Robert W. Halstead

Railroad Signal and Accident Reconstruction Expert
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CV Available Upon Retention
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Skillset Listing Current Through 8/22/2013
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Skillset:

Railroad Crossings and/or Signals:

- A.S. – Engineering Science, B.S. - Electrical Engineering.
- Formerly employed by a large Northeastern Class I railroad as a signal circuit designer at System Engineering HQ, designing both rail/highway grade crossing warning systems and wayside signal systems (signals that the trains operate by).
- As Supervisor of Signal Construction, supervised the installation of active warning devices (flashers and/or gates) at over 200 rail/highway grade crossings throughout the Northeast. Also exerted project management and/or supervision over wayside signal installation and modification projects, including the installation of MicroCode I and II (cab signals without wayside) on a 187-mile long mainline. Represented the railroad on numerous "diagnostic teams" with state representatives, during which warning device upgrade needs were assessed and preliminary designs were devised and approved. Planned and conducted extensive "service testing," whereby new signal systems were verified to operate safely and placed in service.
- As Supervisor of Signal Maintenance, supervised signal maintainers, technicians, and inspectors responsible for the maintenance and Federally-required testing of computer-controlled, mission-critical signaling and train control systems, encompassing 400 route-miles, 27 interlockings, and over 400 rail/highway grade crossings.
- Worked closely with the Operations Dept. to facilitate train operations during the normal course of business and in crisis situations. Investigated accidents (including at crossings) when required and prepared detailed reports on findings.

- Trained Signal Dept. personnel system-wide on proper maintenance, inspection and testing procedures. Attended technical seminars given by signal equipment manufacturers and taught seminars for Signal Dept. personnel on the latest electronic and computer-controlled signaling systems.
- Actively test both crossing and wayside signals systems post-accident to determine conformance with Federal and State statutes and regulations, as well as generally-accepted industry practice.
- Familiar with Federal Railroad Administration standards for signal system design, inspection, testing, and maintenance, as set forth in 49 CFR Parts 234, 235 and 236, and AREMA IAmerican Railway Engineering and Maintenance of Way Association) Recommended Practices.
- Familiar with light rail signaling systems and electrified (catenary and third-rail) territory
- Have been consulted by the National Transportation Safety Board (NTSB) for technical assistance in determining accident signal causation.

Railroad Accident Reconstruction:

- Fully accredited by the Accreditation Commission for Traffic Accident Reconstruction (ACTAR) as a Traffic Accident Reconstructionist (No. 1285) since 2002. ACTAR is the highest accreditation in Accident Reconstruction, and requires the passage of an 8-hour, closed book exam and continuous education to maintain.
- Have investigated and/or reconstructed over 300 railroad-related accidents across the U.S. and Canada over the past 17 years, including but not limited to:
    - Impacts between trains and vehicles at rail/highway grade crossings
    - Impacts between trains and railroad employees or pedestrians at rail/highway grade crossings, on bridges, or at other points along the right-of-way
    - Impacts between trains and maintenance-of-way equipment
    - Impacts between vehicles and maintenance-of-way equipment at crossings
    - Collisions between trains (head-on, rear-end, and sideswipe)
    - Derailments
    - Passenger platform gap accidents
    - Railroad employee on-the-job injuries (FELA)
    - Determinations of adequacy of active warning devices at rail/highway grade crossings
    - Determinations of adequacy of available signage and sight distance at rail/highway grade crossings that do not have active warning devices (flashers or flashers/gates)
    - Time studies of signal maintainers as they perform specific signal inspection, testing, and maintenance activities
- President – *National Association of Railroad Safety Consultants and Investigators* (NARSCI)
- Lecture across the U.S. on a continuing basis to railroad accident reconstruction organizations and law enforcement agencies, including the Pennsylvania State Police and CAARS (California

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Accident Reconstruction Society – lecture sponsored by the California Highway Patrol and LAPD).

- Trained in the acquisition and analysis of data from Event Data Recorders (EDR) from highway vehicles and its application to the overall accident reconstruction.
- Examine data downloaded from locomotive event recorders – determine when horn was sounded and brakes applied relative to impact.
- Trained in the acquisition and analysis of cellular telephone data records and their integration with GPS and other time-based data, including locomotive and signal system-based data sources.
- Maintains an electronic archive of thousands of accident and research reports , many of which do not exist on the Web, extending to over 500,000 pages, all of which are full-text searchable by keyword, and useable to support detailed expert opinions in a wide variety of cases.
- Recognized by the court as an expert in human factors of motorists as they approach rail/highway grade crossings (including perception-reaction time, perception and recollection of speed, time, and distance.
- Devised and constructed a measuring rig for measuring train to platform gap distance, even without a train present. This data, taken at fixed intervals along the platform, can be imported into a computer program to determine the largest likely gap at any point along the platform.
- Has worked many of the largest and most complex forensic railroad accident investigations and reconstructions in North America over the past 17 years, including:
    - Chatsworth CA (head-on collision between freight and passenger train with 25 fatalities and 100+ injuries)
    - Washington D.C. WMATA Ft. Totten (rear-end collision between two commuter trains with 9 fatalities and 50+ injuries)
    - Graniteville SC (collision, derailment, hazmat release with 9 fatalities and 500+ injuries),
    - Fox River Grove (commuter train struck school bus, 7 fatalities and 20+ injuries)
    - Bourbonnais IL (Amtrak train struck semi-truck, 11 fatalities and 100+ injuries)
- Has been retained by both civil plaintiffs and defendants, including railroads, railroad construction and maintenance contractors, insurance companies, and signal equipment suppliers. Has also been retained in criminal matters.

