County of Los Angeles

Millennium-Playa Del Mar Apartments Project

Draft Environmental Impact Report

SCH 2006101104
County Project R2009-02015

Volume II – Appendices

County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, California 90012

March 2010

DRAFT
ENVIRONMENTAL IMPACT REPORT

Millennium-Playa del Mar Apartments Project

Volume II – Appendices

State Clearinghouse Number 2006101014

County Project Number R2009-02015

Permits:	**RCUPT200900150**
	RPAT200900013
	RZCT200900013
	RENTV200600147

March 2010

TABLE OF CONTENTS

Volume I

Volume II

Appendices

APPENDIX 1.0

Initial Study, Notice of Preparation (NOP), and Comments on the NOP

Initial Study

STAFF USE ONLY

PROJECT NUMBER: *R2009-02015*
CASES: *RENVT200600147*
RCUPT200900150
RZCT200900013
RPAT200900013

* * * * INITIAL STUDY * * * *

COUNTY OF LOS ANGELES
DEPARTMENT OF REGIONAL PLANNING

GENERAL INFORMATION

I.A. Map Date: *December 8, 2009* Staff Member: *Anthony Curzi*
Thomas Guide: *672 E7 & F7* USGS Quad: *Venice*
Location: *5550 Grosvenor Boulevard, Los Angeles, CA 90066*

Description of Project: *Applicant proposes developing project site with a 216-unit multi-family apartment structure in one building, a 433-space above-grade parking structure, a swimming pool and spa, and a fitness center. Requested entitlements include a zone change from R-3-DP and R-1 to R-4-DP, a general plan amendment from Low Density Residential 1(one to six dwelling units per acre) to High Density Residential 4 (22 or more dwelling units per acre), and a Conditional Use Permit (CUP) to approve the development program consistent with the zone change. The existing on-site uses—a single-family house, church, and parking lot—will be demolished. The apartment building will be one-, two-, three- and four-stories and will have a maximum height of 60 feet. Ingress and egress to the project will be from Grosvenor Boulevard and from an existing alley on Juniette Street. The project will require approximately 31,700 cubic yards of grading of which 15,000 cy will be exported. Moreover, project demolition will create 15,000 cubic yards of waste material.*

Gross Acres: *4.93*

Environmental Setting: *The project site is located north of Jefferson Boulevard, east of Lincoln Boulevard (Hwy 1), west of Centinela Avenue and south of the Marina Freeway (SR-90) in the community of West Fox Hills. Surrounding land uses consist of single-family houses to the north, office buildings to the east, apartment buildings to the south (in the City of Los Angeles), and manufacturing and office uses west of the site, also located in the City of Los Angeles. Playa Del Rey Elementary School is located northeast of the project site. The site is mounded in the center. The site contains minimal landscaping with some ornamental vegetation.*

Zoning: *R-3-DP (4.79 acres) Limited Multiple Residential Development Program and R-1 (0.14 acres) Single-Family Residential*

General Plan: *Category 1-Low Density Residential*

Community/Area wide Plan: *NA*

Major projects in area:

PROJECT NUMBER	DESCRIPTION & STATUS

There are no other projects proposed for the West Fox Hills unincorporated island.

NOTE: For EIRs, above projects are not sufficient for cumulative analysis.

REVIEWING AGENCIES

Responsible Agencies

- ☐ None
- ☒ Regional Water Quality Control Board
  - ☒ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☐ Army Corps of Engineers
- ☐
- ☐
- ☐
- ☐
- ☐

Trustee Agencies

- ☐ None
- ☐ State Fish and Game

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☐ Resource Conservation District of Santa Monica Mtns. Area
- ☒ AQMD
- ☒ Los Angeles Unified School District
- ☒ City of Culver City
- ☒ City of Los Angeles
- ☒ DWP
- ☐
- ☐
- ☐
- ☐

Regional Significance

- ☒ None
- ☐ SCAG Criteria
- ☐ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

County Reviewing Agencies

- ☐ Subdivision Committee
- ☒ DPW: GMED, Traffic and Lighting, Environmental Programs, Drainage and Grading, CEQA Review.

☐ State Parks
☒ Native American Heritage Commission
☒ Caltrans District 7
☐
☐

☐
☐
☐
☐
☐

☒ Sheriff's Department
☒ Sanitation District
☒ DPH
☒ Fire Department
☒ County Library

IMPACT ANALYSIS MATRIX		ANALYSIS SUMMARY (See individual pages for details)				
			Less than Significant Impact/No Impact	Less than Significant Impact with Project Mitigation	Potentially Significant Impact	
CATEGORY	**FACTOR**	Pg				Potential Concern
HAZARDS	1. Geotechnical	5	☐	☐	☒	*Liquefaction*
	2. Flood	6	☒	☐	☐	
	3. Fire	7	☒	☐	☐	
	4. Noise	8	☐	☐	☒	*Construction*
RESOURCES	1. Water Quality	9	☐	☒	☐	*Water quality*
	2. Air Quality	10	☐	☐	☒	*Grading, parking structure*
	3. Biota	11	☒	☐	☐	
	4. Cultural Resources	12	☒	☐	☐	
	5. Mineral Resources	13	☒	☐	☐	
	6. Agriculture Resources	14	☒	☐	☐	
	7. Visual Qualities	15	☐	☐	☒	*Shadows, building height, light and glare from parking structure.*
SERVICES	1. Traffic/Access	16	☐	☐	☒	*Additional trips from 216 residential units.*
	2. Sewage Disposal	17	☐	☒	☐	*Sewer infrastructure capacity*
	3. Education	18	☒	☐	☐	
	4. Fire/Sheriff	19	☒	☐	☐	
	5. Utilities	20	☐	☐	☒	*Solid waste capacity*
OTHER	1. General	21	☒	☐	☐	
	2. Environmental Safety	22	☒	☐	☐	
	3. Land Use	23	☐	☒	☐	*Plan designation and zoning; community character.*
	4. Pop/Hous./Emp./Rec.	24	☐	☒	☐	*Impacts to recreational facilities.*
	5. Mandatory Findings	25	☐	☐	☒	*Geotechnical, noise, visual.*

Environmental Finding:

FINAL DETERMINATION: On the basis of this Initial Study, the Department of Regional Planning finds that this project qualifies for the following environmental document:

☐ NEGATIVE DECLARATION, inasmuch as the proposed project will not have a significant effect on the environment.

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was determined that this project will not exceed the established threshold criteria for any environmental/service factor and, as a result, will not have a significant effect on the physical environment.

☐ MITIGATED NEGATIVE DECLARATION, in as much as the changes required for the project will reduce impacts to insignificant levels (see attached discussion and/or conditions).

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was originally determined that the proposed project may exceed established threshold criteria. The applicant has agreed to modification of the project so that it can now be determined that the project will not have a significant effect on the physical environment. The modification to mitigate this impact(s) is identified on the Project Changes/Conditions Form included as part of this Initial Study.

☒ ENVIRONMENTAL IMPACT REPORT*, inasmuch as there is substantial evidence that the project may have a significant impact due to factors listed above as "significant".

☐ At least one factor has been adequately analyzed in an earlier document pursuant to legal standards, and has been addressed by mitigation measures based on the earlier analysis as described on the attached sheets (see attached Form DRP/IA 101). The Addendum EIR is required to analyze only the factors changed or not previously addressed.

Reviewed by: Anthony Curzi — Date: December 9, 2009

Anthony Curzi

Approved by: Paul McCarthy — Date: December 9, 2009

Paul McCarthy

☐ This proposed project is exempt from Fish and Game CEQA filling fees. There is no substantial evidence that the proposed project will have potential for an adverse effect on wildlife or the habitat upon which the wildlife depends. (Fish & Game Code 753.5).

☐ Determination appealed – see attached sheet.

*NOTE: Findings for Environmental Impact Reports will be prepared as a separate document following the public hearing on the project.

HAZARDS - 1. Geotechnical

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project located in an active or potentially active fault zone, Seismic Hazards Zone, or Alquist-Priolo Earthquake Fault Zone? *The project is located within one mile of the Charnock Fault.*
b.	☐	☒	☐	Is the project site located in an area containing a major landslide(s)?
c.	☐	☒	☐	Is the project site located in an area having high slope instability?
d.	☒	☐	☐	Is the project site subject to high subsidence, high groundwater level, liquefaction, or hydrocompaction? *The project site is located in a liquefaction zone.*
e.	☐	☒	☐	Is the proposed project considered a sensitive use (school, hospital, public assembly site) located in close proximity to a significant geotechnical hazard?
f.	☐	☒	☐	Will the project entail substantial grading and/or alteration of topography including slopes of over 25%? *The project will require 15,000 cubic yards (cy) of grading, all of which will be exported.*
g.	☐	☒	☐	Would the project be located on expansive soil, as defined in Table 18-1-B of Uniform Building Code (1994), creating substantial risks to life or property?
h.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Building Ordinance No. 2225 – Sections 308B, 309, 310, and 311 and Chapters 29 and 70

☐ **MITIGATION MEASURES**

☐ Lot Size ☐ Project Design

☐ **OTHER CONSIDERATIONS**

☒ Approval of Geotechnical Report by DPW

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **geotechnical** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No Impact

HAZARDS - 2. Flood

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the major drainage course, as identified on USGS quad sheets by a dashed line, located on the project site?
b.	☐	☒	☐	Is the project site located within or does it contain a floodway, floodplain, or designated flood hazard zone?
c.	☐	☒	☐	Is the project site located in or subject to high mudflow conditions?
d.	☐	☒	☐	Could the project contribute or be subject to high erosion and debris deposition from run-off?
e.	☐	☒	☐	Would the project substantially alter the existing drainage pattern of the site or area?
f.	☐	☐	☐	Other factors (e.g., dam failure)?

STANDARD CODE REQUIREMENTS

☐ Building Ordinance No. 2225 – Section 308A ☐ Ordinance No. 12,114 (Floodways)

☐ Approval of Drainage Concept by DPW

☐ MITIGATION MEASURES

☐ Lot Size ☐ Project Design

☐ OTHER CONSIDERATIONS

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **flood (hydrological)** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

HAZARDS - 3. Fire

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located in a Very High Fire Hazard Severity Zone (Fire Zone 4)?
b.	☐	☒	☐	Is the project site in a high fire hazard area and served by inadequate access due to lengths, width, surface materials, turnarounds or grade?
c.	☐	☒	☐	Does the project site have more than 75 dwelling units on a single access in a high fire hazard area?
d.	☐	☒	☐	Is the project site located in an area having inadequate water and pressure to meet fire flow standards?
e.	☐	☒	☐	Is the project located in close proximity to potential dangerous fire hazard conditions/uses (such as refineries, flammables, explosives manufacturing)?
f.	☐	☒	☐	Does the proposed use constitute a potentially dangerous fire hazard?
g.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Water Ordinance No. 7834 ☐ Fire Ordinance No. 2947 ☐ Fire Regulation No. 8
☐ Fuel Modification / Landscape Plan

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **fire hazard** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

HAZARDS - 4. Noise

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located near a high noise source (airports, railroads, freeways, industry)? *The project site is located approximately 1.9 miles north of LAX and has a CNEL of less than 65. Highway 90 is located 0.27 miles northwest of the project site.*
b.	☒	☐	☐	Is the proposed use considered sensitive (school, hospital, senior citizen facility) or are there other sensitive uses in close proximity? *The proposed use is residential. Playa Del Rey Elementary School is located 50 feet northeast from the project site.*
c.	☐	☐	☒	Could the project substantially increase ambient noise levels including those associated with special equipment (such as amplified sound systems) or parking areas associated with the project? *The proposed project consists of an above-grade parking structure from which noise may generate.*
d.	☐	☐	☒	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels without the project? *Construction noise may increase ambient noise levels.*
e.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Noise Control (Title 12 – Chapter 8) ☐ Uniform Building Code (Title 26 - Chapter 35)

☐ MITIGATION MEASURES ☐ OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by **noise**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 1. Water Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located in an area having known water quality problems and proposing the use of individual water wells? *The City of Los Angeles Department of Water and Power will provide water service to the proposed project.*
b.	☐	☒	☐	Will the proposed project require the use of a private sewage disposal system? *Sewer service will be provided by the Los Angeles County Sanitation District.*
	☐	☐	☐	If the answer is yes, is the project site located in an area having known septic tank limitations due to high groundwater or other geotechnical limitations *or* is the project proposing on-site systems located in close proximity to a drainage course?
c.	☐	☐	☒	Could the project's associated construction activities significantly impact the quality of groundwater and/or storm water runoff to the storm water conveyance system and/or receiving water bodies? *Ten to 99 residential units subject to NPDES requirements.*
d.	☐	☐	☒	Could the project's post-development activities potentially degrade the quality of storm water runoff and/or could post-development non-storm water discharges contribute potential pollutants to the storm water conveyance system and/or receiving bodies? *Ten to 99 residential units subject to NPDES requirements.*
e.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Industrial Waste Permit
☐ Plumbing Code – Ordinance No.2269
☐ Health Code – Ordinance No.7583, Chapter 5
☒ NPDES Permit Compliance (DPW)

☐ **MITIGATION MEASURES**
☐ Lot Size ☐ Project Design ☐ Compatible Use

☐ **OTHER CONSIDERATIONS**

CONCLUSION
Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by, **water quality** problems?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 2. Air Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Will the proposed project exceed the State's criteria for regional significance (generally (a) 500 dwelling units for residential users or (b) 40 gross acres, 650,000 square feet of floor area or 1,000 employees for non-residential uses)? *Two hundred sixteen apartment units are proposed.*
b.	☐	☒	☐	Is the proposal considered a sensitive use (schools, hospitals, parks) and located near a freeway or heavy industrial use? *The proposed use is residential.*
c.	☒	☐	☐	Will the project increase local emissions to a significant extent due to increased traffic congestion or use of a parking structure or exceed AQMD thresholds of potential significance? *The proposed project will have an above-grade parking structure.*
d.	☐	☐	☒	Will the project generate or is the site in close proximity to sources that create obnoxious odors, dust, and/or hazardous emissions? *The proposed project's parking structure may generate emissions; 31,700 cubic yards of grading of which 15,000 cubic yards will be exported.*
e.	☐	☒	☐	Would the project conflict with or obstruct implementation of the applicable air quality plan?
f.	☐	☒	☐	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?
g.	☐	☒	☐	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standard (including releasing emission which exceed quantitative thresholds for ozone precursors)?
h.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Health and Safety Code – Section 40506

☐ **MITIGATION MEASURES**

☐ Project Design ☐ Air Quality Report

☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by, **air quality**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 3. Biota

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located within Significant Ecological Area (SEA), SEA Buffer, or coastal Sensitive Environmental Resource (ESHA, etc.), or is the site relatively undisturbed and natural?
b.	☐	☒	☐	Will grading, fire clearance, or flood related improvements remove substantial natural habitat areas?
c.	☐	☒	☐	Is a drainage course located on the project site that is depicted on USGS quad sheets by a dashed blue line or that may contain a bed, channel, or bank of any perennial, intermittent or ephemeral river, stream, or lake?
d.	☐	☒	☐	Does the project site contain a major riparian or other sensitive habitat (e.g. coastal sage scrub, oak woodland, sycamore riparian, woodland, wetland, etc.)?
e.	☐	☒	☐	Does the project site contain oak or other unique native trees (specify kinds of trees)?
f.	☐	☒	☐	Is the project site habitat for any known sensitive species (federal or state listed endangered, etc.)?
g.	☐	☐	☐	Other factors (e.g., wildlife corridor, adjacent open space linkage)?

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ ERB/SEATAC Review ☐ Oak Tree Permit

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, **biotic** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 4. Archaeological/Historical/Paleontological

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site in or near an area containing known archaeological resources or containing features (drainage course, spring, knoll, rock outcroppings, or oak trees) that indicate potential archaeological sensitivity?
b.	☐	☒	☐	Does the project site contain rock formations indicating potential paleontological resources?
c.	☐	☒	☐	Does the project site contain known historic structures or sites?
d.	☐	☒	☐	Would the project cause a substantial adverse change in the significance of a historical or archaeological resource as defined in 15064.5?
e.	☐	☒	☐	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
f.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ Phase 1 Archaeology Report

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **archaeological, historical**, or **paleontological** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 5. Mineral Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
b.	☐	☒	☐	Would the project result in the loss of availability of a locally important mineral resource discovery site delineated on a local general plan, specific plan or other land use plan?
c.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES**

☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **mineral** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 6. Agriculture Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?
b.	☐	☒	☐	Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?
c.	☐	☒	☐	Would the project involve other changes in the existing environment that due to their location or nature, could result in conversion of Farmland, to non-agricultural use?
d.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **agriculture** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 7. Visual Qualities

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed?
b.	☐	☒	☐	Is the project substantially visible from or will it obstruct views from a regional riding or hiking trail?
c.	☐	☒	☐	Is the project site located in an undeveloped or undisturbed area that contains unique aesthetic features?
d.	☐	☐	☒	Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features? *The project is a high density multi-family housing development. North of the project site are single-family houses. However, there are other multi-story apartment buildings to the south.*
e.	☒	☐	☐	Is the project likely to create substantial sun shadow, light or glare problems? *Building height may create winter shadows on properties to the north. Parking structure may cause light and glare on properties to the south.*
f.	☐	☒	☐	Other factors (e.g., grading or landform alteration)?

☐ **MITIGATION MEASURES** ☒ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Visual Report ☐ Compatible Use

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **scenic** qualities?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 1. Traffic/Access

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Does the project contain 25 dwelling units or more and is it located in an area with known congestion problems (roadway or intersections)? *Project contains 216 units and is located near Playa Vista, an area with congestion problems.*
b.	☐	☒	☐	Will the project result in any hazardous traffic conditions?
c.	☐	☒	☐	Will the project result in parking problems with a subsequent impact on traffic conditions?
d.	☐	☒	☐	Will inadequate access during an emergency (other than fire hazards) result in problems for emergency vehicles or residents/employees in the area?
e.	☒	☐	☐	Will the congestion management program (CMP) Transportation Impact Analysis thresholds of 50 peak hour vehicles added by project traffic to a CMP highway system intersection or 150 peak hour trips added by project traffic to a mainline freeway link be exceeded? *The proposed project will generate approximately 111 a.m. and 138 p.m. peak hour trips.*
f.	☐	☒	☐	Would the project conflict with adopted policies, plans, or program supporting alternative transportation (e.g., bus, turnouts, bicycle racks)?
g.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☒ Traffic Report ☒ Consultation with Traffic & Lighting Division

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **traffic/access** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 2. Sewage Disposal

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	If served by a community sewage system, could the project create capacity problems at the treatment plant?
b.	☐	☒	☐	Could the project create capacity problems in the sewer lines serving the project site?
c.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Sanitary Sewers and Industrial Waste – Ordinance No. 6130

☐ Plumbing Code – Ordinance No. 2269

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **sewage disposal** facilities?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

SERVICES - 3. Education

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project create capacity problems at the district level?
b.	☐	☐	☒	Could the project create capacity problems at individual schools that will serve the project site? *Two hundred fifteen (216 minus one existing) residential units in the area could create capacity problems at schools that serve the project site.*
c.	☐	☒	☐	Could the project create student transportation problems?
d.	☐	☐	☒	Could the project create substantial library impacts due to increased population and demand? *There may be a small increase in the demand for library services.*
e.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** ☒ **OTHER CONSIDERATIONS**

☐ Site Dedication ☒ Government Code Section 65995 ☒ Library Facilities Mitigation Fee

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **educational** facilities/services?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

SERVICES - 4. Fire/Sheriff Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project create staffing or response time problems at the fire station or sheriff's substation serving the project site?
b.	☐	☒	☐	Are there any special fire or law enforcement problems associated with the project or the general area?
c.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES**

☐ Fire Mitigation Fee

☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **fire/sheriff** services?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

SERVICES - 5. Utilities/Other Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site in an area known to have an inadequate public water supply to meet domestic needs or to have an inadequate ground water supply and proposes water wells?
b.	☐	☒	☐	Is the project site in an area known to have an inadequate water supply and/or pressure to meet fire fighting needs?
c.	☐	☒	☐	Could the project create problems with providing utility services, such as electricity, gas, or propane?
d.	☒	☐	☐	Are there any other known service problem areas (e.g., solid waste)? *Cumulative impacts on landfill capacity may be limited*
e.	☐	☒	☐	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services or facilities (e.g., fire protection, police protection, schools, parks, roads)?
f.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Plumbing Code – Ordinance No. 2269 ☐ Water Code – Ordinance No. 7834

☐ **MITIGATION MEASURES**

☐ Lot Size ☐ Project Design

☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **utilities** services?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - <u>1. General</u>

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Will the project result in an inefficient use of energy resources? *Project will comply with County Green Building ordinance.*
b.	☐	☐	☒	Will the project result in a major change in the patterns, scale, or character of the general area or community? *Project will introduce high-density residential uses next to single-family houses. However, the project site is also next to existing multi-family housing. See Land Use discussion.*
c.	☐	☒	☐	Will the project result in a significant reduction in the amount of agricultural land?
d.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ State Administrative Code, Title 24, Part 5, T-20 (Energy Conservation)

☐ **MITIGATION MEASURES** ☒ **OTHER CONSIDERATIONS**

☐ Lot Size ☒ Project Design ☒ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to any of the above factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

OTHER FACTORS - 2. Environmental Safety

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Are any hazardous materials used, transported, produced, handled, or stored on-site?
b.	☐	☒	☐	Are any pressurized tanks to be used or any hazardous wastes stored on-site?
c.	☐	☒	☐	Are any residential units, schools, or hospitals located within 500 feet and potentially adversely affected? *Residential units and a school are located within 500 feet of the project site, but they should not be adversely affected.*
d.	☐	☒	☐	Have there been previous uses that indicate residual soil toxicity of the site or is the site located within two miles downstream of a known groundwater contamination source within the same watershed?
e.	☐	☒	☐	Would the project create a significant hazard to the public or the environment involving the accidental release of hazardous materials into the environment?
f.	☐	☒	☐	Would the project emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
g.	☐	☒	☐	Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment?
h.	☐	☒	☐	Would the project result in a safety hazard for people in a project area located within an airport land use plan, within two miles of a public or public use airport, or within the vicinity of a private airstrip?
i.	☐	☒	☐	Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
j.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES**

☐ Toxic Clean-up Plan

☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact relative to **public safety**?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

OTHER FACTORS - 3. Land Use

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Can the project be found to be inconsistent with the plan designation(s) of the subject property? *The land use designation for the project site is Low Density Residential which has a maximum density of six dwelling units per acre. The density of the proposed project is approximately 44 dwelling units per acre. The project includes a request for a general plan amendment.*
b.	☐	☐	☒	Can the project be found to be inconsistent with the zoning designation of the subject property? *The project site is zoned Limited Multiple Residential-Development Program (R-3-DP) which requires 1,452 square feet per unit. The project proposes an average unit size of 870 square feet. The project includes a request for a zone change to R-4-DP.*
c.				Can the project be found to be inconsistent with the following applicable land use criteria:
	☐	☒	☐	Hillside Management Criteria?
	☐	☒	☐	SEA Conformance Criteria?
	☐	☐	☐	Other?
d.	☐	☐	☒	Would the project physically divide an established community? *Project will introduce high-density residential uses next to single-family houses. However, the project site is also next to existing multi-family housing.*
e.	☐	☒	☐	Other factors?

☐ **MITIGATION MEASURES** ☒ **OTHER CONSIDERATIONS**

With plan amendment and zone change, project will be consistent with zoning regulations.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **land use** factors?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 4. Population/Housing/Employment/Recreation

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project cumulatively exceed official regional or local population projections?
b.	☐	☒	☐	Could the project induce substantial direct or indirect growth in an area (e.g., through projects in an undeveloped area or extension of major infrastructure)?
c.	☐	☒	☐	Could the project displace existing housing, especially affordable housing? *The project will add to housing stock.*
d.	☐	☒	☐	Could the project result in substantial job/housing imbalance or substantial increase in Vehicle Miles Traveled (VMT)?
e.	☐	☐	☒	Could the project require new or expanded recreational facilities for future residents? *Although the project will add additional residents to the community who will require additional recreational facilities, the project will contain some on-site facilities for residents.*
f.	☐	☒	☐	Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?
g.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **population, housing, employment,** or **recreational** factors?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/No impact

MANDATORY FINDINGS OF SIGNIFICANCE

Based on this Initial Study, the following findings are made:

	Yes	No	Maybe	
a.	☐	☒	☐	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?
b.	☐	☐	☒	Does the project have possible environmental effects that are individually limited but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. *Visual, sewage disposal, land use, and air quality.*
c.	☒	☐	☐	Will the environmental effects of the project cause substantial adverse effects on human beings, either directly or indirectly? *Noise, traffic, and geotechnical.*

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the environment?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

Notice of Preparation (NOP)

Los Angeles County
Department of Regional Planning

Planning for the Challenges Ahead

Jon Sanabria
Acting Director of Planning

NOTICE OF PREPARATION

DATE: **December 10, 2009**

PROJECT TITLE: **Millennium-Playa Del Mar Apartments Project**
County Project Number R2009-02015
Case Numbers: RENVT200600147, RCUPT200900150, RZCT200900013, RPAT2009000013

PROJECT APPLICANTS: **Din/Cal, Inc.**
3411 Richmond Avenue, Suite 200
Houston, TX 77046
(832) 209-1218

INTRODUCTION

The Los Angeles County Department of Regional Planning (County) will be the Lead Agency pursuant to the requirements of the California Environmental Quality Act (CEQA), and will prepare an Environmental Impact Report (EIR) for an application submitted by Din/Cal, Inc. (Applicant) for the installation and operation of a 216-unit apartment complex in one building with an associated parking structure, landscaping, pedestrian and automobile access and circulation routes.

The project applicant is requesting a General Plan Amendment (a change from Low-Density 1 to High-Density 4), a zone change (from R-3-DP and R-1 to R-4-DP), and a Conditional Use Permit to approve the development program consistent with the zone change.

The Project Description, Site Plan and the attached CEQA Initial Study prepared by the County of Los Angeles constitute the Notice of Preparation (NOP) required by CEQA (State CEQA Guidelines Section 15082[a]).

1.0 GENERAL OVERVIEW OF PROPOSED PROJECT

The Project to be evaluated in the Environmental Impact Report (EIR) is the Millennium-Playa Del Mar Apartments Project (Project), submitted for consideration to Los Angeles County by Din/Cal, Inc.. The Project proposes to develop a 216-unit apartment complex in one building with an associated parking structure, landscaping, pedestrian and automobile access and circulation routes.

1.1 Project Location and Access

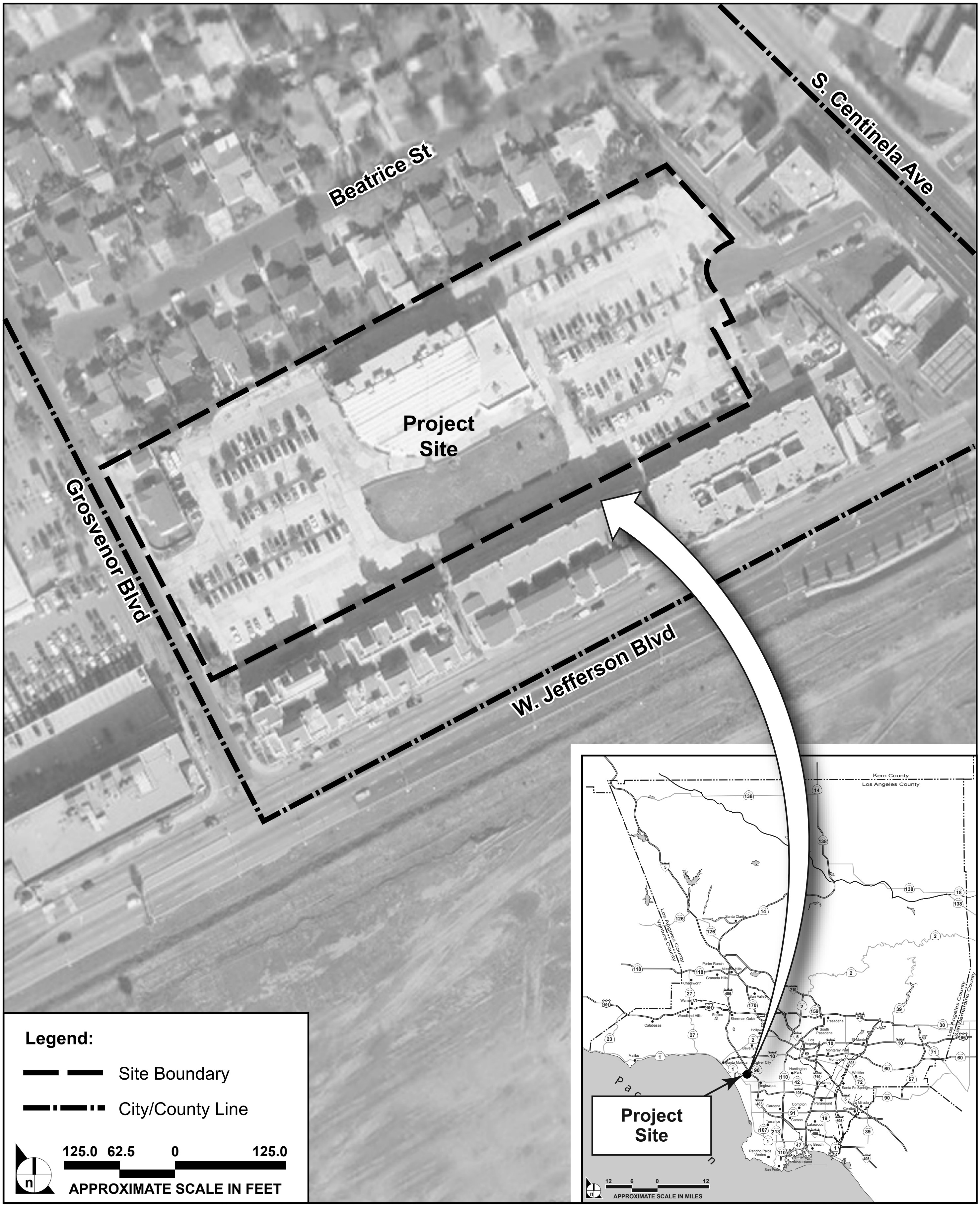
The Project site is located in an unincorporated County "island" in the southern portion of Los Angeles County (West Fox Hills-Del Rey), at 5550 Grosvenor Boulevard. The Project site is located approximately 13 miles southwest of downtown Los Angeles, and approximately three miles north of the Los Angeles International Airport. The City of Santa Monica is located approximately four miles north of the site. Interstates 10 (I-10) and 405 (I-405) provide primary regional access to the site vicinity and surroundings. **Figure 1** illustrates the regional and local project location. The project site is located within the Venice U.S. Geological Survey (USGS) 7.5-minute quadrangle (shown in **Figure 2**).

Access to the site is presently available from two roads: Grosvenor Boulevard via West Jefferson Boulevard; and Juniette Street via Centinela Avenue. Regional public transportation systems serving the Project site and surrounding area include the Los Angeles County Metropolitan Transportation Authority (MTA), the Santa Monica Municipal Bus Blue Lines, the Culver CityBus and the Los Angeles Department of Transportation (LADOT) Commuter Express transit system.

The Project site adjoins lands of the City of Los Angeles on the west across Grosvenor Boulevard and nearby intersections are primarily within City jurisdiction. Consideration of the City's relevant regulations and plans will be provided in the EIR, particularly those pertaining to the traffic analysis.

1.2 Surrounding Land Uses

The Project site is located in a diverse area that features single family homes, multi-family apartment buildings and a variety of office and light industrial commercial uses. Recent development in the Project area is primarily high-density residential in nature, particularly south of the Project site, where the Playa Vista development is being constructed in the City of Los Angeles. There is also some new neighborhood retail and service businesses in the area, which support the convenience shopping needs of the area's growing residential population.



SOURCE: Google Earth – 2009, Impact Sciences, Inc. – December 2009

FIGURE **1**

Region and Local Project Location

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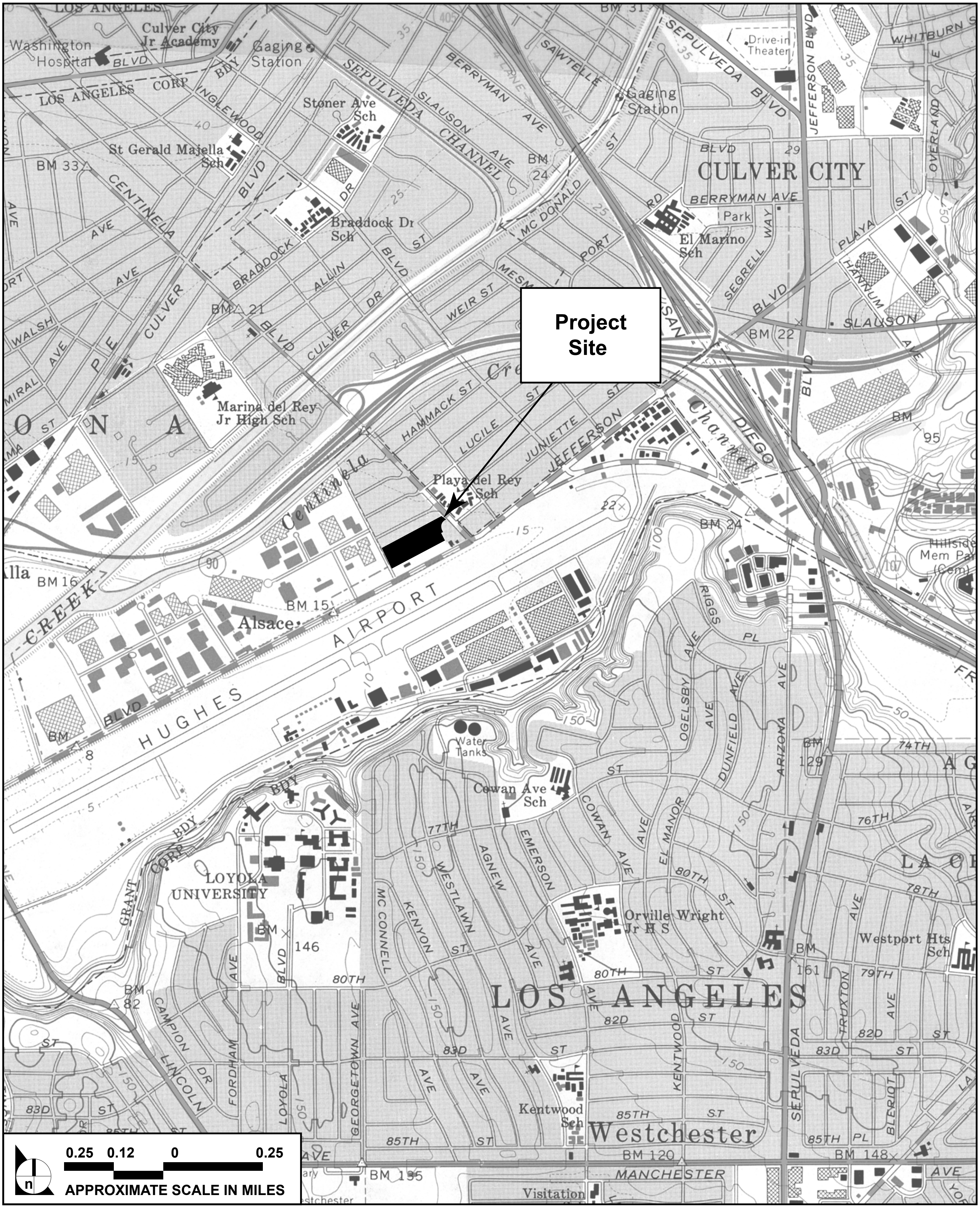


SOURCE: USGS Venice Quadrangle – 1981, Impact Sciences, Inc. – December 2009

FIGURE 2

USGS Quadrangle and Project Location

Land use patterns in the area are largely urbanized. One-story single-family homes are located along the northern boundary of the site. A row of three and four-story multi-family apartment buildings is located along the southern border of the Project site, separated by a public alley. Some older general commercial and industrial buildings are found at the northeastern and northwestern corners of the site, and at the western site boundary, across Grosvenor Boulevard, is an office building with a large surface parking area and two-story parking structure.

1.3 On-Site Land Uses

In total, the Project site is 4.93 gross acres in size (4.36 acres net size not including County roadway right-of-ways) and comprises two parcels of approximately 4.79 and 0.14 gross acres (County Assessor's Parcel Numbers 4211-003-068 and 4211-003-041, respectively). The first parcel presently contains two connected buildings about 30 feet in height that are part of an existing church facility (City of Angels Church of Religious Sciences of Los Angeles). The remainder of this parcel is used as a paved surface parking lot. The second parcel, at the northwestern corner of the site, contains a one-story home and associated landscaping, which is owned by the church. The buildings and all associated parking area elements would be removed as part of the project.

The site is mounded in the center, and the church building is located on the apex of this raised topographical feature. Little of the site is vegetated save for some ornamental trees in the parking lots and a small recessed lawn-like green to the east of the main church building. The parking lots are paved and surround the building, and contain a few trees, overhead lights, concrete curbing, a non-linear corrugate fence, and some signage. A series of fencing and walls surround the site. From the entrance on Juniette Street, traveling clockwise around the site to the entrance on Grosvenor Boulevard, the site is bordered by an ornamental iron fence on the south that is owned by the church. The site is bordered on the north by a mixture of masonry block and wood wall and fences that are primarily owned by the individual homeowners along the northwest boundary of the site.

2.0 ENVIRONMENTAL CHARACTERISTICS

2.1 Surface Hydrology

No waterways or major drainage courses occur on the project site or on adjacent parcels. Drainage is by sheet flow to surrounding roadways, where water is collected in an existing surface and underground storm drain system. As a result of the limited topographical relief on the site, there is no potential for mudflows or landslides and the potential for water erosion is small. During construction, de-watering may be required due to a high groundwater table present in the area. In this case, any dewatering activities will be performed in a manner consistent with National Pollution Discharge Elimination System (NPDES) permit for the area. This could include Best Management Practices (BMPs) techniques such as directing groundwater to a network of settling basins, then filtering the water before diverting it to the existing storm drain system.

2.2 GEOLOGIC FEATURES AND SOILS

The site elevation ranges from approximately 14 to 25 feet above sea level. The subsurface material of the site, within the maximum depth of exploration, is composed of uncertified fill, underlain by native highly compressible clays; medium dense sands and silty sands; and very dense sand and gravel. Groundwater was measured during soil sampling at a depth of 10.5 feet below the existing grade.

No active faults occur on site, although the project site is in a seismically active region. The site is not subject to mudslides, but there is potential for soil liquefaction from strong seismic shaking due to sandy soil composition and the high water table elevation on the site. A preliminary geotechnical investigation completed for the site indicated the presence of a potentially liquefiable sandy soil layer on the Project site at a depth of approximately 25 feet.

2.3 BIOLOGICAL RESOURCES

The project site is presently developed and within a highly urbanized area. No significant biological resources occur on site. The project is not located within an existing or planned County of Los Angeles designated Significant Ecological Area (SEA) and is consistent with all applicable local and regional conservation plans.

The site is presently landscaped with non-native species typical of shade trees placed in parking lots. The project site does not contain any wetlands, major riparian vegetation or special-status habitat, and it does not contain oak or other unique native plants. No special-status plant species are known to occur on the project site.

Trees on the project site may provide habitat for species typical of developed urban areas (primarily birds and small mammals such as squirrels). Given the developed nature of the project site and its surroundings, terrestrial wildlife resources are not expected to be abundant or diverse.

3.0 PROJECT DESCRIPTION

3.1 Overview of Site Plan

The proposed project is a request for a Conditional Use Permit to allow 216 apartments in one building with a maximum height of four stories (60 feet) along and a 433-space parking structure with a maximum height of five and one half stories (56 feet); a zone change from R-3-DP and R-1 to R-4-DP; and a general plan amendment to change the land use designation from Low Density Residential 1 to High Density Residential 4. The existing church, parking lot, and single-family residence will be removed. The project will require on-site grading of 31,700 cubic yards of cut of which 15,000 cubic yards of soil would be exported from the site and 16,700 cubic yards of fill to be used on-site. Ingress and egress will be provided by an existing alley south of the project site and a new fire alley along the northern part of the site. **Figure 3** provides a site plan for the project.

3.2 Apartment Units

There are nine unit types (floor plans) proposed for the Project, ranging in size from a 724-square-foot one-bedroom unit to a 1,361-foot two-bedroom unit. Average unit size would be approximately 914 square feet with a majority having attached balconies or patios (not included in square footage calculations).

3.3 Access/Parking

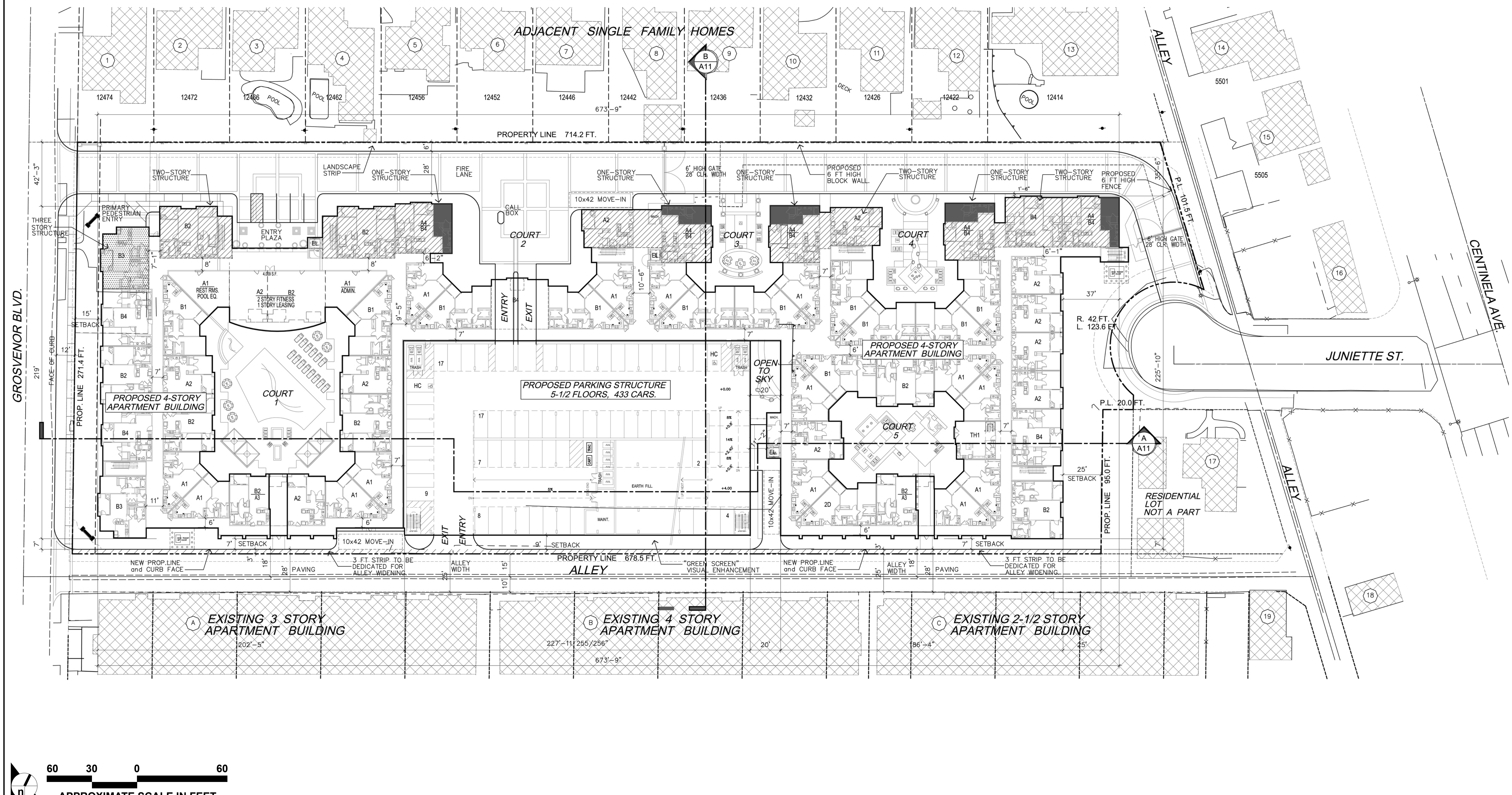
In total, 438 parking spaces would be provided for the Project (as required by County Code.) **Table 1** provides a breakdown of the parking spaces provided.

Table 1
Parking Spaces

Space Type	Total per Type
Standard	379
Guest	54
Leasing Office	5
Total Provided	**438**
County Requirements	433

Source: Impact Sciences

Vehicular access to and from the parking structure would be provided via entrances located along the northern and southern alleyways. Vehicles would access the entrance along the northern driveway from Grosvenor Boulevard. Vehicles would access the entrance along the southern alleyway from either Grosvenor Boulevard or an existing north-south alleyway to the east of the Project site.



SOURCE: Architects Orange – December 2009

FIGURE 3

Playa del Mar Site Plan

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3.4 Excavation and Grading

Excavation and grading on the Project site would commence in June 2011 and continue through July 2011. Total site grading would involve approximately 25,000 cubic yards of earth material. The site is currently mounded toward the center of the site. Site preparation would include excavation of this mounded material and the export of earth material would be required. In total, it is estimated that 15,000 cubic yards of excavation material would be removed and taken to a landfill as capping material or used on other construction sites. Approximately 500 to 750 round trip hauling truck trips[1] would be required to remove this material, or approximately 9 to 13 round trip truck trips per working day during this period.[2]

After excavation is complete, the site would be graded to prepare the area for building foundations, garages, and to level the site to match the elevations found in the surrounding terrain. Consistent with state and federal environmental policies, all grading would be performed in a manner that minimizes the amount of wind-blown dust and soil entering nearby water drains. Additionally, trucks with sprinklers would be used to apply water to the grading soils to ensure proper compaction.

3.5 Requested Approvals

The proposed Project would be subject to review and approval according to the regulatory approval processes in Los Angeles County.

General Plan Amendment. A General Plan amendment is being requested to change the General Plan land use designation from Low-Density 1 (1 to 6 dwelling units (du)/acre) to High Density 4 (22 or more du/acre).

Zone Change. A zone change is being requested to change the zoning on the site from R-3-DP (4.21 acres) and R-1 (0.14 acres) to R-4-DP.

Conditional Use Permit. A Conditional Use Permit is being requested to authorize the development program for residential uses consistent with this zone change.

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1 Based on a hauling capacity of 20-30 cubic yards per truck.

2 Based on the removal of 261 cubic yards per day (15,000 cubic yards/58 days).

Subsequent to these approvals, the applicant would request other development permits, including building permits, grading permits, etc.

4.0 ENVIRONMENTAL IMPACT REPORT

In conformance with Section 15063 of the *State CEQA Guidelines* (California Code of Regulations Title 14, Chapter 3), the County of Los Angeles prepared an Initial Study (**Attachment A**) and determined that the project had the potential to result in significant adverse impacts, and consistent with Section 15063(b)(1)(A), required preparation of an EIR. The following analysis will be included in this EIR.

4.1 Project Description

The purpose of the Project Description is to describe the Project in a way that will be meaningful to the public, reviewing agencies, and decision makers. *State CEQA Guidelines* Section 15124 states that the Project Description need not be exhaustive but should supply sufficient detail necessary to perform the evaluation and review of a Project's potential environmental impacts. The Project Description will provide the following items: (1) the precise location and boundaries of the Project, (2) a statement of Project goals, (3) a description of the Project, and (4) a statement briefly describing the intended uses of the EIR.

4.2 Environmental Setting

The *State CEQA Guidelines* require a description of the environment, as it exists, from both a local and regional perspective. The Environmental Setting discussion will be provided as a separate chapter in the EIR and will also provide an analysis of the project's consistency with all applicable local and regional plans. This analysis will be based primarily on the project's consistency with the adopted goals and policies in the Los Angeles County General Plan.

4.3 Impact Analyses

Scopes of work for each required topic defined as part of the County-prepared Initial Study are provided below. These scopes of work may be modified based on information received as part of this NOP process or as deemed appropriate by the Lead Agency. The following areas were identified in the Initial Study as having potential impacts that required additional analysis:

- Geotechnical and Soil Resources

- Noise
- Air Quality
- Traffic and Access
- Visual Resources
- Hydrology and Water Quality
- Sewer Services
- Solid Waste Services

The proposed scope of work for each of these topic sections is described below.

4.3.1 Geology

The following Scope of Work is proposed to define and evaluate this project's potential adverse effect on the geological environment.

1. Incorporate the available geotechnical, geologic and soils information developed from the literature, including the applicant's geotechnical investigation. This discussion shall include a description of existing earth materials, geologic units, and seismic hazards.
2. Provide a discussion of the applicable regulations and building standards related to seismic and geological safety and discuss Project consistency with these regulations.
3. Based on information provided by the applicant, describe and analyze the proposed grading plan.
4. Based on the conclusions of the geotechnical investigation, potential impacts will be analyzed as follows:
   - Document the locations of the nearest active faults and determine whether there would be any hazards related to fault rupture.
   - Determine whether people or structures would be exposed to significant effects from ground shaking, ground failure, or landslides.
   - Discuss the potential for erosion-related impacts from grading and with regard to the drainage on site.
   - Discuss the potential for the project to be located on an unstable geologic unit or soil, along with the associated hazards.

- Discuss soils constraints (expansive soils, corrosive soils) related to structural development.
- Discuss hazards associated with methane gas as it may occur in subsurface soils on and near the Project site.

5. Incorporate recommendations and mitigation measures from the geotechnical investigation and document their effectiveness at reducing impacts to a less-than-significant level.
6. Discuss that geological impacts are generally site-specific for projects of this size and that cumulative impacts are not anticipated with Project development.

4.3.2 Noise

The project site is located approximately three miles north of Los Angeles International Airport (LAX). Noise from jet traffic is audible. The site is situated in a dense urban area and existing noise sources are generally from vehicles. The noise analysis will be based on a combination of on-site noise measurements and roadway noise modeling. This quantitative data will address potential project construction and operational noise impacts to on-site new residents and nearby sensitive receptors. The analysis would include the following components:

1. A description of existing noise sources and the noise environment in the vicinity of the Project site.
2. A summary of noise measurements on the project site and along roadways most affected by increases in Project traffic.
3. Identification of noise-sensitive land uses or activities in the vicinity of the Project site and along roadways providing access to and from the site.
4. A discussion of relevant noise policies, regulations, and standards, including those in the County General Plan and Noise Ordinance, and an analysis of the Project's consistency with these regulations.
5. A discussion of construction noise impacts, based upon proposed construction activities and scheduling information provided by the applicant. The EIR shall evaluate noise impacts from construction based on the duration, nature, phasing, and level of various construction activities.
6. A description of typical noise generated by the project during operation. Noise generated by project-generated motor vehicle traffic on adjacent sensitive land uses would also be evaluated.
7. Noise modeling shall be conducted to assess increases in noise levels at adjacent noise sensitive locations.

8. Discuss whether the proposed residential uses within the project site could be exposed to noise levels above County noise standards, or whether the project would cause or cumulatively contribute to a significant off-site noise impact. If significant impacts are identified, provide mitigation measures based on County General Plan standards and/or potential construction program or project design modifications.

9. Special attention in the EIR shall be afforded to noise impacts associated with the proposed parking structure on the existing apartment building located to the south, and to noise impacts associated with increased vehicle traffic on the access alley on the existing apartment structures to the south.

4.3.3 Air Quality

The project is situated in the South Coast Air Basin, a severe non-attainment area. Air quality standards, policies, and monitoring are the responsibility of the South Coast Air Quality Management District (SCAQMD). The following scope of work is proposed to define and evaluate potential adverse effect on air quality during the Project's construction and operation.

1. Describe baseline air quality information, including area topography and meteorology and their influence over air quality, relevant state and federal ambient air quality standards, monitoring data for the past five years from the monitoring station(s) near the Project site, air quality trends, and existing and reasonably foreseeable sensitive receptors near the development site or near roadways/intersections that could be affected by Project traffic. Identify federal, state, and local regulatory agencies responsible for air quality policies, regulations, and standards that pertain to the project. Identify major existing sources of air pollutants in the project vicinity, including sources of toxic air contaminants or odorous emissions on the basis of inventory data compiled by the SCAQMD.

2. Based on available information from the Project applicant, calculate potential emissions from construction activities related to the project. Include emissions from grading, excavation, and building construction. Consider construction haul trips and exhaust emissions from construction equipment. Compare estimated construction emissions with SCAQMD thresholds.

3. Calculate operational mobile and area source emissions for reactive organic gases, nitrogen oxides, particulates, and carbon monoxide using the most current URBEMIS model. Calculations associated with vehicle traffic will be based on the trip generation modeling documented in the traffic report. Compare the estimated emissions to the SCAQMD thresholds.

4. Discuss the potential for the combined emissions from the Project and cumulative development to adversely affect air quality or impede attainment of air quality goals. Also, discuss whether the Project would conflict with the most recent version of the Air Quality Management Plan and other applicable air quality plans. Apply SCAQMD significance criteria to determine the potential for cumulative air quality impacts.

5. Identify mitigation measures as necessary to reduce or avoid any potential Project-specific or cumulative impacts to air quality and quantify their effectiveness based on methodologies available from SCAQMD and other sources.

4.3.4 Traffic and Access

Some intersections outside of the immediate Project area could experience increased traffic with development of the Project and other projects planned in the area. A traffic report is being prepared by the applicant and will be submitted to the County for review. The traffic study will address existing and future conditions at approximately 14 intersections in the vicinity of the project site. Once accepted, the findings will be incorporated into the EIR, including any mitigation for traffic impacts identified in the report. The following analysis would be incorporated into the proposed EIR to address potential project and cumulative traffic impacts to the environment.

1. Study area, methodology, and level of service standards;
2. Description of regional and local transportation network;
3. Existing traffic volumes and levels of service;
4. Related projects within the study area;
5. Programmed roadway improvements;
6. A discussion of the relevant agencies, policies and regulations that affect traffic planning in the project area. The discussion will provide an analysis of the Project's consistency with all applicable regulations;
7. Relevant transportation and circulation features of the proposed project;
8. Trip generation, distribution, and assignment;
9. Traffic impacts that could occur with development of this project, when combined with regional traffic growth and traffic associated with other planned projects (cumulative analysis). This analysis would consider increased traffic, parking, and consistency with alternative transportation policies; and
10. Describe project-specific and cumulative mitigation measures.

4.3.5 Visual Resources

The existing character of the project site will be changed with development of the proposed project. The proposed project is of a different aesthetic character and proposes more housing units per acre than land uses abutting the site to the north. The following scope of work is proposed to define and evaluate this Project's potential adverse effect on the aesthetic environment.

1. Describe the existing visual character of the project site, focusing on site features such as topography, vegetation, existing light sources, and the site's relationship to nearby uses. Work will be based on site reconnaissance.

2. Provide text and photos documenting views of the project site from adjacent roadways.

3. Summarize applicable policies or regulations related to visual quality, including policies from the County of Los Angeles General Plan. Discuss project's consistency with existing and planned development in the area.

4. Prepare four photorealistic simulations of the project. These simulations would provide a conceptual illustration of the proposed Project within its neighborhood context.

5. Using the visual simulations, evaluate the visual impacts of the proposed project, with respect to defined significance criteria, focusing on changes to existing visual character, and effects on views from nearby roadways.

6. Evaluate potential light, glare, and shade/shadow impacts from new sources and determine whether they would substantially degrade the existing visual character of the site or area.

7. Describe and evaluate mitigation measures proposed as part of the Project. Identify, as necessary, additional mitigation measures for avoidance or reduction of the identified visual impacts.

8. Special attention shall be afforded to light and glare impacts from the proposed parking structure on the existing apartment building situated south of the Project site.

9. Special attention shall be afforded to the visual impact of the proposed Project on existing single-family residential uses situated north of the Project site and the existing apartment building situated to the south.

4.3.6 Hydrology/Water Quality

The following scope of work is proposed to define and evaluate this project's potential adverse effect on the hydrology and water quality environments.

1. Analyze water quality management issues and review plans. Typical constituents associated with racetrack runoff are expected to include primarily sediments, oil and grease. If untreated, runoff from the racetrack could degrade surface/groundwater quality in drainage courses on and off site. The County shall require development of a Storm Water Pollution Prevention Plan (SWPPP) to guide water quality protection during the construction and post-construction phases, in compliance with the regulatory requirements of the construction and municipal storm water permit components of the National Pollution Discharge Elimination System. New regulations being adopted by the Regional Board require treatment of 80 to 90 percent of mean annual rainfall. Compliance with these regulations is typically explained in a Storm Water Management Plan (SWMP), including how the proposed treatment measures will be monitored and maintained.

2. Characterize pollutants of concern under existing conditions and following development and assemble information regarding the local and regional regulations related to storm water quality management. The Draft EIR shall review the site design plans for consistency with regulatory criteria and suitability of water quality treatment measures proposed to avoid impacts to local drainage channels and off-site habitat. Where applicable, the Draft EIR shall identify additional opportunities and constraints that bracket selection of best management practices (BMPs) and recommend further measures that are appropriate for the project.

3. Assess impacts to groundwater recharge from the proposed project. Recharge to groundwater is typically reduced when development creates impervious surfaces over areas that were formerly permeable. Under this task the EIR will assess the magnitude and importance of existing recharge, evaluate how recharge will likely change as construction occurs and identify impacts and mitigation measures suitable for maintaining hydrologic support to retained drainage channels or local wells, if applicable. If appropriate, the Draft EIR shall also suggest BMPs to maintain recharge.

4. Describe any other direct, indirect and cumulative impacts on water resources resulting from the proposed project and appropriate mitigation measures.

4.3.7 Sewer Service

Domestic sewage flows from the project site are currently treated at the City of Los Angeles' (City) Hyperion Treatment Plant through a contractual agreement between the County and City. This plant has surplus capacity to serve new projects. However, a full analysis of sewer line capacity from the project site to sewer trunk lines is necessary to adequately evaluate system capacity. The following analysis would be incorporated into the proposed EIR to adequately address potential project and cumulative impacts on the county sewage treatment systems.

1. Obtain information on existing sewer capacity, assess the potential impacts of the proposed project, define specific standards and provide input on appropriate mitigation measures.

2. Provide information on existing conditions for the treatment and disposal of domestic sewage via the existing sewage treatment system.

3. Provide information on the sewage treatment system's capacity for additional wastewater treatment and on any pending and proposed improvements to the system.

4. Based on readily available wastewater generation rates, calculate the project's wastewater generation. Compare with the defined capacities of the sewage treatment plant(s) and sewage system.

5. Provide mitigation measures proposed as part of the project or recommendations of the County of Los Angeles Department of Public Works. Describe cumulative impacts and mitigation measures.

4.3.8 Solid Waste Service

The following scope of work is proposed to define and evaluate this project's potential adverse effect on the solid waste service environments.

Solid waste collection and transfer in unincorporated Los Angeles County is handled by private contractors. These contractors haul waste to a variety of sorting, recycling and transfer stations and to local and regional landfills. The following analysis would be incorporated into the proposed EIR to adequately address potential project and cumulative impacts on solid waste services.

1. Provide information regarding on-site solid waste collection and transfer. Identify likely landfills that accept solid waste from Marina del Rey, discuss capacity of these landfills and current diversion rates of recyclables in Los Angeles County.

2. Based on readily available solid waste generation rates, calculate the project's estimated solid waste generation. Compare with the defined capacities of identified landfills.

3. Document hazardous materials or the generation of hazardous wastes associated with the project. Document policies and measures that would apply to the safe use and disposal of such materials.

4. Provide mitigation measures proposed as part of the project. Describe cumulative impacts and mitigation measures.

5. Demolition and construction waste would be hauled via an approved haul route, to an appropriate approved, environmentally acceptable landfill location. The impact of this additional solid waste on local landfills shall be evaluated in the Draft EIR.

4.4 Alternatives

In conformance with the *State CEQA Guidelines*, a range of reasonable alternatives that would reduce significant impacts and would foster informed decision making and public participation will be included in the Draft EIR.

4.5 Growth-Inducing Impacts

In conformance with the *State CEQA Guidelines*, growth-inducing impacts (i.e., ways the Project could foster economic growth or population growth) either direct or indirect would be described and analyzed.

4.6 Review Period

Due to time limits mandated by State law, your response must be sent at the earliest possible date, but no later than 30 calendar days after formal issuance date of this notice. Please submit comments no later than the close of business January 18, 2010. In submitting comments, please include the commenter's name, telephone number, and e-mail address in the event it is necessary to further clarify the comments being offered.

Please send your written comments to:

Impact Analysis Section
Department of Regional Planning
320 West Temple Street, Room 1348
Los Angeles, CA 90012
Attn: Anthony Curzi
Tel: (213) 974-6461
Fax: (213) 626-0434
E-mail: acurzi@planning.lacounty.gov

DIN-CAL MILLENNIUM-PLAYA DEL MAR PROJECT
NOP DISTRIBUTION LIST
(December 2009)
(Certified Mail with return receipts or any tracking method)

Los Angeles County

Department of Regional Planning (2 copies)
Impact Analysis Section
320 West Temple St., Room 1348
Los Angeles, CA 90012
Attn: Anthony Curzi

Mr. Ken Habaradas (4 copies + county memo)
Department of Public Health
Bureau of Environmental Protection
Environmental Health
5050 Commerce Drive,
Baldwin Park, CA 91706

County of Los Angeles (6 copies + DPW cover letter)
Public Works Department
Land Development Division
900 South Fremont Avenue
Alhambra, CA 91803
Attn: Toan Duong

County of Los Angeles Fire Department (3 copies + FD cover letter)
Forestry Division, Prevention Bureau
5823 Rickenbacker Rd., Rm. 123
Commerce, CA 90040
Attn: Ms. Cusick

Lloyd Taber - Marina del Rey County Library (1 copy)
4533 Admiralty Way
Marina del Rey, CA 90292

County of Los Angeles (1 copy + county memo)
Sanitation Districts
P.O. Box 4998
Whittier, CA 90607-4998
Attn: Environmental Review

County of Los Angeles Sheriff Department (1 copy + county memo)
Mr. Gary T. K. Tse
Director of Facilities Planning
Building A9-East/5th Floor North
1000 S. Fremont Avenue
Alhambra, CA 91803
Attn: Mr. Tom Bellizia

County of Los Angeles (1 copy + county memo)
Marina Del Rey Sheriff Station
13851 Fiji Way
Marina Del Rey, CA 90292
Attn: Environmental Review

County of Los Angeles (1 copy + county memo)
Public Library
P.O. Box 7011
Downey, CA 90241-7011

Los Angeles County – County Clerk Office (with a $75 check payable to the County Clerk)
12400 Imperial Highway
P.O. Box 53592
Norwalk, CA 90650

<u>State Agencies</u>

California Regional Water Quality Control Board (1 copy)
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013
Attn: Environmental Review

Elmer Alvarez (1 copy)
Caltrans- District 7
Planning Division/CEQA MS16
100 South Main Street
Los Angeles, CA 90012

Department of Transportation (1 copy)
Division of Aeronautics – M.S. # 40
P.O. Box 942873
Sacramento, CA 94273-0001

California Highway Patrol (1 copy)
P.O. Box 942898
Sacramento, CA 94298-0001
Attn: Environmental Review

Native American Heritage Commission (1 copy)
915 Capitol Mall, Room 364
Sacramento, CA 95814
Attn: Environmental Review

State Clearinghouse (15 copies + NOC Form)
P.O. Box 3044
Sacramento, CA 95812-3044
Attn: Environmental Review

Local And Other Agencies

South Coast Air Quality Management District (1 copy)
21865 E. Copley Drive
Diamond Bar, CA 91765-4182
Attn: Environmental Review

West Basin Municipal Water District (1 copy)
17140 South Avalon Blvd., Ste. 210
Carson, CA 90746-1296
Attn: Environmental Review

City of Los Angeles (5 copies)
Planning Department
200 N. Spring Street, 7th Floor
Los Angeles, CA 90012
Attn: Environmental Review

Nicole A. Velásquez (1 copy)
Field Deputy
Councilmember Bill Rosendahl
City of Los Angeles, 11th District
7166 W. Manchester Blvd.
Westchester, CA 90045

Culver City (1 copy)
Planning Division
9770 Culver Blvd.
Culver City, CA 90232
Attn: Environmental Review

Los Angeles Unified School District (1 copy)
P.O. Box 513307
Los Angeles, CA 90051
Attn: Environmental Review

Los Angeles Unified School District (1 copy)
Environmental Health & Safety
1449 S. San Pedro
Los Angeles, CA 90015
Attn: Environmental Review

Mar Vista Library (2 copies)
12006 Venice Bl.
Los Angeles, CA 90066-3810

Playa Vista Library (2 copies)
6400 Playa Vista Dr.
Playa Vista, CA 90094-2168

Westchester-Loyola Library (2 copies)
7114 W. Manchester Ave.
Los Angeles, CA 90045-3509

Del Rey Neighborhood Council (DRNC) (1 copy)
Mark Redick, President
12820 Short Avenue
Los Angeles, CA 90066

Del Rey Homeowners & Neighbors Association (DRH&NA) (1 copy)
Chris Nevil, President
PO Box 661450
Los Angeles, CA 90066

Metropolitan Transportation Authority (1 copy)
Metro CEQA Review Coordination
One Gateway Plaza MS 99-23-2
Los Angeles, CA 90012-2952

Agency and Public Comments on NOP

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, OFFICE OF REGIONAL PLANNING
AND PUBLIC TRANSPORTATION
IGR/CEQA BRANCH
100 SOUTH MAIN STREET
LOS ANGELES, CA 90012
PHONE (213) 897-3747
FAX (213) 897-1337

FEB 10 2010

Flex your power!
Be energy efficient!

February 2, 2010

Mr. Anthony Curzi
Department of Regional Planning
320 West Temple Street
Los Angeles, CA, 90012

Re: Millennium-Playa Del Mar Apartments
IGR/CEQA 091217/NOP
Vic. L.A. I-90 PM 25.659

Dear Mr. Curzi:

Thank you for allowing the California Department of Transportation (Caltrans) to review the Initial Study located in the Notice of Preparation (NOP) for the Millennium-Playa Del Mar Apartments project. The proposed project is a request for a Conditional Use Permit to allow 216 apartments in one building with a maximum height of four stories (60 feet) along with a 433-space parking structure with a maximum height of five and one half stories (56 feet), a zone change from R-3-DP and R-1 to R-4-DP, and a general plan amendment to change the land use designation from Low Density Residential 1 to High Density Residential

Based on a review of information contained in the documents we received, we have the following comments.

The proposed project may potentially impact freeway facilities at I-405 and Jefferson ramps, I-90 and Centennial ramps. Caltrans has responsibilities for these transportation facilities. As indicated in section 4.3 "Impact Analyses" (page 10-17) of the NOP, the lead agency will prepare/modify and submit a Traffic Impact Study in the Environmental Impact Report (EIR).

To evaluate traffic impacts on State highway facilities, we request the following information is included in the traffic impact analysis:

1. Volume counts during AM and PM peak periods.
2. Level of Service before and after development.
3. Future conditions should include project existing traffic, and project plus cumulative traffic.
4. Discussion of mitigation measures appropriate to alleviate any anticipated traffic impacts, including sharing of mitigation costs.

For State significant thresholds and further guidance on the preparation of acceptable traffic studies please refer to the Statewide Guide preparation of Traffic Impact Studies at:

http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

If you have any questions regarding our comments, please call project coordinator Zeron Jefferson at (213) 897 –1333 or me at (213) 897-6696. Please refer to our internal record number 091217/ZJ.

Sincerely,

Elmer Alvarez

Elmer Alvarez
IGR/CEQA Program Manager

cc: Scott Morgan, State Clearinghouse

South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

DEC 24 2009

December 23, 2009

Mr. Anthony Curzi
County of Los Angeles
Department of Regional Planning, Impact Analysis Section
320 West Temple Street
Los Angeles, CA 90012

Dear Mr. Curzi:

Notice of Preparation of a Draft Environmental Impact Report (Draft EIR) for the Millennium-Play Del Mar Apartments Project

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft environmental impact report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality analysis and electronic versions of all air quality modeling and health risk assessment files. Electronic files include spreadsheets, database files, input files, output files, etc., and does not mean Adobe PDF files. Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, the lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2007 Model. This model is available on the SCAQMD Website at: www.urbemis.com.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has developed a methodology for calculating PM2.5 emissions from construction and operational activities and processes. In connection with developing PM2.5 calculation methodologies, the SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD requests that the lead agency quantify PM2.5 emissions and compare the results to the recommended PM2.5 significance thresholds. Guidance for calculating PM2.5 emissions and PM2.5 significance thresholds can be found at the following internet address: http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html.

In addition to analyzing regional air quality impacts the SCAQMD recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized significance analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

In the event that the proposed project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the lead agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis") can be found on the SCAQMD's CEQA web pages at the following internet address: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the SCAQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additional mitigation measures can be found on the SCAQMD's CEQA web pages at the following internet address: www.aqmd.gov/ceqa/handbook/mitigation/MM_intro.html Additionally, SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html. In addition, guidance on siting incompatible land uses can be found in the California Air Resources Board's Air Quality and Land Use Handbook: A Community Perspective, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's World Wide Web Homepage (http://www.aqmd.gov).

The SCAQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Daniel Garcia, Air Quality Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Susan Nakamura

Susan Nakamura
Planning Manager
Planning, Rule Development and Area Sources

SN:DG:AK
LAC091216-02AK
Control Number

COUNTY OF LOS ANGELES
Public Health

JONATHAN E. FIELDING, M.D., M.P.H.
Director and Health Officer

JONATHAN E. FREEDMAN
Chief Deputy Director

ANGELO J. BELLOMO, REHS
Director of Environmental Health

ALFONSO MEDINA, REHS
Director of Environmental Protection Bureau

Environmental Hygiene Program
Cole Landowski, MS, CIH, REHS, Head
5050 Commerce Drive
Baldwin Park, California 91706
TEL (626) 430-5430 • FAX (626) 813-3025

www.publichealth.lacounty.gov

January 8, 2010

Anthony Curzi
Principal Regional Planning Assistant
Los Angeles County Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

RE: Millennium-Playa Del Mar Apartments, between Grosvenor and Centinela Ave., Playa del Rey, CA, R2009-02015

Mr. Curzi:

This is to inform you that upon review of all documents forwarded to our program by you and upon visiting the proposed project site location at the above address, it appears that the proposed construction project **will have a significant noise impact** upon the surrounding community during the construction phase of the project.

We recommend that a full noise analysis be conducted to address potential project construction and operational noise impacts on-site residents and adjacent sensitive receptors. Upon completion and submission of the acoustical analysis, we will submit comments addressing the findings listed in the acoustical report.

Also, also an air quality assessment should be conducted to identify potential adverse conditions on the air quality at the site and surrounding land use during the Project's construction and operation. The assessment should include baseline air quality information, calculation of potential emissions from construction activities (i.e.: grading, excavating, building construction, hauling and auto emissions). The assessment should also address Green House Gas Emissions. Comparison between the estimated emissions of the construction and operational phases of the project to SCAQMD thresholds should be included. Identify potential emissions and impacts of ultrafine particles around the project location.

We appreciate the opportunity to be of service on this project and look forward to working with you in the future. If you have any questions please contact Evenor Masis at (626)430-5430.

Sincerely,

Cole Landowski, MS, CIH
Head, Environmental Hygiene Program

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

GAIL FARBER, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

January 25, 2010

IN REPLY PLEASE REFER TO FILE: LD-1

TO: Paul McCarthy
Impact Analysis Section
Department of Regional Planning

~~Attention Anthony~~ Curzi

FROM: for Steve Burger
Land Development Division
Department of Public Works

NOTICE OF PREPARATION/INITIAL STUDY (NOP/IS)
PROJECT NO. R2009-02015
RENV 200600147 AND RCUPT200900150
MILLENNIUM-PLAYA DEL MAR APARTMENTS PROJECT

We reviewed the NOP/IS for the Millennium-Playa Del Mar apartments project and concur that an Environmental Impact Report (EIR) is required. The project consists of the construction of a 216-unit apartment complex in one building with an associated parking structure, landscaping, pedestrian and automobile access, and circulation routes.

The following comments are for your consideration and relate to the environmental document only:

Services–Traffic/Access

1. We generally agree with the NOP/IS that the proposed project has the potential to significantly impact the County and County/City roadways and intersections in the area. We would like the opportunity to review the related environmental documents and traffic study upon their completion. The County's methodology shall be used when evaluating the County and/or County/City intersections. The study shall also address the cumulative impacts generated by this and nearby developments and include the Level of Service analysis for the affected intersections. If traffic signals or other mitigation measures are warranted at the affected intersections, the developer shall determine its proportionate share of traffic signal or other mitigation costs and submit this information to Public Works for review and approval. A copy of our Traffic Impact Analysis Report Guidelines may be obtained on Public Works' website at http://dpw.lacounty.gov/traffic.

If you have any questions regarding comment 1, please contact Isaac Wong of Public Works' Traffic and Lighting Division, Traffic Studies Section, at (626) 300-4796 or by e-mail at iswong@dpw.lacounty.gov.

2. The NOP/IS did not identify the amount of earthwork proposed for the site. The applicant shall disclose the total earthwork on all project documents (including site plan/exhibit map) to include any proposed over-excavation as recommended on the soils report. If the proposed earthwork exceeds 10,000 cubic yard and is not balanced on-site then the Draft Environmental Impact Report (DEIR) shall disclose haul routes and location of disposal area. Discussion and evaluation of pavement integrity of haul routes should be included in the DEIR.

3. The DEIR will need to disclose areas/limits of reconstruction along the alley between Grosvernor Boulevard and Juniette Street. Since the alley is proposed as the primary access to the new parking structure, reconstruction of the entire alley may be required unless the pavement/Portland Concrete Cement condition and structural section can be demonstrated by the applicant to be in acceptable condition. Reconstruction of the alley approach will/may be required to provide an acceptable pedestrian path across the approach. The reconstruction could impact the adjoining property. If so, the applicant shall disclose any related impact and secure related covenants/construction letter as part of this project.

4. Any work within the jurisdiction of the City of Los Angeles shall be coordinated with that agency.

If you have any questions regarding comments 2 through 4, please contact Andy Narag at (626) 458-4921 or by e-mail at anarag@dpw.lacounty.gov.

Services–Utilities/Water

1. Public Works' Consolidated Sewer Maintenance District (CSMD) is responsible for maintenance of the local sewers within the unincorporated County of Los Angeles. Therefore, sewer development within the entire project area will be required to be annexed to the CSMD and Aneta Zone of the CSMD. We will also require that any sewer construction project within the study area comply with Public Works' sewer design standards. Attached is a copy of sewer connection procedure for Marina del Rey and the Aneta Zone for your reference.

If you have any questions regarding comment 1, please contact May Hong at (626) 300-3388 or by e-mail at mahong@dpw.lacounty.gov.

2. Submit a sewer area study to Public Works' Land Development Division for review and approval per the statement on page 16 of 17 (4.3.7.1). All findings and conclusion should be included in the DEIR.

If you have any questions regarding comment 2, please contact Tony Khalkhali at (626) 458-4921 or by e-mail at tkhalkh@dpw.lacounty.gov.

Hazards–Flood/Water Quality

1. Submit a drainage concept to Public Works for review and approval, and the corresponding box on the IS should be checked off.

2. If the scope of work per the CUP has not changed from that proposed per Tract No. 67206 then the previously approved drainage concept for Tract No. 67206 may be revised and used for the CUP. Otherwise, a new drainage concept must be submitted for review and approval.

If you have any questions regarding comments 1 and 2, please contact Lizbeth Cordova at (626) 458-4921 or by e-mail at lcordova@dpw.lacounty.gov.

Hazard-Soils/Geology

1. All or portion of the site is located in a potentially liquefiable area per the State of California Seismic Hazard Zones Map–Venice Quadrangle. All geotechnical issues discussed in the IS should be addressed in the DEIR. Geotechnical reports addressing the proposed development and recommending mitigation measures for the geotechnical hazards should be included as part of the EIR

If you have any questions regarding the Geology comment, please contact Jeremy Wan at (626) 458-4925 or by e-mail at jwan@dpw.lacounty.gov.

If you have any other questions or require additional information, please contact Toan Duong at (626) 458-4945 or by e-mail at tduong@dpw.lacounty.gov.

JY:ca
P:\ldpub\CEQA\CDM\DRP- Project No. R2009-02015, CUP200900150_ Millennium-Playa Del Mar Apartments _NOP.doc

Attach.

SEWER CONNECTION PROCEDURE FOR MARINA DEL REY AND THE ANETA ZONE

1. All applicants for new sewer connections or for building alterations which will result in increased discharge to the public sewer shall be submitted to the Southwest Building and Safely District office. The office is located at:

   1320 West Imperial Highway
   Los Angeles, CA 90044
   Phone Number : (323) 820-6500
   Fax Number : (323) 756-0780

2. Building and Safety will refer applicants to Land Development Division for confirmation of adequate sewer capacity and to the City of Los Angeles for payment of sewer connection charges. The City's contact person and location for connection charge payment is as follows:

   City of Los Angeles
   West Los Angeles Engineering District Office
   1828 Sawtelle Boulevard, 3rd Floor
   Los Angeles, CA 90025-5516

   (310) 575-8384

3. Land Development will collect the appropriate fee for determining sewer capacity availability, per Section 20.32.250 of the Los Angeles County Code, from the applicant and request flow measurement from Sewer Maintenance.

4. Sewer Maintenance will conduct the necessary flow test and provide Land Development with the flow test data.

5. Land Development will perform flow calculations to evaluate the adequacy of the existing local sewer to accommodate the increased flow and require proof of payment of sewer connection charges to the City of Los Angeles. Based on the results of the capacity study:

   a. If adequate sewer capacity is available, Land Development will provide the applicant with a sewer capacity availability letter. The applicant will then submit the sewer capacity availability letter and proof of payment of City connection charges to Building and Safety who may then issue the necessary permits.

   b. If adequate sewer capacity is not available, Land Development will set requirements for the needed sewer upgrades and notify the applicant. The applicant will then prepare and submit required sewer upgrade plans to Land Development for review and approval. Following construction, Land Development approval of the facilities for public use, and confirmation of the connection charge payment to the City, the necessary permits may be issued.

6. If a sewer saddle is necessary, Building and Safety will collect the installation fee specified by Section 20.32.200 of the Los Angeles County Code prior to issuance of the sewer connection permit.

Del Rey Homeowners and Neighbors Association
P.O. Box 661450 Los Angeles, CA 90066
www.delreyhome.org

January 14, 2010

VIA EMAIL AND U.S.P.S.

Department of Regional Planning
320 West Temple Street, Room 1348
Los Angeles, CA 90012
Attn: Anthony Curzi

Re: Notice of Preparation
Playa del Mar Apartment Project
County Project Number R2009-02015
Case Nos.: RENVT200600147, RCUPT200900150
RZCT200900013, RPAT2009000013

Dear Mr. Curzi:
The proposed Din/Cal Millennium-Playa Del Mar apartment project is located in the heart of the Del Rey community. Over the course of the last forty-five days the Del Rey Homeowners And Neighbors Association's Board Of Directors has reviewed the Notice of Preparation ("NOP"), attended three presentations by Din/Cal and have gone door-to-door discussing the project with the community. The Board has now voted to oppose any increase in density or up-zoning whatsoever as we cannot find the benefit to the community and surrounding neighborhoods. Furthermore, the Board has also voted to submit the following comments, which we request to be addressed in the final EIR.

Project Size. Our primary concern is with the proposed size and density of this project. Del Rey is primarily a low density, residential community, and we believe it is important to our community to retain that neighborhood character. There is no reason for the County of Los Angeles to approve an up-zoning change from six units per acre to forty-four units per acre for this 4.93 acre parcel of land, a huge increase from what is allowed by the County's General Plan.

Ingress/Egress. An alley is defined as "a narrow service street for serving rear of lots, less than 30 feet in width." (Los Angeles County Department of Public

Works Mapping and Property Management Division, Street Naille Policy as of 6/28/99). A 216 unit apartment complex cannot be adequately serviced with just an alley on the south and a fire alley on the north. Even with the required three-foot dedication on the southern alley we do not believe these alleys would provide sufficient access for the residents coupled with public services especially if emergency services personnel need to access the property.

The Initial Study portion of the NOP (p. 16) anticipates that the proposed project will generate approximately 111 a.m. and 138 p.m. peak hour trips, i.e. 111+ vehicles leaving the parking structure and entering Grosvenor Blvd. during a single hour, i.e. one car entering every 23 seconds. It is not realistic to expect that the vehicles can get from the alley onto Grosvenor Blvd. quickly enough to keep the traffic flowing, particularly if Din/Cal installs the proposed traffic light at the Grosvenor Blvd. & Jefferson Blvd. intersection.

The ingress/egress onto Centinela Avenue is even more problematic. The nearby intersection of Centinela Ave. & Jefferson Blvd. already is considered to have congestion that cannot be mitigated. Northbound Grosvenor Blvd. is a cul de sac, and there are no traffic controls to protect people entering Centinela Ave. from the residential streets that connect Grosvenor Blvd. with Centinela Avenue.

These streets and alleyways immediately surrounding the proposed development were not designed to meet the demand of a project of this large scale and density and will only burden already congested streets resulting in diminished quality of life.

Parking. There is already insufficient parking on the surrounding streets due to underparked industrial and commercial uses on Grosvenor and the prior parking on Centinela that is now restricted to only a few hours a day as part of Playa Vista's traffic mitigation measures in 2005.

In short, our knowledge suggests the NOP has concluded incorrectly that the project will not result in any hazardous traffic conditions and will not result in parking problems with a subsequent impact on parking conditions (NOP, p.16).

Geology. We have serious reservations about the geotechnical aspects of the project. With the water table just 10 feet below the surface and the methane gas problems that have surfaced at Playa Vista, what impact will the weight of these structures have on the geology of the subsurface?

Parkland. When Din/Cal spoke to our Board in December, they said they were planning to build 216 residential rental units, a clubhouse, business center, fitness center, pool, spa and landscaped courtyards. The project is expected to generate $370,000 of Quimby Funds.

Del Rey has a dearth of parkland. The 5550 Grosvenor property is centrally located and the last big piece of relatively open land in Del Rey. Ideally, we would like to see the entire parcel dedicated for use as a park. If Din/Cal chooses to move forward with this project, as allowed within the existing zoning, the recreational facilities should be made available to the general public.

View Impacts. If the zoning change were granted, the apartments would be 60 feet high, the parking structure 56 feet high. (NOP p. 7), However, if the R-1 & R-3 zoning were retained, the maximum height would be 35 feet from the existing or excavated grade (Los Angeles County Zoning Ordinance). The NOP states (p.15), "Building height may create winter shadows on properties to the north" and "Parking structure may cause light and glare problems on properties to the south." These problems will be avoided if the County would simply say "NO" to the proposed zoning change.

Potential Errors Within The NOP. Upon researching the current lots owned by the City Of Angels Church, the proposed development plans and the County's Notice Of Preparation dated December 10, 2009, we am very perplexed by what lots are included and their zoning. According to the NOP the project consists of only two lots (4211-003-068 & 4211-003-041), which the NOP states are zoned R-3DP and R-1. Upon researching the lots with the County's parcel maps and GIS system it appears that the project is actually five lots all zoned LCR1YY & LCR1*, see below. It would appear that this is a major error that must be corrected and the public must be notified in order to not feel that it is being misled.

ADDRESS	A.P.N.	LOT SIZE	BLDG SIZE	ZONING
5550 Grosvenor	4211-003-068	171626	38987	LCR1YY
5550 Grosvenor	4211-003-038	17651	0	LCR1*
5550 Grosvenor	4211-003-040	1202	0	LCR1YY
5544 Grosvenor	4211-003-041	5863	1490	LCR1YY
12414 Juniette	4211-003-042	240	0	LCR1*
Total SF		196582	40477	
Total Acres		4.51		

The Del Rey Homeowners and Neighbors Association is very concerned about the proposed magnitude of this project and its potential impact on the Del Rey community. When the draft environmental impact report is being prepared, we strongly urge that each of the issues above be meticulously examined.

Very truly yours,
DEL REY HOMEOWNERS & NEIGHBORS ASSOCIATION

George Gross, First Vice President
310/586 0344

From: Teresa Walters [mailto:teresainla@hotmail.com]
Sent: Friday, January 15, 2010 1:18 PM
To: Curzi, Anthony
Subject: Project R2009-02015

To: Anthony Curzi 1/15/2010

Re: Millennium - Playa Del Mar Apartments proposal

Project/Case number: R2009-02015

I am a new resident of Del Rey, residing at 12467 Beatrice Street, and am writing to express my concerns regarding the EIR for the project referenced above.

The EIR must adequately consider and mitigate the dangers of building a project of this scope in a liquefaction zone that is in close proximity to a gas station (corner of Jefferson and Centinela), leaking underground storage tanks (see attached), also in a potential flood zone (see attached), and in a city-designated methane zone (see attached). My own yard is spongy and uneven and the geotechnical concerns of moving forward with the proposed project are monumental. In my opinion, building a project of this scope should not be considered on such environmentally fragile land. For this and further reasons described below I am opposed to this project and to any up-zoning of the current church and home properties.

In addition to geotechnical issues, concerns regarding noise, visual blight, sewage, water and utilities, even Internet capacity are substantial. Increased traffic is a huge concern that cannot be adequately mitigated until the impact of Playa Vista is known and assessed. This project should be shelved.

Thank you for giving this proposed project the attention it deserves. I will follow up this email with a signed fax and letter.

Regards,

Teresa Walters

12467 Beatrice Street

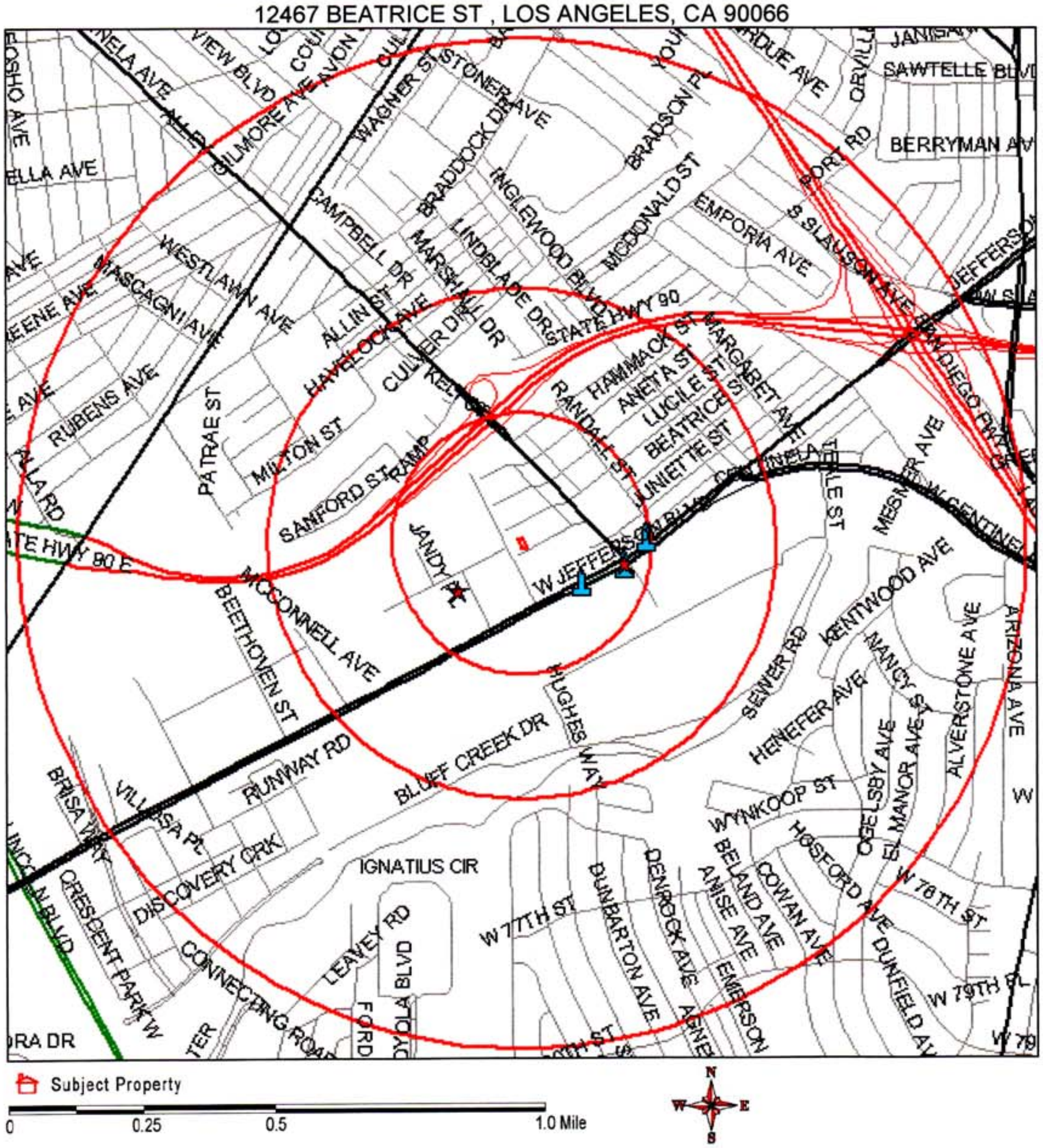
Los Angeles, CA 90066-6903

phone: (310) 821-7195

fax: (888) 242-1825

MAP OF SITES FOUND AROUND PROPERTY AT:

12467 BEATRICE ST , LOS ANGELES, CA 90066



NOTE: The foregoing map may show more sites than are reported in the listing below. The map shows all sites found within the square coverage area. The listing below reports only those sites found within the standard radius search distance for the database listed, which covers a smaller area. Sites outside of that standard radius search distance are not listed below. The standard radius search distances are defined by the U.S. Environmental Protection Agency's "All Appropriate Inquiries" (AAI) guidelines. The AAI standard search distance differs between database categories, depending upon degree of potential hazard. See section called "Explanation of Databases Used" for the actual standard search distance used for each database category.

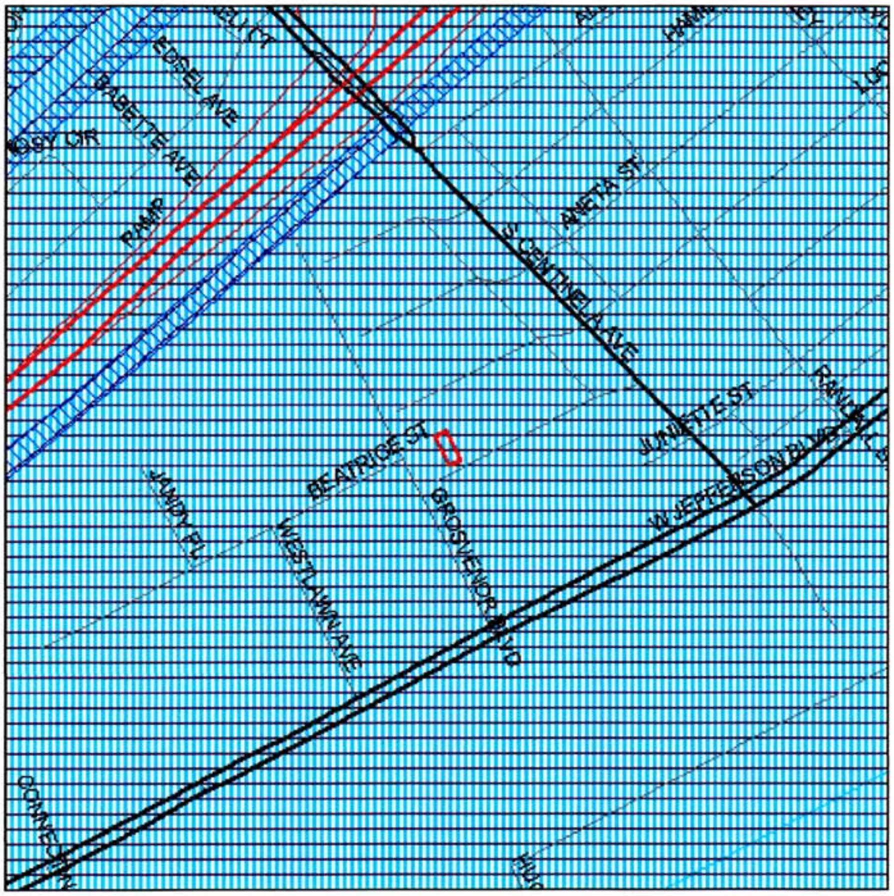
	(NPL) Federal National Priorities List or "Superfund" sites		(SWIS) Solid Waste Landfill Facilities
	(RCRA COR) Corrective Action Sites		(SLIC) Spills, Leaks, Investig. & Cleanup
	(LUST) Leaking Underground Storage Tanks		California EnviroStor State Response Sites
	Oil or Gas Well		

JCP-LGS Property Disclosure Reports | **MAP COVER PAGE**

Natural Hazard Disclosure Report

Property Address: 12467 BEATRICE ST ,
LOS ANGELES, LOS ANGELES County, CA

APN: 4211-002-030
Report Date: 06/22/2009
Report Number: 557621



Subject Property

	Special Flood Hazard Area
	Area of Potential Flooding, Dam Failure
	Very High Fire Hazard Severity Zone
	Wildland Area, Substantial Forest Fire Risk
	Earthquake Fault Zone
	Seismic Hazard Zone, Landslide
	Seismic Hazard Zone, Liquefaction

N W E S

0 0.125 0.25

miles

This map is provided for convenience only to show the approximate location of the Property and is not based on a field survey.

This INDUSTRY STANDARD REPORT contains the Natural Hazard Disclosure Report, the Tax Report and the Enviro Report.

THIS REPORT PROVIDES THE STATUTORY DISCLOSURES MANDATED BY CALIFORNIA CIVIL CODE SECTION 1103.2 AND DELIVERY OF THIS REPORT AND THE EXECUTED STATUTORY FORM IS SUFFICIENT TO MEET THE SAFE HARBOR FOR THE SELLER AND SELLER'S AGENT. THIS REPORT ALSO CONTAINS OTHER IMPORTANT DISCLOSURES AND INFORMATION. SELLER AND SELLER'S AGENT MAY HAVE ADDITIONAL RESPONSIBILITIES FOR CERTAIN DISCLOSURES WITHIN THEIR ACTUAL KNOWLEDGE.

The Natural Hazard Disclosure Report For LOS ANGELES COUNTY

Property Address: 12467 BEATRICE ST ,
LOS ANGELES, LOS ANGELES COUNTY, CA 90066
("Property")

APN: 4211-002-030
Report Date: 06/22/2009
Report Number: 557621

IN	NOT IN	MAP N/A*	Hazards	The Property is:	Refer to page:
		✓	Fault	an area where a map is not available	15
	✓		Fire Hazard	NOT IN a city-designated very high fire hazard severity zone	15
✓			Methane	IN an city-designated methane or methane buffer zone	15

From: C C [mailto: atrina1022@ mail.com]
Sent: aturday, January 1 , 2010 10:00 PM
To: Curzi, Anthony
Subject: M   M -P A   MAR APARTM   T   P   P T F   RM

Hi Mr Curzi
I just received this from a neighbor today. The only way I can get this to you on time is to email it in an attachment.

I hope this gets through to you.

I don't know why the residents in the apartment buildings (between Centinella and Gosvenor on Jefferson Blvd) were not included in this NOP. We are going to be seriously impacted by another unnecessary apartment complex that one cannot live in because of the high density and minimum building standards that makes it impossible to have any quality of living and privacy.

This neighbor hood has put up with enough with the Playa Vista project and all of their lies. I am hoping the county will be more vigilant and realistic about the environmental impact this will have.

I thank you for your time
Sincerely
Catherine Carey

Public Input Form
Scoping Meeting
Millennium – Playa Del Mar Apartments

Project/Case Numbers: R2009-02015, RENVT200600147, RCUPT200900150, RZCT200900013, RPAT200900013

December 16, 2009

Required Approvals:

- General Plan Amendment (low Density 1 to High Density 4)
- Zone Change (R-3-DP and R-1 to R-4-DP)
- Conditional Use Permit

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Comments: This site will impact an already saturated multi family housing market

We already have problems with the impact that playa vista development has had on the existing structure of the apartment complexes on the south corner between jefferson and grosvenor

The more recent multi family housing complexes are so poorly constructed that you would rather sleep in your car

The site is asking to be zoned for more residences than it was suppose to be used for

The impact from the constant movement of the wetlands/ liquification factor has caused the gas casings in the gas station located at the corner of Grosvenor and jefferson to crack and leak into the soil.

There is no need to build another obscene multi family housing project that will only impact the traffic and quality of life of the existing community

You may also indicate if you would like to receive notices for hearings on the project. If you wish to have a notice, please be sure to include your name and full address. The EIR will be available at local libraries and the County offices and, for a charge, individual copies may be obtained through a bonded blue printer.

Name: CATHY CAREY

Address: 12505 W. JEFFERSON BLVD#206

City/State/ZIP: LOS ANGELES, CA 90066

Lead Agency Contact:

Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
Fax: (213) 626-0434
acurzi@planning.lacounty.gov

January 16, 2010

Anthony Curzi

County of Los Angeles
Deprtment of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

Regarding Public Input: Millennium - Playa Del Mar Apartments
Project/Case # R2009-02015
Initial Study - Notice of Preparation-December 10.2009

Dear Mr. Curzi,

I disagree on various items in the initial study, and have stated so, on the following pages.
GeoTechnical Hazards pg 5 (a)(d) Charnock fault 1 mile away could become active. (d) along with liquefaction-and methane gas at Playa Vista. Evacuation in case of emergencies would be gridlock - panic. YES

NOISE- Pg 8 b,c,d, (b) Impact of noise at Playa Del Rey School during demolition and construction. YES (c) Noise levels in alley & parking facility. YES (d) Demolition & construction noise - dirt haulers and heavy equipment. YES Noise impact into homes & apts. will be impossible, including vibrations & air quality. YES.

WATER QUALITY- pg 9 c (c) construction activity could impact receiving water in homes. YES

AIR QUALITY pg 10 h (h) Impact on children at the school 50 ft away. YES

VISUAL QUALITIES pg 15 d (d) High density will interfear with the privacy of homes. They will tower over their back & front yards. The apts will receive noise from parking structure. They will have poor air quality on their porchs & into their apts. There will be echo sounds from heavy traffic in the alleyway, due to height, YES

TRAFFIC ACCESS IMPACT pg 16 a, b, c, d, e, g, (a)Congestion problem at corner of Centinela and Jefferson Blvd. also at Grosvenor and the alleyway. YES (b) Hazardous traffic conditions YES (c) Parking problems YES (d) Inadequate access in emergencies. YES (e) Peak hour traffic to 405 freeway & 90 freeway. YES (g) Heavy traffic congestion at Centinela & Jefferson, Grosvenor and alleyway. All will be increased to the maximum when Playa Vista Phase II is completed.and when the office building are completed and occupied. The future is gridlock! Even now Centinela North & South bound-- speeding is out of control due to no enforcement. Signs for speed ignored. Dangerous for children and seniors to cross. YES

SEWERS pf 17 (a) Sewage system has been known to backup onton our streets, when overloaded or antiquated piping has broken. More sewerage from 216 units with double plus occupancy could present overload conditions. YES

EDUCATION pg 18 b,c, (b) Could create capacity problem at the schools. (c) Tenants with children at Playa Del Rey School.. walking is a safety issue due to speeding traffic on Centinela. Dangerous to cross at signals at Lucile St and Jefferson Blvd. due to speeding traffic & running red lights. YES/ YES

SHERIFF pg 19 (a) Possible slow response by fire and sheriff depending on urgency. and if apts. will be gated. YES

SERVICES pg 20 (f) Solidwaste trucks will cause excessive noise at 7:00 a.m. - 1:00 p.m. Depends on how many days a week is adequate to handle waste from 216 units. Noise annoying to homes and apts. YES

ENVIRONMENTAL SAFETY pg 22 c,e, (c) Any hazardous wastes could effect the school 50 ft away and homes within 500 ft. 100 homes in County of Los Angeles, and 100 homes in the City of Los Angles,plus Apts. on Jefferson . YES (e) An accidental release of hazardous materials during demolition and construction would impact the public and environment. YES

OTHER FACTORS pg 22 (i) The occupancy of 216 units, approx. 400-500 people, physically trying to evacuate an emergency evacuation plan would be a panic situation as access is limited to Grosvenor and the alleyway. The impact of that many people,plus homeowners and empoloyees of businesses would cause a panic mode in an emergency such as eathquake, tsunami, fire, flooding or plane crash could be devastating. YES

FACTORS IMPACT pg 23 a,b,d,(a)The plan is inconsistent. The land is low density residential property - No request acceptable for general amendment. YES (b) The project is inconsistant to zoning. YES. (d) The project physically divides our community. The existing multi family apts. are secondary and are not property owners who pay property taxes as individual families. (The however) multi-family housing is a buffer situation from Jefferson Blvd. and should be recognized and considered on all issues. YES

FACTORS IMPACT pg 24 a,d, , (a) It could exceed regional and local projections. YES (d) On vehicle miles traveled. YES

MANDATORY FINDINGS pg 25 b,c, Environmental effects - past, current and future projects. YES (c) Definately. YES

OTHER CONSIDERATIONS There is nothing said as to the amount of time this project will take? It will disrupt our neighborhood, putting us all under physical an mental stress for approximately two years. and what about damage to our homes & apts., such as cracks, breaking pipes, gas leaks, etc. Dirt and dust in our homes,cars, gardens, and especially at the school.

I also object to the Map figure 2 in the Notice of Preparation. This 1981 Map is definately outdated! It states Hughes Airport which is now Playa Vista. It does not inclued all the condos, homes and other buildings in the residential area in the West part of playa Vista. It does not show the new high rise office buildings and Clippers Sports Center at the East end of Playa Vista. Therefore anyone looking at the NOP map does not realize what a Mega Mega development has been created, with much more to come with Phase II, the Village. All of this in our immediate area.

With all this developement of Playa Vista comes the extreme traffic, poor air pollution, extreme noise, heavy vibration, additional population, and deteriorating open space. This all puts stress and pressure on the outside areas, such as our 100 homes in the County of Los Angeles, and 100's of homes in in the City of Los Angeles, built in the late 40's and early 50's. Our area of Del Rey is basically low density and thats the way we want to keep it.

When developers come in and want to demolish the church and build high density apartments or condos, they try to rezone to accomodate their money making project, without giving back something to our community thats beneficial to improve our way of life.

Needless to say I oppose the Millennium-Playa Del Mar Apartments Project and oppose the change of zoning.

I apologize for the length of these comments on the NOP but they had to be said. There are mispelled words and typing errors througout. My excuse, I am using a borrowed typerwiter as I am not computerized.

I am an original homeowner who has lived on Lucile St. in the County of Los Angeles for 56 years. I have been a member of the Del Rey Homeowner Assoc. since the beginning. I have been active in supporting my neighborhood by trying to make it a better place to live.

Thank you for your patience, understanding, and consideration.

Ms Mickey Shockley

Ms Mickey Shockley
12460 Lucile Street
Los Angeles, CA 90066

Public Input Form
Scoping Meeting
Millennium – Playa Del Mar Apartments

Project/Case Numbers: R2009-02015, RENVT200600147, RCUPT200900150, RZCT200900013, RPAT200900013

December 16, 2009

RECEIVED
JAN 19 2010

Required Approvals:

- General Plan Amendment (low Density 1 to High Density 4)
- Zone Change (R-3-DP and R-1 to R-4-DP)
- Conditional Use Permit

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Comments: I OPPOSE THE MILLENIUM - PLAYA DEL MAR APARTMENTS. NO TO A GENERAL PLAN AMENDMENT (LOW DENSITY 1 TO HIGH DENSITY 4) NO TO ZONE CHANGE (R-3DP AND R-1 TO R-4DP) NO TO CONDITIONAL USE PERMIT
I HAVE ADDITIONAL COMMENTS ON THE ATTACHED THREE (3) PAGES RELATED TO NOP

You may also indicate if you would like to receive notices for hearings on the project. If you wish to have a notice, please be sure to include your name and full address. The EIR will be available at local libraries and the County offices and, for a charge, individual copies may be obtained through a bonded blue printer.

Name: Ms. Mickey Shockley
Address: 12460 Lucile St
City/State/ZIP: Los Angeles, CA 90066

Lead Agency Contact:

Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
Fax: (213) 626-0434
acurzi@planning.lacounty.gov

12433 Lucile Street
Los Angeles, California, 90066
January 15, 2010

Project Title: Millennium-playa Del Mar apartments Project
County Project Number R2009-02015
Case Numbers: RENVT200600147, RCUPT200900150,
Rzct200900013, rpa2009000013

MAJOR PROBLEMS:

1. Playa Del Rey Elementary School is located 50 feet NE from the project site. The noise, air pollution and increase traffic is not healthy for young children.
2. Traffic has increased tremendously since Playa Vista development and will continue to increase as Playa Vista is still developing. There have been numerous incidents of cars almost hitting pedestrians at the intersection of Lucile Street and Centinela Avenue and that is with the assistance of a traffic light. I am one of those pedestrians.
3. Noise pollution has increased from the additional traffic on the Freeway 90 and from Centinela Avenue. We should not have to tolerate additional noise pollution.

We should not have to tolerate additional noise, air pollution, traffic and the destruction of our "neighborhood" and the increased percentage of traffic-pedestrian accidents.

Thank you for your time and please consider our comments.

Sincerely,

Jane Matsuzaki

Jane Matsuzaki

Public Input Form
Scoping Meeting
Millennium – Playa Del Mar Apartments

Project/Case Numbers: R2009-02015, RENVT200600147, RCUPT200900150, RZCT200900013, RPAT200900013

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Comments: A) above documents do not identify the Project Milestone and completion schedules - no evaluation performed
B) Above documents do not identify a Project Risk Mitigation Management Plan
C) The Initial Plan and the impact criteria identified appear to be pro-project oriented without ample consideration to existing conditions and neighborhood including PDR Grammar School.

You may also indicate if you would like to receive notices for hearings on the project. If you wish to have a notice, please be sure to include your name and full address. The EIR will be available at local libraries and the County offices and, for a charge, individual copies may be obtained through a bonded blue printer.

Name: SALVADOR GAMBOA

Address: 12434 Lucile ST

City/State/ZIP: Los Angeles, CA 90066

Lead Agency Contact:
Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
Fax: (213) 626-0434
acurzi@planning.lacounty.gov

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Millennium – Playa Del Mar Apartments
Project/Case Numbers: R2009-02015, RENVT200600147, RCUPT200900150, RZCT200900013, RPAT200900013

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Name: SALVADOR GAMBOA

Address: 12434 Lucile ST

City/State/ZIP: Los Angeles, CA 90066

Lead Agency Contact: Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
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JAN 20 2010

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Scoping Meeting
Millennium – Playa Del Mar Apartments

Project/Case Numbers: R2009-02015, RENVT200600147, RCUPT200900150, RZCT200900013, RPAT200900013

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December 16, 2009

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Comments: (1) This area is zoned for a 35 foot maximum height. It can not continue to function appropriately when Regional Planning continues to upzone Del Rey
(2) Traffic is already extremely heavy on Jefferson Blvd. We don't need to exacerbate this.
(3) the density allowable by law is 135, (not 261). (4) there are potential environmental issues (methane gas).

You may also indicate if you would like to receive notices for hearings on the project. If you wish to have a notice, please be sure to include your name and full address. The EIR will be available at local libraries and the County offices and, for a charge, individual copies may be obtained through a bonded blue printer.

Name: Wendy Averill / Marilee France

Address: 11801 Wagner St.

City/State/ZIP: Culver City, Ca 90230

Lead Agency Contact:

Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
Fax: (213) 626-0434
acurzi@planning.lacounty.gov

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Scoping Meeting
Millennium – Playa Del Mar Apartments

Project/Case Numbers: R2009-02015, RENVT200600147, RCUPT200900150, RZCT200900013, RPAT200900013

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Comments: TRAFFIC TRAFFIC TRAFFIC
Congestion Congestion congestion
NOISE - NOISE - NOISE
auto exhaust fumes X 300+ more cars.
It's Already impossible to get across
Centinela Ave now! A school is less than
570 ft to the east! We do not want a project
of this size - keep the development within the current zoning # of units allowed

NO variances at the neighbors expense!

You may also indicate if you would like to receive notices for hearings on the project. If you wish to have a notice, please be sure to include your name and full address. The EIR will be available at local libraries and the County offices and, for a charge, individual copies may be obtained through a bonded blue printer.

Name: Jaqueline Joyce & Louis Gottlieb

Address: 12445 Beatrice Street

City/State/ZIP: Los Angeles CA. 90066

Lead Agency Contact:

Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
Fax: (213) 626-0434
acurzi@planning.lacounty.gov

FYI ☺

Just so the "non-profit" church can get more $ for this Parcel!

Public Input Form
Scoping Meeting
Millennium – Playa Del Mar Apartments

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- Zone Change (R-3-DP and R-1 to R-4-DP)
- Conditional Use Permit

This form allows you to make comments on what you believe should be addressed in the Environmental Impact Report for the proposed project. You may submit your comments at this scoping meeting or mail to the Lead Agency Contact listed below. Written comments on the Notice of Preparation (NOP) for the Environmental Impact Report will be accepted until **January 18, 2010 at 6:00 P.M.**

Comments: - TRAFFIC IS BAD NOW AND PLAYA VISTA IS NOT DONE.
- WITH MORE APT UNITS THERE WILL BE MORE CATS + DOGS AND THAT MEANS MORE POOP ON OUR LAWNS + FLOWER BEDS.

You may also indicate if you would like to receive notices for hearings on the project. If you wish to have a notice, please be sure to include your name and full address. The EIR will be available at local libraries and the County offices and, for a charge, individual copies may be obtained through a bonded blue printer.

Name: SAM FUJINAMI

Address: 12443 LUCILE ST.

City/State/ZIP: LOS ANGELES, CA 90066

Lead Agency Contact:

Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
Fax: (213) 626-0434
acurzi@planning.lacounty.gov

Public Input Form
Scoping Meeting
Millennium – Playa Del Mar Apartments
Project/Case Numbers: R2009-02015, RENVT200600147, RCUPT200900150, RZCT200900013, RPAT200900013

December 16, 2009

Required Approvals:

- General Plan Amendment (low Density 1 to High Density 4)
- Zone Change (R-3-DP and R-1 to R-4-DP)
- Conditional Use Permit

This form allows you to make comments on what you believe should be addressed in the Environmental Impact Report for the proposed project. You may submit your comments at this scoping meeting or mail to the Lead Agency Contact listed below. Written comments on the Notice of Preparation (NOP) for the Environmental Impact Report will be accepted until **January 18, 2010 at 6:00 P.M.**

Comments:

1. The county should not permit any upzoning of this property. In particular, the three R-1 properties should not be upzoned to R-4. That is a tremendous increase in density that completely ignores the plans that were made for this area.
2. The development must comply with the county height limit of 35 feet. It is next to a single family residential neighborhood.
3. Vehicular access to/from this property is problematic, and there is no good way to make the traffic flow easier because it is so close to the busy intersection of Centinela Ave./Jefferson Blvd.. The alley width must remain at 30 feet. A signal at Grosvenor Blvd. will not solve the problem because the number of vehicles that would need to wait would result in lengthy backups.
4. Rather than paying Quimby Funds to the county, the neighborhood would be better off if some of the land were set aside for use as a public park.
5. The ground in this area has a high water table and methane gas pockets. The EIR must consider the geological effects of the proposed project's weight.

You may also indicate if you would like to receive notices for hearings on the project. If you wish to have a notice, please be sure to include your name and full address. The EIR will be available at local libraries and the County offices and, for a charge, individual copies may be obtained through a bonded blue printer.

Name:

Address: Ms. Elizabeth A. Pollock
11923 Bray Street
Culver City CA 90230-6009

City/State/ZIP:

Lead Agency Contact:

Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
Fax: (213) 626-0434
acurzi@planning.lacounty.gov

JAN 19 2010

Public Input Form
Scoping Meeting
Millennium – Playa Del Mar Apartments
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This form allows you to make comments on what you believe should be addressed in the Environmental Impact Report for the proposed project. You may submit your comments at this scoping meeting or mail to the Lead Agency Contact listed below. Written comments on the Notice of Preparation (NOP) for the Environmental Impact Report will be accepted until **January 18, 2010 at 6:00 P.M.**

Comments: Please don't ruin our neighborhood with more traffic, more people, and more noise. When we moved here we loved the area. Now it is getting so congested we are hardley move. People parking all over our streets. We can hardley get into our driveway! We need more open space and parks —

You may also indicate if you would like to receive notices for hearings on the project. If you wish to have a notice, please be sure to include your name and full address. The EIR will be available at local libraries and the County offices and, for a charge, individual copies may be obtained through a bonded blue printer.

Name: ED & ILA STEWART

Address: 12442 LUCILE ST.

