



# Design-Build and Public-Private Partnerships: Risk Allocation of Subsurface Conditions

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**P**roject Owners, especially in the public sector, are exploring and utilizing alternative project delivery methods, such as design-build (D-B) and public-private partnerships (P3s). Some of these projects involve significant subsurface work, raising the issue of how to allocate subsurface conditions risk. In the quest to eliminate or substantially reduce cost overrun exposure for all design and construction risks and to achieve cost certainty or guaranteed maximum price at contract formation, many public-sector Owners are adopting the unfortunate practice of allocating virtually all subsurface condition risk to private-sector project participants, including D-Bs, Concessionaires, and others. The concept of fair and balanced subsurface condition risk allocation applies, albeit in a modified approach, in the context of these alternative delivery approaches and should be adopted by Project Owners.

## Subsurface Projects and Delivery Methods

For most of the last century, the design-bid-build (D-B-B) delivery method has been the predominant approach for

delivery of most heavy civil infrastructure projects, including those entailing significant subsurface work, such as tunnels. D-B-B involves separate contractual relationships between the Project Owner, the Consulting Engineer, and the Constructor. Typically, the design phase precedes and is completed independently of the planning and implementation of the construction work. This bifurcation in the timely and functional interaction in roles and responsibilities between designers and constructors has proven especially problematic for subsurface projects in which both the design and construction means and methods are highly dependent upon the anticipated and actual ground conditions.

Both D-B and P3s provide an opportunity to improve the interaction, collaboration, and integration of the design and construction planning and processes on subsurface projects. By doing so, it is possible to reduce conflicts and disputes resulting from the traditional separation of design and construction functions and responsibilities. In D-B, a prime entity, the Design-Builder, is engaged by the Project Owner to both design and construct the project. In general,

a P3 involves a Development Agreement between a Public Owner and a Private Sector Concessionaire. Under the Development Agreement, the Concessionaire is responsible for financing, designing, and constructing the project, and typically for operating and maintaining the completed project for a prescribed concession period (often multi-decades in duration). The Concessionaire typically enters into an agreement – the Design-Build Agreement – with a Design-Builder to design and construct the project. Thus, virtually all P3s have embedded within their structure the D-B approach.

D-B and P3s provide the opportunity to transfer substantial risk associated with the design and construction processes from the Project Owner to other project participants, especially the Design-Builder in D-B, and the Concessionaire and Design-Builder in P3s. These risks generally include the consequences of design and construction performance deficiencies, as well as cost increases due to variations in anticipated and actually encountered subsurface conditions.

Both D-B and P3s have gained substantial popularity at the federal, state, and local levels, as the public sector seeks to contain cost overrun exposure and obtain private capital to finance infrastructure, tunnels, and other projects. Cost and schedule overruns due to unanticipated subsurface conditions represent a substantial concern for public owners (and financiers in P3s), and the attraction of “buying out” those concerns through risk allocation terms is paramount to them. For this reason, an increasing number of projects involving tunneling and other significant subsurface work are being delivered utilizing these alternate delivery methods.

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### Subsurface Conditions Risk Allocation

Project Owners have a significant number of potential and optional approaches to address risk allocation for subsurface conditions in D-B and P3 projects. The same sound and fundamental principles of fairness and balance in risk allocation that have been successful in D-B-B subsurface projects should be applied and adopted in the D-B and P3 context. These





principles, which translate into a number of beneficial practices that seem to work for Project Owners, include:

- Commissioning an adequate subsurface investigation program.
- Disclosing available subsurface data and reports to relevant project participants involved (or likely to become involved) in the design and construction processes.
- Limiting the use of disclaimers regarding data or other furnished information.
- Utilizing Geotechnical Baseline Reports (GBRs) to objectively define anticipated subsurface conditions and assist in contractual risk allocation.
- Including a differing site conditions clause in contract documents, thereby providing the potential for an equitable adjustment in time and/or money in the event that encountered subsurface conditions materially differ from those defined in the GBR and/or otherwise indicated in the Contract Documents.

