COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT

DATE: December 8, 2021

TO: Planning Commission

FROM: Planning Staff

SUBJECT: EXECUTIVE SUMMARY: Consideration of a Coastal Development Permit, Design Review, Non-Conforming Use Permit, and Variance, pursuant to Sections 6328.4, 6565.3, 6133.3.b(1), and 6531, respectively, of the San Mateo County Zoning Regulations, to allow the construction of a new 1,861 sq. ft. single-family residence with an attached two-car garage (423 sq. ft.), a reduced front setback (14 feet, 8 inches where 20 feet is required), and an increase in allowed site coverage from 25 percent to 32 percent on a substandard 4,761 sq. ft. legal parcel located on Ocean Boulevard in the unincorporated Moss Beach area. The project includes a sewer mainline extension along Ocean Avenue, between Bernal Avenue and Precita Avenue. The Coastal Development Permit is appealable to the California Coastal Commission. This item was continued from the September 22, 2021 Planning Commission hearing.

County File Number: PLN 2020-00043 (SunCal Properties and Investments Partnership LLC)

PROPOSAL

The applicant is seeking a Coastal Development Permit, Design Review approval, a Non-Conforming Use Permit, and Variance to allow the construction of a two-story 1,861 sq. ft. single-family residence with an attached two-car garage (423 sq. ft.) located on Ocean Boulevard, between Bernal Avenue and Precita Avenue, in the unincorporated area of Moss Beach. The substandard 4,761-square-foot parcel has been legalized by a historic County-initiated Local Coastal Program merger. To develop the substandard lot, the applicant is requesting a reduced front setback to 14 feet, 8 inches where 20 feet is required, as a portion of the garage extends into the required front setback. Additionally, a variance is being requested to increase the allowed site coverage from 25 percent to 32 percent to maximize development and comply with design review standards. The project includes a sewer mainline extension along Ocean Boulevard, between Bernal Avenue and Precita Avenue, minor grading, and no tree removal.

RECOMMENDATION

That the Planning Commission approve the Coastal Development Permit, Design Review, Non-Conforming Use Permit, and Variance, County File Number PLN 2020-00043, by adopting the required findings and conditions of approval listed in Attachment A.

SUMMARY

On September 22, 2021, the Planning Commission considered the project at a public meeting and continued this item to a future date to allow the Commission time to review the geotechnical report and for the applicant to update the geotechnical report to analyze sea level rise in the projected erosion rates. The Planning Commission also requested time to review Coastal Commission comments and conditions that were submitted prior to the meeting.

The proposed project has been evaluated and found to be in compliance with applicable General Plan and Local Coastal Program (LCP) policies with regards to visual resources, soil resources, urban land use, water and wastewater policies, earthwork operations, and natural hazards. An updated geotechnical report was submitted by the applicant and reviewed by the County's Geotechnical Section and peer reviewer. The conditionally approved geotechnical report estimates that the bluff will retreat to within 10 feet of Ocean Boulevard in 75 years. Taking into account sea level rise, the rate of erosion would increase to within five feet of Ocean Boulevard in 50 years. The estimates project that the economic lifespan of the proposed project, considering sea level rise, will exceed the LCP requirement that structures be setback from coastal bluff tops in a manner that provides a 50-year economic lifespan.

On June 10, 2021, the Coastside Design Review Committee adopted the findings to recommend project approval, pursuant to the Design Review Standards for One-Family Residential Development in the Midcoast, Section 6565.20 of the San Mateo County Zoning Regulations

Staff has reviewed the proposal against the required findings for the issuance of a Non-Conforming Use permit and variance and concluded all required finding can be made. The legal non-conforming site will be developed with a single-family home which is a permitted use in the R-1 Zoning District. The size of the parcel is substantially smaller than the required minimum lot size for the S-105 Zoning District and smaller than a majority of the parcels in the area. The 25 percent site coverage requirement would only permit 790 sq. ft. not including the garage. To comply with all parking standards and design review standards requiring that the design of the second floor be set back from the main floor to create façade articulation and to balance the massing of the structure, a variance is required.

ENVIRONMENTAL EVALUTATION

The project is exempt from environmental review pursuant to California Environmental Quality Act (CEQA) Guidelines, Section 15303(a), which exempts the construction of a single-family residence in an urbanized area. The parcel will be served by all public services.

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RECOMMENDATION

That the Planning Commission approve the Coastal Development Permit, Design Review, Non-Conforming Use Permit, and Variance, County File Number PLN 2020-00043, by adopting the required findings and conditions of approval listed in Attachment A.

BACKGROUND

Report Prepared By: Kanoa Kelley, Project Planner, Email: kkelley@smcgov.org

Applicant/Owner: SunCal Properties and Investments Partnership LLC

Location: Ocean Boulevard, between Bernal Avenue and Precita Avenue, in Moss Beach

APN: 037-278-090

Parcel Size: 4,761 sq. ft., minimum parcel size is 20,000 sq. ft. for the S-105 Zoning District

Existing Zoning: R-1/S-105/DR/GH/CD (One-family Residential/20,000 sq. ft. lot minimum/Design Review/Geologic zone /Coastal Development)

General Plan Designation: Low Density Residential

Local Coastal Plan Designation: Low Density Residential

Williamson Act: This parcel is not under a Williamson Act Contract.

Parcel Legality: The parcel was legalized by lot merger.

Existing Land Use: Vacant

Water Supply and Sewage Disposal: Montara Water and Sanitary District (MWSD). The project includes a sewer mainline extension along Ocean Avenue, between Bernal Avenue and Precita Avenue.

Flood Zone: The parcel is located within Zone X, areas of minimal flood hazard

Environmental Evaluation: The project is exempt from environmental review pursuant to the California Environmental Quality Act (CEQA) Guidelines, Section 15303, Class 3(a), which exempts construction of small structures including new single-family residences in residential zones. The development is located in a residential zoning district and will be served by all public services.

Setting: The 4,761 sq. ft. parcel proposed for development is located on Ocean Boulevard west of Cabrillo Highway (Highway 1) and west of the Half Moon Bay Airport in the community of Moss Beach. Access will be provided off Ocean Boulevard. The site is currently vacant with minimal natural vegetation and surrounded by a vacant parcel to the east and single-family homes to the north and south.

DISCUSSION

A. KEY ISSUES

1. Planning Commission Continuance

On September 22, 2021, the Planning Commission considered the subject project at a public meeting and continued this item to a future date to allow the Commission time to review the geotechnical report and for the applicant to update the geotechnical report to analyze sea level rise in the projected erosion rates. The Planning Commission also requested time to review Coastal Commission comments and conditions that were submitted prior to the meeting.

An updated geotechnical report, Attachment E, was provided by the applicant and reviewed and conditionally approved by the County's Geotechnical Section and peer reviewer. The updated report projects the rate of erosion, taking into account sea level rise, would increase to within five feet of Ocean Boulevard in 50 years. Thus, the economic lifespan of the proposed project, considering sea level rise, will exceed the LCP requirement that structures be setback from coastal bluff tops in a manner that provides a 50-year economic lifespan.

Additionally, Coastal Commission conditions have been added to the recommended conditions of approval in Attachment A.

2. Conformance with the County General Plan

Upon review of the applicable provisions of the General Plan, staff has determined that the project complies with all applicable General Plan Policies, including the following:

a. Soil Resources

Policies 2.2 (*Minimize Soil Erosion*) and 2.17 (*Regulate Development to Minimize Soil Erosion and Sedimentation*) seek to ensure that development proposals include measures to minimize soil erosion and sedimentation. The project site is relatively flat and minimal grading is necessary to implement the project. A recommended condition of approval requires implementation of Best Management Practices (BMPs) and an Erosion and Sediment Control Plan. The Erosion and Sediment Control Plan must be implemented prior to the beginning of construction and throughout the construction period. Implementation of the Erosion and Sediment Control Plan and BMPs will ensure that all construction-related activities will minimize soil erosion and sedimentation generated from the project construction.

b. Visual Quality

Policy 4.36 (*Urban Area Design Concept*) calls for new development to maintain and, where possible, improve upon the appearance and visual

character of development in urban areas, and ensures that new development in urban areas is designed and constructed to contribute to the orderly and harmonious development of the locality. The Design Review standards implement this policy within Design Review Zoning Districts in the County, including the Midcoast area. The Coastside Design Review Committee (CDRC) reviewed the project and found that the project complies with Policy 4.36. A discussion of compliance with Design Review standards is provided in Section A.4.b of this report.

c. Urban Land Use

Policy 8.39 (*Height, Bulk and Setbacks*) regulates the height, bulk and setback requirements in zoning districts to: (1) ensure that the size and scale of development is compatible with the parcel size, (2) provide sufficient light and air in and around structures, (3) ensure that development of permitted densities is feasible, and (4) ensure public health and safety. The proposed two-story single-family home meets the zoning district height standard and is compatible in design, scale and size with other residences located in the neighborhood within the limitations of the parcel size. The appearance of mass and bulk of the single-family home is reduced by articulation of all exterior façades. The design and materials of the single-family home is complementary to other homes in the neighborhood, as supported by the Coastside Design Review Committee's review and recommendation (see Section A.4.b of this report).

d. Water Supply

Policy 10.1 (*Coordinate Planning*) requires the County to coordinate water supply planning with land use and wastewater management planning to assure that the supply and quality of water is commensurate with the level of development planned in the area. The Montara Water and Sanitary District (MWSD) has confirmed that there is adequate capacity to serve the project subject to water connection permits at the building permit stage.

e. Wastewater

Policies 11.1 and 11.2 (*Adequate Wastewater Management and Coordinate Planning*) require the County to plan for the provision of adequate wastewater management facilities to serve development in order to protect public health and water quality and to coordinate wastewater management planning with land use and water supply planning to assure that the capacity of sewerage facilities is commensurate with the level of development planned for an area. The Montara Water and Sanitary District (MWSD) has confirmed that there is adequate sewer capacity to serve the project. A sewer mainline extension between Bernal Avenue and Precita Way is required and a sewer grinder pump may be required.

f. Natural Hazard

Policies 15.20 (*Review Criteria for Locating Development in Geotechnical Hazard Areas*) and 15.21 (Requirement for Detailed Geotechnical Investigations) seek to avoid siting of structures where they are jeopardized by geotechnical hazards and if development is to occur in these areas a detailed geotechnical investigation is required. As detailed in Sections 3.d and 4.e of this staff report, a geotechnical investigation has been completed and a report submitted which has been conditionally approved by the County Building Department's Geotechnical Section.

g. Man-Made Hazards Airport Safety

Policies 16.41 to 16.43 seek to regulate land uses surrounding airports to assure airport safety. The property is located in the Half Moon Bay Airport Runway Safety Zone 7, Airport Influence Area. See staff's discussion of Policy 1.36 in Section 3.a. of this report for project conformance with applicable airport safety regulations.

3. Conformance with the Local Coastal Program

The project requires a Coastal Development Permit (CDP), appealable to the California Coastal Commission, as the site involves the construction of a new single-family residence outside of the Single-family Categorical Exclusion Area and within the Coastal Commission Appeals Jurisdiction. Staff has determined that the project is in compliance with applicable Local Coastal Program (LCP) Policies discussed below:

a. Locating and Planning New Development Component

Policy 1.18 (*Location of New Development*) directs new development to existing urban areas in order to discourage urban sprawl and maximize the efficiency of public facilities, services and utilities. Also, the policy requires new development to be concentrated in urban areas by requiring the "infilling" of existing residential subdivisions. Policy 1.20 (*Definition of Infill*) defines infill as the development of vacant land in urban areas that is subdivided and zoned for development at densities greater than one dwelling unit per 5 acres, and/or served by sewer and water. The site is served by Montara Water and Sanitary District and is designated by the Local Coastal Program for Low Density Residential (0.3 to 2.0 dwelling units/acre) use, for which the proposal complies.

Policy 1.23 (*Timing of New Housing Development in the Midcoast*) limits the maximum number of dwelling units built in the urban Midcoast to 40 units each year. San Mateo County is not projected to exceed this maximum for the 2021 Calendar year.

Policy 1.36 (*Half Moon Bay Airport Influence Area Requirements - Map 1.5*) locates the project site within Runway Safety Zone 7, the Half Moon Bay Airport, Airport Influence Area (AIA). The Half Moon Bay Airport Land Use Compatibility Plan (ALUCP) prohibits hazards to flight, and outdoor stadiums or other high intensity uses within this area. The proposed project is to construct a single-family home which is a low intensity use and will therefore comply with the Airport Land Use Compatibility Plan. Regarding noise, the project site is located outside the Community Noise Equivalent Level (CNEL) airport noise exposure contours and is, therefore, not exposed to significant levels of aircraft noise.

b. Sensitive Habitats Component

Policy 7.3 (*Protection of Sensitive Habitats*) prohibits any land use or development which would have significant adverse impact on sensitive habitat areas and requires development in areas adjacent to sensitive habitats to be sited and designed to prevent impacts that could significantly degrade the sensitive habitats. The site consists of ruderal vegetation and is not located in an area identified as sensitive habitat in the Local Coastal Program.

c. Visual Resources Component

Visual Resources Policy 8.12(a) (*General Regulations*) applies the Design Review Zoning District to urbanized areas of the Coastal Zone, which includes Moss Beach. The project is, therefore, subject to Section 6565.20 of the Zoning Regulations (*Standards for Design for One-family and Two-family Residential Development in the Midcoast*). As discussed in Section A.4.b of this report, the Coastside Design Review Committee (CDRC) considered this project at their regularly scheduled meeting of June 10, 2021. The CDRC determined that the project is in compliance with applicable Design Review Standards, and recommended approval. See further discussion in Section A.4.b.

Visual Resources Policy 8.13 (*Special Design Guidelines for Coastal Communities*) establishes design guidelines for Montara, Moss Beach, El Granada, and Miramar. The proposed home complies with these guidelines as follows:

(1) On-site grading is not extensive and only limited to standard construction activity.

(2) The proposed materials for the house, such as composition shingle roofing and board and batten siding, will be painted in subdued earth tone colors that presents a natural appearance.

(3) The proposed house design uses gabled roofs, clad with non-reflective, composite roof shingles as the primary roof material.

(4) The proposed residence will be a two-story building; the second story will be set back from the first-floor footprint to minimize visual obstruction. The enhanced façade articulation brings the proposed structure to scale with the rest of the homes in the neighborhood.

d. Hazards Component

Hazards Policy 9.8 (*Regulation of Development on a Coastal Bluff Tops*) permits cliff top development only if the setback and design are adequate to ensure stability for at least 50 years. The project is located on the east side of Ocean Boulevard which runs parallel to the Seal Cove area bluff edge. The conditionally approved geological report estimates that the bluff will retreat to within 10 feet of Ocean Boulevard in 75 years. Taking into account sea level rise projections, the rate of erosion would increase to within five feet of Ocean Boulevard in 50 years. The estimates project that the economic lifespan of the proposed project will exceed the LCP requirement.

e. Shoreline Access

The project site is located between the first public through road and the sea. The site is surrounded by existing development, located on the east side of Ocean Boulevard, and does not have direct access to the sea due to steep cliffs west of Ocean Boulevard. Additionally, the siting of the project does not impede bluff access to the west of Ocean Boulevard or block coastal trails. Therefore, development of the parcel is in conformance with public access policies and will not block or impede access to local beaches or recreation areas.

4. Conformance with the Zoning Regulations

a. Conformance with S-105 Zoning District Development Standards

The proposal includes a non-conforming use permit (NCUP) to allow the development of a substandard 4,761 sq. ft. parcel which requires a reduction of the front setback to 14 feet 8 inches to accommodate development; this encroachment and the development of a non-conforming sized parcel are to be remedied with a NCUP. A Variance is also being requested to allow an increase of the allowed site coverage from 25 percent to 31 percent to support the development design. The proposal complies with all other R-1/S-105/GH/DR/CD development standards, as indicated in the following table:

	S-105 Development Standards	Proposed
Minimum Site Area	20,000 sq. ft.	4,761 sq. ft. (legal site) to be remedied with NCUP
Maximum Floor Area	2,285.28 sq. ft. (48%)	2,284 sq. ft. (48%)
Maximum Building Site Coverage	1,190 sq. ft. (25% maximum)	1,527 sq. ft. (32%) to be remedied with a Variance
Minimum Front Setback	20 ft.	14 feet 8 inches - ft. to be remedied with NCUP
Minimum Rear Setback	20 ft.	20 ft.
Minimum Right Side Setback	10 ft.	10 ft.
Minimum Left Side Setback	10 ft.	10 ft.
Maximum Building Height	28 ft.	27 ft., 5 in. (2 story)
Minimum Parking Spaces	2	2

b. Conformance with Design Review District Standards

On June 10, 2021, the CDRC adopted the findings to recommend project approval, pursuant to the Design Review Standards for One-Family Residential Development in the Midcoast, Section 6565.20 of the San Mateo County Zoning Regulations, specifically elaborated as follows:

(1) Section 6565.20.C. SITE PLANNING AND STRUCTURE PLACEMENT; 1. Integrate Structures with the Natural Setting, b. Grading, Standards (1)(3):

The proposed design requires minimal grading. The proposed design limits grading to the footprint of the structure and its immediate vicinity.

(2) Section 6565.20.D. ELEMENTS OF DESIGN; 3. Roof Design, a. Massing and Design of Roof Forms, Standards 1 and 3:

The proposed roof design provides visual interest and articulation with use of primary and secondary roof forms. The proposed primary roof material is non-reflective material and color.

(3) Section 6565.20.D. ELEMENTS OF DESIGN; 1. Building Mass, Shape and Scale, b. Neighborhood Scale, Standards (1):

The revised design has balanced and appropriate proportions of massing. Changes to the rooflines and second floor footprint provide articulation and reduce the apparent scale of the home.

(4) Section 6565.20.D. ELEMENTS OF DESIGN; 2 Architectural Styles and Features, a. Architectural Style, Standards 1 and 2:

The revised design has been refined to demonstrate a clear architectural style with details that complement the neighboring homes.

(5) Section 6565.20.D. ELEMENTS OF DESIGN; 2. Architectural Styles and Features, b. Openings, Standard (1):

The window design has been simplified and has a cohesive and balanced composition for the architectural style of the home.

The following conditions of approval were recommended by the Coastside Design Review Committee (CDRC) and have been included in the conditions of approval (Attachment A):

(1) The planting plan and irrigation plan prepared by Taproot Garden Design, from the original submittal date of March 11, 2021, shall be included without changes.

(2) One exterior sconce shall be provided for each garage door. The exterior sconce between the garage doors shall be removed on the 3-D renderings and any other drawings.

The following suggestions were proposed by the Coastside Design Review Committee:

(1) Utilize the curved parapet detail from the rear balcony to terminate the roof rather than glass/plexi-panel where the front balcony meets the roof on the right side of the home.

c. Variance Findings

The proposed project exceeds the site coverage allowed in the S-105 Zoning District by 7 percent. Therefore, a variance for the increase in site coverage is requested. In order to approve a variance, the following findings must be made:

(1) The parcel's location, size, shape, topography and/or other physical conditions vary substantially from those of other

parcels in the same zoning district or vicinity.

The parcel is 76 percent smaller than the required lot size for the S-105 Zoning District which requires a minimum lot size of 20,000 square feet. Many of the parcels in the immediate vicinity are substandard in size, but at least 5,000 sq. ft. with a majority being around 7,500 sq. ft. in size. The parcel size differs substantially from the parcels in the same zoning district.

The site coverage standard counts the perimeter square footage of all buildings and structures, including garages. Furthermore, the parking regulations require a house with two or more bedrooms to provide two covered parking spaces, with a minimum of 9 feet by 19 feet per covered space. Typically, the covered parking requirement is satisfied by a two-car garage of approximately 400 sq. ft., as proposed. On a standard 20,000 square foot lot size, the maximum site coverage allowance of 25 percent for the S-105 Zoning District would allow a maximum lot coverage of 5,000 sq. ft. Including a 400 square foot garage to meet covered parking standards, a maximum potential site coverage of the parcel would allow approximately 4,500 sq. ft. for a standard sized lot. However, on the subject 4,761 sq. ft. substandard parcel with a 400 square foot garage to satisfy covered parking, the maximum potential site coverage for the house would be limited to approximately 790 square feet. The proposed site coverage for the house is 1,104 sq. ft. with a 423 square foot garage. Therefore, staff believes that the proposed site coverage is reasonable for the property and that the house has been designed to provide balance and appropriate proportions of massing, and articulation and features (i.e., rooflines), that help to scale its visual appearance relative to the lot size.

(2) Without the Variance, the landowner would be denied the rights and privileges that are enjoyed by other landowners in the same zoning district or vicinity.

Without the Variance, the property owner would not be able to develop the lot as proposed and would be required to reduce the site coverage down from 1,527 sq. ft. to the otherwise required 1,190 sq. ft., inclusive of a garage. However, the proposed project would be keeping within the average site coverage of developed lots in the area of approximately 1,500 square feet. The Variance is required to utilize the parcel to its full extent, comply with design standards, and mitigate the restrictions on the parcel due to its diminutive size. Furthermore, the proposed site coverage is within the range of other developments in the area.

(3) The Variance does not grant the landowner a special privilege which is inconsistent with the restrictions placed on other parcels in the same zoning district or vicinity.

The Variance does not constitute the granting of special privileges as the same consideration may be granted to any other party seeking to develop a similar substandard lot in the area.

(4) The Variance authorizes only uses or activities which are permitted by the zoning district.

The Variance would authorize a single-family dwelling on a parcel zoned for one-family residential use.

(5) The Variance is consistent with the objectives of the General Plan, the Local Coastal Program (LCP), and the Zoning Regulations.

The Variance will allow the orderly development of a vacant legal lot in an urbanized area that will comply with all development standards with the exception of lot coverage and front setback requirements. The increase in site coverage will allow the design of the home to be compliant with coastal design standards, as supported by the Coastside Design Review Committee's recommendation for approval, ensuring a design that is harmonious with and enhances the community of Moss Beach. The project is consistent with the goals and objectives of the Local Coastal Program. See staff's discussion of project conformance with the applicable General Plan policies, LCP Policies, and zoning standards contained in Sections A.2, A.3 and A.4, respectively, of this staff report.

d. Non-conforming Use Permit Findings

The applicant proposes to develop a non-conforming legal lot. The lot is 4,761 sq. ft. where the minimum lot size, per the S-105 Zoning District standards, is 20,000 square feet. In accordance with Section 6133.3.b(1) of the Zoning Regulations, a Non-conforming Use Permit is being requested in order to develop the substandard parcel and maximize the footprint of the home and attached garage through a reduction in the front setback. Per Section 6503 and Section 6133.b(3) of the San Mateo County Zoning Regulations, in order to grant a Non-conforming Use Permit for the development of a non-conforming parcel, the following findings must be made:

(1) The establishment, maintenance and/or conducting of the use will not, under the circumstances of the particular case, result in a significant adverse impact to coastal resources, or be

detrimental to the public welfare or injurious to property or improvements in said neighborhood.

This project was reviewed and conditionally approved by all applicable agencies including the Building Inspection Section and Coastside Fire Protection District. With the exception of the front setback and the site coverage, the project complies with all other S-105 Zoning District development standards. The development of the parcel and encroachment of the front left corner of the garage approximately 4 feet into the front 20 feet setback would not be detrimental to the general public safety and no coastal resources are impacted by the development. For discussion of the requested site coverage exception, see Section A.4.c. above.

(2) The proposed development is proportioned to the size of the parcel on which it is being built.

The proposed development is a two-story, 2,284-square-foot single-family home which complies with density, floor area, and height requirements of the S-105 Zoning District. The development has been found to be compatible with the neighborhood in both scale and design, as concluded by the Coastside Design Review Committee, and is well suited to the substandard parcel.

(3) All opportunities to acquire additional contiguous land in order to achieve conformity with the zoning regulations currently in effect have been investigated and proven to be infeasible.

The two adjacent parcels at 961 Ocean Boulevard and 999 Ocean Boulevard are developed with existing single-family homes under separate ownership. The parcel (APN 037-278-070) located to the rear of the subject parcel is currently under construction for a new single-family residence associated with Building Permit BLD 2014-01181 issued on January 27, 2021. Therefore, there is not an opportunity in this area to purchase additional vacant space for the purposes of a merger.

(4) The proposed development is as nearly in conformance with the zoning regulations currently in effect as is reasonably possible.

The proposed development is seeking relief from the front setback and site coverage requirements only. The project is compliant with all other zoning regulations such as parking, density, floor area, and height. The CDRC has reviewed and recommended approval for the design. See also staff's discussion on the requested Variance necessary for site coverage in Section A.4.c. above.

(5) Use permit approval does not constitute a granting of special privileges.

The Non-conforming Use Permit does not constitute the granting of special privileges as the same consideration may be granted to any other party seeking to develop a similar substandard lot. An example of this is the Non-conforming Use Permit approved to develop the rear substandard lot with a right-side yard setback exception, PLN 2009-00123.

e. Geological Hazard District Regulations

The subject site is located in a Geological Hazard (GH) Zone. Due to the erosion and instability of the bluffs in Seal Cove, hazardous zones of this area are identified as Zones 1-3, with Zone 1 being the most hazardous and Zone 3 the most stable part of Seal Cove. The front setback of the proposed parcel is located in Zone 2 (area of questionable stability) and a majority of the site is located in Zone 3. Per Section 6296.3 of the Zoning Regulations, prior to any development in these zones an engineering geological investigation and soil foundation investigation is required. The applicant has submitted the required geotechnical investigations that have been reviewed by the County Geotechnical Engineer and peer reviewed by the County's Geotechnical consultants. The geological report demonstrates feasibility of the project and shows that the bluff erosion, after considering sea level rise, will not negatively impact the proposed single-family residence within a 50-year time frame. Additional geotechnical review will be required prior to issuance of a building permit. As required by Section 6295.4 of the Zoning Regulations, a condition of approval has been included to require recordation of a deed restriction that the property is in a geological hazard zone.

B. ENVIRONMENTAL REVIEW

The project is exempt from environmental review pursuant to California Environmental Quality Act (CEQA) Guidelines, Section 15303(a), which exempts the construction of a single-family residence in an urbanized area. The parcel will be served by all public services.

C. REVIEWING AGENCIES

Building Inspection Section
Drainage Section
Department of Public Works
Geotechnical Section
Midcoast Community Council
Coastside Fire Protection District
Montara Water and Sanitary District
California Coastal Commission

ATTACHMENTS

A. Recommended Findings and Conditions of Approval
B. Location Map and Aerial Photo
C. Plans
D. Geotechnical Report and Geological Investigations
E. Updated Geotechnical Report and Geological Investigations
F. Coastside Design Review Committee Recommendation Letter

Attachment A

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL

Permit or Project File Number: PLN 2020-00043 Hearing Date: December 8, 2021

Prepared By: Kanoa Kelley, Project Planner For Adoption By: Planning Commission

RECOMMENDED FINDINGS

Regarding the Environmental Review, Find:

1. That the project is exempt from environmental review pursuant to California Environmental Quality Act (CEQA) Guidelines, Section 15303(a), which exempts the construction of a single-family residence in an urbanized area. The parcel will be served by all public services.

Regarding the Coastal Development Permit, Find:

2. That the project, as described in the application and accompanying materials required by Section 6328.7 and as conditioned in accordance with Section 6328.14, conforms with the plans, policies, requirements and standards of the San Mateo County Local Coastal Program as described in Section A.3 of this staff report related to Locating and Planning New Development, Sensitive Habitats, Shoreline Access, and Hazards Components.

3. Where the project is located between the nearest public road and the sea, or the shoreline of Pescadero Marsh, that the project is in conformity with the public access and public recreation policies of Chapter 3 of the Coastal Act of 1976 (commencing with Section 30200 of the Public Resources Code).

   The project site is located between the first public road and the sea. The site is surrounded by existing development, located on the east side of Ocean Boulevard, and does not have direct access to the sea due to steep cliffs west of Ocean Boulevard. Additionally, the siting of the project does not impede bluff access to the west of Ocean Boulevard. Therefore, development of the parcel is in conformance with public access policies and will not block or impede access to local beaches or recreation areas.

4. That the project conforms to specific findings required by policies of the San Mateo County Local Coastal Program with regard to Locating and Planning New Development, Sensitive Habitats, Shoreline access, and Hazards Components.

The project incorporates conditions to comply with erosion control requirements and the design is consistent with Coastside Design Review standards for single-family residential buildings. The project is not in or near a sensitive habitat area and conforms with the land use and density designations of the General Plan and Local Coastal Program. Furthermore, the project has been reviewed and conditionally approved by the geotechnical review section.

5. That the number of building permits for construction of single-family residences other than for affordable housing issued in the calendar year does not exceed the limitations of LCP Policy 1.23. San Mateo County is not projected to exceed the 40 unit maximum for the 2021 Calendar year.

Regarding the Design Review, Find:

6. Section 6565.20 (C) SITE PLANNING AND STRUCTURE PLACEMENT b. Grading Standards:

   The proposed design requires minimal grading. The proposed design limits grading to the footprint of the structure and its immediate vicinity.

7. Section 6565.20 (D) ELEMENTS OF DESIGN; 3. Roof Design a. Massing and Design of Roof Forms Standard:

   The proposed roof design provides visual interest and articulation with use of primary and secondary roof forms. The proposed primary roof material is non-reflective material and color.

8. Section 6565.20 (D)1 (b) NEIGHBORHOOD SCALE; (1) New and enlarged homes should respect the scale of the neighborhood through building dimensions, shape and form, façade articulation, or architectural details that appear proportional and complementary to other homes in the neighborhood.

   The revised design has balanced and appropriate proportions of the massing. Changes to the rooflines and second floor footprint provide articulation and reduce the apparent scale of the home.

9. Section 6565.20 (D)2 (a) ARCHITECTURAL STYLE; (1) Use an architectural style and design elements that complement the predominant style of nearby homes, only when such homes conform with the design standards. Likewise, avoid the architectural styles and design elements of nearby homes when such homes do not conform with the design standards. Where no predominant architectural style can be defined, encourage compatibility through the use of similar building shapes, exterior materials or (2) Architectural styles that complement the coastal, semi-rural, diverse small-town character of the area, such as coastal craftsman are encouraged. Contemporary and uncommon styles can be compatible if building shapes, and materials are carefully chosen to complement other homes in the neighborhood.

   The revised design has been refined to demonstrate a clear architectural style with details that complement the neighboring homes.

10. Section 6565.20 (D)2 (b) OPENINGS (1) Select windows and doors that are compatible with the dominant types on the house and in the neighborhood; when assessing compatibility consider the size and proportions of the openings, materials, and style or detailing.

    The window design has been simplified and has a cohesive and balanced composition for the Architectural style of the home.

Regarding the Non-Conforming Use Permit, Find:

11. That the establishment, maintenance and/or conducting of the use will not, under the circumstances of the particular case, result in a significant adverse impact to coastal resources, or be detrimental to the public welfare or injurious to property or improvements in said neighborhood.

    This project was reviewed and conditionally approved by all applicable agencies including the Building Inspection Section and Coastside Fire Protection District. With the exception of the front setback and the site coverage, the project complies with all other S-105 District Development Standards. The development of the parcel and encroachment of the front left corner of the garage into the front setback would not be detrimental to the general public safety and no coastal resources are impacted by the development.

12. That the proposed development is proportioned to the size of the parcel on which it is being built.

    The proposed development is a two-story, 2,284 square-foot-single-family home which complies with density, floor area, and height requirements of the S-105 District. The development has been found to be compatible with the neighborhood in both scale and design, as concluded by the Coastside Design Review Committee, and is well suited to the substandard parcel.

13. That all opportunities to acquire additional contiguous land in order to achieve conformity with the zoning regulations currently in effect have been investigated and proven to be infeasible.

    The two adjacent parcels at 961 Ocean Boulevard and 999 Ocean Boulevard are developed with existing single-family homes under separate ownership. The parcel (APN 037-278-070) located to the rear of the subject parcel is not available for purchase and is currently under construction for a new single-family residence. Therefore, there is not an opportunity in this area to purchase additional vacant space for the purposes of a merger.

14. That the proposed development is as nearly in conformance with the zoning regulations currently in effect as is reasonably possible.

    The proposed development is seeking relief from the front setback and site coverage requirements only. The project is compliant with all other zoning regulations such as

parking, density, floor area, and height. The CDRC has recommended approval for the design.

15. That the Non-Conforming Use Permit approval does not constitute a granting of special privileges.

    The Non-conforming Use Permit does not constitute the granting of special privileges as the same consideration may be granted to any other party seeking to develop a similar substandard lot.

Regarding the Variance, Find:

16. The parcel's location, size, shape, topography and/or other physical conditions vary substantially from those of other parcels in the same zoning district or vicinity.

    The parcel is 76 percent smaller than the required lot size for the S-105 Zoning District of which requires a minimum lot size of 20,000 square feet. The parcel size differs substantially from the parcels in the same zoning district.

17. Without the Variance, the landowner would be denied the rights and privileges that are enjoyed by other landowners in the same zoning district or vicinity.

    Without the Variance the property owner would not be able to develop the lot as proposed. The proposed site coverage is within the range of other developments in the area. The Variance is required to utilize the parcel to its full extent, comply with design standards, and mitigate the restrictions on the parcel due to its diminutive size.

18. The Variance does not grant the landowner a special privilege which is inconsistent with the restrictions placed on other parcels in the same zoning district or vicinity.

    The Variance does not constitute the granting of special privileges as the same consideration may be granted to any other party seeking to develop a similar substandard lot in the area.

19. The Variance authorizes only uses or activities which are permitted by the zoning district.

    The Variance authorizes only a single-family dwelling on the residentially zoned parcel.

20. The Variance is consistent with the objectives of the General Plan, the Local Coastal Program (LCP) and the Zoning Regulations.

    The Variance will allow the orderly development of a vacant lot in an urbanized area that will comply with all development standards with the exception of lot coverage and front setback requirements. The increase in site coverage will allow the design of the home to be compliant with coastal design standards, as supported by the Coastside Design Review Committee's recommendation for approval, ensuring a design that is harmonious with and enhances the community of Moss Beach. The project is

consistent with the goals and objectives of the General Plan, LCP, and Zoning Regulations, as discussed in the staff report.

RECOMMENDED CONDITIONS OF APPROVAL

Current Planning Section

1. The project shall be constructed in compliance with the plans reviewed by the Coastside Design Review Committee and approved by the Planning Commission on December 8, 2021. Any changes or revisions to the approved plans shall be submitted to the Community Development Director for review and approval prior to implementation. Minor adjustments to the project design may be approved by the Design Review Officer if they are consistent with the intent of and are in substantial conformance with this approval. Alternatively, the Design Review Officer may refer consideration of the revisions to the Coastside Design Review Committee, with applicable fees to be paid.

2. The final approval of the subject permits shall be valid for five (5) years from the date of final approval, in which time a valid building permit shall be issued for the work and a completed inspection (to the satisfaction of the Building Official) shall have occurred within one (1) year of the associated building permit's issuance. This approval may be extended by a 1-year increment with submittal of an application for permit extension and payment of applicable extension fees sixty (60) days prior to the expiration date.

3. The project shall adhere to the following as conditioned by the Coastside Design Review Committee:

    a. The planting plan and irrigation plan prepared by Taproot Garden Design, from the original submittal date of March 11, 2021, shall be included without changes.

    b. One exterior sconce shall be provided for each garage door. The exterior sconce between the garage doors shall be removed on the 3-D renderings and any other drawings.

4. The applicant shall provide "finished floor elevation verification" to certify that the structure is constructed at the height shown on the approved plans. The applicant shall have a licensed land surveyor or engineer establish a baseline elevation datum point near the construction site.

    a. The applicant shall maintain the datum point so that it will not be disturbed by the proposed construction activities until final approval of the building permit.

    b. This datum point and its elevation shall be shown on the submitted site plan. This datum point shall be used during construction to verify the elevation of the finished floors relative to the existing natural or to the grade of the site (finished grade).

c. Prior to Planning approval of the building permit application, the applicant shall also have the licensed land surveyor or engineer indicate on the construction plans: (1) the natural grade elevations at the significant corners (at least four) of the footprint of the proposed structure on the submitted site plan, and (2) the elevations of proposed finished grades.

d. In addition, (1) the natural grade elevations at the significant corners of the proposed structure, (2) the finished floor elevations, (3) the topmost elevation of the roof, and (4) the garage slab elevation must be shown on the plan, elevations, and cross-section (if one is provided).

e. Once the building is under construction, prior to the below floor framing inspection or the pouring of the concrete slab (as the case may be) for the lowest floor(s), the applicant shall provide to the Building Inspection Section a letter from the licensed land surveyor or engineer certifying that the lowest floor height, as constructed, is equal to the elevation specified for that floor in the approved plans. Similarly, certifications on the garage slab and the topmost elevation of the roof are required.

f. If the actual floor height, garage slab, or roof height, as constructed, is different than the elevation specified in the plans, then the applicant shall cease all construction and no additional inspections shall be approved until a revised set of plans is submitted to and subsequently approved by both the Building Official and the Community Development Director.

g. A survey verification letter will be required during the construction phase of this project. Once the building permit has been issued and the forms have been set, the surveyor of record shall field measure the setback dimensions of the set forms from applicable property lines and compose a survey verification letter, with stamp and signature, of the field measurements to be submitted to the Planning and Building Department for review and approval.

5. The applicant shall include an erosion and sediment control plan to comply with the County's Erosion Control Guidelines on the plans submitted for the building permit. This plan shall identify the type and location of erosion control measures to be installed upon the commencement of construction in order to maintain the stability of the site and prevent erosion and sedimentation off-site.

6. Approved erosion and sediment control measures shall be installed prior to beginning any work and maintained throughout the term of the building permit. Failure to install or maintain these measures will result in stoppage of construction until the corrections have been made and fees paid for staff enforcement time.

7. The applicant is responsible for ensuring that all contractors minimize the transport and discharge of pollutants from the project site into water bodies by adhering to the San Mateo Countywide Stormwater Pollution Prevention Program "General Construction and Site Supervision Guidelines," below.

   a. Stabilizing all denuded areas and maintaining erosion control measures continuously between October 1 and April 30. Stabilizing shall include both proactive measures, such as the placement of hay bales or coir netting, and passive measures, such as revegetating disturbed areas with plants propagated from seed collected in the immediate area.

   b. Storing, handling, and disposing of construction materials and wastes properly, so as to prevent their contact with stormwater.

   c. Controlling and preventing the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, and non-stormwater discharges to storm drains and watercourses.

   d. Using sediment controls or filtration to remove sediment when dewatering site and obtaining all necessary permits.

   e. Avoiding cleaning, fueling, or maintaining vehicles on-site, except in a designated area where wash water is contained and treated.

   f. Delineating with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.

   g. Protecting adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.

   h. Performing clearing and earth-moving activities only during dry weather.

   i. Limiting and timing applications of pesticides and fertilizers to prevent polluted runoff.

   j. Limiting construction access routes and stabilizing designated access points.

   k. Avoiding tracking dirt or other materials off-site; cleaning off-site paved areas and sidewalks using dry sweeping methods.

   l. The contractor shall train and provide instruction to all employees and subcontractors regarding the construction best management practices.

8. To reduce the impact of construction activities on neighboring properties, comply with the following:

   a. All debris shall be contained on-site; a dumpster or trash bin shall be provided on site during construction to prevent debris from blowing onto adjacent properties. The applicant shall monitor the site to ensure that trash is picked up and appropriately disposed of daily.

   b. The applicant shall remove all construction equipment from the site upon completion of the use and/or need of each piece of equipment which shall include but not be limited to tractors, back hoes, cement mixers, etc.

   c. The applicant shall ensure that no construction-related vehicles shall impede through traffic along the right-of-way. All construction vehicles shall be parked on-site outside the public right-of-way. There shall be no storage of construction vehicles in the public right-of-way.

9. All new power and telephone utility lines from the street or nearest existing utility pole to the main dwelling and/or any other structure on the property shall be placed underground.

10. Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property shall be limited to the hours from 7:00 a.m. to 6:00 p.m., weekdays and 9:00 a.m. to 5 p.m., Saturdays. Said activities are prohibited on Sundays, Thanksgiving, and Christmas (San Mateo County Ordinance Code Section 4.88.360).

11. The exterior colors and materials as approved by the Planning Commission shall be implemented. Color verification shall occur in the field after the applicant has applied the approved materials and colors but before a final inspection has been scheduled.

12. The applicant shall include a copy of the approval letter with conditions of approval on the top pages of the building plans.

13. The applicant shall demonstrate compliance with the Water Efficient Landscape Ordinance (WELO) and provide the required forms at the Building Permit stage.

Coastal Commission Conditions

14. The applicant shall remove or relocate, in part or in whole, the development authorized by this Coastal Development Permit (CDP), including, but not limited to, the residential buildings and other development authorized under this CDP, when any government agency with legal jurisdiction has issued a final order, not overturned through any appeal or writ proceedings, determining that the structures are currently and permanently unsafe for occupancy or use due to coastal hazards and that there are no measures that could make the structures suitable for habitation or use without the use of a shoreline protective device; or in the event that coastal hazards eliminate access for emergency vehicles, residents, and/or guests to the site due to the degradation and eventual failure of Ocean Boulevard as a viable roadway. The

County of San Mateo shall not be required to maintain access and/or utility infrastructure to serve the approved development in such circumstances. Development associated with removal or relocation of the residential buildings or other development authorized by this CDP shall be subject to issuance of all necessary permits required under applicable regulations, and may require review by the County of San Mateo and/or the California Coastal Commission prior to any such activities. In the event that portions of the development fall into the ocean or the beach, or to the ground, before they are removed or relocated, the Permittee shall remove all recoverable debris associated with the development from such areas, and lawfully dispose of the material in an approved disposal site, all subject to Community Development Director approval.

15. The Permittee assumes the risks to the Permittee and the properties that are the subject of this CDP of injury and damage from such hazards in connection with this permitted development; unconditionally waives any claim of damage or liability against the County of San Mateo, its officers, agents, and employees for injury or damage from such hazards; indemnifies and holds harmless the County, its officers, agents, and employees with respect to the County's approval of the CDP 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; accepts full responsibility for any adverse effects to property caused by the permitted project; acknowledges and agrees that the boundary between public land (tidelands) and private land may shift with rising seas, the structure may eventually be located on public trust lands, and the development approval does not permit encroachment onto public trust land; and that any future encroachment must be removed unless the Coastal Commission determines that the encroachment is legally permissible pursuant to the Coastal Act and authorizes it to remain, and any future encroachment would also be subject to the State Lands Commission's (or other trustee agency's) leasing approval.

16. Disclosure documents related to any future marketing and/or sale of the property, including but not limited to marketing materials, sales contracts, and similar documents, shall notify potential buyers of the terms and conditions of this CDP, including explicitly the coastal hazard requirements of **Condition of Approval 14**. A copy of this CDP shall be provided in all real estate disclosures.

17. **PRIOR TO ISSUANCE OF THE BUILDING PERMIT**, the Permittee shall submit to the Community Development Director for review and approval documentation demonstrating that the landowners have executed and recorded against the parcels governed by this CDP a deed restriction, in a form and content acceptable to the Community Development Director: (1) indicating that, pursuant to this CDP, the County of San Mateo has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property; (2) imposing the terms and conditions of this CDP as covenants, conditions and restrictions on the use and enjoyment of the property. The deed restriction shall include a legal description of all of the parcels governed by this permit. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the terms and conditions of this permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or

the development it authorizes – or any part, modification, or amendment thereof – remains in existence on or with respect to the subject property.

Building Inspection Section

18. A building permit is required for this project. The applicant shall apply for a building permit and shall adhere to all requirements from the Building Inspection Section, the Geotechnical Section, the Department of Public Works, and the Coastside Fire Protection District. No site disturbance shall occur, including any grading, until a building permit has been issued.

Geotechnical Section

19. A Geotechnical Report shall be submitted at the Building Permit stage. The report shall be updated to the current locally adopted building code Significant grading profiles, grading proposals, foundation design recommendations, retaining wall design recommendations, and basement design recommendations, if any, shall be provided in the geotechnical report at the Building Permit stage. For a vacant site, the Geotechnical Report shall provide sufficient soil investigation data to evaluate the potential hazards, for example, expansive soils, soil corrosivity, weak soil strength, and liquefaction. If any hazards are found, mitigation shall be provided in foundation design and grading proposal.

