

**April 2008 Draft – COAA EPCM Contract
Appendix A – Owner’s Requirements
Attachment**

1. General

This Appendix defines the Owner’s Requirements for the Services for the Project.

Brief Description of the Facilities

Brief Description of:

- 1.1.1. Scope
- 1.1.2. Engineering Scope
- 1.1.3. Procurement Scope
- 1.1.4. Construction Management Scope

The Facilities shall be complete, fully operable and maintainable, in accordance with industry standards for _____, and shall conform to the Owners operational requirements. The planned commercial operation date for the project is xxxxxxxx date

The date of completion of Services will be the date stated in the Final Completion Notice (see Appendix I for the standard form)

Should the Owner require, and both parties agree, the date of completion may be extended following the issue of the Final Completion Notice to include the warranty periods of the Works Contractors.

Furthermore, should the Owner require, and both parties agree, the EPCM Contractor Services may be extended further to include the operation and maintenance of the Facilities for periods of time to be determined.

Pursuant to Article xxx, the EPCM Contractor will submit to the Owner, for approval, the Project Execution Plan (PEP) on or before

_____.

The EPCM Contractor will provide support to the Owner in environmental regulatory applications.

1.8 Appointment of Prime Contractor

2. Engineering

- 2.1. Detailed Engineering Scope
- 2.2. Engineering Design Deliverables
- 2.3. FEED (Front End Engineering Document)
- 2.4. Conceptual Design
- 2.5. Design Base Memorandum (DBM)
- 2.6. Engineering Cost of Service Estimate
- 2.7. Modularization Strategy
- 2.8. Automation Plan
- 2.9. Engineering Management
- 2.10. Engineering Quality
 - 2.10.1 Building Codes & Statutes
 - 2.10.2 Owners Standards & Specifications
- 2.11. Procurement

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- 2.11.1. Material Requisitions
- 2.11.2. Material Technical Bid Evaluations
- 2.11.3. Equipment Technical Bid Evaluations
- 2.11.4. Works Contractors Bid Evaluations
- 2.12. Construction & Field Engineering Support
- 2.13. Constructability Reviews
- 2.14. Value Engineering Studies
- 2.15. Safety in design Studies

- 3. Procurement
 - 3.1. Procurement Protocols For:
 - 3.1.1. Bulk Material
 - 3.1.2. Owner’s Tagged Equipment
 - 3.1.3. Long Lead & Schedule Driven Items
 - 3.1.4. FEED Estimate and Schedule Support
 - 3.2. Vendor Data
 - 3.3. Operating Manuals and Spare Parts
 - 3.4. Quality Surveillance
 - 3.5. Expediting Procedure
 - 3.6. Customs Clearances and Insurance
 - 3.7. Transportation, Logistics, and Warehousing
 - 3.8. Logistics/Materials Management/Receiving Inspection/Check-in, Storage, etc.
 - 3.9. Qualified Carriers – Local & International
 - 3.10. Approved Vendor/Supplier of Choice Lists
 - 3.11. Material Receiving and Distribution

- 4. Construction Management
 - 4.1. Construction Execution
 - 4.1.1. Labor & Industrial Relations
 - 4.1.2. Resource Availability
 - 4.1.3. Environmental, Health, Safety, and Site Security
 - 4.1.4. Emergency Services
 - 4.1.5. Mobilization of Both EPCM & Works Contractors
 - 4.1.6. Construction Quality Control
 - 4.1.7. Personnel Housing and Transportation
 - 4.1.8. Construction Infrastructure
 - 4.1.9. Construction Equipment
 - 4.1.10. Construction Services
 - 4.1.11. Construction Supervision
 - 4.1.12. Demobilization, Demolition, Salvage and Abandonment
 - 4.1.13. Red Line and As-Built Drawing
 - 4.1.14. Home Office and Engineering Support
 - 4.1.15. Vendor Support
 - 4.2. Apprenticeship Employment Plan
 - 4.3. Work Site Policies and Procedures **(NTD – see also Appendix F)**
 - 4.4. Productivity Enhancement Program(s)
 - 4.5. Scaffolding
 - 4.6. Site Access

