STAFF REPORT TO THE MARIN COUNTY
DEPUTY ZONING ADMINISTRATOR
Casado Coastal Permit

Recommendation: Approve with Conditions
Hearing Date: April 15, 2021

Application No(s): P2942
Agenda Item: 2
Last Date for Action: May 11, 2021

Owner(s): Martin Casado
Assessor's Parcel No(s): 193-172-17
Property Address: 8 Ocean Avenue, Bolinas
Project Planner: Kathleen Kilgariff
Signature: Kathleen Kilgariff

Countywide Plan Designation:
C-SF5 (Coastal Single-Family, 2-4 units/acre)
Community Plan Area:
Bolinas Community Plan
Zoning District:
C-RA-B2 (Coastal, Residential, Agricultural; 10,000
square foot minimum lot area)
Environmental Determination:
Exempt per CEQA Guidelines section 15303, Class 3

PROJECT SUMMARY

The applicant requests Coastal Permit approval to construct a new soldier-pier and tieback system to prevent further erosion of a lot located in the community of Bolinas. The proposed scope of work includes a 73-foot retaining wall and underground improvements at the eastern portion of the property. The maximum exposed height of the eastern retaining wall is 7 feet above grade. A 137-foot retaining wall and underground improvements is proposed at the western portion of the property. The maximum exposed height of the western retaining wall is 6 feet, 6 inches above grade. All proposed improvements would occur on private property, with no construction activities occurring at the beach level.

Coastal Permit approval is required because the project involves the alteration of land in the Coastal Zone, pursuant to Marin County Code Section 22.56.0551.B.

PROJECT SETTING

Characteristics of the site and surrounding area are summarized below:

Lot Area: 144,524 square feet
Adjacent Land Uses: Single-Family residences to the north, south, and east; Pacific Ocean to the west
Topography and Slope: Relatively flat to bluff edge and then the property slopes downward to the Pacific Ocean; average slope is 42%

Existing Vegetation: The majority of the site contains introduced ornamental landscaping and invasive species such as acacia and eucalyptus.

Environmental Hazards: The area is subject to landslides and the portion of the property along the beach is subject to potential liquefaction and tsunami inundation, should an earthquake or tsunami occur.

The property is located on a coastal bluff between the Gridded Mesa and Downtown Bolinas. The site is currently developed with a single-family residence, originally constructed in 1958, and appurtenant structures. Development is located on the flattest portion of the lot, which is approximately 160 feet above the shoreline, preserving the bluff and beach in its natural state. While the current owner developed a small trail to clear invasive species from the bluff, there is neither private nor public access to the shore given the steep topography of the bluff.

In addition to the legally built structures on the site, the property contains the illegally constructed pier and tieback system that this Coastal Permit application aims to legalize.

BACKGROUND

A Coastal Permit application was submitted on October 20, 2020. Upon receipt, application materials were transmitted to the Department of Public Works (DPW), Environmental Health Services (EHS). At the same time, an Interagency Referral was prepared and posted on the project webpage, along with all project materials. The Interagency Referral requested any agencies interested in the project to provide comments on the application. The project was deemed incomplete on November 19, 2020. The applicant submitted revised materials on February 11, 2021. Staff received written memoranda from DPW and EHS. Their correspondences are provided as attachments to this staff report for further review. The project was deemed complete on March 12, 2021.

The applicant provided the following reports as part of the application materials:

- Geotechnical Report, prepared by William E. Moore, P.E., G.E., dated September 11, 2020, which provides an evaluation of the project to reduce site erosion.

- Geotechnical Memo, prepared by William E. Moore, P.E, G.E., dated February 8, 2021, which provides an estimate of erosion if the existing retaining walls were not constructed.

- Landscape Narrative, prepared by Lea Earnheart of natural landscapes, dated December 15, 2020, which describes the site landscaping to remove invasive species.

A notice was posted on the project site on November 13, 2020, identifying the applicants and describing the project and its location. A site visit was conducted on the same day the notice was posted. Upon deeming the application complete, a Notice and Referral was posted online on August 20, 2019, requesting any interested organizations or individuals to provide comments on the proposal. The Community Development Agency provided a mailed public notice on March 25, 2021, identifying the applicant, describing the project and its location, hearing date and location in accordance with California Government Code requirements. Said notice was mailed to all property owners within 300 feet of the subject property.
RECOMMENDATION

Staff recommends that the Deputy Zoning Administrator review the administrative record, conduct a public hearing, and approve the Casado Coastal Permit.

