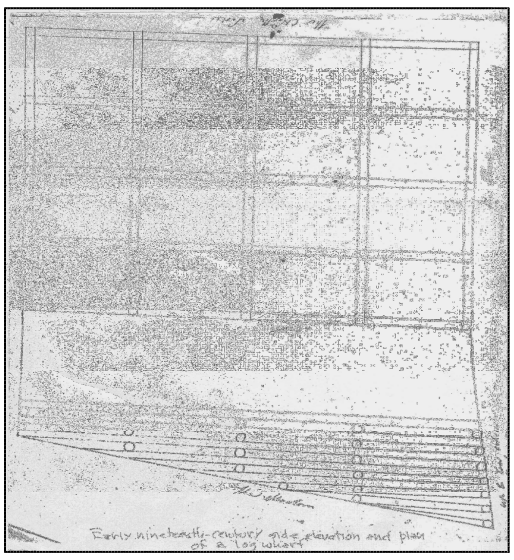
THE STRATHAM - NEWFIELDS BRIDGES
1700-2000

FERRIES, WHARVES, AND TAVERNS



Plan and elevation of an 18th century wharf built with logs and filled with earth and stone

Courtesy of the Baker Library, Harvard Business School

This crossing, today called Chapman's Landing, had become an important site for trade between waterborne and roadway traffic by the early 1700s.

The Piscataqua estuary is a complex system of tidal creeks that end at waterfalls and are fed by fresh rivers. Villages developed at each fall, where waterpower could be harnessed to run saw and grist mills. The highways that connect these villages frequently intersect the region's many waterways. These intersections required ferries, and eventually bridges, to allow highway traffic to cross the streams.

Ferry landings had wharves, often built of interlocked logs that were pinned together and filled with earth and stones. Such wharves were natural meeting places that offered an opportunity to buy and sell cargoes from boats and carts.

In 1700, the provincial government granted Richard Hilton a fifty-year license for a ferry across the Squamscott River at this location, with the right to open an accompanying tavern on the Newmarket (now Newfields) bank of the river. Upon a petition by neighbor Jonathan Wiggin, the government granted Wiggin a similar privilege on the Stratham shore in 1721. Both men were required to provide rights-of-way leading through their properties to the river crossing. These rights-of-way evolved into today's Route 108.

This crossing became a center of both trade and travel. Local tanner and civic leader Samuel Lane, who lived 1 1/4 miles to the east on the "Country Road" leading from Portsmouth to Exeter, often noted in his diary that he met boats here. Lane traded leather, boots, and farm produce for goods brought by water from Portsmouth or the Isles of Shoals, ten miles out at sea, often buying whale oil and fish from the Shoals. Although the cash price of these goods was higher than at Portsmouth, their delivery to this landing saved much time and expense in travel to the port town.

The Hilton and Wiggin taverns on each side of the ferry provided essential services to travelers who were far from home. Taverns of the 1700s provided for every need of the person or animal on the road. They offered shelter, warmth, and light after dark; food for man and animal; and a secure place to impound the herds and droves that once filled New Hampshire's roads. They were a place for the traveling world to exchange news and goods with the settled world; a place to hold public, corporate, and private meetings; and a refuge for those who were sick or injured away from home.

Left: Map of Newmarket by D. Smith (1805)

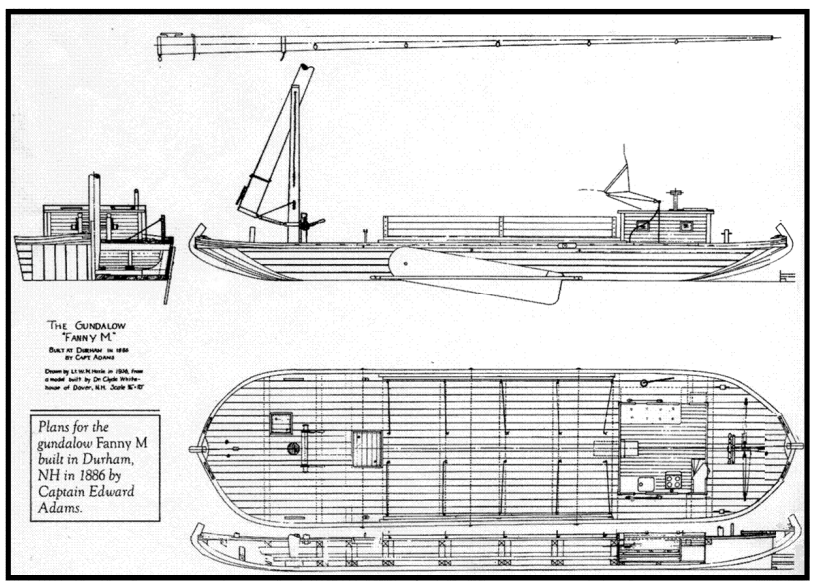
Courtesy of the New Hampshire Division of Archives and Records Management

