

The role of the Engineer in the Emerald book

J. Maclure

Consultant, Durham, UK

ABSTRACT: It is normal in a design and build contract for the contractor to be solely responsible for the adequacy not only of the design but also the construction operations. However in the FIDIC form of Contract for Underground Works (the “Emerald Book”) the Parties agree a Geotechnical Baseline Report (GBR) and the Employer (Capitalized terms used in this paper have the meaning ascribed to them in the Emerald Book) accepts the risk of subsurface conditions that fall outside those agreed in that GBR. Accordingly the Engineer has a specific role to monitor the actual physical conditions encountered and record the corresponding measures taken by the Contractor, in order to assess if and to what extent those measures correspond to the expectations of the GBR and are in accordance with the Contractor’s Proposal and the Contract. The Engineer will use these records and the Contractor’s quantum measurements to determine adjustments to the Contract Price and times for completion of the Underground Works

1 INTRODUCTION

As is well known to all members of the ITA, there is an ever-growing demand for utilizing underground space for infrastructure. The difficulty in predicting underground behaviour and conditions poses unique challenges regarding construction practicability, time and cost. Thus, allocation of underground risks among the stakeholders becomes critical in underground construction. To address these unique risks the International Tunnelling and Underground Space Association (ITA) and the International Federation of Consulting Engineers (FIDIC) joined forces to draft the new FIDIC Form of Contract for Underground Works (the “Emerald Book”). To accomplish this, the two organizations setup a joint task group (TG10). The Emerald Book has been modelled on the 2017 FIDIC Yellow Book (Conditions of Contract for Plant & Design Build) but with significant innovations tailored to underground construction. Consistent with FIDIC’s philosophy of achieving a fair allocation of risks among the parties, the Emerald Book has been drafted with a view to promoting a balanced risk allocation that is specifically adapted to the risks inherent and unique to underground works.

At the time of drafting this paper, the Emerald Book had not yet been published. Therefore there may be some differences in wording between the sub-clauses referenced in this paper and the wording in the published Form of Contract.

Largely as a consequence of the deserved status and reputation of individual engineers, the 18th century saw a separation of design and construction activities. Works contracts – both public and private - were highly individual, drawn up on the advice of an Engineer and reflecting that he was wholly responsible, on behalf of the Employer, for the design, approval of construction and certification for payment of the completed Works. By the end of the 19th century standard forms of traditional Design Bid Build contracts were in common use. Design was usually carried out on behalf of the Employer by a Consulting Engineer. It comes as no surprise that FIDIC, a federation of national Associations of Consulting Engineers, is committed to maintaining the role of the Engineer – indeed it sees this role as critical!

However many iconic structures have come about as a result of Design Build projects where both the design and the construction are the responsibility of the Contractor - and this form

of procurement is increasingly perceived by both public and private developers as having several advantages:

- (1) A single point of responsibility and liability – no separation of liability between the design and the build.
- (2) An enhanced design standard – under a typical design appointment the designer is obliged to do no more than exercise ‘reasonable skill and care’. Under a design and construct arrangement, the completed construction must, unless the parties agree otherwise, be reasonably fit for its intended purpose.
- (3) The Contractor’s experience and specialist knowledge of construction techniques can lead to better problem solving and savings in both time and cost.
- (4) And it is not necessary for the Contractor to do all the design - but he must be willing to assume responsibility for the Employer’s concept design (if any), and complete the detailed design.

Some have argued, however, that for underground works the risk allocation is unsuitable for Design Build – there are too many unknowns in the ground conditions. The Emerald Book seeks to provide a balanced and equitable allocation of the risks arising from ground conditions in such a way that the advantages of Design Build can be realized.

2 UNDERGROUND WORKS DESIGN RISK ALLOCATION

A fair allocation of risk requires that if underground works in uncertain or difficult ground conditions are likely, the risk of adverse unforeseen physical conditions should be borne by the Employer who owns the project, selected the Site, carried out the pre-tender ground investigation, and is the party that should benefit most if an anticipated risk does not occur.

