

Superfund Records Center
SITE: Pine St. Canal
BREAK: _____
OTHER: 28732

**PHOTODOCUMENTATION OF HISTORIC CANAL CRIBWORK IDENTIFIED
DURING CONSTRUCTION OF THE PINE STREET CANAL WEIR,
BURLINGTON, CHITTENDEN COUNTY, VERMONT**

Prepared for:

de maximis, inc.
135 Beaver Street
Fourth Floor
Waltham, MA 02452

Prepared by:

John G. Crock, Ph.D.

**CONSULTING ARCHAEOLOGY PROGRAM
UNIVERSITY OF VERMONT
112 University Heights
Burlington, VT 05405**

November 19, 2001

PHOTODOCUMENTATION OF HISTORIC CANAL CRIBWORK IDENTIFIED DURING CONSTRUCTION OF THE PINE STREET CANAL WEIR, BURLINGTON, CHITTENDEN COUNTY, VERMONT

Project Description

This brief report documents architectural features associated with the historic Pine Street Barge Canal in Burlington, Vermont, exposed during a recent construction project. The Environmental Project Management firm *de maximus, inc.* was retained by the Pine Street Canal Performing Defendants to oversee the design and construction of the remedial action for the Pine Street Canal Superfund Site in Burlington, Vermont. One component of the remedial action included the installation of a four-foot high reinforced concrete weir across the mouth of the barge canal, underneath the existing bike path footbridge. Historic cribwork associated with the sidewalls and piers/breakwaters at the mouth of the barge canal were inadvertently disturbed and exposed during construction. Photodocumentation of exposed features was undertaken to mitigate the adverse effects of construction impacts on components of the National Register eligible Pine Street Barge Canal complex.

According to Thor Helgason, Project Coordinator for *de maximus, inc.*, the disturbance of the buried architectural features occurred when “during excavation for the weir footing, a concrete step or sill was found cast into the northern railroad bridge abutment (Figure 1). The concrete step appeared to have been cast on top of wooden cribbing, which extends from the edge of the bridge abutment at least 12 feet. Within the weir footing excavation, the cribbing was composed of square 10-inch timbers (in the east-west direction), connected by notches to round, notched logs extending about 6 feet in a north-south direction, similar to Lincoln Logs. The top of the cribbing is at elevation 93, which is about 6 inches above the proposed top of weir footing elevation. The cribbing was filled with 1-foot diameter, angular stone. At the edge of the weir footing excavation, the cribbing was cut and left in place (Figure 2). The cribbing does not appear on the design drawings for the railroad bridge and it may or may not have been associated with construction of the bridge.”

Subsequent to the discovery of the buried canal cribwork at the mouth of the historic canal, Eric Gilbertson of the Vermont Division for Historic Preservation (VDHP) met on site with project engineers and Dr. John G. Crock and Dr. Charles Knight, Director and Assistant Director of the University of Vermont Consulting Archaeology Program (UVM CAP), respectively. On behalf of the VDHP, Gilbertson recommended photographing and mapping the location of the exposed features to mitigate the adverse effect to the historic resource caused by construction of the weir. The present report includes the results of the emergency documentation effort.

Historic Pine Street Barge Complex

The Pine Street Canal and Barge Canal bridge were first determined eligible for the National Register of Historic Places in 1986 based on their historic and



Figure 1. Excavation for weir footing, facing south. Note cut timbers representing the south canal wall to left of workman, cut timbers representing the north canal wall below pumps in foreground, and displaced timbers within excavation trench (photo courtesy of John Hunt, *de maximis*).



Figure 2. Cutting of north canal wall timbers at the northwest corner of weir footing excavation (photo courtesy of John Hunt, *de maximis*).

archaeological merits. Later, archaeological investigations associated with the Pine Street Canal Superfund Site Project were undertaken by John Milner Associates (McVarish et al. 2001). Following background research and site inspections, Milner recommended that the Pine Street Barge Complex, including the Barge Canal, the barge canal bridge, the breakwaters, the sunken canal boats and the remains of two boathouses/marine railways, was eligible for inclusion on the National Register of Historic Places under Criteria A. This determination was based on the significance of the Barge Canal Complex relative to historic events in Burlington and the contribution of the property to broad patterns of history (McVarish et al. 2001). Though Milner concluded that activities undertaken by the proposed weir construction would not affect the physical integrity of the historic drawbridge abutments, they did recommend a series of large format photographs of the historic bridge to mitigate the adverse effects of weir construction on the bridge abutments. Engineering plans prepared later were designed to avoid the historic bridge abutments entirely. Milner did not predict the impacts to historic cribwork below the existing concrete abutments, however, which were recently exposed (10/11/01) during construction of the footing for the weir.

