

Section 01325

CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.01 GENERAL

- A. Provide Construction Schedules for Work included in Contract in accordance with requirements in this Section. Create Construction Schedule using Critical Path Method (CPM) computer software capable of mathematical analysis of Precedence Diagramming Method (PDM) plans. Provide printed activity listings and bar charts in formats described in this Section.
- B. Combine activity listings and bar charts with narrative report to form Construction Schedule submittal for City Engineer.

1.02 MEASUREMENT AND PAYMENT

- A. No payment will be made for this item. Include the cost of construction scheduling in overhead cost for this project.

1.03 SCHEDULING STAFF

- A. Employ or retain services of individual experienced in critical path scheduling for duration of Contract. Individual shall cooperate with City Engineer and update schedule monthly as required to indicate current status of Work.

1.04 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittal Procedures.
- B. During preconstruction meeting, as described in Section 01312 - Coordination and Meetings, provide sample bar charts and activity listings produced from scheduling software proposed. Scheduling software is subject to review by City Engineer and must meet requirements provided in this Section. Review of samples will be provided by City Engineer within 7 days of submittal.
- C. Within 21 days of receipt of approval of Contractor's format, or 30 days of Notice to Proceed, whichever is later, submit proposed Construction Schedule for review. Base Construction Schedule submittal on following:
  - 1. Level of detail and number of activities required in schedule are dependent on project type.
    - a. For wastewater projects, Categorize Work Type and Area Code in schedule.

- 1) For wastewater rehabilitation projects, there are 6 work-type categories. An area code will be assigned for each Meter Service Area or Basin. Include at least one activity for each unique combination of work type and area code. Normal schedules of wastewater rehabilitation projects contain between 35 and 100 activities, depending on number of basins and work types involved in each basin.
- 2) For wastewater relief projects (line work), area codes will be assigned geographically.
- 3) For wastewater plant or facility work, other criteria may apply to assignment of area codes, such as a combination of geographical and craft categories.
2. For projects with multiple types of tasks within scope, indicate types of Work separately within schedule.
3. For projects with work at different physical locations or service areas, or different facilities within a site, indicate each location or facility separately within schedule. Show Work on each floor of multi-story building as separate tasks.
4. For projects with multiple crafts or significant subcontractor components, indicate elements separately within schedule. Unless permitted by City Engineer, tasks shall consist of work covered by only one division of Project Manual.
5. Unless permitted by City Engineer, each schedule task shall be same as Schedule of Values line item, and vice versa.
6. For projects with significant major equipment items or materials representing over 5 percent of Total Contract Price, indicate shop drawing submittal and review, purchase, delivery, and installation dates. Include activities for testing, adjustment, and delivering O & M manuals.
7. No task except acquisition of major equipment items shall represent more than one percent of Total Contract Price for facility projects and 3 percent of Total Contract Price for other projects. Duration of tasks may not exceed 40 calendar days.
8. For projects where operating facilities are involved, identify each period of work, which will impact any process or operation in schedule and must be agreed to by City Engineer and facility operator prior to starting work in area.
9. Construction Schedule submittals shall include:
  - a. Printed bar charts that meet criteria outlined in this Section and are produced by Contractor's approved scheduling software.

- b. Activity listings that meet criteria outlined in this Section and are produced by Contractor's approved scheduling software.
  - c. Predecessor/successor listing sorted by Activity ID that meets criteria outlined in this Section and which is produced by Contractor's scheduling software.
  - d. A logic network diagram is required with first Construction Schedule submittal for facilities projects.
  - e. Prepare and submit graphic or tabular display of estimated monthly billings, i.e., a cash flow curve for Work with first schedule submittal. This information is not required in monthly updates, unless significant changes in work require re-submittal of schedule for review. Display shall allocate units indicated in bid schedule or Schedule of Values to Construction Schedule activities. (Weighted allocations are acceptable, where appropriate). Dollar value associated with each allocated unit will be spread across duration of activity on monthly basis. Total for each month and cumulative total will be indicated. These monthly forecasts are only for planning purposes of City Engineer. Monthly payments for actual work completed will be made by City Engineer in accordance with Document 00700 - General Conditions.
  - f. Narrative Report that provides information outlined in this Section.
- D. No payment will be made until Construction Schedule and billing forecast are accepted by City Engineer.
- E. If Contractor desires to make changes in his method of operating and scheduling, after original schedule has been reviewed by City Engineer, notify City Engineer in writing, stating reasons for changes. When City Engineer considers these changes to be significant, Contractor may be required to revise and resubmit for review all or affected portion of Contractor's Construction Schedule to show effect on Work.
- F. Upon written request from City Engineer, revise and submit for review all or any part of Construction Schedule submittal to reflect changed conditions in Work or deviations made from original plan and schedule.
- G. Updated Construction Schedule with Actual Start and Actual Finish Dates, Percent Complete, and Remaining Duration of each Activity shall be submitted monthly. Data date used in updating monthly Construction Schedule shall be same date as is used in monthly Payment Application. This monthly update of schedule shall be required before monthly Payment Application will be processed for payment.
- 1.05 SCHEDULING COMPUTER SOFTWARE REQUIREMENTS
- A. Create Contractor's Construction Schedule using CPM computer software that provides mathematical analysis of PDM plans. Use software capable of creating bar charts and activity listings which can be sorted by various fields, i.e., Sort by Activity ID; Sort by Early

Start; Sort by Total Float; Sort by Area Code; sort by Specification Section number; and sort by Subcontractor. Use software capable of producing logic network diagram.

- B. Use PDM scheduling software capable of producing activity listings and bar charts with following information for each activity in schedule:
  - 1. Activity ID
  - 2. Activity Description
  - 3. Estimated (Original) Duration
  - 4. Remaining Duration
  - 5. Actual Duration
  - 6. Early Start Date
  - 7. Late Start Date
  - 8. Early Finish Date
  - 9. Late Finish Date
  - 10. Free Float
  - 11. Total Float
  - 12. Activity Codes (such as Area Code, Work Type, Specification Section, Subcontractor)
- C. Use PDM scheduling software capable of printing calendars using mathematical analysis of schedule, indicating standard work days of week and scheduled holidays.
- D. Use Scheduling software capable of printing activity listing that indicates Predecessors and Successors, Lag Factors and Lag Relationships used in creating logic of schedule.
- E. Use scheduling software to provide monthly time in Bar Chart Format and scale with 12-month scale not to exceed one page width. Bar charts may be printed or plotted on 8.5 by 11-inch, 8.5 by 14-inch or 11 by 17-inch sheet sizes. Over-size plots are not acceptable.

1.06 NARRATIVE SCHEDULE REPORT

- A. Narrative Schedule Report shall list Activities Started This Month; Activities Completed This Month; Activities Continued This Month; Activities Scheduled To Start or Complete Next Month; Problems Encountered This Month; Actions Taken to Solve These Problems.
- B. Narrative Schedule Report shall describe changes made to Construction Schedule Logic (i.e., changes in Predecessors and Lags); Activities Added to Schedule; Activities Deleted from Schedule; any other changes made to Schedule other than addition of Actual Start Dates and Actual Finish Dates and changes of Data Date and Remaining Durations for re-calculation of mathematical analysis.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION