

## **SECTION 01 32 13 SCHEDULING of WORK**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

The Owner will provide and pay for the services of a Construction Scheduling Agent (C.S.A.) to assist in developing and implementing the Contractor's project scheduling system.

#### **1.02 SCHEDULE DEVELOPMENT**

- A.** C.S.A. personnel will meet with the Contractor and subcontractor personnel to define the activities and responsibilities that constitute all major aspects of the project and sub-divide and balance these activities to a level of activity resource loading in terms of crew sizes. The overall project information shall be developed in a large group cooperative scheduling meeting to be held during the first three weeks of the Contract Time. The Contractor and subcontractors shall anticipate a period of three consecutive days of scheduling during this three-week period.
- B.** A detailed relational database will be developed from the above information, which will produce a Computerized Overall Project Schedule in bar graph form. A detailed materials list including submittal dates, approval dates, and delivery dates will also be a part of this Overall Project Schedule using the same computerized bar-graph graphics format.
- C.** At completion, all of the above activities and materials will be set on a calendar that represents the duration of the project. All of the activities and materials must be part of a graphic computer database in order to allow parts of the schedule to be excerpted in hard copy or by electronic transmission at any time. Also construction logic changes must be able to be inserted at any time and the effect of such changes on total project duration known immediately in terms of all activities affected with relation to the critical path of the project. Updates to logic, activities, and materials will be stated in the bi-weekly computerized Critical Activity Update Schedule that is sent out along with a formal report of the project following each Job Coordination Meeting attended by all active participants to the project.

#### **1.03 COMPUTERIZED GRAPHIC RELATIONAL DATA BASE DEVELOPMENT**

- A.** The C.S.A. will develop a detailed computerized graphic database using computer applications that have the capabilities of graphically illustrating the exact relational intent of all contractors and subcontractors to the project. Data collected from the above participants to the project will be placed on a workday type calendar. The project will be graphically built with work relationships being represented in a precedence related format, which is then synchronized to the project calendar. The construction logic resulting from data collection from all job participants including critical materials will be placed on the project calendar make up called the Overall Project Schedule.
- B.** The above mentioned collection of data, meetings with the Contractor and the Contractor's prospective major subcontractors producing a computerized Overall Project Schedule and time-logic precedent graphically presented relational database in hard copy form for the entire duration of the project, and distribution to all project participants shall occur within thirty calendar days of the large group cooperative scheduling meeting referred to in paragraph 1.02 A of this Section. Bi-weekly job Coordination Meetings which begin the update phase of the Overall Project Schedule showing project status (days ahead or days behind the Overall Project Schedule), a discussion of problems with appropriate solutions, and a revised and updated computerized Critical Activity Update Schedule shall start within forty-five (45) calendar days of the Notice to Proceed for the Project.

#### **1.04 SCOPE OF SCHEDULE SYSTEM**

- A.** The project schedule system will include an overall, time-scaled project schedule of a computerized bar graph type, which demonstrates that the Contractor can meet overall project schedule requirements. Overall Project Schedule shall consist of detailed activities and their

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restraining relationships as required to complete the project through site, structural, rough-in, and finish activities. The Contractor and each subcontractor shall provide detail schedule information, including resource requirements for each work element, to complete its part of this contract. The Overall Project Schedule must also include shop drawings submittal, approval, fabrication and delivery dates for material items deemed by the C.S.A. to be significant to the scheduling process. The Overall Project Schedule will be the basis for interpreting time-associated provisions of the Contract. The Schedule will include a reasonable amount of time between shop drawing submittal and approval to account for Designer's review and approval process.

