



# Electrical Transmission and Substation Structures 2018

*Dedicated to Strengthening  
our Critical Infrastructure*



Proceedings of the Electrical  
Transmission and Substation  
Structures Conference 2018

Atlanta, Georgia ■ November 4–8, 2018

**ASCE**

Edited by  
Michael Miller, P.E.



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# ELECTRICAL TRANSMISSION AND SUBSTATION STRUCTURES 2018

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PROCEEDINGS OF THE ELECTRICAL TRANSMISSION AND  
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SPONSORED BY  
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American Society of Civil Engineers

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## Preface

The planning and preparation of the Electrical Transmission and Substation Structures Conference 2018 required an extraordinary amount of time, effort, and dedication by the members of the conference steering committee and the ASCE/SEI staff. The success of the conference is a direct reflection of the level of effort by this group of volunteers.

The steering committee would also like to acknowledge the critical support of the sponsors and exhibitors who made this conference a success through their exhibition displays and substantial financial support.

This conference takes place every three years and provides sessions on Structural Analysis, Special Design Considerations, Foundations, Structural Failure Analysis and Investigation, Substation Design Issues, Seismic, Construction Challenges, Structure Upgrading, and much more.

On behalf of our dedicated volunteers and SEI staff, we would like to thank you for spending your valuable time attending the Electrical Transmission and Substation Structures Conference. It is our hope that you and your colleagues will benefit greatly from the information provided and make professional connections that last for years

## Acknowledgments

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