



Rethinking and Recalibrating Design-Build

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December 2020

In the last 18 months, the signs and signals, if not alarms, that something is seriously veering off the tracks in Design-Build (“DB”) delivery on major public infrastructure projects have become increasingly evident by comments and actions of a number of diverse and important constituencies in the construction, design and insurance industries. The root causes of many of the negative experiences and trends on those DB projects arise out of certain Owner procurement and contractual practices that are adversely, albeit differentially, impacting Contractors, Consulting Engineers and their professional liability insurers; and resulting in their (suspended or permanent) withdrawal from DB projects. Those experiences and trends need to be urgently arrested and corrected, and certain DB procurement and contractual practices recalibrated.

Critical Questions

- What are the adverse experiences on these DB delivery projects, who are they impacting, and why?
- Why is correction of those experiences and related developments important to the future viability and continued promise and

sustainability of DB delivery?

- What can and should be done, and when, to address those negative experiences and developments, and to recalibrate DB on major public infrastructure projects?

What are the adverse experiences on these DB delivery projects, who are they impacting, and why?

Construction Contractors

Major construction contractors are exiting the North American DB (and public-private partnership, or P3) public infrastructure project market.¹ Those contractors point to the challenges, and the significant and substantial risks of committing to a fixed (or guaranteed maximum) price adequate to undertake and encompass responsibility for the design and construction of a major and complex public infrastructure project. These chal-

¹ See T. Schleifer, *Seeking A Fix to the Fixed-Price Conundrum*, Eng. News-Rec. (Nov. 18, 2019); T. Schleifer, *View Point, Contractors and Design-Build: Let’s End Risk-Shift Madness*, Eng. News Rec. (March 2/9, 2020); Jamie Peterson, *What is Wrong with Design-Build Contracting*, Under Constr. (Winter 2019); Constr. Super Conf. (December 16-18). Some of the concerning implications for consulting engineers of this development are discussed in D.J. Hatem, *Letter to the Editor*, published in Eng. News-Rec. (December 16, 2019).

lenges and risks particularly derive from a number of critical uncertainties and unknowns at the point required for fixed price commitment.

For the most part the issue is not lack of clear project scope or boundaries. Those typically are sufficiently communicated and understood. Rather, the problems derive from insufficient comprehension, definition, consistency and constancy in owner and other stakeholder expectations and requirements governing both design and construction.² The number and varying interests of stakeholders – beyond the project owner or sponsor – who likely will have significant post-GMP influence in the definition, development and approval of those expectations and requirements as realized in the design development process and construction execution - adds yet further uncertainty

²For an excellent article discussing issues and concerns in the use of design-build for urban subsurface projects, see R. Drake, W. Hansmire, *Getting Metro Owners the Best Value from Their Major Underground Projects*, 2020 Proceedings, North American Tunneling, Society for Mining, Metallurgy and Exploration, PP. 256 – 262 (raising issues as to concerns as to use of DB on urban subsurface projects, such as limitations in use of performance specifications; and the premium cost to the owner of transferring substantial design, and construction and subsurface conditions risk to the design-builder).

when their expectations do not align or coincide with reasonable assumptions underlying the Design-Builder's fixed price commitment.

Contractors also point to imbalanced risk allocation terms embodied in DB contracts. Those terms allocate substantial risk to the Design-Builder beyond the risks typically allocated to a Contractor in Design-Bid-Build, or risks that are not within the reasonable ability of the Design-Builder to control or manage³. Further, the practice of some Owners in mandating compliance with highly detailed and overly-prescriptive design criteria or standards impose substantial risk on the Design-Builder while simultaneously reducing the latter's ability to exercise independent professional judgment and adequate discretion and control in the design development and optimization process.

From the perspective of the Contractor, as Design-Builder, these uncertainties, unknowns and risks are, for the most part, beyond the reasonable ability of the Design-Builder to control and manage, especially within the constraints of fixed-price and imbalanced risk allocation contractual terms. In that environment, not losing money or, at best, breaking-even are the realistic goals that in many cases define "success". Not a way to run a successful business.

