

JOINT-USE WEEK

JW1

Part I: Loadings and Strengths

Part II: O-Calc Pro Pole Analysis Software Tutorial

Part III: Required Clearances

Featuring new discussions, new handouts
& new joint-use clearance exercises

August 6-10, 2012

Myrtle Beach, SC

Instructors: Allen L. Clapp, PE and Matt Gardner

**NEW
SOFTWARE!**

3.44 CEU's

About the seminar

This special Tutorial Week on Physical Design of Joint-Use Wood Pole Distribution Lines addresses the increasing problem of accommodating larger numbers and sizes of cables and conductors on wood pole utility lines. Unfortunately, line failures and clearance problems have increased in recent years due to overloading poles.

Attendees will be divided into teams to work exercises in each part.

This course is particularly designed for engineers and technicians who want to add or increase expertise in facility placement and structural design of wood pole lines. Written answers are given for each question of the practical exercises worked in class, including rule references. Additional exercises and answers are provided for later use by attendees.

Who should attend

- ◆ designers and staking technicians
- ◆ engineering technicians
- ◆ make-ready and final inspectors
- ◆ electrical engineers
- ◆ standards developers
- ◆ contractors

Important topics

Part 1: Loadings & Strengths

- ◆ Determine if new facilities can be added to existing wood poles
- ◆ Determine required Grade of Construction
- ◆ Calculate wind & ice loadings on structures & supported facilities
- ◆ Calculate stress on poles & crossarms
- ◆ Calculate strength of poles & crossarms
- ◆ Determine required pole class
- ◆ Properly use the NESC to develop standards and joint-use contracts for new construction or check compliance of existing construction
- ◆ Increase pole life & reliability
- ◆ Responsibilities for meeting NESC requirements
- ◆ Rationale behind NESC requirements
- ◆ Determine required wood pole class

Part 2: O-Calc Pro

- ◆ How to use the new O-Calc Pro wood pole analysis software to calculate loading and required pole strength
- ◆ Determine if new facilities can be added to existing wood poles
- ◆ Calculate stress on poles & crossarms
- ◆ Calculate strength of poles & crossarms
- ◆ Determine required pole class
- ◆ Increase pole life & reliability
- ◆ Determine required wood pole class

Students must bring a laptop computer to use the software in class for Part II.

Part 3: Clearances

- ◆ Determine required wood pole height
- ◆ Determine if new facilities can be added to existing wood poles
- ◆ Determine required clearances between wires & cables at the pole & required pole height
- ◆ Properly use the NESC to develop standards and joint-use contracts for new construction or check compliance of existing construction
- ◆ Responsibilities for meeting NESC requirements
- ◆ Rationale behind NESC requirements

It is recommended that students bring a scientific calculator to Parts I & III.

In addition, you receive

	Part 1	Part 2	Part 3
Current National Electrical Safety Code and NESC Handbook	✓		✓
Demo copy of O-Calc Pro Pole Analysis Software w/ 5% PCU Training Center discount coupon & 5% Osmose discount coupon if O-Calc is purchased from PCUtraining within 45 days of seminar; total of 10% O-Calc discounts	✓	✓	
Bound Student Workbook	✓	✓	✓
Bound Appendix Book of helpful charts, tables and technical discussions	✓		
Excerpts from Practical Utility Safety	✓		✓
Exercise/Answer Sheets	✓		✓
CEUs and NC or FL PDHs awarded upon successful completion on workshop	✓	✓	✓
Plus continental breakfasts, lunches & refreshments	✓	✓	✓

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JOINT-USE WEEK SCHEDULE

All 5 Days — \$1845



- **Parts I & II only — \$1595**
- **Part I only — \$1075**
- **Parts II & III only — \$1565**
- **Part II only — \$785**
- **Parts I & III only — \$1695**
- **Part III only — \$1045**

Part I: Loading and Strength Calculations (1.37 CEU's)		Part II: O-Calc Pro Pole Analysis Software Tutorial (0.7 CEU's)		Part III: Clearances on Joint-Use Pole Lines (1.37 CEU's)	
Mon (8 am - 5 pm)	Tues (8 am - 3:30 pm)	Wed (8 am - 4 pm)	Thurs (8 am - 5 pm)	Fri (8 am - 3:30 pm)	
<ul style="list-style-type: none"> ◆ Introduction ◆ NESC Organization ◆ Application of the Grandfather Clause ◆ Practical consideration of: effects of difficulties in obtaining desired sag/tensions and guying tensions, long spans next to short spans, etc. ◆ Using sag & tension calculations ◆ Required Grades of Construction 	<ul style="list-style-type: none"> ◆ Calculating required pole strength class for various configurations ◆ Guying deadends and angles, including: <ul style="list-style-type: none"> • Required guy strength • Effects on poles ◆ Buckling strength for deadend, angle & transformer poles ◆ Calculating maximum spans for various configurations 	<ul style="list-style-type: none"> ◆ O-Calc fundamentals ◆ Program overview ◆ Review functions & features ◆ Create groups & poles ◆ Basic design inputs ◆ How to model a pole ◆ Adding wires & attachments ◆ Guying ◆ Understanding loading results ◆ How to determine sag and tension 	<ul style="list-style-type: none"> ◆ Introduction ◆ Organization of the NESC ◆ Utility responsibilities: How to use the Grandfather Clause ◆ Definitions and references ◆ Development of overhead clearances ◆ Vertical clearances of lowest wires or cables above ground rails and water 	<ul style="list-style-type: none"> ◆ Calculations of required clearances at poles for various spans, types & sizes of power conductors & cables and telephone & CATV cables <ul style="list-style-type: none"> • supply space • communication space • communication worker safety zone ◆ Special considerations for fiber-optic cables 	
Lunch (noon - 12:30)	Lunch (noon - 12:30)	Lunch (noon - 12:30)	Lunch (noon - 12:30)	Lunch (noon - 12:30)	
<ul style="list-style-type: none"> ◆ Calculating the strength of poles and crossarms <ul style="list-style-type: none"> • At groundline • At supply space • At bolt holes • At intermediate points ◆ Required strength factors 	<ul style="list-style-type: none"> ◆ Adding cables or conductors to existing lines <ul style="list-style-type: none"> • Effects of overlashed cables ◆ Determining appropriate clearance specifications & loading limits in joint-use contracts ◆ Calculating bending stresses caused by guys on poles ◆ Calculating the limitations on use of sidewalk street guys & pole push braces 	<ul style="list-style-type: none"> ◆ Compare results using a variety of pole classes, NESC loading districts & grade of constructions ◆ O-Calc – Advanced ◆ Exercise: Angle pole ◆ Exercise: Deadend pole ◆ Exercise: Joint-use pole ◆ Use O-Calc to demonstrate & understand the impact of joint-use attachments ◆ Advanced tips & tricks ◆ How to set up pole templates ◆ How to share pole loading results 	<ul style="list-style-type: none"> ◆ Vertical & horizontal clearances between wires, conductors & cables <ul style="list-style-type: none"> • At the pole • In the span ◆ Using sag & tension calculations <ul style="list-style-type: none"> • Effects of differences in sags & tensions on clearances & 	<ul style="list-style-type: none"> ◆ Selection of pole heights for various spans & configurations ◆ Adding cables or conductors to existing lines <ul style="list-style-type: none"> • Effects of overlashed cables ◆ Determining appropriate clearance specifications & loading limits in joint-use contracts ◆ Practical consideration of: effects of difficulties in obtaining desired sag/tensions and guying tensions, long spans next to short spans, etc. 	

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