



## PAUL J. MOORE JOINS MDE'S ENGINEERING STAFF

Paul J. Moore is an electrical engineer and has joined MDE as a Principal. He will be providing services in the area of accident investigation and reconstruction, and fire investigation. Mr. Moore brings to MDE a diverse professional background with experience in both design engineering as well as accident investigation and failure analysis. He also brings a new capability to MDE — accident and fire scene mapping using a Total Station survey instrument.

Mr. Moore comes to MDE from The Boeing Company, where he worked for over four years in design, project management, and compliance with FAA regulations. Recently, Mr. Moore managed a project to upgrade the Auxiliary Power Unit (APU) system on the 737 Next Generation. Other work involved electrical design for the 777 water, waste, and oxygen systems, and the 747-400 fire detection system.

Prior to his work at Boeing, Mr. Moore was a police officer, and later a detective with the Seattle Police Department. As a police officer, he responded to over 300 vehicle accidents immediately after they occurred and examined vehicles, interviewed drivers and witnesses, collected evidence, wrote reports, and took enforcement action.

After two-and-a-half years as a police officer, Mr. Moore was promoted to Detective and was assigned to the Accident Investigation Squad (AIS). This unit was responsible for providing an on-scene response to fatality/serious injury accidents, as well as accidents where the City of Seattle may have substantial liability. The assignment provided invaluable experience in the areas mentioned above, as well as additional experience in criminal case

preparation, and accident and crime scene mapping using a Total Station instrument.

Mr. Moore received his Bachelor of Science degree in Electrical Engineering from the University of Washington. His undergraduate study was concentrated in electrical transmission and distribution systems, and computer modeling of electrical systems. He is currently pursuing his Master of Science in Mechanical Engineering degree at the University of Washington, specializing in Systems and Dynamics.

## TOTAL STATION SCENE MAPPING

### *A Valuable Tool in Accident Reconstruction*



Every day, on city streets, county roads, and state highways, thousands of vehicle accidents occur, resulting in numerous claims of damaged vehicles and personal injuries. For this reason, attorneys and insurance companies hire accident reconstruction professionals to determine what occurred in a collision, based on the available evidence. The reconstructionist uses principles of physics and dynamics to ascertain important elements of a case such as vehicle speed, direction of travel, and time/distance issues.

An essential tool for an accurate interpretation is the accident scene map. A properly detailed and scaled scene map offers the engineer/reconstructionist a superior tool with which to proceed with his analysis. Also, a quality, detailed map provides jurors the ability to "see" the accident scene.

A scene map can be anything from a hand-drawn sketch to a computer generated, electronically measured representation. For level, orthogonal intersections and straight sections of roadway, a map created using hand measuring devices such as a measuring tape or rolling tape is sufficient, though with limited precision and detail. However, not all vehicle accidents occur on straight, level sections of roadway.

### TOTAL STATION

Often, traffic accidents occur at hill crests or valleys, at non-orthogonal intersections, or on irregularly curved roads. A hand-measured map can become a potential liability when used to represent these types of scenes because of the difficulty in obtaining accu-

rate scene measurements. In some cases, the map may be so inaccurate that it affects some of the critical reconstruction calculations. The best way to map an irregular accident scene is the use of a total station.

With a total station, precision of fractions of an inch can be obtained. Additional benefits include:

- Higher level of drawing detail (e.g., individual trees, vehicle damage profiles, very short road marks)
- 3-D coordinate data, which can be used for elevation profiles, heights of sight obstructions, determining roadway crown characteristics, etc.
- Increased jury appeal.

### HOW DOES IT WORK?

The Total Station (TS) is a surveying instrument consisting of an electronic theodolite (telescope), an electronic distance measuring unit (EDM), and a data collector. At an accident scene, one person operates the TS while a second person places a reflecting prism over each desired data point. Each data point recorded will include northing, easting, and elevation (x,y,z) coordinates. These coordinates are processed into a file that can be exported into most computer-aided drafting (CAD) programs for editing.

The final product is a sophisticated, accurate map that is of great utilitarian value to the reconstructionist and provides superior imagery for courtroom presentations.

