
PROFILE

Founder, Managing Member, and Principal Engineer at Scout Forensics LLC with civil, structural, and geotechnical engineering experience including residential and commercial design, bridge design, structural framing, and forensic investigations for commercial, institutional, and residential structures. He also has experience with site development including drafting construction drawings, development of detailed grading plans and storm water pollution prevention plans, and the design of domestic water, sanitary sewer, storm sewer, and detention systems. His experience with hydrology and hydraulics includes engineering support for the development of emergency action plans by studying the ability of overflow structures to convey the probable maximum flood. In addition, he has determined inundated areas following simulated dam failures – including high-risk areas/dams. Prior to conducting forensic investigations, he was a project engineer and project manager for design of structural, site development, and geotechnical construction projects. Key strengths include the following:

- Wind Damage Assessment
- Hail Damage Assessment
- Fire Damage Assessment
- Structural Collapse Evaluation
- Building Envelope Evaluation
- Water/Moisture Intrusion Assessment
- Commercial/Industrial Structures
- Residential Structures
- Wood/Steel/Concrete Construction
- Construction Deficiencies
- Foundations
- Pavement
- Retaining Walls
- Civil Infrastructure
- Water/Wastewater Conveyance
- Hydrology & Hydraulics
- Flooding
- Site Drainage/Site Preparation/Site Grading
- Stormwater Detention/Retention
- Ponds/Embankments

EDUCATION

Master of Engineering, Civil Engineering, 2009

Texas A&M University – College Station, Texas

Bachelor of Science, Civil Engineering, 2007

Texas A&M University – College Station, Texas

PROFESSIONAL BACKGROUND

Scout Forensics LLC (Central Texas)

Managing Member and Principal Engineer – April 2021 to Present

Caliber Forensics (San Antonio, Texas)

Principal Engineer – January 2020 to April 2021

Envista Forensics (San Antonio, Texas)

Principal Consultant – August 2019 to January 2020

Senior Project Engineer – August 2017 to August 2019

Project Engineer – August 2014 to August 2017

Gessner Engineering, LLC (San Antonio / College Station, Texas)

Project Manager – May 2009 to August 2014

LICENSURE

Professional Engineer (PE) – Texas, Colorado, Missouri, Oklahoma, Louisiana, Florida, and New Mexico

Private Pilot (ASEL)

Remote Pilot in Command, Commercial Operator (Part 107)

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers (ASCE)

Association of State Dam Safety Officials (ASDSO)

REPRESENTATIVE PROJECT EXPERIENCE

Commercial and Residential Structural Inspections

United States

Performed forensic structural inspections on hundreds of properties in several states throughout the United States when requested by insurance carriers, attorneys, property owners, realtors, or potential buyers to determine cause and origin of damage, extent of damage, and/or remediation recommendations. Evaluated structures subjected to storm-induced forces (e.g., tornados, hurricanes, high winds), vehicle/tree impacts, fires, explosions, water/moisture intrusion, construction deficiencies, and excessive loading. As part of his forensic experience, Mr. Zapalac has provided litigation support services in multiple legal matters.

New High School Campus

College Station, Texas

The project scope consisted of the development of a 63.7-acre site, including the main high school building, a field house, two ticket booths, a concession stand, three press boxes, a greenhouse and tennis buildings, totaling over 450,500 square feet. Civil engineering services for this project included the design of an entire water system network including over 6,000 linear feet of water pipe to supply both fire and domestic water service, an approximately 3,000 linear feet sanitary sewer system connecting to the City of College Station sanitary sewer and about 10,000 linear feet of storm sewer pipe that discharged into two separate detention ponds. The design documents required the development of a grading plan for the site (including the baseball, softball, and football practice fields) and paving plan for the complex site.

Texas Army National Guard North Fort Hood Entrance Paving Repair

Gatesville, Texas

Provided geotechnical and civil engineering services for the new heavy service concrete pavement entrance into the Texas Army National Guard Mobilization and Training Equipment Site (MATES) located at Fort Hood near Gatesville, Texas. The pavement was designed for use of the United States Military Heavy Equipment Transporter (HET) tractor and associated armored vehicle payload.

Texas Army National Guard Martindale Army Airfield Apron and Runway Investigation*San Antonio, Texas*

Provided forensic engineering services related to construction deficiencies in the concrete apron and runway for the Martindale Army Airfield. The forensic investigation was requested after newly installed concrete pavement began to fail resulting in significant foreign object debris (FOD) and a hazard to military equipment (specifically Army UH-60 Helicopters) and personnel.

Private Lake Dam Study*College Station, Texas*

Performed a hydrologic and hydraulic analysis to determine if the conditions at a 40+ surface acre private lake in a developed area would allow the safe passage of the 75% Probable Maximum Flood (PMF) per Texas Administrative Code regulations. The purpose of this hydrologic and hydraulic analysis was to determine the adequacy of the dam and spillway.

Land Development Flood Study*Brenham, Texas*

A detailed hydrologic and hydraulic analysis was performed to determine the extent of the 100-year flood (Base Flood Elevation) for a section of property in Brenham, Texas. The purpose of the analysis was to determine the base flood water surface elevations for the owner/developer and to evaluate the feasibility of developing a site adjacent to the creek studied.

Subdivision Development Flood Study*Brenham, Texas*

Performed a hydrologic and hydraulic analysis to determine the limits of a 100-year storm (Base Flood Elevation) at a new subdivision near Brenham, Texas. The purpose of this hydrologic and hydraulic analysis is to determine the base flood water surface elevations for the southwestern lots adjacent to an existing tributary.

Toledo Bend Reservoir*Texas/Louisiana*

Toledo Bend Reservoir is one of the largest man-made bodies of water in the United States. The lake is used for water supply, hydroelectric power generation, and recreation. It is impounded by a rolled earth fill and concrete dam with a concrete spillway. In 2016, heavy rainfall runoff resulted in the highest recorded spillway flows since construction of the dam/lake in 1966. During the high-flow event, the dam and concrete spillway were damaged. Forensic engineering services were provided to visit the site, assess damage to the spillway and dam, review, and comment on proposed repair methods, and oversee and comment on the conducted repairs.

Pacific Gas & Electric (PG&E)*California*

Pacific Gas & Electric Company operates more than 100 reservoirs, with most being located in the higher elevation of California's Sierra Nevada Mountain Range, for the purpose of generating hydroelectric power. In 2017, heavy rainfall runoff resulted in extreme flows on the Pit River causing damage to multiple dams and the inundation of one powerhouse. Professional services were provided including visiting multiple sites to assess damage to the dams and dam appurtenances, assess damage to the powerhouse structure/adjacent riverbed, determine cause(s) of damage, review and opine on proposed repair methods, and oversee and comment on the conducted repairs.

Spencer Dam Failure
Nebraska

The Nebraska Public Power District operated a run-of-the-river hydroelectric dam (Spencer Dam) on the Niobrara River. In 2019 snowmelt and heavy rains resulted in record level flows in the Niobrara River causing a complete failure of Spencer Dam resulting in subsequent loss of life. Forensic engineering services were provided to review documented damage to the dam, determine cause(s) of damage, and provide technical consultation.