COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
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TOM BURNS, PLANNING DIRECTOR

NOTICE OF ENVIRONMENTAL REVIEW PERIOD

SANTA CRUZ COUNTY

APPLICANT: Ron Powers of Powers Land Planning. for Corte Cabrillo LLC

APPLICATION NO.: **05-0388**

APN: **037-151-12 & -13**

The Environmental Coordinator has reviewed the Initial Study for your application and made the following preliminary determination:

XX Negative Declaration
(Your project will not have a significant impact on the environment.)

XX Mitigations will be attached to the Negative Declaration.

_____ No mitigations will be attached.

_____ Environmental Impact Report
(Your project may have a significant effect on the environment. An EIR must be prepared to address the potential impacts.)

As part of the environmental review process required by the California Environmental Quality Act (CEQA), this is your opportunity to respond to the preliminary determination before it is finalized. Please contact Matt Johnston, Environmental Coordinator at (831) 454-3201, if you wish to comment on the preliminary determination. Written comments will be received until 5:00 p.m. on the last day of the review period.

Review Period Ends: August **1,2007**

Randall Adams
Staff Planner

Phone: **454-3218**

Date: June **28,2007**

NAME: Corte Cabrillo LLC
APPLICATION: 05-0388
A.P.N: 037-151-12 & -13

NEGATIVE DECLARATION MITIGATIONS

A. In order to ensure that the mitigation measures B - **X** (below) are communicated to the various parties responsible for constructing the project, prior to any disturbance on the property the applicant shall convene a pre-construction meeting on the site. The following parties shall attend: the applicant, grading contractor supervisor, the project arborist, and Santa Cruz County Resource Planning staff. The temporary construction fencing demarcating the disturbance envelope, tree protection fencing, and silt fencing will be inspected at that time. Results of pre-construction bird surveys will also be collected at that time.

B. In order to prevent erosion, off site sedimentation, and pollution of creeks, prior to start of site work the applicant shall submit a detailed erosion control plan for review and approval by Resource Planning staff. The plan shall include a clearing and grading schedule, clearly marked disturbance envelope, revegetation specifications, temporary road surfacing and construction entry stabilization and details of temporary drainage control.

C. To prevent drainage discharges from carrying silt, grease, and other Contaminants from paved surfaces into nearby waterways, the applicant/owner shall maintain the silt and grease traps in the storm drain system according to the following monitoring and maintenance procedures:

a. The traps shall be inspected to determine if they need cleaning or repair prior to October 15 each year at a minimum;
b. A brief annual report shall be prepared by the trap inspector at the conclusion of each October inspection and submitted to the drainage section of the department of public works within 5 days of inspection. This monitoring report shall specify any repairs that have been done or that are needed to allow the trap to function adequately.

D. In order to prevent impacts to nesting raptors, if the project is underway outside of the time period of August 1 to October 15, the project biologist shall perform surveys within two weeks of the expected start date. If protected raptors are nesting within the project area, either disturbance will be avoided until young have fledged, or a radius of "no disturbance" shall be implemented after consultation with California Department of Fish and Game staff.

E. In order to minimize impacts to air quality:

a. Standard dust control BMPs shall be implemented during all grading and demolition work.
b. In order to ensure that the one hour air quality threshold for the pollutant acrolein is not exceeded during demolition and paving, prior to the issuance of the grading permit, the applicant shall modify the grading plans to include notes incorporating the construction conditions given by the Monterey Bay Air Pollution Control District (MBAPCD) as follows:

i. All pre-1994 diesel equipment shall be retrofitted with EPA certified diesel oxidation catalysts ***or*** all such equipment shall be fueled with B99 diesel fuel;
ii. Applicant shall retain receipts for purchases of catalysts or b99 diesel fuel until completion of the project;
iii. Applicant shall allow MBAPCD to inspect receipts and equipment throughout the project.

Alternatively, the applicant may submit a health risk assessment to the MBAPCD for review and approval. Any recommendations and requirements of the MBAPCD will become conditions of constructing the project.

F. In order to prevent impacts from noise generated by vehicular traffic on Soquel Drive, the applicant shall submit a letter from the acoustical engineer verifying that the plans reflect the recommendations cited in the Noise Study Report by Environmental Consulting Services, dated June 8th, 2007.

G. In order to prevent impacts to mature trees that are to be retained, the applicant shall submit a letter from the project arborist verifying that the plans reflect the recommendations cited in the arborist report by Maureen Hamb, dated January 12th, 2006. The project arborist shall be included in the preconstruction meeting to verify that all tree protection measures have been installed prior to clearing or grading activities. Prior to final inspection on the building permit, the project arborist shall provide the County with a letter indicating the recommendations of the arborist report have been implemented.

Environmental Review
Initial Study

Application Number: 05-0388

Date: June 26th, 2007
Staff Planner: Randall Adams

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: Powers Land Planning

APN: 037-151-12 & 13 (Attachment 1)

OWNER: Corte Cabrillo LLC

SUPERVISORAL DISTRICT: 2

LOCATION: North-east corner of Soquel Drive and Corte Cabrillo in Aptos. (6233 & 6255 Soquel Drive) (Attachment 1)

SUMMARY PROJECT DESCRIPTION:

Proposal to create **28** residential townhouse lots with common open space and construct **28** townhouses.

Requires a General Plan Amendment and Rezoning to change a portion of APN 037-151-12 from Commercial Office/PA to Urban Medium Residential/RM-4, a Subdivision, a Residential Development Permit, Roadway Abandonment of approximately 78 sq. ft. of Soquel Drive, an amendment to Commercial Development Permit D-73-8-15, a Roadway/Roadside Exception, a Preliminary Grading Approval, and a Soils Report Review.

ALL OF THE FOLLOWING POTENTIAL ENVIRONMENTAL IMPACTS ARE EVALUATED IN THIS INITIAL STUDY. CATEGORIES THAT ARE MARKED HAVE BEEN ANALYZED IN GREATER DETAIL BASED ON PROJECT SPECIFIC INFORMATION.

X Geology/Soils	X Noise
____ Hydrology/Water Supply/Water Quality	Air Quality
____ Biological Resources	____ Public Services & Utilities
____ Energy & Natural Resources	____ Land Use, Population & Housing
____ Visual Resources & Aesthetics	____ Cumulative Impacts
____ Cultural Resources	____ Growth Inducement
____ Hazards & Hazardous Materials	____ Mandatory Findings of Significance
X Transportation/Traffic	

DISCRETIONARY APPROVAL(S) BEING CONSIDERED

__X__ General Plan Amendment	__X__ Grading Permit
__X__ Land Division	Riparian Exception
__X__ Rezoning	_____ Other:
__X__ Development Permit	_____
_____ Coastal Development Permit	_____

NON-LOCAL APPROVALS

Other agencies that must issue permits or authorizations:

ENVIRONMENTAL REVIEW ACTION

On the basis of this Initial Study and supporting documents:

___ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

___ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the attached mitigation measures have been added to the project. A MITIGATED NEGATIVE DECLARATION will be prepared.

___ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Matt Johnston

6/26/07
Date

For: Claudia Slater
Environmental Coordinator

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS
Parcel Size: **4.01** acres (in two parcels)
Existing Land Use: Commercial office building, single family residence, and vacant.
Vegetation: Mixed trees and grasses
Slope in area affected by project: _X_ **0 - 30%** ___ **31 – 100%**
Nearby Watercourse: Tannery Gulch
Distance To: 500 feet to the east

ENVIRONMENTAL RESOURCES AND CONSTRAINTS
Groundwater Supply: N/A
Water Supply Watershed: Not mapped
Groundwater Recharge: Not mapped
Timber or Mineral: Not mapped
Agricultural Resource: Not mapped
Biologically Sensitive Habitat: Not mapped
Fire Hazard: Not mapped
Floodplain: Not mapped
Erosion: Not mapped
Landslide: Not mapped
Liquefaction: Low potential
Fault Zone: Not mapped
Scenic: Mapped scenic resource
Historic: Not mapped
Archaeology: Not mapped
Noise Constraint: Soquel Drive
Electric Power Lines: N/A
Solar Access: Adequate
Solar Orientation: South
Hazardous Materials: N/A

SERVICES
Fire Protection: Central Fire Protection District
School District: Soquel Elementary School District
Sewage Disposal: Santa Cruz County Sanitation District
Drainage District: Zone 5 Flood Control District
Project Access: Corte Cabrillo (off Soquel Drive)
Water Supply: Soquel Creek Water District

PLANNING POLICIES
Zone District: RM-4 & PA (Attachment 1)
General Plan: R-UM & C-0 (Attachment 1)
Special Designation: None
Urban Services Line: _X_ Inside ___ Outside
Coastal Zone: ___ Inside _X_ Outside

PROJECT SETTING AND BACKGROUND:

The subject property is approximately 4 acres located on the northeast corner of the intersection of Soquel Drive and Corte Cabrillo, with the majority of the available frontage on Corte Cabrillo. An existing medical office building is located at the southwest corner of the properly and a single family residence with detached outbuildings is located on the east side of the property with an existing driveway from Soquel Drive. The remaining area of the subject property is vacant and is wooded with a mixture of oaks, pines, cypress, and eucalyptus trees. Multi-family development exists to the west and south (across Soquel Drive), with single family residences located to the north and a religious facility to the east.

DETAILED PROJECT DESCRIPTION:

This application is a proposal to construct 28 townhouses on an approximately 4 acre property with an existing commercial office building and single family dwelling. (Attachment 2) The single family dwelling and driveway access to Soquel Drive will be demolished as a component of this proposal. The commercial office building will be retained on a separate parcel and a portion of the site will be rezoned from the PA (Professional and Administrative Offices) zone district to the RM-4 (Multi-family Residential) zone district consistent with the remainder of the property. The General Plan land use designation will be amended from C-0 (Professional and Administrative Offices) to R-UM (Urban Medium Density Residential) for this area. An amendment to Commercial Development Permit D-73-8-15 is included to reflect the modified commercial site and associated improvements.

The proposed residential development will be accessed from Corte Cabrillo. Seven townhouse units will be accessed directly from Corte Cabrillo and the remaining units will have vehicular access from interior roadways. Pedestrian circulation is proposed throughout the site with common area open space and a staircase down to Soquel Drive from the interior of the development. Interior roadways will require an exception to the County Design Criteria, with reduced widths, sidewalks, and landscaping strips. Corte Cabrillo will require an exception due to the lack of a separated sidewalk across the street from the proposed development. A small (approx. 78 square feet) triangular section of Soquel Drive (at the rear of Lots 14 & 15) is requested to be abandoned to allow for a better configuration of rear yard areas.

Grading will be required to prepare the site for development and to ensure that the site is properly drained. Grading volumes will be approximately 6,350 cubic yards (cut) and 1,080 cubic yards (fill), with the remaining 5,270 cubic yards to be exported off site. Stepped retaining walls will be constructed at the east side of the development, with a maximum combined height of 8.5 feet. Many of the trees will be removed due to age, disease, and site disturbance due to construction. Replacement trees will be installed in the common areas where space allows.

Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

III. ENVIRONMENTAL REVIEW CHECKLIST

A. Geology and Soils

Does the project have the potential to:

1. Expose people or structures to potential adverse effects, including the risk of material loss, injury, or death involving:

   A. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or as identified by other substantial evidence? — X

   B. Seismic ground shaking? — X

   C. Seismic-related ground failure, including liquefaction? — **X**

   D. Landslides? — X

All of Santa Cruz County is subject to some hazard from earthquakes. However, the project site is not located within or adjacent to a county or State mapped fault zone. A geotechnical investigation for the proposed project was performed by Tharp & Associates, dated 2/05 (Attachment 3). The report concluded that seismic shaking can be managed through proper foundation design, that landslides are not a potential hazard, and that the potential for liquefaction is low. The report has been reviewed and accepted by Environmental Planning staff (Attachment 4).

2. Subject people or improvements to damage from soil instability as a result of on- or off-site landslide, lateral spreading, to subsidence, liquefaction, or structural collapse? — X

The geotechnical report cited above did not identify a significant potential for damage caused by any of these hazards.

3. Develop land with a slope exceeding 30%? — X

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

There are slopes that exceed 30% within the Soquel Drive right of way. No residential structures are proposed on slopes in excess of 30%. Site improvements and the placement of fill for the construction of a stairway will occur in the location of the current driveway for the single family dwelling on APN 037-151-13.

4.	Result in soil erosion or the substantial loss of topsoil?		X	

Some potential for erosion exists during the construction phase of the project, however, this potential is minimal because the project site is gently sloped and standard erosion controls are a required condition of the project. Prior to approval of a grading or building permit, the project must have an approved Erosion Control Plan, which will specify detailed erosion and sedimentation control measures. The plan will include provisions for disturbed areas to be planted with ground cover and to be maintained to minimize surface erosion.

5.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code(1994), creating substantial risks to property?		X	

The geotechnical report for the project did not identify any elevated risk associated with expansive soils.

6.	Place sewage disposal systems in areas dependent upon soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems?		X	

No septic systems are proposed. The project will connect to the Santa Cruz County Sanitation District, and the applicant will be required to pay standard sewer connection and service fees that fund sanitation improvements within the district as a Condition of Approval for the project.

7.	Result in coastal cliff erosion?			X

B. Hydrology, Water Supply and Water Quality

Does the project have the potential to:

1.	Place development within a 100-year flood hazard area?		X	

According to the Federal Emergency Management Agency (FEMA) National Flood

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

Insurance Rate Map, dated March 2, 2006, no portion of the project site lies within a 100-year flood hazard area.

2. Place development within the floodway resulting in impedance or redirection of flood flows? — X

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated March 2, 2006, no portion of the project site lies within a 100-year flood hazard area.

3. Be inundated by a seiche or tsunami? — X

4. Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit, or a significant contribution to an existing net deficit in available supply, or a significant lowering of the local groundwater table? — X

The project will obtain water from Soquel Creek Water District and will not rely on private well water. Although the project will incrementally increase water demand, Soquel Creek Water District has indicated that adequate supplies are available to serve the project as the project is required to participate in the District's offset program (Attachment 5). The project is not located in a mapped groundwater recharge area.

5. Degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion). — X

Runoff from this project may contain small amounts of chemicals and other household contaminants. No commercial or industrial activities are proposed that would contribute a significant amount of contaminants to a public or private water supply. Potential siltation from the proposed project will be mitigated through implementation of erosion control measures. A silt and grease trap, and a plan for maintenance, will be required to reduce this impact to a less than significant level.

6. Degrade septic system functioning? — X

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
7. Alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which could result in flooding, erosion, or siltation on or off-site?			X	

The proposed project will alter the existing drainage pattern of the site. As a component of the drainage plan, water from an existing subsurface drainage along the east side of Corte Cabrillo will be collected into the storm drains for the proposed development. Storm water runoff will be captured, treated, and discharged into existing storm drainage facilities in Corte Cabrillo and Soquel Drive to prevent potential impacts.

8. Create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems, or create additional source(s) of polluted runoff?			X	

Drainage Calculations prepared by Bowman & Williams, dated 7/15/06 (Attachment 6), have been reviewed for potential drainage impacts by the Department of Public Works (DPW) Drainage Section staff. The calculations show that the net increase in runoff will be **2.44** cubic feet per second for a ten year storm event before considering the detention systems. The runoff rate from the property is proposed to be controlled by pervious paving and on-site detention to a rate that does not exceed the pre-development rate. DPW staff have determined that existing storm water facilities are adequate to handle the increase in drainage associated with the project (Attachment 7). Refer to response B-5 for discussion of urban contaminants and/or other polluting runoff.

9. Contribute to flood levels or erosion in natural water courses by discharges of newly collected runoff?			X	

See response B-8 above.

10. Otherwise substantially degrade water supply or quality?			X	

A silt and grease trap, and a plan for maintenance, will be required to minimize the effects of urban pollutants.

Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

C. Biological Resources

Does the project have the potential **to:**

1.	Have an adverse effect on any species identified as a candidate, sensitive, or special status species, in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?	**X**

According to the California Natural Diversity Data Base (CNDDB), maintained by the California Department of Fish and Game, there are no known special status plant or animal species in the site vicinity, and there were no special status species observed in the project area. However, due to the proposed tree removals, it will be necessary to determine the presence of special status bird species in the trees that are proposed to be removed and to adjust the timing of tree removals to avoid nesting periods for these species.

2.	Have an adverse effect on a sensitive biotic community (riparian corridor), wetland, native grassland, special forests, intertidal zone, etc.)?	**X**

The site is not mapped as containing biotic resources and no sensitive biotic communities were identified on the project site.

3.	Interfere with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native or migratory wildlife nursery sites?	**X**

The proposed project does not involve any activities that would interfere with the movements or migrations of fish or wildlife, or impede use of a known wildlife nursery site.

4.	Produce nighttime lighting that will illuminate animal habitats?	**X**

The subject property is located in an urbanized area and is surrounded by existing residential development that currently generates nighttime lighting. There are no

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

sensitive animal habitats within or adjacent to the project site.

5.	Make a significant contribution to the reduction of the number of species of plants or animals?		X	
6.	Conflict with any local policies or ordinances protecting biological resources (such as the Significant Tree Protection Ordinance, Sensitive Habitat Ordinance, provisions of the Design Review ordinance protecting trees with trunk sizes of 6 inch diameters or greater)?		X	

Although the project has been designed to preserve as many existing trees as possible, the removal of ***86*** trees in excess of 6 inches in diameter is proposed. An arborist's report and update letter, prepared by Maureen Hamb, dated 6/17/05 & 1/12/06 (Attachment 8) were submitted to evaluate the health of the trees and to identify trees that were suitable for preservation. Per the arborist, many of the trees are in fair to poor health due to disease, decay, and insect activity, with some of the trees having died since the time of application. The arborist has identified tree protection measures to protect the trees suitable for preservation that have been incorporated into the project design. Adherence to the tree protection measures and the planting of 75 replacement trees throughout the development will mitigate for the proposed tree removals.

7.	Conflict with the provisions of an adopted Habitat Conservation Plan, Biotic Conservation Easement, or other approved local, regional, or state habitat conservation plan?			X

D. Energy and Natural Resources

Does the project have the potential to:

1.	Affect or be affected by land designated as "Timber Resources" by the General Plan?			X

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
2. Affect or be affected by lands currently utilized for agriculture, or designated in the General Plan for agricultural use?				X

The project site is not currently being used for agriculture and no agricultural uses are proposed for the site or surrounding vicinity.

3. Encourage activities that result in the use of large amounts of fuel, water, or energy, or use of these in a wasteful manner?				X
4. Have a substantial effect on the potential use, extraction, or depletion of a natural resource (i.e., minerals or energy resources)?				X

E. Visual Resources **and** Aesthetics
Does the project have the potential to:

1. Have an adverse effect on a scenic resource, visual obstruction of th resource?			X	

The ject is located within a mapped scenic resource area, as designated in th County's General Plan (1994). However, no p blic scenic resources can be identified on the ec site or within the project area. The nly vie that will be affected the project are those from private y d f ad that are not designated as scenic roads in the County General lan. County visual resource protection regulations only p to public viewsheds.

2. Substantially damage scenic resources, within a d ii corridor or public view shed area including, but not lir to, rees, rock g d h ildi ?			X	

See response E-I above. The j site is not located along a y designated scenic road.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
3. Degrade the existing visual character or quality of the site and its surroundings, including substantial change in topography or ground surface relief features, and/or development on a ridge line?			X	

The existing visual setting is a residential neighborhood with an existing commercial office building. The proposed project is designed and landscaped so as to fit into this setting.

4. Create a new source of light or glare which would adversely affect day or nighttime views in the area?			X	

The project will create an incremental increase in night lighting. However, this increase will be small, and will be similar in character to the lighting associated with the surrounding existing uses.

5. Destroy, cover, or modify any unique geologic or physical feature?			X	

There are no unique geological or physical features on or adjacent to the site that would be destroyed, covered, or modified by the project.

F. Cultural Resources

Does the project have the potential to:

1. Cause an adverse change in the significance of a historical resource as defined in CEQA Guidelines 15064.5?			X	

The existing structure(s) on the property is not designated as a historic resource on any federal, State or local inventory.

2. Cause an adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines 15064.5?			X	

The site is not mapped as containing archaeological resources and no archeological resources have been identified in the project area. Pursuant to County Code Section 16.40.040, if at any time in the preparation for or process of excavating or otherwise disturbing the ground, any human remains of any age, or any artifact or other evidence of a Native American cultural site which reasonably appears to exceed 100 years of

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

age are discovered, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.

3.	Disturb any human remains, including those interred outside of formal cemeteries?		X	

Pursuant to Section 16.40.040 of the Santa Cruz County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report shall be prepared and representatives of the local Native California Indian group shall be contacted. Disturbance shall not resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established.

4.	Directly or indirectly destroy a unique paleontological resource or site?			X

G. Hazards and Hazardous M

Does the project have the er to:

1.	Create a significant hazard to the public or the environment as a result of :h routine tı sto use or di: ıl of h materials, ɔt including gasoline or other motor fuels?			**X**
2.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X

The project site is not included on the 1/12/07 list of hazardous sites in Santa Cruz County compiled pursuant to the specified code.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
3. Create a safety hazard for people residing or working in the project area as a result of dangers from aircraft using a public or private airport located within two miles of the project site?				X
4. Expose people to electro-magnetic fields associated with electrical transmission lines?				X
5. Create a potential fire hazard?			X	

The project design incorporates all applicable fire safety code requirements and will include fire protection devices as required by the local fire agency.

6. Release bio-engineered organisms or chemicals into the air outside of project buildings?				X

H. Transportation/Traffic

Does the project have the potential to:

1. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			X	

A traffic study and update letter for the proposed development has been prepared by Higgins Associates, dated **12/21/05** and **10/20/06** (Attachment 9). According to the traffic engineer, the project will create an incremental increase in traffic on nearby roads, intersections, and at the ramps of Highway **1** at the Park Avenue exit **(268** new trips, including **21** morning peak trips and **28** evening peak trips). The study concludes that this additional traffic (including cumulative conditions for growth within the area) will not result in significant traffic impacts to the surrounding area and Level of Service for any intersection will not drop to D or below as a result of the project. The project will add considerably less than **1%** of the existing traffic to the Highway **1** segments, which already operate at E or F during peak hours. The additional traffic, therefore, does not reach the thresholds given in the General Plan that define when impacts are considered to be significant.

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The traffic study identified lengthy delays for the lefl turn movement from Corte Cabrillo onto eastbound Soquel Drive. This left turn movement is indicated as prohibited by a right turn only sign, but no physical barrier exists to prevent left turns. The study originally recommended the construction of median channelization with re-striping and modification of the intersection to prohibit left turns from Corte Cabrillo onto eastbound Soquel Drive while allowing lefl turns from eastbound Soquel Drive onto Corte Cabrillo. The update letter indicates that the intersection conforms to CalTrans stopping sight distance criteria and that restriction of lefl turn movements is not necessary at this location.

The Department of Public Works, Road Engineering section has reviewed and accepted the traffic study and update letter.

2.	Cause an increase in parking demand which cannot be accommodated by existing parking facilities?		X	

The project meets the code requirements for the required number of parking spaces and therefore new parking demand will be accommodated on site.

3.	Increase hazards to motorists, bicyclists, or pedestrians?		**X**	

The proposed project will include exceptions to the County Design criteria for the interior roadways. The County standard for new roadways is a 56 foot wide right of way with parking, sidewalks, and landscape strips on both sides. The project design includes an exception to reduce the interior roadway to a **24** foot wide paved surface with no parking along the roadway outside of marked stalls. **A** pedestrian walkway is proposed on one side of the roadway and landscaping is located throughout the project site. On street parking has been limited to marked spaces and adequate pedestrian circulation has been provided throughout the site which will prevent potential hazards to motorists, bicyclists, and/or pedestrians.

4.	Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the county congestion management agency for designated intersections, roads or highways?		**X**	

See response H-1 above.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

I. Noise

Does the project have the potential to:

1. Generate a permanent increase in ambient noise levels in the project vicinity above levels existing without the project? — X

The project will create an incremental increase in the existing noise environment. However, this increase will be small, and will be similar in character **to** noise generated by the surrounding existing uses.

2. Expose people to noise levels in excess of standards established in the General Plan, or applicable standards of other agencies? — X

Per County policy, average hourly noise levels shall not exceed the General Plan threshold of 50 Leq during the day and 45 **Leq** during the nighttime. Impulsive noise levels shall not exceed 65 db during the day or 60 db at night. An acoustic study has been submitted (Attachment 10) which states that traffic noise in portions of the project site adjacent to Soquel Drive can exceed these standards. The project acoustic engineer has recommended construction techniques for the residential buildings and fencing that will attenuate the traffic noise in order achieve compliance with General Plan noise standards.

3. Generate a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? — X

Noise generated during construction will increase the ambient noise levels for adjoining areas. Construction will be temporary, however, and given the limited duration of this impact it is considered to be less than significant.

J. Air Quality

Does the project have the potential to:
(Where available, the significance criteria established by the MBUAPCD may be relied upon to make the following determinations).

1. Violate any air quality standard or contribute substantially to an existing or projected air quality violation? — X

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

The North Central Coast Air Basin does not meet State standards for ozone and particulate matter (PM10). Therefore, the regional pollutants of concern that would be emitted by the project are ozone precursors (Volatile Organic Compounds [VOCs] and nitrogen oxides [NOx]), and dust.
Given the modest amount of new traffic that will be generated by the project there is no indication that new emissions of VOCs or NOx will exceed Monterey Bay Unified Air Pollution Control District (MBUAPCD) thresholds for these pollutants and therefore there will not be a significant contribution to an existing air quality violation.
Project construction may result in a short-term, localized decrease in air quality due **to** generation of dust and particulate matter (PM10). Standard dust control best management practices, such as periodic watering, will be implemented during construction to reduce impacts to a less than significant level. Additional measures shall be required to reduce the production of emissions (acrolein) from diesel equipment during the construction phase of the project.

2.	Conflict with or obstruct implementation of an adopted air quality plan?			X	

The project will not conflict with or obstruct implementation of the regional air quality plan. See J-1 above.

3.	Expose sensitive receptors to substantial pollutant concentrations?				X
4.	Create objectionable odors affecting a substantial number of people?				X

K. Public Services and Utilities

Does the project have the potential to:

1.	Result in the need for new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
	a. Fire protection?			**X**	

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
b. Police protection?			X	
c. Schools?			X	
d. Parks or other recreational activities?			**X**	
e. Other public facilities; including the maintenance of roads?			X	

While the project represents an incremental contribution **to** the need for services, the increase will be minimal. Moreover, the project meets all of the standards and requirements identified by the local fire agency or California Department of Forestry, as applicable, and school, park, and transportation fees to be paid by the applicant will be used to offset the incremental increase in demand for school and recreational facilities and public roads.

2. Result in the need for construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	

See response **B-8** above.

3. Result in the need for construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	

The project will obtain water from Soquel Creek Water District and will not rely on private well water. Although the project will incrementally increase water demand, Soquel Creek Water District has indicated that adequate supplies are available to serve the project as the project is required to participate in the District's offset program (Attachment 5).

Sanitary sewer service is available to serve the project, as reflected in the attached letter from the Santa Cruz County Sanitation District (Attachment **11).**

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
4. Cause a violation of wastewater treatment standards of the Regional Water Quality Control Board?			X	

The project's wastewater flows will not violate any wastewater treatment standards.

5. Create a situation in which water supplies are inadequate to serve the project or provide fire protection?			X	

The water mains serving the project site provide adequate flows and pressure for fire suppression. Additionally, the local tire agency has reviewed and approved the project plans, assuring conformity with fire protection standards that include minimum requirements for water supply for fire protection.

6. Result in inadequate access for fire protection?			X	

The project's road access has been approved by the local fire agency assuring conformity with fire protection standards that include minimum requirements for emergency vehicle access.

7. Make a significant contribution to a cumulative reduction of landfill capacity or ability to properly dispose of refuse?			X	

The project will make an incremental contribution to the reduced capacity of regional landfills. However, this contribution will be relatively small and will be of similar magnitude to that created by existing land uses around the project.

8. Result in a breach of federal, state, and local statutes and regulations related to solid waste management?			X	

L. Land **Use,** Population. and Housing

Does the project have the potential to:

1. Conflict with any policy of the County adopted for the purpose of avoiding or mitigating an environmental effect?			X	

The proposed project does not conflict with any policies adopted for the purpose of avoiding or mitigating an environmental effect.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
2. Conflict with any County Code regulation adopted for the purpose of avoiding or mitigating an environmental effect?			X	

The proposed project does not conflict with any regulations adopted for the purpose of avoiding or mitigating an environmental effect.

3. Physically divide an established community?			X	

The project will not include any element that will physically divide an established community.

4. Have a potentially significant growth inducing effect, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	

A General Plan Amendment and Rezoning is included with this application to rezone an unused commercial portion of the project site to match the adjacent multi-family residential General Plan and zoning designations. The proposed project is designed at the density and intensity of development allowed by the resulting General Plan and zoning designations for the parcel. Additionally, the project does not involve extensions of utilities (e.g., water, sewer, or new road systems) into areas previously not served. Consequently, it is not expected to have a significant growth-inducing effect.

5. Displace substantial numbers of people, or amount of existing housing, necessitating the construction of replacement housing elsewhere?			**X**	

The proposed project will entail a net gain in housing units.

M. Non-Local Approvals

Does the project require approval of federal, state, or regional agencies? Yes ____ No X

N. Mandatory Findings of Significance

1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant, animal, or natural community, or eliminate important examples of the major periods of California history or prehistory? Yes ____ No **X**

2. Does the project have the potential to achieve short term, to the disadvantage of long term environmental goals? (A short term impact on the environment is one which occurs in a relatively brief, definitive period of time while long term impacts endure well into the future) Yes ____ No X

3. Does the project have impacts that are individually limited, but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, and the effects of reasonably foreseeable future projects which have entered the Environmental Review stage)? Yes ____ No X

4. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? Yes ____ No X

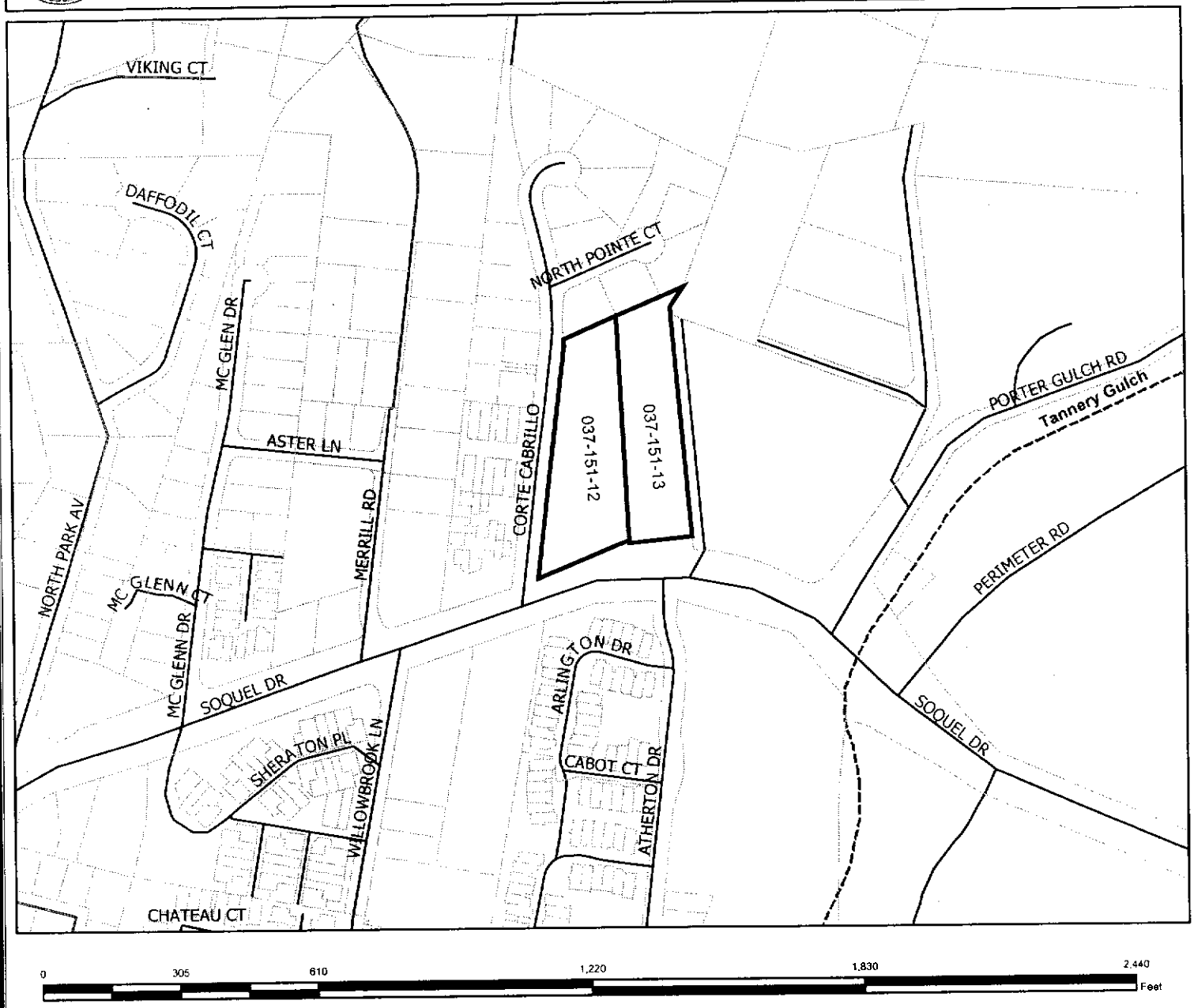
TECHNICAL REVIEW CHECKLIST

	REQUIRED	COMPLETED*	N/A
Agricultural Policy Advisory Commission (APAC) Review			X
Archaeological Review			X
Biotic Report/Assessment			X
Geologic Hazards Assessment (GHA)			X
Geologic Report			X
Geotechnical (Soils) Report		XXX	
Riparian Pre-Site			X
Septic Lot Check			X

Attachments:

1. Vicinity Map, Map of Zoning Districts, Map of General Plan Designations, Assessors Parcel Map
2. Tentative Map & Preliminary Improvement Plans prepared by Bowman & Williams, revised 9/25/06; Landscape Plan prepared by Michael Arnone, revised 10/10/06.
3. Geotechnical Investigation (Conclusions and Recommendations) prepared by Tharp & Associates, dated 2/05.
4. Geotechnical Review Letter prepared by Joe Hanna - County Geologist, dated 7/6/05.
5. Letter from Soquel Creek Water District, dated 5/24/07.
6. Drainage calculations (Summary) prepared by Bowman & Williams, dated 7/15/06.
7. Discretionary Application Comments, dated 2/15/07.
8. Arborists Report (Summary and Recommendations) prepared by Maureen Hamb, dated 6/17/05 & 1/12/06.
9. Traffic Study & Update Letter (Conclusions and Recommendations) prepared by Higgins Assoc., dated 12/21/05 & 10/20/06.
10. Noise Study, prepared by Environmental Consulting Services, dated 6/8/07.
11. Memo from Department of Public Works, Sanitation, dated 8/7/06.

