ACEC Massachusetts
July 23, 2019

Public Infrastructure Challenges, Risks and Opportunities for Consulting Engineers: P3s and DB

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Public Infrastructure Challenges, Risks and Opportunities For Consulting Engineers: P3s and DB

- Industry Trends in Infrastructure: P3s and DB
- Design Development Risk
- Significant and Concerning Claims Experience
- No Longer Simply Large Firm Problem
- Problem is National in Dimension

Public Infrastructure Challenges, Risks and Opportunities for Consulting Engineers: P3s and DB

Statement of the Problem and the Challenge

- Substantial Increases In Final Design and Construction Cost **Compared** to DB Contract Award Amount
- Increases Manifest During Post-Award Design Development Process
- Design-Builder Has No Contractual Cost Adjustment Remedy From Project Owner
- Design-Builder Seeks Alternative Source for Recovery of "Cost Overrun" – Professional Liability Claim Against Consulting Engineer

Focus on the Problem and the Challenge

- Design Development Risk in P3s and DB: Perfect Storm
- Professional Liability Claims Experience For Consulting Engineers in P3s and DB
- Meeting the Challenge

Design Development Risk in P3s and DB: Perfect Storm

Design Development Risk

Definition: The risk of defects in the basis, standards, criteria, details, degree of prescription, assumptions articulated or underlying:

(a) preparation of conceptual or preliminary design ("preliminary design") included in the Owner's procurement documents;

(b) Design-Builder and its Consulting Engineer's understanding and assumptions as to the preliminary design including pre-award conceptions and in preparation of pre-award technical proposals as to basis for further design development;

(c) Design-Builder and/or Consulting Engineer's pre-award assessment of risk and contingencies associated with the development of the pre-award design and potential or probability of variations therefrom; and

(d) Design-Builder's pricing of design and construction cost and contingency associated with the development and finalization of preliminary design.

Design Development Risk in P3s and DB: Perfect Storm

Roles and Risks of DB Project Participants: Relevance and Impact on Design Development Risk

Project Owner

- Imprudent selection of DB
- Unbalanced Risk Allocation Approaches
- Highly Prescriptive and Mandated Design Requirements and Details
- Ambiguous Design Criteria or Requirements
- Role and Scope of Review of Design-Builder Design Submittals
  - Substantive comments
  - Intrusion / interference
  - Preferences / imposing judgments
  - Delays / disruption in review process
- Unreasonable Delays in Design Review Process
- Subsurface Conditions Risk Allocation and Disclaimers
- Overly Broad Disclaimers
- Defense and Indemnification Obligations of Design-Build Team for Errors, Omissions and Other Deficiencies in Owner-Furnished Design and Reference Information or Documents
- **MBTA Greenline Extension Contract Documents**

Design Development Risk in P3s and DB: Perfect Storm

Roles and Risks of DB Project Participants:
Relevance and Impact on Design Development Risk

Design-Builder

- Aggressive Bid Pricing
- No or Inadequate Design Development Contingency
- Unreasonably Restrictive Scope of Consulting Engineer Pre-Award Design and Investigation/Verification Services
- Unreasonable Risk Allocation (e.g., quantity overrun contractual liability), and heightened standard of care contractual terms
- Insistence on Payment Withholding and Backcharge Provisions that Diminish or Negate Otherwise Available Professional Liability Insurance Coverage

Design Development Risk in P3s and DB: Perfect Storm

Roles and Risks of P3 and DB Project Participants: Relevance and Impact on Design Development Risk

Consulting Engineer

- Failure to Comprehend or Clarify Project Owner Design Criteria, Standards or Requirements
- Failure to Recommend Investigations, Studies or Further Design Development During Pre-Award Phase
- Failure to Adequately Identify, Evaluate and Advise as to Design Risks and Potential Post-Award Consequences
- Delays in Preparation of Design Submittals
- Failure to Adhere to Professional Standard of Care in Design Development Process

Design Development Contingency

Design-Builder's Pricing Should Include Design Development Contingency to Address Costs Due to:

- Natural progression of design development following contract award
- The recognition that optimistic, minimally-compliant or aggressive bid (proposal) design assumptions may not be accepted by the owner
- Variables such as owner preferences, unreasonable regulatory interpretations, delay in third-party approvals may impact design development process
- The level of effort, degree of technical support, detail or engineering validation required by the owner may exceed what is customarily accepted in DBB
- Errors, omissions or other deficiencies in proposal design or design development services that do not rise to the level of professional standard of care departure.

Design Development Contingency

As a Massachusetts Superiour Court has recently commented in the context of a design-builder claim asserted against a consulting engineer:

> "A number of experts testified concerning industry standards regarding the amount of contingency that a contractor should include when bidding a design/build project; consensus seemed to be that cost increases in the range of 10% should be expected. It is unnecessary for the court to find as a fact what the proper percentage for contingency was in this case; indeed, an appropriate contingency is undoubtedly dependent on the project and the amount of time available to the engineering team to advance toward a final design before bid submission. All of the experts, however, agreed, and the court finds, that in design/build projects weights, complexities and therefore construction costs invariably increase after the contract is awarded as design development proceeds to the final approved-by-owner construction design."

- The Middlesex Corporation, Inc. v. Fay, Spofford & Thorndike, Inc., Commonwealth of Massachusetts, Superior Court, Civil Action 15-02992-BLS1, Memorandum of Decision, June 28, 2019, pp. 13-14.

