

## **SCHEDULE O - PROJECT CONTROLS**

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## **SCHEDULE O - PROJECT CONTROLS**

### **1 PROJECT CONTROLS MANAGEMENT PLAN**

#### **1.1 General**

The Contractor will perform the project controls functions necessary to support the cost and schedule objectives of the Owner by:

- (a) providing a description of the means of ensuring and reporting that the Contractor is performing the Work in accordance with the Contractor Construction Execution Plan; and
- (b) providing timely and accurate schedule, progress, cost data and associated reporting of the performance of the Work as required by the Contract Documents.

#### **1.2 Project Controls Management Plan**

In association with the Contractor Construction Execution Plan, the Contractor will submit a plan (the “**Project Controls Management Plan**”) that describes the Contractor’s project controls processes, procedures and systems to be used and how Contractor will interface with Owner’s processes and systems.

The Contractor’s Project Controls Management Plan and associated procedures will include:

- (a) roles and responsibilities of Contractor’s management personnel for the performance of the Work
- (b) work breakdown structure and cost breakdown structure;
- (c) planning and scheduling;
  - (i) Schedule development; and
  - (ii) Schedule control.
- (d) progress and performance;
- (e) cost management;
- (f) change management;
- (g) risk management;
- (h) project reporting:
  - (i) reporting calendar;
  - (ii) content; and

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- (iii) timing and frequency.

The content, timing and frequency of Project reports and data will align with the Owner's process and system requirements. See CKPC0-GEN-0000-PC-PRO-00008 - Contractor Progress Reporting and CKPC0-GEN-0000-PC-PRO-00009 - Reporting Calendar

- (i) project controls information systems; and

- (j) final Project report:

- (i) Contractor will submit a final report upon Substantial Completion. The format of this report will be mutually agreed by the Contractor and the Owner. Copies of electronic files developed in preparing this report will be provided to Owner.

- (ii) The report will include a copy of the Work Schedule and a copy of the equipment and bulk material requisitions, Purchase Orders (unpriced) and delivery schedule.

In addition to the Contractor Construction Execution Plan, the Contractor will submit to Owner the following;

- (k) Project 30-day detailed look ahead schedule within 14 days after the Effective Date, and

- (l) Project schedule baseline package within 14 days after the Effective Date.

### 1.3 Work Breakdown Structure

Contractor's work breakdown structure and any associated coding structures will align with CKPC Project Work Breakdown Structure and associated coding structures to permit Contractor roll up of information for reporting to Owner. See CKPC0-GEN-0000-PC-LST-00001 - CKPC Project Work Breakdown Structure.

## **2 SCHEDULE MANAGEMENT**

Contractor will develop and control the Work Schedule in accordance with this Schedule and the following:

- (a) CKPC0-GEN-0000-PC-PRO-00004      Schedule Development and Control
- (b) CKPC0-GEN-0000-PC-PRO-00005      Schedule Integration Management
- (c) CKPC0-GEN-0000-PC-PRO-00006      Basis of Schedule Template
- (d) CKPC0-GEN-0000-PC-PRO-00007      Scheduling ID and Coding Dictionary

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The above attachments are Owner's schedule procedures used in the development of the Work Schedule. Items within the attachments may or may not be applicable to the Contract. Any deviation from these standards shall be discussed and agreed upon with Owner.

## 2.2 Contractor Schedule Responsibilities

Contractor responsibilities include:

- (a) develop and issue Project schedule baseline for Owner approval, including:
  - (i) level 3 schedule logic-driven and resource loaded;
  - (ii) incorporation of all Project milestones including:
    - (A) Owner program milestones;
    - (B) contractual milestones;
    - (C) major interim milestones;
  - (iii) applicable coding in accordance with Owner schedule coding structure;
  - (iv) roll-ups for Project level I and II schedules;
  - (v) schedule basis and assumptions document in accordance with the Owner's attached Basis of Schedule Template; and
  - (vi) all supporting documents;
- (b) develop and issue regular Project schedule update package with progress in accordance with Owner reporting calendar including:
  - (i) incorporation and maintenance of Project schedule changes in accordance with the Owner Management of Change process;
  - (ii) identification and report of all Project schedule deviations of the schedule update compared with baseline plan and compared with the previous period report including:
    - (A) explanation of deviations;
    - (B) revisions to key logic, durations and critical path;
    - (C) mitigation measures and recovery plan, as required;
- (c) participate in review meetings prior to submitting schedule and progress reports to Owner;
- (d) provide any assistance requested by Owner to verify the information provided by Contractor;

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## 2.3 Owner Schedule Responsibilities

Owner responsibilities include:

- (a) oversee planning and scheduling activities across the CKPC Project to ensure that all planning and scheduling practices are compliant with Owner requirements;
- (b) establish, update and maintain the overall Owner CKPC Project schedule;
- (c) provide Contractor with Owner schedule milestones (Schedule E); and
- (d) upload Contractor level III schedule native files (XER) into the Owner Primavera database.

