



# Pennsylvania Society of Land Surveyors

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## SUMMER CONFERENCE

August 23 & 24, 2018

Penn Stater Hotel and Conference Center

215 Innovation Blvd.

State College, PA 16803

PSLS Member \$320, Non-Member \$350

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The following is the outline of courses or tracks. Each course will cover two days or 16 hours of instruction.

Track 1: “Autodesk Civil 3D”

Instructor - John Cooke, Civil Training LLC.

Track 2: “Carlson Field to Finish”

Instructors - Mike Hyman and Doug Aaberg, PLS,  
Carlson Software

Track 3: “Laser Scanning – Which Solution is Right for You?”

Instructors - Kenneth Fronheiser, PLS, Chris  
Guagliardo

Track 4: “Stormwater Design using HydroCad”,

Instructor Thomas Seybert, Ph.D., PE

Track 5: “Construction Stake out in the Modern Age”, Instructor Robert Miller, PLS

# Course Descriptions and Bios

## **Track 1: “Autodesk Civil 3D”**

**Instructor - John Cooke, Civil Training LLC.**

### **Course Description: Autodesk Civil 3D Day One – Core Skills for Surveyors**

This one-day class provides a comprehensive introduction to Autodesk Civil 3D®, focusing on its use as a practical tool for surveying. Drawing on experience in an actual Civil 3D implementation in a Survey- Engineering-Environmental firm, the class provides the essential information for using Civil 3D in a survey department, whether a standalone shop or as part of a larger multi-discipline firm.

Following an overview of Civil 3D’s interface and terminology, the class examines how Civil 3D manages and presents data through objects and styles. The class focuses heavily on point management and presentation in Civil 3D, drawing on real production settings and examples. The class then examines digital terrain modeling in Civil 3D in detail, again focusing on the processing and management of field data in terrain modeling. The course includes an overview of the alignment, profile and parcel tools as an introduction to those topics for further applications.

A critical component of the successful implementation of Civil 3D in a survey firm is the settings and styles available through the template drawing employed. Accordingly, participants in this class will receive the Civil 3D template employed in the program.

### **Course Description: Autodesk Civil 3D Survey Day Two – Practical Applications**

The focus of this one-day class is practical – and successful – applications of Autodesk Civil 3D® in a survey firm. Drawing from practical experience in a Survey-Engineering-Environmental firm, the class examines workflows, standards and procedures that effectively utilize Civil 3D in boundary and topographic survey work.

The class begins with an examination of Civil 3D project structure, including the survey project and database, the project’s relationship with other disciplines or clients through Civil 3D Data Shortcuts and LandXML.

With a project foundation established, the class examines several strategies for importing field data into Civil 3D. The class then focuses on techniques for editing and manipulating data, and on analysis through traverse and network definition, reporting and adjustment. The class also discusses strategies for the management of office and comp data and their interaction with the project and database.

This class examines new tools, introduced in Civil 3D in the current releases, that enhance survey workflows, including a new COGO Editor and a new Least Squares Input Editor. The class concludes with an examination of techniques for producing survey deliverables, including the management of data through Point Groups, and utilization of complex annotation requirements with external data managed through databases and other files.

**Bio Information:** John Cooke joined Wetland Studies and Solutions, Inc. in the fall of 2009 after working as an independent consultant and AutoCad instructor for over twenty years. Mr. Cooke presently operates the CivilTraining, LLC division of Wetland Studies and Solutions, Inc. a Davey Tree Company, and supports Engineering, GIS and Surveying technology efforts within the office and for other clients nationwide. Mr. Cooke has been continuously affiliated with Autodesk Civil/Survey applications since 1987, functioning initially in development and then in consulting and training roles.

He has an extensive background in the development, implementation and training of Autodesk AEC Civil Engineering, Surveying, GIS and BiM solutions. He has provided training to thousands of individuals nationwide, assisted numerous clients in implementing Civil software, CAD standards and practices, and provided project consulting to many clients in unusual or challenging project applications. His experience level covers a spectrum from wide-area network-based systems for large international clients to individual data collection and mapping stations for survey sole practitioners. Mr. Cooke's training experience ranges from multi-discipline firms at national and regional levels to individualized field survey training in subway tunnels under New York City.

Operating CivilTraining, LLC, Mr. Cooke continues to provide training and consulting services to national clientele. Within Wetland Studies and Solutions, Inc. he manages development efforts for Engineering and Survey automation, including the creation of custom software for stream restoration based on AutoCAD Civil 3D.

