

PROFILE

Bruce Barnes is the Technical Director of Civil/Structural group and has over 25 years of engineering experience. He has investigated, tested, and analyzed failures ranging from snow load failures of residential structural systems to the catastrophic collapse of a 2,000 foot tall television tower and the circumstances leading up to the explosion of a \$500 million power plant loss. As part of his experience, Mr. Barnes investigates cases involving foundation failures, fire-damaged buildings, roof damage, failed structural components, building collapse, architectural and engineering product failures, code compliance, standard-of-care, and construction site safety. He also investigates premises liability issues such as those associated with slip-and-fall incidents. His extensive analysis and design experience combined with his educational background enables him to analyze a wide variety of structural problems and failures. He utilizes these analysis and testing skills to frequently formulate and issue construction documents for the repair of structures. He has been featured on news programs such as the Denver NBC affiliate 9News and the Denver CBS affiliate Channel 4. Key strengths include the following:

- ▶ Wind Damage Assessment
- ▶ Retaining Walls
- ▶ Foundations
- ▶ Fire Damage Assessment
- ▶ Concrete Structures
- ▶ Wood Structures
- ▶ Brick and Concrete Masonry
- ▶ Residential Homes
- ▶ Conventional Stucco
- ▶ Slip and Fall Accidents
- ▶ Water Intrusion
- ▶ Construction Vibration
- ▶ Groundwater Problems
- ▶ Tilt Wall Panel Buildings
- ▶ Catastrophe Response
- ▶ Swimming Pools
- ▶ Storm Surge Damage Assessment
- ▶ Commercial Buildings
- ▶ Structural Repair and Rehabilitation
- ▶ Liquid Containment Structures
- ▶ Structural Steel
- ▶ Metal Buildings
- ▶ EIFS (Exterior Insulating Finishing Systems)
- ▶ Windows
- ▶ Construction Defects
- ▶ Geotechnical/Sinkhole Investigations
- ▶ Blast Damage
- ▶ Site Drainage/Site Preparation
- ▶ Roofing
- ▶ Fiber Reinforced Plastic Strengthening of Existing Structures

- ▶ *Industries:* Forensics, residential, commercial and industrial buildings, water and wastewater structures
- ▶ *Computer Skills:* Windows, MS Office (Word, Excel, PowerPoint), and Xactimate
- ▶ *CAD / Design Packages:* RISA, Robot, and AutoCAD

OFFICE

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CONTACT

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WEBSITE

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EDUCATION

Master of Science, Civil/Structural Engineering, 1990

Iowa State University – Ames, Iowa

Bachelor of Science, Civil Engineering, 1987 with Honors

Iowa State University – Ames, Iowa

LICENSES

Professional Engineer (PE):

- ▶ Colorado
- ▶ Illinois
- ▶ Indiana
- ▶ Iowa
- ▶ Minnesota
- ▶ North Dakota
- ▶ Wisconsin

PROFESSIONAL AFFILIATIONS

- ▶ American Society of Civil Engineers - Since 1985
- ▶ International Conference of Building Officials - Since 2002

PROFESSIONAL BACKGROUND

February 2022 – Present: Envista Forensics – Plymouth, MN

Technical Director

December 2021 – January 2022: Envista Forensics – Plymouth, MN

Assistant Technical Director

October 2019 – December 2021: Envista Forensics – Plymouth, MN

Senior Principal Consultant

April 2008 – September 2019: Envista Forensics – Plymouth, MN

Vice President – Forensic Engineering, East Region

2000 – 2008: Knott Laboratory, LLC – Centennial, CO

Vice President Civil Engineering

1998 – 2007: University of Colorado at Denver – Denver, CO

Adjunct Professor

1993 – 2000: Black & Veatch – Denver, CO

Structural Engineer

1990 – 1993: Iowa State University / DOE – Ames, IA

Research Project Manager

REPRESENTATIVE PROJECT EXPERIENCE

Snake River Waste Water Treatment Plant Expansion

Summit County Board of Commissioners – Summit County, Colorado

- ▶ Project engineer supervising all engineering disciplines for the design of new headworks, aeration basins, clarifiers, digesters, filters, contact basins, and wet wells. Project included extensive standby power facilities and complex dewatering of excavations.

Kuiper Reservoir

City of Aurora – Aurora, Colorado

- ▶ Responsible for the detailed engineering of a new HDPE/PPE liner for a 15 MG potable water storage reservoir.

Phase 3 STP Upgrade

Rocky Flats/ Department of Energy – Rocky Flats, Colorado

- ▶ Responsible for the detailed engineering of reinforced concrete influent and effluent flow equalization tanks on pier foundations.

