Workshops

Workshops are scheduled for ***Monday,*** **January 22, 8:30 a.m.–noon and 1:30–5 p.m.;** ***Tuesday*****, January 23, 8:30 a.m.–noon and 1:30–5 p.m.; and** ***Wednesday,*** **January 24, 8:15–11:45 a.m. and 12:45–4:15 p.m.**
Morning and afternoon breaks allow participants time to visit exhibits (except Wednesday).

MONDAY A.M. Sessions
January 22, 8:30 a.m.- 12 p.m.

201 Sudoku, Puzzles, and Boundaries — 8:30 a.m. - 12 p.m.
Gregory Clark, PLS, PE
Crosswords, Sudoku's, Cryptoquotes, and Boundary Retracements; puzzle: a game or problem designed to test ingenuity or knowledge.
When attempting a crossword puzzle or Sudoku on the back page of a newspaper, clues are provided to get us started toward the end solution. Usually there can be only one inarguable solution as intended by the scrivener. When called upon to perform a boundary retracement, how can we know when we have collected and analyzed sufficient evidence, or clues, in order to be able to viably argue and defend our conclusions of location if need be? The scrivener, or original parties to a land boundary are usually not available to provide first-hand answers to the question of "intent".
These questions will be explored in this workshop by reviewing the Opinion and Court Order of Distefano v Moore No. 222 CD 2013 which consisted of an Action to Quiet Title related to a Boundary Line Error and an Action to Quiet Title related to Adverse Possession. Specifics from this case will be used to expand on: 1) the role of the retracement surveyor in determining land boundaries, 2) importance of collecting/analyzing sufficient evidence, 3) the need to be familiar with pertinent case law, 4) the value of effective communication between surveyor, client, and attorney.

301 Computations in State Plane Coordinates — 8:30 a.m. - 12 p.m.
Dr. Esra Tekdal Yilmaz
This workshop will cover the underlying theory of map projections. It will demonstrate how to take field observations of direction and distance and reduce them to a mapping/grid surface. It will also demonstrate how to layout a ground distance that is determined from SPCS/grid coordinates. The workshop will show how a single project factor can be used to perform these computations in the field automatically in your data collector as well as how to determine when one project factor is sufficient to achieve SPCS coordinates from field observations and layout ground observations such as a surface horizontal distance from grid coordinate computations. Finally it will demonstrate how to compute SPCS coordinates when your control lies in more than one SPCS zone.

501 Construction Development for the Surveyor — 8:30 a.m. - 12 p.m.
Byron Rimmer, PLS
This workshop is intended for the surveyor that needs knowledge in understanding the importance of overall grading plans throughout a subdivision. The workshop touches on various topics of land development such as tree saving, retaining walls, rock excavation, etc. Learn guidelines for setting location of houses, floor elevations, basement exposure, swales and lot grading.

701 FEMA Elevation Certificates — 8:30 a.m. - 12 p.m.
Thomas Smith, PE, PLS
The goal of this session is to instruct the attendees to complete the FEMA Elevation Certificate. The instructions will include how to find the latest FEMA forms and the tools needed to complete the Certificate for Detailed study streams (AE Zones) and for approximate Flood Zone (A) streams. The presentation will discuss the field data needed to complete the forms, including the use of Google Earth and datum conversion using VERTCON software.

801 GIS/CAD Project Workflow 8:30 a.m. - 12 p.m.

John Cooke & Kevin Zelinsky

The goal of this seminar will be to demonstrate a successful workflow through a typical project utilizing both AutoCAD® and ArcGIS® technologies. The seminar focuses on realistic applications of GIS solutions most surveyors and engineers already own, or are readily available at nominal cost. The seminar topics will include project scoping, base mapping, field data acquisition, field data QA/QC, spatial analysis, cartographic display, and delivery to the client.

MONDAY A.M. Sessions

January 22, 8:30 - 10 a.m.

101 Managing Overhead and Survey Operational Costs 8:30 -10 a.m.

Joseph Dolan, PLS

Overhead expenses are the bane of any growing surveying and engineering business. While many surveyors are adept at managing their projects and understand labor costs, they fail to recognize the impact of overhead expenses. This session will delve into typical overhead expenses of a surveying / engineering business, and talk about ways the business owner or manager can both manage and recoup these expenses. This session will also talk about management of expendable supply costs and ways to be more efficient in managing them.