- B.** A Relational Database will be represented in computerized bar-graph form in the final scheduling document referred to above as the Overall Project Schedule. This Relational Database will have the capability to provide the Critical Path of the project, which can be set into a graphic curve depicting work intensities and critical periods of the project as a guide for the project. Progress on an as-built basis can be plotted against this original project curve to determine days ahead or days behind schedule.
- C.** The project schedule system will also include regularly established Job Coordination Meetings participated in by the Contractor, active or near-active subcontractors, the C.S.A., the Designer, and the Owner. Job Coordination Meetings shall be held on-site and bi-weekly, or more often if conditions warrant, for establishing the current status of completion and revising the schedule and overall databasing as necessary.
- D.** As a part of each Job Progress Meeting, the Contractor and the C.S.A. will maintain highly detailed computerized Critical Activity Update Schedule in a graphic bar chart form. The origin will be the Overall Project Schedule. Initially this Critical Activity Update Schedule can be computer excerpted or extracted from the current logic of the Computerized Overall Project Schedule data base system. This excerpt then becomes the updatable portion of project control and even with construction logic and materials change shall fit within the original guidelines and major milestones set forth in the original Overall Project Schedule. If there is an occurrence where the Critical Activity Update Schedule appears not to fit inside the original set of windows spelled out in the Overall Project Schedule, then this is a signal to add more resources, crews, or time to return the project to the as planned status.

## **1.05 PROGRESS REPORTS**

After each job progress meeting, the C.S.A. will prepare a report which includes a copy of the latest computerized Critical Activity Update including all logic changes resulting from the meeting and a graph of the Critical Path of the project including the as-planned profile of the project as compared to the as-built in-progress update. There will also be a written report produced from the comments of the active participants to the project that will point out problems and solutions and any construction logic or material deficiencies that might have occurred.

## **1.06 SCHEDULING SYSTEM USED FOR A MANAGEMENT TOOL**

- A.** This is a special condition whereby the project at large gains a status of being considerably ahead of goals set forth in the Overall Project Schedule. At this time, good scheduling technique warrants a re-thinking of present logic and what influence the ahead of schedule condition may have, leading ultimately to a re-scheduling of the project under the title of Revised Overall Project Schedule or Overall Project Completion Schedule. The same schedule development process mentioned above will be used in making the revised or completion schedules. The main difference between the revised or completion schedules and the original Overall Project Schedule is the manner in which project status is figured. Project status will still be stated in terms of the original Overall Project Schedule and days ahead or behind this schedule will be stated even though the revised or completion schedule may at times be showing a negative or minus progress.
- B.** The most recently updated Critical Activity Update Schedule, Graph Trend Analysis (days behind or days ahead of schedule) and written project report including construction logic changes and materials status represents the latest update of the Project Overall Project Status. These associated trends derived from the computerized data base and represented in the above mentioned detailed report including the Graph Trend Analysis which depicts the status of the critical path of the project in terms of the original Overall Project Schedule (As-Planned) shall be

the basis for interpreting the schedule provisions of the Contract, except that the latest updated schedule shall have been issued for five (5) calendar days before it becomes effective and serves as the new basis for contract interpretation.

- C.** If the updated schedule indicates that Substantial Completion will be achieved more than fifteen (15) days later than required by Contract, then within seven (7) days Contractor shall meet with C.S.A. and develop a recovery schedule indicating an action plan for returning schedule to compliance with Contract. Recovery schedule shall include detailed description of labor requirements, planned overtime, and logic changes necessary to ensure completion in accordance with Contract requirements.

#### **1.07 SCHEDULE RESPONSIBILITY AND APPROVAL**

- A.** Project Schedule development is the responsibility of the Contractor. The above schedule specification requirements are designed to assist the Project, the Contractor, and each subcontractor in the timely completion of the activities within their respective responsibility.
- B.** The schedule system is to be used to assist the Contractor in keeping the Work on schedule and for assisting the Contractor to complete the Work within the specified time for Substantial Completion. The Contractor will be held solely responsible for the failure to substantially complete the Work within the specified time.
- C.** Approval of the schedule by the Owner or the Owner's agents does not warrant, either expressly or implicitly, the feasibility, logic, and/or durations of activities; these matters are and remain the responsibility of the Contractor. Approval of the schedule by the Owner or the Owner's agents is only for the purpose of establishing that the schedule complies with the Contract Documents.
- D.** Contractor shall:
  - 1.** Accurately represent to Owner and C.S.A. its planning schedule for execution of Work, and
  - 2.** Utilize the schedules made available by Contractor to Owner and C.S.A. without material deviation.

**END OF SECTION**