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**DESIGN PROFESSIONAL LIABILITY: DETERMINING
PROFESSIONAL NEGLIGENCE DURING THE
SUBMITTAL REVIEW PROCESS**

A Thesis in

Civil Engineering

by

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ABSTRACT

Professional liability is a concern for architects and engineers in today's litigious society. Contractors may seek to recover damages caused by the design professional's actions or inactions during the submittal review process. However, there is no contract defining the relationship between contractor and design professional under many common project delivery methods. Contractors must pursue tort claims such as professional negligence to recover damages. Architects and engineers must understand the requirements for proving professional negligence to effectively manage their risk.

The research first determined which elements are essential in proving professional negligence by reviewing the literature regarding professional liability. Over twenty appellate court decisions involving professional negligence were located and analyzed. The key issues of each case, as identified by the courts, were used to determine rules and inquiries for determining professional liability as it relates to the submittal review process.

Courts use the legal concepts of duty, breach, and cause when determining if an architect or engineer acted negligently, and draw a distinction between claims for physical damages and claims for purely economic damages. Claimants pursuing damages for purely economic damages must prove an additional requirement of foreseeability and navigate the application of the economic loss rule. Courts may evaluate the owner/designer agreement when considering if the claimant was owed a tort duty by the design professional, although tort claims are usually independent of contracts. The unique relationship between designer and builder has challenged state courts' interpretation of tort and contractual duties, accounting for inconsistent decisions on professional liability across the United States.

TABLE OF CONTENTS

LIST OF FIGURES.....	vi
Chapter 1. INTRODUCTION.....	1
Problem Statement.....	2
Objective.....	3
Scope.....	4
Methodology.....	4
Significance.....	7
Overview of Chapters.....	7
Chapter 2. LITERATURE REVIEW.....	9
Defining Submittals.....	9
Overview of the Submittal Process.....	10
Contract Language Regarding Submittals.....	12
Product Equals.....	14
Liability in Determining Equality.....	15
Economic Necessity of the Submittal Review Process.....	16
Submittal Review Challenges.....	16
Legal Trends Involving Submittals.....	17
Submittal Stamp Language.....	19
Previous Research.....	19
Chapter 3. LEGAL THEORIES OF DESIGN PROFESSIONAL LIABILITY.....	21
Introduction to the U.S. Legal System.....	21
Breach of Contract.....	22
Evolution of Liability.....	22
Tort Theory of Law.....	24
Strict Liability Torts.....	26
Ordinary Negligence.....	27
Professional Negligence.....	28
Legal Duty Owed the Claimant.....	29
Breach of Legal Duty.....	30
Proximate Cause.....	31
Damages Suffered.....	31
Economic Loss Rule.....	32
Foreseeability.....	34

LIST OF FIGURES

Fig. 1. Divisions of civil law.....	25
Fig. 2. Claimant recovery strategies.....	36
Fig. 3. Decision flowchart in determining negligence for physical damages.....	47
Fig. 4. Decision flowchart in determining negligence for purely economic damages.....	59

Chapter 1

INTRODUCTION

Design professionals have become more attentive to the liability of their actions in an effort to effectively manage their risk. Architects and engineers perform many duties during the course of a construction project; one of which is to review contractor submittals. The submittal review process poses serious legal risks to design professionals, as they have been held liable for errors and omissions in approved submittals, submittals rejected without proper cause, and delays resulting from the submittal review process. However, design professionals can manage their risk by understanding the extent of their liability in the review process.

Contractor submittals are an intermediate step between the design professional's design documents and the finished product. Submittals may vary in form and detail; shop drawings indicate *how* the contractor will perform some portion of the work whereas product samples indicate *what* is to be provided. Contractors initiate procurement and fabrication upon receipt of approved submittals from the design professional. Submittals approved with errors and/or omissions commonly lead to rework and costly time delays, and in the worst cases, personal injury and destruction of property. Contractors may wish to pursue negligence claims against design professionals for various reasons; to recover damages they were unable to recover directly from the owner, to recover damages in addition to any settlement they may have already reached with the owner, or to avoid litigation with the owner for business relationship reasons. Architects and engineers expose themselves to a great deal of liability when reviewing contractor submittals and should be aware of the associated legal risks to better mitigate their liability.

Problem Statement

A contractor may incur an increase in construction costs when an architect rejects a material product data submittal without proper cause or when an engineer takes an unreasonable amount of time to approve a shop drawing which causes schedule delays. The contractor may then seek additional compensation for the increased cost. The owner-contractor agreement may contain provisions precluding or limiting recovery (no-damage-for-delay). It is common that no contract exists between contractor and design professional under most project delivery methods (design-bid-build), therefore, breach of contract is not a viable recovery strategy. Can the contractor recover the additional costs directly from the design professional without a contract defining the relationship between the two parties, and what are the criteria for doing so? The research aims to answer this question.

The literature regarding design professional liability is quite conflicting. Some courts have ruled that claimants (persons seeking compensation for damages suffered) must have a contractual relationship with the architect or engineer, referred to as privity of contract, in order to be compensated for design professional negligence. In contrast, other courts have waived the privity of contract requirement. This research examined why courts differ on the necessity of the privity requirement. In cases where privity is not a requirement, court decisions differ on whether a claimant can recover purely economic damages for design professional negligence. Purely economic damages are damages that are not a direct consequence of personal injury or property damage. This research determined the circumstances in which parties without privity are entitled to

compensation for purely economic damages. Another portion of the research was directed at determining which actions by the design professional constitute professional negligence specific to the submittal review process. Finally, design professionals feel they can limit their liability in the submittal review process by using exculpatory language, such as “no exceptions taken” and “not rejected,” on their submittal review action stamps. This research evaluated if courts consider submittal approval language when determining liability. With so many variables, it is difficult for design professionals to effectively manage their risk during the submittal review process.

Objective

The primary objective of this research was to develop a set of rules and inquiries that courts consistently apply when determining if a design professional acted with professional negligence during the submittal review process. These rules and inquiries were incorporated into flowcharts for architects and engineers to assess their liability without having to locate and read numerous court decisions. While determining professional negligence, the courts draw a distinction between claims for physical damages, such as personal injury and destruction of property, and purely economic damages, where the damages were not a consequence of personal injury or destruction of property. This research also made this distinction by developing two flowcharts for assessing liability: one specific to physical damages, and another specific to purely economic damages. The reasoning for this distinction is developed further in the third chapter.

Scope

The scope of this research was limited to claims for design professional negligence in the submittal review where no contractual relationship existed between the design professional and claimant. The purpose of this limitation is to focus on design professional negligence claims and ignore the more prevalent breach of contract claim. The differences between these types of claims are discussed further in the third chapter. The purpose of this distinction is because breach of contract is a separate and distinct area of law from design professional negligence. The phrase “design professional negligence” for the purpose of this research refers to professional negligence specific to design professionals. The term “design professional” for the purpose of this research is meant to include only architects and engineers, as the legal system draws no distinction between these professions (Jackson 1984).

Methodology

The following tasks describe the method by which the research was conducted:

1. *Research current industry standards regarding submittal review.* Language referring to submittal review used in standard form of agreements such as AIA (American Institute of Architects), EJCDC (Engineers Joint Contract Documents Committee), and AGC (Associated General Contractors of America) was analyzed and compared. The purpose of this task was to determine the responsibilities design professionals are commonly held accountable for under standard contract language.

2. *Research the criteria for proving design professional negligence.* Criteria used to establish design professional negligence was researched by examining legal references written for the design professional audience. The legal references included publications such as construction liability literature, engineering and legal journal articles, and law review articles.

3. *Locate appellate court cases where the design professional's actions during the submittal review process were the basis of the professional negligence claim, where no contract existed between claimant and design professional.* Appellate court decisions referenced in the research were located using the "West American Digest System." Current precedence of a court decision was determined by a legal technique referred to as "Shepardizing," which indicates whether or not a future case has upheld or rejected a previous decision. Other court cases were found by using the electronic legal encyclopedia *Westlaw Campus*, which provides keyword searches over a vast amount of appellate legal decisions. Cases settled out of court and trial court decisions were not part of this research because precedence set by case law is established in the federal and state appellate court systems. The process for selecting cases for the research was very restrictive, as only those cases in which the submittal review was the primary legal issue being evaluated were chosen. Furthermore, plaintiffs in the selected cases must be pursuing a professional negligence claim against the defendant design professional, and must not have any contractual relationship with the defendant. The research strove to find as many cases as possibly that fit the criteria so the conclusions developed would be as accurate as possible, not just based on a sample.

4. *Assess the relationship between the criteria for proving design professional negligence and the facts of the appellate cases.* Numerous court cases were analyzed to determine the criteria by which design professionals are considered professionally negligent, twenty of which are cited within the research. It is important to recognize the key factual issues of each case, as identified by the court, and determine how those issues relate to proving design professional negligence. The reader should be aware that the legal system is usually consistent, but not always perfect. As this research uncovered, cases of similar facts did have conflicting results. One of the goals of this research was to determine a possible reasoning for these inconsistencies.

5. *Develop a decision flowchart to determine if liability for professional negligence exists.* This task was the major benefit of the research. Rules and inquiries for determining liability for design professional negligence in the submittal review process were developed from the previous tasks and incorporated into flowcharts. One flowchart was developed for design professional negligence claims resulting from physical damages, and another for purely economic damages. The flowcharts were constructed for use by design professionals with minimal legal training.

6. *Validate the results of the flowchart analysis with test cases.* Apply the rules and inquiries in the flowcharts to predict the outcome of test cases. Test cases were selected by the same criteria as other cases used throughout the research. The test cases were arbitrarily picked during the case selection process, but their decisions were not

used in the development of the flowcharts discussed in the previous task, so the flowcharts could be tested without bias. The predicted decision from the flowchart was compared with the actual court decision of the test case to assess the validity of the each flowchart.

Significance

This research will provide design professionals with a better understanding of the liability of their actions and allow architects and engineers to better manage their risk of design professional negligence during the submittal review process. The rules developed to determine liability may be of value to contractors as well, as contractors commonly initiate claims against design professionals and may wish to evaluate the legitimacy of their claim. This research will raise awareness to the design community that the absence of a contractual relationship between a claimant and design professional may not suffice alone as a viable defense for design professional negligence.

Overview of Chapters

Chapter two consists of a literature review which familiarizes the reader with the submittal review process and associated problems which may lead to errors, omissions, and delays. Chapter two provides further information about common claims filed against architects and engineers and how they differ from design professional negligence. Chapter three explains the limited legal terminology used in the research that is necessary

for the reader to understand. Chapter four discusses negligence claims against design professionals based on physical damages to person and/or property. A flowchart assessing liability for design professional negligence based on the stated case law concludes the chapter. Chapter five presents multiple negligence cases where the claimant suffered purely economic damages (no physical injury or destruction of property) and concludes with a flowchart for assessing liability. Chapter six concludes the research by drawing the appropriate conclusions and presents recommendations for mitigating risk during the submittal review process and areas of future research.

Chapter 2

LITERATURE REVIEW

The first part of this chapter introduces the reader to contractor submittals and the review process under the design-bid-build project delivery method, a typical project delivery method where no privity of contract exists between contractor and design professional. This introduction includes defining the various types of submittals and identifying each party's responsibilities in the review process under standard contract language. The last part of this chapter discusses both the necessity of the submittal review process and the associated problems.