Department of Public Works

20. Prior to the issuance of the Building permit, the applicant shall submit a driveway "Plan and Profile," to the Department of Public Works, showing the driveway access to the parcel (garage slab) complying with County Standards for driveway slopes (not to exceed 20 percent) and to County Standards for driveways (at the property line) being the same elevation as the center of the access roadway. When appropriate, as determined by the Department of Public Works, this plan and profile shall be prepared from elevations and alignment shown on the roadway improvement plans. The driveway plan shall also include and show specific provisions and details for both the existing and the proposed drainage patterns and drainage facilities.

21. No proposed construction work within the County right-of-way shall begin until County requirements for the issuance of an encroachment permit, including review of the plans, have been met and an encroachment permit issued. Applicant shall contact a Department of Public Works Inspector 48 hours prior to commencing work in the right-of-way.

22. Prior to the issuance of the Building Permit, the applicant will be required to provide payment of "roadway mitigation fees" based on the square footage (assessable space) of the proposed building per Ordinance No.3277.

Drainage Section

23. The following will be required at the building permit stage:

a. A final, full drainage report prepared by a registered Civil Engineer.

b. A final grading and drainage plan stamped and signed by a registered Civil Engineer.

c. An updated C3 and C6 Checklist, if changes to impervious areas have been made during the design phase.

Montara Water and Sanitary District

24. The applicant is required to obtain Sewer Permits prior to issuance of the building permit. A sewer mainline extension will be required, and a Sewer grinder pump may be required. Sewer Connection Fees must be paid prior to issuance of the connection permit.

25. The applicant is required to obtain a Domestic Water Connection Permit prior to issuance of the building permit. The connection fee for domestic water must be paid prior to issuance of the connection permit. Water mainline extension may be required.

26. Connection to the Montara Water and Sanitary District's fire protection system is required. A Certified Fire Protection Contractor must certify adequate fire flow calculations. Connection fees for the fire protection system is required. The connection charge must be paid prior to issuance of a Private Fire Protection permit.

Coastside Fire Protection District

27. Fire Department access shall be to within 150 feet of all exterior portions of the facility and all portions of the exterior walls of the first story of the buildings as measured by an approved access route around the exterior of the building or facility. Access shall be a minimum of 20 feet wide, all weather capability, and able to support a fire apparatus weighing 75,000 lbs. Where a fire hydrant is located in the access, a minimum of 26 feet is required for a minimum of 20 feet on each side of the hydrant. This access shall be provided from a publicly maintained road to the property. Grades over 15 percent shall be paved and no grade shall be over 20 percent. When gravel roads are used, it shall be class 2 base or equivalent compacted to 95 percent. Gravel road access shall be certified by an engineer as to the material thickness, compaction, all weather capability, and weight it will support.

28. All buildings that have a street address shall have the number of that address on the building, mailbox, or other type of sign at the driveway entrance in such a manner that the number is easily and clearly visible from either direction of travel from the street. New residential buildings shall have internally illuminated address numbers contrasting with the background so as to be seen from the public way fronting the building. Residential address numbers shall be at least six feet above the finished surface of the driveway. An address sign shall be placed at each break of the road where deemed applicable by the San Mateo County Fire Department. Numerals shall be contrasting in color to their background and shall be no less than 4 inches in

height and have a minimum 1/2-inch stroke. Remote signage shall be a 6-inch by 18-inch green reflective metal sign.

29. Contact the Fire Marshal's Office to schedule a Final Inspection prior to occupancy and Final Inspection by a Building Inspector. Allow for a minimum of 72 hours notice to the Fire Department at 650/ 573-3846.

30. A fire flow of 500 gpm for 2 hours with a 20-psi residual operating pressure must be available as specified by additional project conditions to the project site. The applicant shall provide documentation including hydrant location, main size, and fire flow report at the building permit application stage. Inspection is required prior to Fire's final approval of the building permit or before combustibles are brought on site.

31. Any chimney or woodstove outlet shall have installed onto the opening thereof an approved (galvanized) spark arrestor of a mesh with an opening no larger than 1/2-inch in size or an approved spark arresting device. Maintain around and adjacent to such buildings or structures a fuelbreak/firebreak made by removing and cleaning away flammable vegetation for a distance of not less than 30 feet and up to 100 feet around the perimeter of all structures or to the property line, if the property line is less than 30 feet from any structure. This is not a requirement nor an authorization for the removal of live trees. Remove that flammable portion of any tree which extends within 10 feet of the outlet of any chimney or stovepipe, or within 5 feet of any portion of any building or structures. Remove that dead or dying portion of any tree which extends over the roof line of any structure. An interior and exterior audible alarm activated by automatic fire sprinkler system water flow shall be required to be installed in all residential systems. All hardware must be included on the submitted sprinkler plans.

32. An approved Automatic Fire Sprinkler System meeting the requirements of NFPA-13D shall be required to be installed for your project. Plans shall be submitted to the San Mateo County Building Inspection Section for review and approval by the authority having jurisdiction.

33. A statement that the building will be equipped and protected by automatic fire sprinklers must appear on the title page of the building plans.

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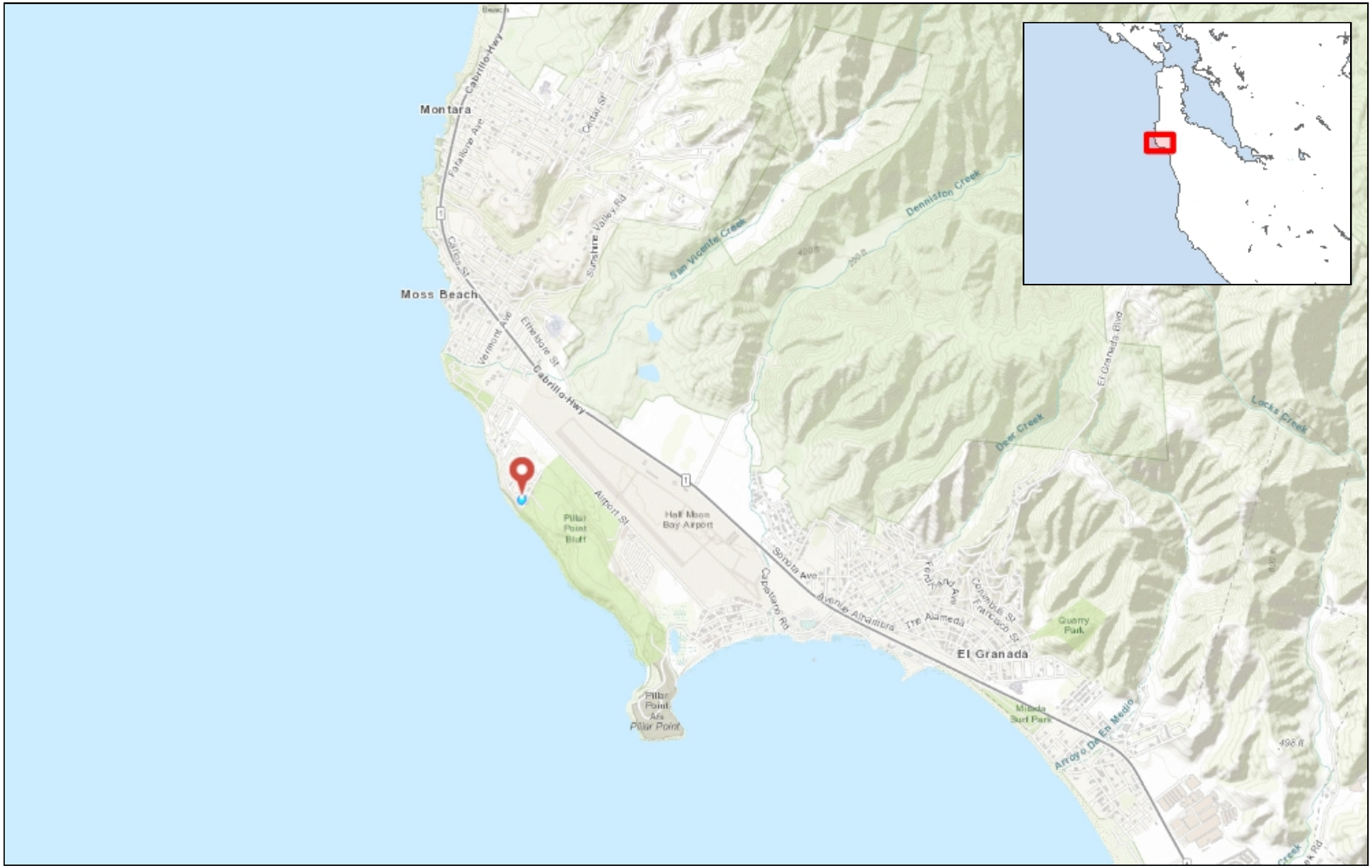
County of San Mateo - Planning and Building Department

ATTACHMENT B

San Mateo County

County San Mateo, CA



1.70 0 0.85 1.70 Miles

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1: 53,714

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

San Mateo County

County San Mateo, CA

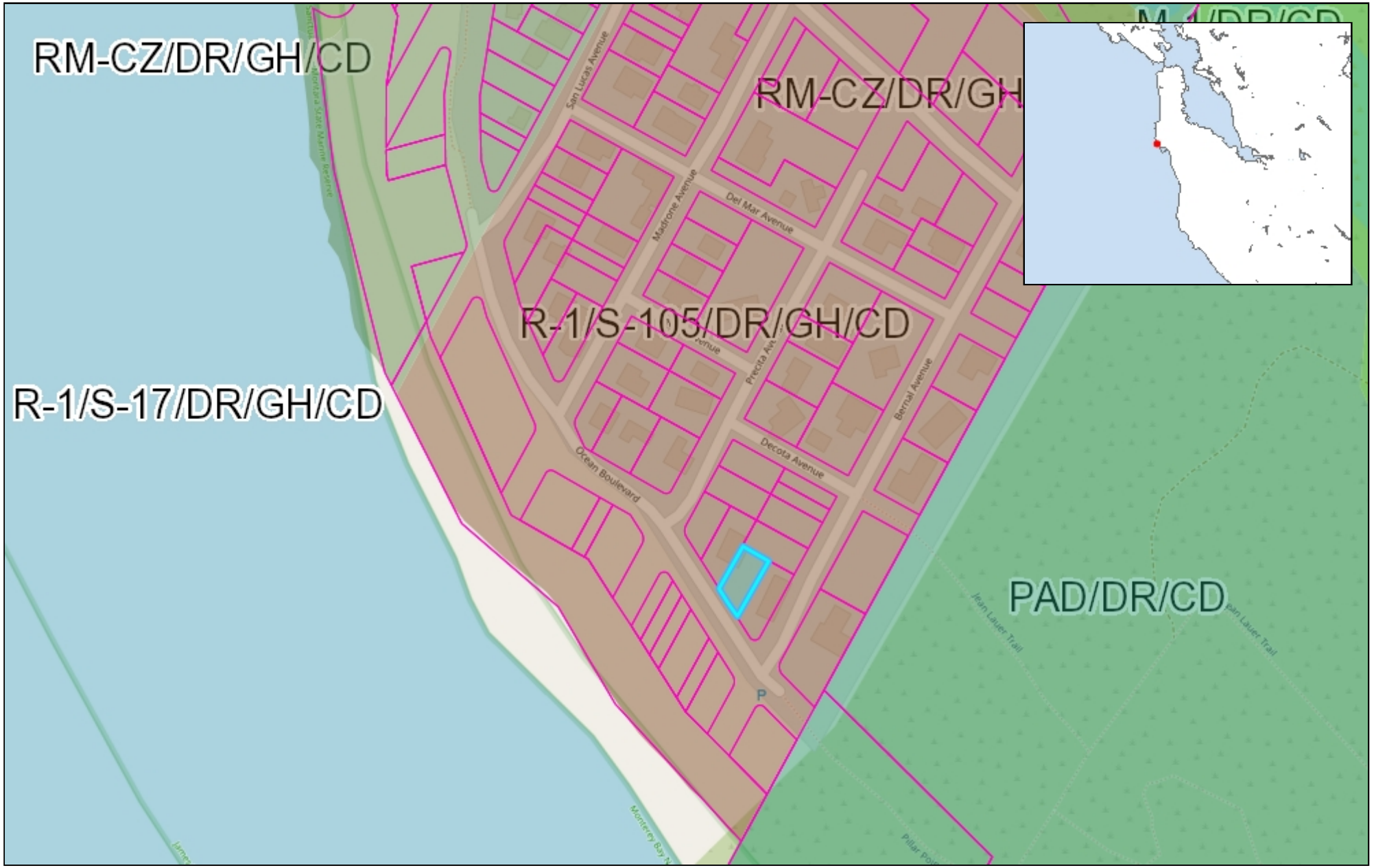
0.11 0 0.05 0.11 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

1: 3,357

San Mateo County

County San Mateo, CA



0.11 0 0.05 0.11 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

1: 3,357

County of San Mateo - Planning and Building Department

ATTACHMENT C

NEW RESIDENCE
for
THE SHARMA FAMILY
989 OCEAN BLVD. MOSS BEACH CALIFORNIA 94038

Geurse Conceptual Designs, Inc.
405 bayswater ave.
Burlingame, california 94010
tel: 650.703.6197
e:mail: jgeurse@gmail.com

SIGNATURE BOX:
NAME: JESSE GEURSE
DATE: OCTOBER 29, 2020

BUILD. MAINT. + OPERATION (2019 CGC §4.410)

- AN OPERATION AND MAINTENANCE MANUAL WILL BE PROVIDED AT FINAL INSPECTION. 2019 CGC §4.410.1
- FOR BUILDINGS WITH MORE THAN 4 MULTI-FAMILY UNITS PROVIDE FOR RECYCLING. 2019 CGC §4.410.2

BUILDING DEPT. GENERAL NOTES

- ANY HIDDEN CONDITIONS REQUIRE WORK TO BE PERFORMED BEYOND THE SCOPE OF THE BUILDING PERMIT ISSUED FOR THESE PLANS MAY REQUIRE FURTHER CITY APPROVALS INCLUDING REVIEW BY THE PLANNING COMMISSION. THE BUILDING OWNER, PROJECT DESIGNER, AND /OR CONTRACTOR MUST SUBMIT A REVISION TO THE CITY FOR ANY WORK NOT GRAPHICALLY ILLUSTRATED IN THESE PLANS PRIOR TO PERFORMING THIS WORK.

VERIFICATION (2019 CGC §703)

- UPON REQUEST, VERIFICATION OF COMPLIANCE WITH THIS CODE MAY INCLUDE CONSTRUCTION DOCUMENTS, PLANS, SPECIFICATIONS, BUILDER OR INSTALLER CERTIFICATION, INSPECTION REPORTS, OR OTHER METHODS ACCEPTABLE TO THE BUILDING DIVISION THAT WILL SHOW SUBSTANTIAL CONFORMANCE WITH THE 2019 CODE REQUIREMENTS.
  2019 CGC §703.1

POLLUTANT CONTROL (2019 CGC §4.504)

- AT THE TIME OF ROUGH INSTALLATION, DURING STORAGE ON THE CONSTRUCTION SITE, AND UNTIL FINAL STARTUP OF THE HVAC EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENTS OPENINGS WILL BE COVERED WITH TAPE, PLASTIC, SHEET METALS, OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF WATER, DUST, OR DEBRIS THAT MAY ENTER THE SYSTEM.
  2019 CGC §4.504.1
- ADHESIVES, SEALANTS, AND CAULKS USED ON THE PROJECT SHALL FOLLOW LOCAL AND REGIONAL AIR POLLUTION OR AIR QUALITY MANAGEMENT DISTRICT STANDARDS. 2019 CGC §4.504.2.1
- PAINTS AND COATINGS WILL COMPLY WITH VOC LIMITS. 2019 CGC §4.504.2.2
- AEROSOL PAINTS AND COATINGS WILL MEET THE PRODUCT-WEIGHTED MIR LIMITS FOR ROC, AND COMPLY WITH PERCENT VOC BY WEIGHT OF PRODUCT LIMITS, REGULATION 8, RULE 49. 2019 CGC §4.504.2.3 DOCUMENTATION SHALL VERIFY COMPLIANCE FOR VOC FINISH MATERIALS. 2019 CGC §4.504.2.4
- CARPET SYSTEMS WILL MEET CALGREEN TESTING AND PRODUCT REQUIREMENTS. 2019 CGC §4.504.3
- WHERE RESILIENT FLOORING IS INSTALLED, AT LEAST 80% OF THE FLOOR AREA RECEIVING RESILIENT FLOORING WILL COMPLY WITH THE CALIFORNIA GREEN BUILDING CODE REQUIREMENTS. 2019 CGC §4.504.4
- HARDWOOD PLYWOOD, PARTICLEBOARD, AND MEDIUM DENSITY FIBERBOARD COMPOSITE WOOD PRODUCTS SHALL COMPLY WITH THE LOW FORMALDEHYDE EMISSION STANDARDS. 2019 CGC §4.504.5

S.M. COUNTY PLANNING AND BLDG. LOCATION

SAN MATEO COUNTY PLANNING & BUILDING DEPARTMENT
COUNTY OFFICE BUILDING
455 COUNTY CENTER, 2ND FLOOR
REDWOOD CITY, CA 94063
PHONE: (650) 363-4161
FAX: (650) 363-4849

S.M. COUNTY PLANNING AND BLDG. HOURS

DEVELOPMENT REVIEW CENTER HOURS: MONDAY THRU FRIDAY
PLANNING COUNTER: 7:30 AM - 5:00 PM, CALL (650) 363-1825
BUILDING COUNTER: 7:30 AM - 5:00 PM, CALL (650) 599-7311
FOR AUTOMATED INSPECTION SCHEDULING SYSTEM, CALL (650) 306-8415
PUBLIC WORKS COUNTER: 7:30 AM - 5:00 PM, CALL (650) 363-4161
APPOINTMENTS ARE TEMPORARILY UNAVAILABLE UNTIL FURTHER NOTICE

PROJECT TEAM

- DESIGN/ARCHITECTURE BY:
  GEURSE CONCEPTUAL DESIGNS, INC
  405 BAYSWATER AVENUE
  BURLINGAME, CA. 94010
  PHONE:(650) 703-6197
  E:MAIL: JGEURSE@GMAIL.COM
- GRADING AND DRAINING (CIVIL ENG.) BY:
  OSUNA ENGINEERING, INC.
  PROJECT MANAGER JESUS OSUNA
  PHONE: (408) 721-2100 EXT. 105
  FAX. (408) 721-1333
  JESUS@OSUMAENGINEERING.CO,
- LANDSCAPING BY:
  TAPROOT GARDEN DESIGN
  TOPAZE & PATRI CK MCCAFFERY
  (408) 728-7689
  ORGANIC@TAPROOTGARDENS.COM
- STRUCTURAL ENGINEERING BY:
  GPM ENGINEERS
  MOHAMMED GENIDY
  3340 WALNUT AVE., SUITE 292
  FREMON, CA 94538
  (510) 377-7866
- GEOTECNICAL ENGINEERING BY:
  FRANK LEE
  10 KOOTENAI COURT
  FREMONT, CA 94539
  (510) 277-2945
- GEOLOGY BY:
  LOU RICHARDS
  P.O.BOX 2085
  MOUNTAIN VIEW, CA 94042
  (650) 967-1000
- FIRE PROTECTION BY:
  RYAN HOLLAN
  4437 OLIVE RANCH ROAD
  GRANITE BAY. CA 95746
  (916) 214-7051
- SOLOR DESIGN BY:
  SANTA CRUZ RENEWABLES
  2360 ORCHARD STREET, #22
  SOQUEL, CA 95073
  (530) 400-8593
- TITLE 24 BY:
  ENERGY ANALYTICA
  8206 CARIBOU PEAK WAY
  ELK GROVE, CA 95758
- SURVEY BY:
  BQT LAND SURVEYING
  871 WOODSIDE WAY
  SAN MATEO, CA 94401
  (650) 212-1030

DISCLAIMER

- NIETHER GEURSE CONCEPTUAL DESIGNS, INC. OR THE PROJECT ENGINEERS SHALL BE RESPOSIBLE FOR ANY ACTIONS TAKEN. BY ANYONE ON THE PROJECT IF THAT PERSON HAS KNOWLEGDE OF ANY CALCULATIONS OR SPECIFI- CATIONS UNTIL GEURSE CONCEPTUAL DESIGNS, INC. PRINCIPALS OR PROJECT ENGINEERS HAVE BEEN NOTIFIED. UPON NOTIFICATION THE PARTIES INVOLVED WILL CORRECT THE DISCREPANCY, MAKE THE NECESSARY INCLUSIONS OR MORE CLEARLY EXPLAIN THE INTENT OF THE DRAWINGS, CALCULATIONS OR SPECIFICATIONS.
- THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE SHOWN, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT ALL WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONST. MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES NECESSARY TO COMPLETE THE PROJECT.
- THE CONTRACTOR SHALL ALSO PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. OBSERVATION VISITS TO THE PROJECT SITE BY FIELD REPRESENTATIVES OF GEURSE CONCEPTUAL DESIGNS, INC. AND PROJECT ENGINEERS SHALL NOT INCLUDE INSPECTION OF PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES REQUIRE FOR THE SAME, WHICH IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY SUPPORT SERVICES PERFORMED BY GEURSE CONCEPTUAL DESIGNS, INC. PRINCIPALS AND THE PROJECT ENGINEERS DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION WHICH ARE FURNISED BY OTHERS. THE SUPPORT SERVICES PERFORMED BY GEURSE CONCEPTUAL DESIGNS, INC. AND THE ENGINEERS, WHEATHER OF MATERIAL OR WORK, AND WHEATHER PERFORMED PRIOR TO , DURING, OR AFTER COMPLETION OF CONSTRUCTION ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFOR- MANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS. HOWEVER, THEY DO NOT GUARANTEE CONTRACTORS PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
- ALL SUB-CONTRACTORS ARE RESPONSIBLE FOR COMPLIANCE OF ALL APPLICABLE CODES AND REGULATIONS REGARDLESS OF WHAT IS SHOWN ON DRAWINGS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH STANDARD BUILDING CODES BY GOVERNING JURISDICTIONS OF APPLICABLE CODES. THE BUILDER OF THIS STRUCTURE SHALL BE TOTALLY RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND DETAILS OF THESE PLANS PRIOR TO AND DURING CONSTRUCTION. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER ANY SCALED DIMENSIONS. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL CHECK ALL DRAWINGS FURNISHED TO THEM IMMEDIATELY UPON RECEIPT AND SHALL PROMPTLY NOTIFY THE CONCERNING PARTIES OF ANY PROBLEMS, DETAILS, OR DISCREPANCIES. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL COMPARE ALL DRAWINGS AND VERIFY THE FIGURES IN ALL CONDITIONS, DIMENSIONS, AND DETAILS. ANY DISCREPANCIES SHALL BE CORRECTED PRIOR TO THE COMMENCEMENT OF ANY WORK IN THE AREA OF QUESTION. THE CONTRACTOR AND ANY EFFECTED SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR ANY ERRORS WHICH MAY HAVE BEEN OMITTED THEREBY.

VICINITY MAP

SUBJECT PROPERTY

PROJECT DATA

PROJECT: NEW 2 STORY RESIDENCE
OWNERS: RAJ SHARMA
LOCATION: 989 OCEAN BLVD. MOSS BEACH, CA 94038
LOT #: APN 037-278-090
ZONING: R-1/S-105
SITE AREA: 4,761 SQ. FT.
ALLOWABLE 10' EXTENSION OF GARAGE INTO FRONT SETBACK: 210 SQ. FT.
ACTUAL EXTENSION OF GARAGE INTO FRONT SETBACK 33 SQ.FT.
TOTAL MAX BUILDING FOOTPRINT (INCLUDING GARAGE EXT.): 1,527 SQ. FT. (32% OF SITE)
DESIGN BUILDING FOOT PRINT: 1,494 SQ. FT.

FRONT SETBACK: 20'-0"
SIDE SETBACKS: 10'-0"
BACK SETBACK: 20'-0"

MAX, BUILDING HT.: 28'-0"
MAX. INTRUSION HT.: 33'-0".
BUILDING HEIGHT: 27'-6"

LIVING AREAS:

GARAGE: 423 SQ. FT.
FIRST FLOOR: 1,104 SQ. FT.
SECOND FLOOR: 757 SQ. FT.

TOTAL FHA AREA (48% of Site): 2,284 SQ. FT.

IMPERVIOUS SURFACE AREA:

BUILDING FOOTPRINT: 1,494 SQ. FT.

PARCEL COVERAGE OF IMPERVIOUS AREA (ALLOWED 10% X 4,761 SQ. FT. = 467 SQ. FT.

PATIO: 220 SQ. FT.
FRONT PORCH : 52 SQ. FT.

TOTAL = 272 SQ. FT.

DRIVEWAY (PERVIOUS PAVERS): 425 SQ. FT

EST. EXCAVATION:

BASEMENT 0 CU. YD.

TOTAL EXCAVATION: 0 CU. YD.

PROJECT DESCRIPTION

NEW 2 STORY RESIDENCE:
FIRST LEVEL: 3 BEDROOM, 2 BATH, ½ BATH, FOYER, + 2 CAR GARAGE

SECOND LEVEL: FAMILY, ROOM, KITCHEN, DINING AREA, REAR BALCANY AND FRON DECK

CODE COMPLIANT

THESE PLANS ARE TO COMPLY TO THE FOLLOWING CODES, ORDINANCES, RULES AND REGULATIONS;

- 2019 CALIFORNIA BUILDING CODE
- 2019 CALIFORNIA RESIDENTIAL CODE
- 2019 CALIFORNIA ELECTRICAL CODE
- 2019 CALIFORNIA MECHANICAL
- 2019 CALIFORNIA FIRE CODE
- 2019 CALIFORNIA PLUMBING CODE
- 2019 CALIFORNIA GREEN BUILDING CODE
- 2019 CALIFORNIA ENERGY EFFICIENCY STANDARDS
- COUNTY OF SAN MATEO MUNICIPAL CODE, ETC.
- ALL OTHER STATE, MUNICIPAL, AND LOCAL ORDINANCES, CODES, RULES AND REGULATIONS.
- AS AMENDED BY THE STATE OF CALIFORNIA BUILDING CODE

SHEET INDEX

SHEET NO.	DESCRIPTION
T.0	TITLE SHEET + PROJECT DATA
• SITE MANAGEMENT / GREEN BUILDING	
BMP.1	CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP'S)
• SURVEY	
SP.1	SITE PLAN
• ARCHITECTURE	
SP.1	SITE PLAN
A.1	FIRST LEVEL FLOOR PLAN
A.1.SF	FIRST LEVEL FLOOR AREA CALCULATION PLAN
A.2	SECOND LEVEL FLOOR PLAN
A.2.SF	SECOND LEVEL FLOOR AREA CALCULATION PLAN
A.3	ROOF PLAN
A.4	EXTERIOR ELEVATIONS
A.5	EXTERIOR ELEVATIONS
A.6	EXTERIOR 3D RENDERINGS
A.7	EXTERIOR 3D RENDERINGS
A.8	EXTERIOR 3D RENDERINGS

COUNTY OF SAN MATEO CALIFORNIA

MOSS BEACH

NO.	DATE	BY	DESCRIPTION	CONST.
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△	5-18-2021	JFG	CDRC-MEETING COMMENTS	
△	4-1-2021	JFG	PLANNING DESIGN REVIEW SUBMISSION	

REVISIONS

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REF TRUE NORTH

PROJECT NAME
NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
TITLE SHEET AND PROJECT DATA

DATE: ______
JOB NO.: 2117
DRAWN BY: JFG
REVIEWED BY: JFG
ENGINEER.: AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION: ______
DRAWING NO.: T.0

Geurse Conceptual Designs, Inc.
405 bayswater ave.
Burlingame, california 94010
tel: 650.703.6197
e:mail: jgeurse@gmail.com

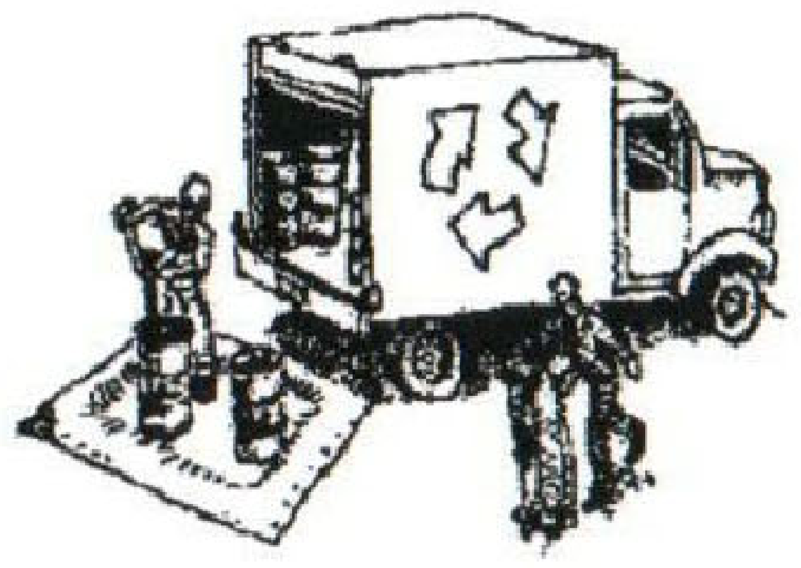
SIGNATURE BOX:
NAME: JESSE GEURSE
DATE: OCTOBER 29, 2020

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management



Non-Hazardous Materials

- ❑ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- ❑ Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials

- ❑ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ❑ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ❑ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ❑ Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- ❑ Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- ❑ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- ❑ Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- ❑ Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- ❑ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

Construction Entrances and Perimeter

- ❑ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ❑ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control

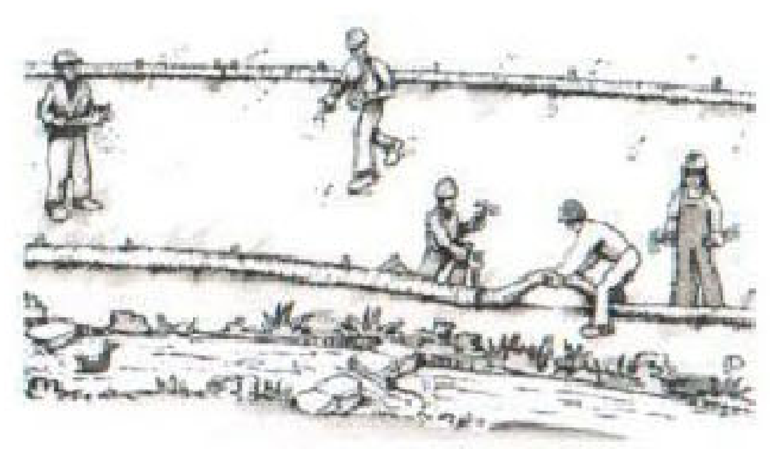
Maintenance and Parking

- ❑ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ❑ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ❑ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ❑ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment.

Spill Prevention and Control

- ❑ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ❑ Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- ❑ Clean up spills or leaks immediately and dispose of cleanup materials properly.
- ❑ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- ❑ Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

Earthmoving

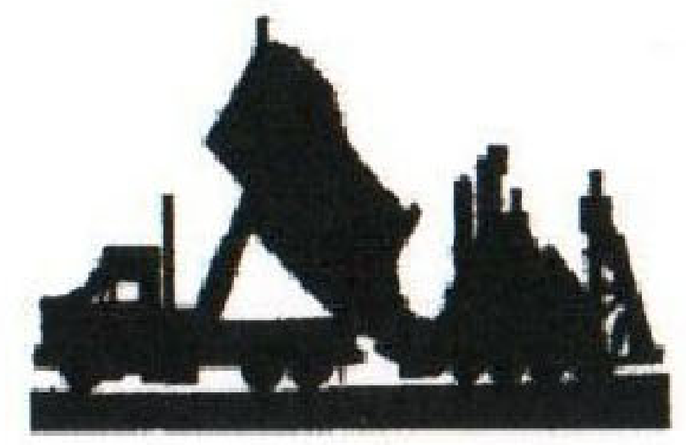


- ❑ Schedule grading and excavation work during dry weather.
- ❑ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ❑ Remove existing vegetation only when absolutely necessary, and seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.
- ❑ Prevent sediment from migrating offsite and protect storm drain inlets, gutters, ditches, and drainage courses by installing and maintaining appropriate BMPs, such as fiber rolls, silt fences, sediment basins, gravel bags, berms, etc.
- ❑ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- ❑ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells
  - Buried barrels, debris, or trash.

Paving/Asphalt Work



- ❑ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ❑ Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- ❑ Do not use water to wash down fresh asphalt concrete pavement.

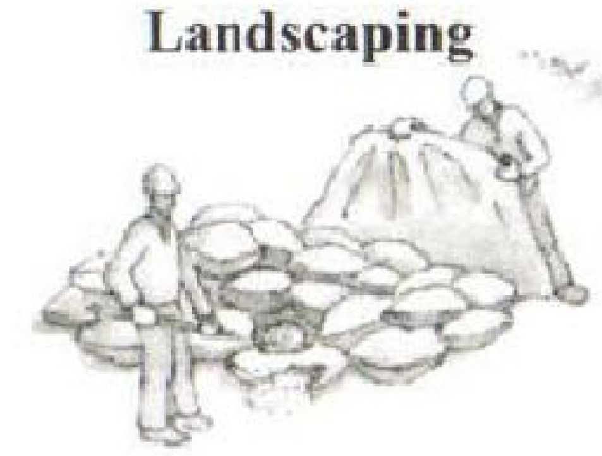
Sawcutting & Asphalt/Concrete Removal

- ❑ Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- ❑ Shovel, abosorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- ❑ If sawcut slurry enters a catch basin, clean it up immediately.

Concrete, Grout & Mortar Application

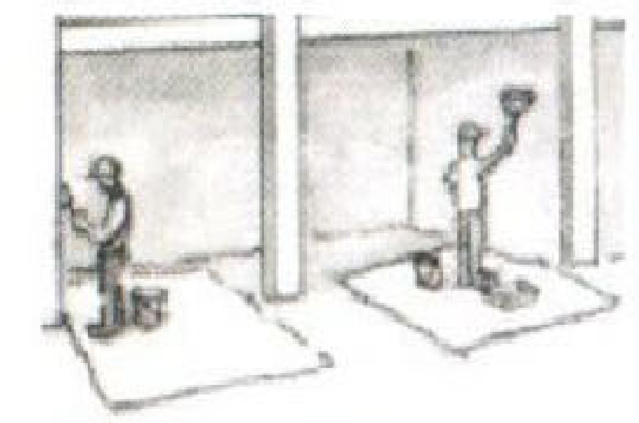
- ❑ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- ❑ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- ❑ When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

Landscaping



- ❑ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ❑ Stack bagged material on pallets and under cover.
- ❑ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

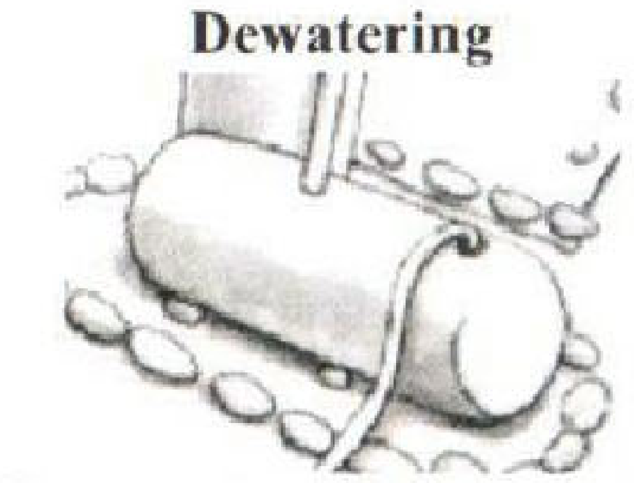
Painting & Paint Removal



Painting Cleanup and Removal

- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ❑ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.

Dewatering



- ❑ Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer call your local wastewater treatment plant.
- ❑ Divert run-on water from offsite away from all disturbed areas.
- ❑ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- ❑ In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal.

Storm drain polluters may be liable for fines of up to $10,000 per day!

COUNTY OF SAN MATEO CALIFORNIA

MOSS BEACH

NO.	DATE	BY	DESCRIPTION	CONST.
	5-18-2021	JFG	CDRC-MEETING COMMENTS	
	4-1-2021	JFG	PLANNING DESIGN REVIEW SUBMISSION	

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REF TRUE NORTH

PROJECT NAME
NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
CONSTRUCTION BEST MANAGEMENT PRACTICES

DATE:
JOB NO.: 2117
DRAWN BY: JFG
REVIEWED BY: JFG
ENGINEER: AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION:
DRAWING NO.: BMP.1

0' 8' 16' 24'

1" = 8'

BASIS OF BEARINGS

THE BEARING, NORTH 28°30' EAST, OF BERNAL AVENUE, AS SHOWN ON THAT CERTAIN SUBDIVISION MAP ENTITLED "RIVIERA OCEAN TRACT" WHICH WAS FILED FOR RECORD IN BOOK 6 OF MAPS PAGE 20, SAN MATEO COUNTY RECORDS, WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BENCHMARK

ELEVATIONS SHOWN HEREON ARE BASED UPON NAVD 88 DATUM. BENCHMARK USED WAS THE NGS DISK "S 1240" (PID HT1812), LOCATED ON TOP AND 1.2 FEET NORTHWEST OF THE SOUTHEAST END OF THE CONCRETE HEADWALL AT THE JUNCTION OF HIGHWAY 1 AND ETHELDORE STREET. ELEVATION = 60.91 FEET. SITE BENCHMARK IS THE MAGSPIKE WITH STAINLESS STEEL WASHER WITH AN ELEVATION OF 109.05 FEET.

NOTES:

BGT RELIED UPON A NORTH AMERICAN TITLE COMPANY PRELIMINARY TITLE REPORT, ORDER NO. 55903-19-00260, AS TITLE REFERENCE. NO EASEMENTS WERE REFERENCED WITHIN SAID REPORT.

UTILITIES SHOWN HEREON TAKEN FROM VISUAL SURFACE EVIDENCE AND SHOULD BE CONSIDERED AS APPROXIMATE ONLY. ACTUAL LOCATIONS OF UTILITIES MAY VARY. TRUE LOCATION OF UTILITIES CAN ONLY BE OBTAINED BY EXPOSING THE UTILITY.

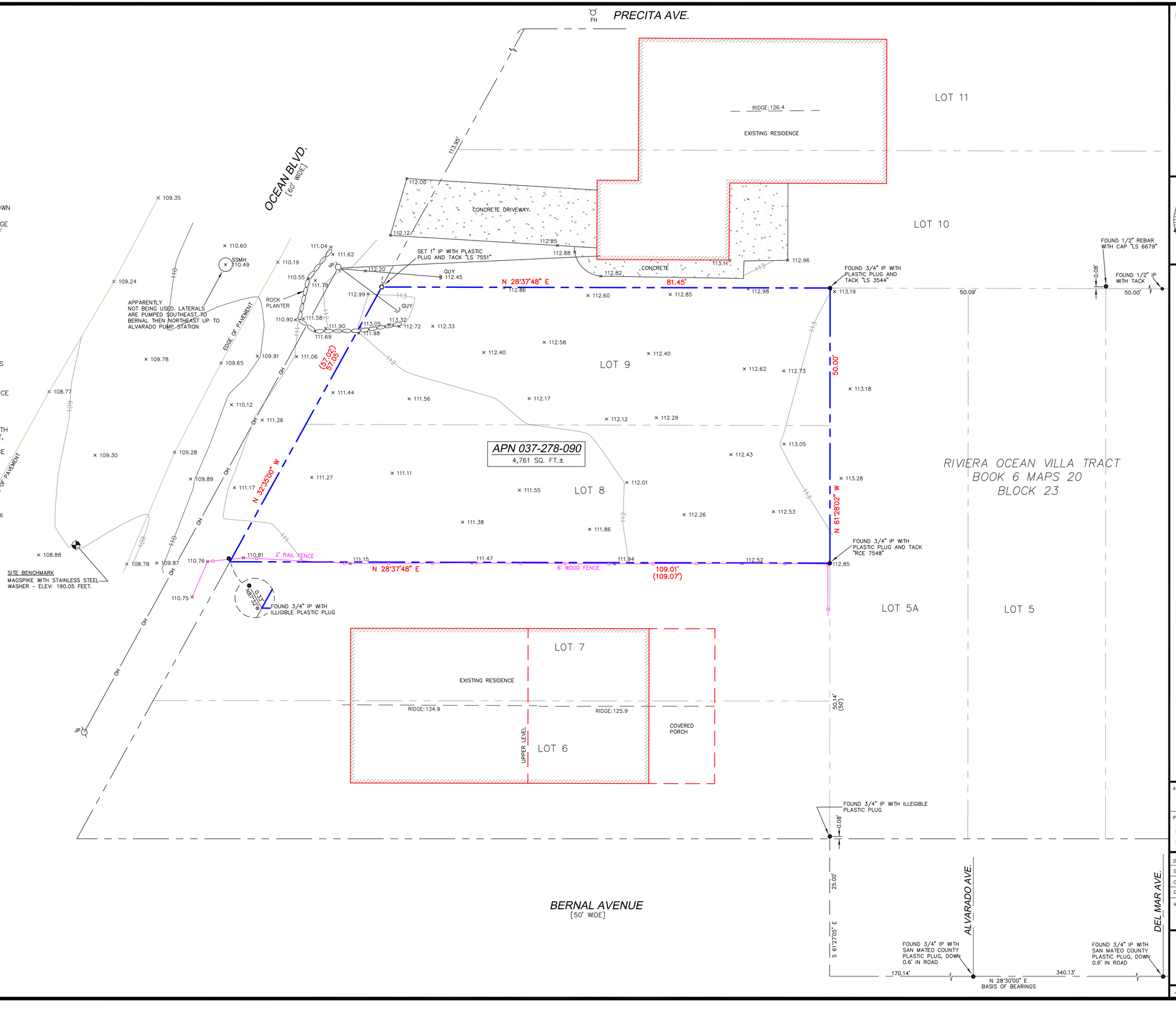
TREE LOCATIONS SHOWN HEREON ARE SHOWN SYMBOLICALLY WITH SYMBOL SIZES BASED UPON TRUNK DIAMETER AT CHEST HEIGHT, AT THE LOCATION WHERE THE TREE ENTERS THE GROUND SURFACE. LOCATIONS AND SIZES OF TREE TRUNKS CAN ONLY BE CONSIDERED APPROXIMATE UNLESS OTHERWISE STATED ON THE MAP. TREES OF TRUNK DIAMETER SIZES OF 6 INCHES OR GREATER WERE LOCATED BY THE FIELDCREW.

SURVEY PERFORMED BY: BGT LAND SURVEYING
www.bgtsurveying.com

DATE OF FIELD SURVEY: JANUARY 15, 2020
JOB NUMBER: 18-132

LEGEND

AC	ASPHALT CONCRETE
BW	BACK OF WALK
CB	CATCH BASIN
C/L	CENTERLINE
CMP	CORRUGATED METAL PIPE
CI	CAST IRON PIPE
CO	CLEAN OUT BOX
CP	SURVEY CONTROL POINT
CPP	CORRUGATED PLASTIC PIPE
CTV	CABLE TELEVISION LINE
DI	DROP INLET
EM	ELECTRIC METER
EV	ELECTRIC VAULT
FF	FINISHED FLOOR
FL	FLOWLINE
FH	FIRE HYDRANT
GM	GAS METER
GRD	GROUND
GUY	GUY ANCHOR
GV	GAS VALVE
HCR	HANDICAP RAMP
HVE	HIGH-VOLT ELECTRIC
INV.	INVERT
IP	IRON PIPE
JP	JOINT POLE
KV	KILOVOLT
LAT.	LATERAL
LG	LIP OF GUTTER
MH	MH (TYPE UNKNOWN)
MON-MON	MONUMENT TO MONUMENT DISTANCE
PBV	PACBELL/SBC VAULT
PGE	PG&E VAULT
PIV	POST INDICATOR VALVE
PP	POWER POLE
SDMH	STORM DRAIN MANHOLE
SL	STREET LIGHT
SLB	STREET LIGHT BOX
SLV	STREET LIGHT VAULT
SSMH	SANITARY SEWER MANHOLE
SSV	SANITARY SEWER VAULT
TBC	TOP BACK OF CURB
TBM	TEMPORARY BENCHMARK
TS	TRAFFIC SIGNAL
TSB	TRAFFIC SIGNAL BOX
UNK	UNKNOWN TYPE
VCP	VITRIFIED CLAY PIPE
WBF	WATER BACK FLOW VALVE
WM	WATER METER BOX
WV	WATER VALVE
-CTV-	CABLE TELEVISION LINE
-E-	ELECTRICAL LINE
-G-	GAS LINE
-OH-	OVERHEAD LINE
-SD-	STORM DRAIN LINE
-SS-	SANITARY SEWER LINE
-T-	TELEPHONE LINE
-W-	WATER LINE



BGT LAND SURVEYING
871 Woodside Way - San Mateo, CA 94401
Main (650) 212-1030 bgtinfo@bgtsurveying.com

LICENSED LAND SURVEYOR
BRYAN G. TAYLOR
NO. 7551
STATE OF CALIFORNIA

BOUNDARY AND TOPOGRAPHIC SURVEY

LOTS 8-9, BLOCK 23, "MAP OF RIVIERA OCEAN VILLA TRACT" (BOOK 6 MAPS 20)

VACANT, OCEAN BLVD.

MOSS BEACH (UNINCORPORATED), COUNTY OF SAN MATEO, CALIFORNIA

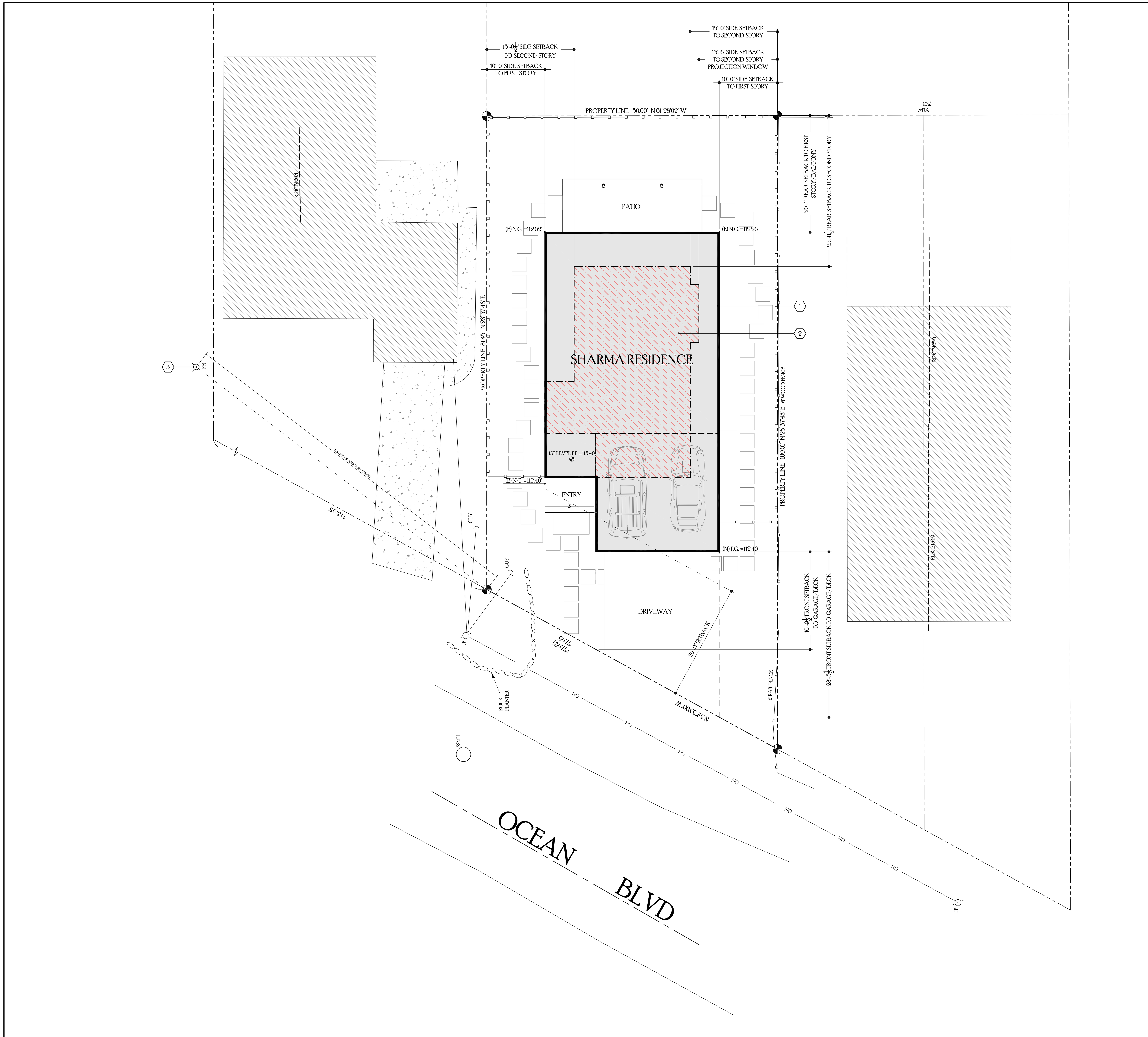
Assessor Parcel Number:
037-278-090

Prepared For:
SUNCAL PROPERTIES & INVESTMENTS
25800 Industrial Blvd. G360
Hayward, CA 94545

Date:	JAN. 2020
Scale:	1" = 8'
Contour Interval:	1'
Drawn by:	LHL
Revisions:	

SU-1

Job No. 18-132



SITE PLAN

SCALE 1/8"=1'-0"

SITE PLAN KEYNOTES

1. OUTLINE OF FIRST LEVEL FLOOR (SHOWN SOLID)
2. SECOND LEVEL FLOOR (SHOWN HATCHED-DOT)
3. EXISTING LOCATION OF FIRE HYDRANT

Geurse Conceptual Designs, Inc.
405 bayswater ave.
Burlingame, california 94010
tel: 650.703.6197
e:mail: jgeurse@gmail.com

SIGNATURE BOX:
NAME: JESSE GEURSE
DATE: OCTOBER 29, 2020

MOSS BEACH

NO.	DATE	BY	DESCRIPTION	CONST.
	5-18-2021	JFG	CDRC-MEETING COMMENTS	
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DRAWING TITLE
SITE PLAN

DATE:
JOB NO.: 2117
DRAWN BY: JFG
REVIEWED BY: JFG
ENGINEER: AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION
DRAWING NO.: SP.1

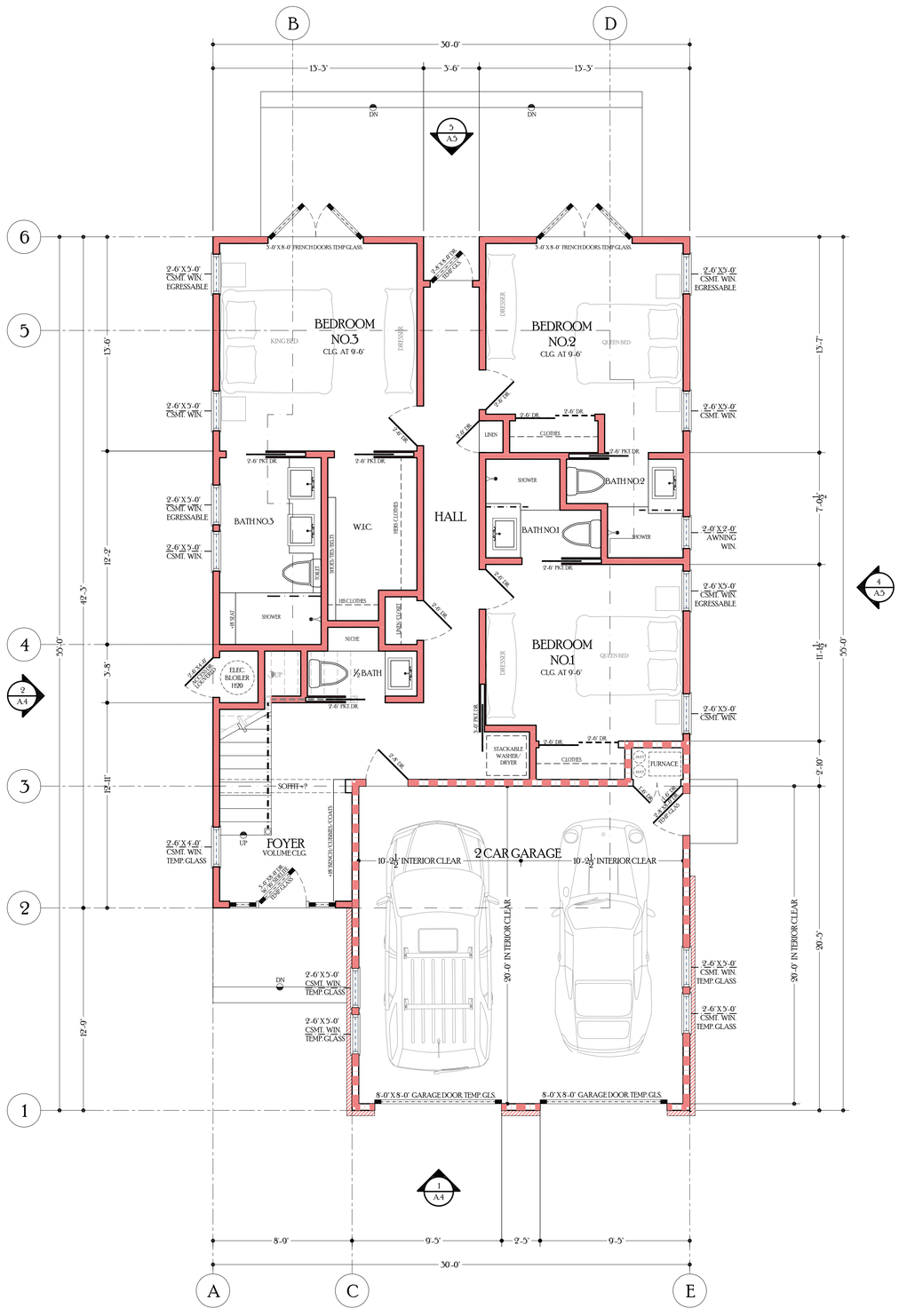
KEYNOTES CONTINUED

LEGEND

1-HOUR FIRE RATED WALL BETWEEN GARAGE AND LIVING SPACE.
–PROVIDE 5/8" TYP 'X' ONE-HOUR FIRE RATED WALL AND CEILING PER CODE FOR REQUIRED 1-HOUR FIRE SEPARATION BETWEEN GARAGE AND LIVING SPACE SHOWN DASHED.
PRIVATE GARAGE SEPARATION FROM THE DWELLING UNIT AND ITS ATTIC AREA BY MEANS OF A MINIMUM 5/8" -INCH TYP 'X' GYTSUM BOARD APPLIED TO THE GARAGE SIDE."

EXTERIOR WALL:
2X4 STUDS AT 16" O.C. ON EXTERIOR WALL WITH BATTEN BOARD SIDING / 2 LAYERS OF GRADE 'D' BUILD. PAPER O/ PLYWOOD W/ INSULATION PER TITLE 24 REPORT

INTERIOR WALL:
2X4 STUDS AT 16" O.C. WITH 5/8" INTERIOR GYPSUM. DOUBLE UP 2X4 WALLS AT ALL THICKEN WALLS. PROVIDE 2X6 AT ALL PLUMBING WALLS.



FIRST LEVEL KEYNOTES

FIRST LEVEL FLOOR PLAN

SCALE: 1/4"=1'-0"

Geurse Conceptual Designs, Inc.
405 bayswater ave.
Burlingame, california 94010
tel: 650.703.6197
email: jjgeurse@gmail.com

SIGNATURE BOX:
NAME: JESSE GEURSE
DATE: OCTOBER 29, 2020

COUNTY OF SAN MATEO CALIFORNIA

MOSS BEACH

NO.	DATE	BY	DESCRIPTION	CONST.
5	5-18-2021	JFG	CDRC–MEETING COMMENTS	
4	4-1-2021	JFG	PLANNING DESIGN REVIEW SUBMISSION	

REVISIONS

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL FIELD CONDITIONS AND COMPARE THEM WITH THE CONSTRUCTION DOCUMENTS BEFORE COMMENCING ACTIVITIES. ERRORS, OMMISSIONS, OR ANY OTHER INCONSISTENCIES DISCOVERED SHALL IMMEDIATELY BE REPORTED TO THE DESIGNER.

REF
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HORIZ

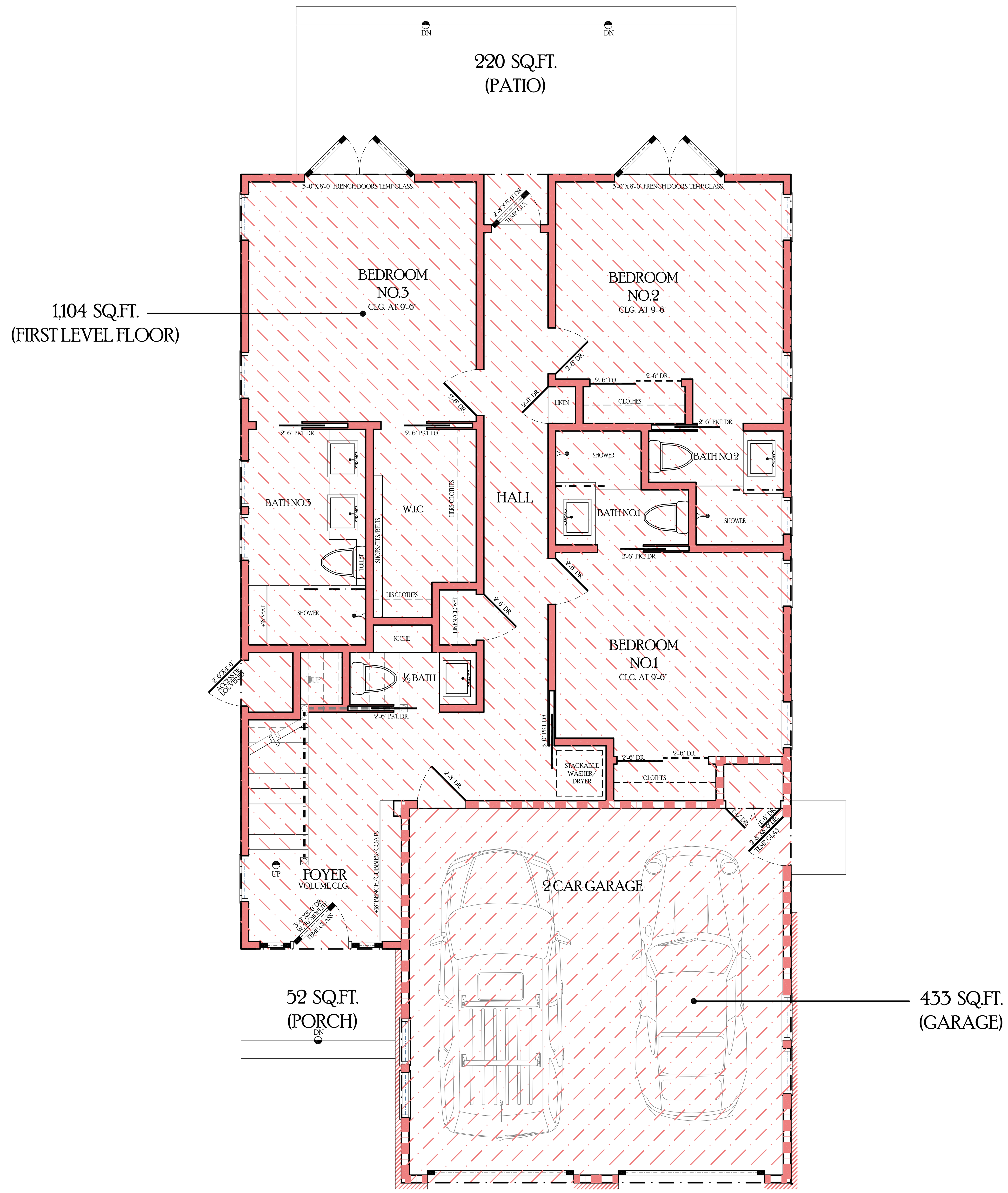
PROJECT NAME
NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
FIRST LEVEL FLOOR PLAN

DATE
JOB NO. 2117
DRAWN BY: JFG
REVIEWED BY: JFG

ENGINEER
AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION

DRAWING NO.
A.1



FIRST LEVEL FLOOR AREA CALCULATION

SCALE 1/4"=1'-0"

PROJECT INFO. + FLOOR AREA

PROJECT:	NEW 2 STORY RESIDENCE
OWNERS:	RAJ SHARMA
LOCATION:	989 OCEAN BLVD. MOSS BEACH, CA 94038
LOT #:	APN 037-278-090
ZONING:	R-1/S-105
SITE AREA:	4,761 SQ. FT.

ALLOWABLE 10' EXTENSION OF GARAGE INTO FRONT SETBACK: 210 SQ. FT.

ACTUAL EXTENSION OF GARAGE INTO FRONT SETBACK 33 SQ.FT.

TOTAL MAX BUILDING FOOTPRINT (INCLUDING GARAGE EXT.): 1,537 SQ. FT. (32% OF SITE)

DESIGN BUILDING FOOT PRINT: 1,537 SQ. FT.

FRONT SETBACK:	20'-0"
SIDE SETBACKS:	10'-0"
BACK SETBACK:	20'-0"
MAX, BUILDING HT.:	28'-0"
MAX. INTRUSION HT.:	33'-0".
BUILDING HEIGHT:	27'-6"

LIVING AREAS:

GARAGE:	433 SQ. FT.
FIRST FLOOR:	1,104 SQ. FT.
SECOND FLOOR:	757 SQ. FT.
TOTAL FHA AREA (48% of Site):	2,294 SQ. FT.

IMPERVIOUS SURFACE AREA:

BUILDING FOOTPRINT: 1,537 SQ. FT.

PARCEL COVERAGE OF IMPERVIOUS AREA (ALLOWED 10% X 4,761 SQ. FT. = 467 SQ. FT.

PATIO:	220 SQ. FT.
FRONT PORCH :	52 SQ. FT.
TOTAL =	272 SQ. FT.
DRIVEWAY (PERVIOUS PAVERS):	425 SQ. FT

EST. EXCAVATION:

BASEMENT	0 CU. YD.
TOTAL EXCAVATION:	0 CU. YD.

Geurse Conceptual Designs, Inc.
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Burlingame, california 94010
tel: 650.703.6197
e:mail: jgeurse@gmail.com

SIGNATURE BOX:
NAME: JESSE GEURSE
DATE: OCTOBER 29, 2020

MOSS BEACH

NO.	DATE	BY	DESCRIPTION	CONST.
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△	5-18-2021	JFG	CDRC-MEETING COMMENTS	
△	4-1-2021	JFG	PLANNING DESIGN REVIEW SUBMISSION	

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REF TRUE NORTH

PROJECT NAME
NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
FIRST LEVEL FLOOR AREA CALCULATION PLAN

DATE		ENGINEER.	AART ASSINK	DRAWING NO.
JOB NO.	2117	SCALE:	AS SHOWN	A.1.SF
DRAWN BY:	JFG	RELEASED TO CONSTRUCTION		
REVIEWED BY:	JFG			

KEYNOTES CONTINUED

LEGEND

1-HOUR FIRE RATED WALL BETWEEN GARAGE AND LIVING SPACE.
–PROVIDE 5/8" TYP 'X' ONE-HOUR FIRE RATED WALL AND CEILING PER CODE FOR REQUIRED 1-HOUR FIRE SEPARATION BETWEEN GARAGE AND LIVING SPACE SHOWN DASHED.
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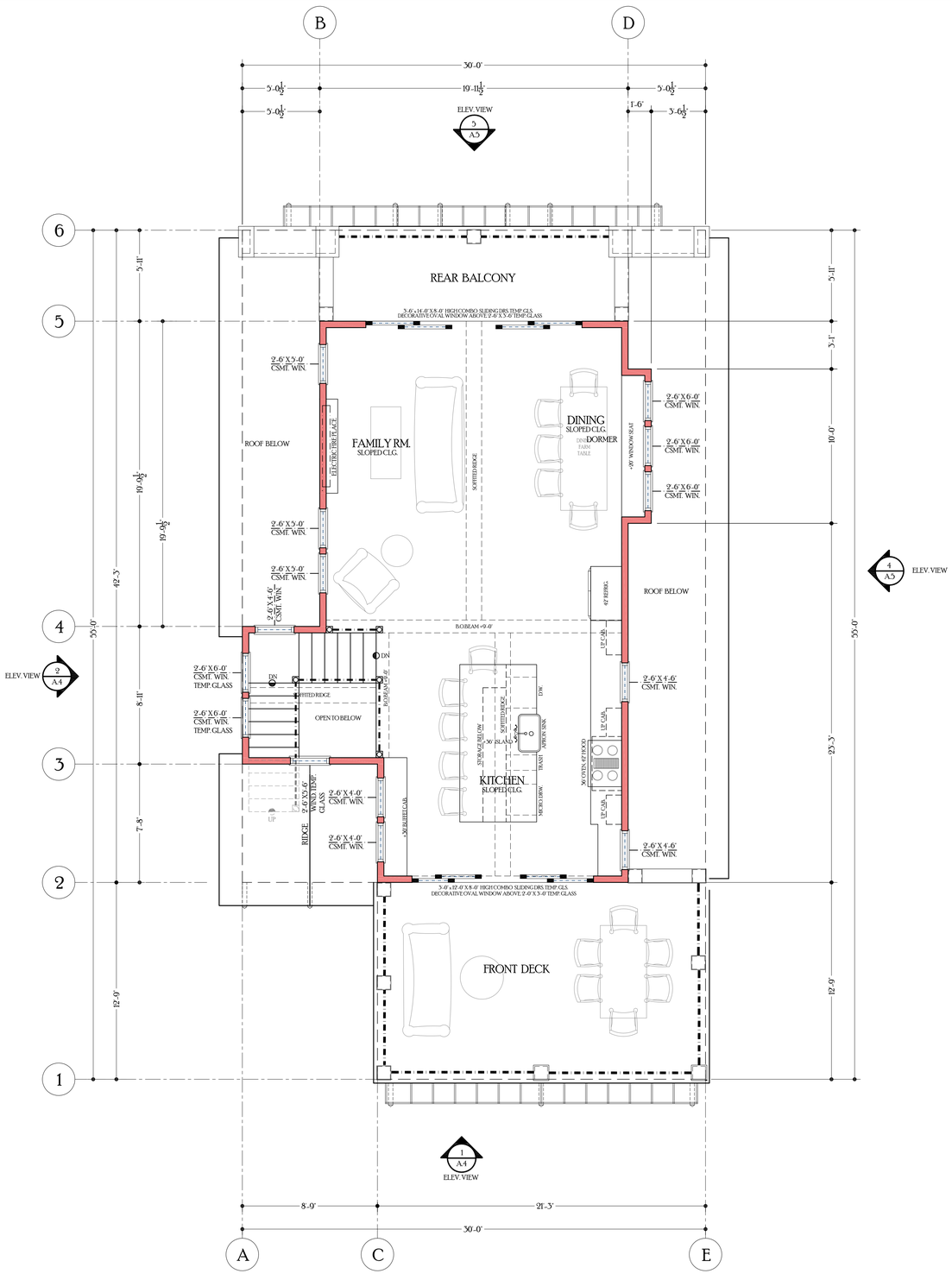

SECOND LEVEL FLOOR PLAN

SCALE: 1/4"=1'-0"

FIRST LEVEL KEYNOTES

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SIGNATURE BOX:
NAME: JESSE GEURSE
DATE: OCTOBER 29, 2020

COUNTY OF SAN MATEO CALIFORNIA

MOSS BEACH

NO.	DATE	BY	DESCRIPTION	CONST.
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REF: NORTH

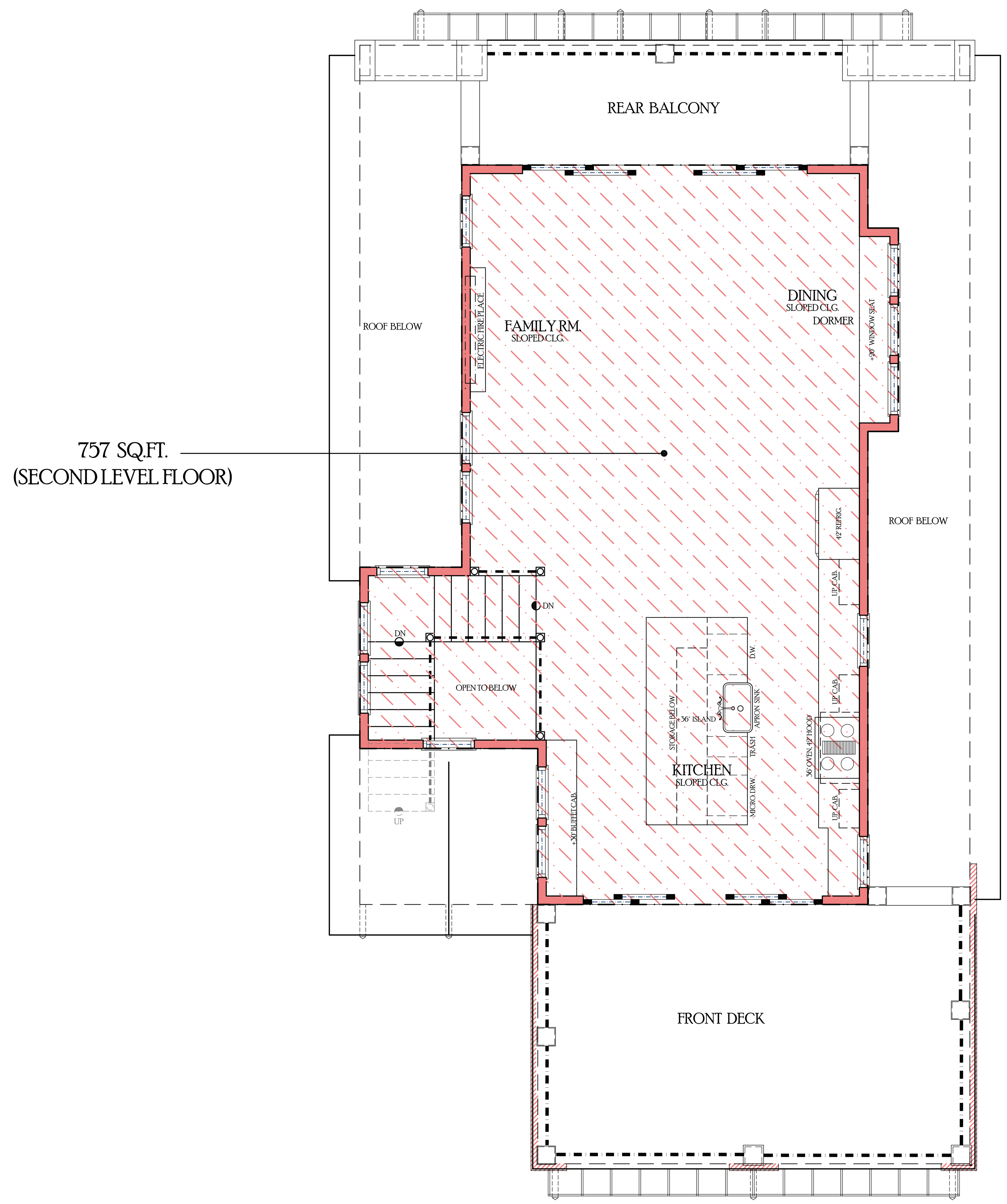
PROJECT NAME:
NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
SECOND LEVEL FLOOR PLAN

DATE
JOB NO. 2117
DRAWN BY: JFG
REVIEWED BY: JFG

ENGINEER: AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION

DRAWING NO.
A.2



SECOND LEVEL FLOOR AREA CALCULATION

SCALE 1/4"=1'-0"

PROJECT INFO. + FLOOR AREA

PROJECT: NEW 2 STORY RESIDENCE

OWNERS: RAJ SHARMA

LOCATION: 989 OCEAN BLVD.
MOSS BEACH, CA 94038

LOT #: APN 037-278-090

ZONING: R-1/S-105

SITE AREA: 4,761 SQ. FT.

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BACK SETBACK: 20'-0"

MAX, BUILDING HT.: 28'-0"
MAX. INTRUSION HT.: 33'-0".
BUILDING HEIGHT: 27'-6"

LIVING AREAS:

GARAGE: 433 SQ. FT.
FIRST FLOOR: 1,104 SQ. FT.
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TOTAL FHA AREA (48% of Site): 2,294 SQ. FT.

IMPERVIOUS SURFACE AREA:

BUILDING FOOTPRINT: 1,537 SQ. FT.

PARCEL COVERAGE OF IMPERVIOUS AREA (ALLOWED 10% X 4,761 SQ. FT. = 467 SQ. FT.

PATIO: 220 SQ. FT.
FRONT PORCH : 52 SQ. FT.

TOTAL = 272 SQ. FT.

DRIVEWAY (PERVIOUS PAVERS): 425 SQ. FT

EST. EXCAVATION:

BASEMENT 0 CU. YD.

TOTAL EXCAVATION: 0 CU. YD.

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SIGNATURE BOX:
NAME: JESSE GEURSE
DATE: OCTOBER 29, 2020

MOSS BEACH

REVISIONS

NO.	DATE	BY	DESCRIPTION	CONST.
△	5-18-2021	JFG	CDRC-MEETING COMMENTS	
△	4-1-2021	JFG	PLANNING DESIGN REVIEW SUBMISSION	

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REF TRUE NORTH

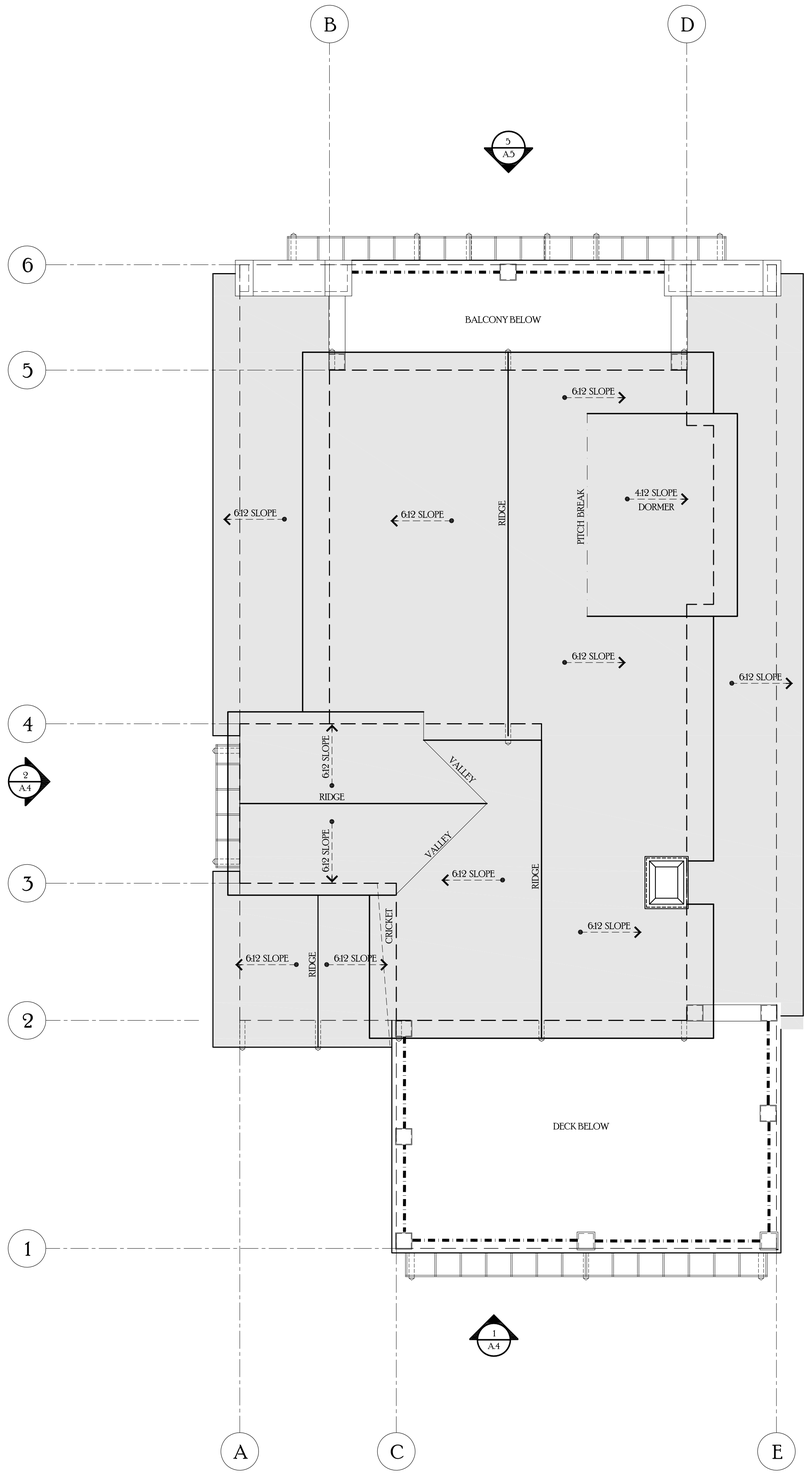
PROJECT NAME
NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
SECOND LEVEL FLOOR AREA CALCULATION PLAN

DATE
JOB NO. 2117
DRAWN BY: JFG
REVIEWED BY: JFG

ENGINEER. AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION

DRAWING NO.
A.2.SF



ROOF LEVEL PLAN

SCALE: 1/4"=1'-0"

ROOF PLAN KEYNOTES

ROOF LEGEND

ROOF AREA

Geurse Conceptual Designs, Inc.

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SIGNATURE BOX:
NAME: JESSE GEURSE
DATE: OCTOBER 29, 2020

COUNTY OF SAN MATEO CALIFORNIA

MOSS BEACH

NO.	DATE	BY	DESCRIPTION	CONST.
	5-18-2021	JFG	CDRC-MEETING COMMENTS	
	4-1-2021	JFG	PLANNING DESIGN REVIEW SUBMISSION	

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RFF

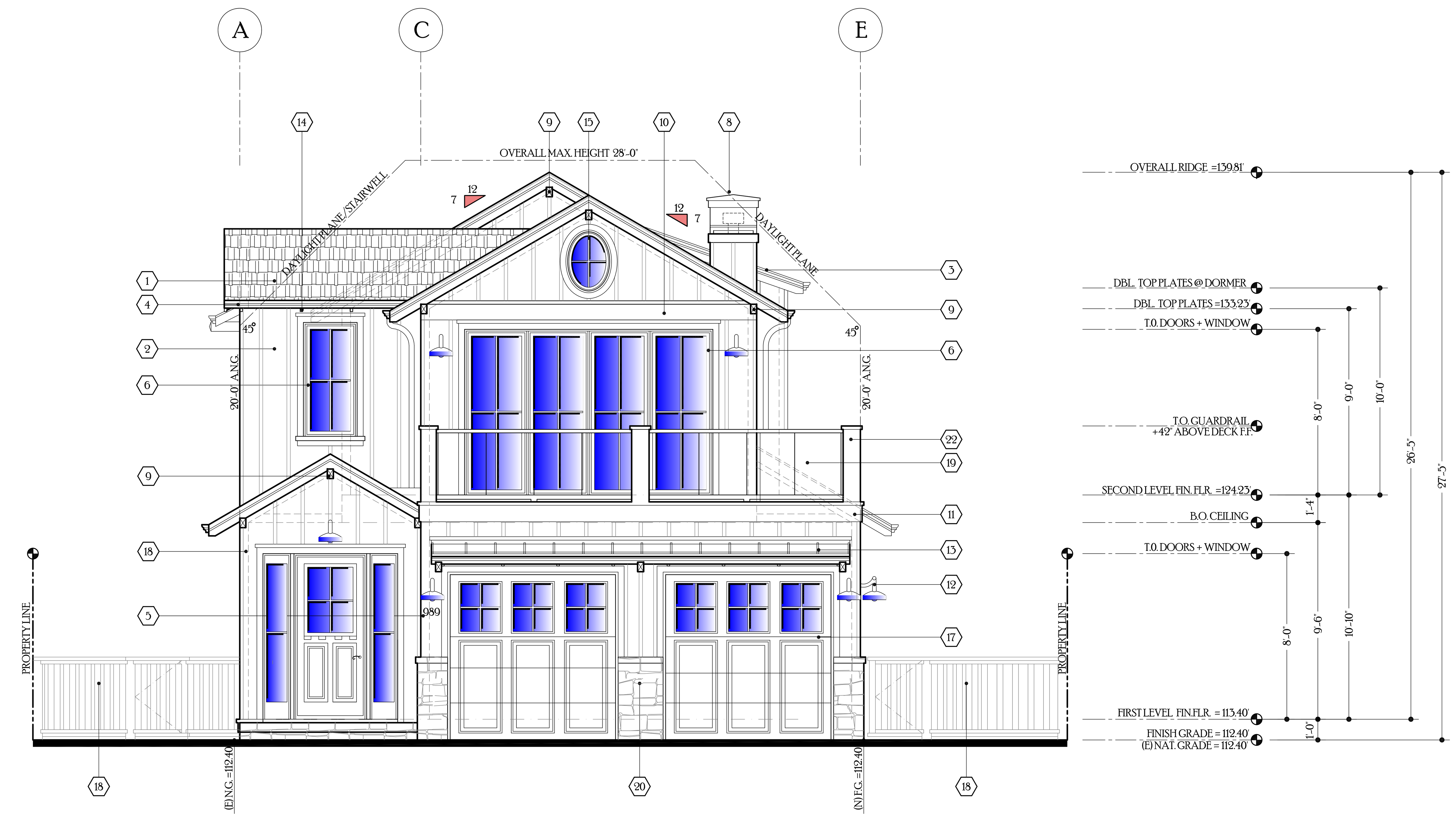
PROJECT NAME
NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
ROOF LEVEL PLAN

DATE
JOB NO. 2117
DRAWN BY: JFG
REVIEWED BY: JFG

ENGINEER
AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION

DRAWING NO.
A.3



1~PROPOSED-FRONT ~WEST ELEVATION

SCALE: 1/4"=1'-0"

SEE SHT A.4 FOR TYP FINISH MATERIALS

2~PROPOSED-LEFTSIDE~NORTH ELEVATION

SCALE: 1/4"=1'-0"

ELEVATION~KEYNOTES

1. ASPHALT ROOFING~CLASS: 'B'
- ~MANUFACTURER: GAF, TIMBERLINE
- ~PRODUCT: HDZ BARKWOOD LAMINATED HIGH DEFINITION ASPHALT SHINGLES
- ~STYLE: HIGH DIMENSIONAL
- ~COLOR: BLACK/BROWN MIXTURE

2. EXTERIOR FINISH:
- ~STYLE: BATTEN AND BOARD

BATTEN AND BOARD OVER TYVEX OVER PLYWOOD
- ~SPACING: BATTENS AT 16" O.C.
- ~TEXTURE: SMOOTH
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

3. DECORATIVE STANDING SEAM SHED ROOF:
- ~MATERIAL: METAL
- ~FINISH: KYNAR
- ~STYLE: AS SHOWN
- ~COLOR: BROWN

4. FACIA, EAVE AND RAKE WITH EXPOSED RAFTER TIPS
- ~SIZE: 2X8 WITH 2" RUNNER AND MOLDING
- ~MATERIAL: WOOD,
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

5. ILLUMINATED ADDRESS BY EXTERIOR LANTERN ON TIMER.

6.~TRIM HEAD AND JAMB SURROUND:
- ~SIZE: 1"X 3-1/2"
- ~CAP SIZE: 1" X 2" WITH METAL DRIP
- ~SILL SIZE: 1" X 2" SILL WITH 1" X 4" APRON
- ~STYLE: TRADITIONAL
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~~PAINT MANUFAC; GLIDDEN OR EQUAL

~ EXTERIOR DOORS AND WINDOWS:
- ~EXTERIOR: ALUM CLAD. COLOR:BROWN
- ~GLAZING : DUAL GLAZED SIMULATED TRUE DIVIDED
- ~INTERIOR: PRIMED, PAINT READY.
- ~DOOR AND WINDOW REP:

DOOR AND WINDOW S TO BE MANUFAC;
BY MARVIN, INTEGRITY OR EQUAL
- ~SEE SHEET AD.2 FOR TYPICAL DOOR AND WINDOW DETAILS.

7. GUTTERS AND DOWNSPOUTS
- ~MATERIAL: GALVANIZED
- ~COLOR BROWN
- ~SIZE OF GUTTER: 5" DECORATIVE O.G.
- ~SIZE OF DOWN SPOUT: 4" DIA.

8. METAL CHIMNEY SHROUD WITH VENT CAP
- ~INSTALL HEIGHT PER MANUFACTURERS REQUIREMENTS
- ~COLOR: BROWN
- ~STYLE: AS SHOWN IN ELEVATION.

9. DECORATIVE 4X6 CORBEL
- ~SIZE: 4X6
- ~MATERIAL: WOOD
- ~COLOR: BLACK WALNUT (PPG1014-7, THD-E4)

10 WOOD TRIM BOARD HEADER WITH WATER TABLE
- ~SIZE: 2X10 WITH 2 X WATER TABLE
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

11. BASE WOOD BOARD WITH WATER TABLE
- ~SIZE: 2X10 WITH 2 X WATER TABLE
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

- 12. DECORATIVE EXTERIOR LIGHT FIXTURE
- ~COLOR: BROWN

13. DECORATIVE SHED ROOF WITH STANDING SEAM ROOF MATERIAL
- ~MATERIAL: METAL
- ~FINISH: KYNAR
- ~STYLE: AS SHOWN
- ~COLOR: BROWN

- ~SIZE: CORBEL SUPPORT BRACKET 4X6 TRIM: COLOR: BLACK WALNUT

14. EXPOSED RAFTER TIPS AT 32" O.C. TYP.
- ~SIZE: : SEE DETAIL
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

15. DECORATIVE TEMPERED GLASS OVAL WINDOW:
- ~SIZE:: SEE PLAN
- ~MANUFACTURER STANDARD SIZE.
- ~BROWN

16. DECORATIVE TEMPERED GLASS OVAL WINDOW:
SIZE:: SEE PLAN
- ~MANUFACTURER STANDARD SIZE.
- ~BROWN

17. TERMINATION BASE
- ~SIZE: 2X6 TRIM WITH 2 X SOLID CAPPING
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

- 18. DECORATIVE WOOD FENCE PER LANDSCAPE PLANS.
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

19. ACRYLIC CLEAR PANELS AT DECK AND BALCONY
- ~ 2X6 TOP RAIL AND BOTTOM RAIL
- ~SIZE: 42" ABOVE DECK FINISH FLOOR.
- ~MATERIAL: ACRYLIC OR TEMPERED GLAZING.
- ~COLOR: CLEAR

20. THIN SET STONE VENEER
- ~SIZE: 2" THINK PANEL VENEER
- ~MATERIAL: CANYON CREEK
- ~COLOR: CANYON CREEK
- ~MANUFACTURER: PENINSULA BUILDING MATERIAL, CO.