## **3 CKPC PROJECT WORK BREAKDOWN STRUCTURE**

Contractor's Work Breakdown Structure and any associated coding structures will align with CKPC Project Work Breakdown Structure and associated coding structures to permit Contractor roll up of information for reporting to Owner. See CKPC0-GEN-0000-PC-LST-0001 CKPC Project Work Breakdown Structure and CKPC0-GEN-0000-PC-LST-00002 CKPC Project Cost Breakdown Structure.

## **4 PROGRESS MEASUREMENT AND PERFORMANCE**

### 4.1 Progress Measurement and Performance

The Contractor will establish and maintain progress measurement and performance in accordance with this Schedule and CKPC0-GEN-0000-PC-PRO-00008 - Contractor Progress Reporting.

Contractor will establish and maintain, a progress measurement and earned value system and procedures to accurately analyze and update the Work Schedule and progress of the Work. This will reflect the Work status at any given time during Project execution.

Contractor's progress measurement system will be based on the principles of an earned value (%) calculation. All progress measurement will be based on physical percent completion of deliverables and based on approved rules of credit for procurement, construction and pre-commissioning deliverables or activities. Contractor is responsible for measuring the progress of procurement deliverables and installed weighted quantities.

### 4.2 Methodology

Contractor will submit with Contractor's Project Controls Management Plan the methodology for progress measurement and earned value system. Contractor will also submit the rules of credit (progress templates) for progress measurement for procurement, construction and pre-commissioning activities for Owner's review and approval.

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## 5 COST MANAGEMENT

### 5.1 Cost Control Management System

Contractor will establish and maintain Contractor's cost management system in accordance with this Schedule and in alignment with CKPC0-GEN-0000-PC-LST-00002 - CKPC Project Cost Breakdown Structure. Contractor cost control and reporting will include:

- (a) original budget;
- (b) current budget;
- (c) committed costs;
- (d) incurred costs;
- (e) invoiced;
- (f) estimate at completion;
- (g) forecast at completion; and
- (h) monthly incurred cost flow projection.

Contractor will submit with Contractor's Project Controls Management Plan, the methodology, systems and procedures for Project cost control and reporting.

Contractor will provide monthly cost control reporting in accordance with Owner Cost Breakdown Structure including:

- (i) an electronic data file for Owner upload to Owner's cost system; and
- (j) tabular reports in alignment with Owner month end reporting format.

Contractor will establish in Contractor's cost management system, sufficient structure and detail to provide drill down capability to identify, manage and mitigate concerns and opportunities.

Contractor will provide any necessary supporting data from Contractor systems to be incorporated into the monthly reports.

### 5.2 Original Budget

Contractor will submit with Contractor's Project Controls Management Plan, the Contract Price for the Work structured in accordance with Owner's Cost Breakdown Structure. Upon Owner approval, this will form the Original budget.

### 5.3 Current Budget

The original budget plus all approved Change Orders to date will form the current budget.

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The current budget will be the basis for monitoring and controlling Project cost. This will be used by the Contractor and Owner for all cost comparisons.

**5.4     Committed Cost**

Commitments are the value of awarded Sub-contracts, Purchase Orders, service agreements or any other agreement. They represent what the Contractor has agreed or committed to in terms of the goods and services that are to be provided.

**5.5     Incurred Cost**

Incurred cost is the value of Work completed up to a specific time based on the contract prices.

Cut off dates for incurred costs are the calendar month end in accordance with the Reporting Calendar. Therefore, and for reasons of timeliness, it may be necessary for Contractor to estimate a portion of the total cost incurred from the period cut-off of to the calendar month end.

Supplier and contractor invoice information will not be relied on solely as the basis for cost incurred. If Work has been done, then cost has been incurred. It is necessary to evaluate that cost regardless of whether invoices have been received.

The Contractor will provide, on a monthly basis, a forecast of incurred costs broken out by month for the duration of the Contract.

**5.6     Forecast at Completion**

Forecast at Completion (FAC) is the Current Budget plus any potential changes as outlined in Section 7 below.

**6       PROJECT ACCOUNTING**

**6.1     Invoicing and Payment**

See Master Services Agreement Clause 8.0

**7       MANAGEMENT OF CHANGES**

**7.1     Process**

In the event of a Change, in accordance with Contract Documents and Special Conditions, the Contractor will follow the process as identified in this Schedule so as to achieve the intended benefits while minimizing health, safety, environmental, quality and business risks. Owner has developed the following Change management objectives:

- (a)     minimize the impact of Change;
- (b)     give early warning of potential Change; and



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- (c) identify and document all associated impacts arising from the Change;

The principles to support these objectives are documented below.

