

LEGAL FRAMEWORK

5.1 Why Law For Engineers?

“Law constitutes the rules under which civilized individuals and communities live and maintain their relationships with one another. It includes all legislative enactments and established controls of human action”. Engineers should not practice law just as lawyers should not practice engineering. However, just as knowing the basics of business accounting, as described in lecture 4, helps young engineers practice engineering, knowing the basics of law also helps them practice engineering.

Many of your actions, or inactions, could have legal implications for your and for your business, government, academic, or volunteer organization. You should know enough about the legal aspects of engineering practice to recognize when you need to take certain actions, when to do nothing, and when to ask if legal counsel might be prudent.

Legal Principles can help guide your actions when involved in tasks such as:

1. Helping prepare contracts for professional services:

You may be asked to help prepare a contract or agreement for services, goods or other outcomes between various entities, such as a consulting engineering firm and a client or owner, a municipality and a constructor, or a manufacturer and a customer. The desired end-point may be a set of plans and specifications; a constructed structure, facility, or system; or a manufactured product.

2. Interpreting contracts once a project is underway:

Even a well-crafted, mutually acceptable contract or agreement requires numerous interpretations during planning, design, construction, manufacturing, or operations. For example, the customer’s representative may call the design engineer at a manufacturing firm, after reviewing a draft design from the manufacturer, and request that more alternatives be developed and examined. The design engineer must decide if the request is reasonable, that is, within or beyond the scope of the contract.

Or assume that the agreement between the consulting firm and a client or owner indicates that the latter will contract for geotechnical services with a third party when such services are needed. However, once the overall project is underway, someone on the client or owner’s staff contacts a

young engineer at the consulting firm and says “Why don’t you retain the geotechnical firm as subcontractor to your firm—you are more familiar with geotechnical firms anyway?”

The young engineer ought to determine if this request is as logical as it sounds or if prudence indicates that the consulting firm should decline the suggestion.

3. Managing to minimize personal and organizational liability:

As young engineers or other technical professionals go about their work, especially when doing what may appear to be relatively mundane tasks, they should be aware of ways in which personal liability and the liability of their organization can be minimized.

4. Anticipating and / or preparing for expert witness testimony:

This situation is similar to the preceding, but much more focused in that it assumes the engineer or other technical person is going to be involved as a consultant or expert witness in litigation process. You, as a young engineer, are not likely to serve as consultant or expert witness in such situations. However, as you gain experience and assume more responsibility the likelihood of being asked or required to do so will rise. So begin to think about that possibility.

5. Understanding project-related requirements in local, county and national laws and rules:

The practice of engineering and some other technical professions in the public and private sector is typically heavily influenced and constrained by the requirements of local, regional, state, and national laws and administrative rules. You are strongly urged to learn about those requirements in the early stages of a project.

7. Recognizing relevant pending or recent legislation and possible impacts on projects:

In addition to knowing about already-enacted legislation, you or somebody in your organization should be tracking pending legislation. Given the multi-year span of some planning-design-construction projects and manufacturing projects, legislation being debated at the beginning of the project might be enacted and available to benefit a client, owner, or customer before the end of the project.

5.2 Legal Terminology

Liability: Obligated, according to law or equity, to make good on acts or omissions that cause loss or damage to others. The cause could be breach, fraud, or negligence or various combinations. To be found liable means that an individual or organization has to pay or do something.

Breach: “Violation of a right, of a duty, or of a law, either by act of commission or by non-fulfillment of an obligation. Thus, breach of contract is the unexcused failure to satisfy one’s contractual undertaking.” The focus is on results in that breach has little to do with intention.

Fraud: “An intentionally deceitful practice aimed at depriving another person of his or her rights or doing injury to him or her in some respect.” (Bockrath and Plotnick 2011). Fraud has everything to do with intention.

Negligence: “. . . consists of a failure to follow such a pattern of behavior as, under the circumstances, a reasonable person would have pursued, or, contrarily, of doing what a reasonable person would not have done. Thus negligence is conduct that is abnormally likely to cause harm to others, or that is, all circumstances considered, unreasonably dangerous, though not intentionally so.” Negligence is the claim of choice for most plaintiffs. However, a plaintiff must prove, by preponderance of evidence, all of the following: a duty of care; breach of that duty; causation (connection between the negligence and the harm or injury); and loss or damages.

