# GENERAL

## Related Sections

### Section 01025 – Measurement and Payment

### Section 01035 – Amending and Supplementing Contract Documents

### Section 01300 – Submittals

### Section 01310A – Facility Schedule Template

## Measurement and Payment



### The Work outlined in this Section shall be included in the price of item no. A1.02 of the Bid Form. Notwithstanding any other provision in the Contract, payments for this item will be made on the progress draw following completion and acceptance of each submission and the payments will be broken down, as follows:

#### 10% will be paid upon submission of a Detailed Schedule acceptable to the Region.

#### 15% will be paid upon submission of a Final Baselined Detailed Schedule acceptable to the Region.

#### Remaining 75% – Payment will be prorated monthly over the remaining Contract time, including any extensions to the Contract time and each monthly prorated amount will be paid, provided that, each monthly update of the schedule and Narrative Progress Report are submitted and accepted in accordance with the Contract Documents.

### No payments will be made for incomplete or unacceptable submissions based on the criteria outlined in section 1.6.

### Furthermore, if a schedule is not accepted within 30 Days of the required submission date, a deduction for that monthly schedule payment may be made.

### Onsite activity may not start until an acceptable Preliminary Schedule has been provided.

## Submittals

### The Contractor shall submit schedules in accordance with the timelines in Figure 1 and the descriptions below:

#### Figure 1: Submittals Timeline



#### Preliminary Schedule – within 5 Working Days of Contract execution

#### Detailed Schedule – within 30 Working Days of Contract execution

#### Baselined Detailed Schedule – within 65 Working Days of Contract execution

#### Updates of the Baselined Detailed Schedule - with each application for payment

#### Narrative Progress Report – with each application for payment

### All schedules shall be submitted in electronic format, Microsoft Project .mpp file and PDF file. The Contractor shall own the software and necessary license for Microsoft Project Professional 2010 or higher.

### The Contractor may submit updated schedule for approval up to 10 days prior to payment application to avoid any payment delays associated with schedule comments and clarifications.

### The Contractor shall distribute an electronic copy of each schedule to:

#### Consultant

#### Subcontractors

#### Other stakeholders as requested by the Region

## Project Scheduler

### The Contractor shall provide a project scheduler with the following minimum qualifications:

#### Proof of completion of Microsoft Project training (.pdf of training certificate)

#### Experience using Microsoft Project to manage a minimum of 3 projects of similar size and scope

## Schedule Structure

### All schedule submittals shall adhere to the schedule structure detailed herein.

### Format

#### The Contractor shall use the appropriate Region’s Microsoft Project template, provided in electronic format, as the basis for the schedule.

#### The Contractor name, contract number, project name, date submitted, revision or update number, date printed, the page number and total number of pages shall be indicated on every schedule page.

#### The schedule shall identify all Working Days and Non-Working Days on the MS Project calendar. The calendar shall include statutory holidays and construction specific Non-Working Days such as shutdowns (e.g. for winter holidays or fish timing windows, etc.) site access restrictions, and any other Non-Working time that impacts the project schedule (e.g. water storage facilities may not be removed from service during peak water demand periods).

#### The schedule start date shall coincide with the date of the Notice to Commence work, and shall be entered into the Project Information dialog box as the Start Date.

#### The Gantt Chart timescale across the top of the schedule shall be set-up to display the schedule duration by year, month, and week.

#### A legend shall be included to describe any standard and special symbols used.

#### The schedule shall not contain any blank rows.

### Summary Tasks and Milestones

#### Outlining shall be used to establish a hierarchical relationship within tasks.

#### Summary tasks shall be used to group common tasks together or to distinguish separate phases of the project.

#### Summary tasks shall not be linked to other summary tasks or to detail tasks indented under the summary task.

#### Milestones shall be included to mark the completion of each summary task and the delivery of each major deliverable in the project.

