2017 PLS-CADD Advanced Training and User Group

Update on ASCE and NESC Codes and Standards

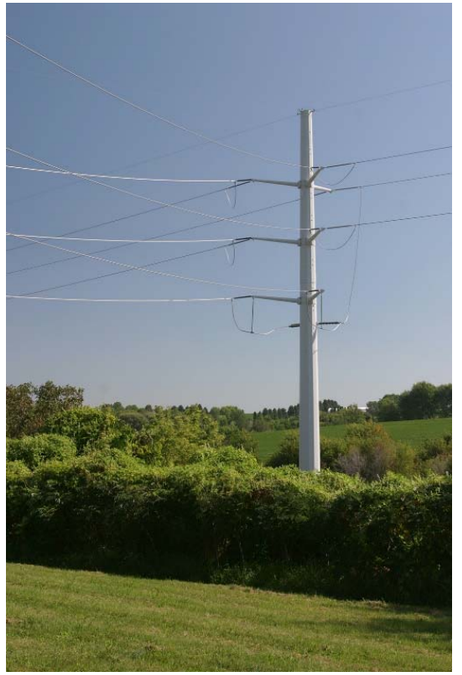
by
Otto J. Lynch, P.E.
Power Line Systems, Inc.

Executive Summary - ASCE

- 2 Standards Committees
  - Directly Under ASCE Structural Engineering Institute (SEI)
- 6 Task Committees
  - Under Electrical Transmission and Substation Structures (ETS) Committee
  - Chair – Ron Carrington
- Triennial ASCE/SEI ETS Conference

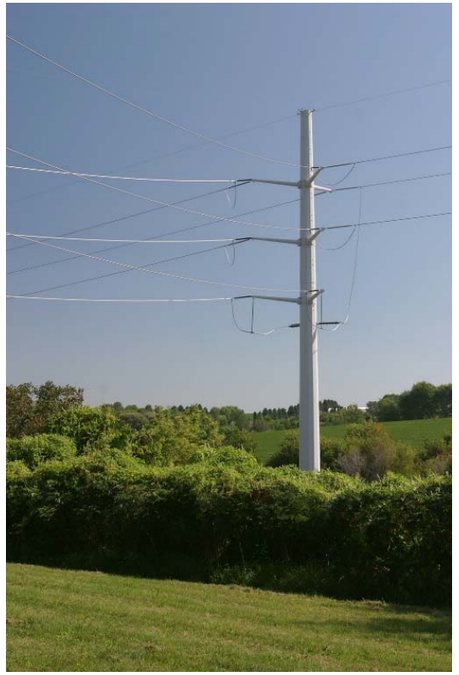
ASCE 48 – Tubular Steel Structures

- Chair - Ken Sharpless
- On track for Publication in 2017 (Mostly).



ASCE 48 – Tubular Steel Structures

- What to look for:
  - Aesthetic design
  - Expanded Appendix
  - Unloaded member fatigue
  - Shaft to baseplate issues
  - Connections



ASCE 10 – Lattice Steel Structures

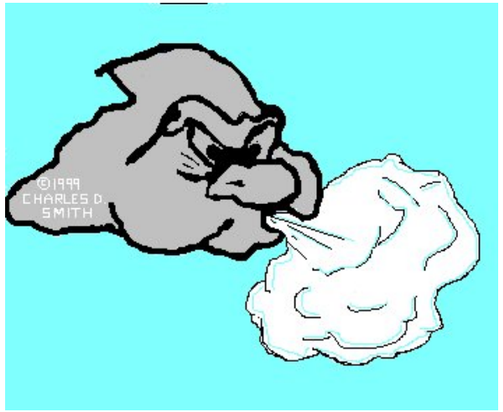
- Chair – Bob Nickerson
- ASCE 10-15 PUBLISHED!!!
  - Order from ASCE Bookstore
  - http://www.asce.org/templates/publications-book-detail.aspx?id=12069
- What to look for:
  - Additional definitions and equations
  - Post angle member splices, welded angles
  - Commentary - Climbing and Fall Protection
  - Appendix C – Guidelines for Existing Towers
    - 12 sections
    - Historical Material Specs
    - Original Compression Curves

ASCE 10 – Lattice Steel Structures

- New Committee Formed for 2020 Edition
  - First meeting in Ft. Worth March 22nd and 23rd, 2016
  - 2nd meeting in Kansas City October 4th and 5th, 2016
  - Last meeting in Houston May 23rd and 24th, 2017
- 5 Working Groups
- Currently have 49 Change Proposals
- No Change Proposals Accepted After October, 2017