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- 4.7. Site Bulletins/Notices
- 4.8. Site Vehicles (Operation, Permits, etc.)
- 4.9. Site Offices and Facilities
- 4.10. Site Services (Access roads maintenance & snow removal, parking, debris removal, temporary heat, light, power, washrooms, parking, time control, brass alleys, etc.)
(NTD – place comprehensive list here)
- 4.11. Site Utilities (electrical power, gas, fire and potable water, telephone, internet, etc.)
(NTD – place comprehensive list here)
- 4.12. Snow removal ~ Responsibility for, in work areas
- 4.13. Workface Planning – see Attachment A
- 4.14. Continuous Improvement Process (CIP)
- 4.15. Cranes/Checklists/Certification
- 4.16. Critical Lifts/Lift Studies
- 4.17. Direct Hire Labour (Minor work)
- 4.18. Equipment, Small Tools, Consumables
- 4.19. Communication Plan
- 4.20. Interface & Integration of Management Systems
 - 4.20.1. Interface (With Owner’s Programs)
 - 4.20.2. Integration (With Owner’s Programs)
- 5. Organizational Plan
 - 5.1. Accounting Plan
 - 5.2. Team Building Plan
 - 5.3. Rewards and Recognition
 - 5.4. Retention & Development
 - 5.5. Organization Charts ~ Owner and EPCM Contractor
 - 5.6. Owner’s Key Personnel/Areas and Limits of Authority
 - 5.7. Responsibility Matrix
 - 5.8. Staffing Plan / Contacts List
- 6. Project Safety Plan
 - 6.1. Risk Management
 - 6.1.1. Risk Management
 - 6.1.2. Risk Identification, Assessment, Mitigation, & Monitoring Plan
 - 6.2. Independent Project Review
 - 6.3. Operability and Maintainability Review
 - 6.4. PHA, HAZOP, SIL Review
 - 6.5. Incident Investigation & Reporting
 - 6.6. Work Permit Procedures
 - 6.7. Lock Out Procedures
 - 6.8. Loss Management
 - 6.9. Safe Work Procedures
 - 6.10. Safety Meetings
 - 6.11. Weather (Work policy in extremes of temperature)
 - 6.12. Drug & Alcohol Policy
 - 6.13. Emergency Evacuation
 - 6.14. Fire Protection/Prevention/Evacuation

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- 6.15. First Aid/Medical Facilities
- 6.16. HAZOP Studies

- 7. Regulatory Compliance & Stakeholder Relations
 - 7.1. Environmental Management
 - 7.2. Application and Permitting
 - 7.3. Management of Regulatory Changes
 - 7.4. Site Reporting

- 8. Quality Management
 - 8.1. QA/Shop Supervision
 - 8.2. Quality Management Program
 - 8.3. Inspection & Test Plan (ITP)

- 9. Technical Information & Document Management
 - 9.1. Records Management & Document Control
 - 9.2. System Management & IT Plan
 - 9.3. Models – Review & Maintenance
 - 9.4. Vendor Data Management
 - 9.5. Information Management & Support for Interface Management
 - 9.6. Information Exchange
 - 9.7. Information Quality and Integrity
 - 9.8. Information Turn Over Protocols
 - 9.9. Requests for Information (RFI) Procedure

- 10. Financial
 - 10.1. Financial Control/Reporting
 - 10.2. Cash Forecasting
 - 10.3. Financial Audit
 - 10.4. Financial Loss Management
 - 10.5. Cash Management
 - 10.6. Claims Management

- 11. Project Controls
 - 11.1. Project WBS
 - 11.2. Cost Estimate and Control Base
 - 11.3. Contingencies
 - 11.4. Performance and Progress Monitoring
 - 11.5. Project Cost Control System
 - 11.6. Project Reporting
 - 11.7. Overall Project Master Schedule
 - 11.8. Industry Benchmarking
 - 11.9. Reporting and Stewardship

- 12. Contracts
 - 12.1. Contracting Program for Works Contractors
 - 12.2. SubContracting Plan
 - 12.2.1. Off Site Fabrication Shops
 - 12.2.2. Specialized Work

