

# Preservation: Why Not In Pennsylvania?

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## Why Not Pennsylvania?



Pennsylvania has an unrivaled collection of historic bridges, particularly metal truss bridges, yet also has a knack for demolishing these bridges and preserving very few. This presentation will first explore problems in Pennsylvania, and then suggest solutions through an examination of bridge preservation in Michigan.

## Why Not Pennsylvania?



Every attempt is made to provide as much factual information as possible. However some of the problems in Pennsylvania could only be identified through personal observation, since PennDOT and other agencies have been less than willing to discuss their inner workings and agendas for dealing with historic bridges.

**Part 1**

# **Barriers To Preservation In Pennsylvania**

## **A Look At State and Local Level Issues**



## Demolition Next To Replacement



The majority of historic truss bridge replacement projects in Pennsylvania build the new bridge next to the replacement. The historic bridge is then demolished, even though it is not in the way of the replacement.

## Unfounded Liability Concerns



A study done by the SRI Foundation revealed that no survey-participating DOT could report a single historic bridge related lawsuit, yet PennDOT frequently cites liability as a reason to demolish historic bridges.

## National Scenic River Act



While this act intends to preserve the culture and history of rivers, restrictions on the number of bridge crossings on a river initially suggest that a bridge cannot be left standing next to its replacement.

## National Scenic River Act



Since this contradicts the goals of the Act, it is likely that dialog with NPS could result in a variance, yet this dialog does not occur.

## State Standard Truss Bridges



Standard plan truss bridges built mostly in the 1930s in Pennsylvania were all evaluated as non-historic in the inventory. These beautiful and impressive bridges display fabrication techniques and designs that stopped being used at least 40 years ago.

## State Standard Truss Bridges



State standard bridges, like all old truss bridges, are disappearing rapidly and are worthy of historic status and preservation. They should be considered for historic preservation now when the best examples can be picked out from the bunch, instead of waiting until most are demolished, limiting preservation choices.

## Bridge Marketing



A major barrier to preservation is an apparent attitude/belief of Pennsylvania agencies like PennDOT that marketing a bridge to a third party for relocation and preservation elsewhere should be the primary and preferred and only feasible preservation option.

## Bridge Marketing Problems

- Pennsylvania's many large historic bridges are difficult/costly to relocate.
  - Historic bridges lose a degree of historic significance when relocated, per National Register criteria.
- Multi-span bridges may only get one span preserved, despite fact that multi-span configuration may be source of significance.

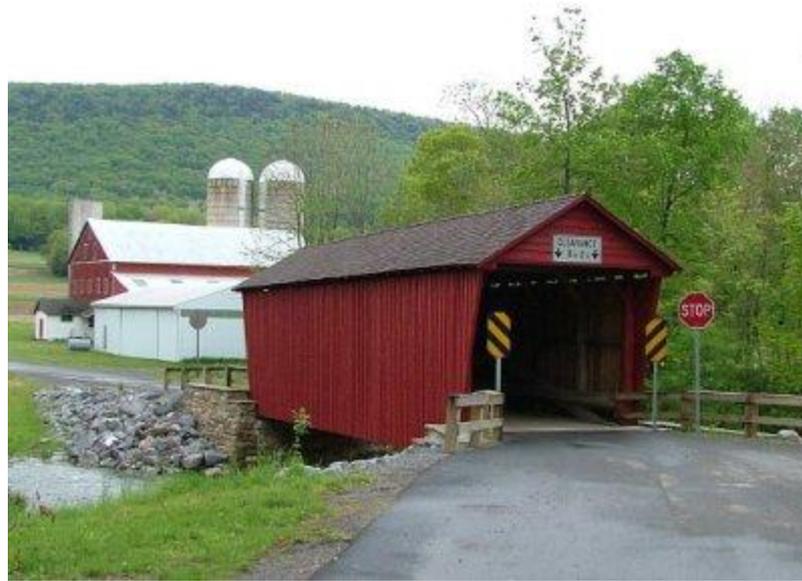


## Bridge Marketing Problems

- Historic bridges may look best in their original location: they tend to be located in beautiful settings where their design compliments their location.
- Other preservation alternatives may in fact be feasible.



