COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHY MOLLOY PREVISICH, PLANNING DIRECTOR

NEGATIVE DECLARATION AND NOTICE OF DETERMINATION

07-0198 Vicinity of north and west side of East Cliff Dr. APN(S): Non APN Specific County right-of-way

The proposal is to construct pedestrian pathway improvements on the north and west side of East Cliff Drive along Schwan Lake between 9th Avenue to 12th Avenue, including a portion of proposed sidewalk on the east side of East Cliff Drive extending approximately 150 feet south from Prospect Way to a proposed crosswalk, and development of public parking on 11th Avenue. Improvements include an on-grade pathway with a stabilized decomposed granite surface and a wood railing, a concrete pier and deck walkway structure with stabilized decomposed granite and a metal railing, improved bicycle land widths, drainage improvements, landscaping, retaining walls, and grading of approximately 407 cubic yards of cut and 147 cubic yards of fill. The project requires a Coastal Development Permit, Preliminary Grading Approval, a Riparian Exception, and a Development Permit for railings in excess of 3 feet in height adjacent to a right-of-way.

ZONE DISTRICT: Parks and Recreation (PR)
OWNER/APPLICANT: Santa Cruz County Public Works Dept and Redevelopment Agency
STAFF PLANNER: SHEILA MCDANIEL, 454-2466
EMAIL: pln056@co.santa-cruz.ca.us
ACTION: Negative Declaration with mitigations
REVIEW PERIOD ENDS: DECEMBER 7, 2010

This project will be considered at a public hearing by the Planning Commission.
The time, date and location have not been set. When scheduling does occur, these items will be included in all public hearing notices for the project.

Findings:
This project, if conditioned to comply with required mitigation measures or conditions shown below, will not have significant effect on the environment. The expected environmental impacts of the project are documented in the Initial Study on this project, attached to the original of this notice on file with the Planning Department, County of Santa Cruz, 701 Ocean Street, Santa Cruz, California.

Required Mitigation Measures or Conditions:
_____ None
__XX__ Are Attached

Review Period Ends: December 7, 2010

Date Approved By Environmental Coordinator: 12/21/10

MATT JOHNSTON
Environmental Coordinator
(831) 454-3201

If this project is approved, complete and file this notice with the Clerk of the Board:

NOTICE OF DETERMINATION
The Final Approval of This Project was Granted by _____

on _____. No EIR was prepared under CEQA.
(Date)
THE PROJECT WAS DETERMINED TO NOT HAVE SIGNIFICANT EFFECT ON THE ENVIRONMENT.

Date completed notice filed with Clerk of the Board: _____

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KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

NOTICE OF ENVIRONMENTAL REVIEW PERIOD

SANTA CRUZ COUNTY

APPLICANT: **County of Santa Cruz**

APPLICATION NO.: **07-0198**

PARCEL NUMBER (APN): **County Right of Way, non-APN specific**

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: **December 7, 2010**

Staff Planner: **Sheila McDaniel**

Phone: **(831) 454-2466**

Date: **November 5, 2010**

NAME: East Cliff Drive Pedestrian Improvements
APPLICATION: 07-0198
A.P.N: County Right-of-Way

NEGATIVE DECLARATION MITIGATIONS

A. In order to mitigate impact to water quality as a result of winter grading, prior to the issuance of the grading permit, the applicant shall submit final operations plans, construction phasing and timelines, and associated erosion control measures, and identification of best management practices to be employed in inclement weather for review and approval.

B. In order to mitigate potential impacts to California red legged frogs, the following measures shall be implemented:

1. The applicant/construction manager shall be required to have a qualified biologist conduct a pre-construction survey for threatened California red-legged frog not more than 72 hours prior to vegetation removal and construction activities. If frogs are present on the construction site, the applicant shall consult with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), prior to the start of construction activities. No work shall begin until authorized by the USFWS and CDFG.
2. Prior to the start of construction, a qualified wildlife biologist shall provide an educational seminar with the work crew. The seminar shall address legal status, natural history and frog identification, and measures to implement if red-legged frogs are observed on the site.
3. A qualified biologist should be present to monitor initial vegetation removal. The vegetation removal should be performed with the use of hand tools. The vegetation should be removed before any ground disturbance is performed on-site. Use of heavy equipment, staged in open areas, may also be appropriate to carefully remove large debris, under the supervision of a qualified biologist. If red-legged frogs are observed on-site after work has commenced, operations shall cease and the USFWS and CDFG should be contacted immediately for further guidance. Work shall not resume until authorized by these agencies.

C. In order to mitigate potential impacts to dusky-footed wood rats, the following measures shall be implemented:

1. Prior to construction, a qualified biologist shall complete a pre-construction survey within 30 to 60 days prior to any ground-disturbing activities associated with construction to search for wood rat nests or other signs. The entire impact area, as well as a 50-

foot buffer zone outside the limits of construction, should be inspected for nests. If no nests are detected, or if a nest is present that can be avoided, no additional field studies will be necessary and a letter-report should be submitted to the regulatory agencies in support of this determination.

2. If the biologist determines that a ground survey was insufficient to determine absence of the species due to dense vegetation or extensive debris, which may inhibit an observer's view, then a biologist should be present while the vegetation and debris is removed by hand.
3. If wood rats or their nests are identified and cannot be avoided, a live-trapping study should be performed. Prior to conducting a live trapping study, CDFG should be contacted to review the study plan and determine the fate of any wood rats captured. If approved by CDFG, captured wood rats will be released out of the impact area but within the existing oak woodland near 12th Avenue. Piles of native branches should be placed at the release location to provide temporary cover for any wood rats released. If possible, nests should be moved to the oak woodland. Efforts will be made to move portions of the nest intact to the release site. The trapping effort should continue a minimum of three consecutive nights until no wood rats are captured. Other native small mammals should also be released in the adjacent oak woodland. Non-native animals captured should be humanely eliminated from the wild.

D. In order to mitigate potential impacts to cormorants and other nesting birds, the following measures shall be implemented:

1. Submit a nesting survey prior to construction. The nesting survey requirement should be incorporated into the construction documents and submitted to Environmental Planning staff prior to construction to ensure compliance.
2. Construction activities should be scheduled after August 15th in the vicinity of nesting trees or shrubs. If construction activities are scheduled to begin between March 1 and August 15, a pre-construction nesting survey should be conducted by a qualified wildlife biologist one week prior to the start of construction activities to record nesting evidence (e.g., territorial displays, birds carrying food, etc.) within or in the immediate vicinity of the project alignment. If active nesting or territory is observed, a 60-foot buffer shall be established around a songbird nesting area or a minimum of 250 feet from a cormorant rookery. A monitoring biologist should be present to record the behavior of nesting cormorants and to increase the buffer zone distance, as needed. No construction activities should be allowed within these buffer zones. Construction activities would be allowed elsewhere outside of the buffer areas. If

the wildlife biologist determines evidence of nesting is no longer observed, project activities could be allowed to start immediately.

E. In order to mitigate potential impacts to riparian and wetland vegetation, the following measures shall be implemented:

1. Temporary construction fencing shall be placed around the construction staging zone to avoid unnecessary impacts to sensitive habitat.
2. Any immature willows and emergent wetlands, as identified in the biotic report, that are removed as a result of construction shall be replaced after construction with the same species and in the same general location at a 3 to 1 ratio.
3. Any willows that are removed shall be replaced and monitored to ensure survival, in a ratio of 3 to 1. These mitigations shall be included in the final landscape plan.
4. Five years of monitoring and maintenance by the Department of Public Works shall be required to ensure success.
    a. Planning staff shall have the authority to determine early successful revegetation, based upon 90% plant establishment.
5. Staging areas shall be located outside of any sensitive habitat.
6. Any necessary trimming of Coast Live Oaks near the northerly end of the path shall be completed under supervision of a certified arborist.
7. Overall project mitigation requires removal of exotics in the construction zone, construction staging area, and in the immediate vicinity of the project construction site.

F. In order to mitigate impacts to emergency access, one lane of traffic will remain open at all times so that fire trucks, ambulances and other emergency vehicles will not be blocked from using the road at any time. If the open lane must be blocked, it may not be closed for more than 20 minutes at a time and traffic control must be in place to allow immediate through access to emergency service vehicles.

G. In order to mitigate any potential noise-related impacts, the project will be required to include hours of operation for heavy construction machinery, restricting construction activities to after 8:30 am to minimize morning noise disturbance to surrounding residential uses. In addition, the contractor will be required to provide a noise notification sign alerting the public of the duration of the noise disturbance for this portion of the work.

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www.sccoplanning.com

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ENVIRONMENTAL REVIEW INITIAL STUDY

Date: 10/25/10 **Application Number: 07-0198**

Staff Planner: Sheila McDaniel

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: County of Santa Cruz Public Works Department and Redevelopment Agency

APN(s): Non APN Specific, County right-of-way

OWNER: County of Santa Cruz

SUPERVISORAL DISTRICT: 1

PROJECT LOCATION: Project located on East Cliff Drive between 9th Avenue and 12th Avenue in the Live Oak Planning Area.

SUMMARY PROJECT DESCRIPTION: Proposal to construct pedestrian pathway improvements on the north and west side of East Cliff Drive along Schwan Lake between 9th Avenue to 12th Avenue, including a portion of proposed sidewalk on the east side of East Cliff Drive extending approximately 150 feet south from Prospect Way to a proposed crosswalk, and development of public parking on 11th Avenue. Improvements include an on-grade pathway with a stabilized decomposed granite surface and a wood railing, a concrete pier and deck walkway structure with stabilized decomposed granite and a metal railing, improved bicycle lane widths, drainage improvements, landscaping, retaining walls, and grading of approximately 407 cubic yards of cut and 147 cubic yards of fill. The project requires a Coastal Development Permit, Preliminary Grading Approval, a Riparian Exception, and a Development Permit for railings in excess of 3 feet in height adjacent to a right-of-way.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: 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.

- ☒ Geology/Soils
- ☒ Hydrology/Water Supply/Water Quality
- ☒ Biological Resources
- ☒ Noise
- ☒ Air Quality
- ☒ Greenhouse Gas Emissions

- ☐ Agriculture and Forestry Resources
- ☐ Mineral Resources
- ☐ Visual Resources & Aesthetics
- ☐ Cultural Resources
- ☐ Hazards & Hazardous Materials
- ☒ Transportation/Traffic
- ☐ Public Services
- ☐ Recreation
- ☐ Utilities & Service Systems
- ☐ Land Use and Planning
- ☐ Population and Housing
- ☒ Mandatory Findings of Significance

DISCRETIONARY APPROVAL(S) BEING CONSIDERED:

- ☐ General Plan Amendment
- ☐ Land Division
- ☐ Rezoning
- ☒ Development Permit
- ☒ Coastal Development Permit
- ☒ Grading Permit
- ☒ Riparian Exception
- ☐ Other:

NON-LOCAL APPROVALS

Other agencies that must issue permits or authorizations:

California Coastal Commission Permit for work within the coastal jurisdiction area boundary, shown on the project cover sheet map (Attachment 2).

California State Parks right-of-entry encroachment permit for construction work
California Department of Fish and Game Streambed Alteration Agreement necessary

DETERMINATION: (To be completed by the lead agency)
On the basis of this initial evaluation:

- ☐ 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 revisions in the project have been made or agreed to by the project proponent. 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.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An

ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Matthew Johnston
Environmental Coordinator

12/21/10
Date

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS

Parcel Size: N/A, County Right-of-Way
Existing Land Use: County Right-of-Way
Vegetation: Area adjacent to Right-of-way contains riparian vegetation, see biotic report (Attachment 6)
Slope in area affected by project: ☒ 0 - 30% ☐ 31 – 100%
Nearby Watercourse: Schwan Lake
Distance To: Adjacent to right-of-way

ENVIRONMENTAL RESOURCES AND CONSTRAINTS

Water Supply Watershed: Arana Rodeo
Groundwater Recharge: No, but right-of-way drains to Schwan Lake, which is subject to Groundwater Recharge
Timber or Mineral: No
Agricultural Resource: No
Biologically Sensitive Habitat: Yes, see attached Biotic Report
Fire Hazard: No
Floodplain: Yes
Erosion: Yes
Landslide: No
Liquefaction: Yes

Fault Zone: No
Scenic Corridor: Not mapped as a visual resource area

Historic: No
Archaeology: Not mapped
Noise Constraint: No

Electric Power Lines: Yes
Solar Access: N/A
Solar Orientation: N/A
Hazardous Materials: No
Other:

SERVICES

Fire Protection: Central

School District: N/A

Sewage Disposal: County Sanitation

Drainage District: County Flood Control Zone 5
Project Access: East Cliff Drive Public Right-of-Way
Water Supply: Santa Cruz Water Department

PLANNING POLICIES

Zone District: PR and R-1-3.5, both to the center of the right-of-way
General Plan: Existing Parks and Recreation, Urban High Residential, both to the center of the right-of-way

Special Designation: None

Urban Services Line: ☒ Inside ☐ Outside
Coastal Zone: ☒ Inside ☐ Outside

ENVIRONMENTAL SETTING AND BACKGROUND:

The proposed project is located along East Cliff Drive between 9th and 12th Avenue, adjacent to Schwan Lake within the Live Oak Planning Area. East Cliff Drive provides access for vehicles, pedestrians and bicyclists to and from surrounding residential areas to the Santa Cruz Yacht Harbor and the beaches in the vicinity, including the California State Park Twin Lakes Beach.

This section of East Cliff Drive is a 60 foot public right-of-way developed with two travel lanes and bicycle lanes and no on-street parking, with exception of perpendicular parking on the south side of the street adjacent to Twin Lakes State Beach on the southern end. The Eleventh Avenue right-of-way also currently provides an informal parking area for beach users. Roadway improvements on East Cliff Drive do not currently occupy the full right-of-way. The northeast edge of the roadway is flanked by a steep slope upward alongside existing residential properties and a steep slope adjacent to and downward to Schwan lake from the roadway. The bicycle lanes varying in width throughout this section of roadway where they meet the standard 5 foot sidewalk dimension in places and not in others. Sidewalk is absent and pedestrians currently share the bicycle lane as needed.

This project is proposed by the Public Works Department and the Redevelopment Agency to improve pedestrian and bicycle access, and safety within the right-of-way where improvements are limited or absent. Initially, the Redevelopment Agency held community meetings for the Twin Lakes beachfront improvement project proposed on East Cliff Drive between 5th Avenue and 12th Avenue. Due to the complexity of the overall project, complicated community input, and ultimately a lack of community consensus on the beachfront portion of the project, the Agency divided the beachfront improvement project into three separate improvement projects, phases, if you will, so each segment could address the specific issues related to each and the Agency could provide additional community meetings as necessary. This resulted in the Lake and 5th Avenue improvement project (Phase 1), East Cliff Drive improvement project from 9th Avenue to 12th Avenue (Phase 2), and East Cliff Drive Improvement project from 5th Avenue to 9th avenue (Phase 3).

Phase 1, the Lake and 5th Avenue improvement project, was completed in 2003. On June 3, 2004, the Redevelopment Agency held an additional community meeting for Phase 2, East Cliff Drive segment from 9th Avenue to 12th Avenue. This resulted in a community consensus on street improvements. A formal route concept proposal was scheduled for public hearing before the Board of Supervisors and approved on November 23, 2004. The Board letter is attached as Attachment 15 for more information regarding the specific details of the community process and route concept improvements. And finally, the Redevelopment Agency held three community meetings for the Twin lakes Beachfront improvement project on East Cliff Drive between 5th to 9th on September 27, 2007, January 10, 2008, and on May 1, 2008, where a consensus was achieved. The Concept Plan was submitted to the Board of Supervisors and approved August 12, 2008. The agency is currently developing the project improvement plans

and environmental studies for submittal of a coastal permit application for the Twin Lakes Beachfront improvement project to the Planning Department in winter of 2011.

Due to the timing of the community input process for the Twin Lakes improvement project and development of plans and preparation of technical studies, a coastal permit application for the Twin Lakes improvement project is proposed separately from the proposed 9th to 12th Avenue project under consideration. In order to satisfy the purpose of CEQA to ensure a full and complete environmental review and to avoid potential project segmentation, this initial study will evaluate potential cumulative impacts of both the proposed project and the future Twin Lakes Beachfront improvement project. The future Twin Lakes Beachfront improvements will undergo a separate CEQA review process when the details of that project have been determined.

DETAILED PROJECT DESCRIPTION:

The proposed project improvements are located within the 60 foot East Cliff Drive public right-of-way for the most part, with exception of a construction area encroachment within the California State Parks property along the periphery of the improvement area above Schwan Lake. A right-of-way entry for construction is required on the northwest side of East Cliff Drive between Prospect Way and 12th Avenue. An easement from State Parks is needed along the edge of 9th Avenue and East Cliff Drive. Project improvements are proposed within the Eleventh Avenue right-of-way, which is approximately 60 feet in width.

Right-of-way Improvements

The project includes construction of curb, gutter, a five to six foot wide on-grade pedestrian pathway and a pier supported walkway with resin stabilized decomposed granite located on the north and northwest side of East Cliff Drive (Schwan Lake side) from the existing crosswalk at 9th Avenue to the existing sidewalk west of 12th Avenue. The on-grade pathway is proposed to extend approximately 600 feet east along East Cliff Drive from 9th Avenue and provides pathway footings varying in height up to approximately two feet. A wood handrail is proposed along this section of pathway. On the south side of Schwan Lake, a few two to three foot wide landscape strips are proposed to separate the on-grade pathway from the street for a small portion of the on-grade pathway.

The on-pier walkway extends approximately 1000 feet along the north and northwest side of East Cliff Drive. Three overlooks are provided in this section to the east of and above Schwan Lake along East Cliff Drive. The width of the overlook is approximately nine feet. The pier support and walkway vary in height above grade from at grade to three and a half feet in height. The on-pier walkway is proposed to be inset with resin stabilized decomposed granite. The project also includes a new pedestrian crosswalk across East Cliff Drive located approximately 150 feet south of Prospect Street. The cross walk is proposed to provide a pedestrian enabled flashing safety light, as required by Public Works. Curb, gutter and a four foot wide pedestrian pathway with resin stabilized decomposed granite is proposed to extend along the east side of East Cliff

Drive from Prospect Street to the proposed cross walk. A retaining wall, varying in height from grade to four feet in height, is proposed at the back of sidewalk.

Improvements proposed on 11th Avenue include a formalized street entry defined by an asphalt concrete curb with landscape islands on the east and west side of the entry and the provision of 12 formal parking spaces including a handicap parking space. A wide shoulder pull off is provided on East Cliff Drive for entry to and exit from 11th avenue. A walkway, sitting area, and overlook are provided adjacent to the public parking.

Improvements on 9th Avenue and East Cliff Drive include the provision of a more defined west bound curbed entry to 9th Avenue and a pedestrian crosswalk from 9th Avenue across East Cliff Drive.

Drainage

The project provides storm drainage improvements throughout the length of the project. This includes removal of existing drainage inlets and replacement with drainage inlets that provide silt and grease filtration inserts exceeding the current design criteria.

The Schwan Lake inlet located at 9th avenue is proposed to be removed and replaced with a new inlet meeting current design standards. An additional 15 inch storm drain line is proposed in the roadway that will connect to the existing storm drain system there. A new inlet is proposed directly on the south side of Schwan Lake. Also, the existing 12 inch storm drain pipe located on the east side of East Cliff Drive, adjacent to Schwan Lake, is proposed to be replaced with a 15 inch pipe and a new inlet is proposed on the southwest side of East Cliff Drive that will connect to the existing storm drain. A rip rap, gabion basket, drainage dissipater is proposed at the base of the pipe outfall. Finally, an old drain box located across from Prospect Street will be replaced with a new inlet and be connected to the existing storm drain. A drainage dissipation mat is also proposed at this outfall. A small section of new drain pipe is proposed there to extend to the new inlet location.

Grading

Project grading includes approximately 407 cubic yards of cut and 147 cubic yards of fill divided according to the below values.

Cut (in cubic yards)
Piers: 87
Site Cut: 320
Total: 407
Fill (in cubic yards)
147

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

The volumes do not include asphalt and base rock removal or replacement of the existing roadway surface as Public Works road maintenance is exempt from the grading ordinance.

Winter grading is proposed for this project due to biotic constraints and state beach public access requirements.

III. ENVIRONMENTAL REVIEW CHECKLIST

A. GEOLOGY AND SOILS

Would the project:

1.	Expose people or structures to potential substantial adverse effects, including the risk of 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 based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
	B. Strong seismic ground shaking?	☐	☐	☒	☐
	C. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	D. Landslides?	☐	☐	☒	☐

Discussion (A through D): The project site is located outside of the limits of the State Alquist-Priolo Special Studies Zone (County of Santa Cruz GIS Mapping, California Division of Mines and Geology, 2001).

This project is located in a seismically active region of northern California, as the October 17, 1989 earthquake amply demonstrated, and is relatively close to the San Andreas Fault. The Working Group on California Earthquake Probabilities[1] estimates

[1] Working Group on California Earthquake Probabilities - Historic California Earthquake Catalog, [1] 2007 Working Group on California Earthquake Probabilities, 2008, The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2): U.S.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

that Northern California has a 30-year probability of 93% for the occurrence of an M≥6.7 earthquake, and a 15% probability of an M≥7.5 earthquake. The nearby San Andreas Fault by itself has a 30-year probability of 21% of generating an M≥6.7 earthquake. Very strong ground shaking is likely to occur at the site during the anticipated lifetime of the project and, therefore, proper grading, structural and foundation design is imperative. In addition to the San Andreas, other nearby fault systems capable of producing intense seismic shaking on this property include the San Gregorio, Zayante, Sargent, Hayward, Butano, and Calaveras faults, and the Monterey and Corralitos fault complexes.

East Cliff Drive is threatened by seismically induced slope instability, and could fail during a large earthquake. Kleindfelder[2], the project geotechnical engineering company, recognizes this potential hazard, and has incorporated design standards into the project that will increase the ability of the new walkways and bicycle path to resist the affects of seismicity during an earthquake (including seismically induced instability). By using these new improved walkways and bicycle pathway, pedestrians and bicyclist will be less affected by seismicity, liquefaction, and slope instability.

2.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐

Discussion: Analysis by the project geotechnical engineer demonstrates that the slope is stable except during an earthquake. As noted in item one, the project geotechnical engineering company, has developed design standards that will increase the ability of the new walkways and bicycle path to resist the affects of seismicity including seismically induced instability.

3.	Develop land with a slope exceeding 30%?	☐	☐	☒	☐

Discussion: There are slopes that exceed 30% on the property. The majority of the project avoids slopes over 30 percent. On the eastside of East Cliff a small retaining wall will be constructed in an area of 30% slopes to reduce the amount of excavation to create a walkway. The geotechnical engineer has reviewed this slope and has determined that the retaining wall and final slopes will be stable.

Geological Survey Open-File Report 2007-1437 and California Geological Survey Special Report 203 [http://pubs.usgs.gov/of/2007/1437/].

[2] Kleinfelder, August 13, 2010, File No: 84635; Geotechnical Investigation of Schwan Lake Pedestrian Improvements

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
4. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Discussion: Some potential for erosion exists during the construction phase of the project; However, this potential is minimal because standard erosion controls are required by County Code Chapter 16.22 as a 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 Section 1802.3.2 of the California Building Code (2007), creating substantial risks to life or property?	☐	☐	☒	☐

Discussion: There is no indication that the development site is subject to substantial risk caused by 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 where sewers are not available?	☐	☐	☐	☒

Discussion: No septic systems are required or proposed by the project. The project is a road improvement project.

7. Result in coastal cliff erosion?	☐	☐	☒	☐

Discussion: The proposed project is located on a bluff (cliff) over looking a coastal lagoon. The proposed project will reduce existing erosion through drainage control, landscaping, and maintenance. No erosion will result from the project.

B. HYDROLOGY, WATER SUPPLY, AND WATER QUALITY
Would the project:

1. Place development within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☒	☐

Discussion: According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated March 2, 2006, a portion of the project site lies within the special flood hazard area. The amount of encroachment is minor and

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

drainage calculations prepared by the project Public Works Civil Engineer, dated September 10, 2010 indicate that the no rise would occur to the base flood elevation due to these improvements.

2.	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐

Discussion: According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated March 2, 2006, a portion of the project site lies within a 100-year flood hazard area. The proposed improvements are next to Schwan Lake and will not impede flow or modify the geometry of the roadway in such a manner that redirect flood flows.

3.	Be inundated by a seiche, tsunami, or mudflow?	☐	☐	☒	☐

Discussion: During a typical storm season, a portion of the roadway adjacent to the beach is overtopped during large to moderate storm events with a combination of large swells and extreme high tides. Sand and debris from Twin Lakes Beach is deposited on the road by these large storm events and it becomes necessary to close the road until crews are available to clear and reopen the road. In addition, scour by wave action also causes some undermining of the pavement edge and erosion of the embankment fill between the quarry stone. This scenario typically occurs several times per year depending on the severity of the storm season and tides.

The County of Santa Cruz Public Works Department maintains the embankment and revetment on an as needed basis. Significant maintenance work on the embankment would typically occur after a severe storm or declared emergency event and would generally consist of clearing the roadway of sand and debris, clearing the culvert inlet and outlets of debris, replacing or adjusting portions of the revetment, filling embankment voids over the revetment, and pavement repair. Minor maintenance is required more often and generally consists of clearing the road and culvert inlets and outlets of debris.

On November 14, 2008, Governor Arnold Schwarzenegger issued Executive Order (EO) S-13-08 to enhance the state's management of climate impacts from sea level rise, increased temperatures, shifting precipitation and extreme weather events. There are four key actions in the EO including: (1) initiate California's first statewide climate change adaptation strategy that will assess the state's expected climate change impacts, identify where California is most vulnerable and recommend climate adaptation policies by early 2009; (2) request the National Academy of Science establish an expert panel to report on sea level rise impacts in California to inform state planning and development efforts; (3) issue interim guidance to state agencies for how to plan for sea level rise in designated coastal and floodplain areas for new projects;

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

and (4) initiate a report on critical existing and planned infrastructure projects vulnerable to sea level rise.

The order requires the California Energy Commission, the California Ocean Protection Council and Caltrans to conduct numerous scientific studies and coordination on the impact of climate change, including new sea level rise impact projections that are being used to develop the state's climate change adaptation strategy. This work has not been completed and therefore is not available for the design of this project.

The Public Works Department acknowledges that sea level rise could impact the Schwan Lake crossing and other low water crossings along the East Cliff Drive corridor. However, their opinion is that the practical course of action at this time is to wait for additional guidance and policy from the State 6 and Federal government on global warming and sea level rise and identification of potential sources to fund environmental review, engineering design, and reconstruction of these crossings to an appropriate elevation. The proposed pathway along East Cliff Drive at the Schwan Lake culvert crossing would not preclude future improvements that would address sea level rise, such as a bridge structure, and would provide a necessary pedestrian pathway for health and safety purposes. In the meantime, the Public Works Department will continue to closely monitor and maintain its low water crossings at Schwan Lake and at other locations along the East Cliff Drive corridor. This does not represent any change in conditions pre or post project, therefore there would be no significant impact.

4.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒

Discussion: The project does not require ground water and is not located in a mapped groundwater recharge area.

5.	Substantially degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

intrusion).

The project would not discharge runoff either directly or indirectly into a public or private water supply.

6.	Degrade septic system functioning?	☐	☐	☐	☒

Discussion: There is no indication that there are existing septic systems located in the vicinity of the project that would be affected by the project.

7.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding, on- or off-site?	☐	☐	☒	☐

Discussion: The proposed project is located adjacent and above Schwan Lake along East Cliff Drive. Existing runoff travels along the edge of East Cliff Drive and into existing drainage catch basins alongside the street. The existing drainage facilities will be improved by the project and the existing overall drainage pattern of the site will not be significantly altered by the project. The project engineer provided drainage calculations (Attachment 3) indicating that the project will not result in an appreciable difference in the amount of runoff or the potential for flooding. Department of Public Works Drainage Section staff have reviewed the plans and conditioned the project to provide final drainage calculations confirming compliance prior to grading permit issuance.

8.	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐

Discussion: The project provides pedestrian pathway improvements, which are anticipated to result in only a slight increase in impervious area and associated increase in runoff. The drainage improvements proposed by the project are mostly repair of existing drainage facilities and water quality upgrades.

To improve existing drainage facilities along this section of roadway, the project includes the addition of five silt and grease filtration units intended to improve water quality treatment before it enters Schwan Lake where no treatment was provided before. The project also includes the addition of two drainage dissipation mats at the

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

base of existing drainage outfalls into Schwan Lake and replacement of a failing pipe, which will reduce the rate of runoff of existing and proposed outflows.

Drainage Calculations have been prepared by Casey Carlson, Civil Engineer, Public Works, dated September 10, 2010 (Attachment 3) and the project has been deemed complete by the Department of Public Works (DPW) Drainage Section staff.

The DPW drainage review staff has conditioned the project to complete final drainage calculations demonstrating that the drainage facilities meet design criteria requirements prior to issuance of the grading/building permit. The DPW staff does not anticipate that additional improvements will be required. However, drainage staff has identified drainage issues in the storm drain system adjacent to and upstream of the project site of work. They have suggested the addition of a water quality treatment unit at the northerly 9th Avenue inlet meeting the current county standard. This suggested improvement at the 9th Avenue inlet is beyond the scope of this project because no additional runoff is proposed by the project in this area that warrants a requirement for this improvement. The Twin Lakes Beachfront project, located between 5th and 9th, avenue, is in the design stage now, will be responsible for addressing the condition of this drainage system between 7th and 8th Avenue at that time.

The project addresses drainage issues and requirements and will not result in significant environmental impacts.

9.	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐

Discussion: These improvements will not contribute to the potential flooding. Drainage calculations prepared by Casey Carlson, dated September 20, 2010 (Attachment 3), confirm that there will be no appreciable rise in the lake water that could contribute to flooding or erosion due to the project improvements.

10.	Otherwise substantially degrade water quality?	☐	☒	☐	☐

Discussion: The project requires winter grading due to the requirement to provide biotic protection of cormorant nesting until after August 15 and the requirement to keep public access open to the beach between May 31 and Labor day. A winter grading permit is typically prohibited between October 15th and April 15th. Under the circumstances winter grading is unavoidable. The applicant has provided a very specific erosion control plan with winter grading in mind to ensure that water quality in Schwan lake is not compromised by the construction of the project during the winter

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

months. To mitigate potential impacts to water quality as a result of winter grading, prior to the issuance of the grading permit, the applicant shall submit more detailed operations plans, construction phasing, and timelines and associated erosion control measures, and identification of best management practices to be employed in inclement weather for review and approval. With issuance of the grading permit prior to construction and implementation of the final approved erosion control plan, it is not anticipated that winter grading will compromise the water quality of Schwan Lake or the Monterey Bay.

Once the project is complete the proposed silt and grease traps at existing inlets adjacent to existing outfalls along Schwan Lake will improve water quality treatment and minimize the effects of urban pollutants on Schwan lagoon and the Monterey Bay where no treatment existed before. The Public Works Department provides regular maintenance of the filtration units. This is a long-term beneficial impact.

C. BIOLOGICAL RESOURCES

Would the project:

1.	Have a substantial adverse effect, either directly or through habitat modifications, 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?	☐	☒	☐	☐

Discussion: A Biotic Report was prepared for this project by John Gilchrist and Associates, dated March 2007 and revised August 31, 2009 (Attachment 6). The original report has been reviewed and accepted by the Planning Department Environmental Section, dated July 17, 2007 (Attachment 5). The revised report includes more recent bird surveys and is included in the initial study as part of the environmental determination. The reports identify that there are several listed sensitive animal species, including the California red-legged frog (CRLF), the San Francisco dusky-footed wood rat, and the Double-crested Cormorant and other nesting birds that have the potential to be present that could be unintentionally lost as a result of project construction. Implementation of the following mitigation measures would ensure that impacts are less than significant.

<u>California red-legged frog</u>

The CRLF is known to inhabit coastal lagoons in the Santa Cruz area. However, they are generally not found in urbanized areas and the likelihood of their presence in the project area is low. To ensure no impacts to CRLFs occur, the following measures shall be implemented:

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

1) The applicant/construction manager shall be required to have a qualified biologist conduct a pre-construction survey for threatened California red-legged frog not more than 72 hours prior to vegetation removal and construction activities. If frogs are present on the construction site, the applicant shall consult with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), prior to the start of construction activities. No work shall begin until authorized by the USFWS and CDFG.
2) Prior to the start of construction, a qualified wildlife biologist shall provide an educational seminar with the work crew. The seminar shall address legal status, natural history and frog identification, and measures to implement if red-legged frogs are observed on the site.
3) A qualified biologist should be present to monitor initial vegetation removal. The vegetation removal should be performed with the use of hand tools. The vegetation should be removed before any ground disturbance is performed on-site. Use of heavy equipment, staged in open areas, may also be appropriate to carefully remove large debris, under the supervision of a qualified biologist. If red-legged frogs are observed on-site after work has commenced, operations shall cease and the USFWS and CDFG should be contacted immediately for further guidance. Work shall not resume until authorized by these agencies.

Dusky-footed Wood rat

1) Prior to construction, a pre-construction survey shall be completed by a qualified biologist within 30 to 60 days prior to any ground-disturbing activities associated with construction to search for wood rat nests or other signs. The entire impact area, as well as a 50-foot buffer zone outside the limits of construction, should be inspected for nests. If no nests are detected, or is a nest is present that can be avoided, no additional field studies will be necessary and a letter-report should be submitted to the regulatory agencies in support of this determination.
2) If the biologist determines that a ground survey was insufficient to determine absence of the species due to dense vegetation or extensive debris, which may inhibit an observer's view, then a biologist should be present while the vegetation and debris is removed by hand.
3) If wood rats or their nests are identified and cannot be avoided, a live-trapping study should be performed. Prior to conducting a live trapping study, CDFG should be contacted to review the study plan and determine the fate of any wood rats captured. If approved by CDFG, captured wood rats will be released out of the impact area but within the existing oak woodland near 12th Avenue. Piles of native branches should be placed at the release location to provide temporary cover for any wood rats released. If possible, nests should be moved to the oak woodland. Efforts will be made to move portions of the nest intact to the release site. The trapping effort should continue a minimum of three consecutive nights until no wood rats are captured. Other native small mammals should also be released in the adjacent oak woodland. Non-native

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

animals captured should be humanely eliminated from the wild.

Cormorants and other Nesting Birds

1) Submit a nesting survey prior to construction. The nesting survey requirement should be incorporated into the construction documents and submitted to Environmental Planning staff prior to construction to ensure compliance.

2) Construction activities should be scheduled after August 15th in the vicinity of nesting trees or shrubs. If construction activities are scheduled to begin between March 1 and August 15, a pre-construction nesting survey should be conducted by a qualified wildlife biologist one week prior to the start of construction activities to record nesting evidence (e.g., territorial displays, birds carrying food, etc.) within or in the immediate vicinity of the project alignment. If active nesting or territory is observed, a 60-foot buffer shall be established around a songbird nesting area or a minimum of 250 feet from a cormorant rookery. A monitoring biologist should be present to record the behavior of nesting cormorants and to increase the buffer zone distance, as needed. No construction activities should be allowed within these buffer zones. Construction activities would be allowed elsewhere outside of the buffer areas. If the wildlife biologist determines evidence of nesting is no longer observed, project activities can be allowed to start immediately.

2.	Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

***Discussion*:**

A Biotic Report was prepared for this project by John Gilchrist and Associates, dated March 2007 and updated on August 31, 2009 (Attachment 6). The report has been reviewed and accepted by the Planning Department Environmental Section (Attachment 9). The report identifies sensitive willow riparian and emergent wetland plant communities located along the southern margin of Schwan Lagoon from 9th Avenue to the west and 12th Avenue to the east, including Arroyo Willow, Freshwater

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Marsh, Coastal Strand, Eucalyptus/Coast Live Oak Forest, and ruderal vegetation. Identified plant communities are mapped on Figure 5 of the biotic report. Special-Status Plants and Communities with potential to occur at the study site are identified in Table 1 of the report. Identified vegetation is comprised of both native and non-native plant species.

