



Community and Economic Development in North Carolina and Beyond Blog: Pedestrian Bridges: Connecting People with Communities

By CED Program Interns & Students

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A pedestrian bridge can be more than just a crossing structure. In

some cases, it can be a piece of artwork and a gateway that connects communities. That said, sometimes the total costs and benefits of installing a pedestrian bridge are not fully considered. As such, there is an opportunity to explore the purpose, costs, and funding of building pedestrian bridges as well as examine relevant examples of successful pedestrian bridges.

Purpose

“Pedestrian bridges can be useful for linking buildings or popular destinations (e.g. shopping centers, large schools, recreational facilities, parking garages, light rail stations). They are also useful for linking areas separated by highways of freeways, where at-grade crossing are not permitted. Additionally, pedestrian bridges can be used for trail crossings.” Ultimately, pedestrian bridges can be used in three situations, including: (1) crossing interstate highways, (2) crossing natural physical obstacles like rivers, or (3) crossing railroads. At some intersections, a pedestrian bridge might be a better investment than a road-level crossing. These intersections may call for designs that utilize a natural “desire line” where pedestrians will be inclined to use the bridge. For example, a depressed road (in a “v-shape”) can utilize a pedestrian bridge that maintains a level walking path, which is more convenient for pedestrians than walking on an incline or decline. Unfortunately, some bridges are built without much thought for pedestrians. Typically, these bridges are unsuccessful and usually have long winding ramps, stairs, or elevators that are very inconvenient. Also, some bridges are located far from at-grade crossings and cost pedestrians valuable time. This may cause illegal movements by pedestrians and puts both pedestrians and vehicle drivers in harm’s way. The Safe Routes Guide to School notes that “the location selected for any bridge is an important factor in its effectiveness. Like all pedestrian crossings, any facility that is inconvenient or requires an indirect path will simply not be used. The effectiveness of a grade-separated crossing depends on its perceived ease of use by the users. Pedestrians will weigh the perceived safety benefit of using the bridge versus the extra effort and time it will require when making a decision about where to cross.”

Cost

Pedestrian bridges and tunnels can be costly to build. Pedestrian and Bicycle Information Center writes “Pedestrian bridges tend to be among the most expensive treatments for crossings. A typical crossing of a multilane roadway costs hundreds of thousands of dollars. This is largely because of the height of the bridge, which requires long ramps in order



for the facilities to be accessible to pedestrians with disabilities. Thus, pedestrian bridges can cost less and work best when the crossing is over a sunken or lowered roadway.” Bridges over an arterial street are expensive and will often require extensive ramps. As a result, the high cost of a grade separation should be considered along with security issues, drainage problems, lighting needs, and maintenance. The Federal Highway Administration estimates that pedestrian bridges range from \$150 to \$250 per square foot, totaling a cost of approximately \$1 million to \$5 million per complete installation. Please note that the cost for specific types of bridges can vary substantially, based on specific situation, materials, and other factors. Also note that ADA guidelines require that all facilities be accessible to all users, including those in wheelchairs and the visually impaired. These guidelines may increase the costs of bridge construction.

One pedestrian bridge manufacturer charges based on the linear foot, from between \$500 to over \$2,000 per linear foot. The two most widely used materials are wood and pre-fabricated steel. Wood is often less expensive than steel and can be a fourth of the price of steel. “Typically, bridges that are 50 feet to 100 feet long are made from weathering steel, with wood or concrete decks. Bridges beyond 120 feet can use a steel truss. Additional costs can include painted bridges, bow trusses (as opposed to parallel chord trusses), girder beams with aesthetic wood covering (25% increase), AASHTO code (as opposed to AISC code), and wider decks of 13 feet to 16 feet (20-40% increase) compared with 12-foot bridge decks.”

Funding

Although it has been established that pedestrian bridges can be cost-intensive, this still begs the question “where does funding come from?” Often times, it originates directly from a government organization. In Raleigh, the construction of a \$3.8 million pedestrian bridge on the beltline (near Wade Avenue) is being funded by both the City of Raleigh and the State of North Carolina. One planned pedestrian bridge in Palo Alto, California, is funding it’s \$17 million bridge through mostly grants and the City’s general fund. The Santa Clara Valley Transportation Authority is providing \$350,000, and the remainder will come from public and private funding sources, like Google, whose headquarters are located a mile away from the site and will contribute \$1 million. Often, finances of these bridges must be compromised through many public and private sources.

Relevant Examples

Even with high costs and a daunting funding process, some pedestrian bridges have proved essential in helping transform local downtowns. In Greenville, SC, the city realized that it did not have an iconic image. As noted in a local newspaper article, “the bridge became [that iconic image].” The Liberty Bridge is an engineering marvel, held aloft by a web of steel cables, with the platform curving away to highlight the falls of the Reedy River that have come to define Greenville. The bridge is now considered the city’s “postcard,” can hold 1,300 people at a time, and spans 345 feet over the reedy river. The suspension bridge won the prestigious Arthur G. Hayden Medal and is now the capstone of the West End. Mayor Know White notes “We spent \$13 million on the park [and] within two years, we had about \$100 million private investment. It happened more quickly than we thought. Ten years later, we’re feeling the impact.”

Within North Carolina, bridges have also had an important social impact. The Durham Freeway Bridge near Alston Avenue honors R. Kelly Bryant Jr.’s “long effort to reconnect black neighborhoods split by the highway.” The bridge crosses Interstate 40 and connects the American Tobacco Trail to The Streets at Southpoint. This gateway brings together communities and gives access to the outdoors as well as plentiful shopping options. Similarly, with the recent help of Creative Corridors Coalition, Winston-Salem is planning the Strollway Pedestrian Bridge to “relink the city’s historic past to its dynamic present and bright future.” Planting beds will be integrated into the bridge on either side of the walkway with a variety of native plants and ornamental trees. This bridge will represent a truly innovative transportation solution for Winston-Salem.

As these success stories become more prevalent, communities may boldly consider installing a pedestrian bridge for more than just safety reasons. They may identify an opportunity to create an iconic image for their community that could reap both financial and social benefits for years to come.

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