Curriculum Vitae

Chris Bloomberg, P.E.

Profession: Mr. Bloomberg is a consulting engineer specializing in the reconstruction of vehicular accidents. He has analyzed in excess of a thousand accidents involving cars, tractor-trailers, pedestrians, bicyclists, motorcycles, heavy trucks, etc. He has considerable experience with leading edge technology in the field, including tractor-trailer and automobile "black box" data retrieval systems, robust 3-dimensional accident reconstruction and simulation programs, photogrammetry software, surveying equipment, and vehicle accelerometers. Mr. Bloomberg also applies his expertise by inspecting and documenting the condition of mechanical systems, such as the brakes, on tractor-trailers and heavy trucks.

Licensure: Professional Engineer, State of Florida, License Number 55695
Professional Engineer, State of Alabama, License Number 23356

Education: *The University of Alabama at Birmingham*, Birmingham, AL
1986 to 1990 - Bachelor of Science in Materials Engineering, *Cum Laude*
1991 to 1992 - Graduate Studies in Materials Engineering

Experience: *Bloomberg Consulting, Inc.* - Pensacola, FL
2000 to present - President and Consulting Engineer

Benedict Engineering Company, Inc. - Tallahassee, FL
1998 to 1999 - Vice President of Engineering and Accident Reconstructionist
1996 to 1999 - Accident Reconstructionist and Manager of the Pensacola Office
1993 to 1996 - Accident Reconstructionist

The University of Alabama at Birmingham - Birmingham, AL
1991 to 1992 - Undergraduate Class Instructor and Materials Testing Consultant

Process Equipment Company - Birmingham, AL
1990 to 1991 - Design and Safety Analysis

The University of Alabama at Birmingham - Birmingham, AL
1989 to 1990 - Research for NASA Space Shuttle Projects
1989 to 1990 - Materials Testing Consultant

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Professional Associations:

- National Society of Professional Engineers
- National Association of Professional Accident Reconstruction Specialists
- Society of Automotive Engineers
- American Society for Testing and Materials
- Florida Engineering Society
- ASM International
- Phi Kappa Phi
- Tau Beta Pi
- Alpha Sigma Mu

Training:

- Ongoing Accident Reconstruction Training – Since 1993, Mr. Bloomberg has analyzed hundreds of SAE technical papers, crash tests, and other leading edge research in the field of engineering and accident reconstruction.
- Traffic Accident Reconstruction, *Northwestern University*, Evanston, IL
- Commercial Vehicle Accident Reconstruction, *Texas A & M*, Denton, TX
- Extracting and Analyzing Data from Electronic Control Modules, *Detroit Diesel Training Center*, Detroit, MI
- Electronic Technician for On Highway Trucks, *Caterpillar Training Center*, Birmingham, AL
- Highway Event Data Recorder Symposium (Vehicle "Black Box" Systems), *National Transportation Safety Board*, Ashburn, VA
- Crash Data Retrieval Certification (Vehicle "Black Box" Systems), *Collision Safety Institute*, Houston, TX
- Crash Data Retrieval Conference, *ARC Network*, Dallas, TX
- Crash Data Retrieval Conference, *ARC Network*, Houston, TX
- Crash Data Analyst Certification, *Collision Safety Institute*, Atlanta, GA
- HTTG Commercial Vehicle Brake Testing, *Transportation Research Center*, East Liberty, OH
- Commercial Vehicle Braking Systems, *Society of Automotive Engineers*, Detroit, MI
- Vehicle Drivetrains, *Society of Automotive Engineers*, Detroit, MI
- HVE-3D Computer Simulations – HVE Forum, *Engineering Dynamics*, Las Vegas, NV
- HVE-3D Computer Simulations – HVE Forum, *Engineering Dynamics*, San Francisco, CA
- HVE-3D Computer Simulations – HVE Forum, *Engineering Dynamics*, Miami,
- FLHVE-3D Computer Simulations – HVE Forum, *Engineering Dynamics*, Phoenix, AZ
- HVE-2D Computer Simulations, *Northwestern University*, Tallahassee, FL

- Injuries, Anatomy, Biomechanics, and Federal Regulations, *Society of Automotive Engineers*, Detroit, MI
- Biomaterials, *University of Alabama at Birmingham*
- Emergency Collision Avoidance, *Labatt's Test Track*, Toronto, Canada
- Human Factors, *Catair Conference*, Toronto, Canada
- Human Factors for Traffic Accident Reconstruction, *University of Massachusetts, Amherst*, MA
- Commercial Vehicle Inspection, *Florida Trucking Association*, Jasper, FL
- Defensive Driving Strategy, *National Safety Council*, Tallahassee, FL
- Fracture Mechanics, *University of Alabama at Birmingham*
- Non-Destructive Testing, *University of Alabama at Birmingham*