Mount Rushmore Security Upgrade

US Department of the Interior – Mount Rushmore, South Dakota

- ▶ Responsible for the detailed engineering for a new bullet and blast hardened ranger command center utilizing reinforced concrete masonry, hollow core precast concrete panels and wood finishes.

8 MG Water Storage Reservoir

Project 7 Water Authority – Montrose, Colorado

- ▶ Responsible for the detailed engineering of a new 8 MG water storage reservoir which included a reinforced concrete ring foundation and a structural steel tank.

Switch Gear Building

Sacramento RCSD – Sacramento, California

- ▶ Responsible for the detailed engineering of two new switch gear buildings and foundations with seismic considerations.

WWRP Improvements

Victor Valley Waste Water Reclamation Authority – Victorville, California

- ▶ Responsible for the detailed engineering of partially buried aeration basin, clarifier, and filter complex with seismic considerations.

Burke Elderly Housing

Federal Housing Authority – Cheyenne, Wyoming

- ▶ Responsible for the structural inspection of failed post-tensioning strands and formulated repair recommendations.

WTP Expansion

City of Port Arthur – Port Arthur, Texas

- ▶ Responsible for the detailed engineering of a pier-supported solids contact clarifier and filter complex.

Coyote Ranch

Godfrey & Lapuyade – Aurora, Colorado

- ▶ Responsible for the investigation of deficient shear and fire walls in numerous three-story apartment buildings. The investigation included:
 - ▶ Design and observation of a fire-testing program conducted on full-scale, load-bearing walls at the Southwest Research institute in San Antonio, Texas.
 - ▶ Design and execution of a lateral-load testing program conducted on full-scale, load-bearing walls for the purposes of determining the as-built capacity of the as-built walls.
 - ▶ Analysis of the existing structures utilizing test results.
 - ▶ Design of repairs to remedy both shear wall and fire wall deficiencies.
 - ▶ Expert witness testimony.

Lazy H Ranch Riding Arena Collapse

Godfrey & Lapuyade – Larkspur, Colorado

- ▶ Responsible for the investigation of the snow-load induced collapse of a 304 foot by 160 foot metal building.

Trip-and-Fall

Jackson Hole Mountain Resort – Jackson Hole, Wyoming

- ▶ Responsible for the investigation of a trip and fall incident that occurred on a wooden deck structure at Corbett's Cabin above tree line.

KDUH Tower Collapse

Great American Custom Insurance – Hemingford, Nebraska

- ▶ Responsible for the investigation of the cause of a 1,965-foot tall television tower collapse which resulted in two fatalities.

Museum Foundation Movement

The Wildlife Experience – Centennial, Colorado

- ▶ Responsible for the evaluation of the extent of structural damage to a 2-story museum facility resulting from differential movement of deep concrete pier foundations supporting precast concrete double tee floors systems.

Snow Load Damage and Repair – Residential Wood and Masonry Structure

Farmers Insurance – Denver, Colorado

- ▶ Responsible for the evaluation of the extent of snow load damage and the subsequent preparation of detailed engineering plans and specifications to repair that damage. The project included new wooden roof trusses and detailed requirements for the attachment of these new trusses to 50+ year old masonry systems.

Deck Damage and Strengthening – Multifamily Wood Structure

Peachwood I Homeowners Association – Aurora, Colorado

- ▶ Responsible for the evaluation of the extent of structural damage to wooden decks in a multi-family development. Responsible for the subsequent preparation of plans and specifications for the repair of rotted and degraded wood-framed decks in the development.

Fire Damage Evaluation and Repair – Multifamily Concrete and Steel Structure

Philadelphia Insurance – St. Paul, Minnesota

- ▶ Responsible for the investigation of the extent of damage resulting from a fire to a three-story concrete and structural steel multifamily residential complex. Also responsible for the preparation of repair plans and specifications to address fire damage to concrete/metal deck floor systems, structural steel bar joists, structural steel connections, and concrete columns.

Fire Damage Repair – Industrial Precast/Prestressed Concrete Structure

Travelers Insurance – Castle Rock, Colorado

- ▶ Responsible for the design of repairs to a fire-damaged precast/prestressed concrete double tee roof structural system.

Fire Damage Investigation and Repair – Multifamily Wood Structure

Engle Martin & Associates – Maple Grove, Minnesota

- ▶ Responsible for determining the extent of structural damage induced by a fire in a multifamily building. Also responsible for the subsequent preparation of plans and specifications to repair the identified damages.