Right: Map of Stratham by Phinehas Merrill (1793)

Courtesy of the New Hampshire Historical Society

Plans for the gundalow *Fanny M.*, built in Durham, N.H. in 1886 by Captain Edward Adams. Drawn by Lt. W. M. Morris from a model built by Dr. Clyde Whitehouse of Dover, N.H.

Courtesy of the Exeter Historical Society



THE STRATHAM - NEWFIELDS BRIDGES
1700-2000

NAVIGATION ON THE SQUAMSCOTT RIVER

The Squamscott River served as an important artery of navigation from the settlement of Exeter, at the head of tidewater, in 1638. Vessels as large as seventy tons passed through Great Bay and traveled the tidal river to Exeter's docking basin. Shipyards in Exeter and Newfields built vessels as heavy as three or four hundred tons. Exeter's sawmills, some established as early as the 1640s, shipped large quantities of lumber downriver. As a center of the masting trade, Exeter floated rafts of eastern white pine trees, up to 150 feet long, downriver to be loaded onto special ships and delivered to the Royal Navy.

Gundalow loaded with cordwood
Courtesy Exeter Historical Society

Launching of the *Merrill*, Squamscott River, Exeter, 1902
Courtesy of the Exeter Historical Society

Gundalows carried heavy loads in shallow water and navigated the Great Bay currents.

Because Exeter and Newfields depended upon waterborne commerce, their merchants protested proposals to build a bridge at this site in 1746. They objected that:

The said river having been free Ever since The settling the Town of Exeter (upwards of one hundred years) for the passing and repassing of Vessels from hence to Portsmouth & Boston and other Ports, and there being Generally water sufficient for the passing and repassing of any Vessell of one hundred Tons Loaden whereby this Town as well as the Towns above it have reaped great advantages By means of Transporting their Lumber and by having return'd to them by the same Vessels, The Provisions and Necessaries for the Support of Life & for Commerce and Trade with Each other; Which the building of the aforesaid bridge would greatly hurt if not Totally Stop, & also Prevent Carrying on the building of Vessells in the Town of Exeter which they have as Just a right to do as any other Towns in the Province.

Three masted schooner, *Lizzie J. Call*, launched 1886, on the Exeter side of the bridge.

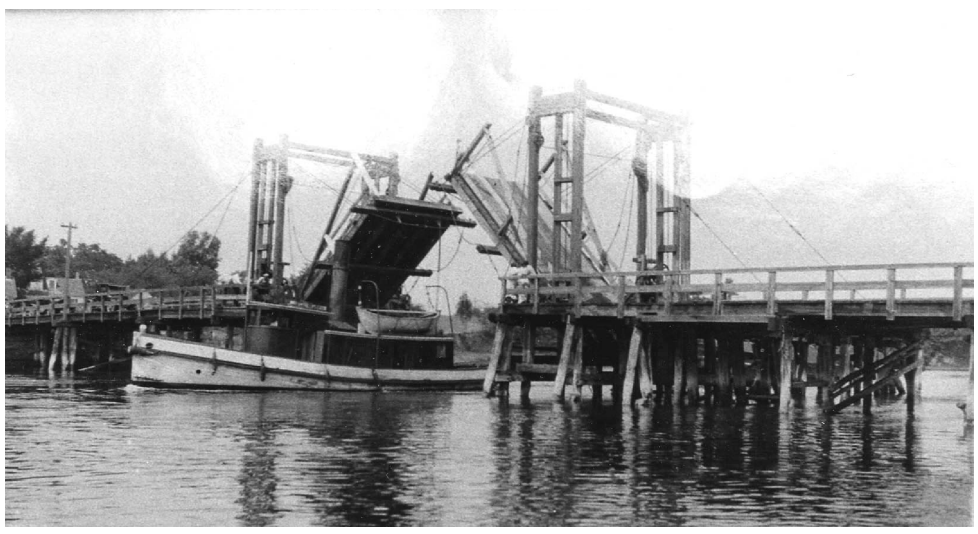
Courtesy of the Exeter Historical Society