Therefore, an engineer might be negligent but not legally liable. Incidentally, being honest and well-intentioned, noble as they are, are not enough to protect you from negligence.

Tort: “A wrongful behavior . . . for which a civil action will lie; the unprivileged commission (or omission) of an act whereby another person incurs loss or injury; such breach of duty as results in damage to plaintiff”

Standard of care: “The level of competence practitioners in their field customarily expect given the circumstances”

“The degree of care that a reasonably prudent person would exercise in some particular circumstances. Breach, fraud, and negligence are the three ways, individually or in combinations, in which an engineer or other technical professional and/or his or her organization can incur liability.

Changing Attitudes: Forewarned is Forearmed

Decades ago, people were more inclined to take risks and accept the consequences, whether the results were favorable or unfavorable. However, today, individuals seem more inclined to blame others for the negative consequences of their actions and, in some situations, start legal proceedings. A new concept of social injustice has evolved. As in the past, accidents and failures are recognized as being expensive as a result of factors such as medical costs, additional materials, and schedule delays. However, it is increasingly common to expect someone else to pay the costs, or at least part of them.

As noted by Robert Half, staffing firm founder, “The search for someone to blame is always successful.” However, while finding someone to blame may always be successful, successfully blaming them is another matter. Smart individuals and their organizations manage their affairs so as not to become scapegoats.

More specifically, the tendency is to look for “deep pockets.” This may be a government agency, a contractor, a consulting engineer, a manufacturing firm, or an individual engineer. Forewarned is truly forearmed in minimizing exposure to litigation. Fear of litigation may stifle creativity and innovation at the very time society is faced with increasingly complex issues, problems, and opportunities that require new approaches.

5.3 Liability: Incurring It

Unfortunately, there are many ways in which today’s individual engineer or other technical professional and his or her organization can incur liability. Liability-incurring opportunities abound in the practice of engineering and related technical professions.

Liability-incurring opportunities abound in the practice of engineering and related technical professions. As noted in the earlier definitions of legal terms, breach has little or nothing to do with intention, but nevertheless consists of violating a right, a duty, or a law. Simply failing to deliver plans and specifications on time as specified in a contract or agreement could constitute breach. Fraud, which is explicitly intentional and deceitful action, consists of actions such as billing a client for products not delivered or falsely stating that a necessary government permit had been secured.

Table 5.1 Essentially all of the services provided by an engineer or similar professional can expose the firm to liability.

Service	Potential liability for engineer or other professional	Comment
Facilitating meetings	Breach: Contract promised X meetings and only Y were conducted	-
Interpreting use of the site	Negligence: Failure to allow for building set backs	-
Investigating underground site conditions	Negligence: Failure to find shallow bedrock or utilities such as a water main or gas line	Unknown site conditions, especially subsurface, can be a major source of liability. Use contract clauses that allocate or shift the risk associated with the site conditions
Helping to secure project financing	Fraud: Engineer/architect “steers” client, owner, or customer to a specific lender in return for a kick-back from the lender	-
Assisting in obtaining project approval from regulatory agencies	Fraud: Falsely claim that an agency granted approval	-
Preparing drawings and specifications for electrical work	Negligence: Inadequate insulation/protection leads to fire	-
Preparing cost estimates	Negligence: Numerical error	-
Reviewing contractor bids	Fraud: Altering a bid to favor a contractor	-
Examining contractor’s shop drawings	Negligence: Failure to note an unsatisfactory change	Use means and methods clauses stating that shop drawing review is for general conformance with the contract documents and that means and methods are the contractor’s responsibility
Maintaining accurate books and records	Breach: Failure to do and submit when required	-
Creating as-built drawings to show final construction including location of utilities	Negligence: Incorrectly locating buried electric line leading later to a disastrous excavation accident	-

Negligence, the most common of the three ways in which technical professionals and their organizations may incur liability, includes failing to exercise care and provide expertise in accordance with the profession's standard of care. For example, calculation error could lead to a negligence determination. To reiterate a point made earlier, you must recognize that being honest and well-intentioned are simply not enough to avoid negligence. You and your organization must be disciplined in the manner in which you provide services if negligence and possible resulting liability are to be avoided. And to restate a point made as part of the earlier definition of negligence, while negligence is always a slippery slope, it does not necessarily equate to liability.