Defining Submittals

It is important to define what the term "submittal" encompasses. AIA (American Institute of Architects 1997) Document A201, General Conditions of the Contract for Construction, defines submittals in section 3.12 as: shop drawings, product data, or samples. AIA (1997) definitions for each of these terms are given below:

3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

Overview of the Submittal Process

A typical construction project will have hundreds of contactor submittals, possibly even thousands depending on the size and complexity of the project. The submittal review process is intended to be a dialogue between the design professionals and the builders (Epstein 2007). Shop drawings are the most intensive submittal to produce and review. They are usually prepared by a subcontractor or fabricator and sent to the prime contractor, either the general contractor or construction manager, for review and approval. The purpose of the prime contractor's review is to identify constructability issues and any coordination that will be required among other trades (Epstein 2007). Prime contractor liability for approval and rejection of subcontractor submittals varies, depending on how the general contractor or construction manager has allocated their risk in their agreement with the subcontractor. Product data and samples typically require a much less intensive review and are usually provided by suppliers and vendors. The prime contractor performs a cursory review to assure the material/product conforms to the project specifications. In general, the prime contractor's review is to assure that the subcontractor has provided a material/product that satisfies what the prime contractor has contractually promised to provide the owner. Upon approval, the prime contractor forwards the submittal to the lead design professional, usually the architect, for their review and approval.

The design professional's review of shop drawings is to ascertain that the builder understands the architectural and engineering design concepts of the project (O'Leary 2003). O'Leary also suggests that this review stage allows the design professional a

chance to correct any misunderstanding of the contract requirements, before the costs of fabrication, procurement, or installation has been incurred. Standard contract language states that architects and engineers review shop drawings to ensure that proposed construction scheme depicted within the drawings satisfies the design intent for the completed structure (Epstein 2007). The U.S. District Court described the design professional's scope of review in *First National Bank of Akron v. Cann* (503 F.Supp. 419, 1980) by stating:

... shop drawings are the final word as to how the work should proceed on the job site, and supersede the architectural plans. Not surprisingly, shop drawings require the approval of the architect, who examines them for conformance with the design concept of the project and for compliance with the specifications of the contract documents. Thus, approved shop drawings will always carry out the original intent of the plan.

The phrases “design intent” and “design concept” are commonly used in standard contract language and by the courts to describe the nature of the design professional's review, although these phrases do not have a universally excepted definition.

Product data and samples are typically reviewed by the author of the specifications to which the material/product corresponds. Design professional approval implies that the proposed material/product conforms to project specifications. Upon approval from the design professional, the submittal is filtered back down to the subcontractor, fabricator, or supplier that initiated its approval. Typically, receipt of approved shop drawings initiates fabrication while receipt of approved material/product data submittals initiates procurement.

Contract Language Regarding Submittals

Design professionals have modified their standard contract documents throughout the years to limit their liability. It is important that these documents clearly define the role of the design professional in the submittal review process. AIA (1997) Document B141, Standard Form of Agreement Between Owner and Architect, defines the design professional's scope in paragraph 2.6.4.1 as:

The Architect shall review and approve or take other appropriate action upon the Contractor's submittals...but only for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents.

Another standard contract, EJCDC (2002) Document E-500, Standard Form of Agreement Between Owner and Engineer for Professional Services, paragraph A1.05.11 also limits the role of the design professional in the review process as:

...only for conformance with the information given in the Contract Documents and compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

AIA (1997) Document B141, paragraph 2.6.4.1 continues to further define what work is excluded from the design professional's scope and delegates said work to the contractor by stating:

Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities... all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review shall not constitute approval of safety precautions or...of any construction means, methods, techniques, sequences or procedures.

EJCDC (2002) Document E-500, paragraph A1.05.11 echoes AIA's disclaimer to construction means and methods by stating:

Such reviews and approvals...will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions and programs.

Ultimately, the design professional's duty under standard contract language is to review submittals for conformance with the design concept. Furthermore, the contractor, not the design professional, is responsible for construction means and methods, which includes the safety of workers during erection/installation.

Design professionals must manage their time in the submittal review process because construction schedules rely on timely approval of submittals to allow for fabrication or procurement. AIA (1997) Document A201, General Conditions of the Contract for Construction, paragraph 4.2.7 states:

The Architect will review and approve or take other appropriate action upon the Contractor's submittals...The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work.

Contrasting AIA documents, AGC (2000) Document 200, Standard Form of Agreement and General Conditions Between Owner and Contractor, paragraph 3.14.2 assigns liability to the owner, stating:

The Owner shall be responsible for review and approval of submittals with reasonable promptness to avoid causing delay.

However, AGC (2000) Document 200 does not clearly identify the design professional's level of responsibility in the submittal review process (Schinnerer 2003). Unlike both AIA and AGC, EJCDC Document E-500, paragraph A1.05.11, references a submittal schedule by stating:

Engineer shall meet any Contractor's submittal schedule that Engineer has accepted.

This language suggests that the design professional is obligated to review submittals within the time parameters dictated by the submittal schedule, if the design team has accepted to meet those time requirements. Contractors typically justify claims for delay damages upon failure of the design professional to timely approve submittals. Architects and engineers must make sure their time of review is not unreasonable or does not exceed a contractually accepted time parameter.

Product Equals

Design professionals can restrict the materials, equipment, and products used in a project by using proprietary specifications, ensuring that the finished project meets the expectations of the owner. Proprietary specifications describe desired products by referencing specific manufacturers, brand names, model, or types (Ibbs 1986). However, such restrictions inhibit fairness and competition among manufacturers and suppliers, and are typically prohibited in the public sector.

Public sector contracting usually requires specifications to state all salient physical, functional, and other essential characteristics necessary to express the minimum functional requirements of the product (Ibbs 1986). Ibbs further suggests that only these features are to be considered material and essential in determining equality. Design professionals add the phrase “or equal” to their specifications to allow contractors to propose alternate products. With the addition of the phrase “or equal,” products or materials specified by brand name serve only as to represent the level of quality sought by the design professional (Ibbs 1986). A product equal does not have to be identical to

the product specified, but similar in performance, quality, and other material characteristics listed. An alternate vehicle to “or equal” specifications is to contractually state that brand names listed in the specifications are only to establish minimum quality and performance standards and allow the contractor to submit substitutions by terms of the contract. Typically, allowing equals and substitutions is an advantage of the owner, as they encourage competition which ultimately lowers costs.

Liability in Determining Equality

Construction contractors rely on the quotes they receive from suppliers when they submit fixed priced bids on projects (also referred to as lump-sum bidding). The competitive nature of the construction industry encourages suppliers to take advantage of the “or equal” clause in the specifications. Unfortunately, the design professional’s determination of a products acceptability will typically not be known until after the contractor is already contractually bound to the fixed price (Ibbs 1985). Contractors are vulnerable to economic losses when substitutions and equals quoted in their bid are rejected. Design professionals may be liable for additional costs incurred by the contractor if the rejected submittal conforms to all material characteristics listed in the project specifications.

Economic Necessity of the Submittal Review Process

The submittal process is a necessity in the construction industry because it is not practical for design professionals to provide illustrations or descriptions of every detail on a project (Epstein 2007). Competition to reduce costs has caused an increase in the amount of contractor design work by using performance specifications and schematic designs (Rubin and Ressler 1985). Epstein also suggests that the submittal process gives contractors a great deal of latitude in performing the work when the design professional has only established performance requirements in the design documents, as performance requirements allow contractors to work with suppliers to find the most cost-effective method of meeting project requirements (Cushman and Bottum 1987).

Submittal Review Challenges

Reviewing contractor submittals can be a daunting task to design professionals. Meticulous checking is time-consuming and costly for architects and engineers to administer (O'Leary 2003). Adequate knowledge of the project and industry experience, along with professional judgment, is required for an intelligent and thorough submittal review (Ostanik 2007). Unfortunately, design firms under pressure to cut time and costs may assign their least experienced, and typically lowest paid, personnel the task of reviewing shop drawings (Rubin and Ressler 1985). These personnel may lack an understanding of the project requirements and industry experience. Competitive pressure

to cut costs during the review process increases the risk of approved submittals with errors and omissions, for which the design professional can be liable.

Architects and engineers are also subject to claims for an unreasonable review duration, which resulted in project delays and/or disruptions to the planned sequence of work (Sweet and Schneier 2004). Delays in the review process are commonly attributed to the design professional's ignorance of the project sequence (O'Brien 1976). The review process is typically sequenced by order of receipt, rather than by importance to schedule. It is difficult for the design professional to prioritize the review without direction from the prime contractor. However, some delays in the review process can be directly attributed to the contractor's actions. For example, contractors may resubmit previously rejected submittals with insufficient or no changes (Hess, et al. 2007). Contractors may also encourage delays by deliberately overwhelming architects and engineers with numerous items for review at once, referred to in the construction industry as "submittal dumping" (Ostanik 2007), which allows the contractor to blame the design professional for schedule delays. Submittals are a source of contention between design professionals and contractors and have become a significant source of professional liability claims against architects and engineers (O'Leary 2003).

Legal Trends Involving Submittals

Approved contractor submittals supersede the project drawings and specifications, even though they are not part of the contract documents. Contractors initiate fabrication and procurement of materials and equipment after submittals have been approved by the

design professional. For this reason, the best contract documents are of little value if the contractor commences work with defective shop drawings. Contractors are entitled to rely upon the completeness and timeliness of the design professional's review and approval of submittals (Cushman 1983). This reliance is the basis for much litigation.

The recent trend in construction litigation is to file claims against all parties involved in the project and let expert witnesses assist the court in determining the liable parties, if any (Hinshaw and Culbertson 2005). This strategy may account for the approximately 25% of engineering firms in the United States that experienced legal claims from 1995 through 2004 (Schinnerer 2005). The Schinnerer report also suggests that firms are choosing to settle with claimants rather than pay costly legal fees associated with litigation. XL Design Professional (XLDP), a major insurance provider for architects and engineers, recently performed a study evaluating claims against their design professional policy holders. XLDP paid out \$396 million in claims payments (referred to in industry terms as claims dollars) from 1996 through 2000, involving 8687 claims. Architects accounted for 44% of those claims dollars, increasing 7% from their last study covering the years 1989 to 1995. XLDP's Chief Claims Officer, Steve Mauck, attributes the increasing number of claims against architects for two reasons. First, architects are usually the prime design professional on a project and brought into litigation even if the problem lies solely with their consultant. Second, growth of construction projects outpacing the growth of experienced design professionals, causing many design firms to stretch their resources. The study also showed that the owner accounted for 62% of the claims, while third parties and contractors/subcontractors accounted for 23% and 11% of the claims, respectively.

Submittal Stamp Language

AIA and EJCDC have given substantial consideration to the language they suggest for use on the design professional's stamp, reflecting that of the language used in standard contract documents. Architects and engineers have tried to limit their liability by replacing the term "approved" on their stamps with more exculpatory language such as "not rejected" and "no exceptions taken." Cushman (1983) suggests that these disclaimers will not affect liability and are ignored by the courts, and that disclaimers on submittal action stamps give architects and engineers a false sense of security during the submittal review process. Rubin and Ressler (1985) suggest that architects and engineers should focus more on exercising better care in the review than looking for ways to limit their liability.

Previous Research

The intention of this thesis is to further the research of Richard Taylor (Taylor 1996). Taylor developed general rules for determining liability in the shop drawing review process, proposing the following three inquiries:

- 1.) Does the approved shop drawing meet the design intent?
- 2.) Was the review timely?
- 3.) Did the contractor deviate from contract requirements?

However, Taylor does not differentiate between breach of contract theory and negligence theory of liability, both of which are discussed further in the next chapter. Taylor also neglects to address why there is so much discrepancy regarding the privity of contract

requirement between claimant and design professional in appellate court decisions.

