

GEORGIA DOT RESEARCH PROJECT 17-34

FINAL REPORT

**EMERGING TRENDS IN DESIGN PROFESSIONAL
LIABILITY POLICIES IN INNOVATIVE PROJECT
DELIVERY**



OFFICE OF PERFORMANCE-BASED

MANAGEMENT AND RESEARCH

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ATLANTA, GA 30308**

1. FHWA-GA-20-1734		2. Government Accession No.:		3. Recipient's Catalog No.:	
4. Title and Subtitle: Emerging Trends in Design Professional Liability Policies in Innovative Project Delivery			5. Report Date: November 2019		
			6. Performing Organization Code:		
7. Author(s): Baabak Ashuri, Ph.D., DBIA Jung Hyun Lee Yuxin Zhou			8. Performing Organ. Report No.:		
9. Performing Organization Name and Address: Economics of the Sustainable Built Environment (ESBE) Lab Georgia Institute of Technology 280 Ferst Drive, Atlanta, GA 30332-0680			10. Work Unit No.:		
			11. Contract or Grant No.: P.I. NO. 0015842		
12. Sponsoring Agency Name and Address: Georgia Department of Transportation, Office of Performance-Based Management and Research 600 W. Peachtree Street NW Atlanta, GA 30308			13. Type of Report and Period Covered: Final; March 2018–November 2019		
			14. Sponsoring Agency Code:		
15. Supplementary Notes Prepared in cooperation with the U.S. Department of Transportation and Federal Highway Administration.					
16. Abstract: Prepared in cooperation with the GDOT Office of Innovative Delivery, this research found the areas of challenges of design liability in the design–build environment, including: (a) issues related to design claims in design–build, (b) heightened standard of care in design–build, and (c) change in design professional liability insurance due to design–build. The research examined the state of the practice in the following areas: (a) fundamental types of design professional liability insurance available for design–build projects, (b) significance and variations of design professional liability insurance policy elements with regard to state DOTs' specification requirements, and (c) decision-making considerations concerning design professional liability insurance.					
17. Key Words: Innovative project delivery, design–build, design professional liability insurance, design liability, design claim, errors and omissions (E&O)			18. Distribution Statement:		
19. Security Classification (of this report): Unclassified		20. Security Classification (of this page): Unclassified		21. Number of Pages: 82	22. Price:

GDOT Research Project No. 17-34

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Final Report

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Georgia Department of Transportation

In cooperation with

U.S. Department of Transportation

Federal Highway Administration

November 2019

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EXECUTIVE SUMMARY

This research project identifies emerging issues regarding design liabilities and explores the state-of-the-art practices in design professional liability insurance (DPLI) policy for design–build (DB) highway construction projects. The main objective of the research undertaken is to study the significant issues and challenges regarding design liability in the DB environment and state of the practices in DPLI across various state departments of transportation (DOTs). The research aims to identify important trends, best practices, and recommendations. The research assignment began with an in-depth analysis of the current literature in terms of published academic papers, federal and state reports, and conference presentations associated with professional associations. These resources include federal and state reports published by various organizations such as the National Cooperative Highway Research Program (NCHRP) and General Accounting Office (GAO); numerous state DOTs’ design–build agreements, master contracts, and requests for proposals (RFPs); and presentations and other published records from professional associations such as the Design–Build Institute of America (DBIA). Following the literature review stage, the research methodology continued with a survey and interviews with question-and-answer sessions with subject-matter experts across the country. This stage included a questionnaire survey, email interviews, telephonic conversations and

meetings, and presentations during relevant conferences, such as the Transportation Research Board (TRB) and DBIA conferences.

The first half of the research was performed to identify designer liability. The major findings of the first step of the research were: (a) key issues in design claims, (b) heightened standard of care in design liability, and (c) design professional liability insurance in the DB environment. In light of these developments, several challenges were identified:

- Number of design claims between DB and design–bid–build (DBB)
- Design claim sources
- Involvement of insurance company during pre-award phase
- Heightened standard of care language in DB and DBB
- Influence of heightened standard of care language on design claims
- Gaps with DPLI coverage as to heightened standard of care
- Types of DPLI in DB
- Influence of DB on changes in DPLI policy

The second half of the research effort was to examine emerging trends of state DOT practice of DPLI and identify best practices in consideration of DPLI that influence the selection of DPLI policy requirements in the DB environment. The results of the email interview process and review of state DOTs’ design–build agreements and RFPs helped

identify several important areas that can be considered for enhancing the state of the practice for DPLI in DB as follows:

(a) Fundamental types of DPLI:

- Annual-based practice DPLI
- Project-specific DPLI by the engineering firm
- Project-specific DPLI by the design–builder
- Project-specific DPLI by the owner

(b) Significant elements under DPLI:

- Prime and additional insured(s)
- Indemnity party
- Coverage amount
- Extended reporting period
- Retroactive date
- Supplemental policies

(c) Decision-making considerations:

- Considerations in selection of DPLI types
- Considerations in determining coverage amount requirements

ACKNOWLEDGMENTS

The research reported herein was sponsored by the Georgia Department of Transportation through Research Project Number 17-34. The authors acknowledge and appreciate the help of Mr. Darryl VanMeter, GDOT Assistant P3 Division Director/State Innovative Delivery Administrator, and Mrs. Supriya Kamatkar, GDOT Research Program Manager.

Chapter 1 Introduction and Literature Review

1.1 Introduction

Design–build (DB) is no longer considered an experimental project delivery method. The number of projects in the transportation industry procured with DB in the United States has increased 600 percent from 2002 to 2016 (DBIA 2016). In 2018, the FMI Corporation also reported that design–build spending is anticipated to increase by 18 percent in the nonresidential construction market between 2018 and 2021. As of January 2018, DB had been fully authorized in 29 states and the District of Columbia, widely permitted in another 5 states, and authorized with certain limitations in 11 additional states, while only 5 states do not have the authority to use DB in highway programs (DBIA 2018). With DB contracting, the owner signs a contract with a single combined entity as a designer and a contractor. Coordinating the schedule of the project with this single team allows the design–builder to overlap between design and construction activities or to initiate its construction work before the design phase is complete, which saves costs and reduces time (Ashuri et al. 2013).

The Federal Highway Administration (FHWA) and several state DOTs have defined best practices to enhance the utilization of alternative project delivery in the U.S. Identified best practices to effectively implement innovative project delivery systems, such as design–build and design–build–finance, were highlighted in several research studies (Amekudzi-Kennedy et al. 2016; Ashuri et al. 2013, 2019; Ashuri and Kashani 2012; Ashuri and Mostaan 2014, 2015; Asmar et al. 2017; Garvin et al. 2011; Kashani and Ashuri 2011; Mostaan and Ashuri 2015, 2016; Tran and Molenaar 2013).

Design professional liability is an important issue for state departments of transportation (DOTs) as the responsibility of the design is being transferred to the design–build team under the alternative delivery method. Therefore, state DOTs are interested in learning more about the effective best practices for smooth execution of DB projects to ensure that the design liability is managed well in the alternative delivery environment. Since more roles and responsibilities have shifted from DOTs to design–builders in this alternative method, this change can create problems in determining who needs to bear responsibilities when a dispute arises between the owner and design–builder and between the design–builder and design professional (Loulakis et al. 2015).

Design-related risk factors have been identified as critical risk factors in the delivery of highway projects (Ashuri et al. 2015, 2017a, 2017b, 2018b, 2018c; Gatti et al. 2014; Molenaar et al. 2011; Tran et al. 2013). Ensuring that design–build project delivery leads to a high-quality design and construction product is an important area of concern for transportation agencies. Best practices and selection factors for design and construction quality management approaches have been identified for the innovative project delivery environment (Ashuri et al. 2018a; Gad et al. 2015; Jallan et al. 2018; Kraft and Molenaar 2015; Lee et al. 2019)

In common law, design professionals are held to a “standard of care” that is defined as what reasonably prudent professionals would do “in the same community, in the same time frame, given the same or similar circumstances” (Demkin and American Institute of Architects 2008). The DBIA standard agreement also stated that “[t]he standard of care for all design professional services performed to execute the Work shall be the care and skill ordinarily used by members of the design profession practicing under similar conditions at the same time and locality of the Project” (DBIA 2010). When a design professional fails to meet the professional standard of care, this is known as professional negligence. To protect the design professional against liability claims

and lawsuits that arise from negligence, errors, and omissions in providing professional services, design professional liability insurance (DPLI), commonly known as an errors and omissions (E&O) policy, is required by the owner (Beard et al. 2001). The DPLI coverage responds to the professional negligence.

This standard of design professional liability does not guarantee a successful outcome for service (Friedlander 1998). On the contrary, contractors usually imply a warrant that the result of their services will be a successful project (Friedlander 1998). In DB projects, the line of liability between professional design services and construction work is often blurred (Allensworth et al. n.d.). In fact, design-builders are usually held to the same warranty standards as contractors with respect to both contracting and design services. This often leads to an increased standard that the design professionals are held to a stricter standard in a DB context than when there is a separate contract for design services in a design-bid-build (DBB) contract (Friedlander 1998).

The owners may like the design-build contract because of this stricter language of standard of care. However, this heightened standard of care can result in a potentially uncovered gap when a breach of contract falls within the heightened standard of care that is above the common law standard of care (Levin 2016). The typical DPLI policies generally do not cover the claims and lawsuits arising out of contractual agreements that need to meet a higher standard of care than required by law (International Risk Management Institute 2013). Thus, it is important to be aware of contract language, and the design professional should determine how to handle the unique project requirements and risks they assume (International Risk Management Institute 2013).

1.2 Design Professional Liability Insurance (DPLI)

DPLI is a third-party coverage of the policyholder's liability to others arising from errors and omissions committed by the policyholder in providing professional services (Turner 2016).

First, second, and third parties indicate the policyholder, the insurance company, and the claimant against the policyholder, respectively. The policy responds to professional negligence when design professional fails to meet standard of care and such failures cause a legally recognized harm. One of the important characteristics of DPLI is that this policy only covers the common law standard of care. There is no coverage problem if the contract standard of care is consistent with the common law standard of care. However, the policy may exclude coverage for failure to meet a heightened standard of care (International Risk Management Institute 2013). Thus, it is important to obtain advice on the DPLI policy and contract documents from legal and insurance experts before the execution of the contract.

There is no standard and uniform DPLI policy. Each insurance company offers its own distinctive policy form. In fact, DPLI coverage tends to vary from insurance company to company and by the insureds. Although each policy differs from each project or each engineering firm (i.e., an insured), there are common features that are found in most DPLI policies, as discussed below: two types of DPLI, coverage triggers, policy period, the dollar limits of coverage, and exclusion of insured versus insured.

Engineering firms can purchase a DPLI policy either on an annual basis or for specific projects. Annual-based practice DPLI, also known as cooperate policy, is the most common policy and covers all ongoing projects of the firms if the policy is renewed every year. Despite its conveniences and efficiencies, this annual-based practice DPLI lacks the flexibility of changing the policy by projects. Thus, the need for a DPLI policy for a specific project has emerged. Unlike the annual-based practice DPLI, the project-specific DPLI is written with a policy period that is related to the duration of the project, and its coverage is used only for the specific project. There are several similarities and differences between the two types of DPLI, as noted below.

DPLI policies are “claims-made” policies. To trigger the policy, there must be claims made against the design professionals during the policy period (International Risk Management Institute 2013). Thus, it is important to state an explicit policy period because some design defects may not be discovered for years after the completion of the project involved (Turner 2016). An extended reporting period (ERP) is used to cover these design defects that are filed after the completion of the project. In addition, a retroactive date is often used to set the inception date of the new policy, which means there will be no coverage under this policy for claims based on services provided prior to that date (International Risk Management Institute 2013). With a DB contract, design professionals may provide design services before a DB contract is executed. Thus, the International Risk Management Institute (2013) recommends that a retroactive date is better set for the date of execution of the DB contract or the date when DB team is formed, rather than the date of the commencement of design services. Inclusion of the ERP or retroactive date might be a hassle when using an annual-based practice DPLI because of its lack of policy flexibility, while it is common when a project-specific DPLI is used.

The policy provides two ways for response to the dollar limits of coverage: a per-claim limit and an aggregate of all claims limit for the policy period. With the annual-based practice DPLI, the aggregate limits apply to all claims of all ongoing projects of the engineering firm arising during a one-year policy period. This may lead to significant reduction or exhaustion based on claims on unrelated projects. For the project-specific DPLI, the coverage limits are prepared for the specific project so that the risk of eroding limits due to claims that are not for the project is eliminated (International Risk Management Institute 2013). The dollar limits of coverage are usually used for both defense costs and settlement. If an early settlement of the claim is not

achieved, this can significantly erode the amount available under the policy to pay claims, posing a major concern for both the policyholder and the claimants (Turner 2016).

One of customary features of DPLI is the “insured versus insured exclusion,” which prohibits one insured from bringing a claim against other insured under the same policy (International Risk Management Institute 2013). DPLI also does not respond to claims against additional insured who are nonprofessionals (Turner 2016). As mentioned above, the practice policy is limited to tailor its policy with respect to each project’s requirements, while the project-specific DPLI is often used to provide much higher and more flexible policy limits. Although the additional insured(s) could be stated under the engineering firm’s project-specific DPLI policy, it is important to know that this exclusion still applies to all insureds. For example, if a design–builder is an additional insured under the design professional’s project-specific DPLI policy by providing in-house design services, the policy triggers the coverage if claims against the design–builder are brought by the owner. However, the project-specific DPLI does not respond to claims brought from the design–builder to design professionals because of the “insured versus insured exclusion.”

1.3 Literature Review

The research team examined the previous research to identify: (1) design liability in design–build, and (2) the practice of design professional liability insurance in design–build.

Regarding design liability in design–build, the research team found previous research projects have noted a challenge of changes in design liability that is unique to the design–build environment. Many researchers have documented a trend of transferring the risk of design liability from the owner to the design–build team for errors and omissions in design–build projects (FHWA 2006; Gransberg et al. 2006; Molenaar and Gransberg 2001; Tran and Molenaar 2013). A

heightened standard of care such as express/implied warranty and fitness for purpose and the incurring of uninsurable issues have emerged in design–build projects (Ahmadifar 2013; Chan and Yu 2005; Palmer et al. 1996; Peck and Hoch 1985; Quatman and Sell 2005; Rowings Jr. et al. 2000)

Peck and Hoch (1985) noticed a second basis of liability of the engineer in design–build: warranty of fitness for the intended purpose. However, they found very few courts upheld such a warranty absent the engineer’s actual knowledge of unique performance criteria. Palmer et al. (1996) also found a warranty to perform in accordance with a higher standard could subject a design consultant to liability in design–build. They noted that even though all the work has been performed in accordance with the industry standard of care, the failure to meet the required heightened standard of care could constitute a contractual liability that may not be covered by design professional liability insurance. Rowings Jr. et al. (2000) researched liability under design–build in the electrical contracting industry and found that subcontracting design leads to a single-point responsibility in the design–build team, which means most of the liability is passed through to the designer. Such a pass-through of liability requires a careful review of contract responsibility, insurance, and obligations. Chan and Yu (2005) stated a perception of two distinct levels of design liability in design–build: fitness for purpose, and reasonable skill and care. Meanwhile, a practical problem that the distinction brought to design–build projects is unavailability of current insurance in the market to cover design liability for “fitness for purpose.”

Previous research also examined design liability issues through reviewing the standard forms of construction contract. Chan and Yu (2005) examined the contract conditions regarding design liability in the popular standard forms of construction contract. They found an issue of the lack of clarity or consistency on level of design liability required in design–build contracts.

Quatman and Sell (2005) examined standard of care in the Design-Build Institute of America (DBIA) standard contract. In the DBIA standard contract between the design-builder and the designer, they found a common law standard of care is stated as "... ordinarily used by members of the design profession practicing under similar conditions at the same time and locality of the Project." However, in the DBIA standard prime contract between the owner and the design-builder, a heightened standard is included as "[d]esigner agrees that all Services shall be performed to achieve such standards," which is regardless of the standard of care. Quatman and Sell (2005) noted that this may create a heightened standard of care not covered by professional liability insurance. Such a discrepancy in the prime contract and the subcontract may create a risk of uninsurable design liability (Quatman and Sell 2005).

Ahmadifar (2013) provided a summary of the difference in design liability in design-bid-build (DBB) and design-build. In DBB, the design professionals design the project to fit the specifications and ensure full compliance by the contractor. Thus, the design professional's standard of liability is only one of professional negligence. However, under design-build contracts, the standard of care of the design-builder is often "fitness for the intended purpose." Thus, the design professional is potentially subject to a higher standard of care, such as "an express warranty," "an implied warranty," and "strict liability in tort."

