

SECTION 013200A
CONSTRUCTION PROGRESS DOCUMENTATION

[---Section 013200A should be used for contracts for which a fully-developed computer-generated critical path method Project Schedule is appropriate for managing and controlling the Work. It is anticipated that Projects with durations of 300 days or more would generally meet this criteria. The time frames indicated herein are presumed to be appropriate for such contracts but may be adjusted for contracts of shorter or longer durations.---]

[---For contracts with lesser Work management and control requirements, Section 013200B or Section 013200C should be used. For the very simplest of contracts, Section 013200 may be omitted in its entirety and the Project Schedule provisions in the General Conditions will control.---]

[---For contracts for which the University and/or the University's contracted Construction Management firm will be assuming responsibility for the Project Schedule, Section 013200D should be used.---]

PART 1 - GENERAL

1.01 QUALIFICATIONS

- A. Responsibility for Scheduling. The Lead Prime Contractor shall designate an authorized Scheduling Representative, or engage a Scheduling Consultant, who shall be responsible for the preparation of all required project schedules and schedule reports. The Lead Prime Contractor shall provide to the University for approval the name, experience, and qualifications of the Scheduling Representative/Consultant.
- B. Qualifications. The Scheduling Representative/Consultant shall be experienced in CPM scheduling and knowledgeable in construction methods, including methods used in mechanical and electrical construction. He/she should have, as a minimum, either formal training from a scheduling software system vendor or five (5) years experience in working with computerized schedules. He/she shall have ready access to computer equipment and shall be capable of producing schedules, reports, and updates on a timely basis throughout the construction period. To the extent possible, the task of Schedule updating shall be assigned to the same individual.
- C. Coordination. The Scheduling Representative/Consultant shall inform key Project personnel, including other Separate Prime Contractors, in the proper methods of providing data and utilizing the Project Schedule information.

1.02 SCHEDULING OF WORK

- A. The Lead Prime Contractor shall be responsible for scheduling construction, and for developing, updating, and maintaining a Project Schedule as described in this Section. Other Separate Prime Contractors, and management personnel from all Contractors, shall actively participate in scheduling and schedule development, updating, and maintenance.
- B. Separate Prime Contractors shall have their subcontractors and suppliers working on the project also contribute in developing, updating, and maintaining the Project Schedule. Subcontractor and supplier coordination shall be through their respective Separate Prime Contractor only.

- C. The approved Project Schedule shall be used to manage the work, to measure the progress of the work, and to aid in evaluating time extensions.
- D. The approval of the Project Schedule by the University is for assurance that the Project Schedule complies with the requirements of this Section, and that the Project Schedule approximates an acceptable general flow of the Work. Approval does not imply that specific activity durations, logic, and/or values assigned to activities are correct. Construction means and methods and management of the Work are the responsibility of the Contractors.
- E. Separate Prime Contractor Coordination.
 - 1. The Lead Prime Contractor shall secure time commitments for performing critical elements of the Work from each Separate Prime Contractor involved.
 - 2. The Project Schedule shall include signature boxes for signatures by representatives of all Separate Prime Contractors, certifying acceptance of the Project Schedule. Acceptance of the Project Schedule does not relieve the Contractors of the responsibility for the accuracy of the Project Schedule and for the Contractors' obligations to meet the contractual completion date. Acceptance does not constitute approval or warranty of the Contractors' means and methods of construction.
 - 3. In the event of disagreement involving the designated Lead Prime Contractor and one or more of the other Separate Prime Contractors regarding construction sequences, durations, and other aspects of the Project Schedule and scheduling, the determinations of the Lead Prime Contractor will control.
 - 4. Failure by any other Separate Prime Contractor to provide full cooperation with the Lead Prime Contractor in accomplishing any Project Scheduling actions will be sufficient grounds for declaring that Contractor in default.
- F. No Contractor may assert any claim whatsoever for any delay or additional costs incurred in development of the Project Schedule or any related requirement of this Section.
- G. The Project Schedule shall be the basis for measuring the Contractors' progress. Lack of an approved Project Schedule or a Scheduling Representative/Consultant will result in an inability of the University to evaluate the Contractors' progress. Failure of the Contractors to provide all information, as specified below, shall result in the disapproval of the entire Project Schedule submission. In the case where Project Schedule revisions have been directed by the University and those revisions have not been included in the Project Schedule, the University may hold retainage, each payment period, until revisions to the Project Schedule have been made.

