



# James H. Anspach, P.G.

Specialist Consultant

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## Areas of Expertise

- Risk Management
- Project Development
- Business Process Management
- Business Unit and Team Development
- Standard of Care
- Strategic Planning
- Instruction / Training
- Project/ Team Management
- Claim and Litigation Management
- Contract Management
- Quality Assurance and Control
- Policy Development
- Research Projects

## Background

Mr. Anspach is a Pegasus Global Holdings, Inc. Specialist Consultant and an authority on standard of care issues for the practice of subsurface utility engineering. He has 30+ years' experience, 25 years of which has been with So-Deep, in the research, development, and application of risk management techniques in the field of utilities. His specialties include: surface geophysical techniques for the purpose of utility identification and detection, conflict analysis, relocation coordination, condition assessment, and data development, retention and management.

Mr. Anspach serves on national committees regarding utility issues. He was a prime consultant for the 1996 FAA Safety Study, "Cable Cuts – Causes and Preventive Measures." He assisted in developing the 2004 FAA ANI-10 policy on utility damage prevention and utility mapping for FAA facilities. As a So-Deep principal and chairman of ASCE 38-02, he wrote the standard for utility depiction and collection guidelines for engineering projects.

Mr. Anspach is a frequent speaker at national engineering conferences. He has practical experience managing many large subsurface utility engineering projects and contracts with scopes including utility mapping, utility coordination, utility relocation design, and utility avoidance strategies. He has developed and taught classes in subsurface utility engineering for many universities, utility companies, and government organizations. He served as a keynote speaker at the 1994 National Transportation Safety Board Damage Prevention Symposium and at the 2000 National Damage Prevention Conference. He wrote an editorial column for ten years in Underground Focus Magazine called "The Engineer's View."

Mr. Anspach has numerous awards, citations, and plaques regarding his history of damage prevention work, several from the US Secretary of Transportation. He was in responsible charge of numerous So-Deep projects including one of the nation's first "multi-locate" contracts (1983, Fairfax County cable build, VA) and was one of the first to present the advantages of this concept at several One-Call Symposiums in the early 1980s. Mr. Anspach served on the Course Development Review Team for the National Highway Institute's Highway/Utilities Issue Course, 2001 edition and is an instructor for this course.

In 2002, Mr. Anspach was an instructor at University of Wisconsin for their Trenchless Technology and Avoiding Paving Cuts professional development courses. He is currently ASCE's instructor for their 2 day class on CI/ASCE 38-02. He has served as an expert witness in litigation

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involving utility damages. During his tenure with So-Deep, Mr. Anspach has participated in numerous professional activities and authored many publications in furtherance of the subsurface utility engineering profession. Some of these activities and publications are set forth below.

From 1978-1983, Mr. Anspach served as a consultant and then Director for Heath Consultants. He performed natural gas and water leakage surveys, Underground Storage Tank tightness testing, and investigated natural gas explosions. He worked closely with the Office of Pipeline Safety and the National Transportation Safety Board on leakage regulations and on the classifications of natural gas leakage. He developed leakage control programs for several major natural gas distribution companies, and presented classes in pipeline location and characteristics of gas explosions for many utility owners and other organizations.

Mr. Anspach has also participated in a wide variety of research projects, either as an Investigator or Principal Investigator, for over 30 years. Many of these projects are performed in conjunction with research universities. Jim's wide array of expertise in surface geophysics, data repositories, damage prevention statutes and procedures, utility design, highway design, utility construction practices, and project management make him a valuable addition to research teams dealing with these, and peripheral, issues.

The following sampling of projects illustrates the breadth of these investigations. These do not include the many projects where Jim had significant input as a project resource but was not part of the primary research team.

1978: Gas Research Institute, development of the early ground penetrating radar units for utility detection

1985: Battelle Research Institute, correlation of depth accuracy claims by surface geophysics vs actual exposure

1995: Virginia Center for Innovative Technology, correlation of accuracy and completeness of utility records to actual utility location

1999: FHWA, "Cost Savings On Highway Projects Utilizing Subsurface Utility Engineering." (in association with Purdue University)

2007: National Academies/SHRPII, "Encouraging Innovation in Locating and Characterizing Utilities" (in association with Louisiana Tech University)

2007: National Academies/SHRPII, "DOT-Utility Coordination: Understanding Key Aspects of the Problem and Opportunities for Improvement." (in association with University of Florida)

2008: National Academies/TRB, "Utility Location and Highway Design"

He has worked on numerous engagements (*see attached Representative Engagement Experience*).

