## Credit Information

These webinar are open to the public and are designed to qualify for 3.0/6.0 PDHs for professional engineers and land surveyors in most states. These courses are not approved in New York; please refer to specific state rules to determine eligibility.

HalfMoon Education is an approved continuing education sponsor for engineers in Florida (Provider License No: CEA362), Indiana (License No. CE21700059), Maryland, New Jersey (Approval No. 24GP00049300) and North Carolina (S-0130).

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These webinars have been registered with the Florida Board of Professional Surveyors and Mappers for 3.0/6.0 CE credits. These webinars have been approved for Missouri land surveyors by the Missouri APEPLSPLA for 3.0/6.0 PDUs.

Attendance will be monitored, and attendance certificates will be available after the webinars for those who attend the entire course and score a minimum 80% on the quiz that follows that course (multiple attempts allowed).

**On-Demand Credits**
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**September Land Webinars**

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## Live, Interactive Webinars

**Orthometric Heights Using GNSS**
- Monday, September 9, 2024 | 9:00 am - 12:00 pm CDT

**GNSS Workshop:**
**Understanding Common Problems**
- Monday, September 16, 2024 | 9:00 am - 12:00 pm CDT

**Aerial Mapping for**
**Land Surveyors and Civil Engineers**
- Monday, September 30, 2024 | 9:00 am - 4:00 pm CDT

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## HalfMoon Education Live Webinars

# September Land Webinars

### Orthometric Heights Using GNSS
Monday, September 9, 2024 | 9:00 am - 12:00 pm CDT

Credits: Land Surveyors: 3.0 PDHs* | Professional Engineers: 3.0 PDHs*

### GNSS Workshop: Understanding Common Problems
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Credits: Land Surveyors: 3.0 PDHs* | Professional Engineers: 3.0 PDHs*

### Aerial Mapping for Land Surveyors and Civil Engineers
Monday, September 30, 2024 | 9:00 am - 4:00 pm CDT

Land Surveyors: 6.0 PDHs* | Professional Engineers: 6.0 PDHs*

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## Orthometric Heights Using GNSS

**Monday, September 9, 2024 | 9:00 am - 12:00 pm CDT**

**Tuition:** $179 per registrant

**Credits:** Land Surveyors: 3.0 PDHs* | Professional Engineers: 3.0 PDHs*

**Presented by Todd Horton, PE, PLS** *Owner of Meridian Geospatial Consulting, LLC*

**Agenda:**

- Vertical datum evolution
- Ellipsoidal, geoid and orthometric heights defined
- Geoid development - past, present, and future
- GNSS limitations and capabilities in height measurement
- Strategies for robust orthometric heights with GNSS

24 SWOHGNSS 9 9 WEBR SC

## GNSS Workshop: Understanding Common Problems

**Monday, September 16, 2024 | 9:00 am - 12:00 pm CDT**

**Tuition:** $179 per registrant

**Credits:** Land Surveyors: 3.0 PDHs* | Professional Engineers: 3.0 PDHs*

**Presented by Todd Horton, PE, PLS** *Owner of Meridian Geospatial Consulting, LLC*

**Agenda:**

- GNSS error sources
- Understanding GNSS accuracy estimates
- Single-base versus network RTK accuracy
- RTK versus OPUS static methods
- Addressing common GNSS surveying problems

24 SWGNSSCP 9 16 WEBR SC

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## Aerial Mapping for Land Surveyors and Civil Engineers

**Monday, September 30, 2024 | 9:00 am - 4:00 pm CDT**

**Tuition:** $339 per registrant
$309 per attendee for group registrations of two or more from the same company, at the same time, for the same program.