Project construction requires pruning of willow and coyote brush near 9th Avenue, though trimming is not considered a significant impact because they will grow back. The on-grade pathway near 9th avenue requires removal of non-native ruderal vegetation, which is also not considered a significant impact. The area also requires construction staging in the area adjacent to the pathway and requires removal of up to 18 small willows and some emergent wetland vegetation in the southeasterly bend of East Cliff Drive. This is a significant biotic impact. In order to mitigate impacts to riparian and wetland vegetation, the following shall be completed:

1) Temporary construction fencing shall be placed around the construction staging zone to avoid unnecessary impacts to sensitive habitat.
2) Any immature willows and emergent wetlands removed as a result of construction shall be replaced after construction with the same species and in the same general location at a 3 to 1 ratio.
3) Any willows that are removed shall be replaced and monitored to ensure survival, in a ratio of 3 to 1. These mitigations shall be included in the landscape plan.
4) Three to five years of monitoring and maintenance by the Department of Public Works shall be required to ensure success.
5) Construction staging in the area of the above grade pathway shall be limited to avoid removal or permanent impacts to the mature willows.
6) Any necessary trimming of Coast Live Oaks near the northerly end of the path shall be completed under supervision of a certified arborist.

Overall project mitigation requires removal of exotics in the construction zone, construction staging area, and in the immediate vicinity of the project construction site. The slopes above Schwan Lagoon are mostly located within the State Parks property and the project applicant is not expected or required to remove invasive vegetation in areas beyond the County right-of-way and construction area. Thus, removal of invasive vegetation area is limited to that area within the construction fencing and remaining County right-of-way, within the vicinity of the project construction zone.

3. Interfere substantially 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?	☐	☒	☐	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Discussion: See Items C1 and C2 above.

4.	Produce nighttime lighting that would substantially illuminate wildlife habitats?	☐	☐	☒	☐

Discussion: The right-of-way development area is adjacent to a riparian corridor where existing nighttime traffic currently generates lighting alongside the riparian habitat areas described in the biotic report (Attachment 6). The project proposes a pedestrian triggered crosswalk flashing signal within the public right-of-way approximately 150 feet south of the Prospect intersection. Streetlights currently in place produce more light. Periodic lighting should not be any more intense than existing vehicle lights. The additional lighting is not expected to result in a significant impact.

5.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐

Discussion: The project includes silt fencing, silt and grease traps where none currently exist, and revegetation plantings for any removed willow trees along the slope above Schwan Lake. These measures will ensure that impacts to Schwan Lake will be minimized. See also B. 5 below.

6.	Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?	☐	☐	☒	☐

Discussion: The project is required to obtain a riparian exception pursuant to the riparian protection ordinance, County Code 16.30, for temporary construction related impacts to willow habitat. Environmental Planning has reviewed the plans and can make the necessary findings for approval of the exception in accordance with the riparian ordinance. The project will be required to comply with riparian exception conditions including protective fencing, minimizing willow trimming, and replacement of any removed species.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
7. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Discussion: The proposed project would not conflict with the provisions of any adopted Habitat Conservation Plan or Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur.

D. AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

1. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

Discussion: The project site does not contain any lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. In addition, the project does not contain Farmland of Local Importance. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide or Farmland of Local Importance would be converted to a non-agricultural use. No impact would occur from project implementation.

2. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

Discussion: The project site is a public right-of-way, which is not considered to be an agricultural zone. Additionally, the project site's land is not under a Williamson Act Contract. Therefore, the project does not conflict with existing zoning for agricultural

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

use, or a Williamson Act Contract. No impact is anticipated.

3.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒

Discussion: The project is not adjacent to land designated as Timber Resource.

4.	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: No forest land occurs on the project site or in the immediate vicinity. No impact is anticipated.

5.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: The project site and surrounding area is located within an urban area and does not contain any lands designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance or Farmland of Local Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide, or Farmland of Local Importance would be converted to a non-agricultural use. Therefore, no impacts are anticipated.

E. MINERAL RESOURCES

Would the project:

1.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

Discussion: The site does not contain any known mineral resources that would be of value to the region and the residents of the state. Therefore, no impact is anticipated from project implementation.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
2. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion: The project site is located within a public right-of-way, which is not considered to be an Extractive Use Zone (M-3) nor does it have a Land Use Designation with a Quarry Designation Overlay (Q) (County of Santa Cruz 1994). Therefore, no potentially significant loss of availability of a known mineral resource of locally important mineral resource recovery (extraction) site delineated on a local general plan, specific plan or other land use plan would occur as a result of this project.

F. VISUAL RESOURCES AND AESTHETICS

Would the project:

1. Have an adverse effect on a scenic vista?	☐	☐	☒	☐

Discussion:

The project would not directly impact any public scenic resources, as designated in the County's General Plan (1994), or obstruct any public views of these visual resources.

2. Substantially damage scenic resources, within a designated scenic corridor or public view shed area including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐

Discussion: The project site is not located along a County designated scenic road, public viewshed area, scenic corridor, within a designated scenic resource area, or within a state scenic highway. Therefore, no impact is anticipated.

3. Substantially 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 ridgeline?	☐	☐	☒	☐

Discussion: Although the project is not mapped within a protected scenic resource area, as identified and mapped in the General Plan, the project is located along the coast and provides views of the surrounding ocean, coastal bluff, and Schwan Lagoon by pedestrians and vehicle occupants. While County visual resource protection regulations only apply to public view sheds, coastal protection ordinances require that improvements within the coastal zone are designed to be visually compatible and

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

integrated with the area and required to minimize site disturbance and to retain all mature trees over 6 inches in diameter.

Project improvements are proposed along the west edge of the East Cliff Drive within the right-of-way and located on the east and south side of Schwan Lake. A small portion of sidewalk improvements are located on the east edge of the roadway within the public right-of-way south of Prospect Avenue so a crosswalk may be provided there. The pathway will provide enhanced views of the lake and ocean, which is a beneficial impact of the project.

In portions of the right-of-way the grade drops off down toward Schwan lake. The edge of the existing roadway improvements is situated adjacent to densely populated willow vegetation that screens most of the eastern roadway from view. An elevated on-pier pathway will be provided along the eastern edge of Schwan Lake to address soil stability issues there. The proposed sidewalk improvements have been designed to follow the natural topography as much as possible and to minimize the required grading. Visual simulations provided by the applicant show the appearance of the structure upon construction. The proposed improvements provide neutral earth tone materials and colors intended to blend the improvements with the surroundings. In particular, the pedestrian pathway railing is proposed to be medium brown in color and the pathway surface is proposed to be a sandy colored resin stabilized decomposed granite.

Alternatives to this project design included an option to place sidewalk improvements along the seaward side of the right-of-way. However this option would require significant grading along the coastal bluff and high retaining walls significantly taller than that required for the proposed project, which would result in a dramatic alteration to the visual character of the existing natural condition of the cliff. The proposed alternative selected by the community would minimize these impacts. The project does require trimming of the existing willows in the construction zone. However, willows are fast growing riparian plants that are expected re-grow to fully screen the base of the structure. This will ensure the visual intrusion resulting from the project will be minimized and in general conformance with the coastal regulations.

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

Discussion: The project will create an incremental increase in night lighting associated with pedestrian triggered crosswalk signal light. However, this increase will be small, and will be similar in character to the lighting associated with vehicles traveling down the roadway at present and other surrounding residential uses alongside the roadway.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

G. CULTURAL RESOURCES

Would the project:

1.	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	☐	☐	☐	☒

Discussion: The site is not designated as a historic resource on any federal, State or local inventory.

2.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☐	☐	☒	☐

Discussion: Almost all disturbance is on artificial fill. 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 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?	☐	☐	☒	☐

Discussion: 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 or unique geologic feature?	☐	☐	☒	☐

Discussion: None have been identified on site.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

H. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

1.	Create a significant hazard to the public or the environment as a result of the routine transport, use or disposal of hazardous materials?	☐	☐	☐	☒

Discussion: The project does not involve the transport or use of hazardous materials.

2.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒

Discussion: See Item H.1, above.

3.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

Discussion: See Item H.1, above.

4.	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?	☐	☐	☐	☒

Discussion: The project site is not included on the list of hazardous sites in Santa Cruz County compiled pursuant to the specified code.

5.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Discussion: No airport is located within close proximity to the site.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
6.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Discussion: See H. 5 above.

7.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

Discussion: The proposed sidewalk will not impair emergency response or emergency evacuation and may have a beneficial impact for pedestrian evacuation.

8.	Expose people to electro-magnetic fields associated with electrical transmission lines?	☐	☐	☐	☒
9.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Discussion: The project design incorporates fire hydrants as required by the local fire agency to ensure that fire protection can be adequately provided.

I. TRANSPORTATION/TRAFFIC

Would the project:

1.	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Discussion: The General Plan circulation plan identifies the street as an arterial roadway. The Public Works County Design Criteria requires sidewalks as an integral element of all arterial streets. The plans are consistent with this design standard.

2.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

Discussion: There are no impacts to air traffic.

3.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐

Discussion: Aside from the proposed pedestrian pathway improvements and drainage improvements, the proposed project provides improvements that address existing traffic safety considerations on East Cliff Drive, East Cliff and11th Avenue, and East Cliff and 9th avenue This includes the provision of full bicycle lanes and a pedestrian crosswalk located approximately 150 feet south of Prospect Avenue. Improvements also include formalized entry and exit design improvements at 9th and 11th that are intended to allow vehicles safe exit from the street to the live oak seasonal parking program booth located at 9th Avenue and for access to the public parking area and overlook on 11th Avenue, respectively.

The proposed crosswalk south of prospect Avenue will allow pedestrians to cross the street to the proposed pedestrian pathway improvements proposed on East Cliff. The cross walk has been designed to provide cross walk stripping consistent with the County Public Works Design standards as well as a pedestrian triggered flashing light for pedestrian safety.

The 11th Avenue parking area is a 60 foot public right-of-way that provides access to an existing single family dwelling located on the south end of the street and to existing parallel public parking located there. Eight striped parking spaces are divided between the west and east side of this right-of-way. East Cliff Drive currently provides a wide paved shoulder along the road that provides an informal vehicle pull-off for passersby. A no parking fire lane is currently striped in the center of the 11th Avenue right-of-way entry to ensure that passersby do not obstruct emergency or residential vehicle access.

The proposed project formalizes the parking and circulation of this 11th Avenue area by narrowing the street entry with addition of landscape islands and addition of a formal right turn lane shoulder along the south side of East Cliff Drive. 11 standard parking spaces and one handicap parking space are proposed to be located along the west edge of the 11th avenue right-of-way spur. These improvements are intended to

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

improve circulation by providing a more defined roadway and roadway shoulder to reduce traffic speed and improve traffic safety. The improvements also increase the number of formal parking spaces for the public and improve emergency vehicle and residential access on 11th Avenue.

9th Avenue provides similar circulation improvements designed to slow the speed of vehicles entering the street and improve pedestrian safety. This includes formalizing and narrowing the street entry to 9th Avenue by addition of curb bulb out along the north side of the street adjacent to Schwan Lake. The improvements include addition of a new pedestrian crosswalk from 9th Avenue across East Cliff Drive to accommodate vehicle and pedestrian activity at the existing Live Oak Parking Program permit parking kiosk located there seasonally.

These improvements are designed to reduce hazards related to traffic and are a beneficial impact.

4.	Result in inadequate emergency access?	☐	☒	☐	☐

Discussion: It is anticipated that one lane of traffic would be temporarily closed during hours of construction operations. The contractor shall implement a traffic control and local detour plan. This plan is required to be submitted to the Public Works Department for written approval a minimum of 5 days prior to construction. The plans also indicate that temporary road closures may not be made on the street before 8:30 or after 4:30 p.m. In order to mitigate impacts to emergency access, one lane of traffic will remain open at all times so that fire trucks, ambulances and other emergency vehicles will not be blocked from using the road at any time. If the open lane must be blocked, it may not be closed for more than 20 minutes at a time and traffic control must be in place to allow immediate through access to emergency service vehicles. Implementation of these construction practices will ensure that emergency access and/or traffic circulation impacts are less than significant impacts.

See Item I.3 for discussion of emergency access along 11th Avenue.

5.	Cause an increase in parking demand which cannot be accommodated by existing parking facilities?	☐	☐	☒	☐

Discussion: The project is not subject to parking requirements since it is a pedestrian and road improvement project that will not create new uses that generate additional parking. The project proposes to formalize parking and circulation at the 11th Avenue spur located south of East Cliff Drive. This area currently provides 8 formal parallel parking spaces and an informal parking area with unknown and undocumented number of parking spaces. These spaces are regulated by the Live Oak Parking Program District. The area is also currently striped for emergency access to ensure that the roadway remains open for emergency personnel and residential access to an existing dwelling located at the end of 11th Avenue. Some of the informal parking in this area disrupts safe emergency vehicle, vehicle access and circulation, pedestrian,

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

and bicycle circulation and can not really be counted as existing parking. 11 parking standard spaces and one handicap space are proposed by the project to replace the existing parking. It is anticipated that there will be a net increase in formal parking spaces in this area, including a new accessible parking space where none existing before. A reduction in parking is not anticipated.

6.	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

Discussion: The proposed project would comply with current road requirements to prevent potential hazards to motorists, bicyclists, and/or pedestrians by addition of pedestrian pathway within the county right-of-way.

7.	Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the County General Plan for designated intersections, roads or highways?	☐	☐	☒	☐

Discussion: No increase in vehicle traffic is expected as a result of this project.

J. NOISE

Would the project result in:

1.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

Discussion: The project will not create an incremental increase in the existing noise environment.

2.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐

Discussion: Project construction involves drilling piers, driving sheet piles in the ground and saw cutting of pavement, which is a temporary noise impact. To mitigate for this noise, the project will be required to include hours of operation restricting these construction activities to after 8:30 am to minimize morning noise disturbance to surrounding residential uses. In addition, the contractor will be required to provide a noise notification sign alerting the public of the duration of the noise disturbance for this

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

portion of the work. These measures will reduce the potential impacts to pedestrians and surrounding residential uses to less than significant.

3.	Exposure of persons to or generation of noise levels in excess of standards established in the General Plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐

Discussion: See item J.2 above.

4.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

Discussion: 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. See J. 2 above.

5.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion: The project is not located within an airport land use plan area.

6.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion: The project is not located within an airport land use plan area.

K. AIR QUALITY

Where available, the significance criteria established by the Monterey Bay Unified Air Pollution Control District (MBUAPCD) may be relied upon to make the following determinations. Would the project:

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

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Discussion: The North Central Coast Air Basin does not meet State standards for ozone and particulate matter (PM_{10}). Therefore, the regional pollutants of concern that would be emitted by the project are ozone precursors (Volatile Organic Compounds [VOCs] and nitrogen oxides [NO_x]), and dust.

The project will not result in any long term increases in pollutants because the project is intended as a pedestrian improvement project and is not expected to generate additional traffic that might result in new emissions of VOCs or NO_x 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. However, as noted on the plans, standard dust control best management practices, such as periodic watering, will be implemented during construction to reduce impacts to a less than significant level.

2.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐

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

3.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐

Discussion: See K1 above.

4.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Discussion: See K1 above.

5.	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion: See K1 above.

L. GREENHOUSE GAS EMISSIONS

Would the project:

1.	Generate greenhouse gas emissions, either directly or indirectly, that may	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

have a significant impact on the environment?

Discussion: The proposed project, like all development, is responsible for an incremental increase in green house gas emissions by usage of fossil fuels during the project construction.

At this time, Santa Cruz County is in the process of developing a Climate Action Plan (CAP) intended to establish specific emission reduction goals and necessary actions to reduce greenhouse gas levels to pre-1990 levels as required under SB 375 legislation. Until the CAP is completed, there are no specific standards or criteria to apply to this project. However, the following factors, when considered as a whole, are expected to reduce nay impacts of increased green house gas emissions to a less than significant level:

1. The facility is proposed along a major transit corridor and bus route, and once complete will encourage visitors to walk and bicycle to the public recreation facilities along the beach.
2. The project construction will be required to comply with the Regional Air Quality Control Board emissions requirements for construction equipment involved in the project.

2.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion: The proposed project will significantly improve the pedestrian connection between the beach area and surrounding residential areas, which will reduce vehicular trips that contribute to green house gas emissions. The project will potentially have a positive impact on emissions because more people will walk instead of drive to the coast from surrounding neighborhoods.

M. PUBLIC SERVICES

Would the project:

1.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Fire protection?	☐	☐	☐	☒
b. Police protection?	☐	☐	☐	☒
c. Schools?	☐	☐	☐	☒
d. Parks or other recreational activities?	☐	☐	☐	☒
e. Other public facilities; including the maintenance of roads?	☐	☐	☐	☒

Discussion (a through e): The project does not involve the development of increased land use intensity and therefore will have no impacts to public service requirements.

N. RECREATION

1. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

Discussion: The project is a sidewalk improvement project that addresses the need for improved pedestrian and bicycle access to existing coastal recreational uses at Twin Lakes Beach and the Harbor. The project will address needed public safety improvements and deterioration of public facilities, which is a beneficial impact.

2. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion: The project is a sidewalk improvement project that addresses the need for improved pedestrian and bicycle access to existing coastal recreational uses at Twin Lakes Beach and the Harbor. See N.1.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

O. UTILITIES AND SERVICE SYSTEMS

Would the project:

1.	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐

Discussion: Drainage analysis of the project by Casey Carlson, dated September 10, 2010 (Attachment 3) concluded that the project is "intended to provide new landscape features and upgrades to the existing storm drainage system and the existing parking lot at the 11th Avenue spur. Impact to site drainage system due to project activities is relatively minor, being primarily repair and water quality upgrades to the existing drainage system. The proposed drainage improvements, including new catch basins, drain pipe, and drainage dissipation mats at the outfalls are not anticipated to result in significant impacts. The plans include an erosion control plan, which will prevent the effects of siltation which may otherwise occur during construction of the improvements.

2.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐

Discussion:

The project does not involve or require connection to an existing municipal water supply because the project is a road improvement project. Per the attached project plans, municipal water lines will not be affected as a result of project construction.

The project does not require municipal sewer service either. However, the Santa Cruz County Sanitation District is responsible for capping and replacing an eight inch sewer main in the public right-of-way in the path of the proposed project prior to project construction. The proposed project will not commence before this occurs. The project involves drilling some of the pier support holes through a few portions of the abandoned pipe. Per the Sanitation District, the plans have been revised to address required construction practices necessary to ensure that the project will not result in significant impacts as a result of pipe boring.

3.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒

Discussion: The project will not result in any wastewater flows.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
4.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

Discussion: The project does not involve or require water supplies since it is a road improvement project.

5.	Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

Discussion: The project is a road improvement project and does not involve wastewater use.

6.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐

Discussion: The project requires grading of approximately 407 cubic yards and fill of approximately 147 cubic yards. Any required off-haul is required to be taken to the County landfill, which currently has adequate capacity for the project's disposal requirements.

7.	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion: The only solid waste produced by this project will be the tailings from the pier drilling process. Tailing disposal shall be regulated by the grading permit.

P. LAND USE AND PLANNING

Would the project:

1.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance)	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

adopted for the purpose of avoiding or mitigating an environmental effect?

Discussion: The Redevelopment Agency has proposed the 9th to 12th Avenue East Cliff Drive project separately from the 5th to 9th avenue East Cliff Drive project, which is in the conceptual stages of development at this time based on the timing of the community involvement process and construction schedule. The East Cliff Drive Twin Lakes 5th to 9th Avenue project is a beach protection, coastal access, and a coastal stabilization project, while the 9th to 12th East Cliff Drive project is a pedestrian pathway improvement project that involves the provision of sidewalk improvements. The 9th to 12th Avenue project is within close proximity to a coastal lake and results in impacts mostly related to biotic habitat while the 5th to 9th avenue project involves mostly coastal beach impacts.

A separate project process for these projects is not intended to avoid environmental review, but rather meant to address project timing. Both projects are not exempt from CEQA and are subject to Environmental Review. Neither project is dependent upon the other nor would impacts of these projects together result in any cumulative impacts. The proposed project does not conflict with any policies adopted for the purpose of avoiding or mitigating an environmental effect and will not result in any significant impacts as a result.

2.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion: The project is not located within an area subject to a habitat conservation plan or natural community conservation plan.

3.	Physically divide an established community?	☐	☐	☐	☒

Discussion: The project does not include any element that would physically divide an established community.

Q. POPULATION AND HOUSING

Would the project:

1.	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐

Discussion: The proposed project would not induce substantial population growth in an area because the project does not propose any physical or regulatory change that

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

would remove a restriction to or encourage population growth in an area including, but limited to the following: new or extended infrastructure or public facilities; new commercial or industrial facilities; large-scale residential development; accelerated conversion of homes to commercial or multi-family use; or regulatory changes including General Plan amendments, specific plan amendments, zone reclassifications, sewer or water annexations; or LAFCO annexation actions.

2.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion: The proposed project would not displace any existing housing since the project is located within the public right-of-way.

3.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion: The proposed project would not displace a substantial number of people since the project is located within a public right-of-way.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

R. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
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, reduce the number or restrict the range of a rare or endangered plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

Discussion: 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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory were considered in the response to each question in Section III of this Initial Study. Resources that have been evaluated as significant include mitigation measures that clearly reduce these effects to a level below significance. These mitigation measures are identified in the body of the report. As a result of this evaluation, there is no substantial evidence that, after mitigation, significant effects associated with this project would result. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
2. 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, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Discussion: In addition to project specific impacts, this evaluation considered the projects potential for incremental effects that are cumulatively considerable. This includes the future Twin Lakes Beach Beachfront Project, which is not under consideration at this time. As a result of this evaluation, there were no impacts that were determined to be potentially significant cumulative effects, including to transportation and traffic. As a result of this evaluation, there is no substantial evidence that there are cumulative effects associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
3. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion: In the evaluation of environmental impacts in this Initial Study, the potential for adverse direct or indirect impacts to human beings were considered. As a result of this evaluation, there is no substantial evidence that, after mitigation, there are adverse effects to human beings associated with this project. See body of initial study for recommended mitigation measures. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

IV. TECHNICAL REVIEW CHECKLIST

	REQUIRED	DATE COMPLETED	N/A
Agricultural Policy Advisory Commission (APAC) Review	Yes ☐ No ☐		☒
Archaeological Review	Yes ☐ No ☒		☐
Biotic Report/Assessment	Yes ☒ No ☐	3/7/2007 and 8/19/2009	☐
Geologic Hazards Assessment (GHA)	Yes ☐ No ☒		☐
Geologic Report	Yes ☐ No ☒		☐
Geotechnical (Soils) Report	Yes ☒ No ☐	In process	☐
Riparian Pre-Site	Yes ☐ No ☒		☐
Septic Lot Check	Yes ☐ No ☐		☒
Other:	Yes ☐ No ☐		☐

V. REFERENCES USED IN THE COMPLETION OF THIS ENVIRONMENTAL REVIEW INITIAL STUDY

County of Santa Cruz 1994. *General Plan and Local Coastal Program for the County of Santa Cruz, California.* Adopted by the Board of Supervisors on May 24, 1994, and certified by the California Coastal Commission on December 15, 1994.
Santa Cruz County GIS Mapping System, On the Planning Department Web Site
2010 Santa Cruz County Regional Transportation Plan
Volume II of the Zoning Ordinance

VI. ATTACHMENTS

1. Vicinity Map, Map of Zoning Districts, Map of General Plan Designations, Assessors Parcel Map
2. Civil Engineer Plan Sheets 1 to 11 of 17, and Sheets 15 to 17 of 17 prepared by Casey R. Carlson of the Department of Public Works, dated 4/12/07 with revisions dated 1/7/10 and 9/10/10, Landscape Plan Sheets 12 to 14 of 17, prepared by Anita Kane, dated 4/12/07 with revisions dated 1/7/10 and 9/10/10
3. Drainage calculations excerpts prepared by Casey Carlson, dated September, 2010 (Complete report on file)
4. Arborists Report excerpts prepared by Arbor Art Tree Service, dated August 30, 2007, and attached addendum, dated January 6, 1010 (Complete report on file)
5. Biotic Report Review Letter prepared by Matt Johnston, County Planning Department, dated July 17, 2007
6. Biotic Report excerpts prepared by John Gilcrest and Associates, dated March 2007 and revised August 31, 2009 (Complete report on file)
7. Grading Report excerpts, prepared by Casey Carlson, dated September 2010 (Complete report on file)
8. Discretionary Application Comments
9. Board of Supervisors Route Concept Letter, dated November 23, 2004
10. Geotechnical Report Recommendations (Complete report on file)

Location Map

Legend

- Subject Parcels
- Assessors Parcels
- Streets
- Perennial Strea
- Intermittent Stream
- Lakes
- City of Santa Cruz

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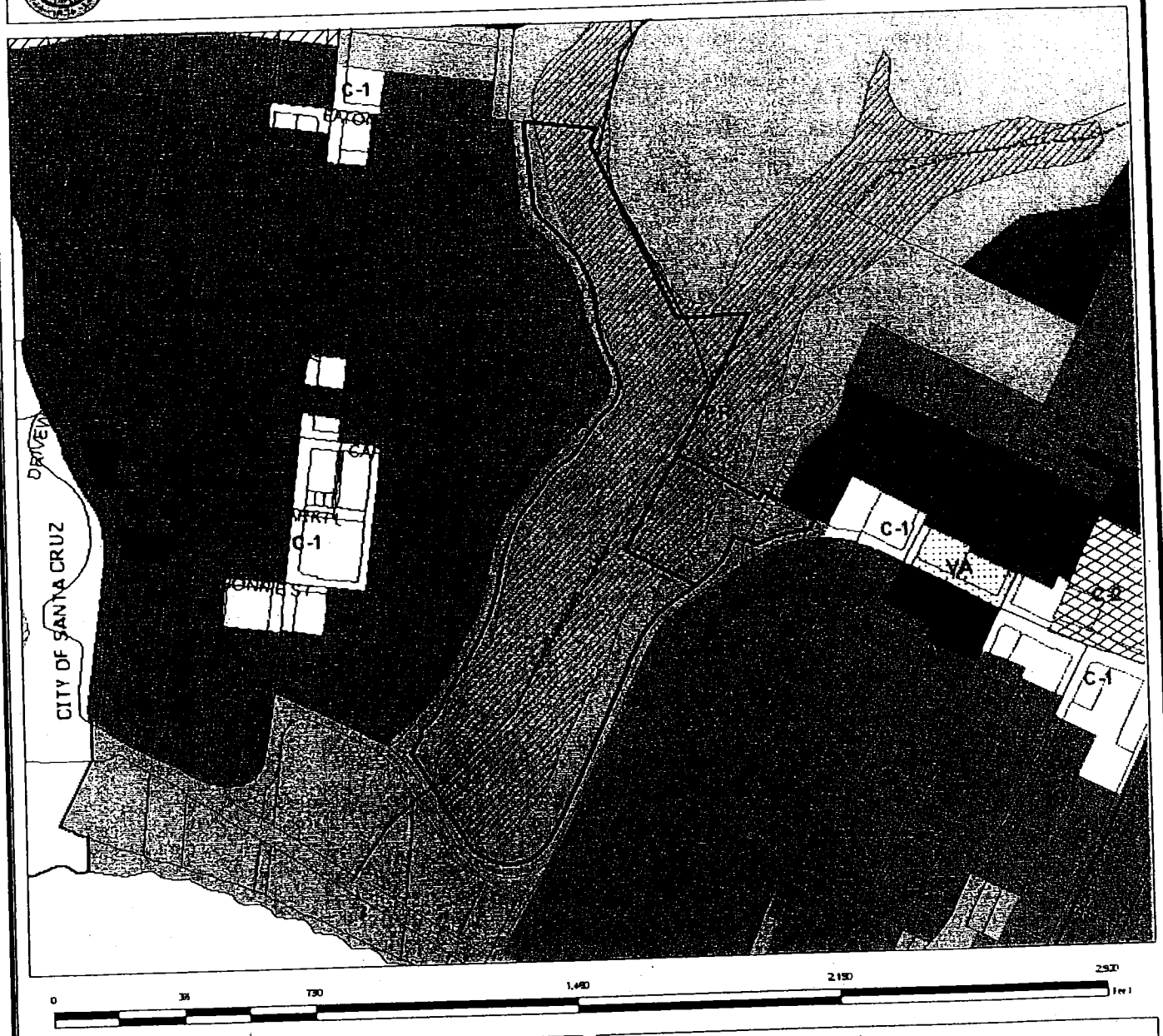
Map Created by
County of Santa Cruz
Planning Department
May 2007

ATTACHMENT 1

Zoning Map



Legend

- Subject Parcels
- Assessors Parcels
- Streets
- Intermittent Stream
- Lakes
- PARK(PR)
- RESIDENTIAL-SINGLE FAMILY (R-1)
- RESIDENTIAL-MULTI FAMILY (RM)
- COMMERCIAL-PROF OFFICE (PA)
- COMMERCIAL-NEIGHBORHOOD (C-1)
- COMMERCIAL-COMMUNITY (C-2)
- COMMERCIAL-VISITOR ACCOM. (VA)
- City of Santa Cruz

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Map Created by
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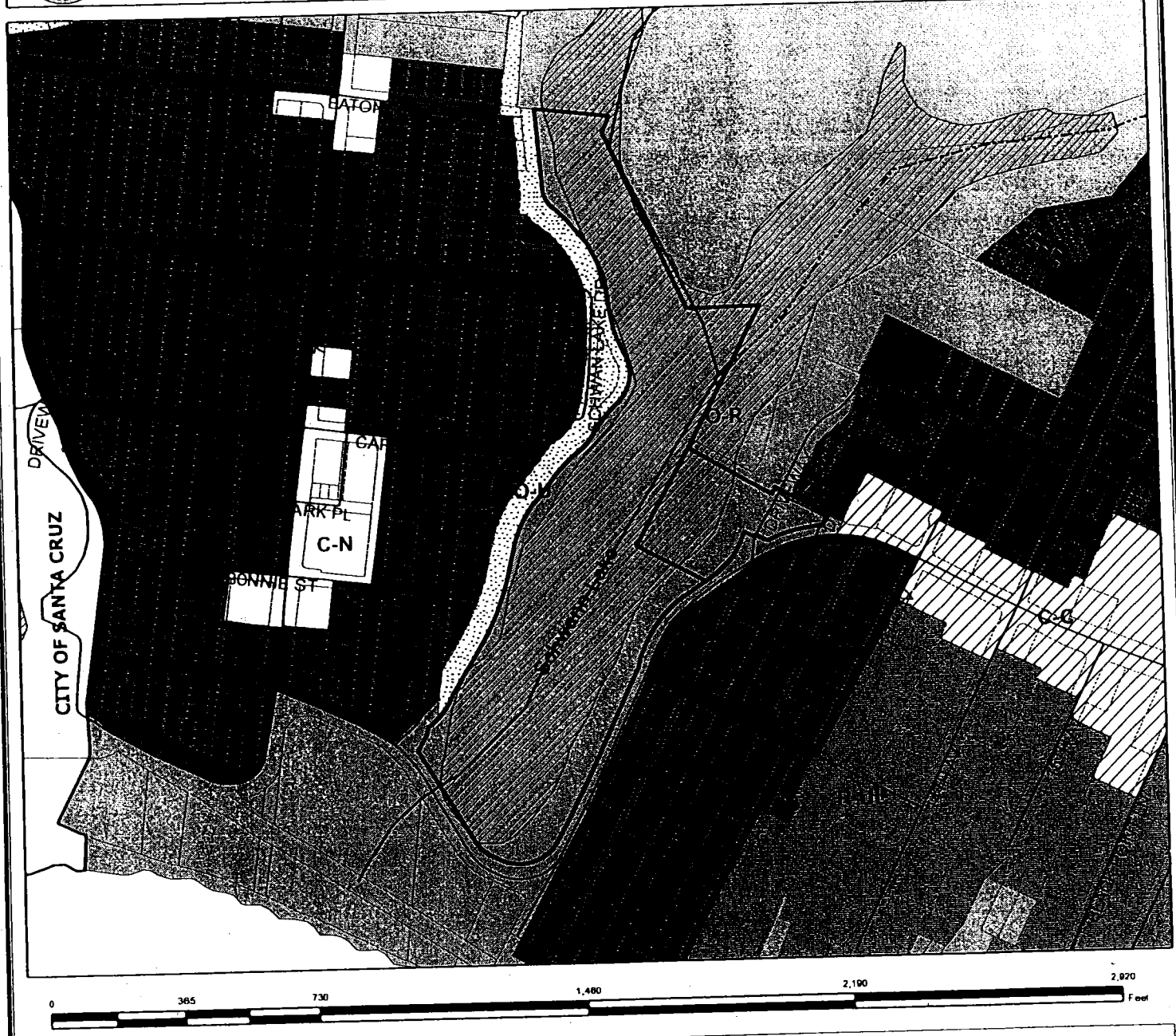
Planning Department
May 2007

ATTACHMENT 1

General Plan Designation Map



Legend

- Subject Parcels
- Assessors Parcels
- Streets
- Perennial Strea
- Intermittent Stream
- Lakes
- City of Santa Cruz
- Parks and Recreation (O-R)
- Residential - Urban Low Density (R-UL)
- Residential - Urban High Density (R-UH)
- Commercial-Neighborhood (C-N)
- Commercial-Community (C-C)

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Map Created by
County of Santa Cruz
Planning Department
May 2007

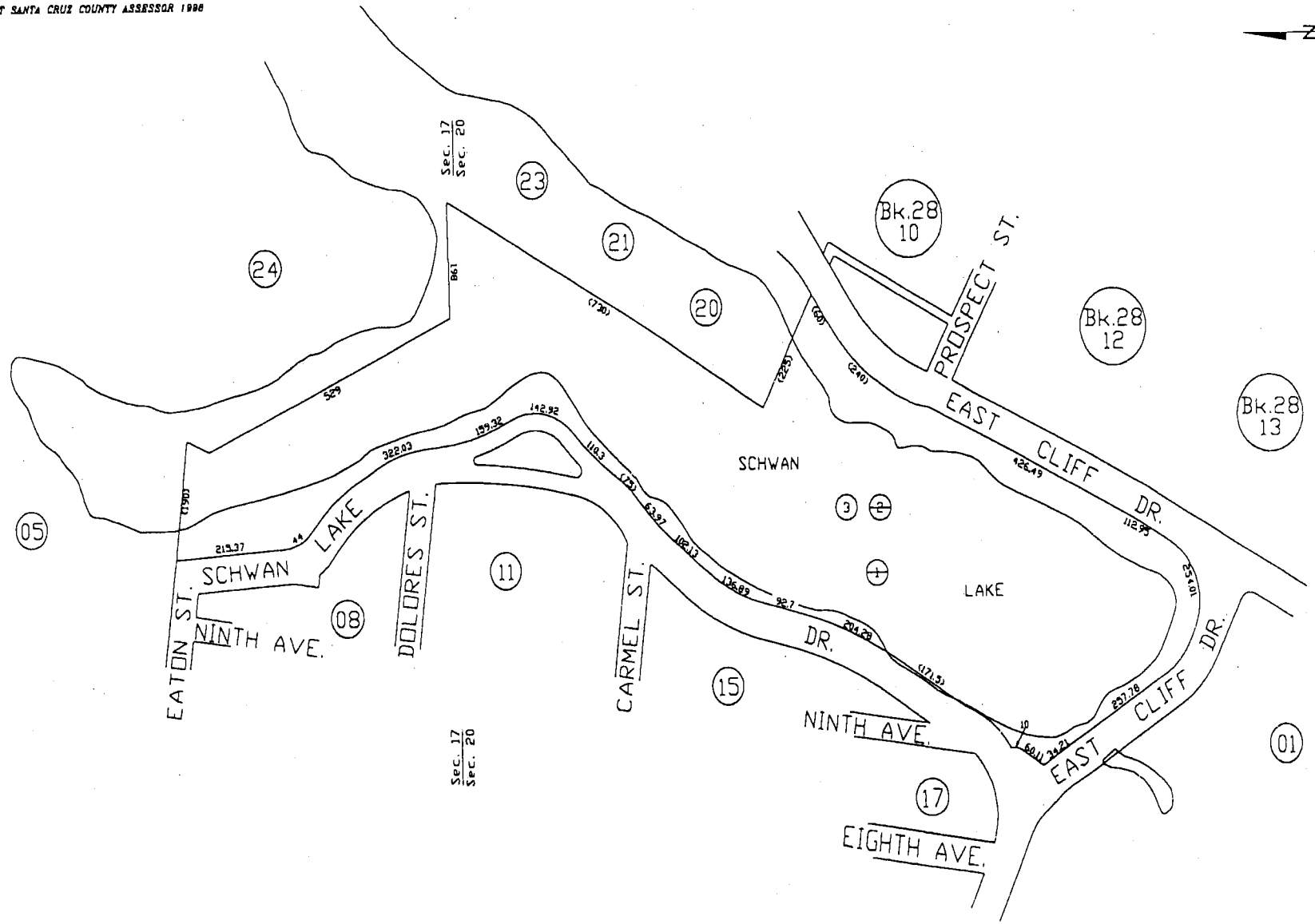
ATTACHMENT 1

FOR TAX PURPOSES ONLY

POR. OF SEC. 17 & 20,
T.11S., R.1W., M.D.B. & M.

