EXPRO National Manual for Projects Management

Volume 7, Chapter 4

Project Schedule Standards and Quality Procedure

Document No. EPM-KPP-PR-000006 Rev 002

Document Submittal History:

Revision:	Date:	Reason For Issue
000	31/01/2018	For Use
001	07/01/2019	For Use
002	23/08/2021	For Use

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1.0 PURPOSE

The purpose of this procedure is to provide a guideline for projects to follow certain minimum schedule standards and to perform basic schedule quality assessment.

This procedure applies to works performed under all Government construction projects executed throughout the Kingdom of Saudi Arabia.

2.0 SCOPE

Applicable to all schedules on all projects, except for the schedule quality metrics which are applicable to schedules produced on schedule automation software.

3.0 DEFINITIONS

Definitions	Description
Finish to Finish (FF)	Relationship that links the finish of a predecessor to the finish of a successor
Finish to Start (FS)	Relationship that links the finish of a predecessor to the start of a successor
Start to Start (SS)	Relationship that links the start of a predecessor to the start of a successor
Total Float (TF)	Amount of time an activity can be delayed without affecting project completion.
WBS	Work Breakdown Structure - A WBS is a logical top-down structure that defines and displays the project scope for all of the work to be performed in accomplishing the project objectives

Please see document “EPM-KPP-PR-000001 Project Planning and Scheduling Definitions and Concepts Procedure” for general definitions.

4.0 REFERENCES

1. EPM-KPP-PR-000001 - Project Planning and Scheduling Definitions and Concepts Procedure

5.0 RESPONSIBILITIES

5.1 Lead Planners

Lead planners are responsible to make sure schedules are produced within standards and that they meet minimum quality requirements.

5.2 Schedulers

Adhere to the established project requirements for schedule standards and quality.

6.0 PROCESS

6.1 SCHEDULE STANDARDS

6.1.1 Color Standards

Consistency of use of colors is highly suggested as the project team will start to recognize the meaning of graphs in charts by the color of the graph. The colors suggested below are the default colors of some schedule automation tools.

- Black = Baseline
- Blue = Actual
- Green = Forecast
- Red = Critical
- Grey = Re-Forecast or Target