**Credits:** Land Surveyors: 6.0 PDHs* | Professional Engineers: 6.0 PDHs*

**Presented by**
**Karen Schuckman, CP, CMS-Lidar**
*Senior Director of Remote Sensing and Geospatial Services at RRC Companies*

**Agenda:**

**Basics of Photogrammetry**

- How does photogrammetry work?
- Photogrammetric sensors and platforms
- Georeferencing of aerial imagery
- Principles of photogrammetric bundle adjustment
- Mapping products derived from imagery

**Basics of Lidar**

- How does lidar work?
- Lidar sensors for topographic mapping
- Georeferencing and calibration of lidar point clouds
- Classification of lidar point clouds
- LAS data format
- Mapping products derived from lidar

**Topographic Mapping from Aerial Imagery and Lidar**

- Digital elevation, digital terrain, and digital surface models
- Standards for topographic mapping products
- Data quality considerations
- Surface interpolation methods
- Surface treatment for hydrologic modeling
- Derived products for engineering and geospatial analysis

**Positional Accuracy Standards for Aerial Imagery and Lidar**

- Fundamental principles of accuracy assessment
- Overview of ASPRS and USGS standards
- Positional accuracy assessment procedures and methods
- Positional accuracy reporting and metadata

**Spatial Reference Systems and Datum Modernization**

- Fundamental principles of geodesy
- Ellipsoids, datums and projections
- Historical development of horizontal and vertical datums for conterminous US
- National Spatial Reference System Modernization Program

**Aerial Survey Project Planning and Specifications**

- Requirements for effective flight planning
- Choice of platform and sensor
- Image resolution and lidar point density considerations
- Cost considerations

**Ground Control for Aerial Survey: Best Practices**

- Accuracy requirements for ground control and checkpoints
- Target design and placement
- Recommended survey methodology
- Survey reporting and metadata requirements

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## Faculty

**Todd Horton, PE, PLS** is the owner of Meridian Geospatial Consulting, LLC. Meridian Geospatial provides technician training and continuing education seminars for the land surveying industry. Mr. Horton served in the US Air Force and with the Illinois Department of Transportation in planning, design, construction, surveying and maintenance of civil engineering projects including commercial structures, airfields, utility systems and highways, earning his PE license in 1991. Joining the full-time faculty at Parkland College in Champaign, Illinois, in 1998, he taught land surveying and construction management courses. Mr. Horton founded the land surveying associate degree program at Parkland College in 2001. Working during summers for local engineering firms, he earned his professional land surveying license in 2007. Beginning in 2009, Mr. Horton presented seminars frequently with HalfMoon Education Inc., ultimately speaking in 42 states. He continues to provide training with HalfMoon, with several professional associations and for various private clients. His top priority is providing practical skill training for survey technicians. Mr. Horton retired from full-time teaching in 2023 and has joined Farnsworth Group Inc. in Champaign, IL, as a senior project land surveyor. You can reach him at todd@meridiangeospatial.com.

**Karen Schuckman** is the senior director of Remote Sensing and Geospatial Services at RRC Companies, a recognized leader in the international renewable energy industry. She continues to serve as a part-time associate teaching professor of Geography at Pennsylvania State University, where for 17 years she was the lead faculty for the graduate certificate in Remote Sensing and Earth Observation in the Online Geospatial Program. She also serves as the executive director of the American Society for Photogrammetry and Remote Sensing. Prior to her move to teaching, Ms. Schuckman was the geospatial technology leader at URS Corporation (now AECOM) from 2005-2006. From 1995 – 2005, she was with the EarthData group (now Fugro). Notable projects in her private sector career include leading the use of remotely sensing imagery in the Hurricane Katrina response, leading lidar acquisition for the first phase of the North Carolina Floodplain Mapping Program, numerous transportation mapping projects for state DOTs, and technology demonstration projects for NOAA, NASA and the US Department of Transportation. Prior to joining the private sector, Ms. Schuckman worked for the USGS National Mapping Division, in Menlo Park, California. She is a former vice chair of the NOAA Advisory Committee on Commercial Remote Sensing (ACCRES) and a member of the National Research Council Committees on Floodplain Mapping Technologies and FEMA Flood Map Accuracy. She holds an MS degree in Geospatial Information Systems from The Pennsylvania State University, is an ASPRS Certified Photogrammetrist, ASPRS Certified Mapping Scientist – Lidar, and Professional Land Surveyor.

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please refer to specific state rules to determine eligibility.