MODEL SCHEDULING SPECIFICATION

Introduction (Not part of the specification)

Before implementation, we recommend that your contract and this provision be reviewed and modified to ensure compatibility with your requirements. The following are a few integration issues to consider:

1. Consistent terminology – This specification includes a definitions section for terms used in the specification. Please check to ensure that these definitions are compatible with the definitions used in your contract. Also, please check to ensure that the terms used in the model specification are consistent with the usage in your contract. For example, this specification uses the term contract documents to describe all of the documents that make up the agreement between the parties to the contract. You may be using a different term or phrase (“plans and specifications,” for example) to describe the same thing.

2. Correct identification of roles and responsibilities – This specification identifies only two parties, the owner and the contractor. In general, the contractor is given the responsibility to develop the schedule and to submit it to the owner for review and acceptance. These parties may be given different titles or assigned different responsibilities on your project. There may also be additional parties, such as a project manager, a scheduling consultant, an architect, or an engineer that need to be integrated into the specification.

3. Procedures – This specification assumes a generic administrative process for implementing the scheduling specification. For example, the contractor is tasked with submitting the schedule to the owner for review and acceptance. Some owners, however, make it a policy not to accept a contractor’s schedule. This specification will need to be modified to accommodate such a policy and any other differences between this specification and your project administration system.

4. The specification uses a numbering system to identify each paragraph and requirement. This system should be modified to fit into the numbering system employed by your contract.

5. Note, also, that this is a scheduling specification, not a time extension specification. This model specification does not forbid a contractor from submitting a schedule update that shows a project finishing late or describe the actions that the contractor must take if a project falls behind.

6. One of the most powerful and desirable new features of Primavera Version 6.0 is its ability to allow organizations to integrate schedules across projects and provide timely and useful reporting to senior managers concerning the progress of both their construction program as a whole and individual projects. To facilitate the most successful use of these new features, owners and contractors in a particular community or industry should establish a Scheduling Manual. The purpose of this manual will be to establish uniform and consistent standards for setting up work breakdown structures, naming and coding activities, assigning
costs for cost-loaded schedule, and for identifying resources for resource-loaded schedules. The manual could also establish a uniform schedule of observed holidays, winter or other seasonal shutdown periods, and other variables to help ensure consistent and reliable integration of scheduling information at the enterprise level across projects. This specification is written based on the presumption that such a manual has been developed and uses this manual to establish standards for naming and coding activities.

7. In some instances, the specification provides for options. The “normal” or “typical” language is included in the specification, and the option is provided in italics in parentheses. Occasionally, additional commentary regarding a particular aspect of the specification has been included in the specification to aid in understanding or implementation. Such commentary is not intended to be part of the specification.

8. This specification does not mandate the use of Primavera software products and is not intended to be proprietary. However, certain requirements and terminology of this specification anticipate the use of Primavera PPM Version 6.0 and newer. The specification has not been checked against other scheduling software products to ensure that they will be able to meet the specified requirements.

Because the model specification is not written for a particular contract or project, Primavera Systems, Inc. is not responsible for the consequences of its adoption into your contract. We urge you to review the specification carefully and seek appropriate assistance to adapt the provision to your project.

Use of the Active Voice and Imperative Mood

The model scheduling specification was written in the active voice. In sentences written in the active voice, someone acts on something. For example: "The owner will review the initial schedule at the first project meeting." A similar sentence in the passive voice — "The schedule will be reviewed at the first project meeting" — is unclear as to who is responsible for reviewing the schedule.

This specification also makes use of the imperative mood. The imperative mood is used when the party issuing an instruction and the party receiving it are understood. In this specification, the owner is stating its requirements or directions for work to the contractor. For example, the sentence in this specification that states, "Plan and schedule the project and report progress to the owner," means, "The contractor shall plan and schedule the project and report the progress to the owner."

100.1 Scheduling Terms.

1. Activity. A discrete, identifiable task or event that takes time, uses resources, has a definable start and stop date, furthers the work’s progress, and can be used to plan, schedule, and monitor a project.

2. Activity, Controlling. The first incomplete activity on the critical path. (Also referred to as the controlling operation.)
3. **Activity, Critical.** Any activity on the critical path.