City/State/ZIP: L.A, CA 90066

Lead Agency Contact:

Anthony Curzi
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-6461
Fax: (213) 626-0434
acurzi@planning.lacounty.gov

APPENDIX 4.1

DRC Engineering Residential Density Study

NOTE: ALL GROSS AREAS AND ACREAGES ARE APPROXIMATE

	APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
PROPOSED SITE	4211 - 003 - 038	189,809	4.36	216	49.57
	4211 - 003 - 040				
	4211 - 003 - 041				
	4211 - 003 - 042				
	4211 - 003 - 068				
	4211 - 001 - 013	5,768	0.13	1	7.55
	4211 - 001 - 014	5,766	0.13	1	7.55
	4211 - 001 - 015	5,815	0.13	1	7.49
	4211 - 001 - 016	5,815	0.13	1	7.49
	4211 - 001 - 017	5,815	0.13	1	7.49
	4211 - 001 - 018	5,815	0.13	1	7.49
	4211 - 001 - 019	5,815	0.13	1	7.49
	4211 - 001 - 020	5,815	0.13	1	7.49
	4211 - 001 - 021	5,815	0.13	1	7.49
	4211 - 001 - 022	5,815	0.13	1	7.49
	4211 - 001 - 023	5,815	0.13	1	7.49
	4211 - 001 - 024	5,815	0.13	1	7.49
	4211 - 001 - 025	5,815	0.13	1	7.49
	4211 - 001 - 026	5,815	0.13	1	7.49
	4211 - 001 - 027	9,279	0.21	1	4.69
	4211 - 001 - 028	5,815	0.13	1	7.49
	4211 - 001 - 029	7,965	0.18	1	5.47
	4211 - 001 - 030	5,996	0.14	1	7.26
	4211 - 001 - 031	5,000	0.11	1	8.71
	4211 - 001 - 032	5,000	0.11	1	8.71
	4211 - 001 - 033	5,597	0.13	6	46.70
	4211 - 002 - 001	9,005	0.21	1	4.84
	4211 - 002 - 002	4,951	0.11	5	43.99
	4211 - 002 - 003	7,399	0.17	1	5.89
	4211 - 002 - 004	6,803	0.16	1	6.40
	4211 - 002 - 005	5,825	0.13	1	7.48
	4211 - 002 - 006	8,224	0.19	1	5.30
	4211 - 002 - 007	5,825	0.13	1	7.48
	4211 - 002 - 008	5,806	0.13	1	7.50
	4211 - 002 - 009	5,825	0.13	1	7.48
	4211 - 002 - 010	5,806	0.13	1	7.50
	4211 - 002 - 011	5,825	0.13	1	7.48
	4211 - 002 - 012	5,806	0.13	1	7.50
	4211 - 002 - 013	5,825	0.13	1	7.48
	4211 - 002 - 014	5,806	0.13	1	7.50
	4211 - 002 - 015	5,825	0.13	1	7.48

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4211 - 002 - 016	5,806	0.13	1	7.50
4211 - 002 - 017	5,825	0.13	1	7.48
4211 - 002 - 018	5,806	0.13	1	7.50
4211 - 002 - 019	5,825	0.13	1	7.48
4211 - 002 - 020	5,806	0.13	1	7.50
4211 - 002 - 021	5,825	0.13	1	7.48
4211 - 002 - 022	5,806	0.13	1	7.50
4211 - 002 - 023	5,776	0.13	1	7.54
4211 - 002 - 024	5,759	0.13	1	7.56
4211 - 002 - 025	5,759	0.13	1	7.56
4211 - 002 - 026	5,776	0.13	1	7.54
4211 - 002 - 027	5,314	0.12	1	8.20
4211 - 002 - 028	5,314	0.12	1	8.20
4211 - 002 - 029	5,314	0.12	1	8.20
4211 - 002 - 030	5,314	0.12	1	8.20
4211 - 002 - 031	5,314	0.12	1	8.20
4211 - 002 - 032	5,314	0.12	1	8.20
4211 - 002 - 033	5,314	0.12	1	8.20
4211 - 002 - 034	5,314	0.12	1	8.20
4211 - 002 - 035	5,314	0.12	1	8.20
4211 - 002 - 036	5,314	0.12	1	8.20
4211 - 002 - 037	5,314	0.12	1	8.20
4211 - 002 - 038	5,314	0.12	1	8.20
4211 - 002 - 039	5,314	0.12	1	8.20
4211 - 002 - 040	5,314	0.12	1	8.20
4211 - 002 - 041	5,314	0.12	1	8.20
4211 - 002 - 042	5,314	0.12	1	8.20
4211 - 002 - 043	5,314	0.12	1	8.20
4211 - 002 - 044	5,314	0.12	1	8.20
4211 - 002 - 045	6,763	0.16	1	6.44
4211 - 002 - 046	5,769	0.13	1	7.55
4211 - 002 - 047	5,314	0.12	1	8.20
4211 - 002 - 048	5,314	0.12	1	8.20
4211 - 002 - 049	5,680	0.13	1	7.67
4211 - 002 - 052	8,198	0.19	1	5.31
4211 - 002 - 053	13,520	0.31	COMMERCIAL	
4211 - 003 - 001	6,735	0.15	1	6.47
4211 - 003 - 002	5,000	0.11	1	8.71
4211 - 003 - 003	2,500	0.06	COMMERCIAL	
4211 - 003 - 004	2,500	0.06	COMMERCIAL	
4211 - 003 - 005	5,898	0.14	COMMERCIAL	
4211 - 003 - 008	12,006	0.28	1	3.63
4211 - 003 - 010	5,816	0.13	1	7.49
4211 - 003 - 012	5,816	0.13	1	7.49

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4211 - 003 - 014	5,816	0.13	1	7.49
4211 - 003 - 016	5,816	0.13	1	7.49
4211 - 003 - 018	5,816	0.13	1	7.49
4211 - 003 - 020	5,816	0.13	1	7.49
4211 - 003 - 022	5,816	0.13	1	7.49
4211 - 003 - 024	5,816	0.13	1	7.49
4211 - 003 - 026	5,816	0.13	1	7.49
4211 - 003 - 028	5,816	0.13	1	7.49
4211 - 003 - 030	5,816	0.13	1	7.49
4211 - 003 - 032	5,769	0.13	1	7.55
4211 - 003 - 051	22,520	0.52	62	119.93
4211 - 003 - 058	2,502	0.06	VACANT	
4211 - 003 - 059	9,061	0.21	1	4.81
4211 - 003 - 060	4,300	0.10	COMMERCIAL	
4211 - 003 - 061	2,500	0.06	VACANT	
4211 - 003 - 062	2,500	0.06	COMMERCIAL	
4211 - 003 - 063	10,600	0.24	COMMERCIAL	
4211 - 003 - 065	24,916	0.57	54	94.41
4211 - 003 - 066	20,037	0.46	38	82.61
4211 - 003 - 067	1,897	0.04	VACANT	
4211 - 003 - 800	5,992	0.14	N/A	
4211 - 005 - 003			VACANT	
4211 - 005 - 013			COMMERCIAL	
4211 - 005 - 014			COMMERCIAL	
4211 - 005 - 015			COMMERCIAL	
4211 - 005 - 016			COMMERCIAL	
4211 - 005 - 017			COMMERCIAL	
4211 - 005 - 018			COMMERCIAL	
4211 - 005 - 019			SCHOOL	
4211 - 005 - 020			COMMERCIAL	
4211 - 005 - 021	196,020	4.50	309	68.67
4211 - 006 - 001			COMMERCIAL	
4211 - 006 - 002			COMMERCIAL	
4211 - 006 - 003			COMMERCIAL	
4211 - 006 - 004			COMMERCIAL	
4211 - 006 - 005			COMMERCIAL	
4211 - 006 - 006			COMMERCIAL	
4211 - 006 - 009			COMMERCIAL	
4211 - 006 - 010			COMMERCIAL	
4211 - 006 - 025			COMMERCIAL	
4211 - 006 - 026			COMMERCIAL	
4211 - 009 - 025			COMMERCIAL	

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4211 - 009 - 028			COMMERCIAL	
4211 - 010 - 042	32,364	0.74	39	52.00
4211 - 010 - 043	26,854	0.62	32	52.00
4211 - 010 - 044	38,706	0.89	46	52.00
4211 - 010 - 045	41,815	0.96	50	52.00
4211 - 010 - 046	40,790	0.94	49	52.00
4211 - 010 - 047	39,830	0.91	48	52.00
4211 - 010 - 048	40,286	0.92	48	52.00
4211 - 010 - 051	26,399	0.61	32	52.00
4211 - 010 - 052	68,825	1.58	82	52.00
4211 - 010 - 086	142,877	3.28	171	52.00
4211 - 010 - 087	665,161	15.27	794	52.00
4211 - 034 - 003	69,588	1.60	83	52.00
4211 - 034 - 004	119,667	2.75	143	52.00
4211 - 034 - 005	46,180	1.06	55	52.00
4211 - 034 - 007	149,846	3.44	179	52.00
4211 - 034 - 008	27,785	0.64	33	52.00
4211 - 034 - 009	26,960	0.62	32	52.00
4211 - 034 - 010	66,826	1.53	80	52.00
4211 - 034 - 011	115,268	2.65	138	52.00
4211 - 034 - 012	64,630	1.48	77	52.00
4211 - 034 - 013	132,422	3.04	158	52.00
4211 - 034 - 014	32,557	0.75	39	52.00
4211 - 034 - 015	31,693	0.73	38	52.00
4211 - 034 - 016	70,197	1.61	84	52.00
4211 - 034 - 017	33,750	0.77	40	52.00
4211 - 034 - 018	70,214	1.61	84	52.00
4220 - 007 - 001	4,018	0.09	COMMERCIAL	
4220 - 007 - 002	2,503	0.06	COMMERCIAL	
4220 - 007 - 003	2,503	0.06	COMMERCIAL	
4220 - 007 - 004	2,503	0.06	COMMERCIAL	
4220 - 007 - 005	5,736	0.13	1	7.59
4220 - 007 - 006	5,751	0.13	1	7.57
4220 - 007 - 007	5,751	0.13	1	7.57
4220 - 007 - 008	5,751	0.13	1	7.57
4220 - 007 - 009	5,751	0.13	1	7.57
4220 - 007 - 023	13,992	0.32	COMMERCIAL	
4220 - 007 - 024	5,709	0.13	1	7.63
4220 - 007 - 025	5,751	0.13	1	7.57
4220 - 007 - 026	5,751	0.13	1	7.57
4220 - 007 - 027	5,751	0.13	1	7.57
4220 - 007 - 028	5,751	0.13	1	7.57

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4220 - 007 - 029	5,751	0.13	1	7.57
4220 - 007 - 030	5,751	0.13	1	7.57
4220 - 007 - 036	2,500	0.06	VACANT	
4220 - 007 - 037	2,500	0.06	COMMERCIAL	
4220 - 007 - 038	2,500	0.06	COMMERCIAL	
4220 - 007 - 039	2,500	0.06	COMMERCIAL	
4220 - 007 - 040	2,500	0.06	COMMERCIAL	
4220 - 007 - 041	2,500	0.06	COMMERCIAL	
4220 - 007 - 042	4,828	0.11	COMMERCIAL	
4220 - 007 - 044	2,500	0.06	COMMERCIAL	
4220 - 007 - 045	2,500	0.06	COMMERCIAL	
4220 - 007 - 046	2,500	0.06	COMMERCIAL	
4220 - 007 - 047	5,000	0.11	COMMERCIAL	
4220 - 007 - 048	2,500	0.06	COMMERCIAL	
4220 - 007 - 049	5,000	0.11	COMMERCIAL	
4220 - 007 - 050	11,875	0.27	COMMERCIAL	
4220 - 011 - 001	4,038	0.09	1	10.79
4220 - 011 - 002	4,000	0.09	1	10.89
4220 - 011 - 003	5,000	0.11	1	8.71
4220 - 011 - 004	5,000	0.11	1	8.71
4220 - 011 - 005	4,963	0.11	1	8.78
4220 - 011 - 006	4,258	0.10	1	10.23
4220 - 011 - 007	5,748	0.13	1	7.58
4220 - 011 - 008	5,748	0.13	1	7.58
4220 - 011 - 009	5,748	0.13	1	7.58
4220 - 011 - 010	5,748	0.13	1	7.58
4220 - 011 - 011	5,748	0.13	1	7.58
4220 - 011 - 012	5,748	0.13	1	7.58
4220 - 011 - 013	5,704	0.13	1	7.64
4220 - 011 - 014	5,708	0.13	1	7.63
4220 - 011 - 015	5,748	0.13	1	7.58
4220 - 011 - 016	5,748	0.13	1	7.58
4220 - 011 - 017	5,748	0.13	1	7.58
4220 - 011 - 018	5,748	0.13	1	7.58
4220 - 011 - 019	5,748	0.13	1	7.58
4220 - 011 - 020	8,446	0.19	1	5.16
4220 - 011 - 021	6,793	0.16	1	6.41
4220 - 011 - 022	6,250	0.14	1	6.97
4220 - 011 - 023	5,000	0.11	1	8.71
4220 - 011 - 024	4,962	0.11	1	8.78
4220 - 011 - 025	6,063	0.14	1	7.18
4220 - 011 - 026	5,748	0.13	1	7.58
4220 - 011 - 027	5,748	0.13	1	7.58
4220 - 011 - 028	5,748	0.13	1	7.58

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4220 - 011 - 029	5,748	0.13	1	7.58
4220 - 011 - 030	5,748	0.13	1	7.58
4220 - 011 - 031	5,708	0.13	1	7.63
4220 - 011 - 032	5,705	0.13	1	7.64
4220 - 011 - 033	4,598	0.11	1	9.47
4220 - 011 - 034	4,598	0.11	1	9.47
4220 - 011 - 035	4,598	0.11	1	9.47
4220 - 011 - 036	4,598	0.11	1	9.47
4220 - 011 - 037	4,598	0.11	1	9.47
4220 - 011 - 038	5,651	0.13	1	7.71
4220 - 012 - 021	13,237	0.30	COMMERCIAL	
4220 - 012 - 900	199,550	4.58	SCHOOL	
4220 - 013 - 001	5,705	0.13	1	7.64
4220 - 013 - 002	5,748	0.13	1	7.58
4220 - 013 - 003	5,748	0.13	1	7.58
4220 - 013 - 004	5,748	0.13	1	7.58
4220 - 013 - 025	5,748	0.13	1	7.58
4220 - 013 - 026	5,748	0.13	1	7.58
4220 - 013 - 027	5,748	0.13	1	7.58
4220 - 013 - 028	5,748	0.13	1	7.58
4220 - 013 - 029	5,694	0.13	1	7.65
4220 - 019 - 001	5,706	0.13	1	7.63
4220 - 019 - 002	5,748	0.13	1	7.58
4220 - 019 - 003	5,748	0.13	1	7.58
4220 - 019 - 004	5,748	0.13	1	7.58
4220 - 019 - 005	5,748	0.13	1	7.58
4220 - 019 - 006	5,748	0.13	1	7.58
4220 - 019 - 025	5,748	0.13	1	7.58
4220 - 019 - 026	5,748	0.13	1	7.58
4220 - 019 - 027	5,748	0.13	1	7.58
4220 - 019 - 028	5,748	0.13	1	7.58
4220 - 019 - 029	5,748	0.13	1	7.58
4220 - 019 - 030	5,702	0.13	1	7.64
4220 - 020 - 010	5,705	0.13	1	7.64
4220 - 020 - 011	5,746	0.13	1	7.58
4220 - 020 - 012	5,746	0.13	1	7.58
4220 - 020 - 013	5,746	0.13	1	7.58
4220 - 020 - 014	5,746	0.13	1	7.58
4220 - 020 - 015	5,746	0.13	1	7.58
4220 - 020 - 016	5,746	0.13	1	7.58
4220 - 020 - 035	5,745	0.13	1	7.58

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4220 - 020 - 036	5,745	0.13	1	7.58
4220 - 020 - 037	5,745	0.13	1	7.58
4220 - 020 - 038	5,745	0.13	1	7.58
4220 - 020 - 039	5,745	0.13	1	7.58
4220 - 020 - 040	5,745	0.13	1	7.58
4220 - 020 - 041	5,702	0.13	1	7.64

NOTE: ALL GROSS AREAS AND ACREAGES ARE APPROXIMATE

DENSITY WITHIN COUNTY OF LOS ANGELES				
APN	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC.)
4211-001-013 TO 4211-001-033 4211-002-001 TO 4211-002-049 4211-002-052 4211-003-001, 4211-003-002 4211-003-008, 4211-003-010 4211-003-012, 4211-003-014 4211-003-016, 4211-003-018 4211-003-020, 4211-003-022 4211-003-024, 4211-003-026 4211-003-028, 4211-003-030 4211-003-032, 4211-003-038 4211-003-040, 4211-003-041 4211-003-042, 4211-003-059 4211-003-068	709,337	16.28	312	19.16

NOTE: GROSS AREA AND ACREAGE ARE APPROXIMATE

DENSITY WITHIN 1000-FT RADIUS			
GROSS AREA FOR RESIDENTIAL (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC.)
3,672,359	84.31	3,512	41.66

LEGEND

1000-FT RADIUS LIMIT

CITY/COUNTY BOUNDARY

MILLENNIUM-PLAYA DEL MAR

NOTE: ALL LOT LINES ARE APPROXIMATE.

PREPARED BY:

DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 N. Riverview Drive, Ste. 100
Anaheim Hills, California 92808
(714) 685-6860

GREGORY R. COOKE R.C.E. 39478 DATE

REGISTERED PROFESSIONAL ENGINEER
GREGORY R. COOKE
No. 39478
Exp. 12-31-11
CIVIL
STATE OF CALIFORNIA

DATE:	NO.:	REVISION:

PROJECT: **MILLENNIUM-PLAYA DEL MAR**
5550 GROSVENOR BLVD.
COUNTY OF LOS ANGELES, CALIFORNIA

DRAWING NAME: **DENSITY STUDY EXHIBIT**

ISSUE:	EXHIBIT
DATE:	2010-03-08
CHECKED: GRC	DRAWN: CMT
DRAWING FILE:	.
PROJECT NO.:	06-354C
SHEET NUMBER:	1
OF 1	SHEETS
SCALE:	1" = 100'

EXTERNAL REFERENCES: 6354recbndy01 10516
FILENAME: M:\2006\06-354C DinCal Marina Del Rey\exhibit\density study\06-354C density study.dwg, LAST SAVED ON: Mar 08 2010 11:05am PLOTTED BY: MICHELLE, ON: Mar 08 2010 2:51pm, CFG:

APPENDIX 4.1

DRC Engineering Residential Density Study

NOTE: ALL GROSS AREAS AND ACREAGES ARE APPROXIMATE

	APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
PROPOSED SITE	4211 - 003 - 038	189,809	4.36	216	49.57
	4211 - 003 - 040				
	4211 - 003 - 041				
	4211 - 003 - 042				
	4211 - 003 - 068				
	4211 - 001 - 013	5,768	0.13	1	7.55
	4211 - 001 - 014	5,766	0.13	1	7.55
	4211 - 001 - 015	5,815	0.13	1	7.49
	4211 - 001 - 016	5,815	0.13	1	7.49
	4211 - 001 - 017	5,815	0.13	1	7.49
	4211 - 001 - 018	5,815	0.13	1	7.49
	4211 - 001 - 019	5,815	0.13	1	7.49
	4211 - 001 - 020	5,815	0.13	1	7.49
	4211 - 001 - 021	5,815	0.13	1	7.49
	4211 - 001 - 022	5,815	0.13	1	7.49
	4211 - 001 - 023	5,815	0.13	1	7.49
	4211 - 001 - 024	5,815	0.13	1	7.49
	4211 - 001 - 025	5,815	0.13	1	7.49
	4211 - 001 - 026	5,815	0.13	1	7.49
	4211 - 001 - 027	9,279	0.21	1	4.69
	4211 - 001 - 028	5,815	0.13	1	7.49
	4211 - 001 - 029	7,965	0.18	1	5.47
	4211 - 001 - 030	5,996	0.14	1	7.26
	4211 - 001 - 031	5,000	0.11	1	8.71
	4211 - 001 - 032	5,000	0.11	1	8.71
	4211 - 001 - 033	5,597	0.13	6	46.70
	4211 - 002 - 001	9,005	0.21	1	4.84
	4211 - 002 - 002	4,951	0.11	5	43.99
	4211 - 002 - 003	7,399	0.17	1	5.89
	4211 - 002 - 004	6,803	0.16	1	6.40
	4211 - 002 - 005	5,825	0.13	1	7.48
	4211 - 002 - 006	8,224	0.19	1	5.30
	4211 - 002 - 007	5,825	0.13	1	7.48
	4211 - 002 - 008	5,806	0.13	1	7.50
	4211 - 002 - 009	5,825	0.13	1	7.48
	4211 - 002 - 010	5,806	0.13	1	7.50
	4211 - 002 - 011	5,825	0.13	1	7.48
	4211 - 002 - 012	5,806	0.13	1	7.50
	4211 - 002 - 013	5,825	0.13	1	7.48
	4211 - 002 - 014	5,806	0.13	1	7.50
	4211 - 002 - 015	5,825	0.13	1	7.48

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4211 - 002 - 016	5,806	0.13	1	7.50
4211 - 002 - 017	5,825	0.13	1	7.48
4211 - 002 - 018	5,806	0.13	1	7.50
4211 - 002 - 019	5,825	0.13	1	7.48
4211 - 002 - 020	5,806	0.13	1	7.50
4211 - 002 - 021	5,825	0.13	1	7.48
4211 - 002 - 022	5,806	0.13	1	7.50
4211 - 002 - 023	5,776	0.13	1	7.54
4211 - 002 - 024	5,759	0.13	1	7.56
4211 - 002 - 025	5,759	0.13	1	7.56
4211 - 002 - 026	5,776	0.13	1	7.54
4211 - 002 - 027	5,314	0.12	1	8.20
4211 - 002 - 028	5,314	0.12	1	8.20
4211 - 002 - 029	5,314	0.12	1	8.20
4211 - 002 - 030	5,314	0.12	1	8.20
4211 - 002 - 031	5,314	0.12	1	8.20
4211 - 002 - 032	5,314	0.12	1	8.20
4211 - 002 - 033	5,314	0.12	1	8.20
4211 - 002 - 034	5,314	0.12	1	8.20
4211 - 002 - 035	5,314	0.12	1	8.20
4211 - 002 - 036	5,314	0.12	1	8.20
4211 - 002 - 037	5,314	0.12	1	8.20
4211 - 002 - 038	5,314	0.12	1	8.20
4211 - 002 - 039	5,314	0.12	1	8.20
4211 - 002 - 040	5,314	0.12	1	8.20
4211 - 002 - 041	5,314	0.12	1	8.20
4211 - 002 - 042	5,314	0.12	1	8.20
4211 - 002 - 043	5,314	0.12	1	8.20
4211 - 002 - 044	5,314	0.12	1	8.20
4211 - 002 - 045	6,763	0.16	1	6.44
4211 - 002 - 046	5,769	0.13	1	7.55
4211 - 002 - 047	5,314	0.12	1	8.20
4211 - 002 - 048	5,314	0.12	1	8.20
4211 - 002 - 049	5,680	0.13	1	7.67
4211 - 002 - 052	8,198	0.19	1	5.31
4211 - 002 - 053	13,520	0.31	COMMERCIAL	
4211 - 003 - 001	6,735	0.15	1	6.47
4211 - 003 - 002	5,000	0.11	1	8.71
4211 - 003 - 003	2,500	0.06	COMMERCIAL	
4211 - 003 - 004	2,500	0.06	COMMERCIAL	
4211 - 003 - 005	5,898	0.14	COMMERCIAL	
4211 - 003 - 008	12,006	0.28	1	3.63
4211 - 003 - 010	5,816	0.13	1	7.49
4211 - 003 - 012	5,816	0.13	1	7.49

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4211 - 003 - 014	5,816	0.13	1	7.49
4211 - 003 - 016	5,816	0.13	1	7.49
4211 - 003 - 018	5,816	0.13	1	7.49
4211 - 003 - 020	5,816	0.13	1	7.49
4211 - 003 - 022	5,816	0.13	1	7.49
4211 - 003 - 024	5,816	0.13	1	7.49
4211 - 003 - 026	5,816	0.13	1	7.49
4211 - 003 - 028	5,816	0.13	1	7.49
4211 - 003 - 030	5,816	0.13	1	7.49
4211 - 003 - 032	5,769	0.13	1	7.55
4211 - 003 - 051	22,520	0.52	62	119.93
4211 - 003 - 058	2,502	0.06	VACANT	
4211 - 003 - 059	9,061	0.21	1	4.81
4211 - 003 - 060	4,300	0.10	COMMERCIAL	
4211 - 003 - 061	2,500	0.06	VACANT	
4211 - 003 - 062	2,500	0.06	COMMERCIAL	
4211 - 003 - 063	10,600	0.24	COMMERCIAL	
4211 - 003 - 065	24,916	0.57	54	94.41
4211 - 003 - 066	20,037	0.46	38	82.61
4211 - 003 - 067	1,897	0.04	VACANT	
4211 - 003 - 800	5,992	0.14	N/A	
4211 - 005 - 003			VACANT	
4211 - 005 - 013			COMMERCIAL	
4211 - 005 - 014			COMMERCIAL	
4211 - 005 - 015			COMMERCIAL	
4211 - 005 - 016			COMMERCIAL	
4211 - 005 - 017			COMMERCIAL	
4211 - 005 - 018			COMMERCIAL	
4211 - 005 - 019			SCHOOL	
4211 - 005 - 020			COMMERCIAL	
4211 - 005 - 021	196,020	4.50	309	68.67
4211 - 006 - 001			COMMERCIAL	
4211 - 006 - 002			COMMERCIAL	
4211 - 006 - 003			COMMERCIAL	
4211 - 006 - 004			COMMERCIAL	
4211 - 006 - 005			COMMERCIAL	
4211 - 006 - 006			COMMERCIAL	
4211 - 006 - 009			COMMERCIAL	
4211 - 006 - 010			COMMERCIAL	
4211 - 006 - 025			COMMERCIAL	
4211 - 006 - 026			COMMERCIAL	
4211 - 009 - 025			COMMERCIAL	

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4211 - 009 - 028			COMMERCIAL	
4211 - 010 - 042	32,364	0.74	39	52.00
4211 - 010 - 043	26,854	0.62	32	52.00
4211 - 010 - 044	38,706	0.89	46	52.00
4211 - 010 - 045	41,815	0.96	50	52.00
4211 - 010 - 046	40,790	0.94	49	52.00
4211 - 010 - 047	39,830	0.91	48	52.00
4211 - 010 - 048	40,286	0.92	48	52.00
4211 - 010 - 051	26,399	0.61	32	52.00
4211 - 010 - 052	68,825	1.58	82	52.00
4211 - 010 - 086	142,877	3.28	171	52.00
4211 - 010 - 087	665,161	15.27	794	52.00
4211 - 034 - 003	69,588	1.60	83	52.00
4211 - 034 - 004	119,667	2.75	143	52.00
4211 - 034 - 005	46,180	1.06	55	52.00
4211 - 034 - 007	149,846	3.44	179	52.00
4211 - 034 - 008	27,785	0.64	33	52.00
4211 - 034 - 009	26,960	0.62	32	52.00
4211 - 034 - 010	66,826	1.53	80	52.00
4211 - 034 - 011	115,268	2.65	138	52.00
4211 - 034 - 012	64,630	1.48	77	52.00
4211 - 034 - 013	132,422	3.04	158	52.00
4211 - 034 - 014	32,557	0.75	39	52.00
4211 - 034 - 015	31,693	0.73	38	52.00
4211 - 034 - 016	70,197	1.61	84	52.00
4211 - 034 - 017	33,750	0.77	40	52.00
4211 - 034 - 018	70,214	1.61	84	52.00
4220 - 007 - 001	4,018	0.09	COMMERCIAL	
4220 - 007 - 002	2,503	0.06	COMMERCIAL	
4220 - 007 - 003	2,503	0.06	COMMERCIAL	
4220 - 007 - 004	2,503	0.06	COMMERCIAL	
4220 - 007 - 005	5,736	0.13	1	7.59
4220 - 007 - 006	5,751	0.13	1	7.57
4220 - 007 - 007	5,751	0.13	1	7.57
4220 - 007 - 008	5,751	0.13	1	7.57
4220 - 007 - 009	5,751	0.13	1	7.57
4220 - 007 - 023	13,992	0.32	COMMERCIAL	
4220 - 007 - 024	5,709	0.13	1	7.63
4220 - 007 - 025	5,751	0.13	1	7.57
4220 - 007 - 026	5,751	0.13	1	7.57
4220 - 007 - 027	5,751	0.13	1	7.57
4220 - 007 - 028	5,751	0.13	1	7.57

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4220 - 007 - 029	5,751	0.13	1	7.57
4220 - 007 - 030	5,751	0.13	1	7.57
4220 - 007 - 036	2,500	0.06	VACANT	
4220 - 007 - 037	2,500	0.06	COMMERCIAL	
4220 - 007 - 038	2,500	0.06	COMMERCIAL	
4220 - 007 - 039	2,500	0.06	COMMERCIAL	
4220 - 007 - 040	2,500	0.06	COMMERCIAL	
4220 - 007 - 041	2,500	0.06	COMMERCIAL	
4220 - 007 - 042	4,828	0.11	COMMERCIAL	
4220 - 007 - 044	2,500	0.06	COMMERCIAL	
4220 - 007 - 045	2,500	0.06	COMMERCIAL	
4220 - 007 - 046	2,500	0.06	COMMERCIAL	
4220 - 007 - 047	5,000	0.11	COMMERCIAL	
4220 - 007 - 048	2,500	0.06	COMMERCIAL	
4220 - 007 - 049	5,000	0.11	COMMERCIAL	
4220 - 007 - 050	11,875	0.27	COMMERCIAL	
4220 - 011 - 001	4,038	0.09	1	10.79
4220 - 011 - 002	4,000	0.09	1	10.89
4220 - 011 - 003	5,000	0.11	1	8.71
4220 - 011 - 004	5,000	0.11	1	8.71
4220 - 011 - 005	4,963	0.11	1	8.78
4220 - 011 - 006	4,258	0.10	1	10.23
4220 - 011 - 007	5,748	0.13	1	7.58
4220 - 011 - 008	5,748	0.13	1	7.58
4220 - 011 - 009	5,748	0.13	1	7.58
4220 - 011 - 010	5,748	0.13	1	7.58
4220 - 011 - 011	5,748	0.13	1	7.58
4220 - 011 - 012	5,748	0.13	1	7.58
4220 - 011 - 013	5,704	0.13	1	7.64
4220 - 011 - 014	5,708	0.13	1	7.63
4220 - 011 - 015	5,748	0.13	1	7.58
4220 - 011 - 016	5,748	0.13	1	7.58
4220 - 011 - 017	5,748	0.13	1	7.58
4220 - 011 - 018	5,748	0.13	1	7.58
4220 - 011 - 019	5,748	0.13	1	7.58
4220 - 011 - 020	8,446	0.19	1	5.16
4220 - 011 - 021	6,793	0.16	1	6.41
4220 - 011 - 022	6,250	0.14	1	6.97
4220 - 011 - 023	5,000	0.11	1	8.71
4220 - 011 - 024	4,962	0.11	1	8.78
4220 - 011 - 025	6,063	0.14	1	7.18
4220 - 011 - 026	5,748	0.13	1	7.58
4220 - 011 - 027	5,748	0.13	1	7.58
4220 - 011 - 028	5,748	0.13	1	7.58

APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4220 - 011 - 029	5,748	0.13	1	7.58
4220 - 011 - 030	5,748	0.13	1	7.58
4220 - 011 - 031	5,708	0.13	1	7.63
4220 - 011 - 032	5,705	0.13	1	7.64
4220 - 011 - 033	4,598	0.11	1	9.47
4220 - 011 - 034	4,598	0.11	1	9.47
4220 - 011 - 035	4,598	0.11	1	9.47
4220 - 011 - 036	4,598	0.11	1	9.47
4220 - 011 - 037	4,598	0.11	1	9.47
4220 - 011 - 038	5,651	0.13	1	7.71
4220 - 012 - 021	13,237	0.30	COMMERCIAL	
4220 - 012 - 900	199,550	4.58	SCHOOL	
4220 - 013 - 001	5,705	0.13	1	7.64
4220 - 013 - 002	5,748	0.13	1	7.58
4220 - 013 - 003	5,748	0.13	1	7.58
4220 - 013 - 004	5,748	0.13	1	7.58
4220 - 013 - 025	5,748	0.13	1	7.58
4220 - 013 - 026	5,748	0.13	1	7.58
4220 - 013 - 027	5,748	0.13	1	7.58
4220 - 013 - 028	5,748	0.13	1	7.58
4220 - 013 - 029	5,694	0.13	1	7.65
4220 - 019 - 001	5,706	0.13	1	7.63
4220 - 019 - 002	5,748	0.13	1	7.58
4220 - 019 - 003	5,748	0.13	1	7.58
4220 - 019 - 004	5,748	0.13	1	7.58
4220 - 019 - 005	5,748	0.13	1	7.58
4220 - 019 - 006	5,748	0.13	1	7.58
4220 - 019 - 025	5,748	0.13	1	7.58
4220 - 019 - 026	5,748	0.13	1	7.58
4220 - 019 - 027	5,748	0.13	1	7.58
4220 - 019 - 028	5,748	0.13	1	7.58
4220 - 019 - 029	5,748	0.13	1	7.58
4220 - 019 - 030	5,702	0.13	1	7.64
4220 - 020 - 010	5,705	0.13	1	7.64
4220 - 020 - 011	5,746	0.13	1	7.58
4220 - 020 - 012	5,746	0.13	1	7.58
4220 - 020 - 013	5,746	0.13	1	7.58
4220 - 020 - 014	5,746	0.13	1	7.58
4220 - 020 - 015	5,746	0.13	1	7.58
4220 - 020 - 016	5,746	0.13	1	7.58
4220 - 020 - 035	5,745	0.13	1	7.58

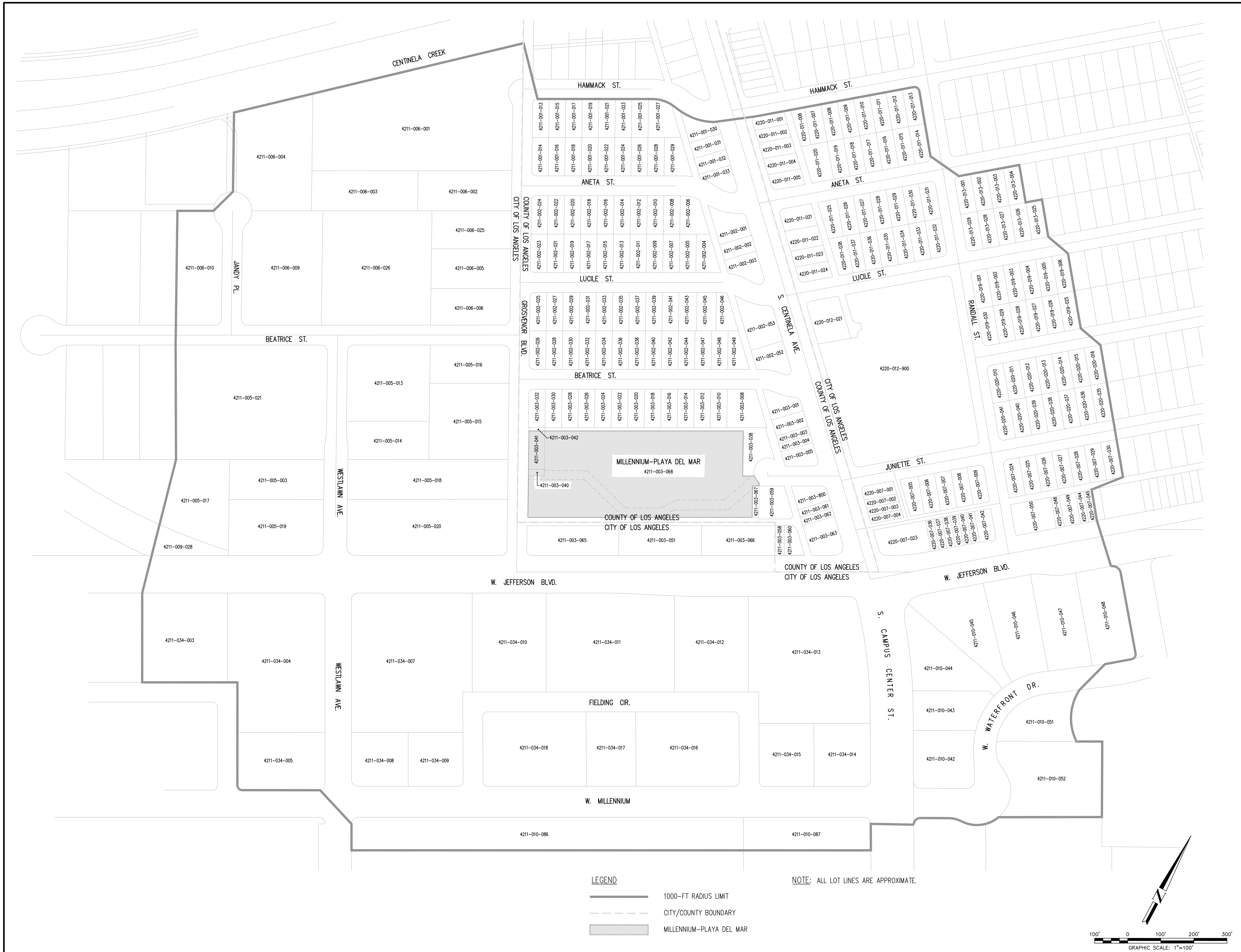
APN NO.	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC)
4220 - 020 - 036	5,745	0.13	1	7.58
4220 - 020 - 037	5,745	0.13	1	7.58
4220 - 020 - 038	5,745	0.13	1	7.58
4220 - 020 - 039	5,745	0.13	1	7.58
4220 - 020 - 040	5,745	0.13	1	7.58
4220 - 020 - 041	5,702	0.13	1	7.64

NOTE: ALL GROSS AREAS AND ACREAGES ARE APPROXIMATE

DENSITY WITHIN COUNTY OF LOS ANGELES				
APN	GROSS AREA (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC.)
4211-001-013 TO 4211-001-033 4211-002-001 TO 4211-002-049 4211-002-052 4211-003-001, 4211-003-002 4211-003-008, 4211-003-010 4211-003-012, 4211-003-014 4211-003-016, 4211-003-018 4211-003-020, 4211-003-022 4211-003-024, 4211-003-026 4211-003-028, 4211-003-030 4211-003-032, 4211-003-038 4211-003-040, 4211-003-041 4211-003-042, 4211-003-059 4211-003-068	709,337	16.28	312	19.16

NOTE: GROSS AREA AND ACREAGE ARE APPROXIMATE

DENSITY WITHIN 1000-FT RADIUS			
GROSS AREA FOR RESIDENTIAL (SF)	ACREAGE (AC.)	NO. OF UNITS	DENSITY (DU/AC.)
3,672,359	84.31	3,512	41.66



PREPARED BY:

DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning

160 N. Riverview Drive, Ste. 100
Anaheim Hills, California 92808
(714) 685-6860

GREGORY R. COOKE R.C.E. 39478 DATE

REGISTERED PROFESSIONAL ENGINEER
GREGORY R. COOKE
No. 39478
Exp. 12-31-11
CIVIL
STATE OF CALIFORNIA

NO.:	REVISION:	DATE:

PROJECT:
MILLENNIUM-PLAYA DEL MAR
5550 GROSVENOR BLVD.
COUNTY OF LOS ANGELES, CALIFORNIA

DRAWING NAME:
DENSITY STUDY EXHIBIT

ISSUE:	EXHIBIT
DATE:	2010-03-08
CHECKED: GRC	DRAWN: CMT
DRAWING FILE:	.
PROJECT NO.:	06-354C
SHEET NUMBER:	1
OF 1 SHEETS	
SCALE:	1" = 100'

EXTERNAL REFERENCES: 6354recbndy01 10516
FILENAME: M:\2006\06-354C DinCal Marina Del Rey\exhibit\density study\06-354C density study.dwg, LAST SAVED ON: Mar 08 2010 11:05am PLOTTED BY: MICHELLE, ON: Mar 08 2010 2:51pm, CFG:

APPENDIX 4.2

Geotechnical Analyses

GEOTECHNICAL REPORT
PROPOSED RESIDENTIAL DEVELOPMENT
LOTS 1 AND 2 OF TRACT 33003
5550 GROSVENOR BOULEVARD
LOS ANGELES COUNTY, CA 90066

Prepared for:

ARCHSTONE-SMITH
One Spectrum Pointe Drive, Suite 225
Lake Forest, CA 92630

Prepared by:

GROUP DELTA CONSULTANTS, INC.
370 Amapola Avenue
Torrance, California 90501
Tel. (310) 320-5100
Fax (310) 320-2118

GDC Project No. L-746
May 3, 2007

GROUP DELTA CONSULTANTS

Geotechnical Engineering

Geology

Hydro Geology

Earthquake Engineering

Materials Testing & Inspection

Forensic Services

CELEBRATING 20 Years of Service

May 3, 2007

Archstone-Smith
One Spectrum Pointe Drive, Suite 225
Lake Forest, CA 92630

Attention: Cynthia H. Eppeldauer, Assistant Vice President

Subject: Geotechnical Report
Proposed Residential Development
Lots 1 and 2 of Tract 33003
5550 Grosvenor Boulevard
Los Angeles County, CA 90066
GDC Project No. L-746

Ms. Eppeldauer,

Group Delta Consultants (GDC) is pleased to submit this geotechnical report for the proposed Residential Development Project, located at 5550 Grosvenor Boulevard, north of Jefferson Boulevard, Los Angeles County, California.

We appreciate the opportunity to provide geotechnical services for this project. Should you have any questions regarding this report, or if we can be of further service, please call us at 310 320-5100.

Sincerely,
GROUP DELTA CONSULTANTS, INC.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL DAVID READER
No. GE 2259
Exp. 3-31-08
GEOTECHNICAL
STATE OF CALIFORNIA

Michael D. Reader, G.E. # 2259	Ying Liu, Ph.D.
CEO	Project Engineer

Distribution: Addressee (4)
Los Angeles County (2)

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICES

GEOTECHNICAL REPORT
PROPOSED RESIDENTIAL DEVELOPMENT
Between Grosvenor Boulevard and Juliette Street
North of Jefferson Boulevard
Los Angeles County, California

1.0 INTRODUCTION

This report presents our geotechnical recommendations for the proposed residential development project, which is currently conceived as at-grade 4-level residential buildings, and multilevel at-grade parking structures. The site is located between Grosvenor Boulevard and Juliette Street, north of Jefferson Boulevard, Los Angeles County, California. Figure 1 shows the site location.

1.1 Project Description

Our understanding of the project is based on discussions with you regarding the scope of the project, as well as the Exhibit Map for Tract Map No. 67206 prepared by DRC dated April 25, 2007.

The site encompasses about 4.45 acres (lot 1) and 0.21 acres (Lot 2), and is currently functioning as a Church with at-grade parking. Archstone-Smith does not currently own the site, but is considering it purchase. The proposed residential development is currently conceived as 4-level at-grade structures. In addition, several multi-level parking structures are planned.

1.2 Purpose and Scope of Work

The purpose of this geotechnical investigation was to review available geotechnical data pertinent to the site, perform additional field exploration, laboratory tests, and engineering analyses, and provide geotechnical recommendations for the proposed development. Our scope of work excludes all issues related to environmental engineering, hazardous materials and related maters.

Our authorized scope of work included:

- Visit site to view the existing site conditions, in consideration of the planned development;

- Review available geotechnical information for the property, including review of published geologic and geotechnical maps and previous soils reports pertaining to the site area;

- Perform three geotechnical borings and three CPT soundings to evaluate existing geotechnical conditions;

- Perform laboratory testing to determine the physical and engineering properties of the subsurface materials;

- Perform engineering analyses to develop recommendations for APGD pile foundations; and

- Prepare a Report of Geotechnical Recommendations for submittal to the County.

2.0 GEOTECHNICAL INVESTIGATION

2.1 Previous Geotechnical Investigation

The subject site was previously investigated by Applied Geotechnical Engineering, Inc. (1987) for construction of the existing Church. In their site investigation, Applied Geotechnical Engineering drilled two geotechnical borings to the depths of 20 feet and 40 feet below the existing grade of about El. +20 feet. Subsurface soils encountered in their investigation consisted of alternating layers of silty sand and clay. Groundwater was encountered at a depth of 20 feet in their field exploration.

The existing church is a two story structure with one level of basement. The basement floor elevation is about El. +10 feet, which is about 10 feet below it surrounding ground. The existing church was founded on conventional spreading footings.

Applied Geotechnical Engineering's Soils Report indicated that the existing church building and pavements were supported on compacted fill (90% relative compaction), or native soils. However, we were not able to obtain the previous compaction report.

2.2 Current Field Exploration

The subsurface conditions at this site were investigated by drilling three geotechnical borings and advancing three CPT soundings. The locations of explorations are shown in Figure 2.

Borings were drilled to depths ranging from 51.5 to 56.5 feet below the existing grades. The CPT soundings were advanced to depths ranging from 46 to 48 feet below the existing grades. Both relatively undisturbed samples and Standard Penetration Tests (SPT) samples were taken in the borings. The explorations were performed under the continuous technical supervision of our field engineer, who also maintained detailed logs of the soil encountered, classified the materials, and assisted in obtaining soil samples. Details of the field exploration program, including copies of the boring logs and CPT interpretations, are presented in Appendix A.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Surface Conditions

The site currently contains a church, which is a two-story structure with one level of basement. The basement floor is at approximately El. +10.0 feet. The site also includes a large area of at-grade asphalt concrete parking lots. These existing improvements will be demolished to make room for the proposed development. The existing site grade varies from about El. +22.0 feet to El. +26.0 feet at the central part of the site to approximately El. +16.3 feet to El. +19.5 feet at the perimeters of the site. Grosvenor Boulevard on the west side of the site is at approximately El. +14.5 feet; and Juliette Street on the east side of the site is at about El. + 17.0 feet.

3.2 Subsurface Conditions

The subsurface material of the site, within the maximum depth of exploration, is comprised of compacted fill, underlain by native highly compressible clays, medium dense sands and silty sands, and very dense sand and gravel. A generalized cross-section through the existing site (A-A') is presented in Figure 3. The detailed soil layering is listed below.

3.2.1 Layer No. 1: Compacted Fill (CL-SC-SM)

The site is mostly covered by concrete and asphalt pavement, and the two-story church building. The compacted fill underlying pavement area and building pad was compacted to 90 % of relative compaction, according to the soils report prepared by Applied Geotechnical Engineering (1987). The thickness of the compacted fill ranges from 4 to 7 feet. The fill generally consists of clay, sandy clay and silty sand. In general, the clays and sandy clays are firm to stiff; and the silty sands are medium dense.

3.2.2 Layer No. 2: Native Clay and Silty Sand (CL-SM-ML)

Layer 2 consists of firm clay and medium dense silty sand, extending from the bottom of the compacted fill to El. +7 to El. +9 feet. The estimated undrained shear strength of the clay ranges from 0.7 to 1.5 ksf. The standard penetration test (SPT) blow counts is about 11 to 15.

3.2.3 Layer No. 3: Highly Compressible Clay / Silt (CL-CH-ML)

Layer 3 consists of soft, normally consolidated and highly compressible clays and silts. The thickness of this layer ranges from 7 feet to about 15 feet, extends from the bottom of layer 2 to El. -8.5 to El. +2 feet. The estimated undrained shear strength of these clays generally ranges from 0.5 to 2 ksf.

3.2.4 Layer No. 4: Sand, Silty Sand and Sandy Silt (SP-SM-ML)

From about El.-8.5 feet to El. -18.5 feet, the subsurface soils consist of medium dense to very dense sands, silty sands, and silts, interbedded with sandy and silty clay. The CPT tip resistance for this layer ranges from 20 tsf to greater than 380 tsf.

3.2.5 Layer No. 5: Clay (CL-CH)

From about El. -18.5 feet to El. -28.0 feet, the subsurface soils consist of firm to stiff clays and silty clays. The estimated undrained shear strength of these clays generally ranges from 0.5 to 2 ksf.

3.2.6 Layer No. 6: Dense and Very Dense Sand (SP)

Below about El. -28 feet, the soils are generally dense and very dense sands with gravels, with standard penetration test (SPT) blow counts generally ranging from 46 to greater than 50 blows per foot.

3.3 Laboratory Testing

Laboratory testing was performed on selected samples of the subsurface materials recovered from the borings. Tests were conducted to develop index and engineering properties of the subsurface materials for use in the engineering analysis for the proposed structures. The tests included:

- Atterberg Limit
- Consolidation
- Direct Shear
- Expansion Index
- Moisture Content and Dry Density
- Soil Corrosivity

Moisture content, dry density, and pocket penetrometer data are shown on the boring logs in Appendix A. Detailed descriptions of the tests performed and their results are presented in Appendix B.

3.4 Groundwater

Groundwater was measured in Boring B-1 at a depth of 10.5 feet below the existing grade, which corresponds to approximately El. +8.5 feet. GDC recommends that a groundwater level of El. +10 feet be used for design.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 General

Based on the findings of our field exploration, laboratory testing, and engineering analysis, it is our opinion that the site is suitable from a geotechnical standpoint for the proposed construction. Because of the presence of highly compressible clays and potentially high and variable liquefaction induced ground settlement, it is our opinion that the proposed structures should be supported on pile foundation. Geologic and seismic hazard evaluation, as well as foundation recommendations is presented in the following sections.

4.2 Potential Seismic Hazards

Potential geologic and seismic hazards for any site include ground rupture, slope instability, lateral spreading, subsidence, liquefaction, seismic compaction, and settlements tsunamis/ and seismic shaking.

4.2.1 Ground Surface Rupture

The site is not located within an Alquist-Priolo Earthquake Fault Zone. No known active faults are mapped as crossing the site or projecting towards the site in the geologic literature reviewed. Therefore, the possibility of ground surface fault rupture at the site is considered low. The closest faults to the subject site are summarized below.

Table 1: Summary of Closest Faults to the Subject Site

Fault Name	Source to Site Distance (km)	Maximum Credible Moment Magnitude (M_W)
Newport-Inglewood (LA Basin) Fault	6.3	7.1
Santa-Monica Fault	9.5	6.6
Palos Verdes Fault	9.5	7.3

Note: Source to site distance is defined as the closest distance to the surface project of fault rupture

4.2.2 Probabilistic Seismic Hazard Analysis

The site coordinates for the subject site used in our seismic hazard analysis are -118.412 (Longitude) and 33.981 (Latitude). The probabilistic seismic hazard analysis website provided by California Geologic Survey indicates that the Peak Horizontal Ground Acceleration (PGA) for a mean return period of 475 years is 0.45 g, for alluvium at the subject site. The USGS seismic hazard deaggregation analysis website indicates that for the same return period, the PGA on firm rock (average shear wave velocity of 2500 fps on the top 100 feet) at the subject site is about 0.41 g. The deaggregated predominant earthquake magnitude is reported as 6.6. In this report, a mean PGA of 0.45g and magnitude of 6.6, for 10 percent probability of being exceeded in 50 years, is used for liquefaction analysis. Seismic deaggregation result indicates that the Newport-Inglewood Fault has the largest individual hazard contribution.

4.2.3 Liquefaction Potential

Liquefaction involves the sudden loss in strength of a saturated, cohesionless soil (predominantly sand) caused by the build-up of pore water pressure during cyclic loading, such as that produced by an earthquake. This increase in pore water pressure can temporarily transform the soil into a fluid mass, resulting in vertical settlement and can also cause lateral ground deformations. Typically, liquefaction occurs in areas where there are loose sands and the depth to groundwater is less than 50 feet from the surface. Seismic shaking can also cause soil compaction and ground settlement without liquefaction occurring, including settlement of dry sands above the water table.

Liquefaction potential of the subsurface soils was first screened using the Modified Chinese Criteria (SP 117, Pages 30-31). The clayey soils of Layer 3 (having liquid limits of 47 and 68) and Layer 5 (having liquid limits of 41 and 55) do not satisfy the Modified Chinese Criteria, therefore, are not considered as liquefiable.

We assessed the liquefaction potential using the simplified liquefaction analysis procedure recommended by NCEER (Youd and Idriss, 1997, 2001), using actual SPT blow counts for all three borings drilled. Our liquefaction analysis indicated that some of the sandy soils in layer 2 and layer 4 are liquefiable. Layer No. 6 consists of very dense sand and gravel, and is not liquefiable. The total thickness of liquefiable soils ranges between 8 and 12 feet.

For estimating the resulting ground settlements, we used the method proposed by Tokimatsu and Seed (1987). Our analysis indicates that the amount of settlement that would likely occur ranges from 0.8 to 1.8 inches. Liquefaction analysis is documented in Appendix C.

4.2.4 Seismic Site Coefficients

For seismic analysis of structures in accordance with the seismic provisions of the California Building Code (CBC, 2001), the site is located in Seismic Zone 4, and a Seismic Zone Factor of 0.4 should be used. Seismic hazard deaggeration result indicates that the Newport-Inglewood (LA Basin) Fault has the largest individual hazard contribution, therefore, is determined to be the controlling fault for the subject site. The seismic design parameters, using the Newport-Inglewood (LA Basin) Fault as controlling fault, are provided in Table 1.

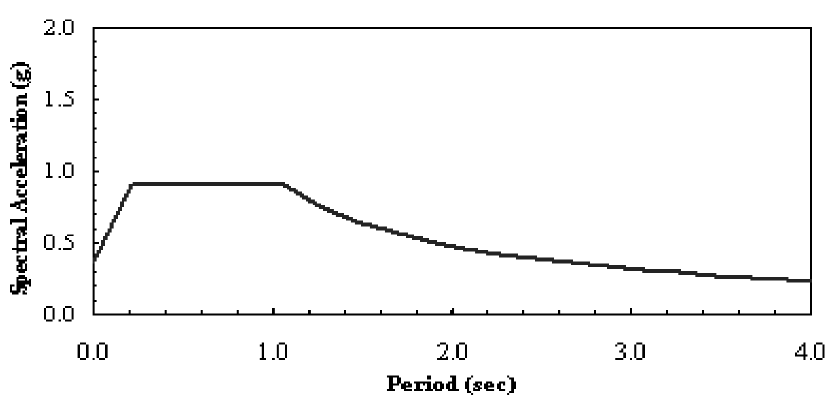
TABLE 2

CBC 2001 SEISMIC DESIGN PARAMETERS
GDC Project No. L-746

<< INPUT PARAMETERS >>		
Seismic Zone Factor, Z Zone 1 = 0.075 Zone 2A = 0.15 Zone 2B = 0.20 Zone 3 = 0.30 Zone 4 = 0.40	0.4	
Soil Profile Type SA = Hard Rock SB = Rock SC = Very Dense Soil and Soft Rock SD =Stiff Soil Profile SE =Soft Soil Profile SF = Requires Site-Specific Evaluation	SE	
Controlling Fault Name	Newport Inglewood	
Closest Distance to Fault, Df	6.3	km
Max. Moment Magnitude, Meq	7.1	Mw
Fault Slip Rate, SR	1.5	mm/year

<< OUTPUT >>		
Seismic Source Type	B	
Near Source Factor, Na	1.00	
Near Source Factor, Nv	1.15	
Seismic Coefficient, Ca	0.36	
Seismic Coefficient, Cv	0.96	
ARS Control Period, Ts	1.07	sec
ARS Control Period, To	0.21	sec

CBC 2001 DESIGN RESPONSE SPECTRUM



4.2.5 Other Seismic Hazards

If post-construction slopes are planned, it is our opinion that properly compacted 2:1 (horizontal to vertical) fill slopes should be grossly stable during a maximum seismic event. Some localized sloughing of sandy slopes may occur during a major seismic event.

The site is not adjacent to bodies of water or open slopes, and the liquefiable layer is about 25 feet below the existing grade, therefore, the potential for lateral spreading is low.

All low-lying areas along California's coast are subject to potentially dangerous tsunamis. Tsunamis are long period waves generated primarily from distant and local offshore earthquakes, landslides, or volcanic eruptions. The magnitude of the potential hazard is a function of the coastline configuration, sea floor topography, individual wave characteristics, and distance and direction from the source. Two tsunamis, as the result of the 1960 Chile earthquake, caused damage in the Los Angeles and Long Beach harbors. In 1960, waves up to five feet in height occurred in Cerritos Channel, and currents up to 12 knots were reported.

A 5-foot run-up for 100-year tsunami and an 8-foot run-up for a 500-year tsunami are predicted near the Marian Del Rey area (Ziony, Editor, 1985). If the tsunami coincides with high tide, the maximum water elevations may reach El. +11 feet and El. +14 feet, respectively, near the site. Since the finished site grades are about El. +19 feet and the site is located 2.0 miles inland, the damage potential from tsunamis at the site is considered low.

4.3 Demolition

Prior to the start of grading, demolition will be required to remove the existing improvements, including the existing church, basement, and pavements. It is not known to what extent other buried structures or tanks or septic systems may be present. It should also be anticipated that buried remnants of other historic construction could also be encountered anywhere on the site.

The basement pad elevation of the existing church is El. +10 feet. Groundwater level encountered in our April 2005 field exploration was at approximately El. +8.5 feet. Depending on the embedment depth of footings, it is likely that one or two feet of the excavation will be below water table. It is also possible that perched water exists in the sandy soils underlain by less permeable clayey soils, above the groundwater table. Water entering the excavation could be handled by pumping from perimeter ditches and sumps.

Any soils loosened or disturbed during the demolition should be removed to the limits determined by the project Geotechnical Engineer. Any void created from the demolition should be properly backfilled as described in Section 4.5 of this report.

The Civil Engineer should identify the presence and location of all existing utilities on the property. Precautions should be taken to remove, relocate or protect existing utilities, as appropriate.

4.4 Removals

Prior to the start of grading, all vegetation and topsoil should be stripped. The vegetation should be removed from the site. The topsoil may be stockpiled and reused in planned landscape areas. In addition, any trees, shrubs, and roots, should be removed. Any soils loosened during removal of tree/shrubs should also be removed.

4.5 Grading

The buildings are proposed to be supported on piles and the floor slab will be a structural slab. Currently, the site is mostly covered by concrete and asphalt pavement, and the two-story church buildings. The compacted fill underlying existing pavement area and building pad was compacted to 90 % of relative compaction. To provide uniform support for pavements, and to improve lateral constraint of the piles, we recommend that the upper 24 inches of subgrade soils below building pad and pavement be compacted to 95% of relative compaction.

All grading should conform to the requirements of the County of Los Angeles Grading Division and the general grading recommendations outlined below.

1. The grading contractor is responsible for notifying the project Geotechnical Engineer of a pre-grading meeting prior to the start of grading operations and anytime that the operations are resumed after an interruption.

2. Prior to the start of earthwork the existing improvements will require demolition, as discussed in Section 4.3. Existing utilities should be removed, relocated or protected, as appropriate.

3. As discussed in Section 4.4, the project area shall be stripped and cleared of vegetation. Two feet of onsite soil below the proposed building pad and pavement area shall be removed and recompacted to provide uniform support for pavements, and to improve lateral constraint of the piles. The actual limits for removals should be determined by the project Geotechnical Engineer when final elevations are established for buildings and should also be reviewed during grading, depending on the actual conditions encountered. Due to the existence of highly compressible clay layer, if new fill is to be added to the site to an elevation above the existing grade, a surcharge program and waiting period will be required.

4. The bottoms of completed excavations shall be observed by the project Geotechnical Engineer, while it is proof-rolled with loaded equipment. Any loose or yielding soils shall be over-excavated and recompacted to the limits determined by the project Geotechnical Engineer.

5. Fill placed under structures or pavement shall be placed as "structural fill". All structural fill should be free of expansive clay, rock greater than 3 inches in maximum size, debris and other deleterious materials. All structural fill should be compacted to at least 95 percent of the maximum dry density determined by ASTM D 1557-91. Fill placed in non-structural and landscape areas should be compacted to at least 90 percent.

6. All earthwork and grading shall be performed under the observation of the project Geotechnical Engineer. Compaction testing of the fill soils shall be performed at the discretion of the project Geotechnical Engineer. Testing shall be performed for approximately every 2 feet in fill thickness or 500 cubic yards of fill placed, whichever occurs first. If specified compaction is not achieved, additional compactive effort, moisture conditioning, and/or removal and recompaction of the fill soils will be required.

7. All materials used for asphalt concrete and base shall conform to the 2000 "Green Book" or the equivalent, and shall be compacted to at least 95 percent relative compaction.

8. If, in the opinion of the Geotechnical Engineer, Contractor, or Owner, an unsafe condition is created or encountered during grading, all work in the area shall be stopped until measures can be taken to mitigate the unsafe condition. An unsafe condition shall be considered any condition that creates a danger to workers, on-site structures, on-site construction, or any off-site properties or persons.

4.6 Temporary Excavation

The proposed development consists of at-grade residential and parking structures. The deepest excavation will involve removal of the one-level basement of the existing church building during demolition. Depending on the embedment depth of footings, it is likely that one or two feet of the excavation for removal of the existing basement will be below water table. Water entering the excavation could be handled by pumping from perimeter ditches and sumps.

Excavation slopes should be made with an inclination of 1 to 1 (Vertical to Horizontal).

Surcharge loads, such as vehicular traffic, heavy construction equipment, and stockpiled materials, should be kept away from the top of temporary excavations a horizontal distance of at least five feet from the excavation. Sloughing of sand slopes and unstable soil zones should be anticipated within temporary excavations, and workmen should be adequately protected. Construction equipment and foot traffic should be kept off excavation slopes to minimize sloughing.

All excavation slopes should meet the minimum requirements of the Occupational Safety and Health Association (OSHA) Standards. Maintaining safe and stable slopes on excavations is the responsibility of the contractor and will depend on the nature of the soils and groundwater conditions encountered and his method of excavation. Excavations during construction should be carried out in such a manner that failure or ground movement will not occur. The contractor should perform any additional studies deemed necessary to supplement the information contained in this report for the purpose of planning and executing his excavation plan.

4.7 Foundation Recommendations

Due to the presence of soft to firm, moderate to high compressible clays below the site, and variable potential liquefaction settlements across the subject site, shallow foundation is not considered as an appropriate option. We recommend that the proposed structures be supported on pile foundations. We recommend auger pressure grouted displacement (APGD) piles be used to help minimize the disrupting effects of noise and vibration normally associated with driven piles in close proximity to occupied residential structures. Recommendations for 12 inches square prestressed concrete driven piles are also given as an available option. However, considerations of noise and vibration could eliminate driven piles as a viable alternative. Also, drivability is a concern for driven piles because of dense sand lenses above the bearing layer. The 16-inch diameter APGD piles have been successfully used at many of the adjacent Playa Vista Projects. Specification for APGD piles is provided in Appendix H.

To provide uniform support, and to improve lateral restraint of the piles, the upper 24 inches of subgrade soils below building pad should be compacted to 95% of relative compaction.

4.7.1 Axial Pile Capacity

Variable dense and very dense sand and gravel was encountered below approximately El. -26 to -28 feet. It is recommended that the piles be embedded 3 to 5 feet into the dense sand and gravel layer to develop end-bearing capacity. The design tip elevation maybe taken as El. -33 feet. The allowable axial bearing capacity of a 52-foot long 16-inch diameter APGD pile may be taken as 200 Kips. The liquefaction downdrag acting on a single pile, under design basis earthquake event, is estimated to be on the order of 68 Kips. The pile has a factor of safety of 1.25 considering liquefaction downdrag. The pile capacity calculation is documented in Appendix E. We recommend that piles be installed with minimum 3 diameters center-to-center spacing. For piles with 3 diameter center-to-center spacing, no reduction in axial capacity is required.

Total and differential settlement of piles under the recommended allowable load may be taken as 0.5 inch and 0.25 inch, respectively. The recommendation shall be confirmed, and revised as necessary, during the pile load testing program.

It should be noted that the maximum downdrag load of 68 Kips is based on the assumption that no settlement of the pile occurs due to the application of the downdrag load. It is estimated that piles could settle about 0.25 inches as the downdrag load is applied. This settlement will significantly reduce the downdrag load. However, for conservatism we require an ultimate capacity of 400 kip, assuming the full downdrag of 68 kips for seismic condition. The ultimate and allowable pile capacity should be estimated by conducting a static load-testing program, as discussed in Section 4.7.3.

Pre-drilling shall not be permitted for test piles and production piles.

The minimum torque required to indicate penetration into the bearing layer shall be set at 60 ft-kip, unless shown to be otherwise during the load testing program.

If driven concrete piles are to be used, driven to the same tip elevation of El. -33 feet, the following design values may be used:

Table 3: Axial Pile Capacity of 12-in Square Driven Prestressed Concrete Pile

Pile Dimension (inches)	Axial Capacity Ultimate (Kips)	Axial Capacity Allowable (Kips)	Liquefaction Downdrag (Kips)	F.S. with Downdrag
12	360	180	66	1.2

4.7.2 Lateral Pile Capacity

We calculated the lateral pile capacities of the 16-in diameter APGD pile and 12-in square driven concrete pile, using LPILE 5.0 (Ensoft, 2004). We used a p-multiplier of 0.65 to account for pile group effects. The piles will be connected to a structural slab, which provides a large value of rotational stiffness. Under lateral load, the pile will be essentially at fixed head condition. For the purpose of comparison, we also calculated pile capacity for free head condition. Pile capacities under free and fixed head conditions, for 0.5 and 1 inch pile head deflection, are provided in Tables 4 and 5. LPILE output are documented in Appendix D.

Table 4: Lateral Pile Capacity for 12-in Square Driven Concrete Pile

Pile Head Deflection (in)	Free Head Condition			Fixed Head Condition		
	Max. Shear (Kips)	Max. Moment (kip-ft)	Depth to Max. Moment (ft)	Max. Shear (Kips)	Max. Moment (kip-ft)	Depth to Max. Moment (ft)
0.5	7	19	8	12	-51	0
1.0	9	33	9	17	-85	0

Table 5: Lateral Pile Capacity for 16-in APGD Pile

Pile Head Deflection (in)	Free Head Condition			Fixed Head Condition		
	Max. Shear (Kips)	Max. Moment (kip-ft)	Depth to Max. Moment (ft)	Max. Shear (Kips)	Max. Moment (kip-ft)	Depth to Max. Moment (ft)
0.5	9	30	9.5	17	-80	0
1.0	12	52	10	25	-135	0

4.7.3 Pile Load Testing or Indicator Pile Program

For the 16-in diameter APGD pile, GDC recommends conducting a pile load-testing program, which would consist of monitoring the installations of four test piles at selected locations, and performing load testing according to ASTM 1143-81. The testing program would be carried out as a separate mobilization by the pile contractor. GDC envisions that the testing program will require approximately 26 hours to perform each pile load test in the field plus an additional week of geotechnical analyses by GDC to provide the pile-length and allowable load recommendations.

Test piles should be continuously installed to various depths of penetration into dense granular material (Layer 6) below about El. -26 to -28 feet, using a Bauer BG25 drilling machine, or equivalent, delivering drill torque up to 180,000 foot-lbs. We recommend final tip elevations for test piles at about El. -33 feet; however, some variability should be expected. Each test pile location requires a CPT, which should be completed prior to the load-testing program.

In addition to testing each pile to the ASTM 1143-81 standards, we require a creep test at the recommended allowable load. The creep test holds the allowable load for at least two hours to demonstrate displacement of the test pile slows to less than 0.005 inch per hour, which is half the rate recommended in ASTM 1143-81. Test piles not meeting this requirement shall be rejected.

GDC should monitor the indicator-pile and production-pile installations to verify that piles are installed in accordance with the geotechnical recommendations and have achieved a satisfactory pile length.

GDC recommends one CPT sounding be performed per 12 production piles used in the foundations. Depending on the actual number of production piles, additional CPT soundings will be required prior to installing production piles.

If driven piles are to be used, prior to ordering the production piles, we recommend that indicator piles be driven at the subject site. The number of indicator piles will be determined once the foundation plan is available. The actual pile capacity is subject to verification, and will be refined based on the pile driving results of the indicator piles. We recommend that the hammer and driving system performance, pile driving stresses, pile structural integrity, and pile static bearing capacity evaluated by means of pile driving analyzer (PDA). Pile driving criteria for the production piles will be established by wave equation analysis (GRL-WEAP).

4.7.4 Lateral Resistance

For resistance to lateral loads, an allowable passive fluid pressure of 300 pcf may be used for design, for grid beams and pile caps placed in structural fill or in undisturbed, stiff or dense, native soils. Sliding resistance shall not be used due to potentially high liquefaction settlement.

4.7.5 Structural Slab / Slab-on-Grade

Due to potentially high and variable liquefaction settlement, slab-on-grade may not be used for the proposed buildings; instead, we recommend that structural slab supported on the pile foundation be used.

4.8 Minor Retaining Walls and Fence Walls

Minor retaining walls that are less than 36 inches in height retaining level backfill, for hardscape around the building exterior (if used) may be supported near the finish grade on spread footings. Footings may be designed using an allowable bearing pressure of 1.5 ksf. The upper 12 inches of wall footing subgrade should be scarified, moisture conditioned as required, and compacted to a minimum of 95% relative compaction in accordance with ASTM D 1557. Retaining wall footings on level ground should have a minimum embedment of 18-inches below finish grade. Retaining walls founded on a 2:1 slope should have a minimum embedment of 36-inches below finish grade above the slopeward edge of footing.

We recommend that retaining walls be backfilled with non-expansive granular soils with a PI less than 15 and percent passing No. 200 sieve of less than 15 percent. A 2-ft thick cap consisting of less pervious onsite materials should be used to minimize infiltration of surface water. The finish surface should be graded to drain away from the proposed structures. Heavy compaction equipment operating adjacent to retaining walls can cause excessively high lateral soil pressures to be exerted on the wall. Therefore, soils within 5 feet of the wall should either be compacted with hand operated equipment or designed to withstand compaction pressure from heavy equipment.

Cantilever walls, which are free to move laterally at least ½ in. for each 10-ft height, may be designed for an equivalent fluid pressure of 38 pcf (with level backfill) or 45 pcf (2:1 sloping backfill).

The above design parameters assume that all walls are constructed with a properly designed drainage system to prevent buildup of hydrostatic pressures behind the wall. This may consist of geocomposite drain board or 12 inch of clean crushed rock encapsulated in filter fabric, discharging to weep holes or drain pipes. Typical wall drainage is shown in Figure 4.

4.9 Expansion Potential

Laboratory testing conducted on a representative sample indicated that the near surface soils at the subject site have a low expansion potential (2001 UBC, Table 18A-I-B).

4.10 Soil Corrosivity

Representative samples of the foundation zone encountered in the borings were tested to evaluate corrosion characteristics. The results indicate the test samples had a pH of 8.2, water-soluble sulfate content of 123 ppm and soluble chloride content 49 ppm. The sulfate results indicate that sulfate exposure is negligible.

The tested samples were also found to have a minimum measured electrical resistivity of 14,784 Ohm-cm. The following correlation can generally be used between electrical resistivity and corrosion potential:

Elect. Resistivity (Ohm-cm)	Corrosion Potential
Less than 1,000	Severe
1,000-2,000	Corrosive
2,000-10,000	Moderate
greater than 10,000	Mild

On the basis of the laboratory testing, the samples are classified as having a mild corrosion potential for buried metals. This potential should be considered in the design and protection of underground metal utilities.

4.11 Pavement Design

The near surface soil at the subject site consists of a mixture of clay, silt and silty sand. The "R" values of the on site soils are anticipated to be on the order of 10 to 15. Based on an R-Value of 10, the following pavement sections are recommended for Traffic Index (TI) values of 5, 6, and 7:

Table 6: Traffic Index and Section Thickness

Traffic Index (TI)	Section Thickness (Feet) AC Over AB
5	0.25 AC/0.75 AB
6	0.30 AC/0.95 AB
7	0.35 AC/1.15 AB

Traffic Index values of 5 are recommended for car parking and non-truck driveways. Traffic index of 6 or higher may be used for truck areas or for the streets. A concrete pavement consisting of 6 inches of concrete over 6 inches of aggregate base is recommended to be used for trash enclosures and other areas that will be subjected to high wheel loads or abrasive wheel forces, i.e., where there is a tight turning radius. The pavement section for other TI's can be provided, if requested.

The upper 24 inches of subgrade supporting pavements should be compacted to at least 95 percent relative compaction (ASTM D1557-1990). Actual pavement section thickness is subject to verification based on the "R" values of on-site soils, which are expected to be tested during construction.

5.0 POST INVESTIGATION SERVICES

We recommend that final project plans and specifications should be reviewed by GDC to confirm that the full intent of the recommendations presented in this report have been properly applied to the design. During construction, all earthwork should be observed and tested by GDC, including site preparation, excavations, placement of compacted fill and backfill, and installation of drainage systems.

6.0 LIMITATIONS

This investigation was performed in accordance with generally accepted geotechnical engineering principles and practice. The professional engineering work and judgments presented in this report meet the standard of care of our profession at this time. No other warranty, expressed or implied, is made. This report has been prepared for Archstone-Smith, and their design consultants. It may not contain sufficient information for other parties or other purposes, and should not be used for other projects or other purposes without review and approval by GDC.

The recommendations for this project are, to a high degree, dependent upon proper quality control of grading and foundation construction. Consequently, the recommendations are made contingent on the opportunity of GDC to observe grading operations, subgrade/base preparation, and piles installation. If parties other than GDC are engaged to provide such services, they must be notified that they will be required to assume complete responsibility for the geotechnical phase of the project by concurring with the recommendations in this report or provide alternate recommendations as deemed appropriate

7.0 REFERENCES

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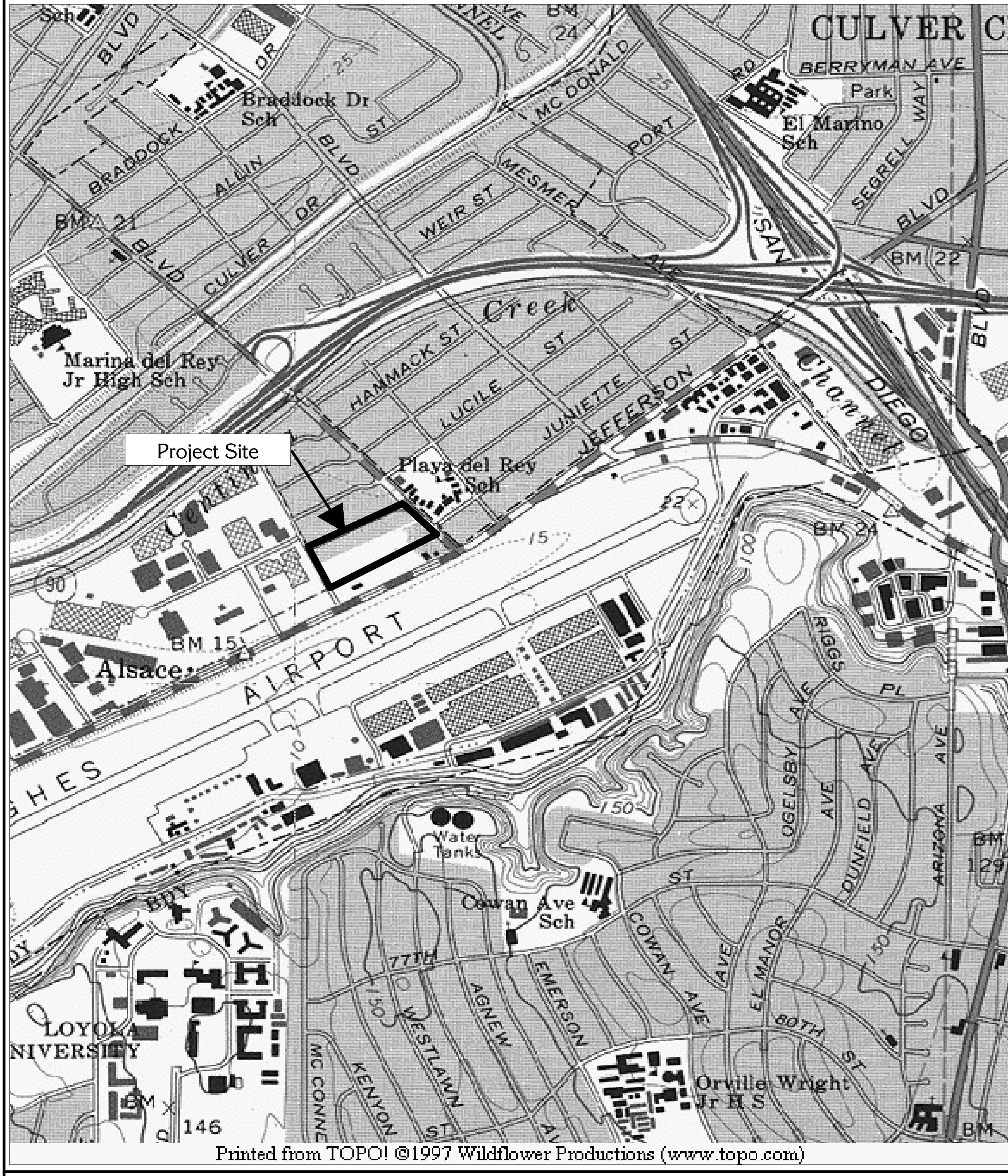
FIGURES



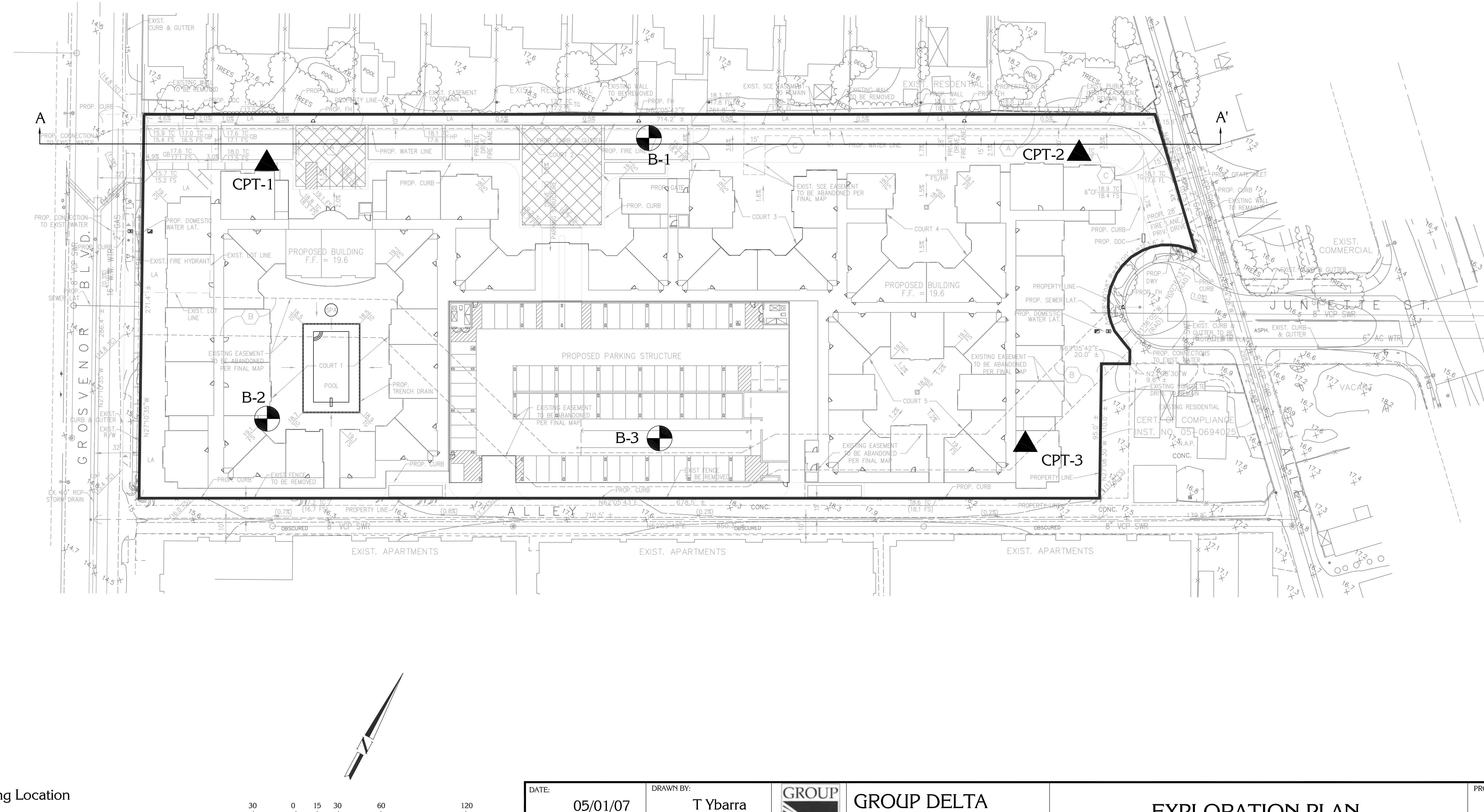
VICINITY MAP

Group Delta Consultants, Inc.

Project Number: L-746

Project Name: Residential Developement- Tract 33003, Lots 1 & 2 Figure 1

Date: 04/30/2007



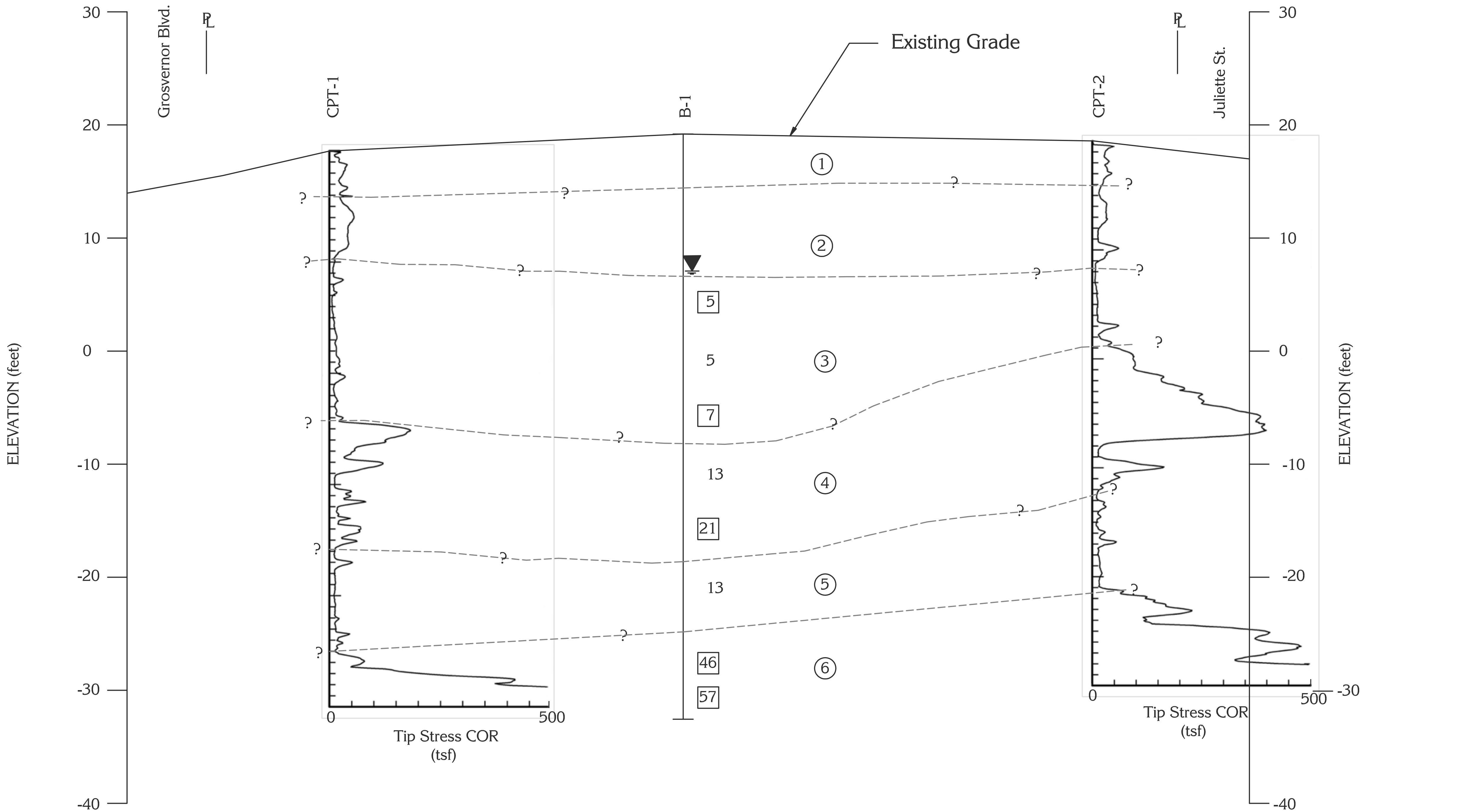
LEGEND

- Boring Location
- CPT Location

Reference: DRC (2007) , Exhibit Map For Tract Map No. 67206 " for Archstone Playa Del Mar.

DATE: 05/01/07	DRAWN BY: T Ybarra	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	PROJECT NUMBER: L-746
REVISION:	APPROVED BY: Y Liu	EXPLORATION PLAN	SCALE: As Shown
REVISION:		Archstone-Smith - Residential Development Tract 33003, Lots 1 & 2 - Los Angeles, CA	FIGURE NUMBER: 2

N:\PROJECTS\700-799\L-746 ARCHSTONE-SMITH GROSVENOR\DRAWINGS\L-746 FIG 2 EXPLORATION PLAN.DWG



Legend

- Groundwater
- 21 Standard Pentration N-Value
- 7 3 1/4" OD Sampler Driven with 140lb-18in. drop

Soil Layers

1. Compacted Fill (CL/SC/SM)
2. Native: Clay and Silty Sand (CL/SM/ML)
3. Highly Compressible Clay (CL/ML)
4. Silty Sand and Sandy Silt (SM/ML)
5. Clay (CL)
6. Dense Sand (SP)

CROSS SECTION A-A

Archstone-Smith
Residential Developement
Tract 33003, Lots 1 & 2
5550 Grosvenor Blvd. Los Angeles, CA

Group Delta Consultants, Inc.
GROUP DELTA CONSULTANTS
370 Amapola Ave.
Suite 212
Torrance, CA
Phone: (310) 320-5100
Fax: (310) 320-2118

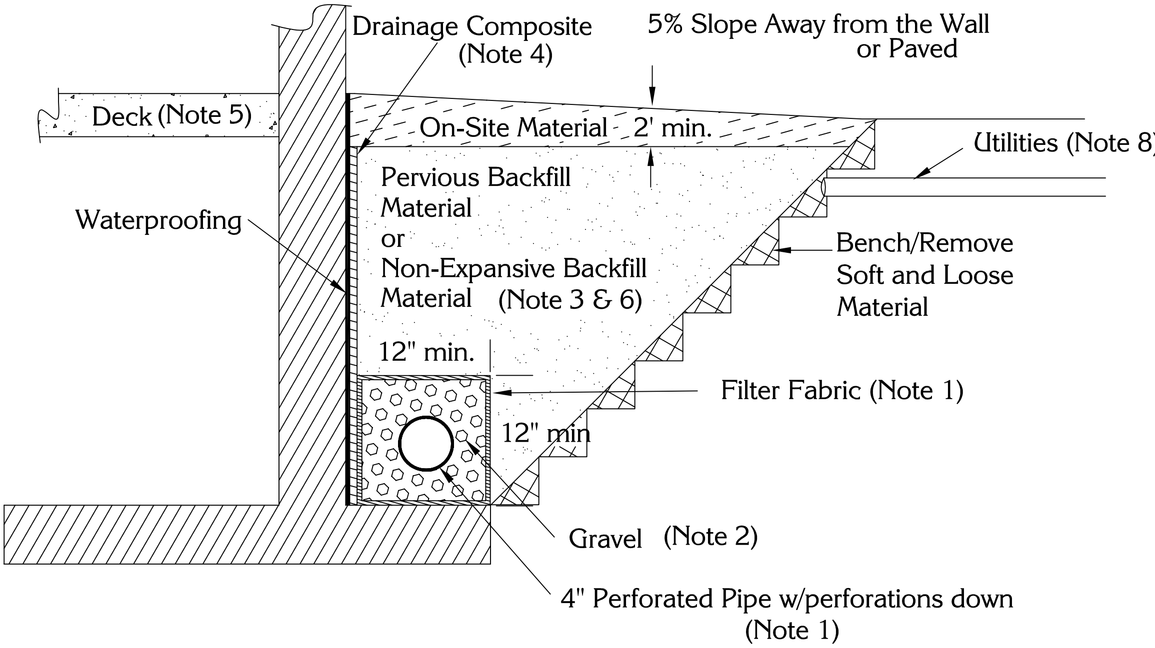
Drawn By:	T Ybarra
Approved By:	Y. Liu
Date:	04/30/07
Revised:	
Scale:	V: 1" = 10' H: As Shown
Project Number:	L-746
Figure Number:	3

Notes:

1. Refer to Figure 2 for location of cross section.
2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface conditions.
3. The cross section is based on geologic interpretation of conditions encountered at exploration locations. Acutal conditions may vary between explorations.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

N: PROJECT\600-699\L-746 Grosvenor and Jefferson\Frawings\L-746 Cross Section A-A.dwg



NOTES

1) Perforated pipe should be an ASTM standard Acrylonitrile Butadiene Styrene (ABS), Polyvinyl Chloride (PVC), or Polyethylene (PE) with a 0.25% slope for drainage and wrapped with a filter fabric (Mirafi 140 or equivalent).

2) Gravel - 3/8" or 3/4" gravel

3) If no drainage composite is used, Pervious Backfill material should be used above the gravel zone. Pervious Material should be meet Public Works Standard (Greenbook 2000, 3.0.0-3.5.2) as follows:

100% passing 3/4"
80-100% passing 3/8"
0-8% passing -100 sieve
0-3% passing -200 sieve

4) If a drainage composite is used, non expansive backfill material may be used above the gravel zone. Drainage Composite Material should be MiraDrain 6000 material or equivalent. Backfill should have an EI<30 and conform to Group Delta Grading and Backfill Recommendations.

5) If the wall is supported by the deck, no backfill shall be placed before the deck is constructed and a structural engineer's approval is given.

6) No heavy equipment or compaction equipment should be used above the perforated pipe, or within 8 feet of the wall. Only hand compaction equipment should be used above adjacent to the walls.

7) Utility Laterals - Remove loose material and hand compact backfill or use 2-sack sand/cement slurry.

BASEMENT WALL BACKFILL

Archstone Smith - Residential Development Tract 33003, Lots 1 & 2 - Los Angles, California			PROJECT NUMBER: L-746 DATE: 05/07/2007
SCALE: Not To Scale	DRAWN BY: T Ybarra	APPROVED BY: Y Liu	REVISED: 05/07/2007 FIGURE: 4

GROUP DELTA CONSULTANTS, INC.

APPENDIX A
FIELD EXPLORATION

APPENDIX A
FIELD EXPLORATION

The subsurface conditions at the site were investigated on 03/02/2006 and 03/03/2006. The exploration program included drilling 3 borings and performing 3 Cone Penetration Test (CPT) probes. The locations of explorations are shown on Figure 2. The borings were drilled using truck-mounted hollow-stem auger drilling equipment.

The borings and CPTs were advanced to a depth ranging from about 46 to 56.5 feet below the existing grades. The explorations were performed under the continuous technical supervision of our field engineer, who also maintained detailed logs of the soils encountered, classified the materials, and assisted in obtaining soil samples. Subsurface materials encountered in the borings were visually classified and logged in accordance with the Unified Soil Classification System (USCS). Boring logs are presented in Figures A-2 to A-4 and CPT logs are presented in Figures A-6 and A-8. A Legend for the boring logs is presented in Figure A-1. A Legend for CPT logs is presented in Figure A-5. Key for soil classification using Unified Soil Classification System (ASTM D-2487) is presented in Figure A-0.

Relatively undisturbed samples alternated with Standard Penetration Tests (SPT) samples were taken in the borings at depth intervals of 5 feet, or less. In addition, representative bulk samples were taken within the upper 5 feet. The locations of samples are indicated on the logs. The drive samples were obtained with a 3-inch O.D. split-barrel sampler lined with 1-inch high brass rings. The sampler was driven into the soil using a 140-pound hammer falling a distance of 30 inches. The number of blows required to drive the sampler 12 inches into the soil is recorded on the boring logs.

The Standard Penetration Tests (SPT) were conducted in accordance with ASTM D 1586, using a standard 2-inch outside diameter, 1.375-inch inside diameter, split-spoon sampler. The SPT sampler was driven into the soil using a 140-pound hammer free-falling 30 inches. The N-value blow counts are shown directly on the boring logs.

All samples were sealed to prevent moisture loss and returned to our laboratory for additional visual examination and laboratory testing. A discussion of the laboratory testing program, including test results, is provided in Appendix B.

The CPT probes were performed in general accordance to ASTM D3441-86, using a 30-ton truck-mounted electric cone penetrometer. A CPT sounding is performed by pushing a conical tipped steel probe with a cylindrical friction sleeve into soil while simultaneously recording the end bearing and side friction resistance. The conical tip had a 60-degree apex angle and a projected cross sectional area of 1.55 square inches and is advanced with a hydraulic ram. The cylindrical friction sleeve has a surface area of 23.25 square inches. Both the tip and sleeve have outside diameters of 1.4 inch.

As the probe is advanced, electronic instruments measure and record both the tip resistance and the frictional resistance on the sleeve. The tip and frictional resistance are then analyzed, using available correlations, to estimate soil classification, density, strength and compressibility of subsurface materials. Unlike soil borings, in which drive samples are generally taken every five feet, CPT soundings provide a continuous record of soil properties with depth.

The following are attached and complete this appendix:

Figure A-0	Key for Soil Classification
Figure A-1	Legend for Log of Test Borings
Figures A-2 through A-4	Log of Borings
Figure A-5	Legend for CPT Log
Figures A-6 and A-8	CPT Logs

KEY FOR SOIL CLASSIFICATION

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

PRIMARY DIVISIONS			*GROUP SYMBOL*	*SECONDARY DIVISIONS*
COARSE GRAINED SOILS (less than 50% fines passing the No. 200 Sieve)	GRAVEL (% GRAVEL > % SAND)	CLEAN GRAVEL (Less than 5% fines)	GW	Well-graded gravel, gravel with sand, little or no fines
			GP	Poorly-graded gravel, gravel with sand, little or no fines
		"DIRTY" GRAVEL (More than 12% fines)	GM	Silty gravel, silty gravel with sand, silty or non-plastic fines
			GC	Clayey gravel, clayey gravel with sand, clayey or plastic fines
	SAND (% SAND ≥ % GRAVEL)	CLEAN SAND (Less than 5% fines)	SW	Well-graded sand, sand with gravel, little or no fines
			SP	Poorly-graded sand, sand with gravel, little or no fines
		"DIRTY" SAND (More than 12% fines)	SM	Silty sand, silty sand with gravel, silty or non-plastic fines
			SC	Clayey sand, clayey sand with gravel, clayey or plastic fines
FINE GRAINED SOILS (50% or more fines passing the No. 200 Sieve)	SILTS AND CLAYS (Liquid Limit less than 50)		ML	Inorganic silt, sandy silt, gravelly silt, or clayey silt with low plasticity
			CL	Inorganic clay of low to medium plasticity, sandy clay, gravelly clay, silty clay, Lean Clay
			OL	Low to medium plasticity Silt or Clay with significant organic content (vegetative matter)
	SILTS AND CLAYS (Liquid Limit 50 or more)		MH	Inorganic elastic silt, sandy silt, gravelly silt, or clayey silt of medium to high plasticity
			CH	Inorganic clay of high plasticity, Fat Clay
			OH	Medium to high plasticity Silt or Clay with significant organic content (vegetative matter)
HIGHLY ORGANIC SOILS			PT	Peat or other highly organic soils

Note: Dual symbols are used for coarse grained soils with 5 to 12% fines (ex: SP-SM), and for soils with Atterberg Limits falling in the CL-ML band in the Plasticity Chart. Borderline classifications between groups may be indicated by two symbols separated by a slash (ex: CL/CH, SW/GW).

CONSISTENCY CLASSIFICATION

COARSE GRAINED SOILS		***FINE GRAINED SOILS***		
Blowcount SPT[1] (CAL)[2]	Consistency	Blowcount[3] SPT[1] (CAL)[2]	Consistency	Undrained Shear Strenth[3], S_u (ksf)
0-4 (0-6)	Very Loose	<2 (<3)	Very Soft	< 0.25
		2-4 (3-6)	Soft	0.25 -0.50
5-10 (7-15)	Loose	5-8 (7-12)	Firm	0.50 - 1.0
11-30 (16-45)	Med. Dense	9-15 (13-22)	Stiff	1.0 - 2
31-50 (46-75)	Dense	16-30 (23-45)	Very Stiff	2.0 - 4.0
>50 (>75)	Very Dense	>31 (>45)	Hard	>4.0

MOISTURE CLASSIFICATION

DRY - Absence of moisture, dusty, dry to the touch
MOIST- Damp but no visible water
WET- Visible free water, usually soil is below water table

CONSISTENCY NOTES:

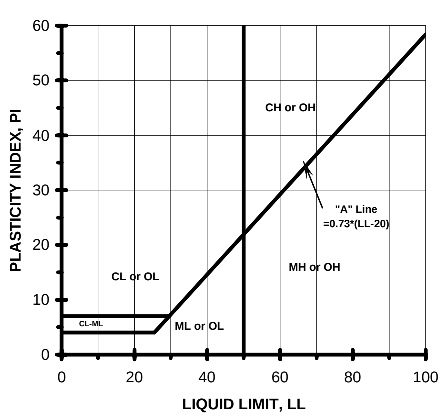
1. Number of blows of a 140-lb. hammer falling 30-inches to drive a 2-inch OD (1.375-inch ID) **SPT Sampler** [ASTM D-1585] the final 12-inches of driving
2. Number of blows of a 140-lb. hammer falling 30-inches to drive a 3-inch OD (2.42-inch ID) **California Ring Sampler** the final 12-inches of driving.
3. Undrained shear strength of cohesive soils predicted from field blowcounts is generally unreliable. Where possible, consistency should be based on S_u data from pocket penetrometer, torvane, or laboratory testing.

CLASSIFICATION CRITERIA BASED ON LABORATORY TESTS

Grain Size Classification

CLAY AND SILT		SAND			GRAVEL		COBBLES		BOULDERS	
		Fine	Medium	Coarse	Fine	Coarse				
US Std Sieve	No. 200	No. 40	No. 10	No. 4	3/4"	3"		12"		
Grain Size (mm)	0.075	0.425	2	4.75	19.1	76.2		304.8		

PLASTICITY CHART



Classification of earth materials shown on the logs is based on field inspection and should not be construed to imply laboratory analysis unless so stated.

Granular Soil Gradation Parameters

Coefficient of Uniformity: $C_u = D_{60} / D_{10}$

Coefficient of Curvature: $C_C = (D_{30})^2 / (D_{10} \times D_{60})$

D_{10}= 10% of the soil is finer than this diameter

D_{30}= 30% of the soil is finer than this diameter

D_{30}= 60% of the soil is finer than this diameter

Group Symbol	Gradation or Plasticity Requirement
SW	C_u>6 and C_c between 1 and 3
GW	C_u>4 and C_c between 1 and 3
GP or SP	Clean gravel or sand not meeting requirement for GW or SW
GM or SM	Plots below "A" Line on Plasticity Chart or PI < 4
GC or SC	Plots above "A" Line on Plasticity Chart and PI > 7

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Archstone-Smith, Residential Devlop.	L-746	LEGEND

SITE LOCATION	START	FINISH	SHEET NO.
Los Angeles, CA	3/2/2006	3/2/2006	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	E. Dela Fuente	Y. Liu

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/ELEV. GROUND WATER (ft)
Mayhew 1000	5"	30		▼ / na

SAMPLING METHOD	NOTES
Hammer: 140 lbs., Drop: 30 in.	

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / FOOT)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												BULK, CAL, SPT - Refers to the sampling method as described below
5			B-1									BULK - Refers to collecting sample by method of placing disturbed soil cuttings into a large plastic bag
10			R-2									CAL (CALIFORNIA MODIFIED) - A 3.0" o.d. split tube sampler lined with 2.42" i.d. metal sample rings generally driven into the soil by a 140 lbs. hammer free falling 30 inch
15			S-3									SPT (STANDARD PENETRATION TEST) - A 2.0" o.d. split spoon sampler with a 1.375" i.d. driven into the soil with a 140# hammer free falling a height of 30"
20												ABBREVIATIONS FOR OTHER TESTS:
25												

ABBREVIATIONS FOR OTHER TESTS:

AL = Atterberg Limits	GS = Grain Size Analyses
CN = Consolidation	PP = Pocket Pen
CO = Corrosivity	RV = R-Value
CP = Laboratory Compaction	WA = Wash on #200 Sieve
DS = Direct Shear	EI = Expansion Index
LL = Liquid Limit	TV = Torvane

GDC_LOG_BORING_1A_FOOT L-746.GPJ GDC_WLOG.GDT 5/14/07

GROUP DELTA CONSULTANTS, INC.
370 Amapola Ave., Suite 212
Torrance, CA 90501

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-1

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Archstone-Smith, Residential Devlop.	L-746	B-1

SITE LOCATION	START	FINISH	SHEET NO.
Los Angeles, CA	3/2/2006	3/2/2006	1 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	E. Dela Fuente	Y. Liu

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5"	51.5	19	▼ 10.0 / *9.0*

SAMPLING METHOD	NOTES
Hammer: 140 lbs., Drop: 30 in.	

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / FOOT)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												3" of Concrete
												3" of Aggregate Base
												Fill: **Clay/Sandy Clay (CL)** stiff, dry to moist, dark brown
	15		R-1	19	117.34	15.6						
5												**Native:** **Sand Silt/Silty Sand (ML/SM)** medium dense, trace of clay
			R-2	17	102	19.3						
			R-3	13	88	34.8						
	10											
10			R-4	19	94	30.0					▼	
												Sandy Clay (CL) firm, moist, gray, trace of roots
	5											
15			S-5	5		41.1	PP			0.75		
	0											
20			R-6	5	91	28.3	AL CN PP		47 15 32	0.75		
	-5											
25			S-7	7		31.1	PP WA	56		1.0		
												Sandy Clay/ Clayey Sand (CL/SC) stiff, moist, to wet, gray
	-10											

GDC_LOG_BORING_1A_FOOT L-746.GPJ GDC_WLOG.GDT 5/14/07

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Archstone-Smith, Residential Devlop.	L-746	**B-1**

SITE LOCATION	START	FINISH	SHEET NO.
Los Angeles, CA	3/2/2006	3/2/2006	2 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	E. Dela Fuente	Y. Liu

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5"	51.5	19	▼ 10.0 / *9.0*

SAMPLING METHOD	NOTES
Hammer: 140 lbs., Drop: 30 in.	

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / FOOT)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-8	13	101	26.4	AL CN PP			1.0		
												Sand (SP) medium dense, wet, gray, fine to medium grained, with gravel
	-15											
35			S-9	21		32.3	WA	11				
												Clay (CH) stiff, moist, gray, trace of roots
	-20											
40			R-10	13	88	34.5	CN PP		55 16 39	1.25		
	-25											
45			S-11	46	9.9	18.6						
												Sand (SP) dense, wet, gray, fine to medium grained
	-30											
50			S-12	57								**Sand (SP)** very dense, wet, gray, fine to medium grained, trace of fine gravel
												Bottom of boring B-1 @ 51.5 feet. Groundwater encountered @ 10.5 feet. Boring backfilled with cement grout.
	-35											
55												
	-40											

GDC_LOG_BORING_1A_FOOT L-746.GPJ GDC_WLOG.GDT 5/14/07

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Archstone-Smith, Residential Devlop.	L-746	**B-2**

SITE LOCATION	START	FINISH	SHEET NO.
Los Angeles, CA	3/2/2006	3/2/2006	1 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	E. Dela Fuente	Y. Liu

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5"	56.5	22	▼ / *na*

SAMPLING METHOD	NOTES
Hammer: 140 lbs., Drop: 30 in.	

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / FOOT)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												Fill: **Sandy Clay (CL)** stiff, moist, brown
	20											
			R-1	19	118	15.1	PP			1.5		
5												
			R-2	18								
	15											
			R-3	8	107	19.9						**Sandy Clay (CL)** firm
			R-4	17	96	22.3	DS					**Native:** **Silty Sand (SM)** medium dense, moist to wet, brown, trace of mica
10												
			S-5	11		41.4						
	10											
												Sandy Silt/Silty Sand (ML/SM) loose, wet, gray
15												
			R-6	7	73 91	51.2 27.3	WA WA	89 44				
	5											
												Sandy Clay (CL) very soft, wet, greenish gray, trace of root organics
20												
			S-6	2		34.9						
	0											
												Clay (CH) soft, moist, dark greenish gray, trace of seashells
25												
			R-7	3	64	60.1	AL CP DS PP		68 21 47	0.5		
	-5											

GDC_LOG_BORING_1A_FOOT L-746.GPJ GDC_WLOG.GDT 5/14/07

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Archstone-Smith, Residential Devlop.	L-746	B-2

SITE LOCATION	START	FINISH	SHEET NO.
Los Angeles, CA	3/2/2006	3/2/2006	2 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	E. Dela Fuente	Y. Liu

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5"	56.5	22	▼ / *na*

SAMPLING METHOD	NOTES
Hammer: 140 lbs., Drop: 30 in.	

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / FOOT)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-8	4		73.3	PP			<0.5		**Clay (CH)** soft, moist, dark greenish gray, trace of seashells
	-10											
												Clayey Sand (SC) medium dense, with gravel
35			R-9	19								
	-15		R-10	34								
			R-11	9	52		PP			<0.5		**Clay (CL)** firm, moist, dark greenish gray, trace of root organics
40			S-12	6		42.1	PP			0.75		
	-20											
45			R-13	13	78	48.2	PP			1.0		**Clay (CL)** stiff, moist, dark gray, trace of fine to medium sand, trace of root organics
	-25											
												Sand (SP) very dense, wet, gray, trace of fine gravel, fine to medium grained, with gravel
50			S-14	73		17.2						
	-30											
55			S-15	49		11.1						**Sand (SP)** dense, wet, gray, trace of fine gravel, medium to coarse grained, with gravel
	-35											Bottom of boring B-2 @ 56.5 feet. Groundwater encountered @ 13 feet. Boring backfilled with cement grout.

GROUP DELTA CONSULTANTS, INC.
370 Amapola Ave., Suite 212
Torrance, CA 90501

FIGURE A-3 b

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Archstone-Smith, Residential Devlop.	L-746	B-3

SITE LOCATION	START	FINISH	SHEET NO.
Los Angeles, CA	3/2/2006	3/2/2006	1 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	E. Dela Fuente	Y. Liu

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5"	56.5	18	▼ / *na*

SAMPLING METHOD	NOTES
Hammer: 140 lbs., Drop: 30 in.	

DEPTH (feet)	ELEVATION (feet)	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / FOOT)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	DESCRIPTION AND CLASSIFICATION
										Fill: **Clayey Sand (SC)** loose, moist, brown, trace of gravel,
	15	B-1			13.4					
		R-2	14	119	12.7					
5		R-3	13	88	32.5					**Silt (ML)** stiff, moist, light greenish brown, trace of mica and roots
	10	R-4	19	96 88	24.8 37.4	PP			0.75	**Native:** **Clay (CL)** firm, moist, greenish gray, trace of roots
10		R-5	8	91 90	30.1 31.8					**Silty Sand (SM)** loose, moist to wet, greenish brown to brown, trace of mica
	5									**Clay (CL)** firm, moist, dark greenish gray
15		S-6	19		29.9	PP			0.75	
	0									**Clayey Sand (SC)** medium dense, moist to wet, gray, fine grained
20		R-7	16	103	23.2					
	-5									**Silty Sand (SM)** medium dense, wet, dark gray, with gravel
25		S-8	19		12.6	WA	39			- Per driller, **Gravel (GP)**@ 26 ft.
	-10									

GDC_LOG_BORING_1A_FOOT L-746.GPJ GDC_WLOG.GDT 5/14/07

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-4 a

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Archstone-Smith, Residential Devlop.	L-746	B-3

SITE LOCATION	START	FINISH	SHEET NO.
Los Angeles, CA	3/2/2006	3/2/2006	2 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	E. Dela Fuente	Y. Liu

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5"	56.5	18	▼ / *na*

SAMPLING METHOD	NOTES
Hammer: 140 lbs., Drop: 30 in.	

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / FOOT)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-9	59	107	23.1						**Sand (SP)** dense, wet, gray, fine grained
	-15											**Sand/Clayey Sand (SP/SC)** medium dense, wet, gray, fine grained
35			S-10	15		31.8	WA	52				
	-20											**Clay (CL)** stiff, moist, dark gray
40			R-11	17	94	28.8	AL CN		41 13 28			
	-25											**Sand (SP)** medium dense, wet, gray, fine grained, trace of wood organics
45			S-12	27		27.2						
	-30											- Per driller, **Gravel (GP)** @ 47 ft.
50			S-13	59		17.0						**Sand (SP)** very dense, wet, gray, fine to coarse grained
	-35											
55			S-14	48		14.1						**Sand (SP)** very dense, wet, gray, trace of fine gravel
	-40											Bottom of boring B-3 @ 56.5 feet. Groundwater encountered @ 10 feet. Boring backfilled with cemented grout.

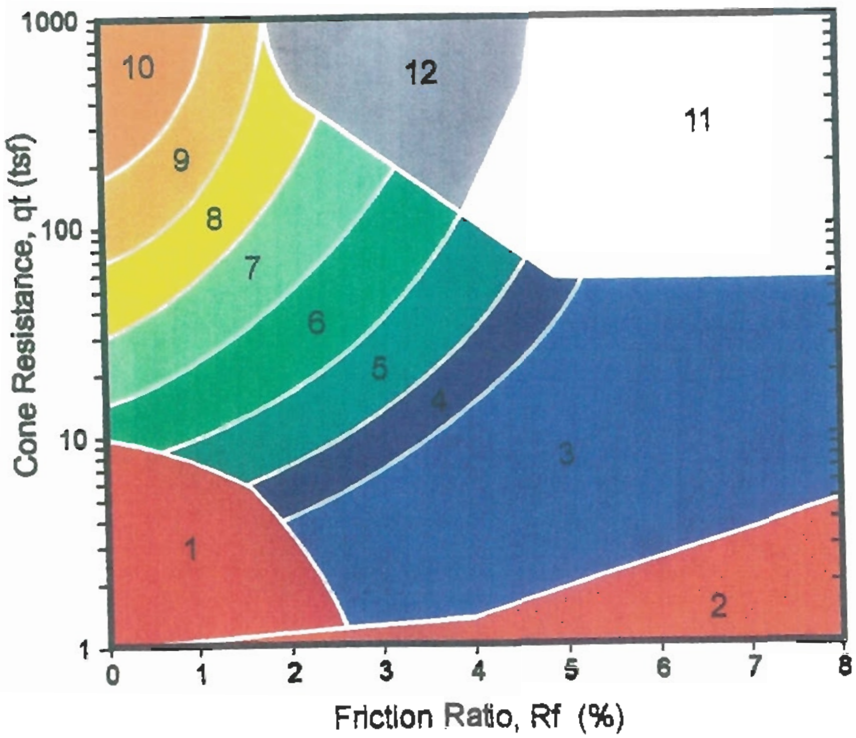
GROUP DELTA CONSULTANTS, INC.
370 Amapola Ave., Suite 212
Torrance, CA 90501

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-4 b

CPT Classification Chart

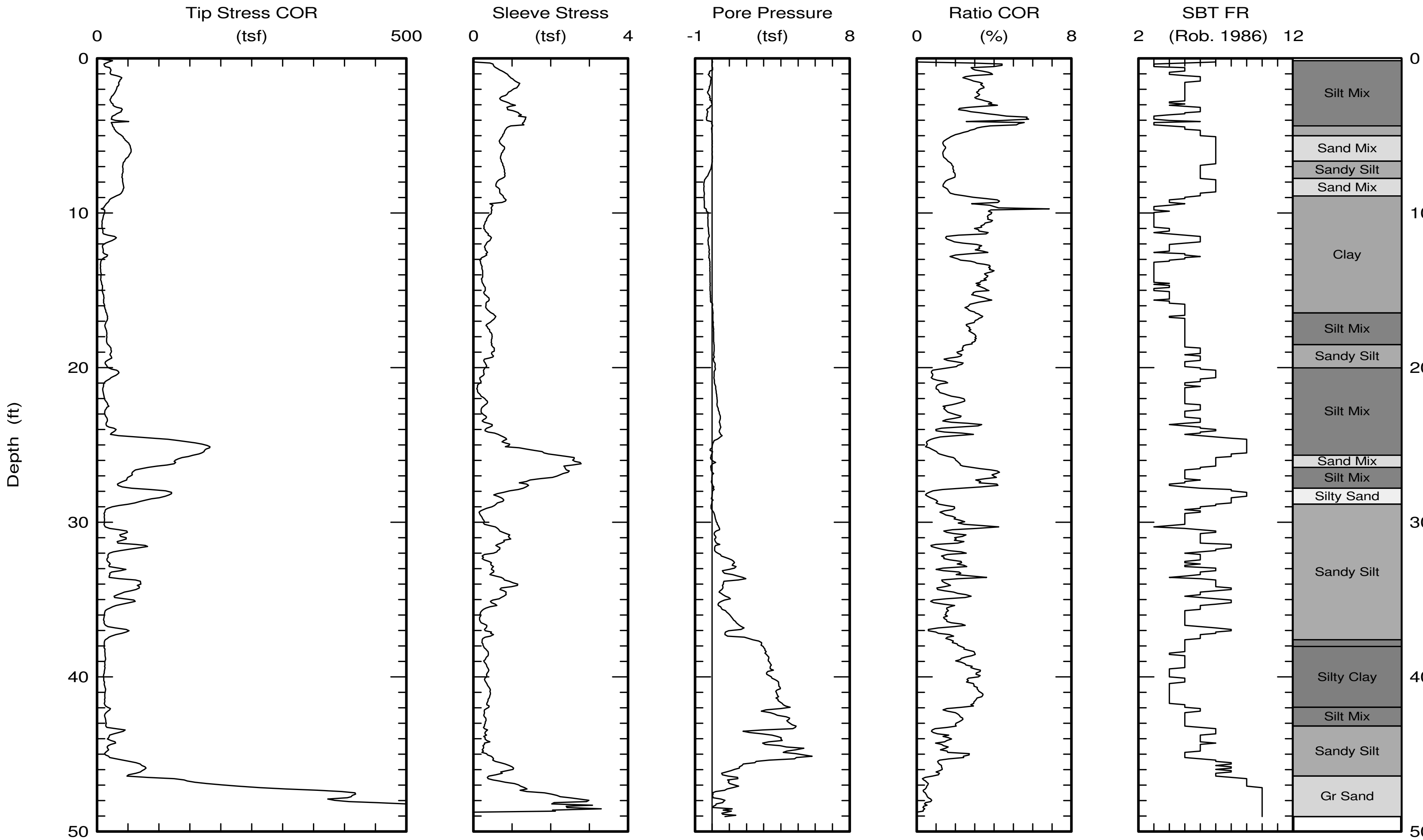
(after Robertson and Campanella, 1988)



Zone	q_t / N	Soil Behavior Type	UCSCS
1	2	sensitive fine grained	OL-OH
2	1	organic material	Pt-OH
3	1	clay	CH
4	1.5	silty clay to clay	CL-CH
5	2	clayey silt to silty clay	ML-CL
6	2.5	sandy silt to clayey silt	MH-ML
7	3	silty sand to sandy silt	SM-ML
8	4	sand to silty sand	SP-SM
9	5	sand	SP
10	6	gravelly sand to sand	SW-SP
11	1	very stiff fine grained *	CL-MH
12	2	sand to clayey sand *	SP-SC

* overconsolidated or cemented

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 skehoe@msn.com	CPT Data 30 ton rig	Date: 02/Mar/2006 Test ID: C-1 Project: PlayaVista
	Client: Group Delta Job Site: SPH Residential	



Maximum depth: 49.04 (ft)

Output file from CPTINT - Version 5.2
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INPUT FILE: C:\temp\C-1.CSV

Developed by: UBC In-Situ Testing FREEWARE
Program: Piezocone Interpretation
Web Site: www.civil.ubc.ca/home/in-situ

Interpreter Name:

SUMMARY SHEET

'a' for calculating Qt: 0.750
Value for Water Table (in m): 2.700
Valid Zone Classification based on: Rf
Missing unit weight to start depth: 18.860
Method for calculating Su: Nkt
Value of the constant Nkt: 15.000
Define Zone 6 for Sand Parameters? YES
"Vertical Flow Gradient, i (- up): +0.000"
CPT to SPT N60 Conversion: Robertson & Campanella

Soil Behavior Type Zone Numbers
For Rf Zone & Bq Zone Classification

Zone #1=Sensitive fine grained Zone #7 =Sand with some Silt
Zone #2=Organic material Zone #8 =Fine sand
Zone #3=Clay Zone #9 =Sand
Zone #4=Silty clay Zone #10=Gravelly sand
Zone #5=Clayey silt Zone #11=Very stiff fine grained *

Zone #6=Silty sand Zone #12=Sand to clayey sand *

* Overconsolidated and/or cemented

NOTE:

"For soil classification, Rf values > 8 are assumed to be 8."

