



# County of Santa Barbara Planning and Development

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## **Introduction:**

The coastal bluff in Isla Vista is dynamic in nature and is in constant retreat. The rate of retreat varies, reacting to relatively slow processes such as weathering and raveling and to more rapid processes such as wave action, slumping, or landslides. The more rapid processes can happen without warning and can create a safety hazard for those living in structures along the edge of the Isla Vista bluff.

## **Purpose:**

It is the intent of this document to establish a policy that protects the safety and welfare of the occupants of buildings located proximal to the retreating coastal bluff in Isla Vista.

## **Background:**

Studies performed to date and historic documentation show that the bluff in Isla Vista is in constant retreat. The exact rate of retreat is a source of debate among geotechnical engineers and geologists, but there is complete agreement on the fact that the bluff is retreating.

The soils or geologic profile is somewhat consistent along the bluff. It generally consists of various cemented alluvium layers (silty sand, partially cemented alluvium, cemented sand, and a shell, or pholad, layer) with a depth in the range of fourteen feet resting on a moderately fractured mudstone with a depth in the range of sixteen feet. The devising plane between the mudstone layer and the alluvium layers is generally horizontal, but some angle of incline is possible depending on the individual property's geologic cross-section.

Soil strength and bluff stability on an individual property can vary, even though the geologic cross-section is fairly consistent. An accurate evaluation of the geologic profile on a particular parcel is only possible with a site-specific investigation. A site-specific investigation is a general requirement of the County of Santa Barbara for new structures and those where it is believed a soil stability concern may exist.

On average, the rate of bluff retreat in Isla Vista is in the range of six inches per year. The true rate of retreat, however, can range from a few inches per year to several feet in a single event. Eyewitness accounts have described as much as eight feet of bluff loss occurring at once. However, this large of an event appears to be infrequent. Single events of up to five feet appear to be more common. Events such as this have been detected with some consistency by County staff through frequent monitoring of activity on the bluff. For purposes of this policy document, a single five foot event is considered a possibility at any given time.

## **Building Code Requirements and Setbacks from Descending Slopes:**

According to California Building Codes, buildings are generally required to meet certain prescriptive setbacks from descending slopes. In the case of Isla Vista, use of this approach would result in a code minimum of approximately 40', measured from the bluff face to any part of the building's foundation.

The Building Official may approve alternate setbacks and clearances from descending slopes based on California Building Code Section 1808.7.5. It further authorizes the Building Official to require an investigation and recommendation of a qualified engineer to demonstrate that the intent of this code section has been satisfied. Such an investigation shall include consideration of material, height of slope, slope gradient, load intensity and erosion characteristics of slope material.

For some soil types and/or geologic cross-sections, a building that is less than 40' from a vertical bluff face using the aforementioned prescriptive approach in the California Building Code could be a cause for concern and warrant study by a licensed design professional. The Building Official would be within the law to require this. However, based on the body of knowledge gained from several geotechnical and geological studies performed to date in Isla Vista, the Building Official has determined that buildings may be much closer to the bluff face than 40' and not be considered dangerous. The Building Official has determined instead that any portion of a building foundation within 10' of the bluff face may potentially be an unsafe condition and warrants study by a licensed design professional. Considering the possibility that five feet of bluff loss may occur in a single event, the Building Official has determined that a building foundation should be evaluated when they are within 15' from the bluff face. The term "building foundation" applies in this case to any portion of a building or its appurtenances

### **Responsibility of the Building Official:**

The Building Official is responsible for the administration and enforcement of the various codes regulating construction, use and occupancy of buildings. Occupancy of an existing legally permitted structure is allowed to continue without change except as is deemed necessary by the building official for the general safety and welfare of the occupants and the public. Erosion of the bluff beyond a certain threshold could jeopardize the safety of a building's occupants due to the potential of a sudden dislodging of the bluff and undermining of a building foundation.

The Code of the County of Santa Barbara, Chapter 10, Article XIV, states that "where the general condition of the soil or underlying rock of a building site is such that it may present a potential for failure, or a hazard to the health, safety and welfare of the public the Building Official may require any additional information as necessary to ascertain the safety and stability of the site and any building or structures constructed or to be constructed on said site."

