



TRANSPORTATION CABINET

Frankfort, Kentucky 40622
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Governor

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Acting Secretary

Memorandum

To: Jeff Jasper, P.E.
Director,
Division of Design

Thru: Rachel Mills, P.E.
Technical Support TEBM,
Division of Construction

From: Jeremiah Littleton, P.E.
Division of Construction

Date: June 10, 2010

Re: Special Provision 82 Moratorium

After discussions with the Federal Highway Administration, Special Provision 82 relating to critical path method (CPM) scheduling should not be used on future projects let through the Project Delivery process. The ability to include this note in project proposals using PES is no longer available.

If a CPM schedule is needed, it will be placed in the proposal as a special note and will be customized for each project until a revised special provision can be developed. An example of this note is attached, but is not intended for use.

If you have any further questions, please contact Jeremiah Littleton.

Thank you.

Attachment

Cc: lots of people (email)



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Special Note for CPM Scheduling

A. General.

Contrary to Kentucky Standard Specifications 108.07.04, additional contract time will only be added when the Engineer deems the critical path of the project has been effected. Create the progress schedule required for this project using the critical path method (CPM). The Contractor shall designate a Schedule Representative who shall be responsible for coordinating with the Engineer during the preparation and maintenance of the schedule. The contractor shall submit an interim schedule followed by a baseline schedule, or only a baseline schedule, depending on when the contractor starts work as described below.

B. Interim Schedule.

If the Contractor starts work within 15 days of the Notice to Begin Work, they shall submit an interim schedule. The interim schedule will be in CPM schedule format. The interim schedule shall include detailed activities for the work to be accomplished during the first 30 days of the Contract, and summary activities for the balance of the work. The interim schedule, if required, shall be submitted at the Preconstruction Conference. No work shall begin without the submission of an interim schedule.

C. Baseline Schedule.

The Contractor shall submit a baseline schedule as outlined in the submission requirements section (C.2) within 15 days of the Notice to Begin Work. No pay estimates will be processed after 15 days without the submission of the baseline schedule. The baseline schedule will be in CPM schedule format and as described below. The Engineer will review the baseline schedule and will “accept”, “accept as noted” or “reject” the schedule within 5 days of receipt. If the Engineer does not provide written notification regarding the disposition of the baseline schedule within 5 days, the submission will be considered “accepted.”

For baseline schedules that are “accepted as noted”, the Contractor shall make the necessary revisions and resubmit the revised schedule within 3 days. The Engineer will only “reject” baseline schedules that are not in compliance with contract requirements.

For baseline schedules that are “rejected”, the Engineer shall indicate in writing portions of the schedule that are not in compliance with the contract requirements. The Project Engineer shall conduct a mandatory meeting with the Contractor and the Contractor’s Schedule Representative within 5 days of the Engineer’s written notice. The purpose of this meeting is to resolve disputes with the baseline schedule so that it may be resubmitted. The Contractor shall provide clarification and all additional information necessary for the Engineer within 3 days of this meeting. The Contractor shall submit the revised Baseline Schedule to the Engineer for review and acceptance within 3 days of this meeting.

No pay estimates will be generated until the baseline schedule is “accepted” or “accepted as noted.” In the event the baseline schedule is not “accepted” within 90 days of the Notice to Begin Work, all work shall cease on the project until the baseline schedule is “accepted”. The incurred delays from the “cease work order” will be the contractor’s responsibility and will not be considered for time extension. Any claims associated with time impacts for work performed or delay experienced prior to the baseline schedule being “accepted” or “accepted as noted” will be evaluated at the sole discretion of the Engineer. “Acceptance” by the Engineer will not relieve the Contractor of their responsibilities for compliance with specifications and contract requirements or for the accuracy or feasibility of the schedule.

“Acceptance” of the baseline schedule does not revise the Contract Documents. The baseline schedule must be “accepted” or “accepted as noted” by the Engineer prior to the Engineer evaluating any contractor claims associated with time impacts.

The Engineer’s review of the baseline schedule will be for compliance with the specifications and contract requirements. “Acceptance” by the Engineer will not relieve the Contractor of any of their responsibilities for the accuracy or feasibility of the schedule.

