



# U.S. Forensic

Engineering • Inspection • Failure Analysis





# Our Company

**U.S. Forensic, L.L.C.**

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[www.usforensic.com](http://www.usforensic.com)

**ENGINEERING  
INSPECTION  
FAILURE ANALYSIS**



U.S. Forensic is an employee owned engineering firm offering evaluation, reporting, and expert witness testimony.

Our experts include:

- Structural Engineers
- Mechanical Engineers
- Accident Reconstructionists
- Tire Experts
- Fire Investigators
- Environmental Experts
- Electrical Engineers

We service the United States from multiple offices and have worked assignments in all 50 states and Puerto Rico.

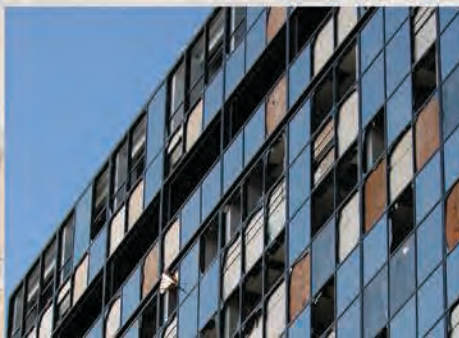
Since its inception in 2006, U.S. Forensic has performed thousands of evaluations to determine the origin and cause of a loss and the extent of damages. Inspections have included various machinery and heavy equipment, commercial and passenger vehicles, residential and commercial buildings, roadways, and marine structures. Our primary focus is assisting our clients in determining the cause of damage. Is it related to a weather event? Did it occur suddenly or is there a long term contributor? Was there a defect related to the product or construction? Was the construction or equipment in compliance with building codes and standards?



Was the equipment maintained, repaired, or used properly? Our goal is to provide our clients with definitive answers to these questions.

U.S. Forensic provides quality unbiased reports. These include conclusive findings along with repair recommendations, photos, and diagrams. We can also provide schedules and costs of recommended repairs when warranted. All opinions rendered will be based on the facts of the specific assignment, and all work to complete an assignment will be performed under the rules and regulations of the authoritative engineering board of the state in which the evaluation is being conducted. Our experts have testified in local, state, and federal courts.

It is a priority of U.S. Forensic to provide our clients with conclusive, defensible reports that are timely and cost effective.







# civil/structural



## PROPERTY EVALUATIONS

- Storm Damage
- Moisture Intrusion
- Roofing
- Foundations
- Flooring
- Construction Defect
- Vibration Damage

## Cause and Extent of Damages

Evaluation of residential and commercial properties to determine cause of damages by construction defect, material failures, lack of maintenance or third party contribution.

## Sudden/Accidental vs. Long Term

Evaluation to determine whether the damage is associated with a recent versus a long term source. Opinions as to the cause of damage being intentional, accidental, or enhanced.

## ROOFING EVALUATIONS

Our engineers will evaluate roof damage to determine if it is related to storm damage (wind, hail, etc), improper installation, lack of maintenance, damage enhancement, end of useful life of materials or other contributing factors. We can also assist with contractor estimate reviews and repair recommendations.

## PREMISES LIABILITY EVALUATIONS

Evaluation of private, public, and commercial properties to determine code compliance with NFPA, ADA, and others standards in the areas of proper signage, lighting, slip resistant flooring, walkways, curbs and handicap ramps.

## DESIGN PERMITTING

Our engineers can provide a scope of repair protocol after damage caused by a fire, storm, or vehicle and tree impacts. We will draft repair drawings, prepare and submit permit packages, and address building department comments.





# automotive

## VEHICLE EVALUATIONS

Our experience includes forensic evaluations of automobiles, trucks, buses, 18 wheelers and heavy equipment. Our staff has the education, training and experience in automotive design, service, repair, and maintenance. Our courtroom qualified experts have evaluated hundreds of failures involving accidents, fires and personal injury.