Location Map



0 305 610 1,220 1,830 2,440 Feet

Legend

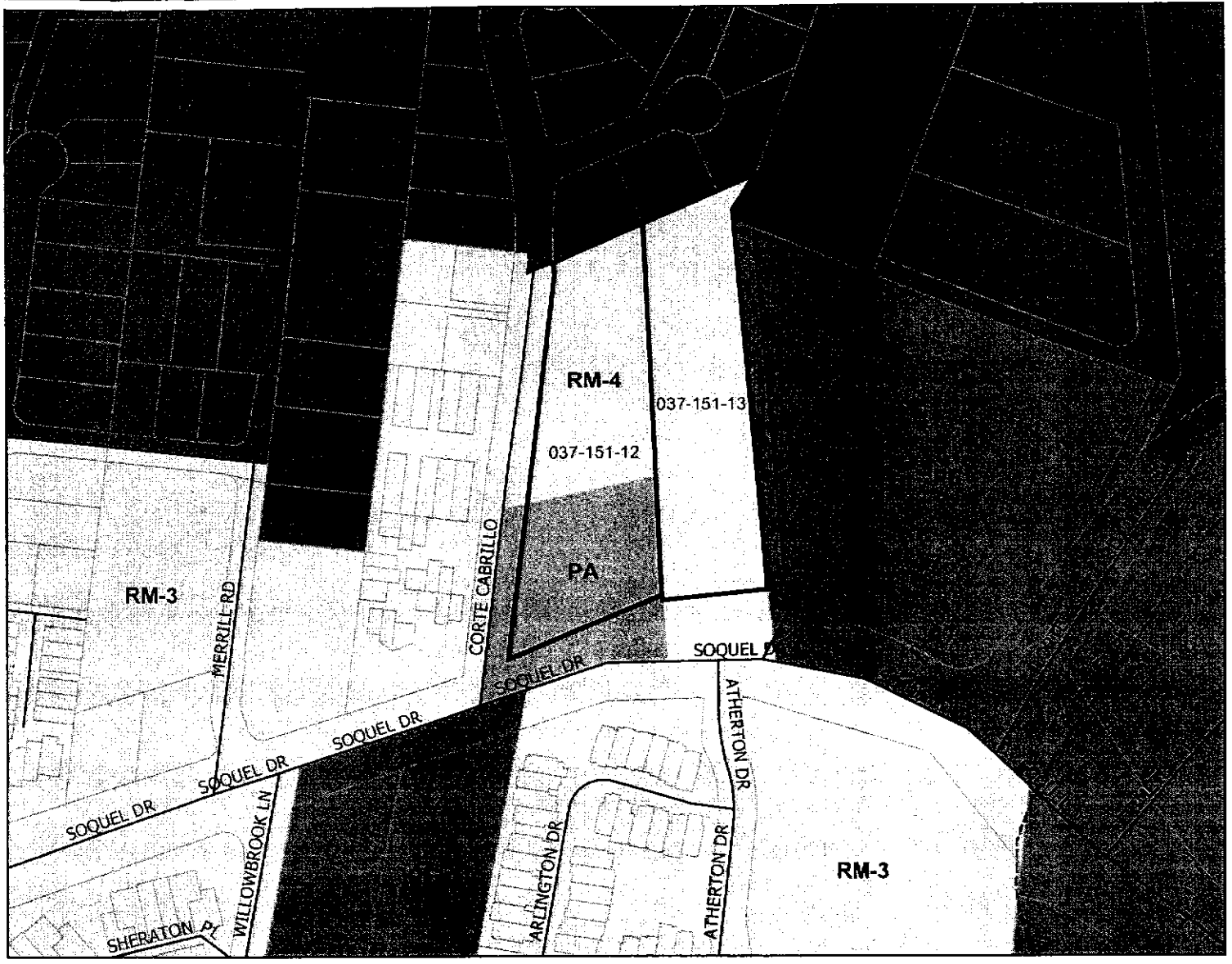
- APN 037-151-12 & -13
- Streets
- Assessors Parcels
- INTERMITTENT STREAM

N
W E

Environmental Review Inital Study
ATTACHMENT 1, 1 of 4
APPLICATION 05-0388

Map Created by
County of Santa Cruz
Planning Department
June 2005

Zoning Map



0 190 380 760 1,140 1,520 Feet

Legend

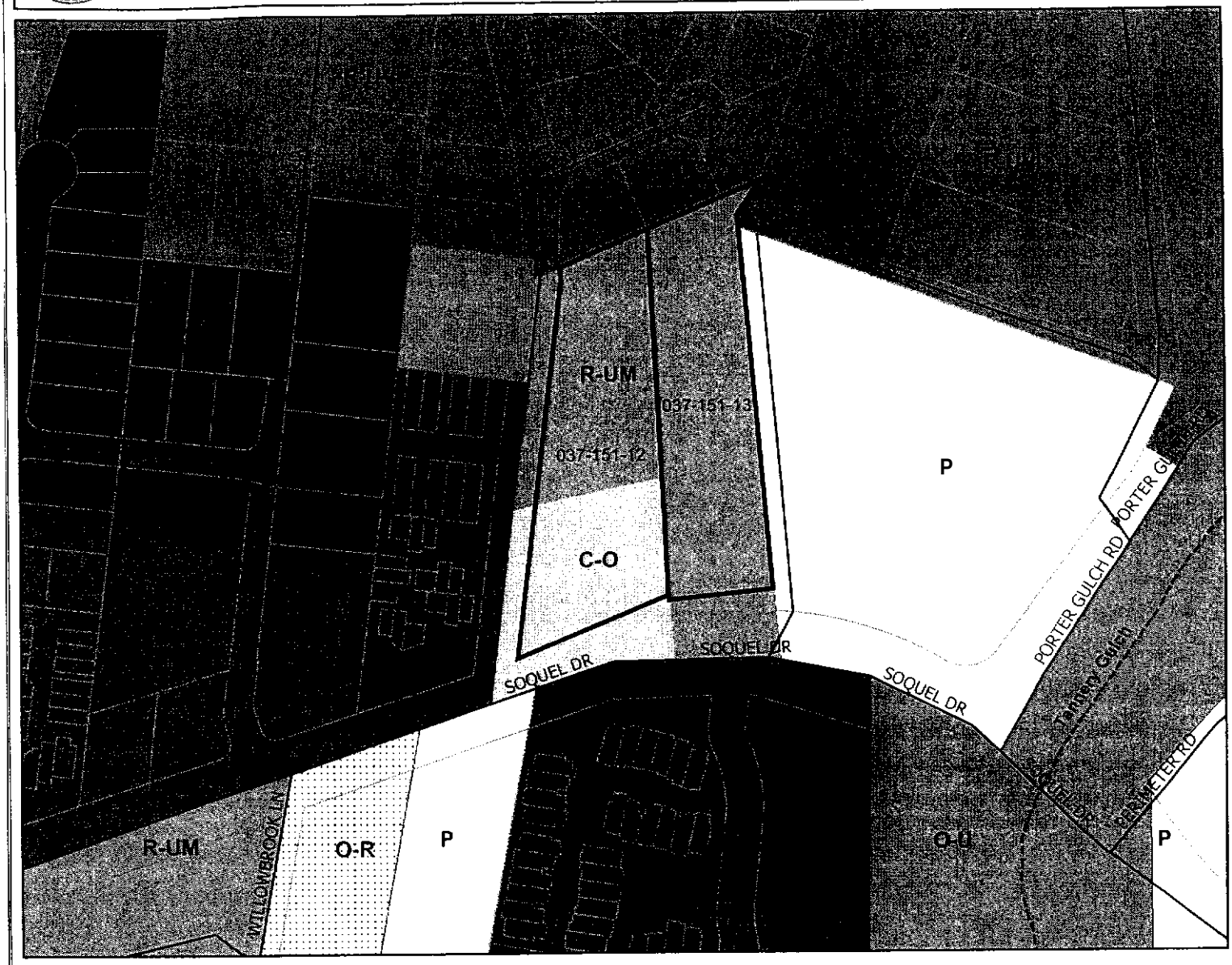
- APN 037-151-12 & -13
- Streets
- Assessors Parcels
- INTERMITTENT STREAM
- RESIDENTIAL-MULTI FAMILY (RM)
- COMMERCIAL-PROF OFFICE (PA)
- PUBLIC FACILITY (PF)
- RESIDENTIAL-SINGLE FAMILY (R-1)

N
W E
S

Environmental Review Inital Stud
ATTACHMENT 1, 2 of 4
APPLICATION 05-0388

Map Created by
County of Santa Cruz
Planning Department
June 2005

General Plan Designation Map



Legend

- APN 037-151-12 & -13
- Streets
- Assessors Parcels
- INTERMITTENT STREAM
- Commercial-Ofice (C-0)
- Residential -Urban Medium Density (R-UM)
- Public Facilites (P)
- Residential - Urban Low Density (R-UL)
- Residential - Urban Very Low Density (R-UVL)
- Residential - Urban High Density (R-UH)
- Urban Open Space (O-U)

N

W E

Environmental Review Inital Study
ATTACHMENT 1, 3 of 4
APPLICATION 05-0388

Map Created by
County of Santa Cruz
Planning Department
June 2005

OR TAX PURPOSES ONLY

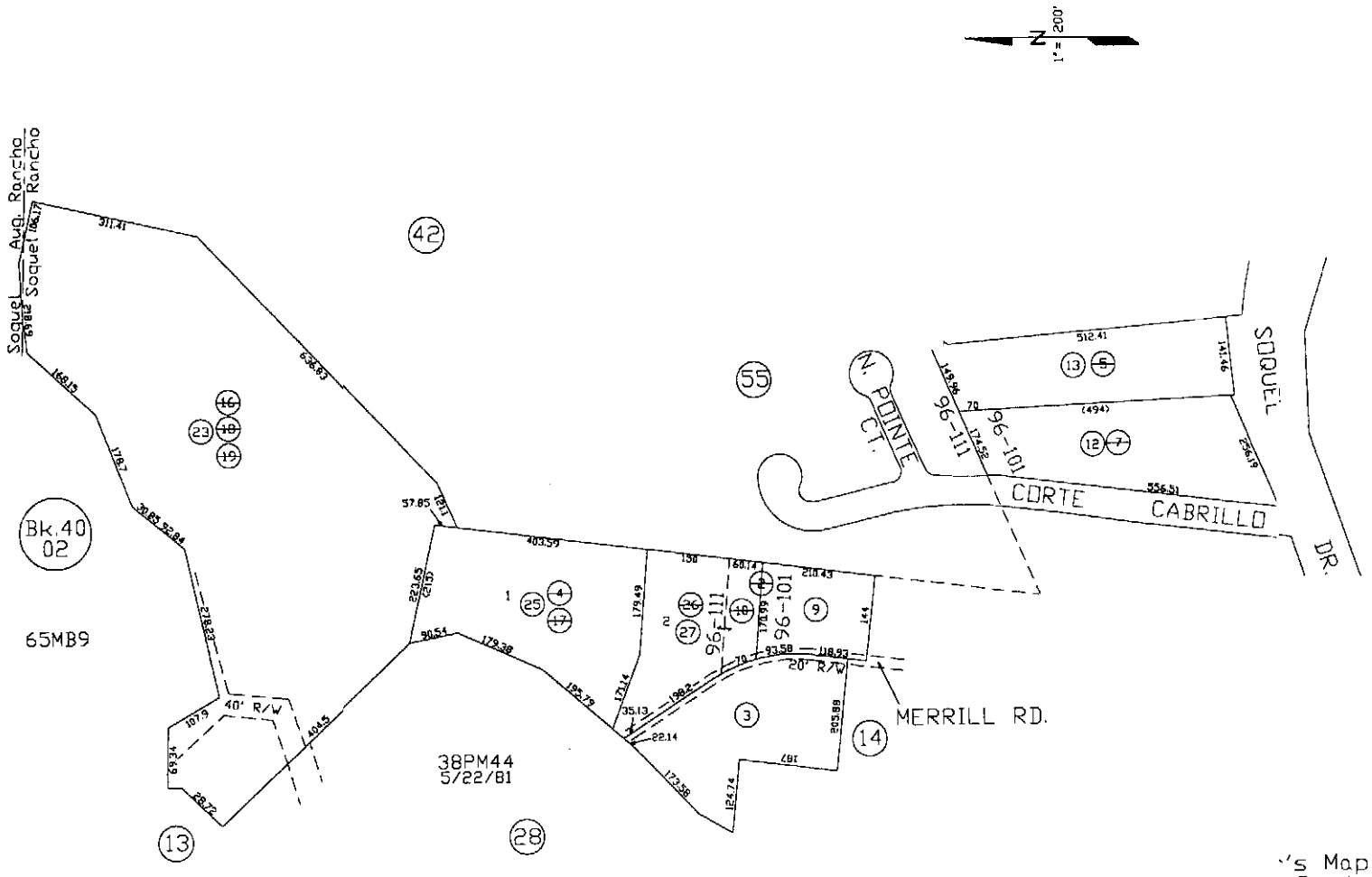
POR. SOQUEL & SOQUEL AUGMENTATION RANCHO

SEC. 2 & 11, T.11S., R.1W., M.D.B. & M.

Tax Area Code
96-101 96-111

37-15

Environmental Review Initial Study
ATTACHMENT 4
APPLICATION 05-0388

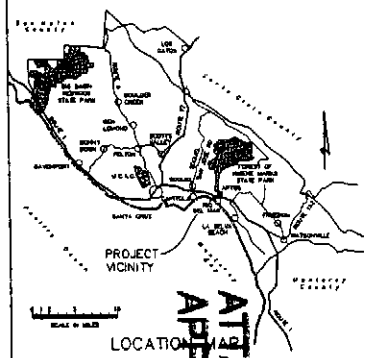


Note - Assessor's Parcel Block &

's Map No. 37-15
County of Santa Cruz, Calif
May, 1998

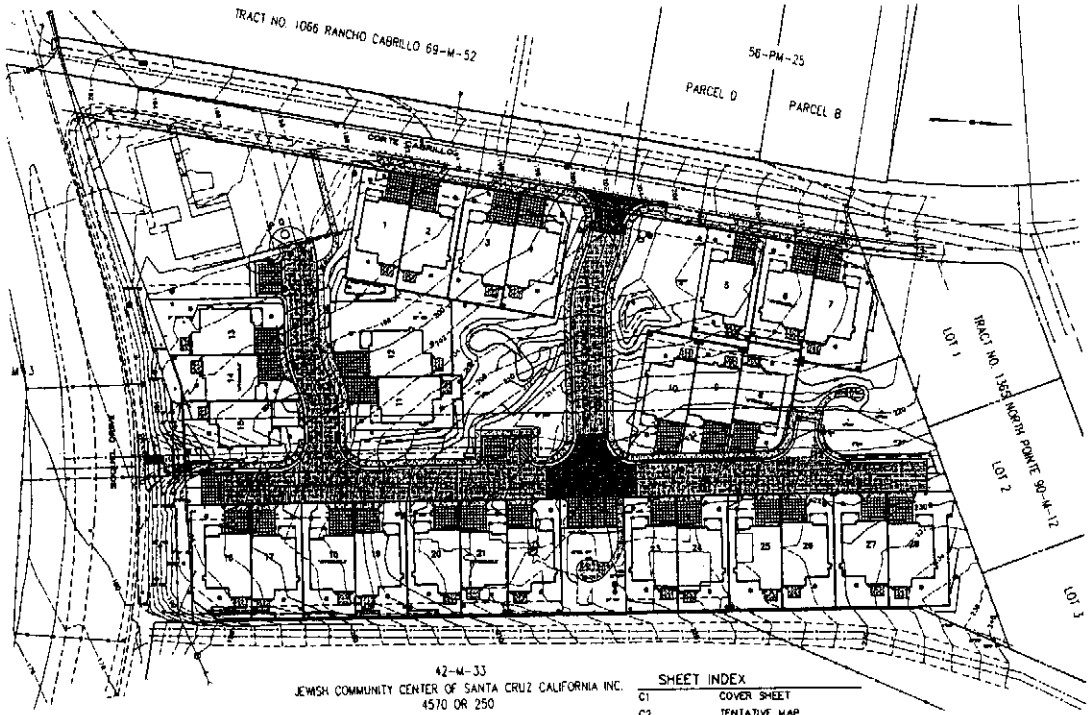
TENTATIVE MAP & PRELIMINARY IMPROVEMENT PLANS
TRACT NO. 1502, 'SILVER OAKS OF APTOS'
APN 037-151-12 & 13 APPLICATION #05-0388

APTOS, SANTA CRUZ COUNTY, CALIFORNIA

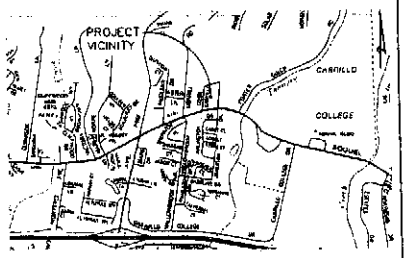


ATTACHMENT 2 Exhibit B
APPLICATION 05-0388

Environmental Review Initial Study



PLAN



VICINITY MAP
NOT TO SCALE

LEGEND

EDGE OF PAVT
PROPERTY LINE
RETAINING WALL
FINISH GRADE CONTOUR
FINISH GRADE SPOT ELEVATION
ASPHALT PAVEMENT
CONCRETE PAVEMENT
PAVING STONES
CENTERLINE OF DRIVEWAY
STORM DRAIN
SANITARY SEWER
WATER SERVICE
FIRE HYDRANT
CATCH BASIN
TREE TO BE REMOVED
SLOPE (DRAINAGE PATH)

ABBREVIATIONS

AC	ASPHALT CONCRETE
BLDG	BUILDING
CB	CATCH BASIN
CONC	CONCRETE
CONST	CONSTRUCT
COSC	SANTA CRUZ COUNTY
CFD	CENTRAL FIRE DISTRICT
DI	DROP INLET
DIA, ø	DIAMETER
DOM	DOMESTIC
DITCH	DITCH
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EX	EXISTING
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FND MO	FIGURE NUMBER
FL	FLOWLINE
GF	GARAGE FLOOR
GR	GRATE
INVERT	INVERT
JP	JOINT POLE
LAT	LATERAL
LF	LINEAR FEET
LT	LEFT
MAX	MAXIMUM
MIN	MINIMUM
PL	PROPERTY LINE
PVMT	PAVEMENT
R	RADIUS
RET	RETAINING
RIM	RIM ELEVATION
RT	RIGHT
S	SLOPE
SCWD	SOQUEL CREEK WATER DIST.
SD	STORM DRAIN
SDCO	STORM DRAIN CLEANOUT
SDMH	STORM DRAIN MANHOLE
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STD	STANDARD
SWTF	STORM WATER TREATMENT DEVICE
TW	TOP OF WALL ELEVATION
TYP	TYPICAL
UTIL	UTILITY
WM	WATER METER
WS	WATER SERVICE

SHEET INDEX

GRAPHIC SCALE

(IN FEET)

REGISTERED PROFESSIONAL ENGINEER — JOEL FRANCIS WILCOX — No. 53588 — Exp. 6-30-07 — CIVIL — STATE OF CALIFORNIA

PRELIMINARY
NOT FOR CONSTRUCTION

APN 037-151-12 & 13 — APPLICATION NUMBER 05-0388

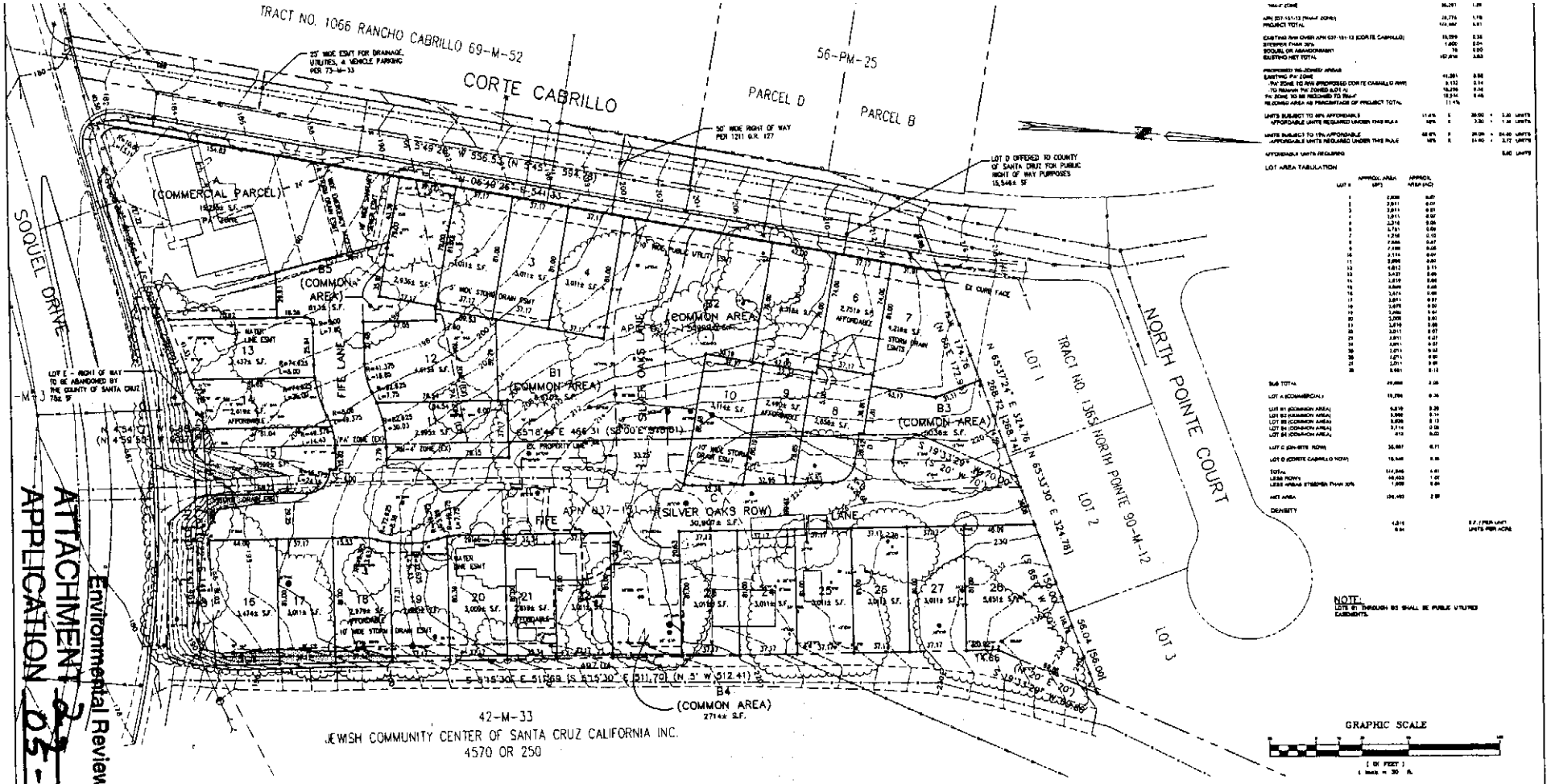
REVISED	
6/28/06	REVISED PER COUNTY COMMENTS
7/18/06	REVISED PER COUNTY COMMENTS

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53588

COVER SHEET

TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

SCALE 1" = 80'	DRAWN JPR/JDK	JOB NO. 22911	SHEET C1
DATE JANUARY 6, 2006	CHECKED JPR	INDEX 1000SCL.4	
DESIGN JPR/JDK	DWG NAME	FILE NO. 22911	OF 16



ATTACHMENT 2
APPLICATION 05-0388

Environmental Review Initial Study

LEGEND

PROJECT INFORMATION

OWNER :	HOLCOMB CORPORATION 19 SEASCAPE VILLAGE APTOS, CA 95003 (831)688-8807	ARCHITECT:	FRED LATTANZIO 19 SEASCAPE VILLAGE APTOS, CA 95003 (831)688-8807	APN	: 037-151-12 & 13
CIVIL ENGINEER :	BOWMAN & WILLIAMS 1011 CEDAR STREET SANTA CRUZ, CA 95060 (831) 426-3560	GEOTECHNICAL ENGINEER:	RAMPF ASSOCIATES 347 SPRECKLES DRIVE APTOS, CA 95003 (831) 662-8600	PROPERTY SIZE	: 4.84 ACRES ±
PROJECT PLANNER :	RON POWERS, AICP POWERS LAND PLANNING, INC. 1407 OCEAN STREET, SUITE B SANTA CRUZ, CA 95060 (831) 438-1883	ARBORIST:	MAUREEN HAMB - WCISA CERTIFIED ARBORIST #2280 540 A SOQUEL AVENUE SANTA CRUZ, CA 95062 (831) 420-1287	ZONING	: 637-151-13 = RM-4 637-151-13 = PA
				GENERAL PLAN DESIGNATION	: URBAN MEDIUM RESIDENTIAL
				PROPOSED USE	: 38 SINGLE FAMILY LOTS, 5 COMMON AREAS & 1 COMMERCIAL REMAINDER
				WATER SUPPLY	: SOQUEL CREEK WATER DIST.
				SEWER SERVICE	: SANTA CRUZ COUNTY SANITATION DISTRICT

REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS MCCA No. 53580 Exp. 6-30-07 CIVIL STATE OF CALIFORNIA

PRELIMINARY
NOT FOR REVIEW

APN 637-151-12 & 13 APPLICATION NUMBER 05-0388

REVISED

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53580

TENTATIVE MAP

TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

SCALE 1" = 30'	DRAWN APR/ADS	JOB NO. 03811	SHEET
DATE JANUARY 6, 2006	CHECKED JPR	INDEX BOOKLET 1	C2

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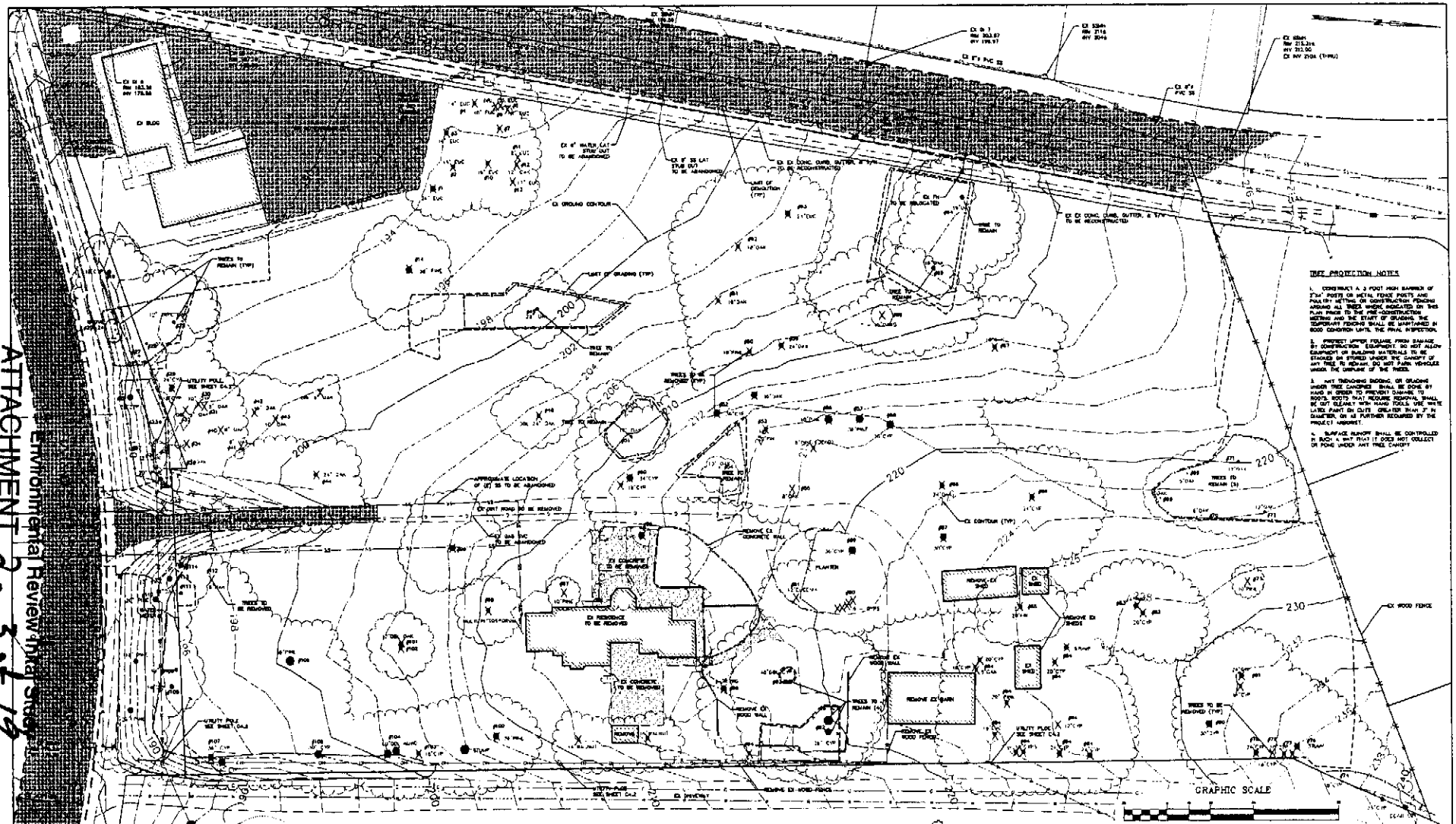
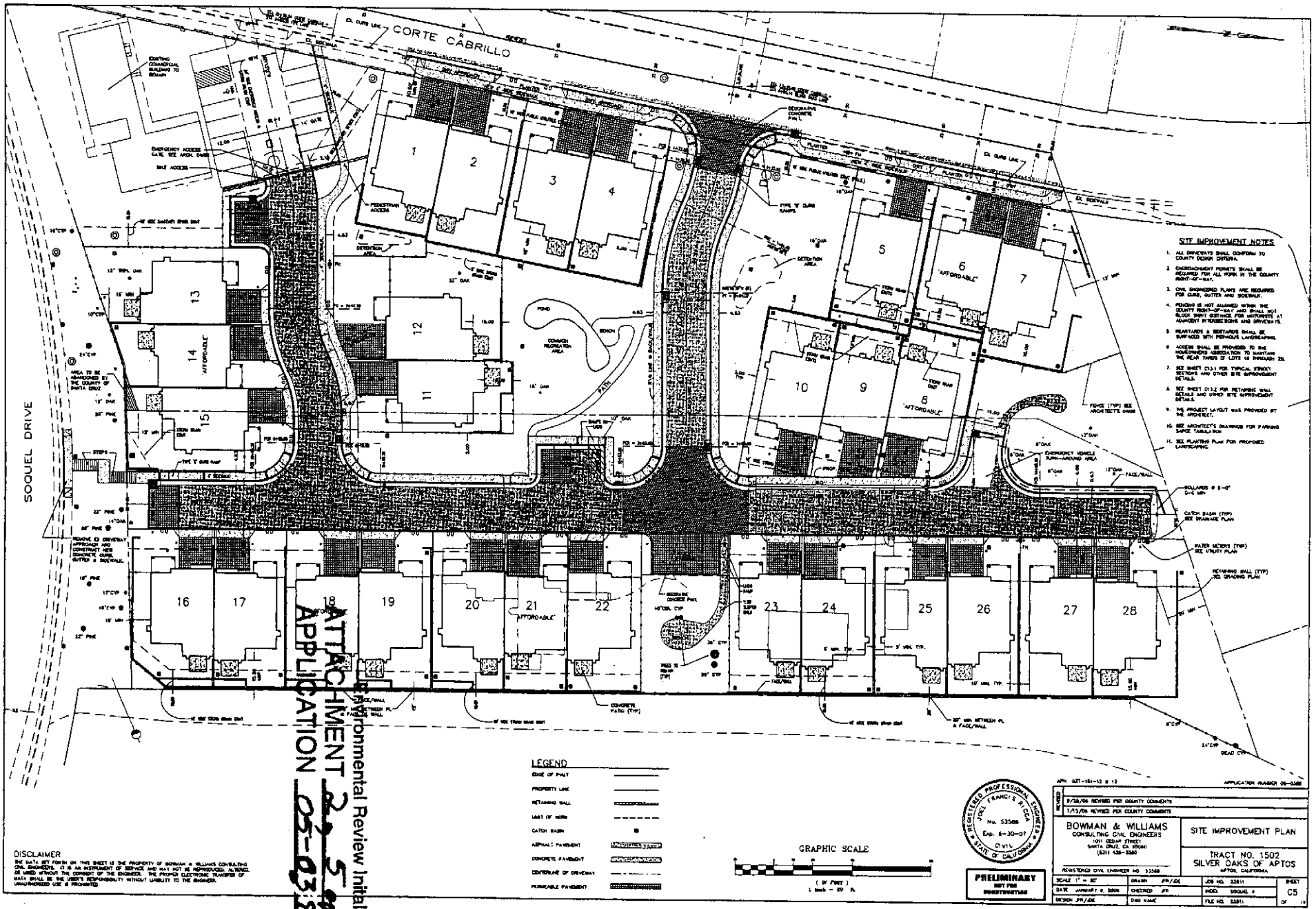


Environmental Review Materials

ATTACHMENT 2 EXHIBIT H

APPLICATION 03-0348

DEMOLITION PLAN NOTES:
GRAPHIC SCALE
DEMOLITION PLAN
TRACT NO. 1502
SILVER OAKS OF APTOS
BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
PRELIMINARY
NOT FOR CONSTRUCTION
DISCLAIMER
Environmental Review Inital Study
ATTACHMENT 2, 4 of 19
APPLICATION 05-0388



ATTACHMENT 2
Environmental Review Initial Study
APPLICATION 05-0386

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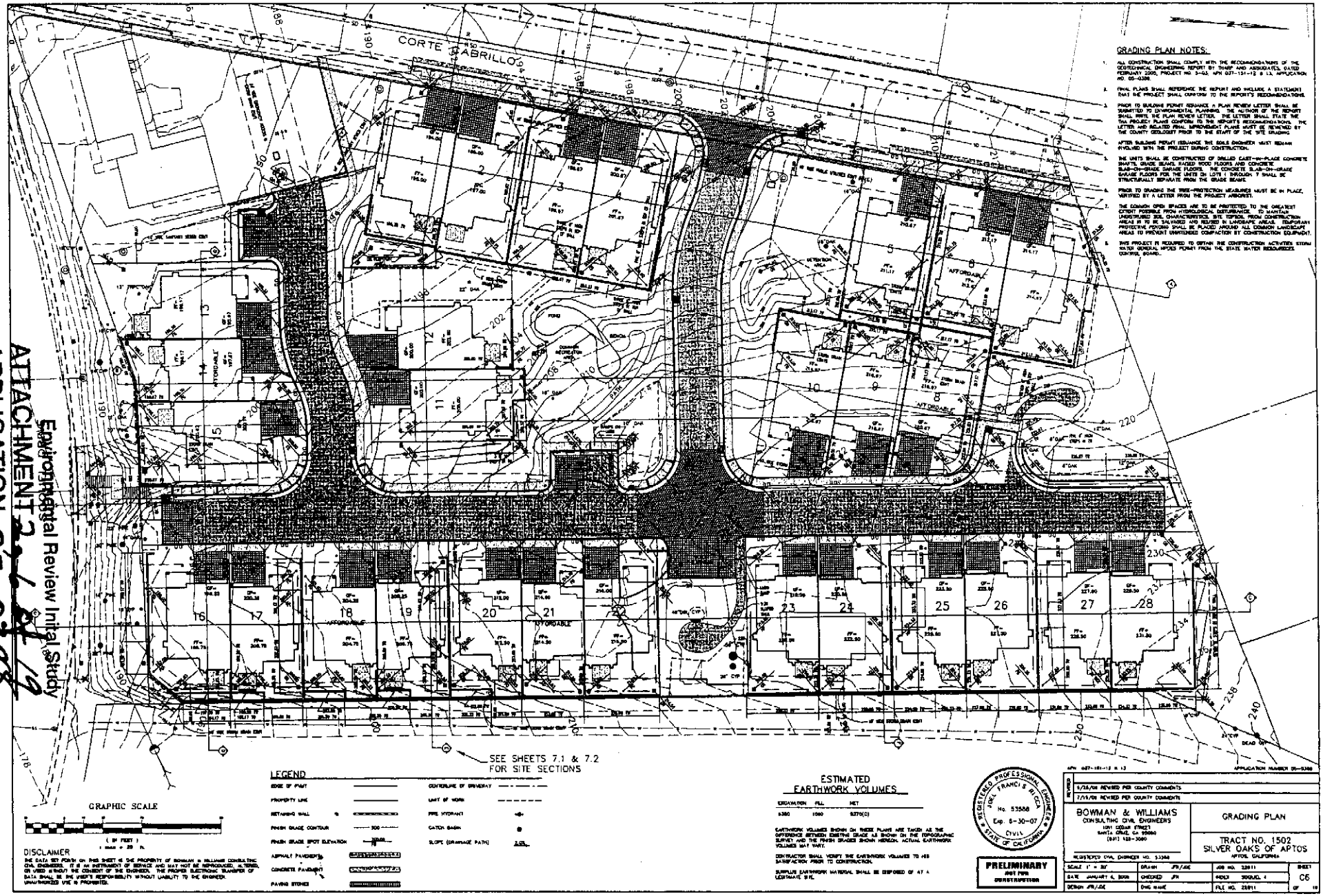

Environmental Review Initial Study
ATTACHMENT 2
APPLICATION 05-0388

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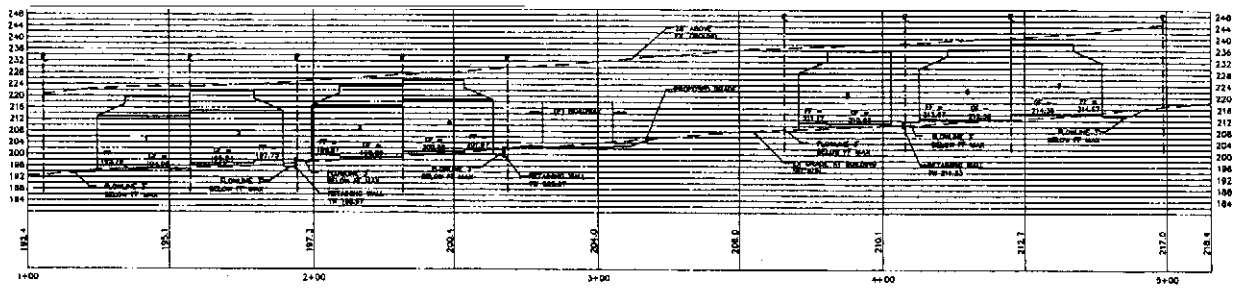
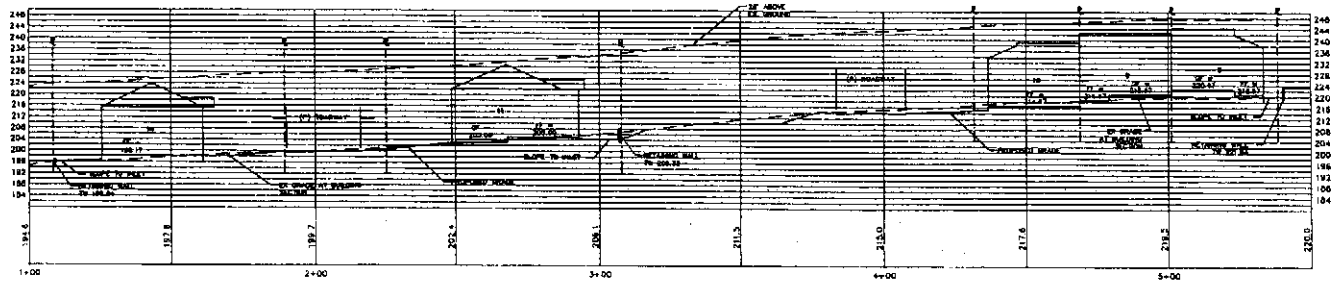
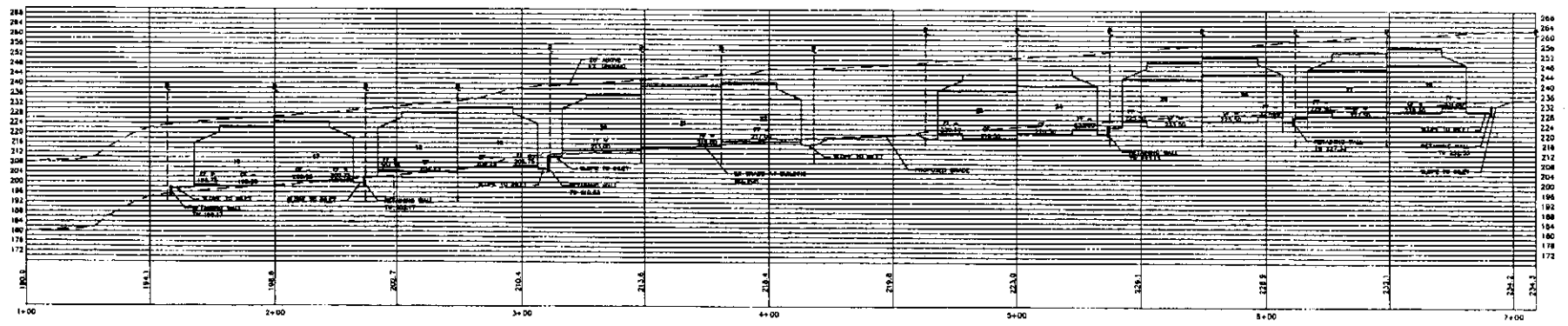


SECTION A-A



SECTION B-B



SECTION C-C

Environmental Review Initial Study
ATTACHMENT 2 of 19
APPLICATION 05-0388

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GRAPHIC SCALE

(IN FEET)
1 inch = 80 ft.