### Education and Registrations

#### **Education**

- B.S., Geologic Sciences, Pennsylvania State University, 1977 (Geology, Geophysics, Geochemistry Options)
- Appalachian Underground Corrosion Short Courses (Basic, Intermediate, Advanced)
- Institute Of Gas Technology, 1979. Gas Distribution Engineer Certificate

#### **Registrations**

- Professional Geologist, Virginia, Pennsylvania, Tennessee

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### Affiliations

- American Society of Civil Engineers, Chair - Construction Standards Council (1998-current)
- American Society of Civil Engineers, Vice-Chair: Codes & Standards Board Committee (1998-current)
- American Society of Civil Engineers - Chair of national standards activity “Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data” (CI/ASCE 38-02) (1998-current)
- Construction Institute – Executive Committee, Research & Engineering Directorate. (1998-current)
- National Highway Institute (FHWA) – Instructor / Course Developer “Highway / Utilities Issues Course” (2001-current)
- National Academies / TRB SHRPII Co-Principal Investigator “Encouraging Innovation in Locating and Characterizing Utilities”
- National Academies / TRB SHRPII Investigator “DOT-Utility Coordination: Understanding Key Aspects of the Problem and Opportunities for Improvement”
- National Academies / TRB NCHRP Principal Investigator “Utility Location and Highway Design”
- Past Member - Environmental and Engineering Geophysical Society
- Past Member - Network Reliability Committee, Alliance for Telecommunication Industry Solutions subcommittee.
- Past Senior Member - American Society of Highway Engineers
- Member - International Who’s Who of Professionals
- Member – International Who’s Who in Information Technology
- Board Advisor – National Damage Prevention Conference

### Technical Papers and Presentations

Mr. Anspach has authored and presented numerous technical papers and articles on various topics related to Utilities, Risk Management and Underground Construction issues (*see attached Technical Papers Documents and Presentations*). Mr. Anspach has also been featured in many national publications:

- *Subsurface Utility Engineering – Through the Crystal Ball.* Trenchless Technology Magazine. Peninsula, OH 2005.
- *Pipeline Planning Utilizing C/I ASCE 38-02.* “New Pipeline Technologies, Security, and Safety.” American Society of Civil Engineers, Reston, VA, pages 1406-1414. 2003.
- *Pipeline Relocation Design Utilizing C/I ASCE 38-02.* “New Pipeline Technologies, Security, and Safety.” American Society of Civil Engineers, Reston, VA., pages 1415-1421. 2003.
- *Pipeline Route Selection for Rural and Cross-Country Pipelines*, American Society of Civil Engineers, Manuals and Reports on Engineering Practice No. 46, August 1998.
- *SUE Comes of Age.* Underground Construction Magazine. April 1998.
- *Utility Quality on the Level.* Constructor Magazine. March 1998.
- *SUE Applies Engineering, Surveying, and Geophysics to Damage Prevention.* Underground Focus Magazine. Sept 1997
- *Underground Utilities Detection and Excavation*, U.S. Department of Energy, Office of Nuclear and Facility Safety, DOE/EH-0541, December 1996.
- *Subsurface Utility Engineering (4 parts).* AEGIS Insurance Services Inc. Quarterly Review. 1996, 1996, 1997, 1997.
- *Subsurface Utility Engineering: Applications in Public Works*, American Public Works Association, 1997.
- *NCDOT Documented Savings from Accurate Location Data.* Underground Focus Magazine. Jan 1996.

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- *Integrating Technology into Subsurface Utility Engineering Projects.* Pipeline and Gas Journal. June 1996.
- *Subsurface Utility Engineering: Utility Detection Methods and Applications.* Proceedings of the Symposium on the Application of Geophysics to Engineering and Environmental Problems. Environmental and Engineering Geophysical Society, April 1996. Pages 443-450.
- *Subsurface Utility Engineering (SUE); Summary of Benefits, Costs, Savings, Users, Applications, Activities, and Responsibilities,* U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, January 1995.
- *Subsurface Utility Engineering,* U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, FHWA-PD-96-0004. November 1995.
- “*The Engineer’s View.*” (Bi-monthly editorial column) *Underground Focus Magazine*, Sept-Oct 1995., Nov-Dec 1995., Jan-Feb 1996., April 1996, Nov-Dec 1996, Nov-Dec 1997, Oct-Nov 2000, Apr-May 2001, Apr-May 2002.