Professional Liability Claims Experience for Consulting Engineers in P3s and DB

Design Development Risk

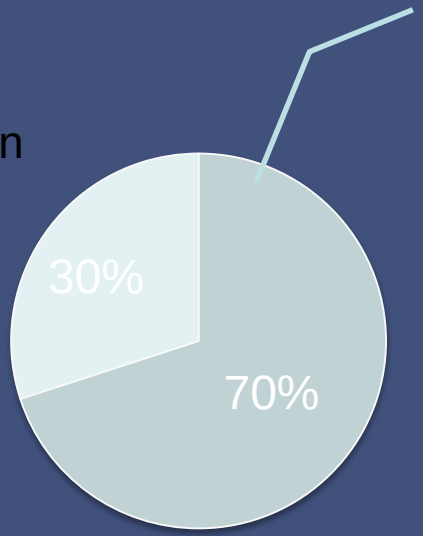
- Professional Liability Claims Based on Design Development Risk
  - Severity
  - Frequency
- Design Development Risk Claims Represent a Major Professional Liability Exposure for Consulting Engineers in P3s and DB

Professional Liability Claims Experience for Consulting Engineers in DB

The professional liability claims experience for Consulting Engineers in DB

What are the sources of professional liability claims against Consulting Engineers on DB projects?

- Construction and design defects in completed project work



- 40% based on pre-award services
- 30% based on post-award services

- Claims asserted prior to construction start and based on services performed prior to construction start

Professional Liability Claims Experience for Consulting Engineers in DB

Design Development Risk

A = Actual cost of design and construction
B = Design-Builder's Contract Price based on conceptual design
C = Difference – i.e., the foundation of a professional liability claim by the Design-Builder against the Consulting Engineer

Professional Liability Claims Experience for Consulting Engineers in DB

Key Issues: Design Development Risk

1. Application of the Professional Standard of Care to Professional Liability Claims Arising out of Design Development Risk?
2. Relevance of Project Owner Procurement, Contractual and Risk Allocation Practices to Design Development Risk
3. Relevance of Design-Builder Bid Pricing, Estimating and Contingency to Design Development Risk
4. How do these Issues relate to Availability, Terms and Pricing of Project-Specific Professional Liability Insurance

Professional Liability Claims Experience for Consulting Engineers in DB

Professional Standard of Care – Application to Design Development Risk

- Reasonable care under the circumstances
  - Scope of services
  - Time constraints
  - Roles, responsibilities and risks of Owner and Design-Builder
  - Other factors and considerations
- Role of expert opinions
- No presently recognized industry standard: Much subjectivity and advocacy in expert opinions

Meeting the Challenge

- Need for industry standards for evaluation of design development risk claims – **Best Practices Guidelines – Design Development Risk**
- Factors to be considered in those Guidelines include:

1. The degree of design development, detailing and prescription furnished by the Owner and included in the RFP.
2. The Owner's approach to design and related (e.g. DSC) risk allocation.
3. Disclaimers and non-reliance provisions in the RFP as to preliminary design risk; and defense and indemnification obligations as to Owner-furnished preliminary design defects.
4. The extent and reasonableness of validation and verification (investigation, studies, etc.) expected or required of the Design-Builder and/or its Consulting Engineer with respect to the Owner-furnished preliminary design (or related reports or information).

Meeting the Challenge

5. The standards required of the Design-Builder in the DB Contract as to compliance with preliminary design, and the extent to which those standards are flowed-down to the Consulting Engineer, and conflict with the latter's standard of care obligation.
6. The relationship and compatibility between preliminary design furnished in the procurement documents and other Owner-furnished information, investigations, etc. (e.g. subsurface); and how risk is allocated in those other respects.
7. The scope of services and professional standard of care reasonably expected of the Consulting Engineer in evaluating the preliminary design, verifying Owner-furnished information, and in preparing a proposal design; and how that standard is defined and applied relative to the cost of designing and constructing the approved final design and construction documents.

Meeting the Challenge

8. Reasonable standards for design development contingency to be priced in the DB Proposal and maintained by the Design-Builder.
9. The contractual (legal) significance of the Owner's acceptance of the Design-Builder's Technical Proposal; and how alternative technical concepts relate to the allocation of preliminary design risk.
10. The role of professional liability insurance for the Consulting Engineer in the context of design development design risk, and best practices in specification and procurement of coverage.

Meeting the Challenge

- Improving Upstream and Relational Risk Allocation in DB
  - Transportation Research Board, Guidelines for Managing Geotechnical Risks in Design-Build Projects, NCHRP Research Report 884 (September, 2018)
  - Essex, R., Hatem, D., Reilly, J., "Alternative Delivery Drives Alternative Risk Allocation Methods," paper to be presented at the North American Tunneling Conference, Washington, D.C., 24-27 June, 2018
  - D.J. Hatem, Subsurface Conditions and Design Adequacy Risk Allocation in Design Build: Dynamics, Interactions and Interdependencies, Tunnel Business Magazine, October 2018
- Progressive Design-Build/Scope Validation
- Industry Convocation to Discuss Relevant Issues Relating to Design Development Risk
- Developing Best Practice Guidelines – Design Development Risk

Meeting the Challenge

Data Collection and Validation

Collect Data on Design-Build and P3 Projects over the Last 10 Years

- With construction values of $500m, or more
- That are either completed or in which design is 90% or more complete

For each subject project, ascertain

- Whether any claims were made by the Design-Builder against its Consulting Engineer
- The amount and bases (e.g. errors/omissions in design development; errors/omissions in RFC design) of the claims
- Resolution of the claims
- Professional Liability Insurer financial contribution to resolution
- Consulting Engineer status (e.g. ENR 100 Firm)
- Amount of Design-Build Contract Price
- Amount of Owner's Estimate of Construction Cost
- Amount of Design-Builder Design Development Contingency Included in its Price

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