

Charlie Merow

Forensic Engineering Expertise

Structural Analysis/Design

Review appropriate documents, including project plans and specifications as it relates to the building structure for purposes of failure analysis and extent of resulting damages. In addition, being a licensed professional and structural engineer, replacement designs are provided upon request. Examples of past work includes failure analysis of collapsed structures (concrete, steel, wood, masonry), and various building components (windows, doors, glass, piping, roofing, exterior and interior cladding) as well as damage assessment of building structures after a fire, including expert witness testimony related to the aforementioned items.

Origin & Cause

Determine the source and responsible party or element related to the failure of a structural or architectural element, or water damage in a building. Examples of past work include failure of roofing and wall cladding causing moisture entry, humidity and condensation related losses, and groundwater entry.

Building Fenestration/Building Envelope

The building envelope is a building's first line of defense to moisture entry. Identifying the type of system (single versus multiple barrier) and how the various adjoining materials' water and air barriers connect is key to effective moisture management. Examples of past work include storefront window exams, residential window installations, exterior cladding specification and installation, and roofing materials and installation.

Building Pathology/Construction Defects

The building pathologist relies on an in-depth knowledge of building design, construction, use, and changes as well as assessing the environment of use and the materials and how these interrelate to systematically identify, investigate and diagnose defects in a building. Past work includes design and specification of repairs as an owner's representative and expert witness testimony related to the aforementioned items.

Inspection and Evaluation of Roofing Systems

This includes steep and low slope roofs as well as various types of roofing materials, including both common and unique roofing applications. Past work involved offering opinions and repairs related to installation deficiencies and storm-related damages, including for hail and wind.

Qualifications & Training

- How to Excel at Your Expert Witness Testimony, SEAK, November 2018
- How to Write a Bulletproof Expert Witness Report, SEAK, April 2019

Education

Bachelor of Science in Civil Engineering
Rose-Hulman Institute of Technology, Terre Haute, IN
May 2002

University of New South Wales, New South Wales, AU
Summer 2000
Energy Beyond 2000: An Energy and Management Perspective

Licenses & Certifications

PE - Professional Engineer

Licensed by the State of Arizona - Number 53742
Licensed by the State of California - Number C77836
Licensed by the State of Colorado - Number 51925
Licensed by the State of Nevada - Number 21832
Licensed by the State of New Mexico - Number 21778
Licensed by the State of Texas - Number 111043

IFSAC Fire I-II – Hazardous Materials Awareness & Operations, Technical Rescuer:

Rope Rescue I and Vehicle Rescue I, Fire Instructor I, Fire Officer I

FEMA Emergency Management Institute IS-100.c, IS-200.c, IS-700.b, IS-800.c

National Registry Emergency Medical Technician, E3615315

New Mexico EMT Basic, 21000590

Employment History

Forensic Engineer

Nederveld, Inc.

June 2024 – Present

Duties include forensic engineering analysis relating to building pathology, structural damage due to fire, structural damage from vehicle impacts, storm damage (wind, snow, hail), seismic, and water loss events, calculations, and plan of repair design.

Owner

Maverick IRON, LLC, Bernalillo, NM

February 2023 – Present

Owner, engineer, and welder/fabricator for Maverick IRON, LLC. Projects have ranged from irrigation diversion and gate systems to light structural and decorative elements used in home remodel projects.

Firefighter

Town of Bernalillo, Bernalillo, NM

March 2023 – May 2024

Career firefighter and emergency medical technician for the Town of Bernalillo Fire Department. Responsible for responding to emergency calls, including medical emergencies, outdoor and structure fires, motor vehicle collisions, and mutual/automatic aid calls in neighboring jurisdictions. Additionally, took an active role in the community, participating in the summer recreation program with the town's youth, joint public service events with the police department, and community events hosted by the town.

Firefighter/EMT

Los Alamos Fire Department, Los Alamos, NM

July 2021 – March 2023

Career firefighter and emergency medical technician for the Los Alamos Fire Department. Responded to emergency calls, including medical emergencies, wildland and structure fires, motor vehicle collisions, and lost or injured hikers. Ensured station and apparatus readiness and participated in training evolutions and physical conditioning to meet the continued demands of the job.