Tax Area Code
82-040

27-19



ATTACHMENT 1

-45-
48/125

Assessor's Map No. 27-19
County of Santa Cruz, Calif.

Cally Redrawn 8/13/98 rm
01 Town (changed page refs)

SHEET No.	TOTAL SHEETS
1	17

COUNTY OF SANTA CRUZ
DEPARTMENT OF PUBLIC WORKS

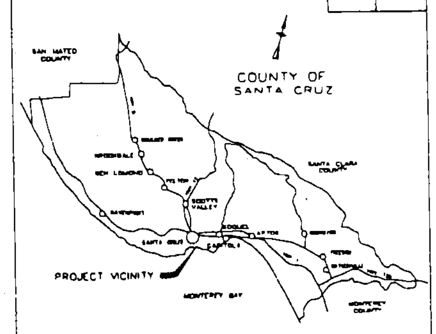
PERMIT REVIEW PLANS FOR CONSTRUCTION OF A REDEVELOPMENT AGENCY FUNDED PROJECT

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE

FOR PROJECT INFORMATION CONTACT:
PAUL RODRIGUES, RDA PROGRAM MANAGER, (831) 454-2280
JIM DAVIES, RDA PROJECT MANAGER, (831) 454-2571

SHEET INDEX

SHEET INDEX	DESCRIPTION
1	TITLE SHEET
2	TYPICAL SECTIONS
3-5	EXISTING SITE CONDITIONS
6-8	GRADING, DRAINAGE, & UTILITIES PLAN
9-11	EROSION CONTROL PLAN
12-14	LANDSCAPE PLAN
15	DETAILS
16	DETAILS & SITE SECTIONS
17	CROSS SECTIONS



LOCATION MAP
NTS

APPLICABLE STANDARD PLANS

COUNTY OF SANTA CRUZ DESIGN CRITERIA
(JUNE 2006 EDITION)

ST-4a	CURB, GUTTER, SIDEWALK, AND DIKE DETAILS
ST-6b	CURB RAMP TYPE B
ST-6c	CURB RAMP TYPE C
ST-6d	CURB RAMP TYPE D
SWM-6a	COUNTY STANDARD GO INLET
SWM-6b	FRAME AND GRATE FOR GO INLET
SWM-13	LONGITUDINAL TRENCH DETAIL
SWM-14	CROSS TRENCH DETAIL

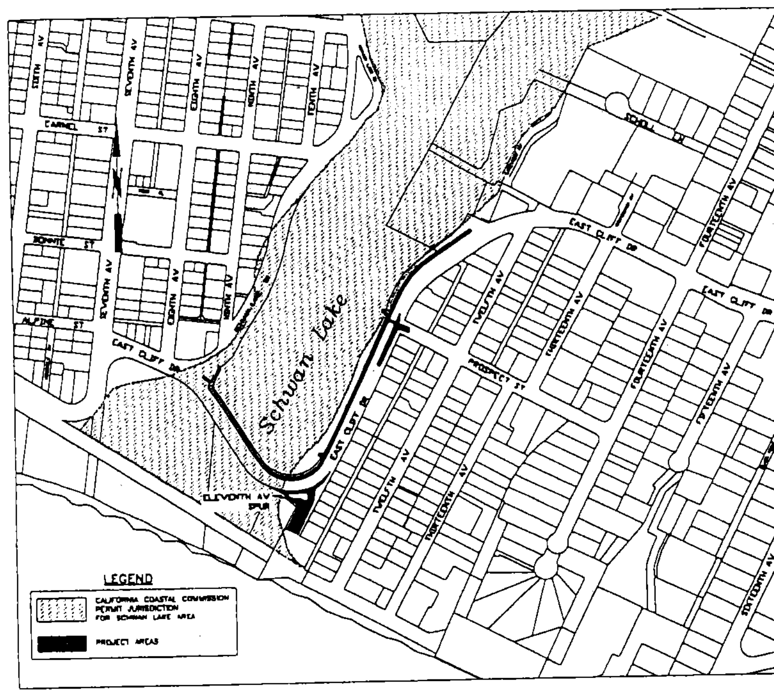
CALTRANS STANDARD PLANS
(MAY 2006 EDITION)

A24D	PAVEMENT MARKINGS WORDS
RS1	ROADSIDE SIGN TYPICAL INSTALLATION
RS2	ROADSIDE SIGN WOOD POST

CALIFORNIA BUILDING CODE
(2007 EDITION)

GENERAL NOTES

1. THE COUNTY OF SANTA CRUZ, DEPARTMENT OF PUBLIC WORKS WILL OBTAIN ALL PERMITS NECESSARY FOR THIS PROJECT.
2. THE CONSTRUCTION LOCATIONS FOR THIS PROJECT ARE WITHIN A SENSITIVE COASTAL ENVIRONMENT. CARE MUST BE TAKEN TO MINIMIZE IMPACTS TO THE RIPARIAN HABITAT. THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION STAGING PLAN AND SCHEDULE TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE BEGINNING ANY WORK. ALL CONSTRUCTION SHALL BE STRICTLY CONFINED TO THE AREAS SHOWN ON THE APPROVED PLAN. NO OVERBURDEN OR WET CEMENT WILL BE ALLOWED TO ENTER INTO THE LAKE OR RIPARIAN ENVIRONMENT. TO PREVENT FURTHER DESTABILIZATION OF THE SUBSTRATE WITHIN THE PROJECT LIMITS CARE SHALL BE TAKEN WITH THE POSITIONING OF ALL HEAVY EQUIPMENT RELATIVE TO THE EDGE OF THE SLOPE.
3. ALL FIGURE REFERENCES REFER TO STANDARD DRAWINGS IN THE CURRENT EDITION OF THE "COUNTY OF SANTA CRUZ DESIGN CRITERIA".
4. NO DEVIATION FROM THE APPROVED PROJECT PLANS SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.
5. THE EXISTING UNDERGROUND UTILITIES ARE SHOWN BASED ON INFORMATION SUPPLIED BY THE UTILITY COMPANIES. THE CONTRACTOR IS TO FIELD VERIFY ANY POSSIBLE CONFLICTS, AND NOTIFY THE ENGINEER OF ANY CONFLICTS FOUND.
6. THE CONTRACTOR IS TO CONTACT UNDERGROUND SERVICE ALERT (USA) (800)-227-2800 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, IN ORDER TO HAVE THE EXISTING UTILITIES MARKED IN THE FIELD.
7. ALL CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO THE HOURS OF 7:30 AM TO 5:00 PM WEEKDAYS. TEMPORARY LANE AND ROAD CLOSURES MAY NOT BE MADE BEFORE 8:30 AM OR AFTER 4:30 PM.
8. ALL CONSTRUCTION ACTIVITY WILL BE ACCESSED FROM THE NORTH AND WEST BOUND TRAVEL LANE ALONG EAST CLIFF DRIVE
9. EXPOSED DIRT SURFACES SHALL BE WETTED DOWN PERIODICALLY TO MINIMIZE DUST GENERATION DURING THE CONSTRUCTION.
10. ALL STATIONING REFERS TO THE CONTROL LINE AS SHOWN ON THESE PLANS.
11. TOP OF GRATE OR COVER ELEVATIONS MAY BE ADJUSTED BY THE ENGINEER TO FIT FIELD CONDITIONS.
12. PRIOR TO THE BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL IMPLEMENT A TRAFFIC CONTROL AND LOCAL DETOUR PLAN. THIS PLAN SHALL BE SUBMITTED TO THE DIRECTOR OF PUBLIC WORKS FOR WRITTEN APPROVAL A MINIMUM OF 5 WORKING DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. THE PLAN MUST RESERVE AN APPROVED AREA OF THE ROADWAY FOR PEDESTRIANS AND BICYCLES AT ALL TIMES TO BE USED CONCURRENTLY WITH VEHICULAR TRAFFIC.



VICINITY MAP
SCALE: 1"=200'

ABBREVIATIONS

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
AS	AGGREGATE SUBBASE
BC	BEGIN CURVE
BCR	BEGIN CURB RETURN
BVC	BEGIN VERTICAL CURVE
B/W	BACK OF SIDEWALK
CATV	CABLE TELEVISION
CI	CAST IRON
C&G	CURB AND GUTTER
CG&S/W	CURB, GUTTER, AND SIDEWALK
CL	CLASS
CL	CENTER LINE
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
D/W	DRIVEWAY
EC	END CURVE
ECR	END CURB RETURN
EL	ELEVATION
EP	EDGE PAVEMENT
EVC	END VERTICAL CURVE
(E)	EXISTING
FH	FIRE HYDRANT
FIG	FIGURE
FL	FLOWLINE
FG	FINISHED GRADE
G	GAS
GB	GRADE BREAK
GP	GUY POLE
GR	GRIND
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
INV	INVERT
JP	JOINT POLE
L	LENGTH
LP	LIGHT POLE
LT	LEFT OF CONTROL LINE
MB	MAILBOX
MON	SURVEY MONUMENT
OC	ON CENTER
PCC	PORTLAND CEMENT CONCRETE
PL	PROPERTY LINE
PP	POWER POLE
PRVC	POINT OF REVERSE VERTICAL CURVATURE
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RT	RIGHT OF CONTROL LINE
R/W	RIGHT OF WAY
S	SLOPE
SC	SAW CUT
SD	STORM DRAIN
SDCB	STORM DRAIN CATCH BASIN
SDMH	STORM DRAIN MANHOLE
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STA	STATION
S/W	SIDEWALK
T	TELEPHONE
TC	TOP OF CURB
TG	TOP OF GRATE
TF	TOP OF FOOTING
TW	TOP OF WALL
TP	TOP OF PAVEMENT
TYP	TYPICAL
UG	UNDERGROUND
VC	VERTICAL CURVE
W	WATER
WM	WATER METER
WV	WATER VALVE
4/15	DETAIL 4, SHEET 15

PROJECT CONSULTANTS

STRUCTURAL ENGINEER:
MOFFATT & NICHOL PH. (925) 944-5411
CONTACT: ROD NIASHITA

SOIL & FOUNDATION ENGINEER:
KLEINFELDER PH. (510) 628-9000
CONTACT: MARK FUHRMAN

ENVIRONMENTAL CONSULTANT:
JOHN GILCHRIST & ASSOC. PH. (831) 479-4355

ARBORIST:
NIGEL BELTON PH. (831) 688-1730

PROJECT BENCHMARK

COUNTY BENCHMARK #8
EL=18.88' (NGVD 29 UNADJUSTED)
BRASS DISC IN CONCRETE
LOCATED 1' NE OF ARNOLD H. BALDWIN DEDICATION PLAQUE TO THE LANDS AROUND SCHWAN LAKE, 101' N FROM C/L OF EAST CLIFF DR. AT EASTERLY EDGE OF 9TH AVE.

PROJECT DESCRIPTION

THE PRIMARY GOAL OF THE PROJECT IS TO PROVIDE PEDESTRIAN ACCESS FROM 9TH AVENUE TO 12TH AVENUE, AND TO ALSO PROVIDE ACCESS TO PROSPECT STREET. IN ADDITION, THE PROJECT WILL PROVIDE NEW LANDSCAPING FEATURES, AND UPGRADES TO THE EXISTING STORM DRAINAGE SYSTEM AND THE EXISTING PARKING LOT AT THE 11TH AVENUE SPUR.

PROJECT AREA DESCRIPTIONS

WEST SIDE PROJECT AREAS (BY STATION RANGE):

0+00 - 4+25	GRADE SUPPORTED PATHWAY
4+25 - 6+50	SHEET PILE SUPPORTED PATHWAY
6+50 - 16+47.59	CIDH PIER SUPPORTED PATHWAY

EAST SIDE PROJECT AREAS (BY STATION RANGE):

4+40 - 6+55	11TH AVE PARKING LOT & LANDSCAPED ISLANDS
10+53 - 12+04.40	PROSPECT ST. WALL & SIDEWALK

SITE PAVING SUMMARY

ITEM DESCRIPTION	QUANTITY
EXISTING AC REMOVAL	198 CY
EXISTING BASEROCK REMOVAL	594 CY
PROPOSED AC PAVEMENT	135 CY
PROPOSED BASEROCK (AC + PATHWAY)	535 CY
OVEREXCAVATION & RECOMPACTION	269 CY
PROPOSED LANDSCAPING DG	63 CY
PROPOSED PLANTING SOIL	150 CY

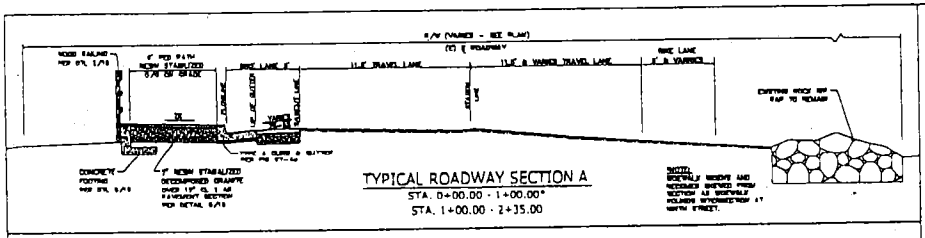
SITE GRADING SUMMARY

ITEM DESCRIPTION	QUANTITY
SITE CUT	320 CY
SITE FILL	147 CY
PIER EXCAVATION (CUT)	87 CY
SITE GRADING TOTAL (CUT)	260 CY

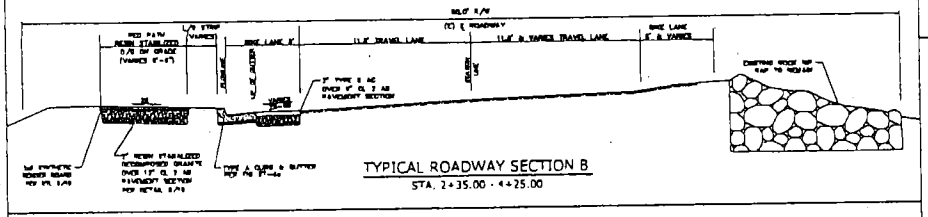
ALL EXCESS SOIL AND CONSTRUCTION WASTE SHOULD BE OFF-HAULED FROM THE SITE AND DISPOSED OF AT A LANDFILL OR OTHER APPROPRIATE FACILITY.

CONSTRUCTION APPROVAL:
NS APPROVAL:
ADA COMPLIANCE:
TRAFFIC ENGINEERING APPROVAL:

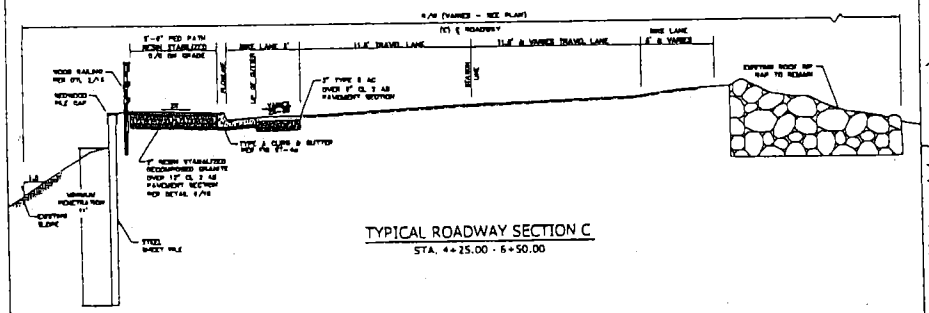
ATTACHMENT 2



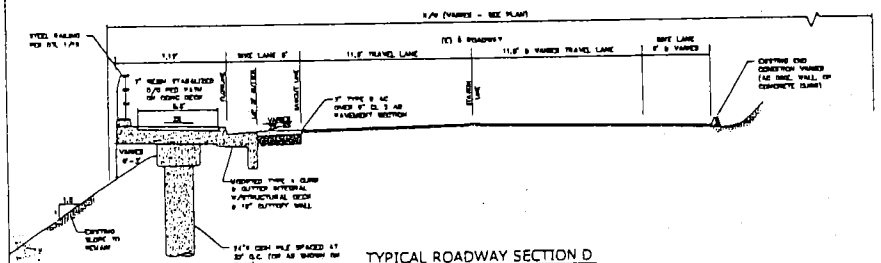
TYPICAL ROADWAY SECTION A
STA. 0+00.00 - 1+00.00*
STA. 1+00.00 - 2+35.00



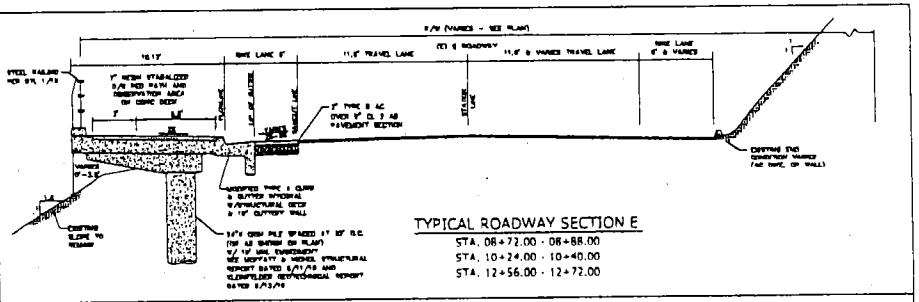
TYPICAL ROADWAY SECTION B
STA. 2+35.00 - 4+25.00



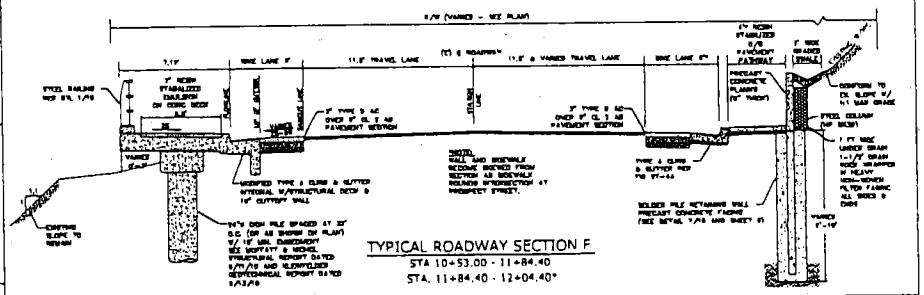
TYPICAL ROADWAY SECTION C
STA. 4+25.00 - 6+50.00



TYPICAL ROADWAY SECTION D
STA. 06+50.00 - 08+72.00
STA. 08+88.00 - 10+24.00
STA. 10+40.00 - 10+53.00
STA. 12+04.40 - 12+56.00
STA. 12+72.00 - 15+51.00
STA. 15+73.00 - 16+42.59

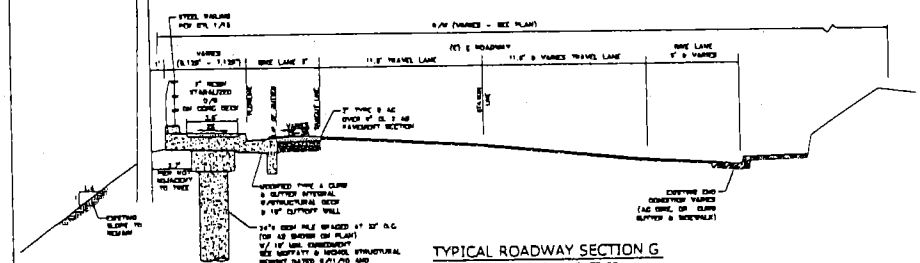


TYPICAL ROADWAY SECTION E
STA. 08+72.00 - 08+88.00
STA. 10+24.00 - 10+40.00
STA. 12+56.00 - 12+72.00



TYPICAL ROADWAY SECTION F
STA 10+53.00 - 11+84.40
STA. 11+84.40 - 12+04.40*

NOTE:
FOR STRUCTURAL DESIGN OF CONC. DECK, RAILINGS, & CIDH PILES SEE MOFFATT & NICHOL REPORT DATED AUGUST 11, 2010



TYPICAL ROADWAY SECTION G
STA. 15+51.00 - 15+73.00

EAST CLIFF DRIVE TYPICAL SECTIONS

SCALE: 1" = 4'

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES

SHEET NAME: TYPICAL ROADWAY SECTIONS | DRAWING NAME: SECTIONS (SHEET 2).DWG

BY	DATE	REVISION
KCW	1/7/10	Development Permit Submittal #2
CRC	8/9/10	Development Permit Submittal #3

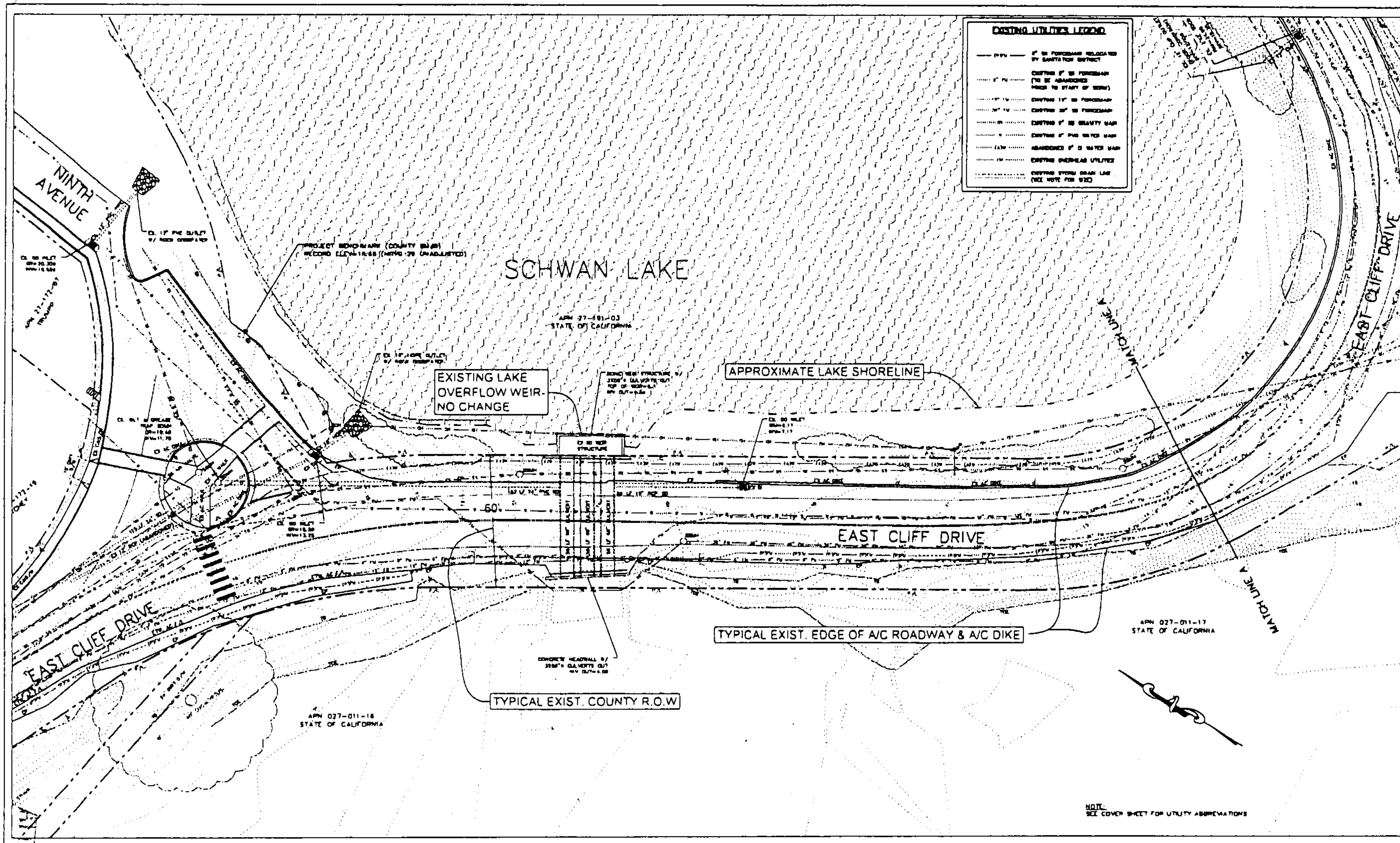
COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

PROJECT ENGINEER
CASEY R. CARLSON

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
TYPICAL ROADWAY SECTIONS

DRAWN: CRC
CHECKED: JSL
DATE: 1/12/07
SCALE: 1"=20
JOB NO. 66020

SHEET 2 OF



EXISTING SITE CONDITIONS

SCALE 1" = 20'

APPROXIMATE LIMIT OF
SCHWAN LAKE WATER SURFACE
ELEVATION = 8.3 FT

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3

SHEET NAME: EXISTING SITE CONDITIONS | DRAWING NAME: TOPO (SHEETS 3,4,5).DWG

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
EXISTING SITE CONDITIONS

PROJECT ENGINEER
CASEY R. CARLSON

DATE	REVISION	BY
1/7/10	Development Permit Submittal #2	JCW
4/19/10	Development Permit Submittal #3	CRC

DRAWN: CRC
CHECKED: JSL
DATE: 4/12/07
SCALE: 1"=20'
JOB NO. 66020
SHEET 3 OF 17

ATTACHMENT 2

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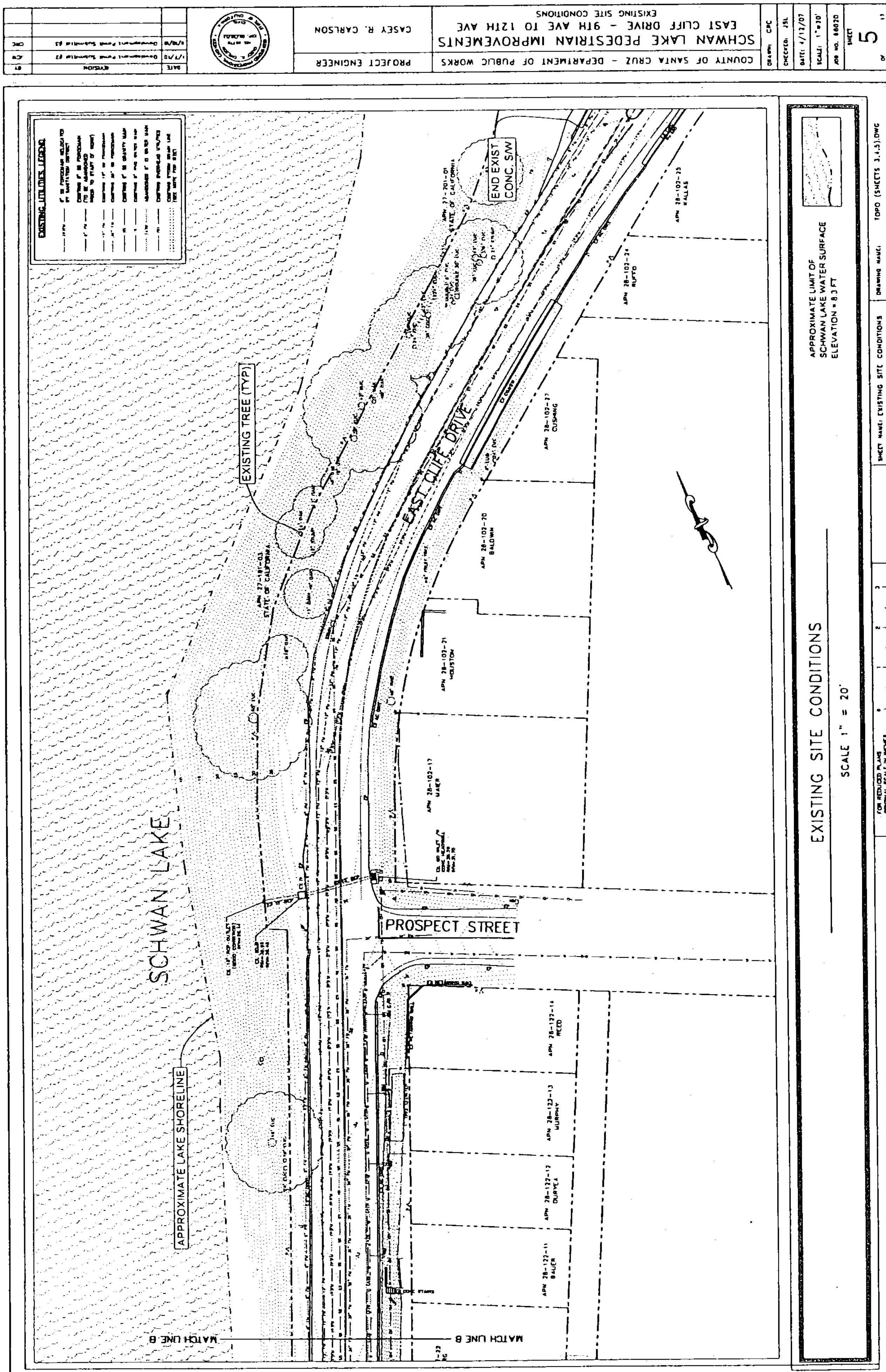
ATTACHMENT 2


COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS
SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
EXISTING SITE CONDITIONS
PROJECT ENGINEER
CASEY R. CARLSON
SHEET 5
EXISTING UTILITIES LEGEND
SCHWAN LAKE
APPROXIMATE LAKE SHORELINE
EXISTING TREE (TYP)
EAST CLIFF DRIVE
PROSPECT STREET
END EXIST CONC. S/W
MATCH LINE B
APPROXIMATE LIMIT OF SCHWAN LAKE WATER SURFACE ELEVATION = 8.3 FT
EXISTING SITE CONDITIONS
SCALE 1" = 20'

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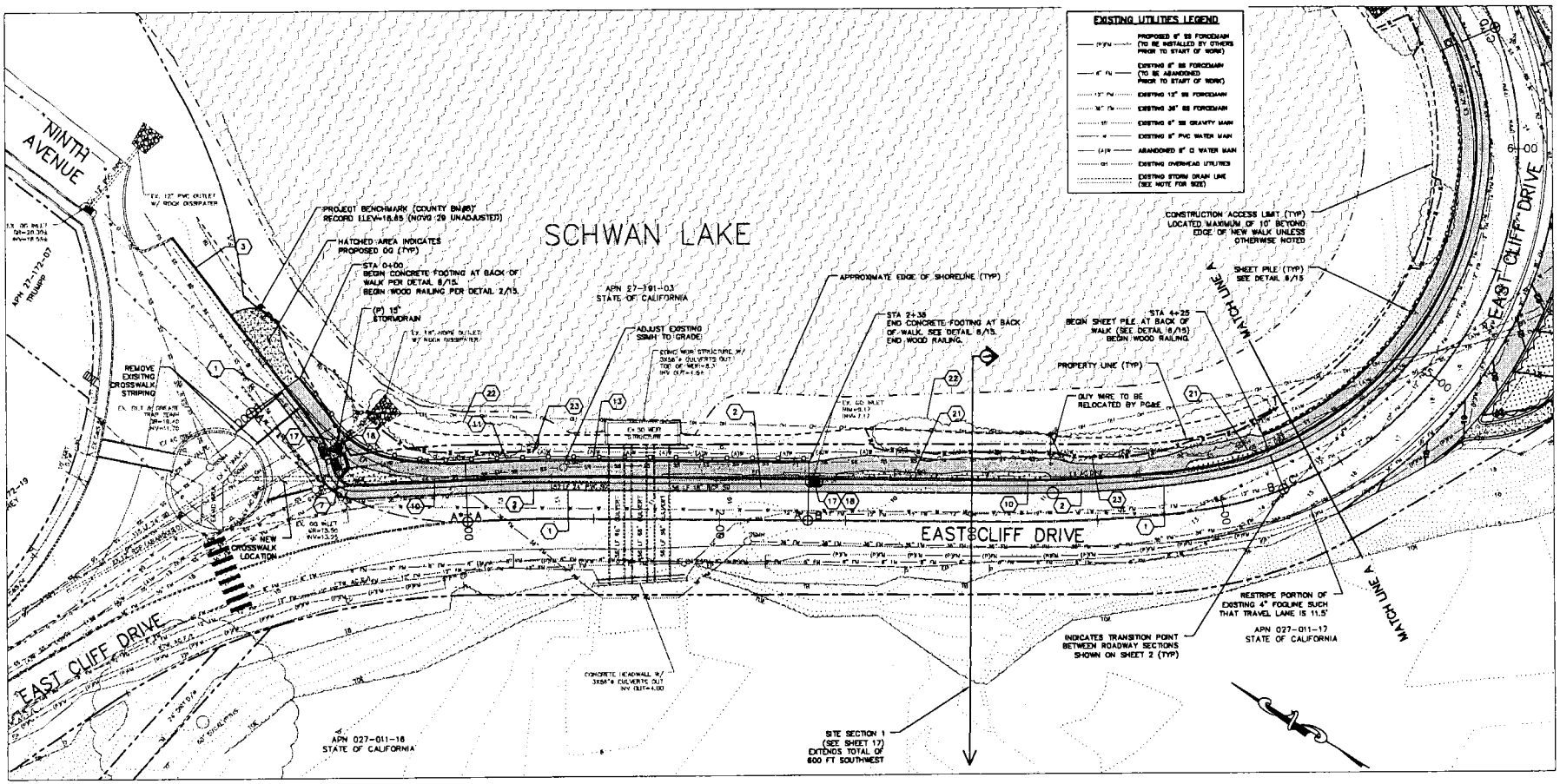
ATTACHMENT 2



CONSTRUCTION NOTES

1. SAWCUT EXISTING ASPHALT PAVEMENT TO PRODUCE A STRAIGHT VERTICAL FACE AGAINST WHICH TO BUTT THE NEW PAVEMENT SECTION, (TYP).
2. INSTALL AC PAVEMENT (3" TYPE B ASPHALT CONCRETE OVER 9" CLASS 2 AGGREGATE BASE) FOR 3' WIDTH ADJACENT TO GUTTER LIP, (TYP).
3. CONSTRUCT AC DIKE PER FIG ST-4a (REMOVE EXISTING IF APP).
4. CONSTRUCT TYPE A CURB & GUTTER W/ 4' SIDEWALK PER FIG ST-4a.
5. CONSTRUCT MODIFIED TYPE B CURB RAMP PER FIG ST-8b.
6. CONSTRUCT MODIFIED TYPE C CURB RAMP PER FIG ST-8c.
7. CONSTRUCT MODIFIED TYPE D CURB RAMP PER FIG ST-8d.
8. CROSSWALK STRIPING PER COUNTY DPW STANDARDS
9. INSTALL CROSS-WALK WARNING LIGHTS.
10. CONSTRUCT TYPE A COLORED CONCRETE CURB & GUTTER PER FIG ST-4a W/ RESIN STABILIZED D/G PAVEMENT WALK PER SECTIONS ON SHEET 2 & DETAILS ON SHEET 15, (TYP).
11. CONSTRUCT COLORED CONCRETE FOOTING AT BACK OF RESIN STABILIZED D/G PAVEMENT WALK PER DETAIL 8/15, (TYP).
12. INSTALL STEEL GUARDRAIL AT BACK OF WALK PER DETAIL 1/15, (TYP)
13. INSTALL WOODEN GUARDRAIL AT BACK OF WALK PER DETAIL 2/15, (TYP).
14. CONSTRUCT 24" DIA CIDH PILE TYP, @ MAX. 32'± OC SPACING PER DETAIL 3/15. SEE ACP REMOVAL NOTE ON SHEET 7.
15. CONSTRUCT 24" DIA CIDH PILE W/ 3'X7.5' PILE CAP AT OBSERVATION AREAS PER DETAIL 4/15. SEE ACP REMOVAL NOTE ON SHEET 7.
16. INCREASE WIDTH OF WALKWAY TO PROVIDE 3' X 10' OBSERVATION AREA.
17. INSTALL COUNTY STANDARD GO INLET PER FIG SWM-8A & 8B, WITH SIGNAGE NOTING "NO DUMPING - DRAIN TO BAY" OR EQUIVALENT (REMOVE EXISTING DRAIN BOX IF APPLICABLE). INSTALL FILTRATION INSERT, "AQUA-GUARDIAN AG-24" OR APPROVED EQUAL
18. CONNECT TO EXISTING STORM DRAINAGE SYSTEM.
19. INSTALL NEW 15" STORM DRAIN PER FIG SWM-13 & 14.
20. INSTALL NEW FIRE HYDRANT-NEW PER SCW (SANTA CRUZ WATER) DETAIL 10, CONNECT TO EXISTING WATER MAIN PER SCW STANDARDS.
21. LANDSCAPE PLANTING STRIP WIDTH VARIES FROM 2' TO 3' (TYP).
22. EXISTING WILLOW STAND, (TYP).
23. INSTALL ORANGE PLASTIC TREE PROTECTION FENCING AS SHOWN AT EXISTING TREES TO REMAIN, (TYP).