Consulting Engineers

Consulting Engineers point to the marginalization and commoditiza-

³D.J. Hatem & P. Gary, ed., *Public-Private Partnerships and Design-Build: Opportunities and Risks for Consulting Engineers*, Chapter 12, Washington: American Council of Engineering Companies (3d ed., 2020); D.J. Hatem, "Improving Risk Allocation on Design-Build Subsurface Projects", *Tunnel Business Magazine*, June 2020.

tion in their roles in the design development process; their limited service scope; barely sustainable compensation level; frequent and substantial payment withholdings and backcharges; and significant and substantial professional liability risk exposure arising out of "cost overrun" claims asserted by Design-Builders against them. Many of the same uncertainties, unknowns and risks perceived (and experienced) by Design-Builders as seriously concerning to them provide the underlying foundation, genesis, motivation and mechanism for many of the Design-Builder professional liability claims against their Consulting Engineer subconsultants⁴.

Design Builder professional liability claims against Consulting Engineers are typically combined with payment withholding and backcharges imposed by the Design-Builder upon the Consulting Engineer, further exacerbating by the Consulting Engineer's ability to successfully perform in accordance with required contractual and professional performance standards and schedule expectations.

Professional Liability Insurers

Owners, Design-Builders and Consulting Engineers involved in DB public infrastructure projects critically depend upon dedicated, or project-specific professional liability insurance ("PSPL") coverage for claims and liabilities due to standard of care departures of Design-Builders and their Consulting Engineers. PSPL

⁴ See D.J. Hatem & P. Gary, ed., *Public-Private Partnerships and Design-Build: Opportunities and Risks for Consulting Engineers*, Chapter 12, §12.4, Risk Allocation and Professional Liability Issues for Consulting Engineers on P3 and DB Projects, Washington: American Council of Engineering Companies (3d ed., 2020).

coverage has always been provided by specialty professional liability insurers. PSPL, rightfully so, has been considered an essential component of an effective risk management program for design and related professional liability exposures on major infrastructure projects in all delivery approaches, including DB and (P3) projects⁵.

The significant losses experienced by the limited class of specialized insurers providing PSPL attributable to Design-Builder professional liability claims against Consulting Engineers have been and are **severe**, leading some of the more responsible and long-standing PSPL insurers to cease or suspend underwriting PSPL coverage on DB (and P3) projects. The problems posed by this trend are serious and, in the opinion of this author, will further progress in a negative and retreating direction in the months ahead with adverse consequences for **all** project participants in DB (and P3) infrastructure projects.

Why is correction of those experiences and related developments important to the future viability and continued promise and sustainability of DB delivery?

The success of DB delivery in the public infrastructure context significantly depends upon the ability of Owners to choose from a relatively broad and diverse group of qualified and experienced DB Teams, resulting from a procurement and

⁵ See D.J. Hatem & P. Gary, ed., *Public-Private Partnerships and Design-Build: Opportunities and Risks for Consulting Engineers*, Chapter 12, §12.6, Risk Allocation and Professional Liability Issues for Consulting Engineers on P3 and DB Projects, Washington: American Council of Engineering Companies (3d ed., 2020).

selection process that emphasizes qualifications-based selection among a sufficient population of excellent competing DB Teams.

Clearly, the exit of major Contractors and Consulting Engineers from the DB project arena significantly detracts from the Owner's ability to achieve those procurement strategies and objectives.

The problems previously addressed and negative experiences of Contractors and Consulting Engineers are, by no means, confined to a limited segment of large Contractors and Consulting Engineering firms. Middle and smaller sized firms are also adversely affected. Those firms serve in lower-tier positions on large-scale DB projects and may also serve in a prime (or multi-prime) position on small-scale DB projects.

