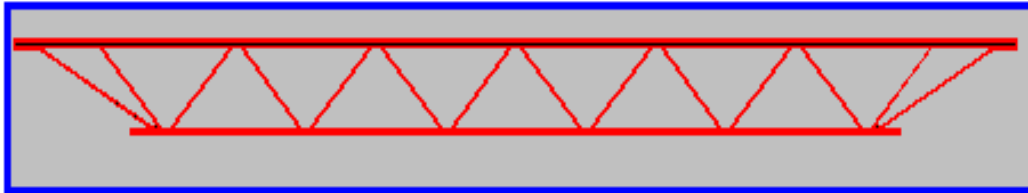


BARJOIST



PROGRAM EXAMPLES

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*Spencer Engineering, Inc.
P.O. Box 321 Carmel, IN 46082*

*Ph: 317-848-2394 Fax: 317-848-2397
www.spencer-engineering.com*

EXAMPLE NO. 1:

In this example it is assumed that floor joist sizes, spacings, and floor slab details for an existing building are the knowns. It is desired to quickly evaluate the floor load capacity and check its vibration characteristics using *BARJOIST*. Figure 1 shows the opening window.



Figure 1

The program requires the User to acknowledge having read and accepted the terms of the User Software Agreement before the program will continue. If the Agreement has not been read, it can be accessed by clicking on the “Read” button. Clicking on the “No” button will cause the program to terminate.

Clicking on the “Yes” button of the opening window brings up the Welcome window shown in Figure 2. A previously saved file can be accessed by clicking on “File” in the menu bar and following the standard Windows file dialog procedures. The Welcome window also permits the User to turn on or turn off portions of the program’s other available windows if so desired. The default is to have all features turned on.