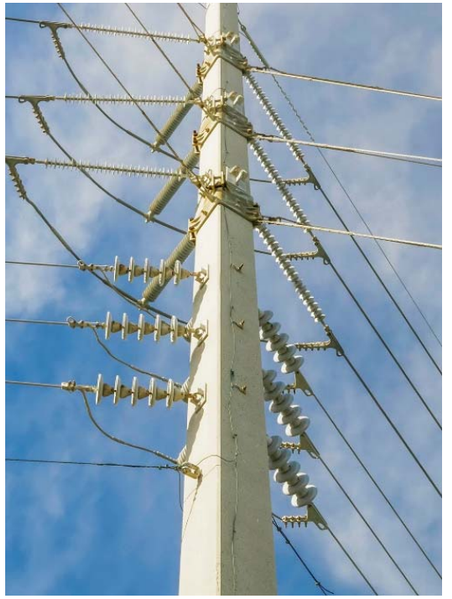
ASCE 74 – Guidelines for Structure Loadings

- Chair – Frank Agnew
- Blue Ribbon Panel Review Nearly Complete
- Publish target – 2017 (?)
- What to look for:
  - Complete rewrite of 3rd Edition
  - Updated wind and ice maps
  - New high-intensity wind numbers
  - New gust-response factors
  - New height adjustment factors
  - Pre-standard appendix



ASCE 123 – Concrete Poles

- Co-Chairs – Doug Sherman & Wes Oliphant
- Latest document published 2012.
  - No recent activity.
  - No modifications anticipated.



ASCE 113 – Substation Design

- Chair – George Watson.
- 1st edition released several years ago.
- 2nd revision currently being worked on.
- 2017 Publish Date
- Numerous working groups
- What to look for:
  - Resolution of wind map selection
  - ASCE 7 – 2005 or ASCE 7 – 2010? Or ASCE 7 – 2016.
  - New section on foundation design issues

ASCE 113 FRP (Fiberglass)

- Chair – Galen Fecht
- Original manual released 2003
  - Renewed committee activity in 2013
  - Complete
  - Blue Ribbon Panel review nearly complete
- Publication in 2017
- What to look for:
  - Updates to reflect maturing industry
  - Updated design considerations
  - Deflections
  - Foundations
  - Hardware

ASCE Wood Structures

- Chair – Jim McGuire of Great River Energy
- 1st Edition
- Editorial Review Complete
- Blue Ribbon Panel Selected
  - Awaiting ASCE Executive Committee Approval
- Fully Anticipate 2017 Publishing

ASCE Wood Structures

- What to look for:
  - Preface
  - Definitions
  - 1 - Structural Configurations and Pole Applications
  - 2 - Initial Considerations
  - 3 - Materials
  - 4 - Design
  - 5 - Connections
  - 6 - Foundations
  - 7 - Manufacturing and Quality Assurance
  - 8 - Assembly and Erection
  - 9 - Inspection, Maintenance and Repair
  - Appendix A – Resiliency of Wood Pole Overhead Lines
  - Appendix B – Examples – Wood Pole Design
  - Appendix C – Laminated Wood Poles
  - Appendix D – Quality and Strength Assessment Tools and Devices
  - Appendix E – Examples – Foundations
  - Glossary
  - Notation
  - Bibliography (References)

ASCE Gene Wilhoite Award

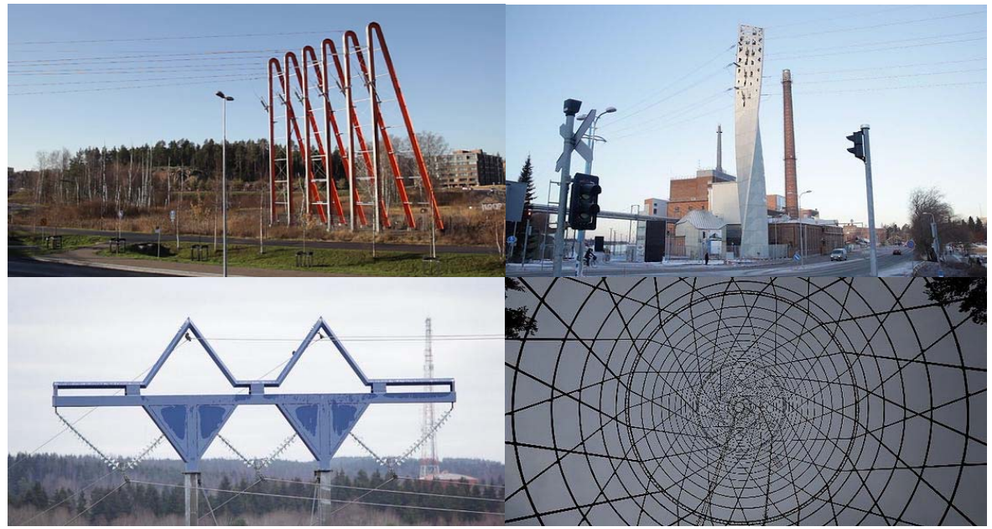
- The award was approved in 1990 to honor Gene M. Wilhoite for his commitments to the electrical transmission industry, his efforts to further the design of transmission line structures, and his exemplary ethical and professional standards. The award was funded by friends and associates of Gene.
- The award is given to an individual for significant contribution to the advancement of the arts and science of transmission line engineering.
- 2015 – Doug Sherman
- 2016 – Dana Crissey

