

CALIFORNIA COASTAL COMMISSION

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COASTAL DEVELOPMENT PERMIT APPLICATION

Application number **3-00-140, Scenic Road Armoring Repairs**

Applicant City of Carmel-by-the-Sea

Project location Six bluff locations below Scenic Road and the Scenic Road Recreational Trail (between 10th Avenue & Martin Way) along the back-beach of Carmel Municipal Beach in the City of Carmel-by-the-Sea in Monterey County.

Project description Repair and augment the existing shoreline armoring in several locations below Scenic Road at Carmel Beach.

Local approval The City of Carmel-by-the-Sea City Council approved the project and certified the CEQA mitigated negative declaration on November 7, 2000.

File documents Carmel Beach Management Plan (CDPs P-980, P-79-320, 3-83-217-A1, 3-83-217-A2, 3-83-217-A3, and 3-83-217-A4); CDP 3-98-102 (Panattoni).

Staff recommendation... **Approval with Conditions**

Summary of staff recommendation: The City proposes repair and augmentation of the existing system of shoreline armoring (both seawalls and revetments) located beneath Scenic Road on the southern portion of the Carmel Municipal Beach. Most all of the back-beach along this stretch of coastline is currently armored by both pre-Coastal Act structures and by a variety of structures permitted by the Coastal Commission since 1974. The armoring here is designed to protect the Scenic Road recreational trail system as well as Scenic Road itself. The proposed armoring repairs would continue the existing Carmel back beach aesthetic through the use of golden-granite facing on the seawall extensions overtopped with hardy cascading vegetation, and through the use of sand contouring and upper bluff vegetation designed to hide the revetment segments; the City of Carmel is well-known for their successful efforts in this regard to minimize the visual impacts of armoring. The proposed repairs would protect the informal meandering nature of the blufftop trail system and the existing back-beach aesthetic with the absolute minimum of beach area coverage. **Staff is recommending approval with conditions.**



California Coastal Commission
April 2001 Meeting in Santa Barbara

Staff: D. Carl Approved by: *TC* 3/27/01
3-00-140 (Scenic Road Armoring Repairs) stf rpt 3.26.2001.doc

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1. Staff Report Summary

The Applicant proposes several repairs and minor additions to the series of rock revetments and golden-granite faced seawalls that line much of the bluff below Scenic Road at Carmel Beach. The objective of the project is to continue to protect the Scenic Road public recreational trail system located atop the bluff



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as well as, ultimately, Scenic Road itself. Scenic Road and the meandering blufftop trail located along its seaward edge are well-known and much-used public recreational features that help to define the Carmel shoreline experience as a complement to the white sands of Carmel Beach proper below. The Coastal Commission permitted the construction of the pathway system, several beach access stairways, the major reconstruction of Scenic Road itself, and much of the back-beach armoring in 1987.

The Scenic Road trail system is a unique public pathway experience that is defined in part by its natural symbiosis with the undulating bluffs and landscape canopy falling off to the beach below. The decomposed granite pathway meanders between tree-dotted, vegetated bluff outcrops and the rock curb that defines the edge of Scenic Road inland. Most all of the blufftop area is landscaped by the City and is complemented by nine stairways and a series of benches and overlooks, many of the improvements faced with decorative rockwork in keeping with the informal organic aesthetic for which the Carmel shoreline is known.

The proposed protective work would be designed to harmonize with the existing armoring present along almost all of the back-beach in Carmel below Scenic Road. To the extent one can make such assertions regarding such unnatural structures, the existing armoring in Carmel is widely recognized as some of the most aesthetically pleasing in the State. The seawalls here undulate with the natural curves of the bluffs and are faced with indigenous Carmel golden granite overtopped with hardy cascading vegetation that help to soften the walls and provide a visual transition to the blufftop trail system above. The existing revetments are unique in that the City has an active management system in place to camouflage the piles of rock by covering the base of such revetments with sand and the upper portion with a soil and vegetation cap that is, again, integrated with the upper blufftop plantings. Although winter storm events and scour can remove such camouflage during peak events, the City regularly re-camouflages the revetments. During most active beach use periods, the revetments appear as natural back-beach bluff dune slopes. The effect of the City's efforts is that the armoring generally melds with, and in fact helps to define, the Carmel beach aesthetic and character.

Staff has worked closely with the City to help them design a project that is mindful of maintaining both the informal meandering nature of the blufftop and the existing back-beach aesthetic with the absolute minimum of beach area coverage. The armoring repairs and augmentations will help to ensure that the public access pathway and pathway experience will not be compromised by ongoing coastal erosion, and that this public access jewel remains in place and retains its charm for current and future generations to enjoy, at the same time as preserving the beach area for continuing beach recreational use. In order to ensure compliance with past Commission actions, and to ensure that the Carmel Beach shoreline is monitored and maintained consistent with the Carmel Beach aesthetic, Staff recommends that the Commission require an updated Carmel Shoreline Management Plan.

As so conditioned, the proposed project is consistent with the policies of the California Coastal Act and staff is recommending approval.



2. Staff Recommendation on Coastal Development Permit

The staff recommends that the Commission, after public hearing, **approve** the proposed project subject to the standard and special conditions below. Staff recommends a **YES** vote on the motion below. A yes vote results in approval of the project as modified by the conditions below. The motion passes only by affirmative vote of a majority of the Commissioners present.

Motion: I move that the Commission approve Coastal Development Permit Number 3-00-140 subject to the conditions below and that the Commission adopt the following resolution:

Approval with Conditions. The Commission hereby grants a permit for the proposed development, as modified by the conditions below, on the grounds that the modified development is consistent with the requirements of Chapter 3 of the California Coastal Act of 1976 (Coastal Act), will not prejudice the ability of the City of Carmel to prepare a local coastal program conforming to Chapter 3 of the Coastal Act, is located between the sea and the first public road nearest the shoreline and is in conformance with the public access and recreation policies of the Coastal Act, and will not have any significant adverse effects on the environment within the meaning of the California Environmental Quality Act (CEQA).

3. Conditions of Approval

A. Standard Conditions

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the Permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the Permittee to bind all future owners and possessors of the subject property to the terms and conditions.



B. Special Conditions

1. **Approved Project.** The City of Carmel by-the-Sea (Permittee) shall undertake development in accordance with the approved final plans (titled *Carmel-by-the-Sea Beach Bluff & Beach Access Improvement Project Along Scenic Road from 10th Avenue to Martin Way* by Neill Engineers Corp. dated received in the Coastal Commission's Central Coast District Office March 7, 2001). Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is necessary. The Permittee shall notify the Executive Director in writing within seven (7) days of completion of the approved project and shall identify the date of project completion.

2. **Carmel Shoreline Management Plan.** WITHIN SIX (6) MONTHS OF COMPLETION OF THE APPROVED PROJECT OR BY APRIL 13, 2002 (WHICHEVER IS EARLIER), the Permittee shall submit to the Coastal Commission for review and approval a Carmel Shoreline Management Plan (Plan). The Plan shall cover the area seaward of and including the first through public road inland of Carmel Beach (i.e., North San Antonio Avenue, Ocean Avenue, and Scenic Road) including: all of Carmel Beach, the bluffs and dunes backing Carmel Beach, Scenic Road, the Scenic Road recreational trail, the Ocean Avenue parking lot, and all accessways to Carmel Beach from the first through public road (i.e., from North San Antonio Avenue, Ocean Avenue, and Scenic Road). The Plan shall be prepared in consultation with: (1) a licensed geologist or civil or geotechnical engineer; and (2) a licensed landscape architect or equivalent resource specialist experienced with Carmel Beach beach and bluff vegetation. The Plan shall at a minimum include:
 - (a) **Goals and Objectives.** A discussion of the goals and objectives of the Plan, which shall include the long-term preservation and protection of: Carmel Beach; the Scenic Drive recreational trail; the beach access stairways and other beach access points; beach area parking (including parking along Scenic Road, on Ocean Avenue seaward of San Antonio Avenue, and the Ocean Avenue parking lot); beach access facilities (e.g., restrooms, benches, signs, etc.); blufftop landscaping; and continuous through public lateral access seaward of any privately-owned properties.
 - (b) **Policies.** A set of policies consistent with Chapter 3 of the Coastal Act designed to achieve Plan objectives.
 - (c) **Current Status.** A map clearly identifying: all public access features (e.g., Carmel Beach, Scenic Road recreational trail, stairways, beach access points, boardwalks, Ocean Avenue parking lot, restrooms, benches, etc.); all development along the back-beach area (including both private residential development and public facilities); landscaping and significant trees; all habitat areas (e.g., Pescadero Creek); and all shoreline armoring. The map shall be supplemented by a narrative describing the mapped resources.
 - (d) **Planned Public Access Projects.** A description of any contemplated public access projects in the Plan area (e.g., a boardwalk on the dunes located between Scenic Road and Ocean Avenue,



pathway improvements from 4th Avenue and North San Antonio to the beach, additional stairways, restrooms, etc.) with, as available, a timeline and workplan for same.

- (e) **Future Armoring.** All bluff areas in the Plan area not currently armored shall be evaluated in terms of whether future armoring is likely at these currently unarmored locations. Such an evaluation shall include, at a minimum, a description of options for addressing continued erosion at these locations without armoring.
- (f) **Shoreline Erosion Trends.** An evaluation of historic erosion trends of the beach and bluffs at Carmel Beach, and an analysis of expected future shoreline conditions based on, at a minimum, evaluation of: existing and/or contemplated armoring in the Plan area; normal and maximum tidal ranges and wave heights; storm surge and anticipated long-term changes in sea level; long-term erosion rates; type and frequency of storms which have caused shoreline retreat historically; conditions leading to subaerial erosion historically; offshore features affecting the site (island sheltering, canyons, etc.); key sand sources and sinks which dominant the Carmel beach littoral cell, and contribution of the back beach area to littoral sand supply; the volume of sand required to establish a square foot of beach on Carmel Beach; plot showing all historic shoreline surveys, with dates of surveys and references. To facilitate future long-term trend evaluation, a series of beach profile transects shall be established and identified in the Plan.
- (g) **Shoreline Erosion Response.** Identification of all measures to be taken to ensure preservation of the existing length and width of sandy beach at Carmel Beach. At a minimum, the cost and benefits of a formal beach nourishment program at Carmel Beach shall be evaluated, including an analysis of the effectiveness of similar programs applied to geologically similar shoreline littoral cells. All such measures identified shall include a detailed description of the method for implementing such measures, including identification of potential sources of funding and appropriate sand materials.
- (h) **Sand Supply Mitigation.** Identification of a mitigation mechanism, at a minimum based upon subsections (f) and (g) above, to be applied to mitigate for Carmel Beach shoreline sand supply impacts in the event future development that alters natural shoreline processes (e.g., revetments, seawalls, retaining walls, etc.) is proposed along the shoreline of the Plan area.
- (i) **Shoreline Armoring Monitoring and Maintenance.** Methods to be used to regularly monitor and maintain all Plan-area shoreline armoring. At a minimum, the Shoreline Armoring Monitoring and Maintenance component of the Plan shall provide for:
 - (1) A series of permanent surveyed benchmarks inland of the bluff edge running the length of Carmel Beach, and a complementary series of survey points on each armoring structure in the Plan area (i.e., at least one survey point at both the upcoast and downcoast end of each structure, and at appropriate locations between each end). The inland surveyed benchmarks and survey points on armoring shall be described in relation to National Geodetic Vertical Datum (NGVD) and identified through permanent markers, benchmarks, survey position,



written description, reference numbers, et cetera to allow measurements to be taken at the same location in order to compare information between years.

- (2) General as-built plans showing the extent of all armoring in the Plan area in relation to the existing topography and other relevant features (including the top of bluff, base of bluff, sand-bluff interface, sandstone platforms, Scenic Road, Scenic Road pathway, and utilities in the Scenic Road right-of-way, etc). The as-built plans shall indicate vertical and horizontal reference distances from the surveyed benchmarks to the survey points on each structure for use in future monitoring efforts.
 - (3) Provisions to retrieve any rock that migrates from revetments.
 - (4) Evaluation in consultation with a licensed civil or geotechnical engineer of the condition and performance of all armoring in the Plan area on a yearly basis following the winter storm season (i.e., after April 1st) and on an as-needed basis following any major storm event during the winter storm season. Such evaluation shall at a minimum address whether any significant weathering or damage has occurred that would adversely impact future performance, and identify any structural damage requiring maintenance, repair, or changes or modifications to permitted armoring. At five-year intervals, the yearly post winter season evaluation shall include measurements of the distance between the inland surveyed benchmarks and survey points on the armoring structures. The results of the evaluation shall be submitted to the Executive Director of the Coastal Commission no later than June 1st of each year.
- (j) **Shoreline Armor Camouflage Monitoring and Maintenance.** Methods to be used to regularly monitor and maintain all Plan-area shoreline armor camouflage (i.e., the landscaping that extends from the upper bluff over the top of the armor, and the sand area that extends over the base of the armor). At a minimum, the Plan shall provide for the shoreline armor camouflage to be evaluated on a yearly basis following the winter storm season (i.e., after April 1st) to ensure that such landscaping and sand cover continues to camouflage the armoring in the project area.
 - (k) **Other Monitoring and Maintenance.** Methods to be used to regularly monitor and maintain all Plan-area public access features (e.g., Carmel Beach, Scenic Road recreational trail, stairways, beach access points, boardwalks, Ocean Avenue parking lot, restrooms, benches, etc.) and landscaping.
 - (l) **Temporary Events.** Methods for evaluating temporary events in the Plan area for, among other things, impacts on the general public use of public recreational areas (including, but not limited to, sandy beach, on-street and lot parking areas, and accessways to the beach). The Plan shall include provisions for the annual submittal of a schedule of such temporary events to the Executive Director of the Coastal Commission.
 - (m) **Emergency Erosion Response.** Procedures and methodologies for responding to an emergency situation arising from shoreline erosion where emergency is defined as "a sudden unexpected



occurrence demanding immediate action to prevent or mitigate loss or damage to life, health, property, or essential public services.”

- (n) **Coastal Permitting.** Procedures to obtain coastal development permits, emergency coastal development permits, and/or permit amendments from the Coastal Commission and, when the City’s Local Coastal Program is certified, from the City of Carmel, for all Plan-identified maintenance activities and other Plan development. All maintenance activities shall be identified as either: (1) regular routine activities (examples may include, but are not limited to: movement of sand on the beach with mechanized and other equipment; retrieval of rocks from revetments; recontouring of beach sand at the base of revetments; placement of soils on the blufftop and atop revetments and seawalls; removal of invasive exotic plants and replanting of bluff and back-beach vegetation; regrouting and minor repair of rockwork in existing seawalls, stairways, trash enclosures, etc.; clearing of vegetation from access trails to the beach; etc.), or as (2) non-routine activities (examples may include, but are not limited to: seawall or revetment repairs; stairway replacement, etc.).

The approved Plan shall be made part of the City’s Local Coastal Program (LCP) as follows: (1) if the Plan is approved before the City has formally submitted a LCP for Coastal Commission review, then the approved Plan shall be included as a component of the first LCP application subsequently made to the Coastal Commission by the City; (2) if the Plan is approved after the City has formally submitted a LCP for Coastal Commission review, then the approved Plan shall be submitted as an LCP amendment as soon as possible following Plan approval.

3. **Carmel Shoreline Management Plan Implementation.** WITHIN THIRTY (30) DAYS OF COMMISSION APPROVAL OF THE CARMEL SHORELINE MANAGEMENT PLAN, the Permittee shall apply for a multi-year coastal development permit from the Coastal Commission, and from the City of Carmel if applicable, to undertake the regular routine maintenance activities identified by the approved Carmel Shoreline Management Plan. Those activities identified as non-routine maintenance activities and as other development by the approved Carmel Shoreline Management Plan shall require separate coastal development permit or permit amendment applications.
4. **Assumption of Risk, Waiver of Liability and Indemnity Agreement.** By acceptance of this permit, the Permittee acknowledges and agrees: (a) that the site is subject to hazards from episodic and long-term bluff retreat, waves, flooding, liquefaction and erosion; (b) to assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (c) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; (d) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission’s approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards; and (e) that any



adverse effects to property caused by the permitted project shall be fully the responsibility of the landowner.

Recommended Findings and Declarations

The Commission finds and declares as follows:

4. Project Description & Background

A. Project Location

The proposed project includes repair work at six separate bluff locations below Scenic Road and the Scenic Road public recreational trail between 10th Avenue and Martin Way along the back-beach of Carmel Municipal Beach in the City of Carmel-by-the-Sea in Monterey County. All of the property involved, including the beach itself, is owned by the City of Carmel. See Exhibit A for a map showing both the general project location, Exhibit C for individual site locations, and Exhibit D for photos of the six individual sites involved.

B. City of Carmel Shoreline Coastal Permitting History

This proposed repair and augmentation project would directly integrate with past shoreline work approved by the Commission along the Carmel Beach over the years. A general history of the Commission's permitting involvement follows.

In 1974, the Commission approved the original Carmel Beach Management Plan that described the judicious use of shoreline protection structures and landscaping to stabilize slopes along Scenic Road in order to protect both Scenic Road and the character of the Carmel Beach itself (P-980, approved November 4, 1974). This original plan acknowledged the need to protect the bluffs through a combination of retaining walls, landscaping, and sand contouring that would best approximate a natural look in harmony with natural beach and bluff appearance. The stated main goal of the plan was "to preserve the beauty of this unique and scenic area" by maintaining the bluff as a greenbelt between the white sand beach and Scenic Road.

The 1974 coastal permit authorized beach bluff seawalls at four different locations as well as multiple stairways to the beach. This 1974 shoreline work was augmented in 1979 by additional rip-rap revetments at the coves present at 12th and 13th Avenues (P-79-320, approved by the Commission June 25, 1979).

The severe 1982-83 El Niño winter storms caused extensive damage to not only the beach itself, but to the existing revetments, seawalls, bluff slopes, stairways, and utilities. These winter storms removed



much of the beach and large portions of blufftop leaving the remaining bluffs, shoreline protective work, and stairways unprotected from wave attack. In addition, major damage was caused by storm water runoff and groundwater drainage, which weakened the natural bluff structure along the Carmel Beach bluffs.

In 1983, the Commission approved Phase 1 of the Carmel Beach Restoration Plan (3-83-217-A1, November 15, 1983) as an amendment to the original Beach Management Plan. Phase 1 consisted of the installation of emergency restoration measures in the form of major areas of rip-rap revetment (approximately 10,000 tons of rip-rap), reconstruction of lost stairways, repair of failed bluffs, and interim sand replenishment. The 1983 approval included the revetment currently proposed for repairs running south of 10th Avenue (Site 1 in the current application - see Exhibit C). An important part of these Phase 1 repairs was the construction of the City's shoreline storm drainage system designed to relieve pressure on the bluffs from water saturation and to redirect storm drainage away from stairs and bluff slopes.

In 1987, the Commission approved another segment of seawall at the terminus of 12th Avenue (immaterial amendment approved April 6, 1987) and further amended the Beach Management Plan through Phase 2 of the Carmel Beach Restoration Plan (3-83-217-A2, approved June 9, 1987). Phase 2 was the culmination of 3 years of planning efforts and resulted in redirecting Scenic Road to one-way to make way for access improvements, the development of the blufftop scenic walkway, rebuilding of 5 stairways, creation of a sand ramp for handicapped access, revegetation of bluff slopes, construction of visitor amenities (i.e., benches, trash receptacles, drinking fountains, etc.), and guardrails to direct pedestrians away from fragile bluff slopes to developed accessways.

Most recently, in 1997, the Commission approved additional armoring in the form of a camouflaged revetment between 11th and 12th Avenues below Scenic Road (CDP 3-83-217-A4, approved November 6, 1997).

C. Carmel Beach Recreational System Today

The comprehensive work begun in 1983 and completed in 1988 through Phases 1 & 2 of the Carmel Beach Restoration Plan, as augmented by work undertaken both previously and since, has defined the Carmel Beach recreational experience and character. Together Carmel Beach, the bluffs, the blufftop trail, and Scenic Road itself combine to form a world-renowned, diverse, much-used, and visually striking system of public access.

The Scenic Road trail system is a unique public pathway experience that is defined in part by its natural symbiosis with the undulating bluffs and landscape canopy falling off to the beach below. The decomposed granite pathway meanders between tree-dotted, vegetated bluff outcrops and the rock curb that defines the edge of Scenic Road inland. Most of the blufftop area is landscaped by the City and is complemented by nine stairways and a series of benches and overlooks, many of the improvements faced with decorative rockwork in keeping with the informal organic aesthetic. The trail provides a panoramic view of Carmel Bay and the beach below (see photo 1 of Exhibit D).