The law does not place the responsibility on the Building Official to perform tests and analysis to prove the safety and habitability of buildings. Under the law, it is the responsibility of the landowner to provide such testing and analysis to the Building Official and to prove to the Building Official that the structure is safe and habitable.

### **Responsibilities and Requirements of the Property Owner:**

Property owners are encouraged to plan well in advance for the inevitable bluff retreat and be pro-active with regard to the safety of their building and its inhabitants. The process of hiring design professionals, having them prepare the necessary documentation and obtaining the proper permits can take a considerable amount of time. It is desirable to have any required work performed well in advance of reaching a condition where the building's safety is in question.

Once a portion of the bluff recedes to a point where County staff has determined it is within 15' of any portion of a building foundation, the property owner and building inhabitants will be sent a letter and a copy of this document by certified mail. In the letter, the property owner will be asked to schedule a meeting with a County building inspector. With an on-site visit, the building inspector will be able to assess the existing conditions, obtain a more accurate measurement to the bluff face, and answer property owner's questions with regard to the County's policies and procedures. If it is confirmed that the building foundation is within 15' of the bluff face, the property owner will be encouraged to immediately begin

formulating plans to either cut their building back or to hire licensed professionals to prepare the necessary investigations and engineering to prepare a structural condition report and justify the safety of the structure.

If the property owner chooses to simply cut the building back, they will be expected to cut the building back to a point where the foundation is 30' or more from the bluff face, though a lesser cutback may be permitted on a case-by-case basis. This will require the least amount of cost and a relatively straightforward permitting path to accomplish. A Coastal Development Permit (land use approval) will be required and the property owner will need to obtain a building permit from the Building and Safety Division. Some minor structural work may also be required by a licensed professional, but a soils investigation will not be required.

For building owners with structures that have conventional shallow foundations, cutting the building back may be their only option. It will be nearly impossible to justify an extended life for structures with this type of foundation.

If it so happens the structure has non-conventional deepened foundation elements that were constructed with proper permits and construction inspections, the building owner may choose to hire licensed professionals to prepare a structural condition report and justify the safety of the structure. This approach would require the property owner to provide a soils investigation by a licensed soils engineer and a structural evaluation by a licensed structural or civil engineer. Additionally, the property owner, with the assistance of the design professional, will be required to establish a monitoring and abatement plan for the structure. This will involve establishing trigger points for cutting the building back so that the building never reaches a point where a dangerous condition exists. It will require that the structural engineer perform inspections and submit a yearly report to the County with regard to the building's current condition.

Should any work need to be performed to strengthen the building's foundation system to extend the life of the existing structure, then a Coastal Development Permit (land use approval) and a building permit from the Building and Safety Division would also be required. Approval of the Coastal Development Permit is not guaranteed, as there are several County and State policies in place that discourage development within bluff setbacks. In reviewing the request for the Coastal Development Permit, P&D staff would evaluate whether other less environmentally damaging alternatives exist that would obviate the need to add new structural development to the eroding bluff (e.g. cutback). The property owner is encouraged to consult with P&D planning staff prior to submitting for the Coastal Development Permit to obtain initial feedback on the scope of the project.

Once noticed by the County that the building's foundation is within 15' of the bluff face, property owners will be required to take action and keep the County informed of their progress. If no progress has been made in resolving the matter and the bluff retreats to a point where the bluff face is within 10' of the building's foundation, the property owner would be subject to an enforcement action. The property owner will be issued a "Notice of Violation" by the Building and Safety Division and will be responsible for enforcement fees. The County will consult with the property owner to establish an abatement schedule, including time frames and deadlines for the work to be accomplished. Continued non-action on the part of the property owner can lead to the issuance of a "Notice of Non-Compliance", which can lead to additional fines. If nothing has been done to achieve compliance and the bluff retreats to a point where the bluff face is within 5' of the building's foundation, a "Notice and Order to Vacate Building and Abate" may be issued on the property.

### **Decks and Appurtenances:**

This policy applies to any foundation element, including structural deck foundations.

### **Permits Required:**

Permits are required to perform any demolition or alteration to structures along the bluff. There are two distinctly different types of permits that are required, each addressing a different set of laws and regulations. Some of the plans and other documentation required for these two types of permits are common to both.

