



North Shore at Canton

Baltimore, MD

Technical Report 1

Structural Concepts

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Structural
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Executive Summary

North Shore at Canton is a 4 story town home and parking garage structure built on top of a pier in Baltimore harbor. The building is unique in the fact that it is built over the water. The first floor of the building is an enclosed parking level, from which the residence gain access to the town houses. The second, third, and fourth levels are comprised of the town house structure. The building is approximately 15,000 sq ft. per floor, with a total square footage of 60,000 sq ft.

This report examines the structural aspects of the garage and town homes, and briefly describes the pier structure. The parking level consists of steel columns and beams which make up a full moment frame, the primary columns are made up of W 12x96 while the beams are primarily W 18x60 and W 24x68, with only some slight variation. The beams have hollow core precast concrete planks, with embedded steel plates, welded to the top flange, the planks are topped with a layer of rigid insulation and a thin layer of concrete. The remaining stories structure is made up of a metal stud shear wall system, and the floor systems consist of open web wood trusses bearing on the shear walls. The roof system is comprised of pre-engineered wood roof trusses, that also bear on the shear walls.

An examination of the loads of the structure, dead, live and lateral, was also done. The design loads used were from BOCA 1996, while the loads in my analysis came from the ASCE 7-02. The dead loads were mainly comprised of the weight of the structure and the snow loads. The live loads that were used were based on a residential structure. The lateral loads are made up from the wind and seismic loads.

A spot check of a typical beam located in the garage floor structure and a typical shear wall on the third floor are analyzed. The results of the spot check of the beam resulted in a slightly larger beam size, however this is most likely as a result of the assumptions made, and the fact that the loads have increased from the code used to design the structure. The shear loads have also been increased, from the previous code the building was exempt from seismic loading, and the shear force that resulted from my analysis was much greater than expected. An analysis with out a seismic lateral force was made and the resulting shear force was still within the design limitation.