**Revisions and Errata List**
**AISC Steel Design Guide 11, 2nd Edition, 1st printing (Printed Copy)**
**July 27, 2018**

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

| Page(s) | Item |
|---|---|
| 17 | In Table 2-4, under Lively Concert for $i$=1, $\alpha_i$ should be 0.25. |
| 17 | In Table 2-4, under Lively Concert for $i$=2, $\alpha_i$ should be 0.05. |
| 20 | In the left column, first paragraph, fifth line, revise $4/\pi \approx 1.3$ to $4/\pi \approx 1.014$. |
| 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, $\beta_i$, 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, $\gamma$ | 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 |

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

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

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

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

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."

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

rapid descents, with $R = 0.6$, or 0.7 otherwise.

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

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

104 Replace the calculations with the following:

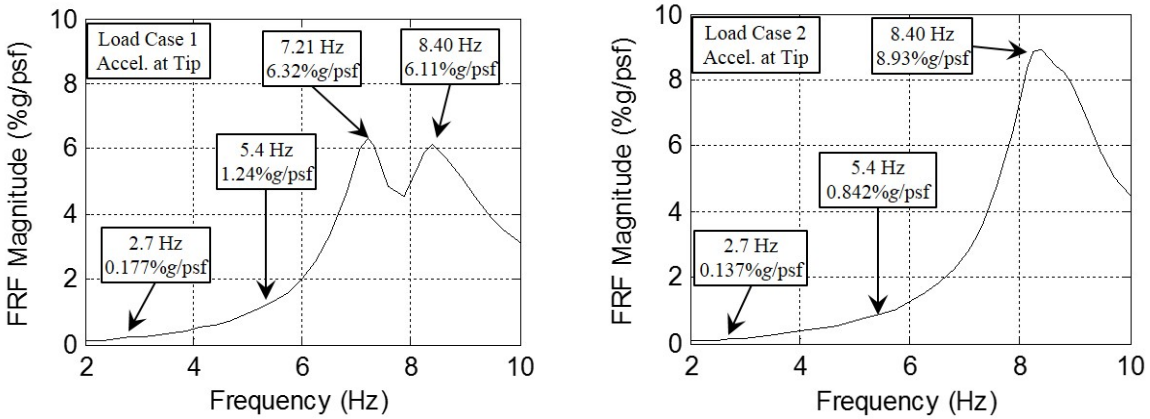
The peak acceleration due to the second harmonic is:

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

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

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

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 $\Delta_j$, revise the definition to:

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