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Structural Option

Technical Assignment #2

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American Eagle Outfitters Quantum II Corporate Headquarters

Executive Summary

This report is a detailed analysis and comparison of various floor systems that could be utilized in the American Eagle Quantum II Corporate Headquarters. The first part of the report studies the existing design. Typical floor loads are defined per ASCE-7 02 and the buildings design. A typical framing bay is defined and analyzed, both manually and with RAM structural design software

The second and third sections of this report deal with alternative floor systems. The first investigates two more options in steel, non-composite beams and non-composite joists. The later section looks at the options provided by concrete floor systems. Hollow core planks and double tee beams are considered and designed with the use of manufacturer's charts. A design summary is presented for each of the four methods in the body of the report, while specific calculations are located in the appendix. Inherent strengths and weaknesses of each system are also discussed.

The final section is a comparison chart of all five floor systems. The ultimate aim of the report is to determine which system options are worthy of further consideration, and it is determined that the existing system of composite steel beams and the option of hollow core concrete planks are the most advantageous, and will be considered in further design work.