4. **Activity ID.** A unique, alphanumeric, identification code assigned to an activity. *(It is recommended that owners and contractors in a particular industry or region adopt a standard activity numbering system to facilitate the integration of schedules across projects. This system could be tied to the standard specification formats adopted by certain industries, such as the format used by the Construction Specification Institute, the AASHTO Guide Specification, or other similar model or guide specification systems. It could also be tied to a standard work breakdown structure for work typical to the industry. The standard activity numbering system should be set forth in a Scheduling Manual that has been ratified by owners, contractors, subcontractors, and suppliers and then referenced as the standard for activity numbering in the scheduling specification.)*

5. **Activity Network Diagram.** *(Also called a pure-logic diagram.)* A graphic representation of a CPM schedule that shows the relationships among activities.

6. **Bar Chart.** Also called a Gantt chart, a graphic representation of a schedule without relationships. A timescale appears along the horizontal axis.

7. **Calendar Day.** A day on the calendar, beginning and ending at midnight.

8. **Completion Date, Contract.** The original date specified in the contract for completion of the project or a revised date resulting from authorized time extensions. The contract may also specify completion dates for interim milestones, phases, or other portions of the project.

9. **Completion Date, Scheduled.** The completion date projected or forecasted by the schedule. The schedule may also project or forecast interim completion dates for milestones, phases, or other portions of the project.

10. **Constraints.** A restriction imposed on the start or finish dates of an activity that modifies or overrides the activity’s logic relationships.

11. **Critical Path.** The **Longest Path.**

12. **Data Date.** The first day in the Initial or Baseline Schedule and the first day for performance of the work remaining in the Monthly Schedule Update or Revised Schedule. *(May also be defined as the date from which a schedule is calculated.)*

13. **Duration, Original.** The estimated time, expressed in workdays, needed to perform an activity.

14. **Duration, Remaining.** The estimated time, expressed in workdays, needed to complete an activity.

15. **Float, Free.** The amount of time an activity can be delayed and not delay its successor(s).

16. **Float, Total.** The amount of time an activity can be delayed and not delay the project completion date.
17. **Holidays.** Holidays observed are: *(This list of holidays is typical for many public construction projects. Please revise this list to coordinate with the holiday schedule adopted by your industry.)*

1st day in January (New Year's Day)

3rd Monday in January (Martin Luther King, Jr. Day)

3rd Monday in February (Presidents’ Day)

Last Monday in May (Memorial Day)

4th day in July (Independence Day)

1st Monday in September (Labor Day)

11th day in November (Veterans Day)

4th Thursday in November (Thanksgiving Day)

25th day in December (Christmas Day)

For holidays that fall on a Saturday, both the Saturday and the preceding Friday are considered to be holidays. For holidays that fall on a Sunday, both the Sunday and the following Monday are considered to be holidays.

18. **Longest Path.** The sequence of activities that establishes the scheduled completion date.

19. **Milestone.** An activity, with no duration, that is typically used to represent the beginning or end of the project or its interim stages.

20. **Narrative Report.** A descriptive report submitted with each schedule, schedule update, or revised schedule. The required contents of this report are set forth in this specification.

21. **Open End.** The condition that exists when an activity has either no predecessor or no successor, or when an activity’s only predecessor relationship is a finish-to-finish relationship or only successor relationship is a start-to-start relationship.

22. **Predecessor.** An activity that is defined by schedule logic to precede another activity. A predecessor may control the start or finish date of its successor.

23. **Relationship.** The interdependence among activities. Relationships link an activity to its predecessors and successors. *(A schedule’s relationships are sometimes referred to as the logic of the schedule. Examples of relationships are: finish-to-start, start-to-start, and finish-to-finish.)*

24. **Schedule.** Activities organized by relationships to depict the plan for execution of a project.

25. **Schedule, Initial.** The schedule showing the original plan for the first 60 calendar days of work.

26. **Schedule, Baseline.** The accepted schedule showing the original plan to complete the entire project. *(Sometimes known as the as-planned schedule.)*
27. **Schedule, Monthly Update.** A schedule produced by incorporating the project’s actual progress (sometimes known as as-built information or data) over a routine interval, usually monthly, into the Baseline Schedule or the latest Monthly Update Schedule.

28. **Schedule, Revised.** A schedule prepared and submitted by the contractor that includes a significant modification to the schedule logic or durations, usually for the purpose of depicting a significant change in the contractor’s plan.