As for the professional liability insurers, the impact and pervasiveness of these negative experiences and their losses goes far beyond the limited class of specialized insurers providing PSPL. The unavailability of PSPL, and the limited capacity and available coverage amounts offered by the PSPL insurers will result in the need for Design-Builders and their Consulting Engineers to require contractual limits of liability (in significantly lower amounts than customarily and conventionally considered acceptable) and other contractual risk allocation protective terms.

Also, and perhaps even more significantly and concerning, the unavailability or limited available capacity of PSPL will necessarily result in more dominant and front-line reliance of Consulting Engineers on their practice (or corporate, standard) professional liability insurance to address

professional liability risk, and to defend and indemnify Design-Builder claims on a primary and more direct, imminent and heightened excess exposure basis⁶. Thus, diminished availability, or non-availability of PSPL insurance will have a domino and cascading effect on practice professional liability insurers, predictably resulting in higher deductibles, and higher premiums and, probably, lower available coverage limits and potential "DB" exclusions in practice insurance.

For the present, Owners appear to be benefitting and relatively pleased with the way DB is functioning; however, that DB model is broken and, in the longer (but not too far distant) term, Owners also will experience the negative impacts and consequences (e.g. less competition, less qualified DB teams, PSPL insurance limitations or unavailability).

What can and should be done, and when, to address those negative experiences and developments, and to recalibrate DB on major public infrastructure projects?

DB Procurement and Contractual Practices

The root causes of the problems in DB delivery derive from certain procurement and contractual practices of Owners requiring Design-Builder commitment to a fixed-price prior to possessing sufficient knowledge pertinent to (eventual) final design and construction approaches and a reasonable opportunity to identify and evalu-

⁶D.J. Hatem, "Changing Professional Liability Practice Insurers; Perils for Consulting Engineers Involved in Design-Build Projects," *Design and Construction Management Professional Liability Reporter* (Donovan Hatem LLP.) May 2019).

ate project risks. These problems are exacerbated by imbalanced risk allocation provisions in the prime DB Contract, the explicit terms or implications of which typically flow down to the Consulting Engineer.

The overarching and macro question is **when** can sufficient understanding of design and construction approaches reasonably and realistically be known in a manner to adequately and realistically inform commitments as to contractual pricing and risk allocation terms.

On complex DB infrastructure projects, it is neither realistic, reasonable, nor fair to expect that such an understanding can or should be known or knowable at the time of DB contract execution.

The acute problems associated with procurement and contractual practices in DB infrastructure projects that (a) require a fixed price at time of initial contract award and (b) mandate imbalanced risk allocation terms, need to be corrected and a more sensible path forward developed. In general, the solution should allow for deferral of contractual commitments as to final price and risk allocation terms until the Design-Builder has had a reasonable opportunity to understand the required design and construction approaches, and the site, subsurface and other relevant conditions and constraints (physical and political) in which those approaches will materialize⁷.

Progressive DB, in the opinion of the author, is a significant step in

⁷ As to subsurface conditions risk, in particular see D.J. Hatem & P. Gary, ed., *Public-Private Partnerships and Design-Build: Opportunities and Risks for Consulting Engineers*, Chapter 12, §12.3.2, Washington: American Council of Engineering Companies (3d ed., 2020); D.J. Hatem, "Improving Risk Allocation on Design-Build Subsurface Projects," *Tunnel Business Magazine*, June 2020.

the right direction to correct some of these root causes and resultant problems in conventional DB. PDB has the attribute of early contractor involvement in the design development process⁸. Early contractor involvement in PDB pro-

⁸ There are several excellent sources that discuss the utilization of PDB and CM/GC generally, see M.C. Loulakis, *A Look at Progressive Design-Build in the Water Sector* (June 4, 2013); J. T. Folden, *Construction Management at Risk and Progressive Design-Build*, Maryland Dept. of Trans; D.D. Gransberg and K. Molenaar, *Critical Comparison of Progressive Design-Build and Construction Manager/General Contractor Project Delivery Methods*, Trans. Res. Rec. (2019); J. Reilly & R.A. Sage, *Benefits and Challenges of Implementing Construction Manager/General Contractor Project Delivery: The View From the Field*, Chapter 3; *Alternative Procurement & Contracting for Megaprojects*; and D.D. Gransberg & K.R. Molenaar, *Critical Comparison of Progressive Design-Build and Construction Manager/General Contractor Project Delivery Methods*, Trans. Res. Rec. (2019).

