Reinforcement shall be sufficient to prevent breakup of the slab during design conditions, even if the soil under the slab is undermined by erosion. Slabs-on-grade installed on structural fill shall be placed so that there is no loss of supporting soil during the design flood conditions.

Exception: When located under an elevated building, slabs-on-grade shall not be reinforced or use turned-down edges.

2.5.2 Footing Design

Footings shall support the structure during design flood conditions, including prolonged inundation and scour and erosion if expected during design flood conditions, to prevent flotation, collapse, and lateral movement.

Footings that are also intended to act as grade beams shall comply with the provisions of Section 4.5.9.

2.6 ENCLOSURES BELOW THE DESIGN FLOOD ELEVATION

Enclosed areas that are used solely for parking, building access, or storage shall be permitted below the DFE provided the enclosed areas meet the requirements of this section.

2.6.1 Required Openings in Foundation Walls

Foundation walls that enclose an area below the DFE, and that do not meet the dry-floodproofing requirements of Section 6.2, shall contain openings to allow for automatic entry and exit of floodwaters during design flood conditions. These openings shall meet the requirements of Section 2.6.2.

2.6.1.1 Openings in Breakaway Walls

Openings to allow for the automatic entry and exit of floodwaters during design flood conditions shall be installed in breakaway walls in flood hazard areas other than Coastal High Hazard Areas. Openings shall meet the requirements of Section 2.6.2 or Section 4.6.2.

Openings in breakaway walls in Coastal High Hazard Areas shall not be required.

2.6.2 Design of Openings

Openings shall meet the nonengineered requirements of Section 2.6.2.1 or the engineered opening requirements of Section 2.6.2.2.

2.6.2.1 Nonengineered Openings

Nonengineered openings shall meet the following criteria:

1. There shall be a minimum of two openings on different sides of each enclosed area; if a structure has more than one enclosed area below the DFE, each area shall have openings;
2. The total net area of all openings shall be at least 1 square inch for each square foot of enclosed area;
3. The bottom of each opening shall be no more than 1 ft above the adjacent ground level;
4. Openings shall not be less than 3 in. in any direction in the plane of the wall;
5. Any louvers, screens, or other opening covers shall not block or impede the automatic flow of floodwaters into and out of the enclosed areas; and
6. Openings meeting requirements 1 through 5 above installed in doors and windows are acceptable; however, doors and windows are not deemed to meet the requirements of this section.

2.6.2.2 Engineered Openings

Engineered openings shall meet the following criteria:

1. Each individual opening, and any louvers, screens, or other covers, shall be designed to allow automatic entry and exit of floodwaters during design flood or lesser flood conditions;
2. There shall be a minimum of two openings on different sides of each enclosed area; if a structure has more than one enclosed area below the DFE, each area shall have openings;
3. Openings shall not be less than 3 in. in any direction in the plane of the wall;
4. The bottom of each required opening shall be no more than 1 ft above the adjacent ground level;
5. The difference between the exterior and interior floodwater levels shall not exceed 1 ft;
6. In the absence of reliable data on the rates of rise and fall, assume a minimum rate of rise and fall of 5 ft/h; where an analysis indicates the rates of rise and fall are greater than 5 ft/h, the total net area of the required openings shall be increased to account for the higher rates of rise and fall; where