### Vehicle Accident Reconstruction

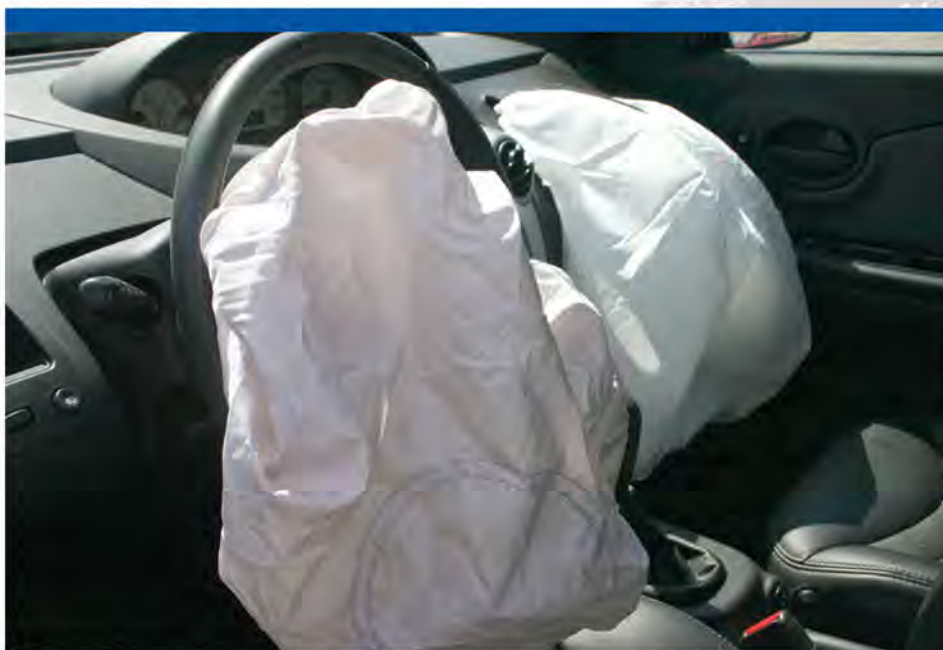
Our experts can reconstruct an accident to determine speed, reaction times, stopping distances, driver input, mechanical failures, and consistency with the accounts of involved parties. By utilizing the Faro 3D Laser Scanner, we can create a 3D replica of the accident scene including measurements, vehicle position, damage including undercarriage, distances, scene and roadway surface information. With this technology, a 3D animation of how a collision occurred can be created. We have constructed accidents involving:

- Passenger & Commercial Vehicles
- Motorcycles
- Vehicle Rollovers
- Minor Impact Accidents
- Train & Vehicle Collisions

### Mechanical Systems Failures

U.S. Forensic provides fast and accurate answers to challenging claims. Our experts can evaluate automotive systems to determine if failure or fire occurred due to a manufacturing defect, service or repair, lack of maintenance, or operator error. We can evaluate:

- Sudden Acceleration
- Steering Failures
- Tire Failures
- Seatbelt Failures
- Fuel System Contamination



### Post Theft Evaluations

Testing of fluids and major mechanical components to determine pre theft vehicle condition. Anti theft systems evaluation to determine theft deterrent capabilities. Key, transponder, anti-theft and engine immobilizer systems analysis to determine how a vehicle was stolen and whether a key was used, duplicated, or the engine immobilizer system was bypassed.

### Storm Damage Evaluations

Evaluation of a vehicle to determine if the damage is attributable to flood waters, hail, or another source.

### Biomechanical Evaluations

Evaluation of accident/injury allegations to determine consistency of injury with damage and force received in vehicle accidents, falls, and product liability



### Evidence Preservation

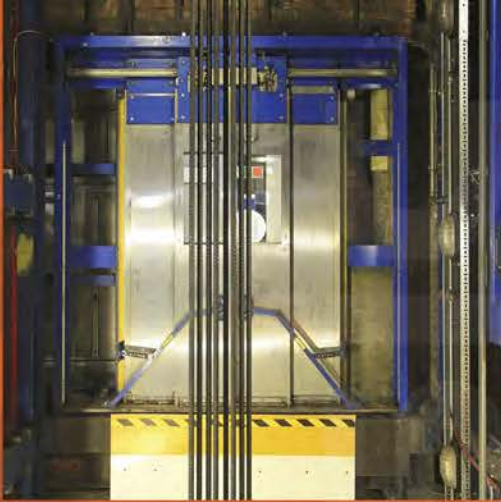
Inspect vehicles and the collision site. Preserve evidence with secure chain of custody for later use in litigation. Provide findings to client.

