US Army Corps of Engineers, Wetlands Research Program Technical Report Y-87-1 (On-line edition), *Corps of Engineers Wetlands Delineation Manual*, by Environmental Laboratory, Final Report. January 1987.

US Army Corps of Engineers, South Pacific Division, *Final Summary Report: Guidelines for Jurisdictional Determinations for Water of the United States in the Arid Southwest*, June 2001.

Appendix C

Geotechnical Investigations and Reviews

November 10, 2004 PL-06405-01

HQ Development
4641 Leahy Street
Culver City, California 90232

Attention: Ms. Mai Gillogly

Subject: **Preliminary Geotechnical Engineering Report**
Proposed Commercial Development
Lot 3, PM Per BK 157 P 50-52 of PM
Vicinity of 29851 Agoura Road
Agoura Hills, California

Presented herewith is the Preliminary Geotechnical Engineering Report prepared, as authorized, for the site of a proposed commercial development in the City of Agoura Hills, California. The conclusions and recommendations contained in this report are based upon Earth Systems Southern California (ESSC's) understanding of the proposed development and on analyses of the data obtained from the field and laboratory testing programs.

The recommendations provided in this report generally pertain to criteria for site grading and foundation design. ESSC strives to provide analyses and recommendations in accordance with the applicable standards of care for the geotechnical engineering profession at the time the study is conducted. The submittal of this report marks the completion of the scope of geotechnical engineering services described in ESSC's proposal dated August 27, 2004 (revised September 8, 2004) and authorized on September 13, 2004. Other services which may be required, such as grading observation and construction testing, are additional services that will be billed according to the Fee Schedule in effect at the time such services are provided. Budgets for these services, which are dependent upon design and construction schedules, can be provided when requested. ESSC appreciates this opportunity to provide professional geotechnical engineering services for this project. If you need clarification of the information contained in this report, or if ESSC can be of additional service, please contact the undersigned.

Respectfully submitted,

Earth Systems
Southern California

Mark L. Russell, G.E.
Project Geotechnical Engineer

Distribution: 6 – Addressee

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INTRODUCTION

This Preliminary Geotechnical Engineering Report has been prepared for the site of a proposed commercial development. The purpose of this study was to evaluate the geotechnical engineering characteristics of the on-site subsurface soils and bedrock relative to the anticipated site development.

This report includes:

1. Descriptions of the field exploration and laboratory tests performed.

2. Evaluation of the expansion potential of soils beneath the site.

3. Conclusions and recommendations relating to construction of the proposed commercial development based upon analyses of data obtained from the exploration and testing programs, and on knowledge of the general and site specific characteristics of the subsurface soils and rock.

SITE DESCRIPTION

The approximate 5-acre site is on the north side of Agoura Road just east of Reyes Adobe Road in the City of Agoura Hills, California (Plates I and II). The Ventura freeway (Hwy 101) forms the north boundary of the site. The roughly rectangular-shaped project site is currently unoccupied with the exception of a rough baseball diamond in the southwest corner. A large oak tree grows from a depression in the ground near the center of the site. The remainder of the site is covered by a light growth of weeds. Access to the property is available from Agoura Road on the south side (see Site Geologic Map, Plate III).

Topographically, the majority of the property consists of relatively flat ground at an elevation of approximately 875 feet above mean sea level. The rear (north end) of the lot slopes up approximately 8 feet at a gradient of approximately 4H:1V. The above-cited descriptions are intended to be illustrative, and are specifically not intended for use as a legal description of the subject property.

PROJECT DESCRIPTION

Based on discussions with the project developer, and review of the preliminary site plan provided, Earth Systems Southern California (ESSC) understands that the proposed project will consist of a two-story commercial office building with a foot-print of approximately 49,000 square feet. The project will also include associated parking, walkways, and landscaping. ESSC has not received building or foundation plans for the proposed structure as of this writing. However, based upon the type of construction, estimated structural loads are not expected to exceed 3,000 pounds per linear foot (plf) for continuous foundations and 120 kips for isolated spread footings.

Due to the relatively flat site topography, ESSC has assumed that conventional cut and fill methods will be used to grade the site, with permanent slope heights of no more than five feet. Sewage disposal will be provided by a public sewer system. These assumptions were used as the basis for the exploration, testing, and analyses programs, and for the recommendations contained in this report. If the anticipated foundation loads or other site conditions vary significantly from the values stated herein, the recommendations should be reconfirmed prior to completing project plans.

PURPOSE AND SCOPE OF SERVICES

The purpose of ESSC's services was to evaluate the project site soil and bedrock conditions, and to provide preliminary geotechnical engineering conclusions and recommendations relative to the project site and the proposed development. ESSC's scope of services included the following:

A. A general reconnaissance of the site and review of previously completed geotechnical reports available at the City of Agoura Hills.

B. Shallow subsurface exploration of the project site by drilling 8 hollow-stem auger test borings.

C. Geotechnical laboratory testing of selected soil and rock samples obtained from the exploration program conducted for this project.

D. Geotechnical engineering analyses of the data obtained from the exploration and testing programs.

E. A summary of findings and recommendations in this written report.

Contained in this report are:

A. Discussions on local and site specific soil and bedrock conditions.

B. Results of laboratory tests and field data.

C. [Evaluation of susceptibility of site soils to swell and expansion.

D. Recommendations relating to the proposed site development, including allowable foundation bearing capacity, recommendations for foundation design, estimated total and differential foundation settlements, site grading criteria, lateral earth pressures, soil expansion characteristics, soil corrosion characteristics, and preliminary pavement section design.

SITE HISTORY

Based on the shape of the site topography, including the presence of the oak tree within a depression it appears that fill has been placed on the site to build up the ground level at some time in the past. (The observations from the exploratory borings discussed herein also suggest the presence of fill). Older topographic mapping (prior to fill placement) suggests 10 feet or more of fill especially in the central and easterly parts of the site. Review of previously completed reports and maps available at the City of Agoura Hills indicates that some kind of geotechnical investigation was completed at the subject site around 1979 (Geosoils, 1979). A geotechnical investigation was conducted in 1995 for the neighboring property at 29851 Agoura Road (Smith-Emery, 1995). The report for that investigation refers to a compaction report dated 1980 for the subject site, however, the compaction report was not available from the City. The reviewed reports indicate that the upper site soils consisted of silts and clays with expansion indices (EI) that ranged from 93 to 173. The reviewed reports also indicate that the neighboring property at 29851 Agoura Road has experienced significant distress relating to poor drainage, over-watering, leaking pipes, under-designed retaining walls, shallow foundations and loose backfill. A large portion of the observed problems were attributable to soil-related issues primarily expansive soils.

FIELD EXPLORATION

The field exploration for this study was conducted on September 22, 2004. Field exploration consisted of drilling and sampling 8 exploratory hollow-stem auger test borings to depths of approximately 11 to 51 feet below the existing ground surface. The approximate locations of the exploratory test borings, as indicated on the attached Site Geologic Map (Plate III), were determined by sighting and tape measuring from existing surrounding improvements. The locations of the borings should be considered accurate only to the degree implied by the measurement method used.

Bulk (disturbed) samples of the subsurface soils and rock were obtained from tailings generated during drilling. These samples were secured for classification and testing purposes and represent mixtures of soils and rock within the noted depths.

Additional soil and rock samples ("ring samples") were secured from within the test borings using a three-inch outside diameter ring sampler (ASTM D 3550) with a shoe similar to the drive cylinder sampler (ASTM D 2937). A 140-pound hammer falling approximately 30 inches (ASTM D 1586) drove the sampler. The hammer was operated by an automatic trip mechanism. The number of blows required to drive the sampler 18 inches was recorded in six-inch increments and recorded on the boring logs. Recovered ring samples were sealed in plastic containers and transported to the ESSC laboratory for further classification and testing.

Further sampling and collection of disturbed soil samples was accomplished using the Standard Penetration Test (SPT) sampler in accordance with ASTM D 1586. The SPT sampler is a split barrel sampler with a 1-3/8 inch inside diameter. This sampler is also driven by a 140-pound hammer falling approximately 30 inches. The number of blows required to drive the sampler 18 inches was recorded in six-inch increments and recorded on the boring logs. Soil samples recovered by this method were sealed in sealed plastic bags. Recovered soil samples were transported to ESSC's laboratory for further classification and testing.

The Logs of Test Borings for this report, included in Appendix A, represent ESSC's interpretation of the field logs prepared for each test boring by ESSC's staff, along with their interpretation of soil and bedrock conditions between samples and results of laboratory tests. While the noted stratification lines represent approximate boundaries between soil and rock types, the actual transitions may be gradual.

LABORATORY TESTING

After visual and tactile classification in the field, the soil and rock samples were brought to ESSC's laboratory. The soil classifications were checked in accordance with the Unified Soil Classification System and a testing program was established as follows:

A. Soil and rock samples were examined and field logs were reviewed to select samples for laboratory testing.

B. In-situ moisture content and dry unit weight for soil and rock ring samples were evaluated (ASTM D 2937 and ASTM D 2216).

C. Soil classification tests consisted of Particle Size Analysis: Mechanical Method and Hydrometer Method (ASTM D 422) and Atterberg Limits (ASTM D 4318).

D. The relative strength characteristics of selected ring samples of the near-surface soils and rock were estimated from the results of direct shear tests (ASTM D 3080). The specimens were placed in contact with water for at least 24 hours before testing and then sheared under normal loads ranging from approximately 0.5 to 2.3 kips per square foot (ksf). Samples were sheared to sufficient strains so that both peak and ultimate values were evaluated.

E. Consolidation tests (ASTM D 2435) were conducted on selected soil ring samples. The maximum stress during testing was 9 ksf. The samples were saturated at 1 ksf to check the hydroconsolidation potential. The samples were unloaded to 4 ksf to check the rebound characteristics.

F. Soil chemistry tests consisted of pH, resistivity, conductivity, and a variety of cations and anions including soluble sulfate. Soil chemistry tests were performed by M.J. Schiff and Associates on a soil sample provided by ESSC.

G. Additional tests consisted of Maximum Density-Optimum Moisture (ASTM D 1557) and Expansion Index (ASTM D 4829).

Refer to Appendix B for the laboratory test results. Presentation of the test results provides only that information considered pertinent. References to ASTM and other test standards refer to the standard currently in effect.

GEOLOGIC SETTING

The subject site is located along the northern margin of the Santa Monica Mountains, part of the Transverse Ranges geomorphic province. Composed of parallel, east-west trending mountain ranges and sediment-filled valleys the Transverse Ranges is one of the most active tectonic/seismic areas of the United States. The distinctive geologic structure of the Transverse Ranges is dominated by the effects of north-south compressive deformation that result in thrust faulting, strike-slip faulting and bedrock folding. These active geologic features are attributable to convergence between the "Big Bend" of the San Andreas fault and northwestern motion of the Pacific Plate and have caused thrust fault related earthquakes such as the 1994 Northridge, the 1971 San Fernando, and the 1987 Whittier Narrows earthquakes.

Geologic units at the site consist of clayey artificial fill, thin clayey alluvial soils, and Tertiary Topanga formation (Tt) clay shale bedrock. Outcrops of volcanic bedrock (Tertiary Conejo Volcanics, Tcvb) are present within the site vicinity.

There are several active or potentially active faults near the subject site. These include the Malibu Coast fault located approximately 8.5 kilometers (km) south of the site, the Anacapa-Dume fault (approximately 10.5 km southwest), the Simi-Santa Rosa fault (approximately 15.5 km northwest), and the Palos Verdes fault (approximately 27.5 km southeast).

The site does not fall within a currently designated California Division of Mines and Geology (CDMG) Fault Rupture Hazard ("Alquist-Priolo") zone (Hart and Bryant, 1999). The site does not fall within a liquefaction hazard zone or slope hazard zone as currently identified by CDMG on the Seismic Hazard Zones Thousand Oaks Quadrangle map dated November 17, 2000.

SUBSURFACE CONDITIONS

Artificial fill soils (af) were encountered in 6 out of the 8 exploratory borings. The depth of fill observed ranged from approximately 8 to 9 feet at the locations of borings B2 - B6 to approximately 14 feet around boring B7. These fill soils were found to consist predominantly of moderately to very compact silty clay and sandy clay (CL and CH soil types based upon the Unified Soil Classification System). Based upon results of the Expansion Index (EI) Tests (ASTM D 4829) conducted for this investigation, the on-site fill soils were observed to have a "medium" (EI = 51 to 90) expansion potential. However, as discussed under Site History above, previous geotechnical reports for the site and vicinity indicated "high" to "very high" (EI = 91 to >130) expansion potential. Refer to Section H of the Recommendations section for explanations and recommendations for dealing with expansive soils.

Native quaternary alluvial soils (Qa) were found to consist predominantly of dense to very dense clayey sands and stiff to hard sandy clay (SC and CLsoil types). Expansion Index (EI) tests conducted on the alluvial soils for this investigation indicated a "very low" (EI = 0 to 21) expansion potential for those materials.

Bedrock of the Upper Topanga Formation (Tt) was encountered in four of the eight borings at depths ranging from 13 to 15 feet. The bedrock was observed to be weathered, laminated clay shale.

The Logs of the Test Borings in Appendix A contain more detailed descriptions of the soils and bedrock encountered. Per the 2001 edition of the California Building Code (CBC) Table 16-J, the site soil profile should be classified as an S_C soil profile (soft rock profile).

GROUNDWATER

No free groundwater was encountered to the maximum depth drilled. Based on the Seismic Hazards report for the Thousand Oaks Quadrangle (CDMG, 2000), the historic shallowest groundwater in the vicinity of the project site could be as shallow as approximately 10 feet. Fluctuations in groundwater levels may occur due to variations in rainfall, regional climate, and other factors.

DISCUSSION AND CONCLUSIONS

Existing Non-Engineered Fill

As discussed above under Site History, no records have been made available regarding compaction testing and certification of the existing fill on this site. Thus, the existing non-engineered fill is not suitable for support of structures. Any structure, pavement or utility supported by the fill may be subject to variable settlement.

For proper support of structures on fill, it would be necessary to remove the existing fill to its full depth, then replace and re-compact it with adequate geotechnical engineering observation and testing. ESSC understands that the removal and replacement option will not be utilized on this project. Rather, the proposed office structure will be supported on deep foundations as discussed below. For minor non-building structures and exterior pavements, limited removal and recompaction of the upper fill soils may somewhat improve the bearing characteristics of the subgrade, but complete removal and replacement would still be necessary to provide a complete certified engineered fill.

Mitigation for Expansive Soils

As discussed in the Subsurface Conditions section and Site History section above, the existing upper soil found on the site consists of clay with expansion potential in the "Medium" to "Very High" ranges. The relatively new development at 29851 Agoura Road (adjacent to the site) is known to have experienced significant problems related to expansive soils. It will be critical at this site consider the effects of expansive soils and to include mitigation measures in the design and

construction of the project. ESSC recommends the following mitigation measures, at a minimum, to be included in the project:

- Use of deep foundations (piers, piles, caissons) rather than conventional shallow foundations for support of the proposed building structure.
- Use of a structural deck supported by the piers and grade beams for the first floor rather than a slab-on-grade.
- Use of a compressible inclusion (e.g. foam) between the floor slab and the ground surface.
- Re-compaction of soils beneath exterior hardscape (i.e walkways, driveways and pavements) using moisture contents above optimum moisture.
- Lime treatment of critical soil subgrade areas during re-compaction.
- Strict control of all roof drainage and surface drainage to direct water away from the building, slabs and pavements.
- Buffer zones of at least 5 feet for all irrigated landscaping away from the proposed building, slabs and pavements.

Foundation Design and Settlements

As discussed, deep foundations are recommended rather than shallow conventional foundations because of the presence of non-engineered fill soil and to minimize the potential detrimental effects of expansive soils on the proposed building structure. Deep foundations (piers, piles or caissons) should bear in competent bedrock.

If the preliminary recommendations for foundation design and construction are followed, settlement of the proposed office building structure should not exceed approximately a half inch (1/2"). Differential settlement of neighboring footings of varying loads, depths or sizes may be as high as fifty percent of the total settlement. Refer to Sections D and E of the Recommendations section of this report for more detailed discussions and recommendations regarding deep foundation design and construction.

Minor exterior structures not attached to the proposed office building (such as trash enclosures or short retaining walls), may be supported on conventional shallow foundations on compacted soil. However, it should be understood that such minor structures could be subject to distress due to the presence of non-engineered fill and expansive soils.

Site Grading

As mentioned in the Subsurface Conditions Section, artificial fill soils are present within the project site to depths of approximately 10 to 14 feet below existing grade. The soils in the site area exhibit expansion potential into the "Very High" range. To provide firm uniform bearing for the proposed exterior hardscape (slabs, walkways, driveways, patios and pavements), it is recommended that the near surface soils (within approximately 2 feet below existing or final proposed grade) be removed and recompacted using moisture higher than optimum moisture content. Soils beneath the proposed building may or may not be recompacted since the building and floor slab will be supported by deep foundations bearing in bedrock rather than on the upper soils. Refer to Section A of the

Recommendations of this report for more detailed discussions and recommendations regarding site preparation.

Seismic Design Parameters

The following table is a summary of the estimated seismic parameters typically used for structural design per the 2001 California Building Code (CBC).

Summary of Seismic Parameters

Seismic Zone	4
Seismic Source Type Malibu Coast Fault Zone	B
Distance from Seismic Source	7 km
Soil Profile Classification (2001 CBC Table 16-J)	S_C
Seismic Zone Factor – Z (2001 CBC Table 16-I)	0.40
Seismic Coefficient - C_a (2001 CBC Table 16-Q)	$0.40N_a$
Seismic Coefficient - C_v (2001 CBC Table 16-R)	$0.56N_v$
Near Source Factor - N_a (2001 CBC Table 16-S)	1.0
Near Source Factor - N_v (2001 CBC Table 16-T)	1.1
Estimated Design-Based Horizontal Acceleration (DBE)*	0.45 g
Estimated Predominant Magnitude, Mw*	7.3
*10% probability of being exceeded in 50 years	

Liquefaction

Liquefaction is defined as a loss of strength of saturated cohesionless soil caused by seismic shaking. Soil types most susceptible to liquefaction are loose, saturated silty to clean fine sands. The project site is not located within a defined liquefaction hazard zone as shown on the Thousand Oaks Quadrangle (CDMG, 200). Because of the presence of relatively shallow bedrock and the lack of near-surface groundwater beneath the site, the potential for liquefaction beneath the site is considered negligible.

RECOMMENDATIONS

Based upon field exploration, laboratory testing, interpretation of the data, and past experience, the following recommendations should be incorporated into site preparation, design, and construction of the proposed commercial development.

A. Site Preparation

The existing fill at the site is non-engineered fill and if all of the fill is not removed, there will be potential for future distress to minor exterior structures, pavements, and slabs supported by that fill. In the event that the owner elects not to remove and replace all of the fill, the following recommendations may help to minimize such distress and maintenance.

1. All vegetation, uncompacted fill, trash piles, pavements, abandoned underground utilities, and other debris should be removed from the proposed grading areas. Underground utilities (water, sewer, storm drain, electric, gas, cable, etc.) are anticipated within or adjacent to the proposed construction area. These utilities should be identified and relocated as required prior to performing excavations for any site grading or foundation excavations. All strippings and debris should be removed from the site in order to preclude their incorporation in site fill or remedial excavation backfill. Depressions resulting from such removals should have debris and loose soils removed and filled with suitable soils placed as recommended below.

2. In order to minimize potential settlement problems associated with structures supported on a nonuniform thickness of compacted fill, the geotechnical engineers should be consulted for site grading recommendations relative to backfilling large and/or deep depressions resulting from removals under Item 1.

3. Soils beneath any proposed traffic-bearing flexible pavement (asphaltic concrete) or rigid pavement (portland cement concrete), including a minimum lateral distance of at least two feet beyond pavement edges, should be excavated a minimum of 24 inches below the existing grade or finished subgrade, **whichever is lower**. The bottom of the remedial excavation should then be scarified (ripped) 6 inches. The scarified and excavated soils should be moisture conditioned to above optimum moisture content and be uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. **Compaction should be verified by testing.**

4. Soils beneath any proposed exterior non-traffic bearing concrete flatwork (sidewalks, patios, walkways etc.), including a minimum lateral distance of at least two feet beyond flatwork edges, should be excavated a minimum of 24 inches below the existing grade or finished subgrade, **whichever is lower**. The bottom of the remedial excavation should then be scarified (ripped) 6 inches. The scarified and excavated soils should be moisture conditioned to above optimum moisture content and be uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. **Compaction should be verified by testing.**

5. Import soils should be equal to, or better than, the on-site soils in strength, expansion, compressibility, and soil chemistry characteristics. In general, import material should be free of organic matter and deleterious substances, have 100% passing a two inch sieve and an Expansion Index less than 20. Import soils can be evaluated prior to their use, but will not be prequalified by the geotechnical consultant. Approval of import soils will be given only after the material is on the project, either in-place, or stockpiled in adequate quantity to complete the project.

6. Consideration should be given to the most appropriate equipment to be used to compact the soil types observed at the site. Fine grained soils (clays and silts) typically should not be subjected to vibration or heavy widely distributed loads (such as smooth rollers or wide rubber tired construction equipment) during the compaction process, as this can cause an increase in the soil pore pressure resulting in 'pumping' or failure to consolidate the soil particles by expelling water and air. The upper site soils are likely best compacted by using a 'kneading' action (such as a 'sheepsfoot' compactor or impact from a sharp blow on a small area (such as a dynamic or high speed tamping foot).

7. Suitable imported fill soils should be moisture conditioned to near optimum moisture content and be uniformly compacted to at least 90% of maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. To aid in the compaction operation, fill should be placed in lifts not exceeding six inches compacted thickness.

8. Backfill around or adjacent to confined areas (i.e. interior utility trench excavations, etc.) may be performed with a lean sand/cement slurry (minimum two sacks of cement per cubic yard) or "flowable fill" material (a mixture of sand/cement/fly ash). The fluidity and lift placement thickness of any such material should be controlled in order to prevent "floating" of any "submerged" structure.

9. Shrinkage because of excavation and compaction of the upper site soils is expected to be approximately 12 percent of any excavated or scarified site soils. This estimate is based upon compactive effort needed to produce an average degree of compaction of approximately 92 percent and may vary depending on contractor methods. Losses from site clearing and grubbing operations may affect quantity calculations and should also be taken into account. The grading contractor should verify shrinkage and earthwork yardage estimates.

10. Roof drainage systems for the proposed structure should be designed so that runoff water is diverted away from any structure.

11. Final site grades should be designed and constructed so that all water is diverted away from all structures and not allowed to pond on or near pavement. Drainage devices should be constructed to divert drainage from the project site.

12. It is recommended that ESSC be retained to provide geotechnical engineering services during the grading, excavation, and foundation phases of development. This continuity of services will allow for the geotechnical review of the design concepts and specifications relative to the

recommendations of this report and will more readily allow for design changes in the event that subsurface conditions differ from those currently anticipated.

B. Excavations

1. Standard construction techniques should be sufficient for site excavations. All excavations should be made in accordance with applicable regulations (including CAL/OSHA). Project safety is the responsibility of the contractor and the owner. ESSC will not be responsible for project safety.

2. Unshored, unsurcharged, open excavations may be cut vertically to a maximum depth of no more than four feet. Excavations extending between four and ten feet deep should be shored or sloped back from the base of the excavation to at least a one horizontal to one vertical (1H:1V) slope or flatter. If excavations dry out, sloughing will occur. No excavation should be made within a 1:1 line projected outward from the toe of any existing footing or structure.

3. During the time excavations are open, no heavy grading equipment or other surcharge loads (i.e. excavation spoils) should be allowed within a horizontal distance from the top of any slope equal to the depth of the excavation (both distances measured from the top of the excavation slope).

4. Adequate measures should be taken to protect any structural foundations, pavements, or utilities adjacent to any excavations.

C. Utility Trenches

Standard construction techniques should be sufficient for site utility trench excavations. The surface of utility trench backfill frequently settles even when backfill is placed under optimum conditions. Structural units or pavement placed over such backfill should be designed to accommodate such movements. Jetting of utility trench backfill is not recommended.

1. Backfill of utilities within rights-of-way should be placed in strict conformance with the requirements of the governing agency. However, as a minimum it is recommended that utility trench backfill should be moisture conditioned to above optimum moisture content and be uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. To aid in the compaction operation, utility trench backfill should be placed in lifts not exceeding six inches compacted thickness.

2. The provisions of this report relative to minimum compaction standards should govern utility trench backfill within the project boundary. In general, service lines extending inside the site should be backfilled with native soils that have been moisture conditioned and uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. To aid in the compaction operation, utility trench backfill should be placed in lifts not exceeding six inches in compacted thickness.

3. Backfill operations should be reviewed and tested by the geotechnical engineer's representative to verify conformance with these recommendations.

D. Pier Design

If a pier and grade-beam foundation system is selected, foundation piers should be designed as friction piles. Piers may consist of drilled or hand-dug, reinforced cast-in-place concrete piles, or structural steel sections installed in bore-holes subsequently backfilled with concrete or concrete slurry.

1. As a minimum, the new piers should be at least eighteen inches (18") in diameter and at least 10 feet in length and embedded a minimum of 5 feet into bedrock. The geotechnical engineer should be consulted during pier installation to determine compliance with the geotechnical recommendations.

2. For vertical capacity, the piers may be proportioned using a skin friction (adhesion) value of 60+24Z pounds per square foot (psf) where Z = Depth (in feet) below the surface of the lowest adjacent final ground. No vertical load carrying capacity is provided for the portions of the piers in soil. For axial uplift loads, a skin friction (adhesion) value of 30+12Z psf may be used. The load capacities should be based upon skin friction with no end bearing. These allowable capacities include a safety factor of 3.0 and may be increased by one-third when considering transient loads such as wind or seismic forces.

3. These allowable skin friction values provided above are based upon available subsurface field data and on ESSC's experience on similar projects. The compressive and tensile strength of new pier designs should be checked to verify the structural capacity of the piers. Reinforcement of piers should be specified by the structural engineer. The specific method of pier installation will affect the performance of the piers. ESSC recommends a meeting with the design team and contractor to verify that the specific method of pier installation can provide the anticipated load supporting capacity.

4. Lateral (horizontal) loads may be resisted by passive resistance of the bedrock and soil against the piers. An equivalent fluid pressure (EFP) of 400 psf per foot of penetration in bedrock may be used for lateral load design. The resisting pressure provided is an ultimate value; an appropriate safety factor should be used for design (minimum of 1.5 recommended). However, the maximum passive pressure used for design should not exceed 6,000 psf.

5. For piers spaced at least three diameters apart, an effective width of three times the actual pier diameter may be used for passive pressure calculations (e.g. "flagpole" design).

6. Assuming 24-inch diameter piers of reinforced concrete that are fixed against rotation at the head, the "point of fixity" may be assumed to be located approximately 6 feet below the final ground elevation.

7. It is the structural engineer's responsibility to design the reinforcement for the piers to sustain the imposed axial and lateral loading.

8. All piers should be tied together laterally (in both directions) at the top with grade beams. The size, spacing, and reinforcing of grade beams should be determined by the structural engineer.

E. Pier Installation

The following recommendations are based upon ESSC's analyses of the geotechnical conditions at the project site and our understanding of the project. The project civil and structural engineers may require additional installation criteria based on other factors (type of pile, structural design, method of construction, etc.).

1. The geotechnical engineers, or their representatives, should be present during excavation and installation of all piers to observe subsurface conditions, and to document penetration into load supporting materials (i.e. competent bedrock).

2. Since the piers are designed to rely on intimate frictional contact with the soil and rock, any casing (if used) should be removed during placement of concrete. Slick or smeared zones on the side-walls of the bore-holes should be removed and, bentonite slurry and similar stabilizing fluids should not be used in bore holes without allowing for a reduction in pile load capacity.

3. The design mix for the concrete to be used in the pier construction should be established and approved by the structural engineer prior to the time of construction. Compression tests should be performed on samples of the concrete in accordance with applicable codes or requirements of the structural engineer. Inspection by qualified personnel should be provided during the concrete batching and during placement of pier steel and concrete.

4. Piers located within three pier diameters of each other should be drilled and filled alternately so that concrete is permitted to set before drilling an adjacent pier. The time for initial set of the concrete will depend on the design mix and should be determined in the field at the time of construction. No fewer than 4 hours should be allowed for the concrete to set before drilling for an adjacent pier. No pier hole should be left open overnight. Since the exact pier installation process is not known at this time, it is important for ESSC to be consulted relative to recommendations for placement criteria to aid in maintaining the integrity of the piers during placement.

5. The bottoms of pier excavations should be relatively clean of loose soils and debris prior to placement of concrete. Any water encountered should be pumped from the boreholes prior to the placement of concrete, or placement of concrete should be by use of a tremie or pump line such that the water is displaced during the concrete placement. The volume of concrete placed should be measured to compare with the design volume.

6. Installed piers should not be more than two percent (2%) from the plumb position.

F. Conventional Shallow Foundations

As discussed above, conventional shallow foundations are not recommended for the proposed building structure because of the relatively high expansion potential of the site soils and the presence of non-engineered fill. In the event that the owner elects to build minor structures on the fill, it should be understood that future distress could occur if all of the fill is not removed and recompacted within n the footprint of the structure. The following recommendations may be used for minor exterior structures (such as small retaining walls and trash enclosures) not attached to the proposed commercial building.

1. Conventional shallow continuous (strip) foundations for minor structures not attached to the main proposed building provided the foundations are embedded sufficiently deep into compacted fill to provide adequate setback from slopes. Strip footings should be stepped to maintain horizontal bottoms along sloping ground.

2. Because of the expansive nature of the site soils, isolated pad foundations are not recommended.

3. Excavations for foundations should be cleaned of all loose or unsuitable soils and debris prior to placement of concrete. Soil generated from the foundation excavations should not be placed below the floor slab unless properly moisture conditioned and compacted, and only after the area to receive fill has been properly prepared and approved.

4. Continuous (wall or strip) foundations for the proposed structures founded in the recommended compacted soil pad may be proportioned for the following values:

   a. Design Values: An allowable "net" bearing capacity of 1,000 pounds per square foot (psf) can be utilized for dead and sustained live loads. This value includes a minimum safety factor of three, and may be increased by 1/3 when transient loads (such as wind and seismic forces) are included.

   b. Continuous foundations should be embedded a minimum of 12 inches below adjacent grade and be a minimum of 12 inches in width. Actual depth, width, and reinforcement requirements for continuous foundations depend on the Expansion Index of the bearing soils (refer to Section H of Recommendations), applicable sections of the governing building code, and requirements of the structural engineer.

   c. The allowable bearing capacity for continuous foundations may be increased by 100 psf for each additional 6 inches of foundation depth, and by 100 psf for each additional 6 inches of foundation width. The allowable bearing capacity should not exceed 2,000 psf to keep estimated settlements within allowable limits. Also, the edge pressure of any eccentrically loaded footing should not exceed this bearing value for either permanent or temporary loads.

5. Resistance to lateral loading may be provided by friction acting along the foundation base. A coefficient of friction of 0.35 may be used for concrete foundations bearing in site soils

recompacted to at least 90% of maximum dry density as determined by ASTM D 1557 test methods, and may be used with dead loads. This value includes a safety factor of 1.5.

6. Additional resistance to lateral loading may be provided by passive earth pressure acting against the sides of foundations or grade beams. Passive pressure may be taken as 400Z PSF, where Z = Depth (in feet) below the finished ground elevation. In passive pressure calculations, the upper one-foot of soil should be subtracted from the depth, Z, unless confined by pavement or slab. The maximum passive pressure used for design should not exceed 6,000 psf. The resisting pressure provided is an ultimate value. An appropriate factor of safety should be used for design calculations (minimum of 1.5 recommended). Frictional and passive resistance to lateral forces may be combined without further reduction.

F. Slab-on-Grade Construction

1. Exterior concrete slab-on-grade construction should be supported by compacted soils prepared as recommended in Section A of this report. Interior (building ground floor) slabs should consist of structural decks supported by the pier and grade-beam foundation system.

2. A minimum of four inches (4") of compacted sand or gravel should be placed over the finished compacted subgrade prior to placing concrete for both interior (building floor) and exterior slabs. This granular material should be moisture conditioned to near optimum moisture content and uniformly compacted using mechanical compaction equipment.

3. Reinforcement of slab-on-grade construction is contingent upon the structural engineer's recommendations and the Expansion Index of the supporting soils. Since the mixing of fill soils with native soils could change the Expansion Index, additional tests should be conducted during rough grading to determine the expansion characteristics of the new subgrade soils. It is recommended that all exterior concrete slab-on-grade construction be reinforced with at least #4 bars on 16-inch centers, each way. **Reinforcement should be placed at mid-depth of the slab.** Additional reinforcement may be required once the final expansion potential of the subgrade soils is known. Actual reinforcement requirements will be dependent on the Expansion Index of the bearing soils (Refer to Section H of Recommendations), applicable sections of the governing building code, and requirements of the structural engineer.

4. The ground floor slab for the proposed office building should e designed as a structural deck supported by the pier and grade-beam foundation. The slab thickness and type and amount of reinforcement should be determined by the structural engineer. In addition to the sand layer, it may be advisable to incorporate a "compressible inclusion" (i.e. foam type product) beneath the interior building ground floor slab to minimize the effect of soil expansion on the slab.

5. Cracks that develop in concrete slab-on-grade should be filled and sealed prior to placing floor coverings. Frequent control joints should be incorporated into the slab construction, particularly in the areas of re-entrant corners, to help control cracking.

6. In areas of moisture sensitive floor coverings, an appropriate vapor retarder should be installed in order to minimize vapor transmission from the subgrade soil to the slab. The vapor retarder should be centered within the four-inch thick sand layer. The vapor retarder should be evaluated for holes and/or punctures, and the edges overlapped and taped, prior to placement of sand. Any holes or punctures observed should be properly repaired. The retarder should be covered with two inches of sand to help protect it during construction. The sand should be lightly moistened and densified just prior to placing the concrete.

7. Relatively impervious floor coverings (i.e. vinyl, linoleum, etc.) that cover concrete slab-on-grade may block the passage of moisture vapor through the concrete slab, which could result in damage to the floor covering. It is suggested that after the concrete slab has sufficiently cured, the concrete slab surface be sealed with a commercial sealant prior to placing the floor covering. The compatibility, and recommendations for placing of the concrete sealer, mastic, and floor covering should be verified by the floor covering manufacturer prior to sealing the concrete or placing of the floor covering.

8. It is recommended that the proposed exterior perimeter slabs (sidewalks, patios, walkways, etc.) be designed to be relatively independent of foundation stems (free-floating) to help mitigate cracking due to foundation settlement and/or expansion.

9. Subgrade soils for all concrete flatwork should be moisture conditioned to above optimum moisture content to a depth of at least 24 inches within 24 hours prior to placement of concrete. Measures should be taken to maintain optimum moisture until concrete is placed. Actual depths of pre-moistening will be dependent upon the actual Expansion Index of the subgrade soils.

G. Retaining Walls

1. The following lateral earth pressures may be used in the design of any proposed retaining walls or similar structures:

	Equivalent Fluid Earth Pressures (pcf)	
	Driving (Active) Earth Pressure*	Resisting (Passive) Earth Pressure*
Well drained, level backfill soil	38	400***
Well drained soil, 2H:1V slope backfill	60	-
At-rest (restrained) wall, Level backfill soil	63**	-

*Equivalent fluid pressure (PSF) per foot of soil height.

**For purposes of design, a wall is considered restrained if it is prevented from movement greater than 0.002H (H = height of wall in feet) at the top of the wall.

***The upper one foot of soil should be neglected for passive pressure calculations unless confined by pavement or slab.

NOTE: The pressures recommended above were based on the assumption that the on site soils will be compacted to approximately 90% of maximum dry density. The use of select granular fill may reduce the recommended driving earth pressure. The resisting pressure provided is an ultimate value. An appropriate factor of safety should be used for design calculations (minimum of 1.5 recommended).

2. Resistance to lateral loading may be provided by friction acting along the foundation base. A coefficient of friction of 0.35 may be used in designing concrete retaining wall foundations in site soils recompacted to approximately 90% of maximum dry density as determined by ASTM D 1557 test procedures, and may be used with dead loads. This value includes a safety factor of 1.5. Frictional and passive resistance may be combined without further reduction.

3. The lateral earth pressure to be resisted by retaining should be increased to allow for surcharge loads. The surcharge considered should include the loads from any structures or vehicle traffic within a distance approximately equal to the height of the retaining wall.

4. Backfill immediately behind any retaining structure should be a free-draining granular material. Comments on the characteristics of import soils will be given by the geotechnical consultant after the material is on the project, either in place, or stockpiled in adequate quantities to complete the project.

5. Backfill behind retaining walls should be with soils that have been properly moisture conditioned to approximately optimum moisture content and uniformly compacted to at least 90% of maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. To aid in the compaction operation, retaining wall backfill should be placed in lifts not exceeding six inches compacted thickness.

6. Compaction within the area of a 1H:1V slope from the bottom of wall excavations should be performed by hand operated compaction equipment. This is intended to reduce potential "locked-in" lateral pressures caused by compaction with heavy grading equipment.

7. Weepholes, backdrains, or an equivalent system of backfill drainage should be incorporated into the retaining wall design (see Plate V for backdrain details). Waterproofing of retaining walls should be provided to help reduce the potential for effloresecent formation.

8. The final grade should be such that all water is diverted away from the retaining wall's foundation or backfill.

H. Expansive Soil

1. The Expansion Index (ASTM D 4829) of the subgrade soils should be considered when designing foundations. As stated in the Soil Conditions section, the on-site soils are considered to have a "Medium" to "Very High" (EI = 51 to >130) expansion potential. The foundation and slab-on-grade design recommendations provided in Sections __ and ___ of this report include generally used guidelines in the Los Angeles County area for foundation design for soils with the indicated degree of expansiveness.

2. The design recommendations included in this report are minimums and comply with normally accepted geotechnical engineering practices. However, actual foundation and slab-on-grade construction reinforcement should be determined by the structural engineer based upon site specific conditions such as foundation loading and engineering characteristics of the subgrade soils.

3. If the site soils are thoroughly mixed and/or additional fill is added during site preparation, the expansion potential may change. The expansion potential of the new subgrade soils should be determined after the site preparation has been completed, and the final foundation design adjusted accordingly.

I. Preliminary Pavement Sections

Based on the near-surface soil types observed at the site, a subgrade 'R-value' of 10 was assumed as a design value for subgrade support beneath pavements at the site. Pavement recommendations are based on Caltrans and PCA guidelines for pavement design life of approximately 10 to 20 years. As traffic levels have not been provided to ESSC, traffic indicees and traffic categories have been assumed for the purposes of design. The following minimum sections may be used for flexible (asphaltic concrete) pavement design:

Traffic Index 4.0 (Automobile and Light Truck Parking Areas)
3.0 inches of Asphalt Concrete 6.0 inches of Crushed Aggregate Base or Equivalent
Traffic Index 6.0 (Truck Traffic Driveways and Access Lanes)
4.0 inches of Asphalt Concrete 11.0 inches of Crushed Aggregate Base or Equivalent

J. Soil Chemical Testing

1. Selected samples of near-surface soils were tested for pH, resistivity and conductivity, as well as a variety of cations and anions including soluble sulfates. Sulfate contents appear to be in the "negligible" range per CBC table 19A-4. Based on that table, Type II cement may be used in concrete elements to be placed in contact with the soil such as foundations, slabs-on-grade and drainage structures.

2. The test results provided in Appendix B should be distributed to the design team for their interpretations pertaining to the corrosivity or reactivity of various construction materials (such as concrete and piping) with the soils. Tests should be conducted of the surface soils in the final graded pad to verify these interpretations, especially if the soils are mixed and additional fill is added during site preparation.

K. Slope Stability

Slope stability calculations were not performed because of anticipated minimal slope heights. If slope heights exceed five feet, engineering calculations should be performed to substantiate the stability of cut or fill slopes. Fill slopes should be constructed to a gradient not exceeding two horizontal to one vertical (2H:1V) and should be overfilled and trimmed back to compacted material.

CLIENT OPTIONAL SERVICES

This report was based on the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to check conformance with the recommendations of this report. Maintaining ESSC as the geotechnical engineering consultant from beginning to end of this project will help provide continuity of services. The recommended services include, but are not necessarily limited to, the following:

a. Consultation as required during the final design stages of the project.

b. Review of grading and/or building plans.

c. Observation and testing during site preparation, grading, placement of engineered fill, and backfill of utility trenches.

d. Consultation as required during construction.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The conclusions and recommendations submitted in this report relative to the proposed development are based, in part, upon the data obtained from site observations during the field exploration operations, and past experience. The nature and extent of variations between the borings may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

In the event of any change in the assumed nature or design of the proposed project as planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing. This report is issued with the understanding that it is the responsibility of HQ Development or of its representatives, to insure that the information and recommendations contained in this report are called to the attention of the architects and engineers for the project and incorporated into the plan. It is also the responsibility of HQ Development, or of its representatives, to insure that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

As the geotechnical engineers for this project, ESSC strives to provide its services in accordance with generally accepted geotechnical engineering practices in this community at this time. No warranty or guarantee is expressed or implied. This report was prepared for the exclusive use of HQ Development and its authorized agents.

It is recommended that ESSC be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design specifications. If ESSC is not accorded the privilege of making this recommended review, it can assume no responsibility for misinterpretation of the recommendations.

The scope of current services for this report did not include any environmental assessment or investigation for the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater or air, on or below or around the site.

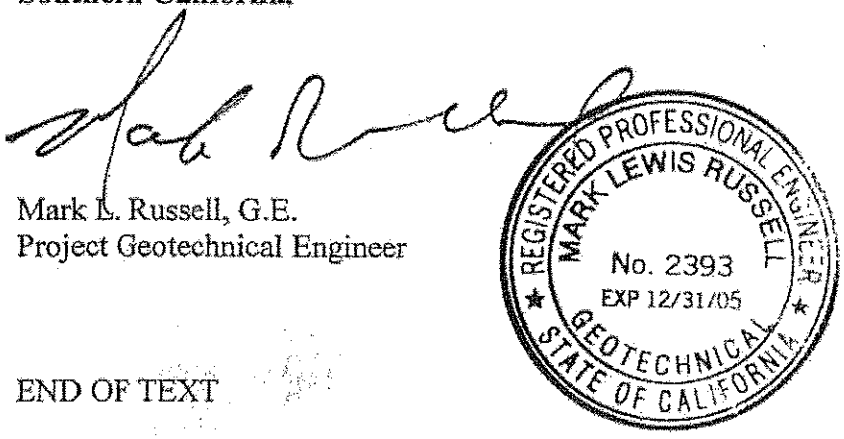
The statements contained in this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly, the conclusions of this report may be invalidated, wholly or partially, by changes outside of ESSC's control, and should therefore be reviewed after one year.

CLOSURE

Earth Systems Southern California trusts this report is sufficient at this time and meets your current needs. Earth Systems Southern California appreciates this opportunity to provide professional geotechnical engineering services for this project. If you have any questions regarding the information contained in this report, or if you require additional geotechnical engineering services, please contact the undersigned.

Respectfully submitted,

Earth Systems
Southern California



Mark L. Russell, G.E.
Project Geotechnical Engineer

END OF TEXT

REFERENCES

PLATES

APPENDICES

REFERENCES

California Division of Mines and Geology, Seismic Shaking Maps of California, 1999, Map Sheet 48, dated 1999.

California Division of Mines and Geology, 2000, Seismic Hazards Zone Map, Thousand Oaks Quadrangle, dated November 17, 2000.

California Division of Mines and Geology, 2000, Seismic Hazard Zone Report for the Thousand Oaks 7.5 Minute Quadrangle, Los Angeles County, California, 2000.

California Division of Mines and Geology, 1997, Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117, dated 1997.

Dibblee, Thomas W., 1993, Geologic Map of the Thousand Oaks Quadrangle, Dibblee Geological Foundation, DF-49 1993.

Geosoils, Inc., 1979, Review of Preliminary Column Loadings for Building No. 1, Proposed Data Command Systems Engineering and Training Complex, Agoura Road Parcel, Agoura, California, dated October 23, 1979.

Hart, Earl W. and William A. Bryant, 1999, Fault-Rupture Hazard Zones in California, Alquist-Priolo Fault Zone Act with index to Earthquake Fault Zone Maps, California Division of Mines and Geology Special Publication 42, revised 1999.

Petersen, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M.S., Frankel, A.D., Leinkaemper, J.J., McCrory, P.A., and Schwarz, D.P., 1996, Probabilistic Seismic Hazard Assessment for the State of California: California Division of Mines and Geology Open-File Report 96-08, 59 p.

Smith-Emery GeoServices, 1995, Report of Geotechnical Investigation for 29851 Agoura Road, Agoura Hills, California, G-95-5289, dated April 14, 2995.

Southern California Earthquake Center (SCEC), 1999, Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California, SCEC, University of Southern California, March 1999.

Southern California Earthquake Center (SCEC), 2002, Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California, SCEC, American Society of Civil Engineers Los Angeles Section, Geotechnical Branch, dated February 2002.

