

order to prevent the bents from floating up during pumping operations two hammers weighing about a ton each were lowered on the cap immediately over the head of each pile. A level and rod with a disc were used to set the piles, the rod resting on the cap, and on a signal from the leveller the pumps were stopped as soon as the bents were within 6 inches of the correct level, the last five or six inches being hammer-driven without the use of the pump. Sometimes a bed of large gravel would be struck, in which case, if sufficient pressure could not be obtained, the hammers were raised two or three feet and dropped on the piles till driven through it. In the meantime men were employed placing buttons on the ends of pipe ready for launching, and when a sufficient number of piles had been driven, the pontoon with the pipe in slings was brought up, the gaskets fastened on with thin wire and the pipe lowered by winches, the diver inserting four long bolts and drawing the pipes together, when the slings were cast off and the remaining bolts put in and screwed up. Three divers were employed, two completing the joint and the third coupling the next length of pipe ahead.

The conduit as laid, extends from the shore crib to the south tunnel shaft, having a 6-foot valve placed just north of the small basin, with the 5-foot branch and valve connecting with the basin, a second branch and a 5-foot valve being inserted about 300 feet south of the tunnel shaft.

The 5-foot branch with valve opposite the basin was provided in order to utilize the new 6-foot conduit to this point, by allowing it to discharge into the basin till such time as the tunnel was completed.

As soon as the conduit was covered as far as the basin, the 6-foot valve just north of the basin was closed and the pipe between the shore crib and the basin pumped out and carefully examined from the inside. Any small leaks found were then caulked.

Just before bringing this portion of the conduit into use, it was flushed out with clean water and the entire surface scrubbed down with brooms, after which it was filled and the 5-foot valve on the connection into the basin opened.

It might be of interest to know that the greatest number of pile bents driven in a day was eleven, and generally two pipes were laid during the same time. Anchor piles, 20-ft. long were also driven where the pipe crossed open channels upon which it was impossible to place fillings. These piles were driven one on each side of the pipe with a timber bolted to them over the top of the pipe to hold it down, and at the level of the bottom of the