

UBC 1997 Piping Restraint Rules

The following information is based on the 1997 UBC code and does not take into account more stringent specifications or local requirements. Systems relating to power piping; process piping; liquid transportation systems for hydrocarbons, LPG, anhydrous ammonia and alcohol; refrigeration; slurries; or gas transmission are subject to ASME standards that should also be consulted where applicable. Should such requirements exist, they would need to be evaluated independently.

For the remainder of this document "piping" refers only to piping not related to those items above.

The UBC grants several exclusions without regard to the project or piping systems importance factor or the expected peak ground accelerations. As such, it is not necessary to review project importance factors or Seismic Zone when reviewing piping systems for possible exclusion (Footnotes on Table 16-O).

Piping, Except Fire, Exempt from Restraint Requirements

Any piping that meets all of the following criteria (Table 16-O Footnotes):

- A) Lateral motion will not cause damaging impact with other systems.
- B) Piping uses exclusively ductile materials and contains ductile connections.
- C) Lateral motion will not cause damage to fragile appurtenances (example: sprinkler heads).
- D) If mounted on a post protruding up from the floor, the post is checked for stability.
- E) The piping supports are under 12" in length and contain a connection that will not allow them to carry a moment (swivel).

Rule of Thumb Exclusions

While the code does not identify any exclusions based on pipe size or fluid carried, most jurisdictions will apply limits to the minimum piping size that requires bracing based on SMACNA. In addition, because hazardous materials such as gas are not addressed in the 97UBC, again the SMACNA document will typically be considered to be the guiding reference. Because the local authority has the final say on this, however, both of these items should be confirmed for each locale.

Restraints can be excluded per SMACNA for:

- 1) Piping in mechanical rooms that is 1.0" diameter or less (SMACNA 3.3).
- 2) Piping in other areas that is 2.0" diameter or less (SMACNA 3.3).

Additional locations where restraint is required:

- 1) All gas and hazardous piping regardless of size (SMACNA 3.3).

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Assuming fire-protection is governed by NFPA 13, restraint exclusions associated with it would be:

- 1) Lateral bracing not required if the top of the pipe is within 6" of the support structure and the pipe is individually supported. Longitudinal bracing still is required (NFPA 13 6-4.5.3, NFPA 13 6-4.5.4).
- 2) Branch lines that are under 2.5" diameter require no bracing (NFPA 13 6-4.5.3).

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