Submitted 7/13/05

Geotechnical Site Investigation Update
Agoura Oaks Plaza, 29857 Agoura Road
Agoura Hills, California

prepared for

HQ Development LLC
4641 Leahy Street
Culver City, CA 90232

GORIAN & ASSOCIATES, INC

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GORIAN & ASSOCIATES, INC

Applied Earth Sciences
Geotechnical
Engineers
and Geologists

3595 Old Conejo Road
Thousand Oaks
California 91320-2122
805 375-9262
818 889-2137
805 375-9263 fax

July 12, 2005

HQ Development LLC
4641 Leahy Street
Culver City, CA 90232

Work Order: 2675-0-0-10
Log Number: 23956

Attention: Mr. Robert Herscu
Managing Partner

Subject: **Geotechnical Site Investigation Update, Agoura Oaks Plaza, 29857 Agoura Road, Agoura Hills, California.**

Reference: Earth Systems Southern California, November 10, 2004, Preliminary Geotechnical Engineering Report, Proposed Commercial Development, Lot 3, PM Per BK 157 P 50-52 of PM, Vicinity of 29851 Agoura Road, Agoura Hills, California. PL-06405-01.

1 INTRODUCTION

Herein, Gorian and Associates, Inc. (GAI) is presenting an update of the referenced preliminary geotechnical engineering report to address the use of conventional foundations to support the proposed Agoura Oaks Plaza at 29857 Agoura Road within Agoura Hills. Previously, within the referenced report, a pile foundation system was considered for the support of the building. However, with removal and recompaction of the existing soils on-site, the structure may be supported on conventional foundations with a slab on-grade. The construction addressed herein is feasible from a geotechnical standpoint.

2 TRANSFER GEOTECHNICAL ENGINEERING

In accordance with California Building Code Section 3317.8, we are providing this notice of transfer of responsibility for geotechnical engineering for the project known as Agoura Oaks Plaza. Earth Systems Southern California (ESSC) provided the referenced preliminary geotechnical engineering report dated November 10, 2004. We have reviewed the referenced ESSC report from the standpoint to transfer geotechnical engineer of record for construction of Agoura Oaks Plaza. Portions of that report are included herein such as the site description, site history, and geologic setting. Based on our review of the referenced reports, site observation, and knowledge of the area, this firm will accept and use the data and recommendations contained in the referenced ESSC report as a basis for development evaluations and monitoring of site construction. No additional subsurface field investigation or laboratory work was proposed for this update. However, as stated above GAI is providing this update of the referenced report to provide recommendations for remedial grading of the site. The remedial grading will be performed to allow the use of conventional foundations for building support and slabs on-grade. Supplemental geotechnical opinions and recommendations will be provided as warranted by conditions observed in the field.

3 PROPOSED DEVELOPMENT

The proposed development will consist of a 90,851 square foot, two-story L shaped building located within the center of the site. Structural loads are anticipated to range from 2000 to 3000 pounds for wall footings and 120 to 150 kips for column loads. Parking and drive areas are proposed adjacent the building. In addition to the proposed remedial grading, site grading is anticipated to consist of minor cuts and fills. Slopes are shown at a 2(H):1(v) gradient and a maximum of seven feet high along the perimeter of the site on the grading plan by Development Resource Consultants, Inc.

4 SCOPE OF GEOTECHNICAL PROFESSIONAL SERVICES

The scope of services described below was performed to provide geotechnical engineering recommendations for design and construction of the proposed commercial development as described herein. The services were performed under the direction of a State registered geotechnical engineer.

Archival Review

Readily available geotechnical information in our files and the referenced report as provided by the client were reviewed and the pertinent data was used in the current geotechnical evaluation of the proposed construction.

Field Investigation

An engineer from our office visited the site to observe the surficial condition of the parcels.

Engineering Evaluation and Analyses

The results the above tasks were used in our engineering evaluation of the proposed development to develop geotechnical recommendations for building design and construction.

Report Preparation

This report contains our geotechnical recommendations regarding remedial grading and design and construction of conventional foundations and slabs on-grade.

5 SITE DESCRIPTION

The approximate 5-acre site is on the north side of Agoura Road just east of Reyes Adobe Road in the City of Agoura Hills, California. The Ventura freeway (Hwy 101) forms the north boundary of the site. The roughly rectangular-shaped project site is currently unoccupied with the exception of a rough baseball diamond in the southwest corner. A large oak tree grows from a depression in the ground near the center of the site. The remainder of the site is covered by a light growth of weeds. Access to the property is available from Agoura Road on the south side. Topographically, the majority of the property consists of relatively flat ground at an elevation of approximately 875 feet above mean sea level. The rear (north end) of the lot slopes up approximately 8 feet at a gradient of approximately 4H: 1V.

6 SITE HISTORY

Based on the shape of the site topography, including the presence of the oak tree within a depression it appears that fill has been placed on the site to build up the ground level at some time in the past. (The observations from the exploratory borings discussed herein also suggest the presence of fill). Older topographic mapping (prior to fill placement) suggests 10 feet or more of fill especially in the central and easterly parts of the site. Review of previously completed reports and maps available at the City of Agoura Hills indicates that some kind of geotechnical investigation was completed at the subject site around 1979 (Geosoils, 1979). A geotechnical investigation was conducted in 1995 for the neighboring property at 29851 Agoura Road (Smith-Emery, 1995). The report for that investigation refers to a compaction report dated 1980 for the subject site, however, the compaction report was not available from the City. The reviewed reports indicate that the upper site soils consisted of silts and clays with expansion indices (EI) that ranged from 93 to 173. The reviewed reports also indicate that the neighboring property

at 29851 Agoura Road has experienced significant distress relating to poor drainage, over-watering, leaking pipes, under-designed retaining walls, shallow foundations and loose backfill. A large portion of the observed problems was attributable to soil-related issues primarily expansive soils.

7 SITE GEOLOGY

The site is along the northern margin of the Santa Monica Mountains, part of the Transverse Ranges geomorphic province. Composed of parallel, east-west trending mountain ranges and sediment-filled valleys the Transverse Ranges is one of the most active tectonic/seismic areas of the United States. The distinctive geologic structure of the Transverse Ranges is dominated by the effects of north-south compressive deformation that result in thrust faulting, strike-slip faulting and bedrock folding. These active geologic features are attributable to convergence between the "Big Bend" of the San Andreas fault and northwestern motion of the Pacific Plate and have caused thrust fault related earthquakes such as the 1994 Northridge, the 1971 San Fernando, and the 1987 Whittier Narrows earthquakes.

Geologic units at the site consist of clayey artificial fill, thin clayey alluvial soils, and Tertiary Topanga formation (Tt) clay shale bedrock. Outcrops of volcanic bedrock (Tertiary Conejo Volcanics, Tcvb) are present within the site vicinity.

There are several active or potentially active faults near the subject site. These include the Malibu Coast fault located approximately *8.5* kilometers (km) south of the site, the Anacapa-Dume fault (approximately *10.5* km southwest), the Simi-Santa Rosa fault (approximately *15.5* km northwest), and the Palos Verdes fault (approximately *27.5* km southeast).

The site does not fall within a currently designated California Division of Mines and Geology (CDMG) Fault Rupture Hazard ("Alquist-Priolo") zone (Hart and Bryant, 1999). The site does not fall within a liquefaction hazard zone or slope hazard zone as currently identified by CDMG on the Seismic Hazard Zones Thousand Oaks Quadrangle map dated November 17, 2000.

7.1 SUBSURFACE CONDITIONS

Artificial fill soils (af) were encountered in 6 out of the 8 exploratory borings. The depth of fill observed ranged from approximately 8 to 9 feet at the locations of borings B2 - B6 to approximately 14 feet around boring B7. These fill soils were found to consist predominantly of moderately to very compact silty clay and sandy clay (CL and CH soil types based upon the Unified Soil Classification System). Based upon results of the Expansion Index (EI) Tests (ASTM D 4829) conducted for this investigation, the on-site fill soils were observed to have a "medium" (EI = 51 to 90) expansion potential. However, as discussed under Site History above, previous geotechnical reports for the site and vicinity indicated "high" to "very high" (EI = 91 to >130) expansion potential.

Native quaternary alluvial soils (Qa) were found to consist predominantly of dense to very dense clayey sands and stiff to hard sandy clay (SC and CL soil types). Expansion Index (EI) tests conducted on the alluvial soils for this investigation indicated a "very low" (EI = 0 to 21) expansion potential for those materials.

Bedrock of the Upper Topanga Formation (Tt) was encountered in four of the eight borings at depths ranging from 13 to 15 feet. The bedrock was observed to be weathered, laminated clay shale. The Logs of the Test Borings in Appendix A contain more detailed descriptions of the soils and bedrock encountered. Per the 2001 edition of the California Building Code (CBC) Table 16-J, the site soil profile should be classified as a Sc soil profile (soft rock profile).

7.2 GROUNDWATER

No free groundwater was encountered to the maximum depth drilled for the referenced ESSC report. Based on the Seismic Hazards report for the Thousand Oaks Quadrangle (CDMG, 2000), the historic shallowest groundwater in the vicinity of the project site could be as shallow as approximately 10 feet. Fluctuations in groundwater levels may occur due to variations in rainfall, regional climate, and other factors.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 GENERAL

The site and subsurface conditions were evaluated from a geotechnical standpoint with respect to the proposed commercial complex. The project may be developed as described earlier in this report provided recommendations presented herein are followed and incorporated into the design and construction. Recommendations should be reviewed with respect to any changes in the proposed development and/or site conditions, should they occur.

8.2 PREVIOUS RECOMMENDATIONS (ESSC)

Earth Systems Southern California (ESSC) provided the referenced preliminary geotechnical engineering report dated November 10, 2004. Recommendations presented in that report remain applicable for site development unless superceded by recommendations presented herein.

8.3 SEISMIC DESIGN PARAMETERS

As previously discussed, active faults identified by the State are not present on-site nor is the site within an Alquist-Priolo Earthquake Fault Zone (formerly Special Studies Zone). Nevertheless, the site is within a seismically active region prone to occasional damaging earthquakes. Therefore, as a minimum the structure should be designed per the current City of Agoura Hills Building Code. Earthquake loads shall be determined in accordance with Chapter 16, Division IV of the 2001 California Building Code. Seismic input parameters provided on the following page are based on the 2001 California Building Code (CBC), Chapter 16.

The purpose of the CBC earthquake provisions is primarily to safeguard against major structural failures and loss of life, not to limit damage or maintain function. Therefore, the values provided in the CBC should be considered minimum design values. Cracking of walls and possible structural damage should be anticipated in a significant seismic event.

CBC – CHAPTER 16 TABLE NO.	SEISMIC PARAMETER	VALUE PER CALIFORNIA BUILDING CODE
16 - I	Seismic Zone Factor Z	0.40
16 - J	Soil Profile Type	S_C
16 – Q	Seismic Coefficient (C_a)	$0.40N_a$
16 – R	Seismic Coefficient (C_v)	$.56N_v$
16 - S	Near-Source Acceleration Factor, N_a	1.0
16 – T	Near-Source Velocity Factor, N_v	1.1
16 - U	Seismic Source Type	B
Map L-32	closest distance to known seismic source	7 km

8.4 SITE PREPARATION AND GRADING

8.4.1 General

The following supplemental remedial grading recommendations are for the construction of a building pad that is suitable for the support of the proposed structure using conventional foundations and slab on-grade. Recommendations for remedial grading outside the building area remain as stated in the referenced report. All aspects of grading including site preparation, grading, and fill placement should be per

the recommendations contained herein or the City of Agoura Hills specifications, whichever is more stringent.

8.4.2 Relative Compaction
Relative Compaction is the ratio of the in-place dry soil density to the maximum dry soil density determined in general conformance with ASTM test method D 1557-91.

8.4.3 Vegetation/Debris Removal
Before starting the removals or site processing, all major vegetation, trash, and debris should be removed from all areas to be graded.

8.4.4 Soil Removals
Within the building area, all fill soils should be removed to firm in-place native alluvium or bedrock. Also, the minimum removal should be 10 feet from the existing grade or to 3 feet below the bottom of the footings, whichever is the deeper. The removals should extend past the outside of the footings a minimum distance equal to the depth of removal below the footing or a minimum of 5 feet, whichever is greater. After removals are completed, a representative of this office should observe the bottom of the removal area prior to placing fill. No fills should be placed until the geotechnical observation of removal areas is completed.

8.4.5 Processing
After completing removals, suitable in-place soils should be processed before placing fill. Processing should consist of scarification of the exposed soil to a minimum depth of 6 to 8 inches. The scarified surface should be relatively free of uneven features that would prevent uniform compaction. Soils should be moisture conditioned to slightly above the optimum moisture content and compacted to a minimum of 90% relative compaction.

8.4.6 Fill Placement
Excavated on-site soils and fill should be cleaned of major vegetation, trash, and debris prior to placement as fill. Fill soils should be placed in thin uniform lifts, brought to slightly above optimum moisture content, and compacted to a minimum of 90% relative compaction.

8.4.7 Temporary Excavations
During construction, the excavation and maintenance of safe and stable slope angles are the responsibility of the contractor, who should consider the subsurface conditions and the method of operation. All subsurface construction should conform to the requirements of OSHA. Surcharge loads should be setback from the top of temporary excavations a minimum horizontal distance equal to the depth of the cut or 10 feet, whichever is more. All excavated backfill should be properly placed and compacted.

8.4.8 Utility Trenches
Backfill of all utility trenches within building, parking, and drive areas should be compacted to a minimum of 90% relative compaction.

8.3.11 Slab Areas
The upper 6 inches of the slab subgrade soils should be recompacted prior to placing the sand subbase, if the soils were disturbed during footing construction or utility installation.

8.5 SOIL EXPANSIVENESS
Expansion tests by ESSC ranged from low to medium expansion. However, the expansion potential of the building pads should be evaluated at the end of grading. Expansive soils contain clay minerals that change in volume (shrink or swell) due to changes in the soil moisture content. The volume change is

caused by the attraction of water to the clay minerals. The amount of volume change depends upon the soil swell potential, availability of water, and soil restraining pressure.

The swelling occurs when the clay soils become wet due to excessive water. Excessive water can be caused by poor surface drainage, over irrigation of lawns and planters, sprinkler or plumbing leaks, and numerous other causes.

Construction on expansive soil has an inherent risk that must be acknowledged and understood by the property owner. The recommendations herein are not intended to eliminate the effects of expansive soils. Additional recommendations can be provided to further reduce the potential for expansive soil action and inherent risk. The following should be maintained within the site.

a) Positive drainage should be continuously maintained away from structures and slopes. Ponding or trapping of water in localized areas near the foundations can cause differential moisture levels in subsurface soils. Plumbing leaks should be immediately repaired so that the subgrade soils underlying the structure do not become saturated.

b) Trees and large shrubbery should not be planted where roots can grow under foundations and flatwork when they mature.

c) Landscape watering should be held to a minimum; however, landscaped areas should be maintained in a uniformly moist condition and not allowed to dry-out. During extreme hot and dry periods, adequate watering should be provided to keep soil from separating or pulling back from the foundations.

8.6 FOUNDATION RECOMMENDATIONS

8.6.1 Design Data

Footings may be designed using an allowable bearing pressure of 3000 pounds per square foot (psf). The bearing pressure is for dead plus live loads and may be increased by one-third when considering wind or seismic loads. Footings should have minimum widths of 12 and 24 inches for continuous and isolated footings, respectively and should be embedded a minimum of 30 inches. The lowest adjacent grade is the lowest soil grade adjacent the footings, interior or exterior. Steel reinforcement should be per the structural engineer's recommendations. However, minimum reinforcement for continuous footings should consist of two number five bars in the top and bottom (minimum total of four bars).

Lateral forces on foundations may be resisted by passive earth pressure and base friction. For the sides of footings bearing against engineered compacted fill or competent native soils, the lateral passive earth pressure may be considered equal to that exerted by an equivalent fluid having a density of 250 pounds per cubic foot (pcf). Base friction may be computed at 0.3 times the normal load. Base friction and passive earth pressure may be combined without reduction.

8.6.2 Estimated Foundation Settlements

Foundation settlement is anticipated to be minor and is not anticipated to exceed one inch. However, anticipated settlement should be reevaluated when the actual foundation loads are available. Settlements due to static loading are expected to occur rapidly as loads are applied. Differential settlement between adjacent footings with similar static loading is anticipated to be one half the total settlement or less.

Minor wall cracking could occur within the structure associated with expansion and contraction of the structural wood members due to thermal or moisture changes. All structures settle during construction and some minor settlement of the structures can occur after construction during the life of the project.

8.6.3 Footing Setback
Were the footing is adjacent a descending slope such as near the oak trees, it should be setback from the descending slope per the requirements of the California Building Code with a minimum setback of 5 feet. Adjacent the existing box culvert, the footings should be embedded below a 2(H):1(V) line or the loads should be determined by recognized methods and found to be within the allowable loads for the box.

8.6.4 Footing Excavations
All footings should be cut square and level and cleaned of slough. Soil excavated from the footing and utility trenches should not be spread over areas of construction unless properly compacted. A representative of this office should observe the footing excavations prior to placing reinforcing steel. Soils silted into the footing excavations during the premoistening operations should be removed prior to casting the concrete. The footings should be cast as soon as possible to avoid deep desiccation of the footing subsoils.

8.6.5 Premoistening
The footing subgrade soils should be premoistened to 3% over the optimum moisture content to a depth of 18 inches below the footing subgrade. A representative of this office should observe the premoistening.

8.6.6 Soil Corrosion
Chemical tests presented by ESSC indicate that the soil is negligible with regards to sulfates. Type II cement may be used in concrete placed in contact with the on-site soils. However, metals should be protected from contact with the on-site soils.

8.7 SLABS-ON-GRADE
8.7.1 Site Preparation
Concrete slabs on-grade may be supported on compacted engineered fill soils. The subgrade soils should be recompacted prior to placing the sand subbase, if the soils were disturbed during footing or utility construction.

8.7.2 Design Data
Lightly loaded slabs-on-grade within the building interior should be a nominal 5 inches thick. Reinforcement should consist of a minimum of No. 4 bars at 16 inches on center in both directions or per the structural engineer's design. Conventional slabs-on-grade should be underlain by a 10-mil plastic moisture barrier. The membrane should be installed so that edges of the plastic sheet overlay at least 12 inches onto any adjacent sheet. The membrane should place mid-height in a minimum of 6 inch thick sand layer.

8.7.3 Concrete
Concrete shrinks as it cures resulting in shrinkage tension within the concrete mass. The development of tension results in cracks within the concrete since concrete is weak in tension. Therefore, the concrete should be placed using procedures to minimize concrete cracking. Concrete shrinkage cracks can become excessive if water is added to the concrete above the allowable limit and proper finishing and curing practices are not followed during construction. Concrete mixing, placement, finishing, and curing should be performed per the American Concrete Institute *Guide for Concrete Floor and Slab Construction* (ACI 302.1R-89). The concrete slump during concrete placement should not exceed the design slump specified by the structural engineer or as a suggested value 5 inches as stated for a Class 1 Floor (ACI 302.1R-89). Where shrinkage cracks would be unsightly, concrete slabs on grade should be provided with tooled crack control joints at 10-15 foot centers or as specified by the structural engineer.

8.7.4 Premoistening

Soils under lightly loaded slabs on-grade should be premoistened to 3% over the optimum moisture content for a depth of 24 inches. A representative of this office should observe the premoistening.

8.7.5 Tile Flooring

Tile flooring can crack, reflecting cracks in the concrete slab below the tile. Therefore, if tile flooring is used, the slab designer should consider additional steel reinforcement in the design of concrete slabs-on-grade where tile will be placed. The tile installer should consider installation methods that reduce possible tile cracking. Placement of a vinyl crack isolation membrane between tile and concrete slabs on-grade (utilizing approved materials and techniques per Tile Council of America/Ceramic Tile Institute guidelines) is one such method to reduce possible cracking of tile.

8.8 SITE DRAINAGE

Positive drainage should be provided away from the structures during and after construction. Planters adjacent a structure should be constructed so irrigation water will not saturate the soils underlying the footings and slabs. The building pad should be graded at a minimum gradient of 2 percent away from the structure towards an approved drainage course, or alternative drainage should be provided.

8.9 GUTTERS AND DOWNSPOUTS

Gutters and downspouts should be installed on structures to collect roof water. Downspouts should drain into collector pipes that will carry the water away from the building or other positive drainage should be constructed.

9 CLOSURE

This report was prepared under the direction of State registered Geotechnical Engineer. The work addressed herein was performed per our proposal dated June 29, 2005. No warranty, express or implied, is made as to conclusions and professional advice included in this report. Gorian and Associates, Inc. disclaims any and all responsibility and liability for problems that may occur if the recommendations presented in this report are not followed.

The report was prepared for the HQ Development LLC and their design consultants solely for design and construction of the project as described herein. It may not contain sufficient information for other uses or the purposes of other parties. These recommendations should not be extrapolated to other areas or used for other facilities without consulting Gorian and Associates, Inc. Our review or use of the referenced investigation report is not intended as a warranty, expressed or implied, as to conclusions and professional advice contained in that report. The services of this office should not be construed to relieve the owner or contractors of their responsibilities or liabilities.

The recommendations are based on interpretations of the subsurface conditions. The interpretations may differ from actual subsurface conditions, which can vary horizontally and vertically across the site. Due to possible subsurface variations, this office should observe all aspects of field construction addressed in this report. Any persons using this report for bidding or construction purposes should perform such independent investigations, as they deem necessary.

oOo

Please call if you have any questions regarding the information or recommendations contained in this report or require additional consultation.

Respectfully,

Gorian and Associates, Inc.

By: Jerome J. Blunck, GE 151
Principal Geotechnical Engineer

Distribution: Addressee (6)

BING YEN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants, Established 1979

Date: July 20, 2005
BYA #: 49.17688.0128

CITY OF AGOURA HILLS - GEOTECHNICAL REVIEW SHEET

To: Allison Cook

Project Location: 29621 Agoura Road, Agoura Hills, California.

Planning Case #: 05-SPR-010

Building & Safety #: None

Geotechnical Report: Gorian & Associates, Inc. (2005), "Geotechnical Site Investigation Update, Agoura Oaks Plaza, 29857 Agoura Road, Agoura Hills, California," Work Order 2675-0-0-10, Log Number 23956, dated July 12, 2005.

Earth Systems Southern California (2005), "Addendum Letter – Response to Geotechnical Reviewer, Proposed Commercial Development, Lot 3, PM Per BK 157 P 50-52 of PM, Vicinity of 29851 Agoura Road, Agoura Hills, California," PL-06405-01, dated June 1, 2005.

Earth Systems Southern California (2004), "Preliminary Geotechnical Engineering Report, Proposed Office Building, Lot 3, PM Per BK 157 P 50-52 of PM, Vicinity of 29851 Agoura Road, Agoura Hills, California," PL-06405-01, dated November 10, 2004.