REGISTERED PROFESSIONAL ENGINEER
JOEL FRANCIS ACCA
No. 53585
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

PRELIMINARY
NOT FOR CONSTRUCTION

APN: 027-131-12 & 13 | APPLICATION NUMBER: 05-0388

REVISED

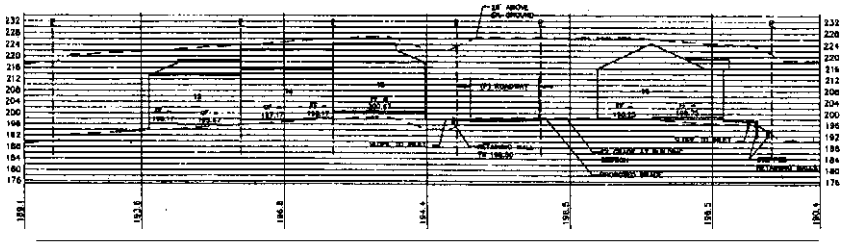
BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

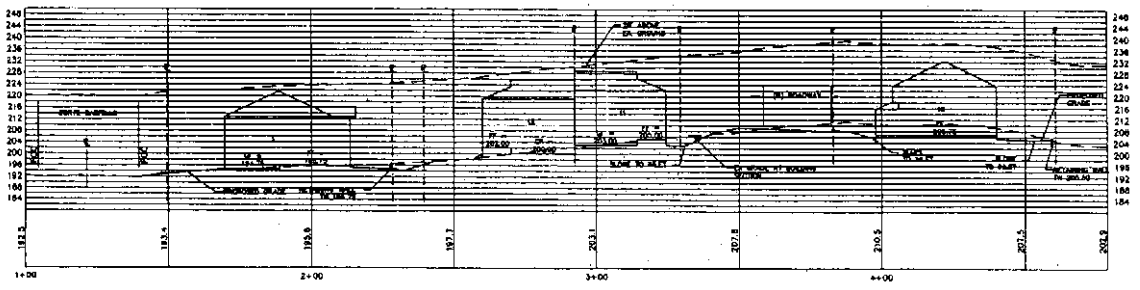
REGISTERED CIVIL ENGINEER NO. 53585

SITE SECTIONS

TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

SCALE: 1" = 80' | DRAWN: JRR/JDK | JOB NO. 12911 | SHEET





SECTION E-E
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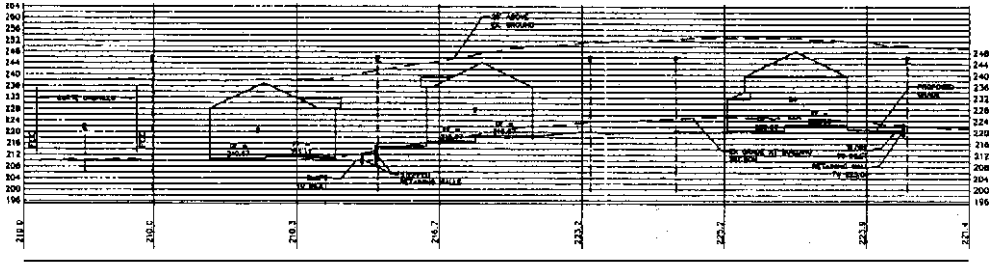
1"=4'VERT



GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

ATTACHMENT 2
APPLICATION 05-0388

Environmental Review Initial Study

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REGISTERED PROFESSIONAL ENGINEER
JOEL FRANCIS KUCA
No. 53568
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

PRELIMINARY
FOR REVIEW ONLY

APN 037-151-12 & 13 APPLICATION NUMBER 05-0388

REVISED

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

REGISTERED CIVIL ENGINEER NO. 53568

SITE SECTIONS

TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

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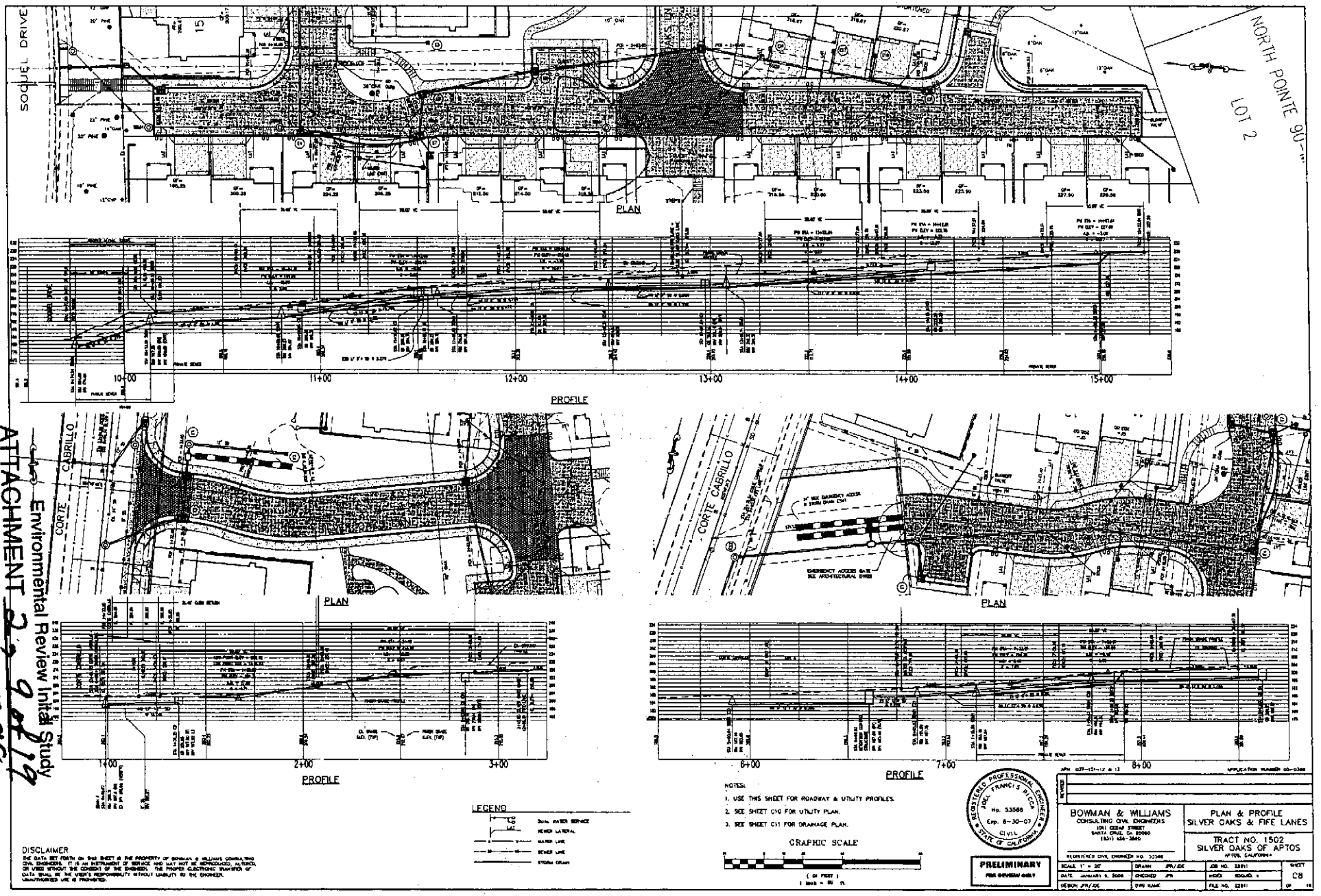
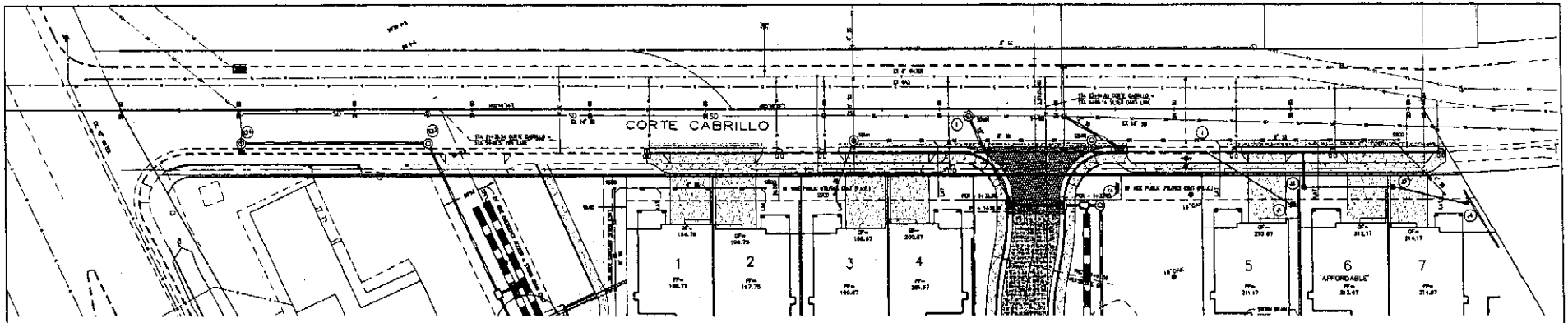
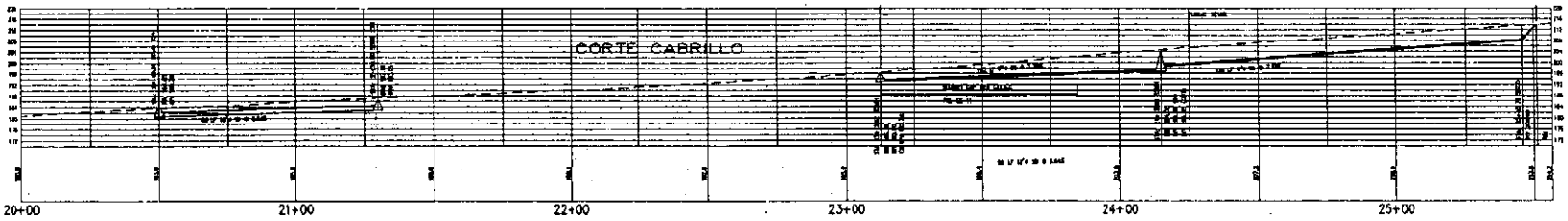


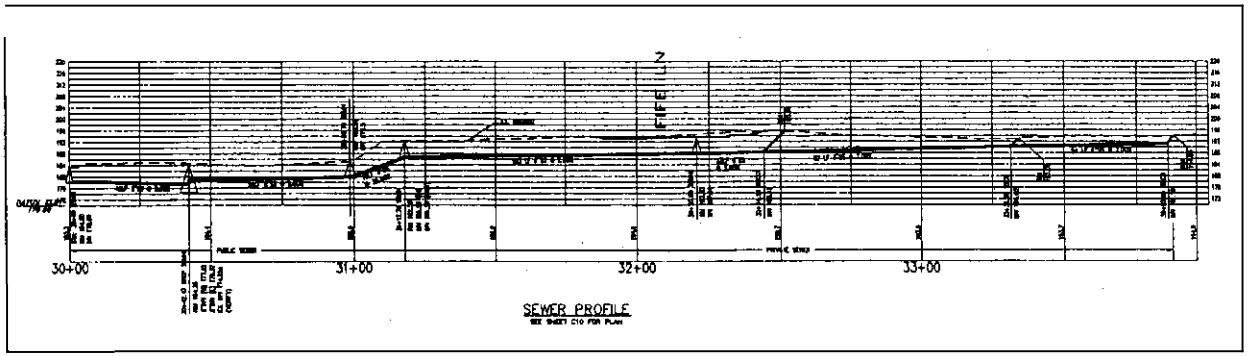
ATTACHMENT 2 pg 19
APPLICATION 05-0388

Environmental Review Initial Study



PLAN





SEWER PROFILE

SEE SHEET C10 FOR PLAN

Environmental Review Initial Study
ATTACHMENT 2
APPLICATION 05-0388

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

DISCLAIMER

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LEGEND

DUAL WATER SERVICE
SEWER LATERAL
WATER LINE

NOTES:

1. USE THIS SHEET FOR ROADWAY & UTILITY PLAN.
2. SEE SHEET C10 FOR UTILITY PLAN.
3. SEE SHEET C11 FOR DRAINAGE PLAN.

REGISTERED PROFESSIONAL ENGINEER
JOEL FRANCIS NICA
No. 53568
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

PRELIMINARY
FOR REVIEW ONLY

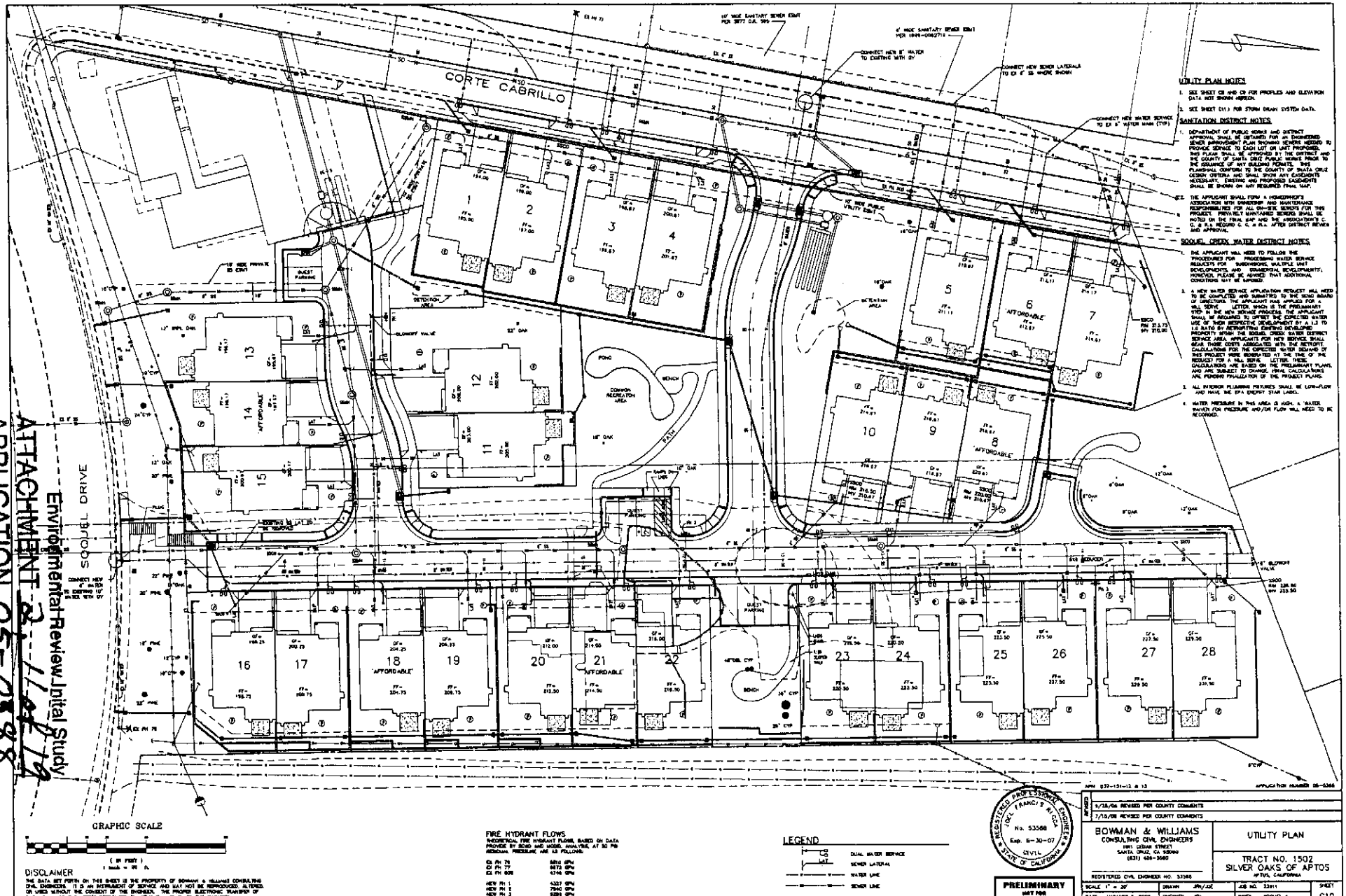
REVISED

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53568

PLAN & PROFILE, CORTE CABRILLO & SANITARY SEWER

TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

SCALE 1" = 20'	DRAWN JPR/JOE	JOB NO. 12911	SHEET
DATE JANUARY 9, 2006	CHECKED JPR	MOD. 3/20/06, 4	C9
DESIGN JPR/JOE	DWG NAME	FILE NO. 12911	OF 19



Environmental Review Initial Study
ATTACHMENT 2
APPLICATION 05-0388

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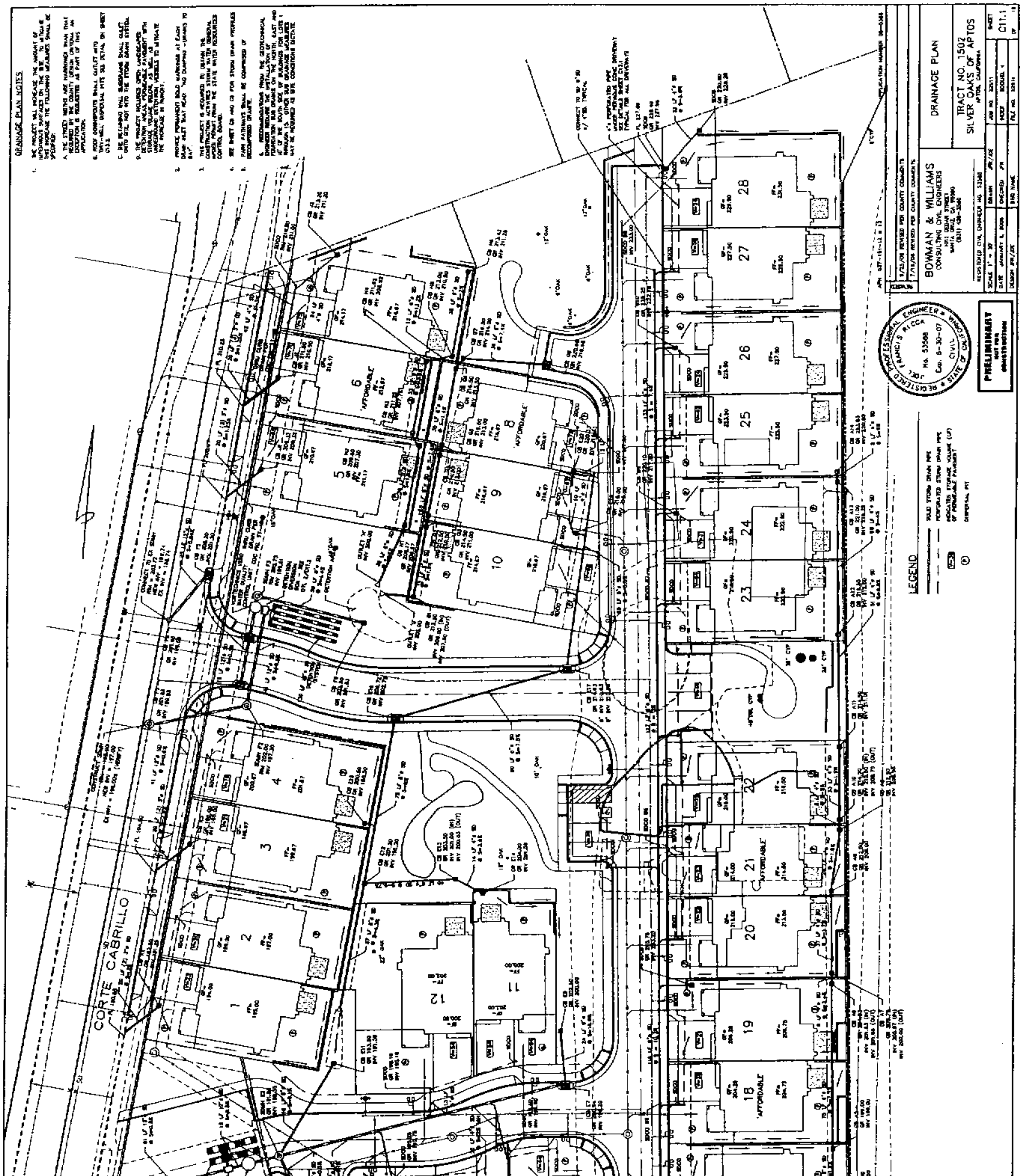


Environmental Review Inital Study
ATTACHMENT 2, 12 of 19
APPLICATION 05-0388

PHI = 1.4
INTENSITY FROM "COUNTY OF SANTA CRUZ DESIGN CRITERIA, RAINFALL INTENSITY DURATION CURVES
10 YEAR DESIGN STORM
Cm=1.00   4=1.00

SYSTEM 'A'

Inlet or Junction Structure

Area Designation	Area A (ac)	C	A*C*Cm (ac)	Tc (min)	I*m (in/hr)	Q (cfs)	Junction Designation	Summ. A*C*Cm	Summ. Tc (min)	DELTA Tc (min)	I*m (in/hr)	Q (cfs)
A9	0.04	0.45	0.02	10.00	2.02	0.037	A9	0.02	10.00	1.26	2.02	0.04
A8	0.03	0.78	0.01	10.00	2.02	0.024	A8	0.03	11.26	0.13	1.92	0.06
A7	0.01	0.58	0.01	10.00	2.02	0.016	A7	0.04	11.39	0.36	1.91	0.07
A6	0.01	0.66	0.01	10.00	2.02	0.013	A6	0.05	11.65	0.60	1.87	0.09
A5	0.03	0.61	0.02	10.00	2.02	0.038	A5	0.07	12.66	0.08	1.83	0.12
A4	0.04	0.44	0.02	10.00	2.02	0.024	A4	0.09	12.61	0.67	1.83	0.16
A3	0.02	0.63	0.02	10.00	2.02	0.031	A3	0.10	13.28	0.25	1.78	0.19
A2	0.01	0.71	0.01	10.00	2.02	0.021	A2	0.12	13.53	0.21	1.77	0.20
A1	0.04	0.36	0.01	10.00	2.02	0.020	A1	0.13	13.74	0.13	1.76	0.24
A10	0.01	0.36	0.01	10.00	2.02	0.011	A10	0.14	13.87	0.19	1.75	0.25
A11	0.01	0.36	0.01	10.00	2.02	0.011	A11	0.15	14.06	0.04	1.74	0.25
							CURB	0.15	14.10			

PIPE PROPERTIES

[illegible]

SYSTEM 'B'

[illegible]

SYSTEM 'C'

[illegible]

SYSTEM 'D'

[illegible]

SYSTEM 'E'

[illegible]

SYSTEM 'F'

[illegible]

SYSTEM 'G'

[illegible]

SYSTEM 'H'

[illegible]

SYSTEM 'J'

[illegible]

Environmental Review Inital Study
ATTACHMENT 2, 13 of 19
APPLICATION 05-0388

REGISTERED PROFESSIONAL ENGINEER
JOEL FRANCIS RICCA
No. 53568
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

PRELIMINARY
FOR REVIEW ONLY

APN 037-181-13 & 13

APPLICATION NUMBER 05-0388

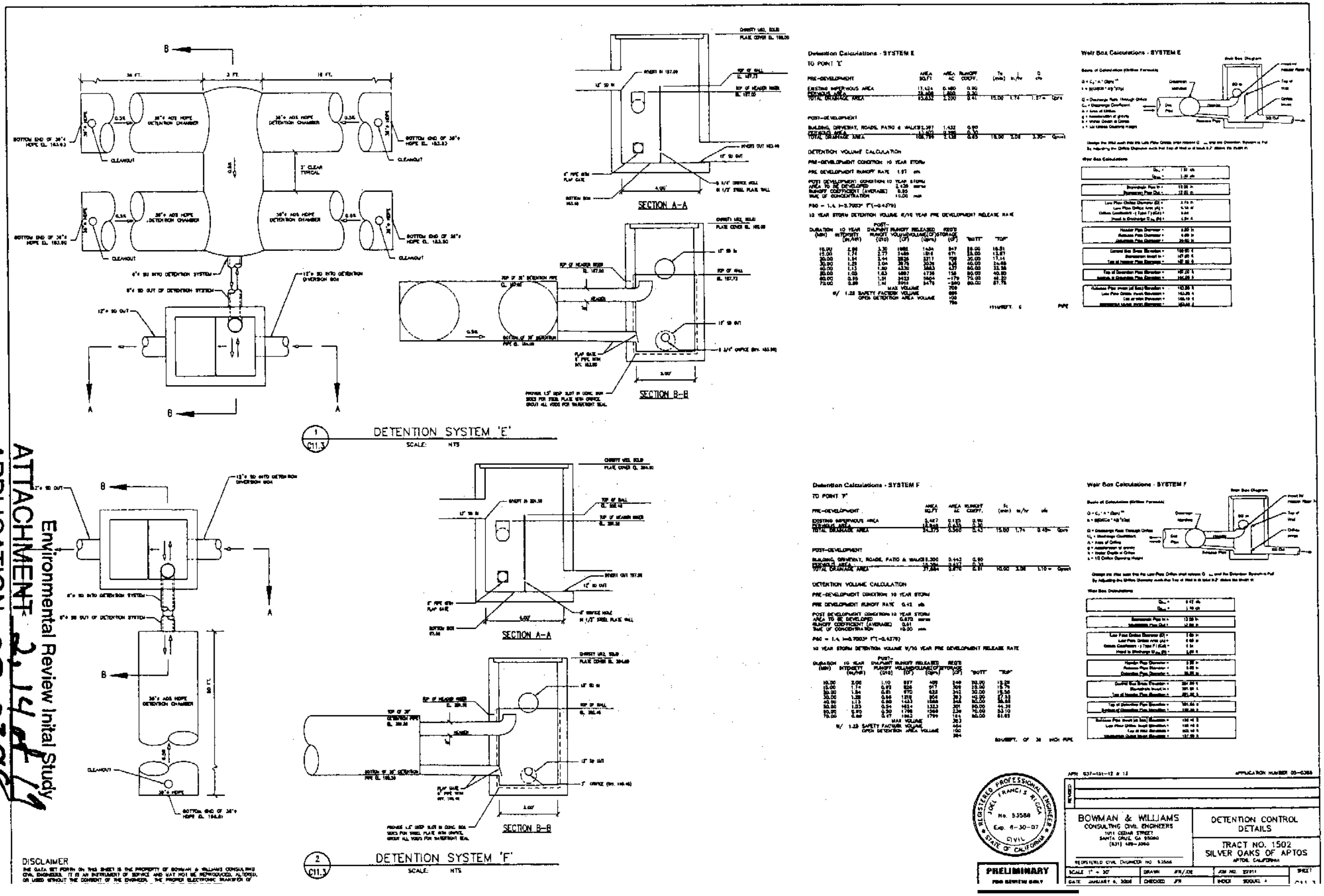
BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

REGISTERED CIVIL ENGINEER NO. 53568

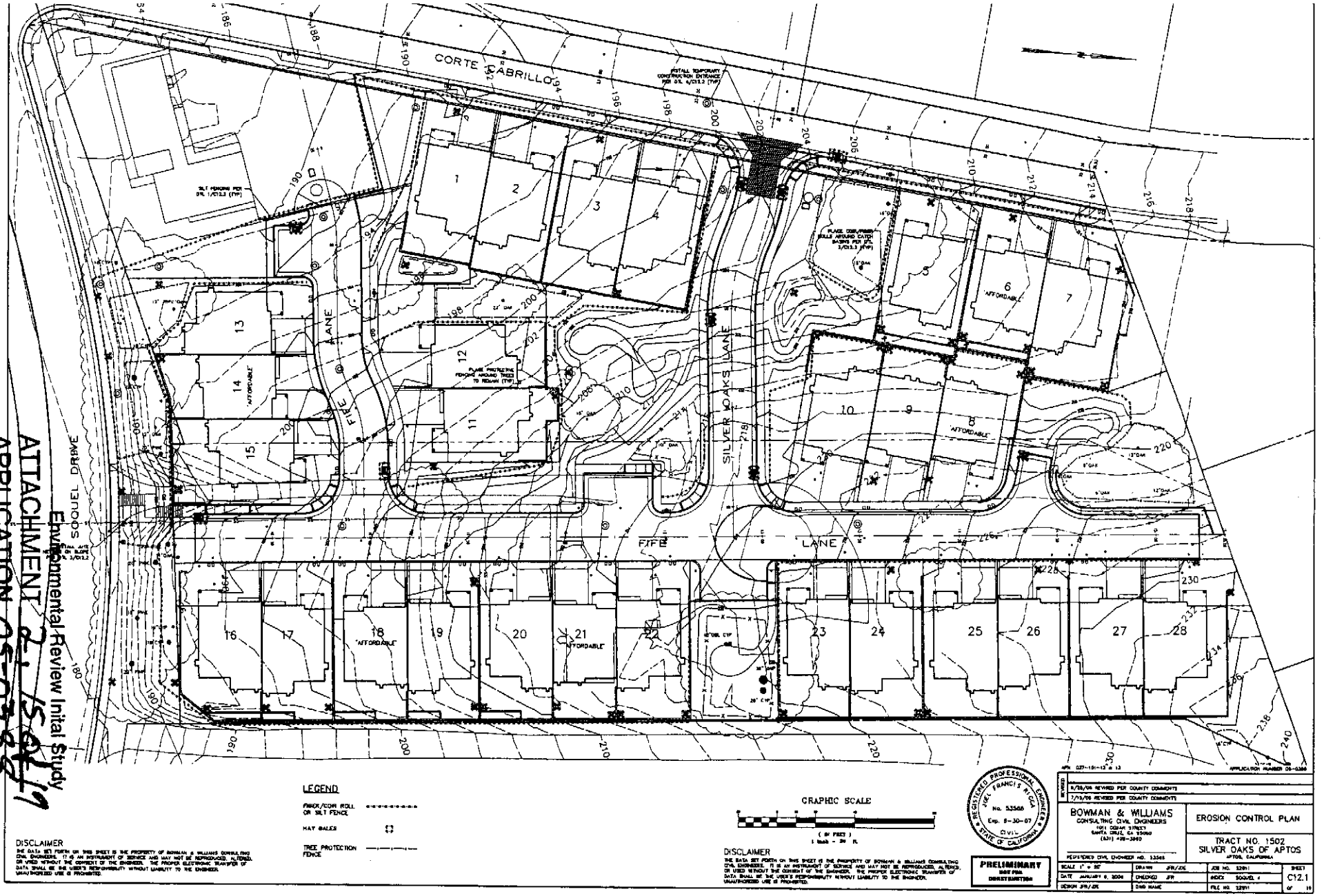
DRAINAGE CALCULATIONS
TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

SCALE 1" = 30' | DATE JANUARY 6, 2006 | DESIGN JFR/JOE | DRAWN JFR/JOE | CHECKED JFR | DWG NAME | JOB NO | MODEL | FILE NO

C11.2 of 18



Environmental Review Inital Study
ATTACHMENT 2, 14 of 17
APPLICATION 05-0388



Environmental Review Inital Study
ATTACHMENT 2 - 05-0338
APPLICATION 05-0338

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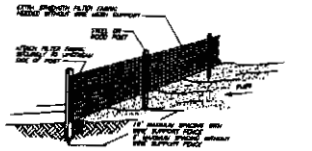
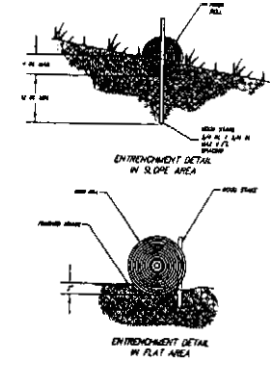
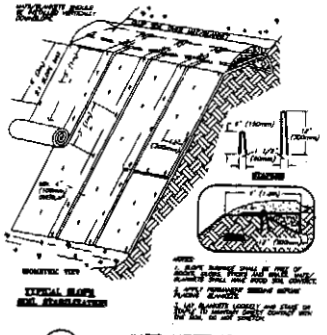
Environmental Review Inital Study
ATTACHMENT 2 to 4
APPLICATION 05-0388



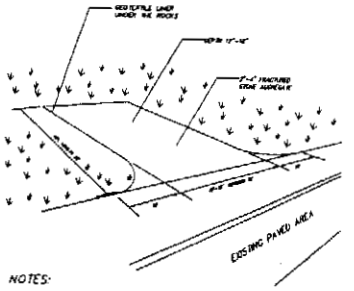
1 C12.2 SILT FENCE
SCALE: NTS



2 C12.2 COIR/FIBER ROLLS (STRAW WATTLES)
SCALE: NTS



3 C12.2 JUTE NETTING
SCALE: NTS



NOTES:
1. Property grade entrance to prevent runoff from construction site. Entrance elevation should be lower than street.
2. Inspect routinely for damage and repair as needed.
3. Require that all employees, subcontractors and suppliers utilize the stabilized construction entrance.
4. Service sediment trapping devices regularly.