Volunteer

SCFD, LLVFD, and CVFD, Regina, NM

July 2019 – June 2022

Volunteer with Sandoval County Fire Department (NW District), Lindrith-Llaves Volunteer Fire Department, and Cuba Volunteer Fire Department. Responded to emergency calls, including motor vehicle accidents, fires, and medical calls (lift assists, landing zone ground control). Served as the Division Chief of District 11 and as the chief, assistant chief, and training captain in Lindrith.

President, Co-owner, Welder

Jack Rabbit design, LLC, Regina, NM

September 2015 – May 2022

Fabricated architectural miscellaneous steel and provided engineering design services. Projects ranged from residential roof evaluations for solar installations to comprehensive commercial building design.

VP Engineering

Forensic Building Science, Inc., St. Paul, MN

November 2018 – July 2019

Responsible for causation analysis of failed structural framing and assemblies; review and evaluation of project documents; building code analysis of new and existing construction; evidence collection and on-site documentation of damage, remediation, and repair; and water infiltration and exfiltration analysis.

Supervised all engineering work performed by the firm. Participated in on-site inspections and evaluations (both non-invasive and destructive) of residential and commercial properties in construction defect and insurance claim evaluations. Documented evidence collected during inspections and repair processes. Reviewed evidence gathered for projects and issued pertinent reports. Inspection experience includes approximately three collapse causation inspections, approximately 35 roof inspections (residential and commercial), and approximately 10 moisture probe and infrared inspections.

Bay 3 Lead, Welder, Fabricator

Amfabsteel, Inc. DTL's Inc., Bernalillo, NM

January 2014 – September 2015

Fabricated main structural members and architectural miscellaneous steel in one of the three main production bays. Ensured work performed in Bay 3 conformed to shop drawing requirements and AISC/AWS standards.

In-house Engineer

April 2011 – December 2013, Bernalillo, NM

Provided engineering services in a design assist or design role for low- and mid-rise buildings. Produced comprehensive calculation packages for delegated engineered systems (stairs, connections, etc.). Served as the Engineer of Record for erection and full building design. Analyzed alternative framing options to optimize the structural steel frame and provided up-front engineering evaluations to accurately weigh cost and schedule impacts of value engineering items. Provided engineering support for fabrication, field, and erection activities.

Applications Engineer

Unirac, Inc.

November 2010 – April 2011, Albuquerque, NM

Designed solar racking systems meeting specific client needs, including both ground mount and roof mount systems. Routinely investigated product failures, assisted with product development and testing, and led the effort to establish company-wide CAD standards in conformance with NCS.

Engineer I

Chavez Grieves Consulting Engineers

March 2008 – October 2010, Albuquerque, NM

Designed gravity and lateral framing as well as foundations. Sized structural site components, including retaining walls, structural loading dock slabs, and light pole bases. Analyzed the structural components supporting architectural elements, such as canopies, signage, and attachment points for suspended lighting, theming, and holiday lighting and decorations. Produced complete calculation packages for building department review addressing all the elements listed above. Responded to RFIs and issues arising from site or existing conditions.

Project Manager

Sandia National Laboratories

June 2002 – September 2002, Albuquerque, NM

Provided project management for customer-funded projects in support of the Lab's line work. Projects ranged from remodel projects (some requiring structural modifications), to paving and hardscape, to technical laboratory modifications with unique physical and mechanical system requirements.

Engineering Intern

Hannum Wagle and Cline Engineering

January 2001 – February 2002, Terre Haute, IN

Assisting the Principals with engineering calculations and design. Worked on the firm's survey crew. Wrote proposals and presentations in response to RFPs (Request for Proposals).

Expert Witness Experience

Depositions

June 2019

Testimony at Deposition

Rothchild vs. State Automobile Mutual Insurance Company (hurricane damage),

United States District Court, Houston Division