

# New Regional Medical Center

## EAST NORRITON, PA

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## Appendix A

# Breadth Analysis

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## BREADTH TOPICS

The following two breadth topics include analysis into technical disciplines, beyond construction management, that are taught within the Architectural Engineering program at The Pennsylvania State University. These breadths focus on investigations into the alternative discipline in order to enhance concurrent analysis topics within the construction management technical investigation, and supplement research efforts within the thesis project.

### ARCHITECTURAL BREADTH | *CONTRIBUTES TO TECHNICAL ANALYSIS 2*

The architectural breadth will involve redesigning the New Regional Medical Center's to align more clearly with the value engineering efforts mentioned previously in the 'VE Considerations' section of *Technical Report No. 3*. The extent of redesign will not be as substantial as the VE recommendation to reduce the atrium from 4 stories to 1 story, for cost and schedule savings purposes. Redesign will be implemented to revise the assembly feature of the atrium's curtain wall glazing. Redesigning efforts will push for modularization of the glazing in order to meet the aggressive enclosure deadline and parallel construction sequencing within the rest of the building. Additionally, the goal of the breadth is verify the benefits of prefabrication of this critical path item. Methods would include research into Medical Center architectural design, materials, and curtain wall performance requirements. Constructability, costs, and schedule durations would be reviewed and compared to the existing system, in addition to identifying key cost and schedule impacts of the new system. The new design would be developed in Autodesk Revit Architecture, and merged into the existing architectural model to produce renderings for owner review. Architectural details, including assembly programming will complete the architectural breadth analysis.

### STRUCTURAL BREADTH | *CONTRIBUTES TO TECHNICAL ANALYSIS 3*

The structural breadth will include structural redesign of the concrete pour stop as a typical building expansion joint (or as recommended otherwise by the project's structural engineer). Case studies would be analyzed to review the conceptual and structural differences within these two systems. The structural engineer would be consulted on the decision to utilize the pour strip in the original design, and structural calculations will be performed to compare this system to a building expansion joint system. Additional costs, schedule impacts, and constructability reviews will be considered as a substantial part of the redesign, notably focusing on foundation changes, and steel frame revisions. Methods will consist of hand calculation in addition to virtual mock ups in Google Sketch Up and/or Autodesk Revit Structural of each system to convey the differences in design, assembly, and constructability. Structural details of the new system, including framing plans will complete the structural breadth analysis, in addition to identifying key cost and schedule impacts of the new system.