In the Emerald Book the Geotechnical Baseline Report becomes, at Contract award, the agreed measure of the foreseeable ground conditions, on which the Contractor’s Proposal is deemed to have been based. Since the anticipated response of the ground during excavation is dependent on the excavation profile and construction methodology, the initial GBR will have reflected the Employer’s reference design and anticipated construction methodology. When completing his Proposal, the Contractor is therefore required to suggest changes to suit his preferred design and construction techniques, and the final ‘Contract’ GBR must therefore be negotiated and agreed before Contract award. Sub-Clause 4.10.2 states

“The Contractor shall be entitled to rely on the contractually anticipated sub-surface physical conditions as set out in the Geotechnical Baseline Report irrespective of any discrepancies or perceived contradictions that may exist between such physical conditions and the physical conditions described in site data or any other documents including all documents made available by the Employer under Sub-Clause 2.5 [Site Data and Items of Reference] or 4.10.1 [Use of Site Data].”(Unless stated, all quoted extracts are from the FIDIC 2018 Emerald Book)

The Employer’s Requirements will include (see Sub-Clause 1.1.40) *“the scope, the preliminary design carried out by or on behalf of the Employer (Employer’s reference design), and design and/or other performance, technical and evaluation criteria for the Works”*. The Contractor’s design obligation is stated in Sub-Clause 5.1 *“The Contractor shall carry out, and be responsible for, the design of the Works to the extent specified in the Employer’s Requirements, and, where applicable, in accordance with the Geotechnical Baseline Report.”*

3 THE ENGINEER AND HIS APPOINTMENT

The appointment of the Engineer may have a significant influence not only on the tendered prices, but also on the successful outcome of the project. One of the first questions a bidder asks is “who is the Engineer?”, because the reputation of the Engineer in administering the contract, dealing promptly and fairly with issues that may arise, and in issuing instructions

and processing payments and variations will have a significant impact on the Contractor's progress and overhead costs.

In keeping with the other FIDIC forms of contract, the Engineer has a double role in the Emerald Book:

- (1) On the one hand he is engaged by the Employer, defined as 'Employer's Personnel' (Sub-Clause 1.1.39) and entrusted with the responsibility of administering the Contract.
- (2) On the other hand he is required to act 'neutrally' between the Parties when it comes to agreeing or determining any matter or Claim under Sub-Clause 3.7.

The Engineer can be a legal entity (such as a firm of Consulting Engineers) in which case a natural person must be appointed and authorized to represent the Engineer on site and to act on his behalf in carrying out the duties assigned to him under the Contract.

He/she must be 'a professional engineer' – (not just a professional project manager) with 'suitable qualifications', 'experience' and 'competence', and when carrying out duties or exercising authority under the Contract the Engineer must act as a 'skilled professional' (Sub-Clause 3.3.1).

These qualifications reflect the importance of his duties - he must be able to give instructions when necessary, order variations, make fair assessments of payments due, and clarify apparent ambiguities and discrepancies. The scope of the Engineer's duties are very broad – and naturally he will need support from assistants with different specializations such as geologists, mechanical engineers, electrical engineers, planners, and surveyors. If the Engineer is an entity (firm) then a natural person (individual) must be still be appointed to be 'the Engineer'. He/she may appoint and duly authorize an Engineer's Representative (Sub-Clause 3.3) who must be based at the Site for the whole time that the Works are being executed, and must be replaced by a suitable temporary replacement during periods of absence from Site. The authority to make agreements or determinations under Sub-Clause 3.7 cannot be delegated to the Engineer's Representative.

4 THE ENGINEER'S AUTHORITY

Over the years there has been a trend for Employers to restrict the authority of the Engineer by requiring him to get written approval prior to exercising a duty under the Contract. The result has been that responses or decisions were often delayed or withheld, with a resultant breakdown of trust between the Engineer and the Contractor.

In the Emerald Book if the Engineer is required to get the consent of the Employer before exercising a specific authority, this must be clearly stated in the Particular Conditions. However Sub-Clause 3.2 states clearly:

"There shall be no requirement for the Engineer to obtain the Employer's consent before the Engineer exercises his authority under Sub-Clause 3.7 [Agreement or Determination]."

