Revisions and Errata List
AISC Steel Design Guide 11, 2nd Edition, 1st printing (Printed and Digital Editions)
February 16, 2023

The following list represents corrections made to the first printing (dated May 2016) and digital edition of the second edition of AISC Design Guide 11, *Vibrations of Steel-Framed Structural Systems Due to Human Activity.*

Page(s) **Item**

3 Revise the definition for *Floor Width* to:
Floor Width. Distance perpendicular to the span of the beams or joists in the bay under consideration over which the structural framing (beam or joist and girder size, spacing, length, etc.) is identical, or nearly identical, in adjacent bays.

16 Below Equation 2-14, revise the definition for R to:

R = calibration factor
= 0.6 for $h = 2$, $h = 3$, or $h = 4$

17 In Table 2-4, under Lively Concert for i=1, α_i should be 0.25.

17 In Table 2-4, under Lively Concert for i=2, α_i should be 0.05.

20 In the left column, first paragraph, fifth line, revise $4/\pi \approx 1.3$ to $4/\pi \approx 1.014$.

24 In the first column, revise the definition of *Floor Width* to:
Floor Width is the distance perpendicular to the span of the beams or joists in the bay under consideration over which the structural framing (beam or joist and girder size, spacing, length, etc.) is identical, or nearly identical, in adjacent bays.

25 In Table 4-2, between Paper offices fit-out and Churches, school and malls, add a row for Lightly furnished quiet spaces, Ratio of Actual Damping-to-Critical Damping, β_i, is 0.005.

29 Replace Table 4-5 with the following:

Table 4-5. Vertical Acceleration Tolerance Limits and Parameters

Step Frequency, Hz	Acceleration Tolerance Limit, a_o, %g	Calibration Factor, R	Walking Load Parameter, γ	Remarks
≤ 2.5	1.7	0.7	0.29	Normal descents
2.5–4.0	3.0	0.6	0.19	Rapidly descending individual —not perceptible
2.5–4.0	4.5	0.6	0.19	Rapidly descending individual —perceptible; rapidly descending group

In the right column, first paragraph, replace the last two sentences with:
Similarly, for rapid descents, R = 0.6.

36 In the 10th line, the value of D_j should be revised from 183 in.^{4}/ft to 184 in.^{4}/ft, as previously calculated in Example 4.1. The subsequent calculation for B_g should also be revised to change the value of D_j from 183 in.^{4}/ft to 184 in.^{4}/ft, changing the value of B_g from 63.8 ft to 63.9 ft. In the

subsequent calculation for W_g, the value of B_g should be revised from 63.8 ft to 63.9 ft, which changes the value of W_g from 116,000 lb to 117,000 lb.

37 Halfway down the page, in the calculation for the equivalent panel mode panel weight, W, the value of W_g should be revised from 116,000 lb to 117,000 lb. The final calculated value of W does not change.

38 In Figure 4-8, revise the 35'-0" joist span to 30'-0".

46 In the Solution section to Example 4.3 under *Beam Mode Properties*, revise the value of D_j from 183 in.^{4}/ft to 184 in.^{4}/ft. Under *Girder Mode Properties*, revise B_g from 63.8 ft to 63.9 ft and W_g from 116,000 lb to 117,000 lb. Under *Combined Mode Properties*, in the calculation for W, revise W_g to 117,000 lb, and the final value of W to 85,200 lb.

47 At the top of the page, in the calculation for a_p/g, revise W to 85,200 lb, and the final value of a_p/g to 0.00625 equivalent fo 0.625%g.

In the Example 4.4 Solution, under *Beam Mode Properties*, revise the value of D_j from 183 in.^{4}/ft to 184 in.^{4}/ft.

55 Revise page 55 to the following:

Evaluation Criterion for Individual Descending Rapidly

The predicted acceleration ratio from Equation 4-8 with $R = 0.6$ and $\gamma = 0.19$ from Table 4-5 is:

$$\frac{a_p}{g} = 0.62e^{-\gamma f_n}\frac{RQ\cos^2\theta}{\beta W_s}\phi_W\phi_R\left(1-e^{-100\beta}\right) \le \frac{a_o}{g} \tag{4-8}$$

$$= 0.62e^{-0.19(7.02\text{ Hz})}\frac{0.6(168\text{ lb})\left(\cos^2 28.3°\right)}{0.03(15{,}500\text{ lb})}(0.995)(0.960)\left[1-e^{-100(0.03)}\right]$$

$$= 0.0249 \text{ or } 2.49\%g$$

The predicted peak acceleration does not exceed the Table 4-5 tolerance limit, 3%g, thus individuals rapidly descending the stair are not expected to cause objectionable vibrations from people standing on the stair.

Evaluation Criterion for Rapidly Descending Group

The predicted peak acceleration due to a rapidly descending group is triple the acceleration due to a rapidly descending individual:

$$a_p = 3(2.49\%g)$$
$$= 7.47\%g$$

57 In the left column, in the paragraph between Equation 5-1 and 5-2, in the second line, insert "ratio" after "peak acceleration."