Attachments:

1. Recommended resolution
2. CEQA exemption
3. Agency responses
5. Geotechnical Memo, prepared by William E. Moore, P.E, G.E., dated February 8, 2021
6. Landscape Narrative, prepared by Lea Earnheart of natural landscapes, dated December 15, 2020
7. Project plans
MARIN COUNTY DEPUTY ZONING ADMINISTRATOR

RESOLUTION NO. _______

A RESOLUTION APPROVING THE CASADO COASTAL PERMIT
8 OCEAN AVENUE, BOLINAS
ASSESSOR’S PARCEL: 193-172-17

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SECTION I: FINDINGS

1. WHEREAS, Martin Casado, owner and applicant, has submitted a Coastal Permit application to construct a new soldier-pier and tieback system to prevent further erosion of a lot located in the community of Bolinas. The proposed scope of work includes a 73-foot retaining wall and underground improvements at the eastern portion of the property. The maximum exposed height of the eastern retaining wall is 7 feet above grade. A 137-foot retaining wall and underground improvements is proposed at the western portion of the property. The maximum exposed height of the western retaining wall is 6 feet, 6 inches above grade. All proposed improvements would occur on private property, with no construction activities occurring at the beach level. The property is located at 8 Ocean Avenue, Bolinas and is further identified as Assessor’s Parcel 193-172-17.

2. WHEREAS, on April 15, 2021, the Marin County Deputy Zoning Administrator held a duly noticed public hearing to take public testimony and consider the project.

3. WHEREAS, the project is Categorically Exempt from the requirements of the California Environmental Quality Act (CEQA) pursuant to Section 15303, Class 3 of the CEQA Guidelines because it does not result in significant impacts to the environment.

4. WHEREAS, the project is consistent with the mandatory findings for Coastal Permit approval (Marin County Code Section 22.56.130I).

   A. Water Supply.

   The project site is served by the Bolinas Community Public Utility District (BCPUD). As such, the property has a viable water source.

   B. Septic System Standards.

   The Marin County Environmental Health Services Division (EHS) reviewed the proposed project and found that the project would not impact the existing septic system on the property. As such, the septic system will comply with the requirements of the EHS standards.

   C. Grading and Excavation.

   The proposed project entails minimal excavation and grading, apart from trenching. The proposed project would include limited spoils required for excavation of drilled piers.
D. Archaeological Resources.

A review of the Marin County Archaeological Sites Inventory Maps on file in the Planning Division indicates that the subject property is located in an area of high archaeological sensitivity. However, the property is currently developed with a single-family residence and accessory structures. As required by the Marin County Code, in the event archeological resources are uncovered during construction, all work shall immediately cease, and the services of a qualified consulting archaeologist be engaged to assess the value of the resource and to develop appropriate mitigation measures.

E. Coastal Access.

The project does not impact coastal access as it is located on a coastal bluff, with neither direct nor safe access to the shore.

F. Housing.

The removal of existing structures that provide housing opportunities for persons of low and moderate income is not included in the scope of work.

G. Stream and Wetland Resource Protection.

The proposed project is not located within the vicinity of sensitive streams or creeks, and there are no wetlands on the project site. The proposed project is located on a previously disturbed lot within a residential area of Bolinas. As a result, the project will not result in impacts on stream or wetland resources.

H. Dune Protection.

Dunes are not present in the project vicinity.

I. Wildlife Habitat Protection

A review of County habitat records, obtained from the California Natural Diversity Database (CNDDB), indicates that there are possible occurrences of the robust walker (Pomatiopsis binneyi), Ricksecker's water scavenger beetle (Hydrochara rickseckeri), and the western bumble bee (Bombus occidentalis). Typical habitat for the robust walker includes perennial seeps and rivulets, which are not present on the subject property. Ricksecker's water scavenger beetle also requires aquatic habitats that are not present on the site. The western bumble bee inhabits a wide range of areas, both urban and rural. Significant vegetation is not proposed for removal, maintaining ornamental and native species. As such, it is not anticipated that the western bumble bee's potential to occur on site would be disrupted by the proposed project.

Additionally, a portion of the property is within the westernmost buffer for monarch butterfly habitat. This covers the location of the existing home and accessory structures. Since the removal significant vegetation is not proposed as part of the project, it is not anticipated that the project would result in the removal of monarch butterfly habitat.
J. Protection of Native Plant Communities.

A review of the above noted habitat records indicate that there are possible occurrences of marsh microseris (*Microseris paludosa*). The habitat for this species is coastal scrub and grasslands, which are not present within the project area. Additionally, the project does not propose the removal of significant vegetation. Instead, the removal of invasive species has occurred onsite as regular maintenance of the property.