Under the FIDIC 1999 conditions (and if required by the Employer's Requirements), the Engineer could be required to 'approve' Contractor's Documents. However it has been contended that in some jurisdictions such approval carries with it a legal assumption of liability.

The emphasis is now on the Engineer's duty not to 'approve' but to assess if and to what extent a document or submission complies with the Contract, and may be used for the Works. If the submission does not comply, the Engineer must give the Contractor a Notice that the submission fails - to a stated extent - to comply. A 'Notice' under the Contract is now to be identified as such, and must meet certain requirements as set out in Sub-Clause 1.3 [Notices and Other Communications]. In the Emerald book the Engineer does not give "approval" – instead he is required to 'Review' (defined in Sub-Clause 1.1.83) a Contractor's document or submission, or give a 'Notice of No-objection' (Sub-Clause 1.1.67), or to give his 'consent' (defined in Sub-Clause 1.2(g)).

5 THE ENGINEER'S RESPONSE AND TIME LIMITS

Contractors have often complained in the past that time-limits applied against them but not against the Employer or Engineer. This has changed in the 2017 FIDIC conditions, and

time-limits now apply to the Engineer's response to Contractor's requests or Notices. Table 1 sets out some of these time-limits.

A failure of the Engineer to respond within the stated time period leads to a deemed outcome which may be not what the Engineer wanted or intended! In general a lack of response leads to a deemed outcome in favour of the Contractor, the notable exception being that a failure by the Engineer to make a determination of a Claim under Sub-Clause 3.7.3 will mean that the Claim is deemed to have been rejected. Table 1 also details the default outcome if the Engineer fails to respond within the specified period.

6 THE ENGINEER'S AUTHORITY TO AGREE OR DETERMINE MATTERS – SUB-CLAUSE 3.7

This is probably the single most demanding duty allocated to the Engineer, and one where he/she is required to be *'acting neutrally and deemed not to be acting for the Employer'*. The Guidance for the Preparation of Particular Conditions Part B suggests that the intention is that *"the Engineer treats both Parties even-handedly, in a fair minded and unbiased manner"* (FIDIC Yellow Book 2nd Ed. 2017 Notes on the Preparation of Special Provisions p21).

Many Sub-Clauses include the requirement for the Engineer to agree or determine. Indeed every situation in which a Party claims an entitlement under Sub-Clause 20.1 leads to the Engineer being required to agree or determine the matter or Claim under this Sub-Clause.

Table 1. Time Limits on Engineer's Responses and Default outcome.

Sub-Cl.	Description	Response period	Default outcome (If Engineer fails to respond within period)
1.16	Submission of Contract Risk Management Plan for Review	14-days	Deemed Notice of No-objection
3.2.2	Contractors Notice of inaccuracies in Engineer's records	14-days	Deemed confirmed as corrected by Contractor.
3.5	Contractor's Notice – objecting to (or considering instruction is a Variation)	7-days	Deemed revocation of instruction
3.7.3	Consultation to reach agreement	42-days	Engineer required to proceed to determination
3.7.3	Engineer's fair determination	1st period 42-days 2nd period	Claim? – deemed rejection Matter to be agreed or determined?– deemed to be a Dispute
4.3	Contractor's Representative	28-days	Deemed consent
4.4	Sub-contractor – prior consent?	14-days	Deemed consent
4.9.1	Quality Management System	28-days	Deemed Notice of No-objection
4.25	Milestone Completion Certificate	28-days	Deemed Milestone Completion Certificate
5.2.2	Review of Contractor's Documents	Period	Deemed Notice of No-objection
6.12	Key Personnel	Ne 21-d 14-days	Deemed consent
7.5	Review proposal – Remediation of Defects	14-days	Deemed Notice of No-objection
8.3	Review of initial programme	21-days	Deemed Notice of No-objection
	Revised programme	14-days	Deemed Notice of No-objection
9.1	Tests on Completion – ready to carry out tests	21-days	Deemed Notice of No-objection
9.1	Review – test certificates	14-days	Deemed Notice of No-objection
10.1	Taking Over Works & Sections	28-days	Deemed Taking Over Cert
10.3	Interference with Tests on Completion	14-days	Immediate issue of Taking Over Certificate
20.2.2	Engineer's initial response to Notice of Claim	14-days	Notice of Claim deemed valid
20.2.4	Fully detailed Claim	14-days	Notice of Claim deemed valid even without statement of contractual/legal basis.