A second part of the literature review focuses on studies on design professional liability insurance in design-build. Coble and Blatter Jr (1999b) raised a perception of difficulty in obtaining design liability insurance in design-build. Tran and Molenaar (2013) found that design professional liability insurance becomes an issue in management that influences the design-build delivery selection, and they noted that insurance can be high risk due to onerous or unobtainable insurance requirements. However, previous research on the practice of design professional liability

insurance in design–build has been scarce and only a few previous studies have been found in the area (Chan and Yu 2005; Mayssa Kalach, Mohamed-Asem Abdul-Malak 2018; Wichern 2004).

Chan and Yu (2005) conducted research regarding design professional liability insurance for design–build projects in the electrical contracting industry. They found that (1) using project-specific professional liability insurance, and (2) modifying the corporate design professional liability insurance (i.e., practice policy) to allow participation in design–build projects are two very common practices in design–build electrical projects. From their research, 69 percent of electrical contractors obtained additional professional liability insurance for individual projects, while 49 percent of them stated their firm had modified the policy to allow design–build projects.

Wichern (2004) studied three approaches to protect the owner in design–build projects against design liability risk through providing comprehensive insurance coverage. The first approach that the research presented is to demand the minimum standards in the designer’s E&O insurance coverage, including appropriate insurance minimums, long-term protection, retroactive coverage, and even excess E&O coverage. The suggested advantage of this approach includes avoiding forcing coverage through the contractor’s surety, while the disadvantage is incomplete coverage for the owner’s claim against the contractor for contractor’s negligence related to design. The second approach is to require the contractor to purchase standalone professional liability policy to cover the design liability exposure of the project. This approach was stated to reinforce the benefit of the design–build model’s single point of responsibility, while leaving the design–builder to pursue apportionment of liability within the design–build team. An associated disadvantage of this approach is an expected increase in cost that would be passed directly to the owner. The third suggested approach is owner-controlled insurance programs (OCIPs), which are stated to be typically employed on large and complex construction projects involving numerous

parties. The aspects of OCIPs that were brought up in the research include direct and increased owner control, customizable scope of coverage at owner's discretion, cost savings due to avoidance of duplicated insurances and uniform and comprehensive insurance coverage.

Kalach et al. (2018) provided comprehensive research on multi-tiered professional liability coverage in design–build. The research identified different forms of insurance policies that can be procured for construction projects, including designer's practice professional liability indemnity, contractor's professional liability, owner's protective professional indemnity, contractor's protective professional indemnity, project specific professional liability, and mitigation of loss/damages. They reviewed the characteristics of different policies and developed risk mitigation options based on the combination of different insurance options. The researchers also proposed a process model illustrating the concerned insurance-coverage claim path and presented how various coverages can be triggered. The research concluded that with increasing complexity of project and integration between design and construction in design–build, professional liability risk is considered to be one of the most difficult to insure for. Besides, given the limitation of the designer's practice policy and the increasing design professional activities performed by the contractors, early planning to manage the risks is highly recommended by the research.

1.4 Problem Statement

It has previously been observed that design liability has been changed by including a heightened standard of care, and design professional liability insurance in design–build has incurred several issues. Although extensive research has been carried out on design liability in design–build, a noticeable gap in the body of knowledge is the lack of study on severity and frequency of the challenges related to design liability occurring in design–build in the highway construction industry. Problems that remain unsolved include how the change in liability

influences design claims, how the different heightened standard of care impacts design–build, and how the related issues influence the practice of design professional liability insurance in design–build. Another deficiency in the body of knowledge is the lack of study on best practices of selecting approaches of design professional liability insurance and determining the insurance requirements for design–build highway projects resting at the owner’s feet. To this end, a study of the current state of DOTs’ practices in owner’s requirements in design professional liability insurance and significant characteristics of different types of design professional liability insurance is needed. Considering all the deficiencies in the body of knowledge mentioned above, this research aims to fill the gaps of current body of knowledge in identifying emerging issues regarding design liabilities and exploring the state-of-the-art practices in design professional liability insurance policy for design–build highway construction projects.

Chapter 2 Research Methodology

2.1 Overview

Because of the nature of this topic, the researchers used a combination of methods. An overview of the research methodology is presented in Figure 1. The overarching objectives of this research were to: (1) identify the key challenges faced by state DOTs to implement design professional liability insurance requirements in design–build projects, and (2) determine practices and strategies of design professional liability insurance policy in the design–build environment. To achieve these objectives, the researchers took the following steps:

Conduct an extensive review of the academic and professional literature related to design claims and design professional liability insurance for alternative project delivery

Create a list of questions to identify challenges associated with design professional liability insurance

Distribute the survey to professional associations in the highway industry

Create open-ended questions for distribution via an initial emailed questionnaire

Refine the questions by conducting dry-run interview with selected subject-matter experts (SMEs) to ensure that the questions are clearly crafted, and the anticipated responses reflect the intent of the research

Distribute the questionnaire with SMEs in state DOTs and follow up with them to receive as high a response rate as possible

Determine the areas to prepare questions for follow-up phone interviews and/or emails

Follow up with agencies and survey respondents that best responded to the initial questionnaire to conduct multiple rounds of structured interviews and/or emails

Collect documents from state DOTs following the interviews/emails (e.g., design–build manuals, design–build agreement, requests for qualifications [RFQs] and requests for proposals [RFPs] of past and current design–build projects, and master contracts) and analyze the contents of these documents in several areas of interest, such as common practices in design professional liability insurance policy and requirements

Summarize and present in this research report the findings from all the information collected through the survey, emails, structured interviews, and content analysis

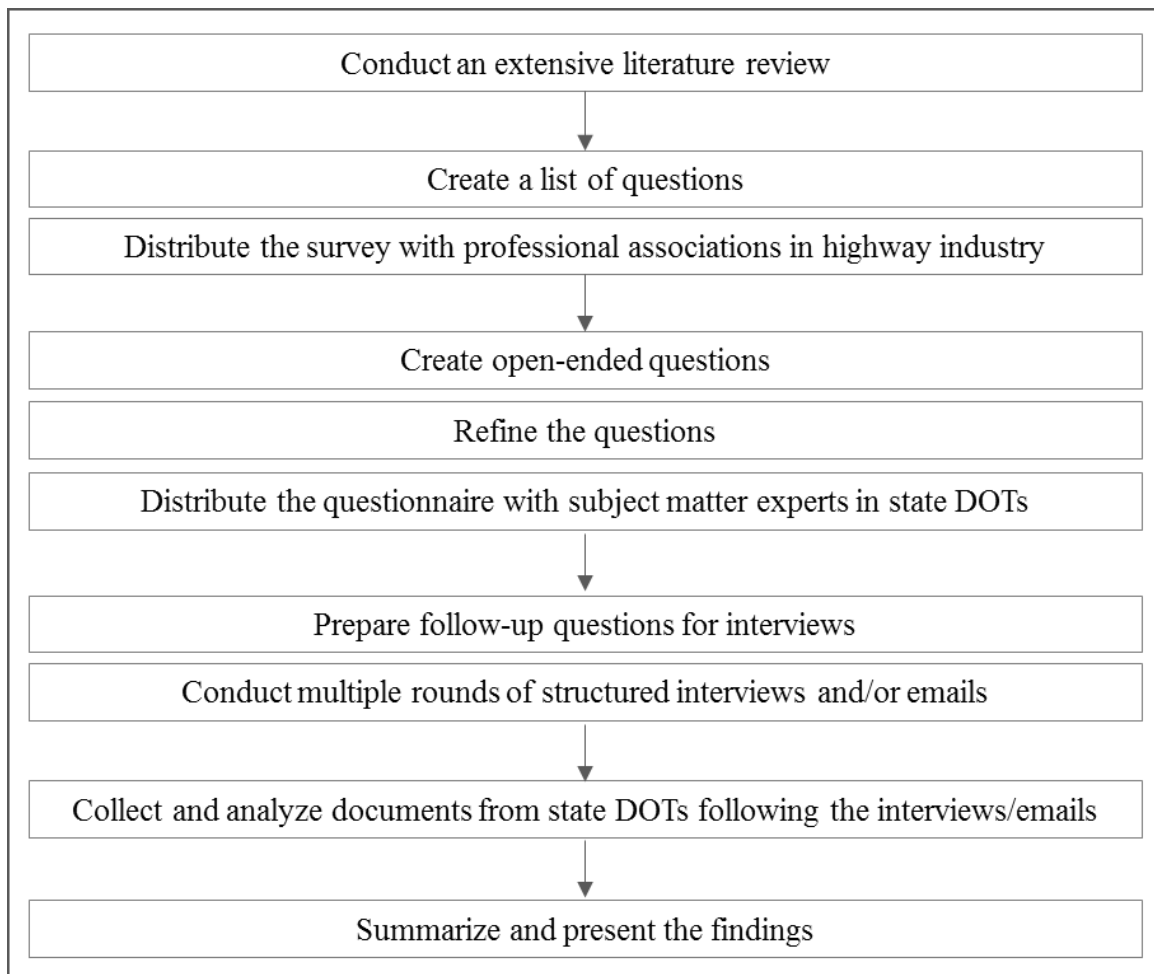


Figure 1. Research Methodology

2.2 Discussion of Research Methodology Steps

Conduct an extensive review of the academic and professional literature related to design claims and design professional liability insurance for alternative project delivery: The main focus of the literature review task was to determine critical issues regarding design claims and any potential gaps in implementing design professional liability insurance in DB in the highway industry.

Create a list of questions to identify challenges associated with design professional liability insurance: The research team developed a list of questions as the first step to identify significant issues regarding design claims and design professional liability insurance. The survey was designed to focus on three main topics: (a) design claims; (b) heightened standard of care in the DB environment; and (c) legal aspects of design liability under the DB environment.

Distribute the survey to professional associations in the highway industry: The survey was distributed to six major professional associations in the highway industry: (a) DBIA transportation market committee; (b) American Society of Highway Engineers (ASHE); (c) American Society of Civil Engineering Construction Institute Legal Affairs and Dispute Resolution (ASCE CI LADR); (d) International Risk Management Institute (IRMI); (e) Association for the Improvement of American Infrastructure (AIAD); and (f) American Council of Engineering Companies of Georgia (ACEC GA)

Create open-ended questions for distribution via an initial emailed questionnaire: The research team developed a set of initial questions as the first step to better understand the state of

the practice in design professional liability insurance among state DOTs in the alternative delivery environment. The areas of focus for initial questions were:

- a. the significant elements such as minimum requirements for DPLI policy in the alternative delivery environment;
- b. the availability of DPLI language in design build agreements (DBAs) and/or RFPs for DB delivery systems; and
- c. critical drivers that influence the selection of DPLI types from different state DOTs for DB delivery systems.

Refine the questions by conducting dry-run interviews with selected SMEs to ensure that the questions are clearly crafted and the anticipated responses reflect the intent of the research:

Researchers sent the questions to several innovative delivery SMEs, such as the heads of the offices of innovative delivery programs in several state DOTs across the nation, in order to validate and refine the questions and make a final decision on the best questions to use in the initial questionnaire to get the best results. The research team then used the refined set of questions to gain and collect information about the current practices of DPLI policy in the alternative delivery environment.

Distribute the questionnaire with SMEs in state DOTs and follow up with them to receive as high a response rate as possible: The email survey was sent to state DOTs in the United States with active design–build programs. Overall, 21 state DOTs provided answers, 24 state DOTs did not participate in the email interview, and 6 state DOTs do not have DB legal authorization (see Figure 2).

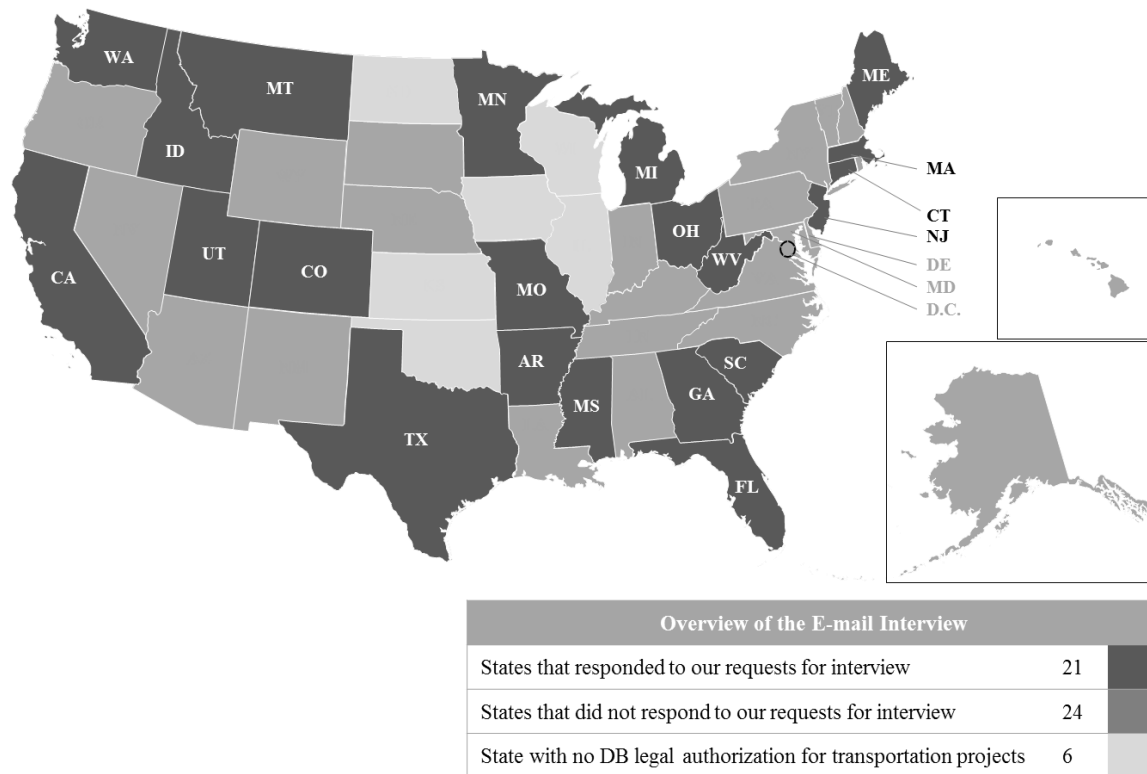


Figure 2. Overview of Email Interview

Determine the areas to prepare questions for follow-up phone interviews and/or emails: The research team used more detailed questions for the follow-up interview/email phase to better understand the practices of DPLI policy among state DOTs in the alternative delivery environment. The researchers refined the follow-up interview/email questions through conducting dry-run interviews with a few SMEs in design–build organizations, including the above-mentioned state DOTs, to ensure that the questions would help collect the information they intended to retrieve from the state DOT officials. The areas of focus for follow-up questions were:

- d. different types of DPLI that have been implemented in the Department;
- e. considerations in selection of DPLI policy types;
- f. further description of minimum DPLI requirements in the DB programs;

- g. standard DPLI language that is being used in the DB projects; and
- h. considerations in determinations of minimum coverage requirements.

Follow up with agencies that best responded to the initial questionnaire to conduct multiple rounds of structured interviews and/or emails: Following the analysis of the initial questions, the researchers identified the following 21 state DOTs for follow-up interviews: Arkansas, California, Colorado, Connecticut, Florida, Georgia, Idaho, Maine, Massachusetts, Michigan, Minnesota, Missouri, Mississippi, Montana, New Jersey, Ohio, South Carolina, Texas, Utah, West Virginia, and Washington State. The selection was made based on the quality and depth of answers to the survey questions, as well as the expressed interest by the respondents to participate in the following research steps.

Collect documents from state DOTs following the interviews/emails (e.g., design–build manuals, design–build agreement, RFQs and RFPs of past and current design–build projects, and master contracts) and analyze the contents of these documents in several areas of interest, such as common practices in design professional liability insurance policy and requirements: Participants in the follow-up interviews/emails provided several internal documents that contained valuable information regarding the design professional liability insurance policy of their alternative delivery programs. Also, they shared copies of the insurance-related section from their agreements and other contract documents. These documents explain how the state DOTs manage various aspects of requirements for handling design professional liability for design–build projects. These documents included, but were not limited to, design–build manuals, design–build agreements, RFQs and RFPs of past and current design–build, and master contracts. Content analysis was performed on the resources provided to: (a) understand state DOTs’ minimum requirements for DPLI

policy in design professional liability in the alternative delivery environment, and (b) determine and characterize different state DOTs' practices in developing and implementing DPLI policy for design–build projects.

