1. The structure is located on a Site Class A, B, C, or D.
2. The isolation system meets the criteria of Item 7 of Section 17.4.1.

17.4.2.2 Response-History Procedure

The response-history procedure is permitted for design of any seismically isolated structure and shall be used for design of all seismically isolated structures not meeting the criteria of Section 17.4.2.1.

17.5 EQUIVALENT LATERAL FORCE PROCEDURE

17.5.1 General

Where the equivalent lateral force procedure is used to design seismically isolated structures, the requirements of this section shall apply.

17.5.2 Deformation Characteristics of the Isolation System

Minimum lateral earthquake design displacements and forces on seismically isolated structures shall be based on the deformation characteristics of the isolation system. The deformation characteristics of the isolation system shall explicitly include the effects of the wind-restraint system if such a system is used to meet the design requirements of this standard. The deformation characteristics of the isolation system shall be based on properly substantiated tests performed in accordance with Section 17.8.

17.5.3 Minimum Lateral Displacements

17.5.3.1 Design Displacement

The isolation system shall be designed and constructed to withstand minimum lateral earthquake displacements, D_D, that act in the direction of each of the main horizontal axes of the structure using Eq. 17.5-1:

$$D_D = \frac{gS_{D1}T_D}{4\pi^2 B_D} \qquad (17.5\text{-}1)$$

where

g = acceleration due to gravity. The units for g are in./s^2 (mm/s^2) if the units of the design displacement, D_D, are in. (mm)

S_{D1} = design 5 percent damped spectral acceleration parameter at 1-s period in units of g-s, as determined in Section 11.4.4

Table 17.5-1 Damping Coefficient, B_D or B_M

Effective Damping, β_D or β_M (percentage of critical)[a,b]	B_D or B_M Factor
≤2	0.8
5	1.0
10	1.2
20	1.5
30	1.7
40	1.9
≥50	2.0

[a]The damping coefficient shall be based on the effective damping of the isolation system determined in accordance with the requirements of Section 17.8.5.2.
[b]The damping coefficient shall be based on linear interpolation for effective damping values other than those given.

T_D = effective period of the seismically isolated structure in seconds, at the design displacement in the direction under consideration, as prescribed by Eq. 17.5-2

B_D = numerical coefficient related to the effective damping of the isolation system at the design displacement, β_D, as set forth in Table 17.5-1

17.5.3.2 Effective Period at Design Displacement

The effective period of the isolated structure at design displacement, T_D, shall be determined using the deformational characteristics of the isolation system and Eq. 17.5-2:

$$T_D = 2\pi\sqrt{\frac{W}{k_{D\min} g}} \qquad (17.5\text{-}2)$$

where

W = effective seismic weight of the structure above the isolation interface as defined in Section 12.7.2

$k_{D\min}$ = minimum effective stiffness in kips/in. (kN/mm) of the isolation system at the design displacement in the horizontal direction under consideration, as prescribed by Eq. 17.8-4

g = acceleration due to gravity

17.5.3.3 Maximum Displacement

The maximum displacement of the isolation system, D_M, in the most critical direction of horizontal response shall be calculated using Eq. 17.5-3:

$$D_M = \frac{gS_{M1}T_M}{4\pi^2 B_M} \qquad (17.5\text{-}3)$$