K. Shoreline Protection.

The Geotechnical materials prepared by William W. Moore, P.E, C.E. note that the seaciff recession rates in Bolinas average from 1.5 to 2 feet per year. Recession occurs in sporadic events and can extend inland up from a few feet up to 25 feet. Estimated recession rate at the property over a 40 year period is 40 to 60 feet, without the construction of shoreline protection. This rate of recession would affect the existing home, which was constructed in 1958, prior to the adoption of the Local Coastal Program. Mr. Moore concludes:

> It is our opinion that a do-nothing option (no construction) would put the primary structure at 8 Ocean (as well as the residence at 105 Terrace) and associated infrastructure (including foundations, onsite septic systems, and other physical improvements) at risk. We have evaluated other options for prevention of further drainage erosion and determined that retention of the immediate slope utilizing buried piers is the only practical, feasible, and thus least impactful solution. Other options, including site drainage alone, above-ground retaining walls or other multi-tiered walls would not extend far enough to bedrock to arrest ongoing surface or subsurface conditions or cause significantly more ground disturbance.

The proposed location of the shoreline protection measures would not result in impacts to environmental resources as there are none present within the project area. Public access to the shoreline is not provided on this property and would not be changed as part of this proposal. Further, the improvements would not restrict navigation, mariculture or other coastal uses and would not create a hazard in the area as the property includes a single-family residence, well above the shoreline, and does not currently support coastal uses.

The majority of the improvements are located underground, and the exposed portion of the wall is not easily visible from offsite locations as the top of the wall is flush with existing grade when viewed towards the ocean.

L. Geologic Hazards.

As the project is located near a coastal bluff and is potentially subject to geologic hazards, a condition of approval shall be placed on the project stating: "The applicant shall record a Waiver of Public Liability holding the County of Marin, other governmental agencies, and the public harmless related to losses experienced due to geologic and hydrologic conditions and other natural hazards."

M. Public Works Projects.

The proposed project will not affect any existing or proposed public works projects in the area.
N. Land Division Standards.

No land division or lot line adjustment is proposed as part of this project.

O. Visual Resources and Community Character.

There will be no impacts on visual resources, as viewed from any public street or public viewing location because a majority of the project is located entirely underground. The portion of the wall that is exposed would not be visible from offsite locations. The project site is currently developed with a single-family residence and associated accessory structures. There are no alterations proposed to the structures as part of this project. All proposed site work associated with the application will be flush with the existing topography.

P. Recreational/Commercial/Visitor Facilities.

The proposed project would not provide commercial or recreational facilities, and the subject property is not governed by VCR (Village Commercial Residential) zoning regulations, which require a mixture of residential and commercial uses.

Q. Historic Resource Preservation.

The project site is not located within any designated historic district boundaries as identified in the Marin County Historic Study for the Local Coastal Program.

SECTION II: ACTION

NOW THEREFORE, BE IT RESOLVED that the project described in condition of approval 1 is authorized by the Marin County Deputy Zoning Administrator and is subject to the conditions of project approval.

This planning permit is an entitlement to apply for construction permits, not a guarantee that they can be obtained, and it does not establish any vested rights. This decision certifies the proposed project's conformance with the requirements of the Marin County Development Code and in no way affects the requirements of any other County, State, Federal, or local agency that regulates development. In addition to a Building Permit, additional permits and/or approvals may be required from the Department of Public Works, the appropriate Fire Protection Agency, the Environmental Health Services Division, water and sewer providers, Federal and State agencies.

SECTION III: CONDITIONS OF PROJECT APPROVAL

NOW, THEREFORE, BE IT RESOLVED that the Marin County Deputy Zoning Administrator hereby approves the Casado Coastal Permit subject to the conditions as specified below:

CDA-Planning Division

1. This Coastal Permit approval authorizes the construction of a new soldier-pier and tieback system to prevent further erosion of a lot located in the community of Bolinas. The proposed scope of work includes a 73-foot retaining wall and underground improvements at the eastern portion of the property. The maximum exposed height of the eastern retaining wall is 7 feet.
above grade. A 137-foot retaining wall and underground improvements is proposed at the western portion of the property. The maximum exposed height of the western retaining wall is 6 feet, 6 inches above grade. All proposed improvements would occur on private property, with no construction activities occurring at the beach level.

2. Plans submitted for a Building Permit shall substantially conform to plans identified as Exhibit A, entitled “Coastal Permit Application 8 Ocean Avenue, Bolinas, CA,” consisting of 4 sheets prepared by Paul Khron, P.E., received in final form on February 11, 2021, and on file with the Marin County Community Development Agency, except as modified by the conditions listed herein.

3. The project shall conform to the Planning Division’s “Uniformly Applied Conditions 2021” with respect to all of the standard conditions of approval, special condition #4 (Waiver of Public Liability), and code enforcement conditions #1-3.

SECTION IV: VESTING

NOW THEREFORE, BE IT RESOLVED that unless conditions of approval establish a different time limit or an extension to vest has been granted, any permit or entitlement not vested within two years of the date of the approval shall expire and become void. The permit shall not be deemed vested until the permit holder has actually obtained any required Building Permit or other construction permit and has substantially completed improvements in accordance with the approved permits, or has actually commenced the allowed use on the subject property, in compliance with the conditions of approval.

