

Executive Summary

This report reports the existing conditions for the Margaret M. Alkek Building for Biomedical Research in Houston, TX and the proposed redesign that was thought of during the first three technical reports conducted. The major issues of research laboratories tend to be indoor air quality and energy consumption. This current solution to the indoor air quality issues of the building is to use 100% outdoor air systems. The proposed redesign will use an active controls system to track the exhaust/return air and determine when it is acceptable to either return the air directly or use another sort of energy recovery device or technique. To have room for the new energy recovery equipment, it is suggested that the level 8 research laboratory is switched with the level 3 mechanical system. This allows for energy recovery devices access to all exhaust streams as well as the air handling units. Also the current configuration of air handlers will be changed and consolidated. Finally a parallel cooling system will be looked at if enough room is not created in consolidating all the air handling equipment for the energy recovery devices.

This report also discusses alternatives that were considered before the final proposed redesign was determined. The justification and integration/coordination issues involved with the proposed redesign are discussed. Finally the breadth topics that are associated with the design as well as the project methods are discussed, then a schedule for the spring semester is presented.