

12.3.1.2 Rigid Diaphragm Condition

Diaphragms of concrete slabs or concrete filled metal deck with span-to-depth ratios of 3 or less in structures that have no horizontal irregularities are permitted to be idealized as rigid.

12.3.1.3 Calculated Flexible Diaphragm Condition

Diaphragms not satisfying the conditions of Sections 12.3.1.1 or 12.3.1.2 are permitted to be idealized as flexible where the computed maximum in-plane deflection of the diaphragm under lateral load is more than two times the average story drift of adjoining vertical elements of the seismic force-resisting system of the associated story under equivalent tributary lateral load as shown in Fig. 12.3-1. The loadings used for this calculation shall be those prescribed by Section 12.8.

12.3.2 Irregular and Regular Classification

Structures shall be classified as having a structural irregularity based upon the criteria in this section. Such classification shall be based on their structural configurations.

12.3.2.1 Horizontal Irregularity

Structures having one or more of the irregularity types listed in Table 12.3-1 shall be designated as having a horizontal structural irregularity. Such structures assigned to the seismic design categories listed in Table 12.3-1 shall comply with the requirements in the sections referenced in that table.

12.3.2.2 Vertical Irregularity

Structures having one or more of the irregularity types listed in Table 12.3-2 shall be designated as having a vertical structural irregularity. Such structures assigned to the seismic design categories listed

in Table 12.3-2 shall comply with the requirements in the sections referenced in that table.

EXCEPTIONS:

1. Vertical structural irregularities of Types 1a, 1b, and 2 in Table 12.3-2 do not apply where no story drift ratio under design lateral seismic force is greater than 130 percent of the story drift ratio of the next story above. Torsional effects need not be considered in the calculation of story drifts. The story drift ratio relationship for the top two stories of the structure are not required to be evaluated.
2. Vertical structural irregularities of Types 1a, 1b, and 2 in Table 12.3-2 are not required to be considered for one-story buildings in any seismic design category or for two-story buildings assigned to Seismic Design Categories B, C, or D.

12.3.3 Limitations and Additional Requirements for Systems with Structural Irregularities

12.3.3.1 Prohibited Horizontal and Vertical Irregularities for Seismic Design Categories D through F

Structures assigned to Seismic Design Category E or F having horizontal irregularity Type 1b of Table 12.3-1 or vertical irregularities Type 1b, 5a, or 5b of Table 12.3-2 shall not be permitted. Structures assigned to Seismic Design Category D having vertical irregularity Type 5b of Table 12.3-2 shall not be permitted.

12.3.3.2 Extreme Weak Stories

Structures with a vertical irregularity Type 5b as defined in Table 12.3-2, shall not be over two stories or 30 ft (9 m) in structural height, h_n .

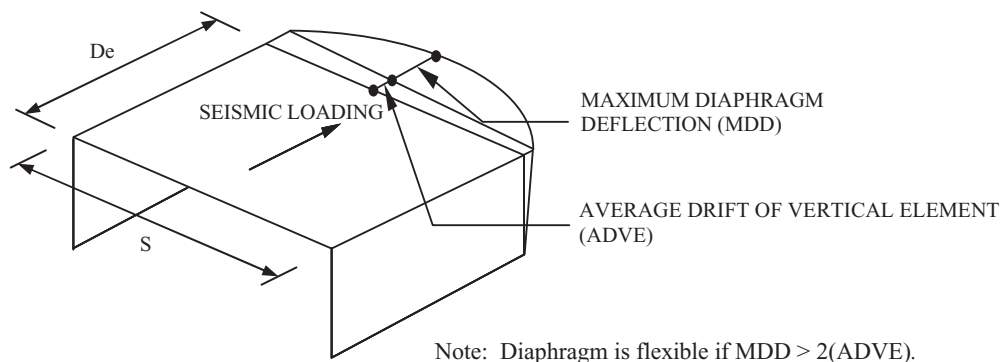


FIGURE 12.3-1 Flexible Diaphragm