2355 Polaris Lane North, Ste. 120
Plymouth, MN 55447

SCOTT A. NESVOLD, P.E.
PRINCIPAL & SENIOR DIRECTOR

sanesvold@engsys.com

Scott Nesvold is a Principal for ESi. Mr. Nesvold provides expert consultation in the fields of Structural Engineering and Fire Protection Engineering regarding building design, structural analysis and failure analysis for all building types. In addition, his background in Fire Protection Engineering offers the expertise to evaluate fire protection systems, fire alarm systems and to analyze the effects of fire and explosions and its impact on structural integrity and life safety. Mr. Nesvold specializes in the assessment of damage to structures and their components following catastrophic events, such as explosions and fire. Rope Access allows him to investigate areas that are difficult to access or heavily damaged.

Mr. Nesvold has an extensive background in rehabilitating historic buildings and bridges. He has applied his experience to the design and retrofit of these culturally significant structures and worked with fire and life safety codes to design and implement unique solutions to improve life safety and to preserve the historic integrity of the buildings.

Mr. Nesvold has investigated damage to structural components related to conditions ranging from serviceability issues to complete collapse. Conditions have included fire and thermal issues, corrosion and material decay, settlement and earth movement, deflections and creep of materials, as well as cracking and overstress. He has been involved in investigating construction accidents and damage resulting from construction operations.

Areas of Specialization

Construction Engineering
Engineering Analysis
Engineering Surveying
Damage Assessment
Failure Analysis
Fire Protection Engineering
Fire/Explosions
Fire Protection Systems
Fire Alarm Systems
Historic Buildings/Rehabilitating
Structural Analysis
Repair and Renovation Design
Rope Access

Education

Master of Engineering, Fire Protection, University of Maryland, College Park, MD, 2009
M.S. Structural Engineering, University of Minnesota, Minneapolis, MN, 2005
B.S. Civil Engineering, South Dakota State University, Brookings, SD, 2003

Licenses/Certifications

State of Arizona ..... P.E. License 54653
State of Florida ..... P.E. License 88175
State of Idaho ..... P.E. License 20102
State of Illinois ..... P.E. License 062.076385
State of Iowa..... P.E. License P25673
State of Louisiana ..... P.E. License PE.0048933
State of Massachusetts..... P.E. License 50327
State of Michigan ..... P.E. License 6201058897
State of Minnesota..... P.E. License 45923
State of Missouri ..... P.E. License 2013008874
State of Montana ..... P.E. License PEL-PE-LIC-90960
State of Nebraska ..... P.E. License E-18586
State of North Dakota ..... P.E. License PE-8725
State of South Dakota ..... P.E. License 11236
State of Texas ..... P.E. License 140384
State of Utah..... P.E. License 13504605-2202
State of Vermont ..... P.E. License 018.0085918
State of Wisconsin ..... P.E. License 44002-6

Professional Affiliations/Honors

Society of Fire Protection Engineers (SFPE)

International and Minnesota Chapter Member

International Association of Arson Investigators (IAAI)

Member

National Fire Protection Association (NFPA):

Technical Committee on Structures, Construction, and Materials (BLD-SCM; NFPA 5000 & 703)

National Association of Subrogation Professionals (NASP)

Member

Defense Research Institute (DRI):

DRI Construction Law SLG Committee Member

DRI Construction Defect Subcommittee Member

American Society of Civil Engineers (ASCE)

Member

American Institute of Steel Construction (AISC)

Member

Positions Held

Engineering Systems Inc., Plymouth, Minnesota

Principal & Senior Director, 2023 – Present

Senior Managing Consultant & Director of Building Sciences, 2019 – 2022

Crane Engineering, Plymouth, Minnesota

Manager, Building Science, Structural/Fire Protection Engineer, 2012 – 2018

Olson & Nesvold Engineers, Bloomington, Minnesota

Vice President/Principal Engineer/Co-Founder, 2009 – 2012

Opus Architects & Engineers, Minnetonka, Minnesota

Structural Engineer, 2006 – 2009

University of Minnesota, Minneapolis, Minnesota

Research Fellow/Assistant, 2004 – 2006

Banner Associates, Inc., Brookings, South Dakota

Structural Engineer, 2003

University of Delaware, Newark, Delaware

Undergraduate Researcher, 2002

Kansas Department of Transportation, Topeka, Kansas

Bridge Construction Inspector and Engineering Technician, 2001

Bolton & Menk, Inc., Sleepy Eye, Minnesota

Engineering Technician I, 2000 – 2001

St. Boni Fire Department, St. Bonifacious, Minnesota

Captain, Safety Officer, 2005 – 2010

Continuing Education

Silent Knight Fire Alarm Systems:

Programming and Installation, 2021

ASCE 59-11 Blast Protection of Buildings:

Blast-resistant Design of Systems, and Components, 2016

Fire-Lite Fire Alarm Systems:

Programming and Installation, 2015

Firefighter II, National Board of Fire Service Professional Qualifications

Firefighter I, National Board of Fire Service Professional Qualifications

Fundamentals of Fire Investigation, IAAI, Sayreville, NJ, 2013

NFPA workshop on ITM Frequencies, Quincy, MA, 2012

National Fire Academy Course, Arson Detection for the First Responder

United States Fire Administration, St. Cloud, MN, 2009

Publications/Presentations

"Structural Condition Assessment – Knowing the Hazard of a Hazard", **S.A. Nesvold**, presented at Minnesota Chapter IAAI Annual Training Conference, St. Cloud, MN, 2025

"Friction Characterization and Mitigation in Large-Scale 6DOF Multi-Axial Hybrid Simulation", **S.A. Nesvold**, Earthquake Engineering & Structural Dynamics published by John Wiley & Sons Ltd, 2025

"Structural Condition Assessment – Is That Building Safe?", **S.A. Nesvold**, presented at Wyoming IAAI Chapter 2024 Conference, Laramie, WY, 2024

"Unique Case Studies Involving Construction Defects on Complex Claims", **S.A. Nesvold**, presented at 2023 Construction Super Conference, Hollywood, FL, 2023

"Fire Protection Systems and Common Failures", **S.A. Nesvold**, presented at Secura Insurance, Bloomington, MN, 2023

"Fire Protection Systems and Common Failures", **S.A. Nesvold**, presented at Travelers Insurance, St. Paul, MN, 2023

"Multi-Story Wood Construction: Issues That Can Arise from Innovative Wood Products", **S.A. Nesvold**, presented at the Construction Law Essentials (Special 2-Day Program): Sticks & Bricks PLUS Fundamentals, ABA Regional Seattle, Seattle, WA, 2021

"From Uptown to Downtown: Issues Regarding Mixed-Use Multi-Level Construction", **S.A. Nesvold,** presented at the North Dakota Defense Lawyers Association (NDDLA) – 2018 Annual Meeting and Seminar, Bismarck, ND, 2018

"Technology You Need When Investigating a Loss", **S.A. Nesvold**, presented at DRI's Construction Law Committee, Nashville, TN, 2018

"Don't Let Your Sprinkler System Drain You", **S.A. Nesvold**, presented at the Minnesota Chapter, Society of Fire Protection Engineers, Roseville, MN, 2018

"Structural Condition Assessment – Is That Building Safe?", **S.A. Nesvold**, presented at Colorado IAAI Annual Training Conference, Vail, CO, 2017

"The Future has Arrived: New Construction Methods and Materials That Are Changing the Industry", **S.A. Nesvold**, presented at Fox Valley Adjusters Association, Appleton, WI, 2017

"Steer Your Experts in the Right Direction", **S.A. Nesvold**, presented at the Defense Research Institute, Young Lawyers Conference, Austin, TX, 2017

"Structural Condition Assessment – Knowing the Hazards of a Hazard", **S.A. Nesvold**, presented at the Bureau of Alcohol, Tobacco, Firearms and Explosives – National Response Team Training, Redstone Arsenal, Huntsville, AL, 2017, Instructor

"Effects of Fire on Structures – Is That Building Safe?", **S.A. Nesvold**, presented at the Minnesota Structural Engineers Association (MNSEA), Golden Valley, MN, 2017

"Structural Condition Assessment – Is That Building Safe?", **S.A. Nesvold**, presented at the Minnesota Chapter International Association of Arson Investigators (IAAI), New Brighton, MN, 2016

"Structural Condition Assessment – A Safety Course in the Effects of Fire and Explosions on Buildings", **S. A. Nesvold**, presented at the Bureau of Alcohol, Tobacco, Firearms and Explosives – National Response Team, Huntsville, AL, 2016, Instructor