TEL: (650) 365-8500
109 SEAPORT BLVD.
REDWOOD CITY
CA 94063

21. DECORATIVE ALUMINUM CLAD GARAGE DOORS WINDOW WINDOW PATTERN PER ELEVATIONS:
- ~COLOR: BROWN

22. GUARDRAIL COLUMN
- ~SIZE: 10" X 10" WITH 2X SOLID CAP
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

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MOSS BEACH

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PROJECT NAME
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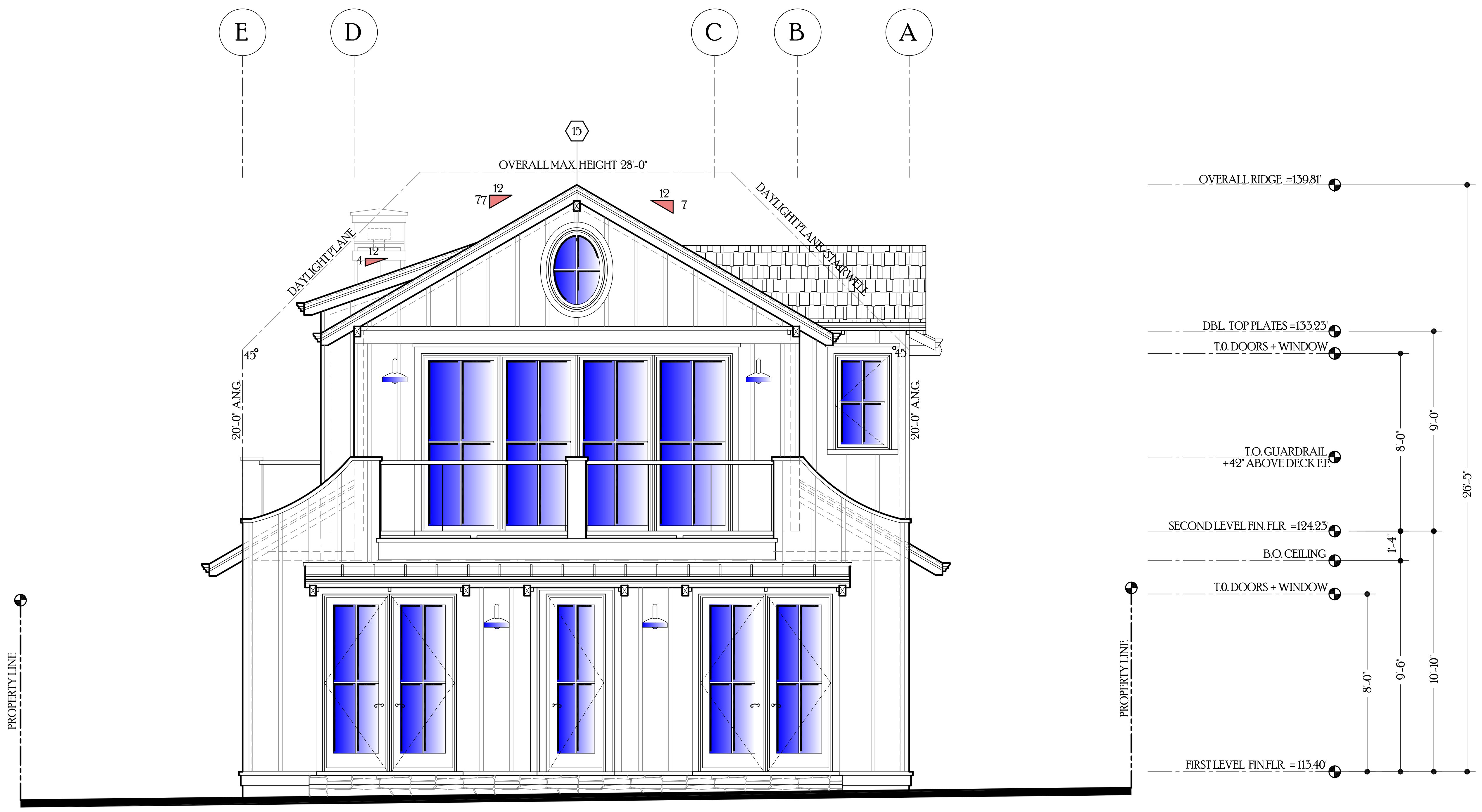
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
EXTERIOR ELEVATIONS

DATE		ENGINEER. AART ASSINK	DRAWING NO.
JOB NO.	2117	SCALE: AS SHOWN	A.4
DRAWN BY:	JFG	RELEASED TO CONSTRUCTION	
REVIEWED BY:	JFG		



SEE SHT A.4 FOR TYP FINISH MATERIALS

3~PROPOSED-REAR~EAST ELEVATION

SCALE: 1/4"=1'-0"

SEE SHT A.4 FOR TYP FINISH MATERIALS

4~PROPOSED-RIGHTSIDE~SOUTH ELEVATION

SCALE: 1/4"=1'-0"

ELEVATION~KEYNOTES

1. ASPHALT ROOFING~CLASS: 'B'
- ~MANUFACTURER: GAF, TIMBERLINE
- ~PRODUCT: HDZ BARKWOOD LAMINATED HIGH DEFINITION ASPHALT SHINGLES
- ~STYLE: HIGH DIMENSIONAL
- ~COLOR: BLACK/BROWN MIXTURE

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- ~PAINT MANUFAC; GLIDDEN OR EQUAL

3. DECORATIVE STANDING SEAM SHED ROOF:
- ~MATERIAL: METAL
- ~FINISH: KYNAR
- ~STYLE: AS SHOWN
- ~COLOR: BROWN

4. FACIA, E AVE AND RAKE WITH EXPOSED RAFTER TIPS
- ~SIZE: 2X8 WITH 2" RUNNER AND MOLDING
- ~MATERIAL: WOOD,
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

5. ILLUMINATED ADDRESS BY EXTERIOR LANTERN ON TIMER.

6.~TRIM HEAD AND JAMB SURROUND:
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- ~SIZE: 2X10 WITH 2 X WATER TABLE
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- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

15. DECORATIVE TEMPERED GLASS OVAL WINDOW:
- ~SIZE:: SEE PLAN
- ~MANUFACTURER STANDARD SIZE.
- ~BROWN

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SIZE:: SEE PLAN
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- ~SIZE: 2X6 TRIM WITH 2 X SOLID CAPPING
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

- 18. DECORATIVE WOOD FENCE PER LANDSCAPE PLANS.
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

19. ACRYLIC CLEAR PANELS AT DECK AND BALCONY
- ~ 2X6 TOP RAIL AND BOTTOM RAIL
- ~SIZE: 42" ABOVE DECK FINISH FLOOR.
- ~MATERIAL: ACRYLIC OR TEMPERED GLAZING.
- ~COLOR: CLEAR

20. THIN SET STONE VENEER
- ~SIZE: 2" THINK PANEL VENEER
- ~MATERIAL: CANYON CREEK
- ~COLOR: CANYON CREEK
- ~MANUFACTURER: PENINSULA BUILDING MATERIAL, CO.

TEL: (650) 365-8500
109 SEAPORT BLVD.
REDWOOD CITY
CA 94063

21. DECORATIVE ALUMINUM CLAD GARAGE DOORS WINDOW WINDOW PATTERN PER ELEVATIONS:
- ~COLOR: BROWN

22. GUARDRAIL COLUMN
- ~SIZE: 10" X 10" WITH 2X SOLID CAP
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

Geurse Conceptual Designs, Inc.
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tel: 650.703.6197
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SIGNATURE BOX:
NAME: JESSE GEURSE
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MOSS BEACH

NO.	DATE	BY	DESCRIPTION	CONST.
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NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE
EXTERIOR ELEVATIONS

DATE
JOB NO. 2117
DRAWN BY: JFG
REVIEWED BY: JFG

ENGINEER. AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION

DRAWING NO.
A.5

PROPOSED~FRONT~LEFTSIDE~BIRDS EYE

SCALE: NOT TO SCALE

PROPOSED~FRONT~LEFTSIDE

SCALE: NOT TO SCALE

ELEVATION~KEYNOTES

1. ASPHALT ROOFING~CLASS: 'B'
- ~MANUFACTURER: GAF, TIMBERLINE
- ~PRODUCT: HDZ BARKWOOD LAMINATED HIGH DEFINITION ASPHALT SHINGLES
- ~STYLE: HIGH DIMENSIONAL
- ~COLOR: BLACK/BROWN MIXTURE

2. EXTERIOR FINISH:
- ~STYLE: BATTEN AND BOARD

BATTEN AND BOARD OVER TYVEX OVER PLYWOOD
- ~SPACING: BATTENS AT 16" O.C.
- ~TEXTURE: SMOOTH
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

3. DECORATIVE STANDING SEAM SHED ROOF :
- ~MATERIAL: METAL
- ~FINISH: KYNAR
- ~STYLE: AS SHOWN
- ~COLOR: BROWN

4. FACIA, E AVE AND RAKE WITH EXPOSED RAFTER TIPS
- ~SIZE: 2X8 WITH 2" RUNNER AND MOLDING
- ~MATERIAL: WOOD,
- ~COLOR: MESA BEIGE (PPG1092-2, THD -B15)
- ~PAINT MANUFAC; GLIDDEN OR EQUAL

5. ILLUMINATED ADDRESS BY EXTERIOR LANTERN ON TIMER.

6.~TRIM HEAD AND JAMB SURROUND :
- ~SIZE: 1"X 3-1/2"
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8. METAL CHIMNEY SHROUD WITH VENT CAP
- ~INSTALL HEIGHT PER MANUFACTURERS REQUIREMENTS
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- ~COLOR: BLACK WALNUT (PPG1014-7, THD-E4)

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- ~MATERIAL: METAL
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COUNTY OF SAN MATEO CALIFORNIA

MOSS BEACH

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REVIEWED BY: JFG

ENGINEER. AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION

DRAWING NO.
A.6

PROPOSED-REAR~RIGHTSIDE

SCALE:1/4"=1'-0"

PROPOSED-FRONT-RIGHTSIDE

SCALE:1/4"=1'-0"

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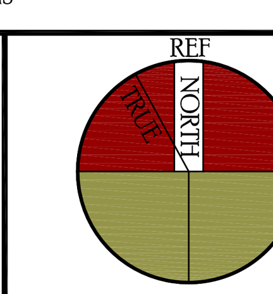

PROJECT NAME

NEW RESIDENCE
for
MR. + MRS. SHARMA
989 OCEAN BLVD.
MOSS BEACH, CALIFORNIA 94038

DRAWING TITLE

EXTERIOR 3D RENDERING

DATE ______
JOB NO. 2117
DRAWN BY: JFG
REVIEWED BY: JFG

ENGINEER. AART ASSINK
SCALE: AS SHOWN
RELEASED TO CONSTRUCTION ______

DRAWING NO.

A.7

PROPOSED~REAR

SCALE: 1/4"=1'-0"

PROPOSED~REAR~LEFTSIDE

SCALE: 1/4"=1'-0"

ELEVATION~KEYNOTES

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A.8

County of San Mateo - Planning and Building Department

ATTACHMENT D

Louis A. Richardson, CEG
Consulting Engineering Geologist
650-967-1000 lou@LARCEG.com

Memo

To: Raj Sharma

From: Lou Richardson, CEG

cc: Sanjay Sharma

Date: October 20, 2021

Re: Fault study at 989 Ocean Blvd. by Earth Investigations Consultants (2000)

Raj –

Regarding the investigation of faulting by Earth Investigations Consultants on 989 Ocean Blvd. in 2000 that you have provided, two drawing plates are missing from it. They are a Site Plan and a Geologic Map. The Site Plan probably shows the location of the fault exploration trench that they excavated – a log of which is provided in their report.

Attached to this memo is the page from that report where they state that there was no evidence of fault rupture. Also attached is a copy of a sketched log of the trench wall and a plan of the site with the fault trench location, based on their description of it.

Hope this helps to clarify things.

Lou

SITE INVESTIGATION

Surface Features

The site occupies a flat, featureless marine terrace surface approximately 140 feet northeast of the top of the seacliff. At the time of this investigation it was bordered on the south and north sides by existing 2-story residences. Drainage would tend to sheet toward the west, albeit sluggishly due to the flat nature of the site.

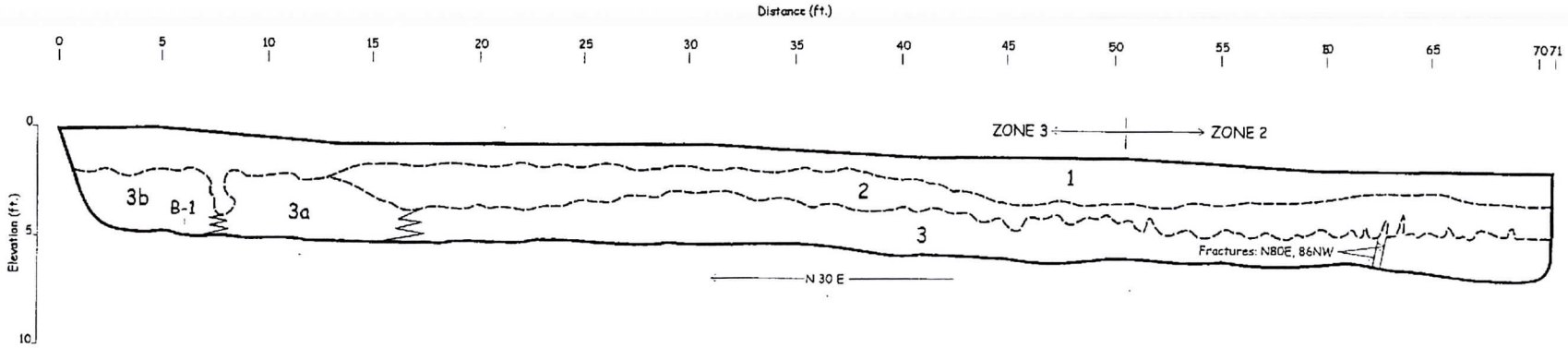
Dark grayish brown, silty sand topsoil was exposed on the ground surface. It was loose with low plasticity. Bedrock was not exposed, however, the seacliff to the west exposed very weathered and closely fractured siltstone dipping gently to the east, beneath approximately 12 feet of granular, marine terrace deposits.

There was no surface evidence of landsliding or of active faulting on the site. A shallow slump at the top of the seacliff underlain by terrace deposits was observed approximately 120 feet west of the site.

Explorations

Seventy-one linear feet of exploratory trench was excavated to an average depth of 5 feet along the southerly property line, approximately perpendicular (North 30 East) to the orientation of faulting and landsliding mapped in the area east and north of the site (Plates 2 and 4). A boring was advanced at the bottom of the east end of the trench (Plate 2 and Plate 5) to further investigate the characteristics of the earth materials to a depth of 12 ½ feet below the ground surface. Our staff engineer and engineering geologist logged the trench and boring.

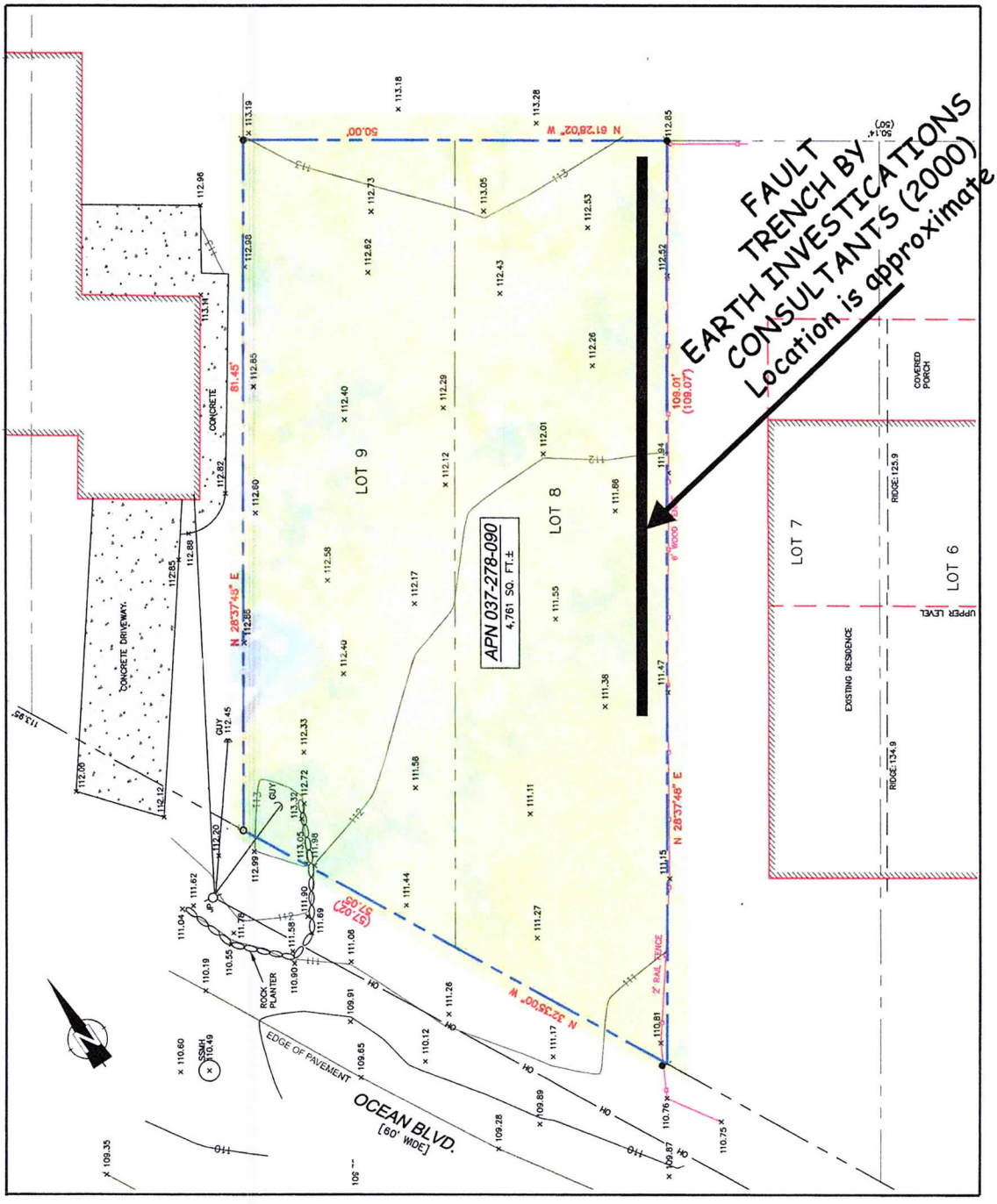
The trench exposed a continuous surface horizon of loose to medium dense, silty sand topsoil overlying interlayered, lenticular marine terrace deposits consisting of silty and low-plasticity, clayey silty sand. A local increase in clay and moisture was encountered in the east end (between Stations 7 and 17) beneath the topsoil. The contact between silty sand and clayey silty sand, between Stations 17 and 71 was irregular. There was no evidence of landslide or fault rupture. The terrace deposits were relatively structureless except for a secondary, high-angle, nearly east-west trending joint set that terminated at the contact between Units 2 and 3 near Station 63.



EXPLANATION

1	Dark greyish brown Silty SAND, trace of Gravel, moist, loose to medium dense (Top Soil).
2	Dark yellowish brown Silty SAND with inclusion of strong brown Sand, moist, medium dense (Terrace Deposit).
3	Moderate to dark yellowish brown Silty Clayey SAND with Gravel, damp, medium dense (Terrace Deposit).
3a	Same as 3, increase in Clay and moisture content but still damp.
3b	Similar to 3a, but becomes moist to damp.
B-1	Boring location

Earth Investigations Consultants	Job No. 1603.01.00 Approved Date 12/28/99	LOG OF EXPLORATORY TRENCH APN 037-278O-090, Ocean Boulevard Seal Cove, California	Plate 4



0 20
Scale in feet

BASE from: Boundary and Topographic Survey, Sheet SU-1 by BGT Land Surveying dated Jan 2020.

GEOTECHNICAL UPDATE
Proposed Residential Property
APN 037-278-090, Ocean Boulevard
Moss Beach, California

Prepared for:
Mr. David Rivard
550 14th Road South
Arlington, Virginia 22202

September 26, 2016
Job 2822.01.00

Earth Investigations Consultants, Inc.
P.O. Box 795
Pacifica, California 94044
Phone 650.557.0262
earthinvestigations@comcast.net

Earth Investigations Consultants

September 26, 2017
Job 2822.01.00

Mr. David Rivard
550 14th Road South
Arlington, VA 22202

RE: GEOTECHNICAL UPDATE
Proposed Residential Property
APN 037-278-090, Ocean Boulevard
Moss Beach, California

Dear Mr. Rivard:

DISCUSSION

Pursuant to your authorization, we have prepared this letter to update our 1999 geotechnical report for the referenced property. The scope of services included review of the project file, site observations, and measurement of the approximate distance between the southwesterly property line and inferred top of bluff. We found the distance ranged from approximately 120 to 145 feet, which is approximately 5 to 20 feet less than measured in 2000, or a bluff top retreat rated of ⅓ to 1 foot per year. In this context, top of bluff would be the nearest break in slope to the site, including the surficial landslide scarp where the greatest retreat was measured.

It is our opinion the conclusions and recommendations presented in our 2000 report remain valid, with the exception of the updated seismic parameters presented in below:

UPDATED SEISMIC DESIGN PARAMETERS

The proposed structures should be designed for the following seismic design criteria derived from the subsurface exploration data and the 2016 California Building Code (2010 ASCE 7 with March 2013 errata):

- Site Location: Latitude = 37.513; Longitude = -122.510
- Site Soil Class: C
- Spectral Response Acceleration Values:
  F_V = 1.3; S_S = 2.276; S_1 = 0.9624; S_{DS} = 1.517; S_{D1} = 0.834

REFERENCE

Earth Investigations Consultants, Inc., 2000, Geotechnical investigation, proposed residence, APN 037-278-090, Ocean Boulevard, Moss Beach, California: February 9 report to Mr. Edward Eng, Job 1603.01.00 16 pages with illustrations and appendix.

We trust this update letter provides you with the information you require at this time. If you have any questions, please call.

Very truly yours,

Earth Investigations Consultants, Inc.

REGISTERED GEOLOGIST
JOEL E. BALDWIN, II
No. EG 1132
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Joel E. Baldwin, II
Engineering Geologist 1132 (Renewal date 2/28/19)

David W. Buckley

REGISTERED PROFESSIONAL ENGINEER
DAVID W. BUCKLEY
C 34386
Exp. 9/30/17
CIVIL
STATE OF CALIFORNIA

David W. Buckley
Civil Engineer 34386 (Renewal date 9/30/19)

JEB:DWB:jb:gl
Distribution: efile and 3 paper copies to addressee

Vacant Lot, Ocean Blvd., Moss Beach

BGT Job#18-132

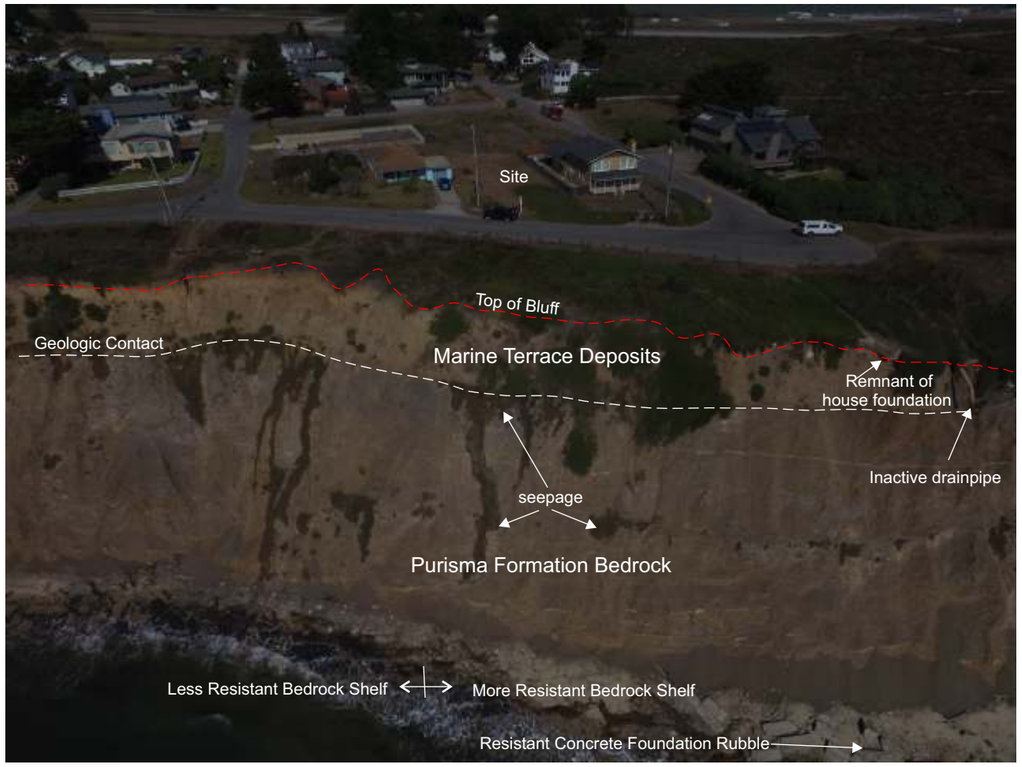
January 2020

Vacant Lot, Ocean Blvd., Moss Beach

BGT Job#18-132

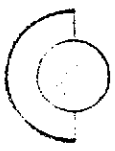
January 2020

Northeasterly view across site. No visible change from conditions observed during our 1999 investigation.



Northeasterly view of bluff. Note seepage (dark tone) primarily at base of marine terrace deposits, and locally from lower on the bluff at points along contact between bedrock layers of shale and sandstone. Bedrock in bluff fronting the site appears to be more resistant than to the south where the toe of bluff is notably indented.

Earth Investigations Consultants, Inc.	**Job No.:** 2822.01.00 **Approved By:** JEB **Date:** 09/26/17	**DRONE IMAGES** APN 037 278 090, Ocean Boulevard Moss Beach, California	**Plate** 1



Earth Investigations Consultants

GEOTECHNICAL INVESTIGATION

Proposed Residence
APN 037-278-090, Ocean Boulevard
Seal Cove, California

Prepared for:

Mr. Edward Eng
4301 Sunset Boulevard
Los Angeles, California 90029

Dated February 9, 2000
Job 1603.01.00

Earth Investigations Consultants
505 Tunnel Avenue, Suite 6
P.O. Box 673
Brisbane, California 94005
Phone 415-467-6645
Fax 415-467-7707

Earth Investigations Consultants

February 9, 2000
Job 1603.01.00

Mr. Edward Eng, Esquire
4301 Sunset Boulevard
Las Angeles, California 90029

RE: **GEOTECHNICAL INVESTIGATION**
Proposed Residence
APN 037-278-090, Ocean Boulevard
Seal Cove, California

Dear Mr. Eng:

INTRODUCTION

Site Location and Proposed Project

Pursuant to your authorization, we have completed the referenced project, located in the southwesterly part of the unincorporated residential community of Seal Cove, California (Plate 1, Vicinity Map). We understand that you propose to construct a 2-story, wood-frame structure in the central part of the lot, between existing homes on the adjoining lots (961 Ocean on north side and 999 Ocean on south side; see Plate 2, Site Plan). The structure will be of conventional lightweight construction with a paved driveway leading to the garage from Ocean Boulevard. Minimal grading is anticipated.

Purpose and Scope of Services

The purpose of this investigation was to characterize the geologic setting and foundation soils and provide geotechnical parameters for the proposed residential construction. The scope of services undertaken to arrive at the findings, conclusions and recommendations in this report included the following:

- Review of pertinent geological maps and literature, and historic aerial photographs and maps covering the site area. The pertinent portion of the Seal Cove Study Area Map prepared by Wm. Cotton & Associates (1980) is contained on Plate 3, Geologic Map.

- Site observations conducted on December 16, 1999.

- Site exploration, including excavation and geologic logging of 71 linear feet of trench excavated with a 24-inch bucket attached to a rubber-tire, Case backhoe, and advancement of 1 boring at the base of the north end of the trench with a gas powered Wacker (BHF 30S) percussion hammer that imparts an axial load of 35 ft. lbs. to the 1 1/2-inch, split-spoon sampler at a rate of 1270 blows per minute. The trench and boring were logged and sampled by our field engineer and engineering geologist. The Trench Log is illustrated on Plate 4 and the Log of Boring on Plate 5. Plate 6 contains the terms and symbols used on the boring log.

- Laboratory index testing of the samples retrieved from the boring. Test included moisture content, dry density, and Atterberg limits.

- Geotechnical analysis of the data.

- Preparation of this report.

Previous Work

Leighton and Associates (LA, 1971) conducted an in-depth engineering geologic investigation of the Seal Cove Area, including the southerly part where the site is located. This investigation was authorized by the County of San Mateo to assess the geologic hazards from landslides and faults. They delineated 4 relative geologic hazard zones on the basis of remote sensing, detailed geologic mapping and subsurface exploration:

Zone 1 - Most severe instability
Zone 2 - Unstable
Zone 3 - Degree of instability unknown
Zone 4 - Most Stable

Their geologic mapping defined a complex of southward-moving (toward the seacliff) landslides easily traced by the presence of fresh surface escarpments, ground cracks and deformed buildings. In the subsurface, the terrace deposits were ruptured to the surface and offset. The landslides were confined to the area north of Madrone Avenue. No landslides were mapped across the site. The closest landslide was mapped approximately 600 feet to the west.

Active faults, having a bearing of North 20 to 30 degrees West, were mapped on the basis of subtle topographic features and subsurface geologic relations. The most obvious fault exposure was in the seacliff (now covered by riprap armor) at the Fitzgerald Marine Reserve, approximately one mile north of the site. At that location, marine terrace deposits are juxtaposed against Purisima formation bedrock. Other subsidiary faults, considered potentially active, were mapped on the basis of photogeologic interpretations of subtle topographic features and subsurface geologic relations exposed in explorations. The nearest of these subsidiary faults is mapped approximately 250 feet northeast of the site.

LA (1971) excavated an exploratory trench in Bernal Avenue, between Ocean Boulevard and Alvarado Avenue, on the east side of the site (Plate 2). It encountered approximately 12 feet of intact, massive sand and gravel terrace deposits containing widely spaced, vertical joints. No geologic features indicative of landsliding or active faulting were reported. A boring from the same investigation, located at the intersection of Bernal Avenue and Ocean Boulevard (Plate 2), encountered approximately 14 feet of undeformed, interbedded sand and gravel terrace deposits dipping gently toward the south and resting on moderately steep, eastward dipping siltstone bedrock of the Purisima formation. Ground water was encountered at the contact between the two geologic units.

William Cotton and Associates (WCA, 1980) was authorized by the County to review and update the LA (1971) findings. They generally concurred with the previous interpretations, and no southward extension of landsliding beyond San Lucas Avenue from which LA mapped was reported. However, they revised LA's (1971) relative geologic hazard designations to the following and combined Zone 3 and Zone 4 on the east side their study area:

Zone 1 - Includes all lands located along the western seacliff that are affected by episodic active landslide processes and seacliff erosion (averaging 2-3 ft./yr.), and is generally defined by the eastern-most extent of landsliding and a setback of 50 feet.

Zone 2 - Includes all lands within a 100 foot wide zone located immediately adjacent to (on the east side of) Zone 1. The eastern boundary is established by a 2:1 (i.e., 26-degree) projection of an imaginary plane from the base of the seacliff west of Ocean Boulevard.

Zone 3 - All lands located outside of the areas affected by active of potential landslides.

Geologic investigations by Howard-Donley Associates, Inc. (1981a and b) and Baldwin-Wright, Inc. (1989) revealed that the terrace deposits form an irregular mantle of gravels, sands, silts and clays overlying interbedded sandstone, siltstone that, in the area between San Lucas and La Grande Avenues, is involved in deep-seated bedrock landslides. The southward extent of landsliding

defined by those investigations is characterized by subtle ground cracks that terminate at the south side of San Lucas Avenue. The northward extension of sliding in that area is characterized by well developed ground depressions, escarpments and ground cracks that extend toward Los Banos Avenue to join other distinct ground deformations and escarpments that continue subparallel to the coastline to Terrace Lane just north of the Distillery Restaurant. Exploratory trenches cut perpendicular to the landslide surface features in private property between San Lucas and La Grande Avenues, adjacent to Ocean Boulevard revealed distinct, near vertical ruptures filled with loose topsoil extending from the surface rupture to a depth of at least 18 feet. The separations were interpreted to penetrate into the bedrock located approximately 22 feet below the ground surface (Howard-Donley Associates, Inc., 1981a; Baldwin-Wright, Inc. 1989). Rotation and low-angle shears from landslide movement in Purisima formation bedrock is visible at the face of the seacliff downhill from the Distillery Restaurant. These deformations were interpreted to represent the headward region of bedrock landsliding in the northern end of a 3-part landslide complex that moves spasmodically during and following heavy rainfall (Howard-Donley Associates, 1981a and b; Baldwin-Wright, Inc., 1989).

Near the site, JCP Engineers and Geologists 1980, 1983, and 1986) conducted geologic and geotechnical investigations for the purpose of residential developments on property bordering the south side of the site, and for two other properties on the south side of Bernal Avenue approximately 120 feet south of the site (Plate 2). Their trenches extended across the Zone 1-2 boundary mapped by WCA (1980) and encountered undisturbed terrace deposits of interbedded sands and clays, without reported evidence of fault or landslide rupture/deformation.

SITE INVESTIGATION

Surface Features

The site occupies a flat, featureless marine terrace surface approximately 140 feet northeast of the top of the seacliff. At the time of this investigation it was bordered on the south and north sides by existing 2-story residences. Drainage would tend to sheet toward the west, albeit sluggishly due to the flat nature of the site.

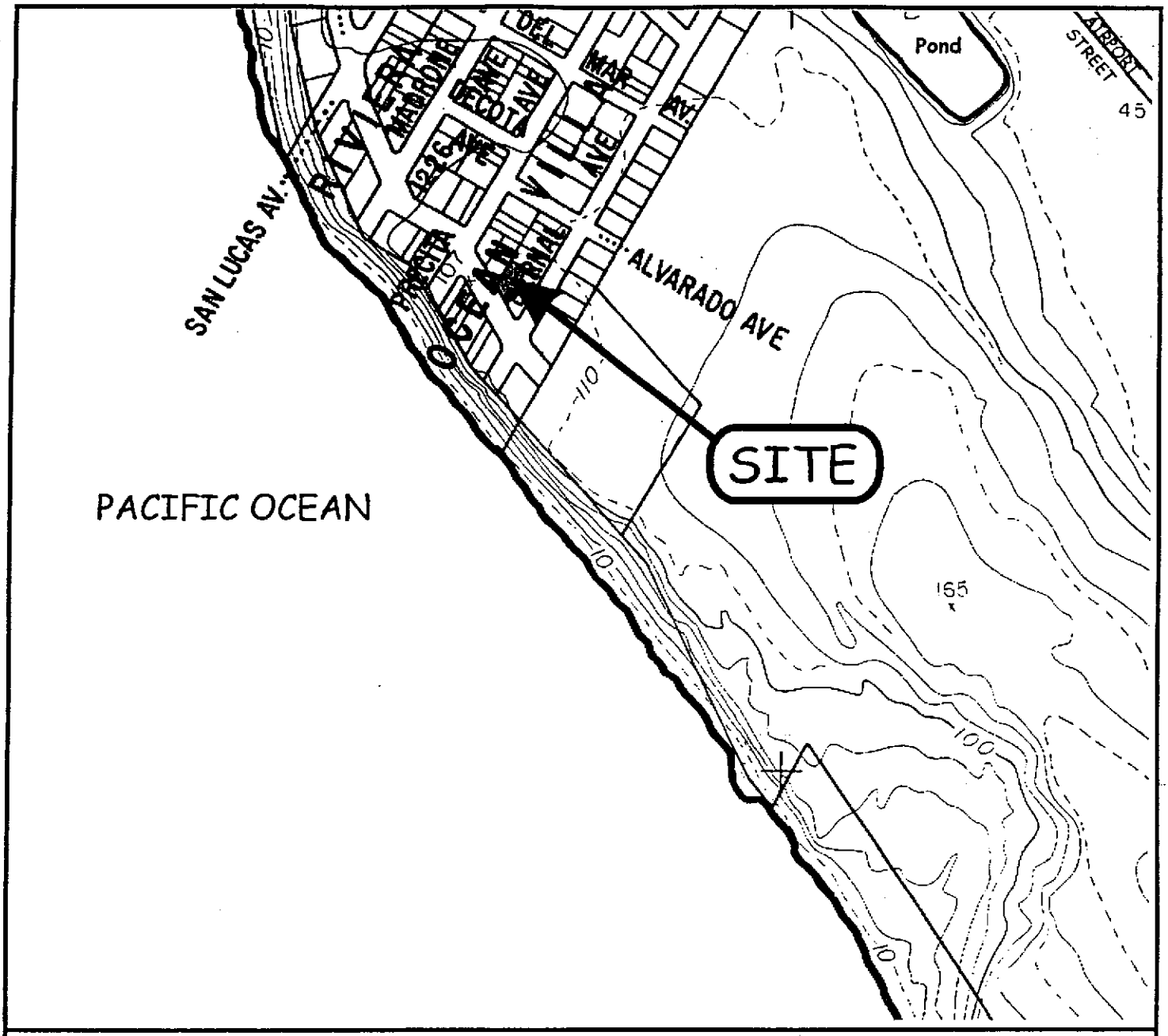
Dark grayish brown, silty sand topsoil was exposed on the ground surface. It was loose with low plasticity. Bedrock was not exposed, however, the seacliff to the west exposed very weathered and closely fractured siltstone dipping gently to the east, beneath approximately 12 feet of granular, marine terrace deposits.

There was no surface evidence of landsliding or of active faulting on the site. A shallow slump at the top of the seacliff underlain by terrace deposits was observed approximately 120 feet west of the site.

Explorations

Seventy-one linear feet of exploratory trench was excavated to an average depth of 5 feet along the southerly property line, approximately perpendicular (North 30 East) to the orientation of faulting and landsliding mapped in the area east and north of the site (Plates 2 and 4). A boring was advanced at the bottom of the east end of the trench (Plate 2 and Plate 5) to further investigate the characteristics of the earth materials to a depth of 12 ½ feet below the ground surface. Our staff engineer and engineering geologist logged the trench and boring.

The trench exposed a continuous surface horizon of loose to medium dense, silty sand topsoil overlying interlayered, lenticular marine terrace deposits consisting of silty and low-plasticity, clayey silty sand. A local increase in clay and moisture was encountered in the east end (between Stations 7 and 17) beneath the topsoil. The contact between silty sand and clayey silty sand, between Stations 17 and 71 was irregular. There was no evidence of landslide or fault rupture. The terrace deposits were relatively structureless except for a secondary, high-angle, nearly east-west trending joint set that terminated at the contact between Units 2 and 3 near Station 63.



N

0 400 ft.