GRADING, DRAINAGE, & UTILITIES PLAN

SCALE 1" = 20'

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3		SHEET NAME: PLAN	DRAWING NAME: PLAN (SHEETS 6,7,8).DWG

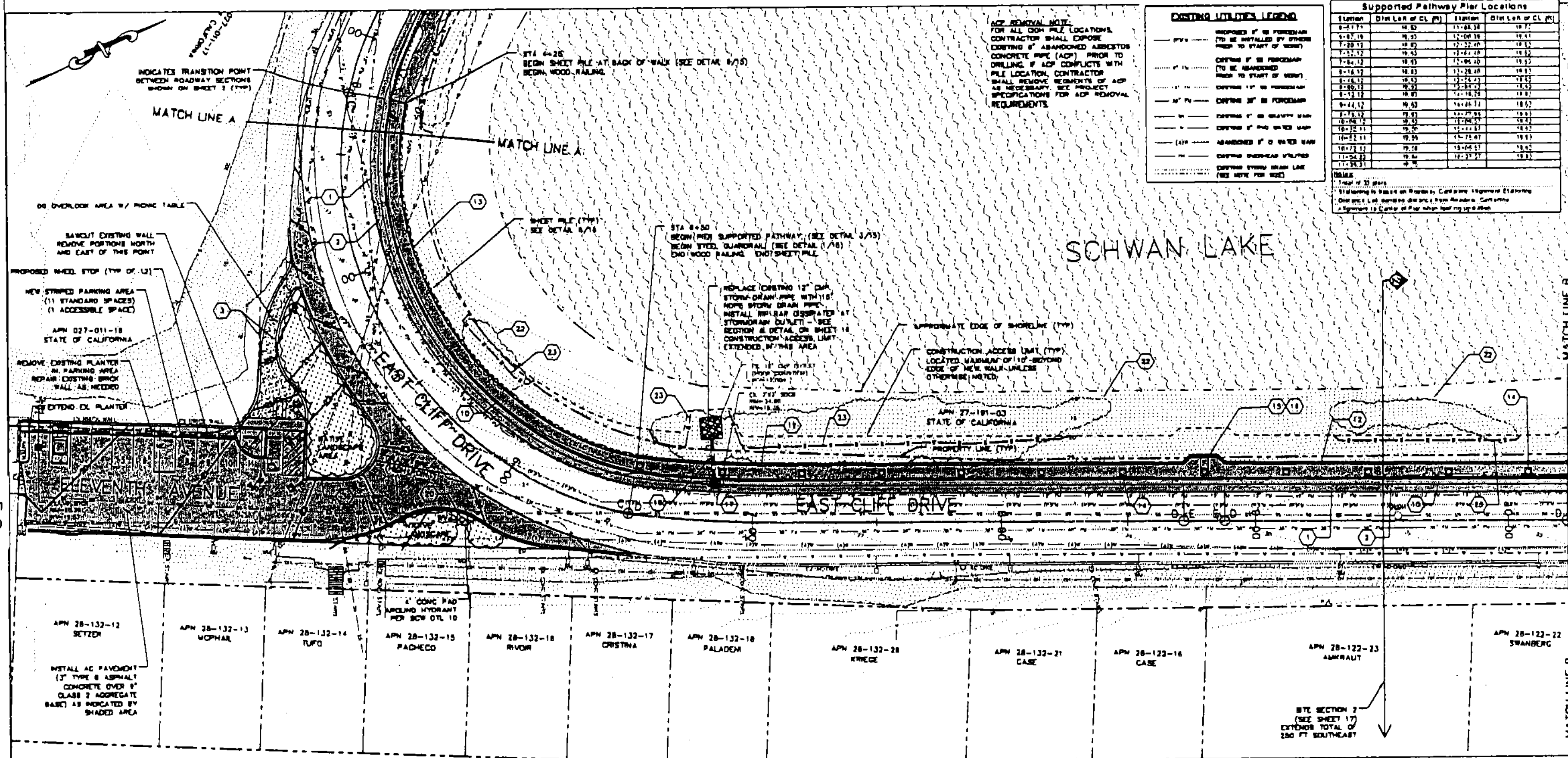
BY	DATE	REVISION
JCW	1/7/10	Development Permit Submittal #2
CRC	9/10/10	Development Permit Submittal #3

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
GRADING, DRAINAGE, & UTILITIES PLAN

PROJECT ENGINEER
CASEY R. CARLSON

DRAWN:	CRC
CHECKED:	JSL
DATE:	4/12/07
SCALE:	1"=20'
JOB NO.	66020
SHEET	6
OF	17



Supported Pathway Pier Locations			
Station	Dist Left of CL (ft)	Station	Dist Left of CL (ft)
[illegible]	19.63	11+88.38	[illegible]
6+87.19	19.53	12+09.39	19.61
7+20.12	19.63	12+32.40	19.53
7+53.12	19.63	12+64.40	19.63
7+84.12	19.63	12+96.40	19.63
8+16.12	19.63	13+28.40	19.63
8+48.12	19.53	[illegible]	19.63
8+80.12	19.53	[illegible]	19.63
9+12.12	19.63	14+16.28	19.63
9+44.12	19.63	14+46.33	19.63
9+75.12	19.63	14+77.95	19.63
10+08.12	19.63	[illegible]	19.63
10+32.11	19.59	[illegible]	19.63
10+52.11	19.59	15+75.67	19.63
10+72.11	19.58	15+64.57	19.63
11+24.82	[illegible]	[illegible]	19.63
11+34.21	[illegible]		

Notes:
- Total of 33 piers
- Stationing is based on Roadway Centerline Alignment Stationing
- Distance Left denotes distance from Roadway Centerline Alignment to Center of Pier when looking up station

CONSTRUCTION NOTES

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18. CONNECT TO EXISTING STORM DRAINAGE SYSTEM.
19. INSTALL NEW 15" STORM DRAIN PER FIG SWM-13 & 14.
20. INSTALL NEW FIRE HYDRANT-NEW PER SCW (SANTA CRUZ WATER) DETAIL 10. CONNECT TO EXISTING WATER MAIN PER SCW STANDARDS.
21. LANDSCAPE PLANTING STRIP WIDTH VARIES FROM 2' TO 5' (TYP).
22. EXISTING WILLOW STAND. (TYP).
23. INSTALL ORANGE PLASTIC TREE PROTECTION FENCING AS SHOWN AT EXISTING TREES TO REMAIN. (TYP).

GRADING, DRAINAGE, & UTILITIES PLAN

SCALE 1" = 20'

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3

SHEET NAME: PLAN

DRAWING NAME: PLAN (SHEETS 6,7,8).DWG

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS

EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE

GRADING, DRAINAGE, & UTILITIES PLAN

PROJECT ENGINEER

CASEY R. CARLSON

DATE	REVISION	BY
1/7/10	Development Permit Submittal #2	JCW
8/6/09	Development Permit Submittal #3	CRC

DRAWN: CRC

CHECKED: JSL

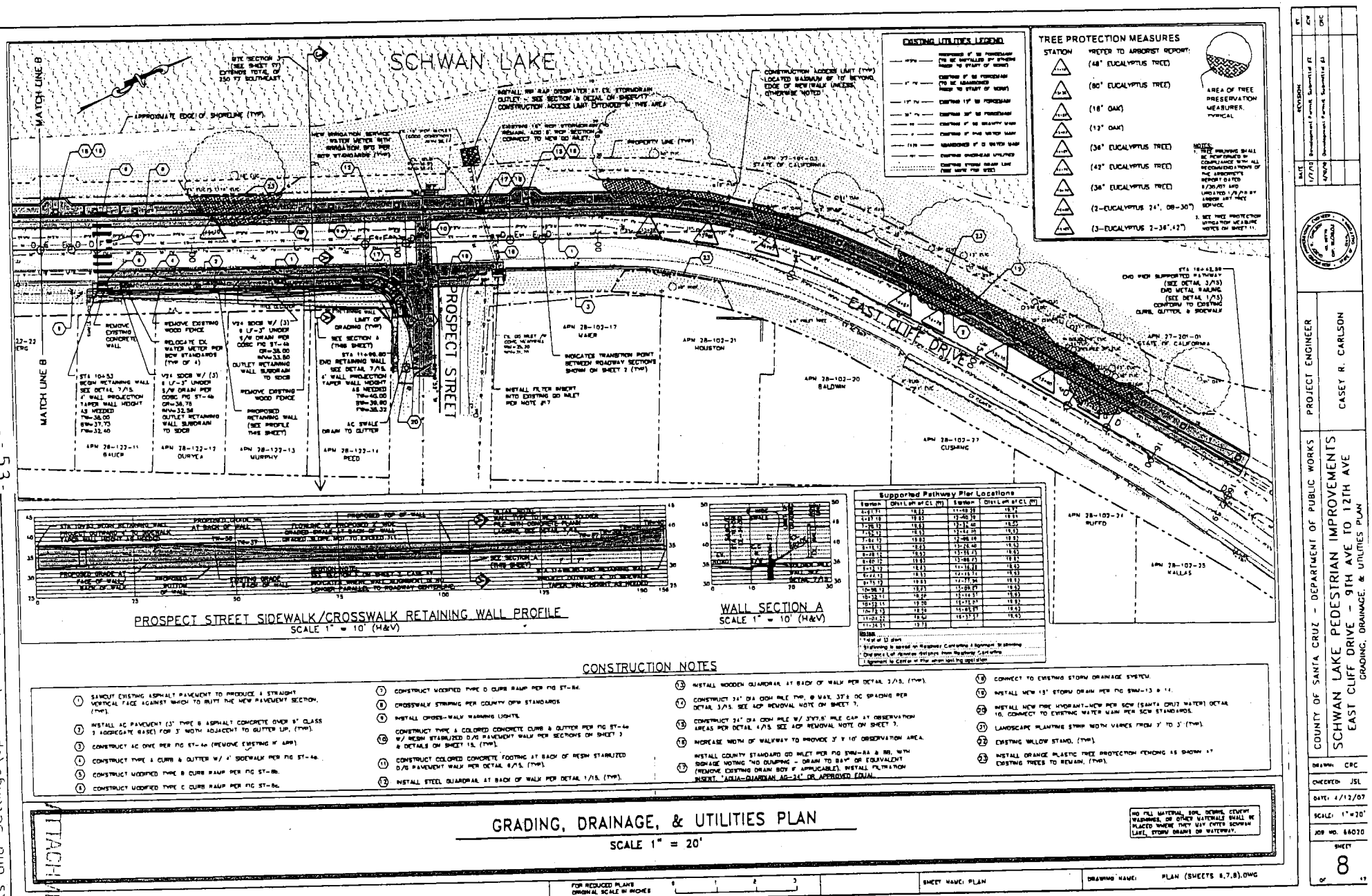
DATE: 4/12/07

SCALE: 1"=20'

JOB NO. 66020

SHEET 7 OF 17

ATTACHMENT 2



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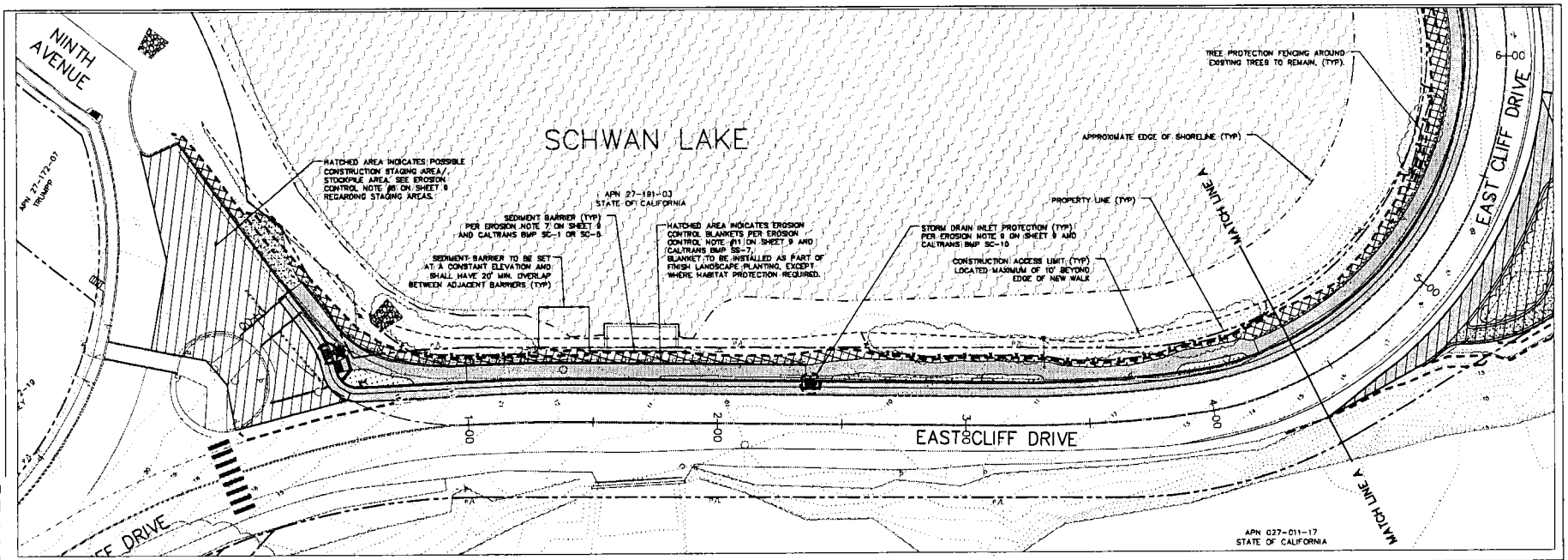

EROSION CONTROL MEASURES

1. THE CONTRACTOR SHALL SUBMIT A WPCP (WATER POLLUTION CONTROL PROGRAM) OR A SWPPP (STORM WATER POLLUTION PREVENTION PLAN) PER THE PROJECT SPECIFICATIONS UPON APPROVAL OF THE PROJECT CONTRACT. THE WPCP/SWPPP SHALL CONTAIN A PHASED CONSTRUCTION SCHEDULE WITH EROSION CONTROL & TEMPORARY DRAINAGE PLANS FOR EACH PHASE OF CONSTRUCTION. THE WPCP/SWPPP MUST BE APPROVED BY PUBLIC WORKS BEFORE CONSTRUCTION BEGINS. THE EROSION CONTROL PLANS SHOWN HEREON ARE A GUIDELINE ONLY, AND WILL BE SUPERCEDED BY THE WPCP/SWPPP.
2. EROSION IS TO BE CONTROLLED AT ALL TIMES ALTHOUGH SPECIFIC MEASURES SHOWN ARE TO BE IMPLEMENTED AT A MINIMUM BETWEEN OCTOBER 15TH AND APRIL 15TH. THE INTENT OF SITE EROSION CONTROL MEASURES IS TO PREVENT ON-SITE EROSION, AND TO PREVENT SEDIMENT FROM LEAVING THE SITE OR ENTERING ANY WATERCOURSE OR RECEIVING INLET. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ANY ADDITIONAL MEASURES NECESSARY TO CONTROL SITE EROSION AND PREVENT SEDIMENT TRANSPORT OFF-SITE ARE IMPLEMENTED.
3. UNNECESSARY GRADING AND DISTURBING OF SOIL SHALL BE AVOIDED (SEE SS-2).
4. RUNOFF FROM THE CONSTRUCTION SITE MUST NOT BE ALLOWED TO FLOW OVER ANY FILL SLOPES.
5. ALL EXCAVATED MATERIAL NOT SUITABLE FOR FILL OR OTHER USE ON-SITE SHALL BE REMOVED TO AN APPROVED DISPOSAL SITE.
6. FOR ON-SITE CONSTRUCTION & STAGING AREAS, SITE HOUSEKEEPING, MATERIALS MANAGEMENT, & EQUIPMENT MANAGEMENT SHALL BE CONSISTENT WITH THE REQUIREMENTS OF THE APPROPRIATE CALTRANS BMP. ROADWAYS ADJACENT TO THE PROJECT SHALL BE KEPT CLEAN AND FREE OF DUST. ANY SOIL OR OTHER EROSIBLE MATERIAL STOCKPILED ON-SITE SHALL BE COVERED WITH PLASTIC (AND ALSO SURROUNDED WITH A SEDIMENT BARRIER IF NEEDED) TO PREVENT SEDIMENT TRANSPORT OFF-SITE.
7. CONSTRUCTION SITE PERIMETER FENCING SHALL BE PLACED AROUND THE PERIMETER OF THE WORK ZONE AND ON-SITE STAGING AREAS TO ENSURE PUBLIC SAFETY. FENCING ALONG ROADWAY MUST ALLOW FOR A MINIMUM OF TWO 11 FT VEHICULAR TRAVEL LANES AT END OF EACH WORK DAY. CONSTRUCTION ACTIVITIES DURING THE WORK DAY MAY EXTEND FURTHER INTO THE STREET SUCH THAT ONE VEHICULAR LANE REMAINS OPEN WITH TRAFFIC CONTROL PROVIDED BY THE CONTRACTOR. AN APPROVED AREA OF THE ROADWAY MUST ALSO BE RESERVED FOR BICYCLE AND PEDESTRIAN ACCESS TO REMAIN OPEN AT ALL TIMES. THE CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL AND LOCAL DETOUR PLAN - SEE GENERAL NOTES ON COVER SHEET FOR SUBMITTAL & IMPLEMENTATION REQUIREMENTS.
8. SEDIMENT BARRIERS SHALL BE CONSTRUCTED ALONG THE BOTTOM OF ALL GRADED SLOPES OR WHERE OTHERWISE SHOWN ON THE EROSION CONTROL PLAN. SEDIMENT BARRIERS SHALL CONSIST OF SILT FENCE (SC-1) OR FIBER ROLLS (SC-5).
9. STORM DRAIN INLETS SHALL BE PROTECTED FROM SEDIMENT DURING CONSTRUCTION PER CALTRANS BMP SC-10. IF THE CATCH BASIN IS ABOVE GRADE, COVER OR PLACE SILT FABRIC UNDER GRATE. IF CATCH BASIN IS AT GRADE AND RECEIVES STORMWATER, SURROUND WITH SEDIMENT BARRIER. SEDIMENT BARRIER SHALL CONSIST OF GRAVEL BAGS IF INLET IS LOCATED IN A PAVED AREA. SEDIMENT BARRIER SHALL CONSIST OF SILT FENCE (SC-1) OR FIBER ROLL (SC-5) IF IN AN UNPAVED AREA.
10. ON ALL FINISH GRADED SLOPES, ON- AND OFF-SITE, EXPOSED DURING CONSTRUCTION ACTIVITIES (IF NOT PERMANENTLY LANDSCAPED PER PLAN) SHALL BE PROTECTED BY A 3 INCH DEEP LAYER MINIFIED SAWDUST AND PLANTING OF THE FOLLOWING NATIVE PLANT SEED MIX RECOMMENDED BY THE CALIFORNIA COASTAL COMMISSION. THIS MIX MAY BE USED AS TEMPORARY SLOPE PROTECTION DEPENDING ON SEASON & TIMING OF CONSTRUCTION, OR AS PERMANENT SEEDING IF NO OTHER LANDSCAPING IS SPECIFIED. SEEDING MAY BE OMITTED FOR AREAS THAT ARE TO RECEIVE PERMANENT LANDSCAPING, SO LONG AS SEDIMENT IN THESE AREAS MAY BE PROTECTED THROUGH A SEDIMENT TRANSPORT WITHOUT THE USE OF SEEDING AS A TEMPORARY MEASURE.

SEED TYPE	SEED APPLICATION RATE
BROMUS CARINATUS	(12 LB PER ACRE SEEDED)
ELYMUS GLAUCUS	(PLUGS)
HORDEUM BRACHYANTHERUM	(8 LB PER ACRE SEEDED)

11. EROSION CONTROL BLANKETS SHALL BE INSTALLED WHERE SHOWN ON PLANS. BLANKET TYPE SHALL BE A STRAW/COCONUT FIBER MATERIAL SUCH AS NORTH AMERICAN GREEN SC-150BN OR APPROVED EQUAL. SITE PREPARATION AND BLANKET INSTALLATION SHALL BE PER CALTRANS BMP SS-7 OR MANUFACTURER'S RECOMMENDATIONS, WHICHEVER IS MORE STRINGENT. BLANKET COVERAGE SHALL INCLUDE ALL DISTURBED SOIL REMAINING AFTER CONSTRUCTION. REPLANTING SHALL BE DONE PER LANDSCAPE PLANS (OR SEEDING AS SHOWN IN NOTE #10 IF NO LANDSCAPING IS SHOWN).
12. CONCRETE WASHOUT SHALL NOT TAKE PLACE ON-SITE. CONCRETE WASTE SHALL BE MANAGED PER CALTRANS BMP WM-8. REGULATIONS GOVERNING CONCRETE WASHOUT STIPULATE A MINIMUM SETBACK OF 100' FROM WATER BODIES AND 50' FROM STORM DRAIN INLETS.
13. SITE GRADING DONE BY HEAVY MACHINERY IS PLANNED TO TAKE PLACE FROM THE EXISTING ROADWAY, THEREFORE NO SITE ENTRANCE MEASURES ARE REQUIRED. IF THE WPCP/SWPPP DETERMINES THAT ANY HEAVY MACHINERY WORK NEEDS TO BE DONE OFF OF THE ROADWAY, A SITE ENTRANCE AND STABILIZED ROADWAY SHALL BE CONSTRUCTED PER CALTRANS BMP TC-1.
14. NO MAINTENANCE OF EQUIPMENT OR MACHINERY SHALL TAKE PLACE ON-SITE.
15. 48 HOUR NOTICE SHALL BE GIVEN TO ENVIRONMENTAL PLANNING AT (831) 454-3168 PRIOR TO COMMENCING WORK, AND UPON COMPLETION OF GRADING AND EROSION CONTROL. FAILURE TO COMPLY MAY RESULT IN ISSUANCE OF A STOP WORK ORDER.

WINTER GRADING MEASURES

THE FOLLOWING WINTER GRADING NOTES ARE MEANT TO APPLY TO WORK INVOLVING LAND DISTURBANCE DONE DURING THE RAINY SEASON (WHICH IS ASSUMED TO OCCUR AT A MINIMUM BETWEEN OCTOBER 15TH AND APRIL 15TH). THESE NOTES ARE MEANT AS A SUPPLEMENT TO THE EROSION CONTROL MEASURES FOR THIS PROJECT. EROSION CONTROL MEASURES SHOULD BE IN PLACE BEFORE THE START OF THE RAINY SEASON.

COUNTY ORDINANCE 16.22.090:

B. WHEN WINTER OPERATIONS ARE PERMITTED, THE FOLLOWING MEASURES SHALL BE TAKEN TO PREVENT ACCELERATED EROSION. ADDITIONAL MEASURES MAY BE REQUIRED:

1. BETWEEN OCTOBER 15 AND APRIL 15, DISTURBED SURFACES NOT INVOLVED IN THE IMMEDIATE OPERATIONS SHALL BE PROTECTED BY MULCHING AND/OR OTHER EFFECTIVE MEANS OF SOIL PROTECTION AS REQUIRED BY THE PLANNING DIRECTOR.
2. ALL ROADS AND DRIVEWAYS SHALL HAVE DRAINAGE FACILITIES SUFFICIENT TO PREVENT EROSION ON OR ADJACENT TO THE ROADWAY OR ON DOWNHILL PROPERTIES. EROSION-PROOF SURFACING MAY BE REQUIRED BY THE PLANNING DIRECTOR IN AREAS OF HIGH EROSION HAZARD.
3. RUNOFF FROM A SITE SHALL BE DETAINED OR FILTERED BY BERMS, VEGETATED FILTER STRIPS, AND/OR CATCH BASINS TO PREVENT THE ESCAPE OF SEDIMENT FROM THE SITE. THESE DRAINAGE CONTROLS SHALL BE MAINTAINED BY THE PERMITTEE AND/OR PROPERTY OWNER AS NECESSARY TO ACHIEVE THEIR PURPOSE THROUGHOUT THE LIFE OF THE PROJECT.
4. EROSION CONTROL MEASURES SHALL BE IN PLACE AT THE END OF EACH DAY'S WORK.
5. THE PLANNING DIRECTOR SHALL STOP OPERATIONS DURING PERIODS OF INCLEMENT WEATHER IF HE DETERMINES THAT EROSION PROBLEMS ARE NOT BEING CONTROLLED ADEQUATELY. (ORD. 2982, 8/2/82; 3337, 11/23/82)

CONTINGENCY NOTES:

6. THE CONTRACTOR SHALL KEEP THE FOLLOWING SUPPLIES ON-HAND FOR EMERGENCY USE: HAZARDOUS MATERIAL SPILL CLEANUP MATERIALS (ABSORBENT PADS, DRIP PANS, ETC.), PLASTIC COVERS FOR STOCKPILES, DUST SUPPRESSANT, SWEEPING EQUIPMENT, MULCH, EROSION CONTROL BLANKETS, SANDBAGS, GRAVEL BAGS, SEDIMENT BARRIER MATERIAL (SILT FENCING AND/OR FIBER ROLLS).
7. THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION TO CONTROL ANY SPILLS OF HAZARDOUS MATERIALS PER THE PROJECT WPCP.
8. THE CONTRACTOR SHALL MONITOR WEATHER BULLETINS AND TAKE THE FOLLOWING PRECAUTIONS PRIOR TO A PREDICTED RAIN EVENT:
   A. INSPECTIONS SHALL BE PERFORMED AS REQUIRED BY THE PROJECT WPCP/SWPPP.
   B. ENSURE ALL EROSION CONTROL MEASURES ARE IN PLACE AND FUNCTIONAL. REPAIR OR REPLACE ANY DAMAGED OR NON-FUNCTIONAL PORTIONS.
   C. APPLY MULCH IF NEEDED TO STABILIZE GROUND, HOWEVER NO FERTILIZER OR OTHER SOIL TREATMENTS SHALL BE APPLIED WITHIN 24 HOURS OF A PREDICTED RAIN EVENT.
   D. SWEEP ROADWAYS IN THE PROJECT AREA.
   E. COVER ANY STOCKPILES. ENSURE THAT ANY HAZARDOUS MATERIALS (INCLUDING TREATED WOODS AND METALS) ARE IN SHEDS OR OTHERWISE COVERED.

BMP NOTE:

THE FOLLOWING CALTRANS BMPS SHALL BE IN PLACE ON SITE AS DESCRIBED IN THE BMP FACT SHEET UNLESS OTHERWISE DIRECTED BY THE PROJECT PLANS. CALTRANS BMP FACT SHEETS CAN BE FOUND AT THE FOLLOWING WEBSITE: (NOTE THAT THE URL BELOW IS CASE SENSITIVE AND MUST BE TYPED EXACTLY) http://www.dot.ca.gov/hq/construc/stormwater/factsheets.htm

SS-1	SCHEDULING
SS-2	PRESERVATION OF EXISTING VEGETATION
SS-7	GEOTEXTILES, PLASTIC COVERS, & EROSION CONTROL BLANKETS
SS-8	WOOD MULCHING
SS-9	EARTH DIKES/ DRAINAGE SWALES & LINED DITCHES
SS-10	OUTLET PROTECTION/ VELOCITY DISSIPATION DEVICES
SC-1	SILT FENCE
SC-2	SEDIMENT/ DESILTING BASIN (BAKER TANKS)
SC-5	FIBER ROLLS
SC-7	STREET SWEEPING & VACUUMING
SC-10	STORM DRAIN INLET PROTECTION
WE-1	WIND EROSION CONTROL
TC-1	STABILIZED CONSTRUCTION ENTRANCE/ EXIT (IF NEEDED)
NS-1	WATER CONSERVATION PRACTICES
NS-2	DEWATERING OPERATIONS
NS-3	PAVING & GRINDING OPERATIONS
NS-6	ILLICIT CONNECTION/ ILLEGAL DISCHARGE DETECTION AND REPORTING
NS-7	POTABLE WATER/ IRRIGATION
NS-8	VEHICLE AND EQUIPMENT CLEANING
NS-9	VEHICLE AND EQUIPMENT FUELING
NS-10	VEHICLE AND EQUIPMENT MAINTENANCE
NS-11	PILE DRIVING OPERATIONS (SHEET PILE)
NS-12	CONCRETE CURING
NS-14	CONCRETE FINISHING
WM-1	MATERIAL DELIVERY AND STORAGE
WM-2	MATERIAL USE
WM-3	STOCKPILE MANAGEMENT
WM-4	SPILL PREVENTION AND CONTROL
WM-5	SOLID WASTE MANAGEMENT
WM-6	HAZARDOUS WASTE MANAGEMENT
WM-8	CONCRETE WASTE MANAGEMENT
WM-9	SEPTIC/ SANITARY WASTE MANAGEMENT
WM-10	LIQUID WASTE MANAGEMENT

EROSION CONTROL PLAN

SCALE 1" = 20'

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3

SHEET NAME: EROSION CONTROL PLAN

DRAWING NAME: EROSION CONTROL (SHEETS 9,10,11).DWG

REVISION	DATE	BY
Development Permit Submittal #2	1/21/10	JCW
Development Permit Submittal #3	8/10/10	CRC

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

PROJECT ENGINEER: CASEY R. CARLSON

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
EROSION CONTROL PLAN

DRAWN: AK
CHECKED: PR
DATE: 4/12/07
SCALE: 1"=20'
JOB NO. 66020
SHEET 9 OF 17

57 / 125

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
EROSION CONTROL PLAN

DRAWN: KK
CHECKED: PB
DATE: 1/12/07
SCALE: 1"=20'
JOB NO. 88020
SHEET 10 OF 17

PROJECT ENGINEER
CASEY R. CARLSON

BY	REVISION	DATE
ET		
CV	Development Permit Submittal #2	1/7/10
CMC	Development Permit Submittal #1	6/18/10

BMP NOTE:
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SCHEDULING
SC-1 PRESERVATION OF EXISTING VEGETATION
SC-2 EROSION CONTROL BLANKETS/ MATTING
SC-3 HYDROSEEDING
SC-4 WOOD MULCHING
SC-5 EARTH DIKES/ DRAINAGE SWALES & LINED DITCHES
SC-6 SILT FENCE
SC-7 SAND BAG BARRIER
SC-8 GRAVEL BAG BARRIER
SC-9 STREET SWEEPING & VACUUMING
SC-10 STORM DRAIN INLET PROTECTION
SC-11 STABILIZED CONSTRUCTION ENTRANCE/ EXIT (4" MINIMUM)
SC-12 WATER CONSERVATION PRACTICES
SC-13 PAVING & GRINDING OPERATIONS
SC-14 DEWATERING OPERATIONS
NS-1 LIMIT CONSTRUCTION/ ILLEGAL DISCHARGE DETECTION AND REPORTING
NS-2 POTABLE WATER/ IRRIGATION
NS-3 CONCRETE CURING AND CLEANING
NS-4 VEHICLE AND EQUIPMENT FUELING
NS-5 VEHICLE AND EQUIPMENT MAINTENANCE
NS-6 PILE DRIVING OPERATIONS (SHEET PILE)
NS-7 CONCRETE PUMPING
NS-8 MATERIAL DELIVERY AND STORAGE
NS-9 STOCKPILE MANAGEMENT
NS-10 SPILL PREVENTION AND CONTROL
NS-11 SOLID WASTE MANAGEMENT
NS-12 CONCRETE WASTE MANAGEMENT
NS-13 SEPTIC/ SANITARY WASTE MANAGEMENT
NS-14 LIQUID WASTE MANAGEMENT