401 Introduction to UAS 8:30 -10 a.m.

Rick Johnston

In this workshop, we will discuss preparing aerial mapping with Unmanned Aerial Systems (UAS). The course will be broken down into three segments, field procedures, office work flow, and lessons learned. The first segment will cover the different aerial platforms for data collection, the legal requirements for commercial flight, and conducting the flight, including aerial control requirements. The second segment will cover the office work flow to create a map from the field data collected. The final segment will cover the lessons learned in preparing aerial mapping.

601 Introduction to GNSS 8:30 -10 a.m.

Dr. Dimitrios Bolkas

Surveyors with little to no experience or knowledge in satellite positioning and who wish to understand how Global Navigation Satellite Systems (GNNSs) work are encouraged to attend this workshop. Some of the concepts that will be discussed include, how satellites can be used to obtain positioning information, why certain field procedures must be followed to obtain coordinates with desired quality, the different coordinate systems involved in GNSS, and things to watch when determining if a GNSS survey is the appropriate method for the application.

MONDAY A.M. Sessions

January 22, 10:30 a.m. - 12 p.m.

102 Determining the True Cost of a Project 10:30 a.m.-12 p.m.

Joseph Dolan, PLS

This session will take a close look at how a project's real cost is determined. The session will discuss how the cost of the project is not just hourly labor, but a combination of labor, benefits, and overhead. Persons that price projects, whether they are the business owner or a project manager, need to understand that a project's true costs is not just how many hours an employee needs to be paid to complete the work but also all of the "hidden" costs. This session ties closely to the Managing Overhead and Survey Expenses session and builds on lessons learned there. This session will not be a comparison as to how much different surveyors charge for the work. While discussion may touch on issues such as regional cost variations or higher overhead expenses for different sized businesses, the session will not allow conversation of what should be charged to do work. The focus of this session is to discuss how the final price should be generated.

402 sUAS Mapping Panel 10:30 a.m.-12 p.m.

John Dunkle, Jr., Rick Johnston, & Mark Maguire

This panel discussion will be presented by surveyors and engineers currently utilizing small unmanned aerial systems (sUAS) as part of their operations. Each presenter will provide a short overview of their company, how long they have been utilizing sUAS, and the types of services and deliverables they produce with their sUAS. Each presenter will discuss the platforms they utilize as well as software packages used to plan, execute, and process flights. Ideas on resources and where to go for help will be offered along with lessons learned. Each panel member will have approximately 20 minutes to speak and at the end of the presentations, the audience will be able to ask the panel questions. If you are interested in offering sUAS services, this is a must attend session.

602 The How's, Why's, & Best Practices for Performing a Localization/Site Calibration 10:30 a.m.-12 p.m.

Dr. Charles D. Ghilani

You load coordinates from a previous survey into your survey controller and hurriedly proceed to the field only to find out that your GNSS receiver's positions based on these coordinates do not fit the monuments from the previous survey. You become frustrated and put your GNSS receiver away and use your total station to complete the job taking the triple the time. If this has happened to you, then this workshop is for you. This workshop discusses the localization (site calibration) method that is used to bring two different coordinate systems, such as arbitrary coordinates and NAD83 (2011), into the coordinate system of the users choice. It will cover the mathematics behind localizing your survey, and why this process is needed. It will look at what data is necessary for saving coordinates for future use, and will discuss when to use a localization, how it is performed in the field, and best practices when performing a localization. It will also present mistakes that can be made when performing a localization, as well as, how to use the NGS toolkit to transform coordinates from a previous realization of NAD 83 into its most current realization. It will also look at how a boundary survey can be enhanced by localizing arbitrary coordinates determined from the record document of the parcel.

MONDAY P.M. Sessions

January 22, 1:30 - 5 p.m.

103 Economics for Small Business 1:30 - 5 p.m.

Dustin Keiser

This session is intended for both those that are involved with operation of a survey business or survey department. Various topics will be presented during this session, including: establishing a business budget and working with the budget throughout the year, maintaining financial records, working with accountants, making capital expenses (buy or finance), and managing accounts payable or accounts receivable.