SECTION V: APPEAL RIGHTS

NOW, THEREFORE, BE IT RESOLVED that this decision is final unless appealed to the Marin County Planning Commission. This decision is final unless appealed to the Planning Commission. A Petition for Appeal and the required fee must be submitted in the Community Development Agency, Planning Division, Room 308, Civic Center, San Rafael, no later than five business days from the date of this decision (April 22, 2021).

SECTION VI: ADOPTION

ADOPTED at a regular meeting of the Deputy Zoning Administrator of the County of Marin, State of California, on the 15 day of April 2021.

______________________________
IMMANUEL BEREKET
MARIN COUNTY DEPUTY ZONING ADMINISTRATOR

Attest:
NOTICE OF CEQA EXEMPTION

March 23, 2021

1. Project Name: Casado Coastal Permit
2. Project Location: 8 Ocean Avenue, Bolinas
   Assessor's Parcel 193-172-17

3. Project Summary:
   The project entails the construction of a new soldier pier and tieback system which includes two retaining walls, measuring 73 and 137 feet in length respectively, and underground improvements on a property developed with a single-family residence.

4. Public Agency Approving Project: Marin County Community Development Agency
5. Project Sponsor: Martin Casado
6. CEQA Exemption Status: CEQA Guidelines section 15303, Class 3
7. Reasons for Exemption:
   All proposed improvements would occur on the site, with no construction activities occurring at the beach level and would not result in significant impacts on the environment.

Project Planner: Kathleen Kilgariff
Reviewed by: [signature]
Kathleen Kilgariff
Planner

Rachel Reid
Environmental Planning Manager

DZA - Attachment #2
**INTERDEPARTMENTAL TRANSMITTAL**  
MARIN COUNTY ENVIRONMENTAL HEALTH SERVICES  
ROOM 236, 415-473-6907

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<th>November 10, 2020</th>
<th>TYPE OF DOCUMENT</th>
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<tr>
<td>TO:</td>
<td>Kathleen Kilgariff</td>
<td>DESIGN REVIEW</td>
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<tr>
<td>FROM:</td>
<td>Becky Gondola, REHS</td>
<td>LAND DIVISION</td>
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<tr>
<td>RE:</td>
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<td>ADDRESS:</td>
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THIS APPLICATION HAS BEEN REVIEWED FOR THE FOLLOWING ITEMS:

- WATER
- POOLS
- SEWAGE
- SOLID WASTE
- HOUSING
- FOOD ESTABLISHMENT

THIS APPLICATION IS FOUND TO BE:

- FIND IT COMPLETE.
- FIND IT INCOMPLETE UNTIL THE ITEMS LISTED BELOW HAVE BEEN SUBMITTED.
- FIND IT ACCEPTABLE AS PRESENTED, WITH THE FOLLOWING CONDITIONS.
- RECOMMEND DENIAL FOR THE REASONS LISTED BELOW.

EHS has no exception to the issuance of the coastal permit for the soldier pier project.

DZA - Attachment #3
PLANNING APPLICATION REVIEW
DEPARTMENT OF PUBLIC WORKS
Inter-office Memorandum - Second Transmittal

DATE: November 6, 2020
TO: Kathleen Kilgariff
FROM: Ali Iqbal
APPROVED: 
RE: Casado Coastal Permit P2942
APN: 193-172-17
ADDRESS: 8 Ocean Avenue Bolinas, CA

DUE: November 9, 2020

TYPE OF DOCUMENT
- DESIGN REVIEW
- LAND DIVISION
- VARIANCE
- USE PERMIT
- ADU PERMIT
- ENVIRONMENTAL REV.
- OTHER:

Department of Public Works Land Use Division has reviewed this application for content and:

X Find it COMPLETE
Find it INCOMPLETE, please submit items listed below

Find it NEEDS SUBSTANTIAL MODIFICATIONS TO CONFORM

Comments Included (Inc.) or Attached (Att.) from other DPW Divisions:
- Traffic
- Flood Control
- Other: 

Merit Comments
Prior to Issuance of a Building Permit:

1. Geotechnical Review and Acceptance: The plans must be reviewed and approved by the soils engineer. Certification shall be either by his/her stamp and original signature on the plans or by a stamped and signed letter. Certification shall reference plans reviewed, specifying site, structural, and drainage plans with date of drawings, and verify that plans address any recommendations previously offered.

2. Site Retaining Walls: Submit design calculations for the retaining walls. Calculations shall be prepared, signed and stamped by the design engineer.

