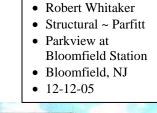# Structural Technical Proposal

By Robert Whitaker

Executive Summary

The current structural system for Parkview at Bloomfield Station is composed of a light gage roof spaced 2' on center (oc) spanning front to back and panelized bearing light gage walls 4" and 6" wide continuously capped with a steel tube for load distribution purposes. These walls not only hold the 16" deep D500 Hambro® floor system but also act as the main lateral force resisting system for the building. Thin cross bracing straps attached to the light gage bearing walls give these walls the lateral capacity required. There are a total of 38 shear walls in the building: 17 in the North-South direction, 17 in the East-West direction, and 4 concrete masonry unit (cmu) stair towers that resist load mainly in the East-West direction. The precast garage is structurally separate, and only the 4" building separation will be considered for story drift in the lateral review.

Structural Proposal

This proposal covers the analysis and design of a steel braced frame as a replacement for the current light gage bearing wall system. Two different framing orientations for the bar joist floor will be investigated, and analyzed for efficiency and compatibility with the redesigned system. The use of the braced frame system will require less braced frames throughout the building than the current system, creating the use of leaning column frames at some unit separations. There are a total of 22 braced frames in the building: 12 in the North-South direction, and 10 in the East-West direction, along with 4 concrete masonry unit (cmu) stair towers that resist load mainly in the East-West direction.

Calculation Overview

Load and Resistance Factor Design (LRFD) will be used in all spot checks. The analysis will be performed on structural components in the building using RAM, a finite element based analysis program. This program performs lateral load calculations, including seismic and wind from three directions, and will be used to compute the loads for the shear walls in the building. The results from previous Technical Reports will be used and verified in the proposed redesign. A building drift limit is to be computed using the RAM program, and the members will be sized using the Manual of Steel Construction ~ 3rd Edition. Finally, a Portal Frame analysis will be used to spot check calculated end reactions in specific frame members.