Plans: Development Resource Consultants, Inc., "Conceptual Grading Plan," 30-scale, March 4, 2005, 4 Sheets.

Previous Reviews: March 28, 2005; July 11, 2005

Findings

Geotechnical Report

☐ Acceptable as presented with the following conditions.

☒ Response Required

Remarks

Gorian & Associates, Inc. (Consultant), who is taking the project over from Earth Systems Southern California prepared a geotechnical update report regarding the proposed two-story office building at the subject site. The City of Agoura Hills – Planning Department reviewed the referenced report from a geotechnical perspective for compliance with applicable codes, guidelines, and standards of practice. Bing Yen & Associates, Inc., on behalf of the City, conducted the geotechnical review.

Based upon the City's review, the referenced reports are acceptable as presented with regard to planning and feasibility issues, and we recommend the Planning Commission consider approval of Case No. 05-SPR-010 from a geotechnical perspective. The Consultant, however, should respond to the following report review comments prior to Building Plan Approval. Plan-Check comments should be addressed in Building & Safety Plan Check, and a separate geotechnical submittal is not required for plan-check comments.

2310 East Ponderosa Drive, Suite 1, Camarillo, CA 93010-4747 Phone (805) 383-0064 Fax (805) 383-3090 e-mail: info@bingyen – com

City of Agoura Hills—Planning Department
Geotechnical Review Sheet

Report Review Comments

1. The Consultant refers to ASTM standards that have been superseded (e.g., 1557) relative to grading recommendations. The most recent ASTM standards should be referenced. Please review the ASTM standards and provide recommendations referring to the most recent versions.
2. It appears that up to about 7.5 feet of alluvium may be left in place under a portion of the building. The limited consolidation testing indicates that the alluvium may be subject to hydroconsolidation. The Consultant needs to evaluate the potential for hydroconsolidation settlement and provide appropriate mitigation measures.

Plan-Check Comments

1. The name, address, and phone number of the Project Geotechnical Consultant and a list of all the applicable geotechnical reports shall be included on the building/grading plans.
2. The grading plan should include the limits and depths of overexcavation of the building pad areas as recommended by the Consultant.
3. The following note must appear on the grading and foundation plans: "*Tests shall be performed prior to pouring footings and slabs to determine the expansion index of the supporting soils, and foundation and slab plans should be reviewed by the Geotechnical Consultant and revised, if necessary, accordingly.*"
4. The following note must appear on the grading and foundation plans that states: "*Excavations shall be made in compliance with CAL/OSHA Regulations.*"
5. The following note must appear on the foundation plans that states: "*All foundation excavations must be observed and approved, in writing, by the Project Geotechnical Consultant prior to placement of reinforcing steel.*"
6. Foundation setback distances from ascending and descending slopes shall be in accordance with Section 1806.5 of the City of Agoura Hills Building Code, or the requirements of the Project Geotechnical Consultant's recommendations, whichever are more stringent. The required minimum foundation setback distances shall be clearly shown on the foundation plans, as applicable.
7. Foundation plans and foundation details shall clearly depict the embedment material and minimum depth of embedment for the foundations.
8. Drainage plans depicting all surface and subsurface non-erosive drainage devices, flow lines, and catch basins shall be included on the building plans.
9. Final grading, drainage, shoring, and foundation plans shall be reviewed, signed, and wet stamped by the project geotechnical consultant.
10. Provide a note on the grading and foundation plans that states: "*An as-built report shall be submitted to the City for review. This report prepared by the Geotechnical Consultant must include documentation of any foundation inspections, the results of all compaction tests as well as a map depicting the limits of fill, locations of all density tests, outline and elevations of all removal bottoms, keyway locations and bottom elevations, locations of all subdrains and flow line elevations, and location and elevation of all retaining wall backdrains and outlets. Geologic conditions exposed during grading must be depicted on an as-built geologic map.*"

Please submit two (2) copies of the written response to the review comments above to Bing Yen & Associates, Inc. and one (1) copy to the City case planner. If you have any questions regarding this review letter, please contact Bing Yen & Associates, Inc. at (805) 383-0064.

Respectfully Submitted,

BING YEN & ASSOCIATES, INC.

Leland M. Kraft, Jr., GE 484, Exp. 06/30/06
Geotechnical Engineering Reviewer

Gordon D. Stolla, CEG 2346, Exp. 03/31/06
Engineering Geologic Reviewer

(818) 779-1889
Fax (818) 779-1990

June 1, 2005

PL-06405-01

HQ Development
4641 Leahy Street
Culver City, California 90232

Attention: Ms. Mai Gillogly

Subject: **Addendum Letter – Response to Geotechnical Reviewer**
Proposed Commercial Development
Lot 3, PM Per BK 157 P 50-52 of PM
Vicinity of 29851 Agoura Road
Agoura Hills, California

Reference: Preliminary Geotechnical Engineering Report, Proposed Commercial Development, Lot 3, PM Per BK 157 P 50-52 of PM, Vicinity of 29851 Agoura Road, Agoura Hills, California, by Earth Systems Southern California, PL-6405-01, dated November 10, 2004.

City of Agoura Hills – Geotechnical Review Sheet dated March 28, 2005 (BingYen & Associates, Inc. – Leland M. Kraft Jr.)

Presented herewith is an Addendum Letter prepared in response to the City of Agoura Hills review letter dated March 28, 2005 (Attachment A) for the proposed two story office building.

SITE DESCRIPTION

The approximate 5-acre site is on the north side of Agoura Road just east of Reyes Adobe Road in the City of Agoura Hills, California. The Ventura freeway (Hwy 101) forms the north boundary of the site. The roughly rectangular-shaped project site is currently unoccupied with the exception of a rough baseball diamond in the southwest corner. A large oak tree grows from a depression in the ground near the center of the site. The remainder of the site is covered by a light growth of weeds. Access to the property is available from Agoura Road on the south side.

Topographically, the majority of the property consists of relatively flat ground at an elevation of approximately 875 feet above mean sea level. The rear (north end) of the lot slopes up approximately 8 feet at a gradient of approximately 4H:1V. The above-cited descriptions are intended to be illustrative, and are specifically not intended for use as a legal description of the subject property.

49.17688.0128

Allison Cook

Earth Systems
Southern California

7949 Woodley Avenue
Van Nuys, CA 91406
(818) 779-1999
Fax (818) 779-1990

June 1, 2005

PL-06405-01

HQ Development
4641 Leahy Street
Culver City, California 90232

RECEIVED
JUL 05 2005
BINGYEN & ASSOCIATES

Attention: Ms. Mai Gillogly

Subject: **Addendum Letter – Response to Geotechnical Reviewer**
Proposed Commercial Development
Lot 3, PM Per BK 157 P 50-52 of PM
Vicinity of 29851 Agoura Road
Agoura Hills, California

Reference: Preliminary Geotechnical Engineering Report, Proposed Commercial Development, Lot 3, PM Per BK 157 P 50-52 of PM, Vicinity of 29851 Agoura Road, Agoura Hills, California, by Earth Systems Southern California, PL-6405-01, dated November 10, 2004.

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Topographically, the majority of the property consists of relatively flat ground at an elevation of approximately 875 feet above mean sea level. The rear (north end) of the lot slopes up approximately 8 feet at a gradient of approximately 4H:1V. The above-cited descriptions are intended to be illustrative, and are specifically not intended for use as a legal description of the subject property.

PROJECT DESCRIPTION

Based on discussions with the project developer, and review of the preliminary plans provided, Earth Systems Southern California (ESSC) understands that the proposed project will consist of a two-story commercial office building with a foot-print of approximately 49,000 square feet. The project will also include associated parking, walkways, and landscaping.

SUBSURFACE CONDITIONS

Artificial fill soils (af) were encountered in the exploratory borings. The depth of fill observed ranged from approximately 8 to 14 feet. These fill soils were found to consist predominantly of moderately to very compact silty clay and sandy clay (CL and CH soil types based upon the Unified Soil Classification System). Based upon results of the Expansion Index (EI) Tests (ASTM D 4829) conducted for this investigation, the on-site fill soils were observed to have a "medium" (EI = 51 to 90) to "very high" (EI = 91 to >130) expansion potential.

Native quaternary alluvial soils (Qa) were found to consist predominantly of dense to very dense clayey sands and stiff to hard sandy clay (SC and CL soil types). Expansion Index (EI) tests conducted on the alluvial soils for this investigation indicated a "very low" (EI = 0 to 21) expansion potential for those materials.

Bedrock of the Upper Topanga Formation (Tt) was encountered at depths ranging from 13 to 15 feet. The bedrock was observed to be weathered, laminated clay shale.

GROUNDWATER

No free groundwater was encountered to the maximum depth drilled. Based on the Seismic Hazards report for the Thousand Oaks Quadrangle (CDMG, 2000), the historic shallowest groundwater in the vicinity of the project site could be as shallow as approximately 10 feet. Fluctuations in groundwater levels may occur due to variations in rainfall, regional climate, and other factors.

REVIEW QUESTION RESPONSE

Comment 1: "The report submitted for review was not bound and the pages were not numbered. One or more pages after the Section 'Liquefaction' are missing. The Applicant needs to submit a complete, bound copy for review."

Response: **Acknowledged** – The Applicant apparently submitted incomplete copies of the original wet signature report prepared by ESSC. The Applicant has been provided with additional copies of the original wet signature reports.

Comment 2: "Regional geologic maps show Conejo Volcanics beneath the Topanga formation on the north side of Agoura Road to areas immediately east and west of the site. The Consultant assigns bedrock to the Topanga formation where reached; however there

exists a possibility that hard volcanic bedrock could be encountered on the southwest portion of the proposed building pad near B8, which did not extend to bedrock. What recommendations will be provided if the two varying types of bedrock are encountered during project construction and what significance does this have on any of the recommendations? Please incorporate your review of the geotechnical reports for the adjacent properties and any additional information in your response."

Response: Geotechnical reports for the adjacent properties were reviewed in light of the potential that hard volcanic bedrock might underly the southwestern part of the subject site. The observations contained in the geotechnical report for the adjacent property on the west (Smith-Emery Geoservices, 1995) indicates that bedrock in this area is sedimentary rock that dips 30- to 60-degrees toward the northeast. This observation together with observations of bedrock on the subject property suggests that no hard volcanic rock will be encountered during project construction.

The allowable skin friction values given for pier foundation design were conservative and are applicable to either type of bedrock. Both types of bedrock are suitable for support of pier foundations. Estimated differential settlement between various pier foundations (embedded in bedrock) carrying varying loads should be as described in the referenced preliminary geotechnical engineering report.

Comment 3: "Review of aerial photos shows the previously active stream channel to meander towards the more northerly portions of the site. What is the basis of the alluvial deposit limits shown on the map? Please include in your response a discussion regarding any research performed on nearby properties and unique properties allowing on to distinguish the alluvium from artificial fill during the visual classification for samples obtained during drilling."

Response: Based on research of the original topography of the site, prior to placement of the non-engineered fill around the oak tree and across the site, there is evidence that a stream channel may have traversed the site from the southwest to the northeast. Original topography shows the surface elevations to be approximately 864 (southwest) to 858 (northeast). The base of the oak tree was identified at approximately elevation 863.5. ESSC was aware of this condition prior to performing the borings for the site investigation.

Comment 4: "Recommendations for lateral pile resistance are given for piles in bedrock. Yet the point of fixity of six feet is referenced from the ground surface. Thus, the depth of fixity may be above the bedrock. The Consultant needs to provide further explanation and justification for the recommended depth of fixity."

Response: **Acknowledged.** This is a typographical error. ESSC intended that the depth to fixity should be a minimum of 6 feet below the bedrock surface.

Comment 5: "The blanks under Section H need to be filled in for clarity."

Response: **Acknowledged** – The text with the blanks should have read "Sections D through F." A revised version of the report has been prepared and provided. An entirely new geotechnical report based on the recent exploration and revised grading plan will also be prepared at a later date.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The conclusions and recommendations submitted in this report relative to the proposed development are based, in part, upon the data obtained from the site observations during the field exploration operations, and past experience. The nature and extent of variations between the boring and test pits may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this addendum report.

This addendum letter is intended to be made part of, and incorporated with, the referenced preliminary geotechnical engineering report dated November 10, 2004. All conclusions, recommendations, and limitations of that report, except as amended in this addendum report, remain valid and apply to this addendum letter.

CLOSURE

ESSC trusts this report is sufficient at this time and meets your current needs. ESSC appreciates this opportunity to provide professional geotechnical engineering services for this project. If you have any questions regarding the information contained in this report, or if you require additional geotechnical engineering services, please contact us.

Respectfully submitted,

Earth Systems
Southern California

CERTIFIED ENGINEERING GEOLOGIST
WILLIAM A. LA SHAPELLE
No. 1813
5/26/07
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
MARK LEWIS RUSSELL
No. 2393
EXP 12/31/05
GEOTECHNICAL
STATE OF CALIFORNIA

William Lachapelle, C.E.G.
Project Geologist

Mark L. Russell, G.E.
Project Geotechnical Engineer

Distribution: 6 – HQ Development

ATTACHMENT A - City of Agoura Hills – Geotechnical Review Sheet

ATTACHMENT A

City Review Sheet

BING YEN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants, Established 1979

Date: March 28, 2005
BYA #: 49.17688.0128

CITY OF AGOURA HILLS - GEOTECHNICAL REVIEW SHEET

To:	Doug Hooper
Project Location:	29621 Agoura Road, Agoura Hills, California.
Planning Case #:	05-SPR-010
Building & Safety #:	None
Geotechnical Report:	Earth Systems Southern California (2004), "Preliminary Geotechnical Engineering Report, Proposed Office Building, Lot 3, PM Per BK 167 P 50-52 of PM, Vicinity of 29851 Agoura Road, Agoura Hills, California," PL-06405-01, dated November 10, 2004.
Plans:	Development Resource Consultants, Inc., "Conceptual Grading Plan," 30-scale, March 4, 2005, 4 Sheets.
Previous Reviews:	None

Findings

Geotechnical Report

- ☐ Acceptable as presented with the following conditions.
- ☒ Response Required

Remarks

Earth Systems Southern California (Consultant) prepared a geotechnical investigation report for the proposed two-story office building. The City of Agoura Hills – Planning Department reviewed the referenced report from a geotechnical perspective for compliance with applicable codes, guidelines, and standards of practice. Bing Yen & Associates, Inc., on behalf of the City, conducted the geotechnical review.

Based upon the City's review, the referenced reports are acceptable as presented with regard to planning and feasibility issues, and we recommend the Planning Commission consider approval of Case No. 05-SPR-010 from a geotechnical perspective. The Consultant, however, should respond to the following report review comments prior to Building Plan Approval. Plan-Check comments should be addressed in Building & Safety Plan Check, and a separate geotechnical submittal is not required for plan-check comments.

Report Review Comments

1. The report submitted for review was not bound, and the pages were not numbered. One or more pages after the Section "Liquefaction" are missing. The Applicant needs to submit a complete, bound copy for review.
2. Regional geologic maps show Conejo Volcanics beneath the Topanga formation on the north side of Agoura Road in areas immediately east and west of the site. The Consultant assigns bedrock to the Topanga formation where reached; however, there exists a possibility that hard volcanic bedrock could be encountered on the southwest portion of the proposed building pad near B-8, which did not

extend to bedrock. What recommendations will be provided if the two varying types of bedrock are encountered during project construction and what significance does this have on any of the recommendations? Please incorporate your review of the referenced geotechnical reports for the adjacent properties and any additional information in your response.

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4. Recommendations for lateral pile resistance are given for piles in bedrock. Yet the point of fixity of six feet is referenced from the ground surface. Thus, the depth of fixity may be above the bedrock. The Consultant needs to provide further explanation and justification for the recommended depth of fixity.
5. The blanks under Section H need to be filled in for clarity.

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2. The grading plan should include the limits and depths of overexcavation of the building pad areas as recommended by the Consultant.
3. The following note must appear on the grading and foundation plans: "*Tests shall be performed prior to pouring footings and slabs to determine the expansion index of the supporting soils. If the expansion index is greater than 20, foundation and slab plans should be revised accordingly.*"
4. The following note must appear on the grading and foundation plans that states: "*Excavations shall be made in compliance with CAL/OSHA Regulations.*"
5. The following note must appear on the foundation plans that states: "*All foundation excavations must be observed and approved, in writing, by the Project Geotechnical Consultant prior to placement of reinforcing steel.*"
6. Foundation setback distances from ascending and descending slopes shall be in accordance with Section 1808.6 of the City of Agoura Hills Building Code, or the requirements of the Project Geotechnical Consultant's recommendations, whichever are more stringent. The required minimum foundation setback distances shall be clearly shown on the foundation plans, as applicable.
7. Foundation plans and foundation details shall clearly depict the embedment material and minimum depth of embedment for the foundations.
8. Drainage plans depicting all surface and subsurface non-erosive drainage devices, flow lines, and catch basins shall be included on the building plans.
9. Final grading, drainage, shoring, and foundation plans shall be reviewed, signed, and wet stamped by the project geotechnical consultant.
10. Provide a note on the grading and foundation plans that states: "*An as-built report shall be submitted to the City for review. This report prepared by the Geotechnical Consultant must include documentation of any foundation inspections, the results of all compaction tests as well as a map depicting the limits of fill, locations of all density tests, outline and elevations of all removal bottoms, keyway locations and bottom elevations, locations of all subdrains and flow line elevations, and location and elevation of all retaining wall backdrains and outlets. Geologic conditions exposed during grading must be depicted on an as-built geologic map.*"
11. Provide a note on the foundation plans that states: "*An as-built report prepared by the Project Geotechnical Consultant documenting the installation of the pile foundation elements shall be submitted to the City for review prior to final approval of the project. The report shall include detailed geologic logs of the pile excavations, including total depth or tip elevation, depth into the*

recommended bearing material, and depth to groundwater, as well as an as-built map depicting the piles and grade beams."

Please submit two (2) copies of the written response to the review comments above to Bing Yen & Associates, Inc. and one (1) copy to the City case planner. If you have any questions regarding this review letter, please contact Bing Yen & Associates, Inc. at (805) 383-0064.

Respectfully Submitted,

BING YEN & ASSOCIATES, INC.

Leland M. Kraft, Jr., GE 484, Exp. 06/30/06
Geotechnical Engineering Reviewer

Gordon B. Stolla, CEG 2348, Exp. 03/31/06
Engineering Geologic Reviewer

130
Lee C

Geotechnical Site Investigation
Proposed Cut Slope South Side of Agoura Road
Agoura Oaks Plaza
29621 Agoura Road, Agoura Hills, CA.

prepared for

HQ Development LLC
4641 Leahy Street
Culver City, CA 90232

GORIAN & ASSOCIATES, INC.

Table of Contents

GORIAN & ASSOCIATES, INC

Applied Earth Sciences
Geotechnical
Engineers
and Geologists

3595 Old Conejo Road
Thousand Oaks
California 91320-2122
805 375-9262
818 889-2137
805 375-9263 fax

December 2, 2005

HQ Development LLC
4641 Leahy Street
Culver City, CA 90232

Work Order: 2675-2-0-10
Log Number: 24199

Attention: Mr. Robert Herscu
Managing Partner

Subject: **Geotechnical Site Investigation, Proposed Cut Slope South Side of Agoura Road, Agoura Oaks Plaza, 29621 Agoura Road, Agoura Hills, CA.**

Reference: Gorian and Associates, Inc., July 12, 2005, *Geotechnical Site Investigation Update, Agoura Oaks Plaza, 29857 Agoura Road, Agoura Hills, California*. Work Order 2675-0-0-10, Log Number 23956.

1 INTRODUCTION

As part of the proposed Agoura Oaks Plaza development at 29621 Agoura Road, the southern side of Agoura Road will be widened to provide an island and east bound traffic lane. Presently the southern side of the existing road alignment is defined by a cut slope. Therefore, widening of the road will primarily involve cutting a new slope farther to the south as shown on the attached Geotechnical Map, Plate 1.

This report was prepared to address the proposed road improvement for the Agoura Oaks Plaza development. Geotechnical issues concerning development of the Agoura Oaks Plaza project were addressed under separate cover in the Gorian and Associates report dated July 12, 2005 (referenced above). Our investigation of the proposed widening of Agoura Road was based upon a 30-scale street improvement plan by Development Resource Consultants Inc. that serves as the base map for our attached Geotechnical Map and Cross Section, Plate 2. The proposed street improvements as shown on that plan are considered feasible from a geotechnical standpoint.

2 PROPOSED DEVELOPMENT

The proposed development will consist of widening and regrading of a portion of Agoura Road. The current plan calls for extending the current southern shoulder of Agoura Road approximately 40 feet toward the south. Widening of the road in this area will require cutting into the hillside south of the road, resulting in a cut slope with a maximum height of approximately 24 feet and oriented at a gradient of 2(H):1(v). Other changes associated with roadway widening will be installation of drainage infrastructure and construction of two median strips in Agoura Road.

3 SITE DESCRIPTION

The project area is an approximately 475 foot long by 90 foot wide section of the southern shoulder of Agoura Road near 29621 Agoura Road. The area is bounded on the north by the current shoulder of Agoura Road, on the west by the Gateway Four Square Church at 29646 Agoura Road, and on the south and east by undeveloped lands under separate ownership. Immediately across the street is the site of the proposed Agoura Oaks Plaza. The site is currently vacant land covered with a low moderate growth of native grasses and weeds. Scattered small chaparral plants are also present and two large oaks are located immediately beyond the southern margin and the western edge of the project area. On the distant, opposite ends of the site concrete culvert walls and drainage pipes carry run off underneath Agoura Road. On the west end of the project area is an asphalt driveway, which provides access to parking for the neighboring church. Just west of the asphalt drive are concrete and metal utility boxes.

Topographically, the site is characterized by an approximately 25 foot high elongate hill which trends east to west. This slope ascends immediately beyond the southern shoulder of Agoura Road. The slope shallows to nearly level to the south before further ascending to the main flank of the dominate east west ridgeline in the area; Ladyface Peak. The north facing side of this hill, i.e., adjacent the current paved section of Agoura Road has been graded into a cut slope, presumably constructed at the time of the grading of Agoura Road. This slope is approximately 19 feet high and is inclined at gradients from 1.5(H):1(V) to steeper than 0.75:1. To the east and west, the hill shallows to moderate gradients of 3(V):1(H) which descending into the north south trending drainage gullies at opposite ends of the site.

Site drainage is predominately via sheet flow to the east and west which concentrates into the mentioned drainage gullies. These gullies flow toward the north where they pass underneath Agoura Road via concrete drainage pipes.

4 SCOPE OF GEOTECHNICAL PROFESSIONAL SERVICES

The scope of services described below was performed to provide geotechnical engineering recommendations for design and construction of the proposed commercial development as described herein. The services were performed under the direction of a State registered geotechnical engineer and certified engineering geologist.