Brief History of the Barge Canal

During the beginning of the lumber boom in the late 1860s, the Pine Street Barge Canal was constructed to facilitate access between the waterfront and several large lumber yards/mills that had developed along Pine Street in Burlington, Vermont. Lawrence Barnes, arguably the most influential of Burlington's lumber barons, was the primary developer of the Barge Canal (McVarish et al., 2001). Barnes also was responsible for reclaiming a natural wetland along the waterfront to create usable property that could accommodate the stockpiling of lumber necessitated by increased demand and the seasonal nature of shipping on Lake Champlain.

Specific to the present documentation project, the canal and the cribwork that formed the walls of the canal was constructed around 1868, following the deposition of the large amounts of fill necessary to reclaim the natural wetland. An article by an anonymous author, printed in the *Free Press* on July 20, 1868, describes the ongoing construction process:

“the short heavy puffs proceeding from the pipe of a cabin standing on dry land, where we once gathered pond lilies and cat tails distracted our attention and interrupted our reverie, and we called to mind the fact that at the last the united energy, capital and foresight of some of the gentlemen who have contributed so much to the business prosperity and good name of our new city, was transforming this old, worse than useless, because miasmatic, frog pond into a new center of our rapidly increasing lumber interests, and that the feeble puffs of the donkey engine draining the marsh was but a faint type of the many horse power engines that ere long will be heard and seen thundering amid the busy whirr of machinery which shall prepare for market the piles of lumber that will crowd around it.

On nearer approach we found that the dyke which is intended to surround the basin, which is to be 300 feet square, and to hold 8 feet in depth of water at low water mark, was entirely completed save the facing with plank which will be done eventually, and a very fair beginning had been made in digging out the ‘hole’ by the

forty men who were hard at work at it. Already a portion of the railroad track had been built, preparatory to the excavating for the draw-bridge, which will cross the channel 80 feet in width, which connects the waters of the basin and the lake.”(Anon. 1868).

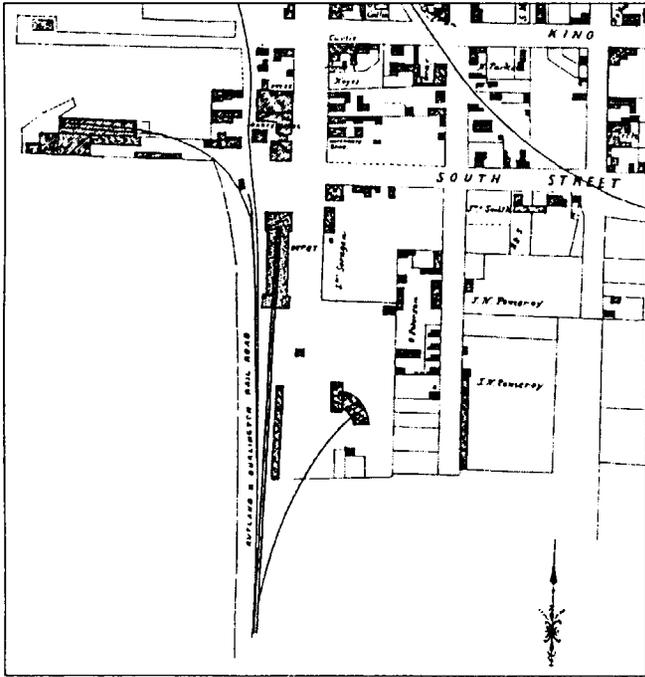
The southern pier/breakwater also was apparently under construction during the summer of 1868. The same Free Press article reports “the pier building by Mr. Luther Whitney of Port Douglass the contractor, extending into the lake, immediately south of the ‘draw,’ seven hundred feet, has been constructed during the past spring to within a few rods of the shore”(Anon. 1868). The southern pier is plainly evident on Beers’ 1869 map (Figure 3). A small northern pier apparently was constructed after Beers’ map was produced, but before a later 1869 Sanborn map was completed (see Figure 3). By 1872, both the north and south piers had been completed (Figure 4), probably including the cribwork facing within the canal and surrounding the piers. The most illustrative detail of the cribwork itself is included on Meilbeck’s 1877 *Birds Eye View of Burlington and Winooski* (Figure 5). This historic view shows the canal and waterfront after its completion and near the peak of the lumber boom. The image shows cribwork along the entire waterfront, including newly reclaimed area to the north and south of the canal mouth.

