

Feasibility Study of Pedestrian Bridge Project for Railroad Crossing in College Town

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Rising number of aged building stock have critical importance on the economic and social well-being of a Pedestrians are frequently in dangerous situations when they have the illegal or unethical occupancy of roadways or make mistakes by competing against moving vehicles. For instance, an ongoing issue with standing freight trains periodically blocking rail crossings in Normal, IL (a college town in the Midwest of the U.S.) has created serious delays for pedestrians and motorists alike. Besides the inconvenience of delay, serious safety concerns with pedestrians disobeying train-crossing gates and travelling across the tracks between train cars burst out as well. To make exercises on the trial more efficient and decrease the potential safety hazards for students, this research focuses on the feasibilities of a pedestrian bridge construction project, which will connect the separated trails when people walk on Constitution Trail from apartments to school, cafeterias, and for other activities, with public private partnership potentials. To find the proper model for decision making process, the authors critically reviewed and compared the Vroom-Yetton-Jago Decision Model (Vroom & Yetton, 1973), OODA Loop model (Huang, 2015) and Recognition- Primed Decision (RPD) model (Klein, 2008) with Fuzzy Comprehensive Evaluation (Zhou & Zhou, 2015). Using the Fuzzy Evaluation method, the authors can obtain the design and construction recommendations based on the primary data collected from public questionnaires, field trips and environmental impact assessment; as well as the secondary data, including cost, construction time and maintenance fee acquired through empirical analogies of pedestrian construction case studies. The preliminary results include the case studies of similar projects and the creation of the evaluation system. The trends observed in the case studies indicate that information sharing and community participation are critical to the success of infrastructure projects. The common understanding of project concerns and community awareness in local business, college students and authority having jurisdictions provide support to the pedestrian bridge. With the technology of infrastructure information modeling and 3D printing, the authors can print the physical, reduced-scale model after the completion of feasibility study. The primary intellectual contribution of this research is the analysis of public-private partnership as a possible funding source for the bridge project. In this study, the authors innovatively implemented infrastructure information modeling and 3D printing which provide a clear guidance for subsequent construction. Accordingly, this feasibility study concept can be expanded to other engineering fields.

Keywords: Feasibility study, project management, bridge construction, environmental impact, Public Private Partnership

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