Table 18.7-2 Force Coefficient, C_{mFV}[a,b]

Effective Damping	$\alpha \le 0.25$	$\alpha = 0.5$	$\alpha = 0.75$	$\alpha \ge 1.0$
≤0.05	1.00	0.35	0.20	0.10
0.1	1.00	0.44	0.31	0.20
0.2	1.00	0.56	0.46	0.37
0.3	1.00	0.64	0.58	0.51
0.4	1.00	0.70	0.69	0.62
0.5	1.00	0.75	0.77	0.71
0.6	1.00	0.80	0.84	0.77
0.7	1.00	0.83	0.90	0.81
0.8	1.00	0.90	0.94	0.90
0.9	1.00	1.00	1.00	1.00
≥1.0	1.00	1.00	1.00	1.00

[a]Unless analysis or test data support other values, the force coefficient C_{mFD} for viscoelastic systems shall be taken as 1.0.
[b]Interpolation shall be used for intermediate values of velocity exponent, α.

relates device force to damping device velocity. The effective fundamental-mode damping shall be taken as equal to the total effective damping of the fundamental mode less the hysteretic component of damping ($\beta_{1D} - \beta_{HD}$ or $\beta_{1M} - \beta_{HM}$) at the response level of interest ($\mu = \mu_D$ or $\mu = \mu_M$).

For higher-mode ($m > 1$) or residual-mode response in the direction of interest, the coefficients, C_{mFD} and C_{mFV}, shall be based on a value of α equal to 1.0. The effective modal damping shall be taken as equal to the total effective damping of the mode of interest (β_{mD} or β_{mM}). For determination of the coefficient C_{mFD}, the ductility demand shall be taken as equal to that of the fundamental mode ($\mu = \mu_D$ or $\mu = \mu_M$).

18.7.2.6 Inelastic Response Limits

Elements of the damping system are permitted to exceed strength limits for design loads provided it is shown by analysis or test that

1. Inelastic response does not adversely affect damping system function.
2. Element forces calculated in accordance with Section 18.7.2.5, using a value of Ω_0 taken as equal to 1.0, do not exceed the strength required to satisfy the load combinations of Section 12.4.

18.8 DESIGN REVIEW

A design review of the damping system and related test programs shall be performed by an independent team of registered design professionals in the appropriate disciplines and others experienced in seismic analysis methods and the theory and application of energy dissipation systems.

The design review shall include, but need not be limited to, the following:

1. Review of site-specific seismic criteria including the development of the site-specific spectra and ground motion histories and all other project-specific design criteria.
2. Review of the preliminary design of the seismic force-resisting system and the damping system, including design parameters of damping devices.
3. Review of the final design of the seismic force-resisting system and the damping system and all supporting analyses.
4. Review of damping device test requirements, device manufacturing quality control and assurance, and scheduled maintenance and inspection requirements.

18.9 TESTING

The force-velocity displacement and damping properties used for the design of the damping system shall be based on the prototype tests specified in this section.

The fabrication and quality control procedures used for all prototype and production damping devices shall be identical.

18.9.1 Prototype Tests

The following tests shall be performed separately on two full-size damping devices of each type and size used in the design, in the order listed as follows.

Representative sizes of each type of device are permitted to be used for prototype testing, provided both of the following conditions are met:

1. Fabrication and quality control procedures are identical for each type and size of device used in the structure.
2. Prototype testing of representative sizes is accepted by the registered design professional responsible for design of the structure.

Test specimens shall not be used for construction, unless they are accepted by the registered design professional responsible for design of the structure and meet the requirements for prototype and production tests.