## Contradictions: Covered Bridges



The large number of one-lane covered bridges preserved for continued vehicular use in Pennsylvania seriously calls into question claims by agencies such as PennDOT that historic metal truss bridges cannot be restored or are unacceptable for continued vehicular use.

## Part 2

# Overcoming Preservation Barriers in Michigan



# Michigan: A Case Study

## Michigan: Preservation Leader



Since there are so few examples of historic bridge preservation in Pennsylvania, the intention of this presentation is to look at the alternatives to demolition and the benefits of preservation by examining another state: Michigan.

## Michigan: Preservation Leader



It is hoped that Michigan's numerous preservation success stories will inspire ideas and reveal the feasibility of historic bridge preservation. While multiple structure types are reviewed, the focus of this presentation is on the highest risk structure type: the metal truss bridge.

## Where Did Those Barriers Go?

- Yes, some of the barriers to preservation seen in Pennsylvania do exist in Michigan.
- Michigan avoids many barriers by exploring and executing a wide variety of **preservation alternatives** rather than expecting a single solution for all truss bridges.
- Good success using Transportation Enhancement grants to fund restoration projects.

## Where Did Those Barriers Go?

- Good cooperation between MDOT and SHPO as well as with third party experts like Vern Mesler... a few strong historic bridge supporters in these state agencies and some counties/cities.
- Michigan understands that liability is not as grave of a concern as Pennsylvania makes it out to be.
- Bridges may be abandoned until preservation is feasible/funded.

## Where Did Those Barriers Go?

- Storage of disassembled historic truss bridges... allows for preservation after replacement.
- Truss bridges not taken for granted due to much smaller number of remaining structures.
- Development of unique and revolutionary preservation techniques.
- All truss bridges initially evaluated as historic... significance determined at time of project planning.

## Part 3

# Michigan's Historic Bridge Success Stories



# Functional, Safe, Feasible

## Continued Vehicular Use



This historic bridge was restored and continues to serve traffic on a primary highway, US-23 in northern Michigan. It is not posted for weight limits.

Properly maintained and inspected bridges can still be safe and functional, even if fracture critical.

# Functional, Safe, Feasible

## Grosse Ile



This island in the Detroit River is home to 10,894 people all of whom rely on the only two bridges to the island: both historic truss bridges, which have been carefully maintained for vehicular use.

## Washtenaw County

Weight Limit: 20 Tons



Rehab In Progress



Full legal loading on a bridge is **NOT** always a requirement, especially for residential or rural bridges. Two pin-connected truss bridges in Washtenaw County were selected for rehabilitation preservation for continued posted vehicular use.

