Session 5: Where Do I Start?
28 February 2016
15.30-17.00
Topics to be Discussed:

- How Does Hydropower Differ from Other Types of Construction?
- Contract Types for Various Kinds of Hydropower Projects
- Preparing a Contracting Plan
- Integrating the Employer’s Normal Practices & Potential Conflicts
- Particular Conditions of Contract; General Specification Requirements
- Brief Case Studies
How Does Hydropower Differ from Other Types of Construction?

- Highly political (money, national pride, visible, sometimes multinational)
- Can drive national development
- Attracts attention of NGOs
- High degree of environmental and social scrutiny
- Dealing with an increasingly important resource ... WATER
- High initial capital cost
- Low maintenance cost
- Long life (50-year minimum design life)
- Long lead time
- Generally remote sites
How Does Hydropower Differ from Other Types of Construction?

- Other infrastructure improvements needed to build them; they in turn provide infrastructure to others
- Bigger does not mean tougher (or easier)
- Multi-disciplinary (technically)
- Potentially lethal
  - Final product
  - During construction
- Serve multiple purposes
- Price-time-quality drivers
- “Value equation”
How Does Hydropower Differ from Other Types of Construction?

- Limited competition
- Bidders will try to dictate terms
- Low profit margins, especially if design-bid-build (FIDIC Red Book)
- Sometimes requires marketing of the project to potential bidders

- Together with the mining industry, it drives innovation among equipment manufacturers
- Old technology generally; however, can drive new technology

- Other aspects that are unique to dam/hydro construction?
Multi-Purpose Nature of Dams

- Power generation
- Flood control
- Water supply
- Agricultural
- Diversion
- Navigation
- Recreation
Cost, Schedule, and Quality Drivers

- Cost
- Time
- Quality
Preparing a Contracting Plan

- Necessity for a Sound Contracting Plan

- Elements of a Sound Contracting Plan
  - Sample table of contents (to be projected as a separate document)

- Periodic Revisions of the Contracting Plan
  - It is a living document!
  - Handy source of reference
Contract Types for Various Kinds of Hydropower Projects

- Most-Commonly Used General Conditions for Dams & Hydro Globally … FIDIC
  - FIDIC Red Book (both 1999 and 1987/92), design-bid-build
  - FIDIC Yellow Book (both 1999 and 1987/92), design-build, E/M works
  - FIDIC Silver Book (1999), EPC

- Others
  - Bank-mandated terms and conditions
  - Government-mandated
  - National engineering society terms and conditions
  - Terms and conditions drafted by lawyers
  - Construction management at risk (CMAR) contracts
  - Public-private-partnership (PPP or P3) contracts
  - Others

- When to use what?
Case Studies used in Sessions 5, 7, and 8

• New Construction
  – AMP/Ohio (USA) – this Session 5
  – Mohale Dam (Lesotho) - Session 7

• Rehabilitation
  – Georgia Energy Security Initiative (Rep. of Georgia) – this Session 5
  – Mangla Powerhouse Refurbishment (Pakistan) – Session 7

• Public-Private-Partnership
  – John Hart Project (Canada) – Session 7

• Interactive Case Study – Session 8
Case Study: AMP/Ohio River Hydroelectric Projects
Case Study: AMP/Ohio River Hydroelectric Projects

Cannelton Hydroelectric Project:
Case Study: AMP/Ohio River Hydroelectric Projects

Willow Island Hydroelectric Project
Case Study: AMP/Ohio River Hydroelectric Projects

Smithland Hydroelectric Project
Case Study: AMP/Ohio River Hydroelectric Projects

Meldahl Hydroelectric Project
Case Study: AMP/Ohio River Hydroelectric Project

- Contracting Plan – Table of Contents
  - 1. INTRODUCTION
  - 2. OVERALL OBJECTIVES AND GENERAL APPROACH
    - 2.1 Overall Hydroelectric Project Objectives
    - 2.2 Overall Approach to the Implementation of the Hydroelectric Projects
    - 2.3 Prequalification
    - 2.4 Bid / Contract Documents
    - 2.5 Bonding Requirement
    - 2.6 Insurance
    - 2.7 Governing Law and Language; Approach Toward Disputes
  - 3. RISK MITIGATION
    - 3.1 General
    - 3.2 Delay / Disruption / Acceleration Risk
    - 3.3 Differing Site Conditions
    - 3.4 Force Majeure
    - 3.5 Other
Case Study: AMP/Ohio River Hydroelectric Project

• Contracting Plan – Table of Contents (continued)
  – 4. BID PACKAGING
    • 4.1 Subdivision of the Work into Bid Packages
    • 4.2 Description of Individual Bid Packages
  – 5. PREQUALIFICATION OF BIDDERS
  – 6. BID PROCESS
  – 7. EVALUATION & AWARD PROCESSES
  – 8. CONTROL OF CONTRACT CHANGES
  – 9. DISPUTE RESOLUTION
  – 10. BONDING AND INSURANCE
  – APPENDICES
Case Study: AMP/Ohio River Hydroelectric Project

• Contracting Plan – Appendices
  – Procurement Schedule
  – Model Terms and Conditions of Contract
  – Model Advertisement / Invitation to Prequalify
  – Model Prequalification Documents for Construction Contractors
  – Mock Criteria for Evaluation of Completed Prequalification Questionnaires
  – Variation Request Evaluation Form
  – Variation Order Form
  – Model Security Forms
  – Others
Case Study: Georgia Energy Security Initiative
Case Study: Georgia Energy Security Initiative

- History of the project(s)
- Contracting plan – outline similar to that used for AMP/Ohio, but adapted substantially to this project
- Contained formal FIDIC contracts and less formal “quick hit” contracts, depending on size, complexity, and procurement speed needed
- Contracts included purchase orders, short-form contracts, and full-size contracts varied based on size and complexity
- Some sole-source contracting with the original manufacturer
- Some work was performed by the Employer
Integrating the Employer’s Normal Practices & Potential Conflicts

- Public vs. private clients
- Value vs. price
- Tradition & laws
  - national procurement standards
  - banks vs. governments
  - insurer vs. Employer’s preferences
  - the post 9/11 world
- Politics
- Limited competition
- Risk Allocation
Particular Conditions of Contract; General Specification Requirements

- Modifying the General Conditions
- Bridging the divide between legal and engineering work
- Projects with multiple contractors
  - Need clear definition of interfaces
  - Interface (cooperation, delivery, turnover)
  - Employer-furnished equipment (who installs?)
- Liquidated damages
  - Time
  - Guarantees
- Simultaneous construction and power generation
- Protecting existing plant
Particular Conditions of Contract; General Specification Requirements

- Completeness of design
- Tender versus construction drawings
- Existing conditions, reference documents
- Interfacing with geotechnical baseline reports
- Electronic bid documents
- Automated document management systems (define it early if used)
- Price escalation; currency issues
- Dispute processes; venues
Where Do I Start?

Questions?
THANK YOU