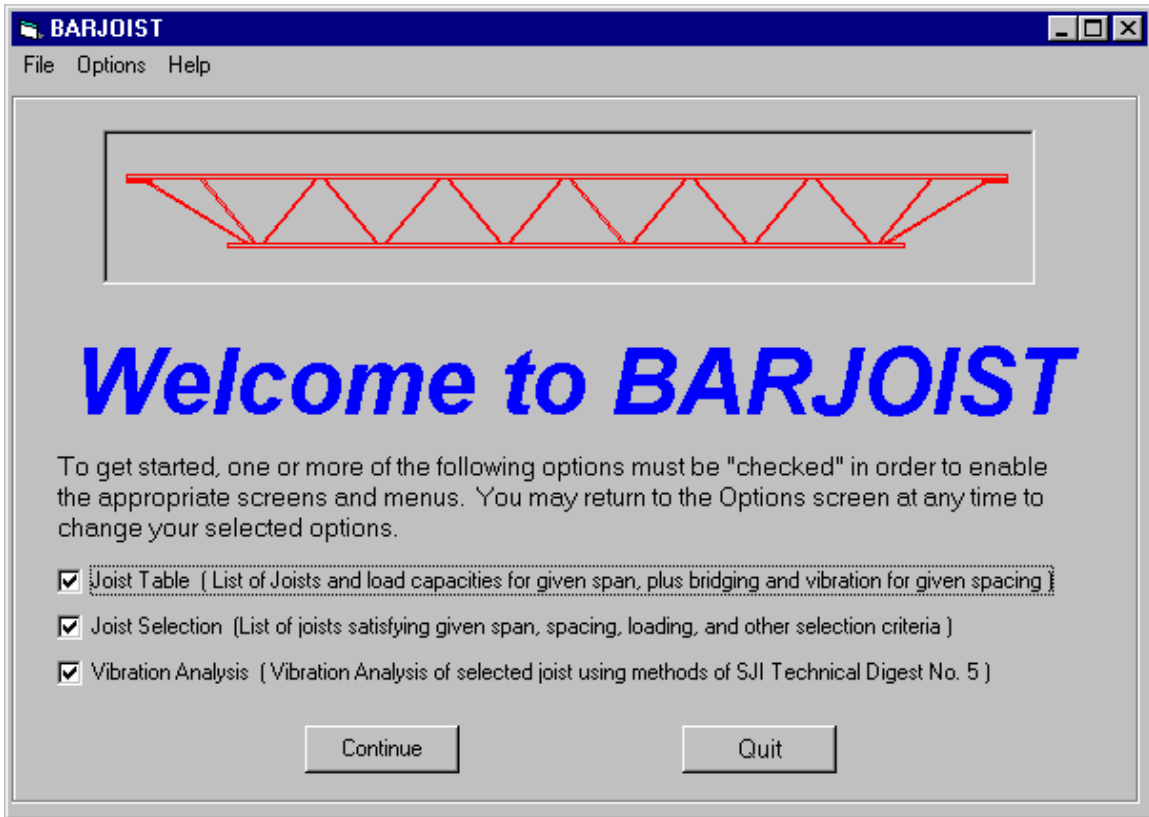


Figure 2

The program’s operation can be terminated by clicking on the “Quit “ button; otherwise, click on the “Continue” button.

Unless a previously saved file has been loaded, in which case previous input values will appear in some of the dialog boxes, the initial input window will appear as shown in Figure 3. The joist depth range and series identifiers will be the default values unless changed by the User. The Joist Selection or Vibration Analysis windows can be accessed by clicking on their respective tabs. For Example No. 1 the Joist Table window will be used initially.