### Crash and Infotainment Data

Our mechanical engineers can download crash data from electronic control modules (ECM) of passenger and commercial vehicles. This data may include speed, braking, acceleration, and other key factors associated with the event

Our engineers may also download infotainment data utilizing the Berla tool. Depending on the vehicle, the infotainment systems may store data such as call logs, SMS messages, emails, whether lights were on or off, and navigation history when a person's smart phone is tethered to the vehicle by blue tooth or USB. This information can be helpful when investigating accidents, thefts, and vehicle occupancy confirmation.





# equipment



## EQUIPMENT EVALUATIONS

Our experience includes forensic evaluations of residential and high-rise building mechanical systems, industrial equipment and oil, gas and marine industry equipment failures. Our areas of specific expertise includes HVAC systems, plumbing, industrial equipment and facilities, forklifts, farm equipment, elevators and escalators. Our courtroom qualified experts have evaluated thousands of failures involving accidents, fires and personal injury.

## EQUIPMENT FAILURES

Evaluation of mechanical and electrical systems to determine if failure or fire was the result of a manufacturing defect, improper service or repair, lack of maintenance or operator error.

Testing of fluids and electrical circuits performed to determine prior maintenance and service contribution or cause.

Specialties include forklifts, pumps, elevators, hydraulic equipment.

## ELEVATORS AND ESCALATORS

Our ASME trained elevator inspector can establish whether the damage is due to mechanical failure, water intrusion, electrical failure, or lightning. In addition to the damage assessment, we perform contractor bid reviews and provide alternative repair options. We also evaluate escalator and elevator accidents. If a passenger reports a sudden acceleration or stop, we can test the function of the equipment and determine if it performs to the safety and building code standards. We also assess door closing speeds, door closing force, and safety signage.

## LIGHTNING STRIKE EVALUATIONS

### HVAC Units, Well Pumps, & Electrical Appliances

U.S. Forensic evaluates HVAC units, well pumps, and appliances that have reported lightning or electrical surge damage. Our engineers inspect the residence for evidence of direct lightning strike damage, visually inspect the unit, pump, or electrical appliance for collateral damage, perform electrical and fluid testing to determine the cause of the damage. We can also provide repair recommendations and review contractor estimates.







# environmental/IAQ



## Mold Testing & Review

Inspection; sample collection; lab testing; analysis; remediation protocol; design assistance; contractor oversight.

## Asbestos Detection

U.S. Forensic provides asbestos detection services. We can deliver the information needed to determine if a building is safe to inspect after a fire. We can also ensure it is safe to begin renovation or demolition activities.

## Imported Drywall

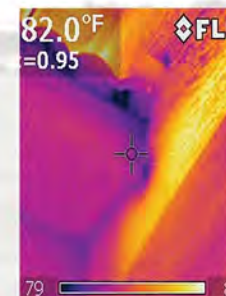
Thorough inspection of risk; photographic documentation of manufacturer or make; sample collection; lab and air testing if required.

## Air Quality

Determine indoor quality and identify origin and cause contributors to loss; present conclusions concisely in a written report.

## Evidence Preservation

Inspect risks; preserve evidence with secure chain of custody for later use in litigation; provide findings to client.



## THERMAL IMAGING ANALYSIS

Through the use of infrared photography, non-destructive investigations to determine moisture source, electrical or temperature issues in roofs, walls or other hidden areas.