-END-
September 11, 2020

Martin Casado / Leilei Shei
8 Ocean Avenue
Bolinas CA, 94924

RE: Geotechnical Observations and Recommendations, 8 Ocean Avenue, Bolinas, Coastal Permit and Design Review; Assessor’s Parcel 193-172-17

Martin,

Please consider this geotechnical evaluation report prepared for your property at 8 Ocean Avenue (APN: 193-162-22) in Bolinas, California. Consistent with the previously proposed project (Marin County file: ID P2376), this report includes after the fact permitting of existing pier and tieback systems on the northwest and southeast side of the property along the bluff face. In addition, this report recommends for a proposed small addition to the 2007 wall (perpendicular to the bluff face) along the southeastern property boundary. The purpose of this report and recommendations is to facilitate permitting for work needed to protect the property and existing improvements from degradation due to surface and subsurface drainage conditions and potential future bluff erosion.

We have conducted multiple site visits, collected topographic data, reviewed current and historical aerials, and have provided preliminary opinions regarding site. This report/plan include uses consistent with the California Coastal Act, the Marin Countywide Plan, the Local Coastal Plan Unit I, and Marin County Implementation Plan (Interim Development Code).

The existing and proposed improvements, including the 2019 emergency repair, are required to prevent continued erosion caused by neighboring activities along the bluff edge and thus jeopardizing the main residence as well as the neighboring residence to the west (105 Terrace Ave). Using the guidelines and the policies of the Bolinas Community Plan (1975), specifically the Bolinas Peninsula Slope Policy (on page 31 of the BCP) the proposed improvements (existing and proposed) are consistent with the recommendations for bluff retreat, setbacks, and site-specific solutions.

BACKGROUND
The existing residential structures/improvements were constructed in 1957 prior to the formation of the California Coastal Act of 1976. The property is located on an elevated terrace approximately 160 feet above the beach, at approximately elevation 164 feet msl. The subject property is located on an elevated terrace mapped on regional geologic maps as Quaternary Terrace (Qt) deposits. Santa Margarita Sandstone (Msm) and Santa Cruz Mudstone (Msc) are mapped in the vicinity. The Qt deposits, which consist of clay, silt, and gravel, form the bulk of the bluff down to the beach. Surface drainage
and unmitigated neighboring ground disturbance appears to accelerate the raveling of the bluff. The Qt deposits overlie what appears to be either Msc and/or Msm along a subhorizontal contact approximately 10 feet above the beach. Field observations and review of historical aerial images by others (Settgast, 2005) for the area have suggested that the area has endured episodic retreat and/or landsliding in addition to general localized bluff erosion to the south, east, and west of the subject property.

Our firm had submitted a geotechnical evaluation report for the existing stabilization structure in an 8/27/07 report, which included our design, our criteria and our calculations. We also monitored drilling and tieback testing in respective 8/7/07 & 11/29/07 reports. Copies of these three reports are attached. The original 2007 stabilization structure has functioned well even through unseasonable rains despite earth slippage downslope from this structure. Without its support, a substantial segment of the sea-cliff and much of the level terrace above would have been lost. A segment of the bluff just east of the 2007 upgrade, which had not been upgraded, had moved during these storms.

PRELIMINARY OPINION
The property is being undermined by encroaching geologic events from neighboring properties. Based upon our field observations and our understanding of similar phenomena, it is our opinion that the progressive failures along the eastern property boundary is driven by long-term surficial runoff and problematic site disturbance associated with improper usage of the neighboring property. In addition, the western bluff portion of the subject property has been adversely impacted by unintentional consequences of the permitted wall located on the 105 Terrace property to the west. In its current state, the bluff would experience significant landsliding if undetected. It is also our opinion that subsurface drainage at the top of the bluff is contributing to the degradation of the hillside. Natural erosion coupled with weather- and wave-driven erosion at the base of the bluff are also occurring near the project site. The impacts to existing structures due to the above can be mitigated with appropriate structural solutions.

Three California registered Geotechnical Engineers participated in the formulation of appropriate urgent measures. The three are William W. Moore, Robert H. Settgast & Paul Torikian. All three are senior very experienced geotechnical engineer with extensive Marin County experience. It is our opinion that a do-nothing option (no construction) would put the primary structure at 8 Ocean (as well as the residence at 105 Terrace) and associated infrastructure (including foundations, onsite septic systems, and other physical improvements) at risk. We have evaluated other options for prevention of further drainage erosion and determined that retention of the immediate slope utilizing buried piers is the only practical, feasible, and thus least impactful solution. Other options, including site drainage alone, above-ground retaining walls or other multi-tiered
walls would not extend far enough to bedrock to arrest ongoing surface or subsurface conditions or cause significantly more ground disturbance.