Summarize and present in this research report the findings of all the information collected through the survey, emails, structured interviews, and content analysis: In the final step of the research methodology, the research team assembled all the work performed in the earlier stages in an efficient manner to develop a synthesis of all the findings. It was essential to compile this entire process and document the findings in a clear and lucid manner—from the first step of conducting the extensive literature review for finding gaps in the existing research, distributing the survey with professional associations to identify current issues regarding design professional liability insurance, coming up with questions for SMEs, distributing the questionnaires over email and following up with these contacts over a protracted period of time with questions on several pertinent issues, and performing content analysis on all the responses and documents shared by the interviewees. The research team identified important industry practices and emerging trends while summarizing these responses and all the available documents, which have been highlighted in the next two chapters.

Chapter 3 Challenges in Design Liability in the Design–Build Environment

3.1 Overview

The research team conducted a survey to obtain a better understanding with respect to DPLI in the DB environment. The survey aimed to identify the challenges of design liability in the DB environment. To achieve this goal, the survey was designed in three areas of interest: (1) key issues in design claims; (2) heightened standard of care in design liability; and (3) design professional liability insurance in the DB environment. Because of the interdisciplinary nature of the identified research areas, the research team reached out to a wide range of subject-matter experts from multiple domains (owners, owners’ representatives, design consultants, design–build contractors, and insurance and legal advisors) to capture several viewpoints about the issue under research. The survey was distributed to a wide range of professional associations and achieved high-quality responses. The professional associations that participated in the survey are listed below:

DBIA Transportation and Aviation Markets Committee

American Society of Highway Engineers

American Society of Civil Engineering Construction Institute Legal Affairs and Dispute Resolution

International Risk Management Institute

Association for the Improvement of American Infrastructure

American Council of Engineering Companies of Georgia

The respondents consisted of 85 SMEs and represented five different professions (see Figure 3): design consultant, highway contractor, public owner, owner’s representative (rep), and

insurance and legal advisor. Since the initial goal of this survey was to find key issues regarding design claims and liability, the research team planned to explore opinions from design aspects among project parties, 63.53 percent of whom belonged to design groups. The second-most participating professions were highway contractor and insurance and legal advisor (10.59 percent). Owner and owner’s rep were 9.41 and 5.88 percent of the total respondents, respectively.

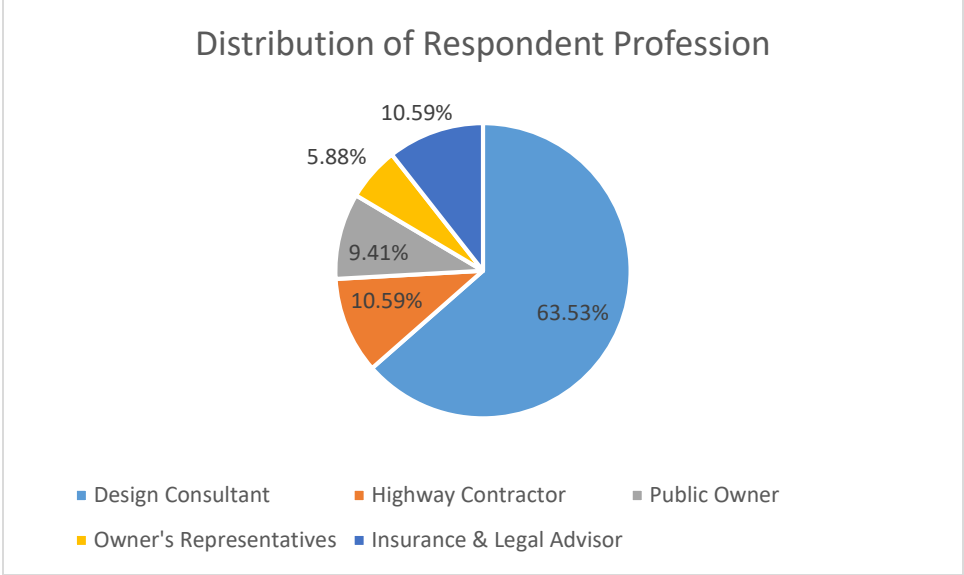


Figure 3. Respondents’ Design-Build Background

The research team needed to obtain insights from subject-matter experts who have sufficient work experience in the DB highway construction industry. Figure 4 shows that almost half of the respondents from all profession groups have more than 10 years of experience in the DB method: 48.15 percent of design consultants; 44.45 percent of highway contractors; 62.5 percent of public owners; 80 percent of owner’s reps; and 66.67 percent of insurance and legal advisors.

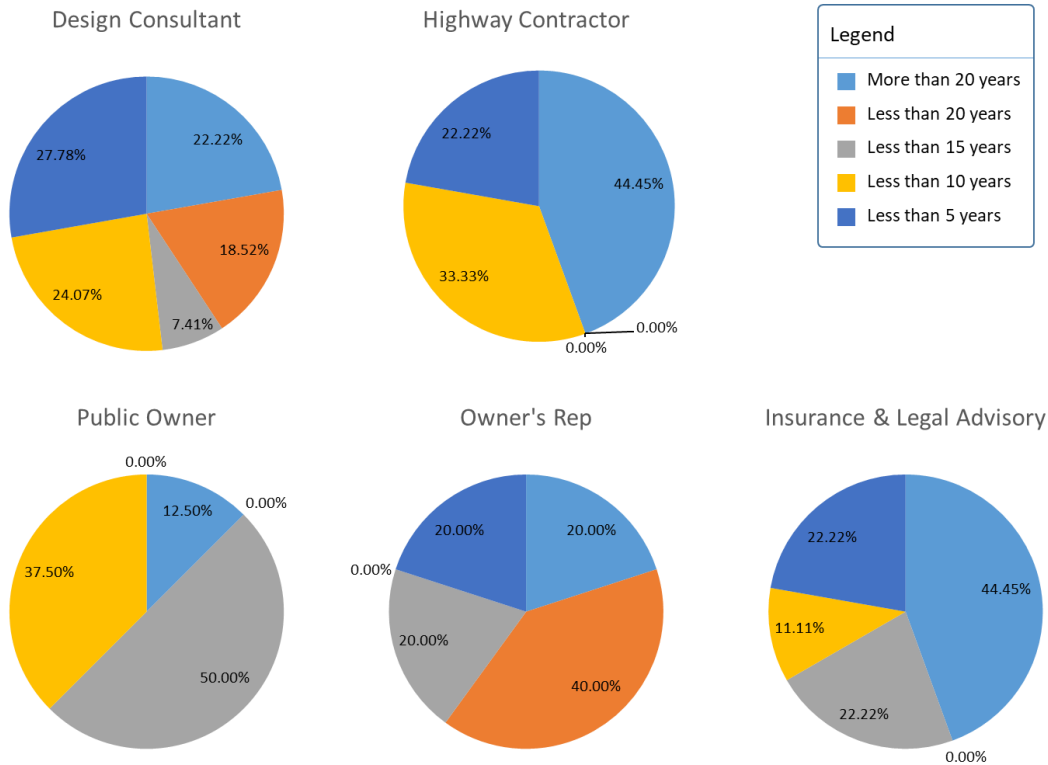


Figure 4. Years of DB Experience by Professions

3.2 Issues of Design Claims in the Design–Build Environment

The first part of the survey was to examine current issues regarding design claims in the DB highway industry. The survey aimed to: (a) examine whether the design–build method results in more claims than those in DBB, (b) determine the project phase that causes most claims, (c) identify design claim sources, and (d) investigate whether DPLI covers claims during the pre-award phase. The research team asked four specific questions to obtain opinions from the SMEs in DB contracting.

1. In your opinion, on average, is the number of design claims greater in design–build projects compared to those in design–bid–build projects?

In your opinion, how often are design claims arising throughout different phases of a design–build project?

In your opinion, what is the relative importance of the following factors as the source of design claims against the engineering consulting firm in design–build projects?

How often does the insurance company participate in the procurement phase of design–build projects (pre-award phase) for the insured of Design Professional Liability Insurance (DPLI)?

3.2.1 Number of design claims (Survey question 1)

A single point of responsibility, which is a key feature of the design–build contract, brings several benefits over the traditional DBB contract (Beard et al. 2001). In addition to DB benefits such as shortened duration and reduced cost, reduced claims has been identified in the literature as a desired feature of DB for the owner (Beard et al. 2001; Gransberg and Barton 2007; Levy 2006; Molenaar et al. 1999; Scott and Molenaar 2017). Figure 5 shows the results of the first question related to the difference in the perception of reduced/increased number of claims for different parties. Owner, owner’s rep, and insurance and legal advisory responded that the design–build method results in fewer design claims because the design–builder has greater vested interest in design, such that the design–build team has been able to integrate well as an actual team. The survey results by these groups align with the desired features of DB. Unlike these three groups, only half of design–builders think that design–build contract reduces design claims. They do not feel the difference because they are working in the integrated team with the designers, but, at the same time, they now have full responsibility for both design and construction services.

Unlike the four groups mentioned above, from the designer’s perspective, the design–build contract may not reduce claims. One of the respondents commented that the number of claims is

significantly greater in DB than that in DBB; however, the increased claims are not public knowledge and not included in most comparison metrics because most claims are settled through arbitration. Some respondents were concerned that, because of the higher risk of the DB project by nature, the owner tries to shift the risk onto the design-build team, and contractors (design-builders) seek to transfer risk and recovery to the designer when problems arise, regardless of fault, by using the designer's DPLI coverage. In the DB environment, the contractor has the ability to file a direct claim against the designer because it lowers the bar for suits of alleged negligence against the designer.

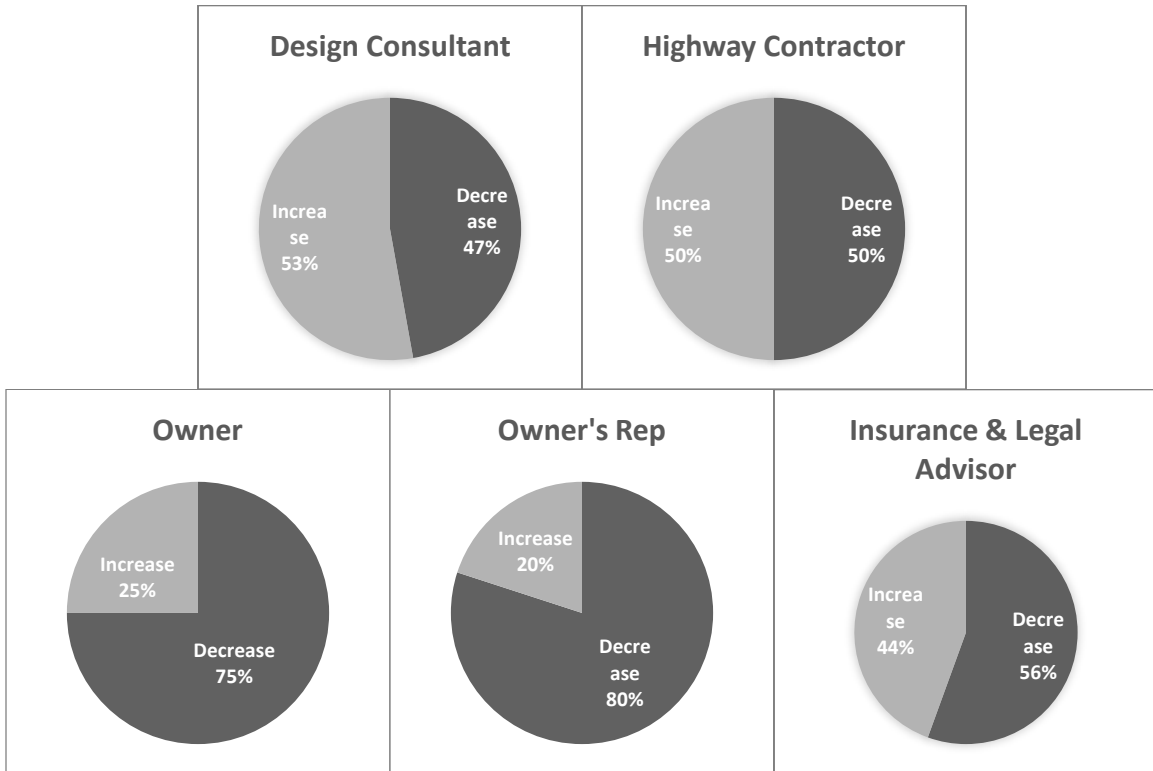


Figure 5. Number of Design Claims in Design-Build Projects

3.2.2 Design claim sources (Survey questions 2 and 3)

The research team investigated the project phases from which design claims are mostly arising. More than half of respondents, shown in Figure 6, answered that claims frequently and occasionally appear after the project award and after the completion of construction. Based on overall respondent comments, the claims arise at the end or nearing completion of the project. One of the respondents commented that, although the results show that the claims are not arising during pre-award, the claims arising during post-award almost always relate to work done during pre-award, such as quantities-based claims.

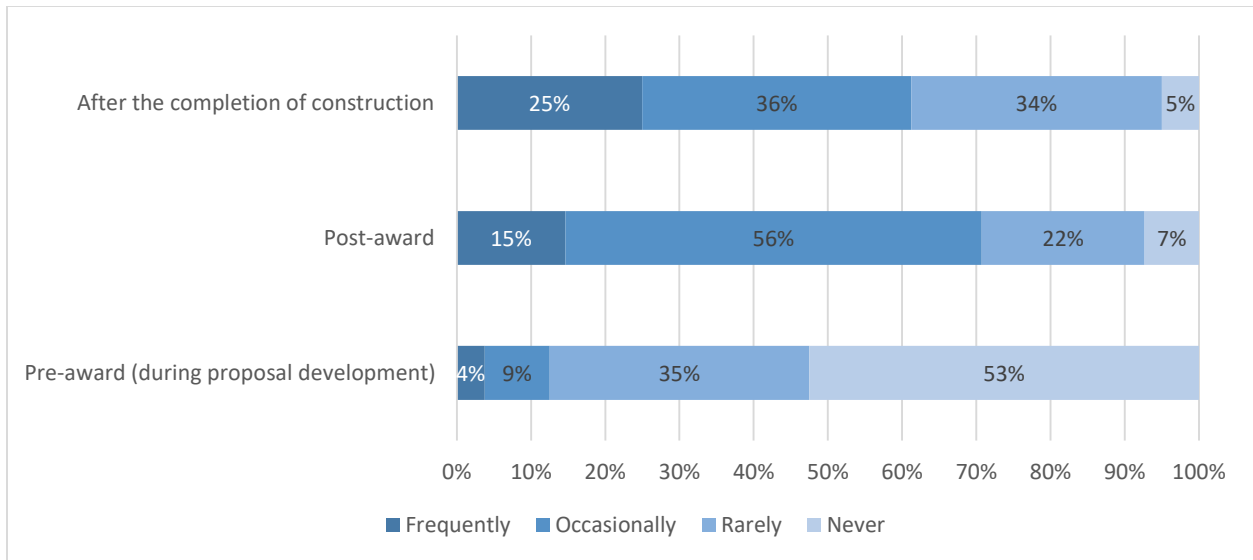


Figure 6. Project Phases When Design Claims Arise

The research team identified nine design claim sources based on the literature review and the initial interview with SMEs. The research team developed the survey question 3: “In your opinion, what is the relative importance of the following factors as the source of design claims against the engineering consulting firm in design–build projects?” The survey is then conducted to determine the relative importance of the following nine design claim sources.

Engineer's negligence in preparing plans, drawings, designs, and specifications

Significant deviation of quantity estimates as the basis of cost estimation during the pre-award phase

Recovery of losses due to differing site conditions

Recovery of losses due to contractor's negligence in preparing the bid

Recovery of losses due to contractor's faulty work during the construction phases

Inadequate investigation during the pre-award phase

Failure to notice the contractor's important information during the pre-award phase

Recovery of losses due to defective owner-furnished documents

Failure of engineer to provide reasonable inspection during the construction phase

The questionnaire asked the respondents to gauge the relative importance of the design claim sources by using a 4-point Likert scale: extremely important, very important, important, and less important. The research team considered all of the design claim sources as important; however, to determine relatively important design claim sources, the research team used the percentage of respondents from each profession group who selected *extremely important* and *very important*. Table 1 shows the three most important design claim sources answered by each profession group, selected according to the highest percentage among each group. If more than one factor indicates the same percentage, the research team ranked these factors as the same level. For instance, six factors that the group of public owner selected are the same highest percentage so that group of public owner only shows six factors that are the most important factors.