A land use approval (specifically, a Coastal Development Permit) is required to ensure that the alteration meets the County's set of zoning regulations and policy requirements. The processing and review of this permit would involve the consideration of available options and whether there are other less environmentally damaging alternatives that can be pursued. Ultimately, this type of permit may require a public hearing. An Emergency Permit may be issued in advance of the Coastal Development Permit depending on the nature of the work (mitigating a potentially dangerous condition necessitating immediate action) and the proximity of the foundation in relation to the adjacent eroding bluff, but a follow-up Coastal Development Permit would still be required. Additional information on Coastal Development Permits can also be obtained by contacting the County's zoning information line at (805) 568-2090.

The second type of permit, a building permit from the Building and Safety Division, is also required for alteration and/or demolition projects. Building permits are required to assure the structure is in compliance with California's building, electrical, mechanical and plumbing codes. Additional information on building permits can also be obtained by contacting the Building and Safety Division's general business line at (805) 568-3030.

### **Policy Statement:**

When any foundation element or a vertical plane drawn tangent to any portion of any foundation element measures 15 feet or less to the inward-most edge of the bluff face, measured horizontally, the property owner is to be notified by the County of Santa Barbara Building and Safety Division with a copy of this document via certified mail. The property owner will be requested to schedule an on-site meeting with a County building inspector. The property will be placed on a "watch" list and will be monitored on a continuing basis for bluff retreat and building proximity.

When any foundation element or a vertical plane drawn tangent to any portion of any foundation element measures 10 feet or less to the inward-most edge of the bluff face, measured horizontally, a formal code enforcement case will be initiated and the property owner will be issued a "Notice of Violation" by the County of Santa Barbara Building and Safety Division. An abatement schedule will be established to address the noncompliant conditions. Continued non-action on the part of the property owner can lead to the issuance of a "Notice of Non-Compliance", which can lead to additional fines.

When any foundation element or a vertical plane drawn tangent to any portion of any foundation element measures five (5) feet or less to the inward-most point of the bluff face, the owner of the property may be issued a "Notice and Order to Vacate Building and Abate" by the County of Santa Barbara Building and Safety Division.

### **Property Owner Options:**

Action by the property owner is required when a building foundation is determined to be within 15' of the bluff face. Typically, this action takes one of three different forms as follows:

- 1) Some property owners choose to simply cut the building back from the bluff. Property owners would be expected to cut back the building and its foundation by at least 30' from the bluff face, though a lesser cutback may be permitted on a case-by-case basis. This would require a Coastal Development Permit and a building permit. Building plans showing the configuration of the revised building layout would be necessary. It will involve some structural engineering, but this work would be relatively

minor in nature (the new rear wall of the building simply needs to be properly engineered for earthquake loads). See the attached document entitled “CUTTING THE BUILDING BACK FROM THE BLUFF – SUBMITTAL REQUIREMENTS AND PERMIT PROCESS” for additional information on this approach.

- 2) Property owners with existing deepened foundation elements may want to try and extend the life of their structure. To do this, the building must be shown to be safe. The property owner will be required to hire a licensed geotechnical expert to prepare a detailed soils investigation and a licensed civil or structural engineer to provide the necessary structural calculations to show that the structure remains safe to occupy. The civil or structural engineer would also need to prepare a Conditional Certificate of Occupancy and monitoring and abatement plan for the structure. See the attached document entitled “STRUCTURAL CONDITION REPORT ONLY – SUBMITTAL REQUIREMENTS AND PERMIT PROCESS” for additional information which would be required to document that the structure as it currently exists remains safe for occupancy.
- 3) Property owners wishing to extend the life of their structure through structural alterations to existing foundation elements would need to obtain a Coastal Development Permit. This approval would need to be secured prior to submitting for a building permit from the Building and Safety Division. As stated above, the Coastal Development Permit is a discretionary action subject to a public hearing and there is no guarantee of permit approval. Depending on the scope of the proposed structural alteration, P&D may determine that there are other less environmentally damaging options that would avoid adding development near the eroding bluff. A Conditional Certificate of Occupancy and a monitoring and abatement plan for the structure would in this case also need to be prepared. It will require that the structural engineer perform inspections and submit a yearly report to the County with regard to the building’s current condition. The submittal requirements and permit process is similar to the previous option. See the attached document entitled “FOUNDATION STRENGTHENING – BUILDING AND SAFETY SUBMITTAL REQUIREMENTS AND PERMIT PROCESS” for additional information on this approach.

