

FINAL REPORT

PEQUAMING BOG PUBLIC ACCESS BOARDWALK

L'ANSE TOWNSHIP

COASTAL MANAGEMENT PROJECT

CONTRACT NUMBER 11E - 13.1

SB482.M52L36 1989

SB  
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1989

PEQUAMING BOG

PUBLIC ACCESS

BOARDWALK

REPORT

The permit through the DNR was applied for during September of 1988. This was one of the initial first steps in the constructing of the Boardwalk Project. Permit No. 88-1-80G/W was issued on September 24, 1989 to L'Anse Township. Surveying and site investigation occurred during the summer of 1988 prior to the permit issuance.

The co-sponsors of this project were the Baraga Soil Conservation District and L'Anse Township. Mr. Bob Larson, Conservation District Chairman originally proposed this project. L'Anse Township had no money to undertake a project like this. Thus the Conservation District offered to purchase the needed materials while the construction was on-going and before the final grant monies became available through the Township. The Township owns the land where the boardwalk was constructed and operate a public park that is adjacent to the boardwalk on the shore of Lake Superior.

The USDA Soil Conservation Service and its Resource Conservation and Development (RC&D) Program were used to gain the needed design and to supply a small amount of construction inspection. The MCCC crew foreman constituted the majority of the on-site construction inspection.

The DNR's Michigan Civilian Conservation Corp (MCCC) stationed at the Ford Forestry Center located at Alberta, Michigan, supplied the much needed labor. These "in-kind labor services", utilized for the boardwalk construction, are itemized and are enclosed within this report.

Along with the permit application, site inspection and surveying, another initial step was obviously the drafting up of the design. The construction plans that were finally used were redesigned and subsequently redrawn twice. The MCCC crew chiefs and the administrator of the program from Camp Alberta drove down to the Crystal Lake Public Access Boardwalk in Iron Mountain on February 22, 1989, and that provided the impetus for the final design utilizing the best features from that boardwalk.

The SCS did the redesign during March of 1989 and the plans were delivered and discussed with the MCCC staff on March 23, 1989. Three price quotes for the materials were gotten for the material quantities outlined on the plans during the latter part of March.

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One building supplier was generally lower for the wolmanized wood that was universally used on the project. Oxcel wood preservative at a retention rate of .40 lbs. per cubic foot of wood treated was used on all the wood materials used in the boardwalk construction.

On March 30, 1989, the wood was delivered to a landowner's property adjacent to the construction site. The wood was initially stacked at a secure site underneath a mercury vapor lamp on a adjacent land-owners property. As of March 28, 1989, the bog was still frozen over.

On April 24, 1989, the SCS and MCCC began the on-site layout of the boardwalk. The bog site is generally made up of three feet of a saturated decomposing sphagnum moss mat floating on one foot of water. The entire bog area is all underlain with old Lake Superior beach sand sediments. This kind of delicate environment posed a real challenge for the construction of the boardwalk. The main concern was to retain some of the naturally occurring bog material immediately surrounding the structure once it was completed. All forms of heavy equipment were obviously ruled out and the whole structure had to be hand built. The 6" x 6", twelve and fourteen foot long posts were "jetted in".

Construction began on June 28, 1989, after the MCCC Woods crew No. 2 finished assisting the DNR with its spring campground clean up. The "Jetting" of the posts was the only feasible way to place the support posts approximately three to four feet into the sandy bottom using only hand labor. The "jetting" of the posts became the biggest problem to solve during the initial construction of this boardwalk.

