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FOUNDATION SYSTEM ON EXPANSIVE SOIL

Foundation systems for buildings on expansive soils shall be designed and constructed in a manner that will minimize damage to the structure from possible movement of the soil. The following guidelines are intended to provide the required mitigation.

I. PRELIMINARY SITE EVALUATION

Below questionnaire is to support the project designer with evaluating the project site soil condition and help determine the best resolution for the site foundation system.

#	Questions	Yes	No
1	**New Development:** Is proposed construction a new development on a lot with no existing building(s)?		
2	**Flood Zone:** Is proposed project located in a flood zone?		
3	**Lot Slope:** Is proposed construction on a lot with more than 6% slope?		
4	**Building Height:** Is proposed project or existing building more than 24 feet above surrounding grade to the highest point?		
5	**If One Story:** greater than or equal 750 square feet (SQFT) new area? **If Two Story:** greater than 1,000 square feet (SQFT) new area?		
6	**Geotechnical Hazard Conditions:** Any known geotechnical hazard conditions listed below? a. The project is in an area of suspected placement of fill, slides, slumps or soil creep. b. The project footprint is in a setback area of stream or creek. c. The area of the project is known for high water table or soil erosion. d. The addition is within 50 feet of a known fault or branch fault line.		
7	**Existing Building Foundation System:** Is existing foundation system designed by a registered engineer? (e.g. piers and grade beam, poste-tension slab, etc.)		
8	**Existing Building Conditions:** Are there conditions that indicate potential presence of expansive soil, hazards of slope instability, liquefaction, differential settlement or surface rupture due to faulting or lateral spreading?		
9	**Existing Building Signs:** Are there any signs of settlement from geotechnical hazard? (e.g. cracks in interior living space, garage, and/or exterior)		
10	**Existing Building Structural Conditions:** Are there any doors or windows that do not easily open, close or latch, door out of square in the frame or strike plate adjustment due to building movement?		
11	**Proposed Foundation System:** Do new proposed foundation walls require lateral soil loads of more than 12”, such as basements or retaining walls?		

If answers to all questions #1 through 11 are "No", the project qualifies for geotechnical investigations and a soil report waiver. See **II. MINIMUM REQUIREMENTS FOR FOUNDATION SYSTEM ON EXPANSIVE SOIL** for further instructions.

If answers to two or less questions are "Yes", the applicant could request for a Building Official's case by case review for geotechnical investigations and a soils report wavier. See **III. REQUEST FOR BUILDING OFFICIAL'S REIVEW** for further instructions.

If answers to three and more questions are "Yes", the project does not qualify for geotechnical investigations and a soils report waiver. See **IV. FOUNDATION DESIGN PER 2025 CALIFORNIA RESIDENTIAL CODE (CRC) and CALIFORNIA BUILDING CODE (CBC)** for further instructions.

II. MINIMUM REQUIREMENTS FOR FOUNDATION SYSTEM ON EXPANSIVE SOIL

For the projects qualified for geotechnical investigations and a soil report waiver, following documents will be required:

1. Site Observation Report by a registered design professional with following information:
   a. Site plan with property lines, existing structures and proposed structures
   b. Approximate four corner elevations at the property lines and cross sections (cross section not required for site slope less than 3%) [**SUBJECT TO SITE INSPECTION**]
   c. Building Information (for attached addition project only): approximate year built, foundation type (e.g. raised or slab), square feet, and number of stories.
   d. Pictures from all four sides and close-up pictures at roof to wall and wall to foundation junctions.
2. Foundation Assessment by a registered design professional:
   a. Summary of foundation assessment: date observed, method used, performed by and findings.
   b. Structural evaluation in terms of settlement and expected differential settlement for the remaining building expectancy lifespan (required for site slope greater than 3%).
   c. Recommendation for the project based on findings from the site observation and foundation assessment.
3. Project specific foundation plans and details or alternatives that meet and/or exceed following minimum requirements and standards.