502 Land Development: The Design Process 1:30 - 5 p.m.

William E. Beardslee, PE, PLS, PP

This workshop is intended to help surveyors understand the planning of the Design process. Topics to be discussed include identifying elements to be considered, the purpose and goal of each project in relation to the approval process, and identifying and evaluating the various elements to be considered in development design. The workshop will also cover communicating with clients, employees, and agencies to assure a positive outcome for the consumer.

702 Computing a FEMA BFE for a Zone A Stream 1:30 - 5 p.m.

Thomas F. Smith, PLS, PE

A FEMA Zone A stream is one where no detailed study has been completed by FEMA; therefore, no Base Flood Elevations (The so-called 100-year flood elevation). This workshop will cover the use of FEMA maps with field surveyed cross-sections to determine the BFE using approximate methods. Detailed methods will also be covered to determine flood flows and BFE elevations with cross-section data. You will also see an example of BFE determined using computer program Excel. Finally, the FEMA eLOMA (electronic letter of map amendment) will be discussed, which allows the removal of structures or property mapped within the flood plain.

802 Basic Survey Math, Part 1 1:30 - 5 p.m.

Mark Hummel, PLS, Robert R. Miller, PLS, & Alexander Wood

The content of this workshop is focused on reviewing basic surveying mathematics with surveying interns (i.e. rodperson or beginning instrument person). Topics to be covered include, but are not limited to, basic geometry and manipulation of bearings and azimuths, basic trigonometry, coordinates, horizontal curves and vertical curves. Participants will need a calculator with trigonometry functions for this course, and should be very familiar with the use of the calculator prior to the workshop, particularly the conversion of degrees minutes and seconds to decimal degrees or vice versa. Class size for this workshop will be limited to forty (40) attendees. A legal description provides the location and description of real estate in written words. The legal description is required for the transfer of real property. This presentation will examine the various ways that property can be described and provide methods by which these descriptions are created. Discussion regarding, reading, writing and interpreting legal descriptions and how this relates to retracement surveys will be included.

These courses are essential for those entering the surveying profession or those who want to further their ambitions and move up in their chosen career path.

MONDAY P.M. Sessions

January 22, 1:30 - 3 p.m.

202 Don't Trust the Deed 1:30 - 3 p.m.

William Beitler, PLS

This session will include examination of three real errors resulting from Pennsylvania surveyors using only the deed to complete a property survey. Participants will examine the deeds used and discuss the clues that should have warned the surveyor of problems. A discussion of similar experiences when using a deed only will follow as well as sharing the problems that resulted. Also, participants will share their personal experiences with identifying the signs and clues that may indicate there is a problem with a deed. The instructor will present examples that should immediately alert the surveyor that a deed cannot be trusted as well as why and by whom a deed description may have been changed.

302 Future of State Plane Coordinates 1:30 - 3 p.m.

Brian Naberezny, LS

This presentation will review the Pennsylvania Coordinate System Law and the two-zone State Plane Coordinate System (SPCS) currently utilized in the Commonwealth of Pennsylvania. The anticipated modernization of the National Spatial Reference System in 2022, necessitates changes to this law. Options for updating the SPCS in Pennsylvania, including one zone and low-distortion projections, will be presented. This presentation is largely meant to gather feedback about how the audience currently utilizes SPCS in Pennsylvania, and what is required in a modern SPCS.

403 Surveyors Forum 1:30 - 3 p.m.

Brian Halchak, EIT, SIT; John P. Lynch, PLS; Lemuel Morrison, LS

This workshop will deliver short programs from three Surveyor's:

Landslide Analysis using Multi Temporal LiDAR Data - Brian Halchak, EIT, SIT: Historically, landslide studies were performed using time-consuming stereoscopic aerial photography and aerial/ground patrols, complemented by resource-intensive field surveys. Realizing the importance of efficiently and accurately identifying landslides to maintain pipeline integrity, Williams has been utilizing high-resolution aerial LiDAR data collected over successive years to delineate landslide boundaries and movement rates.

