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International Federation of Consulting Engineers
The Global Voice of Consulting Engineers





FIDIC 2017 and the Continuing Evolution of the Role of the Engineer

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Agenda

- The historical role of the consulting engineer and its evolution
- Engineer's role in the new 2017 editions of the Red and Yellow Books
 - compared to the 1999 first edition versions



The Consulting Engineer's Role In the context of the project life-cycle

- The Consulting Engineer
 - Relates to intellectual contributions connected with the design of the plant, the preparation of projects and the supervision of the work
 - Supply of intellectual services
- The Role
 - Feasibility
 - Design
 - Supervision of construction contract



The Consulting Engineer's Role The 1957 Red Book

- The “original” Red Book
 - Developed for civil engineering works in the international field
 - Followed closely Institution of Civil Engineers (ICE), 4th edition
 - Based on design-bid-build procurement



ICE Check List of Engineer's Role Pre-Contract

- Ensure the employer is aware that he carries the financial risk for unforeseen events and of the financial managerial and advisory resources required for the contract
- Design and detail the contract works and as far as possible prepare clear working drawings and a concise specification
- Prepare accurate bills of quantities, detailing the works required and complying with the standard method of measurement where possible
- Ensure the employer and his staff understand the role of the Engineer under the Conditions of Contract
 - to ensure *fair dealings between the contractor and the employer*
- Ensure the employer accepts that the Engineer has the quasi-judicial/arbitral powers to make decisions that are final and binding on the employer and contractor subject only to reference to arbitration



ICE Check List of Engineer's Role Pre-Contract

- Ensure the Engineer has a defined and readily understood method of selecting contractors
- Ensure all tenderers receive the same tendering information and are given a sufficient period for the preparation of tenders
- Make all site and service information in the employer's and Engineer's possession available to those invited to tender
- Check tenders carefully and correct any errors in extension of item rates, times or quantity
 - Review tenders received with particular regard to the proposed construction methods and degree of risk involved
 - Submit a report to the employer pointing out any rate that is less than the known cost of carrying out the work and giving a recommendation of a tender acceptance with reasons





ICE Check List of Engineer's Role Post Contract

- Do not exceed the powers granted by the employer,
 - e.g. do not take on responsibility for redesign or significant variations and extra works without the employer's agreement to the works and to provide finance.
- Make decisions on extensions of time at stages and times required under the contract.
- Ensure that a site diary and site records are properly kept and agreed where appropriate with the contractor
- Ensure site meetings are held at least monthly and that minutes are kept and agreed.



ICE Check List of Engineer's Role Post Contract

- Issue certificates for payments after interim measurements promptly
- Visit the site regularly
- Inspect works in progress and review compliance with the contract programme
- Agree measurements of quantities for completed works as the work proceeds
- Ensure claims are detailed and the sums due settled as soon as possible
- On clause 66 decisions, review all the evidence available and if possible, arrange for the Engineer's representative to put the employer's case, and the contractor his, to enable a clear judgment to be made on the issues.



The Consulting Engineer's Role The 1957 Red Book

- Employer to appoint a consulting engineer to accomplish the **design** and **supervise the construction of the project**
- Two party contract [Employer, Contractor]
 - Three party execution
 - Employer
 - Contractor
 - ***Engineer,***
 - ***Employed by Employer***
 - ***Contract administrator***
 - ***Impartial, quasi-arbitral role during contract execution***





The 1957 Red Book and The Role of the Engineer

- **Independent**
 - In mind and action
- **Conflict free**
 - “FIDIC’s policy on conflict of interest requires that consultants provide professional, objective and impartial advice, and at all times hold the client’s interests paramount, without any consideration for future work and strictly avoiding conflicts with other assignments or their own corporate interests.”
- **Trusted** by both parties
 - The Employer’s trusted advisor during project planning and procurement
 - The “friend of the project” during contract execution



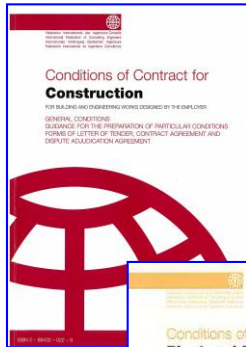


The 1977 and 1987 Red Books The Evolution of Role of the Engineer

- Maintained the basic role of the Engineer:
 - Limited the autonomy of the Engineer
 - Employer may require Engineer obtain approval before carrying out specific duties
 - Increased the Employer's visibility during project execution
 - Required Engineer to consult with Employer and the contractor before deciding
 - On specific issues