“The engineer, when faced with a problem, asks how can we fix it? The attorney/lawyer, when faced with a problem, asks who can we blame?”

Although liability can be incurred as a result of breach, fraud, and negligence, negligence is by far the dominant cause.

Aspiring and young engineering professionals should become students of the history of their profession. By doing so, they will learn to better appreciate the legacy left by engineers and other technical professionals around the globe and also gain insight into failures and how to minimize them. As noted by Harry S Truman, 33rd U.S. President, “The only thing new in the world is the history you don't know.”

5.4 Liability: Minimizing It

As noted earlier in this chapter, society is becoming more litigious, more likely to take legal action, to “sue everybody in the hope of collecting from somebody” (Bockrath and Plotnick 2011). Most claims are meritless. Engineers and other technical professionals must be even more diligent in trying to minimize risks, including obtaining liability insurance and adopting preventive practices.

Insurance: Financial Protection

While purchasing liability insurance won't prevent lawsuits, insurance will provide some financial protection if a liability action is initiated. The insurer, in exchange for regular premium payments, agrees to make liability payments and defend suits arising out of negligence or alleged negligence in the provision of professional services by the insured. Not all consulting firms purchase liability

insurance in that some “go bare.” Small firms are much more likely to go without liability insurance than large firms. Firms without liability insurance are, in effect, self-insured.

As with most insurance policies, there are exclusions—actions and activities that are not covered by liability insurance. Examples are the failure of the insured to complete services on time, intentional fraudulent and other acts of the insured, and the insured providing services outside the organization’s area of expertise. As is also the case with some other forms of insurance, professional liability insurance typically has deductible provisions—an initial amount of loss that is not covered by the insurance.

Liability insurance is expensive when annual premiums are quantified, for example, as a percent of annual billings for a consulting engineering firm. Liability insurance premiums approximate the after-tax profit of many smaller consulting engineering firms. Premiums tend to be higher for greater risk areas of service such as structural design. Incidentally, insurance premiums are part of overhead and, therefore, go right to the bottom line on the engineering organization’s income statement.

Organizational Preventive Practices

Some consulting firms and other organizations may consider liability insurance optional, yet all such organizations should aggressively and systematically establish programs to minimize liability, particularly that which could be incurred as a result of negligence. An organization’s upper management can take many corporate-wide actions to reduce liability exposure. While these are largely beyond the area of responsibility of entry-level professionals, some possible preventive actions are briefly listed as follows:

Incorporating a private practice and incorporating high-risk services separately

- Limiting practice to “safer” disciplines and avoiding higher litigation-potential service areas such as poorly-financed developers, hazardous waste projects, and geotechnical studies
- Understanding what constitutes quality on each project.
- Avoiding financial interest in projects because if the organization has financial interest it may be liable for problems even if there is no claim of professional negligence
- Using standard contract and placing standard of care provisions in agreements

- Placing liability-limiting provisions in contracts and agreements
- Creating, using, and continuously improving written guidance
- Establishing software policies and procedures on the premise that the organization has primary responsibility for the computer programs that it uses
- Hiring insured sub consultants
- Limiting comments about on-going projects to knowledgeable personnel to reduce the likelihood of transmitting erroneous information to the client-owner customer or making promises that cannot be kept
- Using peer review

Personal Preventive Practices

You, by working smart, can reduce your and your organization's liability exposure. Few suggestions:

Guard Your Reputation: "Tell the truth. Keep your word. Give credit for ideas and information. Do your share. Don't blame others. Accept responsibility for your errors and, to the extent feasible, correct them." If you follow this "guard your reputation" advice, you are much less likely to be involved in legal complications and, if you are, you are much more likely to be treated with respect.

Maintain Competence: You need a proactive program of formal and informal activities to maintain individual competence and contribute to corporate competence. Technical services that fall below the standard of care may be deemed negligent and result in personal and organizational liability. Your and your employer's best interests require that you remain current and competent in your areas of technical and non-technical specialization. And that responsibility lies primarily with you.

Watch Your Language: You may be asked to assist with drafting or reviewing contracts or agreements.

Be careful with the words that are used so that you and your organization minimize disagreements with those you serve or work with. Watch our language in order to communicate effectively.

Table 5.2 Carefully use the words in these three categories of problematic words.

