2017 SURVEORS CONFERENCE WORKSHOPS

Workshops are scheduled for ***Monday,*** **January 23, 8:30 a.m.–noon and 1:30–5 p.m.;** ***Tuesday*****, January 24, 8:30 a.m.–noon and 1:30–5 p.m.; and** ***Wednesday,*** **January 25, 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).

PLEASE NOTE: If a workshop is more than one session, you must take ALL SESSIONS to get credit for the workshop. Partial credit will not be given.

Two-part workshops: ▸ (105 & 106), (206 & 207), (304 & 305) (701 & 702),
▸ (703 & 704), (705 & 706), (902 & 903)
Three-part workshop: ▸ (904, 905, & 906)
Four-part workshop: ▸ (803, 804, 805, & 806)

Monday AM Sessions – 1/23/2016 – 8:30 AM – 12:00 PM

101 Project Management & Liability **8:30 a.m. - 12 p.m.**

Mark Amirault & Brian Yorkiewicz, PLS

This course will provide an insight on the Land Surveyor's involvement in Program Management and the potential risks associated with this project delivery method. During the four hours the attendees will walk through the steps of project management and receive tips on how to establish contractual terms that protect the Land Surveyor.

501 Condominium and Planned Community Basics **8:30 a.m. - 12 p.m.**

John Mateyak, Esq.

Given today's increased regulatory environment, government hesitancy to accept roads and other improvements for dedication, and a variety of market forces, developers must form ownership associations to undertake a variety of tasks. The workshop will examine a variety of topics related to condominiums and planned communities in Pennsylvania. The workshop will review the process from the initial planning stages through the recording of the declaration, plats and plans and finally the conveyance of units.

601 Computations in State Plane Coordinates **8:30 a.m. - 12 p.m.**

Dr. Charles D. Ghilani

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.

701 Field-to-Finish and More with Carlson SurvCE and Carlson Survey, Part 1 **8:30 a.m. - 12 p.m.**

Mike Hyman

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 just 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-2-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 field activates and what deliverables are needed. Additionally, we will discuss how 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'/Point Rotation and Translations/Google and other image sources for your survey with Carlson Survey and Carlson SurvCE .

801 FEMA Elevation Certificates **8:30 a.m. - 12 p.m.**

Thomas Smith, PE, PLS

The goal of this seminar 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..

901 Preparing for a Surveying Career **8:30 a.m. - 12 p.m.**

Dr. Frank Derby & Alexander Wood

This workshop is primarily for high school students. It is designed to inform high school students about the surveying profession, careers in the profession, employment opportunities as well as opportunities to operate their own company. Discussions will include the impact of technology and how that is changing the manner in which land surveying is conducted. Recommended courses that high school students should take in preparation for careers in surveying will be discussed as well as opportunities for scholarship from surveying and related organizations.

Monday AM Sessions – 1/23/2016 – 8:30 AM – 10:00 AM

201 The Rewards of Successful Mentoring **8:30 -10 a.m.**

Amy J. Hopkins, PLS

Reap the rewards and personal satisfaction of successful mentoring. The attendee will walk away with a better understanding of what mentoring should be and how to inspire their employees, peers and coworkers to be better surveyors and professionals. How to motivate and coach them toward licensure and reaching their potential. We will also discuss an approach to mentoring under achievers, poor attitudes, "sand paper" people and "clock watchers". The rewards, both professionally and personally that we can experience by becoming an effective mentor will be explored. The PSLS Mentoring program will be re-introduced and you will have the opportunity to volunteer as a mentor.

301 Evolution of Drafting **8:30 -10 a.m.**

Scott R. Reeser, PLS

This workshop will take a walk thru the history of drafting. We will start with the hand drafting of plats in the colonial days to modern day computer aided drafting.©ND

401 Map Accuracy Standards **8:30 -10 a.m.**

Brian Naberezny, PLS, GISP

This workshop will present details of several map accuracy standards focusing on requirements for testing, satisfying, and reporting compliance with each standard. The benefits of utilizing map accuracy standards will be presented followed by group discussion of the pros and cons of their use.

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Monday AM Sessions – 1/23/2016 – 10:30 AM – 12:00 PM

202 Introduction to GNSS **10:30 a.m.-12 p.m.**

Dimitrios Bolkas

Making Project Presentations is one of the ways surveyors disseminate information regarding a planned project to 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.

