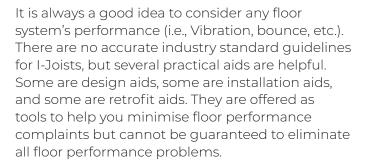
FLOOR SYSTEM PERFORMANCE

Technical Bulletin Dindas I-Joist® Series



Begin by using the concepts of fundamental natural frequency and damping when designing floor systems. The Fundamental Natural Frequency



(FNF) measures how the floor vibrates when you walk on it and is measured in cycles per second (measured by Hertz or Hz).

Damping measures how quickly a floor stops vibrating and is expressed as a percentage between 1% and 100% (most residential floors have a damping range between 5%-25% damping).

Our bodies are susceptible to vibrations below 9 Hz so the ideal floor would have a high FNF with high damping. However, most floor problems combine a low FNF (below 9 Hz) and low damping (around 5%). The following list will help you determine the effect of different parameters on floor performance.

The combination and interaction of these parameters determine how the floor 'feels'.

ESIGN PARAMETERS	EFFECT ON FNF	EFFECT ON DAMPING
■ Longer Spans	Significantly lowers	Little or no effect
■ Higher 'L over' deflection limit (L/480 vs. L/360)	Significantly increases	Little or no effect
 Using an absolute upper limit on live load deflection (Usually between 8mm to 12mm max) 	Significantly increases	Little or no effect
Using deeper I-Joists	Increases	Little or no effect
Reduced Joist on-centre (o.c) spacing	Increases	Little or no effect
Adding perpendicular load bearing partition walls	Little or no effect	Significantly increases
Increasing the overall weight of the floor	Significantly lowers	Significantly increases
STALLATION PARAMETERS	EFFECT ON FNF	EFFECT ON DAMPING
Unlevel bearings (walls, beams & hangers)	Significantly lowers	Significantly lowers
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Longer oparis	Significantly increases	Significantly increases
	Increases	Increases
Longer Spans		
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