



WORK PROGRAM SPECIFICATION (DESIGN & BUILD)

**JABATAN KERJA RAYA
MALAYSIA**



Cawangan Pengurusan Projek Kompleks

Ibu Pejabat JKR Malaysia

Keujudan Dokumen

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1.0 GENERAL

- 1.1. This specification describes the requirements for the preparation, submittal, update and revision of the Contractor's Work Program. The requirements hereunder, are in addition to the provisions under Clause 12.0 of the Condition of Contract.
- 1.2. The Contractor's Work Program shall be used by the Contractor to plan and execute the Works. The Work Program will also be used by the S.O to monitor progress and be the basis for the assessment of extensions of time and the effect of delay on the progress of the Works.
- 1.3. The Work Program shall be produced by the Contractor in the following phases:
 - 1.3.1. Initial Work Program. An Initial Work Program for the first three months of work.
 - 1.3.2. Accepted Work Program. A Work Program (incorporating the Initial Work Program) for the totality of the Works, which shall be submitted to the S.O for his approval. If the S.O does not approve it, this Work Program shall be revised and resubmitted for acceptance as set out in the Contract.
 - 1.3.3. Revised Work Program. Any revision to the Accepted Work Program approved by S.O shall be termed as Revised Work Program.
 - 1.3.4 Tracking Report. Accepted/Revised Work Program updated with actual progress and saved on at least a monthly basis for progress tracking and record purposes.
- 1.4. If at any time there is a dispute between the Contractor and S.O over any matter concerning the Contractor's Work Program, then immediate steps should be taken by either party to have the dispute settled in accordance with the Condition of Contract

2.0 SUBMISSION OF WORK PROGRAM

- 2.1 Within fourteen (14) days from the receipt of the Letter of Acceptance, the Contractor shall submit to the S.O for his information on Initial Work Program showing the order in which the Contractor proposes to carry out the works anticipated in the first three months following the award of the contract. The Initial Work Program shall have regard to the completion date and any other milestones, and/or restraints set out in the contract.
- 2.2 Within twenty eight (28) days from the receipt of the Letter Of Acceptance the Contractor shall submit to the S.O for his review and approval a Work Program for the whole Contract showing the order of procedure in which the Contractor proposes to carry out the Works. This Work Program becomes the Accepted Work Program upon approval by the S.O. The Accepted Work Program shall have regard to the contract completion dates and any other milestones, and/or restraints set out in the Contract. Thereafter, if the actual progress does not conform to the Accepted Work Program, the S.O is entitled to require the Contractor to submit to the S.O for approval a revised Work Program showing the order of procedure and periods necessary to ensure completion of the Works by the contract completion dates.
- 2.3 The Contractor shall furnish the General Method Statement (refer to clause 5.0) and such other details and information as the S.O may reasonably require to approve the Accepted Work Program as set out in Clause 13.5 of the Condition of Contract.
- 2.4 The Contractor shall supply the S.O with electronic copy of each Work Program, together with a print out bar chart or tabular report in a pre-agreed format. All Work Programs shall be prepared and submitted using Microsoft Project 2003 software or latest version or equivalent. The software shall be capable of producing Work Programs and information that complies with the requirements of this clause and shall be in a format that can be read by commercially available proprietary planning software.

- 2.5 Within twenty one (21) days of the Contractor submitting a Work Program complete with all the information required by this clause to the S.O. for approval, the S.O. will approve the Work Program or give its reasons for not approving the Work Program in writing. If such reasons are given, the Contractor shall take account of the reasons and resubmit the Work Program within a period of 10 working days. If the S.O does not response in writing to the Work Program within 21 days, the S.O shall be deemed to have approved the Work Program as submitted.
- 2.6 By agreement the Contractor and the S.O may dispense with print-outs of the various forms of the Contractor's Work Program, but under no circumstances may they dispense with the submission of the required electronic copies.
- 2.7 The Contractor will be required to submit to S.O a soft copy of the Work Program in a compact disk (CD) format. The CD must be submitted in a completely close case and labelled to show;
- Project Name
 - Contractor's Name and Address
 - Reference Number (if any)
 - Any other information as per JKR S.O's instruction, should such need arise
- 2.8 The softcopy for the Accepted Work Program will not be saved as Baseline, unless otherwise approved by S.O or its representatives
- 2.9 The Contractor is required to submit a colour printout copy of the Work Program, bind into a presentable format and labelled accordingly
- 2.10 The Contractor will be required to submit 5 colour copies to S.O for binding into the contract documents upon receipt of approval for the Work Program