Finally, Taylor does not draw a distinction between claims based on physical damage and claims based on purely economic damages. This distinction is critical in developing a flowchart that architects and engineers can use to accurately predict the outcome of their claims. The next chapter discusses the importance of addressing these issues.

Chapter Three

LEGAL THEORIES OF DESIGN PROFESSIONAL LIABILITY

Chapter three begins by introducing the reader to the U.S. legal system and contrasts claims based in tort law (professional negligence) with those based in contract law (breach of contract). Next, each requirement of proving professional negligence is discussed in detail. Chapter three concludes by discussing the applicability of professional negligence claims for purely economic damages and the additional requirement of foreseeability.

Introduction to the U.S. Legal System

The U.S. legal system has multiple divisions of law, two of which are civil and criminal law. Criminal courts serve to punish those guilty of a crime, where the prosecutor is either the state or the federal government, depending on jurisdiction. Defendants in criminal courts must be found guilty beyond a reasonable doubt. Civil courts serve to settle disputes between private parties by ordering compensation from liable parties. Unlike the criminal system, defendants in civil disputes are found liable by a preponderance of the evidence as opposed to beyond a reasonable doubt. Civil law has three main branches: tort law, contract law, and property law. In the past, design professionals were only concerned with claims arising from contract law, such as breach of contract and breach of warranty.

Breach of Contract

Breach of contract occurs when one party to a contract fails to perform in accordance with the terms of their agreement, without sufficient justification (Bockrath 1995). A party to a contract who is injured by its breach has a legal right to seek and recover monetary damages (Kelleher 2005). However, claimants (plaintiffs) must have a contractual relationship, referred to as privity of contract, for the claimant to prevail under breach of contract theory. *Black's Law Dictionary 6th Ed.* defines privity as:

Derivative interest founded on, or growing out of, contract, connection, or bond of union between parties.

Essentially, the existence of a contract is not always required to establish privity. However, courts have maintained that privity arising out of a contract relationship is a prerequisite for breach of contract claims, including claims against architects and engineers. Design professionals could rely upon their liability to not be extended outside the confines of their contractual relationships (Early 1978) until the 1960's, when the privity requirement began to erode from American jurisprudence (Schoumacher 1986, Henderson 2005).

Evolution of Liability

The New York Court of Appeals first rejected the privity of contract requirement in 1916 with the landmark case of *MacPherson v. Buick Motor Co.* (111 N.E. 1050, 1916), where the Court stated:

The duty of a manufacturer to inspect his goods so as to guard against injuries to persons therefrom is independent of contract, and the obligation arises at law.

The New York Court of Appeals believed that manufacturers should be held to a higher standard of care than ordinary persons, and be held liable for damages resulting from their defective products, independent of the nature of their relationship to the injured. Therefore, no contractual relationship was required in New York to recover damages from a manufacturer resulting from a defective product. Erosion of the privity requirement spread from product liability in the manufacturing industry to design professional liability in the construction industry (Schoumacher 1986). *Pastorelli v. Associated Engineers, Inc.* (176 F.Supp. 159, 1959) was one of the first cases to abandon the privity requirement for negligence claims against design professionals. In *Pastorelli*, the U.S. District Court found that:

...absence of privity of contract between alleged tort-feasors and person allegedly injured as a result of their negligence...will not per se bar the application of ordinary principles of negligence in tort action to recover damages...

The term “tort-feasor” mentioned in the previous appellate court decision refers to a party who has committed a tort, such as negligence, which is discussed further in the next section. Architects and engineers became liable in some jurisdictions for tort claims from parties without any contractual relationship (Schoumacher 1986). This transition period accounts for inconsistent appellate court decisions, as some jurisdictions no longer required privity of contract while other jurisdictions still enforced the necessity of privity of contract. In essence, design professional liability was a function of the current jurisdictional attitude on privity. Eventually, most jurisdictions rejected the privity requirement for tort claims for physical damages and have continued to do so since. The

resulting expansion in professional liability had a tremendous impact on the amount of litigation involving design professionals as tort claims have become routine in modern construction litigation (Jackson 1984) with claims against architects and engineers doubling from 1970 to 1990 (Schapker 1990).

Tort Theory of Law

Tort law is an area of civil law that provides compensation for damages suffered, although some tortious behaviors can also be criminal and punishable by imprisonment through the criminal justice system. Prosser and Keaton define tort in *The Law of Torts* 5th Ed. as:

A civil wrong, other than breach of contract, for which the court will provide a remedy in the form of an action for damages.

Torts are classified into three main categories: intentional, negligent or unintentional, and strict liability. Figure 1 illustrates the main areas of civil law including the three divisions of tort law.

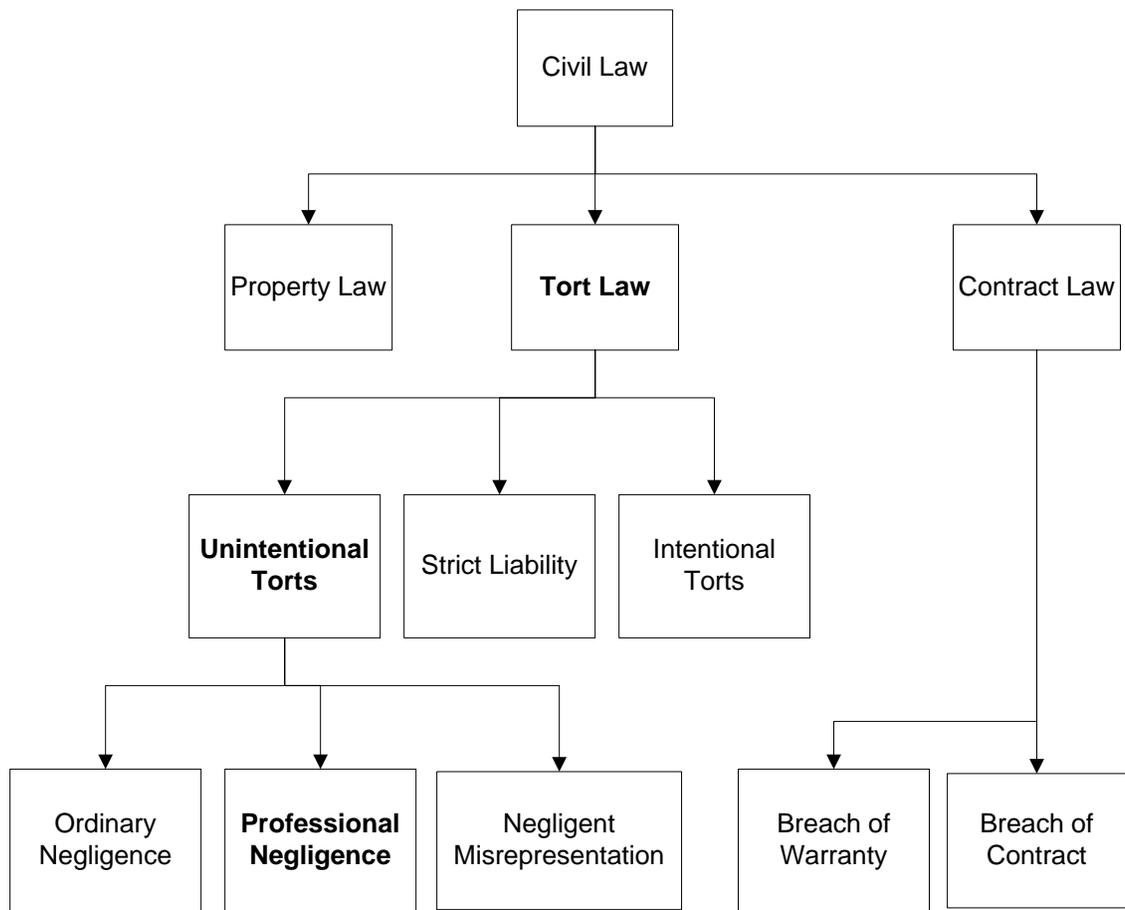


Fig. 1. Divisions of civil law.

The next two sections discuss strict liability torts and negligent torts in further detail. Intentional torts such as assault and battery are irrelevant to the discussion of design professional liability, and therefore, beyond the scope of this research.

Strict Liability Torts

“Liability without fault” is a phrase used synonymously with strict liability. A party that is responsible for the consequences of their actions, regardless of the amount of precaution and care they exercise, is said to be held strictly liable (Kelleher 2005). Strict liability is predominant in the manufacturing industry with product liability claims. Courts have waived strict liability on the design professional community by acknowledging that architecture and engineering are not exact sciences and their services need not be perfect. This sentiment is evident in *City of Mounds v. Waljarvi* (236 N.W.2d 420, 1978), where the Supreme Court of Minnesota stated:

Architects and other vendors of professional services, who deal in somewhat inexact sciences and are continually called upon to exercise their skilled judgment in order to anticipate and provide for random factors that are incapable of precise measurement...do not impliedly warrant that finished product will be fit for purpose for which it was designed but remain liable only for negligence.

Similarly, The U.S. Court of Appeals noted in *Aetna Insurance Co. v. Hellmuth, Obata & Kassabaum, Inc.* (392 F.2d 472, 1968) that:

Although architect whose contractual duties include supervision of construction project is not guarantor or insurer, he is, as member of learned and skilled profession, under duty to exercise the ordinary, reasonable technical skill, ability and competence that is required of architect in similar situation and if by reason of failure to use due care under the circumstances a foreseeable injury results, liability accrues.

Courts acknowledge the uncertainty of engineering and have given design professionals immunity from strict liability.

Ordinary Negligence

Ordinary negligence, sometimes referred to as unintentional tort, differs from strict liability in that courts consider and evaluate the level of care used by the allegedly negligent party. *Black's Law Dictionary 6th Ed.* defines ordinary negligence as:

The omission of that care which a person of common prudence usually takes of his own concerns.

A claimant must prove four elements to have a viable claim for ordinary negligence, which are listed below (Kelleher 2005):

1. Duty owed the claimant to conform to a certain standard of conduct.
2. Failure to conform to the standard of conduct required.
3. Casual connection between conduct and damages (proximate cause).
4. Actual damages suffered by claimant.

A classic example demonstrating the four elements of negligence is the hypothetical case of a person injured in an automobile accident caused by another person (the tort-feasor) exceeding the speed limit and losing control of their car. The injured party was owed a duty by all drivers on the road to comply with all traffic regulations, including the speed limit. The tort-feasor failed to conform to the required standard of conduct by exceeding the speed limit. The tort-feasor lost control of their car after exceeding the speed limit which caused physical damage to the injured party. The damages to the injured party were tangible (injury to person and damage to car). The driver of the speeding car would be liable for ordinary negligence. However, professionals such as doctors, lawyers, accountants, architects, and engineers are held to a higher standard than just ordinary persons of common prudence (Feinman 2007), and are subject to a special form of negligence known as professional negligence.

Professional Negligence

The American Society of Civil Engineers Committee on Professional Practice (ASCE 2004) defines professional negligence as:

Failure, through a preventable error or omission, to practice within the prevailing standard of care.

Professional negligence applies the four elements of ordinary negligence specifically to the design professional community, as described by Schoumacher (1986):

1. *Legal duty owed the claimant*: A duty owed by the engineer to the claimant to conform to a certain standard of conduct as established by the law.
2. *Breach of legal duty*: Failure to achieve the standard of care.
3. *Proximate cause*: A causal connection between the breach of duty and the injuries sustained by the plaintiff.
4. *Damages suffered*: Damages suffered by the claimant.