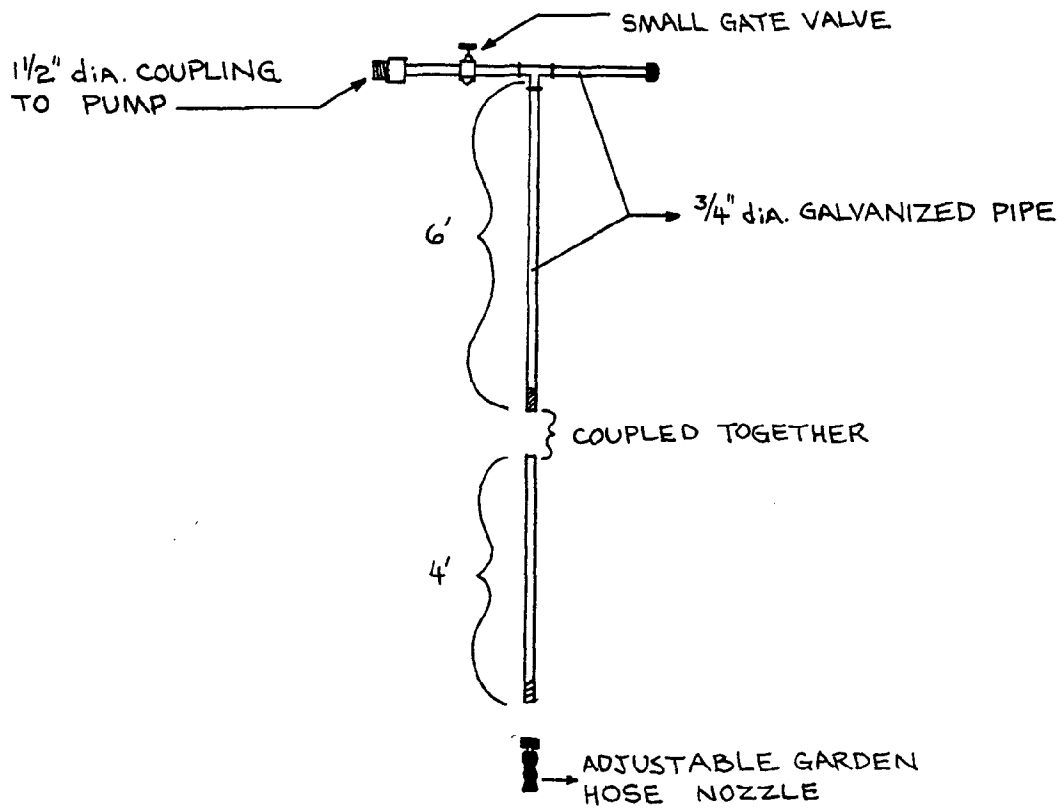
"Jetting", utilizing water pressure, suspends all the sand particles amongst the rapidly flowing water. Once this agitation ceases, the sandy materials quickly fall out of the suspension thus filling the hole back up encasing the boardwalk's support posts.

A jetting apparatus had to be fabricated to apply the proper amount of water pressure at the proper depth in the sandy bottom below the floating sphagnum bog so the support posts could be set.

The first "jetting" apparatus looked like this: See drawing No. 1 attached.