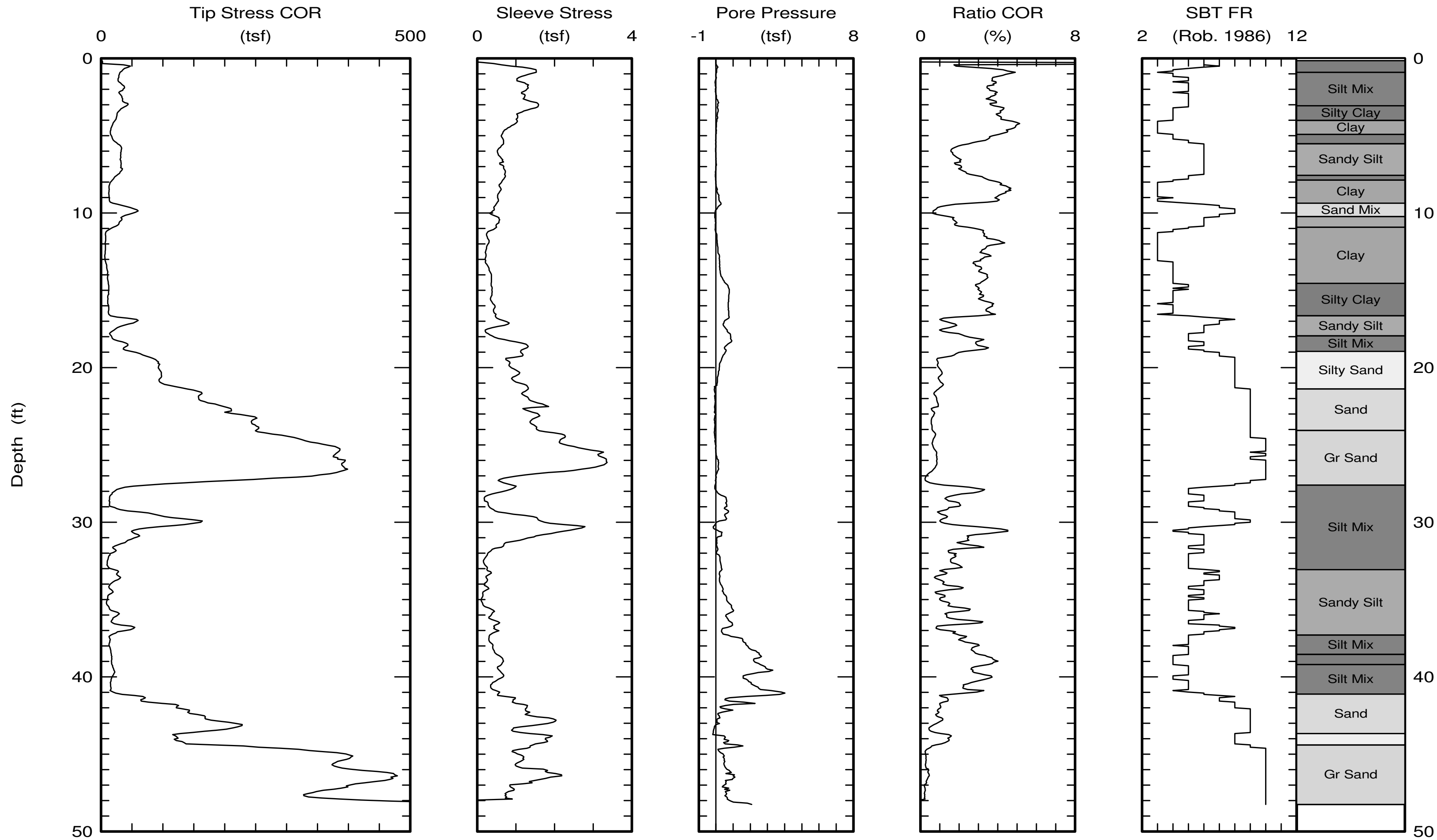
(Note: 9E9 means Out Of Range)

INPUT FILE: C:\temp\C-1.CSV |---

Depth	Qc(avg)	Fs(avg)	Rf	Rf Zone	Spt N	Spt N1	Su
(feet)	(TSF)	(TSF)	(%)	(zone #)	(blow/ft)	(blow/ft)	(TSF)
0.5	17.408	0.483	2.776	5	8	12	1.158
1.5	34.436	1.061	3.085	5	16	24	2.288
2.5	25.393	0.843	3.321	5	12	18	1.682
3.5	31.457	1.116	3.554	5	15	23	2.078
4.5	30.621	1.004	3.28	5	15	23	2.022
5.5	49.143	0.735	1.496	7	16	24	9.00E+09
6.5	47.909	0.729	1.522	7	15	23	9.00E+09
7.5	41.533	0.773	1.861	6	16	24	9.00E+09
8.5	39.517	0.668	1.693	7	13	20	9.00E+09
9.5	14.733	0.583	3.984	3	14	21	0.937
10.5	9.3	0.339	3.668	3	9	13	0.573
11.5	17.725	0.375	2.121	5	8	12	1.132
12.5	11.217	0.302	2.699	4	7	10	0.694
13.5	6.2	0.214	3.476	3	6	8	0.356
14.5	7.507	0.255	3.408	3	7	9	0.439
15.5	10.6	0.339	3.203	4	7	9	0.642
16.5	15.186	0.461	3.032	5	7	9	0.946
17.5	14.707	0.416	2.827	5	7	8	0.91
18.5	18.786	0.496	2.636	5	9	10	1.179
19.5	18.985	0.386	2.032	6	7	8	9.00E+09
20.5	24.677	0.235	0.95	7	8	9	9.00E+09
21.5	10.425	0.141	1.346	5	5	5	0.611

22.5	14.723		0.273	1.848		5		7	7	0.894
23.5	16.617		0.347	2.074		5		8	8	1.019
24.5	80.254		0.666	0.83		8		19	19	9.00E+09
25.5	161.531	1.833	1.135		8		39	38	9.00E+09	
26.5	86.333		2.477	2.87		6		33	32	9.00E+09
27.5	53.392		1.46	2.735		6		20	19	9.00E+09
28.5	86.745		0.668	0.77		8		21	19	9.00E+09
29.5	13.75		0.25	1.817		5		7	6	0.797
30.5	29.236		0.634	2.164		6		11	10	9.00E+09
31.5	50.717		0.722	1.422		7		16	14	9.00E+09
32.5	19.858		0.383	1.913		6		8	7	9.00E+09
33.5	38.845		0.661	1.693		7		12	10	9.00E+09
34.5	50.658		0.85	1.674		7		16	13	9.00E+09
35.5	29.808		0.364	1.218		7		10	8	9.00E+09
36.5	16.927		0.241	1.401		6		7	6	9.00E+09
37.5	23.858		0.327	1.353		6		9	7	9.00E+09
38.5	12.408		0.333	2.561		5		6	5	0.712
39.5	11.536		0.355	2.904		4		8	6	0.654
40.5	11.525		0.362	2.961		4		8	6	0.652
41.5	12.325		0.398	3.041		4		8	6	0.705
42.5	14.591		0.303	1.973		5		7	5	0.851
43.5	24.392		0.305	1.215		6		10	7	9.00E+09
44.5	18.792		0.291	1.485		6		8	6	9.00E+09
45.5	50.95		0.703	1.364		7		16	11	9.00E+09
46.5	111.158	0.691	0.62		9		21	14	9.00E+09	
47.5	364.225	1.918	0.527		10		58	39	9.00E+09	
48.5	575.754	1.725	0.3		10		92	61	9.00E+09	

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 skehoe@msn.com	CPT Data 30 ton rig	Date: 02/Mar/2006 Test ID: C-2 Project: PlayaVista
	Client: Group Delta Job Site: SPH Residential	



Maximum depth: 48.26 (ft)

Test ID: C-2
File: Z02M0605C.ECP

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"     Program: Piezocone Interpretation
"    Web Site: www.civil.ubc.ca/home/in-situ
"
"Interpreter Name:
"
"
"SUMMARY SHEET
"-------------
"'a' for calculating Qt:                 0.750
"Value for Water Table (in m):           2.700
"Valid Zone Classification based on:     Rf
"Missing unit weight to start depth:     18.860
"Method for calculating Su:              Nkt
"Value of the constant Nkt:              15.000
"Define Zone 6 for Sand Parameters?      YES
"Vertical Flow Gradient, i (- up):       +0.000
"CPT to SPT N60 Conversion:              Robertson & Campanella
"
"Soil Behavior Type Zone Numbers
"For Rf Zone & Bq Zone Classification
"-----------------------------------
"Zone #1=Sensitive fine grained     Zone #7 =Sand with some Silt
"Zone #2=Organic material           Zone #8 =Fine sand
"Zone #3=Clay                       Zone #9 =Sand
"Zone #4=Silty clay                 Zone #10=Gravelly sand
"Zone #5=Clayey silt                Zone #11=Very stiff fine grained *
"Zone #6=Silty sand                 Zone #12=Sand to clayey sand *
"   * Overconsolidated and/or cemented
"
"NOTE:
"-----
"For soil classification, Rf values > 8 are assumed to be 8.
"
"( Note: 9E9 means Out Of Range )
"
  INPUT FILE: C:\temp\C-2.CSV  |-------------------------------------------------
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" Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	25.350	0.873	3.444	5	12	18	1.688
1.500	31.860	1.203	3.777	5	15	23	2.118
2.500	34.843	1.303	3.738	5	17	26	2.313
3.500	29.507	1.216	4.119	4	19	29	1.954
4.500	17.793	0.835	4.693	3	17	26	1.167
5.500	25.850	0.627	2.427	6	10	15	9E9
6.500	32.136	0.605	1.883	6	12	18	9E9
7.500	26.746	0.702	2.627	6	10	15	9E9
8.500	13.385	0.581	4.337	3	13	20	0.857
9.500	33.493	0.477	1.424	7	11	17	9E9
10.500	32.033	0.497	1.553	6	12	18	9E9
11.500	8.285	0.291	3.506	3	8	11	0.505
12.500	6.815	0.234	3.420	3	7	10	0.404
13.500	9.085	0.278	3.052	4	6	8	0.553
14.500	11.615	0.371	3.159	4	7	9	0.723
15.500	11.438	0.378	3.265	4	7	9	0.709
16.500	23.062	0.483	2.082	6	9	11	9E9
17.500	28.500	0.458	1.599	6	11	13	9E9
18.500	34.369	1.025	2.972	5	17	19	2.224
19.500	82.285	0.930	1.129	8	20	22	9E9
20.500	95.900	0.985	1.027	8	23	25	9E9
21.500	140.693	1.246	0.886	9	27	28	9E9
22.500	191.123	1.477	0.773	9	37	38	9E9
23.500	246.192	1.483	0.602	9	47	47	9E9
24.500	302.014	2.063	0.683	9	58	57	9E9
25.500	381.621	3.014	0.790	10	61	58	9E9
26.500	386.638	2.653	0.686	10	62	58	9E9
27.500	146.521	0.796	0.544	9	28	26	9E9
28.500	15.150	0.299	1.959	5	7	6	0.898

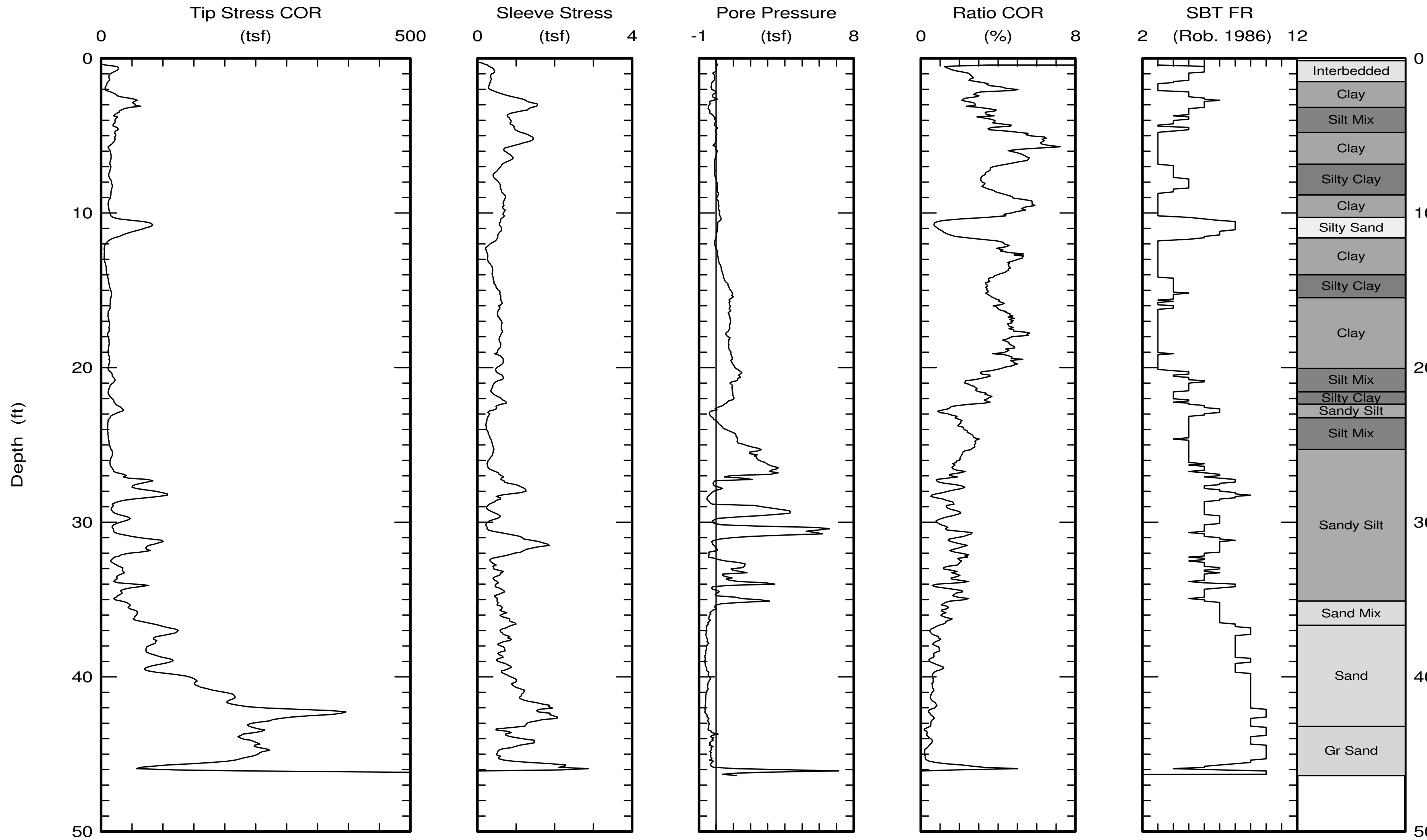
29.500	84.785	0.982	1.157	8	20	18	9E9
30.500	84.614	2.129	2.515	6	32	27	9E9
31.500	31.236	0.701	2.246	6	12	10	9E9
32.500	11.871	0.214	1.795	5	6	5	0.659
33.500	25.615	0.272	1.059	6	10	8	9E9
34.500	14.150	0.186	1.305	6	5	4	9E9
35.500	15.693	0.264	1.667	6	6	5	9E9
36.500	30.362	0.438	1.438	6	12	9	9E9
37.500	17.514	0.368	2.073	5	8	6	1.028
38.500	15.893	0.522	3.196	5	8	6	0.930
39.500	19.238	0.609	3.088	5	9	7	1.152
40.500	15.893	0.459	2.810	5	8	6	0.923
41.499	76.223	0.914	1.194	8	18	13	9E9
42.499	159.179	1.551	0.974	9	31	22	9E9
43.499	173.436	1.389	0.801	9	33	23	9E9
44.499	242.386	1.359	0.560	9	46	31	9E9
45.499	390.286	1.157	0.296	10	62	42	9E9
46.499	450.807	1.670	0.370	10	72	48	9E9
47.499	364.271	0.764	0.210	10	58	38	9E9
48.499	613.050	0.000	0.000	10	9E9	9E9	9E9

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
skehoe@msn.com

CPT Data
30 ton rig

Date: 02/Mar/2006
Test ID: C-3
Project: PlayaVista

Client: Group Delta
Job Site: SPH Residential



Maximum depth: 46.39 (ft)

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"     Program: Piezocone Interpretation
"    Web Site: www.civil.ubc.ca/home/in-situ
"
"Interpreter Name:
"
"
"SUMMARY SHEET
"-------------
"'a' for calculating Qt:                 0.750
"Value for Water Table (in m):           2.700
"Valid Zone Classification based on:     Rf
"Missing unit weight to start depth:     18.860
"Method for calculating Su:              Nkt
"Value of the constant Nkt:              15.000
"Define Zone 6 for Sand Parameters?      YES
"Vertical Flow Gradient, i (- up):       +0.000
"CPT to SPT N60 Conversion:              Robertson & Campanella
"
"Soil Behavior Type Zone Numbers
"For Rf Zone & Bq Zone Classification
"-----------------------------------
"Zone #1=Sensitive fine grained     Zone #7 =Sand with some Silt
"Zone #2=Organic material           Zone #8 =Fine sand
"Zone #3=Clay                       Zone #9 =Sand
"Zone #4=Silty clay                 Zone #10=Gravelly sand
"Zone #5=Clayey silt                Zone #11=Very stiff fine grained *
"Zone #6=Silty sand                 Zone #12=Sand to clayey sand *
"   * Overconsolidated and/or cemented
"
"NOTE:
"-----
"For soil classification, Rf values > 8 are assumed to be 8.
"
"( Note: 9E9 means Out Of Range )
"
  INPUT FILE: C:\temp\C-3.CSV  |-----------------------------------------------
```

" Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	13.762	0.258	1.878	5	7	11	0.915
1.500	11.154	0.331	2.976	4	7	11	0.735
2.500	34.708	0.915	2.639	6	13	20	9E9
3.500	33.977	1.087	3.205	5	16	24	2.247
4.500	23.262	0.992	4.265	4	15	23	1.531
5.500	18.223	1.118	6.136	3	17	26	1.192
6.500	15.592	0.793	5.091	3	15	23	1.012
7.500	14.617	0.493	3.379	4	9	14	0.942
8.500	16.940	0.633	3.735	4	11	17	1.095
9.500	12.740	0.688	5.388	3	12	18	0.812
10.500	50.717	0.621	1.223	7	16	24	9E9
11.500	35.973	0.538	1.496	7	11	16	9E9
12.500	5.531	0.260	4.688	3	5	7	0.319
13.500	7.815	0.355	4.520	3	8	11	0.468
14.500	12.529	0.444	3.508	4	8	10	0.784
15.500	15.785	0.605	3.792	4	10	13	1.000
16.500	12.579	0.556	4.368	3	12	15	0.781
17.500	12.685	0.628	4.895	3	12	14	0.784
18.500	12.400	0.573	4.567	3	12	14	0.761
19.500	12.793	0.601	4.634	3	12	13	0.785
20.500	17.623	0.563	3.151	5	9	10	1.108
21.500	13.921	0.419	2.972	5	7	7	0.853
22.500	26.571	0.529	1.989	6	10	10	9E9
23.500	12.645	0.247	1.957	5	6	6	0.747
24.500	11.733	0.321	2.689	5	6	6	0.696
25.500	16.317	0.387	2.308	5	8	8	1.013
26.500	20.650	0.372	1.751	6	8	8	9E9
27.500	62.533	0.923	1.473	7	20	19	9E9
28.500	59.791	0.561	0.938	8	14	13	9E9

29.500	28.758	0.406	1.389	6	11	10	9E9
30.500	25.458	0.462	1.768	6	10	9	9E9
31.500	80.225	1.444	1.801	7	26	22	9E9
32.500	25.933	0.512	1.967	6	10	8	9E9
33.500	29.158	0.519	1.767	6	11	9	9E9
34.500	40.033	0.549	1.368	7	13	11	9E9
35.500	46.267	0.594	1.281	7	15	12	9E9
36.500	77.300	0.793	1.026	8	18	14	9E9
37.500	97.115	0.692	0.714	8	23	18	9E9
38.500	88.525	0.615	0.696	8	21	16	9E9
39.500	94.767	0.739	0.781	8	23	17	9E9
40.500	160.650	1.013	0.631	9	31	23	9E9
41.499	213.791	1.374	0.643	9	41	30	9E9
42.499	321.525	1.755	0.546	10	51	36	9E9
43.499	241.250	0.890	0.369	10	39	27	9E9
44.499	253.615	0.972	0.383	10	40	27	9E9
45.499	167.675	1.382	0.825	9	32	22	9E9
46.499	581.783	0.363	0.062	10	93	62	9E9

APPENDIX B
LABORATORY TESTING

APPENDIX B
LABORATORY TESTING

B.1 General

Laboratory testing was performed to aid in the classification of soils encountered in the borings and to evaluate their physical properties and engineering characteristics. A description of the laboratory testing program is provided below. The laboratory testing is supplemented by the results of Standard Penetration Test (SPT) sampling conducted in the borings and the results of the CPT probes, which provide additional means to evaluate in situ soil properties such as density, shear strength and compressibility.

B-2 Atterberg Limits

Characterization of the fine-grained fractions of the encountered soils was evaluated using the Atterberg Limits. This test includes Liquid Limit and Plastic Limit Tests to determine the Plasticity Index in accordance with ASTM D4318. Results of these tests are presented in Figure B-1, Atterberg Limits.

B.3 Consolidation

The consolidation characteristics of the foundation soils were evaluated by performing one-dimensional consolidation in general accordance with ASTM Test Method D2435-90, using a floating ring consolidometer and dead weight system. The consolidation data provides evaluation of the soil pre-consolidation pressure and compression indices for evaluating post-development settlements. Results of the tests are presented in Figures B-2 and B-6, Consolidation Tests.

B.4 Direct Shear Tests

Direct shear tests were performed on selected samples in accordance with ASTM Test Method D3080. After the initial weight and volume measurements were made, the sample was placed in a calibrated shear machine and a selected normal load was applied. Each sample was then flooded and allowed to consolidate, and then were sheared under a constant strain to failure. Shear stress and sample deformations were monitored throughout the test. The test results are presented graphically in Figures B-7.

B.5 Expansion Index

The near surface soils encountered at the site consist of a mixture of silty sand, clayey sand and clay. Expansion Index test was conducted on a representative near surface soil sample according to ASTM D-4829-95. The test result indicated that the near surface soils at the subject have a low expansion potential.

B.6 Moisture Content and Dry Unit Weight

The field moisture and dry unit weight of the relatively undisturbed sample were determined in general accordance with ASTM D2216. Results of these tests are presented on the boring logs, and are used to evaluate existing overburden pressures and for correlation.

B.7 Percent of Fines

Determination of fines verses coarse soil particles was performed by the percent passing # 200 Sieve test. Representative samples were dried, weighed, soaked in water until individual soil particles were separated, and then washed on the No. 200 sieve. The percentages of fines (i.e., soil passing #200 sieves) are summarized below and presented on the boring logs.

Table B-1 Summary of Percent of Fines

Boring No.	Depth (ft)	Percent of Fines (%)
B-1	25	56
B-1	35	11
B-2	15	44
B-2	15.5	89
B-3	25	39
B-3	35	52

B.8 Soil Corrosivity

Corrosivity testing was performed on representative samples of the subsurface material, and included soil pH (EPA method 150.1/9045), water-soluble chlorides (Caltrans Test method 422), water-soluble sulfates (Caltrans Test Method 417) and electrical resistivity. The test results are summarized in the following table.

Table B-2 Soil Corrosivity

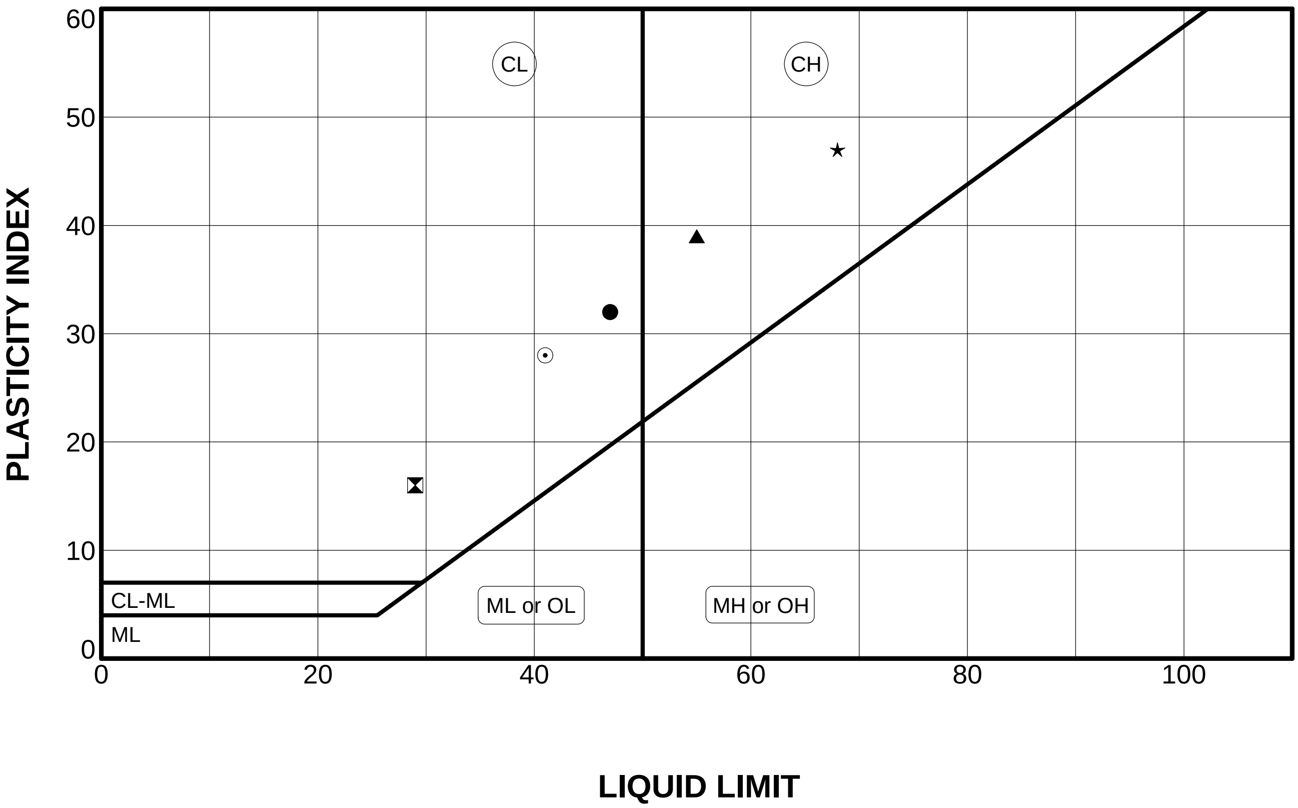
Sample Boring	Depth, feet	pH	Chlorides ppm	Sulfates ppm	Minimum Resistivity ohm-cm
B-3	0-2.5	8.2	49	1213	14784

Notes:

1. Soil Resistivity, Chlorides, and Sulfates tests were performed by GeoLogic Associates.
2. Chlorides (Caltrans 422), Sulfates (Caltrans 417) and pH (ASTM G-5177)

The following figures are attached and complete this appendix:

Figure B-1	Atterberg Limites
Figures B-2 to B6	Consolidation Data
Figures B-7	Direct Shear Test Results



SYMBOL	BORING	DEPTH (ft)	LL	PL	PI	LI	w%	USCS CLASSIFICATION
●	**B-1**	**20.0**	**47**	**15**	**32**	**0.41**	**28**	**(CL) Gray, Sandy Clay**
⧗	**B-1**	**30.0**	**29**	**13**	**16**	**0.81**	**26**	**(CL/SC) Gray, Sandy Clay/ Clayey Sand**
▲	**B-1**	**40.0**	**55**	**16**	**39**	**0.46**	**35**	**(CH) Gray, Clay**
★	**B-2**	**25.0**	**68**	**21**	**47**	**0.83**	**60**	**(CL) Dark Greenish Gray, Clay**
⊙	**B-3**	**40.0**	**41**	**13**	**28**	**0.57**	**29**	**(CL) Dark Gray, Clay**

GDC ATTERBERG L-746.GPJ GDC WLOG.GDT 5/1/07

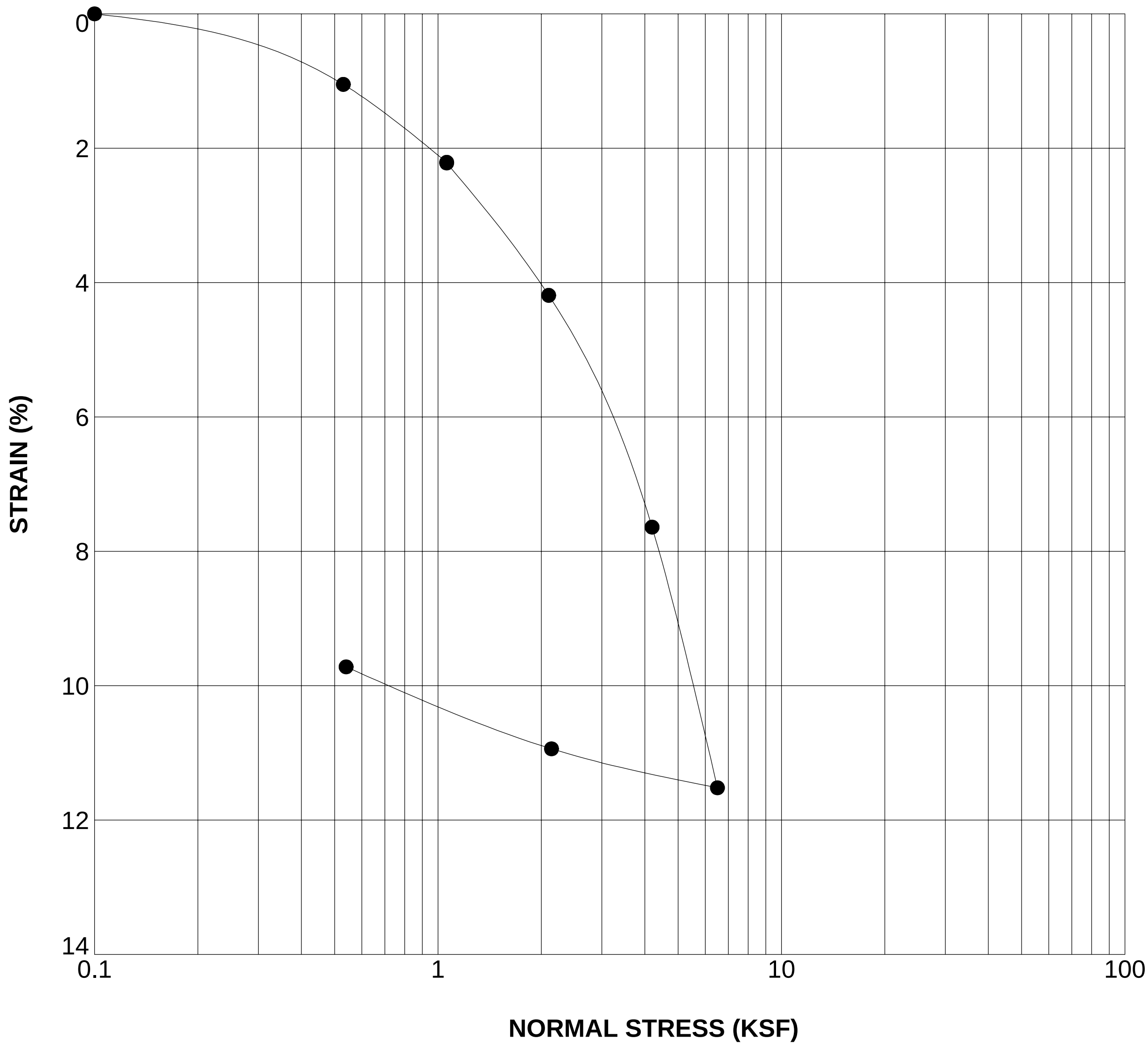
GROUP DELTA CONSULTANTS

ATTERBERG LIMITS

GROUP DELTA CONSULTANTS, INC.

Project: Archstone-Smith, Residential Devlop.
Location: Los Angeles, CA
Number: L-746

FIGURE B-1



SYMBOL	BORING	DEPTH (ft)	DESCRIPTION	Liquid Limit	Plastic Limit
●	**B-1**	**20.0**	**(CL) Gray, Sandy Clay**	**47**	**15**

	Moisture Content (%)	Dry Density (pcf)	Percent Saturation (%)	Void Ratio
INITIAL	**35.5**	**85.0**	**97.7**	**0.983**
FINAL	**31.9**	**95.0**	**100.0**	**0.773**

Specific Gravity: 2.7

Remark: SAMPLE SATURATED AT 1.06 KSF

CONSOLIDATION TEST

(ASTM D-2435)

GROUP DELTA CONSULTANTS, INC.

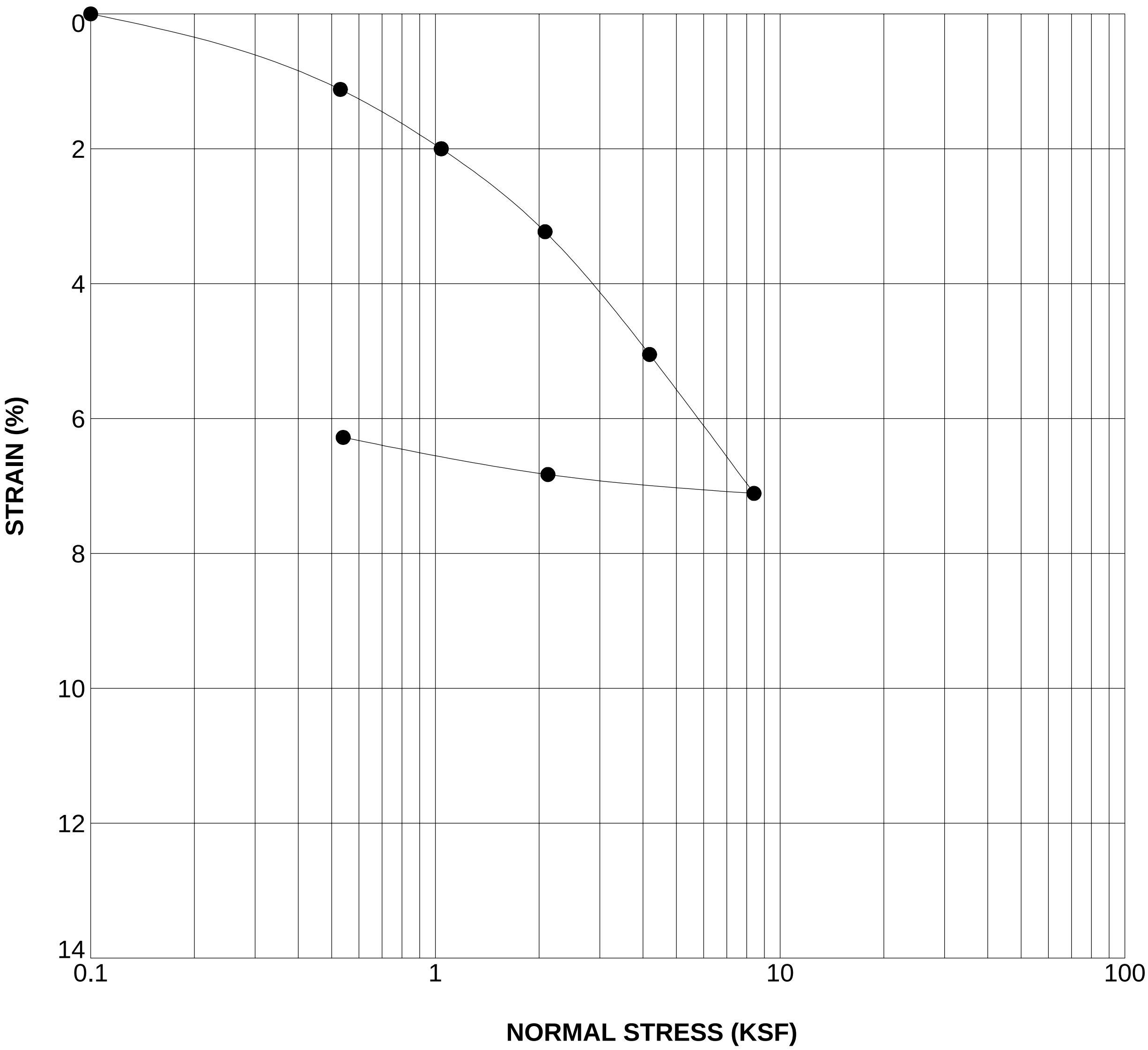
Project Name: Archstone-Smith, Residential Devlop.

Location: Los Angeles, CA

Project No.: L-746

FIGURE B-2

GDC CON STR L-746.GPJ GDC WLOG.GDT 5/1/07



SYMBOL	BORING	DEPTH (ft)	DESCRIPTION	Liquid Limit	Plastic Limit
●	**B-1**	**30.0**	**(CL/SC) Gray, Sandy Clay/ Clayey Sand**	**29**	**13**

	Moisture Content (%)	Dry Density (pcf)	Percent Saturation (%)	Void Ratio
INITIAL	**27.0**	**96.3**	**97.3**	**0.749**
FINAL	**26.8**	**103.8**	**100.0**	**0.623**

Specific Gravity: 2.7

Remark: SAMPLE SATURATED AT 1.04 KSF

GROUP DELTA CONSULTANTS

CONSOLIDATION TEST

(ASTM D-2435)

GROUP DELTA CONSULTANTS, INC.

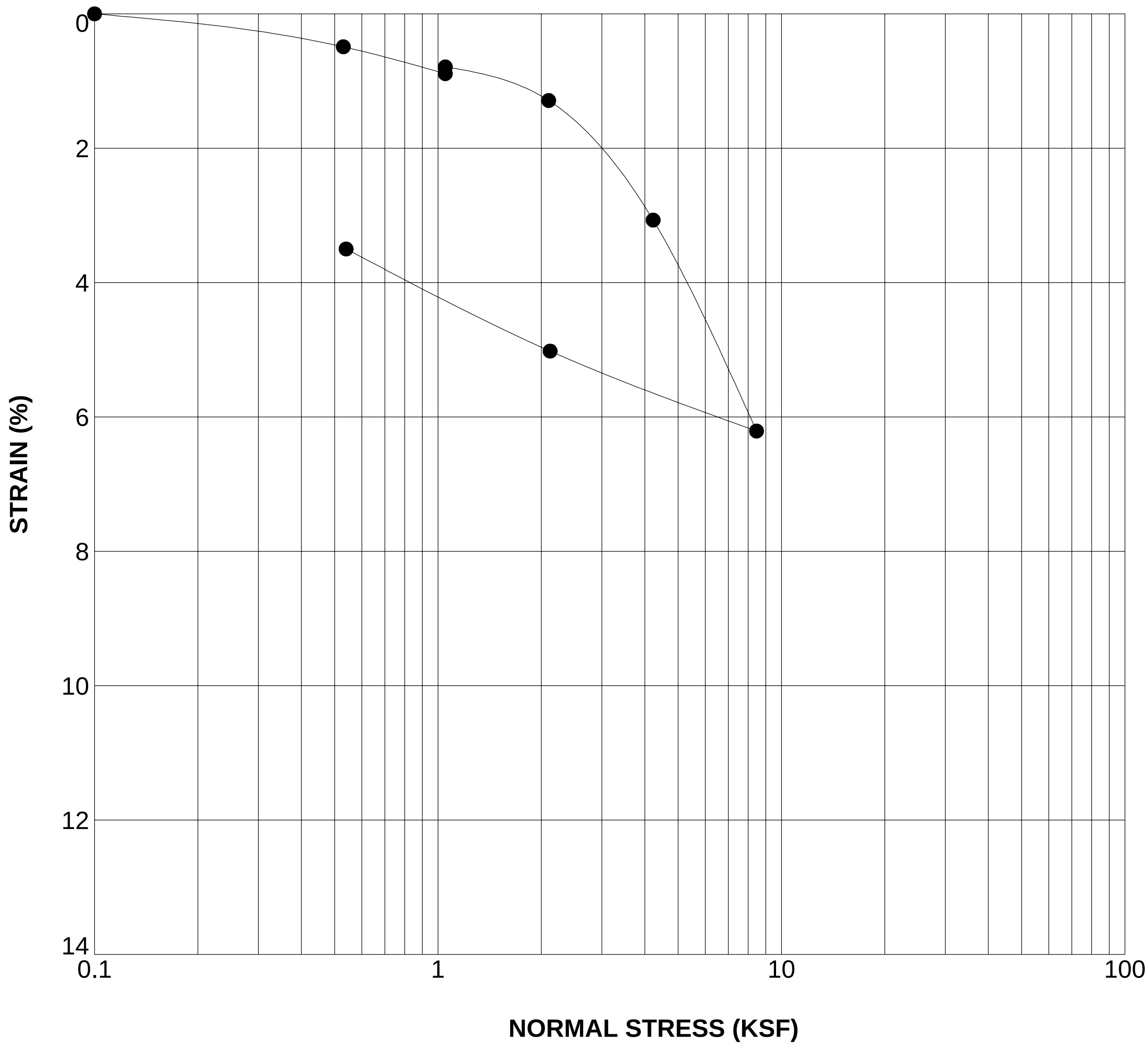
Project Name: Archstone-Smith, Residential Devlop.

Location: Los Angeles, CA

Project No.: L-746

FIGURE B-3

GDC CON STR L-746.GPJ GDC WLOG.GDT 5/1/07



SYMBOL	BORING	DEPTH (ft)	DESCRIPTION	Liquid Limit	Plastic Limit
●	**B-1**	**40.0**	**(CH) Gray, Clay**	**55**	**16**

	Moisture Content (%)	Dry Density (pcf)	Percent Saturation (%)	Void Ratio
INITIAL	**33.7**	**88.0**	**99.4**	**0.915**
FINAL	**36.0**	**91.9**	**100.0**	**0.834**

Specific Gravity: 2.7

Remark: SAMPLE SATURATED AT 1.05 KSF

GROUP DELTA CONSULTANTS

CONSOLIDATION TEST

(ASTM D-2435)

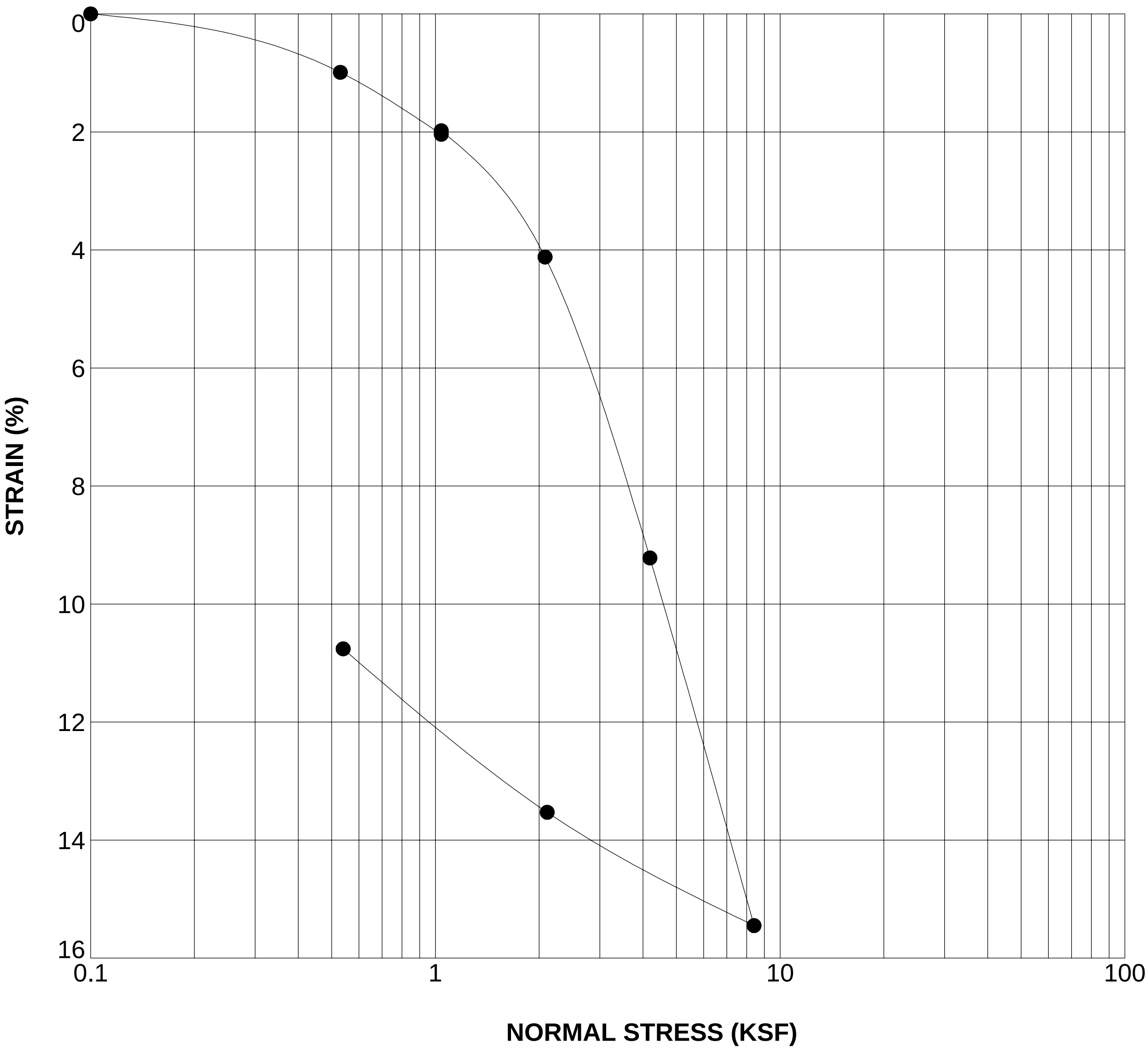
GROUP DELTA CONSULTANTS, INC.

Project Name: Archstone-Smith, Residential Devlop.

Location: Los Angeles, CA

Project No.: L-746

FIGURE B-4



SYMBOL	BORING	DEPTH (ft)	DESCRIPTION	Liquid Limit	Plastic Limit
●	**B-2**	**25.0**	**(CL) Dark Greenish Gray, Clay**	**68**	**21**

	Moisture Content (%)	Dry Density (pcf)	Percent Saturation (%)	Void Ratio
INITIAL	**58.8**	**65.0**	**99.8**	**1.591**
FINAL	**52.7**	**73.5**	**100.0**	**1.291**

Specific Gravity: 2.7

Remark: SAMPLE SATURATED AT 1.04 KSF

CONSOLIDATION TEST

(ASTM D-2435)

GROUP DELTA CONSULTANTS, INC.

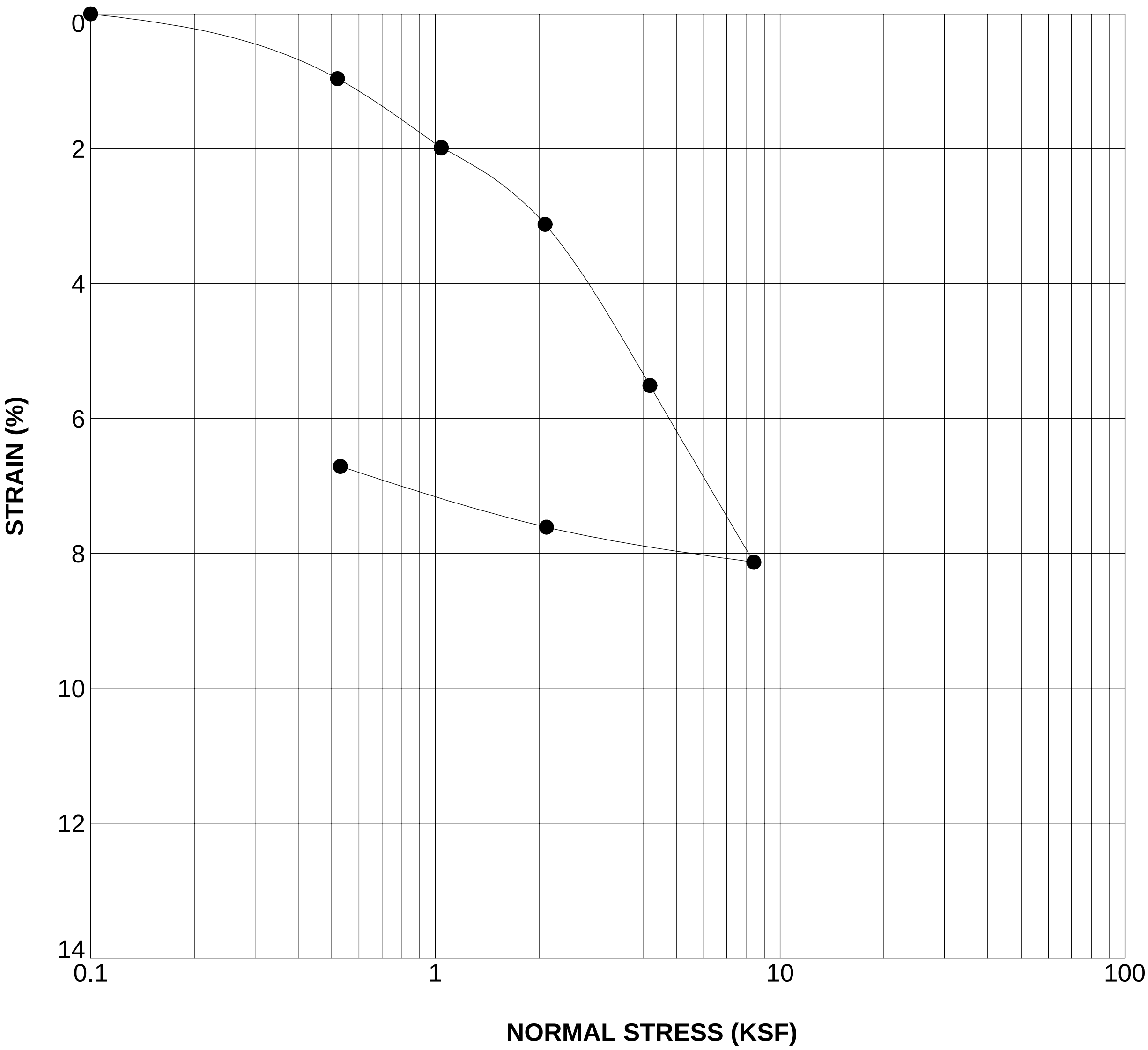
Project Name: Archstone-Smith, Residential Devlop.

Location: Los Angeles, CA

Project No.: L-746

FIGURE B-5

GDC CON STR L-746.GPJ GDC WLOG.GDT 5/1/07



SYMBOL	BORING	DEPTH (ft)	DESCRIPTION	Liquid Limit	Plastic Limit
●	**B-3**	**40.0**	**(CL) Dark Gray, Clay**	**41**	**13**

	Moisture Content (%)	Dry Density (pcf)	Percent Saturation (%)	Void Ratio
INITIAL	**27.9**	**95.6**	**98.8**	**0.763**
FINAL	**26.5**	**103.4**	**100.0**	**0.630**

Specific Gravity: 2.7

Remark: SAMPLE SATURATED AT 1.04 KSF

CONSOLIDATION TEST

(ASTM D-2435)

GROUP DELTA CONSULTANTS, INC.

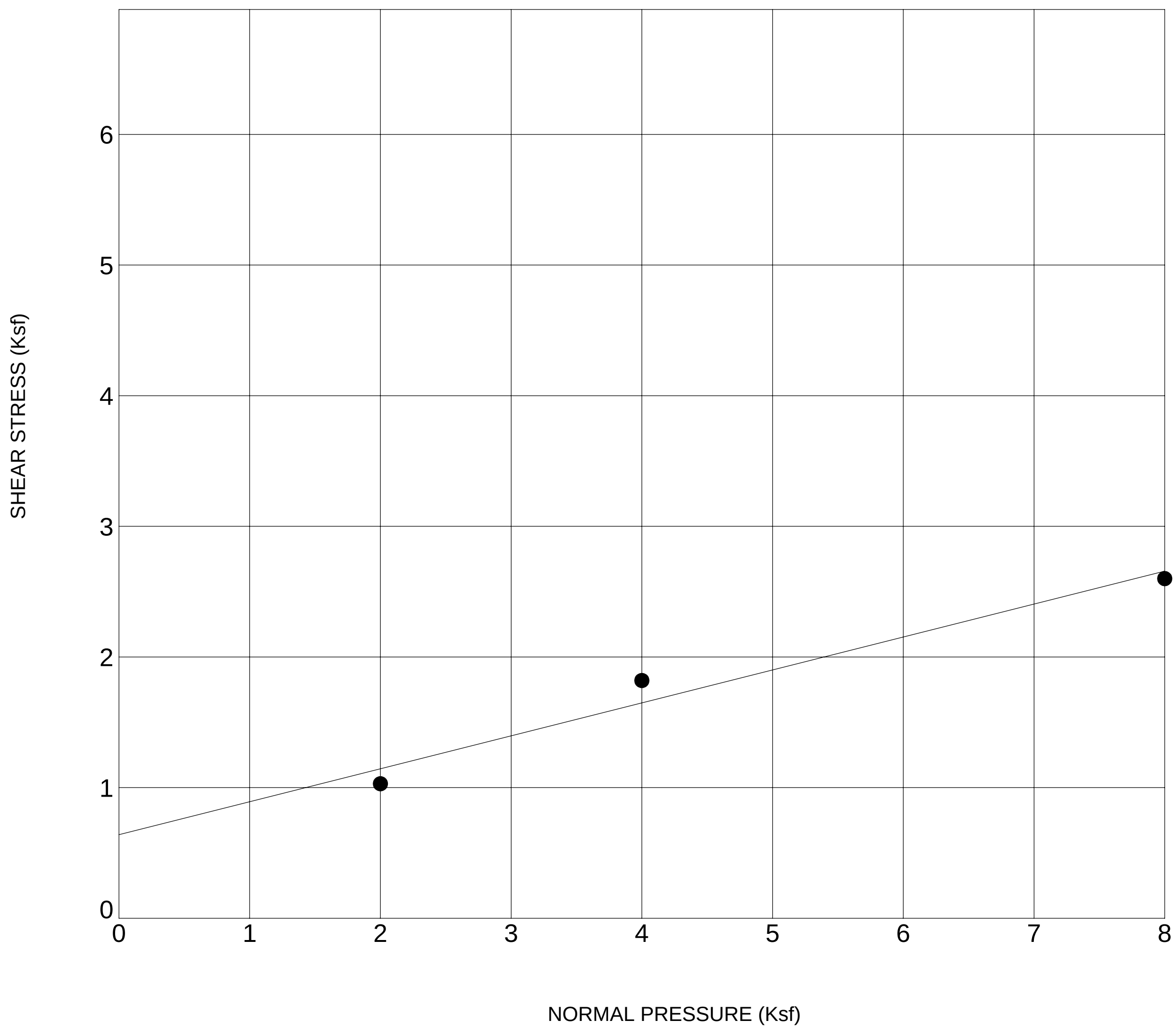
Project Name: Archstone-Smith, Residential Devlop.

Location: Los Angeles, CA

Project No.: L-746

FIGURE B-6

GDC CON STR L-746.GPJ GDC WLOG.GDT 5/1/07



SYM	BORING	Depth(ft)	DESCRIPTION	γ_d lb/ft^3	MC % Before	MC % After	c KSF	ϕ deg
●	**B-2**	**25.0**	**(CL) Dark Greenish Gray, Clay**	**70.7**	**60.1**	**56.2**	**0.64**	**14.2**

NOTE:
1) All samples submerged unless otherwise noted
2) Peak Strength (<0.25 in deformation); Ultimate Strength (0.3 to 0.5 in deformation)

GROUP DELTA CONSULTANTS

DIRECT SHEAR

GROUP DELTA CONSULTANTS, INC.

Project: Archstone-Smith, Residential Devlop.
Location: Los Angeles, CA
Number: L-746

FIGURE B-7

GDC DIRECT SHEAR PEAK L-746.GPJ GDC WLOG.GDT 5/1/07

APPENDIX C
LIQUEFACTION ANALYSIS

EVALUATION OF LIQUEFACTION AND ASSOCIATED GROUND SETTLEMENTS

<<--------------------------- GENERAL INPUT DATA ----------------------------->>

Project Name	**Archstone-Smith Grosvenor**		
Location	**Jefferson Blvd. And Grosvenor Ave.**		
GDC Project Name	**L-746**		
Exploration No.	**B-1**		
Finish Grade Elevation	19 ft	**Investigation Elev.**	19 ft
GWT Depth (design)	9 ft	**GWT Depth (SPT)**	10.5 ft
Soil Unit Weight	115 pcf		
Earthquake Magnitude	6.6		
Peak Ground Acc.	0.45 g		
Required FS_{liq}	1.3		

<< -- REFERENCES -->

+ Based on Proc. of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils (Edited by: T.L. Youd and I.M. Idriss, 1997)
++ Combination of correction factors for thin layer, hammer energy ratio, borehole diameter, and rod lengths.
* Based on Idriss (1998); Byrne and Beaty (1999)
** Based on Tokimatsu and Seed (1987)
*** Tokimatsu and Yoshimi (1983)

<<------------- SUMMARY OF RESULTS ------------------>>

Total Thickness of Liq. Soils = 8.00 feet
Total Ground Settlement = 0.87 inches

<<-------------------------- INPUT SOIL PROFILE DATA -------------------- >>

Soil Investigation Depth Z (ft)	Soil Design Depth Z (ft)	Layer Thickness H (ft)	USCS Soil Type	Sandwiched Layer Correction	SPT Blow Count N (blows/ft)	Thin Layer Corrected SPT Blow Count	Fines Content FC (%)	Combined SPT Correction Factor ++
10.5	10.5	3	SM	1.14	12	13.7	13	1.00
35.0	35.0	5	SP-SM	1.00	21	21.0	11	1.15
48.0	48.0	4	SP	1.03	46	47.4	5	1.38

<<-- SOIL LIQUEFACTION POTENTIAL ANALYSIS (NCEER, 1997) -->>

Bottom of Layer Elevation (ft)	Total Vert. Stress Invest'n σ_v (psf)	Effective Vert. Stress Invest'n $\sigma_{v'}$ (psf)	SPT Stress Correction Factor C_N	Stress Corrected SPT Blow Count $(N_1)_{60}$	Fines Corrected SPT Blow Count $(N_1)_{60cs}$	Total Vert. Stress Design σ_v (psf)	Effective Vert. Stress Design $\sigma_{v'}$ (psf)	Shear Stress Reduction Coeff. r_d	Magnitude Scaling Factor (Idriss) + C_M	Correction for High Overburden Stress+ K_σ	Cyclic Stress Ratio CSR	Cyclic Res. Ratio CRR	Factor of Safety Against Liqefaction FS_{liq}	Seismic Porewater Pressure Ratio *** r_u (%)	Liquefy ?
7.0	1208	1208	1.287	17.6	20.1	1208	1114	0.976	1.387	1.000	0.309	0.311	1.007	86	YES
-18.5	4025	2496	0.895	21.6	23.4	4025	2403	0.889	1.387	0.955	0.436	0.354	0.813	100	YES
-31.0	5520	3180	0.793	51.9	51.9	5520	3086	0.783	1.387	0.897	0.410	N/A	UNDEF.	UNDEF.	NO

<<---- SETTLEMENT CALCULATION --->>

Residual Shear Strength * S_r (psf)	Cyclic Shear Strain γ_c (%)	Vol. Strain ** ε_v (%)	Layer Settlement S (in.)
622	N/A	0.489	0.176
1286	N/A	1.159	0.696
N/A	N/A	0.000	0.000

Correction, Kc, for thin sand layer, H, sandwiched between soft clays.	
	Kc
H=1 FT	1.66
H=2 FT	1.35
H=3 FT	1.14
H=4 FT	1.03

§ Based on Vreugdenhil *et al.* , 1994.

Figure C-1

B-1_746 Liquefaction.xls

EVALUATION OF LIQUEFACTION AND ASSOCIATED GROUND SETTLEMENTS

<<--------------------------- GENERAL INPUT DATA ----------------------------->>

Project Name	**Archstone-Smith Grosvenor**		
Location	**Jefferson Blvd. And Grosvenor Ave.**		
GDC Project Name	**L-746**		
Exploration No.	**B-2**		
Finish Grade Elevation	21.5 ft	**Investigation Elev.**	21.5 ft
GWT Depth (design)	11.5 ft	**GWT Depth (SPT)**	12.5 ft
Soil Unit Weight	115 pcf		
Earthquake Magnitude	6.6		
Peak Ground Acc.	0.45 g		
Required FS_{liq}	1.3		

<< --- REFERENCES -->

+ Based on Proc. of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils (Edited by: T.L. Youd and I.M. Idriss, 1997)

++ Combination of corrrection factors for thin layer, hammer energy ratio, borehole diameter, and rod lengths.

* Based on Idriss (1998); Byrne and Beaty (1999)

** Based on Tokimatsu and Seed (1987)

*** Tokimatsu and Yoshimi (1983)

<<------------- SUMMARY OF RESULTS ------------------>>

Total Thickness of Liq. Soils = 11.00 feet

Total Ground Settlement = 1.28 inches

<<-------------------------- INPUT SOIL PROFILE DATA -------------------- >> **<<-- SOIL LIQUEFACTION POTENTIAL ANALYSIS (NCEER, 1997) --->>** **<<---- SETTLEMENT CALCULATION --->>**

Soil Investigation Depth Z (ft)	Soil Design Depth Z (ft)	Layer Thickness H (ft)	USCS Soil Type	Sandwiched Layer Correction	SPT Blow Count N (blows/ft)	Thin Layer Corrected SPT Blow Count	Fines Content FC (%)	Combined SPT Correction Factor ++		Bottom of Layer Elevation (ft)	Total Vert. Stress Invest'n σ_v (psf)	Effective Vert. Stress Invest'n $\sigma_{v'}$ (psf)	SPT Stress Correction Factor C_N	Stress Corrected SPT Blow Count $(N_1)_{60}$	Fines Corrected SPT Blow Count $(N_1)_{60cs}$	Total Vert. Stress Design σ_v (psf)	Effective Vert. Stress Design $\sigma_{v'}$ (psf)	Shear Stress Reduction Coeff. r_d	Magnitude Scaling Factor (Idriss) + C_M	Correction for High Overburden Stress+ K_σ	Cyclic Stress Ratio CSR	Cyclic Res. Ratio CRR	Factor of Safety Against Liqefaction FS_{liq}	Seismic Porewater Pressure Ratio *** r_u (%)	Liquefy ?		Residual Shear Strength * S_r (psf)	Cyclic Shear Strain γ_c (%)	Vol. Strain ** ε_v (%)	Layer Settlement S (in.)
14.5	14.5	6	SM	1.25	11	13.8	44	1.00		4.0	1668	1543	1.139	15.7	23.8	1668	1480	0.966	1.387	1.000	0.318	0.379	1.190	37	YES		794	N/A	0.123	0.088
35.0	35.0	5	SC	1.00	12	12.0	12	1.15		-16.0	4025	2621	0.874	12.1	14.0	4025	2559	0.889	1.387	0.940	0.409	0.204	0.500	100	YES		613	N/A	1.987	1.192

Correction, Kc, for thin sand layer, H, sandwiched between soft clays.	
	Kc
H=1 FT	1.66
H=2 FT	1.35
H=3 FT	1.14
H=4 FT	1.03

§ Based on Vreugdenhil *et al.* , 1994.

Figure C-2

B-2_746 Liquefaction.xls

EVALUATION OF LIQUEFACTION AND ASSOCIATED GROUND SETTLEMENTS

<<-------------------------- GENERAL INPUT DATA ---------------------------->>

Project Name	**Archstone-Smith Grosvenor**		
Location	**Jefferson Blvd. And Grosvenor Ave.**		
GDC Project Name	**L-746**		
Exploration No.	**B-3**		
Finish Grade Elevation	18 ft	**Investigation Elev.**	18 ft
GWT Depth (design)	8 ft	**GWT Depth (SPT)**	12 ft
Soil Unit Weight	115 pcf		
Earthquake Magnitude	6.6		
Peak Ground Acc.	0.45 g		
Required FS_{liq}	1.3		

<< -- **REFERENCES** -->

+ **Based on Proc. of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils (Edited by: T.L. Youd and I.M. Idriss, 1997)**

++ **Combination of corrrection factors for thin layer, hammer energy ratio, borehole diameter, and rod lengths.**

* **Based on Idriss (1998); Byrne and Beaty (1999)**

** **Based on Tokimatsu and Seed (1987)**

*** **Tokimatsu and Yoshimi (1983)**

<<------------- **SUMMARY OF RESULTS** ------------------>>

Total Thickness of Liq. Soils = 12.50 feet

Total Ground Settlement = 1.80 inches

<<-------------------------- **INPUT SOIL PROFILE DATA** -------------------- >> <<--- **SOIL LIQUEFACTION POTENTIAL ANALYSIS (NCEER, 1997)** -->> <<---- **SETTLEMENT CALCULATION** --->>

Soil Investigation Depth Z (ft)	Soil Design Depth Z (ft)	Layer Thickness H (ft)	USCS Soil Type	Sandwiched Layer Correction	SPT Blow Count N (blows/ft)	Thin Layer Corrected SPT Blow Count	Fines Content FC (%)	Combined SPT Correction Factor ++	Bottom of Layer Elevation (ft)	Total Vert. Stress Invest'n σ_v (psf)	Effective Vert. Stress Invest'n $\sigma_{v'}$ (psf)	SPT Stress Correction Factor C_N	Stress Corrected SPT Blow Count $(N_1)_{60}$	Fines Corrected SPT Blow Count $(N_1)_{60cs}$	Total Vert. Stress Design σ_v (psf)	Effective Vert. Stress Design $\sigma_{v'}$ (psf)	Shear Stress Reduction Coeff. r_d	Magnitude Scaling Factor (Idriss) + C_M	Correction for High Overburden Stress+ K_σ	Cyclic Stress Ratio CSR	Cyclic Res. Ratio CRR	Factor of Safety Against Liqefaction FS_{liq}	Seismic Porewater Pressure Ratio *** r_u (%)	Liquefy ?	Residual Shear Strength * S_r (psf)	Cyclic Shear Strain γ_c (%)	Vol. Strain ** ε_v (%)	Layer Settlement S (in.)
11.0	11.0	2.5	SM	1.25	5	6.3	39	1.00	5.8	1265	1265	1.257	7.9	14.4	1265	1078	0.974	1.387	1.000	0.334	0.224	0.670	100	YES	277	N/A	1.922	0.577
20.0	20.0	5	SC	1.00	10	10.0	50	1.31	-4.5	2300	1801	1.054	13.8	21.6	2300	1551	0.953	1.387	1.000	0.413	0.336	0.812	100	YES	927	N/A	1.275	0.765
25.0	25.0	10	SM	1.00	19	19.0	39	1.38	-12.0	2875	2064	0.984	25.8	36.0	2875	1814	0.942	1.387	1.000	0.437	N/A	UNDEF.	UNDEF.	NO	N/A	N/A	0.039	0.046
35.0	35.0	5	SP/SC	1.00	15	15.0	52	1.38	-19.5	4025	2590	0.879	18.2	26.8	4025	2340	0.889	1.387	0.961	0.447	0.442	0.989	100	YES	1334	N/A	0.589	0.353
45.0	45.0	5	SP	1.00	27	27.0	5	1.38	-29.5	5175	3116	0.801	29.9	29.9	5175	2866	0.808	1.387	0.914	0.427	0.673	1.578	13	NO	N/A	N/A	0.094	0.057

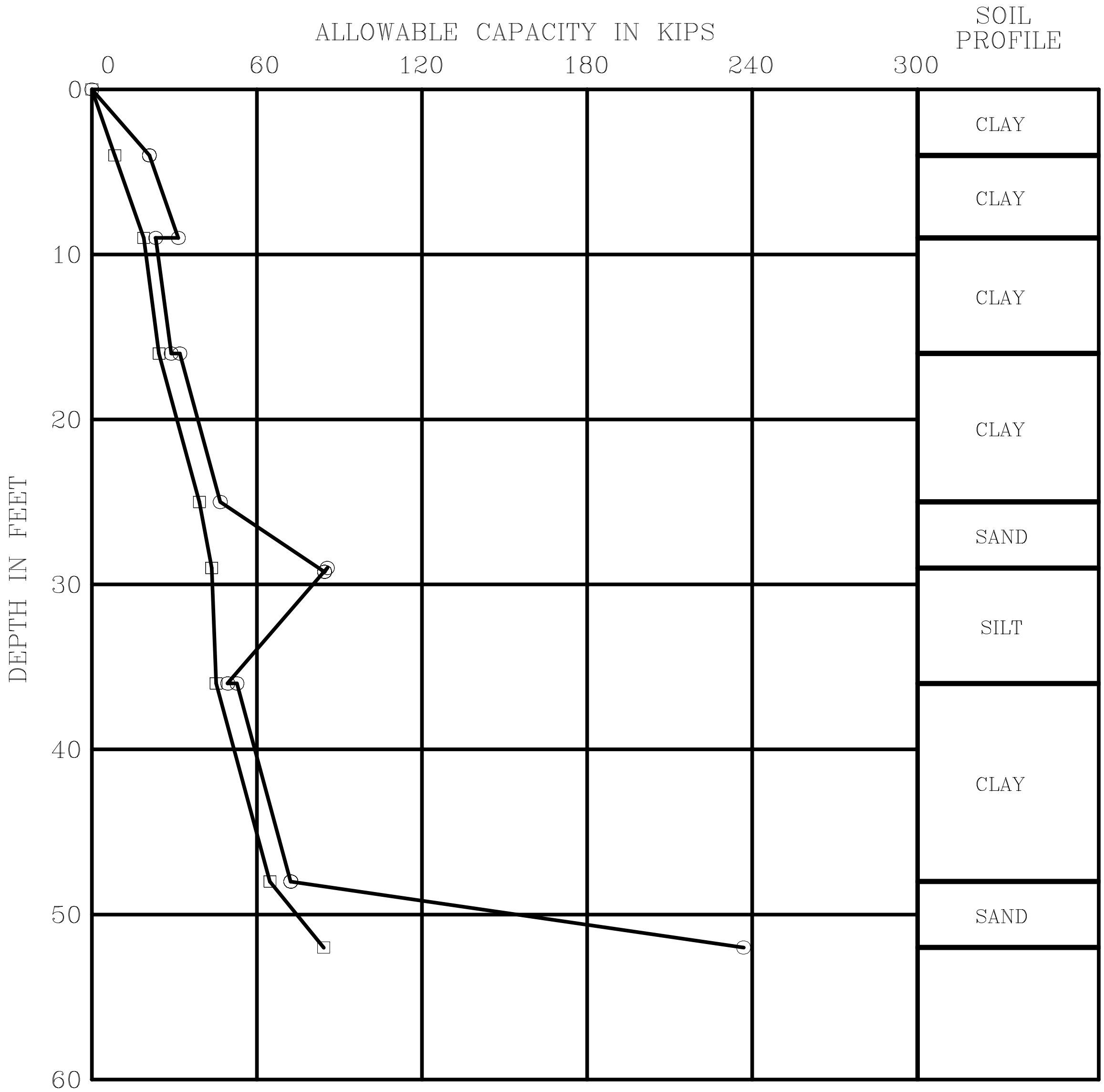
Correction, Kc, for thin sand layer, H, sandwiched between soft clays.	
	Kc
H=1 FT	1.66
H=2 FT	1.35
H=3 FT	1.14
H=4 FT	1.03

§ Based on Vreugdenhil *et al.* , 1994.

Figure C-3

B-3_746 Liquefaction.xls

APPENDIX D
PILE CAPACITY CALCULATIONS



LEGEND
□ SKIN FRICTION
○ TOTAL PILE CAPACITY

PILE DIAMETER : 1.33 ft.
PILE TYPE : DRIVEN,LD
FACTOR OF SAFETY
END BEARING : 2.00
SKIN FRICTION : 2.00

2	16-in APGD PILE
GEOSOFT	ALLOWABLE PILE CAPACITY

```
*********************************************
*                                           *
*        AXIAL PILE CAPACITY PROGRAM        *
*                                           *
**************  A X I A L / G  *************
*                                           *
*       (C) COPYRIGHT 1988, 1990            *
*                                           *
*                 GEOSOFT                   *
*                                           *
*            ALL RIGHTS RESERVED            *
*                                           *
*********************************************
```

"GEOSOFT "

"16-in APGD PILE   "

INPUT PILE DATA

```
NUMBER OF LAYERS =         8
PILE TYPE        = DRIVEN,LD
DIAMETER OF PILE =     1.330     FEET
END AREA         =     1.400     FT*FT
PERIMETER        =     4.180     FEET
FRICTION FS      =     2.000
END BEARING FS   =     2.000
ULT. SETTL.      =      .800     INCH, FOR DRILLED PILES (DEFAULT = 0.05 * DIAMETER)
```

INPUT SOIL DATA

DEPTH FT	SOIL TYPE	UNIT WEIGHT PCF	COHESION KSF	FRICTION ANGLE	BLOW COUNT	CONE RESISTANCE-KSF TIP	CONE RESISTANCE-KSF SKIN
.0	CLAY	120.0	2.000	.0	.0	.0	.0
4.0	CLAY	120.0	2.000	.0	.0	.0	.0
4.0	CLAY	120.0	2.000	.0	.0	.0	.0
9.0	CLAY	120.0	2.000	.0	.0	.0	.0
9.0	CLAY	58.0	.700	.0	.0	.0	.0
16.0	CLAY	58.0	.700	.0	.0	.0	.0
16.0	CLAY	58.0	1.200	.0	.0	.0	.0
25.0	CLAY	58.0	1.200	.0	.0	.0	.0
25.0	SAND	.0	.000	.0	.0	160.0	2.5
29.0	SAND	.0	.000	.0	.0	160.0	2.5
29.0	SILT	58.0	.000	.0	.0	60.0	1.0
36.0	SILT	58.0	.000	.0	.0	6.0	1.0
36.0	CLAY	58.0	1.200	.0	.0	.0	.0
48.0	CLAY	58.0	1.200	.0	.0	.0	.0
48.0	SAND	58.0	.000	.0	.0	700.0	2.6
52.0	SAND	58.0	.000	.0	.0	700.0	2.6

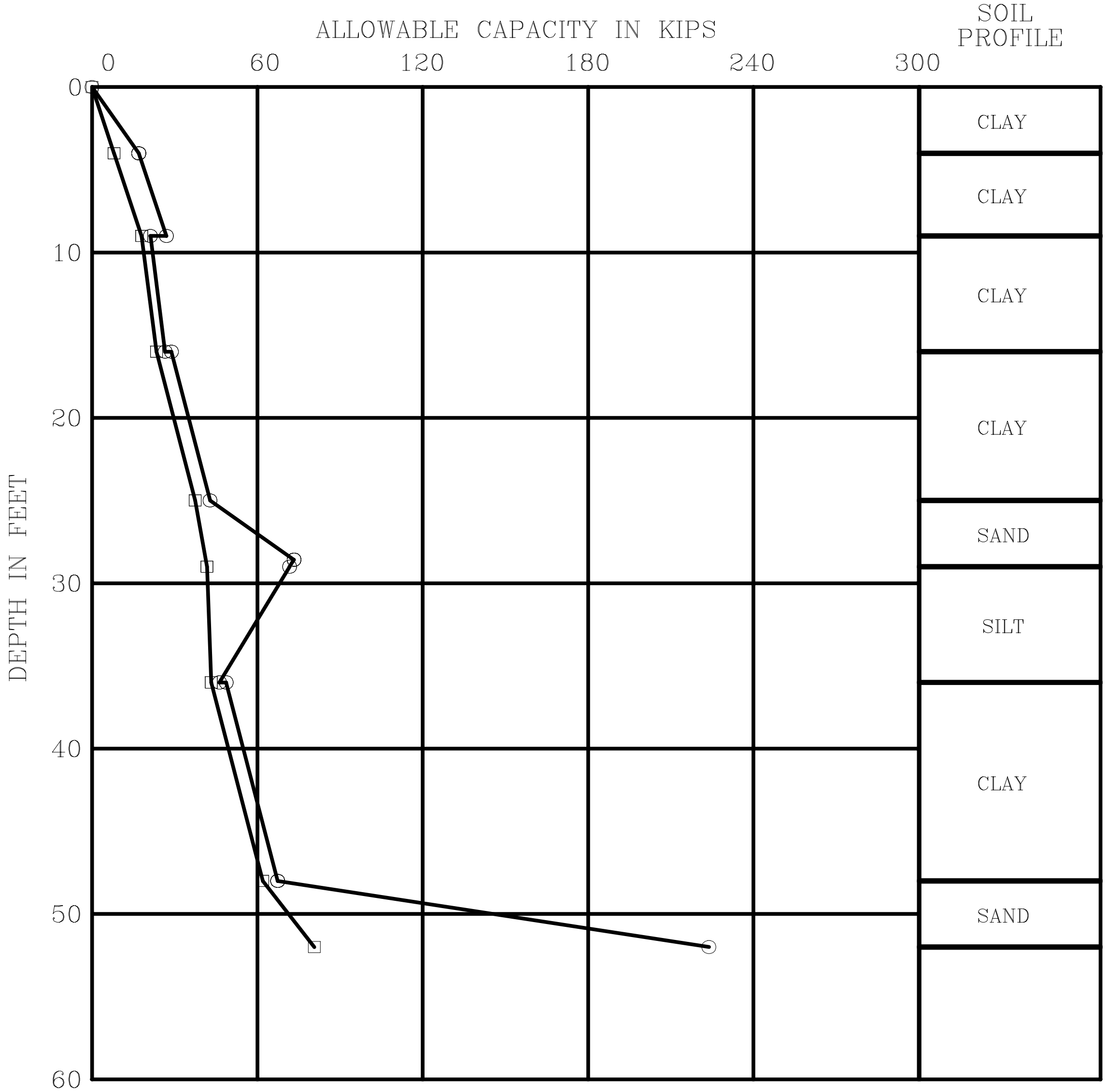
INTERIM PILE CAPACITY TABLE

DEPTH FEET	PO KSF	UNIT SF KSF	UNIT EB KSF	***ULTIMATE PILE CAPACITY, KIP*** FRICTION	END	TOTAL
.0	.000	1.00	0.	0.	0.	0.
4.0	.480	1.00	18.	17.	25.	42.
4.0	.480	1.00	18.	17.	25.	42.
9.0	1.080	1.00	18.	38.	25.	63.
9.0	1.080	.32	6.	38.	9.	46.
16.0	1.486	.45	6.	49.	9.	58.
16.0	1.486	.78	11.	49.	15.	64.
25.0	2.008	.78	11.	78.	15.	93.
25.0	2.008	.53	160.	78.	224.	302.
29.0	2.008	.53	160.	87.	224.	311.
29.0	2.008	.20	60.	87.	84.	171.
36.0	2.414	.02	6.	90.	8.	99.
36.0	2.414	.78	11.	90.	15.	105.
48.0	3.110	.78	11.	129.	15.	145.
48.0	3.110	2.33	700.	129.	980.	1109.
52.0	3.342	2.33	700.	168.	980.	1148.

FINAL PILE CAPACITY TABLE

DEPTH FEET	PO KSF	******* ALLOWABLE CAPACITY, KIP ******* FRICTION	END	TOTAL
.00	.00	0	0	0
1.00	.12	2	3	5
2.00	.24	4	6	10
3.00	.36	6	10	16
4.00	.48	8	13	21
5.00	.60	10	13	23
6.00	.72	13	12	25
7.00	.84	15	12	27
8.00	.96	17	12	29
9.00	1.08	19	4	23
10.00	1.14	20	4	24
11.00	1.20	20	5	25
12.00	1.25	21	5	26
13.00	1.31	22	4	26
14.00	1.37	23	4	27
15.00	1.43	24	4	28
16.00	1.49	24	8	32
17.00	1.54	26	8	34
18.00	1.60	28	7	35
19.00	1.66	29	8	37

20.00	1.72	31	8	39
21.00	1.78	33	7	40
22.00	1.83	34	8	42
23.00	1.89	36	7	43
24.00	1.95	37	8	45
25.00	2.01	39	8	47
26.00	2.01	40	16	56
27.00	2.01	41	24	65
28.00	2.01	42	32	74
29.00	2.01	44	42	86
30.00	2.07	44	36	80
31.00	2.12	44	31	75
32.00	2.18	44	26	70
33.00	2.24	44	21	65
34.00	2.30	45	15	60
35.00	2.36	45	10	55
36.00	2.41	45	8	53
37.00	2.47	47	7	54
38.00	2.53	48	8	56
39.00	2.59	50	8	58
40.00	2.65	52	7	59
41.00	2.70	53	8	61
42.00	2.76	55	8	63
43.00	2.82	57	7	64
44.00	2.88	58	8	66
45.00	2.94	60	7	67
46.00	2.99	61	8	69
47.00	3.05	63	8	71
48.00	3.11	65	7	72
49.00	3.17	70	43	113
50.00	3.23	74	81	155
51.00	3.28	79	117	196
52.00	3.34	84	153	237



LEGEND
□ SKIN FRICTION
○ TOTAL PILE CAPACITY

PILE DIAMETER : 1.00 ft.
PILE TYPE : DRIVEN,LD
FACTOR OF SAFETY
END BEARING : 2.00
SKIN FRICTION : 2.00

1	12-in SQUARE DRIVEN
GEOSOFT	ALLOWABLE PILE CAPACITY

```
*********************************************
*                                           *
*        AXIAL PILE CAPACITY PROGRAM        *
*                                           *
**************  A X I A L / G  *************
*                                           *
*       (C) COPYRIGHT 1988, 1990            *
*                                           *
*                 GEOSOFT                   *
*                                           *
*            ALL RIGHTS RESERVED            *
*                                           *
*********************************************
```

"GEOSOFT "

"12-in SQUARE DRIVEN   "

INPUT PILE DATA

```
NUMBER OF LAYERS =         8
PILE TYPE        = DRIVEN,LD
DIAMETER OF PILE =     1.000     FEET
END AREA         =     1.000     FT*FT
PERIMETER        =     4.000     FEET
FRICTION FS      =     2.000
END BEARING FS   =     2.000
ULT. SETTL.      =      .600     INCH, FOR DRILLED PILES (DEFAULT = 0.05 * DIAMETER)
```

INPUT SOIL DATA

DEPTH FT	SOIL TYPE	UNIT WEIGHT PCF	COHESION KSF	FRICTION ANGLE	BLOW COUNT	CONE RESISTANCE-KSF TIP	SKIN
.0	CLAY	120.0	2.000	.0	.0	.0	.0
4.0	CLAY	120.0	2.000	.0	.0	.0	.0
4.0	CLAY	120.0	2.000	.0	.0	.0	.0
9.0	CLAY	120.0	2.000	.0	.0	.0	.0
9.0	CLAY	58.0	.700	.0	.0	.0	.0
16.0	CLAY	58.0	.700	.0	.0	.0	.0
16.0	CLAY	58.0	1.200	.0	.0	.0	.0
25.0	CLAY	58.0	1.200	.0	.0	.0	.0
25.0	SAND	.0	.000	.0	.0	160.0	2.5
29.0	SAND	.0	.000	.0	.0	160.0	2.5
29.0	SILT	58.0	.000	.0	.0	60.0	1.0
36.0	SILT	58.0	.000	.0	.0	6.0	1.0
36.0	CLAY	58.0	1.200	.0	.0	.0	.0
48.0	CLAY	58.0	1.200	.0	.0	.0	.0
48.0	SAND	58.0	.000	.0	.0	700.0	2.6
52.0	SAND	58.0	.000	.0	.0	700.0	2.6

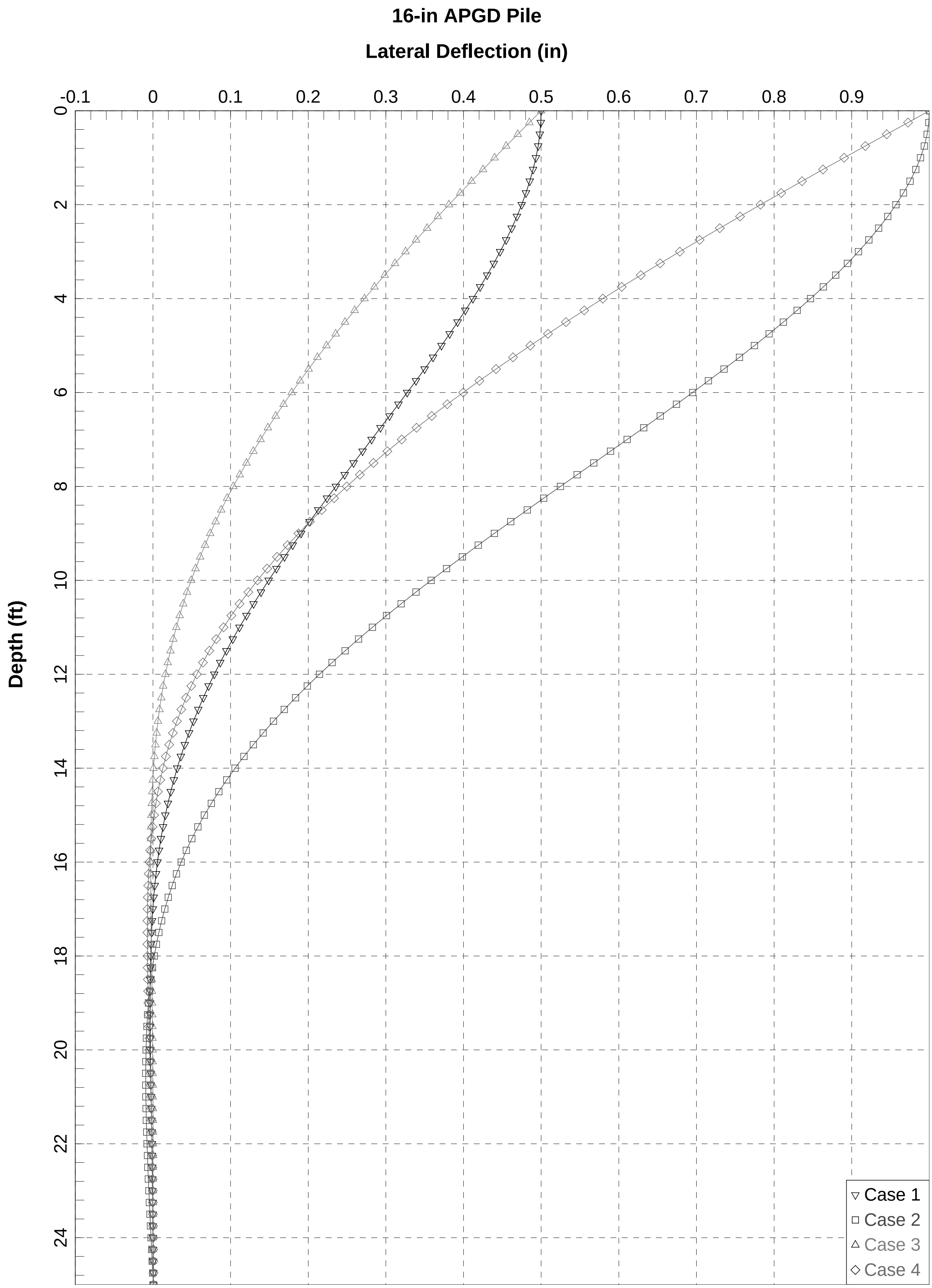
INTERIM PILE CAPACITY TABLE

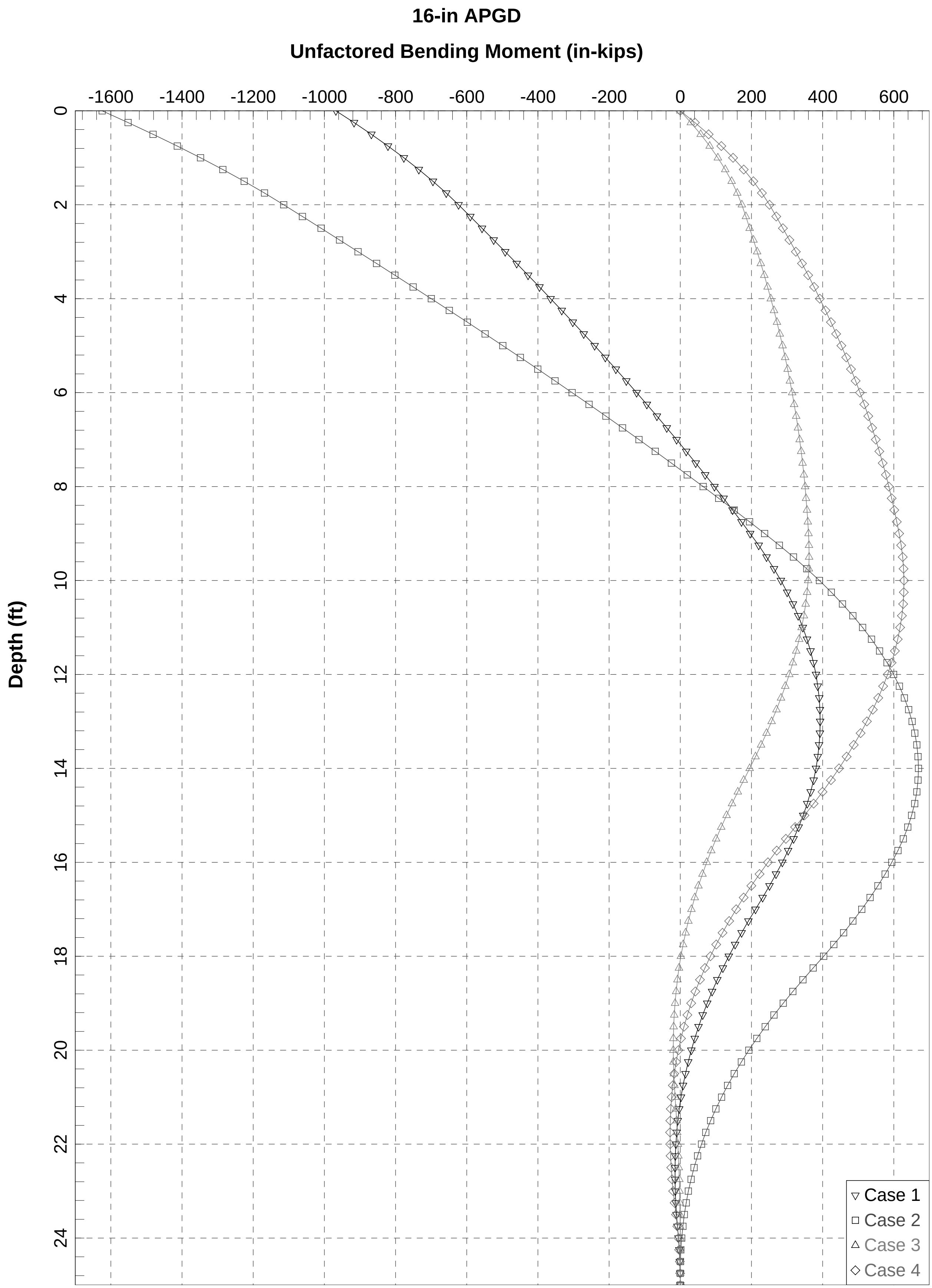
DEPTH FEET	PO KSF	UNIT SF KSF	UNIT EB KSF	***ULTIMATE PILE CAPACITY, KIP*** FRICTION	END	TOTAL
.0	.000	1.00	0.	0.	0.	0.
4.0	.480	1.00	18.	16.	18.	34.
4.0	.480	1.00	18.	16.	18.	34.
9.0	1.080	1.00	18.	36.	18.	54.
9.0	1.080	.32	6.	36.	6.	42.
16.0	1.486	.45	6.	47.	6.	53.
16.0	1.486	.78	11.	47.	11.	58.
25.0	2.008	.78	11.	75.	11.	86.
25.0	2.008	.53	160.	75.	160.	235.
29.0	2.008	.53	160.	83.	160.	243.
29.0	2.008	.20	60.	83.	60.	143.
36.0	2.414	.02	6.	86.	6.	92.
36.0	2.414	.78	11.	86.	11.	97.
48.0	3.110	.78	11.	124.	11.	135.
48.0	3.110	2.33	700.	124.	700.	824.
52.0	3.342	2.33	700.	161.	700.	861.

FINAL PILE CAPACITY TABLE

DEPTH FEET	PO KSF	******* ALLOWABLE CAPACITY, KIP ******* FRICTION	END	TOTAL
.00	.00	0	0	0
1.00	.12	2	2	4
2.00	.24	4	5	9
3.00	.36	6	7	13
4.00	.48	8	9	17
5.00	.60	10	9	19
6.00	.72	12	9	21
7.00	.84	14	9	23
8.00	.96	16	9	25
9.00	1.08	18	3	21
10.00	1.14	19	3	22
11.00	1.20	20	3	23
12.00	1.25	20	3	23
13.00	1.31	21	3	24
14.00	1.37	22	3	25
15.00	1.43	23	3	26
16.00	1.49	23	6	29
17.00	1.54	25	5	30
18.00	1.60	27	5	32
19.00	1.66	28	5	33
20.00	1.72	30	5	35

21.00	1.78	31	6	37
22.00	1.83	33	5	38
23.00	1.89	34	6	40
24.00	1.95	36	5	41
25.00	2.01	37	6	43
26.00	2.01	38	13	51
27.00	2.01	40	20	60
28.00	2.01	41	27	68
29.00	2.01	42	30	72
30.00	2.07	42	26	68
31.00	2.12	42	22	64
32.00	2.18	42	19	61
33.00	2.24	43	14	57
34.00	2.30	43	11	54
35.00	2.36	43	7	50
36.00	2.41	43	6	49
37.00	2.47	45	5	50
38.00	2.53	46	6	52
39.00	2.59	48	5	53
40.00	2.65	49	6	55
41.00	2.70	51	5	56
42.00	2.76	53	5	58
43.00	2.82	54	6	60
44.00	2.88	56	5	61
45.00	2.94	57	6	63
46.00	2.99	59	5	64
47.00	3.05	60	6	66
48.00	3.11	62	5	67
49.00	3.17	67	39	106
50.00	3.23	71	75	146
51.00	3.28	76	109	185
52.00	3.34	81	143	224


16-in APGD Pile
Lateral Deflection (in)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1
Case 2
Case 3
Case 4


16-in APGD
Unfactored Bending Moment (in-kips)
-1600
-1400
-1200
-1000
-800
-600
-400
-200
0
200
400
600
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1
Case 2
Case 3
Case 4

==

LPILE Plus for Windows, Version 5.0 (5.0.26)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

==

This program is licensed to:

Ying Liu
Group Delta Consultants, Inc

```
Path to file locations:      N:\Projects\700-799\L- 746 Archstone-Smith Grosvenor\Lateral Cap\
Name of input data file:     16 in APGD.lpd
Name of output file:         16 in APGD.lpo
Name of plot output file:    16 in APGD.lpp
Name of runtime file:        16 in APGD.lpr
```

Time and Date of Analysis

Date: May 4, 2007   Time: 11:26:51

Problem Title

16-in APGD

Program Options

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 1:
- Computation of Lateral Pile Response Using User-specified Constant EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis uses p-y multiplers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No additional p-y curves to be computed at user-specified depths

```
Solution Control Parameters:
- Number of pile increments            =          100
- Maximum number of iterations allowed =          100
- Deflection tolerance for convergence =   1.0000E-05 in
- Maximum allowable deflection         =   1.0000E+02 in
```

Printing Options:
- Values of pile-head deflection, bending moment, shear force, and
  soil reaction are printed for full length of pile.
- Printing Increment (spacing of output points) = 1

Pile Structural Properties and Geometry

```
Pile Length                             =     300.00 in
Depth of ground surface below top of pile =        .00 in
Slope angle of ground surface           =        .00 deg.
```

Structural properties of pile defined using 2 points

```
Point    Depth         Pile      Moment of       Pile      Modulus of
```

	X in	Diameter in	Inertia in**4	Area Sq.in	Elasticity lbs/Sq.in
1	0.0000	16.00000000	3217.0000	201.0000	3000000.
2	300.0000	16.00000000	3217.0000	201.0000	3000000.

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water
Distance from top of pile to top of layer = .000 in
Distance from top of pile to bottom of layer = 24.000 in

Layer 2 is soft clay, p-y criteria by Matlock, 1970
Distance from top of pile to top of layer = 24.000 in
Distance from top of pile to bottom of layer = 108.000 in

Layer 3 is soft clay, p-y criteria by Matlock, 1970
Distance from top of pile to top of layer = 108.000 in
Distance from top of pile to bottom of layer = 192.000 in

Layer 4 is stiff clay without free water
Distance from top of pile to top of layer = 192.000 in
Distance from top of pile to bottom of layer = 300.000 in

(Depth of lowest layer extends .00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Distribution of effective unit weight of soil with depth
is defined using 8 points

Point No.	Depth X in	Eff. Unit Weight lbs/in**3
1	.00	.07200
2	24.00	.07200
3	24.00	.06900
4	108.00	.06900
5	108.00	.03400
6	192.00	.03400
7	192.00	.03400
8	300.00	.03400

Shear Strength of Soils

Distribution of shear strength parameters with depth
defined using 8 points

Point No.	Depth X in	Cohesion c lbs/in**2	Angle of Friction Deg.	E50 or k_rm	RQD %
1	.000	13.90000	.00	------	------
2	24.000	13.90000	.00	------	------
3	24.000	1.25000	.00	------	------
4	108.000	1.25000	.00	------	------
5	108.000	4.86000	.00	------	------
6	192.000	7.86000	.00	------	------
7	192.000	8.33000	.00	------	------
8	300.000	8.33000	.00	------	------

Notes:

(1) Cohesion = uniaxial compressive strength for rock materials.
(2) Values of E50 are reported for clay strata.
(3) Default values will be generated for E50 when input values are 0.
(4) RQD and k_rm are reported only for weak rock strata.

p-y Modification Factors

Distribution of p-y multipliers with depth defined using 2 points

Point No.	Depth X in	p-mult	y-mult
1	.000	.6500	1.0000
2	300.000	.6500	1.0000

Loading Type

Cyclic loading criteria was used for computation of p-y curves

Number of cycles of loading = 15.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 4

Load Case Number 1

Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Deflection at pile head = .500 in
Slope at pile head = .000 in/in
Axial load at pile head = 200000.000 lbs

Load Case Number 2

Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Deflection at pile head = 1.000 in
Slope at pile head = .000 in/in
Axial load at pile head = 200000.000 lbs

Load Case Number 3

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = .500 in
Bending moment at pile head = .000 in-lbs
Axial load at pile head = 200000.000 lbs

Load Case Number 4

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = 1.000 in
Bending moment at pile head = .000 in-lbs
Axial load at pile head = 200000.000 lbs

Computed Values of Load Distribution and Deflection for Lateral Loading for Load Case Number 1

Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Specified deflection at pile head = .500000 in
Specified slope at pile head = 0.000E+00 in/in
Specified axial load at pile head = 200000.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	.500000	-967688.	17301.1990	0.0000	3401.4601	-238.5897	715.7690
3.000	.499549	-916806.	16559.3940	-.0002929	3274.9290	-247.2256	1484.6937
6.000	.498243	-867979.	15805.0615	-.0005703	3153.5058	-255.7480	1539.9006
9.000	.496127	-821292.	15025.2129	-.0008328	3037.4040	-264.1510	1597.2787
12.000	.493246	-776828.	14220.3429	-.0010812	2926.8333	-272.4290	1656.9575
15.000	.489640	-734672.	13390.8353	-.0013162	2821.9995	-280.5761	1719.0775
18.000	.485349	-694904.	12537.0908	-.0015384	2723.1046	-288.5868	1783.7912
21.000	.480410	-657604.	11659.5277	-.0017486	2630.3463	-296.4553	1851.2660
24.000	.474857	-622849.	10901.2758	-.0019476	2543.9179	-209.0460	1320.6873

27.000	.468724	-589859.	10543.7179	-.0021361	2461.8794	-29.3260	187.6967
30.000	.462041	-557023.	10453.8442	-.0023143	2380.2236	-30.5898	198.6177
33.000	.454838	-524359.	10360.2196	-.0024824	2298.9941	-31.8266	209.9204
36.000	.447147	-491883.	10262.9275	-.0026403	2218.2337	-33.0348	221.6375
39.000	.438996	-459613.	10162.0557	-.0027882	2137.9845	-34.2130	233.8040
42.000	.430417	-427565.	10057.6965	-.0029261	2058.2879	-35.3598	246.4571
45.000	.421439	-395755.	9949.9462	-.0030541	1979.1844	-36.4737	259.6367
48.000	.412093	-364200.	9838.9055	-.0031722	1900.7136	-37.5534	273.3858
51.000	.402406	-332915.	9724.6790	-.0032805	1822.9144	-38.5976	287.7507
54.000	.392410	-301915.	9607.3755	-.0033792	1745.8247	-39.6048	302.7814
57.000	.382131	-271216.	9487.1078	-.0034683	1669.4813	-40.5737	318.5324
60.000	.371600	-240831.	9363.9926	-.0035479	1593.9202	-41.5031	335.0628
63.000	.360844	-210774.	9238.1505	-.0036181	1519.1763	-42.3916	352.4371
66.000	.349891	-181060.	9109.7062	-.0036790	1445.2834	-43.2379	370.7259
69.000	.338770	-151701.	8978.9539	-.0037307	1372.2742	-43.9303	389.0274
72.000	.327507	-122710.	8847.9014	-.0037733	1300.1779	-43.4380	397.8963
75.000	.316130	-94085.9941	8718.3508	-.0038070	1228.9969	-42.9291	407.3869
78.000	.304665	-65831.1335	8590.3515	-.0038319	1158.7330	-42.4038	417.5445
81.000	.293139	-37945.6288	8463.9526	-.0038480	1089.3876	-41.8622	428.4198
84.000	.281577	-10429.8063	8339.2027	-.0038555	1020.9616	-41.3044	440.0689
87.000	.270006	16716.2215	8216.1499	-.0038546	1036.5946	-40.7308	452.5544
90.000	.258450	43492.5546	8094.8419	-.0038452	1103.1817	-40.1412	465.9462
93.000	.246935	69899.5049	7975.3260	-.0038276	1168.8502	-39.5360	480.3222
96.000	.235484	95937.5939	7857.6489	-.0038018	1233.6014	-38.9153	495.7694
99.000	.224124	121608.	7741.8571	-.0037680	1297.4372	-38.2792	512.3852
102.000	.212877	146910.	7627.9963	-.0037262	1360.3598	-37.6280	530.2785
105.000	.201766	171847.	7516.1119	-.0036767	1422.3722	-36.9617	549.5716
108.000	.190816	196419.	7330.0609	-.0036195	1483.4776	-87.0723	1368.9444
111.000	.180049	220171.	6961.7872	-.0035547	1542.5431	-158.4435	2640.0001
114.000	.169488	242455.	6483.7518	-.0034828	1597.9603	-160.2467	2836.4261
117.000	.159153	263253.	6000.5939	-.0034042	1649.6786	-161.8586	3051.0077
120.000	.149063	282544.	5512.9018	-.0033194	1697.6523	-163.2695	3285.9226
123.000	.139236	300313.	5021.2932	-.0032288	1741.8407	-164.4696	3543.6801
126.000	.129690	316546.	4526.4154	-.0031329	1782.2089	-165.4490	3827.1828
129.000	.120439	331231.	4028.9456	-.0030322	1818.7273	-166.1976	4139.8041
132.000	.111496	344359.	3529.5916	-.0029272	1851.3723	-166.7051	4485.4827
135.000	.102875	355922.	3029.0922	-.0028184	1880.1267	-166.9612	4868.8413
138.000	.094586	365915.	2528.2180	-.0027062	1904.9791	-166.9550	5295.3360
141.000	.086638	374338.	2027.7721	-.0025912	1925.9252	-166.6756	5771.4452
144.000	.079039	381191.	1528.5914	-.0024737	1942.9674	-166.1116	6304.9125
147.000	.071796	386478.	1031.7976	-.0023544	1956.1149	-165.0842	6898.0839
150.000	.064913	390207.	540.6203	-.0022337	1965.3884	-162.3673	7503.9568
153.000	.058394	392402.	57.9978	-.0021121	1970.8470	-159.3811	8188.2930
156.000	.052240	393090.	-415.2538	-.0019900	1972.5565	-156.1200	8965.4895
159.000	.046454	392299.	-878.2998	-.0018679	1970.5895	-152.5774	9853.5182
162.000	.041033	390062.	-1330.2841	-.0017463	1965.0257	-148.7454	10875.0933
165.000	.035976	386413.	-1770.3244	-.0016256	1955.9519	-144.6148	12059.3302
168.000	.031279	381390.	-2252.1586	-.0015063	1943.4623	-176.6080	16938.5774
171.000	.026938	374707.	-2772.9757	-.0013888	1926.8431	-170.6035	18999.5078
174.000	.022946	366419.	-3275.1294	-.0012736	1906.2318	-164.1656	21462.8467
177.000	.019297	356585.	-3757.2705	-.0011612	1881.7763	-157.2618	24449.1664
180.000	.015979	345269.	-4217.9332	-.0010521	1853.6358	-149.8467	28132.8065
183.000	.012984	332540.	-4655.4867	-.0009468	1821.9814	-141.8556	32776.7053
186.000	.010299	318472.	-5068.0587	-.0008456	1786.9978	-133.1924	38799.4212
189.000	.007910	303146.	-5453.4082	-.0007490	1748.8856	-123.7073	46916.5986
192.000	.005805	286650.	-5800.1545	-.0006573	1707.8640	-107.4569	55536.6468
195.000	.003966	269134.	-6113.8884	-.0005709	1664.3045	-101.6990	76921.0051
198.000	.002379	250652.	-6402.6955	-.0004901	1618.3441	-90.8391	114548.
201.000	.001026	231306.	-6651.2471	-.0004152	1570.2343	-74.8620	218999.
204.000	-.000112	211243.	-6711.3368	-.0003465	1520.3417	34.8022	929376.
207.000	-.001053	191454.	-6544.3257	-.0002839	1471.1301	76.5386	218017.
210.000	-.001816	172318.	-6295.9219	-.0002273	1423.5427	89.0640	147171.
213.000	-.002417	153951.	-6016.8365	-.0001766	1377.8687	96.9930	120381.
216.000	-.002875	136429.	-5717.3962	-.0001315	1334.2941	102.6339	107089.
219.000	-.003206	119804.	-5403.2061	-9.1657E-05	1292.9533	106.8261	99960.9826
222.000	-.003425	104119.	-5077.9994	-5.6854E-05	1253.9478	109.9784	96327.3602
225.000	-.003547	89404.6906	-4744.5478	-2.6775E-05	1217.3555	112.3228	94996.7166
228.000	-.003586	75684.2276	-4405.0569	-1.1166E-06	1183.2356	114.0045	95380.0464
231.000	-.003554	62975.6891	-4062.5672	2.0434E-05	1151.6321	114.3220	96505.2923
234.000	-.003463	51284.3031	-3720.7070	3.8193E-05	1122.5581	113.5848	98393.2383
237.000	-.003325	40605.6155	-3381.6861	5.2475E-05	1096.0025	112.4291	101449.
240.000	-.003148	30931.2165	-3046.6873	6.3594E-05	1071.9443	110.9034	105678.
243.000	-.002943	22249.1793	-2716.7647	7.1859E-05	1050.3539	109.0450	111152.
246.000	-.002717	14544.3971	-2392.8735	7.7578E-05	1031.1937	106.8825	118007.
249.000	-.002478	7798.8449	-2075.8933	8.1051E-05	1014.4190	104.4376	126455.
252.000	-.002231	1991.7767	-1766.6485	8.2572E-05	999.9780	101.7256	136797.
255.000	-.001982	-2900.1327	-1465.9271	8.2431E-05	1002.2369	98.7553	149461.
258.000	-.001736	-6902.7033	-1174.5011	8.0908E-05	1012.1904	95.5287	165056.
261.000	-.001497	-10044.2283	-893.1501	7.8274E-05	1020.0028	92.0387	184472.
264.000	-.001267	-12355.5320	-622.6935	7.4792E-05	1025.7505	88.2657	209053.
267.000	-.001048	-13870.1399	-364.0379	7.0716E-05	1029.5170	84.1714	240940.
270.000	-.000842	-14624.6185	-118.2521	6.6287E-05	1031.3932	79.6858	283797.
273.000	-.000650	-14659.1970	113.2997	6.1736E-05	1031.4792	74.6821	344521.

276.000	-.000472	-14018.9029	328.6969	5.7279E-05	1029.8869	68.9161	438081.
279.000	-.000307	-12755.7497	590.5778	5.3117E-05	1026.7457	105.6712	1033824.
282.000	-.000153	-10539.1766	828.2952	4.9496E-05	1021.2336	52.8071	1033824.
285.000	-9.66E-06	-7845.3742	912.5006	4.6639E-05	1014.5347	3.3299	1033824.
288.000	.000127	-5120.1398	852.0562	4.4624E-05	1007.7576	-43.6261	1033824.
291.000	.000258	-2786.5856	653.2119	4.3395E-05	1001.9545	-88.9367	1033824.
294.000	.000387	-1252.9422	421.4002	4.2767E-05	998.1407	-65.6044	508606.
297.000	.000515	-309.5051	217.3286	4.2524E-05	995.7945	-70.4433	410601.
300.000	.000642	0.0000	0.0000	4.2476E-05	995.0249	-74.4424	173900.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =       .50000000 in
Computed slope at pile head      =     -.00000791
Maximum bending moment           =  -967687.76809 lbs-in
Maximum shear force              =    17301.19899 lbs
Depth of maximum bending moment  =        0.00000 in
Depth of maximum shear force     =        0.00000 in
Number of iterations             =             16
Number of zero deflection points =              2
```

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 2

```
Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Specified deflection at pile head   =        1.000000 in
Specified slope at pile head        =       0.000E+00 in/in
Specified axial load at pile head   =      200000.000 lbs
```

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	1.000000	-1624300.	24630.6228	0.0000	5034.3156	-283.7325	425.5988
3.000	.999243	-1551580.	23748.4505	-.0004936	4853.4756	-294.0132	882.7080
6.000	.997038	-1481216.	22851.2942	-.0009650	4678.4963	-304.1796	915.2493
9.000	.993453	-1413314.	21923.6872	-.0014149	4509.6379	-314.2251	948.8879
12.000	.988549	-1347976.	20966.1347	-.0018440	4347.1567	-324.1433	983.6939
15.000	.982389	-1285304.	19979.0284	-.0022533	4191.3050	-333.9276	1019.7419
18.000	.975029	-1225398.	18962.7795	-.0026435	4042.3307	-343.5717	1057.1118
21.000	.966527	-1168355.	17917.8184	-.0030156	3900.4777	-353.0690	1095.8893
24.000	.956936	-1114272.	17086.5215	-.0033704	3765.9848	-201.1289	630.5405
27.000	.946305	-1061792.	16729.2315	-.0037086	3635.4766	-37.0644	117.5025
30.000	.934684	-1009447.	16615.6035	-.0040305	3505.3055	-38.6876	124.1732
33.000	.922122	-957261.	16497.1507	-.0043362	3375.5321	-40.2810	131.0488
36.000	.908668	-905260.	16373.9646	-.0046256	3246.2162	-41.8430	138.1463
39.000	.894368	-853467.	16246.1421	-.0048990	3117.4169	-43.3720	145.4836
42.000	.879274	-801905.	16113.7846	-.0051563	2989.1925	-44.8663	153.0797
45.000	.863431	-750597.	15976.9985	-.0053976	2861.6003	-46.3244	160.9547
48.000	.846888	-699566.	15835.8947	-.0056230	2734.6968	-47.7448	169.1301
51.000	.829693	-648834.	15690.5889	-.0058325	2608.5374	-49.1258	177.6288
54.000	.811893	-598423.	15541.2011	-.0060264	2483.1766	-50.4660	186.4755
57.000	.793535	-548355.	15387.8560	-.0062046	2358.6677	-51.7640	195.6966
60.000	.774665	-498650.	15230.6827	-.0063674	2235.0629	-53.0182	205.3205
63.000	.755331	-449330.	15069.8146	-.0065147	2112.4136	-54.2272	215.3781
66.000	.735577	-400414.	14905.3894	-.0066468	1990.7694	-55.3896	225.9026
69.000	.715450	-351921.	14737.7620	-.0067637	1870.1793	-56.3620	236.3353
72.000	.694995	-303871.	14569.4894	-.0068656	1750.6873	-55.8197	240.9502
75.000	.674256	-256266.	14402.8716	-.0069527	1632.3038	-55.2589	245.8660
78.000	.653279	-209110.	14237.9636	-.0070250	1515.0381	-54.6798	251.1016
81.000	.632106	-162408.	14074.8200	-.0070828	1398.8992	-54.0826	256.6780
84.000	.610782	-116162.	13913.4950	-.0071261	1283.8955	-53.4675	262.6181
87.000	.589350	-70375.7384	13754.0418	-.0071550	1170.0345	-52.8346	268.9471
90.000	.567852	-25051.7770	13596.5135	-.0071699	1057.3234	-52.1843	275.6930
93.000	.546330	19807.1984	13440.9623	-.0071707	1044.2812	-51.5165	282.8866
96.000	.524828	64198.8309	13287.4401	-.0071576	1154.6738	-50.8316	290.5617
99.000	.503385	108121.	13135.9981	-.0071309	1263.8990	-50.1297	298.7559
102.000	.482042	151572.	12986.6871	-.0070905	1371.9521	-49.4110	307.5104
105.000	.460842	194550.	12839.5569	-.0070367	1478.8290	-48.6758	316.8710
108.000	.439822	237053.	12594.0184	-.0069696	1584.5262	-115.0165	784.5204
111.000	.419024	278477.	12106.5445	-.0068895	1687.5393	-209.9661	1503.2513
114.000	.398485	317960.	11471.9784	-.0067968	1785.7240	-213.0780	1604.1591
117.000	.378243	355465.	10828.3675	-.0066921	1878.9923	-215.9960	1713.1516