PROPOSED PROJECT
The bluff on the ocean front of 8 Ocean Ave has been identified as an active slide area part of the receding coastline. Two retaining walls have been constructed on an emergency basis; first a 64 ft. pier and tie-back system constructed in 2007; the second, a 140-foot long pier and tie-back system completed in the fall of 2019. Each pier system included steel, reinforced concrete beams, and a tieback cable system to mitigate emergency landslide situations consisting of 18” concrete piers connected with an 18”x30” grade beam and tie backs from 30 to 55 feet long installed back into the natural soils and bedrock. The southeast wall is in response to a 2006 event and the southwest wall was an emergency response developed in the spring of 2019 when a portion of the rear yard (facing the ocean) moved during a high intensity rain event. As described below, improvements from neighboring properties encroached onto the subject property causing unintentional erosion and land sliding. The 2007 wall was constructed in response to increase erosion events due to the eastern adjacent property that threatened the existing residence. The 2019 wall was constructed due to an unexpected event due to high rains in the 2018-2019 winter/spring. Had the walls not been located where constructed, it is likely that the property would have experienced significant erosion that could quickly compromise the integrity of the main residence within one storm season.

We also recommend including an additional portion of the wall to provide stabilization for the recent slippage by extending the existing system eastward about 9 ft along the property boundary of 20 Ocean Avenue. The same criteria, used for the existing system, will be continued for the new extension. This entails an approximate 9 ft extension of the existing deepened grade beam with two drilled piers and a single tieback.

Because the 2007 improvement has performed well for 13 years, the design was quickly adopted for the new 2019 project and is expected to perform effectively. While connecting pier systems on both east and west sides of the subject property was a consideration, we elected to focus first on curtailing further deterioration of the failing slope. There is a land area between the two improvements that protrudes south towards the ocean. Visual observation indicates that erosion is occurring to the west and east of this area, thus necessitating the emergency work in the areas as proposed/constructed. It is our professional opinion, that connecting these two areas is not needed to ensure protection of the residential structure for 40-years plus. However, without the construction of the two pier systems where located, the site conditions and erosion patterns would be quickly exacerbated, and accelerated erosion would be likely.

All improvements or construction would occur within the 8 Ocean Avenue property boundary. Spoils from the grade beam and drilled pier construction will be placed as

William W. Moore, P.E., G.E.
engineered fill upslope from new improvements as shown on the site and drainage plan. The disturbed areas would then be restored with native vegetation when construction is complete. Other controls for surface drainage and roof downspouts will be implemented and routed to areas north and northeast of the site to reduce the amount of surface erosion and site infiltration. The rear yard of 8 Ocean Avenue slopes away from the bluff face, so natural drainage will direct stormwater flows away from existing and proposed improvements.

With respect to mitigation of erosion and its effect on sediment supply, the construction of the buried retaining soldier pier and tieback system will not cause adverse impacts to the shoreline sand supply. The soldier pier system itself is buried, will not be exposed to wave action, and is intended to protect the top of the bluff; it is not an armoring of the shoreline. Furthermore, the beach below is an emergent shoreline where wave action is directly in contact with bedrock, which contributes to the narrowness of the beach. The sand that exists is a thin veneer that mantles resistant bedrock; bedrock is visible in aerial photographs along the shoreline throughout the area. The base of the bluff on the subject property is in close proximity to Canyon creek which runs to the east of Canyon Road. The creek provides a sustained source of sediment that will continue to sustain the beach and will not be impacted by the improvements.

Conventional track mounted LoDrills or Limited Access Rigs access the site and can drill piers at the subject property via access through a small dirt driveway off Ocean. Staging and material and equipment storage would occur via an existing unpaved equipment access path (see Sheet C1). Soil stockpile and laydown areas for excavation materials would occur in areas away from sensitive bluff areas. A construction management plan has been provided as sheet CMP-1.

Per civil engineer Paul Krohn, P.E., the visual appearance of the 2007 improvement is due to bags of cement which with exposure to the elements has hardened similar to concrete. These types of “sack” walls have been used extensively to stabilize road cuts/embankments in Marin County and have excellent longevity. The area covered by the “bags” is approximately 20’ x 30’ or 600 square feet.

Please see the attached Plan Sketch (by William Moore, G.E.) and reference drawing by Paul Krohn, P.E. The sketch shows the approximate location of the scarp created by the march 2019 landslide abrupt drop, as well as approximate distances to the residences, 45 & 50 feet. The new system is shown with the existing system on the Fig 1 from the 2007 report (see Attached Plans: Sheet C-1).

CONSIDERATIONS FOR PERMITTING AND CONSTRUCTION
Pursuant to Marin County Development Code (MCMC) Interim § 22.57.130i(k) Shoreline Protection, we have evaluated potential shoreline protective works for code consistency. Based on observations of geologic site conditions, analysis of historical aerial photos, and review of prior studies in the area, the natural rate of bluff retreat near the project

William W. Moore, P.E., G.E.
site has been receding at a steady rate estimated to be 1 to 2 feet per year (see Salem-Howes report).