In terms of the armoring, to the extent one can make such assertions regarding such unnatural structures, the existing armoring in Carmel is widely recognized as some of the most aesthetically pleasing in the State. The seawalls here undulate with the natural curves of the bluffs and are faced with indigenous Carmel golden granite overtopped with hardy cascading vegetation that help to soften the walls and provide a visual transition to the blufftop trail system above (see, for example, photos 3 and 4 of Exhibit D). The existing revetments are unique in that the City has an active management system in place to camouflage the piles of rock by covering the base of such revetments with sand and the upper portion with a soil and vegetation cap that is, again, integrated with the upper blufftop plantings. Although winter storm events and scour can remove such camouflage during peak events, the City regularly re-camouflages the revetments (see photo example in Exhibit E). During most active beach use periods, the revetments appear as natural back-beach bluff dune slopes. The effect of the City's efforts is that the armoring generally melds with, and in fact helps to define, the Carmel Beach aesthetic and character. Although not always readily apparent at first glance, almost the entire shoreline along the southern end of Carmel Beach (i.e., south of Ocean Avenue) is currently armored (see Exhibit B).

It is within this context that the current proposal is before the Commission. See Exhibit F for the Applicant's most recent project submittal that describes the proposed project and the Carmel Beach recreational experience from the City's perspective.

D. Project Description

The Applicant proposes six separate individual project components as follows (see also proposed project plans in Exhibit C, and photos of the six individual sites in Exhibit D):

Site 1

Approximately 200 to 225 tons of golden granite rock would be placed in a roughly 20 foot gap located between the 10th Avenue stairway and seawall (to the north) and an existing revetment extending to the south. This gap was meant to be filled as part of the larger revetment approved in 1983 at this location (CDP 3-83-217-A1), but, for whatever reason, the revetment was not extended to the stairway. This repair would address problems from end-scour and swirling eddies during storm events in the 20 foot missing segment of rock, and would complete the structure authorized in 1983. The revetment would be keyed into the underlying bedrock for structural stability. As is done for the existing adjacent revetment, the new rock would be camouflaged (i.e., covered with sand at its base and landscaped at its top) consistent with the previously approved planting plan (CDP 3-83-217-A2).

Site 2

Approximately 120 to 180 tons of golden granite rock would be placed at the base of a currently undermined existing golden-granite faced seawall perched atop the sandstone just north of the 13th Avenue stairway. The rock would again be keyed into the underlying bedrock for structural stability and would extend roughly 60 linear feet between a natural notch in the sandstone below the existing wall. The rock would be placed below the summer sand level and is designed to address ongoing scour that



has undermined the existing wall. The rip-rap repair would act as the footing for the existing wall where erosive scour has removed the sandstone previously supporting this wall segment. Rip-rap was chosen for this repair location because of the scoured configuration of the underlying sandstone (the existing notch) as well to help diffuse wave energy that would otherwise be focused into the walled cove at this location during times of heavy storm scour when the rock would be exposed.

Site 3

A roughly 25 linear foot extension would be added to the existing golden-granite faced seawall just south of the 13th Avenue stairway. The wall extension would match the existing wall, would be notched into the downcoast bluff, and is designed to repair and augment the failed end of the existing wall and to protect against additional end scour from storm events.

Site 4

A roughly 50 foot linear extension would be added to the existing golden-granite faced retaining wall at Frank Lloyd Point near Santa Lucia Avenue. Directly inland at this location is the only public restroom facility currently serving the southern portion of Carmel Beach (there is another public restroom at the base of Ocean Avenue to the north). The bluff recently eroded away part of the recreational path, taking with it the benches and guardrails previously present here. The existing retaining wall and the repair extension proposed here is located on a sandstone outcrop above the summer sand levels.

Sites 5 & 6

Two gaps in the existing golden-granite faced seawall, roughly 40 linear feet each, would be closed by adding additional like sections of wall. These sections will replace the existing non-engineered rock revetments at these locations, which will be removed.

Proposed project is fundamentally a repair project

In general, the project proposes a series of repairs and augmentations to the existing armoring present at these six locations below Scenic Road. In the case of Site 1, the revetment was meant to be extended originally into this area based on the Commission's 1983 coastal permit, and the existing request is arguably covered by this previous action. For Site 2, the existing seawall footing needs to be repaired or the wall will soon be completely undermined and fail altogether. At Site 3, the end of the existing wall has already failed and the repair extension would correct this failure consistent with the existing bluff topography. At Site 4, the proposed wall is an upper bluff retaining wall repair and extension designed more to stabilize the upper bluff than to withstand the impact of direct wave attack. Sites 5 and 6 propose the removal of the existing unengineered revetments at two locations with replacement by wall sections that fill two gaps in the existing wall where failure and end effects are taking place currently.

E. Standard of Review

The entire City of Carmel falls within the coastal zone, but the City does not have a certified Local



Coastal Program (LCP).¹ The Commission long ago granted to the City a broad categorical exclusion (E-77-13) which, among other things, exempts most residential development from coastal permitting requirements. However, development along the Scenic Road shoreline and on the beach is not excluded by the order. As a result, the standard of review for the proposed development is the Coastal Act.

5. Coastal Development Permit Determination

A. Geologic Conditions and Hazards

Coastal Act Section 30235 addresses the use of shoreline protective devices:

Section 30235. Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

Coastal Act Section 30253 addresses the need to ensure long-term structural integrity, minimize future risk, and avoid additional, more substantial protective measures in the future. Section 30253 provides, in applicable part:

Section 30253. New development shall:

- (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
- (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

Coastal Act Section 30235 acknowledges that seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" methods designed to forestall erosion also alter natural shoreline processes. Accordingly, with the exception of new coastal-dependent uses, Section 30235 limits the construction of shoreline protective works to those required to protect existing structures or public beaches in danger from erosion. The Coastal Act provides these limitations because shoreline structures have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach.

¹ See also the LCP Planning Process section of this report.



Under Coastal Act Section 30235, new shoreline structures may be approved if: (1) there is an existing structure in danger from erosion; (2) shoreline altering construction is required to protect the existing threatened structure; and (3) the required protection is designed to eliminate or mitigate the adverse impacts on shoreline sand supply. Repair of existing seawalls can be either exempt from permit requirements or required to obtain a permit depending on the nature of the repair (Title 14 CCR, Section 13252(a)).

1. Existing Structure to be Protected

As described earlier, the project is primarily a repair project designed protect the structural integrity of the previously permitted armoring structures originally designed to protect Scenic Road and the recreational trail system on the bluff above Carmel Beach. Almost all of the bluffs below Scenic Road are currently so armored (see Exhibit B). As such, the Commission has previously recognized the inland structures here as existing development for which shoreline armoring was appropriate under Section 30235. There are basically two types of structures for which armoring is being considered here: (1) the previously permitted armoring structures that are in need of maintenance and repair; and (2) the inland public access structures protected by these sections of armor. As described in the project description section of this report, the public access facilities at this location are resources of tremendous local and statewide value.

2. Danger from Erosion

The City's consulting engineering geologist, Rogers Johnson, has been studying the oceanographic and geologic conditions at Carmel Beach for many years.² Evidence in the file shows that the bluffs at Carmel Beach have been actively eroding for as long as records have been kept. From historic records³ and thorough field investigation, Mr. Johnson concluded that, while highly variable, average long-term erosion rates along Carmel Beach (taking into account steady erosion as well as severe episodic events) range from 0.7 to 2.35 feet per year.⁴ Erosion has more recently been slowed as the bluffs have now made their way back to Scenic Road and the recreational trail in most cases and have been armored.⁵ In fact, until the 1982-83 El Niño storms, there was roughly 30 feet of additional bluff area present in the general vicinity of the proposed project; the winter storm episodes of 1982-83 removed this bluff area.

Bluff retreat rates can be notoriously difficult to accurately predict, although an increased understanding of coastal processes is improving the reliability of estimates. In this case, the City's consulting

² Mr. Johnson's comprehensive background work in 1984 formed the basis for the complete makeover of the Carmel beach and bluff access system (Phase 2 of the Carmel Beach Restoration Plan; CDP 3-83-217-A2, approved June 9, 1987); *Phase II Report, Carmel Beach* by Rogers E. Johnson and Associates, February 22, 1984.

³ Information used in this assessment included: U.S. Coast Guard and Geodetic Survey topographic and hydrographic maps from as far back as 1876; United States Geologic Survey maps from 1945; City Assessor Parcel Maps from 1908; nine sets of aerial photographs from as early as 1939; historic beach profiles from the 1940s; interviews with long-time City residents and Public Works personnel; and current field measurements.

⁴ Johnson (1984).

⁵ Almost all of the Carmel shoreline south of Ocean Avenue is so armored (see Exhibit B).



engineering geologist has provided a range of applicable rates based upon analysis of an array of source information pertaining to Carmel Beach.⁶ Because of the importance of public recreational resources at stake here (as described earlier) and the value of Scenic Road as a critical access road, the most cautious approach is warranted and the analysis of the threat from ongoing erosion needs to be based on the conservative end of the estimated erosion spectrum. To rely instead on the less conservative end (i.e., the lowest erosion estimate), does not make good public policy and planning sense in this case. As such, 2.35 feet per year is the long-term rate used to estimate erosion for purposes of establishing the threat to existing structures in this report.

To conclusively show that the structures in this case are in danger from erosion, there must be an imminent threat to these structures. While each case is evaluated based upon its own merits, the Commission has generally interpreted "imminent" to mean that a structure would be imperiled in the next two or three storm cycles (generally, the next few years).

At Site 1 (see Exhibits C and D), the pathway atop the bluff is located roughly 3 feet from the bluff edge; Scenic Road and the City sanitary sewer are roughly 20 feet from the top of the bluff. Several large cypress trees are present at this location. Site visits indicate active erosion is ongoing in this location. Because the revetment was not completed after being permitted in 1983, the 20 foot gap proposed for additional rock could lead to failure of not only the bluffs here, but also the 10th Avenue public access stairway and the existing revetment. Without the proposed repair, it appears likely that the existing structures at this location will be undermined within the next year or so, if not before.

At Site 2 (see Exhibits C and D), the public access stairway is directly connected to the existing seawall that is being undermined. Absent the proposed rip-rap buttress repair at the base of this seawall to fill the undercut section of sandstone below the wall, the previously approved seawall will be lost, and the stairway itself could be compromised, within the next year or so, if not before.

At Site 3 (see Exhibits C and D), the pathway atop the bluff is located roughly 10 feet from the bluff edge; Scenic Road is roughly 20 feet from the top of the bluff. Without the proposed repair, the existing permitted seawall can be expected to fail in segments during each successive storm event. In addition, without the proposed project, end scour effects can be expected to intensify at this location for the rock revetment located immediately adjacent to the south as well. In essence, the repair fills an existing gap between the existing golden granite seawall and the existing downcoast revetment. Without the proposed repair, it appears likely that the structures at this location will be undermined within the next few years, if not before.

At Site 4 (see Exhibits C and D), the pathway atop the bluff is located immediately adjacent to the bluff edge; the restroom and cypress hedge are located roughly 15 feet from the top of the bluff on the opposite side of the pathway. A portion of the pathway was recently lost to erosion at this location. Without the proposed upper bluff retaining wall extension repair, the pathway will be lost and the restroom nestled in the cypress hedge will be threatened within the next year or so, if not before.

⁶ See also the City's summary of erosion along the Carmel shoreline attached as Exhibit F.



At Sites 5 and 6 (see Exhibits C and D), the pathway atop the bluff is located from about 2 feet to about 10 feet from the bluff edge; Scenic Road is roughly 20 feet from the top of the bluff. There is already armoring present at these two sites (the proposal is to remove the stacks of rip-rap and replace with seawall to fill the gaps in the otherwise continuous seawall at this location). Some additional erosion might be expected from storm wave overtopping of the existing revetments, and from upper bluff erosion (surface runoff), but the extent to which this danger would threaten the pathway and the road is hard to calculate given the presence of the two existing revetments. The existing walls are experiencing some failure now because of erosion and scour at their ends (i.e., at the gaps). In any case, the existing revetments have been structurally compromised since their installation in the early eighties and will need to be reengineered without the proposed project to repair and support them. Without this repair, it appears likely that the structures at this location will be undermined within the next few years, if not before.

Overall, there appears to be clear evidence that repair of the existing armoring is needed and that significant near term risk exists to the blufftop recreational trail system, and Scenic Road should the project not occur. Without the proposed project, ongoing erosion can be expected to result in up to roughly 2 feet of bluff loss per year in the affected reach of Carmel Beach. Such continued erosion can be expected to result in the loss of sections of existing permitted seawalls and revetments, the pathway system to varying degrees, and ultimately Scenic Road itself. Substantial evidence has been provided to document the erosion danger at these locations and the Commission finds that the existing structures at these locations are in danger from erosion for the purposes of Section 30235 and that repair is warranted.

3. Feasible Protection Alternatives to a Shoreline Structure

The second test of Section 30235 of the Coastal Act that must be met is that the proposal to alter the shoreline must be *required* to protect the existing structures. In other words, under the policies of the Coastal Act, the project must be the least environmentally damaging feasible alternative. Section 21080.5(d)(2)(A) of CEQA likewise prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse effect that the activity may have on the environment. The Commission notes that it already has, by previous permits, found that Scenic Road and the access trail are worthy of protection. Any action the Coastal Commission may be required to take to continue protecting the public amenities at this location must be consistent with this section of CEQA as well as the Coastal Act. Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures; relocation of the threatened structures; upper bluff retaining walls alone; sand replenishment program; and other drainage and maintenance programs on the blufftop itself.

In this case, the "no project" alternative is not viable because the existing structures here would be undermined in the next few years without this repair and augmentation project. The Carmel Beach and bluff recreational system is a tremendous public access jewel of statewide importance. The loss of which would not be consistent with the protection afforded such a resource in danger from erosion as provided



for by the Act. Likewise, abandonment of the threatened structures would not protect this significant public access facility as directed by the Act.

Relocation of the threatened structures inland is another alternative typically considered. In this case, there is limited space within which to relocate the pathway system, Scenic Road, and/or City utilities. Because of long-term erosion, Scenic Road was already made one-way in the late 1980s. The roadway prism itself is barely wide enough in spots to allow through vehicular access and there is no additional right-of-way space to push the road further inland because this space is occupied by the first row of single-family residences. In some locations, the pathway system could be moved slightly inland to avoid additional armoring. However, such relocation would require either (1) removal of significant trees and vegetation buffering the path from the bluff edge and Scenic and/or narrowing of the pathway itself (thus diminishing the value of the pathway experience), and/or (2) removal of parking spaces that line portions of the road (thus leading to a loss of public access). Either option would involve competing Coastal Act priorities. In this case, since the armoring proposed is essentially a series of repairs designed to reaffirm the integrity of existing permitted armoring along a stretch of mostly armored coastline, relocating threatened structures to a more inland location, while technically feasible in a few discrete locations, does not best accomplish Coastal Act objectives.

In addition, a relocation option may be able to put off the need for additional armoring at these discrete points until later, but it will not eliminate the need for future armoring in the relatively immediate future. There is little space available within which to relocate endangered structures and the bluff here is eroding at a rate of up to roughly 2 feet per year. There have also been 25 to 30 foot episodic bluff failures documented in this portion of the Carmel beach bluffs. One such episode alone would remove the pathway system and portions of Scenic Road. Unless Scenic Road and the public access are abandoned, armoring will be necessary at some near future time to protect through public access. In addition, as previously described, almost all of the bluffs below Scenic are already so-armored (see Exhibit B) and the project is best described as a repair and maintenance project to reaffirm the structural integrity of these previously permitted shoreline structures.

A third alternative to the proposed armoring would be to use upper blufftop remediation measures designed to forestall erosion (new drainage features, slope revegetation, etc.). However, such bluff remediation alone is not likely to sufficiently protect the pathway system. Typical winter storms would still result in end-scour and undermining of the existing deficient armoring, leading to the potential for continued failure of same and the loss of the pathway and ultimately the through road itself. The City already actively manages the upper blufftop slopes with a palette of hardy native bluff species designed to retain the upper blufftop area. Drainage and sheet flow over the bluff edge have been mostly contained, and while some trouble spots still remain, it is clear that new drainage controls would only have limited utility of themselves in terms of protecting the threatened structures.

The pathway system, and ultimately Scenic Road itself, are currently threatened by rapid erosion and potential bluff collapse. There are not any "soft" fixes that could be pursued alone to ensure long-term protection of these existing endangered structures. If the structures are to be so protected, some form of



hard protective armoring repair and augmentation to maintain the integrity of the existing permitted armoring system is required.

The project, therefore, meets the second test of Section 30235 of the Coastal Act.

4. Sand Supply Impacts

The third test of Section 30235 (previously cited) that must be met in order to allow Commission approval is that shoreline structures must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

Beach sand material comes to the shoreline from inland areas, carried by rivers and streams; from offshore deposits, carried by waves; and from coastal dunes and bluffs, becoming beach material when the bluffs or dunes lose material due to wave attack, landslides, surface erosion, gulying, et cetera. Coastal dunes are almost entirely beach sand, and wind and wave action often provide an on-going mix and exchange of material between beaches and dunes. Many coastal bluffs are marine terraces – ancient beaches which formed when land and sea levels differed from current conditions. Since the marine terraces were once beaches, much of the material in the terraces is often beach quality sand or cobble, and a valuable contribution to the littoral system when it is added to the beach. While beaches can become marine terraces over geologic time, the normal exchange of material between beaches and bluffs is for bluff erosion to provide beach material. Bluff retreat and erosion is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When the back-beach or bluff is protected by a shoreline protective device, the natural exchange of material either between the beach and dune or from the bluff to the beach will be interrupted and, if the shoreline is eroding, there will be a measurable loss of material to the beach

Sand supply at Carmel Beach is somewhat atypical in that the sand supply system is essentially self-contained within Carmel Bay. Two watercourses empty into this system (Pescadero Creek and Carmel River). The west facing beach is bounded by granitic headlands that effectively prevent the migration of beach sand up and down the coast. For most sandy beaches, sand is supplied from the littoral drift of materials from upcoast and downcoast sources miles away. In contrast, most of the sand on Carmel Beach is probably derived locally from erosion of sandstone and granitic bedrock. Seasonal changes in beach sand are primarily thought to be a cyclical movement of sands from off to onshore and back again.⁷

Although the precise dynamics of the Carmel Beach sand supply system are uncertain, there would be a relatively small, but quantifiable loss of sand to the system due to the proposed project. This is due to the fact that parts of the repair project would armor small sections of coast not yet so armored. Although these are not vast stretches of unarmored coastline being covered anew (rather these are small augmentations to existing armoring in discrete locations), a sum total of additional armored shoreline

⁷ Johnson (1984)



would be the ultimate result. Some of the effects of such engineered armoring structures on the beach (such as scour, end effects and modification to the beach profile) are temporary or difficult to distinguish from all the other actions which modify the shoreline. Such armoring also has distinct qualitative impacts to the character of the shoreline and visual quality. However, some of the effects that a structure may have on natural shoreline processes can be quantified, including: 1) loss of the beach area on which the structure is located; 2) the long-term loss of beach which will result when the back-beach location is fixed on an eroding shoreline; and 3) the amount of material which would have been supplied to the beach if the back-beach or bluff were to erode naturally.

Fixing the back-beach

Experts generally agree that where the shoreline is eroding and armoring is installed, as is the case with Carmel Beach bluffs, shoreline armoring will eventually define the boundary between the sea and the upland. This is definitely the experience at Carmel Beach, particularly the southern end of the beach where the six proposed sites are located, where most of the shoreline south of Ocean Avenue is currently armored (see Exhibit B). On an eroding shoreline fronted by a beach, the beach will be present as long as some sand is supplied to the shoreline. As erosion proceeds, the profile of the beach also retreats. This process stops, however, when the retreating shoreline comes to a revetment or a seawall. While the shoreline on either side of the armor continues to retreat, shoreline retreat in front of the armor stops. Eventually, the shoreline fronting the armor protrudes into the water, with the winter mean high tide line fixed at the base of the structure. In the case of an eroding shoreline, this represents the loss of a beach as a direct result of the armor.

In addition, sea level has been rising slightly for many years. In the Carmel area, the trend for sea level for the past 25 years has been an increase resulting in a 100 year rate of nearly 1 foot per 100 years.⁸ Also, there is a growing body of evidence that there has been a slight increase in global temperature and that an acceleration in the rate of sea level can be expected to accompany this increase in temperature. Mean water level affects shoreline erosion several ways and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. On a relatively flat beach, with a slope of 40:1, every inch of sea level rise will result in a 40-inch landward movement of the ocean/beach interface. This, too, leads to loss of the beach as a direct result of the armor.

The Commission has established a methodology for calculating the long-term loss of public beach due to fixing the back beach, this impact being equal to the long-term erosion rate multiplied by the width of property which has been fixed by a resistant shoreline protective device:

The area of beach lost due to long-term erosion (A_w) is equal to the long-term average annual erosion rate (R) times the number of years that the back-beach or bluff will be fixed (L) times the width of the property that will be protected (W). This can be expressed by the following equation:

$$A_w = R \times L \times W$$

⁸ NOAA, National Ocean Service.