1.03 NETWORK ANALYSIS SCHEDULES

- A. Use of the Critical Path Method. The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in the Precedence Diagram Method (PDM).
- B. Computer-Generated Schedule. The Project Schedule shall be computer-generated. The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this Section. Failure of the Contractor to meet the requirements of this Section shall result in the disapproval of the Project Schedule. Manual methods used to produce any required information shall require approval by the University.
- C. Level of Detail Required. The Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule with data at the appropriate level of detail shall result in the disapproval of the Project Schedule. The University will use, but is not limited

to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule.

1. Activity Durations. Contractor submissions shall include reasonable activity durations. Reasonable durations are to be determined by the Contractors by consideration of planned crew size/composition, and such durations shall allow the progress of activities to be accurately determined between updates periods (usually less than 2 percent of all non-procurement activities' Original Durations are greater than 20 days).
2. Critical Activities. The following activities shall be listed as separate activities on the Contractor's project schedule:
 - a. Submission and approval of mechanical/electrical layout drawings.
 - b. UCC inspections at the required stages of construction.
 - c. Submission and approval of O & M manuals.
 - d. Submission and approval of record (as-built) drawings.
 - e. Submission and approval of testing and balancing of HVAC.
 - f. HVAC commissioning dates.
 - g. Other performance verification and systems testing, as required.
 - h. Final inspection.
 - i. Correction of punchlist from final inspection.
3. Procurement Activities. Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. Long-lead materials and equipment are those that have a procurement cycle of over ninety (90) days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, and delivery.
4. University Activities. University and others' activities that could impact progress shall be shown. These activities include, but are not limited to: approvals, inspections, utility tie-ins, University-furnished equipment and property, and any separate Notice to Proceed (NTP) for phasing. The Contractor's failure to provide reasonable durations in the schedule for University-approval activities does not establish or change the University's review or approval periods. Approval activities should be shown with the duration at least the minimum allowed by the Contract.
5. Responsibility. All activities shall be identified in the Project Schedule by the Separate Prime Contractor responsible to perform the work. An activity shall not belong to more than one Separate Prime Contractor.
6. Bid Item. If the Contract has more than one Bid Item, all activities shall be identified in the project schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one Bid Item.
7. Phase of Work. If the Project has more than one Phase, all activities shall be identified in the project schedule by the phases of work in which the activity occurs. An activity shall not contain work in more than one phase of work.
8. Area of Work. If the Project has more than one discrete construction area, all activities shall be identified in the project schedule by the area of work in which the activity occurs, as appropriate. An activity shall not contain work in more than one area of work.
9. Feature of Work. All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers to, but is not limited to, the Schedule of Values for the project.

10. Change Orders. Any activity that is added or changed by Contract change order or is used to insert a time extension shall be identified by a number or code for that change order or time extension justification. Whenever possible, such changes shall be added to the Project Schedule by adding new activities. Existing activities shall not normally be changed to reflect change orders. An activity shall not belong to more than one change order or time extension justification.
- D. Days. Work activities should normally have durations in work days. Procurement activities, review and approval activities, and other similar activities may have durations in calendar days. The Project Schedule shall identify the work days per week, and shall identify holidays. The Project Schedule shall also indicate the number of shifts per day, if applicable. The Contractor may request to change the work days from 5 days per week to 6 or 7 days per week should this action become necessary to regain the schedule.
- E. Activity Values. The Project Schedule shall have a dollar value assigned to each activity. The dollar value shall be a reasonable amount based on the labor, materials, and equipment involved with the Work, plus a proportionate share of overhead and profit, represented by the activity. When added together, the dollar value of all activities shall equal the Contract sum(s). The dollar values shall also be coordinated with and agree with the Schedule(s) of Values.
- F. Scheduled Project Completion. The Project Schedule interval shall extend from NTP to the contract completion date.
1. Project Start Date. The Project Schedule shall start no earlier than NTP. The Contractor shall include as the first activity in the project schedule an activity called "Start Project". The "Start Project" activity shall have an "ES" constraint date equal to the date of NTP, and a zero day duration.
 2. Constraint of Last Activity. Completion of the last activity in the Project Schedule shall be constrained by the contract completion date. The Contractor shall include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path.
- G. Interim Completion Dates. Contractually-specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.
1. Start Phase. The Contractor shall include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date of NTP, and a zero day duration.
 2. End Phase. The Contractor shall include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.
 3. Phase X. The Contractor shall include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity shall be logically tied to the earliest and latest activities in the phase.
- H. Default Progress Data Disallowed. Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from