### Technical Presentations and Publications

- Sterling Ray and Anspach, James H, et al. *Innovation in Utility Locating and Mapping Technologies.* Proceedings of the 2009 ASCE Pipelines Annual Conference, San Diego, CA, 2009.
- Anspach, James H. *Finding and Characterizing Utilities Without Records.* Proceedings of the 2009 CGA Excavation Safety Conference & Expo, Orlando, FL, 2009.
- *DOT-Utility Coordination: Understanding Key Aspects of the Problem and Opportunities for Improvement.* National Academies, SHRPII Program, Washington DC, 2009.
- *Encouraging Innovation in Locating and Characterizing Utilities,* National Academies, SHRPII Program, Washington DC, 2009.
- Sterling, Ray and Anspach, James H. et al. *Encouraging Innovation in Locating and Characterizing Buried Utilities for U.S. Transportation Projects.* 12<sup>th</sup> International Conference on Ground Penetrating Radar, June 16-19, 2008, Birmingham, UK.
- Sterling, Ray and Anspach, James H. et al. *The Importance of Utility Location and Characterization in Trenchless Applications.* International Trenchless Technology Symposium, Sao Paulo, Brazil. 2008.
- *Challenges of Utility Data Repositories.* Proceedings of the 2008 Common Ground Alliance Safety Conference, Las Vegas, NV 2008.
- *Depiction of Existing Subsurface Utility Information.* Proceedings of the CIB Annual Meeting, Beijing, China. 2006. (Co-written with Jeffery J. Lew)
- *Developing GIS Utility Information for Site Security Issues.* Proceedings of the American Association of Airport Executives GIS conference, Dallas, TX. 2005.
- *ASCE 38-02 and Airport GIS Systems.* Proceedings of the American Association of Airport Executives GIS conference, Boston, MA. 2004.
- *Collecting and Depicting Utility Data.* Proceedings of the National Damage Prevention Conference. 2004. Houston, TX. (Co-written with John Harter)
- *Reducing Uncertainty in Subsurface Utility Construction.* Proceedings of the ASCE Pipeline Annual Conference, San Diego, CA 2004. (Co-written with Frank W. Huber)
- *Construction Speed and Utilities.* GEOWORLD, Washington DC 2004.
- *Avoiding Utility Relocations.* Proceedings of the International Right of Way Association annual meeting. Austin, TX 2003.
- *Elimination of Utility Line Cuts on a Highway Project Using Subsurface Utility Engineering.* Proceedings of the CIB International Conference on Building Education and Research, London, U.K. 2000. (Co-written with Jeffery J. Lew)
- *Cost Savings On Highway Projects Utilizing Subsurface Utility Engineering.* FHWA, 1999.
- *Protecting Public Safety Through Excavation Damage Prevention,* National Transportation Safety Board, PB97-917003, NTSB/SS-97/01, December 1997.