Above & Below Ground Data Acquisition: The Benefits of Mobile LiDAR & Subsurface Utility Location - John P. Lynch, PLS: An explanation of the uses of Mobile LiDAR and Subsurface Utility Location to gather highly accurate and detailed data to create various deliverables for many diverse projects within the industry. Discussion of the challenges and solutions one may utilize as a smaller organization including partnering with the right team to provide a successful product to the client.

The NYC Grid: Retracing Surveyor John Randel Jr's Footstep from 1st Street to 155th - Lemuel Morrison, LS: 200 Years ago the Commissioners of 1811 devised a plan for the development of the City of New York from its colonial center up through the open Manhattan island. Their plan, a grid of streets and avenues, imposed a rational structure across a patchwork of farmland, forest and marshlands. John Randel, Jr. the commissioners' chief engineer and surveyor, surveyed rural Manhattan and placed a marker at the intersection of every street and avenue, from the Hudson River

to the East River, from 1st street to 155th street. The Grid is plain to see today, but street grading and two centuries of dense development have destroyed all of Randel's markers. Finding actual markers as placed by the original surveyor is not only the gold standard for surveyors, but also a sliver of our history. Are there any left? This discussion will cover the collaborative effort to recover and verify Randel's markers in an area where the grid was laid out, but not constructed – Central Park.

603 Pennsylvania Spatial Data Access 1:30 - 3 p.m.

Maurie Kelly

This presentation will introduce attendees to PASDA – The Pennsylvania Geospatial Data Clearinghouse and its website. Attendees will learn how to navigate the website and discover what data is available. The associated metadata will be reviewed and its importance discussed. How data sets can be accessed and utilized will be demonstrated. Specific attention will be given to the PA MAP program and the data collected along with its potential use for surveyors.

MONDAY P.M. Sessions

January 22, 3:30 - 5 p.m.

203 Indications of Past Land Occupation 3:30 - 5 p.m.

Randall Myers, PLS

Be able to know how to find (locate) evidence of previous land occupation: Wire, tree lines, old fence lines, stones where old fence was, old roads along boundaries, or old wire in stumps on or near boundary lines.

303 Maps in the Penn State University Library 3:30 - 5 p.m.

Heather Ross

The Donald W. Hamer Center for Maps and Geospatial Information at Penn State University collects and manages print and digital maps and other geospatial information resources in support of Penn State research and teaching, and for use by residents of the Commonwealth of Pennsylvania. It is home to the largest print map collection in Pennsylvania and is considered a top 15 collection in the country by volume. In this workshop, participants will learn how to search for print and digital maps in our collection by using a web-based cataloging system and digital collections platform. Of particular interest is the digital collection of Pennsylvania Sanborn fire insurance maps from the mid-1880s through mid-1900s for many Pennsylvania communities. Penn State manages the largest collection of Sanborn maps outside of the Library of Congress and has digitized the entire collection and made those out of copyright freely available online.

404 UAS Processing and Deliverables 3:30 - 5 p.m.

Matt Mercurio

This workshop will take the attendee on the journey from raw data collection to final data product creation using UAS data. Structure from Motion (SfM) and Close Range Photogrammetry can be effectively use to create standard deliverables traditionally available from manned photogrammetry for scenarios when it makes sense. SfM derived data products are appropriate for many mapping applications as along as it is clear what mapping standards the derivative products are required to meet. UAS SfM processing creates a few basic datasets that can be further refined to meet end use needs including: Point Clouds, Elevation Models, 3D Meshes and Orthomosaics. This workshop will also provide guidance when comparing datasets created from UAS to existing datasets and using the UAS data in existing topographic workflows.

604 Real Time Data Collection for ArcGIS Online 3:30 - 5 p.m.

Matthew D. Warner, PLS and Howard S. Hodder, Jr., MGIS, GISP

TThe ArcGIS Platform helps you easily take GIS to the field and back, by helping you to improve coordination, and achieve efficiency in field workforce activities. Esri offers a complete suite of apps that help you replace your reliance on paper, ensure that everyone uses the same authoritative data, reduce errors, boost productivity, and save money. This session will cover the five major aspects of a successful mobile GIS mission: Plan, Coordinate, Navigate, Capture, & Monitor .