Synopsis:

Mr. Bloomberg has extensive knowledge and experience in the areas of engineering and accident reconstruction. He has been involved in the documentation, analysis, and reconstruction of over a thousand vehicle accidents. Included in those have been cases involving automobiles, pedestrians, bicyclists, tractor-trailers, heavy trucks, motorcycles, etc. His experience has included vehicle rollover analysis, nighttime and daytime visibility studies, seat belt use and effectiveness, traffic signal sequencing, headlamp filament analysis, and time/speed/distance analysis. He has considerable experience with leading edge technology in the field, including tractor-trailer and automobile "black box" data retrieval systems, robust 3-dimensional accident reconstruction and simulation programs, photogrammetry software, surveying equipment, and vehicle accelerometers. His experience also includes the inspection and documentation of the condition of mechanical systems on tractor-trailers and heavy trucks, such as the brakes, in order to determine if the maintenance of these systems contributed to the cause of the accident in question.

Mr. Bloomberg has been qualified as an expert in Florida, Alabama, Mississippi, and Georgia. He has been qualified in both state and federal courts. In the area of accident reconstruction, he has given testimony regarding speeds of vehicles, "black box" data, tractor-trailer brakes, avoidance possibilities, vehicle crush and delta-v, time and distance relationships, headlamp usage, reaction times, etc. In the area of vehicle restraints, he has given testimony regarding seat belt usage and effectiveness, restraint components, occupant compartment intrusion, vehicle interior damage, occupant kinematics, etc.

6/2009

Curriculum Vitae

Dr. J. Marcus Hollis, PhD, PE

Profession: Dr. Hollis is a bio-mechanical engineer specializing in biomechanics, injury causation, and seat belt effectiveness. He analyzes how the human body reacts to forces generated from an accident in order to determine if the injuries are consistent with the accident event. Dr. Hollis utilizes a robust 3-dimensional simulation program to determine how an occupant moves in a particular collision, what the occupant collides with, the forces that are generated, and whether seat belt use would have prevented the reported injuries.

Licensure: Professional Engineer, State of Florida, License Number 63326
Professional Engineer, State of Alabama, License Number 15069

Education: *University of California*, San Diego, CA
1988 – Doctor of Philosophy in Bioengineering
University of Alabama at Birmingham, Birmingham, AL
1983 – Master of Science in Biomedical Engineering
Clemson University, Clemson, SC
1979 – Bachelor of Science in Civil Engineering

Experience: *Bloomberg Consulting, Inc.* - Pensacola, FL
2005 to present - Biomechanics and Injury Causation Consultant

University of South Alabama - Mobile, AL
1995 to present – Adjunct Associate Professor, Orthopedic Surgery
1996 to 2006 – Adjunct Associate Professor, Mechanical Engineering

University of Arkansas for Medical Sciences – Little Rock, AR
1988 to 1995 – Assistant Professor, Orthopedic Surgery

University of California, San Diego – La Jolla, CA
1984 to 1988 – Research Associate, Orthopedic Biomechanics

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Current Research:

- Determination of Cervical Spine Substructure Mechanical Properties (Injury Threshold Related)

Awards:

- The American Orthopedic Society for Sports Medicine: Excellence in Research as Applied to Sports Medicine, Clinical Science (Co-Author), 1990
- The American Orthopedic Society for Sports Medicine: Excellence in Basic Science Research, Sports Science (Co-Author), 1986
- Anterior Cruciate Ligament (ACL) Study Group: Effects of ACL Injury and Reconstruction of Miniscal Strain

Patents:

- Patent Number 6652260 – Composite Allograft Press
- Patent Number 6293971 – Composite Allograft, Press & Methods
- Patent Number 6081741 – Infrared Surgical Site Locating Device & Methods
- Patent Number 5981828 – Composite Allograft, Press, and Methods
- Patent Number 5824078 – Composite Allograft, Press, and Methods
- Patent Number 5402800 – Ankle Laxity Measurement System
- Pending - Infrared Surgical Site Locating Device with Laser
- Application in Progress – Minimally Invasive Method for Soft Tissue Suturing