The respondents were unanimous in ranking "*significant deviation of quantity estimates as the basis of cost estimation during the pre-award phase*" as the most important source of the design claim. Three claim sources were selected as the second-most important design claim source:

recovery of losses due to contractor's negligence in preparing the bid; engineer's negligence in preparing plans, drawings, designs, and specifications; and inadequate investigation during the pre-award phase. In the design consultant and public owner groups, *recovery of losses due to differing site conditions* was chosen, and *failure of engineer to provide reasonable inspection during the construction phase* was selected by the insurance and legal advisor, and public owner groups. The group of public owner was the only party that thought that *recovery of losses due to contractor's faulty work during the construction phases* was also a relatively important source. Compared to these seven sources, mentioned above, the remaining two factors were not selected as the top three important design claim sources: *failure to notice the contractor important information during the pre-award phase* and *recovery of losses due to defective owner-furnished documents*.

Table 1. Percentage of Profession Groups Who Selected Extremely Important and Very Important

	Design Consultant	Highway Contractor	Public Owner	Owner's Rep	Insurance and Legal Advisor
Significant deviation of quantity estimates as the basis of cost estimation during the pre-award phase	1 st	1 st	1 st	2 nd	2 nd
Engineer's negligence in preparing plans, drawings, designs, and specifications	2 nd	2 nd			1 st
Recovery of losses due to contractor's negligence in preparing the bid			1 st	1 st	3 rd
Inadequate investigation during the pre-award phase		3 rd	1 st	2 nd	
Recovery of losses due to differing site conditions	3 rd		1 st		
Failure of engineer to provide reasonable inspection during the construction phase			1 st		3 rd
Recovery of losses due to contractor's faulty work during the construction phases			1 st		
Failure to notice the contractor important information during the pre-award phase					
Recovery of losses due to defective owner-furnished documents					

As shown in Table 1, all parties agreed that *significant deviation of quantity estimates as the basis of cost estimation during the pre-award phase* is one of the most important factors when it comes to design claims. Since designers have responsibility for the quantity risk in the DB

environment, this becomes a unique issue of DB projects (Koch et al. 2010). To complete the project within estimated budget, cost engineering cross-checks are needed, and including design contingency may be helpful (DBIA 2017; Koch et al. 2010). Progressive design–build has often been introduced and implemented in the highway industry to improve this issue (DBIA 2017).

In addition, *engineer's negligence in preparing plans, drawings, designs, and specifications* is also a common source that triggers DPLI coverage. All groups, except the public owner or owner's rep, agreed that this is important source when considering design claims. Federal and state court cases generally apply this rule, and failing to follow a professional standard of care would cause an unexpected overrun and be typically covered by DPLI policy (Koch et al. 2010; Loulakis et al. 2015).

Recovery of losses due to contractor's negligence in preparing the bid was the most significant factor for the groups of public owner, and was also ranked 3rd by the insurance and legal advisor group. Hatem and Gary (2017) highlighted that claims arise when there are material differences between the design–builder's pre-award bid estimate assumptions and the actual cost, and this is usually due to aggressive, unrealistic, and opportunistic bidding by the design–builder. Pre-award cost estimating may or may not include a design development contingency.

Inadequate investigation during the pre-award phase was ranked in the top three important sources by three of the five groups. However, the other two groups of design consultant and insurance and legal advisor only responded with 43 and 11 percent, respectively, that this factor is extremely and very important. Unlike DBB, the designer may perform design development under pressure such as an accelerated pace of compressed schedule (Hatem and Gary 2017). To deal with this tightened schedule, the Virginia Department of Transportation (VDOT) utilizes a “scope validation period.” The design–builder is able to investigate and identify “scope issues” that will

materially impact their proposed work within the contract price or contract time (Virginia Department of Transportation 2016). The design–builder is given 120 days after the contract award to present claims regarding “scope issue,” and the design–builder’s rights are waived after the end of the scope validation period (Loulakis et al. 2015).

More than half of design consultant and public owner groups thought that *recovery of losses due to differing site conditions* is an important design claim source. Geotechnical uncertainty is usually high until the post-award site investigation and the completion of the geotechnical design report. To eliminate some of the risk of contingency, differing site conditions (DSC) is recommended for use in the contracts (Gransberg and Loulakis 2016; Loulakis et al. 2015). The basic premise of the clause is to give a contractor cost and time relief if the contractor encounters a “materially different” condition during the execution of the work. However, Loulakis et al. (2015) explained that the courts have been highly protective of a contractor’s ability to obtain relief under this clause. In addition, transportation agencies such as Washington State DOT have sometimes set a monetary ceiling, and the agency only owes the risks above the indicated amount in the contracts (Gransberg and Loulakis 2016; Loulakis et al. 2015).

The groups of public owner and insurance and legal advisor felt *failure of engineer to provide reasonable inspection during the construction phase* is an important design claim source. Loulakis et al. (2015) addressed that the owner faces challenges in proving the designer’s responsibility for discovering defective construction work during inspection. However, the courts have rejected the role of design professional as the guarantor of the quality of construction unless specific contract language requires (Loulakis et al. 2015). Based on the common knowledge of a professional negligence standard, a design professional’s inspection obligations are to perform a reasonable inspection given its contractual inspection of scope of work (Loulakis et al. 2015).

The group of public owner thought that *recovery of losses due to contractor's faulty work during the construction phases* is important. It is difficult to prove whether the design or construction cause design problems and also to cover faulty workmanship to fix construction errors and omissions under insurance coverage (Loulakis et al. 2015; XL Catlin 2016). Although contractors are required to hold a commercial general liability (CGL) policy, the CGL policy will not reimburse the design-builder for these expenses, based on common exclusions in the policy: "Your Work" and "Professional Liability" (Loulakis et al. 2015). Because of this professional liability exclusion, some owners such as Arkansas DOT and Texas DOT require the design-builder to purchase Contractor's Professional Liability Insurance or Contractor's Protective Professional Indemnity that provides coverage for losses arising from professional negligence by the design-builder's self-performed design work.

Although *failure to notice the contractor important information during the pre-award phase* was not selected as one of the three most significant design claim sources, this source is still an important claim source. Hatem (2018) also suggested that timely notification and documentation regarding claims can be a good strategy for successful practice in DB. Most parties provided consistent responses regarding this issue. The group of highway contractor was slightly higher than the other parties, showing that 50 percent of the highway contractor group selected *extremely important* and *very important*, and the remaining four groups were under 50 percent. Since the source itself represents the important role of the contractor, the highway contractor group may consider this source as a potential claim issue.

Recovery of losses due to defective owner-furnished documents also was not selected as a top claim source, but it is important that the Spearin doctrine still applies to DB projects where an owner provides a detailed specification that has been reasonably relied upon by a bidder to the

bidder's detriment (Loulakis et al. 2015). Although the owner is trying to use "weasel words" such as disclaimer, the owner does not get rid of its implied warranty of the sufficiency of its design in design-build projects. The owner assumes the risk of the mistakes under the elements of the Spearin doctrine. According to the email interview with one of the attorneys at law, the Spearin doctrine applies if the following elements of Spearin are met: (1) the contractor was obligated to follow the design provided by the owner, (2) the contractor reasonably relied upon the design, which (3) resulted in either (i) an unacceptable project (defensive use of Spearin) or (ii) caused the contractor to incur additional cost or time or both trying to work with the defective design. The contractor assumes the risk of the mistakes if the elements of Spearin are not met, which would be the case where the design-builder provides the design (Anonymous, personal communication, May 14, 2018). One example of thoughtful practices to address this issue is "scope validation" from VDOT as mentioned above. The design-builder is given 120 days after the contract award to present claims related to deficiencies in owner-furnished information (Loulakis et al. 2015).

3.2.3 Involvement of insurance company during pre-award phase (Survey question 4)

In the previous section, the research team found that respondents have experienced that claims usually arise during post-award and after the completion of the project, but the claims are mostly related to the work performed during pre-award. Insurance advisors are not involved in the procurement that much, as shown in Figure 7. Only 25 percent of the respondents selected that the insurance company always and usually participates in the procurement phase of the project. The research team found that this is the case usually when the designer's practice policy is being used for the project. Annual-based practice DPLI is difficult to tailor its policy to the specific project requirements since the policy covers all other ongoing projects of the engineering firm.

On the other hand, a project-specific policy is flexible to modify its terms and conditions in accordance with the project requirements, and if a retroactive date provision is included in the policy, the professional negligence can be covered as early as indicated in the policy. Insurance advisors also mentioned to the research team that they like to be involved as they feel they can add tremendous value to the owner and to the design–build team. If they have more time, they can provide a more customized solution and better terms. Involving them as a key team member is recommended. Chapter 4 will elaborate on the characteristics of the annual-based practice policy and project-specific policy, and policy elements.

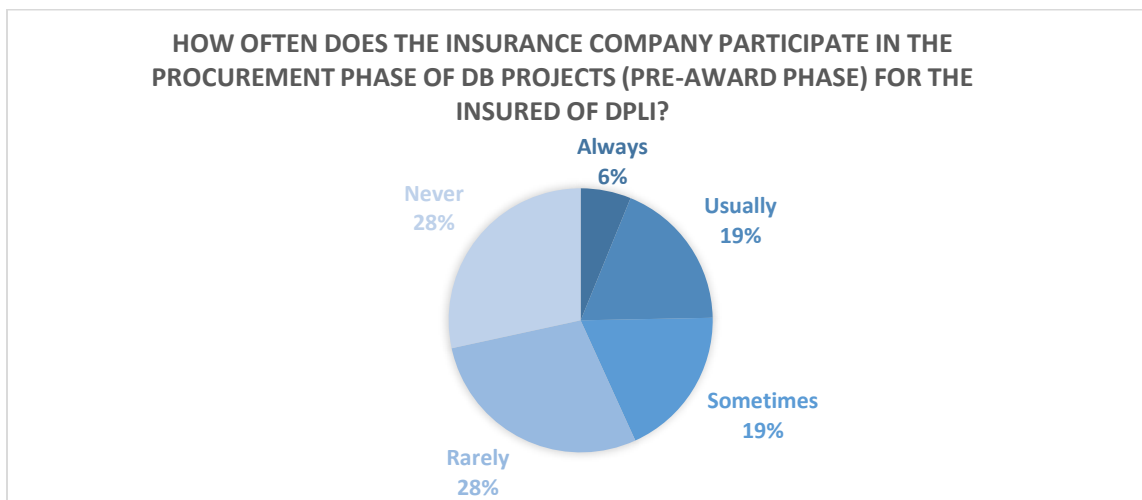


Figure 7. Involvement of Insurance Company During Pre-Award Phase

3.3 Heightened Standard of Care

3.3.1 Heightened standard of care languages in DB and DBB

As described in Chapter 1, the engineer’s standard of care is the degree of care that determines if professional negligence exists. Engineers are professionally negligent when they fail to meet standard of care. The judgment regarding whether standard of care is met by the engineer

and, thus, whether there is professional negligence is the key to determining if the incurred damages are covered by DPLI.

An observation of design–build projects is that the design–build contract can result in a change in the engineer’s standard of care compared with that in traditional design–bid–build projects (Friedlander 1998). The added legal repercussions in design–build teams can also raise the standard of care for the engineer (Coble and Blatter Jr 1999). The reason behind this is that design–build projects have a completely different contractual structure where the engineer acts as a design consultant in the design–build team, instead of that of the owner, so that the engineer is now held to the design–builder’s promise or warranty. If the engineer takes such flow-down of liability, a heightened standard of care rather than the ordinary standard of care is now put on the engineer. An alternative is that the engineer might refuse to accept such heightened standard of care in the contract with the design–builder, which will result in a window of liability.

A survey question regarding the engineer and the heightened standard of care that the engineer is held to through contractual agreement was devised. The purpose of this question was to find: (1) whether heightened standard of care exists in design–bid–build and design–build, and (2) how frequent the different languages exist in design–bid–build and design–build. The research team retrieved the typical heightened standard of care languages from the *National Cooperative Highway Research Program (NCHRP) Legal Research Digest 68: Liability of Design–builders for Design, Construction, and Acquisition Claims*. In this research report, previous legal cases regarding the engineer’s standard of care are examined. The research team summarized the common languages of heightened standard of care based on this. Finally, the following four typical heightened standard of care phrases were investigated through the question presented in Figure 8:

1. “Warranting” your design for fitting the intended purpose

Ensuring your design is “free of errors, omissions, and defects”

Ensuring your design is in compliance with “applicable laws, statutes, ordinance, codes, rules and regulations, or any lawful orders of public authorities”

Achieving a specific performance standard for any aspect of the work

Figure 8 shows the responses to the question: “How often have you seen the following Heightened Standard of Care in your Design–Bid–Build (DBB) / Design–Build (DB) projects?”

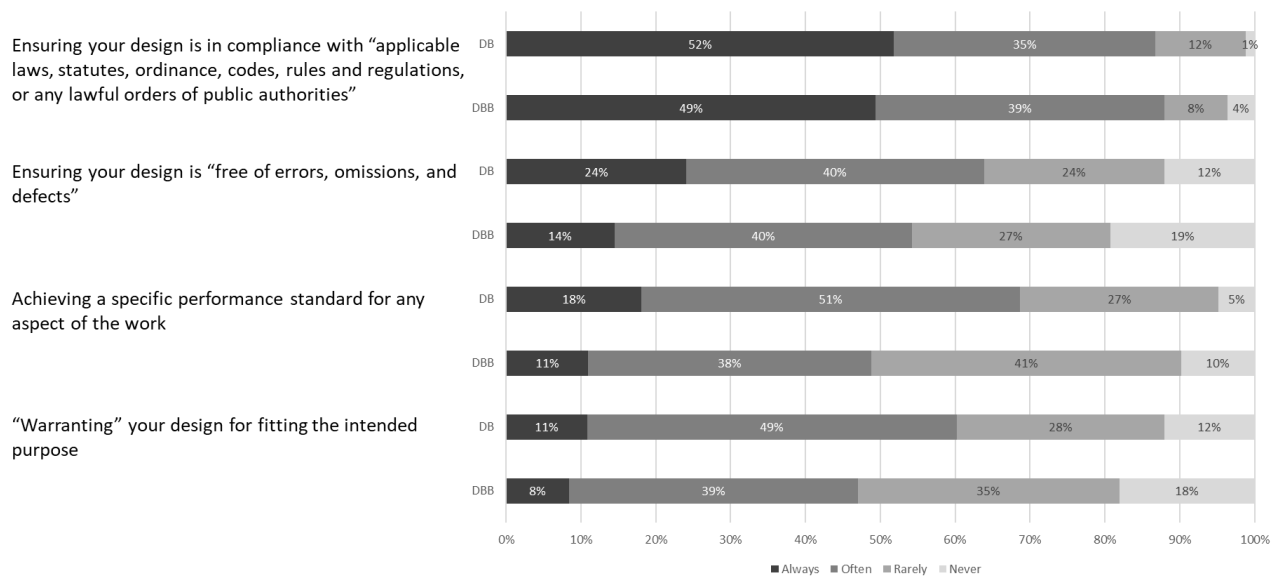


Figure 8. Typical Heightened Standard of Care Languages

From the results, the researchers found that every heightened standard of care language they investigated is always more frequent in design–build projects than in design–bid–build projects. This confirms the observation of heightened standard of care in general in design–build projects. Besides, the frequency rank of each language is the same in both design–bid–build and design–build projects. In another words, those heightened standard of care languages, which are in higher rank in DBB projects, exist as the same level of rank in DB projects. As shown in Figure

8, “ensuring your design is in compliance with applicable laws, statutes, ordinance, codes, rules and regulations, or any lawful orders of public authorities” is the most common heightened standard of care language. Of the respondents who selected this language, 52 and 49 percent think the frequency of the language is “always” in design–build projects and design–bid–build projects, respectively. “Warranting your design for fitting the intended purpose” is the least common heightened standard of care language. Only 11 and 8 percent of the respondents who selected this language think the frequency of the language is “always” in design–build projects and design–bid–build projects, respectively.

Apart from rating of the frequency of the given languages, respondents provided some other heightened standard of care languages that they have experienced before, such as “[the design] will achieve ‘best in class’ performance”; “instruments of Service shall be fully coordinated, and 100% complete”; “the designer has an explicit duty to defend the contractor”; and “the designer is responsible for liquidated/consequential damages.”

