2.4.2 Load Combinations Including Flood Load

When a structure is located in a flood zone, the following load combinations shall be considered in addition to the basic combinations in Section 2.4.1:

1. In V-Zones or Coastal A-Zones (Section 5.3.1), $1.5F_a$ shall be added to other loads in combinations 5, 6, and 7, and E shall be set equal to zero in 5 and 6.
2. In non-coastal A-Zones, $0.75F_a$ shall be added to combinations 5, 6, and 7, and E shall be set equal to zero in 5 and 6.

2.4.3 Load Combinations Including Atmospheric Ice Loads

When a structure is subjected to atmospheric ice and wind-on-ice loads, the following load combinations shall be considered:

1. $0.7D_i$ shall be added to combination 2.
2. (L_r or S or R) in combination 3 shall be replaced by $0.7D_i + 0.7W_i + S$.
3. $0.6W$ in combination 7 shall be replaced by $0.7D_i + 0.7W_i$.

2.4.4 Load Combinations Including Self-Straining Loads

Where applicable, the structural effects of load T shall be considered in combination with other loads. Where the maximum effect of load T is unlikely to occur simultaneously with the maximum effects of other variable loads, it shall be permitted to reduce the magnitude of T considered in combination with these other loads. The fraction of T considered in combination with other loads shall not be less than 0.75.

2.5 LOAD COMBINATIONS FOR EXTRAORDINARY EVENTS

2.5.1 Applicability

Where required by the owner or applicable code, strength and stability shall be checked to ensure that structures are capable of withstanding the effects of extraordinary (i.e., low-probability) events, such as fires, explosions, and vehicular impact without disproportionate collapse.

2.5.2 Load Combinations

2.5.2.1 Capacity

For checking the capacity of a structure or structural element to withstand the effect of an extraordinary event, the following gravity load combination shall be considered:

$$(0.9 \text{ or } 1.2)D + A_k + 0.5L + 0.2S \qquad (2.5\text{-}1)$$

in which A_k = the load or load effect resulting from extraordinary event A.

2.5.2.2 Residual Capacity

For checking the residual load-carrying capacity of a structure or structural element following the occurrence of a damaging event, selected load-bearing elements identified by the Responsible Design Professional shall be notionally removed, and the capacity of the damaged structure shall be evaluated using the following gravity load combination:

$$(0.9 \text{ or } 1.2)D + 0.5L + 0.2(L_r \text{ or } S \text{ or } R) \qquad (2.5\text{-}2)$$

2.5.3 Stability Requirements

Stability shall be provided for the structure as a whole and for each of its elements. Any method that considers the influence of second-order effects is permitted.