## Breeding Bridges with a GC-GA

- 1. Pick two 'parent' bridges based on visual preference from web site. Click on them. http://www.concrete.tcaup.umich.edu/exercises/
- 2. Breed the pair using the "Breed" button.
- 3. This will produce 1 file, input.csv on your desktop.
- 4. Open input.csv in Excel and save it as input.xls (Excel 97-2003 format)
- 5. Open foster5.gct
- 6. Run transcript
- 7. Fit screen (make view wider than high. About 1.5 high x 2 wide)
- 8. Set line weight to 1 for all lines.
- 9. Back play one step in transaction file. Then play to end. This makes a .jpg screen capture.
- 10. Export to .dxf format.
- 11. Close GC.
- 12. Open .dxf file in AutoCad and save as 2000 format .dxf
- 13. Open STAAD-pro and import the .dxf
- 14. Open .std file in editor.
- 15. Open std\_tail.txt in notepad and cut and paste into the STAAD editor (at end of file)
- 16. Close editors
- 17. Run STAAD analysis and get total weight from steel take off. The number will be in KIPS. Write it down in pounds. Any FEA software that has member selection could be used for this steps 13-17. Members are selected from 46ksi HSS rectangular steel tubing. Each deck node carries a point load of 10000 pounds (10 kips).
- 18. Rename input.csv and .jpg file with this weight and the new generation number. For example: 05432\_2.csv and 05432\_2.jpg . Make weight 5 digits with leading 0.
- 19. Copy these 2 files back up to jpg directory in arch534. This is a directory for ARCH 514, but I can upload other's files if you would like to email them to me at pvbuelow@umich.edu.
- 20. Check to see that the jpg appears with label on the web page.