4 C12.2 CONSTRUCTION ENTRANCE
SCALE: NTS

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REGISTERED PROFESSIONAL ENGINEER
JOEL FRANCIS RICCA
No. 53568
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

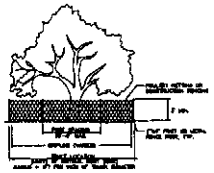
PRELIMINARY
FOR REVIEW ONLY

APN 037-151-12 & 13 APPLICATION NUMBER 05-0388

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, Ca. 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53568

EROSION CONTROL DETAILS
TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

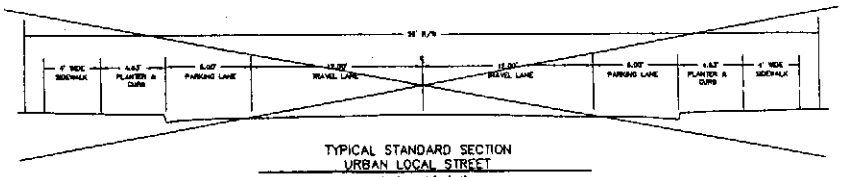
SCALE 1" = 20'	DRAWN JPR/JDE	JOB NO. 22911	SHEET
DATE JANUARY 6, 2006	CHECKED JPR	INDEX SOURCE 4	C12.2
DESIGN JPR/JDE	CAD NAME	FILE NO 22911	OF 18



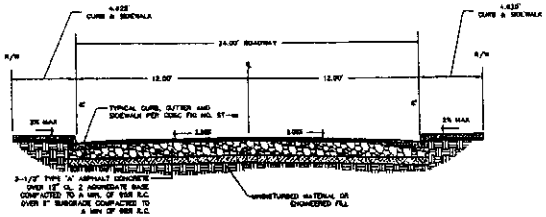
ELEVATION

PLAN VIEW

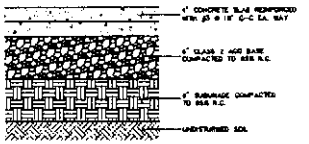
8 C13.1 TREE PROTECTION FENCING



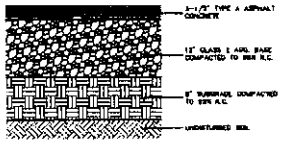
TYPICAL STANDARD SECTION
URBAN LOCAL STREET
SCALE: 1/8"=1'-0"



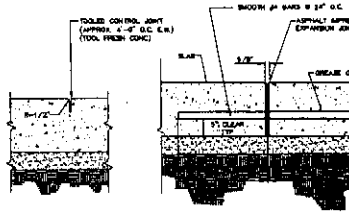
TYPICAL SECTION
SILVER OAKS LANE
SCALE: 1/4"=1'-0"



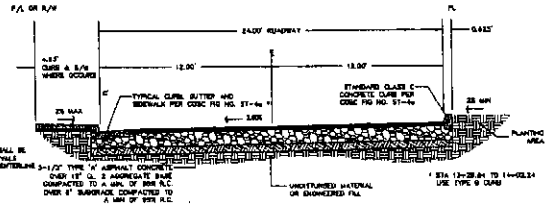
1 C13.1 TYPICAL CONCRETE DRIVEWAY SLAB



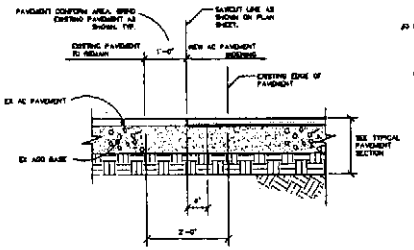
2 C13.1 TYPICAL PAVEMENT SECTION



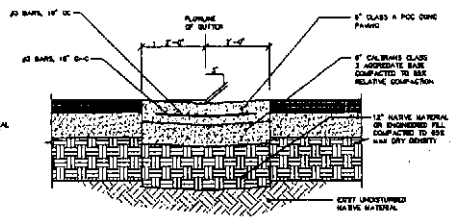
3/C13 CONTROL JOINT
TYPICAL JOINTS
EXPANSION JOINT



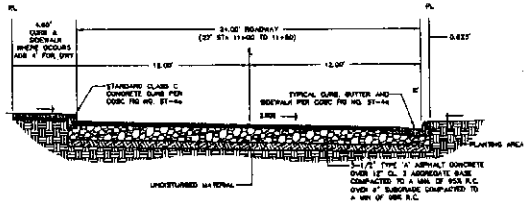
TYPICAL SECTION
FIFE LANE STA. 10+16 TO 11+00, 11+50 TO END
SCALE: 1/4"=1'-0"



4 C13.1 SAWCUT & CONFORM DETAIL



5 C13.1 VALLEY GUTTER DETAIL



TYPICAL SECTION
FIFE LANE STA. 6+77 TO 8+25, 11+00 TO 11+50
SCALE: 1/4"=1'-0"

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Environmental Review Initial Study
ATTACHMENT F
APPLICATION 05-0388

REGISTERED PROFESSIONAL ENGINEER
JOEL FRANCIS KLEIN
No. 53566
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

PRELIMINARY
FOR REVIEW ONLY

APN 037-151-12 & 13 APPLICATION NUMBER 05-0388

NO.	REVISION

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

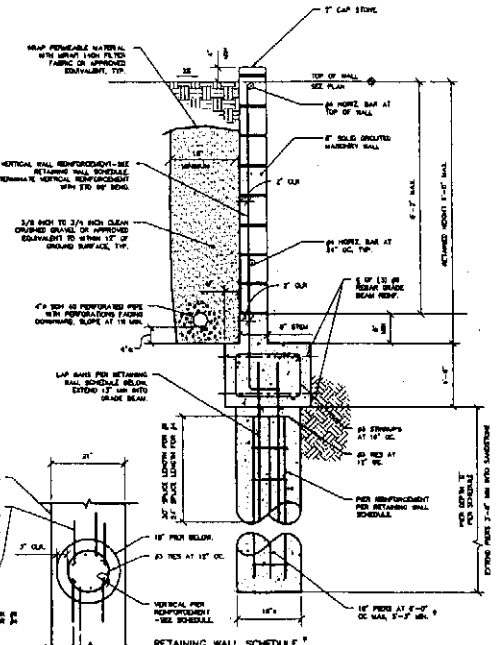
REGISTERED CIVIL ENGINEER NO. 53566

DETAILS

TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

SCALE 1" = 30'	DRAWN JFR/JDK	JOB NO. 3281	SHEET C13.1
DATE JANUARY 5, 2006	CHECKED JFR	PROJ. SQUAD. #	
DESIGN JFR/JDK	CHG NAME	FILE NO. 3281	OF 16

Environmental Review Initial Study
ATTACHMENT 2 pg 19
APPLICATION 05-0288

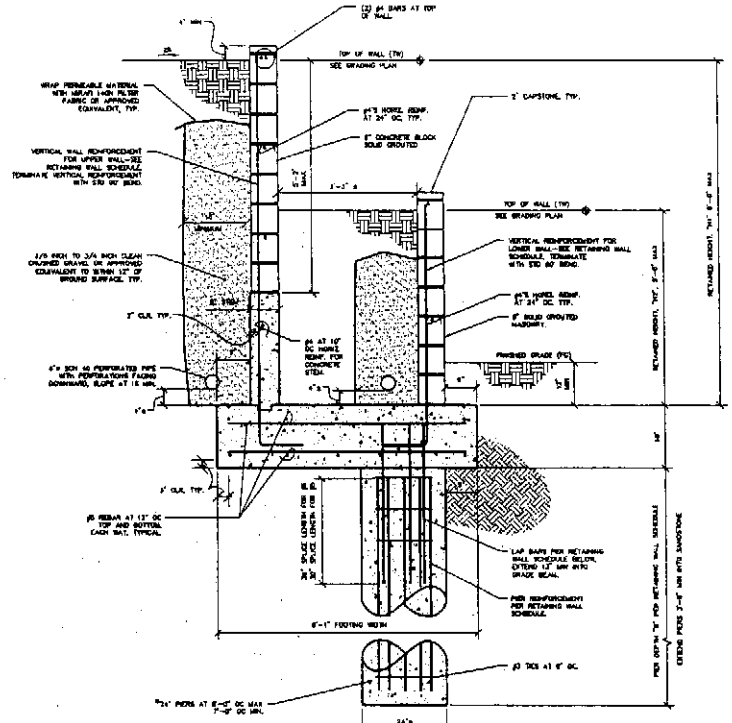


RETAINING WALL SCHEDULE *

RETAINED HEIGHT	PIER DEPTH	PIER REINF.	LAP BARS	VERTICAL WALL REINFORCEMENT
4' < H ≤ 6'	12'-0"	(7) #5'S	(8) #5'S	#5'S AT 8" OC
3' < H ≤ 4'	8'-0"	(5) #5'S	(5) #5'S	#5'S AT 16" OC
H < 3'	6'-0"	(4) #5'S	(4) #5'S	#5'S AT 16" OC

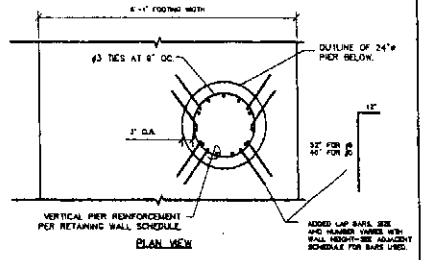
* NOTE: LOCATION OF PIERS FOR SITE RETAINING WALLS SHALL BE COORDINATED WITH LOCATION OF PIERS FOR BUILDING FOUNDATIONS.

4 / 213.2 SITE RETAINING WALL H ≤ 6'
SCALE: 3/4"=1'-0"



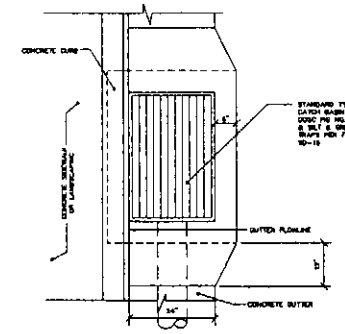
* NOTE: LOCATION OF PIERS FOR SITE RETAINING WALLS SHALL BE COORDINATED WITH LOCATION OF PIERS FOR BUILDING FOUNDATIONS.

5 / 213.2 TYPICAL MASONRY RETAINING WALL WITH PLANTER
SCALE: 3/4"=1'-0"

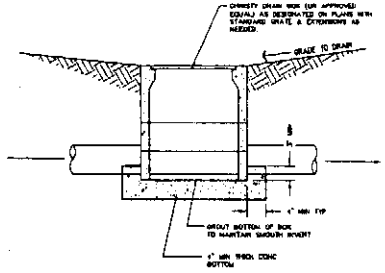


RETAINING WALL SCHEDULE *

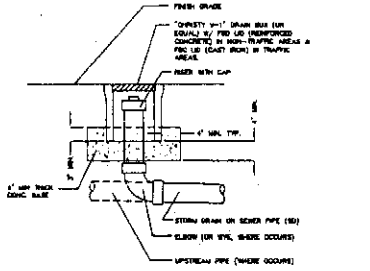
RETAINED HEIGHT	PIER DEPTH	PIER REINF.	LAP BARS	VERTICAL WALL REINFORCEMENT
UPPER WALL				
3' < H1 ≤ 5'	17'-0"	(11) #5'S	(8) #5'S	#5'S AT 8" OC
H1 ≤ 3'	14'-0"	(9) #5'S	(6) #5'S	#5'S AT 8" OC
LOWER WALL				
4' < H2 ≤ 5'	17'-0"	(11) #5'S	(8) #5'S	#5'S AT 8" OC
H2 ≤ 4'	14'-0"	(9) #5'S	(6) #5'S	#5'S AT 16" OC



6 / 213.2 TYPE G.O. CATCH BASIN DETAIL
SCALE: 3/4"=1'-0"



7 / 213.2 TYPICAL CATCH BASIN DETAIL
SCALE: 1"=1'-0"



8 / 213.2 TYPICAL STORM DRAIN CLEANOUT DETAIL (SDCO)
SCALE: N.T.S.

DISCLAIMER

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REGISTERED PROFESSIONAL ENGINEER — JOEL FRANCIS WICKA — No. 53588 — Exp. 6-30-07 — CIVIL — STATE OF CALIFORNIA

PRELIMINARY
Not for Construction

APN 027-151-13 & 13 — APPLICATION NUMBER 05-0288

REVISED

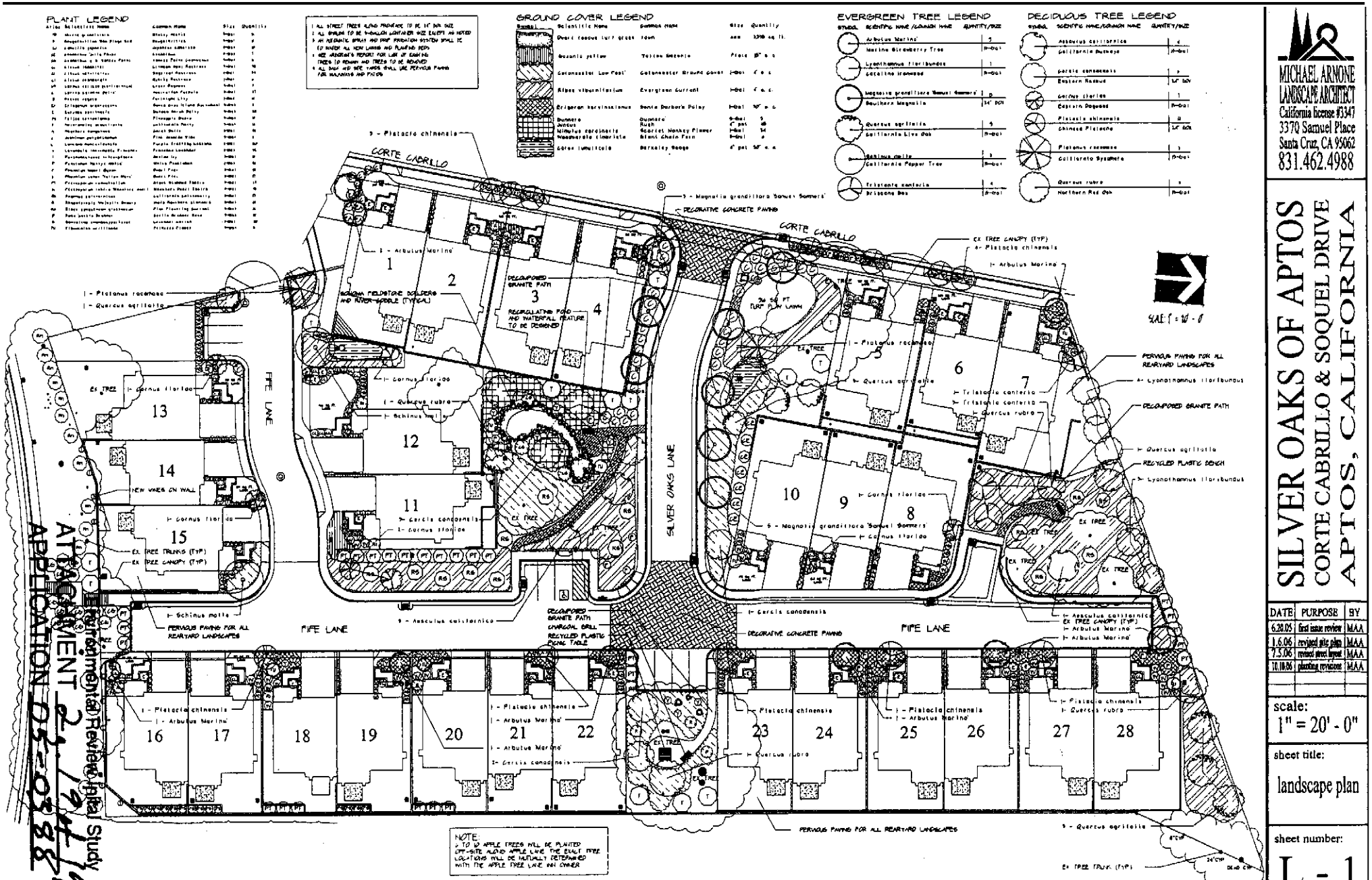
BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

REGISTERED CIVIL ENGINEER NO. 53588

DETAILS

TRACT NO. 1502
SILVER OAKS OF APTOS
APTOS, CALIFORNIA

SCALE	1" = 20'	DRAWN	AB/JDE	JOB NO.	12811	SHEET
DATE	JANUARY 6, 2006	CHECKED	JAW	PAGE	SDSHEET 4	C13.2



ATTACHMENT 2 Environmental Review Initial Study
APPLICATION 05-0388

MICHAEL ARNONE
LANDSCAPE ARCHITECT
California license #3347
3370 Samuel Place
Santa Cruz, CA 95062
831.462.4988

SILVER OAKS OF APTOS
CORTE CABRILLO & SOQUEL DRIVE
APTOS, CALIFORNIA

DATE	PURPOSE	BY
6.20.05	first issue review	MAA
1.6.06	revised site plan	MAA
7.5.06	revised street layout	MAA
10.10.06	planting revisions	MAA

scale: 1" = 20' - 0"

sheet title: landscape plan

sheet number: L - 1

GEOTECHNICAL INVESTIGATION
DESIGN PHASE
PROPOSED SILVER OAKS SUBDIVISION, TRACT NO. 1502
CORTE CABRILLO AND SOQUEL DRIVE, SANTA CRUZ COUNTY, CALIFORNIA
APN 037-151-12 AND 13

FOR
Mr. Mark Holcomb, President
The Holcomb Corporation
19 Seascape Village
Aptos, California 95003

THARP & ASSOCIATES INC
PROJECT NO 05-03
February 2005

1.2 Proposed Development

a. Based on our discussions, it is our understanding that the subject project consists of the construction of approximately 29 two story single family units.

b. Anticipated construction consists of wood frame walls, and roof with concrete slab-on-grade garage floors. It is our understanding that the units may be founded on a drilled, cast-in-place concrete shafts, grade beams and raised wood floors or concrete slabs-on-grade with thickened edge sections. Exact wall, column and foundation loads are unavailable, but are expected to be typical of such construction.

c. Also anticipated is the construction of access roads, attendant driveways, utilities, retaining structures, and associated landscape improvements.

d. The subject site consists of a partially developed parcel on the northeast corner of Corte Cabrillo and Soquel Drive in Santa Cruz County, California. The site is developed with a single family residence and auxiliary structures towards the eastern edge of the parcel. A structure also exists on the southwest corner of the parcel. It is our understanding that the existing residence and auxiliary structures are to be removed and the structure on the southwest corner is to remain.

1.3 Scope of Services

The scope of services provided during the course of our investigation included:

a. Review of previous geotechnical, geologic, and seismological reports and maps pertinent to the site.

b. Field exploration consisting of 9 borings, drilled to depths between of 4.5± feet and 24.0 ± feet below existing grade.

c. Logging and sampling of the boring by our Field Engineer, including the collection of soil samples for laboratory testing.

d. Laboratory testing of soil samples considered representative of subsurface conditions.

e. Geotechnical analyses of field and laboratory data.

f. Preparation of a report (6 copies) presenting our findings, conclusions and recommendations.

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1.4 Authorization

This investigation, as outlined in our Proposal dated January 24, 2005, was performed in accordance with your written authorization of January 25, 2005.

2 FIELD EXPLORATION PROGRAM

Details of the field exploration, including the Boring Logs, Figure A-3 through A-11, are presented in Appendix A.

3 LABORATORY TESTING PROGRAM

Laboratory testing was performed on relatively undisturbed and bulk samples considered representative of subsurface conditions. Details of the laboratory testing program are presented in Appendix B. Test results are presented on the Boring Logs and in Appendix B.

4 SITE DESCRIPTION

4.1 Location

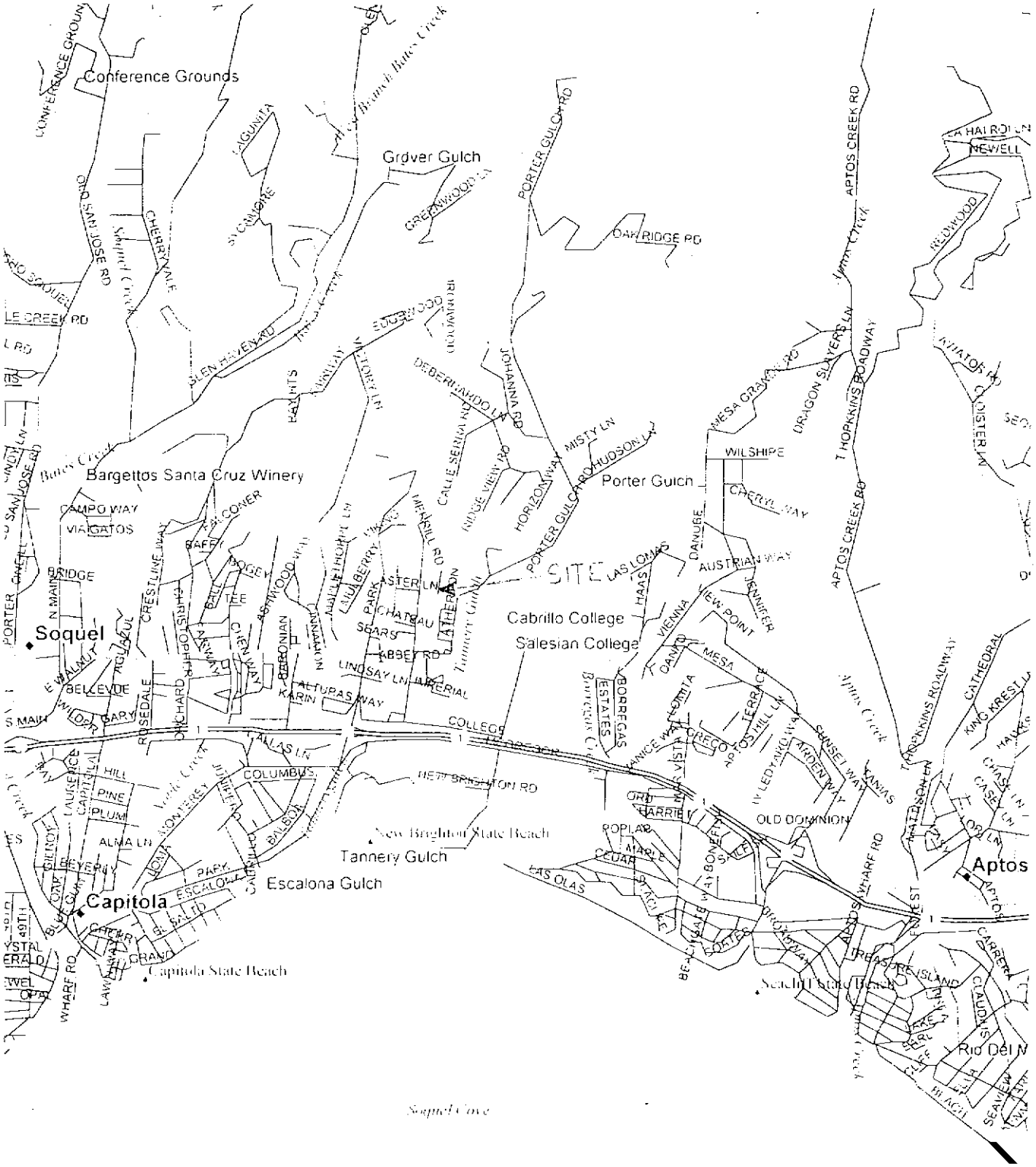
The project site is located on the north side of Highway 1, east of Soquel and west of Aptos in Santa Cruz County, California. The site location is shown on the Location Map, Figure 1.

4.2 Surface Conditions

a. The eastern edge of the property is the crest of a hill that gently descends towards the southwest. 13 units are proposed to be placed on the crest of the hill. The remaining units are proposed to be placed on the gently sloping portion of the parcel.

b. The undeveloped portion of the parcel consists of grasses, trees and brush.

c. The surface soils are generally composed of dark brown to brown silty sand. The surface soil was moist to wet, non plastic, and very loose at the time of our field investigation.



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Tharp and Associates Geotechnical Consultants	SITE LOCATION MAP Corte Cabrillo and Soquel Drive, Santa Cruz County, California	Figure 1

4.3 Subsurface Conditions

a The subsurface profile generally consisted of silty sand and clayey sand overlying sandstone bedrock. Based on otir field investigation atid laboratory testing the silty aiid clayey sand was generally moist to wet, non plastic, loose, arid moderately compressible. The depth *to* bedrock varied across the site. Towards tlie western edge oftlie site, the bedrock was encountered *at* approximately 12 feet below existing grade. Towards the center oftlie slope, aiicl the crest ofthe hill, bedrock was encountered between 3 and 7 feet below existing grade.

b An iiitilled swale was encountered towards tlie western edge of tlie parcel cutting through tlie units adjacent to Corte Cabrillo. Very wet, very loose soil conditions were encountered to bedrock. Recommendations have been provided in the report to mitigate against adverse conditions due to the infilled swale.

d Groundwater was iiot encountered during our field exploration, however, saturated soil coiiditioris and pockets of fiee water were encountered within the infilled swale.

e Complete soil profiles are presented on the Boring Logs, Appendix A, Figures A-3 through A-11. The boring locations are shown on the Boring Location Plan, Figure A-1.

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GEOTECHNICAL HAZARDS

a Geotechnical hazards to man made structures at this site include ground shaking, ground rupture, landsliding, liquefaction, lateral spreading, and differential compaction

b. Ground shaking caused by earthquakes is a complex phenomenon. Structural damage can result from the transmission of earthquake vibrations from the ground into the structure. The intensity of shaking depends on, amongst other items, the proximity of the site to the focal point of the earthquake. Structures built on unconsolidated material generally experience movements of higher amplitude and lower acceleration. In the event of an earthquake, frame and semi-rigid structures with proper seismic parameters incorporated into their design and construction should display only moderate damage. The structure must be designed in accordance with the applicable seismic design parameters outlined in the 1997 Uniform Building Code. See Table I.

Table I. Seismic Design Parameters

		Seismic Coefficient		Near Source Factor		
Soil Profile Type	Seismic Zone Z	C_a	C_v	N_a	N_v	Seismic Source Type
S_C	0.4	$0.40\ N_a$	$0.56\ N_v$	1.52	1.76	A & B

c. Liquefaction, lateral spreading and differential compaction tend to occur in loose, unconsolidated, noncohesive soils with shallow groundwater. The very loose and loose saturated soil within the infilled swale may be liquefiable, however recommendations have been provided within the referenced report to prevent adverse affects to the structures due to potential liquefaction. The lack of shallow groundwater throughout the remainder of the parcel suggests that the potential for these hazards to occur is low

d The subject site has no appreciable vertical relief therefore landsliding is not anticipated to affect the site

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

a Based on the results of our investigation, it is our opinion that from the geotechnical standpoint, the subject site will be suitable for the proposed development provided the recommendations presented herein are implemented during grading and construction

b If these recommendations are implemented in the design and construction, the danger to life and property is considered an ordinary risk (General Plan).

c No active faults are known to exist through the site although published maps indicate the presence of faults nearby

d It is our opinion that the site will be suitable for the support of the proposed units on concrete slabs-on-grade with thickened edge sections and/or drilled, cast-in-place concrete shafts and grade beams, raised wood floors and concrete slab-on-grade garage floors

e If concrete slabs-on-grade with thickened edge sections are utilized For the units adjacent to Corte Cabrillo in the area of the infilled swale, the very loose very wet soil must be removed to bedrock Once the infilled swale is removed to bedrock, a canyon drain should be installed before the soil is replaced with compacted engineered fill See Subsection 6.2.3 for detailed information on the infilled swale removal and the replacement of compacted engineered fill

f If drilled, cast-it-place concrete shafts, grade beams, raised wood floors and concrete slabs-on-grade garage floors are utilized for the units adjacent to Corte Cabrillo, removal of the infilled swale and the construction of a canyon drain is not required We recommend that concrete slab-on-grade garage floors be structurally separate from the grade beams to accommodate for movement and settlement due to the very loose and compressible soils within the infilled swale

g The results of our laboratory testing indicated that the native soil above the bedrock is moderately compressible in its insitu condition In order to ensure uniform compression characteristics and to obviate any potential for differential settlements, site preparation, consisting of overexcavation and recompaction will be required prior to placement of concrete slabs-on-grade with thickened edge sections, concrete slabs-on-grade garage floors, new fills, and pavements See Subsection 6.2.3 for earthwork recommendations in the area of the infilled swale and other areas on the parcel

h We recommend that subdrains be placed on the north and east sides and a minimum of 10 feet on the south side of all units and their respective driveways on the southwest slope and the units adjacent to Corte Cabrillo. The 13 units on the crest of the slope do not require subdrains. The subdrains should be a minimum of 3 feet below the finished grade, or 1 foot below the bottom of the grade beams and/or thickened edge sections, whichever is greater. We also recommend that subdrains be placed on the northern sides of the access roads that run east-west to the bottom of the compacted engineered fill or 3 feet below finished grade, whichever is greater. See Subsection 6.4.3 for subdrain design.

i The results of our laboratory testing indicate that the soluble sulfate content of the on-site soils likely to come into contact with concrete is below the 0.2 percent generally considered to constitute an adverse sulfate condition. Type II cement is therefore considered adequate for use in concrete in contact with the on-site soils.

j We consider that the anticipated grading will not adversely affect, nor be adversely affected by, adjoining property, with due precautions being taken.

k. It is assumed that final grades will not vary more than 4± feet from current grades. Significant variations will require that these recommendations be reviewed.

l The final Grading Plans, Foundation Plans and design loads should be reviewed by this office during their preparation, prior to contract bidding.

m The design recommendations of this report must be reviewed during the grading phase when subsurface conditions in the excavations become exposed.

n Field observation and testing must be provided by a representative of Tharp & Associates, Inc. to enable them to form an opinion regarding the adequacy of the site preparation, the adequacy of fill materials, and the extent to which the earthwork is performed in accordance with the geotechnical conditions present, the requirements of the regulating agencies, the project specifications and the recommendations presented in this report. Any earthwork performed in connection with the subject project without the full knowledge of, and not under the direct observation of Tharp & Associates, Inc., the Geotechnical Consultant, will render the recommendations of this report invalid.

o The Geotechnical Consultant sliotild be notified at least 5 working days prior to any site clearing or other earthwork operations on the subject project in order to observe tlie stripping aiid disposal of unsuitable materials and to ensure coordination with tlie grading contractor During this period, a preconstruction conference should be held on the site to discuss project specifications. observation/testing requirements aiid responsibilities, and scheduling This conference sliould include at least the Grading Contractor. the Architect. and the Geotechnical Consultant

6 2 Grading

6.2.1 General

All grading and earthwork should be performed in accordance with the recommendations presented herein and the requirements of the regulating agencies.

6 2 3 Cite Clearing

a Prior to grading, the areas to be developed for structures, pavements arid other improvements, should be stripped *ot* anv vegetation and cleared of any surface *or* subsurface obstructions, including any existing foundations, utility lines, basements, septic tanks, pavements, stockpiled fills, and miscellaneous debris

b. All pipelines encountered during grading should be relocated as necessary to be completely removed from construction areas or be capped and plugged according to applicable code requirements.

c. Any wells encountered shall be capped in accordance with Santa Cruz County Health Department requirements. The strength of the cap shall be at least equal to the adjacent soil and shall not be located within 5 feet of any structural element.

d Surface vegetation and organically contaminated topsoil should be removed from areas to be graded. The required depth of stripping will vary with the time of year the work is done and must be observed by the Geotechnical Consultant. It is generally anticipated that the required depth of stripping will be 6 to 12 inches.

Note. If this work is done during or soon after the rainy season, or in the spring, the soil may be too wet to be used as engineered fill.

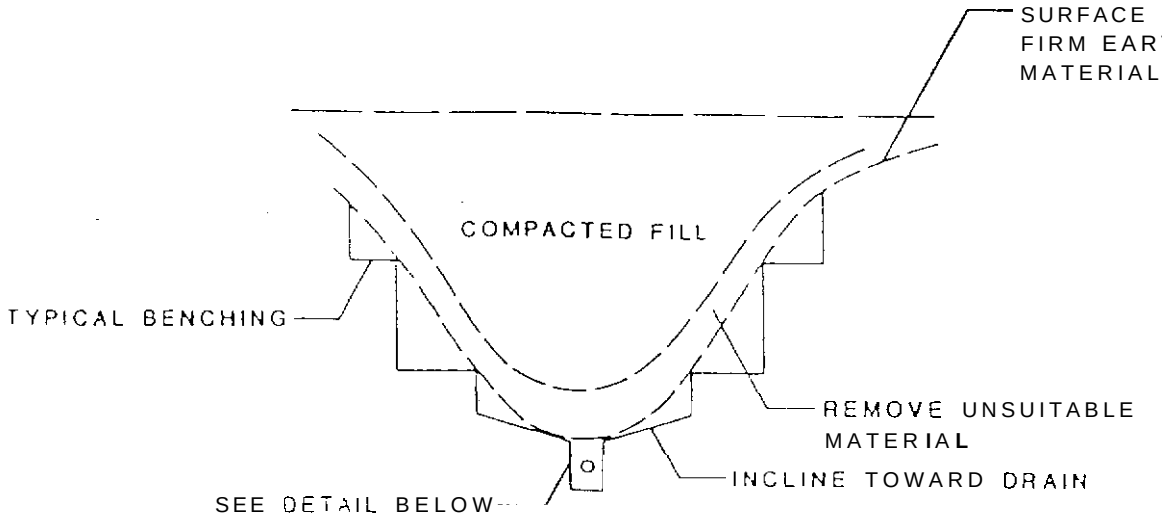
e Holes resulting from the removal of buried obstructions that extend below finished site grades should be backfilled with compacted engineered till.

6.2.3 Preparation of On-Site Soils

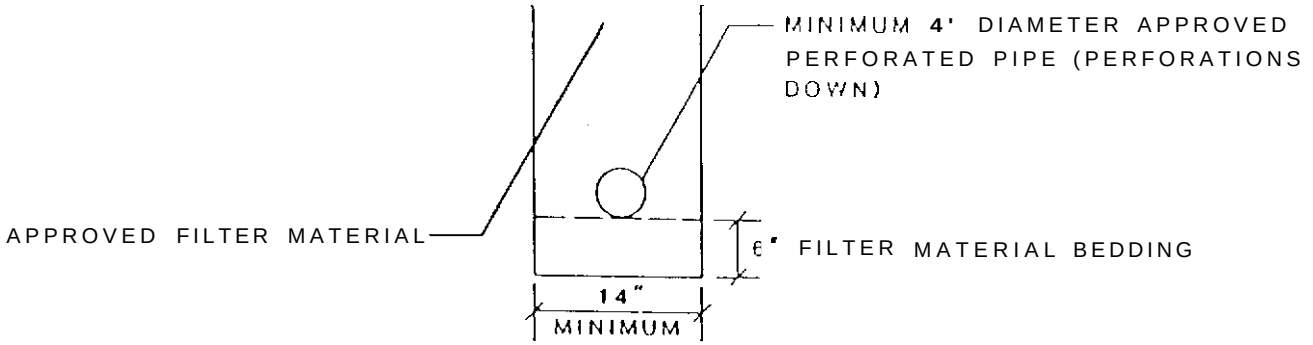
a The results of our tield investigation arid laboratory testing indicate that the near-surface soils on tlie subject site consist of moderately compressible silty sand aiid c l a p sand In order to ensure uniform compression characteristics atid to obviate any potential for differential settlements, site preparation consisting of overexcavation and recompaction will be required prior to placement of concrete slabs-on-grade with thickened edge sections, concrete slabs-on-grade garage floors, new tills, arid pavements The depths of overexcavation and recompaction recommended herein are subject to review during grading

b Itconcrete slabs-on-grade with tliickeiied edge sections are utilized for the units adjacent to Corte Cabrillo. in the area of the infilled swale. tlie very loose, very wet soil must be removed to bedrock The bedrock sliould be keyed aiid benched per Figure 2 Once the iiifilled swale is removed to bedrock, a canyon drain sliould be installed pet Figure 2, and Subsection 6 4 3 c to f before tlie soil is replaced with compacted engineered fill per Subsection 6 3 4 The removed iiiaterial may be used as compacted engineered till. however the material may require significant drying to achieve an optimum moisture content The infilled swale generally runs north south aiid should be removed the entire length of the parcel The depth of removal will be approximately 12 feet at the deepest point, however tlie exact location and depth of removal will be determined in tlie field during grading operations

c. If concrete slabs-on-grade with thickened edge sections are utilized for the remaining units, the native soil should be overexcavated a minimum 2 feet below the bottom of the thickened edge section, or to 4 feet below existing grade, whichever is greater. If bedrock is encountered at a depth of less than 2 feet below the bottom of the thickened edge section or less than 4 feet from existing grade, a minimum of 1 foot of engineered fill should be placed beneath the thickened edge sections. **Preliminary overexcavation depths for the units on the ridge and the units on the slope have been outlined in Table II. The overexcavation depths have been determined based on the lowest point of existing grade within each unit. Due to the slope of existing grade, a substantial amount of overexcavation is required for each unit.**



DETAIL



FILTER MATERIAL **TO** MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

SIEVE SIZE	PERCENTAGE
1"	100
3/4"	90-100
3/8"	40-100
N0.4	25-40
N0.30	5-15
NO.50	0-7
N0.200	0-3

APPROVED PIPE TO BE SCHEDULE O POLY-VINYL-CHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 psi

PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

LENGTH *OF* **RUN**	PIPE DIAMETER
UPPER 500'	4'
NEXT 1000'	6"
> 1500'	8"

Tharp and Associates Geotechnical Consultants	TYPICAL CANYON SUBDRAIN DETAIL	Figure 2

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These **depths are subject to review during grading and may change if finished floor elevations differ from the referenced plan set.** If wet conditions are encountered at the bottom of the excavation, stabilization fabric may be required The material which was removed should then be replaced as compacted engineered fill per the recommendations presented in Subsection 6 2.4 The difference in elevation between the bottom of the overexcavation on the fill side and the bottom of the overexcavation on the cut side should not exceed 5 Feet See Figure 3 for general details **This zone of reworking shall extend a minimum of 3 feet laterally beyond the slab footprint. Due to the variation in elevation of adjoining units, the lateral overbuild of 3 feet should be performed for the lower unit.**

d If drilled cast-in-place concrete shafts and grade beams with raised wood floors are utilized for the units, no overexcavation and recompaction of the native subgrade beneath the structure is required, other than that required to recompact material disturbed during construction For concrete slab-on-grade garage floors, the native soil should be reworked to a depth sufficient to provide a zone of compacted fill extending at least 2 feet below the original ground surface and should result in at least 1 5 feet of reworked material below the aggregate base coarse per Subsection 6.2 4 Wet conditions should be anticipated in the area of the infilled swale, stabilization fabric may be required at the base of the excavation

e In lieu of overexcavation and recompaction of the native subgrade beneath concrete slab-on-grade garage floors, the removed soil, as outlined in Subsection 6 2 3 d , may be replaced with 3/4 inch angular clean gravel The gravel should be vibrated to ensure uniform compression characteristics and obviate any potential for differential settlements

f In pavement areas the native soil should be reworked to a depth sufficient to provide a zone of compacted fill extending at least 2 feet below the original ground surface and should result in at least 1 5 feet of reworked material below the aggregate base coarse per Subsection 6 2 4 This zone of reworking should extend laterally a minimum of 3 feet beyond the pavement

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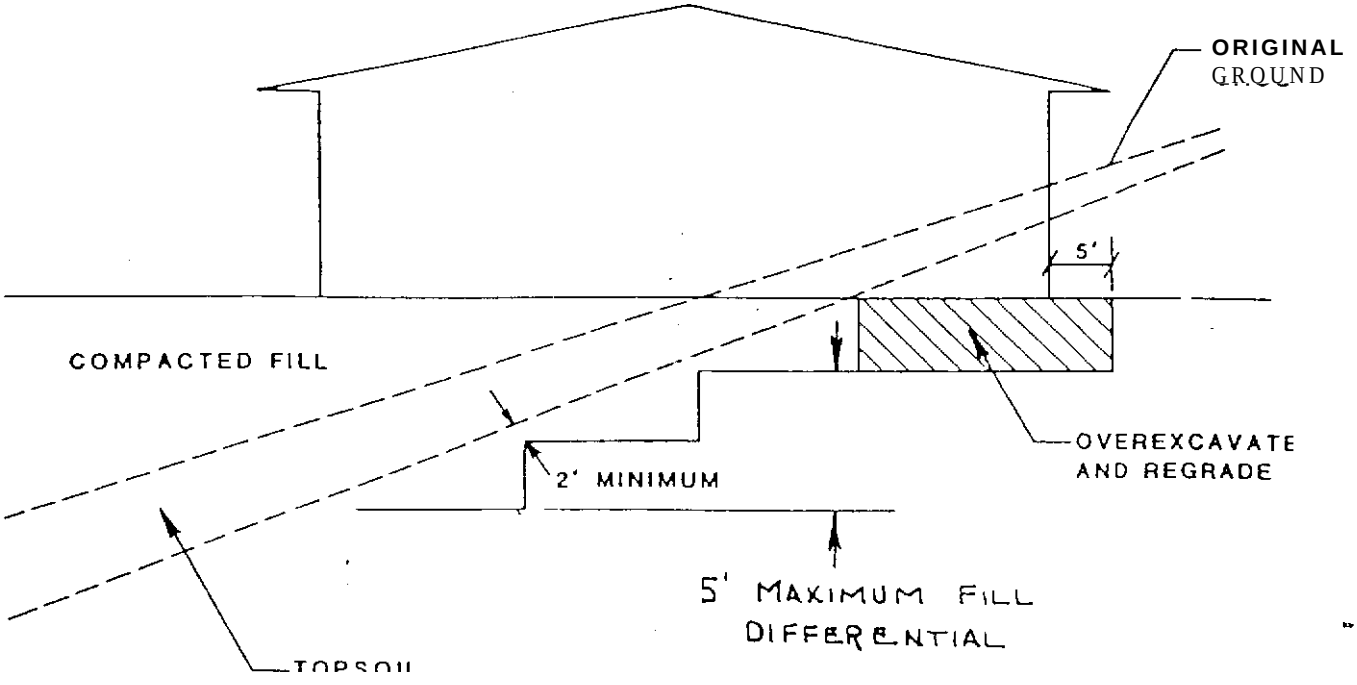
CUT/FILL LOT (TRANSITION)



Tharp and Associates Ceotechnical	CUT/FILL TRANSITION PAD	Figure 3

g. If the infilled swale is not removed, in pavement areas over the infilled swale, the native soil material should be reworked to a depth sufficient to provide a zone of compacted fill extending at least 3.5 feet below the original ground surface and should result in at least 2.5 feet of reworked material below the aggregate base coarse per Subsection 6.2.4. This zone of reworking should extend laterally a minimum of 3 feet beyond the pavement. Wet conditions should be anticipated in the area of the infilled swale, stabilization fabric may be required at the base of the excavation. Premature degradation and cracking of the pavements may occur within the infilled swale area if it is not removed and replaced as outlined in Subsection 6.3.3.b.

h. Beneath new fills, the native soil should be removed to 4 feet below existing grade, or bedrock, whichever is less.

i. Due to the fact that the depth of reworking will be dependent on the slab and pavement grades, etc., our office should be provided with a copy of the final, approved plans prior to the commencement of earthwork operations.

j. The depths of reworking required are subject to review by the Geotechnical Consultant during grading when subsurface conditions become exposed.

k. Settlements may need to be evaluated should the planned grades result in the ground surface being raised 4± or more feet above the existing grades. Should this occur, some additional reworking of existing materials may be required.

l. The depths of overexcavation should be reviewed by the Geotechnical Consultant during the actual construction. Any surface or subsurface obstruction, or questionable material encountered during grading, should be brought immediately to the attention of the Geotechnical Consultant for proper processing as required.