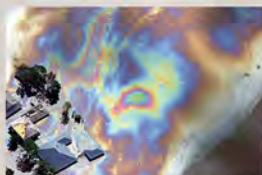
## MOISTURE INTRUSION AND ENVIRONMENTAL SERVICES

U.S. Forensic provides fast and accurate answers to challenging claims involving environmental issues and conditions. With experienced engineers and Certified Industrial Hygienists, and state-of-the-art laboratory testing, U.S. Forensic has the capability to evaluate claims including:

- Mold & Remediation
- Chinese/Imported Drywall
- Chemical Spills
- Evidence Collection
- Lab Testing
- Indoor Air Quality
- Mechanical Failure
- HVAC Design
- Subrogation
- Building Enclosure
- Lead Paint

## Moisture Source Evaluations

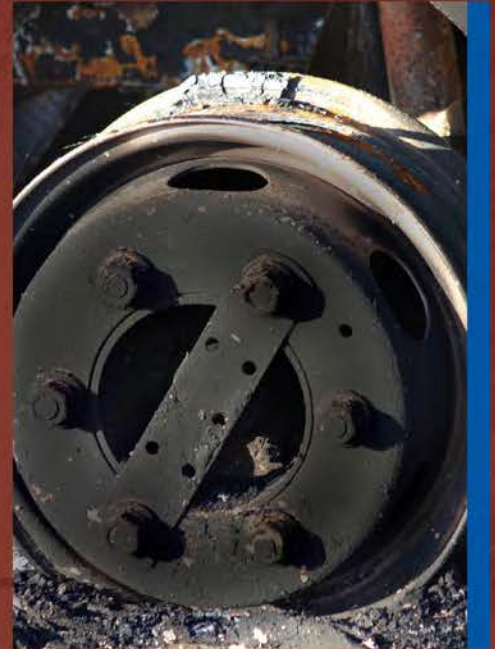
Determination of moisture sources from storm damage, air conditioning systems, plumbing, condensation, construction defects or long term maintenance issues.







# fire/electrical



## FIRE AND ELECTRICAL INVESTIGATIONS

### Structure Fire Origin & Cause Investigations

Evaluation of residential and commercial properties to determine origin & cause of fires due to construction defect, material or equipment failures, lack of maintenance, third party contribution or arson.

### Power Surge Evaluation

Evaluations to determine whether the damage to equipment appears to be caused by electrical surge due to lightning or a utility company problem.

### Electric Code Evaluation

Code compliance evaluations of existing work for compliance and safety. Recommendations of repair and requirements of the National Electric Code.

### Vehicle Fire Origin & Cause

Determination of origin & cause of vehicle fires due to manufacturing defect, improper service or repair, lack of maintenance, improper use or arson. Fluid samples and mechanical inspection to determine any mechanical damage prior to fire.

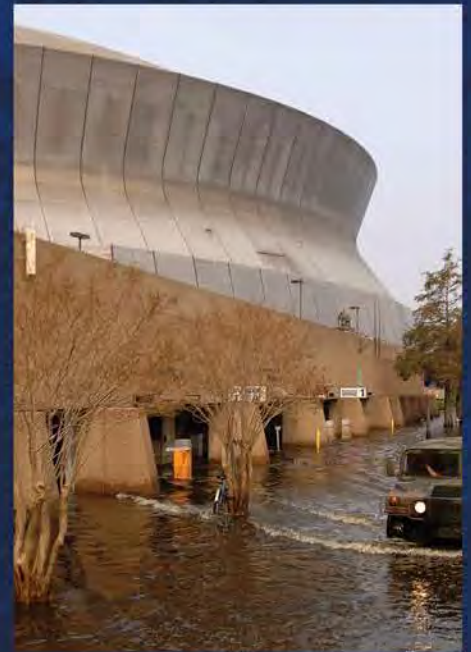
### Electrocution and Shock Evaluations

Evaluation to determine cause of electrical shock or electrocution. Review of original design, installation and use for cause or contributing factors.





