EXPANSIVE CLASSIFICATION	DEPTH OF FTG. BELOW ADJ. GRADE	FOOTING REINFORCEMENT	SLAB THICKNESS/ REINFORCEMENT	PRESATURATION FOR SLAB AREAS	ROCK BASE BELOW SLABS
Non to Low EI less than 50	18" Exterior 12" Interior	2 #4 bars: 1-top and 1-bottom	4" Nominal with #3 bars at 16" o/c both ways	to 12"	Optional 4" Sand or Rock suggested
Medium EI less than 90	30" Exterior 24" Interior	4 #5 bars: 2-top, and 2-bottom.	5" Nominal with #3 bars at 12" o/c both ways or #4 bars at 21" o/c both ways	to 18"	4"
High EI less than 130	36" Exterior 30" Interior	Exterior: 6 #5 bars, 3-top, and 3-bottom. Interior: 4 #5 Bars, 2-top, and 2-bottom	6" Nominal with #4 bars at 12" o/c both ways	to 30"	8"
Very High EI greater than 130	60" Exterior 48" Interior	Exterior: 9 #5 bars 3-top, 3-bottom, 3-mid Interior: 6 #5 bars 3-top, and 3-bottom	8" Nominal with #5 bars at 12" o/c both ways	to 36"	12"

NOTES:

1) These recommendations are intended to substantially reduce risk of significant foundation and slab cracking. It should be recognized that adopting these recommendations may not prevent cracking in all cases. Expansive soil recommendations should not be considered to preclude more restrictive structural or code requirements. Also, these recommendations should not be considered to preclude structural equivalents (e.g., 1 #6 bar in lieu of 2 #4 bars).

2) Unless cracking can be tolerated, these recommendations should also be considered applicable to exterior flatwork and foundations for other appurtenant improvements. Slabs and foundations for exterior improvements which abut the main structure should be structurally continuous with the main building or a distinct architectural separation should be provided. Simple abutting can result in separation and vertical differential. Unless vertical differential at the outer edge of flatwork can be tolerated, a minimum 8-inch wide cut-off wall should be constructed to the same depth as specified for exterior footings. In consideration of conventional excavation equipment dimensions, the width of the cut-off wall will probably increase to at least 12-inches for deeper cut-off walls. Reinforcement should consist of at least 2 #4 bars top and bottom plus additional intermediate bars at one foot spacing. Slab ties should also be provided as specified in Note 9.

3) Presaturation of footing areas may be omitted if footing excavations at the time of concrete placement are generally moist and free of desiccation cracks. Presaturation of slab subgrade areas should be measured from the subgrade (i.e., below rock).

4) Rock base should consist of clean 3/4-inch crushed rock or similar. Processed miscellaneous base or similar should not be used.

5) Vapor membrane such as "Visqueen" or equivalent for slab areas at grade where dampness is undesirable is recommended. "Visqueen" if adopted, should be installed to provide a continuous moisture barrier. The membrane should be sealed around pipes and be overlain by a minimum of 1-inch of clean sand. A minimum 10-mil thickness should be provided. Considering the relatively low-cost, two 10-mil layers with splice areas staggered is the preferred procedure.

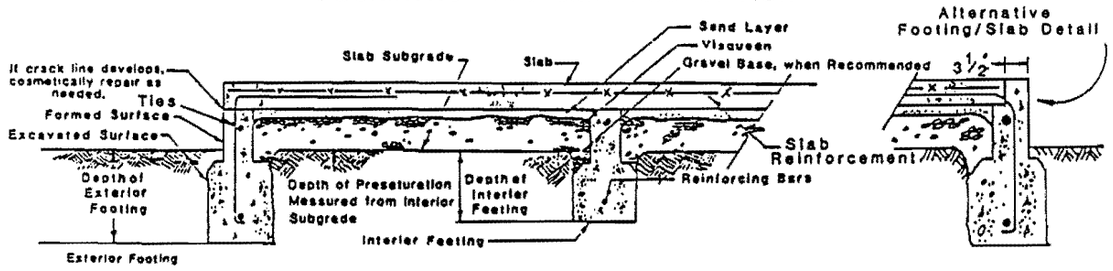
6) Unless otherwise specified, embedment near descending slopes should be increased to provide at least 20-feet horizontal distance to daylight. Horizontal reinforcement should consist of not less than 2 #4 bars per foot of embedment. Deepened footings near slopes will require design as retaining walls for that portion of the footing with a horizontal distance to daylight less than 20 feet. Structural criteria may dictate concrete configuration and reinforcement detailing.

7) A grade beam is recommended across garage entrances to similar depth and reinforcement as exterior footings.

8) Isolated piers are not recommended. Isolated foundations can be provided on the interior of a slab area provided the embedment is to the same depth as exterior footings. The isolated footings should be designed structurally continuous with the surrounding slab area.

9) Except in the garage, slabs should be structurally tied to perimeter footings by bar ties matching slab reinforcement which wrap around footing reinforcement and extend at least 3-feet into slabs. As a preferred slab tie alternative, ties should extend at least 3-feet and 5-feet respectively into the slab on an alternating bar basis. Floating the garage slab from the adjoining foundations is acceptable, provided the possibility of differential movement is recognized. Tieing the garage slab to perimeter foundations is the preferred procedure.

FOUNDATION AND SLAB FOUNDATION



PRESCRIPTIVE FOUNDATION CRITERIA

AMERICAN GEOTECHNICAL	F.N. 1987.02	FEB. 1990

Figure 1