ASCE Aesthetic Structures

- Chair – Mike Khavari
- First “brainstorm” meeting held in Tucson.
- Three subsequent face-to-face meetings
- Biweekly Conference Calls
- Developing White Paper
  - Guidelines to Consider
- Publish in 2017

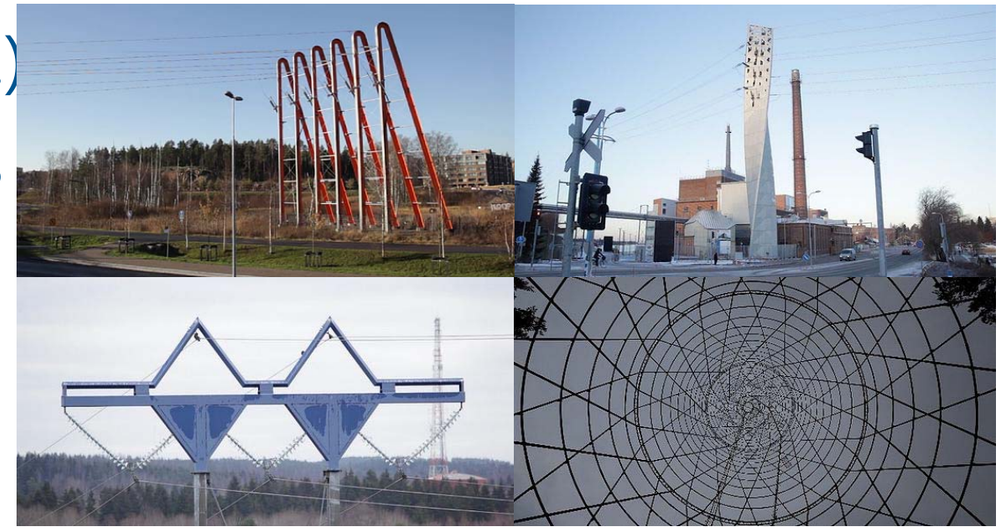
Aesthetic Competition Series

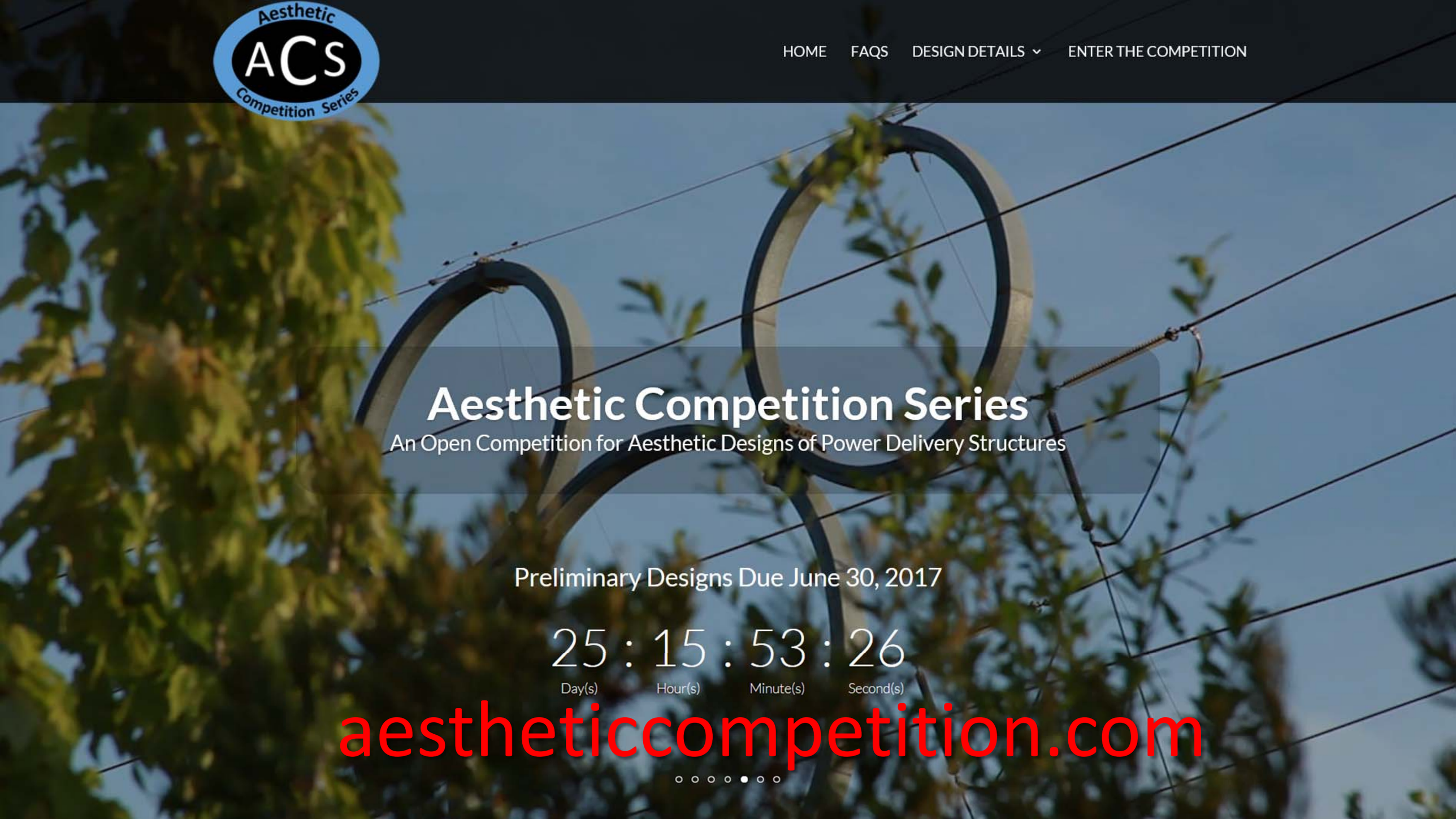
- **A**esthetic **C**ompetition **S**eries
  - (Formerly NATSAC)
- An Open Competition for Aesthetic Designs of Power Delivery Structures
- Open to anyone
  - Professionals
  - Students
  - Teams encouraged!
- See www.aestheticcompetition.com
- OPEN FOR SUBMISSIONS!!!!



Aesthetic Competition Series

- Engineering Based
- Two stage process
- Stage 1 – Preliminary Submittal
- Preliminary written description of the design concept (contemplated materials to be incorporated into the design, finishes, etc.)
- 2. Preliminary concept Sketches/Drawings the proposed design.
- 3. Preliminary Structural Calculations and configuration dimensions, including electrical clearance measurements.




Aesthetic
ACS
Competition Series
HOME
FAQS
DESIGN DETAILS
ENTER THE COMPETITION
Aesthetic Competition Series
An Open Competition for Aesthetic Designs of Power Delivery Structures
Preliminary Designs Due June 30, 2017
25 : 15 : 53 : 26
Day(s)
Hour(s)
Minute(s)
Second(s)
aestheticcompetition.com

ASCE Electrical Transmission and Substations Conference

- 2018 Conference – Atlanta, GA, November 4th – 8th, 2018
- Chair – Mike Miller
- Call for Papers is Out
- Abstracts due September 12th!
- http://www.etsconference.org/