Professional Associations:

- Society of Automotive Engineers
- Orthopedic Research Society
- American Society of Mechanical Engineers
- ASTM International, formerly American Society for Testing and Materials

Training:

- Ongoing Training – Dr. Hollis has analyzed hundreds of SAE technical papers, crash tests, and other leading edge research in the fields of medicine, engineering, and accident reconstruction.
- SAE STAPP Crash Conference
- SAE Airbag Conference
- ASME Bioengineering Conferences
- Orthopedic Research Conferences

Recent Presentations:

- ROBOTIC BIOMECHANICAL TESTING OF CERVICAL SPINE STRUCTURES, J.M**. Hollis** and S. Kolakanuru 25th Southern Biomedical Engineering Conference, Miami, FL, 2009.
- COMPARISON OF CERVICAL SPINE FIXATION DEVICES, **J. Marcus Hollis**, Viorel Raducan, Proceedings of BioMed2009, 44th Frontiers in Biomedical Devices Conference, June 8-9, 2009, Irvine, California, USA
- Current Technology in Spine and Spinal implant Evaluation: Robotic Testing, **J Marcus Hollis**, Proceedings of BioMed2009, 44th Frontiers in Biomedical Devices Conference, June 8-9, 2009, Irvine, California, USA

Papers:

- *Cyclic and Mechanical Testing of Instrumented Swine Spines*, Masters Thesis, University of Alabama at Birmingham, Birmingham, AL, 1983. Thesis Advisor: Professor Jack E. Lemons
- *Development and Application of a Method for Determining the In Situ Forces in Anterior Cruciate Ligament Fiber Bundles*, Ph.D. Dissertation, University of California, San Diego, CA, 1988. Dissertation Advisor: Professor Savio L.Y. Woo
- Nasca RJ, **Hollis JM**, Lemons JE, Cool TA: Cyclic Axial Loading of Spinal Implants. *Spine* 10(9): 792-798 (1985)
- Inoue M, McGurk-Burleson E, **Hollis JM**, Woo, SL-Y: Treatment of Medial Collateral Ligament Injury: I. The Importance of Anterior Cruciate Ligament on the Varus-Valgus Knee Laxity. The 1986 American Orthopedic Society for Sports Medicine Excellence in Research Award (Sports Science). *Am J Sports Med* 15(1): 15-21 (1987)
- Bean DJ, **Hollis JM**, Woo SL-Y, Convery FR: Sustained Pressurization of Polymethylmethacrylate - A Comparison of Low and Moderate Viscosity Bone Cements. *Journal of Orthopedic Research* 6(4): 580-584 (1988)
- Lyon RM, Woo SL-Y, **Hollis JM**, Marcin JP, Lee EB: A New Device to Measure the Structural Properties of the Femur-Anterior Cruciate Ligament-Tibia Complex. *Journal of Biomechanical Engineering* 111:350-354 (1989)
- **Hollis JM**, Takai S, Adams DJ, Horibe S, Woo SL-Y: The Effects of Knee Motion and External Loading on the Length of the Anterior Cruciate Ligament (ACL): A Kinematic Study. *Journal of Biomechanical Engineering* 113:208-214 (1991)