## **Track 2: “Field-to-Finish and More with Carlson Software”** **Instructors - Michael Hyman and Douglas Aaberg, PLS,**

**Course Description:** Utilizing Carlson SurvCE and Carlson Survey students will gain a better understanding about the core ‘Field-to-Finish’ process. We will take a systematic approach for someone who is getting started and also help users who have started the process go to the next level. How it can be adapted for both the office and the field vs. how intimidating it can be even if you’ve never done it before. This will be a ‘hands on’ class with interactive Field-to-Finish learning. From there we will create surfaces for contour map creation. We will also take a look how you can collect GIS attribute data within your field-to-finish collection/office processing data can assist any firm with the movement of 3D Points, 2D and 3D Line-work and 3D surface stakeout and output. Additional items that will be reviewed: Survey Points/Drawing and locating of Survey Points/Using Coordinate Files Effectively within your Survey/Real Time-Cloud Survey Data-from ‘field-to-office’ and ‘office-to-field’/Surface Model and Contour Map Creation/Point Rotation and Translations/Google and other image sources for your survey with Carlson Survey and Carlson SurvCE.

### **Learning Objectives - By the end of this session participants will be able to:**

1. Student will learn and understand project setup within Carlson SurvCE and Carlson Survey
2. A brief overview of the newly added functionality will be reviewed for Carlson SurvCE and Carlson Survey to help production work in the field and office
3. Students will learn about the history of shooting points in the field: From the Field Book to the modern Data Collector(s)/Survey Controllers...

4. Students will have a hands on experience with creating a feature code list to be used within the training session
5. Students will have a better understanding how better the ‘Field-to-Finish’ collection process can produce quicker and better survey & topographic maps
6. Use of Image files and how to integrate them within Survey Map(s)
7. A review of Survey Point Creation and Manipulation will be reviewed and learned
8. Surface Model and Contour Map creation with Carlson from the Field-To-Finish process
9. Annotation of lot and property boundary line map making will be reviewed and learned
10. Configuration Settings and Project Setup within Carlson Software will be reviewed
11. Tips and Tricks within Carlson Survey will also be reviewed as time allows

## **Bio Information:**

Michael Hyman – Mr. Hyman is the Regional Director at Carlson Software Inc. for NY and PA. At Carlson SW Mike is focused on the Land Survey, Civil Engineering, and Construction market segments. Mr. Hyman is a 1991 graduate from Alfred State College with an A.A.S. in Land Surveying. Additionally, his responsibilities continually got him involved in working with Land Surveying technology for both the field and the office. Now at Carlson Software Inc. for 12+ yrs and 20+ years in the technology industry, Mr. Hyman is involved at many levels in the Land Surveying, Civil Engineering, and Construction industries where he lectures, supports, and presents innovative solutions to the industry related to Carlson Software products and services.

Douglas L. Aaberg, PLS – Mr. Aaberg is a licensed Professional Land Surveyor in the states of Massachusetts and Colorado and has been in the Land Surveying/Civil Engineering business his entire career which began in 1977. He has been using Carlson Software exclusively since 1998 and has become an expert in applying the constantly expanding world of Carlson’s programming to the everyday “work flow” of land surveyors and engineers. After enjoying life as a 15 year owner of his own company, he now joins the Carlson SW Team as the Survey Product Manager and will be sharing experience and knowledge to assist in ensuring that Carlson continues to be the leading software available for land surveyors and engineers.

## **Track 3: “Laser Scanning – Which Solution is Right for You?”** **Instructors - Kenneth Fronheiser, PLS and Chris Guagliardo**

**Course Description:** Spatial imaging solutions help surveyors collect more information to help them solve complex problems of their clients. During this course we will take a look at different types of laser scanners on the markets, typical workflow practices of the Trimble SX10 and deliverables.

### **Requirements:**

Each Student needs to bring a computer with Trimble Business Center loaded. Install instructions will be e-mailed out before the conference.

Each student will be given a 30 Trail Code of Trimble Business Center.

## Course Outline:

### Day 1 – AM

- Discuss the different types of laser scanners on the market and application of Laser Scanner. Workflow will also be discussed.
- Discuss Field/Office Procedures of the Trimble SX10
- Take a look at Scanning Hardware options

### Day 1 – PM

- Scanning area outside

### Day 2 - AM

- Work with Scan Data in TBC. Instruction to Include...
  - Import Data
  - QA/QC Data
  - Registration
  - Different ways to manage the point cloud
  - Basic Drafting Techniques
  - Export Data

The end goal of this course is to have the end user have an understanding of when to use what scanner, workflows (both office and field), and create a basic deliverable including exports.

## Bio Information:

**Chris Guagliardo** has spent over 20 years surveying, both in the field and office. He is well versed in the use of Robotic Total Stations and GPS. Chris is a Certified Trainer with Trimble Business Center Software. He currently works for Keystone Precision Instruments in the companies Crofton, Maryland office but serves the support needs of KPI from Maryland to Maine.

**Kenneth J. Fronheiser, PLS** is a professional licensed land surveyor in the Commonwealth of Pennsylvania with over 17 years of land surveying experience. During that time, Ken has been responsible for a wide variety of surveying projects to include: Topographical, Boundary, Construction Layout, RTK/GPS, GIS mapping, Bathometric, and Laser Scanning. Ken has worked for a variety of clients that span from private, public, educational institutions and government agencies. Currently Ken is a Sales Consultant for Keystone Precision Instruments.