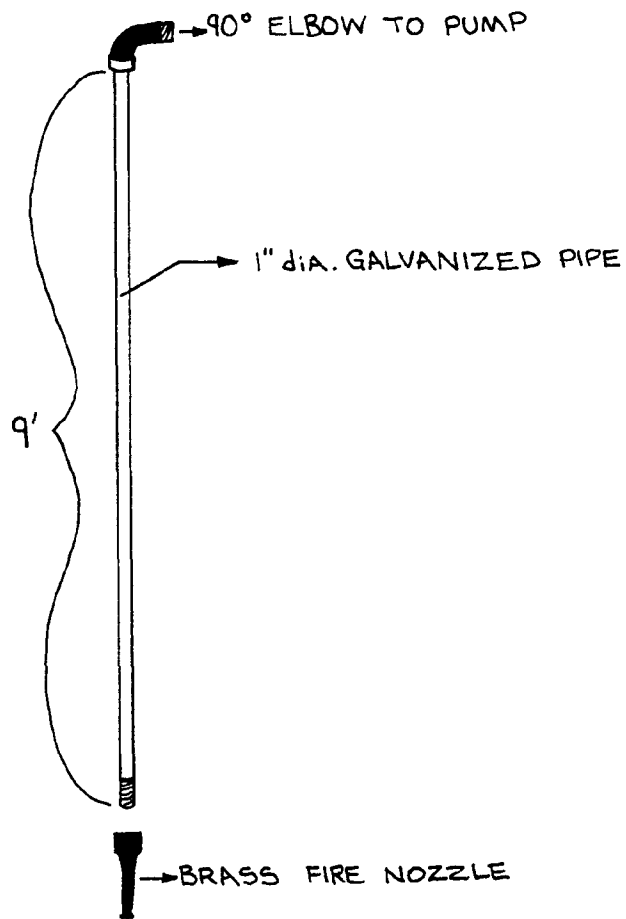
It did not function because there were too many restrictions restricting water flow through the nozzle. Valves, couplings, pipe diameter, nozzle design, etc. were all too restrictive thus this first jetting apparatus was a failure. All the restrictive points in the initial design that was tried on June 28, 1989 were altered for the second attempt at jetting on June 29, 1989.

DRAWING NO. 1



FIRST JETTING APPARATUS

DRAWING NO. 2



SUCCESSFUL JETTING APPARATUS

The second jetting attempt apparatus looked like this: See drawing No. 2 attached.

This time the pipe diameter was big enough and there were very few restrictions within this design to impede the much needed water flow.

The second problem encountered in the jetting process was getting through the floating sphagnum mat that was three feet thick. Flat pointed shovels were sharpened to sever the tangle of roots and the 6" x 6" posts were each cut to a chisel point using a chain saw. The combination of the post's weight, sharpened point and the severing of the mat allowed the post to penetrate through the floating mat, coming to rest on the sandy bottom. Jetting was then started and the posts were pushed down 3 to 4 feet into the sand as the sand below the posts became suspended due to the jetting process. It was impossible to jet in the posts if a large amount of the floating mat adhered to the lower end of the post. Apparently the mat held the sand in place and lessened dramatically the water flow around the penetrating point of the post.

A DNR fire fighting, back pack homelite pump feeding a 2 inch canvas hose connected to another 1 1/2 inch canvas line, fed our improvised 9 foot long jetting tool.

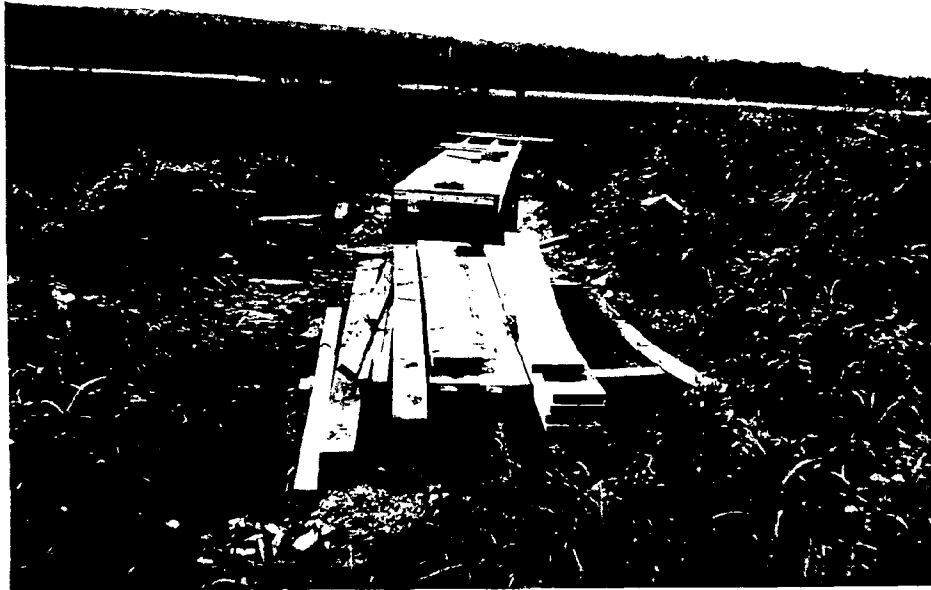
Stringers were then affixed to the posts and the cross-beams then nailed in place. The decking was then placed on top of the stringers and nailed down. Initially the first 50 feet of the boardwalk were completed so the additional materials needed for the remaining boardwalk and deck could be conveyed out without further undue disturbance to the wetland.

