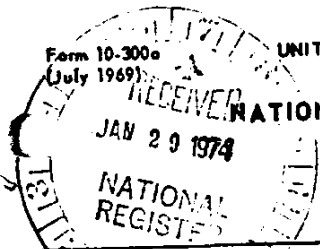


Form 10-300a
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE



NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Continuation Sheet)

2.

STATE New Jersey	
COUNTY Multiple	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE
OCT 1 1974	

(Number all entries)

Morris Canal
New Jersey, Code:34

7. Description (cont.)

bottom of the planes and made secure. Then, boat, basin, and all were transported over the plane atop a triangle-shaped frame set on 8 foot flanged wheels that rode on strap-iron rails laid over the graded slope. Motive power was water, it being let out of the upper level of the canal to turn a wooden water wheel alongside the plane. Wheels were 18 to 20 feet in diameter, according to one early report, and were most likely of the overshot type. Having done its work, the water returned to the canal at the lower level. Once a standardized design had been adopted (c. 1835), all planes were of the above lock-type. By 1861, they were all converted to summit types.

The summit types planes in use at the time of the abandonment of the canal were put into play beginning in 1848. The design was radically different in that it put the water wheel - cast iron, not wood - in a pit about 30 to 50 feet underground. The 12-foot diameter turbines had four arms at their outer edges, ending in openings 15 1/2 inches high by 3 1/2 inches wide, through which the working water exited into a tailrace culvert to be carried back into the canal at the lower level. The force of the exiting water forced the wheel to revolve, in turn rotating a drive shaft which terminated in a clutch mechanism above ground, in a sort of control house, or tower. From the tower the plane tender had an overall, unobstructed view of the plane, plus control over the machinery and the water which operated it.

The average grade of a plane was 10%, or one foot lift for every ten feet. The slope was laid with parallel rows of large flat stones, or sleepers, embedded in the ground and chiseled level to receive 6" x 8" wooden stringers which were spiked in place. Atop the longitudinal stringers were rails (introduced in in the 1860's) laid 12' 4 1/2" from center to center. The rails themselves were 3 1/8" broad at top, 3 1/2" high, and weighed 76 pounds to the yard. The tracks ran a short distance along the bottom of the canal at the foot and the top of the plane, terminating at sheaf wheels, laid horizontally in the canal bed and totally submerged. These wheels guided 2 1/2" twisted wire cable which was attached to both ends of a cradle car and to a 12-foot winding or cable drum in the control house.

The winding drum had a continuous spiral groove of 3" pitch in its periphery. The cable ends were fastened at opposite ends of the drum so that as one end of the cable wound, the other unwound. Passing around the sheaves at top and bottom of the plane, while winding and unwinding around the drum, the cable pulled up or let down boats that were passing the plane. The motions were reversible by means of a

(cont.) GPO 921-724