The procedure starts with the Engineer attempting to get the Parties to resolve the matter by agreement. Negotiation and mediation skills are needed first! Only if no agreement is achieved must he move on to make a fair determination. A step-by-step procedure is required:

Step 1- consultation with the Parties to encourage them to reach agreement – The Engineer must record the consultation and give Notice of the agreement or record the Parties failure to reach agreement, within the time limit for consultation (42-days unless otherwise proposed and agreed). Sub-Clause 3.7.1 [Consultation to reach agreement] “*The Engineer shall consult with both Parties jointly and/or separately, and shall encourage discussion between the Parties in an endeavour to reach agreement*”. If agreement is reached the Engineer has to give a Notice to both Parties with a record of the agreement which the Parties must sign.

Step 2- making a fair determination (in the absence of agreement) within the time limit for determination (42-days from the Notice of step 1, unless otherwise proposed and agreed). Sub-Clause 3.7.2 [Engineer’s Determination] says “*The Engineer shall make a fair determination of the matter or Claim, in accordance with the Contract, taking due regard of all relevant circumstances.*” The consequences of the Engineer’s failure to meet the time limits is stated in Sub-Clause 3.7.3 [Time limits] “*If the Engineer does not give the Notice of agreement or determination within the relevant time limit:*

(i) *in the case of a Claim, the Engineer shall be deemed to have given a determination rejecting the Claim; or*

(ii) *in the case of a matter to be agreed or determined, the matter shall be deemed to be a Dispute which may be referred by either Party to the DAAB for its decision under Sub-Clause 21.4.” Dispute which may be referred by either Party to the DAAB for its decision under Sub-Clause 21.4.”*

Step 3a- giving effect to the agreement or determination. Sub-Clause 3.7.4 [Effect of the agreement or determination] says “*Each agreement or determination shall be binding on both Parties (and shall be complied with by the Engineer) unless and until corrected under this Sub-Clause or, in the case of a determination, it is revised under Clause 21 [Disputes and Arbitration].*”

Step 3b- if either Party is dissatisfied with the determination, then within 28-days after receiving the determination, the dissatisfied Party must give a Notice of Dissatisfaction (“NOD”) under Sub-Clause 3.7.5 [Dissatisfaction with the Engineer’s determination].

Step 4- a NOD allows either Party to then refer the matter to the DAAB for decision under Sub-Clause 21.4[Obtaining DAAB’s Decision].

7 THE ENGINEER’S SPECIFIC DUTY AND AUTHORITY FOR EXCAVATION AND LINING

The Contractor will have prepared his Design Build proposal on the basis of the GBR and the Employer’s Requirements, entered production rates against the activities set out in the Baseline Schedule, and completed the Schedule of Rates and Prices, based on his own design and construction methodology. The Accepted Contract Amount is deemed to cover all his obligations under the Contract.

However under the Emerald Book form of contract, the Employer expects not only to pay for increases in actual quantities of Excavation and Lining Works (within the boundaries of the anticipated conditions described in the GBR), but also that if the actual conditions are better than anticipated he will be entitled to benefit from reduced quantities and a shorter Time for Completion. If the physical conditions fall outside the GBR, the Contractor will be entitled to claim under Sub-Clause 4.12 for Unforeseeable Physical Conditions

Therefore, the Employer entrusts to the Engineer the duty to monitor the Underground Works and to record the actual conditions encountered and measures taken by the Contractor to assess to what extent those measures are compliant with the Contractor’s Proposal and the Contract.