- Woo SL-Y, **Hollis JM**, Adams DJ, Lyon RM, Takai S.: Tensile Properties of the Human Femur-Anterior Cruciate Ligament-Tibia Complex: The Effects of Specimen Age and Orientation. *Am J Sports Med* 19(3): 217-225 (1991)
- **Hollis JM**: Use of a Six Degree of Freedom Position Control Actuator to Study Joint Mechanics. *Advances in Bioengineering* 20:409 (ASME) (1991)
- Flahiff CM, Nelson CL, Gruenwald JM, **Hollis JM**: A Biomechanical Evaluation of an Intramedullary Fixation Device for Intertrochanteric Fractures. *J Trauma* 35:23-27 (1993)
- Hadjari MH, **Hollis JM**, Hofmann OE, Flahiff CM, Nelson CL: Initial Stability of Porous Coated Acetabular Implants: The Effect of Screw Placement, Screw Tightness, Defect Type, and Oversize Implants. *Clinical Orthopedics* 307:117-123 (1994)
- **Hollis JM,** Blasier RD, Flahiff CM: Simulated Lateral Ankle Ligament Injury: Change in Ankle Stability. *Am J Sports Med* 23(6): 672-677 (1995)
- **Hollis JM**, Blasier RD, Flahiff CM, Hofmann OE: Biomechanical Comparison of Reconstruction Techniques in Simulated Lateral Ankle Ligament Injury. *Am J Sports Med* 23(6): 678-682 (1995)
- Flahiff CM, Brooks AT, **Hollis JM**, Vander Shilden JL, Nicholas RW: Biomechanical Analysis of Patellar Tendon Allografts as a Function of Age. *Am J Sports Med* 23(3): 354-358 (1995)
- **Hollis JM**, Niciforis PW, Pearsall AW. Change in Mensical Strain with ACL Injury and After Reconstruction. *Am J Sports Med* 28(5): 700-04 (2000)
- Pearsall, AW; **Hollis, JM**; Russell, Jr., GV; Stokes, D: "A Biomechanical Comparison of Reconstruction Techniques for Disruption of the Acromioclavicular and Coracoclavicular Ligaments." *J Southern Ortho Assoc. Spring 2002: 11(1):11-17*
- Albert W. Pearsall, IV, MD; **J. Marcus Hollis, PhD**; George V. Russell, Jr., MD; Zachary Scheer, BS:" A Biomechanical Comparison of Three Lower Extremity Tendons for Ligamentous Reconstruction about the Knee". *Arthroscopy*. Vol 19, No. 10, 2003
- Pearsall, AW; **Hollis, JM**: "The Effect of Posterior Cruciate Ligament Injury and Reconstruction Upon Meniscal Strain." *The American Journal of Sports Medicine*. In Press

- **Hollis JM**, Woo SL-Y: Estimation of ACL Loads *in situ:* Indirect Methods. In: The Anterior Cruciate Ligament: Current and Future Concepts, D.W. Jackson (ed.), Raven Press
- Flahiff CM, **Hollis JM**: "Mechanical Properties and Use of Orthopedic Graft Tissues" in Encyclopedia Handbook of Biomaterials and Bioengineering Part A: Materials. Wise, D.L. (ed.) Marcel Dekker, Inc., 1(16):517-539 (1995)
- **Hollis JM**, Flahiff CM: "Factors Affecting Bone Ingrowth" in Encyclopedia Handbook of Biomaterials and Bioengineering Part B: Applications. Wise, D.L. (ed.) Marcel Dekker, Inc., l(29):799-821 (1995)
- Crary JL, **Hollis JM**, Manoli A 2nd. The effect of plantar fascia release on strain in the spring and long plantar ligaments. Foot Ankle Int. 2003 Mar;24(3):245-50.
- Pearsall, AW; **Hollis, JM**: "The Effect of Posterior Cruciate Ligament Injury and Reconstruction Upon Meniscal Strain." *The American Journal of Sports Medicine*. Am J Sports Med. 2004 Oct-Nov;32(7):1675-80.
- Kovaleski JE, **Hollis MJ**, Norell PM, Vicory JR, Heitman RJ. Sex and competitive status in ankle inversion-eversion range of motion of college students. Percept Mot Skills. 2004 Dec;99(3 Pt 2):1257-62.
- Pearsall AW, Kovaleski JE, Heitman RJ, Gurchiek LR, **Hollis JM**. The relationships between instrumented measurements of ankle and knee ligamentous laxity and generalized joint laxity. J Sports Med Phys Fitness. 2006 Mar;46(1):104-10.
- JE Kovaleski, PM Norrell, RJ Heitman, **JM Hollis**, AW Pearsall, Knee and Ankle Position, Anterior Drawer Laxity, and Stiffness of the Ankle Complex, Journal of Athletic Training 2008;43(3)

The papers and presentations section represents a partial listing of Dr. Hollis' research and published documents. A complete list can be supplied upon request.

06/2009

Curriculum Vitae

Chris J. Medwell, P.E.

Profession: Mr. Medwell is an engineer specializing in the investigation and reconstruction of motor vehicle collisions. He has considerable experience with leading edge technology in the field, including tractor-trailer and automobile "black box" data retrieval systems, robust 3-dimensional accident reconstruction and simulation programs, surveying equipment, and vehicle accelerometers. Mr. Medwell has both a mechanical and a civil engineering background that gives him insight into both the motor vehicle and the roadway design features as factors in accident dynamics and causation. Mr. Medwell also applies his expertise to cause and origin investigations of motor vehicle and machinery fires.

