

CE 487 Senior Design Project

Pedestrian Bridge Design for Safe and Accessible Crossing

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Problem Statement

Pedestrian safety and accessibility are critical components of modern infrastructure. Currently, there is no dedicated pedestrian bridge at the project site, leaving pedestrians to cross an area that may have vehicular traffic or other hazards. This absence of safe infrastructure exposes users to potential accidents, reduces connectivity between destinations, and does not meet accessibility standards. Without a proper crossing, the site fails to comply with ADA guidelines for accessibility and AASHTO recommendations for pedestrian load-bearing and serviceability.

One solution to this problem is the design and construction of a pedestrian bridge that provides a safe, accessible, and durable crossing. The bridge will separate pedestrians from potential hazards, accommodate anticipated foot traffic, and ensure compliance with safety and accessibility standards. The project site is ideal for this intervention due to the volume of pedestrian traffic and the current lack of crossing infrastructure.

In this adaptive design, a steel pedestrian bridge will be engineered to support a live load of 50 lb/ft and maintain deflection limits of $L/500$. The bridge will incorporate ADA-compliant ramps, appropriate cross slopes, guardrails, and lateral bracing to ensure safety and usability for all pedestrians. Fixed parameters include the width of the crossing, expected pedestrian traffic, and environmental conditions at the site. Limitations and constraints include budget, material availability, and site geometry. The bridge design will adhere to AASHTO 2009 pedestrian bridge specifications, local building codes, and ADA guidelines, providing a safe and functional pedestrian infrastructure solution where none currently exists.