#### A. CUTTING THE BUILDING BACK – SUBMITTAL REQUIREMENTS & PERMIT PROCESS:

##### **A. Drawing Requirements common to the Coastal Development Permit and the building permit:**

Buildings are to be cut back 30’ minimum from the bluff face, though lesser cutbacks may be permitted on a case-by-case basis. The following drawings will be required. These will be necessary for both the Coastal Development Permit and the building permit. Drawings are to be legible and drawn to scale.

##### **1. Site Plan, to include (at minimum):**

- Drawings to be drawn to scale and dimensioned
- Project address
- Name, address, and telephone number of the owner and the person responsible for the preparation of the plans
- Name, address, and telephone number of all consultants involved with the project design
- Easements and/or restricted use areas, with dimensions
- North arrow
- Location of all property lines/dimensions from buildings to property lines
- Current location of bluff top
- Show new footprint of structure/show location of existing footprint to be demolished in a dashed outline
- Locations of all buildings / structures on adjacent property within 10 feet of property line.

- Location and dimensions of walks, driveways and other hardscape
- Drainage information, to include site drainage patterns and drainage devices (catch basins, area drains, sump pumps, etc.)
- Project Data, to include square footage breakdown by floor, Type of Occupancy, Type of Construction (include whether or not building is fire-sprinkled), Assessor's Parcel Number and/or Legal Description

**2. Existing/Demolition Floor Plans:**

- Drawings to be drawn to scale and dimensioned
- Show existing walls, windows, doors and rooms to remain with solid lines/show walls, windows, doors and rooms to be removed in dashed lines
- Provide both upper and lower floors for two-story applications

**3. Proposed Floor Plans:**

- Drawings to be drawn to scale and dimensioned
- Show proposed walls, windows, doors and rooms
- Provide both upper and lower floors for two-story applications
- Show location and type of electrical fixtures, outlets and switches, main electrical panel with amperage rating and smoke detectors (may be shown on separate electrical plan if so desired)
- Show location of proposed plumbing fixtures, new connection to existing building drain or sewer (if applicable).
- Show location and BTU rating of existing or proposed heating system, ducts and registers and method of proposed mechanical ventilation

**4. Elevations:**

- Drawings to be drawn to scale
- Provide elevations that detail vertical dimensions of existing and proposed wall(s), door(s), window(s), chimneys and projections.
- Specify existing or proposed wall and roof material finishes and ventilation locations

**B. Additional drawings and other documentation required for obtaining the building permit:**

Additionally, for the building permit, the following drawings and other documentation will be required.

**5. Building and/or Wall Sections:**

- Drawings to be drawn to scale and dimensioned
- Provide building and/or wall sections at critical locations showing new construction

**6. Schedules:**

- Specify size, configuration, window and door types, types of glazing (alternatively may be shown on floor plans)

**7. Foundation Plan:**

- A soils/geology report is not required. Foundations are to be constructed to minimum requirements in accordance with Chapter 18 of the California Building Code.
- Drawings to be drawn to scale and dimensioned
- Foundation elements are to be included in the cross-section.
- Provide detailing and dimensioning of new footings showing steel reinforcement
- Provide detail showing tie of existing footings to new footings

**8. Framing Plans:**

- Drawings to be drawn to scale and dimensioned
- Show existing and proposed roof and floor framing
- Show size, species, and spacing of all members
- Projects must be engineered or meet conventional framing section of California Building Code Chapter 23
- Show all hardware and connectors; Provide minimum nailing specifications
- Provide framing details as necessary

**9. Energy Conservation:**

- Project must be shown to meet the provisions of the California Energy Code; either a prescriptive or performance approach may be utilized to show compliance

**10. Structural Engineering:**

- Structural engineering not required if building can be shown to meet conventional framing standards of the California Building Code (structural engineering may be desirable to maximize the amount of openings in the ocean facing wall, however)

**C. Additional submittal requirements:**

Additional submittal requirements for the Coastal Development Permit may be found at the following web link: <http://www.sbcountyplanning.org/forms/PermitAppHndt/AppsForms.cfm> (click on “Coastal Development Permit – Hearing Required”). Additional information on building permit submittals and application form may be found at the following website: <http://sbcountyplanning.org/building/index.cfm>

## B. STRUCTURAL CONDITION REPORT – SUBMITTAL REQUIREMENTS & PERMIT PROCESS:

The following documentation is required for a structural condition report. A Conditional Certificate of Occupancy and monitoring and abatement plan will also be required if the building is determined to be safe for occupancy. The structural condition report and Conditional Certificate of Occupancy and monitoring and abatement plan are reviewed under a building permit submittal to the Building and Safety Division. A Coastal Development Permit is not required for review and approval of the structural condition report, the Conditional Certificate of Occupancy and the monitoring and abatement plan. A Coastal Development Permit is required when alteration or demolition work is planned, as discussed in the next section below..

