A Biographical Dictionary of Architects in Maine

Daniel Beedy 1810-1889

Throughout its history, Maine's rivers have presented both opportunities for economic gain as well as obstacles to communication and transportation. Among the nineteenth century mechanics and engineers who designed the facilities and structures used to exploit or overcome these waterways, few attained the level of achievement reached by Daniel Beedy. Working primarily in rural Franklin County as a millwright and engineer, Beedy's career illustrates the importance of this little documented group of builders.

Daniel Beedy was born in Industry, Maine, on November 23, 1810, the son of Daniel and Mary Eveleth Beedy.[1] At age three he and his family moved to an unorganized township near Phillips, where his father had acquired a farm. Beedy's formal education was obtained through local district schools, where he showed an aptitude for engineering, an interest which he subsequently pursued.[2] It has not been determined whether this training was obtained through one of the region's mechanical institutes, by self instruction, or by apprenticeship. Prior to 1850 there is no known documentation that illustrates his career interests.

On March 16, 1850, Daniel Beedy and Samuel Wheeler, both of Weld township, acquired from Oren Robbins a one-half interest in a grist mill located at the lower village in Phillips.[3] This transaction is the first recorded deed that links Beedy to ownership of a mill and marks the beginning of a more than twenty year period in which he held interests in a number of such facilities.[4] In each of these cases the deeds clearly indicate that there were existing mill plants on the sites, but the nature and extent of any subsequent work that he may have performed on them cannot be determined.

In 1854 Beedy moved to Lewiston, one of the state's major nineteenth century textile centers. It was a particularly providential time to be in that city, since three separate textile companies had been organized in the period 1850 to 1854, all of which were in the process of erecting or enlarging their mill operations in 1854. Tradition, in fact, maintains that Beedy was drawn here after his plans for the construction of the Bates Manufacturing Company's number 1 and 2 mills had been accepted.[5] Unfortunately, neither contemporary newspaper accounts nor company histories make mention of the engineers or architects involved with these projects, so that it is impossible to ascertain Beedy's exact role in them.

In the case of the Bates Mill expansion, however, it would appear that his involvement may have been limited to the design of internal mechanical systems rather than the exterior envelope, since the latter was a virtual copy of the original complex. Circumstantial evidence exists to support the tradition of Beedy's association with the Bates Company. This is in the form of a long list of references appended to an advertisement offering his services in mill work and hydraulic engineering that appeared in the *Lewiston Falls Journal*.[6] Among the prominent businessmen whose names appear here are three of Lewiston's leading textile industrialists, including that of G.L. Ward, one of the incorporators of the Bates Mill Company. The advertisement itself suggests Beedy's wide experience in the design of a variety of mills and mill components.

Despite the apparent availability of mill-related work in Lewiston during the mid-1850s, Beedy's residence there was a brief one; and by 1855 he had returned to Franklin County, this time settling in Farmington. In March of that year he and three other local residents acquired the privilege to dig a well and build an aqueduct across a portion of the John Church farm to an adjoining parcel of land.[7] Nothing more is known about this undertaking, but it illustrates Beedy's continued involvement in engineering projects.

Unfortunately, the available documentation about Beedy's mill-related activities does not give us a clear idea about the extent of his engineering skills. In-

Figure 1. Chain Suspension Bridge, Kingfield, c. 1910 view (MHPC).

formation that illustrates his role in the construction of a pair of suspension bridges, on the other hand, provides ample evidence to justify his ranking as one of Maine's leading nineteenth century engineers. Although neither structure survives, the existing photographic and written record memorializes a remarkable chapter in the development of the state's transportation network.

Suspension bridges are known to have existed in China as early as A.D. 56, although they do not seem to have been developed in the West until the eighteenth century, with the first recorded use of metal in such a structure occurring in 1734.[8] The construction of the first metal suspension bridge in the United States is credited to James Finley, whose seventy foot span over Jacob's Creek in Uniontown, Pennsylvania, was erected in 1801. Finley's design, for which he was granted a patent in 1808, employed long chain links for the cables, giving rise to the frequent designation of "chain bridge". In 1816 wire cable was first used by Josiah White and Erskine Hazard in the rebuilding of the chain Schuylkill Falls Bridge erected in 1809. However, its subsequent collapse, along with the failure of several other chain bridges, dampened interest in suspension structures for many years thereafter. The full potential of the suspension bridge was ultimately realized by Charles Ellet, Jr. and John A. Roebling, both of whom began to experiment with designs beginning in the late 1830s.[9] Their engineering innovations and bold proposals set the benchmarks for mid-nineteenth century suspension bridge design in America.