## Washtenaw County



**Weight Limit: 20 Tons**

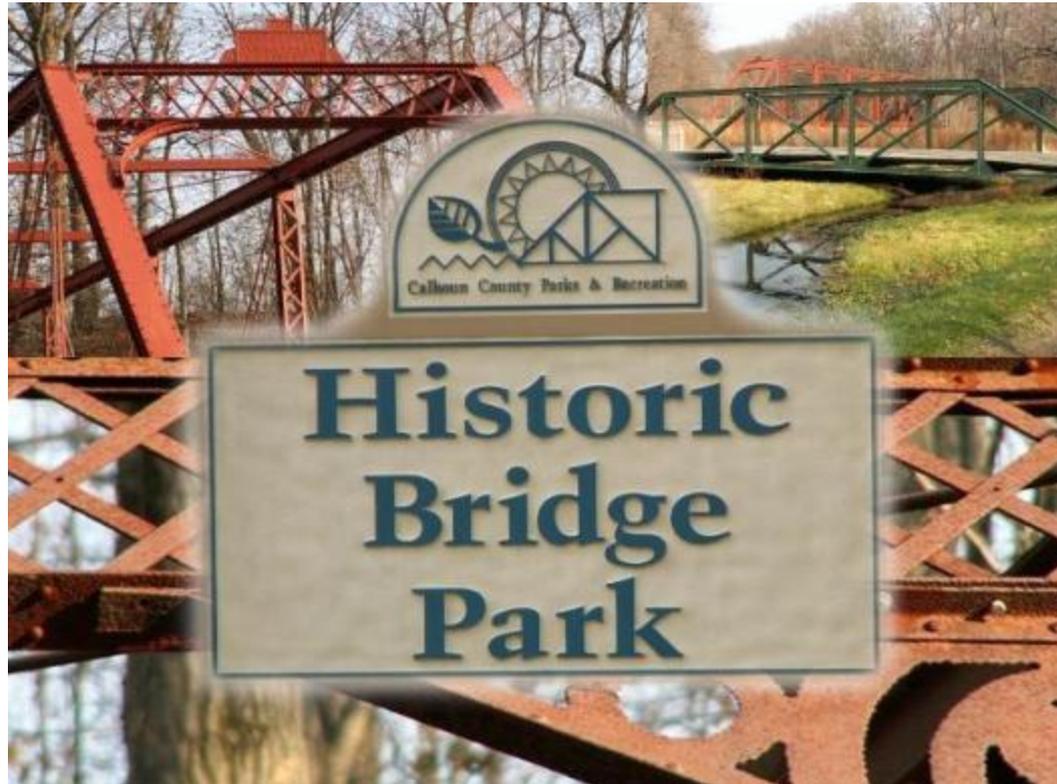
Rehabilitation of this bridge, the Maple Road Bridge near Ann Arbor, cost about \$500,000. Expected demolition/replacement cost had been estimated at \$1,000,000

## New Troy, Michigan



Bridges can create centerpieces for parks, enhancing the beauty and experience of the park. The township and tiny community of New Troy preserved this historic concrete curved chord through girder "concrete camelback" bridge next to a new bridge that was constructed and created a small park around the bridge.

## Calhoun County Historic Bridge Park



The first park of its kind in the entire country, Historic Bridge Park features five restored historic truss bridges that were relocated and saved from demolition from various locations across the state.

## Calhoun County Historic Bridge Park



Pennsylvania should consider creating one or more similar parks to relocate those truss bridges which cannot be successfully marketed to third parties nor which can be left in their original location.

## Bridge Park: Charlotte Highway



Section loss and fatigue: Severe structural deficiency to portions of a bridge should not prevent restoration. The Charlotte Highway Bridge was restored despite severe floor beam section loss.

# Deficiency: Replication

## Bridge Park: Charlotte Highway



The floorbeams on this bridge were replicated right down to the shape and use of rivets to create an exact copy, eliminating all deficiencies in this part of the bridge.

## Replication Issues



Replication is a tool for difficult and severe issues on a historic bridge like metal fatigue and section loss. It remains the goal of preservation to retain original materials whenever possible.

Also, note that replication does **NOT** mean constructing a modern truss bridge in place of the historic truss bridge.

# Embracing Historic Bridges

## Portland, Michigan



Historic bridges bring heritage, culture, beauty, function, and tourism to the communities in which they reside.

Portland, a small city of 3,789 has both preserved existing truss bridges and relocated additional truss bridges into the city for various uses.

# Embracing Historic Bridges

## Portland: Bridge Street



The Bridge Street Bridge, an 1890 two-span pin-connected Pratt through truss was preserved in place for continued one-way vehicular use. It is a stunning gateway into the downtown, and an attraction for a small riverside park.