302 Units of Measure **10:30 a.m.-12 p.m.**

Scott R. Reeser, PLS

This workshop will take a look at various units of measure. While the focus of the session will be aimed at units encountered by a surveyor in the work, we will discuss other various units. Session discussion will include how units of measure have developed in various period of history.

402 UAS Regulations **10:30 a.m.-12 p.m.**

Roy Boyd

The course will go over the differences in the FAA 333 exemption and Part 107 Remote Pilot Certificate. Along with how to apply for the Part 107 Remote Pilot Certificate.

How to apply for airspace authorization and wavers from some of the regulations. And what records the Part 107 Pilot should keep.

Monday PM Sessions – 1/23/2016 – 1:30 PM – 5:00 PM

102 Social Media for Business **1:30 - 5 p.m.**

Intelativity

Leverage social media to build your brand: Intelativity's presentation will go over the ins and outs of social media, addresses benefits among the most widely used platforms and a brief over view of where the industry is heading. We will touch base on additional tools, and applications in the market that are allowing individuals to further leverage their social media profiles to generate solid leads, maintain business relationships, and reinforce Corporate culture.

How to create a presence with impact: Intelativity will conduct a hands on workshop, where the participants will work through creating a Facebook profile, setting up their LinkedIn page, and setting up a twitter profile. Throughout the workshop we will challenge participants to write and create viral content, practice posting images and videos, and use hashtags to post and search.

203 Analyzing Positional Accuracy **1:30 - 5 p.m.**

Esra Tekdal-Yilmas

This workshop is for surveyors who would like to understand the requirements to meet the relative positional accuracy standards listed in the 2016 American Land Title Association (ALTA) and National Society of Professional Surveyors (NSPS) - "Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys." It will present how small errors propagate into observations and present 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.

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303 Case Law 1:30 - 5 p.m.

Theodore Lewis, Esq.

This is a general course intending to provide attendees with an understanding of the importance of case law to our American Legal System and Real Property Law in particular. The attendees will have an opportunity to review some cases in detail and therefore by example see how case law is developed. No particular background knowledge is necessary for the attendee. Some of cases selected will be for their importance to Real Property Law..

502 Interpreting, Applying and Creating Legal Descriptions 1:30 - 5 p.m.

D. Robert Davidson, PLS, Esq.

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.

602 GIS for Project Tracking 1:30 - 5 p.m.

Brian Naberezny, PLS, GISP

Companies use various methods for indexing and storing their project files and often have no readily available method to determine exactly where they have previously performed work. Some companies have started tracking projects in CAD, GIS, Google Earth, or similar applications. The advantages of these methods include the ability to visually identify past projects and the ability to perform general or detailed queries to identify projects matching these search criteria. This hands-on workshop will introduce participants to methods of tracking and querying their project files utilizing a GIS.

Participants in this workshop must bring their own laptop computers to the conference in order to participate in the workshop. Participants will install a trial version of ArcGIS software and communicate with the course instructor via email prior to the conference to ensure the appropriate software is installed and licensed. Instructions will be e-mailed to participants about three weeks prior to the conference. Power and WIFI will be available in the workshop.

702 Field-to-Finish and More with Carlson SurvCE and Carlson Survey, Part 2 - Continuation of session 701

1:30 - 5 p.m.

802 Compute a FEMA Base Flood Elevation (BFE) for a Zone A Stream 1:30 - 5 p.m.

Thomas Smith, PE, PLS

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 QUICK-2. 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.

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

Mark Hummel, PLS and Robert R. Miler, PLS

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.

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Monday PM Sessions – 1/23/2016 – 1:30 PM – 3:00 PM

403 Basic Principles of Photogrammetry **1:30 - 3 p.m.**

Dr. Frank Derby

Photogrammetry has been a part of the surveying technology for many years. It is the art and science of making maps from aerial photographs. Traditional photogrammetry typically involves photographs from manned aerial vehicles. The technology is becoming even more popular with the use of Unmanned Aerial Vehicles (UAVs) for mapping purposes. In this workshop, the basic principles of photogrammetry including flight planning, photo scale, relief displacement, conversion of analog photos to digital imagery, interior and exterior orientations, image rectification versus geo-referencing, and creation of ortho-photographs.