Scale

San Mateo County Topographic Map 10A (1/1/82)

Earth Investigations Consultants	Job No. 1603.01.00 Approved Date 12/28/99	VICINITY MAP APN 037-2780-090, Ocean Boulevard Seal Cove, California	Plate 1

APPENDIX A
SLOPE STABILITY ANALYSES

- Static
- Pseudo-Static – 0.3g for the San Andreas Fault
- Pseudo-Static – 0.5g for the Seal Cove Fault

XSTABL File: 160301PP 2-02-** 14:51

```
*******************************************
*              X S T A B L                *
*                                         *
*        Slope Stability Analysis         *
*               using the                 *
*            Method of Slices             *
*                                         *
*         Copyright (C) 1992 - 97         *
*   Interactive Software Designs, Inc.    *
*        Moscow, ID 83843, U.S.A.         *
*                                         *
*          All Rights Reserved            *
*                                         *
*  Ver. 5.202                 96 - 1547   *
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```

Problem Description : 1603.01.00 static

SEGMENT BOUNDARY COORDINATES

---

18 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	31.0	20.0	32.0	2
2	20.0	32.0	37.0	32.0	2
3	37.0	32.0	48.0	60.0	2
4	48.0	60.0	57.0	100.0	2
5	57.0	100.0	65.0	139.0	2
6	65.0	139.0	68.0	140.0	2
7	68.0	140.0	72.0	150.0	1
8	72.0	150.0	81.0	151.0	1
9	81.0	151.0	82.0	152.0	1
10	82.0	152.0	100.0	153.0	1
11	100.0	153.0	120.0	154.0	1
12	120.0	154.0	148.0	156.0	1
13	148.0	156.0	157.0	155.0	1
14	157.0	155.0	170.0	156.0	1
15	170.0	156.0	183.0	155.0	1
16	183.0	155.0	200.0	157.0	1
17	200.0	157.0	250.0	156.0	1
18	250.0	156.0	300.0	159.0	1

1 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	68.0	140.0	300.0	138.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	125.0	500.0	30.00	.000	.0	1
2	130.0	135.0	1000.0	40.00	.000	.0	1

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 8 coordinate points

****
PHREATIC SURFACE,
****

Point No.	x-water (ft)	y-water (ft)
1	37.00	32.00
2	80.00	66.00
3	120.00	94.00
4	145.00	111.00
5	160.00	117.00
6	240.00	124.00
7	280.00	125.00
8	300.00	126.00

A critical failure surface searching method, using a random technique for generating IRREGULAR surfaces has been specified.

100 trial surfaces will be generated and analyzed.

10 Surfaces initiate from each of 10 points equally spaced along the ground surface between x = 5.0 ft
and x = 68.0 ft

Each surface terminates between x = 100.0 ft
and x = 250.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

38.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

****
** Factor of safety calculation for surface # 70 **
** failed to converge within FIFTY iterations **
**
** The last calculated value of the FOS was 9.0450 **
** This will be ignored for final summary of results **
****

The trial failure surface in question is defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	47.00	57.45
2	75.74	32.59
3	107.19	11.27
4	144.83	6.04
5	182.37	.14
6	215.57	18.62
7	231.62	53.07
8	244.37	88.86
9	249.54	126.51
10	249.85	156.00

```
**********************************************************
**     Factor of safety calculation for surface #    84    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  20.8935    **
**    This will be ignored for final summary of results    **
**********************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	61.00	119.50
2	88.59	93.37
3	126.59	92.98
4	160.95	109.19
5	189.17	134.64
6	195.87	156.51

```
**********************************************************
**     Factor of safety calculation for surface #    88    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was 126.9933    **
**    This will be ignored for final summary of results    **
**********************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	61.00	119.50
2	88.10	92.86
3	125.84	88.37
4	161.43	101.68
5	192.40	123.70
6	217.02	152.64
7	217.52	156.65

```
**********************************************************
**     Factor of safety calculation for surface #    89    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  -2.0361    **
**    This will be ignored for final summary of results    **
**********************************************************
```

The trial failure surface in question is
defined by the following 2 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	61.00	119.50
2	72.54	150.06

```
**********************************************************
**     Factor of safety calculation for surface #    91    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -34.3650    **
**    This will be ignored for final summary of results    **
**********************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	68.00	140.00
2	96.82	115.23
3	130.56	97.76
4	166.96	108.66
5	199.98	127.47
6	229.20	151.77
7	232.92	156.34

```
**********************************************************
**     Factor of safety calculation for surface #    92    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-139.0544    **
**    This will be ignored for final summary of results    **
**********************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	68.00	140.00
2	96.36	114.71
3	133.74	107.88
4	171.48	112.39
5	204.49	131.20
6	237.60	149.85
7	245.83	156.08

```
**********************************************************
**     Factor of safety calculation for surface #    97    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   2.2529    **
**    This will be ignored for final summary of results    **
**********************************************************
```

The trial failure surface in question is

defined by the following 2 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	68.00	140.00
2	76.64	150.52

```
**********************************************************
**     Factor of safety calculation for surface #    99    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -40.7812    **
**    This will be ignored for final summary of results    **
**********************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	68.00	140.00
2	95.29	113.56
3	133.18	110.71
4	170.95	114.90
5	206.13	129.28
6	218.06	156.64

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	63.04	69.86
3	85.26	100.68
4	101.60	134.99
5	107.78	153.39

** Corrected JANBU FOS = 1.055 ** (Fo factor = 1.026)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	47.00	57.45
2	80.78	74.86
3	99.89	107.70
4	119.46	140.28
5	122.64	154.19

** Corrected JANBU FOS = 1.347 ** (Fo factor = 1.053)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	66.71	66.67
3	95.63	91.32
4	103.17	128.56
5	106.61	153.33

** Corrected JANBU FOS = 1.359 ** (Fo factor = 1.064)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	47.00	57.45
2	77.51	80.10
3	105.06	106.28
4	116.32	142.57
5	119.56	153.98

** Corrected JANBU FOS = 1.363 ** (Fo factor = 1.057)

Failure surface No. 5 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	77.20	47.39
3	99.01	78.51
4	113.35	113.70
5	126.11	149.49
6	127.13	154.51

** Corrected JANBU FOS = 1.412 ** (Fo factor = 1.066)

Failure surface No. 6 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	19.00	31.95
2	56.91	29.32
3	92.21	43.38

4	117.55	71.70
5	141.53	101.17
6	155.34	136.58
7	156.58	155.05

** Corrected JANBU FOS = 1.496 ** (Fo factor = 1.076)

Failure surface No. 7 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	26.00	32.00
2	63.79	28.02
3	94.60	50.27
4	121.40	77.20
5	128.67	114.50
6	135.79	151.83
7	136.21	155.16

** Corrected JANBU FOS = 1.549 ** (Fo factor = 1.081)

Failure surface No. 8 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	5.00	31.25
2	42.19	23.45
3	75.37	41.98
4	108.25	61.03
5	141.07	80.19
6	173.72	99.62
7	189.05	134.39
8	198.47	156.82

** Corrected JANBU FOS = 1.608 ** (Fo factor = 1.059)

Failure surface No. 9 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	5.00	31.25
2	41.16	19.57
3	77.80	29.64
4	110.82	48.46
5	128.27	82.21
6	132.06	120.02
7	135.79	155.13

** Corrected JANBU FOS = 1.738 ** (Fo factor = 1.089)

Failure surface No.10 specified by 8 coordinate points

Point	x-surf	y-surf

No.	(ft)	(ft)
1	12.00	31.60
2	43.86	10.89
3	81.84	11.95
4	113.33	33.22
5	137.21	62.78
6	147.15	99.46
7	160.20	135.15
8	160.31	155.26

** Corrected JANBU FOS = 1.776 ** (Fo factor = 1.089)

****
**
** Out of the 100 surfaces generated and analyzed by XSTABL, **
** 8 surfaces were found to have MISLEADING FOS values. **
**
****

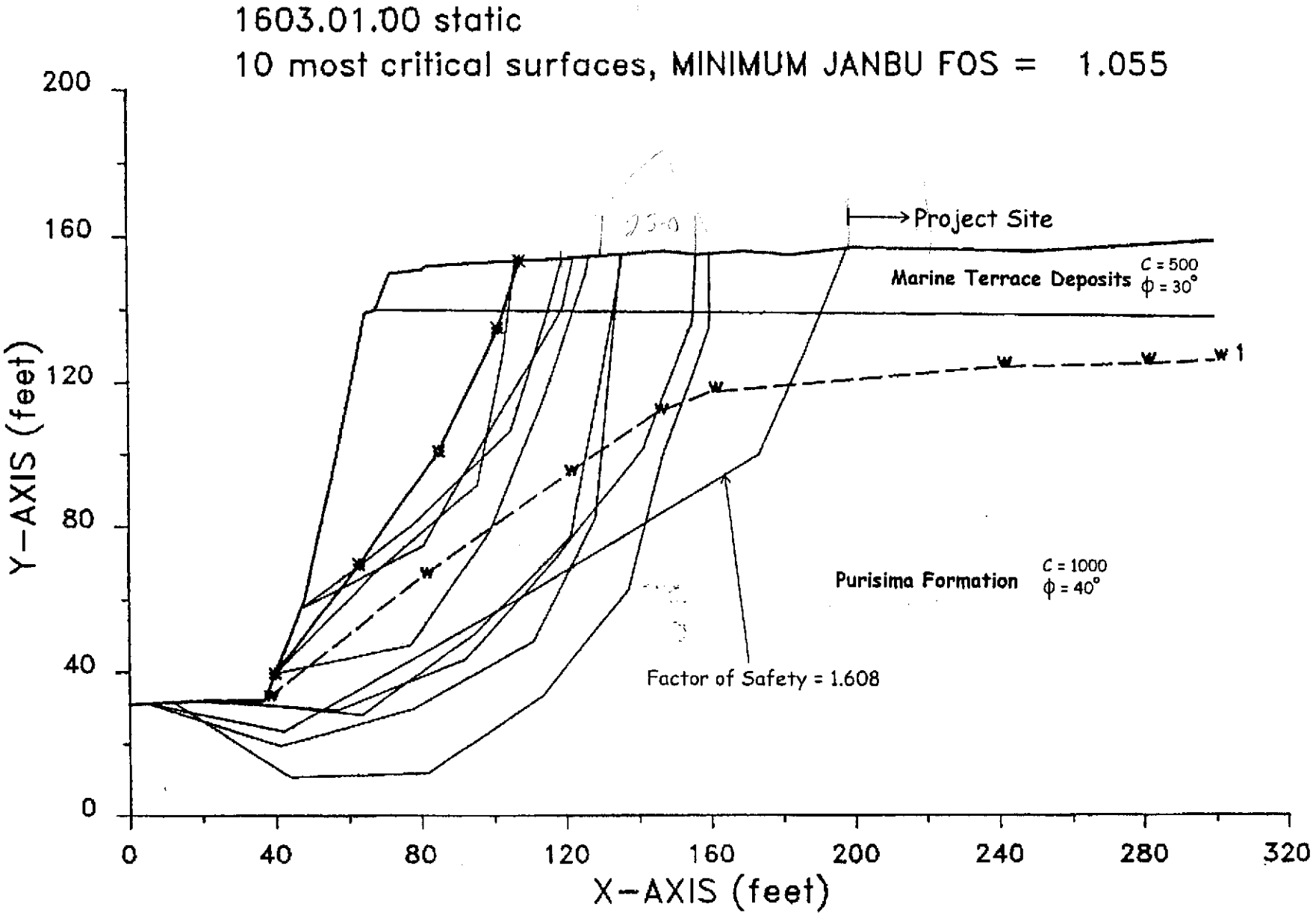
The following is a summary of the TEN most critical surfaces

Problem Description : 1603.01.00 static

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.055	1.026	40.00	107.78	2.772E+05
2.	1.347	1.053	47.00	122.64	4.086E+05
3.	1.359	1.064	40.00	106.61	3.765E+05
4.	1.363	1.057	47.00	119.56	3.851E+05
5.	1.412	1.066	40.00	127.13	6.050E+05
6.	1.496	1.076	19.00	156.58	9.526E+05
7.	1.549	1.081	26.00	136.21	8.344E+05
8.	1.608	1.059	5.00	198.47	1.195E+06
9.	1.738	1.089	5.00	135.79	9.771E+05
10.	1.776	1.089	12.00	160.31	1.361E+06

* * * END OF FILE * * *

PLATES 2 & 3 UNAVAILABLE UNTIL 2/23/00


1603.01.00 static
10 most critical surfaces, MINIMUM JANBU FOS = 1.055
Project Site
Marine Terrace Deposits C = 500 φ = 30°
Purisima Formation C = 1000 φ = 40°
Factor of Safety = 1.608
Y-AXIS (feet)
X-AXIS (feet)
0
40
80
120
160
200
240
280
320

XSTABL File: 160301YY 2-04-** 10:59

```
*******************************************
*              X S T A B L                *
*                                         *
*        Slope Stability Analysis         *
*               using the                 *
*            Method of Slices             *
*                                         *
*         Copyright (C) 1992 - 97         *
*   Interactive Software Designs, Inc.    *
*        Moscow, ID 83843, U.S.A.         *
*                                         *
*          All Rights Reserved            *
*                                         *
*  Ver. 5.202                 96 - 1547   *
*******************************************
```

Problem Description : 1603.01.00 Pseudo-Static 0.3g

SEGMENT BOUNDARY COORDINATES

---

18 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	31.0	20.0	32.0	2
2	20.0	32.0	37.0	32.0	2
3	37.0	32.0	48.0	60.0	2
4	48.0	60.0	57.0	100.0	2
5	57.0	100.0	65.0	139.0	2
6	65.0	139.0	68.0	140.0	2
7	68.0	140.0	72.0	150.0	1
8	72.0	150.0	81.0	151.0	1
9	81.0	151.0	82.0	152.0	1
10	82.0	152.0	100.0	153.0	1
11	100.0	153.0	120.0	154.0	1
12	120.0	154.0	148.0	156.0	1
13	148.0	156.0	157.0	155.0	1
14	157.0	155.0	170.0	156.0	1
15	170.0	156.0	183.0	155.0	1
16	183.0	155.0	200.0	157.0	1
17	200.0	157.0	250.0	156.0	1
18	250.0	156.0	300.0	159.0	1

1 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	68.0	140.0	300.0	138.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	125.0	500.0	30.00	.000	.0	1
2	130.0	135.0	1000.0	40.00	.000	.0	1

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 8 coordinate points

****
PHREATIC SURFACE,
****

Point No.	x-water (ft)	y-water (ft)
1	37.00	32.00
2	80.00	66.00
3	120.00	94.00
4	145.00	111.00
5	160.00	117.00
6	240.00	124.00
7	280.00	125.00
8	300.00	126.00

A horizontal earthquake loading coefficient
of .300 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating IRREGULAR surfaces has been specified.

100 trial surfaces will be generated and analyzed.

10 Surfaces initiate from each of 10 points equally spaced along the ground surface between x = 5.0 ft
and x = 68.0 ft

Each surface terminates between x = 100.0 ft
and x = 250.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

38.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****

-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)

****

Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.

****

USER SELECTED option to maintain strength greater than zero

****

** Factor of safety calculation for surface # 89 **
** failed to converge within FIFTY iterations **
**
** The last calculated value of the FOS was -2.7455 **
** This will be ignored for final summary of results **

****

The trial failure surface in question is defined by the following 2 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	61.00	119.50
2	72.54	150.06

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	63.04	69.86
3	85.26	100.68
4	101.60	134.99
5	107.78	153.39

** Corrected JANBU FOS = .665 ** (Fo factor = 1.026)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	47.00	57.45
2	77.51	80.10
3	105.06	106.28
4	116.32	142.57
5	119.56	153.98

** Corrected JANBU FOS = .838 ** (Fo factor = 1.057)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	66.71	66.67
3	95.63	91.32
4	103.17	128.56
5	106.61	153.33

** Corrected JANBU FOS = .844 ** (Fo factor = 1.064)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	47.00	57.45

2	80.78	74.86
3	99.89	107.70
4	119.46	140.28
5	122.64	154.19

** Corrected JANBU FOS = .844 ** (Fo factor = 1.053)

Failure surface No. 5 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	77.20	47.39
3	99.01	78.51
4	113.35	113.70
5	126.11	149.49
6	127.13	154.51

** Corrected JANBU FOS = .900 ** (Fo factor = 1.066)

Failure surface No. 6 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	19.00	31.95
2	56.91	29.32
3	92.21	43.38
4	117.55	71.70
5	141.53	101.17
6	155.34	136.58
7	156.58	155.05

** Corrected JANBU FOS = .906 ** (Fo factor = 1.076)

Failure surface No. 7 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	5.00	31.25
2	42.19	23.45
3	75.37	41.98
4	108.25	61.03
5	141.07	80.19
6	173.72	99.62
7	189.05	134.39
8	198.47	156.82

** Corrected JANBU FOS = .929 ** (Fo factor = 1.059)

Failure surface No. 8 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	26.00	32.00
2	63.79	28.02
3	94.60	50.27
4	121.40	77.20
5	128.67	114.50
6	135.79	151.83
7	136.21	155.16

** Corrected JANBU FOS = .961 ** (Fo factor = 1.081)

Failure surface No. 9 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	26.00	32.00
2	63.62	26.63
3	99.69	38.58
4	132.72	57.38
5	166.56	74.65
6	189.97	104.58
7	206.73	138.69
8	213.64	156.73

** Corrected JANBU FOS = 1.014 ** (Fo factor = 1.069)

Failure surface No.10 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	5.00	31.25
2	41.16	19.57
3	77.80	29.64
4	110.82	48.46
5	128.27	82.21
6	132.06	120.02
7	135.79	155.13

** Corrected JANBU FOS = 1.056 ** (Fo factor = 1.089)

****
**
** Out of the 100 surfaces generated and analyzed by XSTABL, **
** 1 surfaces were found to have MISLEADING FOS values. **
**
****

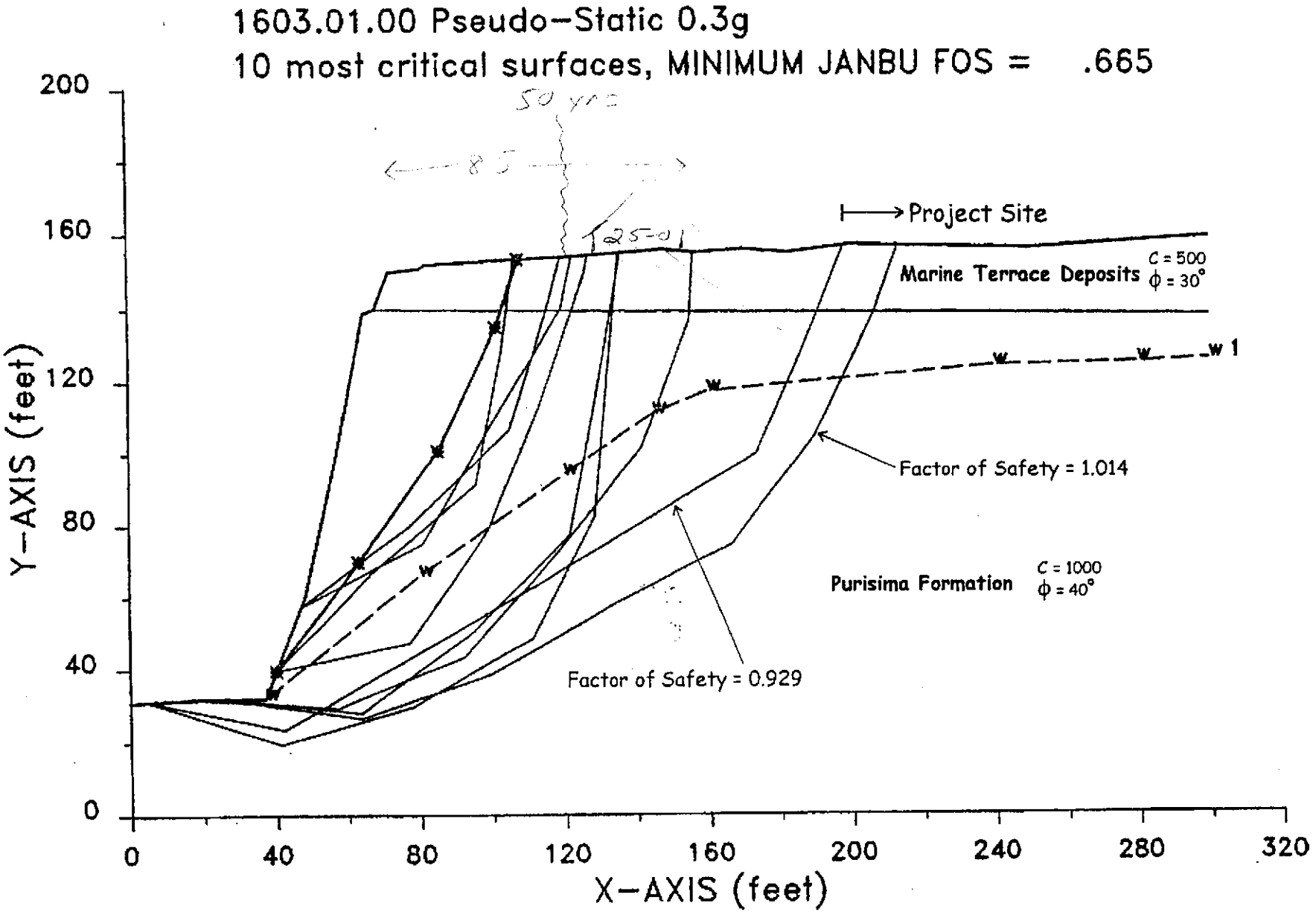
The following is a summary of the TEN most critical surfaces

Problem Description : 1603.01.00 Pseudo-Static 0.3g

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	.665	1.026	40.00	107.78	2.092E+05
2.	.838	1.057	47.00	119.56	3.089E+05
3.	.844	1.064	40.00	106.61	2.988E+05
4.	.844	1.053	47.00	122.64	3.317E+05
5.	.900	1.066	40.00	127.13	5.065E+05
6.	.906	1.076	19.00	156.58	8.065E+05
7.	.929	1.059	5.00	198.47	1.019E+06
8.	.961	1.081	26.00	136.21	7.172E+05
9.	1.014	1.069	26.00	213.64	1.259E+06
10.	1.056	1.089	5.00	135.79	8.558E+05

* * * END OF FILE * * *

160301YY 2-04-** 10:59



XSTABL File: 160301QQ 2-04-** 11:10

```
*******************************************
*              X S T A B L                *
*                                         *
*        Slope Stability Analysis         *
*               using the                 *
*            Method of Slices             *
*                                         *
*         Copyright (C) 1992 - 97         *
*   Interactive Software Designs, Inc.    *
*        Moscow, ID 83843, U.S.A.         *
*                                         *
*          All Rights Reserved            *
*                                         *
*  Ver. 5.202                 96 - 1547   *
*******************************************
```

Problem Description : 1603.01.00 Pseudo-Static 0.5g

SEGMENT BOUNDARY COORDINATES

---

18 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	31.0	20.0	32.0	2
2	20.0	32.0	37.0	32.0	2
3	37.0	32.0	48.0	60.0	2
4	48.0	60.0	57.0	100.0	2
5	57.0	100.0	65.0	139.0	2
6	65.0	139.0	68.0	140.0	2
7	68.0	140.0	72.0	150.0	1
8	72.0	150.0	81.0	151.0	1
9	81.0	151.0	82.0	152.0	1
10	82.0	152.0	100.0	153.0	1
11	100.0	153.0	120.0	154.0	1
12	120.0	154.0	148.0	156.0	1
13	148.0	156.0	157.0	155.0	1
14	157.0	155.0	170.0	156.0	1
15	170.0	156.0	183.0	155.0	1
16	183.0	155.0	200.0	157.0	1
17	200.0	157.0	250.0	156.0	1
18	250.0	156.0	300.0	159.0	1

1 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	68.0	140.0	300.0	138.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	125.0	500.0	30.00	.000	.0	1
2	130.0	135.0	1000.0	40.00	.000	.0	1

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 8 coordinate points

****
PHREATIC SURFACE,
****

Point No.	x-water (ft)	y-water (ft)
1	37.00	32.00
2	80.00	66.00
3	120.00	94.00
4	145.00	111.00
5	160.00	117.00
6	240.00	124.00
7	280.00	125.00
8	300.00	126.00

A horizontal earthquake loading coefficient
of .500 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating IRREGULAR surfaces has been specified.

100 trial surfaces will be generated and analyzed.

10 Surfaces initiate from each of 10 points equally spaced along the ground surface between x = 5.0 ft
and x = 68.0 ft

Each surface terminates between x = 100.0 ft
and x = 250.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

38.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

****
** Factor of safety calculation for surface # 89 **
** failed to converge within FIFTY iterations **
**
** The last calculated value of the FOS was -1.1999 **
** This will be ignored for final summary of results **
****

The trial failure surface in question is defined by the following 2 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	61.00	119.50
2	72.54	150.06

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	63.04	69.86
3	85.26	100.68
4	101.60	134.99
5	107.78	153.39

** Corrected JANBU FOS = .470 ** (Fo factor = 1.026)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	47.00	57.45
2	77.51	80.10
3	105.06	106.28
4	116.32	142.57
5	119.56	153.98

** Corrected JANBU FOS = .605 ** (Fo factor = 1.057)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	66.71	66.67
3	95.63	91.32
4	103.17	128.56
5	106.61	153.33

** Corrected JANBU FOS = .608 ** (Fo factor = 1.064)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	47.00	57.45

2	80.78	74.86
3	99.89	107.70
4	119.46	140.28
5	122.64	154.19

** Corrected JANBU FOS = .620 ** (Fo factor = 1.053)

Failure surface No. 5 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	19.00	31.95
2	56.91	29.32
3	92.21	43.38
4	117.55	71.70
5	141.53	101.17
6	155.34	136.58
7	156.58	155.05

** Corrected JANBU FOS = .675 ** (Fo factor = 1.076)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.00	39.64
2	77.20	47.39
3	99.01	78.51
4	113.35	113.70
5	126.11	149.49
6	127.13	154.51

** Corrected JANBU FOS = .680 ** (Fo factor = 1.066)

Failure surface No. 7 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	5.00	31.25
2	42.19	23.45
3	75.37	41.98
4	108.25	61.03
5	141.07	80.19
6	173.72	99.62
7	189.05	134.39
8	198.47	156.82

** Corrected JANBU FOS = .683 ** (Fo factor = 1.059)

Failure surface No. 8 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	26.00	32.00
2	63.79	28.02
3	94.60	50.27
4	121.40	77.20
5	128.67	114.50
6	135.79	151.83
7	136.21	155.16

** Corrected JANBU FOS = .731 ** (Fo factor = 1.081)

Failure surface No. 9 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	26.00	32.00
2	63.62	26.63
3	99.69	38.58
4	132.72	57.38
5	166.56	74.65
6	189.97	104.58
7	206.73	138.69
8	213.64	156.73

** Corrected JANBU FOS = .748 ** (Fo factor = 1.069)

Failure surface No.10 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	5.00	31.25
2	41.16	19.57
3	77.80	29.64
4	110.82	48.46
5	128.27	82.21
6	132.06	120.02
7	135.79	155.13

** Corrected JANBU FOS = .804 ** (Fo factor = 1.089)

****
**
** Out of the 100 surfaces generated and analyzed by XSTABL, **
** 1 surfaces were found to have MISLEADING FOS values. **
**
****

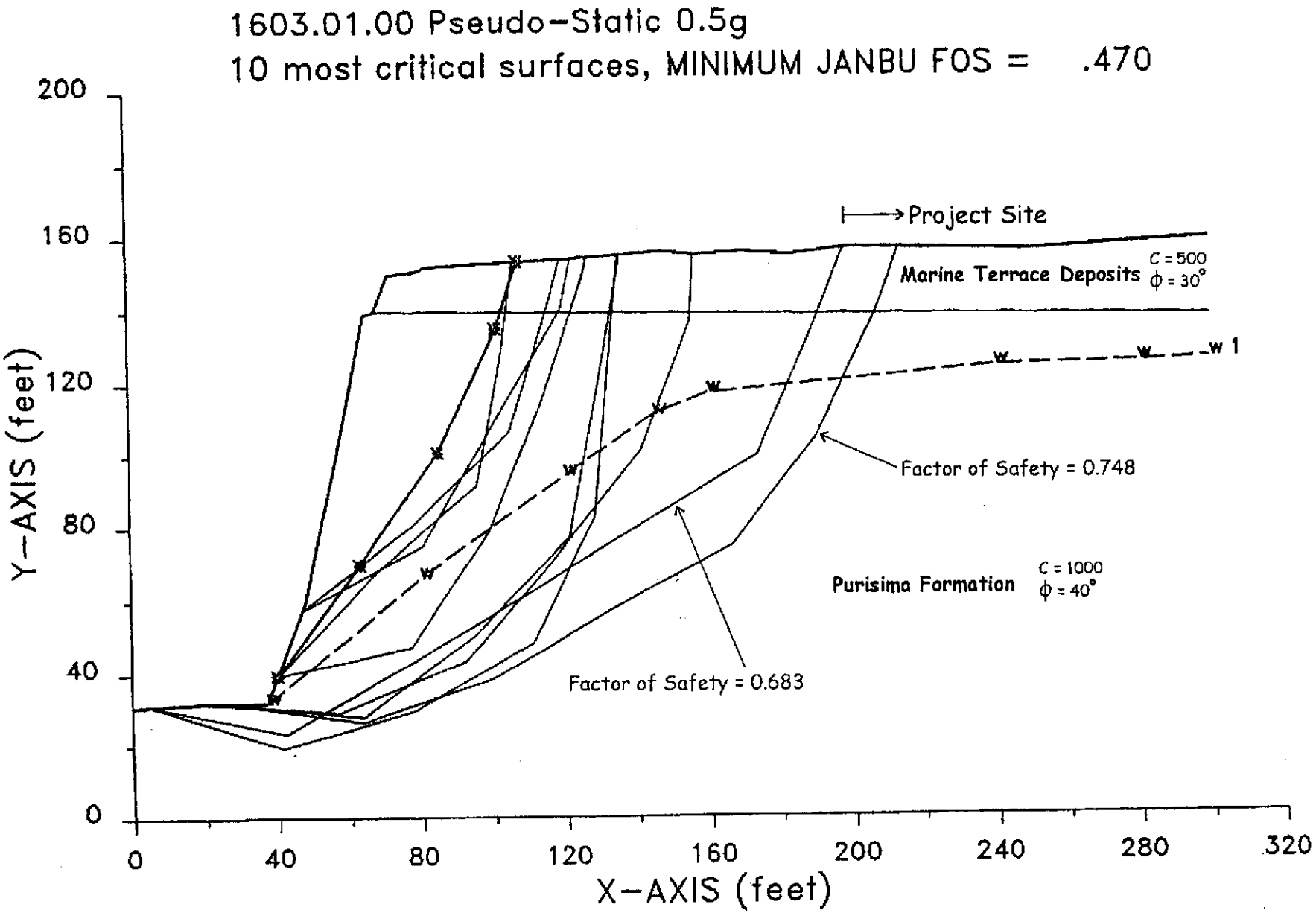
The following is a summary of the TEN most critical surfaces

Problem Description : 1603.01.00 Pseudo-Static 0.5g

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	.470	1.026	40.00	107.78	1.640E+05
2.	.605	1.057	47.00	119.56	2.588E+05
3.	.608	1.064	40.00	106.61	2.479E+05
4.	.620	1.053	47.00	122.64	2.822E+05
5.	.675	1.076	19.00	156.58	7.199E+05
6.	.680	1.066	40.00	127.13	4.472E+05
7.	.683	1.059	5.00	198.47	9.126E+05
8.	.731	1.081	26.00	136.21	6.533E+05
9.	.748	1.069	26.00	213.64	1.157E+06
10.	.804	1.089	5.00	135.79	7.932E+05

* * * END OF FILE * * *

160301QQ 2-04-** 11:10



BORING 1

Equipment Portable Percussion Rig

Elevation _____ Date 12/16/99

Dry Density (pcf)	Moisture Content (%)	Sample	USCS	Depth (ft.)	
			SM	0	Dark greyish brown Silty SAND, trace of Gravel, moist, loose to medium dense (TOP SOIL)
					Log from exploratory trench ↑ — ↓ Boring started at bottom of trench
116.1	11.9	Continuous	SC	5	Moderate to dark yellowish brown Silty Clayey SAND, moist to damp, medium dense (MARINE TERRACE DEPOSITS)
115.7	16.5			10	
127.3	12.1			15	Terminated at 12 1/2'

Earth Investigations Consultants	Job No. 1603.01.00 Approved Date 12/28/99	LOG OF BORING APN 037-2780-090, Ocean Boulevard Seal Cove, California	Plate 5

Primary Divisions			GROUP SYMBOL	Secondary Divisions
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Orangic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

Definition of Terms

U.S. Standard Series Sieve				Clear Square Sieve Openings			
200	40	10	4	3/4"	3"	12"	

SILTS AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

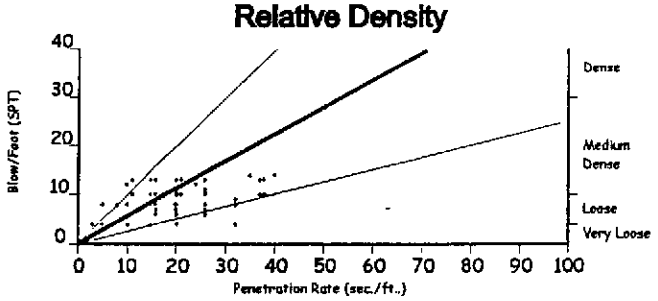
Grain Sizes

Unified Soil Classification System (ASTM D-2487)

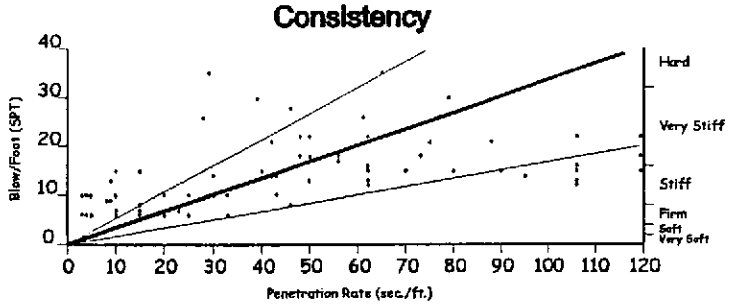
SAND AND GRAVELS	PENETRATION RATE*
VERY LOOSE	0 - 7
LOOSE	7 - 18
MEDIUM DENSE	18 - 53
DENSE	53 - 88
VERY DENSE	OVER 88

SILTS AND CLAYS	STRENGTH**	PENETRATION RATE*
VERY SOFT	0 - 1/4	0 - 6
SOFT	1/4 - 1/2	6 - 11
FIRM	1/2 - 1	11 - 23
STIFF	1 - 2	23 - 47
VERY STIFF	2 - 4	47 - 94
HARD	OVER 4	OVER 94

Relative Density



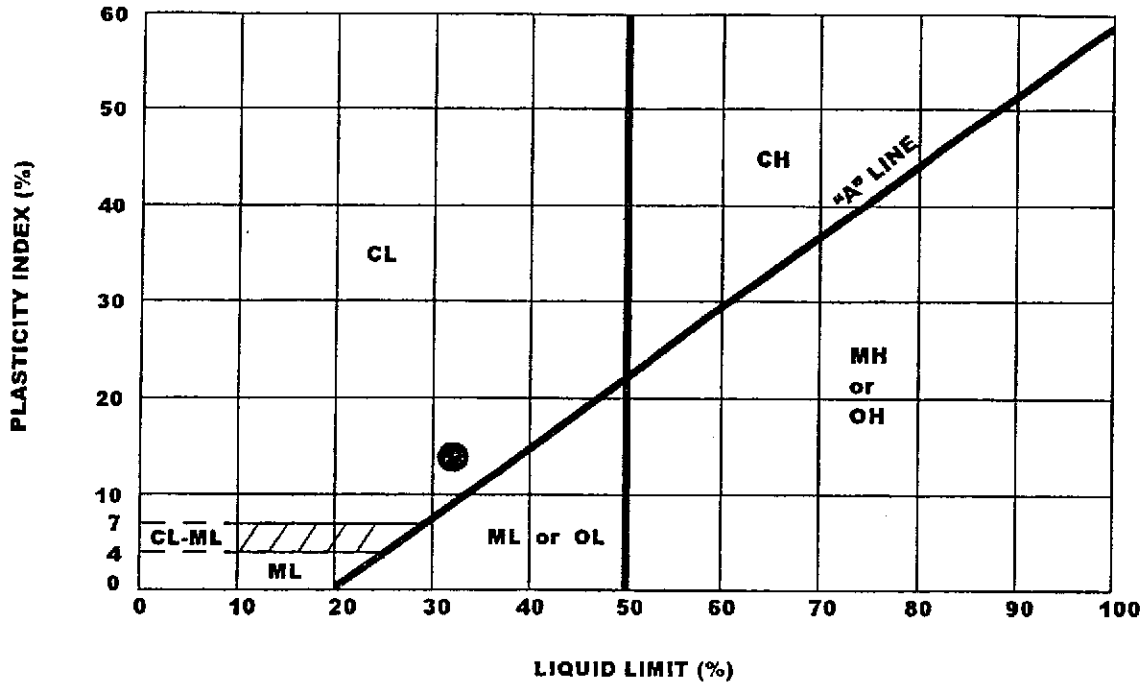
Consistency



* Seconds per foot, based on a portable percussion rig advancing a 1 1/2-inch diameter split-spoon sampler with a force of 35 ft. lb. at a rate of 1270 blows per minute.

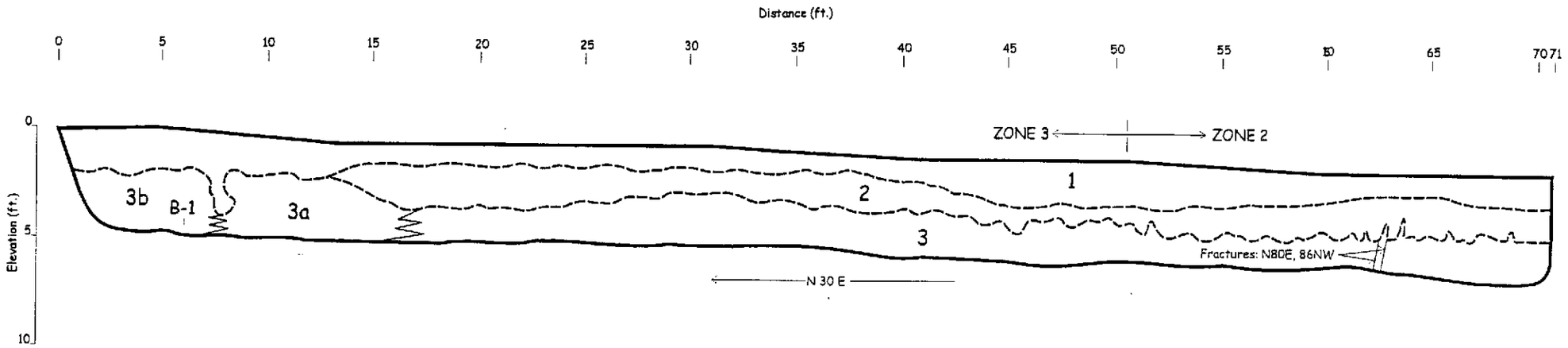
** Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

Earth Investigations Consultants	Job No. 1603.01.00 Date 12/28/99	KEY TO BORINGS APN 037-2780-090, Ocean Boulevard Seal Cove, California	Plate 6



KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	NATURAL WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	PASSING NO. 200 SIEVE (%)	LIQUIDITY INDEX	USCS
⊛	B-1	7'	12	32	14	56	-0.43	CL

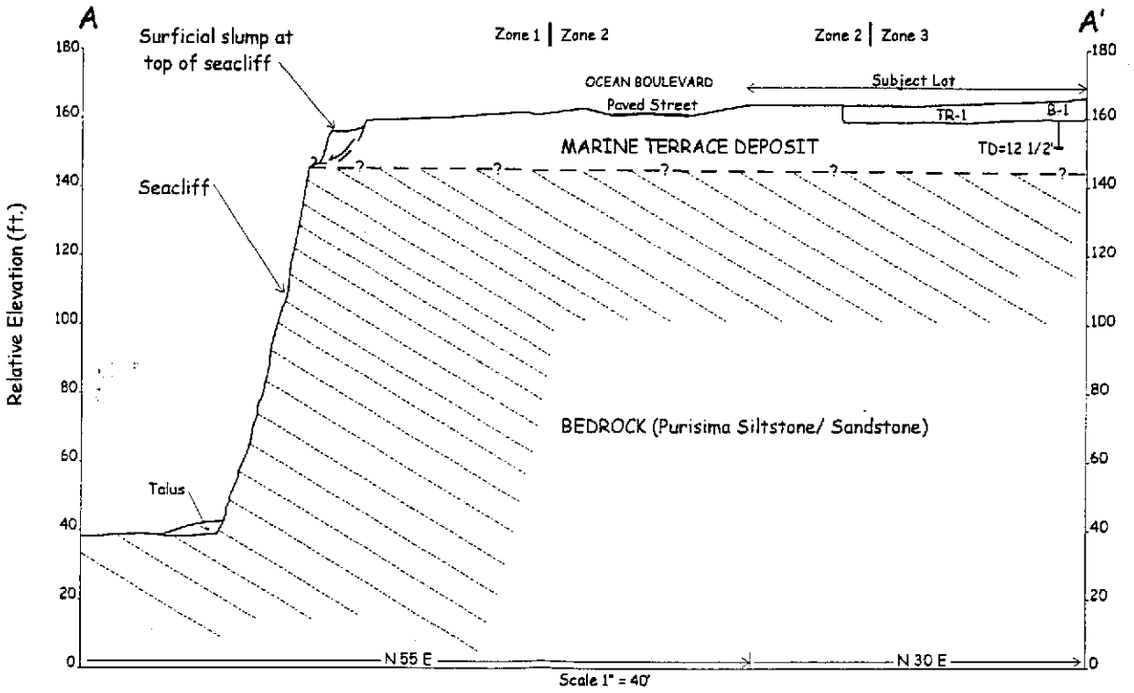
Earth Investigations Consultants	Job No. 1603.01.00 Approved Date 12/28/99	PLASTICITY CHART APN 037-2780-090, Ocean Boulevard Seal Cove, California	Plate 7



EXPLANATION

1	Dark greyish brown Silty SAND, trace of Gravel, moist, loose to medium dense (Top Soil).
2	Dark yellowish brown Silty SAND with inclusion of strong brown Sand, moist, medium dense (Terrace Deposit).
3	Moderate to dark yellowish brown Silty Clayey SAND with Gravel, damp, medium dense (Terrace Deposit).
3a	Same as 3, increase in Clay and moisture content but still damp.
3b	Similar to 3a, but becomes moist to damp.
B-1	Boring location

Earth Investigations Consultants	Job No. 1603.01.00 Approved Date 12/28/99	LOG OF EXPLORATORY TRENCH APN 037-2780-090, Ocean Boulevard Seal Cove, California	Plate 4



Earth Investigations Consultants	Job No. 1603.01.00 Approved Dat 12/28/	GENERALIZED CROSS SECTION A-A' APN 037-2780-090, Ocean Boulevard S , Calif	Plate 8

GEOTECHNICAL INVESTIGATION

PROPOSED NEW TWO-STORIES SINGLE FAMILY STRUCTURE

989 OCEAN BOULEVARD

MOSS BEACH, CA 94038

Report Prepared For

Mr. Sanjay Sharma

989 Ocean Boulevard

Moss Beach, CA 94038

Project No. 11913-S1

FRANK LEE & ASSOCIATES
GEOTECHNICAL CONSULTANTS
10 KOOTENAI COURT, FREMONT, CALIFORNIA 94539
(510) 676-5859

3 December 2020

FRANK LEE & ASSOCIATES
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(510) 676-5859

Project No. 11913-S1
3 December 2020

Sanjay Sharma
989 Ocean Boulevard
Moss Beach, CA 94038

Subject: **GEOTECHNICAL INVESTIGATION**
Proposed New Two-Stories Single Family Structure
989 Ocean Boulevard
Moss Beach, CA 94038

Reference: 1. Geologic Investigation
989 Ocean Boulevard, Moss Beach, CA 94038
By Louis A. Richardson, P.G., C.E.G., Dated 30 November 2020

Dear Mr. Sanjay Sharma:

In accordance with your authorization, **FRANK LEE & ASSOCIATES (FLA)** has completed a geotechnical investigation for the proposed improvement at the subject site. The purpose of this study was to investigate the subsurface conditions and to obtain geotechnical data for use in the design and construction of the proposed improvement. The scope of this investigation included the following:

a. A site and area reconnaissance by the Project Engineer.
b. Excavation, logging, and sampling of 1 exploratory boring to 28.5 feet.
c. Laboratory testing of selected soil samples.
d. An engineering analysis of the data and information obtained.
e. Preparation and writing of this report which presents our findings, conclusions, and recommendations.

Our findings indicate that the proposed improvements are feasible from a geotechnical engineering standpoint provided the recommendations in this report are carefully followed.

SITE LOCATION AND DESCRIPTION

The relatively flat and vacant subject site is located at 989 Ocean Boulevard, Moss Beach, California, with the closest cross street is Bernal Avenue. It is bounded to the southwest by Ocean Boulevard, north by a vacant lot, and the other sides by residential structures.

PROPOSED IMPROVEMENT

The proposed construction consists of building a new two-stories single family structure. We

anticipate the proposed improvement will utilize wood-framed construction and concrete foundation. Light to moderate building loads are typically associated with this type of construction.

FIELD INVESTIGATION

FLA conducted the field investigation on September 21, 2020. The field investigation consisted of a site reconnaissance by the Project Engineer and an excavation of one boring using truck-mounted drill-rig with 4.0-inch stem augers. The approximate location of the boring is shown on the Site Plan, Figure 1.

Soils encountered during the excavation operation were continuously logged in the field. Relatively undisturbed samples were obtained by dynamically driving 18 inches using a 3.0-inch outside diameter Modified California Sampler with a 140-pound hammer free falling 30 inches. Blow counts were recorded for every 6-inch penetration interval, and reported corresponding to the last 12 inches of penetration and converted to SPT blow counts in the boring log. These samples were then sealed and returned to the laboratory for testing. The classifications, descriptions, natural moisture contents, dry densities, direct shear test, and depths of the obtained samples are shown in the Boring Log, Figure 2 of Appendix A.

LABORATORY TESTING

CLASSIFICATION

The field classification of the samples was visually verified in the laboratory in accordance with the Unified Soil Classification System. These classifications are presented in the Boring Log.

MOISTURE-DENSITY

The natural moisture contents and/or dry weights were determined for selected soil samples obtained during our field investigation. The data are presented in the aforementioned Boring Log.

ATTERBERG LIMITS

The Atterberg Limits Test was determined for the selected soil sample to classify, as well as to obtain an indication of the expansion and shrinkage potential with respect to moisture content variations. The test results are summarized as follows:

Sample	***Depth***	***Classification***	***Liquid Limit***	***Plasticity Index***
B1-1	2 feet	Brown clayey sand	21.0%	8

The Atterberg Limits tests indicate that a representative sample of the soil is of low plasticity. The expansion potentials for these soils are thus low.

DIRECT SHEAR

The fully soften Direct Shear Test was performed on a relatively undisturbed sample to evaluate the angle of internal friction and unit cohesion of the soil. The data is presented in the aforementioned Boring Logs and summarized as follow:

Sample	***Depth***	***Classification***	***Angle of Internal Friction (degree)***	***Unit Cohesion(p.s.f.)***
B1-1	2 feet	Brown clayey sand	30	100

UNCONFINED COMPRESSIVE STRENGTH

The Unconfined Compression Test was performed on a relatively undisturbed sample to evaluate the ultimate compressive strength of the soil. The data is presented in the aforementioned Boring Log and summarized as follow:

Sample	***Depth***	***Classification***	***Unconfined Compressive (p.s.f.)***
B1-1	2 feet	Brown clayey sand	13,500
B1-2	8 feet	Brown clayey sand	5,000

SUBSURFACE SOIL CONDITIONS

The following soil descriptions were derived from our site reconnaissance and information obtained from our exploratory boring samples. Detailed descriptions of the materials encountered in the exploratory boring and results of the laboratory testing are presented in the Boring Log, Figure 2.

Based upon our review of the boring log, examination of the samples, and laboratory test data, the general subsurface conditions appear to be relatively uniform. Below the existing ground surface (BGS), sandy soil layer was encountered to 22.0 feet and followed by claystone to siltstone bebrock to the maximum depth explored of 28.5 feet.

No groundwater was encountered during the exploration at the time of our field study. However, fluctuations in the groundwater table are anticipated to vary with respect to seasonal rainfall.

SEISMIC CONSIDERATIONS

According to U.S.G.S U.S. Quaternary Fault maps, the approximate distances from active faults to the subject site are listed in the following table.

Fault Name	**Distance (kilometers)**	**Direction From Site**
San Gregorio	0.32	Northeast
San Andreas	11.51	Northeast

Damage resulting from earthquakes is not necessarily related directly to the distance from the fault. More important than distance, are the foundation materials upon which structures are to be built. If structures are not located across the trace of the fault, are located on structurally competent materials, and are designed with state-of-the-art seismic considerations, the probability of continued usefulness after an earthquake is relatively good.

CALIFORNIA BUILDING CODE SITE CHARACTERIZATION

The following design values are based on the geologic information, longitude and latitude of the site, and the U.S. Seismic Design Maps from https://seismicmaps.org/. Furthermore, in accordance with Chapter 16 of the 2019 California Building Code (CBC), the site seismic design values are provided below:

CBC Category/Coefficient 2016 ASCE 7-16	Design Value
Short-Period MCE at 0.2s, Ss	2.123
1.0s Period MCE, S1	0.868
Soil Profile Type, Site Class	Sd
S_{MS} = Fa x S_s Spectral Response Accelerations	2.123
S_{DS} = 2/3 x S_{MS} Design Spectral Response Accelerations	1.415
** Latitude: 37.5133665 Longitude: -122.510315	

It is noted that final values should be determined by the project structural engineer according to risk categories of the proposed improvement.

GEOLOGIC SETTING

According to Geologic Map of California, https://maps.conservation.ca.gov/cgs/gmc/, the general site vicinity is underlain with sandstone, siltstone, shale, and conglomerate; mostly moderately consolidated.

