

Thermal and Mechanical Building Documentation Report (graduate students only)

The intent of this assignment is to document, analyze and represent innovative contemporary buildings with respect to technology and energy use. Any building may be considered; however, the selection of a building may be constrained by the ability to obtain enough information about the building. In addition to submitting a report (in both printed and digital form) the project will be presented briefly in class.

Specifications

All visual materials contained in the report must be fully attributed (list source). Original work is preferred.

Report Contents

- 1. Information
 - Location
 - Orientation (degrees off north)
 - Diagram of plan/section
 - Size (square feet)
 - Volume of enclosed space (cubic feet)
 - Wall types and materials, R and U values
 - Size and type of exterior wall surface
 - Glass type and amount for each orientation
 - Mechanical system type
 - Diagram of distribution system on a plan diagram (air or water circulation)
 - Name of architect, if any
 - Year built, if known
 - Overall photo of building
- 2. Baseline heat gain/loss analysis using Energy-10
 - Determine energy use per square foot of building area.
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- 3. Analysis/evaluation
 - Rank the energy saving strategies available in Energy-10.
 - Speculate and discuss why some strategies are more effective than others.
 - Make changes to the building and evaluate the following factors (and others appropriate to your specific building) with respect to energy use:
 - Orientation
 - Percentage of glazing
 - Temperature settings
 - Building mass
 - Provide a summary of the building's technology and energy use.
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- Final submission should be a printed PDF in 8.5x11 format as well as the electronic file sent to oberholz@rice.edu (with "516 project submission" in the subject line). Make sure that your name appears within the PDF.
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