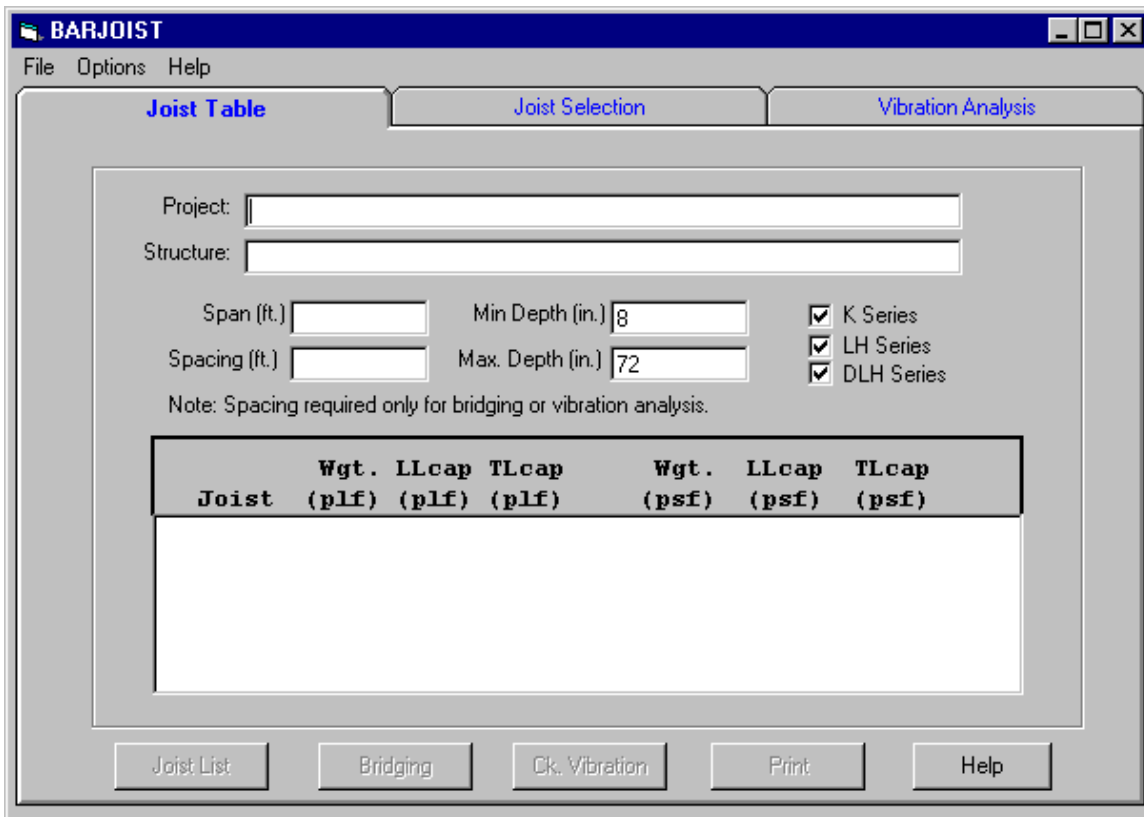


Figure 3

Until User input values are entered, the only active button at the bottom of the window is the “Help” button. By clicking on it, a help window appears with information regarding the use of the Joist Table window.

Titles chosen by the User may be entered in the “Project” and “Structure” fields for identification purposes. These fields may be left blank or filled in later. The titles, if entered, will appear in printouts.

For the purpose of Example No. 1, assume 22K7 joists spaced at 3’-4” on center span 30’-6”. These values are entered in the appropriate fields as shown in Figure 4. As input is entered, the “Joist List” button at the bottom of the window is activated.