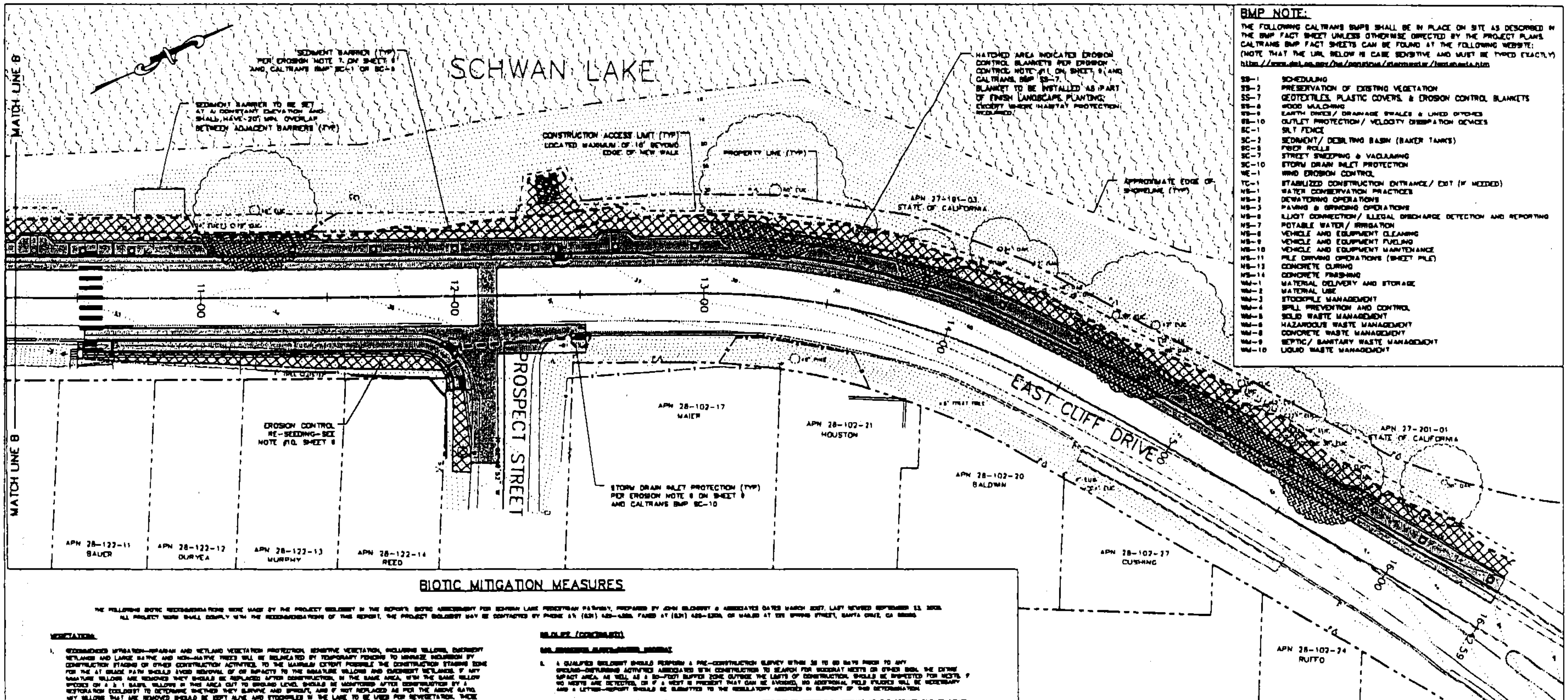
SCHWAN LAKE
EAST CLIFF DRIVE
MATCH LINE A
MATCH LINE B
PROPERTY LINE
APN 027-011-03 STATE OF CALIFORNIA
APN 027-011-12 STATE OF CALIFORNIA
APN 028-132-12 SHANNON
APN 028-132-23 AMSTADT
APN 028-132-16 CASE
APN 028-132-21 CASE
APN 028-132-26 KRIEGE
APN 028-132-18 HALDEN
APN 028-132-17 CRISTINA
APN 028-132-19 RYDER
APN 028-132-15 FLORES
APN 028-132-14 TUFO
APN 028-132-13 MCPHAIL
APN 028-132-12 SEITZ
STORM DRAIN INLET PROTECTION (TYP) PER EROSION NOTE 6 & CALTRANS BMP SC-10
CONSTRUCTION ACCESS (TYP) LOCATED MINIMUM OF 10' BEHIND EDGE OF NEW WALK
APPROXIMATE EDGE OF ROADWAY (TYP)
MATCHED AREA HYDROSEED/ EROSION CONTROL BLANKET PER EROSION CONTROL NOTE #5 (TYP) BLANKET TO BE INSTALLED AS PART OF PHASE 1 LANDSCAPE PLANTING; EXCEPT WHERE NOTED PROTECTION REQUIRED
SEDIMENT BARRIER (TYP) PER EROSION NOTE 7 (TYP) SHEET 9 AND CALTRANS BMP SC-1 OR SC-5
SEDIMENT BARRIER TO BE SET AT A CONSTANT ELEVATION AND SHALL HAVE NO FLOW-THROUGH BYPASS (TYP)
MATCHED AREA HYDROSEED/ EROSION CONTROL BLANKET PER EROSION CONTROL NOTE #5 (TYP) BLANKET TO BE INSTALLED AS PART OF PHASE 1 LANDSCAPE PLANTING; EXCEPT WHERE NOTED PROTECTION REQUIRED
MATCHED AREA HYDROSEED/ EROSION CONTROL BLANKET PER EROSION CONTROL NOTE #5 (TYP) BLANKET TO BE INSTALLED AS PART OF PHASE 1 LANDSCAPE PLANTING; EXCEPT WHERE NOTED PROTECTION REQUIRED
SEDIMENT BARRIER (TYP) PER EROSION NOTE 7 (TYP) SHEET 9 AND CALTRANS BMP SC-1 OR SC-5
SEDIMENT BARRIER TO BE SET AT A CONSTANT ELEVATION AND SHALL HAVE NO FLOW-THROUGH BYPASS (TYP)

EROSION CONTROL PLAN
SCALE 1" = 20'

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3

SHEET NAME: EROSION CONTROL PLAN
DRAWING NAME: EROSION CONTROL (SHEETS 9,10,11).DWG

ATTACHMENT 2.1



BMP NOTE:

THE FOLLOWING CALTRANS BMPS SHALL BE IN PLACE ON SITE AS DESCRIBED IN THE BMP FACT SHEET UNLESS OTHERWISE DIRECTED BY THE PROJECT PLANS. CALTRANS BMP FACT SHEETS CAN BE FOUND AT THE FOLLOWING WEBSITE: (NOTE THAT THE URL BELOW IS CASE SENSITIVE AND MUST BE TYPED EXACTLY)

SS-1	SCHEDULING
SS-2	PRESERVATION OF EXISTING VEGETATION
SS-7	GEOTEXTILES, PLASTIC COVERS, & EROSION CONTROL BLANKETS
SS-8	WOOD MULCHING
SS-9	EARTH DIKES/ DRAINAGE SWALES & LINED DITCHES
SS-10	OUTLET PROTECTION/ VELOCITY DISSIPATION DEVICES
SC-1	SILT FENCE
SC-2	SEDIMENT/ DESILTING BASIN (BAKER TANKS)
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NS-8	VEHICLE AND EQUIPMENT CLEANING
NS-9	VEHICLE AND EQUIPMENT FUELING
NS-10	VEHICLE AND EQUIPMENT MAINTENANCE
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NS-14	CONCRETE FINISHING
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WM-8	CONCRETE WASTE MANAGEMENT
WM-9	SEPTIC/ SANITARY WASTE MANAGEMENT
WM-10	LIQUID WASTE MANAGEMENT

BIOTIC MITIGATION MEASURES

TREE PROTECTION MITIGATION MEASURES

EROSION CONTROL PLAN

SCALE 1" = 20'

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3

SHEET NAME: EROSION CONTROL PLAN

DRAWING NAME: EROSION CONTROL (SHEETS 9,10,11).DWG

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

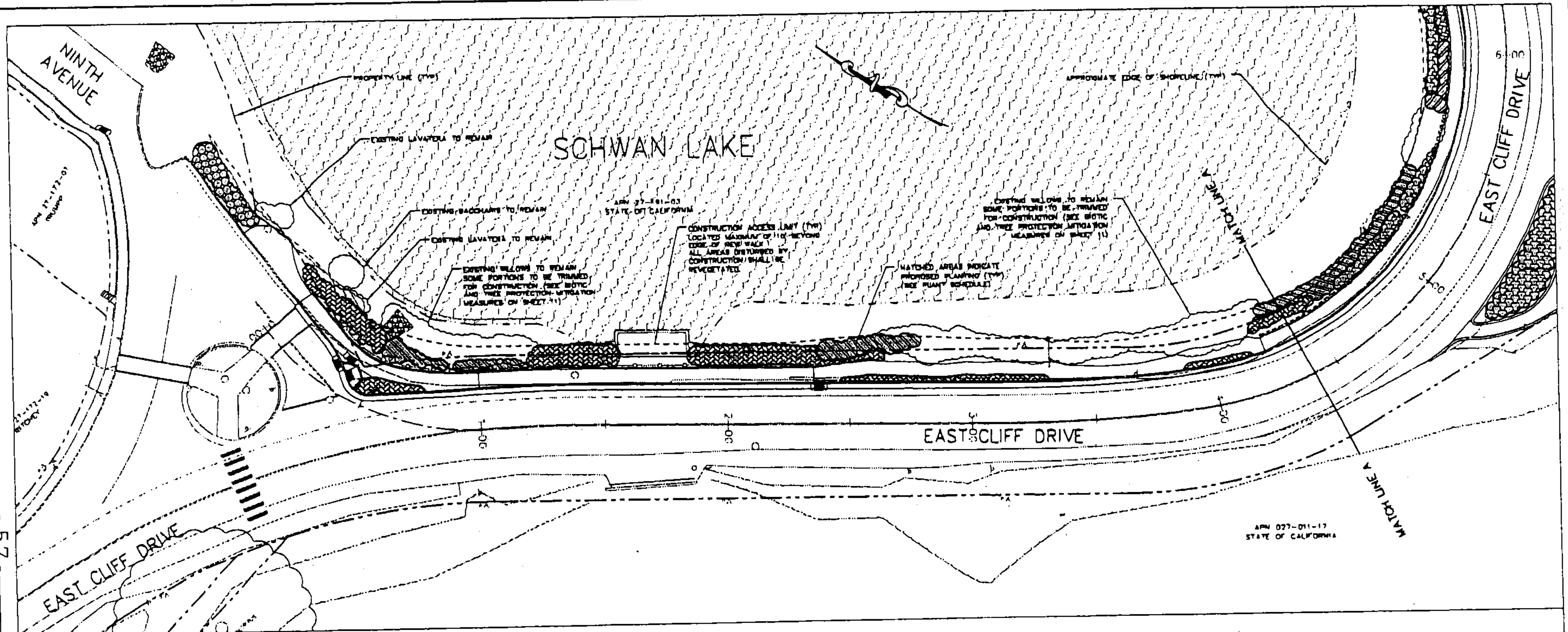
SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
EROSION CONTROL PLAN

PROJECT ENGINEER
CASEY R. CARLSON

DRAWN: AK
CHECKED: PB
DATE: 4/12/07
SCALE: 1"=20'
JOB NO. 66020
SHEET 11 OF 17

DATE	REVISION	BY
1/7/10	Development Permit Submittal #2	JCN
5/26/10	Development Permit Submittal #3	CRC

ATTACHMENT 2



CONCEPT PLANT SCHEDULE

SHRUBS: NATIVE, MEDIUM HEIGHT (5 GALLON)
(Approximate spacing 3'-4' o.c.)
Artemisia californica / California Sagebrush
Ceanothus thyrsiflorus 'Skylark' / Ceanothus cv
Dendromecon rigida / Bush Poppy
Encelia californica / California Encelia
Garrya elliptica 'James Roof' / Coast Silk Tassel
Heteromeles arbutifolia / Toyon
Lavatera assurgentiflora / Mallow
Lupinus albifrons / Bush Lupine
Prunus ilicifolia lyonii / Catalina Cherry
Rhamnus californica / California Coffee Berry
Rhus ovata / Sugar Bush
Ribes viburnifolium / Evergreen Currant
Rosa californica / California Wild Rose
Sambucus mexicana / Mexican Elderberry
Symphoricarpos albus / Common White Snowberry

NATIVE GRASSES (SEEDED OR PLUGS @ 6" O.C.)
(Supplemental seeding prior to permanent installation of erosion control blanket)
Elymus glaucus / Western Ryegrass
Nasella pulchra / Purple Needle Grass
Leymus condensatus / Lyme Grass

SHRUBBY GROUNDCOVER- NATIVE, EVERGREEN (1 GALLON)
(Approximate spacing 2'-3' o.c.)
Arctostaphylos hookeri 'Monterey Carpet' / Manzanita
Baccharis pilulans 'Twin Peaks' / Twin Peaks Coyote Brush
Ceanothus griseus horizontalis 'Yankee Point' / California Lilac

HERBACEOUS PERENNIALS-NATIVE (1 GALLON)
Dudleya caespitosa / Sea Lettuce
Epilobium californicum / California Fuschia
Eriogonum arborescens / Santa Cruz Island Buckwheat
Eriogonum giganteum / St. Catherine's Lace
Mimulus aurantiacus / Sticky Monkey Flower
Sisyrinchium bellum / Blue Eyed Grass

PLANTING NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING PLANTING: INSTALLATION OF PLANTING OF ALL CONTAINER PLANTS SHOWN ON THE PLAN. ALL PLANTS SHALL BE FROM LOCAL SOURCES, NURSERY GROWN AND/OR CONTRACT GROWN BY A LICENSED NURSERY WHICH SPECIALIZES IN NATIVE PLANT PROPAGATION. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT PRIOR CONSENT OF THE LANDSCAPE ARCHITECT.
2. THE LOCATIONS FOR PLANTS SHOWN ON THE PLANS ARE DIAGRAMMATIC ONLY AND SHALL BE ADJUSTED IN THE FIELD PRIOR TO PLANTING. LAY OUT ALL PLANTS AND NOTIFY LANDSCAPE ARCHITECT AT LEAST 24 HOURS IN ADVANCE IN ORDER TO ARRANGE FOR CONFIRMATION AND APPROVAL OF LAYOUT PRIOR TO COMMENCEMENT OF PLANTING OPERATIONS.
3. CONTRACTOR SHALL PROVIDE FOR AN ADDITIONAL 30% OF ALL 2" PLUG PLANT MATERIAL TO BE LOCATED IN THE FIELD AND PLANTED AS DIRECTED BY THE LANDSCAPE ARCHITECT.
4. INSTALL 3" DEEP WALK ON FIR BARK MULCH OR OTHER SUITABLE MATERIAL IN ALL PLANTED AREAS.
5. ALL DISTURBED SLOPE AREAS TO BE COVERED BY EROSION CONTROL BLANKETS (SEE EROSION CONTROL PLANS). ALL EROSION CONTROL BLANKETS INSTALLED AS PART OF THE EROSION CONTROL PLANS SHALL BE LEFT IN PLACE AS PART OF THE FINISHED LANDSCAPING.
6. SEE SHEET #14 FOR PLANTING DETAILS.
7. INVASIVE SHRUBS & GROUNDCOVERS WITHIN LIMIT OF WORK TO BE REMOVED. SEE BIOTIC MITIGATION MEASURE NOTES ON SHEET 11.
8. EXISTING TREES WITHIN THE WORK AREA SHALL BE PROTECTED DURING CONSTRUCTION. SEE SHEET 8 AND TREE PROTECTION MITIGATION MEASURES ON SHEET 11.

IRRIGATION NOTES:

1. IRRIGATION SHALL BE VIA AN AUTOMATICALLY TIMED SYSTEM WITH BATTERY OPERATED REMOTE CONTROL VALVES AND DRIP DISTRIBUTION COMPONENTS.
2. ALL IRRIGATION SHALL BE APPROVED BY SANTA CRUZ WATER DEPARTMENT CONSERVATION DEPT.

APPROXIMATE LIMIT OF SCHWAN LAKE WATER SURFACE ELEVATION = 8.3 FT

LANDSCAPE PLAN

SCALE 1" = 20'

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAYS.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3

SHEET NAME: LANDSCAPE PLAN

DRAWING NAME: LANDSCAPE (SHEETS 12,13,14).DWG

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

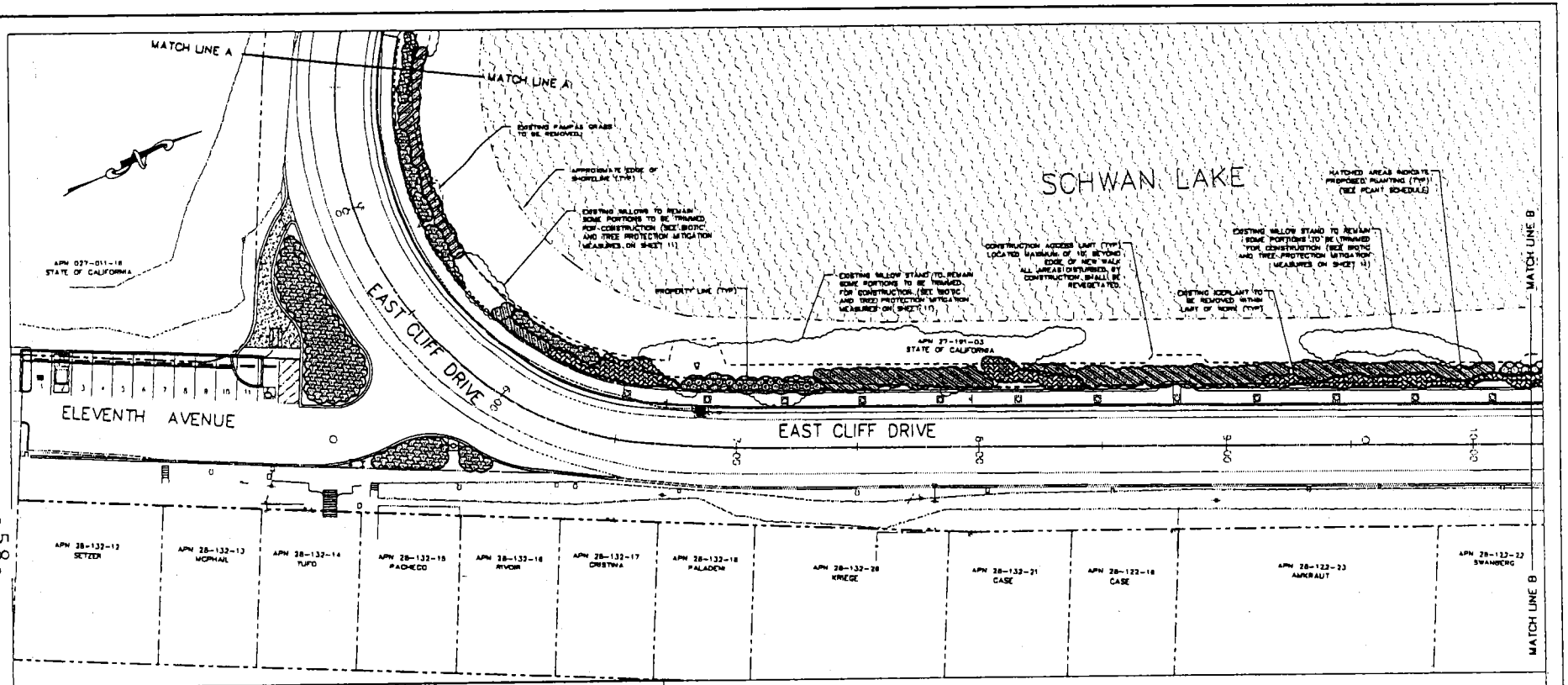
SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
LANDSCAPE PLAN

PROJECT LANDSCAPE ARCHITECT: ANITA KANE

DATE	REVISION	BY
1/7/10	Development Permit Submittal #2	ALK
1/18/10	Development Permit Submittal #3	CRC

DRAWN: AK
CHECKED: RB
DATE: 1/17/07
SCALE: 1"=20'
JOB NO. 66020
SHEET 12 OF 17

ATTACHMENT 2



CONCEPT PLANT SCHEDULE

SHRUBS- NATIVE, MEDIUM HEIGHT (5 GALLON)
(Approximate spacing 3'-4' o.c.)
Artemisia californica / California Sagebrush
Ceanothus thyrsiflorus 'Skylark' / Ceanothus cv
Dendromecon rigida / Bush Poppy
Encelia californica / California Encelia
Garrya elliptica 'James Roof' / Coast Silk Tassel
Heteromeles arbutifolia / Toyon
Lavatera assurgentiflora / Mallow
Lupinus albifrons / Bush Lupine
Prunus ilicifolia lyonii / Catalina Cherry
Rhamnus californica / California Coffee Berry
Rhus ovata / Sugar Bush
Ribes viburnifolium / Evergreen Currant
Rosa californica / California Wild Rose
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Symphoricarpos albus / Common White Snowberry

NATIVE GRASSES (SEEDED OR PLUGS @ 6' O.C.)
(Supplemental seeding prior to permanent installation of erosion control blanket)
Elymus glaucus / Western Ryegrass
Nasella pulchra / Purple Needle Grass
Leymus condensatus / Lyme Grass

SHRUBBY GROUNDCOVER- NATIVE, EVERGREEN (1 GALLON)
(Approximate spacing 2'-3' o.c.)
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Baccharis pilularis 'Twin Peaks' / Twin Peaks Coyote Brush
Ceanothus gloseus horizontalis 'Yankee Point' / California Lilac

HERBACEOUS PERENNIALS-NATIVE (1 GALLON)
Dudleya caespitosa / Sea Lettuce
Epilobium californicum / California Fuschia
Eriogonum arborescens / Santa Cruz Island Buckwheat
Eriogonum giganteum / St. Catherine's Lace
Mimulus aurantiacus / Sticky Monkey Flower
Sisyrinchium bellum / Blue Eyed Grass

LANDSCAPING NOTES:

SEE SHEET 12 FOR PLANTING AND IRRIGATION NOTES.

APPROXIMATE LIMIT OF SCHWAN LAKE WATER SURFACE ELEVATION = 8.3 FT

A LANDSCAPE PLAN

SCALE 1" = 20'

NO FILL MATERIAL, SOIL, DEBRIS, CONCRETE WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3

SHEET NAME: LANDSCAPE PLAN

DRAWING NAME: LANDSCAPE (SHEETS 12,13,14).DWG

REVISION	DATE
Development Permit Submittal #2	1/7/08
Development Permit Submittal #1	9/26/06

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS
PROJECT LANDSCAPE ARCHITECT: ANITA KANE

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
LANDSCAPE PLAN

DRAWN: AK
CHECKED: PB
DATE: 4/12/07
SCALE: 1"=20'
JOB NO. 66020
SHEET 13 OF 17

ATTACHMENT 2

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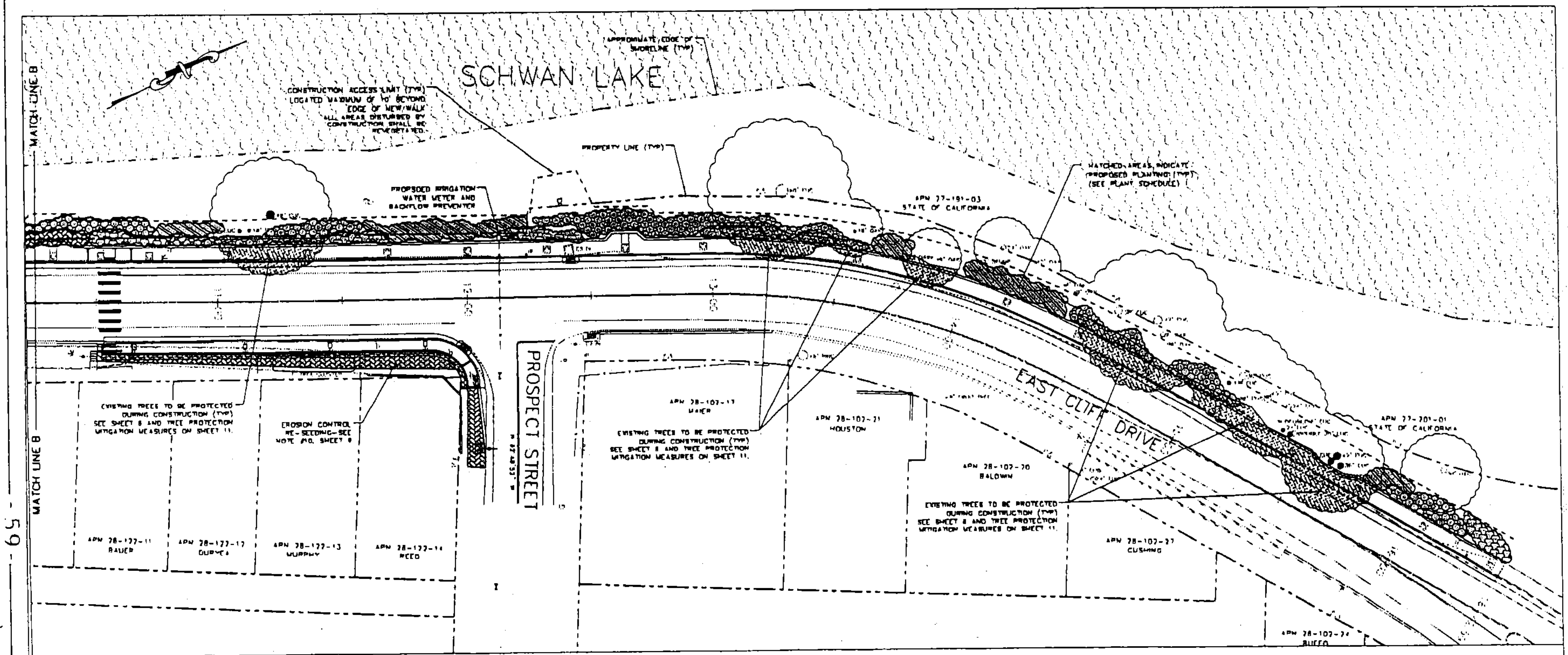


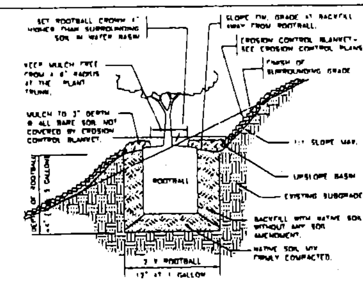
CONCEPT PLANT SCHEDULE

SHRUBS: NATIVE, MEDIUM HEIGHT (5 GALLON)
(Approximate spacing 3'-4' o.c.)
Artemisia californica / California Sagebrush
Ceanothus thyrsiflorus 'Skylark' / Ceanothus cv
Dendromecon rigida / Bush Poppy
Encelia californica / California Encelia
Garrya elliptica 'James Roof' / Coast Silk Tassel
Heteromeles arbutifolia / Toyon
Lavatera assurgentiflora / Mallow
Lupinus albifrons / Bush Lupine
Prunus ilicifolia lyonii / Catalina Cherry
Rhamnus californica / California Coffee Berry
Rhus ovata / Sugar Bush
Ribes viburnifolium / Evergreen Currant
Rosa californica / California Wild Rose
Sambucus mexicana / Mexican Elderberry
Symphoricarpos albus / Common White Snowberry

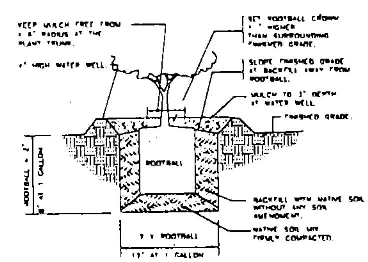
NATIVE GRASSES (SEEDED OR PLUGS @ 6" O.C.)
(Supplemental seeding prior to permanent installation of erosion control blanket)
Elymus glaucus / Western Ryegrass
Nasella pulchra / Purple Needle Grass
Leymus condensatus / Lyme Grass

SHRUBBY GROUNDCOVER: NATIVE, EVERGREEN (1 GALLON)
(Approximate spacing 2'-3' o.c.)
Arctostaphylos hookeri 'Monterey Carpet' / Manzanita
Baccharis pilularis 'Twin Peaks' / Twin Peaks Coyote Brush
Ceanothus griseus horizontalis 'Yankee Point' / California Lilac

HERBACEOUS PERENNIALS-NATIVE (1 GALLON)
Dudleya caespitosa / Sea Lettuce
Epilobium californicum / California Fuschia
Eriogonum arborescens / Santa Cruz Island Buckwheat
Eriogonum giganteum / St. Catherine's Lace
Mimulus aurantiacus / Sticky Monkey Flower
Sisyrinchium bellum / Blue Eyed Grass



1/14 NATIVE SHRUB PLANTING-SLOPE
1" = 1'



2/14 NATIVE SHRUB PLANTING
1" = 1'

LANDSCAPING NOTES:

SEE SHEET 12 FOR PLANTING AND IRRIGATION NOTES.

APPROXIMATE LIMIT OF SCHWAN LAKE WATER SURFACE ELEVATION: 8.3 FT

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

LANDSCAPE PLAN

SCALE 1" = 20'

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3

SHEET NAME: LANDSCAPE PLAN

DRAWING NAME: LANDSCAPE (SHEETS 12,13,14).DWG

DATE	REVISION	BY
1/7/10	Development Permit Submittal #2	KLC
6/10/10	Development Permit Submittal #3	CRC

PROJECT LANDSCAPE ARCHITECT
ANITA KANE

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS
SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
LANDSCAPE PLAN

DRAWN: AK
CHECKED: RB
DATE: 4/17/07
SCALE: 1"=20'
JOB NO. 66020
SHEET 14 OF 17

ATTACHMENT 2

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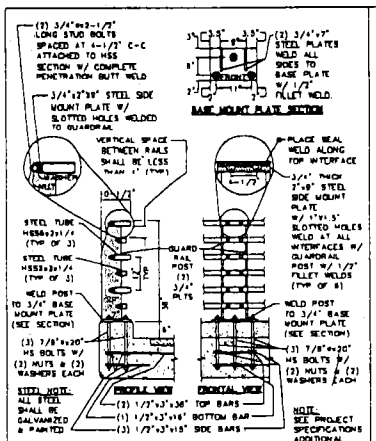
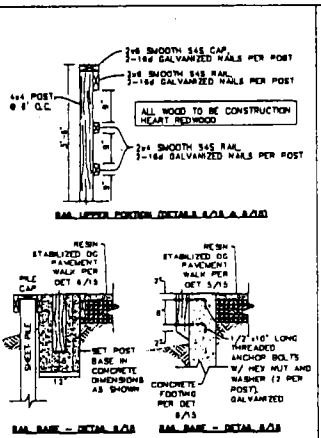


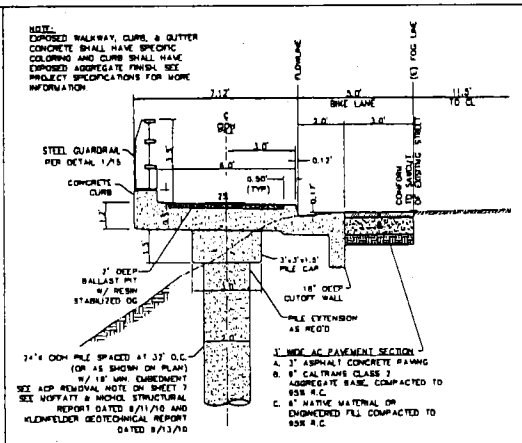
STEEL GUARDRAIL

1/15



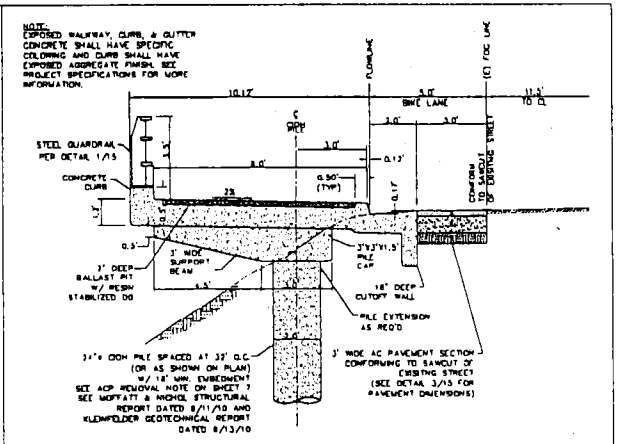
WOOD RAILING

2/15



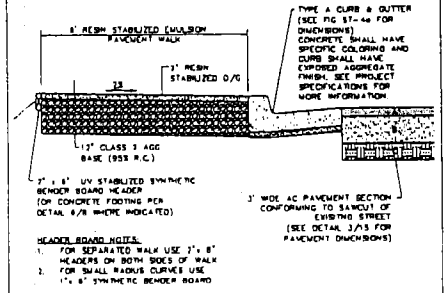
WALKWAY DECK & SUPPORT IN 6' WIDE SECTION

3/15



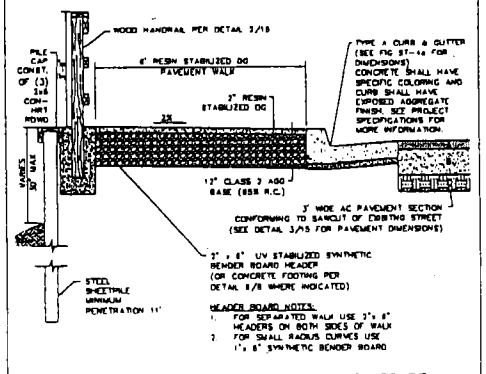
WALKWAY DECK & SUPPORT IN 9' WIDE SECTION (OBSERVATION AREA)

4/15



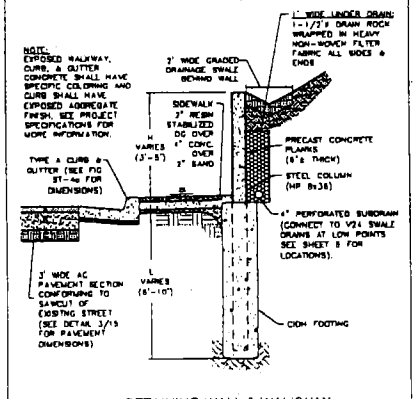
RESIN STABILIZED DG PAVEMENT

5/15



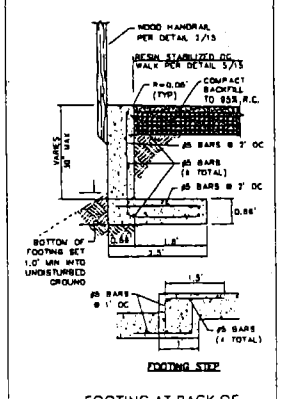
RESIN STABILIZED DG WALKWAY ON-GRADE
(SHEET PILE SUPPORTED SECTION)

6/15



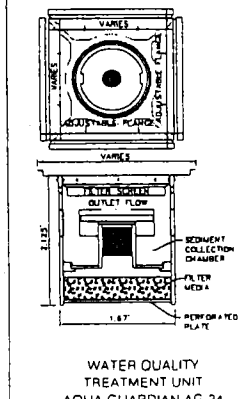
RETAINING WALL & WALKWAY
SOUTH OF PROSPECT STREET

7/15



FOOTING AT BACK OF
ON-GRADE WALKWAY

8/15



WATER QUALITY
TREATMENT UNIT
AQUA GUARDIAN AG-24
OR APPROVED EQUAL

9/15

ATTACHMENT 2

DETAILS

N.T.S.