Accordingly Sub-Clause 3.2.2 [The Engineers Specific Duty and Authority for Excavation and Lining] provides “*The Engineer shall monitor and record progress of the execution of the Excavation and Lining, for compliance with the Contractor’s obligations under Sub-Clause 4.24 [Excavation and Lining].*”

The Engineer is not specifically required to monitor and record all the Underground Works, only the “Excavation and Lining” Works, and both are defined terms in the Emerald Book. “Excavation” is defined in Sub-Clause 1.1.44 as “*all work undertaken to excavate, support and secure the space for the Underground Works, including but not limited to exploratory investigations, preliminary mitigation measures, ground treatment, excavation, ground support measures, seepage treatment, temporary and ancillary works (in each case if any)*” and “Lining” is defined in Sub-Clause 1.1.61 as “*the permanent lining works of the Excavation, whether constructed at the same time or at a later stage, including waterproofing, contact grouting and backfill (if any)*”.

These two underground work activities are considered to be those which are directly influenced by the ground conditions and whose design and planned construction methodology is dependent on the baselines agreed in the GBR. The Contractor’s obligations are more fully described in Sub-Clause 4.24 [Excavation and Lining]

“The Contractor shall take whatever measures are stated in the Employer’s Requirements, Particular Conditions, Geotechnical Baseline Report and/or are agreed in a method statement, and/or are necessary for the safety, stability, timely progress and/or execution of the Works. The Contractor shall submit on a daily basis his interpretations of the data from the sub-surface and surface monitoring programmes, if any.

The Contractor shall endeavour to reach agreement with the Engineer that such measures are (or, if the measures have already been taken, were) necessary for the execution of the Excavation and Lining in accordance with the Contract. The agreement or lack thereof shall be recorded as per Sub-Clause 3.2.2 [Engineer’s Specific Duties and Authority for Excavation and Lining]”

A copy of the records will be provided by the Engineer to the Contractor within an agreed time and the “*Contractor shall examine the records and be deemed to have accepted them unless within 7 days from receipt of the records he gives a Notice to the Engineer of the respect in which the records are asserted as being inaccurate.*”

After receiving the Contractor’s Notice the Engineer has 14-days to review, vary or confirm the records. Failure to respond within the 14-day time period will mean that the records are confirmed as corrected by the Contractor. If the Engineer disagrees with the Contractor’s Notice and wishes to maintain the records without change, he must follow the procedure set out in Sub-Clause 3.7 [Agreement or Determination] as described in Paragraph 6 above, with the first time limit for consultation commencing on the date the Engineer receives the Contractor’s Notice.

8 THE ENGINEER AND UNFORESEEABLE PHYSICAL CONDITIONS SUB-CLAUSE 4.12

If conditions are encountered which are outside the possible conditions foreseen in the GBR, the provisions of Sub-Clause 4.12 [Unforeseeable Physical Conditions] come into play. The Contractor will be required to give a Notice setting out the reasons why he considers the physical conditions to be Unforeseeable, the Engineer must then inspect and investigate, give instructions as necessary, and agree or determine whether and to what extent the physical conditions encountered were Unforeseeable, and the extent of the Contractor’s entitlement to Payment and or Extension of Time, all in accordance with Sub-Clause 4.12. Sub-Clause 4.12.1 [Contractor’s Notice] provides

“After discovery of such physical conditions, the Contractor shall give a Notice to the Engineer, which shall:

- (a) be given as soon as practicable and in good time to give the Engineer opportunity to inspect and investigate the physical conditions promptly and before they are disturbed;*
- (b) describe the physical conditions, so that they can be inspected and/or investigated promptly by the Engineer;*
- (c) set out the reasons why the Contractor considers the physical conditions to be Unforeseeable; and*

(d) describe the manner in which and the extent to which the physical conditions will have an adverse effect on the progress and/or increase the Cost of the execution of the Works.