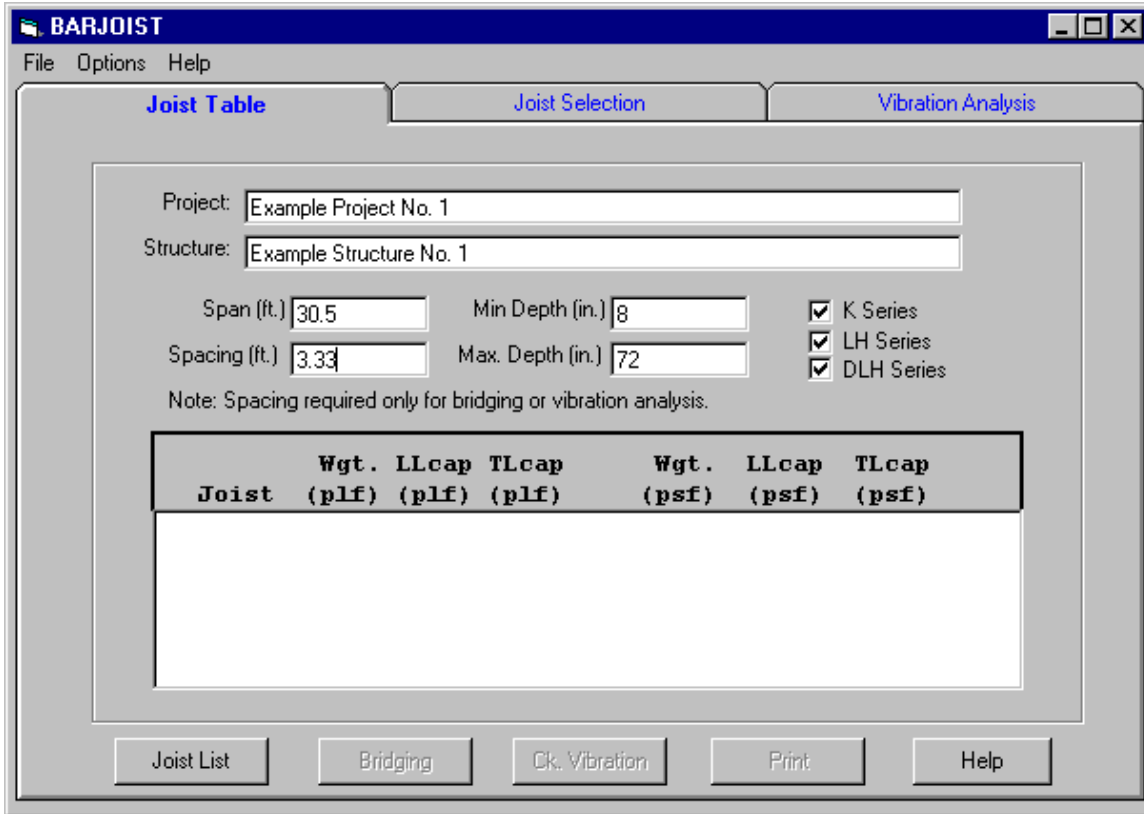


Figure 4

Clicking on the “Joist List” button causes a listing of all the standard joists having load table values for a 30’-6” span to appear in the list box as shown in Figure 5. At the same time the remaining buttons along the bottom of the window are activated. The list box displays seven lines of output at one time. The remaining lines can be accessed by use of the scroll bar to the right of the list box.

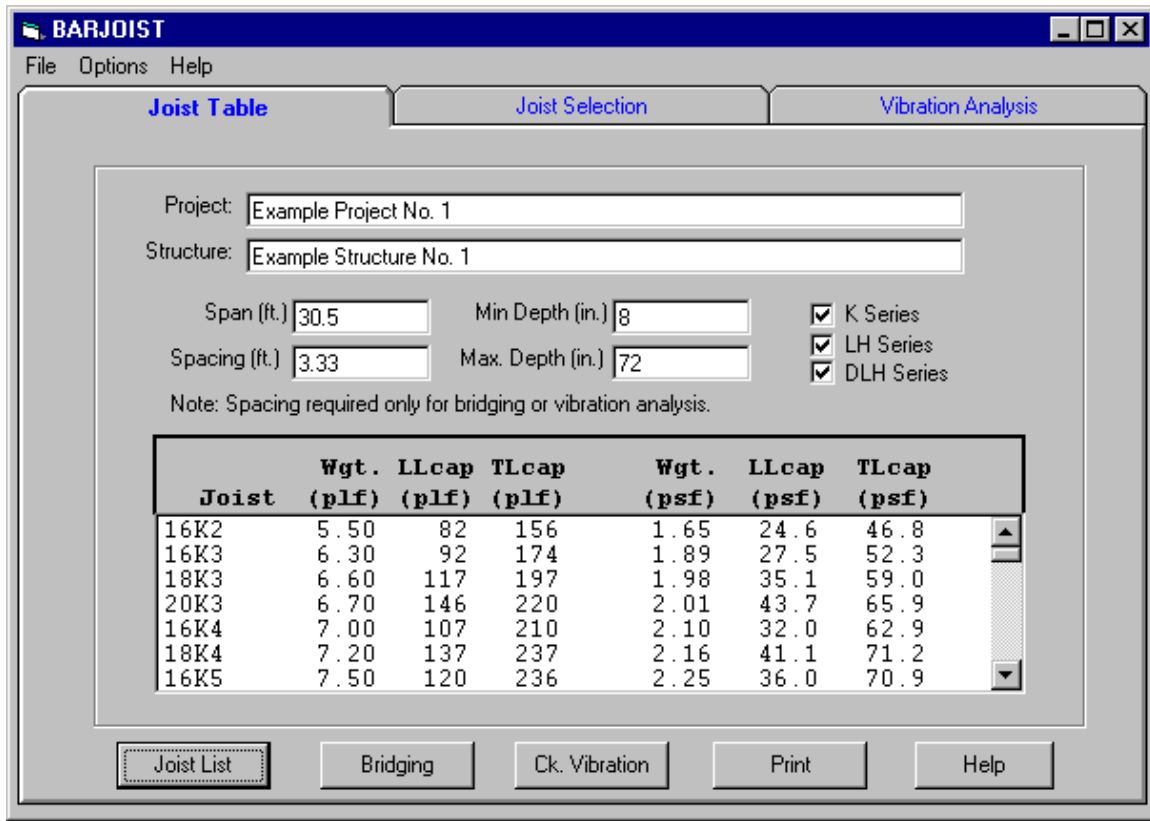


Figure 5

Since both a span and spacing were input, the output listing displays joist weights and load capacities in both plf and psf units. If the spacing field had been left blank, only the plf weights and load capacities would have been displayed.

