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Structural Technical Report 1
Structural Concepts / Existing Conditions

Executive Summary

The purpose of this technical report is to descriptively explain the existing conditions, namely the structural system, of the Koshland Integrated Natural Science Center at Haverford College in Pennsylvania, through a number of analyses. The KINSC is four story science building that is a new edition to the Haverford campus. It is comprised of laboratory, classroom, and office spaces as well as numerous communal areas. The KINSC is directly connected to the two existing structures, Sharpless and Hillies Halls, but is very distinctive in its architecture and engineering.

This report is intended to give an introductory understanding to the buildings structural system. Included in this report are detailed descriptions of the foundation, the floor framing, the lateral force resisting system, the roof framing, as well as the design codes and standards used throughout the engineering of this structure. Also, in this report, the results of several spot checks throughout the building, by way of analysis, have been recorded and confirm that the sizes and reinforcing of the existing framing members are sufficient to carry the required loading. These spot checks include a typical precast concrete beam, a typical precast column, and a 10” hollow core precast plank floor system with a 2” topping. In addition, a shear wall was also analyzed to confirm that lateral support requirements were met. Following the body of the report, are Appendices provide copies of the calculations from the analysis as well as brief sketches of the framing system to allow for a better understanding.

Found within this report are also conclusions from all findings from analyses that were conducted. The primary structural system is precast concrete with the exception of the roof framing and foundation. However, the drawings and building information that was available, there are some key factors that are unknown, such as member reinforcement. Therefore, the spot check calculations could not be checked against existing conditions for validity. However, given the overall dimensions of most of the members, reasonable results were obtained and seem to be very convincing possibilities for what is actually found in the building.