# flood

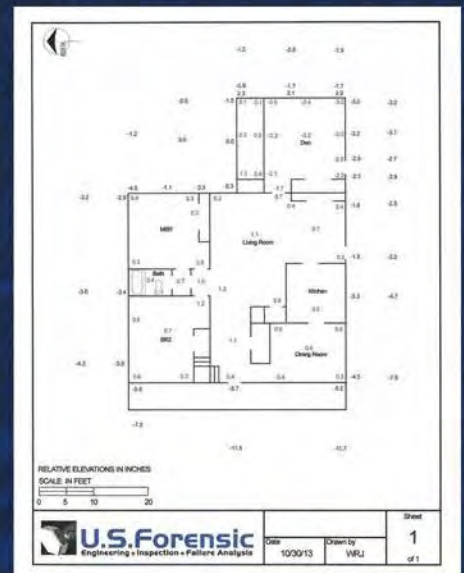


## FLOOD DAMAGE EVALUATIONS

U.S. Forensic performs structural evaluations of damage to foundations and buildings from hydrostatic and hydrodynamic pressures of floodwaters, as well as damages caused by scour, erosion and consolidation due to inundation. We can provide repair vs replacement opinions, as well as perform evaluation of flood related damages to the mechanical and electrical components of a building, including the cost of such repairs.



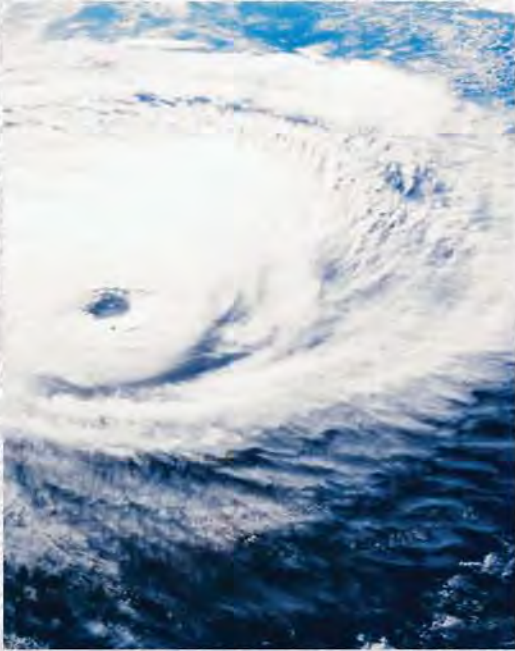
We also provide relative elevation surveys and positive drainage surveys to determine if a lowest floor is a basement as defined by the National Flood Insurance Program. U.S. Forensic also can assist on sheathing damage assessments, elevated building vs slab on grade evaluations, and flood in progress determinations. U.S. Forensic also maintains High Water Mark databases for all major domestic flood events and can provide reports of maximum flood depths for assistance with claims involving concurrent wind and water damages, or claims where flooding cannot otherwise be confirmed.







# catastrophe



## CATASTROPHIC EVALUATIONS

U.S. Forensic has extensive experience in helping rebuild after catastrophic events. We can offer expert opinion as to damages attributable to wind, water, surge, tornado, construction defects and long term neglect.

- Wind vs. Flood Damage Evaluation
- Contractor Cost / Scope Review
- Deferred Maintenance vs. Wind
- Building Code Compliance
- Contribution of Construction Defects
- Feasibility of Repair Study

We are experienced in ASCE wind load requirements, FEMA BFE requirements and class action certification matters related to storms.

### Catastrophic Damage Evaluations

Damage evaluations from wind, hail, tornados and floods. Accessibility, repairability, specific cause and extent of loss, wind vs. surge analysis, cost estimations, storm damages vs. long term maintenance issues.

- Wind vs. Wave Evaluation
- Mechanical Damage Evaluation
- Surge vs. Tornado Evaluation
- Structural Extent of Damages
- Hail Damages
- Remedial Repair Design
- Flood Depth Determination
- Foundation Failures





# marine



## MARINE FACILITY DAMAGE EVALUATIONS

U.S. Forensic has extensive experience in the investigation and evaluation of damage associated with allisions involving vessels and marine facilities, including docks, wharves, bridges and associated structures.



We offer evaluations and expert opinions as to the cause of damages, extent feasibility, and appropriateness of repairs, repair options, cost estimates and depreciation.

- Damage Evaluations
- Joint Inspections
- Permit Review
- Pre-Existing Damage Evaluation
- Feasibility of Repairs
- Review of Scope of Work
- Review of Repair Costs
- Depreciation
- Permit Applications
- Oversight of Repairs







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