## **Track 4: “Stormwater Design using HydroCad”**

**Instructor - Thomas Seybert, Ph.D., PE**

**Course Description:** This workshop will present methods in stormwater management design for quantity control. The 2-day workshop will highlight the use of HydroCAD\* in the analysis and design methods. Participants are required to bring a Microsoft Windows-based laptop computer to the workshop and download a free 15-day trial version of HydroCAD\* on the first day of the workshop. Prior to attending the workshop, participants will also be required to purchase a copy of the HydroCAD-10 Owner's Manual from HydroCAD Software Solutions, LCC, and bring it to

the workshop. Participants should bring a hand calculator to complete some of the minor calculations. Participants are encouraged to work in groups of two.

**Course Objectives:** Each participant will learn the theory and practical application of the following methods.

1. Rainfall data sources and design rainfall
2. Runoff depth using the NRCS CN
3. Travel time and time of concentration
4. Hydrographs by the NRCS unit hydrograph
5. Channel routing
6. Basin routing by the Modified Puls
7. Basin outlet structure rating curves
8. Detention basin sizing and outlet structure design

**Anticipated Learning Outcomes:** Each participant will be able to

1. Identify and select rainfall data needed to create design rainfall
2. Determine watershed times of concentration
3. Determine watershed runoff using the NRCS CN method
4. Model simple single and double subarea watersheds using HydroCAD\*
5. Estimate the required size of a detention basin.
6. Design a multi-stage outlet structure using HydroCAD\*

\*HydroCAD is a registered trademark of HydroCAD Software Solutions, LCC, P.O. Box 477, Chocorua, NH 03817. Visit their website at "[www.hydrocad.net](http://www.hydrocad.net)" for details on how to purchase the HydroCAD-10 Owner's Manual.

### **Bio Information:**

**Thomas A. Seybert, Ph.D., PE**, is Professor Emeritus of Engineering at Penn State Wilkes-Barre. While teaching at Penn State Wilkes-Barre, he was responsible for the delivery of the stormwater management and land development design courses in the baccalaureate surveying program. He was also responsible for the introductory course in surveying taught to both associate and baccalaureate degree students. His research and consulting interests include mitigation of stormwater runoff issues and watershed protection planning. He is the author of the book "Stormwater Management for Land Development Design." He is actively involved in continuing and distance education efforts in both surveying and engineering. He has participated in the annual Pennsylvania Surveyors' Conference since 1991 and he is the current chairperson of the annual Penn State short course "Computational Methods in Stormwater Management." He received his B.S., M.S. and Ph.D. degrees in Civil Engineering from Penn State. He is a registered professional engineer in Pennsylvania.

## **Track 5: "Construction Stake out in the Modern Age" Instructor - Robert Miller, PLS** **Horizon Engineering, LLC**

### **Course Outline:**

- A. Field preparation - office and controls
- B. Field procedures - equipment, types, techniques

Session I  
Sessions II & III

## **Bio Information:**

**Robert R. Miller, P.L.S.**, became licensed as a Professional Surveyor in 1979 in Pennsylvania, and 1994 in Delaware. He is a Past State President of the Pennsylvania Society of Land Surveyors (PSLS) and is a founding trustee of the Pennsylvania Land Surveyors Foundation. Robert was honored as the PSLS 2008 Pennsylvania Surveyor of the Year. Mr. Miller served as the National Society of Professional Surveyors (NSPS) Governor/Director of Pennsylvania for ten years, representing the surveyors of Pennsylvania in Washington as a liaison for educational, legislative, and public relation initiatives. Since 2015, he has served as the NSPS Treasurer. He also serves as the Pennsylvania chairman of the NSPS Trig-Star program since 2005 and serves on the NSPS ALTA/ACSM Standards Committee, where he was involved in the preparation of the 2005/2011/2016 ALTA/ACSM Standards. He is currently a Trustee of the NSPS Foundation. For the last 33 years, Mr. Miller has been teaching workshops in Basic and Applied Survey Mathematics, Construction Surveying, Writing Legal Descriptions and Boundary Survey Law.

As Director of Land Surveying, Mr. Miller is responsible for the day-to-day operations of the survey department and handles the scheduling of projects from initial survey to the final construction stakeout. Mr. Miller remains actively involved in project management and survey activities, including plan generation, field and office scheduling, marketing, and field surveying when needed. He has performed as an expert witness in numerous court proceedings.

Mr. Miller has completed 100 CEU's in Survey and Engineering related courses through the Pennsylvania State University. He also completed one year of studies towards his Bachelor of Science degree in Mathematics prior to pursuing a career in Land Surveying.

Mr. Miller has been in responsible charge of the construction surveying for over 350 land development projects, design and layout of over 250 miles of roadway, construction of numerous railroad facilities, various projects at numerous airports, and over 50 bridges for PADOT. He is qualified in the use of total stations, robotics, data collection, and GPS.