Tuesday A.M. Sessions

January 23, 8:30 a.m.- 12 p.m.

104 Human Resources for Small Business 8:30 a.m. - 12 p.m.

Krista Donbaugh

Human Resources can be a challenge for small business owners. Trying to keep up with the rules, regulations and employee expectations, while handling the business of surveying is just one of the issues small business owners need to address daily. This workshop breaks it all down and offers a step-by-step guide to handling your greatest resource: People. Compensation, recruiting, training, and discipline are among the topics covered.

204 Chain of Title 8:30 a.m.-12 p.m.

John Shoemaker, Esq. and Lester Greevy, Esq.

Attendees need not have any particular level of competence to benefit from this program; software is not required. Intermediate depth of information; attendees can expect to learn to recognize a variety of issues, give basic advice to landowners relative to these issues.

304 Handling Your Data 8:30 a.m.-12 p.m.

Dr. Charles D. Ghilani

The ALTA/NSPS Land Title Surveys, ASPRS map positional accuracy standards, FGDC, and changes to active control in 2022 by the NGS require surveyors to implement and understand statistical analysis required to properly perform a least squares adjustment. This workshop will explore fundamental statistical concepts used as well as advanced techniques that are available after a least squares adjustment to isolate blunders and compute statistical accuracies for a project. Since a least squares adjustment is based on both a functional model, which is the equations solved during the processing, and a weighting model, which ensures that random errors are returned to the correct observations. Furthermore, the workshop will explore methods used to adjust control as well as the observations. This workshop will also look at how random errors propagate during the measurement process with insights into both optical and GNSS field procedures providing recommendations to improve survey results. Additionally, the workshop will explore methods to analyze least squares adjustments, and how to compute radial errors at a station, which is required to meet federal control survey standards.

405 SFM and Photogrammetric Principles for UAS 8:30 a.m.-12 p.m.

Dr. Frank Derby

Traditional photogrammetry typically involves photographs from manned aerial vehicles. The evolution of Unmanned Aerial Systems (UAS) has extended the uses of aerial photography in many civilian applications. The technology is even more popular with the use of Unmanned Aerial Vehicles (UAVs) for surveying and mapping purposes. However, factors such as sensor types and characteristics, image resolution and ground coverage, environmental considerations, storage devices, and processing overheads can affect the quality of the finished product. In this workshop, the basic principles of UAS in photogrammetry including flight planning, relief displacement, interior and exterior orientations, image rectification versus geo-referencing, and creation of ortho-photographs from UAVs will be discussed. Finally, the procedure for creating Structure for Motion (SFM) will be discussed.

503 Easements, Rights of Way and Encumbrances in Land 8:30 a.m.-12 p.m.

Dr. Tony Nettleman, LS, Esq.

An easement is a certain right to use the real property of another without possessing it. It is "best typified in the right of way in which one landowner, A, may enjoy over the land of another, B." It is similar to real covenants and equitable servitudes; in the United States, the Restatement (Third) of Property takes steps to merge these concepts as servitudes.

This seminar will discuss one of the areas in which surveyors are becoming more professionally involved. The seminar will discuss the purpose of easements, how they are created, how they are terminated and other interests in land. The instructor will show how the area of easements can possibly be a new source of expertise for the surveyor. Using actual case studies, the full impact of this specialized area will be examined as they relate to the surveyor.

605 Real-Time GNSS Positioning 8:30 a.m.-12 p.m.

William Henning, PLS

This course will present particular Insights including best-practices in performing RTK surveys for position and cover NOAA's seven "C's" for reliable, accurate RTK positions. Real-time networks (RTNs) are examined as well as future position technologies such as precise point positioning (PPP).

703 Stormwater Review for Licensure, Part 1 8:30 a.m.-12 p.m.

Andrew Bennett, PE and Thomas A. Seybert, PE, Ph.D

Stormwater Hydraulics. This workshop covers basic hydraulics for stormwater management design. The following topics are covered: flow rate, conservation of mass, continuity, basic energy methods, Manning's equation, channel flow analysis, channel sizing, gravity flow pipe sizing, hydraulic elements chart for pipe flow, orifice equation, weir equation and multiple stage outlet structure rating curves. Participants will need a calculator for calculations and a small straight edge for reading charts.