SAVE THE DATE

SEI
ASCE

ELECTRICAL TRANSMISSION & SUBSTATION STRUCTURES CONFERENCE 2018

Atlanta, Georgia | November 4–8

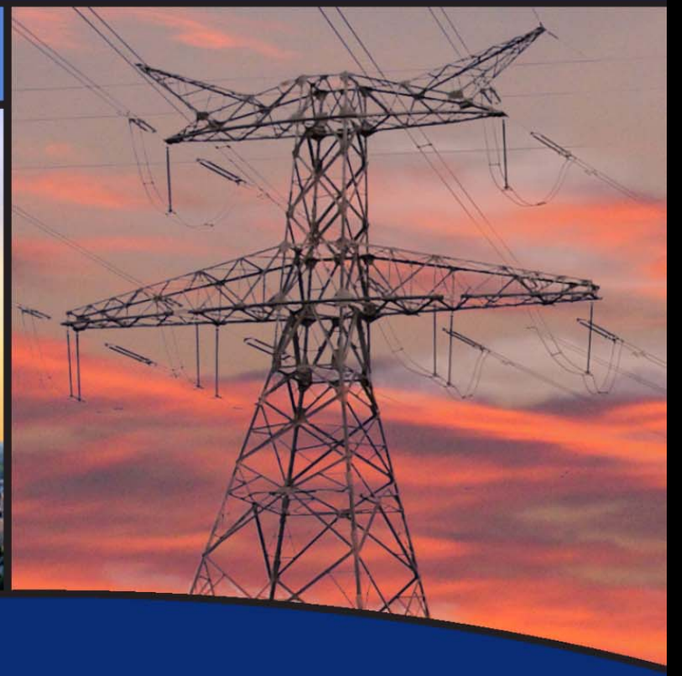
KEY DATES

Abstracts due: September 12, 2017

Draft papers due: February 5, 2018

Final papers due: May 8, 2018

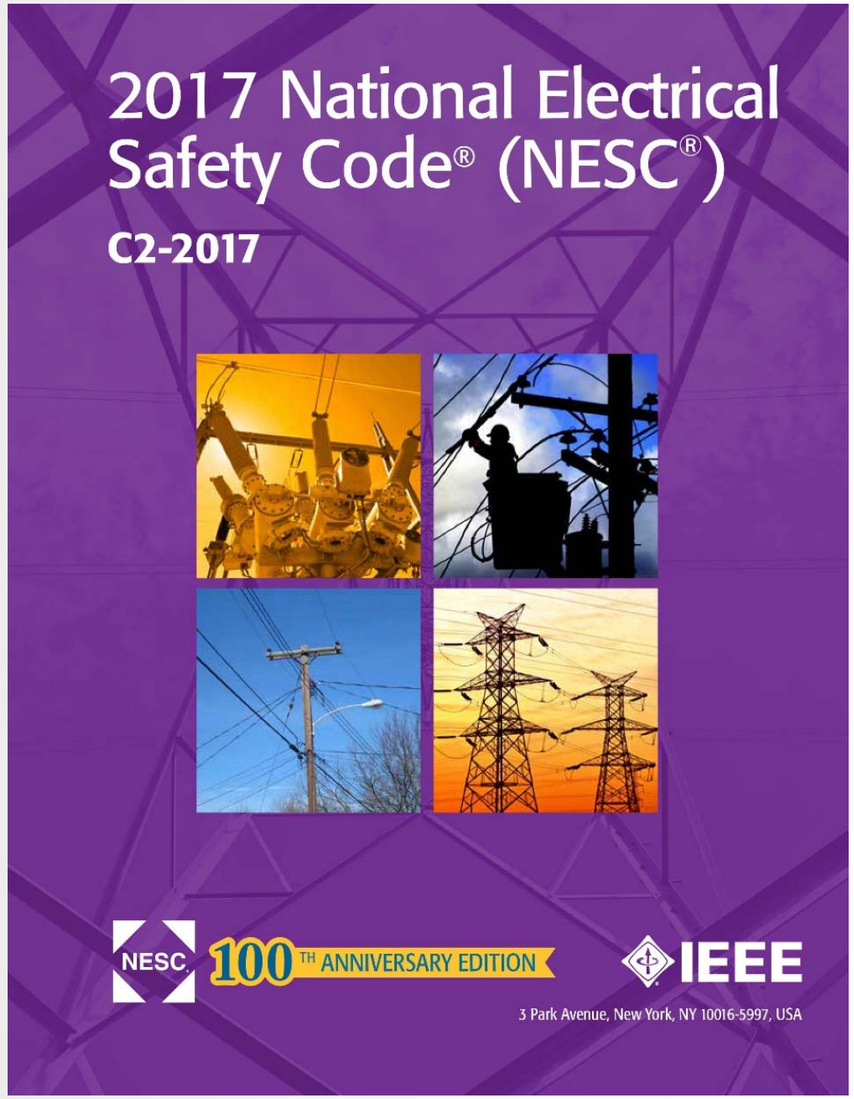
Dedicated to Strengthening our Critical Infrastructure