During the actual fabrication of the boardwalk, the only real pressing problem revolved around how you can maintain a "trueness" to the whole structure when you're standing on a "floating mat" that is by no means stationary. The structural support posts were lined up using taught ropes affixed to posts that were positioned farther out in the bog that lined up with the previously jetted support posts. These taught lines were used to measure distances to the next post and to attempt to maintain a straight line as the MCCC crew continued to jet in more posts leading out in to the bog.

The boardwalk less the handrails was completed around September 5, 1989. During the fourth weekend in August, approximately \$350.00 worth of treated wood was stolen from the job site. That material consisted of 4" x 4" and 2" x 4" boards that were to be utilized in the handrail construction. More materials were purchased and the railings were begun using a slightly different design. The new design entailed bolting/spiking and nailing one 52 inch long 2" x 4" piece with an angled point between the 4" x 4" diameter posts which are positioned every 10 feet.

Finally the entire deck and all the severed ends on the various wood pieces were treated with cuprinol. After the cuprinol treatment the boardwalk itself would have to be considered complete. It was completed on September 21, 1989.

A hand routed wooden sign will be positioned at the beginning of the boardwalk acknowledging the sponsors, the builders, and the funding source which is the Coastal Zone Management grants. The MCCC woodshop crew will fabricate the sign and it should be erected during the last week in September.



View of job site, initial boardwalk construction.



Access from L'Anse Township Park and Pequaming Road.  
A hand routed wooden sign will be placed near the road.



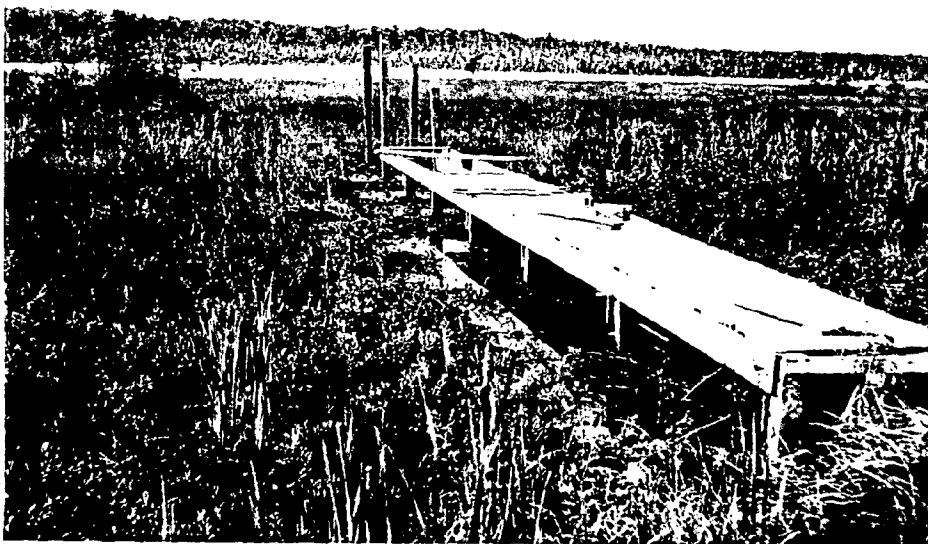
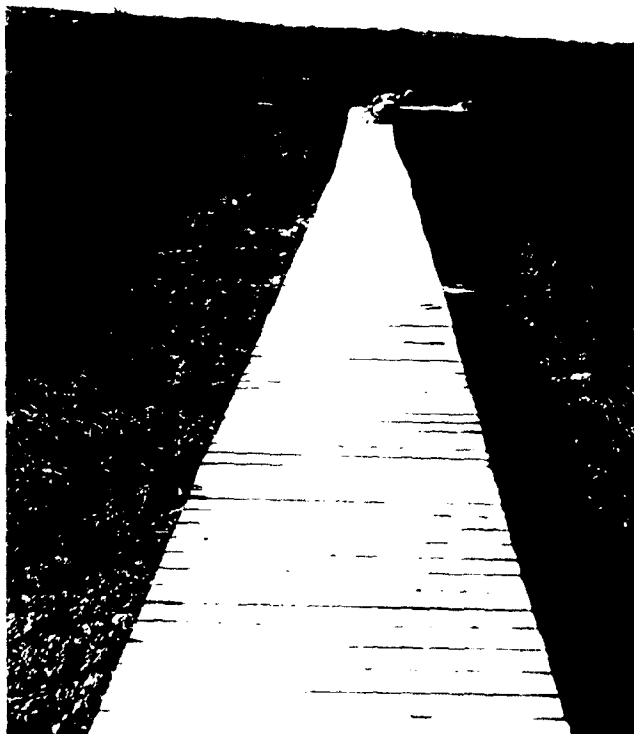