29. **Schedule, Final.** The last schedule update containing actual start and finish dates for every activity. The contractor must certify the final schedule’s accuracy.

30. **Successor.** An activity that is defined by schedule logic to succeed another activity. The start or finish date of a successor may be controlled by its predecessor.

100.2 **Administrative Requirements.**

1. **General Requirements.** Plan and schedule the project and report progress to the owner. Provide a schedule using the critical path method (CPM). The owner’s acceptance of any schedule, whether initial, baseline, update, or revised, does not modify the contract or constitute endorsement or validation by the owner of the contractor’s logic, activity durations, or assumptions in creating the schedule. By accepting the schedule, the owner does not guaranty that the project can be performed or completed as scheduled. If the contractor or the owner discovers errors after the schedule has been accepted, correct the error in the next schedule submission.

2. **Required Schedules.**

2.1 **Initial Schedule.** The owner will use the initial schedule to monitor progress until the baseline schedule is accepted. Prepare and submit a schedule for the first 60 calendar days of work in accordance with subsections 3.1 and 3.2, plus a summary bar chart schedule for the balance of the project. Activity durations on the summary chart may exceed 15 working days.

At least 10 calendar days before the first project meeting, submit the initial schedule to the owner. Ensure that the schedule shows milestone and completion dates no later than the specified contract milestone and completion dates.

The owner will review the initial schedule at the first project meeting. At this meeting, be prepared to generally discuss the proposed schedule for the entire project, not just the 60-day period covered by the initial schedule. If deviations to the staging, phasing, or sequencing required by the contract documents are proposed, be prepared to discuss these deviations.

Within 5 calendar days of the first project meeting, the owner will respond by accepting the initial schedule, rejecting the schedule and identifying the reason for rejection, or by asking for more information. Address the reasons for rejection or provide the information requested and resubmit the revised initial schedule no more than 5 calendar days after the Owner's
response. The owner may withhold progress payments until the contractor submits the initial schedule.

2.2 **Baseline Schedule.** No more than 30 calendar days after approval of the initial schedule, prepare and submit a baseline schedule to the owner for review, in accordance with the requirements of subsections 3.1 and 3.2. Within 10 calendar days of receipt of the baseline schedule, the owner will respond by accepting the baseline schedule, rejecting the schedule and identifying the reason for rejection, or by asking for more information. Address the reasons for rejection or provide the information requested and resubmit the revised baseline schedule no more than 10 calendar days after the owner's response. The owner may withhold progress payments until the contractor submits and the owner accepts the baseline schedule.

2.3 **Monthly Schedule Update.** Prepare and submit a monthly schedule update to the owner that depicts the status of the project as of the end of the month, in accordance with the requirements of subsections 3.1 and 3.2. The update will reflect a new data date, work performed up to, but not including, the new data date, and the plan for completing the project. Submit the schedule update by the first Monday of the following month. The owner may withhold progress payments until the contractor submits and the owner accepts the schedule update.

2.4 **Revised Schedule.** The owner has the right to request a revised schedule. Circumstances leading to such a request include, but are not limited to:

2.4.1 A projected or forecasted delay to scheduled interim or project completion dates

2.4.2 A significant difference between the actual sequence or duration of work and that depicted in the schedule

Prepare and submit the revised schedule no more than 10 calendar days after the owner's request in accordance with the requirements of subsections 3.1 and 3.2. Within 10 calendar days of receipt, the owner will respond by accepting the revised schedule, rejecting the schedule and identifying the reasons for rejection, or by requesting more information. Address the reasons for rejection or submit the information requested no more than 10 calendar days after the owner’s request. The owner may withhold progress payments until the contractor submits and the owner accepts the schedule revision.

2.5 **Final Schedule.** Within 30 calendar days of final acceptance of the project, submit a final schedule with actual start and finish dates for each activity. Include with the submission a certification signed by the principal of the firm stating:

“To the best of my knowledge, the enclosed final schedule reflects the actual start and finish dates of the activities contained herein.”
100.3 **Technical Requirements.**

1. **Software Compatibility Requirements.** The owner uses Primavera Version 6.0 to schedule and monitor its construction program. Prepare and maintain the schedule using one of the following software options:

   1.1 Primavera Version 6.0 and My Primavera in which case the schedule is prepared and maintained on the owner’s database.

