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- Structural ~ Parfitt
- Parkview at Bloomfield Station
- Bloomfield, NJ
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Structural Technical Report #1

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Executive summary

This report covers the structural concepts used in designing Parkview at Bloomfield Station, a six story residential apartment and parking garage in Bloomfield, New Jersey. It encompasses gravity and lateral loading analysis checks.

Structural Overview

The structural system for Parkview at Bloomfield Station is a roof composed of light gage roof trusses spaced 2' on center (oc) spanning front to back, panelized bearing light gage walls 4" and 6" wide continuously capped with a steel tube for load distribution purposes and a 16" deep D500 Hambro® floor system. The main lateral force resisting system for the building is a shear wall system provided by thin cross bracing straps attached to the light gage bearing walls. Finally, a 4" slab-on-grade foundation with 2'-6" continuous footings makes up most of the building's foundation; however, larger 4'x4' spread footings are utilized below column point loads. The precast garage is structurally separate, and it will not be considered in the design review.

Code Overview

The design of the structure was in accordance with the International Building Code (IBC) 2000 with New Jersey amendments, the New Jersey Uniform Construction Code, and local county and township requirements (there were no structural changes due to these amendments). The dead, live, and wind loads used in the design were proven to be adequate based on the loadings found in ASCE 7-98 for gravity and lateral load.

Calculation Overview

All spot checks performed on structural components in the building showed that the members were adequately sized for the calculated loads. The structural columns, the Hambro floor joists, the tube steel top plates, and the shear wall assemblies were all determined to be adequately sized for both ASD and LRFD loadings. It was also determined that seismic design controlled over wind in the lateral analysis. A more in depth analysis of the lateral loadings will be conducted in Tech report 3.

Minor discrepancies with design loads were found between code dead load, snow load and live load calculations; yet, it did not appear that this had any effect on any existing member sizes. Furthermore, story drift, while not expected to be a problem, was shown to be well below the allowable limits. Summaries of the load calculations are included in the following appendix.