120.000	.358333	390961.	10176.3094	-.0065761	1967.2614	-218.7094	1831.0590
123.000	.338787	424415.	9516.4346	-.0064494	2050.4543	-221.2072	1958.8189
126.000	.319636	455798.	8849.4064	-.0063126	2128.4995	-223.4783	2097.4929
129.000	.300911	485086.	8175.9217	-.0061663	2201.3316	-225.5116	2248.2875
132.000	.282638	512254.	7496.7109	-.0060113	2268.8915	-227.2956	2412.5778
135.000	.264843	537280.	6812.5391	-.0058482	2331.1267	-228.8189	2591.9374
138.000	.247549	560147.	6124.2058	-.0056776	2387.9915	-230.0699	2788.1732
141.000	.230777	580838.	5432.5463	-.0055003	2439.4473	-231.0365	3003.3693
144.000	.214547	599342.	4738.4315	-.0053169	2485.4628	-231.7067	3239.9394
147.000	.198876	615649.	4043.1211	-.0051280	2526.0145	-231.8335	3497.1554
150.000	.183779	629755.	3350.8476	-.0049345	2561.0919	-229.6821	3749.3190
153.000	.169269	641676.	2665.4699	-.0047369	2590.7368	-227.2364	4027.3643
156.000	.155358	651432.	1987.8777	-.0045359	2614.9982	-224.4918	4334.9925
159.000	.142054	659046.	1318.9746	-.0043322	2633.9331	-221.4435	4676.6045
162.000	.129365	664544.	659.6801	-.0041265	2647.6061	-218.0861	5057.4705
165.000	.117295	667956.	10.9304	-.0039194	2656.0900	-214.4137	5483.9514
168.000	.105849	669313.	-708.3581	-.0037115	2659.4652	-265.1119	7513.9058
171.000	.095026	668159.	-1495.5226	-.0035037	2656.5965	-259.6644	8197.6845
174.000	.084827	664544.	-2265.7044	-.0032965	2647.6063	-253.7901	8975.6102
177.000	.075247	658521.	-3017.6018	-.0030909	2632.6278	-247.4748	9866.5118
180.000	.066281	650148.	-3749.8647	-.0028875	2611.8052	-240.7005	10894.4980
183.000	.057922	639487.	-4461.0822	-.0026870	2585.2938	-233.4445	12090.9787
186.000	.050159	626606.	-5149.7653	-.0024903	2553.2611	-225.6775	13497.7200
189.000	.042980	611577.	-5814.3228	-.0022978	2515.8868	-217.3608	15171.6185
192.000	.036372	594477.	-6395.1632	-.0021104	2473.3641	-169.8661	14010.6792
195.000	.030318	575738.	-6903.2837	-.0019285	2426.7639	-168.8809	16710.8422
198.000	.024801	555372.	-7400.8971	-.0017527	2376.1170	-162.8613	19700.0100
201.000	.019802	533436.	-7879.3072	-.0015835	2321.5674	-156.0788	23645.8026
204.000	.015300	509996.	-8335.9249	-.0014213	2263.2772	-148.3330	29084.0580
207.000	.011274	485126.	-8767.3608	-.0012666	2201.4306	-139.2909	37063.8891
210.000	.007701	458912.	-9168.7975	-.0011199	2136.2415	-128.3336	49995.3281
213.000	.004555	431457.	-9532.4122	-.0009815	2067.9673	-114.0762	75131.8735
216.000	.001812	402895.	-9841.4517	-.0008518	1996.9399	-91.9501	152261.
219.000	-.000556	373430.	-9876.9462	-.0007312	1923.6676	68.2871	368501.
222.000	-.002575	344511.	-9621.0114	-.0006196	1851.7505	102.3360	119212.
225.000	-.004273	316448.	-9290.9600	-.0005169	1781.9640	117.6983	82625.6426
228.000	-.005676	289385.	-8922.4969	-.0004227	1714.6650	127.9438	67618.3728
231.000	-.006810	263420.	-8528.6835	-.0003368	1650.0952	134.5984	59298.0724
234.000	-.007697	238617.	-8118.5844	-.0002587	1588.4157	138.8010	54098.8515
237.000	-.008362	215019.	-7697.8066	-.0001882	1529.7321	141.7175	50843.0927
240.000	-.008827	192656.	-7269.7501	-.0001249	1474.1205	143.6536	48825.7294
243.000	-.009111	171550.	-6837.0632	-6.8269E-05	1421.6347	144.8043	47678.4741
246.000	-.009236	151716.	-6401.9036	-1.8026E-05	1372.3103	145.3021	47195.8059
249.000	-.009219	133161.	-5966.0909	2.6251E-05	1326.1674	145.2397	47260.8294
252.000	-.009079	115888.	-5531.2049	6.4959E-05	1283.2135	144.6843	47810.4731
255.000	-.008830	99895.5171	-5098.6525	9.8497E-05	1243.4439	143.6840	48818.4282
258.000	-.008488	85177.7236	-4669.7168	.0001273	1206.8439	142.2731	50287.2169
261.000	-.008066	71724.5014	-4245.5965	.0001516	1173.3886	140.4738	52245.8311
264.000	-.007578	59522.1664	-3827.4386	.0001720	1143.0439	138.2981	54751.7274
267.000	-.007034	48553.4125	-3416.3709	.0001888	1115.7670	135.7471	57897.4388
270.000	-.006445	38797.3271	-3013.5341	.0002024	1091.5056	132.8107	61823.5610
273.000	-.005819	30229.3022	-2620.1211	.0002132	1070.1988	129.4646	66742.2128
276.000	-.005166	22820.8202	-2237.4261	.0002214	1051.7754	125.6655	72979.7857
279.000	-.004491	16539.0715	-1866.9131	.0002275	1036.1541	121.3432	81058.6634
282.000	-.003801	11346.3265	-1510.3218	.0002318	1023.2408	116.3843	91865.7196
285.000	-.003100	7198.9244	-1169.8430	.0002347	1012.9271	110.6016	107039.
288.000	-.002392	4045.5936	-848.4456	.0002365	1005.0854	103.6633	129996.
291.000	-.001681	1824.4783	-550.5886	.0002374	999.5620	94.9080	169378.
294.000	-.000968	457.1951	-284.2195	.0002377	996.1618	82.6713	256219.
297.000	-.000255	-166.1312	-28.6414	.0002378	995.4380	87.7141	1033824.
300.000	.000459	0.0000	0.0000	.0002378	995.0249	-68.6198	224367.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection            =     1.00000000 in
Computed slope at pile head     =     -.00001130
Maximum bending moment          =      -1624300. lbs-in
Maximum shear force             =    24630.62276 lbs
Depth of maximum bending moment =        0.00000 in
Depth of maximum shear force    =        0.00000 in
Number of iterations            =             21
Number of zero deflection points =             2
```

Computed Values of Load Distribution and Deflection for Lateral Loading for Load Case Number 3

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Specified deflection at pile head = .500000 in
Specified moment at pile head = .000 in-lbs
Specified axial load at pile head = 200000.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	.500000	0.0000	9285.5349	-.0050320	995.0249	-238.5897	715.7690
3.000	.484904	29802.1375	8559.5601	-.0050273	1069.1365	-245.3936	1518.1986
6.000	.469836	57390.1745	7813.4363	-.0050138	1137.7421	-252.0223	1609.2147
9.000	.454821	82699.3070	7047.6937	-.0049920	1200.6806	-258.4728	1704.8856
12.000	.439884	105667.	6262.8717	-.0049627	1257.7958	-264.7419	1805.5351
15.000	.425045	126232.	5459.5192	-.0049267	1308.9368	-270.8265	1911.5146
18.000	.410324	144336.	4638.1945	-.0048846	1353.9578	-276.7233	2023.2076
21.000	.395737	159923.	3799.4663	-.0048374	1392.7186	-282.4289	2141.0348
24.000	.381299	172938.	3084.3699	-.0047856	1425.0840	-194.3020	1528.7357
27.000	.367023	184172.	2752.3719	-.0047301	1453.0206	-27.0300	220.9397
30.000	.352919	195128.	2669.8830	-.0046712	1480.2668	-27.9625	237.6967
33.000	.338996	205796.	2584.6550	-.0046089	1506.7967	-28.8561	255.3667
36.000	.325266	216166.	2496.8058	-.0045433	1532.5853	-29.7100	274.0225
39.000	.311737	226229.	2406.4553	-.0044745	1557.6087	-30.5236	293.7442
42.000	.298419	235975.	2313.7257	-.0044027	1581.8440	-31.2961	314.6199
45.000	.285321	245395.	2218.7411	-.0043279	1605.2694	-32.0269	336.7468
48.000	.272451	254480.	2121.6279	-.0042502	1627.8642	-32.7153	360.2323
51.000	.259820	263225.	2022.5143	-.0041697	1649.6087	-33.3604	385.1956
54.000	.247433	271619.	1921.5310	-.0040866	1670.4846	-33.9618	411.7688
57.000	.235300	279658.	1818.8107	-.0040009	1690.4743	-34.5185	440.0992
60.000	.223428	287333.	1714.4882	-.0039128	1709.5618	-35.0298	470.3511
63.000	.211823	294640.	1608.7007	-.0038223	1727.7320	-35.4951	502.7082
66.000	.200494	301572.	1501.5877	-.0037296	1744.9711	-35.9136	537.3767
69.000	.189446	308125.	1393.4273	-.0036349	1761.2666	-36.1933	573.1463
72.000	.178685	314295.	1285.8952	-.0035381	1776.6091	-35.4947	595.9335
75.000	.168217	320086.	1180.4716	-.0034396	1791.0115	-34.7877	620.4079
78.000	.158047	325505.	1077.1820	-.0033392	1804.4868	-34.0721	646.7447
81.000	.148181	330556.	976.0520	-.0032372	1817.0485	-33.3479	675.1434
84.000	.138624	335246.	877.1076	-.0031338	1828.7106	-32.6150	705.8314
87.000	.129379	339579.	780.3751	-.0030289	1839.4872	-31.8733	739.0693
90.000	.120451	343563.	685.8811	-.0029227	1849.3930	-31.1227	775.1565
93.000	.111843	347202.	593.6525	-.0028153	1858.4428	-30.3630	814.4387
96.000	.103559	350503.	503.7168	-.0027069	1866.6521	-29.5941	857.3161
99.000	.095601	353473.	416.1016	-.0025975	1874.0364	-28.8160	904.2549
102.000	.087974	356117.	330.8350	-.0024872	1880.6119	-28.0284	955.7996
105.000	.080678	358442.	247.9455	-.0023761	1886.3949	-27.2313	1012.5899
108.000	.073717	360456.	111.9715	-.0022644	1891.4021	-63.4180	2580.8765
111.000	.067092	361831.	-154.1869	-.0021521	1894.8229	-114.0209	5098.4321
114.000	.060804	362113.	-496.0222	-.0020396	1895.5239	-113.8693	5618.1763
117.000	.054854	361303.	-837.0604	-.0019272	1893.5084	-113.4896	6206.8144
120.000	.049241	359403.	-1176.6012	-.0018152	1888.7853	-112.8710	6876.6548
123.000	.043963	356421.	-1513.9105	-.0017039	1881.3694	-112.0019	7642.9192
126.000	.039017	352365.	-1848.2182	-.0015938	1871.2814	-110.8699	8524.6401
129.000	.034400	347244.	-2178.7151	-.0014850	1858.5486	-109.4614	9545.9130
132.000	.030107	341074.	-2504.5488	-.0013780	1843.2049	-107.7611	10737.6802
135.000	.026132	333871.	-2824.8179	-.0012731	1825.2911	-105.7516	12140.3355
138.000	.022469	325653.	-3138.5644	-.0011706	1804.8557	-103.4127	13807.6335
141.000	.019109	316444.	-3444.7629	-.0010708	1781.9547	-100.7197	15812.7556
144.000	.016044	306270.	-3742.3055	-.0009740	1756.6528	-97.6420	18258.0931
147.000	.013264	295159.	-4029.8363	-.0008806	1729.0235	-94.0452	21270.2665
150.000	.010760	283147.	-4304.7324	-.0007907	1699.1524	-89.2189	24874.5883
153.000	.008520	270280.	-4564.4687	-.0007047	1667.1532	-83.9386	29555.0835
156.000	.006532	256606.	-4807.5380	-.0006228	1633.1500	-78.1076	35871.6800
159.000	.004784	242182.	-5032.0468	-.0005453	1597.2797	-71.5650	44881.6799
162.000	.003261	227068.	-5235.4177	-.0004723	1559.6953	-64.0156	58896.6371
165.000	.001950	211336.	-5413.6751	-.0004042	1520.5729	-54.8226	84357.0118
168.000	.000836	195071.	-5575.4377	-.0003410	1480.1254	-53.0191	190336.
171.000	-9.64E-05	178293.	-5627.9051	-.0002830	1438.4009	18.0408	561324.
174.000	-.000862	161643.	-5518.7201	-.0002301	1396.9974	54.7492	190489.
177.000	-.001477	145456.	-5336.6950	-.0001824	1356.7443	66.6010	135247.
180.000	-.001957	129842.	-5125.4080	-.0001396	1317.9144	74.2570	113847.
183.000	-.002315	114872.	-4894.4806	-.0001016	1280.6862	79.6945	103271.
186.000	-.002566	100597.	-4649.4410	-6.8108E-05	1245.1883	83.6652	97803.1697
189.000	-.002724	87056.6364	-4394.1228	-3.8942E-05	1211.5164	86.5469	95324.5992
192.000	-.002800	74278.9756	-4130.2791	-1.3866E-05	1179.7410	89.3489	95731.4661
195.000	-.002807	62291.6014	-3856.7177	7.3601E-06	1149.9309	93.0254	99423.2616
198.000	-.002756	51129.8376	-3576.3383	2.4989E-05	1122.1740	93.8942	102213.
201.000	-.002657	40803.5852	-3294.0137	3.9277E-05	1096.4948	94.3222	106498.
204.000	-.002520	31318.6226	-3011.0116	5.0487E-05	1072.9077	94.3459	112309.
207.000	-.002354	22676.9315	-2728.5064	5.8879E-05	1051.4176	93.9909	119780.
210.000	-.002167	14876.9294	-2447.6060	6.4716E-05	1032.0207	93.2760	129138.

213.000	-.001966	7913.6365	-2169.3714	6.8258E-05	1014.7044	92.2138	140727.
216.000	-.001757	1778.7914	-1894.8320	6.9764E-05	999.4484	90.8125	155028.
219.000	-.001547	-3539.0726	-1624.9981	6.9491E-05	1003.8258	89.0767	172717.
222.000	-.001340	-8054.5863	-1360.8727	6.7689E-05	1015.0549	87.0069	194734.
225.000	-.001141	-11785.5353	-1103.4622	6.4605E-05	1024.3330	84.6001	222420.
228.000	-.000953	-14752.8858	-853.7894	6.0481E-05	1031.7122	81.8484	257719.
231.000	-.000778	-16980.8487	-613.7279	5.5548E-05	1037.2527	78.1926	301436.
234.000	-.000619	-18501.9111	-385.6658	5.0033E-05	1041.0352	73.8488	357637.
237.000	-.000478	-19354.8836	-171.0874	4.4150E-05	1043.1564	69.2035	434332.
240.000	-.000355	-19581.4150	29.0349	3.8098E-05	1043.7197	64.2114	543282.
243.000	-.000249	-19226.3916	254.2761	3.2066E-05	1042.8369	85.9493	1033824.
246.000	-.000162	-18094.2383	467.0317	2.6266E-05	1040.0214	55.8878	1033824.
249.000	-9.18E-05	-16455.7204	598.3248	2.0896E-05	1035.9468	31.6410	1033824.
252.000	-3.68E-05	-14529.3646	664.8100	1.6080E-05	1031.1563	12.6825	1033824.
255.000	4.66E-06	-12486.1565	681.4235	1.1881E-05	1026.0753	-1.6068	1033824.
258.000	3.45E-05	-10455.0811	661.1879	8.3155E-06	1021.0245	-11.8835	1033824.
261.000	5.46E-05	-8529.0077	615.1620	5.3649E-06	1016.2347	-18.8004	1033824.
264.000	6.67E-05	-6770.5471	552.4969	2.9870E-06	1011.8618	-22.9763	1033824.
267.000	7.25E-05	-5217.6106	480.5677	1.1238E-06	1008.0000	-24.9765	1033824.
270.000	7.34E-05	-3888.4893	405.1532	-2.9156E-07	1004.6947	-25.2999	1033824.
273.000	7.07E-05	-2786.3415	330.6430	-1.3290E-06	1001.9539	-24.3736	1033824.
276.000	6.54E-05	-1903.0367	260.2546	-2.0578E-06	999.7573	-22.5520	1033824.
279.000	5.84E-05	-1222.3448	196.2484	-2.5436E-06	998.0646	-20.1188	1033824.
282.000	5.02E-05	-722.4938	140.1312	-2.8459E-06	996.8216	-17.2927	1033824.
285.000	4.13E-05	-378.1426	92.8403	-3.0169E-06	995.9652	-14.2345	1033824.
288.000	3.21E-05	-161.8316	54.9064	-3.1009E-06	995.4273	-11.0548	1033824.
291.000	2.27E-05	-44.9833	26.5897	-3.1330E-06	995.1367	-7.8230	1033824.
294.000	1.33E-05	1.4660	7.9899	-3.1398E-06	995.0285	-4.5768	1033824.
297.000	3.86E-06	6.7236	-.8720393	-3.1385E-06	995.0416	-1.3311	1033824.
300.000	-5.55E-06	0.0000	0.0000	-3.1374E-06	995.0249	1.9125	516912.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      .50000000 in
Computed slope at pile head      =     -.00503198
Maximum bending moment           =   362113.15480 lbs-in
Maximum shear force              =     9285.53495 lbs
Depth of maximum bending moment  =      114.00000 in
Depth of maximum shear force     =        0.00000 in
Number of iterations             =             14
Number of zero deflection points =              3
```

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 4

```
Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Specified deflection at pile head   =        1.000000 in
Specified moment at pile head       =            .000 in-lbs
Specified axial load at pile head   =      200000.000 lbs
```

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	1.000000	0.0000	12282.0254	-.0091837	995.0249	-283.7325	425.5988
3.000	.972449	41079.4995	11418.3934	-.0091773	1097.1809	-292.0221	900.8869
6.000	.944936	79523.1380	10530.1720	-.0091586	1192.7821	-300.1254	952.8435
9.000	.917497	115251.	9617.9256	-.0091283	1281.6293	-308.0388	1007.2142
12.000	.890166	148185.	8682.2292	-.0090874	1363.5288	-315.7588	1064.1566
15.000	.862973	178249.	7723.6685	-.0090366	1438.2926	-323.2817	1123.8413
18.000	.835947	205371.	6742.8402	-.0089770	1505.7382	-330.6038	1186.4532
21.000	.809111	229478.	5740.3524	-.0089094	1565.6893	-337.7214	1252.1935
24.000	.782490	250504.	4914.1035	-.0088348	1617.9755	-213.1113	817.0502
27.000	.756103	269565.	4542.8467	-.0087540	1665.3757	-34.3933	136.4629
30.000	.729966	288266.	4437.8155	-.0086673	1711.8812	-35.6274	146.4209
33.000	.704099	306592.	4329.1488	-.0085748	1757.4556	-36.8171	156.8689
36.000	.678517	324531.	4216.9810	-.0084767	1802.0638	-37.9614	167.8427
39.000	.653239	342066.	4101.4494	-.0083731	1845.6719	-39.0597	179.3816
42.000	.628279	359187.	3982.6934	-.0082641	1888.2471	-40.1110	191.5283
45.000	.603654	375880.	3860.8547	-.0081499	1929.7580	-41.1147	204.3294
48.000	.579379	392132.	3736.0776	-.0080305	1970.1743	-42.0700	217.8364
51.000	.555471	407933.	3608.5088	-.0079062	2009.4672	-42.9759	232.1054
54.000	.531942	423270.	3478.2973	-.0077770	2047.6091	-43.8318	247.1983

57.000	.508809	438135.	3345.5946	-.0076431	2084.5736	-44.6367	263.1834
60.000	.486084	452516.	3210.5549	-.0075047	2120.3359	-45.3898	280.1358
63.000	.463781	466404.	3073.3346	-.0073618	2154.8724	-46.0904	298.1390
66.000	.441913	479790.	2934.0927	-.0072148	2188.1611	-46.7375	317.2854
69.000	.420492	492666.	2793.1693	-.0070636	2220.1812	-47.2115	336.8301
72.000	.399531	505025.	2652.7317	-.0069086	2250.9162	-46.4136	348.5107
75.000	.379041	516873.	2514.7020	-.0067497	2280.3781	-45.6062	360.9602
78.000	.359032	528213.	2379.1088	-.0065873	2308.5796	-44.7892	374.2493
81.000	.339517	539052.	2245.9812	-.0064214	2335.5337	-43.9626	388.4569
84.000	.320504	549395.	2115.3482	-.0062523	2361.2538	-43.1261	403.6719
87.000	.302003	559247.	1987.2392	-.0060800	2385.7539	-42.2799	419.9941
90.000	.284024	568614.	1861.6839	-.0059047	2409.0483	-41.4237	437.5366
93.000	.266575	577503.	1738.7123	-.0057265	2431.1519	-40.5574	456.4273
96.000	.249665	585918.	1618.3546	-.0055457	2452.0800	-39.6811	476.8115
99.000	.233301	593868.	1500.6413	-.0053623	2471.8482	-38.7945	498.8550
102.000	.217491	601357.	1385.6032	-.0051766	2490.4726	-37.8976	522.7472
105.000	.202242	608393.	1273.2712	-.0049885	2507.9700	-36.9904	548.7054
108.000	.187560	614983.	1087.9256	-.0047984	2524.3573	-86.5733	1384.7316
111.000	.173451	620679.	723.3421	-.0046063	2538.5218	-156.4824	2706.5056
114.000	.159922	624850.	252.8613	-.0044128	2548.8961	-157.1715	2948.4073
117.000	.146975	627491.	-219.3234	-.0042181	2555.4630	-157.6183	3217.2515
120.000	.134613	628596.	-692.4679	-.0040229	2558.2111	-157.8114	3517.0006
123.000	.122837	628164.	-1165.7931	-.0038276	2557.1357	-157.7388	3852.3767
126.000	.111648	626195.	-1638.4831	-.0036326	2552.2386	-157.3879	4229.0484
129.000	.101042	622692.	-2109.6830	-.0034385	2543.5286	-156.7454	4653.8746
132.000	.091017	617663.	-2578.4971	-.0032457	2531.0216	-155.7973	5135.2290
135.000	.081568	611116.	-3043.9852	-.0030547	2514.7412	-154.5281	5683.4361
138.000	.072688	603064.	-3505.1590	-.0028660	2494.7188	-152.9211	6311.3699
141.000	.064372	593524.	-3960.9769	-.0026800	2470.9942	-150.9574	7035.2885
144.000	.056608	582515.	-4410.3367	-.0024973	2443.6158	-148.6158	7876.0260
147.000	.049388	570059.	-4851.8464	-.0023181	2412.6409	-145.7240	8851.7823
150.000	.042699	556185.	-5282.2378	-.0021431	2378.1403	-141.2035	9920.7411
153.000	.036530	540937.	-5698.5001	-.0019725	2340.2213	-136.3047	11194.0424
156.000	.030864	524361.	-6099.4489	-.0018070	2299.0008	-130.9945	12732.6681
159.000	.025688	506509.	-6483.7826	-.0016468	2254.6053	-125.2279	14625.0079
162.000	.020984	487435.	-6850.0367	-.0014923	2207.1722	-118.9414	17004.8439
165.000	.016734	467199.	-7196.5116	-.0013439	2156.8509	-112.0418	20086.1989
168.000	.012920	445868.	-7561.8504	-.0012020	2103.8053	-131.5174	30537.3845
171.000	.009522	423271.	-7940.0530	-.0010669	2047.6095	-120.6176	38000.7610
174.000	.006519	399508.	-8282.8470	-.0009390	1988.5177	-107.9118	49660.9145
177.000	.003888	374700.	-8583.0022	-.0008187	1926.8255	-92.1917	71133.0147
180.000	.001607	348993.	-8825.8283	-.0007062	1862.8961	-69.6923	130121.
183.000	-.000349	322593.	-8866.7686	-.0006018	1797.2451	42.3988	364347.
186.000	-.002004	296514.	-8687.4839	-.0005056	1732.3933	77.1243	115446.
189.000	-.003383	271075.	-8432.1060	-.0004174	1669.1302	93.1275	82590.9785
192.000	-.004508	246423.	-8141.2617	-.0003370	1607.8257	100.7687	67052.6436
195.000	-.005404	222631.	-7825.5428	-.0002641	1548.6621	109.7106	60900.1213
198.000	-.006093	199786.	-7489.0304	-.0001984	1491.8508	114.6310	56442.5363
201.000	-.006595	177935.	-7139.2809	-.0001397	1437.5124	118.5353	53921.8535
204.000	-.006931	157118.	-6779.0044	-8.7615E-05	1385.7444	121.6490	52654.7434
207.000	-.007121	137366.	-6410.3599	-4.1845E-05	1336.6261	124.1140	52291.3252
210.000	-.007182	118706.	-6035.1511	-2.0454E-06	1290.2220	126.0252	52641.9754
213.000	-.007133	101158.	-5654.9394	3.2127E-05	1246.5833	127.4493	53604.1352
216.000	-.006989	84737.9364	-5271.1136	6.1020E-05	1205.7502	128.4347	55128.0432
219.000	-.006767	69458.0378	-4884.9352	8.4985E-05	1167.7524	129.0176	57199.7398
222.000	-.006479	55326.3427	-4497.5707	.0001044	1132.6098	129.2254	59832.6491
225.000	-.006140	42347.3577	-4110.1134	.0001196	1100.3338	129.0795	63063.9519
228.000	-.005762	30522.1896	-3723.6002	.0001309	1070.9271	128.5960	66954.0570
231.000	-.005355	19848.6926	-3340.3542	.0001387	1044.3844	126.9014	71092.0350
234.000	-.004930	10313.6062	-2963.5412	.0001434	1020.6726	124.3073	75648.1657
237.000	-.004495	1895.3617	-2594.8687	.0001453	999.7382	121.4744	81078.9542
240.000	-.004058	-5429.9669	-2235.0353	.0001448	1008.5281	118.4146	87544.0793
243.000	-.003626	-11688.5518	-1884.7085	.0001421	1024.0918	115.1366	95254.9733
246.000	-.003205	-16908.7271	-1544.5346	.0001376	1037.0733	111.6460	104494.
249.000	-.002800	-21120.9348	-1215.1493	.0001317	1047.5482	107.9442	115643.
252.000	-.002415	-24357.7052	-897.1911	.0001247	1055.5973	104.0279	129231.
255.000	-.002052	-26653.6818	-591.3193	.0001167	1061.3070	99.8867	146013.
258.000	-.001714	-28045.7069	-298.2385	.0001082	1064.7686	95.5004	167105.
261.000	-.001403	-28572.9972	-18.7386	9.9437E-05	1066.0799	90.8328	194245.
264.000	-.001118	-28277.4629	246.2425	9.0601E-05	1065.3450	85.8212	230315.
267.000	-.000859	-27204.2636	495.5067	8.1978E-05	1062.6761	80.3550	280551.
270.000	-.000626	-25402.7958	727.3808	7.3801E-05	1058.1963	74.2277	355720.
273.000	-.000416	-22928.5403	939.2372	6.6289E-05	1052.0433	67.0099	482724.
276.000	-.000228	-19846.9198	1157.7480	5.9641E-05	1044.3800	78.6640	1033824.
279.000	-5.86E-05	-16053.6217	1306.0358	5.4061E-05	1034.9468	20.1946	1033824.
282.000	9.61E-05	-12075.5784	1286.6539	4.9689E-05	1025.0543	-33.1158	1033824.
285.000	.000240	-8393.3254	1113.1618	4.6508E-05	1015.8973	-82.5456	1033824.
288.000	.000375	-5452.4170	890.9563	4.4356E-05	1008.5839	-65.5914	524529.
291.000	.000506	-3100.8147	686.5956	4.3027E-05	1002.7359	-70.6491	419141.
294.000	.000633	-1384.4757	468.5348	4.2330E-05	998.4678	-74.7247	353975.
297.000	.000760	-340.4011	239.1582	4.2061E-05	995.8714	-78.1930	308800.
300.000	.000886	0.0000	0.0000	4.2009E-05	995.0249	-81.2458	137600.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 4:

```
Pile-head deflection             =     1.00000000 in
Computed slope at pile head      =     -.00918370
Maximum bending moment           =   628596.26538 lbs-in
Maximum shear force              =    12282.02538 lbs
Depth of maximum bending moment  =      120.00000 in
Depth of maximum shear force     =        0.00000 in
Number of iterations             =             17
Number of zero deflection points =              2
```

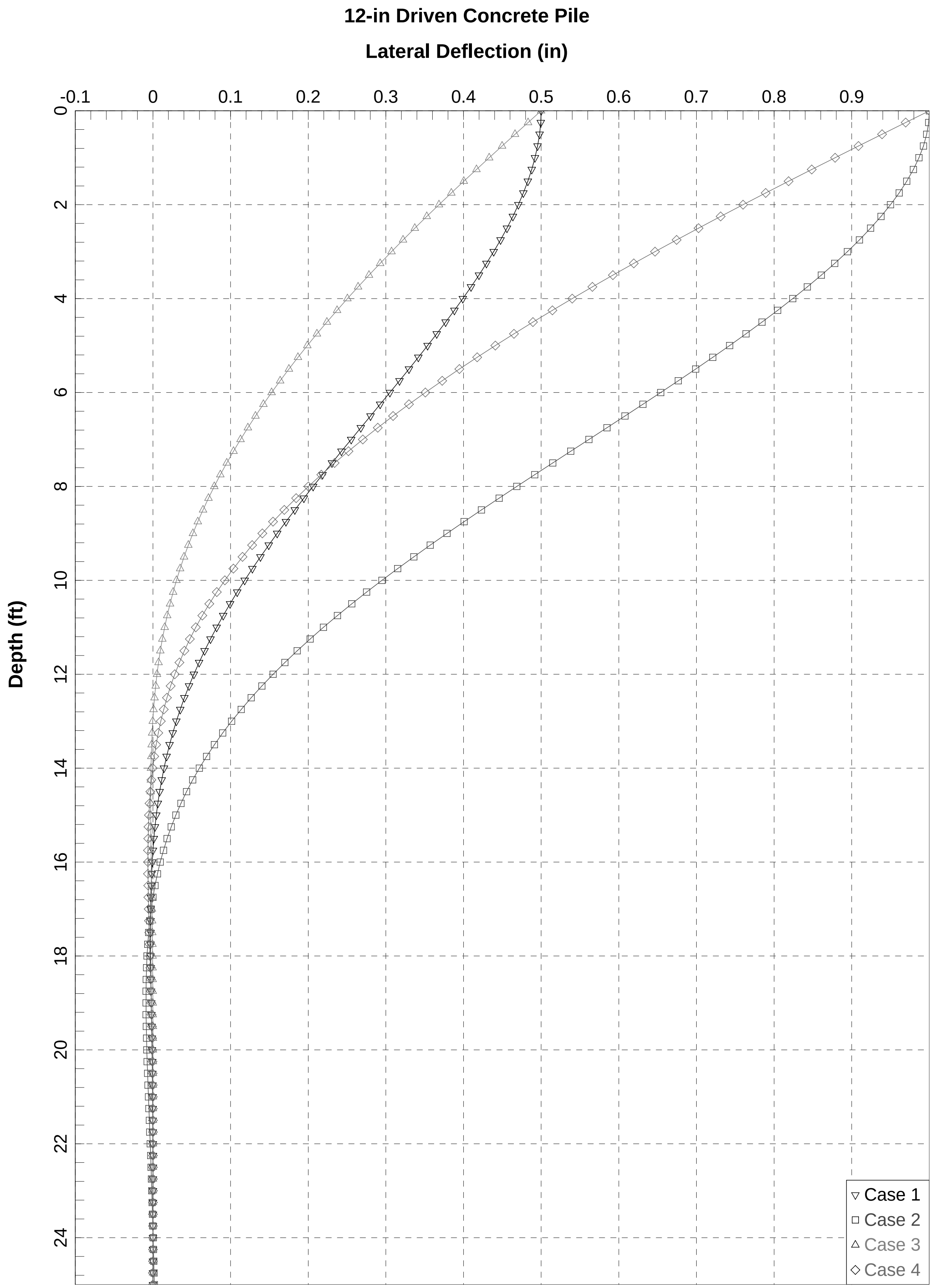
Summary of Pile Response(s)

Definition of Symbols for Pile-Head Loading Conditions:

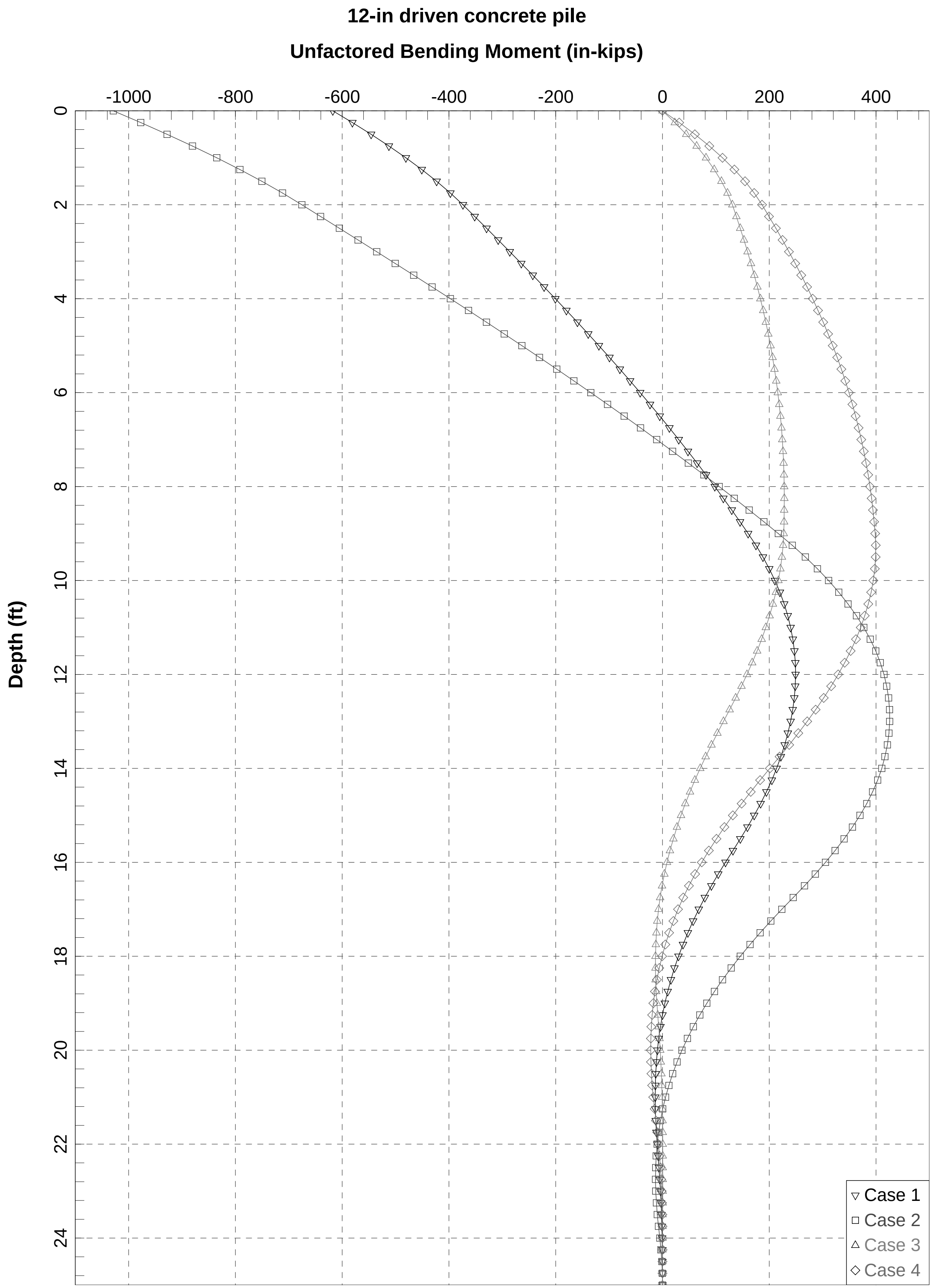
```
Type 1 = Shear and Moment,          y = pile-head displacment in
Type 2 = Shear and Slope,           M = Pile-head Moment lbs-in
Type 3 = Shear and Rot. Stiffness,  V = Pile-head Shear Force lbs
Type 4 = Deflection and Moment,     S = Pile-head Slope, radians
Type 5 = Deflection and Slope,      R = Rot. Stiffness of Pile-head in-lbs/rad
```

Load Type	Pile-Head Condition 1	Pile-Head Condition 2	Axial Load lbs	Pile-Head Deflection in	Maximum Moment in-lbs	Maximum Shear lbs
5	y= .500000	S= 0.000	200000.	.5000000	-967688.	17301.1990
5	y= 1.000000	S= 0.000	200000.	1.0000000	-1624300.	24630.6228
4	y= .500000	M= 0.000	200000.	.5000000	362113.	9285.5349
4	y= 1.000000	M= 0.000	200000.	1.0000000	628596.	12282.0254

The analysis ended normally.



12-in Driven Concrete Pile
Lateral Deflection (in)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1
Case 2
Case 3
Case 4



12-in driven concrete pile
Unfactored Bending Moment (in-kips)
-1000
-800
-600
-400
-200
0
200
400
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1
Case 2
Case 3
Case 4

```
===============================================================================

                LPILE Plus for Windows, Version 5.0 (5.0.26)

               Analysis of Individual Piles and Drilled Shafts
              Subjected to Lateral Loading Using the p-y Method

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                             All Rights Reserved

===============================================================================


This program is licensed to:

Ying Liu
Group Delta Consultants, Inc

Path to file locations:      N:\Projects\700-799\L- 746 Archstone-Smith Grosvenor\Lateral Cap\
Name of input data file:     12in Square.lpd
Name of output file:         12in Square.lpo
Name of plot output file:    12in Square.lpp
Name of runtime file:        12in Square.lpr


-------------------------------------------------------------------------------
                          Time and Date of Analysis
-------------------------------------------------------------------------------

               Date:  May  4, 2007     Time:  11:28: 7


-------------------------------------------------------------------------------
                                Problem Title
-------------------------------------------------------------------------------

12-in Square Concrete Driven Pile


-------------------------------------------------------------------------------
                               Program Options
-------------------------------------------------------------------------------

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 1:
- Computation of Lateral Pile Response Using User-specified Constant EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis uses p-y multiplers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No additional p-y curves to be computed at user-specified depths

Solution Control Parameters:
- Number of pile increments            =          100
- Maximum number of iterations allowed =          100
- Deflection tolerance for convergence =   1.0000E-05 in
- Maximum allowable deflection         =   1.0000E+02 in

Printing Options:
- Values of pile-head deflection, bending moment, shear force, and
  soil reaction are printed for full length of pile.
- Printing Increment (spacing of output points) =  1


-------------------------------------------------------------------------------
                   Pile Structural Properties and Geometry
-------------------------------------------------------------------------------

Pile Length                               =     300.00 in
Depth of ground surface below top of pile =        .00 in
Slope angle of ground surface             =        .00 deg.

Structural properties of pile defined using  2 points

Point    Depth         Pile      Moment of       Pile      Modulus of
```

	X in	Diameter in	Inertia in**4	Area Sq.in	Elasticity lbs/Sq.in
1	0.0000	12.00000000	1728.0000	144.0000	3000000.
2	300.0000	12.00000000	1728.0000	144.0000	3000000.

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water
Distance from top of pile to top of layer = .000 in
Distance from top of pile to bottom of layer = 24.000 in

Layer 2 is soft clay, p-y criteria by Matlock, 1970
Distance from top of pile to top of layer = 24.000 in
Distance from top of pile to bottom of layer = 108.000 in

Layer 3 is soft clay, p-y criteria by Matlock, 1970
Distance from top of pile to top of layer = 108.000 in
Distance from top of pile to bottom of layer = 192.000 in

Layer 4 is stiff clay without free water
Distance from top of pile to top of layer = 192.000 in
Distance from top of pile to bottom of layer = 300.000 in

(Depth of lowest layer extends .00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Distribution of effective unit weight of soil with depth
is defined using 8 points

Point No.	Depth X in	Eff. Unit Weight lbs/in**3
1	.00	.07200
2	24.00	.07200
3	24.00	.06900
4	108.00	.06900
5	108.00	.03400
6	192.00	.03400
7	192.00	.03400
8	300.00	.03400

Shear Strength of Soils

Distribution of shear strength parameters with depth
defined using 8 points

Point No.	Depth X in	Cohesion c lbs/in**2	Angle of Friction Deg.	E50 or k_rm	RQD %
1	.000	13.90000	.00	------	------
2	24.000	13.90000	.00	------	------
3	24.000	1.25000	.00	------	------
4	108.000	1.25000	.00	------	------
5	108.000	4.86000	.00	------	------
6	192.000	7.86000	.00	------	------
7	192.000	8.33000	.00	------	------
8	300.000	8.33000	.00	------	------

Notes:

(1) Cohesion = uniaxial compressive strength for rock materials.
(2) Values of E50 are reported for clay strata.
(3) Default values will be generated for E50 when input values are 0.
(4) RQD and k_rm are reported only for weak rock strata.

---

p-y Modification Factors

Distribution of p-y multipliers with depth defined using 2 points

Point No.	Depth X in	p-mult	y-mult
1	.000	.6500	1.0000
2	300.000	.6500	1.0000

Loading Type

Cyclic loading criteria was used for computation of p-y curves

Number of cycles of loading = 15.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 4

Load Case Number 1

Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Deflection at pile head = .500 in
Slope at pile head = .000 in/in
Axial load at pile head = 200000.000 lbs

Load Case Number 2

Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Deflection at pile head = 1.000 in
Slope at pile head = .000 in/in
Axial load at pile head = 200000.000 lbs

Load Case Number 3

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = .500 in
Bending moment at pile head = .000 in-lbs
Axial load at pile head = 200000.000 lbs

Load Case Number 4

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = 1.000 in
Bending moment at pile head = .000 in-lbs
Axial load at pile head = 200000.000 lbs

Computed Values of Load Distribution and Deflection for Lateral Loading for Load Case Number 1

Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Specified deflection at pile head = .500000 in
Specified slope at pile head = 0.000E+00 in/in
Specified axial load at pile head = 200000.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	.500000	-617646.	12512.7074	0.0000	3533.4917	-192.2860	576.8579
3.000	.499464	-580906.	11908.8873	-.0003468	3405.9230	-201.2399	1208.7356
6.000	.497919	-545776.	11292.0038	-.0006728	3283.9428	-210.0827	1265.7638
9.000	.495427	-512346.	10648.6699	-.0009790	3167.8696	-218.8066	1324.9577
12.000	.492045	-480709.	9979.3537	-.0012663	3058.0164	-227.4042	1386.4831
15.000	.487829	-450951.	9284.4454	-.0015359	2954.6900	-235.8681	1450.5168
18.000	.482830	-423159.	8564.3566	-.0017888	2858.1909	-244.1911	1517.2492
21.000	.477096	-397418.	7819.5211	-.0020263	2768.8125	-252.3659	1586.8871
24.000	.470672	-373810.	7173.2329	-.0022494	2686.8414	-178.4929	1137.6891

27.000	.463600	-351679.	6867.4270	-.0024593	2609.9976	-25.3777	164.2215
30.000	.455916	-329655.	6789.5663	-.0026565	2533.5228	-26.5295	174.5680
33.000	.447661	-307754.	6708.2922	-.0028409	2457.4796	-27.6533	185.3185
36.000	.438871	-285996.	6623.6910	-.0030127	2381.9295	-28.7475	196.5101
39.000	.429584	-264397.	6535.8537	-.0031720	2306.9330	-29.8107	208.1828
42.000	.419839	-242974.	6444.8758	-.0033188	2232.5493	-30.8413	220.3793
45.000	.409672	-221745.	6350.8572	-.0034533	2158.8365	-31.8378	233.1459
48.000	.399119	-200725.	6253.9025	-.0035755	2085.8512	-32.7987	246.5331
51.000	.388219	-179931.	6154.1204	-.0036856	2013.6489	-33.7227	260.5955
54.000	.377006	-159378.	6051.6240	-.0037838	1942.2836	-34.6082	275.3932
57.000	.365516	-139081.	5946.5307	-.0038702	1871.8075	-35.4540	290.9916
60.000	.353784	-119054.	5838.9618	-.0039449	1802.2718	-36.2586	307.4631
63.000	.341847	-99312.9510	5730.0143	-.0040081	1733.7255	-36.3731	319.2054
66.000	.329736	-79864.5110	5621.5471	-.0040599	1666.1962	-35.9384	326.9743
69.000	.317487	-60711.7860	5514.4078	-.0041006	1599.6937	-35.4878	335.3315
72.000	.305133	-41857.3708	5408.6439	-.0041303	1534.2270	-35.0214	344.3232
75.000	.292706	-23303.6146	5304.3027	-.0041491	1469.8042	-34.5394	354.0016
78.000	.280238	-5052.6215	5201.4307	-.0041573	1406.4327	-34.0419	364.4251
81.000	.267762	12893.7487	5100.0742	-.0041550	1433.6588	-33.5291	375.6597
84.000	.255308	30533.8801	5000.2790	-.0041425	1494.9093	-33.0010	387.7794
87.000	.242907	47866.4003	4902.0907	-.0041198	1555.0917	-32.4579	400.8681
90.000	.230589	64890.1794	4805.5543	-.0040872	1614.2020	-31.8997	415.0206
93.000	.218384	81604.3298	4710.7147	-.0040448	1672.2373	-31.3267	430.3440
96.000	.206320	98008.2049	4617.6161	-.0039928	1729.1952	-30.7390	446.9602
99.000	.194427	114101.	4526.3027	-.0039314	1785.0743	-30.1367	465.0076
102.000	.182732	129884.	4436.8178	-.0038608	1839.8741	-29.5199	484.6438
105.000	.171262	145355.	4349.2045	-.0037812	1893.5948	-28.8890	506.0488
108.000	.160044	160516.	4202.3285	-.0036927	1946.2375	-69.0283	1293.9220
111.000	.149106	175001.	3891.6241	-.0035956	1996.5296	-138.1079	2778.7255
114.000	.138471	188181.	3477.9872	-.0034905	2042.2947	-137.6500	2982.2177
117.000	.128163	200057.	3066.0439	-.0033782	2083.5315	-136.9788	3206.3683
120.000	.118202	210631.	2656.4383	-.0032594	2120.2464	-136.0916	3454.0529
123.000	.108606	219907.	2249.8223	-.0031348	2152.4546	-134.9857	3728.6653
126.000	.099393	227892.	1846.8563	-.0030052	2180.1793	-133.6583	4034.2358
129.000	.090575	234594.	1448.2091	-.0028714	2203.4524	-132.1065	4375.5824
132.000	.082165	240027.	1054.5586	-.0027341	2222.3144	-130.3272	4758.5071
135.000	.074171	244203.	666.5924	-.0025939	2236.8143	-128.3170	5190.0531
138.000	.066601	247139.	285.0081	-.0024518	2247.0098	-126.0725	5678.8458
141.000	.059460	248855.	-89.4846	-.0023083	2252.9676	-123.5893	6235.5529
144.000	.052752	249372.	-456.1631	-.0021641	2254.7633	-120.8629	6873.5136
147.000	.046476	248715.	-814.2890	-.0020200	2252.4813	-117.8877	7609.6154
150.000	.040632	246910.	-1163.1056	-.0018766	2246.2154	-114.6567	8465.5415
153.000	.035216	243988.	-1501.8334	-.0017345	2236.0689	-111.1618	9469.5868
156.000	.030225	239980.	-1829.6645	-.0015945	2222.1544	-107.3922	10659.3748
159.000	.025650	234923.	-2145.7541	-.0014571	2204.5945	-103.3342	12086.0522
162.000	.021482	228854.	-2449.2093	-.0013229	2183.5223	-98.9693	13821.0110
165.000	.017712	221815.	-2739.0716	-.0011925	2159.0813	-94.2723	15967.1547
168.000	.014328	213851.	-3049.0714	-.0010664	2131.4269	-112.3943	23533.8632
171.000	.011314	204801.	-3375.8879	-.0009453	2100.0023	-105.4834	27969.8209
174.000	.008656	194730.	-3681.0220	-.0008297	2065.0345	-97.9393	33943.9982
177.000	.006336	183710.	-3962.3155	-.0007202	2026.7713	-89.5897	42419.2667
180.000	.004335	171820.	-4216.8789	-.0006173	1985.4869	-80.1192	55445.7608
183.000	.002632	159150.	-4440.3474	-.0005215	1941.4917	-68.8598	78478.6670
186.000	.001206	145804.	-4624.5213	-.0004333	1895.1527	-53.9228	134148.
189.000	3.26E-05	131922.	-4715.3873	-.0003529	1846.9528	-6.6545	612076.
192.000	-.000912	117935.	-4634.1891	-.0002806	1798.3859	60.7866	200038.
195.000	-.001651	104454.	-4432.4534	-.0002163	1751.5765	73.7038	133916.
198.000	-.002209	91599.9574	-4201.0111	-.0001595	1706.9443	80.5910	109436.
201.000	-.002608	79439.4081	-3952.1748	-.0001101	1664.7202	85.2999	98106.1161
204.000	-.002870	68018.9744	-3693.1641	-6.7388E-05	1625.0659	87.3740	91344.2844
207.000	-.003013	57361.2886	-3429.4246	-3.1109E-05	1588.0600	88.4524	88078.8998
210.000	-.003056	47479.7574	-3163.5823	-7.7280E-07	1553.7492	88.7758	87141.7024
213.000	-.003017	38380.7222	-2897.6756	2.4071E-05	1522.1553	88.4953	87986.2228
216.000	-.002912	30064.8184	-2633.3630	4.3876E-05	1493.2806	87.7131	90369.0690
219.000	-.002754	22527.8934	-2372.0416	5.9094E-05	1467.1107	86.5012	94224.2994
222.000	-.002557	15761.6565	-2114.9215	7.0173E-05	1443.6169	84.9123	99612.9146
225.000	-.002333	9754.1572	-1863.0743	7.7556E-05	1422.7575	82.9859	106708.
228.000	-.002092	4490.1438	-1617.4678	8.1678E-05	1404.4797	80.7518	115805.
231.000	-.001843	-48.6628	-1378.9917	8.2963E-05	1389.0579	78.2323	127345.
234.000	-.001594	-3883.3615	-1148.4773	8.1825E-05	1402.3728	75.4439	141976.
237.000	-.001352	-7037.7163	-926.7151	7.8665E-05	1413.3254	72.3975	160639.
240.000	-.001122	-9538.0497	-714.4707	7.3869E-05	1422.0071	69.0987	184729.
243.000	-.000909	-11413.1827	-512.5018	6.7806E-05	1428.5180	65.5472	216366.
246.000	-.000715	-12694.4283	-321.5789	6.0831E-05	1432.9668	61.7348	258909.
249.000	-.000544	-13415.6531	-142.5138	5.3276E-05	1435.4710	57.6420	317964.
252.000	-.000396	-13613.4420	23.7942	4.5455E-05	1436.1578	53.2300	403592.
255.000	-.000271	-13327.4341	176.2735	3.7660E-05	1435.1647	48.4229	535801.
258.000	-.000170	-12600.9924	336.6354	3.0157E-05	1432.6423	58.4850	1033824.
261.000	-9.02E-05	-11343.8100	470.9790	2.3229E-05	1428.2771	31.0773	1033824.
264.000	-3.03E-05	-9802.9929	533.2796	1.7110E-05	1422.9271	10.4564	1033824.
267.000	1.25E-05	-8164.6643	542.5148	1.1911E-05	1417.2384	-4.2996	1033824.
270.000	4.11E-05	-6562.1973	514.8090	7.6495E-06	1411.6743	-14.1709	1033824.
273.000	5.84E-05	-5084.9898	463.3784	4.2794E-06	1406.5451	-20.1162	1033824.

276.000	6.68E-05	-3787.0622	398.6754	1.7123E-06	1402.0384	-23.0192	1033824.
279.000	6.86E-05	-2694.9923	328.6618	-1.6334E-07	1398.2465	-23.6565	1033824.
282.000	6.58E-05	-1814.8951	259.1549	-1.4683E-06	1395.1906	-22.6815	1033824.
285.000	5.98E-05	-1138.3008	194.2019	-2.3228E-06	1392.8413	-20.6206	1033824.
288.000	5.19E-05	-646.8966	136.4529	-2.8393E-06	1391.1351	-17.8787	1033824.
291.000	4.28E-05	-316.1763	87.5101	-3.1180E-06	1389.9867	-14.7498	1033824.
294.000	3.32E-05	-118.0945	48.2377	-3.2437E-06	1389.2989	-11.4318	1033824.
297.000	2.33E-05	-22.8576	19.0255	-3.2845E-06	1388.9683	-8.0430	1033824.
300.000	1.35E-05	0.0000	0.0000	-3.2911E-06	1388.8889	-4.6406	516912.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =      .50000000 in
Computed slope at pile head       =     -.00001063
Maximum bending moment            =  -617645.60239 lbs-in
Maximum shear force               =    12512.70739 lbs
Depth of maximum bending moment   =        0.00000 in
Depth of maximum shear force      =        0.00000 in
Number of iterations              =             15
Number of zero deflection points  =              2
```

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 2

```
Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Specified deflection at pile head   =        1.000000 in
Specified slope at pile head        =       0.000E+00 in/in
Specified axial load at pile head   =      200000.000 lbs
```

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	1.000000	-1028602.	17383.6436	0.0000	4960.4233	-228.6678	343.0017
3.000	.999107	-977349.	16665.5136	-.0005804	4782.4631	-239.3267	718.6217
6.000	.996517	-927911.	15931.8620	-.0011317	4610.8035	-249.8744	752.2429
9.000	.992317	-880400.	15166.5969	-.0016550	4445.8338	-260.3023	786.9532
12.000	.986588	-834926.	14370.2405	-.0021513	4287.9371	-270.6020	822.8422
15.000	.979409	-791597.	13543.1898	-.0026219	4137.4901	-280.7651	860.0036
18.000	.970856	-750520.	12685.8668	-.0030681	3994.8626	-290.7835	898.5375
21.000	.961000	-711800.	11798.7179	-.0034913	3860.4173	-300.6490	938.5503
24.000	.949909	-675539.	11127.8754	-.0038927	3734.5091	-146.5793	462.9266
27.000	.937644	-640362.	10859.8663	-.0042735	3612.3670	-32.0935	102.6833
30.000	.924268	-605251.	10761.3617	-.0046339	3490.4558	-33.5762	108.9822
33.000	.909841	-570233.	10658.4550	-.0049740	3368.8641	-35.0282	115.4978
36.000	.894424	-535332.	10551.2414	-.0052939	3247.6796	-36.4476	122.2493
39.000	.878077	-500573.	10439.8211	-.0055936	3126.9887	-37.8326	129.2571
42.000	.860862	-465980.	10324.2999	-.0058733	3006.8765	-39.1815	136.5429
45.000	.842838	-431579.	10204.7884	-.0061330	2887.4270	-40.4928	144.1301
48.000	.824064	-397392.	10081.4024	-.0063729	2768.7225	-41.7646	152.0438
51.000	.804600	-363443.	9954.2624	-.0065930	2650.8441	-42.9954	160.3109
54.000	.784506	-329755.	9823.4939	-.0067936	2533.8711	-44.1836	168.9608
57.000	.763839	-296350.	9689.2273	-.0069748	2417.8812	-45.3275	178.0253
60.000	.742657	-263250.	9551.5974	-.0071367	2302.9506	-46.4257	187.5389
63.000	.721018	-230476.	9411.9896	-.0072796	2189.1534	-46.6462	194.0847
66.000	.698980	-198042.	9272.7713	-.0074036	2076.5360	-46.1660	198.1432
69.000	.676597	-165955.	9135.0204	-.0075089	1965.1225	-45.6679	202.4894
72.000	.653926	-134222.	8998.7905	-.0075957	1854.9360	-45.1520	207.1428
75.000	.631023	-102848.	8864.1344	-.0076643	1745.9988	-44.6186	212.1253
78.000	.607940	-71839.5775	8731.1048	-.0077149	1638.3319	-44.0678	217.4613
81.000	.584733	-41203.1705	8599.7533	-.0077476	1531.9555	-43.4998	223.1777
84.000	.561455	-10943.9553	8470.1314	-.0077627	1426.8887	-42.9147	229.3047
87.000	.538157	18932.8272	8342.2902	-.0077604	1454.6279	-42.3128	235.8758
90.000	.514893	48422.2209	8216.2799	-.0077409	1557.0216	-41.6941	242.9286
93.000	.491712	77519.5548	8092.1507	-.0077044	1658.0540	-41.0587	250.5048
96.000	.468666	106220.	7969.9521	-.0076513	1757.7099	-40.4070	258.6511
99.000	.445805	134521.	7849.7331	-.0075816	1855.9750	-39.7390	267.4200
102.000	.423176	162417.	7731.5421	-.0074957	1952.8360	-39.0550	276.8701
105.000	.400830	189905.	7615.4270	-.0073937	2048.2808	-38.3551	287.0672
108.000	.378814	216982.	7419.9076	-.0072760	2142.2980	-91.9912	728.5198
111.000	.357174	243156.	7004.7413	-.0071429	2233.1789	-184.7863	1552.0685
114.000	.335957	267582.	6450.1250	-.0069951	2317.9921	-184.9579	1651.6218
117.000	.315204	290250.	5895.3510	-.0068337	2396.7027	-184.8915	1759.7330

120.000	.294955	311154.	5341.1377	-.0066597	2469.2855	-184.5840	1877.4136
123.000	.275246	330289.	4788.2136	-.0064741	2535.7250	-184.0320	2005.8288
126.000	.256110	347652.	4237.3173	-.0062779	2596.0152	-183.2322	2146.3268
129.000	.237579	363246.	3689.1972	-.0060722	2650.1603	-182.1811	2300.4750
132.000	.219677	377074.	3144.6126	-.0058580	2698.1743	-180.8753	2470.1051
135.000	.202431	389143.	2604.3331	-.0056363	2740.0813	-179.3110	2657.3699
138.000	.185860	399464.	2069.1399	-.0054081	2775.9157	-177.4844	2864.8145
141.000	.169982	408048.	1539.8261	-.0051744	2805.7221	-175.3914	3095.4685
144.000	.154813	414912.	1017.1977	-.0049363	2829.5555	-173.0275	3352.9635
147.000	.140364	420075.	502.0751	-.0046947	2847.4816	-170.3876	3641.6879
150.000	.126645	423558.	-4.7058	-.0044506	2859.5767	-167.4663	3966.9917
153.000	.113661	425387.	-502.2909	-.0042050	2865.9278	-164.2571	4335.4604
156.000	.101415	425590.	-989.8058	-.0039587	2866.6329	-160.7527	4755.2901
159.000	.089908	424199.	-1466.3513	-.0037128	2861.8015	-156.9443	5236.8081
162.000	.079138	421248.	-1930.9996	-.0034682	2851.5541	-152.8212	5793.2101
165.000	.069099	416775.	-2382.7871	-.0032257	2836.0232	-148.3705	6441.6320
168.000	.059784	410822.	-2876.6839	-.0029863	2815.3532	-180.8940	9077.4104
171.000	.051182	403098.	-3409.6146	-.0027507	2788.5349	-174.3931	10222.0063
174.000	.043279	393665.	-3922.2996	-.0025202	2755.7810	-167.3969	11603.4703
177.000	.036060	382589.	-4413.1800	-.0022956	2717.3212	-159.8568	13299.0516
180.000	.029506	369941.	-4880.5208	-.0020778	2673.4046	-151.7038	15424.4506
183.000	.023593	355799.	-5322.3314	-.0018678	2624.3013	-142.8367	18162.2491
186.000	.018299	340248.	-5736.2355	-.0016664	2570.3054	-133.0994	21821.0599
189.000	.013595	323381.	-6119.2382	-.0014744	2511.7400	-122.2357	26974.1158
192.000	.009452	305302.	-6466.8865	-.0012925	2448.9647	-109.5299	34763.2024
195.000	.005840	286131.	-6783.1171	-.0011214	2382.3986	-101.2906	52035.4220
198.000	.002724	265949.	-7062.6020	-.0009616	2312.3222	-85.0327	93650.1048
201.000	6.99E-05	244909.	-7226.2857	-.0008138	2239.2679	-24.0898	1033824.
204.000	-.002159	223568.	-7140.1317	-.0006783	2165.1655	81.5258	113285.
207.000	-.004000	202882.	-6875.2075	-.0005549	2093.3412	95.0904	71323.8051
210.000	-.005488	182982.	-6578.2058	-.0004432	2024.2439	102.9107	56254.2464
213.000	-.006659	163945.	-6261.8310	-.0003428	1958.1420	108.0059	48658.8671
216.000	-.007545	145823.	-5932.6729	-.0002532	1895.2176	111.4328	44306.3875
219.000	-.008178	128653.	-5594.9719	-.0001738	1835.5997	113.7012	41709.0115
222.000	-.008588	112461.	-5251.7685	-.0001040	1779.3798	115.1012	40208.4271
225.000	-.008802	97266.9099	-4905.3931	-4.3329E-05	1726.6212	115.8157	39472.5042
228.000	-.008848	83081.0120	-4557.7167	8.8550E-06	1677.3646	115.9686	39321.1057
231.000	-.008749	69909.9839	-4210.2923	5.3123E-05	1631.6319	115.6477	39654.5847
234.000	-.008529	57755.5106	-3864.4440	9.0063E-05	1589.4289	114.9179	40420.9880
237.000	-.008209	46615.2440	-3521.3250	.0001203	1550.7474	113.8281	41600.0572
240.000	-.007807	36483.2447	-3181.9586	.0001443	1515.5668	112.4161	43195.4829
243.000	-.007343	27350.3229	-2847.2680	.0001628	1483.8553	110.7109	45231.8220
246.000	-.006831	19204.3026	-2518.1000	.0001762	1455.5705	108.7344	47754.6068
249.000	-.006285	12030.2240	-2195.2445	.0001853	1430.6605	106.5026	50833.2861
252.000	-.005719	5810.4916	-1879.4522	.0001904	1409.0642	104.0256	54567.4476
255.000	-.005143	524.9721	-1571.4526	.0001923	1390.7117	101.3075	59097.7056
258.000	-.004565	-3848.9624	-1271.9735	.0001913	1402.2533	98.3452	64624.1395
261.000	-.003995	-7336.4537	-981.7657	.0001881	1414.3627	95.1267	71438.0802
264.000	-.003437	-9965.2576	-701.6351	.0001831	1423.4905	91.6271	79979.3193
267.000	-.002896	-11765.9573	-432.4904	.0001768	1429.7429	87.8027	90945.6984
270.000	-.002376	-12772.3474	-175.4183	.0001697	1433.2373	83.5787	105521.
273.000	-.001878	-13022.0942	68.1887	.0001622	1434.1045	78.8259	125908.
276.000	-.001403	-12557.8863	296.3879	.0001548	1432.4927	73.3069	156771.
279.000	-.000949	-11429.5559	506.1448	.0001479	1428.5748	66.5310	210266.
282.000	-.000516	-9698.4777	691.7528	.0001418	1422.5642	57.2077	332917.
285.000	-9.86E-05	-7449.1631	828.5428	.0001368	1414.7540	33.9857	1033824.
288.000	.000305	-4891.3910	804.9474	.0001332	1405.8729	-49.7159	488469.
291.000	.000701	-2779.3636	638.2765	.0001310	1398.5395	-61.3980	262833.
294.000	.001091	-1218.9534	443.1996	.0001299	1393.1214	-68.6533	188704.
297.000	.001480	-275.9995	229.0446	.0001294	1389.8472	-74.1167	150240.
300.000	.001868	0.0000	0.0000	.0001293	1388.8889	-78.5797	63098.8020

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection              =     1.00000000 in
Computed slope at pile head       =     -.00001483
Maximum bending moment            =      -1028602. lbs-in
Maximum shear force               =    17383.64359 lbs
Depth of maximum bending moment  =        0.00000 in
Depth of maximum shear force     =        0.00000 in
Number of iterations              =             17
Number of zero deflection points =              2
```

Computed Values of Load Distribution and Deflection for Lateral Loading for Load Case Number 3

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Specified deflection at pile head = .500000 in
Specified moment at pile head = .000 in-lbs
Specified axial load at pile head = 200000.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	.500000	0.0000	6880.5805	-.0056082	1388.8889	-192.2860	576.8579
3.000	.483175	23141.3917	6292.7833	-.0056015	1469.2409	-199.5788	1239.1703
6.000	.466391	44478.5387	5683.4022	-.0055820	1543.3283	-206.6752	1329.4124
9.000	.449684	63940.1646	5053.0324	-.0055506	1610.9033	-213.5713	1424.8106
12.000	.433087	81457.4475	4402.2808	-.0055085	1671.7272	-220.2631	1525.7651
15.000	.416632	96964.0784	3731.7656	-.0054569	1725.5697	-226.7470	1632.7128
18.000	.400346	110396.	3042.1166	-.0053969	1772.2094	-233.0190	1746.1329
21.000	.384251	121693.	2333.9753	-.0053297	1811.4342	-239.0751	1866.5545
24.000	.368367	130796.	1722.5778	-.0052567	1843.0412	-168.5232	1372.4602
27.000	.352711	138337.	1435.0418	-.0051788	1869.2241	-23.1675	197.0522
30.000	.337295	145621.	1364.2994	-.0050966	1894.5163	-23.9941	213.4111
33.000	.322131	152638.	1291.1374	-.0050103	1918.8830	-24.7805	230.7802
36.000	.307232	159380.	1215.6780	-.0049201	1942.2914	-25.5258	249.2492
39.000	.292611	165836.	1138.0451	-.0048260	1964.7099	-26.2294	268.9180
42.000	.278277	171999.	1058.3651	-.0047282	1986.1088	-26.8906	289.8974
45.000	.264241	177860.	976.7665	-.0046270	2006.4600	-27.5085	312.3114
48.000	.250515	183412.	893.3798	-.0045224	2025.7372	-28.0826	336.2986
51.000	.237107	188648.	808.3378	-.0044148	2043.9156	-28.6120	362.0145
54.000	.224026	193560.	721.7756	-.0043042	2060.9725	-29.0961	389.6341
57.000	.211282	198143.	633.8305	-.0041908	2076.8867	-29.5340	419.3548
60.000	.198881	202392.	544.6421	-.0040750	2091.6392	-29.9250	451.4004
63.000	.186832	206301.	455.1461	-.0039567	2105.2124	-29.7390	477.5251
66.000	.175141	209871.	366.8796	-.0038363	2117.6076	-29.1053	498.5470
69.000	.163814	213106.	280.5258	-.0037139	2128.8402	-28.4639	521.2719
72.000	.152858	216011.	196.1079	-.0035897	2138.9264	-27.8147	545.8943
75.000	.142276	218590.	113.6495	-.0034640	2147.8830	-27.1575	572.6380
78.000	.132074	220849.	33.1747	-.0033368	2155.7273	-26.4923	601.7620
81.000	.122255	222794.	-45.2921	-.0032084	2162.4775	-25.8189	633.5673
84.000	.112823	224428.	-121.7263	-.0030790	2168.1523	-25.1372	668.4059
87.000	.103781	225758.	-196.1026	-.0029488	2172.7709	-24.4470	706.6908
90.000	.095130	226790.	-268.3951	-.0028178	2176.3534	-23.7480	748.9105
93.000	.086874	227529.	-338.5775	-.0026864	2178.9203	-23.0402	795.6450
96.000	.079012	227982.	-406.6227	-.0025546	2180.4930	-22.3233	847.5886
99.000	.071546	228155.	-472.5029	-.0024226	2181.0931	-21.5969	905.5778
102.000	.064477	228054.	-536.1896	-.0022906	2180.7433	-20.8609	970.6274
105.000	.057803	227686.	-597.6534	-.0021587	2179.4666	-20.1150	1043.9793
108.000	.051524	227059.	-698.7952	-.0020271	2177.2868	-47.3129	2754.7914
111.000	.045640	225926.	-909.3880	-.0018961	2173.3548	-93.0824	6118.4819
114.000	.040148	223878.	-1185.6813	-.0017659	2166.2415	-91.1131	6808.3158
117.000	.035044	220931.	-1455.7255	-.0016372	2156.0110	-88.9164	7611.7306
120.000	.030325	217108.	-1718.8266	-.0015105	2142.7356	-86.4844	8555.8552
123.000	.025982	212431.	-1974.2644	-.0013862	2126.4957	-83.8075	9676.8971
126.000	.022008	206926.	-2221.2850	-.0012648	2107.3808	-80.8729	11024.3126
129.000	.018393	200621.	-2459.0899	-.0011469	2085.4891	-77.6637	12667.5618
132.000	.015126	193547.	-2686.8203	-.0010329	2060.9285	-74.1565	14707.5825
135.000	.012196	185739.	-2903.5317	-.0009231	2033.8172	-70.3178	17297.4469
138.000	.009588	177234.	-3108.1550	-.0008181	2004.2845	-66.0978	20682.3734
141.000	.007287	168072.	-3299.4294	-.0007182	1972.4726	-61.4185	25284.9352
144.000	.005279	158299.	-3475.7805	-.0006237	1938.5388	-56.1488	31911.3574
147.000	.003545	147966.	-3635.0698	-.0005351	1902.6594	-50.0440	42352.6502
150.000	.002068	137131.	-3773.9795	-.0004526	1865.0378	-42.5625	61746.4853
153.000	.000829	125865.	-3885.8174	-.0003765	1825.9207	-31.9962	115771.
156.000	-.000191	114268.	-3894.4354	-.0003070	1785.6520	26.2508	411954.
159.000	-.001013	102867.	-3802.4593	-.0002442	1746.0659	35.0666	103842.
162.000	-.001656	91746.0791	-3686.8129	-.0001879	1707.4517	42.0310	76124.9176
165.000	-.002140	80971.5879	-3553.9765	-.0001379	1670.0402	46.5265	65210.8223
168.000	-.002484	70587.7205	-3390.3259	-9.4063E-05	1633.9851	62.5738	75575.3126
171.000	-.002705	60742.5080	-3198.4089	-5.6062E-05	1599.8004	65.3708	72504.9570
174.000	-.002820	51464.5420	-2999.4133	-2.3595E-05	1567.5852	67.2929	71581.1914
177.000	-.002846	42774.3424	-2795.7154	3.6730E-06	1537.4109	68.5057	72202.8060
180.000	-.002798	34685.8418	-2589.2831	2.6086E-05	1509.3258	69.1159	74099.3567
183.000	-.002690	27207.3403	-2381.8147	4.3995E-05	1483.3588	69.1964	77174.4444
186.000	-.002534	20342.1592	-2174.8204	5.7754E-05	1459.5214	68.7998	81443.5093
189.000	-.002343	14089.1134	-1969.6722	6.7716E-05	1437.8094	67.9656	87010.9992
192.000	-.002128	8442.8664	-1754.6687	7.4236E-05	1418.2044	75.3700	106256.
195.000	-.001898	3472.0178	-1527.0076	7.7684E-05	1400.9445	76.4041	120770.
198.000	-.001662	-812.3996	-1299.7642	7.8453E-05	1391.7097	75.0915	135555.
201.000	-.001427	-4420.7113	-1077.0646	7.6939E-05	1404.2386	73.3749	154234.
204.000	-.001200	-7367.1140	-861.6099	7.3528E-05	1414.4691	70.2616	175620.
207.000	-.000986	-9678.6046	-655.8858	6.8596E-05	1422.4952	66.8878	203504.
210.000	-.000789	-11384.7443	-460.6790	6.2501E-05	1428.4193	63.2501	240600.

213.000	-.000611	-12517.6802	-276.8007	5.5585E-05	1432.3531	59.3355	291321.
216.000	-.000455	-13112.2505	-105.1222	4.8169E-05	1434.4175	55.1168	363293.
219.000	-.000322	-13206.2164	53.3656	4.0554E-05	1434.7438	50.5417	470858.
222.000	-.000212	-12840.7215	238.6711	3.3017E-05	1433.4747	72.9953	1033824.
225.000	-.000124	-11813.8105	412.2180	2.5883E-05	1429.9091	42.7026	1033824.
228.000	-5.65E-05	-10398.4736	505.4889	1.9456E-05	1424.9947	19.4780	1033824.
231.000	-7.18E-06	-8804.2245	538.4175	1.3900E-05	1419.4591	2.4744	1033824.
234.000	2.69E-05	-7184.6483	528.2366	9.2733E-06	1413.8356	-9.2617	1033824.
237.000	4.85E-05	-5645.9327	489.2950	5.5607E-06	1408.4928	-16.6994	1033824.
240.000	6.02E-05	-4255.5515	433.1069	2.6957E-06	1403.6651	-20.7593	1033824.
243.000	6.46E-05	-3050.5263	368.5582	5.8168E-07	1399.4810	-22.2732	1033824.
246.000	6.37E-05	-2044.9005	302.2054	-8.9270E-07	1395.9892	-21.9620	1033824.
249.000	5.93E-05	-1236.2227	238.6213	-1.8421E-06	1393.1813	-20.4274	1033824.
252.000	5.27E-05	-610.9622	180.7504	-2.3766E-06	1391.0103	-18.1532	1033824.
255.000	4.50E-05	-148.8684	130.2504	-2.5964E-06	1389.4058	-15.5135	1033824.
258.000	3.71E-05	173.6559	87.8032	-2.5893E-06	1389.4919	-12.7847	1033824.
261.000	2.95E-05	381.0578	53.3865	-2.4288E-06	1390.2120	-10.1598	1033824.
264.000	2.25E-05	496.8895	26.5026	-2.1747E-06	1390.6142	-7.7629	1033824.
267.000	1.64E-05	542.6830	6.3635	-1.8739E-06	1390.7732	-5.6632	1033824.
270.000	1.13E-05	537.3191	-7.9637	-1.5614E-06	1390.7546	-3.8882	1033824.
273.000	7.07E-06	496.7745	-17.4482	-1.2622E-06	1390.6138	-2.4347	1033824.
276.000	3.71E-06	434.1448	-23.0179	-9.9284E-07	1390.3963	-1.2784	1033824.
279.000	1.11E-06	359.8583	-25.5084	-7.6309E-07	1390.1384	-.3818934	1033824.
282.000	-8.69E-07	282.0099	-25.6322	-5.7737E-07	1389.8681	.2993645	1033824.
285.000	-2.36E-06	206.7577	-23.9653	-4.3594E-07	1389.6068	.8119020	1033824.
288.000	-3.48E-06	138.7410	-20.9464	-3.3597E-07	1389.3706	1.2007	1033824.
291.000	-4.37E-06	81.4827	-16.8854	-2.7225E-07	1389.1718	1.5066	1033824.
294.000	-5.12E-06	37.7552	-11.9801	-2.3775E-07	1389.0200	1.7637	1033824.
297.000	-5.80E-06	9.8876	-6.3373	-2.2396E-07	1388.9232	1.9982	1033824.
300.000	-6.46E-06	0.0000	0.0000	-2.2110E-07	1388.8889	2.2267	516912.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection              =      .50000000 in
Computed slope at pile head       =     -.00560823
Maximum bending moment            =   228154.81276 lbs-in
Maximum shear force               =     6880.58052 lbs
Depth of maximum bending moment  =    99.00000000 in
Depth of maximum shear force      =        0.00000 in
Number of iterations              =             18
Number of zero deflection points =              3
```

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 4

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Specified deflection at pile head   =   1.000000 in
Specified moment at pile head   =   .000 in-lbs
Specified axial load at pile head   =   200000.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	1.000000	0.0000	8782.1157	-.0101694	1388.8889	-228.6678	343.0017
3.000	.969492	31418.9586	8082.8142	-.0101603	1497.9825	-237.5331	735.0236
6.000	.939038	60689.2096	7357.2286	-.0101336	1599.6153	-246.1906	786.5194
9.000	.908690	87722.6724	6605.9888	-.0100907	1693.4815	-254.6359	840.6690
12.000	.878494	112434.	5829.7381	-.0100328	1779.2846	-262.8646	897.6652
15.000	.848494	134740.	5029.1327	-.0099612	1856.7375	-270.8723	957.7173
18.000	.818727	154562.	4204.8421	-.0098775	1925.5633	-278.6547	1021.0536
21.000	.789228	171822.	3357.5497	-.0097831	1985.4948	-286.2069	1087.9243
24.000	.760028	186447.	2689.4029	-.0096794	2036.2751	-159.2243	628.4934
27.000	.731152	199574.	2406.2569	-.0095677	2081.8549	-29.5398	121.2050
30.000	.702622	212366.	2315.9817	-.0094485	2126.2710	-30.6437	130.8400
33.000	.674461	224808.	2222.4636	-.0093220	2169.4734	-31.7017	141.0091
36.000	.646690	236887.	2125.8416	-.0091884	2211.4142	-32.7130	151.7559
39.000	.619330	248590.	2026.2569	-.0090480	2252.0470	-33.6768	163.1283
42.000	.592402	259902.	1923.8536	-.0089008	2291.3277	-34.5921	175.1789
45.000	.565925	270814.	1818.7781	-.0087473	2329.2141	-35.4582	187.9660
48.000	.539918	281312.	1711.1794	-.0085875	2365.6659	-36.2743	201.5542
51.000	.514400	291386.	1601.2089	-.0084218	2400.6450	-37.0394	216.0151
54.000	.489388	301025.	1489.0208	-.0082504	2434.1152	-37.7527	231.4283

57.000	.464898	310220.	1374.7716	-.0080735	2466.0428	-38.4134	247.8828
60.000	.440946	318962.	1258.6208	-.0078915	2496.3960	-39.0205	265.4779
63.000	.417549	327242.	1141.7683	-.0077045	2525.1452	-38.8811	279.3526
66.000	.394720	335058.	1026.2078	-.0075128	2552.2849	-38.1592	290.0229
69.000	.372472	342414.	912.8263	-.0073168	2577.8281	-37.4284	301.4597
72.000	.350819	349315.	801.6508	-.0071167	2601.7888	-36.6886	313.7402
75.000	.329772	355764.	692.7081	-.0069127	2624.1819	-35.9398	326.9515
78.000	.309343	361767.	586.0257	-.0067050	2645.0230	-35.1818	341.1925
81.000	.289542	367327.	481.6312	-.0064941	2664.3284	-34.4146	356.5764
84.000	.270378	372449.	379.5524	-.0062800	2682.1155	-33.6380	373.2323
87.000	.251862	377140.	279.8176	-.0060631	2698.4025	-32.8519	391.3089
90.000	.234000	381404.	182.4555	-.0058436	2713.2081	-32.0562	410.9776
93.000	.216800	385247.	87.4950	-.0056218	2726.5521	-31.2508	432.4372
96.000	.200269	388675.	-5.0343	-.0053979	2738.4550	-30.4354	455.9188
99.000	.184413	391694.	-95.1025	-.0051721	2748.9383	-29.6101	481.6928
102.000	.169236	394311.	-182.6794	-.0049446	2758.0240	-28.7745	510.0769
105.000	.154745	396532.	-267.7342	-.0047158	2765.7351	-27.9287	541.4461
108.000	.140942	398363.	-408.8743	-.0044858	2772.0954	-66.1648	1408.3444
111.000	.127830	399461.	-704.9205	-.0042549	2775.9077	-131.1993	3079.0726
114.000	.115412	399240.	-1096.0310	-.0040238	2775.1384	-129.5411	3367.2693
117.000	.103687	397714.	-1481.7975	-.0037932	2769.8397	-127.6366	3692.9373
120.000	.092653	394901.	-1861.4734	-.0035639	2760.0728	-125.4807	4062.9452
123.000	.082304	390822.	-2234.2961	-.0033365	2745.9086	-123.0677	4485.8646
126.000	.072633	385499.	-2599.4832	-.0031119	2727.4272	-120.3904	4972.5294
129.000	.063632	378959.	-2956.2293	-.0028907	2704.7189	-117.4403	5536.8325
132.000	.055289	371231.	-3303.6997	-.0026736	2677.8838	-114.2067	6196.8910
135.000	.047590	362345.	-3641.0237	-.0024614	2647.0321	-110.6760	6976.7968
138.000	.040521	352338.	-3967.2838	-.0022546	2612.2849	-106.8307	7909.3385
141.000	.034063	341247.	-4281.5004	-.0020539	2573.7744	-102.6471	9040.3994
144.000	.028197	329114.	-4582.6105	-.0018599	2531.6449	-98.0929	10436.4082
147.000	.022903	315983.	-4869.4333	-.0016733	2486.0531	-93.1223	12197.7110
150.000	.018158	301905.	-5140.6182	-.0014945	2437.1703	-87.6676	14484.3629
153.000	.013936	286933.	-5394.5556	-.0013241	2385.1839	-81.6239	17570.7405
156.000	.010213	271127.	-5629.2165	-.0011626	2330.3008	-74.8167	21976.6619
159.000	.006961	254553.	-5841.8289	-.0010105	2272.7528	-66.9249	28844.4772
162.000	.004150	237288.	-6028.0926	-.0008682	2212.8065	-57.2509	41386.1959
165.000	.001751	219426.	-6179.4774	-.0007361	2150.7851	-43.6722	74807.9403
168.000	-.000266	201095.	-6200.9234	-.0006144	2087.1343	29.3749	330913.
171.000	-.001935	182958.	-6069.2248	-.0005032	2024.1590	58.4242	90586.4702
174.000	-.003286	165283.	-5875.3765	-.0004025	1962.7890	70.8079	64649.1915
177.000	-.004350	148189.	-5650.7788	-.0003118	1903.4324	78.9239	54433.2497
180.000	-.005156	131753.	-5405.2490	-.0002308	1846.3635	84.7626	49314.3762
183.000	-.005734	116034.	-5144.4679	-.0001591	1791.7846	89.0914	46608.6906
186.000	-.006111	101077.	-4872.3833	-9.6259E-05	1739.8499	92.2983	45311.2949
189.000	-.006312	86915.1732	-4592.0203	-4.1863E-05	1690.6777	94.6103	44967.0011
192.000	-.006362	73574.8870	-4301.3571	4.5751E-06	1644.3572	99.1652	46760.3967
195.000	-.006285	61101.5404	-3997.9139	4.3544E-05	1601.0470	103.1303	49230.5211
198.000	-.006101	49535.1506	-3687.2010	7.5557E-05	1560.8859	104.0117	51146.0671
201.000	-.005831	38887.6662	-3374.5908	.0001011	1523.9155	104.3951	53708.6208
204.000	-.005494	29166.2349	-3063.7196	.0001208	1490.1605	102.8524	56162.5057
207.000	-.005106	20360.3483	-2757.9601	.0001352	1459.5845	100.9872	59332.2476
210.000	-.004683	12456.2772	-2458.2398	.0001447	1432.1399	98.8263	63309.3033
213.000	-.004238	5437.3176	-2165.4145	.0001498	1407.7685	96.3906	68229.3678
216.000	-.003784	-716.0147	-1880.2841	.0001512	1391.3751	93.6963	74283.6015
219.000	-.003331	-6025.8314	-1603.6060	.0001493	1409.8119	90.7557	81737.1504
222.000	-.002888	-10516.7543	-1336.1065	.0001445	1425.4054	87.5773	90958.4745
225.000	-.002464	-14215.8300	-1078.4917	.0001373	1438.2494	84.1659	102466.
228.000	-.002065	-17152.4764	-831.4589	.0001282	1448.4461	80.5227	117003.
231.000	-.001695	-19358.4631	-595.7089	.0001177	1456.1058	76.6439	135668.
234.000	-.001359	-20867.9325	-371.9628	.0001060	1461.3470	72.5201	160134.
237.000	-.001059	-21717.4750	-160.9834	9.3707E-05	1464.2968	68.1328	193077.
240.000	-.000796	-21946.2815	36.3901	8.1073E-05	1465.0913	63.4496	239021.
243.000	-.000572	-21596.4218	219.1844	6.8474E-05	1463.8765	58.4133	306256.
246.000	-.000386	-20713.3437	386.1810	5.6231E-05	1460.8102	52.9178	411783.
249.000	-.000235	-19346.8133	586.9355	4.4640E-05	1456.0653	80.9185	1033824.
252.000	-.000118	-17245.2983	769.1478	3.4052E-05	1448.7684	40.5563	1033824.
255.000	-3.05E-05	-14772.7889	845.7494	2.4787E-05	1440.1833	10.5115	1033824.
258.000	3.10E-05	-12200.5467	845.4740	1.6982E-05	1431.2519	-10.6951	1033824.
261.000	7.14E-05	-9720.3240	792.5279	1.0640E-05	1422.6400	-24.6023	1033824.
264.000	9.49E-05	-7458.1471	706.5832	5.6690E-06	1414.7852	-32.6941	1033824.
267.000	.000105	-5487.6275	603.0563	1.9231E-06	1407.9432	-36.3238	1033824.
270.000	.000106	-3842.1171	493.5648	-7.7645E-07	1402.2296	-36.6705	1033824.
273.000	.000101	-2525.3068	386.4815	-2.6189E-06	1397.6573	-34.7184	1033824.
276.000	9.07E-05	-1520.0854	287.5206	-3.7894E-06	1394.1670	-31.2555	1033824.
279.000	7.80E-05	-795.6361	200.3124	-4.4595E-06	1391.6515	-26.8832	1033824.
282.000	6.39E-05	-312.8596	126.9352	-4.7802E-06	1389.9752	-22.0349	1033824.
285.000	4.93E-05	-28.2887	68.3837	-4.8789E-06	1388.9871	-16.9994	1033824.
288.000	3.47E-05	103.2973	24.9641	-4.8572E-06	1389.2476	-11.9470	1033824.
291.000	2.02E-05	127.3246	-3.3909	-4.7905E-06	1389.3310	-6.9564	1033824.
294.000	5.93E-06	88.7004	-16.8883	-4.7280E-06	1389.1969	-2.0419	1033824.
297.000	-8.18E-06	31.6681	-15.7220	-4.6932E-06	1388.9988	2.8195	1033824.
300.000	-2.22E-05	0.0000	0.0000	-4.6840E-06	1388.8889	7.6619	516912.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 4:

```
Pile-head deflection              =     1.00000000 in
Computed slope at pile head       =     -.01016936
Maximum bending moment            =   399461.41695 lbs-in
Maximum shear force               =     8782.11568 lbs
Depth of maximum bending moment   =      111.00000 in
Depth of maximum shear force      =        0.00000 in
Number of iterations              =             17
Number of zero deflection points  =              3
```

Summary of Pile Response(s)

Definition of Symbols for Pile-Head Loading Conditions:

