

Thesis Project Portfolio

IVY CORRIDOR PHASE II REDESIGN

(Technical Report)

**INCREASED PEDESTRIAN CONSIDERATIONS IN TRANSPORTATION PLANNING
AS THE INTERSECTION OF COMMUNITY MOVEMENTS AND POLICY
IMPROVEMENTS**

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science
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Bachelor of Science, School of Engineering

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Table of Contents

Sociotechnical Synthesis

Ivy Corridor Phase II Redesign

Increased pedestrian considerations in transportation planning as the intersection of community movements and policy improvements

Prospectus

Sociotechnical Synthesis

Many recent urban infrastructure projects across the United States have focused on providing for more pedestrian-friendly transportation options. This portfolio details a capstone design project and an STS research paper that explore the shaping of pedestrian-centered transportation. The move away from purely automobile infrastructure in cities is linked to increased safety, reduced emissions, and changing public opinion related to infrastructure.

My capstone team completed a redesign of Phase II of the Ivy Corridor project located on Grounds. We were asked to design a site that would meet the needs of all site users including building space for dining, residential, and academic facilities, an interactive stormwater feature, and a space for outdoor learning. Subgoals with those overarching requirements included site regrading, multimodal access considerations, storm water modeling, erosion and sediment control planning, climate resilience assessment, and cost estimation. We had to work collaboratively to create a design for the site that balanced all the requirements and constraints to create a site that benefits all visitors.

The STS research paper explores the ways in which transportation in the United States has grown to be more considerate of pedestrians and other modes. The framework of social shaping of technology (SST) investigates the shaping of technological artifacts by observing the cycle of direction, forms, and outcomes. In other words, SST considers how stakeholders direct innovation, what forms result from innovation, and what impacts the new forms have on stakeholders. Transportation infrastructure in the United States has been historically weighted toward automobiles as a consequence of economic and social conditions in the middle of the 20th century. More recent public movements have advocated for safer walking and biking routes around cities as part of a wider campaign for mixed-use development. Professional design standards coming from the ITE and FHWA have also more frequently acknowledged these designs due to their safety and sustainability benefits. Two universities in Virginia, the University of Virginia and Virginia Commonwealth University, are presented as examples of pedestrian-centered design being implemented in particular environments.