Clicking on the “Bridging” button at the bottom of the window causes the “Bridging Requirements” window to appear, as shown in Figure 7, displaying the minimum number of bridging rows and minimum bridging size for the highlighted joist.

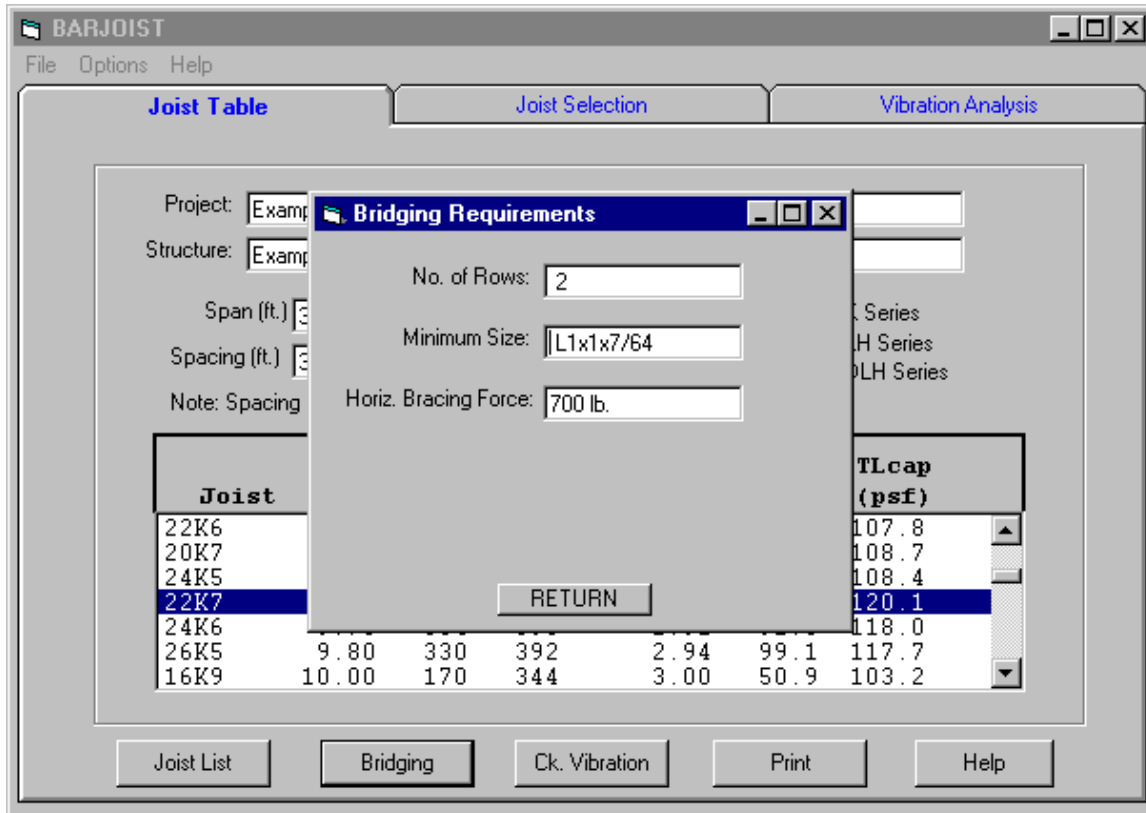


Figure 7

Clicking on the “Return” button of the Bridging Requirements window causes it to disappear. Any of the other joists could be highlighted at this point and their bridging requirements determined if so desired; however, for purposes of this example we will move on to Vibration analysis.