Table II. Preliminary Overexcavation Depths

Note: These depths are subject to review during grading and may change if finished floor elevations differ from the referenced plan set.

((NIT	ELEVATION OF FINISHED GRADE	ELEVATION OF BOTTOM OF FOOTING	ELEVATION OF BOTTOM OF OVEREXCAVATION
	198.5	196.5	191.0
	200.5	198.5	193.0
	204.0	202.0	197.0
4	206.0	204.0	201.0
	212.5	210.5	207.5
6	214.5	212.5	209.5
7	216.5	214.5	211.5
8	223.0	221.0	217.5
9	225.0	223.0	219.5
10	226.5	224.5	221.5
11	228.5	226.5	223.5
12	230.5	228.5	225.5
13	232.5	230.5	227.5
14	199.0	198.0	190.0
15	197.0	195.0	191.0
16	195.0	193.0	189.0
17	205.75	203.75	201.0
18	201.0	199.0	197.0
19	199.0	197.0	193.0
20	218.75	216.75	210.5
21	219.25	217.25	212.5
22	220.25	218.25	212.5

6 2 4 till Placement and Compaction

a Any till or backfill required should be placed in accordance with tlie recommendations presented below

b All fill should be coiiipacted with heavy vibratory equipment

c With the exception oftlie upper 6 inches of subgrade in pavement and driveway areas, iiiaterial to be compacted or reworked should be moisture coiiditioiied or dried to achieve near optimum conditions, and compacted to achieve a minimum relative compaction of 90 percent The upper 6 inches of subgrade in pavement and drive areas aiid all aggregate base and subbase shall be coiiipacted to achieve a minimum relative compaction of 95 perceiit Tlie placement nioisttire content of imported material should be evaluated prior to grading

ti Tlie relative conipaction and required moisture content shall be based on tlie maximum dry density arid optimum moisture content obtained in accordaiice with ASTM D-1557.

e Fill should be coiiipacted by mechanical means in uniform horizontal loose lifts not exceeding 8 inches in thickness

f Imported fill material should be approved by the Geotechnical Consultant prior to importing Soils having a significant expansion potential should iiot be used as imported fill **The Geotechnical Consultant should be notified riot less than 5 working days in advance of placing aiiy fill or base course** material proposed for import. Each proposed source of import iiiaterial should be sampled tested and approved by the Geotechnical Consultant prior to delivery of any soils imported for use on the site

g All till should be placed and all grading performed in accordance applicable codes and tlie requirements ofthe regulating agency

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6 2 5 Cut aiid Fill Slopes

a **Significant** Cut **arid Fill** slopes are iiot **anticipated** for the project **at this time.** Fill **slopes should not exceed** 5 feet **in** vertical **height unless** specifically reviewed **by the Geotechnical Consultant.** Where tlie vertical height exceeds 10 fret, intermediate benches must he provided These benches sliould be at least 6 feet wide and sloped to control surface drainage 4 lined ditch should be used on each bench

b All fill slopes sliould be constructed with engineered **fill** meeting the minimum density requirements of this report and have a gradient no steeper than 2 1 (horizontal to vertical)

c Fill slopes shall be benched and keyed into tlie native slopes by providing a base keyway whose minimum width is 10 feet and which is sloped negatively at least 2 percent back into tlie slope The depth of keyways will vary, depending on the materials encountered. but at all locations shall be ai least 2 feet into firm material This keyway sliould be combined with intermediate benching as required Refer to Figure 4 for general details

d Cut slopes shall not exceed a 2 1 (horizontal to vertical) gradient and a 15 foot vertical height unless specifically reviewed by the Geotechnical Consultant Where tlie vertical height exceeds 15 feet. intermediate benches must be provided These benches slioiild be at least 6 feet wide and sloped to control surface drainage A lined ditch should lie used on each bench

e If a fill slope is to be placed above a cut slope. tlie toe oftlie till slope should be sei back at least 8 feet horizontally from the top ofthe cut slope A lateral surface drain should be placed in the area between the cut aiid fill slopes

I' The above slope gradients are based on tlie strength characteristics of the materials under conditions of normal moisture content that would result from rainfall falling dii-ectly on tlie slope, arid do not take into account tlie additional activating forces applied by seepage from spring areas Therefore. in order to maintain stable slopes at the recommended gradients. it is important that any seepage forces and accompanying hydrostatic pressure encountered be relieved by adequate drainage

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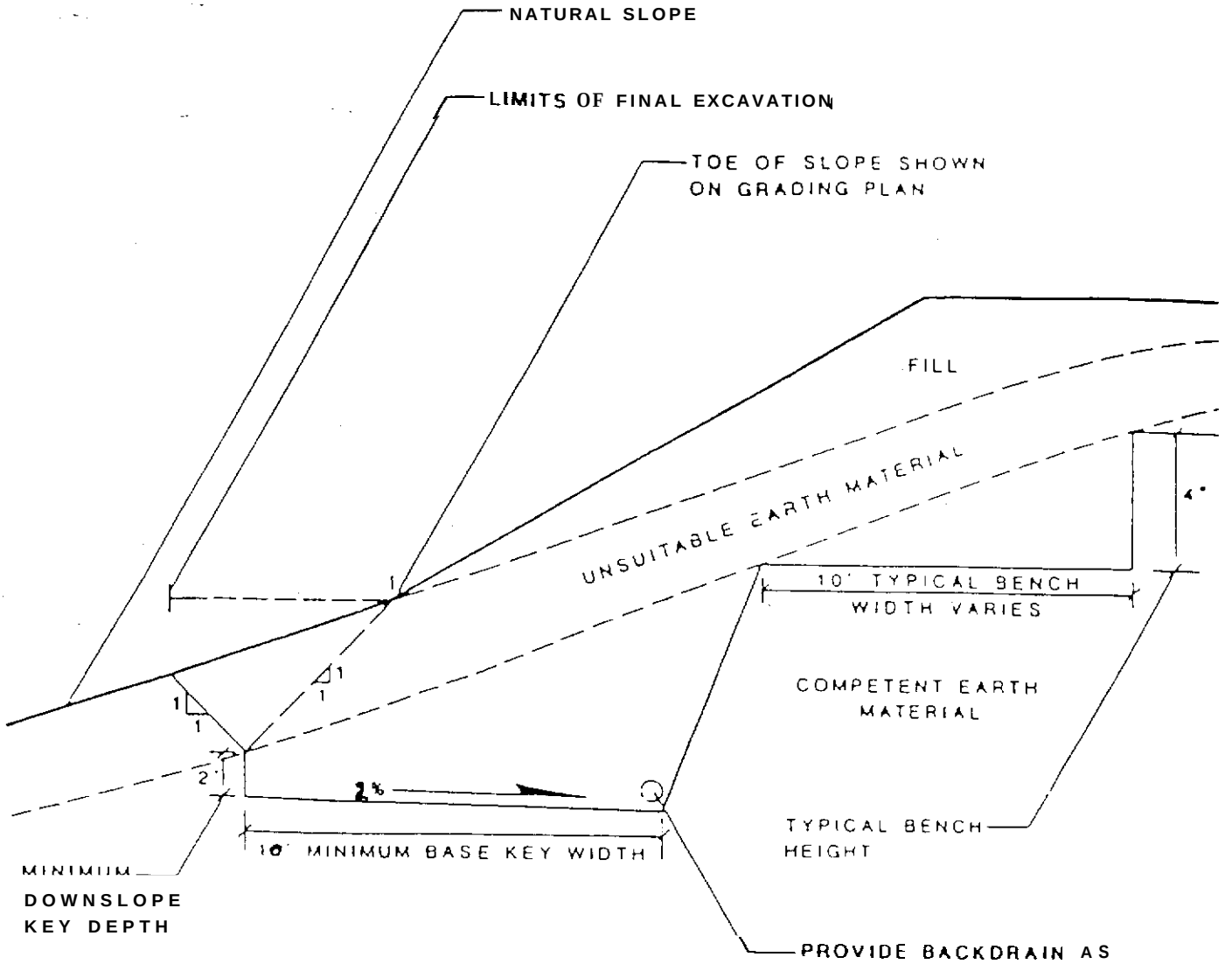

WHERE NATURAL SLOPE GRADIENT IS 5 1 OR LESS BENCHING IS NOT NECESSARY HOWEVER FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL

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Tharp & Associates Geotechnical Consultants	TYPICAL KEY AND **BENCH** DETAIL FILL OVER **NATIVE** SLOPE	Figure 4

Drainage facilities may include subdrains, gravel blankets, rockfill surface trenches or horizontally drilled drains **Configurations and type of drainage will be determined by the Geotechnical Consultant during the grading operations, however, the need for back drains behind fill slopes should be anticipated.**

a The surfaces of all cut and fill slopes should be worked to reduce erosion This work, as a minimum, should include track rolling of the fill slopes and effective planting of all slopes The protection of the slopes should be installed as soon as practicable so that a sufficient growth will be established prior to inclement weather conditions It is vital that no slope be left standing through a winter season without the erosion control measures having been provided

b The above recommended gradients do not preclude periodic maintenance of the slopes, as minor sloughing and erosion may take place

6 2 6 Fill Material

a The on-site soils may be used as compacted fill **Wet conditions were encountered during our field exploration. Significant drying of the soil may be required to achieve optimum moisture conditions.**

b All soils, both existing on-site and imported, to be used as fill, should contain less than 3 percent organics and be free of debris and cobbles over 6 inches in maximum dimension

6 2 7 Shrinkage and Subsidence

a Shrinkage due to the removal and recompaction of the existing on-site native soils is estimated to be on the order of 12 percent in the area of the unfilled swale Shrinkage due to the removal and recompaction of the existing on-site native soils is estimated to be on the order of 9 percent in the remainder of the site Subsidence may be assumed to be ½ to 1 inch

b These are preliminary estimates which may vary with depth of removal, stripping loss, and field conditions at the time of grading Handling losses are not included

6 2 8 Excavating Conditions

a We anticipate that excavation of the oil-site soils may be accomplished with standard earthmoving and trenching equipment

b Though not anticipated at this time, any excavations adjacent to existing structures sliould be reviewed. and recommendations obtained to prevent undermining or distress to these structures

6 2 9 Expansive Soils

a The results ot our laboratory testing indicate that the expansion potential of the soils should be considered Low

b Expansion testing may be required to evaluate the expansivity of material proposed for imported till

6.2.10 Utility Trenches

a We reconinleiid that all utility trenches in tlie area of the infilled swale incorporate a subdrain at the base of the trench. See Subsectioii 6.4.3. for subdrain recommendations. Slurry cut-off walls should be incorporated in utility trenches running beneath roadways arid areas of steep gradients.

b Bedding material should consist of sand with SE not less than 30 which may then be jetted

c Existing oil-site soils may be utilized for trench backfill, provided they are free of organic material and rocks over 6 inches in diameter

d If sand is used, a 3 foot concrete plug should be placed in each trench where it passes under tlie exterior footings

e Backfill of all exterior aiid interior trenches should be placed in thin lifts aiid mechanically compacted to achieve a relative compaction of iiot less than 95 perceiit in paved areas atid 90 percent in otlier areas per ASTM D-1557 Cai-e sliould be taken not to damage utility lines

f Utility trenches that are parallel to the sides of a building should be placed so tliat they do not extend below a line sloping down and away at an inclination of 2 horizontal to 1 vertical froni the bottom outside edge of all tootings

g Trenches should be capped with 1 5± feet of impermeable material Import iiiaterial must be approved by the Geotechnical Consultant prior to its use

h Trenches must be shored as required by tlie local regulatory agency, the State Of California Division of Industrial Safety Construction Safety Orders, aiid Federal OSHA requirements

6 3 11 Surface Drainage

a Pad drainage sliould be designed to collect and direct surface water away from structures to approved drainage facilities A minimum gradient of 2± percent sliotild be maintained and drainage should be directed toward approved swales or drainage faciiities Concentrations of surface water runoff should be handled by providing tlie necessary structures, paved ditches. catch basins, etc

b Drainage patterns approved at the time of construction should be maintained throughout tlie life of the structures The building and surface drainage facilities must not be altered nor any grading, filling, or excavation conducted in the ai-ea without prior review by the Ceotechiiical Consultant

c All roof eaves should be guttered with tlie outlets from tlie downspouts provided with adequate capacity to carry tlie storm water away from the structure to reduce the possibility of soil saturation and erosion The connection should be to a closed conduit which discharges at an approved location away froiii the structure arid tlie graded area

d Irrigation activities at the site should be controlled and reasonable Planter areas should not be sited adjacent to walls without implementing approved measures to contain irrigation water aiid prevent it from seeping into walls and under foundations aiid slabs-on-grade

e The surface soils are classified as moderately erodible Therefore, tlie finished ground sui-face should be planted with erosion resistant landscaping and ground cover and continually maintained to minimize surface erosion

6.3 Foundations

6.3.1 General

a Based on the results of our field exploration and laboratory testing, it is our opinion that the site will be suitable for the support of the proposed units on concrete slabs-on-grade with thickened edge sections and/or drilled. cast-in-place concrete shafts and grade beams raised wood floors and concrete slab-on-grade garage floors

b We recommend that the grade beams and/or thickened edge sections be founded a minimum of 2 feet below finished grade. This will help to mitigate against moisture infiltration beneath the grade beams and/or thickened edge sections.

c We recommend that the garage concrete slabs-on-grade be structurally separate from the drilled, cast-in-place concrete shafts and grade beams.

d At the time we prepared this report, the grading plans and foundation details had not been finalized

e We request an opportunity to review these items during the design stages to determine if supplemental recommendations will be required

6.3.2 Slabs-On-Grade

a Concrete floor slabs may be founded on compacted engineered fill per the recommendations in Subsection 6.2.3. The subgrade should be proof-rolled just prior to construction to provide a firm, relatively unyielding surface. especially if the surface has been loosened by the passage of construction traffic.

b The allowable bearing capacity used should not exceed 2800 lbs/ft^2

c A modulus of subgrade reaction of 250 kcf may be used for design purposes

d We recommend that the thickened edge sections be founded a minimum of 2 feet below finished grade. This will help to mitigate against moisture infiltration beneath the thickened edge sections.

e The slab-on-grade should incorporate a minimum 4 inch capillary break consisting of 3/8 inch to 3/4 inch, clean crushed gravel overlain by a 10 mil waterproof membrane Structural considerations may govern the thickness of the capillary break Place a 2 inch layer of moist sand on top of the membrane. This will help protect the membrane atid will assist in equalizing the curing rate oftlie coiicrete Where moisture sensitive tloor coverings are anticipated or vapor transmission may be a problem. the waterproof membrane will help to reduce moisture condensation under tlie floor coverings

f Requirements for pre-wetting of the subgrade soils prior to the pouring of the slabs will depend on the specific soils arid seasonal moisture conditions arid will be determined by the Geotechnical Consultant at the time of construction It is important that the subgrade soils be thoroughly saturated for 24 to 48 hours prior to the time the concrete is poured

g The subgrade should be presoaked as follows

With Low Expansivity Soil - 4 percentage points above optimum, or to 120 percent optimum, whichever is greater, to 1 foot depth

h For presoaking purposes the expansivity of tlie on site soils may be considered Low

i Slab thickness, reinforcement, and doweling should be determined by the Project Structural Engineer, based on the design live and dead loads. including veliicles

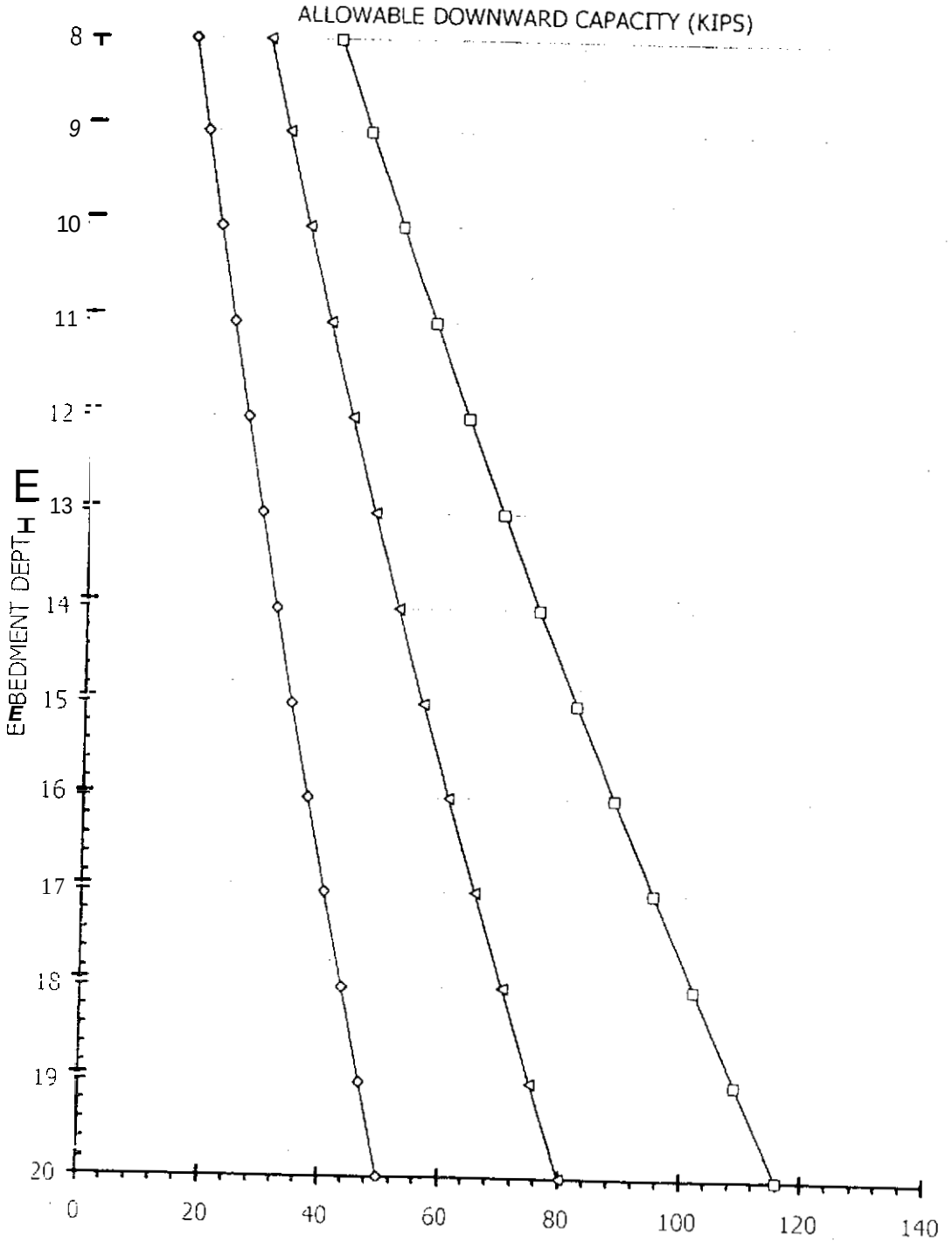
6 3 3 Drilled Cast-In-Place Concrete Shafts

a **The drilled, cast-iii-place concrete** shafts **slioiild be founded a minimum** of **3 feet into the Sandstone bedrock or 8 feet** below **the bottom** of **the grade beams, whichever** is greater

b **We recommend that the grade beanis be founded a minimum of 2 feet below finished grade. This** will help **to mitigate against moisture infiltration beneath the grade** beanis.

c The minimum recommended **shaft** diaiiieter is 1 5 feet

d The estiniated allowable **downward** atid upward axial **shaft** capacities for 1 5, 2, arid 2 5 foot **diameter**, drilled. cast-in-place. concrete shafts are presented in **Figures** 5. **I** and 5 2 These capacities do.not tticlu.de tlie **weight** of the **shaft**



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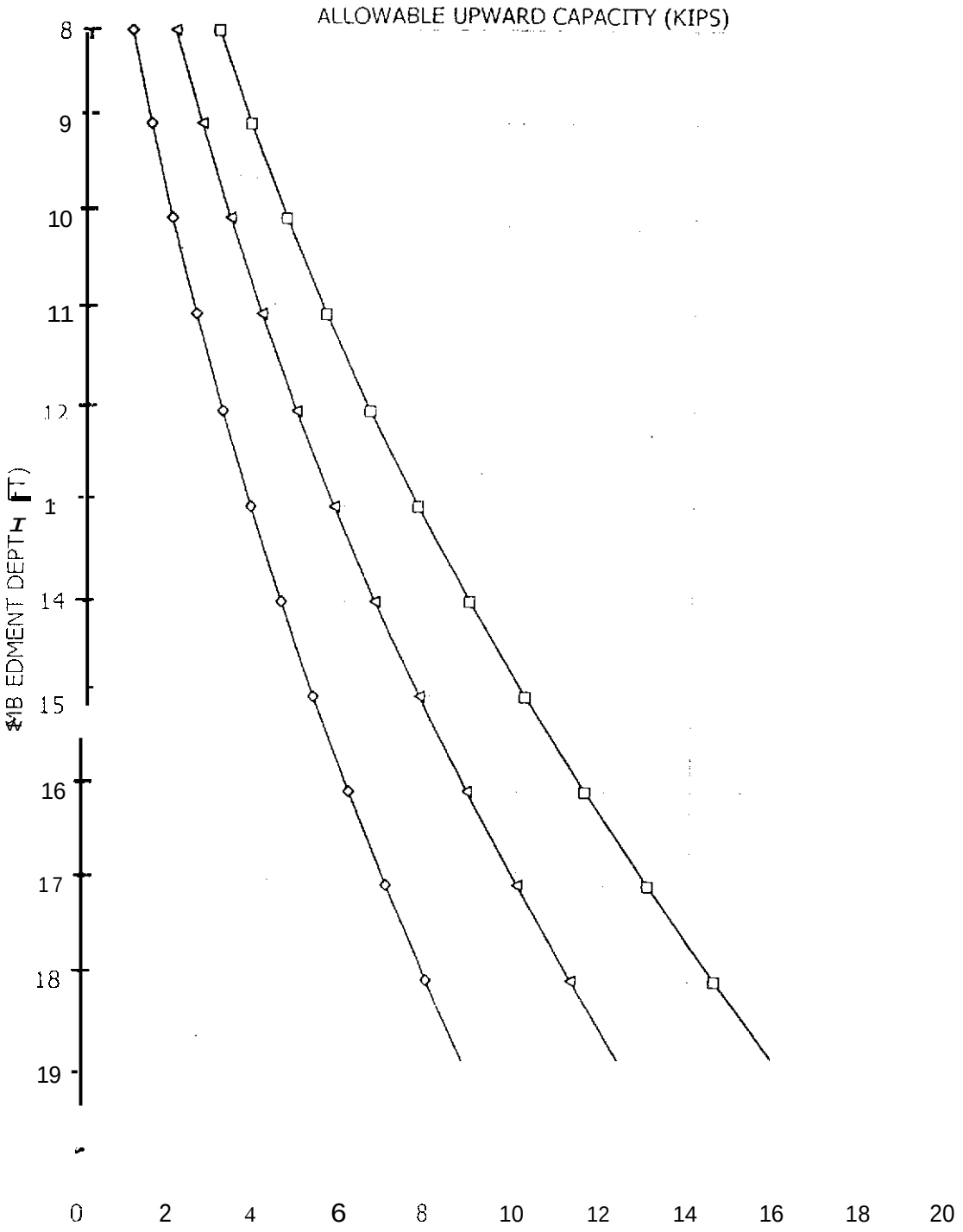
KEY	
----○----	1.5 Foot Diameter
----△----	2.0 Foot Diameter
----□----	2.5 Foot Diameter

Tharp & Associates Geotechnical Consultants	ALLOWABLE **DOWNWARD** CAPACITY DRILLED, CAST-IN-PLACE, CONCRETE SHAFTS	Figure 5.1



KEY

----◇----	1 5 Foot Diameter
----△----	3 0 Foot Diameter
---□----	2 5 Foot Diameter

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Tharp & Associates Geotechnical Consultants	ALLOWABLE UPWARD CAPACITY DRILLED, CAST-IN-PLACE, CONCRETE SHAFTS	Figure 5 2

o. Tlie shaft(s) sliotild contain steel reinforcement as determined by the Project Structural Engineer in accordance with applicable UBC or ACI Standards

6 3 4 Settlements

Total and differential settlements beiieath foundation elements are expected to be within tolerable limits Vertical movements are not expected to exceed 1 inch Differential movements are expected to be within the normal range (½ inch) for tlie anticipated loads and spacings These preliminary estimates sliould be reviewed by the Geotechnical Consultant when Foundation plans for the proposed structures become available If the infilled swale is not removed and replaced with coiiipacted engineered fill beneath tlie garage concrete slabs-oil-gratis. premature cracking and degradation ofthe slabs may occur within the design lifetime oftlie subdivision

6 4 Retaining Structures

Type	Soil Profile	Soil Pressure (psf/ft)	
		Unrestrained Wall	Rigidly Supported Wall
Active Pressure	Level 2 1	40 60	
At-Rest Pressure	Level 2:1	- -	*60* 100
Passive Pressure (ignore upper 2 ft)	Level 3 1	400 250	200 125

soil and rough concrete

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05-0388

c Where both friction atid the passive resistance are utilized for sliding resistance. either oftlie values indicated should be reduced by one-third

d. These are ultimate values, no factor ofsafety has been applied

e Pressure due to any surcharge loads from adjacent footings. traffic, etc , slioiild be analyzed separately Pressures due to these loading can be supplied upon receipt of the appropriate plans and loads Refer to Figure 6

6.4.2 Backfill

a Backfill should be placed under engineering control

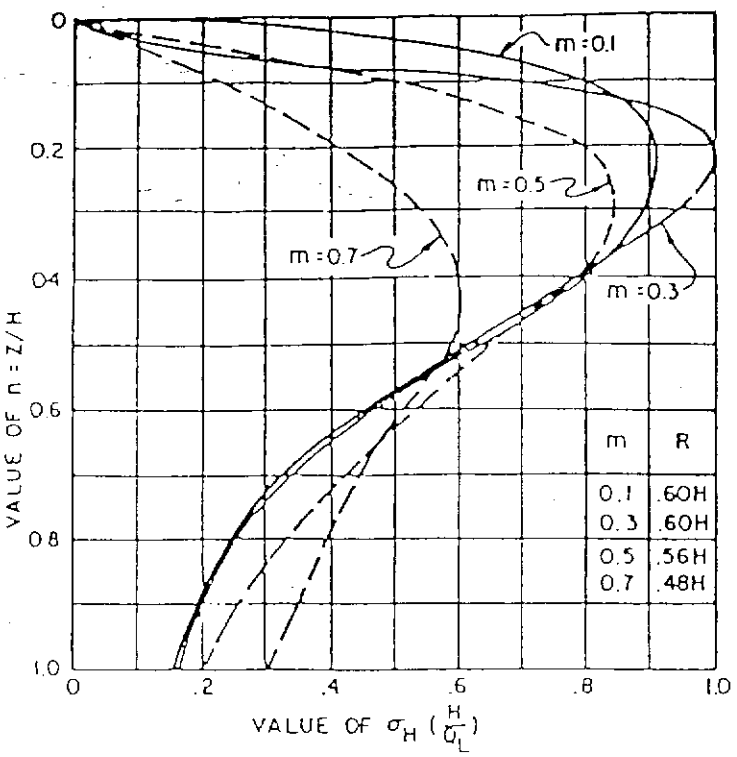
b It is recommended that granular, or relatively low expansivity, backfill be utilized. for a width equal to approximately 1/3 times *the* wall height, aiid not less than 1.5 feet, subject to review during construction

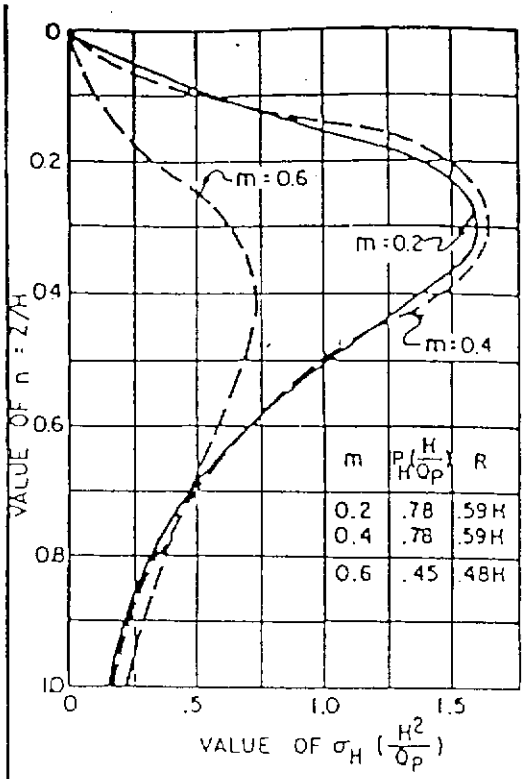
c The granular backfill sliould be capped with at least 18 inches of relatively impermeable material

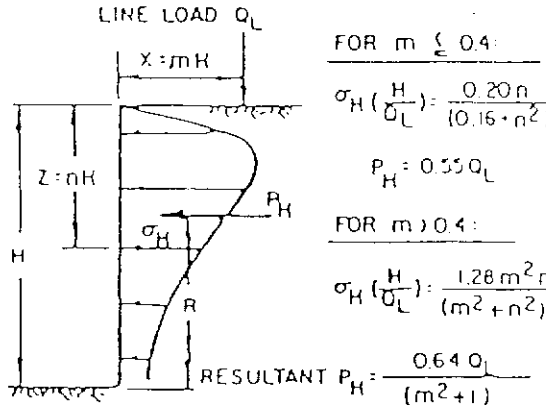
d Backfill should be coiiipacted to achieve a minimum *90* percent relative compaction, tlie conipaction standard being obtained in accordance with ASTM D-1557

e Precautions sliould be taken to ensure that heavy compaction equipment is not used immediately adjacent to walls, so as to prevent undue pressures against. arid movement of, the walls

f The use of water-stops/impermeable barriers aiid appropriate waterproofing should be considered foi any basement construction, aiid for building walls wliicli retain earth







FOR m ≤ 0.4:

$$\sigma_H\left(\frac{H}{Q_L}\right) = \frac{0.20n}{(0.16+n^2)^2}$$

$$P_H = 0.55\,Q_L$$

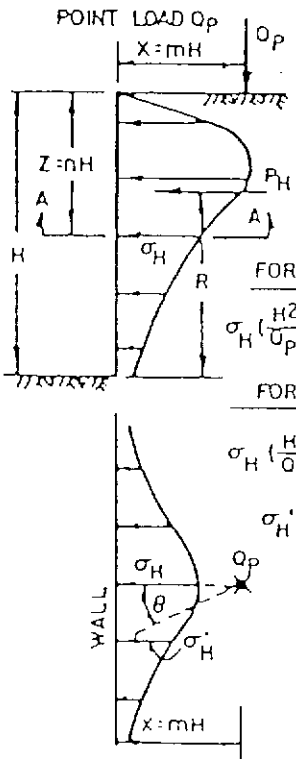
FOR m > 0.4:

$$\sigma_H\left(\frac{H}{Q_L}\right) = \frac{1.28m^2n}{(m^2+n^2)^2}$$

RESULTANT $P_H = \frac{0.64\,Q_L}{(m^2+1)}$

PRESSURES FROM LINE LOAD Q_L

(BOUSSINESQ EQUATION MODIFIED BY EXPERIMENT)



FOR m ≤ 0.4:

$$\sigma_H\left(\frac{H^2}{Q_P}\right) = \frac{0.28n^2}{(0.16+n^2)^3}$$

FOR m > 0.4:

$$\sigma_H\left(\frac{H^2}{Q_P}\right) = \frac{1.77m^2n^2}{(m^2+n^2)^3}$$

$$\sigma_H' = \sigma_H \cos^2(1.1\theta)$$

SECTION A-A

PRESSURES FROM POINT LOAD Op

(BOUSSINESQ EQUATION MODIFIED BY EXPERIMENT)

Reference: Design Manual
NAVFAC DN-? 2
Figure 11
Page 7.2-74

Tharp & Associates Geotechnical Consultants	SURCHARGE PRESSURE DIAGRAM LATERAL SURCHARGE PRESSURE DUE TO ADJACENT VERTICAL LOADS	Figure 6

6.4.3 Backfill Drainage and Subdrain/Canyon Drain Design

a. i. Backdrains should be provided in the backfill, or weepholes/weepslits should be provided in retaining walls (It is recommended that backdrains be provided for walls over 4± feet high, for retaining walls which form part of a building structure, and where any staining or efflorescence due to dripping from weepholes/weepslits would be aesthetically unacceptable.)