Contractor Daily Reports. Failure of the Contractor to document the Actual Start and Finish dates on the Daily Reports for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's schedule. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Program features which calculate one of these parameters from the other shall be disabled.

- I. Out-of-Sequence Progress. Activities that have posted progress without all preceding logic being satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case approval by the University. The Contractor shall propose, for approval prior to submitting an updated Project Schedule, logic corrections to eliminate all out of sequence progress or justify not changing the sequencing.
- J. Negative Lags. Lag durations contained in the Project Schedule shall not have a negative value.

1.04 SCHEDULE SUBMITTALS

The Lead Prime Contractor shall provide the Project Schedule submissions as described below. The items required for each submission are contained in Paragraph 1.06, Submission Requirements.

- A. Preliminary Project Schedule Submission. The Preliminary Project Schedule, defining the Contractors' planned operations for the first sixty (60) calendar days shall be submitted for approval within fifteen (15) calendar days after NTP. The Preliminary Project Schedule shall provide a reasonable level of detail for the first sixty days, and a summary of work for the remainder of the Project.
- B. Initial Project Schedule Submission. The Initial Project Schedule, providing a reasonable sequence of activities which represent work through the entire project and at a reasonable level of detail, shall be submitted for approval within forty-five (45) calendar days after NTP.
- C. Periodic Project Schedule Updates. Schedule Updates, based on the Initial Project Schedule and all preceding Schedule Updates, and defining the current status of the work and the plan for the remaining work, shall be submitted monthly on an agreed upon date.
- D. Project Schedule Required for Payment. The Contractor shall have submitted the Project Schedule submissions required as of the date of Application for Payment in order to have the Application for Payment considered for payment by the University.

1.05 SCHEDULE SUBMITTALS REQUIREMENTS

The following items shall be submitted for the Preliminary Project Schedule submission, for the Initial Project Schedule submission, and for every Periodic Project Schedule Update submission throughout the life of the project.

- A. Electronic Data. Electronic versions of the Project Schedule shall be provided.
 - 1. Format. Electronic files shall be submitted in the format (flash drive, CD, DVD, etc.) directed by or agreed upon with the University. A permanent exterior label shall be affixed to each drive/CD/DVD submitted. The label shall indicate the type of schedule (Preliminary, Initial, Update), full contract number, project name, project location, data date, and the name and telephone number of Scheduling Representative/Consultant.
 - 2. Electronic File Names. Each electronic file submitted shall have a name related to either the data date, the project name, or the Contract number. The Contractor shall develop a

naming convention that will ensure that the names of the files submitted are unique, and that is acceptable to the University.