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- 12.3. Construction Contracting Strategy
- 12.4. Pre-qualified Works Contractor Lists

- 13. Ready for Operations **(NTD – see also Appendix F)**
 - 13.1. Operating Plan Prior to RFO Mobilization
 - 13.2. Turn Over Plan / As-Built Drawings
 - 13.3. Deficiency List
 - 13.4. Start Up Support

- 14. Commissioning
 - 14.1. Commissioning Guide
 - 14.2. Commissioning Procedures
 - 14.3. Commissioning Services

- 15. Operations and Maintenance
 - 15.1. Operations Design
 - 15.2. Maintenance Design
 - 15.3. Turn Around Design

- 16. Administration
 - 16.1. Accounting Procedures

- 17. Management of Change **(NTD – see also Appendix F)**
 - 17.1. Management of Change (MOC)

- 18. Information Systems
 - 18.1. Information Technology
 - 18.2. Information Systems
 - 18.3. System Management
 - 18.4. Embassy Support
 - 18.5. Information Management and Systems (interface between Owner’s systems and EPCM Contractor’s systems)
 - 18.6. Job Execution Authorization

ATTACHMENT A – WORKFACE PLANNING for EPCM CONTRACTS

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WORKFACE PLANNING FOR EPCM CONTRACTS

Owner requires that Engineering, Procurement and Construction Management (EPCM) Contractor work with and support the Construction Contractor with its requirement to implement Workface Planning, in accordance with the Construction Owners Association of Alberta (COAA) model as published on the COAA website (www.coaa.ab.ca.) The EPCM Contractor shall review and comment on the Construction Contractor submitted Workface Execution Plan taking into account the minimum standards of the COAA model contents and shall monitor Construction Contractor’s implementation in being in accordance with terms and conditions agreed between Owner and Construction Contractor.

The Construction Contractor’s - Workface Planning Execution Plan, complete with a Workface Planning Score Card, shall be prepared by the Construction Contractor and submitted to the EPCM Contractor for review and Owner for review and approval no later than 90 days in advance of the beginning of permanent plant installations at the Site or as otherwise agreed. The EPCM Contractor comments shall be submitted to the Owner for review and may be incorporated with the Owners comments and submitted to the Construction Contractor for inclusion to the Plan prior to approval by Owner

The EPCM Contractor shall, as part of work scope as require by Owner, conduct periodic audits and ongoing surveillance of the Construction Contractors - Workface Planning efforts including its lower tier subcontractors using the Workface Planning Score Card at the frequency and times noted therein. Owner shall monitor and reserves the right at any time deemed necessary to audit the Construction Contractor using the Workface Planning Score Card on the execution of the Construction Contractor’s Workface Execution Plan throughout the duration of the contract to determine if Workface Planning is being implemented in accordance with the agreed upon Workface Planning Execution Plan. In cases where significant deviations to the Workface Planning Execution Plan are identified either by the Owner or the EPCM Contractor: the Construction Contractor shall immediately prepare an action plan for correction of the deficiencies and shall immediately implement this plan upon approval of the owner.

The Construction Contractor will divide a Work Design Area into a series of preferred Construction Work Packages (each a “CWP”). These CWP’s will be issued to the Owner and EPCM Contractor in order to align relevant portions of the overall Scope of Work with the EPCM Contractor deliverables e.g.: Engineering Work Packages (EWP’s), Materials and Equipment. With Owner participation, Construction Contractor and EPCM Contractor shall discuss and

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form agreement for mutual benefit with regard to these packaging boundaries. This cooperation shall continue throughout the project to completion.

If EPCM Contractor and Construction Contractor can not agree on the EWP/CWP breakdown the Owner together with the EPCM Contractor and Construction Contractor will formulize an agreement that is beneficial to the overall project.