# Embracing Historic Bridges

## Portland: Kent Street



Source: MDOT

The Kent Street Bridge was relocated from its original location to a nearby location to serve as a crossing for the city's non-motorized trail system. It is an impressive 1904 pin-connected Parker through truss.

## Portland: Railroad Bridge



This bridge, a two-span pin-connected Pratt through truss on an abandoned railroad was re-decked for non-motorized use on the city's non-motorized trail system.

# Embracing Historic Bridges

## Portland: Burroughs Road



This bridge, a two-span riveted Warren pony truss on was relocated from rural Burroughs Road in neighboring Kent County and preserved on the city's non-motorized trail system.

## Kent County: Burroughs Road



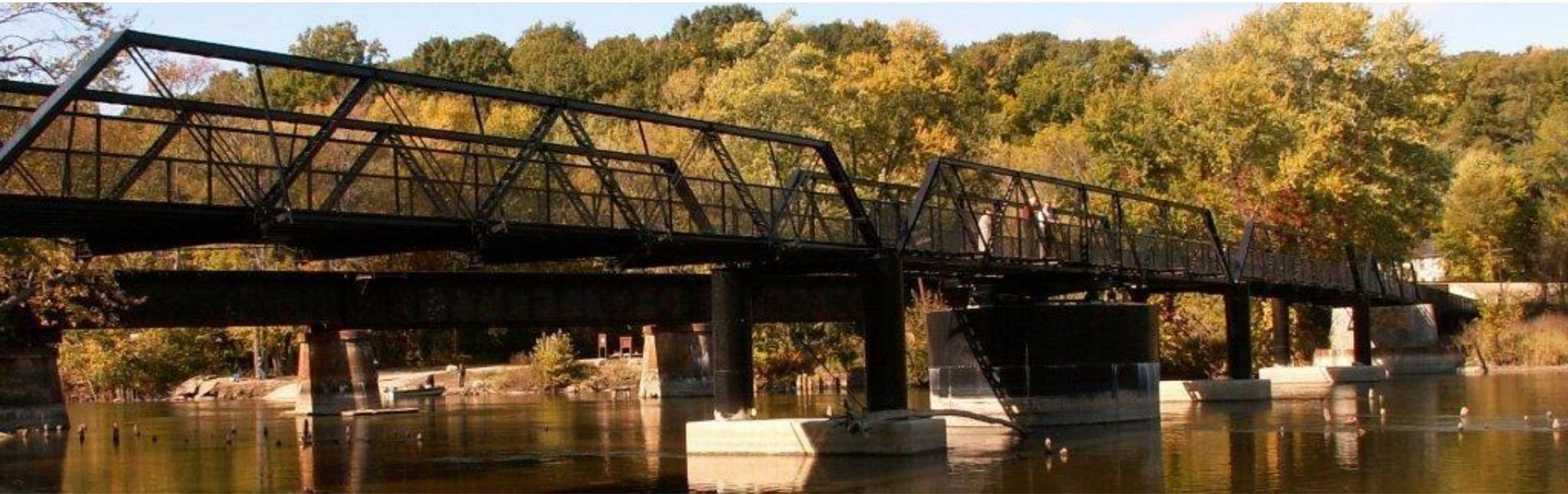
The relocation of the Burroughs Road Bridge to Portland made room for Kent County to relocate a stronger and wider historic truss bridge that was being replaced in Wayne County onto Burroughs Road for vehicular use. This bridge, the Belleville Road Bridge is a riveted parker pony truss built in 1924 to state standard plan.

## 6<sup>th</sup> Street Bridge



Located in Grand Rapids, this is the longest pin-connected truss bridge in Michigan. This four-span structure retains excellent historic integrity and continues to serve vehicular traffic just north of downtown.

## New Richmond Bridge



Located in Allegan County, MI this 1879 bridge is the oldest known highway swing bridge in the United States. It is also the longest pony truss in Michigan, and a rare multi-span pony truss. It was restored for pedestrian use. Later plans have been to build a park around the bridge.

