



INTERPRETATIONS & PROCEDURES

DEVELOPMENT SERVICES DEPARTMENT

BUILDING DIVISION

CODE: 2015 IBC & ASCE 7-10 **INDEX NUMBER:** IBC-2017-008
SECTION: IBC 1613 & ASCE Ch. 13 **ISSUE DATE:** 08/31/2017
SUBJECT: Seismic Bracing MEP, Sprinkler, Fire Alarm, and Smoke Control System Components


1. Structures with $I_p = 1.0$: The attached Table A specifies the City of Bellevue-approved seismic bracing requirements. [Importance factor (I_p) as defined in ASCE7-10 Section 13.1.3]
2. Structures with $I_p > 1.0$: All projects with $I_p > 1.0$ require an engineered design of seismic bracing systems for all mechanical (M), electrical (E), plumbing (P), sprinkler (S)^j, fire alarm (FA), and smoke control (SC) system components when the system component has been assigned an I_p of 1.5. The component I_p shall be taken as 1.5 if any of the following conditions apply.
 - a. The component is required to function for life-safety purposes after an earthquake, including fire protection sprinkler systems.
 - b. The component contains hazardous materials.
 - c. The component is in or attached to an Occupancy Category IV structure and it is needed for continued operation of the facility or where its failure could impair the continued operation of the facility.
3. See WABO/SEAW White Paper 7-2011 for additional guidelines and recommendations.

Table A

Guidelines for System Component Seismic Bracing where $I_p = 1.0$

| | Ducts & Piping | Equipment $\leq 75\#$ | $75\# < \text{Equip} \leq 400\#$ | Equip $> 400\#^h$ |
|--|--|-----------------------|--|---|
| Mechanical Ductwork | SMACNA ⁱ Details/Spacing | N.A. | N.A. | N.A. |
| Gas and Hydronic Piping | SMACNA ⁱ Details/Spacing | N.A. | N.A. | N.A. |
| M, E, P, equip mounted $\leq 4'$ above the floor/roof & mounted with flexible connections ^{a, b, c} | N.A. | No Requirement | No Requirement | Engineering for gravity and lateral support ^{d, e, g} (plan review required) |
| M, E, P, equip mounted $> 4'$ above the floor/roof ^{a, c} | N.A. | No Requirement | Engineering for gravity and lateral support ^{d, e, g} (field approve) | Engineering for gravity and lateral support ^{d, e, g} (plan review required) |
| M, E, P equip mounted with flexible connections. ^{b, c} | N.A. | N.A. | N.A. | N.A. |
| M, E, P equip mounted from a wall or suspended from structure ^f | N.A. | N.A. | Engineering for gravity and lateral support (field approve) | Engineering for gravity and lateral support (plan review required) |
| Plumbing Piping (drain, waste, & vent) | Per UPC | N.A. | N.A. | N.A. |

- a. 4' dimension measured from the floor to the mounting point location.
- b. Mechanical, electrical and plumbing components with flexible connections installed between the components and associated ductwork, piping, and conduit. Non Flexible connections will require plan review.
- c. Water tank restraints required per UPC Section 507.2.
- d. Engineering for gravity not required when mounted at slab on grade
- e. Engineering for lateral not required when the height/width ratio is ≤ 1.0 (in all horizontal directions)
- f. Engineering shall address the bracing system, the point(s) of attachment, and the capacity of the building element or structure supporting the attachment and bracing system.
- g. Rooftop equipment: Change out weight like for like, no engineering required. New units with weight exceeding 5% of original, engineering required for gravity (IEBC Section 402.3).
- h. Water heaters ≥ 60 gallons will fall under this category
- i. SMACNA Restraint Manual "Guidelines for Mechanical Systems": 3rd Ed, 2008, 2015 Uniform Plumbing Code Table 313.3 and 313.6
- j. Seismic bracing for fire protection sprinkler systems in seismic design category D-F designed per NFPA 13 as specified in ASCE 7-10 Section 13.6.8.2.

SIGNATURE: 
 Gregory H. Schrader, PE, SE, Building Official

DATE: August 31, 2017

ATTACHMENTS: N.A.

SUPERSEDES: IBC-06-003