1. Schedule Requirements.

Generate and submit an electronic copy of the baseline schedule using Primavera Contractor 5.0 Deluxe by Primavera Systems Inc., Bala Cynwyd, PA, or equivalent electronically transferable software. The Contractor’s costs associated with these provisions should be incorporated into the bid item for the progress schedule.

Provide a calendar day schedule that shows the various activities of work in sufficient detail to demonstrate a reasonable and workable plan to complete the Project by the Original Contract Completion Date. Show the order and interdependence of activities and the sequence for accomplishing the work. Describe all activities in sufficient detail so that the Engineer can readily identify the work and measure the progress of each activity. The baseline schedule must reflect the scope of work, required phasing, maintenance of traffic requirements, interim completion dates, the Completion Date, and other project milestones established in the Contract Documents. Include activities for submittals, working drawings, shop drawing preparation, submittal review time for the Department shop drawings, material procurement and fabrication, and the delivery of materials, plant, and equipment, and other similar activities.

The Contractor shall be responsible for assuring all work, including all subcontractor’s work, is included in the schedule. The Contractor shall be responsible for assuring that all work sequences are logical and that the schedule indicates a coordinated plan.

Failure by the Contractor to include any element of work required for performance of the Contract shall not excuse the Contractor from completing all work within the required time. Omissions and errors will be corrected as described in Section F or H in this note and will not affect contract time.

a) Administrative Identifier Information.

- | | |
|-------------------|----------------------------------|
| 1. Project Number | 7. Date of Notice to Begin Work |
| 2. County | 8. Completion Date |
| 3. Route Number | 9. Contractor's Name |
| 4. Item Number | 10. Contractor's Dated Signature |
| 5. CID Number | 11. KYTC's Dated Accepted |
| 6. Award Date | Signature |

b) Project Activities.

- i. Activity Identification (ID): Assign each activity a unique identification number. Activity ID length shall not exceed 10 characters. Assign baseline Activity ID's in sequences of 10 (e.g.; A1000, A1010, A1020). This will allow modifications and additional items to be placed into the Identification scheme easily. Once accepted, the Activity ID shall be used for the duration of the project.
- ii. Activity Description: Each activity shall have a narrative description consisting of a verb or work function (e.g.; form, pour, excavate, pier #2) and an object (e.g.; slab, footing, underdrain).
- iii. Activity Original Duration: Assign planned duration in calendar days for each activity. Do not exceed a duration of 20 calendar days for any construction activity unless approved by the Engineer. Do not represent the maintenance of traffic, erosion control, and other similar items as single activities extending to the Completion Date. Break these Contract Items into component activities in order to meet the duration requirements of this paragraph.
- iv. Activity Relationships:
 - All activities, except the first activity, shall have a predecessor(s). All activities, except the final activity, shall have a successor(s).
 - Use only finish-to-start relationships with no leads or lags to link activities, or use start-to-start relationships with lags no greater than the predecessor duration to link activities.
 - Use of finish-to-finish relationship is permitted when both activities are already linked with a start-to-start relationship.

c) Project Milestones.

- i. Start Project: The Contractor shall include as the first milestone in the schedule, a milestone named "Start Project". The date used for this milestone is the date the contract is executed and signed by the Department.
- ii. End Project Milestone: The Contractor shall include as the last activity in the project schedule, a milestone named "End Project". The date used for this milestone is considered the project completion date.
- iii. Start Phase Milestone: The Contractor shall include as the first activity for a project phase, an activity named "Start Phase X", where "X" identifies the phase of work. The Contractor may include additional milestones but, as a minimum, must include all contractual milestones.

- iv. End Phase Milestone: The Contractor shall include as the last activity in a project phase, an activity named "End Phase X" where "X" identifies the phase of work. The Contractor may include additional milestones, but at a minimum contractual milestones.

d) Schedule Options.

The schedule may only be calculated using retained logic. Show open ends as non-critical. Schedule durations are to be contiguous. The project calendar will be based on the Contractor's plan for completing the project. However, the scheduling increment (hours or days) will be stipulated during the Preconstruction Conference. All days must remain active unless the Contractor is instructed not to work by contract documents. Total float shall be calculated as finish float.