Archival Review

Readily available geotechnical information in our files and the referenced report were reviewed and the pertinent data was used in the current geotechnical evaluation of the proposed construction.

Field Investigation

A staff geologist from our office visited the site to observe the surficial conditions in the area of proposed development.

Engineering Evaluation and Analyses

The results the above tasks were used in our engineering evaluation of the proposed development to develop geotechnical recommendations for building design and construction.

Report Preparation

This report contains our geotechnical recommendations regarding remedial grading and design and construction of conventional foundations and slabs on-grade.

5 SITE GEOLOGY

Regional geologic conditions for the site are the same as those described in the referenced Gorian and Associates report dated July 2005. A staff geologist from this office recently visited the site to map

geologic conditions as exposed at the surface and in the subsurface in exposures formed by the existing road cut.

The eastern two thirds of the site are underlain by bedrock of the Conejo Volcanics formation. This bedrock is comprised of dark brown to black fine grained basalt which was largely massive and structureless with some minor, irregular partings observable. This rock occurred in an intensely fractured and deeply weathered condition and was weakly indurated and crumbly. Bedrock becomes less weathered and more indurated with depth.

The western third of the project area is underlain by alluvial soils. These soils consist of a matrix of dark brown sandy clay or clayey silt surrounding variable amounts of coarse gravel, cobbles, and occasional small boulders. The percentage of coarse grained constituents was higher where this unit is exposed on the active channel of the western site drainage. This material was found to be soft at the surface to firm at depth. Exposures in the road cut appear to have remobilized and formed slope wash against the cut slope. As shown on Plate 1 a localized area of the alluvial deposit was observed to have formed minor slumps a maximum of 1.5 feet high where it impinges upon the cut slope. Further west minor erosion gullies were also noted.

Limited amounts of artificial fill soils were mapped between the existing parking lot on the west end of the site and the western drainage. They consist of dark brown clayey sand and silty sand with some gravel. These were likely placed as spill fill during grading of the entrance drive to the neighboring property. They appear to be limited in distribution and are on the order of 4 feet thick where they toe out into the natural slope.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 GENERAL

The site and subsurface conditions were evaluated from a geotechnical standpoint with respect to the proposed roadway improvements. The project may be developed as described earlier in this report provided recommendations presented herein are followed and incorporated into the design and construction. Recommendations should be reviewed with respect to any changes in the proposed development and/or site conditions, should they occur.

6.2 SITE PREPARATION AND GRADING

6.2.1 General

The following supplemental remedial grading recommendations are for the widening of Agoura Road. It is anticipated that the proposed cut slope can be excavated utilizing suitable conventional grading equipment. Existing shallow slumps and erosion gullies will be removed by the proposed grading. The finished cut slope will expose predominately bedrock of the Conejo Volcanics formation. Soil removals are anticipated predominately at the western end of the road widening within and adjacent the existing drainage course.

All aspects of grading including site preparation, grading, and fill placement should be per the recommendations contained herein or the City of Agoura Hills specifications, whichever is more stringent.

6.2.2 Relative Compaction

Relative Compaction is the ratio of the in-place dry soil density to the maximum dry soil density determined in general conformance with ASTM test method D 1557-91.

6.2.3 Vegetation/Debris Removal

Before starting the removals or site processing, all major vegetation, trash, and debris should be removed from all areas to be graded.

6.2.4 Soil Removals

Removals of non-engineered fill, compressible or otherwise unsuitable alluvium, and weathered bedrock are anticipated predominately at the western end of the road widening within and adjacent the existing drainage course. The removals should extend to firm in-place alluvium or bedrock. After removals are completed, a representative of this office should observe the bottom of the removal area prior to placing fill. No fills should be placed until the geotechnical observation of removal areas is completed.

6.2.5 Processing

After completing removals, suitable in-place soils should be processed before placing fill. Processing should consist of scarification of the exposed soil to a minimum depth of 6 to 8 inches. The scarified surface should be relatively free of uneven features that would prevent uniform compaction. Soils should be moisture conditioned to slightly above the optimum moisture content and compacted to a minimum of 90% relative compaction.

6.2.6 Fill Placement

Excavated on-site soils and fill should be cleaned of major vegetation, trash, and debris prior to placement as fill. Rock should not exceed 12 inches in diameter. Fill soils should be placed in thin uniform lifts, brought to slightly above optimum moisture content, and compacted to a minimum of 90% relative compaction.

6.2.7 Temporary Excavations

During construction, the excavation and maintenance of safe and stable slope angles are the responsibility of the contractor, who should consider the subsurface conditions and the method of operation. All subsurface construction should conform to the requirements of OSHA. Surcharge loads should be setback from the top of temporary excavations a minimum horizontal distance equal to the depth of the cut or 10 feet, whichever is more. All excavated backfill should be properly placed and compacted.

6.2.8 Utility Trenches

Backfill of all utility trenches should be compacted to a minimum of 90% relative compaction.

6.3 MANUFACTURED SLOPE CONSTRUCTION AND MAINTENANCE

6.3.1 Cut Slopes

Cut slopes constructed within the bedrock and alluvial areas are expected to expose firm, competent slope faces and may be constructed at a maximum gradient of 2 (h):1(v). No adverse geologic conditions are anticipated. However, the project engineering geologist should observe all of the cut slopes for possible adverse geologic conditions.

6.3.2 Fill Slopes

A small section of fill slope is proposed that may be constructed at a maximum gradient of 2(h):1(v). Fill slopes should be keyed and benched into firm in-place soil or bedrock. Fill slope keyways should be a minimum of 15 feet wide (or as determined in the field by a representative of this office) and cut to a minimum depth of 2 feet at the toe into competent in-place materials. The keyway should be tilted into the slope and should be at least 3 feet deep at the heel (measured from below the slope toe elevation). This office should observe the keyways prior to fill placement.

Where possible, slope face should be overfilled and trimmed back to provide for firm, well-compacted surfaces. If the slope is not overfilled and trimmed, it may be necessary to sheepsfoot and/or grid roll the slopes. The slope face should be tested and reworked as necessary to achieve the required 90 percent relative compaction. Some select grading may be required when placing fill materials within 10 feet of slope faces. Fill soils near the slope face should have at least 250 psf cohesive shear strength.

6.3.3 Slope Maintenance

All slopes are subject to erosion and degradation with time, due to both natural and man-made conditions. With proper slope care, the rate of this degradation can be reduced. Care should be taken to maintain a uniform, near optimum moisture content in the outer zone of slope faces. Over-drying or excessive irrigation of the exposed soils should be avoided. Maintaining a uniform moisture condition in the exposed soils will reduce the potential for softening and strength loss, which may otherwise lead to surficial slumping of slope faces. In addition to moisture control, continuous maintenance of the slopes should include planting with deep rooted, drought resistant vegetation, maintaining positive drainage away from the tops of all slopes, proper maintenance of erosion and drainage control devices and rodent control. However, fresh cuts into the bedrock may not support plant growth. Access, including foot traffic, should be limited to avoid local disturbance to the surficial soils.

6.4 RETAINING WALL DESIGN

6.4.1 General

Two small retaining walls are shown on either side of the drive from Agoura Road. Retaining walls should be founded on competent native materials or engineered compacted fill. The following presents design recommendations for construction of retaining walls at the site. Retaining wall backcuts should be observed by the project geotechnical consultant to evaluate backcut conditions.

6.4.2 Foundations

The foundation recommendations as presented in the referenced report may also be used for retaining wall design.

6.4.3 Active Pressure

Retaining walls should be designed to resist an active earth pressure exerted by compacted backfill or retained soil. Retaining walls that may yield at the top should be designed for an equivalent fluid pressure equal to 38 pounds per cubic foot (pcf) for a level backfill. For light traffic loading adjacent to the wall, a surcharge equal to 2 feet of soil should be used.

The above active pressures are not designed to resist expansion of the backfill. Therefore, if water is allowed to saturate backfill or backcut materials consisting of clayey soils, the expansion pressure could exceed the active pressures provided. Furthermore, the above active pressures are not designed to accommodate any adverse geologic conditions such as unsupported bedding or joint sets. Should such conditions be encountered additional evaluation would be required.

Walls that are at the toe of slopes should have a concrete drainage swale placed behind the wall at the toe of slope to collect surface run off from the slope face.

6.4.4 Retaining Wall Drainage and Backfill

The retaining walls should be waterproofed where moisture penetration through the wall would be a problem. Shallow walls should be provided with a drain consisting of a minimum 1 foot square section of clean gravel (½ to ¾ inch) drain material wrapped in filter fabric placed against the backfill side of the wall. The material should be drained by a perforated 4-inch diameter pipe. The invert of the drainpipe should be at least 6 inches below any adjacent slab-on-grade. For retaining walls less than 3 feet in height, weep holes may be used as the backdrain outlet.

All wall backfill should be compacted to a minimum of 90% of the maximum soil density using light equipment. The retaining wall backfill should be benched into the backcut where the backcut is shallower than 3/4(h):1(v).

6.5 SITE DRAINAGE

Positive drainage should be provided away from the slopes during and after construction.

7 CLOSURE

This report was prepared under the direction of State registered Geotechnical Engineer. No warranty, express or implied, is made as to conclusions and professional advice included in this report. Gorian and Associates, Inc. disclaim responsibility and liability for problems that may occur if the recommendations presented in this report are not followed.

The report was prepared for the HQ Development LLC and their design consultants solely for design and construction of the project as described herein. It may not contain sufficient information for other uses or the purposes of other parties. These recommendations should not be extrapolated to other areas or used for other facilities without consulting Gorian and Associates, Inc. Our review or use of the referenced investigation report is not intended as a warranty, expressed or implied, as to conclusions and professional advice contained in that report. The services of this office should not be construed to relieve the owner or contractors of their responsibilities or liabilities.

The recommendations are based on interpretations of the subsurface conditions. The interpretations may differ from actual subsurface conditions, which can vary horizontally and vertically across the site. Due to possible subsurface variations, this office should observe all aspects of field construction addressed in this report. Any persons using this report for bidding or construction purposes should perform such independent investigations, as they deem necessary.

oOo

Please call if you have any questions regarding the information or recommendations contained in this report or require additional consultation.

Respectfully,

Gorian and Associates, Inc.

By: Jerome J. Blunck, GE 151
Principal Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
JEROME JON BLUNCK
No. 151
Exp. 12/31/08
GEOTECHNICAL
STATE OF CALIFORNIA

William F. Cavan, Jr., CEG 1161
Principal Engineering Geologist

PROFESSIONAL GEOLOGIST
WILLIAM F. CAVAN, JR.
No. EG1161
CERTIFIED
ENGINEERING
GEOLOGIST
EXP. 9/30/07
STATE OF CALIFORNIA

Attachment: Geotechnical Cross Section
Geotechnical Map (in pocket)

Distribution: Addressee (2)
City of Agoura Hills (4) Attention: Allison Cook and James Thorsen
John Parezo, AIA (1)
Brad Rosenheim (1)
Envicom Corporation (1) Attention: Travis Cullen

Date: December 21, 2005
GDI #: 05.00103.0137

CITY OF AGOURA HILLS - GEOTECHNICAL REVIEW SHEET

To:	Allison Cook
Project Location:	29621 Agoura Road, Agoura Hills, California.
Planning Case #:	05-SPR-10
Building & Safety #:	None
Geotechnical Report:	Gorian & Associates, Inc. (2005), "Geotechnical Site Investigation, Proposed Cut Slope South Side of Agoura Road, Agoura Oaks Plaza, 29621 Agoura Road, Agoura Hills, California," W.O.: 2675-2-0-10, Log Number: 24199, dated December 2, 2005.
Previous Reviews:	None

FINDINGS

Planning/Feasibility Issues

☒ Acceptable as Presented

☐ Response Required

Geotechnical Report

☐ Acceptable as Presented

☒ Response Required

REMARKS

Gorian & Associates, Inc. (GAI; consultant) prepared a "Geotechnical Site Investigation" for the proposed cut slope south side of Agoura Road, Agoura Oaks Plaza, 29621 Agoura Road, City of Agoura Hills, California. The proposed development includes the construction of a 2(h):1(v) gradient cut slope approximately 24 ft high.

The City of Agoura Hills – Planning Department reviewed the referenced report from a geotechnical perspective for compliance with applicable codes, guidelines, and standards of practice. GeoDynamics, Inc. (GDI) performed the geotechnical review on behalf of the City.

Based upon the City's review, the referenced reports are acceptable as presented with regard to planning and feasibility issues, and we recommend the Planning Commission consider approval of Case No. 05-SPR-10 from a geotechnical perspective. The Consultant, however, should respond to the following report review comments prior to Building Plan Approval. Plan-Check comments should be addressed in Building & Safety Plan Check, and a separate geotechnical submittal is not required for plan-check comments.

Report Review Comments

1. The consultant should provide pavement design recommendations.
2. The consultant should discuss and evaluate if necessary, the stability of the alluvial wedge that would remain in-place after the construction of the adjacent cut slope. Mitigation measures should be recommended as necessary.
3. The consultant should indicate the north arrow on the Geotechnical Map. The consultant should also clarify distribution of surficial units at the west end of the slope (surficial units are designated both "Qal" and "af".)

Plan-Check Comments

1. The name, address, and phone number of the Consultant and a list of all the applicable geotechnical reports shall be included on the building/grading plans.
2. The grading plan should include the limits and depths of overexcavation of the road and flatwork areas as recommended by the Consultant.
3. The following note must appear on the grading and foundation plans: "*Tests shall be performed to determine the R-value of finish grade materials within the proposed road pavement areas.*"
4. The following note must appear on the grading and foundation plans: "*Excavations shall be made in compliance with CAL/OSHA Regulations.*"
5. The following note must appear on the foundation plans: "*All foundation excavations must be observed and approved, in writing, by the Project Geotechnical Consultant prior to placement of reinforcing steel.*"
6. Foundation plans and foundation details shall clearly depict the embedment material and minimum depth of embedment for the foundations.
7. Drainage plans depicting all surface and subsurface non-erosive drainage devices, flow lines, and catch basins shall be included on the building plans.
8. Final grading, drainage, and foundation plans shall be reviewed, signed, and wet stamped by the consultant.
9. Provide a note on the grading and foundation plans that states: "*An as-built report shall be submitted to the City for review. This report prepared by the Geotechnical Consultant must include the results of all compaction tests as well as a map depicting the limits of fill, locations of all density tests, outline and elevations of all removal bottoms, keyway locations and bottom elevations, locations of all subdrains and flow line elevations, and location and elevation of all retaining wall backdrains and outlets. Geologic conditions exposed during grading must be depicted on an as-built geologic map.*"

If you have any questions regarding this review letter, please contact GeoDynamics, Inc. at (805) 496-1222.

Respectfully Submitted,

GeoDynamics, INC.

Ali A. Haq

Ali Abdel-Haq
Geotechnical Engineering Reviewer
GE 2308 (exp. 12/31/07)

Christopher J. Sexton
Engineering Geologic Reviewer
CEG 1441 (exp. 11/30/06)

GORIAN & ASSOCIATES, INC.

Applied Earth Sciences
Geotechnical
Engineers
and Geologists

3595 Old Conejo Road
Thousand Oaks
California 91320-2122
805 375-9262
818 889-2137
805 375-9263 fax

January 11, 2006

HQ Development LLC
4641 Leahy Street
Culver City, CA 90232

Work Order: 2675-2-0-101

Attention: Mr. Robert Herscu
Managing Partner

Subject: **Geotechnical Site Investigation Supplement, Proposed 1-1/2(H):1(V) Cut Slope South Side of Agoura Road, Agoura Oaks Plaza, 29621 Agoura Road, Agoura Hills, CA.**

Reference: Gorian and Associates, Inc., July 12, 2005, Geotechnical Site Investigation Update, Agoura Oaks Plaza, 29857 Agoura Road, Agoura Hills, California. Work Order 2675-0-0-10, Log Number 23956.

Gorian and Associates, Inc., December 2, 2005, Geotechnical Site Investigation, Proposed Cut Slope South Side of Agoura Road, Agoura Oaks Plaza, 29621 Agoura Road, Agoura Hills, CA. Work Order: 2675-2-0-10, Log Number: 24199.

1 INTRODUCTION

The construction of a 1-1/2(h):1(v) cut slope has been evaluated as an alternative to the previously proposed 2(h):1(v) cut slope along the southern side of Agoura Road. The cut slope will be created for the proposed widening of Agoura Road adjacent the Agoura Oaks Plaza development at 29621 Agoura Road in the City of Agoura Hills. The road widening was previously evaluated for the referenced report of December 2, 2005. Creation of a 1-1/2(h):1(v) slope within the Conejo Volcanic bedrock is considered feasible from a geotechnical standpoint. Cuts within the soil profiles should remain at the previously proposed 2(h):1(v) gradient. The contacts between the geologic units are shown on the attached geotechnical map from the report of December 2, 2005.

2 SITE GEOLOGY

The eastern two thirds of the site are underlain by bedrock of the Conejo Volcanics formation. This bedrock is comprised of dark brown to black fine grained basalt, which was largely massive and structureless with some minor, irregular partings observable. This rock occurred in an intensely fractured and deeply weathered condition and was weakly indurated and crumbly. Bedrock becomes less weathered and more indurated with depth.

The western third of the project area is underlain by alluvial soils. These soils consist of a matrix of dark brown sandy clay or clayey silt surrounding variable amounts of coarse gravel, cobbles, and occasional small boulders. The percentage of coarse grained constituents was higher where this unit is exposed on the active channel of the western site drainage. This material was found to be soft at the surface to firm

at depth. Exposures in the road cut appear to have remobilized and formed slope wash against the cut slope. As shown on the geotechnical map, a localized area of the alluvial deposit was observed to have formed minor slumps a maximum of 1.5 feet high where it impinges upon the cut slope. Further west minor erosion gullies were also noted.

Limited amounts of artificial fill soils were mapped between the existing parking lot on the west end of the site and the western drainage. They consist of dark brown clayey sand and silty sand with some gravel. These were likely placed as spill fill during grading of the entrance drive to the neighboring property. They appear to be limited in distribution and are on the order of 4 feet thick where they toe out into the natural slope.

3 SLOPE STABILITY

Geotechnical Cross Section A-A' from the referenced report of December 2, 2005 was modified to shown the proposed 1-1/2(h):1(v) slope. A discussion of the analyzed geotechnical section and the results of the stability analyses are presented below.

The analyses considered postulated rotational type failures with the use of the computer program GSTABL7 with the user interface STEDwin. GSTABL7 is a 2-dimensional, limit equilibrium slope stability program developed by Garry H. Gregory, P.E., which works in conjunction with STEDwin, a Graphical User Interface developed by Harald W. Van Aller, P.E. GSTABL7 originates from an early version of STABL by Purdue University.

The material strengths for the bedrock were obtain from our prior work on the southern side of Agoura Road in Tract 40447 along Ladyface Circle within the City of Agoura Hills. The shear strengths of 1000 pounds per square foot and 26 degrees are considered conservative for the largely massive and structureless bedrock unit. A unit weight of 130 pounds per cubic foot was used in the analysis.

Each of the analyses completed indicates minimum factors of safety of 3.39 and 2.55 that are in excess of the minimum required 1.5 and 1.1 for static and pseudostatic conditions, respectively. The results of the analyses are attached.

Surficial Stability

A surficial stability analysis was completed for the 1-1/2(h):1(v) cut slope. The vertical depth of the soil saturation zone was assumed to be 4 feet. The analysis resulted in a factor of safety of 4.33, which is above the required minimum factor of safety of 1.5.

3.1 MANUFACTURED SLOPE CONSTRUCTION AND MAINTENANCE

3.1.1 Cut Slopes

Cut slopes constructed within the bedrock and alluvial areas are expected to expose firm, competent slope faces and may be constructed at a maximum gradient of 1-1/2(h):1(v) and 2 (h):1(v), respectively. No adverse geologic conditions are anticipated. However, the project engineering geologist should observe all of the cut slopes for possible adverse geologic conditions.

3.1.2 Fill Slopes

A small section of fill slope is proposed that may be constructed at a maximum gradient of 2(h):1(v). Fill slopes should be keyed and benched into firm in-place soil or bedrock. Fill slope keyways should be a minimum of 15 feet wide (or as determined in the field by a representative of this office) and cut to a minimum depth of 2 feet at the toe into competent in-place materials. The keyway should be tilted into the slope and should be at least 3 feet deep at the heel (measured from below the slope toe elevation). This office should observe the keyways prior to fill placement.

Where possible, slope face should be overfilled and trimmed back to provide for firm, well-compacted surfaces. If the slope is not overfilled and trimmed, it may be necessary to sheepsfoot and/or grid roll the slopes. The slope face should be tested and reworked as necessary to achieve the required 90 percent relative compaction. Some select grading may be required when placing fill materials within 10 feet of slope faces. Fill soils near the slope face should have at least 250 psf cohesive shear strength.

3.1.3 Slope Maintenance

All slopes are subject to erosion and degradation with time, due to both natural and man-made conditions. With proper slope care, the rate of this degradation can be reduced. Care should be taken to maintain a uniform, near optimum moisture content in the outer zone of slope faces. Over-drying or excessive irrigation of the exposed soils should be avoided. Maintaining a uniform moisture condition in the exposed soils will reduce the potential for softening and strength loss, which may otherwise lead to surficial slumping of slope faces. In addition to moisture control, continuous maintenance of the slopes should include planting with deep rooted, drought resistant vegetation, maintaining positive drainage away from the tops of all slopes, proper maintenance of erosion and drainage control devices and rodent control. However, fresh cuts into the bedrock may not support plant growth. Access, including foot traffic, should be limited to avoid local disturbance to the surficial soils.

4 CLOSURE

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The report was prepared for the HQ Development LLC and their design consultants solely for design and construction of the project as described herein. It may not contain sufficient information for other uses or the purposes of other parties. These recommendations should not be extrapolated to other areas or used for other facilities without consulting Gorian and Associates, Inc. Our review or use of the referenced investigation report is not intended as a warranty, expressed or implied, as to conclusions and professional advice contained in that report. The services of this office should not be construed to relieve the owner or contractors of their responsibilities or liabilities.

The recommendations are based on interpretations of the subsurface conditions. The interpretations may differ from actual subsurface conditions, which can vary horizontally and vertically across the site. Due to possible subsurface variations, this office should observe all aspects of field construction addressed in this report. Any persons using this report for bidding or construction purposes should perform such independent investigations, as they deem necessary.

oOo

Please call if you have any questions regarding the information or recommendations contained in this report or require additional consultation.

Respectfully,

Gorian and Associates, Inc.