In this case, as follows:

$$\begin{aligned} A_w &= 2.35 \text{ feet/year}^9 \times (\text{Width of Site 1}^{10} + \text{Site 2}^{11} + \text{Site 3} + \text{Site 4} + \text{Site 5} + \text{Site 6})^{12} \\ &= 2.35 \text{ feet/year} \times (0 \text{ feet} + 0 \text{ feet} + 25 \text{ feet} + 50 \text{ feet} + 40 \text{ feet} + 40 \text{ feet}) \\ &= 2.35 \text{ feet/year} \times (155 \text{ feet}) \\ &= 364 \text{ square feet/year} \end{aligned}$$

To convert the 364 square foot loss of beach per year into the volume of sand necessary to restore the beach commensurately in cubic yards, coastal engineers use a conversion value representing units of cubic yards per square foot of beach.¹³ In this case, the Commission has not been able to establish an actual conversion factor for the Carmel Beach vicinity. However, if a 1.0 conversion factor is used (i.e., the low end of the spectrum of values typically assumed by coastal engineers), a conservative estimate of the cubic yard equivalent of 364 square feet per year can be calculated. For the current proposal, this translates into a direct sand supply impact due to fixing the back-beach location of 364 cubic yards of sand per year.

Encroachment on the Beach

Shoreline protective devices such as seawalls, revetments, gunnite facings, groins, et cetera are all physical structures which occupy space. When a shoreline protective device is placed on a beach area, the underlying beach area cannot be used as beach. This generally results in a loss of public access as well as a loss of sand. The area where the structure is placed will be altered from the time the protective device is constructed, and the extent or area occupied by the device will remain the same over time, until the structure is removed or moved from its initial location, or in the case of a revetment, as it spreads seaward over time. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

Each of the proposed armoring repairs would not be placed directly on sandy beach but rather would be keyed into the underlying sandstone at the subject sites (see Exhibit C). While there are access and recreational issues associated with the loss of any useable recreational sandy beach space, because the

⁹ The worst case (most erosive) scenario as described earlier.

¹⁰ Since the gap to be filled at Site 1 was already permitted by the Commission, and appropriate mitigation defined for such impact at that time, Site 1 is assumed to be zero for the purposes of the fixing the back-beach calculation.

¹¹ Since Site 2 involves a footing repair of an existing wall section, it does not "fix" an additional area of shoreline and thus this segment is zero for the purposes of this calculation.

¹² As a yearly estimate since the lifetime of the project has not been otherwise defined.

¹³ This conversion value is based on the regional beach and nearshore profiles, and overall characteristics. When there is not regional data to better quantify this value, it is often assumed to be between 1 and 1.5, the idea being that to build a beach seaward one foot, there must be enough sand to provide a one-foot wedge of sand through the entire region of onshore-offshore transport. If the range of reversible sediment movement is from -30 feet msl to +10 feet msl, then a one-foot beach addition must be added for the full range from -30 to +10 feet, or 40 feet total. This 40-foot by 1 foot square parallelogram could be built with 1.5 cubic yards of sand (40 cubic feet divided by 27 cubic feet per cubic yard). If the range of reversible sediment transport is less than 40 feet, it will take less than 1.5 cubic yards of sand to rebuild one square foot of beach; if the range of reversible sediment transport is larger than 40 feet, it will take more than 1.5 cubic yards of sand to rebuild one square foot of beach.



sand would be scraped away and the structures placed onto sandstone (and the displaced sand pushed back over the structures), the sand supply impact in this case concerns the potential loss of sandstone area.¹⁴ As discussed above, sandstone is one probable source of sand for the Carmel Beach shoreline supply. As a result, each of the structural fixes pursued by the City would eliminate a small section of sandstone that would otherwise contribute to the local sand supply during winter beach conditions. As discussed in the Commission's methodology, this impact may be quantified as follows:

The encroachment area (A_e) is equal to the width of the properties which are being protected (W) times the seaward encroachment of the protection (E). This can be expressed by the following equation: $A_e = W \times E$

In this case, as follows:

$$\begin{aligned} A_e &= (\text{Footprints of Site 1}^{15} + \text{Site 2} + \text{Site 3} + \text{Site 4} + \text{Site 5} + \text{Site 6}) - (\text{Footprints of existing} \\ &\quad \text{revetments at Sites 5 and 6 to be removed}) \\ &= 0 \text{ square feet} + 630 \text{ square feet} + 125 \text{ square feet} + 175 \text{ square feet} + 180 \text{ square feet} + 180 \\ &\quad \text{square feet} - 225 \text{ square feet} - 600 \text{ square feet} \\ &= 1290 \text{ square feet} - 825 \text{ square feet} \\ &= 465 \text{ square feet} \end{aligned}$$

Using the sand conversion factor of 1.0 (as discussed earlier) the direct loss of beach due to this encroachment translates into a one-time impact of 465 cubic yards of sand.

Retention of Potential Beach Material

If natural erosion were allowed to continue (absent the proposed armoring), some amount of beach material would be added to the Carmel Beach sand supply system. The volume of total material which would have gone into the sand supply system over the lifetime of the shoreline protective devices would be the volume of material between (a) the likely future bluff face location with shoreline protection; and (b) the likely future bluff location without shoreline protection.

Since the main concern is with the sand component of this bluff material, the total material lost must be multiplied by the percentage of bluff material which is beach sand, giving the total amount of sand which would have been supplied to the littoral system for beach deposition if the proposed device were not installed. For conditions where the upper bluff retreat will closely follow the lower bluff, this volume will approach a volume of material equal to the height of the total bluff, the width of the armored area and a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed. For conditions where the upper bluff has retreated significantly and would not be expected to retreat further during the time that the seawall is in place, this volume would approach the volume of

¹⁴ See Access and Recreation section that follows for a discussion of the complementary access and recreational issues associated with such beach area encroachment.

¹⁵ Since the gap to be filled at Site 1 was already permitted by the Commission, and appropriate mitigation defined for such impact at that time, Site 1 is assumed to be zero for the purposes of the encroachment calculation.



material immediately behind the seawall, with a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed.

The City's consulting engineering geologist calculated the sand content of the subject bluff materials at roughly 73% sand. Based upon the dimensions of the proposed new sections of armor, the volume of sand that would be retained on a yearly basis was estimated to be roughly 100 cubic yards.¹⁶

Sand Supply Impacts and Mitigation

As detailed above, the proposed project would have at least three quantifiable impacts on shoreline sand supply: (1) approximately 100 cubic yards of sand lost per year due to the retention of sandy bluff materials; (2) approximately 364 cubic yards of sand lost per year due to fixing the back beach; and (3) approximately 465 cubic yards of sand lost due to the structural footprint. This translates into a one-time sand supply impact of roughly 465 cubic yards, and an ongoing yearly sand supply impact of roughly 464 cubic yards. The City indicates that it annually replaces roughly 100 cubic yards of sand and sandy soils as part of its camouflaging efforts. Although it is not clear that the City's efforts mitigate such sand supply impacts on a direct 1 to 1 basis (because such sand/sandy soil deposition is different from a natural process), it does nevertheless reduce the sand supply impact by some degree. As a result, the net sand supply deficit to the beach due to the proposed project is still in the hundreds of cubic yards per year realm. Such an impact cannot be altogether eliminated by project design.

The project, thus, has not been designed to eliminate impacts on local shoreline sand supply as required by Coastal Act Section 30235. The project has, however, been designed to be located as far inland as possible, has been designed to minimize beach area encroachment, has been designed for the City to continue sand replenishment to a certain degree, and has been designed to remove existing beach area encroachment (i.e., the removal of the existing revetments at Sites 5 and 6). While mitigating factors, these design mitigations alone are not commensurate with the long-term impact on Carmel Beach. Because the project as designed does not meet the sand supply impact test of Section 30235 (i.e., the project design does not eliminate and does not completely mitigate such impacts), the Commission is not required to approve the protective structures proposed. As discussed above, however, the structures endangered in this case are of statewide public access importance and armoring has been shown to be the appropriate protective solution. Thus, in order to approve the project in conformance with Section 30235, additional mitigation for the sand supply impacts is necessary. Typical mitigations required by the Commission for such direct sand supply impacts have been in-lieu fees and/or beach nourishment.

With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system to mitigate the loss of sand that would be caused by a protective device. Obviously, such an introduction of sand, if properly planned, can feed into the Carmel Beach sand system to mitigate the impact of the project. However, although the City actively manages its beach (including moving sand around to camouflage revetments and depositing sandy soil materials atop the armor structures as necessary), the City does not have a formal beach nourishment program, nor is

¹⁶ Johnson (2001).



there any type of regional program to address sand loss. Absent a comprehensive program that provides a means to coordinate and maximize the benefits of mitigation efforts in the area now and in the future, the success of such piecemeal mitigation efforts is questionable. Without a program that evaluates the natural processes and existing conditions in order to establish the most appropriate sites and methods for introducing sand material so that it will mitigate this project's impacts and maximize benefits to the sandy beach, the Commission cannot specify a direct in-kind placement of sandy material as mitigation.

As an alternative mitigation mechanism, the in-lieu fee is oftentimes used by the Commission when in-kind mitigation of impacts is not presently available. In situations where ongoing sand replenishment programs are not yet in place, the in-lieu sand mitigation fee is deposited into an account until such time as an appropriate program is developed and the fees can then be used to offset the designated impacts. The Commission recently required such a fee from a private property owner on the northern portion of Carmel Beach at Pescadero Creek.¹⁷ In that action, the commission acknowledged that, although a formal program is not yet in place for such a fee to be applied, the City is currently working towards that goal. The City is required to update and implement the Carmel Beach Management Plan as a condition of approval of the City's most recently installed shoreline protective structure (CDP 3-83-217-A4 in 1997).¹⁸ Part of the requirement for this updated plan is that it identify appropriate mitigation for armoring at Carmel Beach in light of such armoring's long term shoreline sand supply impacts. The City has indicated that they are currently pursuing such an updated Carmel Beach Management Plan within the context of their current LCP planning efforts. Until such time as the plan is in place, however, appropriate mitigation ratios are unclear.

Such a fee option in this case makes little public policy sense as the fee would be from the City to the City. In addition, unlike many municipalities, the City of Carmel actively manages their beach and beachfront; the City currently budgets over \$100,000 per year to such efforts. Furthermore, the subject armoring is to protect significant public resources. In most requests for shoreline protection, the Commission is faced with reviewing protection that is designed to protect *private* bluff-top structures, but would be located on, and have impacts to, the *public* beach and bluffs. In this case, the impacts from the armoring would be to the public, but the benefits (i.e., preservation of the public recreational trail facility) would be to the public as well. Thus, the Commission finds that the sand supply impacts of this project are partially mitigated by the City's project design, that the impacts and benefits are both to the public, and that the best solution for addressing long-term sand supply impacts from armoring at Carmel Beach is through the required comprehensive beach management plan.

In any case, while the mechanism may not be fully understood, recent anecdotal evidence indicates that the cumulative sand supply impact from the almost complete armoring of the southern portion of the Carmel Beach bluffs over the years may be negligible. Even with substantial winter storm events, such as 1982-83 storms which removed the majority of the sand from the Carmel Beach, this self contained sand supply system has proven itself capable of maintaining a very large sandy beach area with a typical

¹⁷ CDP 3-98-102 (Panattoni).

¹⁸ See LCP Planning Process section of this report for the text of this updated plan requirement.



width of 100 yards (approximately 21.5 acres of sandy beach). Without a comprehensive analysis of these trends, however, it is difficult to assert with certainty that the beach will always maintain such an equilibrium. This is particularly the case in light of ongoing sea level rise and the almost completely fixed back-beach area at Carmel Beach.

The best solution for addressing long-term sand supply impacts from armoring at Carmel Beach is through the comprehensive plan. The subject plan is currently past due and the City is out of compliance with the previous CDP that required this plan. Such a plan that identifies long-term trends and establishes mechanisms to address long-term loss of beach here is much more protective of the Carmel Beach resource than would be an in-lieu fee or other form of mitigation. City resources are better directed to completing such a plan. The City's ongoing maintenance efforts should ensure short-term protection of the resource in the interim.

Therefore, this approval is conditioned for completion of the updated Carmel Beach Shoreline Management Plan (see Special Condition 2). Because the whole of the public recreational system is affected by, and dependent upon to a certain degree, the condition of the beach itself, such plan should address the relationship of the beach to beach accessways and inland public facilities (parking, restrooms, etc.) in order to ensure that their utility is not otherwise compromised over time. Such a plan will provide the context and methodology to ensure long-term protection of Carmel Beach and its related access facilities for future generations to enjoy.

Project impacts to shoreline sand supply are thus properly and commensurately mitigated by a combination of project design (i.e., located as far inland as possible, beach area encroachment minimized, placement of camouflaging sands and sandy soils, removal of existing beach area encroachment) and the updated plan. Such mitigation fulfills the third test of Section 30235 requirement.

5. Long Term Structural Stability

Coastal Act Section 30253 requires the project to assure long-term stability and structural integrity, minimize future risk, and avoid additional, more substantial protective measures in the future. For the proposed project, the main Section 30253 concern is assuring long-term stability. This is particularly critical given the dynamic shoreline environment within which the proposed project would be placed.

Moreover, with global warming and sea level rise (as described above), increased wave heights and wave energy are likewise expected. Along much of the California coast, the bottom depth controls the nearshore wave heights, with bigger waves occurring in deeper water. Since wave energy increases with the square of the wave height, a small increase in wave height can cause a significant increase in wave energy and wave damage. So, combined with the physical increase in water elevation, a small rise in sea level can expose previously protected back shore development to both inundation and wave attack, and those areas that are already exposed to wave attack will be exposed to more frequent wave attack with higher wave forces. Structures that are adequate for current storm conditions may not provide as much protection in the future.



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A second concern with global warming and sea level rise is that the climatic changes could cause changes to the storm patterns and wave climate for the entire coast. As water elevations change, the transformation of waves from deep water will be altered and points of energy convergence and divergence could shift. The new locations of energy convergence would become the new erosion "hot spots" while the divergence points may experience accretion or stability. It is highly likely that portions of the coast will experience more frequent storms and the historic "100-year storm" may occur every 10 to 25 years. For most of California the 1982/83 El Niño event has been considered the "100-year storm." Certain areas may be exposed to storms comparable to the 1982/83 El Niño storms every few decades.

In an attempt to ensure stability under such conditions, the Commission has required that all new shoreline structures be designed to withstand either a 100-year storm event, or a storm event comparable to the 1982/83 El Niño. Also, since it is possible that storm conditions may worsen in the future, the Commission has required that structures be inspected and maintained on a regular basis. The coast can be altered significantly during a major storm and coastal structures need to be inspected on a regular basis to make sure they continue to function as designed. If storm conditions worsen in future years, the structures may require changes or modifications to remain effective. In some rare situations, storm conditions may change so dramatically that existing protective structures may no longer be able to provide any significant protection, even with routine maintenance.

Critical to the task of ensuring long-term stability as required by Section 30253 is a formal long-term monitoring and maintenance program. The City indicates that it is currently preparing a comprehensive Shoreline Management Plan for this, and other, purposes (see pages 19 and 20 of Exhibit F). The intent is that such a plan would become a component of the LCP. However, such an adopted plan is not currently in place.

If the repaired armoring was damaged in the future (e.g. as a result of flooding, landsliding, wave action, storms, etc.) it could further threaten the stability of the pathway system and Scenic Road, which could lead to the need for more bluff alteration and/or more substantial armoring. In addition, such damages could adversely affect the beach by resulting in debris on the beach and/or creating a hazard to the public using the beach. Therefore, in order to find the proposed project consistent with Coastal Act Section 30253, the armoring must be maintained in its approved state. Further, in order to ensure that the City and the Commission know when repairs or maintenance are required, the City must regularly monitor the condition of the subject armoring, particularly after major storm events. Such monitoring will ensure that the Permittee and the Commission are aware of any damage to or weathering of the armoring and can determine whether repairs or other actions are necessary to maintain the structures in their approved state before such repairs or actions are undertaken. To assist in such an effort, monitoring plans should provide vertical and horizontal reference distances from armoring structures to surveyed benchmarks for use in future monitoring efforts.

Again, the City was previously required to prepare such a comprehensive monitoring and maintenance plan as part of the Commission's 1997 approval.¹⁹ As previously described, this plan has not yet been

¹⁹ Special Condition 8 of CDP 3-83-217-A4; the text of this condition is shown in the LCP Planning Process section of this report.



completed. To ensure that the armoring repairs and augmentations proposed here are properly maintained to ensure their long-term structural stability as directed by the Act, the required updated monitoring and maintenance plan must be submitted; see Special Condition 2. Such a plan shall provide for evaluation of the condition and performance of the approved seawalls and revetments and overall bluff stability, and shall provide for submittal of regular reports with recommendations, if any, for necessary maintenance, repair, changes or modifications. Plan-identified maintenance activities will be the subject of a separate coastal development permit application (see Special Condition 3).

6. Assumption of Risk

The experience of the Commission in evaluating the consistency of proposed developments with Coastal Act policies regarding development in areas subject to problems associated with geologic instability, flood, wave, or erosion hazard, has been that development has continued to occur despite periodic episodes of heavy storm damage, landslides, or other such occurrences. Oceanfront development is susceptible to bluff retreat and erosion damage due to storm waves and storm surge conditions. Past occurrences statewide have resulted in public costs (through low interest loans and grants) in the millions of dollars. As a means of allowing continued development in areas subject to these hazards while avoiding placing the economic burden on the people of the state for damages, the Commission has regularly required that Applicants acknowledge site geologic risks and agree to waive any claims of liability on the part of the Commission for allowing the development to proceed.

The risks of the proposed project include that the armoring will not protect against damage to the recreational structures from bluff failure and erosion. In addition, the armoring structures themselves may cause damage by increasing erosion up and downcoast of the structures. Such damage may also result from wave action that damages the armor itself. Although the Commission has sought to minimize these risks, the risks cannot be eliminated entirely. Given that the Applicant has chosen to construct the proposed project despite these risks, the Applicant must assume these risks. Accordingly, this approval is conditioned for the Applicant to assume all risks for developing at these locations (see Special Condition 4). Specifically, Special Condition 4 requires the City to acknowledge the risks and indemnify the Commission against claims for damages that may be brought by third parties against the Commission as a result of its approval of this permit.

6. Conclusion

As discussed above, the facts of this particular case show that the proposed project would repair significant previously permitted armoring and protect inland public access structures currently in danger from ongoing erosion. The armoring repairs and augmentations proposed are required to maintain the integrity of the existing permitted armoring system that currently extends along most all of the City of Carmel shoreline. Project impacts to shoreline sand supply are commensurately mitigated by a combination of project design and the conditional requirement for an updated comprehensive Carmel Beach beach and bluff management plan. Long term monitoring and maintenance to ensure long-term structural stability is likewise encapsulated in the conditionally required plan. As so conditioned, the proposed project is consistent with Coastal Act Sections 30235 and 30253 as discussed in this finding.



B. Public Access and Recreation

Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road (Scenic Road). Coastal Act Sections 30210 through 30214 and 30220 through 30224 specifically protect public access and recreation. In particular:

Section 30210: In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30211: Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Section 30213: Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.

Section 30214(a): The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case...

Section 30221: Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

Section 30223: Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

Coastal Act Section 30240(b) also protects parks and recreation areas. Section 30240(b) states:

Section 30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Carmel Beach is owned and maintained by the City of Carmel and accounts for over 20 acres of fabulous white sand beach. The beach is used year round and represents a major recreational and economic resource to the community and the State. The beach attracts an estimated 1,000 persons per day, with



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larger crowds on holidays and during special events. One of the beach's outstanding features is the sand itself, with the texture and bright appearance of granulated sugar. Beaches composed of such white quartz-feldspar sand are very rare.

Scenic Road and the Scenic Road recreational trail system are also owned and maintained by the City of Carmel. This area is likewise heavily used, providing a complementary experience to the sandy beach for those interested in enjoying the shoreline in a different manner (i.e., for: different vistas, benches, a hard surface for jogging or pushing strollers, for those whose physical condition makes walking on the beach difficult or impossible, etc.). This use level for the pathway is also at least somewhat dictated by a climate (generally cool temperatures and fog prevalent in Carmel for much of the year) that is oftentimes more conducive to blufftop strolls than more active beach use. As previously described, this trail system is a unique public pathway experience that is defined in part by its natural symbiosis with the undulating bluffs and landscape canopy falling off to the beach below. The decomposed granite pathway meanders between tree-dotted, vegetated bluff outcrops and the rock curb that defines the edge of Scenic Road inland. Much of the blufftop area is landscaped by the City and is complemented by nine stairways and a series of benches and overlooks, many of the improvements faced with decorative rockwork in keeping with the informal organic aesthetic.

The proposed project would ensure the continuity of the trail system, and would preserve the existing trail aesthetic and experience. A limited amount of beach space would be given over to the footprints of the proposed armoring augmentations to accomplish this. As described earlier, the footprints were calculated for sand supply purposes at roughly 465 square feet of additional encroachment. Although this is accurate for sand supply purposes (i.e., because the sandstone being covered would no longer otherwise contribute to the system), this area of encroachment has a lesser impact on beach recreational use because the areas so occupied would be, for the most part, areas not otherwise used for recreational sandy beach pursuits. At Site 1, the gap to be filled provides negligible sandy beach recreational area. At Site 2, the proposed armorstone buttress repair is designed to fill an undermined section of sandstone below the existing wall and to address extreme winter storm events and the area of encroachment would be entirely below the summer beach profile. At Site 3, the footing for the wall extension repair would displace approximately 125 square feet of useable beach space, but primarily during the winter storm season as summer sand levels would be above the footing. At Site 4, the wall extension repair is designed to be perched atop the sandstone on the upper bluff and would not occupy otherwise useable sandy beach recreational area. At Sites 5 and 6, roughly 800 square feet of space currently occupied by revetment would be opened up for beach recreational uses (since the proposed wall footing would be perched atop sandstone and would be substantially smaller than the existing revetment footprints).