Other sources more particularly focus on the application and advantages of PDB in the specific context of tunneling and other major subsurface projects. See I.G. Castro-Nova, G.M. Gad & D.D. Gransberg, *Assessment of State Agencies' Practices in Managing Geotechnical Risk in Design-Build Projects*, Trans. Res. Rec. (2017); I.G. Castro-Nova, *Geotechnical Risk Decision Tools for Alternative Project Delivery Method Selection*, Iowa St. U.; D.D. Gransberg & B. Cetin, *Subsurface Risk Management Tools for Alternative Project Delivery*, ASCE Geo-Congress (2020); *I-70 Twin Tunnels Risk Assessment and Project Delivery Selection*, Colorado Dep't of Trans. Innovative Contracting Advisory Committee; M. Fowler, M. Keleman, C. Fischer, M. Hogan & S. Kim, *I-70 Twin Tunnels Widening Using Drill and Blast Under CM/GC Contract*, Soc'y for Mining, Metallurgy and Exploration Inc (2015); J. O'Carroll, A. Thompson & T. Kwialkowski, *A Study in the Use of Design-Build for Tunnel Projects*; S.V. Stockhausen, E. L.D. Sibley and D. Penrice, *Progressive Design-Build – Is it Coming to a Project Near You?*; D. Pelletier, J. Willhite, A. Thompson, B. DiFiore, J. Wallace, *CM/GC Delivery Method For Federally-Procured Projects: A Case Study on the Independent Cost Estimating Process*, Society for Mining, Metallurgy & Exploration, 2020 Proceedings, North American Tunneling, pp. 249-255; N. Sokol, M. Jaeger, J. Sucijsky, *Progressive Design-Build in Silicon Valley*, Society for Mining, Metallurgy & Exploration, 2020 Proceedings, North American Tunneling, pp. 273-281.

vides meaningful and significant opportunities to achieve risk allocation balance⁹. Meaningful involvement, interaction and collaboration among the Design-Builder in PDB, and the Owner, on DB public infrastructure projects should serve to improve their mutual understandings and transparencies of risk perceptions and positively influence pricing and contingency realism. Pricing, contingency and contractual risk allocation should also be better informed by that interaction and collaboration¹⁰.

⁹ The Lake Mead Intake No. 3 project utilized the DB approach in a manner that maximized early contractor involvement during the RFP process in the identification, allocation and management of design and construction risks prior to final price and risk allocation contractual commitments. For more detailed discussion, see M. Feroz, E. Moonan, J. Grayson, *Lake Mead Intake No. 3, Las Vegas, NV: A Transparent Risk Management Approach Adopted by the Owner and the Design-Build Contractor and Accepted by the Insurer*, RETC Proceedings (SM&E 2009), pp. 559-65; J. Hurt, C. Cimiotti, *Lake Mead Intake No. 3*, Engineering 3 (2017), Elsevier, Ltd., pp. 880-87; M. Feroz, E. Moonan, J. Grayson, Southern Nevada Water Authority (SNWA) Risk Management Strategy to Create a Win-Win Situation for the Contractor, the Insurer, and the Owner on the "Lake Mead Intake No. 3", Proceedings of the 36th ITA-Aites World Tunnel Congress, 2010, Vancouver, Canada. Another article relating to that same project discusses the reasons for the Owner's selection of the particular DB approach based on a comparison with other delivery approaches, including DBB and CM/GC. M. Feroz, E. Moonan, J. McDonald, *Project Delivery Selection for Southern Nevada's Lake Mead Intake No. 3*, RETC Proceedings (SM&E 2009), pp. 503-15.