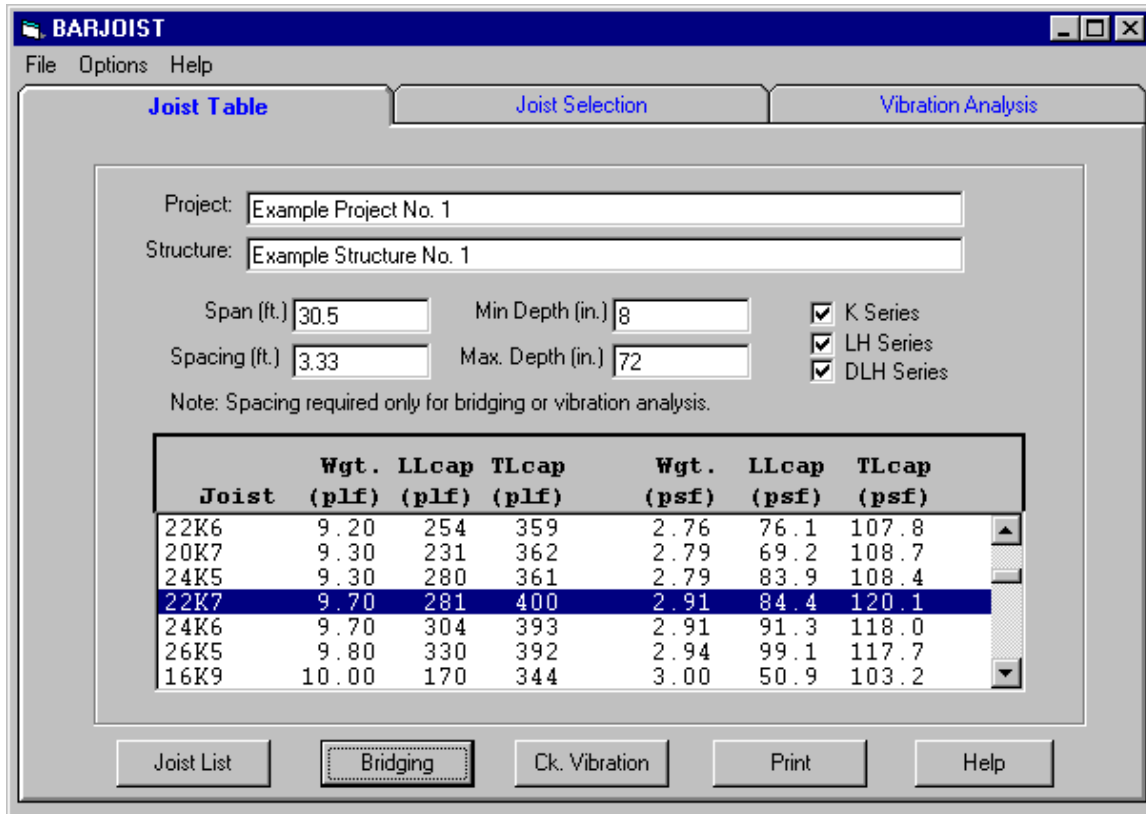


Figure 8

Clicking on the “Ck. Vibration” button at the bottom of the window causes the Vibration Input window to appear as shown in Figure 9. Note that certain input items, such as project and structure identifier, joist size, span, spacing, depth, weight, and total allowable load have automatically been entered.

Input		Results
Project:	Example Project No. 1	
Structure:	Example Structure No. 1	
Joist Size:	22K7	
Joist Span (ft.):	30.5	Joist Weight (plf): 9.7
Joist Spacing (ft.):	3.33	Design Live Load (psf):
Joist Depth (in.):	22	SJI Total All. Load (plf): 400
Concrete Unit Wgt (pcf):		Deck Height (in.):
Concrete Strength (ksi):		Other Dead Load (psf):
Total Slab Thk. (in.):		Percent LL Acting (0-25):

Figure 9

Remaining information to be input by the User includes the joist's design live load, the concrete unit weight, strength, thickness, deck height, other dead load (the slab weight and joist weight are automatically calculated and included by the program), and the percentage of the design live load that is to be considered active at the time of the vibration analysis.