```
Type 1 = Shear and Moment,          y = pile-head displacment in
Type 2 = Shear and Slope,           M = Pile-head Moment lbs-in
Type 3 = Shear and Rot. Stiffness,  V = Pile-head Shear Force lbs
Type 4 = Deflection and Moment,     S = Pile-head Slope, radians
Type 5 = Deflection and Slope,      R = Rot. Stiffness of Pile-head in-lbs/rad
```

Load Type	Pile-Head Condition 1	Pile-Head Condition 2	Axial Load lbs	Pile-Head Deflection in	Maximum Moment in-lbs	Maximum Shear lbs
5	y= .500000	S= 0.000	200000.	.5000000	-617646.	12512.7074
5	y= 1.000000	S= 0.000	200000.	1.0000000	-1028602.	17383.6436
4	y= .500000	M= 0.000	200000.	.5000000	228155.	6880.5805
4	y= 1.000000	M= 0.000	200000.	1.0000000	399461.	8782.1157

The analysis ended normally.

APPENDIX E
SPECIFICATION FOR APGD PILES

Specification for Auger Pressure Grouted Displacement Piles

PART 1 – GENERAL

1.1 Summary

This Specification describes requirements for design and installation of Auger Pressure Grouted Displacement (APGD) Piles. These piles are installed using a hollow shaft displacement auger with grout pumped through the hollow shaft at sufficient pressure and quantity to completely replace the displaced soil and maintain positive grout head at the grout port as the displacement auger is retracted while rotating. Reinforcing steel is inserted into the fluid grout column prior to initial set of the grout.

1.2 References

A. Only applicable standards producing agency reference numbers are indicated in this Specification. Complete or partial versions of noted references, standards, and specifications are not contained in this Specification.
   a. Unless otherwise noted, most current version of standard or reference is applicable.
   b. Obtain, become familiar with, and, where indicated or inferred, conform to listed references and standards.
   c. References and standards are considered minimum requirements unless indicated otherwise.
   d. References to methods of measurement or payment in references and standards are not applicable.
   e. References to alternative acceptable materials in references and standards are not applicable.
   f. Tolerances in references and standards are applicable only if not indicated otherwise in this Specification.
   g. In event of conflict between references or standards and this Specification, this Specification applies.

B. 2002 City of Los Angeles Building Code

C. American Society for Testing and Materials (ASTM).
   a. A53: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
   b. C31: Standard Practice for Making and Curing Concrete Test Specimens in the Field
   c. C33: Standard Specification for Concrete Aggregates
   d. C39: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
   e. C150: Standard Specification for Portland Cement
   f. C192: Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
   g. C494: Standard of Specification for Chemical Admixtures for Concrete

h. C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
i. C939: Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
j. D1143: Standard Test Method for Piles Under Static Axial Compressive Load
k. D4945: Standard Test Method for High-Strain Dynamic Testing of Piles

D. American Concrete Institute (ACI).
a. 301: Specification for Structural Concrete for Buildings
b. 305R: Hot Weather Concreting
c. 306R: Cold Weather Concreting
d. 315: Details and Detailing of Concrete Reinforcement
e. 318: Building Code Requirements for Reinforced Concrete

E. The publications listed above form part of this specification to the extent referenced in this publication. If there is any discrepancy between the references and this specification, the specification shall govern.

1.3 Submittals

ALL submittals, including those outlined below, shall be submitted to the Geotechnical Engineer AND the Structural Engineer of Record at least five (5) working days prior to the beginning of work.

A. Contractor Qualifications: Contractor shall submit evidence that he has been engaged in the successful installation of APGD Piles for at least five years and that his drill rig operators and “keymen” who give directions to the drill rig operators have at least two years of experience in the successful installation of APGD Piles. The Contractor shall furnish records of past successful experience in performing this specific type of work in similar site conditions, and shall submit to the Engineer for review a description of the materials used and method of operations. The information furnished shall demonstrate that the finished piles complied, in all respects, with the quality and properties required by the relevant specifications.
B. Concrete mix design for each class of concrete.
C. Physical samples of prefabricated centralizers/spacers to be used for centralizing/positioning reinforcing steel/access tubes within the pile.
D. Revised mix design when characteristics of materials, project conditions, weather, testing results, or other circumstances warrant adjustments.

E. Material certifications and test reports.
F. Design calculations for engineering to be provided by Contractor if applicable.
G. Record drawings at project closeout. This will include marked-up drawings showings all piles installed and location of any pile not within tolerances specified.

1.4 Records

A. During piling, a City of Los Angeles Deputy Grading Inspector shall record and maintain accurate data for each pile, including the following:
   a. Pile number
   b. Installed length of pile
   c. Auger torque vs. depth
   d. Grout pressure vs. depth
   e. Drilling rate vs. depth
   f. Unusual/unanticipated site conditions

B. Contractor shall submit as-built information including locations and top elevations of piles in a timely manner and prior to placement of steel and/or concrete for pile caps.

1.5 Quality Assurance

A. Codes and Standards. Comply with the provisions of the following codes, specifications and standards except where in conflict with requirements of this specification.
   a. ACI 318
   b. ACI 301
   c. ACI 315

B. Work shall be subject to inspection by Owner. The presence of Owner on job site does not relieve the responsibilities of Contractor.

1.6 Site Conditions

A. Owner is responsible for providing and maintaining a level, well drained working surface and site access. Contractor will inspect the site and notify Owner of any deficiencies.

B. Subsurface Data
   a. Subsurface investigations will be made available for Contractor's information and for interpretation of soil and water conditions that may be encountered at the site. Logs and test data are not represented as complete description of the site soil and water

information, but only display what was found in borings at the identified locations.

C. Existing Underground Obstructions

a. Owner shall locate all underground utilities prior to Contractor proceeding with the work. If utilities and obstructions are to remain in place, Contractor shall provide protection during pile installation. Owner is responsible for relocating all utilities and obstructions not otherwise to remain in place so that Contractor’s progress is not hindered.
b. Should uncharted or improperly located utilities and obstructions be encountered during pile installation, Contractor will cooperate with Owner in keeping necessary services in operation. Contractor is not responsible for removal, damage to or repair of utilities or obstructions not properly located.

1.7 Equipment

A. Drilling Equipment

a. The drilling head of the fixed-mast hydraulic drilling rig shall supply a minimum of 150,000 ft. lbs. of torque at 20 R.P.M. and down crowd of at least 25 tons to the displacement auger, and at least enough torque and down crowd to permit required penetration into the designated bearing layer as specified by the Geotechnical Engineer.
b. Displacement auger (Minimum 10-inch diameter drill stem, 16-inch diameter displacement element, Maximum 5-inch I.D. hollow shaft) fashioned with forward auger flights below the displacing element, reverse auger flights above the displacing element, and a grout port located near the displacement auger tip .
c. The cab of the drilling rig shall be fitted with automated monitoring equipment (AME) designed to monitor the pile installation process. During the drilling portion of the piling process the AME records auger depth, drill torque, and elapsed time. During the grouting portion of the process, the AME shall record and visually display auger depth, grout pressure, and elapsed time. The AME shall be serviced and calibrated (as required) by a qualified technician within 30 days prior to beginning of the work, and reserviced and recalibrated (as required) as often as specified by the manufacturer.

B. Grouting Equipment

a. Use a continuous system of grout mixing, pumping, and agitating equipment. Hose connections should be in clear view of the operator, and equipment should be clean and maintained in good working order to maintain a continuous flow of concrete during auger withdrawal.

b. The grout pump shall be a positive displacement piston pump of an approved design capable of developing displacement pressures at the pump of at least 250-psi. The grout pump shall have an inlet screen (1/2 inch or smaller) to prevent inclusion of foreign objects or potential plugging of equipment. The grout pump shall be equipped with one pressure gauge in clear view of the pump operator, and a pressure sensor at the top of the drill stem that transmits a continuous pressure signal to the AME. Clean gauges daily to prevent grout buildup, and use gauge savers to protect gauges from grout. The grout pump shall be calibrated in terms of volume pumped/stoke at the start of work and recalibrated at least once a week during the course of the work by counting the number of strokes required to fill a 55 gallon drum or other suitable vessel of known volume.

PART 2 – PRODUCTS

2.1 Grout Materials

A. All mix designs shall be submitted for engineer's approval at least 5 working days prior to beginning of work.

B. Proportion materials to provide a grout that can be pumped through the system. The Engineer shall specify the minimum ultimate compressive strength. Admixtures other than those specified with written permission of Engineer shall not be used. City approved retarder, water reducer, superplaticizer, hydration stabilizer, corrosion inhibitor, and/or mineral filler may be used if allowed by the Engineer.

C. Concrete Grout Materials and Mix: ASTM C 150 Type II Low Alkali Portland cement. Compressive strength requirement is based on cylindrical specimens made and cured in accordance with ASTM 31 and C 192 and tested in accordance with ASTM C 39 utilizing 4-inch x 8-inch cylinder molds. The mixture components shall be proportioned and mixed to produce a grout capable of maintaining the solids in suspension, which may be pumped without difficulty, which will penetrate and fill open voids in the adjacent soils, and which will allow for placement of reinforcing steel/access tubes within the fluid grout column prior to initial set.

D. Laboratory Trial Batches: When laboratory trial batches are used to select group proportions, prepare and test specimens in accordance with ASTM C 192.

E. Field Experience Method: When field experience methods are used to select group proportions, establish proportions as specified in ACI 301.

F. Strength data for establishing standard deviation will be considered suitable if the grout production facility has certified records consisting of at least 30 consecutive tests in one group or the statistical average for 2 groups totaling 30 or more tests representing similar materials or project conditions.

G. The Contractor may request mix design adjustments when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, at no additional cost to the Owner and as accepted by the Engineer. Laboratory test data for revised mix designs and strength test results must be submitted at least three working days prior to and accepted by the Engineer before using in the work.

H. Chemical Admixtures: City approved retarder, water reducer, hydration stabilizer, and/or superplasticizer, when allowed by the Engineer, conforming to ASTM C 494. Dosage rate shall not exceed manufacturer's recommendations.

I. Mineral Filler: Per ASTM C 618.

J. Water: Fresh, clean and potable, free from sewage, oil, acid, alkali, salts and organic mater. Quantity of water used shall be such as to produce a grout having a consistency of not less than 16 seconds when tested with a flow cone in accordance with ASTM C 939. Time of mixing shall not be less than one minute.

K. Fine Aggregate: ASTM C 33. If washed, use a washing method that will not remove desirable fines. All aggregate to drain until the residual free moisture is reasonably uniform and stable. Use well-graded aggregate, from fine to course, with fineness modulus between 1.40 and 3.10. The fineness modulus is defined as the total divided by 100 of the cumulative percentages retained on U.S. Standard Sieve Numbers, 16, 30, 50 and 100. The sand shall consist of hard, dense, durable, uncoated rock fragments and shall be free from injurious amounts of silt, lumps, loam, soft or flaky particles, shale, alkali, organic matter, mica, and other deleterious substances. Washed sand shall be permitted to drain until the residual free moisture is reasonably uniform and stable.

2.2 Reinforcing Materials

A. Reinforcing steel shall comply with specifications set by the Engineer. Samples of the reinforcing steel shall be provided to the Engineer at least five working days prior to the beginning of work.

B. The maximum (outside) diameter of the spiral ties of the reinforcing cage shall not exceed 9.5 inches.

PART 3 - EXECUTION

3.1 Engineering

A. A registered engineer licensed in the State of California shall perform all engineering. Contractor will rely on the accuracy and completeness of all design information, including general arrangement, design loads, geometric criteria, and et cetera provided by Owner.

B. Structural Engineering. The structural engineer of record shall provide all design criteria necessary for the design of each pile including, without limitation, design loads, general arrangement, settlement criteria and any special design conditions. The structural engineer shall provide structural design loads including all reinforcing.

C. Geotechnical Engineering. The geotechnical engineer shall provide site characterization, evaluation of group or individual pile capacity and determine design pile penetration criteria. The geotechnical engineer shall review the pile installation records and prepare an installation report.

   a. Design pile penetration criteria shall be specified based on the results of site-specific pile load testing.
   b. Bearing layer shall be determined by conducting at least one (1) CPT sounding for every 20 piles proposed.
   c. CPT results, drilling torque readings, and load testing results will be assessed to determine the magnitude of torque that indicates bearing layer penetration.

3.2 Site Preparation

A surveyor licensed by the State of California shall layout each pile location and elevation benchmark. Adequate ground conditions to support equipment for performance of pile work and load testing shall be provided.

3.3 Installation

A. Drilling

   a. Contractor shall use equipment of adequate torque, crowd, and power to achieve the design tip elevation. The displacement auger used for the production pile installation should be of identical design to that used for test pile installation.
   b. Penetration into the designated bearing layer, as specified by the Geotechnical Engineer, shall be confirmed during installation by a continuous torque reading of at least the target amount established following interpretation of data from the preproduction pile load test program. Limited zones (less than 3

feet) of torque reading below the target minimum torque reading are allowed within the designated bearing layer.

c. The grout port in the auger shall be closed with a plug that prevents soil and/or water from entering the hollow shaft while the displacement auger is drilled into the ground.
d. The displacement auger shall penetrate into the ground to a depth meeting the specified pile penetration criteria. The Geotechnical Engineer shall specify the design pile penetration criteria.
e. Each production pile shall have a diameter of not less than 16 inches over the entire length.
f. The drilling process shall proceed so as to minimize cuttings.
g. The annular space between the drill stem and the shaft wall shall range from 2 to 3 inches.
h. Place no piles within 8 feet of adjacent piles until grout has set for at least 12 hours, unless otherwise directed or approved by the Engineer.

B. Reinforcing

a. Fabricate steel reinforcing cages in accordance with specifications by the Engineer.
b. Prefabricated plastic wheel-type rebar spacers with outside diameters of not less than 6 inches shall be deployed in groups of at least 3 distributed radially on five-foot centers (maximum) to centralize reinforcing cages within the pile. Prefabricated PVC "egg beater"-type centralizers with outside diameters of not less than 12 inches shall be deployed on 20 foot centers (maximum) below the reinforcing cage to centralize reinforcing bars and inspection tubes placed centrally within the pile. Notwithstanding the forgoing, which are intended as minimum requirements, the types, sizes, and quantities of rebar spacers and centralizers used shall be sufficient to perform their intended functions. Wherever rebar spacers or centralizers do not provide 3 inches or greater clear cover by design, the Engineer shall request modification of the building ordinance based upon the parallel use of gamma-gamma logging or other sound rationale. Physical samples of prefabricated centralizers/spacers to be used for centralizing/positioning of reinforcing steel/access tubes within the pile shall be submitted to the Engineer at least five (5) working days prior to the beginning of work. The Deputy Grading Inspector shall observe that the locations and spacings of the centralizers and spacers are as specified, and shall report any deficiencies related thereto.
c. PVC and steel access tubes (see NDT Testing section for details) shall be securely attached to the steel reinforcing prior to placement in the shaft.

C. Grouting

a. A delivery pressure of about 250 psi (measured at the pump), plus the hydraulic pressure developed by the grout column in the drill stem, shall be applied.
b. The operator shall maintain positive rotation of the displacement auger continuously throughout the grouting process.
c. Grout pressure shall be monitored with the AME connected to the pressure transducer located at the top of the drill stem. Should grout pressure at the top of the stem become negative or otherwise not measurable, the pile shall be completed based upon maintaining sufficient grout flow to fully replace the displaced soil.
d. Grout flow volume shall be measured and recorded either by means of a magnetic flow meter or by counting of calibrated grout pump strokes for increments not exceeding 2 feet of pile length as a means of verifying that grout volumes pumped are sufficient to fully replace the displaced soil.
e. A grouting factor of safety of 1.05 shall be used to increase the volume of grout pumped into each 2-foot increment by 5% during withdrawal.
f. In the event of interrupted or stopped grouting, the displacement auger shall be re-advanced five (5) feet before continuing the grouting operation.
g. The displacing element provides support to prevent caving of soil while the displacement auger is withdrawn. The pressure of the grout also maintains the stability of the shaft.
h. Promptly remove accumulated spoil material from around the pile top following full retraction of the displacement auger, and screen top of pile to remove any soil inclusions or other debris.

D. Tolerances

a. Horizontal Deviation: Within 3 inches of the location indicated on Drawings.
b. Vertical Deviation: Within 2 percent of length, as observed on auger shaft and leads.
c. Top Elevation: Within 3 inches of design cutoff elevation.
d. Cut Off: Pile cut-off may be accomplished by removing fresh grout from the top of the pile before initial set, or by cutting grout down to final cut-off elevation at any time after initial set has occurred.

3.4 Pile Load Testing

A. A Pile Load Testing Program shall be completed to establish appropriate drilling criteria to be used during production. The drilling criteria established shall be based on drilling rate and measured auger torque at a specified crowd load. The Contractor shall construct, instrument, and test a number of piles in axial compression in accordance with Soils Report. As a minimum, one out of five of these tests, but not less than a total of 2, must be performed on sacrificial test piles in accordance with ASTM D1143, *Standard Loading Procedure*. The design load shall be held until the measured creep does not exceed 0.005 inch per hour. The balance of the total number of tests may be conducted on production piles by loading the tested piles with a drop hammer and monitoring the pile response by means of a pile driving analyzer (PDA) in accordance with ASTM D4945 *Standard Test Method for High-Strain Dynamic Testing of Piles*, with the additional requirement that high-strain dynamic tests also be performed on at least 2 of the statically tested piles to establish correlation with the static capacity measurements.

B. Tested piles shall be located adjacent to cone penetration testing soundings to confirm that the design penetration criteria are met for the pile. The bearing layer determined from the CPT sounding may be compared to the drilling torque record to establish a site-specific torque requirement to achieve specified penetration into the bearing layer for the displacement auger and site soil condition.

C. The Geotechnical Engineer shall perform pile load testing to not less than 200% of the allowable capacity as specified.

D. Sacrificial test piles and reaction piles shall be cut off 2 feet below the bottom of the methane system and abandoned in place following testing and shall not be incorporated as foundation piles.

E. The results of pile load testing will be submitted as a summary letter to the City Grading Section at the conclusion of testing. The City Grading Section will review and respond to the review summary in three (3) working days. A letter of approval is required prior to commencing production piles.

3.5 Field Quality Control

A. Testing Agency: A qualified independent testing and inspection agency shall be engaged to sample materials and to perform tests and measurements during pile installation.

B. Pile Installation: The Contractor shall maintain accurate records, which shall contain the following information as a minimum for each pile. This information shall be displayed in a manner visible to the Deputy Grading Inspector, and a hard copy of the data shall be provided at the conclusion of each pile.

   a. Pile number
   b. Installed length of pile
   c. Auger torque vs. depth
   d. Elapsed drilling time
   e. Grout pressure vs. depth
   f. Elapsed grouting time

g. Unusual/unanticipated site conditions

C. Grout:
a. Sample grout mixture by making a set of six (6), 4-inch by 8-inch cylinders per 150 cubic yards of grout placed. A minimum of one set of six cylinders shall be made per day.
b. Test two cylinders at seven days and two cylinders at 28 days. The remaining cylinders are to be held in reserve for a period of 56 days.
c. Test the flow of each batch of grout sampled for strength testing using a flow cone under the provisions of ASTM C 939 except that the standard flow cone shall have the discharge tube removed to reveal a 0.75-inch diameter opening.

3.6 Non-Destructive Testing

One purpose of the non-destructive testing is to evaluate the integrity of the piles installed to provide quality control/quality assurance for this pile construction method. Gamma-gamma density logging (GDL) is a geophysical NDT method designed for quality assurance (QA) testing of drilled shaft foundations, slurry walls, and other concrete foundation designs utilizing PVC or steel access tubes.

A. As a minimum, each pile shall include one (1) full length 2-inch diameter, Schedule 40, ASTM A53 steel pipe positioned centrally within each pile to permit gamma-gamma logging, which may be built by coupling shorter sections of pipe utilizing suitable couplings. The number, size, and arrangement of access tubes may be amended by the Engineer based upon field experience.
B. Calibration studies in 55 gallon drums shall be performed on cement grout and rebar samples against which to compare in-shaft readings.
C. Non-destructive testing shall be carried out on each production pile installed until sufficient information is gathered to satisfy the Engineer, Geotechnical Engineer and review agency that APGD piles have consistent, predictable diameter and shape. From then on, piles would be GDL tested at a rate of 1 in 10.

3.7 Unsatisfactory Piles

A. An anomaly shall be defined based upon processed GDL data as a zone of density that is 3 standard deviations or more less than the mean density and indicates a density of at least 5 pounds per cubic foot less than the mean. If such an anomaly is detected, verify that the anomaly is valid by repeating the gamma-gamma logging or using another technique to verify the anomaly. Also, examine whether the anomaly occurs at a location indicated as a problem zone in the inspector's records.

B. If an anomaly is verified, it shall be categorized as one of the following: Acceptable Flaw or Fatal Flaw.

a. Acceptable Flaw: These flaws span less than one foot of pile length, do not expose the rebar to corrosive soils or groundwater, and therefore do not affect the vertical or lateral capacity of the pile. Acceptable flaws need not be corrected.
b. Fatal Flaw: These are flaws that are so severe the pile must be abandoned and replaced. Fatal flaws span greater than one foot of pile length.
c. Geotechnical and Structural Engineer shall evaluate all flaws and, if needed, a Corrosion Engineer shall also be consulted.

C. Misaligned piles or piles improperly installed or damaged as a result of Contractor's operations to an extent that, in the Engineer's opinion, are incapable of performing function for which it was designed, will be considered unsatisfactory.

D. All unsatisfactory piles shall be replaced in accordance with requirements specified herein by the Contractor, at the Contractor's expense.

E. The Geotechnical Engineer shall meet with the City Grading Section after the installation of every 100 piles to review and concur on the results of GDL testing.

F. The Structural Engineer of Record shall review the results of GDL testing, recommend corrective action where needed, and provide structural certification of the production piles at the completion of the project.

3.8 Protection

A. Drilling and other equipment must be kept at sufficient distances from piles being placed and curing piles to avoid compressing or shearing of soil, which may in turn displace or squeeze the grout column.

GROUP DELTA CONSULTANTS

Geotechnical Engineering
Geology
HydroGeology
Earthquake Engineering
Materials Testing & Inspection
Forensic Services

April 7, 2008

Archstone-Smith
One Spectrum Pointe Drive, Suite 225
Lake Forest, CA 92630

Attention: Mr. David Eldridge

Subject: Report Update
Change in Parking Structure Finished Elevation
Proposed Apartment Development
Lots 1 and 2 of Tract 33003
5550 Grosvenor Boulevard
Los Angeles County, CA 90066
GDC Project No. L-746

Reference: Geotechnical Report
Proposed Residential Development
Lots 1 and 2 of Tract 33003
5550 Grosvenor Boulevard
Los Angeles County, CA 90066
GDC Project No. L-746
Dated 5/3/07

Mr. Eldridge,

As requested, Group Delta Consultants (GDC) is pleased to submit this letter updating our report for the proposed project. Based on updated plans, the parking structure finished floor elevation has been revised. The revised lowest parking elevation is now about 6 feet lower than the previous elevation. This results in a lowest parking finished elevation of about +9.

Though this revised parking grade elevation will result in shorter piles for the parking structure, it does not change the recommendations of the referenced report.

370 Amapola Avenue, Suite 212 ♦ Torrance, CA 90501 ♦ Tel (310) 320-5100 ♦ Fax (310) 320-2118
Aliso Viejo ♦ (949) 609-1020 ♦ www.GroupDelta.com ♦ San Diego♦ (858) 524-1500

GROUP DELTA CONSULTANTS

Geotechnical Engineering

Geology

Hydro Geology

Earthquake Engineering

Materials Testing & Inspection

Forensic Services

We appreciate the opportunity to provide geotechnical services for this project. Should you have any questions regarding this report, or if we can be of further service, please call us at 310 320-5100.

Sincerely,
GROUP DELTA CONSULTANTS, INC.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL DAVID READER
No GE 2259
Exp. 3/31/06
GEOTECHNICAL
STATE OF CALIFORNIA

Michael D. Reader, G.E. # 2259
CEO

Geotechnical Report Approval Letter

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
__ Geologist
1 Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT MAP 67206
SUBDIVIDER Archstone-Smith
ENGINEER Development Resource Consultants, Inc.
GEOLOGIST ----------
SOILS ENGINEER Group Delta Consultants, Inc.

TENTATIVE MAP DATED 4/28/08 (Rev.)
LOCATION Del Rey
GRADING BY SUBDIVIDER [ ] (Y or N)
REPORT DATE ----------
REPORT DATE 7/22/08, 5/3/07

TENTATIVE MAP FEASIBILITY IS RECOMMENDED FOR APPROVAL FROM A GEOLOGIC STANDPOINT

THE FOLLOWING CONDITIONS MUST BE FULFILLED:

1. The final map must be approved by the Geotechnical and Materials Engineering Division (GMED) to assure that all geotechnical requirements have been properly depicted. For Final Map clearance guidelines refer to GS051.0 in the Manual for Preparation of Geotechnical Reports (http://www.dpw.lacounty.gov/gmed/manual.pdf).

2. A grading plan must be geotechnically approved by the GMED prior to Final Map approval. The grading depicted on the plan must agree with the grading depicted on the tentative tract or parcel map and the conditions approved by the Planning Commission. If the subdivision is to be recorded prior to the completion and acceptance of grading, corrective geologic bonds may be required.

3. Prior to grading plan approval a detailed soils engineering report must be submitted that addresses the proposed grading. All recommendations of the geotechnical consultants must be incorporated into the plan (Refer to the Manual for Preparation of Geotechnical Reports at http://www.dpw.lacounty.gov/gmed/manual.pdf).

4. The Soils Engineering review dated 9/4/08 is attached.

Prepared by ______ Reviewed by ______ Date 9/11/08
Charles Nestle

Please complete a Customer Service Survey at http://dpw.lacounty.gov/go/gmedsurvey

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 12.0
Job Number GMPH
Sheet 1 of 1

DISTRIBUTION:
____ Drainage
____ Grading
1 Geo/Soils Central File
____ District Engineer
1 Geologist
1 Soils Engineer
1 Engineer/Architect

Apartment Buildings and Parking Structure
Revised Tentative Tract 67206
Location Del Rey
Developer/Owner Archstone-Smith
Engineer/Architect Development Resource Consultants, Inc.
Soils Engineer Group Delta Consultants, Inc.
Geologist ---------

Review of:
Revised Tentative Tract Map Dated By Regional Planning 4/28/08
Soils Engineering Dated **7/22/08**, 5/14/07
Previous Soils Review Sheet Dated 5/14/08

ACTION:

Tentative Map feasibility is recommended for approval, subject to conditions below:

REMARKS:

1. At the grading plan and/or building plan stage:
   a. Provide a grading plan and/or building plan geotechnical report with additional subsurface data to verify and substantiate the on-site soil materials.
   b. Verify and show proposed pile group details, locations, spacing, depth etc. on the plans and geotechnical maps, as necessary. Show locations of each/all proposed piles, pile groups, and details on the plans and geotechnical map.
   c. Provide chemical test results data sheet (sulfate, chloride, resistivity, etc.) for the on-site soils to address the presence of chemicals deleterious to concrete and ferrous materials.
   d. Provide additional clarification of the performance criteria for the recommended indicator pile load testing / indicator pile program. Clarify how the indicator programs will be measured and evaluated (location of tests, spacing, soils data collected, etc.). For the indicator pile program, address the tests, soils data, and/or analyses that will be collected and completed that will determine whether the indicator pile program shows feasibility of the proposed mitigation measures. Show locations on the geotechnical map.
   e. All recommended mitigation measures.

2. At the grading plan and/or building plan stage, submit 40-scale grading plans and/or building plans and geotechnical maps to the Soils Section for verification of compliance with County codes and policies.

REGISTERED PROFESSIONAL ENGINEER
YOSHIYA MORISAKU
No. 67587
Exp. 6/30/09
CIVIL
STATE OF CALIFORNIA

Reviewed by Yoshiya Morisaku Date 9/4/08

NOTICE: **Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.**

P:\Yosh\67206TentT, 5550 Grosvenor Blvd, Del Rey, TentT-App_3 (Apartments, Parking)

GROUP DELTA CONSULTANTS

Geotechnical Engineering
Geology
HydroGeology
Earthquake Engineering
Materials Testing & Inspection
Forensic Services

February 23, 2010 GDC L-884

Din/ Cal, Inc.
3411 Richmond Avenue, Ste. 200
Houston, CA 77046

Attn: Mr. Carl Husmann

Subject: Elimination of Stormwater Infiltration BMP

Reference: Geotechnical Report
Proposed Residential Development
Lots 1 and 2 of Tract 33003
5550 Grosvenor Boulevard
Los Angeles County, CA 90066
GDC Project No. L-746
Dated 5/3/07

Mr. Husman:

We understand that the County of Los Angeles Bureau requires some of the storm water received on the site to be disposed of by infiltration. However, based on geotechnical considerations, to ensure satisfactory performance of the proposed building within its design life, we recommend that on-site infiltration of surface water be eliminated for the following reasons.

<u>Presence of Low Permeability Soils</u>

Based on our field exploration, the site is underlain by compacted fill. The compacted fill generally consists of clay, sandy clay and silty sand. In general, the clays and sandy clays are firm to stiff; and the silty sands are medium dense. the upper 10 to 15 feet of onsite soil consists predominantly of low permeability cohesive soils. These soils in general have a minimum infiltration rate of less than 0.05 inches per hour, which is not suitable for usage of infiltration practices. Below this fill, very low permeability clay was encountered to depths of about 30 feet

In addition, groundwater was measured in Boring B-1 at a depth of 10.5 feet below the existing grade, which corresponds to approximately El. +8.5 feet.

Foundation Considerations

It has long been well established that introduction of moisture into to subgrade soils supporting buildings, pavements and concrete flat work is not prudent. Intentionally infiltrating water into the subsurface of this site will cause a decrease in soil shear strength and increasing in soil compressibility, resulting undesirable and damaging long-term building settlement. It can also cause undesirable moisture transmission through the floor slabs and basement wall, possibly causing of mold problems. Control of surface infiltration and proper drainage of storm water off-site is critical to the long term performance of the proposed buildings and appurtenances.

As a result of presence of low permeability soils, and damaging effects of on-site infiltration of water, GDC recommends that the on-site infiltration requirement should be eliminated.

Closure

Should you have any questions regarding this letter, please feel free to call us at (310) 320-5100.

Sincerely,
GROUP DELTA CONSULTANTS, INC.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL DAVID READER
No GE 2259
Exp 3/31/08
GEOTECHNICAL
STATE OF CALIFORNIA

Michael D. Reader, G.E. # 2259
CEO

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GROUP
DELTA
CONSULTANTS

APPENDIX 4.3

Noise Measurements and Modeling Output

Millennium-Playa Del Mar Apartments Project
On-Site Noise Contours
Existing Conditions

ROADWAY NAME / Segment	Number of Lanes in Each Direction	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor (1)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Distance fı: CNEL at 75 Feet	Distance fı: Dı 75 CNEL
ROADWAY NAME									
Grosvenor Bl-north of Jefferson Bl	1	0	4,288	25	0	1.8%	0.7%	56.3	-
Jefferson Bl-between Grosvenor Bl and Centinela Ave	3	16	43,466	45	0	1.8%	0.7%	72.1	-
Centinela Ave-between Jefferson Bl and Juniette St	3	0	25,090	35	0	1.8%	0.7%	67.0	-
Centinela Ave-between Junitte St and SR-90	2	0	29,064	35	0	1.8%	0.7%	67.6	-

Notes:

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site, such as aspalt. An alpha acoustically "soft" site such, as heavily vegetated ground cover.

"-" = contour is located within the roadway lanes or within 75 feet of the roadway centerline.

Noise levels and distances to contours do not assume any natural or constructed barriers that may attenuate noise.

Assumed 24-Hour Traffic Distribution:	**Day**	**Evening**	**Night**	**Total**
Total ADT Volumes	77.70%	12.70%	9.60%	100.00%
Medium-Duty Trucks	87.43%	5.05%	7.52%	100.00%
Heavy-Duty Trucks	89.10%	2.84%	8.06%	100.00%

Millennium-Playa Del Mar Apartments Project
On-Site Noise Contours
Project Noise

ROADWAY NAME / Segment	Number of Lanes in Each Direction	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor (1)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Distance fr: CNEL at 75 Feet	D: 75 CNEL
ROADWAY NAME									
Grosvenor Bl-north of Jefferson Bl	1	0	790	25	0	1.8%	0.7%	48.9	-
Jefferson Bl-between Grosvenor Bl and Centinela Ave	3	16	520	45	0	1.8%	0.7%	52.9	-
Centinela Ave-between Jefferson Bl and Juniette St	3	0	232	35	0	1.8%	0.7%	46.6	-
Centinela Ave-between Junitte St and SR-90	2	0	342	35	0	1.8%	0.7%	48.3	-

Notes:

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site, such as aspalt. An alpha acoustically "soft" site such, as heavily vegetated ground cover.

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Medium-Duty Trucks	87.43%	5.05%	7.52%	100.00%
Heavy-Duty Trucks	89.10%	2.84%	8.06%	100.00%

Millennium-Playa Del Mar Apartments Project
On-Site Noise Contours
Existing+Project Conditions

ROADWAY NAME / Segment	Number of Lanes in Each Direction	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor (1)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Distance fr: CNEL at 75 Feet	D: 75 CNEL
ROADWAY NAME									
Grosvenor Bl-north of Jefferson Bl	1	0	5,078	25	0	1.8%	0.7%	57.0	-
Jefferson Bl-between Grosvenor Bl and Centinela Ave	3	16	43,986	45	0	1.8%	0.7%	72.2	-
Centinela Ave-between Jefferson Bl and Juniette St	3	0	25,322	35	0	1.8%	0.7%	67.0	-
Centinela Ave-between Junitte St and SR-90	2	0	29,406	35	0	1.8%	0.7%	67.7	-

Notes:

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site, such as aspalt. An alpha acoustically "soft" site such, as heavily vegetated ground cover.

"-" = contour is located within the roadway lanes or within 75 feet of the roadway centerline.

Noise levels and distances to contours do not assume any natural or constructed barriers that may attenuate noise.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night	Total
Total ADT Volumes	77.70%	12.70%	9.60%	100.00%
Medium-Duty Trucks	87.43%	5.05%	7.52%	100.00%
Heavy-Duty Trucks	89.10%	2.84%	8.06%	100.00%

Millennium-Playa Del Mar Apartments Project
On-Site Noise Contours
Cumulative Base 2013

ROADWAY NAME Segment	Number of Lanes in Each Direction	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor (1)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	Distance fı CNEL at 75 Feet	DI 75 CNEL
ROADWAY NAME									
Grosvenor Bl-north of Jefferson Bl	1	0	4,630	25	0	1.8%	0.7%	56.6	-
Jefferson Bl-between Grosvenor Bl and Centinela Ave	3	16	49,562	45	0	1.8%	0.7%	72.7	-
Centinela Ave-between Jefferson Bl and Juniette St	3	0	30,308	35	0	1.8%	0.7%	67.8	-
Centinela Ave-between Junitte St and SR-90	2	0	34,603	35	0	1.8%	0.7%	68.4	-

Notes:

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site, such as aspalt. An alpha acoustically "soft" site such, as heavily vegetated ground cover.

"-" = contour is located within the roadway lanes or within 75 feet of the roadway centerline.

Noise levels and distances to contours do not assume any natural or constructed barriers that may attenuate noise.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night	Total
Total ADT Volumes	77.70%	12.70%	9.60%	100.00%
Medium-Duty Trucks	87.43%	5.05%	7.52%	100.00%
Heavy-Duty Trucks	89.10%	2.84%	8.06%	100.00%

Millennium-Playa Del Mar Apartments Project
On-Site Noise Contours
Cumulative+Project 2013

ROADWAY NAME Segment	Number of Lanes in Each Direction	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor (1)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	Distance fr CNEL at 75 Feet	D 75 CNEL
ROADWAY NAME									
Grosvenor Bl-north of Jefferson Bl	1	0	5,420	25	0	1.8%	0.7%	57.3	-
Jefferson Bl-between Grosvenor Bl and Centinela Ave	3	16	50,082	45	0	1.8%	0.7%	72.7	-
Centinela Ave-between Jefferson Bl and Juniette St	3	0	30,540	35	0	1.8%	0.7%	67.8	-
Centinela Ave-between Junitte St and SR-90	2	0	34,945	35	0	1.8%	0.7%	68.4	-

Notes:

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site, such as aspalt. An alpha acoustically "soft" site such, as heavily vegetated ground cover.

"-" = contour is located within the roadway lanes or within 75 feet of the roadway centerline.

Noise levels and distances to contours do not assume any natural or constructed barriers that may attenuate noise.

Assumed 24-Hour Traffic Distribution:	**Day**	**Evening**	**Night**	**Total**
Total ADT Volumes	77.70%	12.70%	9.60%	100.00%
Medium-Duty Trucks	87.43%	5.05%	7.52%	100.00%
Heavy-Duty Trucks	89.10%	2.84%	8.06%	100.00%

APPENDIX 4.4

Air Quality Modeling Output

Construction Assumptions

12/16/2009 10:21:21 AM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Construction Emissions\Construction - Playa Del Mar.urb924

Project Name: Millennium-Playa Del Mar Apartments Construction Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2011 TOTALS (lbs/day unmitigated)	7.46	71.09	62.68	0.08	58.24	3.39	61.63	12.18	3.12	15.30
2011 TOTALS (lbs/day mitigated)	7.46	71.09	62.68	0.08	10.46	3.39	13.86	2.20	3.12	5.32
2012 TOTALS (lbs/day unmitigated)	153.75	57.37	72.41	0.09	0.37	3.75	4.12	0.13	3.44	3.57
2012 TOTALS (lbs/day mitigated)	153.75	57.37	72.41	0.09	0.37	3.75	4.12	0.13	3.44	3.57

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 6/1/2011-6/30/2011 Active Days: 22	3.50	29.71	16.71	0.01	8.56	1.60	10.16	1.79	1.47	3.26
Demolition 06/01/2011-06/30/2011	3.50	29.71	16.71	0.01	8.56	1.60	10.16	1.79	1.47	3.26
Fugitive Dust	0.00	0.00	0.00	0.00	8.51	0.00	8.51	1.77	0.00	1.77
Demo Off Road Diesel	2.85	21.76	12.70	0.00	0.00	1.28	1.28	0.00	1.18	1.18
Demo On Road Diesel	0.62	7.89	3.04	0.01	0.04	0.32	0.36	0.01	0.29	0.30
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00

12/16/2009 10:21:21 AM

Time Slice 7/1/2011-7/29/2011 Active Days: 21	7.46	**71.09**	34.81	0.04	**58.24**	3.39	**61.63**	**12.18**	3.12	**15.30**
Mass Grading 07/01/2011-07/31/2011	7.46	71.09	34.81	0.04	58.24	3.39	61.63	12.18	3.12	15.30
Mass Grading Dust	0.00	0.00	0.00	0.00	58.08	0.00	58.08	12.13	0.00	12.13
Mass Grading Off Road Diesel	5.06	40.97	21.80	0.00	0.00	2.18	2.18	0.00	2.01	2.01
Mass Grading On Road Diesel	2.36	30.03	11.55	0.04	0.15	1.21	1.36	0.05	1.11	1.16
Mass Grading Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Time Slice 8/1/2011-12/30/2011 Active Days: 110	6.20	46.32	62.68	0.08	0.34	2.73	3.08	0.12	2.50	2.62
Building 08/01/2011-11/30/2012	6.20	46.32	62.68	0.08	0.34	2.73	3.08	0.12	2.50	2.62
Building Off Road Diesel	3.39	24.04	14.00	0.00	0.00	1.78	1.78	0.00	1.64	1.64
Building Vendor Trips	1.78	20.34	15.15	0.04	0.14	0.84	0.98	0.05	0.77	0.81
Building Worker Trips	1.03	1.94	33.53	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Time Slice 1/2/2012-9/28/2012 Active Days: 195	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Time Slice 10/1/2012-10/31/2012 Active Days: 23	151.19	42.48	61.43	0.09	0.36	2.49	2.84	0.13	2.27	2.40
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Coating 10/01/2012-11/30/2012	145.45	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Architectural Coating	145.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.07	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01

12/16/2009 10:21:21 AM

Time Slice 11/1/2012-11/30/2012 Active Days: 22	**153.75**	57.37	**72.41**	**0.09**	0.37	**3.75**	4.12	0.13	**3.44**	3.57
Asphalt 11/01/2012-11/30/2012	2.56	14.89	10.98	0.00	0.01	1.26	1.28	0.01	1.16	1.17
Paving Off-Gas	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.34	14.35	8.99	0.00	0.00	1.24	1.24	0.00	1.14	1.14
Paving On Road Diesel	0.04	0.44	0.17	0.00	0.00	0.02	0.02	0.00	0.02	0.02
Paving Worker Trips	0.05	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Coating 10/01/2012-11/30/2012	145.45	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Architectural Coating	145.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.07	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01

Phase Assumptions

Phase: Demolition 6/1/2011 - 6/30/2011 - Default Demolition Description

Building Volume Total (cubic feet): 405224

Building Volume Daily (cubic feet): 20271.89

On Road Truck Travel (VMT): 281.55

Off-Road Equipment:

1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

Phase: Mass Grading 7/1/2011 - 7/31/2011 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 4.32

Maximum Daily Acreage Disturbed: 4.32

Fugitive Dust Level of Detail: High

Onsite Haulage: 255.18 ton-miles/day; Offsite haulage: 0 ton-mils/day

On Road Truck Travel (VMT): 1071.43

Off-Road Equipment:

1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

12/16/2009 10:21:21 AM

Phase: Paving 11/1/2012 - 11/30/2012 - Type Your Description Here

Acres to be Paved: 1.08

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 8/1/2011 - 11/30/2012 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 10/1/2012 - 11/30/2012 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 6/1/2011-6/30/2011 Active Days: 22	3.50	29.71	16.71	0.01	8.56	1.60	10.16	1.79	1.47	3.26
Demolition 06/01/2011-06/30/2011	3.50	29.71	16.71	0.01	8.56	1.60	10.16	1.79	1.47	3.26
Fugitive Dust	0.00	0.00	0.00	0.00	8.51	0.00	8.51	1.77	0.00	1.77
Demo Off Road Diesel	2.85	21.76	12.70	0.00	0.00	1.28	1.28	0.00	1.18	1.18
Demo On Road Diesel	0.62	7.89	3.04	0.01	0.04	0.32	0.36	0.01	0.29	0.30
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00

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Time Slice 7/1/2011-7/29/2011 Active Days: 21	7.46	**71.09**	34.81	0.04	10.46	3.39	13.86	2.20	3.12	5.32
Mass Grading 07/01/2011-07/31/2011	7.46	71.09	34.81	0.04	10.46	3.39	13.86	2.20	3.12	5.32
Mass Grading Dust	0.00	0.00	0.00	0.00	10.30	0.00	10.30	2.15	0.00	2.15
Mass Grading Off Road Diesel	5.06	40.97	21.80	0.00	0.00	2.18	2.18	0.00	2.01	2.01
Mass Grading On Road Diesel	2.36	30.03	11.55	0.04	0.15	1.21	1.36	0.05	1.11	1.16
Mass Grading Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Time Slice 8/1/2011-12/30/2011 Active Days: 110	6.20	46.32	62.68	0.08	0.34	2.73	3.08	0.12	2.50	2.62
Building 08/01/2011-11/30/2012	6.20	46.32	62.68	0.08	0.34	2.73	3.08	0.12	2.50	2.62
Building Off Road Diesel	3.39	24.04	14.00	0.00	0.00	1.78	1.78	0.00	1.64	1.64
Building Vendor Trips	1.78	20.34	15.15	0.04	0.14	0.84	0.98	0.05	0.77	0.81
Building Worker Trips	1.03	1.94	33.53	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Time Slice 1/2/2012-9/28/2012 Active Days: 195	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Time Slice 10/1/2012-10/31/2012 Active Days: 23	151.19	42.48	61.43	0.09	0.36	2.49	2.84	0.13	2.27	2.40
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Coating 10/01/2012-11/30/2012	145.45	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Architectural Coating	145.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.07	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 11/1/2012-11/30/2012 Active Days: 22	**153.75**	57.37	**72.41**	**0.09**	0.37	**3.75**	4.12	0.13	**3.44**	3.57
Asphalt 11/01/2012-11/30/2012	2.56	14.89	10.98	0.00	0.01	1.26	1.28	0.01	1.16	1.17
Paving Off-Gas	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.34	14.35	8.99	0.00	0.00	1.24	1.24	0.00	1.14	1.14
Paving On Road Diesel	0.04	0.44	0.17	0.00	0.00	0.02	0.02	0.00	0.02	0.02
Paving Worker Trips	0.05	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.01	0.01

12/16/2009 10:21:21 AM

Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Coating 10/01/2012-11/30/2012	145.45	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Architectural Coating	145.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.07	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2011 - 7/31/2011 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Construction Emissions\Construction - Playa Del Mar.urb924

Project Name: Millennium-Playa Del Mar Apartments Construction Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2011 TOTALS (lbs/day unmitigated)	7.46	71.09	62.68	0.08	58.24	3.39	61.63	12.18	3.12	15.30
2011 TOTALS (lbs/day mitigated)	7.46	71.09	62.68	0.08	10.46	3.39	13.86	2.20	3.12	5.32
2012 TOTALS (lbs/day unmitigated)	153.75	57.37	72.41	0.09	0.37	3.75	4.12	0.13	3.44	3.57
2012 TOTALS (lbs/day mitigated)	153.75	57.37	72.41	0.09	0.37	3.75	4.12	0.13	3.44	3.57

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 6/1/2011-6/30/2011 Active Days: 22	3.50	29.71	16.71	0.01	8.56	1.60	10.16	1.79	1.47	3.26
Demolition 06/01/2011-06/30/2011	3.50	29.71	16.71	0.01	8.56	1.60	10.16	1.79	1.47	3.26
Fugitive Dust	0.00	0.00	0.00	0.00	8.51	0.00	8.51	1.77	0.00	1.77
Demo Off Road Diesel	2.85	21.76	12.70	0.00	0.00	1.28	1.28	0.00	1.18	1.18
Demo On Road Diesel	0.62	7.89	3.04	0.01	0.04	0.32	0.36	0.01	0.29	0.30
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00

12/16/2009 10:21:36 AM

Time Slice 7/1/2011-7/29/2011 Active Days: 21	7.46	**71.09**	34.81	0.04	**58.24**	3.39	**61.63**	**12.18**	3.12	**15.30**
Mass Grading 07/01/2011-07/31/2011	7.46	71.09	34.81	0.04	58.24	3.39	61.63	12.18	3.12	15.30
Mass Grading Dust	0.00	0.00	0.00	0.00	58.08	0.00	58.08	12.13	0.00	12.13
Mass Grading Off Road Diesel	5.06	40.97	21.80	0.00	0.00	2.18	2.18	0.00	2.01	2.01
Mass Grading On Road Diesel	2.36	30.03	11.55	0.04	0.15	1.21	1.36	0.05	1.11	1.16
Mass Grading Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Time Slice 8/1/2011-12/30/2011 Active Days: 110	6.20	46.32	62.68	0.08	0.34	2.73	3.08	0.12	2.50	2.62
Building 08/01/2011-11/30/2012	6.20	46.32	62.68	0.08	0.34	2.73	3.08	0.12	2.50	2.62
Building Off Road Diesel	3.39	24.04	14.00	0.00	0.00	1.78	1.78	0.00	1.64	1.64
Building Vendor Trips	1.78	20.34	15.15	0.04	0.14	0.84	0.98	0.05	0.77	0.81
Building Worker Trips	1.03	1.94	33.53	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Time Slice 1/2/2012-9/28/2012 Active Days: 195	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Time Slice 10/1/2012-10/31/2012 Active Days: 23	151.19	42.48	61.43	0.09	0.36	2.49	2.84	0.13	2.27	2.40
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Coating 10/01/2012-11/30/2012	145.45	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Architectural Coating	145.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.07	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01

12/16/2009 10:21:36 AM

Time Slice 11/1/2012-11/30/2012 Active Days: 22	**153.75**	57.37	**72.41**	**0.09**	0.37	**3.75**	4.12	0.13	**3.44**	3.57
Asphalt 11/01/2012-11/30/2012	2.56	14.89	10.98	0.00	0.01	1.26	1.28	0.01	1.16	1.17
Paving Off-Gas	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.34	14.35	8.99	0.00	0.00	1.24	1.24	0.00	1.14	1.14
Paving On Road Diesel	0.04	0.44	0.17	0.00	0.00	0.02	0.02	0.00	0.02	0.02
Paving Worker Trips	0.05	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Coating 10/01/2012-11/30/2012	145.45	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Architectural Coating	145.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.07	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01

Phase Assumptions

Phase: Demolition 6/1/2011 - 6/30/2011 - Default Demolition Description

Building Volume Total (cubic feet): 405224

Building Volume Daily (cubic feet): 20271.89

On Road Truck Travel (VMT): 281.55

Off-Road Equipment:

1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

Phase: Mass Grading 7/1/2011 - 7/31/2011 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 4.32

Maximum Daily Acreage Disturbed: 4.32

Fugitive Dust Level of Detail: High

Onsite Haulage: 255.18 ton-miles/day; Offsite haulage: 0 ton-mils/day

On Road Truck Travel (VMT): 1071.43

Off-Road Equipment:

1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

12/16/2009 10:21:36 AM

Phase: Paving 11/1/2012 - 11/30/2012 - Type Your Description Here
Acres to be Paved: 1.08
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 8/1/2011 - 11/30/2012 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day
1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 10/1/2012 - 11/30/2012 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 6/1/2011-6/30/2011 Active Days: 22	3.50	29.71	16.71	0.01	8.56	1.60	10.16	1.79	1.47	3.26
Demolition 06/01/2011-06/30/2011	3.50	29.71	16.71	0.01	8.56	1.60	10.16	1.79	1.47	3.26
Fugitive Dust	0.00	0.00	0.00	0.00	8.51	0.00	8.51	1.77	0.00	1.77
Demo Off Road Diesel	2.85	21.76	12.70	0.00	0.00	1.28	1.28	0.00	1.18	1.18
Demo On Road Diesel	0.62	7.89	3.04	0.01	0.04	0.32	0.36	0.01	0.29	0.30
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00

12/16/2009 10:21:36 AM

Time Slice 7/1/2011-7/29/2011 Active Days: 21	7.46	**71.09**	34.81	0.04	10.46	3.39	13.86	2.20	3.12	5.32
Mass Grading 07/01/2011-07/31/2011	7.46	71.09	34.81	0.04	10.46	3.39	13.86	2.20	3.12	5.32
Mass Grading Dust	0.00	0.00	0.00	0.00	10.30	0.00	10.30	2.15	0.00	2.15
Mass Grading Off Road Diesel	5.06	40.97	21.80	0.00	0.00	2.18	2.18	0.00	2.01	2.01
Mass Grading On Road Diesel	2.36	30.03	11.55	0.04	0.15	1.21	1.36	0.05	1.11	1.16
Mass Grading Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Time Slice 8/1/2011-12/30/2011 Active Days: 110	6.20	46.32	62.68	0.08	0.34	2.73	3.08	0.12	2.50	2.62
Building 08/01/2011-11/30/2012	6.20	46.32	62.68	0.08	0.34	2.73	3.08	0.12	2.50	2.62
Building Off Road Diesel	3.39	24.04	14.00	0.00	0.00	1.78	1.78	0.00	1.64	1.64
Building Vendor Trips	1.78	20.34	15.15	0.04	0.14	0.84	0.98	0.05	0.77	0.81
Building Worker Trips	1.03	1.94	33.53	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Time Slice 1/2/2012-9/28/2012 Active Days: 195	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Time Slice 10/1/2012-10/31/2012 Active Days: 23	151.19	42.48	61.43	0.09	0.36	2.49	2.84	0.13	2.27	2.40
Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Coating 10/01/2012-11/30/2012	145.45	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Architectural Coating	145.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.07	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 11/1/2012-11/30/2012 Active Days: 22	**153.75**	57.37	**72.41**	**0.09**	0.37	**3.75**	4.12	0.13	**3.44**	3.57
Asphalt 11/01/2012-11/30/2012	2.56	14.89	10.98	0.00	0.01	1.26	1.28	0.01	1.16	1.17
Paving Off-Gas	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.34	14.35	8.99	0.00	0.00	1.24	1.24	0.00	1.14	1.14
Paving On Road Diesel	0.04	0.44	0.17	0.00	0.00	0.02	0.02	0.00	0.02	0.02
Paving Worker Trips	0.05	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.01	0.01

12/16/2009 10:21:36 AM

Building 08/01/2011-11/30/2012	5.75	42.34	58.96	0.08	0.34	2.48	2.82	0.12	2.27	2.39
Building Off Road Diesel	3.18	22.41	13.79	0.00	0.00	1.62	1.62	0.00	1.49	1.49
Building Vendor Trips	1.63	18.15	13.98	0.04	0.14	0.74	0.88	0.05	0.68	0.73
Building Worker Trips	0.94	1.78	31.20	0.04	0.20	0.12	0.32	0.07	0.10	0.17
Coating 10/01/2012-11/30/2012	145.45	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01
Architectural Coating	145.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.07	0.14	2.47	0.00	0.02	0.01	0.03	0.01	0.01	0.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2011 - 7/31/2011 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

Millenium-Playa Del Mar Apartments Project
Localized Significance Thresholds
Based on SCAQMD Screening Tables for Construction and Operational Emissions

Pollutant	SRA	Distance (meters)	Emission Thresholds for Project Sizes (pounds per day) 2-Acre	5-Acre	4.32-Acre*
PM_{10} - Construction	3	25	8	15	13.41
$PM_{2.5}$ - Construction	3	25	5	8	7.32
PM_{10} - Operational	3	25	2	4	3.55
$PM_{2.5}$ - Operational	3	25	1	2	1.77
NO_X - Construction/Operational	3	25	131	197	182.04
CO - Construction/Operational	3	25	982	1823	1632.37

Source:

South Coast Air Quality Management District, *Final Localized Significance Threshold Metholodolgy*, Appendix C - Mass Rate LST Lookup Tables, (2008).

Note:
* The LSTs for a 4.32-acre site were interpolated based on the 2-acre and 5-acre values.

URBEMIS2007 Existing Operational Emissions

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Existing Playa Del Mar.urb924

Project Name: Playa Del Mar Existing Conditions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	0.45	0.41	1.97	0.00	0.00	0.00
TOTALS (lbs/day, mitigated)	0.45	0.41	1.97	0.00	0.00	0.00
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	2.60	3.10	26.96	0.02	4.10	0.80
TOTALS (lbs/day, mitigated)	2.55	3.04	26.42	0.02	4.01	0.79
Percent Reduction	1.92	1.94	2.00	0.00	2.20	1.25

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	3.05	3.51	28.93	0.02	4.10	0.80
TOTALS (lbs/day, mitigated)	3.00	3.45	28.39	0.02	4.01	0.79
Percent Reduction	1.64	1.71	1.87	0.00	2.20	1.25

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.03	0.39	0.32	0.00	0.00	0.00
Hearth - No Summer Emissions						
Landscape	0.14	0.02	1.65	0.00	0.00	0.00
Consumer Products	0.05					
Architectural Coatings	0.23					
TOTALS (lbs/day, unmitigated)	0.45	0.41	1.97	0.00	0.00	0.00

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.03	0.39	0.32	0.00	0.00	0.00
Hearth - No Summer Emissions						
Landscape	0.14	0.02	1.65	0.00	0.00	0.00
Consumer Products	0.05					
Architectural Coatings	0.23					
TOTALS (lbs/day, mitigated)	0.45	0.41	1.97	0.00	0.00	0.00

Area Source Changes to Defaults

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	0.08	0.11	0.98	0.00	0.15	0.03
Place of worship	2.52	2.99	25.98	0.02	3.95	0.77
TOTALS (lbs/day, unmitigated)	2.60	3.10	26.96	0.02	4.10	0.80

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	0.08	0.11	0.96	0.00	0.14	0.03
Place of worship	2.47	2.93	25.46	0.02	3.87	0.76
TOTALS (lbs/day, mitigated)	2.55	3.04	26.42	0.02	4.01	0.79

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	0.33	9.56	dwelling units	1.00	9.56	84.56
Place of worship		9.11	1000 sq ft	38.99	355.20	2,283.32
					364.76	2,367.88

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.6	1.4	98.2	0.4
Light Truck < 3750 lbs	7.4	2.7	93.2	4.1
Light Truck 3751-5750 lbs	22.9	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	71.4	28.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Place of worship				3.0	1.5	95.5

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Existing Playa Del Mar.urb924

Project Name: Playa Del Mar Existing Conditions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	0.47	0.40	0.75	0.00	0.07	0.06
TOTALS (lbs/day, mitigated)	0.47	0.40	0.75	0.00	0.07	0.06
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	2.83	3.72	26.48	0.02	4.10	0.80
TOTALS (lbs/day, mitigated)	2.78	3.65	25.95	0.02	4.01	0.79
Percent Reduction	1.77	1.88	2.00	0.00	2.20	1.25

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	3.30	4.12	27.23	0.02	4.17	0.86
TOTALS (lbs/day, mitigated)	3.25	4.05	26.70	0.02	4.08	0.85
Percent Reduction	1.52	1.70	1.95	0.00	2.16	1.16

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.03	0.39	0.32	0.00	0.00	0.00
Hearth	0.16	0.01	0.43	0.00	0.07	0.06
Landscaping - No Winter Emissions						
Consumer Products	0.05					
Architectural Coatings	0.23					
TOTALS (lbs/day, unmitigated)	0.47	0.40	0.75	0.00	0.07	0.06

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.03	0.39	0.32	0.00	0.00	0.00
Hearth	0.16	0.01	0.43	0.00	0.07	0.06
Landscaping - No Winter Emissions						
Consumer Products	0.05					
Architectural Coatings	0.23					
TOTALS (lbs/day, mitigated)	0.47	0.40	0.75	0.00	0.07	0.06

Area Source Changes to Defaults

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	0.09	0.13	0.94	0.00	0.15	0.03
Place of worship	2.74	3.59	25.54	0.02	3.95	0.77
TOTALS (lbs/day, unmitigated)	2.83	3.72	26.48	0.02	4.10	0.80

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	0.09	0.13	0.92	0.00	0.14	0.03
Place of worship	2.69	3.52	25.03	0.02	3.87	0.76
TOTALS (lbs/day, mitigated)	2.78	3.65	25.95	0.02	4.01	0.79

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	0.33	9.56	dwelling units	1.00	9.56	84.56
Place of worship		9.11	1000 sq ft	38.99	355.20	2,283.32
					364.76	2,367.88

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.6	1.4	98.2	0.4
Light Truck < 3750 lbs	7.4	2.7	93.2	4.1
Light Truck 3751-5750 lbs	22.9	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	71.4	28.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Place of worship				3.0	1.5	95.5

URBEMIS2007 Proposed Project Operational Emissions

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Operational Emissions\Operational - Playa Del Mar.urb924

Project Name: Millenium-Playa Del Mar Apartments Operational Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	11.78	2.73	2.71	0.00	0.02	0.02
TOTALS (lbs/day, mitigated)	11.78	2.73	2.71	0.00	0.02	0.02
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	10.26	12.45	116.43	0.13	21.89	4.27
TOTALS (lbs/day, mitigated)	10.00	12.09	113.07	0.13	21.26	4.14
Percent Reduction	2.53	2.89	2.89	0.00	2.88	3.04

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	22.04	15.18	119.14	0.13	21.91	4.29
TOTALS (lbs/day, mitigated)	21.78	14.82	115.78	0.13	21.28	4.16
Percent Reduction	1.18	2.37	2.82	0.00	2.88	3.03

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.21	2.71	1.16	0.00	0.01	0.01
Hearth - No Summer Emissions						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	11.08					
Architectural Coatings	0.37					
TOTALS (lbs/day, unmitigated)	11.78	2.73	2.71	0.00	0.02	0.02

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.21	2.71	1.16	0.00	0.01	0.01
Hearth - No Summer Emissions						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	11.08					
Architectural Coatings	0.37					
TOTALS (lbs/day, mitigated)	11.78	2.73	2.71	0.00	0.02	0.02

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Apartments low rise	10.26	12.45	116.43	0.13	21.89	4.27
TOTALS (lbs/day, unmitigated)	10.26	12.45	116.43	0.13	21.89	4.27

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Apartments low rise	10.00	12.09	113.07	0.13	21.26	4.14
TOTALS (lbs/day, mitigated)	10.00	12.09	113.07	0.13	21.26	4.14

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments low rise	13.50	6.63	dwelling units	216.00	1,432.08	12,666.75
					1,432.08	12,666.75

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.5	0.6	99.2	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	60.7	39.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Operational Emissions\Operational - Playa Del Mar.urb924

Project Name: Millenium-Playa Del Mar Apartments Operational Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	11.73	3.90	1.67	0.01	0.11	0.11
TOTALS (lbs/day, mitigated)	11.73	3.90	1.67	0.01	0.11	0.11
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	10.83	14.99	111.59	0.11	21.89	4.27
TOTALS (lbs/day, mitigated)	10.54	14.56	108.37	0.11	21.26	4.14
Percent Reduction	2.68	2.87	2.89	0.00	2.88	3.04

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	22.56	18.89	113.26	0.12	22.00	4.38
TOTALS (lbs/day, mitigated)	22.27	18.46	110.04	0.12	21.37	4.25
Percent Reduction	1.29	2.28	2.84	0.00	2.86	2.97

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.21	2.71	1.16	0.00	0.01	0.01
Hearth	0.07	1.19	0.51	0.01	0.10	0.10
Landscaping - No Winter Emissions						
Consumer Products	11.08					
Architectural Coatings	0.37					
TOTALS (lbs/day, unmitigated)	11.73	3.90	1.67	0.01	0.11	0.11

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.21	2.71	1.16	0.00	0.01	0.01
Hearth	0.07	1.19	0.51	0.01	0.10	0.10
Landscaping - No Winter Emissions						
Consumer Products	11.08					
Architectural Coatings	0.37					
TOTALS (lbs/day, mitigated)	11.73	3.90	1.67	0.01	0.11	0.11

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Apartments low rise	10.83	14.99	111.59	0.11	21.89	4.27
TOTALS (lbs/day, unmitigated)	10.83	14.99	111.59	0.11	21.89	4.27

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Apartments low rise	10.54	14.56	108.37	0.11	21.26	4.14
TOTALS (lbs/day, mitigated)	10.54	14.56	108.37	0.11	21.26	4.14

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments low rise	13.50	6.63	dwelling units	216.00	1,432.08	12,666.75
					1,432.08	12,666.75

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.5	0.6	99.2	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	60.7	39.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

CO Hotspots Analysis

BAY AREA AQMD SIMPLIFIED CALINE4 ANALYSIS; UPDATED WITH EMFAC2007

Project Title:	Archstone Playa del Mar Project
Intersection:	Centinela Ave. and Culver Blvd.
Analysis Condition:	Future Cumulative with Project
Nearest Air Monitoring Station measuring CO:	SRA 3 (Southwest Los Angeles County Coastal)
Background 1-hour CO Concentration (ppm):	3.0
Background 8-hour CO Concentration (ppm):	2.4
Persistence Factor:	0.7
Analysis Year:	2009

				Approach/Departure Speed	
		Roadway Type	No. of Lanes	A.M.	P.M.
North-South Roadway:	Centinela Ave.	AT GRADE	4	5	5
East-West Roadway:	Culver Blvd.	AT GRADE	4	5	5

EMFAC2007 COMPOSITE EMISSION FACTORS FOR CO

Air Basin: South Coast County: Los Angeles
Assumes lowest mean wintertime temperature of 47 degrees F and 30% humidity.

	Average Speed (miles per hour)									
Year	5	8	11	14	17	20	23	26	29	32
2008	8.877	7.732	6.829	6.108	5.526	5.057	4.682	4.371	4.114	3.903
2009	8.018	6.995	6.187	5.54	5.017	4.597	4.259	3.979	3.746	3.554
2010	7.25	6.339	5.617	5.037	4.568	4.191	3.887	3.635	3.424	3.249
2011	6.578	5.765	5.118	4.598	4.176	3.836	3.563	3.334	3.142	2.983
2012	5.983	5.255	4.674	4.206	3.826	3.519	3.273	3.066	2.891	2.745
2013	5.437	4.787	4.267	3.846	3.504	3.228	3.006	2.818	2.66	2.526
2014	4.963	4.38	3.911	3.531	3.222	2.972	2.771	2.601	2.456	2.333
2015	4.534	4.01	3.588	3.244	2.964	2.739	2.556	2.401	2.269	2.157
2020	3.038	2.713	2.448	2.23	2.052	1.908	1.791	1.689	1.601	1.525
2025	2.234	2.008	1.821	1.667	1.54	1.438	1.355	1.283	1.219	1.163
2030	1.84	1.657	1.506	1.381	1.278	1.196	1.13	1.071	1.02	0.975
2035	1.625	1.464	1.331	1.221	1.131	1.06	1.002	0.952	0.907	0.868
2040	1.509	1.358	1.233	1.13	1.047	0.981	0.928	0.882	0.842	0.806

PEAK HOUR TURNING VOLUMES

A.M. Peak

		N			
		100	1,165	75	
W		<	v	>	E
295	^			^	140
780	>			<	410
55	v			v	165
		<	^	>	
		45	1,270	185	
		S			

P.M. Peak

		N			
		270	1,655	190	
W		<	v	>	E
135	^			^	175
525	>			<	720
45	v			v	210
		<	^	>	
		40	1,455	155	
		S			

Representative Traffic Volumes (Vehicles per Hour)

	A.M.		P.M.
N-S Road	3,045	N-S Road	3,880
E-W Road	1,755	E-W Road	1,975
Primary Road =	N-S Road	Primary Road =	N-S Road

ROADWAY CO CONTRIBUTIONS

	Reference CO Concentrations				Traffic		Emission		
Roadway	0 Feet	25 Feet	50 Feet		Volume		Factor		
A.M. Peak Hour									
N-S Road	11.9	7.0	5.4	*	3,045	*	8.02	÷	100,000
E-W Road	3.3	2.6	2.2	*	1,755	*	8.02	÷	100,000
P.M. Peak Hour									
N-S Road	11.9	7.0	5.4	*	3,880	*	8.02	÷	100,000
E-W Road	3.3	2.6	2.2	*	1,975	*	8.02	÷	100,000

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
0 Feet from Roadway Edge	6.4	7.2	5.4
25 Feet from Roadway Edge	5.1	5.6	4.2
50 Feet from Roadway Edge	4.6	5.0	3.8

BAY AREA AQMD SIMPLIFIED CALINE4 ANALYSIS; UPDATED WITH EMFAC2007

Project Title:	Archstone Playa del Mar Project
Intersection:	Centinela Ave. and Washington Blvd.
Analysis Condition:	Future Cumulative with Project
Nearest Air Monitoring Station measuring CO:	SRA 3 (Southwest Los Angeles County Coastal)
Background 1-hour CO Concentration (ppm):	3.0
Background 8-hour CO Concentration (ppm):	2.4
Persistence Factor:	0.7
Analysis Year:	2009

				Approach/Departure Speed	
		Roadway Type	No. of Lanes	A.M.	P.M.
North-South Roadway:	Centinela Ave.	AT GRADE	4	5	5
East-West Roadway:	Washington Blvd.	AT GRADE	4	5	5

EMFAC2007 COMPOSITE EMISSION FACTORS FOR CO

Air Basin: South Coast County: Los Angeles

Assumes lowest mean wintertime temperature of 47 degrees F and 30% humidity.

	Average Speed (miles per hour)									
Year	5	8	11	14	17	20	23	26	29	32
2008	8.877	7.732	6.829	6.108	5.526	5.057	4.682	4.371	4.114	3.903
2009	8.018	6.995	6.187	5.54	5.017	4.597	4.259	3.979	3.746	3.554
2010	7.25	6.339	5.617	5.037	4.568	4.191	3.887	3.635	3.424	3.249
2011	6.578	5.765	5.118	4.598	4.176	3.836	3.563	3.334	3.142	2.983
2012	5.983	5.255	4.674	4.206	3.826	3.519	3.273	3.066	2.891	2.745
2013	5.437	4.787	4.267	3.846	3.504	3.228	3.006	2.818	2.66	2.526
2014	4.963	4.38	3.911	3.531	3.222	2.972	2.771	2.601	2.456	2.333
2015	4.534	4.01	3.588	3.244	2.964	2.739	2.556	2.401	2.269	2.157
2020	3.038	2.713	2.448	2.23	2.052	1.908	1.791	1.689	1.601	1.525
2025	2.234	2.008	1.821	1.667	1.54	1.438	1.355	1.283	1.219	1.163
2030	1.84	1.657	1.506	1.381	1.278	1.196	1.13	1.071	1.02	0.975
2035	1.625	1.464	1.331	1.221	1.131	1.06	1.002	0.952	0.907	0.868
2040	1.509	1.358	1.233	1.13	1.047	0.981	0.928	0.882	0.842	0.806

PEAK HOUR TURNING VOLUMES

A.M. Peak

		N			
		40	995	105	
W		<	v	>	E
85 ^				^	75
895 >				<	730
110 v				v	115
		<	^	>	
		145	1,590	110	
		S			

P.M. Peak

		N			
		60	1,740	140	
W		<	v	>	E
150 ^				^	105
990 >				<	995
120 v				v	135
		<	^	>	
		150	1,545	90	
		S			

Representative Traffic Volumes (Vehicles per Hour)

	A.M.		P.M.
N-S Road	3,065	N-S Road	3,780
E-W Road	2,030	E-W Road	2,465
Primary Road =	N-S Road	Primary Road =	N-S Road

ROADWAY CO CONTRIBUTIONS

Roadway	Reference CO Concentrations 0 Feet	25 Feet	50 Feet		Traffic Volume		Emission Factor		
A.M. Peak Hour									
N-S Road	11.9	7.0	5.4	*	3,065	*	8.02	÷	100,000
E-W Road	3.3	2.6	2.2	*	2,030	*	8.02	÷	100,000
P.M. Peak Hour									
N-S Road	11.9	7.0	5.4	*	3,780	*	8.02	÷	100,000
E-W Road	3.3	2.6	2.2	*	2,465	*	8.02	÷	100,000

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
0 Feet from Roadway Edge	6.5	7.3	5.4
25 Feet from Roadway Edge	5.1	5.6	4.2
50 Feet from Roadway Edge	4.7	5.1	3.9

BAY AREA AQMD SIMPLIFIED CALINE4 ANALYSIS; UPDATED WITH EMFAC2007

Project Title:	Archstone Playa del Mar Project
Intersection:	Grosvenor Blvd. and Jefferson Blvd.
Analysis Condition:	Future Cumulative with Project
Nearest Air Monitoring Station measuring CO:	SRA 3 (Southwest Los Angeles County Coastal)
Background 1-hour CO Concentration (ppm):	3.0
Background 8-hour CO Concentration (ppm):	2.4
Persistence Factor:	0.7
Analysis Year:	2009

				Approach/Departure Speed	
		Roadway Type	No. of Lanes	A.M.	P.M.
North-South Roadway:	Grosvenor Blvd.	AT GRADE	0	5	5
East-West Roadway:	Jefferson Blvd.	AT GRADE	4	5	5

EMFAC2007 COMPOSITE EMISSION FACTORS FOR CO

Air Basin: South Coast County: Los Angeles
Assumes lowest mean wintertime temperature of 47 degrees F and 30% humidity.

	Average Speed (miles per hour)									
Year	5	8	11	14	17	20	23	26	29	32
2008	8.877	7.732	6.829	6.108	5.526	5.057	4.682	4.371	4.114	3.903
2009	8.018	6.995	6.187	5.54	5.017	4.597	4.259	3.979	3.746	3.554
2010	7.25	6.339	5.617	5.037	4.568	4.191	3.887	3.635	3.424	3.249
2011	6.578	5.765	5.118	4.598	4.176	3.836	3.563	3.334	3.142	2.983
2012	5.983	5.255	4.674	4.206	3.826	3.519	3.273	3.066	2.891	2.745
2013	5.437	4.787	4.267	3.846	3.504	3.228	3.006	2.818	2.66	2.526
2014	4.963	4.38	3.911	3.531	3.222	2.972	2.771	2.601	2.456	2.333
2015	4.534	4.01	3.588	3.244	2.964	2.739	2.556	2.401	2.269	2.157
2020	3.038	2.713	2.448	2.23	2.052	1.908	1.791	1.689	1.601	1.525
2025	2.234	2.008	1.821	1.667	1.54	1.438	1.355	1.283	1.219	1.163
2030	1.84	1.657	1.506	1.381	1.278	1.196	1.13	1.071	1.02	0.975
2035	1.625	1.464	1.331	1.221	1.131	1.06	1.002	0.952	0.907	0.868
2040	1.509	1.358	1.233	1.13	1.047	0.981	0.928	0.882	0.842	0.806

PEAK HOUR TURNING VOLUMES

A.M. Peak

	N				
		35	0	20	
W		<	v	>	E
75	^			^	230
1,625	>			<	1,705
0	v			v	0
		<	^	>	
		0	0	0	
	S				

P.M. Peak

	N				
		95	0	90	
W		<	v	>	E
35	^			^	80
1,635	>			<	1,570
0	v			v	0
		<	^	>	
		0	0	0	
	S				

Representative Traffic Volumes (Vehicles per Hour)

	A.M.		P.M.
N-S Road	360	N-S Road	300
E-W Road	3,580	E-W Road	3,375
Primary Road =	E-W Road	Primary Road =	E-W Road

ROADWAY CO CONTRIBUTIONS

	Reference CO Concentrations				Traffic		Emission		
Roadway	0 Feet	25 Feet	50 Feet		Volume		Factor		
A.M. Peak Hour									
N-S Road	0.0	0.0	0.0	*	360	*	8.02	÷	100,000
E-W Road	11.9	7.0	5.4	*	3,580	*	8.02	÷	100,000
P.M. Peak Hour									
N-S Road	0.0	0.0	0.0	*	300	*	8.02	÷	100,000
E-W Road	11.9	7.0	5.4	*	3,375	*	8.02	÷	100,000

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
0 Feet from Roadway Edge	6.4	6.2	4.8
25 Feet from Roadway Edge	5.0	4.9	3.8
50 Feet from Roadway Edge	4.6	4.5	3.5

BAY AREA AQMD SIMPLIFIED CALINE4 ANALYSIS; UPDATED WITH EMFAC2007

Project Title:	Archstone Playa del Mar Project
Intersection:	I-405 NB Ramps and Jefferson Blvd.
Analysis Condition:	Future Cumulative with Project
Nearest Air Monitoring Station measuring CO:	SRA 3 (Southwest Los Angeles County Coastal)
Background 1-hour CO Concentration (ppm):	3.0
Background 8-hour CO Concentration (ppm):	2.4
Persistence Factor:	0.7
Analysis Year:	2009

				Approach/Departure Speed	
		Roadway Type	No. of Lanes	A.M.	P.M.
North-South Roadway:	I-405 NB Ramps	AT GRADE	0	5	5
East-West Roadway:	Jefferson Blvd.	AT GRADE	4	5	5

EMFAC2007 COMPOSITE EMISSION FACTORS FOR CO

Air Basin: South Coast County: Los Angeles

Assumes lowest mean wintertime temperature of 47 degrees F and 30% humidity.

	Average Speed (miles per hour)									
Year	5	8	11	14	17	20	23	26	29	32
2008	8.877	7.732	6.829	6.108	5.526	5.057	4.682	4.371	4.114	3.903
2009	8.018	6.995	6.187	5.54	5.017	4.597	4.259	3.979	3.746	3.554
2010	7.25	6.339	5.617	5.037	4.568	4.191	3.887	3.635	3.424	3.249
2011	6.578	5.765	5.118	4.598	4.176	3.836	3.563	3.334	3.142	2.983
2012	5.983	5.255	4.674	4.206	3.826	3.519	3.273	3.066	2.891	2.745
2013	5.437	4.787	4.267	3.846	3.504	3.228	3.006	2.818	2.66	2.526
2014	4.963	4.38	3.911	3.531	3.222	2.972	2.771	2.601	2.456	2.333
2015	4.534	4.01	3.588	3.244	2.964	2.739	2.556	2.401	2.269	2.157
2020	3.038	2.713	2.448	2.23	2.052	1.908	1.791	1.689	1.601	1.525
2025	2.234	2.008	1.821	1.667	1.54	1.438	1.355	1.283	1.219	1.163
2030	1.84	1.657	1.506	1.381	1.278	1.196	1.13	1.071	1.02	0.975
2035	1.625	1.464	1.331	1.221	1.131	1.06	1.002	0.952	0.907	0.868
2040	1.509	1.358	1.233	1.13	1.047	0.981	0.928	0.882	0.842	0.806

PEAK HOUR TURNING VOLUMES

A.M. Peak

	N	0	0	0	
W		<	v	>	E
375 ^				^	470
845 >				<	1,315
0 v				v	0
		<	^	>	
		160	10	95	
	S				

P.M. Peak

	N	0	0	0	
W		<	v	>	E
295 ^				^	370
1,325 >				<	1,365
0 v				v	0
		<	^	>	
		190	0	295	
	S				

Representative Traffic Volumes (Vehicles per Hour)

	A.M.		P.M.
N-S Road	855	N-S Road	665
E-W Road	2,725	E-W Road	3,355
Primary Road =	E-W Road	Primary Road =	E-W Road

ROADWAY CO CONTRIBUTIONS

	Reference CO Concentrations				Traffic		Emission		
Roadway	0 Feet	25 Feet	50 Feet		Volume		Factor		
A.M. Peak Hour									
N-S Road	0.0	0.0	0.0	*	855	*	8.02	÷	100,000
E-W Road	11.9	7.0	5.4	*	2,725	*	8.02	÷	100,000
P.M. Peak Hour									
N-S Road	0.0	0.0	0.0	*	665	*	8.02	÷	100,000
E-W Road	11.9	7.0	5.4	*	3,355	*	8.02	÷	100,000

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
0 Feet from Roadway Edge	5.6	6.2	4.6
25 Feet from Roadway Edge	4.5	4.9	3.7
50 Feet from Roadway Edge	4.2	4.5	3.4

BAY AREA AQMD SIMPLIFIED CALINE4 ANALYSIS; UPDATED WITH EMFAC2007

Project Title:	Archstone Playa del Mar Project
Intersection:	Lincoln Blvd. and Jefferson Blvd.
Analysis Condition:	Future Cumulative with Project
Nearest Air Monitoring Station measuring CO:	SRA 3 (Southwest Los Angeles County Coastal)
Background 1-hour CO Concentration (ppm):	3.0
Background 8-hour CO Concentration (ppm):	2.4
Persistence Factor:	0.7
Analysis Year:	2009

				Approach/Departure Speed	
		Roadway Type	No. of Lanes	A.M.	P.M.
North-South Roadway:	Lincoln Blvd.	AT GRADE	6	5	5
East-West Roadway:	Jefferson Blvd.	AT GRADE	4	5	5

EMFAC2007 COMPOSITE EMISSION FACTORS FOR CO

Air Basin: South Coast County: Los Angeles

Assumes lowest mean wintertime temperature of 47 degrees F and 30% humidity.

	Average Speed (miles per hour)									
Year	5	8	11	14	17	20	23	26	29	32
2008	8.877	7.732	6.829	6.108	5.526	5.057	4.682	4.371	4.114	3.903
2009	8.018	6.995	6.187	5.54	5.017	4.597	4.259	3.979	3.746	3.554
2010	7.25	6.339	5.617	5.037	4.568	4.191	3.887	3.635	3.424	3.249
2011	6.578	5.765	5.118	4.598	4.176	3.836	3.563	3.334	3.142	2.983
2012	5.983	5.255	4.674	4.206	3.826	3.519	3.273	3.066	2.891	2.745
2013	5.437	4.787	4.267	3.846	3.504	3.228	3.006	2.818	2.66	2.526
2014	4.963	4.38	3.911	3.531	3.222	2.972	2.771	2.601	2.456	2.333
2015	4.534	4.01	3.588	3.244	2.964	2.739	2.556	2.401	2.269	2.157
2020	3.038	2.713	2.448	2.23	2.052	1.908	1.791	1.689	1.601	1.525
2025	2.234	2.008	1.821	1.667	1.54	1.438	1.355	1.283	1.219	1.163
2030	1.84	1.657	1.506	1.381	1.278	1.196	1.13	1.071	1.02	0.975
2035	1.625	1.464	1.331	1.221	1.131	1.06	1.002	0.952	0.907	0.868
2040	1.509	1.358	1.233	1.13	1.047	0.981	0.928	0.882	0.842	0.806

PEAK HOUR TURNING VOLUMES

A.M. Peak

		N			
		305	1,640	595	
W		<	v	>	E
460 ^				^	495
525 >				<	210
50 v				v	385
		<	^	>	
		25	2,370	820	
		S			

P.M. Peak

		N			
		675	2,050	565	
W		<	v	>	E
170 ^				^	775
195 >				<	380
55 v				v	580
		<	^	>	
		50	2,075	495	
		S			

Representative Traffic Volumes (Vehicles per Hour)

	A.M.		P.M.
N-S Road	5,865	N-S Road	6,310
E-W Road	3,030	E-W Road	2,990
Primary Road =	N-S Road	Primary Road =	N-S Road

ROADWAY CO CONTRIBUTIONS

	Reference CO Concentrations				Traffic		Emission		
Roadway	0 Feet	25 Feet	50 Feet		Volume		Factor		
A.M. Peak Hour									
N-S Road	9.5	6.1	4.9	*	5,865	*	8.02	÷	100,000
E-W Road	3.3	2.6	2.2	*	3,030	*	8.02	÷	100,000
P.M. Peak Hour									
N-S Road	9.5	6.1	4.9	*	6,310	*	8.02	÷	100,000
E-W Road	3.3	2.6	2.2	*	2,990	*	8.02	÷	100,000

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
0 Feet from Roadway Edge	8.3	8.6	6.3
25 Feet from Roadway Edge	6.5	6.7	5.0
50 Feet from Roadway Edge	5.8	6.0	4.5

BAY AREA AQMD SIMPLIFIED CALINE4 ANALYSIS; UPDATED WITH EMFAC2007

Project Title:	Archstone Playa del Mar Project
Intersection:	Sepulveda Blvd. and Centinela Ave.
Analysis Condition:	Future Cumulative with Project
Nearest Air Monitoring Station measuring CO:	SRA 3 (Southwest Los Angeles County Coastal)
Background 1-hour CO Concentration (ppm):	3.0
Background 8-hour CO Concentration (ppm):	2.4
Persistence Factor:	0.7
Analysis Year:	2009

				Approach/Departure Speed	
		Roadway Type	No. of Lanes	A.M.	P.M.
North-South Roadway:	Sepulveda Blvd.	AT GRADE	6	5	5
East-West Roadway:	Centinela Ave.	AT GRADE	4	5	5

EMFAC2007 COMPOSITE EMISSION FACTORS FOR CO

Air Basin: South Coast County: Los Angeles
Assumes lowest mean wintertime temperature of 47 degrees F and 30% humidity.

	Average Speed (miles per hour)									
Year	5	8	11	14	17	20	23	26	29	32
2008	8.877	7.732	6.829	6.108	5.526	5.057	4.682	4.371	4.114	3.903
2009	8.018	6.995	6.187	5.54	5.017	4.597	4.259	3.979	3.746	3.554
2010	7.25	6.339	5.617	5.037	4.568	4.191	3.887	3.635	3.424	3.249
2011	6.578	5.765	5.118	4.598	4.176	3.836	3.563	3.334	3.142	2.983
2012	5.983	5.255	4.674	4.206	3.826	3.519	3.273	3.066	2.891	2.745
2013	5.437	4.787	4.267	3.846	3.504	3.228	3.006	2.818	2.66	2.526
2014	4.963	4.38	3.911	3.531	3.222	2.972	2.771	2.601	2.456	2.333
2015	4.534	4.01	3.588	3.244	2.964	2.739	2.556	2.401	2.269	2.157
2020	3.038	2.713	2.448	2.23	2.052	1.908	1.791	1.689	1.601	1.525
2025	2.234	2.008	1.821	1.667	1.54	1.438	1.355	1.283	1.219	1.163
2030	1.84	1.657	1.506	1.381	1.278	1.196	1.13	1.071	1.02	0.975
2035	1.625	1.464	1.331	1.221	1.131	1.06	1.002	0.952	0.907	0.868
2040	1.509	1.358	1.233	1.13	1.047	0.981	0.928	0.882	0.842	0.806

PEAK HOUR TURNING VOLUMES

A.M. Peak

	N			
	215	1,235	90	
W	<	v	>	E
140 ^				^ 200
405 >				< 905
715 v				v 380
	<	^	>	
	875	2,485	415	
	S			

P.M. Peak

	N			
	130	2,040	225	
W	<	v	>	E
260 ^				^ 205
975 >				< 490
1,830 v				v 545
	<	^	>	
	920	2,225	375	
	S			

Representative Traffic Volumes (Vehicles per Hour)

	A.M.		P.M.
N-S Road	6,105	N-S Road	7,935
E-W Road	3,255	E-W Road	4,605
Primary Road =	N-S Road	Primary Road =	N-S Road

ROADWAY CO CONTRIBUTIONS

	Reference CO Concentrations				Traffic		Emission		
Roadway	0 Feet	25 Feet	50 Feet		Volume		Factor		
A.M. Peak Hour									
N-S Road	9.5	6.1	4.9	*	6,105	*	8.02	÷	100,000
E-W Road	3.3	2.6	2.2	*	3,255	*	8.02	÷	100,000
P.M. Peak Hour									
N-S Road	9.5	6.1	4.9	*	7,935	*	8.02	÷	100,000
E-W Road	3.3	2.6	2.2	*	4,605	*	8.02	÷	100,000

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
0 Feet from Roadway Edge	8.5	10.3	7.5
25 Feet from Roadway Edge	6.7	7.8	5.8
50 Feet from Roadway Edge	6.0	6.9	5.2

Millennium-Playa Del Mar Apartments Project
Evaluation of Global Climate Change Impacts

Table GHG-1
Construction GHG Emission Factors

Equipment Type	CO_2 Emission Factor[1] (kg/gal)	CH_4 Emission Factor[2,3] (kg/gal)	N_2O Emission Factor[2,3] (kg/gal)	CO_2 to CO_2E Ratio (GWP CH_4 = 21) (GWP N_2O = 310)
Off-Road	10.15	0.00058	0.00026	0.991
On-Road	10.15	0.000031	0.000029	0.999
Vendor	10.15	0.000031	0.000029	0.999
Autos[4]	n/a	n/a	n/a	0.950

Sources:

1. California Climate Action Registry, *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions Version 3.1*, (2009) 96.
2. California Climate Action Registry, *General Reporting Protocol: Reporting Entity-Wide Greenhouse as Emissions Version 3.1*, (2009) 98-100.
3. California Energy Commission, *Diesel Use in California, Remarks by Commissioner James D. Boyd, (*2002). It was assumed that heavy duty on-road trucks have a fuel economy of 6 miles per gallon based on this data source.
4. U.S. Environmental Protection Agency, Office of Transportation and Air Quality, *Emission Facts - Greenhouse Gas Emissions from a Typical Passenger Vehicle (EPA420-F-05-004)*, (2005) 4. Passenger vehicle CO_2 emissions are assumed to be 95% of GHG emissions on a CO_2 equivalent basis.

Millennium-Playa Del Mar Apartments Project
Evaluation of Global Climate Change Impacts

Table GHG-2
Construction GHG Emissions

Construction Year	Equipment Type	Annual CO_2 Emissions[1] (Tons CO_2/yr)	Annual CO_2 Emissions (MT CO_2/yr)	CO_2 to CO_2e Ratio	Annual CO_2e Emissions (MT CO_2e/yr)
2011	Off-Road	195.23	177.11	0.991	178.73
2011	On-Road	60.81	55.17	0.999	55.22
2011	Vendor	222.47	201.82	0.999	202.01
2011	Worker/Autos	238.44	216.31	0.950	227.69
Total 2011		**716.95**	**650.41**		**663.65**
2012	Off-Road	297.19	269.61	0.991	272.07
2012	On-Road	0.82	0.74	0.999	0.74
2012	Vendor	485.40	440.35	0.999	440.76
2012	Worker/Autos	523.25	474.68	0.950	499.67
Total 2012		**1,306.66**	**1,185.38**		**1,213.25**
Total		**2,023.61**	**1,835.79**		**1,876.90**
Total Amortized (30 Years)					**62.56**

Sources:
1. Estimated CO_2 emissions from URBEMIS2007.

Where:

CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
gal	Gallons
GWP	Global warming potential
kg	Kilograms
MT	Metric ton
N_2O	Nitrous oxide
yr	Year

Millennium-Playa Del Mar Apartments Project
Evaluation of Global Climate Change Impacts

Table GHG-3
Operational Motor Vehicle GHG Emissions

Buildout Year	Equipment Type	Annual CO_2 Emissions[1] (Tons CO_2/yr)	CO_2 to CO_2e Ratio[2]	Annual CO_2e Emissions (MT CO_2E/yr)
Existing (2009)	Motor Vehicles	433.30	0.950	413.77
Proposed Project (2012)	Motor Vehicles	2,327.83	0.950	2,222.92
Net Total				**1,809.15**

Sources:

1. Estimated CO_2 emission from URBEMIS2007.

2. U.S. Environmental Protection Agency, Office of Transportation and Air Quality, *Emission Facts - Greenhouse Gas Emissions from a Typical Passenger Vehicle* EPA420-F-05-004, (2005) 4. Passenger vehicle CO_2 emissions are assumed to be 95% of GHG emissions on a CO_2 equivalent basis.

Where:

CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
MT	Metric ton
yr	Year

Millennium-Playa Del Mar Apartments Project
Evaluation of Global Climate Change Impacts

Table GHG-4
Area Source GHG Emissions (General and Student/General)

Land Use	CO_2 Emission Factor[1] GWP = 1 (kg/MMBtu)	CH_4 Emission Factor[2] GWP = 21 (kg/MMBtu)	N_2O Emission Factor[2] GWP = 310 (kg/MMBtu)	Annual CO_2 Emissions[3] (Tons CO_2/yr)	Annual CO_2e Emissions (MT CO_2e/yr)
Proposed Project					
Natural Gas	56.06	0.0059	0.0001	632.53	575.41
Landscape Maintenance[4]	70.88	0.0110	0.0006	0.51	0.47
Hearths (Natural Gas)	56.06	0.0059	0.0001	0.76	0.69
Total				633.80	576.56
Existing Land Uses					
Natural Gas	56.06	0.0059	0.0001	86.34	78.54
Landscape Maintenance[4]	70.88	0.0110	0.0006	0.51	0.47
Hearths (Natural Gas)	56.06	0.0059	0.0001	0.13	0.12
Total				86.98	79.13
Net Total				**546.82**	**497.44**

Sources:

1. URBEMIS2007 uses a CO_2 emission factor of 120,000 pounds per million cubic feet. This was converted to kg/MMBtu.

2. California Climate Action Registry, *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions Version 3.1* , (2009) 103.

3. Estimated CO_2 emissions from URBEMIS2007. URBEMIS2007 assumes 4,011.5 cubic feet/unit/month of natural gas for multi-family units.
4. Landscape maintenance equipment were assumed to be fueled with motor gasoline.

Where:

CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
GWP	Global warming potential
kg	Kilogram
MMBtu	Million British thermal units
MT	Metric ton
N_2O	Nitrous oxide
yr	Year

Millennium-Playa Del Mar Apartments Project
Evaluation of Global Climate Change Impacts

Table GHG-5
Electrical Consumption GHG Emissions

Land Use	Units	Electrical Consumption Factor[1] (kW-hr/unit/yr)	Annual Consumption Factor (MW-hr/yr)	CO_2 Emission Factor[2] GWP = 1 (lbs/MW-hr)	CH_4 Emission Factor[2] GWP = 21 (lbs/MW-hr)	N_2O Emission Factor[2] GWP = 310 (lbs/MW-hr)	Annual CO_2e Emissions ($MT\ CO_2e/yr$)
Proposed Project							
Residential	216 DU	7,000.00	1,512.00	641.26	0.029	0.011	442.55
Existing Land Uses							
Church	39,000 gsf	4.90	191.10	641.26	0.029	0.011	55.93
Residential	1 DU	7,000.00	7.00	641.26	0.029	0.011	2.05
Total							**384.57**

Sources:
1. Residential. CAPCOA, *CEQA & Climate Change Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, (2008) 61.
   Church. California Climate Action Registry, *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* Version 3.1, (2009) 38.
2. California Air Resources Board, *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*, Version 1.0, (2008) 174.
   The CO_2 factor is for Southern California Edison.

Where:

CH_4	Methane	kW-hr	Kilowatt-hour
CO_2	Carbon dioxide	lbs	Pounds
CO_2e	Carbon dioxide equivalent	MW-hr	Megawatt-hour
DU	Dwelling unit	MT	Metric ton
gsf	Gross square feet	N_2O	Nitrous oxide
GWP	Global warming potential	yr	Year

Millennium-Playa Del Mar Apartments Project
Evaluation of Global Climate Change Impacts

Table GHG-6
Solid Waste GHG Emissions

Land Use	Solid Waste Generation[1] (Tons/yr)	CO_2e Emission Factor[2] (MT CO_2e/MT waste)	Annual CO_2e Emissions (MT CO_2e/yr)
Proposed Project			
Residential	253.00	0.11	25.25
Existing Land Uses			
Church	49.80	0.11	4.97
Residential	1.20	0.11	0.12
Net Total Emissions			**20.16**

Sources:

1. Impact Sciences, Inc., *Solid Waste Section of the Millennium-Playa Del Mar Apartments Project Draft EIR,* (2008).

2. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, *Greenhouse Gas Emission Factors for Management of Selected Materials in Municipal Solid Waste (EPA-530-R-98-013)* , (1998). The factor is based on mixed municipal solid waste as disposed in landfills without landfill gas recovery.

Where:

CO_2e	Carbon dioxide equivalent
MT	Metric ton
yr	Year

Millennium-Playa Del Mar Apartments Project
Evaluation of Global Climate Change Impacts

Table GHG-7
Potable Water Supply, Conveyance, Treatment, and Distribution GHG Emissions

Land Use	Action	Potable Water Estimate[1] (MG/yr)	Electrical Consumption Factor[2,3,4] (kW-hr/MG)	Annual Electrical Consumption (MW-hr/yr)	CO_2 Emission Factor[5] GWP = 1 (lbs/MW-hr)	CH_4 Emission Factor[5] GWP = 21 (lbs/MW-hr)	N_2O Emission Factor[5] GWP = 310 (lbs/MW-hr)	Annual CO_2e Emissions (MT CO_2E/yr)
Proposed Project	Supply & Conveyance	15.30	9,727	148.82	641.26	0.029	0.011	43.56
	Treatment	15.30	111	1.70	641.26	0.029	0.011	0.50
	Distribution	15.30	1,272	19.46	641.26	0.029	0.011	5.70
Total Emissions								49.75
Existing Land Use	Supply & Conveyance	0.8600	9,727	8.37	641.26	0.029	0.011	2.45
	Treatment	0.8600	111	0.10	641.26	0.029	0.011	0.03
	Distribution	0.8600	1,272	1.09	641.26	0.029	0.011	0.32
Total Emissions								2.80
Net Total								46.96

Sources:
1. Impact Sciences, Inc., (2009). Potable water was estimated based on a 125% sewage generation loading factor.
2. California Energy Commission, *California's Water-Energy Relationship, Final Staff Report*, CEC-700-2005-011-SF, (2005) 26.
3. California Energy Commission, *Refining Estimates of Water-Related Energy Use in California, PIER Final Project Report*, CEC-500-2006-118, (2006) 22.
4. R. C. Wilkinson, et. al, California Department of Water Resources, *Water Sources "Powering" Southern California*, n.d.
   Recycled water was estimated to use 285 kW-hr per acre-foot (West Basin Municipal Water District).
5. California Air Resources Board, *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*, Version 1.0, (2008) 174.
   The CO_2 factor is for Southern California Edison.

Where:

CH_4	Methane	MG	Million gallons
CO_2	Carbon dioxide	MW-hr	Megawatt-hour
CO_2e	Carbon dioxide equivalent	MT	Metric ton
GWP	Global warming potential	n/a	Not applicable
kW-hr	Kilowatt-hour	N_2O	Nitrous oxide
lbs	Pounds	yr	Year

Millennium-Playa Del Mar Apartments Project
Evaluation of Global Climate Change Impacts

Table GHG-8
Generated Wasterwater Treatment Electrical Demand GHG Emissions

Land Use	Wastewater Generation Rate[1] (MG/yr)	Electrical Demand Factor[2] (kW-hr/MG)	Annual Demand Factor (MW-hr/yr)	CO_2e Emision Factor[3] (lbs/MW-hr)	Annual CO_2e Emissions (MT CO_2e/yr)
Proposed Project					
Residential	12.24	1,911	23.39	645.28	6.85
Existing Land Uses					
Church	0.61	1,911	1.17	645.28	0.34
Residential	0.08	1,911	0.15	645.28	0.04
Total Emissions	0.69				0.39
Net Total					**6.46**

Sources:

1. Impact Sciences, Inc., *Sewer Section of the Millennium-Playa Del Mar Apartments Project Draft EIR,* (2008).
2. California Energy Commission, *Refining Estimates of Water-Related Energy Use in California, PIER Final Project Report (CEC-500-2006-118)*. Prepared by Navigant Consulting, Inc., (2006) 22.
3. California Air Resources Board, Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories, Version 1.0, (2008) 174.

The CO_2 factor is for Southern California Edison.

Table GHG-9
Generated Wastewater Treatment Process GHG Emissions[1]

Project	Maximum Daily Population	Pounds BOD5 per Capita per Day[2] (lbs BOD5/capita/day)	Pounds CH_4 per Pound BOD5[3] (lbs CH_4/BOD5)	Fraction Anaerobically Digested[4]	Annual CO_2e Emissions (MT CO_2e/yr)
Proposed Project	480	0.13	0.22	0.15	**1.79**

Sources:

1. US Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I, Chapter 4.3.5*, (1998). Data is not available to determine CO_2 and N_2O emissions from this process. The dominant GHG is CH_4.
2. The US EPA recommends a default value of 0.13 lb BOD5/capita/day.
3. The US EPA recommends a default value of 0.22 lb CH_4/BOD5.
4. The US EPA recommends a default value of 15% for the fraction anaerobically digested for domestic wastewater.

Where:

BOD5	Biological oxygen demand using a standard 5 day test
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
GWP	Global warming potential
kW-hr	Kilowatt-hour
lbs	Pounds
MG	Million gallons
MT	Metric ton
N_2O	Nitrous oxide
yr	Year

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Construction Emissions\Construction - Playa Del Mar.urb924

Project Name: Millennium-Playa Del Mar Apartments Construction Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	CO_2
2011 TOTALS (tons/year unmitigated)	716.96
2011 TOTALS (tons/year mitigated)	716.96
Percent Reduction	0.00
2012 TOTALS (tons/year unmitigated)	1,306.66
2012 TOTALS (tons/year mitigated)	1,306.66
Percent Reduction	0.00

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	CO_2
2011	716.96
Demolition 06/01/2011-06/30/2011	37.70
Fugitive Dust	0.00
Demo Off Road Diesel	23.20
Demo On Road Diesel	13.13
Demo Worker Trips	1.37
Mass Grading 07/01/2011-07/31/2011	91.87
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	42.23
Mass Grading On Road Diesel	47.68
Mass Grading Worker Trips	1.96
Building 08/01/2011-11/30/2012	587.39
Building Off Road Diesel	129.80
Building Vendor Trips	222.47
Building Worker Trips	235.12
2012	1,306.66
Building 08/01/2011-11/30/2012	1,281.49
Building Off Road Diesel	283.20
Building Vendor Trips	485.40
Building Worker Trips	512.89

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Coating 10/01/2012-11/30/2012	7.62
Architectural Coating	0.00
Coating Worker Trips	7.62
Asphalt 11/01/2012-11/30/2012	17.55
Paving Off-Gas	0.00
Paving Off Road Diesel	13.99
Paving On Road Diesel	0.82
Paving Worker Trips	2.74

Phase Assumptions

Phase: Demolition 6/1/2011 - 6/30/2011 - Default Demolition Description

Building Volume Total (cubic feet): 405224

Building Volume Daily (cubic feet): 20271.89

On Road Truck Travel (VMT): 281.55

Off-Road Equipment:

1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

Phase: Mass Grading 7/1/2011 - 7/31/2011 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 4.32

Maximum Daily Acreage Disturbed: 4.32

Fugitive Dust Level of Detail: High

Onsite Haulage: 255.18 ton-miles/day; Offsite haulage: 0 ton-mils/day

On Road Truck Travel (VMT): 1071.43

Off-Road Equipment:

1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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Phase: Paving 11/1/2012 - 11/30/2012 - Type Your Description Here

Acres to be Paved: 1.08

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 8/1/2011 - 11/30/2012 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 10/1/2012 - 11/30/2012 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	CO_2
2011	716.96
Demolition 06/01/2011-06/30/2011	37.70
Fugitive Dust	0.00
Demo Off Road Diesel	23.20
Demo On Road Diesel	13.13
Demo Worker Trips	1.37
Mass Grading 07/01/2011-07/31/2011	91.87
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	42.23
Mass Grading On Road Diesel	47.68
Mass Grading Worker Trips	1.96
Building 08/01/2011-11/30/2012	587.39
Building Off Road Diesel	129.80
Building Vendor Trips	222.47
Building Worker Trips	235.12
2012	1,306.66
Building 08/01/2011-11/30/2012	1,281.49
Building Off Road Diesel	283.20
Building Vendor Trips	485.40
Building Worker Trips	512.89
Coating 10/01/2012-11/30/2012	7.62
Architectural Coating	0.00
Coating Worker Trips	7.62

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Asphalt 11/01/2012-11/30/2012	17.55
Paving Off-Gas	0.00
Paving Off Road Diesel	13.99
Paving On Road Diesel	0.82
Paving Worker Trips	2.74

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2011 - 7/31/2011 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Existing Playa Del Mar.urb924

Project Name: Playa Del Mar Existing Conditions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	CO_2
TOTALS (tons/year, unmitigated)	86.98
TOTALS (tons/year, mitigated)	86.98
Percent Reduction	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO_2
TOTALS (tons/year, unmitigated)	433.30
TOTALS (tons/year, mitigated)	424.62
Percent Reduction	2.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO_2
TOTALS (tons/year, unmitigated)	520.28
TOTALS (tons/year, mitigated)	511.60
Percent Reduction	1.67

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Natural Gas	86.34
Hearth	0.13
Landscape	0.51
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	86.98

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO2
Natural Gas	86.34
Hearth	0.13
Landscape	0.51
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, mitigated)	86.98

Area Source Changes to Defaults

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Single family housing	15.57
Place of worship	417.73
TOTALS (tons/year, unmitigated)	433.30

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO2
Single family housing	15.25
Place of worship	409.37
TOTALS (tons/year, mitigated)	424.62

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	0.33	9.56	dwelling units	1.00	9.56	84.56
Place of worship		9.11	1000 sq ft	38.99	355.20	2,283.32
					364.76	2,367.88

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.6	1.4	98.2	0.4
Light Truck < 3750 lbs	7.4	2.7	93.2	4.1
Light Truck 3751-5750 lbs	22.9	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	71.4	28.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Place of worship				3.0	1.5	95.5

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\1052.001 Millennium-Playa Del Mar Apartments\Emissions\Operational Emissions\Operational - Playa Del Mar.urb924

Project Name: Millenium-Playa Del Mar Apartments Operational Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	633.80
TOTALS (tons/year, mitigated)	633.80
Percent Reduction	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	2,327.83
TOTALS (tons/year, mitigated)	2,260.63
Percent Reduction	2.89

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	2,961.63
TOTALS (tons/year, mitigated)	2,894.43
Percent Reduction	2.27

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Natural Gas	632.53
Hearth	0.76
Landscape	0.51
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	633.80

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO2
Natural Gas	632.53
Hearth	0.76
Landscape	0.51
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, mitigated)	633.80

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO_2
Apartments low rise	2,327.83
TOTALS (tons/year, unmitigated)	2,327.83

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO_2
Apartments low rise	2,260.63
TOTALS (tons/year, mitigated)	2,260.63

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments low rise	13.50	6.63	dwelling units	216.00	1,432.08	12,666.75
					1,432.08	12,666.75

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.5	0.6	99.2	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	60.7	39.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

APPENDIX 4.5

Traffic Impact Analysis

TRAFFIC STUDY
FOR THE
MILLENNIUM-PLAYA DEL MAR RESIDENTIAL PROJECT

Prepared for:

DIN/CAL, INC.

December 2009

Submitted by:

RAJU Associates, Inc.

TRAFFIC STUDY
FOR THE
MILLENNIUM-PLAYA DEL MAR RESIDENTIAL PROJECT

December 2009

Prepared for:

DIN/CAL, INC.

Prepared by:

RAJU ASSOCIATES, INC.
524 S. Rosemead Boulevard
Pasadena, California 91107
(626) 792-2700

Ref: RA 293

EXECUTIVE SUMMARY

A detailed traffic study has been performed by Raju Associates, Inc. to assess the traffic impacts of the proposed Playa Del Mar residential project located within the County of Los Angeles, California. The Project address is 5550 Grosvenor Boulevard in the County of Los Angeles.

As proposed, the Project consists of 216 multi-family dwelling units (apartments). The Project would also provide a total of 438 parking spaces. A multi-level parking structure would contain 433 parking spaces for residents and guests and five spaces would be at-grade. The existing site includes a 38,987 square-foot church and a single family residence (rented out by the church) that will be removed.

Currently, driveways located on Grosvenor Boulevard and Juniette Street provide full access to the existing church site. As proposed, the Project would have one driveway on Grosvenor Boulevard providing access to the northern entrance/exit of the parking structure. The east-west alley located south and adjacent to the project will provide access to the southern entrance/exit of the parking structure. This alley is accessible from Juniette Street, Grosvenor Boulevard and Jefferson Boulevard.

Current and future traffic analyses at 14 intersections within the Cities of Culver City and Los Angeles, and the County of Los Angeles were conducted in this study. At these locations, traffic operations were studied prior to and after implementation of the Proposed Project, deficiencies and impacts identified, improvements and mitigation measures developed, their effectiveness determined and residual traffic impacts, if any, ascertained as part of this study. Access and circulation at the proposed driveways providing access to parking for the Project were also evaluated and discussed in this report. The following executive summary highlighting the key findings of this study is presented.

- A total of 14 intersections were analyzed within the study area for this Project. These locations are within the area bounded by Washington Boulevard on the north, Centinela Avenue/Sepulveda Boulevard on the south, Lincoln Boulevard on the west and Sepulveda Boulevard on the east.

- Currently, all 14 of the analyzed intersection locations are operating at acceptable levels of service (LOS D or better) during both the morning and evening peak hours.

- In the Cumulative (Future Year 2013) Base conditions, i.e., future conditions without the implementation of the Proposed Project, 13 of the 14 analyzed intersection locations are projected to operate at acceptable levels of service (LOS D or better) during both the morning and evening peak hours. The intersection of Sepulveda Boulevard/Centinela Avenue is projected to operate at LOS F during the morning peak hour and LOS E during the evening peak hour.

- The Proposed Project consists of 216 multi-family dwelling units (apartments) including a parking structure with 433 spaces and five spaces at-grade. The existing site includes a 38,987 square-foot church and a single-family residence that will be removed. The Project is estimated to generate a net total of 88 trips during the morning peak hour and 115 trips during the evening peak hour.

- In the Cumulative (Future Year 2013) Plus Project conditions, both AM and PM peak hour operating conditions would be similar to those projected for the Cumulative Base conditions. Thirteen of the 14 analyzed intersection locations are projected to operate at acceptable levels of service (LOS D or better) during both the morning and evening peak hours. The intersection of Sepulveda Boulevard/Centinela Avenue is projected to operate at LOS F during the morning peak hour and LOS E during the evening peak hour.

- The Cumulative (Future Year 2013) Plus Project traffic conditions indicate that the Proposed Project would not cause a significant traffic impact at any of the study intersections.

- In order to address the traffic operations at Grosvenor Boulevard/Jefferson Boulevard, it is recommended that a traffic signal be installed at this intersection. This signal would also include the provision of Automated Traffic Surveillance and Control (ATSAC) System and Adaptive Traffic Control System (ATCS). A traffic signal at this location will provide required control at this intersection and accommodate the Proposed Project's traffic for improved operations.

- Traffic impact analysis at two intersections namely Centinela Avenue at Juniette Street and Centinela Avenue at Jefferson Boulevard were conducted using the County of Los Angeles guidelines for traffic studies and significant impact criteria. There would be no significant project impact as well as no significant cumulative impact at these locations during Future Year 2013 conditions.

- Parking and access/circulation systems were assessed. A review of the Project's site plan indicates that the parking, access and circulation systems would function adequately and that there would be no adverse impact from the Proposed Project.

TABLE OF CONTENTS

LIST OF FIGURES

NO.

LIST OF TABLES

NO.

APPENDICES

I. INTRODUCTION

This report documents the assumptions, methodologies and findings of a study conducted by Raju Associates, Inc., to evaluate the potential traffic impacts of the proposed Playa Del Mar Project. This Project is located at 5550 Grosvenor Boulevard in the County of Los Angeles, California.

PROJECT DESCRIPTION

The Proposed Project would be located north of Jefferson Boulevard at 5550 Grosvenor Boulevard. The Project site is located within unincorporated Los Angeles County, encompassed by the City of Los Angeles. Although the Proposed Project would be located within County of Los Angeles jurisdiction, all of the analyzed intersections are located within the City of Los Angeles. As a result, this study was prepared in coordination with both the County of Los Angeles and City of Los Angeles. The County of Los Angeles agreed to proceed under a Memorandum of Understanding (MOU) with City of Los Angeles Department of Transportation (LADOT) in lieu of standard County of Los Angeles Procedures. Figure 1 illustrates the location of the Proposed Project in relation to the surrounding street system.

As proposed, the Project consists of 216 multi-family dwelling units (apartments). The Project would also provide a total of 438 parking spaces. A multi-level parking structure would contain 433 parking spaces for residents and guests and five spaces would be at-grade. The existing site includes a 38,987 square-foot church and a single-family residence (rented out by the church) that will be removed.

Currently, driveways located on Grosvenor Boulevard and Juniette Street provide full access to the existing church site. As proposed, the Project would have one driveway on Grosvenor Boulevard providing access to the northern entrance/exit of the parking structure. The east-west alley located south and adjacent to the Project will provide access to the southern entrance/exit of the parking structure. This alley is accessible from Juniette Street, Grosvenor Boulevard and Jefferson Boulevard.

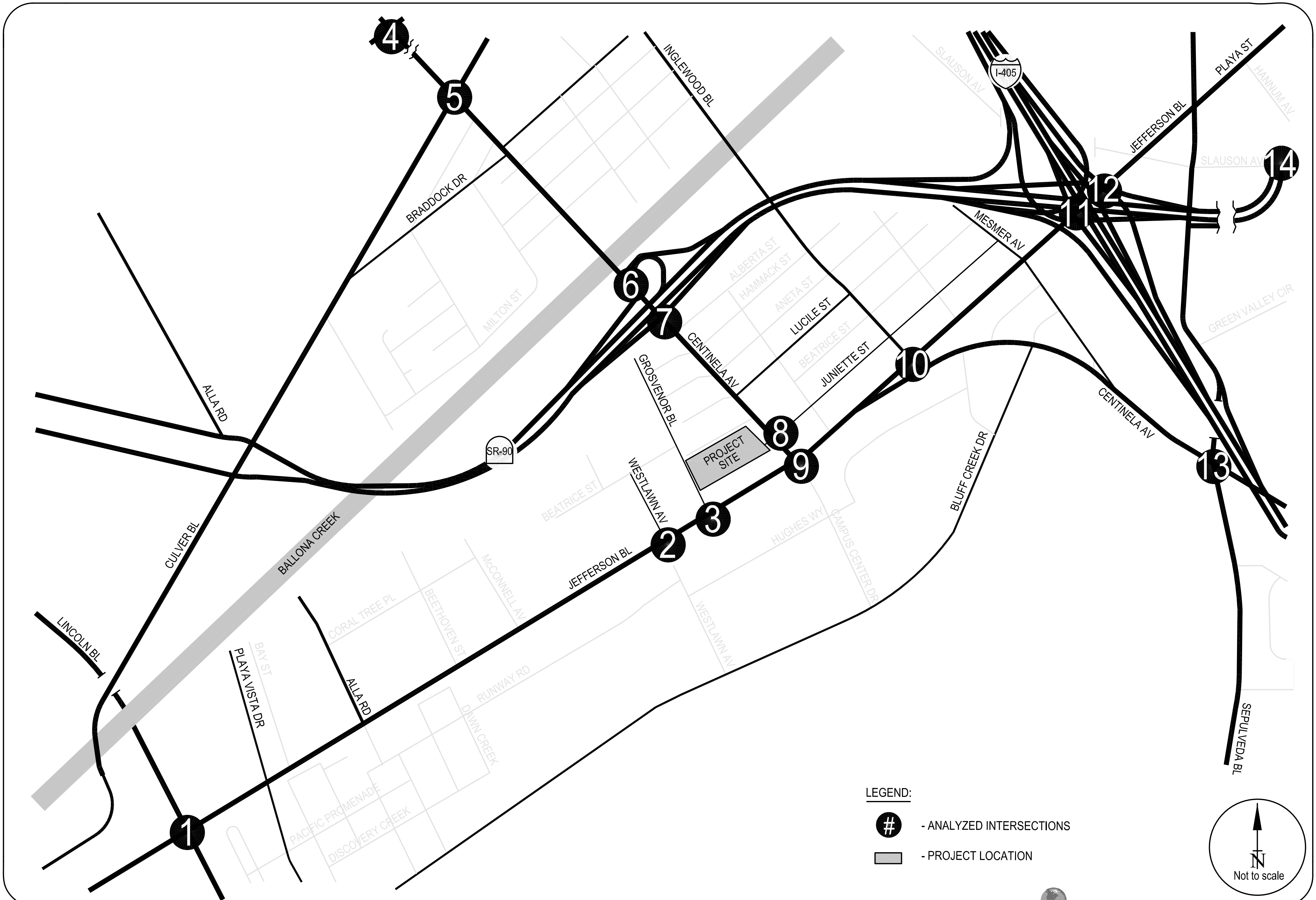


FIGURE 1
LOCATION OF PROJECT AND ANALYZED INTERSECTIONS

RAJU Associates, Inc.

STUDY SCOPE

The scope of work for this study was developed in conjunction with both the County of Los Angeles and the City of Los Angeles Department of Transportation staff. This scope was further coordinated with the City of Culver City staff. The base assumptions, technical methodologies and geographic coverage of the study were all identified as part of the study approach. The study is directed at the analysis of potential traffic impacts on the street system produced by the proposed project and includes an analysis of the following scenarios:

- Current (Existing) 2009 Conditions - The analysis of existing traffic conditions is intended to provide a basis for the remainder of the study. The existing conditions analysis includes an assessment of streets, traffic volumes, and operating conditions.

- Cumulative Base (2013) Conditions - Future traffic conditions without the Proposed Project has been developed for the year 2013. The objective of this analysis is to project future traffic growth and operating conditions, which could be expected to result from regional growth and related projects in the vicinity of the study area by the year 2013.

- Cumulative Plus Project (2013) Conditions – The net traffic expected to be generated by the Proposed Project is estimated and added to the Cumulative Base (2013) traffic forecasts. The impacts of the Proposed Project on future traffic operating conditions are then identified.

For this traffic study, 14 locations were defined as study intersections. Twelve of the 14 study intersections are controlled by traffic signals. The remaining intersections (Centinela Avenue/Juniette Street and Grosvenor Boulevard/Jefferson Boulevard) are unsignalized and controlled by stop signs along the minor approaches. The following intersections (see Figure 1) were analyzed for the scenarios described above:

1. Lincoln Boulevard/Jefferson Boulevard
2. Westlawn Avenue/Jefferson Boulevard
3. Grosvenor Boulevard/Jefferson Boulevard (unsignalized)
4. Centinela Avenue/Washington Boulevard
5. Centinela Avenue/Culver Boulevard
6. Centinela Avenue/SR-90 Westbound Ramps
7. Centinela Avenue/SR-90 Eastbound Ramps
8. Centinela Avenue/Juniette Street (unsignalized)

9. Centinela Avenue/Jefferson Boulevard
10. Inglewood Avenue-Centinela Avenue/Jefferson Boulevard
11. I-405 Southbound Ramps/Jefferson Boulevard
12. I-405 Northbound Ramps/Jefferson Boulevard
13. Sepulveda Boulevard/Centinela Avenue
14. Marina (SR-90) Freeway/Slauson Avenue

A majority of the study intersections are located within the City of Los Angeles, while the Project site is located within unincorporated Los Angeles County. As a result, this study was prepared in coordination with both the County of Los Angeles and City of Los Angeles. The study included herein is based on the City of Los Angeles Traffic Study Policies and Procedures. An additional analysis is included based on the County of Los Angeles Traffic Impact Analysis Report Guidelines for the two intersections (Centinela Avenue/Juniette Street and Centinela Avenue/Jefferson Boulevard) that are partially within the County of Los Angeles jurisdiction.

A detailed Memorandum of Understanding (MOU) was prepared in coordination with the City of Los Angeles Department of Transportation. A copy of the same is attached in Appendix A of this report. Additionally, intersections within the City of Culver City as well as those in Caltrans jurisdiction were included for traffic impact assessment.

ORGANIZATION OF REPORT

An executive summary presenting key details of the study is provided at the beginning of this report. The rest of the report is divided into seven chapters. Chapter I presents an introduction and provides details of the various elements of the study. Chapter II describes the existing circulation system, traffic volumes, and traffic conditions within the study area. The methodology to obtain Future Year 2013 traffic volumes without and with the Proposed Project are described and applied in Chapter III. Chapter IV presents assessment of traffic conditions with and without the Project and the potential traffic impacts due to the Proposed Project. Chapter V presents assessment of traffic conditions using County of Los Angeles methodology for two of the study intersections that are partially within Los Angeles County. The results of the analysis of the Proposed Project's impacts on the Congestion Management Program (CMP) regional transportation system are provided in Chapter VI. Parking, access and circulation evaluation are presented in Chapter VII. A summary of the analysis and study conclusions is included in Chapter VIII. Appendices to this report include details of the technical analysis.

II. EXISTING CONDITIONS

A comprehensive data collection effort was undertaken to develop a detailed description of existing conditions within the study area. The assessment of conditions relevant to this study includes an inventory of the street system, traffic volumes on these facilities, and operating conditions at key intersections. A detailed description of these elements is presented in this chapter.

STUDY AREA

The Proposed Project is located within the unincorporated area of the County of Los Angeles, at 5550 Grosvenor Boulevard bounded to the south, east and west by the City of Los Angeles. It is located on the east side of Grosvenor Boulevard between Beatrice Street and Jefferson Boulevard in the County of Los Angeles. The street system within immediate vicinity of the Project site, however, is under the jurisdiction of the City of Los Angeles. The study area was developed in conjunction with both agencies, the County of Los Angeles and the City of Los Angeles, as well as the City of Culver City. The Marina (SR-90) Freeway is located approximately 0.35 miles north of the project site and the San Diego (I-405) Freeway is located approximately 0.75 miles east of the project site.

The study area is bounded by Washington Boulevard on the north, Centinela Avenue/Sepulveda Boulevard on the south, Lincoln Boulevard on the west, and Sepulveda Boulevard on the east.

EXISTING STREET SYSTEM

The existing street system within the study area consists of a regional highway system including major arterials and a local street system including secondary arterials, collectors and local streets. A description of the regional and local access and circulation offered by the various roadways follows.

The San Diego (I-405) Freeway and Marina (SR-90) Freeway provide the primary regional access to the study area. The major and other arterial streets used to access the study area include Lincoln Boulevard, Sepulveda Boulevard, Washington Boulevard, Culver Boulevard, Centinela Avenue, and Jefferson Boulevard. Grosvenor Boulevard, Westlawn Avenue, Inglewood Avenue and Juniette Street provide local access and circulation. Brief descriptions of the arterial facilities serving the study area are included in the following section. The existing lane configurations of the analyzed intersections are included in Appendix B.

- Lincoln Boulevard – Lincoln Boulevard is classified as a major arterial roadway. It runs in a north-south direction across several jurisdictions. The posted speed limit is 45 miles per hour in the vicinity of the study area. Within the study area, the roadway generally offers six travel lanes, three lanes in each direction. Generally, no parking is allowed along many stretches of this roadway within the study area.

- Jefferson Boulevard – Jefferson Boulevard is a major arterial roadway that traverses in an east-west direction across several jurisdictions and provides six to seven travel lanes, three lanes in the westbound direction and three to four lanes in the eastbound direction. Within the study area, this roadway provides connection to the I-405 northbound and southbound on-off ramps. Restricted parking is available for a short stretch on either side of the street between Inglewood Boulevard and Mesmer Avenue. The posted speed limit along this facility is 45 miles per hour.

- Washington Boulevard – Washington Boulevard is a major arterial roadway that traverses in an east-west direction. This roadway offers four travel lanes, two lanes per direction, with a central left-turn median. Restricted parking is allowed along many stretches of this roadway, generally, except at major intersections where turn lanes are provided. The posted speed limit is 35 miles per hour.

- Centinela Avenue – Centinela Avenue is classified as a major arterial roadway. It runs in a north-south direction across several jurisdictions. Within the study area, the roadway provides four to six travel lanes, two to three lanes in each direction, and provides connection to the SR-90 westbound and eastbound on-off ramps. North of Jefferson Boulevard, restricted parking is allowed along many stretches of this roadway, generally, except at major intersections where turn lanes are provided. The posted speed limit is 35 miles per hour.

- Sepulveda Boulevard – Sepulveda Boulevard is a major arterial that traverses in a north-south direction. The posted speed limit is 35 miles per hour. Within the study area, Sepulveda Boulevard generally offers six travel lanes, three lanes per direction, with a raised median. Restricted parking is available on both sides of the street south of the study area in downtown Westchester.

- Culver Boulevard – Culver Boulevard is a major arterial roadway that traverses in an east-west direction. This roadway offers four travel lanes, two lanes per direction. Restricted parking is allowed along many stretches of this roadway, generally, except at major intersections where turn lanes are provided. Within the study area, the posted speed limit is 40 miles per hour.

- Inglewood Avenue – Inglewood Avenue is classified as a secondary arterial roadway. It traverses in a north-south direction across the City of Los Angeles. Within the study area, the roadway provides four travel lanes, two lanes in each direction. Parking is generally available on either side of the street. The posted speed limit is 30 miles per hour.

- Slauson Avenue – Slauson Avenue is a major arterial roadway that traverses in an east-west direction across the City of Culver City and other jurisdictions. The roadway generally provides six travel lanes, three lanes in each direction. Parking is generally not allowed on either side of the street. Within the study area, the posted speed limit is 40 miles per hour.

- Grosvenor Boulevard – Grosvenor Boulevard is a local roadway that traverses in the north-south direction. This roadway provides direct access to the Project site and defines the western frontage of the Project site. Within the study area, the roadway provides two travel lanes, one lane in each direction. Restricted parking is generally available on either side of the street. The posted speed limit is 25 miles per hour.

- Westlawn Avenue – Westlawn Avenue is a local roadway that traverses in the north-south direction. The roadway provides one lane in each direction. Parking is generally available on either side of the street. The prima facie speed limit is 25 miles per hour.

- Juniette Street – Juniette Street is a local roadway that traverses in the east-west direction and provides direct access to the Project site. The roadway provides two travel lanes, one lane in each direction. Between Centinela Avenue and the Project driveway, there is no curb or sidewalk on the south side of the street. Parking is generally available on either side of the street. The prima facie speed limit is 25 miles per hour.

EXISTING TRAFFIC VOLUMES AND LEVELS OF SERVICE

The following sections present the existing intersection peak hour traffic volumes, a description of the methodology utilized to analyze the intersection traffic conditions, and the resulting level of service conditions at each of the study intersections.

Existing Traffic Volumes

Weekday morning and evening peak hour traffic counts were compiled from data collected at the analyzed intersections in May and June 2009. These traffic volumes reflect typical weekday operations during current year 2009 conditions. The traffic volumes in Figure 2 represent, for the purposes of this analysis the Existing 2009 AM and PM peak hour conditions, respectively.

The raw data showing the intersection counts are attached in Appendix C.

Level of Service Methodology

Level of service (LOS) is a qualitative measure used to describe the condition of traffic flow, ranging from excellent conditions at LOS A to overloaded conditions at LOS F. LOS D is typically recognized as the minimum acceptable level of service in urban areas. The City of Los Angeles considers LOS 'D' as "acceptable". The Level of service definitions for signalized intersections are provided in Table 1.

Twelve of the 14 analyzed intersections are controlled by traffic signals. The remaining intersections (Centinela Avenue/Juniette Street and Grosvenor Boulevard/Jefferson Boulevard) are unsignalized and controlled by a stop sign on the minor approach.

The "Critical Movement Analysis-Planning" (Transportation Research Board, 1980) method of intersection capacity analysis was used to determine the intersection volume to capacity (V/C) ratio and corresponding LOS at the signalized intersections. The CALCADB software package developed by LADOT was used to implement the CMA methodology. Table 1 defines the ranges of V/C ratios and corresponding levels of service for signalized intersections. The unsignalized intersections were analyzed using this same methodology with the capacity set at 1,200.

Eleven of the 12 signalized study intersections are currently controlled by the City of Los Angeles' Automated Traffic Surveillance and Control (ATSAC) System and Adaptive Traffic Control System (ATCS). In accordance with LADOT procedures, a capacity increase of 10% (0.07 V/C adjustment for ATSAC and 0.03 V/C adjustment for ATCS) was applied to reflect the benefits of ATSAC/ATCS control at these intersections.

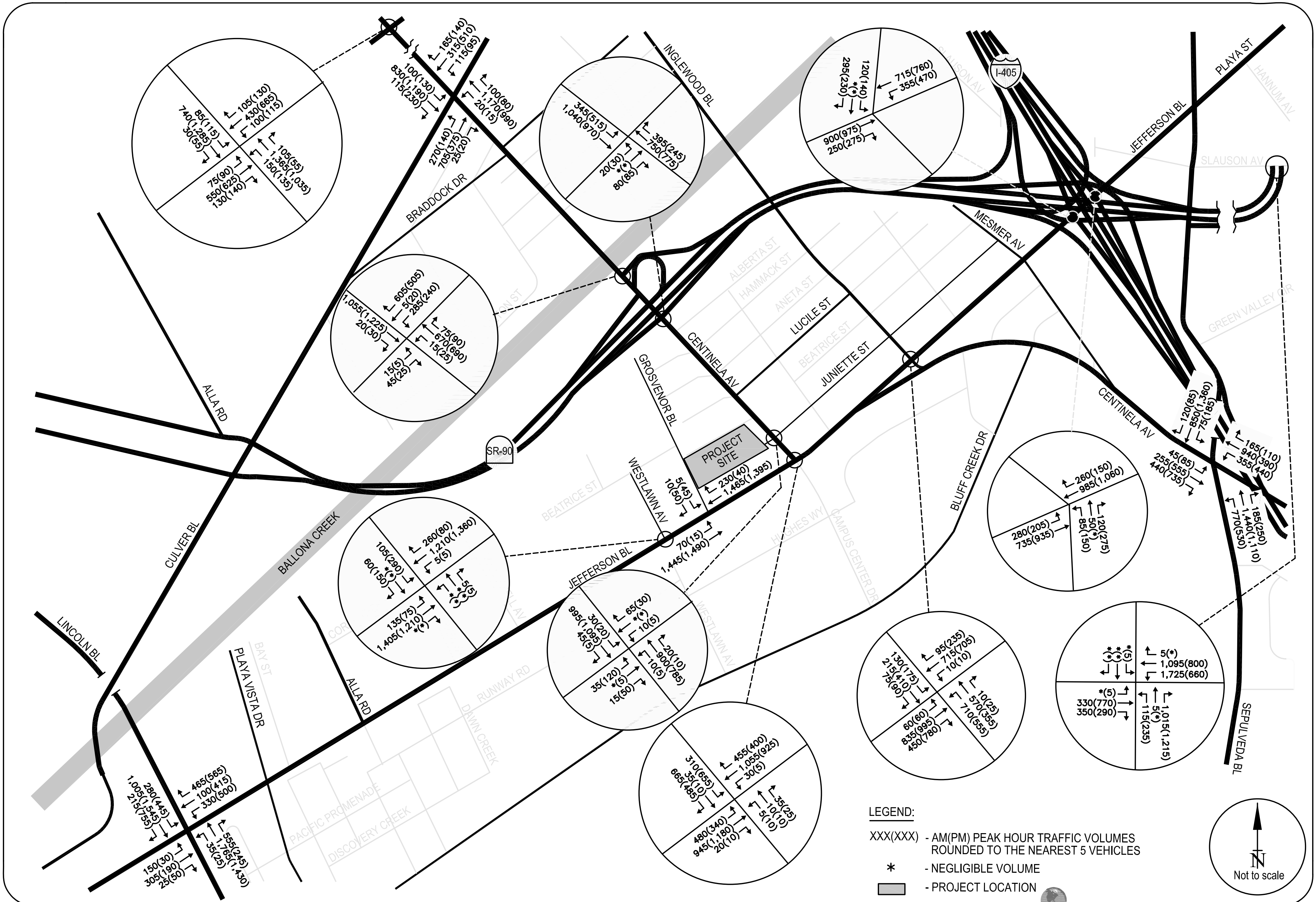


FIGURE 2
EXISTING (2009) PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

TABLE 1
LEVEL OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS

Level of Service	Volume/Capacity Ratio	Definition
A	0.000 - 0.600	EXCELLENT. No Vehicle waits longer than one red light and no approach phase is fully used.
B	>0.600 - 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	>0.700 - 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	>0.800 - 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	>0.900 - 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: Transportation Research Board, *Transportation Research Circular No. 212, Interim Materials on Highway Capacity* , 1980.

Existing Levels of Service

The existing traffic volumes presented in Figure 2 for AM and PM peak hours, respectively, were used in conjunction with the level of service methodologies described above, and the current intersection characteristics illustrated in Appendix B, to determine the existing operating conditions at the analyzed intersections.

Table 2 summarizes the results of the intersection capacity analysis for existing conditions at each of the 14 intersections in the study area. The table indicates the existing V/C ratio during the morning and evening peak hours and the corresponding LOS at the study intersections. As illustrated in the table, all 14 of the study intersections are currently operating at LOS D or better during both the morning and evening peak hours.

Capacity calculation worksheets for Existing (2009) conditions are provided in Appendix D of the report.

EXISTING TRANSIT CONDITIONS

Eleven bus lines currently serve the study area. Four bus lines are operated by the Los Angeles County Metropolitan Transportation Authority (LACMTA), three bus lines are operated by the Culver City Bus (CC), two bus lines are operated by Santa Monica Big Blue Bus (SM) and two bus lines are operated by the Los Angeles Department of Transportation (CE). These transit lines are described below:

- LACMTA 108 - Line 108 is a local east/west line that provides service from Marina Del Rey to Pico Rivera and travels primarily along Centinela Avenue and Jefferson Boulevard within the study area. This line runs everyday, including holidays, at a peak frequency of approximately 15 minutes during peak commute hours. The western terminus is at the intersection of Palawan Way/Washington Boulevard in Marina Del Rey. The eastern terminus is at the intersection of Paramount Boulevard/Slauson Avenue in Pico Rivera.

TABLE 2
EXISTING (2009) INTERSECTION LEVEL OF SERVICE ANALYSIS

No.	Intersection [1]	Existing (2009) Conditions			
		AM Peak Hour		PM Peak Hour	
		V/C	LOS	V/C	LOS
1.	Lincoln Boulevard & Jefferson Boulevard	0.544	A	0.725	C
2.	Westlawn Avenue & Jefferson Boulevard	0.389	A	0.466	A
3.	Grosvenor Boulevard & Jefferson Boulevard [2]	0.542	A	0.493	A
4.	Centinela Avenue & Washington Boulevard	0.740	C	0.765	C
5.	Centinela Avenue & Culver Boulevard	0.697	B	0.695	B
6.	Centinela Avenue & Marina Fwy WB Ramps	0.421	A	0.414	A
7.	Centinela Avenue & Marina Fwy EB Ramps	0.347	A	0.321	A
8.	Centinela Avenue & Juniette Street [2]	0.383	A	0.457	A
9.	Centinela Avenue & Jefferson Boulevard	0.642	B	0.541	A
10.	Inglewood Boulevard & Jefferson Boulevard	0.459	A	0.501	A
11.	I-405 SB Ramps & Jefferson Boulevard	0.443	A	0.543	A
12.	I-405 NB Ramps & Jefferson Boulevard	0.468	A	0.618	B
13.	Sepulveda Boulevard & Centinela Avenue	0.848	D	0.753	C
14.	Marina (SR-90) Freeway & Slauson Avenue	0.590	A	0.676	B

Note:
V/C - Volume to Capacity Ratio

LOS - Level of Service

[1] All signalized intersections include V/C credit of 0.10 to account for ATSAC and ATCS. Note that ATCS credit of 0.03 is not automatically reflected on the capacity calculation worksheets in the appendices.

[2] Unsignalized intersection - stop-controlled on minor approach(es). Per the City of Los Angeles Department of Transportation, CMA methodology was used to determine the LOS using a capacity of 1,200.

- LACMTA 110 - Line 110 is a local east/west lines that provide service from Playa Vista to Bell Gardens and travels primarily along Jefferson Boulevard within the study area. This line runs everyday, including holidays, at a peak frequency of approximately 13-15 minutes during peak commute hours. The western terminus is at intersection of Playa Vista Drive/Jefferson Boulevard in Playa Vista. The eastern terminus is at the intersection of Granger Avenue/Florence Avenue in Bell Gardens.

- LACMTA 220 - Line 220 is a local north/south line that provides service from West Hollywood to Los Angeles International Airport (LAX) and travels primarily along Culver Boulevard and Lincoln Boulevard within the study area. This line runs everyday, including holidays, at a peak frequency of approximately 60 minutes during peak commute hours. The northern terminus is at the West Hollywood Library. The southern terminus is at the LAX City Bus Center located at the intersection Vicksburg Avenue/96th Street.

- LACMTA 439 - Line 439 is an express service north/south line that provides service from Downtown Los Angeles to Torrance and travels primarily along Sepulveda Boulevard within the study area. This line runs everyday, including holidays, at a peak frequency of approximately 32-34 minutes during peak commute hours. The northern terminus is at the Patsaouras Transit Plaza in Downtown Los Angeles. The southern terminus is at the intersection of Palos Verdes Boulevard/Via Valencia in Torrance.

- CC 2 – Culver City Bus Line 2 is a local east/west line that provides service from Venice High School to the Fox Hills Mall Transit Center and travels primarily along Inglewood Boulevard and Jefferson Boulevard within the study area. This line runs Monday through Friday at a frequency of approximately 60 minutes. Service is not provided on weekends and holidays.

- CC 3 – Culver City Bus Line 3 is a local north/south line that provides service from Century City to Culver City and travels primarily along Centinela Avenue within the study area. This line runs everyday, including holidays, at a frequency of 20 minutes. The northern terminus is at the intersection of Century Park West/Olympic Boulevard in Century City. The southern terminus is at the intersection of Mesmer Avenue/Centinela Avenue.

- CC 6 – Culver City Bus Line 6 is a local north/south line that provides service from Westwood to Inglewood and travels primarily along Sepulveda Boulevard within the study area. This line runs everyday, including holidays, at a frequency of 12 minutes. The northern terminus is at the University of California Los Angeles (UCLA) Ackerman Terminal in Westwood. The southern terminus is at the Metro Green Line Station in Inglewood.

- SM 3 – Santa Monica Big Blue Bus Line 3 is a local north/south line that provides service from Westwood to Inglewood and travels primarily along Lincoln Boulevard within the study area. This line runs everyday, including holidays, at a peak frequency of

10-12 minutes during peak commute hours. The northern terminus is at the University of California Los Angeles (UCLA) Ackerman Terminal in Westwood. The southern terminus is at the Metro Green Line Station in Inglewood.

- SM Rapid 3 – Santa Monica Bus Blue Bus Line Rapid 3 is a north/south “rapid bus” line that provides service from Santa Monica to Inglewood and travels primarily along Lincoln Boulevard within the study area. This line runs Monday through Friday from 6:00-10:00 a.m. and 2:00-7:00 p.m. at a frequency of 15 minutes. Service is not provided on weekends and holidays. The northern terminus is at the intersection of 4th Street/Wilshire Boulevard in Santa Monica. The southern terminus is at the Metro Green Line Station in Inglewood.

- CE 437 – Line 437 is a LADOT Commuter Express line that provides service from Downtown Los Angeles to Marina Del Rey and travels primarily along Culver Boulevard within the study area. This line runs Monday through Friday at a peak frequency of approximately 23 minutes during peak commute hours. Service is not provided on weekends and holidays. The western terminus is at the intersection of Pacific Avenue/Washington Boulevard in Marina Del Rey. The eastern terminus is at the intersection of San Pedro Street/Temple Street in Downtown Los Angeles.

- CE 574 – Line 574 is a LADOT Commuter Express line that provides service from Sylmar to El Segundo and travels primarily along Sepulveda Boulevard within the study area. This line runs Monday through Friday at a peak frequency of approximately 25 minutes during peak commute hours. Service is not provided on weekends and holidays. The northern terminus is at the Sylmar Metrolink Station in Sylmar. The southern terminus is at the intersection of Aviation Boulevard/Space Park Drive in El Segundo.

These transit lines within the study area are illustrated in Figure 3.

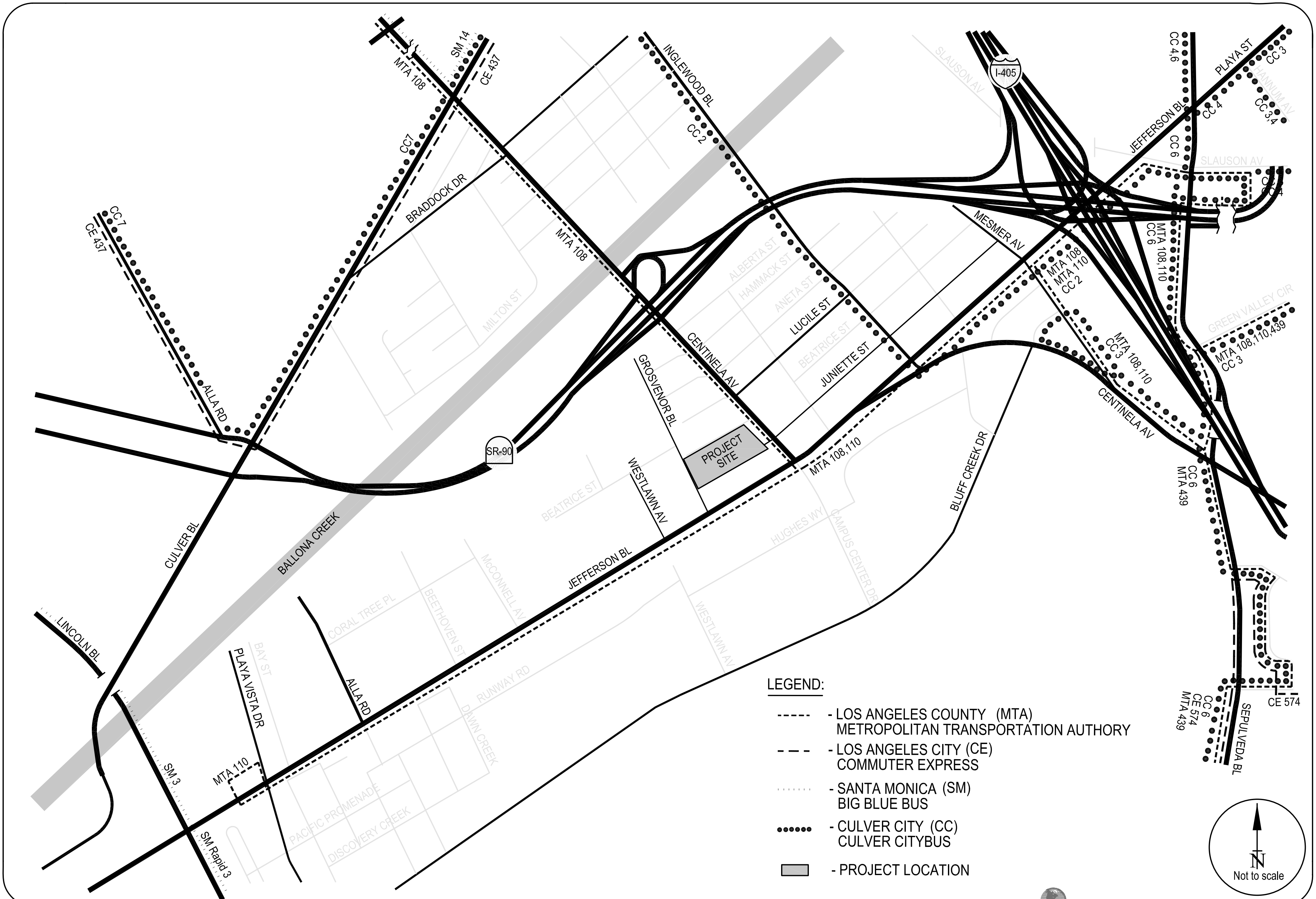


FIGURE 3
EXISTING TRANSIT LINES

RAJU Associates, Inc.

III. FUTURE YEAR 2013 TRAFFIC PROJECTIONS

In order to properly evaluate the potential impact of the Proposed Project on the local street system, estimates of the Future Year 2013 traffic volumes both with and without the Project were developed. The Future Year 2013 without the Project was first developed including estimates for background growth in area-wide trip making and trips generated by future developments in the vicinity of the study area. The Future (2013) without Project traffic represents the cumulative base conditions. The traffic generated by the Proposed Project was then estimated and assigned separately to the street system. The addition of the project traffic and the cumulative base traffic represents the Future Cumulative (2013) Plus Project scenario. Each of these future traffic scenarios is described further in this chapter.

CUMULATIVE (2013) BASE TRAFFIC PROJECTIONS

The Cumulative (2013) Base traffic projections reflect growth in traffic from two primary sources: Firstly, the background or ambient growth to reflect the effects of overall area-wide regional growth both within and outside the study area; and secondly, from traffic generated by specific cumulative projects located within, or in the vicinity of, the study area. Each of these components is described below.

Area-wide Ambient Traffic Growth

The traffic in the vicinity of the study area has been estimated to increase at a rate of about 2% per year per the Memorandum of Understanding. Future increases in background traffic volumes due to regional growth and development are expected to continue at this rate. With the assumed completion date of 2013, the existing 2009 traffic volumes were adjusted upward by a factor of 8% to reflect this area-wide regional growth. The resulting Existing Plus Ambient Growth (2013) traffic volumes are illustrated in Figure 4.

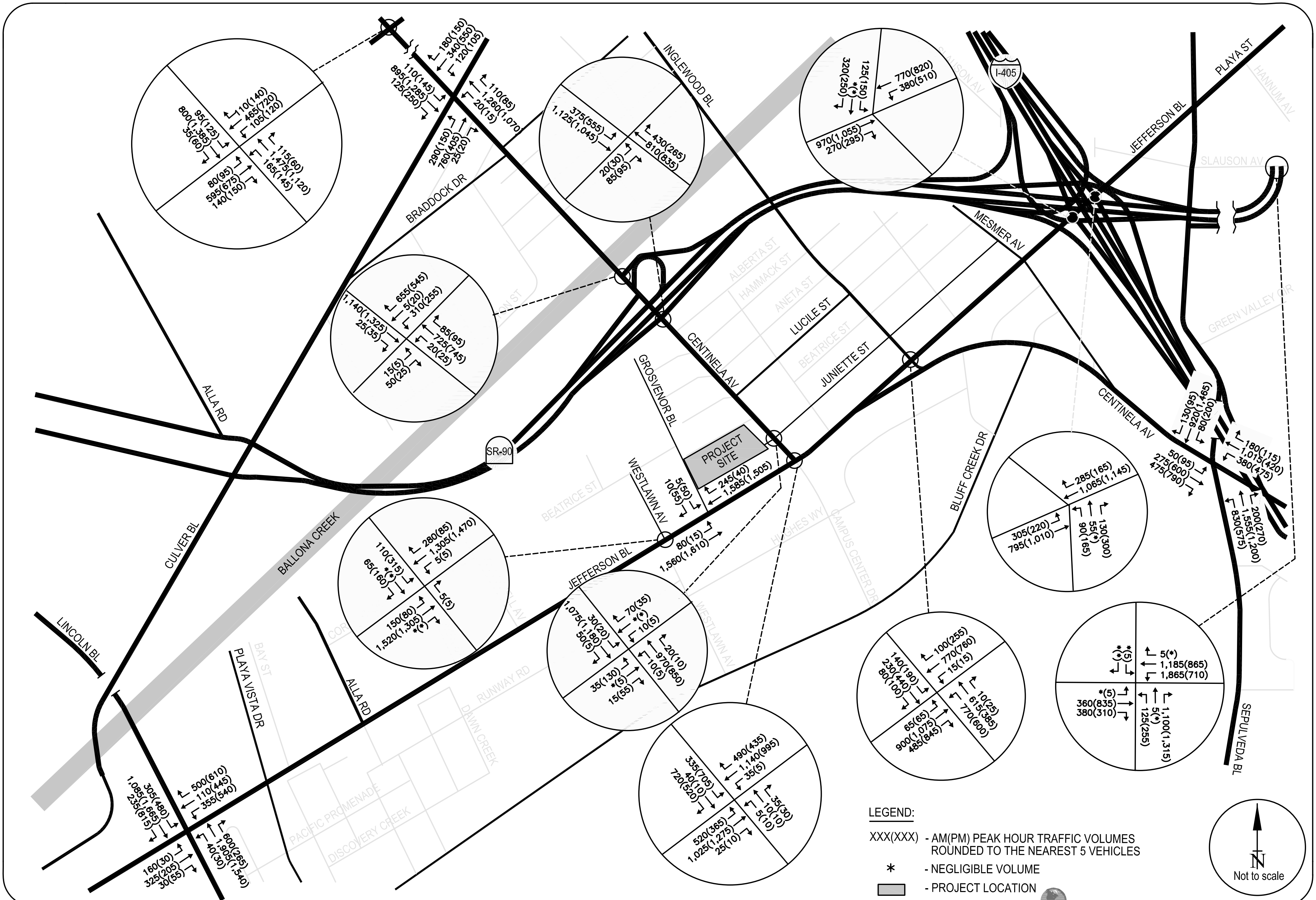


FIGURE 4
EXISTING PLUS AMBIENT GROWTH (2013) PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

Cumulative Project Traffic Generation and Assignment

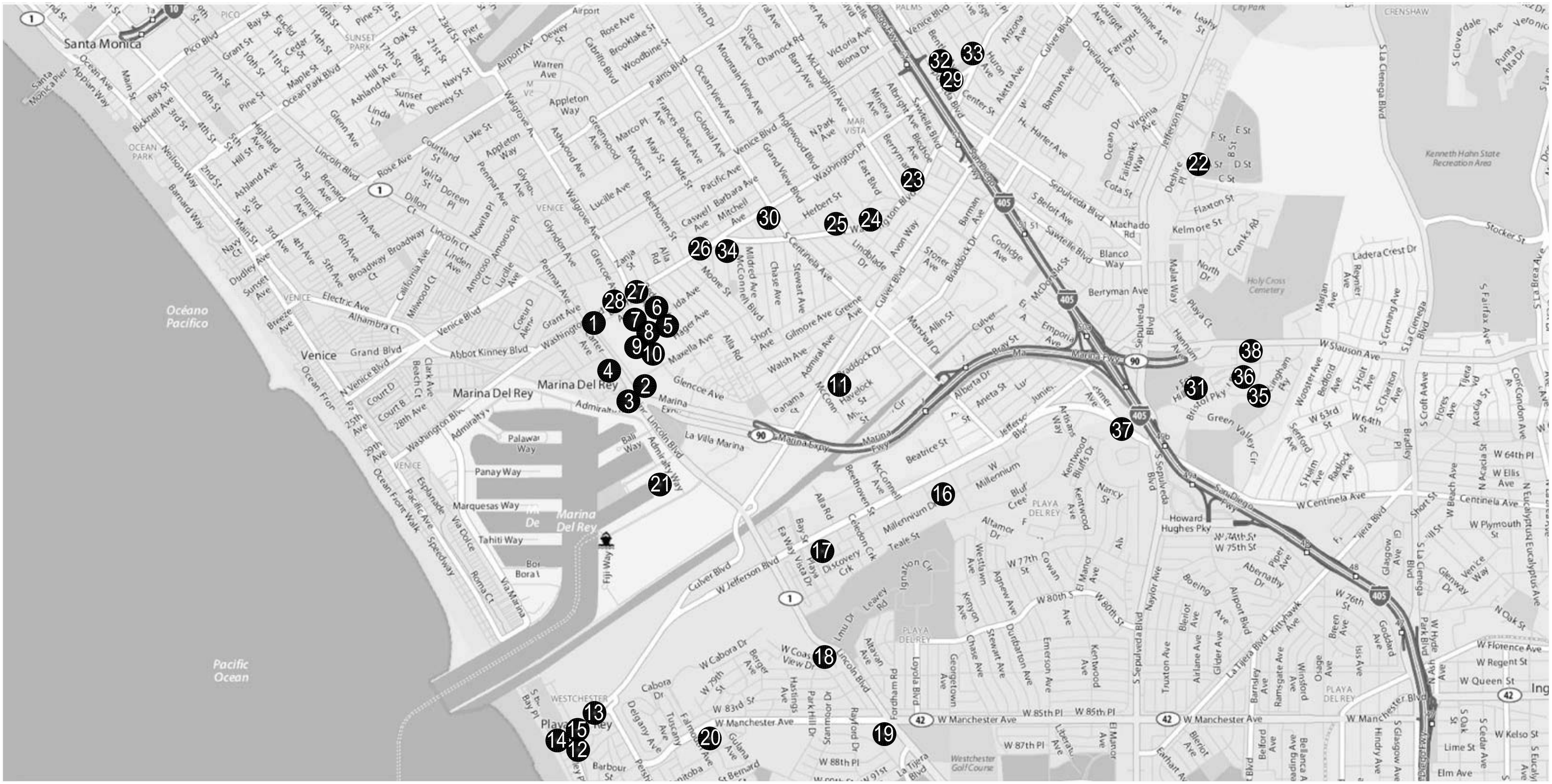
As indicated, the second potential source of traffic growth in the study area is that expected from other future development projects in the vicinity. These "cumulative projects" are those developments that are planned and expected to be in place within the same timeframe as the proposed project. Data describing cumulative projects in the area was solicited from the City of Los Angeles, County of Los Angeles, and City of Culver City. Thirty-eight cumulative projects were identified within the study area. The locations of these projects are shown in Figure 5.

The trip generation estimates for the related projects were provided by the City of Los Angeles, the City of Culver City and from traffic studies for specific related projects indicated in Table 3. Table 3 summarizes the trip generation of related projects. As indicated in Table 3, the cumulative projects are expected to generate approximately 11,316 trips during the morning peak hour and 14,372 trips during the evening peak hour.

The geographic distribution and the traffic assignment of the cumulative projects were performed and the results are illustrated in Figure 6. These related projects' traffic estimates were added to the Existing plus Ambient Growth (2013) traffic to obtain the Cumulative (2013) Base traffic volumes. Figure 7 provides the Cumulative (2013) Base traffic volumes at each of the analysis intersections during both AM and PM peak hours. These volumes represent Future (2013) Cumulative Base (without project) conditions.

PROJECT TRAFFIC VOLUMES

The implementation of the Proposed Project consists of 216 multi-family dwelling units (apartments). The Project would also provide 438 parking spaces for residents and guests. The existing site includes a 38,987 square-foot church and a single-family residence (rented out by the church) that will be removed.



LEGEND:

- LOCATION OF RELATED PROJECTS

N
Not to scale

MAP SOURCE: YAHOO MAPS 2009

FIGURE 5
LOCATION OF RELATED PROJECTS

RAJU Associates, Inc.

TABLE 3
ESTIMATED WEEKDAY TRIP GENERATION OF RELATED PROJECTS

Map No.	Project Name	Location	Description	Daily	AM Peak Hour IN	AM Peak Hour OUT	AM Peak Hour TOTAL	PM Peak Hour IN	PM Peak Hour OUT	PM Peak Hour TOTAL
City of Los Angeles [1]										
1	Mixed-Use Project	4004 Lincoln Boulevard	Condominium 98 units, Retail 6,020 s.f.	841	11	39	50	59	40	99
2	Villa Marina Project [2]	4350 Lincoln Boulevard	Condominium 244 units, Shopping Center 9,000 s.f.; To be removed: Shopping Center -21,038 s.f	903	11	84	95	73	10	83
3	Mixed-Use Project	4363 Lincoln Boulevard	Condominium 158 units, Shopping Center 3,178 s.f., To be removed: Car Rental Facility -48,000 s.f.	386	0	47	47	53	18	71
4	Mixed-Use Project	NWC Princeton Drive/ Carter Avenue	Apartments 298 units; To be removed: Light Manufacturing -24,000 s.f., Office -21,600 s.f., Auto Service/Repair -40,000 s.f.	860	-70	103	33	47	-79	-32
5	Condominium Project	4155 Redwood Avenue	Condominium 118 units	691	9	43	52	41	20	61
6	Condominium Project	4055, 4063, 4071 S Redwood Avenue	Condominiums 140 units	820	11	51	62	65	33	98
7	Condominium Project	4050 Glencoe Avenue	Condominium 77 units	451	6	28	34	27	13	40
8	Apartment Project	4080 Glencoe Avenue	Apartment 64 units	430	7	26	33	26	14	40
9	Del Rey Lofts	4115 Glencoe Avenue and 4133 Redwood Avenue	Condominium 49 units, Apartment 52 units	636	9	40	49	38	19	57
10	Condominium Project	4131 Glencoe Avenue	Condominium 117 units	686	9	42	51	41	20	61
11	Mixed-Use Project	12700 Braddock Drive	Warehouse 134,557 s.f., Office 1,357 s.f.; To be removed: University of CA Laundry -58,323 s.f.	493	22	2	24	36	136	172
12	Condominium Project	Trolley Place and Vista Del Mar	Condominium 46 units	270	3	17	20	21	11	32
13	Mixed-Use Project	220 Culver Boulevard	Apartment 63 units, Retail 6,000 s.f.; To be removed: Restaurant -4,000 s.f.	180	13	7	20	29	31	60
14	Mixed-Use Project	6819 Pacific Avenue	Apartment 29 units, Restaurant 3,000 s.f., Retail 1,000 s.f.	620	22	29	51	37	25	62
15	Mixed-Use Project	138 Culver Boulevard	Condominium 63 units, Retail 10,051 s.f.	712	10	28	38	46	36	82
16	The Village at Playa Vista	S/o Jefferson Boulevard/Westlawn Avenue	Office 1,750,000 s.f., Apartment 2,600 units, Retail 150,000 s.f., Community Serving Uses 40,000 s.f.	24,220	577	1049	1,626	1275	1,027	2,302
17	Playa Vista Mixed-Use Project [3]	Jefferson Bl b/t Lincoln Boulevard and Centinela Av	Includes 3,246 d.u., 2,142,050 s.f. of office use, 25,000 s.f. of retail use, 1,129,900 s.f of production and staging support, and 65,000 s.f. of community serving use. (Includes anticipated growth through 2013.)	40,771	3,647	1,489	5,136	2,640	3,327	5,967
18	Single Family Residential	7400 80th Street (assumed 15 % completed and occupied)	Single-Family Residential 120 units	1,220	25	70	95	82	46	128
19	Decron Development [3]	8601 Lincoln Boulevard	29,000 s.f. mixed use project	905	4	4	8	72	72	144
20	Apartment Project	8030-8040 Manchester Avenue	Apartment 204 units	1,371	21	83	104	96	47	143
County of Los Angeles										
21	Marina Del Rey Local Coastal Plan [4]	Marina del Rey	Development contained within Local Coastal Plan (Includes anticipated growth through 2013)	34,113	673	1,021	1,694	1,344	1,113	2,457
22	West Los Angeles Community College Master Plan and EIR [5]	Overland Av/Freshman Dr	Proposed Master Plan for the College to increase the student enrollment.	6,785	436	45	481	300	133	433
City of Culver City [6]										
23	FAYNSOD Family Trust	11501-11509 Washington Boulevard	6,411 g.s.f. mixed-use project consisting of three retail spaces and three apartment units on the second floor.	150	0	1	1	5	6	11
24	11957 Washington Bl Office Project	11957 Washington Boulevard	73,569 s.f. three-story Office building	810	100	14	114	19	91	110
25	Modification to CUP, Expanding School	12095-12101 Washington Boulevard	Conversion of a 20,090 s.f. Office building into classrooms and administration offices.	89	31	42	73	6	-12	-6
26	Baldwin Site	12803 W. Washington Boulevard	New three-story commercial (Office and Retalil) condominium building (retail ground floor) totaling 37,308 s.f.	808	41	10	51	29	54	83
27	Live/Work Units	13340 Washington Boulevard	41-unit Condominium development with 6 live/work Condominium units in Culver City and 35 Units in Los Angeles	240	3	15	18	14	7	21
28	Glencoe/Washington Mixed-Use Project	13365 Washington Boulevard	Retail 4,183 s.f., Condominium 19 units	333	5	9	14	13	11	24
29	Vehicle Repair Shop	11167 Washington Place	Construction of new Vehicle Repair Shop with 1,196 s.f. of repair area with 2 service bays and 191 s.f. of Office	40	2	2	4	2	2	4
30	Washington Place Office	12402 Washington Place	Office 30,400 s.f., Specialty Retail 9,300 s.f.	747	48	10	58	19	51	70
31	Westfiled Fox Hills Mall Expansion	6000 Fox Hills Mall	293,786 g.s.f. Retail and 427 parking spaces	5,377	63	41	104	255	276	531
32	Hampton Inn	3954 Sepulveda Boulevard	77-unit Hotel	629	26	17	43	24	21	45
33	Four-Unit Condominium	3972 Tilden Avenue	4-unit Condominiums	23	0	2	2	1	1	2
34	Four-Unit Condominium	4025 Wade Street	4-unit Condominiums	23	0	2	2	1	1	2
35	Office Expansion Project	5800 Uplander Way	Add 3 stories; 57,050 g.s.f. to a two-story 26,214 g.s.f Office	582	72	10	82	13	66	79
36	Fire Station No. 3	6030 Bristol Parkway	Two-story, 12,156 g.s.f. Fire Station	838	60	11	71	5	10	15
37	Radisson Office Tower (Entrada)	6161 Centinela Avenue	342,400 g.s.f. Office tower and parking structure addition	3,442	442	60	502	79	383	462
38	Office and Retail Building	700-701 Corporate Pointe	240,612 g.s.f. Office; 4,242 g.s.f. Retail	2,649	329	45	374	61	298	359
			TOTAL RELATED PROJECT TRIP GENERATION	135,144	6,678	4,638	11,316	6,994	7,378	14,372

[1] Related projects and trip generation totals (unless noted otherwise) provided by LADOT, 2009. Trip distribution based on *ITE Trip Generation Manual, 8th Edition*.
[2] Trip generation from *Memorandum for Villa Marina Residential Project Alternative Traffic Evaluation*, Kaku Associates, February 2005
[3] Trip generation from *Playa Vista Transportation Plan*. Approximately 3,000 d.u., 350,000 s.f. of office use, and 65,000 s.f. of community serving use already built.
[4] PM trip generation from *Marina del Rey Local Coastal Plan*. AM trip generation is based on rates included in *ITE Trip Generation Manual, 8th Edition*.
[5] Trip generation from *West Los Angeles College Master Plan EIR*, Jones & Stokes, 2004.
[6] Related projects and trip generation provided by the City of Culver City, 2009.

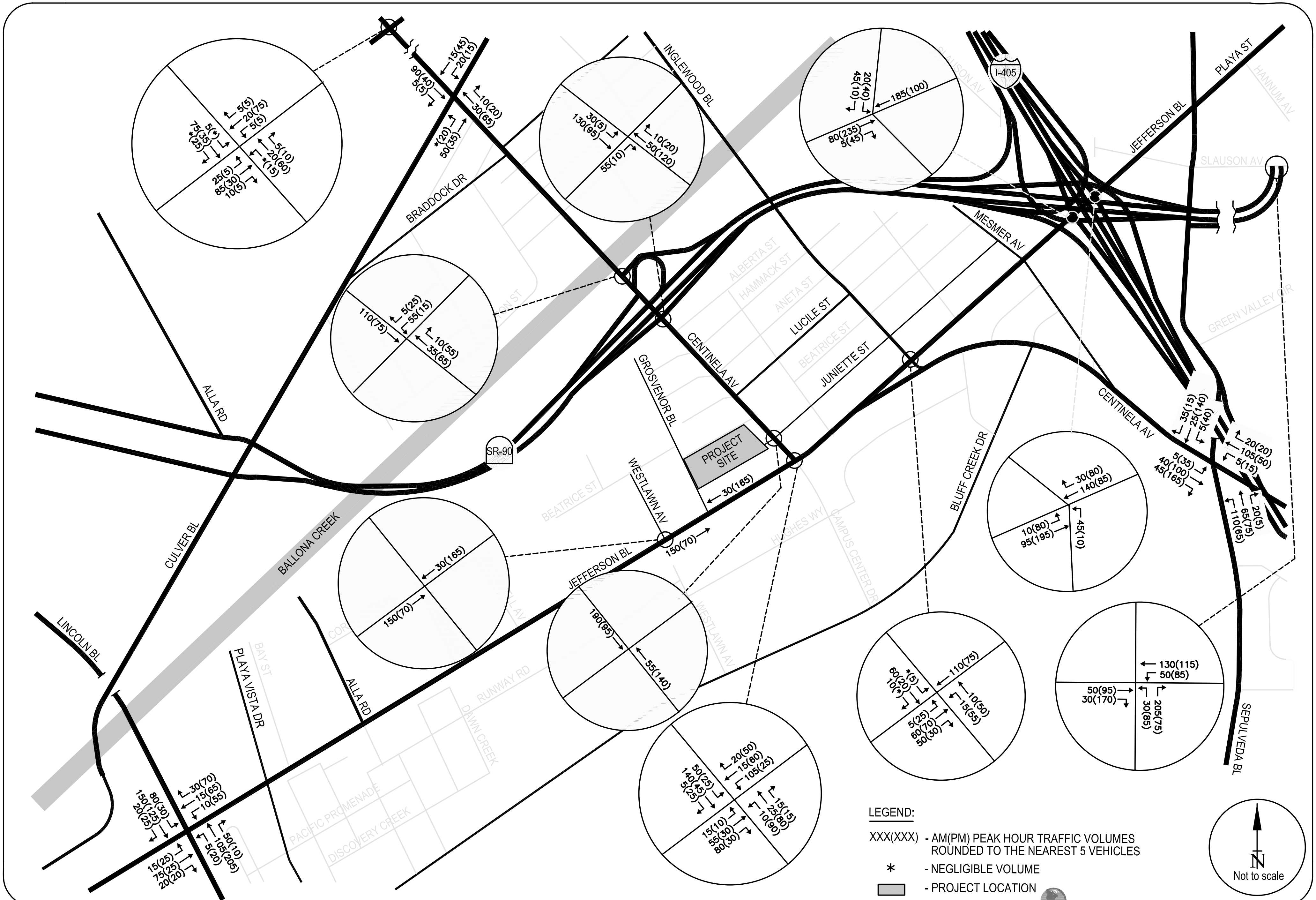


FIGURE 6
RELATED PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

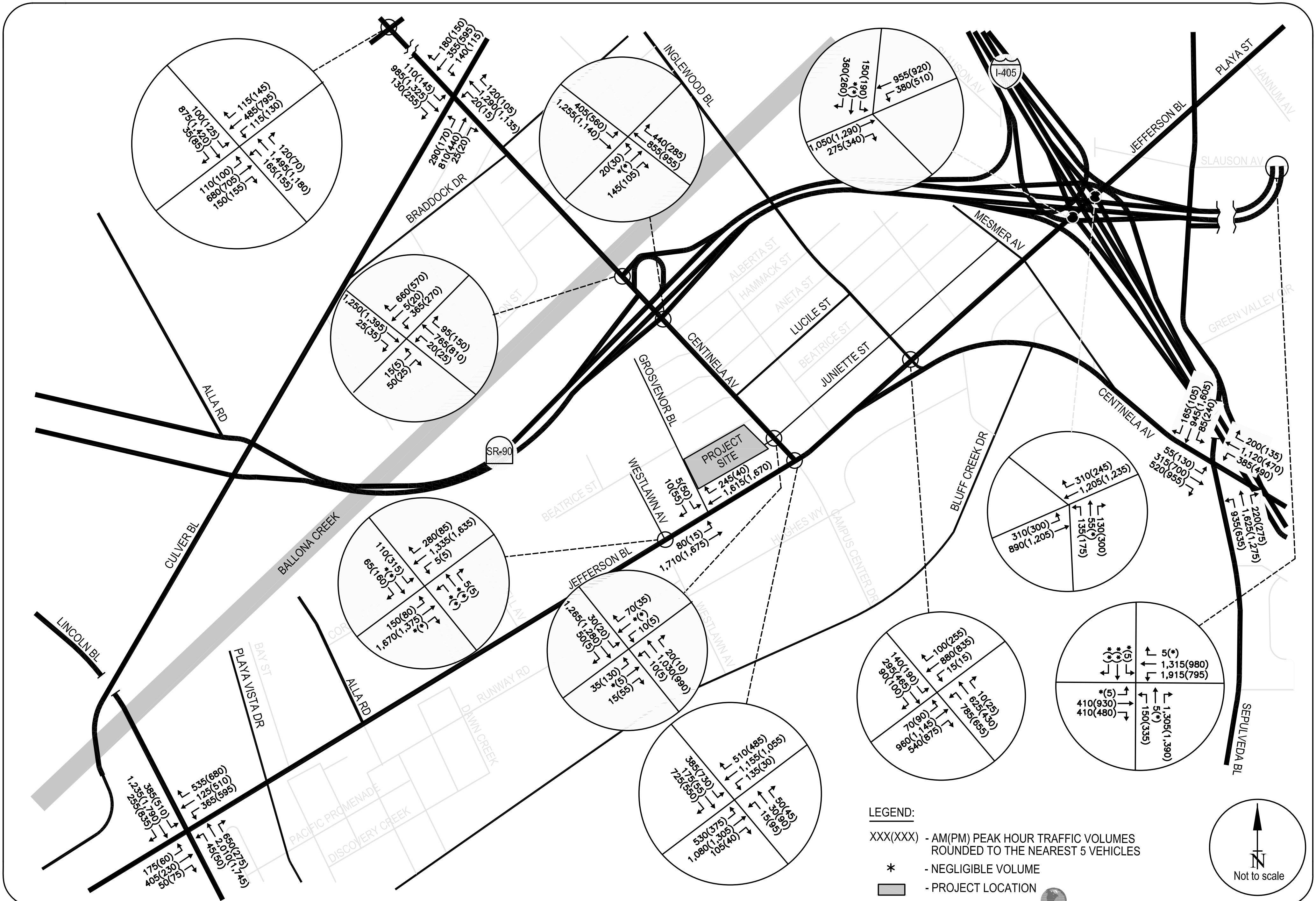


FIGURE 7
CUMULATIVE (2013) BASE PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

Project Trip Generation

Utilizing rates from the ITE Trip Generation Informational Report, 8th Edition, the Proposed Project's trip generation was determined. Table 4 presents details of the Proposed Project's trip generation including type of use, size, applicable rate and trip generation estimates. Other calculations within the tables also provide for trip generation reductions from existing uses.

From Table 4, it can be observed that the proposed project's trip generation would result in a net total of approximately 1,078 daily trips of which 88 trips (8 inbound, 80 outbound) would occur during the morning peak hour and 115 trips (78 inbound, 37 outbound) during the evening peak hour.

The Coastal Transportation Corridor Specific Plan (CTCSP) that regulates all traffic and infrastructure-related issues within the City of Los Angeles area immediately adjacent to the Proposed Project site (located within the County of Los Angeles jurisdiction) specifies different trip generation rates for apartments. However, these rates were developed in 1993 when the CTCSP Ordinance #168,999 was adopted and were based on information from the Institute of Transportation Engineer's Trip Generation Report 3rd Edition. Since then, ITE has collected and compiled a rich database (with 90 data points from around the country) and published the same in the ITE Trip Generation Informational Report, 8th Edition. The specifics of this information compilation are included in Appendix E.

Project Trip Distribution

The geographic trip distribution for project trips was assumed to be the following:

- To and From the North: 25%
- To and From the South: 25%
- To and From the East: 25%
- To and From the West: 25%

TABLE 4
ESTIMATED PROJECT TRIP GENERATION

	Size	Daily	AM Peak Hour			PM Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Project Apartment	216 d.u.	1,433	22	88	110	88	48	136
Existing Uses-To be removed Church	(38,987) s.f.	(355)	(14)	(8)	(22)	(10)	(11)	(21)
Net Project Trip Generation Total		1,078	8	80	88	78	37	115
Trip Rates [1] Apartment (ITE Land Use 220) Church (ITE Land Use 560)	Trips per d.u. Trips per 1,000 s.f.	[2] 9.11	20% 62%	80% 38%	[2] 0.56	65% 48%	35% 52%	[2] 0.55

[1] Rates from ITE, *Trip Generation, 8th Edition, Informational Report*

[2] Trip generation for apartment was calculated using the following formulas:

Daily: T = 6.06(X) + 123.35
AM Peak Hour: T = 0.49 (X) + 3.73
PM Peak Hour: T = 0.55 (X) + 17.65

Where:
T = Two-way volume of traffic (total trip-ends)
X = Area in 1,000 gross square feet of leasable area

Intersection level trip distribution percentages are shown in Figure 8. Based on these distribution assumptions, location and points of access of the Project driveways, and net trip generation from the Proposed Project, traffic estimates of net project-only trips were developed. These net project-only trips are presented in Figure 9.

FUTURE YEAR 2013 CUMULATIVE PLUS PROJECT TRAFFIC VOLUMES

Utilizing the project-only traffic estimates developed for both AM and PM peak hours, traffic forecasts for the Future Year 2013 with Project conditions were developed. The Cumulative (2013) Base traffic forecasts were combined with the net project-only traffic volumes to obtain the Future with Project traffic volume forecasts. The Future Year 2013 Cumulative plus Project traffic volumes during both A.M. and P.M. peak hours are presented in Figure 10.

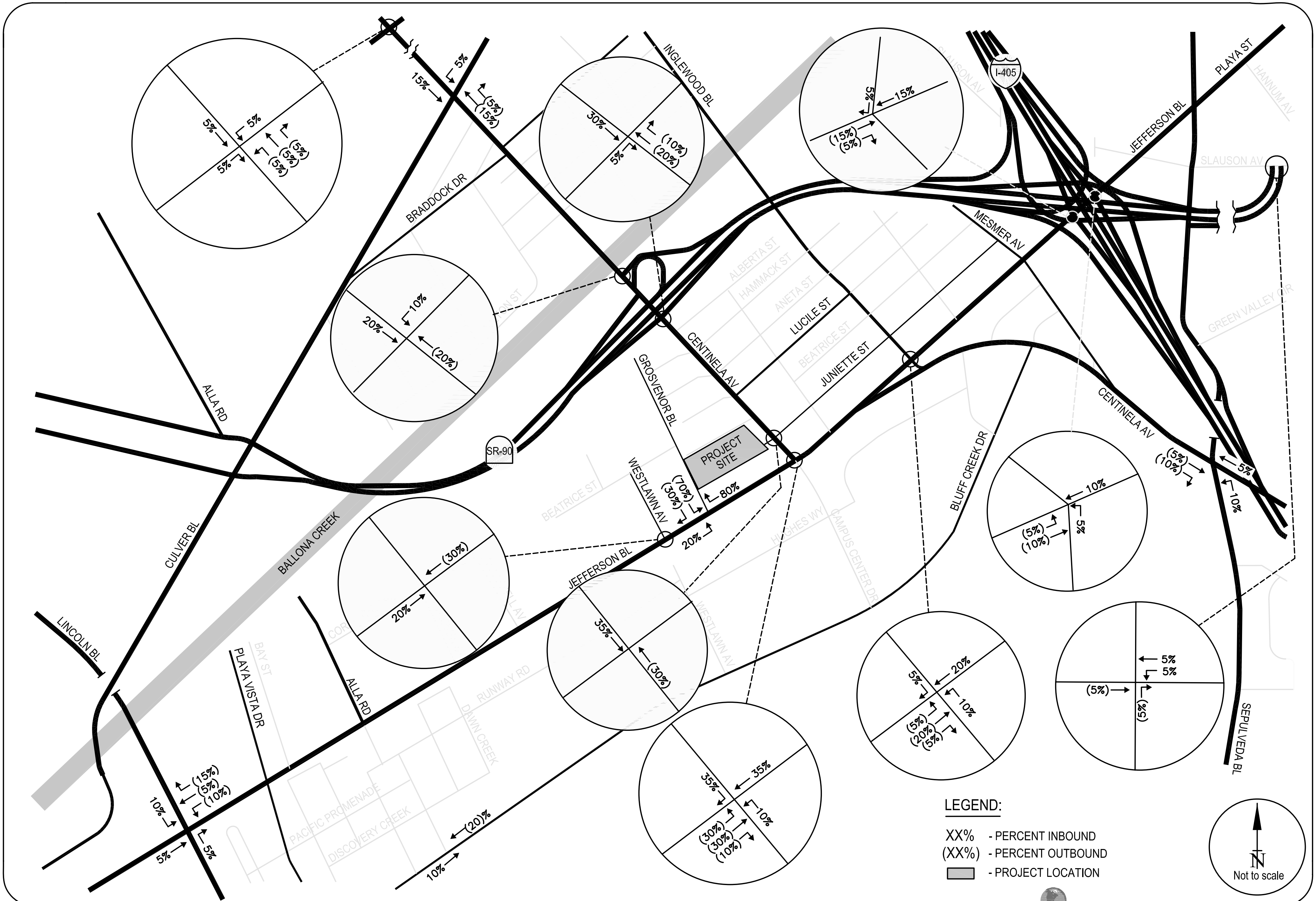


FIGURE 8
PROJECT TRIP DISTRIBUTION

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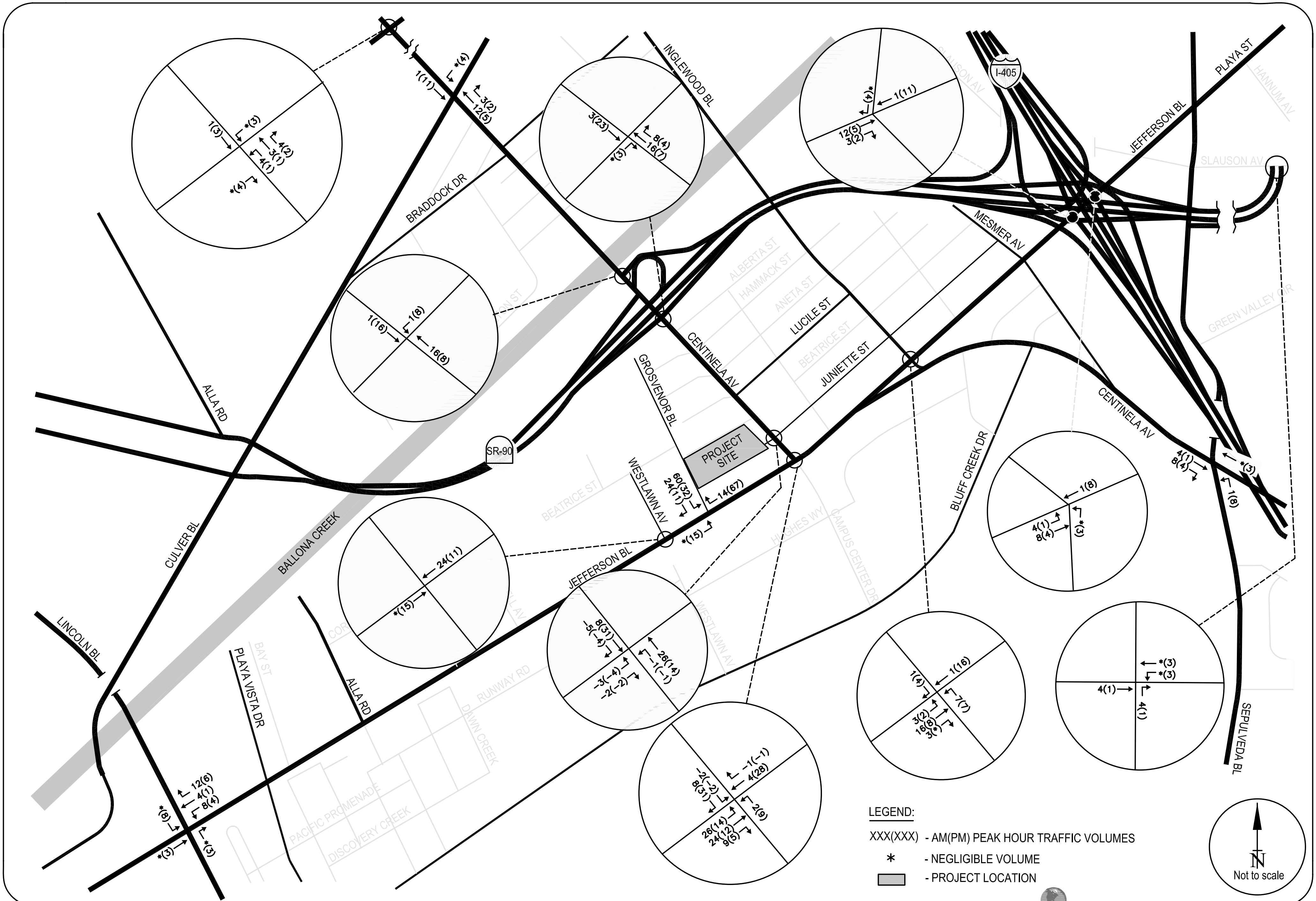


FIGURE 9
NET PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

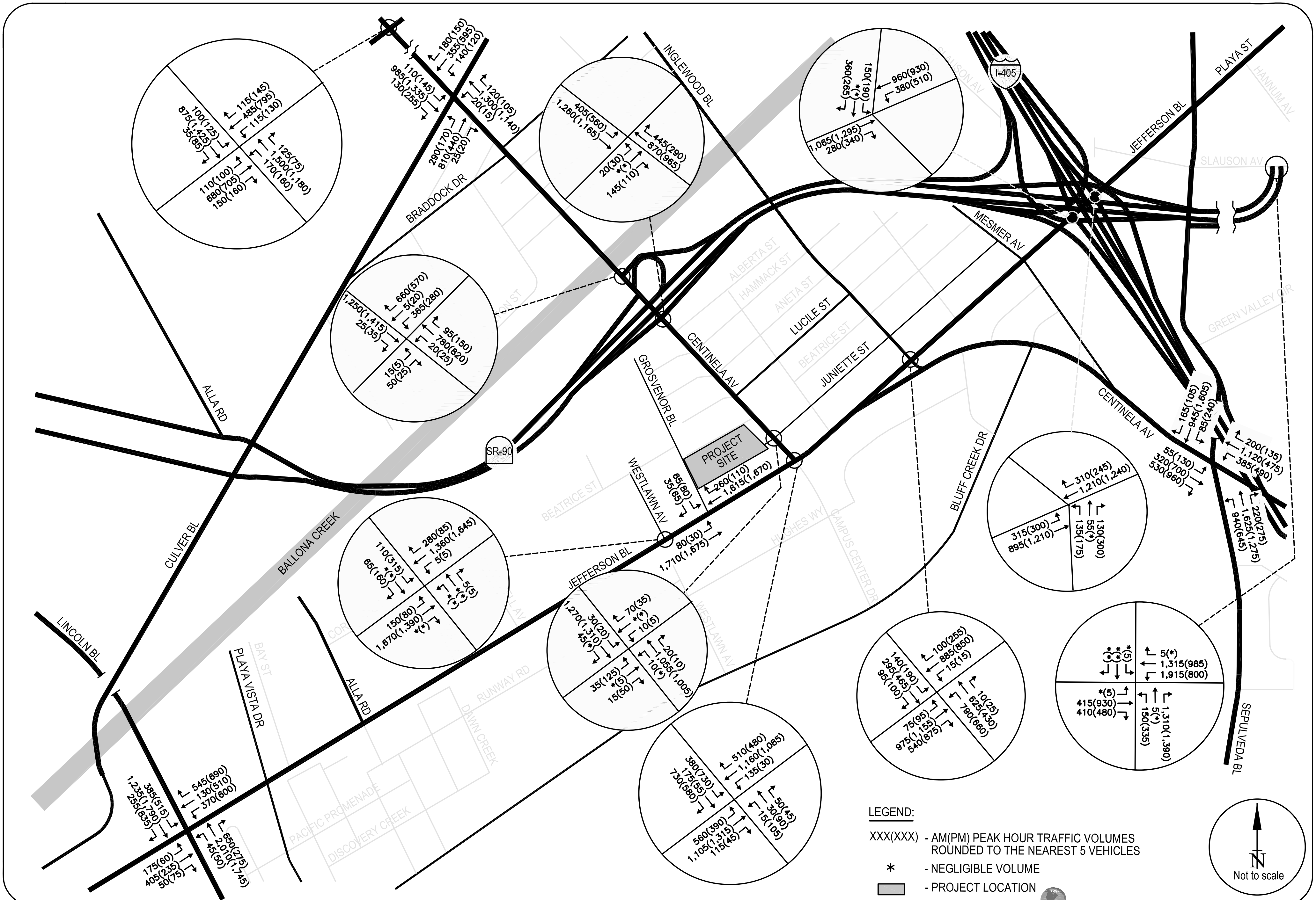


FIGURE 10
CUMULATIVE (2013) PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

IV. FUTURE YEAR 2013 TRAFFIC CONDITIONS & IMPACT ANALYSIS

The Future Year 2013 Cumulative Base and Cumulative Plus Project conditions were analyzed utilizing the methodologies and assumptions per the City of Los Angeles traffic study guidelines. The results were then used to assess the potential impact of the Proposed Project on the local street system.

The traffic impact analysis compares the volume to capacity (V/C) ratios at each study location under the cumulative base and cumulative plus project conditions to determine the incremental difference in V/C ratios caused by the Proposed Project. This provides the information needed to assess the potential impact of the Project using significance criteria established by the City of Los Angeles.

SIGNIFICANT TRAFFIC IMPACT CRITERIA

The City of Los Angeles Department of Transportation has established threshold criteria that determine if a project has a significant traffic impact at a specific intersection. According to the criteria provided by the City of Los Angeles, a project impact is considered significant if the following conditions are met:

Intersection Condition With Project Traffic		Project-Related Increase in V/C Ratio
LOS	V/C Ratio	
C	0.701 – 0.800	equal to or greater than 0.040
D	0.801 – 0.900	equal to or greater than 0.020
E, F	> 0.900	equal to or greater than 0.010

Using these criteria, for example, a project would not have a significant impact at an intersection if it is operating at LOS C after the addition of project traffic and the incremental change in the V/C ratio is less than 0.040. However, if the intersection is operating at a LOS F after the addition of project traffic and the incremental change in the V/C ratio is 0.010 or greater, the project would be considered to have a significant impact.

CUMULATIVE BASE IMPROVEMENTS

The roadway network for the future base conditions within the study area is affected by a number of regional improvement plans and improvements implemented by the Playa Vista Phase 1 project. These improvements include the following:

- <u>Lincoln Boulevard/Jefferson Boulevard</u> - The improvement at this location will include the addition of a second northbound right-turn lane. The northbound approach would then provide a left-turn lane, three through lanes, a shared through/right-turn lane and a separate right-turn lane.

- <u>Centinela Avenue/Washington Boulevard</u> – The improvement at this intersection includes a separate southbound right-turn lane. The southbound approach would provide a left-turn lane, two through lanes, and a separate right-turn lane.

- <u>Centinela Avenue/SR-90 Westbound Ramps</u> – The improvement at this intersection includes a third northbound lane. The northbound approach would provide a left-turn lane, two through lanes and a shared through/right-turn lane.

- <u>Centinela Avenue/SR-90 Eastbound Ramps</u> – The southbound approach at this intersection will be improved to include a third through lane. The southbound approach would provide dual left-turn lanes and three through lanes. In order to accommodate this improvement, the northbound approach will be restriped to provide two through lanes and a shared through/right-turn lane.

- <u>Inglewood Avenue/Jefferson Boulevard</u> – The improvement at this intersection includes a separate right-turn on the southbound approach. The southbound approach would provide a left-turn lane, two through lanes and a separate right-turn lane.

- <u>Bluff Creek Drive</u> – With the completion of the Playa Vista Projects, Bluff Creek Drive would provide connectivity from Lincoln Boulevard to Centinela Avenue. This roadway would serve as an alternative to traveling along Jefferson Boulevard. Bluff Creek Drive would provide four travel lanes, two lanes in the eastbound and westbound directions.

These improvements are included in both the Cumulative (2013) Base conditions and Cumulative (2013) Plus Project conditions analyses. The future lane configurations of the analyzed intersections are included in Appendix B.

CUMULATIVE (2013) BASE TRAFFIC CONDITIONS

The Cumulative (2013) Base (without Proposed Project) peak hour traffic volumes were analyzed at each of the study intersections to determine the V/C ratio and corresponding level of service. Table 5 presents the results of the Year 2013 Cumulative Base (without project) traffic analysis. As indicated in the table, 13 of the 14 study intersections during both the morning and evening peak hours are projected to operate at LOS D or better. The remaining intersection, the intersection of Sepulveda Boulevard/Centinela Avenue, is projected to operate at LOS F during the morning peak hour and LOS F during the evening peak hour.

Capacity calculation worksheets for Cumulative (2013) Base conditions are attached in Appendix F of the report.

CUMULATIVE (2013) PLUS PROJECT TRAFFIC CONDITIONS

The Cumulative (2013) Plus Project peak hour traffic volumes were analyzed to determine the V/C ratio and LOS at each of the analyzed intersections. The results of this analysis are also summarized on Table 5. Table 5 indicates that traffic generated by the Project would be similar to cumulative base conditions. As indicated in the table, 13 of the 14 study intersections during both the morning and evening peak hours are projected to operate at LOS D or better. The remaining intersection, the intersection of Sepulveda Boulevard/Centinela Avenue, is projected to operate at LOS F during the morning peak hour and LOS F during the evening peak hour.

Capacity calculation worksheets for Cumulative (2013) Plus Project conditions are attached in Appendix G of the report.

TABLE 5
INTERSECTION LEVEL OF SERVICE ANALYSIS
FUTURE CONDITIONS

No.	Intersection [1]	Peak Hour	Cumulative (2013) Base Conditions V/C	Cumulative (2013) Base Conditions LOS	Cumulative (2013) Plus Project Conditions V/C	Cumulative (2013) Plus Project Conditions LOS	Project Increase in V/C	Significant Project Impact
1.	Lincoln Boulevard & Jefferson Boulevard	AM	0.696	B	0.700	B	0.004	No
		PM	0.856	D	0.859	D	0.003	No