### A. Structural Condition Report – submittal requirements:

#### 1. Site Plan, to include (at minimum):

- Project address
- Name, address, and telephone number of the owner and the person responsible for the preparation of the plans
- Name, address, and telephone number of all consultants involved with the project design
- Easements and/or restricted use areas, with dimensions
- North arrow
- Location of all property lines/dimensions from buildings to property lines
- Current location of bluff top and toe, location of Mean High Tide Line
- Locations of all buildings / structures on adjacent property within 10 feet of property line.
- Location and dimensions of walks, driveways and other hardscape
- Drainage information, to include site drainage patterns and drainage devices (catch basins, area drains, sump pumps, etc.)
- Project Data, to include square footage breakdown by floor, Type of Occupancy, Type of Construction (include whether or not building is fire-sprinkled), Assessor's Parcel Number and/or Legal Description

#### 2. Geotechnical Report:

- A foundation investigation is to be prepared by a CA Licensed Geotechnical Engineer and/or Engineering Geologist in accordance with Chapter 18 of the California Building Code. Field work and reporting is to be signed by both the Geotechnical Engineer and the Engineering Geologist.
- A geologic cross-section at scale is to be provided, showing soil and bedrock conditions. Foundation elements are to be included in the cross-section.
- Perform work to sufficiently characterize relevant geotechnical engineering parameters of the soil and bedrock (may require soil drilling and sampling).
- Perform site-specific static and seismic slope stability analyses-issues of potential importance: shear strength, bedrock fracturing, possible tension cracks, coastal bluff conditions. Note: see Ashfor S.A. and Sitar N. (2002), Simplified Method for Evaluating Seismic Stability of Steep Slopes, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 128 No. 2, or other published resources on bluff/steep slope stability for more information.
- Evaluate liquefaction potential and consequences of liquefaction to the structure and adjacent bluff stability.
- Verify average bluff retreat rate at the site
- Provide input regarding possible single occurrence of failure/bluff loss (County has used a single occurrence value of five feet in previous structure evaluations)
- Assess impacts of bluff instability/loss of bluff on drilled piers and resulting lateral loads/pressures on drilled piers, if applicable
- Provide input regarding potential bluff instability/loss of bluff to an Architect or Professional Engineer for evaluation of foundations and structure. Evaluation must include consideration of a

minimum single-event of five-foot loss of bluff or larger (if predicted at the site by the Geotechnical Engineer or Engineering Geologist)

- The Building Official requires that Liquefaction Potential and Soil Strength Loss is evaluated as per California Building Code Chapter 18.

### **3. Structural Analysis and Existing Foundation Plans/Detailing:**

- The information provided in the Geotechnical/Geological report is to be communicated to a Licensed Architect or Professional Engineer for evaluation, who shall determine the structural integrity of the building and its foundation. The report shall include a Site Plan which shows the building location relative to the descending slope and the current elevation of key foundation elements (e.g., finish floor elevation at building corners, finish deck elevation, etc.)
- Structural Engineer is to provide an evaluation of the existing foundation system relative to the findings in the prepared soils report.
- Structural calculations are to include the effects of lateral loads such as wind, seismic, potential wave damage, hydrostatic pressure and/or soil pressure on structural elements including caissons or columns
- Include structural key, design dead and live loads
- Provide size and spacing of all structural elements, construction assemblies, critical connection details, reinforcement detailing, and any other structural elements referred to in the structural calculations
- Provide an assessment on the condition of the existing structure (i.e., cracking, weathering, corrosion, erosion, etc.) Include recommendations for testing, if required, to determine structural properties of materials.