It is our professional opinion that non-engineered construction activities on the bluff face area of the adjoining property as well as a neighboring permitted wall encroaching onto the western rear yard have created unnecessary and excessive drainage conditions resulting in escalated erosion in the area. Given the existing conditions adjacent to the subject property, and pursuant to MCMC § 22.57.130(k)(2), shoreline protective works are allowable based on the following criteria:

2. Standards and requirements for shoreline protective works. Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline process shall be permitted only when:
   a. Required to serve coastal-dependent uses or to protect existing structures (constructed before adoption of the LCP).
   b. No other nonstructural alternative is practical or preferable.
   c. The condition causing the problem is site specific and not attributable to a general erosion trend, or the project reduces the need for a number of individual projects and solves a regional erosion problem.
   d. The structure will not be located in wetlands or other significant resource or habitat area, and will not cause significant adverse impacts to fish or wildlife.
   e. There will be no reduction in public access, use and enjoyment of the natural shoreline environment, and construction of a structure will preserve or provide access to related public recreational lands or facilities.
   f. The structure will not restrict navigation, mariculture or other coastal use and will not create a hazard in the area in which it is built.

Per the Marin County Assessor’s records, and stated above, the existing residence at 8 Ocean Avenue was constructed in 1957, prior to the drafting of the California Coastal Act. It is our professional opinion that no other alternative is feasible or practical and that site observations indicate the major contributor to erosion is site specific due to surface and sub-surface drainage complications from adjacent sources, including non-engineered construction activities. As determined through historical aerial investigation, site visits, and visual observations of unmitigated site disturbance, it is clear that the activities at the neighboring property (20 Ocean Avenue) were the primary cause of landsliding and erosion activity on the subject property. In order to arrest the dangerous conditions adjacent to the site, the 2007 pier system was constructed in its present location specific to stopping further issues. Pursuant to the geotechnical reports prepared by Settgast (1/31/19) and Moore (5/14/19), the 1-2 foot per year retreat rate

William W. Moore, P.E., G.E.
was determined through historical aerial evaluation and site observations. Given the 40-year life span of the main residence, this retreat rate couples with unmitigated off-site ground disturbance, would complicate the integrity of the residence which could eventually succumb to bluff erosion if not arrested through development of the pier system. Background information is also provided which includes bluff observation information from Salem Howes in 2006.

The construction of the underground piers will prevent near-term erosion issues for this portion of Ocean Avenue and would potentially eliminate the need for multiple individual projects. No wetlands or sensitive plant or animal species are located in the area of potential disturbance. No tree removal is required for construction of the proposed piers and grade beam extension.

Furthermore, there is no public access to the shoreline below where proposed improvements would be constructed, and the proposed improvement would not result in impacts to navigation, maricultural or any other coastal use. Finally, construction is expected to only occur from the elevated portions of the properties, and no construction impacts would be required on the bluff face or at beach level. The buried piers will help protect the slope from future failure for both properties (105 Terrace and 8 Ocean) and reinforce an area of slope that is susceptible to subsurface water seepage in an area where man-made drainage complications and sub-standard site disturbance (20 Ocean) have sped up the natural erosion process.

**Summary**

The 2007 pier system was constructed to shore up movement spurred by the non-engineered construction activities and excessive drainage on the adjacent property (20 Ocean Avenue). At the time, earth movement activities on that parcel were contributing to excessive movement on the 8 Ocean Avenue property. Due to the topography of the subject property, and the activities located on the adjacent parcel, the 2007 improvement was specifically located in order to arrest erosion that would compromise the main residence at 8 Ocean Avenue. The accelerated erosion caused by 20 Ocean Avenue is evident based on historical aerial evaluations, site observations, and lack of planning or building permit compliance. In addition, a proposed nine-foot extension (perpendicular to the bluff face) will minimize site disturbance at 20 Ocean Avenue. Furthermore, the permitted improvement on 105 Terrace has encroached onto the western rear yard without an engineered termination point. As such, a significant land movement that occurred on the subject property jeopardizes both the subject property and the 105 Terrace residence. The 2019 improvement provided a proper resolution and created one site-specific system for both properties. Bluff recession and the associated landslides do not occur on a regular predictable schedule. Recession may be zero for a number of years and may be 15 or 20 feet during one or two harsh weather years. Useable life of structures may be significantly extended by construction of pier systems and improving drainage. No other possible improvement would arrest erosion in these locations.

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existing slope conditions for the rear yard area, such that surface drainage is directed away from the bluff thus reducing the overall surface and subsurface drainage conditions contributing to bluff erosion. Finally, it has been noted that site disturbance continues at 20 Ocean Avenue, including significant vegetation removal along the bluff face (see photo attached).

After review and consideration of these concepts, please do not hesitate to call me at (707) 373-5438 or contact me via email at wwm110@sbcglobal.net if you have questions or comments regarding the proposal suggested above.

