

CHAPTER 1  
INTRODUCTION

1-1. Purpose and Scope. The purpose of this manual is to present the primary features common to pumping station facilities intended for interior drainage on civil works flood protection projects and to present guidance for their architectural and structural design. Much of this guidance is general in nature with liberal reference to appropriate Corps manuals and other design guides. However, specific design guidance is provided for areas involving loading or other factors unique to pumping station structures.

1-2. Applicability. This manual is applicable to all HQUSACE-/OCE elements and field operating activities having civil works responsibilities.

1-3. References. The following manuals and design guides contain information pertinent to the design of pumping stations and appurtenant structures.

a. Department of the Army Corps of Engineers Publications.

- TM 5-809-1, Load Assumptions for Buildings.
- TM 5-809-3, Masonry Structural Design for Buildings.
- TM 5-809-10, Seismic Design for Buildings.
- EM 385-1-1, Safety and Health Requirements Manual.
- EM 1110-1-1804, Geotechnical Investigations.
- EM 1110-1-2101, Working Stresses for Structural Design.
- EM 1110-2-1913, Design and Construction of Levees.
- EM 1110-2-2000, Standard Practice for Concrete.
- EM 1110-2-2102, Waterstops and Other Joint Materials.
- EM 1110-2-2103, Details of Reinforcement-Hydraulic Structures.
- EM 1110-2-2502, Retaining and Flood Walls
- EM 1110-2-2902, Conduits, Culverts and Pipes.
- EM 1110-2-2906, Design of Pile Structures and Foundations.
- EM 1110-2-3101, Pumping Stations-Local Cooperation and General considerations.
- EM 1110-2-3102, General Principles of Pumping Station Design and Layout.
- EM 1110-2-3105, Mechanical and Electrical Design of pumping stations.

EM 1110-2-3104  
30 Jun 89

EM 1110-2-3400, Painting: New Construction and Maintenance.  
ER 1110-2-1150, Engineering After Feasibility Studies.  
ER 1110-2-1806, Earthquake Design and Analysis for Corps of Engineers Projects.  
CEGS-02724-N7, Force Mains and Inverted Siphons: Sewer

b. Other Technical Publications:

"Building Code Requirements for Reinforced Concrete (ACI 318-83) (Revised 1986)". Available from American Concrete Institute, Box 19150, Detroit, MI 48219.

"Builders' Hardware". Available from American National Standards Institute (ANSI), 1430 Broadway, New York, NY 10018.

"Building Code Requirements for Minimum Design Loads in Building and Other Structures, (ANSI A58.1.)". Available from American National Standards Institute (ANSI), 1430 Broadway, New York, NY 10018.

"Standard Specifications for Highway Bridges," The American Association of State Highway and Transportation Officials (AASHTO). Available from AASHTO General Offices, 444 North Capital Street, N.W., Suite 225, Washington, D. C. 20001.

"National Fire Protection Association (NFPA) Codes". Available from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

"Occupational Safety and Health Administration (OSHA) Standards". Available from Occupational Safety and Health Administration, 200 Constitution Avenue, N. W., Washington, D. C. 20210.

"Manual of Steel Construction," American Institute of Steel Construction (AISC). Available from American Institute of Steel Construction, Inc., 400 North Michigan Avenue, Chicago, IL 60611.

"Uniform Building Code (UBC)". Available from: International Conference of Building Officials, 5360 South Workman Mill Road, Whittier, CA 90601.

1-4. Rescission. EM 1110-2-3103, Architectural Design of Pumping Stations, 29 February 1960 and EM 1110-2-3104, Structural Design of Pumping Stations, 9 June 1958.

1-4. Rescission. EM 1110-2-3103, Architectural Design of Pumping Stations, 29 February 1960 and EM 1110-2-3104, Structural Design of Pumping Stations, 9 June 1958.