REQUIREMENTS [REFERENCE CODES*]	**NEW ACCESSORY STRUCTURE OR RESIDENTIAL ADDITIONA**	
	SLAB-ON-GROUND	**RAISED FOUNDATION**
Site Preparation	Soil shall be pre-saturated to a depth of 18" prior to pouring foundations	
Moisture Barrier [R506.3.3]	Min. 6-mil inch with joints lapped not less than 6"	Not Required
Design Criteria [Table R401.4.1]	Maximum assumed load bearing pressure: 1,500 psf	
Minimum Width, Thickness, and Depth of Footing (See Note 1)	***Attached:*** the foundation system shall be whichever greater between the existing and minimum show on Page 5 ***Detached:*** dimensions must meet or exceeds dimensions shown on Page 6	
Cross Sections	Required for site slope > 3% - provide cross section of foundation design that show how the foundation design is adequate and/or appropriate for the site's existing slope conditions (e.g. stepped foundation, deep piers, etc.).	
Foundation Type	Monolithic and continuous footings required below all exterior walls and interior bearing walls	
Height Above Finish Grade [R404.1.6]	4" for masonry veneer and 6" elsewhere	

Reinforcement Specification [404.1.3.3.7.1]	ASTM A706 for low-alloy steel with a minimum yield strength of 60,000 psi (Grade 60) (414 MPa)	
Support and Cover [R403.1.3.5.3]	Steel reinforcement in concrete cast against the earth shall have a minimum cover of 3 inches (75 mm). Minimum cover for reinforcement in concrete cast in removable forms that will be exposed to the earth or weather shall be 11/2 inches (38 mm) for No. 5 bars and smaller, and 2 inches (50 mm) for No. 6 bars and larger.	
Subsoil Drains [CPC 1101.6]	N / A	Required
Drainage (See Note 2) [R401.3]	Lots shall be graded to drain surface water away from foundation walls. The grade shall fall not fewer than 6 inches within the first 10 feet.	

Notes and Abbreviations:

" - inches psi – pound per square inch psf - pounds per square feet

* 2025 California Residential Code unless otherwise noted CBC – California Building Code

Note 1 – For construction of a house <= 32-foot-wide; add 2-inch to the footing width and 1-inch to the footing thickness for every 2 feet of the house width greater than 32 feet.

Note 2 – Where drainage is unachievable per R401.3, provide an alternative designed system that ensure drainage away from the structure (e.g. drain inlets, catch basins).

III. REQUEST FOR BUILDING OFFICIAL'S REVIEW

For a project that had two or less "Yes" in above in the **I. PRELIMINARY SITE EVALUATION** questionnaire, the applicant has two options:

Option 1 - request for a Building Official's case by case review for geotechnical investigations and a soils report waiver by submitting following documents prepared by a qualified registered design professional or engineer:

1. Statement of qualification [**SUBJECT TO REVIEW**]
2. Site Observation Report with following information:
    a. Site plan with property lines.
    b. Approximate four corner elevations at the property lines and existing residence on plans and cross sections (cross section not required for site slope less than 3%) [**SUBJECT TO SITE INSPECTION**].
    c. Building Information (for attached addition project only): approximate year built, foundation type (e.g. raised or slab), square feet, number of stories, maximum height above the adjacent grade.
    d. Pictures from all four sides and close-up pictures at roof to wall and wall to foundation junctions.
3. Foundation Assessment:
    a. Summary of foundation assessment: date observed, method used, performed by, finding, etc.
    b. Structural evaluation in terms of settlement and expected differential settlement for the remaining building expectancy lifespan.
    c. Recommendation for the project based on findings from the site observation and foundation assessment.
4. Project specific foundation plans and details or alternatives that meet and/or exceed following minimum requirements and standards.
5. Stamped and signed letter with following information:
    a. Why qualified personnel believes the project may be qualified for the geotechnical investigations and a soils report waiver; and
    b. How the proposed foundation design integrated known/unknown site conditions.

6. Completed and signed ***B. Request for Building Official's Review Form for Geotechnical Investigations and Soils Report Waiver Form***

Option 2 - design per **IV. FOUNDATION DESIGN PER 2025 CALIFORNIA RESIDENTIAL CODE AND CALIFORNIA BUILDING CODE (CBC)**

IV. FOUNDATION DESIGN PER 2025 CALIFORNIA RESIDENTIAL CODE (CRC) AND CALIFORNIA BUILDING CODE (CBC)

Provide following for the foundation system on expansive soil:

1. Geotechnical investigations per California Building Code (CBC) 1803.5.11 and 1803.5.12;
2. Soils report per CBC 1803.6;
3. Foundation design calculation and analysis; and
4. Foundation plans and details that is adequate and appropriate for the site soil conditions.

V. GENERAL NOTES

If the design professional designed the foundation bases on the information provided in a soils report, the soils report is required to be submitted with the building permit application even if the project would otherwise not be required to provide a soil report per this information bulletin.