As described in the previous finding, however, continued armoring of the shoreline at Carmel Beach, such as that proposed, could ultimately lead to a loss of the sandy beach itself over time. Such a loss would be inconsistent with the Act's protection of this vital and finite public access resource. Such a loss would commensurately degrade the other existing public recreational facilities here that depend in large measure on the presence and condition of the beach itself. Although recent anecdotal evidence is that the beach here is in a relative state of equilibrium, it is not clear that long term trends will eventually



validate this hypothesis. Given the importance of the sandy beach resource, the most conservative tact is warranted. The best way to ensure that sandy beach is not lost in the long term is to better understand the long-term shoreline erosion trends at Carmel Beach, particularly as they relate to shoreline armoring, and to develop an appropriate long-term planning response. It may be that preservation of the beach will ultimately require some form of beach nourishment. In any case, the inland beach recreational system as a whole (pathways, parking, restrooms, landscaping, etc.) must be understood within the context of its relationship to the beach.

Therefore, this approval is conditioned for completion of the updated Carmel Beach Shoreline Management Plan (see Special Condition 2). Because the whole of the public recreational system is affected by, and dependent upon to a certain degree, the condition of the beach itself, such plan should address the relationship of the beach to beach accessways and inland public facilities (parking, restrooms, etc.) in order to ensure that their utility is not otherwise compromised over time. Such a plan will provide the context and methodology to ensure long-term protection of Carmel Beach and its related access facilities for future generations to enjoy. This approval is likewise conditioned for the City to submit a CDP application to implement ongoing routine shoreline public access system maintenance activities (as identified in the updated plan) to ensure that maximum public access is maintained as directed by the Act (see Special Condition 3).

As conditioned, long-term management and preservation of the precious public access resources of Carmel Beach are expected. Likewise, because the project includes the replacement of the two revetments with vertical wall segments, a net short-term gain of recreational beach space is expected. In addition, the City will camouflage the revetment extension consistent with their past practice, and will use golden-granite facing on the seawall extensions. Active monitoring and maintenance through the long-term plan will ensure that such camouflaging and aesthetic enhancements are maintained.

The proposed project is designed to maximize public access to the beach and bluffs, protect existing no cost access, and protect upland recreational lands for priority recreational uses, and is therefore consistent with the Coastal Act access and recreation policies cited in this finding.

C. Visual Resources

Coastal Act Section 30251 states:

Section 30251. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.



Coastal Act Section 30240(b), previously cited, also protects the aesthetics of parks and recreation areas such as those involved in this application. Section 30240(b) states:

Section 30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

A potential impact from the project on the recreational beach area is the introduction of a decidedly unnatural structure in an area of tremendous scenic value. As previously discussed, a primary goal of the original 1974 Carmel Beach Management Plan with regards to shoreline protective work, as amended through 25 years of permitting history, is to maintain the natural beauty of back-beach bluffs. While rip-rap revetments are generally unsightly piles of rock, the City of Carmel has been extremely successful with landscaping of revetments along the beach. As previously described, the City's methodology for revetments has been to push sand up over the bottom of the revetment and cover the top with soil and landscaping. The effect of this sand and vegetation "cap" is that the revetment looks like a vegetated bluff face (see Exhibit E). Likewise, the seawalls along the back-beach undulate with the natural curves of the bluffs and are faced with indigenous Carmel golden granite overtopped with hardy cascading vegetation that help to soften the walls and provide a visual transition to the blufftop trail system above (see, for example, photos 2, 3, and 4 of Exhibit D).

The City has indicated that it will camouflage the revetment extension at Site 1 as it has done others in the past (i.e., sand recontouring and landscape cap), and that all seawall augmentations will be faced with golden granite to mimic the existing seawalls. Blufftop relandscaping will be undertaken at each of the project sites. In order to ensure that these efforts are maintained for the long-term, this approval is conditioned for the ongoing monitoring and maintenance of the camouflaging elements (see Special Condition 2), and is likewise conditioned for the City to submit a CDP application to implement ongoing routine camouflaging maintenance (see Special Condition 3). With the City's proven track record for the innovative camouflaging of revetments and for golden-granite seawalls topped with cascading vegetation, over time, these structures should blend into the natural back-beach bluff similar to previous efforts. Furthermore, Phase 2 of the Carmel Beach Restoration Plan (approved by the Commission June 9, 1987) provides for replacement planting and sand recontouring of the bluffs when storm action strips away these design features. The effect of the City's efforts is that the proposed armoring will generally meld with, and in fact help to define, the Carmel beach aesthetic and character. As such, the scenic and visual qualities of the Carmel Beach will be maintained over the long term.

As conditioned, the Commission finds that the proposed project has been designed in such a way as to minimize public view impacts and will be visually compatible with the character of surrounding area; and, as such, is consistent with Coastal Act Sections 30240(b) and 30251 as discussed in this finding.

D. LCP Planning Process

Coastal Act Section 30604(a) states:



Prior to certification of the local coastal program, a coastal development permit shall be issued if the issuing agency, or the commission on appeal, finds that the proposed development is in conformity with Chapter 3 (commencing with Section 30200) and that the permitted development will not prejudice the ability of the local government to prepare a local coastal program that is in conformity with Chapter 3 (commencing with Section 30200). A denial of a coastal development permit on grounds it would prejudice the ability of the local government to prepare a local coastal program that is in conformity with Chapter 3 (commencing with Section 30200) shall be accompanied by a specific finding which sets forth the basis for that conclusion.

1. LCP History/Status

The entire City of Carmel falls within the coastal zone, but the City does not yet have a certified LCP. Approximately twenty years ago, the City submitted the Land Use Plan (LUP) portion of its LCP for review by the Coastal Commission. On April 1, 1981, the Commission certified part of the LUP as submitted and part of the LUP with suggested modifications regarding beach-fronting property. The City resubmitted an amended LUP that addressed the beach-fronting properties provisions, but that omitted the previously certified portion of the document protecting significant buildings within the City. On April 27, 1984, the Commission certified the amended LUP with suggested modifications to reinstate provisions for protecting significant structures. However, the City never accepted the Commission's suggested modifications and so the LUP remains uncertified.

The LCP zoning or Implementation Plan (IP) was certified by the Commission with suggested modifications on April 27, 1984. However, the City did not accept the suggested modifications and so the IP, too, remains uncertified.

Predating the City's LCP planning efforts, the Commission authorized a broad-ranging categorical exclusion within the City of Carmel in 1977 (Categorical Exclusion E-77-13). E-77-13 excludes from coastal permitting requirements most types of development not located along the beach and beach frontage of the City.

The City is currently working on a new LCP submittal (both LUP and IP), funded in part by an LCP completion grant awarded by the Commission. This current City effort is focused on protecting the significant coastal resources found in Carmel, including the spectacular public beach and recreational amenities along the City's shoreline, the urban forest that uniquely identifies Carmel as "the City within the trees," the substantial riparian and habitat areas (such as Mission Trails Nature Preserve and Pescadero Canyon), and the unique community and visual character of Carmel as exhibited by the style, scale, and rich history of its residential, commercial, and civic architecture. Taken as a whole, these resources combine to form the special character of Carmel; a character that comprises a significant coastal resource worthy of protection in its own right. The City indicates that the Land Use Plan is expected to be submitted for Commission review in April 2001, with the Implementation Plan submittal expected by December 2001.



2. Shoreline Management Planning

As has been discussed in this staff report, the City's Beach Management Plan was originally adopted by the Commission in 1974. Since that time, the plan has been affected by the series of permitting actions taken by the Commission.²⁰ However, there has never been any type of formal resubmittal of an updated plan to help guide either the City and/or the Commission when armoring projects such as this one are proposed. The difficulties associated with such a lack of approved policy direction came to a head the last time the Commission reviewed a City shoreline armoring proposal in 1997 (CDP 3-83-217-A4).

In 1997, the Commission approved additional armoring in the form of a camouflaged revetment between 11th and 12th Avenues (CDP 3-83-217-A4, approved November 6, 1997). In 1997, it had been roughly a decade since the last time the Commission had reviewed an armoring proposal in Carmel and much had changed with regards to the general understanding of coastal processes and the effect of shoreline armoring on same in that decade's time. During the course of this 1997 application it became clear that a better methodology for addressing future shoreline erosion and potential armoring was necessary in Carmel. Although the City had implicitly developed a program through their long history of active management of the beach, the beach recreational trail, and the armoring central to both, lacking a Local Coastal Program and/or a plan designed to address future events, the Commission found itself in the position of addressing an individual project outside of what would preferably be part of a comprehensive planning solution for Carmel Beach and bluffs. To address this deficiency, the Commission required the City to prepare an updated beach management plan meant to provide the blueprint for future armoring proposals such as the current application; 3-83-217-A4 further required implementation of the updated plan. Special Condition 8 of 3-83-217-A4 states:

Beach Management Plan. WITHIN TWELVE (12) MONTHS OF COMPLETION OF THE REVETMENT, the permittee shall submit to the Executive Director for review and approval an update of the Carmel Beach Management Plan as amended by coastal permit (i.e., P-980, P-79-320, 3-83-217-A1, 3-83-217-A2, 3-83-217-A3, and 3-83-217-A4). This updated plan shall describe the extent of existing protective works and other beach development, and shall include a description of development both approved and contemplated in the future on Carmel Beach and bluffs. This plan shall include, but not be limited to, (1) a discussion of sand supply dynamics and sand supply impacts due to protective work, based upon existing studies, (2) erosion patterns, (3) maintenance and repair procedures for protective work, protective work landscaping, and public access facilities (i.e., stairways), and (4) appropriate mitigation measures for any identified resource and/or public access impacts associated with implementing the plan. In order to implement the updated Carmel Beach Management Plan, the City shall either:

- a) submit an application for a coastal development permit to implement the plan at the same time that the updated Carmel Beach Management Plan is submitted for review and approval*

²⁰ See Project Description section of this report for details on past Coastal Commission permitting actions regarding shoreline structures in Carmel.



of the Executive Director; or

- b) *WITHIN THREE (3) MONTHS OF COMPLETION OF THE REVETMENT, submit to the Executive Director for review and approval a timeline for local coastal program (LCP) completion to consist of an updated land use plan (LUP) and an implementation plan (IP) incorporating the updated Carmel Beach Management Plan. If the LCP is not certified by the California Coastal Commission WITHIN TWELVE (12) MONTHS OF COMPLETION OF THE REVETMENT, the City shall submit an application for a coastal development permit to implement the updated Carmel Beach Management Plan.*

As has been detailed previously in this report, the plan was never submitted for review and approval. The City has redoubled its efforts in this regard and indicates that an update of the plan is currently in process. The updated plan would coordinate the many programs that the City currently implements along the shoreline into one comprehensive plan. It is anticipated that such a plan will form a major component of the City's LCP submittal. The Commission's current LCP completion grant to the City includes the updated plan requirement. To date, the current draft LUP (not yet adopted by the City and not yet formally submitted to the Commission) includes some broad beach maintenance and shoreline armoring policies that essentially commit to armoring of the Carmel shoreline. Background information on, and policies to mitigate for, long-term loss of beach due to armoring are thus far lacking. Although recent anecdotal evidence shows that Carmel Beach does not appear to be narrowing, the Commission's experience statewide has been that armored shorelines eventually lead to a loss of recreational beach area from fixing the back-beach position on an eroding shoreline.²¹ If Carmel Beach is to be protected for future generations to enjoy, the rebuttable presumption is that some form of nourishment may be necessary.

In any case, the LCP will need to include adequate policies to ensure such long term preservation of the beach resource and the related inland recreational access system (stairways, trails, pathways, parking, restrooms, landscaping, etc.). This approval is conditioned for the submittal of a shoreline management plan intended to provide the adequate level of specificity in LCP policies to make decisions on future projects (be it by the City and/or the Commission) and to ultimately preserve the very special public shoreline access system at Carmel Beach (see Special Condition 2). Because of the plan and policy nature of the updated plan, the plan would be submitted for Coastal Commission review and approval. Commission staff will prepare a staff report with a recommendation, including any necessary modifications, on the Plan submitted.²²

²¹ See also earlier discussion on shoreline sand supply impacts.

²² The staff report will include a recommendation to the Commission that the submitted Plan be either: (1) approved as submitted; (2) approved as modified as necessary to achieve Coastal Act Chapter 3 consistency (in such case, the staff report shall include recommended Plan modifications); or (3) denied (in such case, the staff report shall include recommended Plan modifications and recommended required measures (with associated deadlines for same) to be undertaken by the Permittee prior to resubmittal of the Plan for Commission review and approval).



It is expected that the City will be able to readily develop the required plan update as it is currently developing elements of such a plan as of the date of this staff report.²³ Moreover, the City indicates that many of the ongoing maintenance procedures and policies are already in place, having been implemented by the City for a number of years outside of a Commission-adopted plan process.²⁴ In addition, much shoreline erosion data has been developed to date by the City and it is expected that with some minimum of additional effort and analyses, adequate information to guide updated plan principals, policies, and methodologies (including mitigation methodologies) can be readily developed. Finally, the City has staff and expertise in the disciplines required to develop and implement the updated plan. Since the proposed project will not be completed inside of several months at the earliest, the additional six month time frame from project completion for plan submittal should be adequate within which to assemble the requisite plan pieces (see Special Condition 2). In the unlikely event that project completion itself is stymied, Special Condition 2 is alternatively timed for the submittal of the required plan within one-year of Commission action (i.e., by April 13, 2002) if applicable.

3. Potential for Prejudicing City LCP Efforts

In approving the subject project, the Commission continues to support the preservation of the Scenic Road recreational trail system and Carmel Beach itself. Such an action is consistent with past Commission actions,²⁵ is consistent with the goals and objectives of the City, and, as discussed in previous sections of this report, is consistent with Coastal Act Chapter 3 policies. However, whereas the Commission has been actively encouraging the City to investigate appropriate mitigation to ensure the continued availability of a public beach in Carmel, the City has not to date embraced this concept. Part of the rationale for this is that for reasons that are not completely understood, recent anecdotal evidence indicates that Carmel Beach itself does not appear to be narrowing. Such a discrepancy is not a fundamental Coastal Act policy rift between the City and Commission, but rather represents a lack of information with which to make informed decisions regarding protecting the beach in the long-term future. The Commission has acted, and will continue to act until an LCP is certified, based upon the best available data regarding Carmel Beach shoreline processes. However, it is clear that the system mechanics are not completely understood. Because of this, long term interpolation of trends is likewise difficult. This points out that additional information is necessary to support the City's current LCP planning efforts vis-à-vis shoreline management, but it does not prejudice preparation of an LCP in conformance with the Act. The City is currently required to develop such an updated Plan by two previous Commission actions (i.e., the 1997 CDP and the current LCP completion grant) and the current condition only reinforces this updated plan requirement in light of current information. Thus, this approval is conditioned for such additional planning and analyses of shoreline trends – and appropriate responses thereto – in Carmel (see Special Condition 2).

²³ Such an updated plan is a requirement of both the 1997 CDP and the current LCP completion grant to the City from the Commission.

²⁴ This approval is likewise conditioned for the City to submit a CDP application to implement ongoing routine shoreline public access system maintenance activities (as identified in the required updated plan) to ensure that all such development activities are covered by a coastal development permit.

²⁵ Past Coastal Commission permitting actions are described in detail in the Project Description section of this report.



In any case, it is anticipated that a final post-certification boundary map defining coastal permitting jurisdiction in the City of Carmel will show that the Coastal Commission will retain coastal permitting authority over much, if not all, of the beach area as well as portions of the back-beach bluffs where armoring may be pursued in the future. Not to discount City LCP efforts in this regard (because any adopted LCP provisions will provide critical guidance), the Coastal Act will remain the standard of review for development proposed in these areas. As such, it is critical that the City complete their updated beach management plan efforts and that such a plan is pro-actively implemented for Carmel Beach to ensure maximum beach area is available in the future. In addition, because the whole of the public recreational system is affected by, and dependent upon to a certain degree, the condition of the beach itself, such plan must address the relationship of the beach to beach accessways and inland public facilities (parking, restrooms, etc.) in order to ensure that their utility is not otherwise compromised over time. Such a plan will provide the context and methodology to ensure long-term protection of Carmel Beach and its related access facilities for future generations to enjoy.

For the reasons discussed in this report, the Commission finds that, as conditioned: the proposed project would not prejudice Commission action on future coastal planning decisions regarding development in Carmel; and is consistent with Coastal Act requirements that development not prejudice LCP planning efforts that conform to the Coastal Act.

E. California Environmental Quality Act (CEQA)

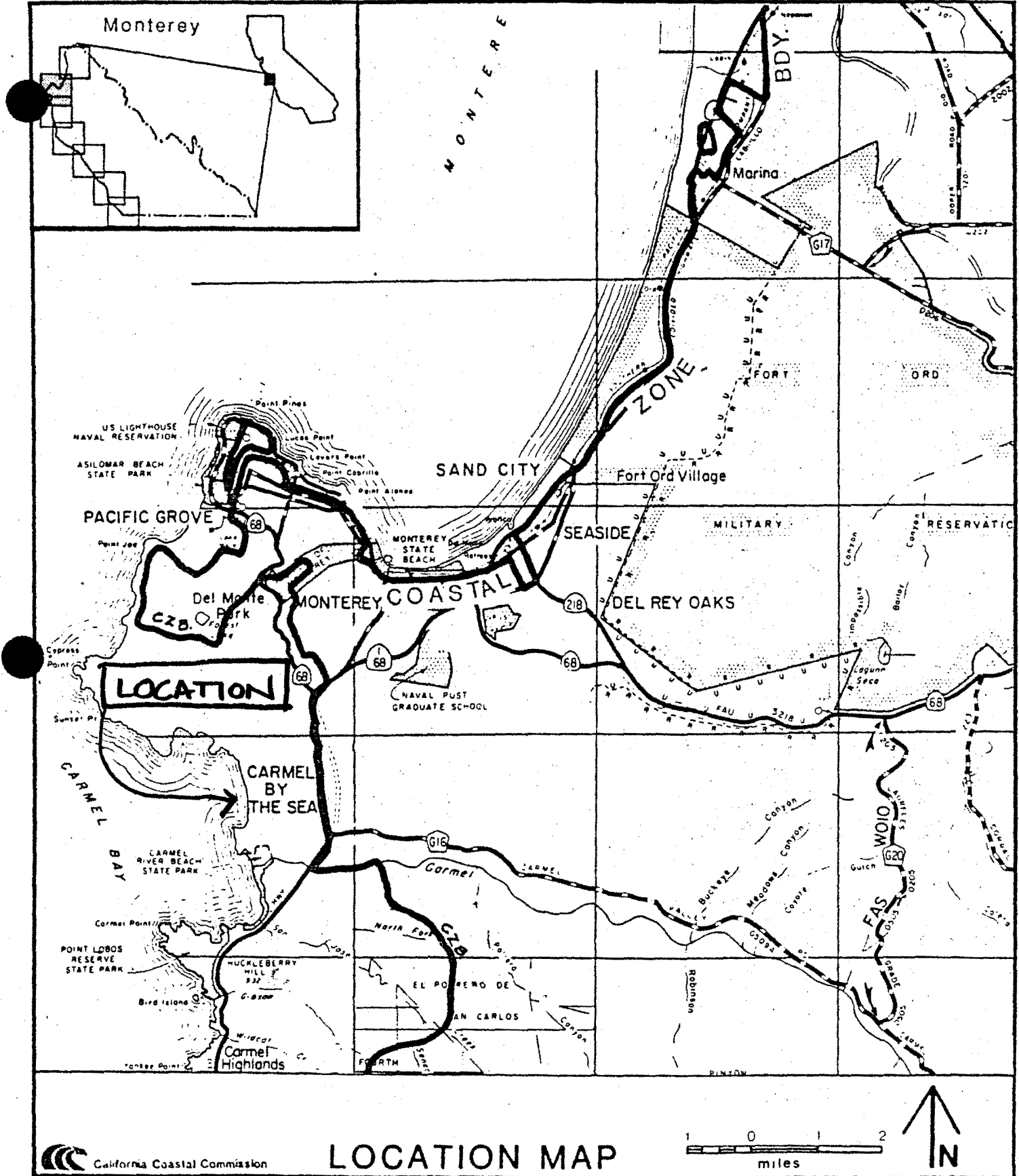
Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The City certified a mitigated negative declaration for the proposed project when they approved the project on November 7, 2000. The negative declaration includes several mitigation measures to address potential impacts to shoreline resources. Part of this package is a detailed construction erosion control plan to protect against runoff from the site disturbing the beach or bay waters.