2.	Westlawn Avenue & Jefferson Boulevard	AM	0.435	A	0.441	A	0.006	No
		PM	0.547	A	0.550	A	0.003	No
3.	Grosvenor Boulevard & Jefferson Boulevard [2]	AM	0.593	A	0.667	B	0.074	*
		PM	0.578	A	0.645	B	0.067	*
		AM			917.2 sec	F	-	*
		PM			799.2 sec	F	-	*
					with Mitigation Measure			
		AM			0.433	A	-0.160	No
		PM			0.416	A	-0.162	No
4.	Centinela Avenue & Washington Boulevard	AM	0.857	D	0.859	D	0.002	No
		PM	0.859	D	0.861	D	0.002	No
5.	Centinela Avenue & Culver Boulevard	AM	0.776	C	0.780	C	0.004	No
		PM	0.802	D	0.806	D	0.004	No
6.	Centinela Avenue & Marina Frwy WB Ramps	AM	0.496	A	0.496	A	0.000	No
		PM	0.480	A	0.484	A	0.004	No
7.	Centinela Avenue & Marina Frwy EB Ramps	AM	0.421	A	0.426	A	0.005	No
		PM	0.455	A	0.459	A	0.004	No
8.	Centinela Avenue & Juniette Street [2]	AM	0.468	A	0.465	A	-0.003	No
		PM	0.519	A	0.521	A	0.002	No
9.	Centinela Avenue & Jefferson Boulevard	AM	0.712	C	0.719	C	0.007	No
		PM	0.626	B	0.637	B	0.011	No
10.	Inglewood Boulevard & Jefferson Boulevard	AM	0.532	A	0.536	A	0.004	No
		PM	0.576	A	0.584	A	0.008	No
11.	I-405 SB Ramps & Jefferson Boulevard	AM	0.534	A	0.538	A	0.004	No
		PM	0.674	B	0.677	B	0.003	No
12.	I-405 NB Ramps & Jefferson Boulevard	AM	0.543	A	0.544	A	0.001	No
		PM	0.713	C	0.713	C	0.000	No
13.	Sepulveda Boulevard & Centinela Avenue	AM	1.024	F	1.024	F	0.000	No
		PM	0.909	E	0.914	E	0.005	No
14.	Marina (SR-90) Freeway & Slauson Avenue	AM	0.673	B	0.674	B	0.001	No
		PM	0.783	C	0.784	C	0.001	No

Note:
V/C - Volume to Capacity Ratio

LOS - Level of Service

[1] All signalized intersections include V/C credit of 0.10 to account for ATSAC and ATCS. Note that ATCS credit of 0.03 is not automatically reflected on the capacity calculation worksheets in the appendices.

[2] Unsignalized intersection - stop-controlled on minor approach(es). Per the City of Los Angeles Department of Transportation, CMA methodology was used to determine the LOS using a capacity of 1200.

* Per the City of Los Angeles traffic study guidelines: "*In reviewing unsignalized intersections, only intersections that are adjacent to the project or that are expected to be integral to the project's site access and circulation plan should be identified as study intersections. For these intersections, the overall intersection delay should be measured pursuant to procedures accepted by LADOT during the scoping process. If, based on the estimated delay, the resultant LOS is E or F in the "future with project" scenario, then the intersection should be evaluated for the potential installation of a new traffic signal. The study shall include a traffic signal warrant analysis prepared pursuant to Section 353 of LADOT's Manual of Policies and Procedures and submitted to LADOT for review and approval. Unsignalized intersections shall only be evaluated to determine the need for the installation of a traffic signal or other traffic control device but will not be included in the impact analysis*."

PROJECT IMPACTS

Using the specified significant impact criteria, the traffic impacts at the analysis locations were determined. Table 5 identifies the individual impacts during both A.M. and P.M. peak hours at each of the analysis locations. It can be observed that none of the study intersections would be significantly impacted by the Proposed Project

The City of Los Angeles also provides guidelines for evaluating unsignalized intersection locations. The guidelines state that: "*In reviewing unsignalized intersections, only intersections that are adjacent to the project or that are expected to be integral to the project's site access and circulation plan should be identified as study intersections. For these intersections, the overall intersection delay should be measured pursuant to procedures accepted by LADOT during the scoping process. If, based on the estimated delay, the resultant LOS is E or F in the "future with project" scenario, then the intersection should be evaluated for the potential installation of a new traffic signal. The study shall include a traffic signal warrant analysis prepared pursuant to Section 353 of LADOT's Manual of Policies and Procedures and submitted to LADOT for review and approval. Unsignalized intersections shall only be evaluated to determine the need for the installation of a traffic signal or other traffic control device but will not be included in the impact analysis*."

The unsignalized intersection of Grosvenor Boulevard/Jefferson Boulevard is integral to the Project's site access and circulation plan. Intersection delay at this location was estimated for the Future Cumulative (2013) Plus Project conditions. The Highway Capacity Manual (HCM) method of analysis for stop-controlled intersections was used to determine the delay and corresponding level of service. Intersection delay is defined as the average delay experienced by drivers at the intersection who must stop or yield to unimpeded major street traffic. This method uses a "gap acceptance" technique to predict driver delay. This methodology is applicable to unsignalized intersections where there is potential for difficulty for cross-traffic due to heavy traffic volumes on the major street.

As indicated in Table 5, the intersection of Grosvenor Boulevard/Jefferson Boulevard is projected to operate at a failing level of service, LOS F, during both the morning and evening peak hours. Therefore, traffic signal warrants analysis was prepared to determine the need for the installation of a traffic signal. Two warrants namely Warrant 2 – Four-Hour Vehicular Volume, and Warrant 3 – Peak Hour Volumes were satisfied for Cumulative (2013) Plus Project conditions at the intersection of Grosvenor Boulevard/Jefferson Boulevard.

The HCM capacity calculation worksheets and signal warrant analysis are attached in Appendix H.

RECOMMENDED MITIGATION MEASURE

In order to address the traffic operations at Grosvenor Boulevard/Jefferson Boulevard, the following mitigation measure is recommended for the Project. It is recommended that a traffic signal be installed at this intersection. This signal would also include the provision of Automated Traffic Surveillance and Control (ATSAC) System and Adaptive Traffic Control System (ATCS). A traffic signal at this location will provide required control at this intersection and accommodate the Proposed Project's traffic for improved operations. Additionally, a traffic signal at this location will allow for safe left-turns in and out of Grosvenor Boulevard and provide a safer pedestrian connection to destinations within Playa Vista located south of the Project site. This will also alleviate existing and future traffic circulation issues at the intersection of Westlawn Avenue/Jefferson Boulevard.

Table 5 also summarizes the effects of the traffic signal at Grosvenor Boulevard/Jefferson Boulevard. As indicated, Grosvenor Boulevard/Jefferson Boulevard would improve to a very good level of service, LOS A, during both the morning and evening peak hours with the proposed traffic signal.

The capacity calculation worksheets are attached in Appendix I.

V. LOS ANGELES COUNTY TRAFFIC IMPACT ANALYSIS

This section presents assessment of traffic conditions for two of the study intersections using the County of Los Angeles' methodology, guidelines and significant impact criteria. These two intersections are both in the County of Los Angeles as well as City of Los Angeles jurisdictions and include Centinela Avenue/Juniette Street and Centinela Avenue/Jefferson Boulevard.

Per Los Angeles County guidelines, the following scenarios were analyzed:

- Future (2013) with Ambient Growth Base Conditions - Future traffic conditions without the Proposed Project have been developed for the year 2013. The objective of this analysis is to project future traffic growth and operating conditions, which could be expected to result from regional growth in the vicinity of the study area by the year 2013. The resulting volumes for this scenario are shown in Figure 4 (Chapter III).

- Future (2013) with Ambient Growth Plus Project Conditions - The net traffic expected to be generated by the Proposed Project is estimated and added to the Future with Ambient Growth Base (2013) traffic forecasts. The resulting volumes for this scenario are shown in Figure 11. The impacts of the Proposed Project on future traffic operating conditions are then identified.

- Future (2013) with Ambient Growth Plus Project and Related Projects Conditions – The net traffic expected to be generated by the Proposed Project and related projects is estimated and added to the Future with Ambient Growth Base (2013) traffic forecasts. The impacts of the cumulative projects (including the Proposed Project) on future traffic operating conditions are then identified. The resulting volumes for this scenario are the same as the Cumulative (2013) Plus Project volumes (shown in Figure 10 – Chapter 3).

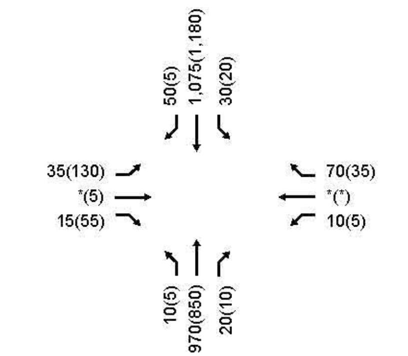
The traffic volumes for these scenarios were developed in the same manner as described in Chapter III of this report. The resulting volumes at the two intersections are included in Appendix J.

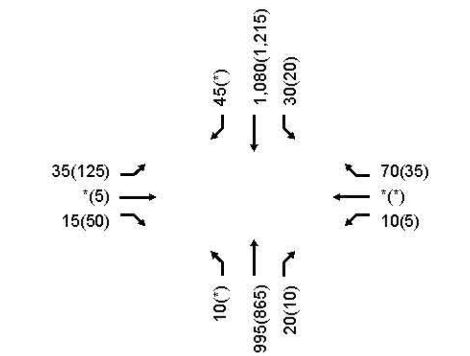
The traffic impact analysis compares the volume to capacity (V/C) ratios at each study location under the future base and future plus project conditions to determine the incremental difference in V/C ratios caused by the Proposed Project. An additional analysis compares the future base and

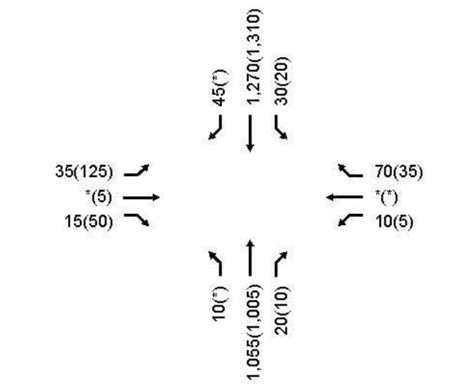
FIGURE 11
TRAFFIC VOLUMES
FOR LOS ANGELES COUNTY TRAFFIC IMPACT ANALYSIS

INT	STREET	Future (2009) w/Ambient Growth	Future (2009) w/Ambient Growth Plus Project	Future (2009) w/Ambient Growth Plus Project and Related Projects

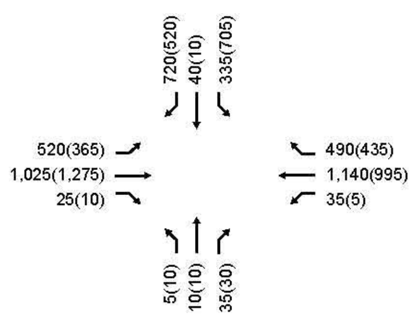
8. N/S: CENTINELA AV
E/W: JUNIETTE ST

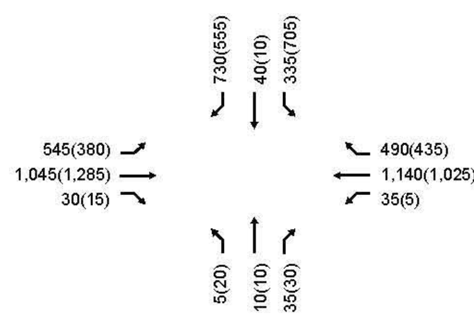


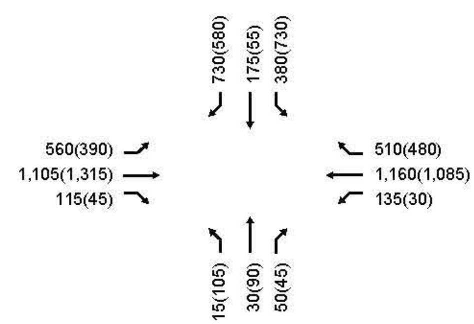




9. N/S: CENTINELA AV
E/W: JEFFERSON BL







LEGEND:
XXX(XXX) - AM(PM) Peak Hour Traffic Volumes
Rounded to the nearest 5 vehicles.
* - Negligible Volume.

future plus project and related projects to determine the cumulative impacts. These provide the information needed to assess the potential project impacts and cumulative impacts, respectively, using significance criteria established by the County of Los Angeles.

LEVEL OF SERVICE METHODOLOGY

The Intersection Capacity Utilization (ICU) method of intersection analysis, per the County of Los Angeles traffic impact study guidelines for analyzing intersection conditions, was used to determine the intersection volume to capacity (V/C) ratio and corresponding level of service at each study intersection. A capacity of 1,600 vehicles per lane per hour and 2,880 for dual left-turn lanes was assumed in the capacity calculations in accordance with the guidelines.

SIGNIFICANT TRAFFIC IMPACT CRITERIA

The County of Los Angeles Department of Public Works has established threshold criteria that determine if a project has a significant traffic impact at a specific intersection. According to the criteria provided by the County of Los Angeles, a project impact is considered significant if the following conditions are met:

Intersection Condition With Project Traffic		Project-Related Increase in V/C Ratio
LOS	V/C Ratio	
C	0.701 – 0.800	equal to or greater than 0.040
D	0.801 – 0.900	equal to or greater than 0.020
E, F	> 0.900	equal to or greater than 0.010

Using these criteria, for example, a project would not have a significant impact at an intersection if it is operating at LOS C after the addition of project traffic and the incremental change in the V/C ratio is less than 0.040. However, if the intersection is operating at a LOS F after the addition of project traffic and the incremental change in the V/C ratio is 0.010 or greater, the project would be considered to have a significant impact.

FUTURE (2013) WITH AMBIENT GROWTH BASE TRAFFIC CONDITIONS

The Future (2013) with Ambient Growth Base without Proposed Project peak hour traffic volumes were analyzed at the two study intersections to determine the V/C ratio and corresponding level of service. Table 6 presents the results of the Year 2013 Ambient Growth Base (without project) traffic analysis. As indicated in the table, both of the analyzed intersections are projected to operate at LOS D or better during both the morning and evening peak hours.

Capacity calculation worksheets for Future (2013) with Ambient Growth Base conditions are attached in Appendix J of the report.

FUTURE (2013) WITH AMBIENT GROWTH PLUS PROJECT TRAFFIC CONDITIONS

The Future (2013) with Ambient Growth Plus Project peak hour traffic volumes were analyzed to determine the volume to capacity (V/C) ratio and LOS at each of the analyzed intersections. The results of this analysis are also summarized on Table 6. Table 6 indicates that traffic generated by the Project would change the intersection level of service from future base conditions at one of the two study intersections. The Centinela Avenue/Jefferson Boulevard intersection is projected to operate at LOS C during the evening peak hour under Future (2013) with Ambient Growth Plus Project conditions compared to LOS B under Future (2013) with Ambient Growth Base conditions.

Capacity calculation worksheets for Future (2013) with Ambient Growth Plus Project conditions are attached in Appendix J of the report.

PROJECT IMPACTS

Using the specified significant impact criteria, the traffic impacts at the two analysis locations were determined. Table 6 identifies the individual impacts during both A.M. and P.M. peak hours at each of the analysis locations. It can be observed that none of the analyzed intersections would

TABLE 6
INTERSECTION LEVEL OF SERVICE ANALYSIS
LOS ANGELES COUNTY METHODOOLOGY [1]

No.	Intersection	Peak Hour	Future (2013) with Ambient Growth Base Conditions V/C	Future (2013) with Ambient Growth Base Conditions LOS	Future (2013) with Ambient Growth Plus Project Conditions V/C	Future (2013) with Ambient Growth Plus Project Conditions LOS	Project Increase in V/C	Significant Project Impact	Future (2013) with Ambient Growth Plus Project & Related Projects V/C	Future (2013) with Ambient Growth Plus Project & Related Projects LOS	Increase in V/C	Significant Impact
8.	Centinela Avenue & Juniette Street	AM	0.412	A	0.410	A	-0.002	No	0.449	A	0.037	No
		PM	0.471	A	0.471	A	0.000	No	0.491	A	0.020	No
9.	Centinela Avenue & Jefferson Boulevard	AM	0.806	D	0.814	D	0.008	No	0.824	D	0.018	No
		PM	0.697	B	0.707	C	0.006	No	0.739	C	0.038	No

[1] Level of service based on Intersection Capacity Utilization (ICU) methodology.

be significantly impacted by the Proposed Project. Therefore, no mitigation measures would be required for the Proposed Project.

FUTURE (2013) AMBIENT GROWTH PLUS PROJECT AND RELATED PROJECTS TRAFFIC CONDITIONS

The Future (2013) with Ambient Growth Plus Project and Related Projects peak hour traffic volumes were analyzed to determine the volume to capacity (V/C) ratio and LOS at the two analyzed intersections. The results of this analysis are summarized on Table 6. Table 6 indicates that traffic generated by the cumulative projects would change the intersection level of service from future base conditions at one of the two study intersections. The Centinela Avenue/Jefferson Boulevard intersection is projected to operate at LOS C during the evening peak hour under Future (2013) with Ambient Growth Plus Project and Related Project conditions compared to LOS B under Future (2013) with Ambient Growth Base conditions.

Capacity calculation worksheets for Future (2013) with Ambient Growth Plus Project and Related Projects conditions are attached in Appendix J of the report.

CUMULATIVE PROJECTS IMPACTS

Using the specified significant impact criteria, the traffic impacts at the two analysis locations were determined. Table 6 identifies the individual impacts during both A.M. and P.M. peak hours at each of the analysis locations. It can be observed that none of the analyzed intersections would be significantly impacted by the cumulative effects of Proposed Project and related projects. Therefore, no mitigation measures would be required under cumulative conditions.

VI. REGIONAL/CMP ANALYSIS

This section presents the Congestion Management Program (CMP) transportation impact analysis. This analysis was conducted in accordance with the procedures outlined in the *Congestion Management Program for Los Angeles County* (Los Angeles County Metropolitan Transportation Authority, July 2004). The CMP requires that when a traffic impact report is prepared for a project, traffic impact analyses be conducted for select regional facilities based on the quantity of project traffic expected to use these facilities.

CMP TRAFFIC IMPACT ANALYSIS

The CMP guidelines for determining the study area of the analysis for CMP arterial monitoring intersections and for freeway monitoring locations are as follows:

- All CMP arterial monitoring intersections where the proposed project will add 50 or more trips during either the AM or PM weekday peak hours of adjacent street traffic.
- All CMP mainline freeway monitoring locations where the proposed project will add 150 or more trips, in either direction, during either the AM or PM weekday peak hours.

The nearest CMP arterial monitoring intersections to the project site are the intersections of Lincoln Boulvard/SR-90 Ramps and Centinela Avenue/Venice Boulevard. Based on the incremental project trip generation estimates presented in Chapter III, the Proposed Project is not expected to add 50 or more new trips per hour to these locations. Therefore, no further analysis of this CMP monitoring intersection is required.

The nearest mainline freeway monitoring location to the project site is the San Diego Freeway (I-405) north of La Tijera Boulevard. Based on the incremental project trip generation estimates, the Proposed Project will not add 150 or more new trips per hour to this location in either direction. Therefore, no further analysis of CMP freeway monitoring stations is required.

VII. PARKING & ACCESS/CIRCULATION ANALYSIS

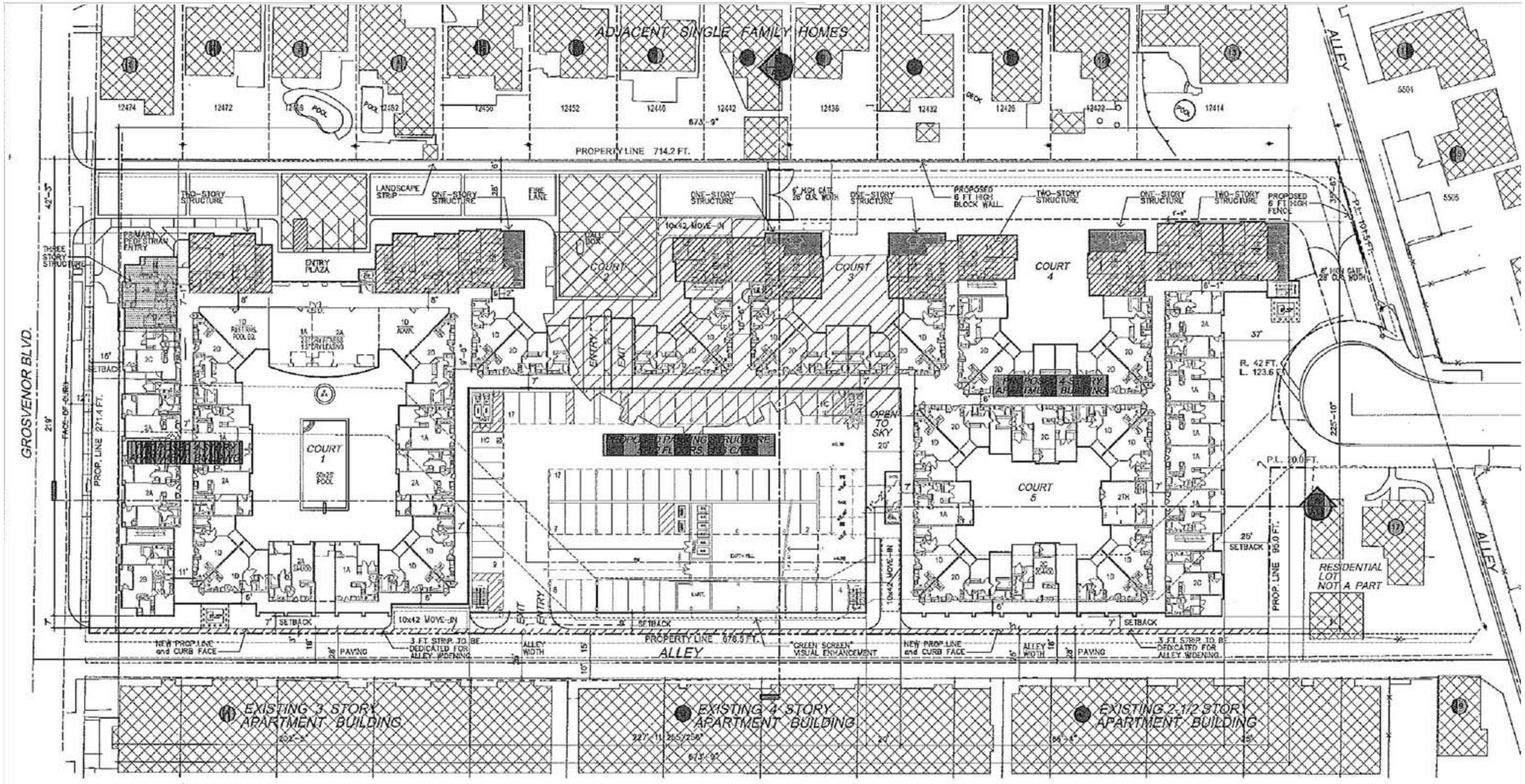
This chapter provides an evaluation of parking and access/circulation in the immediate vicinity of the site. The parking evaluation consists of examining the required parking for the proposed uses and comparing the same to the proposed parking supply for the Project. The access and egress evaluation consists of a review of vehicular access and egress driveways to ascertain that adequate provisions are included in the Project design features. Additionally, the provisions for on-site and local circulation in the vicinity of the Project are also assessed in this chapter.

PARKING CODE REQUIREMENTS

The Proposed Project consists of 216 multi-family dwelling units (apartments). Of the 216 dwelling units, 106 dwelling units will have one bedroom and 112 dwelling units will have 2 bedrooms. The Project would provide a total of 438 spaces, a multi-level parking structure containing 433 parking spaces for the residents and guests and five spaces at-grade. The existing site includes a 38,987 square-foot church and a single-family residence (rented out by the church) that will be removed. The Project site plan is shown in Figure 12.

The required parking for multi-family residential per the County of Los Angeles parking requirements follows:

- 1-bedroom apartment – 1 ½ covered space per dwelling unit
- 2 (+)-bedroom apartment – 1 ½ covered spaces plus ½ uncovered spaces
- Guest parking (a minimum of 10 dwelling units) - 1 space per 4 dwelling units



PROJECT INFORMATION

SUPERVISORIAL DISTRICT:	2
EXISTING ZONE:	R-3-DP (4.79 ACRES) & R-1(0.14 ACRES)
PROPOSED ZONE:	R-4-DP
EXISTING LAND USE CATEGORY:	LOW DENSITY RESIDENTIAL
PROPOSED LAND USE CLASSIFICATION:	HIGH DENSITY RESIDENTIAL
ASSESSORS PARCEL NUMBERS:	4211-003-058 & 4211-003-041
ADDRESS:	5550 GROSVENOR BOULEVARD

PROJECT STATISTICS

GROSS LOT AREA:	4.93 ACRES GROSS	(214,750 S.F.)
NET LOT AREA:	4.32 ACRES NET	(188,172 S.F.)
TOTAL UNITS:	106 - 1BR, 110 - 2BR,	216 TOTAL
DENSITY:	50 DU/AC	(871 S.F. PER UNIT)

PARKING SUMMARY

PARKING REQUIRED:

1.5 SPACES X 106 1BR. APT = 159
2.0 SPACES X 110 2BR. APT = 220
1.0 GUEST PER 4 UNITS = 54
TOTAL = 433

PARKING PROVIDED:

433 IN PARKING STRUCTURE
5 ON GRADE AT LEASING

BUILDING SUMMARY:

APARTMENTS		QTY.	
1A -	1 BR. 1 BA.	37	
1C -	1 BR. 1BA.	5	
1D -	1 BR. 1 BA.	62	
2A -	MOD 1BR. 1B	1	
2C -	MOD 1BR. 1BA	1	
	SUBTOTAL:	106	49 %
2A-	2 BR. 2 BA.	28	
2B-	2 BR. 2 BA.	7	
2C-	2 BR. 2 BA.	25	
2D-	2 BR. 2 BA.	48	
2TH	2BR.TOWNHOUSE	2	
	SUB TOTAL:	110	51 %
TOTAL		216	

LEASING / REC. 4,009 S.F.

X-8.09-S 12-03-08

N
Not to scale

SOURCE: ARCHITECTS ORANGE

FIGURE 12
PROJECT SITE PLAN

RAJU Associates, Inc.

Based on these requirements, the Proposed Project would require a total of 433 spaces (106 d.u. x 1.5 spaces/d.u. = 159 spaces; 110 d.u. x 2 spaces/d.u. = 220 spaces; 216 d.u. x 0.25 space/d.u. = 54 spaces). A total of 438 spaces are being provided on-site (433 within the parking structure and five spaces at-grade).

ACCESS AND CIRCULATION

Currently, driveways located on Grosvenor Boulevard and Juniette Street provide full access to the existing church site. As proposed, the Project would have one driveway on Grosvenor Boulevard providing access to the northern entrance/exit of the parking structure. The east-west alley located south and adjacent to the project will provide access to the southern entrance/exit of the parking structure. This alley is accessible from Juniette Street, Grosvenor Boulevard and Jefferson Boulevard.

Summarizing, the parking and access/circulation associated with the Proposed Project would be adequate.

VIII. SUMMARY OF CONCLUSIONS

This study was undertaken to assess existing traffic conditions, estimate future conditions with and without the proposed project, analyze potential traffic impacts of the proposed project, assess required improvements and identify/recommend project mitigation to alleviate the significant traffic impacts on the transportation system. Raju Associates, Inc. performed this detailed study and the following summarizes the results of the analysis:

- A total of 14 intersections were analyzed within the study area for this Project. These locations are within the area bounded by Washington Boulevard on the north, Centinela Avenue/Sepulveda Boulevard on the south, Lincoln Boulevard on the west and Sepulveda Boulevard on the east.

- Currently, all 14 of the analyzed intersection locations are operating at acceptable levels of service (LOS D or better) during both the morning and evening peak hours.

- In the Cumulative (Future Year 2013) Base conditions, i.e., future conditions without the implementation of the proposed project, 13 of the 14 analyzed intersection locations are projected to operate at acceptable levels of service (LOS D or better) during both the morning and evening peak hours. The intersection of Sepulveda Boulevard/Centinela Avenue is projected to operate at LOS F during the morning peak hour and LOS E during the evening peak hour.

- The Proposed Project consists of 216 multi-family dwelling units (apartments) including a parking structure with 433 spaces and five spaces at-grade. The existing site includes a 38,987 square-foot church and a single-family residence that will be removed. The Project is estimated to generate a net total of 88 trips during the morning peak hour and 115 trips during the evening peak hour.

- In the Cumulative (Future Year 2013) Plus Project conditions, both AM and PM peak hour operating conditions would be similar to those projected for the Cumulative Base conditions. Thirteen of the 14 analyzed intersection locations are projected to operate at acceptable levels of service (LOS D or better) during both the morning and evening peak hours. The intersection of Sepulveda Boulevard/Centinela Avenue is projected to operate at LOS F during the morning peak hour and LOS E during the evening peak hour.

- The Cumulative (Future Year 2013) Plus Project traffic conditions indicate that the Proposed Project would not cause a significant traffic impact at any of the study intersections.

- In order to address the traffic operations at Grosvenor Boulevard/Jefferson Boulevard, it is recommended that a traffic signal be installed at this intersection. This signal would also include the provision of Automated Traffic Surveillance and Control (ATSAC) System and Adaptive Traffic Control System (ATCS). A traffic signal at this location will provide required control at this intersection and accommodate the Proposed Project's traffic for improved operations.

- Traffic impact analysis at two intersections namely Centinela Avenue at Juniette Street and Centinela Avenue at Jefferson Boulevard were conducted using the County of Los Angeles guidelines for traffic studies and significant impact criteria. There would be no significant project impact as well as no significant cumulative impact at these locations during Future Year 2013 conditions.

- Parking and access/circulation systems were assessed. A review of the Project's site plan indicates that the parking, access and circulation systems would function adequately and that there would be no adverse impact from the Proposed Project.

APPENDIX A

Memorandum of Understanding

SCOPING FOR TRAFFIC STUDY

This Memorandum of Understanding (MOU) acknowledges Los Angeles Department of Transportation (LADOT) requirements of traffic impact analysis for following project:

Project name: **Playa Del Rey Apartment Project**
Project address: **County of Los Angeles, CA**
Project description: **Project consists of 216 multi-family (apartment) dwelling units replacing existing 38,987 s.f. Church of Religious Science**

Geographic Distribution: N **25%** S **25%** E **25%** W **25%**
(Attach graphic illustrating project trip distribution percentages at the studied intersections)

Trip Generation Rate(s) Source: **ITE Trip Generation, 8th Edition (see Attachment A)**

	Land Use: **Apartment**		Land Use		Land Use (Existing): **Church**	
	In	out	in	out	in	out
AM Trips	**22**	**88**			**-14**	**-8**
PM Trips	**88**	**48**			**-10**	**-11**

Project Buildout Year: **2013**
Ambient or CMP Growth Rate: **2%**
Related Projects: **See Attachment C.**

Study Intersections: (Subject to revision after CMP requirement, related projects, trip generation and distribution are determined)

1. **Centinela Avenue/Culver Boulevard**
2. **Centinela Avenue/SR-90 WB Ramps**
3. **Centinela Avenue/SR-90 EB Ramps**
4. **Centinela Avenue/Juniette Street**
5. **Centinela Avenue/Jefferson Boulevard**
6. **Lincoln Boulevard/Jefferson Boulevard**
7. **Westlawn Avenue/Jefferson Boulevard**
8. **Grosvenor Boulevard/Jefferson Boulevard**
9. **Inglewood Bl-Centinela Av/Jefferson Boulevard**
10. **I-405 NB Ramps/Jefferson Boulevard**
11. **I-405 SB Ramps/Jefferson Boulevard**
12. **Sepulveda Boulevard/Centinela Avenue**
13. **Centinela Avenue/Washington Boulevard**
14. **Marina (SR-90) Fwy/Slauson Avenue**

Trip Credits: (Exact amount of credit subject to approval by LADOT)

	Yes	no
Transportation Demand Management (TDM)		**X**
Existing Active Land Use	**X**	
Previous Land Use		**X**
Internal Trip		**X**
Pass By Trip		**X**
Transit		**X**

This analysis must follow latest LADOT traffic study guidelines

	Consultant	Developer
Name	**Raju Associates**	**Dell Tokes, Din/Cal, Inc.**
Address	**524 Rosemead Bl, Pasadena, Ca**	**341 Richmond Avenue, Houston, TX 77046**
Phone No.	**626-792-2700**	

Approved by:

Consultant's Representative   Date   LADOT's Representative   Date

ATTACHMENT A
ESTIMATED PROJECT TRIP GENERATION

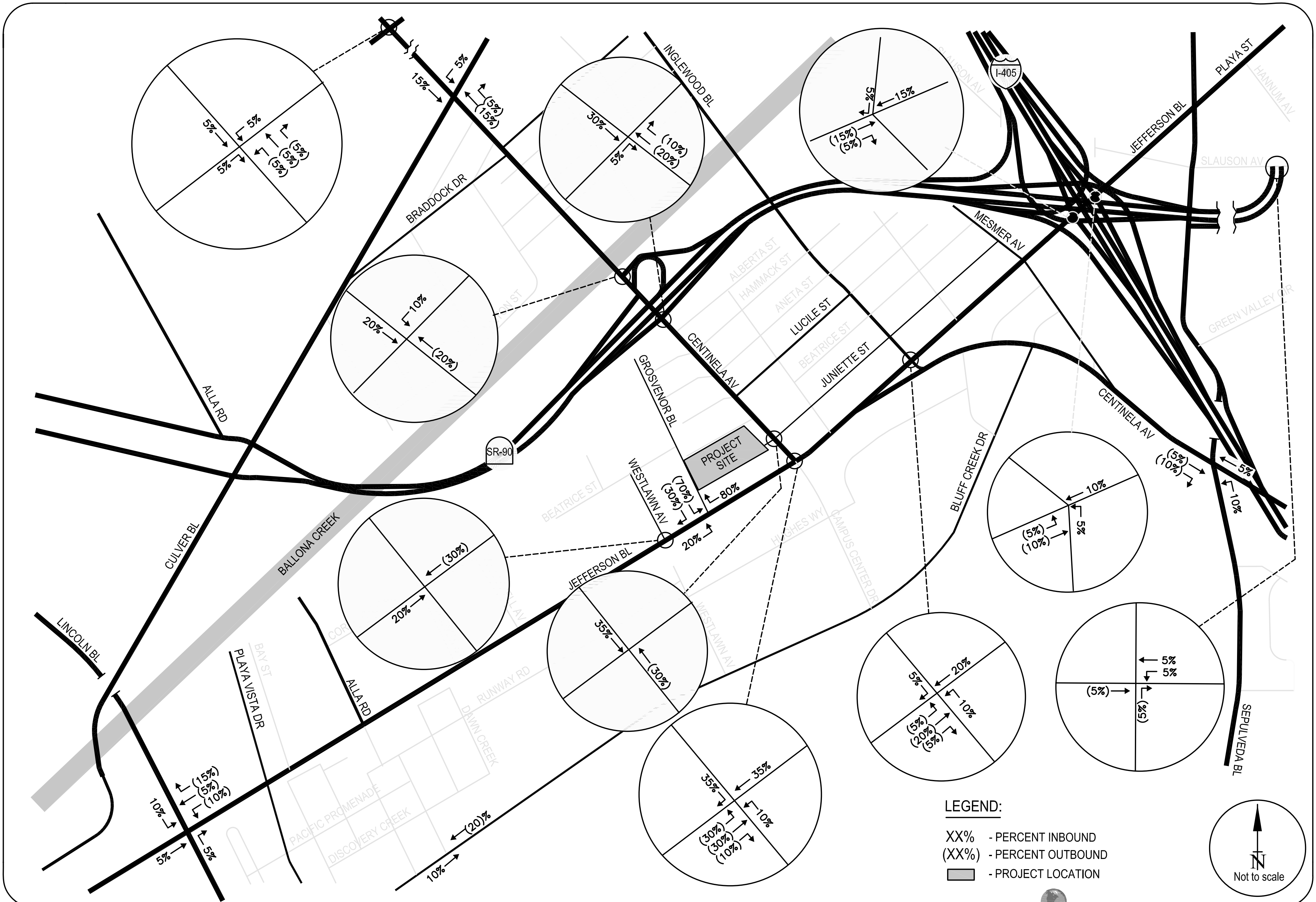
	Size	Daily	AM Peak Hour			PM Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Project Apartment	216 d.u.	1,433	22	88	110	88	48	136
Existing Uses-To be removed Church	(38,987) s.f.	(355)	(14)	(8)	(22)	(10)	(11)	(21)
Net Project Trip Generation Total		1,078	8	80	88	78	37	115
Trip Rates [1] Apartment (ITE Land Use 220) Church (ITE Land Use 560)	 Trips per d.u. Trips per 1,000 s.f.	 [2] 9.11	 20% 62%	 80% 38%	 [2] 0.56	 65% 48%	 35% 52%	 [2] 0.55

[1] Rates from ITE, *Trip Generation, 8th Edition, Informational Report*

[2] Trip generation for apartment was calculated using the following formulas:

Daily: $T = 6.06(X) + 123.35$
AM Peak Hour: $T = 0.49 (X) + 3.73$
PM Peak Hour: $T = 0.55 (X) + 17.65$

Where:
T = Two-way volume of traffic (total trip-ends)
X = Area in 1,000 gross square feet of leasable area



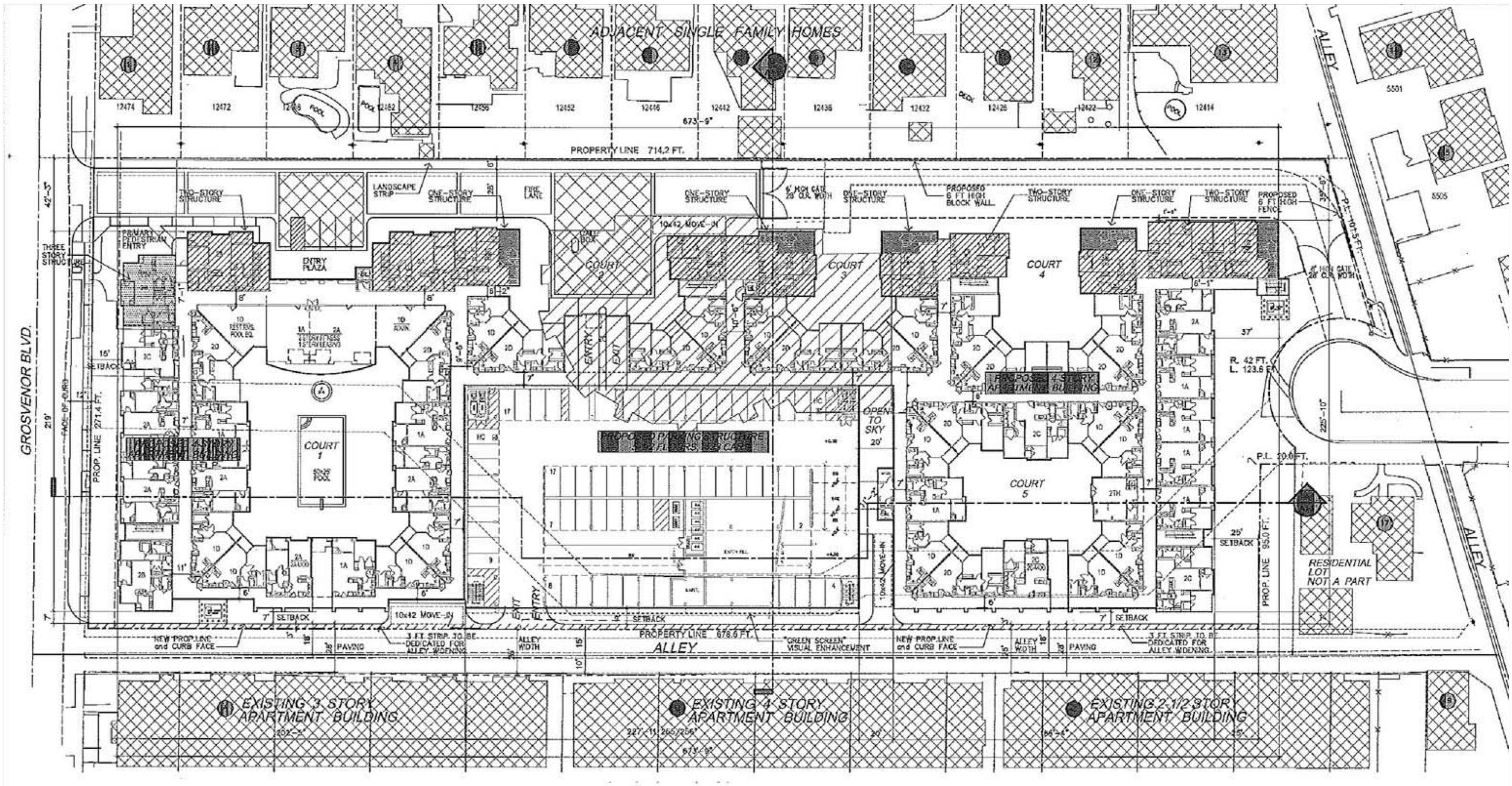
ATTACHMENT B
PROJECT TRIP DISTRIBUTION

RAJU Associates, Inc.

ATTACHMENT C
ESTIMATED WEEKDAY TRIP GENERATION OF RELATED PROJECTS

Map No.	Project Name	Location	Description	Daily	AM Peak Hour IN	AM Peak Hour OUT	AM Peak Hour TOTAL	PM Peak Hour IN	PM Peak Hour OUT	PM Peak Hour TOTAL
City of Los Angeles [1]										
1	Mixed-Use Project	4004 Lincoln Boulevard	Condominium 98 units, Retail 6,020 s.f.	841	11	39	50	59	40	99
2	Villa Marina Project [2]	4350 Lincoln Boulevard	Condominium 244 units, Shopping Center 9,000 s.f.; To be removed: Shopping Center -21,038 s.f	903	11	84	95	73	10	83
3	Mixed-Use Project	4363 Lincoln Boulevard	Condominium 158 units, Shopping Center 3,178 s.f., To be removed: Car Rental Facility -48,000 s.f.	386	0	47	47	53	18	71
4	Mixed-Use Project	NWC Princeton Drive/ Carter Avenue	Apartments 298 units; To be removed: Light Manufacturing -24,000 s.f., Office -21,600 s.f., Auto Service/Repair -40,000 s.f.	860	-70	103	33	47	-79	-32
5	Condominium Project	4155 Redwood Avenue	Condominium 118 units	691	9	43	52	41	20	61
6	Condominium Project	4055, 4063, 4071 S Redwood Avenue	Condominiums 140 units	820	11	51	62	65	33	98
7	Condominium Project	4050 Glencoe Avenue	Condominium 77 units	451	6	28	34	27	13	40
8	Apartment Project	4080 Glencoe Avenue	Apartment 64 units	430	7	26	33	26	14	40
9	Del Rey Lofts	4115 Glencoe Avenue and 4133 Redwood Avenue	Condominium 49 units, Apartment 52 units	636	9	40	49	38	19	57
10	Condominium Project	4131 Glencoe Avenue	Condominium 117 units	686	9	42	51	41	20	61
11	Mixed-Use Project	12700 Braddock Drive	Warehouse 134,557 s.f., Office 1,357 s.f.; To be removed: University of CA Laundry -58,323 s.f.	493	22	2	24	36	136	172
12	Condominium Project	Trolley Place and Vista Del Mar	Condominium 46 units	270	3	17	20	21	11	32
13	Mixed-Use Project	220 Culver Boulevard	Apartment 63 units, Retail 6,000 s.f.; To be removed: Restaurant -4,000 s.f.	180	13	7	20	29	31	60
14	Mixed-Use Project	6819 Pacific Avenue	Apartment 29 units, Restaurant 3,000 s.f., Retail 1,000 s.f.	620	22	29	51	37	25	62
15	Mixed-Use Project	138 Culver Boulevard	Condominium 63 units, Retail 10,051 s.f.	712	10	28	38	46	36	82
16	The Village at Playa Vista	S/o Jefferson Boulevard/Westlawn Avenue	Office 1,750,000 s.f., Apartment 2,600 units, Retail 150,000 s.f., Community Serving Uses 40,000 s.f.	24,220	577	1049	1,626	1275	1,027	2,302
17	Playa Vista Mixed-Use Project [3]	Jefferson Bl b/t Lincoln Boulevard and Centinela Av	Includes 3,246 d.u., 2,142,050 s.f. of office use, 25,000 s.f. of retail use, 1,129,900 s.f of production and staging support, and 65,000 s.f. of community serving use. (Includes anticipated growth through 2013.)	40,771	3,647	1,489	5,136	2,640	3,327	5,967
18	Single Family Residential	7400 80th Street (assumed 15 % completed and occupied)	Single-Family Residential 120 units	1,220	25	70	95	82	46	128
19	Decron Development [3]	8601 Lincoln Boulevard	29,000 s.f. mixed use project	905	4	4	8	72	72	144
20	Apartment Project	8030-8040 Manchester Avenue	Apartment 204 units	1,371	21	83	104	96	47	143
County of Los Angeles										
21	Marina Del Rey Local Coastal Plan [4]	Marina del Rey	Development contained within Local Coastal Plan (Includes anticipated growth through 2013)	34,113	673	1,021	1,694	1,344	1,113	2,457
22	West Los Angeles Community College Master Plan and EIR [5]	Overland Av/Freshman Dr	Proposed Master Plan for the College to increase the student enrollment.	6,785	436	45	481	300	133	433
City of Culver City [6]										
23	FAYNSOD Family Trust	11501-11509 Washington Boulevard	6,411 g.s.f. mixed-use project consisting of three retail spaces and three apartment units on the second floor.	150	0	1	1	5	6	11
24	11957 Washington Bl Office Project	11957 Washington Boulevard	73,569 s.f. three-story Office building	810	100	14	114	19	91	110
25	Modification to CUP, Expanding School	12095-12101 Washington Boulevard	Conversion of a 20,090 s.f. Office building into classrooms and administration offices.	89	31	42	73	6	-12	-6
26	Baldwin Site	12803 W. Washington Boulevard	New three-story commercial (Office and Retalil) condominium building (retail ground floor) totaling 37,308 s.f.	808	41	10	51	29	54	83
27	Live/Work Units	13340 Washington Boulevard	41-unit Condominium development with 6 live/work Condominium units in Culver City and 35 Units in Los Angeles	240	3	15	18	14	7	21
28	Glencoe/Washington Mixed-Use Project	13365 Washington Boulevard	Retail 4,183 s.f., Condominium 19 units	333	5	9	14	13	11	24
29	Vehicle Repair Shop	11167 Washington Place	Construction of new Vehicle Repair Shop with 1,196 s.f. of repair area with 2 service bays and 191 s.f. of Office	40	2	2	4	2	2	4
30	Washington Place Office	12402 Washington Place	Office 30,400 s.f., Specialty Retail 9,300 s.f.	747	48	10	58	19	51	70
31	Westfiled Fox Hills Mall Expansion	6000 Fox Hills Mall	293,786 g.s.f. Retail and 427 parking spaces	5,377	63	41	104	255	276	531
32	Hampton Inn	3954 Sepulveda Boulevard	77-unit Hotel	629	26	17	43	24	21	45
33	Four-Unit Condominium	3972 Tilden Avenue	4-unit Condominiums	23	0	2	2	1	1	2
34	Four-Unit Condominium	4025 Wade Street	4-unit Condominiums	23	0	2	2	1	1	2
35	Office Expansion Project	5800 Uplander Way	Add 3 stories; 57,050 g.s.f. to a two-story 26,214 g.s.f Office	582	72	10	82	13	66	79
36	Fire Station No. 3	6030 Bristol Parkway	Two-story, 12,156 g.s.f. Fire Station	838	60	11	71	5	10	15
37	Radisson Office Tower (Entrada)	6161 Centinela Avenue	342,400 g.s.f. Office tower and parking structure addition	3,442	442	60	502	79	383	462
38	Office and Retail Building	700-701 Corporate Pointe	240,612 g.s.f. Office; 4,242 g.s.f. Retail	2,649	329	45	374	61	298	359
			TOTAL RELATED PROJECT TRIP GENERATION	135,144	6,678	4,638	11,316	6,994	7,378	14,372

[1] Related projects and trip generation totals (unless noted otherwise) provided by LADOT, 2009. Trip distribution based on *ITE Trip Generation Manual, 8th Edition*.
[2] Trip generation from *Memorandum for Villa Marina Residential Project Alternative Traffic Evaluation*, Kaku Associates, February 2005
[3] Trip generation from *Playa Vista Transportation Plan*. Approximately 3,000 d.u., 350,000 s.f. of office use, and 65,000 s.f. of community serving use already built.
[4] PM trip generation from *Marina del Rey Local Coastal Plan*. AM trip generation is based on rates included in *ITE Trip Generation Manual, 8th Edition*.
[5] Trip generation from *West Los Angeles College Master Plan EIR*, Jones & Stokes, 2004.
[6] Related projects and trip generation provided by the City of Culver City, 2009.



PROJECT INFORMATION

SUPERVISORIAL DISTRICT:	2
EXISTING ZONE:	R-3-DP (4.79 ACRES) & R-1(0.14 ACRES)
PROPOSED ZONE:	R-4-DP
EXISTING LAND USE CATEGORY:	LOW DENSITY RESIDENTIAL
PROPOSED LAND USE CLASSIFICATION:	HIGH DENSITY RESIDENTIAL
ASSESSORS PARCEL NUMBERS:	4211-003-068 & 4211-003-041
ADDRESS:	5550 GROSVENOR BOULEVARD

PROJECT STATISTICS

GROSS LOT AREA:	4.93 ACRES GROSS (214,750 S.F.)
NET LOT AREA:	4.32 ACRES NET (188,172 S.F.)
TOTAL UNITS:	106 - 1BR, 110 - 2BR, 216 TOTAL
DENSITY:	50 DU/AC (871 S.F. PER UNIT)

PARKING SUMMARY

PARKING REQUIRED:

1.5 SPACES X 106 1BR. APT = 159
2.0 SPACES X 110 2BR. APT = 220
1.0 GUEST PER 4 UNITS = 54
TOTAL = 433

PARKING PROVIDED:

433 IN PARKING STRUCTURE
5 ON GRADE AT LEASING

BUILDING SUMMARY:

APARTMENTS		QTY.	
1A -	1 BR. 1 BA.	37	
1C -	1 BR. 1BA.	5	
1D -	1 BR. 1 BA.	62	
2A -	MOD 1BR. 1B	1	
2C -	MOD 1BR. 1BA	1	
	SUBTOTAL:	106	49 %
2A-	2 BR. 2 BA.	28	
2B-	2 BR. 2 BA.	7	
2C-	2 BR. 2 BA.	25	
2D-	2 BR. 2 BA.	48	
2TH	2BR.TOWNHOUSE	2	
	SUB TOTAL:	110	51 %
TOTAL		216	
LEASING / REC.		4,009 S.F.	

X-BLDG-1, 12-02-09

N
Not to scale

SOURCE: ARCHITECTS ORANGE

ATTACHMENT D
PROJECT SITE PLAN

RAJU Associates, Inc.

SCOPING FOR TRAFFIC STUDY

This Memorandum of Understanding (MOU) acknowledges Los Angeles Department of Transportation (LADOT) requirements of traffic impact analysis for following project:

Project name: **Archstone Playa Del Mar Residential Project**
Project address: **County of Los Angeles, CA**
Project description: **Project consists of 218 multi-family (apartment) dwelling units replacing existing 38,987 s.f. Church of Religious Science**

Geographic Distribution: N **25%** S **25%** E **25%** W **25%**
(Attach graphic illustrating project trip distribution percentages at the studied intersections)

Trip Generation Rate(s) Source: **ITE Trip Generation, 7th Edition (see Attachment A)**

	Land Use: **Apartment**		Land Use		Land Use (Existing): **Church**	
	In	out	in	out	in	out
AM Trips	**22**	**89**			**-15**	**-13**
PM Trips	**90**	**48**			**-14**	**-12**

Project Buildout Year **2010**
Ambient or CMP Growth Rate **2%**
Related Projects: **See Attachment C.**

Study Intersections: (Subject to revision after CMP requirement, related projects, trip generation and distribution are determined)

1. **Centinela Avenue/Culver Boulevard**
2. **Centinela Avenue/SR-90 WB Ramps**
3. **Centinela Avenue/SR-90 EB Ramps**
4. **Centinela Avenue/Juniette Street**
5. **Centinela Avenue/Jefferson Boulevard**
6. **Lincoln Boulevard/Jefferson Boulevard**
7. **Westlawn Avenue/Jefferson Boulevard**
8. **Grosvenor Boulevard/Jefferson Boulevard**
9. **Inglewood Bl-Centinela Av/Jefferson Boulevard**
10. **I-405 NB Ramps/Jefferson Boulevard**
11. **I-405 SB Ramps/Jefferson Boulevard**
12. **Sepulveda Boulevard/Centinela Avenue**
13. **Centinela Avenue/Washington Boulevard**
14. **Marina (SR-90) Fwy/Slauson Avenue**

Trip Credits: (Exact amount of credit subject to approval by LADOT)

	Yes	no
Transportation Demand Management (TDM)		X
Existing Active Land Use	X	
Previous Land Use		X
Internal Trip		X
Pass By Trip		X
Transit		X

This analysis must follow latest LADOT traffic study guidelines

	Consultant	Developer
Name	**Raju Associates**	**Cynthia Eppledauer, Archstone Smith**
Address	**524 Rosemead Bl, Pasadena, Ca**	**1 Spectrum Pointe, Suite 225, Lake Forrest, CA**
Phone No.	**626-792-2700**	**949-455-4500**

Approved by:

Consultant's Representative 6/21/07 Date

LADOT's Representative 6/21/07 Date

EXHIBIT A
ESTIMATED PROJECT TRIP GENERATION

	Size	Daily	AM Peak Hour			PM Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Project Apartment	218 d.u.	1,461	22	89	111	90	48	138
Existing Uses-To be removed Church	(38,987) s.f.	(355)	(15)	(13)	(28)	(14)	(12)	(26)
Net Project Trip Generation Total		1,106	7	76	83	76	36	112
Trip Rates [1] Apartment (ITE Land Use 220) Church (ITE Land Use 560)	 Trips per d.u. Trips per 1,000 s.f.	 [2] 9.11	 20% 54%	 80% 46%	 [2] 0.72	 65% 52%	 35% 48%	 [2] 0.66

[1] Rates from ITE, *Trip Generation, 7th Edition, Informational Report*

[2] Trip generation for apartment was calculated using the following formulas:

Daily: T = 6.01(X) + 150.35
AM Peak Hour: T = 0.49 (X) + 3.73
PM Peak Hour: T = 0.55 (X) + 17.65

Where:
T = Two-way volume of traffic (total trip-ends)
X = Area in 1,000 gross square feet of leasable area

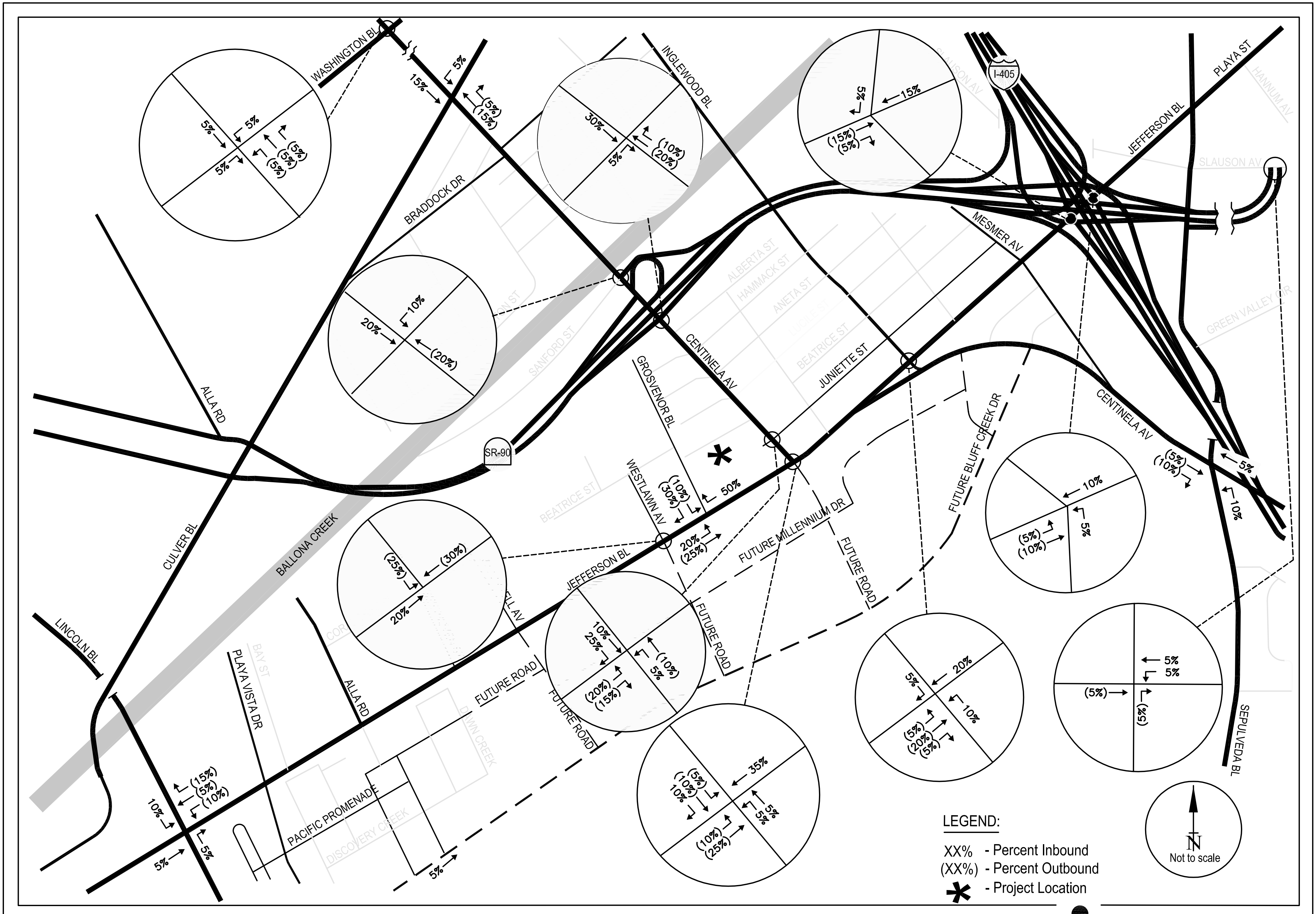


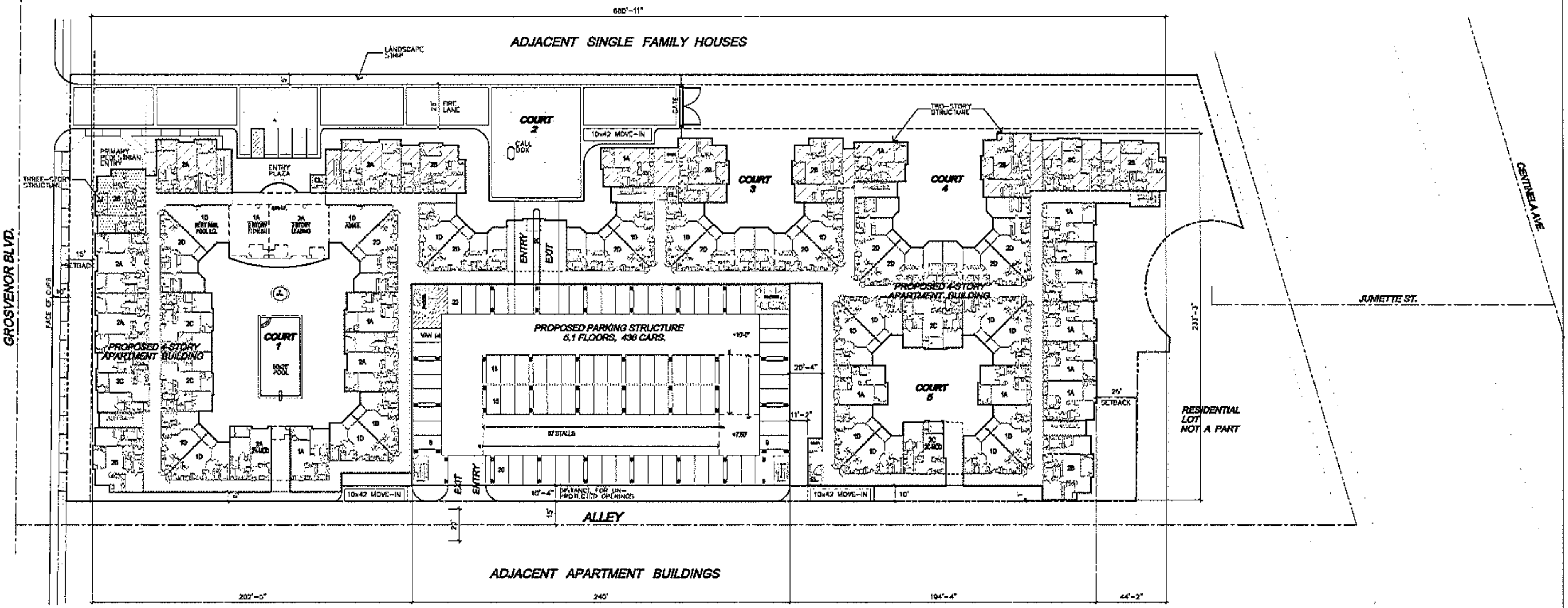
FIGURE 8
PROJECT TRIP DISTRIBUTION

RAJU Associates, Inc.

EXHIBIT C
ESTIMATED WEEKDAY TRIP GENERATION OF RELATED PROJECTS

Map No.	Project Name	Location	Description	Daily	AM Peak Hour			PM Peak Hour		
					IN	OUT	TOTAL	IN	OUT	TOTAL
City of Los Angeles										
1.	Villa Marina Project [1]	4350 Lincoln Bl	244 d.u. (condominium) and 9,000 s.f. of retail use	903	11	84	95	73	10	83
2.	Westchester Neighborhood School [2]	5401 Beethoven St	420 student private school	1,042	203	129	332	31	40	71
3.	Decron Development [2]	8601 Lincoln Bl	29,000 s.f. mixed use project	905	4	4	8	72	72	114
4.	Western Federal Credit Union [2]	8632 Sepulveda Bl	3,621 s.f. walk-in bank	n/a	0	0	0	25	25	50
5.	Westchester Lutheran School [2]	7831 Sepulveda Bl	600 student school expansion	250	39	25	64	14	18	32
6.	Marina Honda [2]	5850 Centinela Av	42,391 s.f. of new car sales	407	19	6	25	22	34	56
7.	LMU Day Care Center [2]	7900 Loyola Bl	16 employee day care center	450	42	37	79	39	44	83
8.	Playa Vista Mixed-Use Project [3]	Jefferson Bl b/t Lincoln Boulevard and Centinela Av	Includes 3,246 d.u., 2,142,050 s.f. of office use, 25,000 s.f. of retail use, 1,129,900 s.f of production and staging support, and 65,000 s.f. of community serving use. (Includes anticipated growth through 2009.)	16,688	1,346	626	1,972	687	1,451	2,138
County of Los Angeles										
9.	Marina Del Rey Local Coastal Plan [4]	Marina del Rey	Development contained within Local Coastal Plan	40,343	837	1,288	2,125	1,478	1,333	2,811
10.	West Los Angeles Community College Master Plan and EIR [5]	Overland Av/Freshman Dr	Proposed Master Plan for the College to increase the student enrollment.	6,785	436	45	481	300	133	433
City of Culver City [6]										
11.	Mixed Use Development	11281 Washington Pl	17,500 g.s.f. mixed use project w/ retail and residential.	751	11	7	18	32	34	66
12.	Culver City Muffler	11333 Washington Bl	2,500 g.s.f.	n/a	5	3	8	4	4	8
13.	FAYNSOD	11501-11509 Washington Bl	6,411 g.s.f. mixed-use project consisting of three retail spaces and three apartment units on the second floor.	150	0	1	1	5	6	11
14.	The Olson Co. Mixed-Use Project	12337-12449 Washington Bl	Mixed-use project consisting of 13,340 g.s.f. of commercial and 80 residential units.	1,196	16	34	50	63	41	104
15.	West Culver Lofts	12801-12823 Washington Bl	24 units; 12 live/work, and 12 residential lofts	141	2	9	11	8	4	12
16.	Commercial and Retail Development	13322 Washington Bl	4,257 g.s.f. commercial	896	15	9	24	38	41	79
17.	Live/Work Units	13340 Washington Bl	41 unit condominium development with 6 live/work condominium units in Culver City and 35 Units in Los Angeles	240	3	15	18	14	7	21
18.	Westfiled Fox Hills Mall Expansion	200 Fox Hills Mall	293,786 g.s.f. retail and 427 parking spaces	5,377	63	41	104	255	276	531
19.	Hampton Inn	3954 Sepulveda Bl	77-unit hotel	629	26	17	43	24	21	45
20.	Four-Unit Condominium	4025 Wade St	4-unit condominiums	23	0	2	2	1	1	2
21.	Grandview Palms	4061 Grandview Bl	62,737 g.s.f. multi-unit care facility	151	2	2	4	7	5	12
22.	Office and Retail Building	4447 Sepulveda Bl	9,000 g.s.f.	99	12	2	14	2	11	13
23.	Fire Station No. 3	6030 Bristol Pkwy	Two-story, 12,156 g.s.f. fire station	838	60	11	71	5	10	15
24.	Office and Retail Building	700-701 Corporate Pointe	240,612 g.s.f. office; 4,242 g.s.f. retail	2,649	329	45	374	61	298	359
25.	Symantec Office Development	800-900 Corporate Pointe	550,000 g.s.f. office, research/development, parking	4,910	639	87	726	118	578	696
26.	Veterinary Clinic	11182 Culver Bl	7,000 g.s.f. veterinary clinic with caretaker unit	220	13	12	25	18	18	36
			TOTAL RELATED PROJECT TRIP GENERATION	86,042	4,132	2,542	6,674	3,395	4,516	7,882

[1] Trip generation from *Memorandum for Villa Marina Residential Project Alternative Traffic Evaluation* , Kaku Associates, February 2005
[2] Trip generation totals provided by LADOT, July 2006. Trip distribution based on *ITE Trip Generation Manual, 7th Edition* .
[3] Trip generation from *Playa Vista Transportation Plan* . 2,000 d.u., 350,000 s.f. of office use, and 65,000 s.f. of community serving use already built.
[4] PM trip generation from *Marina del Rey Local Coastal Plan* . AM trip generation is based on rates included in *ITE Trip Generation Manual, 7th Edition* .
[5] Trip generation from *West Los Angeles College Master Plan EIR* , Jones & Stokes, 2004.
[6] Trip Generation provided by the City of Culver City, July 2005.



PROJECT SUMMARY:

APARTMENTS	QTY.	
1A- 1 BR. 1 BA.	34	
1D- 1 BR. 1 BA.	70	48.6%
2A-MOD 1BR. 1BA.	1	
2C-MOD 1BR. 1BA.	1	
2A- 2 BR. 2 BA.	27	
2B- 2 BR. 2 BA.	21	
2C- 2 BR. 2 BA.	24	51.4%
2D- 2 BR. 2 BA.	40	
TOTAL	218	

LEASING-ADMIN. 2,094 SQ.FT.
REC. CENTER 2,324 SQ.FT.

TOTAL ACRES 4.35 ACRES, 189,779 S.F.
DENSITY 50.0 DU/AC.
OCCUPANCY R-1, AND S4
TYPE OF CONSTRUCTION V - 1 HR; SPRINKLERED, AND TYPE I (GARAGE)

PARKING REQUIRED:
2.0 STALLS PER UNIT = 436

PARKING PROVIDED:
87 STALLS PER FLOOR = 5.1 FLOORS

SITE PLAN
FIRST LEVEL

0' 30' 60' 90'

SCALE: 1" = 30'-0"

06-211 MARCH 06, 2007

ARCHSTONE PLAYA DEL MAR

ARCHSTONE COMMUNITIES

1 SPECTRUM POINTE, SUITE 225, LAKE FOREST, CA (949) 455-4500

ARCHITECTS ORANGE

144 NORTH ORANGE ST., ORANGE, CALIFORNIA 92866 (714) 639-9860

RAJU Associates, Inc.

524 S. Rosemead Blvd.,
2nd Floor,
Pasadena, CA 91107
Voice:(626) 792-2700
Fax: (626) 792-2772

MEMORANDUM

TO: Mr. Jeff Pletyak, LACDPW
Mr. Suen Fei Lau, LACDPW
Mr. Aaron Clark, Armbruster & Goldsmith, LLP
Ms. Cynthia Eppledauer, Archstone Smith

FROM: Srinath Raju

SUBJECT: Archstone Playa Del Mar Residential Project Traffic Study Meeting Minutes

DATE: April 30, 2007 **REF:** RA236

This memorandum briefly details the minutes of the meeting held on April 24, 2007 at the LA County Department of Public Works' offices in Alhambra, CA. The following people were in attendance at the meeting:

1. Mr. Jeff Pletyak, LACDPW
2. Mr. Suen Fei Lau, LACDPW
3. Mr. Aaron Clark, Armbruster & Goldsmith, LLP
4. Ms. Cynthia Eppledauer, Archstone Goldsmith
5. Mr. Srinath Raju, Raju Associates Inc

Raju explained the purpose of the meeting was to discuss the assessment letter comments provided by the LACDPW staff for the traffic impact analysis for the Grosvenor Court Project (currently named the Archstone Playa Del Mar Project) that has since been updated.

Raju explained that the City of Los Angeles traffic impact analysis methodology was agreed to for the previously proposed Grosvenor Court Project (since the adjacent roadway system servicing the Project was entirely within the City of Los Angeles and that all the adjacent locations were controlled by the City) at the joint City of Los Angeles and County of Los Angeles meeting in June 2006.

Raju Associates Inc prepared a traffic study and submitted the same to the City of Los Angles and the County of Los Angeles. The City of Los Angeles Department of Transportation reviewed the report and approved the same. An assessment letter addressing the review of the traffic study was provided by the City of Los Angeles Department of Transportation.

However, the County Department of Public Works prepared a comment letter that suggested that the LA County methodology for preparation of traffic studies be used in the analysis of two intersections namely the Centinela at Juniette intersection and the Centinela / Jefferson Boulevard intersection since a portion of these two intersections were partially within the County of Los Angeles jurisdiction.

Mr. Lau mentioned that he would discuss with Mr. Bill Winter, Assistant Deputy Director of Public works relative to the need for doing this given that both these intersections are controlled by the City of Los Angeles. However, in the meantime, he suggested that Raju continue preparation of the traffic impact analysis at these two locations per County guidelines. The base assumptions relative to all other elements would remain the same as those detailed in the approved traffic report per the City of Los Angeles guidelines except that the related projects are refined to include only those projects or components thereof that would be completed by the project horizon year 2009. It was agreed among all the participants that the City of Los Angeles methodology for preparing the traffic impact analysis will be utilized in the conduct of this study for all locations and in addition, the Los Angeles County methodology would be used to study the traffic impacts at the Centinela / Jefferson and the Centinela / Juniette intersections per the County guidelines.

Next, Mr. Raju presented updated traffic generation details associated with trips to and from the updated Proposed Project. A trip generation table that detailed the Proposed Project trips, existing trips to be removed and the net new trips associated with the Project is included in Attachment A.

An updated MOU will be prepared for this Project and based on this Final MOU and the specific details noted above, the Traffic Study associated with the Proposed Project will be conducted. The study will be submitted to the City of Los Angeles, Culver City and the County simultaneously and all the comments would be collectively addressed as part of the study process.

If you have any questions, please do not hesitate to let Srinath Raju know.

ATTACHMENT A

TABLE 5
ESTIMATED PROJECT TRIP GENERATION

	Size	Daily	AM Peak Hour			PM Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Project Apartments	218 d.u.	1,465	22	89	111	88	47	135
Existing Uses-To be removed Church	(38,987) s.f.	(355)	(15)	(13)	(28)	(14)	(12)	(26)
Net Project Trip Generation Total		1,110	7	76	83	74	35	109
Trip Rates [1] Apartment (ITE Land Use 220) Church (ITE Land Use 560)	Trips per d.u. Trips per 1,000 s.f.	6.72 9.11	20% 54%	80% 46%	0.51 0.72	65% 52%	35% 48%	0.62 0.66

[1] Rates from ITE, *Trip Generation, 7th Edition, Informational Report*

APPENDIX B

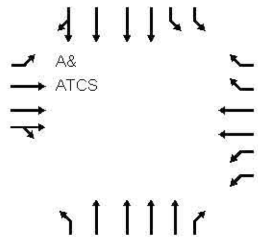
Intersection Lane Configurations

PLAYA DEL MAR PROJECT
INTERSECTION LANE CONFIGURATIONS

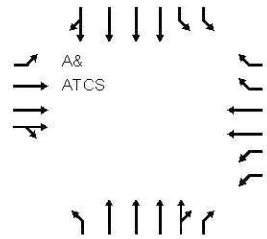
INT | STREET | EXISTING 2009 | YEAR 2013 CONDITIONS

1 N/S: LINCOLN BLVD
E/W: JEFFERSON BLVD

EXISTING 2009:

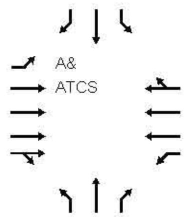


YEAR 2013 CONDITIONS:



2 N/S: WESTLAWN AV
E/W: JEFFERSON BLVD

EXISTING 2009:

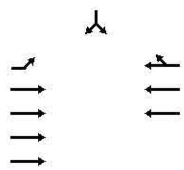


YEAR 2013 CONDITIONS: SAME AS EXISTING

3 N/S: GROSVENOR BLVD
E/W: JEFFERSON BLVD

* STOP SIGN ON MINOR APPROACH

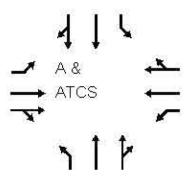
EXISTING 2009:



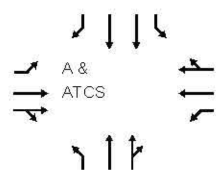
YEAR 2013 CONDITIONS: SAME AS EXISTING

4 N/S: CENTINELA AV
E/W: WASHINGTON BLVD

EXISTING 2009:

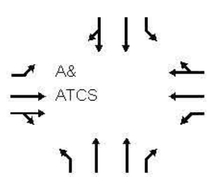


YEAR 2013 CONDITIONS:



5 N/S: CENTINELA AV
E/W: CULVER BLVD

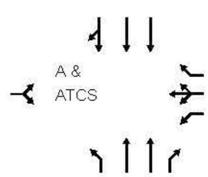
EXISTING 2009:



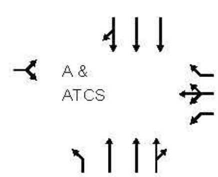
YEAR 2013 CONDITIONS: SAME AS EXISTING

6 N/S: CENTINELA AV
E/W: RTE-90 W/B RAMPS

EXISTING 2009:

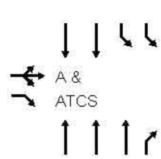


YEAR 2013 CONDITIONS:

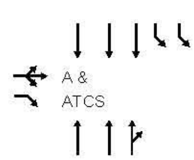


7 N/S: CENTINELA AV
E/W: RTE-90 E/B RAMPS

EXISTING 2009:



YEAR 2013 CONDITIONS:

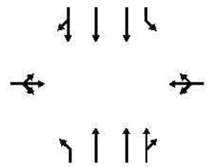


PLAYA DEL MAR PROJECT
INTERSECTION LANE CONFIGURATIONS

INT | STREET | EXISTING 2009 | YEAR 2013 CONDITIONS

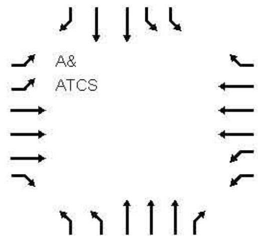
8 N/S: CENTINELA AV
E/W: JUNIETTE ST

* STOP SIGN ON MINOR APPROACHES



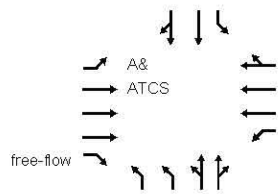
YEAR 2013: SAME AS EXISTING

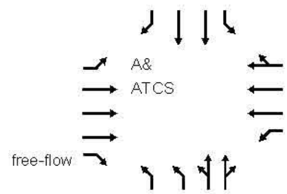
9 N/S: CENTINELA AV
E/W: JEFFERSON BLVD



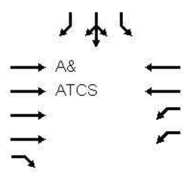
YEAR 2013: SAME AS EXISTING

10 N/S: INGLEWOOD BLVD
E/W: JEFFERSON BLVD



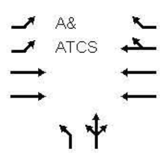


11 N/S: I-405 S/B RAMPS
E/W: JEFFERSON BLVD



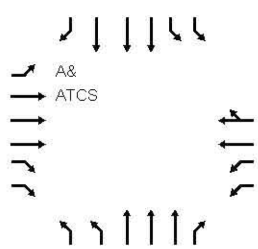
YEAR 2013: SAME AS EXISTING

12 N/S: I-405 N/B RAMPS
E/W: JEFFERSON BLVD



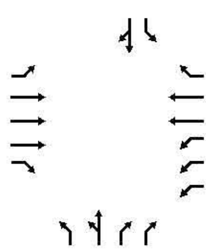
YEAR 2013: SAME AS EXISTING

13 N/S: SEPULVEDA BLVD
E/W: CENTINELA AV



YEAR 2013: SAME AS EXISTING

14 N/S: MARINA FWY
E/W: SLAUSON AV



YEAR 2013: SAME AS EXISTING

APPENDIX C

Traffic Counts

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Lincoln Blvd | DATE: 5/26/2009 | LOCATION: City of Marina Del Rey

E-W STREET: W Jefferson Blvd | DAY: TUESDAY | PROJECT# 09-5215-019

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	1	2	2	1	1	2	0	2	2	2	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	393	46	53	168	37	26	36	1	33	11	53	858
7:15 AM	0	539	99	37	167	45	34	55	4	46	26	95	1147
7:30 AM	5	580	140	55	266	56	42	61	0	73	30	99	1407
7:45 AM	10	397	150	72	253	67	24	75	16	94	24	122	1304
8:00 AM	19	386	148	74	222	43	50	89	6	92	21	110	1260
8:15 AM	2	401	116	81	265	51	33	78	5	69	26	134	1261
8:30 AM	3	275	111	96	247	76	36	103	14	59	46	112	1178
8:45 AM	2	371	109	109	249	66	39	106	4	68	19	124	1266
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	42	3342	919	577	1837	441	284	603	50	534	203	849	9681

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	36	1764	554	282	1006	217	149	303	27	328	101	465	5232
PEAK HR. FACTOR:		0.812			0.948			0.826			0.931		0.930

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Lincoln Blvd DATE: 5/26/2009 LOCATION: City of Marina Del Rey

E-W STREET: W Jefferson Blvd DAY: TUESDAY PROJECT# 09-5215-019

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	1	2	2	1	1	2	0	2	2	2	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	9	338	69	103	340	120	13	41	10	92	72	133	1340
4:15 PM	11	290	67	101	342	143	12	43	7	88	65	128	1297
4:30 PM	5	353	68	97	408	158	21	41	7	105	66	129	1458
4:45 PM	6	348	73	103	355	143	19	39	9	120	66	123	1404
5:00 PM	0	383	40	104	376	162	2	56	12	119	116	136	1506
5:15 PM	5	361	79	121	444	189	9	32	14	131	84	149	1618
5:30 PM	12	348	59	119	367	218	8	71	11	124	104	130	1571
5:45 PM	10	336	66	100	356	184	11	31	12	126	110	150	1492
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	58	2757	521	848	2988	1317	95	354	82	905	683	1078	11686

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	27	1428	244	444	1543	753	30	190	49	500	414	565	6187
PEAK HR. FACTOR:		0.954			0.908			0.747			0.958		0.956

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Westlawn Ave | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd | DAY: WEDNESDAY | PROJECT# 09-5220-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	1	1	1	4	0	1	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM			2	8	0	2	5	227		2	176	30	452
7:15 AM			0	12	0	5	14	226		0	204	36	497
7:30 AM			0	20	0	4	12	302		1	242	32	613
7:45 AM			1	19	0	8	18	331		1	291	43	712
8:00 AM			2	26	0	14	32	390		2	319	44	829
8:15 AM			1	30	1	13	34	350		1	272	60	762
8:30 AM			1	23	1	16	35	338		1	287	57	759
8:45 AM			0	25	0	17	36	329		1	331	98	837
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	0	7	163	2	79	186	2493	0	9	2122	400	5461

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	0	0	4	104	2	60	137	1407	0	5	1209	259	3187
PEAK HR. FACTOR:		0.500			0.943			0.915			0.856		0.952

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET:	Westlawn Ave	DATE:	06/03/2009	LOCATION:	City of Playa Vista
E-W STREET:	Jefferson Blvd	DAY:	WEDNESDAY	PROJECT#	09-5220-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	1	1	1	4	0	1	3	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM			0	52		24	7	272		0	283	19	657
4:15 PM			0	51		20	9	241		0	282	15	618
4:30 PM			1	70		23	10	281		2	287	12	686
4:45 PM			0	51		27	7	266		0	274	20	645
5:00 PM			1	62		31	25	317		1	311	18	766
5:15 PM			2	67		41	16	315		2	328	22	793
5:30 PM			1	89		45	18	310		2	351	21	837
5:45 PM			0	74		32	14	266		0	370	19	775
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	5	516	0	243	106	2268	0	7	2486	146	5777

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	0	0	4	292	0	149	73	1208	0	5	1360	80	3171
PEAK HR. FACTOR:		0.500			0.823			0.936			0.929		0.947

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Grosvenor Blvd DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd DAY: WEDNESDAY PROJECT# 09-5220-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	3	0	1	4	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM				5		2	5	233			207	21	473
7:15 AM				1		2	7	230			236	23	499
7:30 AM				3		2	6	317			275	26	629
7:45 AM				3		2	9	341			331	34	720
8:00 AM				1		1	14	405			365	30	816
8:15 AM				0		3	13	367			330	48	761
8:30 AM				3		1	18	346			346	47	761
8:45 AM				0		4	27	325			425	103	884
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	0	0	16	0	17	99	2564	0	0	2515	332	5543

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	0	0	0	4	0	9	72	1443	0	0	1466	228	3222
PEAK HR. FACTOR:		0.000			0.813			0.904			0.802		0.911

CONTROL: 1-way stop (SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Grosvenor Blvd   DATE: 06/03/2009   LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd   DAY: WEDNESDAY   PROJECT# 09-5220-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	3	0	1	4	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM				11		10	5	317			293	26	662
4:15 PM				10		8	9	285			288	10	610
4:30 PM				10		5	8	344			296	17	680
4:45 PM				9		10	2	315			283	12	631
5:00 PM				12		12	4	375			319	11	733
5:15 PM				11		11	6	379			340	11	758
5:30 PM				9		16	3	396			359	10	793
5:45 PM				14		13	3	339			375	7	751
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	0	0	86	0	85	40	2750	0	0	2553	104	5618

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	0	0	0	46	0	52	16	1489	0	0	1393	39	3035
PEAK HR. FACTOR:		0.000			0.907			0.943			0.937		0.957

CONTROL: 1-way stop (SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Washington Blvd | DAY: WEDNESDAY | PROJECT# 09-5220-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	1	1	1	2	0	1	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	19	265	12	15	89	7	16	56	8	10	67	13	577
7:15 AM	45	292	6	17	117	7	17	88	20	11	99	19	738
7:30 AM	66	353	18	11	160	7	18	113	25	9	145	25	950
7:45 AM	50	350	26	21	175	13	16	154	38	24	128	29	1024
8:00 AM	38	334	27	24	182	6	23	126	31	29	106	21	947
8:15 AM	30	336	22	24	183	8	21	131	28	20	91	24	918
8:30 AM	34	346	31	17	199	5	16	139	31	26	105	29	978
8:45 AM	37	310	27	25	175	7	15	131	29	20	126	21	923
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	319	2586	169	154	1280	60	142	938	210	149	867	181	7055

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	152	1366	106	86	739	32	76	550	128	99	430	103	3867
PEAK HR. FACTOR:		0.953			0.969			0.906			0.873		0.944

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Washington Blvd DAY: WEDNESDAY PROJECT# 09-5220-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	1	1	1	2	0	1	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	28	197	13	35	250	21	23	171	29	19	108	32	926
4:15 PM	24	228	15	37	337	9	21	166	32	30	151	23	1073
4:30 PM	41	229	13	31	317	17	13	140	45	26	154	27	1053
4:45 PM	36	228	12	29	329	11	17	137	41	24	137	37	1038
5:00 PM	28	261	16	29	315	22	23	146	34	28	163	34	1099
5:15 PM	35	265	13	27	321	9	20	153	29	29	166	32	1099
5:30 PM	35	277	12	31	351	15	22	177	38	36	167	36	1197
5:45 PM	35	234	15	27	296	11	24	147	39	20	169	29	1046
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	262	1919	109	246	2516	115	163	1237	287	212	1215	250	8531

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	133	1037	56	114	1283	57	89	623	140	113	665	131	4441
PEAK HR. FACTOR:		0.946			0.916			0.899			0.951		0.928

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Culver Blvd DAY: WEDNESDAY PROJECT# 09-5220-006

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	0	1	2	0	1	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	217	26	15	95	13	48	104	4	7	22	18	570
7:15 AM	4	262	23	13	112	19	63	147	4	17	47	35	746
7:30 AM	6	309	35	20	194	16	76	162	4	25	50	40	937
7:45 AM	4	315	21	26	230	20	67	173	4	34	64	53	1011
8:00 AM	3	294	37	27	210	36	65	166	5	28	92	40	1003
8:15 AM	6	273	18	25	185	36	65	184	7	21	73	36	929
8:30 AM	6	286	25	24	204	25	71	182	7	30	87	36	983
8:45 AM	4	257	28	31	210	26	73	163	6	34	81	27	940
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	34	2213	213	181	1440	191	528	1281	41	196	516	285	7119

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	19	1168	101	102	829	117	268	705	23	113	316	165	3926
PEAK HR. FACTOR:		0.947			0.949			0.958			0.928		0.971

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Culver Blvd DAY: WEDNESDAY PROJECT# 09-5220-006

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	0	1	2	0	1	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	7	214	12	43	245	38	36	95	8	20	93	21	832
4:15 PM	3	226	14	29	298	50	37	107	3	20	107	29	923
4:30 PM	8	217	22	34	299	47	32	78	5	17	133	39	931
4:45 PM	13	211	19	33	284	47	32	79	1	15	137	46	917
5:00 PM	2	250	14	33	295	49	36	107	3	31	102	39	961
5:15 PM	2	269	28	33	300	59	34	94	7	19	119	38	1002
5:30 PM	6	268	17	31	306	62	32	81	3	21	166	31	1024
5:45 PM	5	202	21	35	290	60	39	93	7	24	124	33	933
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	46	1857	147	271	2317	412	278	734	37	167	981	276	7523

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	15	989	80	132	1191	230	141	375	20	95	511	141	3920
PEAK HR. FACTOR:		0.906			0.973			0.918			0.857		0.957

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Marina Freeway WB Ramps | DAY: WEDNESDAY | PROJECT# 09-5220-007

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	0	2.5	0.5	0	1	0	1.3	0.3	1.3	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	121	16		123	3	1		11	52	5	114	448
7:15 AM	4	141	16		157	2	5		10	33	2	136	506
7:30 AM	1	176	23		236	6	3		9	52	1	182	689
7:45 AM	1	155	16		263	4	4		9	76	2	167	697
8:00 AM	8	176	16		294	5	4		13	90	1	185	792
8:15 AM	4	164	21		236	8	1		12	51	0	123	620
8:30 AM	4	177	24		264	5	6		11	68	0	132	691
8:45 AM	3	128	19		253	11	3		7	84	1	127	636
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	27	1238	151	0	1826	44	27	0	82	506	12	1166	5079

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	17	672	77	0	1057	22	15	0	45	285	3	607	2800
PEAK HR. FACTOR:		0.934			0.902			0.882			0.811		0.884

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Marina Freeway WB Ramps | DAY: WEDNESDAY | PROJECT# 09-5220-007

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	0	2.5	0.5	0	1	0	1.3	0.3	1.3	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	5	135	19		314	10	0		2	41	6	83	615
4:15 PM	1	137	14		301	5	1		1	51	4	93	608
4:30 PM	5	143	13		311	3	0		4	43	5	117	644
4:45 PM	6	156	25		289	7	0		7	65	5	108	668
5:00 PM	6	166	28		292	9	1		6	49	5	114	676
5:15 PM	6	190	18		322	5	3		6	64	2	133	749
5:30 PM	5	179	18		322	10	1		4	60	6	151	756
5:45 PM	6	142	16		284	9	0		6	73	6	111	653
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	40	1248	151	0	2435	58	6	0	36	446	39	910	5369

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	23	691	89	0	1225	31	5	0	23	238	18	506	2849
PEAK HR. FACTOR:		0.938			0.946			0.778			0.878		0.942

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET:	Centinela Ave	DATE:	06/03/2009	LOCATION:	City of Playa Vista
E-W STREET:	Marina Freeway EB Ramps	DAY:	WEDNESDAY	PROJECT#	09-5220-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	2	2	0	0.3	0.3	1.3	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM		138	77	43	144		2		3				407
7:15 AM		159	78	49	150		1		9				446
7:30 AM		198	121	85	213		3		12				632
7:45 AM		167	115	78	269		5		29				663
8:00 AM		199	118	104	295		3		11				730
8:15 AM		185	92	81	216		2		20				596
8:30 AM		197	72	82	261		9		21				642
8:45 AM		148	91	70	274		1		21				605
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	1391	764	592	1822	0	26	0	126	0	0	0	4721

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	0	748	397	345	1041	0	19	0	81	0	0	0	2631
PEAK HR. FACTOR:		0.903			0.868			0.735			0.000		0.901

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Marina Freeway EB Ramps | DAY: WEDNESDAY | PROJECT# 09-5220-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	2	2	0	0.3	0.3	1.3	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM		154	67	129	229		7		14				600
4:15 PM		147	54	125	228		3		17				574
4:30 PM		155	61	132	228		8		24				608
4:45 PM		181	62	124	235		5		23				630
5:00 PM		193	60	144	205		9		18				629
5:15 PM		203	62	126	264		9		22				686
5:30 PM		197	61	122	265		5		24				674
5:45 PM		159	48	116	245		5		24				597
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1389	475	1018	1899	0	51	0	166	0	0	0	4998

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	0	774	245	516	969	0	28	0	87	0	0	0	2619
PEAK HR. FACTOR:		0.961			0.952			0.927			0.000		0.954

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave　　DATE: 06/03/2009　　LOCATION: City of Playa Vista

E-W STREET: Juniette St　　DAY: WEDNESDAY　　PROJECT# 09-5220-009

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	165	3	3	102	0	9	0	3	1	2	7	296
7:15 AM	0	181	1	5	114	1	7	5	2	1	2	7	326
7:30 AM	2	283	4	7	178	2	4	0	1	2	0	16	499
7:45 AM	5	246	6	23	248	5	4	0	2	4	0	26	569
8:00 AM	2	244	10	10	221	6	7	0	2	4	0	40	546
8:15 AM	2	214	2	7	231	4	11	0	3	1	0	14	489
8:30 AM	2	225	6	4	223	16	8	0	5	1	1	3	494
8:45 AM	2	216	2	9	319	19	7	0	4	2	0	7	587
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	16	1774	34	68	1636	53	57	5	22	16	5	120	3806

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	8	899	20	30	994	45	33	0	14	8	1	64	2116
PEAK HR. FACTOR:		0.905			0.770			0.839			0.415		0.901

CONTROL: 2-way stop(E/W)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave   DATE: 06/03/2009   LOCATION: City of Playa Vista

E-W STREET: Juniette St   DAY: WEDNESDAY   PROJECT# 09-5220-009

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	189	3	8	257	2	12	0	2	2	0	10	488
4:15 PM	0	161	1	5	229	0	24	0	5	2	0	8	435
4:30 PM	3	182	3	4	241	0	15	0	7	4	0	13	472
4:45 PM	0	196	1	5	233	0	15	0	7	1	0	14	472
5:00 PM	0	200	2	4	248	1	11	2	9	1	1	8	487
5:15 PM	1	206	3	6	301	2	27	1	6	2	0	7	562
5:30 PM	2	183	2	3	286	2	47	1	17	1	1	10	555
5:45 PM	0	197	1	6	259	1	35	0	18	0	0	6	523
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	9	1514	16	41	2054	8	186	4	71	13	2	76	3994

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	3	786	8	19	1094	6	120	4	50	4	2	31	2127
PEAK HR. FACTOR:		0.949			0.905			0.669			0.771		0.946

CONTROL: 2-way stop(E/W)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd DAY: WEDNESDAY PROJECT# 09-5220-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	2	1	2	3	1	2	3	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	3	3	39	3	58	74	163	2	7	162	95	609
7:15 AM	1	3	3	37	2	72	74	156	0	7	187	107	649
7:30 AM	0	1	1	72	4	101	137	184	1	8	205	154	868
7:45 AM	0	3	3	90	11	154	130	215	3	7	229	125	970
8:00 AM	1	3	6	79	10	134	141	258	9	11	255	119	1026
8:15 AM	1	2	12	80	9	143	119	244	3	5	250	104	972
8:30 AM	2	2	4	77	5	153	114	233	3	13	256	117	979
8:45 AM	0	1	11	75	11	237	106	212	6	2	293	116	1070
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	5	18	43	549	55	1052	895	1665	27	60	1837	937	7143

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	4	8	33	311	35	667	480	947	21	31	1054	456	4047
PEAK HR. FACTOR:		0.750			0.784			0.887			0.937		0.946

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Centinela Ave DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd DAY: WEDNESDAY PROJECT# 09-5220-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	2	1	2	3	1	2	3	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	1	4	9	144	7	102	84	244	1	1	190	92	879
4:15 PM	0	5	4	140	5	83	80	214	0	0	220	88	839
4:30 PM	0	7	5	144	3	97	87	266	2	2	187	106	906
4:45 PM	2	6	2	140	2	100	80	245	1	3	209	99	889
5:00 PM	2	3	9	179	0	87	85	296	4	2	228	106	1001
5:15 PM	2	3	9	163	2	135	78	306	3	0	245	112	1058
5:30 PM	1	3	9	168	6	134	89	315	2	2	203	84	1016
5:45 PM	3	0	0	144	0	127	88	262	2	0	247	100	973
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	11	31	47	1222	25	865	671	2148	15	10	1729	787	7561

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	8	9	27	654	8	483	340	1179	11	4	923	402	4048
PEAK HR. FACTOR:		0.786			0.929			0.942			0.931		0.957

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Inglewood Blvd   DATE: 06/03/2009   LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd   DAY: WEDNESDAY   PROJECT# 09-5220-011

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2.5	1	0.5	1	2	0	1	3	2	1	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	127	133	1	14	25	4	10	124	56	2	132	18	646
7:15 AM	159	145	5	28	29	13	14	131	57	5	165	24	775
7:30 AM	191	160	1	29	54	16	21	156	85	1	168	28	910
7:45 AM	184	169	3	40	62	18	16	173	123	7	175	21	991
8:00 AM	186	146	2	38	47	27	11	226	113	2	174	28	1000
8:15 AM	164	129	2	24	62	16	20	203	114	2	165	20	921
8:30 AM	178	125	2	28	43	13	14	232	101	1	201	24	962
8:45 AM	196	106	3	29	50	23	16	210	100	2	218	22	975
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	1385	1113	19	230	372	130	122	1455	749	22	1398	185	7180

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	712	569	9	130	214	74	61	834	451	12	715	93	3874
PEAK HR. FACTOR:		0.906			0.871			0.961			0.907		0.969

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Inglewood Blvd | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd | DAY: WEDNESDAY | PROJECT# 09-5220-011

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2.5	1	0.5	1	2	0	1	3	2	1	3	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	107	66	10	47	91	16	19	204	165	0	179	43	947
4:15 PM	104	76	5	56	92	16	12	202	157	3	166	43	932
4:30 PM	120	69	8	36	94	26	22	233	174	0	158	58	998
4:45 PM	131	77	2	61	109	32	27	208	155	1	143	55	1001
5:00 PM	136	77	8	41	98	25	15	266	195	3	173	55	1092
5:15 PM	158	105	5	45	103	24	19	246	208	6	183	57	1159
5:30 PM	123	81	10	50	97	17	12	252	208	2	169	67	1088
5:45 PM	137	92	2	38	111	25	14	231	171	1	178	55	1055
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	1016	643	50	374	795	181	140	1842	1433	16	1349	433	8272

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	554	355	25	174	409	91	60	995	782	12	703	234	4394
PEAK HR. FACTOR:		0.871			0.968			0.965			0.964		0.948

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: I-405 SB Ramps | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd | DAY: WEDNESDAY | PROJECT# 09-5220-012

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.3	.3	1.3	0	4	1	2	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM				28	0	48		141	46	69	117		449
7:15 AM				24	0	49		165	30	67	144		479
7:30 AM				23	1	47		154	44	94	125		488
7:45 AM				27	2	59		177	48	74	164		551
8:00 AM				26	0	65		227	67	96	160		641
8:15 AM				27	0	70		230	64	81	176		648
8:30 AM				33	0	88		225	66	87	181		680
8:45 AM				32	1	71		217	53	90	198		662
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	0	0	220	4	497	0	1536	418	658	1265	0	4598

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	0	0	0	118	1	294	0	899	250	354	715	0	2631
PEAK HR. FACTOR:		0.000			0.853			0.977			0.928		0.967

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: I-405 SB Ramps DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd DAY: WEDNESDAY PROJECT# 09-5220-012

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.3	.3	1.3	0	4	1	2	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM				21	0	47		219	59	118	180		644
4:15 PM				23	0	61		221	58	115	163		641
4:30 PM				42	1	50		242	62	87	171		655
4:45 PM				38	0	48		216	64	119	158		643
5:00 PM				42	1	55		274	71	130	199		772
5:15 PM				32	0	53		247	64	128	180		704
5:30 PM				30	0	60		259	70	105	193		717
5:45 PM				37	1	64		197	68	109	186		662
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	0	0	265	3	438	0	1875	516	911	1430	0	5438

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	0	0	0	141	2	232	0	977	273	472	758	0	2855
PEAK HR. FACTOR:		0.000			0.919			0.906			0.935		0.925

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: I-405 NB Ramps | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd | DAY: WEDNESDAY | PROJECT# 09-5220-013

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.3	0.3	0.3	0	0	0	2	2	0	0	3	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	20	9	37				63	107			167	63	466
7:15 AM	19	15	29				80	108			191	58	500
7:30 AM	15	8	40				51	127			205	68	514
7:45 AM	26	11	40				59	144			211	51	542
8:00 AM	14	14	25				76	178			244	68	619
8:15 AM	27	15	32				72	184			229	61	620
8:30 AM	19	14	34				69	190			251	70	647
8:45 AM	24	9	30				64	184			263	63	637
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	164	95	267	0	0	0	534	1222	0	0	1761	502	4545

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	84	52	121	0	0	0	281	736	0	0	987	262	2523
PEAK HR. FACTOR:		0.868			0.000			0.982			0.958		0.975

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: I-405 NB Ramps DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Jefferson Blvd DAY: WEDNESDAY PROJECT# 09-5220-013

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.3	0.3	0.3	0	0	0	2	2	0	0	3	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	33	3	40				48	192			265	52	633
4:15 PM	29	1	73				45	199			249	31	627
4:30 PM	31	0	71				46	239			228	41	656
4:45 PM	40	0	68				29	224			236	33	630
5:00 PM	29	0	77				66	251			300	45	768
5:15 PM	40	0	63				48	231			268	39	689
5:30 PM	42	2	68				61	229			257	34	693
5:45 PM	42	0	68				40	192			252	24	618
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	286	6	528	0	0	0	383	1757	0	0	2055	299	5314

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	151	2	276	0	0	0	204	935	0	0	1061	151	2780
PEAK HR. FACTOR:		0.958			0.000			0.898			0.878		0.905

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sepulveda Blvd DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Centinela Ave DAY: WEDNESDAY PROJECT# 09-5220-014

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	1	3	2	2	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	129	332	18	4	82	11	7	32	54	35	199	36	939
7:15 AM	170	387	19	12	140	12	10	35	57	56	279	25	1202
7:30 AM	225	440	41	18	176	18	8	35	70	69	259	44	1403
7:45 AM	194	373	32	15	216	14	15	70	92	59	215	25	1320
8:00 AM	219	385	45	30	200	26	13	68	92	62	299	36	1475
8:15 AM	189	339	60	9	210	16	13	76	113	55	205	17	1302
8:30 AM	215	405	47	17	218	26	7	55	121	97	219	63	1490
8:45 AM	145	313	33	18	223	53	12	55	113	139	218	49	1371
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	1486	2974	295	123	1465	176	85	426	712	572	1893	295	10502

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	768	1442	185	74	851	121	45	254	439	353	941	165	5638
PEAK HR. FACTOR:		0.898			0.889			0.913			0.898		0.946

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sepulveda Blvd DATE: 06/03/2009 LOCATION: City of Playa Vista

E-W STREET: Centinela Ave DAY: WEDNESDAY PROJECT# 09-5220-014

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	1	3	2	2	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	75	212	25	52	259	17	28	137	119	90	86	37	1137
4:15 PM	94	209	67	39	303	21	10	115	165	86	72	40	1221
4:30 PM	105	233	49	54	292	23	14	103	147	81	111	31	1243
4:45 PM	139	215	50	32	324	21	13	137	159	93	64	35	1282
5:00 PM	161	323	64	44	290	23	26	142	163	102	102	25	1465
5:15 PM	126	248	70	59	365	13	29	156	223	121	110	25	1545
5:30 PM	125	309	60	33	328	25	16	122	179	124	113	31	1465
5:45 PM	119	230	57	48	375	25	15	136	168	94	65	27	1359
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	944	1979	442	361	2536	168	151	1048	1323	791	723	251	10717

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	531	1110	251	184	1358	86	86	556	733	441	390	108	5834
PEAK HR. FACTOR:		0.863			0.908			0.843			0.876		0.944

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Marina Freeway | DATE: 06/03/2009 | LOCATION: City of Playa Vista

E-W STREET: Slauson Ave | DAY: WEDNESDAY | PROJECT# 09-5220-015

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	1	2	1	1	0	1	3	1	2	2	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	13	1	175	1		0	0	57	55	389	193	1	885
7:15 AM	16	4	197	1		1	1	62	87	424	248	1	1042
7:30 AM	25	1	207	0		0	0	56	107	508	265	0	1169
7:45 AM	36	0	256	0		1	1	68	84	434	314	2	1196
8:00 AM	25	2	279	1		0	0	99	84	404	278	1	1173
8:15 AM	29	2	275	1		0	0	109	75	379	239	3	1112
8:30 AM	50	1	278	0		0	1	106	65	309	213	0	1023
8:45 AM	35	3	250	0		0	0	108	62	309	229	0	996
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	229	14	1917	4	0	2	3	665	619	3156	1979	8	8596

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	115	5	1017	2	0	1	1	332	350	1725	1096	6	4650
PEAK HR. FACTOR:		0.929			0.750			0.928			0.914		0.972

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET:	Marina Freeway	DATE:	06/03/2009	LOCATION:	City of Playa Vista
E-W STREET:	Slauson Ave	DAY:	WEDNESDAY	PROJECT#	09-5220-015

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	1	2	1	1	0	1	3	1	2	2	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	57	0	312	1	7	7	0	187	95	160	168	0	994
4:15 PM	55	2	254	0	2	5	1	208	57	140	161	0	885
4:30 PM	49	1	248	0	0	1	0	211	51	139	198	0	898
4:45 PM	53	0	254	0	0	0	2	210	69	164	208	0	960
5:00 PM	55	1	307	1	0	0	2	161	73	182	217	0	999
5:15 PM	72	0	312	1	0	1	0	212	81	182	202	2	1065
5:30 PM	55	0	344	1	0	0	0	189	66	131	174	0	960
5:45 PM	40	0	274	1	1	4	1	202	61	157	206	0	947
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	436	4	2305	5	10	18	6	1580	553	1255	1534	2	7708

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	235	1	1217	3	0	1	4	772	289	659	801	2	3984
PEAK HR. FACTOR:		0.910			0.500			0.909			0.916		0.935

CONTROL: Signalized

APPENDIX D

Existing (2009) Conditions

* All signalized intersections include V/C credit of 0.10 to account from ATSAC and ATCS. ATCS credit of 0.03 is not automatically reflected on the capacity calculation worksheets.

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: LINCOLN BLVD W/E: JEFFERSON BLVD I/S No:

AM/PM: AM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	36	1764	554	282	1006	217	328	101	465	149	303	27
AMBIENT												
RELATED												
PROJECT												
TOTAL	36	1764	554	282	1006	217	328	101	465	149	303	27

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	4	0	0	1	0	2	0	3	0	1	0	0	2	0	2	0	0	2	0	1	0	2	0	1	0	0

	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Prot-Fix	OLA	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	Auto

Critical Movements Diagram

	A	B
SouthBound	306	155
EastBound	110	149
WestBound	101	180
NorthBound	441	36

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{441 + 155 + 180 + 110}{*1375} = 0.574$$

LOS = A

CalcaDB

December 21, 2009 ,Monday 04:37:53 PM

INTERSECTION DATA SUMMARY SHEET

N/S: WESTLAWN AV | W/E: JEFFERSON BL | I/S No:

AM/PM: AM | Comments: EXISTING (2009) CONDITIONS

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	0	0	4	104	2	60	5	1209	259	137	1407	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	4	104	2	60	5	1209	259	137	1407	0

LANE	1	2	3	4	5	6	7
NORTHBOUND	1	0	1	0	0	1	0
SOUTHBOUND	1	0	1	0	0	1	0
WESTBOUND	1	0	2	0	1	0	0
EASTBOUND	1	0	3	0	1	0	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	Perm	Auto
WESTBOUND	Perm	Auto
EASTBOUND	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	60	104
EastBound	352	137
WestBound	489	5
NorthBound	4	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{4 + 104 + 489 + 137}{*1500} = 0.419$$

LOS = A

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CalcaDB

December 21, 2009 ,Monday 04:37:53 PM

INTERSECTION DATA SUMMARY SHEET

N/S: GROSVENOR BL W/E: JEFFERSON BL I/S No:

AM/PM: AM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	4	0	9	0	1466	228	72	1443	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	0	4	0	9	0	1466	228	72	1443	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	4	0	0	0	0

	NORTHBOUND Phasing	NORTHBOUND RTOR	SOUTHBOUND Phasing	SOUTHBOUND RTOR	WESTBOUND Phasing	WESTBOUND RTOR	EASTBOUND Phasing	EASTBOUND RTOR
SIGNAL	<none>	<none>	Split	Auto	Perm	Auto	Perm	<none>

Critical Movements Diagram

SouthBound
A: 13
B: 4

EastBound
A: 361
B: 72

WestBound
A: 565
B: 0

NorthBound
A: 0
B: 0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{0 + 13 + 565 + 72}{1200} = 0.542$$

LOS = A

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CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV | W/E: WASHINGTON BL | I/S No:

AM/PM: AM | Comments: EXISTING (2009) CONDITIONS

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	152	1366	106	86	739	32	99	430	103	76	550	128
AMBIENT												
RELATED												
PROJECT												
TOTAL	152	1366	106	86	739	32	99	430	103	76	550	128

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	386	86
EastBound	339	76
WestBound	267	99
NorthBound	736	152

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{736 + 86 + 99 + 339}{*1500} = 0.770$$

LOS = C

2009AM

CalcaDB

December 21, 2009 ,Monday 04:37:53 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE W/E: CULVER BLVD I/S No:

AM/PM: AM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	19	1168	101	102	829	117	113	316	165	268	705	23
AMBIENT												
RELATED												
PROJECT												
TOTAL	19	1168	101	102	829	117	113	316	165	268	705	23

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	2	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

SouthBound
A: 473
B: 102

EastBound
A: 364
B: 268

WestBound
A: 241
B: 113

NorthBound
A: 584
B: 19

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{584 + 102 + 241 + 268}{*1500} = 0.727$$

LOS = C

Developed by Chun Wong, 12/94

2009AM

December 21, 2009 ,Monday 04:37:53 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE

W/E: MARINA FREEWAY WB RAMPS

I/S No:

AM/PM: AM

Comments: EXISTING (2009) CONDITIONS

COUNT DATE:

STUDY DATE:

GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	17	672	77	0	1057	22	285	3	607	15	0	45
AMBIENT												
RELATED												
PROJECT												
TOTAL	17	672	77	0	1057	22	285	3	607	15	0	45

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	2	0	0	1	0	0	0	2	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1

	NORTHBOUND Phasing	NORTHBOUND RTOR	SOUTHBOUND Phasing	SOUTHBOUND RTOR	WESTBOUND Phasing	WESTBOUND RTOR	EASTBOUND Phasing	EASTBOUND RTOR
SIGNAL	Perm	Free	Perm	Auto	Split	Auto	Split	Auto

Critical Movements Diagram

	A	B
SouthBound	360	0
EastBound	60	15
WestBound	305	285
NorthBound	336	17

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

V/C = (17 + 360 + 305 + 60) / *1425 = 0.451

LOS = A

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2009AM

CalcaDB

December 21, 2009 ,Monday 06:01:26 PM

INTERSECTION DATA SUMMARY SHEET

N/S:	CENTINELA AVE	W/E:	MARINA FREEWAY EB RAMPS	I/S No:	
AM/PM:	AM	Comments:	EXISTING (2009) CONDITIONS		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	748	397	345	1041	0	0	0	0	19	0	81
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	748	397	345	1041	0	0	0	0	19	0	81

	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
LANE	0 0 3 0 0 1 0	2 0 2 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 1 0

	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Prot-Fix	<none>	<none>	<none>	Split	Auto

Critical Movements Diagram

	A	B
SouthBound	521	190
EastBound	50	19
WestBound	0	0
NorthBound	397	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{397 + 190 + 0 + 50}{*1425} = 0.377$$

LOS = A

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CalcaDB

December 21, 2009 ,Monday 04:37:53 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV W/E: JUNIETTE ST I/S No:

AM/PM: AM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	8	899	20	30	994	45	8	1	64	33	0	14
AMBIENT												
RELATED												
PROJECT												
TOTAL	8	899	20	30	994	45	8	1	64	33	0	14

LANE							
NORTHBOUND	1	0	2	0	1	0	0
SOUTHBOUND	1	0	2	0	1	0	0
WESTBOUND	0	0	0	1	0	0	0
EASTBOUND	0	0	0	1	0	0	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	Perm	Auto
WESTBOUND	Perm	Auto
EASTBOUND	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	346	30
EastBound	47	33
WestBound	73	8
NorthBound	306	8

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{8 + 346 + 73 + 33}{1200} = 0.383$$

LOS = A

Developed by Chun Wong, 12/94

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE | W/E: JEFFERSON BLVD | I/S No:

AM/PM: AM | Comments: EXISTING (2009) CONDITIONS

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	4	8	33	311	35	667	31	1054	456	480	947	21
AMBIENT												
RELATED												
PROJECT												
TOTAL	4	8	33	311	35	667	31	1054	456	480	947	21

LANE							
NORTHBOUND	2	0	3	0	0	1	0
SOUTHBOUND	2	0	2	0	0	1	0
WESTBOUND	2	0	3	0	0	1	0
EASTBOUND	2	0	3	0	0	1	0

SIGNAL	NORTHBOUND Phasing	NORTHBOUND RTOR	SOUTHBOUND Phasing	SOUTHBOUND RTOR	WESTBOUND Phasing	WESTBOUND RTOR	EASTBOUND Phasing	EASTBOUND RTOR
	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	OLA	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	403	171
EastBound	316	264
WestBound	351	17
NorthBound	24	2

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{2 + 403 + 351 + 264}{*1375} = 0.672$$

LOS = B

2009AM

CalcaDB

December 21, 2009 ,Monday 04:37:53 PM

INTERSECTION DATA SUMMARY SHEET

N/S: SEPULVEDA BLVD | W/E: CENTINELA AVE | I/S No:

AM/PM: AM | Comments: EXISTING (2009) CONDITIONS

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	768	1442	185	74	851	121	353	941	165	45	254	439
AMBIENT												
RELATED												
PROJECT												
TOTAL	768	1442	185	74	851	121	353	941	165	45	254	439

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	2 0 3 0 0 1 0	2 0 3 0 0 1 0	2 0 1 0 1 0 0	1 0 3 0 0 2 0

SIGNAL	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
	Prot-Fix	Auto	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	OLA

Critical Movements Diagram

SouthBound
A: 284
B: 41

EastBound
A: 85
B: 45

WestBound
A: 553
B: 194

NorthBound
A: 481
B: 422

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{422 + 284 + 553 + 45}{*1375} = 0.878$$

LOS = D

Developed by Chun Wong, 12/94

CalcaDB

December 21, 2009 ,Monday 05:31:43 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY SB RAMPS W/E: JEFFERSON BLVD I/S No:

AM/PM: AM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	0	0	0	118	1	294	354	715	0	281	899	250
AMBIENT											-281	
RELATED												
PROJECT												
TOTAL	0	0	0	118	1	294	354	715	0	281	618	250

LANE							
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	1	0	0	1	0	1	0
WESTBOUND	2	0	2	0	0	0	0
EASTBOUND	0	0	2	0	0	1	0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	<none>	<none>	Split	Auto	Prot-Fix	<none>	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	148	118
EastBound	309	141.0
WestBound	358	195
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{0 + 148 + 195 + 309}{1200^*} = 0.473$$

LOS = A

2009AM

CalcaDB

December 21, 2009 ,Monday 05:31:21 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY NB RAMPS W/E: JEFFERSON BLVD I/S No:

AM/PM: AM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	84	52	121	0	0	0	354	987	262	281	736	0
AMBIENT								-354				
RELATED												
PROJECT												
TOTAL	84	52	121	0	0	0	354	633	262	281	736	0

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	1 0 0 1 0 0 0	0 0 0 0 0 0 0	0 0 1 0 1 1 0	2 0 3 0 0 0 0

SIGNAL	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
	Perm	Auto	<none>	<none>	Perm	Auto	Prot-Fix	<none>

Critical Movements Diagram

SouthBound A: 0 B: 0

EastBound A: 245 B: 155

WestBound A: ~~317~~ B: 354 ~~0~~

NorthBound A: 173 B: 84

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{173 + 0 + \cancel{317}\ 354 + 155}{1200^*} = \cancel{0.468}\ 0.498$$

LOS = A

Developed by Chun Wong, 12/94

2009AM

December 21, 2009 ,Monday 04:37:53 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: INGLEWOOD-CENTINELA AV | W/E: JEFFERSON BL | I/S No:

AM/PM: AM | Comments: EXISTING (2009) CONDITIONS

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	712	569	9	130	214	74	12	715	93	61	834	451
AMBIENT												
RELATED												
PROJECT												
TOTAL	712	569	9	130	214	74	12	715	93	61	834	451

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	2	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	2	0	1	0	0	1	0	3	0	0	1	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Split	Auto	Split	Auto	Perm	Auto	Perm	Free

Critical Movements Diagram

SouthBound
A: 144
B: 130

EastBound
A: 278
B: 61

WestBound
A: 269
B: 12

NorthBound
A: 323
B: 323

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

V/C = (323 + 144 + 269 + 61) / *1425 = 0.489

LOS = A

Developed by Chun Wong, 12/94

2009AM

December 21, 2009 ,Monday 04:37:53 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S:	SR-90 RAMPS	W/E:	SLAUSON AV	I/S No:	
AM/PM:	AM	Comments:	EXISTING (2009) CONDITIONS		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	115	5	1017	2	0	1	1725	1096	6	1	332	350
AMBIENT												
RELATED												
PROJECT												
TOTAL	115	5	1017	2	0	1	1725	1096	6	1	332	350

LANE	NB	SB	WB	EB
	1 1 0 0 0 2 0	1 0 0 0 1 0 0	3 0 2 0 0 1 0	1 0 3 0 0 1 0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Split	OLA	Split	Auto	Prot-Fix	Auto	Prot-Fix	Free

Critical Movements Diagram

	A	B
SouthBound	1	2
EastBound	111	1
WestBound	548	638
NorthBound	60	60

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{60 + 2 + 638 + 111}{1375} = 0.590$$

LOS = A

Developed by Chun Wong, 12/94

December 21, 2009 ,Monday 04:38:24 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: LINCOLN BLVD
W/E: JEFFERSON BLVD
I/S No:

AM/PM: PM
Comments: EXISTING (2009) CONDITIONS

COUNT DATE:
STUDY DATE:
GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	27	1428	244	444	1543	753	500	414	565	30	190	49
AMBIENT												
RELATED												
PROJECT												
TOTAL	27	1428	244	444	1543	753	500	414	565	30	190	49

LANE	NB	SB	WB	EB
	1 0 4 0 0 1 0	2 0 3 0 1 0 0	2 0 2 0 0 2 0	1 0 2 0 1 0 0

SIGNAL	NB	SB	WB	EB
Phasing	Prot-Fix	Prot-Fix	Prot-Fix	Prot-Fix
RTOR	OLA	Auto	OLA	Auto

Critical Movements Diagram

	A	B
SouthBound	753	244
EastBound	80	30
WestBound	207	275
NorthBound	357	27

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{27 + 753 + 275 + 80}{*1375} = 0.755$$

LOS = C

Developed by Chun Wong, 12/94

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: WESTLAWN AV W/E: JEFFERSON BL I/S No:

AM/PM: PM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	4	292	0	149	5	1360	80	73	1208	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	4	292	0	149	5	1360	80	73	1208	0

LANE	NB	SB	WB	EB
	1 0 1 0 0 1 0	1 0 1 0 0 1 0	1 0 2 0 1 0 0	1 0 3 0 1 0 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	149	292
EastBound	302	73
WestBound	480	5
NorthBound	4	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{4 + 292 + 480 + 73}{*1500} = 0.496$$

LOS = A

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: GROSVENOR BL | W/E: JEFFERSON BL | I/S No:

AM/PM: PM | Comments: EXISTING (2009) CONDITIONS

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	0	0	0	46	0	52	0	1393	39	16	1489	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	0	46	0	52	0	1393	39	16	1489	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	4	0	0	0	0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	<none>	<none>	Split	Auto	Perm	Auto	Perm	<none>

Critical Movements Diagram

	A:	B:
SouthBound	98	46
EastBound	372	16
WestBound	477	0
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{0 + 98 + 477 + 16}{1200} = 0.493$$

LOS = A

2009PM

December 21, 2009 ,Monday 04:38:24 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV

W/E: WASHINGTON BL

I/S No:

AM/PM: PM

Comments: EXISTING (2009) CONDITIONS

COUNT DATE:

STUDY DATE:

GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	133	1037	56	114	1283	57	113	665	131	89	623	140
AMBIENT												
RELATED												
PROJECT												
TOTAL	133	1037	56	114	1283	57	113	665	131	89	623	140

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	670	114
EastBound	382	89
WestBound	398	113
NorthBound	547	133

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{133 + 670 + 113 + 382}{*1500} = 0.795$$

LOS = C

Developed by Chun Wong, 12/94

2009PM

December 21, 2009 ,Monday 04:38:24 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE

W/E: CULVER BLVD

I/S No:

AM/PM: PM

Comments: EXISTING (2009) CONDITIONS

COUNT DATE:

STUDY DATE:

GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	15	989	80	132	1191	230	95	511	141	141	375	20
AMBIENT												
RELATED												
PROJECT												
TOTAL	15	989	80	132	1191	230	95	511	141	141	375	20

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	2	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	711	132
EastBound	198	141
WestBound	326	95
NorthBound	495	15

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{15 + 711 + 326 + 141}{*1500} = 0.725$$

LOS = C

Developed by Chun Wong, 12/94

2009PM

CalcaDB

December 21, 2009 ,Monday 04:38:24 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE
W/E: MARINA FREEWAY WB RAMPS
I/S No:
AM/PM: PM
Comments: EXISTING (2009) CONDITIONS
COUNT DATE:
STUDY DATE:
GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	23	691	89	0	1225	31	238	18	506	5	0	23
AMBIENT												
RELATED												
PROJECT												
TOTAL	23	691	89	0	1225	31	238	18	506	5	0	23

LANE							
NORTHBOUND	1	0	2	0	0	1	0
SOUTHBOUND	0	0	2	0	1	0	0
WESTBOUND	1	0	0	1	0	1	0
EASTBOUND	0	0	0	0	0	0	1

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Free
SOUTHBOUND	Perm	Auto
WESTBOUND	Split	Auto
EASTBOUND	Split	Auto

Critical Movements Diagram

	A:	B:
SouthBound	419	0
EastBound	28	5
WestBound	262	238
NorthBound	346	23

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{23 + 419 + 262 + 28}{*1425} = 0.444$$

LOS = A

Developed by Chun Wong, 12/94

CalcaDB

December 21, 2009 ,Monday 06:02:06 PM

INTERSECTION DATA SUMMARY SHEET

N/S:	CENTINELA AV	W/E:	MARINA FREEWAY EB RAMPS
I/S No:		AM/PM:	PM
Comments:	EXISTING (2009) CONDITIONS		
COUNT DATE:		STUDY DATE:	
GROWTH FACTOR:			

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	0	774	245	516	969	0	0	0	0	28	0	87
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	774	245	516	969	0	0	0	0	28	0	87

	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
LANE	0 0 3 0 0 1 0	2 0 2 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 1 0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Perm	Auto	Prot-Fix	<none>	<none>	<none>	Split	Auto

Critical Movements Diagram

	A	B
SouthBound	485	284
EastBound	58	28
WestBound	0	0
NorthBound	258	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{258 + 284 + 0 + 58}{*1425} = 0.351$$

LOS = A

Developed by Chun Wong, 12/94

CalcaDB

December 21, 2009 ,Monday 04:38:24 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE
W/E: JUNIETTE ST
I/S No:

AM/PM: PM
Comments: EXISTING (2009) CONDITIONS

COUNT DATE:
STUDY DATE:
GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	3	786	8	19	1094	6	4	2	31	120	4	50
AMBIENT												
RELATED												
PROJECT												
TOTAL	3	786	8	19	1094	6	4	2	31	120	4	50

LANE							
NORTHBOUND	1	0	2	0	1	0	0
SOUTHBOUND	1	0	2	0	1	0	0
WESTBOUND	0	0	0	1	0	0	0
EASTBOUND	0	0	0	1	0	0	0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	367	19
EastBound	174	120
WestBound	37	4
NorthBound	265	3

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{3 + 367 + 4 + 174}{1200} = 0.457$$

LOS = A

2009PM

December 21, 2009 ,Monday 04:38:24 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S:	CENTINELA AVE	W/E:	JEFFERSON BLVD	I/S No:	
AM/PM:	PM	Comments:	EXISTING (2009) CONDITIONS		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	8	9	27	654	8	483	4	923	402	340	1179	11
AMBIENT												
RELATED												
PROJECT												
TOTAL	8	9	27	654	8	483	4	923	402	340	1179	11

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	2	0	3	0	0	1	0	2	0	2	0	0	1	0	2	0	3	0	0	1	0	2	0	3	0	0	1	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	OLA	Prot-Fix	OLA

Critical Movements Diagram

	A:	B:
SouthBound	296	360
EastBound	393	187
WestBound	308	2
NorthBound	26	4

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{26 + 360 + 308 + 187}{*1375} = 0.571$$

LOS = A

Developed by Chun Wong, 12/94

2009PM

December 21, 2009 ,Monday 04:38:24 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: SEPULVEDA BLVD   W/E: CENTINELA AVE   I/S No:

AM/PM: PM   Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	531	1110	251	184	1358	86	441	390	108	86	556	733
AMBIENT												
RELATED												
PROJECT												
TOTAL	531	1110	251	184	1358	86	441	390	108	86	556	733

LANE	NB	SB	WB	EB
	2 0 3 0 0 1 0	2 0 3 0 0 1 0	2 0 1 0 1 0 0	1 0 3 0 0 2 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Prot-Fix	Auto	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	453	101
EastBound	185	86
WestBound	249	243
NorthBound	370	292

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{292 + 453 + 243 + 185}{*1375} = 0.783$$

LOS = C

Developed by Chun Wong, 12/94

2009PM

CalcaDB

December 21, 2009 ,Monday 05:33:18 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY SB RAMPS W/E: JEFFERSON BLVD I/S No:

AM/PM: PM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	141	2	232	472	758	0	204	977	273
AMBIENT											-204	
RELATED												
PROJECT												
TOTAL	0	0	0	141	2	232	472	758	0	204	773	273

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	1	0	0	1	0	1	0	2	0	2	0	0	0	0	0	0	2	0	0	1	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	<none>	<none>	Split	Auto	Prot-Fix	<none>	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	125	125
EastBound	387	-0- 102
WestBound	379	260
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{0 + 125 + 260 + 387}{1200^*} = 0.573$$

LOS = A

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CalcaDB

December 21, 2009 ,Monday 05:33:21 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY NB RAMPS W/E: JEFFERSON BLVD I/S No:

AM/PM: PM Comments: EXISTING (2009) CONDITIONS

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	151	2	276	0	0	0	472	1061	151	204	935	0
AMBIENT								-472				
RELATED												
PROJECT												
TOTAL	151	2	276	0	0	0	472	589	151	204	935	0

LANE	NB	SB	WB	EB
	1 0 0 1 0 0 0	0 0 0 0 0 0 0	0 0 1 0 1 1 0	2 0 2 0 0 0 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Perm	Auto	<none>	<none>	Perm	Auto	Prot-Fix	<none>

Critical Movements Diagram

	A	B
SouthBound	0	0
EastBound	468	112
WestBound	295	472 ~~0~~
NorthBound	278	151

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{278 + 0 + \cancel{0}\ 472 + \cancel{468}\ 112}{1200^*} = \cancel{0.552}\ 0.648$$

LOS = ~~A~~ B

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CalcaDB

December 21, 2009 ,Monday 04:38:24 PM

INTERSECTION DATA SUMMARY SHEET

N/S: INGLEWOOD-CENTINELA AV | W/E: JEFFERSON BL | I/S No:

AM/PM: PM | Comments: EXISTING (2009) CONDITIONS

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	554	355	25	174	409	91	12	703	234	60	995	782
AMBIENT												
RELATED												
PROJECT												
TOTAL	554	355	25	174	409	91	12	703	234	60	995	782

LANE							
NORTHBOUND	2	1	0	0	1	0	0
SOUTHBOUND	1	0	1	0	1	0	0
WESTBOUND	1	0	2	0	1	0	0
EASTBOUND	1	0	3	0	0	1	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Split	Auto
SOUTHBOUND	Split	Auto
WESTBOUND	Perm	Auto
EASTBOUND	Perm	Free

Critical Movements Diagram

	A	B
SouthBound	250	174
EastBound	332	60
WestBound	312	12
NorthBound	234	234

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{234 + 250 + 312 + 60}{*1425} = 0.531$$

LOS = A

CalcaDB

December 21, 2009 ,Monday 04:38:24 PM

INTERSECTION DATA SUMMARY SHEET

N/S:	SR-90 RAMPS	W/E:	SLAUSON AV	I/S No:	
AM/PM:	PM	Comments:	EXISTING (2009) CONDITIONS		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	235	1	1217	3	0	1	659	801	2	4	772	289
AMBIENT												
RELATED												
PROJECT												
TOTAL	235	1	1217	3	0	1	659	801	2	4	772	289

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	1	0	0	0	2	0	1	0	0	0	1	0	0	3	0	2	0	0	1	0	1	0	3	0	0	1	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Split	OLA	Split	Auto	Prot-Fix	Auto	Prot-Fix	Free

Critical Movements Diagram

	A	B
SouthBound	1	3
EastBound	257	4
WestBound	401	244
NorthBound	426	118

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{426 + 3 + 244 + 257}{1375} = 0.676$$

LOS = B

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APPENDIX E

Apartment Trip Generation Rates

Apartment
(220)

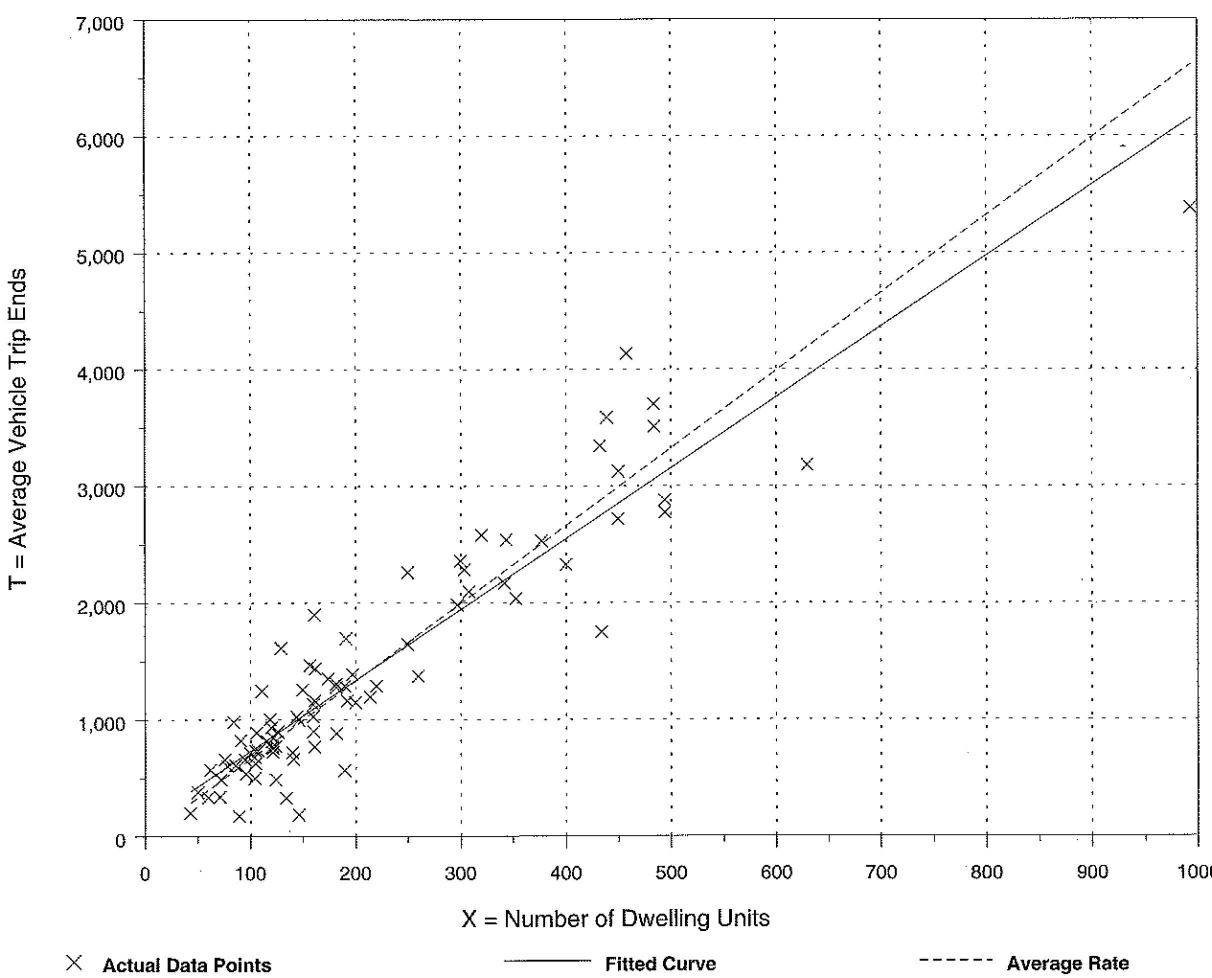
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 88
Avg. Number of Dwelling Units: 210
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.65	1.27 - 12.50	3.07

Data Plot and Equation



Fitted Curve Equation: $T = 6.06(X) + 123.56$

$R^2 = 0.87$

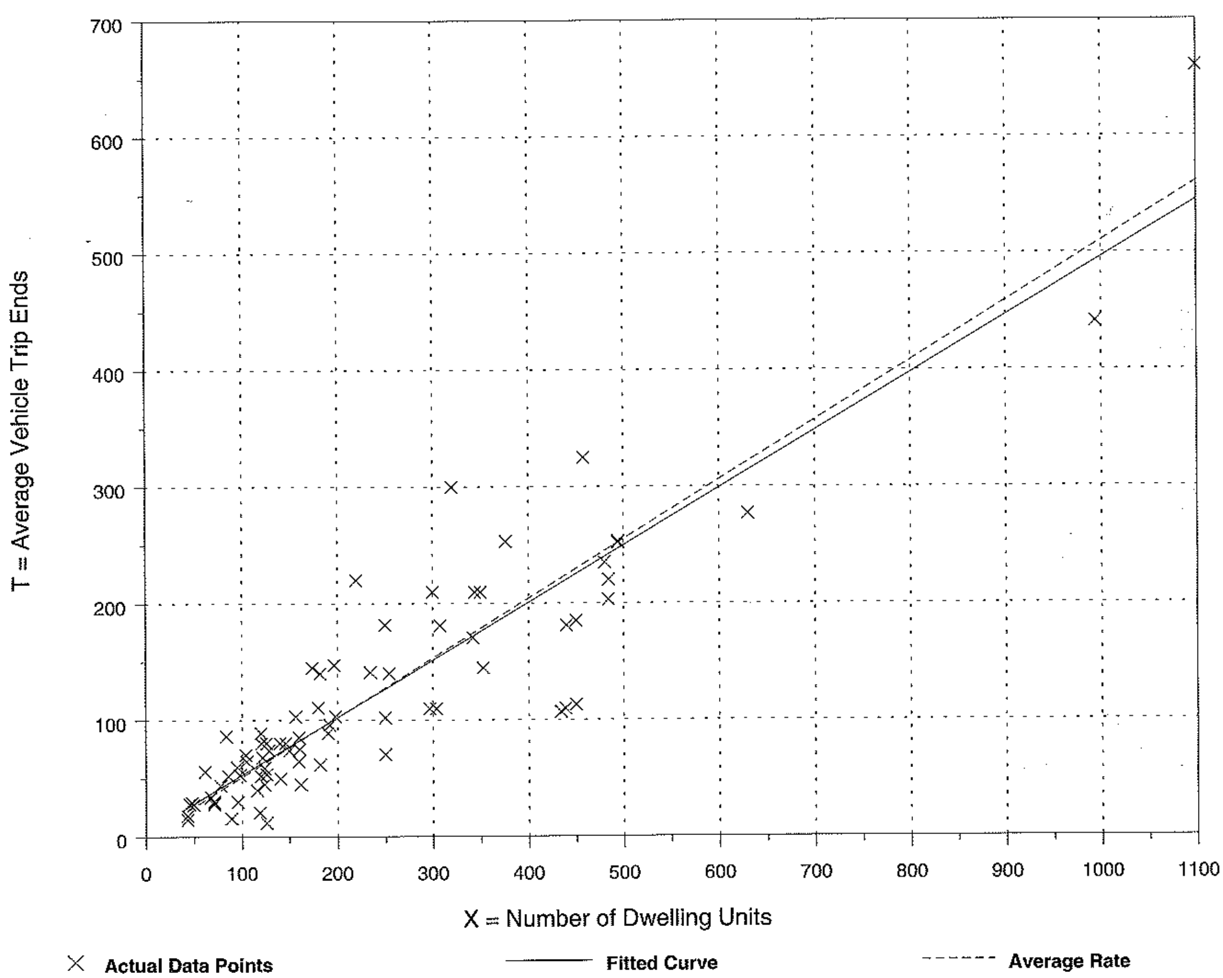
Apartment
(220)

Average Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.**
Number of Studies:	78
Avg. Number of Dwelling Units:	235
Directional Distribution:	20% entering, 80% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.10 - 1.02	0.73

Data Plot and Equation



Fitted Curve Equation: T = 0.49(X) + 3.73 $\quad$ **R^2 = 0.83**

Apartment
(220)

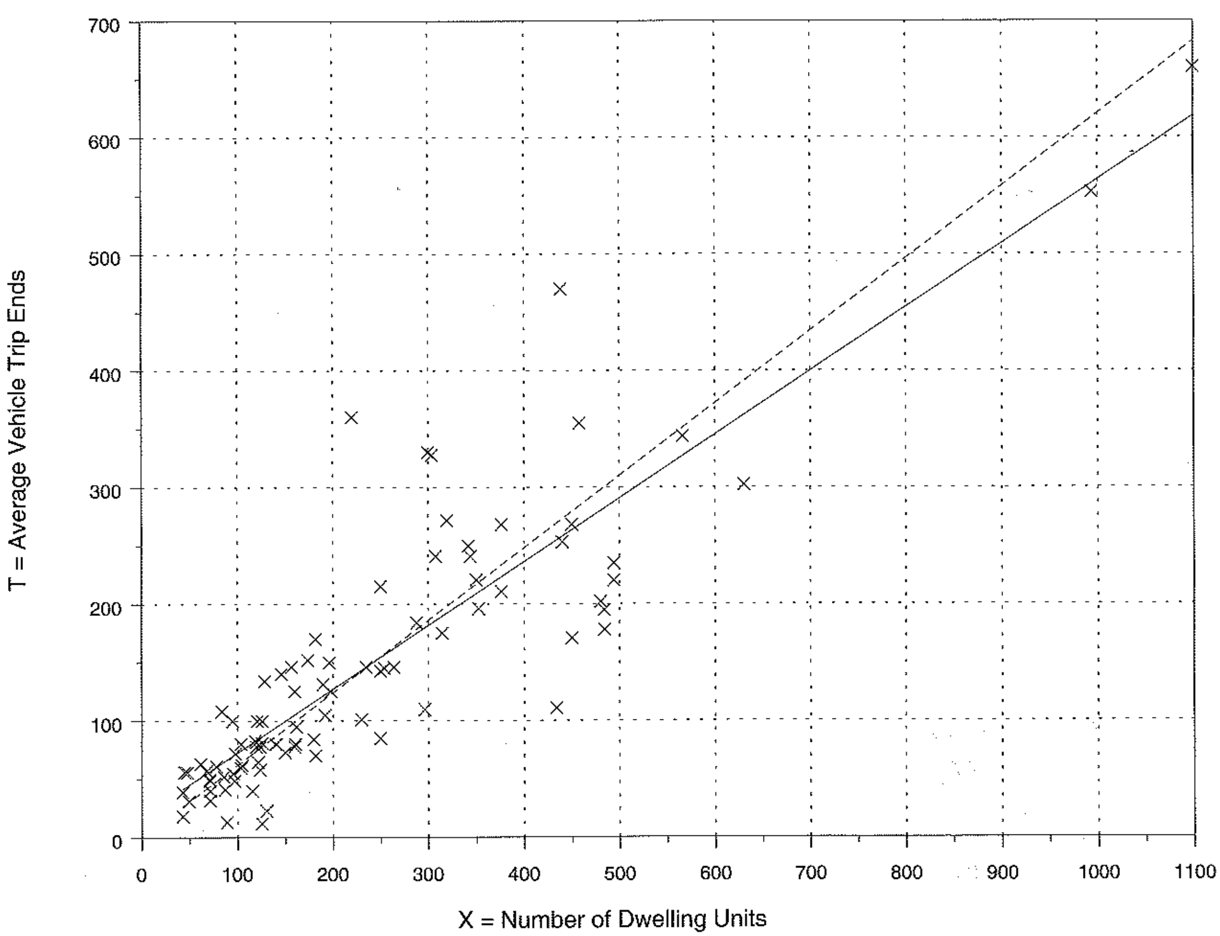
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 90
Avg. Number of Dwelling Units: 233
Directional Distribution: 65% entering, 35% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.62	0.10 - 1.64	0.82

Data Plot and Equation



X **Actual Data Points** ——— **Fitted Curve** - - - - - - **Average Rate**

Fitted Curve Equation: $T = 0.55(X) + 17.65$ **$R^2 = 0.77$**

APPENDIX F

Cumulative (2013) Base Conditions

* All signalized intersections include V/C credit of 0.10 to account from ATSAC and ATCS. ATCS credit of 0.03 is not automatically reflected on the capacity calculation worksheets.

CBASEAM

CalcaDB

December 21, 2009 ,Monday 04:38:56 PM

INTERSECTION DATA SUMMARY SHEET

N/S: LINCOLN BLVD W/E: JEFFERSON BLVD I/S No:

AM/PM: AM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	43	2009	650	387	1235	253	364	124	533	175	403	48
AMBIENT												
RELATED												
PROJECT												
TOTAL	43	2009	650	387	1235	253	364	124	533	175	403	48

	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
LANE	1 0 3 0 1 1 0	2 0 3 0 1 0 0	2 0 2 0 0 2 0	1 0 2 0 1 0 0

	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Prot-Fix	OLA	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	Auto

Critical Movements Diagram

	A	B
SouthBound	372	213
EastBound	150	175
WestBound	80	200
NorthBound	532	43

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

V/C = (532 + 213 + 200 + 150) / *1375 = 0.726 LOS = C

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December 21, 2009 ,Monday 04:38:56 PM

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INTERSECTION DATA SUMMARY SHEET

N/S:	WESTLAWN AV	W/E:	JEFFERSON BL	I/S No:	
AM/PM:	AM	Comments:	CUMULATIVE (2013) BASE		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	4	112	2	65	5	1336	280	148	1672	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	4	112	2	65	5	1336	280	148	1672	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	2	0	1	0	0	1	0	3	0	1	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A:	B:
SouthBound	65	112
EastBound	418	148
WestBound	539	5
NorthBound	4	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{4 + 112 + 539 + 148}{*1500} = 0.465$$

LOS = A

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December 21, 2009 ,Monday 04:38:56 PM

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INTERSECTION DATA SUMMARY SHEET

N/S:	GROSVENOR BL	W/E:	JEFFERSON BL	I/S No:	
AM/PM:	AM	Comments:	CUMULATIVE (2013) BASE		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	4	0	10	0	1613	246	78	1710	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	0	4	0	10	0	1613	246	78	1710	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	4	0	0	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	<none>	<none>	Split	Auto	Perm	Auto	Perm	<none>

Critical Movements Diagram

	A	B
SouthBound	14	4
EastBound	428	78
WestBound	620	0
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{0 + 14 + 620 + 78}{1200} = 0.593$$

LOS = A

CBASEAM

CalcaDB

December 21, 2009 ,Monday 04:38:56 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV | W/E: WASHINGTON BL | I/S No:

AM/PM: AM | Comments: CUMULATIVE (2013) BASE

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	166	1496	121	99	873	36	114	483	114	108	678	148
AMBIENT												
RELATED												
PROJECT												
TOTAL	166	1496	121	99	873	36	114	483	114	108	678	148

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	1	0	1	0	0	1	0	2	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	437	99
EastBound	413	108
WestBound	299	114
NorthBound	809	166

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{809 + 99 + 114 + 413}{*1500} = 0.887$$

LOS = D

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December 21, 2009 ,Monday 04:38:56 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S:	CENTINELA AVE	W/E:	CULVER BLVD	I/S No:	
AM/PM:	AM	Comments:	CUMULATIVE (2013) BASE		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	21	1290	118	110	984	129	140	356	178	290	812	25
AMBIENT												
RELATED												
PROJECT												
TOTAL	21	1290	118	110	984	129	140	356	178	290	812	25

LANE	NB	SB	WB	EB
	1 0 2 0 0 1 0	1 0 1 0 1 0 0	1 0 1 0 1 0 0	1 0 1 0 1 0 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	557	110
EastBound	419	290
WestBound	267	140
NorthBound	645	21

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{645 + 110 + 140 + 419}{*1500} = 0.806$$

LOS = D

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CBASEAM

CalcaDB

December 21, 2009 ,Monday 04:38:56 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE
W/E: MARINA FREEWAY WB RAMPS
I/S No:

AM/PM: AM
Comments: CUMULATIVE (2013) BASE

COUNT DATE:
STUDY DATE:
GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	18	763	94	0	1250	24	363	3	660	16	0	49
AMBIENT												
RELATED												
PROJECT												
TOTAL	18	763	94	0	1250	24	363	3	660	16	0	49

LANE	1	2	3	4	5	6	7
NORTHBOUND	1	0	2	0	1	0	0
SOUTHBOUND	0	0	2	0	1	0	0
WESTBOUND	1	0	0	1	0	1	0
EASTBOUND	0	0	0	0	0	0	1

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	Perm	Auto
WESTBOUND	Split	Auto
EASTBOUND	Split	Auto

Critical Movements Diagram

	A	B
SouthBound	425	0
EastBound	65	16
WestBound	342	342
NorthBound	286	18

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{18 + 425 + 342 + 65}{*1425} = 0.526$$

LOS = A

CBASEAM

CalcaDB

December 21, 2009 ,Monday 04:38:56 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE   W/E: MARINA FREEWAY EB RAMPS   I/S No:

AM/PM: AM   Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	856	438	404	1256	0	0	0	0	21	0	143
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	856	438	404	1256	0	0	0	0	21	0	143

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	2	0	1	0	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Perm	Auto	Prot-Fix	<none>	<none>	<none>	Split	Auto

Critical Movements Diagram

	SouthBound	EastBound	WestBound	NorthBound
A:	419	82	0	438
B:	222	21	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{438 + 222 + 0 + 82}{*1425} = 0.451$$

LOS = A

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CalcaDB

December 21, 2009 ,Monday 04:38:56 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV | W/E: JUNIETTE ST | I/S No:

AM/PM: AM | Comments: CUMULATIVE (2013) BASE

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	9	1028	22	32	1263	49	9	1	69	36	0	15
AMBIENT												
RELATED												
PROJECT												
TOTAL	9	1028	22	32	1263	49	9	1	69	36	0	15

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	2	0	1	0	0	1	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	437	32
EastBound	51	36
WestBound	79	9
NorthBound	350	9

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{9 + 437 + 79 + 36}{1200} = 0.468$$

LOS = A

Developed by Chun Wong, 12/94

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE W/E: JEFFERSON BLVD I/S No:

AM/PM: AM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	14	32	49	384	176	723	136	1154	511	532	1079	105
AMBIENT												
RELATED												
PROJECT												
TOTAL	14	32	49	384	176	723	136	1154	511	532	1079	105

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	2 0 3 0 0 1 0	2 0 2 0 0 1 0	2 0 3 0 0 1 0	2 0 3 0 0 1 0

SIGNAL	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	OLA	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	430	211
EastBound	360	293
WestBound	385	75
NorthBound	12	8

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{8 + 430 + 385 + 293}{*1375} = 0.742$$

LOS = C

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December 21, 2009 ,Monday 04:38:56 PM

INTERSECTION DATA SUMMARY SHEET

N/S: SEPULVEDA BLVD W/E: CENTINELA AVE I/S No:

AM/PM: AM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	937	1624	219	87	944	164	384	1119	199	56	315	520
AMBIENT												
RELATED												
PROJECT												
TOTAL	937	1624	219	87	944	164	384	1119	199	56	315	520

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	2	0	3	0	0	1	0	2	0	3	0	0	1	0	2	0	1	0	1	0	0	1	0	3	0	0	2	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Prot-Fix	Auto	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	315	48
EastBound	105	56
WestBound	659	211
NorthBound	541	515

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{515 + 315 + 659 + 56}{*1375} = 1.054$$

LOS = F

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December 21, 2009 ,Monday 05:33:56 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY SB RAMPS   W/E: JEFFERSON BLVD   I/S No:

AM/PM: AM   Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	149	1	361	382	957	0	311	1051	276
AMBIENT											-311	
RELATED												
PROJECT												
TOTAL	0	0	0	149	1	361	382	957	0	311	740	276

	NB							SB							WB							EB						
LANE	0	0	0	0	0	0	0	1	0	0	1	0	1	0	2	0	2	0	0	0	0	0	0	2	0	0	1	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	<none>	<none>	Split	Auto	Prot-Fix	<none>	Perm	Auto

Critical Movements Diagram

SouthBound
A: 181
B: 149

EastBound
A: 370
B: 156 0

WestBound
A: 479
B: 210

NorthBound
A: 0
B: 0

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{0 + 181 + 210 + 370}{1200^{*}} = 0.564$$

LOS = A

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CalcaDB

December 21, 2009 ,Monday 05:34:02 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY NB RAMPS | W/E: JEFFERSON BLVD | I/S No:

AM/PM: AM | Comments: CUMULATIVE (2013) BASE

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	134	56	131	0	0	0	382	1207	311	311	889	0
AMBIENT								-382				
RELATED												
PROJECT												
TOTAL	134	56	131	0	0	0	382	825	311	311	889	0

LANE							
NORTHBOUND	1	0	0	1	0	0	0
SOUTHBOUND	0	0	0	0	0	0	0
WESTBOUND	0	0	1	0	1	1	0
EASTBOUND	2	0	2	0	0	0	0

SIGNAL	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
Phasing	Perm	<none>	Perm	Prot-Fix
RTOR	Auto	<none>	Auto	<none>

Critical Movements Diagram

	A	B
SouthBound	0	0
EastBound	445	171
WestBound	413	382 ~~0~~
NorthBound	187	134

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{187 + 0 + 413 + 171}{1200^*} = 0.573$$

LOS = A

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INTERSECTION DATA SUMMARY SHEET

N/S: INGLEWOOD-CENTINELA AV

W/E: JEFFERSON BL

I/S No:

AM/PM: AM

Comments: CUMULATIVE (2013) BASE

COUNT DATE:

STUDY DATE:

GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	784	627	10	140	293	92	13	882	100	72	960	539
AMBIENT												
RELATED												
PROJECT												
TOTAL	784	627	10	140	293	92	13	882	100	72	960	539

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	2	1	0	0	1	0	0	1	0	2	0	0	1	0	1	0	2	0	1	0	0	1	0	3	0	0	1	0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Split	Auto	Split	Auto	Perm	Auto	Perm	Free

Critical Movements Diagram

	A	B
SouthBound	147	140
EastBound	320	72
WestBound	327	13
NorthBound	355	355

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{355 + 147 + 327 + 72}{*1425} = 0.562$$

LOS = A

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December 21, 2009 ,Monday 04:38:56 PM

INTERSECTION DATA SUMMARY SHEET

N/S: SR-90 RAMPS W/E: SLAUSON AV I/S No:

AM/PM: AM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	152	5	1305	2	0	1	1913	1314	6	1	409	408
AMBIENT												
RELATED												
PROJECT												
TOTAL	152	5	1305	2	0	1	1913	1314	6	1	409	408

LANE							
NORTHBOUND	1	1	0	0	0	2	0
SOUTHBOUND	1	0	0	0	1	0	0
WESTBOUND	3	0	2	0	0	1	0
EASTBOUND	1	0	3	0	0	1	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Split	OLA
SOUTHBOUND	Split	Auto
WESTBOUND	Prot-Fix	Auto
EASTBOUND	Prot-Fix	Free

Critical Movements Diagram

	A	B
SouthBound	1	2
EastBound	136	1
WestBound	657	708
NorthBound	79	79

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{79 + 2 + 708 + 136}{1375} = 0.673$$

LOS = B

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CalcaDB

December 21, 2009 ,Monday 04:39:19 PM

INTERSECTION DATA SUMMARY SHEET

N/S: LINCOLN BLVD W/E: JEFFERSON BLVD I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	48	1747	274	508	1792	837	597	510	682	58	232	73
AMBIENT												
RELATED												
PROJECT												
TOTAL	48	1747	274	508	1792	837	597	510	682	58	232	73

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	3	0	1	1	0	2	0	3	0	1	0	0	2	0	2	0	0	2	0	1	0	2	0	1	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Prot-Fix	OLA	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	Auto

Critical Movements Diagram

	A	B
SouthBound	837	279
EastBound	102	58
WestBound	255	328
NorthBound	437	48

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{48 + 837 + 328 + 102}{*1375} = 0.886$$

LOS = D

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CalcaDB

December 21, 2009 ,Monday 04:39:19 PM

INTERSECTION DATA SUMMARY SHEET

N/S: WESTLAWN AV W/E: JEFFERSON BL I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	0	0	4	315	0	161	5	1634	86	79	1373	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	4	315	0	161	5	1634	86	79	1373	0

LANE	NB	SB	WB	EB
	1 0 1 0 0 1 0	1 0 1 0 0 1 0	1 0 2 0 1 0 0	1 0 3 0 1 0 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	161	315
EastBound	343	79
WestBound	573	5
NorthBound	4	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

V/C = (4 + 315 + 573 + 79) / *1500 = 0.577 LOS = A

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CalcaDB

December 21, 2009 ,Monday 04:39:19 PM

INTERSECTION DATA SUMMARY SHEET

N/S: GROSVENOR BL W/E: JEFFERSON BL I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	0	0	0	50	0	56	0	1669	42	17	1676	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	0	50	0	56	0	1669	42	17	1676	0

LANE							
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	0	0	0	0	0	0	1
WESTBOUND	0	0	2	0	1	0	0
EASTBOUND	1	0	4	0	0	0	0

SIGNAL	Phasing	RTOR
NORTHBOUND	<none>	<none>
SOUTHBOUND	Split	Auto
WESTBOUND	Perm	Auto
EASTBOUND	Perm	<none>

Critical Movements Diagram

	A	B
SouthBound	106	50
EastBound	419	17
WestBound	570	0
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{0 + 106 + 570 + 17}{1200} = 0.578$$

LOS = A

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December 21, 2009 ,Monday 04:39:19 PM

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INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV | W/E: WASHINGTON BL | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) BASE

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	157	1181	71	124	1420	87	129	794	145	102	704	156
AMBIENT												
RELATED												
PROJECT												
TOTAL	157	1181	71	124	1420	87	129	794	145	102	704	156

LANE							
NORTHBOUND	1	0	1	0	1	0	0
SOUTHBOUND	1	0	2	0	0	1	0
WESTBOUND	1	0	1	0	1	0	0
EASTBOUND	1	0	1	0	1	0	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	Perm	Auto
WESTBOUND	Perm	Auto
EASTBOUND	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	710	124
EastBound	430	102
WestBound	470	129
NorthBound	626	157

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{157 + 710 + 470 + 102}{*1500} = 0.889$$

LOS = D

Developed by Chun Wong, 12/94

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CalcaDB

December 21, 2009 ,Monday 04:39:19 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE W/E: CULVER BLVD I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	16	1133	105	143	1326	254	116	597	152	172	442	22
AMBIENT												
RELATED												
PROJECT												
TOTAL	16	1133	105	143	1326	254	116	597	152	172	442	22

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	2	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0

	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

SouthBound
A: 790
B: 143

EastBound
A: 232
B: 172

WestBound
A: 375
B: 116

NorthBound
A: 567
B: 16

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{16 + 790 + 375 + 172}{*1500} = 0.832$$

LOS = D

Developed by Chun Wong, 12/94

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December 21, 2009 ,Monday 04:39:19 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE | W/E: MARINA FREEWAY WB RAMPS | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) BASE

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	25	811	151	0	1397	33	272	19	571	5	0	25
AMBIENT												
RELATED												
PROJECT												
TOTAL	25	811	151	0	1397	33	272	19	571	5	0	25

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	2	0	1	0	0	0	0	2	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Perm	Auto	Split	Auto	Split	Auto

Critical Movements Diagram

SouthBound
A: 477
B: 0

EastBound
A: 30
B: 5

WestBound
A: 295
B: 272

NorthBound
A: 321
B: 25

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{25 + 477 + 295 + 30}{*1425} = 0.510$$

LOS = A

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CalcaDB

December 21, 2009 ,Monday 04:39:19 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE | W/E: MARINA FREEWAY EB RAMPS | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) BASE

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	956	287	562	1141	0	0	0	0	30	0	105
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	956	287	562	1141	0	0	0	0	30	0	105

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	0 0 2 0 1 0 0	2 0 3 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 1 0

SIGNAL	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
	Perm	OLA	Prot-Fix	<none>	<none>	<none>	Split	Auto

Critical Movements Diagram

SouthBound
A: 380
B: 309

EastBound
A: 68
B: 30

WestBound
A: 0
B: 0

NorthBound
A: 414
B: 0

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{414 + 309 + 0 + 68}{*1425} = 0.485$$

LOS = A

Developed by Chun Wong, 12/94

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December 21, 2009 ,Monday 04:39:19 PM

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INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV

W/E: JUNIETTE ST

I/S No:

AM/PM: PM

Comments: CUMULATIVE (2013) BASE

COUNT DATE:

STUDY DATE:

GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	3	991	9	21	1279	6	4	2	33	130	4	54
AMBIENT												
RELATED												
PROJECT												
TOTAL	3	991	9	21	1279	6	4	2	33	130	4	54

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	1 0 2 0 1 0 0	1 0 2 0 1 0 0	0 0 0 1 0 0 0	0 0 0 1 0 0 0

SIGNAL	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	428	21
EastBound	188	130
WestBound	39	4
NorthBound	333	3

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{3 + 428 + 4 + 188}{1200} = 0.519$$

LOS = A

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CBASEPM

CalcaDB

December 21, 2009 ,Monday 04:39:19 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE W/E: JEFFERSON BLVD I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	97	89	46	730	56	549	30	1056	483	375	1304	40
AMBIENT												
RELATED												
PROJECT												
TOTAL	97	89	46	730	56	549	30	1056	483	375	1304	40

LANE							
NORTHBOUND	2	0	3	0	0	1	0
SOUTHBOUND	2	0	2	0	0	1	0
WESTBOUND	2	0	3	0	0	1	0
EASTBOUND	2	0	3	0	0	1	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Prot-Fix	Auto
SOUTHBOUND	Prot-Fix	OLA
WESTBOUND	Prot-Fix	OLA
EASTBOUND	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	343	402
EastBound	435	206
WestBound	352	17
NorthBound	38	53

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{38 + 402 + 352 + 206}{*1375} = 0.656$$

LOS = B

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CBASEPM

December 21, 2009 ,Monday 04:39:19 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S:	SEPULVEDA BLVD	W/E:	CENTINELA AVE	I/S No:	
AM/PM:	PM	Comments:	CUMULATIVE (2013) BASE		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	637	1275	274	239	1605	106	491	470	137	130	700	956
AMBIENT												
RELATED												
PROJECT												
TOTAL	637	1275	274	239	1605	106	491	470	137	130	700	956

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	2	0	3	0	0	1	0	2	0	3	0	0	1	0	2	0	1	0	1	0	0	1	0	3	0	0	2	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Prot-Fix	Auto	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	535	131
EastBound	233	130
WestBound	304	270
NorthBound	425	350

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{350 + 535 + 270 + 233}{*1375} = 0.939$$

LOS = E

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CBASEPM

CalcaDB

December 21, 2009 ,Monday 05:34:31 PM

INTERSECTION DATA SUMMARY SHEET

N/S:	I-405 FWY SB RAMPS	W/E:	JEFFERSON BLVD	I/S No:	
AM/PM:	PM	Comments:	CUMULATIVE (2013) BASE		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	192	2	261	510	918	0	300	1291	339
AMBIENT											-300	
RELATED												
PROJECT												
TOTAL	0	0	0	192	2	261	510	918	0	300	991	339

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	1	0	0	1	0	1	0	2	0	2	0	0	0	0	0	0	2	0	0	1	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	<none>	<none>	Split	Auto	Prot-Fix	<none>	Perm	Auto

Critical Movements Diagram

SouthBound
A: 152
B: 152

EastBound
A: 496
B: 150 ~~0~~

WestBound
A: 459
B: 281

NorthBound
A: 0
B: 0

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{0 + 152 + 281 + 496}{1200^*} = 0.704$$

LOS = C

Developed by Chun Wong, 12/94

CBASEPM

CalcaDB

December 21, 2009 ,Monday 05:34:35 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY NB RAMPS | W/E: JEFFERSON BLVD | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) BASE

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	173	2	298	0	0	0	510	1233	243	300	1207	0
AMBIENT								-510				
RELATED												
PROJECT												
TOTAL	173	2	298	0	0	0	510	723	243	300	1207	0

LANE

NORTHBOUND	1	0	0	1	0	0	0
SOUTHBOUND	0	0	0	0	0	0	0
WESTBOUND	0	0	1	0	1	1	0
EASTBOUND	2	0	2	0	0	0	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	<none>	<none>
WESTBOUND	Perm	Auto
EASTBOUND	Prot-Fix	<none>

Critical Movements Diagram

SouthBound
A: 0
B: 0

EastBound
A: 604
B: 165

WestBound
A: 362
B: 510 ~~0~~

NorthBound
A: 300
B: 173

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{300 + 0 + \overset{510}{\cancel{0}} + \overset{165}{\cancel{604}}}{1200^*} = \cancel{0.683}\ 0.743$$

LOS = ~~B~~ C

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INTERSECTION DATA SUMMARY SHEET

N/S: INGLEWOOD-CENTINELA AV   W/E: JEFFERSON BL   I/S No:

AM/PM: PM   Comments: CUMULATIVE (2013) BASE

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	653	431	27	192	464	98	13	834	253	92	1146	873
AMBIENT												
RELATED												
PROJECT												
TOTAL	653	431	27	192	464	98	13	834	253	92	1146	873

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	2 1 0 0 1 0 0	1 0 2 0 0 1 0	1 0 2 0 1 0 0	1 0 3 0 0 1 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Split	Auto	Split	Auto	Perm	Auto	Perm	Free

Critical Movements Diagram

	A	B
SouthBound	232	192
EastBound	382	92
WestBound	362	13
NorthBound	278	278

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{278 + 232 + 362 + 92}{*1425} = 0.606$$

LOS = B

CBASEPM

December 21, 2009 ,Monday 04:39:19 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: SR-90 RAMPS | W/E: SLAUSON AV | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) BASE

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	337	1	1389	3	0	1	795	981	2	4	931	480
AMBIENT												
RELATED												
PROJECT												
TOTAL	337	1	1389	3	0	1	795	981	2	4	931	480

LANE							
NORTHBOUND	1	1	0	0	0	2	0
SOUTHBOUND	1	0	0	0	1	0	0
WESTBOUND	3	0	2	0	0	1	0
EASTBOUND	1	0	3	0	0	1	0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Split	OLA	Split	Auto	Prot-Fix	Auto	Prot-Fix	Free

Critical Movements Diagram

	A	B
SouthBound	1	3
EastBound	310	4
WestBound	491	294
NorthBound	470	169

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{470 + 3 + 294 + 310}{1375} = 0.783$$

LOS = C

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APPENDIX G

Cumulative (2013) Plus Project Conditions

* All signalized intersections include V/C credit of 0.10 to account from ATSAC and ATCS. ATCS credit of 0.03 is not automatically reflected on the capacity calculation worksheets.

AMCPROJ

CalcaDB

December 21, 2009 ,Monday 04:39:45 PM

INTERSECTION DATA SUMMARY SHEET

N/S: LINCOLN BLVD   W/E: JEFFERSON BLVD   I/S No:

AM/PM: AM   Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	43	2009	650	387	1235	253	372	128	545	175	403	48
AMBIENT												
RELATED												
PROJECT												
TOTAL	43	2009	650	387	1235	253	372	128	545	175	403	48

LANE							
NORTHBOUND	1	0	3	0	1	1	0
SOUTHBOUND	2	0	3	0	1	0	0
WESTBOUND	2	0	2	0	0	2	0
EASTBOUND	1	0	2	0	1	0	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Prot-Fix	OLA
SOUTHBOUND	Prot-Fix	Auto
WESTBOUND	Prot-Fix	OLA
EASTBOUND	Prot-Fix	Auto

Critical Movements Diagram

	A	B
SouthBound	372	213
EastBound	150	175
WestBound	87	205
NorthBound	532	43

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{532 + 213 + 205 + 150}{*1375} = 0.730$$

LOS = C

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AMCPROJ

CalcaDB

December 21, 2009 ,Monday 04:39:45 PM

INTERSECTION DATA SUMMARY SHEET

N/S: WESTLAWN AV W/E: JEFFERSON BL I/S No:

AM/PM: AM Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	4	112	2	65	5	1360	280	148	1672	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	4	112	2	65	5	1360	280	148	1672	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	2	0	1	0	0	1	0	3	0	1	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	65	112
EastBound	418	148
WestBound	547	5
NorthBound	4	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{4 + 112 + 547 + 148}{*1500} = 0.471$$

LOS = A

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December 21, 2009 ,Monday 04:39:45 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: GROSVENOR BL **W/E:** JEFFERSON BL **I/S No:**

AM/PM: AM **Comments:** CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: **STUDY DATE:** **GROWTH FACTOR:**

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	64	0	34	0	1613	260	78	1710	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	0	64	0	34	0	1613	260	78	1710	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	4	0	0	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	<none>	<none>	Split	Auto	Perm	Auto	Perm	<none>

Critical Movements Diagram

	A	B
SouthBound	98	64
EastBound	428	78
WestBound	624	0
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{0 + 98 + 624 + 78}{1200} = 0.667$$

LOS = B

AMCPROJ

December 21, 2009 ,Monday 04:39:45 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV W/E: WASHINGTON BL I/S No:

AM/PM: AM Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	170	1499	125	99	874	36	114	483	114	108	678	148
AMBIENT												
RELATED												
PROJECT												
TOTAL	170	1499	125	99	874	36	114	483	114	108	678	148

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	1	0	1	0	0	1	0	2	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0

	NORTHBOUND Phasing	NORTHBOUND RTOR	SOUTHBOUND Phasing	SOUTHBOUND RTOR	WESTBOUND Phasing	WESTBOUND RTOR	EASTBOUND Phasing	EASTBOUND RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

SouthBound
A: 437
B: 99

EastBound
A: 413
B: 108

WestBound
A: 299
B: 114

NorthBound
A: 812
B: 170

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{812 + 99 + 114 + 413}{*1500} = 0.889$$

LOS = D

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CalcaDB

December 21, 2009 ,Monday 04:39:45 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE   W/E: CULVER BLVD   I/S No:

AM/PM: AM   Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	21	1302	121	110	985	129	140	356	178	290	812	25
AMBIENT												
RELATED												
PROJECT												
TOTAL	21	1302	121	110	985	129	140	356	178	290	812	25

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	1 0 2 0 0 1 0	1 0 1 0 1 0 0	1 0 1 0 1 0 0	1 0 1 0 1 0 0

SIGNAL	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	557	110
EastBound	419	290
WestBound	267	140
NorthBound	651	21

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{651 + 110 + 140 + 419}{*1500} = 0.810$$

LOS = D

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December 21, 2009 ,Monday 04:39:45 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE W/E: MARINA FREEWAY WB RAMPS I/S No:

AM/PM: AM Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	18	779	94	0	1251	24	364	3	660	16	0	49
AMBIENT												
RELATED												
PROJECT												
TOTAL	18	779	94	0	1251	24	364	3	660	16	0	49

	NB							SB							WB							EB						
LANE	1	0	2	0	1	0	0	0	0	2	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Perm	Auto	Perm	Auto	Split	Auto	Split	Auto

Critical Movements Diagram

	A	B
SouthBound	425	0
EastBound	65	16
WestBound	342	342
NorthBound	291	18

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{18 + 425 + 342 + 65}{*1425} = 0.526$$

LOS = A

AMCPROJ

December 21, 2009 ,Monday 04:39:45 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE — W/E: MARINA FREEWAY EB RAMPS — I/S No:

AM/PM: AM — Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: — STUDY DATE: — GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	0	872	446	404	1259	0	0	0	0	21	0	143
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	872	446	404	1259	0	0	0	0	21	0	143

LANE							
NORTHBOUND	0	0	2	0	1	0	0
SOUTHBOUND	2	0	3	0	0	0	0
WESTBOUND	0	0	0	0	0	0	0
EASTBOUND	0	0	0	1	0	1	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	Prot-Fix	<none>
WESTBOUND	<none>	<none>
EASTBOUND	Split	Auto

Critical Movements Diagram

	A	B
SouthBound	420	222
EastBound	82	21
WestBound	0	0
NorthBound	446	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{446 + 222 + 0 + 82}{*1425} = 0.456$$

LOS = A

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December 21, 2009 ,Monday 04:39:45 PM

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INTERSECTION DATA SUMMARY SHEET

N/S:	CENTINELA AV	W/E:	JUNIETTE ST	I/S No:	
AM/PM:	AM	Comments:	CUMULATIVE (2013) PLUS PROJECT		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	8	1054	22	32	1271	44	9	1	69	33	0	13
AMBIENT												
RELATED												
PROJECT												
TOTAL	8	1054	22	32	1271	44	9	1	69	33	0	13

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	2	0	1	0	0	1	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0

	NORTHBOUND Phasing	NORTHBOUND RTOR	SOUTHBOUND Phasing	SOUTHBOUND RTOR	WESTBOUND Phasing	WESTBOUND RTOR	EASTBOUND Phasing	EASTBOUND RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	438	32
EastBound	46	33
WestBound	79	9
NorthBound	359	8

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{8 + 438 + 79 + 33}{1200} = 0.465$$

LOS = A

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December 21, 2009 ,Monday 04:39:45 PM

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INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE | W/E: JEFFERSON BLVD | I/S No:

AM/PM: AM | Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	16	32	49	382	176	731	136	1158	510	558	1103	114
AMBIENT												
RELATED												
PROJECT												
TOTAL	16	32	49	382	176	731	136	1158	510	558	1103	114

LANE	NB	SB	WB	EB
	2 0 3 0 0 1 0	2 0 2 0 0 1 0	2 0 3 0 0 1 0	2 0 3 0 0 1 0

SIGNAL	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	OLA	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	424	210
EastBound	368	307
WestBound	386	75
NorthBound	12	9

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{9 + 424 + 386 + 307}{*1375} = 0.749$$

LOS = C

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December 21, 2009 ,Monday 04:39:45 PM

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INTERSECTION DATA SUMMARY SHEET

N/S:	SEPULVEDA BLVD	W/E:	CENTINELA AVE	I/S No:	
AM/PM:	AM	Comments:	CUMULATIVE (2013) PLUS PROJECT		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	938	1624	219	87	944	164	384	1119	199	56	319	528
AMBIENT												
RELATED												
PROJECT												
TOTAL	938	1624	219	87	944	164	384	1119	199	56	319	528

LANE							
NORTHBOUND	2	0	3	0	0	1	0
SOUTHBOUND	2	0	3	0	0	1	0
WESTBOUND	2	0	1	0	1	0	0
EASTBOUND	1	0	3	0	0	2	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Prot-Fix	Auto
SOUTHBOUND	Prot-Fix	Auto
WESTBOUND	Prot-Fix	OLA
EASTBOUND	Prot-Fix	OLA

Critical Movements Diagram

	A:	B:
SouthBound	315	48
EastBound	106	56
WestBound	659	211
NorthBound	541	516

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

V/C = (516 + 315 + 659 + 56) / *1375 = 1.054

LOS = F

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December 21, 2009 ,Monday 05:52:46 PM

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INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY SB RAMPS   W/E: JEFFERSON BLVD   I/S No:

AM/PM: AM   Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	149	1	361	382	958	0	315	1063	279
AMBIENT											-315	
RELATED												
PROJECT												
TOTAL	0	0	0	149	1	361	382	958	0	315	748	279

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	0 0 0 0 0 0 0	1 0 0 1 0 1 0	2 0 2 0 0 0 0	0 0 2 0 0 1 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	<none>	<none>	Split	Auto	Prot-Fix	<none>	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	181	149
EastBound	374	158 ~~0~~
WestBound	479	210
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{0 + 181 + 210 + 374}{1200^*} = 0.568$$

LOS = A

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December 21, 2009 ,Monday 05:52:59 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY NB RAMPS W/E: JEFFERSON BLVD I/S No:

AM/PM: AM Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	134	56	131	0	0	0	382	1208	311	315	897	0
AMBIENT								-382				
RELATED												
PROJECT												
TOTAL	134	56	131	0	0	0	382	826	311	315	897	0

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	1 0 0 1 0 0 0	0 0 0 0 0 0 0	0 0 1 0 1 1 0	2 0 2 0 0 0 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Perm	Auto	<none>	<none>	Perm	Auto	Prot-Fix	<none>

Critical Movements Diagram

SouthBound A: 0 B: 0

EastBound A: 449 B: 173

WestBound A: 413 B: 382.0

NorthBound A: 187 B: 134

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{187 + 0 + 413 + 173}{1200^*} = 0.574$$

LOS = A

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December 21, 2009 ,Monday 04:39:45 PM

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INTERSECTION DATA SUMMARY SHEET

N/S: INGLEWOOD-CENTINELA AV

W/E: JEFFERSON BL

I/S No:

AM/PM: AM

Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE:

STUDY DATE:

GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	791	627	10	140	293	93	13	883	100	75	976	542
AMBIENT												
RELATED												
PROJECT												
TOTAL	791	627	10	140	293	93	13	883	100	75	976	542

	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
LANE	2 1 0 0 1 0 0	1 0 2 0 0 1 0	1 0 2 0 1 0 0	1 0 3 0 0 1 0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Split	Auto	Split	Auto	Perm	Auto	Perm	Free

Critical Movements Diagram

	A	B
SouthBound	147	140
EastBound	325	75
WestBound	328	13
NorthBound	357	357

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{357 + 147 + 328 + 75}{*1425} = 0.566$$

LOS = A

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INTERSECTION DATA SUMMARY SHEET

N/S: SR-90 RAMPS | W/E: SLAUSON AV | I/S No:

AM/PM: AM | Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	152	5	1309	2	0	1	1913	1314	6	1	413	408
AMBIENT												
RELATED												
PROJECT												
TOTAL	152	5	1309	2	0	1	1913	1314	6	1	413	408

LANE	NB	SB	WB	EB
LT	1	1	3	1
LT/TH	1	0	0	0
TH	0	0	2	3
LT/TH/RT	0	0	0	0
TH/RT	0	1	0	0
RT	2	0	1	1
LT/RT	0	0	0	0

SIGNAL	NB	SB	WB	EB
Phasing	Split	Split	Prot-Fix	Prot-Fix
RTOR	OLA	Auto	Auto	Free

Critical Movements Diagram

	A	B
SouthBound	1	2
EastBound	138	1
WestBound	657	708
NorthBound	79	79

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{79 + 2 + 708 + 138}{1375} = 0.674$$

LOS = B

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December 21, 2009 ,Monday 04:40:06 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: LINCOLN BLVD | W/E: JEFFERSON BLVD | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	48	1747	277	516	1792	837	601	511	688	58	235	73
AMBIENT												
RELATED												
PROJECT												
TOTAL	48	1747	277	516	1792	837	601	511	688	58	235	73

LANE							
NORTHBOUND	1	0	3	0	1	1	0
SOUTHBOUND	2	0	3	0	1	0	0
WESTBOUND	2	0	2	0	0	2	0
EASTBOUND	1	0	2	0	1	0	0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Prot-Fix	OLA	Prot-Fix	Auto	Prot-Fix	OLA	Prot-Fix	Auto

Critical Movements Diagram

	A	B
SouthBound	837	284
EastBound	103	58
WestBound	256	331
NorthBound	437	48

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

V/C = (48 + 837 + 331 + 103) / *1375 = 0.889

LOS = D

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December 21, 2009 ,Monday 04:40:06 PM

INTERSECTION DATA SUMMARY SHEET

N/S: WESTLAWN AV W/E: JEFFERSON BL I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	4	315	0	161	5	1645	86	79	1388	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	4	315	0	161	5	1645	86	79	1388	0

LANE							
NORTHBOUND	1	0	1	0	0	1	0
SOUTHBOUND	1	0	1	0	0	1	0
WESTBOUND	1	0	2	0	1	0	0
EASTBOUND	1	0	3	0	1	0	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	Perm	Auto
WESTBOUND	Perm	Auto
EASTBOUND	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	161	315
EastBound	347	79
WestBound	577	5
NorthBound	4	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{4 + 315 + 577 + 79}{*1500} = 0.580$$

LOS = A

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December 21, 2009 ,Monday 04:40:06 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S:	GROSVENOR BL	W/E:	JEFFERSON BL	I/S No:	
AM/PM:	PM	Comments:	CUMULATIVE (2013) PLUS PROJECT		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	82	0	67	0	1669	109	32	1676	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	0	82	0	67	0	1669	109	32	1676	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	4	0	0	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	<none>	<none>	Split	Auto	Perm	Auto	Perm	<none>

Critical Movements Diagram

	A	B
SouthBound	149	82
EastBound	419	32
WestBound	593	0
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{0 + 149 + 593 + 32}{1200} = 0.645$$

LOS = B

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December 21, 2009 ,Monday 04:40:06 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV W/E: WASHINGTON BL I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	158	1182	73	124	1423	87	132	794	145	102	704	160
AMBIENT												
RELATED												
PROJECT												
TOTAL	158	1182	73	124	1423	87	132	794	145	102	704	160

LANE							
NORTHBOUND	1	0	1	0	1	0	0
SOUTHBOUND	1	0	2	0	0	1	0
WESTBOUND	1	0	1	0	1	0	0
EASTBOUND	1	0	1	0	1	0	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	Perm	Auto
WESTBOUND	Perm	Auto
EASTBOUND	Perm	Auto

Critical Movements Diagram

SouthBound A: 712 B: 124

EastBound A: 432 B: 102

WestBound A: 470 B: 132

NorthBound A: 628 B: 158

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{158 + 712 + 470 + 102}{*1500} = 0.891$$

LOS = D

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December 21, 2009 ,Monday 04:40:06 PM

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INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE W/E: CULVER BLVD I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	16	1138	107	143	1337	254	120	597	152	172	442	22
AMBIENT												
RELATED												
PROJECT												
TOTAL	16	1138	107	143	1337	254	120	597	152	172	442	22

LANE	NB	SB	WB	EB
	1 0 2 0 0 1 0	1 0 1 0 1 0 0	1 0 1 0 1 0 0	1 0 1 0 1 0 0

SIGNAL	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

SouthBound A: 796 B: 143

EastBound A: 232 B: 172

WestBound A: 375 B: 120

NorthBound A: 569 B: 16

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{16 + 796 + 375 + 172}{*1500} = 0.836$$

LOS = D

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December 21, 2009 ,Monday 04:40:06 PM

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INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE **W/E:** MARINA FREEWAY WB RAMPS **I/S No:**

AM/PM: PM **Comments:** CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: **STUDY DATE:** **GROWTH FACTOR:**

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	25	819	150	0	1413	33	280	19	571	5	0	25
AMBIENT												
RELATED												
PROJECT												
TOTAL	25	819	150	0	1413	33	280	19	571	5	0	25

LANE							
NORTHBOUND	1	0	2	0	1	0	0
SOUTHBOUND	0	0	2	0	1	0	0
WESTBOUND	1	0	0	1	0	1	0
EASTBOUND	0	0	0	0	0	0	1

SIGNAL	Phasing	RTOR
NORTHBOUND	Perm	Auto
SOUTHBOUND	Perm	Auto
WESTBOUND	Split	Auto
EASTBOUND	Split	Auto

Critical Movements Diagram

	A	B
SouthBound	482	0
EastBound	30	5
WestBound	295	280
NorthBound	323	25

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

$$V/C = \frac{25 + 482 + 295 + 30}{*1425} = 0.514$$

LOS = A

Developed by Chun Wong, 12/94

PMCPROJ

CalcaDB

December 21, 2009 ,Monday 04:40:06 PM

INTERSECTION DATA SUMMARY SHEET

N/S:	CENTINELA AVE	W/E:	MARINA FREEWAY EB RAMPS	I/S No:	
AM/PM:	PM	Comments:	CUMULATIVE (2013) PLUS PROJECT		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	963	291	562	1164	0	0	0	0	30	0	108
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	963	291	562	1164	0	0	0	0	30	0	108

	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
LANE	0 0 2 0 1 0 0	2 0 3 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 1 0

	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	OLA	Prot-Fix	<none>	<none>	<none>	Split	Auto

Critical Movements Diagram

	A	B
SouthBound	388	309
EastBound	69	30
WestBound	0	0
NorthBound	418	0

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + A(E/B)

V/C = (418 + 309 + 0 + 69) / *1425 = 0.489

LOS = A

Developed by Chun Wong, 12/94

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AV   W/E: JUNIETTE ST   I/S No:

AM/PM: PM   Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	2	1005	9	21	1310	2	4	2	33	126	4	52
AMBIENT												
RELATED												
PROJECT												
TOTAL	2	1005	9	21	1310	2	4	2	33	126	4	52

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	2	0	1	0	0	1	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	Perm	Auto	Perm	Auto	Perm	Auto

Critical Movements Diagram

	A	B
SouthBound	437	21
EastBound	182	126
WestBound	39	4
NorthBound	338	2

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{2 + 437 + 4 + 182}{1200} = 0.521$$

LOS = A

PMCPROJ

CalcaDB

December 21, 2009 ,Monday 04:40:06 PM

INTERSECTION DATA SUMMARY SHEET

N/S: CENTINELA AVE W/E: JEFFERSON BLVD I/S No:

AM/PM: PM Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: STUDY DATE: GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	106	89	46	728	56	580	30	1084	482	389	1316	45
AMBIENT												
RELATED												
PROJECT												
TOTAL	106	89	46	728	56	580	30	1084	482	389	1316	45

LANE							
NORTHBOUND	2	0	3	0	0	1	0
SOUTHBOUND	2	0	2	0	0	1	0
WESTBOUND	2	0	3	0	0	1	0
EASTBOUND	2	0	3	0	0	1	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Prot-Fix	Auto
SOUTHBOUND	Prot-Fix	OLA
WESTBOUND	Prot-Fix	OLA
EASTBOUND	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	366	400
EastBound	439	214
WestBound	361	17
NorthBound	38	58

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{38 + 400 + 361 + 214}{*1375} = 0.667$$

LOS = B

Developed by Chun Wong, 12/94

PMCPROJ

CalcaDB

December 21, 2009 ,Monday 04:40:06 PM

INTERSECTION DATA SUMMARY SHEET

N/S: SEPULVEDA BLVD

W/E: CENTINELA AVE

I/S No:

AM/PM: PM

Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE:

STUDY DATE:

GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	645	1275	274	239	1605	106	491	473	137	130	701	960
AMBIENT												
RELATED												
PROJECT												
TOTAL	645	1275	274	239	1605	106	491	473	137	130	701	960

LANE							
NORTHBOUND	2	0	3	0	0	1	0
SOUTHBOUND	2	0	3	0	0	1	0
WESTBOUND	2	0	1	0	1	0	0
EASTBOUND	1	0	3	0	0	2	0

SIGNAL	Phasing	RTOR
NORTHBOUND	Prot-Fix	Auto
SOUTHBOUND	Prot-Fix	Auto
WESTBOUND	Prot-Fix	OLA
EASTBOUND	Prot-Fix	OLA

Critical Movements Diagram

	A	B
SouthBound	535	131
EastBound	234	130
WestBound	305	270
NorthBound	425	355

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = B(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

V/C = (355 + 535 + 270 + 234) / *1375 = 0.944

LOS = E

PMCPROJ

December 21, 2009 ,Monday 05:35:24 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY SB RAMPS | W/E: JEFFERSON BLVD | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	192	2	265	510	929	0	301	1296	341
AMBIENT											-301	
RELATED												
PROJECT												
TOTAL	0	0	0	192	2	265	510	929	0	301	995	341

LANE							
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	1	0	0	1	0	1	0
WESTBOUND	2	0	2	0	0	0	0
EASTBOUND	0	0	2	0	0	1	0

SIGNAL	Phasing	RTOR
NORTHBOUND	<none>	<none>
SOUTHBOUND	Split	Auto
WESTBOUND	Prot-Fix	<none>
EASTBOUND	Perm	Auto

Critical Movements Diagram

	A:	B:
SouthBound	153	153
EastBound	498	151 0
WestBound	465	281
NorthBound	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{0 + 153 + 281 + 498}{1200^*} = 0.707$$

LOS = C

Developed by Chun Wong, 12/94

PMCPROJ

CalcaDB

December 21, 2009 ,Monday 05:35:18 PM

INTERSECTION DATA SUMMARY SHEET

N/S: I-405 FWY NB RAMPS | W/E: JEFFERSON BLVD | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	176	2	298	0	0	0	510	1241	243	301	1211	0
AMBIENT								-510				
RELATED												
PROJECT												
TOTAL	176	2	298	0	0	0	510	731	243	301	1211	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	2	0	2	0	0	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	Perm	Auto	<none>	<none>	Perm	Auto	Prot-Fix	<none>

Critical Movements Diagram

SouthBound
A: 0
B: 0

EastBound
A: 606
B: 166

WestBound
A: 366
B: 510 ~~0~~

NorthBound
A: 300
B: 176

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = B(W/B) + A(E/B) 166

$$V/C = \frac{300 + 0 + \overset{510}{\cancel{0}} + \cancel{606}}{1200^*} = \cancel{0.685}\ 0.743$$

LOS = ~~B~~ C

Developed by Chun Wong, 12/94

PMCPROJ

CalcaDB

December 21, 2009 ,Monday 04:40:06 PM

INTERSECTION DATA SUMMARY SHEET

N/S: INGLEWOOD-CENTINELA AV
W/E: JEFFERSON BL
I/S No:

AM/PM: PM
Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE:
STUDY DATE:
GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND LT	NORTHBOUND TH	NORTHBOUND RT	SOUTHBOUND LT	SOUTHBOUND TH	SOUTHBOUND RT	WESTBOUND LT	WESTBOUND TH	WESTBOUND RT	EASTBOUND LT	EASTBOUND TH	EASTBOUND RT
EXISTING	660	431	27	192	464	102	13	850	253	94	1154	873
AMBIENT												
RELATED												
PROJECT												
TOTAL	660	431	27	192	464	102	13	850	253	94	1154	873

LANE	NORTHBOUND	SOUTHBOUND	WESTBOUND	EASTBOUND
	2 1 0 0 1 0 0	1 0 2 0 0 1 0	1 0 2 0 1 0 0	1 0 3 0 0 1 0

SIGNAL	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
	Split	Auto	Split	Auto	Perm	Auto	Perm	Free

Critical Movements Diagram

	A	B
SouthBound	232	192
EastBound	385	94
WestBound	368	13
NorthBound	280	280

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{280 + 232 + 368 + 94}{*1425} = 0.614$$

LOS = B

Developed by Chun Wong, 12/94

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: SR-90 RAMPS | W/E: SLAUSON AV | I/S No:

AM/PM: PM | Comments: CUMULATIVE (2013) PLUS PROJECT

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	337	1	1390	3	0	1	798	984	2	4	932	480
AMBIENT												
RELATED												
PROJECT												
TOTAL	337	1	1390	3	0	1	798	984	2	4	932	480

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	1	1	0	0	0	2	0	1	0	0	0	1	0	0	3	0	2	0	0	1	0	1	0	3	0	0	1	0

	NB Phasing	NB RTOR	SB Phasing	SB RTOR	WB Phasing	WB RTOR	EB Phasing	EB RTOR
SIGNAL	Split	OLA	Split	Auto	Prot-Fix	Auto	Prot-Fix	Free

Critical Movements Diagram

	A	B
SouthBound	1	3
EastBound	311	4
WestBound	492	295
NorthBound	469	169

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + B(S/B)

West/East Critical Movements = B(W/B) + A(E/B)

$$V/C = \frac{469 + 3 + 295 + 311}{1375} = 0.784$$

LOS = C

APPENDIX H

Highway Capacity Manual Worksheets/Signal Warrant Worksheets

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #1 Grosvenor Bl/Jefferson Bl [Cumulative (2013) Plus Project-AM Pea
********************************************************************************
Average Delay (sec/veh):     24.3   Worst Case Level Of Service:       F[917.1]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    1  0  4  0  0    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    64    0    34    78 1710     0     0 1613   260
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    64    0    34    78 1710     0     0 1613   260
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    64    0    34    78 1710     0     0 1613   260
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0    64    0    34    78 1710     0     0 1613   260
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.8 xxxx   6.9   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2326 xxxx   668  1873 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    32 xxxx   406   326 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    26 xxxx   406   326 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  2.45 xxxx  0.08  0.24 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.9 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  19.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     C    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx   39 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx 10.8 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx  917 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    F     *     *    *     *     *    *     *
ApproachDel:    xxxxxx            917.1            xxxxxx           xxxxxx
ApproachLOS:       *                F                *                *
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #11 Grosvenor Bl/Jefferson Bl [Cumulative (2013) Plus Project-PM Pe
********************************************************************************
Average Delay (sec/veh):     32.8   Worst Case Level Of Service:       F[799.2]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   1  0  4  0  0   0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    82    0    67    32 1688     0     0 1669   109
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    82    0    67    32 1688     0     0 1669   109
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    82    0    67    32 1688     0     0 1669   109
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0    82    0    67    32 1688     0     0 1669   109
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.8 xxxx   6.9   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2209 xxxx   611  1778 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    39 xxxx   442   354 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    36 xxxx   442   354 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  2.29 xxxx  0.15  0.09 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.3 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  16.2 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     C    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx   61 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx 14.8 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx  799 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    F     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            799.2            xxxxxx            xxxxxx
ApproachLOS:        *                F                *                 *
```