By: Jerome J. Blunck, GE 151
Principal Geotechnical Engineer

Attachment: Appendix A: Slope Stability Analyses
Geotechnical Cross Section
Geotechnical Map (in pocket)

Distribution: Addressee (2)
City of Agoura Hills (4) Attention: Allison Cook and James Thorsen
John Parezo, AIA (1)
Brad Rosenheim (1)
Envicom Corporation (1) Attention: Travis Cullen

Appendix D

Noise Calculations

ROADWAY TRAFFIC NOISE

Project: Agoura HQ Development Project Project No. 05-58610
Date: 31-Jan-06

Roadway: Agoura Road w/ Gateway Church as nearest sensitive receptor

PROJECT DATA and ASSUMPTIONS

Vehicle Reference Energy Mean Emission Levels (FHWA 1977, TNM®, or CALVENO): TNM
Distance to Receptor: 260 feet
Site Condition (Hard or Soft): hard
Upgrade longer than 1 mile: 0 %
Existing Total Traffic Volume (ADT): 8,000 vehicles
Ambient Growth Factor: 2.3%
Future Year : 2008
Total Project Volume (ADT): 1,298 vehicles
Total Cumulative Growth Volume (ADT): 1,500 vehicles
Source of Traffic Data: Traffic Impact Analysis, Overland Consultants, Inc. 2005

Daily Vehicle Mix

	Existing	*Project*	*Future*
Automobile	96.0%	99.0%	96.6%
Medium Truck	2.0%	0.5%	1.8%
Heavy Truck	2.0%	0.5%	1.6%

Source: Assumed given land use and road characteristics

Percentage of Daily Traffic

Existing and Future

	Day (7 am-7 pm)	*Evening (7-10 pm)*	*Night (10 pm - 7 am)*
Automobile	77.5%	12.9%	9.6%
Medium Truck	84.8%	4.9%	10.3%
Heavy Truck	86.5%	2.7%	10.8%

Source: Default Assumption

Project

	Day (7 am-7 pm)	*Evening (7-10 pm)*	*Night (10 pm - 7 am)*
Automobile	77.5%	12.9%	9.6%
Medium Truck	84.8%	4.9%	10.3%
Heavy Truck	86.5%	2.7%	10.8%

Source: Default Assumption

Average Speed

Existing

	Day (7 am-7 pm)	*Evening (7-10 pm)*	*Night (10 pm - 7 am)*
Automobile	45	45	45
Medium Truck	45	45	45
Heavy Truck	45	45	45

Source: Assumed average speed

Future

	Day (7 am-7 pm)	*Evening (7-10 pm)*	*Night (10 pm - 7 am)*
Automobile	45	45	45
Medium Truck	45	45	45
Heavy Truck	45	45	45

Source: Assumed average speed

ROADWAY TRAFFIC NOISE

Project: Agoura HQ Development Project Project No. 05-58610
Date: 31-Jan-06

Roadway: Agoura Road w/ Gateway Church as nearest sensitive receptor

Vehicle Noise Emission Levels*: TNM

RESULTS

DAY-NIGHT AVERAGE LEVEL (Ldn)	Ldn at Site 260 feet from road centerline	Distance to dBA Contour Line from roadway centerline, feet 75	70	65	60	55
Existing	60.4 dBA	#N/A	28	128	276	595
Existing + Project	60.9 dBA	#N/A	32	139	300	646
Future with Ambient Growth	60.6 dBA	#N/A	30	132	284	613
Future with Ambient Growth and Project	61.1 dBA	#N/A	33	143	308	663
Future with Ambient Growth and Cumulative Projects	61.3 dBA	#N/A	35	147	316	681
Future with Ambient, Cumulative, and Project Growth	61.7 dBA	#N/A	39	157	338	729

Change in Noise Levels	
Due to Project	0.5 dBA
Due to Ambient Growth	0.2 dBA
Due to Ambient and Cumulative	0.9 dBA
Due to All Future Growth	1.3 dBA

COMMUNITY NOISE EXPOSURE LEVEL (CNEL)	CNEL at Site 260 feet from road centerline	Distance to dBA Contour Line from roadway centerline, feet 75	70	65	60	55
Existing	60.9 dBA	#N/A	32	138	297	641
Existing + Project	61.4 dBA	#N/A	36	150	323	697
Future with Ambient Growth	61.1 dBA	#N/A	33	142	306	660
Future with Ambient Growth and Project	61.6 dBA	#N/A	38	154	332	715
Future with Ambient Growth and Cumulative Projects	61.8 dBA	#N/A	39	158	341	734
Future with Ambient, Cumulative, and Project Growth	62.2 dBA	#N/A	43	169	365	787

Change in Noise Levels	
Due to Project	0.5 dBA
Due to Ambient Growth	0.2 dBA
Due to Ambient and Cumulative	0.9 dBA
Due to All Future Growth	1.3 dBA

*NOTES: Based on algorithms from the Federal Highway Administration "Traffic Noise Model ®", FHWA-PD-96-010, January, 1998.

#N/A = Not Applicable

ROADWAY TRAFFIC NOISE

Project: Agoura HQ Development Project Project No. 05-58610
Date: 31-Jan-06

Roadway: Agoura Road w/ Los Angeles County Animal Shelter as nearest sensitive receptor

PROJECT DATA and ASSUMPTIONS

Vehicle Reference Energy Mean Emission Levels (FHWA 1977, TNM®, or CALVENO):	TNM
Distance to Receptor:	50 feet
Site Condition (Hard or Soft):	Hard
Upgrade longer than 1 mile:	0 %
Existing Total Traffic Volume (ADT):	8,000 vehicles
Ambient Growth Factor:	2.3%
Future Year :	2008
Total Project Volume (ADT):	1,298 vehicles
Total Cumulative Growth Volume (ADT):	1,500 vehicles

Source of Traffic Data: Traffic Impact Analysis, Overland Consultants, Inc. 2005

Daily Vehicle Mix

	Existing	*Project*	*Future*
Automobile	96.0%	99.0%	96.6%
Medium Truck	2.0%	0.5%	1.8%
Heavy Truck	2.0%	0.5%	1.6%

Source: Assumed given land use and road characteristics

Percentage of Daily Traffic

Existing and Future

	Day (7 am-7 pm)	*Evening (7-10 pm)*	*Night (10 pm - 7 am)*
Automobile	77.5%	12.9%	9.6%
Medium Truck	84.8%	4.9%	10.3%
Heavy Truck	86.5%	2.7%	10.8%

Source: Default Assumption

Project

	Day (7 am-7 pm)	*Evening (7-10 pm)*	*Night (10 pm - 7 am)*
Automobile	77.5%	12.9%	9.6%
Medium Truck	84.8%	4.9%	10.3%
Heavy Truck	86.5%	2.7%	10.8%

Source: Default Assumption

Average Speed

Existing

	Day (7 am-7 pm)	*Evening (7-10 pm)*	*Night (10 pm - 7 am)*
Automobile	45	45	45
Medium Truck	45	45	45
Heavy Truck	45	45	45

Source: Assumed average speed

Future

	Day (7 am-7 pm)	*Evening (7-10 pm)*	*Night (10 pm - 7 am)*
Automobile	45	45	45
Medium Truck	45	45	45
Heavy Truck	45	45	45

Source: Assumed average speed

ROADWAY TRAFFIC NOISE

Project: Agoura HQ Development Project Project No. 05-58610
Date: 31-Jan-06

Roadway: Agoura Road w/ Los Angeles County Animal Shelter as nearest sensitive receptor

Vehicle Noise Emission Levels*: TNM

RESULTS

DAY-NIGHT AVERAGE LEVEL (Ldn)	Ldn at Site 50 feet from road centerline	Distance to dBA Contour Line from roadway centerline, feet 75	70	65	60	55
Existing	67.6 dBA	#N/A	28	74	159	343
Existing + Project	68.1 dBA	#N/A	32	80	173	373
Future with Ambient Growth	67.7 dBA	#N/A	30	76	164	354
Future with Ambient Growth and Project	68.3 dBA	#N/A	33	82	178	383
Future with Ambient Growth and Cumulative Projects	68.4 dBA	#N/A	35	85	183	393
Future with Ambient, Cumulative, and Project Growth	68.9 dBA	#N/A	39	91	195	421

Change in Noise Levels	
Due to Project	0.5 dBA
Due to Ambient Growth	0.2 dBA
Due to Ambient and Cumulative	0.9 dBA
Due to All Future Growth	1.3 dBA

COMMUNITY NOISE EXPOSURE LEVEL (CNEL)	CNEL at Site 50 feet from road centerline	Distance to dBA Contour Line from roadway centerline, feet 75	70	65	60	55
Existing	68.0 dBA	#N/A	32	80	172	370
Existing + Project	68.6 dBA	#N/A	36	87	187	402
Future with Ambient Growth	68.2 dBA	#N/A	33	82	177	381
Future with Ambient Growth and Project	68.8 dBA	#N/A	38	89	192	413
Future with Ambient Growth and Cumulative Projects	68.9 dBA	#N/A	39	91	197	424
Future with Ambient, Cumulative, and Project Growth	69.4 dBA	#N/A	43	98	211	454

Change in Noise Levels	
Due to Project	0.5 dBA
Due to Ambient Growth	0.2 dBA
Due to Ambient and Cumulative	0.9 dBA
Due to All Future Growth	1.3 dBA

*NOTES: Based on algorithms from the Federal Highway Administration "Traffic Noise Model ®", FHWA-PD-96-010, January, 1998.

#N/A = Not Applicable

Appendix E

Traffic Impact Analysis

TRAFFIC IMPACT ANALYSIS FOR A PROPOSED OFFICE DEVELOPMENT

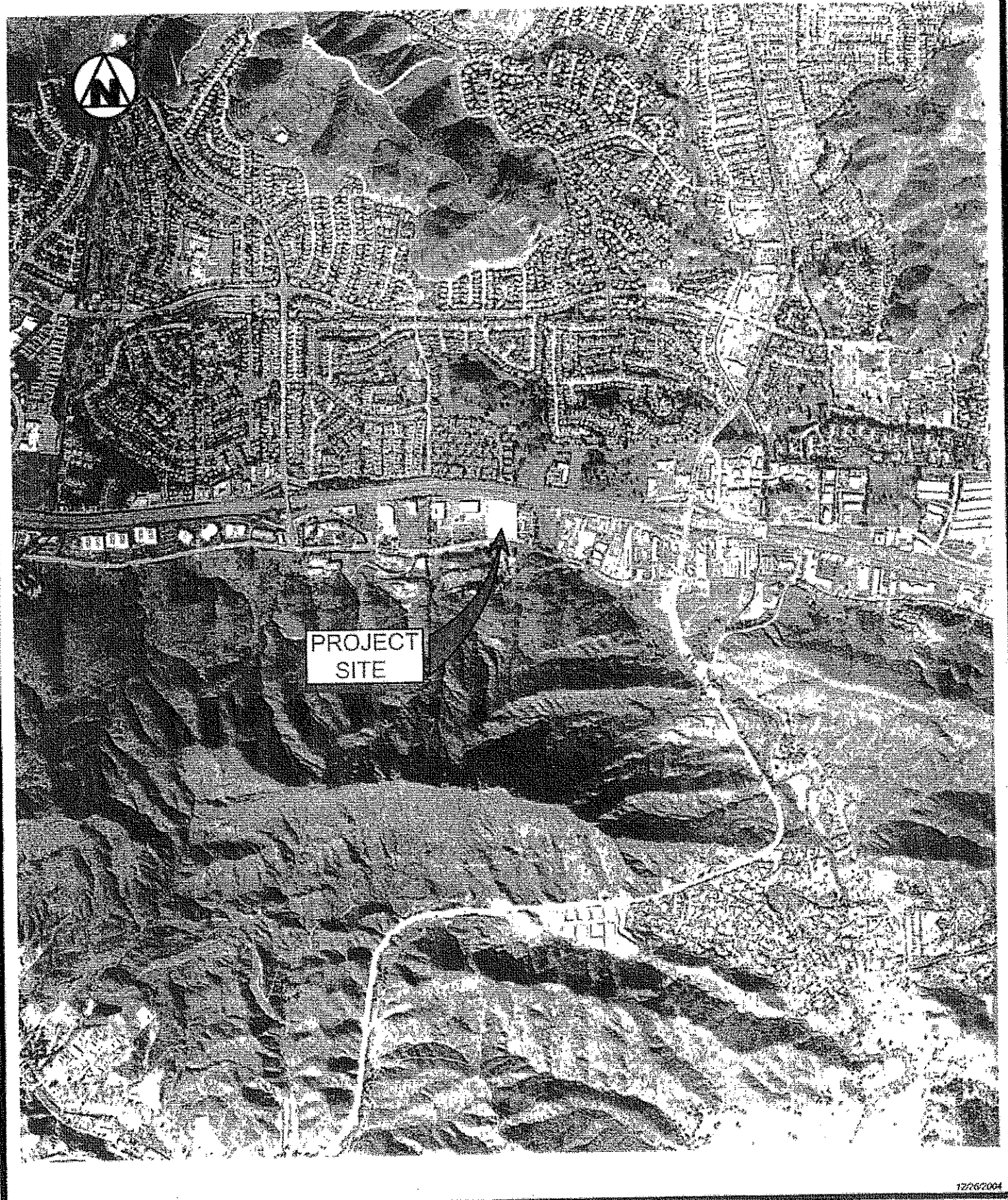
29851 Agoura Road
City of Agoura Hills

Prepared for:
HQ Development LLC

Prepared by:

Overland Traffic Consultants, Inc.
25876 The Old Road # 307
Santa Clarita, California 91381
(661) 799 – 8423

February 2005



12/26/2004

PROJECT SETTING

Overland Traffic Consultants, Inc.
25876 The Old Road #307, Santa Clarita, CA 91381
(661)799-8423 v. (661)799-8456 f, OTC@overlandtraffic.com

EXECUTIVE SUMMARY

The proposed project is the construction of a 96,479 square foot office building on approximately 5.17 acres of undeveloped property. The project site is located on the north side of Agoura Road between Kanan Road and Reyes Adobe Road in the City of Agoura Hills, as shown in the following aerial photograph. Parking for the office building will be provided on-site with approximately 308 parking spaces in a surface parking lot surrounding the office building. Vehicular access to Agoura Road is planned by one centrally located driveway.

The focus of this traffic study is to evaluate the potential traffic impact created by the proposed office building on nearby intersections under different traffic growth scenarios. It is estimated the project will generate approximately 1,298 daily vehicular trips with 182 and 187 trips occurring during the morning and afternoon peak hours, respectively.

Traffic growth scenarios have been developed to estimate the potential impact caused by ambient traffic growth (external to the study area), by the project traffic alone and combined with ambient growth, and lastly, the cumulative impact by all other planned developments nearby. The current intersection level of service and the significance of the impacts created by the added traffic volume for the different traffic growth scenarios are tabulated in the following table.

As shown, the current intersection operating conditions are at capacity or exceed capacity at Agoura Road and its intersections with Kanan Road and at the 101 Freeway ramps. Adding the project traffic is expected to significantly impact 1 intersection: Agoura Road and Kanan Road as compared to the impact of ambient traffic growth alone which is estimated to impact four intersections. Using the ambient traffic growth as the baseline the project would impact 2 intersections.

Cumulative traffic growth assuming all the other known or planned developments but without the proposed project is estimated to impact 6 of the 8 study intersections with 1 additional impact added by the addition of the proposed project.

Intersection	Existing		+ Project	+ Amb only	+ Proj. & Amb.	+ Ambient + Related	Total
Reyes Adobe Rd & Agoura Rd	AM	LOS B	NO	NO	NO	NO	NO
	PM	LOS C	NO	NO	NO	NO	**YES**
Reyes Adobe Rd & 101 Frwy S/B	AM	LOS B	NO	NO	NO	**YES**	**YES**
	PM	LOS C	NO	NO	**YES**	**YES**	**YES**
Reyes Adobe Rd & 101 Frwy N/B	AM	LOS C	NO	**YES**	NO	**YES**	**YES**
	PM	LOS C	NO	NO	NO	**YES**	**YES**
Reyes Adobe Rd & Canwood St	AM	LOS A	NO	NO	NO	NO	NO
	PM	LOS B	NO	NO	NO	NO	NO
Agoura Rd & Kanan Rd	AM	LOS D	NO	**YES**	NO	**YES**	**YES**
	PM	LOS D	**YES**	**YES**	**YES**	**YES**	**YES**
Agoura Rd & 101 Frwy S/B	AM	LOS D	NO	**YES**	NO	**YES**	**YES**
	PM	LOS B	NO	NO	NO	**YES**	**YES**
Agoura Rd & 101 Frwy N/B	AM	LOS E	NO	**YES**	NO	**YES**	**YES**
	PM	LOS E	NO	**YES**	NO	**YES**	**YES**
Agoura Rd & Canwood St (S)	AM	LOS A	NO	NO	NO	NO	NO
	PM	LOS B	NO	NO	NO	**YES**	**YES**

Possible project traffic mitigation for the intersection of Kanan Road and Agoura Road is the conversion of the southbound right-turn only lane into a through/right combination lane by widening the west side of Kanan Road south of Agoura Road. As mitigation for the project's contribution to cumulative traffic growth (ambient and related), the project shall pay its fair share pursuant to the development fee (Resolution No. 493) for the development of the Seventeen-Year Arterial Street System Improvement Plan. It is further recommended that the costs associated with the widening of Kanan Road and Agoura Road be credited towards the development fee as the roadway improvement is part of the fee based area wide improvement plan.

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CHAPTER 1 INTRODUCTION

As part of the process for the office development approval, the potential traffic impact of the proposed development has been evaluated using the Intersection Capacity Utilization (ICU) method of analysis. The ICU analysis method calculates the operating conditions of an intersection using a ratio of peak hour traffic volume to intersection capacity. The amount of new traffic added to an intersection by the proposed project determines the significance of the project impact. Eight key intersections have been selected by the City of Agoura Hills for this traffic impact analysis. These intersections are listed below:

1. Agoura Road and Reyes Adobe Road;
2. Reyes Adobe Road and 101 Freeway S/B ramps;
3. Reyes Adobe Road and 101 Freeway N/B ramps;
4. Reyes Adobe Road and Canwood Street;
5. Kanan Road and Agoura Road;
6. Kanan Road and 101 Freeway S/B ramps;
7. Kanan Road and 101 Freeway N/B ramps; and,
8. Kanan Road and Canwood Street (south intersection).

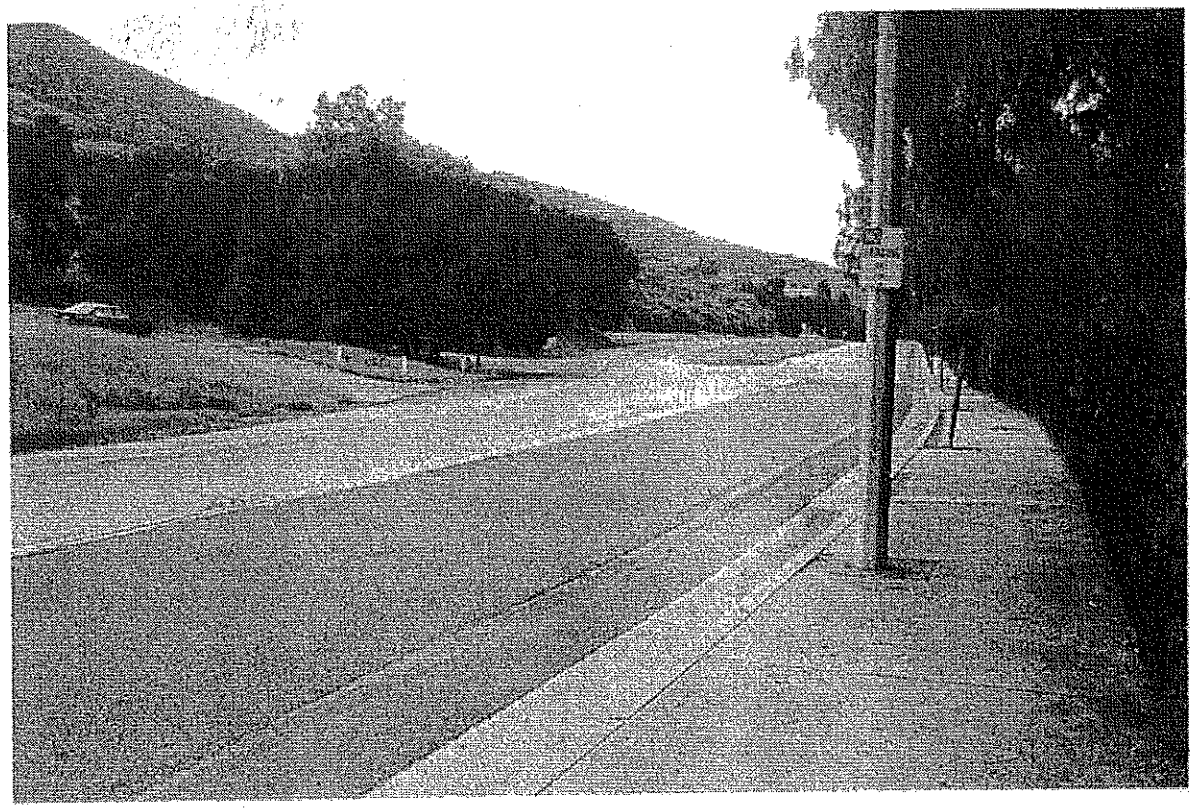
The ICU analysis of peak hour traffic conditions has been conducted for present conditions and for future conditions with and without the proposed project traffic volume. This traffic study also documents future traffic conditions with the proposed project and other potential land development projects in the study area.