The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. The proposed project's coastal resource issues have been discussed in the Commission's findings incorporated herein, and appropriate mitigations have been developed to supplement the City's review of the proposed project. Accordingly, the project is being approved subject to conditions which implement the mitigating actions required of the Applicant by the Commission (see Special Conditions of Approval). As such, the Commission finds that only as modified and conditioned by this permit will the proposed project not have any significant adverse effects on the environment within the meaning of CEQA.







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617

SAND CITY

Fort Ord Village

PACIFIC GROVE

SEASIDE

MILITARY

RESERVATION

Del Monte Park

MONTEREY COASTAL

DEL REY OAKS

LOCATION

NAVAL POST GRADUATE SCH-0GL

CARME
BY THE SEA

CARME
BAY

CARME
RIVER BEACH
STATE PARK

POINT LOBOS
RESERVE
STATE PARK

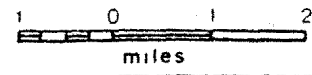
HUCKLEBERRY
HILL
932

EL PORRENO DE
SAN CARLOS

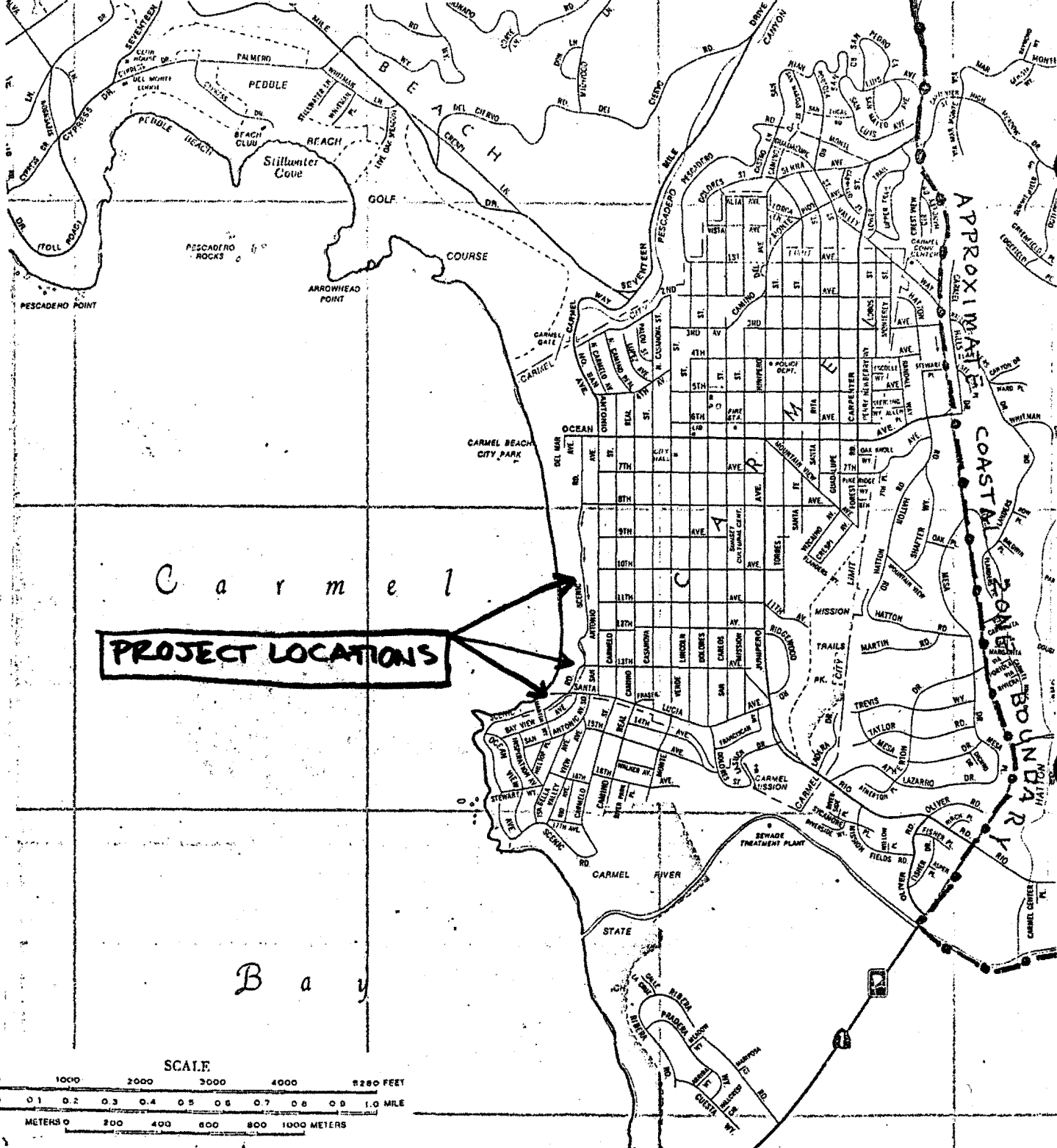
Carmel
Highlands

California Coastal Commission

LOCATION MAP

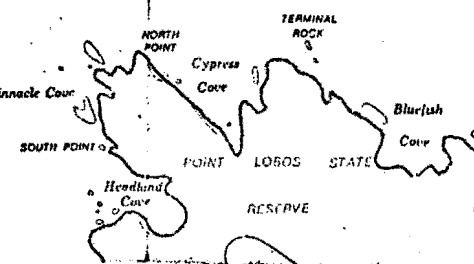
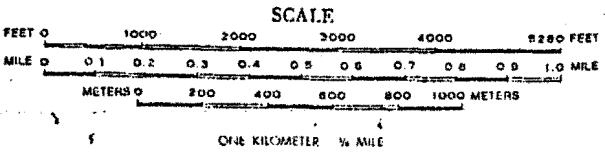


CALIFORNIA COASTAL COMMISSION
EXHIBIT A (10/2)



Carmel

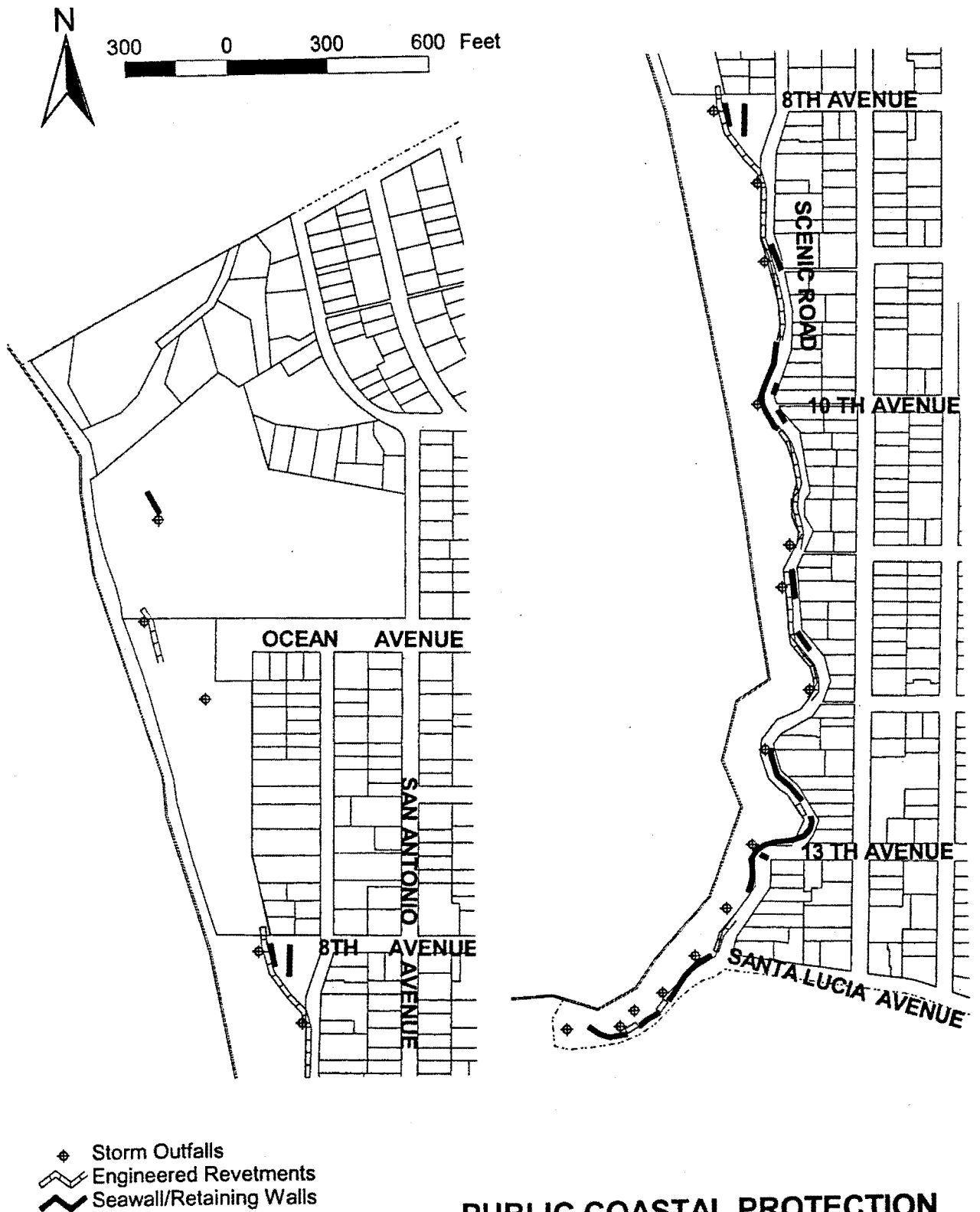
PROJECT LOCATIONS



10 BIG SUR & SAN SIMEON

CALIFORNIA COASTAL COMMISSION

EXHIBIT A (20F2)



- ◆ Storm Outfalls
- ⚡ Engineered Revetments
- 〰 Seawall/Retaining Walls

Figure 9.6a

PUBLIC COASTAL PROTECTION STRUCTURES TO BE MAINTAINED

CARMEL-BY-THE-SEA BEACH BLUFF & BEACH ACCESS IMPROVEMENT PROJECT

ALONG SCENIC ROAD

FROM 10TH AVENUE TO MARTIN WAY



RECEIVED

MAR 07 2001

CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

CITY COUNCIL MEMBERS

SUSAN A. McCLOUD, MAYOR

PAULA HAZDOVAC

BARBARA LIVINGSTON

DICK ELY

GERARD ROSE

RICHARD GUILLEN, INTERIM CITY ADMINISTRATOR

JAMES M. CULLEM, DIRECTOR OF PUBLIC WORKS

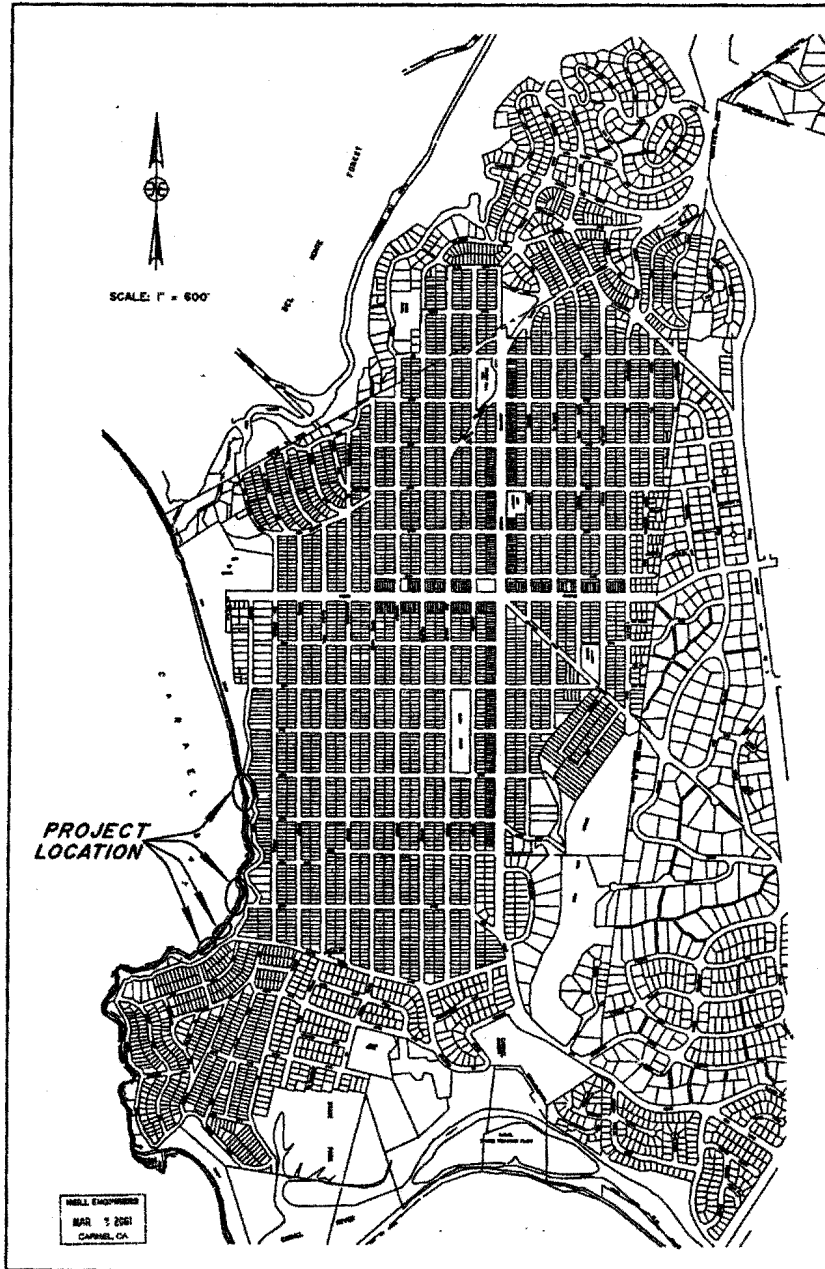
PREPARED BY:

NEILL ENGINEERS CORP.
CARMEL, CALIFORNIA



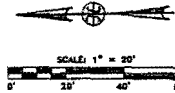
Sharon H. Ford
REGISTERED CIVIL ENGINEER NO. 52428

CALIFORNIA COASTAL COMMISSION
EXHIBIT C (10FS)

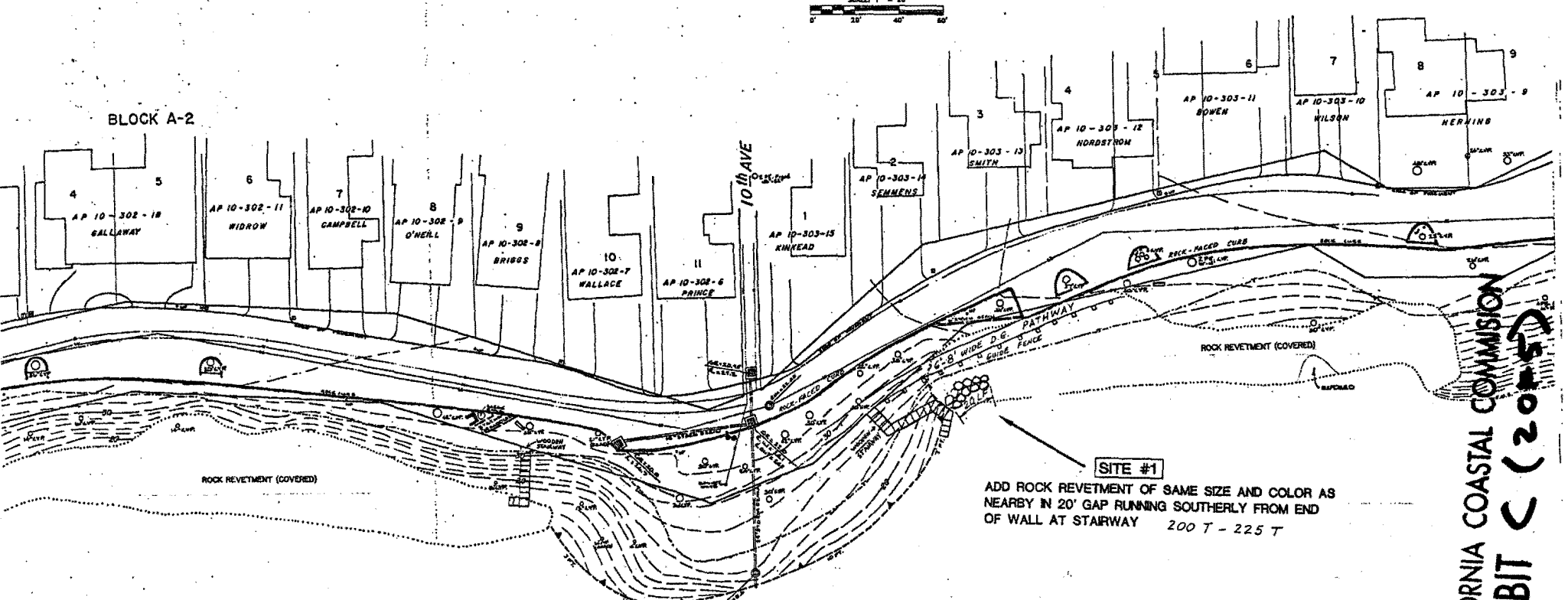


NEILL ENGINEERS
MAR 5 2001
CARMEL, CA

BLOCK A-3



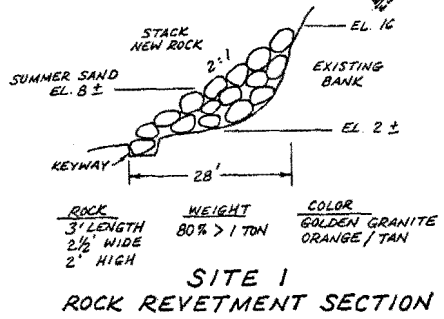
BLOCK A-2



SITE #1
 ADD ROCK REVETMENT OF SAME SIZE AND COLOR AS
 NEARBY IN 20' GAP RUNNING SOUTHERLY FROM END
 OF WALL AT STAIRWAY 200 T - 225 T

CALIFORNIA COASTAL COMMISSION
 EXHIBIT C (2015)

- LEGEND**
- 10 — MAJOR CONTOUR
 - 5 — MINOR CONTOUR
 - ▲— EXIST. RETAINING WALL
 - EXIST. CATCH BASIN
 - — — EXIST. STORM DRAIN LINE
 - S— EXIST. SANITARY SEWER LINE
 - W— EXIST. WATER LINE
 - EXIST. MANHOLE
 - - - - - EDGE OF SAND AND TIDE OF BLUFF
 - - - - - TOP OF BANK



NEILL ENGINEERS CORP. CARMEL, CALIFORNIA
 BEACH BLUFF AND
 BEACH ACCESS
 IMPROVEMENT PROJECT
 SCENIC ROAD AT TENTH AVENUE
 CITY OF CARMEL-BY-THE-SEA, CALIFORNIA
 W.O. 7766
 NOVEMBER 2000
 SCALE: 1"=20'
William H. Ford
 Registered Civil Engineer No. 29411

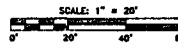
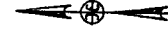
BEACH BLUFF AND BEACH ACCESS IMPROVEMENT PROJECT
SCENIC ROAD AT THIRTEENTH AVENUE
 CITY OF CARMEL-BY-THE-SEA, CALIFORNIA

W.O. 7766
 NOVEMBER 2000
 SCALE: 1"=20'

Shannon B. Ford
 Registered Civil Engineer No. 28

BLOCK A-5

13th AVE.

