

# Lilac Bridge Replacement

Hooksett, New Hampshire

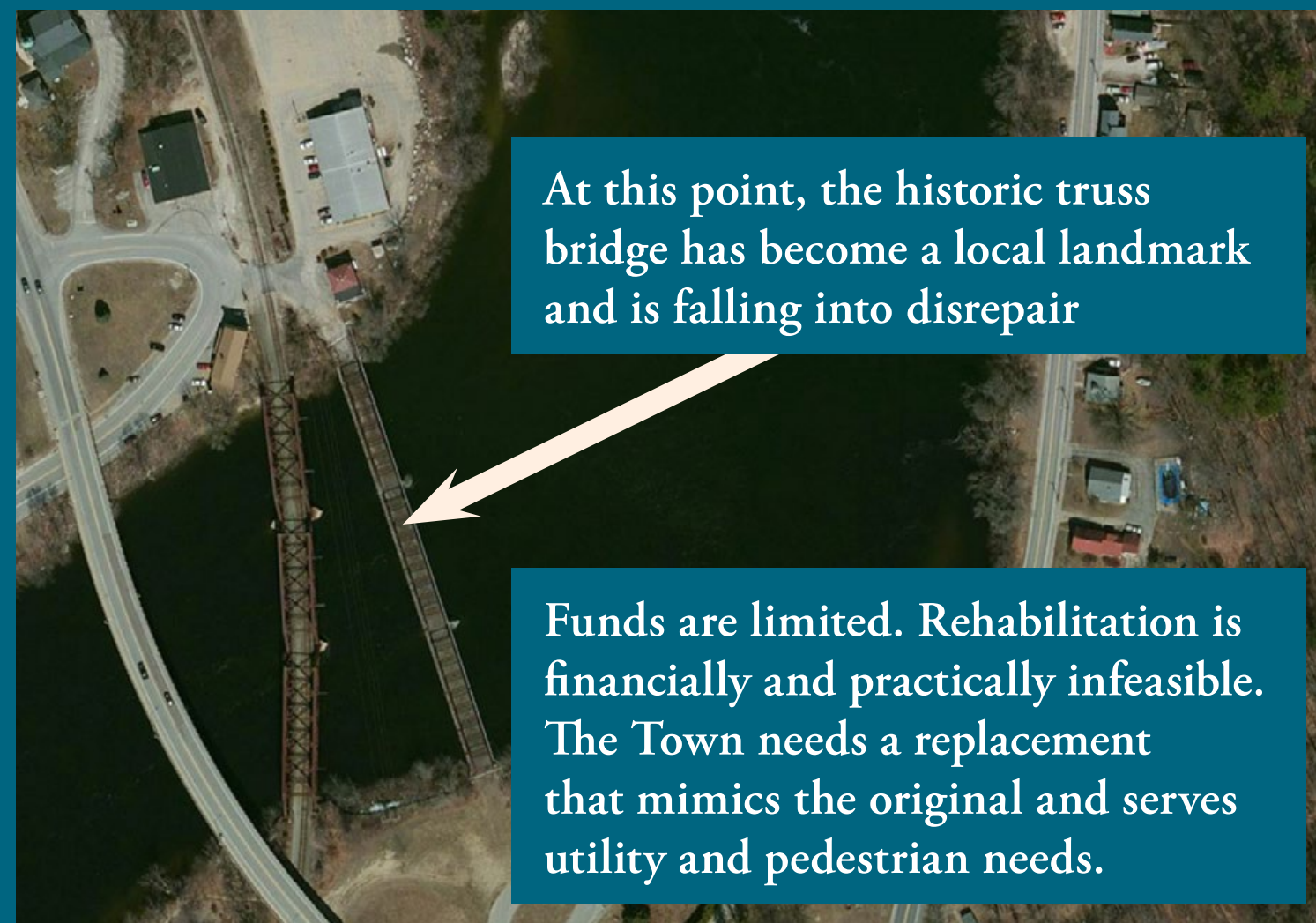
1909  
1969  
1976  
1995

Two-lane, high Pratt steel truss bridge erected as only vehicle and pedestrian crossing over the Merrimack River.

A sewer line is suspended from the truss bridge.

The truss bridge is closed to vehicle traffic. Discussions begin on the need for a safer utility service crossing.

The deteriorating truss is closed to pedestrians. Connectivity between historic points of interest and local businesses is reduced.



### DESIGN CHALLENGES

- The new structure will need to appear as a scaled-down model of the original bridge with similar truss geometry, but as a one-lane pedestrian bridge instead of a two-lane vehicle bridge.
- The consultant's responsibility includes leading charrettes to build consensus between 8 groups holding jurisdiction over the project—in a short period of time.
- The consultant is responsible for developing economical, constructible alternatives that resemble the previous structure.

### CONSTRUCTION CHALLENGES

- The 1909 bridge will not support snow loads in the coming winter for this two-year project.
- The sewer line cannot be maintained in place during construction.
- Planned construction access employs nearly exclusive use of bridge boats. At the time of the contract award, the team is notified that the river will be drawn down for a dam project downstream. Water levels will not support the boats.

2014  
2016  
2017

NHDOT informs the town that the bridge is failing with fractured members: steel sections begin falling into the river.

## DESIGN AND CONSTRUCTION BEGIN, CHALLENGES ARISE



34-second explosive demolition video: [youtu.be/F4s6J\\_rbj2Y](https://youtu.be/F4s6J_rbj2Y)

### DESIGN SOLUTIONS

- The consultant collected input from all 8 groups to best understand their needs and developed alternatives for parties to review.
- The consultant worked with the Town, two historical groups, and NHDHR to select a look that is constructable, and facilitated the salvage of one original bridge portal for an interpretive display.
- The consultant designed an economical prefabricated structure that uses modern techniques, but gives the appearance of a historic structure.

### CONSTRUCTION SOLUTIONS

- Explosive demolition is selected.
- The contractor installs an innovative and cost-effective temporary sewer bypass.
- The contractor builds a causeway in the river to provide safe construction access at no additional cost to the client.



### The New Bridge

- Concerns of environmental disaster are cleared by a new sewer crossing with a 75-year service life.
- The bridge provides a safe, minimal maintenance solution that restores pedestrian and ADA-compliant connectivity lost in 1995.
- The new 490-ft-long structure is a destination in its own way and reconnects other attractive local destinations in Hooksett's Historic Village District such as Robie's Country Store, the VFW, Veterans Park, and the Congregational Church.

2018



A causeway is built to facilitate construction access at the last minute due to the river draw-down.



38-second time lapse bridge installation video: [youtu.be/p1Ds0ZE2UQg](https://youtu.be/p1Ds0ZE2UQg)



Utilities are replaced without service interruptions.