"Trending Use of Experts in Product Liability Cases", **S.A. Nesvold**, presented at the National Association of Subrogation Professionals Lit Skills Conference, Fort Lauderdale, FL, 2016

"Commercial Property: Inspecting Hard to Reach Areas Quickly and Inexpensively", **S.A. Nesvold**, Claims Journal, 2016

"Bracing for Failure: A Case Study of Wood Truss Failures and the Responsibility of the Designers, Manufacturers and Installers", **S.A. Nesvold**, presented at the North Dakota Defense Lawyers Association, 2015 Annual Meeting and Fall Seminar, Bismarck, ND, 2015

"2015 Minnesota Codes & Historic Buildings", **S.A. Nesvold**, presented at the Minnesota Historical Society, Minnesota History Center, St. Paul, MN, 2015

"Incident Site Management – Managing and Documenting an Incident Scene", **S.A. Nesvold**, presented at the ASCE Forensic Engineering 7th Congress, Miami, FL, 2015

"Bracing for Failure: A Case Study of Wood Truss Failures and the Responsibility of the Designers, Manufacturers, and Installers", **S.A. Nesvold**, presented at the North Dakota Defense Lawyers Association (NDDLA) – 2015 Annual Meeting and Seminar, Bismarck, ND, 2015

"Structural Shoring Short Course", **S. A. Nesvold**, presented at the Bureau of Alcohol, Tobacco, Firearms & Explosives (ATF), Fire Research Laboratory, Ammendale, MD, 2015

"Incident Site Management – Managing and Documenting an Incident Scene", **S.A. Nesvold**, J.R. Panko, Proceedings of the 7th Congress and Forensic Engineering, American Society of Civil Engineers, Reston, VA, pp. 589-599, 2015

"MN Conservation Code (IEBC) 2015 & Historic Buildings", **S.A. Nesvold**, presented at the AIA Minnesota – 80th Annual Convention, Minneapolis, MN, 2014

"Historic Buildings – IFC, IBC, IEBC, 2014", **S.A. Nesvold**, presented at the 2014 State Fire Marshal's Conference, Minneapolis, MN, 201.

"Incident Site Management and 3D Laser Scanning Applications", **S.A. Nesvold**, presented at the Associated General Contractors (AGC) Technology and New Product Fair, St. Louis Park, MN, 2014

"Incident Site Management: The Importance of Managing and Documenting an Incident Scene", **S.A. Nesvold**, Claims Journal, 2014

"Incident Scene Documentation", **S. A. Nesvold**, presented at the Twin Cities Claims Association (TCCA) Winter Conference, Bloomington, MN, 2014

"The Value of a Multidisciplinary Approach to Complex Facility and Product Liability Cases", **S.A. Nesvold**, presented at the Larson King, Saint Paul, MN, 2013

"Incident Site Management", **S.A. Nesvold**, presented at the Associated General Contractors (AGC) Safety Committee, Saint Paul, MN, 2013

"Incident Site Management", **S.A. Nesvold**, presented at the North Dakota Defense League (NDDLA), Bismarck, ND, 2013

"Forensic Engineering & Architecture", **S.A. Nesvold**, presented at the University of Minnesota, Minneapolis, MN, 2013

"Historic Preservation and Life Safety", **S.A. Nesvold**, presented at the AIA Minnesota – 78th Annual Convention, Minneapolis, MN, 2012

"Detecting and Confirming the Presence of Road Flare Residue in Fire Investigations", **S.A. Nesvold**, K.L. Pacholke, Proceedings of the 5th International Symposium on Fire Investigation Science and Technology, National Association of Fire Investigators, International, Sarasota, FL, pp. 495-506, 2012

"Detecting and Confirming the Presence of Road Flare Residue in Fire Investigations", **S.A. Nesvold**, presented at the International Symposium of Fire Investigators, NAFI, University of Maryland-College Park, MD, 2012

"Fire Protection Systems: How to Manage the Risk", **S.A. Nesvold**, presented at the Collier's College, Minnetonka, MN, 2012

"What is Fire Protection Engineering?", **S.A. Nesvold**, presented at the Hennepin County Government Center, Minneapolis, MN, 2011

"What is Structural Engineering?", **S.A. Nesvold**, presented at the University of Minnesota, CE1101, Minneapolis, MN, 2010