In addition, comments under this question from the responses provided more perspectives regarding heightened standard of care. As mentioned earlier, the root of the heightened standard of care language is, in fact, an intention of flow-down of liability. A comment mentioned that these are heightened standard of care languages in contracts between a design–builder and the designer, and, at the same time, they are the contractual obligations between the owner and the design–builder. The design–builder’s intention to flow the liability to the designer through the heightened standard of care language is very unfavorable to the designer. A design consultant respondent expressed that the contractual language such as “fitness for purpose” has to be promised by the contractor, but it does not mean that the engineering firm will agree for it to flow down to the design subcontract. As stated in the comment, “[a] prudent engineering firm will not be accepting

heightened standard of care in their [its] design subcontracts regardless of what a Prime is signing up to in the prime agreement with the Owner.” Two other design consultant respondents share the same opinion on this issue, mentioning that they will not allow some certain heightened standard of care language to remain in their contract.

3.3.2 Influence of heightened standard of care languages on design claims

Another survey question regarding the challenges stemming from heightened standard of care investigates the influence of heightened standard of care languages on the number of design claims. Figure 9 shows the response to the question: “In your opinion, has the Heightened Standard of Care in design–build contracts resulted in more design claims?”

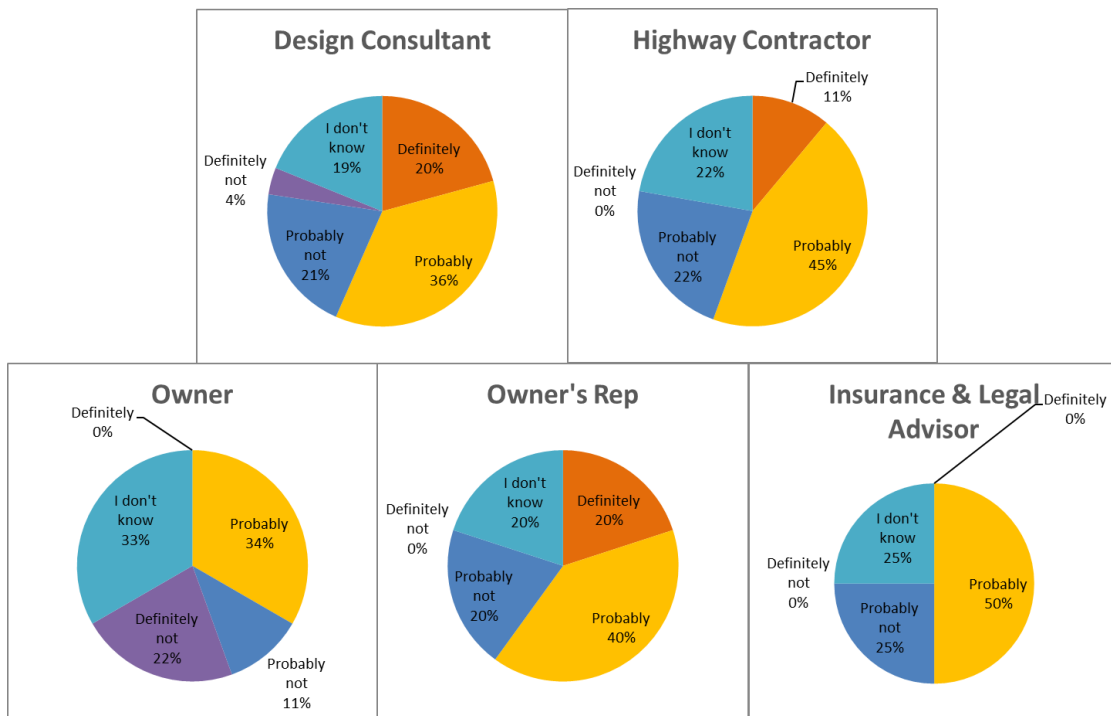


Figure 9. Results for Question: Has heightened standard of care in design-build contracts resulted in more design claims?

More than half of respondents in four categories—design consultant, highway contractor, owner’s representative, and insurance and legal advisor—indicated that heightened standard of

care in design–build contracts definitely or probably resulted in more design claims. In other words, the majority of the respondents from these professions think the heightened standard of care in design–build contracts has resulted in more design claims. The owner group shows an opinion contrary to all the other profession groups. Only 34 percent of respondents from the owner side think the heightened standard of care probably leads to more design claims. Among these respondents, none chose “definitely”; all 34 percent are from those selecting “probably.”

The divergence of the owner responses compared with the other professions for this question shows a consistency with the result of the change in the amount of design claims. Previous literature regarding public and private sector attitudes toward design–build provides an idea why such divergence exists (Songer and Molenaar 1996). The authors state that implicit in the design–build projects is the owner’s shelter from liability. The engineer does not perform as the agent of the owner but as an entity in the design–build team. Design errors and omissions are solely the responsibility of the design–builder and are resolved in the team. Therefore, the number of design claims is reduced from the owner’s side. Besides, from the comments of the previous survey question, the heightened standard of care languages in a contract between the design–builder and the designer are actually contractual obligations between the owner and the design–builder. The owner cannot see the flow-down of liability from this.

Opposed to the owner’s opinion, the majority from the other groups responded with an increase in design claims due to heightened standard of care. As a design consultant respondent commented, “[h]eightedened SOC [standard of care] makes it easier for an Owner or Contractor to allege breach of contract or negligence and means more discovery, more defense costs and more time involved in an engineer or their carrier defending themselves.” Another design consultant respondent raised a point on this that in large design–build projects, these issues more easily

translating into claims makes the design firms hesitate to become involved in design–build projects. “I have not seen a DB or P3 project of \$200M or larger that has not resulted in a claim and when serving as the owner's rep have general knowledge of when these issues are surfacing and likely to translate into a claim. The conditions are causing many design firms to rethink their involvement in design–build.”

3.3.3 Gaps with DPLI coverage as to heightened standard of care

As described in Chapter 1, a common knowledge of DPLI is that the judgment regarding whether standard of care is met by the engineer determines if the incurred damages are covered by DPLI. If the heightened standard of care cannot be covered by DPLI, this coverage gap would pose a big challenge to the design consultant. However, there remains a doubt as to whether a change of project delivery method would be likely to make a difference in the coverage of DPLI. A survey question is developed to determine the coverage issue regarding DPLI: “Does a typical Design Professional Liability Insurance (DPLI) Policy of the engineering consulting firm cover design claims arising from failure to meet the clauses regarding the Heightened Standard of Care in the design–build project?” Figure 10 shows the result from the different professions.

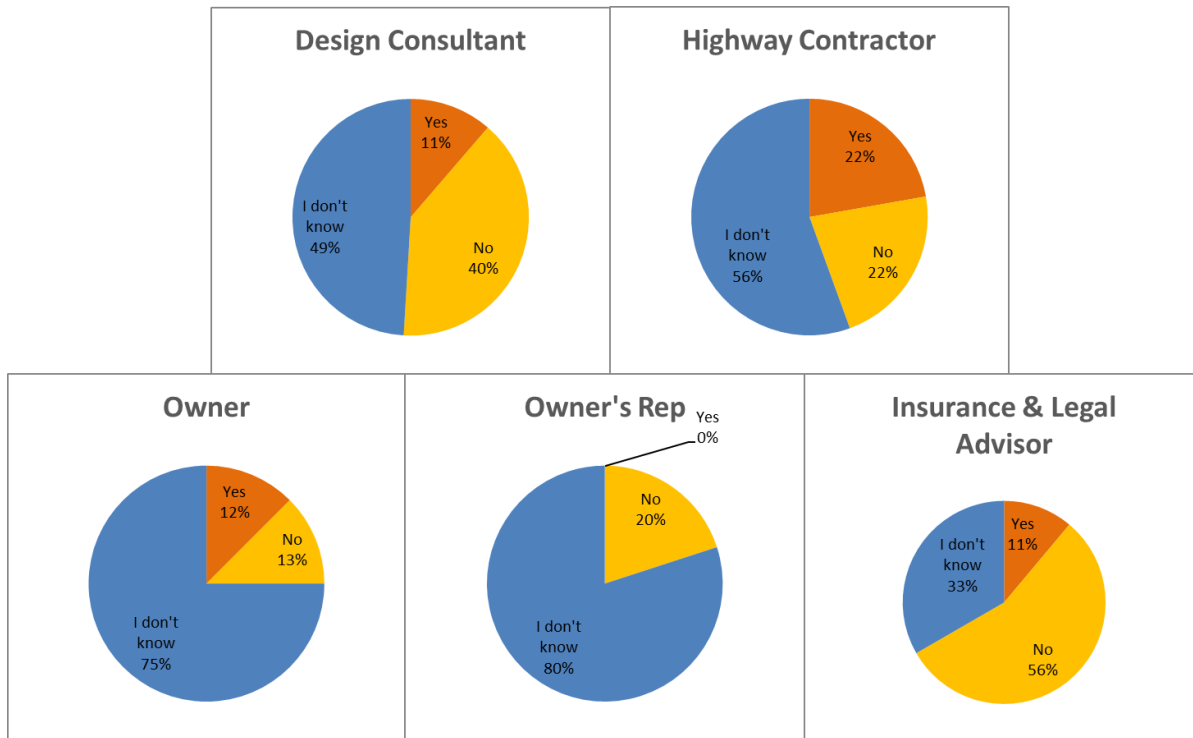


Figure 10. DPLI's Coverage Scope Regarding Heightened Standard of Care

Apart from the insurance and legal advisor group, the majority of the respondents from the groups of design consultant, highway contractor, owner, and owner's rep selected "I don't know." Insurance and legal advisor is the group that shows the most knowledge regarding this issue, with only 33 percent who selected "I don't know." The design consultant and highway contractor groups have 49 and 56 percent of responses, respectively, who do not know the issue while the owner's side shows even less knowledge; 75 percent of owner and 80 percent of owner's rep selected "I don't know." Among those who selected "yes" or "no," respondents who think heightened standard of care cannot be covered is the significant majority, while there is still some portion of the respondents in each group who think otherwise.

From the results, an existing significant issue is found: the scope of DPLI coverage in design-build projects is not familiar to a lot of professionals in this industry. This gray area seems

to be a unique issue for design–build projects. Survey respondents did not specify any particular instances that their insurance providers denied their own claims due to the issue of the heightened standard of care. One respondent mentioned that he knows DPLI covers only negligence based on industry standard of care but he has yet to see in practice a situation where their insurer has attempted to deny coverage based upon a heightened standard of care. The insurer has always had full coverage for any of their claims. Another respondent indicated a similar case where their insurance policy is okay with this issue. But he also said, in general, this depends on the policy. Some other providers are writing design–build projects out of their standard policies or charging additional premium. The respondents who answered “yes” did not provide any extra comments, but the explanation above might give some clarification to this. The respondents who answered “no” indicated their knowledge in common sense of standard of care and professional negligence. Four respondents held the same point that heightened standard of care is uninsurable when industry standard and commercially available DPLI is only triggered by professional negligence.

3.4 Design Professional Liability Insurance in the Design–Build Environment

3.4.1 Types of DPLI in design–build

An observation from the literature discussed in Chapter 1 regarding DPLI is the use of two types of DPLI in design–build projects. Whether the use of project-specific DPLI springs up in design–build projects and how often project-specific DPLI is required in design–build need to be further verified. Thus, a survey question regarding the use of DPLI types in the design–build team was then developed: “What types of Design Professional Liability Insurance (DPLI) is the engineering consulting firm required to provide in the design–build team?” Figure 11 shows the results of this survey question.

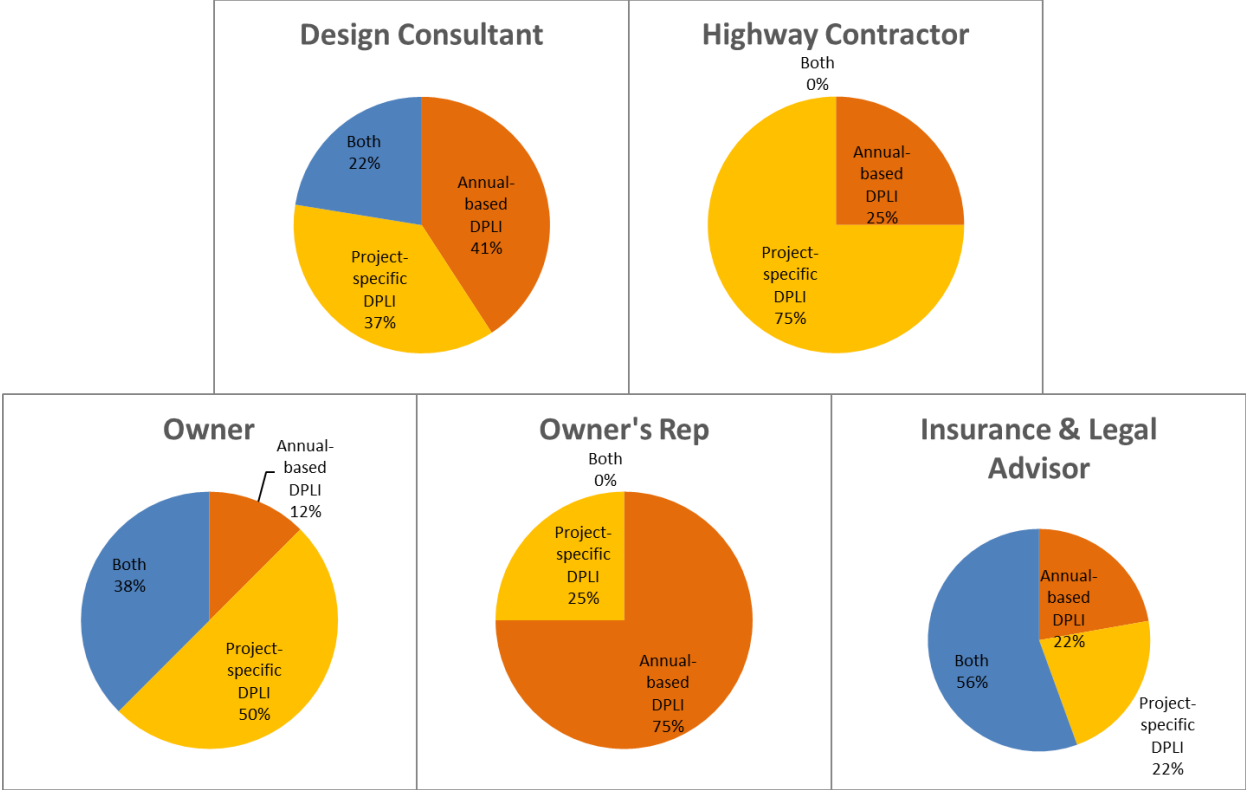


Figure 11. Types of DPLI Used in Design-Build Projects

The results indicate that a significant portion of the DPLI required in design-build projects is project-specific DPLI, even though different professions show different percentages in types of DPLI. Except for owner’s rep, all other groups reveal more than half of the respondents have been requiring project-specific DPLI for design-build projects. A significant observation under this survey question is that the requirement for types of DPLI may vary from project to project. Some owners responded that a project-specific policy may be required depending on the complexity of the projects. Many design consultants also raised that they use their corporate policy or project-specific policy depending on project size, risk profile, and owner’s specifications.

3.4.2 Influence of design–build on changes in DPLI policy

The previous sections of this chapter examine the challenges regarding changes in design claims situation and heightened standard of care in the design–build environment. These are issues closely related to design professional liability insurance. A survey question was devised to examine whether any substantial changes in DPLI policy have been brought about by design–build: “In your opinion, have you noticed any of the following substantial changes in the Design Professional Liability Insurance (DPLI) of the engineering consulting firm because of the engineering firm’s involvement in design–build projects?” The choices were developed based on situations of the possible changes happening to a DPLI policy: (1) Significant increase of the premium of the policy, (2) Limitation of coverage clauses added to the policy, (3) Exclusion of coverage clauses added to the policy, and (4) No significant changes.