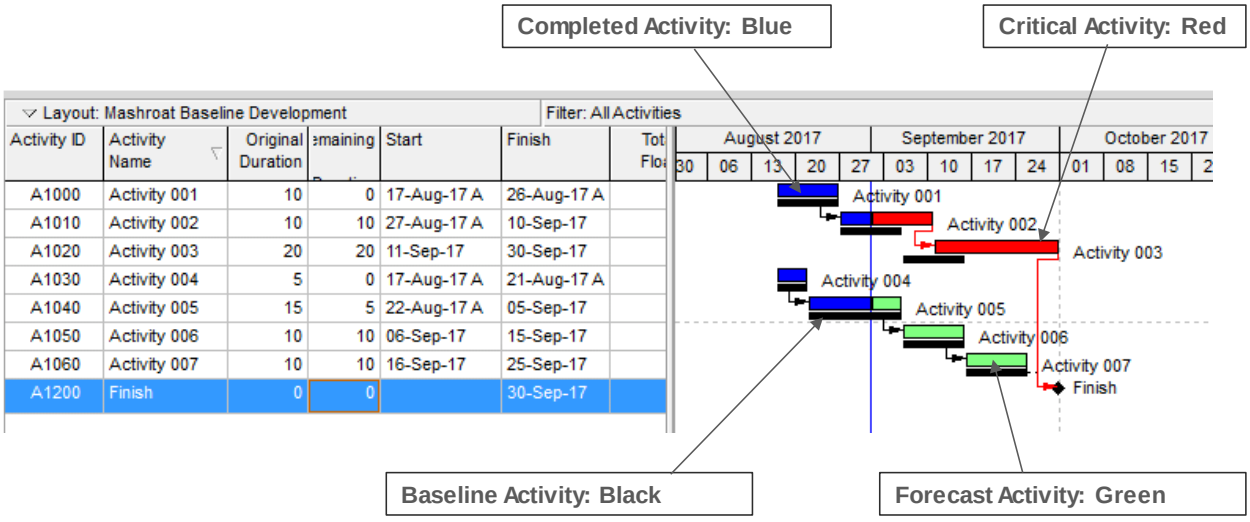

Figure 1: Color use for Schedule Gantt Charts

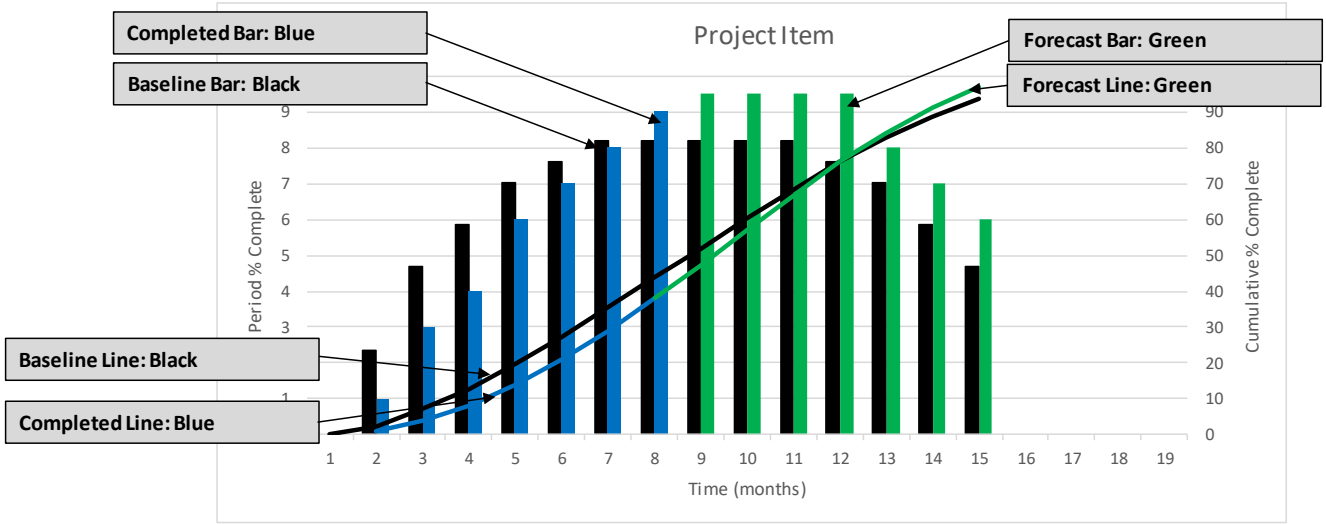

Figure 2: Color use for Schedule Curve

6.1.2 Activity Coding Standards

Alignment with Cost Codes. All schedule codes related to items tracked by the project controls department will need to have the same structure and coding in order to allow for the cost schedule integration. These apply to:

- Area (Activity Code or Work Breakdown Structure (WBS) Code)
- Facility (Activity Code or WBS Code)
- Discipline (Activity Code)
- Commodity (Activity Code and/or Resource Code)
- (Sub)Contractor (Activity Code)

Additionally, the schedule will incorporate other codes so as to filter, sort and group according the project needs. These items could include:

- Responsibility (Activity Code)
- Critical Path Number (Activity Code)
- Related to Milestone (Activity Code)
- Work Packages (Activity Code)

6.1.3 Activity ID Standard

6.1.3.1 Activity ID Definition

Projects are free to use any kind of approach for Activity ID definition. The main decision is whether Activity ID should have intelligence or not. Intelligent Activity ID provides information, such as the department, area, facility or commodity, it pertains to.

Advantages of using Intelligent Activity ID:

- Easy to track predecessors and successors during schedule development and analysis
- Less use of Columns with Activity codes in schedule reports

Disadvantages of Intelligent Activity ID:

- Structure needs to be defined
- Strict adherence to structure is required
- Duplication and possible conflict with equivalent Activity Codes

6.1.3.2 Activity ID Single Use

Projects must ensure that once and Activity ID has been used and presented in a submittal, these Activity IDs cannot be changed or reused for other purposes. This is to allow traceability of a schedule activity from original baseline to last schedule issuance.

6.2 SCHEDULE QUALITY METRICS

Following are measuring items to be used to determine Schedule Quality. Please note that schedule quality is not a representation of plan quality.

- Open Ends:
  Activities that do not have a FS or FF relationship are to be considered as open-ended and should be 100% avoided. In other words, a SS relationship is not sufficient.

