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REPAIR, EVALUATION, MAINTENANCE, AND
REHABILITATION RESEARCH PROGRAM

TECHNICAL REPORT REMR-CO-3

CASE HISTORIES OF CORPS BREAKWATER
AND JETTY STRUCTURES

Report 9

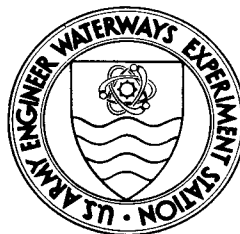
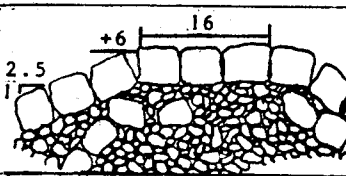
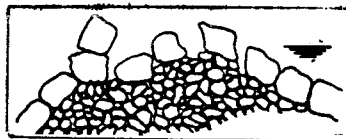
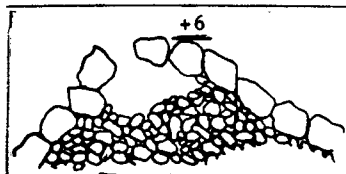
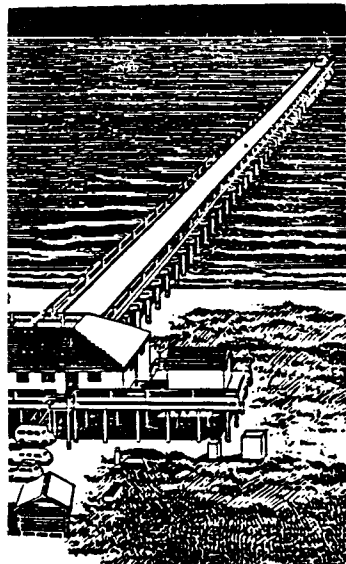
SOUTHWESTERN DIVISION

by

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Table 2

Port Bolivar DikePort Bolivar, Texas

<u>Date(s)</u>	<u>Construction and Rehabilitation History</u>
1933- 1934	A 1,700-ft-long steel sheet-pile dike was constructed to prevent shoaling in the Gulf Intracoastal Waterway at this location (Figure 3). The seaward end of the dike consisted of a 12-ft-diam sheet-pile cell, with a 2-ft-thick concrete cap (and underlying fill material), protected by a stone blanket at the toe of the cell. The top elevation of the sheet pile was +4 ft mlt. Existing water depths varied from -4 (landward) to -13 (seaward) ft mlt. A total of 47,500 sq ft of sheet pile and 6,670 tons of stone was used. Cost of the improvements was \$25,000.
1936- 1937	The landward end of the dike was repaired and extended 200 ft at a cost of \$7,050. Approximately 230 tons of stone was placed as scour protection at the seaward end at a cost of \$1,750.
1966	The outer 1,230 lin ft of sheet pile was supplemented with a rubble-mound section similar to the 1964-1965 Port O'Connor repairs. The dike was generally intact, with some damage to the piling at the outer end and a heavy coating of rust scale due to saltwater exposure. Existing ground elevations varied from -5 ft mlt near the seaward end to +4 ft mlt along the unrepaired landward segment (in general, an accretion of 6 to 8 ft had occurred since original construction). The outer sheet-pile cell, with a maximum water depth of -11 ft mlt, was the only section where localized scour was evident (but in this case not critical to structural integrity). The sheet-pile top elevation was generally from +3.5 to +4 ft mlt (within 0.5 ft of the design elevation). The rubble-mound design sections (Figure 3, inset), with the existing dike at the center line, had a crown elevation varying from +4 (seaward) to +6 (landward) ft mlt, a crown width of approximately 8 ft (2 cover stones wide) and 1V:2H side slopes. The sections were built upon a 2-ft-thick (3 ft at outer end) bedding layer of 0.5-in. to 200-lb stone. The bedding layer extended from 3 ft (landward) to 10 ft (seaward) beyond the toe of the cover layer and was covered with a 2-ft-thick layer of 200- to 1,000-lb apron stone. Similar sized stone were used as core stone, and the outer layer consisted of 1- to 6-ton stone. Filler stone (0.5 to 4 in.) also were placed with the core stone, in a section extending beneath the crown at 1V:1H side slopes. The general purpose of filler stone is to decrease permeability and reduce sediment transport through the structure. The cover stone size was selected based partly on Hudson's slope stability equation and partly for economic reasons. A total of 19,280 tons of stone was placed at a cost of \$164,700.
1985	The dike presently is considered to be in good condition.