3.0 CONTRACTOR TO REMAIN RESPONSIBLE

- 3.1 The submission to and approval by the P.D. or the P.D.'s representative of such Work Program or the furnishing of such particulars shall not relieve the Contractor of any of his duties or responsibilities under this Contract

4.0 PREPARATION OF WORK PROGRAMS

THE ACCEPTED WORK PROGRAM

- 4.1 The Work Program submitted by the Contractor in accordance with sub clause 2.2 above becomes the Accepted Work Program upon acceptance by the S.O. The Accepted Work Program shall form the Contractor's basic strategy for the completion of the Works by the contract completion date. The Work Program to be accepted may either be at the direction of the S.O in a linked bar chart format or precedence network format prepared using techniques acceptable to the S.O and shall show as far as reasonably practicable:
- 4.1.1 The Work Program must be presented in a Works Breakdown Structure (WBS) format to designated level approved by S.O or its representatives
- 4.1.2 The activities in all work packages including those by the principal sub-contractors and suppliers, statutory undertakers, those contractors and suppliers directly employed by the Employer and others.
- 4.1.3 The earliest and latest start and finish dates for every activity in each work package. Activities shall include all scope activities and any activities or time durations expected in addition to scope activities.
- 4.1.4 Access dates for each phase or section.

- 4.1.5 The earliest and latest start and finish dates for each phase or section, including dates when the Contractor plans to complete work to allow the Employer and others to do their work.
- 4.1.6 Milestone and Key Dates. The Work Program will start with milestone and finish or complete with milestone.
- 4.1.7 The Work Program must indicate clearly designated governmental approved holidays and any other holidays they wish to adhere to during the course of the project time. This selected list of holidays must be on the timeline chart display or extractable via the calendar view
- 4.1.8 Dates by which design work or drawings to be produced by the Contractor or sub-contractors or suppliers will be submitted to the S.O for acceptance and dates by which acceptance of such design work or drawings will be required by the Contractor, allowing time for submittals, re-submittals and reviews.
- 4.1.9 Dates by which samples to be produced by the Contractor will be submitted for approval by the S.O and dates by which approval of such samples will be required by the Contractor, allowing time for submittals, re-submittals and reviews.
- 4.1.10 Procurement periods and delivery dates for the major items of goods, plants and materials.
- 4.1.11 Dates by which work will be ready for testing by the S.O.
- 4.1.12 The work contained in defined Provisional Sums.
- 4.1.13 Activities representing the likely work content of undefined Provisional Sums, complete with logic links but with durations set to zero (Milestone)

4.1.14 Commissioning periods

4.1.15 Provisions for float, time risk allowances, quality control procedures, health and safety requirements [*and any other requirements that may be set out in the Contract*]

4.2 The Accepted Work Program shall also be presented as schedules showing an analysis of the network including:

4.2.1 A schedule of all activities tabulated in order of earliest starting date and showing for each activity:

4.2.1.1 Activity number and brief description;

4.2.1.2 Preceding and succeeding activity numbers; The commencement and finish date must have both predecessor and successor element linked;

4.2.1.3 Duration;

4.2.1.4 Earliest and latest starting and finishing dates;

4.2.1.5 Total and Free float.

4.2.2 A schedule of leads and lags with (if requested by the S.O) reasons for them. Excessive leads and lags, negative lags or open/hanging activities, use of fixed dates and any other programming activities that can have the effect of creating false criticality or inhibiting the Work Program from reacting dynamically to change should be avoided.