Licensure: Professional Engineer, State of Florida, License Number 70343
Professional Engineer, State of Alabama, License Number 29499
Professional Engineer, State of Mississippi, License Number 19668
Professional Engineer, State of Texas, License Number 99481
Professional Engineer, Province of Ontario (Canada), License Number 90259102

Certification: Motor Vehicle Specialty Mechanic, State of Michigan (Automobile and heavy truck brakes, suspension and steering, and motorcycle repair), Certificate Number M201931

Education: *The University of Waterloo*, Waterloo, Ontario, Canada
1977 to 1982 - Bachelor of Applied Science in Mechanical Engineering

Experience: *Bloomberg Consulting, Inc.* - Pensacola, FL
2006 to present – Accident Reconstructionist

HRYCAY Consulting Engineers Inc., previously Becker Transportation Safety or BTS Consulting Engineers - Windsor, Ontario, Canada
1989 to 2006 - Investigative Engineer, Motor Vehicle Accident Group

Ford Motor Company of Canada - Oakville, Ontario, Canada
1987 to 1988 - Dealer Operations Manager, Atlantic Region
1983 to 1987 - Zone Service Manager, Atlantic Region
1982 to 1983 – Warranty Claims, Service Engineering, Service Hotline

Transport Canada - Ottawa, Ontario, Canada
1979 - Department of Road Safety

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Professional Associations:

- Alabama Board of Professional Engineers & Land Surveyors
- Florida Board of Professional Engineers
- Mississippi Board of Licensure for Professional Engineers & Surveyors
- Texas Board of Professional Engineers (TBPE)
- Professional Engineers Ontario (PEO)
- Society of Automotive Engineers (SAE)
- National Association of Fire Investigators (NAFI)

Professional Development:

- Since 1989, Mr. Medwell has analyzed hundreds of SAE technical papers, crash tests, and other leading edge research in the field of engineering and accident reconstruction. In 2007, Mr. Medwell took and passed both the Fundamentals of Engineering (FE) and the Principles and Practice of Engineering (PE) examinations, required for licensure as a Professional Engineer in the USA. For the PE exam, Mr. Medwell chose to take the Civil Engineering Transportation specialty, which covers such topics as Transportation Planning, Traffic Analysis, Traffic Safety, and Roadway and Roadside Design.
- "Heavy Vehicle Crash Reconstruction", *National Association of Professional Accident Reconstruction Specialists*, Ocean City, MD (October 2009)
- "Crash Data Retrieval (CDR) Data Analyst Certification" (Vehicle "Black Box" Systems), *Collision Safety Institute,* New Orleans, LA (August 2009)
- "National Seminar on Fire Analysis Litigation", *National Association of Fire Investigators*, Sarasota, FL (August 2008)
- "Vehicle Fire Investigations – Protecting and Preserving Your Evidence", *Florida Advisory Committee on Arson Prevention,* Tallahassee, FL (June 2008)
- "Highway Vehicle EDR Symposium", *Society of Automotive Engineers (SAE),* Ashburn, VA (September 2007)
- "Cummins INSITE 6 Qualification", *Cummins Mid-South L.L.C.*, Morgan City, LA. (June 2007)
- "Human Factors for Traffic Accident Reconstruction", *Accident Dynamics Research Center*, University of Massachusetts, Amherst, MA. (June 2007)
- "REC-TEC Accident Reconstruction Software Training", taught by George M Bonnett; *IPTM*, Jacksonville, FL. (August 2006)
- "Caterpillar Engine Control Modules, Data Extraction", *Thompson Power Systems*, Birmingham, AL. (August 2006)
- "Crash Data Retrieval (CDR) Data Analyst Certification" (Vehicle "Black Box" Systems), *Collision Safety Institute,* Clinton Township, MI (March 2006)
- "Accident Reconstruction," 2005 World Congress and Exhibition, *SAE* Detroit, Michigan (April 2005)