For up-to-date information, visit
www.etsconference.org

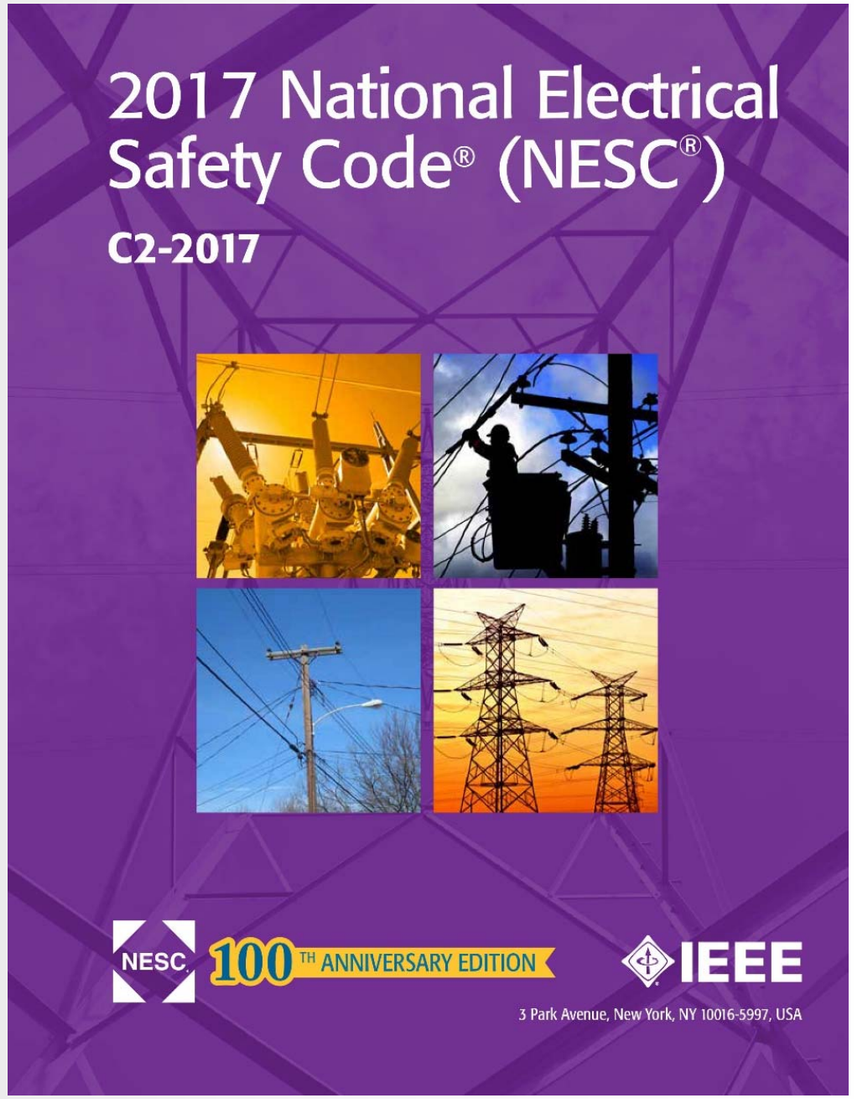
National Electrical Safety Code (NESC)

- 2017 Edition Published
  - No Significant Changes to Structural
  - 261H1c – Limiting Cable Tensions
  - 35% at initial tension without external loading
  - 25% at final tension without external loading
  - NOTE 1: Initial tension in this application is a conductor condition that exists immediately after installation. This condition exists before inelastic elongation, creep or stress relaxation occurs and before the conductor is subjected to external loads.
  - NOTE 2: Final tension in this application is intended to be the tension that exists after long term creep and prior to ice or wind loading.



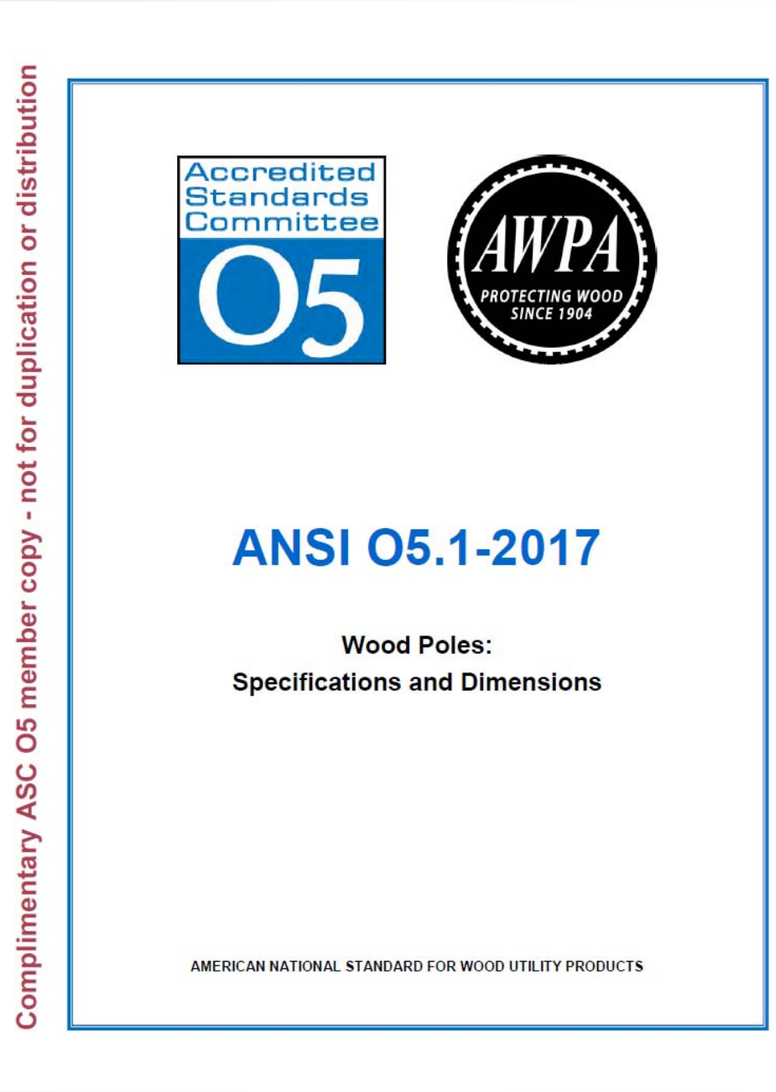
National Electrical Safety Code (NESC)