803 Basic Survey Math, Part 2 - Continuation of session 202 8:30 a.m.-12 p.m.

Tuesday P.M. Sessions

January 23, 1:30 - 5 p.m.

105 Project Management and Liability 1:30 -5 p.m.

Mark Amirault and Brian Yorkiewicz, PLS

This course provides an insight on the surveyor's involvement in program management, and the potential risks associated with this project delivery method. During the 3.5 hours the attendees will walk through the steps of project management and receive tips on how to establish contractual terms that protect the surveyor.

205 The Legal Aspects of Land Surveying 1:30 -5 p.m.

Dr. Tony Nettleman, LS, Esq.

The Legal Aspects of Land Surveying introduces the student to everything they need to know about researching legal documents (case law and statutes), using those rules to make decisions in terms of land research, measurements, and boundary determinations, and finally how court cases and Survey Board statutes determines the surveyor's standard of practice.

305 Multi-GNSS PPP and its Function in Land Surveying 1:30 -5 p.m.

Heather Nicholson and Ryan White

Precise Point Positioning (PPP) is one of the existing techniques used to estimate user positions from GNSS observations. PPP can provide centimeter-level positional accuracy anywhere in the world by utilizing a single receiver without the need of having nearby reference stations or a virtual network. With the advent of additional constellations (GLONASS, Galileo, BeiDou) the PPP technique continues to improve in achievable accuracies and availability. In this workshop, an overview of PPP will be discussed as well a comparison of similarities and differences between it and other GNSS positioning techniques. Several advantages of the use of PPP with and without multi-GNSS (MGNSS) observables will be presented including their current and future roles in land surveying. Finally, case studies highlighting practical applications of static and kinematic MGNSS PPP with be shown.

406 Principles of Laser Scanning 1:30 -5 p.m.

Chip Berniard and Kenneth J. Fronheiser, PLS

This workshop is for professionals looking to enter the field of terrestrial laser scanning. We will discuss the different types of terrestrial laser scanners on the markets, field and office workflows, and what types of deliverables can be created from a terrestrial laser scanner.

504 Understanding Soil Survey - More Than a Checklist 1:30 -5 p.m.

Laurel Mueller

This workshop will provide the attendee with Soil Survey history, how soil surveys were made, and conversion to orthophoto, transition to digital, Web Soil Survey. The attendee will learn what to learn from the information on the map -not just a checklist item. We will cover Wetlands, Stormwater, Prime farmland and the Land Capability Classification System, Sewage systems, Hydrologic Group, Erosivity, Drainage, bedrock rock depth, high water table, etc., when more precise information is needed, and when soil surveys used for regulating can be wrong. The workshop will also discuss High Intensity Soil Survey as a basis for land development, and hydraulic conductivity (Ksat) testing for large volume sewage systems & stormwater facilities, and answer the question, "What are soil scientists?"

606 GNSS-Derived Heights 1:30 -5 p.m.

William Henning, PLS

This workshop will examine how NAD 83 GNSS ellipsoid heights are used with a hybrid geoid model to correctly produce Helmert orthometric heights (NAVD 88) using both static and real-time GNSS methods. NGS heights will be presented. Precisions and accuracies from various methods will be compared and contrasted.

704 Stormwater Review for Licensure Part 2 1:30 -5 p.m.

Andrew Bennett, PE & Thomas A. Seybert, PE, Ph.D.

Watersheds-Rainfall-CN. This workshop begins with the presentation of basic watershed characteristics as they relate to stormwater runoff calculations. Specific characteristics to be discussed include drainage area, watershed length, surface slope, hydrologic soil groups and land use/land cover. These topics will be followed by identifying rainfall data sources for Pennsylvania and nationally. The rainfall presentation will be followed by a presentation of the NRCS CN method for estimating surface runoff volumes. Participants will need a calculator for calculations and small straight edge for reading charts. Participants should be completely familiar with the topics covered in the Stormwater Review for Licensure Part 1 workshop before taking this workshop.