- "DDEC Reports/Data Extrication," *Detroit Diesel Training Center*, Redford, Michigan (December 2004)
- "Safety, Braking, Steering," *SAE* 2004 Commercial Vehicle Engineering Congress and Exhibition, Chicago, Illinois (October 2004)
- "Motor Vehicle Theft & Fire Investigation," *Michigan Arson Prevention Committee*, Portland, Michigan (June 2004)
- "Motor Vehicle Theft & Fire Investigation", *Michigan Arson Prevention Committee*, Detroit, Michigan (June 2003)
- "Accident Reconstruction," *SAE* 2003 International Congress and Exposition, Detroit, Michigan (March 2003)
- "Hands on Training HVE- 3D," *Engineering Dynamics Corporation*, Windsor, Ontario (July 2002)
- "Crash Data Retrieval (CDR) Operator's Certification Course," *Collision Safety Institute*, Toronto, Ontario (June 2002)
- "Accident Reconstruction," *SAE* 2002 International Congress and Exposition, Detroit, Michigan (March 2002)
- "Braking Performance of Heavy Commercial Vehicles," *Richard Radlinski*, at International Truck Assembly Plant, Chatham, Ontario (June 2001)
- "Electronic Engine Controls & Accident Reconstruction," *BTS Consulting Engineers*, Windsor, Ontario (June 2001)
- "Traffic Control in Survey Zones," *BTS Consulting Engineers*, Windsor, Ontario (February 2001)
- "Brakes/ABS Braking Systems," *Snap-On Tools Training Center*, Auburn Hills, Michigan, (April 2000)
- "HVE Forum," *Engineering Dynamics Corporation*, Atlanta, Georgia, (April 1999)
- "Fire Investigation/Arson Task Force Seminar," *International Association of Arson Investigators (Ontario Chapter)*, London, Ontario, (October 1998)
- "NFPA 921 Fire & Explosion Investigation," *International Association of Arson Investigators (Ontario Chapter)*, Burlington, Ontario, (September 1997)
- "Accident Reconstruction," *SAE* 1997 International Congress and Exposition, Detroit, Michigan, (February 1997)
- "Accident Reconstruction," *SAE* 1996 International Congress and Exposition, Detroit, Michigan, (February 1996)
- "Crash Tests & Heavy Truck Skid Tests," *Transportation Research Centre*, East Liberty, Ohio (October 1995)
- "Vehicle Fire/Theft Investigation," *Criminal Justice Training Center, Macomb Community College*, Macomb County, Michigan (July 1995)
- "Human Factors in Traffic Collisions," *Canadian Association of Technical Accident Investigators and Reconstructionists (CATAIR)*, Mississauga, Ontario (August 1994)

- "Emergency Collision Avoidance", *Labatt's Test Track*, Mississauga, Ontario (August 1994)
- "Air Brake Endorsement," *St. Clair College*, Windsor, Ontario (May 1994)
- "Accident Reconstruction - Technology and Animation IV," *SAE* 1994 International Congress and Exposition, Detroit, Michigan (March 1994)
- "Vehicle Fire/Theft Investigation," *Criminal Justice Training Center, Macomb Community College*, Macomb County, Michigan (July 1993)
- "Accident Reconstruction - Technology and Animation III," *SAE* 1993 International Congress and Exposition, Detroit, Michigan (March 1993)
- "BH_2VK Crash Testing Project," *Mobility Systems Inc.*, San Bernardino, California (August 1992)
- "Safety," *SAE* 1992 Future Transportation Technology Conference and Exposition, Costa Mesa, California (August 1992)
- "40th Annual Seminar," *International Association of Auto Theft Investigators, Inc.*, Toronto, Ontario (August 1992)
- "Automotive Electrical Systems Servicing," *Oakland Community College*, Auburn Hills, Michigan (Winter Term 1992)
- "Accident Reconstruction - Technology and Animation II," *SAE* 1992 International Congress and Exposition, Detroit, Michigan (February 1992)
- "Fire Investigation Seminar," *International Association of Arson Investigators, Inc. (Ontario Chapter)*, Windsor, Ontario (June 1991)
- "Front Suspension and Steering Service," *Oakland Community College*, Auburn Hills, Michigan (Winter Term 1991)
- "Technical Fundamentals for the Fire Investigator," *University of Wisconsin*, Madison, Wisconsin (April 1991)
- "Accident Reconstruction: Technology and Animation," *SAE* 1991 International Congress and Exposition, Detroit, Michigan (February 1991)
- "Brake System Service," *Oakland Community College*, Auburn Hills, Michigan (Fall Term 1990)
- "Accident Reconstruction" and "Vehicle Crashworthiness and Occupant Protection in Frontal Collisions," *SAE* 1990 International Congress and Exposition, Detroit, Michigan (February 1990)
- While employed with Ford, Mr. Medwell regularly attended short courses and seminars for training in servicing and diagnostic procedures for various gasoline and diesel engines, drive train, steering, suspension and braking systems, electronic engine control systems, anti-lock brake systems, and electronic fuel injection. Mr. Medwell also undertook training in Basic Service Management and Dealership Accounting Practices.