LIQUEFACTION EVALUATION

According to Special Publication 117A by the State of California, liquefaction is a phenomenon in which saturated (submerged), cohesionless soils are subjected to a temporary loss of strength due to the buildup of pore water pressures, especially as a result of cyclic loading induced by earthquakes or ground shaking. In the process, the soil acquires a mobility sufficient to permit both horizontal and vertical deformations, if not confined. Soils most susceptible to liquefaction are clean, loose, saturated, uniformly graded, fine sands. Other susceptible soils are loose silty sand, soft sandy silt and even soft, low expansive clay. Bray and Sancio also gave the criteria for soils “not susceptible” to liquefaction having Wc/LL not greater than 80% or a PI not less than 18.

Based on our review of the soil conditions and the absence of ground water, it is the opinion of FLA that the probability of liquefaction within the depth of the boring underlying this site is low. It is noted that the site is not within the Earthquake Zones of Required Investigation.

LATERAL SPREADING EVALUATION

Lateral spread is a type of ground failure associated with movement of an overlying surficial soil mass along a zone of soil that fails or loses strength primarily associated within a liquefiable sediment caused by an earthquake event. The ground failure tends to propagate as block failures. Two types of lateral spread may occur these being 1) lateral spread toward a free face wherein the shear zone is exposed on or near the free face and 2) lateral spread down gentle ground slopes where a free face is not present. In both cases, the shear/liquefiable zone has to be continuous. The magnitude of lateral spreading depends on many factors, including distance to the free face, site geometry, earthquake magnitude and properties of the liquefiable layer and the overlying layer, continuity of the liquefiable layer, and inclination of the liquefiable layer.

Based on our screening, due to the absence of groundwater, the probability of lateral spreading occurring at the site is low.

DRY DENSIFICATION AND DIFFERENTIAL COMPACTION EVALUATION

Based on our screening, due to medium dense to dense silty to fine sand, the potential for dry settlement and differential compaction at the site is low.

SLOPE STABILITY AND LURCHING EVALUATION

Based on our screening, due to medium dense to dense silty to fine sand and Purisima Formation, the potential for slope instability and lurching is low.

COASTAL BLUFF RETREAT EVALUATION

According to the Geologic report in reference 1, the average retreat is about 6.5 inches per year. Given the current rate, the property should still have about 40 feet of buffer to the future top of cliff from the edge of the property in 75 years.

One major point of concerns that might affect the retreat rate would be the current storm drainage located to the south of the property, at the intersection of the Ocean Boulevard and Bernal Avenue, Figure 2 in red circle. It seems that the drainage discharges at mid-slope and therefore creating excessive erosion at the vicinity area. FLA recommend the storm drainage be fixed to have a continuous line to discharge storm water at the toe of the cliff rather than at mid-slope to slow down the erosion process.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

1. Based on the results of our reconnaissance, FLA concludes that the subject site is geotechnically suitable for the proposed improvements provided the recommendations presented in this report are incorporated into the project plans and specifications. The recommendations given in this report are applicable only for the design of the previously described improvements and only at the location mentioned. They should not be used for any other purpose.

2. FLA should review the foundation plans and specifications so that comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications.

3. It is recommended that FLA be retained for testing and observation during grading and foundation construction phases to help determine that the design requirements are fulfilled, and to verify soil condition. Our firm should be notified at least two working days prior to grading and/or foundation operations on the property.

4. The following conclusions and recommendations are based on information provided, the results of our site reconnaissance and laboratory tests, as well as our experience with similar soil conditions. Possibility always exists that the subsurface conditions at the site may vary somewhat from what is expected. If there are any unusual conditions differing significantly from those described herein during construction, this firm should be notified to review the effects on the performance of the designed foundations. Any work related to the grading and foundation operations performed without the direct observation of FLA will invalidate the recommendations of this report.

GENERAL SITE PREPARATION AND GRADING

5. Prior to grading, the proposed building and garage pads, if applicable, with minimum 3 feet offset, should be cleared of all obstructions and deleterious materials such as existing foundation, asphalt, utilities, pipes, surface or subsurface structures, and organic top soil. These objects shall be accurately located on the grading plans to assist the Field Engineer in establishing proper control over their removal or relocation.

6. It is estimated that stripping depths of organic top soil may in the order of 6 to 12 inches. The final depth of stripping should be verified by FLA in the field. The predominantly organic material from the stripping should be removed from the site or to use as future landscaping soil only. Any depressions left by the removal of obstructions and deleterious materials shall be cleaned of all debris to expose native subgrade.

7. Following the removal of obstructions and deleterious materials, any loose fill material or wet soil is encountered on-site in areas that will or may affect the proposed structure(s) should be over-excavated. The extend of the over-excavation should be determined by FLA on-site during grading.

8. The exposed native competent soil should then be; excavated to proposed grade, if applicable; scarified in the upper 8 inches; and be watered or aerated as necessary to bring the soils to a moisture content 2.0 percent above the optimum moisture amount. The subgrade should then be uniformly compacted to a minimum degree of relative compaction of 90 percent of the maximum dry density as determined by ASTM D1557 Laboratory Test Procedure and tested by FLA in the field for quality control per ASTM D6983.

9. Following the initial compaction of the native soil, fills, either clean native soil or import soil, can be used to establish desired grade. This fill should be placed in lifts not exceeding 4 to 8 inches in fluff thickness, dependent on compaction equipment. Each fill lift should then be compacted to a minimum relative compaction of 90 percent, at 2% above optimum moisture content. Each layer shall be spread evenly and thoroughly and shall be blade mixed to provide uniformity of the soil in each layer. Compaction of each layer shall be continuous over the entire fill area and continued until the required density is obtained. FLA should be notified to test the compacted soil for quality control at every 12 to 24 inches in vertical fill.

10. Should select import material be used to establish the proper grading for the proposed development, the import material should (a) be free of organic material; (b) have a Plasticity Index between four (4) and twelve (12); (c) be no more than 15% passing the No. 200 Sieve; (d) not contain rocks or lumps over 4 inches in greatest dimension. The import fill should be approved by FLA before it is transported to the site.

11. After grading is completed and the Field Engineer has finished his observation of the grading work, no further excavation or fill shall be done except with the approval of and under the observation of the Field Engineer.

12. It shall be the responsibility of the grading contractor and/or the general contractor to prevent erosion of the freshly graded areas during construction and until such time as permanent drainage and erosion measures have been installed.

13. In the event that any unusual condition not covered by the special provisions is encountered during the grading operations, the Soil Engineer shall be immediately notified for further recommendation.

WATER WELLS

14. All water wells (if any) on the site, which are to be abandoned, shall be capped according to the requirements of the Water District, City, and/or County. The final elevation of the top of the well casing must be a minimum of 3 feet below any adjacent grade prior to any grading operations. In no case shall a building foundation be placed over a capped well.

FOUNDATION

15. Provided that the previously Site Preparation and Grading have been properly prepared for the building and garage pads, the proposed structures may be supported on a shallow footing foundation system.

16. The footings should be designed for allowable bearing pressures of 2,000 p.s.f. due to dead loads plus design live loads, and 2,600 p.s.f. due to all loads which include wind or seismic forces. The bottom of the footings should be founded at least 24 inches below the lowest adjacent pad grade with a minimum 15 inches wide. All interior foundation should be tied with foundation ties. Isolated interior foundation should be limited in the design. The final depth and

width of footing will be determined by FLA in the field. Footing reinforcement will be determined by the Structural Engineer.

17. The bottom of the footing should be generally compacted and free of loose soil before concrete pouring.

18. The available resistance to lateral loads when utilizing spread footing is limited to sliding resistance along the base of the footing. Sliding resistance between the base of the footing and the underlying soil may be taken as a friction value of 0.30.

19. We estimate that the total movement will be approximately 1.0-inches, and post-construction differential settlements across the building should not exceed approximately 0.75- inches over a span of 50 feet during the life of the building following construction.

TRENCH BACKFILL

20. Backfilling and compaction of utility trenches must meet the requirements published by the City and/or County. All trench backfill under pavement areas must be backfilled with suitable native or imported soil and compacted to at least 90% relative compaction as determined by ASTM D1557 latest Laboratory Test Procedure. The top minimum 12 inches of the subgrade should be compacted to at least 95%.

21. The backfill of utility trenches extending under the building and landscaping area should be properly compacted to ensure against water migration underneath the structure.

22. Specific excavation considerations are beyond the scope of this report. However, stable excavations over 5 feet deep for utility construction will require a temporary stable cut slope and/or proper shoring. Proper shoring and stable cut slope construction should be in accordance with the Occupational Safety and Health Administration (OSHA) requirements as well as other applicable building code requirements.

CONCRETE SLAB-ON-GRADE

23. Interior and garage slab-on-grade should be underlain by at least 4 inches of 3/4-inch clean crushed rock to act as a cushion between the subsoil and the slab. A minimum 12 inches of class II baserock should be placed below the crushed rock and compacted to a minimum 95 percent of relative compaction and tested by FLA in the field.

24. A minimum 8 inches of native subgrade soil should be scarified, moisture conditioned and compacted to a minimum 90 percent of relative compaction below the class II baserock and tested by FLA in the field.

25. Garage concrete slab entrance should be designed with a thicken edge extending minimum 4 inches below the slab.

26. In area where moisture transmission through slabs is undesirable, a 15-mil membrane serving as a vapor retarder should be placed over the above recommended crushed rock to minimize condensation caused by temperature differentials under the floor covering. It is noted that the 15-mil is not a waterproofing material. If waterproofing is desired, a waterproofing specialist should be consulted.

DRIVEWAY

27. Prior to any paving construction, the upper 12 inches of the subgrade soil should be scarified and recompacted to 95% of the maximum dry density at 2% above the optimum moisture content as defined by ASTM D1557 latest test procedure.

28. After the compaction of the subgrade, aggregate base should then be placed on top of the subgrade and compacted to a minimum relative compaction of 95% at optimum moisture content as defined by the aforementioned ASTM Test Procedure. Class II aggregate base should conform to the requirement of Standard Specifications of Caltrans.

29. Pavement Sections: The recommended pavement sections are based on several Traffic Indexes (T.I.) and R-value of 5 are presented in the following Table.

Traffic Index (TI)	Asphaltic Concrete Pavement (inches)	Class II Aggregate Base (inches)	Total Depth (inches)
4.5	4.0	8.0	12.0
5	4.0	9.0	13.0
6	4.0	13.0	17.0

GENERAL DRAINAGE AND CONSTRUCTION REQUIREMENTS

30. All parallel trenches should stay at least 3.0 feet away from the foundation and the bottom of the trench should stay above the imaginary 45 degrees line as measure from the bottom of the foundation.

31. All grading must be adjusted to provide positive drainage away from the structure to prevent ponding of water toward the building according to CBC 1804.4. All surface drainage should be provided by the project Civil Engineer and maintained by the property owners at all times.

32. The top minimum 8 inches of surface soil within 10 feet of the building, if applicable, should be generally compacted to act as a surface seal.

33. Roof drainage should be collected by a system of gutters and downspouts and discharged by adequate piping to carry storm water away from the structures.

34. Flower beds and planting areas should not be constructed along building perimeters. If they are constructed, only drought resistant foliage requiring minimal irrigation should be installed.

35. Sprinkler systems should not be installed where they may cause saturation of the foundation soils. Landscape mounds or concrete flatwork should not block or obstruct the surface drainage measures.

36. Backfill of utility trenches under the building areas should be compacted to at least 90 percent compaction to ensure against water migration underneath the building structure. Building area should be placed outside of existing and future tree drip-line to minimize root damage to the foundation.

CONSTRUCTION OBSERVATION AND TESTING

37. All grading and site drainage, including pier drilling, preparation of subgrade, placement of clean fill and clean non-expansive fill beneath slabs-on-grade, retaining wall backfill, utilities excavation and backfill, and installation of surface and subsurface drainage, should be performed in accordance with the geotechnical report prepared for this project by FLA, and under FLA observations as required under California Building Code, Section 1705.6 and Table 1705.6.

38. FLA should be provided at least 2 days in advance for notification of any earthwork operations and should be present to observe and test, as necessary, the earthwork, foundation, and drainage installation phases of the project for compliance and evaluation of site conditions with the geotechnical design concepts, specifications, and recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

39. Our client should recognize that every effort made to evaluate the subsurface conditions at this site is based on the samples recovered from the boring and the results of laboratory tests on these samples. The conclusions reached in this report were based on the conditions at the test boring location. The owner or his representative should be reminded that unanticipated subsurface conditions are commonly encountered and cannot be fully determined and frequently require that additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate these required extra costs.

40. Our client should also recognize that this report is prepared for the exclusive use of the proposed improvement. Our professional services, findings, and recommendations were prepared in accordance with generally accepted engineering principles and practices. No other warranty, expressed or implied, is made.

41. The conclusions and recommendations contained in this report will not be considered valid after a period of two years unless the changes are reviewed, and the conclusions of this report are modified or verified in writing. In the event that a geotechnical consultant firm other than FLA is engaged in providing geotechnical services, FLA must receive a letter of indemnification releasing us of any responsibility on the subject project.

42. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure the information and recommendations contained in this report are

brought to the attention of the Architect, Engineer, and Contractor. In all cases, the contractor shall retain responsibility for the quality of the work and for repairing defects regardless of when they are found. It is also the responsibility of the contractor for conforming to the project plans and specifications.

Should you have any questions relating to the contents of this report or for any other service, please contact our office at your convenience.

Very truly yours,

FRANK LEE & ASSOCIATES

Frank Lee, C.E.
Professional Engineer CE 34975

APPENDIX A

Site Plan, Figure 1

Boring Log, Figure 2

FRANK LEE & ASSOCIATES	***SITE PLAN***	*Figure No. 1*
GEOTECHNICAL CONSULTANTS	No Scale	*Page No. 14*

Depth (Feet)	Description	Sample No.	Unified Soil Classification	Blows/Foot (350 Ft.-Lbs)	Dry Density (P.C.F)	Moisture (% Dry Density)	Pocket Penet. (T.S.F)	Remarks
2	Brown silty to fine sand		SM					Elevation = 106 ft Internal Friction = 30°
4	Brown clayey sand, medium dense to dense and moist	1-1	SC	31	125.1	10.4		Cohesion = 100 p.s.f. LL = 21% , PI =8 U.C. = 13,500 p.s.f.
6		1-2		29	118.7	15.0		U.C. = 5,000 p.s.f.
8								
10								
12								
14	grades to more clayey							
16								
18	Brown silty to fine sand with coarse sand, medium dense and moist to very moist	1-3	SM	17	89.3	18.6		
20								
22								
24	Grayish dark brown claystone to siltstone, soft weathered, and fragtured	1-4		>50	107.9	20.3		
26								
28		1-5		>50	110.3	18.6		
30	Boring terminated at 28.5 feet. No groundwater was encountered.							
32								
34								
36								
38								
40								
42								
44								
46								
48								
50								

FRANK LEE & ASSOCIATES	***BORING LOG NO. 1***	*Figure No. 2*
GEOTECHNICAL CONSULTANT	*Date Drilled:* 21 September 2020 *By:* TN	*Page No. 15*

GEOLOGIC INVESTIGATION

Residential Parcel
APN 037-278-090
989 Ocean Boulevard
Moss Beach, California

prepared for

Sanjay Sharma

PROJ. NO. 1094.120
November 30, 2020

LOUIS A. RICHARDSON, P.G., C.E.G
Consulting Engineering Geologist

GEOLOGIC INVESTIGATION November 30, 2020
989 Ocean Boulevard Project 1094.120
Moss Beach, California

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P.O. Box 2085
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November 30, 2020 Project No. 1094.120

Mr. Sanjay Sharma
1801 Willow Way
San Bruno, California 94806

Re: GEOLOGIC CONDITIONS at APN 037-278-090
989 Ocean Boulevard, Moss Beach, California
San Mateo County Planning Department Case No. PLN2020-00043

Dear Mr. Sharma:

INTRODUCTION

Under your request, this report summarizes the results of our investigation of site engineering geologic conditions at the above-referenced parcel on which a two-story single-family residence is being proposed. This study's primary purpose is to investigate geologic features and conditions at the property, which is located in the Riviera Ocean Villa Tract in the southern corner area of Moss Beach, California. The attached *Site Location Map*, **Plate 1**, illustrates the site vicinity.

Among items requested in the geotechnical review dated March 30, 2020, of the application for a Coastal Development Permit, the County of San Mateo has asked for information regarding geologic conditions and potential impact(s) of bluff retreat from a nearby coastal bluff to the property. This report speaks to those matters. It is intended to provide supplementary geologic material to a geotechnical report dated October 9, 2020, prepared for the project by Frank Lee & Associates.

SCOPE OF SERVICES

The work for this geologic investigation included:

1. Research and review of certain published and unpublished geologic and geotechnical information, including maps, reports, and aerial photographs relevant to the site;
2. A geologic field reconnaissance of the site and surrounding vicinity on November 24, 2020;
3. Review of a survey map prepared by BGT Land Surveying, dated January 2020, and;
4. Preparation of this report, including geologic maps and figures, a list of references utilized, recommendations, and opinions regarding site suitability from an engineering geologic standpoint.

LIMITATIONS

This report describes observations from a geologic reconnaissance at the site, a study of published geologic maps, and selected aerial photographs of the site area. It summarizes the results of the

geologic field observations and research. It is to assist in evaluating this specific site from a geologic standpoint only. The work scope did not include assessing environmental hazards, such as hazardous materials or groundwater contamination that can be present within sites or nearby areas. The report is not a comprehensive Natural Hazard Disclosure (NHD) report for real estate transactions. Other than observation of surface materials, subsurface explorations and soil or rock testing was not part of this geologic evaluation. It does not provide engineering recommendations, services, or design.

There are certain limitations inherent in this qualitative screening-level evaluation of a site. Adverse conditions and site variations that might require further investigation could exist or occur that were not apparent or observed at the work time. The passage of time may also result in significant changes in site conditions and current technology and science. If such factors change materially after the release of this report, we must review and update it.

The opinions and conclusions expressed herein follow generally accepted engineering geologic principles and practices for the limited scope of a qualitative level reconnaissance and screening investigation. No other warranty, either expressed or implied, as to the methods, results, conclusions, or professional advice, is made.

GEOLOGIC SETTING

Geology and Terrain

The site property is situated in the southwestern corner of Moss Beach, an unincorporated census-designated community on the western coastline of San Mateo County north of Half Moon Bay, about 20 miles south of San Francisco. The shoreline along this portion of the coast is relatively rugged with many reefs, offshore rocks, and a low wave-cut rock platform on the seaward edge of a steep, cliff-like bluff about 100 feet high. In the site area, the cliff trends southerly from Seal Cove past the site property to Pillar Point before curving southeasterly into Half Moon Bay.

The bluff's face exposes bedrock of the Purisima Formation (**Tp**), a bedded sequence of shallow marine sandstone and mudstone deposits of Pliocene-Miocene age (about 2.5 to 11 million years) that have been uplifted from the ocean floor. Atop the Purisima Formation is a mantle of younger marine terrace deposits (**Qmt**) composed of poorly consolidated sandy and gravelly materials that reach inland onto Montara Mountain's lower foothills to the east. More recent alluvial fans and subaerial fluvial and colluvial deposits (**Qof**) extend outward from the upland areas onto the bench-like terrace, which slopes gently westward toward the bounding bluff. A *Vicinity Geologic Map* is presented on the attached **Plate 2**.

Earthquake Faulting and Seismicity

The west-central coast of California, including Moss Beach, is within a region of active faulting that extends eastward from offshore areas of the Pacific Coast through the San Francisco Bay region to the western side of the Sacramento-San Joaquin Valley. **Plate 3**, *Regional Fault Map*, shows the subject property's location relative to known active or potentially active earthquake faults in this region. The active 600+ mile-long San Andreas fault is the region's dominant geologic structure. It passes about 7.5 miles southeast of the subject property. It was responsible for the Great San Francisco Earthquake of 1906. The epicenter of that 7.9 magnitude event was located offshore in the ocean about 16.5 miles north of the site.

Another major active fault that could significantly impact this locality is the Hayward-Rogers Creek fault, about 25.7 miles to the northeast. It ruptured in 1868 with a 6.8 magnitude earthquake that caused significant damage throughout San Francisco and the Bay Area's emerging communities. The Seal Cove fault, an eastern, inland trace of the 176 mile-long San Gregorio fault zone, passes in a northwesterly direction about 1,000 feet northeast of the subject property. Although it is not known to be active in historic time, the San Gregorio fault zone is considered potentially active based on trenching at Seal Cove (Simpson and others, 1997) which indicated Holocene age (within last 11,000 years) activity. As shown in **Plate 4**, *Seismic Hazards Zone Map*, the Seal Cove fault is in the bounds of a State of California Alquist-Priolo Earthquake Fault Zone.

Active faults in the region have generated 22 earthquakes of magnitude 6.0 or higher in the last 160 years – an average of about one every seven years. Future large earthquakes are inevitable. The probability of a magnitude 6.7 - or higher - earthquake in the San Francisco region during the 30 years following 2014 is at least 72% (Aagard, B.T. et al., 2016). The chance for such an occurrence on the San Andreas fault is about 22%.

SITE CHARACTERIZATION

Description of Site and Vicinity

The site property (APN 037-278-090) is situated in the southwestern corner of the Moss Beach community, approximately one-quarter of a mile west of the Half Moon Bay Airport. It is at Latitude 37.513 and Longitude -122.510, about 5.5 miles northwest of downtown Half Moon Bay in the Rivera Ocean Villa Tract, shown on the attached *Tract Map*, **Plate 5**. This locality is bounded along its western edge by a steep coastal bluff just west of the site parcel.

The parcel is a vacant, quadrilateral-shaped, 0.11-acre flat-lying property fronting on the eastern side of Ocean Boulevard about 80 feet north of its intersection with Bernal Avenue. As shown on the *Site Plan*, **Plate 6**, it is about 50 feet wide and averages about 100 feet deep. As shown on this report's **cover photo**, residences exist on both sides of the property and adjoining land to the rear is vacant.

Site Geology

The shoreline in this area of the coast consists of a 100 foot high, steep bluff bordered by a narrow sand beach and a wide offshore intertidal rock platform. Exposed on the bluff's face are units of the Purisima Formation. This sedimentary rock is rich in expansive clays of low permeability. The upper one-fifth of the cliff is a raised marine terrace which mantles the Purisima Formation. It comprises marine and non-marine sediments deposited along an ancient shoreline that is now above the influence of the ocean. These poorly-consolidated, sandy materials are easily eroded from the bluff's face and along ravines that cross the terrace. The proposed residence will be founded on the unconsolidated materials of the upper section.

The interface between the two units is an old wave-cut platform that has been uplifted by tectonic processes. Frank Lee & Associates performed a single boring on the site property in September 2020. It determined that the upper, unconsolidated section is about 22 feet thick. Beneath that, the boring encountered dense claystone and siltstone bedrock typical of the Purisima Formation.

Site History

We reviewed a series of aerial photographs that were dated from 1943 through 2020 for this investigation. They are listed in the references section on Page **8** of this report.

The photographs show that in 1943 and 1946, the nearby Half Moon Bay Airport runway and taxiways were well established. West of the airport, the Rivera Ocean Villa Tract was vacant except for a few structures near the present corner of San Lucas and Del Mar Avenues. There was a home on the west side of Ocean Boulevard between San Lucas and Madrone Avenues and another on top of the bluff at Bernal Avenue's southern end. At that time, Ocean Boulevard existed as an unimproved dirt road or trail atop the bluff in the project site region.

The area was essentially the same in 1956 except for a home constructed on the eastern side of Ocean Boulevard between Madrone and Precita Avenues. Most of the future streets had been laid out or graded at their present locations in the tract. They were only visible as outlines in fields on the afore-mentioned photos.

An assortment of houses existed in the adjacent area northwest of the Rivera Ocean Villa Tract by 1968. A house was constructed at 961 Ocean Boulevard, adjacent to the subject property's northern side. Ocean Boulevard had been improved and widened by that time. In 1973, a new house was being constructed at the north corner of Ocean Boulevard and Madrone Ave. The rest of the tract was still largely vacant.

By the early 1990s, most parcels on the tract, including properties on both sides of the subject parcel, were residentially developed. The two structures on the bluff along the western side of Ocean Boulevard were removed due to the bluff edge's encroachment. Large portions of many parcels atop the bluff along the western side of the street have been lost due to landward retreat of the bluff's outer edge. All of them are presently vacant.

NATURE OF THE BLUFFS AND EROSION

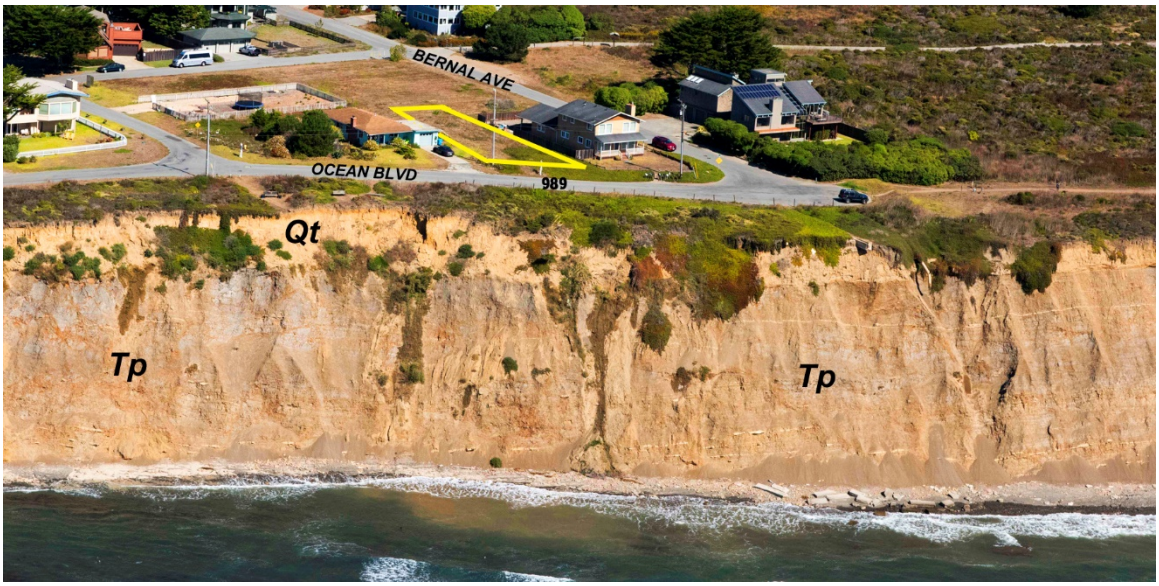
Bluff Erosion and Retreat

Landslides and bluff retreat on the seaward side of Ocean Boulevard are a natural geological process that has persisted during fluctuations in sea level and uplift of the land for many thousands of years. The bluff retreat mechanisms in this locality include erosion on the ground surface, failure initiated by groundwater processes, and wave attack during times of heavy surf. Depending on the bluff materials' character, the erosion and landward retreat of coastal bluffs tend to be episodic due to various reasons.

Other than grain-by-grain erosion and gullying at the bluff edge's surface, the most obvious and active contributor to bluff top erosion and retreat along Ocean Boulevard is subaerial erosion from groundwater inland of the sea cliff. As precipitation and irrigation on inland areas percolate downward through the unconsolidated surficial materials, it perches on top of the less permeable Purisima Formation unit. It migrates toward the ocean side on a buried, gently sloping, platform-like surface of the bedrock. When the groundwater discharges at the bluff's exposed face, loss of strength due to saturation can cause piping and cavitation along the interface between the two geologic units resulting in slumping and the collapse of sections of the unconsolidated surficial unit. Tension fractures parallel to the cliff face several areas along the bluff top, and future failures appear assured.

Local landslides and failures along the front of the bluff appear primarily related to the saturation of the terrace sediments that mantle the underlying bedrock platform. Wet conditions are visible in the upper cliff area, which is actively retreating because of groundwater emerging on the cliff's face,

causing portions of the upper, unconsolidated terrace materials to collapse. Seepage from the interface between the two geologic units is visible on the front of the bluff, as shown in the following picture:



Coastal bluff showing seepage along contact between Terrace Deposits (Qt) and Purisima Formation (Tp). Site property is outlined in yellow. *Date of photography: October 2019 - Source: California Coastal Records Project.*

Erosion of the lowest portion of the bluff along this reach of Ocean Boulevard is primarily caused by wave action during high tides or storms. Weak, fragile sedimentary rocks such as the Purisima Formation tend to be easily eroded by waves, causing block falls, and debris slides on the cliff-like bluff face. Wave action eventually carries most of the fallen debris away from the base of the bluff. Since the global mean sea level is likely to rise at least one foot above 2000 levels by the end of the century (NOAA, 2017), erosion by wave action will continue or accelerate.

Erosion Rates

Due to various external factors such as major rainfall events, high-energy wave events, earthquakes, etc., landward retreats of bluffs along this coast tend to be temporarily episodic events with short-term occurrences. This study focuses on the long-term average annual retreat rate of land at the top edge of the bluff in the subject parcel's immediate locality at 989 Ocean Boulevard (APN 037-278-090). A sequence of vertical aerial imagery dating from 1946 through 2020 was utilized for a relatively long-term comparison, giving a total sampled interval of 74 years.

Given the dynamic nature of the shoreline geography at this location, identifying stable geographic reference points along the bluff edge was not possible for measurement purposes. Therefore, an inland point feature was utilized to project a line through the site property perpendicular to the bluff edge and the site's western property line. In this case, the southwestern corner at the intersection of Bernal and Alvarado Avenues, a point discernable on all of the aerial images, was used as the eastern end of the reference line.

1946 Bluff Edge

A portion of the stereo-paired aerial imagery taken in 1946 is shown on the attached **Plate 7**. At the time, a well-defined edge of vegetation along the bluff top defined the top edge of a cliff-like

face that fronted on a narrow beach at the base. In 1946, the lateral distance along the reference line from the bluff edge to the southwest corner of the Bernal/Alvarado Ave. intersection was about 390 feet.

2020 Bluff Edge

During the field reconnaissance of this study on November 24, 2020, the bluff's upper edge was a recent low scarp at a crown crack on a developing landslide slump along the bluff's top edge. We measured the distance along the reference line from the scarp to the western property line to be 75.5 feet. The entire length to the corner of the above-described intersection was about 350 feet, as shown on **Plate 7**.

Average Long-Term Retreat

The short-term bluff retreat has likely been episodically variable. The sampling of five different aerial imagery intervals from 1943 to 2020 found that the bluff's landward retreat over a 74-year interval was about 40 feet. The *long-term average* is, therefo*re,* **6.5 inches per year** at this specific location. Griggs (1985) shows average retreat rates of **5 inches per year** along this reach of the coast.

There are areas where gullying and episodes of landsliding and block falls, and debris slides have occurred along the bluff north and south of this site. Studies of the coastline from San Francisco to Ano Nuevo by Lajoie and Mathieson (1985) documented numerous block falls and slides along the high Moss Beach bluffs during the 1982 -1983 El Nino storms. One residence at the cliff top was relocated and another was abandoned.

SITE GEOLOGIC HAZARD CONSIDERATIONS

Ground Shaking

Like all properties in coastal California, an important natural hazard is ground shaking from a large earthquake. Based on the region's seismic history, the subject property is likely to be impacted by significant ground motions during the anticipated lifetime of any site improvements. From the standpoint of impact to the site as a result of a large earthquake in the relatively near future, the San Andreas fault's northern reach is the predominant source of significant ground shaking potential.

Probabilistic modeling based on many different possible earthquakes in the Bay Area indicates a 10% chance of ***severe*** ground shaking (Intensity 8) being exceeded in the next 50 years in the site neighborhood (ABAG, 2020). An Intensity of 8 can cause moderate to heavy damage to poorly constructed masonry buildings and unbraced wood-frame buildings. ***Violent*** shaking could occur from the maximum expected earthquake (M 7.5) on the San Gregorio fault (ABAG, 2020), causing massive damage in the area.

Slope Stability

Severe cliff erosion occurs along this reach of the coast. The fragile cliff materials are subject to erosion from waves, block falls, and debris slides, resulting in the episodic and continual landward retreat of the bluff's top edge. This investigation has determined the *average* rate of retreat in the site area appears to be about 6.5 inches per year. Based on that rate, the *Geologic Cross-Section* shown in **Plate 8** illustrates the predicted location of the top edge of the bluff in the next 50 and 75 years. It should be noted that in nearby areas, large, complex landslides that reach a considerable distance inland have occurred as a single event during heavy rains and earthquakes.

Liquefaction

A map of earthquake liquefaction susceptibility compiled by the Association of Bay Area Governments shows that liquefaction during earthquake shaking is low to very low in the site locality (ABAG, 2020).

Drainage and Groundwater

The site observations for this study in August 2020 were during a prolonged dry period, and concentrated runoff or standing waters were not in evidence. During periods of heavy precipitation, surface runoff is likely to be intense at this locality. Significant infiltration and buildup of groundwater perching on top of the bedrock formation can result, causing discharge on the face of the bluff in the form of seeps and springs.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This investigation has found that the site is about 75 feet from the top edge of an unstable, high sea cliff with a history of retreat. It is classed as having a high risk of further failure. Published average rates of retreat and those calculated by this investigation's historical aerial imagery study indicate that the site property is outside of at least 75 years of future bluff top regression.

It must be recognized that the various historical changes to the bluff will continue. There can be very little change over many years and then a sudden substantial retreat over a concise period due to a storm or an earthquake-induced slope failure. Such episodes cannot be represented by an average based on widely spaced data points derived from a few historical photos and surveys. Long-term average annual retreat rates are a reasonable substitute for changes from episodic events.

Much of the erosion and failure on the bluff's seaward side appears to be initiated by gullying from surface runoff and subaerial erosion that occurs when perched groundwater daylights on the face of the bluff. Drainage from roofs and pavements should be collected and diverted into storm drains to avoid surface erosion and excessive infiltration into the soil mantle with its resulting adverse impact at the face of the bluff.

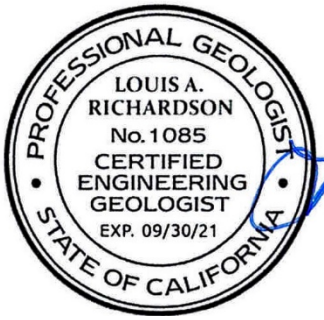
Seismic ground shaking could be severe at this site. Proposed improvements must be designed for anticipated seismic loading and forces to prevent endangerment of life, limb, or property. Recommendations for mitigation of geologic and seismic hazards, and any other factors that may affect the project's analyses and design should be based on established seismic design parameters and prevailing codes. Property owners or buyers are encouraged to obtain and read a publication prepared by the California Seismic Safety Commission (2020) entitled "The Homeowners Guide to Earthquake Safety," which can be accessed online (see attached list of references).

Geologic and geotechnical conditions may, and often do, vary across a site and nearby areas. Should features or conditions be observed that differ from those described, they must be reported immediately to the project geotechnical engineer and geologist. They should have the opportunity to observe any unexpected conditions. If so, additional exploration and analyses may be necessary.

CLOSURE

This report is for the exclusive use of Mr. Sanjay Sharma for this specific property. It is not transferrable to other projects or site locations unless authorized in writing by the undersigned. The

opportunity to be of assistance in this matter is sincerely appreciated. We trust that this provides the information required at this time. If there are any questions or if further services are needed, please contact the undersigned.



Very truly yours,

Louis A. Richardson
Certified Engineering Geologist
No. EG 1085

REFERENCES

Aagaard, B.T. et al, 2016, Earthquake Outlook for the San Francisco Bay Region 2014-2043, U.S. Geological Survey (USGS) Fact Sheet 2016-3020.

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Griggs, G., et al, 2005, Living With The Changing California Coast, University of California Press.

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San Mateo County, 2020, County GIS, San Mateo County Information Services, accessed online.

Simpson, G.D., Thompson, S.C., Noller, J.N., and Lettis, W.P., 1997, The northern San Gregorio fault zone: Evidence for the timing of Late Holocene earthquakes near Seal Cove, California: Bulletin of the Seismological Society of America, v. 87, no. 5, p. 1158-1170.

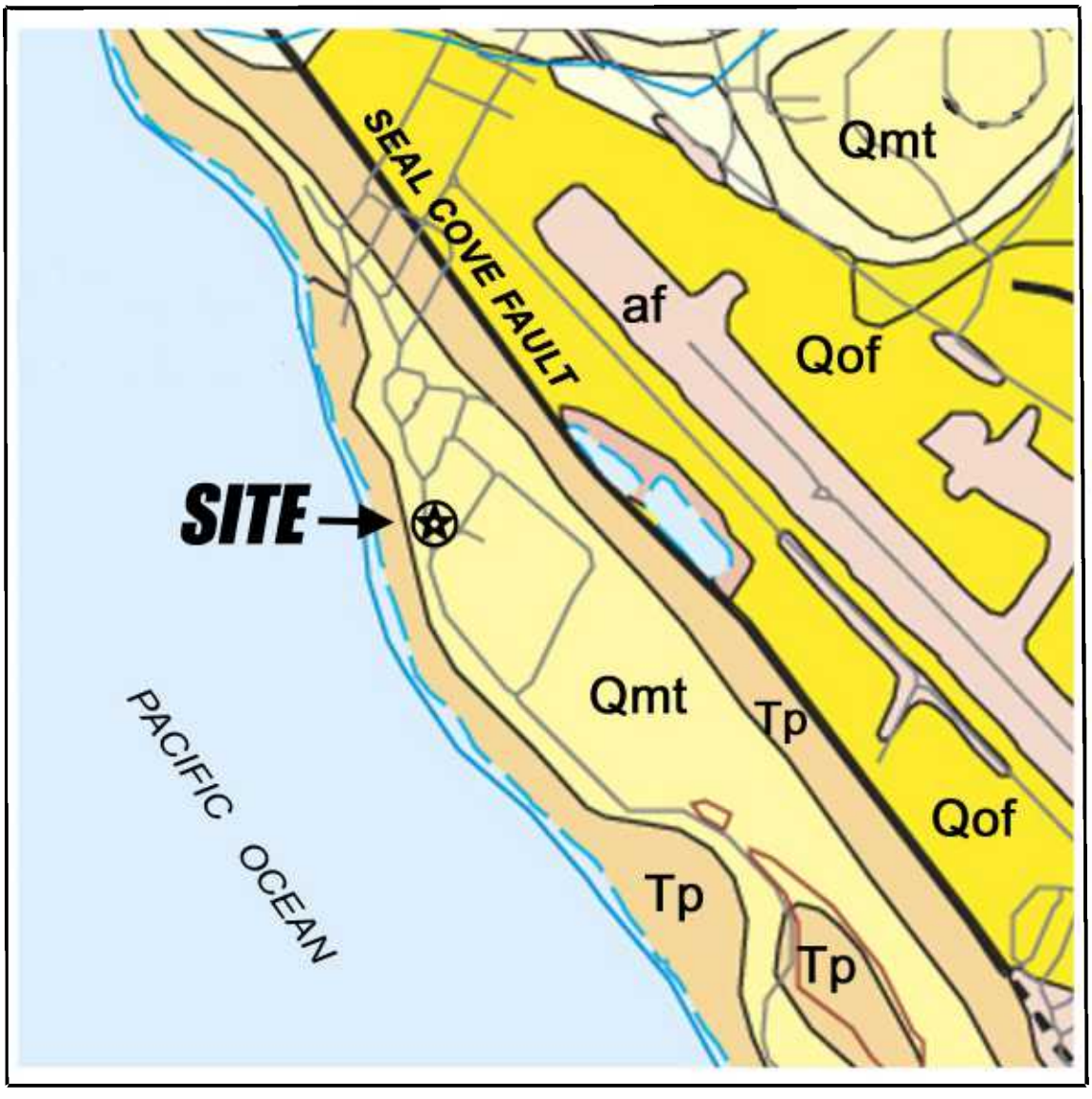
Aerial Photographs:
The following aerial photographs were reviewed:

Date: 10/11/1943	Photo Nos. DDB-2B-210 and -211 (stereo), Source: USGS
Date: 7/29/1946	Photo Nos. 2-180 and -181 (stereo), Source: USGS
Date: 5/27/1956	Photo Nos. DDB-1R-2 and -3 (stereo), Source: USGS
Date: 4-16-1968	Photo Nos. GS-VBZJ 1-3 and -4 (stereo), Source: USGS
Date: 4/22/1973	Photo Nos. 3567-2-143 and-144 (stereo), Source: USGS
Date: 4-2-2020	Source: Google Earth Aerial Imagery.