#### 7.2 Minimize the Impact of Change

To minimize the impact of changes, considerations to be evaluated include:

- (a) health, safety, environmental;
- (b) reliability;
- (c) operability;
- (d) maintainability; and
- (e) statutory and legal.

#### 7.3 Early Warning of Potential Change

The Contractor will give the Owner written notice of any potential Change as soon as the Contractor is aware of the potential Change. The integrity of the early warning system is dependent upon the commitment to identify a potential Change as soon as there is the first indication of a possible need for change. The steps include identification and logging of potential Change.

#### 7.4 Identify and Document All Associated Impacts

All impacts of potential Change should be identified and documented. All requested and approved Changes will include documentation to ensure adequate funding, resources, scheduling and risk management.

The following impacts will be assessed with each potential Change:

- (a) cost impacts;
- (b) schedule impacts to:
  - (i) Contractor milestones;
  - (ii) critical path activities in accordance with the Contractor schedule; and
  - (iii) critical milestones (as agreed with Owner).

#### 7.5 Change Meetings and Change Logs

The Contractor will issue up-to-date Change logs to Owner on a regular basis as part of periodic reports.

Contractor will hold change management review meetings. Owner personnel be invited to the change management review meetings.

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## **8 CONTRACTOR REPORTING**

Contractor will submit Contractor reporting format and content to Owner for review and approval as part of Contractor Project Controls Management Plan.

Contractor will submit Project reports to Owner in accordance with CKPC0-GEN-0000-PC-PRO-00008 - Contractor Progress Reporting and CKPC0-GEN-0000-PC-PRO-00009 - Reporting Calendar. Contractor will ensure Contractor systems and coding structures are aligned with Owner reporting requirements to provide consistent reporting content and format to permit Owner to compile consolidated reporting across the CKPC Project.

Contractor will use Contractor systems however Contractor will meet all Owner requirements and present all reports and required data subject to Owner review and approval.

## **9 PROJECT CONTROLS CLOSEOUT**

Contractor will prepare, compile and issue a complete project controls closeout report.

The Contractor will submit for Owner's Approval within 60 days of the Effective Date, an outline of the proposed Project Controls Closeout report in accordance with the requirements of this Schedule.

Contractor will submit the draft project closeout report to Owner for review within 60 days of Mechanical Completion.

Owner will review this report and provide written comments to the Contractor within 14 days of issue of the draft report or advise Contractor in writing that there are no comments.

Contractor will update this report based on Owner comments and resubmit for approval within 30 days of receiving comments from Owner or written confirmation there are no comments.

The Project Controls Closeout Report is intended to describe the source of as-built data and the basis of as-built costs and is expected to identify the final schedule, cost, quantities and hour data.

The Project Controls Closeout Report will include the following, subject to review and approval by the Owner as some items may not apply to all contractors. Contractor will structure the close out report in accordance with the following table of contents:

- (a) Project Overview
  - Scope of Work Overview – Identifying and briefly explaining all scope of work
  - Project Highlights
  - Costs summarized to CKPC Project Work Breakdown Structure Level 3
  - Invoice Log
  - Lessons Learned pertaining to Project Controls
- (b) Construction (where applicable)
  - Civil Earthworks cost, quantity and hours

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- Piling cost, quantity, hours and type
  - Concrete cost, quantity and hours
  - Steel by cost, quantity and hours by:
    - Light
    - Medium
    - Heavy
    - Extra Heavy
  - Buildings cost and m2
  - Mechanical Equipment type, cost and quantity
  - Piping cost, quantity and hours by:
    - Above ground and underground
    - Installation
    - Welding diameter inches
    - PWHT
    - NDE Testing
    - Hydrotests
    - Reinstates
  - Electrical cost, quantity and hours by:
    - Power and Control Cable
    - Cathodic protection
    - Cable Trays
    - Equipment
  - Instrumentation and Automation by cost, quantity and hours
  - Fireproofing cost, quantities and hours
  - Insulation cost, quantities and hours by:
    - Pipe
    - Equipment
  - Scaffolding by cost and hours
  - Freight by:
    - Equipment
    - Bulks
    - Module
  - Final Indirect Costs
    - Labour
      - CMT
      - Indirect Field Labour
    - Material
      - Small Tools, Consumables & Equipment
      - Cranes over 300 tonnes
    - Warehouse
    - CMT

**(c) Schedule**

- EPC Level 3 resource loaded schedule (native and PDF)
- Systems turn-over schedule (native and PDF)
- Last Monthly Progress Report along with native files.