



WARREN

**THE WARREN GROUP, INC.** FORENSIC ENGINEERS & CONSULTANTS  
7805 ST. ANDREWS ROAD | PO BOX 1608 | IRMO, SOUTH CAROLINA 29063  
TEL 803.732.6600 FAX 803.732.7576 ↓↓ WARRENF0RENSICS.COM

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***Roger E. Davis, P.E.***

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Mechanical Engineer

**Aerial Lifts**

**Failure Analysis**

**Water and Sewer Systems**

**Industrial Accident Investigation**

**Machine Safeguarding**

**Products Liability**

**Vehicle Mechanical Failure**

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## EDUCATION

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| <b>1975</b> | <b>Masters of Business Administration</b><br>University of South Carolina            |
| <b>1968</b> | <b>Bachelor of Science in Mechanical Engineering</b><br>University of South Carolina |
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## EXPERIENCE

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| <b>1998 to Present</b> | <p>The Warren Group, Inc., Irmo, South Carolina. Senior Consulting Engineer performing specialized consulting and training related to property damage and personal injuries involving mechanical systems.</p> <p><b>Mechanical Failure Analysis</b><br/>Swimming pools, hot tubs, and recreational water hazards, potable and wastewater systems, trucks and heavy equipment, diesel engines, property damage loss analysis, investigation of accidents and the analysis of designs with regard to safety.</p> <p><b>Safety Design Analysis (both personal injury and property damage)</b><br/>Industrial accident reconstruction, machine safeguarding, machine controls, OSHA compliance, standards and codes compliance, products liability, product failures, failure analysis, consumer products.</p> <p><b>Fire &amp; Explosion Analysis</b><br/>Determine origin and cause, cause of fire spread, cause of the injury or property damage and establish responsibility for fires involving agricultural, heavy equipment and industrial machinery.</p> <p><b>Training</b><br/>Fire and life safety, standards and codes, hazard identification, risk assessment, engineering design for safety and products liability.</p> |
| <b>1995 to 1998</b>    | <p>Founding Partner, WDS Development, Lexington, South Carolina.<br/>Development of residential properties.</p>  |
| <b>1987 to 1995</b>    | <p>Laidlaw Environmental Services, Inc., Columbia, South Carolina. Vice President, Engineering and Regulatory Affairs. Largest hazardous/industrial waste management firm in North America. Responsible for a professional staff of 150 employees involved in Engineering, Health and Safety and Regulatory compliance for all North American operations (over 100 sites).</p>   |

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## EXPERIENCE, Continued

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**1987 to 1995**

(Continued)

- Played major role in due diligence investigations of targeted acquisitions, including a multi-site company purchased for more than \$230 million.
- Developed and marketed OSHA/DOT/RCRA internal training programs to outside clients, including such firms as Dow-Jones, Lockheed, City of Los Angeles and others.
- Served on steering committee for business process improvement (re-engineering).
- Responsible for major capital construction, including successful major modifications to the largest hazardous waste incinerator in North America, under very tight regulatory controls, schedule and budget.
- Contributed to dramatic improvements realized in safety performance over a four-year period. Auto liability costs reduced by 83% (despite increased mileage), Worker's Compensation claims per million hours worked reduced by 50%.
- Ran the oversight of medical surveillance program.
- Instituted internal and external compliance audit programs improving performance and reducing liability. Company cited by EI Digest, a major trade publication, for environmental excellence at 11 major facilities in 1995.
- Developed and promoted positions on legislation and regulations, initiated necessary legal challenges.

**1983 to 1987**

Laidlaw Environmental Services, Inc., Pinewood, South Carolina. Facility Manager. Overall manager of site with Profit and Loss responsibility, involving transportation, treatment and disposal of wastes, production and marketing of absorbent clays (cat litter), and major civil construction activities.

- Developed the conceptual design for major components of the most advanced landfill in the United States.
- Internalized construction costs of landfill cells to realize savings over 30%.
- Instituted significant improvements in worker protection, site security, site appearance and regulatory compliance.
- Handled majority of community and media relations for a site inherently objectionable to much of the public.

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## EXPERIENCE, Continued

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<b>1981 to 1983</b>	South Carolina Department of Health and Environmental Control (DHEC), Columbia, South Carolina. Assistant Deputy Commissioner for Environmental Quality Control. Responsible for all environmental programs and special assignments.
<b>1971 to 1981</b>	South Carolina Department of Health and Environmental Control (DHEC), Columbia, South Carolina. Engineer/Manager of Water Supply Division District Director, Central Midlands Health District Director, Domestic Wastewater Division  Responsibilities included roles in both management and field inspections for certification of utilities construction (water/sewer/landfills). As a staff engineer, reviewed and approved plans and specifications for public water systems, swimming pools, and bathing beaches. Later, as a District Engineer, was responsible for operation of water systems, sewer systems, swimming pools, and bathing beaches in the four Midland county areas.
<b>1969 to 1971</b>	The Torrington Company, Clinton, South Carolina. Manufacturing Engineer.
<b>1968 to 1969</b>	Charleston Naval Shipyard, Charleston, South Carolina. Fluid Power Engineer
<b>1968 to 1974</b>	South Carolina Air National Guard. Non-destructive Inspection Technician
<b>1966 to 1968</b>	Cummins Carolina Diesel, Columbia, South Carolina. Diesel Mechanic