### ALSO IN THE NEWS:

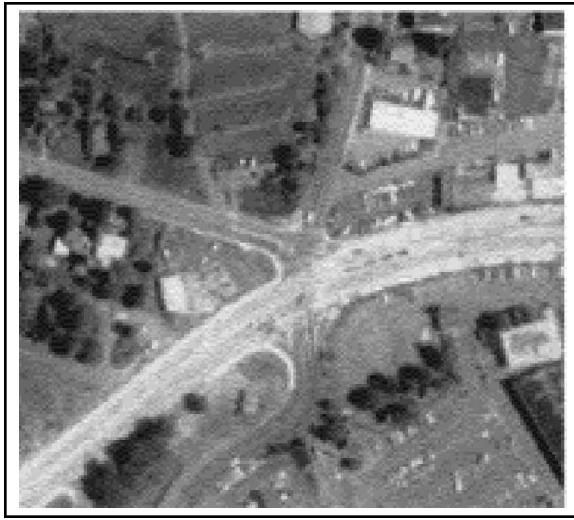
**Roger W. Sackett** has announced his retirement from MDE effective July 15, 1999. Roger has been with us for eight years. Founder **Jack O. Winsor** has begun a medical leave of indefinite duration. One of MDE's capable engineers will continue work on any active cases as MDE strives to provide quality engineering service to our clients.

**MDE Engineers, Inc.**

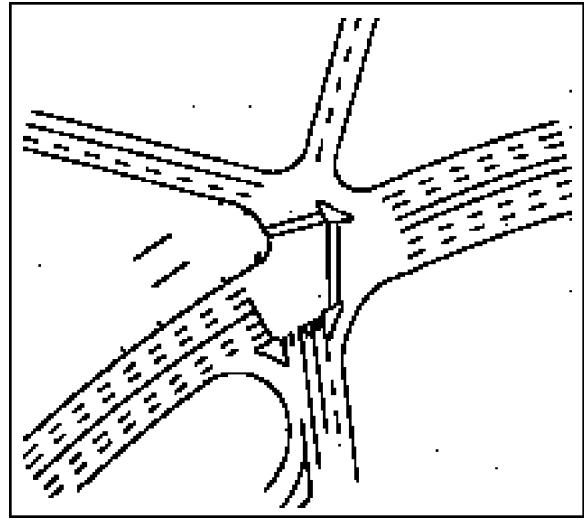
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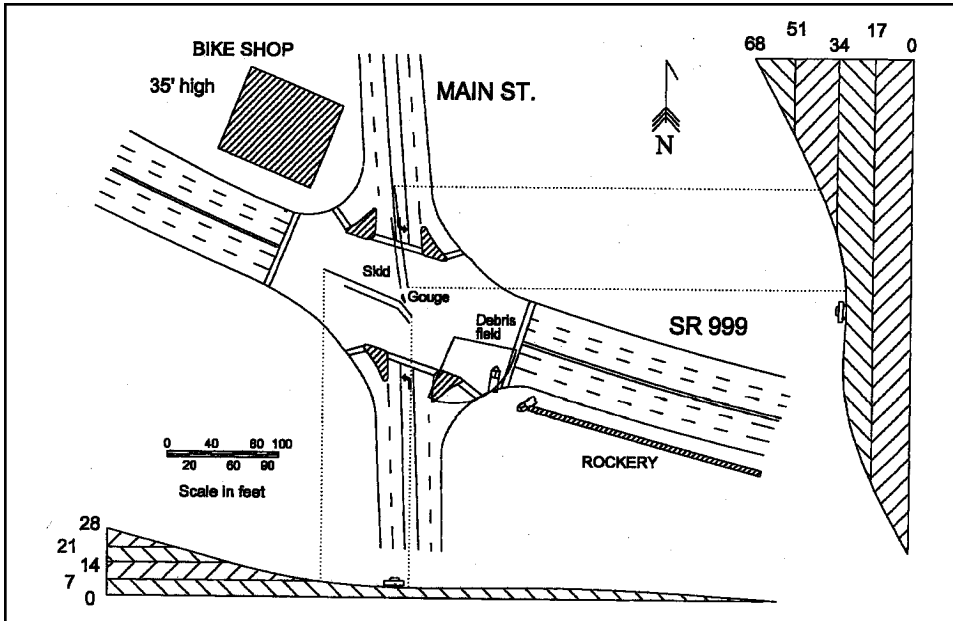
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This is a satellite photo showing a complex, non-orthogonal intersection that makes accurate measurement and site documentation difficult.



This drawing, made using Total Station surveying equipment, makes calculations and accident reconstruction analysis easy and accurate.



## TOTAL STATION MAPPING

- Accurately maps non-orthogonal intersections.
- Produces an Elevation Profile - hills and grades can be easily mapped.
- Data point collection is fast and easy - allowing greater detail.
- Portions can be enlarged by computer for easier measuring and/or viewing.
- Extremely precise data is obtained by Total Station instrument.
- Crush profiles can be calculated from vehicle damage profiles.

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