Based on the earliest available historic maps, the cribwork for the interior of the canal and the southern pier were completed by 1869, and for the northern pier by 1872. The maps do show an evolution of the northern pier and shoreline between 1869 and 1890. The progression goes from no pier (Beers 1869) to a short pier (Sanborn 1869), then a full length pier (Pichot 1872), then infilling to the north of the north pier (UVM 1886). The 1886 map showing infilling suggests a collapse of cribwork in this area, sedimentation of the “cove”, or simply low water conditions at the time the 1872 map was prepared (see Figure 4). The 1890 map depicts a more irregular shoreline than apparently existed earlier and seems to provide evidence of erosion along this portion of the waterfront and/or a general lack of maintenance. By this time in Burlington history, the lumber boom was definitely on the decline and resources may not have been as readily available for the upkeep of the waterfront cribwork and the cribwork around the canal. The 1890 map does show the addition of structures on the filled in area north of the canal mouth, however. These were likely associated with the railroad and the operation of the drawbridge. More recent Sanborn *Insurance Maps of Burlington, Vermont* from 1894 onward do not show the piers and also depict an irregular shoreline (Sanborn 1894; 1900; 1926). While the piers may have been outside the area of focus for these maps, it is also likely that they already had substantially degraded by the late 19th century.

Photodocumentation of Historic Architectural Features

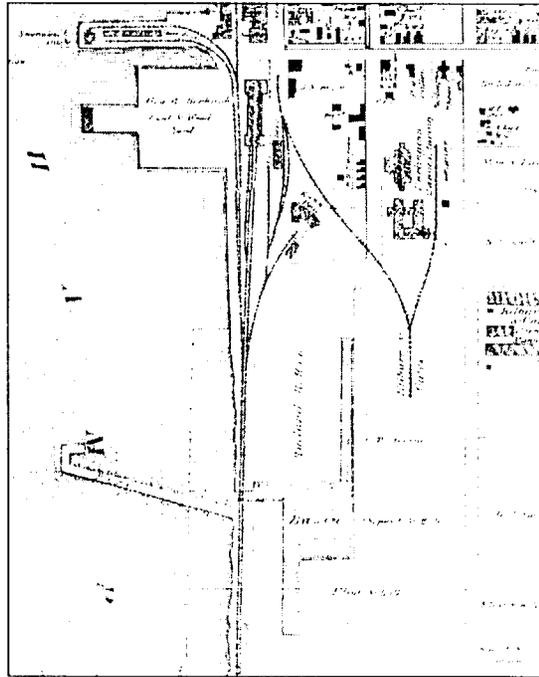
Though the visibility and integrity of buried cribwork and associated features was complicated by ongoing weir construction, substantial information regarding construction techniques and materials was exposed as a result of the footing excavation. This information was further enhanced by extremely low water levels on Lake Champlain (ca.

1853



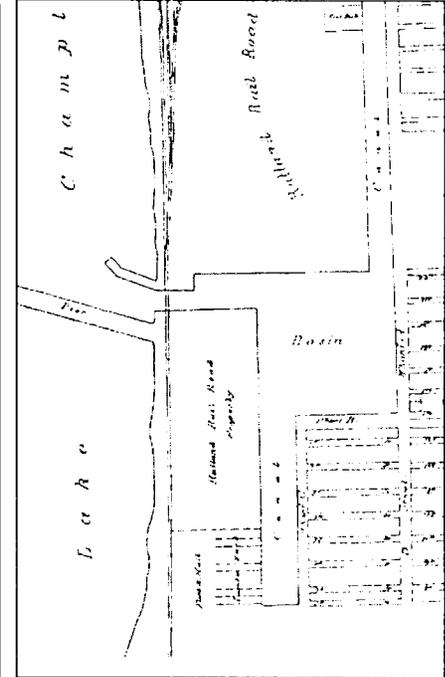
Pre-Canal (Presdee and Edwards 1853)

1869a



Canal with south pier (Beers 1869)

