

Structural Technical Report #2

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- Parkview at Bloomfield Station
- Bloomfield, NJ
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Executive Summary

This report covers the comparative redesign of the Hambro® floor system currently used in Parkview at Bloomfield Station, a six story residential apartment in Bloomfield, New Jersey. This comparison encompasses gravity loading analysis for five different floor systems: bar joist with metal decking, hollow core planks, concrete pan joists, waffle flat slab and pre-stress concrete slab. There is a comparison table and an extensive calculation appendix attached at the end of this report.

The typical design bay size in Parkview is 30'-0" \pm 1'-0" wide by 38'-0" long. There are no height restrictions for the building but a shorter height is desirable with a current ceiling-to-floor depth of 19". This ceiling-to-floor depth allows for six residential levels and a roof level with a total building height of just less than 89 feet. The Hambro System has a 3 hour fire rating and a low system weight of 40 pounds per square foot. This system also features a quick erection time, creating a lower overall floor system cost.

The best floor redesign to parallel the Hambro system is the hollow core plank floor system. The hollow core plank system features shorter depths (10" + 3" to 6"), and a fast erection time. The hollow core plank system is also a less complex option overall and reasonably close in cost to the Hambro system. However, a change in supporting structure from lightgauge shear walls to a steel or concrete lateral frame will be required, causing some changes to the existing architecture. This system has system weights nearly double the current floor weight, and will require larger foundations. Finally, additional fireproofing will need to be considered for the hollow core plank system which only has a 2 hour fire rating. While this floor system has drawbacks with respect to weight and support system, the hollow core plank system appears to be the most viable alternative to the current floor system.