#### Milestones shall be marked by a zero (0) day duration task.

### Tasks

#### The first line of the schedule shall show the Project Summary task, and shall not contain a typed title or heading.

#### Schedule tasks shall be identified and sorted by a work breakdown structure code in a logical sequence. A cross reference to item numbers in the Bid Form shall be included as part of the task name.

#### All tasks shall be automatically scheduled. Use of manually scheduled tasks shall not be permitted.

#### Task start and finish dates shall be calculated by Microsoft Project, as per the project start date, the durations of the tasks, and the relationships between tasks.

#### Tasks shall follow a logical sequence from top to bottom, with limited reverse linking scenarios.

#### Orphan tasks shall not be permitted; that is, all tasks shall have at least one predecessor (Finish-Start, Start-Start, Finish-Finish) and one successor (Finish-Start, Start-Start, or Finish-Finish). Two special cases are as follows: Notice to Commence task is not required to have a predecessor and End of Warranty is not required to have a successor.

#### Each task shall be uniquely named so that it can be identified independent of schedule outline or summary task – e.g. generic task name “Region Review” vs. specific task name “Region Review Shop Drawings”.

#### All task durations shall be entered in units of days (not units of weeks or months).

#### Task duration for submittal review shall not be less than the review time specified in Section 01300 - Submittals unless it has been clearly identified and the prior written acceptance of the Region has been obtained.

### Critical Path

#### The schedule shall include a visible critical path, utilizing the calculation method inherent in the Microsoft Project software. Changes to durations in a critical path task shall impact the project finish date.

### Schedule Contingency and Schedule Slack

#### Contingency, when used in the context of the schedule, is the time between the Contractor’s proposed time for completion and the Contract Time for completion.

#### Slack, when used in the context of the schedule, is the amount of time a task can be delayed before impacting the schedule.

#### Contingency and Slack time included in the schedule are project resources and shall be available to both the Contractor and the Region to meet the Contract milestones and Contract Time.

#### The use of schedule Contingency or Slack suppression techniques is prohibited. This includes, but is not limited to:

##### Preferential sequencing or logic

##### Over inflating task durations or extending activity times

##### Building contingency into each task

##### Unwarranted or excessive use of lead/lag logic

## Schedule Acceptance

### This section applies to all schedule submittals.

### Following submittal by the Contractor, the Consultant shall review the schedule and return the reviewed copy within 10 Working Days after receipt.

### The Contractor shall re-submit the finalized schedule within 5 Working Days after receipt of the reviewed copy by the Consultant.

### A schedule shall be accepted if it addresses the following minimum requirements:

#### Conforms to the structure identified in section 1.5, and the specific requirements identified for each schedule submittal in sections 1.7, 1.8 and 1.9.

#### The schedule duration, including Total Performance of the Work and all intermediate milestones is within the Contract Time.

#### The specified Work sequences and constraints are shown as specified in the Contract Documents.

#### Start-up and testing times are as specified in the Contract Documents.

#### Submittal review times are as specified in the Contract Documents.

### In all other respects, the Consultant’s acceptance of the Contractor’s schedule indicates that, in the Consultant’s judgment, the schedule represents a reasonable plan for constructing the Work in accordance with the Contract Documents. The Consultant’s review and/or acceptance of the Contractor’s schedule shall not constitute authorization or acceptance of any changes to, or deviations from, the Contract requirements.

### Any lack of comment by the Consultant on any aspect of the schedule that is not in accordance with the Contract Documents shall not be construed as acceptance of that change or deviation, unless the Contractor has explicitly called the non-conformance to the Consultant’s attention in its submittal.

### The Contractor remains responsible for the schedule and the execution of the Work, including, but not limited to, performing all activities, estimating task durations, and sequencing of any tasks required to construct the Work in accordance with the Contract Documents.

### Where a schedule is deemed unacceptable by the Consultant, the Contractor shall make the requested corrections and re-submit in accordance with section 1.6.3.