- B. Project Schedule Diagram. The network diagram shall be required on the Initial Schedule submission and on monthly Schedule Update submissions. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The University may use, but is not limited to, the following conditions to review the schedule for compliance:
1. Diagrams shall show a continuous flow from left to right.
 2. The activity number, description, and duration shall be shown on the diagram.
 3. Dates shall be shown on the diagram for start of project, any contractually-required interim completion dates, and the contract completion date.
 4. The critical path shall be clearly shown.
 5. Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by phase of work, work area, and/or responsibility.
- C. Schedule Reports. The reports listed below shall be submitted. Unless otherwise designated, the format for each activity for the Schedule Reports listed below shall contain: Activity Number, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, and Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.
1. Activity Report. A list of all activities sorted according to activity number.
 2. Total Float Report. A list of all incomplete activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates. Completed activities shall not be shown on this report.
 3. 60-Day Look-Ahead Report. A list of all incomplete activities either with an Actual Start Date or with a Late Start Date within the next 60 days. Activities shall be sorted by the Actual Start Date and then the Late Start Date in chronological order.
 4. Separate Prime Contractor Report. A list of all activities sorted according to Separate Prime Contractor, and secondly, if used, by Trade Responsibility or subcontractor.
- D. Narrative Report. A Narrative Report shall be provided which includes a description of activities along the critical path(s) or most critical path(s), a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to relay to the University the Contractors' thorough analysis of the Project Schedule and their plans to compensate for any problems, either current or potential, which are revealed through that analysis. For Schedule Update submissions, the Narrative Report shall also specifically reference, on an activity-by-activity basis, all changes made since the previous period and relate each change to documented, accepted schedule changes.
- E. S-Curves. Earnings curves (cash flow) shall be submitted that show scheduled ES/EF and LS/LF curves. Periodic Project Schedule Updates shall indicate the actual progress plotted as of the data date. The cash flow curves are affected by the assigned cost and duration of the activities. The LS/LF cash flow curve is expected approximate a reasonable percent earned for any percent of duration completed based on previous contracts which were completed on schedule.

1.06 SCHEDULE SUBMITTALS FINALIZATION AND DISTRIBUTION

- A. Finalization of the Project Schedule. Upon submission of the Initial Project Schedule (paragraph 1.04 B.), following review by the University, if revisions to the proposed Project Schedule are required, the Lead Prime Contractor shall do so promptly. The Project Schedule must be finalized, accepted, signed by all Separate Prime Contractors, and approved by the University not more than sixty (60) calendar days after NTP. Failure to finalize the Project Schedule by that date will result in the withholding of all Contract payments until the Project Schedule is finalized.
- B. Distribution of the Project Schedule.
 - 1. Once finalized, the Lead Prime Contractor shall print and distribute copies of the Project Schedule to the University, the Professional, and all other Separate Prime Contractors. Copies of the Project Schedule shall also be posted or made available in the Project meeting room and/or temporary field office.
 - 2. When Periodic Project Schedule Updates (paragraph 1.04 C.) are published, and when revisions are made, the Lead Prime Contractor shall distribute copies to the same parties and post it in the same location(s). Once parties have completed their assigned portion of the Work and are no longer involved in construction activities, they may be deleted from distribution.
 - 3. Separate Prime Contractors and other recipients shall report promptly to the Lead Prime Contractor, in writing, any problems anticipated by the projections and information shown on the Project Schedule and Periodic Project Schedule Updates.

1.07 SCHEDULE UPDATING

- A. The Lead Prime Contractor's Scheduling Representative/Consultant shall meet with superintendents or project managers of each Separate Prime Contractor and representatives of the University to update the Project Schedule at monthly intervals. Each Prime Contractor shall provide to the Scheduling Representative/Consultant information needed to enable the Project Schedule to be updated.
- B. Update Process and Components.
 - 1. Actual start dates, finish dates, percents complete, and remaining durations shall be inserted for each activity completed or underway, as appropriate. Percents complete shall be in ten percent (10%) increments.
 - 2. All approved time extensions shall be appropriately inserted.
 - 3. All approved change orders shall be appropriately inserted.
 - 4. Any other schedule adjustments shall be integrated, to include rearranging the logic or changing activity durations. Such schedule adjustments shall be accepted by all parties agreeing to the Project Schedule.
 - 5. The Project Schedule, with all insertions in place, shall be automatically updated by the computer software system. For activities already started but not complete, updating shall use remaining durations rather than a duration automatically calculated by the computer from the percent complete.

6. Within five (5) working days after each meeting, the Lead Prime Contractor shall make distribution of the Periodic Project Schedule Update per paragraph 1.06 B. 2.