These elements are identified in *Donnelly Construction Co. v. Oberg/Hunt/Gilleland* (677 P.2d 1292, 1984), where the Supreme Court of Arizona stated:

...action in negligence may be maintained on showing that defendant owed duty to plaintiff, that duty was breached, and that breach proximately caused injury which resulted in actual damages.

Essentially, professional negligence can only be maintained by showing the design professional breached a duty of care owed to the claimant and this breach of duty proximately caused actual damages to the claimant (Circo 2007). Each of the four essential elements of proving professional negligence is discussed below.

Legal Duty Owed the Claimant

The first step in proving professional negligence is to prove that the design professional owed the claimant a duty of care imposed by law (legal or tort duty). Design professionals are governed in their practices by statutes, contracts, standards, and ethical codes at all government levels (Hatem 1989). Contractual duties are enforced by law to uphold the expectation of promises made (Sweet and Schneier 2004). Tort duties are imposed by law on licensed design professionals to protect the health and safety of the public. Prosser and Keaton differentiate between the two types of duties in *The Law of Torts 5th Ed.* by stating:

Tort obligations are in general obligations that are imposed by law, apart from and independent of promises made...

Contract obligations are created to enforce promises which are manifestations... of a commitment to the future. They are, therefore, obligations based on the manifested intention of the parties to a bargaining transaction.

The nature of the design professional's duty of care has been described in numerous appellate court decisions, including *Donnelly Construction*, where the Supreme Court of Arizona stated:

Design professionals have duty to use ordinary skill, care, and diligence in rendering their professional services, and duty to use skill and care to provide plans and specifications which are sufficient and adequate for particular job extends to those with whom design professionals are in privity and to those with whom they are not.

Similarly, the Florida Supreme Court stated in *Lochrane Engineering, Inc. v. Willingham Realgrowth Investment, Ltd.* (552 So.2d 973, 1989) that:

The duty of a professional who renders services, such as a doctor, lawyer, or engineer, is different from the duty of one who renders manual services or delivers a product. The contractual duty of one who delivers a product or manual services, is to conform to the quality or quantity specified in the express contract... However, the duty imposed by law upon professionals rendering professional services is to perform such services in accordance with the standard of care used by similar professionals in the community under similar circumstances.

After establishing that the design professional owed the claimant a legal duty, the next step is to prove that this legal duty was breached.

Breach of Legal Duty

The second step in proving professional negligence is proving that the design professional breached their legal duty owed the claimant by failing to meet their respective profession's standard of care. This is usually established by expert testimony during litigation, unless the court has determined the area is within common knowledge and comprehension of an ordinary person. The "standard of care" concept has many analogous definitions to the one stated below, cited from the *Book of approved jury instruction 6.37, Duty of the Design Professional* (BAJI 1986):

In performing professional services for a client, a professional has the duty to have that degree of learning and skill ordinarily possessed by reputable professionals, practicing in the same or similar locality and under similar circumstances.

It is his or her further duty to use the standard of care and skill ordinarily used in like cases by reputable members of his or her profession practicing in the same or similar locality under similar circumstances, and to use reasonable diligence and his or her best judgment in the exercise of professional skill and in the application of learning, in an effort to accomplish the purpose for which he or she was employed.

The court determines if the design professional breached their duty owed the claimant by comparing their actions to the standard of care, the hypothetical actions of another similarly situated design professional under similar circumstances. Architects and engineers are not liable for professional negligence if the court establishes that other reputable members of their profession would have acted similarly to the alleged tortfeasor.

Proximate Cause

The third element in proving professional negligence is to establish that the design professional's breach of duty was the proximate cause of the claimant's damages.

Black's Law Dictionary 6th Ed. defines proximate cause as:

That which, in a natural and continuous sequence, unbroken by any efficient intervening cause, produces injury, and without which the result would have not occurred.

In essence, damages must be the direct result of the design professional's failure to use adequate care or skill.

Damages Suffered

The final element in establishing a viable claim for professional negligence is proving that the claimant did in fact suffer damages. Although simplistic in concept, this element may be the most controversial. Courts have acknowledged that physical damages, such as personal injury or property damage, are worthy of awarding

compensation, independent of contractual privity. However, courts disagree on whether purely economic damages, damages not a consequence of physical damage, are compensable in a professional negligence claim without contractual privity. Some jurisdictions allow claimants to recover purely economic damages if the claimant can prove that their damages were foreseeable, in addition to the four elements previously mentioned. This situation is discussed in the last section of this chapter. Other jurisdictions have barred recovery of purely economic damages in tort claims such as professional negligence. Jurisdictions that bar such recovery are said to have adopted the economic loss rule (also referred to as the economic loss doctrine).

Economic Loss Rule

The economic loss rule bars tort recovery where the claimant suffers only economic damages without any physical harm (Lung 2000). Its purpose is to preserve the distinction between contract law and tort law (Edelstein 2000). Circo (2007) explains this distinction further by stating:

The economic loss rule marks the fundamental boundary between the law of contracts, which is designed to enforce expectations created by agreement, and the law of torts, which is designed to protect citizens and their property by imposing a duty of reasonable care on others.

Essentially, jurisdictions enforcing the economic loss rule (through statutes or precedence) believe contract law is better equipped than tort law at handling economic damages in a commercial setting (Steffery 1994). Contract law allows parties to allocate their risk in the terms of their contract. Jurisdictions enforcing the economic loss rule

fear that parties would pursue tort remedies to recover benefits they were unable to obtain in contractual obligations (*Bershchauer/Phillips Const. Co. v. Seattle School Dist. No 1*, 881 P.2d 986, 1994) which undermines the integrity of contracts. Jurisdictions may enforce the economic loss rule in a variety of forms, as some states only apply it to product liability claims, while others apply it to professional services claims as well. However, not all jurisdictions enforce the economic loss rule, as there remains debate among state courts over the legality of recovering purely economic losses in tort (Cushman and Bottum 1987). Jurisdictions not enforcing the economic loss rule believe that claimants should be given a chance to present the merits of their case and allow the court to determine if liability exists. Olafsen (2005) suggests that there is no reason to bargain for a standard of performance that is already imposed by law (professional duty). Furthermore, design professionals need to be held accountable for their actions regardless of the existence of contractual duties. This sentiment of accountability is illustrated in the case of *Mid-Western Electric, Inc. v. DeWild Grant Reckert & Asc. Co.* (500 N.W.2d 250, 1993), where the Supreme Court of South Dakota stated:

To deny a plaintiff his day in court would, in effect, be condoning a professional's right to do his or her job negligently with impunity as far as innocent parties who suffer economic loss. We agree the time has come to extend to plaintiffs recovery for economic damage due to professional negligence.

However, jurisdictions that do allow parties to recover purely economic damages under professional negligence theory require an additional element of proof to the four stated previously; the damages must be foreseeable.

Foreseeability

Jurisdictions that do not enforce the economic loss rule have allowed third parties of contracts to pursue professional negligence claims against design professionals when the claimant is of a class of people whose reliance on the design professional's conduct is foreseeable (Cushman 1983). Courts view contractors as a class of people whose reliance on the design professional's conduct is foreseeable. The five essential elements in proving professional negligence against a design professional in the absence of privity are as follows:

1. *Legal duty owed the claimant*: A duty owed by the engineer to the claimant to conform to a certain standard of conduct as established by the law.
2. *Breach of legal duty*: Failure to achieve the standard of care.
3. *Proximate cause*: A causal connection between the breach of duty and the injuries sustained by the plaintiff.
4. *Purely economic damages suffered*: Damages not the result of injury to plaintiff or their property.
5. *Foreseeability*: Damages to plaintiff were reasonably foreseeable.

The additional requirement of foreseeability was first identified by the Supreme Court of Florida in *A.R. Moyer, Inc. v Graham* (285 So.2d 397, 1973), which stated:

...a third-party general contractor, who may foreseeably be injured or sustain an economic loss proximately caused by negligent performance of a contractual duty of an architect or engineer, has a cause of action against alleged negligent architect or engineer, notwithstanding absence of privity.

Foreseeability was later clarified in *Eastern Steel Constructors, Inc. v. City of Salem* (549 S.E.2d 266, 2001), where the Supreme Court of Appeals of West Virginia stated:

The ultimate test of the existence of a duty to use care is found in the foreseeability that harm may result if it is not exercised; the test is whether an ordinary man in the defendant's position, knowing what he knew or should have

known, would anticipate that harm of the general nature of that suffered was likely to result.

In essence, architects and engineers must render reasonable skill and judgment to all parties that foreseeably rely upon their professional services (Petros and Elegant 2000).

Eastern Steel Constructors indicates that courts recognize the special relationship between contractor and design professional, and the resulting reliance that ensues, by stating:

A design professional, such as an architect or engineer, owes a duty of care to a contractor, who has been employed by the same project owner as the design professional and who has relied upon the design professional's work product in carrying out his or her obligations to the owner, notwithstanding the absence of privity of contract between the contractor and the design professional, due to the special relationship that exists between the two, and consequently, the contractor may, upon proper proof, recover purely economic damages in an action alleging professional negligence on the part of the design professional.

In conclusion, claimants without privity attempting to recover purely economic damages under professional negligence theory in jurisdictions that do not enforce the economic loss rule must prove that the claimant's damages were foreseeable, in addition to the four essential elements previously discussed. The flowchart presented in Figure 2 illustrates a claimant's recovery options against a design professional based upon the nature of the damages and relationship between the two parties.

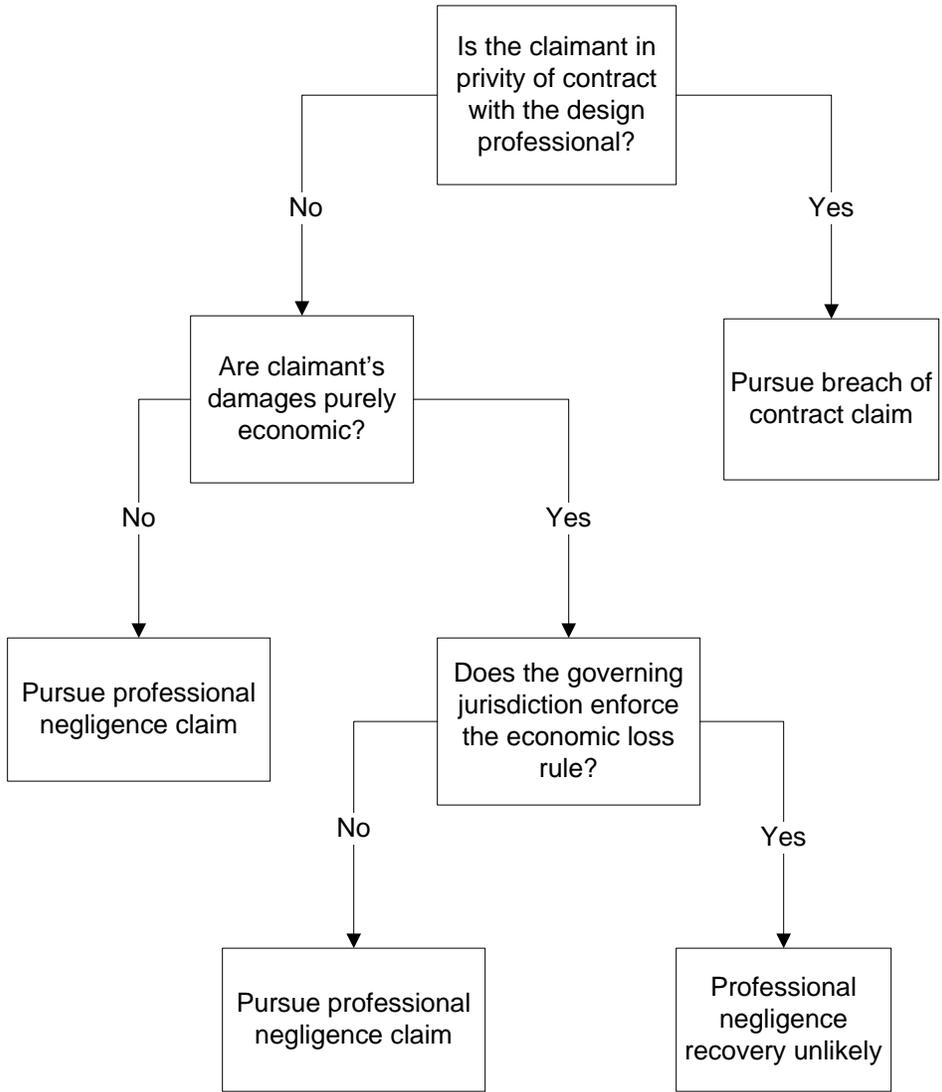


Fig. 2. Claimant recovery strategies.