¹⁰ It is generally recognized that the advantages of PDB particularly on subsurface projects, include the ability of the Owner Team and DB or Contractor Team to be better informed and aligned as to both perceptions and realities of critical risk variables and contingencies – such as those involving evaluation of subsurface conditions and assessments as to final design feasibility and approach – prior to reaching contractual commitments on price and risk allocation terms. See D. Hatem, *Improving Risk Allocation on Design-Build Subsurface Projects*, Tunnel Business Magazine, June 2020; C.B. Farnsworth, R.O. Warr, J.E. Weidman, & D. M. Hutchings, *Effects of CM/GC Project Delivery on Managing*

DB (and P3) PSPL Insurance Solutions

There are equally serious and acute problems relating to the continued availability of PSPL Insurance – consequential to the fixed price and imbalanced risk allocation root causes – that need to be urgently addressed. The effective and longer-term solution to these problems, conjunctively and essentially, depends upon correction of the underlying procurement and contractual root causes and the implementation of improved, correlative underwriting practices.

Guidelines to improve the balancing of risk allocation in DB (and P3) projects should be developed that adequately, realistically and equitably account for the clearly defined respective roles and responsibilities of the Owner, Design-Builder and Consulting Engineer¹¹. Those

Process in Transportation Construction, J. Constr. Eng. Manage. (2016); D.Q. Tran & K.R. Molenaar, *Risk-Based Project Delivery Selection Model for Highway Design and Construction*, J. Constr. Eng. Manage. (2015); I.G. Castro-Nova, G.M. Gad, A. Touran, B. Cetin and D.D. Gransberg, *Evaluating the Influence of Differing Geotechnical Risk Perceptions on Design-Build Highway Projects*, ASCE-ASME; D.D. Gransberg, *Construction Manager – General Contractor Project Delivery*, TR News 285 (March-April 2013); N. Munfah, *Controlling Tunneling Project Risk Implemented by Alternative Delivery*, Tunneling Online; S. R. Kramer, *Using Alternative Delivery Methods to Increase Competitiveness on Tunnel Projects* (August 14, 2017); *Guide for Design Management on Design-Build and Construction Manager/General Contractor Projects*, Nat'l Cooperative Highway Res. Program; *Geotechnical Information Practices in Design-Build Projects*, Nat'l Cooperative Highway Res. Program, Nat'l Cooperative Highway Res. Program; *Guidelines for Managing Geotechnical Risks in Design-Build Projects*, NCHRP Res. Rep. 884; and S. Briglia & M.C. Loulakis, *Geotechnical Risk Allocation on Design-Build Construction Projects: The Apple Doesn't Fall Far From the Tree*, J. of the American College of Constr. Lawyers, Vol. 11, No. 2 (Sept. 2017); D. Mast, P. Nicholas, *Alternative Delivery For Tunnels*, Tunnel Business Magazine, December 2020.

¹¹ See D.J. Hatem & P. Gary, ed., *Public-Private Partnerships and Design-Build:*

guidelines may provide the foundation for enhanced underwriting of PSPL coverage. There is constructive and encouraging precedent for the development and implementation of improved and balanced risk allocation in procurement and contractual practices as a predicate and foundation mechanism to address serious reservations and withdrawals in insurance capacity on subsurface projects. That precedent resulted from a collaborative effort among Owners, Constructors, Consulting Engineers and insurers, culminating in the promulgation of the *Joint Code of Tunnel Practice for Risk Management of Tunnel Works*¹².

A similar constructive and collaborate effort should be undertaken to address the fixed price and imbalanced risk allocation issues – and consequent professional liability insurance market withdrawals and reduced capacity issues – in DB (and P3s). PSPL insurance is essential to

Opportunities and Risks for Consulting Engineers, Chapter 12, §12.1.5, Risk Allocation and Professional Liability Issues for Consulting Engineers on P3 and DB Projects, Washington: American Council of Engineering Companies (3d ed., 2020).