804 Applied Survey Math, Part 1 1:30 -5 p.m.

Mark Hummel, PLS, Robert R. Miller, PLS, & Alexander Wood

The content of this workshop is focused on the practical application of basic surveying mathematics within the normal survey practices. This course is for survey interns (i.e. rodperson or instrument person). Topics to be covered include, but are not limited to, construction stakeout - curves, grades, stationing, boundary surveying, trigonometry, and coordinate systems. The class will be devoted to utilizing basic survey math skills to solve real-world surveying problems. **Participants will need a calculator with trigonometry functions for this course**, and should be very familiar with the use of the calculator prior to the workshop, particularly the conversion of degrees minutes and seconds to decimal degrees or vice versa. Class size for this workshop will be limited to forty (40) attendees.

These courses are essential for those entering the surveying profession or those who want to further their ambitions and move up in their chosen career path.

Wednesday A.M. Sessions

January 24, 8:15 - 11:45 a.m.

106 Communications in the Workplace 8:15-11:45 a.m.

Scott R. Reeser, PLS

The workplace is an ever changing landscape. Just as the equipment we use to conduct our surveys continues to evolve, so does the way we need to communicate and interact in the workplace. This session will explore the various methods of communications that are used in the workplace as well as discuss some ways that are evolving as we continue to move thru the future.

206 Finding and Prioritizing Boundary Retracement Evidence 8:15-11:45 a.m.

Dr. Tony Nettleman, LS, Esq.

The majority of land surveyors retrace the boundaries of existing, already created parcels. But many things including poorly-written documents, less-than-detail-oriented original surveyors, and conflicting resurveys can make the task of retracing a parcel so difficult. Learn the five most important principles of boundary retracement in just 3.5 hours!

306 A Land Surveyor's Look at Geodesy and Datums 8:15-11:45 a.m.

William Henning, PLS

Our Navstar GPS has brought the land surveyor from relying on local, passive monumentation - perhaps in a local network, to using remote positioning, global datums, State Plane projections, and georeferenced GIS. This has underlined the need for a passing familiarity with the science of "Geodesy". This workshop will examine the history and evolution of horizontal, geometric, vertical and gravimetric national datums in the USA and will also show the current scientific datums used worldwide. Various datum programs and tools available from NOAA's National Geodetic Survey (NGS) will be shown, some that are models and some that are direct mathematical conversions without error. The importance of an accurate gravimetric geoid model as part of the new national vertical datum will be discussed along with the new geometric datum - north to be rolled out in 2022.

407 The Reality of Reality Capture 8:15-11:45 a.m.

James Shaw & Jonathan Austin

Coming soon

505 Project Management Strategies 8:15-11:45 a.m.

Michael Venuto, PLS, PE

This course will highlight project management strategies that have proven to be effective on any project. We will examine project situations to evaluate effective methods to resolve daily project challenges. We will discuss collaboration, communication, goal setting and problem solving and the role they play in successful project execution.

607 Part 107 Exam Review, Part 1 8:15-11:45 a.m.

Kenneth Martin

Part 107 of the Federal Aviation Regulations regulate the commercial use of unmanned aircraft. An operator of a small UAS must obtain a remote pilot airman certificate. The exam for certification covers a broad spectrum of topics from Airspace classification to the physiological effects of drugs and alcohol. This workshop takes the attendee through the required information to help prepare for the Part 107 Exam.

705 Stormwater Review for Licensure, Part 3 8:15-11:45 a.m.

Andrew Bennett, PE & Thomas A. Seybert, PE, Ph.D.

Travel Time-Hydrographs-Detention Storage. This workshop begins with the presentation of travel time methods and the concept of watershed time of concentration. The NRCS average velocity methods will be presented to analyze sheet flow, swale flow and channel flow. This topic will be followed with a discussion of two hydrograph methods namely the NRCS tabular hydrograph method of TR-55 (1986) and the NRCS unit hydrograph method as developed through the computer program WIN TR-55 (2009). Pre-development and post development hydrographs will be investigated. Detention storage estimates to control post-development runoff will be presented using the NRCS TR-55 (1986) method and the CN difference method. Participants will need a calculator for calculations and small straight edge for reading charts. Participants should be completely familiar with the topics covered in the Stormwater Review for Licensure Part 2 workshop before taking this workshop.