CHAPTER 2 PROJECT DESCRIPTION

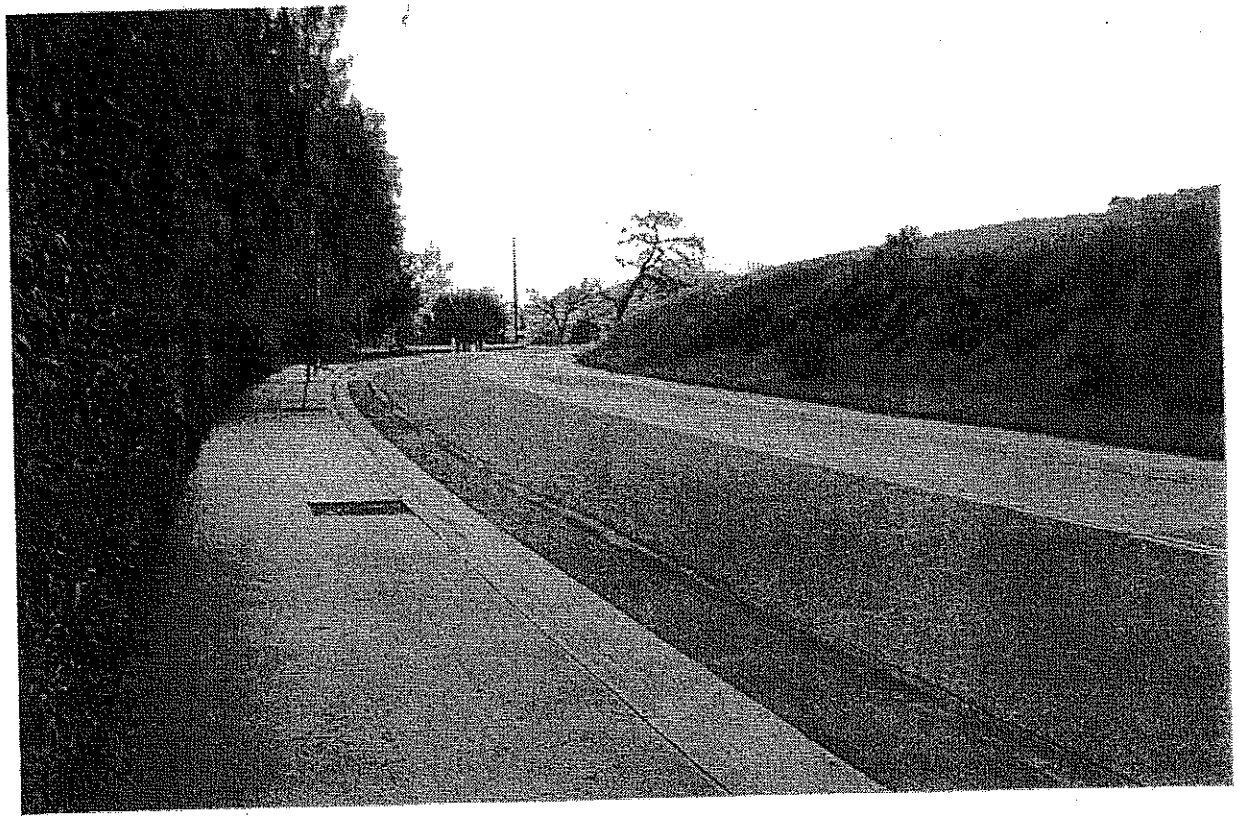
The applicant plans to develop a 96,479 square foot office building on approximately 5.17 acres of vacant property which is situated on the north side of Agoura Road between Kanan Road and Reyes Adobe Road in the City of Agoura Hills, as shown on Figure 1. Approximately 308 parking spaces are planned in a surface parking lot surrounding the proposed office building. Access to the site is planned via one driveway on Agoura Road. Figure 2 depicts the proposed site plan.

Based on the field survey of the sight distance, suitable visibility is available provided landscaping is maintained. Below are the sight distance photographs from the proposed project driveway on Agoura Road.

From driveway location looking west along Agoura Road.



From driveway location looking east along Agoura Road.



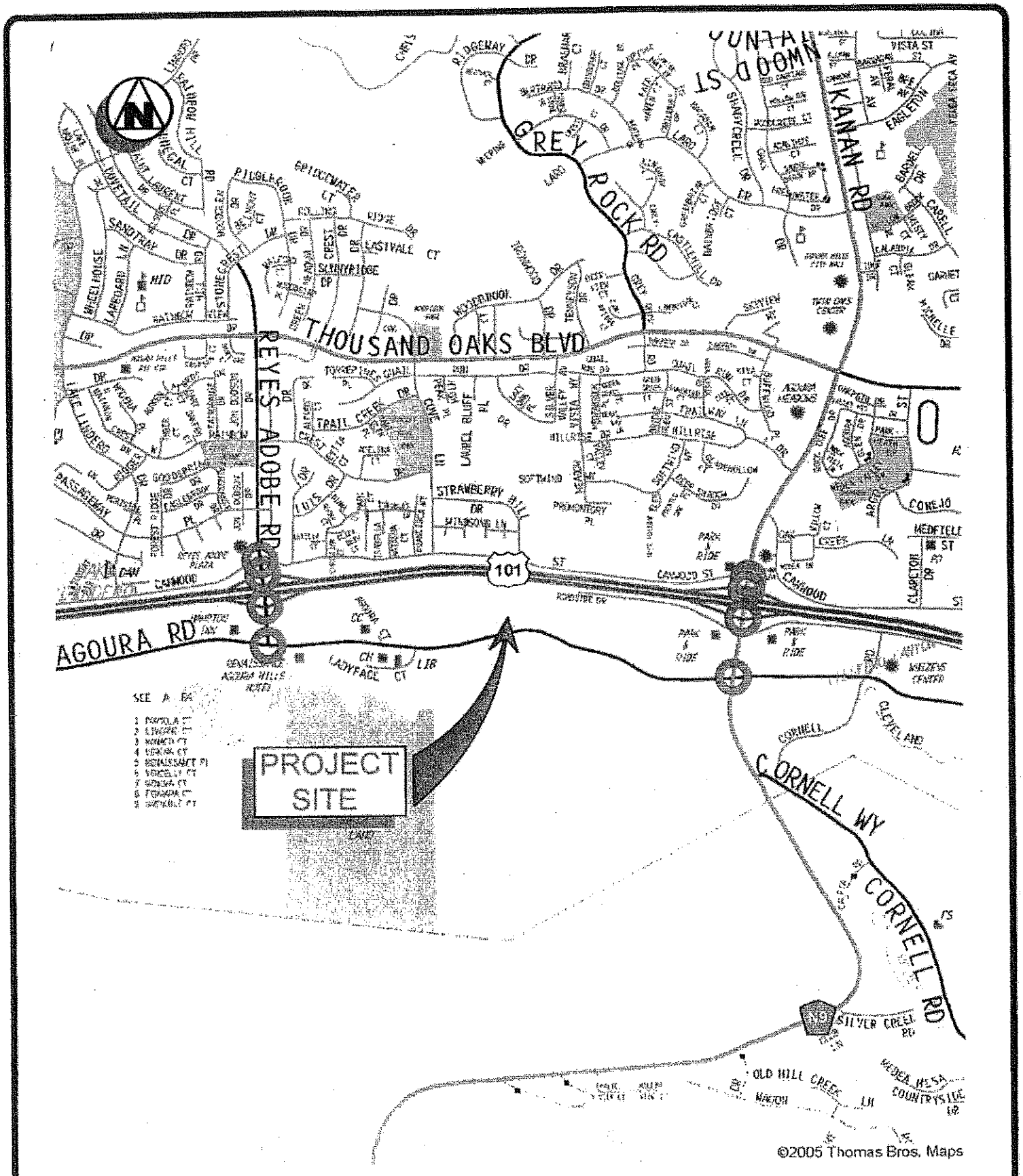


FIGURE 1

1/5/2005

PROJECT SITE LOCATION AND STUDY INTERSECTIONS

Overland Traffic Consultants, Inc.
25876 The Old Road #307, Santa Clarita, CA 91381
(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

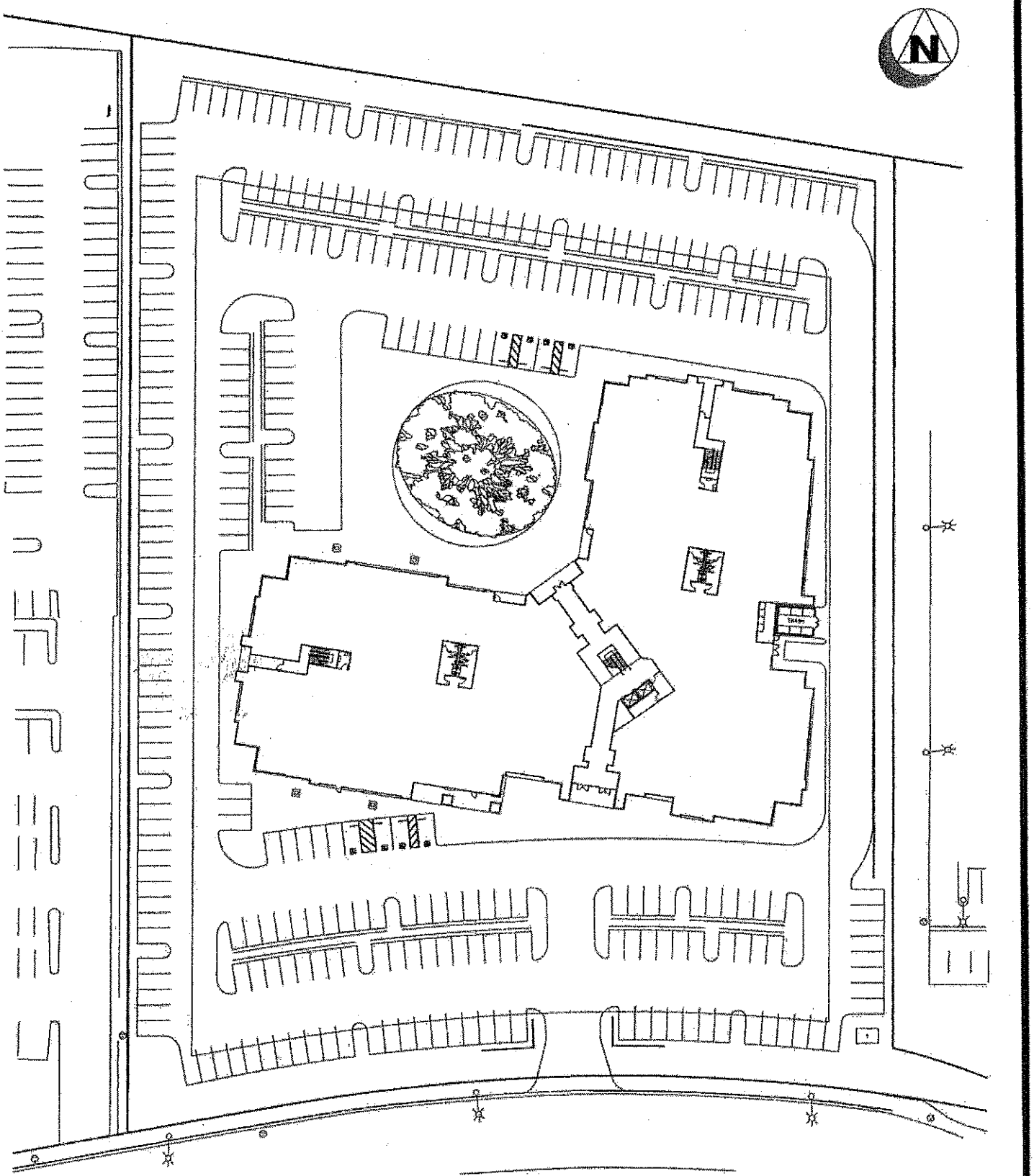


FIGURE 2

2/19/2005

PROJECT SITE LAYOUT

Overland Traffic Consultants, Inc.
25876 The Old Road #307, Santa Clarita, CA 91381
(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

CHAPTER 3 ENVIRONMENTAL SETTING

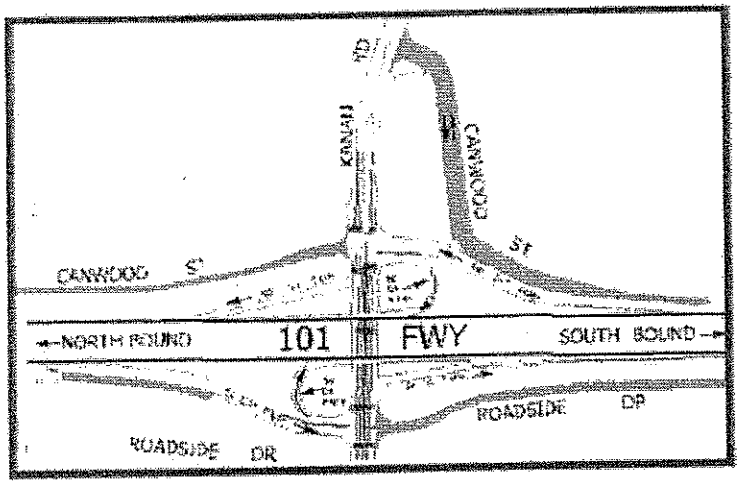
The project is located in the City of Agoura Hills along Agoura Road between Reyes Adobe Road and Kanan Road south of the Ventura Freeway. The land uses in the immediate vicinity of the project site include undeveloped land, office/industrial uses and a church on the south side of Agoura Road just west of the project site.

The Ventura Freeway (Interstate 101) is the regional transportation facility connecting the Ventura County area to the greater Los Angeles basin. This freeway provides four mixed-flow lanes with an auxiliary lane between ramp intersections. Project access to the freeway is provided by ramps located at Kanan Road and at Reyes Adobe Road. Average daily traffic volume on the Ventura Freeway at Reyes Adobe Road (Caltrans 2003) is approximately 187,000 vehicles per day (ADT) with approximately 7,300 vehicles per peak hour (VPH) southbound in the morning peak hour and 7,800 VPH northbound in the afternoon peak hour.

Agoura Road is an east-west secondary arterial and is the only roadway serving the proposed project. Agoura Road runs parallel to the 101 Freeway through the area from Calabasas on the east to Thousand Oaks on the west. Portions of the roadway have been improved as part of new land developments. Adjacent to the project site, Agoura Road currently provides one lane in each direction. On-street parking is not allowed.

Other key roadways in the area are Reyes Adobe Road and Kanan Road. Reyes Adobe Road provides local access between the developed areas north of the freeway to the freeway interchange. Kanan Road is a major north-south roadway connecting Thousand Oaks Boulevard, Lindero Canyon Road, Agoura Road, the 101 Freeway and Mulholland Highway further to the south.

Freeway interchange projects are planned for both Kanan Road and Reyes Adobe Road to relieve current traffic congestion. At Kanan Road the proposed project will eliminate all left hand turns on to the freeway adding much needed capacity for the estimated traffic growth in the area. An illustration is provided below showing the proposed interchange improvements along Kanan Road.



The planned improvements to Reyes Adobe Road consist primarily of expanding the bridge overpass to a 6-lane facility and adding bike lanes as shown below.

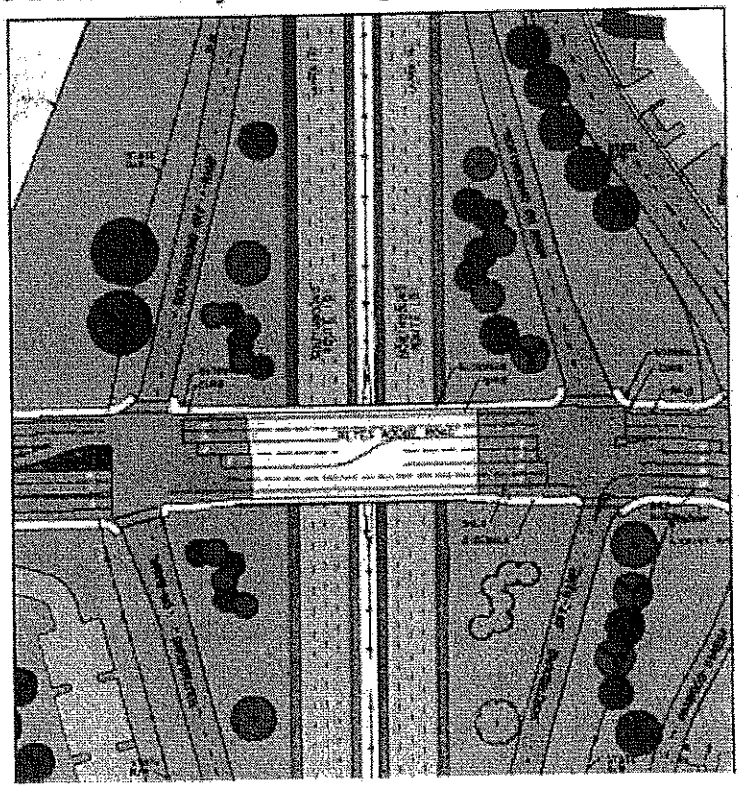


Figure 3 illustrates the study intersection locations, type of intersection traffic control and intersection lane configurations.

Transit Information

The closest public transportation in the study area is provided by Metro line 161 and LADOT Commuter Express Line 422. Both transit lines are accessible at Park-n-Ride lots located at Kanan Road near the 101 Freeway ramps. No direst transit service is provided along Agoura Road adjacent to the project site. Transit routes for Metro 161 and CE 422 are contained in Appendix A.

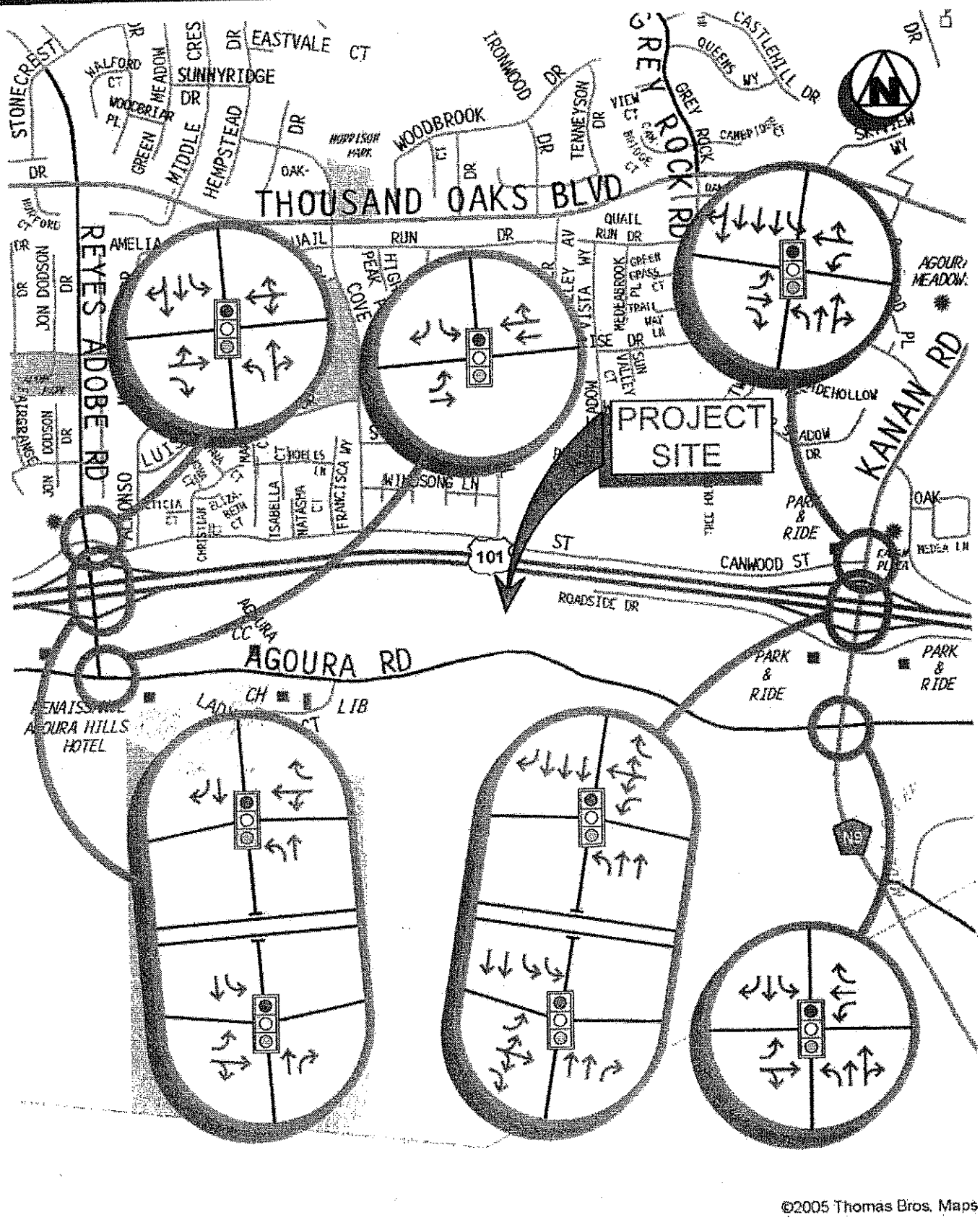


FIGURE 3

2/27/2005

STUDY INTERSECTION CHARACTERISTICS

Overland Traffic Consultants, Inc.
25876 The Old Road #307, Santa Clarita, CA 91381
(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

CHAPTER 4 PROJECT TRAFFIC

Traffic Generation

Traffic-generating characteristics of office buildings have been extensively survey by the Institute of Transportation Engineers (ITE). This database has been published in a handbook titled Trip Generation. The publication of these traffic generation studies has become the industry standard for estimating traffic volume by different land uses. These ITE studies indicate that a residential tract of the size associated with the proposed development generally exhibit the trip-making characteristics as shown by the equations provided in Table 1.

On the basis of these trip generation equations, estimates of the project's traffic were calculated as provided in Table 2. As shown, the proposed project could be expected to add an average of 1,298 vehicle trips per day with 182 morning trips and 187 afternoon trips to the roadway network.

Table 1
Project Trip Generation Rates
ITE 7TH Edition

Office - (per 1,000 square feet gross floor area)

Daily:	Ln (Trips) = 0.77 Ln (area) + 3.65
AM Peak Hour:	Ln (Trips) = 0.80 (area) + 1.55; In = 88%, Out = 12%
PM Peak Hour:	Trips = 1.12 (area) + 78.81; In = 17%, Out = 83%

Table 2
Estimated Project Traffic Generation

Proposed Land Use	Daily Traffic	AM Peak Hour Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out
96,479 square feet	1,298	182	160	22	187	32	155

Trip Distribution and Assignment

A primary factor affecting trip direction is the distribution of population, employment centers and shopping opportunities. The estimated directional distribution of the project traffic volume used in this analysis was determined based on the location of these land uses, the study area street and freeway facilities, and regional CMP data. Figure 4 illustrates the estimated project traffic distribution.

The assignment of the project traffic to the study intersections is shown in Figure 5. The resulting peak hour traffic volume assignments are shown in Figure 6 for the morning and afternoon peak hours at all the study intersections. This assignment of the project traffic provides the necessary level of detail to analyze the proposed project peak hour traffic impacts at the study locations.