- 2022 Next Edition
- 15 July 2018
  - Final date to receive change proposals from the public for revision of the 2017 Edition of the NESC, preparatory to the publication of a 2022 Edition.
- http://standards.ieee.org/about/nesc



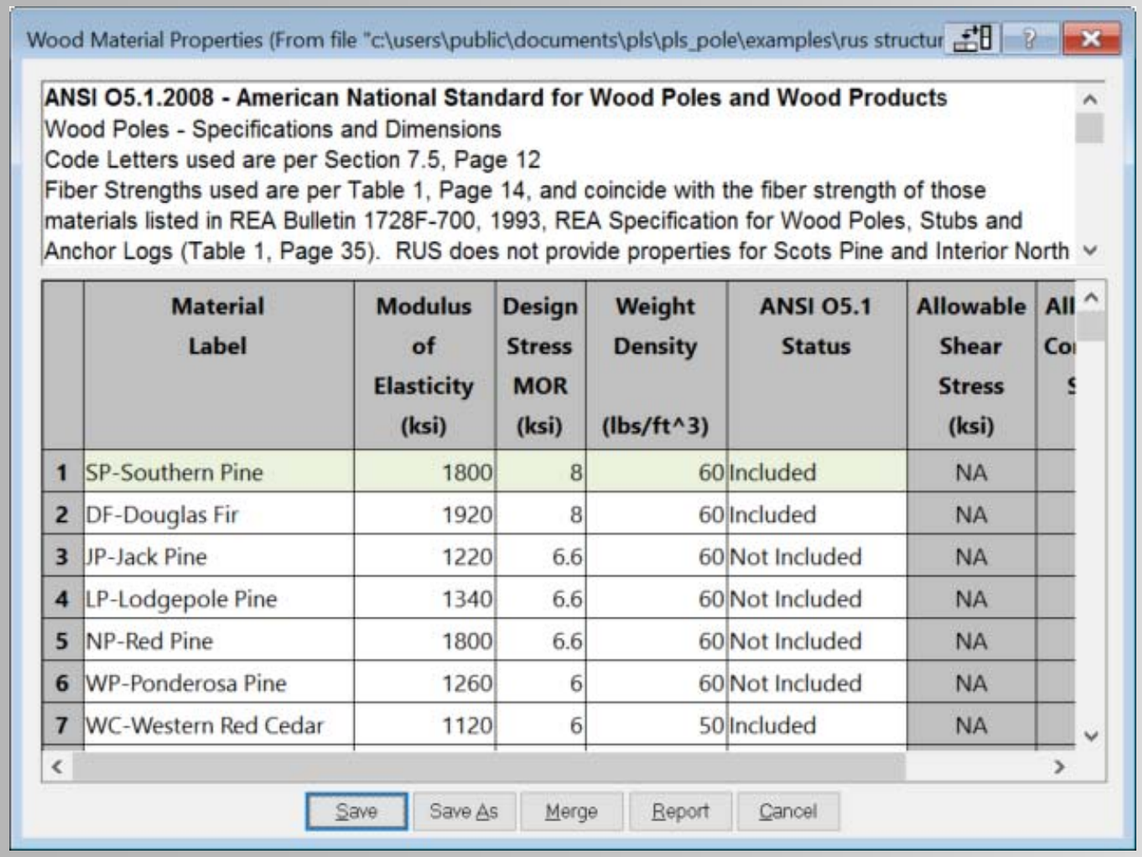
ANSI O5.1

- 2017 Edition Published
- Table 1 – Adds MOE
- Different from REA 1724E-200 MOE
  - Values usually larger so poles will show less deflection and therefore lower stresses when using nonlinear anlaysis