Category	Examples
1. Absolutes/superlatives	All, always, any, best, every, highest, maximum, minimum, never, none, only
2. Promises	Approve, assure, ensure, examine, certify, guarantee, insure, investigate, reach consensus, supervise, test, warrant
3. Multiple meanings, interpretations	Complete, defend, equal, essential, estimate, expert, final, full, furnish, install, necessary, periodic, required, safe, specialist, thorough

Table 5.3 Problematic words can be readily replaced with words that more accurately convey the intent.

Problematic words	Category	Possible replacement
All existing information will be gathered	1	Readily available information will be reviewed and collected as needed
At all times	1	Will be done once per . . .
Insure, ensure, assure	2	Reasonable effort will be made
Periodically	3	Every Friday
Prepare summaries of all meetings	1	Prepare summaries of monthly project status meetings with client
Supervise, inspect	3	Observe and report
Will complete all project services	1	Will prepare and submit for review and approval normal engineering drawings suitable for construction

Finally, we have words with multiple meanings/interpretations, that is, Category 3. Writing in the scope of services that you will make “periodic” visits to the construction site sounds good, but will you visit the construction site daily, weekly, or monthly?

At the draft stage in order to reduce legal and other problems later on, search for problematic words in the above categories in contracts and agreements, and also in emails; memoranda; letters; statements of qualifications (SOQs); and promotional materials such as advertising, brochures, and websites.

Practice Empathy

Related to the topic of watching our language, is how we, as service providers, listen to and talk to owners, clients, and customers because it apparently impacts the probability of litigation.

Might how engineers and other technical professionals communicate be the cause of some of our interpersonal and legal problems? Bachner (2009) goes on “As for the quality of your work being a substitute for the quality of your relationships, wake up!” He concludes by saying, “When errors occur, as they inevitably will, having a relationship can mean the difference between resolving them amicably and moving on, or having to defend a lawsuit.”

Communicate-Communicate-Communicate

This advice applies to the interaction between you and your supervisors, colleagues, paraprofessionals, support personnel, client-owner-customer representatives, and other project stakeholders.

Document Everything

Everything means essentially everything, including, but not limited to, meetings, telephone calls, e-mails, field reconnaissance, and conversations.

As you do your engineering work, record what you did, when you did it, and why. And, once again, watch your language—assume that anything you write will someday be viewed by your peers or, worse yet, by opponents in litigation.

Your organization may have a uniform documentation system consisting of components such as filing procedures, special forms, and a project management system.

For example, Bachner (2008) urges that an organization have a documentation program that includes “written guidance that tells people what should be written,” and “how long various types of documentation should be kept.” If your employer doesn’t have a documentation system, perhaps you should offer to assist in its development. If such a suggestion is not well-received, develop your own system so at least your work is carefully documented.

Please note that once a litigation process begins, counsel for plaintiffs and defendants will request, during the discovery process, minutes and summaries of meetings, emails, and notes about telephone conversations. “Telephone conversations, in general, are not discoverable during litigation.” However, telephone conversation logs are discoverable and can demonstrate your and your team’s efforts to communicate (Matsuoka 2009). Claims as to “who said what and when they

said it” that are backed by written documentation carry much more weight than undocumented recollections.

Back to meetings. A possible explanation for not preparing meeting summaries is that “we each took our own notes so we don’t need official group notes” (Domalik 2010). The fallacy here is that the individual notes are likely to have many differences on important decisions and action items.

5.5 Maintaining Perspective on Liability Minimization

“The greatest mistake you can make in life,” according to writer and editor Elbert Hubbard, is to be continually fearing you will make one.” In keeping with that advice, your firm or other organizations should guard against letting the “tail wag the dog,” that is, becoming overly fearful if not paranoid about liability.

Recognize that much of what engineering and similar organizations do to minimize liability exposure is also being done for one or more other reasons, some of which may even be more important—this is just good managing and leading. For example, peer review, which is one way to minimize liability, is also likely to yield a more cost effective design as measured by minimizing life-cycle costs. Documentation during a project, another liability minimization device, is also helpful in coordinating a project, writing a report on a project, as a resource for “surprise” meetings, and as a guide for future, similar projects. While timely response to client, owner, and customer requests will surely minimize liability exposure, it is also a mark of good service. Use of standard, tested contract and agreement language is another liability-minimization measure and also a time-saving device. Finally, written technical and other guidance will certainly minimize the probability of errors or omissions within an engineering or other technical organization. Such guidance will also, in the long run, greatly reduce the time required to complete tasks and processes and serve as a very effective orientation and training tool for new personnel.