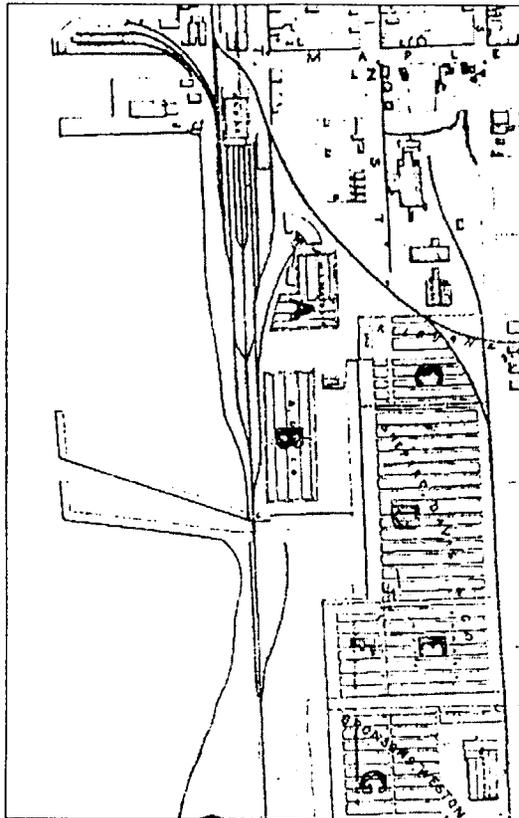
1869b



Canal with south pier and first stage of north pier (Sanborn 1869)

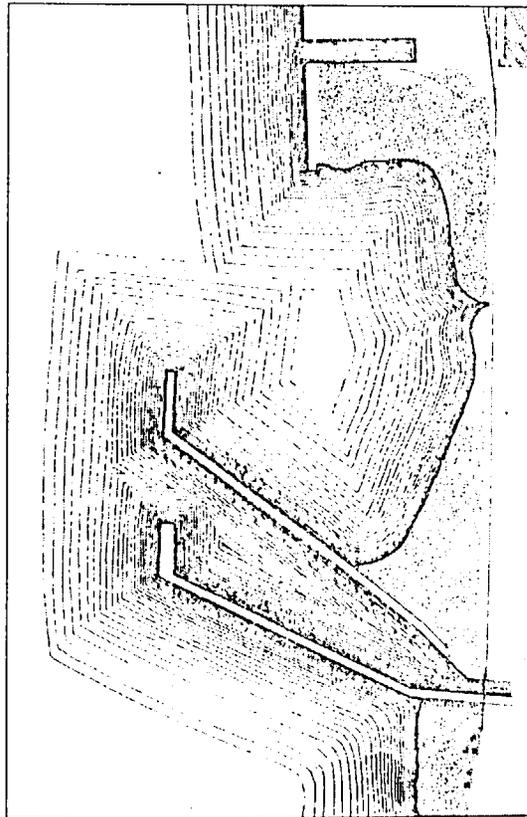
Figure 3. Historic maps showing the development of the barge canal and piers/breakwaters between 1853 and 1869.

1872



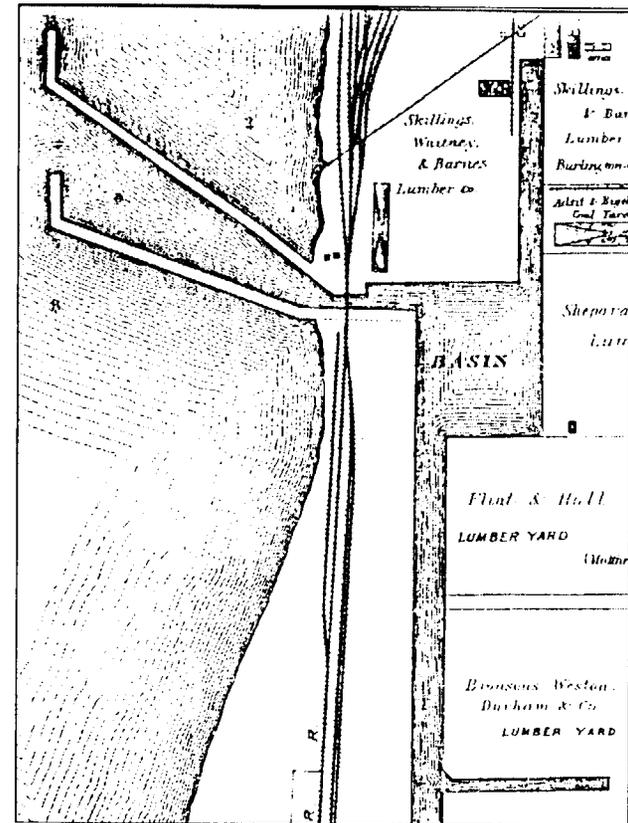
Canal with two piers (Pichot 1872)

1886



Infilling and/or erosion north of north pier (UVM 1886)

1890



Structures on infilled area just north of canal mouth, west of tracks (Hopkins 1890)

Figure 4. Historic maps showing development of the barge canal and waterfront from 1872 through 1890.