"Multi-Axial Subassemblage Testing (MAST) System," C. E. French, C. K. Shield, J. F. Hajjar, A. E. Schultz, P. M. Bergson, D. J. Daugherty, C. P. Wan, D. W. Ernie, D. H. C. Du, **S.A. Nesvold**, University of Minnesota, Minneapolis, MN, USA, 2005

Selected Project Experience

Structural Failure and Collapse Investigations

- **Commercial Roof Collapse Due to Snow Load, Minnesota**
  Investigated the collapse of roof trusses at a commercial building resulting from snow accumulation. Identified improper temporary support systems, inadequate bracing, and oversight failures as primary causes. Recommended corrective measures, stabilization strategies, and procedures for safe debris removal and reconstruction.

- **Concrete Floor Collapse During Demolition, Historic Armory, Minnesota**
  Analyzed structural failure of concrete flooring at a historic armory during selective demolition. Investigation uncovered severe deterioration and corroded reinforcement causing structural collapse. Provided detailed damage assessments, stabilization recommendations, and structural repair guidelines.

- **Hog Confinement Facility Roof Collapse, Iowa**
  Conducted a detailed structural investigation following the collapse of a wood-framed hog confinement building. Extensive corrosion of metal truss connector plates, exacerbated by poor ventilation, was identified as the primary cause. Advised on improving ventilation systems and structural maintenance practices.

- **Scaffolding Collapse at Urban Construction Site, Minnesota**
  Examined scaffold system collapse resulting in multiple injuries. Determined inadequate anchorage spacing, improper anchor methods, and insufficient design against wind loads as root causes. Delivered comprehensive forensic analyses emphasizing noncompliance with anchoring standards and structural deficiencies.

- **Corrosion-Induced Collapse in Agricultural Facilities, Minnesota and Wisconsin**
  Investigated collapses due to severe corrosion of structural connectors in agricultural facilities. Analysis detailed extensive deterioration due to corrosive environments and inadequate maintenance, advising on improved ventilation and maintenance procedures.

- **Agricultural Facility Damage Investigations (Multiple Locations)**
  Performed comprehensive forensic assessments of agricultural facilities including grain storage bins, silos, grain elevators, grain legs, and associated structures. Investigations involved detailed analyses of damage resulting from dust explosions, grain fires, corrosion, structural deterioration, and construction defects. Provided expert evaluations of structural integrity, identified causal factors contributing to facility damage, and developed targeted recommendations for repairs and preventive measures.

Construction Defect and Code Compliance Assessments

- **Airport Terminal Construction Deficiencies, Midwest Internation Airport**
  Investigated severe construction defects at an international airport terminal. Evaluations focused on contractor adherence to industry standards and building specifications, revealing substantial deficiencies in concrete placement, drainage systems, and structural detailing. Provided forensic analysis and recommendations for significant remediation measures.

- **Residential Construction Defects Investigation, Minnesota**
  Investigated reported defects in a residential property, assessing structural integrity, exterior cladding, moisture management, and window installations. Analysis revealed numerous issues stemming from noncompliance with industry standards. Recommended corrective actions to remediate structural deficiencies.

- **Apartment Complex Water Intrusion and Façade Defects, Minnesota**
  Conducted detailed inspections revealing improper masonry veneer installations, faulty flashing, and inadequate water barriers. Provided a forensic analysis pinpointing specific construction errors and outlined remediation steps necessary to restore integrity and code compliance.

Explosion and Blast Damage Evaluations

- **Residential and Commercial Explosion Assessments (Multiple States)**
  Conducted several hundred investigations into structural damage resulting from explosions, leveraging combined expertise in fire protection engineering and structural system behavior. Using overpressure wave properties, evaluations included analysis of propane, natural gas, and refinery-related explosions, determining the extent of blast-induced structural damages and distinguishing them from pre-existing conditions. Provided clear forensic evidence supporting causation analysis, structural integrity assessments, and scope of necessary repairs.

- **Natural Gas Explosion Impact on Commercial Property, Illinois**
  Assessed structural integrity and cosmetic damage claims resulting from a nearby gas explosion. Analysis differentiated explosion-related damages from pre-existing structural conditions, utilizing detailed forensic techniques including crack pattern analysis, structural response assessments, and site condition documentation to determine accurate damage attribution.