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- *Subsurface Utility Engineering Success Stories / Subsurface Utility Engineering Evaluation Activities*. Federal Highway Administration . Proceedings of the Sixth National Highway/Utility Conference. Cleveland, OH April 16-18, 1997. Publication No. FHWA-PD-98-006.
- *Subsurface Utility Engineering (SUE)*. North Carolina Department of Transportation, Engineering Management. February 1, 1996.
- *Results and Recommendations Pertaining to Facilities Reliability*, Alliance for Telecommunications Industry Solutions, Network Reliability Steering Committee, Bellcore, February 1996.
- *Subsurface Utility Engineering: Locating before Construction*. Proceedings of the CIB International Conference on Construction Modernization and Education, Beijing, China, October 1996. (Co-written with Jeffery J. Lew)
- *Subsurface Utility Engineering: Upgrading the Quality of Utility Information*. "Advances In Underground Pipeline Engineering," Second International Conference. American Society of Civil Engineers. June 1995.
- "Find All Underground Lines Before Construction Starts." Underground Focus Magazine, April 1995.
- *Subsurface Utility Engineering: Locating Before Construction*. Proceedings of the CIB International Conference on Construction Modernization and Education, Beijing, China. October 1996. (Co-written with Jeffery J. Lew)
- *Subsurface Utility Engineering: Upgrading the Quality of Utility Information*. "Advances In Underground Pipeline Engineering," Second International Conference. American Society of Civil Engineers. June 1995. Note: Nominated for ASCE Technical Paper of the Year.
- *A Case Study of an Environmental Assessment Combining Historical Practices and Subsurface Utility Engineering*. Proceedings of the 1995 American Power Conference. April 1995. (Co-written with Lawra D. Dodge )
- *Subsurface Utility Engineering: A Damage Prevention Tool for Trenchless Technology*, Proceedings of the North American Society for Trenchless Technology, May 1995.
- *Subsurface Utility Engineering: A Proven Solution*. Written and directed by So-Deep, Inc. Produced by the U.S. Department of Transportation, Federal Highway Administration. 1995
- *Underground Precision Develops*. Engineering News Record. Feb 1994.
- *A Case Study of an Underground 138 kV Transmission Line Design Utilizing Subsurface Utility Engineering*. Proceedings of the American Power Conference, April 1994. (Co-written with Stanley E. Wilson)
- *Subsurface Utility Engineering*. Proceedings of the Fourth National Highway/Utility Conference. U.S. Department of Transportation, Federal Highway Administration, Office of Engineering. Publication No. FHWA-PD-94-032. April 1994.
- *Integrating Subsurface Utility Engineering into Damage Prevention Programs*. Proceedings of the 1994 Excavation Damage Workshop, National Transportation Safety Board. September 1994.
- *Locating and Evaluating the Condition of Underground Utilities*. Proceedings of RETROFIT '94, sponsored by Stanford University/National Science Foundation. June 1994.
- *Subsurface Utility Engineering - SUE HANDBOOK*. U.S. Department of Transportation, Federal Highway Administration, Office of Engineering. October 1994
- *Advances in Site Investigation and Detection*, "Research Needs in Automated Excavation and Material Handling in the Field," National Science Foundation, April 1993.
- *Subsurface Utility Engineering*. Proceedings of the 29th Paving and Transportation Conference, University of New Mexico, 1992.
- *A Solution Named SUE*. Airport Magazine. July 1992.
- *Out of Sight Work-With Vision*. Ohio Contractor Magazine. July 1992.
- *Improving the Quality Level of Underground Information*, Proceedings of the Third National Highway/Utility Conference, U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, Publication No. FHWA-PD-93-030, October 1992.
- *Subsurface Utility Engineering*. Engineering Times. October 1991.

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- *Subsurface Utility Engineering: A Technology for the 90's*. Written, directed, and produced by So-Deep, Inc. and distributed by the Federal Highway Administration, 1990.

### Standards and Guidelines

- *New National Utility Standards & Guidelines from AASHTO, ASCE, and FHWA*. Proceedings of the New Jersey Transportation Quality Initiative Conference, Atlantic City, NJ. 2004.
- *History of the ASCE Standard*. Proceedings of the National Highway and Utility Conference. Tampa, FL 2003.
- *Subsurface Utility Engineering (SUE) & The New National Engineering Standard For Utilities*. Proceedings of the APWA Annual Meeting, Washington DC. 2002.
- *CI ASCE 38-02. Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*. American Society of Civil Engineers, Reston, VA 2002.
- *Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data*. Proceedings of the ASCE Annual Pipeline Conference. Cleveland, OH. 2002.
- *The Role of ASCE's Construction Standards Council*. Proceedings of the ASCE Texas Section Annual Meeting, Arlington, TX. 2002.
- *SUE: New Standards – Same Old Applications*. Trenchless Technology Magazine, Oct 1999.
- *Subsurface Utility Engineering: Standards for the Depiction of Subsurface Utility Quality Levels Within Geographic Information Systems*. Proceedings of the Geographic Information Systems For Transportation Symposium (GIS-T). AASHTO. April 1995