Synopsis:

Mr. Medwell has extensive knowledge and experience in motor vehicle accident investigations and reconstruction. He has been involved in the documentation, analysis, and reconstruction of more than 900 serious motor vehicle accidents, including more than 300 involving heavy vehicles (tractor-trailers, trucks, buses) and more than 80 involving motorcycles. Mr. Medwell has also investigated and reconstructed numerous collisions involving pedestrians and bicycles. His experience has included time/speed/distance analysis, mechanical and electrical system failures, nighttime and daytime visibility studies, seat belt use, headlamp filament analysis, and traffic signal sequencing. He has considerable experience with leading edge technology in the field, including tractor-trailer and automobile "black box" data retrieval systems, robust 3-dimensional accident reconstruction and simulation programs, surveying equipment, and vehicle accelerometers.

Mr. Medwell has testified in court or at deposition as an expert or consultant in Alabama, Florida, Illinois, Indiana, Michigan, Nebraska, New York, Oklahoma, Ontario, and Grand Cayman. He has been qualified as an expert in both state and federal courts. In the area of accident reconstruction, he has given testimony regarding speeds of vehicles, avoidance possibilities, vehicle crush and delta-v, pedestrian impact evidence, time and distance relationships, headlamp usage, reaction times, etc. He has testified regarding Traffic Impact Analysis. He has also testified regarding the cause and origin of vehicle fires, and regarding the physical condition of a motor vehicle being consistent or inconsistent with the reported circumstances of an insured fire, collision, or theft loss.

05/2010

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Curriculum Vitae

Michael F. Bosworth P.E.

Profession: Michael Bosworth is a Professional Engineer and Consultant with experience, education, and training in the fields of Mechanical Engineering, Civil Engineering and Forensic Engineering. His practice currently focuses on providing consulting services to legal, insurance, governmental, and corporate clients throughout North America. Specific areas of expertise include vehicle collision reconstruction, commercial vehicle crash investigation and analysis, highway work zone traffic control, traffic control devices, vehicle system components and dynamics, and driver factors. Michael has provided consulting services in 11 states including expert witness testimony at the deposition or jury trial levels in Florida and Illinois

With a professional and academic background in both Mechanical Engineering and Civil Engineering, Mr. Bosworth investigates product and premises liability and mechanical failure cases. Michael applies his forensic expertise to construction inspection and materials testing of commercial, residential, and high-rise buildings. His professional experience includes inspection of structural elements, masonry, steel reinforcing, cables, formwork, bolts, and fireproofing. Included areas of expertise are construction plan compliance, construction equipment failure, construction and materials defects, worksite accidents and other worksite issues as they relate to construction.

Licensure & Certification: Professional Engineer, State of Florida, License Number 67515
American Concrete Institute (ACI) Certified Structural Masonry Inspector, Certification Number SMI-2432

Education: *University of Florida*, Gainesville, Florida
Bachelors in Mechanical Engineering, 2002

University of Florida, Gainesville, Florida
Masters in Civil Engineering, 2009

Northwestern University, Chicago, Illinois
Advanced Traffic Accident Reconstruction, 2008

Member of Chi Epsilon National Engineering Honor Society for outstanding academic achievement

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Bloomberg Consulting

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Experience:

Bloomberg Consulting, Inc. – Tampa, Florida

2010 – Senior Forensic Engineer

- Vehicular Crash Investigation & Reconstruction
- Mechanical Failure Analysis
- Product and Premises Liability
- Facility and Site Safety Investigation
- Electronic Event Recorder Data Retrieval
- Construction Materials and Compliance Inspection & Testing
- Construction Accident Investigation & Reconstruction

Armstrong Forensic Engineers, Inc. – Tampa, Florida

2008 to 2010 – Senior Forensic Engineer

- Vehicular Crash Investigation & Reconstruction
- Mechanical Failure Analysis
- Product and Premises Liability
- Facility and Site Safety Investigation
- Construction Materials and Compliance Inspection & Testing
- Construction Accident Investigation & Reconstruction
- Expert Witness Services at the Deposition, Mediation and Jury Trial Level

Universal Engineering Sciences – Gainesville, Florida

2005 to 2007 – Project Manager / Construction Forensics Specialist

- Construction Forensics Engineer
- Construction Services Engineer
- Commercial and Residential Building Inspector