4.2.3 A schedule of all activities lying on the paths containing the least float, namely the critical activities.

- 4.2.4 A schedule identifying the days of working per week, shifts per working day and holidays. Where multiple calendars are used, this information shall be provided for each of the calendars, accompanied by a schedule indicating the calendar applicable to each activity.
- 4.2.5 A schedule giving details of the Contractor's resource requirements in terms of manpower, gang sizes, tradesmen, work rates, items of plant or equipment and materials and quantities of work allowed for in sufficient detail to explain the Contractor's activity durations. Activities that may be expedited by use of overtime, additional shifts or any other means shall be identified and explained.
- 4.3 The Accepted Work Program shall also be presented with or be accompanied by the following schedules:
- 4.3.1 A schedule of all submittals and material procurement activities, including time for submittals, re-submittals and reviews and time for fabrication and delivery of manufactured products. The interdependence of procurement and construction activities shall be included in the schedule.
- 4.3.2 A schedule giving the monetary value of each activity for cash flow purposes. The sum of the monetary values shall be equal to the total of the Contract amount. The schedule shall also give the payment items applicable to the activity monetary values.
- 4.4 The Accepted Work Program shall be prepared in sufficient detail to ensure the adequate planning, execution and monitoring of the work. Activities should generally range in duration up to 14 calendar days (single trade activities with uniform rates of progress might be excepted) and the number of activities with duration of less than seven calendar days should be kept to a minimum to make progress monitoring on larger projects more manageable.

- 4.5 The Accepted Work Program shall take into account all time risk allowances, including time for the weather conditions (rain, wind, flood etc) reasonably to be anticipated by the Contractor. The Contract time has been defined on the assumption that the weather conditions will conform to at least a 10 year average of the conditions prevailing at the Site. The Contractor shall provide this data and a summation of the assumed number of adverse weather days per month to the S.O with the Work Program.

5.0 GENERAL METHOD STATEMENT

- 5.1 At the same time as the Contractor submits the Work Program in sub clause 2.3 [*or such other time as may be specified in the Contract*] the Contractor shall submit to the S.O for his acceptance a general description of the arrangements and methods of construction for Major Works and Temporary Works designs the Contractor proposes to adopt for the carrying out of the Works ('the Method Statement'). The Method Statement should be fully cross-referenced to the activities in the Work Program.
- 5.2 The Contractor shall submit to the S.O sufficient information as may be considered reasonably necessary by the S.O to interpret, evaluate and give approval to the Work Program.
- 5.3 The Contractor shall, whenever required by the S.O, furnish for his information further and more detailed particulars of the Contractor's Method Statement
- 5.4 Should the Contractor wish to change a Method Statement or should the S.O subsequently consider it necessary to change a Method Statement, then the Contractor shall submit a revised Method Statement.

6.0 WORK PROGRAM FOR SPECIAL EQUIPMENT

- 6.1 The contractor shall include Work Program detailing out the Schedule for equipping Special Equipment as described in the Brief Requirements or System Design Document in the overall Work Program.
- 6.2 The Work Program shall indicate schedules, milestones and critical dates for preparation and submission of detailed proposal; Technical Specification Adherence (TSA) for major and critical equipment, Consent and / or Approvals, Procurement, Supply, Delivery, Installation and Testing and Commissioning of equipment (where applicable)
- 6.3 The proposed dates of submission and approval in the schedule shall / may form the basis of determining the definition of '*adopt current and/or latest technology or techniques*' of the Special Equipment Brief; as such as the schedules proposed in the Work Program should thus be reasonable and logical
- 6.4 This special equipment Work Program will be incorporated with logical linkage and presented on to the Accepted Work Program for overall monitoring and control of the contract.

7.0 CASH FLOW ESTIMATES

- 7.1 The Contractor shall submit to the S.O for his information a detailed cash flow estimate, in monthly periods, of all payments to which the Contractor considers he will be entitled to under the Contract. The Contractor shall subsequently submit such revised cash flow estimates at monthly intervals based on the Accepted/Revised Work Program, if required by the S.O.

8.0 REVISING AND UPDATING WORK PROGRAMS

8.1 THE REVISED WORK PROGRAM

- 8.1.1 The Accepted/Revised Work Program and the corresponding General Method Statement if required by the S.O shall be revised by the Contractor within 10 working days of the Contractor changing its methods and/or sequences of Works. The Work Program shall also be revised within 10 working days of the grant by the S.O of an extension of time, or whenever circumstances arise that in the opinion of the S.O affect the progress of the Works. Each revision to the Work Program shall be submitted to the S.O for its review and approval. Once a revised Work Program is approved by the S.O, it replaces the previously Accepted or Revised Work Program.
- 8.1.2 Each Revised Work Program submitted for approval shall be presented as or be accompanied by the schedules referred to in subclause 4.4 and, if necessary, subclause 4.5 above, together with any amendments to the Method Statement.