## Mottville Bridge



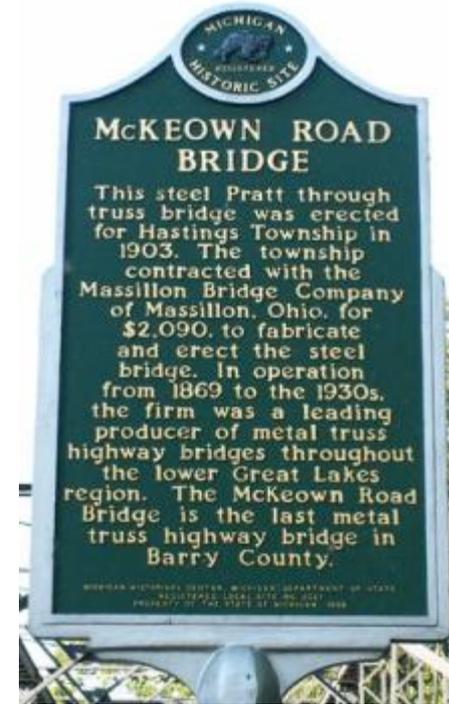
Located in St. Joseph County, MI, this is the longest concrete camelback bridge in Michigan and one of the only multi-span examples remaining. It has been bypassed and preserved by MDOT.

## North Saginaw Road Bridge



This riveted Parker pony truss bridge was located on a busy road for which it was functionally obsolete. Midland County relocated and restored it on a more quiet road than where it was originally. They also chose not to alter the bridge to bring it up to full legal loading, so it remains a posted bridge, albeit at a generous 62 tons.

## McKeowen Road Bridge



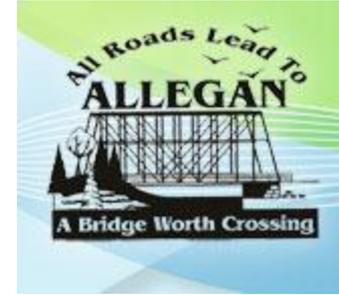
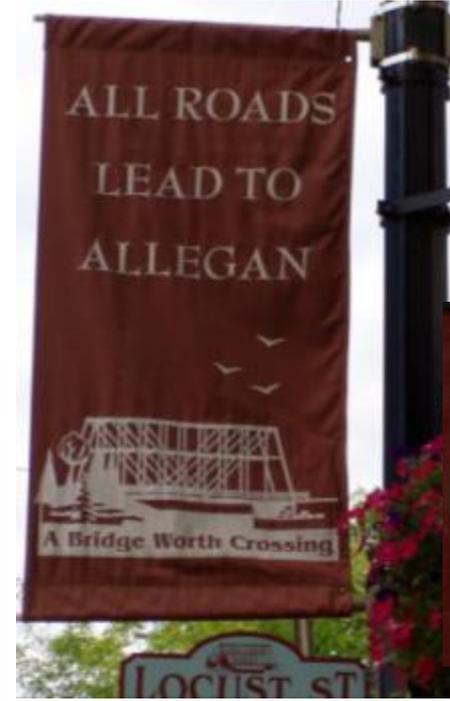
This pin-connected Pratt through truss was bypassed by a modern bridge. Rather than demolish it after the new bridge was complete, the county owners decided to preserve the bridge and create an attractive park around the county's last remaining truss bridge.

## Sterling Road Bridge



This historic pin-connected Pratt through truss was relocated from the adjacent county to Morenci, Michigan right near the Ohio border. It provides a crossing for a sidewalk that parallels a state highway.

## 2<sup>nd</sup> Street Bridge, Allegan, MI



This 1886 historic Whipple through truss was rehabilitated in 1981 in response to community support for the bridge, representing an early commitment to historic bridges. City logos, banners, businesses, and even manhole covers feature this treasured bridge.