Despite these fears, navigation on the Squamscott continued to prosper after completion of the "Great" or "Lottery" Bridge at this site in 1773. Exeter produced twenty-one vessels between 1791 and 1800. By far the largest was the 500-ton *Hercules*, built in 1793 by merchant Eliphalet Ladd. Launched sideways and buoyed by empty hogsheads to get her downstream, *Hercules* was just one foot narrower than the 32-foot drawspan opening of the Lottery Bridge.

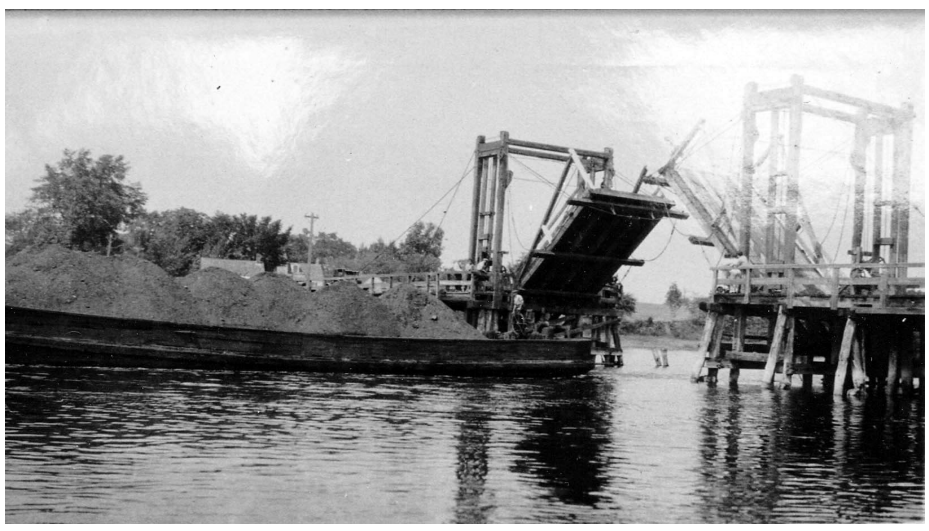
Tugboat *Iva* approaching bridge towing two masted schooner *Ada J. Campbell* from Exeter to Great Bay

Courtesy of the Exeter Historical Society

Navigation on the Squamscott remained crucial to Exeter well into the twentieth century. By the late 1880s, coastal schooners delivered most of New Hampshire's coal. In Exeter, Col. Henry W. Anderson's Exeter Coal Company owned five coal schooners. Tugboats *Iva* and *Undine* regularly towed the fully-laden colliers up the Squamscott until the 1930s.



Tugboat *Iva* at the 1807 bridge Courtesy of the Stratham Historical Society



Coal barge in tow Courtesy of the Stratham Historical Society

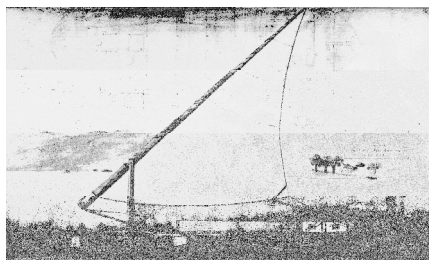
THE STRATHAM - NEWFIELDS BRIDGES
1700-2000

TWO WOODEN BRIDGES

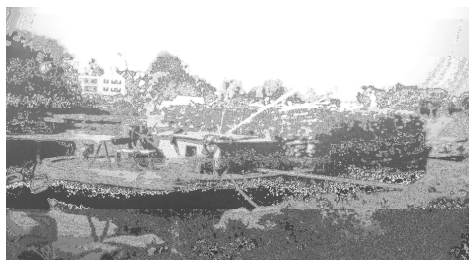
This important crossing lay on the most direct route between the port of Portsmouth and the new inland townships granted in the 1720s and 1730s. Heavily loaded carts and sledges could not be carried over the stream by boats, and ferries were sometimes wholly stopped by ice in the river. Increasing freight traffic to and from inland towns demanded a bridge.