The screenshot shows the BARJOIST software interface. The title bar reads "BARJOIST" and includes standard window controls. The menu bar contains "File", "Options", and "Help". There are three tabs: "Joist Table", "Joist Selection", and "Vibration Analysis", with "Vibration Analysis" being the active tab. Below the tabs, there are two sub-tabs: "Input" and "Results", with "Input" being the active sub-tab. The main area contains a form with the following fields and values:

Project:	Example Project No. 1	
Structure:	Example Structure No. 1	
Joist Size:	22K7	
Joist Span (ft.):	30.5	Joist Weight (plf): 9.7
Joist Spacing (ft.):	3.33	Design Live Load (psf): 50
Joist Depth (in.):	22	SJI Total All. Load (plf): 400
Concrete Unit Wgt (pcf):	145	Deck Height (in.): 1
Concrete Strength (ksi):	4	Other Dead Load (psf): 10
Total Slab Thk. (in.):	4.5	Percent LL Acting (0-25): 10

At the bottom of the form are two buttons: "OK" and "Help".

Figure 10

Clicking on the “OK” button at the bottom of the window causes the Vibration Results window to appear as shown in Figure 11. The results indicate that the calculated vibration falls somewhere between the “barely perceptible” and “distinctly perceptible” categories as defined for the Wiss/Parmalee equations. For the Murray equation, the vibration appears to be acceptable if a damping ratio of at least 4% actually exists.