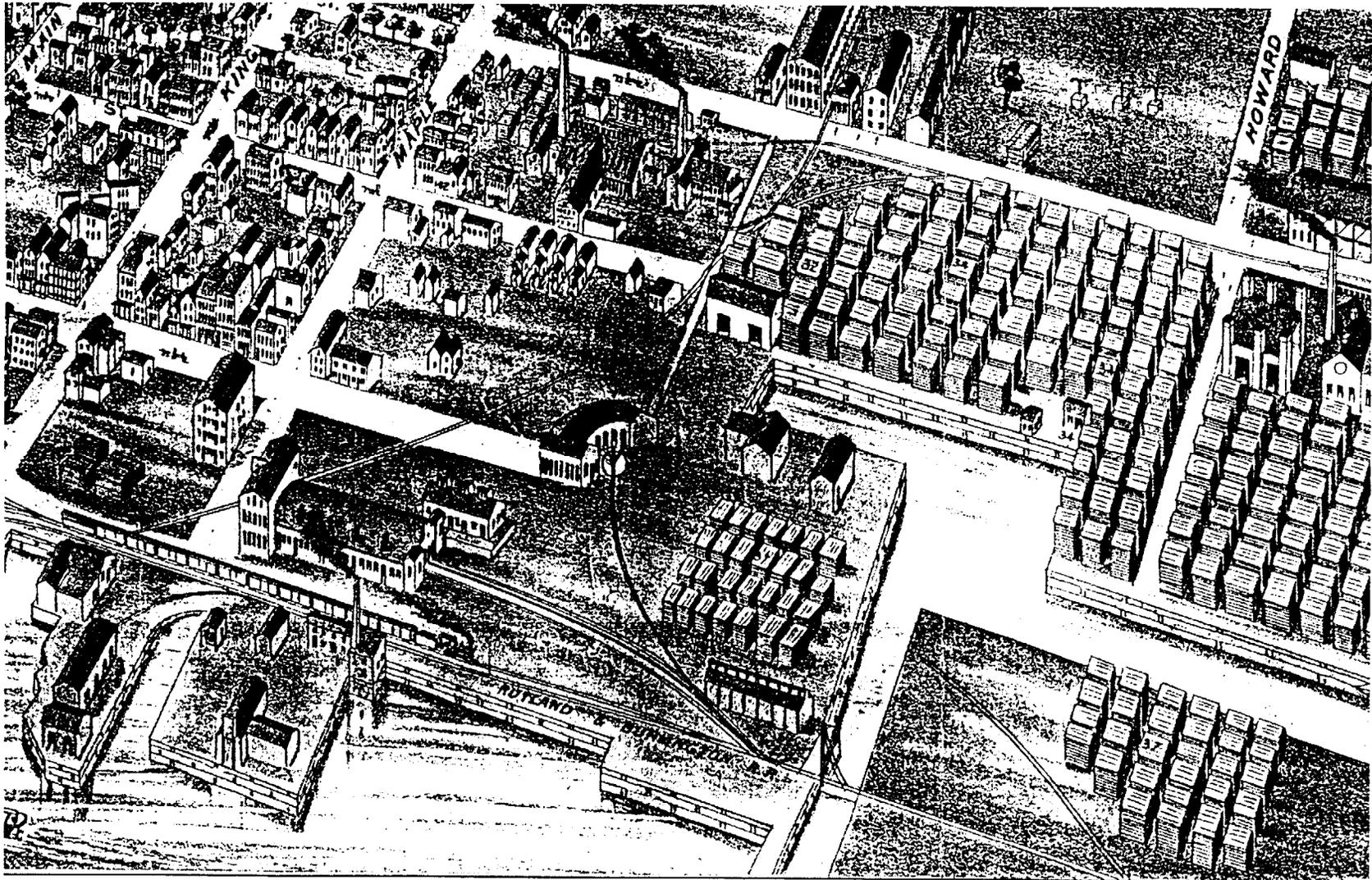


Figure 5. Close-up of Meilbek's 1877 *Birds Eye View of Burlington and Winooski, Vt.* Note cribwork along waterfront and canal.