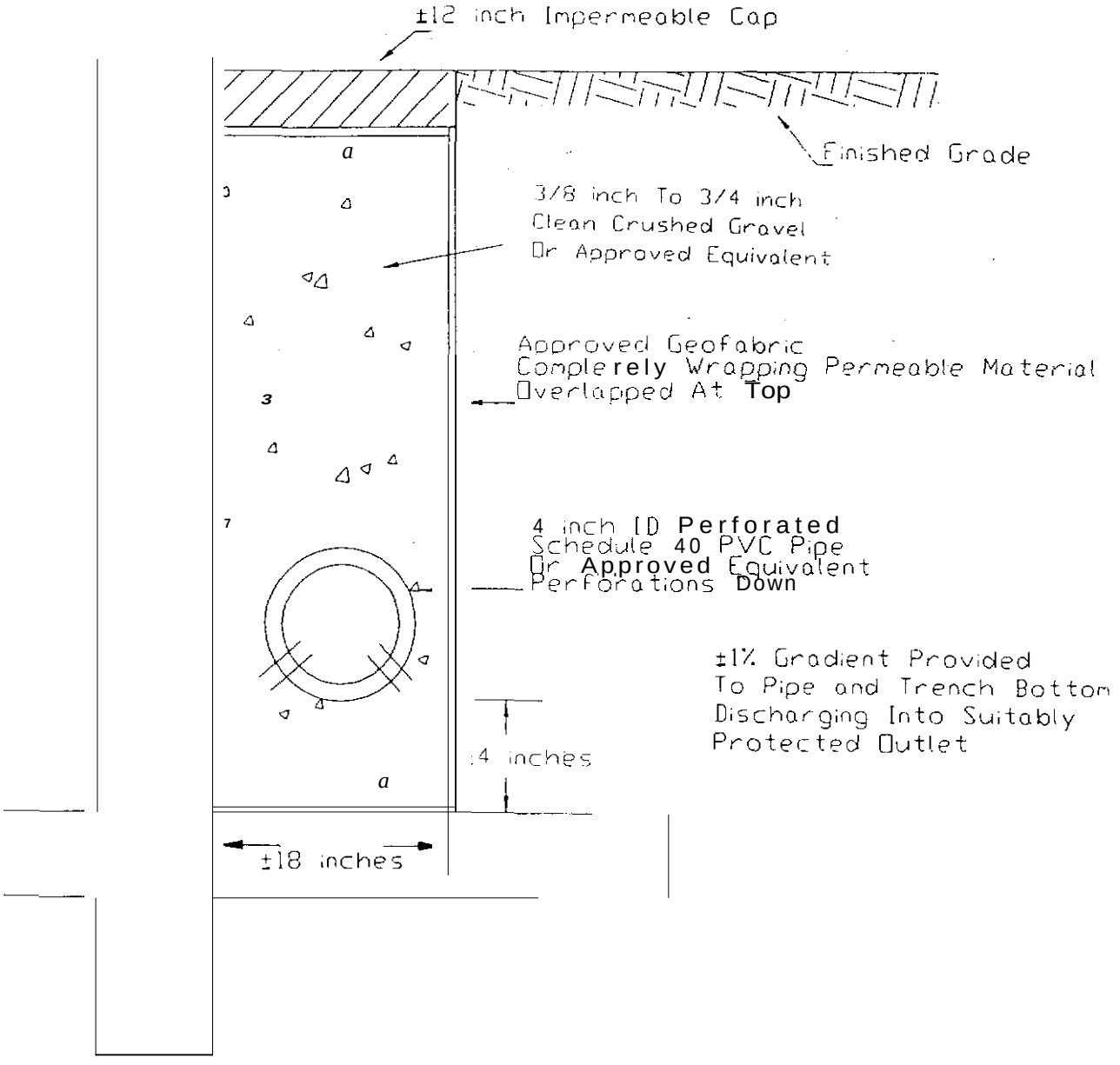
ii. Weepholes/weepslits should be per CALTRANS Standard Plans

iii. Backdrains, subdrains, and canyon drains should be per Subsections b) to f) below

b. Backdrains/subdrains should consist of 4 inch diameter Schedule 40, PVC pipe or equivalent, embedded in approximately 3 ft³/linear foot of 3/8 inch to 3/4 inch, clean crushed gravel, enveloped in **Mirafi Filterweave** 300 or approved equivalent. The pipe should be 4± inches above the trench bottom, a gradient of 1± percent being provided to the pipe and trench bottom, discharging into suitably protected outlets. See Figure 7 for the standard detail for the backdrain and Figure 8 for the standard detail for the subdrain.

c. The pipe for the canyon drain should be 6± inches above the trench bottom; a gradient of 1± percent being provided to the pipe and trench bottom; discharging into suitably protected outlets. See Figure 2 for the standard detail of a canyon drain. The minimum diameter of pipe for canyon drains of various lengths are specified below:

i. Within 500 feet of upper end: 4 inch diameter Schedule 40, PVC pipe or equivalent embedded in approximately 5 ft³/linear foot of 3/8 inch to 3/4 inch, clean crushed gravel enveloped in **Mirafi Filterweave** 300 or approved equivalent



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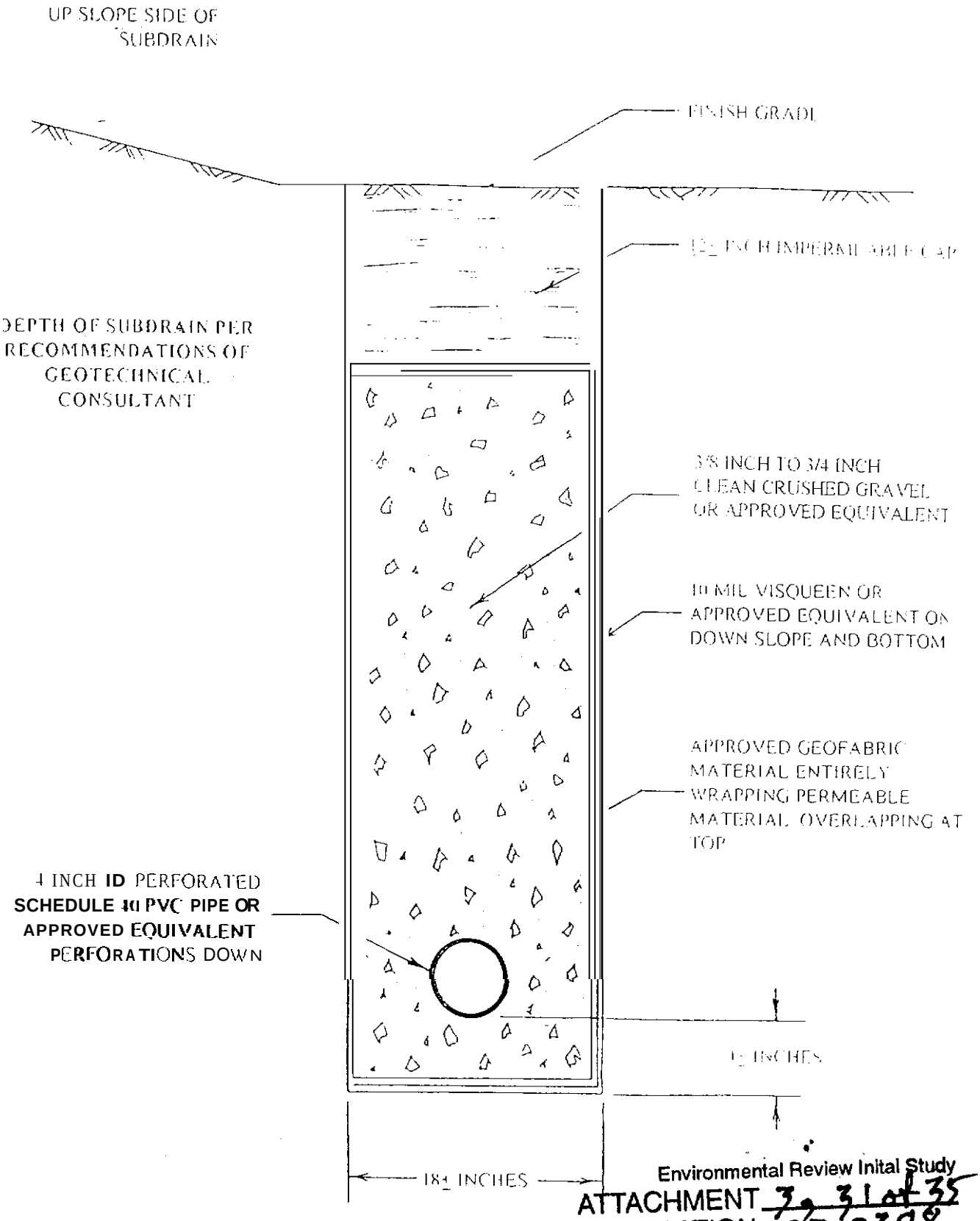
Tharp & Associates Geotechnical Consultants	**TYPICAL BACKDRAIN CONFIGURATION** DETAIL	Figure 7



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Tharp & Associates Geotechnical Consultants	RECOMMENDED SUBDRAIN CONFIGURATION	Figure
	Typical Detail	8

ii Between 500 feet and 1500 feet froni upper end: 6 inch diameter Schedule 40, PVC pipe or equivalent embedded in approximately 9 ft^3/linear foot of 3/8 inch to 3/4 inch. clean crushed gravel, enveloped in **Mirafi Filtetweave** 300 or approved equivalent

iii In excess of 1500 feet froni upper end: 8 inch diameter Schedule 40. PVC pipe or equivalent embedded in approximately 9 ft^3/linear foot of 3/8 inch to 3/4 inch. clean crushed gravel. enveloped in **Mirafi Filterweave 300** or approved equivalent.

d Pel-forations in backdrains/subdrains/canyon drains are recommended as follows 3/8 inch diaiiieter, in 2 rows at the ends *of a* 120 degree arc. at 3 inch centers in each row, staggered between rows, placed downward

e Backdrains/subdrains/canyon drains should be approved by the Geotechnical Consultant after placement *of* bedding and pipe and prior to the placement of clean crushed gravel

f An unobstructed outlet should be provided at tlie lower end of each segment of backdrain/subdrain/canyon drain The outlet should consist of an unperforated pipe oftlie same diameter, connected to tlie perforated pipe aiid extended to a protected outlet at a lower elevation uti a continuous gradient of at least I pet-cent

6.5 Pavement Design

The design oftlie pavement section was beyond our scope of services for this project To have the selected pavement sections perform to their greatest efficiency, it is very important that tlie following items be considered

a Properly moisture condition **tlir** subgrade and compact it to a minimum relative dry density of 95 percent, at a moisture content 1-3 percent over the optimum moisture content

b Provide sufficient gradient to prevent ponding of water

c Use only ıality mı rials of the type an ckness (minimum) specified All baserock must meet Cal-Trans Standard Specifications for Class [[Aggregate Base. aiid be angular in shape.

d Compact tlie base and subbase uniformly to a minimum relative dry density ***of05*** percent

e The R-Value slioiild be obtained at tlie conclusion of grading and tlie design pavement sections reviewed at that time

f Asphalt concrete should be placed only during periods of fair weather when tlie ambient air temperature is within prescribed limits

ᵍ Maintenance should be undertaken on a routine basis

h If concrete slabs are required, a design will be provided upon receipt of traffic loads and volume

6 6 Exterior Concrete Flatwork

a Concrete flatwork slioiild be divided into as nearly square panels as possible Frequent joints should be provided to give articulation to tlie panels Landscaping and planters adjacent to concrete flatwork should be designed in such a manner as to direct drainage away from coiiciete areas to approved outlets

b It is assumed that coiiciete flatwork will be subjected only to pedestrian ti-affic

7 LIMITATIONS

a Our investigation was performed in accordance with the usual and current standards of the professional as they relate to this and similar localities No other warranty, expressed or implied is provided as to the conclusions and professional advice presented in this report

b The samples taken and tested, and the observations made, are considered to be representative of the site, however, soil and geologic conditions can vary significantly between sample locations

c As in most projects, conditions revealed during construction excavation may be at variance with preliminary findings If this occurs, the changed conditions must be evaluated by the Project Geotechnical Consultant and the Geologist, and revised recommendations be provided as required

d This report is issued with the understanding that it is the responsibility of the Owner, or of his Representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans, and that it is ensured that the Contractor and Subcontractors implement such recommendations in the field

e This firm does not practice or consult in the field of safety engineering We do not direct the Contractor's operations, and we are not responsible for other than our own personnel on the site, therefore, the safety of others is the responsibility of the Contractor The Contractor should notify the Owner if he considers any of the recommended actions presented herein to be unsafe.

f The findings of this report are considered valid as of the present date However changes in the conditions of a site can occur with the passage of time, whether be due to natural events or to human activities on this or adjacent sites In addition changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge

g Accordingly, this report may become invalidated wholly or partially by changes outside our control Therefore, this report is subject to review and revision as changed conditions are identified.

It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance. please do not hesitate to contact our office

Sincerely.

THARP & ASSOCIATES, INC.

Adrian L Garner, PE
Senior Engineer
R.C E 66057
Expires 6/30/06

Appendices
1 Appendix A Field Exploration
2 Appendix B Laboratory Testing

Distribution: (4) Addressee
(1) Bowman & Williams
1011 Cedar Street
Santa Cruz, C'A 95060
ATTN Joel F Ricca
(1) Frederic Lattanzio. .Architect
217 Soutli Drive
Aptos, CA 95003

Environmental Review Inital Study
ATTACHMENT& 35 of 35
APPLICATION 05-0388

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET. 4TH FLOOR, SANTA CRUZ, CA 95060
(831)454-2580 FAX. (831)454-2131 TOO (831)454-2123
TOM BURNS, PLANNING DIRECTOR

July 6, 2005

Powers Land Planning, Inc.
1607 Ocean Street, Suite 8
Santa Cruz, CA 95060

Subject: Review of Geotechnical Engineering Report by Tharp and Associates, Dated February 2005; Project No. 5-03;
APN: *037-151-12 & 13,* Application *No: 05-0388*

Dear Ron Powers:

The purpose of this letter is to inform you that the Planning Department has accepted the subject report and the following items shall be required:

1. All construction shall comply with the recommendations of the report

2. Final plans shall reference the report and include a statement that the project shall conform to the report's recommendations.

3. Prior to building permit issuance a plan review letter shall be submitted to Environmental Planning. The author of the report shall write the plan review letter. The letter shall state that the project plans conform to the report's recommendations.

After building permit issuance the soils engineer must remain involved with the project during construction. Please review the Notice to Permits Holders (attached).

Our acceptance of the report is limited to its technical content. Other project issues such as zoning, fire safety, septic or **sewer** approval, etc. may require resolution by other agencies.

Please submit two copies of the report at the time of building permit application.

Please call the undersigned at 454-3175 if we can be of any further assistance.

Sincerely,

Joe Hanna
County Geologist

Environmental Review Inital Study
ATTACHMENT 4
APPLICATION 05-0388

Cc: Andrea Koch, Environmental Planning
Holcomb Corporation, 19 Seascape Village, Aptos, CA 95003

(over)

SOQUEL CREEK WATER DISTRICT

RECEIVED
MAY 29 2007
Powers Land Planning, Inc.

Mr. Ron Powers
1607 Ocean Street, Suite 8
Santa Cruz, CA 95060

SUBJECT Conditional Water Service Application – Silver Oaks **of** Aptos Subdivision, Corte Cabrillo & Soquel Drive, Aptos, **APN 037-151-12 & 13**

Dear Mr. Powers:

In response to the subject application, the Board of Directors of the Soquel Creek Water District at their regular meeting of May 22, 2007, voted to grant you **a** conditional Will Serve Letter for your 28-lot subdivision project so that you may proceed through the appropriate planning entity. An Unconditional Will Serve Letter cannot be granted until such time as you are granted a Final Discretionary Permit on your project. At that time, an Unconditional Will Serve Letter will be granted subject to your meeting the requirements of the District's Water Demand Offset Program and any additional conservation requirements of the District prior to obtaining the actual connection to the District facilities subject to the provisions set forth below.

Possible Infrastructure Check List	yes	no
1. LAFCO Annexation required		X
2. Water Main Extension required off-site		X
3. On-site water system required	X	
4. New water storage tank required		X
5. Booster Pump Station required		X
6. Adequate pressure	X	
7. Adequate flow	X	
8. Frontage on a water main	X	
9. Other requirements that may be added as a result of policy changes.	X	

This present indication to serve is valid for a two-year period from the date of this letter; however, it should not be taken as a guarantee that service will be available to the project in the future or that additional conditions, not otherwise listed in this letter, will not be imposed by the District prior to granting water service. Instead, this present indication to serve is intended to acknowledge that, under existing

Environmental Review Intal Study
ATTACHMENT 5, 1 of 4
APPLICATION 05-0385

conditions, water service would be available on condition that the developer agrees to provide the following items without cost to the District:

1) Destroys any wells on the property in accordance with State Bulletin No. 74;
2) Satisfies all conditions imposed by the District to assure necessary water pressure, flow and quality;
3) Satisfies all conditions of Resolution No. **03-31** Establishing a Water Demand Offset Policy for New Development, which states that all applicants for new water service shall be required to offset expected water use of their respective development by a 1.2 to **1** ratio by retrofitting existing developed property within the Soquel Creek Water District service area so that any new development has a "zero impact" on the District's groundwater supply. Applicants for new service shall bear those costs associated with the retrofit as deemed appropriate by the District up to a maximum set by the District and pay any associated fees set by the District to reimburse administrative and inspection costs in accordance with District procedures for implementing this program;
4) Satisfies all conditions for water conservation required by the District at the time of application for service, including the following:
    a) Plans for a water efficient landscape and irrigation system shall be submitted to District Conservation Staff for approval. Current Water Use Efficiency Requirements are enclosed with this letter, and are subject to change;
    b) All interior plumbing fixtures shall be low-flow and all Applicant-installed water-using appliances (e.g. dishwashers, clothes washers, etc.) shall have the EPA Energy Star label plus new clothes washers also shall have a water use factor of **7.5** or less;
    c) District Staff shall inspect the completed project for compliance with all conservation requirements prior to commencing domestic water service;
5) Completes LAFCO annexation requirements, if applicable;
6) *All* units shall be individually metered with a minimum size of 5/8-inch by %-inch standard domestic water meters;
7) **A** memorandum of the terms of this letter shall be recorded with the County Fkcorder of the County of Santa Cruz to insure that any future property owners are notified of the conditions set forth herein.

Future conditions which negatively affect the District's ability to serve the proposed development include, but are not limited to, a determination by the District that existing and anticipated water supplies are insufficient to continue adequate and reliable service to existing customers while extending new service to your development. In that case, service may be denied.

Environmental Review Inital Study
ATTACHMENT 5, 2 of 4
APPLICATION 05-0388

You are hereby put on notice that the Board of Directors of the Soquel Creek Water District is considering adopting additional policies to mitigate the impact of new development on the local groundwater basins, which are currently the District's only source of supply. Such actions are being considered because of concerns about existing conditions that threaten the groundwater basins and the lack of a supplemental supply source that would restore and maintain healthy aquifers. The Board may adopt additional mandatory mitigation measures to further address the impact of development on existing water supplies, such as the impact of impervious construction on groundwater recharge. Possible new conditions of service that may be considered include designing and installing facilities or fixtures on-site or at a specified location as prescribed and approved by the District which would restore groundwater recharge potential as determined by the District. The proposed project would be subject to this and any other conditions of service that the District may adopt prior to granting water service. As policies are developed, the information will be made available at the District Office.

Sincerely,
SOQUEL CREEK WATER DISTRICT

Jeffery N. Gailey
Engineering Manager/Chief Engineer

Cc: Mark Holcomb
19 Seascape Village
Aptos, CA **95003**

Enclosures: Modifications to the Water Demand Offset Program
Water Use Efficiency Requirements & Sample
Unconditional Water Service Application

Environmental Review Inital Study
ATTACHMENT 5, 3 of 4
APPLICATION 05-0388

SOQUEL CREEK WATER DISTRICT

Board of Directors
Bruce Daniels. President
Dr. Thomas R. LaHue, Vice President
Dr. Don Hoernschemeyer
Dr. Bruce Jane
Daniel F. Kriege

Laura D. Brown, General Manager

May 22,2007

Subject: Modifications to the Water Demand **Offset** Program

Dear Water Service Applicant/Developer:

This letter is to inform you about recent modifications to the Soquel Creek Water District's Water Demand Offset (WDO) program for new construction. You were noticed in a letter dated March 16,2007 of the proposed changes and of the April 3, 2007 Public **Hearing** to adopt them. The changes become effective May 30, 2007. Please read this letter carefully because these changes apply to your project. Please go to the District's website www.soquelcreekwater.org home page under "What's New" and click on ***"Wuter Demand Offset Informationfor Developers"*** for information to help you comply with the modifications listed below.

Modifications

1. High-Efficiency Toilets **(HETs)** Only in **New** Development – New development is **required** to install HETs. HETs are toilets that flush on average 1.28 gallons per flush **or** less and include dual-flush toilets. The typical ultra-low flow toilets (ULFTs) that flush 1.6 gallons per flush (gpf) are no longer acceutable. Your project's previously calculated offset requirement will be lowered based on the reduced water demand resulting from installing the more efficient HETs. Unless you show proof that your toilets were purchased before May 30, 2007, your project is required to install HETs. HETs are available **from** local vendors and a list of them is available at www.cuwcc.org/toilet_fixtures/HET.pdf .
2. High-Efficiency Toilets (HETs) Only as Retrofit Toilets – Only HETs are to be installed at existing customer locations (residential **and** commercial). **The** list of approved HETs **from** which the retrofit candidates **must** select is available on the District's web site. **The** only exception **will** be candidates who enrolled in the toilet retrofit program before April 3,2007. Pre April 3,2007 retrofit candidates may select from either the former toilet retrofit list or the **new** HET **list. As** a developer, you will receive a larger offset credit by installing HETs than ULFTs.
3. HET Retrofits for Commercial ULFTs – Since commercial toilets (i.e. restaurants, bars, etc.) generally have higher **use** than residential toilets, WDO credit is now available to developers for replacing **ultra** low-flow toilets (ULFTs) with **HETs** at commercial venues. **A** list will be available on May 30,2007 showing the offset credit available for retrofitting ULFTs with HETs. Note that commercial retrofits **require** pressure assist HETs, unless **the** commercial entity submits a written waiver request **from** having pressure assist toilets.
4. Retrofit of **Lawn** Credits –When they **are** available, developers will be able to purchase offset credits directly **from** the District for customers who replace typical turf with water-wise grasses and plants or with synthetic *turf*. No turf offset credits **are** yet available, but we **think** a bank of credits will be available for purchase within a **few** months. Note that turf credits are generally about twice as expensive **as** the toilet retrofit credits, but there is less work involved since you just pay directly for **the** credits. Please call if this program interests you.

For more information, please contact Ron Duncan, Conservation and Customer Service Field Manager, at (831) 475-8501 ext. 144 or rond@soquelcreekwater.org.

Sincerely,

SOQUEL CREEK **WATER** DISTRICT

Laura D. Brown
General Manager

Environmental Review Inital Study
ATTACHMENT 5, 4 of 4
APPLICATION 05-0388

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
A CALIFORNIA CORPORATION
1011 CEDAR • PO BOX 1621 • SANTACRUZ, CA 95061-1621
PHONE (831) 426-3560 FAX (831) 426-9182 www.bowmanandwilliams.com

July **15,** 2006

Holcomb Corporation
19 Seascape Village
Aptos. CA 95003

Subject: Silver Oaks Subdivision, Drainage Analysis, Our File No. 22911

Deaf Mark Holcomb.

Calculations have been prepared for a 10 year storm event for the proposed Silver Oaks Subdivision in Aptos, California. Attached are calculations for the Storm Drain System. Detention, and Storm Water Quality Control Unit (SWQCU) sizing. Storm Drain calculations performed, are based on the rational method as described in the County of Santa Cruz Design Criteria Manual. Also, attached is a map showing the Existing Drainage Plan and Proposed Drainage Plan with area configurations. The existing drainage area is comprised of two sub-areas. Area '1', located on the Southern Portion of the site, drains into the existing storm drain system along Soquel Drive, and is routed to Drainage Basin 1. Area '2, located on the Northern Portion of the site, drains into the existing storm drain system along Corte Cabrillo. and is routed to Drainage Basin 2.

The proposed drainage area is comprised of two sub-areas. Area 'P1' includes drainage from systems 'A', 'B', 'C', and 'D'. Drainage from Area 'P1' flows to Soquel Drive, and continues to Drainage Basin 1 Area 'P2' includes drainage from drainage systems 'E, 'F', 'G', 'H', 'J', and 'K'. Drainage from Area 'P2' flows to Corte Cabrillo, and continues to Drainage Basin 2.

The increase in impervious surface of Area 'P1' is mitigated through the use of permeable pavement with storage volume below.

The increase in impervious surface of Area 'P2' is mitigated through the use of permeable pavement with storage volume below, proposed detention ponds ' E and 'F', as well as proposed detention systems 'E' and 'F'. The proposed runoff captured by drainage system 'E' is treated by a SWQCU and detained in 3 6 diameter storage tanks. Detention System **'E'** also includes mitigation for the increase in runoff directed to Corte Cabrillo from drainage system ' K (Lots 1 through **4).** The proposed runoff captured by drainage systems 'F', 'G', and **'H'** is treated by a SWQCU and detained in 18" diameter storage tanks. Detention System ' F also includes mitigation for the increase in runoff directed to Corte Cabrillo from drainage system 'J' (Lots 5 through 7).

Runoff from the proposed buildings shall be collected into downspouts. Downspouts shall flow to proposed 'dry well' dispersal pits located at the front and rear of each lot.

We find that the drainage system as proposed will sufficiently mitigate the impacts due to the project's development.

Sincerely,

Bowman & Williams

Joel F. Ricca. RCE 53588

Environmental Review Inital Study
ATTACHMENT 6
APPLICATION 05-0388

COUNTY OF SANTA CRUZ
DISCRETIONARY APPLICATION COMMENTS

Project Planner: Randal1 Adams
Application No.: 05-0388
APN: 037-151-12

Date: February 15, 2007
Time: 08:03:19
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Environmental Planning Completeness Comments

The geotechnical report for the project correctly identifies several alternatives for dealing with on-site soil conditions. One option requires the over excavation and recompaction of the soils next to Corte Cabrillo. and another recommendation requires the recompaction of the soils under slabs. Although these recommendations are appropriate, the implications are enough different that the amount of grading will be significanlty different. Before completeness, the applicant must provide plans that indicate the amount and location of the proposed removals. If the applicant can not make a choice between the alternatives at this point in the permit process, plans sets that show the alternatives along with calculations of the amount of grading of each alernative must be supplied with the application.

By modifing the alignment of the driveway, and by using higher retaining walls, the number of Oak Trees that would have to be removed could be reduced.

The proposed retaining present a long straight line. To reduce the visual impact of the wall the applicant should consider alternative wall align- ments and wall type to break up the linear nature of the wall. ========= REVIEW ON JULY 6, 2005 BY JOSEPH L HANNA =========
Geotechnical Report Accepted. Joe Hanna ========= UPDATED ON JULY 6. 2005 BY JOSEPH L HANNA =========
========= UPDATED ON JULY 15, 2005 BY ANDREA M KOCH =========

1) Where possible, redesign the project to preserve more trees. For example, shifting the roadway in location slightly could preserve a few trees proposed for removal that are located along the proposed roadway.

Also. flipping several driveways to the other side could prevent removal of trees located in the proposed driveway areas. For example, Trees 42 and 47 might be retained if proposed driveways were relocated.

Some trees proposed for removal are in fair health or better and do not clearly interfere with construction or could potentially be avoided. These trees include Tree Numbers 45. 48. 66, 67. 70. 74. 75. 76. 85. 103. 104. 105. Retain these trees if possible. ========= UPDATED ON FEBRUARY 8. 2006 BY ANDREA M KOCH =========
1) No additional comnents.

Environmental Planning Miscellaneous Conments

Prior to the approval of improvement plans by Public Works, a plan review letter must be submitted by the Geotechnical Engineer. This letter. and related final improvement plans. must be reviewed by the County Geologist prior to start of the site grading. ========= REVIEW ON JULY 6, 2005 BY JOSEPH L HANNA =========
========= UPDATED ON JULY 15. 2005 BY ANDREA M KOCH =========

1) For retained trees, please show on the plans the tree protection measures to be used. Include details of the tree protection measures.

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2) Include the tree preservation specifications listed in the arborist report on the project plans.

3) Prior to grading, please provide a letter from the project arborist stating that tree protection measures are in place.

4) Please provide a plan review letter from the geotechnical engineer stating that the plans comply with the recommendations in the geotechnical report. ========== UPDATED ON FEBRUARY 8. 2006 BY ANDREA M KOCH ==========
1) No additional comments.

Housing Completeness Comments

========== REVIEW ON JULY 7, 2005 BY TOM POHLE ==========
========== UPDATED ON JULY 22. 2005 BY TOM POHLE ==========

This project is subject to the requirements of County Code 17.10 in addtionto other County Code requirements. Our understanding is that information has been requested from the developer regarding the square footage of the project , as well as the square footage of the land converted from Commercial/PA zoning to Residential zoning. The Affordable Housing Obligation (AHO) for this project cannot be determined until the developer provides the required information.

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========== UPDATED ON FEBRUARY 10. 2006 BY TOM POHLE ========== ATTACHMENT 7, 2 of 12
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This project was previously routed as a project with 29 units. The developer is currently proposing to divide 2 existing parcels and to create28 lots and construct 28 new homes. One of the parcels involved is not currently zoned residential, and per County Code 17.10.030 (b) 5, the required change in zoning will create a 40% Affordable Housing Obligation (AHO) for the project for the portion of the land subjected to the zoning change. while the balance of the land will generate a 15%AHO.

The developer has provided plans with calculations of the square footage of the total project land area. as well as the square footage of the land proposed for a zoning change. Based on the developer's square footage assumptions, the developer's mathematical conclusion is that the AHO is 5 affordable homes. The reviewer. using the land square footage provided by the developer concluded that. in addition to the

5 units on site, a small fractional fee would also apply. However. it should be noted that the AHO is subject to change if the Project Planner for this project determines that the square footage calculations made by the developer are not correct due to either mathematical error or use of a methodology inconsistent with the methodology utilized by the County.Fractional adjustments to the AHO. if applicable, will occur upon completion of the calculations by the Project Planner.

Parcel Sizes: County Code 17.10.032 (a) 2 requires the parcel size of the affordable units to be no smaller than the size of the smallest market rate unit parcel. The developer will need to make changes to meet this requirement.

Floor Plans: The plans provide a floor plan for only one of the designated affordable units. Lot 14. Floor plans for all affordable units (or clarification that the floor plan for Lot 14 represents all 5 affordable homes) are needed to determine compliance with County Code 17.10.032. As well, the floor plan for the affordable unit *is* not completely labeled, consequently such things as the number of bedrooms cannot be accurately be determined. It is also unclear if the lack of a toilet in the lower floor 1/2 bathroom was intended as part of the design or is an error.

(Note: The toilet issue also appears for the market rate unit on Lot 15 and on sheet A4 for Lots 1 and 2. In addition there are incomplete drawings on market rate units on Lots 15 and 13 with regard to missing doors and/or bath fixtures.)

Housing Miscellaneous Comments

========== UPDATED ON JULY 22. 2005 BY TOM POHLE ==========

none

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========== UPDATED ON FEBRUARY 10, 2006 BY TOM POHLE ========== The reviewer suggests that the developer review County Code 17.10.032, available on the County's web site when preparing final building plans in the future to assure compliance and expedite building plan review.

Long Range Planning Completeness Conments

========== REVIEW ON JULY 5, 2005 BY GLENDA L HILL ==========
1. The amount of net developable land is not indicated ON the plans and. therefore, it is not possible to determine if there is sufficient land for the proposed density. Sheet A0 says the square footage of the lot is 103.387 square feet. The Tentative Map on Sheet C1.0 indicates the sizes of the lots and common area. No calculation of net developable land (land minus the accessways) is given. 2. The location of the required affordable units are not called out on the site plan. 3. The project plans and application description do not call the type of proposed development: are these proposed condominiums, townhouses, 1ots with zero lot 1ines? Clarify the type of proposed development. 4. Submit calculation of the square footage of the property that is currently designated Office so the affordable housing requirement can be determined. ========== UPDATED ON JULY 5. 2005 BY GLENDA L HILL ==========
---------- UPDATED ON JULY 5. 2005 BY GLENDA L HILL ==========
========== UPDATED ON JULY 8. 2005 BY GLENDA L HILL ==========

Long Range Planning Miscellaneous Conments

========== REVIEW ON JULY 5. 2005 BY GLENDA L HILL ==========
1. This project includes a request to redesignate a portion of the site from non-residential to residential land. This triggers Interim Ordinance 4783. Thisordinance requires, among other things. that the land use redesignation be approved only if 40% of the units or lots are affordable (with at least 1/2 affordable to low income households and the balance affordable to moderate income households). These affordable units shall be located on-site. 2. Since this project includes a General Plan Amendment request. it is subject to Tribal Consultation. as required by Senate Bill 18. effective March 1. 2005. The purpose of consultation is to preserve or mitigate impacts to cultural places. The first step in the process is to request a list of tribes that have an interest in the project location from the Native American Historic Commission (this request has already been sent). The NAHC has 30 days upon receipt to send the County the list. Once received. letters to the tribes offering consultation will be sent. The tribes have 90 days upon receipt to request consultation. Consultation takes as long as necessary. Consultation is confidential and does not include the applicant unless allowed by the tribes. 3. It appear that some retaining walls will exceed 6 feet in height at the exterior of the property (Sheet C7.2). If so, this must be advertised as part of the project proposal. 4. As per Section 18.10.131(f) of the County Code, an amendment to the Development Permit for

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the office building must be approved as part of the processing of this application.
========== UPDATED ON JULY 5, 2005 BY GLENDA L HILL ==========
========== UPDATED ON JULY 8, 2005 BY GLENDA L HILL ==========

Dpw Drainage Completeness Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========== REVIEW ON JULY 13, 2005 BY DAVID W SIMS ==========
Prior comments from discretionary application 03-0496 have not been fully addressed Additional comment will be posted once this project has been discussed with the previous reviewer.

========== UPDATED ON JULY 15, 2005 BY DAVID W SIMS ==========
General Plan policies: 7.23.1 New Development 7.23.2 Minimizing Impervious Surfaces 7.23.3 On-Site Stormwater Detention 7.23.4 Downstream Impact Assessments 7.23.5 Con trol Surface Runoff

An engineered drainage plan was submitted with the application, and was reviewed for completeness of discretionary development. and compliance with stormwater management controls and County policies listed above. The plan was found to need the following additional information and revisions prior to approving discretionary stage Storm-water Management review.

1) Consistent with policy 7.23.1 and 7.23.3. detention will be required only to the extent that predevelopment runoff rates cannot be maintained through other applied measures, and where drainage problems are not resolved. This plan relies primarily on detention as a mitigation measure. Please provide alternative/additional runoff mitigation measures that are effective for a broad range of storm sizes. and clearly show and note these measures on the plans. There appears to be a significant error in detention calculations with the predevelopment pervious areas estimated with a C-value of 0.6 rather than the value 0.3 used in post-development calculations. Please review, revise or explain this estimate. The area of the site draining easterly along Soquel does not provide runoff mitigation. capable of holding to pre-develop-ment rates. This will be needed.

2) Consistent with policy 7.23.2 impervious surfaces are to be minimized. It appears feasible that the guest parking lots, firetruck turn around. sidewalks. patios and driveways could all potentially be constructed of pervious materials to better meet this item as well as item 1 above. Park pathways on the landscape plans are noted as decomposed granite. This notation should also be made on the civil plans.

3) A downstream impact assessment is not being required at this time. The reviewer has checked available inventory information for both drainage routings. and found reasonably adequate facilities throughout the paths except for a low road/stream crossing within the New Brighton Beach State Park. The low road/stream crossing under the railroad bridge floods annually. However, this is a low use area during storm periods and not a primary public travel way. The applicant will not be re-quired to make any off-site mitigations, but is expected to provide substantially effective on-site mitigations fully addressing standard policies, so as to minimize further aggravation of this problem spot for a broad range of storms.

4) While the design engineer's cover letter to the applicant (6/21/05) stated methods of additional BMPs, none of these methods appear on the plans. Indicate clearly on the plans each of these measures. **It** would seem feasible to conduct downspouts along the sides of the homes to either the front or rear landscape areas and terminate with a bubbler release rather than piping directly to the stormdrains. Detail 6/C7.1 on the plans does not correctly communicate the methods of downspout distribution as proposed in the letter. As proposed, some of the driveways sloped towards landscape appear to be blocked by the retaining wall structures. The 50/50 flow split at catch basin A6 does not seem to maintain equivalent runoff areas. **It** appears that all this water should be routed southerly.

5) The common open spaces are to be protected to the greatest extent possible from hydrologic disturbance. To do this **it** is required that any **fill** and compaction in these zones be specified to match undisturbed soils. Site topsoil from construction areas is to be salvaged, set aside and reused in disturbed and filled landscape areas. Temporary protective fencing is to be specified around all common landscape areas to prevent unintended construction equipment compaction. Please attempt to reduce the grading occurring in any of the park areas, particularly that shown on each side of Road 1. The cut depths in these areas will completely remove the topsoil and expose undeveloped soils. possibly approaching the shallow sandstone bedrock layer. Unmitigated. such exposure will make vegetation establishment difficult. and natural permeability and runoff buffering poor. Revised grading and foundation elevations and/or additional retaining walls could make these deep cuts unnecessary.

6) Please provide permanent bold markings at each inlet that read: "NO DUMPING - DRAINS TO BAY".

7) With the removal of the inlet on Corte Cabrillo. a valley gutter is to be provided at the site entrance. Alternatively a new inlet may be established just upstream of the entrance.

8) Indicate where the extensive number of retaining wall subdrains will be routed. **It** might be feasible for some of these drains to be routed to open space areas for spreading rather than continuously discharged to the stormdrain. Please review.

9) **If** the new roads are intended to be County maintained, the detention facilities will need to be located out of the right-of way. ========= UPDATED ON FEBRUARY 16. 2006 BY DAVID W SIMS =========
2nd Review:

It is recommended and encouraged that the design engineer make an appointment to discuss stormwater mitigation issues with the reviewer before working ON the next submittal,

Prior item 1) Incomplete. The plan is not correctly targeted in its stormwater treatment approach, This proposal still relies primarily ON pipe detention as a mitigation measure with virtually the entirety of the streets, sidewalks. parking spaces and driveways mitigated by only this method. Structural pipe detention with only the limited ability to control a peak storm event will not be accepted as the primary means of stormwater mitigation (See Part 3, Section G. 1 of CDC and GP

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7.23.1). Please provide alternative/additional runoff mitigation measures that are substantially effective for a broad range of storm sizes and serve as the primary methods treating the high impact areas of the project. Clearly show and note these measures on the plans. While potentially beneficial. the other measures that have been proposed may limit some future impacts and treat already low impacted areas such as yards and common park space. but will have little effect on mitigating the high impact areas.

