The pile pullout resistance shall be taken as the ultimate frictional or adhesive force that can be developed between the soil and the pile plus the pile and pile cap weight.

2. In the case of rotational restraint, the anchorage shall be designed to resist the axial and shear forces and moments resulting from the seismic load effects including overstrength factor of Section 12.4.3 or 12.14.3.2 or shall be capable of developing the full axial, bending, and shear nominal strength of the pile.

12.13.6.6 Splices of Pile Segments

Splices of pile segments shall develop the nominal strength of the pile section.

EXCEPTION: Splices designed to resist the axial and shear forces and moments from the seismic load effects including overstrength factor of Section 12.4.3 or 12.14.3.2.

12.13.6.7 Pile Soil Interaction

Pile moments, shears, and lateral deflections used for design shall be established considering the interaction of the shaft and soil. Where the ratio of the depth of embedment of the pile to the pile diameter or width is less than or equal to 6, the pile is permitted to be assumed to be flexurally rigid with respect to the soil.

12.13.6.8 Pile Group Effects

Pile group effects from soil on lateral pile nominal strength shall be included where pile center-to-center spacing in the direction of lateral force is less than eight pile diameters or widths. Pile group effects on vertical nominal strength shall be included where pile center-to-center spacing is less than three pile diameters or widths.

12.14 SIMPLIFIED ALTERNATIVE STRUCTURAL DESIGN CRITERIA FOR SIMPLE BEARING WALL OR BUILDING FRAME SYSTEMS

12.14.1 General

12.14.1.1 Simplified Design Procedure

The procedures of this section are permitted to be used in lieu of other analytical procedures in Chapter 12 for the analysis and design of simple buildings with bearing wall or building frame systems, subject to all of the limitations listed in this section. Where these procedures are used, the seismic design category shall be determined from Table 11.6-1 using the value of S_{DS} from Section 12.14.8.1. The simplified design procedure is permitted to be used if the following limitations are met:

1. The structure shall qualify for Risk Category I or II in accordance with Table 1.5-1.
2. The site class, defined in Chapter 20, shall not be class E or F.
3. The structure shall not exceed three stories above grade plane.
4. The seismic force-resisting system shall be either a bearing wall system or building frame system, as indicated in Table 12.14-1.
5. The structure shall have at least two lines of lateral resistance in each of two major axis directions.
6. At least one line of resistance shall be provided on each side of the center of mass in each direction.
7. For structures with flexible diaphragms, overhangs beyond the outside line of shear walls or braced frames shall satisfy the following:

$$a \leq d/5 \qquad (12.14\text{-}1)$$

where

a = the distance perpendicular to the forces being considered from the extreme edge of the diaphragm to the line of vertical resistance closest to that edge

d = the depth of the diaphragm parallel to the forces being considered at the line of vertical resistance closest to the edge

8. For buildings with a diaphragm that is not flexible, the distance between the center of rigidity and the center of mass parallel to each major axis shall not exceed 15 percent of the greatest width of the diaphragm parallel to that axis. In addition, the following two equations shall be satisfied:

$$\sum_{i=1}^{m} k_{1i} d_{1i}^2 + \sum_{j=1}^{n} k_{2j} d_{2j}^2 \geq 2.5\left(0.05 + \frac{e_1}{b_1}\right) b_1^2 \sum_{i=1}^{m} k_{1i} \qquad \text{(Eq. 12.14-2A)}$$

$$\sum_{i=1}^{m} k_{1i} d_{1i}^2 + \sum_{j=1}^{n} k_{2j} d_{2j}^2 \geq 2.5\left(0.05 + \frac{e_2}{b_2}\right) b_2^2 \sum_{j=1}^{m} k_{1j} \qquad \text{(Eq. 12.14-2B)}$$

where (see Fig. 12.14-1)

k_{1i} = the lateral load stiffness of wall i or braced frame i parallel to major axis 1

k_{2j} = the lateral load stiffness of wall j or braced frame j parallel to major axis 2