



## THE FORENSIC ENGINEERING REPORT

I-ENG-A® [IN-JUH]

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### WHY HIRE PROFESSIONAL ENGINEERS?

Professional Engineers and Land Surveyors are a self-policing group of professionals, recognized by state law which grants it certain rights and privileges and requires certain responsibilities. The law requires registrants to be competent, truthful, thorough and prompt in the execution of their assignment. Their legal obligations are explicitly stated in state administrative code with respect to the general public, their clients, to each other and to the board of registration.

The law also requires that the interest, well being, safety and security of the general public must be protected in all registrants' work. This broad statement has several possible interpretations, but some are already anchored in case law. Case in point: we were recently involved in evaluation of a fatal construction site accident. In this incident a new piece of machinery was not adequately guarded resulting in the tragic accident. As this case ran its course this engineer came to realize that as tragic as this accident was there was potential for re-occurrence if improvements of guards were not made. Furthermore, in this engineer's judgment, it is very unlikely persons of authority and responsibility in this case will recognize and prevent a similar future accident of this or greater magnitude. Therefore, it became my professional duty to notify people involved in the design, development and manufacture of the equipment about the problem. This was done via a strongly worded letter passed on to the equipment producer via the attorney that we supported on the case.

The law and engineer's code of ethics also require that they act as "faithful agents or trustees in professional matters for each employer or client". This item really enters into our daily lives as engineers. In the simplest form, it means that we pay attention to all issues involved in the case that we are called to and not only to a narrow definition of the problem given to us. To illustrate this with an example, we were called as experts to a case where our own attorney prefaced the conversation with a statement that the case will most likely be lost due to the incompetence of the contractor whom we were asked to assist with his defense. We went to work after this encouragement with little hope but unflinching diligence. Our thorough

review proved that there were several other incompetent contractors involved in the construction of the subject project and their quantitative contribution to the problem overshadowed the contribution of our defendant. The result of the litigation was much more favorable to our insurance company client than originally expected.

The professional engineer is required by law and his code of ethics to "strive with skill, diligence and judgment exercised by a prudent practitioner to achieve the goals and objectives agreed upon with his client". They should also "have a clear and documented understanding and acceptance of the work to be performed for the client".

Once again to illustrate from our experience: This engineer was once involved in a job where we were asked to evaluate a claim against a contractor who let a project with hydronic heating system freeze during cold weather during construction and thus caused a good deal of consequential damage when the frozen pipes thawed. The plastic pipe used in the project was approved for use in the code in effect when the claim was made, so the case seemed open-and-shut. Based on our research, experimental work and analysis of the pipe manufacturing process, we found that the pipe was not approved for use when it was purchased and used in the project, that its manufacturing process and its design changed significantly since it was used and that the failure was primarily caused by a manufacturing defect in an unapproved pipe.

The engineer is required by law and code of ethics to "issue statements, critiques or arguments on engineering matters only when clearly indicating on whose behalf the statements are made". Engineer shall also "respond to inquiries from other engineers regarding their work in a timely, fair and honest manner".



## WHY HIRE PROFESSIONAL ENGINEERS?

*(Continued from page 1)*

I have only an example of lack of civility to illustrate this point. Once, on an inspection job I met by accident the expert (un-licensed) for the opposing side. The other expert spent most of the day on the job interfering with my work, commenting on it and trying to get me into an argument. Conversely, we have had many cases where licensed professional engineers working for opposing attorneys interacted with professionalism and civility.

The law and the code of ethics also spell out things that the professional engineers are not allowed to do. The biggest taboo in engineering practice is stamping after the fact someone else's design, and/or construction.

I am sure that every engineer has numerous examples of this, but a classic occurrence of it is a contractor or a building inspector who wants an after-the-fact stamp and approval for his construction detail.

It is also required that all designs and other work stamped by an engineer have been done by him personally or under his personal direction.

While using other employees or associates to do part of the work is allowable, all work must be done under immediate direction of the professional engineer keeping in mind that ultimate responsibility for the accuracy of the project is solely the engineer's who stamped the project. This may not be a problem in small organizations, but in big consulting offices with three or more levels of management this is always a consideration.

Professional liability for engineering work has practically no statute of limitations. There is a statutory limit of six years on breach of written contract, but latest court interpretation makes the time run from the date of discovery of the problem, not from the completion of the design or construction.

This is a place to mention the case of an architect who completed a design of a house in 1993 under a limited scope of services contract specifically excluding construction inspections from his scope of work. He got sued in 2005 and had to defend himself and his work for all of the problems which were construction related.

It is necessary to mention in conclusion that many organizations using the term Engineer or Design in their name do not have professional engineers on their staff. I know of an organization with the word "Engineering" in its name that is actually performing housekeeping services.

(Please remember that this is not a legal advice, but merely a show of your humble engineer's understanding of the law.)

Article by:  
TRNKA Engineers,  
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## MEMBER FIRM FEATURE ENGINEERS

Trnka Engineers Company (TEC) was established in 1972 to serve primarily an industrial clientele. Until 1994 its sole activity was design and construction management of industrial and commercial facilities and then it branched into investigative engineering.