805 Applied Survey Math, Part 2 - Continuation of session 804 8:15-11:45 a.m.

Wednesday P.M. Sessions

January 24, 12:45 - 4:15 p.m.

107 Small Business Marketing 12:45 - 4:15 p.m.

Scott Butcher and Kristi Reichard

This session will consider several aspects of marketing a business, the creation of a marketing plan, advertising, making contacts, building relationships, and closing deals.

207 Water Boundaries: Definitions and Locations 12:45 - 4:15 p.m.

Michael F. Brinkash, PLS & Mark Brinkash, PLS

In order to determine the location of water boundaries the surveyor needs to know and understand definitions and associated deed calls and phrases. Dictionary definitions of non-tidal waterways along with court defined meanings of language and phrases expressed in legal documents are the basis for adequately determining the location of water boundaries. The surveyor must understand the difference between navigable and non-navigable, along with navigable-in-fact versus navigable-in-law waterways in order to determine the boundary location of riparian owners. The study of case laws show court defined meanings of Ordinary High Water Mark and Ordinary Low Water Mark. In some cases the court has gone onto instructing the surveyor and others how to identify these water mark locations. Basic public and private rights to waterways must be understood by the surveyor in order to communicate and help educate the public. Some case laws on water boundaries will be discussed. The attendee should expect to obtain a basic understanding of waterway boundaries and associated public and private rights.

307 Analyzing Positional Accuracy 12:45 - 4:15 p.m.

Dr. Charles D. Ghilani

This workshop is for surveyors who are performing or would like to perform ALTA-NSPS surveys and would like to understand the requirements to meet the relative positional accuracy standards listed in the 2016 American Land Title Association - National Society of Professional Surveyors "2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys." It will discuss how to "correctly weight" a least squares adjustment, how to correctly compute "95% error ellipses," and field procedures that can be used to achieve the required accuracies.

408 Profiting From Point Clouds 12:45 - 4:15 p.m.

James Shaw & Jonathan Austin

You do not have to own a laser scanner to benefit from point clouds. Just having the point cloud data can lead to better planning, better engineering, and better quality control - saving you and your client from costly mistakes. Just as important, you can provide profitable services extracting features and surfaces to better serve your existing markets or to pursue entirely new ones. Through a series of live demonstrations, you will learn to: acquire freely available LiDAR data and perform a site analysis; create a surface model from aerial LiDAR data; extract CAD or GIS features from terrestrial or mobile LiDAR; use photographic data from a sUAS to create 30 models and to perform stockpile calculations; and, combine various data sources to create a complete topographic model.

506 Railroad Surveying 12:45 - 4:15 p.m.

Robert Piligian, PLS

This course will provide information to aid Land Surveyors when dealing with railroad-related survey issues. A brief review of the historical aspects of railroads in PA followed by a description of common terms used in conjunction with railroads. Examples of monumentation including images will be discussed followed by a review of ICC Valuation Maps. A discussion of abandonment and some title issues affecting railroad property will occur along with a review of safety requirements while working along railroad property. The presenter will discuss his work experience with railroads and offer some hints to uncover previously unknown railroad information.

608 Part 107 Exam Review, Part 2 - Continuation of session 607 12:45 - 4:15 p.m.

706 Stormwater Review for Licensure, Part 4 12:45 - 4:15 p.m.

Andrew Bennett, PE & Thomas A. Seybert, PE, Ph.D.

Rational Formula-Sedimentation Basin Sizing-Outlet Protection. The workshop addresses the Rational formula for peak flow estimates. Specifically the elements of units, drainage area, land use, land cover, Rational C coefficient, time of concentration and rainfall intensity selection will be addressed. This topic will be followed by the sizing of sedimentation basins and outlet pipe protection design as prescribed by the Pennsylvania Department of Environmental Protection E&S manual. Participants will need a calculator for calculations and small straight edge for reading charts. Participants should be completely familiar with the topics covered in the Stormwater Review for Licensure Part 3 workshop before taking this workshop.

806 Applied Survey Math, Part 3 - Continuation of session 804 12:45 - 4:15 p.m.