Maine's numerous bodies of water are significant barriers to transportation by land, necessitating frequent construction of bridges, many of which were frequently damaged or entirely destroyed by natural forces. Wooden structures, most often covered, were virtually the rule in the state until the introduction of steel truss bridges in the late nineteenth century; although short stone arch spans and pile trestle bridges are also known to have existed.[10]

The first suspension bridge built in Maine was erected in 1852-53 over the Carrabassett River in Kingfield[11] (Figure 1). Town records indicate that Daniel Beedy superintended the construction, and presumably supplied the design, although he undoubtedly drew upon proven models for his inspiration. In its overall configuration the structure resembled a Finley-type chain bridge, although in place of long links it employed many more short links to form the dual chain cables. Two tapered timber frame towers sheathed in wood shingles and punctuated by portals provided the vertical height for the cables. The length of the suspended span was about 190 feet, and the width of the plank over timber roadway and flanking walkways measured 15 feet. This bridge remained in constant use until 1916, when it was replaced by a reinforced concrete arch structure.

Four years after the completion of the chain bridge in Kingfield, Beedy was called upon to build another suspension bridge, this time across the Sandy River in the nearby town of Strong (Figure 2). Like his earlier chain bridge, it was built to replace a wooden structure which was lost in the previous year's

flooding. The general form of this 1857 structure was virtually identical to the Kingfield bridge, but a significant advance was made with the introduction of wire cables in place of chains. Documentary photographs of the structure show that the wooden towers were taller and somewhat narrower than their predecessors, but this variation can be attributed to the narrower 13 foot roadway and the increased length of the 254 foot suspended span. After sixty-five years of service, this bridge was replaced in 1922 by a steel truss structure.

The shift from the use of chains to wire cables marked a significant technological and psychological advance in suspension bridge engineering. In his analysis of the Maine bridges, Robert Vogel suggests that the use of a material whose strength was previously known locally — chain — would quite naturally predate that of a more unusual component — wire — in the design of an admittedly unorthodox structure.[12] Furthermore, and despite the existence of wire cable bridges dating from the early 1840s, he credits the successful completion and wide recognition of Roebling's 1855 Niagara Railway Suspension Bridge as an important factor in establishing the reliability of the wire suspension bridge. Finally, due consideration must be given to the fact that for three years the Kingfield bridge had stood the tests of daily use and natural forces.

The trepidation that accompanied the use of a suspension bridge must have been widely felt. In fact, a story that proves the point survives. Following completion of the Kingfield span, the sway created such dispute about its safety that:

> To show his own confidence in the structure, Mr. Beedy, in the presence of a large company of people, drove his horse across the bridge and back at full speed, and was heartily cheered by the people on his return...[13]

Similar misgivings regarding the Strong suspension bridge were addressed in the *Franklin Patriot* when it wrote that "It has the appearance of strength and durability beyond a fear or doubt."[14]

A discussion of these two structures requires an analysis of yet a third suspension bridge that was erected over the Carrabassett River in New Portland in 1866, one that survives with remarkable integrity.[15] Like its predecessor at Strong, this bridge employs the tapered shingled wooden towers, stone abutments, and wire cables. Documentary photographs of the two structures show that the framing of the towers was virtually identical, although the reduced length of the New Portland span necessitated shorter towers in order to maintain the same cable slope. The agent for this bridge was David Elder, a New Portland farmer.[16] The striking similarity between the three bridges leads one to conclude that the existing Beedy

Figure 2. Wire Suspension Bridge, Strong, c. 1880 view (MHPC).

designed structures standing a few miles to the north and south, respectively, were closely evaluated during the construction of the New Portland bridge. In 1866 Beedy was residing out of the state, and he clearly could not have supervised the project. Nevertheless, it is tempting to speculate that the town selectmen contacted him requesting a design which, quite naturally, resembled his earlier efforts.

At the taking of the 1860 census, Beedy was still making his residence in Farmington. However, in April, 1862, Beedy journeyed to California, ostensibly because of poor health.[17] For the next five years, he was employed to build quartz mines in Alamas, Mexico and at an as yet unknown location in Oregon. From his quarters in Alamas, Beedy composed six lengthy letters describing various aspects of the local scene and the mine, as well as two others entitled "I am Going to California", all of which were published in the *Franklin Patriot*.[18] In these letters, he warned of the hardships and financial ruin that awaited the vast majority of the fortune seeking immigrants, many of whom had left loved ones far behind, an experience which he may have personally known.

Beedy's return to Farmington was announced in the July 11, 1867, issue of the *Franklin Patriot*, although his westward travels continued as late as 1871 when he is reported to have been in Arkansas City, Kansas.[19] Nothing is known of his work during this period. Beedy died in Farmington on July 29, 1889, and is interred in the town cemetery, a large obelisk marking the family plot.

