

Component Type	Typical a_p
Rigid components attached directly to structure	1.0
Flexible or vibration-sensitive components	2.5
Suspended ceilings	2.5
Piping systems	2.5
Mechanical equipment	1.0 – 2.5 (depends on flexibility)

R_p	Component
1.5	Brittle attachment
~2.5	Mechanical equipment
3 – 6	Piping
up to 4 - 6	Suspended ceilings

- a_p accounts for the dynamic amplification of floor motion experienced by a component due to its own flexibility and natural frequency
- A component that moves in sync with the floor (unity gain) sees less force
- One that resonates with building motion sees much more
- a_p appears in the numerator of the F_p equation, so higher $a_p \rightarrow$ higher design force
- The component response modification factor R_p accounts for the ability of a component to dissipate energy through ductility or flexibility
- R_p plays the same conceptual role for components that R plays for structural systems
- High ductility \rightarrow lower design force