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Structural

MK Parfitt

Office Building, Washington, DC*

Technical Assignment 2

10/31/05



*Building specifics omitted at owners request

Executive Summary

The purpose of this technical assignment is to compare alternate floor systems to the originally designed floor system. The first part is a review of the existing floor system as was investigated in detail for technical assignment 1. A reasonable loading is determined using IBC 2003 live loads, and ACI dead load guidelines. This loading was used to later in the report for design of the alternate floor systems.

Four alternate floor systems were considered. The original design was also considered without the effects of post-tensioning. The other systems were a one-way skip-joint, precast double tees, two-way waffle slab construction, and a non-composite metal deck system. Each system was roughly sized using a representative bay. Critical features of each system were checked and compared to other systems and the original to determine the feasibility of each alternative.

The factors used to check the framing systems were overall structure depth, effect to lateral system, strength, architectural impact, fire-rating, cost, material usage, LEED design, and constructability. Overall it appeared that the modified two-way slab with drop panels was the best choice, because the post-tensioning was not necessary in ultimate strength checks. The waffle slab was another good choice, as was the precast tees except for their excessive depth.