- Hard Constraints:
  Constraints that violate logic are to be 100% avoided.

- Negative Lags:
  Negative lags generate problems at statusing, and should be replaced with SS/FF relationships. Moreover, the start of an activity cannot be driven by activities finishing after its commencement. It is not logical. This must be completely avoided.

- Negative Float:
  Resulting negative float while setting the project schedule baseline or forecast is unacceptable. If there is no option avoiding it, there needs to be a clear explanation and recommended mitigation actions included in the schedule narrative.

- No Contingency:
  Lack of schedule contingency demonstrates an incomplete planning/schedule process and would fail this test.

- Logic Density:
  A logic density (# of relationships / # of activities) of more than 3 makes the network logic heavy. If the logic density is greater than 4 there is a high probability of redundant logics.

- SS with no FF:
  A SS relationship does not close a true successor to the activity. In other words, a delay in finishing of the activity will never have a negative impact. That is not logical.

- Out of sequence statusing:
  Severe out of sequence statusing demonstrates poor initial planning, poor adherence to plan and schedule, and can create logic confusion.

- Invalid Dates:
  Actual dates in the future or forecast dates in the past demonstrate poor scheduling practices.

- Redundant Logic:
  Excessive use of redundant logic makes logic tracing very complex. Logic links should be kept at bare and essential minimum to allow efficient ongoing planning.

6.3 SCHEDULE PERFORMANCE METRICS

Once a project commenced, performance metrics come into play.

- Correctness of Critical Path:

  The Lead Planner should perform a detailed assessment of the schedule's critical paths. It is important to note that the critical path is not an "automatic" calculation and printout of the schedule, but a planner's assessment of the critical schedule information.

- Missed Tasks:
  The schedule should be tested to measure the team's ability to follow the schedule. Multiple

approaches are possible. Including counting planned starts, comparing with actual starts and providing a starts performance index. Actual starts shall only be counted towards started activities if it was planned to start. Same approach applies for finishes.

- Missed Tasks of less than 30 days Total Float (TF):
  Measure the team's ability to comply with schedule critical activities, defined as having less than 30 calendar days of total float.

- Baseline Execution Index:
  Missed tasks compared to the baseline schedule. Here current period information can be analyzed producing a Period Baseline performance Index, and cumulative information can be analyzed to produce a To-Date Baseline performance Index.

- Last Update Execution Index:
  Missed tasks compared to the last schedule update. Here current period information will be compared against last period update producing a Period performance Index. This approach will demonstrate the team's ability to perform adequate short term planning.g

For schedules of short period (less than 1 year) or are not very detailed, a baseline schedule execution index tracking would be appropriate.

For detailed schedules (more than 1000 activities), a period schedule execution index is more reasonable as it represents better current teams ability to plan and execute to plan.

Full Schedule	Failed	Bad	Worrying	Acceptable	Good
Baseline Schedule Execution Index	<50%	<65%		>75%	>80%
Period Schedule Execution Index	<60%	<70%		>80%	>90%

Table 1: Baseline Schedule Execution Index

<30d TF Activities	Failed	Bad	Worrying	Acceptable	Good
Baseline Schedule Execution Index	<70%	<75%		>85%	>90%
Period Schedule Execution Index	<80%	<85%		>95%	>100%

Table 2: Period Schedule Execution Index

6.4 SCHEDULE SUBMITTALS

All schedule submittals must be self-descriptive and shall contain:

Identification:

- Entity Name
- Project Number
- Project Name
- Contract Number
- Contract Name
- Contractor

Timing:

- Data Date
- Issuance Date

Version:

- Version

Purpose:

- Purpose (for example: “Issued for information”, or “Issued for review and approval”, or “Weekly Report”)

Description:

- Short description of content (for example: “60 day lookahead”, or “Area B02 Civil Activities”)

Target:

- All schedules will have to reference and compare against an agreed plan, either Original Baseline, Current Baseline and/or Last Period Update.

Logic:

- Relationships to be graphically shown whenever feasible. Not suitable for long schedule printouts as the amount of relationships lines will make schedule unreadable.

Legend:

- Legend of Symbols and colors used, as well as nature of target schedule(s) (i.e “Current Baseline 28Mar2017”)

Legibility:

- All schedule submittals to be legible when printed in A4 or A3 paper.

7.0 ATTACHMENTS

N/A