### Until the schedule is acceptable to the Consultant and the Region project team as a Baselined Detailed Schedule, the review and revision process shall continue, during which time the Contractor shall update the schedule in order to reflect the actual progress and occurrences on the project to date. The Contractor shall be fully responsible for all costs and any delays associated with the schedule review, revision and approval processes outlined in this Section.

## Preliminary Schedule

### The Preliminary Schedule shall:

#### Show the duration and sequence of the major activities of the Work required to meet interim milestones, Substantial Performance of the Work and Total Performance of the Work

#### Reflect the means and methods chosen by the Contractor

#### Start with the date of Notice to Commence Work and finish with the date of Warranty End

#### Incorporate all tasks, activities and documentation submission requirements as defined by the Contract

#### Specify work sequences and construction constraints

### The Preliminary Schedule shall show tasks including, but not limited to the following:

#### Notice to Commence

#### Permits and Approvals Acquisition

#### Submittals as specified in Section 01300 – Submittals, including Region review times

#### Region furnished equipment or material delivery dates or ranges of dates

#### Procurement activities for pre-purchased equipment and materials with long lead time

#### Mobilization and initial site work summary

#### Major structural, mechanical, equipment, electrical, architectural, SCADA/PAC/device programming and instrumentation and control work summary

#### Start-up summary

#### Training summary

#### Commissioning summary

#### Substantial Performance

#### Total Performance

#### Project close-out summary

#### Demobilization summary

#### Warranty start, duration and end

## Detailed Schedule

### The Detailed Schedule shall:

#### Breakdown summaries into manageable tasks with durations of no less than 1 Working Day and no more than 10 Working Days, exclusive of submittal review and product fabrication / delivery tasks or unless otherwise approved by the Region.

#### Be cost loaded such that:

##### The cost to perform each Work activity, with the exception of summary tasks and milestones shall be added to detail tasks on the Detailed Schedule in accordance with the completed Schedule of Prices specified in Section 01025 - Measurement and Payment.

##### The sum of all task costs shall equal the Contract Price. An unbalanced or front loaded schedule shall not be accepted.

##### The Detailed Schedule shall be used for cash flow forecasting and estimation of monthly progress payments.

### Scheduling Workshop:

#### The Scheduling Workshop shall occur no later than 20 Working Days following the Notice of Award.

#### The Contractor’s Project Scheduler shall lead the Scheduling Workshop.

#### The Consultant and Region shall be invited to participate in the Scheduling Workshop.

#### At the Workshop, the Contractor shall present the Detailed Schedule, explaining at a minimum, the sequencing and logic of the schedule, tasks on the critical path, the use of any lead or lag times, and the incorporation of any risk mitigation measures.

#### The Workshop participants shall provide feedback on the Detailed Schedule during the Workshop.

#### Following the Workshop, the Contractor shall update the Detailed Schedule and shall re-submit the Detailed Schedule within 5 Working Days.

### Baselining:

#### When accepted by the Region, the Detailed Schedule submittal following the Scheduling Workshop shall replace the Preliminary Schedule, be baselined, and become the Baselined Detailed Schedule.

#### Should an accepted adjustment of Contract Time be made in accordance with section 1.11.5, the Baselined Detailed Schedule shall be updated to reflect the change in Contract Time and the Baselined Schedule shall be re-baselined.

## Updates of the Baselined Detailed Schedule

### The Contractor shall update the Baselined Detailed Schedule monthly (or more frequently) in order to reflect actual progress and occurrences to date.

### Updates of the Baselined Detailed Schedule shall show the following changes occurring since the previous submission:

#### The percentage of work complete to date

#### Re-scheduling of late tasks

#### Revised projections of progress and completion dates. Include actual start and actual finish dates of completed activities in conformance to completion in progress payment.

