



Senior Thesis Program
The Department of Architectural Engineering
The Pennsylvania State University
University Park, PA

Structural Technical Report 2
Pro-Con Structural Study of Alternate Floor Systems

Prepare a study and comparison of at least four different alternative floor framing systems for your building (one must be the original system). At least one must be a different framing material. In addition, no more than one system can be a variation on the same floor system. (for example, changing beam spacing but keeping the same basic frame layout.) If possible, (this is important) select systems that have a reasonable chance of being considered as part of your end of the semester structural proposal.

Your report should include the following:

1. An executive summary paragraph of the findings/conclusions/results of the overall assignment.
2. Preliminary sizes of the framing members and slabs for the alternative framing systems. Be sure to check stress and deflections. Use computer programs and approximate methods as appropriate to save time. This is not intended to be an exhaustive analysis assignment. It is to be considered schematic/preliminary design so you can gather information for decisions.
3. A sketch (hand drawn on grid paper is OK or CAD if you prefer) of the layout of each system labeled with typical sizes, appropriate notes (ie material strengths) and any exclusions or restrictions.
4. A brief written comparison of the various systems and how they relate to your building. Your comparison should address such items as fire protection and fire ratings, durability, weight (for example, if you have poor foundation conditions, a heavy structure may be at a disadvantage), susceptibility to vibration, costs, least depth, etc. Note that we do not necessarily expect you to have all this information at this time but we do expect you to question everything and list it as a factor until proven otherwise.
5. Make it clear in your evaluations if you feel the particular framing system is still viable for use in your building now that you have investigated it or if it should be eliminated from consideration and why. Note: Opinion alone is not enough here. You need data to back up your decision. Otherwise, you need to keep the system in the running.
6. A summary comparison chart of features of the three systems (and a fourth listing which is that of the existing floor), including a category that indicates if the system has potential for more in depth investigation.