

International Arbitration Alert

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FIDIC Issues “Emerald Book” for Underground Works

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International construction arbitration welcomes FIDIC's¹ latest standard form contract: the “Emerald Book”². Known more formally as *Conditions of Contract for Underground Works* the contract is designed to address issues that arise when dealing with sub-surface works and, in particular, it seeks to codify the cost and time impact of “Unforeseeable Physical Conditions”. The Emerald Book is an innovative contract. It is a rational but complex contract best suited for employers and contractors who are well advised on design and its direct relationship with the program and costs. We say this because the rights and obligations in the Emerald Book revolve around the Geotechnical Baseline Report (a new document in the world of FIDIC contracts) (GBR) and because the Emerald Book seeks to integrate cost and time through:

- A specific focus on the Contractor’s precise methods of working.
- A specific focus on the Contractor’s estimated rates of progress.
- By distinguishing between time-related rate items, quantity-related rate items and fixed rate items for the performance of the Works (thus creating greater transparency).

Put simply, the Emerald Book establishes both cost and time based on the descriptions in the Geotechnical Baseline Report such that deviation from the assumptions, statements or analysis in the GBR will lead to an adjustment in the Contract Price and the Time for Completion. Critics will assert that the Emerald Book is a Contractor’s charter³ leading to a generous cost-reimbursable paradigm. Its supporters will assert that the Emerald Book represents the optimum risk allocation when dealing with underground works.

The Key Provisions

- **Design:** The Works are to be designed by the Contractor according to the reference design by the Employer and the GBR. Given that the General Design Obligations are to be set out in the Employer’s Requirements (ERs), the ERs will need to set out whether fitness for purpose or reasonable skill and care obligations are required and/or a preferred design life (for some or all of the Works).

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- **Time and Cost Integration:** The Emerald Book requires clarity between the assumptions in the ‘cost model’ and those in the ‘time model’. Clause 8.2.1 states:

“The Completion Schedule shall demonstrate the Time for Completion of the Milestones based on the sequential logical links between the Milestones with Time for Completion that are *based on and consistent with the production rates provided by the Contractor in the Baseline Schedule* for the Excavation and Lining Works and with the Times for Completion of the other Works” (our emphasis)
- **Geotechnical Baseline Report:** This is defined as the geotechnical baseline report to be included in the Contract and which describes the subsurface physical conditions to serve as the basis for the execution of the Excavation and Lining Works, including design and construction methods, and the reaction of the ground to such methods. The GBR (like the Works Information in NEC forms of contract) is of fundamental importance: *“The GBR sets out the allocation of the risk between the Parties for such subsurface physical conditions”*. All subsurface physical conditions not addressed in the GBR shall be considered ‘Unforeseeable’. Purely numerical differences in the physical conditions described in the GBR and encountered during the works do not provide sufficient basis for an adjustment in compensation or Time for Completion (for example, a permeability outside the range specified in the GBR is not sufficient, unless the water seepage is higher than the limit specified in the GBR).
- **Extension of Time:** All risks arising out of the foreseen properties of the ground, obstacles and adverse reaction to the excavation and ground support processes are assigned to the Contractor as well as the production rates and costs of performing the Works under the conditions set out in the GBR. This means that the Contractor can only obtain an extension of time to the Time for Completion if Unforeseeable Physical Conditions (as defined in Clause 4.12) are encountered. However,
 - If more onerous conditions encountered are higher than described in the GBR, the Time for Completion will be extended (based in part on the production rates included in the Schedule of Baselines (as defined in Clause 8.2.2) and the Completion Schedule (as defined in Clause 8.2.1)).
 - If less onerous conditions than described in the GBR are encountered then the Time for Completion shall be reduced.
 - If less onerous conditions than described in the GBR are encountered then the Costs may also be reduced. Clause 4.12.5 provides:

“... If and to the extent that these more favorable conditions were encountered, the Engineer may take account of the reductions in Cost which were due to these conditions in calculating the additional Cost to be agreed or determined under this Sub-Clause 4.12.5. However, the net effect of all additions and reductions under this Sub-Clause 4.12.5 shall not result in a net reduction in the Contract Price.”
- **Prolongation:** The adjustment of the Time for Completion due to the difference between the contractually agreed and the encountered subsurface physical conditions also leads to an adjustment of the Contractor’s time-related charges. This is an excellent mechanism and the Contractor is required in the Bill of Quantities for the Excavation and Lining Works to distinguish between time-related

rate items, quantity-related rate items and fixed rate items for the performance of the Works. Clauses 13.8.2 and 13.8.3 provide more details.