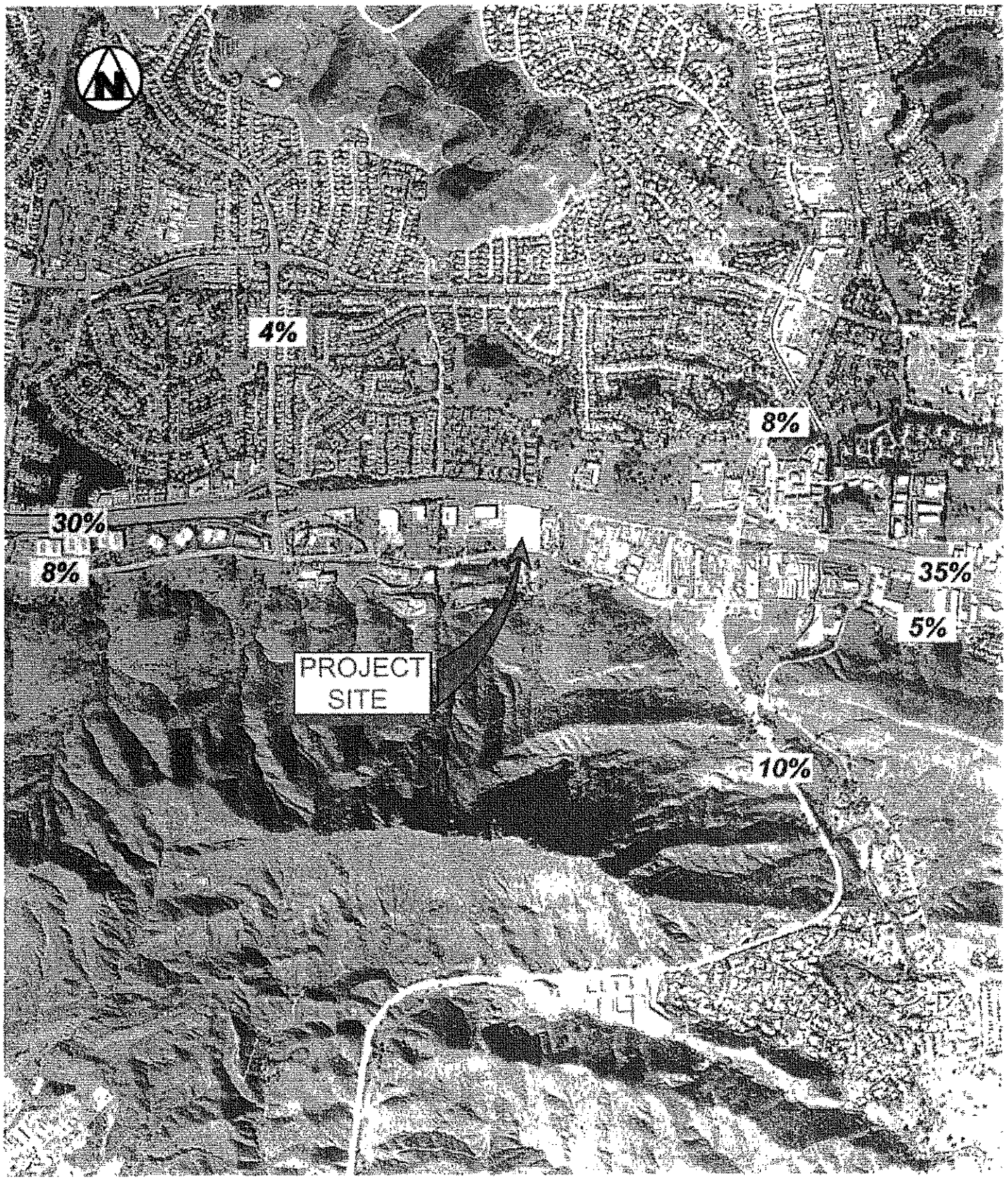


FIGURE 4

3/17/2005

PROJECT DISTRIBUTION

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(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

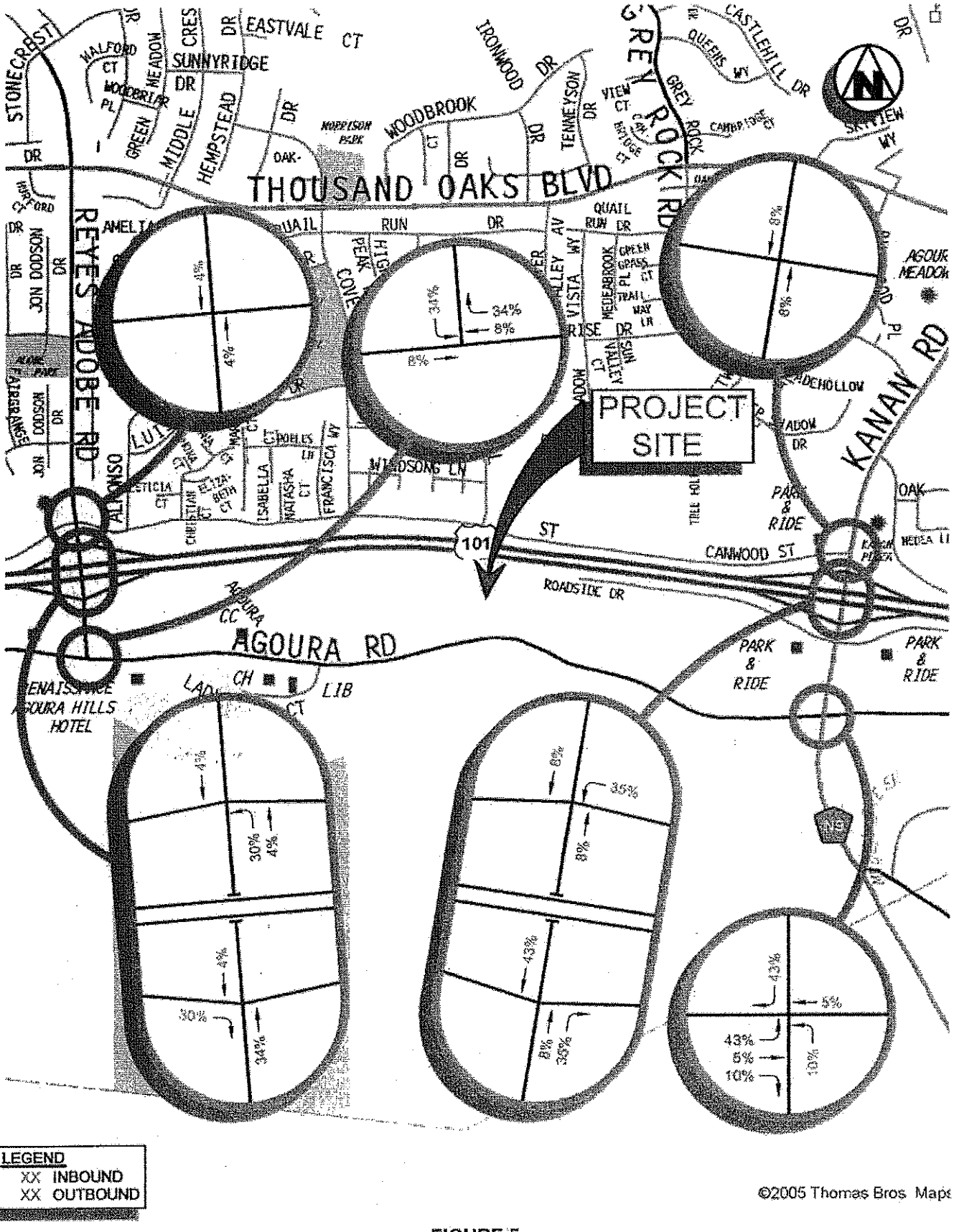

FIGURE 5

3/1/2005

PROJECT TRAFFIC ASSIGNMENT PERCENTAGES

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(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

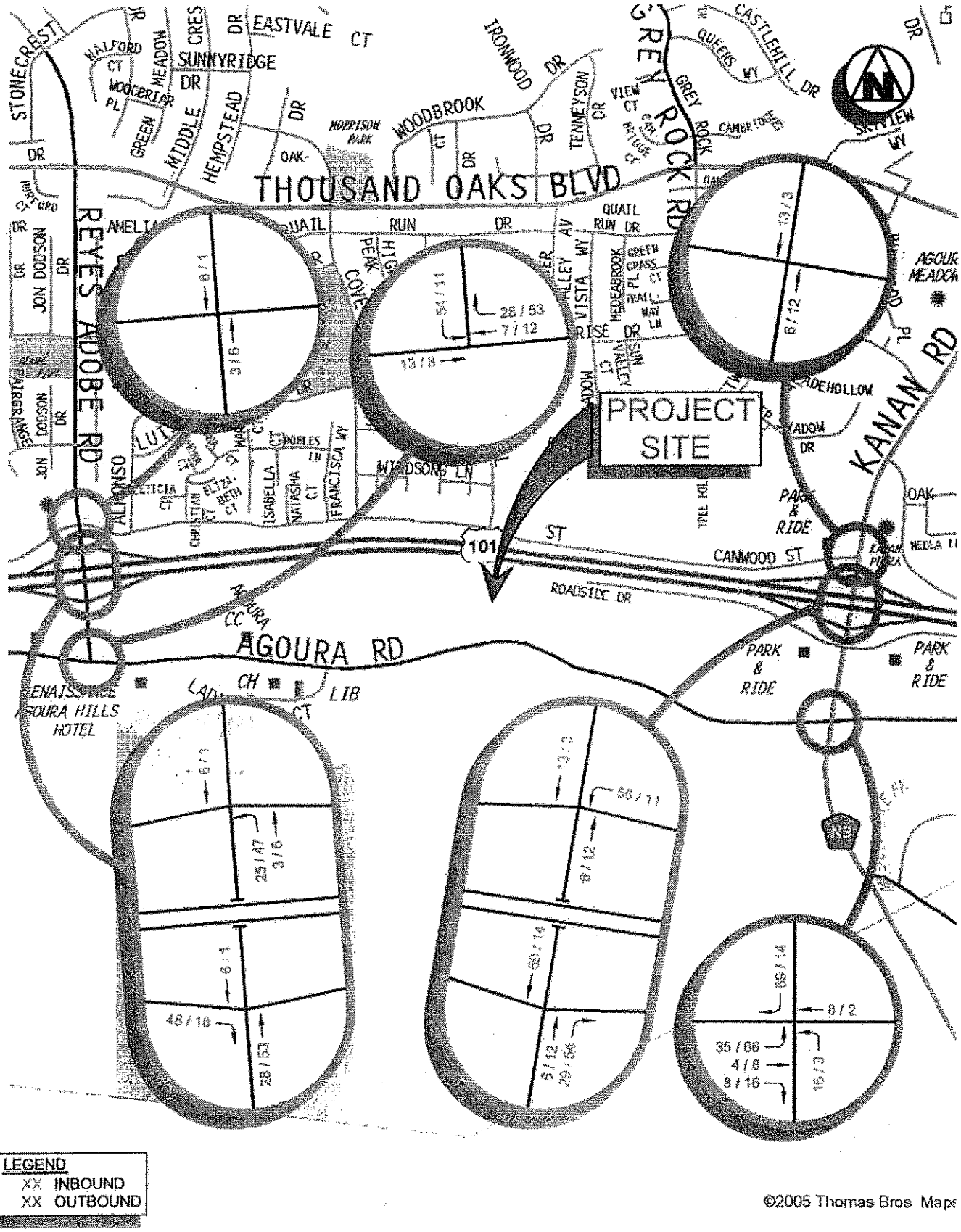

FIGURE 6

3/1/2005

PROJECT TRAFFIC VOLUMES
AM / PM PEAK HOURS

Overland Traffic Consultants, Inc.
25876 The Old Road #307, Santa Clarita, CA 91381
(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

CHAPTER 5 TRAFFIC CONDITIONS ANALYSIS

Peak Hour traffic volumes at the study intersections were based on traffic counts collected by the Traffic Solution, an independent traffic data collection company. The AM and PM peak period counts were collected between the hours of 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM at each intersection. The peak hour volume for each intersection was then determined independently by four highest consecutive 15-minute volumes. Existing peak hour traffic volume at each study intersection is illustrated in Figure 7 for the morning peak hour and Figure 8 for the afternoon peak hour. Data collection worksheets for the peak hour traffic counts are contained in Appendix B.

Analysis of Existing Traffic Conditions

The new traffic counts were used along with current intersection geometrics and traffic controls to determine the intersection operating conditions. The traffic analysis was then conducted through the use of a procedure termed the Intersection Capacity Utilization (ICU) methodology. All study intersections were evaluated using this methodology pursuant to the criteria established by the City of Agoura Hills.

The ICU procedure uses a ratio to compare the traffic volume to the capacity of an intersection. A volume-to-capacity ratio is defined as the proportion of an hour necessary to accommodate all the intersection traffic assuming all approaches were operating at capacity. ICU values provide an ideal tool for easily quantifying intersection operating characteristics. For example, if an intersection has an ICU value of 0.70, the intersection is operating at 70% capacity with 30% unused capacity.

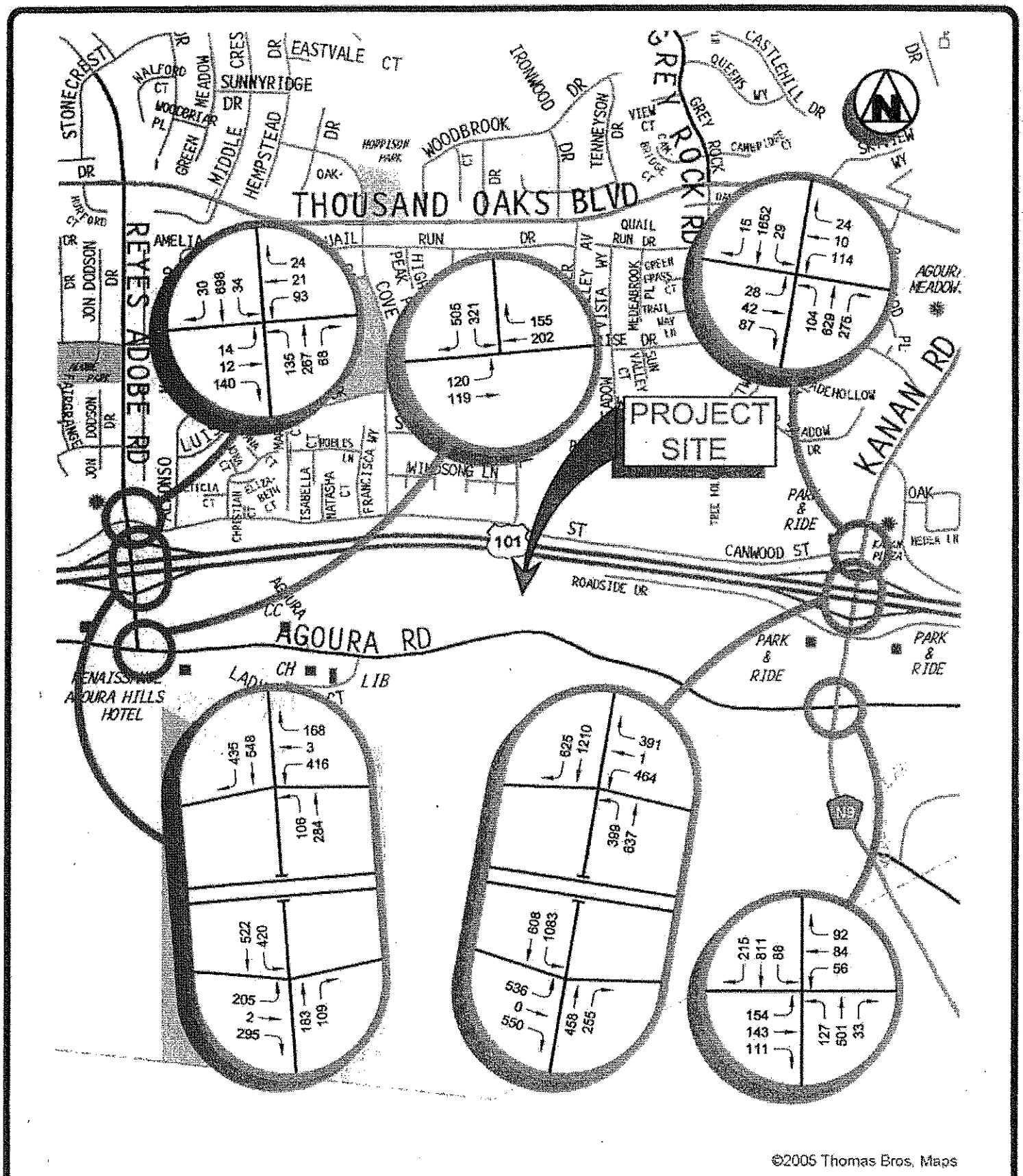

FIGURE 7

3/19/2005

EXISTING (2005) TRAFFIC VOLUMES
AM PEAK HOUR

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(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

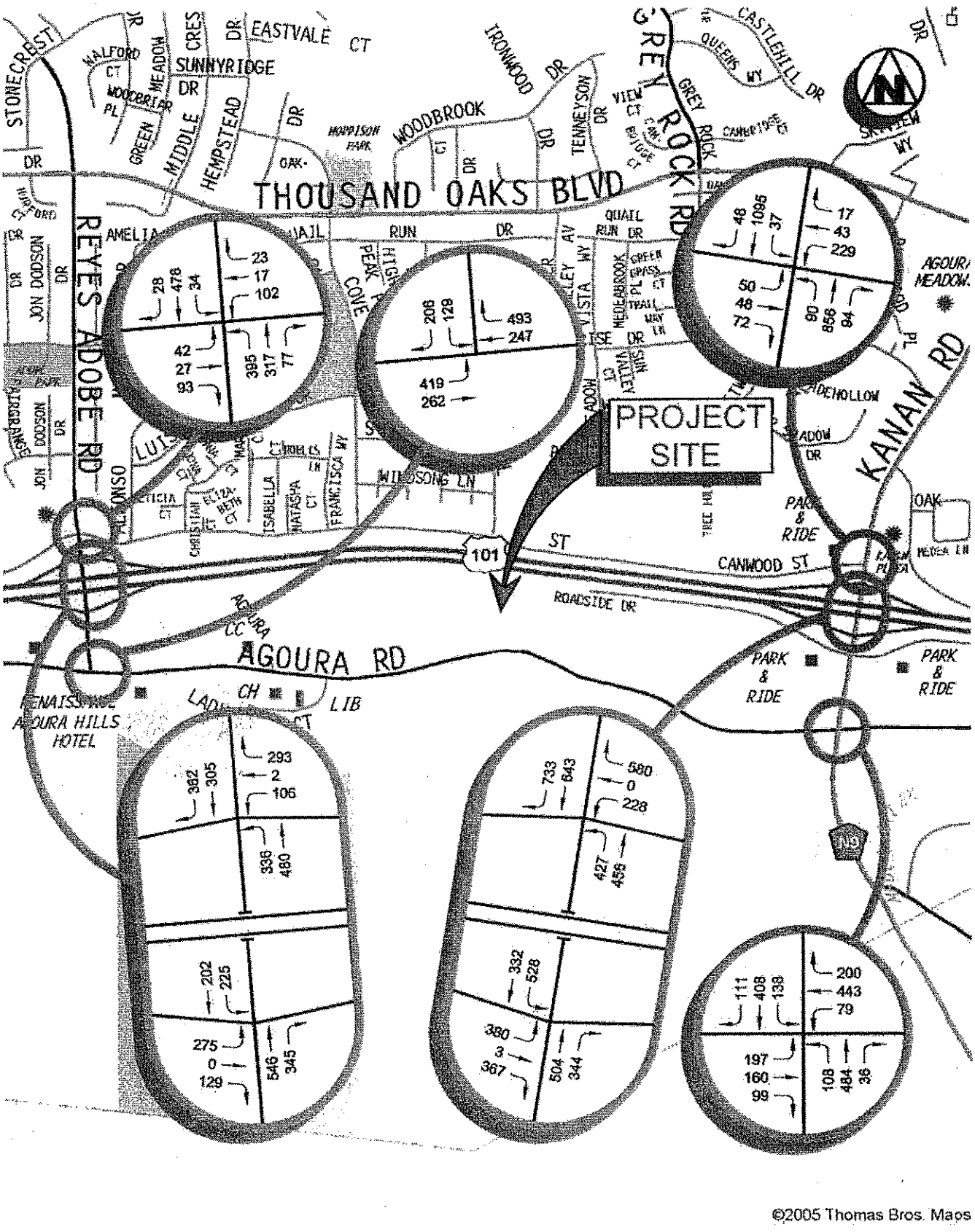

FIGURE 8

3/19/2005

EXISTING (2005) TRAFFIC VOLUMES
PM PEAK HOUR

Overland Traffic Consultants, Inc.
25876 The Old Road #307, Santa Clarita, CA 91381
(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

Intersection capacity is defined as the maximum hourly volume of traffic in the critical lanes which has a reasonable expectation of passing through an intersection under ideal roadway and traffic conditions. For planning purposes, lane capacity equates to 1,600 vehicles per hour per lane and 2,880 for double left-turn lanes.

The ICU ratios were calculated by dividing the hourly traffic volume by the lane capacity. Then the critical lane volumes (the highest combination of conflicting movements that must be accommodated) were added together. Finally, a ten percent (10%) critical clearance interval was added to the sum of the critical lane volumes to account for the appropriate clearance time between cross street movements.

Once the volume-to-capacity ratio (ICU value) has been calculated, operating characteristics are graded (A through F) to estimate the level of congestion and stability of the traffic flow. The term "Level of Service" (LOS) is used by traffic engineers to describe the quality of traffic flow. Definitions of the LOS grades as defined by the Los Angels County CMP are shown in Table 3.

Comparing the changes in the traffic conditions between the traffic growth scenarios provides the necessary information to determine if the growth in traffic volume creates a significant impact on the study intersections. It should be noted that the following impact analysis does not consider any changes to the existing intersection configuration (i.e., future highway dedications or roadway improvements) only the traffic growth is considered. According to the standards adopted by the City of Agoura Hills, a traffic impact is considered significant if the related increase in the ICU value equals or exceeds the thresholds shown below:

Criteria for Significant Traffic Impact (*)

LOS	Final ICU Value	Traffic Related Increase in ICU Value
D, E, F	> 0.801	+ 0.02 or more

Table 3

ICU Level of Service Definitions

LOS	Volume to Capacity (V/C) Ratio	Operating Conditions
A	0.00 – 0.60	At LOS A, there are no cycles that are fully loaded, and few are even close to loaded. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turning movements are easily made, and nearly all drivers find freedom of operation.
B	>0.60 – 0.70	LOS B represents stable operation. An occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel somewhat restricted with platoons of vehicles.
C	>0.70 – 0.80	In LOS C stable operation continues. Full signal cycle loading is still intermittent, but more frequent. Occasionally drivers may have to wait through more than one red signal indication, and back-ups may develop behind turning vehicles.
D	>0.80 – 0.90	LOS D encompasses a zone of increasing restriction, approaching instability. Delays to approaching vehicles may be substantial during short peaks within the peak period, but enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive back-ups.
E	>0.90 – 1.00	LOS E represents the most vehicles that any particular intersection approach can accommodate. At capacity (V/C = 1.00) there may be long queues of vehicles waiting upstream of the intersection and delays may be great (up to several signal cycles).
F	>1.00	LOS F represents jammed conditions. Back-ups from location downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration; hence, volumes carried are not predictable. V/C values are highly variable, because full utilization of the approach may be prevented by outside conditions.