Proctor Engineering Research and Consulting, Inc. – Gainesville, Florida

2002 to 2004 – Forensic Engineer

- Vehicular Crash Investigation & Reconstruction
- Product and Premises Liability
- Construction Accident Investigation & Reconstruction
- Structural Failure Investigation

MACTEC, Inc. – Newberry, Florida

2000 to 2003 – Project Engineer

- Environmental Field Work Team Leader
- Senior draftsman

NASA: Florida Space Research Institute – Cape Canaveral, Florida

2001 – Engineering Intern under shuttle astronaut Dr. Sam Durrance

University of Florida – Gainesville, Florida

2000 – CAD / 3-D Modeling Computer Drafting Instructor

Professional Associations:

- Society of Automotive Engineers (SAE)
- Institute of Transportation Engineers (ITE)
- American Concrete Institute (ACI)
- Pyrotechnics Guild International Inc. (PGII)

Publications & Presentations:

"Commercial Vehicle Dynamics for Collision Reconstruction", ARC Crash Conference Technical Series, Las Vegas, Nevada, 2009 for inclusion in Collision Magazine, coauthor.

"Vehicular and Driver Factors in Commercial Vehicle Safety", Proceedings of the 1st International Road Safety Conference, Cape Town, South Africa, 2009, coauthor.

Training:

- 2009 - Florida Safe Home Wind and Hurricane Mitigation Inspector Certification
- 2008 - Advanced Animation and Forensic Engineering Analysis using Vista FX3
- 2005 - Florida Concrete Products Association Certified Structural Masonry Inspector (Renewed 2009)
- 2003 - Pyrotechnics certification, Pyrotechnics Guild International through the Florida Pyrotechnics Guild
- 2001 - 40 Hr - Hazwoper hazardous waste site safety certification (expired)
- 2000 - High speed machining machine design and construction under Jiri Tlusty - University of Florida.
- 1996 - Former Brevard County, Florida Emergency Medical Technician

Consulting Experience:

VEHICULAR ACCIDENT INVESTIGATION AND RECONSTRUCTION

Crash analysis and reconstruction involving:

Passenger vehicles	Trucks	Trailers
Semi tractor-trailers	Commercial trucks	Intermodal Equipment
Recreational vehicles	Motorcycles	Pedestrians
Bicycles	Roadside hazards	Hazardous road conditions
Highway control and safety devices	Road construction sites	Parking lots
Intersections	Crosswalks	Heavy Equipment

Reconstruction and Analysis Types

Automotive component analysis	Vehicle crush analysis
Vehicle fire analysis	Road elevation and line-of-site analysis
Roll-over analysis	Road analysis of tire marks, furrows and gouges
Vehicular fluid discharge analysis	Lane change analysis
Crash sequence reconstruction	Crash site measurement and mapping
Crash reconstruction animation	Bulb filament analysis
Momentum Analysis	Mechanical Failure
Biomechanical impact and failure analysis	Static analysis of lumbar spine of seated driver
Seat belt	Tire Failure
ATV / Scooter Mechanical Failure	Weight distribution / Sway control systems
Electric Brakes and Controllers	Custom off-road vehicle design analysis

Consulting Experience (continued):

BUILDING CONSTRUCTION, CONSTRUCTION EQUIPMENT AND CONSTRUCTION MATERIALS

- Threshold building inspection as an agent
- Reinforcing steel inspection
- Brick inspection
- Vapor barrier installation
- Retainer walls
- Fire-proofing inspection
- Bolt inspection
- Water intrusion using thermography
- Concrete strength testing – cylinders, rebound hammer
- Concrete Strength Testing - Windsor probe
- OSHA, NIOSH & ADA compliance
- Receiving platform failure (southern-pine wood material failure)
- Dishwasher Failure (flooding)
- Commercial mower roll-over
- Welder electrocution
- Wind Damage Inspection
- Water Damage Inspection
- Hail Damage Inspection
- Non-threshold building inspector
- Masonry inspection
- Concrete, Grout and Mortar testing
- Rebar, joint reinforcing wire and post tension cable
- Precast panel and ornamentals inspection
- Project plans and specifications compliance
- Grout mapping using thermography
- Structure Scanning with GPR technology
- Elevator towers
- 3-View cabinet hinge failure
- Forklift control system design analysis
- Sharp edge analysis
- Track-loader Occupant Sensor System failure
- Slip and fall
- Construction Equipment Piezo-alarm Analysis
- Material fall and strike
- Furniture Failure
- Hangar door counter-weight mechanical analysis