1999 FIDIC Red and Yellow Books The Role of the Engineer



- ▶ Red Book
 - Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer, 1st Edition 1999
 - **Engineer's Role: Design and contract administration**
 - ***DAB: Impartial, quasi-arbitral role during contract execution***
- ▶ Yellow Book
 - Conditions of Contract for Plant and Design Build, for Electrical and Mechanical Plant, and For Building and Engineering Works, Designed by the Contractor, 1st Edition 1999
 - **Engineer's Role: Contract administration**
 - ***DAB: Impartial, quasi-arbitral role during contract execution***



The Engineer: Defined

- **1999, SC 1.1.2.4:** "Engineer" means the person appointed by the Employer to act as the Engineer for the purposes of the Contract and named in the **Appendix to Tender**, or other person appointed from time to time by the Employer and notified to the Contractor under Sub-Clause 3.4 [Replacement of the Engineer].
- **2017, SC 1.1.35:** "Engineer" means the person named in the Contract Data appointed by the Employer to act as the Engineer for the purposes of the Contract, or any replacement appointed under Sub-Clause 3.6 [Replacement of the Engineer].



The Engineer: Defined

- **1999, SC1.1** Int. par.: Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.
- **2017, SC3.1**, 3rd par.: If the Engineer is a legal entity, a natural person employed by the Engineer shall be appointed and authorised to act on behalf of the Engineer under the Contract.



Appointment of the Engineer...

- **1999, SC3.1**, 1st par.: The Employer shall appoint the Engineer who shall carry out the duties assigned to him in the Contract.
 - The Engineer's staff shall include suitably qualified engineers and other professionals who are competent to carry out these duties.
- **2017 SC3.1**:
 - 1st par.: The Employer shall appoint the Engineer who shall carry out the duties assigned to him in the Contract.
 - 3rd par.: The Engineer (or, if a legal entity, the natural person appointed to act on its behalf) shall be:
 - (a) a professional engineer having suitable qualifications, experience and competence to act as the Engineer under the Contract; and
 - (b) shall be fluent in the ruling language defined in Sub-Clause 1.4 [Law and Language].



Role/Powers of the Engineer...

- The powers given to the Engineer are determined by the terms of the contract



Duties and Authority of the Engineer....

1999 SC 3.1 [2nd, 3rd & 4th pars.]:

- The Engineer shall have no authority to amend the contract
- “The Engineer may exercise the authority attributable to the Engineer as specified in or necessarily to be implied from the Contract.”
- If the Engineer is required to obtain the approval of the Employer before exercising a specified authority, the requirements shall be as stated in the Particular Conditions. The Employer undertakes not to impose further constraints on the Engineer’s authority, except as agreed with the Contractor.
 - However, whenever the Engineer exercises a specified authority for which the Employer’s approval is required, then (for the purposes of the Contract) the Employer shall be deemed to have given approval.”



Duties and Authority of the Engineer....

1999 SC 3.1 [5th par.]:

- Except as otherwise stated
- Whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Engineer shall be deemed to be acting for the Employer
- The Engineer has no authority to relieve either Party of any duties, obligations or responsibilities under the contract
- Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Engineer (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances.



Duties and Authority of the Engineer....

2017 SC 3.2

- Except as otherwise stated in these Conditions, whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Engineer shall act as a skilled professional and shall be deemed to act for the Employer.
- The Engineer shall have no authority to amend the Contract or to relieve either Party of any duty, obligation or responsibility under or in connection with the Contract.



Duties and Authority of the Engineer.... 2017 SC 3.2

- If the Engineer is required to obtain the consent of the Employer before exercising a specified authority, the requirements shall be as stated in the Particular Conditions.
 - However, whenever the Engineer exercises a specified authority for which the Employer's consent is required, then (for the purposes of the Contract) the Employer shall be deemed to have given his consent
 - 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].
 - The Employer shall not impose further constraints on the Engineer's authority.



Duties and Authority of the Engineer....