Petitioners first sought permission for a bridge over the Squamscott River here in 1746. Upstream interests, especially in Exeter, protested that a bridge would stop the migration of fish upriver and would destroy Exeter's prosperity as a port, a lumber and mast exporter, and a center of shipbuilding.

The provincial government granted permission to construct a bridge here in 1747. Lacking the means to pay for the structure, promoters asked the province to authorize a lottery. Lottery income would be invested in construction of a bridge with a draw-span to permit ships to pass up and down the river.



Captain Adams' gundalow, *Fannie M.*



Loading gundalow with cordwood

Drawing and two photos courtesy of Exeter Historical Society

Coal schooner, *Lizzie J. Call* under construction, 1886.

The lottery was authorized in 1768. After much delay, the "Great" or "Lottery" Bridge opened for traffic on June 4, 1773. Built on wooden piers set on the river bottom and heavy beams or stringers that supported a wooden deck, the Lottery Bridge was about eighteen feet wide and 192 feet long between stone abutments.

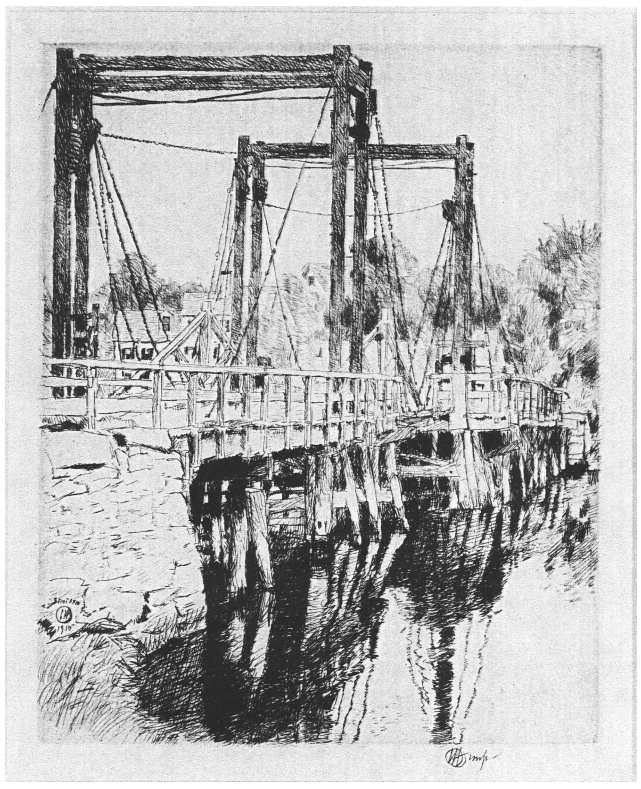
Without funds for its upkeep, the Lottery Bridge fell into disrepair by the early 1800s. In 1807, the state legislature chartered a private corporation, composed of the selectmen of Stratham and Newmarket, that was empowered to construct a new bridge and to charge tolls for its maintenance.

The company obtained a plan from the eminent bridge builder Timothy Palmer (1751-1821) of Newburyport, Massachusetts, and then hired local carpenter Henry Wiggin, Jr. (1767-1828) to build a new four-span wooden structure. The new bridge was thirty-two feet wide and supported by stone-filled wooden piers resting on the river bottom. The bridge had a draw-span for vessels, and a wooden truss at the Stratham end that provided a forty-foot clear opening for rafts of logs and lumber. Wiggin received $4,900 for his work, paid over time from a share of the toll revenues. The bridge opened on December 10, 1807.

The second bridge continued as a toll bridge for a hundred years, undergoing periodic repairs and alterations. In 1907, the state legislature authorized Rockingham County to purchase the bridge and operate it toll-free for the first time. The ancient wooden bridge remained in use until it was replaced by a steel swing bridge in 1926.

