

Technical Report 2 – Alternate Floor Systems

Executive Summary



This report is an analysis of possible alternate floor systems for The Hershey Academic Support Center found in Hershey, PA. After analyzing the existing system, feasible alternate systems were chosen and considered for the building's floor system. Advantages and disadvantages were contrived and studied to determine if each system was worth further investigation.

Existing Floor System – Composite Steel Beams and Girders

- ~Advantages: Quick Erection with Lightweight Construction
- ~Disadvantages: Needs Fireproofing and Possible Vibration Issues

Floor System #1 – Composite Steel Beams and Girders (No Camber)

- ~Advantages: Existing System Advantages and Easier to Fabricate
- ~Disadvantages: Existing System Disadvantages and a Possibly Higher Cost

Floor System #2 – Non-Composite Steel Beams and Girders

- ~Advantages: Cheaper System with a Shorter Construction Time
- ~Disadvantages: Increased System Weight and Possible Lateral Effects
- ~Further Investigation: YES

Floor System #3 – One-way Multiple Span Concrete Joists

- ~Advantages: Decreased Overall Depth and Less Vibration Issues
- ~Disadvantages: Longer Construction Time and a Heavier System
- ~Further Investigation: YES

Floor System #4 – Two-way Flat Slab with Drop Panels

- ~Advantages: No Fireproofing or Vibration Concerns
- ~Disadvantages: Thick Slab with Drops and Very Heavy Weight

Floor System #5 – Two-way Waffle Flat Slab

- ~Advantages: Very Thin Floor System with Little Vibration Effects
- ~Disadvantages: More Expensive System and Longer Construction Time
- ~Further Investigation: YES

Floor System #6 – Open Web Steel Joists

- ~Advantages: Lightweight System with a Faster Build Time
- ~Disadvantages: Increased Floor Depth with Difficult Fireproofing