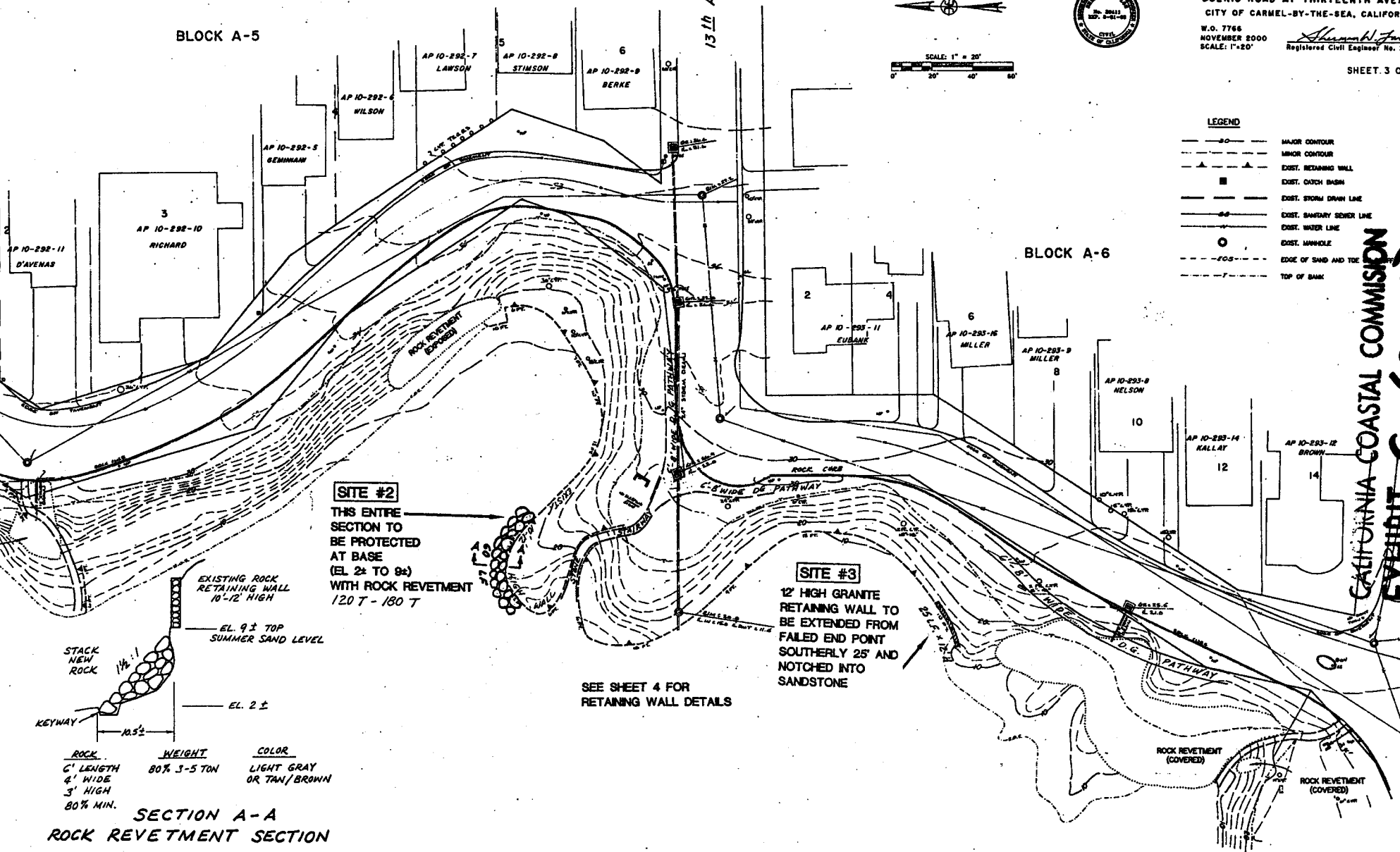


LEGEND

- 20 — MAJOR CONTOUR
- 10 — MINOR CONTOUR
- ▲— EXIST. RETAINING WALL
- EXIST. CATCH BASIN
- — EXIST. STORM DRAIN LINE
- S— EXIST. SANITARY SEWER LINE
- — EXIST. WATER LINE
- EXIST. MANHOLE
- - - - - EDGE OF SAND AND TIDE
- - - - - TOP OF BANK

BLOCK A-6

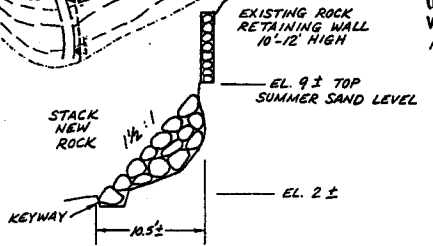
CALIFORNIA COASTAL COMMISSION
EXHIBIT C (3 of 5)



SITE #2
 THIS ENTIRE SECTION TO BE PROTECTED AT BASE (EL. 2± TO 9±) WITH ROCK REVETMENT 120 T - 180 T

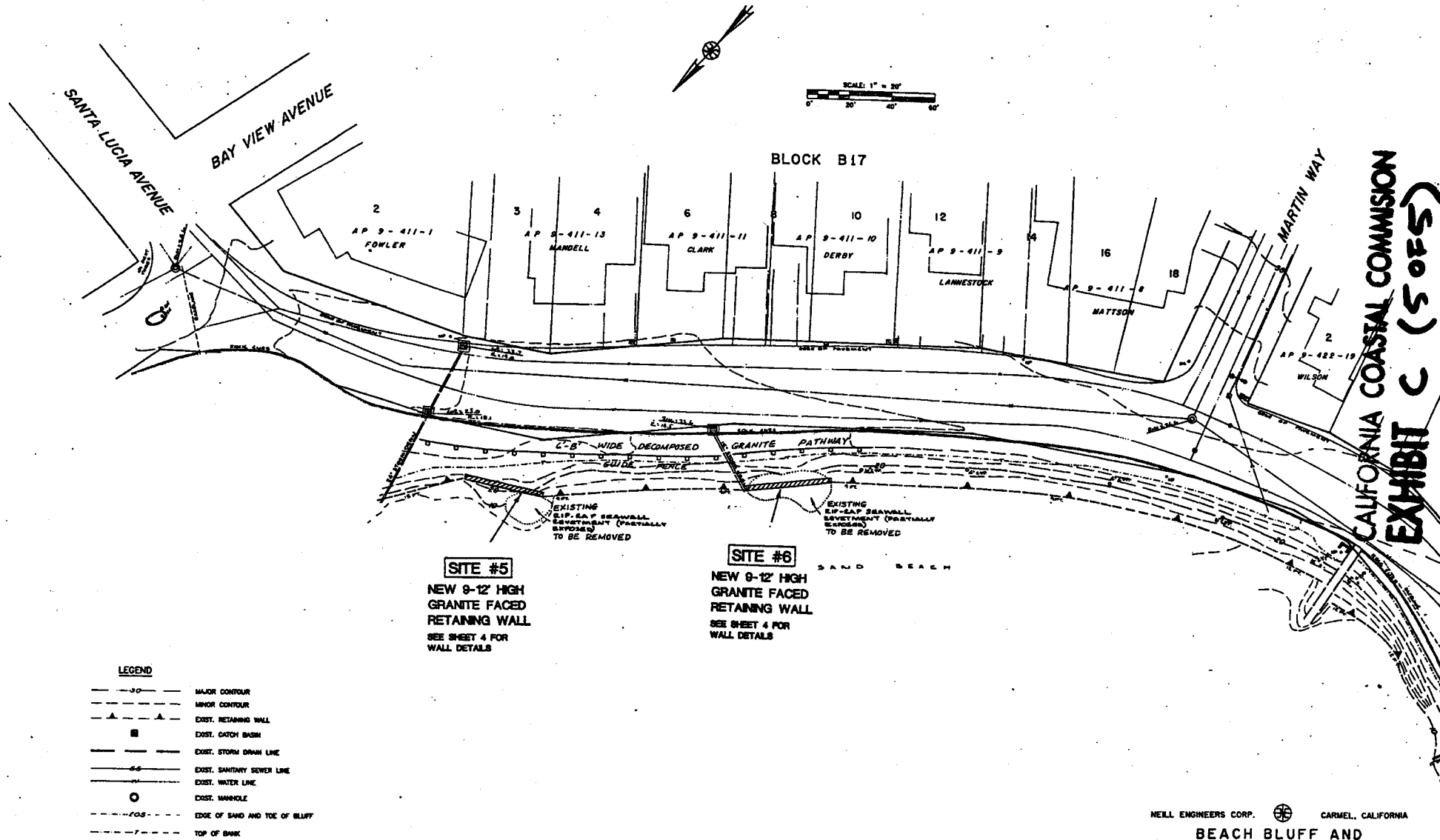
SITE #3
 12' HIGH GRANITE RETAINING WALL TO BE EXTENDED FROM FAILED END POINT SOUTHERLY 25° AND NOTCHED INTO SANDSTONE

SEE SHEET 4 FOR RETAINING WALL DETAILS



SECTION A-A
ROCK REVETMENT SECTION

| ROCK | WEIGHT | COLOR |
|---|-------------|----------------------------|
| C' LENGTH 4' WIDE 3' HIGH 80% MIN. | 80% 3-5 TON | LIGHT GRAY OR TAN/BROWN |



CALIFORNIA COASTAL COMMISSION
EXHIBIT C (5 OF 5)

NEILL ENGINEERS CORP. CARMEL, CALIFORNIA
BEACH BLUFF AND BEACH ACCESS IMPROVEMENT PROJECT
 SCENIC ROAD SOUTH OF BAYVIEW AVENUE
 CITY OF CARMEL-BY-THE-SEA, CALIFORNIA
 W.O. 7766
 NOVEMBER 2000
 SCALE: 1"=20'



Photo 1: View of the northern portion of Carmel Beach and Carmel Bay as seen from the blufftop Scenic Drive recreational trail

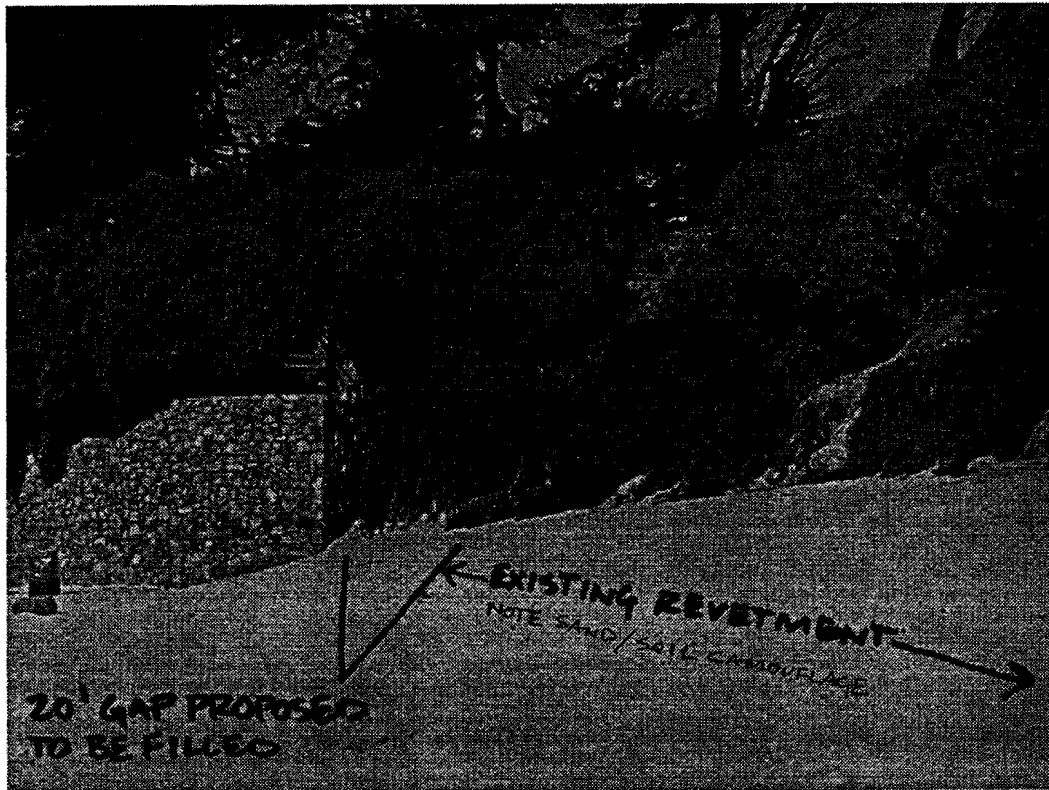
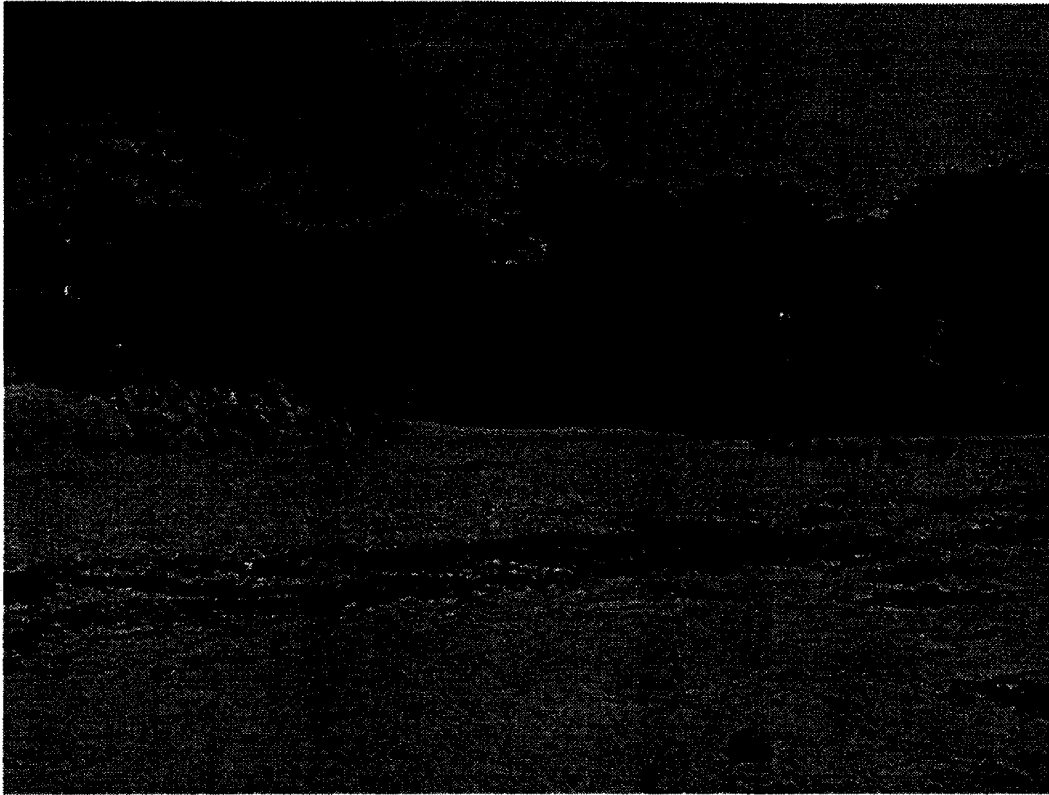


Photo 2: View of Site 1 from Carmel Beach

CALIFORNIA COASTAL COMMISSION
EXHIBIT D (1 OF 5)



13TH AVE
STAIRS
←

Photo 3: View of Site 2 from Carmel Beach



Photo 4: View of Site 2 from the blufftop Scenic Drive recreational trail

CALIFORNIA COASTAL COMMISSION
EXHIBIT D (2015)

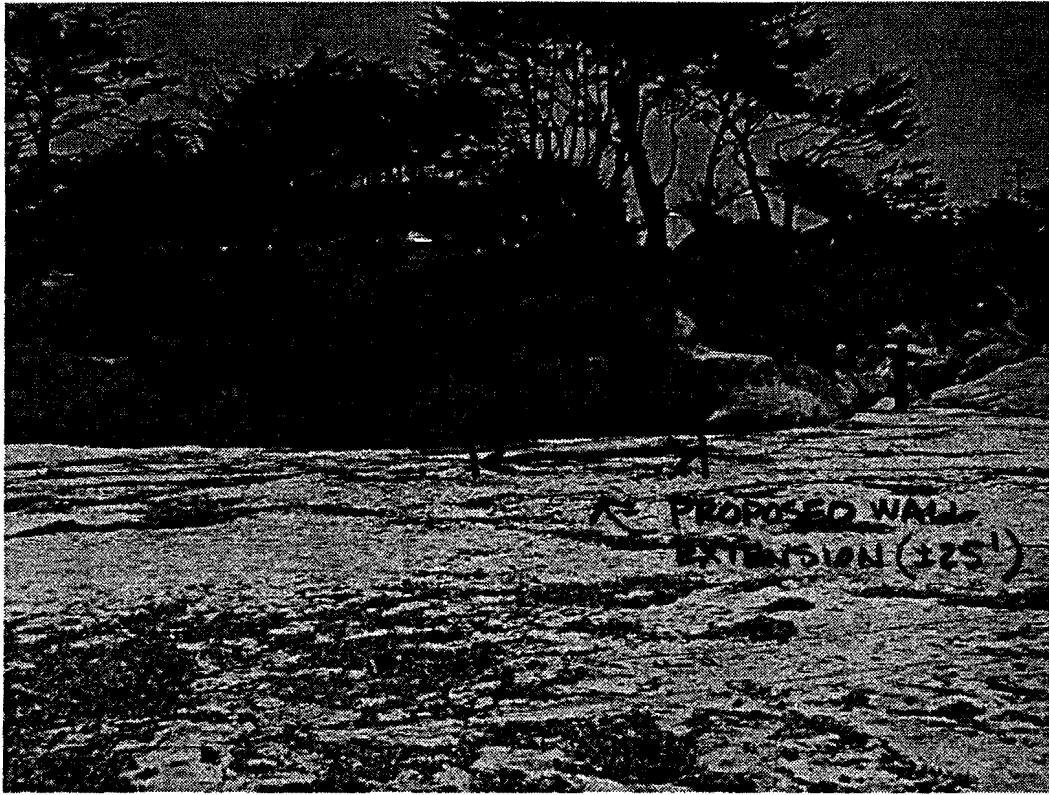


Photo 5: View of Site 3 from Carmel Beach



Photo 6: View of Site 3 from the blufftop Scenic Drive recreational trail



Photo 7: View of Site 4 from Carmel Beach



Photo 8: View of Site 4 from the blufftop Scenic Drive recreational trail at Frank Lloyd Point

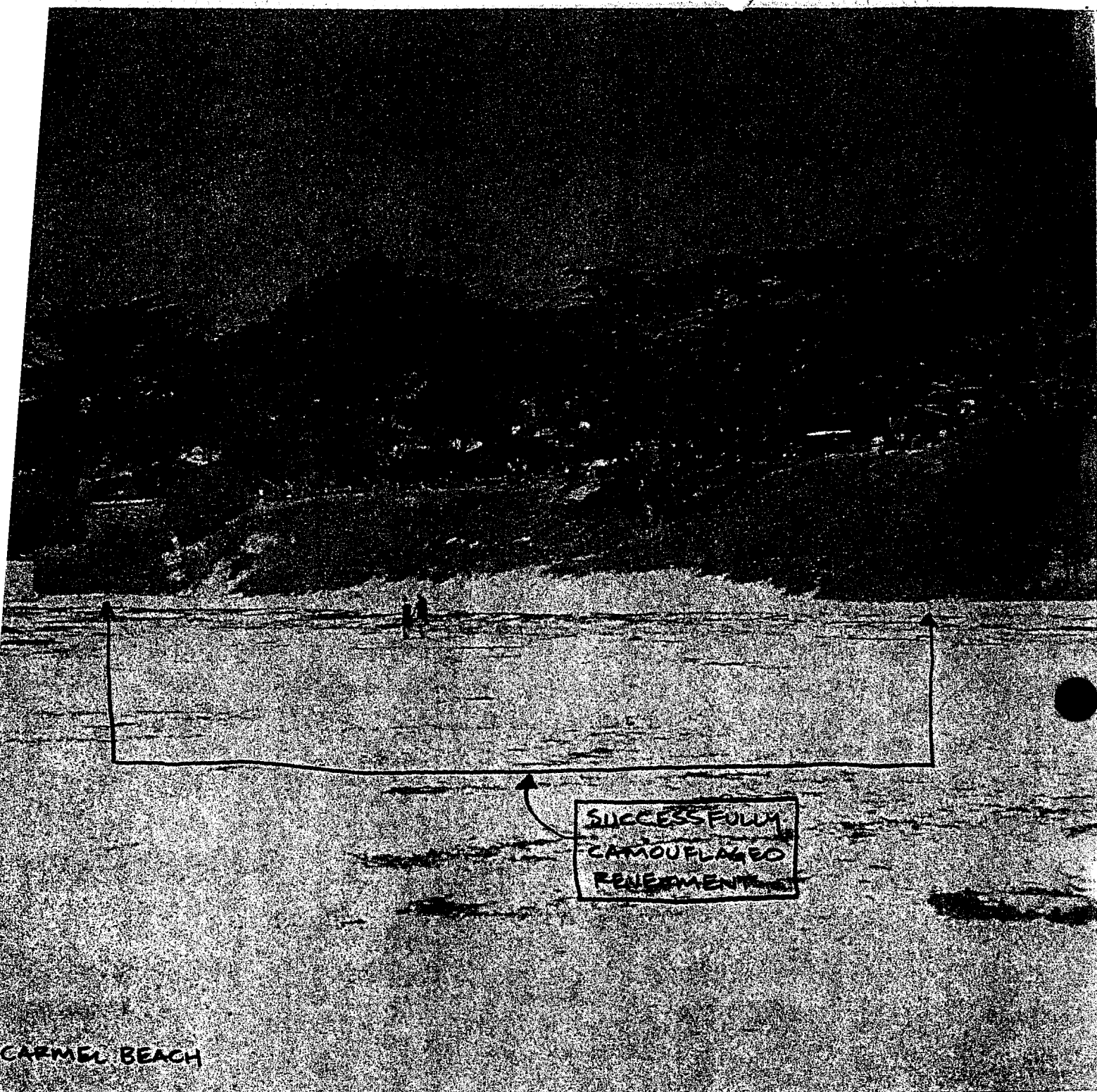
CALIFORNIA COASTAL COMMISSION
EXHIBIT D (9015)



Photo 9: View of Site 5 from Carmel Beach



Photo 10: View of Site 6 from Carmel Beach



CARMEL BEACH

CALIFORNIA COASTAL COMMISSION
EXHIBIT E (10P1)

RECEIVED

March 6, 2001

MAR 07 2001

CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

Dan Carl, Coastal Planner
California Coastal Commission
725 Front Street, STE 300
Santa Cruz, CA 95060

Dear Mr. Carl:

This document is in response to your letter dated October 25, 2000 on the Coastal Development Permit Application Number 3-00-140 (City of Carmel-by-the-Sea's proposed shoreline armoring at six locations along Scenic Road between 10th Avenue and Martin Way). The purpose of this document is to provide you with the additional information requested. We are including more detailed background information about the forces affecting Carmel's shoreline, as well as a clearer description of the City's responses to topics such as coastal erosion, shoreline access, and bluff protection. In addition to this document, please find the following attachments:

1. New Project Plans reflecting changes at Sites #2, 4, 5, and 6; and
2. Additional geotechnical information from Rogers Johnson, the City's geological consultant (including survey profiles and sand content analysis data).