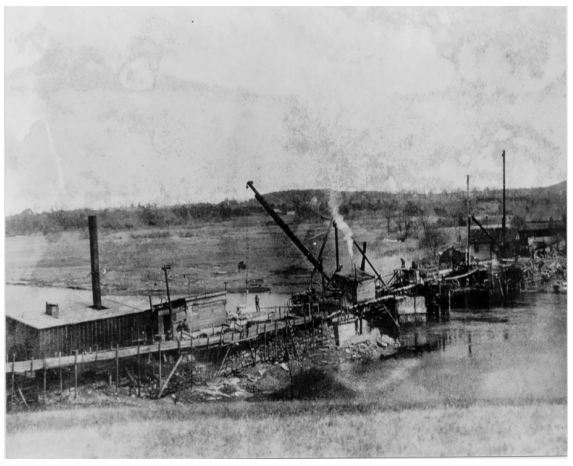
Bridge Toll Sign

Courtesy of Richard Ramsdell



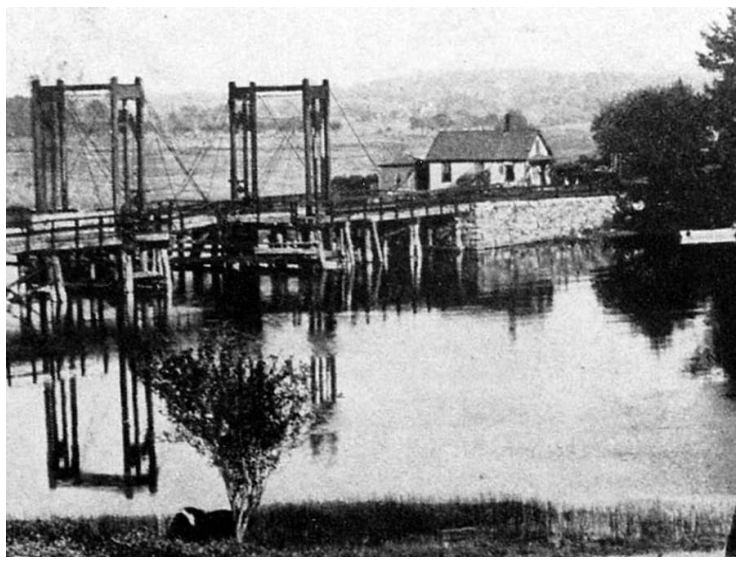
Stratham Bridge
Etching by Childe Hassam

Courtesy of New Hampshire Historical Society



Demolition of wooden bridge, April 14, 1926

Courtesy of New Hampshire Division of Historical Resources



View toward Stratham side
"Toll bridge for 100 years made free in 1907"

Postcard courtesy of Stratham Historical Society

THE STRATHAM - NEWFIELDS BRIDGES
1700-2000

THE STEEL SWING BRIDGE

In 1925, the New Hampshire Highway Department decided to replace the wooden bridge of 1807 with a swing bridge. A swing bridge rotates on a central pivot, turning 90 degrees to permit vessels to pass on either side of a central pier. The new steel bridge provided 50-foot openings on each side of the open span, compared with a 32-foot opening in the wooden span of 1807.

The bridge had a fixed plate girder span on the Stratham side extending 70 feet from the eastern abutment to a concrete pier in the river. The rotating span, also a plate-girder, was 136 feet long and weighed 40 tons. This span was perfectly balanced on a central bronze bearing which was mounted on a second concrete pier seventy feet from the Newfields abutment. It was designed to be opened and closed by one or two men turning seven-foot capstan bars or levers.

When it was closed, the swing span was held steady by retractable steel wedges that slid beneath the girders at each end and the center. To open the bridge, the bridge tender withdrew these wedges by inserting the capstan bar in a hole on the bridge deck and pushing the end of the bar while walking in a circle. A series of rotating rods under the bridge floor turned cranks at each end of the swing span, retracting the wedges and lowering the span to balance on its central pivot.