The FIDIC Yellow Book at Sub-Clause 4.12.2 required the Engineer to inspect and investigate “within 7 days”. However if such conditions are not anticipated by the GBR, the measures required and the Contractor’s entitlement to time and payment will depend on the Engineer’s acknowledgement of the unforeseeable physical condition, and the Contractor’s operation may be halted waiting for the Engineer’s subsequent instruction. The Guidance for the preparation of Particular Conditions Part B – Special Provisions, “Each time period stated in the General Conditions is what FIDIC believes is reasonable, realistic and achievable in the context of the obligation to which it refers, and reflects the appropriate balance between the interests of the Party required to perform the obligation, and the interests of the other Party whose rights are dependent on the performance of that obligation.” Accordingly in the Emerald Book at Sub-Clause 4.12.2 (Engineer’s inspection and investigation), safety is the first priority of both parties, but thereafter the Engineer should make his inspection “as soon as possible” – the first paragraph now states:

“The Engineer shall inspect and investigate the physical conditions (if safe to do so) as soon as possible or as agreed with the Contractor, after receiving the Contractor’s Notice.”

9 AGREEING OR DETERMINING MEASUREMENTS - SUB-CLAUSE 13.8.1

Since the Parties have agreed prior to the award of the Contract that the Geotechnical Baseline Report represents the agreed measure of the foreseeable ground conditions, upon which the Contractor is deemed to have based his proposal, then the Contractor is entitled to payment for the actual quantities of ‘foreseeable’ Excavation and Lining Works carried out. Accordingly the actual Excavation and Lining Works carried out in conditions conforming to those described in the agreed baselines in the GBR are subject to measurement.

In the FIDIC Red Book (FIDIC 2017 2nd Edition Conditions of Contract for Construction for Building and Civil Engineering Works designed by the Employer) the responsibility for measurement is allocated to the Engineer and measurements are made of the net theoretical quantity of the Permanent Works shown on the drawings or other records prepared by the Engineer. In the Emerald Book the responsibility for the design is with the Contractor, so responsibility for the measurement of Underground Works is given to the Contractor under Sub-Clause 13.8.1 [Responsibility for Measurement] which states “*Unless agreed otherwise, the Contractor shall be responsible for the measurement and shall submit relevant measurements with full supporting records to the Engineer at the intervals stated in the Contract Data (if not stated then at monthly intervals).*”

The Contractor will provide full supporting details with the measurement, and the Engineer is then tasked with reviewing, agreeing or varying by determination the Contractor’s measurement. Sub-Clause 13.8.1 goes on to provide “*On receipt of the measurement records, the Engineer shall proceed under Sub-Clause 3.7 [Agreement or Determination] to agree or determine the measurement (and, for the purpose of Sub-Clause 3.7.3 [Time limit], the date when the Engineer receives the measurement records shall be the date of commencement of the time limit under Sub-Clause 3.7.3 [Time limit]).*”

10 RISK MANAGEMENT

The Emerald book promotes good practice by the identification of risks, their allocation between the parties to the Contract and the management and control of risks as recommended by the ITIG Code of Practice for Risk Management of Tunnel Works, through the use of a Project Risk Management Plan in accordance with the details set out in the Employer’s Requirements (ITIG 2nd Ed May 2012 A Code of Practice for Risk Management of Tunnel Works, clause 9.3 p.17).

Sub-Clause 1.16 [Contract Risk Management Plan] provides for the Contractor to complete a Contract Risk Register and a Risk Management Plan and provide it to the Engineer for his Review. The Engineer is required to respond within 14-days with a Notice of No-Objection or a Notice stating that the Risk Register or Risk Management Plan fails to comply with the Contract with reasons.

The Contract Risk Management Plan will lead to Risk Management meetings and/or to Advance Warnings in accordance with Sub-Clause 8.4 [Advance Warning] requiring either Party or the Engineer to advise the others of any known or probable future events or circumstances that may adversely affect the work, or cause a delay or increase in the Contract Price.

11 THE ENGINEER AND CLAIMS

The claims procedure in Clause 20 now applies equally to Contractor's claims, and to Employer's claims. So the 28-day time bar applies equally to a late Notice of Claim from either the Contractor or the Employer under Sub-Clause 20.2.1 [Notice of Claim] which provides

"The claiming Party shall give a Notice to the Engineer, describing the event or circumstance giving rise to the cost, loss, delay or extension of DNP for which the Claim is made as soon as practicable, and no later than 28 days after the claiming Party became aware, or should have become aware, of the event or circumstance (the "Notice of Claim" in these Conditions).