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3	
SHEET NAME: DETAILS	DRAWING NAME: DETAILS (SHEETS 15).DWG

REVISION	DATE	BY
Development Permit Submittal #2	1/7/08	JCW
Development Permit Submittal #1	5/24/07	CRC

PROJECT ENGINEER
CASEY R. CARLSON

COUNTY OF SANTA CRUZ – DEPARTMENT OF PUBLIC WORKS

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE – 9TH AVE TO 12TH AVE
DETAILS

DRAWN: CRC
CHECKED: JSL
DATE: 4/12/07
SCALE: 1" = 20'
JOB NO. 86020
SHEET 15 OF 17

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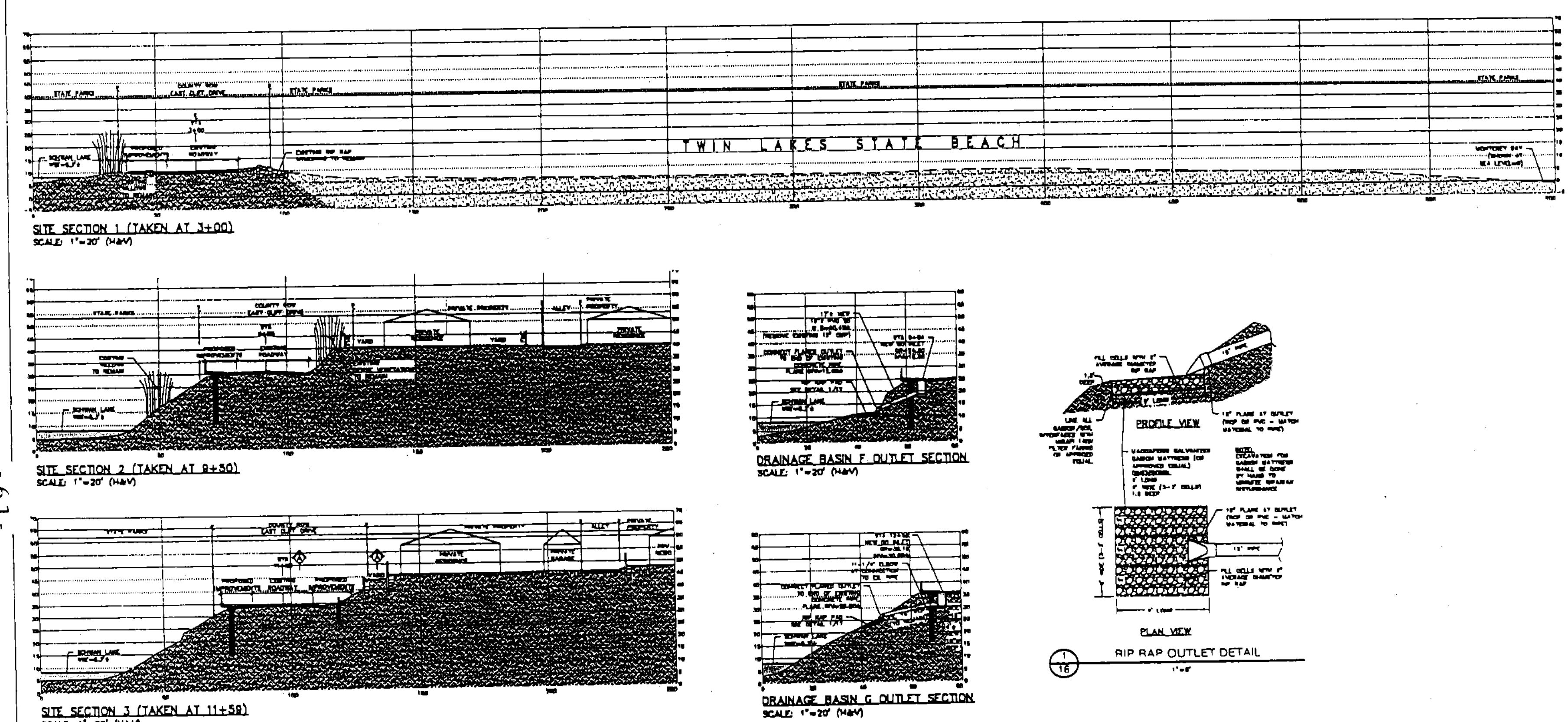

ROADWAY CROSS SECTIONS

SCALE 1" = 20'

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES

SHEET NAME: ROADWAY CROSS SECTIONS

DRAWING NAME: CROSS SECTIONS (SHEETS 14,17).DWG

DATE	REVISION	BY
1/7/10	Development Permit Submittal #2	JCW
9/15/10	Development Permit Submittal #3	CRC

PROJECT ENGINEER

CASEY R. CARLSON

COUNTY OF SANTA CRUZ – DEPARTMENT OF PUBLIC WORKS

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS

EAST CLIFF DRIVE – 9TH AVE TO 12TH AVE

DETAILS & SITE SECTIONS

DRAWN: CRC

CHECKED: JSL

DATE: 1/17/07

SCALE: 1"=20'

JOB NO. 66020

SHEET 16 OF 17

9/20/2010 9:49:53 AM

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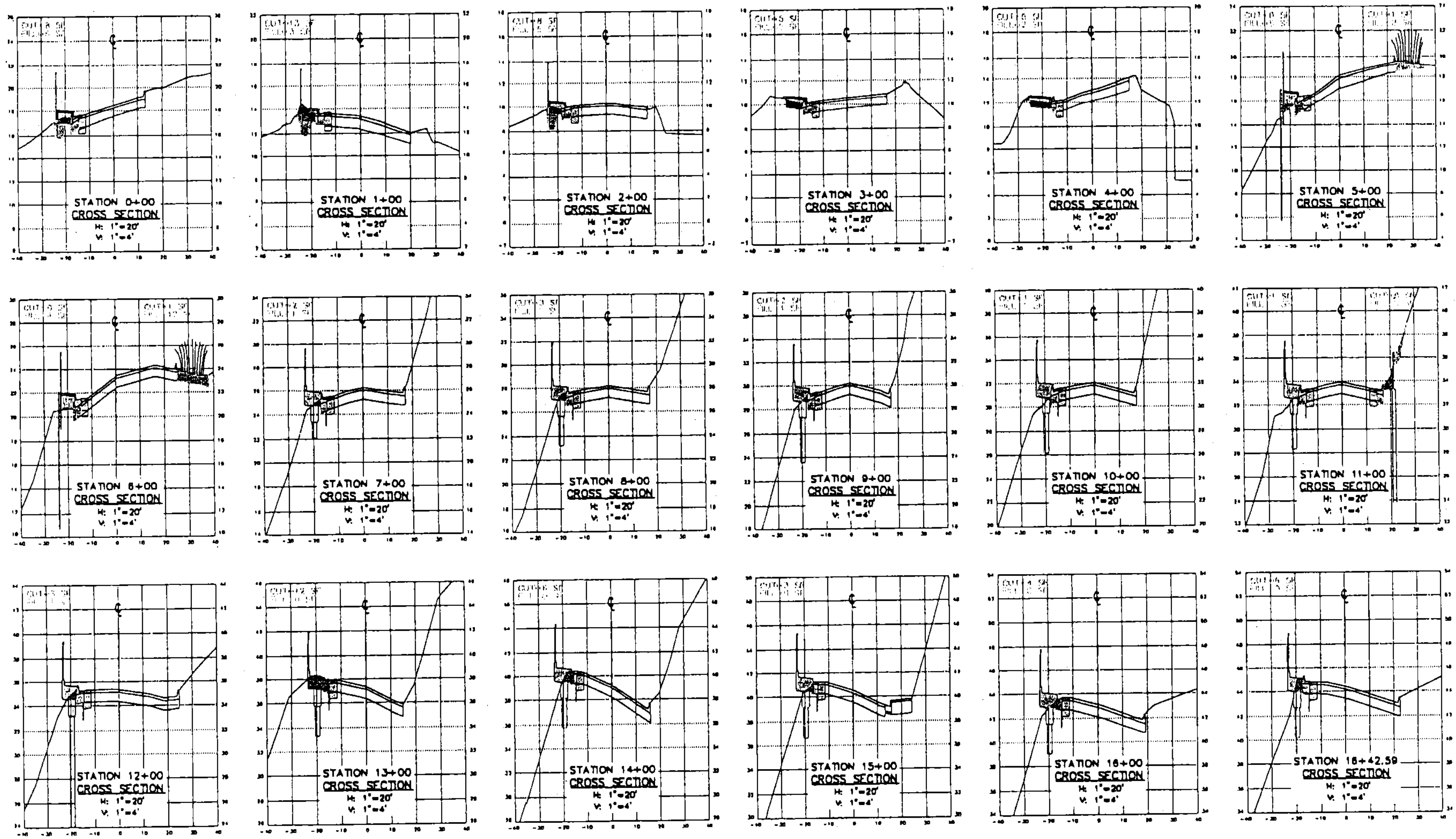
ATTACHMENT 2



ROADWAY CROSS SECTIONS

SCALE 1" = 20'

NO FILL MATERIAL, SOIL, DEBRIS, CEMENT WASHINGS, OR OTHER MATERIALS SHALL BE PLACED WHERE THEY MAY ENTER SCHWAN LAKE, STORM DRAINS OR WATERWAY.

FOR REDUCED PLANS ORIGINAL SCALE IN INCHES

SHEET NAME: ROADWAY CROSS SECTIONS

DRAWING NAME: CROSS SECTIONS (SHEETS 16,17).DWG

DATE	REVISION	BY
1/7/10	Development Permit Submittal #2	JCM
8/18/10	Development Permit Submittal #3	CRC

PROJECT ENGINEER

CASEY R. CARLSON

COUNTY OF SANTA CRUZ - DEPARTMENT OF PUBLIC WORKS

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS

EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE

ROADWAY CROSS SECTIONS

DRAWN: CRC
CHECKED: JSL
DATE: 4/13/07
SCALE: 1"=20'
JOB NO. 66020
SHEET 17 OF 17

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ATTACHMENT 2

COUNTY OF SANTA CRUZ
DEPARTMENT OF PUBLIC WORKS

701 Ocean Street – 4th Floor, Santa Cruz, CA 95060
Phone: (831) 454-2160 Fax: (831) 454-2385

STORMWATER MANAGEMENT REPORT

FOR

SCHWAN LAKE
PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE – 9TH AVE TO 12TH AVE

RDA JOB NO. 66020

September 10, 2010

PREPARED BY:
CASEY CARLSON, CIVIL ENGINEER
PUBLIC WORKS – REDEVELOPMENT DIVISION

BASIS OF DESIGN:
1. COUNTY DESIGN CRITERIA, JUNE 2006 EDITION
2. PROJECT PLANS & SPECIFICATIONS

ATTACHMENT 3

Table of Contents

ATTACHMENT 3

1.0 INTRODUCTION

The proposed project is located on East Cliff Drive between the cross streets of 9th Avenue and 12th Avenue in the Leona Creek Drainage Basin of Flood Zone 5 in Santa Cruz County. Project improvements encompass an area of approximately 0.80 acres. The project portion of East Cliff Drive runs from 9th Avenue east to the 11th Avenue Spur, then turns north and runs past Prospect Street to 12th Avenue. The primary goal of the project is to provide pedestrian access from 9th Avenue to 12th Avenue, and to also provide access to Prospect Street. The project will provide this access with a pile-supported walkway on the west side, a short retaining wall and sidewalk east side (adjacent to Prospect Street), and a crosswalk connecting these two segments. In addition, the project will provide new landscaping features and upgrades to the existing storm drainage system and the existing parking lot at the 11th Avenue spur. Impact to site drainage due to project activities is relatively minor, being primarily repair and water quality upgrades to the existing drainage systems.

2.0 BASIS OF CALCULATIONS

- The **Rational Formula** (below) is used to determine Surface Flow Rates:

$$Q=C_aCi_aiA$$

Such that:

$Q=$	Estimated Peak Surface Runoff (CFS)
$C_a=$	Antecedent Moisture Factor (Unitless)
$C=$	Runoff coefficient (Unitless)
$i_{a=}$	Rainfall Intensity Adjustment Factor (Unitless)
$i=$	Rainfall Intensity (in/hr)
$A=$	Area of Site (Acres)

- **Manning's Equation** (below) is used to determine Open Channel Flow:

$$Q=1.486n^{-1}AR^{2/3}S^{1/2} \quad \text{and} \quad R=A/P$$

Such that:

$Q=$	Flow in Channel (CFS)
$n=$	Manning's roughness coefficient (unitless)
$A=$	Flow Area of Channel (SF)
$P=$	Wetted Perimeter of Channel (FT)
$R=$	Hydraulic Radius of Channel (FT)
$S=$	Longitudinal Slope in Channel (FT/FT)

ATTACHMENT 3

3.0 DESCRIPTION OF SITE DRAINAGE PATTERNS

DESCRIPTION OF SITE DRAINAGE BASINS	
BASIN	**DRAINAGE BASIN DESCRIPTION**
A*	Basin drains east to a direct connection with the Schwan Lake/ East Cliff Culvert
B	Basin drains overland south across East Cliff Drive to Twin Lakes State Beach
C	Basin drains southeast to Schwan Lake via a rip rap outlet located east of the intersection of 9th Ave & Schwan Lake Drive
D	Basin drains west to a direct connection with the Schwan Lake/ East Cliff Culvert
E	Basin drains to Twin Lakes State Beach via an existing outlet through rip rap armoring
F*	Basin drains southwest to Schwan Lake via a rip rap outlet located north of the intersection of 11th Ave & East Cliff Drive
G*	Basin drains southwest to Schwan Lake via a rip rap outlet located west of the intersection of Prospect St. & East Cliff Drive

DESCRIPTIONS OF SITE DRAINAGE SUB-BASINS	
SUB-BASIN	**DRAINAGE SUB-BASIN DESCRIPTION**
A1	Encompasses Large portion of upstream tributary drainage from 7th Ave (East Cliff Drive to north of Eaton St)
A2*	Area drains southeast to GO Inlet at the intersection of 9th Ave & East Cliff Drive , and from there to adjacent manhole
B	Area drains overland south across East Cliff Drive to Twin Lakes State Beach
C	Area drains southeast to Schwan Lake via a rip rap outlet located east of the intersection of 9th Ave & Schwan Lake Drive
D	Area drains west to a direct connection with the Schwan Lake/ East Cliff Culvert
E	Area drains to Twin Lakes State Beach via an existing outlet through bluff armoring
F*	Area drains southwest to Schwan Lake via a rip rap outlet located north of the intersection of 11th Ave & East Cliff Drive
G1*	Area drains west to a proposed GO inlet at the S/E corner of the intersection of Prospect St and East Cliff Drive
G2*	Area drains south to an existing GO inlet at the N/E corner of the intersection of Prospect St and East Cliff Drive

* DRAINAGE BASIN AND SUB-BASIN NOTES (DENOTED BY ASTERISK):

1. Sub-Basin A2 will be redirected in post-development, this sub-basin originally drained directly to Schwan Lake
2. Sub-Basin G1 will be redirected in post-development, this sub-basin originally drained further south to Area E
3. Basins F & G will be upgraded to have rip rap stabilized outlets (current outlets are not stabilized)

ATTACHMENT 3

4.0 ANALYSIS & DISCUSSION

HYDROLOGY (OVERLAND FLOW):
Calculations for project post-development overland flows are shown in the "Hydrology Calculations" section of the report. Overland flows were calculated for all sub-basins individually for the 10 and 25-year storm events; these values are used for further analysis in subsequent section of the report. A table summarizing these calculations is shown in Section 5.0.

GUTTER CAPACITY CHECK:
Calculations for project gutter capacity are shown in the "Gutter Capacity Check" section of the report. Gutter capacity was checked for the 10 and 25-year storm events; Sub-Basins D&F are the only project areas requiring gutter flow analysis. Calculations show that these areas are mostly contained in the gutter during larger storm events, extending approximately 1 ft into the bike lane during the 25-year storm event.

HYDRAULIC CAPACITY CHECK (PIPE FLOW):
Calculations for project post-development hydraulic capacity (pipe flow) are shown in the "Hydraulic Capacity Check for Site Drainage Systems" section of the report. Hydraulic Capacity was checked for the 10 and 25-year storm events. Only Basins A and G were included in these calculations (all other basins had a single pipe section at a steep grade with a direct outlet). Calculations show that all junctions have a positive freeboard and should not overtop (through the 25-year storm event). The proposed GO inlet for Sub-Basin G1 will have a low freeboard (8" for 10 year event, 6" for 25-year event), but will not overtop. The inlet at G1 does not pose a major concern; if it is overtopped in events exceeding the 25 year event, the excess will simply be intercepted by the inlet for Basin E downstream.

ENERGY DISSIPATER DESIGN:
Calculations for energy dissipater design are shown in the "Energy Dissipater Design" section of the report. Energy Dissipaters are required for Basins F & G, these are for two existing outlets along the east edge of Schwan Lake. These outlets are currently unprotected and subject to erosion, the project proposes to upgrade these outlets with energy dissipaters to slow and filter stormwater. These dissipaters will consist of rock filled gabion mattresses; details for these are shown on the project plans and are included in this report for reference. In addition to the dissipaters, the inlets for both basins will be upgraded to GO inlets and the existing partially-collapsed pipe for Basin F will be replaced.

WATER QUALITY TREATMENT UNIT SIZING:

Calculations for proposed water quality treatment units are shown in the "Water Quality Treatment Unit Sizing" section of the report. As a best management practice, water quality treatment units will be installed in the upgraded GO inlets in Basins/Sub Basins A2, D, F, G1, and G2. The purpose of these units is to provide water quality treatment for street runoff. The units have been sized based on the standard California Water Quality Treatment Intensity (I=0.2 in/hr). Based on the calculations, the Aqua Guardian AG-24 catch basin filter insert (or approved equivalent) provides sufficient capacity for treatment of all sub-basins; a detail for this unit is shown on the project plans, and has been included in this report for reference. Maintenance information has also been included in this report for reference.

LAKE BASE FLOOD ELEVATION:

Calculations for lake base flood elevation are shown in the "Schwan Lake Base Flood Elevation Calculations" section of the report. In the Incomplete Application Letter for this project dated 2/5/10, Environmental Planning Comment #3 stated: "Demonstrate how the base flood elevation (BFE) of the lake will not be increased by the proposed improvements." The calculations in this section have been prepared in response to this comment, they quantify the amount of additional stormwater that project improvements could expect to generate in a 100 year storm, and extrapolate this into expected lake level rise. Based on the calculations, there will be no appreciable rise in lake water level due to project improvements.

5.0 SUMMARY

The table below summarizes on-site flows and treatment unit calculations.

STORMWATER FLOW SUMMARY				
Sub Basin	Q_{10} (CFS)	Q_{25} (CFS)	Q_{WQ} (CFS)	Q_{AG-24} (CFS)
A1	20.48	27.03	-	-
A2	0.17	0.22	0.02	1.2
B	7.20	9.50	-	-
C	12.99	17.14	-	-
D	0.87	1.15	0.09	1.2
E	2.52	3.33	-	-
F	0.54	0.72	0.05	1.2
G1	2.67	3.52	0.26	1.2
G2	3.54	4.67	0.35	1.2

TABLE KEY

Q10 = Post Development Flow for a 10-Year Storm Event.
Q25 = Post Development Flow for a 25-Year Storm Event.
Qwq = Required Treatment Flow based on California Water Quality Standards.
Qag-24 = Treatment flow provided by AG-24 unit per manufacturer's data.

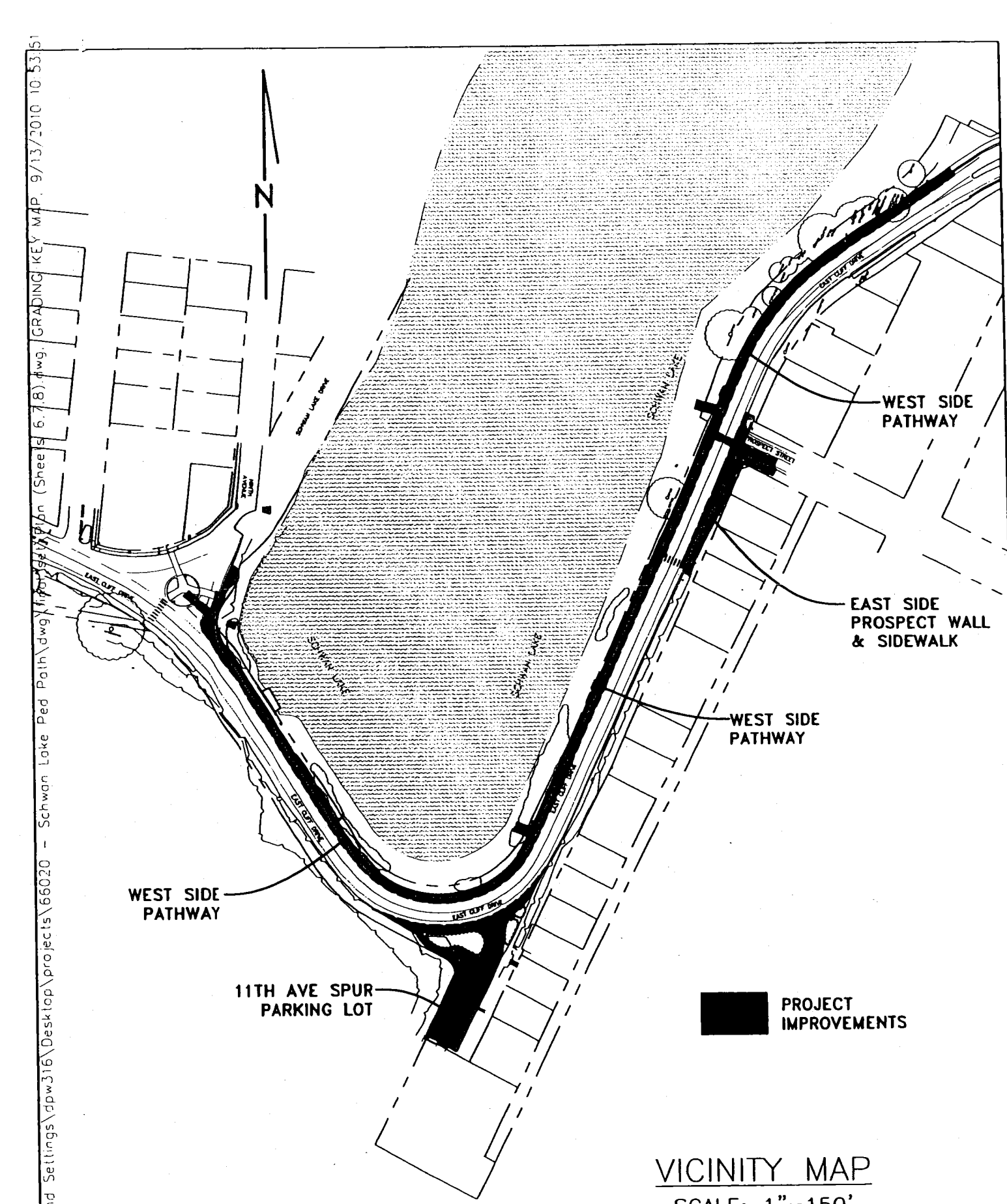
6.0 CONCLUSIONS

As discussed in Section 4.0, all stormwater capacity elements for this project (Pipe Flow, Gutter Capacity, & Energy Dissipation) have been checked and have been found to be adequately sized for expected flows.

To improve the water quality of site stormwater, stormwater filtration inserts for site GO inlets have been sized and specified on the project plans (see Section 4.0 for discussion of method of analysis). Based on the calculations, the Aqua Guardian AG-24 catch basin filter insert (or approved equivalent) has been chosen for use on this project. The use of these inserts should significantly improve the quality of stormwater leaving the site during low intensity "first flush" storm events. The use of energy dissipaters on the existing outlets of basins F & G should prevent outlet erosion and thereby also improve water quality.

The Environmental Planning department had concerns regarding a rise in lake associated with project improvements. As discussed in Section 4.0, the calculations show that there will be no appreciable rise in lake water level due to project improvements.

It is our opinion that the proposed project improvements are in conformance with County Drainage Standards and will not cause any adverse downstream impacts.



VICINITY MAP

SCALE: 1"=150'

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE – 70 AVE TO 12TH AVE

ATTACHMENT 3

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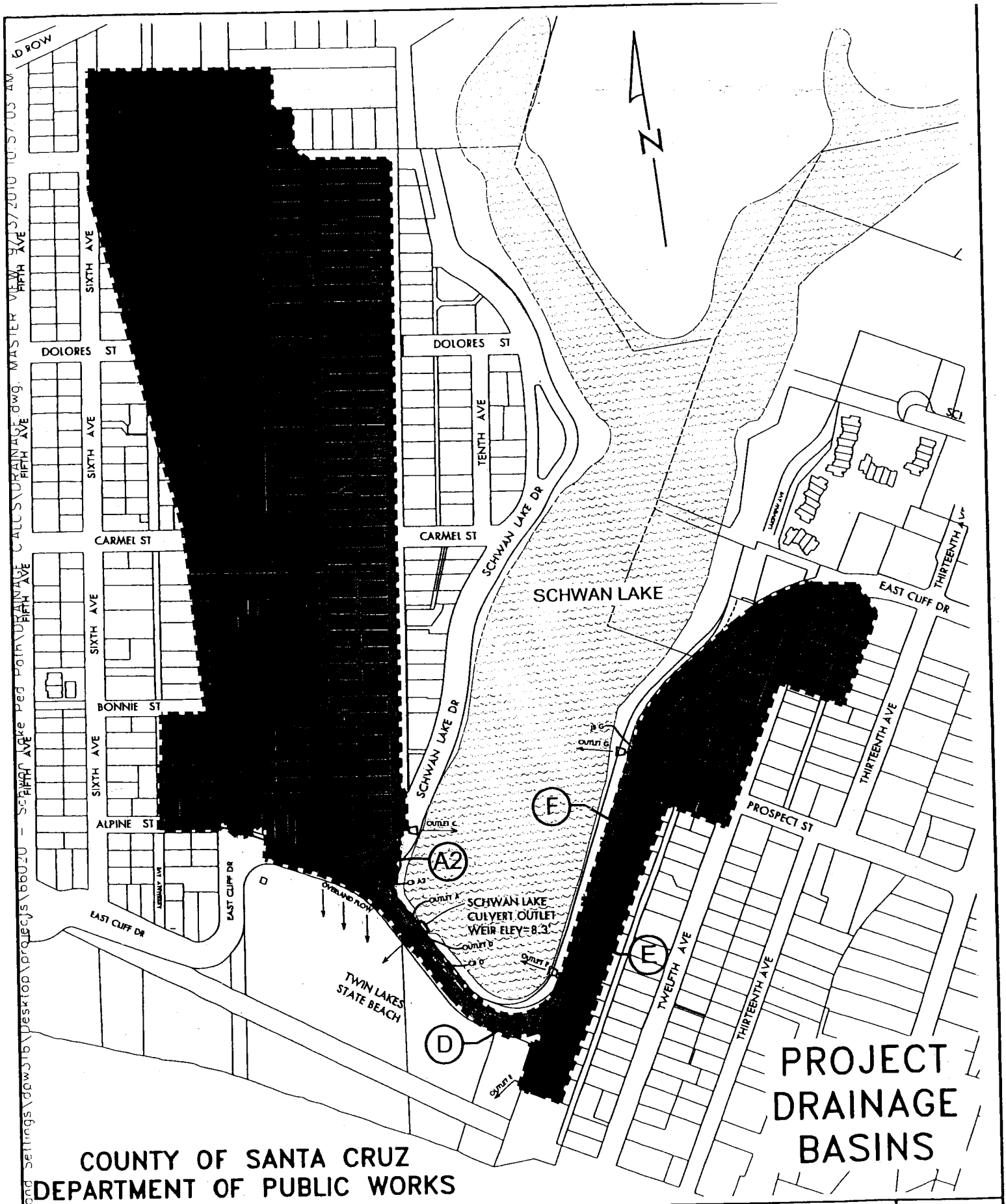


PROJECT DRAINAGE BASINS

COUNTY OF SANTA CRUZ
DEPARTMENT OF PUBLIC WORKS

SCHWAN LAKE
PEDESTRIAN IMPRORVEMENTS
EAST CLIFF DRIVE: 9TH TO 12TH

DESIGN:	CRC	DATE:	9-10-10	SHEET
DRAFTING:	CRC	SCALE:	1"=300'	
CHEC	ISL	JOB NO:	66020	

ATTACHMENT 3

ARBOR ART
Tree Service

RECOMMENDED TREE PROTECTION MITIGATIONS FOR THE EAST CLIFF PEDESTRIAN WALKWAY PROJECT BETWEEN 9TH AVENUE AND 12TH AVENUE SANTA CRUZ

REQUESTED BY:
JIM DAVIES, PROJECT MANAGER
SANTA CRUZ COUNTY REDEVELOPMENT AGENCY
GOVERNMENTAL CENTER
701 OCEAN STREET, ROOM 510
SANTA CRUZ, CA 95060

SITE INSPECTION BY:
NIGEL BELTON
WCISA CERTIFIED ARBORIST WE-410A
AUGUST 30, 2007
(See attached addendum dated January 6, 2010)

JOB: RDA-EAST CLIFF DRIVE PEDESTRIAN WALKWAY – 9/07

WE-410A

Ph / Fax (831) 688-1259
P.O. Box 1744 ~ Aptos, CA 95001 ~ CCL # 657930 ~ nigelbolton@sbcglobal.net

ATTACHMENT 4

RECOMMENDED TREE PROTECTION MITIGATIONS FOR THE EAST CLIFF PEDESTRIAN WALKWAY PROJECT BETWEEN 9TH AVENUE AND 12TH AVENUE SANTA CRUZ

PAGE 4.

Pier #15 (Station 15+40) - continued:
that any significant buttress roots located in close proximity will not be significantly damaged during the drilling procedure. This pier site should be hand excavated before drilling work proceeds to determine if any roots over two inches in diameter are present. Any roots of this size should be hand pruned to avoid damage.
- Prune the encroaching Eucalyptus canopy back for a 30 foot clearance above the pier site for equipment access.
- Remove one five inch diameter limb located at 12 feet above the road level on the co-dominant Eucalyptus tree (42 and 36 inch DBH) to the north east of pier #15. This limb encroaches over the pier.

Pier #16 (Station 15+63): This pier is located 7.5 feet east of a co-dominant Tasmanian Blue Gum Eucalyptus (42 and 36 inch DBH).
- The pier site should be hand excavated to a depth of 36 inches to determine if roots over two inches are present. Any roots over two inches diameter should be hand cut to avoid excessive damage during the drilling procedure.
- This tree encroaches over the pier site and requires pruning to allow for equipment access.

Summary:

1. Pier #15 should be re-located to be situated no closer than six feet away from the base of the adjacent 30 inch DBH Eucalyptus tree.

2. The following pier sites should be hand dug before drilling work proceeds to determine if roots over two inches in diameter are present. Any roots over two inches in diameter should be hand pruned.

- Piers #1, #15 and #16.

3. The trees canopies in close proximity to the pier locations noted below will require overhead pruning to provide access for drilling equipment. A 30 foot vertical clearance is required above these pier locations. The clearances should extend six feet horizontally behind these locations.

- Piers #1, #2, #8, #9, #12, #14, #15, and #16.

ATTACHMENT 4

RECOMMENDED TREE PROTECTION MITIGATIONS FOR THE EAST CLIFF PEDESTRIAN WALKWAY PROJECT BETWEEN 9TH AVENUE AND 12TH AVENUE SANTA CRUZ

Summary (continued):

4. The recommended construction period protective fencing should be installed parallel to the walkway at as close as possible to the edge of the construction activities. Plastic snow fencing attached to steel fence standards will be appropriate in this context.

Please call me if you have any questions.

Sincerely yours

Nigel Belton

ATTACHMENT 4

ARBOR ART

Tree Service

1/6/2010

James Davies
Project Manager
Santa Cruz County Redevelopment Agency
Governmental Center
701 Ocean Street, Room 510
Santa Cruz, CA 95060

Subject – An addendum to the report concerning the protection of trees for the East Cliff Pedestrian Walkway Project, dated August 30, 2007

Dear Mr. Davies,

This letter pertains to the report dated August 30, 2007.

I have reviewed the report and checked the site to determine if any of the recommendations regarding tree protection need to be changed. The site conditions have not changed in the time elapsed since the original survey and subsequently, the recommendations in the report remain relevant.

Sincerely yours

Nigel Belton

WE-4004A

Ph / Fax (831) 688-1239

P.O. Box 1741 ~ Aptos, CA 95001 ~ CCI # 657930 ~ nigelbelton@sbcglobal.net

ATTACHMENT 4

COUNTY OF SANTA CRUZ

Melissa Copy
FILE (07)-0198

PLANNING DEPARTMENT
701 OCEAN STREET, ROOM 400, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
TOM BURNS, DIRECTOR

DATE 07/17/2007

County of Santa Cruz RDA & Public Works
701 Ocean Street, Rm 510
Santa Cruz, CA 95060

Subject: Biotic Report Review
APN: 027-191-03 & 027-201-01
Owner: State of California
App #: 07-0198, East Cliff Drive Pedestrian Walkway

JUL 20 2007

Dear County of Santa Cruz RDA & Public Works

The review of your biotic assessment by John Gilchrist and Associates, dated March 2007, has been completed and the report has been accepted. A copy of the review letter from our consultant is attached for your reference.

Conditions Regarding Biotic Resources:

As long as the development proceeds as proposed and the 10 recommendations put forth in the above-cited report are implemented, this project will have no significant biological impacts. Prior to the issuance any building permit or approval of additional discretionary permit(s) the final plans and plan notes must be reviewed by Environmental Planning staff to ensure that all recommendations set forth in the biotic assessment have been incorporated.

Please call me if you have any questions about this letter.

Sincerely,

Matthew Johnston
Resource Planner

FOR: Claudia Slater
Principal Planner
Environmental Planning

Cc: Jessica Degrassi

ATTACHMENT F

ECOSYSTEMS WEST

July 5, 2007

Matt Johnston
Planning Department
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Re: Biological Review of the Biotic Assessment for the Schwan Lake Pedestrian Pathway on East Cliff Drive, 9th Ave. to 12th Ave. Santa Cruz County, CA, Application No. 07-0198

Dear Matt:

This letter summarizes my review of the "Biotic Assessment" for the proposed "Schwan Lake Pedestrian Pathway East Cliff Drive between 9th and 12th Avenues in Santa Cruz, California" prepared by John Gilchrist & Associates dated March 2007. The proposed pathway project is located on the southern and eastern edges of Schwan Lake along the right-of-way of East Cliff Drive between 9th and 12th Avenues in the unincorporated area of Live Oak in Central Coast Santa Cruz County, California. The project will include the construction of a curb, gutter and 6-foot wide pedestrian pathway on the Schwan Lake side of East Cliff Drive. The pathway will be a concrete deck on piers or on conventional grade. The total length of the pathway is approximately 1650 feet in length.

A site visit was conducted by Bill Davilla of EcoSystems West on June 26, 2007. During this visit I walked the entire length of the proposed pedestrian pathway to review the project footprint and compare my observations with the findings of the biotic assessment prepared by John Gilchrist & Associates. As characterized in the assessment report, the proposed footprint is comprised primarily of ruderal habitat with an overstory of coast live oak and blue gum on the eastern half of the pathway and arroyo willow and freshwater marsh on the south side of the lake. The ruderal habitat is characterized by non-native grasses and non-native herbs. Two special-status plant communities were documented adjacent to the pathway. These include Arroyo willow and Freshwater marsh vegetation types. The latter is dominated primarily by bulrush. No direct impacts will occur to these two special-status plant communities.

No special-status plants species were documented during the course of surveys. Surveys were comprehensive and conducted during the appropriate flowering phenology periods of special-status plant species known to occur in the vicinity of the project area. Surveys were floristically conducted and the report includes a comprehensive plant species list (confirmed by this reviewer). No special-status amphibians, reptiles, or insects were observed in the project area. Several special-status birds were documented on the lake and/or nesting in the large trees that ring the lake in the project area. In particular, a large rookery of double-crested cormorants were documented and observed by this reviewer in the large blue gum eucalyptus trees that ring the lake. One roost tree is located over the pathway near the intersection of East Cliff Drive and Prospect Avenue. In

819 1/2 Pacific Ave. · Suite 4, Santa Cruz, CA 95060
Phone 831-429-6[illegible] · FAX 831-429-8742

ATTACHMENT

addition, several special-status birds (i.e., brown pelican) were observed on the lake surface and shoreline.

John Gilchrist & Associates documents that the majority of development will occur within the ruderal habitat adjacent to East Cliff Drive. This would not be considered a significant impact. They raised concern that project construction staging may adversely affect the arroyo willow and freshwater wetland habitats on the south end of the lake. They recommend that the construction staging areas be placed outside these habitats. Staging could take place on the pavement at the end of 9th Avenue with out closing access to 9th entirely on that end of road. If willows need to be removed then they should be replanted at a 3:1 ratio as recommended in the assessment. All other vegetation mitigation measures should be followed as recommended in the report. Initial construction grading and vegetation removal should begin after August 15th to avoid nesting and roosting cormorants and other nesting birds. If construction occurs during the nesting season, then buffers proposed should be installed around the nest trees and the nesting birds monitored to assess if the buffer is sufficient or requires adjustment. If construction occurs during the nesting season, the roost trees should be monitored on a weekly basis to observe project affects. The other prescribed recommended wildlife mitigation measures should be followed as prescribed.

If prescribed mitigation measures are implemented as prescribed the project should not result in significant unmitigatable impacts. Should you require further clarification of this review, please don't hesitate to contact me.

Sincerely,

Bill Davilla
Principal/Senior Botanist

ATTACHMENT 5

BIOTIC ASSESSMENT

SCHWAN LAKE PEDESTRIAN PATHWAY
EAST CLIFF DRIVE, 9TH AVE. TO 12TH AVE.
SANTA CRUZ COUNTY, CALIFORNIA

Prepared for:

James Davies
County of Santa Cruz
Redevelopment Agency

Prepared by:

John Gilchrist & Associates

March 2007
Revised: August 31, 2009

ATTACHMENT 6

BIOTIC ASSESSMENT
SCHWAN LAKE PEDESTRIAN PATHWAY

SUMMARY

The County of Santa Cruz Department of Public Works is planning a new pedestrian walkway along East Cliff Drive. The proposed walkway extends from the intersection with Ninth Avenue along the southern and eastern edges of Schwan Lake to near Twelfth Avenue. East Cliff Drive at Schwan Lake is a heavily used corridor with a relatively narrow bike path and without a safe pedestrian pathway. The purpose of the proposed project is to provide an adequate bikeway and separated, safe pedestrian path. The path will also serve to provide an essential link in the continuation of the California Coastal Trail system and a local segment of the Monterey Bay National Marine Sanctuary Trail.

The proposed project includes construction of a curb, gutter and a 6-foot wide pedestrian pathway on the Schwan Lake side of the roadway, from the existing crosswalk at Ninth Avenue to the existing sidewalk west of Twelfth Avenue. Because of substandard soil conditions along the easterly edge of Schwan Lake the pathway in this area will be structurally supported on piers drilled into competent underlying soils. A concrete deck will be constructed on top of the piers to provide the path. The path beginning at the 9th Avenue crosswalk around the southerly end of Schwan Lake will be a conventional on-grade path, in some areas supported by a small retaining wall. Another short section of resin stabilized decomposed granite sidewalk will be constructed on the inland side of East Cliff Drive beginning at Prospect Avenue and continuing south for about 170 feet. After the paths are built, an asphalt bike lane will replace the existing bike lane on the Lake edge of the roadway. Final construction will add a railing along the edge of the elevated path, and upgrades to storm drains and insertion of filter materials to improve Schwan Lake water quality.

