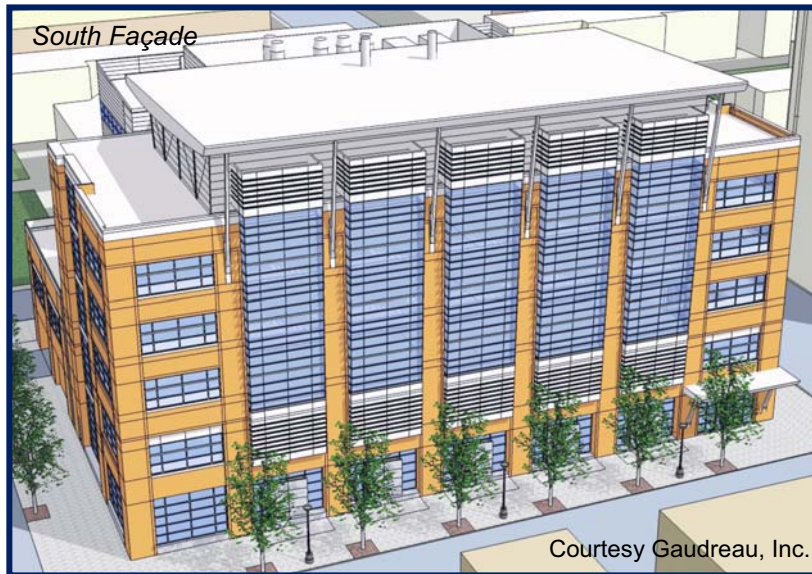


## EXECUTIVE SUMMARY

The Forensic Medical Center is a proposed, five-story state-of-the-art laboratory and office building. It will contain a small parking garage for staff and a drive-through delivery area on the ground floor. Autopsy rooms and their support spaces would make up the second floor, along with a high-security BioSafety Level 3 laboratory. On the third floor are histology, toxicology, and neuropathology laboratories, while the fourth floor houses



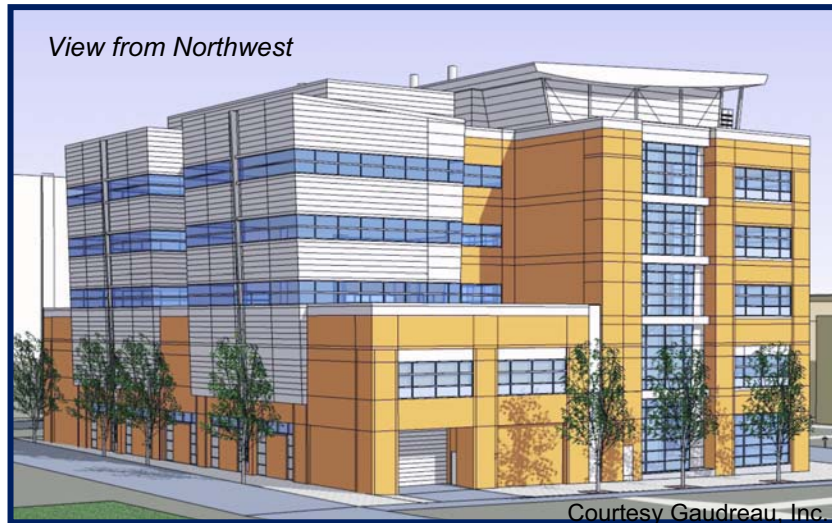
the public reception area, along with an investigations suite, photography suite, IT suite, and training rooms. On the fifth floor are administrative offices, medical records, and a library/conference room. This floor will also house the Chief Medical Examiner's office suite. As designed, the building would include 121,000 square feet of space, and would rise to 105 feet above grade. The cost is estimated at \$45 million, with construction scheduled to begin in July 2008, continuing to May 2010.

The structure of The Forensic Medical Center was designed as a two-way, flat-plate concrete system, with a dual moment frame and shearwall lateral system. This report investigates the feasibility, as well as the cost and schedule implications of changing this system to a composite steel system with concentric braced frames. Because the building houses high-tech laboratory equipment, a vibration study was required to ensure it would function properly. The existing concrete system was designed for vibration using methods originally developed for steel, as a standard for the design of concrete for vibrations does not exist. Using these methods required many conservative assumptions, which may have possibly led to an over-conservative structure. However, the system was only designed for slow to moderate walking, and not fast walking, which may not be adequate in this case.

The structural redesign was performed according to ASCE 7-05 and IBC 2006, with the assistance of a RAM Structural System model. AISC Design Guide 11 "Floor Vibrations Due to Human Activity" was used to design and analyze the vibration-critical fifth floor of the building. The results were W16 beams framing into W18 girders on typical floors, with much larger sizes on the fifth floor. The loads were carried to the foundation by W10 and W12 columns. Braced frames consisted of wide-flange columns (W10) and beams (W8 to W16). Rectangular hollow structural sections were used as the braces, with sizes ranging from HSS12x4x3/8 to HSS16x8x1/2.

A construction management study was performed to determine the cost and schedule impact of the redesigned steel system. The steel system was estimated to cost approximately \$1.4 million less than the concrete system, while being completed three months sooner.

Original plans for The Forensic Medical Center included an Alternative Care Facility on the ground floor. The facility would involve the conversion of the parking garage area into a triage unit in the case of a local catastrophic event, such as an accident, natural disaster, or terrorist attack. These plans were dropped because of budget concerns. A



study was conducted on the feasibility of including such a facility, including architectural, mechanical, lighting, and electrical requirements, and a rough estimate of their costs. The study concluded that such a facility would add a significant cost to the overall price of the building, and it would be up to the owners to determine whether the facility should be implemented.