#### Adjusted or modified sequences of the Work

#### Delays in submittals/resubmittals, deliveries and the Work

#### Accepted changes in scope

## Narrative Progress Report

### The Narrative Progress Report shall describe, in narrative form, the schedule progress for the reporting period, and shall highlight significant changes, delays or concerns that may impact Contract delivery.

### Contents shall include:

#### Contractor name, contract number, project name, reporting period and date submitted.

#### Number of Days worked over the period, work force on hand, construction equipment on hand (including utility vehicles such as pickup trucks, maintenance vehicles, stake trucks).

#### General progress of the Work, including a listing of any activities started and completed over the reporting period, mobilization/demobilization of Subcontractors, and major milestones achieved.

#### Documentation of weather conditions over the reporting period, and any resulting impacts to the schedule.

#### Identification of new activities and sequences as a result of any executed Change Orders which affect the schedule.

#### Description of actual or potential delays, including related causes, and the steps taken or anticipated to be taken in order to mitigate their impact.

#### Changes to activity logic.

#### Changes to the critical path.

#### Identification of, and accompanying reasons for, any activities added or deleted since the last report.

#### Steps taken to recover the schedule from Contractor caused delays.

## Schedule Management

### The Contractor shall be required to monitor schedule progress and to mitigate schedule variances.

### The schedule shall be a standing agenda item during regular construction meetings. During the meeting, the Contractor shall display the current schedule in electronic format.

#### The Contractor shall present a schedule view that displays a two week look back and a two week look ahead for discussion.

#### Late start tasks or tasks that have not started by the date of the meeting shall be identified and rescheduled. Notes shall be used to provide explanations and mitigation plans for re-scheduling late tasks.

#### Percent complete value for tasks shall also be updated at the meeting.

#### A Tracking Gantt shall be used to compare the current schedule against the Baselined Detailed Schedule and to identify variances to the milestone finish dates and Contract Time.

### If the Contractor fails to complete a task by its scheduled completion date and this failure is anticipated to extend the Contract Time (or any milestones), the Contractor shall, within 5 Working Days of such failure, submit a written statement as to how the Contractor intends to correct the non-performance and return to an acceptable schedule. Any additional resources expended by the Contractor to maintain or recover the schedule and to complete the Work within the Contract Time (or any milestones) will not be justification for an adjustment to the Contract Price or Contract Time.

### The Region may order the Contractor to increase its equipment, labour force, and/or working hours, at no additional cost to the Region, if the Contractor fails to:

#### Complete a milestone by its completion date.

#### Satisfactorily execute the Work as necessary in order to prevent delay to the overall completion of the Contract.

### Adjustment of Contract Times:

#### The Contractor shall reference the General Conditions and Section 01035 - Amending and Supplementing Contract Documents for additional requirements.

#### The evaluation and reconciliation of any adjustments to the Contract Time shall be based on the updated schedule at the time of the proposed adjustment or claimed delay.

#### No time extensions will be granted, nor will any other claims relating to delays be considered until a delay occurs which (i) impacts the project’s critical path (ii) consumes all available contingency or slack time, and (iii) extends the Work beyond the Contract Time.

### Claims Based on the Contract Time:

#### Where the Region has not yet rendered a formal decision on the Contractor’s claim for an adjustment of the Contract Time, and the parties are unable to agree as to the amount of adjustment to be reflected in the Baselined Detailed Schedule, the Contractor shall reflect an interim adjustment in the Baselined Detailed Schedule acceptable to the Region.

#### It is understood and agreed that such interim acceptance will not be binding on either the Contractor or the Region, and will be made only for the purpose of continuing to schedule the Work until a formal decision has been rendered as to an adjustment, if any, of the Contract Time.

#### The Contractor shall revise the Baselined Detailed Schedule prepared thereafter in accordance with the Region’s formal decision.

# PRODUCTS (NOT USED)

# EXECUTION (NOT USED)

**END OF SECTION**

The templates referenced in this Section can be found in Section 01310A – Facility Schedule Template