The project will remove a portion of existing ruderal vegetation adjacent to the roadway which is not considered a significant biologic impact. Elimination of invasive exotic plants is seen as a benefit from the project. Construction staging could also adversely affect sensitive willow riparian and emergent wetland plant communities. Mitigation has been proposed to minimize these impacts. No sensitive plant species will be affected by the project. Construction activities have a slight potential to affect listed sensitive animal species, including California red-legged frog and San Francisco dusky-footed woodrat. Again, measures are available to mitigate any potential impacts. Project construction could also have adverse effects on nesting bird species. If construction cannot be done outside the nesting season, pre-construction surveys and buffer zones around nest sites are recommended until nesting has terminated. With mitigation, all potentially significant biologic impacts can be reduced to insignificant levels.

ATTACHMENT 6

IMPACTS and MITIGATION

The proposed project involves construction of a pedestrian path and the installation of retaining walls. The standard thresholds of significance presented in CEQA were used to evaluate project impacts and to determine if the proposed project poses significant impacts to biological resources. For this analysis, significant impacts are those that substantially affect either:

- A plant species or community listed as sensitive or rare by the State
- A wildlife species listed or proposed for listing by State or Federal governments as rare, threatened or endangered, including its habitat.
- Nesting habitat for a State species of special concern.
- Nesting birds protected under the Federal Migratory Bird Treaty Act or Section 3503.5 of CDFG Code.
- A habitat recognized as sensitive by State and County of Santa Cruz (i.e., riparian habitat).

VEGETATION

Impact: The on-grade path footprint occurs largely within non-native ruderal vegetation, requiring removal of that vegetation type. This is not considered a significant biotic impact. The 5-foot extension (toward the Lake) for construction staging will likely require removal of up to 18 small arroyo willows and possibly some emergent wetland vegetation in an area near the southeasterly bend of East Cliff Drive. As both habitats are considered sensitive by the state and county, this is considered a significant biotic impact which can be mitigated (see below). The project would also require pruning of native willow and coyote brush near 9th Ave., which is not considered significant as these species will recover within several years. The footprint for the 1050 foot above grade path is also largely within ruderal vegetation, although some mature willows may need to be trimmed to accommodate the path near the southerly end of this section. This is also not considered significant as arroyo willow will grow back rapidly. Construction staging within the 10-foot construction staging zone will require removal of 2 to 3 mature willows at the southerly end and limbing of several coast live oaks and eucalyptus at the northerly end of this segment, if the full ten feet is required. Removal of the mature willows should be avoided (see below). No sensitive plant species will be affected by project construction.

1. Recommended Mitigation—Riparian and Wetland Vegetation Protection. Sensitive vegetation, including willows, emergent wetlands and large native and non-native trees will be delineated by temporary fencing to minimize incursion by construction staging or other construction activities. To the maximum extent possible the construction staging zone for the at-grade path should avoid removal of or impacts to the immature willows and emergent wetlands. If any immature willows are removed they should be replaced after construction, in the same area, with the same willow species on a 3:1 basis. Willows in this area cut to ground level should be monitored after construction by a restoration ecologist to determine whether they survive and sprout, and if not replaced as per the above ratio. These actions should be incorporated into the landscape plan. The construction staging for the above-grade structural path should be reduced to avoid any removal or permanent impacts to mature arroyo willows. If trimming of coast live oaks near the northerly end of the path is necessary, it should be conducted under guidance and supervision of a licensed arborist. If done during nesting season a biologist should conduct a nesting survey 1-2 days in advance.

2. **Recommended Mitigation—Exotics Removal.** All non-native, invasive understory vegetation in the construction zone, staging areas and in the immediate vicinity of the project site should be removed. Species removed will include English ivy, German ivy, Himalayan blackberry, pampas grass and ice plant. Complete removal from the Lake bank slopes could have a beneficial effect on the habitat. However, most of the invasive species are within the State Parks property which neither the County nor the Redevelopment Agency have any authority or responsibility for vegetation management. A consulting restoration ecologist or vegetation specialist from County staff should be on-site at the beginning of construction to identify species to be removed and natives that will be protected. To minimize disturbance, hand removal or use of small equipment is preferred. After construction, appropriate native wetland and coastal upland species should be planted to stabilize disturbed soil, control erosion, and enhance existing natural vegetation, as per the landscape plan.

WILDLIFE

Impact—California Red-legged Frog. Construction activities may result in the unintentional loss of dispersing individuals using the project alignment as over-summering habitat. Although the habitat appears marginal for CRF and the likelihood of their occurrence seems to be very low, the absence of CRF habitat could not be determined during this study. Therefore, the following measures are recommended:

Recommended Mitigations—California Red-legged Frog:

3. Conduct a pre-construction survey for threatened California red-legged frog not more than 72 hours prior to vegetation removal and construction activities. If frogs are present on the construction site, consult with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), prior to the start of construction activities. No work shall begin until authorized by the USFWS and CDFG.

4. Require that a qualified wildlife biologist provide an educational seminar with the work crew, prior to the start of construction activities. The seminar should address legal status, natural history and frog identification, and measures to implement if red-legged frogs are observed on the site.

5. A qualified biologist should be present to monitor initial vegetation removal. The vegetation removal should be performed with the use of hand held tools. The vegetation should be removed before any ground disturbance is performed on-site. Use of heavy equipment, staged in open areas, may also be appropriate to carefully remove large debris, under the supervision of a qualified biologist. If red-legged frogs are observed on-site after work has commenced, operations shall cease and the USFWS and CDFG should be contacted immediately for further guidance. Work shall not resume until authorized by these agencies.

Impact--Southwestern Pond Turtle. The project alignment does not support suitable upland nesting habitat for western pond turtles, due to the lack of open habitat. In addition, except for nesting activity, pond turtles are not expected to inhabit the surrounding uplands but could be found within the Lake that lies outside the construction zone. Therefore, no additional protection measures are recommended.

Impact--S. F. Dusky-footed Woodrat. The absence of woodrat habitat could not be determined during this study, although, the likelihood of this species occurrence is considered low. Construction activities could result in the loss of habitat, nests and/or individuals.

Recommended Mitigations—S.F Dusky-footed Woodrat

6. A qualified biologist should perform a pre-construction survey within 30 to 60 days prior to any ground-disturbing activities associated with construction to search for woodrat nests or other sign. The entire impact area, as well as a 50-foot buffer zone outside the limits of construction, should be inspected for nests. If no nests are detected, or if a nest is present that can be avoided, no additional field studies will be necessary and a letter-report should be submitted to the regulatory agencies in support of this determination.

7. If the biologist determines that a ground survey was insufficient to determine absence of the species due to dense vegetation or extensive debris, which may inhibit an observer's view, then a biologist should be present while the vegetation and debris is removed by hand (see No. 5, above).

8. If woodrats or their nests are identified and cannot be avoided, a live-trapping study should be performed. Prior to conducting a live-trapping study, CDFG should be contacted to review the study plan and determine the fate of any woodrats captured. If approved by CDFG, captured woodrats will be released out of the impact area but within the existing oak woodland near 12th Avenue. Piles of native branches should be placed at the release location to provide temporary cover for any woodrats released. If possible, nests should be moved to the oak woodland. Efforts will be made to move portions of the nest intact to the release site. The trapping effort should continue a minimum of three consecutive nights until no woodrats are captured. Other native small mammals should also be released in the adjacent oak woodland. Non-native animals captured should be humanely eliminated from the wild.

Impact--Double-crested Cormorant and other Nesting Birds. Construction-related disturbances and habitat removal could result in the disruption of nesting activities of birds inhabiting the project alignment. All bird species known or suspected to nest in the project area are protected by the Migratory Bird Treaty Act. In addition, cormorants (rookeries) are considered a state species of special concern.

Recommended Mitigations—Cormorants and other Nesting Birds:

9. Because the nesting surveys (Figures 6, 7 & 8) indicated presence of a number of nests along the project route, and the surveys were conducted in 2005, 2007 and 2009 confirming nesting, an updated survey should be conducted prior to construction. Results of that survey should be incorporated into contractor construction documents.

10. Construction activities should be scheduled after August 15th in the vicinity of nesting trees or shrubs. If construction activities are scheduled to begin between March 1 and August 15, a pre-construction nesting survey should be conducted by a qualified wildlife biologist one week prior to the start of construction activities to record nesting evidence (e.g., territorial displays, birds carrying food, etc.) within or in the immediate vicinity of the project alignment. If active nesting or territory is observed, a 60-foot buffer shall be established around a songbird nesting area or a minimum of 250 feet from a cormorant rookery. A monitoring biologist should be present to record the behavior of nesting cormorants and to increase the buffer zone distance, as needed. No construction activities should be allowed within these buffer zones. Construction activities would be allowed elsewhere outside of the buffer areas. If the wildlife biologist determines evidence of nesting is no longer observed, project activities can be allowed to start immediately.

ATTACHMENT 6

11. If eucalyptus trees have to be removed for project construction (not presently planned), the biologist should consult with the Department of Fish and Game (DFG) regarding the design and installation of nesting platforms to replace removed tree(s). Trees should only be removed outside the nesting season.

Impact--Oak Woodland and Willow Riparian. In the context of this project, direct and indirect effects to oak and willow trees within the project alignment (e.g., removal, trimming) are not expected to result in significant adverse impacts to wildlife due to both habitats' relatively limited wildlife value and limited limbing or removal in each area. However, because oak and willow riparian woodlands are protected by the CDFG, mitigation measures #1, 5 & 10 above have been recommended and would mitigate for less than significant wildlife impacts.

ATTACHMENT 6

COUNTY OF SANTA CRUZ
DEPARTMENT OF PUBLIC WORKS

701 Ocean Street – 4th Floor, Santa Cruz, CA 95060
Phone: (831) 454-2160 Fax: (831) 454-2385

GRADING REPORT

FOR

SCHWAN LAKE PEDESTRIAN IMPROVEMENTS

EAST CLIFF DRIVE – 9TH AVE TO 12TH AVE

RDA JOB NO. 66020

September 10, 2010

PREPARED BY:
CASEY CARLSON, CIVIL ENGINEER
PUBLIC WORKS – REDEVELOPMENT DIVISION

BASIS OF DESIGN:
1. COUNTY DESIGN CRITERIA, JUNE 2006 EDITION
2. PROJECT PLANS & SPECIFICATIONS

ATTACHMENT 7

SCHWAN LAKE PEDESTRIAN PATHWAY
EAST CLIFF DRIVE - 9TH AVE TO 12TH AVE
GRADING CALCULATIONS

Table of Contents

ATTACHMENT 7

1.0 INTRODUCTION

The proposed project is located adjacent to Schwan Lake on East Cliff Drive between the cross streets of 9th Avenue and 12th Avenue. Project improvements encompass an area of approximately 0.75 acres. The primary goal of the project is to provide pedestrian access from 9th Avenue to 12th Avenue, and to also provide access to Prospect Street. The project will provide this access with a pile-supported walkway on the west side, a short retaining wall and sidewalk east side (adjacent to Prospect Street), and a crosswalk connecting these two segments. In addition, the project will provide new landscaping features and upgrades to the existing storm drainage system and the existing parking lot at the 11th Avenue spur.

2.0 BASIS OF CALCULATIONS

Site Grading Quantities were derived using the Average End Area method based on sections generated for project improvements.

Site Paving Quantities were derived by measuring the surface area of paving items and multiplying by the depth of that item.

3.0 METHOD OF ANALYSIS

Sections were taken for the pile supported path along the west side from Station 0+00 to Station 16+42.59, as well as the retaining wall and walkway on the east side adjacent to Prospect Street from Station 10+53 to Station 12+04.41. Grading quantities from these sections were determined using the average end area method.

Cut resulting from Pile drilling was calculated separately assuming a drill depth of 18'.

All pavement related quantities were determined from area measurements and depths taken from the current project plans.

ATTACHMENT 7

4.0 SUMMARY

Roadway Paving Summary	
Existing AC Removal	198 CY
Existing Baserock Removal	594 CY
Proposed AC Pavement	135 CY
Proposed Baserock (AC + Pathway)	535 CY
Overexcavation & Recompaction	269 CY
Proposed DG	63 CY
Proposed Planting Soil	150 CY

Site Grading Summary	
Item Description	Quantity
Site Cut	320 CY
Site Fill	147 CY
Pier Excavation (Cut)	87 CY

Site Grading Total (Cut) 260 CY

5.0 CONCLUSIONS

The overall grading quantities indicate that the site will generate excess soil (cut). All excess soil should be off-hauled from the site and disposed of at a County Landfill or other appropriate facility.

The site will also require demolition of some existing pavement surfaces, which will generate excess material in the form of asphalt and baserock. All excess pavement waste material should be off-hauled from the site and disposed of at a landfill or other appropriate facility.

ATTACHMENT 7

CENTRAL FIRE PROTECTION DISTRICT
of Santa Cruz County
Fire Prevention Division

930 17th Avenue, Santa Cruz, CA 95062
phone (831) 479-6843 fax (831) 479-6847

Date: September 17, 2010
To: Santa Cruz County Redevelopment
Applicant: **same**
From: Tom Wiley
Subject: **07-0198**
Address **East Cliff Improvements**
APN: none
OCC:
Permit: 20100260

We have reviewed plans for the above subject project. District requirements appear to have been met.

Please ensure designer/architect reflects equivalent notes and requirements on velums as appropriate when submitting for **Application for Building Permit.**

Submit a check in the amount of $115.00 for this particular plan check, made payable to Central Fire Protection District. A $35.00 **Late Fee** may be added to your plan check fees if payment is not received within 30 days of the date of this Discretionary Letter. INVOICE MAILED TO APPLICANT. Please contact the Fire Prevention Secretary at (831) 479-6843 for total fees due for your project.

If you should have any questions regarding the plan check comments, please call me at (831) 479-6843 and leave a message, or email me at tomw@centralfpd.com. All other questions may be directed to Fire Prevention at (831)479-6843.

CC: File & County

As a condition of submittal of these plans, the submitter, designer and installer certify that these plans and details comply with applicable Specifications, Standards, Codes and Ordinances, agree that they are solely responsible for compliance with applicable Specifications, Standards, Codes and Ordinances, and further agree to correct any deficiencies noted by this review, subsequent review, inspection or other source. Further, the submitter, designer, and installer agrees to hold harmless from any and all alleged claims to have arisen from any compliance deficiencies, without prejudice, the reviewer and the Central FPD of Santa Cruz County.
East_Cliff-091710

Sheila McDaniel

From: Diane Romeo
Sent: Monday, October 04, 2010 2:18 PM
To: Sheila McDaniel
Subject: Twin lake ped project

hi Sheila, i just entered my comments in alus. let me know if there are any problems with them.

(just in case, here they are:

No. 3 Review Summary Statement; App. No. 07-0198; APN: 27-191-03 and 27-201-01 East Cliff Drive Pedestrian Improvements:

Sewer service is available for this project based upon the plans submitted for this routing. RDA staff shall continue to work with District staff on this project for compliance with codes and design criteria and relocation of sewers.

This review notice is effective for one year from the issuance date to allow the applicant the time to receive 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 availability letter must be obtained by the applicant. Once a tentative map is approved this letter shall apply until the tentative map approval expires.

Reference for County Design Criteria:
http://www.dpw.co.santa-cruz.ca.us/DESIGNCRITERIA.PDF

Unless future revisions involve public sewer mains, no additional routings to the District are required.

Any questions regarding the above criteria should be directed to Diane Romeo of the Sanitation Engineering division at (831) 454-2160.

There are no miscellaneous comments.)

Diane Romeo
Department of Public Works
831.454.2160

ATTACHMENT 8

Application 07-0198
Conditions of Approval
Environmental Planning: A. Gentile, C. Banti, and J. Hanna
October 6, 2010

1. The project is located between FEMA Flood Zones A and AE. A portion of the approximate A Zone is located in the regulatory V Zone. The project engineer of record must use the best available information to differentiate between the approximate A and V Zones. After this differentiation has been made, the project engineer must state that the project design complies with the NFIP requirements for the applicable zones.

2. The project engineer of record shall, at the end of the project, submit a letter that indicates the project has been completed per plans and confirms that the constructed project cause no rise in the AE Zone Base Flood Elevation (BFE).

3. All maintenance of the roadway shall be carried out without placing additional fill in the approximate A or AE Zones.

4. If the project will be constructed during the winter, a written supplement to the erosion control plan is required to describe operational conditions to avoid the tracking of mud and sediment onto the street.

5. Per County Code Section 12.10.315(4) and Public Works Design Criteria, the proposed retaining wall has a surcharge (slopes greater than 5:1) and must be designed per the current California Building Code.

6. Submit two copies of the soils report at the time of Grading Permit Application. The soils report has been reviewed, but will not be formally accepted until the time of grading application review.

7. It appears winter grading may be required for this project. Please submit the following for winter grading approval: (a) Detailed operations plans with construction phases, timelines and associated erosion control measures, (b) best management practices to be employed in the event of inclement weather, (c) review letter from the soils engineer of record that approves the operations and erosion control plans and provides additional mitigation recommendations as required.

8. A plan review letter from the geotechnical engineer shall be required prior to grading permit approval.

ATTACHMENT 8

========= UPDATED ON OCTOBER 1, 2010 BY ALYSON B TOM =========
Address the following prior to building/grading permit issuance:

1) Provide a final drainage plan and analysis demonstrating that the drainage facilities located within the project boundaries (existing and proposed) meet design criteria requirements. Add notes to clean out the system where necessary. Assume full pipe, expected lake, or expected water surface flood elevation in the drainage system analysis for conservative outlet boundary condition. Include analysis that assumes that runoff from drainage area B enters the storm drain system in the clogged inlets as was intended in previous projects.

2) Demonstrate that the water quality treatment units proposed will provide for adequate overflow capacity, particularly for basin G. Provide confirmation from road maintenance staff that maintenance of the proposed units can reasonably be accommodated. Consider installation of treatment units at outlets C and E.

Informational Items 3) Review of the evaluation of the base flood elevation will be completed by Environmental Planning.

4) Per discussion with project engineer, the adjacent RDA project on East Cliff Drive may include roadway work near the intersection with 8th Avenue. If so, consider the stormwater evaluation and safe overflow at 8th Avenue as part of that project.

5) This project may require coverage under the State's General Construction Stormwater Permit. For more information see http://www.waterboards.ca.gov/

========= UPDATED ON OCTOBER 8, 2010 BY ALYSON B TOM =========
Please address the following updated comment No. 1 in addition to all previous miscelleous comments:

1) Per conversation with project engineer this project will be redesigned so that area A2 will drain in it's current configuration and so no changes to system A are proposed. In this case analysis for systemA is not required as part of this project, but should be included with the adjacent RDA project. Provide a final drainage plan and analysis demonstrating that the drainage facilities located within the project boundaries (existing and proposed) meet design criteria requirements. Add notes to clean out the system where necessary. Assume full pipe, expected lake, or expected water surface flood elevation in the drainage system analysis for conservative outlet boundary condition.

County of Santa Cruz

DEPARTMENT OF PUBLIC WORKS

701 OCEAN STREET, ROOM 410, SANTA CRUZ, CA 95060-4070
(831) 454-2160 FAX (831) 454-2385 TDD (831) 454-2123

THOMAS L. BOLICH
DIRECTOR OF PUBLIC WORKS

AGENDA: NOVEMBER 23,2004

November 10,2004

SANTA CRUZ COUNTY BOARD OF SUPERVISORS
701 Ocean Street
Santa Cruz, California 95060

SUBJECT: ROUTE CONCEPT PROPOSAL FOR EAST CLIFF DRIVE FROM 9TH AVENUE TO 12TH AVENUE

Members of the Board:

Presented herein for your Board's consideration is a route concept for the portion of East Cliff Drive between 9th Avenue and 12th Avenue in the Live Oak planning area. Attachment No. 1 presents a map showing the route concept area. The plan view of the proposed project is shown on Attachment No. 2, and typical street sections are displayed on Attachment Nos. 3 and 4.

BACKGROUND

This section of East Cliff Drive is tentatively scheduled for pedestrian and bike lane improvements during the 2006 construction season. East Cliff Drive at Schwan Lake is an east–west arterial street which is a scenic alternative to Brommer Street and Capitola Road, and is heavily used by motorists, bicyclists, and pedestrians. The primary goal of this improvement project is to provide for a continuous and safe pedestrian pathway connecting residents living in the neighborhoods east of Schwan Lake to the beach and harbor area. The proposed project entails the construction of curb, gutter and a 6-foot-wide pathway on the Schwan Lake side only, from the existing crosswalk at 9th Avenue to the existing sidewalk west of 12th Avenue, while allowing room within the existing right-of-way to install improvements on the other side in the future.

Several years ago, a community process for improvements to the Twin Lakes beachfront area was initiated. The proposed Twin Lakes project encompassed East Cliff Drive from 5th Avenue to 12th Avenue as well as Lake and 5th Avenues, and included pedestrian improvements along the entire length, parking improvements in several areas, landscape improvements, and shoreline stabilization in selected areas. Three community meetings were held regarding the project in 2001, which resulted in an inadequate public consensus on an overall design. The areas of concern for the Twin Lakes project were primarily the extent of improvements along the beach area and management of the parking, especially between 5th and 7th Avenues. The need for a pedestrian pathway on the Schwan Lake side of East Cliff Drive was generally accepted and was not a subject of controversy at these community meetings. Staffs

conclusion was that there was not a consensus on the larger beach area project, but that some of the smaller project components which had agreement could be constructed independently. For example, the Lake and Fifth Avenues Improvements, with a pedestrian pathway from Eaton Street to East Cliff Drive, was constructed in 2003.

The currently proposed project was presented at a community meeting on June 3,2004. The general consensus was that pedestrian improvements were needed in order to provide safe access from the neighborhoods adjacent to Schwan Lake to the Twin Lakes State Beach area, the harbor, and miscellaneous commercial areas. Discussion focused on the pedestrian route and on safety issues. Many of the residents who live east and south of East Cliff Drive access the beach area via Prospect Avenue. Pedestrians crossing East Cliff Drive at Prospect Avenue have difficulty due to traffic speeds and limited sight distance. While some residents voiced a preference for pedestrian improvements on the east side of East Cliff Drive south of Prospect Avenue, others supported the plan as presented, as it offers the most scenic opportunities and better serves neighborhoods north of East Cliff Drive, and because a path on the east side would require the construction of retaining walls that are highly visible from the roadway.

The greatest concern expressed at the community meeting was that vehicles regularly drive at unsafe speeds on East Cliff Drive, especially on the curve between Prospect and 12th Avenues. Westbound drivers pick up speed while traveling downhill and are distracted by the scenic views of the ocean, beaches, and Schwan Lake. Speeding and sight distance limitations make entry and exit from both Prospect Avenue and 12th Avenue difficult. Westbound vehicles also regularly cut across the existing bike lane at the southeast corner of Schwan Lake. Some participants asked about the placement of a crosswalk at or near Prospect Avenue, along with possible advance warning light systems, as well as pros and cons of a stop sign on East Cliff Drive at Prospect Avenue.

EXISTING CONDITIONS

East Cliff Drive is designated as an arterial street in the County's General Plan, and has a 60-foot-wide right-of-way in the area under discussion. The existing laneage is two lanes throughout, with the lanes being 11 to 11.5 feet in width. There are bike lanes on both sides, approximately 4 feet in width, with no on-street parking except for an unorganized shoulder area opposite the southeast corner of Schwan Lake. The terrain adjacent to the roadway slopes steeply up to residential properties to the east and down to Schwan Lake on the west. There are a number of eucalyptus and oak trees on the lake side of the road north of Prospect Avenue, and one large pine tree on the east side in this area. There is existing curb, gutter and sidewalk along the north side of East Cliff Drive beginning about 150 feet west of 12th Avenue and continuing east to 17th Avenue. An existing sidewalk on the south side of East Cliff Drive begins at 14th Avenue and goes eastward. East Cliff Drive west of 12th Avenue received an asphalt overlay and new striping in 2004, so the traveled way is in very good condition.

PROPOSED EAST CLIFF DRIVE ROUTE CONCEPT

The overall proposed route concept is to maintain existing traffic lanes and the existing eastbound bike lane, improve the westbound bike lane to a minimum 5-foot width, and to provide a continuous 6-foot-wide pedestrian pathway along the Schwan Lake side of the road.

The pathway will run from the existing sidewalk near 12th Avenue to 9th Avenue, where there is an existing pedestrian crossing to Twin Lakes State Beach and existing sidewalk on the north side of East Cliff Drive. Construction of retaining walls (average exposed height of 2 to 3 feet on the downhill lake side of the path) and railings at the back of the pathway will be necessary above Schwan Lake in areas where the terrain slopes steeply down from East Cliff Drive. The retaining wall will be exposed to Schwan Lake, but can be screened by the replanting of native vegetation adjacent to the wall. In addition, it may be necessary to remove or bridge around a group of four eucalyptus trees between Prospect and 12th Avenues. Improvements in this area will be designed to maintain the maximum number of mature trees, and all remaining trees along East Cliff Drive will be protected during construction.

The material proposed for the pathway is resin stabilized decomposed granite, which was used on the nearby Lake and Fifth Avenues Improvements project. This material has a less urban feel than concrete sidewalks and has been positively received by the local community. Since there are no driveway crossings on this segment of the route, Public Works concurs with the use of this material for this walkway. Several widened areas are also proposed along the pathway to serve as overlooks along Schwan Lake.

The Schwan Lake side of East Cliff Drive was selected for the pedestrian pathway for several reasons. The existing sidewalk near 12th Avenue is on the lake (north) side. There are numerous homes, apartments, and a mobile home park north of East Cliff Drive and west of 17th Avenue which generate pedestrian trips to the beach area via East Cliff Drive. A pathway on this side would also serve pedestrians going to the East Cliff Shopping Center from neighborhoods west of the lake. When staff have been on site, they have observed that most pedestrian traffic is on the lake side of the road. In addition, placing a pedestrian pathway on the east side would require a significant cut into the existing bank, removal of a large pine tree north of Prospect Avenue, alteration of stairways to private homes, and construction of highly visible retaining walls for the entire length from 12th Avenue to the ocean. Higher walls exposed to traffic or pedestrian areas are to be avoided as they have become a target for graffiti in the Live *Oak* area.

A crosswalk across East Cliff Drive at Prospect Avenue was discussed at the community meeting; however, it is not proposed due to concerns shared by staff and the community that it could bring a false sense of security to pedestrians if other measures to slow or stop traffic could not be used because of limited sight distance and the speed of westbound traffic on East Cliff Drive. Residents also expressed concern that the same conditions make it difficult to pull out onto East Cliff Drive from Prospect Avenue. Vehicular sight distance is also limited to the north of Prospect Avenue due to the curve in the road and the steep bank on the east side of East Cliff Drive. The idea of a stop sign on East Cliff Drive at this location was also discussed at the community meeting, but is not recommended due to safety concerns regarding the lack of vehicular stopping sight distance in the westbound direction. Similarly, installation of a median island on East Cliff Drive at Prospect Avenue to slow traffic and provide a refuge for pedestrians was considered, but not recommended because of sight distance and because a median would require widening the road, resulting in more retaining walls and the loss of trees. Installation of special in-pavement crosswalk lighting was also suggested at the meeting. While it would be possible to install this type of crosswalk, experience with in-pavement lighting installed on Portola Drive at Corcoran Avenue has shown it not to be particularly effective at stopping traffic even

with no sight distance limitations. A flashing light could be installed at the curve to alert and slow westbound traffic as it approaches the intersection at Prospect Avenue. Other alternatives to aid vehicle egress from the neighborhood have also been considered, such as closing off Prospect Avenue, making Prospect Avenue into a one-way entry into the neighborhood, and opening Prospect Avenue through to 14th Avenue. These alternatives each create similar problems at 12th Avenue and East Cliff Drive and are generally not supported by the neighborhood.

This route concept establishes the location of improvements on the Schwan Lake side of East Cliff Drive only. While allowing space for future improvements within the right-of-way on the opposite side, it does not propose any new construction there. Existing improvements will for now remain as is on the south and east sides. Adequate right-of-way exists to construct improvements on the non-lake side of the road should future expansion become necessary. A pedestrian pathway and other improvements could be installed along the south side of East Cliff Drive in the vicinity of the beach at such time that a consensus can be reached as to what beachfront improvements are desired.

SPECIAL CONSIDERATIONS

The primary goal of this route concept is to provide a safe pedestrian pathway where none currently exists along East Cliff Drive. At present, pedestrians are forced to walk along the edge of the roadway or in the bike lane in most locations, exposing themselves to fast moving vehicular traffic. The project resulting from this route concept will allow pedestrians to enjoy safe access in this scenic area along the shore of Schwan Lake. In addition, allowance is made for future improvements on the opposite side of East Cliff Drive.

It is therefore recommended that the Board of Supervisors approve the proposed route concept for East Cliff Drive from 9th Avenue to 12th Avenue.

Yours truly,

THOMAS L. BOLICH
Director of Public Works

TLB:RHN:mh

Attachments

RECOMMENDED FOR APPROVAL:

County Administrative Officer

copy to: Redevelopment Agency
Planning Department
Public Works

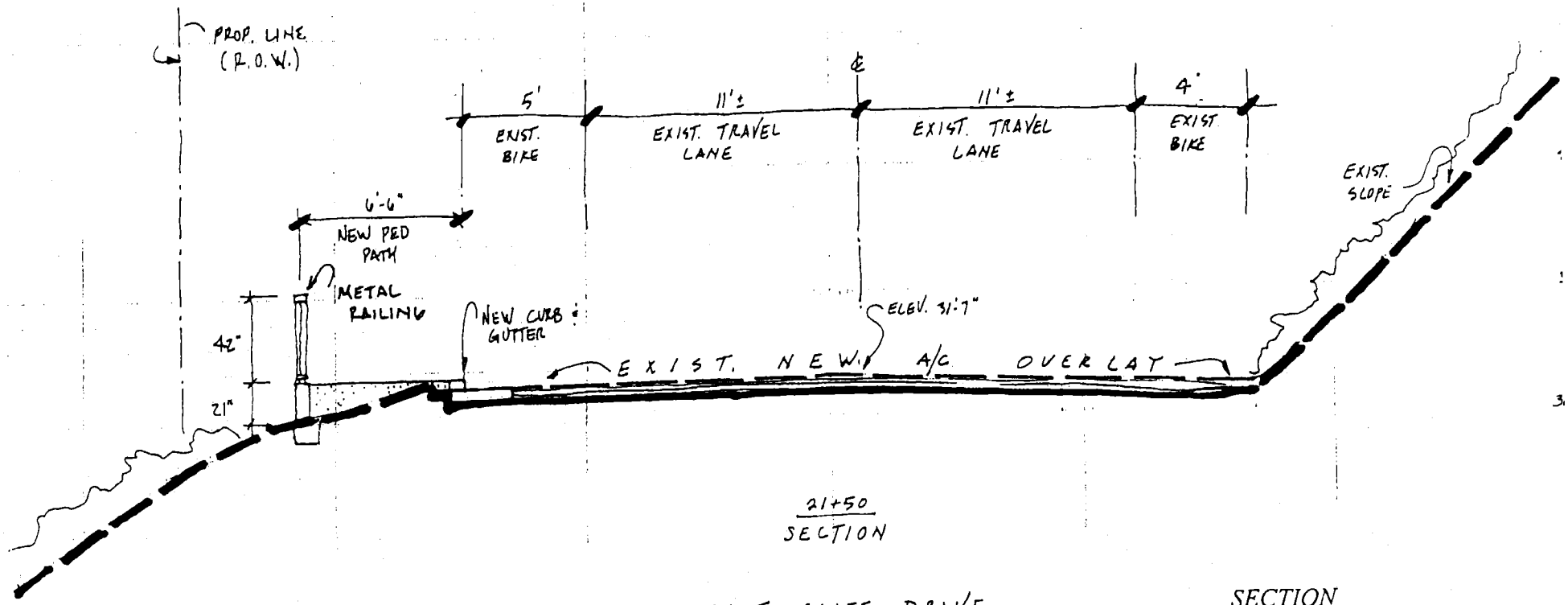
ATTACHMENT 9

40 EAST9-12MH

VICINITY MAP
N.T.S.

EAST CLIFF DRIVE ROUTE CONCEPT

NINTH AVENUE TO TWELFTH AVENUE



21+50
SECTION

EAST CLIFF DRIVE
1/4"= 1'-0"

SECTION
Route Concept
East Cliff Drive
Ninth Avenue to Twelfth Avenue

Pedestrian/ Bike Lane Improvements

KLEINFELDER
Bright People. Right Solutions.

GEOTECHNICAL INVESTIGATION
SCHWAN LAKE PEDESTRIAN IMPROVEMENTS
EAST CLIFF DRIVE
9TH AVENUE TO 12TH AVENUE
SANTA CRUZ COUNTY, CALIFORNIA

August 13, 2010
File No: 84635

ATTACHMENT 19

6.0 CONCLUSIONS AND RECOMMENDATIONS

This section summarizes our conclusions and recommendations for design and construction of the proposed pedestrian pathway. The conclusions and recommendations that follow are based on design information provided by Moffatt & Nichol and the County of Santa Cruz, the results of our field and laboratory investigations, information from previous geologic and geotechnical studies conducted by others, our engineering analyses, and our professional judgment. Note that our field exploration did not include the proposed pathway segment between Sta. 0+00 and Sta. 4+25. Therefore, our conclusions and recommendations for the pathway between Sta. 0+00 and 4+25 are based on extrapolations of available subsurface information from our Boring B-106.

6.1 GEOLOGIC HAZARDS

Geologic hazards reviewed for this project include seismic shaking, fault ground rupture, liquefaction, slope erosion due to wave impact, static slope stability and seismic slope stability. These considerations are discussed below.

6.1.1 Seismic Shaking

Historically, the site has been subject to intense seismic activity. The site will likely be subjected to at least one moderate to severe earthquake and associated seismic shaking during the project lifetime. Some degree of structural damage due to strong seismic shaking should be expected. Periodic slight to moderate earthquakes should also be expected.

6.1.2 Fault Ground Rupture

Based on our review of the geologic maps, the project area is not underlain by known active faults (i.e., faults that exhibit evidence of ground displacement in the last 11,000 years), nor does the site lie within an Alquist-Priolo Earthquake Fault Zone. Therefore, the potential for ground rupture due to faulting through the site is considered low. However, the site does fall within about 17 km of the Class A San Andreas fault, 18 km of the Class A San Gregorio fault, 11.5 km of the Class B Monterey Bay-Tularcitos fault and 12 km of the Class B Zayante-Vergeles fault.

6.1.3 Liquefaction

Soil liquefaction is a condition in which saturated, predominantly granular soils undergo a substantial loss of strength and deformation due to pore pressure increase resulting from cyclic stress application induced by earthquakes. In the process, the soil acquires mobility sufficient to permit both horizontal and vertical movements if the soil mass is not confined. Structures founded on or above potentially liquefiable soils may experience bearing capacity failures due to the temporary loss of foundation support, vertical settlements, and undergo lateral spreading. Soils most susceptible to liquefaction are saturated, loose, clean, uniformly graded, and fine-grained sand deposits. However, based on recent observations and study, under certain conditions significant cyclic softening can also occur in low-plasticity silts and clays (Seed et al., 2003).

The peak horizontal ground surface acceleration (PGA) with a 10 percent probability of exceedance in 50 years for alluvial conditions is approximately 0.45g (California Geological Survey Probabilistic Seismic Hazards Mapping Ground Motion Webpage http://www.consrv.ca.gov/cgs/rghm/pshamap). The modal earthquake for liquefaction susceptibility calculations is the M_w = 7.9 seismic event on the San Andreas fault.