### **B. Conditional Certificate of Occupancy and Monitoring Program:**

If the building is shown by the structural condition report to be safe for continued occupancy, a Conditional Certificate of Occupancy for a one year time period may be issued when accompanied with a documented ongoing monitoring program and abatement plan. The Conditional Certificate of Occupancy would be subject to renewal on a yearly basis. The Conditional Certificate and Occupancy and monitoring and abatement plan is to include the following components:

#### **1. Trigger Conditions:**

- Structural engineer of record needs to establish well defined and documented trigger conditions and what course of action will be taken when trigger conditions are reached. Trigger conditions are to be established through structural calculations. Triggers are to describe a clear course of action to be taken in advance of any condition which would render the building unsafe. (For example, structural calculations may show that a caisson may be safe up until 90% of its height is exposed on the bluff face. Trigger condition may dictate that the building be cut back prior to the 50% of the caisson's becoming exposed.)
- Trigger conditions are to be comprehensive and conclusive, addressing all possible triggers that would affect the safety of the structure
- Once established, the trigger conditions at the subject site are to be periodically observed by the property owner, a property manager or by another responsible individual as designated by the property owner (herein referred to as "Responsible Individual"). The Responsible Individual's site observations are to be performed and recorded on a continuing basis as agreed to by the County based on the structural engineer's recommendations in addition to any inspections required as a result of Significant Events (see item d below).

#### **2. Baseline Structural Report:**

- Structural engineer of record is to provide a baseline report, which includes 1) a current Site Plan and Site Profile drawing representing current bluff and building/deck conditions, 2) photograph(s)

as necessary to show the current condition of the bluff, and 3) the list of trigger conditions established for the project and documentation (may include or require photographic evidence, measurements, elevations, or other evidence) establishing the current condition of the trigger.

- A copy of the baseline structural report is to be retained by the structural engineer of record to allow comparison with future conditions.

### **3. Annual Inspections:**

- Inspections by the structural engineer of record and such other experts as the structural engineer of record deems necessary are to be performed once per year following the initial report. A report containing the results of the annual inspection is to be filed with the property owners and the Building and Safety Division no later than May 30 of each year. The report shall include 1) results from the annual inspection, describing current conditions relative to each of the initial trigger conditions discussed under item a) above, 2) updated Site and Profile drawings representing current bluff and deck conditions, 3) photograph (s) of the current bluff condition and 4) recommended inspection/observation requirements for the year forthcoming for the Responsible Individual (described under “Trigger Conditions”).

### **4. Significant Events:**

- The Responsible Individual as designated by the property owner (described under “Trigger Conditions”) is to perform an inspection on the building within twelve (12) hours following notification or learning of the occurrence of any of the following events. If any of the “trigger conditions” are observed, the Responsible Individual is to contact the property owner, the Engineer-of-Record and the Building and Safety Division immediately. If the Responsible Individual is unsure of the condition of the property or is unable to make a determination of any of the “trigger conditions”, the structural engineer of record will arrange an inspection of the property within 48 hours. The Responsible Individual will keep a written record of his/her inspection that shall be made available for inspection by either the Engineer of Record or Building and Safety Division, upon request. The significant events are 1) any seismic event causing significant shaking at the building site including any event measuring 4.0 or greater on the Richter scale with its epicenter at a location within a 75 mile radius of the subject property, 2) a rainfall event exceeding one inch per hour for a time period of greater than two hours, or a rainfall event exceeding four inches in any one twenty-four hour period, or a rainfall event exceeding six inches in any forty-eight hour period, 3) any tidal event associating a NOAA-declared high surf advisory coupled with tides higher than two feet over Mean High Tide Level and 4) the mechanism under which the Building and Safety Division is to be contacted shall be specified in the Conditional Certificate of Occupancy.

### **C. For alterations or strengthening of foundations:**

Additional documentation will be required for proposals to correct substandard conditions which require work on the bluff or existing buildings. See the attached document entitled “FOUNDATION STRENGTHENING – SUBMITTAL REQUIREMENTS AND PERMIT PROCESS” for additional information on this type of work.

<b>C. FOUNDATION STRENGTHENING – BUILDING AND SAFETY SUBMITTAL REQUIREMENTS &amp; PERMIT PROCESS:</b>
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The following is required for strengthening of an existing foundation. Some of these requirements are a duplication of the requirements for a structural condition report. This work will require approval of a Coastal Development Permit, which is subject to discretionary review and a public hearing, and a building permit. A Conditional Certificate of Occupancy and a monitoring and abatement plan will also need to be approved as part of the building permit.

