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# Design of Guyed Electrical Transmission Structures

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# Design of Guyed Electrical Transmission Structures

Prepared by the  
Subcommittee on Guyed Transmission Structures of the  
Committee on Electrical Transmission Structures of  
The Structural Engineering Institute of the  
American Society of Civil Engineers

Published by  
**ASCE** *American Society  
of Civil Engineers*

1801 Alexander Bell Drive  
Reston, VA 20191

Abstract:

Guyed structures are commonly used to support electric transmission lines. They generally have the advantage of lightweight, erection ease, pre-assembly, and simple foundation design. There is a considerable range of applications, from simple guyed wood poles to the very large guyed steel latticed structures. This guide was prepared to supplement the various ASCE and IEEE guides for the design of electrical transmission structures. This publication describes the various types of guyed structures that have been used; presents typical guys and fittings; illustrates guy anchors and foundations; explores analysis and design techniques specific to guyed structures; discusses unique construction and maintenance problems; and displays both hand and computer calculations to illustrate some of the concepts discussed in the document.

Library of Congress Cataloging-in-Publication Data

American Society of Civil Engineers. Committee on Electrical Transmission Structures. Subcommittee on Guyed Transmission Structures.

Design of guyed electrical transmission structures / by the Subcommittee on Guyed Transmission Structures of the Committee on Electrical Transmission Structures of The Structural Engineering Institute of the American Society of Civil Engineers.

p. cm. -- (ASCE manuals and reports on engineering practice ; no. 91)

ISBN 0-7844-0284-1

1. Electric lines--Poles and towers--Design and construction. 2. Guy anchors. I. Title. II. Series.

TK3242.A52 1997

97-26968

621.319'22--dc21

CIP

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Library of Congress Catalog Card No: 97-26968

ISBN 0-7844-0284-1

Manufactured in the United States of America.

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# PREFACE

In 1991 the ASCE Committee on Electrical Transmission Structures (CETS) recommended that a subcommittee be formed to prepare a guide for the design of guyed transmission structures. The CETS has been or is being involved with the publication of design guides for the structural and geometric design of transmission or substation structures. Guides are or will soon be available for the design of steel transmission towers, tubular steel poles and frames, prestressed concrete poles and frames, as well as substation structures. It was felt that none of the existing or upcoming guides contained enough information regarding guyed structures. Therefore the CETS Subcommittee on Guyed Transmission Structures was established in 1991 to prepare this publication.

This guide represents the consensus of opinion of the subcommittee and although the subject matter of the guide has been thoroughly researched, its application should come only after sound engineering judgment has been used.

The many and unique contributions of H. Brian White to this document through his work with the subcommittee and his paper on guyed structures (White 1993) are greatly appreciated.

The subcommittee wishes to thank the Peer Review Committee for its contributions to the final draft of this document: Leon Kempner (Chair), Lindsay Esterhuizen, Jake Kramer, and Goetz Schildt. It also wishes to acknowledge the assistance of the three chairmen of the CETS during whose tenure this guide was conceived and developed: Anthony DiGioia, Alain Peyrot, and Leon Kempner.

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