We evaluated liquefaction triggering potential using procedures presented by Youd et al. (2001) and guidelines presented by California Division of Mines and Geology (1997) and Martin and Lew (1999). Calculations for the liquefaction analyses are included in Appendix D of this report. Based on our analyses, the submerged dune sands and the sandy and silty basin deposits encountered in Borings B-105 and B-106 to about El -16 and El -18.5 feet, respectively, are susceptible to liquefaction in the event of the design earthquake. Based on our inferences from the available subsurface information, we estimate that the liquefaction hazard extends from near the beginning of the pathway alignment to about Sta. 6+00. North of about Sta. 6+00 the loose to medium-dense sands are generally above the expected average groundwater level (between about El +2 and El +8.5), and the submerged sands generally are too dense to liquefy under the design criteria described above. Possible consequences of liquefaction at the site include lateral spreading of the embankment and low slope areas toward the lake,

vertical ground surface settlements, sand boils at the ground surface, and disruption of underground utilities.

Volumetric recompaction following liquefaction ("liquefaction settlement") was evaluated using procedures by Tokimatsu and Seed (1987), with blow counts adjusted for fines content as outlined by Martin and Lew (1999). Depending on the liquefiable layer thickness and composition, we calculated liquefaction settlement of up to about 1/2 foot. Based on the results of our liquefaction analyses and our judgment, we estimate that differential settlement due to liquefaction settlement could approach about 3 inches over a horizontal distance of 100 feet.

Lateral spreading is a post-liquefaction phenomenon consisting of blocks of soil "laterally sliding" toward an open face such as the adjacent Schwan Lake. For the project site, soils above the groundwater table could "float" on top of the liquefied soils below, and the soil mass would spread toward the lake. With the data from our borings, we applied the procedure presented by Youd et al. (2002) and computed an estimate of permanent lateral displacement of up to about 20 feet for the immediate vicinity of Borings B-105 and B-106.

If deep foundations or other structures are contemplated west of about Sta. 6+00, the structural engineer should analyze the effect that this magnitude of horizontal displacement could have on the formation of plastic hinges at the upper and lower boundaries of the liquefiable layer as identified below.

Approximate Depth Intervals of Potentially Liquefiable Soils

Approximate Stationing, Feet	Approximate Elevation Interval, Feet
4+25 (B-106)	El +8 to El -18.5
5+50 (B-105)	El +8 to El -16
6+00	El +8 to El -8 (extrapolated)
> 6+00	No significant liquefaction potential

Liquefiable layer intervals at locations between the points identified above may be inferred by linear interpolation. Note that field exploration west of Sta. 4+25 was

outside our scope of services. In the absence of site-specific data and as a preliminary estimate of liquefaction hazard potential between Sta. 0+00 and 4+25, we recommend that this reach be assumed to be liquefiable and behave similarly to soils at Sta. 4+25 (B-106). To reduce the potential impact of lateral spreading on deep foundations, consideration could be given to founding the pathway between Sta. 0+00 and 6+50 at grade (i.e., no deep foundations in this interval).

Mitigation alternatives for liquefaction-related hazards are available, such as soil-cement columns, but such measures will likely not be economical unless the entire roadway embankment is similarly improved. It may be that the most cost-effective alternative for handling the liquefaction hazard is to make repairs (along with the rest of the roadway embankment) after the damage occurs.

6.1.4 Slope Erosion Due to Wave Impact

In August 2007 our senior engineering geologist visited the site, assessed the general geologic site conditions, and formulated an opinion on the susceptibility of the slope along the project alignment to erosion due to wave action. Our general conclusions with respect to slope erosion include the following:

- The south bank of Schwan Lake (which includes the proposed pathway reach from approximately Sta. 0+00 to about 4+50) is considered low enough that this reach is expected to remain subject to storm surge and periodic damage, as is the roadway itself.
- The reach between about Sta. 4+50 and about 16+43 generally lies perpendicular to expected storm waves and, as such, would be minimally impacted by such waves compared to a more frontal assault. This conclusion is supported by the field observation of our certified engineering geologist, Mr. Michael Clark, who visited the site and did not find evidence of significant active or past recedence of the lagoon slope between about Sta. 4+50 and 16+43.

6.1.5 Slope Stability

For our slope stability analyses, we based the ground surface profile on the topographic map provided by the County of Santa Cruz, shown on Plates 2a through 2d. Plates 2c and 2d show the locations of three cross sections, B–B' (Sta. 12+00), C–C' (Sta. 15+20) and D–D' (retaining wall side, Sta. 10+80). We evaluated slope stability at each of these sections under static and seismic conditions.

Slope stability analyses were conducted using the commercial computer program Slope/W produced by Geoslope. This program was used to perform automatic searches of different potential failure surfaces and to compute the lowest safety factor corresponding to a critical failure surface for a particular analysis condition. For purposes of these analyses, the factor of safety is defined as the ratio of the shear strength of the soil to the strength necessary for "just stable" equilibrium. We focused our analyses on potential failure surfaces that involve major portions of the slope and the proposed structural foundation or wall elements. For a given slope configuration and loading scenario, the program Slope/W is able to analyze several thousand potential slip surfaces.

Failure surfaces were analyzed using Spencer's method. Spencer's method is a two-dimensional limit-equilibrium method that satisfies force equilibrium of slices and overall moment equilibrium of the potential sliding mass. The inclination of side forces between vertical slices is assumed to be the same for all slices and is calculated along with the safety factor. This method utilizes the slope configuration, unit weight and shear strength properties of the soils, and boundary and internal distribution of forces due to water pressures. After a potential failure surface has been assumed, the soil mass located above the failure surface is divided into a series of vertical slices. Forces acting on each slice include the slice weight, the pore pressure, the effective normal force on the base, the mobilized shear force (including both cohesion and friction), and the horizontal side forces due to earth pressures.

For our analyses, we considered failure surfaces that involve the crest and at least half of the slope height. Shallow, surficial slip surfaces that do not involve proposed structural elements were not analyzed. We followed the general guidelines provided by the California Geological Survey (formerly California Division of Mines and Geology),

Special Publication 117, "Guidelines for Mitigating Seismic Hazards in California," adopted in 1997 by the State Mining and Geology Board in accordance with the Seismic Hazards Mapping Act of 1990.

We conducted our analyses using effective stress strength parameters that we selected based on the field and laboratory test results presented on the boring logs and our experience and judgment. The strength parameters that we selected are shown below.

Static-strength Soil Parameters for Stability Analyses

Material No.	Description	Unit Weight, pcf	Effective Cohesion, psf	Effective Friction Angle, degrees
1	Sandy Clay and Clayey Sand Fill	115	50	33
2	Dune Sand	120	0	36
3	Medium Dense to Dense Terrace Deposits	125	0	38
4	Dense to Very Dense Terrace Deposits	125	0	43

For stability analyses under seismic conditions, we conducted pseudo-static analyses. In accordance with the recommendations of the above-referenced SP-117 state publication, we used a horizontal seismic coefficient based on one-half of the maximum horizontal ground acceleration for rock conditions ($k = ½ \times 0.41g = 0.21$). This approach is applicable to limiting slope displacements of about 3 to 6 inches. Also, in accordance with SP-117 guidelines, we reduced the static shear strength parameters by 80 percent for use in the pseudo-static analyses.

The stability analysis results for Sections B–B', C–C' and D–D' are described below.

Section B–B' (Sta. 12+00)

Static stability analyses results for Section B–B' are shown on Plate 5. Failure surface locations with the lowest ten computed safety factors are shown on the results presented on Plate 5. The analysis results shown on Plate 5 involve failure surfaces at least 5 feet deep, include the crest of the slope and about one-half of the slope height. The minimum computed safety factor found for this static condition is 1.70, which we consider to be adequate.

Pseudo-static analyses results for Section B–B' are shown on Plate 6. Failure surface locations with the lowest ten computed safety factors are shown on the results presented on Plate 6. The analysis results shown on Plate 6 involve failure surfaces at least 5 feet deep, include the crest of the slope and about one-half of the slope height. The minimum computed safety factor found for this pseudo-static condition is 0.90, which indicates that the slope may not be stable under seismic conditions.

Section C–C' (Sta. 15+20)

Static stability analyses results for Section C–C' are shown on Plate 7. Failure surface locations with the lowest ten computed safety factors are shown on the results presented on Plate 7. The analysis results shown on Plate 7 involve failure surfaces at least 5 feet deep, include the crest of the slope and about one-half of the slope height. The minimum computed safety factor found for this static condition is 1.21, which we consider to be adequate.

Pseudo-static analyses results for Section C–C' are shown on Plate 8. Failure surface locations with the lowest ten computed safety factors are shown on the results presented on Plate 8. The analysis results shown on Plate 8 involve failure surfaces at least 5 feet deep, include the crest of the slope and about one-half of the slope height. The minimum computed safety factor found for this pseudo-static condition is 0.70, which indicates that the slope may not be stable under seismic conditions.

Section D–D' (Sta. 10+80)

For Section D–D' we analyzed the slope stability for two conditions: 1) existing conditions without the retaining wall and 2) with the retaining wall installed and the backslope groomed.

Static stability analyses results for existing conditions at Section D–D' are shown on Plate 9. Failure surface locations with the lowest ten computed safety factors are shown on the results presented on Plate 9. The analysis results shown on Plate 9 involve failure surfaces at least 3 feet deep, include the crest of the slope, the upslope property line and most of the slope height. The minimum computed safety factor found for this static condition is 1.40, which we consider to be adequate.

Pseudo-static analyses results for existing conditions at Section D–D' are shown on Plate 10. Failure surface locations with the lowest ten computed safety factors are shown on the results presented on Plate 10. The analysis results shown on Plate 10 involve failure surfaces at least 3 feet deep, include the crest of the slope, the upslope property line and most of the slope height. The minimum computed safety factor found for this pseudo-static condition is 0.81, which indicates that the existing slope may not be stable under seismic conditions.

Static stability analyses results for the condition with a 5-foot high retaining wall at Section D–D' are shown on Plate 11. At this location, the backslope is about 5 feet high. Assuming that the backslope is graded smooth from the back of the wall to the upslope property line, the proposed backslope would be about 1-H to 1-V. Failure surface locations with the lowest ten computed safety factors for this configuration are shown on the results presented on Plate 11. The analysis results shown on Plate 11 involve failure surfaces at least 3 feet deep, include the crest of the slope, the upslope property line and involve the wall foundation. The minimum computed safety factor found for this static condition is 1.43, which we consider to be adequate.

Pseudo-static analyses results for the condition with a 5-foot high retaining wall at Section D–D' and the backslope conditions as described above are shown on Plate 12. Failure surface locations with the lowest ten computed safety factors are shown on the results presented on Plate 12. The analysis results shown on Plate 12 involve failure

surfaces that include the crest of the slope, the upslope property line and the wall foundation. The minimum computed safety factor found for this pseudo-static condition is 0.87, which indicates that a reconfigured slope with an approximately 5-foot high retaining wall may not be stable under seismic conditions.

Conclusions Regarding Slope Stability – West Side Slope (Along Schwan Lake)

The analysis results presented above and on Plates 5 through 12 suggest that the slopes at the sections analyzed appear to be stable under static conditions. Under seismic conditions, however, the slopes are susceptible to major slope failures that involve significant portions of the slope, the planned pathway centerline and, in the case of a gravity retaining wall along the east side of East Cliff Drive and south of Prospect Street, the wall foundation and upslope properties.

Note that under design seismic conditions the slope along the lakefront (west) side of East Cliff Drive is susceptible to major slope failure, as described above, either with or without the proposed pathway; construction of the pathway is not expected to significantly impact the computed safety factor. To mitigate the seismic slope instability hazard along the structurally-supported portion of the pathway, the CIDH foundations should extend well below the slip surface elevations shown on Plates 6 and 8. See Section 6.3 below for further discussion and design recommendations for CIDH foundations.

The minimum CIDH shaft depth should be selected based on consideration of CIDH geotechnical capacity, as described in Section 6.3, and on the results of the stability analyses discussed above. Preliminary design drawings provided by Moffatt & Nichol for the structure-supported portions of the pathway show the CIDH shafts will be installed near the edge of the existing slope crest. The stability analysis results for the structure-supported pathway reach (see Plates 5 through 8) show that the upper portions of the critical slope failure surfaces involve approximately the upper 5 feet of the slope crest edge. To avoid the potential loss of geotechnical capacity in a slope slip surface zone, we recommend that the minimum CIDH shaft depth between Sta. 6+50 and 16+43 be taken as 18 feet, which will allow the CIDH shafts to fully penetrate the existing fill soils (generally about 5 to 8 feet thick along the top of the slope crest at our boring locations) and be embedded at least 6 to 8 feet into the underlying terrace

deposit sands. Note that geotechnical or structural capacity requirements may dictate CIDH shaft depths deeper than 18 feet.

Conclusions Regarding Slope Stability – East Side Slope (South of Prospect Street)

To raise the calculated safety factor for seismic slope stability for the completed retaining wall south of Prospect Street and the backslope to an acceptable level, the County may consider a mitigation alternative such as a soldier-pile-and-lagging wall system, in which a row of CIDH shafts is installed under the retaining wall on 6 to 8-foot centers. The CIDH shafts could be incorporated into the retaining wall design and extend below the critical slip surface planes.

We evaluated the pseudo-static stability of the slope with a 5-foot high retaining wall with a row of CIDH shafts installed under a soldier-pile-and-lagging retaining wall, as described above. The results of these analyses are presented on Plate 13. With 24-inch diameter CIDH shafts on center-to-center spacings of three diameters, we found a pseudo-static safety factor against major slope failure of about 1.1, which exceeds the computed safety factor of 0.81 for the existing slope under pseudo-static conditions.

Detailed design recommendations for stability mitigation options such as CIDH shafts is outside our current scope of services, but we can provide such design input if authorized. Note also that if the backslope grade configuration differs from that described above (i.e., graded from the wall top to a 1-H to 1-V maximum slope to the upslope property line), then we should be authorized to evaluate case-specific slope and retaining wall configurations.

We focused our stability analyses on primarily deep slide masses that involve the slope crest, adjacent private properties, and proposed structural elements. We expect that in addition to these relatively "major" failure surfaces, there exists the potential for shallow, surficial slope failures that involve relatively minor soil quantities, particularly under seismic conditions or under extended rainfall conditions. Such shallow slope movements may be mitigated by establishing benches, terraces, and planting vegetation that will not require extensive irrigation.

6.2 2007 CBC SEISMIC DESIGN PARAMETERS

The Maximum Considered Earthquake (MCE) mapped spectral accelerations for 0.2 second and 1-second periods (S_S and S_1) were estimated using Section 1613 of the 2007 CBC. The mapped acceleration values and associated soil amplification factors (F_a and F_v) based on the 2007 CBC are presented below. Corresponding design spectral accelerations (S_{DS} and S_{D1}) are also presented below.

The following table of 2007 CBC seismic design parameters are applicable to the structure-supported portion of the pathway from about Sta. 6+50 to about Sta. 16+43.

2007 CBC Seismic Design Parameters
(Sta. 6+50 to Sta. 16+43)

Parameter	Value	2007 CBC Reference
S_S	1.50g	Section 1613.5.1
S_1	0.60g	Section 1613.5.1
Site Class	C	Table 1613.5.2
F_a	1.0	Table 1613.5.3(1)
F_v	1.3	Table 1613.5.3(2)
S_{MS}	1.50g	Section 1613.5.3
S_{M1}	0.78g	Section 1613.5.3
S_{DS}	1.00g	Section 1613.5.4
S_{D1}	0.52g	Section 1613.5.4

Between about Sta. 4+25 and 6+50 (the at-grade-supported portion of the proposed pathway that we investigated) subsurface conditions include deep deposits of silts and sands that are relatively weak and susceptible to earthquake-induced liquefaction. The 2007 CBC seismic design parameters for this reach are presented below.

2007 CBC Seismic Design Parameters
(Sta. 4+25 to Sta. 6+50)

Parameter	Value	2007 CBC Reference
S_S	1.50g	Section 1613.5.1
S_1	0.60g	Section 1613.5.1
Site Class	E	Table 1613.5.2
F_a	0.90	Table 1613.5.3(1)
F_v	2.40	Table 1613.5.3(2)
S_{MS}	1.35g	Section 1613.5.3
S_{M1}	1.44g	Section 1613.5.3
S_{DS}	0.90g	Section 1613.5.4
S_{D1}	0.96g	Section 1613.5.4

6.3 CIDH SHAFT FOUNDATIONS

We understand that the structurally-supported portion of the proposed pathway will likely be supported on drilled shafts, also known as cast-in-drilled-hole (CIDH) shafts. The following sections present our recommendations for geotechnical design and construction of drilled shaft foundations for the pathway between roughly Sta. 6+50 and Sta. 16+43.

6.3.1 Axial Capacity

A curve illustrating the ultimate axial compressive capacity of a single unit (1-foot) diameter CIDH shaft installed from the existing ground surface between Sta. 6+50 and 16+43 is shown on Plate 14. Capacities were computed using procedures for drilled shafts outlined by Reese and O'Neill (1999).

The ultimate capacity curve on Plate 14 does not include end bearing because we expect that slurry methods will be required to install the shafts, thereby preventing visual inspection of the bottom of shaft excavations. Additionally, the movement associated with mobilizing the full end-bearing resistance of CIDH shafts is frequently

beyond structural tolerances. For a CIDH shaft drilled in sand under slurry and with no verifiable bottom clean-out, the vertical movement required to mobilize end-bearing resistance may approach several inches.

The ultimate capacity curve on Plate 14 is for a CIDH shaft of a unit diameter (1 foot). Capacities for drilled shafts of diameters other than 1 foot may be obtained by multiplying the capacity for the 1-foot shaft by the actual shaft diameter (in feet). We recommend a minimum shaft diameter of 18 inches.

To obtain allowable axial capacities using the curve presented on Plate 14, a safety factor of at least 2 should be used for compressive loads, and a safety factor of 3 should be used for sustained uplift. A safety factor of 1.2 may be used for all loading conditions for additional loads caused by earthquake shaking or wind. Recommendations for the installation of CIDH shafts are presented in Section 6.7.5.

6.3.2 Lateral Load Resistance

Lateral load resistance of CIDH shafts for support of the structure can be developed by passive soil pressure acting against the shafts. A passive resistance based on an equivalent fluid weighing 370 pounds per cubic foot (pcf) acting against twice the projected shaft diameter may be used to a maximum depth of 20 feet.

In addition to the lateral capacity of the CIDH shafts, lateral load resistance may be provided by other below-grade structural elements, including grade beams or pier caps. Passive resistance on vertical sides of pier caps or grade beams may be estimated using an equivalent fluid weight of 300 pcf. A frictional resistance of 0.35 times the dead load acting on the base of grade beams or pier caps may be used. If grade beams or pier caps are poured neat against the soil, the friction and passive resistance may be assumed to act simultaneously. Note that mobilization of lateral resistance of the pier cap will require a lateral displacement of approximately 0.2 of the pier cap height for sandy fill soils that will be placed and compacted around the pier cap.

6.3.3 Lateral Load Response

We evaluated the response of 24 and 30-inch diameter CIDH shafts using the commercial computer software LPILE under free-head conditions for top-of-shaft shear

loads of 5, 10, 15 and 20-kips. Shaft deflection, bending moment and shear versus shaft length are plotted on Plates 15 through 17 for the 24-inch shafts and on Plates 18 through 20 for the 30-inch shafts. These design values represent the expected lateral resistance of the shafts under the given shear loads and pier cap connection and include no factor of safety. Note that the curves on Plates 15 through 20 are applicable to single CIDH shafts with no consideration for group effects. Additional assumptions for these analyses are listed below.

- The CIDH-supported structure is constructed from about Sta. 6+50 onward. Between Sta. 0+00 and Sta. 6+50 the structure is supported at grade, with no deep foundation support but with possible supplemental lateral support provided by a sheetpile wall between about 4+25 and 6+50.
- CIDH shafts are installed at the crest of the slope.
- Constant gross section flexural stiffness (constant "uncracked" EI).
- Shaft spacings exceed 3 diameters.

6.4 RETAINING WALL SOUTH OF PROSPECT STREET

We understand that the retaining wall proposed along the east side of East Cliff Drive and south of Prospect Street will be about 164 feet long and up to about 5 feet high. We assume this wall will be designed to allow movement of about 1/4 inch in order to mobilize active earth pressures behind the wall and passive pressures against the front of the embedded portion. The finished backslope will also be graded to varying heights and backslope configurations. The tallest and steepest backslope will occur toward the south end of the proposed retaining wall alignment, where the backslope will be up to about 5 feet high. Assuming the backslope is graded to a uniform slope from the wall to the upslope property line, the maximum backslope angle will be about 1-H to 1-V. In addition, we assume that backfill immediately adjacent to the new walls will be granular and of low expansion potential.

The following paragraphs apply to two design alternatives: 1) a soldier-pile-and-lagging system and 2) a simple cantilevered wall on a shallow footing. We understand that a soldier-pile-and-lagging wall system is the current preferred alternative.

6.4.1 Lateral Earth Pressures on Retaining Wall

The recommended procedure for calculating lateral earth pressures on the proposed retaining wall south of Prospect Street is illustrated on Plate 21. The procedure illustrated on Plate 21 may be adapted to either a conventional cantilevered wall or a soldier-pile-and-lagging wall. We understand that the wall may be up to about 5 feet high, with corresponding backslopes of between about 1 to 1.5-horizontal on 1-vertical.

The equivalent fluid pressures presented on Plate 21 apply for full drainage behind the wall and an allowable lateral wall movement of up to about ¼ inch. For wall backslopes (β) of up to 1.5-H to 1-V, the active pressure may be calculated based on an equivalent fluid weight of 65 pounds per cubic foot (pcf). For (1.5-H to 1-V) < β < (1-H to 1-V), the equivalent fluid weight for active pressures may be taken as 70 pcf.

The seismic pressure increment, which is added to the static active pressure, may be taken as an inverted triangular distribution based on an inverted equivalent fluid pressure of 40 pcf. The resultant seismic force should be taken to act a distance of 0.6H feet above the wall footing, where H = the wall (stem) height. For seismic analyses, the safety factor may be reduced to 1.0.

Passive pressures in front of the wall stem may be calculated using a triangular pressure distribution based on an equivalent fluid weight of 360 pcf. Note that this equivalent fluid weight applies for a wall that is allowed to move up to about 1/4 inch and has area paving in front of the wall stem.

6.4.2 Passive Pressures in Front of CIDH Shafts

Passive pressures in front of CIDH shafts (applicable for soldier-pile-and-lagging wall system) may be calculated using a triangular pressure distribution based on an equivalent fluid weight of 400 pcf. Note that this equivalent fluid weight applies for a wall that is allowed to move up to about ¼ inch and has area paving in front of the wall.

If CIDH shafts are designed on center-to-center spacings of at least 3 diameters (S/D ≥ 3), passive pressures may be calculated as shown on Plate 21. If CIDH shafts are spaced closer than about 3 diameters, the interference from adjacent piles reduces

the passive resistance compared to that of a single pile. For closely-spaced piles, the following passive pressure reduction factors may be used:

Spacing Ratio, S/D	Passive Pressure Reduction Factor
≥ 3	1 (i.e., no reduction)
2 (i.e., one diameter gap)	0.8
1 (i.e., CIDH shafts touching)	0.5

6.4.3 Retaining Wall Backfill and Drainage

To achieve the earth pressure and drainage conditions described above, the backfill adjacent to the walls should consist of granular soil with low expansion potential. In general, the on-site silty and clayey sands could be made suitable for reuse as backfill provided the organic materials (e.g., roots and other plant debris) are essentially removed. We should review and approve the proposed backfill materials before they are used in construction. Overcompaction of wall backfill should be avoided because increased compaction effort can result in lateral pressures significantly greater than those used in design. We recommend that all backfill placed within 3 feet of the walls be compacted with hand-operated equipment.

The new retaining wall may be designed without hydrostatic pressures if it is fully drained. Backdrainage should consist of either a prefabricated drainage material, installed in accordance with the manufacturer's recommendations, or a layer of drain rock. A drain rock layer, if used, should be at least 12 inches thick and extend to within 1 foot of the ground surface. A 4-inch diameter, perforated schedule 40 (or equivalent) pipe should be installed (with perforations facing down) along the base of the retaining wall. The drain pipe should rest on a 2-inch thick bed of drain rock. Drain pipes should be sloped to drain by gravity.

Drain rock should conform to Caltrans specifications for Class 2 permeable material. A 1-foot thick cap of clayey soil should be placed over the drain rock to inhibit surface water infiltration.

6.4.4 Cantilevered Wall Foundation

We assume that, if used, a cantilevered retaining wall will be founded on a shallow footing. If pushover analyses performed by the structural engineer indicate that deep foundations are required, we should be consulted to provide supplemental recommendations for an alternative wall foundation system.

Shallow footings for cantilevered retaining walls should be founded on properly-prepared subgrade soils at a minimum embedment depth of 2 feet below nearest adjacent finished grade. Subgrade preparation for wall footings is discussed in Section 6.7.3 of this report. Excavations for retaining wall foundations should expose undisturbed and competent clayey sand. Retaining walls that are constructed at least 24 inches below nearest adjacent finished grade and founded on competent soils as described above may be designed for a net allowable bearing pressure of [1,400 + 450B] psf, where B = the footing width in feet. For all loads including wind or seismic, the allowable bearing pressure may be increased by one-third. The net allowable bearing pressure presented here includes a safety factor of at least 3 with respect to shear failure of the foundation soil.

If the footing is poured on a properly-prepared subgrade (as described in Section 6.7.3), the dead load may provide frictional resistance against sliding based on a friction coefficient of 0.35 at the footing base.

6.5 SHEETPILE WALL BETWEEN STA. 4+25 AND STA. 6+50

We understand that between approximately Sta. 4+25 and Sta. 6+50 the available right-of-way for the proposed pathway may not accommodate a purely grade-supported pathway. For supplemental pathway support in this reach, the County and Moffatt & Nichol are considering the use of a short (up to 3-foot high) retaining wall constructed of driven or pressed-in sheetpiles. Note that sheetpile walls described in this section should not be relied upon for roadway embankment stabilization or hazard mitigation in the event of either a storm surge or earthquake-induced liquefaction. To guide the development of our design recommendations, we used a set of cross sections provided Moffatt & Nichol on January 21, 2008.

6.5.1 Minimum Sheetpile Penetration

For supplemental support of the proposed pedestrian pathway between Sta. 4+25 and Sta. 6+50 we recommend a minimum sheetpile penetration of 11 feet. Note that the sheetpile contractor may propose a deeper minimum sheetpile penetration depending on the contractor's installation methods. Our minimum recommended penetration is based on a safety factor for passive soil pressures of at least 1.5 and unbalanced water surface levels at the ground surface behind the wall and 10 feet lower in front of the wall. Due to the relatively low proposed sheetpile section heights, we do not consider necessary an additional horizontal force due to earthquake acceleration.

6.5.2 CWALSSI Input

We understand that Moffatt & Nichol plans to design the sheetpile wall using the U.S. Army Corps of Engineers computer program CWALSSI. A "starter" input file for this program is provided on Plate 22. The geotechnical parameters included in the CWALSSI input file are based on the geotechnical data and conclusions presented in this report. As noted on Plate 22, the input parameters for the wall section properties ("WALLE," "WALLI," and "WALLA") must be entered by the user. This input file was provided in electronic form to Moffatt & Nichol on January 28, 2008.

6.6 GRADE-SUPPORTED PATHWAY SEGMENT

The scope of our field exploration for the grade-supported segment of the proposed pathway does not include the segment between Sta. 0+00 and Sta. 4+25. Please note the "Limitations" comments in Section 7.2 regarding applicability of the conclusions and recommendations presented in this report to the pathway segment between Sta. 0+00 and Sta. 4+25.

The grade-supported pathway segment is expected to be designed and constructed from Sta. 0+00 to about Sta. 4+25. In the event that a sheetpile wall is not feasible between Sta. 4+25 and Sta. 6+50, an alternate supplemental support scheme may be needed. A schematic representation of a possible alternate supplemental support scheme that involves rip-rap, a woven geotextile fabric and partial support at-grade is shown on Plate 23. Subgrade preparation recommendations for grade-supported pathway segments are provided in Section 6.7.3.

To reduce erosion of the finished pathway, drainage for the pathway should be provided, and the pathway should also be protected from excessive runoff from the adjacent roadway and bicycle lane. Periodic maintenance and repair of the grade-supported pathway should be expected throughout its service life.

We expect that the pathway will be supported on primarily clayey fine sand fill soils. Subgrade soils exposed for riprap benches and pathway support should be scarified to a depth of 6 to 9 inches and recompacted to at least 90 percent of maximum dry density and within 2 percent of optimum moisture per ASTM D 1557. Soft spots that can not be worked to meet the compaction criteria should be overexcavated and backfilled with riprap. The depth of any overexcavation should be determined by us during construction as part of our construction observation services.

6.7 CONSTRUCTION CONSIDERATIONS

The following sections present recommendations regarding various aspects of construction, including site preparation, shallow temporary excavations, subgrade preparation, fill selection and placement, and CIDH shaft construction.

6.7.1 Site Preparation

Prior to construction, existing utilities to be affected by construction and other subsurface obstructions should be removed or relocated, and vegetation and other debris should be removed. Depressions left from below-grade obstructions and utilities should be excavated to unyielding soil and backfilled with properly compacted fill. Site drainage should also be provided to keep earthwork and other construction areas free from significant stormwater accumulation.

6.7.2 Shallow Temporary Excavations

Excavations should be designed and constructed in accordance with all applicable local, state and federal trenching regulations. The surficial soils affected by shallow excavations at this site should be classified as OSHA Type C. OSHA regulations generally do not require shallow excavations to depths of 4 feet or less to be sloped back or braced. However, if sloughing or caving occurs in excavations less than 4 feet

deep, the slopes should be cut back to at least 1-H to 1-V. Any excavations deeper than 4 feet should be designed by a California registered civil engineer.

Although we did not encounter shallow groundwater during our field exploration, it is possible that water could be encountered in temporary excavations, depending on localized water levels and rainfall and runoff. Any water seepage into shallow temporary excavations can probably be handled by pumping from sumps.

6.7.3 Subgrade Preparation

After excavation or fill placement, subgrade materials should be proofrolled to look for soft spots. Soft spots should be removed, the area scarified, and properly-prepared subgrade material should be placed according to the recommendations given below. Additional, specific subgrade preparation recommendations for the grade-supported portion of the pathway are provided in Section 6.6 above.

6.7.4 Fill Selection and Placement

Engineered, structural fill should be used to bring overexcavated areas to design rough grade and as backfill against pier caps, grade beams and retaining walls. Structural fill should consist of low-plasticity soils with a liquid limit less than 35 and a plasticity index below 15. Structural fill should be free of significant organics and other deleterious materials and have an effective clod diameter of 3 inches or less, with at least 90 percent of the material passing a 3/4-inch sieve. The near-surface, on-site soils that we encountered in our borings appear to meet the requirements for structural fill material, provided it can be processed to remove significant organics. Before any fill is placed, we should approve the material for suitability for use as structural fill.

Except behind the retaining wall or adjacent to grade beams, structural fill should be compacted to at least 95 percent of the maximum dry density per ASTM D 1557 and at a moisture content from -1 to +3 percent of optimum using loose-lift thicknesses of 6 to 8 inches. Adjacent to foundations, we recommend 4-inch lift thicknesses and hand-operated compaction equipment.

See Section 6.4.2 for specific recommendations regarding fill selection and placement behind the retaining wall. Behind the retaining wall, the granular fill should be

compacted to between 90 and 95 percent of the maximum dry density per ASTM D 1557. To avoid excessive wall movements and lateral pressures in excess of design values, care should be taken to avoid overcompaction of the backfill. We recommend that lightweight, hand-operated equipment be used to compact backfill behind walls.

To achieve a firm compacted surface at the face of the fill slopes, the slopes should be overbuilt and subsequently trimmed back, or "track walked". If general fill that contains fine-grained soils is used on the slope faces, erosion protection should be provided. To reduce erosion on slope faces constructed with general fill, the slope faces should be seeded as soon as possible with appropriate ground cover vegetation. If additional protection is desired, then vegetative cover reinforcement mats (erosion control blankets/mats) can be used in order to reduce downslope movement/creep potential. Various types of erosion control mats are available including thicker "longer-term" protection types that facilitate moisture retention and germination, to thinner varieties of mats that degrade more rapidly.

Riprap stone should be well-graded so that it has a high density, relatively high permeability, adequate strength and appropriate modulus after placement. Weakly-cemented sandstones and other materials susceptible to break-down during placement or exposure to repeated cycles of wetting and drying should be avoided. We should be given the opportunity to sample the proposed borrow source materials and test them for suitability as riprap materials. As mentioned in Section 6.6, riprap stone should be 12-inch minus in size.

6.7.5 CIDH Shaft Installation

The construction of CIDH shafts will likely require the slurry technique when drilling though the granular soils at the site. However, CIDH shafts should be cased through the upper 15 feet of relatively loose, granular soils that are found near the top of the slope surfaces. Where CIDH shafts are located within 15 feet of an underground utility line, the casing should extend to at least 15 feet below the lowest point of the adjacent utility.

Successful completion of CIDH shafts requires good construction procedures. Drilled excavations should be constructed by a skilled operator using techniques that allow the

excavations to be completed, the reinforcing steel placed, and the concrete poured in a continuous manner to reduce the time that excavations remain open. Drilled excavations should not remain open overnight.

We recommend that CIDH shafts be installed by following the guidelines presented by O'Neill and Reese (1999). We should also be given an opportunity to review the proposed specifications prior to construction. The following considerations will aid in the successful construction of CIDH shafts.

- The clear spacing between rebars or behind the rebar cage should be at least three times the maximum size of the coarse aggregate.
- Centralizers on the rebar cage should be installed to keep the cage properly positioned.
- Cross bracing of a reinforcing cage may be used when fabricating, transporting and lifting. However, experience has shown that cross bracing can contribute to the development of voids in a concrete shaft. Therefore, we recommend removing the cross bracing prior to lowering the reinforcing cage into the open shaft.
- Concrete should have a slump of 6 inches +/- 1 inch. Concrete should be placed from the bottom of the shaft using a tremie pipe or concrete pump.

Concrete tremied into a shaft with slurry should always maintain a hydrostatic pressure greater than either the surrounding groundwater level or slurry in the excavation. The slurry should have a marsh funnel velocity of 45 to 60 seconds. The slurry should have a specific gravity between 1.02 (8.5 lb/gal) and 1.15 (9.6 lb/gal) at the time of concrete placement. In addition, the sand content in the slurry should be less than 15 percent. Before pulling the casing, a sufficient head of concrete that fills the casing is needed.

Although the axial capacity recommendations provided in Section 6.3 neglect end bearing capacity, we recommend that the shafts be cleaned prior to concrete placement with a clean-out bucket used in conjunction with submersible pumps. Air lifts should not be used on the sandy shaft excavation bottoms.

The CIDH installation equipment will operate very close to the top of the lake-ward slope along East Cliff Drive. To protect the relatively loose materials at the top of the slope and to reduce erosion and the incidence of shallow slumps, the tire loads from heavy trucks and other heavy "surcharge" loads incidental to construction should be spread across an area as wide as possible to reduce the pressures. Timber mats and/or machinery with balloon tires or tracks may be considered. If the applied bearing pressure of the Contractor's equipment within about 15 feet of the top of the slope exceeds about 200 psf, we should review the impact that the applied load will have on the potential for shallow, localized "slump" failures near the top of the slope.

6.7.6 Wet Weather Construction

We understand that construction activities including site preparation and grading may occur during the rainy winter months. We have no objection to the use of winter (wet weather) grading methods provided the following conditions are met.

If site grading and construction is to be performed during the winter rainy months, the owner and contractors should be fully aware of the potential impact of wet weather. Rainstorms can cause delay to construction and damage to previously-completed work by saturating subgrade soils, causing erosion, reducing the stability of cut slopes or flooding excavations.

Earthwork during rainy months will require extra effort and caution by the contractors. The contractor should be responsible to protect his work to avoid damage by rainwater. Standing pools of water should be pumped out immediately. Construction during wet weather conditions should be addressed in the project construction bid documents and specifications. We recommend the contractor submit a wet-weather construction plan outlining procedures to be employed to protect the work and to reduce damage by rainstorms. This submittal should be reviewed and approved by Kleinfelder.