



# GEM Engineering, Inc.

GEOTECHNICAL ENVIRONMENTAL & MATERIALS SERVICES

**FORENSIC ENGINEERING and EXPERT WITNESS SERVICES**

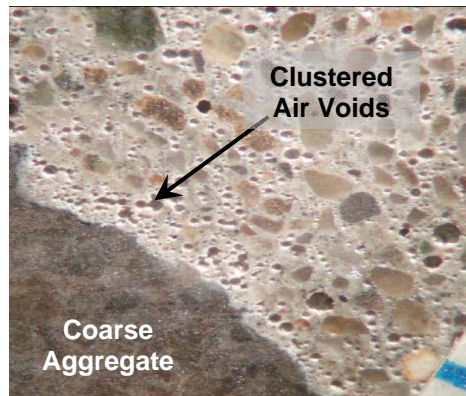
A GEM forensic evaluation is a tiered assessment of a material, building or other structure that has performed unexpectedly or sustained damage. GEM conducts forensic evaluations of construction materials and investigates failures in residential, commercial, and industrial structures.



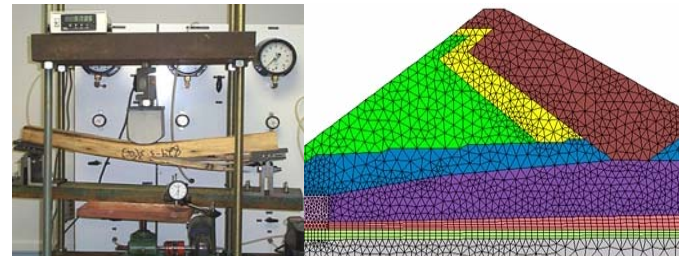
Our failure causation analyses often include: instrumentation, metallurgical examinations, laboratory chemical or material tests, and mechanical analyses. We are skilled in designing and constructing equipment specific to the tests and simulations needed to replicate or model unusual field conditions.



GEM's experts are problem solvers who plan and perform data collection, form hypotheses, conduct tests and arrive at meaningful conclusions for the client to consider when selecting a proper method for mitigation of the problem or assessing cause.



Computer finite elements analysis often is used to evaluate dimensional or material properties thought to contribute to failure. We issue comprehensive reports, models and illustrations which are easily understood by other experts, engineers, attorneys, judges and juries. GEM can prepare a graphical or pictorial representation of the chain of events leading to a particular event for clarity of understanding.



## Types of Forensic Analysis Conducted by GEM

- Concrete Problems
- Excessive Deformation
- Material Incompatibility
- Degraded Asphalt Paving
- Expansion or Shrinkage
- Aggregate Reactions
- Corrosion
- Fire Damage
- Substandard Materials
- Weathering
- Material Handling
- Installation Methods
- Settlement or Heave
- Sinkholes
- Slope Movements
- Groundwater or Floods
- Earthquakes
- Mine Subsidence
- Blasting Vibrations
- Design Errors
- Construction Defects
- Veneer/Cladding
- Failures
- Collapses
- Water Intrusion
- Masonry Degradation
- Wood Decay
- Retaining Walls

GEM provides root cause failure analysis and engineering expert witness services to legal, insurance, and industrial firms to evaluate the cause(s) of accidents and product failures. We are experienced in providing engineering expertise to owner/management and legal teams, and have communication skills to:

- Help you easily understand the technical issues
- Provide detailed graphics, models & animations as needed to communicate important issues

Our track record includes:

- Providing testimony in numerous court cases
- Three recent cases in excess of \$50 million

**Who to contact?** Jerry Vandeveld, P.E., [gtv@gemeng.com](mailto:gtv@gemeng.com), or Mike Ronayne, P.E., LEED® AP, [mronayne@gemeng.com](mailto:mronayne@gemeng.com), are ready to assist you in evaluating failures or unexpected material behavior. Call or email us if you have questions about our forensic services, or if we can assist you on a project.