



# Surgery Expansion Phase 1

## Children's National Medical Center

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### Executive Summary

This thesis proposal is for the analysis work and industry research portion of the AE Senior Thesis. It includes the details for what my research on prefabrication in relation to the Infection Control Risk Assessment (ICRA) put forth by the American Institute of Architects (AIA), an analysis for prefabricating the mechanical systems and interior partitions, and an analysis of the acoustics of the Neonatal Intensive Care Unit (NICU), Critical Intensive Care Unit (CICU) and the two new operating rooms.

The industry research on prefabrication is a study of what contractors can prefabricate to reduce the risk of patient infection. It is an attempt to determine how much can actually be prefabricated off site. Using surveys, a list of the largest concerns of hospital owners and staff will be comprised. The list will allow for more detailed research into specific systems and products. Ultimately, the result of this research will be a guide for owners, contractors and designers to use in supplement to the ICRA regulations and help them determine what extra measures they can take.

Prefabrication will also be used as the main analysis tool of the mechanical system. In an effort to reduce the project schedule and costs, I am going to examine applying prefabrication. The mechanical detail will be a breadth study, to include an analysis of the elements as designed, and the possible redesign of elements to maximize the amount of prefabrication. Interior partitions will also be examined for prefabrication as a cost and schedule reduction method. Constructability reviews will also be conducted in determining if prefabrication is a viable option and should be seriously pursued.

Noise penetration will be studied as an acoustical breadth. The efforts of this analysis will focus on what measures can be taken prior to construction to minimize the impact of construction noise for the rest of the hospital. Two particular areas of focus will be the NICU and CICU which house patients with extremely sensitive conditions. The new operating rooms will also be examined for acoustical isolation as designed. If necessary, new measures will be added to the project to isolate these rooms to allow for better concentration of the surgeons, and to prevent issues during future construction projects.