During the EDS or preliminary engineering stage of the project, as a result of agreement between the EPCM Contractor and the Construction Contractor, the Construction Contractor will identify the CWP’s and develop a CWP Release Plan that will specify the number, approximate manhour size, and release date of each CWP. The CWP Release Plan will include standard templates to be used, the number of packages, and planned craft loading to accomplish the tasks in the CWP’s. Construction Contractor shall submit the CWP Release Plan to the EPCM Contractor for review and Owner for review and approval. If Owner or EPCM Contractor has comments on the initial submittal and if requested by Owner, the Construction Contractor will resubmit the CWP Release Plan which will include Owner’s and/or EPCM Contractors comments in order to gain Owner’s approval. The date of the Construction Contractor’s initial submittal of the CWP Release Plan is to be agreed upon between Owner and Construction Contractor at the beginning of the EDS or preliminary engineering phase.

Each CWP will include but not limited to the following:

- A detailed description of the Scope of Work for a defined area that has been released for execution by the Construction Contractor
- A detailed Bill of Materials (BOM) specifying all quantities making up the scope of Work released by the CWP.
- A schedule detailing commencement and completion dates for scope of Work released by the CWP.
- Technical requirements, references and information pertinent to the scope of Work released in the CWP.
- Safety considerations with respect to the Work / Risk Assessment.

As Issued-for-Construction (IFC) CWP’s are released, the Construction Contractor and/or its lower tier subcontractors shall provide the following:

- Roles and responsibilities for Construction Contractor and Sub-Contractors
- Safety considerations with respect to the Work / Risk Assessment.
- Dedicated, suitably trained Workface Planners who have either completed the COAA Fundamentals Course or equivalent Owner-developed course to break the CWP into a series of specific Workface Planning work

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packages called Field Installation Work Packages (FIWP’s). These dedicated Workface Planners will be accountable to complete and signoff as ready the FIWP’s before the FIWP is released to the crew.

- Dedicated Integration Planner with assigned responsibility to coordinate and lead the efforts of the Workface Planners and resolve anticipated conflicts proactively between the different FIWP’s.
- Dedicated Resource Coordinators with assigned responsibility for areas such as material identification and control, scaffolding, construction equipment, specialty tools, and other resources needed to support the Workface Planning effort.
- Experienced personnel including craft supervision to review the scope and completeness of FIWP’s.
- Work force and leadership to execute FIWP’s.
- Personnel and systems to report progress and performance of FIWP’s in an agreed upon format and frequency with the Owner.
- Prepare and maintain detailed schedules and spreadsheets tracking, monitoring, and closing-out FIWP’s from start to completion of each FIWP during the construction phase of the project.
- Provide quality assurance personnel to audit compliance to FIWP instructions and requirements

Prior to the CWP’s reaching IFC stage, the Construction Contractor and/or its lower tier subcontractors shall develop a preliminary FIWP Release Plan for each CWP indicating the approximate size and planned release date for each FIWP. The Owner and EPCM Contractor will review the Contractor’s FIWP Release Plan and Owner shall approve with input from the EPCM Contractor. If Owner or EPCM Contractor has comments on the initial submittal and if requested by Owner, the Construction Contractor will resubmit the FIWP Release Plan which will include Owner’s and/or EPCM Contractor comments in order to gain Owner’s approval. The date of the Contractor’s initial submittal of the FIWP Release Plan is to be agreed upon between Owner, EPCM Contractor and Construction Contractor during the EDS or preliminary engineering phase of the project.

The EPCM Contractor shall be responsible for the following:

- Review and comments on the Construction Contractor’s - CWP Release Plan, CWP – EWP alignment and other appropriate items, these comments shall be submitted to the Owner for review and may be included with the Owners comments and submitted to the Construction Contractor for inclusion to the Plan prior to approval by Owner
- Review the detailed description of the CWP Scope of Work for a defined area and submit comments to Owner for review and may be include with the Owner’s Comments and submitted to the Construction Contractor for

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inclusion in the Plan prior to the release for execution by the Construction Contractor

- Monitor, audit and perform ongoing surveillance on the Construction Contractor’s - CWP Release Plan and its execution as requested by Owner
- Review and comments on the Construction Contractor’s – FIWP Release Plan, comments shall be submitted to the Owner for review and may be included with Owners comments and submitted for inclusion to the Plan prior to approval by Owner
- Monitor, audit and perform ongoing surveillance on the Construction Contractor’s – FIWP Release Plan and its execution as requested by Owner