   1.2 Primavera Version 6.0 in which case the schedule is prepared on a separate database and maintained through file submission described below.

   1.3 Primavera for Contractors in which case the schedule is prepared on a separate database and maintained through file submission described below.

   1.4 Any other software that is compatible in the Primavera Version 6.0 in which case the schedule is prepared on a separate database and maintained through file submission described below.

2. **Schedule Requirements.** Provide a schedule that meets the following requirement:

   2.1 Calculate the schedule using the Retained Logic scheduling option unless written authorization is obtained from the owner to use the Progress Override scheduling option.

   2.2 Do not use the following types of logic relationships.

      2.2.1 Negative lags

      2.2.2 Lags in excess of 10 workdays

      2.2.3 Start-to-finish relationships

      2.2.4 Open ends. Only the first activity will have no predecessor and only the last activity will have no successor.

      2.2.5 Constraints. The contractor may use a limited number of constraints only with the owner’s written authorization.

      2.2.6 Manually modified dates. The contractor may manually modify dates only with the owner’s written authorization.

      2.2.7 Obtain the owner's written authorization prior to using lags with finish-to-start relationships

   2.3 Includes the following work activities, as applicable:

      2.3.1 Work to be performed by the contractor, subcontractors, and suppliers.

      2.3.2 Work to be performed by the owner, other contractors, and third parties such as government agencies and authorities, permitting authorities, or other entities required for completion of the project.
2.3.3 The project start date, scheduled completion date, and other contractually mandated milestones, start or finish dates for phases, or site access or availability dates

2.3.4 Submittal, review, and approval activities when applicable, including time periods for the owner’s approval as specified in the contract documents *(A specific contract reference is preferred here.)*

2.3.5 Fabrication, delivery, installation, testing, and similar activities for materials, plants, and equipment

2.3.6 Sampling and testing periods

2.3.7 Settlement or surcharge periods

2.3.8 Cure periods

2.3.9 Utility notification and relocation

2.3.10 Installation, erection and removal, and similar activities related to temporary systems or structures such as temporary electrical systems or shoring

2.3.11 Punch list, substantial completion, final cleanup, and similar activities

2.3.12 Required acceptance testing, inspections, or similar activities

2.3.13 Durations for receipt of permits or acquisition of rights of way

2.4. Define the following attributes for each activity in the schedule:

2.4.1 A unique alphanumeric Activity ID as specified in the owner’s Scheduling Manual

2.4.2 A unique descriptive name, using such attributes as work type and location to distinguish activities as specified in the owner’s Scheduling Manual *(This should be coordinated with a standard work breakdown structure and follow the guidelines established in the Scheduling Manual)*;

2.4.3 A duration stated in workdays of no more than 15 workdays, unless a longer duration is requested by the contractor and approved by the owner

2.4.4 Uses codes for responsibility, phasing, and staging as specified in the Scheduling Manual


3.1 Preparing Schedule on Owner’s Database. If the schedule is prepared using My Primavera in the owner’s database, then for each schedule submission, submit the following items:

3.1.1 A transmittal letter to the owner identifying which schedule in the database is being submitted for review
3.1.1 A narrative report

3.2 Preparing Schedule on Separate Database. If the schedule is prepared using Primavera Version 6.0, Primavera for Contractors, or some other software compatible with Primavera Version 6.0, then, for each schedule submission, submit the following items:

3.2.1 A transmittal letter
3.2.2 A narrative report
3.2.3 A Primavera Version 6.0 compatible electronic file of the schedule on a computer disc (CD)
3.2.4 The critical path in bar chart format (Longest Path sort)
3.2.5 Work paths with total float values within 20 workdays of the critical path’s total float value in bar chart format. For example, if the critical path has a total float value of zero, then show all of the work paths with total float values of 20 or less.
3.2.6 An activity network diagram plotted in color, on E-size paper, with each sheet of the plot including a title, match data for diagram correlation, a page number, and a legend. The activity network diagram should only be submitted with schedules with revised relationships or activity durations.
3.2.7 A Predecessor/Successor report with the following items for each activity:
   3.2.7.1 Activity ID and description
   3.2.7.2 Original duration
   3.2.7.3 Remaining duration
   3.2.7.4 Calendar ID
   3.2.7.5 Predecessors and Successors
   3.2.7.6 Early start date
   3.2.7.7 Early finish date
   3.2.7.8 Late start date
   3.2.7.9 Late finish date
   3.2.7.10 Total float
   3.2.7.11 Relationship type
   3.2.7.12 Lags
   3.2.7.13 Constraints