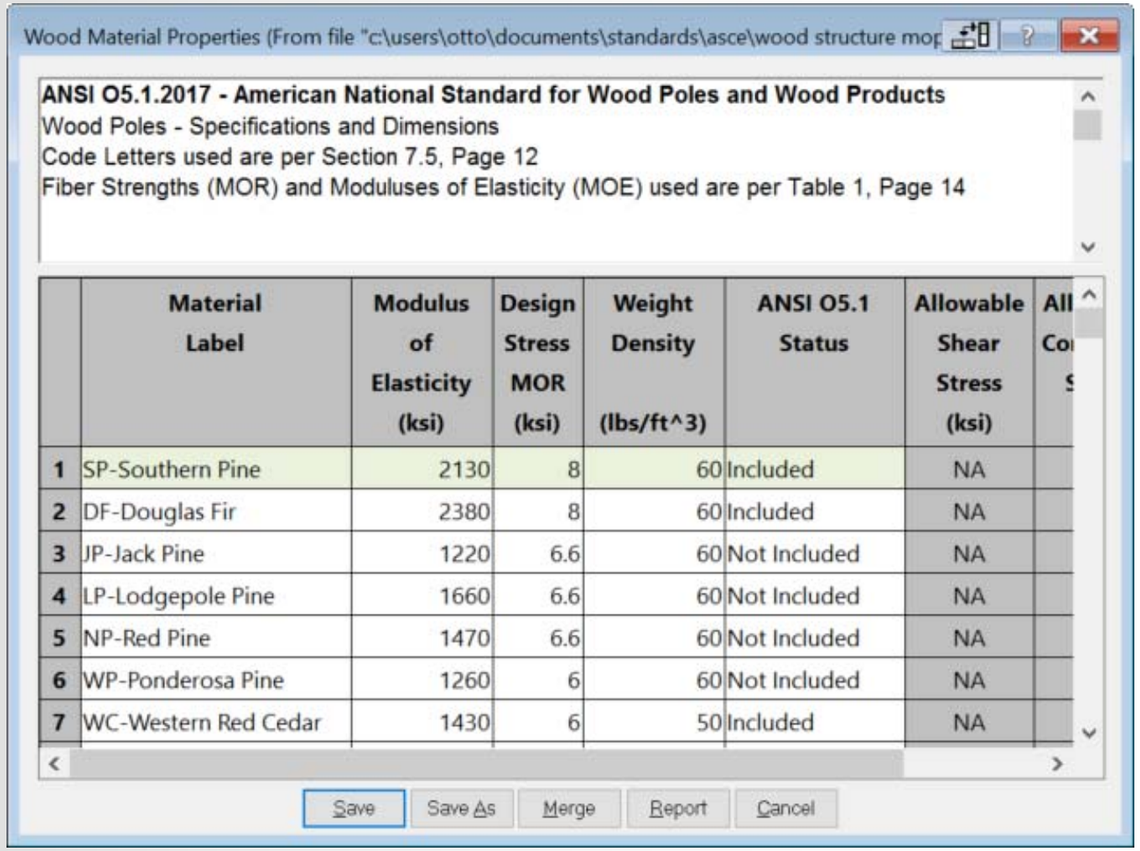


ANSI O5.1

RUS 1724E-200 Values → 2017 ANSI O5.1 Values



	Material Label	Modulus of Elasticity (ksi)	Design Stress MOR (ksi)	Weight Density (lbs/ft^3)	ANSI O5.1 Status	Allowable Shear Stress (ksi)	All Co
1	SP-Southern Pine	1800	8	60	Included	NA	
2	DF-Douglas Fir	1920	8	60	Included	NA	
3	JP-Jack Pine	1220	6.6	60	Not Included	NA	
4	LP-Lodgepole Pine	1340	6.6	60	Not Included	NA	
5	NP-Red Pine	1800	6.6	60	Not Included	NA	
6	WP-Ponderosa Pine	1260	6	60	Not Included	NA	
7	WC-Western Red Cedar	1120	6	50	Included	NA	



	Material Label	Modulus of Elasticity (ksi)	Design Stress MOR (ksi)	Weight Density (lbs/ft^3)	ANSI O5.1 Status	Allowable Shear Stress (ksi)	All Co
1	SP-Southern Pine	2130	8	60	Included	NA	
2	DF-Douglas Fir	2380	8	60	Included	NA	
3	JP-Jack Pine	1220	6.6	60	Not Included	NA	
4	LP-Lodgepole Pine	1660	6.6	60	Not Included	NA	
5	NP-Red Pine	1470	6.6	60	Not Included	NA	
6	WP-Ponderosa Pine	1260	6	60	Not Included	NA	
7	WC-Western Red Cedar	1430	6	50	Included	NA	

Any Questions About ASCE / NESC / ANSI O5?

Contact
Otto J. Lynch, P.E.
otto@powline.com
(608) 663-1135

SEI ASCE
ELECTRICAL TRANSMISSION & SUBSTATION STRUCTURES CONFERENCE 2018
Hyatt Regency Hotel | Atlanta, GA | November 4–8
SAVE THE DATE