76 In Example 6.1, the sentence above the final calculation for $V_{1/3}$ should be revised to:

As discussed in Section 6.1.2, because the sensitive equipment can be anywhere in the bay, ϕ_E=1.0, and the predicted maximum velocity is

99 In the right column, first full paragraph, revise last sentence to:

For rapid descents, $R = 0.6$.

100 Revise Table 7-4 as follows:

Table 7-4. Fourier Series Parameters for Rhythmic Group Loads		
Group Dancing, w_p = 12.5 psf		
Dominant Frequency, Hz	*h*	α
1.5–2.7	1	0.50
3.0–5.4	2	0.05
Lively Concert or Sports Event, w_p = 31 psf		
Dominant Frequency, Hz	*h*	α
1.5–2.7	1	0.25
3.0–5.4	2	0.05
Aerobics, w_p = 4.2 psf		
Dominant Frequency, Hz	*h*	α
2.0–2.75	1	1.5
4.0–5.50	2	0.6
6.0–8.25	3	0.1
Jumping Exercises, w_p = 4.2 psf		
Dominant Frequency, Hz	*h*	α
2.0–2.75	1	1.8
4.0–5.5	2	1.3
6.0–8.25	3	0.7
8.0–11	4	0.2

103 Revise the text following *Predicted Acceleration Due to Lively Concert* as follows:

Predicted Acceleration Due to Lively Concert

The estimated weight of participants, w_p, is 18.7 psf. From Table 7-4, the dynamic load factors for lively concerts are $\alpha_1 = 0.25$ and $\alpha_2 = 0.05$, and the excitation frequency, f_{step}, is between 1.5 Hz and 2.7 Hz. The maximum frequency of the second harmonic is 5.4 Hz, which is less than the fundamental frequency, 7.21 Hz, so it is not possible for a force harmonic to match a natural frequency and cause resonance. The FRF magnitude indicates the maximum response will occur when the step frequency is at its maximum value, 2.7 Hz; hence, f_{step} = 2.7 Hz. The Load Case 1 FRF magnitudes at 2.7 Hz and 5.4 Hz are higher than the corresponding Load Case 2 FRF magnitudes, thus Load Case 1 is used to evaluate the balcony.

The peak acceleration due to the first harmonic, using Equation 7-9, is

$$\begin{aligned} a_{p,1} &= FRF(f_{step})\alpha_1 w_p \qquad \text{(from Eq. 7-9)} \\ &= (0.177\%g/\text{psf})(0.25)(18.7\ \text{psf}) \\ &= 0.827\%g \end{aligned}$$

104 Replace the calculations with the following:

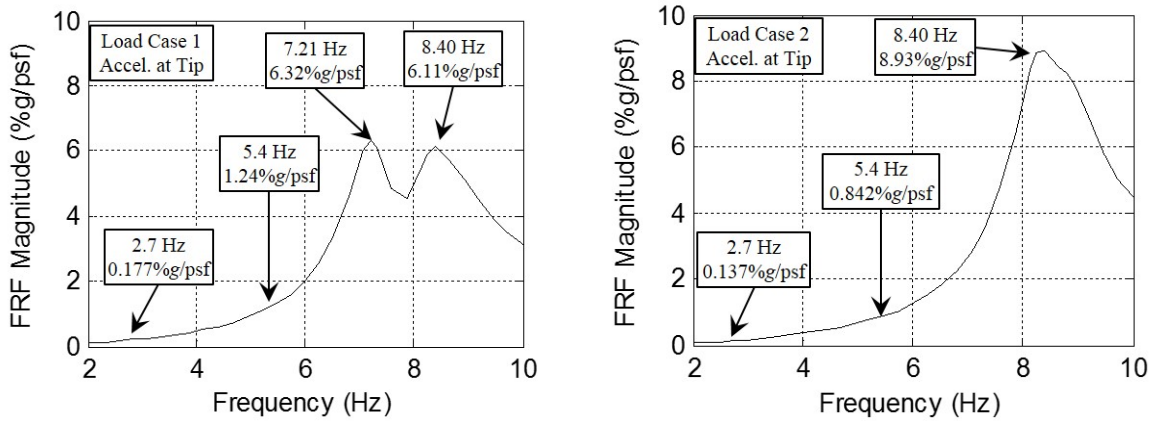
The peak acceleration due to the second harmonic is:

$$a_{p,2} = FRF(2f_{step})\alpha_2 w_p \qquad \text{(from Eq. 7-9)}$$
$$= (1.24\%g/\text{psf})(0.05)(18.7\ \text{psf})$$
$$= 1.16\%g$$

The total peak acceleration, computed using the 1.5 power rule, Equation 7-10, is:

$$a_p = \left[\sum_i \left(a_{p,i}\right)^{1.5}\right]^{1/1.5}$$
$$= \left[(0.827)^{1.5} + (1.16)^{1.5}\right]^{1/1.5} \qquad (7\text{-}10)$$
$$= 1.59\%g$$

104 Replace Figure 7-17 with the following:



(a) Load Case 1 *(b) Load Case 2*

Fig. 7-17. Predicted FRF magnitudes, Example 7.2.

125 In the entry for Δ_j, revise the definition to:

midspan deflection of the beam or joist due to the weight supported by the member, in.