If the claiming Party fails to give a Notice of Claim within this period of 28 days, the claiming Party shall not be entitled to any additional payment, the Contract Price shall not be reduced (in the case of the Employer as the claiming Party), the Time for Completion (in the case of the Contractor as the claiming Party) or the DNP (in the case of the Employer as the claiming Party) shall not be extended, and the other Party shall be discharged from any liability in connection with the event or circumstance giving rise to the Claim."

Upon receipt of a Notice of Claim, the Engineer is required to give the claiming Party a Notice within 14-days if he/she considers that the Notice of Claim was not given in the required 28-days. However if the claiming Party disagree with this ruling it may provide, with its fully detailed claim, reasons that in its opinion justify the late submission. If the Engineer does not give such an initial response in 14-days the Notice of Claim is deemed to be valid.

The Claiming Party is required to keep contemporary records, and allow the Engineer to inspect them when required

Within 84-days (or such other period that may be proposed by the claiming Party and agreed by the Engineer) of the claiming Party becoming aware of the event or circumstance, the claiming Party is required (Sub-Clause 20.2.4) to submit a fully detailed claim, or risk receiving a Notice from the Engineer that the Notice of Claim is considered to have lapsed and no longer be valid. The fully detailed claim must also contain a statement of the contractual and/or legal basis of the Claim. If the claiming Party fails to provide this statement within this time period the Engineer should, within 14-days of the expiry of the 84 days, give a Notice stating that the Claim Notice has lapsed and is no longer valid. Again, if the Engineer does not give such a Notice within 14-days the Notice of Claim is deemed to be valid, and once again if the Claim Notice has been declared lapsed, but the claiming Party disagrees, it must give a Notice to this effect, with details, to the Engineer, who must then review the circumstances. So the claiming Party faces two time-bar provisions – the first relating to the date of the Notice of Claim, and the second relating to the submission of a statement of the contractual and/or legal basis, but in both cases the claiming Party can submit justification of the circumstances to the Engineer to review, agree or determine.

On receipt of the fully detailed Claim the Engineer will proceed under Sub-Clause 3.7 [Agreement or Determination] to agree or determine the matter of the claim.

12 CONCLUSIONS

The role of the Engineer in the Emerald Book is extraordinarily challenging. Not only does he/she have the normal duties expected of the Engineer in a Design Build setting – such as to

Review Contractor's Documents, to clarify and resolve ambiguities, to witness tests, monitor progress, and give consent or No-objection to the Contractor's operations, but also, in view of the agreed risk allocation represented by the GBR, the Engineer has the added duty to monitor and record the measures taken by the Contractor in response to the actual conditions encountered. This duty will be crucial to the determination of foreseeable physical conditions. In addition, since the Excavation and Lining Works are to be measured by the Contractor for the purposes of payment and adjustment of Time for Completion, the Engineer will receive the measurement records made by the Contractor, agree or determine the measurement and adjust the Time for Completion and Contract Price accordingly.

The key qualification requirements of the Engineer will undoubtedly be competence and experience. In the Emerald Book (following FIDIC 2017 2nd Editions) the focus ends up on the Engineer's duty in connection with agreeing or determining in which he/she also requires communication, negotiation and mediation skills. The Engineer, a natural person, may not delegate that authority – even to the Engineer's Representative!

ACKNOWLEDGEMENT

This contribution is based upon the work of the FIDIC Task Group 10 “New Form of Contract for Tunneling and Underground Works”. The author wishes to thank FIDIC, the ITA and his colleagues Gösta Ericson (IC Consultants, Lund, Sweden), Hannes Ertl (D2 Consultants, Linz, Austria), Andres Marulanda (Ingetec, Bogotá, Columbia), Charles Nairac (White & Case LLP, Paris, France), Matthias Neuenschwander (Neuenschwander Consulting Engineers Ltd., Bellinzona, Switzerland) and Martin Smith (Matrics Consult Ltd., Seoul, Republic of Korea) for their important contributions.

Caveat: at the moment of writing of this article, the FIDIC Emerald Book is still under review. Part of the content may therefore be in contrast with the published Form of Contract. The reader should always consult the published FIDIC Form of Contract for Underground Works.