where

g = acceleration of gravity
S_{M1} = maximum considered earthquake 5 percent damped spectral acceleration parameter at 1-s period, in units of g-s, as determined in Section 11.4.3
T_M = effective period, in seconds, of the seismically isolated structure at the maximum displacement in the direction under consideration, as prescribed by Eq. 17.5-4
B_M = numerical coefficient related to the effective damping of the isolation system at the maximum displacement, β_M, as set forth in Table 17.5-1

17.5.3.4 Effective Period at Maximum Displacement

The effective period of the isolated structure at maximum displacement, T_M, shall be determined using the deformational characteristics of the isolation system and Eq. 17.5-4:

$$T_M = 2\pi\sqrt{\frac{W}{k_{M\min}g}} \qquad (17.5\text{-}4)$$

where

W = effective seismic weight of the structure above the isolation interface as defined in Section 12.7.2 (kip or kN)
$k_{M\min}$ = minimum effective stiffness, in kips/in. (kN/mm), of the isolation system at the maximum displacement in the horizontal direction under consideration, as prescribed by Eq. 17.8-6
g = the acceleration of gravity

17.5.3.5 Total Displacement

The total design displacement, D_{TD}, and the total maximum displacement, D_{TM}, of elements of the isolation system shall include additional displacement due to actual and accidental torsion calculated from the spatial distribution of the lateral stiffness of the isolation system and the most disadvantageous location of eccentric mass.

The total design displacement, D_{TD}, and the total maximum displacement, D_{TM}, of elements of an isolation system with uniform spatial distribution of lateral stiffness shall not be taken as less than that prescribed by Eqs. 17.5-5 and 17.5-6:

$$D_{TD} = D_D\left[1 + y\frac{12e}{b^2+d^2}\right] \qquad (17.5\text{-}5)$$

$$D_{TM} = D_M\left[1 + y\frac{12e}{b^2+d^2}\right] \qquad (17.5\text{-}6)$$

where

D_D = design displacement at the center of rigidity of the isolation system in the direction under consideration as prescribed by Eq. 17.5-1
D_M = maximum displacement at the center of rigidity of the isolation system in the direction under consideration as prescribed by Eq. 17.5-3
y = the distance between the centers of rigidity of the isolation system and the element of interest measured perpendicular to the direction of seismic loading under consideration
e = the actual eccentricity measured in plan between the center of mass of the structure above the isolation interface and the center of rigidity of the isolation system, plus accidental eccentricity, in ft (mm), taken as 5 percent of the longest plan dimension of the structure perpendicular to the direction of force under consideration
b = the shortest plan dimension of the structure measured perpendicular to d
d = the longest plan dimension of the structure

EXCEPTION: The total design displacement, D_{TD}, and the total maximum displacement, D_{TM}, are permitted to be taken as less than the value prescribed by Eqs. 17.5-5 and 17.5-6, respectively, but not less than 1.1 times D_D and D_M, respectively, provided the isolation system is shown by calculation to be configured to resist torsion accordingly.

17.5.4 Minimum Lateral Forces

17.5.4.1 Isolation System and Structural Elements below the Isolation System

The isolation system, the foundation, and all structural elements below the isolation system shall be designed and constructed to withstand a minimum lateral seismic force, V_b, using all of the appropriate requirements for a nonisolated structure and as prescribed by Eq. 17.5-7:

$$V_b = k_{D\max}D_D \qquad (17.5\text{-}7)$$

where

$k_{D\max}$ = maximum 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. 17.8-3
D_D = design displacement, in in. (mm), at the center of rigidity of the isolation system in the direction under consideration, as prescribed by Eq. 17.5-1