Chapter 4

PROFESSIONAL NEGLIGENCE FOR PHYSICAL DAMAGES

The facts and decisions of five appellate court cases involving professional negligence during the submittal review process are presented in this chapter. No contractual relationship exists between claimant and design professional in any of the cases presented. The scope of this chapter is limited to claims of physical damages, as purely economic damages are presented in the following chapter. The purpose of this chapter is to show a relationship between the design professional's actions during the submittal review process and the four essential elements for proving design professional negligence.

Waggoner v. W&W Steel Co. (657 P.2d 147, 1982)

In *Waggoner*, a portion of steel framework fell during the construction of a hospital in Oklahoma resulting in the deaths of two workers and injury to another. Ironworkers were in the process of securing steel on the sixth, seventh, and eighth floors which had been erected that day. The three men were waiting for other workers to bring them guy lines that were required to temporary secure the structure. A gust of wind caused the unbraced steel to collapse before the men could secure it, causing them to fall. The injured worker, along with the families of the deceased, brought suit against the project architect for the personal injury and wrongful deaths that ensued. Plaintiffs claimed the defendant Architect was negligent in approving structural steel shop

drawings without specifications for temporary bracing. The Court looked to the Contract for Construction to determine the responsibility for temporary bracing.

The General Condition of the Contract for Construction stated the following:

2.2.4 ...The Architect will not be responsible for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the Work...”

4.3.1 The Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, and sequences and procedures and for coordinating all portions of the Work under Contract.

4.13.1 By approving and submitting Shop Drawings and Samples, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria....

10.2.1 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

.1 all employees on the Work and all other persons who may be affected thereby...

The Supreme Court of Oklahoma determined that the architect was not responsible for temporary bracing, and therefore was not liable, by stating:

...it was the duty of the contractor, not the architects, to see that the shop drawings included provisions for temporary connections which fall into the categories of “field construction criteria”, “construction means, methods, techniques, sequences and procedures”. Since it was not the responsibility of the architects, they obviously would not be negligent in failing to require temporary connections.

Analysis of Waggoner v. W&W Steel Co.

The contract language clearly puts responsibility for construction means, methods, and techniques on the contractor, and further goes on to indemnify the architect

for such responsibility. Courts will not ignore clear and unambiguous contract language. Under most standard forms of agreement such as AIA, architects and engineers are not liable for damages resulting from construction related activities. *Waggoner* fails to prove the first essential element of professional negligence, by failing to establish a legal duty owed the claimant to specify temporary bracing. The contractor owed the claimants a tort duty to provide temporary bracing and the proper safety precautions, which originated from the contractor's contractual obligations to the owner.

**C.W. Regan v. Parsons, Brinckerhoff, Quade, and Douglas v. Diamond
(411 F.2d 1379, 1969)**

Parsons, Brinckerhoff, Quade, and Douglas (Parsons), an engineering firm, was hired to prepare plans and specifications for the construction of a automotive passenger tunnel under the Elizabeth River in Virginia, connecting the cities of Norfolk and Portsmouth. Diamond Construction Co. (Diamond) was contracted to perform the heavy construction of roughing in the tunnel. C.W. Regan, Inc. (Regan) was contracted to build the approaches to both entrances of the tunnel, as well as perform the electrical and drainage work inside the tunnel. A steel bulkhead inside the tunnel was interfering with the work of both contractors during construction. Diamond sought permission from Parsons, as required by contract, to cut out the steel bulkhead and replace it with a wooden bulkhead which would not interfere with the work. Section 105.03 of the contract documents stated:

- e. The Contractor shall submit to the Engineer the designs and working drawings for plant and temporary structures required...Such approval, however, will not relieve the Contractor of his responsibility for the adequacy of their design,

construction and use, and he shall make good all injuries to persons or things arising on account of them.

The drawings explicitly stated that felt material was to be used to provide a seal around the edges, and the edges were to be caulked if necessary. Parsons approved the drawings with comments for improving the structural integrity of the bulkhead. Later in March of 1962, a record high tide level produced a 30 foot head of water at the bulkhead causing a great quantity of water to leak in around the edges and damage the work inside. Parsons claimed Diamond was liable for failing to seal the bulkhead and Parsons was negligent in their approval of the temporary bulkhead design. The case was appealed to the U.S.

Court of Appeals Fourth Circuit, which stated in regards to the claim against Parsons:

Consulting engineer on tunnel building project could not be charged with negligence in having approved plans of one contractor for construction of a temporary bulkhead which subsequently leaked and caused flooding, where manner of fitting bulkhead against masonry and manner of caulking to prevent leaks were field details which were responsibility of contractor...

Analysis of C.W. Regan v. Parsons, Brinckerhoff, Quade, and Douglas v. Diamond

Regan demonstrates that design professionals are not liable for physical damages resulting from construction means and methods when contract language clearly puts such responsibility on the contractor. The damages resulted from a problem in the temporary bulkhead design, not the completed tunnel design described in contract documents.

Regan fails to establish a legal duty owed the claimant which is required to prevail under professional negligence theory.

Day v. National U.S. Radiator Corp. (128 So.2d 660, 1961)

In *Day v. National U.S. Radiator Corp.*, a plumbing subcontractor was killed by an explosion while testing a newly installed boiler in a Louisiana hospital. The injury resulted because the boiler was installed without the pressure release valve specified in the design documents, which plainly stated that the contractor was to “*equip hot water heaters with temperature and pressure relief valves.*” Investigation determined the boiler brochure was approved by the project architect without the pressure relief valve shown. The wife of the deceased (Day) claimed the architect was negligent in his approval of the boiler brochure and was awarded damages at trial.

Upon appeal, the architect claimed his approval of the submittal was for procurement of the items contained in the brochure, not an approval of all components required for installation of the boiler. The Supreme Court of Louisiana concluded the boiler submittal was not intended to be an inclusive list of all required equipment for the domestic hot water installation and reversed the trial court’s ruling, stating:

Architects were not negligent in approving plumbing subcontractor’s shop drawing which did not specify a pressure relief valve for hot water boiler which subsequently exploded, killing plaintiff’s husband, where shop drawing was not intended to include all equipment required for installation of the system, and even if plan was complete, in view of fact subcontractor did not rely on it in installation of boiler, its approval by architects was not proximate cause of the explosion... Both breach of legal duty to injured party and proximate causation are prerequisites to tort liability.

Analysis of Day v. National U.S. Radiator Corp.

Day v. National U.S. Radiator Corp. indicates that courts evaluate the intent of the submittal when determining liability and establishing if a legal duty was owed. The project architect's approval of the brochure was merely an acknowledgement that the boiler was the correct model and allow for procurement. Recall from Chapter 2 that brochures are considered product data, and their intent is to show *what* is being provided. The submittal was not a detailed shop drawing indicating *how* the boiler was to be installed, nor an inclusive list of all components required. Approval of the brochure did not indicate that the architect failed to use adequate care or judgment, and therefore, no legal duty owed the deceased was breached. Furthermore, the appellate court established that the plumbing subcontractors did not reference the approved brochure during the installation of the boiler. Thus, there was no causal connection between the approved brochure and the deficient installation of the boiler, which lacks proximate cause.

Duncan v. State Board for Architects, Professional Engineers and Land Surveyors (744 S.W.2d 524, 1988)

One of the most infamous professional liability cases that illustrates the importance of the submittal review process is *Duncan v. Missouri Board for Architects, Professional Engineers and Land Surveyors*, commonly referred to as *Hyatt Regency case*. In *Duncan*, two suspended walkways above a hotel lobby filled with people collapsed and fell onto the crowded main lobby floor of the Hyatt Regency Hotel in Kansas City, Missouri. The tragedy killed 114 people and left another 185 injured

(Carper 2001). Daniel Duncan, the project structural engineer, along with Jack Gillum, the project structural engineer of record and Duncan's supervisor, were charged with gross negligence on multiple accounts. Of relevance to the research, Duncan was charged with gross negligence in the review of Shop Drawing 30 and Erection drawing E3.

Two walkways were suspended directly above each other and hung from the roof structure of the hotel lobby by tension rods. Only a sketch of the lower walkway connection was illustrated in the structural design drawings, showing a single tension rod connected to a box beam which supported the lower walkway. There was a note in the structural design drawings expressing that the upper walkway connection be "similar" to the lower walkway connection shown in the drawings. Duncan later stated that his intention was to use a single tension rod, from the roof structure to the lower walkway, passing through the box beam of the upper walkway. This single rod would carry the load of both walkways to the roof structure. Instead, the steel fabricator subcontracted to perform the work, Havens Steel Company (Havens), submitted shop drawings showing a double rod connection at the upper walkway, instead of the single rod connection as intended by Duncan. In this configuration, the box beam at the upper walkway was supporting the lower walkway, which doubled the bearing stress on the box beam at the upper walkway. Neither Duncan nor Gillum performed any additional calculations with the connection configuration shown in Havens' shop drawings before approving them. To worsen matters, the box beam and rod connection was "non-redundant", meaning that failure of the connection would result in failure of the entire suspended structure. When

the walkways became crowded with hotel guests, the overstressed connections at the upper walkway failed, causing a progressive collapse of the entire suspended structure.

The Missouri Board of Architects, Professional Engineers and Land Surveyors claimed that Duncan was grossly negligent in reviewing Haven's shop drawings. The Missouri Court of Appeals differentiated between gross and ordinary professional negligence by stating:

Phrase "gross negligence," as used in professional engineer licensing statute, denotes an improper conduct greater in kind or in degree or both than ordinary negligence...

Actions that are grossly negligent in character are those actions that show no regard for the safety of others and such lack of diligence is likely to cause harm (ASCE 2004).

Duncan was found grossly negligent at trial after months of investigation and testimony.

Upon appeal, the Missouri Court of Appeals confirmed the lower court's decision, stating:

Evidence, which demonstrated that project engineer in direct charge of actual engineering work on construction project failed to review shop drawings of hotel walkway construction...supported finding that engineer had been "grossly negligent"...