2017 SC 3.2

- Any acceptance, agreement, approval, check, certificate, comment, consent, disapproval, examination, inspection, instruction, Notice, No-objection, record(s) of meeting, permission, proposal, record, reply, report, request, Review, test, valuation, or similar act (including the absence of any such act) by the Engineer, the Engineer's Representative or any assistant shall not relieve the Contractor from any duty, obligation or responsibility he has under or in connection with the Contract.



Authority of the Engineer....

1999 and 2017: Authority in Brief

- The ENGINEER shall have no authority to change the Contract!
- The ENGINEER has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract!
- Any act or absence of disapproval by the ENGINEER shall not relieve the Contractor from any responsibility he has under the Contract!
- The ENGINEER shall be deemed to act for the Employer! Except:
 - 1999, SC3.1, 5th par.: Except as otherwise stated in these Conditions:
 - SC 3.5The Engineer shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances
 - 2017, SC3.7, 1st par.: The Engineer shall act neutrally between the Parties when carrying out his duties under this Sub-Clause.



The Role of the Engineer FIDIC 2017 and 1999 Compared

- General Remarks:
 - The 2017 Edition of the Red Book is more prescriptive than the 1999 first Edition.
 - Clause 3 remains to be dealing with the Engineer, but it is much more detailed and elaborate, 6 pages in 2017 against the 1999 2 pages.
 - Provides clearer and more direct language.
 - Sub-Clause 3.7 'Agreement or Determination ' against the 1999 SC 3.5 'Determination'.
 - Step by step management and procedures.



FIDIC 2017 and the Continuing Evolution of the Role of the Engineer....

- SC 3.1 The Engineer
 - Legal entity or individual
 - Professional engineer, suitably qualified and experienced
 - Fluent in the language of the Contract.
- SC 3.2 Duties and Authority
 - Appointed to carry out the role and duties of the Engineer assigned under the Contract
 - Deemed to act for Employer, but for under SC 3.7
 - Cannot amend the terms of the Contract
 - Employer cannot put further constraints on Engineer
 - The Engineer may delegate to suitably qualified assistants



FIDIC 2017 and the Continuing Evolution of the Role of the Engineer....

- Proactive administration by Engineer
 - Engineer's enhanced role in promoting collaboration
 - Engineer obligated to undertake formal and structured communication
 - “Notice” as defined term
 - The Engineer's role in claims process robustly defined
 - Step by step management and procedures



Engineer's Role in Promoting Collaboration

8.4 Advance Warning:

"Each Party shall advise the other and the Engineer, and the Engineer shall advise the Parties, in advance of any known or probable future events or circumstances which may:

- (a) adversely affect the work of the Contractor's Personnel;
- (b) adversely affect the performance of the Works when completed;
- (c) increase the Contract Price; and/or
- (d) delay the execution of the Works or a Section (if any).

The Engineer may request the Contractor to submit a proposal under Sub-Clause 13.3.2 [Variation by Request for Proposal] to avoid or minimise the effects of such event(s) or circumstance(s).





Engineer's Role in Promoting Collaboration

- 3.8 Meetings:

“The Engineer or the Contractor’s Representative may require the other to attend a management meeting to discuss arrangements for future work and/or other matters in connection with execution of the Works.”
- 3.7.1 Consultation to reach agreement
 - encourage Parties to reach agreement within 42 days



Formal and structured communication with the parties



The 2017 FIDIC Red and Yellow Books Enhanced Contract Administration

- "Notice" means a written communication identified as a Notice and issued in accordance with Sub-Clause 1.3 [Notices and Other Communications].
 - SC 1.3 "Whenever these Conditions provide for the giving of a Notice ... the Notice ... shall be in writing and ... be identified as a Notice... and include reference to the provisions of the Contract under which it is issued...shall have effect when it is received "
 - Note: Progress reports and schedules do not constitute a notice
 - SC 4.20 "However, nothing stated in any progress report shall constitute a Notice under a Sub-Clause of these Conditions."
 - SC 8.3 "Nothing in any programme, the Programme or any supporting report shall be taken as, or relieve the Contractor from any obligation to give, a Notice under the Contract."



The 2017 FIDIC Red and Yellow Books Engineer's Notice Required (e.g.)