Monday PM Sessions – 1/23/2016 – 3:30 PM – 5:00 PM

404 UAS Flight Planning and Field Operations **3:30 - 5 p.m.**

Matt Mercurio

This workshop will provide a basic understanding of the requirements and best practices for UAS field operations. This will include basic information on current status of UAS regulation, mapping flight planning considerations and logistical recommendations for day of operations and control options. This information will prove valuable for anyone involved in or is considering conducting or managing UAS operations and those receiving data products from UAS mapping operations.

Tuesday AM Sessions – 1/24/2016 – 8:30 AM – 12:00 PM

103 Human Resources for Small Business **8:30 - 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 Modernization of the NSRS **8:30 a.m.-12 p.m.**

David Doyle

During the next decade enhancements and additions to the network of Global Navigation Satellite Systems (GNSS) including; the U.S. NAVSTAR Global Positioning System, Russian GLONASS, European Union GALILEO and China's BeiDou will significantly improve the use of space-based positioning systems for surveying, mapping, charting, navigation and innumerable other applications. In order to meet the anticipated demands for an improved geospatial framework that these developments will require, the National Geodetic Survey (NGS) is implementing a plan for the modernization of the National Spatial Reference System (NSRS). Among the various topics outlined in this plan is the adoption of an entirely new geodetic reference frame with updated geometric (horizontal) and gravimetric (vertical) realizations that will replace both the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88). The architecture of this new framework will be designed to be virtually identical to and aligned with the International Terrestrial Reference Frame (ITRF), and with orthometric heights based exclusively on nation-wide gravity observations producing a high accuracy (1-2 cm) geoid model. This presentation will highlight the rational for these changes; the various elements that currently define the NSRS and describe the activities NGS is making to improve the capacity of and access to NSRS in support this transition including tools such as OPUS and DSWorld.

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304 Preparation and Presentation: The Keys to Success, Part 1 — 8:30 a.m.-12 p.m.

William Beardslee, PLS

Nothing is more important to the surveyor than the ability to communicate his findings clearly and concisely to a client, an agency or the public. This course will take communication skills from preparation of data and information through preparation of a presentation to skills for actual presentation, both written and oral. The number one skill required by companies for leadership positions is oral communication. This course will help lead you to that level of ability.

405 UAS Data Reduction & Deliverables — 8:30 a.m.-12 p.m.

Matt Mercurio

The UAS Data Reduction and Deliverables 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.

503 Boundary Disputes — 8:30 a.m.-12 p.m.

Michael D. Kreiger, PLS

A disagreement between territorial boundaries causing for much anguish beyond the owner. In this seminar we will discuss disputes and how to determine if a dispute is a matter of perception of fact. Is the dispute a title or Survey issue? We will discuss standards of measurement and how to utilize these standards to remedy a potential dispute. We will discuss the many real estate transfer process in PA and the lack of a requirement to perform Surveys. We will further discuss how to remedy a dispute through proper Surveying methods, while further discussing how to remedy a dispute formally by documentation or court documents.

In this session we will have guest speakers to discuss an actual Boundary Dispute, title overlap, title insurance, and the situation that is not being easily resolved. The goal of this Seminar will be to provide thought provoking ideas to the Surveyor and others to remove the words boundary dispute from our vocabulary.

603 GIS for Subdivision — 8:30 a.m.-12 p.m.

Paul DeBarry

Attendees will learn the fundamentals of GIS and ArcMap, different types of data applicable to subdivisions (wetlands, soils, streams, etc.) including how to use LiDAR data and where and how to get the data. Attendees will learn how to import the data layers required for subdivision analysis using typical subdivision and land development ordinance requirements.

703 AutoCAD Civil 3D Core Skills, Part 1 — 8:30 a.m.-12 p.m.

John Cooke

This one-day class provides a comprehensive introduction to AutoCAD® 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.

803 Stormwater Review for Licensure Part 1: Stormwater Hydraulics 8:30 a.m.-12 p.m.

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

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.

903 Basic Survey Math, Part 2 - Continuation of session 902 8:30 a.m.-12 p.m.

Tuesday PM Sessions – 1/24/2016 – 1:30 AM – 5:00 PM

104 Methods of Communication 1:30 -5 p.m.

Scott R. Reeser, PLS

Communication in today's multi-generational workplace can be a challenge for everyone. Changes in technology and communication styles and expectations make getting messages across a challenge. This session will explore the various means of communication in the workplace.