TRAFFIC SIGNAL WARRANT INPUT PARAMETERS

INTERSECTION AND SCENARIO NAMES

Major Street: JEFFERSON BOULEVARD
Minor Street: GROSVENOR BOULEVARD
Scenario: CUMULATIVE (2013) PLUS PROJECT - PM PEAK HOUR
Urban/Rural: U (U=urban, R=rural) ***See Note [a]***

NUMBER OF LANES FOR MOVING TRAFFIC ON EACH APPROACH

Major Street:	3
Minor Street:	1

TRAFFIC VOLUME DATA

	Peak Hour ***Note [b]***	4th Highest Hour	8th Highest Hour	Estimated Daily
Hourly Factor (% of Peak Hour):	n/a	85%	60%	n/a
Vehicles Per Hour (Peak Hour)				
Major Street-Approach 1:	1,778	1,511	1,067	0
Major Street-Approach 2:	1,708	1,452	1,025	0
Major Street-Heavier Left Turn: ***See Note [c]***	0	0	0	0
Minor Street-Higher Volume App:	149	127	89	0

Notes:

a. Use "rural" if the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000. Otherwise, use "urban" (default value).
b. The single highest hour of the day, whether it be AM peak hour or PM peak hour or even some other hour. It is normally not necessary to test both AM peak hour and PM peak hour.
c. Use if separate signal phase to be provided for left-turn movement.

TRAFFIC SIGNAL WARRANTS
EIGHT-HOUR VEHICULAR VOLUME (MUTCD Warrant 1, Caltrans Warrants 1, 2 & 8)

Major Street: JEFFERSON BOULEVARD
Minor Street: GROSVENOR BOULEVARD
Scenario: CUMULATIVE (2013) PLUS PROJECT - PM PEAK HOUR
Urban/Rural: U (U=urban, R=rural or high speed [c])

MINIMUM VEHICULAR VOLUME
(MUTCD Condition A, Caltrans Warrant 1)

Number of Lanes on Each Approach		
Major Street:	3	
Minor Street:	1	
Vehicles Per Hour (8th Highest Hour)		
Major Street (Approach 1):	1,067	
Major Street (Approach 2):	1,025	
Major Street Left Turn (see note [d]):	0	
Minor Street (Higher Volume App.):	89	
MINIMUM VEHICULAR VOLUME SATISFIED?		**NO**

Minimum Requirements

Number of Lanes for Moving Traffic on Each Approach: Major Street	Minor Street	Vehicles Per Hour (eighth highest hour) on Major Street (Total of Both Approaches): 100% [a]	80% [b]	70% [c]	Vehicles Per Hour (eighth highest hour) on Higher-Volume Minor Street Approach (1 Direction Only): 100% [a]	80% [b]	70% [c]
1	1	500	400	350	150	120	105
>=2	1	600	480	420	150	120	105
>=2	>=2	600	480	420	200	160	140
1	>=2	500	400	350	200	160	140
Minimum Required		600	480	#N/A	150	120	#N/A
Test Amount		2,092	2,092	#N/A	89	89	#N/A

INTERRUPTION OF CONTINUOUS TRAFFIC
(MUTCD Condition B, Caltrans Warrant 2)

Number of Lanes on Each Approach		
Major Street:	3	
Minor Street:	1	
Vehicles Per Hour (8th Highest Hour)		
Major Street (Approach 1):	1,067	
Major Street (Approach 2):	1,025	
Major Street Left Turn (see note [d]):	0	
Minor Street (Higher Volume App.):	89	
INTERRUPT. OF CONT. TRAFFIC SATISFIED?		**YES**

Minimum Requirements

Number of Lanes for Moving Traffic on Each Approach: Major Street	Minor Street	Vehicles Per Hour (eighth highest hour) on Major Street (Total of Both Approaches): 100% [a]	80% [b]	70% [c]	Vehicles Per Hour (eighth highest hour) on Higher-Volume Minor Street Approach (1 Direction Only): 100% [a]	80% [b]	70% [c]
1	1	750	600	525	75	60	53
>=2	1	900	720	630	75	60	53
>=2	>=2	900	720	630	100	80	70
1	>=2	750	600	525	100	80	70
Minimum Required		900	720	#N/A	75	60	#N/A
Test Amount		2,092	2,092	#N/A	89	89	#N/A

80% COMBINATION (Caltrans Warrant 8)

No one warrant satisfied but following warrants fulfilled 80% or more:

Condition A 80% Fulfilled?	NO	
Condition B 80% Fulfilled?	YES	
80% COMBINATION SATISFIED?		**NO**

Minimum Requirements:
Conditions A and B Both 80% Fulfilled

Notes:
a. Basic minimum hourly volume (eighth highest hour).
b. Used for combination of Conditions A and B.
c. May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000.
d. Heavier left-turn movement from the major street may be included with minor street volume if a separate signal phase is proposed for left-turn movements.

Adopted from: U.S. Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices, Millennium Edition*, 2001; and Caltrans, *Traffic Manual*, 2002.

12/21/2009

TRAFFIC SIGNAL WARRANTS
FOUR HOUR VEHICULAR VOLUME (MUTCD Warrant 2, Caltrans Warrant 9)
PEAK HOUR VEHICULAR VOLUME (MUTCD Warrant 3, Caltrans Warrant 11)

Major Street:	JEFFERSON BOULEVARD
Minor Street:	GROSVENOR BOULEVARD
Scenario:	CUMULATIVE (2013) PLUS PROJECT - PM PEAK HOUR
Urban/Rural:	U (U=urban, R=rural [a])

FOUR HOUR VOLUME (MUTCD Warrant 2, Caltrans Warrant 9)

Number of Lanes on Each Approach			
Major Street:	3		
Minor Street:	1		
Vehicles Per Hour (4th Highest Hour)			
Major Street (Approach 1):	1,511	Major Street Left Turn (see note [b]):	0
Major Street (Approach 2):	1,452	Minor Street (Higher Volume App.):	127
Major Street Total (Both Approaches):	2,963	Minor Street Total:	127
Minimum Volume on Major Street to Satisfy Warrant (see note [c]):	390	Minimum Volume on Minor Street to Satisfy Warrant (see note [c]):	80

FOUR HOUR VOLUME WARRANT SATISFIED **YES**

PEAK HOUR VOLUME (MUTCD Warrant 3, Caltrans Warrant 11)

Number of Lanes on Each Approach			
Major Street:	3		
Minor Street:	1		
Vehicles Per Hour (Peak Hour)			
Major Street (Approach 1):	1,778	Major Street Left Turn (see note [b]):	0
Major Street (Approach 2):	1,708	Minor Street (Higher Volume App.):	149
Major Street Total (Both Approaches):	3,486	Minor Street Total:	149
Minimum Volume on Major Street to Satisfy Warrant (see note [d]):	510	Minimum Volume on Minor Street to Satisfy Warrant (see note [d]):	100

PEAK HOUR VOLUME WARRANT SATISFIED **YES**

Notes:

a. May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000.

b. Heavier left-turn movement from the major street may be included with minor street volume if a separate signal phase is proposed for left-turn movements.

c. From: USDOT, FHWA, "Manual on Uniform Traffic Control Devices," 2001, Figure 4C-1.

d. From: USDOT, FHWA, "Manual on Uniform Traffic Control Devices," 2001, Figure 4C-3.

Adopted from: U.S. Department of Transportation, Federal Highway Administration, "Manual on Uniform Traffic Control Devices, Millennium Edition," 2001; and Caltrans, "Traffic Manual," 2002.

SUMMARY OF TRAFFIC SIGNAL WARRANT ANALYSIS

Major Street: JEFFERSON BOULEVARD
Minor Street: GROSVENOR BOULEVARD
Scenario: CUMULATIVE (2013) PLUS PROJECT - PM PEAK HOUR

SUMMARY OF RESULTS

Warrant	MUTCD Warrant Number	Caltrans Warrant Number	Requested for Analysis?	Volumes Satisfy Warrant?	Applicable Time Period
Eight Hour Vehicular Volume	1				
Minimum Vehicular Volume	1A	1	YES	NO	8th Highest Hour
Interruption of Continuous Traffic	1B	2	YES	YES	8th Highest Hour
80% Combination	1C	8	YES	NO	8th Highest Hour
Four Hour Volume	2	9	YES	YES	4th Highest Hour
Peak Hour Volume	3	11	YES	YES	Peak Hour
Pedestrian Volume	4	3	NO	n/a	Peak Hour
Estimated Average Daily Traffic	n/a	n/a			
Minimum Vehicular Volume			NO	n/a	Daily
Interruption of Continuous Traffic			NO	n/a	Daily
80% Combination			NO	n/a	Daily

APPENDIX I

Cumulative (2013) Plus Project Conditions

With Mitigation Measure

* All signalized intersections include V/C credit of 0.10 to account from ATSAC and ATCS. ATCS credit of 0.03 is not automatically reflected on the capacity calculation worksheets.