**A. Foundation Strengthening – submittal requirements:**

**1. Site Plan, to include (at minimum):**

- Project address
- Name, address, and telephone number of the owner and the person responsible for the preparation of the plans
- Name, address, and telephone number of all consultants involved with the project design
- Easements and/or restricted use areas, with dimensions
- North arrow
- Location of all property lines/dimensions from buildings to property lines
- Current location of bluff top and toe, location of Mean High Tide Line
- Locations of all buildings / structures on adjacent property within 10 feet of property line.
- Location and dimensions of walks, driveways and other hardscape
- Drainage information, to include site drainage patterns and drainage devices (catch basins, area drains, sump pumps, etc.)
- Project Data, to include square footage breakdown by floor, Type of Occupancy, Type of Construction (include whether or not building is fire-sprinkled), Assessor's Parcel Number and/or Legal Description

**2. Geotechnical Report:**

- A foundation investigation is to be prepared by a CA Licensed Geotechnical Engineer and/or Engineering Geologist in accordance with Chapter 18 of the California Building Code. Field work and reporting is to be signed by both the Geotechnical Engineer and the Engineering Geologist.
- A geologic cross-section at scale is to be provided, showing soil and bedrock conditions. Foundation elements are to be included in the cross-section.
- Perform work to sufficiently characterize relevant geotechnical engineering parameters of the soil and bedrock (may require soil drilling and sampling).
- Perform site-specific static and seismic slope stability analyses-issues of potential importance: shear strength, bedrock fracturing, possible tension cracks, coastal bluff conditions. Note: see Ashfor S.A. and Sitar N. (2002), Simplified Method for Evaluating Seismic Stability of Steep Slopes, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 128 No. 2, or other published resources on bluff/steep slope stability for more information.
- Evaluate liquefaction potential and consequences of liquefaction to the structure and adjacent bluff stability.
- Verify average bluff retreat rate at the site
- Provide input regarding possible single occurrence of failure/bluff loss (County has used a single occurrence value of five feet in previous structure evaluations)
- Assess impacts of bluff instability/loss of bluff on drilled piers and resulting lateral loads/pressures on drilled piers, if applicable
- Provide input regarding potential bluff instability/loss of bluff to an Architect or Professional Engineer for evaluation of foundations and structure. Evaluation must include consideration of a

minimum single-event of five-foot loss of bluff or larger (if predicted at the site by the Geotechnical Engineer or Engineering Geologist)

- The Building Official requires that Liquefaction Potential and Soil Strength Loss is evaluated as per California Building Code Chapter 18.

### **3. Structural Analysis and Existing Foundation Plans/Detailing:**

- The information provided in the Geotechnical/Geological report is to be communicated to a Licensed Architect or Professional Engineer for evaluation, who shall determine the structural integrity of the building and its foundation. The report shall include a Site Plan which shows the building location relative to the descending slope and the current elevation of key foundation elements (e.g., finish floor elevation at building corners, finish deck elevation, etc.)
- Structural Engineer is to provide an evaluation of the existing foundation system relative to the findings in the prepared soils report.
- Structural calculations are to include the effects of lateral loads such as wind, seismic, potential wave damage, hydrostatic pressure and/or soil pressure on structural elements including caissons or columns
- Include structural key, design dead and live loads
- Provide size and spacing of all structural elements, construction assemblies, critical connection details, reinforcement detailing, and any other structural elements referred to in the structural calculations
- Provide an assessment on the condition of the existing structure (i.e., cracking, weathering, corrosion, erosion, etc.) Include recommendations for testing, if required, to determine structural properties of materials.