- SC 2.5 [Site Data and Item Reference]
- 3.4 [Delegation by the Engineer]
- 3.5 [Engineer's Instructions]
- 3.7 [Agreement or Determination]
- 4.3 [Contractor's Representative]
- 4.4 [Contractor's Documents],
- 4.9 [Quality Management and Compliance Verification System]
- 5.2.3 (RB) [Payment to Nominated Subcontractors]
- 7.4 [Testing by the Contractor]
- 7.5 [Defects and Rejection]





The 2017 FIDIC Red and Yellow Books Engineer's Notice Required (e.g.)

- 8.1 [Commencement Date]
- 10.3 [Interference with Tests on Completion]
- 11.6 [Further Tests after Remedying Defects]
- 12.1 [Works to be Measured]
- 13.1 [Right to Vary]
- 13.2 [Value Engineering]
- 13.3 [Variation Procedure]
- 13.6 [Adjustments for Changes in the Law]
- 14.11.1 14.6.2, 14.11, 15.1, 20.2.6....)

New: Time limits associated with
Engineer's Obligations



The 2017 FIDIC Rainbow Suite:

Time Limits Governing Engineer's Obligations (e.g.)

- SC 3.4 Delegation by the Engineer
 - if the Contractor questions any instruction or Notice given by an assistant, the Contractor may by giving a Notice refer the matter to the Engineer. The Engineer shall be deemed to have confirmed the assistant's instruction or Notice if the Engineer does not respond, within 7 days after receiving the Contractor's Notice
- SC 3.5 Engineer's Instructions
 - If the Engineer does not respond within 7 days after receiving this Notice, by giving a Notice confirming, reversing or varying the instruction, the Engineer shall be deemed to have revoked the instruction.
- SC 3.7.3 if no Engineer's Notice of agreement/determination within 42 days
 - Claims deemed rejected
 - Other matters deemed Dispute



The Engineer's role in claims process robustly defined



2017 Red and Yellow Books The Engineer's Duties

- **Claims** and Proactive Contract Administration

FIDIC Guide, pp. 88-89

"... Major projects give rise to major risks, which have to be dealt with if they occur....In these events, the claims procedures are specified so as to provide the degree of formality considered necessary for the proper administration of a...project.

complying with these procedures and maintaining a co-operative approach to the determination of all adjustment should enhance the likelihood of achieving a successful project."

- Claims: a contractual mechanism that formally structures request for and determination of adjustment





Claims separated from disputes

- Clause 20: Employer's and Contractor's Claims
- Clause 21: Disputes and Arbitration
- Defined terms
 - Claim
- Focus on the Engineer's duty in determination of Claims
 - Clause 20 and Clause 3 provide clear definition of:
 - Actions required
 - Time limits



Engineer to Agree or Determine Claims Sub-clause 3.7 (old 3.5)

- **S.C 1.1.6:** “Claim” means a request or assertion by one Party to the other Party for an entitlement or relief under any Clause of these Conditions or otherwise in connection with, or arising out of, the Contract or the execution of the Works.



Engineer to Agree or Determine Claims Sub-clause 3.7 (old 3.5)

- The Engineer shall act “neutrally”
- Sub-clause 3.7.1: Consultation
 - Consult jointly and/or separately
 - Endeavour to encourage Parties to reach agreement within 42 days
 - Written and signed by Parties
- Sub-clause 3.7.2: Determination
 - Make a fair determination within 42 days
- If no Notice of agreement or determination within time
 - Claim deemed rejected; the
 - “matter” is deemed to be a Dispute and may be referred to the DAAB
 - NOD not required



Engineer to Agree or Determine Claims Sub-clause 3.7 (old 3.5)

Sample clauses that require Engineer to proceed under Sub-Clause 3.7
[Agreement or Determination]

- 4.7.3: Setting Out
- 8.5: Extension of Time for Completion
- 10.2: Taking Over Parts
- 12.1: Works to be Measured
- 12.3: Valuation of the Works
- 13.2: Value Engineering
- 13.3: Variation Procedure
- 13.5: Daywork
- 14.4: Schedule of Payments





Engineer to Agree or Determine Claims Sub-clause 3.7 (old 3.5)

