

## **CONSTRUCTION UPON SLOPES STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL**

### **A. SCOPE**

This bulletin establishes the minimum standards by which the Department may permit construction upon slopes steeper than two horizontal to one vertical under the provisions of LABC Section 7014.1 of the Los Angeles Building Code. These minimum standards shall also apply to construction on any slope with adverse geologic conditions and/or for areas subject to slides and unstable soils as defined in LABC Section 7016.

### **B. GEOTECHNICAL REQUIREMENTS**

Subject to approval by the Department, construction may be permitted upon slopes steeper than 2:1 (horizontal: vertical), provided reports from a soil (geotechnical) engineer and an engineering geologist recommend favorably towards construction. The reports shall satisfy slope stability analyses requirements in accordance to Information Bulletin P/BC 2023-049 "Slope Stability Evaluation and Acceptance Standards". In particular, the report shall incorporate the following, where applicable, and any other provisions determined by the Department to be reasonable and necessary:

1. The site developed as proposed has a calculated minimum safety factor of 1.5 against deep-seated failure.
2. The site developed as proposed has a calculated minimum safety factor of 1.0 against deep-seated failure for earthquake-induced landslides based on an analysis performed in accordance with the most recent version of California Geologic Survey Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California per LABC Section 1803.7. For a cumulative displacement analysis, a maximum of 5 centimeters of displacement shall be assumed for slopes that may affect the integrity of structures.
3. The exposed slope surface has a calculated minimum safety factor of 1.5 against surficial failure.
3. Stability of temporary excavations shall be evaluated. The calculated minimum safety factor shall be 1.25.
4. The effect of the offsite slopes to the proposed development shall be evaluated.

5. Recommendations for embedment and setback of footings shall be provided.

### **C. DESIGN REQUIREMENTS**

Footings for structures shall be designed by a civil or structural engineer. The design shall incorporate the following:

1. Footings shall be set back from descending slopes per LABC Section 1808.7.2 but not less than that recommended by the geotechnical consultant.
2. Structures on, or adjacent to, slopes shall have clearances or setbacks in compliance with LABC Sections 1808.7.1, 1808.7.3, and 1808.7.5.
3. With the exception of properly compacted fill, all soil above bedrock shall be assumed to be creep-prone. Any reduction in the assumed depth of creep shall be justified by the soil engineer. The designing engineer shall provide support against downhill creep which shall be assumed to be a minimum of 1,000 pounds per linear foot acting upon each caisson or pier penetrating the creep prone soil. Any reduction in the assumed load shall be justified by the soil engineer. No such creep pressure need be considered for retaining walls and grade beams.
4. Adequate drainage devices shall be provided to protect slopes from erosion and to conduct water collected from decks, roofs, perimeter and other walls directly to a paved street or other disposal area approved by the Department. Permanent devices shall also be provided to control drainage from any springs or effluent seepages.

### **D. CONSTRUCTION REQUIREMENTS**

The plans concerning foundations, grading, retaining walls, drainage and seepage pit locations shall be reviewed by the engineering geologist and soil engineer for conformity with their Reports and City Approval Letter prior to issuance of a permit. Plans shall require that:

1. All loose brush and debris are removed from the site prior to starting construction.
2. No soil from the footing excavation is placed on the slope.
3. All footing excavations are inspected by the LADBS Inspector, the soils engineer and engineering geologist prior to placement of forms and reinforcing steel.
4. Concrete placement for foundations is inspected during placement by a Deputy Concrete Inspector approved by the Department.

5. All retaining walls are completed to the satisfaction of the Department prior to framing where such construction would interfere with the construction of the retaining wall.
6. All retaining walls are promptly backfilled.
7. Drainage devices on slopes and behind retaining walls are constructed prior to framing on the completed foundation.
8. The site is planted and irrigated as required by LABC Section 7012.1.