2. Submission Requirements.

Submit all schedules within the time frames specified. Submit the schedule and information in electronic file format via email, and compact disc (CD) compatible with the Engineer's computer. Submit the following information along with the electronic baseline schedule:

- a) A baseline schedule in a bar chart format including the Administrative Identifier Information discussed in Section C.1.a on the first page of the schedule. For each activity on the chart, indicate the Activity ID, Activity Description, Original Duration, Remaining Duration, Total Float, Early Start Date, Early Finish Date, and Percent Complete. Use arrows to show the relationships among activities.
- b) A baseline schedule in a bar chart format, on paper. Identify the critical path of the project on the bar chart in red. The critical path is defined as; the longest path of activities in the project that determines the project completion date. The activities that make-up the critical path of activities are the "Critical Activities."

3. Submittal Cover Memo.

All submittals shall be accompanied with a brief cover memo containing:

- Identification of the submission as the Baseline Schedule
- Administrative Identifier Information (see section C.1.a)
- Any critical notes as determined by the Contractor

An example Cover Memo is provided in this note.

D. Float.

Use of float suppression techniques, such as; preferential sequencing (arranging critical path through activities more susceptible to Department caused delay), lag logic restraints, unrealistic activity durations, zero total or free float constraints, extending activity times, or imposing constraint dates other than as required by the contract, shall be cause for rejection of the project schedule or its updates. Schedules with negative float will also not be accepted.

1. Definitions of Float.

Total Float is the length of time along a given network path that the actual start and finish of activity(s) can be delayed without delaying the project completion date. Project Float is the length of time between the End Project Milestone and the Contract Completion Date.

2. Ownership of Float.

Float available in the schedule, at any time shall not be considered for the exclusive use of either the Department or the Contractor. During the course of contract execution, any float generated due to the efficiencies of either party is not for the sole use of the party generating the float; rather it is a shared commodity to be reasonably used by either party. Efficiencies gained as a result of favorable weather within a Biweekly period, where the number of days of normally anticipated weather is less than expected, will also contribute to the Project Float. A schedule showing work completing in less time than the contract time, and accepted by the Department, will be considered to have Project Float. Project Float will be a resource available to both the Department and the Contractor. No time extensions will be granted nor delay damages paid unless a delay occurs which impacts the project's critical path, consumes all available float and extends the work beyond the Contract Completion Date.

3. Negative Float.

Negative float is not allowed. Schedules with negative float will not be accepted. Negative float will not be a basis for requesting time extensions. Any extension of time will be addressed in accordance with the Section F. Scheduled completion date(s) that extend beyond the contract (or phase) completion date(s) may be used in computations for assessment of liquidated damages. The use of this computation is not to be construed as an order by the Department to accelerate the project.

E. Biweekly Update Schedule.

A Biweekly update schedule is a schedule in which only progress is updated from the prior data date to the current data date. Work added and/or excusable delays encountered since the prior data date must be represented as a schedule revision as described in Section E.

1. Update Requirements.

Biweekly on a date set at the Preconstruction Conference and until Formal Acceptance, submit an updated schedule and all required information with a data date of the last day of the preceding biweekly submittal. The date for submission and data date may be adjusted to accommodate regularly scheduled progress meetings. Submit the Biweekly updated bar chart on paper and a copy of the updated schedule in electronic format in Section C.2. The Engineer shall "accept" or "reject" the schedule update within 5 days of receipt of the updated CPM schedule. The Engineer may withhold estimates if the updated schedule is not submitted as required by this section. For each updated schedule, identify the actual start and finish dates for all completed activities and the actual start

date and remaining duration for all activities in progress. Provide a written narrative that identifies any changes or shifts in the critical path and submit reasons for the changes or shifts in the critical path.