The east and south edges of the development draining to Soquel Drive drain to a separate sub-watershed that does not rejoin until downstream of Highway 1. Independ ent runoff mitigations are needed for this area because it drains into a separate watershed. Also, the drainage area along each side of the watershed divide needs to be kept proportional to the original area. A net diversion of area into a separate watershed is not allowed

It is not clear how the surface detention basins at F3 and E12 will function. The basin outlets do not restrict flow. So it must be presumed that the outlet control box for the pipe storage is intended. However the basin elevations are higher than the top of the overflow weir wall in the detention outlet control box. Thus by the time any basin detention could occur the outlet control box would already be in an overflow condition and the basin detention would be ineffective.

There are an excessive number of inlets and piping that create unnecessarily effi- cient drainage and exacerbate runoff impacts for the proposed development. This may also too easily allow additional impacts by promoting future connections that bypass mitigation measures. Please reduce the number of inlets and pipes to not more than that necessary to provide adequate drainage and prevent excessively efficient drainage

Prior item 2) Incomplete. The road width exception (if granted) is not sufficient to meet the requirement to minimize impervious surfacing. While the proposed parking configuration is slightly more efficient. the parallel parking lane reduction in the road width is mostly offset by having to provide parking spaces elsewhere and by al- lowing the accommodation of larger and/or more numerous structures. It appears feasible that the guest parking lots, firetruck turn around, sidewalks, patios and driveways could all potentially be constructed of pervious materials to better meet this item. as well as helping to meet item 1 above.

Prior items 3 through 9) Complete

See miscellaneous comments for items to be addressed prior to public hearing and prior to recording the final map. ========= UPDATED ON AUGUST 16. 2006 BY DAVID W SIMS =========
3rd Review:

Prior items 1 through 9: Complete. See new miscellaneous comment 0.

Dpw Drainage Miscellaneous Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

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========= REVIEW ON JULY 13. 2005 BY DAVID W SIMS =========
NO COMMENT
========= UPDATED ON JULY 15. 2005 BY DAVID W SIMS =========
Construction activity resulting in a land disturbance of one acre or more, or less than one acre but part of a larger common plan of development or sale must obtain the Construction Activities Storm Water General NPDES Permit from the State Water Resources Control Board. Construction activity includes clearing, grading, excavation. stockpiling, and reconstruction of existing facilities involving removal and replacement. For more information see:
http://www.swrcb.ca.gov/stormwtr/constfaq.html

A recommended source for conceptual stormwater mitigations: START AT THE SOURCE, Design Guidance Manual for Stormwater Quality Protection. 1999 Edition, Bay Area Stormwater Management Agencies Association. Forbes Custom Publishing.

A free copy may be obtained:
http://www.mcstoppp.org/acrobat/StartattheSourceManual.pdf

A bound version may be ordered: http://www.basmaa.org/

A drainage impact fee will be assessed on the net increase in impervious area. The fees are currently $0.85 per square foot, and are assessed upon permit issuance. Reduced fees are assessed for semi-pervious surfacing to offset costs and encourage more extensive use of these materials.

Because this application is incomplete in addressing County development policies. resulting revisions and additions will necessitate further review comment and possibly different or additional requirements. The applicant is subject to meeting all future review requirements as they pertain to the applicant's changes to the proposed plans.

All resubmittals shall be made through the Planning Department. Materials left with Public Works may be returned by mail, with resulting delays.

Please call the Dept. of Public Works, Stormwater Management Section. from 8:00 am to 12:00 noon if you have questions. ========= UPDATED ON FEBRUARY 16, 2006 BY DAVID W SIMS =========
Miscellaneous items:

Prior to public hearing provide the following:

A) Similar to sheet C6. show surface flow arrows ON the drainage plan sheet C11.1

B) All driveways and road pavements must receive water quality filtration by some means within the project site. Units 1 through 7 do not show this measure.

C) The runoff from Silver Oaks Lane does not route to detention given the pipe con figuration and details shown. It is feasible to mitigate this flow.

D) The County does not want the extra pipes, manholes and connections proposed ON Corte Cabrillo. Please simplify and reduce the number of connections. New manholes

E23 and E24 should be eliminated and the existing manhole near E23 used instead. New manhole F should be eliminated and the connection of the site mitigation systems and the new inlet on Corte Cabrillo made to the existing manhole. If there are conflicts that prevent this please show and explain them.

E) The drywells used for the roof downspouts should be located further away from the foundation of the structures. and as far as feasible from any yard inlet.

Prior to recording the final map and improvement plans provide the following

F) Calculations supporting the revised mitigation measures used.

G) Total detention volumes calculated are significantly less than (approx 75%) those determined by review check. Where detention is kept, please review procedures used for errors.

H) Detention system E contains elevation errors for top of wall. and computed dis charge head, which affects orifice size.

I) The type F orifice (C = 0.54) used in the calculations should be reviewed for constructability in the field. It does not correspond to a simple hole through a steel plate as the details specify. which would allow a higher release rate than that allowed. A type C orifice (C = 0.61) appears to better match the construction detai1s proposed.

J) By crossection or profile indicate planned or estimated clearances for all storm-drain lines where they cross mainlines of any other utility. Laterals to individual structures need not be shown in section

K) The drainage plan view C11.1 should note stormdrain sizes, lengths, materials. invert and grate elevations, etc...

L) System E pipe calculations contain a C-value exceeding 1.0.

M) Note County standard CDC figure ST-4b for under sidewalk drains.

N) Silt and grease traps are not required at every street inlet. The number of units should be reduced to simplify future maintenance burdens. Manhole E21 is common to the main system flowpath and could Potentially serve as a trap location. Please review, and if used verify that there is adequate sediment/debris storage capacity Because this is a significant development a more sophisticated and larger capacity trap is recommended.

Please call the Dept. of Public Works, Stormwater Management Section, from 8:00 am to 12:00 noon if you have questions. ========= UPDATED ON AUGUST 16. 2006 BY DAVID W SIMS =========
Miscellaneous items A through E: Addressed for purposes of the public hearing.

Miscellaneous items F through N: Not reviewed. These items will be reviewed during submittal of the final improvement plans.

Item 0: It was not clear if the amount of mitigation for drainage Area 1 is actually sufficient. While the stated storage provided appears sufficient. does this storage actually get utilized by enough of the drainage area to be as effective as claimed? If not, additional measures may be needed to control rates. This same issue pertains to the sizing of the two detention systems in Area 2 as well

Dpw Driveway/Encroachment Completeness Comments

========== REVIEW ON JUNE 29. 2005 BY RUTH L ZADESKY ==========
No comment, project involves a subdivision or MLD.

Dpw Driveway/Encroachment Miscellaneous Comments

========== REVIEW ON JUNE 29. 2005 BY RUTH L ZADESKY ==========
Driveway to conform to County Design Criteria Standards.
Encroachment permit required for all off-site work in the County road right-of-way.
Civi1 engineered plans required for curb. gutter and sidewalk.
Fencing is not allowed within the County road right-of-way.
Proposed fencing shall not block sight distance for motorists at adjacent intersections and driveways.

Dpw Road Engineering Completeness Conments

========== REVIEW ON JULY 14. 2005 BY GREG J MARTIN ==========
1) Corte Cabrillo should be 36 feet from curb face to curb face in order to meet the County Standard for an Urban Local Street with Parking. The sidewalk along the frontage should be separated. The right-of-way dedication should be 10 feet from the curb face.

2) The existing commercial building which shall become a commercial lot is subject to current parking requirements as part of this proposal. Please provide the number of parking spaces required for this building on the plans and show additional details regarding the parking layout. Parking spaces should be numbered, the parking lot dimensioned. and the existing driveway shown.

3) Roadway 3 appears to have an alignment which goes through the existing parking lot for the existing commercial building. Its our understanding the parking lot shall serve as emergency access. Please provide details on how this shall be accomplished (ie. gates) and show an easement.

4) Pedestrian access should be provided from Roadway 2 to Soquel Drive. A staircase is acceptable. Pedestrian and bicycle access should also be provided to Corte Cabrillo from Roadway 3 between the parking lot for the commercial building and Lot #1.

5) Roadways 1, 2, and 3 are recommended to meet County Standards for an Urban Local Street with Parking. This requires two 12 foot travel lanes. 6 feet on each side for parking, and separated sidewalks on each side. The right-of-way requirement for this road section is 56 feet. Cul-de-sacs designed to County Standards are recommended.

6) Exceptions to the County Standards for streets may be proposed by showing a) a

typical road section of the required standard on the plans crossed out, b) the reason for the exception below, and c) the proposed typical road section.

7) We particularly do not recommend an exception for sidewalk improvements along the South side of Roadway 1, the West side of Roadway 2, and the North side of Roadway 3. Constructing these sidewalk improvements, the pedestrian access to Soquel Drive from Roadway 2, the bicycle/pedestrian access to Corte Cabrillo from Roadway 3, and handicapped access ramps shall improve the overall pedestrian circulation for the project.

8) Property lines for townhouses should be behind the back of sidewalk in all cases

9) A traffic study shall be required. Please contact Public Works to discuss the scope of work prior to commencing the study.

10) We do not recommend walls adjacent to the driveways unless they are 3 feet or less in height. It-s our understanding these wall are less than 3 feet therefore they are acceptable.

11) Parking spaces in front of the garages for Lot 19 and 20 are recommended to be 20 feet in length behind the sidewalks. The guest parking is recommended to be consistent with this as well.

12) Each parking space should be numbered including those within garages and for the commercia1 bui1ding.

13) The development is subject to Aptos Transportation Improvement (TIA) fees at a rate of $4000 per additional lot created. Twenty eight additional lots are proposed which results in a fee of $112,000. The total TIA fee of $112.000 is to be split evenly between transportation improvement fees and roadside improvement fees.

If you have any questions please contact Greg Martin at 831-454-2811. ========= UPDATED ON FEBRUARY 13. 2006 BY GREG J MARTIN =========
1) Corte Cabrillo has not been revised to meet the County Standard for an Urban Local Street with Parking. Please show the typical standard section for an Urban Local Street with Parking crossed out and the proposed section below.

2) The existing commercial building which shall become a commercial lot is subject to current parking requirements as part of this proposal. Please provide the number of parking spaces required for this building on the plans and show additional details regarding the parking layout. Parking spaces should be numbered, the parking lot dimensioned, and the existing driveway shown. 3) Roadways 1, 2, and 3 are recommended to meet County Standards for an Urban Local Street with Parking. This requires two 12 foot travel lanes. 6 feet on each side for parking. and separated sidewalks on each side. The right-of-way requirement for this road section is 56 feet. Cul-de-sacs designed to County Standards are recommended.

4) Exceptions to the County Standards for streets may be proposed by showing a) a typical road section of the required standard on the plans crossed out. b) the reason for the exception below, and c) the proposed typical road section.

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5) The steps along the sidewalk at the corner of Fife Lane and Fife Lane are not recommended. The design needs to meet ADA requirements and include handicapped access ramps at this location as well. Handicapped ramps are recommended at Sta. 12+00 and Sta.14+00 on Fife Lane as well.

6) Each parking space should be numbered including those within garages and for the commercial building.

7) The development is subject to Aptos Transportation Improvement (TIA) fees at a rate of $4000 per additional lot created. Twenty eight additional lots are proposed which results in a fee of $112,000. The total TIA fee of $112.000 is to be split evenly between transportation improvement fees and roadside improvement fees

8) The traffic study is being reviewed and comments shall be placed hereupon completion of the review.

If you have any questions please contact Greg Martin at 831-454-2811. ========= UPDATED ON FEBRUARY 13, 2006 BY GREG J MARTIN =========
========= UPDATED ON AUGUST 17, 2006 BY GREG J MARTIN =========
1) Corte Cabrillo and the internal roads have not been revised to meet the County Standard for an Urban Local Street with Parking. This requires two 12 foot travel lanes. 6 feet on each side for parking, and sidewalks on each side. The right-of-way requirement for this road section is 56 feet. Cul-de-sacs designed to County are recommended. The plans show the proposed exceptions properly.
---------- 2) Parking space 94 is a handicapped space. We recommend switching this parking space with parking space 92. The ramp does not appear correct. We recommend a Type D ramp. The path can then be connected to the back of the ramp allowing it to be used by Lots 19-22 for access to the common recreation area.
---------- 3) The development is subject to Aptos Transportation Improvement (TIA) fees at a rate of $4000 per additional lot created. Twenty eight additional lots are proposed which results in a fee of $112,000. The total TIA fee of $112.000 is to be split evenly between transportation improvement fees and roadside improvement fees.

4) The traffic study is being reviewed and comments shall be placed here upon completion of the review.
---------- If you have any questions please contact Greg Martin at 831-454-2811.

Dpw Road Engineering Miscellaneous Comnents

========= REVIEW ON JULY 14, 2005 BY GREG J MARTIN =========
========= UPDATED ON FEBRUARY 13, 2006 BY GREG J MARTIN =========
========= UPDATED ON AUGUST 17, 2006 BY GREG J MARTIN =========

Environmental Review Inital Study
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APPLICATION 05-0388

Maureen Hamb-WCISA Certified Arborist #2280
Professional Consulting Services

TREE RESOURCE EVALUATION
CONSTRUCTION IMPACT ANALYSIS

6233 & 6255 SOQUEL DRIVE

Prepared for
Mark Holcomb
The Holcomb Corporaton
19 Seascape Village
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June 17.2005

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ASSIGNMENT/SCOPE OF SERVICES

The development of a residential subdivision is proposed for property located at 6233 and 6255 Soquel Drive. Most of the large site is undeveloped and populated with a variety of tree species. **A** portion of the property contains and older residence that is surrounded by mature, unmaintained landscape trees. The project developer, Mark Holcomb has retained me to evaluate the condition of the existing trees and provide recommendations for protecting the retained trees during the development process. To complete the evaluation I have completed the following:

- Locate, map, number and catalog data on 114 trees greater than six inches in *trunk* diameter growing adjacent to the development area.
- Identify each tree as to species and measure trunk diameter at 54 inches above grade.
- Perform a visual assessment of each tree to determine health status, structural integrity and suitability for incorporation into the development project.
- Review grading and drainage plans prepared by Bowman and Williams to evaluate potential construction impacts.
- Provide recommendations for tree retention and tree removal based on overall condition and construction related impacts.
- Provide recommendations for reducing impacts and create a tree protection plan.

SUMMARY

One hundred and fourteen trees growing on a large property located at 6233 and 6255 Soquel Drive have been evaluated and development plans have been reviewed to assess the construction related impacts.

The sloping site is populated with a variety of tree species, including coast live *oaks,* Monterey cypress and Monterey pine. Landscape specimens surround the existing older residence and outbuildings on the property. Sixty percent of the trees on the site are in poor condition. The mature Monterey cypress are in decline and display serious structural defects. The Monterey pines are also in decline; pitch canker disease and decay have lead to the failure of several large trees.

Eighty-five trees will require removal to construct the site as proposed. Twenty-nine trees that are in good condition will **be** retained and incorporated into the development project. **A** number of these trees were selected early in the development process as suitable candidates for retention. The developer has made efforts to design around these trees, creating open space areas that provide adequate room for them to continue to grow.

The landscape plan for the project incorporates an additional 75 trees that will be planted in the open space areas and along the streetscape.

BACKGROUND

In November of 2004, I visited **6233** and **6255** to complete a visual assessment **of** the trees. For purposes of identification, I attached numbered tags to the tree trunks and documented locations on an attached site map.

The visual assessment is based on methods developed by Claus Mattheck and described in The Body Language of Trees. This type of assessment includes an evaluation of the biology and mechanics ***of*** each tree. They are rated as "good", "fair" or **"poor"** in the attached tree inventory.

Tree stands and individual trees vary in their suitability for preservation on a development site. Data on species tolerances, along with overall tree condition can indicate the level of impact the tree can withstand without suffering long-term detrimental affects. Trees that are structurally unstable may represent a risk to the users of the site. Trees in poor health **or** those species that are intolerant **of** site alterations may not survive the impacts of construction.

The biological assessment is used to determine health status and includes an evaluation of the following:

- Vitality of the leaves, bark and twigs
- Presence of fungi, decay **or** insect infestations
- Percentage and size of dead branching
- Status of old wounds or cavities

Healthy trees in "good" health display dense full canopies with dark green foliage. Dead branching is limited to smaller twigs no greater than one inch in diameter. No evidence of disease, decay or insect activity is visible.

Trees in "fair" health have **10-30%** foliar dieback, with dead branching limited to smaller twigs and branches and minor evidence of disease, decay or insect activity.

Trees in "poor" health display greater than **30%** foliar decline, dead branches greater than two inches in diameter and/or areas of decay, disease **or** insect activity.

The property itself is sloping with a flat area to the east where the existing older house stands surrounded by a variety of outbuildings. The trees in this area have not been provided proper maintenance. The undeveloped lower portion **of** the site *(to* the west) is mainly populated with *oaks.* **A** small grove of eucalyptus trees is located between the development site and an existing commercial parking lot.

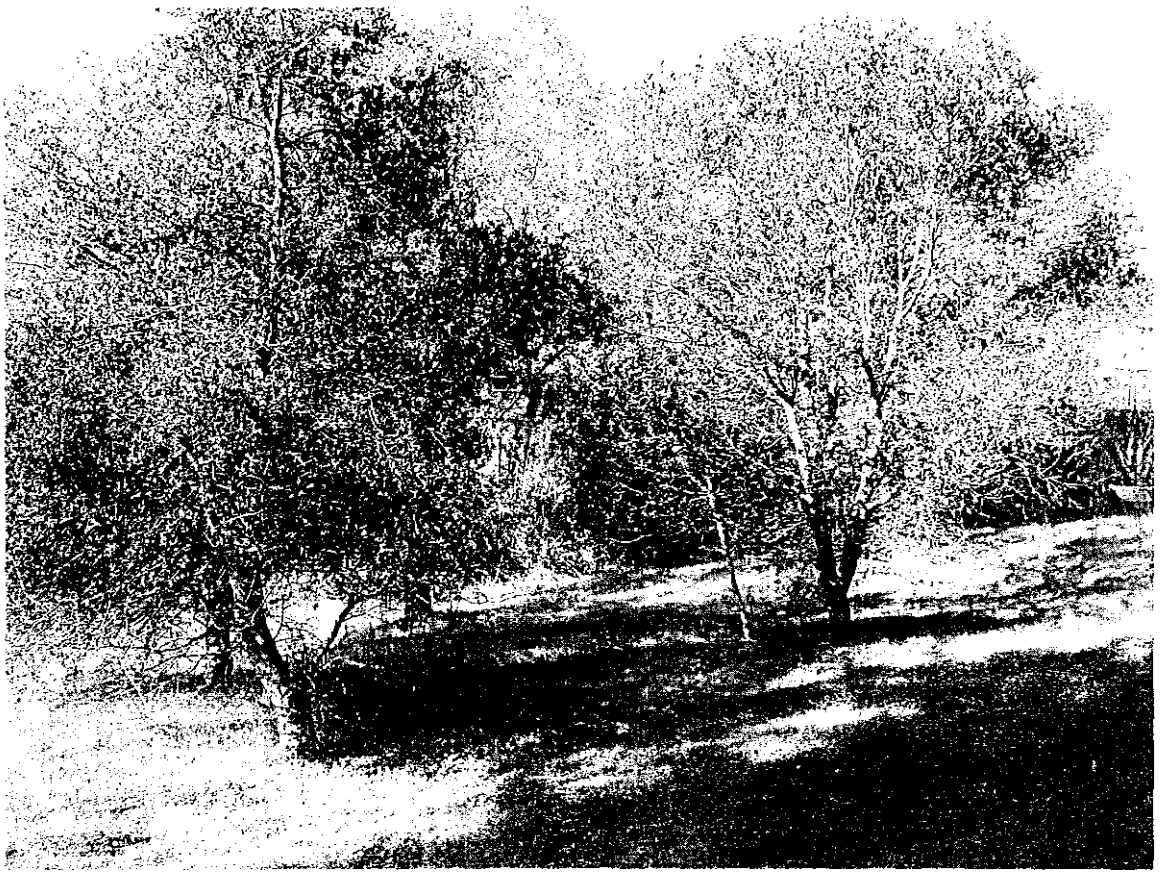
Tree Description

As stated previously, approximately **60%** of the trees on this property are in **poor** condition. The large Monterey cypress in the existing landscape have not been maintained. Large diameter branches have failed and are on the ground or lodged in the tree canopies. The points where the branching has failed are decayed. The large multiple stems are weakly attached to one another and are potentially at **risk of** failure.

The Monterey pines are also in decline. Several large trees have failed (pictured below) their trunks still on the ground.

Trees in this condition are not suitable for incorporation into development projects. Tree structure has been compromised and vigor **is** low, making them **less** tolerant of site changes and the impacts of construction.

Trees selected for incorporation into residential development should be young and vigorous with the ability to withstand a percentage **of** root loss, changes in normal drainage patterns and in many cases, the fragmentation **of** the grove setting.



This group of young coast live *oaks* will be retained, protected and incorporated into the development project. When modifying sites with tree removal, attempts should be made to keep groves of trees or tree systems intact. **As** a group, the trees have a better ability to withstand the impacts of site changes

Several individual *oaks* (pictured here) will also be retained as specimens in the common areas and adjacent to the roadway.

DISCUSSION OF CONSTRUCTION IMPACTS

The 29 trees that will be retained on this project site could be affected by the development process. Excavation, changes in grade and soil compaction are typical activities that occur during construction projects that can have a detrimental affect on tree health and structural stability.

Reduction of natural grade adjacent to native *oak* trees can have both immediate and long-term affects on health. Small fibrous roots (absorbing roots) are present in the upper soil layers and can extend beyond the canopy of the **tree. A** small cut of two to four inches can remove a portion of the absorbing root layer. This layer **is** responsible for supplying the tree with moisture and nutrients. When they are removed, the tree can display symptoms of water stress and **loss** of vigor. Trees can tolerate the loss of a percentage of this layer as they can regenerate quickly. Loss of the entire layer would lead the decline and possible death of the tree.

Increasing native grade adjacent to oaks can be damaging especially if irrigated. The fill holds moisture around the trunk and alters normal gas exchange. Disease and decay *can* develop in the structural roots responsible for keeping the tree upright. The absorbing **roots** can suffocate and die off due to lack of oxygen. *Oak* root fungus can develop causing the eventual death **of** the tree.

'Trenching is often necessary to construct footings for retaining walls, foundations and underground supply lines. The equipment used for these procedures can severely damage the structural roots of trees. When roots are tom and shattered the damaged area cannot seal properly and decay enters the root. Damage and decay in the structural roots can cause destabilization. Root severance close to the tree trunk, **or** on two **or** more sides of the tree can also compromise stability.

Soil compaction is a necessary component in stabilizing sites for construction and can occur as a result of moving men and equipment through a construction site. This procedure can damage **or** kill roots in the top four to six inches of soil. The dense compacted layers restrict root activity and development and over the long term affect tree vigor.

RECOMMENDATIONS

Ideally, the critical root zone of retained trees would remain undisturbed during development, eliminating the opportunity for damage and the resulting decline of the trees. The critical root zone is an area determined by species tolerances, tree age, overall condition and the type of impact proposed.

Procedures that include preconstruction treatments and alternative construction methods can be utilized within or just outside the critical root zone to reduce the detrimental affects of construction.

Tree Removal is a necessary component of this project. The site is densely forested limiting the amount of space available for residential development.

Protection Fencing is a simple and effective way to protect trees during construction. Fencing supported by posts in the ground creates both a physical and visual barrier between the trees, the construction workers and their equipment. When access into the protected areas becomes necessary, it will be reviewed by both the contractor and the project arborist.

Trenching for underground services must be located outside the critical root zone defined on the attached map. If no alternate route for these services can be designed and trenching within this area becomes necessary it must be at least 10 feet from the tree trunk and dug by hand under the supervision of the project arborist.

Preconstruction root severance can be performed in areas where foundation construction, pier placement or other impacts are proposed within 10 feet of a retained tree. This procedure is performed in advance of construction and prevents damage to roots by equipment. It also allows time for the tree to respond to the impact and begin to redevelop absorbing roots prior to construction.

This procedure begins with the staking of the "final line of disturbance". An area just outside the stakes is excavated to expose roots. Hand tools are used *to* further expose the roots and they are properly pruned at the final line of excavation. The excavated area is then covered with layers of moistened burlap and backfilled. If necessary, the area can be irrigated during the summer months. When construction begins, the foundation is dug carefully using the burlap layer as a boundary.

Irrigation trenches must be located outside the critical root zone. If necessary supply lines can be located above, grade and covered by mulch. Emitters in these areas are restricted to drip-type only.

Soil compaction caused by men and equipment can be reduced by the installation of a mulch layer (wood chips) at least three inches in depth.

Contractors and sub contractors should be supplied with a copy **of** the attached Tree Preservation Specifications before entering the construction site.

CONCLUSION

The proposed development of this large property will require the removal of 85 trees. More than half the trees are in poor condition and are not suitable for retention on a development site.

Twenty-nine trees will be retained and incorporated into the project. In addition, the landscape proposed for **the** site will include planting an additional 75 trees in an effort to mitigate tree removal.

The retained trees will be protected from construction related impacts using **the** recommendations made **for** exclusionary fencing, preconstruction treatments and monitoring during construction.

Any questions regarding the trees on this development site or the content **of** this report can be directed to my office.

Respectfully submitted,

Maureen Hamb-WCISA Certified Arborist #2280

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Maureen Hamb-WCISA Certified Arborist #2280
Professional Consulting Services

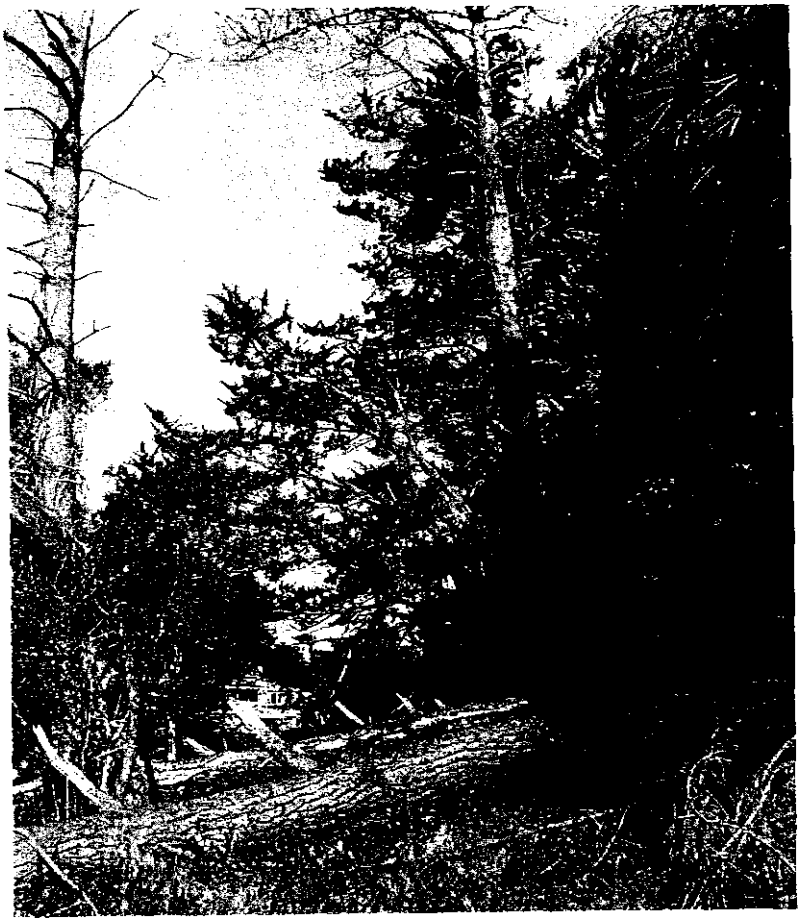
January 12, 2006

Mark Holcomb
Holcomb Development
19 Seascape Village
Aptos, CA 95003

Regarding: "Silver Oaks"/6233 & 6255 Soquel Drive

Introduction
As requested, I have reviewed the most recent grading plans prepared for the "Silver *Oaks"* development project (Bowman and Williams 01-06-06) located at the comer of **Soquel** Avenue and **Corte** Cabrillo. I also visited the site to perform a cursory visual assessment of the trees to evaluate any changes in condition.

Observations
During my recent visit to the site (01-05-06), I found that several more trees had failed during recent storms.



Two large diameter Monterey pines had suffered trunk failure (pictured at right) damaging the branch structures **of** several nearby Monterey cypress and young coast Live *oaks.*

This type of tree failure was anticipated based on the observations and conclusions made in my original assessment of the trees on this property. They have not been provided regular maintenance and many are standing dead. Several large cypress display severe structural defects that will lead to branch failure. Trees in this condition that represent a **risk** are not suitable for retention on development projects. Whole tree failure or large branch failure **will** likely continue during **storm** events when winds are **high** and **soil** becomes saturated.

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Santa Cruz, CA 95060
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Telephone: 831-420-1287
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Plan **Review**
The updated development plans retain 27 of the 110 trees growing within the property boundaries. The majonty **of** the retained trees are growing on the slope between Soquel Drive and the project site. One tree in this area is standing dead and should be removed.

The other trees that will be retained and incorporated into the project include a healthy grove of young coast live *oaks* (#68-#72). Young healthy trees are better able to withstand the impacts related to site alterations and survive the long term. These trees will be protected by a combination **of** exclusionary fencing and straw bale barricades.

Tree #49, pictured here has been provided adequate space to protect the root zone from damage and allow the canopy to remain intact.

Trees #51 and #54 are young *oaks* that will be incorporated into the common recreation area near the center of the site. Protection fencing will be installed at the limits **of** grading boundary to prevent damage to the root structures during construction.

Trees **#64** and #65 are mature trees growing near the Corte Cabrillo road frontage. They have been provided a large area and will be protected by fencing during construction. **A** IO-foot utility easement is located adjacent to tree #64. If trenching is proposed in this area, the specific impacts to the tree **roots** must be evaluated. Pre-construction root pruning can be performed in advance of trenching to reduce the impact to the structural root system.

Trees #92 and #93 are large Monterey cypress that will be incorporated in a common area between lots #22 and #23. They require maintenance pruning and the installation of a cable support system to improve structure and stability. These trees will be provided an exclusion zone bordered by fencing during construction.

Tree #99 is a mature coast Live *oak* tree that will be retained and incorporated into a landscape area adjacent to the roadway **(Fife** Lane). I recommend pre-construction root severance adjacent to this tree during the initial grading phase of the project.

This procedure begins with staking the "final line of disturbance''. **A** "Ditchwitch" type of trencher can be used to sever roots at the line of excavation. Any shattered or tom roots **are** cut cleanly using hand tools. This process must be completed by qualified professionals under the supervision of the project arborist.

Protection fencing with straw bale barricades will be erected around this tree (pictured below) during construction. Canopy alterations may be necessary to allow for vehicle clearance.

I have enclosed a tree protection plan outlining fencing and barricade locations for all retained trees on this project site.

Please call my office with any questions or concerns about the trees on this site

Respectfully,

Maureen Hamb- WCISA Certified Arborist #2280

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HIGGINS ASSOCIATES

CIVIL & TRAFFIC ENGINEERS

SILVER OAKS SUBDIVISION TRAFFIC ANALYSIS REPORT

SANTA CRUZ COUNTY, CALIFORNIA

Draft Report

Prepared For

Powers Land Planning
Santa Cruz, CA

December 21, 2005

1 INTRODUCTION

This Traffic Impact Analysis (TIA) presents the results from an analysis of the traffic impacts from the proposed Silver Oaks Subdivision development in unincorporated Santa Cruz County, California. The project is located on the east side of Corte Cabrillo, north of Soquel Drive. The location with respect to the local road network is shown on Exhibit 1.

The project consists **of** 28 residential units and will be accessed via Corte Cabrillo. The project site plan is shown on Exhibit 2.

1.1 Scope of Work

The scope of work for this traffic study was defined based on discussions with County staff. It was specifically developed to identify the potential traffic impacts that may be associated with the development of the project site. The traffic study includes a traffic impact analysis on intersection traffic operations during typical weekday AM and PM peak hours.

The study analyzed traffic conditions under the following four development scenarios:

- Existing Traffic Conditions;
- Background (Existing Plus Approved) Traffic Conditions;
- Background Plus Project Traffic Conditions;
- Cumulative Traffic Conditions (Year 2020).

The following intersections were included within the analysis:

1. Park Avenue/Soquel Drive
2. Corte Cabrillo/Soquel Drive
3. College Drive/Soquel Drive
4. East Perimeter Road/Soquel Drive

1.2 Traffic Operation Evaluation Methodologies and Level of Service Standards

Lntersection traffic operations were evaluated based on the Level of Service (LOS) concept. LOS is a qualitative description of an intersection and roadway's operation, ranging from LOS A to LOS F. Level of service "A" represents free flow un-congested traffic conditions. Level of service "F" represents highly congested traffic conditions with unacceptable delay to vehicles on the road segments and at intersections. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes.

The County of Santa Cruz has established LOS C as the general threshold for acceptable overall traffic operations for both signalized and unsignalized intersections. County standards also allow for LOS D in locations where improvements cannot be made due to extreme environmental and topographical constraints. Santa Cruz County has jurisdiction over the study intersections.

The California Department of Transportation (Caltrans) has jurisdiction over Highway 1 and its ramps. The Caltrans level **of** service standard is the LOS C/D threshold – LOS C is acceptable in all cases, and LOS D is acceptable on a case-by-case basis.

Intersection operations were evaluated using technical procedures documented in the 2000 *Highway Capacity Manual* (HCM). For signalized and all-way stop controlled intersections, average control delay per vehicle is utilized to define intersection level of service. Delay is dependent on a number of factors including the signal cycle length, the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand. *Appendices A* and B show the relationship between vehicle delay and the signalized and two-way stop controlled intersection level of service categories. The TRAFFIX 7.7 software program was utilized to calculate the intersection levels of service for most of the study intersections.

2 EXISTING TRAFFIC CONDITIONS

This chapter presents a description of the existing traffic network, existing traffic volumes, intersection levels of service, and an overview of traffic flow conditions within the study area.

2.1 Existing Traffic Network

Regional access to the project site is provided by Highway 1. Major roadways in the vicinity of the project site are Soquel Drive and Park Avenue. Other area roadways include Cabrilla College Drive and Perimeter Road. These roadways and Corte Cabrillo are described below.

Highway 1 is a state highway within Santa Cruz County, providing access to San Francisco to the north, and Monterey to the south, via Santa Cruz, Capitola, Aptos, and Watsonville. Within much of Santa Cruz County, it is oriented in an east-west alignment, although the interregional alignment of Highway 1 is designated north-south. In the vicinity of the project, it is a four-lane freeway west of the 41st Avenue interchange and west of Porter Street-Bay Avenue interchange, and a four-lane freeway with auxiliary lanes in each direction between the 41st Avenue and Porter Street-Bay Avenue interchanges. The speed limit on Highway 1 is *65* miles per hour (MPH).

Soquel Drive is an east-west arterial street within central Santa Cruz County, extending from the eastern outskirts of Santa Cruz to the far eastern edge of Aptos. In the vicinity of the project site, Soquel Drive is four lanes wide. Left turn channelization is provided at all major intersections. The speed limit on Soquel Drive near the project site is 35 mph. Bike lanes are provided on both sides of Soquel Drive in the vicinity of the project.

Park Avenue is a two-lane arterial providing north-south circulation through the City of Capitola and Aptos area. South of Soquel Drive, a bike lane is provided on both sides of the road. On-street parking is unrestricted on the west side of Park Avenue.

Cabrillo College Drive is a two-lane collector street which primarily serves the residential neighborhood and Cabrillo College. The posted speed limit on Cabrilla College Drive varies from 20 to 40 mph. No shoulder marking is provided on Cabrilla College Drive. Cabrilla College Drive provides access to a Cabrillo College parking lot.

Perimeter Road is a two-lane local street located on the north side of Soquel Drive that provides access and circulation for Cabrilla College.

The Park Avenue and Cabrilla College Drive intersections on Soquel Drive are signalized, The Corte Cabrillo/Soquel Drive and East Perimeter/Soquel Drive intersections are controlled by stop signs on the side street approaches to Soquel Drive. The southbound Corte Cabrillo approach to Soquel Drive is signed to allow only right turn movements from Corte Cabrilla to westbound Soquel Drive. Left turn movements are allowed from eastbound Soquel Drive to Corte Cabrilla.

2.2 Existing Traffic Data

Traffic volumes at all four study intersections were collected on Wednesday October 26, 2005 and Thursday October 27, 2005. The counts were conducted during the 7:00 to 9:00 AM and 4:00 to 6:00 PM peak commute periods. The highest one-hour volumes at each intersection during each peak period were determined. These volumes represent the AM and PM peak hour intersection volumes. The existing peak hour traffic volumes are presented on Exhibit **3.**

2.3 Existing Conditions Intersection Operations

Intersection levels of service under existing conditions are summarized on Exhibit **4.** Recommended intersection improvements are summarized on Exhibit 5. **All** study intersections operate within acceptable levels of service. The Park Avenue/Soquel intersection operates at LOS C during the AM and PM peak hours and the Cabrilla College Drive/Soquel intersection operates at LOS B during the AM and PM peak hours. The Corte Cabrillo/Soquel Drive intersection operates at an overall LOS **A** with LOS C operations on the Corte Cabrillo approach during both peak hours. The East Perimeter/ Soquel Drive intersection operates at an overall LOS **A** with D operations on the East Perimeter Road approach during both peak hours. The LOS calculations are contained in ***Appendices*** *C* through *F*. No improvements are currently required at the study intersections to provide additional intersection capacity.

