

# Michael J. McCort, P.E.

Ponderosa Associates, Ltd  
130 Miners Drive  
Lafayette, CO 80026  
303.666.8112  
303.666.4169 (fax)  
[mccort@ponderosa-assoc.com](mailto:mccort@ponderosa-assoc.com)

**Education**                      **1994 - 1997**                      University of Colorado                      Boulder, CO  
M.S. Civil Engineering

**1985 - 1990**                      The Ohio State University                      Columbus, OH  
B.S. Civil Engineering

**Accreditations**

Professional Engineer (PE), Colorado #31713

Professional Engineer (PE), Alabama # 28398-E

Engineer in Training (EIT), Ohio

Accreditation Commission for Traffic Accident Reconstruction (ACTAR) #1002, 1999

**Professional Experience**                      **1997 - Present**                      Ponderosa Associates, Ltd.                      Lafayette, CO  
Senior Engineer

- Performed investigation, reconstruction and analysis of motor vehicle accidents, including automobiles, SUV rollovers, heavy vehicle, bicycle and motorcycle.
  - Vehicle accident reconstruction – bicycles, motorcycles, automobiles, SUV, Heavy Trucks.
  - Developed in-house capability to download ECM data from heavy truck engines.
  - Developed in-house vehicle instrumentation capabilities with Isaac Instruments equipment for measuring accelerations and yaw, pitch roll rates in vehicles.
  - In-house training of other engineers in accident reconstruction and use of accident reconstruction tools including AutoCAD, HVE, and instrumentation equipment and software.
  - Participated in full scale roll over test of a 1991 Ford Explorer. Performed post reconstruction to validate methods and values used.
  - Developed technique to model and reconstruct rollover accidents using 3D Studio Max animation software to match vehicle damage to roadway evidence in virtual space.
  - Operated 4WD utility vehicle for full-scale dynamic stability and rollover testing. Performed full scale testing on vehicle to determine roll and pitch stability and center of gravity.
  - Designed and performed static load testing to model head forces to a vehicle roof structure in a rollover accident.
  - Performed static and dynamic load testing on various vehicle components.
  - Developed and implemented in-house capability for field reverse projection photogrammetry techniques to locate roadway evidence of motor vehicle accidents.
  - Developed in-house tools to compute vehicle crush coefficients, including coefficients for use in force saturation method of crush analysis.

- Reconstruction of motor vehicle accidents using recognized software tools including EDCRASH, EDSMAC, HVE 2D, HVE 3D, Photomodeler, 3D Studio Max, and AutoCAD.
- Performed finite element modeling and strain gage testing of vehicle structures.
  - Generated 3D space frame model of 40-foot transit bus structure for finite element modeling. Assisted in finite element modeling of bus structure. Designed and implemented structural modifications to bus floor and suspension structures. Performed strain gage testing of full scale bus during driving maneuvers.
  - Generated 3D space frame model of 60-foot articulated transit bus structure for finite element modeling. Assisted in finite element modeling of bus structure. Performed strain gage testing of full-scale bus during driving maneuvers. Performed fatigue analysis on structure.
  - Generated 3D space frame model of double-decker intermodal transit bus structure for finite element modeling. Assisted in finite element modeling of bus structure.
  - Performed strain gage testing and stress analysis of failures on a commercial riding mower.
  - Performed strain gage testing of a hockey stick to measure stresses during a slapshot.
- Performed investigation and analysis of building code issues, OSHA regulations, structural and civil design issues and construction accidents.
  - Performed analysis of flooring and roofing issues including leaks, waterproofing and moisture transmission through concrete floor slabs.
  - Performed analysis of construction accidents including review of OSHA and building codes and analysis of forces/dynamics involved in accident.
  - Performed design consulting services for home inspections, foundation design, retaining wall design and building design.

**1994 - 1997** National Institute of Science and Technology Boulder, CO  
Professional Research Experience Program (PREP) Fellow

- Performed research related to the measurement of seismic level ground vibrations.
  - Established a continuous vibration monitoring station next to construction site that can be accessed for data via an internet web site.
  - Performed vibration measurements and analyses using seismic accelerometers and Fourier spectral analysis software.
  - Wrote supplement to user's manual for operation of vibration measurement equipment describing theories of operation and related measurement techniques.
  - Reviewed design documents pertaining to Advanced Technology Laboratory (ATL) vibration issues.

**1995 - 1996** Knott Laboratory Denver, CO  
Consulting Contract Engineer (as graduate student under direction of John Dow, PhD, Graduate Advisor, University of Colorado)

- Performed frequency analysis of recorded police dispatch tapes to determine if the sound of a gunshot was recorded on the tape.
- Performed frequency analysis of audio from a video recording to determine if illegal proprietary equipment is being used in a factory.

