$V$ = The total design shear at the base of the structure in the direction of interest, as determined using the procedure of 12.14.8.1
$V_x$ = The seismic design shear in Story $x$. See Section 12.14.8.3
$W$ = See Section 12.14.8.1
$W_c$ = Weight of wall
$W_p$ = Weight of structural component
$w_i$ = The portion of the effective seismic weight, $W$, located at or assigned to Level $i$
$w_x$ = See Section 12.14.8.2

**12.14.2 Design Basis**

The structure shall include complete lateral and vertical force-resisting systems with adequate strength to resist the design seismic forces, specified in this section, in combination with other loads. Design seismic forces shall be distributed to the various elements of the structure and their connections using a linear elastic analysis in accordance with the procedures of Section 12.14.8. The members of the seismic force-resisting system and their connections shall be detailed to conform with the applicable requirements for the selected structural system as indicated in Section 12.14.4.1. A continuous load path, or paths, with adequate strength and stiffness shall be provided to transfer all forces from the point of application to the final point of resistance. The foundation shall be designed to accommodate the forces developed.

**12.14.3 Seismic Load Effects and Combinations**

All members of the structure, including those not part of the seismic force-resisting system, shall be designed using the seismic load effects of Section 12.14.3 unless otherwise exempted by this standard. Seismic load effects are the axial, shear, and flexural member forces resulting from application of horizontal and vertical seismic forces as set forth in Section 12.14.3.1. Where specifically required, seismic load effects shall be modified to account for overstrength, as set forth in Section 12.14.3.2.

***12.14.3.1 Seismic Load Effect***

The seismic load effect, $E$, shall be determined in accordance with the following:

1. For use in load combination 5 in Section 2.3.2 or load combinations 5 and 6 in Section 2.4.1, $E$ shall be determined in accordance with Eq. 12.14-3 as follows:

$$E = E_h + E_v \qquad (12.14\text{-}3)$$

2. For use in load combination 7 in Section 2.3.2 or load combination 8 in Section 2.4.1, $E$ shall be determined in accordance with Eq. 12.14-4 as follows:

$$E = E_h - E_v \qquad (12.14\text{-}4)$$

where

$E$ = seismic load effect
$E_h$ = effect of horizontal seismic forces as defined in Section 12.14.3.1.1
$E_v$ = effect of vertical seismic forces as defined in Section 12.14.3.1.2

*12.14.3.1.1 Horizontal Seismic Load Effect* The horizontal seismic load effect, $E_h$, shall be determined in accordance with Eq. 12.14-5 as follows:

$$E_h = Q_E \qquad (12.14\text{-}5)$$

where

$Q_E$ = effects of horizontal seismic forces from $V$ or $F_p$ as specified in Sections 12.14.7.5, 12.14.8.1, and 13.3.1.

*12.14.3.1.2 Vertical Seismic Load Effect* The vertical seismic load effect, $E_v$, shall be determined in accordance with Eq. 12.14-6 as follows:

$$E_v = 0.2S_{DS}D \qquad (12.14\text{-}6)$$

where

$S_{DS}$ = design spectral response acceleration parameter at short periods obtained from Section 11.4.4
$D$ = effect of dead load

**EXCEPTION:** The vertical seismic load effect, $E_v$, is permitted to be taken as zero for either of the following conditions:

1. In Eqs. 12.4-3, 12.4-4, 12.4-7, and 12.14-8 where $S_{DS}$ is equal to or less than 0.125.
2. In Eq. 12.14-4 where determining demands on the soil–structure interface of foundations.

*12.14.3.1.3 Seismic Load Combinations* Where the prescribed seismic load effect, $E$, defined in Section 12.14.3.1 is combined with the effects of other loads as set forth in Chapter 2, the following seismic load combinations for structures not subject to flood or atmospheric ice loads shall be used in lieu of the seismic load combinations in Sections 2.3.2 or 2.4.1:

**Basic Combinations for Strength Design (see Sections 2.3.2 and 2.2 for notation).**