During the AM peak hour, three vehicles turned left from the Corte Cabrilla approach to Soquel Drive. Three vehicles also turned left from this approach during the PM peak hour. The Corte Cabrillo approach to Soquel Drive is signed to allow only right turn movements. At the current time, there is no channelization at the Corte Cabrillo/Soquel Drive intersection to prohibit left turn movements from Corte Cabrillo. Construction of median channelization on Soquel Drive at Corte Cabrillo is recommended. The channelization should be designed to allow left turns from Soquel Drive to Corte Cabrilla, but prohibit left turns from Corte Cabrillo to eastbound Soquel Drive. This will ensure that only right turns are made from Corte Cabrillo but continue to allow left turns from Soquel Drive to Corte Cabrilla.

Intersection improvements recommended for Existing Conditions are summarized on Exhibit 5.

3 BACKGROUND TRAFFIC CONDITIONS

This section of the report describes the analyses of the study road network under Background Conditions. The Background Condition scenario accounts for traffic growth expected over the near term resulting from new development approved for development.

3.1 Background Condition Traffic Volumes

The most significant traffic generator in the vicinity of the project is Cabrillo College. **A** significant portion of traffic growth on the road network in the vicinity of the college can be attributed to enrollment increases at the college. For the Atherton Place traffic study, it was estimated that traffic growth from the college would increase at a rate of about ***3%*** per year. For this study, Background Condition traffic volumes were estimated by increasing existing traffic volumes on Soquel Drive, Park Avenue and College Drive **3%** per year for 5 years. In addition, traffic generated by the Atherton Place project was estimated and added to the study intersections.

The Background Condition traffic volume projections are shown on Exhibit ***6***.

3.2 Background Condition Intersection Operations

Lntersection levels of service under Background conditions are shown on Exhibit 4. Overall intersection levels of service remain unchanged under Background Conditions. No improvements would be required at the Park Avenue/Soquel Drive and the College Drive/Soquel Drive intersections to provide additional intersection capacity.

As described under Existing Conditions, median channelization is recommended on Soquel Drive at Corte Cabrillo to prohibit left turns from Corte Cabrilla to Soquel Drive.

The East Perimeter Road/Soquel Drive intersection operates at LOS **A** during the AM and PM peak hours under Background Conditions. The southbound East Perimeter Road approach operates at LOS F during the AM and PM peak hour. LOS F operations indicate that vehicles on the East Perimeter Road approach to Soquel Drive will experience significant delays. However, the peak hour signal warrant is not met under Background Conditions. The decision to signal the intersection should be based on an engineering study that considers the volume of traffic entering the intersection throughout the day, pedestrian traffic, bicycle traffic and crash history at the intersection. It is recommended that the East Perimeter Road/Soquel Drive intersection be monitored by the County and signalized when warranted.

4 BACKGROUND PLUS PROJECT TRAFFIC CONDITIONS

This section of the report describes the analyses of the study road network under Background Plus Project traffic conditions. The section includes the analysis of the study project trip generation, distribution and assignment.

4.1 Project Definition

The project consists of the development of 28 residential units. Seven of the units will be accessed directly from Corte Cabrillo. The remaining units will be accessed via a new street network accessed from Corte Cabrillo.

4.2 Project Trip Generation

Exhibit 7 contains the trip generation estimate for the study project, which is based upon trip rates published in the Institute of Transportation Engineers' (ITE) ***Trip** Generation*, 7th Edition, 2003. The project would generate a net 268 daily vehicle trips, with 21 trips generated during the AM peak hour and 28 trips generated during the **PM peak** hour.

4.3 Project Trip Distribution and Assignment

The anticipated project trip distribution is shown below:

Direction	Percentage
To/From the East via Soquel Dnve	30%
To/From the West via Soquel Dnve	30%
To/From the South via Park Avenue	40%
TOTAL	100%

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The trip distribution pattern used for the Atherton Place traffic study has been used for this study. Exhibit 8 shows the assignment of project trips to the local road network.

The project trips shown on Exhibit 8 were added to the Background Condition traffic volumes to create Background Plus Project traffic volumes. These traffic volumes are shown on Exhibit 9.

4.4 Background Plus Project Conditions Intersection Operations

Intersection levels of service under Background Plus Project conditions are shown on Exhibit 4. Overall intersection levels of service remain unchanged with Project trips added to Background Condition traffic volumes. No improvements would be required at the study intersections to provide additional intersection capacity. The impact of the project trips to the study intersections would not be significant.

As described under Existing Conditions, median channelization is recommended on Soquel Drive at Corte Cabrillo to prohibit left turns from Corte Cabrillo to Soquel Drive.

As with Background Conditions, East Perimeter Road approach to Soquel Drive operates at LOS F during the AM and PM peak hour. However, the peak hour signal warrant is not met under Project Conditions. It is recommended that the East Perimeter Road/Soquel Drive intersection be monitored by the County and signalized when warranted.

4.5 Highway 1 Impacts

Highway 1 currently operates at LOS F during the AM and PM peak commute hours in the vicinity of the project. **A** contribution of 1% of the capacity of Highway 1 would be considered a significant impact based upon the Santa Cruz County General Plan Level *of* Service Policy. The addition of 40 trips to a deficient segment of H8ighway 1 would constitute a significant impact based on an ideal freeway lane capacity of 2,000 vehicles per hour. The proposed project would generate 21 trips during the AM peak hour and 28 trips during the PM peak hour. Because the project will generate add less than 40 trips to any segment of Highway 1 during the peak commute hours, the project impact to Highway 1 would not be significant.

5 CUMULATIVE TRAFFIC CONDITIONS

This section reports on the analysis results of the long-term cumulative, or Year 2020, traffic conditions. Analysis *of* the long-term cumulative conditions includes the previously-discussed Background volumes and trips from future development in the area.

5.1 Long-Term Cumulative Growth

Additional traffic growth is anticipated over the next ten years beyond the previously-analyzed conditions. For this study, Cumulative Condition traffic volumes were achieved by increasing existing volumes by an average rate of 3% for 15 years. Also, traffic from the proposed project and the Atherton Place project were included in the Cumulative Condition traffic volume projections.

The Cumulative Condition traffic volumes are depicted on Exhibit 10

5.2 Cumulative Condition Intersection Operations

Intersection levels of service for the Cumulative traffic conditions are summarized on Exhibit 4. The LOS calculations are contained in ***Appendices*** *C* through *F*.

Under Cumulative Conditions, the Park Avenue/Soquel Drive intersection would operate at LOS D during the *AM* and PM peak hours based on the traffic volume projections developed for this study. To achieve acceptable LOS C operations a second left turn lane would be required on the northbound Park Avenue approach to Soquel Drive. In addition, a free right turn lane would be required for the right turn from northbound Park Avenue to eastbound Soquel Drive. With these improvements the intersection would operate at LOS C under Cumulative Conditions.

Under Cumulative Conditions, the Corte Cabrillo/Soquel Drive intersection would operate at an overall LOS **A,** but the southbound approach would operate at LOS F. The level of service calculation is based on the existing intersection design. The LOS F operation occurs on the Corte Cabrillo approach because the calculation includes the vehicles currently turning left during the *AM* and PM peak hours from Corte Cabrillo to eastbound Soquel **Drive.** When these vehicles are removed from the calculation, the southbound intersection approach operates at LOS **B** during the *AM* and PM peak hours. As described under Existing Conditions, median channelization is recommended on Soquel Drive at Corte Cabrillo to prohibit left turns from Corte Cabrillo to Soquel Drive.

The College Drive/Soquel Drive intersection operates at LOS B during the AM and PM peak hours under Cumulative Conditions. No improvements are required at this intersection for Cumulative Conditions.

The East Perimeter Road/Soquel Drive intersection operates at LOS F during the AM peak hour and LOS C during the PM peak hour under Cumulative Condition. The peak

hour signal warrant is not met under Cumulative Conditions. It is recommended that the intersection be monitored by the County and a traffic signal be installed when warranted. With signalization, the intersection would operate at LOS B during the ***Ah4*** peak hour and LOS **A** during the PM peak hour.

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6 SUMMARY OF RECOMMENDATIONS

The recommended intersection improvements are summarized in this section

6.1 Improvements Recommended for Existing Conditions

1. Construct median channelization on Soquel Drive at Corte Cabrillo that would allow left turns from Soquel Drive to Corte Cabrillo, but prohibit left turns from Corte Cabrillo to eastbound Soquel Drive. This will ensure that only right turns are made from Corte Cabrillo but continue to allow left turns from Soquel Drive to Corte Cabrillo.

6.2 Improvements Recommended for Background Conditions

In addition to the improvements recommended for Existing Conditions, the following improvement is recommended for Background Conditions:

1. Monitor the East Perimeter Road/Soquel Drive intersection for possible signalization.

6.3 Improvements Recommended for Background Plus Project Conditions

In addition to the improvements recommended under Existing and Background conditions, the following is recommended under Background Plus Project conditions:

1. The project would he responsible for payment of the applicable Santa Cruz County traffic impact fees for the study area, based upon the estimated trip generation for the project.

6.4 Improvements Recommended for Cumulative Conditions

In addition to the improvements recommended under Existing, Background, Background Plus Project conditions, the following improvements are recommended under Cumulative conditions:

1. At the Park Avenue/Soquel Drive, add a second left turn lane on the northbound Park Avenue approach and improve the right turn movement from northbound Park Avenue to eastbound Soquel Drive to a free right turn movement. This would require the addition of a third eastbound through lane on Soquel Drive east of Park Avenue. If these improvements are not implemented, the intersection would operate at LOS **D** under Cumulative Conditions during the AM and PM peak hours.

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ATTACHMENT 9, Unit 2C
APPLICATION 05-0388

HIGGINS ASSOCIATES
CIVIL & TRAFFIC ENGINEERS

October 20,2006

Ron Powers
Powers Land Planning, Inc.
1607 Ocean Street, Suite **8**
Santa Cruz, CA 95060

Re: Silver *Oaks* Subdivision Traffic Study, Santa Cruz County, California

Dear Ron,

At the request of County Public Works staff, we have reassessed the improvement recommended in the traffic study prepared for the Silver *Oaks* Subdivision involving the modification of the median on Soquel Drive at Corte Cabrillo. In the traffic study prepared for the Silver *Oaks* project, channelization in the Soquel Drive median at Corte Cabrillo was recommended to prohibit left turns from Corte Cabrillo to eastbound Soquel Drive. The Corte Cabrillo approach to Soquel Drive is currently signed to allow only right tums from Corte Cabrillo to Soquel Drive. The median at the intersection is currently designed as a flush two-way left turn lane and some vehicles turn left at this location despite the right turn only sign. This letter documents an analysis of the feasibility of removing the existing turn prohibition on the Corte Cabrillo approach to allow left and right turns from the Corte Cabrillo approach **to** Soquel Drive. Comer sight distance and intersection operations were evaluated at the intersection.

Corner Sight Distance

The comer sight distance looking to the east from the Corte Cabrillo approach is 340 feet and the comer sight distance looking to the west from the approach is 405 feet. The posted speed limit on Soquel Drive is 35 miles per hour. A design speed of 40 miles per hour was used for this evaluation. The minimum comer sight distance should be at least 300 feet based on Caltrans stopping sight distance criteria, which is the minimum distance allowable for comer sight distance. The comer sight distances provided in both directions from the Corte Cabrillo approach to Soquel Drive meet the minimum comer sight distance standards.

Accident History

Very few accidents have occurred at the intersection. According to information provided by public works staff, there have been two reported accidents at the intersection since 1995. One accident occurred on Corte Cabrillo and was a sideswipe accident. The other accident involved a bicycle and not a collision between two vehicles.

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Intersection Operations

Intersection operations were re-evaluated assuming the left turn movements are allowed from the Corte Cabrillo approach to Soquel Drive. The AM peak hour is the critical time period with respect to left turn movements from Corte Cabrillo. Traffic movements from Corte Cabrillo are highest during the AM peak hour compared to the PM peak hour. In addition, the outbound driveway Soquel Drive serving the Santa Cruz Montessori School is located directly opposite Corte Cabrillo. The school contributes to the traffic generated during the AM peak hour, but the contribution to traffic during the PM peak commute hour is not as significant because school classes dismiss earlier in the afternoon. Therefore, the analysis was limited to the AM peak commute hour.

To assess traffic operations with left turns allowed, a portion of the existing and project right turn movements from Cabrillo Corte were reassigned to the southbound left turn movement. For existing conditions, 9 of the existing 19 right turns during the AM peak hour were reassigned to the left turn movement. Based upon the assignment of projected generated traffic presented in the traffic study, 5 of the project outbound trips during the AM peak hour were reassigned to the left turn movement from Cabrillo Corte. With these changes, the intersection level of service for the various analysis scenarios are shown on Exhibit 1. The level of service calculation worksheets are attached.

For all analysis conditions, the Soquel Drive/Corte Cabrillo intersection operates at LOS A. Under Background Plus Project Conditions, the Corte Cabrillo approach will operate at LOS D and the driveway for the school will operate at LOS E. At two-way stop controlled intersections, LOS F operations on the minor street approach is usually the condition when improvements would be warranted.. Therefore, improvements are not warranted under Background Plus Project Conditions.

Under Cumulative Conditions, the Corte Cabrillo approach will operate at LOS F and the driveway for the school will operate at LOS F. These levels of service indicate that delays for vehicles on these approaches will be long. Volumes on the northbound and southbound approaches would not be at levels that would warrant signalization. Improvements may be warranted at the intersection in the form of median channelization as described in the traffic study to prohibit certain turning movements. Operations at the intersection should be monitored as buildout of the General Plan occurs to assess the need for median channelization to limit turning movements at the intersection.

Summary

Based on observations of current traffic operations at the Soquel Drive/Corte Cabrillo intersection as well as comer sight distance conditions, accident history and intersection operations, allowing left turns from the southbound Corte Cabrillo approach to Soquel Drive would not create significant impacts. Removing the left turn prohibition should be considered as an alternative to the median channelization improvements described in the traffic study.

However, traffic conditions should be monitored at the intersection as buildout **of** the General Plan occurs to assess the need for median channelization to limit turning movements at the intersection.

Please contact me if you have any questions regarding this analysis.

Sincerely,

J. Daniel Takacs, TE
Principal Associate

Enclosures

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									Background Conditions		Background + Project Conditions		Cumulative Conditions	
									AM Peak Hr		AM Peak Hr		AM Peak Hr	
									Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
2	Corte Cabrillo	Soquel Drive	SB 1-R EB 1-L,2-T WB 1-T, 1-T/R	Stop	C	Overall SB Approach NB Approach	1.1 23.7 29.6	A C D	1.2 29.4 37.0	A D E	1.5 31.2 39.3	A D E	2.2 60.5 69.4	A F F

Notes:
1. L, T, R = Left, Through, Right.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. LOS = Level of Serivce
4. Delay = Average control delay per vehicle

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EXHIBIT 1-
LEVEL OF SERVICE
SUMMARY TABLE

Level of Service Calculation
Worksheets

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Corte Cabrillo/Soquel Dr

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: D[29.61

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	2 0	0	0 0	1 1	0
Volume Module:												
Base Vol:	41	0	4	12	0	10	8	783	0	0	1013	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	47	0	4	12	0	10	8	783	0	0	1013	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	0	4	12	0	10	8	783	0	0	1013	0
user Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	59	0	5	15	0	13	10	979	0	0	1266	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	59	0	5	15	0	13	10	979	0	0	1266	0
Critical Gap Module:												
Critical Gp:	7.5	xxxx	6.9	7.5	xxxx	6.9	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1915	xxxx	517	2084	xxxx	720	1165	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	36	xxxx	481	27	xxxx	329	533	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	34	xxxx	481	26	xxxx	329	533	xxxx	xxxxx	xxxx	xxxx	xxxxx
Total Cap:	200	706	xxxxx	172	711	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.29	xxxx	0.01	0.09	xxxx	0.04	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	11.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	•	•	*	*	*	B	*	•	*	•	•
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	209	xxxxx	xxxx	219	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.2	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	29.6	xxxxx	xxxxx	23.7	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	D	*	*	C	*	*	*	*	•	•	*
ApproachDel:		29.6			23.7			xxxxxx			xxxxxx	
ApproachLOS:		D			C			*			*	

Environmental Review Inital Study
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

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Intersection #2 Corte Cabrillo/Soquel Dr

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Average Delay (sec/veh): 1.2 Worst Case Level Of Service: E[37.01

****

Approach:	North Bound			South Bound			East Bound				West Bound			
Movement:	L	T	R	L	T	R	L	T	R		L	T	R	
Control:	Stop Sign			Stop Sign			Uncontrolled				Uncontrolled			
Rights:	Include			Include			Include				Include			
Lanes:	0 0	1!	0 0	0 0	1!	0 0	1 0	2	0 0		0 0	1	1 0	
Volume Module:														
Base Vol:	47	0	4	12	0	10	8	920	0	0	1176	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	47	0	4	12	0	10	8	920	0	0	1176	0		
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0		
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0		
Initial Fut:	47	0	4	12	0	10	8	920	0	0	1176	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		
PHF Volume:	59	0	5	15	0	13	10	1150	0	0	1470	0		
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0		
Final Vol.:	59	0	5	15	0	13	10	1150	0	0	1470	0		
Critical Gap Module:														
Critical Gp:	7.5	xxxx	6.9	7.5	xxxx	6.9	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
FollowUpTim:	3.5	xxxx	3.3	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
Capacity Module:														
Cnflict Vol:	2368	xxxx	622	2567	xxxx	873	1370	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Potent Cap.:	15	xxxx	402	11	xxxx	250	427	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Move Cap.:	14	xxxx	402	10	xxxx	250	427	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Total Cap:	167	672	xxxxx	140	677	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Volume/Cap:	0.35	xxxx	0.01	0.11	xxxx	0.05	0.02	xxxx	xxxx	xxxx	xxxx	xxxx		
Level Of Service Module:														
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
LOS by Move:	*	*	•	*	*	•	B	*	*	•	*	*		
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT		LT -	LTR -	RT	
Shared Cap.:	xxxx	175	xxxxx	xxxx	175	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx	1.6	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shrd StpDel:	xxxxx	37.0	xxxxx	xxxxx	29.4	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shared LOS:	*	E	*	*	D	•	*	•	*		•	*	*	
ApproachDel:		37.0			29.4		xxxxxx				xxxxxx			
ApproachLOS:		E			D			•				*		

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Corte Cabrillo/Soquel Dr

Average Delay (sec/veh): 1.5 Worst Case Level Of Service: E[39.3]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	2 0	0	0 0	1 1	0
Volume Module:												
Base Vol:	47	0	4	17	0	21	12	925	0	0	1176	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	47	0	4	17	0	21	12	925	0	0	1176	1
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	0	4	17	0	21	12	925	0	0	1176	1
user Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	59	0	5	21	0	26	15	1156	0	0	1470	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	59	0	5	21	0	26	15	1156	0	0	1470	1
Critical Gap Module:												
Critical Gp:	7.5	xxxx	6.9	7.5	xxxx	6.9	4.1	xxxx	XXXXX	XXXXX	XXXX	XXXXX
FollowUpTim:	3.5	xxxx	3.3	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	2390	XXXX	626	2586	xxxx	874	1372	xxxx	xxxxx	XXXX	xxxx	xxxxx
Potent Cap.:	15	XXXX	399	10	xxxx	250	426	xxxx	xxxxx	xxxx	XXXX	XXXXX
Move Cap.:	13	XXXX	399	10	xxxx	250	426	xxxx	xxxxx	XXXX	XXXX	xxxxx
Total Cap:	159	666	xxxxx	139	672	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.37	xxxx	0.01	0.15	xxxx	0.11	0.04	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	XXXXX	XXXX	xxxxx	xxxxx	XXXX	xxxxx	0.1	xxxx	XXXXX	XXXXX	XXXX	XXXXX
stopped Del:	xxxxx	XXXX	xxxxx	XXXXX	xxxx	xxxxx	13.7	xxxx	XXXXX	XXXXX	xxxx	XXXXX
LOS by Move:	*	*	*	•	•	*	B	*	•	•	*	•
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	167	xxxxx	xxxx	184	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.6	xxxxx	xxxxx	1.0	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	39.3	xxxxx	xxxxx	31.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	E	•	*	D	•	•	•	•	*	*	*
ApproachDel:		39.3			31.2			xxxxxx			XXXXXX	
ApproachLOS:		E			D			*			*	

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

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Intersection #2 Corte Cabrillo/Soquel Dr

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Average Delay (sec/veh): 2.2 Worst Case Level Of Service: F[69.4]

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Ease Vol:	47	0	4	17	0	21	12	1194	0	0	1496	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	47	0	4	17	0	21	12	1194	0	0	1496	1
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	0	4	17	0	21	12	1194	0	0	1496	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	59	0	5	21	0	26	15	1493	0	0	1870	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	59	0	5	21	0	26	15	1493	0	0	1870	1
Critical Gap Module:												
Critical Gp:	7.5	xxxx	6.9	7.5	xxxx	6.9	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	3520	xxxx	844	3791	xxxx	1238	1830	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	2	xxxx	275	1	xxxx	129	256	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	1	xxxx	275	1	xxxx	129	256	xxxx	xxxxx	xxxx	xxxx	xxxxx
Total Cap:	110	586	xxxxx	93	592	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.53	xxxx	0.02	0.23	xxxx	0.20	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	20.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	•	•	*	C	*	•	*	•	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	115	xxxxx	xxxx	110	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	2.6	xxxxx	xxxxx	1.8	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	69.4	xxxxx	xxxxx	60.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	F	*	*	•	•	*	*	*
ApproachDel:		69.4			60.5			xxxxxx			xxxxxx	
ApproachLOS:		F			F			*			*	

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Environmental Consulting Services 18488 Prospect Road – Suite 1, Saratoga, CA 95070
Phone: (408) 257-1045 stanshell99@toast.net **FAX:** (408) 257-7235

June 8,2007

Mr. Ron Powers
Powers Land Planning Inc.
1607 Ocean Street – Suite 8
Santa Cruz, CA 95060

Re: Noise Study Report for the Silver Oaks Townhomes Project.
Soquel Drive and Corte Cabrillo, Santa Cruz County – APN 037-151-12,- 13 .

Dear Mr. Powers,

I have reviewed the acoustical aspects of the design documents for the subject project relative to the Santa Cruz County and State of California residential noise planning requirements. This report presents the results of the noise study, which includes on-site noise monitoring, projection of future L_{dn} project noise levels, a description of architectural details relevant to noise protection performance, and general recommendations for compliance with County planning criteria [Ref 1] and California Title 24 Noise Insulation Standards [Ref 2].

PROJECT DESCRIPTION [3]

The proposed Silver Oaks residential development site is a mostly-undeveloped lot located on Soquel Drive at Corte Cabrillo. There are primarily residential uses in the area, although there is a health-related commercial office building on the corner adjacent to the site. The proposal includes 28 townhomes with 2–vehicle garages in each and an additional 66 parking spaces on site. Cabrillo College is east of the property on Soquel Drive. Access would be by a new street, Silver Oaks Lane, from Corte Cabrillo. This report evaluates the complete build-out scenario.

SUMMARY OF FINDINGS

The primary source of noise at the project site is traffic on Soquel Drive, a four-lane arterial with a middle median/ turn lane. Typical vehicle passby noise levels on the site are 60-70 dBA at 50 feet. Trucks, motorcycles, and poorly-muffledvehicles produce peak levels 5 to 15 dBA higher on passby. Traffic on Soquel Drive adjacent to the project site has moderate volumes and speed which is responsible for a majority of the noise in the area. Traffic on Corte Cabrillo is low volume and low speed, and contributes little to the overall noise level. There are no other significant noise sources in the project area other than that from typical sporadic urban noises such as garbage truck collection and landscape maintenance equipment activities.

Based upon site noise measurements, anticipated future traffic volumes, and noise modeling, the worst-case Design Noise Level for project residential units would be 69 dBA Ldn. The Design Noise Level is the worst-case outdoor noise level the project structures with the highest noise exposures must mitigate to provide a satisfactory interior environment. To meet Santa Cruz County residential noise criteria, described in the Noise Element of the Santa Cruz County General Plan [1], the following general design measures must be met:

- Title 24–specifies that long-term interior noise levels not exceeding 45 L_{dn} due to exterior sources must be provided.

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- Party wall assemblies between residential units must have a minimum 50 STC (Sound Standard STC ratings for different types of party wall constructions are
- F ceili assemblies between attached units should have a 50 IIC (Impact Insulation) rating, as well as a 50 STC t . This regulation does not apply to this projec since tov le do nor share a ceili) ssembly with other units (party wall connections onl
- Outdoor activity areas associated with residentia uses s de ks , ba lco nie l l k are recommended tc meet a County Noise Element standard of 60 dBA Ldn, if fe le

NOISE MONITORING AND DESIGN NOISE LEVEL ANALYSIS

Field noise measurements on site were made during the late morning wmmute period of May 24, 2007, with a CEL-440 precision noise meter and analyzer, calibrated with a B & K Model 4230 Sound Level Calibrator. The measurement locations were chosen to represent worst-case exposure of project residential units closest to Soquel Drive and Corte Cabrillo:

Location 1 –approximately the location of the back yard of residential unit #16, nearest to Soquel Drive on the southeast corner of the site, about 60 feet from the nearest lane

Location 2 – approximately the location of the front yard/deck of residential unit #1, about 25 feet from the near lane of Corte Cabrillo

Existing Noise Levels

Noise levels were measured and are reported using percentile noise descriptors: L_{90} (the background noise level exceeded 90 % of the time), L_{50} (the median noise level exceeded 50% of the time), L_1 (the peak level exceeded 1% of the time), and L_{eq} (the average energy-equivaient noise level). Measured noise levels are presented in Exhibit 1 below. The L_{dn} noise levels were computed as the long-term average of L_{eq} using the typical daily traffic distribution in the area, with standard weighted penalties for the nighttime hours.

EXHIBIT 1

EXISTING NOISE LEVELS (dBA)

Silver Oaks Townhomes Project Site – Santa Cruz County

Location	L_{90}	L_{50}	L_{eq}	L_1	L_{dn}
1. Unit 16 yard, southeast corner of site	49	55	58	65	62
3. Unit 1 deck/yard, west side of site	42	46	53	66	56

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will have noise levels 5-15 dBA less. The DNL is computed based on field measurements of present noise levels, projections of future traffic noise increases, and modeled by an enhanced and tested version of the National Cooperative Highway Research Board traffic noise model [5].

Existing daily traffic volumes on Soquel Drive near the project are approximately 21,000, based on Santa Cruz County Transportation Commission counts and the Higgins Associates project traffic study [4]. It is projected that traffic will increase about 38% over the next ten years on Soquel Drive, to about 29,000, primarily from general cumulative growth, but including about 270 daily project-generated trips. The traffic study assumes that weekday project trips would be about 28 in the peak pm hour, a trip increase of less than 1% on Soquel Drive.

Based on the expected future increase in traffic on Soquel Drive, noise modeling provides the anticipated 2017 site noise levels shown in Exhibit 2, an increase of about 2 dB over present noise levels for similar locations (without protection). Site noise levels would be highest at the residential units closest to the roadway. in addition, exposures at the upper floor windows closest to and facing the road would be approximately 9 dB higher than first-floor noise levels because protection of ground floor areas by the property line fence and topography. Anticipated future residential noise levels at other representative locations are given in the 2nd and 3rd columns of Exhibit 2.

EXHIBIT 2

FUTURE NOISE LEVELS – Ldn (dBA)

Silver Oaks Project - **Soquel** Drive and Corte Cabrillo

Location	First floor facing traffic	Second Floor facing traffic	First floor facing away
1. Units near Soauel Drive, south end	57-59	67-69	55-57
2. Units along Corte Cabrillo	56-58	57-59	53-55
3. Units in mid-site and north end	53-55	54-56	52-54

The estimated worst-case noise levels for upper floor units closest to and facing the roadway, the architectural Design Noise Level, would be 69 dBA. Areas further back from the Soquel Drive and Corte Cabrillo, such as the interior areas and units at the north section of the site facing away from traffic, would have significantly lower noise levels than those near the roadways, as shown in Exhibit 2.

This project is adjacent to residential uses to the north, east and west. As in any busy area, some non-traffic activities could cause sporadic disturbance to the project. However, the proximity to steady arterial traffic would provide a noise background covering most incidental noise from adjacent properties.

STATE OF CALIFORNIA and SANTA CRUZ COUNTY RESIDENTIAL NOISE STANDARDS

County and State noise criteria require that new residential housing developments provide an interior L_{dn} noise level of 45 dBA or less due to exterior noise sources. As described in the previous section, the worst-case project noise environment for architectural design purposes is 69 dBA for units next to Soquel Drive. Therefore, to achieve an interior L_{dn} of 45 dBA, a minimum noise reduction of at least 24 dB must be provided by the combined elements of the building shell, particularly those units near the freeway. The transmission loss of architectural building elements is designated by Sound Transmission Class (STC) ratings for wall elements and by Impact Insulation Class (IIC) ratings for floor/ceiling assemblies, both of which are methods of estimating the inherent ability to attenuate noise transmission. Residences not near the roadway would have lower noise exposure levels due to both distance and shielding effects.

Standard wood and gypsum exterior wall constructions have STC ratings of approximately 40 dBA or more. Standard hollow-core doors and openable single pane windows are rated at about 22-28 STC. Typical dual-layer thermal pane windows are rated at 27-30 dB STC. Except for actual cracks and openings in a structure, doors and windows are usually the weakest elements in the design and construction of a good sound-rated building, and usually reduce the overall protection provided by the more substantial wall structures.

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County Noise Element guidelines for residential areas recommend that outdoor activity areas be protected to at least 60 dBA Ldn. In high-volume traffic environments this often means noise reduction by means of noise walls—special property line or rear yard walls—or individual deck enclosures. In most developments, including Silver Oaks, the residential structures themselves offer much of the protection necessary from traffic noise impacts except for units facing the roads. The four units nearest to Soquel Drive, #13, 14, 15 and 16, are protected at ground level by the proposed 6-foot property line noise wall that wraps at the corners. and hence meet the 60 dB Ldn outdoor criteria.

RECOMMENDATIONS

Following are recommendations for meeting the key criteria for good residential noise insulation design by the Silver Oaks Townhomes development

1. WINDOWS. Windows should have STC rating of at least 25 dB to meet interior noise requirements, although a higher STC rating is recommended for units near and facing the roadways to provide more protection from peak noise from motorcycles and trucks. High quality double-glazed thermal windows, with two 118" lights separated by a 1/2" to 3/4" air space, and good weather seals if openable, typically have ratings of 28-30 STC. Installation of this quality window is typical for developments near major traffic sources and would be recommended for this project, particularly in units near and facing the roads.

2. PARTY WALL ASSEMBLIES. For minimizing noise transmitted between attached residential units, the party wall assembly should have several inches of air space, fiberglass insulation, minimal structural connections, and generally resilient channel (RC) on one side of the party wall, in order to meet the 50 dBA STC requirement. Acceptable types of party wall assemblies are described in References 6 and **7.**

   In addition, any fire stops between units should not provide a strong structural connection. That is, they should be of lightweight material, such as sheet metal or fiberglass that cannot conduct low-frequency sound and vibration between units.

3. EXTERIOR DOORS. Entrance doors and sliding glass doors, particularly those in units near and facing the roadways should be solid core with good weather seals, and with an STC rating of at least 25 dB to match Me building shell noise reduction criteria.

4. PROTECTED OUTDOOR ACTIVITY AREAS. As shown in Exhibit 2, and described previously, the four units nearest to Soquel Drive, # 13, 14, 15 and 16, have back and/or side yards that meet the 60 dB Ldn outdoor criteria with the planned property line 6-foot wall that wraps at the corners. A solid 6-foot fence/wall of material such as double layer wood or masonry is recornmended to provide 5-7 dB noise reduction in these key areas, which would provide an outdoor noise environment in the 58-60 dBA Ldn range behind the wall.

5. VENTILATION. Mitigation of outside traffic noise is based upon windows that are closed in order to provide the required noise protection. Therefore all units, particularly those units nearest the traffic noise sources producing the primary noise, must have a ventilation system that provides a habitable interior environment with the windows dosed, regardless of outside temperature. In addition, if air conditioning units are installed, the noise levels produced by the AC units must not themselves cause a noise problem for any of the residential units associated with the project or adjacent residential properties.

6. GENERAL DESIGN AND CONSTRUCTION PRACTICES. Good noise design must be implemented by good field construction practices or the design performance will not be achieved. This includes minimizing all penetrations of and connections between party wall and floor/ceiling assemblies, and acoustical sealant around any necessary wall penetrations.

If I may be of further assistance on this project, please do not hesitate to contact me

Respectfully submitted

Stan Shelly

H. Stanton Shelly
Acoustical Consultant
Board Certified Member (1982),
Institute of Noise Control Engineering

REFERENCES

1. "Noise Element", Santa Cruz County General Plan, Santa Cruz County Planning Department, 1999.
2. "Noise Insulation Standards." Section 3501, Title 24, Part 2, California Building Standards Code, revised September 1989.
3. Architectural Site Plan *A2,* triplex elevations A8 and A10, Lattanzio & Associates, Aptos, CA
4. Project traffic study data: Higgins Associates, Gilroy, CA; December 2005.
5. Highway Noise - A Design Guide for Highway Engineers, National Cooperative Highway Research Program Report 117, Highway Research Board, National Academy of Sciences, Washington, D.C., 1971 (model enhanced and field validated by ECS).
6. DuPree, Russell B., Catalog of STC and *IIC* Ratings for Wall and *Floor/Ceiling* Assemblies, California Dept. of Health Services, Office of Noise Control, Berkeley, CA, Feb. 1980.
7. Fire Resistance and Sound *Control* Design Manual, 17'' Ed., Gypsum Association, Washington, DC, 2003.
8. Noise *Insulation* Problems in Buildings. Paul Veneklasen & Associates, for Santa Clara County Airport Land Use Commission, San Jose, January 1973.

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SANTA CRUZ COUNTY SANITATION DISTRICT

INTER-OFFICE CORRESPONDENCE

DATE: **AUGUST** 7, 2006

TO: Planning Department, ATTENTION RANDALL ADAMS

FROM: Santa Cruz County Sanitation District DREW BYRNE

SUBJECT: SEWER AVAILABLIITY ***AND*** DISTRICT'S CONDITIONS OF SERVICE FOR THE FOLLOWING PROPOSED DEVELOPMENT

APN: 37-151-12, 13 APPLICATION NO.: 05-0388

PROJECT DESCRIPTION: 29 UNIT TOWNHOUSE DEVELOPMENT – 3RD SUBMITTAL

Sewer service is available for the subject development upon completion of the following conditions. This notice is effective for one year from the issuance date to allow the applicant the time to complete tentative map, development or other discretionary permit approval. If after this time frame this project has not received approval from the Planning Department, a new sewer service availability letter must be obtained by the applicant and would be subject to sewer availability conditions current at that time. Once a tentative map is approved, this letter shall apply until the tentative map approval expires.

This application is sufficiently complete for the discretionary permit phase although some revisions to the plans are required before final Public Works approval. It is assumed that all proposed sewers built as part of this project is to be privately owned and maintained by the homeowner's association.

The conditions below regarding sewer redesign and sewer lateral abandonment shall be resolved at the final plan review stage.

1. All existing public sewer manholes shall be labeled with the District's manhole designation. All proposed sewer manholes shall be labeled in a manner to allow for easier identification. For final design, sewer profiles shall be drawn to vertical scale that will allow the reviewer a more clear perspective of sewer depth and cover. Applicant's engineer should coordinate these drafting issues with District prior to revision to avoid unnecessary drafting changes in future reviews.

2. Point(s) of sewer lateral abandonment shall be shown. Point of abandonment shall be at the existing back of walk at Soquel Drive.

3. All sewers shall be constructed at a slope of 2.0% minimum unless a District variance is given. Variance for slope less than 2.0% shall be considered only if a steeper slope is not feasible (not applicable in this case) or for depth of sewer that would become excessive (probably not applicable)

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4. **A** sewer manhole is required at every change in direction or slope

5. Show sewer easement for existing sewer just west of the Corte Cabrilla right-of-way, where is pertains to proposed sewer lateral tie-in shall be shown on the plans.

6. The proposed connections for Lots 3 and 4 shall be revised. The proposed connection to existing eight-inch sewer is not allowed because this line was not built to current depth standards, the line was never accepted into the District inventory and other reasonable connection options are available.

Department of Public Works and District approval shall be obtained for an engineered sewer improvement plan showing sewers needed to provide service to each lot or unit proposed. This plan shall be approved by the District and the County of Santa Cruz Public Works prior to the issuance of any building permits. This plan shall conform to the County of Santa Cruz Design Criteria and shall show any easements necessary. Existing and proposed easements shall be shown on any required Final Map.

The applicant shall form a homeowner's association with ownership and maintenance responsibilities for all on-site sewers for this project. Privately maintained sewers shall be noted on the Final Map and the association's CC&R's. Record CC&R's after District review and approval.

Following completion of the above mentioned engineered sewer plan and Final Map, the following conditions shall he met during the building permit process:

Proposed location of on-site sewer lateral(s), clean-out(s), and connection(s) to existing public sewer must be shown on the plot plan of the building permit application.

Show all existing and proposed plumbing fixtures on floor plans of building application. Completely describe all plumbing fixtures according to table 7-3 of the uniform plumbing code.

Drew Byrne
Sanitation Engineering

DB:

Copy: Applicant: Powers Land Planning
1607 Ocean Street, Suite 8
Santa Cruz, CA 95060

Owner: Holcomb Corporation
19 Seascape Village
Aptos, CA 95003

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