Prestressed Concrete Transmission Pole Structures

Recommended Practice for Design and Installation

ASCE Manuals and Reports on Engineering Practice No. 123

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Recommended Practice for Design and Installation

Prepared by
the Task Committee on Concrete Transmission Pole Structures of
the Committee of Electrical Transmission Structures of
the Structural Engineering Institute of
the American Society of Civil Engineers

Edited by
Wesley J. Oliphant, P.E., and
Douglas C. Sherman, P.E.

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PREFACE

The purpose of this manual is to provide the reader with a basic knowledge of the principles and methods for the design, manufacturing, and use of prestressed spun- and static-cast concrete poles for overhead utility line structures. This manual is the result of a multiyear collaborative effort by engineers from electric utilities, consulting firms, and manufacturers engaged in the design and application of these structures.

Since the publication in 1987 of the ASCE *Guide for the Design and Use of Concrete Poles* and the 1994 ASCE-PCI Committee Report "Guide for the Design of Prestressed Concrete Poles," significant advancements and innovations have been realized in concrete pole design and manufacturing technologies. These advancements have propelled the use of concrete poles into an ever-increasing and significant role in the design and construction of overhead utility line structures.

Technological advances have occurred in three key areas. First, the types and quality of the raw materials used in the production of high-performance concrete have improved dramatically. Second, advanced manufacturing methods and equipment to produce high-quality, stronger, and longer length poles are being used. Third, with meaningful research and development (R&D) investment in the technology, significant and innovative enhancements to the engineering design technology of concrete poles are being developed. In addition to their use in distribution, subtransmission, or wood replacement applications, concrete poles are being designed and used in major transmission line projects up to and including 345kV and 500kV transmission lines.

Following is a brief summary of this manual's content:

Structural Configurations and Pole Applications: A variety of structural and phase wire configurations are needed by utilities to address different power line environments. A number of arrangements are

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