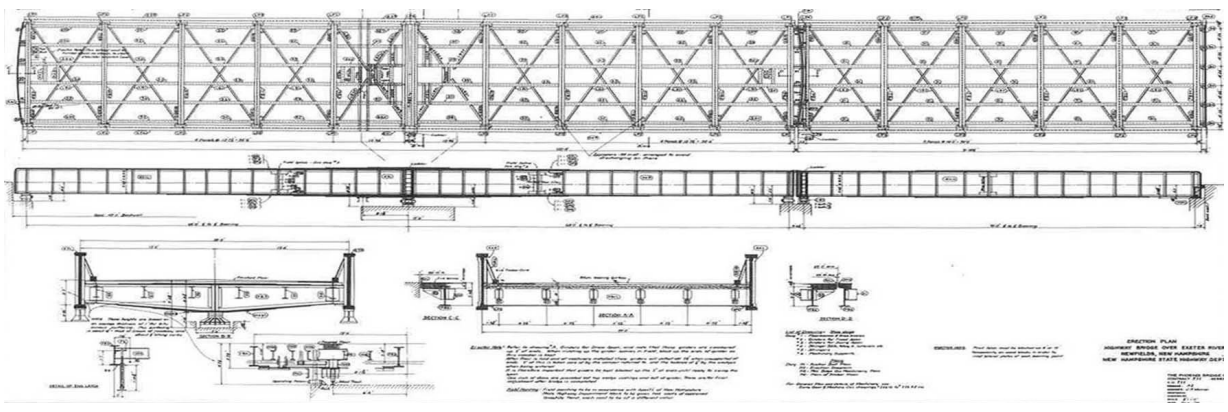
To swing the span, the operator placed the capstan bar in a second receptacle, which drove a toothed wheel or "pinion." The pinion engaged a toothed ring or "rack" that encircled the central pivot. Again pushing the capstan bar in a circle, the bridge tender slowly rotated the heavy span. Each circle of the capstan bar turned the span about ten degrees. Nine or ten circles by the operator opened the span fully. After the boat passed through, the operator reversed the procedure, closing the span and driving the wedges back under the bridge seats.

The swing bridge was constructed in 1926 by the Phoenix Bridge Company of Pennsylvania, long a leading American fabricator of metal bridges. The bridge originally had a wooden deck. This was replaced by an open steel grid deck in 1947. Rubber tires passing over such a deck generate a high-pitched sound that earned the span the local nickname of the "singing bridge." The swing span remained in operation until about 1955, when it was welded shut.

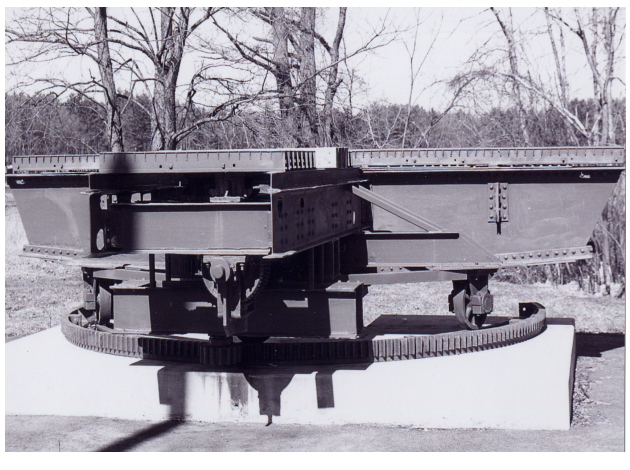
Navigation by large vessels on the Squamscott River ended in 1954 when the Boston and Maine Railroad replaced their swing bridge downstream with a fixed bridge. The current highway bridge replaced the 1926 swing bridge in 2001.

Left: The 1926 swing bridge seen from the Newfields shore. The fixed plate girder is on the Stratham side, to the right. To the left, the 136 foot plate girder swing bridge is balanced on a central pier.

Junction of fixed span (left) and swing span

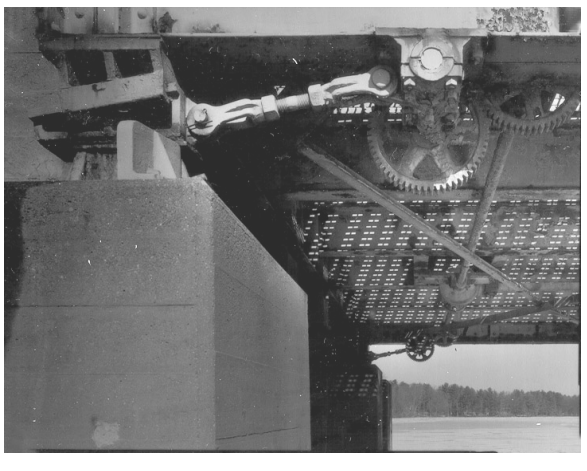


Central pier supporting turning mechanism



Central bearing, toothed pinion and circular rack

Rotating rod and retractable steel wedge



Retractable steel wedges at bridge abutment

All pictures and drawings are courtesy of the New Hampshire Department of Transportation, Historic American Engineering Record (HAER)