Analysis of Duncan v. State Board for Architects, Professional Engineers and Land Surveyors

Duncan owed a legal duty to provide a structure that was safe and free of harm to the public arising out of his obligations as a professional engineer. This duty was breached when Duncan failed to check Haven's shop drawings for conformance with the design intent of the structural drawings. The court determined that another similarly

situated structural engineer would have checked a subcontractor's design of a non-redundant connection to assure it conformed to the design intent. Furthermore, if another similarly situated structural engineer noticed a deviation from their original design intent, they would perform the necessary additional calculations to confirm the proposed design was adequate. Therefore, Duncan's actions did not conform to the standard of care of his profession. As stated by Missouri Court of Appeals:

Duncan did not, as in standard practice, look for an assembled detail of the connection...No review was made nor calculations performed to determine whether the box beam-hanger rod connection shown on the shop drawings met Code requirements. Shop drawing review by the engineer is contractually required, universally accepted and always done as part of the design engineer's responsibility.

Duncan breached a contractually duty owed the owner, which created a tort duty owed the public, by failing to adequately review shop drawings before approving them. The nonconforming connection approved by Duncan was the proximate cause of the physical damages, injury to persons and destruction of property. Therefore, Duncan was liable for gross professional negligence due to the severity of the consequences, as all four elements for proving professional negligence are satisfied.

Conclusion

The cases of *Waggoner* and *C.W.Regan* indicate that courts will not hold design professionals liable for damages resulting from construction means, methods, or techniques when the contract language clearly indemnifies the architect of such responsibility and allocates that responsibility to the contractor. Courts still evaluate

contract language to determine the obligations of all parties involved in a project, as contractual obligations may give rise to tort duties.

In *Day*, the project architect owed the deceased a legal duty to review the boiler submittal with a level care that meets or exceeds the standard of care of his profession. However, the claimant could not establish that the project architect failed to meet the standard of care, as approval of a component does not imply approval of the overall system. In addition, the claimant failed to establish that the architect's actions were the proximate cause of the damages suffered because the deceased did not reference the approved submittal during installation.

The case of *Duncan* suggests that architects and engineers will be liable for damages resulting from approved submittals when their review failed to comply with the standard of care. Duncan breached a legal duty owed all of the hotel occupants by failing to use the necessary level of care required to determine if the structural shop drawings conformed to the design concept expressed in his design documents and provide a structure safe to the public.

Figure 3 uses the concepts developed in this chapter and the previous to determine if liability is likely to exist.

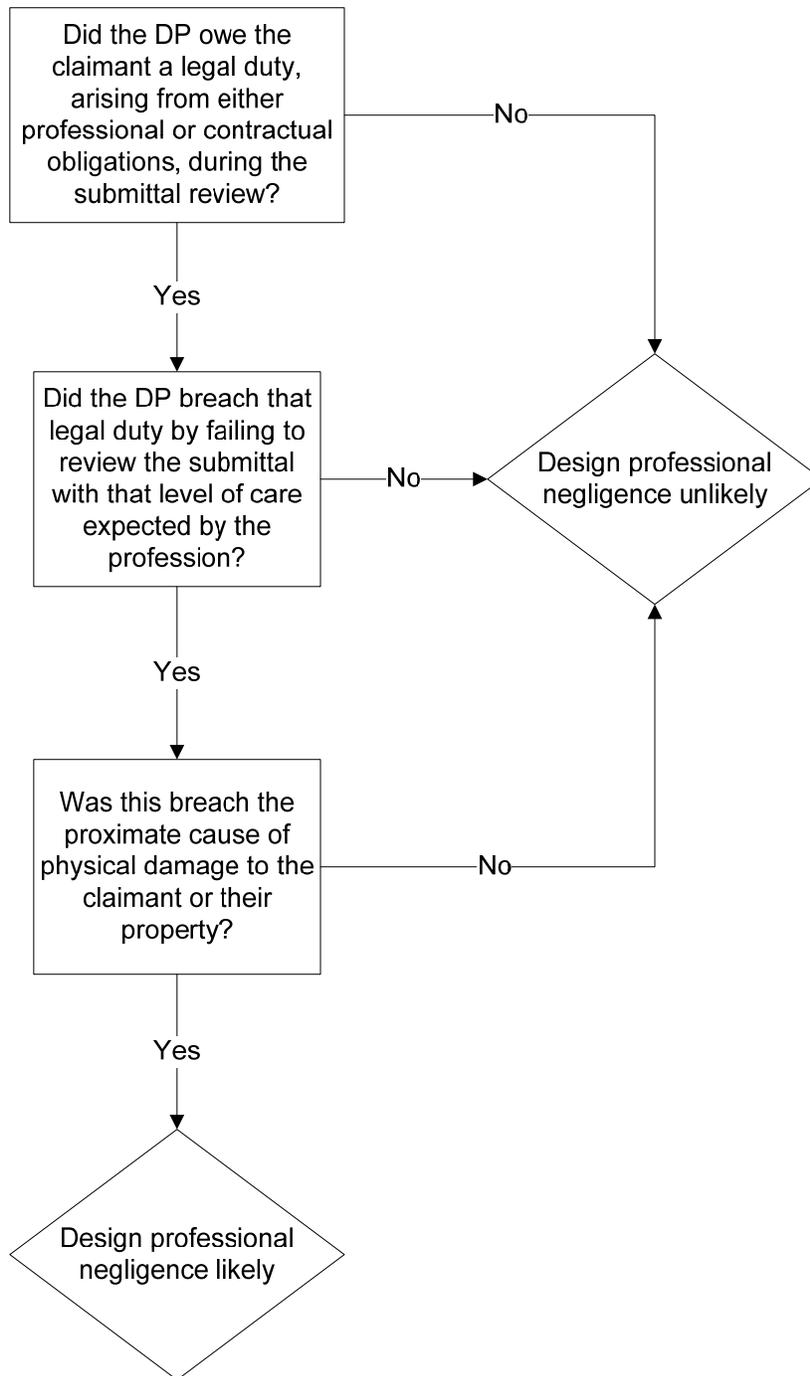


Fig. 3. Decision flowchart in determining professional negligence for physical damages.

Validation: Jaeger v. Henningson, Durham & Richardson, Inc. (714 F.2d 773, 1983)

In the case of *Jaeger*, the architectural firm Henningson, Durham & Richardson, Inc. (HDR) entered into a contract to perform architectural services for an office building in Sioux Falls, South Dakota. Paragraph 1.1.18 of the owner/designer agreement stated:

The Architect shall review and approve shop drawings, samples, and other submissions of the Contractor only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents.

The owner contracted Swift Brothers Construction Co. as the general contractor, who then subcontracted the steel fabrication to Egger Steel Co. (Egger). In turn, Egger subcontracted the steel erection to L.H. Sowles (Sowles). Egger prepared shop drawings pursuant to receiving drawings and specifications from HDR. Specifications required that stairway landing pans be fabricated from 10-gauge steel with angle stiffeners, but Egger's shop drawings mistakenly called for 14-gauge steel without angle stiffeners. HDR's project architect failed to notice the discrepancies and approved the shop drawing. Egger fabricated and delivered the stairway landing pan pursuant to the approved shop drawing. Jaegar and Sell were employees of Sowles responsible for erecting the stairways. During construction, the pan collapsed while the two men were on it, causing the men to fall 16 feet and sustain serious injuries. The injured workers claimed HDR was negligent in failing to detect the error in Egger's stairway shop drawing.

Predicted Result from Flowchart

Did the design professional owe the claimant a legal duty, arising from either professional or contractual obligations, during the submittal review? Yes. It was the architect's professional obligation to review the contractor's shop drawings for compliance with codes expressed in their design intent. This is also a contractual duty owed to the owner.

Did the design professional breach that legal duty by failing to review the submittal with that level of care expected by the profession? Yes. The design documents intended the stair pans be fabricated from 10-gauge steel with angle stiffeners while the shop drawing specified 14-gauge steel without angle stiffeners. HDR failed to detect an error in the shop drawing that a cursory review would have revealed. The Court felt another architect under similar circumstances would have detected this error.

Was this breach the proximate cause of physical damage to the claimant or their property? Yes. Expert testimony established that the stair pans would not have collapsed had they been built to contract specifications. Therefore, the claimants injuries were the direct result of the architect's breach of duty.

The decision flowchart suggests that HDR was negligent in the review and approval of stairway shop drawings.

Actual Result

The United States Court of Appeals affirmed the lower court's decision that HDR was negligent in failing to detect and correct errors in the steel stairway shop drawings. Thus, the decision flowchart accurately predicted the Court's decision.

Chapter 5

PROFESSIONAL NEGLIGENCE FOR PURELY ECONOMIC DAMAGES

The facts and decisions of four appellate court cases involving professional negligence during the submittal review process resulting in purely economic damages are presented in this chapter. No contractual relationship exists between claimant and design professional in any of the cases presented. The first two cases presented involve contractor claims against the design professional for economic damages resulting from delays in the submittal review process. The third case illustrates an architect's liability for economic damages resulting from an approved submittal with errors. This case also demonstrates the requirement of foreseeability for determining liability for purely economic damages. The chapter concludes with a decision flowchart and a validation case.

Prichard Brothers, Inc. v. Grady Company (436 N.W.2d 460, 1989)

Grady Co. (Grady) was contracted by the School District in 1980 to provide architectural services for the addition and remodeling of a school building in Minnesota. The School District contracted with Prichard Brothers, Inc. (Prichard) the following year as the general contractor. The School District used standard AIA agreements with both parties. The general conditions of the Owner/Architect agreement stated:

The Architect will review and approve or take other appropriate action upon Contractor's submittals...Such action shall be taken with reasonable promptness so as to cause no delay.

Construction was scheduled to be completed in June on 1982. However, delays during construction delayed completion until October of 1982. Prichard claimed the delays were the result of Grady's negligence in the submittal review process and filed a claim accordingly for increased costs and lost earnings. At trial, an expert witness testified that the shop drawings submitted to Grady by Prichard were of proper quality and should have been approved in a timely fashion which implies that Grady's review was unreasonable in duration. The trial court determined that Grady was negligent in their interpretation of specifications and response to shop drawings and awarded compensation to Prichard. Consequently, Grady appealed the decision based on the issue that the claim should not have been allowed to proceed in tort for negligence.

The Court of Appeals of Minnesota looked to determine whether Prichard established that Grady breached a duty imposed by law or by contract. Prichard must first establish they were owed a legal duty by Grady to prevail in tort. The Court concluded that:

Construction contractor's action against school district and architectural firm involved duties imposed by contract, and case should not have proceeded on negligence theory where damages sought were solely economic losses resulting from alleged breach of those duties.

As to the actions of Grady, the Court further stated:

Architectural firm did not fail to perform its duties under contract...as contract by its plain language made that firm not liable for any interpretation rendered in good faith....

Essentially, the appellate court barred Prichard's recovery for purely economic damages because there lacked privity of contract. Prichard appealed the decision to the Supreme Court of Minnesota, which reversed the appellate court's decision, stating:

General contractor could assert claim against architect for negligence in overseeing building project, and was not limited to contractual remedies.

Ultimately, Prichard was able to recover additional costs that were the result of Grady's professional negligence.

Analysis of Prichard Brothers, Inc. v. Grady Company

Prichard Brothers indicates that some jurisdictions interpret the design professional's duty to review submittals, as stated by AIA, "...with reasonable promptness so as to cause no delay," as a contractual duty owed the owner as well as a tort duty owed the contractor. Other jurisdictions see this duty as only contractual. The ideology that a contractual duty giving rise to a tort duty is also illustrated in the case of *Bates & Rogers Construction Corp. v. North Shore Sanitary District* (414 N.E.2d 1274, 1980), where the Appellate Court of Illinois stated:

Scope of duty running from architect or engineer who engages in tortious conduct which hinders and damages the contractor, although based upon tort rather than contract, is nevertheless defined by the architect and engineer's contract with the owner.

