

The Site Design for a Hotel in Pantops, Charlottesville  
(Technical Report)

How Can Zoning Reform Occur in the US?  
(Sociotechnical Research Paper)

An Undergraduate Thesis Portfolio  
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Bachelor of Science in Civil Engineering

by

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Preface

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## **Sociotechnical Synthesis**

Land use and development patterns in the United States contribute to high energy demand for transportation and deficient stocks of affordable housing. Construction practices and land use reforms can mitigate energy intensity and environmental damage.

A private developer is seeking my capstone team's help to develop and design construction documents for a new hotel in the Pantops area of Charlottesville. The team selected a location and building orientation consistent with the county code, designed a parking lot, planned site grading, developed a compliant stormwater management plan and planned for utilities. The research team sought to develop a design serving the interests of the hotel's architects and guests in an economical design.

In the United States, land use patterns and transportation policies impose low-density development that promotes car driving, and consequently high per capita greenhouse gas emissions. Nevertheless, advocacies, companies and policymakers have promoted some reforms that may soo reduce the energy intensity of US land use and transportation.