- **Cost of Excavation and Lining Works:** Such works are to be paid for using the rates and prices set out in the Bill of Quantities. The Contractor is under an obligation to measure the as-built quantities which are then agreed or determined by the Engineer. The Accepted Contract Amount shall be deemed to cover all other Underground Works and all things necessary for the proper execution and completion thereof. A detailed procedure for the remeasurement exercise is set out at Clause 13.8. The mandatory obligation to distinguish between the differing rates is excellent. Clause 13.8.3 provides:

“The Bill of Quantities for the Excavation and Lining Works shall include fixed rate items, time-related rate items and quantity-related rate items for the Excavation and Lining Works as follows:

- (a) Fixed rate items for, as appropriate, the provision of Contractor’s Equipment, facilities, and supervision, facilities and services required by the Employer’s Personnel, fees for relevant Contractor’s overhead charges, and the maintenance of such provisions for the relevant section of the Excavation and Lining Works for the period necessary according to the Completion Schedule.
- (b) Time-related rate items for, as appropriate, the extended or reduced availability and maintenance of the fixed rate items in sub-paragraph (a) above, all expressed, unless otherwise specified, in units for an extension or reduction for a calendar day.
- (c) Quantity-related rate items for the Excavation and Lining Works, and Plant supply and installation for the relevant portion of the Works.
- (d) Unless provided otherwise in the Particular Conditions, value-related charges for compliance with contractual provisions such as, without limitation, insurance, securities, permits, and levies for the relevant portion of the Excavation and Lining Works, shall be included as percentage additions in the rates described in (a), (b) and/or (c) above.

The unit rates and prices referred to in this Sub-Clause 13.8.2 [Bill of Quantities for Excavation and Lining Works] shall not vary with changes in measured quantities and shall be deemed to cover the entire remuneration of the Contractor for such Excavation and Lining Works”.

The Battleground

A fundamental point of deviation in international construction contracts is risk allocation. Some Employers take the view that agreement of a fixed price lump sum contract means that the Contractor bears all risks associated with delivery of the Works. In contrast, the FIDIC asserts⁴ that:

Each risk of foreseeable subsurface physical conditions shall be allocated in the [GBR] to the Party that is best positioned to control it, which leads to more effective risk control. Transparent and equitable allocation of ground related risks leads to more competitive Tenders and lower outturn costs of the Works. The Employer should avoid establishing an overly conservative GBR, as this will render it less effective. Instead, the Employer is advised to provide realistic statements in the

GBR to give tenderers confidence in the fairness of the Schedule of Baselines as the basis for the Tender

The technical, commercial and legal ‘battleground’ will be the GBR. The GBR is a contract document and listed as the sixth most important document out of the 12 listed in Clause 1.5 *Priority of Documents*. The precise rights and precise obligations express and/or implied in the GBR are of fundamental importance to the effective operation of the Emerald Book. Put another way, if the GBR fails then the Emerald Book fails. The irresistible conclusion is that for the Emerald Book to operate commensurate with FIDIC’s aspirations, the Employer, Contractor and Professional Consultants all need to be clear and confident that the GBR accurately and fully captures the ‘risk allocation term-sheet’. It is often said that disputes are inevitable in construction projects—this is especially so when one considers subsurface ground conditions. All eyes ought to be on the GBR, the Completion Schedule and Schedules of Baselines.

1 The International Federation of Consulting Engineers (commonly known as FIDIC, an acronym for its French name: *Fédération Internationale Des Ingénieurs-Conseils*) is an international standards organization for the consulting engineering & construction best known for the FIDIC family of contract templates.

2 The Emerald Book provides:

- General Conditions
- Guidance for the Preparation of Particular Conditions and Annexes: Example Forms of Securities
- Guidance for the Preparation of Tender Documents and Annexes: Table of Contents of the Geotechnical Baseline Report, Example Forms of Schedule of Baselines, Completion Schedule, Schedule of Contractor's Key Equipment
- Forms of Letter of Tender, Letter of Acceptance, Contract Agreement and Dispute Adjudication/Avoidance Agreement.

Although, the Second Edition of the "Conditions of Contract for Plant and Design-Build, 2007" ("Yellow Book" 2017) was used as the basis for drafting the Emerald Book's General Conditions of Contract it is important to note that over sixty clauses and sub-clauses deviate from those in the Yellow Book.

3 The Emerald Book was developed by FIDIC in collaboration with the International Tunneling and Underground Space Association (ITA) through a joint Task Group 10 (established in 2014) on 'Contract Form for Tunneling and Underground Works'. Given that ITA members are contractors who engage in tunneling, the ITA may be perceived by some to be 'pro-Contractor'. There is also a view that Clause 4.12.5 evidences a pro-Contractor approach since the net effect of all additions and reductions under Sub-Clause 4.12.5 shall not result in a net reduction in the Contract Price.

4 Emerald Book Appendix A: The Geotechnical Baseline Report.

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