- **Residential Property Explosion and Freeze Damage, Massachusetts**
  Evaluated extensive structural damage and water intrusion in a residential building following a widespread gas explosion event. Detailed forensic inspection included damage mapping, structural integrity verification, and analysis of resulting secondary damage from boiler failures and frozen pipes. Provided comprehensive findings clearly linking explosion-related damage and subsequent building system failures.

- **Residential Gas Explosion Damage Investigations, Pennsylvania**
  Conducted detailed forensic evaluations of several dozen alleged property damage claims resulting from a nearby natural gas explosion during pipeline modernization work. The investigations included structural integrity assessments, detailed visual inspections, and blast wave analysis to distinguish explosion-related damages from pre-existing conditions and normal construction defects. Provided expert conclusions clarifying the scope of damage attributable to the incident, recommended targeted repairs, and identified unrelated maintenance issues and long-term deterioration.

Fire Safety System Investigations

- **Senior Living Apartment Fire Fatality Investigation**
  Conducted a detailed forensic evaluation of the fire alarm system's operation and its impact on occupant response during a fatal apartment fire resulting in six deaths. Performed comprehensive system testing and reviewed alarm activation, programming, notification effectiveness, and occupant behavior. Determined that prematurely silencing the active alarm significantly delayed evacuation, directly contributing to multiple fatalities. Provided expert analysis on alarm system compliance, occupant notification procedures, and facility emergency response practices.

- **Hotel Fire Alarm System Failure and Extensive Water Damage, Iowa**
  Analyzed repeated failures of a hotel’s fire alarm system following fire incidents, resulting in severe water damage. Identified systemic failures and poor maintenance as critical factors. Provided recommendations to improve fire safety systems and compliance.

- **Hospital Sprinkler System Deficiencies, Indiana**
  Investigated reported inadequacies in a hospital fire sprinkler system, identifying insufficient hanger spacing and inadequate system pressure. Confirmed code noncompliance, outlining necessary corrective actions for achieving full fire safety compliance.

- **Fire Sprinkler Pipe Failures Due to Environmental Stress Cracking (Multiple States)**
  Performed detailed forensic investigations into multiple failures of CPVC fire sprinkler pipe systems in residential buildings across several states. Identified environmental stress cracking as a result of chemical incompatibility between the piping material and construction sealants used during installation. Provided expert analysis evaluating contractor standard of care, specifically addressing contractor responsibilities for proper material selection, chemical compatibility reviews, approval protocols, installation oversight, subcontractor management, and quality control practices.

Structural Damage from Environmental and Natural Causes

- **Marina Dock Damage from River Fluctuation, Iowa**
  Evaluated structural damage to marina docks caused by fluctuating river levels. Identified insufficient design accommodating water-level variations, displacement of walkways, and compromised utilities. Recommended significant structural corrections and redesign.

- **Structural Instability of Park Pier, Wisconsin**
  Investigated significant deterioration and structural instability of a park pier supported by aging timber and steel bin walls. Determined insufficient structural assessments and design flaws, providing detailed repair strategies and structural reinforcements.

Civil Infrastructure and Public Safety Evaluations

- **Railroad Bridge Vehicle Impact Assessment, Wisconsin**
  Investigated significant damage to a railroad bridge caused by a vehicle impact, identifying structural displacements and integrity concerns. Provided thorough analysis, including repair assessments and structural reinforcement recommendations.

- **Water Tower Paint Failure Investigation, Minnesota**
  Using rope access techniques, evaluated extensive paint delamination on a municipal water tower. Investigation determined normal environmental wear rather than storm impacts as the primary cause, advising on maintenance schedules and repainting requirements.

Miscellaneous Construction Evaluations

- **Residential Swimming Pool and Landscaping Defects, Wisconsin and Minnesota**
  Investigated significant structural cracking, drainage issues, and soil settlement around residential pools. Determined inadequate site preparation, faulty construction techniques, and poor moisture management as primary causes. Recommended comprehensive repair and stabilization measures.

- **Balcony Guardrail Stability Evaluation, Minnesota**
  Investigated reported looseness and movement in balcony guardrails at a high-rise building. Determined movement was due to inherent design characteristics rather than structural inadequacies. Provided detailed analysis, addressing occupant safety concerns and suggesting improvements in guardrail connections.