3.3 Narrative Reports for the Initial and Baseline Schedule. For each submission of the initial and baseline schedule provide a narrative report that includes the following information:
3.3.1 Explanation of the overall plan to complete the project, including where the work will begin and how the work and crews will flow through the project

3.3.2 Use and application of the workdays per week, number of shifts per day, number of hours per shift, holidays observed, and how the schedule accommodates adverse weather days for each month or activity

3.3.3 If the project is a multi-year project, then identify the work to be completed in each construction season

3.3.4 A statement explaining why the schedule completion date is forecast to occur before or after the contract completion date.

3.3.5 An explanation stating why any of the contract milestone dates are forecast to occur late.

3.3.6 A description of problems or issues anticipated

3.3.7 A description of anticipated delays, including:
   3.3.7.1 Identification of the delayed activity by activity ID and description
   3.3.7.2 Type of delay
   3.3.7.3 Cause of the delay
   3.3.7.4 Effect of the delay on other activities, milestones, and completion dates
   3.3.7.5 Identification of the actions needed to avoid or mitigate the delay

3.3.8 A description of the critical path

3.3.9 A description of work paths with total float values within 20 workdays of the critical path’s total float value. For example, if the critical path has a total float value of zero, then describe all of the work paths with total float values of 20 or less.

3.3.10 A statement identifying constraints and an explanation of the reason for and purpose of each constraint.

3.3.11 The statement describing the reason for the use of each lag.

3.4 Narrative Reports for the Monthly Schedule Update and Revised Schedule. For each submission of the monthly schedule update and revised schedule provide a narrative report that includes the following information:

3.4.1 A description of the status of the scheduled completion date (and any contract milestone date(s)) since the last schedule submitted
3.4.2 A statement explaining why the scheduled completion date is forecast to occur before or after the contract completion date. An explanation stating why any of the contract milestone dates are forecasted to occur late

3.4.3 A description of the work performed since the last schedule update

3.4.4 A description of unusual labor, shift, equipment, or material conditions or restrictions encountered or anticipated

3.4.5 A description of the problems encountered or anticipated since the last schedule submission

3.4.6 A statement that identifies and describes any current and anticipated delays. A discussion of delays in the narrative report does not constitute notice and does not replace the need for the contractor to provide notice as required by the contract. Include the following:
   3.4.6.1. Identification of the delayed activity by activity ID and description
   3.4.6.2 Type of delay
   3.4.6.3 Cause of the delay
   3.4.6.4 Effect of the delay on other activities, milestones, and completion dates
   3.4.6.5 Identification of the actions needed to avoid or mitigate the delay

3.4.7 A description of the critical path

3.4.8 A description of changes in the critical path and schedule completion date (for the project or its milestones) from the last schedule submission

3.4.9 Descriptions of the status of work paths that have total float values within 20 workdays of the critical path identified in the previous schedule submission

3.4.10 Descriptions of work paths with total float values within 20 workdays of the critical path’s total float value. For example, if the critical path has a total float value of negative 25, then show all of the near critical paths with total float values of negative 5 or less.

3.4.11 A statement or ClaimDigger report that identifies the changes made between the previous schedule submission and the current proposed schedule, including, but not limited to:
   3.4.11.1 Data date
   3.4.11.2 Completion date
3.4.11.3 Activity code assignments
3.4.11.4 Scheduling options
3.4.11.5 Activity descriptions
3.4.11.6 Added activities
3.4.11.7 Deleted activities
3.4.11.8 Added activity relationships
3.4.11.9 Deleted activity relationships
3.4.11.10 Activity original durations
3.4.11.11 Activity remaining durations
3.4.11.12 Activity actual start and finishes
3.4.11.13 Percent complete
3.4.11.14 Constraints
3.4.11.15 Activity resources
3.4.11.16 Activity costs
3.4.11.17 Activity coding

3.4.12. A statement providing status of pending items, including, but not limited to:
3.4.12.1 Permits
3.4.12.2 Change orders
3.4.12.3 Time extension requests
3.4.12.4 Noncompliance or similar notices indicating deficiencies in the contractor’s performance