5.6 Legal Forms of Business Ownership

Businesses such as consulting firms, manufacturing companies, and constructors, usually use, from a legal perspective, one of three basic forms of business ownership. These forms are the sole proprietorship, partnership, and corporation. As an aspiring engineer or as a young professional, you should understand the elements of the three forms for at least two reasons. First, doing so will help you understand part of the legal context of your employment. For example, why you may or

not be able to invest in your company. Second, some day you may, individually or with others, start your own consulting, manufacturing, construction, or other business and will need, among many other decisions, to select a basic form of business ownership.

In Kenya, you can register any business through the ecitizen portal, <https://www.ecitizen.go.ke/> . The steps and requirements for each type of business are shown on the website.

Sole Proprietorship

With the sole proprietorship or, as it is sometimes called, the individual proprietorship or sole ownership, an individual owns and operates the business. One advantage of the sole proprietorship is that it is the simplest and least expensive to establish and operate.

The most significant negative aspect of the sole proprietorship is that the owner is personally liable, including personal, non-business assets, for all debts and obligations. This disadvantage may be partially offset by purchasing liability insurance. Another disadvantage of the sole proprietorship is that the size of the business and the ability to expand are limited by the sole proprietor's resources, including his or her knowledge and skill and ability to obtain financing. The knowledge and skill limitation can be somewhat offset by hiring employees or by developing arrangements with other sole proprietors that offer needed complementary services.

Partnership

In a general partnership, which is an unincorporated entity, two or more persons own and operate the business although ownership, decision-making, debts, losses, and profits are not necessarily equally shared. A partnership is recognized as a legal entity entitled to own property, hire employees, and sue or be sued. The laws generally recognize the partnership as an entity separate from the individual partners. For example, the partners pay income taxes, not the partnership. Any partner can act on behalf of the partnership provided the action is in keeping with the scope of the business.

The appeal of a partnership is that it combines the financial assets, facilities, equipment, and talents of two or more individuals who are interested in engaging in the same type of business. On the negative side, particularly when compared to a sole proprietorship, individual partners are restricted in their business actions although they typically have more latitude than owners of a

corporation. For example, a partner cannot sell or mortgage his or her share of the partnership's assets without permission of the other partners. Furthermore, in a fashion similar to the sole proprietorship, each partner is financially responsible for the acts of all the partners to the full extent of his or her personal assets.

Corporation

Although various kinds of corporations exist, such as private and public and profit nonprofit, this discussion is limited to private, for-profit corporations. Such a corporation is an entity created under state or similar entity incorporation laws, consisting of one or more individuals, owned by one or more stockholders, and considered separate from the employees or the owners. A board of directors, elected by the owners, provides general control. The corporation can buy and sell real estate, enter into agreements, and sue and be sued. A corporation can be dissolved by surrender or expiration of its state or other charter with its business obligations settled in accordance with those laws. Owners pay taxes only on dividends received after the corporation pays state and federal taxes.

A significant advantage of a corporation, contrasted with a sole proprietorship or partnership, is the limited liability of the owners. Stockholder liability is limited, with a few exceptions, to the amount of their investment in the corporation.

Examples of exceptions—situations in which one or more individuals within a corporation risk personal liability—are when fraud is committed or when a corporation is underfunded or underinsured. Other advantages of corporations are the ability to raise large amounts of capital and the corporation's perpetual organizational life, that is, continuation of the organization is not dependent on particular employees or owners because the corporation is an entity separate from the employees and owners. Another advantage of a corporation is that it provides ease of multiple ownership.

A possible disadvantage of a corporation is that the stockholders are not in any way agents of the corporation. The board of directors controls the corporation and the officers of the board act as agents for the corporation; although each stockholder owns a part of the organization, he or she cannot act unilaterally on behalf of the organization.

Closure

From a legal perspective, businesses such as consulting firms, manufacturing companies, and constructors use one of three basic forms of business ownership: the sole proprietorship, the partnership, and the corporation. As you move through your career in the private sector, when you are an employee, you may work for all three types of organizations. If you decide to start your own business, various business ownership avenues and scenarios are available. For example, you may begin as a sole proprietorship, then join with others in a partnership, and finally convert to a corporation.