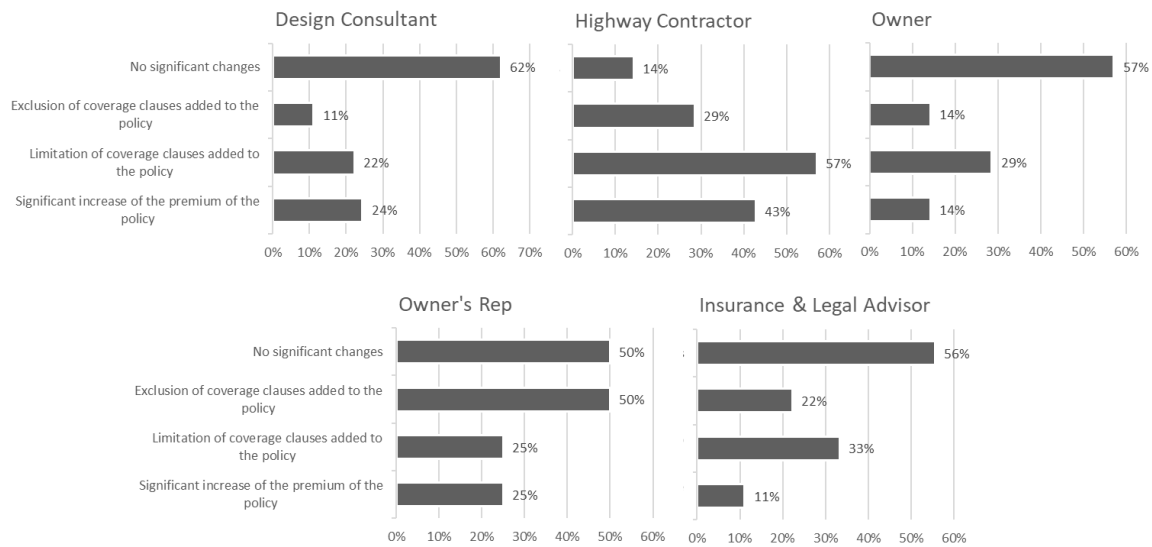


Figure 12. Influence of Design–Build on Changes in DPLI Policy

Figure 12 shows the percentage of respondents who have seen a corresponding change in the engineering firm’s DPLI, according to different professional groups. Except for the highway

contractors, “no significant changes” takes the lead. This result shows consistency with the common knowledge in the industry that an engineering firm’s corporate DPLI has less flexibility to modify the policy according to different conditions. This may explain why no significant changes are mostly observed by the respondents. Some respondents’ comments confirmed this theory: “Insurance carriers will not modify their policy language for design–build.” Besides, another observed reason is that design–build only represents a small percentage of the overall revenue of some engineering firms, so the corporate policy has not been changed due to this. Comments include: “Not significant changes because DB only represents less than 5 percent of our overall net revenue,” and “Premium increase hasn’t been significant solely due to DB projects, and since DB has been one of our service lines, there are no limitation of coverage or exclusion of coverage clauses added.”

Overall, the survey results show variations in responses regarding changes in DPLI brought by design–build. From the results, some portion of the respondents, no matter in which profession group, have seen increase of premium, limitation, or exclusion of coverage due to the exposure to design–build. A possible explanation to this is that factors coupled with the factor of involvement in design–build influence DPLI policy as well. From the respondents’ comments, the premium is found to also depend upon good project performance and applying best practices, including executing design–build contracts with reasonable assessment of responsibilities. Other considerations are taken into account, as another respondent provided information on this: “[these changes] depends on the overall risk exposure/risk tolerance and industry claims experience of individual insurance companies and individual design firms.”

Another big concern regarding design–build and DPLI is whether involvement in design–build projects puts the designer in the position of high risk when seeking DPLI from the insurer.

A survey question was developed to investigate this issue: “In your opinion, is an engineering consulting firm with a number of design–build projects in its portfolio considered as a high-risk client for insurance companies to issue the Design Professional Liability Insurance (DPLI)?”

Figure 13 indicates the results of the survey question from the different professions.

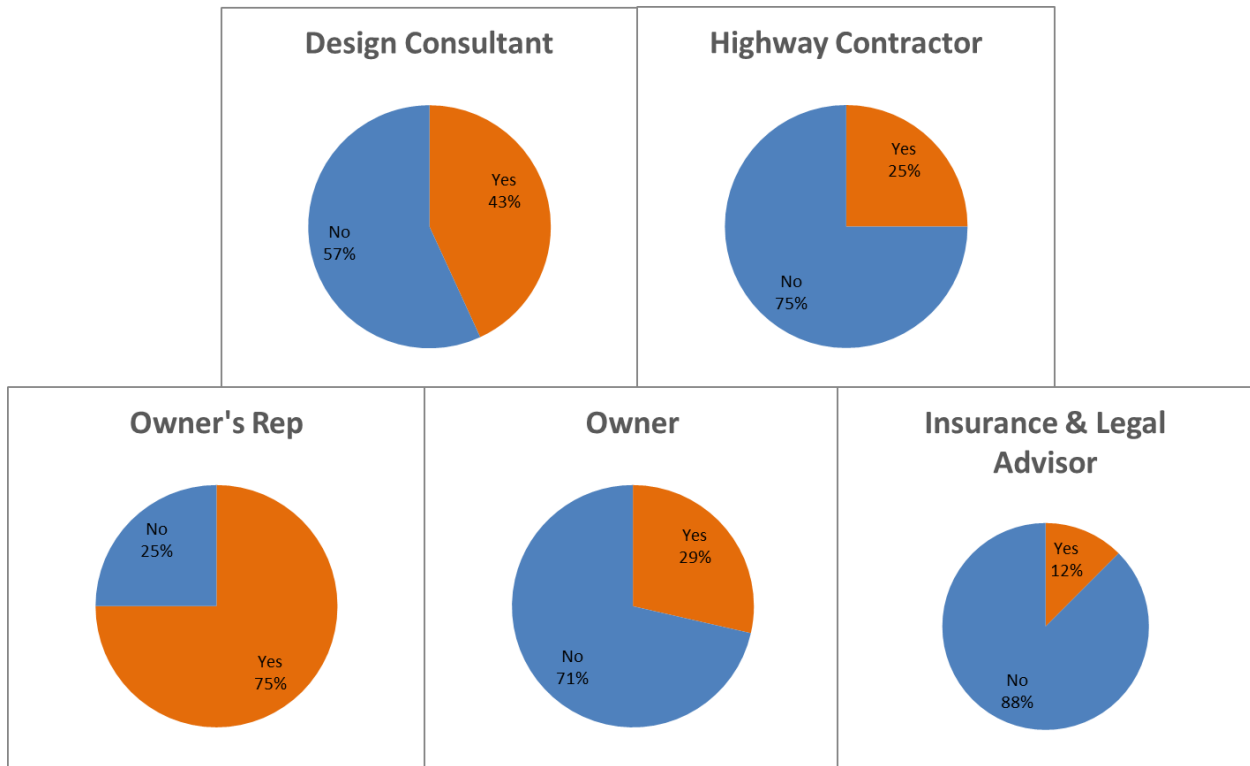


Figure 13. Results for Question: Is an engineering firm with involvement in design–build projects considered as a high-risk client for insurance company?

Most of the respondents show their attitude of disagreement to this statement. Comparing the responses from different professions, the group of owner’s rep is the only one that has a majority of respondents who selected “yes” (75 percent). Except for owner’s rep, all other groups have more than half of respondents who selected “no.” The most prominent is the group of insurance and legal advisor with 88 percent denying that the engineering firm with design–build projects in the portfolio is considered to be a high-risk client.

Some of the respondents who answered “yes” on this question expressed their opinion that they do not think this way, but they think the insurance companies view it as high risk. Another respondent who answered “yes” commented that he thinks if design–build is a small part of the portfolio, but the project types are rated as higher risk, the risk factor is likely to increase. A respondent who answered “no” provided the thought that if the engineering firm’s involvement in design–build projects is very common, there is no reason to differentiate on this. “Virtually every designer of any type or size has D-B projects in its portfolio either as a prime designer or as a sub to a prime designer. I don’t see it as a point of differentiation.” Two other respondents who answered “no” presented another point that the effort of the designer to mitigate risks by diligently negotiating contract terms will be assessed by the insurer.

Chapter 4 State of the Practice of Design Professional Liability Insurance under a DB Environment

Insurance companies provide various design professional liability insurance products for design professional negligence in the current insurance market. Those DPLI products show great variations in policy elements depending on the insurance provider and the available customizable options. Identifying the fundamental types of DPLI available for coverage of design service in design–build projects in practice is a preliminary step of this study, which provides the foundation for further study on the significance and variations of policy elements and the emerging trend of state DOTs’ practice of DPLI. This chapter explores different types of DPLI that are commonly used in the highway construction industry and the significant elements of DPLI policy.

4.1 Different Types of Design Professional Liability Insurance

To identify the fundamental types of design professional liability insurance, the researchers reviewed insurance sections of state DOT RFPs and design–build agreements (DBAs) and conducted interviews with state DOT personnel and industry experts. The researchers found that design professional liability insurance policies have basic characteristics of two aspects: (1) scope of work under coverage, and (2) purchaser of the policy. Variations in the two basic characteristics lead to fundamental differences in DPLI policies. According to the policy variations within these two basic characteristics, DPLI policies can be identified as four fundamental types in current practice for design–build highway projects:

Annual-based practice DPLI

Project-specific DPLI by the engineering firm

Project-specific DPLI by the design–builder

Project-specific DPLI by the owner

Table 2 shows the four types of design professional liability insurance and their basic characteristics.

Table 2. Four Types of DPLI

<i>Basic characteristics</i>	Annual-based practice DPLI	Project-specific DPLI by engineering firm	Project-specific DPLI by design–builder	Project-specific DPLI by owner
Scope of work under coverage	All design works by the engineering firm	One specific project	One specific project	One specific project
Purchaser of the policy	Engineering firm	Engineering firm	Design–builder	Owner

Scope of work under coverage: Practice policy vs. Project-specific policy

Scope of work under coverage divides design professional liability insurances that are used by engineering firms in the market into two significantly different categories: (1) annual-based practice DPLI and (2) project-specific DPLI.

Annual-based design professional liability insurance, also known as “practice policy” or “corporate policy,” is the most common type of design professional liability insurance. This policy is always purchased by the engineering firm to cover design claims regarding professional negligence for the design works performed by the firm on an annual basis. The coverage is for the named insured—the engineering firm only—and the coverage amount is shared by all the projects done by the engineering firm during the

coverage period. In contrast to the annual-based practice policy, project-specific design professional liability insurance is the policy being purchased to cover design liability for a specific project. The rationale of purchasing this type of policy is that the provided coverage is for a specific project without concern that the coverage has already been exhausted by other projects under the same annual-based practice policy.

Purchaser of the policy: Engineering firm vs. design–builder vs. owner

The purchaser of the policy is another basic characteristic that marks differences in policy types. The purchaser matters because that determines who actively arranges the policy for the project. The purchaser is not necessarily the same as the policy holder, but it influences significantly who is to be covered and provides more protection under the policy. This is explained in detail in a later section of comparison of DPLI types, following an introduction of the significant elements of DPLI.

Although DPLI is to cover design professional negligence occurring during the policy period, the purchaser of DPLI is not always the engineering firm who provides the design service, due to the nature of the design–build project delivery method. The researchers identified that in design–build projects, the engineering firm, design–builder, and the owner are three entities that can be the purchaser of DPLI.

State DOTs’ practice in requirement of types of design professional liability insurance

The research team conducted content analysis of requests for proposal (RFPs) and design-build agreements (DBAs) from 15 DOTs to identify the state of the practice regarding types of DPLI that are being used for their projects. After reviewing insurance sections of their documents, the researchers found that the requirements regarding types of design professional liability insurance from the 15 DOTs show variations in three ways.

The summary of state DOTs' practice in requirement of types of DPLI is shown in Figure 14.

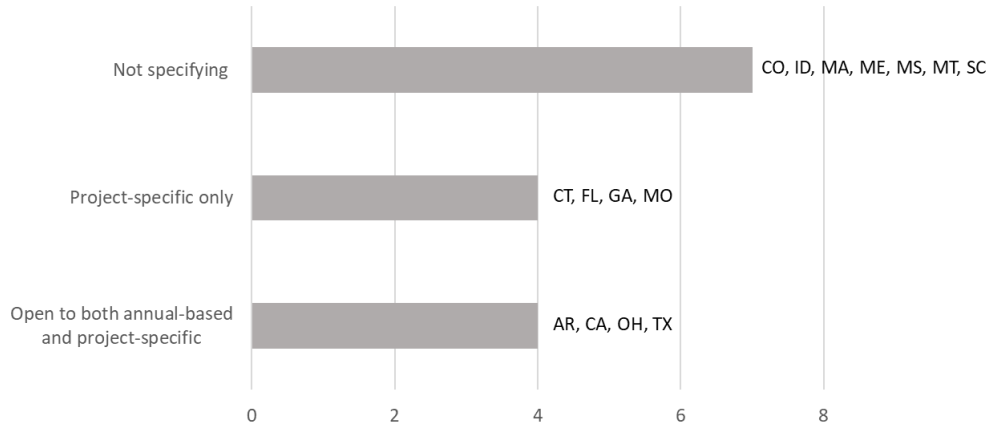


Figure 14. State DOTs' Practice in Requirement of Types of DPLI

1. Requiring use of project-specific DPLI only

Some DOTs require design professional liability insurance to be used for a design–build project to be a project-specific policy. In accordance with the project requirements, the project-specific policy must be purchased; providing annual-based practice design professional liability insurance will not be acceptable for these state DOTs' design–build projects. Example language from Georgia DOT is that “[s]uch policy is to be project-specific.” Four out of fifteen DOTs are showing such requirement in their design–build documents: Connecticut, Florida, Georgia, and Missouri DOTs.

2. Mentioning both annual-based corporate DPLI and project-specific DPLI, and being open to use either of them

Another typical practice of state DOTs regarding the types of design professional liability insurance is being open to a choice of either an annual-based practice policy or a project-specific policy. Design–build contract documents specifically indicate annual-based practice policy and project-specific policy, showing that DOTs have been aware of the two types of policies being used in current practice. They indicate their openness regarding the use of the two types of policies. Arkansas DOT, Caltrans, Ohio DOT, and Texas DOT are using this type of requirement. Example language from Texas DOT is “DB Contractor may satisfy such insurance requirement via either a series of annual practice policies or a project-specific policy covering the period of design and construction.” Ohio DOT is a bit different from the other DOTs mentioned above. They differentiate the design professional liability insurance requirement based on size and complexity of the project. For large/complex projects, Ohio DOT requires project-specific DPLI for the design–build team and annual-based practice DPLI for a contractor’s in-house design service. For other projects, Ohio DOT mentions annual-based practice DPLI only.

3. Not specifying the types in the requirement

Some DOTs do not specify the types of design professional liability insurance in their insurance requirement, as no such language is found in their insurance requirement sections of the design–build contract documents. Example language from Massachusetts DOT is “[t]he DB Entity shall provide professional liability coverage with limits not less than \$1,000,000 per claim and aggregate, protecting against any negligent act, error or omission arising out of design or engineering activities with respect to the

Project [...].” In such a paragraph of insurance requirement, types of required design professional liability insurance are not mentioned. Idaho, Colorado, Maine, Massachusetts, Mississippi, Montana, and South Carolina DOTs are under this category.

4.2 Significant Elements Under Design Professional Liability Insurance

State DOTs require design-builders to meet the minimum requirements for the DPLI policy, and the language of DPLI requirements varies from state to state. In addition to types of DPLI that are used in state DOTs, this study also examined the insurance section from state DOT RFPs and DBA to identify significant elements of DPLI requirements. This research found five significant elements that are commonly used under DPLI policy language: (1) prime and additional insured, (2) indemnity party, (3) coverage amount, (4) extended reporting period, (5) retroactive date, and (6) supplement policies. Some DOTs tend to explicitly state all six elements in their RFPs or/and DBA, while other DOTs require some of these six elements. This research also found the similarities and differences in describing each element among state DOTs.

4.2.1 Prime and additional insured(s)

In DPLI, the prime insured is the prime entity for which the policy provides protection. In addition to the prime insured, the additional insured(s) could be stated in the policy, as well. An additional insured status covers the additional insured entity on a vicarious liability basis for acts arising out of a named insured. In fact, the additional insureds can receive protection from the policy of the prime insured. In spite of this merit, according to the experts in the insurance industry, parties may not seek additional insured status in DPLI because there is an “insured vs. insured” exclusion typically included in

DPLI. The “insured vs. insured” exclusion precludes the insureds from bringing a claim against the other insured under the project-specific policy. Furthermore, the additional insured status is not allowed under the practice policy, while project-specific DPLI may have room to add any parties such as the owner or design–builder as an additional named insured(s).

Table 3 shows that, although project-specific DPLI is purchased, the available party as additional insured can be different and limited. If the engineering firm purchases the project-specific DPLI, the contractor (builder) cannot be allowed as an additional insured under the engineering firm’s policy. On the other hand, the engineering firm can be an additional insured under the project-specific DPLI that is purchased by the design–builder, but in fact, this DPLI is not beneficial to the engineer because the project-specific DPLI only responds to claims brought from the owner to the design–builder, but not the design–builder to the engineer due to the “insured vs. insured” exclusion. Under this circumstance, the engineering firms actually need to use either their own practice policy or an additional project-specific policy purchased by themselves for protection. Therefore, the observed trend under additional insured status is that most DOTs do not require an additional insured under DPLI policy.