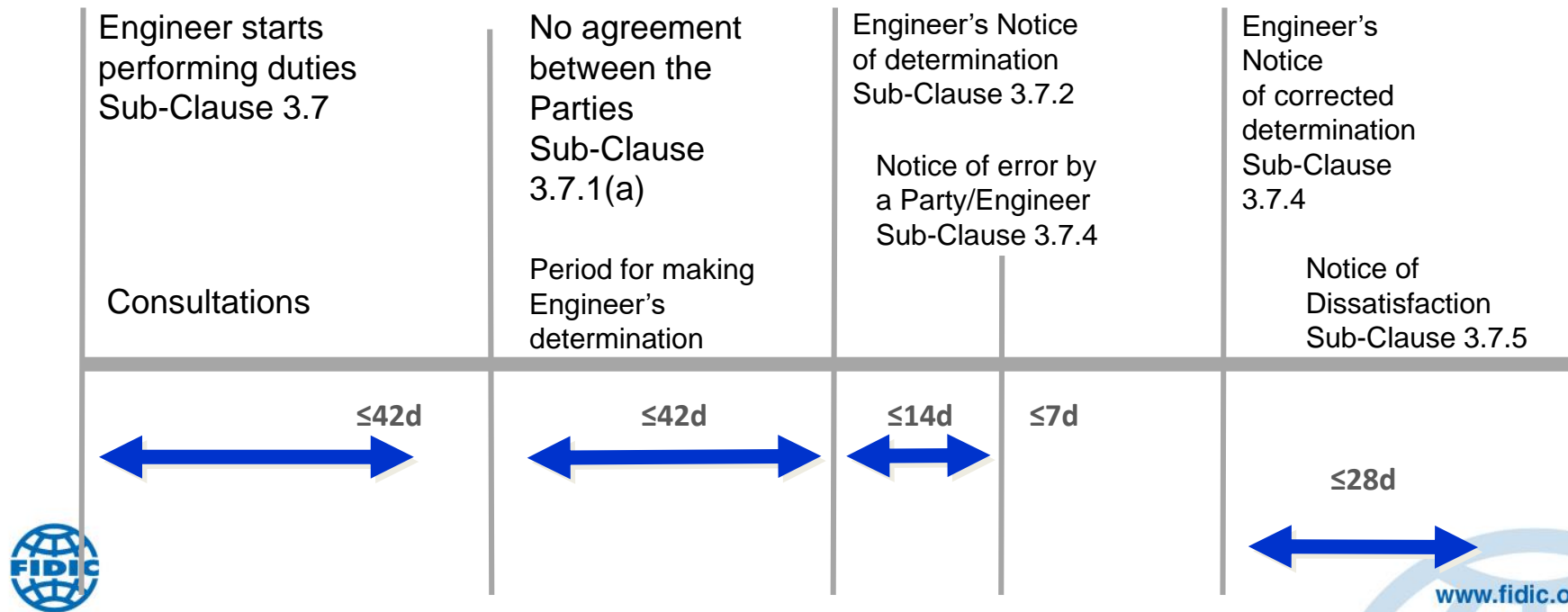
Sample clauses that require Engineer to proceed under Sub-Clause 3.7 [Agreement or Determination]

- 14.5: Plant and Materials intended for the Works
- 15.3: Valuation after Termination for Contractor's Default
- 15.6: Valuation after Termination for Employer's Convenience
- 18.5: Optional Termination
- 20.1: Claims
- 20.2: Claims for Payment and/or EOT





Engineer to Agree or Determine Claims Sub-clause 3.7 (old 3.5)





Emerging challenges for the construction industry

- New delivery methods
 - PPPs, PFIs, Alliancing...
- Geopolitical & economic risks: maintaining our industry in a world experiencing geopolitical & economic re-balancing
- Sustainability & climate change: equipping our industry to reduce and mitigate climate change impact
- New technologies: what is their impact (BIM, collaborative work, big data, block chain technology, IoT...)
- New initiatives – Belt and Road Initiative (BRI)



Place & role of consulting engineers in today's international construction projects.....

- Today and tomorrow...new challenges and opportunities:
 - Trusted advisor to clients
 - Who is the client?
 - Multi-disciplinary expert
 - Innovator



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Thank You





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