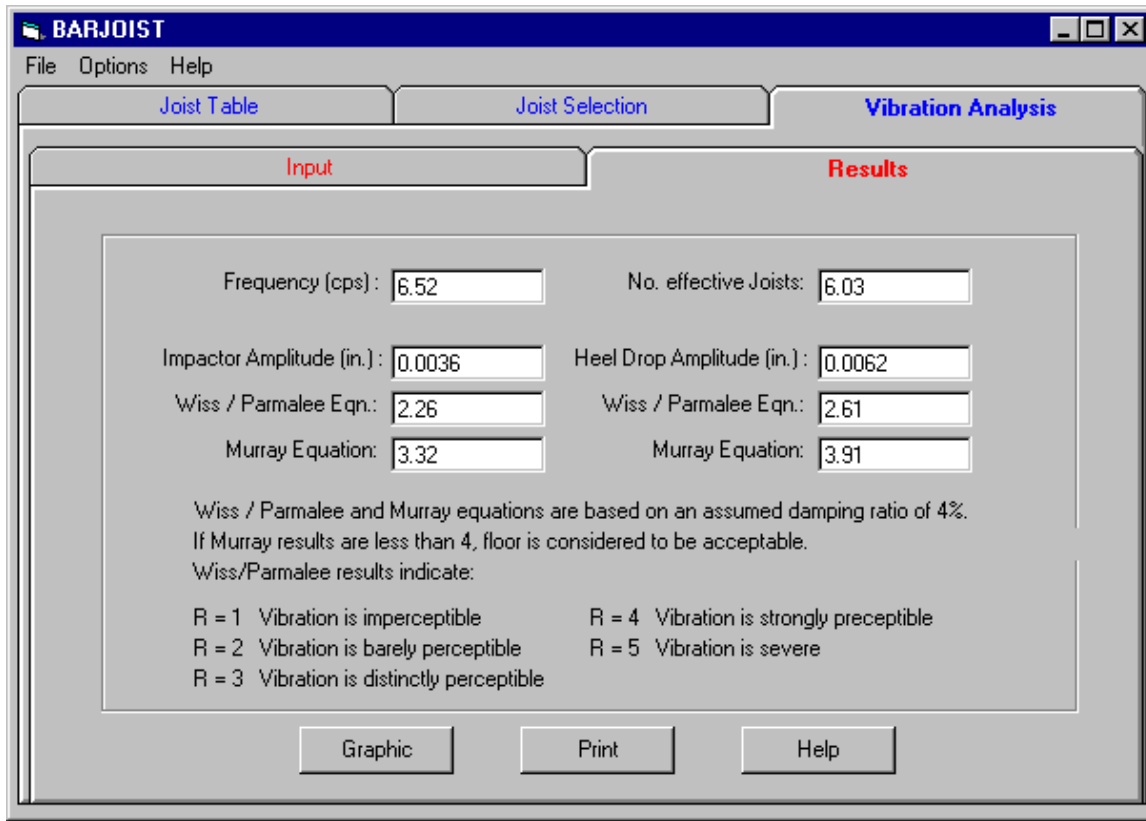


Figure 11

Clicking on the “Graphic” button at the bottom of the window brings up the graph of Figure 12. As indicated, calculated vibrations based on both the standard heel drop and impactor criteria fall in the “slightly perceptible” range although vibrations due to heel drop are approaching the boundary between “slightly perceptible” and “distinctly perceptible”.

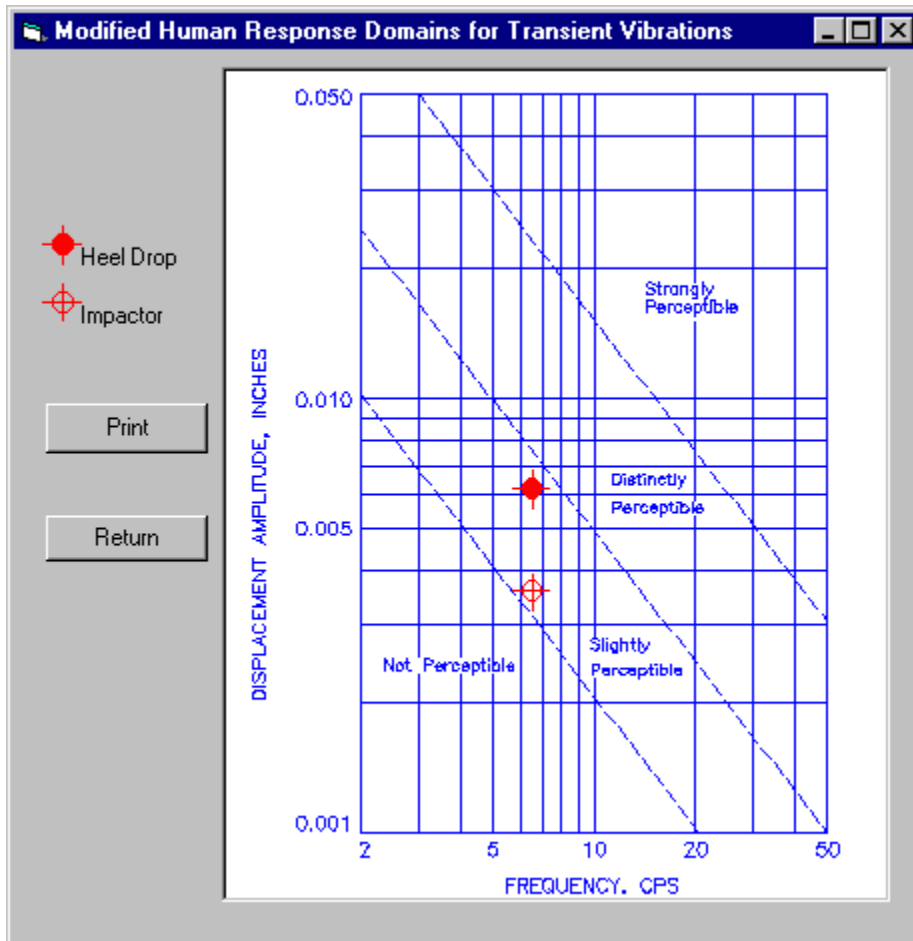


Figure 12

Clicking on the “Print” button will bring up the standard Windows print dialog box and the graph results can be printed out. Clicking on the “Return” button will cause a return to the Vibration Results window of Figure 11, from which any of the other tabs and windows are accessible.

EXAMPLE NO. 2:

(Under Construction, please check back later)