Contractors in such jurisdictions can recover damages associated with delays resulting from the submittal review process, even in the absence of contractual privity. However, claims of this nature can be subject to the economic loss rule, as illustrated by the first

appellate court decision in *Prichard Brothers*. The Court of Appeals of Minnesota did not believe that a contractual duty could give rise to a tort duty and therefore barred the recovery of purely economic damages in tort. Fortunately for Prichard, the Supreme Court of Minnesota did not share this view and overturned the lower court's ruling. Grady's failure to approve shop drawings "of proper quality" was a breach of their legal duty owed Prichard to not delay their work. This case illustrates the struggle courts go through to maintain the distinction between contract and tort.

Gurtler, Hebert and Co., Inc. v. Weyland Machine Shop, Inc. (405 So.2d 660, 1981)

Gurtler, Hebert and Co. (Gurtler) were contracted to construct an outside stairway for the Charity Hospital in New Orleans, Louisiana. Subsequently, Gurtler subcontracted the furnishing and delivery of steel required for the project to Weyland Machine Shop, Inc. (Weyland). Gurtler contends Weyland furnished incomplete and unacceptable shop drawings which resulted in a delay in supplying steel to the project. This delay caused Gurtler economic damage for which Gurtler seeks compensation. At trial, Weyland contended that the architect, Cimini, Meric, Burns, Counce, Inc. (Architect), was responsible for the delay and petitioned them as a third party defendant. Weyland based their petition on allegations that the Architect:

...improperly and unreasonably withheld its approval for shop drawings which were prepared and completed in a timely fashion.

Weyland also alleged the Architect was liable for:

...its failure to act reasonably or timely on the submittals of detail drawings...

The trial judge dismissed the third party petition on the justification that the Architect was not a party to the contract with Gurtler and Weyland. Subsequently, Weyland appealed the decision to a higher court. The Court of Appeal of Louisiana found that a contractor does have a right to assert a claim against an architect under the circumstances presented in the case by stating:

Subcontractor... can assert in a third-party demand a cause of action in tort against architect even though no privity of contract existed between the architect and subcontractor.

Analysis of *Gurtler, Hebert and Co., Inc. v. Weyland Machine Shop, Inc.*

The case of *Gurtler, Hebert* suggests that jurisdictions not enforcing the economic loss rule will allow a negligence claim to proceed if the claimant alleges the design professional failed to timely review submittals, which caused the claimant to suffer economic harm. The intention of this case is not to show that the Architect was negligent, but rather, to show legal precedence of a negligence claim against a design professional for delays in the submittal review process, in the absence of contractual privity.

Mid-Western Electric, Inc. v. DeWild Grant Reckert & Associates Co. (500 N.W.2d 250, 1993)

In the case of *Mid-Western Electric*, the Air National Guard contracted DeWild Grant Reckert & Associates (DGR) to prepare drawings and specifications for fire protection and suppression systems for a base in South Dakota. The Guard then contracted Jans Corp. (JC) as the general contractor. Mid-Western Electric, Inc. (Mid-Western) submitted a bid to JC to perform the electrical portion of the work based on

quotes for the required electrical equipment provided by TLC Sales. Mid-Western was awarded the subcontract and subsequently contracted TLC Sales to supply the electrical equipment. Mid-Western submitted catalog cuts of ultraviolet (UV) fire detectors to DGR for approval as required by contract. The proposed fire detectors failed to meet the detection requirements specified in the contract documents. DGR noticed the deviation but approved the submittal based on the assumption that the detection sensitivity could be adjusted. Mid-Western purchased and installed the fire detectors upon receiving approval of the submittal from DGR. Upon testing, an Air National Guard Officer demanded that Mid-Western replace the UV detectors with ultraviolet, infrared detectors (UVIR). Mid-Western complied and then sued DGR for the economic harm they suffered, claiming DGR was negligent in their approval of the fire detector submittal.

The trial court awarded Mid-Western compensation from DGR, who subsequently appealed the decision. The Supreme Court of South Dakota found that Mid-Western did possess a viable claim against DGR. The Court also gave instructions to future courts deciding similar cases to use the concept of foreseeability to determine if a legal duty existed by stating:

Legal concept of foreseeability is to be used to determine whether duty exists in action for economic damage for professional negligence beyond the strictures of privity of contract.

However, the high Court reversed the lower Court's decision for failing to give adequate jury instructions and ordered a retrial limited to the criteria of professional negligence.

No record of a retrial exists which suggests the parties may have agreed to a settlement.

Analysis of Mid-Western Electric, Inc. v. DeWild Grant Reckert & Associates Co.

The case of *Mid-Western* recognizes that design professionals can be liable for purely economic losses resulting from their negligence during the submittal review process, in the absence of privity. The concept of foreseeability is what distinguishes claims of physical damages from claims of purely economic damages, where the claimant is required to show their harm was foreseeable by the design professional's negligence.

As the project architect, it was DGR's professional duty to review all contractor submittals with a level of care and skill ordinarily expected from another similarly situated architect. Design professionals are obligated to review product data for conformance with project specifications. DGR recognized a deviation between the submittal specifications and design specifications, but made no effort to understand the consequences of that deviation before approving the submittal. The trial court determined that DGR did not meet the standard of care, and therefore, breached their professional duty owed the contractor which proximately caused Mid-Western economic harm. The trial court also determined that economic harm to Mid-Western was reasonably foreseeable by DGR's negligence.

Conclusion

The first two cases presented in this chapter illustrate that contractors can recover purely economic damages resulting from the submittal review process in the absence of privity, in jurisdictions not enforcing the economic loss rule. Specifically, *Prichard*

Brothers indicates that contractual obligations can give rise to tort obligations. *Mid-Western* illustrates that claimants without privity of contract seeking to recover purely economic damages must prove their harm was foreseeable by the tort-feasor's negligence. Figure 4 incorporates these rules and inquiries into a decision flowchart for assessing liability.

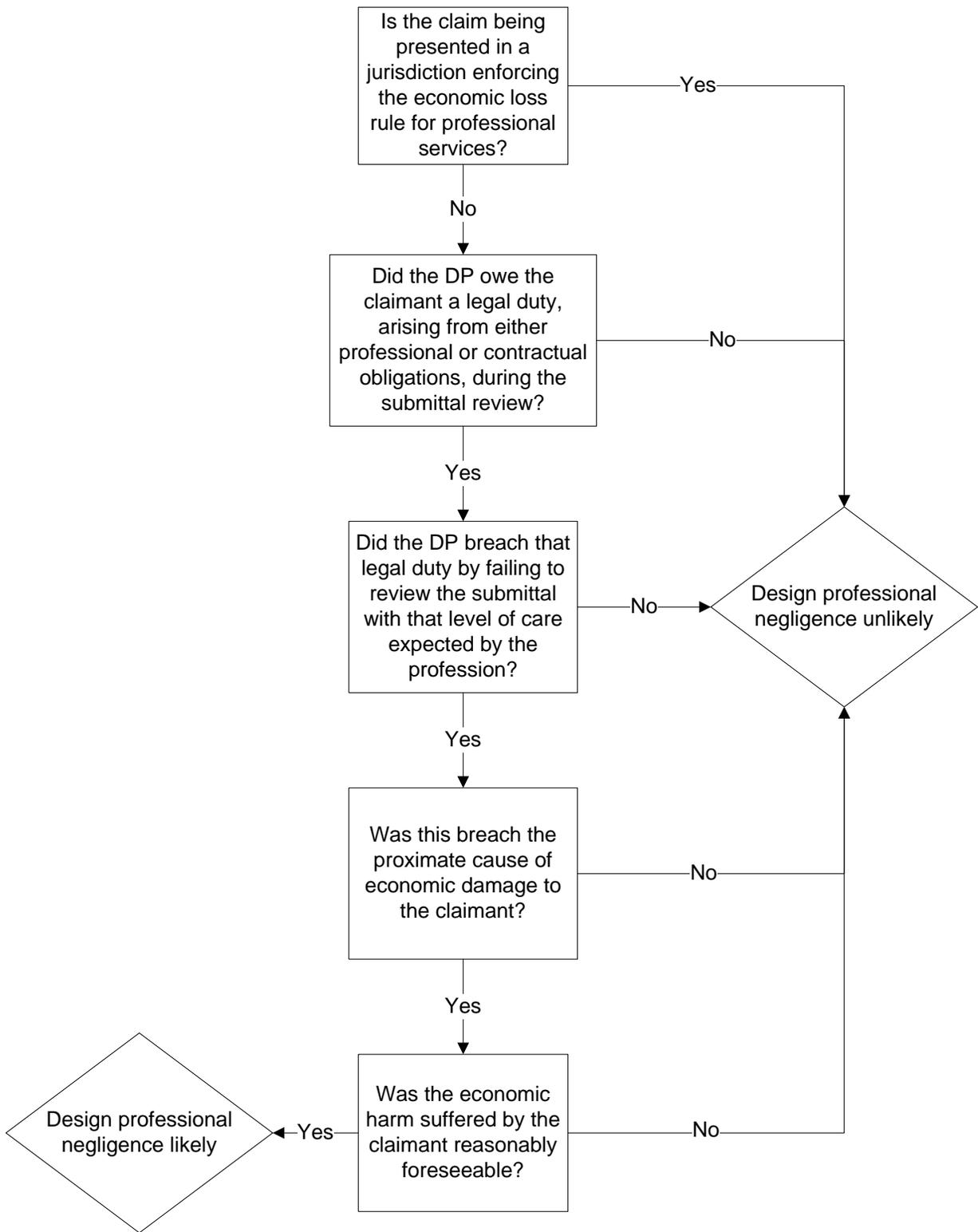


Fig. 4. Decision flowchart in determining negligence for purely economic damages.

Validation: Waldor Pump & Equipment Co. v. Orr-Schelen-Mayeron & Assoc., Inc. (386 N.W.2d 375, 1986)

In *Waldor Pump*, the City of Monticello, Minnesota contracted OSM, an engineering firm, to prepare plans and specifications for the modernization of the city's wastewater treatment plant, as well as supervise construction of the project. The City contracted Paul A. Lawrence Co. (PALCO) as the general contractor, who subcontracted Waldor Pump (Waldor) to supply eight "Wilden" make sludge pumps. Under the terms of the contract between Waldor and PALCO, Waldor would supply alternate pumps conforming to specifications if the Wilden pumps were rejected by the engineer. The project specifications required the pumps to be "self-priming" and use a "coil spring." The Wilden pumps were self-priming, but failed to use a coil spring, and were subsequently rejected. Waldor supplied a more expensive "Dorr-Oliver" pump to PALCO which was approved. Waldor filed a claim against OSM for the additional costs on the basis that OSM was negligent in their interpretation of the project specifications. Waldor contended that the purpose of a coil spring was to make the pump self-priming and was specific to only certain manufacturers. Waldor's expert witness testified that the rejected pump conformed to all material aspects of the specifications and that the engineer had no substantial reason to reject it.

Predicted Result from Flowchart

Is the claim being presented in a jurisdiction enforcing the economic loss rule for professional services? No. Minnesota case law has applied the economic loss rule to product liability claims, but never to professional services.

Did the design professional owe the claimant a legal duty, arising from either professional or contractual obligations, during the submittal review? Yes. It was the engineer's professional obligation to review the contractor's shop drawings for compliance with project specifications.