Although little information exists about Daniel Beedy's training and projects, the documentation that survives shows us that he characterized the spirit of Maine's mid-nineteenth century builders and mechanics. Confronted by technological constraints, natural forces, and a populace resistant to change, these craftsmen nevertheless triumphed by virtue of their innate abilities as observers and translators. Considering their relatively remote location and advanced design, the suspension bridges at Kingfield and Strong are remarkable accomplishments, which earn for Beedy a special place in the state's building history.

Kirk F. Mohney

NOTES

[1] William C. Hatch, *History of the Town of Industry, Maine*, Farmington, 1893, p. 511.

[2] Much of Beedy's biographical material, including this account, is taken from his lengthy obituary that appeared in the August 1, 1889, edition of the *Farmington Chronicle*, hereinafter cited as Beedy Obituary.

[3] Oren Robbins to Samuel Wheeler and Daniel Beedy, March 16, 1850, Franklin County Deeds, Office of the Registry of Deeds, Franklin County Courthouse, Farmington, Book 17, p. 557, hereinafter cited as Franklin County Deeds. The industrial schedule of the 1850 census shows that this mill was by far the largest in Phillips with an annual production of 16,400 bushels of grain.

[4] Beedy acquired further interest in the Phillips mill in 1853, a one-quarter share of a mill in Wilton in 1854, a one-half part of a mill in Farmington in 1855, and further portions of the Wilton mill in 1858. Franklin County Deeds, Book 26, p. 367; Book 29, p. 261; Book 31, p. 101; Book 37, p. 358, respectively.

[5] Beedy Obituary. This statement is somewhat confusing, although given Lewiston's proliferation of mills not surprising. Bates Mill #1 had opened in 1852, whereas #2 was built in 1854. In addition, the Hill Company's first mill was also erected in 1854. Perhaps Beedy was involved with these two facilities, but probably not Bates #1. For a complete chronology of Lewiston's mills, see J.G. Elder, *History of Lewiston*, Lewiston, 1882.

[6] *Lewiston Falls Journal*, June 3, 1854.

[7] Franklin County Deeds, Book 33, p. 544. In April, 1855 Beedy also acquired his Farmington mill (see note 4 above).

[8] David Plowden, *Bridges: The Spans of North America*, New York, 1974, p. 58, hereinafter cited as Plowden, *Bridges*.

[9] Ellet's early interest is underscored by his series of published pamphlets beginning in the spring of 1838 with *A Popular Notice on Suspension Bridges*. Plowden, *Bridges*, p. 72.

[10] The state's oldest pile trestle bridge is believed to be Sewall's Bridge across the York River, built in 1761. Although its members have been replaced many times, the structure survives with significant design integrity.

[11] Not only was this the first structure of its type erected in Maine, but it is believed to have been the only Finley type span erected in New England east of the Merrimack River (the Essex-Merrimack bridge designed by Finley was built in 1810 and completely rebuilt in 1909). Llewellyn N. Edwards, "The Evolution of Early American Bridges", reprinted from the *Transactions of the Newcomen Society*, Vol. XII, in *Maine Technology Experiment Station*, No. 15, October, 1934, Orono, 1934, p. 28.

[12] Robert M. Vogel, *Roebling's Delaware and Hudson Canal Aqueducts*, Smithsonian Studies in History and Technology, No. 10, Washington, D.C., 1971, p. 28.

[13] Beedy Obituary.

[14] *Farmington Chronicle*, July 16, 1857.

[15] Tradition held that this bridge was built in 1842. Determined research by Charles A. Whitten, C.E., a former bridge engineer with the State of Maine Department of Transportation, uncovered town records that unquestionably fix the date at 1866. Copies of his correspondence and notes are on file at the Maine Historic Preservation Commission, Augusta.

[16] One reference states that Elder had previously built a suspension bridge across the Missouri River. "Here's the Fine Old Suspension Bridge at New Portland, Maine", *New England Construction*, May, 1954. This is questionable, however, given that in both the 1850 and 1860 census he was residing in New Portland. It is likely that Elder's role in this bridge was limited to being the town's representative in the project. He was probably not its designer.

[17] Beedy's wife, whom he had married in 1834, died in 1858, leaving him to make this trip on his own. Beedy Obituary.

[18] The letters were printed in the *Patriot* between May 22, 1863, and July 1, 1864.

[19] On June 3, 1871, he transferred his last remaining interest in the Phillips gristmill. Franklin County Deeds, Book 72, p. 191.

LIST OF KNOWN COMMISSIONS IN MAINE BY DANIEL BEEDY

Chain Suspension Bridge, Kingfield, 1852-53, Destroyed.
Wire Suspension Bridge, Strong, 1857, Destroyed.

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