8.2 THE TRACKING REPORTS

- 8.2.1 The Accepted/Revised Work Program shall be updated for actual progress at least once every month and the updates shall be archived as separate electronic files for record purposes. The updates shall be to all scope activities and any additional activities carried out or time durations experienced in addition to the scope activities. Actual progress shall be recorded by means of actual start and actual finish dates for activities, together with percentage completion and/or remaining duration of currently incomplete activities. Any periods of suspension of an activity should be reported during the tracking activity. Each tracking reports on the Accepted/Revised Work Program shall be submitted to the S.O. for its acceptance as a record. It is possible (if the Works have been delayed) that these Tracking

Reports will show completion later than the contract completion dates. In this event the S.O.'s acceptance of such Work Programs will not constitute acceptance of the delay(s).

- 8.2.2 The Tracking Reports will be used by the S.O to monitor the Contractor's performance against the Accepted/Revised Work Program, forecast work to be performed in the subsequent period and to assess extensions of time at the time the cause of delay occurs. In order to provide effective monitoring of performance, the Contractor shall also provide to the S.O the progress reports as described in subclause 13.1 of the Condition of Contract and the cash flow estimates described in sub clause 8.1 above.

9.0 SCHEDULERS OR PLANNING CONSULTANTS

- 9.1 The Contractor shall to employ a full time competent Scheduler or Planning consultant to provide explanation to JKR or its representatives about the works Work Program during the Technical Meetings and/or other meetings during the contract period.
- 9.2 The scheduler will have to be of the following criteria
- i. A technical personnel with 5 years working experience
 - ii. Qualification relevant to the works Work Program creation
- 9.3 S.O or his representatives at the time of audit of the scheduler can request for the Scheduler's work portfolio of past projects to justify the scheduler's ability
- 9.4 Roles & Responsibilities of Scheduler include but not limited to;
- i. To prepare the Work Program according to JKR specification
 - ii. To prepare progress reports as and when required by S.O

- iii. To carry out revision of the approved Work Program when necessary (change in scope, change in time, change in cost)
- iv. To assist in performance monitoring and control throughout the contract period (performance reporting, variations, forecasting, change control)
- v. To provide hands on (on site) training to the Contractor and JKR staff

10.0 TRAINING

10.1 The Contractor will need to send four (4) representatives from JKR and two (2) of their site based representatives to attend Project Scheduling Training to be conducted by the qualified scheduler or planning consultant appointed by the project. The training must include the following minimum content. S.O. or its representatives will select the Trainer and the facility conducting such training and inform the Contractor of their choice.

10.2 Training Content :

- a. Planning basics & fundamentals
- b. Resource loading and management
- c. Financial loading
- d. Physical & financial progress chart generation
- e. Scheduled and actual progress monitoring
- f. Progress difference in duration and percentage
- g. Reports
- h. Works breakdown structures (WBS) and Critical Path analysis
- i. Progress payment able Work Program

Glossary

Baseline

The Project Management Plan establishes project management's interpretation of the why, what, how, who, how much, and when of the project.

It is a **baseline** tool used as a reference for managing the project. It is one of the most important document in the overall planning, monitoring, and implementation of a project and should be "owned" by the project manager and his/her team.

Critical Path

The sequence of activities that must be completed on schedule for an entire project. to be completed on schedule. Each task on the critical path is called a critical task. If a critical task is delayed, then the entire project will be delayed by the same amount (unless another activity on the critical path can be accelerated).

Critical Path Analysis

Critical Path Analysis is a method that formally identifies tasks which must be completed on time for the whole project to be completed on time. It also identifies which tasks can be delayed for a while if resource needs to be reallocated to catch up on missed tasks.

Milestone

A significant event in the project, usually completion of a major deliverable. A milestone, by definition, has duration of zero and no effort. Milestones are essential to manage and control a project, but there is no task associated with it (although preparing a milestone can involve significant work). Usually a milestone is used as a project checkpoint to validate how a project is progressing and revalidate the work.

General Method Statement

General Method statement is a document that gives specific instructions on how to safely and effectively perform a work related task submitted by the contractor at the beginning of the project for approval. The method statement encompasses the following:

1. purpose
2. scope
3. references
4. definitions
5. responsibilities
6. equipment
7. risk assessment
8. safety
9. procedure
10. attachments (if any)

Work Breakdown Structure (WBS)

WBS is a hierarchical tree structure decomposing a project into activities and sub-activities to help define and control the project and its elements of work.

Work Package

A work package is the basic building block of a work breakdown structure. It can be considered as a sub-project. It is composed of one or several tasks.

A work package may typically last a week to a month in duration and is performed by an individual or small work group.