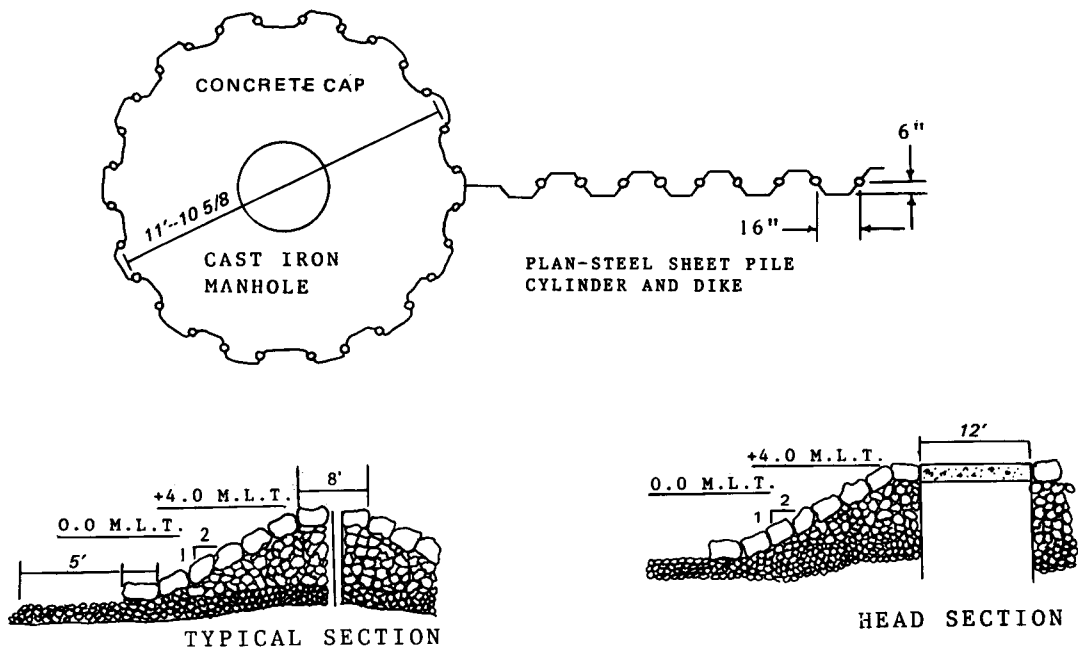
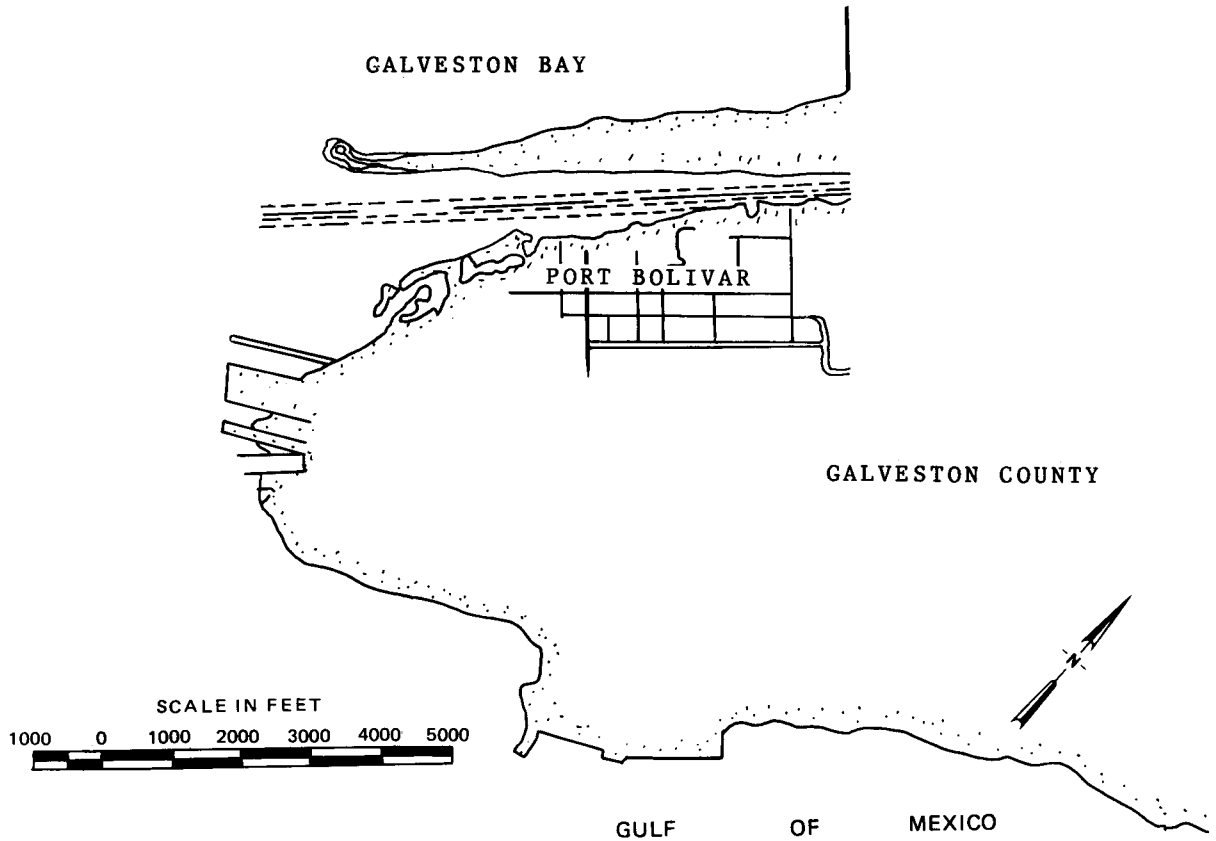


Figure 3. Location, plan view, and typical sections of Port Bolivar jetty