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## PROFESSIONAL ORGANIZATIONS

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National Association of Fire Investigators (NAFI)  
American Society of Mechanical Engineers (ASME)

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## PAST AFFILIATIONS

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Chairman of Building Committee, Lexington Medical Center Board, Lexington, South Carolina  
Vice Chairman, Lexington Medical Center Board of Directors  
ASM International  
Vice President, Board Member of Environmental Technology Council, Washington D.C.  
Advisory Committee, Environmental Training Center, Central Carolina Community College, Sumter, South Carolina  
Young Engineer of the Year, Columbia Chapter, South Carolina Society of Professional Engineers

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## **PAST AFFILIATIONS (Continued)**

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Advisory Committee, State Water Plan (Water Resources Commission)  
Participant on Governor's Task Force on National Resources and Environment  
Water and Pollution Control Association of South Carolina  
South Carolina Industrial Waste Management Association  
South Carolina Chamber of Commerce Technical Committee

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## **REGISTRATION**

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Professional Engineer in South Carolina #04958  
Professional Engineer in North Carolina #031145  
Professional Engineer in Alabama #28018  
Professional Engineer in Georgia # 032335  
Professional Engineer in Mississippi # 19646  
Professional Engineer in Arkansas # 19577  
National Council of Examiners for Engineering and Surveying #20291

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## **CONTINUING EDUCATION**

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### **December 12, 2019**

"Use of Insulation and Vapor Barriers," Online-PDH Online Course

### **December 9, 2019**

"OSHA Noise Hazards," EZ-pdh Online Course

### **December 9, 2019**

"Construction Site Safety," EZ-pdh Online Course

### **December 6, 2019**

"Engineering Economics Made Easier with MS Excel," SunCam Online Course

### **December 3, 2019**

"Understanding Construction Contracts," PDH Engineer Online Course

### **November 25, 2019**

"Anatomy of Construction Defects," Red Vector Online Course

### **December 12, 2018**

"An Introduction to Roofing Systems," PDHengineer Online Course

10/8/2020

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## CONTINUING EDUCATION (Continued)

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**December 12, 2018**

“Valve Fundamentals,” SunCam Online Course

**June 8, 2018**

“Forensic Engineering Part B, Four Classes of Metallurgical and Mechanical Failures,” SunCam Online Course

**June 1, 2018**

“Forensic Engineering Part A, Conducting Failure Analysis of Metallic Materials,” SunCam Online Course

**December 28, 2017**

“What Every Engineer Should Know About Structures – Part D – Bending Strength of Materials,” SunCam, Online Course

**December 21, 2017**

“What Every Engineer Should Know About Structures – Part C – Axial Strength of Materials,” SunCam, Online Course

**December 14, 2017**

“What Every Engineer Should Know About Structures – Part A – Statics Fundamentals,” SunCam, Online Course

**December 7, 2017**

“What Every Engineer Should Know About Structures – Part B – Statics Applications,” SunCam, Online Course

**January 22, 2016**

“FARO Focus Training,” 3D Scanner Training by Dustin Forensics, Irmo, South Carolina

**November 8-11, 2015**

National Association of Subrogation Professionals, 2015 Annual Conference, Reno, Nevada

- Manufactured Fireplaces & Chimney Fires: Expectations for Fire Investigations and Guidance for Subrogation Success
- Expert Challenges and the Revised NFPA 1033
- The Investigation of Electrical Overloads
- Marine Fire Investigations
- Beware Thor’s Hammer: Hidden Hazards in Non-Metallic Cable Installations
- Grain Storage Tank Failures: Design, Erection, Collapse and Damage Issues
- State-Specific Subrogation Coast to Coast
- Workers’ Compensation Subrogation Arising Out of Accidents in the Restaurant and Food Industries

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## CONTINUING EDUCATION, (Continued)

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### **August 6, 2015**

Training in “Warren’s Written Fall Protection Program & Policies,” by Steve Hunt, CPCU, ARM, Fall Protection Manager, Irmo, South Carolina

“Fall Protection - 29 CFR 1926, Subpart M (1926.500- 1926.503) Training,” Course designed by: Prosafe Solutions, Inc., conducted by Steve Hunt, CPCU, ARM, Fall Protection Manager, Irmo, South Carolina