### Program and Project Risk Management

- Anspach, James H. *Using Subsurface Utility Engineering for Risk Management on Trenchless Projects*. Proceedings of the 2009 NW Municipal Engineers Forum on Trenchless Technology. Louisiana Tech University, Held in Tacoma, WA, 2009.
- *Managing Underground Utility Risks*. Proceedings of the 2008 Chicago-land Construction Safety Council Conference, Chicago, IL, 2008.
- *Managing Underground Utility Risks*. Proceedings of the Construction Institute Conference, Chicago, IL 2006.
- *Dealing with the Challenges and Risks of Underground Construction*, Proceedings of the American Water Works Association, March 1999.
- *Defining Allocations of Risk: Support of Risk Management Standards*. Georgia Professional Engineer, December 1998.
- *Reducing Existing Underground Utility Risks on Airport Improvement Projects: Subsurface Utility Engineering*. Proceedings of the 25<sup>th</sup> International Air Transportation Conference, June 1998
- *Design and Construction Risk Management for Existing Utilities*, Proceedings of the Construction Congress V, American Society of Civil Engineers, October 1997.
- *Managing Risk on Light Rail Projects – Subsurface Utility Engineering*, Proceedings of the National Conference on Light Rail Transit, TRB/APTA, November 1995.

### Dispute Resolution

- Anspach, James H. *How Standards Affect Damage Prevention Professionals: An Expert Witness Perspective*. Proceedings of the 2009 CGA Excavation Safety Conference & Expo, Orlando, FL, 2009.
- *History of Utility Damage Prevention*. Proceedings of the 2008 Common Ground Alliance Safety Conference, Las Vegas, NV 2008.
- *Designer Tickets: Pros and Cons*. Proceedings of the National Damage Prevention Conference. 2004. Houston, TX.

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- *Reducing Utility Damages that Affect Air Traffic Control Operations.* Proceedings of the Aviation Technical Committee Symposium. Federal Aviation Administration. Washington DC. 2003. (Co-written with Kien Nguyen)
- *The Real Key to Damage Prevention.* Proceedings of the National Damage Prevention Conference. San Diego, CA. 2002.
- *Review of and Recommendations for Engineering and Construction Practices Relative to Utility Damage Prevention at the Hanford Site,* Kaiser Hanford/U.S. Department of Energy, March 1995.
- *Cable Cuts: Causes, Impacts, and Preventive Measures,* Special Review, U.S. Department of Transportation, Federal Aviation Administration, Safety Quality Assurance Division, June 1993.
- *Subsurface Utility Engineering: A Damage Prevention Tool for Trenchless Technology.* Proceedings of the North American Society for Trenchless Technology. May 1995.

Teaching & Training

- Anspach, James H. *Update of Utility Engineering Studies.* Proceedings of the 2009 FAA / AAAE GIS Conference, Chicago, IL, 2009.
- *Developing Curricula for Subsurface Utility Engineering.* Proceedings of the CIB W89 International Conference on Building Education and Research (BEAR 2003). University of Salford, U.K. 2003. Pg 492-500.

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<i>James Anspach</i> <i>Representative Engagement Experience</i>		
Industry	Type	Project Name
<b>Buildings</b>	<b>Government</b>	The White House, Washington DC, USA
<b>Buildings</b>	<b>Government</b>	The CIA, Langley VA, USA
<b>Infrastructure</b>	<b>Water/Wastewater</b>	Blue Plains Treatment Plant, Washington DC, USA
<b>Infrastructure</b>	<b>Telecommunications</b>	C&P Telephone Duct Relocation Design, Roanoke VA, USA
<b>Transportation</b>	<b>Airport</b>	National Airport, Washington DC, USA
<b>Transportation</b>	<b>Airport</b>	Dulles International Airport, Washington DC, USA
<b>Transportation</b>	<b>Airport</b>	Dulles International Airport corridor improvement project, Washington DC, USA
<b>Transportation</b>	<b>Airport</b>	SEATAC Airport NEDP Project, Seattle WA, USA
<b>Transportation</b>	<b>Highway</b>	Utilities relocation design for VDOT's City Falls Church Highway Project, VA, USA
<b>Transportation</b>	<b>Highway</b>	SR99 Project Seattle WA, USA
<b>Transportation</b>	<b>Bridge</b>	Woodrow Wilson Bridge Project VA, USA
<b>Transportation</b>	<b>Bridge</b>	Bridge replacement and improvement project, Seattle WA
<b>Power</b>	<b>Utilities</b>	Columbus Southern Power Company, Columbus OH, USA