Jetting apparatus, pipe, nozzle, hose and pump.



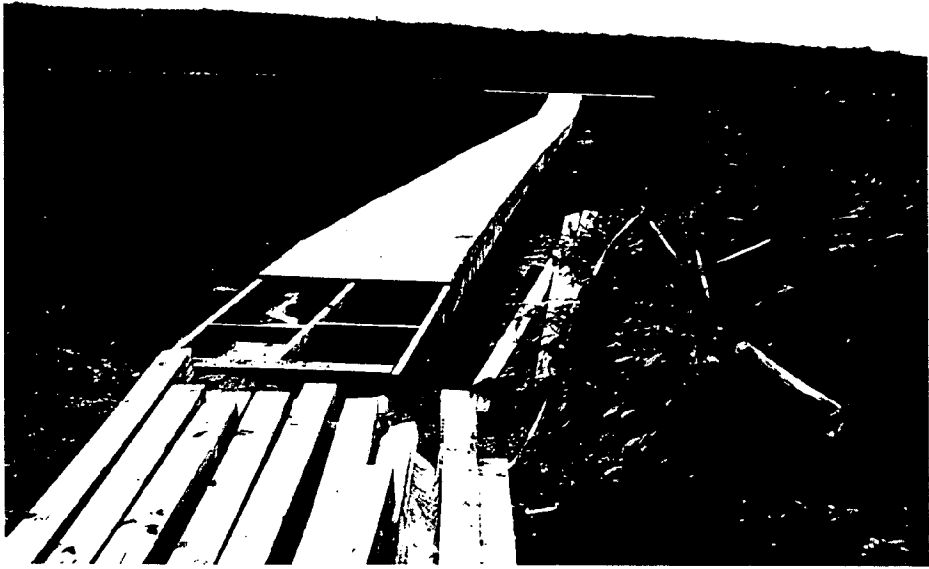
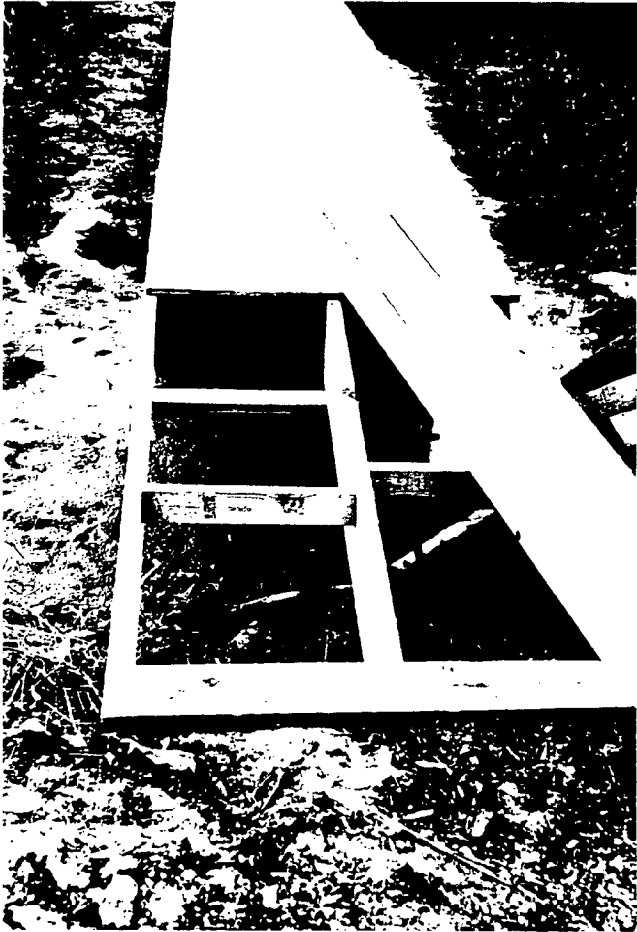
Final Jetting to level out the boardwalk prior to handrail installation.