C. Regaining Lost Time.

1. Behind Schedule. If the Project Schedule indicates that the Project Completion Date, and any Interim Completion Dates, will not be met, even after all approved extensions of time, change orders, and schedule adjustments are inserted, the sequence and duration of activities shall be revised by the Contractors through concurrent operations, increase of shifts, manpower, or other means until the Project Schedule produced indicates that the Project will meet these required dates. In adjusting their activities, including but not limited to changes in durations and sequences, the Contractors shall respect the existing duty of the Lead Prime Contractor to coordinate the Work, and they shall follow its directions.
2. Recovery Schedule. If the Project Schedule indicates that the Project Schedule for the Project Completion Date, and any Interim Completion Date, has more than thirty (30) days of negative float, even after all approved extensions of time, change orders, and schedule adjustments are inserted, the Contractor shall promptly provide a Supplemental Recovery Schedule (to regain the original schedule) or a Supplemental Completion Schedule (to complete by the Contract completion date). This Supplemental Schedule shall be developed by reducing the remaining durations, revising logic, and/or adjusting resources onsite. The Supplement Schedule shall not replace the original Project Schedule as the official Contract schedule. The original Project Schedule shall be updated monthly and monitored to determine the effect the Supplemental Schedule is having on progress.

- D. Schedule No Longer Applicable. If the Contractors perform the work in such a manner that the Project Schedule no longer indicates the actual logic and activity durations being employed for the Work, the Lead Prime Contractor shall develop a revised Project Schedule that reflects the actual management and prosecution of the Work.

1.08 REQUESTS FOR TIME EXTENSIONS

- A. Submission Requirements. In the event any Separate Prime Contractor requests an extension of the contract completion date, or any interim completion date, that Contractor shall furnish a written justification and supporting Project Schedule data so that the University may make a determination as to whether or not an extension of time should be approved. Supporting data may include, as deemed necessary by the University, a list of all affected activities, with their associated Project Schedule activity numbers, an analysis of the overall impact of the changes proposed, and a sub-network of the affected area.
- B. Coordination. The Separate Prime Contractor requesting the time extension and the Lead Prime Contractor shall coordinate and cooperate together to analyze the Project Schedule and produce the required supporting documentation.
- C. Justification of Delay. The Project Schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with its request. Only delays in activities which affect critical path activities will be considered for a time extension. The determination as to the number of allowable days of contract extension shall be based upon the Project Schedule update in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the Project Schedule, will not be a cause for a time extension.
- D. Separate Prime Contractors' Schedules. In no event will the granting of an extension of time to one Separate Prime Contractor automatically entitle any other Separate Prime Contractor to an extension of time.

1.09 OWNERSHIP OF FLOAT

Float available in the Project Schedule, at any time, shall not be considered for the exclusive use of either the University or any Separate Prime Contractor.

1.10 CONTRACTOR COORDINATION AND DISPUTES

- A. Lead Prime Contractor Direction. If the Lead Prime Contractor and one or more of the other Separate Prime Contractors disagree as to the reasonableness of the Project Schedule, the use of resources adequate to meet the Project Schedule, the sequence of construction, or other schedule-related coordination issues, such dispute shall be submitted to the Lead Prime Contractor for determination. Disputes between two or more Separate Prime Contractors pertaining to scheduling issues shall be submitted promptly to the Lead Prime Contractor for determination. In all cases, the final decision of the Lead Prime Contractor shall be accepted by all Separate Prime Contractors, subject only to the commencement of a formal dispute proceeding pursuant to provisions of the Contract.

- B. Delays Between Prime Contractors. Each Separate Prime Contractor shall prosecute its Work to maintain its progress in accordance with the Project Schedule, so that no delays are caused to other Separate Prime Contractors. Should any Separate Prime Contractor fail to maintain progress according to the Project Schedule or cause delay to another Separate Prime Contractor, it shall furnish such additional manpower, equipment, additional shifts, and/or other measures that are necessary, or that are directed by the Lead Prime Contractor, to bring its operations up to schedule without any additional expenses to the University or the other Separate Prime Contractors. Disputes between the Separate Prime Contractors regarding adherence to the Project Schedule and the furnishing of additional resources shall be submitted promptly to the Lead Prime Contractor for determination. The final decision of the Lead Prime Contractor shall be accepted by all Separate Prime Contractors, subject only to the commencement of a formal dispute proceeding pursuant to provisions of the Contract.

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

(Not Used)

END OF SECTION 013200A