205 Geodesy and Datums 1:30 -5 p.m.

David Doyle

This program details the historical and contemporary developments of the horizontal and vertical geodetic datums of the United States including; the Bessel reference system, U.S. Standard Datum, North American Datum, North American Datum of 1927, North American Datum of 1983, First, Second, Third and Fourth General Vertical Adjustments, the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988. The program will also highlight the development of reference ellipsoids, geoid models and contemporary global coordinate systems such as the International Terrestrial Reference Frame (ITRF) and the World Geodetic System of 1984 (WGS 84), and highlight the efforts of the National Geodetic Survey to modernize the reference systems of the United States.

305 Preparation and Presentation: The Keys to Success, Part 2: Continuation of Session 304 1:30 -5 p.m.

406 Mobile Mapping 1:30 -5 p.m.

Jeff DeBoer

Mobile Mapping has evolved into one of the key technologies for fast and reliable 3D mapping. Today, a growing number of service providers capture geo-referenced data in many different environments by means of mobile laser scanners and digital imagery. These systems map infrastructure such as roadways, railroads, utilities and buildings from moving platforms. Providing valuable data for maintenance activities or construction planning. This workshop will cover some of the technology used within these systems, basic field practices and office processing workflows. In addition, we will look at key benefits, deliverables and applications.

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504 Mediation and Arbitration Fundamentals 1:30 -5 p.m.

Tom Skinbinski

This workshop will present the basic concepts of mediation and arbitration in the resolution of claims/disputes against professional surveying services. The fundamentals of contract formation and the importance of utilizing contracts in the performance of professional surveying services will also be discussed.

604 Parcel Based GIS 1:30 -5 p.m.

Dr. Frank Derby

GIS technology is useful in all applications that rely on spatially referenced data. Parcel based GIS includes applications that apply land parcel data for management and decision support. It includes information systems for judicial, fiscal and multipurpose land management applications. Irrespective of application, the fundamental graphic data is the graphical land parcel data which is produced by surveyors. This workshop will cover conversion of digital graphical data into topologically structured GIS layers, for property corner monuments, boundary lines, and parcel polygons. The workshop includes the development of attribute databases in support of legal, fiscal and multipurpose applications. Ultimately the importance of land parcel data as an instrument for effective land administration and socioeconomic development will be discussed.

704 AutoCAD Civil 3D Core Skills, Part 2—Continuation of Session 703 1:30 -5 p.m.

804 Stormwater Review for Licensure Part 2: Watersheds-Rainfall-CN 1:30 -5 p.m.

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

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.

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

Mark Hummel, PLS & Robert R. Miller, PLS

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.

Wednesday AM Sessions – 1/25/2016 – 8:15 AM – 11:45 AM

105 Ethics, Part 1 8:15-11:45 a.m.

D. Robert Davidson, PLS, Esq.

This session will review legal and ethical considerations faced by surveyors in their practice. Historical context of professional standards of conduct and ethics in general will be considered. The legal requirements and obligations related to standards of conduct and ethics for licensed surveyors and penalties for violations will be reviewed. State Registration Board enforcement cases will be discussed regarding violations of these standards. The unauthorized practice of law will be examined along with malpractice

and general and professional liability. Other topics will include, Federal and State laws related to the practice of surveying. The program will include case studies where attendees will participate in evaluating various ethical situations encountered by surveyors.

206 Practical Applications Using OPUS, Part 1 8:15-11:45 a.m.

William Henning

This workshop will showcase four outstanding Online Positioning User Service (OPUS) tools provided by NOAA's National Geodetic Survey: OPUS-Static, OPUS-Rapid Static, OPUS-Shared and OPUS-Projects. Through comparing and contrasting the different OPUS varieties and evaluating the key statistics reported in their solutions sent to the user, surveyors and other geospatial professionals can have confidence with OPUS processing results. Common questions such as "What accuracy should we expect from each method?", "Is there any way to use OPUS-RS with longer occupations?", "Will OPUS positions match my local control coordinates?" and others will be discussed. **13, 1:30 -5 p.m.**

306 Land Development Principles, Part 1 8:15-11:45 a.m.

Richard Kresge

This workshop will walk you through the Land Development process with focus on the principles involved starting with an overview of the Land Development Process. Topics will include zoning, regulatory reviews, preparing agreements and more.

