



# Seismic Bracing System Components – MEP, Sprinkler, Fire Alarm, Smoke Control

## *Building Division Interpretations and Procedures*

<b>Index Number:</b>	IBC-2017-008
<b>Issue Date:</b>	06-09-2020
<b>Code:</b>	2015 IBC & ASCE 7-10
<b>Section:</b>	IBC 1613 & ASCE Ch. 13

1. Components 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. Components 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), 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 ≤ 75#	75# < Equip ≤ 400#	Equip > 400# <sup>h</sup>
Mechanical Ductwork	SMACNA <sup>i</sup> Details/Spacing	N/A	N/A	N/A
Gas and Hydronic Piping	SMACNA <sup>i</sup> Details/Spacing	N/A	N/A	N/A
M, E, P, equip mounted ≤ 4' above the floor/roof & mounted with flexible connections <sup>a, b, c</sup>	N/A	No Requirement	No Requirement	Engineering for gravity and lateral support <sup>d, e, g</sup> (plan review required)
M, E, P, equip mounted > 4' above the floor/roof <sup>a, c</sup>	N/A	No Requirement	Engineering for gravity and lateral support <sup>d, e, g</sup> (field approve)	Engineering for gravity and lateral support <sup>d, e, g</sup> (plan review required)
M, E, P equip mounted with flexible connections <sup>b, c</sup>	N/A	N/A	N/A	N/A
M, E, P equip mounted from a wall or suspended from structure <sup>f</sup>	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 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

For questions concerning required permits, contact Development Services (425-452-4121) between 8 a.m. and 4 p.m., Monday through Friday (Wednesday, 10 to 4).

Signature Gregg Schrader  
 Gregg Schrader, PE, SE, Building Official

Date: 06/09/2020

Attachments                      Supersedes: \_\_\_\_\_