Railroad Employee Injuries (FELA) and OSHA:

- While Supervisor of Signals , trained and supervised employees as to safe work practices on a continuing basis. Counseled employees when unsafe work practices were observed. Principal areas of safety-related instruction given included, but were not limited to, use of hand tools and heavy machinery, lifting and transporting material with boom trucks, working in excavations, elevated places , and proper work zone protection against highway and/or train traffic. Trained and supervised employees engaged in both low and high electrical work, proper lockout/tagout procedures, and required personal protective equipment.

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- While Supervisor of Signals, investigated employee injuries and devised corrective action.
- While with IWT, have investigated and reconstructed a wide range of employee injury and fatality cases across virtually all railroad operating departments.
- Familiar with OSHA regulations and how they apply to the rail industry.
- Completed 30-hour OSHA training courses #510 *Occupational Safety and Health Standards for Construction* and #3095 *Electrical Standards*.
- Currently certified by the North American Board of Certified Energy Practitioners (NABCEP) as a "PV [Photo Voltaic Energy System] Installer." This certification requires extensive training on the National Electric Code (NEC), the National Electric Safety Code (NESC), the passage of a four-hour closed book examination, and ongoing Continuing Education Units.

Photography, Video, and Computer-Generated Animation:

- Over 30 years of experience in still photography in a variety of formats, former owner of an aerial photography company.
- Have lectured to fellow forensic accident reconstructionists on both photographic and video-based evidence collection techniques.
- Have shot VHS, SVHS, MiniDV, Betacam SP analog video. Currently shoot MiniDV and digital video in both 4:3 720p and 16:9 HD 1080p.
- Use digital video to precisely time and simultaneously record as evidence crossing flasher/gate operation. Also use digital video to determine speed of passing trains and the amount of sight distance available to motorists through vegetation at crossings.
- Have shot gyro-stabilized video from the ground and onboard moving trains and hyrail vehicles.
- Create animated sequences for accident reenactment and concept-visualization using the ElectricImage Animation System (EIAS) and 3-D Studio Max.
- Can overlay ("composite") animated elements on top of video footage to aid in accident sequence visualization. Most commonly used to create an animated "dashboard" to display locomotive event recorder data on a second-by-second basis over synchronized head-end video footage.
- Use Photomodeler Scanner to create accurate three dimensional models of damaged locomotives, rolling stock, and highway vehicles from photographs. Also create three dimensional models of complete accident scenes, including crossing surface condition and surrounding vegetation.
- Analyze locomotive video for timing and evidence of manipulation.
- Have had video and animated footage used by the National Transportation Safety Board (NTSB) for crash analysis, and presented by NTSB at its final Public Hearing on the accident in Washington, D.C.
- Create finished video productions for use at trial in IWT's in-house editing suite using Adobe Premiere.

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Statistical Analysis:

- Well versed in the use of Microsoft Excel for data collection and assimilation, interpolation, graphing, and statistical analysis.
- Well versed in, and have taught college-level courses in, the construction of Relational Database Management Systems (RDBMS) using Microsoft Access, coded in Access Basic (a superset of Visual Basic) to create commercial grade, efficient, high volume throughput data analysis systems. Can migrate Access database to SQL Server when required.
- Have created and maintain Access databases of Federal Railroad Administration (FRA) Accident/Injury data from 1975 to present, and can perform statistical analysis and create data subsets using any combination of search criteria at a level far exceeding that available on FRA's website.
- Have created and maintain Access databases of Federal Railroad Administration (FRA) False Proceed Signal and Crossing Activation Failure data from 1995 to present, and can perform statistical analysis and create data subsets using any combination of search criteria at a level far exceeding that available on FRA's website.
- Have constructed custom Access databases for locomotive fuel consumption studies, from importing text-based source data to the daily creation and delivery of high-level reports and graphs.

Legal Services:

- Assist Counsel in initial determination of case viability
- Prepare detailed list of discovery items required
- Prepare detailed list of interrogatories
- Assist Counsel in preparing to take opposing fact witness and expert witness depositions
- Attend opposing expert depositions, if requested, to offer instantaneous evaluation and generate additional questions based on expert responses
- Prepare affidavits and Expert Report
- Create demonstrative evidence for trial, including drawings, PowerPoint presentations, and video and computer animation, if requested
- Experienced in deposition and trial settings, present well to juries
- Cost effective

Published Works:

- *IronWood Guide to Railway Safety* – CD-ROM Series (Editor-in-Chief)

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- *Encyclopedia of Forensic Science*, 2nd Edition (2013) – contributed Chapter 147 *Railroad Accident Reconstruction*

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