AMCPROJ

December 21, 2009 ,Monday 04:42:04 PM

CalcaDB

INTERSECTION DATA SUMMARY SHEET

N/S: GROSVENOR BL | W/E: JEFFERSON BL | I/S No:

AM/PM: AM | Comments: CUMULATIVE (2013) + PROJECT W/MITIGATION

COUNT DATE: | STUDY DATE: | GROWTH FACTOR:

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	64	0	34	0	1613	260	78	1710	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	0	64	0	34	0	1613	260	78	1710	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	4	0	0	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	<none>	<none>	Split	Auto	Perm	Auto	Perm	<none>

Critical Movements Diagram

	A	B
SouthBound	98	64
EastBound	428	78
WestBound	624	0
NorthBound	0	0

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{0 + 98 + 624 + 78}{*1500} = 0.463$$

LOS = A

Developed by Chun Wong, 12/94

PMCPROJ

CalcaDB

December 21, 2009 ,Monday 04:42:59 PM

INTERSECTION DATA SUMMARY SHEET

N/S:	GROSVENOR BL	W/E:	JEFFERSON BL	I/S No:	
AM/PM:	PM	Comments:	CUMULATIVE (2013) + PROJECT W/MITIGATION		
COUNT DATE:		STUDY DATE:		GROWTH FACTOR:	

Volume/Lane/Signal Configurations

	NORTHBOUND			SOUTHBOUND			WESTBOUND			EASTBOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EXISTING	0	0	0	82	0	67	0	1669	109	32	1676	0
AMBIENT												
RELATED												
PROJECT												
TOTAL	0	0	0	82	0	67	0	1669	109	32	1676	0

	NORTHBOUND							SOUTHBOUND							WESTBOUND							EASTBOUND						
LANE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	4	0	0	0	0

	NORTHBOUND		SOUTHBOUND		WESTBOUND		EASTBOUND	
	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR	Phasing	RTOR
SIGNAL	<none>	<none>	Split	Auto	Perm	Auto	Perm	<none>

Critical Movements Diagram

	SouthBound	EastBound	WestBound	NorthBound
A:	149	419	593	0
B:	82	32	0	0

A = Adjusted Through/Right Volume
B = Adjusted Left Volume
* = ATSAC Benefit

V/C RATIO	LOS
0.00 - 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E

Results

North/South Critical Movements = A(N/B) + A(S/B)

West/East Critical Movements = A(W/B) + B(E/B)

$$V/C = \frac{0 + 149 + 593 + 32}{*1500} = 0.446$$

LOS = A

Developed by Chun Wong, 12/94

APPENDIX J

Los Angeles County Analysis

ICU Worksheets

Project: **PLAYA DEL MAR PROJECT**

North/South Street: **CENTINELA AVENUE**
East/West Street: **JEFFERSON BOULEVARD**

Scenario: **FUTURE (2013) WITH AMBIENT GROWTH CONDITIONS**

Thru Lane:	1600 vph	N-S Split Phase :	N
Left-Turn Lane:	1600 vph	E-W Split Phase :	N
Dual LT Penalty:	10 %	Lost Time (% of cycle) :	10

Peak Period: **AM PEAK HOUR**

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	1.00	720	1,600	0.288 *	N-S(1):	0.129
	TH	2.00	38	3,200	0.012	N-S(2):	0.289 *
	LT	2.00	336	2,880	0.117	E-W(1):	0.224
Westbound	RT	1.00	492	1,600	0.203	E-W(2):	0.417 *
	TH	3.00	1,138	4,800	0.237 *		
	LT	2.00	33	2,880	0.011	V/C:	0.706
Northbound	RT	1.00	36	1,600	0.012	Lost Time:	0.100
	TH	3.00	9	4,800	0.002		
	LT	2.00	4	2,880	0.001 *		
Eastbound	RT	1.00	23	1,600	0.013	ICU:	0.806
	TH	3.00	1,023	4,800	0.213		
	LT	2.00	518	2,880	0.180 *	LOS:	D

Peak Period: **PM PEAK HOUR**

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	1.00	522	1,600	0.212	N-S(1):	0.262 *
	TH	2.00	9	3,200	0.003	N-S(2):	0.215
	LT	2.00	706	2,880	0.245 *	E-W(1):	0.266
Westbound	RT	1.00	434	1,600	0.051	E-W(2):	0.335 *
	TH	3.00	997	4,800	0.208 *		
	LT	2.00	4	2,880	0.001	V/C:	0.597
Northbound	RT	1.00	29	1,600	0.017 *	Lost Time:	0.100
	TH	3.00	10	4,800	0.002		
	LT	2.00	9	2,880	0.003		
Eastbound	RT	1.00	12	1,600	0.005	ICU:	0.697
	TH	3.00	1,273	4,800	0.265		
	LT	2.00	367	2,880	0.127 *	LOS:	B

* = Critical Movement

Project: **PLAYA DEL MAR PROJECT**

North/South Street: **CENTINELA AVENUE**
East/West Street: **JUNIETTE STREET**

Scenario: **FUTURE (2013) WITH AMBIENT GROWTH CONDITIONS**

Thru Lane:	1600 vph	N-S Split Phase :	N
Left-Turn Lane:	1600 vph	E-W Split Phase :	N
Dual LT Penalty:	10 %	Lost Time (% of cycle) :	10

Peak Period: **AM PEAK HOUR**

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	0.00	49	0	0.000	N-S(1):	0.227
	TH	3.00	1,074	4,800	0.234 *	N-S(2):	0.240 *
	LT	1.00	32	1,600	0.020	E-W(1):	0.038
Westbound	RT	0.00	69	0	0.000	E-W(2):	0.072 *
	TH	1.00	1	1,600	0.049 *		
	LT	0.00	9	1,600	0.006	V/C:	0.312
Northbound	RT	0.00	22	0	0.000	Lost Time:	0.100
	TH	3.00	971	4,800	0.207		
	LT	1.00	9	1,600	0.006 *		
Eastbound	RT	0.00	15	0	0.000	ICU:	0.412
	TH	1.00	0	1,600	0.032		
	LT	0.00	36	1,600	0.023 *	LOS:	A

Peak Period: **PM PEAK HOUR**

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	0.00	6	0	0.000	N-S(1):	0.192
	TH	3.00	1,182	4,800	0.248 *	N-S(2):	0.250 *
	LT	1.00	21	1,600	0.013	E-W(1):	0.121 *
Westbound	RT	0.00	33	0	0.000	E-W(2):	0.105
	TH	1.00	2	1,600	0.024		
	LT	0.00	4	1,600	0.003 *	V/C:	0.371
Northbound	RT	0.00	9	0	0.000	Lost Time:	0.100
	TH	3.00	849	4,800	0.179		
	LT	1.00	3	1,600	0.002 *		
Eastbound	RT	0.00	54	0	0.000	ICU:	0.471
	TH	1.00	4	1,600	0.118 *		
	LT	0.00	130	1,600	0.081	LOS:	A

* = Critical Movement

Project: PLAYA DEL MAR PROJECT

North/South Street: CENTINELA AVENUE
East/West Street: JEFFERSON BOULEVARD

Scenario: FUTURE (2013) WITH AMBIENT GROWTH PLUS PROJECT CONDITIONS

Thru Lane:	1600 vph	N-S Split Phase :	N
Left-Turn Lane:	1600 vph	E-W Split Phase :	N
Dual LT Penalty:	10 %	Lost Time (% of cycle) :	10

Peak Period: AM PEAK HOUR

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	1.00	728	1,600	0.285 *	N-S(1):	0.128
	TH	2.00	38	3,200	0.012	N-S(2):	0.287 *
	LT	2.00	334	2,880	0.116	E-W(1):	0.229
Westbound	RT	1.00	491	1,600	0.203	E-W(2):	0.427 *
	TH	3.00	1,142	4,800	0.238 *		
	LT	2.00	33	2,880	0.011	V/C:	0.714
Northbound	RT	1.00	36	1,600	0.012	Lost Time:	0.100
	TH	3.00	9	4,800	0.002		
	LT	2.00	6	2,880	0.002 *		
Eastbound	RT	1.00	32	1,600	0.018	ICU:	0.814
	TH	3.00	1,047	4,800	0.218		
	LT	2.00	544	2,880	0.189 *	LOS:	D

Peak Period: PM PEAK HOUR

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	1.00	553	1,600	0.227	N-S(1):	0.261 *
	TH	2.00	9	3,200	0.003	N-S(2):	0.233
	LT	2.00	704	2,880	0.244 *	E-W(1):	0.269
Westbound	RT	1.00	433	1,600	0.051	E-W(2):	0.346 *
	TH	3.00	1,025	4,800	0.214 *		
	LT	2.00	4	2,880	0.001	V/C:	0.607
Northbound	RT	1.00	29	1,600	0.017 *	Lost Time:	0.100
	TH	3.00	10	4,800	0.002		
	LT	2.00	18	2,880	0.006		
Eastbound	RT	1.00	17	1,600	0.005	ICU:	0.707
	TH	3.00	1,285	4,800	0.268		
	LT	2.00	381	2,880	0.132 *	LOS:	C

* = Critical Movement

Project: PLAYA DEL MAR PROJECT

North/South Street: CENTINELA AVENUE
East/West Street: JUNIETTE STREET

Scenario: FUTURE (2013) WITH AMBIENT GROWTH PLUS PROJECT CONDITIONS

Thru Lane:	1600 vph	N-S Split Phase :	N
Left-Turn Lane:	1600 vph	E-W Split Phase :	N
Dual LT Penalty:	10 %	Lost Time (% of cycle) :	10

Peak Period: AM PEAK HOUR

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	0.00	44	0	0.000	N-S(1):	0.232
	TH	3.00	1,082	4,800	0.235 *	N-S(2):	0.240 *
	LT	1.00	32	1,600	0.020	E-W(1):	0.035
Westbound	RT	0.00	69	0	0.000	E-W(2):	0.070 *
	TH	1.00	1	1,600	0.049 *		
	LT	0.00	9	1,600	0.006	V/C:	0.310
Northbound	RT	0.00	22	0	0.000	Lost Time:	0.100
	TH	3.00	997	4,800	0.212		
	LT	1.00	8	1,600	0.005 *		
Eastbound	RT	0.00	13	0	0.000	ICU:	0.410
	TH	1.00	0	1,600	0.029		
	LT	0.00	33	1,600	0.021 *	LOS:	A

Peak Period: PM PEAK HOUR

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	0.00	2	0	0.000	N-S(1):	0.195
	TH	3.00	1,213	4,800	0.253 *	N-S(2):	0.254 *
	LT	1.00	21	1,600	0.013	E-W(1):	0.117 *
Westbound	RT	0.00	33	0	0.000	E-W(2):	0.103
	TH	1.00	2	1,600	0.024		
	LT	0.00	4	1,600	0.003 *	V/C:	0.371
Northbound	RT	0.00	9	0	0.000	Lost Time:	0.100
	TH	3.00	863	4,800	0.182		
	LT	1.00	2	1,600	0.001 *		
Eastbound	RT	0.00	52	0	0.000	ICU:	0.471
	TH	1.00	4	1,600	0.114 *		
	LT	0.00	126	1,600	0.079	LOS:	A

* = Critical Movement

Project: **PLAYA DEL MAR PROJECT**

North/South Street: **CENTINELA AVENUE**
East/West Street: **JEFFERSON BOULEVARD**

Scenario: **FUTURE (2013) WITH AMBIENT GROWTH + PROJECT AND RELATED PROJECTS**

Thru Lane:	1600 vph	N-S Split Phase :	N
Left-Turn Lane:	1600 vph	E-W Split Phase :	N
Dual LT Penalty:	10 %	Lost Time (% of cycle) :	10

Peak Period: **AM PEAK HOUR**

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	1.00	731	1,600	0.283 *	N-S(1):	0.140
	TH	2.00	176	3,200	0.055	N-S(2):	0.289 *
	LT	2.00	382	2,880	0.133	E-W(1):	0.277
Westbound	RT	1.00	510	1,600	0.199	E-W(2):	0.435 *
	TH	3.00	1,158	4,800	0.241 *		
	LT	2.00	136	2,880	0.047	V/C:	0.724
Northbound	RT	1.00	49	1,600	0.000	Lost Time:	0.100
	TH	3.00	32	4,800	0.007		
	LT	2.00	16	2,880	0.006 *		
Eastbound	RT	1.00	114	1,600	0.066	ICU:	0.824
	TH	3.00	1,103	4,800	0.230		
	LT	2.00	558	2,880	0.194 *	LOS:	D

Peak Period: **PM PEAK HOUR**

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	1.00	580	1,600	0.241 *	N-S(1):	0.272
	TH	2.00	56	3,200	0.018	N-S(2):	0.278 *
	LT	2.00	728	2,880	0.253	E-W(1):	0.284
Westbound	RT	1.00	482	1,600	0.074	E-W(2):	0.361 *
	TH	3.00	1,084	4,800	0.226 *		
	LT	2.00	30	2,880	0.010	V/C:	0.639
Northbound	RT	1.00	46	1,600	0.019	Lost Time:	0.100
	TH	3.00	89	4,800	0.019		
	LT	2.00	106	2,880	0.037 *		
Eastbound	RT	1.00	45	1,600	0.000	ICU:	0.739
	TH	3.00	1,316	4,800	0.274		
	LT	2.00	389	2,880	0.135 *	LOS:	C

* = Critical Movement

Project: PLAYA DEL MAR PROJECT

North/South Street: CENTINELA AVENUE
East/West Street: JUNIETTE STREET

Scenario: FUTURE (2013) WITH AMBIENT GROWTH + PROJECT AND RELATED PROJECTS

Thru Lane:	1600 vph	N-S Split Phase :	N
Left-Turn Lane:	1600 vph	E-W Split Phase :	N
Dual LT Penalty:	10 %	Lost Time (% of cycle) :	10

Peak Period: AM PEAK HOUR

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	0.00	44	0	0.000	N-S(1):	0.244
	TH	3.00	1,271	4,800	0.274 *	N-S(2):	0.279 *
	LT	1.00	32	1,600	0.020	E-W(1):	0.035
Westbound	RT	0.00	69	0	0.000	E-W(2):	0.070 *
	TH	1.00	1	1,600	0.049 *		
	LT	0.00	9	1,600	0.006	V/C:	0.349
Northbound	RT	0.00	22	0	0.000	Lost Time:	0.100
	TH	3.00	1,054	4,800	0.224		
	LT	1.00	8	1,600	0.005 *		
Eastbound	RT	0.00	13	0	0.000	ICU:	0.449
	TH	1.00	0	1,600	0.029		
	LT	0.00	33	1,600	0.021 *	LOS:	A

Peak Period: PM PEAK HOUR

Approach	Movement	Lanes	Volume	Capacity	V/C	ICU ANALYSIS	
Southbound	RT	0.00	2	0	0.000	N-S(1):	0.224
	TH	3.00	1,310	4,800	0.273 *	N-S(2):	0.274 *
	LT	1.00	21	1,600	0.013	E-W(1):	0.117 *
Westbound	RT	0.00	33	0	0.000	E-W(2):	0.103
	TH	1.00	2	1,600	0.024		
	LT	0.00	4	1,600	0.003 *	V/C:	0.391
Northbound	RT	0.00	9	0	0.000	Lost Time:	0.100
	TH	3.00	1,005	4,800	0.211		
	LT	1.00	2	1,600	0.001 *		
Eastbound	RT	0.00	52	0	0.000	ICU:	0.491
	TH	1.00	4	1,600	0.114 *		
	LT	0.00	126	1,600	0.079	LOS:	A

* = Critical Movement

APPENDIX 4.7

Conceptual SUSMP/Hydrology Study

CONCEPTUAL HYDROLOGY & SUSMP STUDY

For:

MILLENIUM-PLAYA DEL MAR

Project Site Location/Address:
5550 Grosvenor Blvd.
Los Angeles County, CA 90066

CUP No. 200900150
NOP/IS Project No. R2009-02015

Prepared for:
Din/Cal, Inc.
3411 Richmond Avenue, Suite 200
Houston, Texas

Lead Agency:
County of Los Angeles
900 S. Fremont Ave.
Alhambra, CA 91803
(626) 458-5100

Prepared by:

DRC Engineering, Inc.
160 N. Riverview, Suite 100
Anaheim Hills, CA 92808
(714) 685-6860
Gregory R. Cooke, P.E., P.L.S., Principal

REGISTERED PROFESSIONAL ENGINEER
GREGORY R. COOKE
No. 39478
Exp. 12-31-11
CIVIL
STATE OF CALIFORNIA

Reviewed by: 2/24/10
Gregory R. Cooke RCE 39478 Exp. 12-31-11

February 23, 2010

TABLE OF CONTENTS

Introduction

A preliminary hydrologic analysis has been prepared for the 4.4 acre Marina Del Rey project site in Los Angeles County, California. The project site is located north of the first alley to the north of Jefferson Boulevard and west of Centinela Avenue. Both existing and proposed condition analyses have been prepared.

Purpose

The hydrologic analysis has been prepared to quantify the drainage impacts due to the re-development of the site.

Discussion

This site is currently a commercial development with associated parking and landscaping. The site is proposed to be re-developed as a high density residential development with associated above ground parking. In the proposed condition, storm runoff from 99% of the site will be collected into two proposed onsite storm drains and delivered to an existing storm drain in Grosvenor Blvd., to the west of the site. Preliminary plans indicate that approximately 93% of the project will drain to the proposed onsite storm drain along the northern boundary of the site and 6% will drain to the proposed onsite vegetation swale along the western boundary of the site. The remaining 1% of the site will surface drain to the existing alley on the south side of the site. In both the existing and proposed conditions, all runoff generated from the project site discharges into the existing public storm drain on Jefferson Boulevard.

<u>Existing Condition</u> The existing site is developed with a church and paved areas for parking and drive aisles. The site has approximately 3.9 acres of impervious area, which is 91 percent of the site. The site currently has two distinct drainage areas. Runoff from the easterly portion of the site drains overland in a northeasterly direction out onto Juniette Street and then Centinela Avenue. Runoff then flows southeasterly and enters a public storm drain in Centinela Avenue maintained by City of Los Angeles, which discharges into a County-maintained public storm drain in Jefferson Blvd. Runoff from the westerly portion of the site drains overland in a southwesterly direction out onto Grosvenor Blvd. Runoff then flows southeasterly and enters a public storm drain in Grosvenor Blvd. maintained by City of Los Angeles, which discharges into a County-maintained public storm drain in Jefferson Blvd. The public storm drain in Jefferson Blvd. conveys drainage in a southwesterly direction and discharges into the Ballona Wetlands. The Ballona Wetlands outlet to the Ballona Estuary, which discharges into the Pacific Ocean.

<u>Proposed Condition</u> The proposed development will have approximately 3.6 acres of impervious area, which is 83 percent of the site. The project consists of the construction of a multi-family residential complex with an above-ground parking structure and associated landscaping, utilities, curb, gutter, sidewalk, and paved areas for drive aisles. Instead of having storm water runoffs surface drain to Juniette Street without being treated as in the existing condition, the development will have onsite inlets that will pick up all onsite storm water runoffs. Storm water runoff from the majority portion of the site will drain in a southwesterly direction in the proposed onsite storm drain where it will pass through an off-line centralized SUSMP device (or approved equivalent) that provides treatment for oil/grease, trash/debris, nutrients, petroleum

hydrocarbons, and suspended solids (including typical metals associated with parking areas). Storm water runoff from the western portion will be collected by a vegetation swale. An inlet at the north end of the vegetation swale will pipe the flow to join the flow from the said SUSMP device and discharges into a public storm drain on Grosvenor Blvd. maintained by City of Los Angeles, which discharges into the storm drain on Jefferson Blvd as in the existing condition. The public storm drain on Jefferson Blvd. conveys drainage in a southwesterly direction and discharges into the Ballona Wetlands. The Ballona Wetlands outlet to the Ballona Estuary, which discharges into the Pacific Ocean. It has been approved by the City of Los Angeles who maintains the existing storm drain on Grosvenor Boulevard to divert all the storm water runoff from the project site to the storm drain on Grosvenor Boulevard. See Appendix E for the documents of approval.

Storm water runoff from the site will be treated by two off-line centralized SUSMP devices and/or BMP filters, or approved equivalent, in the onsite storm drain system prior to release into public facilities.

Hydrologic Analysis

A 50-year hydrologic analysis has been completed for the 4.4 acre site. Based on the LACDPW Hydrology / Sedimentation Manual and Addendum, the site is located within an area that is comprised of hydrologic soil type 017 and has a 50-year – 24-hour isohyetal value of approximately 5.2 inches. Time-of-Concentration (Tc) estimates were prepared for both the existing and proposed drainage conditions. The existing condition is assumed to be 90% impervious whereas it varies by sub-areas in the proposed condition.

The hydrologic analysis indicates that existing condition generates a 50-year peak flow rate of 10.5 cfs whereas the proposed condition generates a 50-year peak flow rate of 7.7 cfs. The hydrologic analysis also indicates that the existing condition generates a total runoff volume of 1.7 ac-ft and the proposed condition will generate 1.5 ac-ft.

SUSMP Analysis

The hydrologic analysis indicates that existing condition generates a 50-year peak flow rate of 10.5 cfs whereas the proposed condition generates a 50-year peak flow rate of 7.7 cfs. The hydrologic analysis also indicates that that the existing condition generates a total runoff volume of 1.7 ac-ft and the proposed condition will generate 1.5 ac-ft. The existing site has approximately 10% of previous area and the proposed development anticipates over 17% of pervious area. Based on these results this project should be exempt from a full hydromodification analysis as described in the County of Los Angeles Low Impact Development Standards Manual dated January 2009.

The Geotechnical report shows that the soil on this project is mainly clay and that groundwater was encountered at elevation +10. The proposed development will have site elevations between +17.5 and +19.6. Due to the groundwater elevation and the soil type infiltration is not feasible as described in the County of Los Angeles Low Impact Development Standards Manual dated January 2009. The site proposes that the Storm water runoff from the site will be treated by an on-line centralized SUSMP devices and BMP filters, or approved equivalent, in the onsite storm drain system prior to release into public facilities.

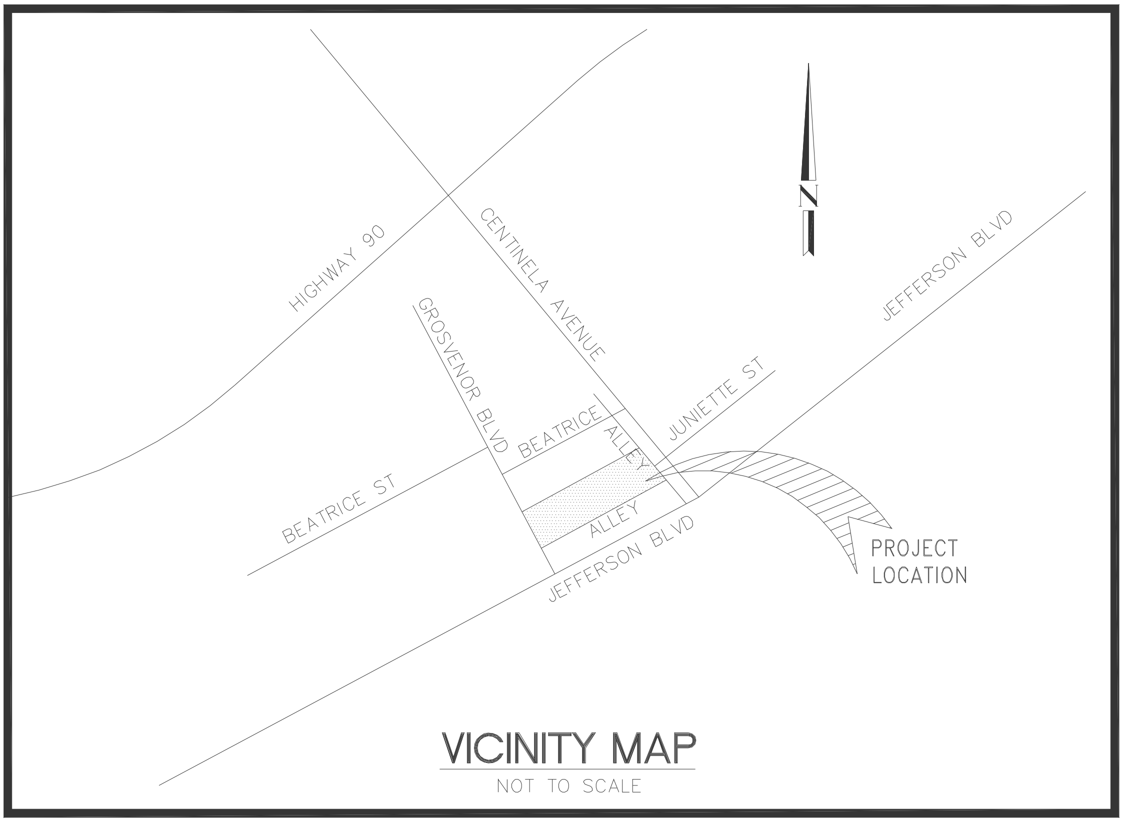
The hydrologic analysis is contained in Technical Appendix B and the associated hydrology maps are contained in Technical Appendix D. the Landscape exhibits showing the pervious area are contained in Appendix F.

APPENDIX A

Location Map

FIGURE 1A: LOCATION MAP

FIGURE 1B: VICINITY MAP



Los Angeles County Thomas Guide Page 672, Grid E-7 and F-7

APPENDIX B

Hydrologic Analysis Per Tc Calculator

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

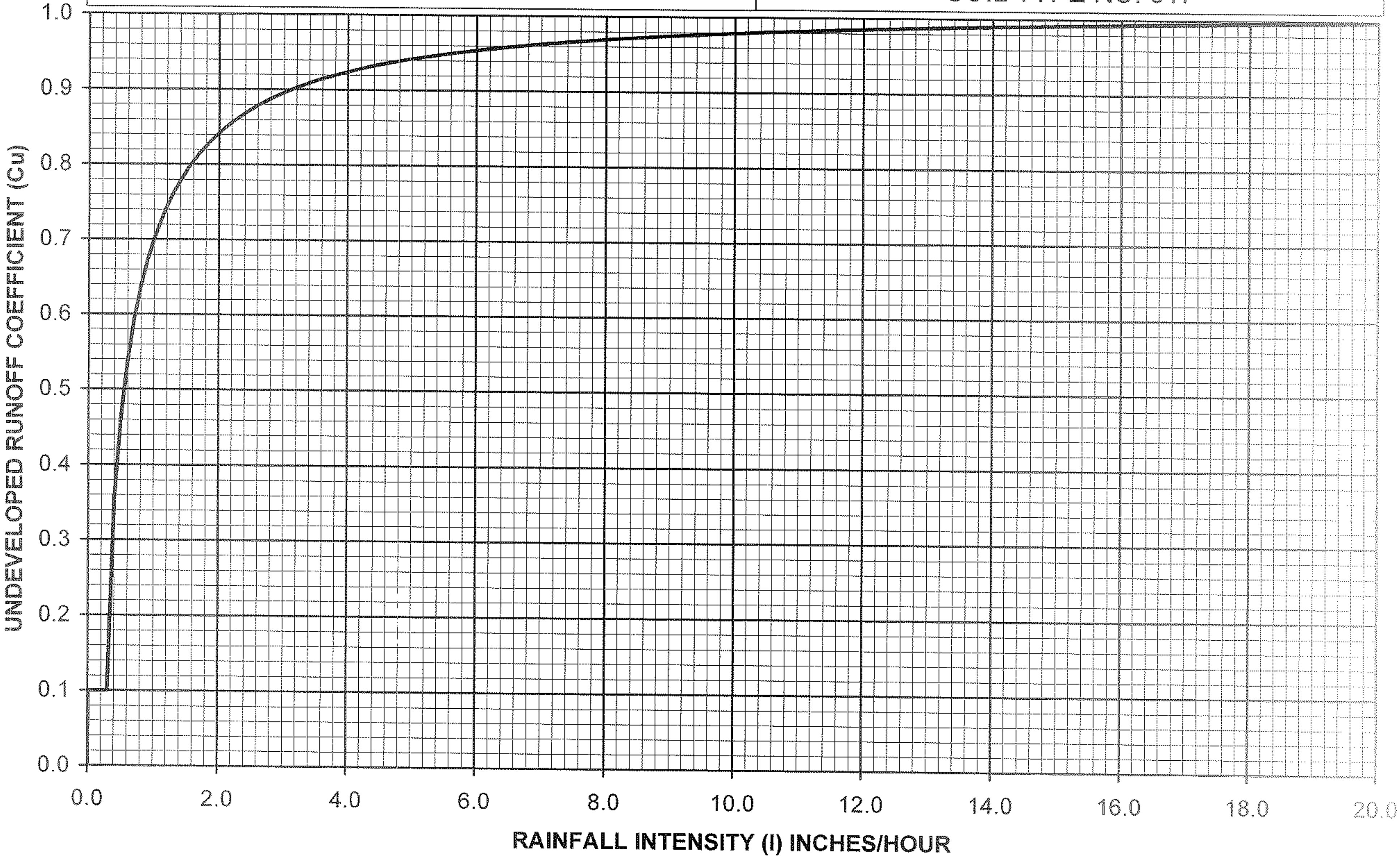
Where: C_D = Developed Runoff Coefficient

IMP = Proportion Impervious

C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 017



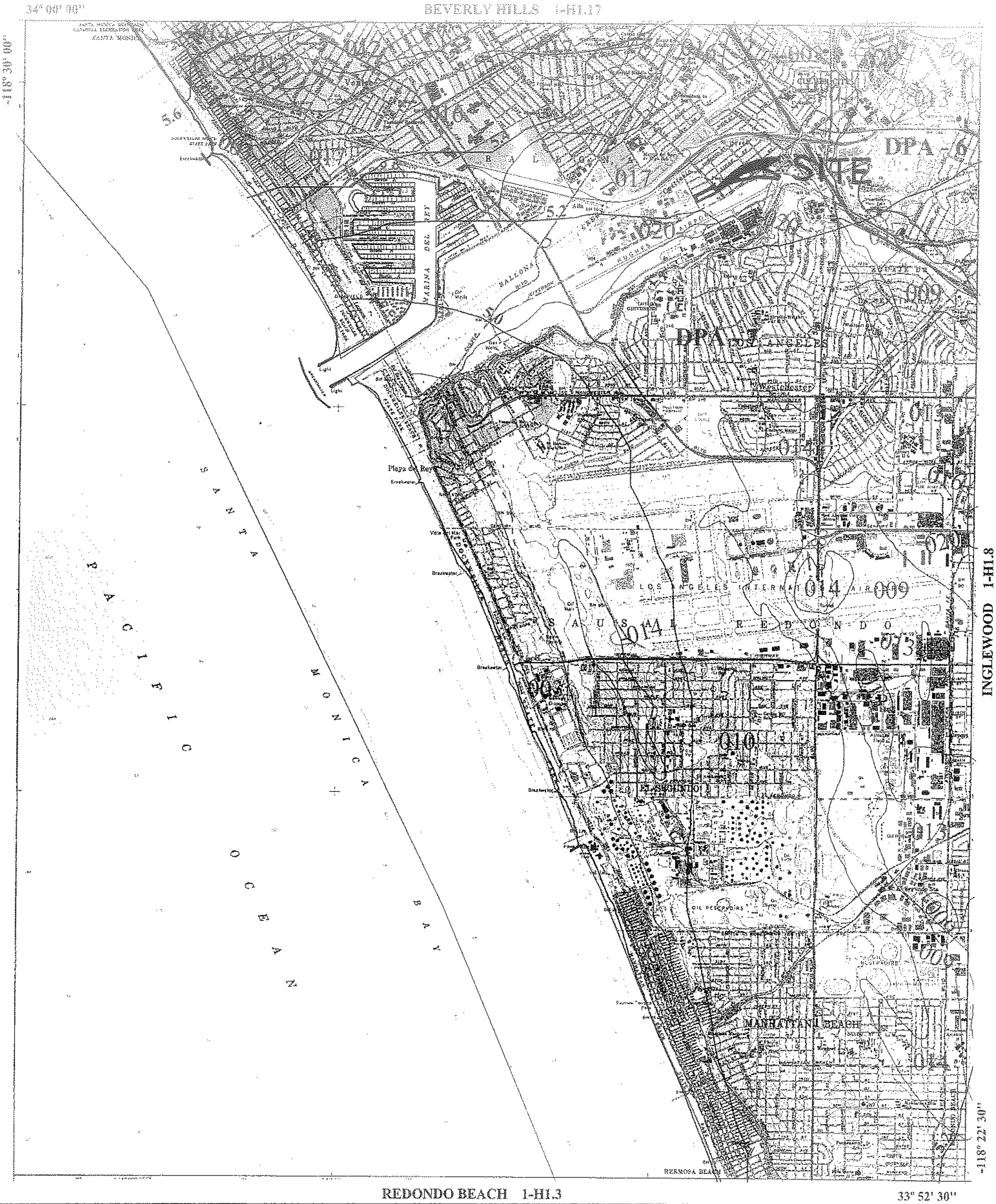
Millenium-Playa Del Mar
Hydrology Analysis - Total Runoff Volume

EXISTING CONDITION														
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Volume (acre-ft)
06-354C Exist.	1A	1.32	90	50	17	271	0.030	5.2	5	3.10	0.90	0.90	3.68	0.51
06-354C Exist.	1B	1.8	90	50	17	582	0.017	5.2	8	2.49	0.87	0.90	4.03	0.70
06-354C Exist.	1C	1.13	90	50	17	577	0.016	5.2	8	2.49	0.87	0.90	2.53	0.44
06-354C Exist.	1D	0.1	90	50	17	135	0.059	5.2	5	3.10	0.90	0.90	0.28	0.04
PROPOSED CONDITION														
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Volume (acre-ft)
06-354C Prop.	1A	4.04	84	50	17	1135	0.005	5.2	14	1.91	0.83	0.89	6.87	1.37
06-354C Prop.	1B	0.27	63	50	17	264	0.010	5.2	5	3.10	0.90	0.90	0.75	0.08
06-354C Prop.	2A	0.03	100	50	17	453	0.006	5.2	8	2.49	0.87	0.90	0.07	0.01
06-354C Prop.	2B	0.02	100	50	17	228	0.002	5.2	6	2.85	0.89	0.90	0.05	0.01

Tc Equation
Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

APPENDIX C

SUSMP Calculations



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

V E N I C E

50-YEAR 24-HOUR ISOHYET

1-H1.7

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

A.1 METHOD FOR CALCULATING STANDARD URBAN STORMWATER MITIGATION PLAN FLOW RATES AND VOLUMES BASED ON 0.75-INCHES OF RAINFALL: WORKSHEET

PROJECT NAME

MILLENIUM-PLAYA DEL MAR - SUBAREA 1A

NOMENCLATURE

A_I	=	Impervious Area (acres)
A_P	=	Pervious Area (acres)
A_U	=	Contributing Undeveloped Upstream Area (acres)
A_{TOTAL}	=	Total Area of Development and Contributing Undeveloped Upstream Area (acres)
C_D	=	Developed Runoff Coefficient
C_U	=	Undeveloped Runoff Coefficient
I_X	=	Rainfall Intensity (inches/hour)
Q_{PM}	=	Peak Mitigation Flow Rate (cfs)
T_C	=	Time of Concentration (minutes, must be between 5-30 min.)
V_M	=	Mitigation Volume (ft^3)

EQUATIONS

A_{TOTAL}	=	$A_I+A_P+A_U$
A_I	=	(A_{TOTAL}*% of Development which is Impervious)
A_P	=	(A_{TOTAL}*% of Development which is Pervious)
A_U	=	(A_{TOTAL}*% of Contributing Undeveloped Upstream Area***)
C_D	=	$(0.9*Imp.)+[(1.0-Imp.)*C_U]$ If $C_D<C_U$, use $C_D=C_U$)
Q_{PM}	=	$C_D*I_X*A_{TOTAL}*(1\ hour/3{,}600\ seconds)*(1\ ft/12\ inches)*(43{,}560\ ft^2/1\ acre)$
	=	$C_D*I_X*A_{TOTAL}*(1.008333\ ft^3\text{-hour/acre-inches-seconds})$
T_C	=	$10^{-0.507} * (C_D*I_X)^{-0.519} *Length^{0.483}*Slope^{-0.135}$
V_M	=	$(0.75\ inches)*[(A_I)(0.9)+(A_P+A_U)(C_U)]*(1ft/12inches)*(43{,}560\ ft^2/1\ acre)$
	=	$(2{,}722.5\ ft^3/acre)*[(A_I)(0.9)+(A_P+A_U)(C_U)]$

*****Contributing Undeveloped Upstream Area is an area where stormwater runoff from an undeveloped upstream area will flow directly or indirectly to the Post-Construction Best Management Practices (BMPs) proposed for the development. This additional flow must be included in the flow rate and valume calculations to appropriately size the BMPs.**

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	4.04	Acres
Type of Development	RESIDENTIAL (MULTI-FAMILY)	
Predominate Soil Type #	017	
% of Sub-Area Impervious	84%	
% of Sub-Area Pervious	16%	
% of Project Contributing Undeveloped Area	0%	
A_I	3.38	Acres
A_P	0.66	Acres
A_U	0	Acres

DETERMING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angeles County Department of Public Works Hydrology Manual. Use the Modified Rational Method for calculating the peak mitigation Q_{PM} for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached Table 1 for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

   T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

   I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominant soil type.

   C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * \text{Imp.}) + [(1.0 - \text{Imp.}) * C_U]$

   C_D 0.77

5. Calculate the value for $C_D * I_X$

   $C_D * I_X$ 0.15

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * \text{Length}^{0.483} * \text{Slope}^{-0.135}$

   Calculated T_C 51.09 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes. Use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

TABLE FOR ITERATIONS:

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.77	0.149	51.09	-21.09
2	51	0.193	0.10	0.77	0.149	51.09	-0.09
3							
4							
5							
6							
7							
8							
9							
10							

Length: 1135 ft.
Slope: 0.005

Acceptable T_C value 51.0 minutes

8. Calculate the Peak Mitigation Flow Rate,
   $Q_{PM} = C_D * I_X * A_{Total} * (1.008333 \text{ ft}^3\text{-hour / acre-inches-seconds})$

   Q_{PM} = **0.607** cfs

TABLE 1

INTENSITY - DURATION DATA FOR 0.75-INCHES OF RAINFALL
FOR ALL RAINFALL ZONES

Duration, Tc (min)	Rainfall Intensity, IX (in/hr)
5	0.447
6	0.411
7	0.382
8	0.359
9	0.339
10	0.323
11	0.309
12	0.297
13	0.286
14	0.276
15	0.267
16	0.259
17	0.252
18	0.245
19	0.239
20	0.233
21	0.228
22	0.223
23	0.218
24	0.214
25	0.210
26	0.206
27	0.203
28	0.199
29	0.196
30	0.193

DETERMINING THE VOLUME (V_M)

In order to determine the volume (VM) of stormwater runoff to be mitigated from the new development, use the following equation:

$VM = (2{,}722.5\ ft^3/acre)*[(A_I)(0.9)+(A_P+A_U)(C_U)]$

$A_I = 3.38$ acres $A_P = 0.66$ acres $A_U = 0$ acre $C_U = 0.10$

$VM = (2{,}722.5\ ft^3/acre) \times [\ (3.38\ acres)(0.9) + (0.66\ acres + 0\ acre)(0.10)\ ]$
$= 8{,}461.5\ ft^3$

Volume of stormwater runoff to be mitigated from Subarea 1A = 8,461.5 ft ^{3}

A.1 METHOD FOR CALCULATING STANDARD URBAN STORMWATER MITIGATION PLAN FLOW RATES AND VOLUMES BASED ON 0.75-INCHES OF RAINFALL: WORKSHEET

PROJECT NAME

MILLENIUM-PLAYA DEL MAR - SUBAREA 1B

NOMENCLATURE

A_I	=	Impervious Area (acres)
A_P	=	Pervious Area (acres)
A_U	=	Contributing Undeveloped Upstream Area (acres)
A_{TOTAL}	=	Total Area of Development and Contributing Undeveloped Upstream Area (acres)
C_D	=	Developed Runoff Coefficient
C_U	=	Undeveloped Runoff Coefficient
I_X	=	Rainfall Intensity (inches/hour)
Q_{PM}	=	Peak Mitigation Flow Rate (cfs)
T_C	=	Time of Concentration (minutes, must be between 5-30 min.)
V_M	=	Mitigation Volume (ft^3)

EQUATIONS

A_{TOTAL}	=	$A_I+A_P+A_U$
A_I	=	(A_{TOTAL}*% of Development which is Impervious)
A_P	=	(A_{TOTAL}*% of Development which is Pervious)
A_U	=	(A_{TOTAL}*% of Contributing Undeveloped Upstream Area***)
C_D	=	$(0.9*\text{Imp.})+[(1.0-\text{Imp.})*C_U]$ If $C_D<C_U$, use $C_D=C_U$
Q_{PM}	=	$C_D*I_X*A_{TOTAL}*(1 \text{ hour}/3{,}600 \text{ seconds})*(1 \text{ ft}/12 \text{ inches})*(43{,}560 \text{ ft}^2/1 \text{ acre})$
	=	$C_D*I_X*A_{TOTAL}*(1.008333 \text{ ft}^3\text{-hour/acre-inches-seconds})$
T_C	=	$10^{-0.507} * (C_D*I_X)^{-0.519} *\text{Length}^{0.483}*\text{Slope}^{-0.135}$
V_M	=	$(0.75 \text{ inches})*[(A_I)(0.9)+(A_P+A_U)(C_U)]*(1\text{ft}/12\text{inches})*(43{,}560 \text{ ft}^2/1 \text{ acre})$
	=	$(2{,}722.5 \text{ ft}^3/\text{acre})*[(A_I)(0.9)+(A_P+A_U)(C_U)]$

*****Contributing Undeveloped Upstream Area is an area where stormwater runoff from an undeveloped upstream area will flow directly or indirectly to the Post-Construction Best Management Practices (BMPs) proposed for the development. This additional flow must be included in the flow rate and valume calculations to appropriately size the BMPs.**

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	0.27	Acres
Type of Development	RESIDENTIAL (MULTI-FAMILY)	
Predominate Soil Type #	017	
% of Sub-Area Impervious	63%	
% of Sub-Area Pervious	37%	
% of Project Contributing Undeveloped Area	0%	
A_I	0.17	Acres
A_P	0.10	Acres
A_U	0	Acres

DETERMING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angeles County Department of Public Works Hydrology Manual. Use the Modified Rational Method for calculating the peak mitigation Q_{PM} for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached Table 1 for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

   T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

   I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominant soil type.

   C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * \text{Imp.}) + [(1.0 - \text{Imp.}) * C_U]$

   C_D 0.60

5. Calculate the value for $C_D * I_X$

   $C_D * I_X$ 0.12

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * \text{Length}^{0.483} * \text{Slope}^{-0.135}$

   Calculated T_C 26.13 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes. Use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

TABLE FOR ITERATIONS:

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.60	0.117	26.13	3.87
2	26	0.206	0.10	0.60	0.124	25.26	0.74
3	25	0.210	0.10	0.60	0.127	25.01	-0.01
4							
5							
6							
7							
8							
9							
10							

Length: 264 ft.
Slope: 0.010

Acceptable T_C value 25.0 minutes

8. Calculate the Peak Mitigation Flow Rate,
   $Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour / acre-inches-seconds})$

   Q_{PM} = **0.035** cfs

TABLE 1

INTENSITY - DURATION DATA FOR 0.75-INCHES OF RAINFALL
FOR ALL RAINFALL ZONES

Duration, Tc (min)	Rainfall Intensity, IX (in/hr)
5	0.447
6	0.411
7	0.382
8	0.359
9	0.339
10	0.323
11	0.309
12	0.297
13	0.286
14	0.276
15	0.267
16	0.259
17	0.252
18	0.245
19	0.239
20	0.233
21	0.228
22	0.223
23	0.218
24	0.214
25	0.210
26	0.206
27	0.203
28	0.199
29	0.196
30	0.193

DETERMINING THE VOLUME (V_M)

In order to determine the volume (VM) of stormwater runoff to be mitigated from the new development, use the following equation:

$$VM = (2{,}722.5\ ft^3/acre)*[(A_I)(0.9)+(A_P+A_U)(C_U)]$$

A_I = 0.17 acres A_P = 0.10 acres A_U = 0 acre C_U = 0.10

$$VM = (2{,}722.5\ ft^3/acre) \times [\ (0.17\ acres)(0.9) + (0.10\ acres + 0\ acre)(0.10)\ ]$$
$$= 443.8\ ft^3$$

Volume of stormwater runoff to be mitigated from Subarea 1A = 443.8 ft^3

A.1 METHOD FOR CALCULATING STANDARD URBAN STORMWATER MITIGATION PLAN FLOW RATES AND VOLUMES BASED ON 0.75-INCHES OF RAINFALL: WORKSHEET

PROJECT NAME

MILLENIUM-PLAYA DEL MAR - SUBAREA 2A

NOMENCLATURE

A_I	=	Impervious Area (acres)
A_P	=	Pervious Area (acres)
A_U	=	Contributing Undeveloped Upstream Area (acres)
A_{TOTAL}	=	Total Area of Development and Contributing Undeveloped Upstream Area (acres)
C_D	=	Developed Runoff Coefficient
C_U	=	Undeveloped Runoff Coefficient
I_X	=	Rainfall Intensity (inches/hour)
Q_{PM}	=	Peak Mitigation Flow Rate (cfs)
T_C	=	Time of Concentration (minutes, must be between 5-30 min.)
V_M	=	Mitigation Volume (ft^3)

EQUATIONS

A_{TOTAL}	=	$A_I+A_P+A_U$
A_I	=	(A_{TOTAL}*% of Development which is Impervious)
A_P	=	(A_{TOTAL}*% of Development which is Pervious)
A_U	=	(A_{TOTAL}*% of Contributing Undeveloped Upstream Area***)
C_D	=	$(0.9*\text{Imp.})+[(1.0-\text{Imp.})*C_U]$ If $C_D<C_U$, use $C_D=C_U$
Q_{PM}	=	$C_D*I_X*A_{TOTAL}*(1\text{ hour}/3{,}600\text{ seconds})*(1\text{ ft}/12\text{ inches})*(43{,}560\text{ ft}^2/1\text{ acre})$
	=	$C_D*I_X*A_{TOTAL}*(1.008333\text{ ft}^3\text{-hour/acre-inches-seconds})$
T_C	=	$10^{-0.507}*(C_D*I_X)^{-0.519}*\text{Length}^{0.483}*\text{Slope}^{-0.135}$
V_M	=	$(0.75\text{ inches})*[(A_I)(0.9)+(A_P+A_U)(C_U)]*(1\text{ft}/12\text{inches})*(43{,}560\text{ ft}^2/1\text{ acre})$
	=	$(2{,}722.5\text{ ft}^3/\text{acre})*[(A_I)(0.9)+(A_P+A_U)(C_U)]$

*****Contributing Undeveloped Upstream Area is an area where stormwater runoff from an undeveloped upstream area will flow directly or indirectly to the Post-Construction Best Management Practices (BMPs) proposed for the development. This additional flow must be included in the flow rate and valume calculations to appropriately size the BMPs.**

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	0.03	Acres
Type of Development	RESIDENTIAL (MULTI-FAMILY)	
Predominate Soil Type #	017	
% of Sub-Area Impervious	100%	
% of Sub-Area Pervious	0%	
% of Project Contributing Undeveloped Area	0%	
A_I	0.03	Acres
A_P	0.00	Acres
A_U	0	Acres

DETERMING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angeles County Department of Public Works Hydrology Manual. Use the Modified Rational Method for calculating the peak mitigation Q_{PM} for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached Table 1 for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

<u>CALCULATION STEPS:</u>

1. Assume an initial T_C value between 5 and 30 minutes.

   T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

   I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominant soil type.

   C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * \text{Imp.}) + [(1.0 - \text{Imp.}) * C_U]$

   C_D 0.90

5. Calculate the value for $C_D * I_X$

   $C_D * I_X$ 0.17

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * \text{Length}^{0.483} * \text{Slope}^{-0.135}$

   Calculated T_C 29.54 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes. Use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

TABLE FOR ITERATIONS:

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.90	0.174	29.54	0.46
2	29	0.196	0.10	0.90	0.176	29.30	-0.30
3							
4							
5							
6							
7							
8							
9							
10							

Length: 453 ft.
Slope: 0.006

Acceptable T_C value 29.0 minutes

8. Calculate the Peak Mitigation Flow Rate,
   $Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour / acre-inches-seconds})$

   Q_{PM} = **0.005** cfs

TABLE 1

INTENSITY - DURATION DATA FOR 0.75-INCHES OF RAINFALL
FOR ALL RAINFALL ZONES

Duration, Tc (min)	Rainfall Intensity, IX (in/hr)
5	0.447
6	0.411
7	0.382
8	0.359
9	0.339
10	0.323
11	0.309
12	0.297
13	0.286
14	0.276
15	0.267
16	0.259
17	0.252
18	0.245
19	0.239
20	0.233
21	0.228
22	0.223
23	0.218
24	0.214
25	0.210
26	0.206
27	0.203
28	0.199
29	0.196
30	0.193

DETERMINING THE VOLUME (V_M)

In order to determine the volume (VM) of stormwater runoff to be mitigated from the new development, use the following equation:

$VM = (2{,}722.5\ ft^3/acre)*[(A_I)(0.9)+(A_P+A_U)(C_U)]$

$A_I = 0.03$ acres $A_P = 0.00$ acres $A_U = 0$ acre $C_U = 0.10$

$VM = (2{,}722.5\ ft^3/acre) \times [\ (0.03\ acres)(0.9) + (0.00\ acres + 0\ acre)(0.10)\ ]$
$= 73.5\ ft^3$

Volume of stormwater runoff to be mitigated from Subarea 1A = 73.5 ft ^{3}

A.1 METHOD FOR CALCULATING STANDARD URBAN STORMWATER MITIGATION PLAN FLOW RATES AND VOLUMES BASED ON 0.75-INCHES OF RAINFALL: WORKSHEET

PROJECT NAME

MILLENIUM-PLAYA DEL MAR - SUBAREA 2B

NOMENCLATURE

A_I	=	Impervious Area (acres)
A_P	=	Pervious Area (acres)
A_U	=	Contributing Undeveloped Upstream Area (acres)
A_{TOTAL}	=	Total Area of Development and Contributing Undeveloped Upstream Area (acres)
C_D	=	Developed Runoff Coefficient
C_U	=	Undeveloped Runoff Coefficient
I_X	=	Rainfall Intensity (inches/hour)
Q_{PM}	=	Peak Mitigation Flow Rate (cfs)
T_C	=	Time of Concentration (minutes, must be between 5-30 min.)
V_M	=	Mitigation Volume (ft^3)

EQUATIONS

A_{TOTAL}	=	$A_I+A_P+A_U$
A_I	=	(A_{TOTAL}*% of Development which is Impervious)
A_P	=	(A_{TOTAL}*% of Development which is Pervious)
A_U	=	(A_{TOTAL}*% of Contributing Undeveloped Upstream Area***)
C_D	=	$(0.9*\text{Imp.})+[(1.0-\text{Imp.})*C_U]$ If $C_D<C_U$, use $C_D=C_U$
Q_{PM}	=	$C_D*I_X*A_{TOTAL}*(1\text{ hour}/3{,}600\text{ seconds})*(1\text{ ft}/12\text{ inches})*(43{,}560\text{ ft}^2/1\text{ acre})$
	=	$C_D*I_X*A_{TOTAL}*(1.008333\text{ ft}^3\text{-hour/acre-inches-seconds})$
T_C	=	$10^{-0.507}*(C_D*I_X)^{-0.519}*\text{Length}^{0.483}*\text{Slope}^{-0.135}$
V_M	=	$(0.75\text{ inches})*[(A_I)(0.9)+(A_P+A_U)(C_U)]*(1\text{ft}/12\text{inches})*(43{,}560\text{ ft}^2/1\text{ acre})$
	=	$(2{,}722.5\text{ ft}^3/\text{acre})*[(A_I)(0.9)+(A_P+A_U)(C_U)]$

*****Contributing Undeveloped Upstream Area is an area where stormwater runoff from an undeveloped upstream area will flow directly or indirectly to the Post-Construction Best Management Practices (BMPs) proposed for the development. This additional flow must be included in the flow rate and valume calculations to appropriately size the BMPs.**

Developed by I. Nasseri, J. Pereira, T. Piasky, & A. Walden

DETERMING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angeles County Department of Public Works Hydrology Manual. Use the Modified Rational Method for calculating the peak mitigation Q_{PM} for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached Table 1 for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

   T_C 20 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

   I_X 0.233 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominant soil type.

   C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * \text{Imp.}) + [(1.0 - \text{Imp.}) * C_U]$

   C_D 0.90

5. Calculate the value for $C_D * I_X$

   $C_D * I_X$ 0.21

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * \text{Length}^{0.483} * \text{Slope}^{-0.135}$

   Calculated T_C 22.30 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes. Use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

TABLE FOR ITERATIONS:

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	20	0.233	0.10	0.90	0.210	22.30	-2.30
2	23	0.218	0.10	0.90	0.196	23.09	-0.09
3							
4							
5							
6							
7							
8							
9							
10							

Length: 228 ft.
Slope: 0.002

Acceptable T_C value 23.0 minutes

8. Calculate the Peak Mitigation Flow Rate,
   $Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour / acre-inches-seconds})$

   Q_{PM} = **0.004** cfs

TABLE 1

INTENSITY - DURATION DATA FOR 0.75-INCHES OF RAINFALL
FOR ALL RAINFALL ZONES

Duration, Tc (min)	Rainfall Intensity, IX (in/hr)
5	0.447
6	0.411
7	0.382
8	0.359
9	0.339
10	0.323
11	0.309
12	0.297
13	0.286
14	0.276
15	0.267
16	0.259
17	0.252
18	0.245
19	0.239
20	0.233
21	0.228
22	0.223
23	0.218
24	0.214
25	0.210
26	0.206
27	0.203
28	0.199
29	0.196
30	0.193

DETERMINING THE VOLUME (V_M)

In order to determine the volume (VM) of stormwater runoff to be mitigated from the new development, use the following equation:

$VM = (2{,}722.5\ ft^3/acre)*[(A_I)(0.9)+(A_P+A_U)(C_U)]$

$A_I = 0.02$ acres $A_P = 0.00$ acres $A_U = 0$ acre $C_U = 0.10$

$VM = (2{,}722.5\ ft^3/acre) \times [\ (0.02\ acres)(0.9) + (0.00\ acres + 0\ acre)(0.10)\ ]$
$= 49.0\ ft^3$

Volume of stormwater runoff to be mitigated from Subarea 1A = 49.0 ft^3

APPENDIX D

Letter of Approval from City of Los Angeles

Julie Huang

From: Phong Nguyen [Phong.Nguyen@lacity.org]
Sent: Monday, January 28, 2008 9:59 AM
To: Julie Huang
Subject: RE: 5550 Grosvenor Blvd., Del Ray (Tract 67206) StormDrainConnection Permit

Follow Up Flag: Follow up
Flag Status: Red

City of Los Angeles, Bureau of Engineering,West Los Angeles Engineering District approves the site drainage diverting toward the Grosvenor Blvd. for the above mentioned tract.no.67206.
For further information ,please call me at (310) 575-8591.

Phong Nguyen
B-Permit
Bureau of Engineering
West Los Angeles Engineering District
PS: Please forward this Email to the County of Los Angeles

APPENDIX E

Letter From Geotechnical Engineer

GROUP DELTA CONSULTANTS

Geotechnical Engineering

Geology

HydroGeology

Earthquake Engineering

Materials Testing & Inspection

Forensic Services

February 23, 2010

GDC L-884

Din/ Cal, Inc.
3411 Richmond Avenue, Ste. 200
Houston, CA 77046

Attn: Mr. Carl Husmann

Subject: Elimination of Stormwater Infiltration BMP

Reference: Geotechnical Report
Proposed Residential Development
Lots 1 and 2 of Tract 33003
5550 Grosvenor Boulevard
Los Angeles County, CA 90066
GDC Project No. L-746
Dated 5/3/07

Mr. Husman:

We understand that the County of Los Angeles Bureau requires some of the storm water received on the site to be disposed of by infiltration. However, based on geotechnical considerations, to ensure satisfactory performance of the proposed building within its design life, we recommend that on-site infiltration of surface water be eliminated for the following reasons.

Presence of Low Permeability Soils

Based on our field exploration, the site is underlain by compacted fill. The compacted fill generally consists of clay, sandy clay and silty sand. In general, the clays and sandy clays are firm to stiff; and the silty sands are medium dense. the upper 10 to 15 feet of onsite soil consists predominantly of low permeability cohesive soils. These soils in general have a minimum infiltration rate of less than 0.05 inches per hour, which is not suitable for usage of infiltration practices. Below this fill, very low permeability clay was encountered to depths of about 30 feet

In addition, groundwater was measured in Boring B-1 at a depth of 10.5 feet below the existing grade, which corresponds to approximately El. +8.5 feet.

Foundation Considerations

It has long been well established that introduction of moisture into to subgrade soils supporting buildings, pavements and concrete flat work is not prudent. Intentionally infiltrating water into the subsurface of this site will cause a decrease in soil shear strength and increasing in soil compressibility, resulting undesirable and damaging long-term building settlement. It can also cause undesirable moisture transmission through the floor slabs and basement wall, possibly causing of mold problems. Control of surface infiltration and proper drainage of storm water off-site is critical to the long term performance of the proposed buildings and appurtenances.

As a result of presence of low permeability soils, and damaging effects of on-site infiltration of water, GDC recommends that the on-site infiltration requirement should be eliminated.

Closure

Should you have any questions regarding this letter, please feel free to call us at (310) 320-5100.

Sincerely,
GROUP DELTA CONSULTANTS, INC.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL DAVID READER
No GE 2259
Exp [illegible]
GEOTECHNICAL
STATE OF CALIFORNIA

Michael D. Reader, GE # 2259
CEO

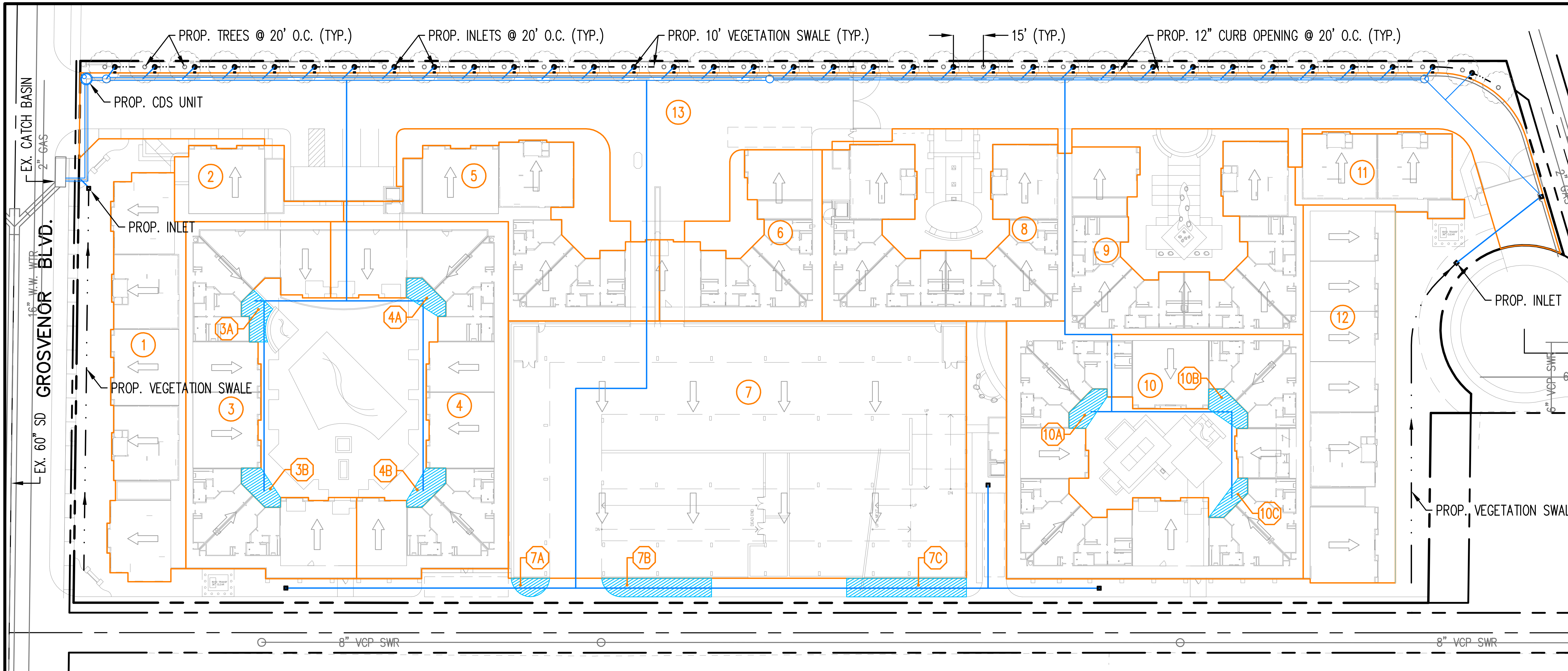
N:\Projects\800-899\L-884 Din Cal Grosvenor Apartment\L-884 DMC Grosvenor Elimination Stormwater Infiltration.doc

GROUP DELTA CONSULTANTS

APPENDIX F

Preliminary SUSMP Exhibit

FILENAME: M:\2006\06-354C DinCal Marina Del Rey\Water Quality\6354C preliminary SUSMP exhibit.dwg, LAST SAVED ON: Feb 24 2010 7:58am PLOTTED BY: MICHELLE, ON: Feb 25



DRAINAGE AREA		4% OF DRAINAGE AREA	LID PLANTER		
NO.	AREA (SF)	(SF)	NO.	AREA (SF)	TOTAL (SF)
1	7,320	293			
2	2,344	94			
3	9,291	372	3A	247	489
			3B	242	
4	9,867	395	4A	227	460
			4B	233	
5	6,621	265			
6	4,699	188			
7	29,538	1,182	7A	138	1190
			7B	492	
			7C	560	
8	8,262	330			
9	7,947	318			
10	14,130	565	10A	219	631
			10B	245	
			10C	167	
11	2,977	119			
12	8,727	349			
13	28,362	1,134			

LEGEND

LID PLANTER
INLET
DRAINAGE AREA BOUNDARY
VEGETATION SWALE
STORM DRAIN
STORM DRAIN
STORM DRAIN MANHOLE
ROOF DRAIN DIRECTION
3 DRAINAGE AREA LABEL
3A LID PLANTER LABEL

N

SCALE: 1"=50'

2010-02-23

MILLENIUM-PLAYA DEL MAR

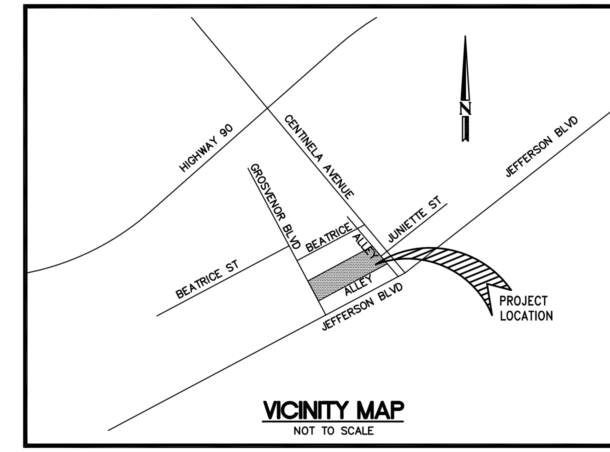
PRELIMINARY SUSMP EXHIBIT

LOS ANGELES, CA

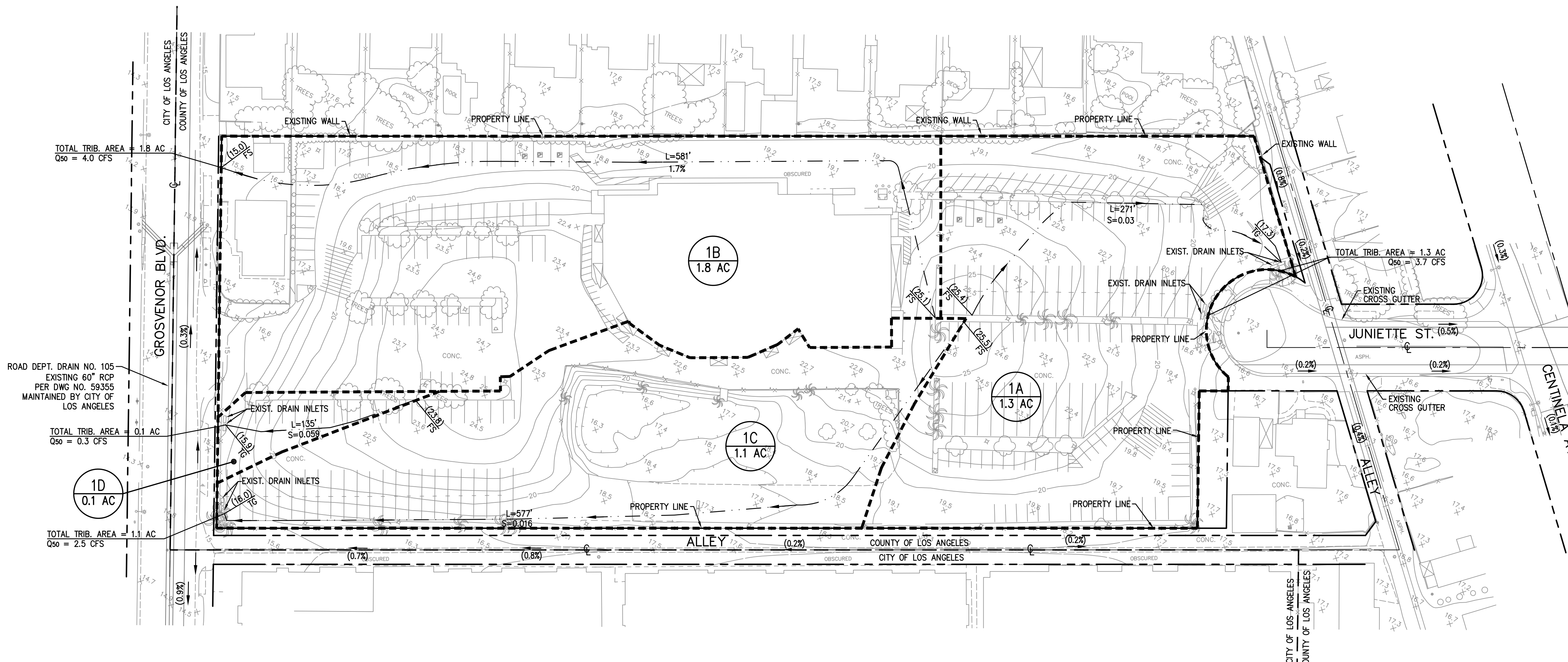
DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 N. Riverview Drive, Ste. 100
Anaheim Hills, California 92808
(714) 685-6860

APPENDIX G

Hydrology Maps



THOMAS GUIDE PAGE 672 GRID NUMBER E-7 & F-7



EXISTING CONDITION				
SUBAREA	1A	1B	1C	1D
AREA	1.3 AC	1.8 AC	1.1 AC	0.1 AC
Q50	3.7 CFS	4.0 CFS	2.5 CFS	0.3 CFS
RUNOFF VOL.	0.5 AC-FT	0.7 AC-FT	0.4 AC-FT	0.04 AC-FT
50-YEAR 24-HR ISOHYET	5.2 IN			
% IMPERVIOUSNESS	90 %			
Tc	5 MIN.	8 MIN.	8 MIN.	5 MIN.
SOIL TYPE	017			

40' 0' 40' 80' 120'
GRAPHIC SCALE: 1"=40'

DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 N. Riverview Drive, Ste. 100
Anaheim Hills, California 92808
(714) 685-6860
GREGORY R. COOKE R.C.E. 39478 DATE

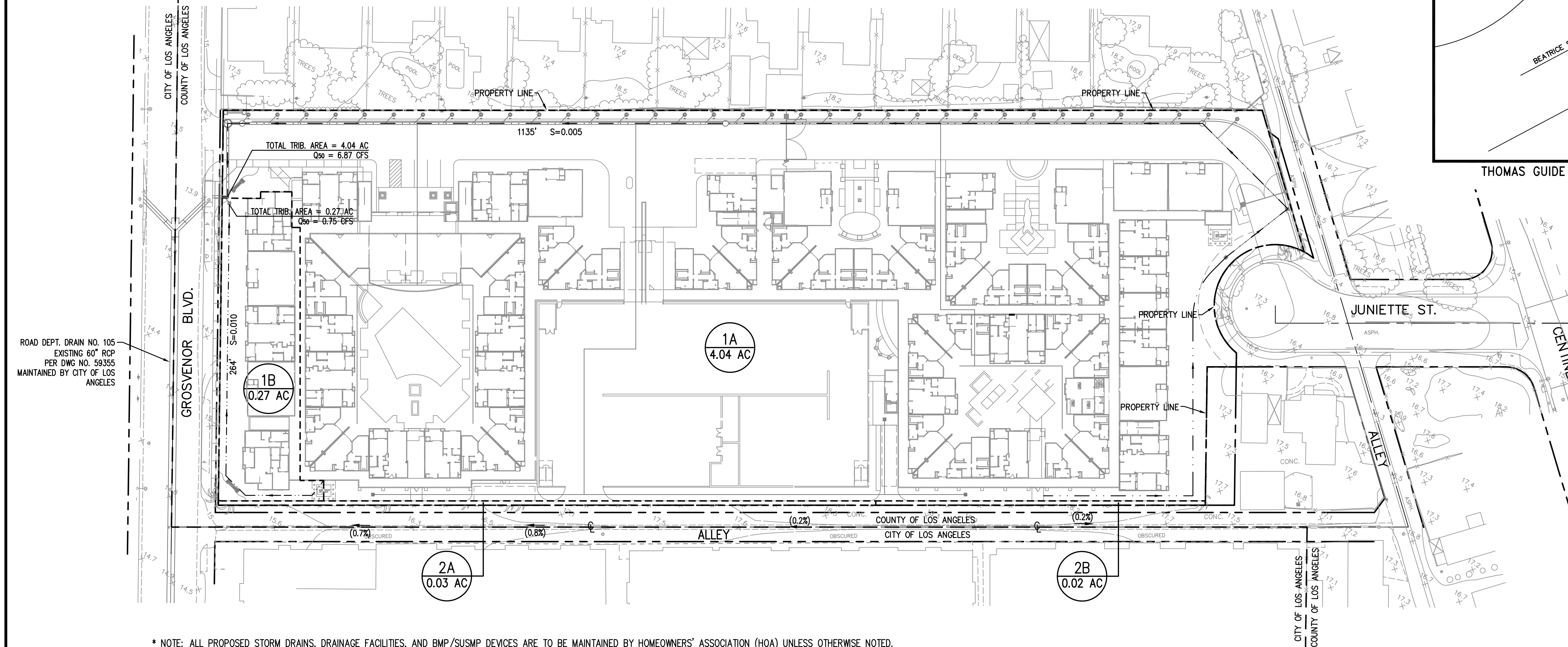
NO.: REVISION: DATE:

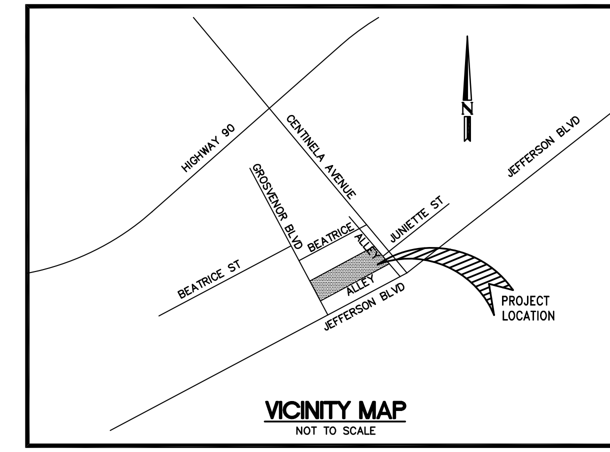
PROJECT: **MILLENIUM-PLAYA DEL MAR**
5500 GROSVENOR BOULEVARD
LOS ANGELES, CALIFORNIA

DRAWING NAME: **CONCEPTUAL HYDROLOGY MAP**
EXISTING CONDITION

ISSUE: CONCEPTUAL
DATE: 2010-02-23
CHECKED: GRC DRAWN: CMT
DRAWING FILE: HM-EX
PROJECT NO.: 06-354C
SHEET NUMBER: 1
OF 1 SHEETS
SCALE: 1"=40'

FILENAME: M:\2006\06-354C DinCal Marina Del Rey\Hydrology\6354C hm-ex.dwg, LAST SAVED ON: Feb 23 2010 3:28pm PLOTTED BY: MICHELLE, ON: Feb 25 2010 7:31am, CFG:





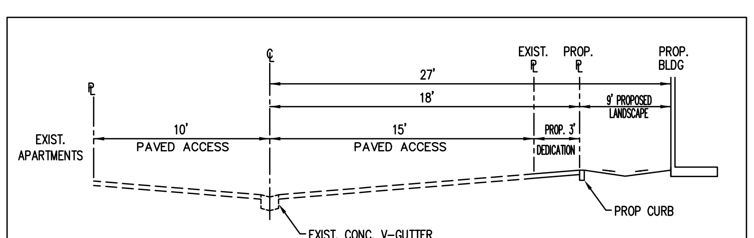
THOMAS GUIDE PAGE 672 GRID NUMBER E-7 & F-7

* NOTE: ALL PROPOSED STORM DRAINS, DRAINAGE FACILITIES, AND BMP/SUSMP DEVICES ARE TO BE MAINTAINED BY HOMEOWNERS' ASSOCIATION (HOA) UNLESS OTHERWISE NOTED.

DRAINAGE CONCEPT NOTES:

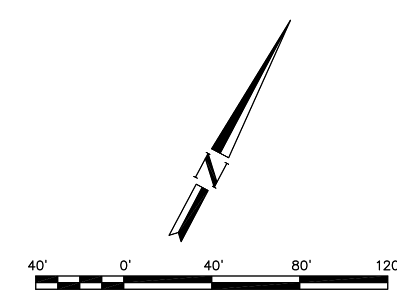
1. HYDROLOGY INFORMATION AND STORM DRAIN ALIGNMENTS SHOWN ARE NOT NECESSARILY APPROVED.
2. COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3. NECESSARY EASEMENTS WILL BE DEDICATED FOR THE STORM DRAIN SYSTEM TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
4. VEHICULAR ACCESS WILL BE PROVIDED TO ALL INLETS AND OUTLETS TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
5. APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5 (EXCEPT AS NOTED).
6. ALL PROPOSED IMPROVEMENTS WITHIN CITY OF LOS ANGELES JURISDICTION SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF LOS ANGELES.

PROPOSED CONDITION				
SUBAREA	1A	1B	2A	2B
AREA	4.04 AC	0.27 AC	0.03 AC	0.02 AC
Q_{50}	6.87 CFS	0.75 CFS	0.70 CFS	0.50 CFS
RUNOFF VOL.	1.37 AC-FT	0.08 AC-FT	0.01 AC-FT	0.01 AC-FT
50-YEAR 24-HR ISOHYET	5.2 IN			
% IMPERVIOUSNESS	84%	63%	100%	100%
Tc	14 MIN.	5 MIN.	8 MIN.	6 MIN.
SOIL TYPE	017			



SOUTH ALLEY TYPICAL SECTION

PROPOSED CONDITIONS
N.T.S.



GRAPHIC SCALE: 1"=40'

DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 N. Riverview Drive, Ste. 100
Anaheim Hills, California 92808
(714) 685-6860

GREGORY R. COOKE R.C.E. 39478 DATE

NO.:	REVISION:	DATE:

PROJECT: **MILLENIUM-PLAYA DEL MAR**
5500 GROSVENOR BOULEVARD
LOS ANGELES, CALIFORNIA

DRAWING NAME: **CONCEPTUAL HYDROLOGY MAP**
PROPOSED CONDITION

ISSUE: CONCEPTUAL
DATE: 2010-02-24
CHECKED: GRC DRAWN: CMT
DRAWING FILE: HM-PROP
PROJECT NO.: 06-354C
SHEET NUMBER: 1
OF 1 SHEETS
SCALE: 1"=40'

APPENDIX 4.8

Sewer Capacity Availability Request/Sewer Will Serve Letter

15-1108-0708

City of Los Angeles
Bureau of Engineering

refer to 6-610-1106

Sewer Capacity Availability Request (SCAR)

To: Bureau of Sanitation

The following request is submitted to you on behalf of the applicant requesting to connect to the public sewer system. Please verify that capacity exists at the requested location for the proposed developments shown below. The results are good for 180 days from the date of sewer capacity approval from the Bureau of Sanitation.

Job Address: 5550 GROSVENOR BLVD (COUNTY)

Date submitted: 7/23/2008 Request Will Serve Letter: Yes ID: 1162

Applicant: GREG COOK Phone: 714-885-8880

Address: 170 N RIVERVIEW DR, SUITE 100 Fax: 714-885-8801 S-Map: 560-07 ✓

City: ANAHEIM State: CA Zip: 92808 Wye Map: 105-161-3 ✓

Email: BPA No.:

SIMMS Map - Maintenance Hole Locations

	Street Name	U/S MH	D/S MH	Diameter
1:	GROSVENOR BLVD	56007153 ✓	56007117 ✓	8 inch (VCP) S: 0.0044
2:				0 inch
3:				0 inch

Proposed Project Description: TOWNHOMES FOR TR MAP 67208

	Proposed Use Description	Quantity	Flow
1.	ONE BDRM APT	107 DU	12,840 GPD
2.	TWO BDRM APT	109 DU	17,440 GPD
3.		0	0 GPD
4.		0	0 GPD

PROPOSED TOTAL FLOW: 30,280.00 GPD ✓ ≈21 GPM

Remarks: RESUBMITTAL OF SCAR ID #895 (DATED 11-27-06). CONTACT BOE IF SCARF FEE IS REQ'D.

CAPACITY AVAILABLE: ☒ YES ☐ NO

Note: Results are good for 180 days from date of approval by the Bureau of Sanitation.

Date Approved: Namhee Kim 8/14/2008 (NE)

Approved by: A D[illegible] 8-18-08
Bureau of Sanitation
(323) 342-6252

Submitted by: NATALIE MOORE (WLA)
Bureau of Engineering
~~(213) 482-7030~~
(213) 482-7007 Fax
310-575-8631

5550 GROSVENOR BLVD (COUNTY)

APPENDIX 5.0

Request for Information and Comments

April 4, 2006 CEC-1605-1

Standard Pacific Homes
3030 Old Ranch Parkway, Suite 450
Seal Beach, California 90740

Subject: Summary of results of Phase I and Phase II environmental assessment investigations of a relatively rectangular parcel consisting of the addresses of 5544 and 5550 Grosvenor Boulevard and 12414 Juniette, County of Los Angeles, California.

1.0 INTRODUCTION AND PURPOSE

Standard Pacific Homes has retained Carlin Environmental Consulting, Inc. (CEC) to conduct environmental investigations at the subject site. It is our understanding that Standard Pacific is in the process of considering the purchase of the subject site. All research has been conducted generally utilizing the procedures presented in ASTM E 1527 and E 1528, Standard Practice for Environmental Site Assessments, Phase I Environmental Site Assessment Process and Transaction Screen Process (commercial real estate). Site and vicinity inspections and document research were performed generally according to ASTM guidelines. Figures 1 and 2 illustrate the site location and site configuration respectively.

The purpose of this investigation is to evaluate the general environmental conditions on the site by researching documents and inspecting the site and vicinity for possible usage, past or present, of potentially hazardous materials for a Phase I - Environmental Site Assessment. Within this resulting assessment summary report, CEC identifies observed and/or documented recognized environmental conditions, if any exist, that may have significantly impacted the site.

Typically a full report would have been produced. However, it is our understanding that a report will not be submitted to potential investors or lenders for more than one year. Thus it will be necessary to update any report at that time so that when submitted it is less than six months old. Additionally, a revised ASTM procedure for environmental assessments will be adopted by our industry in November of 2006. The new guidelines when adopted will include additional sections and language. Thus when the full report is prepared, it will likely be after these guidelines go into affect and the report will include all information required under the new guidelines. Note that between now and November, CEC and others in our industry will be attempting to standardize the information and language which will be included. We are very aware of the new guidelines and have to date made every attempt to conduct research and investigations that will meet these guidelines when the final report for this site is prepared. The following sections include our findings.

2.0 SUMMARY OF PERTINET FINDINGS

Our investigations have included the following:

- All research required by ASTM for a Phase I Environmental Assessment;

- A Phase II level investigation of soil and groundwater;
- A methane investigation.

2.1 Phase I Environmental Assessment Results

All research for the current standard of ASTM Phase I Assessments has been completed. This ASTM guideline will be updated and in effect on November 1, 2006. It is our understanding that Standard Pacific will not submit a Phase I report to potential investors until after that date. Thus, because the format of an industry acceptable report will likely change significantly, CEC has recommended that preparation of any reports other than this summary be delayed until after November 1, 2006 or until required by potential investors or lenders. No evidence of chemical usage that may have caused an environmental condition was uncovered by our investigation. There are however, numerous potential sources of subsurface contamination within 1 mile of the subject site. There is a potential that these offsite sources have caused subsurface contamination that may have migrated beneath the site, thus as will be discussed in the following section of this summary, a soil and groundwater investigation was conducted.

2.2 Phase II Level Investigation of Soil and Groundwater

Five borings were excavated at the site by CEC between March 9, 2006 and March 15, 2006. Soil samples were collected and analyzed from depths of 5, 10, and 15 feet below current ground surface at each boring location. Additionally, a grab type groundwater sample was collected from each of the borings and analyzed for Volatile Organic Compounds (VOC). It is our understanding that Standard Pacific intends to construct a building which will include underground parking. This will generate a significant volume of soil export. A volume of 30,000 to 50,000 cubic yards of export soil is typical of these types of structures. Because there are potential sources of subsurface contamination in the site area, the possibility exits that soil beneath the site could be contaminated from offsite migration. If contaminated, it would be necessary to dispose of any export soil at an appropriately approved facility. The costs of this disposal would be significantly higher than a relatively conventional export process. Thus, the underlying purpose for our subsurface investigation was to determine if there is any indication that contaminated soil would be found during future excavations. No evidence of subsurface contamination was found in soil or groundwater by our investigation. No further subsurface investigations are recommended at this time.

Group Delta Consultants conducted a geotechnical investigation at this site consisting of the excavation of a series of borings. CEC personnel were periodically onsite to observe these activities. Based on our observations and discussions with Group Delta personnel it is CEC's understanding that no evidence of subsurface contamination was observed. This provides additional support that future export soil can be disposed of conventionally. The attached laboratory results of our investigation can be provided to future receivers of exported soil.

2.3 Methane Investigation

The following is Carlin Environmental Consulting, Inc.'s (CEC) review of potentially required methane mitigation measures for the subject site. CEC has confirmed that the site is surrounded by the new City of Los Angeles "Methane Zone". However, since this is an unincorporated community, it is not directly subject to the City's methane code. Typically the County's code requires that mitigation be performed when a site is within 200 feet of an abandoned or active oil well. It is unclear at this time, which code will need to be followed at this site. As the site development process continues, CEC recommends that meetings with appropriate County of Los Angels departments be held to establish a permissible approach to methane mitigation.

CEC has also reviewed pertinent oil field and oil well maps published by the California Department of Oil and Gas (DOG). A review of Sheet W1-5, published in 1991, confirmed that the property is located approximately 1.5 miles northeast of the Playa Del Rey Oil Field and approximately 2 miles southwest of the Inglewood Oil Field. The closest oil well to the site, Mesmer City Realty Co., Ltd #1; 31-6704, is located approximately 1,000 feet southeast of the subject site. The map shows that no historical oil wells have existed on the said property.

CEC has performed a preliminary methane investigation that is loosely based on the City of Los Angeles guidelines. The highest methane concentration encountered in the investigation, 2,950 ppm with limited associated pressure, would label the site as a Level III site in the City of Los Angeles. Table 1 below presents the findings of the preliminary methane investigation.

Table 1. Methane Investigation Results

Boring	Depth (feet bgs)	Methane Concentration (ppm)
C-2	5	2,950
C-2	10	1,800
C-3	5	460
C-3	10	720
C-4	5	520
C-4	10	1,300
C-5	5	1,500
C-5	10	2,700

Table 2 outlines the City of Los Angeles guidelines for required methane mitigation measures based on the measured methane concentrations and pressures for "Methane Zone" sites. As shown in the table, a level III site would include the following:

- An impervious membrane
- A methane gas venting system
- A dewatering system below the gas collection pipes if the predicted water table is within 1 foot of the gas collection piping system.
- A gas detection system in conjunction with a mechanical ventilation system.

TABLE 2 - MITIGATION REQUIREMENTS FOR METHANE ZONE (City of Los Angeles)

		Site Design Level	LEVEL I		LEVEL II		LEVEL III		LEVEL IV		LEVEL V
		Design Methane Concentration (ppmv)	0 – 100		101 – 1,000		1,001 – 5,000		5,001 – 12,500		> 12,500
		Design Methane Pressure (inches of water column)	≤ 2"	> 2"	≤ 2"	> 2"	≤ 2"	> 2"	≤ 2"	> 2"	All Pressures
PASSIVE SYSTEM		De-watering System (See note 1)	X	X	X	X	X	X	X	X	X
PASSIVE SYSTEM	Sub-Slab Vent System	Perforated Horizontal Pipes	X	X	X	X	X	X	X	X	X
PASSIVE SYSTEM	Sub-Slab Vent System	Gravel Blanket Thickness Under Impervious Membrane	2"	2"	2"	3"	2"	3"	2"	4"	4"
PASSIVE SYSTEM	Sub-Slab Vent System	Gravel Thickness Surrounding Perforated Horizontal Pipes	2"	2"	2"	3"	2"	3"	2"	4"	4"
PASSIVE SYSTEM	Sub-Slab Vent System	Vent Risers	X	X	X	X	X	X	X	X	X
PASSIVE SYSTEM		Impervious Membrane (See note 2)	X	X	X	X	X	X	X	X	X
ACTIVE SYSTEM (See note 3)	Sub-Slab Vent System	Pressure Sensors Below Impervious Membrane								X	X
ACTIVE SYSTEM (See note 3)	Sub-Slab Vent System	Mechanical Extraction System								X	X
ACTIVE SYSTEM (See note 3)	Lowest Occupied Space System (See note 6)	Gas Detection System (See notes 4 & 5)		X		X	X	X	X	X	X
ACTIVE SYSTEM (See note 3)	Lowest Occupied Space System (See note 6)	Mechanical Ventilation		X		X	X	X	X	X	X
ACTIVE SYSTEM (See note 3)	Lowest Occupied Space System (See note 6)	Alarm System		X		X	X	X	X	X	X
ACTIVE SYSTEM (See note 3)		Control Panel (See notes 4 & 5)		X		X	X	X	X	X	X
MISC. SYSTEM (see note 10)		Trench Dam (See note 7)	X	X	X	X	X	X	X	X	X
MISC. SYSTEM (see note 10)		Conduit or Cable Seal Fitting (See note 8)	X	X	X	X	X	X	X	X	X
MISC. SYSTEM (see note 10)		Additional Vent Risers									X

X = Required Mitigation Components

NOTES FOR TABLE 2:

1. DEWATERING: De-watering will be required if the maximum historical high groundwater table elevation, or projected post-construction groundwater level, is within 12 inches below the bottom of the installed perforated horizontal pipes.
2. SINGLE FAMILY DWELLINGS AND ACCESSORY BUILDINGS TO SINGLE FAMILY DWELLINGS
   a. The impervious membrane may be 6 mil thick visquene in lieu of the approved 60 mil thick impervious membrane in buildings located in the Methane Buffer Zone with Site Design Levels A and Level B with less than 2" Design Methane Pressure.
   b. Pressure sensors below the impervious membrane and its control panel which signal a warning annunciator at 3 inches water pressure may be used in lieu of the gas detection system, mechanical ventilation system, and the mechanical extraction system for buildings located in all Site Design Levels except for Site Design Level D with Design Methane Pressure greater than 2" and Site Design Level E.
   c. Gas detection system that triggers an alarm at gas concentration of 12,500 ppmv may be used in lieu of the Mechanical Ventilation System when the following are provided:
      i. Detectors are placed in each room, hallways, closets, and enclosed spaces. Exception: Kitchens and bathrooms do not need to be equipped with detectors.
      ii. All Detectors including single station types shall be hardwired to the building power source and be provided with back-up power for 24 hours of standby and 5 minutes in the alarm mode.
   d. Single-station detectors with built-in backup battery may be used in lieu of a complete alarm system.
   e. Detectors in dwelling units may be wired as individual units or in tandem. The primary power to each detector shall be from a dwelling unit branch circuit ahead of any disconnecting device.
   f. Deep vent wells are not required for all each detached buildings with footprint less than 6,000 square feet in area.
3. EXCEPTIONS BASED ON BUILDING SIZE: Pressure sensors below the impervious membrane and its control panel which signal a warning annunciator at 3 inches water pressure may be used in lieu of the gas detection system, mechanical ventilation system, and the mechanical extraction system for buildings with Site Design Levels A, B, and C with all of the following physical features:
   a. width less than 50 feet, and
   b. footprint less than 50,000 square feet of lot area, and
   c. landscaping at least 2 feet wide located immediately adjacent to the exterior walls covering more than 50% of the exterior walls of the building.
4. WIRING:
   a. Detectors in dwelling units may be wired as individual units or in tandem.

b. The primary power to each Detector shall be from a dwelling unit branch circuit ahead of any disconnecting device.
c. In lieu of a complete alarm system, single-station detectors with built-in backup battery may be used within dwelling units in of residential buildings.
d. Trench dams shall be installed for all underground electrical conduit or cable systems entering or leaving a building or structure. Trench dams shall also be installed for any utility mechanical piping system.
e. Conduit or cable seal fitting shall also be installed for any installation as required by the electrical code and for any outdoor equipment installation protected by an impervious membrane.

5. MECHANICAL VENTILATION: The requirements for mechanical ventilation in the lowest occupied space system may be fulfilled using one of the following options:

Option 1 – Triggered Mechanical Ventilation
- Gas detection system shall be provided with 24-hour back-up power.
- Alarms shall be provided with 5 minutes of back-up power.

Option 2 – Continuous Mechanical Ventilation
- Gas detection system and alarms are not required.
- Back-up power to continuously operate the mechanical ventilation system for a minimum of 24 hours shall be provided.

Option 3 – Scheduled Start-Up Ventilation
- Gas detection system and alarm system are not required.
- Back-up power to operate the mechanical ventilation system throughout a 24-hour start-up schedule shall be provided.

Option 4 – Natural Ventilation
- Gas detector system and alarm system are not required.
- The entire building or portions of buildings may be provided with natural ventilation in accordance with standards established by the superintendent of building.

6. TAR COLLECTION SUMPS: Tar collection sumps shall be installed in all buildings within 50 feet of a tar seep boundary to prevent tar from blocking perforated horizontal pipes and de-watering systems.

3.0 CONCLUSIONS AND RECOMMENDATIONS

CEC's investigations have found no evidence of historical site usage that would have negatively affected the environmental integrity of the site. Future soil export should be considered "clean". Results of the attached laboratory analyses should be provided to the future receivers of the exported soil. It is possible that contaminated soil could be found during future excavation; however, it is unlikely.

Relatively low concentrations of methane gas have been found beneath the subject site. It should be anticipated that some methane gas mitigation measures will be necessary based on the site's close proximity to the Playa Vista development where maximum mitigation is required. Future activities should include meetings and correspondence with appropriate County of Los Angeles departments to establish acceptable methane gas mitigation for the proposed development.

The information obtained by the investigative activities summarized herein should be included in a Phase I and Phase II report when required. It is anticipated that this will be after November 1, 2006 when new ASTM standards for these types of reports will be adopted. The report should be appropriately formatted to comply with the new standard and be less than 6 months old when submitted to potential lenders and investors.

4.0 LIMITATIONS AND EXCEPTIONS

This environmental investigation was conducted using a degree of care and skill normally exercised, under similar circumstances, by reputable soil engineers, geologists, and environmental scientists practicing in this and similar localities. Opinions presented herein apply to site conditions existing at the time of our study and cannot necessarily be taken to apply to site conditions or changes that we are not aware of or have not had the opportunity to evaluate. CEC also assumes that the information provided by the owner representatives, regulatory database provider, and regulatory agencies is true and reliable. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this document.

5.0 SIGNATURE PAGE

The opportunity to be of service is appreciated. If you have any questions, please call.

Very truly yours,

Carlin Environmental Consulting, Inc.

Gary T. Carlin
Senior Environmental Geologist
R.E.A. 3403

Otto Figueroa
Project Geoscientist

Analytical Data

Alpha Scientific Corporation
Environmental Laboratories

03-10-2006

Mr. Otto Figueroa
Carlin Environmental Consulting, Inc.
14661 Myford Road, Suite A
Tustin, CA 92780

Project: Stan Pac Church
Project Site: West LA Church on Jefferson
Sample Date: 03-09-2006
Lab Job No.: AG603034

Dear Mr. Figueroa:

Enclosed please find the analytical report for the sample(s) received by Alpha Scientific Corporation on 03-09-2006 and analyzed for the following parameters:

EPA 8015M (Total Petroleum Hydrocarbons)
EPA 8260B (VOC's By GC/MS)

All analyses have met the QA/QC criteria of this laboratory.

The sample(s) arrived in good conditions and with a chain of custody record attached.

Alpha Scientific Corporation is a CA DHS certified laboratory (Certificate Number 2633). Thank you for giving us the opportunity to serve you. Please feel free to call me at (562) 809-8880 if our laboratory can be of further service to you.

Sincerely,

Roger Wang, Ph.D.
Laboratory Director

Enclosures

This cover letter is an integral part of this analytical report.

16760 Gridley Road, Cerritos, CA 90703 Phone (562) 809-8880 Fax (562) 809-8801

Client: Carlin Environmental Consulting, Inc.
Project: Stan Pac Church
Project Site: West LA Church on Jefferson
Matrix: Soil
Batch No. for TPH-g: BMC09-GS1
Batch No. for TPH-D: EC09-DS1

Lab Job No.: AG603034

Date Sampled: 03-09-2006
Date Received: 03-09-2006
Date Analyzed: 03-09-2006
Date Analyzed: 03-09-2006
Date Reported: 03-10-2006

EPA 8015M (Total Petroleum Hydrocarbons)
Reporting Units: mg/kg (ppm)

Sample ID	Lab ID	C4-C12 (Gasoline range TPH)	C13-C23 (Diesel range TPH)	C24-C40 (Oil range TPH)
MDL		0.2	1	25
PQL		0.5	5	50
Method Blank		ND	ND	ND
Stan Pac C 5	AG603034-1	ND	ND	ND
Stan Pac C 10	AG603034-2	ND	ND	ND
Stan Pac C 15	AG603034-3	ND	ND	ND

ND: Not Detected (at the specified limit).

16760 Gridley Road, Cerritos, CA 90703 Phone (562) 809-8880 Fax (562) 809-8801

Alpha Scientific Corporation
Environmental Laboratories

Client: Carlin Environmental Consulting, Inc.
Project Site: West LA Church on Jefferson

Lab Job No.: AG603034
Matrix: Water

Date Reported: 03-10-2006
Date Sampled: 03-09-2006

EPA 8260B (VOCs by GC/MS, Page 1 of 2) Reporting Unit: µg/L (ppb)

DATE ANALYZED			03-09-06	03-09-06			
DILUTION FACTOR (DF)			1	1			
LAB SAMPLE I.D.				AG603034-4			
CLIENT SAMPLE I.D.				Stan Pac C W1			
COMPOUND	**MDL**	**PQL**	MB				
Dichlorodifluoromethane	2	5	ND	ND			
Chloromethane	2	5	ND	ND			
Vinyl Chloride	2	2	ND	ND			
Bromomethane	2	5	ND	ND			
Chloroethane	2	5	ND	ND			
Trichlorofluoromethane	2	5	ND	ND			
1,1-Dichloroethene	2	5	ND	ND			
Iodomethane	2	5	ND	ND			
Methylene Chloride	5	10	ND	ND			
trans-1,2-Dichloroethene	2	5	ND	ND			
1,1-Dichloroethane	2	5	ND	ND			
2,2-Dichloropropane	2	5	ND	ND			
cis-1,2-Dichloroethene	2	5	ND	ND			
Bromochloromethane	2	5	ND	ND			
Chloroform	2	5	ND	ND			
1,2-Dichloroethane	2	5	ND	ND			
1,1,1-Trichloroethane	2	5	ND	ND			
Carbon tetrachloride	2	5	ND	ND			
1,1-Dichloropropene	2	5	ND	ND			
Benzene	1	1	ND	ND			
Trichloroethene	2	2	ND	ND			
1,2-Dichloropropane	2	5	ND	ND			
Bromodichloromethane	2	5	ND	ND			
Dibromomethane	2	5	ND	ND			
Trans-1,3-Dichloropropene	2	5	ND	ND			
cis-1,3-Dichloropropene	2	5	ND	ND			
1,1,2-Trichloroethane	2	5	ND	ND			
1,3-Dichloropropane	2	5	ND	ND			
Dibromochloromethane	2	5	ND	ND			
2-Chloroethylvinyl ether	5	10	ND	ND			
Bromoform	2	5	ND	ND			
Isopropylbenzene	2	5	ND	ND			
Bromobenzene	2	5	ND	ND			

16760 Gridley Road, Cerritos, CA 90703
Phone (562) 809-8880 Fax (562) 809-8801

Alpha Scientific Corporation
Environmental Laboratories

Client: Carlin Environmental Consulting, Inc.
Project Site: West LA Church on Jefferson

Lab Job No.: AG603034
Matrix: Water

Date Reported: 03-10-2006
Date Sampled: 03-09-2006

EPA 8260B (VOCs by GC/MS, Page 2 of 2) Reporting Unit: ppb

COMPOUND	MDL	PQL	MB	Stan Pac C W1			
Toluene	1	1	ND	ND			
Tetrachloroethene	2	2	ND	ND			
1,2-Dibromoethane(EDB)	2	5	ND	ND			
Chlorobenzene	2	5	ND	ND			
1,1,1,2-Tetrachloroethane	2	5	ND	ND			
Ethylbenzene	1	1	ND	ND			
Total Xylenes	2	2	ND	ND			
Styrene	2	5	ND	ND			
1,1,2,2-Tetrachloroethane	2	5	ND	ND			
1,2,3-Trichloropropane	2	5	ND	ND			
n-Propylbenzene	2	5	ND	ND			
2-Chlorotoluene	2	5	ND	ND			
4-Chlorotoluene	2	5	ND	ND			
1,3,5-Trimethylbenzene	2	5	ND	ND			
tert-Butylbenzene	2	5	ND	ND			
1,2,4-Trimethylbenzene	2	5	ND	ND			
Sec-Butylbenzene	2	5	ND	ND			
1,3-Dichlorobenzene	2	5	ND	ND			
p-Isopropyltoluene	2	5	ND	ND			
1,4-Dichlorobenzene	2	5	ND	ND			
1,2-Dichlorobenzene	2	5	ND	ND			
n-Butylbenzene	2	5	ND	ND			
1,2,4-Trichlorobenzene	2	5	ND	ND			
1,2-Dibromo-3-Chloropropane	2	5	ND	ND			
Hexachlorobutadiene	2	5	ND	ND			
Naphthalene	2	2	ND	ND			
1,2,3-Trichlorobenzene	2	5	ND	ND			
Acetone	25	25	ND	ND			
2-Butanone (MEK)	25	25	ND	ND			
4-Methyl-2-pentanone (MIBK)	25	25	ND	ND			
MTBE	2	2	ND	ND			
ETBE	2	2	ND	ND			
DIPE	2	2	ND	ND			
TAME	2	2	ND	ND			
TBA	10	20	ND	ND			

MDL=Method Detection Limit; PQL=Practical Quantitation Limit; MB=Method Blank; ND=Not Detected (below DF × MDL), J=Trace concentration.

16760 Gridley Road, Cerritos, CA 90703 Phone (562) 809-8880 Fax (562) 809-8801

03-10-2006

EPA 8015M (TPH)
Batch QA/QC Report

Client:	Carlin Environmental Consulting, Inc.	Lab Job No.:	AG603034
Project:	Stan Pac Church		
Matrix:	Soil	Lab Sample ID:	AG603034-1
Batch No:	BMC09-GS1	Date Analyzed:	03-09-2006

I. MS/MSD Report
Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
TPH-g	ND	1,000	1,270	1,070	127.0	107.0	17.1	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Report Value	True Value	Rec.%	Accept. Limit
TPH-g	1,030	1,000	103.0	80-120

ND: Not Detected (at the specified limit)

16760 Gridley Road, Cerritos, CA 90703 Phone (562) 809-8880 Fax (562) 809-8801

03-10-2006

EPA 8015M (TPH)
Batch QA/QC Report

Client:	Carlin Environmental Consulting, Inc.	Lab Job No.:	AG603034
Project:	Stan Pac Church		
Matrix:	Soil	Lab Sample ID:	Z603039-1
Batch No.:	EC09-DS1	Date Analyzed:	03-09-2006

I. MS/MSD Report
Unit: ppm

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
TPH	ND	200	208	206	104.0	103.0	1.0	30	70-130

II. LCS Result
Unit: ppm

Analyte	LCS Report Value	True Value	Rec.%	%Rec Accept. Limit
TPH	207	200	103.5	80-120

ND: Not Detected (at the specified limit).

16760 Gridley Road, Cerritos, CA 90703 Phone (562) 809-8880 Fax (562) 809-8801

03-10-2006

EPA 8260B
Batch QA/QC Report

Client:	Carlin Environmental Consulting, Inc.	Lab Job No.:	AG603034
Project:	Stan Pac Church		
Matrix:	Water	Lab Sample ID:	R603036-1
Batch No:	0309-VOBW1	Date Analyzed:	03-09-2006

I. MS/MSD Report
Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
1,1-Dichloroethene	ND	20	20.0	19.7	100.0	98.5	1.5	30	70-130
Benzene	ND	20	19.7	18.9	98.5	94.5	4.1	30	70-130
Trichloro-ethene	ND	20	18.7	18.8	93.5	94.0	0.5	30	70-130
Toluene	ND	20	20.8	21.2	104.0	106.0	1.9	30	70-130
Chlorobenzene	ND	20	19.0	18.1	95.0	90.5	4.9	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Value	True Value	Rec.%	Accept. Limit
1,1-Dichloroethene	16.8	20	84.0	80-120
Benzene	17.1	20	85.5	80-120
Trichloro-ethene	17.5	20	87.5	80-120
Toluene	20.1	20	100.5	80-120
Chlorobenzene	17.1	20	85.5	80-120

ND: Not Detected.

16760 Gridley Road, Cerritos, CA 90703 Phone (562) 809-8880 Fax (562) 809-8801

Page ___ of ___

ALPHA SCIENTIFIC CORPORATION
CHAIN OF CUSTODY RECORD

Lab Job Number AG603034

Client: Carlin Environmental Consulting Inc
Address: 14661 Myford Rd Tustin CA

Report Attention	Phone	Fax	Sampled by
Oscar	714 508-1111		Oscar

Project Name/No.: StanPac church
Project Site: West LA church on Jefferson

T.A.T. Requested
- ☐ Rush 8 12 24 hrs
- ☐ 2-3 days ☑ Normal

Sample Condition
- ☑ Chilled ☑ Intact
- ☑ Sample seals

Analyses Requested

Client Sample ID	Lab Sample ID	Sample Collect Date	Sample Collect Time	Matrix Type	Sample Preserv	No., type* & size of container	8015M (Gasoline)	8015M(Diesel)	8260B(BTEX, Oxygenates)	8260B (VOCs)	8270C(SVOCs)	CAM Metals	8015 Modified	Start at C chain 4					Remark
StanPac C 5	AG603034-1	3/9/06	9AM	P									X						
StanPac C 10	-2	"	930	P									X						
StanPac C 15	-3	"	10:AM	P									X						
StanPac C W1	-4	"	11AM	G						X									

Relinquished by	Company	Date	Time	Received by	Company	Date	Time
Oscar Figueroa	CEC	3/9/06	130PM	[signature]	ASC	3.9.06	13:30
Relinquished by	Company	Date	Time	Received by	Company	Date	Time

Container types: M=Metal Tube, A=Air Bag, P=Plastic bottle, G=Glass bottle, V=VOA vial

Alpha Scientific Corporation
16760 Gridley Road
Cerritos, CA 90703
Tel: (562) 809-8880
Fax: (562) 809-8801

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.
Distribution: WHITE with report, PINK to courier.

Alpha Scientific Corporation
Environmental Laboratories

03-20-2006

Mr. Otto Figueroa
Carlin Environmental Consulting, Inc.
14661 Myford Road, Suite A
Tustin, CA 92780

Project: Stan Pac Church
Project Site: West LA Church on Jefferson
Sample Date: 03-15-2006
Lab Job No.: AG603056

Dear Mr. Figueroa:

Enclosed please find the analytical report for the sample(s) received by Alpha Scientific Corporation on 03-15-2006 and analyzed for the following parameters:

EPA 8015M (Total Petroleum Hydrocarbons)
EPA 8260B (VOC's By GC/MS)

All analyses have met the QA/QC criteria of this laboratory.

The sample(s) arrived in good conditions and with a chain of custody record attached.

Alpha Scientific Corporation is a CA DHS certified laboratory (Certificate Number 2633). Thank you for giving us the opportunity to serve you. Please feel free to call me at (562) 809-8880 if our laboratory can be of further service to you.

Sincerely,

Roger Wang, Ph.D.
Laboratory Director

Enclosures

This cover letter is an integral part of this analytical report.

16760 Gridley Road, Cerritos, CA 90703 Phone (562) 809-8880 Fax (562) 809-8801

03-20-2006

EPA 8260B
Batch QA/QC Report

Client:	Carlin Environmental Consulting, Inc.	Lab Job No.:	AG603056
Project:	Stan Pac Church		
Matrix:	Water	Lab Sample ID:	R603063-1
Batch No:	0317-VOEW1	Date Analyzed:	03-17-2006

I. MS/MSD Report
Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
1,1-Dichloroethene	ND	20	17.1	18.0	85.5	90.0	5.1	30	70-130
Benzene	ND	20	19.3	20.1	96.5	100.5	4.1	30	70-130
Trichloro-ethene	ND	20	21.0	21.8	105.0	109.0	3.7	30	70-130
Toluene	ND	20	20.2	20.7	101.0	103.5	2.4	30	70-130
Chlorobenzene	ND	20	20.0	21.3	100.0	106.5	6.3	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Value	True Value	Rec.%	Accept. Limit
1,1-Dichloroethene	18.4	20	92.0	80-120
Benzene	21.0	20	105.0	80-120
Trichloro-ethene	21.1	20	105.5	80-120
Toluene	21.6	20	108.0	80-120
Chlorobenzene	21.5	20	107.5	80-120

ND: Not Detected.

16760 Gridley Road, Cerritos, CA 90703 Phone (562) 809-8880 Fax (562) 809-8801

ALPHA SCIENTIFIC CORPORATION

CHAIN OF CUSTODY RECORD

Page ___ of ____

Lab Job Number AG603056

Client: Carlin Environmental Consulting Inc

Address: 14661 Myford Rd Tustin CA

Report Attention: Oscar | Phone: 714 508 1111 | Fax: | Sampled by: Oscar

Project Name/No.: StanPac Church | Project Site: West LA Church on Jefferson

T.A.T. Requested: ☐ Rush 8 12 24 hrs ☐ 2-3 days ☑ Normal

Sample Condition: ☑ Chilled ☑ Intact ☐ Sample seals

Client Sample ID	Lab Sample ID	Sample Collect Date	Sample Collect Time	Matrix Type	Sample Preserv	No., type* & size of container	8015M (Gasoline)	8015M(Diesel)	8260B(BTEX, Oxygenates)	8260B (VOCs)	8270C(SVOCs)	CAM Metals	8015 Modified	Start at C4					Remark
StanPac C2-5	AG603056-1	3/15/06	AM	P									X						
StanPac C2-10	-2	"	"	P									X						
StanPac C2-15	-3	"	"	P									X						
StanPac C2-W	-4	"	"	G						X									
StanPac C3-5	-5	"	"	P									X						
StanPac C3-10	-6	"	"	P									X						
StanPac C3-15	-7	"	"	P									X						
StanPac C3-W	-8	"	"	G						X									
StanPac C4-5	-9	"	PM	P									X						
StanPac C4-10	-10	"	"	P									X						
StanPac C4-15	-11	"	"	P									X						
StanPac C4-W	-12	"	"	G						X									
StanPac C5-5	-13	"	"	P									X						
StanPac C5-10	-14	"	"	P									X						
StanPac C5-15	-15	"	"	P									X						
StanPac C5-W	-16	"	"	G						X									

Relinquished by	Company	Date	Time	Received by	Company	Date	Time
[signature]	CEC	3/15/06	7PM	[signature]	ASC	3/15/06	7:00pm
Relinquished by	Company	Date	Time	Received by	Company	Date	Time

Container types: M=Metal Tube, A=Air Bag, P=Plastic bottle, G=Glass bottle, V=VOA vial

Alpha Scientific Corporation
16760 Gridley Road
Cerritos, CA 90703
Tel: (562) 809-8880
Fax: (562) 809-8801

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.
Distribution: WHITE with report, PINK to courier.

Figures

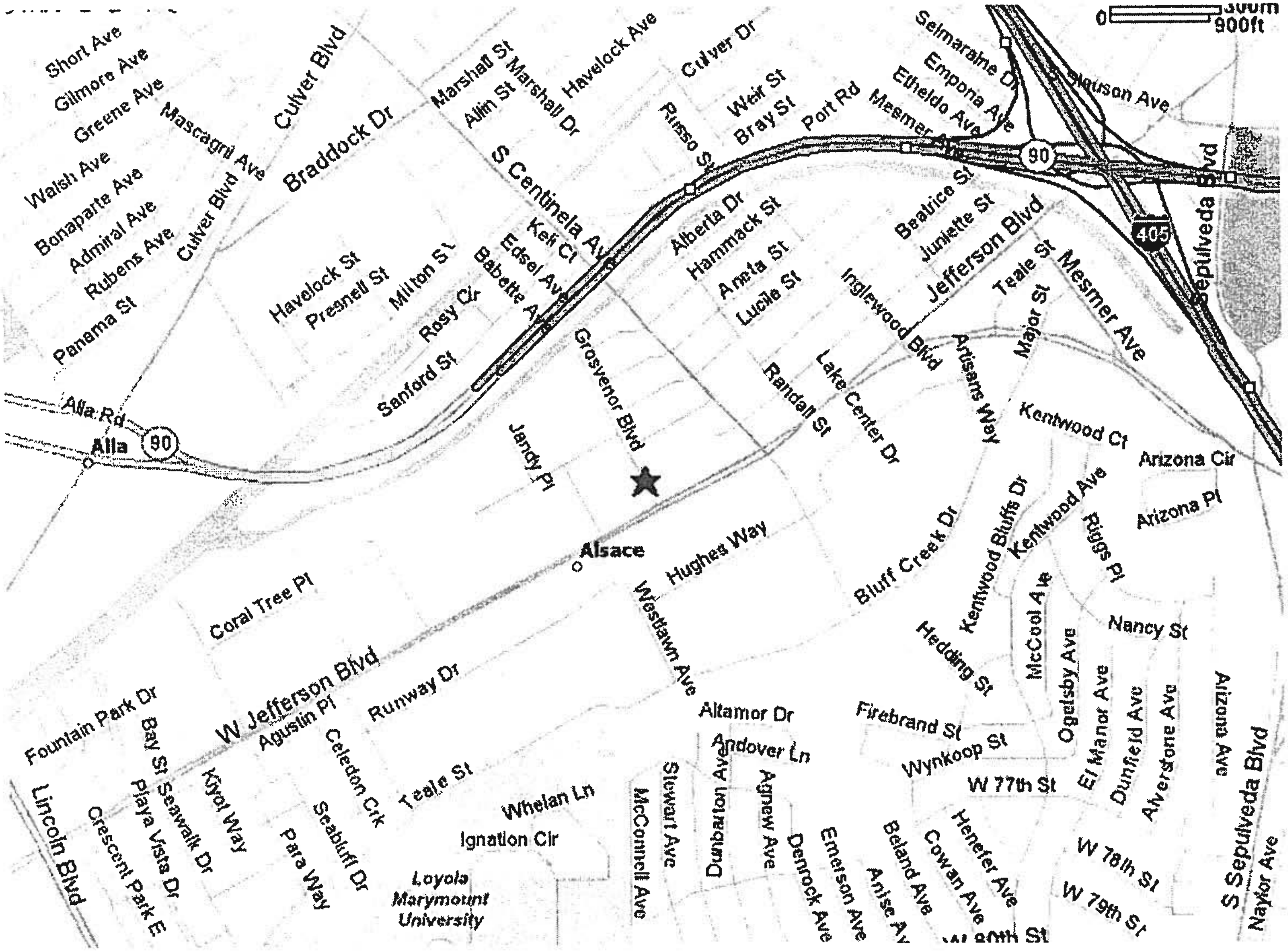


Figure 1. Site Location Map

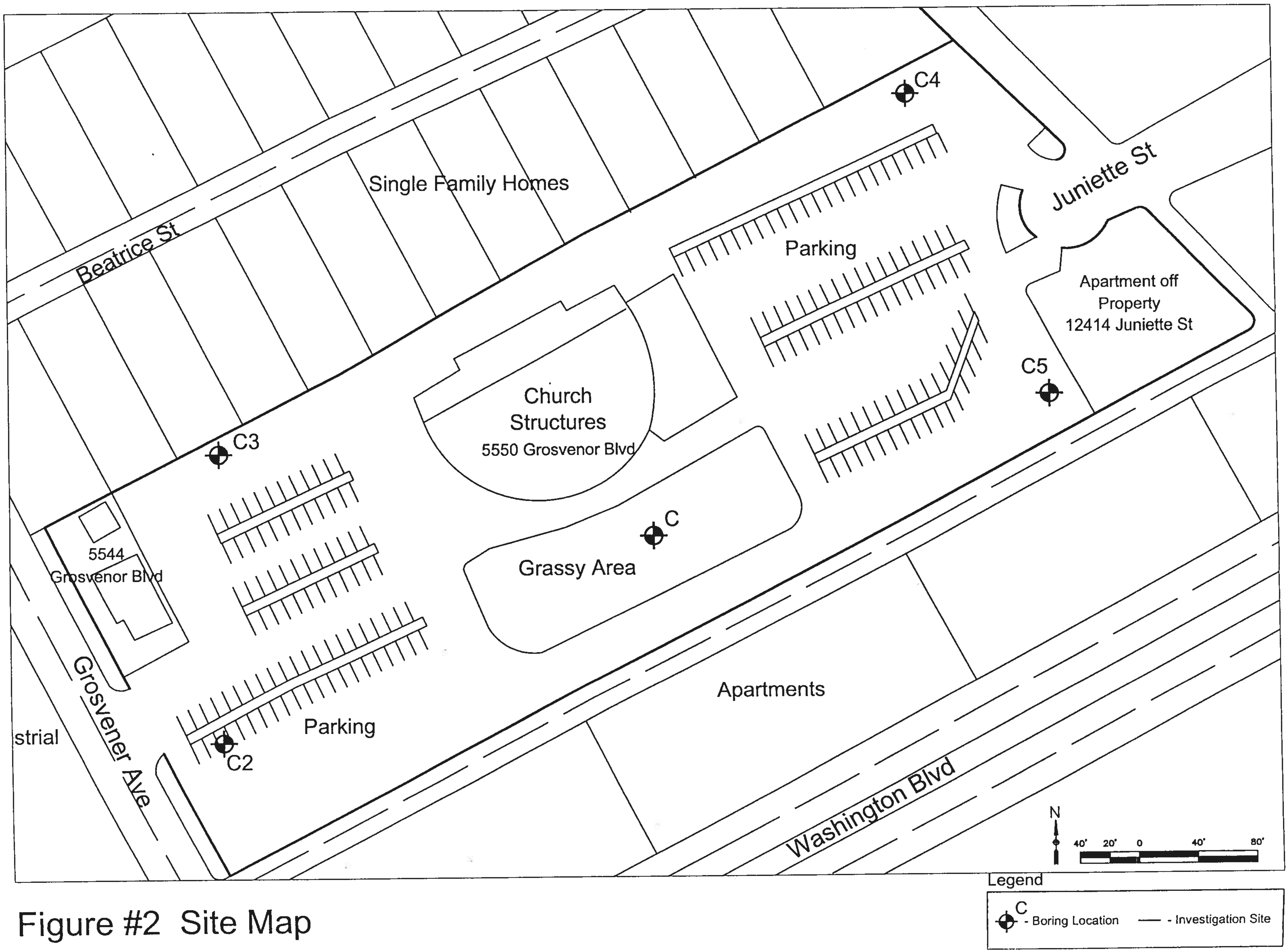


Figure #2 Site Map

Los Angeles Department of Water and Power Will Serve Letter

July 31, 2008

Map No. 104-162

Development Resource Consultants, Inc
160 North Riverview Drive, Suite 100
Anaheim Hills, California 92808

Attention: Mr. Gregory R. Cooke, P.E.P.L.S.

Dear Mr. Cooke:

Subject: Water Availability
5550 Grosvenor Boulevard

This is in reply to your request for information regarding water availability for the above-mentioned property. The subject property can be supplied with water from the municipal system subject to the Los Angeles Department of Water and Power, Water System's rules and conditions.

If you need additional information, please contact Mr. Frank Meza at (213) 367-1301. Correspondence may be addressed to P.O. Box 51111, Room 1425, Los Angeles, California 90051-5700.

Sincerely,

Kathleen [signature]

(for) HUGO A. TORRES
Manager-Business Arrangements
Water Distribution Engineering

FM:ct

c: Mr. Frank Meza