PLATES

APN 037-278-090 989 Ocean Blvd. Moss Beach, CA	**SITE LOCATION MAP**		
	Proj. No. 1094.120	November 2020	Plate **1**

LOUIS A. RICHARDSON
Consulting Engineering Geologist



0 1000
Scale in feet

Reference: Brabb, E.E., et al (1998)

EXPLANATION

Geologic Units

Surficial Materials

- af ARTIFICIAL FILL
- Qof OLD ALLUVIAL FAN
- Qmt MARINE TERRACE

Bedrock

- Tp PURISSIMA FORMATION

Symbols

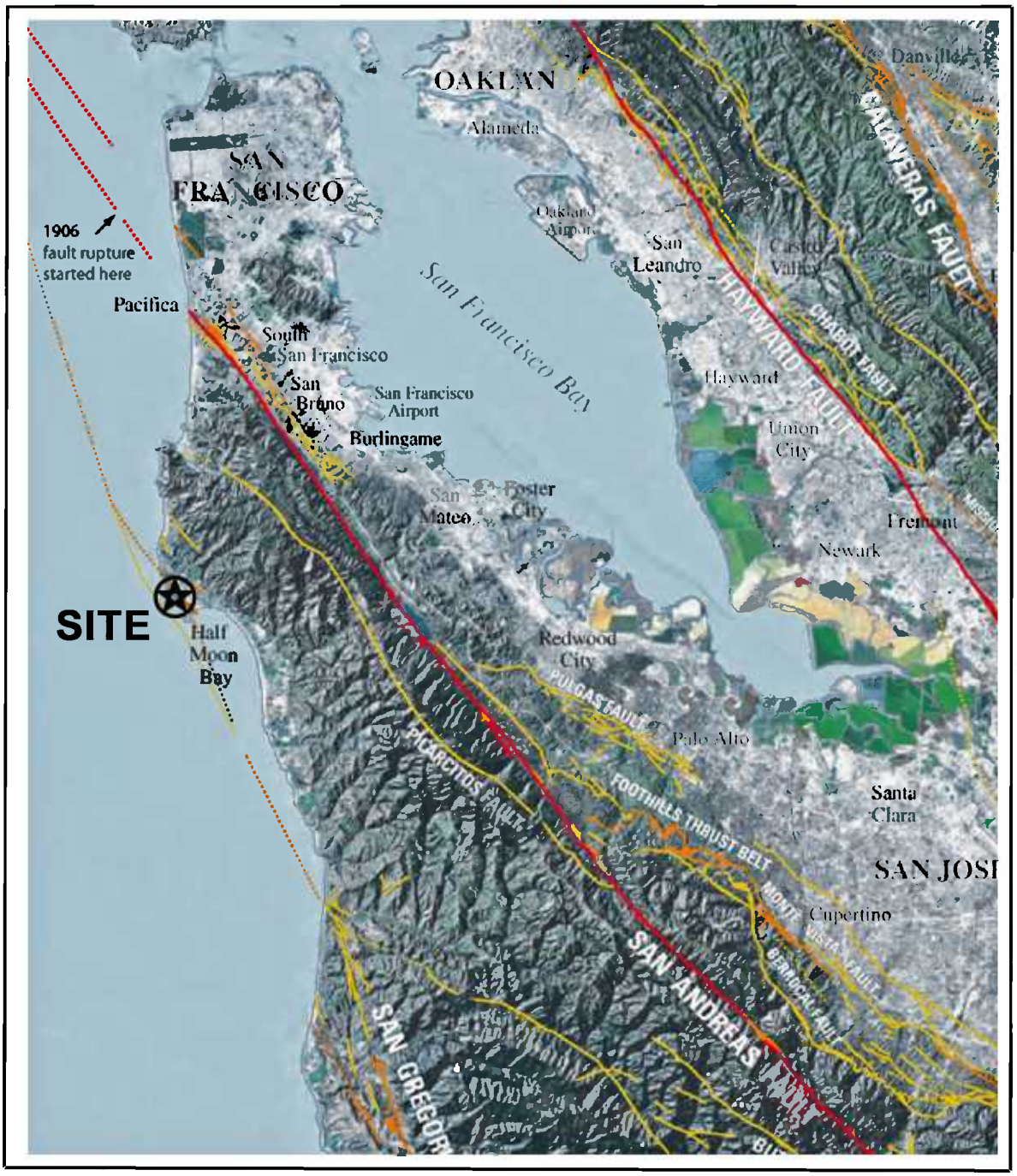
- Contact between units.
- Fault

APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

VICINITY GEOLOGIC MAP

Proj. No.		Plate
1094.120	November 2020	2

LOUIS A. RICHARDSON
Consulting Engineering Geologist



REFERENCE: Graymer (2006)

MAP KEY

Fault that had ground rupture in an earthquake in **historic** time (since 1776). Dotted where concealed by water

Holocene-active fault. Dotted where concealed by overlying rocks, sediments, or water

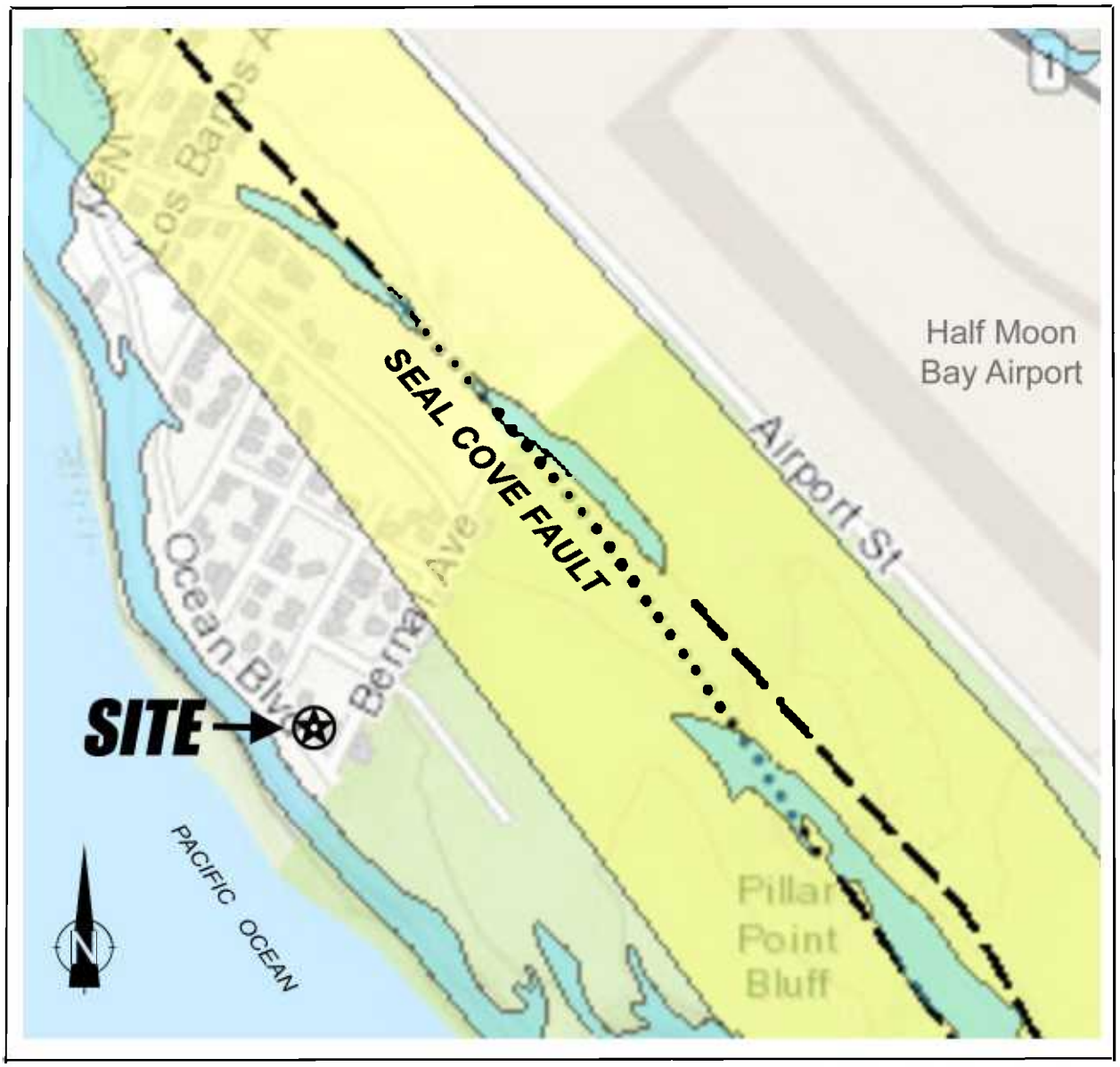
Quaternary-active fault. Dotted where concealed by overlying rocks, sediments, or water

APN 037-278-090
989 Ocean Blvd.
Moss Beach, California

REGIONAL FAULT MAP

Proj. No.		Plate
1094.120	November 2020	3

LOUIS A. RICHARDSON
Consulting Engineering Geologist



0 500
Scale in feet

Reference: CGS Earthquake Zones of Required Investigation, Montara Mountain Quadrangle.

Legend

Earthquake Fault Zone

Earthquake-Induced Landslide Zone

Fault Trace
- approximately located.

APN 037-278-090 989 Ocean Blvd. Moss Beach, CA	**SEISMIC HAZARDS ZONE MAP**		
	Proj. No. 1094.120	November 2020	Plate **4**

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Consulting Engineering Geologist

RIVIERA OCEAN VILLA TRACT
Moss Beach, CA

0 200
Scale in feet

Base from: County of San Mateo GIS

APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

TRACT MAP

Proj. No. 1094.120	November 2020	Plate 5

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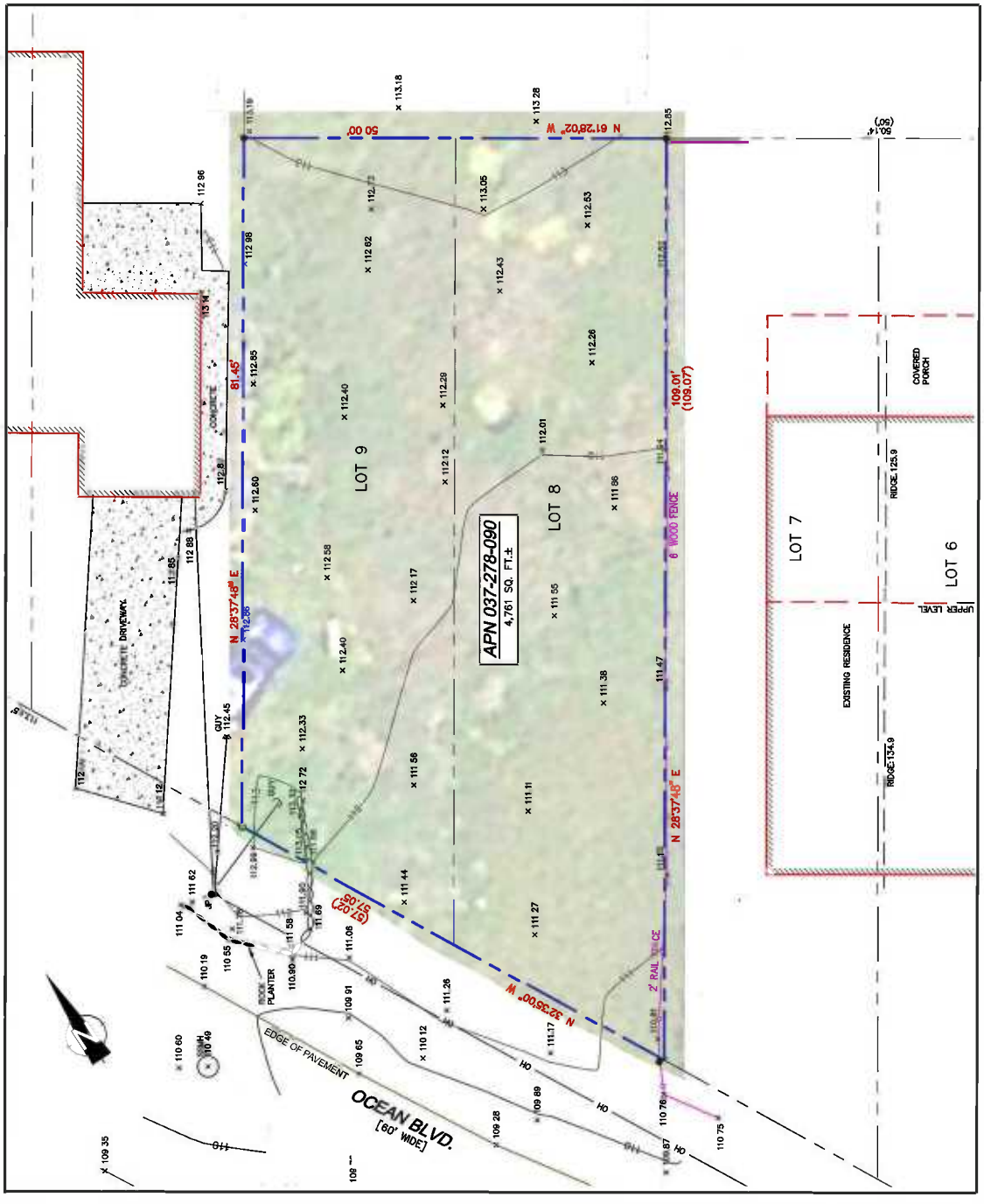
Consulting Engineering Geologist



BASE from: Boundary and Topographic Survey, Sheet SU-1 by BGT Land Surveying dated Jan 2020.

APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

SITE PLAN

Proj. No.		Plate
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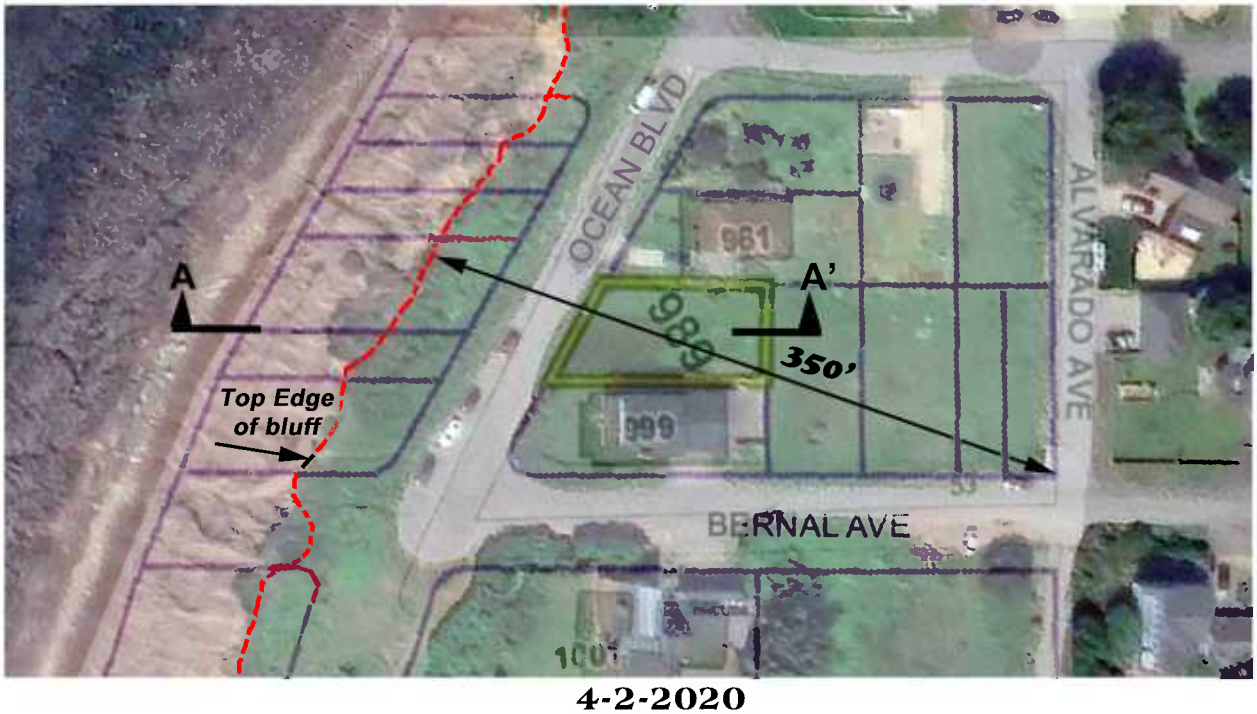
Consulting Engineering Geologist

7-22-1946



4-2-2020

0 100
Scale in feet

Line of Section (see Plate 8) A A'

LEGEND
Top Edge of bluff

APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

BLUFF RETREAT 1946-2020

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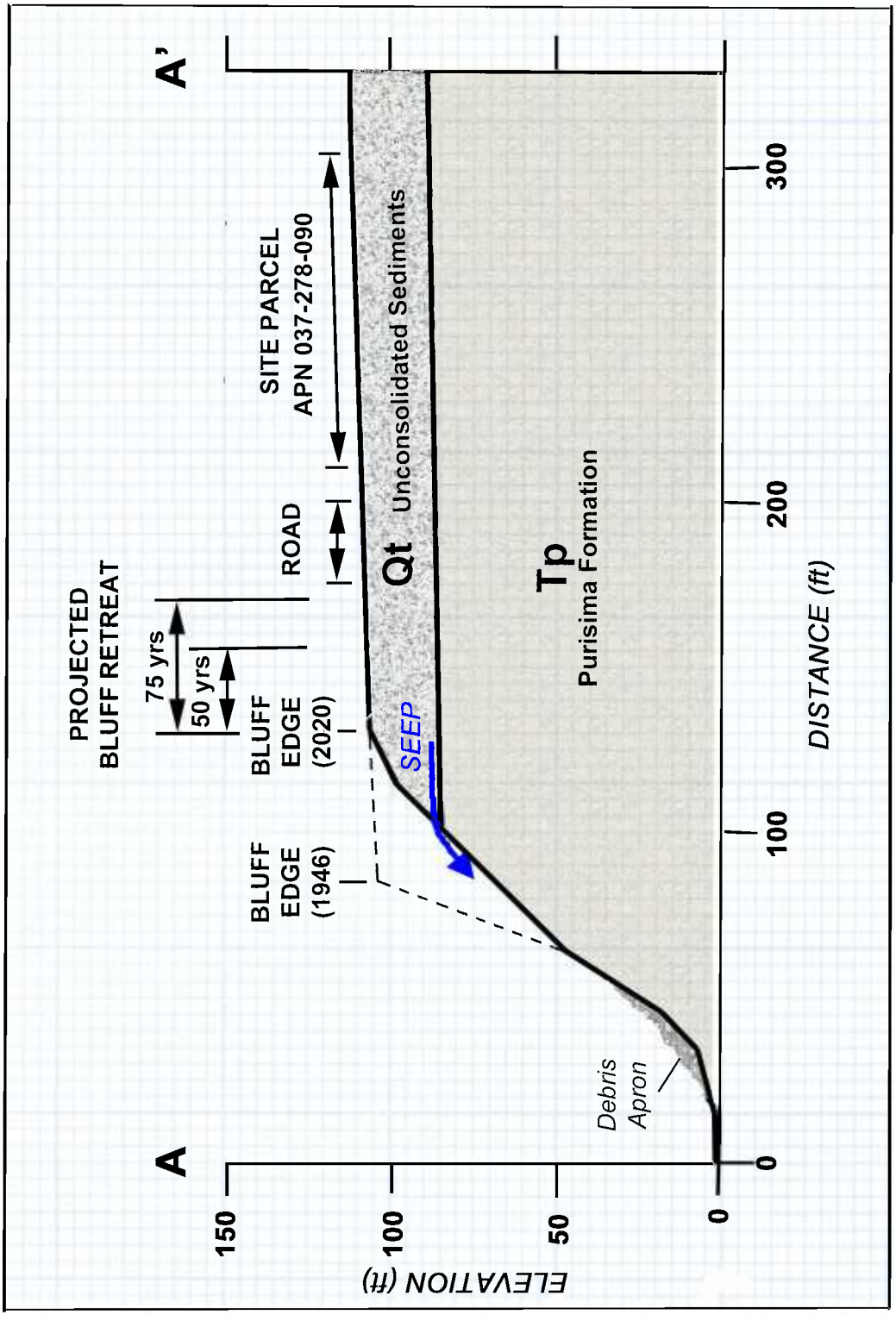
Consulting Engineering Geologist



IDEALIZED CROSS-SECTION - view toward northwest

See Plate 7 for location of section.

APN 037-278-090 989 Ocean Blvd. Moss Beach, CA	**GEOLOGIC CROSS-SECTION**		
	Proj. No. 1094.120	November 2020	Plate 8

LOUIS A. RICHARDSON
Consulting Engineering Geologist

GEOLOGIC INVESTIGATION

Residential Parcel
APN 037-278-090
989 Ocean Boulevard
Moss Beach, California

prepared for

Sanjay Sharma

PROJ. NO. 1094.120
November 30, 2020

LOUIS A. RICHARDSON, P.G., C.E.G
Consulting Engineering Geologist

GEOLOGIC INVESTIGATION November 30, 2020
989 Ocean Boulevard Project 1094.120
Moss Beach, California

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P.O. Box 2085
Mountain View
California 94042

November 30, 2020 Project No. 1094.120

Mr. Sanjay Sharma
1801 Willow Way
San Bruno, California 94806

Re: GEOLOGIC CONDITIONS at APN 037-278-090
989 Ocean Boulevard, Moss Beach, California
San Mateo County Planning Department Case No. PLN2020-00043

Dear Mr. Sharma:

INTRODUCTION

Under your request, this report summarizes the results of our investigation of site engineering geologic conditions at the above-referenced parcel on which a two-story single-family residence is being proposed. This study's primary purpose is to investigate geologic features and conditions at the property, which is located in the Riviera Ocean Villa Tract in the southern corner area of Moss Beach, California. The attached *Site Location Map*, **Plate 1**, illustrates the site vicinity.

Among items requested in the geotechnical review dated March 30, 2020, of the application for a Coastal Development Permit, the County of San Mateo has asked for information regarding geologic conditions and potential impact(s) of bluff retreat from a nearby coastal bluff to the property. This report speaks to those matters. It is intended to provide supplementary geologic material to a geotechnical report dated October 9, 2020, prepared for the project by Frank Lee & Associates.

SCOPE OF SERVICES

The work for this geologic investigation included:

1. Research and review of certain published and unpublished geologic and geotechnical information, including maps, reports, and aerial photographs relevant to the site;
2. A geologic field reconnaissance of the site and surrounding vicinity on November 24, 2020;
3. Review of a survey map prepared by BGT Land Surveying, dated January 2020, and;
4. Preparation of this report, including geologic maps and figures, a list of references utilized, recommendations, and opinions regarding site suitability from an engineering geologic standpoint.

LIMITATIONS

This report describes observations from a geologic reconnaissance at the site, a study of published geologic maps, and selected aerial photographs of the site area. It summarizes the results of the

geologic field observations and research. It is to assist in evaluating this specific site from a geologic standpoint only. The work scope did not include assessing environmental hazards, such as hazardous materials or groundwater contamination that can be present within sites or nearby areas. The report is not a comprehensive Natural Hazard Disclosure (NHD) report for real estate transactions. Other than observation of surface materials, subsurface explorations and soil or rock testing was not part of this geologic evaluation. It does not provide engineering recommendations, services, or design.

There are certain limitations inherent in this qualitative screening-level evaluation of a site. Adverse conditions and site variations that might require further investigation could exist or occur that were not apparent or observed at the work time. The passage of time may also result in significant changes in site conditions and current technology and science. If such factors change materially after the release of this report, we must review and update it.

The opinions and conclusions expressed herein follow generally accepted engineering geologic principles and practices for the limited scope of a qualitative level reconnaissance and screening investigation. No other warranty, either expressed or implied, as to the methods, results, conclusions, or professional advice, is made.

GEOLOGIC SETTING

Geology and Terrain

The site property is situated in the southwestern corner of Moss Beach, an unincorporated census-designated community on the western coastline of San Mateo County north of Half Moon Bay, about 20 miles south of San Francisco. The shoreline along this portion of the coast is relatively rugged with many reefs, offshore rocks, and a low wave-cut rock platform on the seaward edge of a steep, cliff-like bluff about 100 feet high. In the site area, the cliff trends southerly from Seal Cove past the site property to Pillar Point before curving southeasterly into Half Moon Bay.

The bluff's face exposes bedrock of the Purisima Formation (**Tp**), a bedded sequence of shallow marine sandstone and mudstone deposits of Pliocene-Miocene age (about 2.5 to 11 million years) that have been uplifted from the ocean floor. Atop the Purisima Formation is a mantle of younger marine terrace deposits (**Qmt**) composed of poorly consolidated sandy and gravelly materials that reach inland onto Montara Mountain's lower foothills to the east. More recent alluvial fans and subaerial fluvial and colluvial deposits (**Qof**) extend outward from the upland areas onto the bench-like terrace, which slopes gently westward toward the bounding bluff. A *Vicinity Geologic Map* is presented on the attached **Plate 2**.

Earthquake Faulting and Seismicity

The west-central coast of California, including Moss Beach, is within a region of active faulting that extends eastward from offshore areas of the Pacific Coast through the San Francisco Bay region to the western side of the Sacramento-San Joaquin Valley. **Plate 3**, *Regional Fault Map*, shows the subject property's location relative to known active or potentially active earthquake faults in this region. The active 600+ mile-long San Andreas fault is the region's dominant geologic structure. It passes about 7.5 miles southeast of the subject property. It was responsible for the Great San Francisco Earthquake of 1906. The epicenter of that 7.9 magnitude event was located offshore in the ocean about 16.5 miles north of the site.

Another major active fault that could significantly impact this locality is the Hayward-Rogers Creek fault, about 25.7 miles to the northeast. It ruptured in 1868 with a 6.8 magnitude earthquake that caused significant damage throughout San Francisco and the Bay Area's emerging communities. The Seal Cove fault, an eastern, inland trace of the 176 mile-long San Gregorio fault zone, passes in a northwesterly direction about 1,000 feet northeast of the subject property. Although it is not known to be active in historic time, the San Gregorio fault zone is considered potentially active based on trenching at Seal Cove (Simpson and others, 1997) which indicated Holocene age (within last 11,000 years) activity. As shown in **Plate 4**, *Seismic Hazards Zone Map*, the Seal Cove fault is in the bounds of a State of California Alquist-Priolo Earthquake Fault Zone.

Active faults in the region have generated 22 earthquakes of magnitude 6.0 or higher in the last 160 years – an average of about one every seven years. Future large earthquakes are inevitable. The probability of a magnitude 6.7 - or higher - earthquake in the San Francisco region during the 30 years following 2014 is at least 72% (Aagard, B.T. et al., 2016). The chance for such an occurrence on the San Andreas fault is about 22%.

SITE CHARACTERIZATION

Description of Site and Vicinity

The site property (APN 037-278-090) is situated in the southwestern corner of the Moss Beach community, approximately one-quarter of a mile west of the Half Moon Bay Airport. It is at Latitude 37.513 and Longitude -122.510, about 5.5 miles northwest of downtown Half Moon Bay in the Rivera Ocean Villa Tract, shown on the attached *Tract Map*, **Plate 5**. This locality is bounded along its western edge by a steep coastal bluff just west of the site parcel.

The parcel is a vacant, quadrilateral-shaped, 0.11-acre flat-lying property fronting on the eastern side of Ocean Boulevard about 80 feet north of its intersection with Bernal Avenue. As shown on the *Site Plan*, **Plate 6**, it is about 50 feet wide and averages about 100 feet deep. As shown on this report's **cover photo**, residences exist on both sides of the property and adjoining land to the rear is vacant.

Site Geology

The shoreline in this area of the coast consists of a 100 foot high, steep bluff bordered by a narrow sand beach and a wide offshore intertidal rock platform. Exposed on the bluff's face are units of the Purisima Formation. This sedimentary rock is rich in expansive clays of low permeability. The upper one-fifth of the cliff is a raised marine terrace which mantles the Purisima Formation. It comprises marine and non-marine sediments deposited along an ancient shoreline that is now above the influence of the ocean. These poorly-consolidated, sandy materials are easily eroded from the bluff's face and along ravines that cross the terrace. The proposed residence will be founded on the unconsolidated materials of the upper section.

The interface between the two units is an old wave-cut platform that has been uplifted by tectonic processes. Frank Lee & Associates performed a single boring on the site property in September 2020. It determined that the upper, unconsolidated section is about 22 feet thick. Beneath that, the boring encountered dense claystone and siltstone bedrock typical of the Purisima Formation.

Site History

We reviewed a series of aerial photographs that were dated from 1943 through 2020 for this investigation. They are listed in the references section on Page **8** of this report.

The photographs show that in 1943 and 1946, the nearby Half Moon Bay Airport runway and taxiways were well established. West of the airport, the Rivera Ocean Villa Tract was vacant except for a few structures near the present corner of San Lucas and Del Mar Avenues. There was a home on the west side of Ocean Boulevard between San Lucas and Madrone Avenues and another on top of the bluff at Bernal Avenue's southern end. At that time, Ocean Boulevard existed as an unimproved dirt road or trail atop the bluff in the project site region.

The area was essentially the same in 1956 except for a home constructed on the eastern side of Ocean Boulevard between Madrone and Precita Avenues. Most of the future streets had been laid out or graded at their present locations in the tract. They were only visible as outlines in fields on the afore-mentioned photos.

An assortment of houses existed in the adjacent area northwest of the Rivera Ocean Villa Tract by 1968. A house was constructed at 961 Ocean Boulevard, adjacent to the subject property's northern side. Ocean Boulevard had been improved and widened by that time. In 1973, a new house was being constructed at the north corner of Ocean Boulevard and Madrone Ave. The rest of the tract was still largely vacant.

By the early 1990s, most parcels on the tract, including properties on both sides of the subject parcel, were residentially developed. The two structures on the bluff along the western side of Ocean Boulevard were removed due to the bluff edge's encroachment. Large portions of many parcels atop the bluff along the western side of the street have been lost due to landward retreat of the bluff's outer edge. All of them are presently vacant.

NATURE OF THE BLUFFS AND EROSION

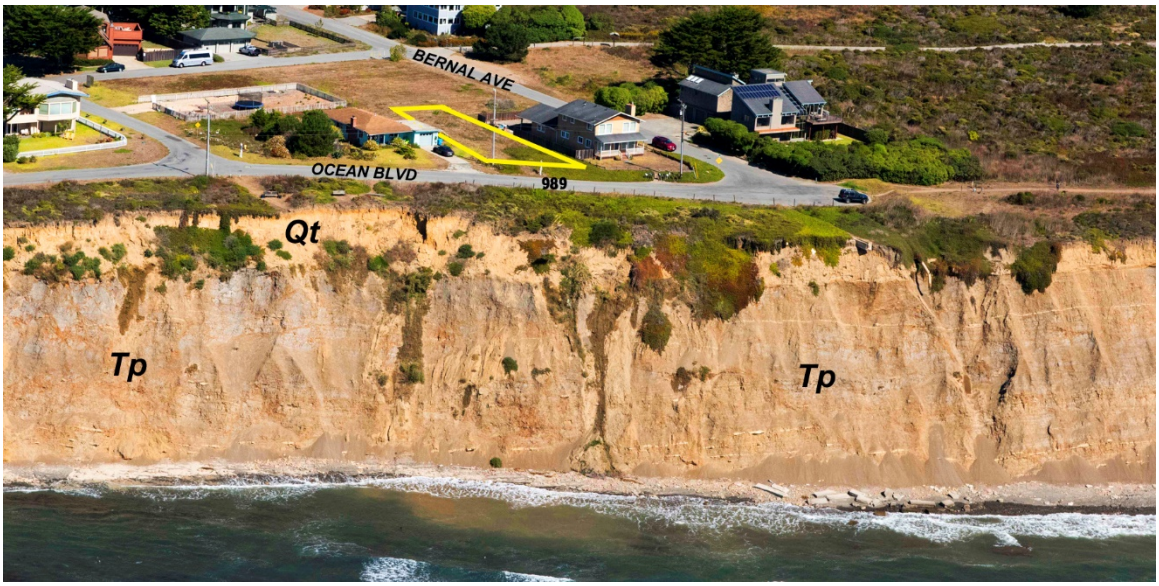
Bluff Erosion and Retreat

Landslides and bluff retreat on the seaward side of Ocean Boulevard are a natural geological process that has persisted during fluctuations in sea level and uplift of the land for many thousands of years. The bluff retreat mechanisms in this locality include erosion on the ground surface, failure initiated by groundwater processes, and wave attack during times of heavy surf. Depending on the bluff materials' character, the erosion and landward retreat of coastal bluffs tend to be episodic due to various reasons.

Other than grain-by-grain erosion and gullying at the bluff edge's surface, the most obvious and active contributor to bluff top erosion and retreat along Ocean Boulevard is subaerial erosion from groundwater inland of the sea cliff. As precipitation and irrigation on inland areas percolate downward through the unconsolidated surficial materials, it perches on top of the less permeable Purisima Formation unit. It migrates toward the ocean side on a buried, gently sloping, platform-like surface of the bedrock. When the groundwater discharges at the bluff's exposed face, loss of strength due to saturation can cause piping and cavitation along the interface between the two geologic units resulting in slumping and the collapse of sections of the unconsolidated surficial unit. Tension fractures parallel to the cliff face several areas along the bluff top, and future failures appear assured.

Local landslides and failures along the front of the bluff appear primarily related to the saturation of the terrace sediments that mantle the underlying bedrock platform. Wet conditions are visible in the upper cliff area, which is actively retreating because of groundwater emerging on the cliff's face,

causing portions of the upper, unconsolidated terrace materials to collapse. Seepage from the interface between the two geologic units is visible on the front of the bluff, as shown in the following picture:



Coastal bluff showing seepage along contact between Terrace Deposits (Qt) and Purisima Formation (Tp). Site property is outlined in yellow. *Date of photography: October 2019 - Source: California Coastal Records Project.*

Erosion of the lowest portion of the bluff along this reach of Ocean Boulevard is primarily caused by wave action during high tides or storms. Weak, fragile sedimentary rocks such as the Purisima Formation tend to be easily eroded by waves, causing block falls, and debris slides on the cliff-like bluff face. Wave action eventually carries most of the fallen debris away from the base of the bluff. Since the global mean sea level is likely to rise at least one foot above 2000 levels by the end of the century (NOAA, 2017), erosion by wave action will continue or accelerate.

Erosion Rates

Due to various external factors such as major rainfall events, high-energy wave events, earthquakes, etc., landward retreats of bluffs along this coast tend to be temporarily episodic events with short-term occurrences. This study focuses on the long-term average annual retreat rate of land at the top edge of the bluff in the subject parcel's immediate locality at 989 Ocean Boulevard (APN 037-278-090). A sequence of vertical aerial imagery dating from 1946 through 2020 was utilized for a relatively long-term comparison, giving a total sampled interval of 74 years.

Given the dynamic nature of the shoreline geography at this location, identifying stable geographic reference points along the bluff edge was not possible for measurement purposes. Therefore, an inland point feature was utilized to project a line through the site property perpendicular to the bluff edge and the site's western property line. In this case, the southwestern corner at the intersection of Bernal and Alvarado Avenues, a point discernable on all of the aerial images, was used as the eastern end of the reference line.

1946 Bluff Edge

A portion of the stereo-paired aerial imagery taken in 1946 is shown on the attached **Plate 7**. At the time, a well-defined edge of vegetation along the bluff top defined the top edge of a cliff-like

face that fronted on a narrow beach at the base. In 1946, the lateral distance along the reference line from the bluff edge to the southwest corner of the Bernal/Alvarado Ave. intersection was about 390 feet.

2020 Bluff Edge

During the field reconnaissance of this study on November 24, 2020, the bluff's upper edge was a recent low scarp at a crown crack on a developing landslide slump along the bluff's top edge. We measured the distance along the reference line from the scarp to the western property line to be 75.5 feet. The entire length to the corner of the above-described intersection was about 350 feet, as shown on **Plate 7**.

Average Long-Term Retreat

The short-term bluff retreat has likely been episodically variable. The sampling of five different aerial imagery intervals from 1943 to 2020 found that the bluff's landward retreat over a 74-year interval was about 40 feet. The *long-term average* is, therefo*re,* **6.5 inches per year** at this specific location. Griggs (1985) shows average retreat rates of **5 inches per year** along this reach of the coast.

There are areas where gullying and episodes of landsliding and block falls, and debris slides have occurred along the bluff north and south of this site. Studies of the coastline from San Francisco to Ano Nuevo by Lajoie and Mathieson (1985) documented numerous block falls and slides along the high Moss Beach bluffs during the 1982 -1983 El Nino storms. One residence at the cliff top was relocated and another was abandoned.

SITE GEOLOGIC HAZARD CONSIDERATIONS

Ground Shaking

Like all properties in coastal California, an important natural hazard is ground shaking from a large earthquake. Based on the region's seismic history, the subject property is likely to be impacted by significant ground motions during the anticipated lifetime of any site improvements. From the standpoint of impact to the site as a result of a large earthquake in the relatively near future, the San Andreas fault's northern reach is the predominant source of significant ground shaking potential.

Probabilistic modeling based on many different possible earthquakes in the Bay Area indicates a 10% chance of ***severe*** ground shaking (Intensity 8) being exceeded in the next 50 years in the site neighborhood (ABAG, 2020). An Intensity of 8 can cause moderate to heavy damage to poorly constructed masonry buildings and unbraced wood-frame buildings. ***Violent*** shaking could occur from the maximum expected earthquake (M 7.5) on the San Gregorio fault (ABAG, 2020), causing massive damage in the area.

Slope Stability

Severe cliff erosion occurs along this reach of the coast. The fragile cliff materials are subject to erosion from waves, block falls, and debris slides, resulting in the episodic and continual landward retreat of the bluff's top edge. This investigation has determined the *average* rate of retreat in the site area appears to be about 6.5 inches per year. Based on that rate, the *Geologic Cross-Section* shown in **Plate 8** illustrates the predicted location of the top edge of the bluff in the next 50 and 75 years. It should be noted that in nearby areas, large, complex landslides that reach a considerable distance inland have occurred as a single event during heavy rains and earthquakes.

Liquefaction

A map of earthquake liquefaction susceptibility compiled by the Association of Bay Area Governments shows that liquefaction during earthquake shaking is low to very low in the site locality (ABAG, 2020).

Drainage and Groundwater

The site observations for this study in August 2020 were during a prolonged dry period, and concentrated runoff or standing waters were not in evidence. During periods of heavy precipitation, surface runoff is likely to be intense at this locality. Significant infiltration and buildup of groundwater perching on top of the bedrock formation can result, causing discharge on the face of the bluff in the form of seeps and springs.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This investigation has found that the site is about 75 feet from the top edge of an unstable, high sea cliff with a history of retreat. It is classed as having a high risk of further failure. Published average rates of retreat and those calculated by this investigation's historical aerial imagery study indicate that the site property is outside of at least 75 years of future bluff top regression.

It must be recognized that the various historical changes to the bluff will continue. There can be very little change over many years and then a sudden substantial retreat over a concise period due to a storm or an earthquake-induced slope failure. Such episodes cannot be represented by an average based on widely spaced data points derived from a few historical photos and surveys. Long-term average annual retreat rates are a reasonable substitute for changes from episodic events.

Much of the erosion and failure on the bluff's seaward side appears to be initiated by gullying from surface runoff and subaerial erosion that occurs when perched groundwater daylights on the face of the bluff. Drainage from roofs and pavements should be collected and diverted into storm drains to avoid surface erosion and excessive infiltration into the soil mantle with its resulting adverse impact at the face of the bluff.

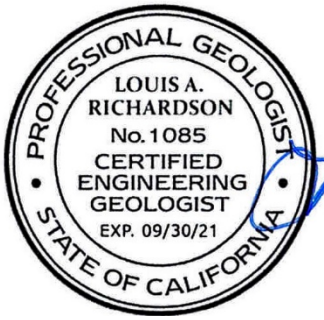
Seismic ground shaking could be severe at this site. Proposed improvements must be designed for anticipated seismic loading and forces to prevent endangerment of life, limb, or property. Recommendations for mitigation of geologic and seismic hazards, and any other factors that may affect the project's analyses and design should be based on established seismic design parameters and prevailing codes. Property owners or buyers are encouraged to obtain and read a publication prepared by the California Seismic Safety Commission (2020) entitled "The Homeowners Guide to Earthquake Safety," which can be accessed online (see attached list of references).

Geologic and geotechnical conditions may, and often do, vary across a site and nearby areas. Should features or conditions be observed that differ from those described, they must be reported immediately to the project geotechnical engineer and geologist. They should have the opportunity to observe any unexpected conditions. If so, additional exploration and analyses may be necessary.

CLOSURE

This report is for the exclusive use of Mr. Sanjay Sharma for this specific property. It is not transferrable to other projects or site locations unless authorized in writing by the undersigned. The

opportunity to be of assistance in this matter is sincerely appreciated. We trust that this provides the information required at this time. If there are any questions or if further services are needed, please contact the undersigned.



Very truly yours,

Louis A. Richardson
Certified Engineering Geologist
No. EG 1085

REFERENCES

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Simpson, G.D., Thompson, S.C., Noller, J.N., and Lettis, W.P., 1997, The northern San Gregorio fault zone: Evidence for the timing of Late Holocene earthquakes near Seal Cove, California: Bulletin of the Seismological Society of America, v. 87, no. 5, p. 1158-1170.

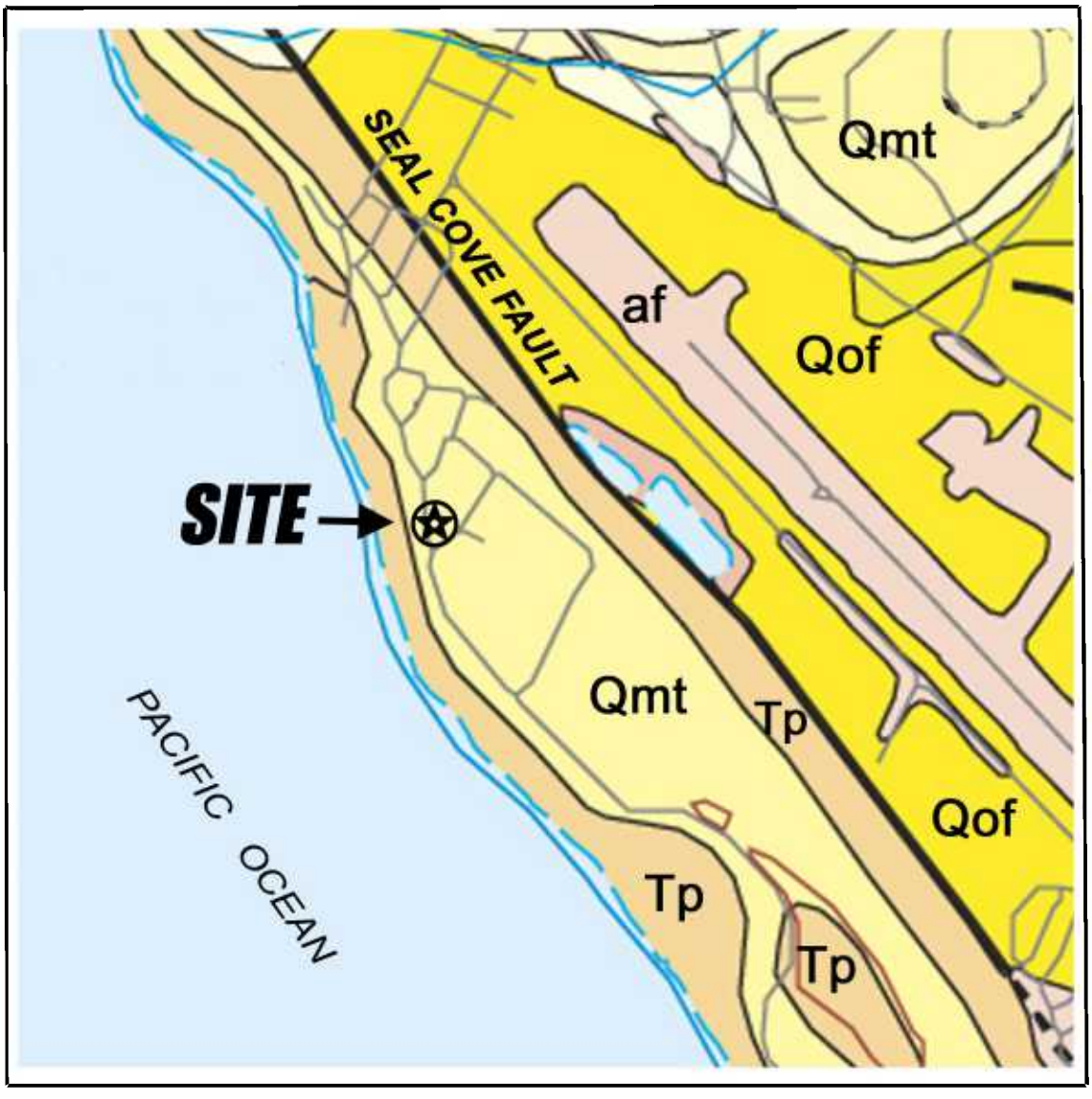
Aerial Photographs:
The following aerial photographs were reviewed:

Date: 10/11/1943	Photo Nos. DDB-2B-210 and -211 (stereo), Source: USGS
Date: 7/29/1946	Photo Nos. 2-180 and -181 (stereo), Source: USGS
Date: 5/27/1956	Photo Nos. DDB-1R-2 and -3 (stereo), Source: USGS
Date: 4-16-1968	Photo Nos. GS-VBZJ 1-3 and -4 (stereo), Source: USGS
Date: 4/22/1973	Photo Nos. 3567-2-143 and-144 (stereo), Source: USGS
Date: 4-2-2020	Source: Google Earth Aerial Imagery.