TEC became a member of the Investigative Engineers Association (I-ENG-A®) in January 2000 and began to market its investigative services to the insurance and legal industry. It has completed hundreds of assignments for insurance companies in variety of specialties. After the local earthquake on 28 Feb 2001 TEC completed over 300 damage investigation ranging in severity from insignificant to total collapse. Zdenek Trnka, PE, the founder and principal of TEC also testified in several legal cases as an expert witness for defense and in fewer cases also for the plaintiff. TEC currently offers services in all engineering disciplines as well as architecture. The assignments cover a broad range of insurance needs including product liability, design defects, construction defects, water intrusion, fire investigations, industrial accident investigations, traffic accidents and cause and origin investigations. TEC is con-

nected through its principal with a scientific community and can, on project basis, secure a support of world known scientists in some highly specialized fields such as nuclear physics and chemistry.

Trnka Engineers Company (TEC) is committed to the same-day response to the initial call and to developing a project schedule within one work day from the initial call. The project control practices anchored in the office policies assure that the client is always informed and in control of the project to achieve the fastest and most cost effective execution of the investigative assignment.

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## COMEDY RELIEF CORNER

Q: How do you drive an engineer completely insane?

A: Tie him to a chair, stand in front of him, and fold up a road map the wrong way.

Q: How can you tell an extroverted engineer?

A: When he talks to you, he looks at your shoes instead of his own.

To the optimist, the glass is half full.

To the pessimist, the glass is half empty.

To the engineer, the glass is twice as big as it needs to be.





## FORENSIC EVIDENCE RECOVERY SERVICES BY DATABANK DATA SERVICES

The Investigative Engineers Association has a new member firm for the El Paso, Texas area, Goodwin Engineering, Inc. Goodwin Engineering has another company, **Databank Data Services, LLC**, who provides Professional Data Recovery Services, Computer Forensics, and Media/Data Conversions.

**Databank Data Services** is located in Austin, Texas, and provides the recovery of data, Computer Forensics, and Media/Data Conversion services from virtually any type of media, including any combination of hard drives, even if they have been damaged from corporate sabotage, harsh chemicals, fire or flood.

Since 1994 **Databank Data Services** has been providing data services including Data Recovery, Computer Forensics, and Media/Data Conversion throughout the world. **Databank Services** provides the following services:

- **Data Recovery** - Even in the face of the most daunting emergency disaster recovery, crashed hard drive repair or corrupt file recovery the capabilities of Databank Services are unmatched in the industry. Databank Services consistently salvages and extracts lost data from all media types and all operating systems.
- **Computer Forensics Consultant** - All investigations are performed by a Texas Licensed Private Investigator and are conducted in accordance with Department of Justice guidelines for searching and seizing computer evidence. Databank's extensive knowledge of data retrieval gives them the unique insight

into Computer Forensics. Often, forensic evidence recovery is preceded by the necessity for data recovery. Unlike many forensic firms, Databank Services performs both. Therefore, they are able to conduct a more thorough investigation and deliver a more complete report. Computer Forensic investigations can be performed on all media types including hard drives, digital tapes, flash devices, diskettes, digital cameras, cell phones, and many more.

- **Data Bureau** - No media storage type is off limits when it comes to media exchange and data conversion capabilities. Databank Services is one of a few companies that has the expertise to read almost any known digital media. They also have the capability of reading and converting thousands of file types.

If you have an insured who has lost information from a storm or other damage, Databank Data Services stands ready to serve. For further information, please visit their website: [www.DataBankServices.com](http://www.DataBankServices.com) or call 1-800-295-8166. You can trust your critical data to Databank Data Services.

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## THE FUTURE OF HAIL DETECTION

In the late 1990's, the National Severe Storms Laboratory developed a Hail Detection Algorithm which indicates whether or not a storm cell is producing hail. An enhanced algorithm was developed several years later which estimates the probability of hail, the size and maximum size for each detected storm cell.

Improved even further, the present system called, the Enhanced Hail Diagnosis Algorithm (EHDA), uses multiple radars. This improved hail diagnosis integrates the traditional reflectivity radar information with velocity radar information (for rotation and storm-top divergence) from several radars, as well as near-storm environment data from a mesoscale model.

The future of hail detection includes the development of polarimetric technology to be added to the current WSR-88D Doppler weather radars used by the NWS. This technology will be available for installation into the national radar network in five to 10 years. Polarimetric radar can identify the specific location of hail, rather than the probability of hail at any particular location within the storm.

Information from the NOAA:  
National Severe Storms Laboratory

Recently Weather Decision Technologies, Inc. (WDT), was a sponsor and presented information at the Investigative Engineers Association 2007 Convention. WDT shared about its forensic weather reports **Hailtrax™** and **Lightning Trax™**.

These verification reports assist the local member firm in providing evidence to the insurance industry. It is important to have an engineering investigator on-site for review and documentation of information relative to the hail or lightning damage suspected. More information is available at WDT's Forensic Products website or by calling 888.255.7099.

For a sample hail and lightning verification reports, visit: [www.weatherforensics.com](http://www.weatherforensics.com)

The image to the right depicts a region where hail was tracked in Denver, Colorado. Note, the area in the center had 2" or greater hail detected.



**FORENSIC ENGINEERING SERVICE  
TO THE PROPERTY AND CASUALTY  
INDUSTRY SINCE 1991**



**INVESTIGATIVE ENGINEERS ASSOCIATION  
(I-ENG-A® [IN-JUH]),  
FORENSIC ENGINEERING**

Nation's oldest network of engineering firms providing  
"Cause and Origin" investigations to the  
Insurance Industry.

**CURRENT MAP OF MEMBER FIRM LOCATIONS**



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