

As speed was to be essential in the entire undertaking, it was decided to do all work on force account, and with this end in view plans were at once commenced for raising the grade four feet and maintaining it at that level.

The method adopted in this filling was the use of two hydraulic dredges, one dipper dredge, ten scows, and a small, but powerful tug, with the necessary discharge pipe, etc. The hydraulic dredges were about 90 feet long and 32 feet wide, containing a centrifugal pump of 22-inch suction and 20-inch discharge; the dipper dredge had a capacity of three cubic yards.

Owing to the rise and fall of the tide covering the base of operations, provision had to be made for the protection of the sand after having been deposited, and with this purpose in view a light bulkhead was constructed (Fig. 2 and 3) around the entire property, same being completed in sections as fast as the filling progressed.

The material for the bulkhead was unloaded from cars at the wharf in Holly Beach, directly upon scows, and brought through the back channel to destination. The construction of the bulkhead was very crude, as it was merely to act as a protection for the sand filling, and was composed of creosoted piling nine feet long and of an average thickness of eight inches at the butt. These were driven on a batter of two to twelve by means of a jet, for a depth of five and one-half feet, and eight feet centre to centre. To these piles, by means of drift pins, stringers three by six inches, and seven to eight feet long, were fastened, at the top of the piling and at the original grade line. Creosoted plank two by twelve inches, and seven to eight feet long were next pumped in and bolted to the stringers. In front of these a trench six feet wide and four feet deep was excavated and filled with brush, which was then covered over; the object of this last was to prevent backwash.

For the construction of this bulkhead very little plant was needed, and owing to the fact of the tide covering the base of operations it had of necessity to be portable. A six-inch centrifugal pump mounted on a truck with wide tread wheels, six hundred feet of three-inch cast iron pipe with anchor and strainer, four hundred feet of three-inch woven hose, portable tripod for lifting and handling piling, and a twenty horse-power gasoline engine that could be connected either to the pump, or the saw, completed the outfit.

Upon the completion of the filling it was found that unless some further precautions were taken, on the ocean front, the bulkhead would be demolished by the action of the waves, owing to a marked change in the currents. Therefore strong measures were taken; these consisted of driving a double row of piling thirty-five