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## 1.0 Executive Summary

### Introduction

This report analyzes and compares alternate floor systems to the existing floor system at Fordham Place. The alternate systems were chosen based on design considerations listed below. Assumptions were made and each system was compared based on the advantages and disadvantages to determine a viable alternate system.

### Existing Floor System

Composite steel beams with composite slab on metal deck

This system is suited very well for Fordham Place. It is really quick and easy to erect which can be important in a busy city like Bronx. It is also more economical than concrete systems because there is no height limitation in Bronx, therefore floor sandwich depth is not a factor.

### Alternate Floor System

Two – Way flat plate

A two – way flat plate is an average design. Concrete is primarily used to decrease floor sandwich depth. However, as noted before that is not major factor. Also if a two way system would be used, a two – flat slab with drop panels is a more efficient design.

Two – way flat slab with drop panels

As discussed above this system is better than the flat plate because the extra concrete in the drop panels gives the system a higher moment capacity where it is needed (column supports).

Two – way waffle slab

This system was considered because it performs the same as any other two way system, but the geometry allows a design that does not require as much concrete as the other two – way systems. However, it is very unsightly and will not work well with duct work.

One – way pan joist

One – way concrete floor systems are primarily used for bays that are not so square. This bad thing about this design, and the other concrete systems, is they do not work well with duct work and electrical lines.

Open web steel joist

This is a risky design for an office building due to its susceptibility to floor vibrations. It is the designers engineering judgment, but I would avoid Open web steel joist.

Non – composite steel beams with concrete slab on metal deck

This is a good design; however a composite design yields smaller members, and therefore is the better design.

**Conclusion:** Structurally, all options are viable. However only the steel systems and the flat slab with drop panels are architecturally and structurally viable. The best system is the current composite steel beams with composite slab on metal deck.