An assessment of key factors affecting the design of beam-and-slab floor systems.

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# Outline

1. Levers + do they matter
   1. Size optimization of steel beams
   2. Compare constant sizing vs. individually sized vs. shape optimized
   3. Slab topology:
      1. One way slab on deck
      2. Two way slab of reinforced concrete, orthonormal or normal (and if orthonormal, which vector)
   4. Slab geometry: Cellular vs. uniform sizing
2. M e g a p l o t
3. Grillage topology
   1. 4-6 discrete choices with large variations
4. Grillage geometry

Three cases — each of these cases can be parametrically adjusted to plot out the optimal design for each design space.

* 1. Case 1: regular slab (4 bays)
  2. Case 2: self-derived slab
  3. Case 3: …? Voronoi?

1. Assembly depth
   1. Utilities
2. Case study, working through the layered decision tree
   1. Business as usual
   2. Bad choice
   3. Best choice that we can find

# Questions

* What are the most important factors in efficient floor design?
* Are there trade-offs between different design choices (is there a pareto front?)
* How sensitive is a given design to different geometric, topological, sizing, and slab choices?