

Basic Crime Scene Mapping with Total Station Technology April 01-03, 2020

Location: Westmoreland County Coroner's Facility
2503 South Grande Boulevard
Greensburg, Pennsylvania 15601

Instructors: Michael Hochrein, Retired FBI Special Agent
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Sponsored by: HD Forensics, LLC, 4023 Alison Avenue, Erie, Pennsylvania 16506

Accredited through:

1. Approved by the Municipal Police Officer's Education and Training Commission (MPOETC) for twenty-seven (27) hours of Continuing Law Enforcement Education (CLEE) credits.
2. Approved by the IAI Crime Scene certification program for twenty-seven (27) hours of instruction for initial certification and recertification.

Tuition: \$300.00

Class size: Limited to 15 participants

Supplies/ Equipment: HD Forensics will provide two (2) total stations and miscellaneous mapping equipment for demonstration and practice; however, attendees are encouraged to bring their department's total station instruments and peripherals in order to gain familiarity.

Description: This course is designed for law enforcement personnel who have been, or will be, tasked with crime scene documentation through mapping or diagramming techniques. Specifically, attendees will be introduced to the theory and practice of crime scene mapping as it relates to the operation of total station technology. Through lecture, table-top exercises, demonstrations, and practical exercises in mock scenes, attendees will learn the basic math and physics behind the operation of total station instruments and how more rudimentary manual techniques relate to advances in technology. Attendees will also understand logistical approaches to mapping both indoor and outdoor crime scenes. As it relates to criminal investigation, attendees will also understand the importance of preserving the digital evidence collected with advanced technology such as the total station, in order that it can be processed by themselves, laboratory specialists, or outside specialists toward the construction of investigative and trial exhibits.

As law enforcement agencies acquire electronic technology used to document crime scenes through measurements, (i.e. total stations, scanners, global positioning systems), a tendency exists for the operators of that equipment to understand what buttons to push to get readings, but

less an understanding of how the equipment computes those readings, or the importance of calibration, proper set-up, datum selection, and field validation prior to survey. Forensic surveying with optical and electronic instruments is a perishable skill. This course acts both as an introductory course for total station operators and crime scene mappers, but also a refresher course for current operators. This course is **not** a vehicular accident reconstruction course although some examples of such scenes may be discussed.

The Westmoreland County Coroner's facilities are located at 2503 South Grande Boulevard, Greensburg, Pennsylvania 15601. In addition to being near the County seat and its amenities, the facility has free parking and is a short drive from restaurants, fast food, gas, motel, and stores on Route 30.

Day 1 **April 01, 2020**
The Evolution of Crime Scene Measurement Techniques & Basic Mapping Principles

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|-------------------|---|
| 08:30 – 09:00am | Registration |
| 09:00 – 09:30am | Introduction and Course Content |
| 09:30 – 10:30am | Introduction to Crime Scene Diagramming <ul style="list-style-type: none">- The Importance of Diagramming the Scene- Baseline Mapping- Trilateration vs. Triangulation- Polar Coordinate Mapping- How Baselines, Triangles and Polar Coordinates relate to the Total Station technology- Total Stations, Scanners, and Global Navigation Satellite Systems |
| 10:30 – 10:45am | Break |
| 10:45am – 12:00pm | Introduction to Crime Scene Diagramming (continued) |
| 12:00 – 01:00pm | Lunch |
| 01:00 – 02:30pm | Total Station Instrument Familiarity <ul style="list-style-type: none">- Mapping Terminology- Instrument Terminology and Function- Control Point/Datum and Backsight Selection- Initial Set-up, Leveling, and Orientation- Calibrations and Field Validations |
| 02:30 – 02:45pm | Break |
| 02:45 – 05:00pm | Scene Considerations |

- Prioritizing Scene Features
- Coding Considerations
- Using Multiple Total Stations on Large Scenes

Total Station Instrument Set-up drills

Day 2

April 02, 2020

Approaching the Scene & Establishing Datums/Control Points

09:00 – 10:30am

Review

The Utility of Geographic Information Systems (GIS) and Building Information Modelling (BIM)

- GIS and BIM in Preparing for the Search
- GIS and BIM in Crime Scene Report Preparation

10:30 – 10:45am

Break

10:45am – 12:00pm

Mapping Outdoor Scenes Practical Exercise

12:00 – 01:00pm

Lunch

01:00 – 02:30pm

Mapping Outdoor Scenes Practical Exercise (continued)

02:30 – 02:45pm

Break

02:45 – 05:00pm

Exercise Review

Introduction to Vehicle Mapping

- Control Point/Datum Selection
- Contour Mapping
- Offsite surveying and tying the vehicle to the scene (*not vehicular accident reconstruction*)

Day 3

April 03, 2020

Crime Scene Survey Logistics

09:00 – 10:30am

Review

The Basics of Total Station use in Documenting Ballistic Trajectory and Blood Stain Evidence

- Collecting data for the expert

Mapping Basics in the Indoor Scene

- Linking the Inside to the Outside
- Unstable Floors
- Interior Feature Mapping

10:30 – 10:45am Break

10:45am – 12:00pm Final Practical Exercise

12:00 – 01:00pm Lunch

01:00 – 02:00pm Final Practical Exercise (continued)

02:00 – 02:15pm Break

02:15 – 03:30pm Final Practical Exercise (continued)

03:30 – 05:00pm Preserving the Total Station Data as Evidence
Review of Exercise/ Discussion