- Part I – Guardrails & Personal Fall Arrest Systems
- Part II – Horizontal Lifelines, Safety Nets, Roofing Procedures & Training

### **July 13, 2015**

“Fall Protection 101 Training” presented by Kent Earle of Capital Safety, Irmo, South Carolina

### **August 18, 2014**

CAL-EMA Safety Assessment Program, 5-Year Damage Assessment Certification, presented by the CAL-EMA National Database in Irmo, South Carolina

### **June 30, 2014**

“International Building Code & More: Plumbing and Mechanical Requirements (RV-10406),” RedVector.com, Online Course

### **June 30, 2014**

“Compressed Air Systems in Industrial Plants,” RedVector.com, Online Course

### **June 29, 2014**

“Design & Construction Claims,” RedVector.com, Online Course

### **June 27, 2014**

“Safety: Machine Operation,” RedVector.com, Online Course

### **December 30, 2013**

“Automotive Suspension Systems,” PDHengineer.com, Online Course

### **December 27, 2013**

“Compressed Air Systems,” PDHonline.org, Inc., Online Course

### **December 18, 2013**

“NFPA 70 - 2014 National Electrical Code Essentials,” presented by National Fire Protection Association (NFPA), Online Seminar

### **July 3, 2013**

“HVAC Design - Fundamentals,” SunCam.com, Online Course

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## CONTINUING EDUCATION, (Continued)

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**September 28, 2012**

“Abusive Behavior – Professionalism In and Out of the Courtroom,” NC Association of Defense Attorneys 2012 Fall Seminar, Greensboro, NC

**June 28, 2012**

“Liquid Piping System Process,” PDHcentral.com, Online Course

**March 8, 2012**

“Manufactured Fireplace Fires: Recognition, Causes & Potential Litigation,” Online webinar presented by NASP

**December 27, 2011**

“Finite Element Analysis,” RedVector.com, Online Course

**December 27, 2011**

“Preparation for the Marine Fire Scene,” CFITrainer.net, Online Course

**December 27, 2011**

“Fire and Explosion Investigations: Utilizing NFPA 1033 and 921,” CFITrainer.net, Online Course

**December 29, 2010**

“Control of Hazardous Energy (Lockout/Tagout),” Eduwhere, Online Course

**December 28, 2010**

“Forensic Engineering Part B,” SunCam, Inc., Online Course

**June 30, 2010**

“Fluid Power Part 1 Hydraulic Principles,” PDHengineer.com, Online Course

**June 29, 2010**

“Process Piping Part 3- Non-Metallic Piping Systems,” PDHengineer.com, Online Course

**March 24, 2010**

“Arc Mapping Basics,” CFITrainer.net, Online Course

**December 15, 2009**

“An Analysis of the Station Nightclub Fire,” CFITrainer.net, Online Course

**November 24, 2009**

“Introduction to Control and Instrumentation,” SunCam, Online Course

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## CONTINUING EDUCATION, (Continued)

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**November 16, 2009**

“Moisture Problems in Buildings,” American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., The South Carolina Chapter

**December 24, 2008**

“Safeguarding Equipment and Protecting Workers from Amputations,” Discountpdh.com, Online Course

**April 28, 2008**

“Corporate Forensic Engineering Training,” SEAK, Inc. Seminar, Irmo, South Carolina

**December 7, 2007**

“Introduction to Auto Cad,” presented by Central Carolina Technical College, Division of Continuing Education & Work Force Development, Sumter, South Carolina

**December 27, 2006**

“Over Current Protection & Grounding,” RedVector.com, Online Course

**December 27, 2006**

“Lighting and Appliances,” RedVector.com, Online Course

**December 26, 2006**

“Requirements for Electrical Installations,” RedVector.com, Online Course

**December 22, 2006**

“Building Pathology: An Introduction,” RedVector.com, Online Course

**November 28, 2006**

“Building Pathology: Roofs,” RedVector.com, Online Course

**September 27-30, 2004**

Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, Eastern Kentucky University, Richmond, Kentucky

**September 16, 2004**

“Report Writing,” SEAK, Inc., Columbia, South Carolina

**June 29 – July 2, 2004**

“Crane Safety,” Georgia Institute of Technology, Distance Learning and Professional Education Center, Atlanta, Georgia

**October 9, 2003**

“Law School for Experts,” SEAK, Inc. Seminar, Columbia, South Carolina

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## CONTINUING EDUCATION, (Continued)

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**October 7, 2003**

“Root Cause Failure Analysis,” ASME Seminar, Columbia, South Carolina

**June 26, 2003**

“Machine Guarding Technician Course,” The National Association of Safety Professionals, On-Line Curriculum

**March 22-25, 2000**

2000 National Advanced Fire, Arson and Explosion Investigation Science and Technology Program, Eastern Kentucky University, Richmond, Kentucky

