

## **1.0 Executive Summary**

The Miller Children's Hospital Pediatric Inpatient Addition is a 4-story, 127,000 sq. ft. facility housing operating rooms, ICUs, patient rooms, as well as administrative offices and conference rooms. The mechanical system for the building uses a constant volume air system with air handling units located on the roof. The on-site central plant houses the chillers, cooling towers, and pumps as well as other electrical equipment for the building. This report summarizes the findings of Technical Reports 1 and 2, researches the main mechanical equipment, and explores the mechanical control systems.

The Pediatric Inpatient Addition mechanical system was designed by JBA Consulting Engineers with two 500-ton centrifugal water cooled chillers, two induced draft cooling towers, seven air handling units, two 2000 MBH hot water boilers, as well as condenser water pumps, chilled water pumps, and hot water pumps. The mechanical system is operated using direct digital controls which monitor and adjust system components to maintain proper set points and conditions of operation. The schematic flow diagrams included in this report outline condenser water flow, chilled water flow, and hot water flow with proper control components.

Finally, a critique of the design was done to identify possible areas of improvement or redesign. JBA Consulting Engineers designed the Pediatric Inpatient Addition with the primary objective being patient health and occupant safety. The Tech 2 energy analysis revealed that the building consumes a large amount of energy through mechanical systems operation and may have the potential for reducing some operating costs, warranting further research into energy saving techniques. Another possible option for further research is in the field of indoor air quality, particularly in a medical facility such as this. It is determined that a more in-depth analysis must be done in this area before any conclusion on redesign can be made.