



Proposal





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PROBLEM STATEMENT

There are many different design solutions that can work for one particular building. Some designs work better than others based on which design considerations are most important to the owner. For my proposed thesis, I decided that building flexibility was the most important design consideration to be taken into account. The existing system of a 2" metal deck and 4 ½" concrete slab allows for a 12 foot span in the east-west direction forcing an interior bearing wall to be included in the middle of each bay. This design essentially divides each 24 ft x 28 ft apartment unit in half and does not allow for a greater level of flexibility which is desired in dwelling units such as apartments and dormitories.

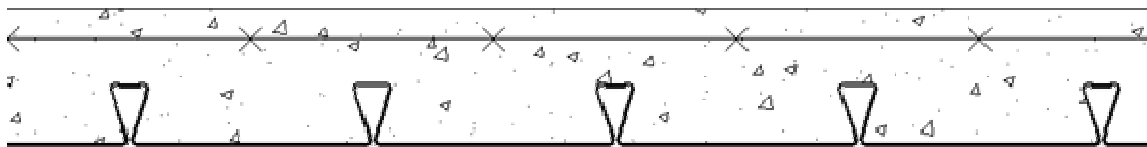


Figure 9: Existing Epicore MSR metal deck Section



DESIGN CRITERIA

The main controlling factor in this proposed solution is to incorporate a floor system with a longer span. Other factors such as cost, constructability, availability, and overall performance will be taken into consideration after flexibility when evaluating this proposed structure. After looking at alternative structural systems in Tech 2, I discovered that there were several feasible alternative solutions. However, after consulting with Dr. Boothby, I am proposing a post-tensioned system as a replacement for the existing slab on metal deck system. I will explore whether a post-tensioned system will give me the flexibility that I'm looking for by allowing for a longer span while maintaining the slab thickness at a reasonable and profitable level. In doing so, the interior masonry bearing wall in the middle of each bay will no longer be needed and the floorplan becomes much more flexible.