- Electrical Fire Causes
- Explosion Investigation
- Fire Scene Analysis
- Computer Fire Modeling

**March 29-31, 1999**

1999 Property Loss Research Bureau Claims Conference, New Orleans, Louisiana

- Advanced Property Subrogation
- Preparing for a Deposition
- Managing Major Commercial Building Losses
- Boiler versus Open Peril Coverage and Loss Adjusting
- Legal Issues in Arson Defense

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## COURSES, SEMINARS AND LECTURES PRESENTED

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**November 10, 2015**

“*Who Else Owns This Workers’ Compensation Loss? Looking Deeper When the Facts First Appear to be Bad,*” presented at the National Association of Subrogation Professionals, Eureka! Subro Education - 2015 Annual Conference

**Three-hour seminar, approved by the North Carolina Department of Insurance, Continuing Education Agency Services Division, entitled, “*Investigating Property and Liability Claims: Determining Who Else Owns This Loss?*”**

**March 28, 2011**

Travelers Insurance, Charlotte, North Carolina

**October 4, 2011**

Montgomery Mutual Insurance, Charlotte, North Carolina

**June 13, 2012**

EMC Insurance, Charlotte, North Carolina

**March 31, 2011**

“Utility Piping Case Studies: Faulty Workmanship - Has Crossman Clarified Anything?” Course presented at Columbia Conference Center, Columbia, SC

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## **COURSES, SEMINARS AND LECTURES PRESENTED, (Cont.)**

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***“Water Damage”*** presented at the Large Loss and Complex Claims Investigations Seminar, The Warren Group, Irmo, South Carolina

- **August 27, 2009**
- **October 22, 2009**
- **March 18, 2010**
- **May 20, 2010**

**November 3, 2008**

“Water, Water Everywhere – Evaluating Water Damage Losses,” presented to Claims Management Association of SC, Charleston, South Carolina

**November 29, 2006**

“Homeowner’s Insurance Losses,” presented to insurance adjusters at Kemper Insurance, Charlotte, North Carolina

**September 28, 2005**

Course presented to insurance adjusters and industry, “Engineering Aspects of Residential & Commercial Losses,” at the Investigate, Mitigate and Subrogate Seminar, Charlotte, North Carolina

**October 8, 2004**

“Who Else Owns this Loss and other Investigative Techniques,” presented to the South Carolina Association of Legal Investigators, Spartanburg, South Carolina

**June 1994**

Presentation to the Safety Council of Nebraska, Inc., at the Ninth Annual Environmental Management Conference

**June 25, 1991**

Presentation to The Ninth Carolina Regional Conference on “Issues in Environmental Law and Technology,” sponsored by the Greenville, South Carolina Chamber of Commerce

**September 27, 1991**

“Environmental Risk Assessment and Risk Communication Seminar,” a case study presented to the South Carolina Chamber of Commerce Technical Committee

**April 24, 1991**

“Current Environmental Issues in the Legal/Political Arena,” presented to the Paralegal Association, Columbia, South Carolina

**June 6, 1990**

Technical presentation, “Secure Landfills,” presented at Haz Mat International 1990 Conference, Atlantic City, New Jersey

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## **COURSES, SEMINARS AND LECTURES PRESENTED, (Cont.)**

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**April 25, 1990**

“Regulation of Hazardous Waste Management,” presented to Fiber Producer Conference, Greenville, South Carolina, through Clemson College of Engineering Continuing Education

**January 16, 1990**

Seminar presenter at the “Solid Waste and Sludge Workshop,” Davis and Floyd Engineers, Greenwood South Carolina

**October 19, 1989**

“Government Involvement in Industry,” presented to the Carolinas Chapter of National Solid Waste Management Association, Charlotte, North Carolina

**October 4, 1989**

Speech presented to South Atlantic Section of Air and Waste Management Association, Virginia Beach, Virginia

**1988**

“Treatment Methods for Waste Management,” presented to the School of Public Health, University of South Carolina

**March 31, 1988**

“Current Environmental Issues,” presented to Environmental Law Society, University of South Carolina School of Law

**September 20, 1986**

Speech to Board of Directors, South Carolina Medical Association, Hilton Head Island, South Carolina

**October 1 & 2, 1984**

“Environmental Management,” presented to South Carolina Society of Professional Engineers

**March 1984**

Speech to Conference on Textile Wastewater Treatment and Air Pollution Control, Office of Professional Development of the College of Commerce and Industry, Clemson University

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## **PUBLICATIONS**

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*“A Simple Property Damage Claim?”* The Analyst Newsletter, October 1998

*“Don’t Blow Your Pipes: Failures Associated with Pressurized CPVC Water Piping,”*  
The Analyst Newsletter, April 2001

*“The Year of the Crane,”* The Warren Group 2003 Year in Review, March 2004