I. **BACKGROUND**

A. **Introduction**

Carmel Beach is located at the base of a series of high dunes and shoreline bluffs. Public access to the beach area is primarily from the parking area at the foot of Ocean Avenue as well as from numerous sites along Scenic Road. But from these locations, access to the waterline requires a descent that ranges between 12 and 50 feet, depending on location and season. During several months of the year, high-energy storm waves scour sand from the beach, exposing the underlying sandstone bedrock. These conditions often make beach access difficult. During some periods, storm-generated waves strike directly against the dunes, bluffs and beach access stairways, making beach access dangerous. And, like nearly all open-coast locations, the Carmel shoreline appears to be facing a future of rising sea levels and unpredictable weather patterns.

CALIFORNIA COASTAL COMMISSION
EXHIBIT F (1 OF 20)

In spite of these conditions, the City of Carmel remains dedicated to the protection of shoreline access for all its residents and visitors. Over the past 60 years, the City has built and maintained beach access stairs and ramps that extend from the top of its shoreline bluffs down to the beach level. Today, there are nine stairways and two sand ramps along Carmel's shore. Through its beach management program, the City annually moves thousands of tons of sand to cover its engineered revetments and to maintain sand ramps to facilitate access for beach-users.

For over 40 years, Carmel has built seawalls, retaining walls, and rock revetments in a continuing program to protect the City's shoreline bluffs and the many public amenities along its bluff tops, including the beach bluff pathway, Scenic Road, utilities, and private homes, from various erosive forces. During this period, the City has worked to mitigate negative impacts (structural, functional, and visual) that often result from the use of hard protective structures along the shore:

- o Seawalls and Retaining Walls - To reduce the visual impact of these structures, the City has covered them all with a facing of "golden granite" rocks, giving the walls a more "natural" look. Thus far, the accelerated loss of beach sand that is often associated with seawall construction has not occurred along Carmel Beach. This may be due to the sand transport process that is characteristic of the Carmel shoreline.
- o Revetments - To mask any intrusive impact, all engineered revetments installed since 1983 have been covered with beach sand, and, in many cases, replanted with vegetation. During the beach's peak visitor period (mid-Spring through early-Fall), most of the revetments are so well covered that they are virtually indistinguishable from other portions of Carmel's beach and bluffs. Further, the City's beach management program directs the Forest, Parks, and Beach Department's personnel to annually contract sand bulldozing from the lower beach to thoroughly cover exposed revetment structures and replenish the upper dunes from Ocean Avenue south to 8th Avenue.

The City recognizes that a revetment's footprint takes up more beach space than does a seawall, but understands that, at certain sites, under certain conditions (e.g. to protect the base of existing walls, to diffuse wave action) a revetment may be the appropriate choice for shoreline protection. The City believes that the conditions at the 13th Avenue cove (Site #2) represent such a situation. Wherever possible, the City endeavors to mitigate potential impacts via such mechanisms as:

- Anchoring the lowest facing stones in a keyway, excavated into the underlying bedrock (to stabilize the revetment and help prevent the seaward migration of the stones);
- Utilizing engineered revetments built as steeply as feasible, to minimize the structure's footprint; and
- Covering revetments with several feet of sand or more to maintain optimum beach area during periods of high public use.

B. Erosion along the Carmel Shoreline

The proposed project has been designed to protect the City's beach bluff pathway, beach access stairways, and other public amenities from erosion. Erosion rates along the Carmel shoreline were calculated by Johnson (1984). Comparing a 1908 assessor's map with shoreline profiles surveyed during 1983, Johnson estimated that erosion rates ranging between 0.3 and 0.7 feet/year occurred along the southern portion of the Carmel shoreline (where the proposed project is located).

Johnson also analyzed a series of aerial photographs of the Carmel shoreline dating as far back as 1939. Along the shore near 10th Avenue (close to Site #2), Johnson documented losses of 10-15 feet between 1939 and 1956 (similar to the erosion rate described above). Analysis of other photos, however, showed short-term erosion at much higher rates: the loss of at least 20 feet near Martin Way (south of Sites #5 and 6) between 1968 and 1970, and loss of 30 feet near Santa Lucia (Site #4) during the El Niño storms of 1982/83.

In his 1984 report, Johnson noted the highly variable nature of shoreline erosion at Carmel Beach. Along the shore, erosion rates differ from location to location, and year to year. Factors that determine the severity and rate of erosion include:

- Exposure to Wave Impact - Most of the Carmel shoreline is oriented along a North-South axis, and faces directly into the high-energy storm waves that usually strike the shore during the winter storm season. Exposure to wave impact may also be affected by:
 - Volume and Distribution of Beach Sand.
The volume of sand on Carmel Beach changes both seasonally and annually. In general, there is often a correlation between the amount of sand on Carmel Beach during the winter storm season and the severity of erosion caused by high-energy storm waves. Sand level plays a critical role along the Carmel

shore; low sand levels may uncover the footings of seawalls, making them more exposed to erosive damage.

The exact processes of sand movement in the Carmel Beach area are not fully understood. The major portion of Carmel Beach sand is derived from the erosion of granite headlands along the Monterey Peninsula, rather than from sand discharged into the ocean from coastal rivers and creeks. During the severest winters, large volumes of sand are scoured off Carmel Beach, exposing the underlying sandstone. But within one to two years, typical summer sand levels return. It is possible that sand removed from the beach is moved to offshore sandbars during the winter, and then redeposited over the next few summers.

- **Condition of the Offshore Kelp Bed.**
There is a well-developed kelp bed located just offshore from Carmel Beach. Kelp beds are known to buffer the energy of incoming waves. This might have some effect on the rate of sand deposition on Carmel Beach. In the past, this bed has been mechanically harvested. The impact of large-scale kelp harvesting on erosion of the Carmel shoreline is not understood.
- **Orientation of Exposed Outcrops ("Bedrock Platform").**
As described above, one of the characteristics of severe winter storm seasons is the scouring of large volumes of sand off Carmel Beach, exposing the sandstone bedrock. The bedrock is incised by deep channels ("re-entrants") that lie perpendicular to the beach bluffs. Johnson (1984) concluded that these channels could focus wave energy, causing severe erosion at specific locations along the shore, as experienced in the 13th Avenue cove at Site #2.
- **Bluff Characteristics** – The severity and rate of erosion along the shore is dependent on the type of material that makes up Carmel's coastal bluffs.
- **Composition of Bluff Material**
All sites for the proposed project are located along the southern portion of the Carmel shoreline. Here, the upper shore consists of sandstone headlands, promontories, and shallow coves, along with bluffs made of marine terrace deposits and sandy loam fill material. All of these features have experienced moderate- to severe erosion from high-energy storm waves. In response, the City has protected much of its southern shoreline with walls or engineered rock revetments.

In this area, the erosion threat has been most severe at unarmored locations. For example, wave action has overtopped sandstone outcrops and has

eroded the upper bluffs just south of the Santa Lucia Avenue beach access stairway.

The potential for erosion has been greatly reduced at locations protected by walls or revetments. In the past, waves had been eroding the upper bluffs just south of the 12th Avenue stairway, but the installation of a perched retaining wall at that site in 1985 has prevented subsequent damage. Seawall construction around the 10th Avenue headland, in the 13th Avenue cove, and along most of the shore stretching from Martin Way to the southern City limits, has successfully protected bluffs at these sites from further erosion. The small amount of erosion experienced in these areas has occurred at the ends of walls (Sites #1 and 3), or in small gaps where walls were not built (Sites #5 and 6).

Revetments at these sites appear to have also prevented further severe erosion. Nearly all of these are engineered revetments, designed by the City's consulting engineering geologist. They were built at a slope of 1.7:1, with the lowest course of armor stones lodged into a keyway that was cut into the underlying bedrock. Bluffs and associated amenities protected by these engineered revetments have not suffered any noticeable erosion. Two small non-engineered revetments, installed at Sites #5 and 6, have been significantly impacted by high-energy storm waves: several armor stones were displaced and perched. Now, wave overtopping has damaged the bluffs at each of these sites. (The City's project now under consideration proposes to remove of these non-engineered revetments.)

- Presence of Faults and/or Joints
Johnson (1984) explains how faults and joints in the bedrock have affected erosion rates along the Carmel shoreline. He concludes that "two strong sets of fractures ... have permitted surf erosion to selectively attack the coast along the trend of these zones of weakness, forming the irregularly shaped coastline" at Carmel.
- Uncontrolled Storm Water - Before the mid-1980s, a contributing cause of bluff erosion was poorly controlled storm water run-off. Carmel's shoreline is located at the bottom of a large hill, and receives run-off from the City's storm water drainage systems. During the 1982/83 El Niño storms, some of Carmel's beach bluffs were badly damaged by storm water which overwhelmed the capacity of the storm water system and washed down concrete beach access stairways.

Storm water run-off also eroded bluffs at locations where protective vegetation had been destroyed by people climbing down (or up) the fragile coastal bluffs.

Between 1983 and 1988, the City implemented a program to remedy this problem. Scenic Road was re-contoured and the seaward curb was redesigned, helping ensure efficient storm water drainage. The entire Scenic Road storm drain system was completely re-built, utilizing larger drainpipes and catch basins, and placing outfalls in locations where storm water run-off would not cause erosion. The City also instituted a beach area maintenance program that included the cleaning of debris from protective grates, ensuring that storm water would flow directly into the new drainage system. New access stairways and sand ramps were built in convenient locations. Finally, bluffs and bluff top areas were landscaped with shrubs, boulders, wooden barriers, and appropriate signage, to help discourage "bluff-cutting." Through this program, the City has successfully reduced (in most cases, eliminated) erosion caused by storm water run-off and errant foot traffic.

Erosion rates at the same location may vary widely from year to year. This temporal variation is due to a number of factors, including:

- o Intensity of High-Energy Storm Waves
- o Co-occurrence of Severe Storms and High Tides
- o Amount of Sand on the Beach during the Winter Storm Season.

Storm wave intensity and co-occurrence of storms and high tides are important factors, but they are not unique to Carmel's shoreline, and so will not be discussed here. Winter beach sand volume has been discussed above.

As previously stated, the details of sand movement and distribution at Carmel Beach are not fully understood. One question still unanswered deals with how the erosion of sandstone outcrops and marine terrace bluff material impacts the Carmel shoreline sand budget. Johnson recently analyzed the sand content of these shoreline components. He reported that the sand content of the sandstone bedrock was 67% and the bluff material was 79%. Erosion of these features could conceivably add sand to Carmel Beach, though it is not clear if these sand grains are the same size, shape, or hardness as the "native" Carmel Beach sands. It is also not clear how the volume of this eroded sand compares with the amount of native sand returned to the beach annually from offshore sand bars, or deposited from erosion of the hard granite headlands of the Monterey Peninsula. Additionally, it should be noted that the City adds new fill material to its coastal bluffs from time to time. This fill has a sand-content that is equal to, or exceeds, that of the City's marine terrace bluffs. It is reasonable to assume that the erosion of this fill material must add some measure of sand to the Carmel shoreline, perhaps balancing the amount withheld by the City's shoreline armoring projects.

C. Carmel Beach Bluff Pathway

The Carmel Bluff and Beach Access Improvement Project is designed to address threats to a variety of amenities along the City's shoreline. One of the most important of these is the beach bluff pathway. This pathway plays a critical role in the City's overall plan to protect the Carmel shoreline and to facilitate public access to the coast. It provides a safe and convenient way for thousands of residents and visitors to move along the upper shore, and directs people to stairways and sand ramps, providing beach access without endangering the City's fragile coastal bluffs.

The pathway helped solve problems caused by people who climbed on the bluffs, damaging vegetation and causing severe erosion from storm water run-off. The pathway landscaping includes plants, boulders, and protective wooden barriers. The City also uses signs directing pedestrians to the nearest beach access stairway or sand ramp along with signs requesting that people "please stay off the bluffs" (citing the appropriate section of the City's Municipal Code).

The beach bluff pathway also enhanced the experience of shoreline users whose activities are limited to the Scenic Road bluff top area. Throughout the year, there are many whose physical condition makes walking on the beach difficult or impossible. (Please note that the Carmel Beach Bluff Pathway was designed to be accessible to the physically challenged.) There are others who prefer to sit or stand on bluffs overlooking the shore and enjoy the scenic vistas. In addition, there are many who use the bluff top area for walking or running. Finally, there are some conditions, characteristic of the Carmel shoreline, that often discourage use of the beach itself:

- o Climate – Carmel Beach weather conditions often include periods that range from cool and windy to wet and foggy. These conditions are most likely to occur during the period of highest public use (mid-Spring through early-Fall). Many find these conditions are more conducive to strolls along the bluffs in warm clothes than the more typical beach activities.
- o Tides – Like most sections of the central California coast, tides at Carmel Beach range from -2.0 to +8.0 feet. During periods of high tide, travel on the beach, especially south of 12th Avenue, may be difficult or dangerous.
- o Sand Level – During severe winters, sand scour can expose large masses of sandstone ("bedrock platforms"). These outcrops can interfere with pedestrian movement along the beach.

Because of these conditions, many people limit their shoreline experience to visiting the City's coastal bluffs instead of Carmel Beach.

Before the mid-1980s, those using the bluff top were often forced to walk on Scenic Road, a sometimes-busy two-way thoroughfare. Pedestrians and runners resorted to weaving among parked cars and dodging moving vehicles. The City addressed these problems by narrowing Scenic Road to a one-way street and creating a meandering pathway where people could enjoy the beautiful vistas of the Carmel shoreline in peace and safety.

An important feature of the pathway design is the way it invites people out onto portions of Carmel's coastal bluffs and promontories. This provides superb views for pedestrians who choose not to travel down to the beach. The pathway enables users to enjoy the unique shoreline experience without compromising public safety or generating erosion damage to the bluffs and vegetation. Erosion threatening the pathway, especially those portions along the promontories, would deny shoreline visitors, especially those with limited mobility, access to a valuable public resource.

II. PROJECT DESCRIPTION

The Carmel Bluff and Beach Access Improvement Project includes construction of various improvements to the beach bluff pathway and beach access facilities between 10th Avenue and Martin Way along Scenic Road. The project involves construction of engineered revetments and engineered concrete, granite-faced seawalls or retaining walls, depending on the specific needs at each site. A detailed description of the project characteristics for each of the sites is provided below.

Scenic Road and 10th Avenue (Site #1): During the 1997/98 El Niño storms, heavy rains, strong surf and wave motion damaged the rock and wooden stairway access to the beach from Scenic Road. Wave motion also undermined a small portion of the seawall foundation, and displaced some of the armor stones making up the original protective revetment.

Site #1 is located at the base of high bluffs directly adjacent to the beach access stairway described above. Running southward from the stairway and existing seawall is an extensive engineered rock revetment (now covered by sand) that was installed in 1983 (see Sheet #2 of the Project Plans). Much of the damage during the 1997/98 storms occurred in a 20-foot gap between the northern end of the revetment and the seawall that was never armored. High-energy storm waves have been observed to enter this gap, swirl, batter, and erode the beach access stairway and adjoining walls.

The City's beach bluff pathway at the top of the bluff is not in imminent danger, but Site #1 directly adjoins a major beach access stairway. Continued damage in this area would adversely affect public shoreline access.

The City proposes to install a 20 foot-long engineered revetment to fill the gap described above. This new revetment will use 200-225 tons of armor stones to fill gap, running southerly from the end of the stairway wall. The armor stones will be of the same size (3 feet long by 2.5 feet wide by 2 feet high; 80% of boulders will be greater than 1 ton) as stones used in the existing revetment immediately to the south. Their color will match the "golden granite" facing stones used on the seawall and stairway immediately to the northwest. The proposed revetment will extend out from the toe of the existing bank 28 feet, and will be placed from elevation 2+/- to elevation 16 feet, to match the revetment constructed in 1985. The proposed revetment will have a footprint of approximately 560 square feet. Excavation associated with the proposed structure will include clearing of vegetation, removal and re-spreading of beach sand and construction of a keyway. The revetment will be covered with sand and will be re-vegetated. Annually, any exposed portion of the revetment not covered with sand via the natural sand replacement process will be re-covered by the City as part of its beach management program. The proposed armoring is designed to prevent undermining of the seawall and the beach access stairway foundations.

The City has concluded that there is no viable non-structural option at this site. No threatened structures or other amenities can be moved. Neither landscaping nor dune building can be expected to protect the threatened stairway and adjoining seawall from attack by high-energy storm waves. A no-project decision will clearly result in further damage to the beach access stairway and to the protective seawalls and revetments.

Scenic Road and 13th Avenue (Site #2): The bluff, beach access stairway, and beach bluff pathway at Scenic Road and 13th Avenue are protected by a granite rock-faced seawall that is founded in the sandstone bedrock, and was built decades ago. Over many years, the sandstone has been eroded away by wave action, undermining portions of the seawall foundation and threatening the integrity of the wall. Following the 1995 FEMA 1042 and 1044 disasters, the City attempted an emergency repair at these sites using concrete and large rock. But during the 1997/98 El Niño storms, heavy rains, strong surf and wave motion combined to destroy this repair work, again undermining part of the seawall and beach access stairway foundation.

Site #2 is located at the mouth of a narrow cove that extends more than 150 feet inland from the main beach. Over the years, City personnel have observed that storm waves increase their speed and abrasive action upon entering this cove. This

results in severe erosion of the natural sandstone outcrop located at the base of the bluff and the existing seawall on the southern side of the cove. Significant portions of this sandstone have already been extensively eroded just in the past decade. Continued loss of this sandstone will damage or destroy the existing seawall, bluff, and beach bluff pathway.

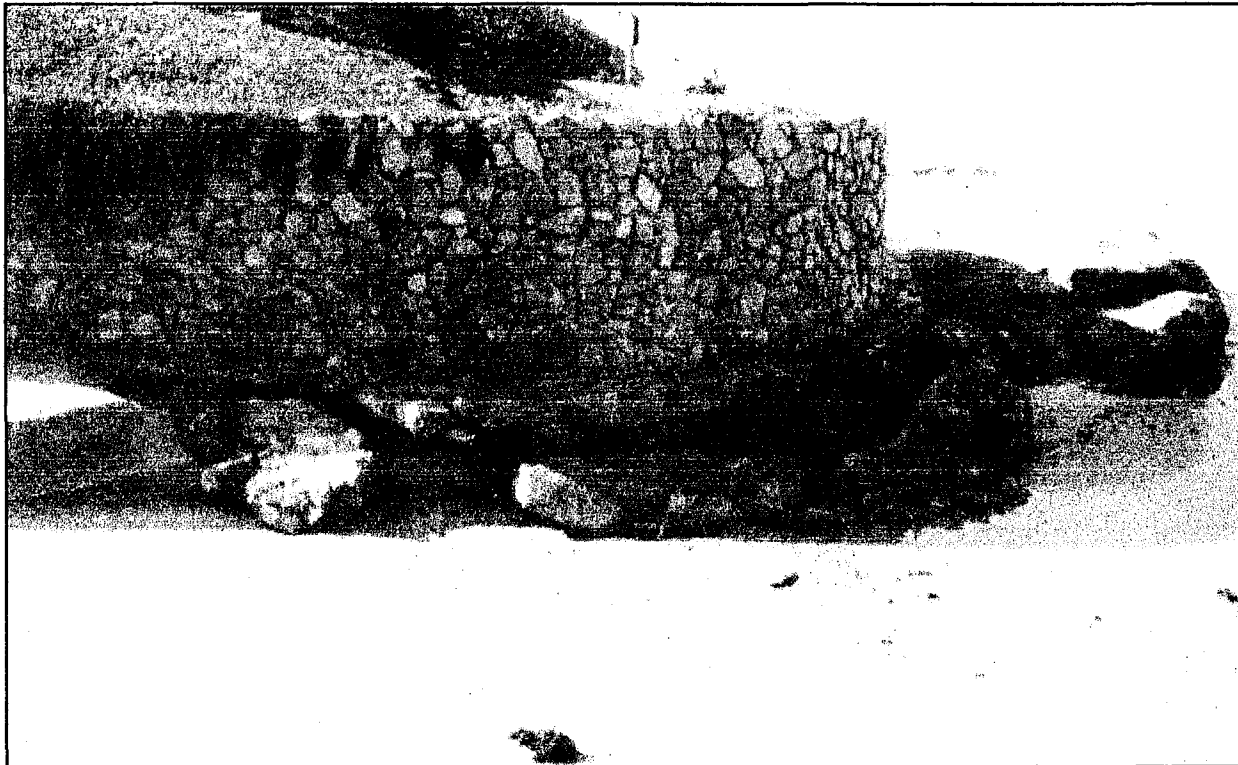


Figure 1. Photo showing current conditions at Site #2. Note large gap in sandstone and broken remains of rocks and concrete used in earlier repairs.