Table 3. Additional Insured(s) under Different Types of DPLI

Types of DPLI	Additional Insured
Annual-based Practice Policy	Not allowed
Project-specific DPLI by the engineering firm	Allowed for design subconsultants
Project-specific DPLI by the design–builder	Allowed for designers
Project-specific DPLI by the owner	Allowed for contractor and design subconsultants

4.2.2 Indemnity party

Indemnity endorsement is a term that specifies another party as the indemnifying party under the policy so that it holds the party harmless from any claims brought by a third party due to professional negligence. Indemnity endorsement functions in a similar fashion to an additional insured endorsement. Similar to an additional insured endorsement, the annual-based practice policy does not allow the prime insured to indemnify any other parties, while indemnity endorsement can be added under a project-specific policy regardless of the purchaser of the project-specific DPLI policy (see Table 4).

Table 4. Indemnifying Party under Different Types of DPLI

Types of DPLI	Indemnifying Party
Annual-based Practice Policy	Not allowed
Project-specific DPLI by the engineering firm	Allowed
Project-specific DPLI by the design–builder	Allowed
Project-specific DPLI by the owner	Allowed

The researchers found that the Texas, Massachusetts, and Arkansas DOTs include indemnity endorsement in their DBA, and their language related to that section is provided below.

Texas DOT: “Such insurance shall provide an indemnified party endorsement for the benefit of TxDOT.”

Massachusetts DOT: “The policy must also indemnify MassDOT for any liabilities, damages or judgments, and reasonable attorneys’ fees and related costs due to a Breach of Professional Duty of the Named Insured(s) and/or their subconsultants.”

Arkansas DOT: “[...] the Department and the parties listed in Section 9.2.6 as indemnified parties on such policies.”

4.2.3 Coverage amount

Coverage amount is the maximum amount of money that the insurance company provides the insured for coverage under DPLI. It is a typical term in all DPLI policies, and state DOTs set the minimum amount of coverage that the design–builder needs to provide. The coverage limit term usually is specified by a certain amount per claim and in aggregate in the policy. The coverage amount of DPLI shows wide variation depending on the requirement from the insured and the available options from the insurance company.

In state DOTs’ practice, a certain amount per claim and/or in aggregate is always found as one of the DPLI coverage requirements in their contracts. Nine DOTs that do not require a design–builder to hold a project-specific policy usually specify a certain amount for the policy coverage. Figure 15 shows the coverage variations among DOTs, and this ranges from \$1M to \$25M. Idaho DOT requires coverage limit in aggregate only. Aside

from Idaho DOT, the other eight DOTs set the policy thresholds for both each claim and aggregate amount.

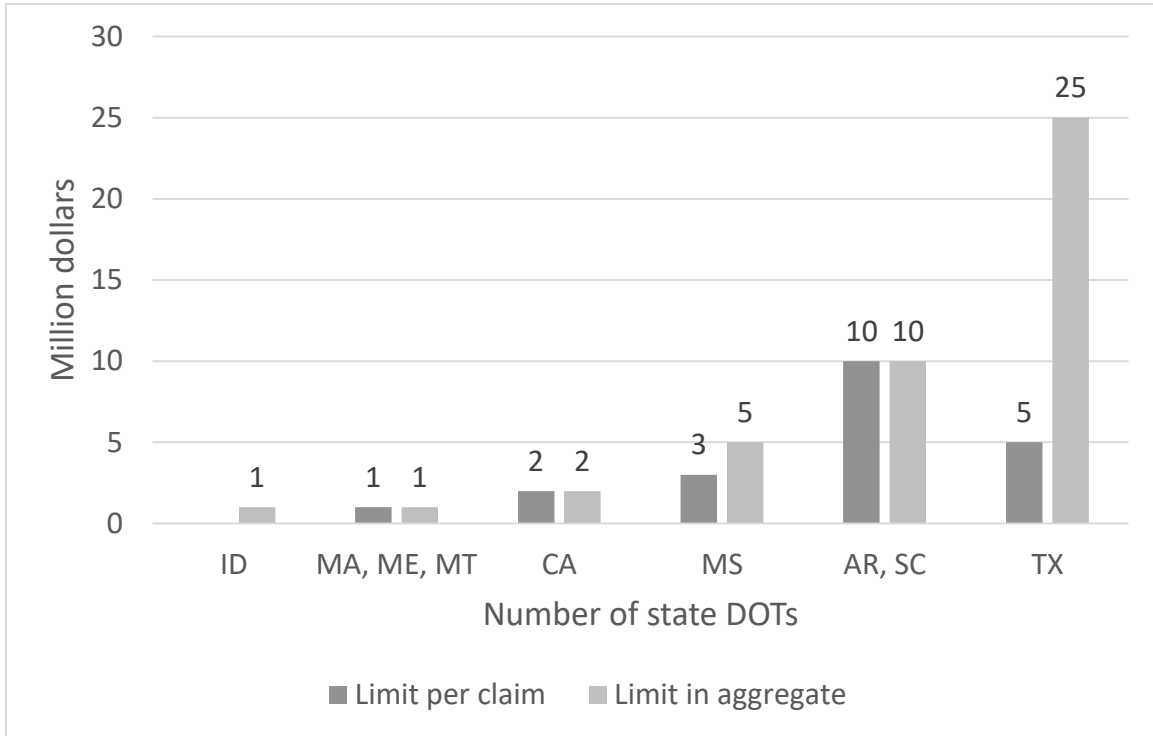


Figure 15. Typical Minimum Coverage Requirements – Practice Policy

On the other hand, four DOTs—Connecticut, Florida, Missouri, and Ohio—tend to change minimum coverage requirements depending on project size based on their criteria such as project size and cost (see Table 5). Ohio DOT classifies DB projects based on their sizes (small or large) and specifies different minimum limits for DPLI coverage (per claim or in aggregate) for the project types. For small projects, Ohio DOT does not require the design–builder to purchase a project-specific policy, as mentioned in the previous section, and the minimum coverage requirements are \$1M for each claim and in aggregate. Ohio DOT increases the minimum requirements for large projects and also requires the design–

builder to hold a project-specific policy. Ohio DOT requires increased liability requirements if the project has high-risk items, and large projects typically have higher risk items so that the requirements need to be increased. Typically, any project over \$100M is considered a large project, and for large projects, the minimum requirement for coverage is \$10M per claim and in aggregate. Three other DOTs—Connecticut, Florida, and Missouri—require a project-specific policy only, and they classify the minimum requirements based on project cost. According to the interview of state DOT personnel regarding minimum limit classifications, the research team found that the main reasons to classify projects based on their size so as to specify DPLI depends on owner risk and project risk.

Table 5. Coverage Requirements Variation

	Project Size	Minimum Per Claim (\$)	Minimum Aggregate Limit (\$)
Connecticut DOT	- Under \$25M	N/A	2M
	- Under \$50M	N/A	3M
	- Under \$100M	N/A	4M
	- Over \$100M	N/A	5M
Florida DOT	- Under \$30M	N/A	1M
	- Under \$75M	N/A	2M
	- Over \$75M	N/A	5M
Missouri DOT	- Under \$50M	1M	1M
	- Over \$50M	10M	10M
Ohio DOT	- Small projects	1M	1M
	- Large projects	10M	10M

4.2.4 Extended reporting period

DPLI policy is written on a “claims-made” basis so that the coverage triggers when an actual claim is filed during the period of the policy (International Risk Management Institute 2013). Extended reporting period (ERP) provisions are commonly used on claims-made policies. ERP provisions do not mean the extension of the policy, but this allows the insured additional time to file or present claims that are based on acts, errors, or omissions to the insurer after the policy period has ended (International Risk Management Institute 2013).

According to the content analysis of RFPs and DBAs, this research found that most DOTs have ERP provision in their DPLI section, as shown in Figure 16. Four DOTs—Florida, Maine, Mississippi, and Montana—do not require ERP in their documents. Three to five years of ERP were required by seven DOTs. Ohio DOT has different ERP based on the complexity of the projects. It requires 3-year ERP for small projects and 5 years for large/complex projects.

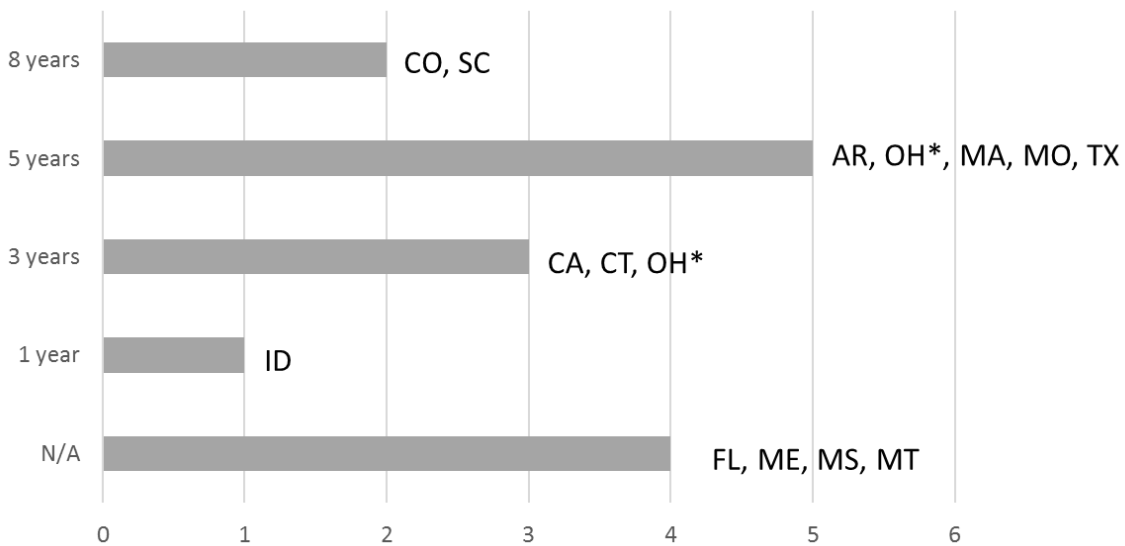


Figure 16. Requirements for Extended Reporting Period

4.2.5 Retroactive date

Similar to ERP, retroactive date provisions are common in DPLI policies because of the nature of claims-made policies that limit coverage triggers during the period of the policy (International Risk Management Institute 2013). The policy can be covered after a designated date, called a retroactive date. In fact, claims that arise out of acts, errors, or omissions can be covered under the policy if the claims occurred after the policy's retroactive date and before the policy's expiration date (International Risk Management Institute 2013).

Based on the content analysis of RFPs and DBAs from 15 DOTs shown in Figure 17, 8 out of 15 DOTs include retroactive date provisions, and the other seven DOTs do not include the provisions. These eight DOTs use different language for retroactive date since the retroactive date is a designated date that the policy coverage can be in effect so that this date can vary depending on the choice of DOTs. Figure 18 shows four types of example language that are required under DPLI sections: (1) design work commencement, (2) contract execution, (3) exact date, and (4) final RFP issue. Their example languages regarding retroactive date are shown below.

- *Design Work Commencement*
 - *Colorado DOT: "a retroactive date which covers the period in which the design work began"*
 - *Georgia DOT: "a retroactive date no later than the date that design services commenced"*

- *Missouri DOT: “[t]he policy shall have a retroactive date of no later than the date the first design or engineering Activities have been conducted by the Designer”*
- **Contract Execution**
 - *Arkansas DOT: “a retroactive date of no later than the date of execution of this Design–Build Agreement”*
 - *California DOT: “a retroactive date no later than the date of this contract execution”*
 - *South Carolina DOT: “any retroactive date under the policy shall precede the effective date of this Contract”*
- **Exact Date**
 - *Massachusetts DOT: “[t]he policy shall have a retroactive date no later than the date hereof”*
- **Final RFP Issue**
 - *Ohio DOT: “the policy shall have a retroactive date no later than the date on which the final Request for Proposal documents are issued”*

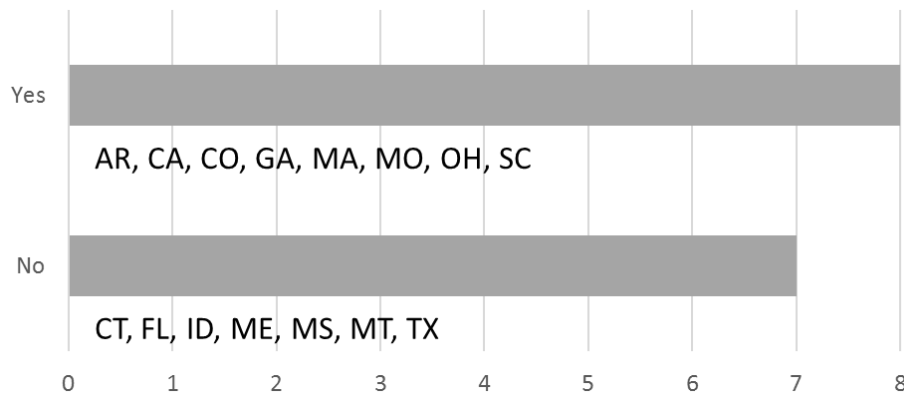


Figure 17. Inclusion of Retroactive Dates Provisions under DPLI Policy



Figure 18. Types of Example Language of Retroactive Dates

4.2.6 Supplemental policies

Some additional policies supplement DPLI and provide extra protection regarding losses due to professional negligence. These policies aim to fill the potential gaps of the prime DPLI policy and provide the team with extra coverage.

Contractor’s protective professional indemnity (CPPI) is a policy that supplements the prime DPLI policy and provides additional protection for the design–builder. The policy provides the design–builder with excess coverage over the DPLI policy of design subconsultants in the case that the design–builder suffers losses due to professional negligence by its design subconsultants. It also provides coverage for losses arising from professional negligence by the design–builder’s self-performed design work.

Owner’s protective professional indemnity (OPPI) is another supplemental policy that aims to provide additional protection for the owner. OPPI covers the professional

negligence damages that exceed the DPLI policy coverage provided by the design–build team. It also protects the owner by indemnifying the owner against third-party claims arising from professional negligence, which can be an alternative to indemnity endorsement under the main DPLI policy.

The researchers found state DOTs’ practices in these supplemental policies are that two DOTs out of the eleven DOTs being examined—Arkansas and Texas—specifically require CPPI as supplemental policies under the DPLI requirement section in their DBA. None of the DOTs studied in this research has used OPPI. This may a result of lack of familiarity with this policy since only limited underwriters offer this coverage (Taylor 2012).

4.3 Discussion

4.3.1 Considerations in selection of DPLI types

4.3.1.1 Comparison of four types of DPLI

Based on the results of identifying and examining the state of the practice of types and significant elements of DPLI, this research compared the four types of DPLI by considering their significant policy elements. Table 6 summarizes the advantages and the disadvantages of the four types of design professional liability insurance.

Table 6. Advantages and Disadvantages of DPLI Types

Types of DPLI	Advantages	Disadvantages
Annual-based practice DPLI	<ul style="list-style-type: none"> • Familiarity • Good for small projects 	<ul style="list-style-type: none"> • Limited coverage available • Additional insured and indemnifying party NOT allowed • Extended reporting period NOT guaranteed
Project-specific DPLI by the engineering firm	<ul style="list-style-type: none"> • Coverage for the specific project • Customized coverage amount • Additional insured/indemnifying party allowed • Extended reporting period guaranteed • Subdesign consultants get protection as the additional insured 	<ul style="list-style-type: none"> • Additional cost • No coverage for design-builder’s design work
Project-specific DPLI by the design-builder	<ul style="list-style-type: none"> • Coverage for the specific project • Customized coverage amount • Additional insured/indemnifying party allowed • Extended reporting period guaranteed 	<ul style="list-style-type: none"> • Additional cost • Claims between design-builder and designer NOT covered • Designer may need to use additional professional liability protection
Project-specific DPLI by the owner	<ul style="list-style-type: none"> • Coverage for the specific project • Customized coverage amount • Additional insured/indemnifying party allowed • Extended reporting period guaranteed • Subdesign consultants get protection as the additional insured • Claim center 	<ul style="list-style-type: none"> • Additional cost • Prohibited by law in some states like Ohio

Annual-based practice DPLI is purchased by the design firm on an annual basis to protect against claims arising from professional negligence for all the design services performed by the firm. Widely used as a common type of DPLI in the highway industry, the annual-based practice policy is very familiar to both the engineering firms who provide the design services and the public owners. The research team also found that the annual-based practice DPLI has the advantage over project-specific DPLI of being less costly, so it is good for small design–build projects cost-wise. The disadvantage of the annual-based practice DPLI is that the available coverage amount will be limited because the policy is shared by multiple projects performed by the engineering firm. Moreover, there is no additional insured or indemnifying party allowed, and no ERP guaranteed, as there is no customizability for a specific project under the annual-based practice DPLI.