PLATES

APN 037-278-090 989 Ocean Blvd. Moss Beach, CA	**SITE LOCATION MAP**		
	Proj. No. 1094.120	November 2020	Plate **1**

LOUIS A. RICHARDSON
Consulting Engineering Geologist



0 1000
Scale in feet

Reference: Brabb, E.E., et al (1998)

EXPLANATION

Geologic Units

Surficial Materials

- af ARTIFICIAL FILL
- Qof OLD ALLUVIAL FAN
- Qmt MARINE TERRACE

Bedrock

- Tp PURISSIMA FORMATION

Symbols

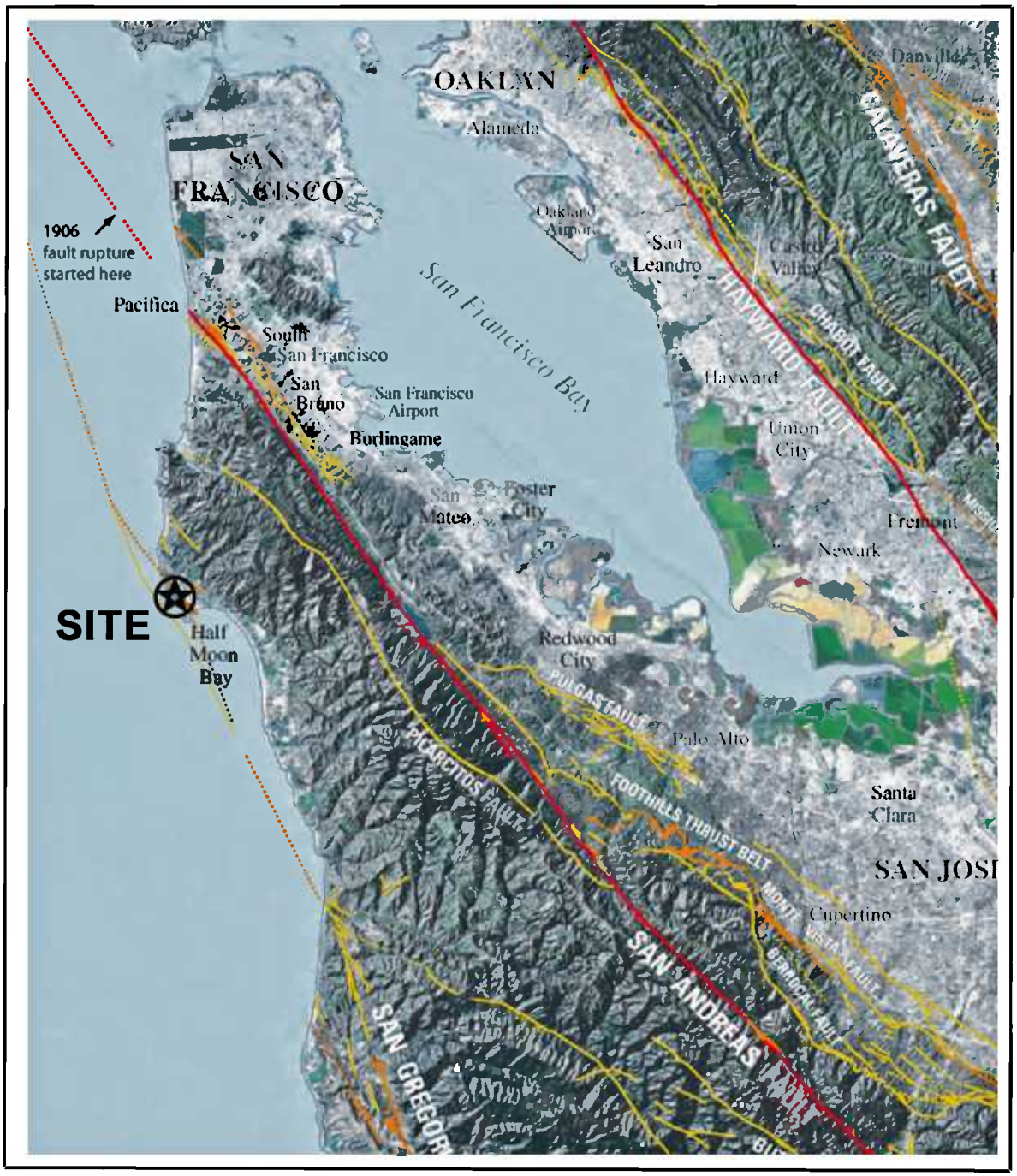
- Contact between units.
- Fault

APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

VICINITY GEOLOGIC MAP

Proj. No.		Plate
1094.120	November 2020	2

LOUIS A. RICHARDSON
Consulting Engineering Geologist



REFERENCE: Graymer (2006)

MAP KEY

Fault that had ground rupture in an earthquake in **historic** time (since 1776). Dotted where concealed by water

Holocene-active fault. Dotted where concealed by overlying rocks, sediments, or water

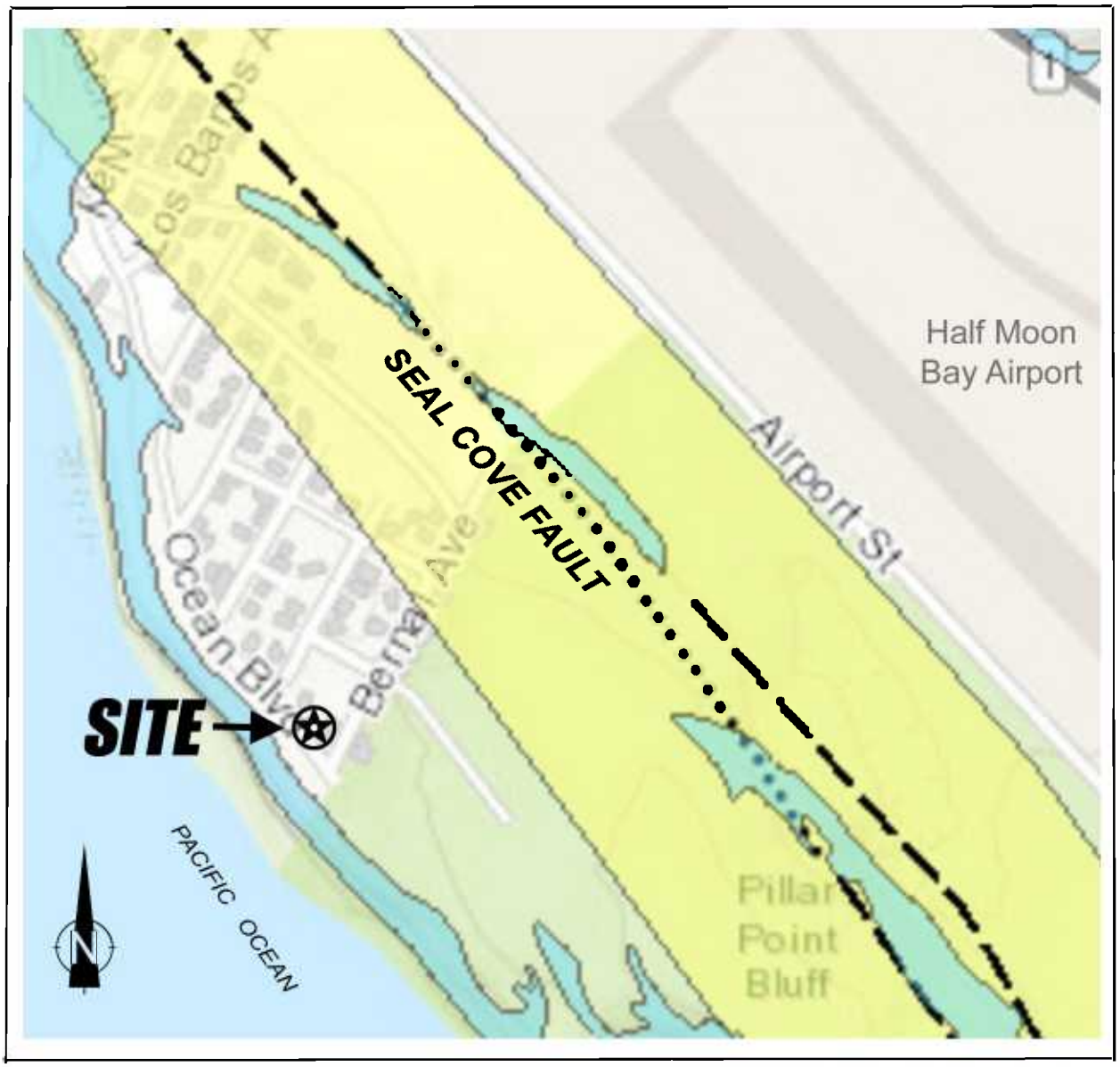
Quaternary-active fault. Dotted where concealed by overlying rocks, sediments, or water

APN 037-278-090
989 Ocean Blvd.
Moss Beach, California

REGIONAL FAULT MAP

Proj. No.		Plate
1094.120	November 2020	3

LOUIS A. RICHARDSON
Consulting Engineering Geologist



0 500
Scale in feet

Reference: CGS Earthquake Zones of Required Investigation, Montara Mountain Quadrangle.

Legend

Earthquake Fault Zone

Earthquake-Induced Landslide Zone

Fault Trace
- approximately located.

APN 037-278-090 989 Ocean Blvd. Moss Beach, CA	**SEISMIC HAZARDS ZONE MAP**		
	Proj. No. 1094.120	November 2020	Plate **4**

LOUIS A. RICHARDSON
Consulting Engineering Geologist

RIVIERA OCEAN VILLA TRACT
Moss Beach, CA

0 200
Scale in feet

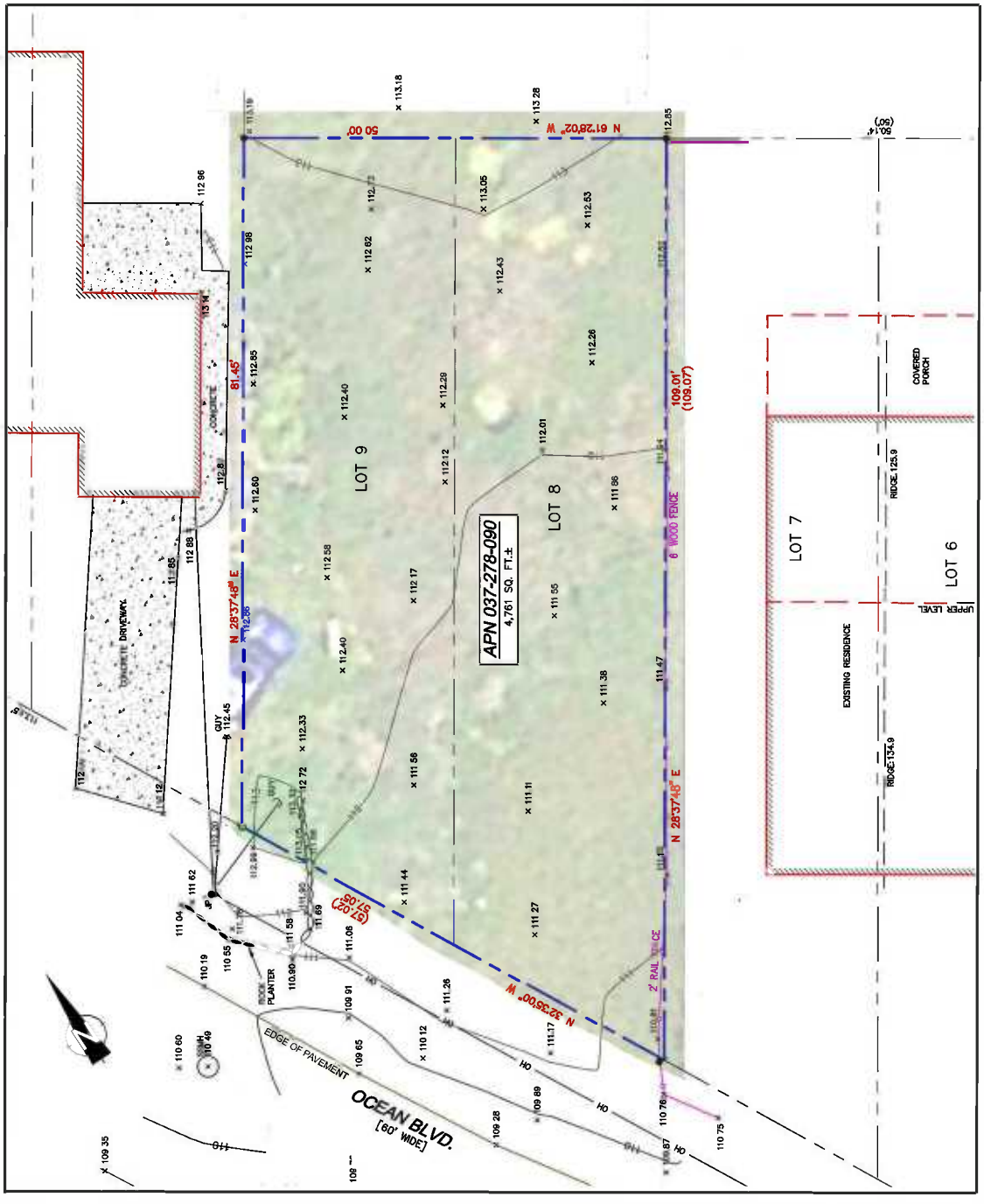
Base from: County of San Mateo GIS

APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

TRACT MAP

Proj. No. 1094.120	November 2020	Plate 5

LOUIS A. RICHARDSON
Consulting Engineering Geologist



BASE from: Boundary and Topographic Survey, Sheet SU-1 by BGT Land Surveying dated Jan 2020.

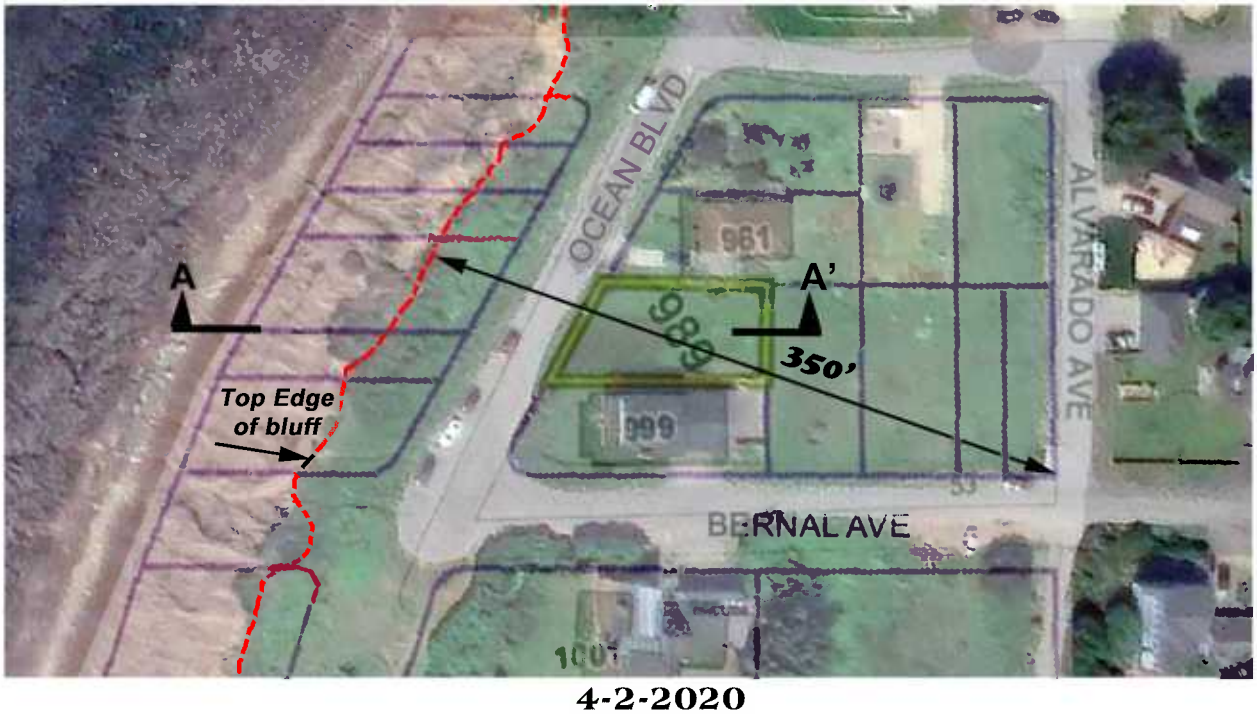
APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

SITE PLAN

Proj. No.		Plate
1094.120	November 2020	6

LOUIS A. RICHARDSON
Consulting Engineering Geologist

7-22-1946



4-2-2020

0 100
Scale in feet

Line of Section (see Plate 8) A A'

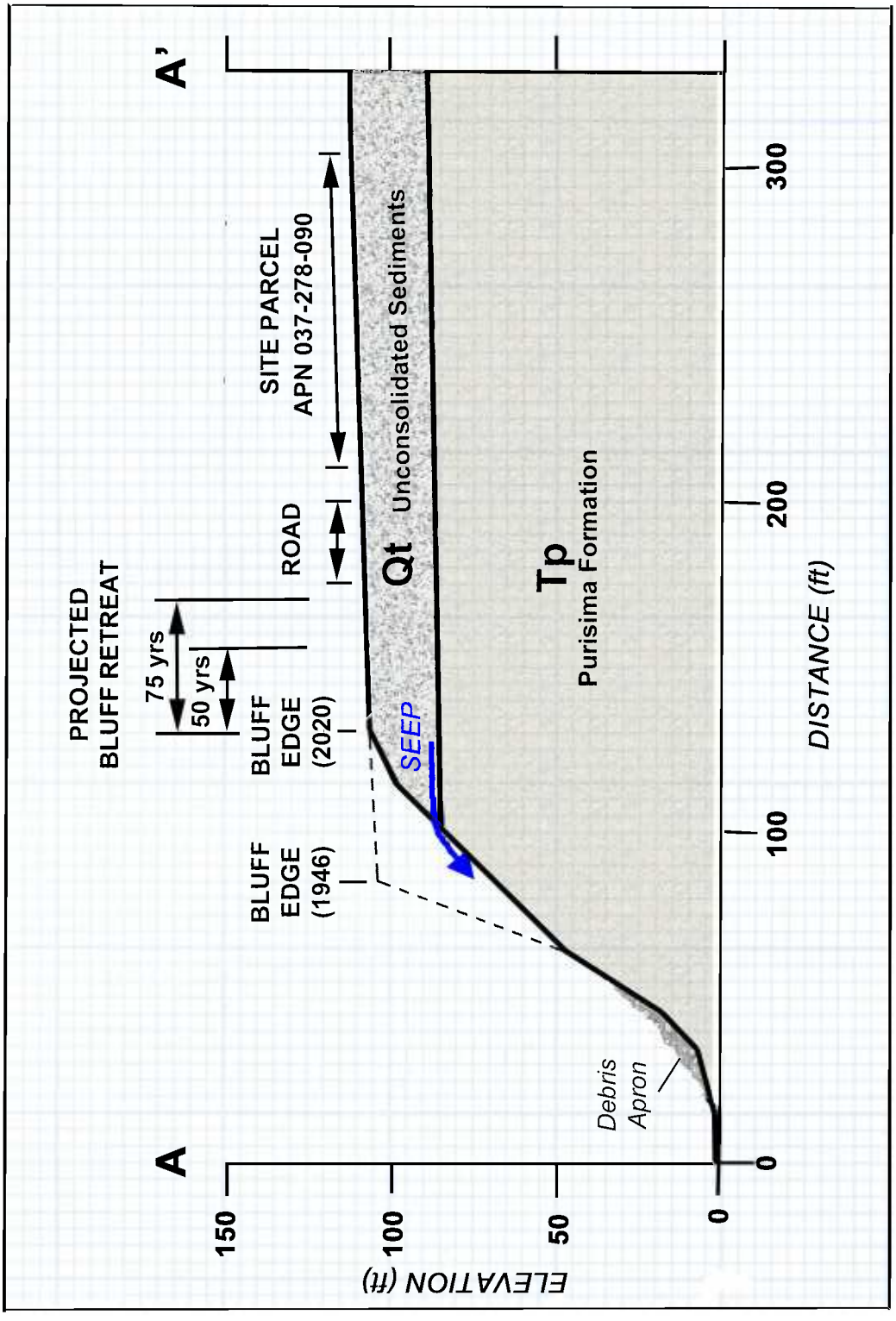
LEGEND
Top Edge of bluff

APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

BLUFF RETREAT 1946-2020

Proj. No.		Plate
1094.120	November 2020	7

LOUIS A. RICHARDSON
Consulting Engineering Geologist



IDEALIZED CROSS-SECTION - view toward northwest

See Plate 7 for location of section.

APN 037-278-090 989 Ocean Blvd. Moss Beach, CA	**GEOLOGIC CROSS-SECTION**		
	Proj. No. 1094.120	November 2020	Plate 8

LOUIS A. RICHARDSON
Consulting Engineering Geologist

County of San Mateo - Planning and Building Department

ATTACHMENT E

LOUIS A. RICHARDSON, P.G., C.E.G.
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P.O. Box 2085
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ATTN: Sanjay Sharma
1801 Willow Way
San Bruno, California 94806

Project No. 1094 B
October 12, 2021

RE: SUPPLEMENTAL GEOLOGIC INFORMATION
for Vacant Lot at 989 Ocean Boulevard (APN 037-278-090)
Moss Beach, San Mateo County, California

Dear Mr. Sharma:

Introduction

At the request of the County Planning Commission, this letter provides an expansion of information contained in our geologic report of November 30, 2020. That report addressed the historical and future conditions of the nearby steep coastal bluff located west of 989 Ocean Boulevard.

Edge of Bluff

The subject bluff is a steep, westerly-facing cliff-like exposure of sedimentary rocks approximately 100 feet high with scattered sand and gravel distributed along the base. Development setbacks are typically measured inland from the upper edge of the bluff top, which is primarily a qualitative determination. Under the California Coastal Act, the bluff edge, or cliff line, is by and large defined as the line of intersection beyond which the slope of the adjacent land begins to increase toward the steeper inclination of the bluff or cliff.

In this locality, the upper 20 feet of the bluff is an elevated terrace composed of weak, porous sandy clay and clayey sand soils with mixtures of sand and gravel. These soils have developed on an uplifted old platform of landward-dipping cemented sandstone and siltstone beds of Purisima Formation sedimentary bedrock, making up the cliff-like lower 80 feet of the site bluff shown on the ***Photo Plate*** attached at the end of this text. Along the front of the bluff, the upper terrace displays a somewhat irregular step-like topography that has resulted from erosion, saturation, and outward slumping of the unstable terrace soils. We define the top edge of this section of the bluff as the landward boundary of the uppermost rise. Therefore, our projections of the future bluff-top retreat were measured perpendicularly from that edge toward the proposed residence.

Episodic events of climate and weather primarily influence bluff retreat. As such, predicting the precise timing and scale of individual bluff failures and coastal change is particularly difficult and uncertain. Therefore, our estimates of bluff edge positions and retreat rates are time-averaged based on historical data and a review of a series of stereographic vertical aerial photographs dating back 78 years. They do not represent the timing or scale of episodic failures that ultimately lead to long-term rates. Nevertheless, this procedure is currently the most straightforward to provide a baseline for assessing changes in bluff position through time.

Factors Influencing Bluff Retreat

Coastal cliff erosion and failure rates can vary depending on site-specific geology, wave energy, coastal slope, beach width and height, rock strength and jointing, groundwater seepage forces, and sea-level rise. One of the main erosion mechanisms leading to failure in the bluff area at this locality is groundwater emerging as springs along the interface between the porous terrace soil and the more resistant, less permeable bedrock beneath it. The resulting saturation weakens and liquefies the soil, causing gravitational failures, including debris slides, local slumps, and block falls along the upper 20 feet or so of the bluff.

The retreat of the upper bluff of this locality is mainly independent of the lower bluff behavior, which is composed of resistant, less porous, landward-dipping layers of sandstone and silty shale bedrock of the Purisima Formation. The southeasterly-trending shoreline angle on this reach of the coastline is reasonably straight compared to other areas where there are large, deep-seated landslides at Seal Cove to the north and toward Pillar Point to the south. It is a relatively stable segment of cliffed coast with a wide offshore intertidal rock platform that lacks an effective beach. There are no revetments or critical reentrants such as gullies, ravines, coves, or irregular points of land, sea stacks, or other features that would reflect, focus, or concentrate and amplify basal wave attack, toe scours, and erosion.

Weathering, decomposition, and stress relief along the lower cliff's face produce piecemeal shallow sloughing and raveling on the exposed bedrock's front. The failed rubble accumulates as an apron along a narrow beach at the bottom, somewhat moderating wave attack. Still, heavy wave action sporadically disperses the debris during severe storms in the winter seasons.

A slender seasonal beach in the site locality is not safely accessible to closely inspect the lower cliff. However, high-resolution oblique aerial photographs of this area show no overhangs, notches, undercutting, openings, or sea caves in evidence that would indicate a coming collapse of the lower cliff and consequent failure of the upper bluff due to lack of support.

Impact of Sea Level Rise (SLR)

Various processes drive ocean surface changes, resulting in distinct patterns of sea-level change at local to regional scales. As a result, the total sea-level difference varies over time, and the uncertainty is considerable. Global sea level is 5-8 inches higher on average than in 1900, and sea levels are rising at an average rate of 1.8 mm (0.07 inches) per year since 1961 (IPCC, 2014). The California coastline is experiencing a rise in sea level, including coastal flooding and increased coastal erosion that is primarily believed to be driven by climatic change. SLR is predicted to increase the number and intensity of extreme storms and the height of coastal storm surges, leading to more frequent and severe flooding and coastal erosion events over the next century.

Projections of SLR at the San Francisco Golden Gate tide gauge are in the following table:

San Francisco, Golden Gate SEA-LEVEL RISE PROJECTIONS*

Feet above 1991-2009 mean	MEDIAN	LIKELY RANGE	1-IN-20 CHANCE	1-IN-200 CHANCE
Year / Percentile	*50% probability SLR meets or exceeds...*	*67% probability SLR is between...*	*5% probability SLR meets or exceeds...*	*0.5% probability SLR meets or exceeds...*
2030	0.4	0.3 — 0.5	0.6	0.8
2050	0.9	0.6 — 1.1	1.4	1.9
2100 (RCP 2.6)	1.6	1.0 — 2.4	3.2	5.7
2100 (RCP 4.5)	1.9	1.2 — 2.7	3.5	5.9
2100 (RCP 8.5) **	2.5	1.6 — 3.4	4.4	6.9

* Rising Seas in California: An Update on Sea-Level Rise Science. California Ocean Science Trust, (California Ocean Protection Council Science Advisory Team Working Group), April 2017.

** Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report, 2014.

The table shows that the likely (67% probability) range along the northern San Mateo County coast for a projected SLR by 2050 is between 0.6 and 1.1 feet above the 1991-2009 mean sea level, which would be between 0.9 and 1.6 feet over the next 50 years. Representative Concentration Pathway (RPC) is a greenhouse gas concentration. If there are no significant global efforts to limit or reduce the influence on climate from emissions of greenhouse gases, an RPC of 8.5 is applied. The likely SLR range for RPC 8.5 is projected to be between 1.6 and 3.4 feet by 2100.

While erosion and landslides can remove several feet of the bluff top, the lower cliffs can be stable for decades when backed by cemented bedrock. A review of a series of stereo vertical aerial photographs obtained from the U.S. Geological Survey dating from 1943 to the present of this shoreline location shows that the bedrock along the base of the cliff has been reasonably stable over the past 78 years. But, of course, the lower portion of the cliff will continue to be subjected to periodic wave attacks as the sea level rises.

However, the resistant bedrock at this location extends upward for several tens of feet, and the predicted few feet of SLR will impact only that bedrock. Therefore, SLR should have very little additional influence on the lower cliff. As far as the upper area of the 100-foot-high bluff is concerned, it is sufficiently elevated to prevent any projected SLR from impacting it. As a result, the future retreat rate of the bluff top should be similar to the historical average of 6.5 inches (0.54 feet) per year described in our November 20, 2020 report.

Firm predictions of coastal bluff retreat are challenging to validate because the future cannot be foreseen. There are uncertainties involved in every factor of climate, weather, temperature, sea-level rise projections, rock condition, and cliff edge positions. Even if the retreat rate is increased by 50% to 0.81 feet per year to account for uncertainties, a 50-year or a 75-year retreat of the bluff edge would still fall short of reaching the site parcel (see cross-section on the attached ***Plate 8A***).

Fault Hazard Potential

The Seal Cove fault follows the eastern side of the Seal Cove bluffs along the base of an easterly-facing slope about 1,000 feet northeast of the site property. First identified by Glen (1959), the Seal Cove fault is considered an active segment of the San Gregorio fault system (USGS/Seal Cove, 2009), which merges with the active San Andreas fault north of San Francisco. Therefore, it is within a State Alquist-Priolo (AP) zone of active earthquake faulting. "Active" means it has had movement within the past 11,000 years (Holocene age). Trenching performed on the fault near Seal Cove in 1997 dated the most recent activity between A.D. 1270 and A.D. 1400 (Simpson et al., 1997).

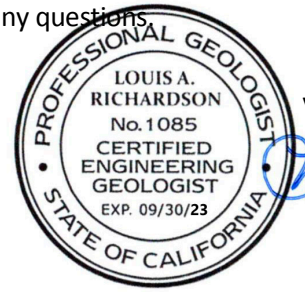
At least three fault branches pass through the bluff area of Moss Beach southwest of the main Seal Cove fault trace (Leighton, 1976 and Cotton, 1980). Although these branches are not within an AP zone, the County requires fault investigations for development in that area. Various trenching studies within the area have not found any of these branches to have Holocene activity.

Fault exploration was performed on the subject property at 989 Ocean Boulevard by Earth Investigation Consultants (2000). They excavated a geologic trench along the site property's southeastern boundary and found no evidence of faulting. In addition, we have reviewed two other fault investigations filed with the State that involved trenching in the nearby area. Neither of them encountered faulting within Holocene age deposits. One was on a parcel about 300 feet northeast of the site property (PSC Associates, 1978), and the other was about 500 feet north of it (Purcell, Rhoades, 1977).

Closure

The information in this letter is for the exclusive use of Mr. Sanjay Sharma and his design team for this specific project. It is not transferrable to other projects or site locations unless authorized in writing by the undersigned.

The opportunity to be of assistance in this matter is sincerely appreciated. We trust that this provides the information required at this time. However, if further services are needed, don't hesitate to contact the undersigned if any questions.



Very truly yours,

Attachments (2)

Louis A. Richardson, PG, CEG

LOUIS A. RICHARDSON, P.G., C.E.G.
CONSULTING ENGINEERING GEOLOGIST

REFERENCES

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Earth Investigation Consultants, 2000: Geotechnical Investigation, Proposed Residence, APN 037-278-090, Ocean Boulevard, Seal Cove, California; consultant report for Edward Eng, Esq.

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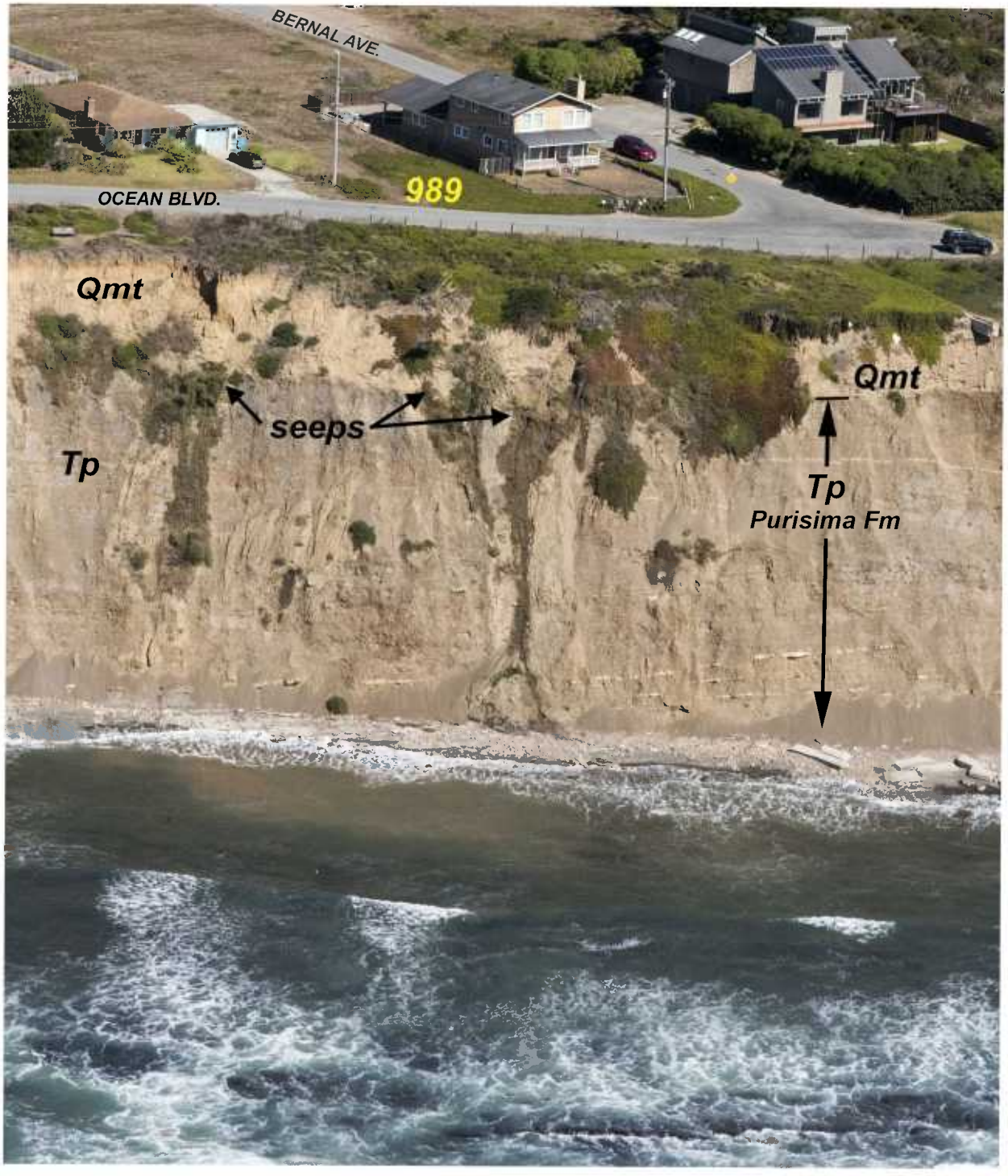
U.S. Army Corps of Engineers, 1971: National Shoreline Study, California Regional Inventory; contributors - Dames & Moore, San Francisco, Calif.

USGS/Seal Cove, 2009: The San Andreas and San Gregorio Fault Systems in San Mateo County; U.S. Geological Survey Open-File Report 2005/1127, Chapter 8.

The following aerial photographs were reviewed:

Date: 10/11/1943	Photo Nos. DDB-2B-210 and -211 (stereo), Source: USGS
Date: 7/29/1946	Photo Nos. 2-180 and -181 (stereo), Source: USGS
Date: 5/27/1956	Photo Nos. DDB-1R-2 and -3 (stereo), Source: USGS
Date: 4/16/1968	Photo Nos. GS-VBZJ 1-3 and -4 (stereo), Source: USGS
Date: 4/22/1973	Photo Nos. 3567-2-143 and-144 (stereo), Source: USGS
Date: 9/26/2020	Source: Google Earth Aerial Imagery.



DATE: 10/4/2020

APN 037-278-090 989 Ocean Blvd. Moss Beach, CA	**SITE BLUFF**		
	Proj. No. 1094 B	October 2021	**PHOTO PLATE**

LOUIS A. RICHARDSON
Consulting Engineering Geologist

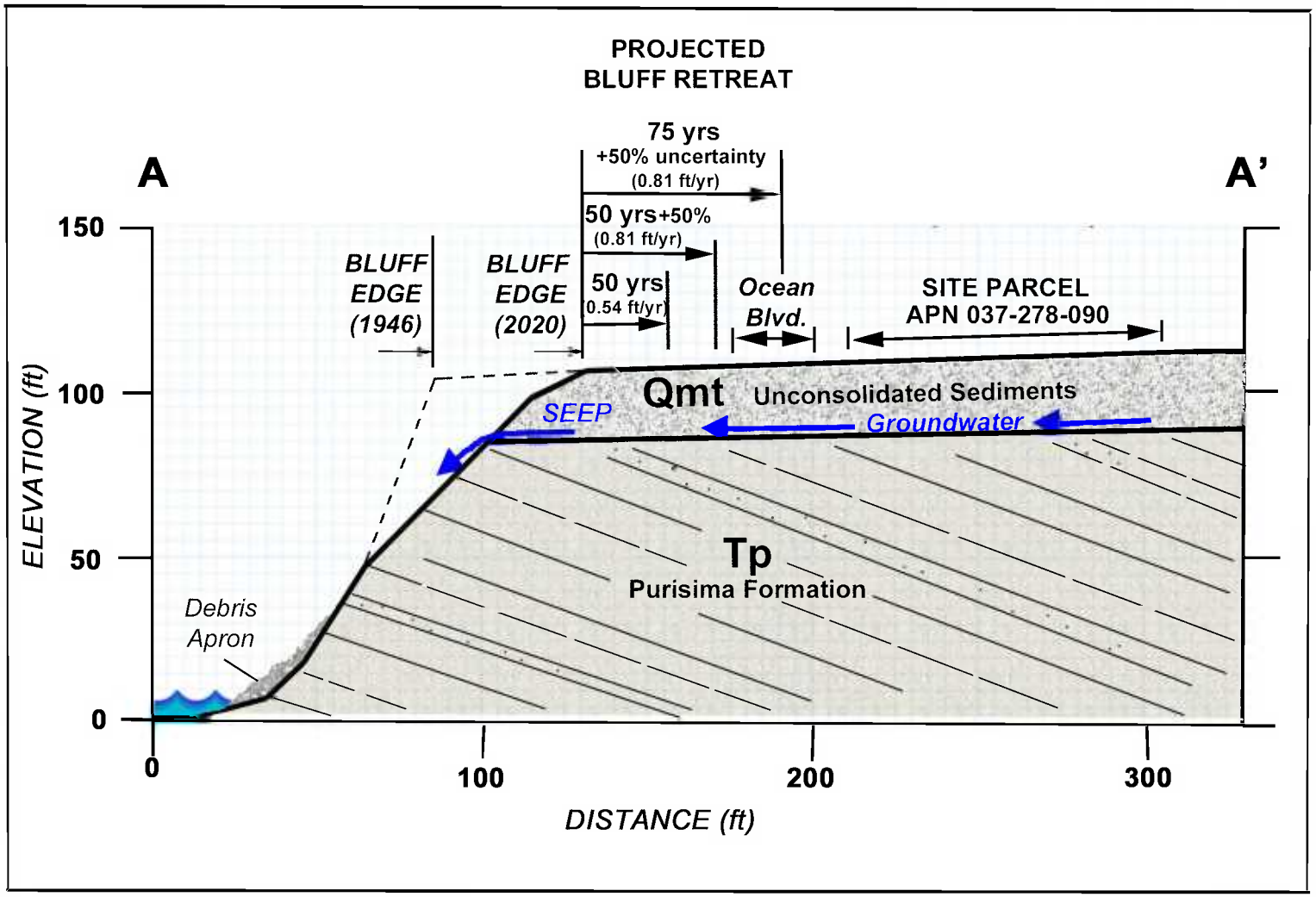
APN 037-278-090
989 Ocean Blvd.
Moss Beach, CA

Proj. No. 1094 B

October 2021

Plate 8A

GEOLOGIC CROSS-SECTION



IDEALIZED CROSS-SECTION - view toward northwest

For location of section, see Plate 7 of Nov. 20, 2020 report.

LOUIS A. RICHARDSON
Consulting Engineering Geologist

APN 037-278-090
989 Ocean Boulevard
Moss Beach, CA

Proj. No. 1094 B

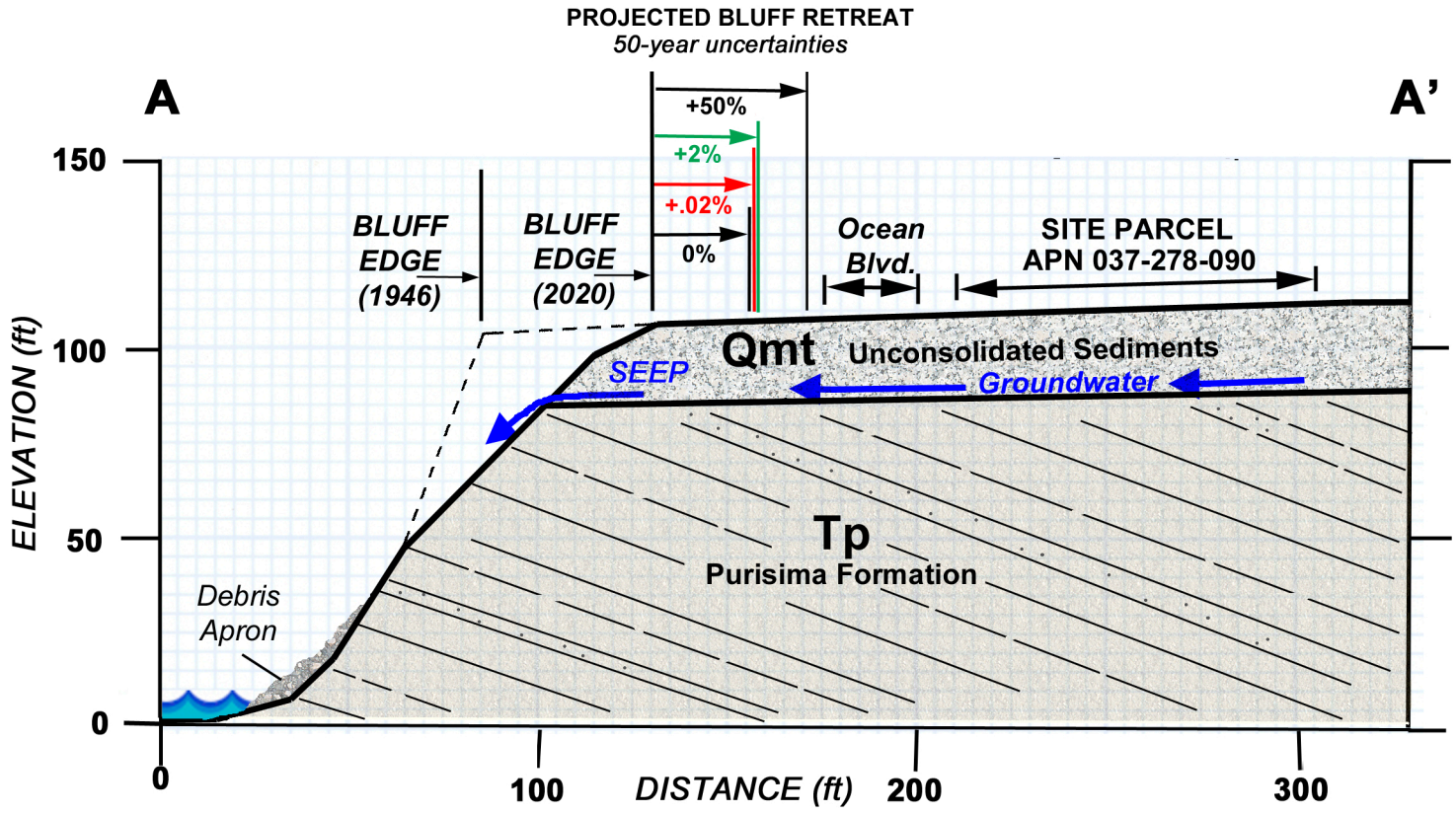
November 2021

Plate 8B

BLUFF TOP RETREAT

Horizontal Retreat from 2020 bluff top edge (feet)

Year / Percentile	*Retreat Distance @ 0.54 ft/yr**	*Retreat Distance +0.2% uncertainty*	*Retreat Distance +2% uncertainty*	*Retreat Distance +50% uncertainty*
2070 (50 years)	27.0	27.1	27.6	40.5
2095 (75 years)	40.5	40.6	41.3	60.8



Note: For location of section, see Plate 7 of Nov. 20, 2020 report.

LOUIS A. RICHARDSON
Consulting Engineering Geologist

County of San Mateo - Planning and Building Department

ATTACHMENT F

Following are CDRC Findings for Letter of Continuance for PLN2020-00043

989 Ocean Blvd., Moss Beach, Ca

05/14/21

Decision: Applicant requested continuance

The project has significantly improved façade articulation and massing since previous continuance, and is consistent with standards 6565.20 (D)e – wall articulation and 6565.20(D)c.1-second stories

Recommendations:

Per 6565.20 (D) D.4 Exterior Materials and Colors:

- Specify paint color - body to be a darker cream color paint, decorative wood elements to be medium brown. Provide paint manufacturer and color names/numbers.
- Specify Shingle manufacturer, color & style.
- Provide product manufacturer and finish specifications for garage doors
- Revise deck railing and post scale/proportions to be more consistent with dominant farm-style of home. Consider metal rod or cable rails instead of glass, or containing glass with wood top and bottom rail. Specify posts and any top or bottom rails to be finished to match other decorative wood elements, with smaller top caps

Per 6565.20(D)2.c.1 Revise roof form over front entry stair to be more consistent with dominant roof forms and reduce dominant appearance of roofing over front door – consider reducing pitch to match right side dormer. Consider one single light above front door if roof pitch is reduced rather than (2) on each side.

Per 6565.20 (D)4.a Architectural Style, and to achieve a unified design style:

- Eliminate jog to provide a continuous façade at the garage
- Reduce oval window size on front and back of second floor roof gables
- Reduce number of eyebrow shed roofs – at side door extend major roof rather than adding eyebrows below, or connect the two adjacent eyebrow roofs to be on continuous one
- Simplify the style of the chimney cap. Consider chimney cap more in keeping with the Farmhouse style.
- Revise boiler access door so that it matches the adjacent siding. Contain the door within wood siding or stone facing, not bridging both.

Per (6565.20(F)1: Provide landscape / planting plan that conform to the standards. Consider landscaping to help conceal access door to boiler.

Per (6565.20(F)4: Reduce number of exterior lights and specify dark sky compliant fixtures – typically one fixture per door