**1990 - 1994** Stone & Webster Engineering Englewood, CO

- Career Development Engineer (Appointed 1990)
- Engineer (Appointed 1993)

- Performed design and analysis of reinforced concrete and steel structures.
  - Navajo Scrubber Project, Page, Arizona, Salt River Project: Layout and design of various steel and concrete structures for emissions retrofit project including design of reinforced mat foundation for an 800 ft. stack.
  - Healy Clean Coal Project, Healy, AL, Alaska Industrial Development and Export Authority: Performed steel layout and design including: turbine crane runway, coal storage silos, floor steel, vertical and horizontal bracing systems and STAAD computer modeling of entire boiler superstructure.
  - Joppa Steam Electric Station, IL, Electric Energy, Inc.: Performed steel layout and design for braced steel frame buildings including design of steel silos and STAAD computer analysis of structure.
  - Riverside Generating Plant, Minneapolis, MN, Northern States Power Co.: Performed layout and design of a concrete demineralization tank and supporting steel for mechanical equipment.
  - Rocky Flats D.O.E. Plant, Golden, CO, EG&G: Reviewed maintenance work orders submitted by plant supervisors and performed necessary designs for modifications.
  - Bradley Lake Hydroelectric Power Plant, Homer, AK, Alaska Energy Authority: Performed reinforced concrete design for fuel storage building, including design of foundation walls, column piers, and mat foundation.

**1986 - 1990**

Ruhlin Construction Company Columbus, OH

- Student Engineer – Cooperative Education Program in association with The Ohio State University
- Performed tasks associated with large construction projects including assistance to job superintendents, change order review, estimation take-off, and participation in contract bid packages.
  - State Office Tower II Construction Project, Columbus, OH, State of Ohio
  - Columbus City Center Mall, Columbus, OH, State of Ohio

**Additional  
Professional  
Activities**

Lecturer: Samford University Cumberland School of Law Continuing Legal Education seminar. Truck Accident Litigation, "Effective Use of Animation and Reconstruction Experts", November 16, 2007, Birmingham, AL.

Driver: Full scale crash test of a Toyota Corolla into a bollard post. Performed instrumentation of bollard with strain gages and performed analysis with Algor Finite Element Analysis software.

Algor Finite Element Analysis Courses 906 and 930 Static Analyses and Non Linear Dynamic Analyses, April 3-5, 2006, Denver, CO

Participant: Full scale roll over test of a 1991 Ford Explorer 2WD utilizing remotely operated throttle, brakes and steering with trip mechanism due to tire/road friction only.

Lecturer: Presentation on Rollover Reconstruction and a Full Scale Rollover Test of a Ford Explorer, Attorneys Information Exchange Group (AIEG), August 26, 2005, Denver, CO

HVE Forum by Engineering Dynamics Corporation, May 28-30, 2003, Las Vegas, NV

SAE TOPTEC – Passenger Vehicle Rollover TOPTEC: Causes, Prevention and Injury Prevalence, April 22-23, 2002, Scottsdale, AZ

SAE TOPTEC – Accident Reconstruction TOPTEC: Special Topics, May 22-23, 2001 Tempe, AZ

Caterpillar 01 Introduction to Electronic Technician (ET), Wagner Equipment Co., October 12, 2006, Lafayette, CO

SAE Seminar – Braking Performance of Heavy Commercial Vehicles, September 26-27, 2002, Lafayette, CO

HVE Training Course by Engineering Dynamics Corporation, November 12-13, 2001, Lafayette, CO (<http://www.edccorp.com/educate.html>)

Lecturer: Yaw Marks and Rollovers segment of Accident Reconstruction Seminar, Ponderosa Associates, October 17, 2000

Vetronix Crash Data Retrieval System (CDR) – Instruction on use of CDR for airbag module (black box) downloads (<http://www.vetronix.com/diagnostics/cdr/>)

Airbag Deployment Demonstration – Full scale test fire of airbag

Lieka Total Station survey instrument and Mapscenes data acquisition system for Pocket PC. Beta testing for Mapscenes system and training session on Lieka TS

Bosch 8 hr Crash Data Retrieval (CDR) Technician Course, Grand Junction, CO, 12/18/2009

Bosch 32 hr Crash Data Retrieval (CDR) Analyst Course, Grand Junction, CO, 12/18/2009

How to Interpret Commercial Vehicle Event Data Recorders, 40 hr, University of Tulsa Continuing Engineering & Science Education, February 22-26, 2010

HVE Forum by Engineering Dynamics Corporation, Feb 21 - 25, 2011, Scottsdale, AZ

**Professional  
Affiliations**

American Society of Civil Engineers ASCE  
Society of Automotive Engineers SAE  
Chi Epsilon Civil Engineering Honor Society  
National Society of Professional Engineers  
National Association of Professional Accident Reconstruction Specialists  
NAPARS

**Publications**

Master's Thesis: The Theoretical Basis of Digital Signal Processing and  
Implementation to Measure Ground Vibrations

Occupant Kinematics and Biomechanical Injury Evaluation in Recreational  
Rides, Sances, Kumaresan, Finocchiaro, McCort