Submit the following with each updated schedule:

- a) CPM Schedule in Bar Chart Format
- b) Electronic files (formatted as described above)

2. Submittal Cover Memo.

All update submittals shall be accompanied with a brief cover memo containing all the information require in the Baseline Submittal Cover Memo per section C.3 with the addition of:

- Baseline Report
 - Narrative of baseline expectations
 - Project completion status per baseline expectations
- Logic Report
 - Logic Modification Report per section F
 - Narrative of all logic changes and reasoning
 - Two separate CPM submissions; one reflecting the schedule without changes in logic, the other reflecting the proposed logic and the effects.
 - Description of fragnet required per section F
- Progress Report
 - Narrative of all schedule changes since last update
 - Details of each change including impact of change on the schedule, float consumption or addition, and reason causing change when float is consumed

F. Revisions.

The Work may require and/or the Contractor may make revisions to the CPM schedule. Addition of new activities (fragnets required) or new calendars or changes to existing activities, calendars or logic constitute a revision. All revisions must be reported in a Logic Modification Report. The Logic Modification Report is a separate CPM update which includes all the changes recommended by the contractor within the current Biweekly update schedule. It shall include a Narrative explanation of the necessary changes accompanying the Biweekly update schedule. Any revision which modifies the critical path or impacts an interim date or project completion date is considered a Logic Modification. A fragnet is defined as the sequence of new activities that are proposed to be added to the existing schedule. The fragnet shall identify the predecessors to the new activities and demonstrate the impacts to successor activities. If submitted as a fragnet, the Contractor shall compute two Finish Dates. The first Finish Date shall be computed without consideration of any impact by the fragnet. The second Finish Date shall be

computed with consideration of any impact by the fragnet. The Contractor shall also submit a written narrative stating the reason for the proposed revisions. The Engineer shall “accept” or “reject” proposed revisions within ten days of receipt of appropriate schedules and narrative. All approved revisions will be incorporated into the Biweekly Update Schedule which will become the Revised Biweekly Update Schedule.

G. Time Extensions.

The Work may require and/or the Contractor may request an extension of the Completion Date. Perform the following analysis to compute the duration of the time extension.

Submit two paper copies and two electronic copies of each analysis performed.

1. Determine project progress prior to circumstance(s) necessitating the time extension. Unless the Engineer requests an interim schedule updated to the date of the circumstance alleging to have caused delay, the previous accepted Biweekly update shall be used to display the prior progress of the project. This schedule is referred to as the Un-impacted Schedule
2. Prepare a fragmentary network (fragnet) depicting the circumstance that is believed to have delayed the project.
3. Insert the fragnet into the Un-impacted Schedule, run the schedule calculations and determine the finish date. This schedule is referred to as the Impacted Schedule.
4. Compare the Impacted Schedule finish date with the Un-impacted Schedule finish date in order to determine the duration of any warranted time extension.

Submit the impacted schedule with the request for time extension. Include a narrative report describing the effects of new activities and relationships to interim and contract completion dates. All time extensions approved by the Engineer will be incorporated into the Biweekly update with the fragnet used to determine impacts incorporated into the schedule.

H. Recovery Schedule.

If the Biweekly Update Schedule or Revised Biweekly Update Schedule projects a finish date for the Project more than 14 calendar days later than the Contract Completion Date, submit a recovery schedule showing a plan to finish by the current Completion Date. The acceptance of any schedule projecting a completion date for the Project beyond the Current Contract Completion Date does not constitute approval of a time extension or an order to accelerate. All changes to completion dates and orders to accelerate must be made via Change Order. The Department will withhold Estimates until the Engineer “accepts” the recovery schedule. The Engineer will use the schedule to evaluate time extensions and associated costs requested by the Contractor. In the event the current Completion Date is in dispute, the recovery schedule will need to be submitted once the dispute has been resolved.

I. Basis of Payment.

The Department will make partial payments according to Section 109.05 of the standard specifications and as modified by the following schedule:

1. The Department will release 50 percent of the lump sum amount bid for Project CPM Schedule to the Contractor with the first regular estimate payable after the Engineer has “accepted” the CPM Baseline schedule submission and the Department has received the scheduling software.
2. The Department will release an additional 25 percent of the lump sum amount bid for Project CPM Schedule to the Contractor with the first regular estimate payable after 50 percent of the original contract amount is complete.
3. The Department will release the remaining 25 percent of the lump sum amount bid for Project CPM Schedule to the Contractor with the first regular estimate payable after project completion.

The Department will pay for the accepted quantities at the contract price as follows:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
-----	Project CPM Schedule	Lump Sum

The Department will consider payment as full compensation for all work required in this provision.