Final "Jetting" to  
subtly level out the  
boardwalk prior to  
hand rail installation.

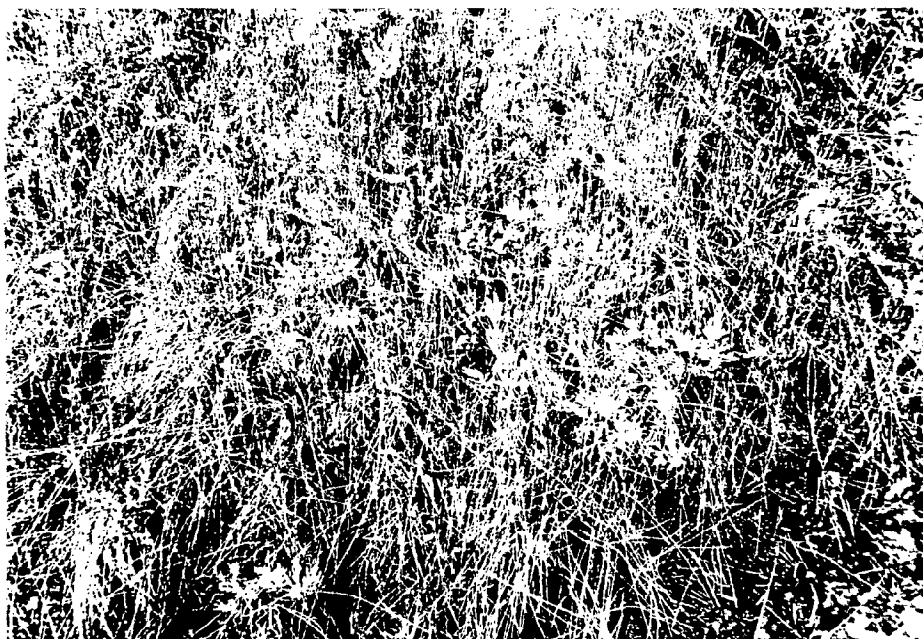


Initial 60 feet of boardwalk construction.

Access ramp construction  
to boardwalk bog access.



Overall view of boardwalk and job site.



View of the "Floating Bog" containing  
leatherleaf, pitcher plants, reeds and sedges.



View from the observation deck to the east.

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