

additional feet of beton, making in all 14 feet, put in. The outside of the caisson was examined by a diver, who reported that the bags had been swept away from the south side, leaving an aperture under the edge, which was closed with bags of beton. About the middle of February the tub was again pumped out ; the leaks were still very troublesome, but within the capacity of the pumps ; the surface of the beton was levelled off, and an open grillage, composed of two courses of flatted timbers laid transversely, put in ; the spaces between the timbers were filled with beton, and on this grillage the masonry was started on the 20th of February. The rising water threatened to drown out the works, and a third section nine feet high was added to the tub, the river rising above its base for one or two days. This section was similar to the one below, but built of pine ; it was afterwards removed and made into a railroad water tank. The base of the masonry is at an elevation of 95.57 ; the first course of stone is the full size of the tub, and from this the courses are stepped off till their diameter is reduced to that of the pier. The floating derrick used to lay the masonry was fastened on the north side of the caisson, and the pier built up as rapidly as possible.

PIER No. 3.

Work was begun on this foundation on the 29th day of August, 1867. The rock was found at an elevation of 67—30 feet below the extreme low-water mark—and was then overlaid with 22 feet of sand, the water being 17 feet deep. A compact cluster of piles was first driven, 150 feet above the site of the pier, to serve as an anchorage during the subsequent work ; one or two of this clump washed out before the driving was completed, but the rest were secured by immediate riprapping, and have remained firm for more than two years. The pile-driving boat was then dropped below, hanging to the anchor piles, and twelve piles driven to form an instrument stand for use in locating the pier. But it was found very difficult to make a pile stand at all in this rapid current ; the rush of the water swayed the head of the pile back and forth several feet, washed around its base, and dug out the surrounding sand till the pile popped up and floated away. One pile in four of those driven was lost in this way with almost complete regularity. The piles were accordingly secured with some