Sincerely,

[Signature]

William W. Moore

CC: Sean Kennings, LAK Associates
    Martin Casado / Leilei Shei, owners

[Signature]

Robert H. Settgast

William W. Moore, P.E., G.E.
GEOENGINEERING, INC.
Geotechnical Engineering Consultants

166 Indian Hills Drive Phone (415)235 9626
rhsettgast@hotmail.com Novato, CA 94949

Mr Martin Casado
147 Los TrancosCircle
Portola Valley CA 94028

February 8, 2021

GEOTECHNICAL CONSULTATION
ESTIMATED SEACLIFF RECESSION
WITHOUT RETENTION WALLS
8 OCEAN AVE
BOLINAS, CA

Our firms had previously evaluated this parcel and provided geotechnical services for the new drilled and anchored retention wall that lies parallel and roughly 30 ft seaward from the 2019 slide. The building officials have now requested an estimate of sea-cliff recessions that might have occurred if the recent 2080 drilled and anchored retention wall, seaward of this slide, had never been built.

Multiple studies over the years have shown that seaciff recession rates in Bolinas average from 1-1/2 to 2 ft per year. They occur in episodical events at intervals from a year to a century, extend inland from a few feet to 25 ft.

We have used the above criteria and the position of the remains of the slide escarpment as a benchmark for forecasting future recessions. We judge that the slide escarpment, without the retention wall, would progress 40 to 60 ft over a 40 year span, which could endanger the existing dwelling.

Our services meet all normal standards for comparable projects in similar settings. No warranties or forms of insurance coverage are expressed or implied in neither our written or verbal communications.

We trust that this report provides the required information. You may contact us for clarification.

RHS rhs
Attachment

Respectfully Submitted

Robert Settgast
Professional Geotechnical Engineer

William Moore
Professional Geotechnical Engineer

DZA - Attachment #5
FIGURE 1

ESTIMATED RECESSION IF NO WALL
(ASSUMES AVERAGE RATE OF 1.5 FEET PER YEAR)

PLAN SKETCH
Approx. Scale 1" : 40'

SCARP
created by landslide 3/11/2019
FIGURE 2
ESTIMATED RECESSION IF NO WALL
(ASSUMES AVERAGE RATE OF 2 FEET PER YEAR)

PLAN SKETCH
Approx. Scale 1" :40'

SITE PLAN
natural landscapes

December 15, 2020

To Whom it May Concern;

My name is Lea Earnheart, owner/proprietor of natural landscapes in Bolinas, CA. In early October 2020, I was hired by Martin Casado, owner of 8 Ocean Ave. in Bolinas, to provide maintenance and management for invasive and problematic vegetation communities on the subject property. Specifically, we were tasked with management of overgrown vegetation, erosion protection and reduction of windthrow potential. To access these vegetation areas, we installed a dirt footpath with erosion control steps at needed intervals. This path was installed during the last week of October to facilitate tree work on the bluff, in particular the large plantation of Acacia. While the other self-sown species - Eucalyptus and Monterey Pine - could be accessed from the beach below, the major portion of the Acacia ‘plantation’ required access from the top of the bluff.

None of the species named here are native, and rather are considered “invasive”. It is generally accepted that protecting the integrity of a bluff requires keeping trees cut low to reduce “wind throw”, which can loosen soils and thereby contribute to erosion issues.

These trees had not been cut for many years, so when the property was purchased by Mr. Casado, he opted to locate experts to assist in whatever maintenance would best serve bluff stability.

To that end, he also hired Chuck Oakander, a highly respected Pacific Slope Arborist, who recommended trimming all the trees on the slope prior to the arrival of the 2020/2021 winter storms and maintaining them at a low height on a yearly basis going forward. It should be noted that this is the more ecologically responsible choice than cutting them and spraying the cuts with an herbicide. It also recognizes that while the Acacia is an invasive species, its extensive root system is, at this point, undoubtedly assisting in the stabilization of the bluff, as are the living roots of the other species. May I emphasize that no trees were removed during this process, only trimmed to reduce their impact on bluff instability.

To support the effort of the arborists, our team from natural landscapes manifested the path, following an existing deer path down the slope. This path was meant to limit impact, and protect the slope, as workers moved up and down, as well as to keep them safe. Hand tools were used to slightly widen the path the animals had made, and short sections of railroad ties, or in some cases thick Eucalyptus branches found on site, were installed at intervals and secured with landscape stakes, to provide safe access and further prevent unnecessary erosion.

A second, shorter path to the southeast, which also follows an existing deer path, was claimed to facilitate management of invasive plants as well as a revegetation project with native plants on the upper slope of this region of the bluff. Steps were not necessary on this path, nor any widening. Only non-native invasives - Ice Plant and Echium – were removed from the area. It was then covered with a biodegradable coconut erosion blanket and stapled securely. Plugs of prostrate coyote bush (Baccharis pilularis “Pigeon Pt.”) and CA. Fescue are currently being planted with the winter rains.

Please feel free to contact me if you have any further questions.

Sincerely,
Lea Earnheart, Proprietor of natural landscapes