Did the design professional breach that legal duty by failing to review the submittal with that level of care expected by the profession? Yes. Waldor's expert testified that OSM had no material reason to reject the sludge pump submittal, as it conformed to all material features listed in the contract specifications. OSM failed to meet their profession's standard of care.

Was this breach the proximate cause of physical damage to the claimant or their property? Yes. OSM's rejection of the submittal proximately caused Waldor to provide more expensive sludge pumps at their own expense.

Was the economic harm suffered by the claimant reasonably foreseeable? Yes. It was reasonably foreseeable that rejection of the sludge pump submittal would force Waldor, who relied on OSM's interpretation of specification, to provide a more expensive unit at their own cost.

The decision flowchart suggests that OSM was negligent in their rejection of the Wilden sludge pump submittal.

Actual Result

The court ruled in favor of Waldor, and was affirmed in the Court of Appeals of Minnesota, which stated:

Engineering firm hired by city to prepare plans and specifications and to supervise project updating city's wastewater treatment plant was liable in negligence to subcontractor who foreseeably relied on and was harmed by engineer's drafting and interpretation of specifications for water pumps.

The decision flowchart successfully predicted the decision in the case of *Waldor Pump*.

Chapter 6

CONCLUSION AND RECOMMENDATIONS

Conclusion

Design professionals are likely to be held liable for professional negligence to parties without contractual privity for physical damages, if the claimant can prove that the architect or engineer breached a duty imposed by law, by failing to conform to the profession's standard of care, and such damages were a direct result of that breach. Courts consider the nature and intent of the submittal (shop drawing versus product data) as well as the submittal's conformance to the design intent when considering the design professional's adherence to the standard of care. Legal duty originates in the design professional's obligations to the public as a professional, and may extend to future users of the design. In addition, this research revealed that courts also evaluate the owner/designer agreement, to determine if the claimant was owed a tort duty arising out of contractual obligations to the owner. The complex relationship between designer and contractor has blurred the line between contract and tort.

This research also showed that courts are hesitant to award purely economic damages in tort claims such as professional negligence to claimants without contractual privity. Recovery is subject to the economic loss rule and an additional requirement of foreseeability. Jurisdictions barring claims for purely economic damages in tort are said to enforce the economic loss rule. Essentially, architects and engineers are immune to professional negligence claims for purely economic damages in such jurisdictions. However, this research indicated that jurisdictions that do not enforce the economic loss

rule will award compensation to claimants for professional negligence if they can prove their harm was reasonably foreseeable, in addition to the aforementioned criteria of duty, breach, and proximate cause. Essentially, courts evaluate whether or not the architect or engineer could have anticipated the harm to the claimant by their actions or inactions when determining liability.

Recommendations for Mitigating Risk

The most effective strategy for mitigating the risk to professional negligence claims in the submittal review process is to focus on providing a high level of care and skill. The following strategies are suggested proactive methods of mitigating risk in the submittal review process:

Read and understand the owner/designer agreement. The owner/designer agreement may define the design professional's contractual obligations to the owner and their relationship to the contractor during the submittal review process. Contractual terms within the agreement may give rise to tort duties owed to persons who are of a class of people whose reliance on the fulfillment of those contractual obligations is foreseeable (contractors).

Understand the legal obligations to the public as a design professional. Architects and engineers have an obligation to review shop drawings for conformance with the design intent, in the interest of public welfare.

Evaluate the submittal type and complexity. Submittals come in various forms which may have different review requirements. A thorough shop drawing review may require the professional judgment and industry experience of a senior architect or engineer who has intimate knowledge of the project requirements. In contrast, review of product data may require meticulous comparison with the project specifications, which a less experienced architect or engineer is capable of performing.

Write complete and quality specifications. Material and product specifications should be inclusive of all salient features necessary to satisfy the owner's requirements. By doing so, the design professional has sufficient cause for rejecting contractor equals and substitutions that do not meet the owner's expectations, nor are they obligated to accept a product or material which is inferior to what the owner has required.

Coordinate submittal submission dates with the project schedule. Submittals required for schedule-critical activities should be identified by the contractor and given special priority by the design team. The design team should also coordinate the appropriate approval sequence with the prime contractor and owner before construction begins so all parties are aware of the approval chain. Also, architects and engineers should refrain from committing to a finite review duration time for submittals, as standard contract language has purposely been ambiguous in this area to the design professional's advantage. Avoiding finite review durations forces claimants to prove the review duration did not conform to industry standard, a somewhat ambiguous criterion.

Do not rely on exculpatory language. Architects and engineers use a variety of exculpatory language on the submittal action stamps to avoid using the term “Approved.” However, such language will not relieve architects and engineers of their professional obligations and is generally ignored by the courts.

Recommendation for Future Research

Without doubt, the most confusing issue in the entire research was the application of the economic loss rule. Some states apply the rule in multiple tort claims for purely economic damages; some states only apply the rule in tort claims involving product liability, while other states do not apply the rule at all. The U.S. legal system is based on consistency and precedence, while the economic loss rule undermines this sentiment. Contractors, designers, and all professionals would be interested in understanding the various forms it takes and the jurisdictions that apply each form.

BIBLIOGRAPHY

American Institute of Architects (AIA). (1997). *General Conditions of the Contract for Construction*, AIA A201, Washington, D.C.

American Institute of Architects (AIA). (1997). *Standard Form of Agreement Between Owner and Architect*, AIA B141, Washington, D.C.

ASCE Committee on Professional Practice (ASCE). (2004). "Mitigating Professional Liability for Civil Engineers: White Paper." *Leadership and Management in Eng.*, October 2004, 141-147.

Associated General Contractors of America (AGC). (2000). *Standard Form of Agreement and General Conditions Between Owner and Contractor*, AGC 200.

Barrett, Sidney R. (1989). "Recovery of Economic Loss in Tort for Construction Defects: A Critical Analysis." *40 S.C. Law Review* 891.

Bockrath, Joseph T. (1995). *Contracts and the Legal Environment for Engineers and Architects*. McGraw-Hill, Inc., New York, NY.

Book of Approved Jury Instruction (BAJI). (1986). "California jury instructions." West Publishing Co., St. Paul, MN.

Caplicki, Edmund V. (2006). "Economic Loss Rule Bars Subcontractors Claim in Colorado." *J. Prof'l. Issues in Engrg. Educ. and Pract.*, 132(2), 149-150.

Carper, Kenneth L. (2001). *Why Buildings Fail*. National Council of Architectural Registration Boards, Washington, D.C.

Circo, Carl J. (2007). "Placing the Commercial and Economic Loss Problem in the Construction Industry Context." *John Marshall Law School*, Vol. 41, 2007.

Cushman, Robert F. (1983). *Avoiding Liability in Architecture, Design, and Construction*. John Wiley & Sons, New York, NY.

Cushman, Robert F. and Thomas G. Bottum (1987). *Architect and Engineer Liability: Claims Against Design Professionals*. John Wiley & Sons, New York, NY.

Earley, Anthony F. (1978). "Liability of Architects and Engineers: A New Approach." *53 Notre Dame Law Review* 306.

Edelstein, Stewart I. (2008). "Beware the Economic Loss Rule"
"<http://www.cohenandwolf.com/CM/CommercialLitigationPublications/Beware-The-Economic-Loss-Rule.asp>"

Engineers Joint Contract Documents Committee (EJCDC). (2002). *Standard General Conditions of the Construction Contract*, EJCDC C-700.

Epstein, Robert C. (2007). "Liability for Flawed Shop Drawings." *New Jersey Law Journal*, 188(13). June 25, 2007.

Feinman, Jay M. (2007). *Professional Liability to Third Parties 2nd Ed.* American Bar Association, Chicago, IL.

Hatem, David J. (1989). "Impact of Professional Practice Standards on Liability of Engineers." *J. Man. Eng.*, 5(3), 249-256.

Henderson, Steven M. (2005). "Walking the Line Between Contract and Tort in Construction Disputes." *95 Kentucky Law Journal* 145.

Hess, Stephen A., Jerome V. Bales, P. Douglas Folk, and L. Tyrone Holt. (2007). *Design Professional and Construction Law*. American Bar Association.

Hinshaw & Culbertson. (2005). "Limiting Liability for Design Professionals in Construction Defect Claims." June 1 2005.
"<http://www.hinshawlaw.com/limiting-liability-for-design-professionals-in-construction-defect-claims-06-01-2005/>"

Ibbs, C. William. (1986). "Brand Name or Equal Product Specifications." *J. Construction Engineering and Management.*, 112(1), 1-13.

Ibbs, C. William. (1985). "Product Specification Practice and Problems." *J. Construction Engineering and Management*, 111(2), 157-172.

Jackson, Patricia N. (1984). "The Role of Contract in Architectural and Engineering Malpractice." *51 Insurance Counsel J.* 517.

Kelleher, Thomas J. (2005). *Common Sense Construction Law 3rd Ed.* John Wiley & Sons, Inc. Hoboken, NJ.

Lung, Harvey J. (2000). "Facing the New Millennium: Are Traditional Defenses Effective in Shielding the Design Professional from Liability?" *Proceedings of the 39th Annual Meeting of Invited Attorneys*, May 18-20, Las Vegas, NV.

O'Brien, James J. (1976). *Construction Delay: Responsibilities, Risks, and Litigation*. Cahners Books Int., Inc., Boston, MA.

Olafsen, Kurt, Daniel Rapaport, Sigmund D. Schutz, and Jonathan Mermin. (2005). "Tort Killer: The applicability of the economic loss doctrine to service contracts." *Maine Bar Journal*, Summer 2005 (100-105).

O'Leary, Arthur. (2003). "Learning to Live with this Necessary Evil." *Design Cost Data*, March/April 2003. "http://www.dcd.com/issue_archive/0303_issue.html"

Ostanik, Matt. (2007). "Construction Submittal and Shop Drawing Liability." *Submittal Exchange*.
"<http://www.submittalexchange.com/public/pdf/Construction%20Submittal%20and%20Shop%20Drawing%20Liability.pdf>"

Petros & Elegant (2000). "Florida Malpractice Law: Liability of Design Professionals."
"<http://library.findlaw.com/2000/Nov/1/129466.html>"

Rubin, Robert A. and Marcy L. Ressler (1985). "Shop Drawing Review: Minimizing the Risks." *Civil Engineering*, March 1985, 68-70.

Schapker, Dennis R. (1990). "Tort Reform and Design Professionals." *J. Prof. Iss. Eng.*, 116(3), 258-265.

Schinnerer, Victor O. (2003). "The Value of Establishing Submittal Procedures."
"http://www.schinnerer.com/risk_mgmt/contractors/comments/submit.pdf"

Schinnerer, Victor O. (2005). "From Risk to Profit: Benchmarking and Claims Study."
"http://www.schinnerer.com/risk_mgmt/design_firms/riskprof.html"

Schoumacher, Bruce. (1986). *Engineers and the Law: An Overview*. Van Nostrand Reinhold Co., New York, NY.

Steffey, Matthew S. (1994). "Negligence, Contract, and Architect's Liability for Economic Loss." *82 Kentucky Law Journal* 659.

Sweet, Justin and Marc. M. Schneier (2004). *Legal Aspects of Architecture, Engineering, and the Construction Process, 7th Ed.*, West Publishing Co., St. Paul, MN.

Taylor, Richard C. (1996). "Liability of Design Professionals for the Review/Approval of Contractor Submittals." Masters Thesis. The Pennsylvania State University.

XL Design Professional (2008). "Claims Against Architects on the Rise." *Architects Loss Prevention Library*. "<http://www.xldp.com/architects/claims.html>"