Project-specific DPLI is the policy provided for a specific project and is allowed to tailor coverages and limits to comply with the project risks and requirements. The researchers found that all the project-specific policies show some advantages and disadvantages in common, regardless of the purchaser of the policy. One of their big advantages is that they provide coverage for a specific project, eliminating any concern that the available coverage amount has been exhausted by other projects under the same policy, as is the case under the annual-based practice policy. Another positive aspect of project-specific policies is their customizability. With the customizable terms and conditions, the project-specific DPLI can have a customized coverage amount, add an additional insured and indemnifying party, and guarantee ERP as required by the owner. The common disadvantage of project-specific DPLI is the additional cost associated, as the project-specific policies are usually more expensive than the annual-based practice policies.

Other than the common features discussed above, each project-specific policy has its unique advantages and disadvantages because of the difference in the purchaser of the policy.

Project-specific DPLI by the engineering firm is purchased by the engineering firm to provide coverage for claims arising from design services caused by professional negligence for a specific project. This policy shares the same merits of the project-specific policy as discussed above. Under the project-specific DPLI by the engineering firm, the subdesign consultants, being the additional insured in the policy, can get such protection, too. Its unique disadvantage is that there is no coverage for the design–builder under the project-specific DPLI by the engineering firm, in the case that the design–builder in the project is performing in-house design work, as well.

Project-specific DPLI by the design–builder is another policy that provides coverage for claims arising from design services caused by professional negligence for a specific project. However, the policy is purchased by the design–builder. This policy shares the same merits of project-specific policy as discussed above, including the ability to provide coverage for a specific project, having customized coverage amount, adding an additional insured and indemnifying party, and guaranteeing ERP as required by the owner. The disadvantage of the policy is the additional cost, as with the other project-specific policies. Another disadvantage specifically with this policy is that the claims between design–builder and designers are not protected against each other because of an “insured vs. insured exclusion.” Therefore, the designer may need additional DPLI protection either from its own practice policy or added project-specific DPLI that is purchased by the engineering firm.

Project-specific DPLI by the owner is the DPLI acting as an insurance component of the owner-controlled insurance program that also includes other insurance policies, such as commercial general liability, builder's risk, contractor's pollution insurance, and etc. Through owner controlled insurance programs (OCIP), the owner arranges DPLI for the design-build team. Under this DPLI, the insured are the design professionals who perform professional services for the project. The owner would not be an insured under the policy, which avoids the case in which the "insured vs. insured exclusion" precludes its right to make claims to the design professionals. This policy shares the same merits as the other project-specific policies, as well, including the ability to provide coverage for a specific project, have customized coverage amount, allow an additional insured and indemnifying party, guarantee ERP as required, and provide subdesign consultant protection. One unique feature of project-specific DPLI by the owner is the claims process. From the owner's perspective, with a project-specific policy purchased by either the engineering firm or the design-builder, the owner may not be aware of any issues between the builder and designer. However, under an OCIP, the insurance company steps in and builds up a claim center to handle various insurance claims. It has been shown that handling claims becomes more efficient under this method, but at the same time, the owner is required to invest more in administration to manage the wrap-up insurance (Senate 1999). A consideration regarding implementing an OCIP is whether this program is prohibited by state law. In states such as Ohio, an OCIP cannot be implemented because it is prohibited by the state law. This research only found evidence of successfully launching an OCIP in the North I-25 Express Lanes Project in Colorado.

4.3.1.2 Decision factors influencing the selection of DPLI Types

Drawn from the comparison of different types of DPLI, the research team identified eight decision factors in selection of different types of DPLI: (1) affordability of insurance cost, (2) familiar terms and provisions, (3) customizable terms and coverage amount, (4) indemnifying owner allowed, (5) ease of claim process, (6) not affected by insured vs. insured exclusion, (7) fit for large project, and (8) fit for complex project.

The first six decision factors are derived from the policy dimension. By nature, these factors are considerations regarding the policy itself, which are summarized from the advantages and disadvantages of different types of DPLI. The last two decision factors are considerations from the project dimensions. According to the results from email interviews with DOTs, the researchers found that project size and project complexity are two project factors that DOTs are taking into account when selecting DPLI types.

Table 7 shows the eight selection factors including both policy dimension and project dimension, and how the factors influence the selection of the different types of DPLI. The relationship between the types of DPLI and the factors is described as very favorable (++), favorable (+), less favorable (-), and unfavorable (--). A very favorable (++) description indicates that for a particular factor, using the associated DPLI type will be very favorable. A favorable (+) description signifies that the type of DPLI shown is beneficial although not the best for this factor. A less favorable (-) description indicates the particular type will not contribute to the factor category positively. An unfavorable (--) description suggests that the type of DPLI, if selected, will very negatively influence the outcome regarding the factor category.

Table 7. Decision Factors of DPLI Selection

	Affordability of Insurance Cost	Familiar Terms and Provisions	Customizable Terms and Coverage Amount	Indemnifying Owner Allowed	Ease of Claim Process	Not Affected by Insured vs. Insured Exclusion	Fit for Large Project	Fit for Complex Project
Annual-based Practice Policy ¹	++	++	--	--	-	++	-	-
Project-specific DPLI by the Engineering Firm	+	+	++	++	+	++	+	+
Project-specific DPLI by the Design–Builder	-	-	++	++	+	--	+	+
Project-specific DPLI by the Owner	--	--	++	++	++	++	+	+

¹ Annual-based practice policy is always purchased by the engineering firm.

First, affordability of insurance cost measures the financial aspect of a policy. Cost of a policy is an aspect that cannot be neglected when selecting an appropriate policy for a project. Annual-based DPLI is typically more affordable than project-specific policies, as annual-based DPLI is shared by multiple projects performed by the engineering firm during a certain period of time. For project-specific policies, the policy purchased by the engineering firm is the most cost-efficient DPLI. One of the insurance experts commented that the engineering firm is in the best position to secure the policy money-wise because it typically has the best relationship and leverage with the insurance company due to project volumes. The project-specific policy by the design–builder is more expensive than that by the engineering firm due to two layers of duplicate policies that may be generated as explained in the previous section. The project-specific policy by the owner could be the most expensive policy according to this research. This stems from the policy being relatively new and without previous history and examples as benchmarks, putting the policy not in the best position to have the best price.

Second, familiar terms and provisions is a factor regarding the project participants' familiarity with terms and provisions under the policy. It would influence the execution and implementation of the policy. Considering this factor, the annual-based practice DPLI by the engineering firm is very favorable (++) as it has been in the industry for the longest period of time. The engineering firms are typically required to hold the annual-based practice policy to perform design service in the highway industry. Regarding project-specific policies, the one by the engineering firm is also favorable (+). Project-specific DPLI by the design–builder and the owner are less favorable (-) and unfavorable (--), respectively, taking their frequency and precedence of use in the industry into account.

Third, customizable terms and coverage amount reveals whether the policy terms and the coverage limit can be modified on a project-by-project basis. The annual-based practice policy has less flexibility of modifying specifically for one project because this policy is to cover all other projects in the engineering firm during the policy period, while the project-specific policy is designed for a specific project only. Thus, the annual-based policy is unfavorable (--) and all types of the project-specific policy are very favorable (++).

Fourth, indemnifying owner allowed indicates the possibility of the presence of an indemnity endorsement that holds the owner from any claims brought by a third party due to professional negligence under the policy. The researchers found that the annual-based practice policy cannot add an indemnity endorsement since this policy is difficult to tailor its terms, while project-specific policies are designed for a specific project so that the policy allows the owner stated as an indemnifying party, if necessary. Therefore, (--) and (++) are assigned, respectively, to annual-based practice DPLI and all three types of project-specific DPLI.

Fifth, ease of claim process is a consideration that describes whether the DPLI supports a smooth and efficient claim process or not. From this research, DPLI by the owner is very favorable (++) to the ease of claim process because of the involvement of an insurance company as a claim center. With the claims center being set, handling claims is more efficient under this method. DPLI by the engineering firm and the design-builder are shown to have comparable favorable level of ease of claim process (+) because the policy is set to handle the claims under a specific project only. Annual-based corporate DPLI is less favorable (-), compared with the project-specific policies since the claims from various projects are to be handled under the same policy by the insurance company.

Sixth, not affected by insured vs. insured exclusion reflects the coverage issue regarding the “insured vs. insured exclusion.” From the discussion in the previous section, the “insured vs. insured exclusion” causes coverage gaps under project-specific DPLI by the design–builder, while other policies do not have that issue. Therefore, taking this factor into consideration, project-specific DPLI by the design–builder is unfavorable (--), while others are favorable (++).

Lastly, fit for large project and fit for complex project demonstrate the appropriateness of a policy to be used in large/complex policy. From the email interview with DOTs, the research team found that, typically, DOTs may consider the use of project-specific DPLI associated with large and/or complex projects. As the size and complexity of the project grow, the associated risk will drive the owner to shift to project-specific policies. Thus, project-specific policies are assigned as favorable (+) and annual-based corporate policies are assigned as less favorable (-) in light of fitness for large/complex projects.

In summary, the annual-based practice policy has great advantages in terms of cost efficiency and familiarity. Since most engineering firms hold their own practice policy, they do not need to purchase an additional policy to cover themselves. However, this policy lacks customization because the practice policy is being used for all other ongoing projects of the engineering firm. On the other hand, the project-specific policy is generally allowed to tailor its policy with regard to the project requirements. The project-specific DPLI by the engineering firm is still better than one by the design–builder in terms of cost efficiency because the engineering firm may need to purchase an additional policy or use their practice policy to cover themselves from claims between the design–builder and engineering firm

under the project-specific DPLI by the design-builder. Project-specific DPLI by the owner may overburden the owner with spending additional money, but, in return, the insurance company as a claim center will handle the claim easily and quickly.

4.3.2 Considerations in determining coverage amount requirements

DPLI requirements from state DOTs typically set out the minimum threshold both per claim and in aggregate. Since the DPLI coverage is on a claim-made basis, not an occurrence basis, the DPLI is not available on a per-occurrence basis. The researchers found that DOTs differ when it comes to the minimum coverage amount requirements for DPLI policy. The minimum coverage for per claim is from \$1M to \$10M, and aggregate limits vary from \$1M to \$25M.

Based on the answers provided in the email interview of state DOT representatives, this research determined four factors that play a role in the decision on minimum coverage, as shown in Figure 19: (1) the size of the project, (2) the level of risk, (3) contract price, and (4) the complexity of the project. Since each highway project is unique, these project characteristics such as project size and complexity are considerable factors when determining the minimum DPLI coverage. In addition to project size and complexity, DOTs decide the minimum amounts based on the risk in the contract. If the project has high-risk items, DOTs may require increased minimum coverage amounts. The insurance sections of DBAs from state DOTs also indicate the minimum coverage requirement that is mostly classified according to contract price (if classified minimum coverages are in use), which draws the contract price to be an explicit factor in determining the minimum coverage amount.

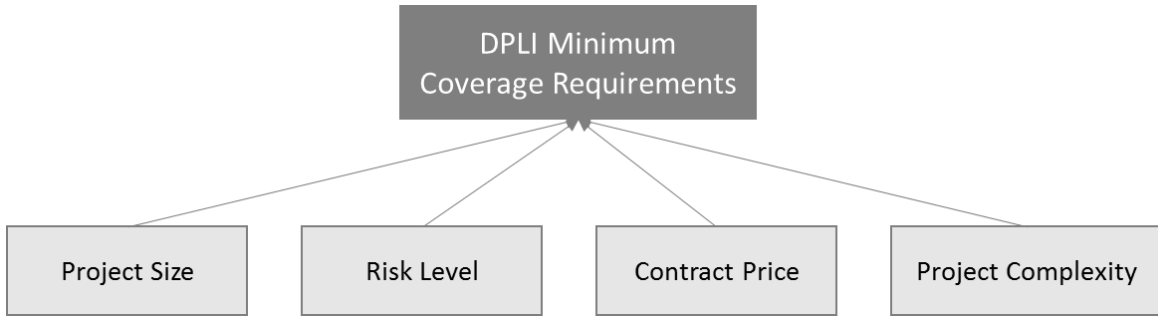


Figure 19. Factors that Influence the DPLI Minimum Coverage Amount

Chapter 5 Conclusions

The research provides a synthesis of emerging trends in design professional liability insurance in the design–build environment. Through surveys and interviews with subject-matter experts and content analysis of documents from state DOTs, this study identified emerging issues regarding design liabilities and explored the state of the practice in design professional liability insurance policies for design–build highway construction projects.

The research found the areas of challenges of design liability in the design–build environment, including: (a) issues related to design claims in design–build, (b) heightened standard of care in design–build, and (c) change in design professional liability insurance (DPLI) due to design–build. With respect to these areas, several challenges were identified:

- Number of design claims between design–build (DB) and design–bid–build (DBB)
- Design claim sources
- Involvement of insurance company during the pre-award phase
- Heightened standard of care language in DB and DBB
- Influence of heightened standard of care languages on design claims
- Gaps with DPLI coverage as to heightened standard of care
- Types of DPLI in DB
- Influence of DB on changes in DPLI policy

With regard to state DOTs’ state-of-the-art practice in design professional liability insurance policy for design–build highway construction projects, the research examined the state of the practice in the following areas: (a) fundamental types of DPLI available for design–build projects, (b) significance and variations of DPLI policy elements with regard

to state DOTs' specification requirements, and (c) decision-making considerations concerning DPLI. The findings of each area are presented as follows:

(a) Fundamental types of DPLI:

- Annual-based practice DPLI
- Project-specific DPLI by the engineering firm
- Project-specific DPLI by the design–builder
- Project-specific DPLI by the owner

(b) Significant elements under DPLI:

- Prime and additional insured(s)
- Indemnity party
- Coverage amount
- Extended reporting period
- Retroactive date
- Supplemental policies

(c) Decision-making considerations:

- Considerations in selection of DPLI types
- Considerations in determining coverage amount requirements

Based on the findings of this research, Table 8 summarizes state DOTs' practices regarding DPLI requirements in the DB environment.

Table 8. Summary of State DOTs' Practice in DPLI Requirement

		Annual Practice Policy	Project-Specific Policy	Minimum Per Claim (\$)	Minimum Aggregate Limit (\$)	Indemnity Endorsement	Extended Reporting Period (year)	Retroactive Date	Supplement Policies
Georgia DOT			X	1M	N/A		5	X	
Maine DOT		Not Specified		1M	1M		N/A		
Idaho DOT		Not Specified		N/A	1M		1		
Caltrans		X	Optional	2M	2M		3	X	
Colorado DOT		Not Specified		2M	2M		3	X	
Connecticut DOT	- Under \$25M		X	N/A	2M		3	X	
	- Under \$50M		X	N/A	3M		3		
	- Under \$100M		X	N/A	4M		3		
	- Over \$100M		X	N/A	5M		3		
Florida DOT	- Under \$30M		X	N/A	1M		N/A		
	- Under \$75M		X	N/A	2M		N/A		
	- Over \$75M		X	N/A	5M		N/A		
Mass DOT		Not Specified		1M	1M	X	5	X	
Mississippi DOT		Not Specified		3M	5M		N/A		
Missouri DOT	- Under \$50M		X	1M	1M		5		
	- Over \$50M		X	10M	10M		5		
Montana DOT		Not Specified		1M	1M		N/A	X	
Ohio DOT	- Small projects	X		1M	1M		3	X	
	- Large projects		X	10M	10M		5	X	
Arkansas DOT		X	Optional	10M	10M	X	5	X	X
South Carolina DOT		Not Specified		10M	10M		8	X	
Texas DOT		X	Optional	5M	25M	X	5		X

In summary, it has been observed from this study that design–build project delivery has imposed challenges on issues related to design liability in the design–build environment. The study found industry professions are held to different perceptions and understandings toward these issues, considering their different roles of participation in the design–build projects. While the change in design liability and the challenges regarding design professional liability insurance are significant in design–build projects, state DOTs are observed putting effort into exercising various strategies in practice to mitigate the associated risk. The study concludes that with better understanding of the design–build relationship and design liability in design–build and with proper considerations in strategies in practice of DPLI, the challenges and risks associated with design liability and DPLI are manageable in design–build projects.

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