The City proposes to install an engineered revetment into the gap left by the eroded sandstone (see Figures 2, and 3). This revetment is designed to protect the existing seawall foundation, the adjoining beach access stairway, and the beach bluff pathway, as well as the protective sandstone that lines the southern portion of 13th Avenue cove. The City had considered an alternate option suggested by Johnson (in his 1998 letter): the construction of a reinforced concrete wall below the existing seawall. Both options will protect the existing seawall and beach access stairway. However, the City believes that the revetment option will add an additional degree of protection – it will help diffuse the energy of waves entering the cove. This should reduce the potential for further erosion of the sandstone, the cove's seawalls and bluffs, and the beach bluff pathway above. These areas will otherwise become vulnerable when future storm waves further erode the remaining sandstone along the cove's southern side.

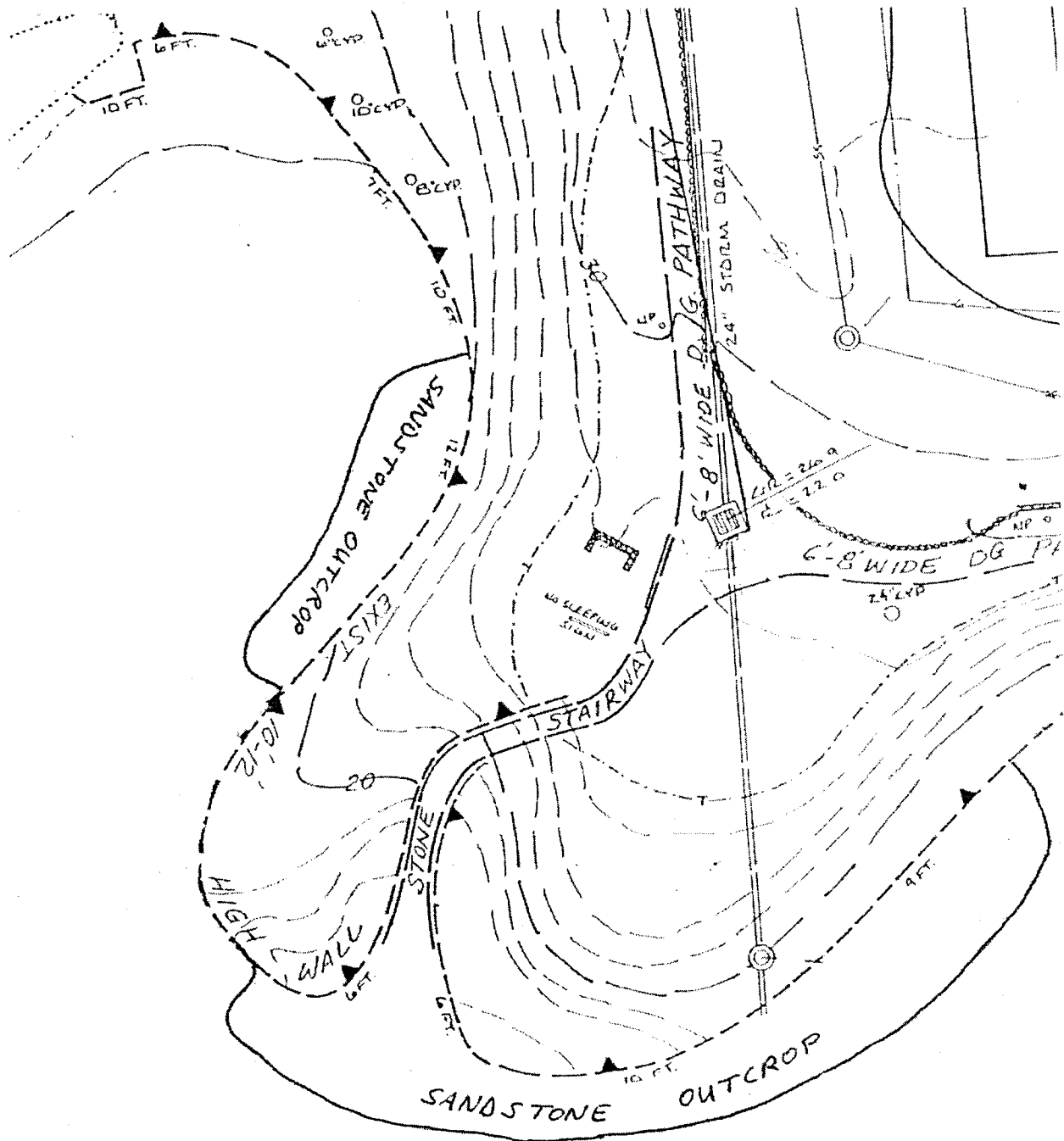


Figure 2. Drawing of current conditions at Site #2, showing gap in sandstone.

The City believes that any adverse impacts of a revetment at this site (e.g. the loss of some shoreline access during wintertime low-use periods) are more than offset by the higher degree of protection afforded by the revetment design. Further, the City believes that sand deposition at this site, through natural shoreline processes as well as the City's program of annual sand replacement, will completely cover the revetment structures with sand during the period of highest public visitation and use (mid-Spring through early-Fall).

At Site #2, the proposed project will involve the installation of a 60-foot long engineered revetment constructed of 120-180 tons of stacked armor stones, keyed into the bedrock. The size of the armor stones will be approximately 6 feet long by 4 feet wide by 3 feet high, with 80% of the armor stones weighing three to five tons; the color will be light gray or tan/brown. The revetment will extend out from the base of the retaining wall approximately 10.5 feet, and will be placed from elevation 2+/- to elevation 9+/- feet. (NOTE: as shown on Sheet 3 of the enclosed project plans, the top of this proposed revetment will be located just below the summer sand level). This proposed revetment will have a footprint of approximately 630 square feet. The structure excavation will include removal of beach sand and construction of an

engineered revetment keyed into the bedrock. The revetment will then be re-covered with sand. Annually, any exposed portion of the revetment not covered by the natural sand replacement process will be re-covered by the City as part of its beach management program.

There are no non-structural alternatives that can protect this site against wave attack. The threatened seawalls and beach access stairway cannot be moved. A no-project alternative would result in damage to the existing protective seawalls, stairway, and, eventually, the beach bluff pathway.

Scenic Road Between 13th and Santa Lucia Avenues (Site #3):

Site #3 is located along the southern side of a very shallow cove approximately 180 feet south of the 13th Avenue beach access stairway. Since the late 1950s, this cove has been protected with a granite-faced seawall. During the 1997/98 El Niño storms, the southernmost end of this wall failed.

Damage to the wall at this site endangers adjoining portions of the seawall that protects bluffs along the rest of the cove. Above Site #3, these bluffs rise to elevations ranging from 18 and 24 feet high, and the beach bluff pathway comes within 12 feet of the edge of bluff.

At Site #3, the City proposes to build a 12-foot high granite-faced reinforced concrete seawall. It will be an extension of the existing wall, and will extend southerly from its failed end for a distance of 25 feet. At its south end, the new

seawall section will be notched several feet into the sandstone. The wall's golden granite masonry façade will match the existing seawall. The structure excavation will remove enough beach sand and sandstone necessary to establish an engineered footing appropriate for the structure. The proposed wall and footing will be constructed of poured-in-place reinforced concrete and will be founded in the sandstone bedrock. The wall will contain weep holes, be backed by drain rock, and will be faced and capped with golden granite.

There are no viable non-structural options for this site. As in previous sites, the threat here involves erosion from high-energy storm waves. A no-project alternative would almost certainly result in eventual destruction of the existing wall, erosion of the bluffs protected by that wall, and loss of the beach bluff pathway.

Scenic Road and Santa Lucia Avenue (Site #4): Frank Lloyd Point is a small promontory composed of sandstone bedrock overlain by marine terrace deposits (relatively loose, unlithified sands and gravels on which a soil has formed). These deposits are relatively weak and susceptible to erosion. Over the years terrace deposits were stripped from the underlying sandstone. This damage extends up to the top of the bluff, within two feet of the beach bluff pathway. During the 1997/98 El Niño storms, strong wave action damaged bluff and bluff top areas at this site. Boulders at the base of the existing seawall were displaced, and bluff material that supported an 18-inch storm drain outfall was undermined. High-energy storm waves severely eroded portions of the promontory and destroyed or damaged benches and guardrails, and portions of the beach bluff pathway.

The section of pathway being eroded at Site #4 is a critical part of the Carmel Beach Bluff Pathway system. It was designed to bring people out onto Frank Lloyd Point, one of the few scenic promontories along the City's shoreline. As described in Section IC of this document, the pathway was designed to give all shoreline users a chance to experience unique scenic vistas, even if they are unable to go down onto Carmel Beach.

The City proposes to protect this site by building a retaining wall along the upper bluff. The new retaining wall will be eight feet high and 50 feet long. This proposed wall and footing will be constructed of poured-in-place reinforced concrete and will be founded in the sandstone bedrock. The wall will contain drain rock and weep holes, and will be faced and capped with golden granite. This new retaining wall segment will be structurally interconnected to the existing seawall just south of Site #4, and will blend in color and form with nearby existing retaining walls and seawalls. The structure excavation will remove the sandstone necessary to establish an engineered footing appropriate for the structure. The area between the retaining wall and the existing wooden barricade will be filled with 75 cubic yards of topsoil and then re-landscaped (following the guidelines of the City's approved Carmel Beach Bluff Pathway Landscape Design Plan).

The City has considered non-structural options for protection of the beach bluff pathway and amenities at Site #4. Because the main threat here is erosion from high-energy storm waves, landscaping and drainage alternatives clearly will not be effective. A "no-project" option will allow bluff erosion to continue unabated. The current bluff edge is now less than twenty feet from a group of large cypress trees. This leaves little room for moving the beach bluff pathway inland, and, as described earlier, portions of the pathway that bring people out onto the scenic promontories are important parts of the pathway design. Eventually, the cypress trees will be threatened - these long-lived trees are an important visual component of the Carmel shoreline.

Between Santa Lucia Avenue and Martin Way (Sites #5 and #6): Most of the bluff between Santa Lucia and Martin Way is protected by a nearly continuous seawall built in the late 1950s. This seawall, however, does not protect two relatively short segments of bluff. These gaps mark two small bedrock outcrops that extend onto the beach. During the past two decades, storm damage has eroded these outcrops, threatening the integrity of the adjacent seawalls, bluffs, the beach bluff pathway, and several Monterey Cypress trees. In 1983, a non-engineered revetment of large boulders was placed in each of the gaps to help deflect wave energy and protect the beach bluffs. In recent years, erosion of the sandstone has accelerated and many of the boulders have become displaced, leaving some of them perched and creating a safety hazard. Continued erosion of these bluffs will directly threaten the beach bluff pathway, cypress trees, guardrails and other amenities.

The City proposes to fill the gaps with new seawalls that match the existing adjacent walls in design and appearance. Each wall will be approximately 40 feet long and range from 9 to 12 feet high. Both walls will be faced with golden granite like the rocks used on the existing adjacent seawalls. The structure excavations will remove enough sandstone necessary to establish an engineered footing appropriate for each structure. The proposed walls and footings will be constructed of poured-in-place reinforced concrete and will be founded in the sandstone bedrock at elevations that match those of the existing adjacent walls. The walls will contain weep holes and be backed by drain rock. The proposed walls are designed to stabilize the existing seawalls, beach bluffs, four Monterey Cypress trees, the beach bluff pathway, and other amenities along Scenic Road.

The City has concluded that there are no viable non-structural alternatives to protecting Sites #5 and 6. Continued erosion at these sites will threaten the integrity of the existing walls. Loss of these walls will endanger the steep bluffs and the beach bluff pathway, which comes to within five feet of the edge of bluff above each

site. Along this stretch of Scenic Road, there is no room to move the pathway. A no-project alternative would result in eventual loss of portions of the seawall, bluffs, cypress tress, and beach bluff pathway.

III. PROJECT PLANS

Please see the project plans, which have been revised to address the requirements in your letter; a full-size set has been enclosed.

- All components of the project description have been incorporated in these revised project plans.
- The project plans identify the top of bluff, base of bluff, sand-bluff interface, beach bluff pathway location, and distance from top of bluff to the structures being protected at each armoring location. These elements are identified in site plan and cross-section.
- The existing seawall at Site #1, which is covered by vegetation, is identified on sheet 2 of the project plans.
- The beginning and ending of the revetment proposed for Site #2 is shown on sheet 3 of the project plans.
- The amount of rock proposed (in tons) and the length of the revetment section for each proposed armoring location is delineated in the plans.
- All enclosed plans include a graphic scale.
- The landscaping plans for each site follow the recommendations for the Carmel Beach Bluff Pathway Landscape Design Plan as developed in 1985 by the landscape design firm of Royston, Hanamoto, Alley and Abey (RHAA). These landscaping plans are shown on sheets P2 – P5 of the RHAA plans that are already on file with the California Coastal Commission.

IV. CONSTRUCTION PLANS

This Section details some aspects of the proposed project that are unique to construction projects along the Carmel shoreline. Some of this information is taken from the Project Specifications: "Specifications for Beach Bluff Protection Along Scenic Road - From 10th Avenue to Martin Way" dated April 2000.

Engineered Rock Revetment Protection Placing (from Section 72-2.03 of the Project Specifications):

- A 6' wide x 2' deep keyway shall be cut into sandstone bedrock. Beach sand will need to be removed to the level of the sandstone and temporarily stored on adjacent beach.
- Revetment armor stones and golden granite veneer rock (for each seawall) shall be placed by equipment suitable for handling material of the various sizes required. The armor stone shall be placed at a minimum of two layers thick. Suitable equipment shall be used to carefully place the stone. End dumping will not be permitted, nor shall stones be dropped from a height greater than three feet. Stones shall not be dropped onto exposed filter fabric. Armor stones shall be placed to the grades and slope shown on the drawings, with tolerance of 1.0 foot above or below grade.

Project Site Access: Beach access to the work sites as well as rock delivery will be via the City's existing heavy equipment sand ramp between 8th and 9th Avenues, which has historically accommodated heavy equipment access in the past. This sand ramp was built for the City's first major revetment project in 1983, and has remained in place and in use ever since. It is maintained with bulldozed sand, and throughout the year allows easy pedestrian access between Scenic Road and Carmel Beach. The ramp also serves as an access point for City maintenance vehicles and emergency vehicles. Whenever necessary, it also provides access for heavy vehicles involved in shoreline repair projects.

Staging and Stockpiling: Construction materials and equipment are to be delivered to the beach area via the City's existing sand ramp near Scenic Road and 8th Avenue. Rocks and equipment will be delivered to each site by using rubber-tire front-end loaders, traveling as close to the water line as possible. No armor stones or veneer rocks will be dumped over bluffs or walls onto the beach. At sites where reinforced concrete walls and footings are to be constructed, concrete will be pumped down to the work site from pump trucks parked on Scenic Road. Construction activities will be conducted at street level at the following sites:

- Construction of the retaining wall at Site #3 (only concrete pumping)
- Construction of the retaining wall at Frank Lloyd Point at Site #4
- Construction of the seawalls at Sites 5 and 6.

General: No trees are proposed to be removed as part of the project. Trees must be protected according to the conditions in Section 7-1.11A of the Project Specifications and the mitigation measures proposed in the Initial Study/Mitigated Negative Declaration for the project.

Expected Duration of Construction (from Section 8 of the Project Specifications): The Contractor shall complete the entire work within thirty (30) calendar days after receiving a Notice to Proceed from the City.

Timing for All Activities (from Section 8 of the Project Specifications): Normal working hours are from 7:30 AM to 4:30 PM, Monday through Friday, exclusive of Federal and State holidays.

Erosion Control Plan: The Initial Study/Mitigated Negative Declaration contains the following mitigation measures to eliminate significant impacts due to soil erosion and topsoil loss during project construction activities. The revised project plans include these measures to ensure contractor compliance.

- An erosion control plan shall be prepared for review and approval by the Planning Commission prior to beginning construction. The plan shall include the following provisions, at a minimum:
 - The contractor must plan any dewatering and excavation activities so that stable and dry excavations are maintained throughout construction.
 - All development should be sited and designed to conform to site topography and minimize grading and other site preparation activities, to the maximum extent possible.
 - All slopes and disturbed surfaces resulting from project construction shall be prepared and maintained to control erosion. This control shall consist of measures to provide temporary cover to help control erosion during construction (i.e., jute netting or mulch) and permanent vegetative cover to stabilize the site after construction has been completed. The seeded and re-landscaped areas shall be maintained and irrigated as needed to adequately establish vegetative cover. Any grass seed used in the project shall be approved by the City. Any plants used in re-landscaping shall be from the City's approved Carmel Beach Bluff Pathway Landscape Design Plan, developed in 1985 by the landscape design firm of Royston, Hanamoto, Alley and Abey.
 - The following provisions shall apply between October 15 and April 15:
 - Disturbed surfaces not involved in the immediate operations must be protected by mulching and/or other effective means of soil protection.
 - Runoff from the site, if any, 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 must be maintained by the contractor as necessary to achieve their purpose through the duration of the construction period.
 - Erosion control measures shall be in place at the end of each day's work.
 - The inspector shall stop operations during periods of inclement weather if it is determined that erosion problems are not being controlled adequately.

Measures to be Taken to Protect Scenic Road and Carmel Beach Access and Resources During Construction (from Section 7-1.08 of the Project Specifications):

- The Contractor will **not** be allowed to close Scenic Road to through traffic during working hours. Public access along Scenic Road must be maintained at all times.
- Convenient access to driveways, houses, and street parking shall be maintained after each day of work. No driveway or other access shall remain impassable for undue periods.
- The Contractor shall direct all trucks and construction equipment to use the streets indicated on the attached route map. This is the only route that will be allowed for the Contractor's use in providing equipment and materials to the job site and departure. Vehicular access to Carmel Beach will be limited to the City's existing vehicle and equipment access ramp located between just south of 8th Avenue along Scenic Road.
- The Contractor shall be required to restore the City's vehicle and equipment access sand ramp after the construction is completed.
- Whenever possible, vehicle and equipment movement must avoid damage to exposed rock outcrops. Temporary sand ramps shall be built over exposed rock outcrops to avoid damage to these natural formations. At the end of construction, any temporary ramps shall be removed, and all sites returned to their original condition.
- The Contractor will be permitted to park equipment on the ramp or on Scenic Road near 8th in designated curbside parking spaces at night and weekends.

Preservation of Property (from Section 7-1.11 of the Project Specifications): The Contractor shall preserve or replace in kind, or better condition, any part of the beach bluff pathway, fences, landscaping, trees, mail boxes, sign posts, curbs, sidewalks, etc., in the construction area unless otherwise noted in the plans or directed by the Engineer.

The construction area, including adjacent private property, shall be restored to as good or better condition than found.

V. LONG-TERM EVALUATION AND MONITORING

The City is currently developing a Shoreline Management Plan that will expand and unify its programs for monitoring, maintenance and repairs along Carmel's shoreline. In conjunction with procedures already practiced by the City, the Shoreline Management Plan will include provisions for establishing survey benchmarks along the shoreline to be used for periodic monitoring of erosion by qualified personnel.

The Management Plan will also include regular inspections of walls, revetments, beach access stairs and ramps by City staff, as well as periodic inspections by structural engineers. This Plan will also continue the current policy of landscape maintenance and plant replacement by the City's gardening crew. The City will be pleased to forward a working draft of the Shoreline Management Plan to Coastal Commission staff, if desired.

VI. APPROVALS

o City Approval

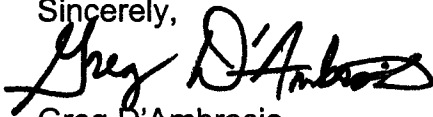
The City of Carmel-by-the-Sea Planning Commission approved the Initial Study/Mitigated Negative Declaration for the proposed project on October 25, 2000. The City of Carmel-by-the-Sea City Council then approved the CEQA document and project on November 7, 2000. Copies of the approvals are enclosed herewith, along with a copy of the final certified CEQA document.

o Other Approvals

Applications to the Monterey Bay National Marine Sanctuary, Regional Water Quality Control Board, and U.S. Army Corps of Engineers were made and copies included with the Coastal Development Permit Application. These agencies are currently awaiting approval of the proposed project by the Coastal Commission prior to issuing their permits, permissions and approvals. We understand that you can issue a conditional permit that conditions the project to provide copies of these other permits, permissions and approvals prior to issuing the final Coastal Development Permit.

We hope this material provides enough background information to answer your questions and address your concerns. Information in this document should be reviewed in conjunction with the materials previously provided in our original application package. Please contact us if you have any questions or need any additional information to process this application. Thank you.

Sincerely,



Greg D'Ambrosio
Assistant City Administrator

Ben Berto, Planning and Building Department
David Shonman, Project Consultant

Enclosures

CH/SHARED/data/greg/beach application modified draft.doc

CALIFORNIA COASTAL COMMISSION
EXHIBIT F (20 OF 20)