¹² The *Joint Code* is discussed in more detail in §12.6.2, pp. 670-71 (and accompanying footnote 389, pp. 672-74), in D.J. Hatem & P. Gary, ed., *Public-Private Partnerships and Design-Build: Opportunities and Risks for Consulting Engineers*, Chapter 12, Washington: American Council of Engineering Companies (3d ed., 2020). For further discussion of the *Joint Code*, see D.J. Hatem & D. Corkum, eds., *Megaprojects: Challenges and Recommended Practices* (American Council of Engineering Cos., 2010), ch. 18, ¶2.0, pp. 597-602. The availability of adequate insurance and surety capacities in P3 projects is essential to securing financing commitments of financiers and investors. The preceding sources discuss the critical importance of professional liability insurance capacity to comply with financier and investor insurance limits and other requirements. As to similar discussion relating to availability of adequate surety bonding capacity, see D. Mast, P. Nicholas, *Alternative Delivery For Tunnels*, *Tunnel Business Magazine*, December 2020.

effective and efficient risk allocation and risk management on DB projects. The continued availability of PSPL insurance, with reasonably appropriate coverage terms and limits, is currently in peril and distress. Once predicate and foundational corrections occur relative to the root causes, a holistic, recalibrated solution that embraces realistic and improved approaches to underwriting of PSPL insurance should be promptly implemented by the PSPL professional liability insurance market.

Conclusion

Some Owners may perceive the PDB approach - of deferring contractual commitments as to final pricing and risk allocation terms until a point after initial contract award - as exposing them to either increased project costs or cost overrun exposures, or risk allocation terms that are less favorable than they have achieved and are achieving presently in DB infrastructure projects. Also, some Owners may contend that fixed price and aggressive risk transfer approaches in conventional and prevailing DB procurement and contractual approaches have worked well for them; and, at least to this point, there is no discernable or compelling reason for any adjustment in those approaches.

The question is whether these or related perceptions and contentions are sound, sensible, or even sustainable in the long term, as evidenced by the recent and likely continued withdrawal of major Contractors, Consulting Engineers, and their professional liability insurers from DB infrastructure projects due to the procurement and contractual fixed price and associated imbalanced risk allocation terms.

In the opinion of the author, there is a compelling and present need to reassess the fixed price and imbalanced risk allocation approaches prevailing in many DB infrastructure procurements. These concerns are all the more intensified as infrastructure projects become even more complex, procurement periods even more contracted, and the need for such projects even more demanding.

The experience of the *past* amply demonstrates the advisability of balanced risk allocation; and the promise of success in the *future* for the design and construction industry vitally depends upon it. It would be both shortsighted and unfortunate to regard *present* economic challenges as opportunities and rationalization for continued imbalanced risk allocation. Disregarding or minimizing the longer-term significance of specific Contractor, Consulting Engineer and Professional Liability Insurers withdrawal from the DB arena is not reflective of a sound or prudent Owner assessment or approach. The underwriting of PSPL insurance on DB and P3 projects was never conceived or intended to substitute or, worse yet, compensate or indemnify, for claims derived from and motivated by either aggressive and unrealistic bid pricing and inadequate contingencies, or imprudent and imbalanced risk allocation between Owners and Design-Builders¹³.

Equally important, the corollary problems for **all** project participants of professional liability

¹³ Stated affirmatively, professional liability insurance is intended to provide coverage for claims and liabilities to the extent caused by breach of professional duty of the Consulting Engineer. The exposures noted in the accompanying text represent business or commercial risk beyond that coverage scope. See K. Collier, *Solving the Quandary of Designer Quantity Risk in Alternative Project Delivery with Insurance*, *Under Construction*, ABA Construction Law Forum (2020).

insurers increasing (temporary or permanent) withdrawal from offering adequate or any PSPL coverage on DB (and P3) infrastructure projects is genuinely and seriously concerning and in desperate need of an immediate solution.

It is time – beyond time – for DB delivery in the public infrastructure context to be recalibrated.

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