407 Laser Scanning: Practical Applications Control 8:15-11:45 a.m.

Sherry Grymko, PSM, MS

This session will provide an overview of terrestrial and aerial laser scanning. It will cover topics such as the types of scanners, a general overview of how scanners work, project planning, field data collection and real world survey project examples.

505 Water Boundaries : Definitions and Locations 8:15-11:45 a.m.

Michael F. 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 have 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, including abstracts from the Daniel Ball Case, U.S. Supreme Court. The attendee should expect to obtain a basic understanding of waterway boundaries and associated public and private rights.

605 GIS Liability 8:15-11:45 a.m.

Salvatore Marsico. MME, JD

The workshop is intended for surveying professionals that have an interest in the exposure to liability when performing GIS functions as well as GIS related activities.

705 AutoCAD Civil 3D Practical Applications, Part 1 8:15-11:45 a.m.

John Cooke

The focus of this one-day class is practical – and successful – applications of AutoCAD® 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.

805 Stormwater Review for Licensure Part 3: Travel Time-Hydrographs-Detention Storage **8:15-11:45 a.m.**

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

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.

905 Applied Survey Math, Part 2 - Continuation of session 904 **8:15-11:45 a.m.**

Wednesday AM Sessions – 1/25/2016 – 8:15 AM – 11:45 AM

106 Ethics, Part 2 - Continuation of session 105 **12:45 - 4:15 p.m.**

207 Practical Applications Using OPUS, Part 1 - Continuation of session 206 **12:45 - 4:15 p.m.**

307 Understanding the State Land Records of PA **12:45 - 4:15 p.m.**

Aaron McWilliams

The presentation will cover the patenting process, the documents created (application, warrant, survey, return of survey and patent) and how to access the records. It will also touch on other sources at the Pennsylvania State Archives, such as land office maps, Board of Property records and Commonwealth deeds. No prior exposure to the state land records is required. The presentation is suitable for both new and experienced users of Pennsylvania's state land records.

408 Laser Scanning Accuracy **8:15-11:45 a.m.**

Anthony Paturzo

This workshop is intended to help the surveyor understand the true accuracy of a laser scanner and how to achieve the best results. The technical specifications of laser scanners will be discussed as well as field operation and office data processing. We will look at field practices through the lens of accuracy and what steps must be taken to ensure a usable point cloud is collected. As a second important part to accurate data we will discuss point cloud registration and aligning to ground control. No prior experience with laser scanning is needed for this class. We will only be discussing the basic principles of laser scanning and what is necessary to collect accurate data.

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506 Road Rights-of-Way 8:15-11:45 a.m.

William Beitler, PLS & Michael D. Kreiger, PLS

This session will discuss the ingress and egress of rights-of-way. We will discuss the public versus private, history of these rights, the back system of rights, the documentation of these rights, the various laws associated with these rights, how a Surveyor should consider and apply these rights. We will discuss surface easement rights of way, fee simple rights of way, widths and lengths and how they are documented in road dockets, condemnation or declaration of taking, etc. We will discuss the municipal requirement for dedicated rights of way, the ratification or recordation (or the lack thereof), and its intended and applied use or misuse, while considering title to the real estate.

We will consider abandoned versus vacated roads, ultimate rights of way, court cases, etc. A Surveyor will walk away from this seminar with a new perspective on roadways beyond the beaten path rule with comprehension fo the roadway rights of way as a boundary line and the assoicated title.

706 AutoCAD Civil 3D Practical Applications, Part 1 - Continuation of Session 705 12:45 - 4:15 p.m.

806 Stormwater Review for Licensure Part 4: Sedimentation Basin Sizing-Outlet Protection-Rational Formula

12:45 - 4:15 p.m.

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

The workshop addresses the sizing of sedimentation basins and outlet pipe protection design as prescribed by the Pennsylvania Department of Environmental Protection E&S manual. These two topics are followed by a presentation on 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. 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.

906 Applied Survey Math, Part 3 - Continuation of session 905 12:45 - 4:15 p.m