However, in D-B and P3 projects involving substantial subsurface work, some Public Owners are departing from these salutary risk allocation practices and the principles of fairness and balance in risk allocation. This approach, to a degree, may be justified on the notion that it is consistent with the primary, if not exclusive, responsibility of the private-sector participants (i.e., the Design-Builder and the Concessionaire) for both design and construction as well as the appropriateness of the design and construction methods relative to anticipated ground conditions. That said, principles of risk sharing, including the utilization of differing site conditions clauses and GBRs, should be implemented in the D-B and P3 contexts, albeit in a modified approach.

Ignoring the principles of fairness and balance in subsurface conditions risk allocation in D-B and P3 projects will lead to the same heightened level of disputes and performance failures and default as has been experienced in D-B-B projects that have not adopted and implemented those principles. The



latter experience amply demonstrates that unfair and unclear risk allocation for subsurface conditions results in “extra-contractual” claims by the Contractor against both the Project Owner (e.g., for fraud, misrepresentation, or non-disclosed “superior knowledge”) and the Consulting Engineer (e.g., for professional negligence or negligent misrepresentation). Put another way, if the contract does not fairly allocate risk, the reality is that the Contractor may sense that it has no alternative but to pursue such “extra-contractual” remedies.

The key point to emphasize here is that many of the risk allocation principles that apply in traditional project delivery have important and continued vitality and application in the context of D-B and P3 projects. However, traditional experience and knowledge regarding subsurface conditions risk allocation must be adjusted to take into account the different roles and responsibilities of project participants and the risk allocation regime that prevails in D-B and P3 settings. It

should be expected that, for D-B and P3 projects, the Design-Builder will undertake relatively greater risk for variations in subsurface conditions. This is a direct result of his role in:

- defining the scope of and performing subsurface investigations;
- evaluating the resulting data;
- developing design and construction approaches suitable for the anticipated subsurface conditions; and
- having single-point, combined responsibility for both design and construction

Put another way, subsurface conditions may be impacted by design and construction approaches, and with D-B and P3 projects, those approaches typically fall within the scope, responsibility, and discretion of the Design-Builder. As such, it is not unreasonable for the Public Owner to have a greater expectation of risk transfer, relative to subsurface conditions, to the Design-Builder. Notwithstanding those factors however, subsurface conditions risk should be shared in a sensible manner based upon project-specific risk assessments.

### Looking Ahead

Both D-B and P3s are at a formative state in terms of contracting practices for subsurface projects. Presently, there are a number of major subsurface projects in progress that are D-B and P3 in nature. In addition, it is anticipated that over the next decade a number of other such projects will be initiated and in various stages of the design and construction processes. Now is the time for the underground design and construction industry to collaboratively develop risk allocation practices for subsurface conditions that are adaptive to the increased design and construction risk assumption by the private sector in the D-B and P3 delivery approaches. To ignore the unfortunate, aggressive, and unbalanced risk allocation trends adopted by some Public Owners in D-B and P3s will inevitably lead to problems, disputes, *and* defaults, as well as other project failures that otherwise may be avoidable.

While risk allocation practices for subsurface conditions on D-B and P-3 projects are being developed, geotechnical and other Consulting Engineers should adopt the following risk management practices:

- Prudent review of prime contract documents and other materials that may be “flowed down” and incorporated into the Consulting Engineer’s contractual obligations.

**If the contract does not fairly allocate risk, the reality is that the Contractor may sense that it has no alternative but to pursue such as “extra-contractual” remedies.**



Now is the time for the underground design and construction industry to collaboratively develop risk allocation practices for subsurface conditions that are adaptive to the increased design and construction risk assumption by the private sector in the design-build and public-private partnerships delivery approaches.

- Appreciation of the significant risk consequences associated with unfair risk allocation between the Public Owner and the Concessionaire and/or Design-Builder.
- Consideration of limitation of liability provisions.
- Inclusion of appropriate qualifications, disclaimers, and limitations in reports and other work products.
- Recommending the procurement of project-specific, professional liability insurance coverage.



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