### **4. Structural Analysis and Proposed Foundation Improvements:**

- Drawings to be drawn to scale and dimensioned
- Structural calculations for proposed improvements which include the effects of lateral loads such as wind, seismic, potential wave damage, hydrostatic pressure and/or soil pressure on structural elements including caissons or columns. Include structural key, design dead and live loads
- Provide size and spacing of all proposed structural elements, construction assemblies, critical connection details, reinforcement detailing, and any other structural elements referred to in the structural calculations
- Provide a minimum of one building cross-section showing the new work in relation to the bluff
- Provide detailing and dimensioning of new footings showing steel reinforcement
- Provide detail showing tie of existing footings to new footings

## **B. Conditional Certificate of Occupancy and Monitoring Program:**

A Conditional Certificate of Occupancy and a monitoring and abatement plan will need to be approved as part of the building permit. The Conditional Certificate of Occupancy would be good for one year and may be issued once the work has been completed. It would then be subject to renewal on a yearly basis depending on the structure's current condition. The Conditional Certificate and Occupancy and monitoring and abatement plan is to include the following components:

### **1. Trigger Conditions:**

- Structural engineer of record needs to establish well defined and documented trigger conditions and what course of action will be taken when trigger conditions are reached. Trigger conditions are to be established through structural calculations. Triggers are to describe a clear course of action to be taken in advance of any condition which would render the building unsafe. (For example, structural calculations may show that a caisson may be safe up until 90% of its height is exposed on the bluff face. Trigger condition may dictate that the building be cut back prior to 50% of the caisson's becoming exposed.)

- Trigger conditions are to be comprehensive and conclusive, addressing all possible triggers that would affect the safety of the structure
- Once established, the trigger conditions at the subject site are to be periodically observed by the property owner, a property manager or by another responsible individual as designated by the property owner (herein referred to as “Responsible Individual”). The Responsible Individual’s site observations are to be performed and recorded on a continuing basis as agreed to by the County based on the structural engineer’s recommendations in addition to any inspections required as a result of Significant Events (see item 4 below).

**2. Baseline Structural Report:**

- Structural engineer of record is to provide a baseline report, which includes 1) a current Site Plan and Site Profile drawing representing current bluff and building/deck conditions, 2) photograph(s) as necessary to show the current condition of the bluff, and 3) the list of trigger conditions established for the project and documentation (may include or require photographic evidence, measurements, elevations, or other evidence) establishing the current condition of the trigger.
- A copy of the baseline structural report is to be retained by the structural engineer of record to allow comparison with future conditions.

**3. Annual Inspections:**

- Inspections by the structural engineer of record and such other experts as the structural engineer of record deems necessary are to be performed once per year following the initial report. A report containing the results of the annual inspection is to be filed with the property owners and the Building and Safety Division no later than May 30 of each year. The report shall include 1) results from the annual inspection, describing current conditions relative to each of the initial trigger conditions discussed under item a) above, 2) updated Site and Profile drawings representing current bluff and deck conditions, 3) photograph (s) of the current bluff condition and 4) recommended inspection/observation requirements for the year forthcoming for the Responsible Individual (described under “Trigger Conditions”).

**4. Significant Events:**

- The Responsible Individual as designated by the property owner (described under “Trigger Conditions”) is to perform an inspection on the building within twelve (12) hours following notification or learning of the occurrence of any of the following events. If any of the “trigger conditions” are observed, the Responsible Individual is to contact the property owner, the Engineer-of-Record and the Building and Safety Division immediately. If the Responsible Individual is unsure of the condition of the property or is unable to make a determination of any of the “trigger conditions”, the structural engineer of record will arrange an inspection of the property within 48 hours. The Responsible Individual will keep a written record of his/her inspection that shall be made available for inspection by either the Engineer of Record or Building and Safety Division, upon request. The significant events are 1) any seismic event causing significant shaking at the building site including any event measuring 4.0 or greater on the Richter scale with its epicenter at a location within a 75 mile radius of the subject property, 2) a rainfall event exceeding one inch per hour for a time period of greater than two hours, or a rainfall event exceeding four inches in any one twenty-four hour period, or a rainfall event exceeding six inches in any forty-eight hour period, 3) any tidal event associating a NOAA-declared high surf advisory coupled with tides higher than two feet over Mean High Tide Level and 4) the mechanism under which the Building and Safety Division is to be contacted shall be specified in the Conditional Certificate of Occupancy.

**C. Additional submittal requirements:**

Additional submittal requirements for the Coastal Development Permit may be found at the following web link:<http://www.sbcountyplanning.org/forms/PermitAppHndt/AppsForms.cfm> (click on “Coastal

Development Permit – Hearing Required”. Additional information on building permit submittals and application form may be found at the following website: <http://sbcountyplanning.org/building/index.cfm>

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