SECTION **01 32 00** - **CONSTRUCTION PROGRESS DOCUMENTATION**

**Content Requests:**

Revise this Section by deleting and inserting text to meet Project-specific requirements.

1. GENERAL
	* + 1. SUMMARY

Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

Startup construction schedule.

**[Contractor's Phasing Plan in addition/alteration Projects.]**

Contractor's Construction Schedule.

Construction schedule updating reports.

Daily construction reports.

Material location reports.

Site condition reports.

Unusual event reports.

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.

Predecessor Activity: An activity that precedes another activity in the network.

Successor Activity: An activity that follows another activity in the network.

Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

* + - * 1. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.
				2. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
				3. Event: The starting or ending point of an activity.
				4. Float: The measure of leeway in starting and completing an activity.

Float time is not for the exclusive use or benefit of either Contractor or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

* + - 1. INFORMATIONAL SUBMITTALS

Format for Submittals: Submit required submittals in the following format:

Working electronic copy of schedule file.

PDF file.

Startup construction schedule.

Retain subparagraph below if requiring schedule of values and Application for Payment submittals using network cost- and resource-loaded reporting as part of requirements in Section 01 29 00 "Payment Procedures."

Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

Retain "Startup Network Diagram" Paragraph below if using CPM-type schedule.

Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

* + - * 1. **[Contractor's Phasing Plan in Addition/Alteration Projects: Of size required to display entire phasing plan for entire construction period.**

**Submit preliminary phasing plan not less than 10 days prior to Phasing Conference.**

**Submit proposed Contractor's Phasing Plan for approval not more than 10 days after Phasing Conference.]**

* + - * 1. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

Retain subparagraph below if Contractor, Contractor, or Construction Manager will use scheduling software to revise Contractor's data or to integrate scheduling data from multiple contracts or separate contracts.

Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

Submit within 60 days of Notice to Proceed.

CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.

Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.

Total Float Report: List of activities sorted in ascending order of total float.

Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

Narrative Report: Analysis of schedule including the following.

Commentary regarding work scheduled to start in the next update period.

Describe activities along the two most critical paths where the total float is 20 workdays or less.

Describe current and anticipated problem areas or delaying factors and their impact and corrective actions taken or required to be taken.

Identify and explain activities that did not start or finish during the update period as scheduled.

Identify and explain schedule changes by activity ID and name. Include new and deleted activities, logic changes, duration changes, calendar changes, lag changes, resource changes, and actual start and finish date changes.

Identify and explain out-of-sequence work.

Construction Schedule Updating Reports: Submit with Applications for Payment.

* + - * 1. Contractor Production Reports: Upload to web-based Project management software website at daily intervals by 10 AM the following workday.
				2. Material Location Reports: Submit at weekly intervals.
				3. Site Condition Reports: Submit at time of discovery of differing conditions.
				4. Unusual Event Reports: Submit at time of unusual event.

Coordinate "Qualification Data" Paragraph below with qualification requirements in Section 01 40 00 "Quality Requirements" and as may be supplemented in "Quality Assurance" Article.

* + - * 1. Qualification Data: For scheduling consultant or Contractor's in-house scheduling representative.
			1. QUALITY ASSURANCE

Retain "Scheduling Consultant Qualifications" Paragraph below if Contractor is required to retain a CPM scheduling consultant.

Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with at least five years' experience scheduling construction projects similar in size and complexity to this Project, with capability of producing CPM reports and diagrams within 24 hours of Contractor's request.

Retain "Prescheduling Conference" Paragraph below if required to emphasize schedule requirements.

* + - * 1. **[Phasing Conference in Addition/Alteration Projects: Conduct conference at Project site within 30 days of Notice to Proceed to comply with requirements in Section 01 31 00 "Project Management and Coordination."**

**Attendees: Government representatives including Store Director, Project Manager, and Contracting Officer and major Subcontractors and suppliers.**

**Agenda:**

**Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule.**

**Review Government Phasing Plan and preliminary Contractor's Phasing Plan.**

**Discuss constraints, including phasing, work stages, temporary relocations, area separations, interim milestones, and partial Contractor occupancy.**

**Review delivery dates for Contractor-furnished and Government-furnished products.]**

* + - 1. COORDINATION

Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

Secure time commitments for performing critical elements of the Work from entities involved.

Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

* + - 1. **[CONTRACTOR'S PHASING PLAN IN ADDITION/ALTERATION PROJECTS**

**Government Phasing Plan: The Government Phasing Plan is provided in the Drawings to communicate Government's required phase separations and sequencing.**

* + - * 1. **Contractor's Phasing Plan: Prepare Contractor's Phasing Plan based on Government Phasing Plan and phasing conference discussions.**

**Where areas must be vacated for construction activities allow five days for commissary personnel to relocate from existing area to temporary location or to newly completed area.**

**Comply with approved Contractor's Phasing Plan. Obtain Government approval not less than 14 days prior to revising Contractor's Phasing Plan.**

**Obtain Government approval prior to starting each phase.**

**Coordinate Contractor's Construction Schedule with Contractor's Phasing Plan.]**

* + - 1. CONTRACTOR'S CONSTRUCTION SCHEDULE

Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

Retain subparagraph below if Contractor requires a specific computer software program.

For Projects with Contract Amount exceeding 2 million dollars, use Primavera P6 for current Windows operating system.

Retain "Scheduling Consultant" Paragraph below only for complex, long-duration projects.

Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting, using CPM scheduling.

Delete "In-House Option" Subparagraph below if not allowed or if Contractor wants to retain an independent consultant. See the Evaluations.

In-House Option: Contractor may waive requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.

Meetings: Scheduling consultant to attend all meetings related to Project progress, alleged delays, and time impact.

Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

Activities: Treat each separate area as a separate numbered activity for each main element of the Work. Comply with the following:

Activity Coding: Identify the following for each activity.

Responsible party, only 1 per activity.

Area/Phase do not allow activities to cover more than one work area or phase.

The applicable Cost Line-Item Number.

Type of activity (submittal, fabrication, installation, testing, etc.).

Activity description.

Work Breakdown Structure (WBS) Code: Adjust the provided code to the specific Project. Add or delete headings or sub-tiers as necessary.

Revise "Activity Duration" Subparagraph below to suit Project. Long activity durations provide less detail and, therefore, less information with which to manage a project. As an alternative to specifying activity duration, indicate minimum and maximum number of activities, which will result in a similar effect.

Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Government.

Provide 80 activities minimum for each million dollars of Contract Amount.

Limit critical (0-day float) activities to 30 percent of all activities and near-critical (<5-day float) activities to 40 percent of all activities. Minimize finish-to-start relationships.

Temporary Facilities: Indicate start and completion dates for the following as applicable:

Securing of approvals and permits required for performance of the Work.

Temporary facilities.

Construction of mock-ups, prototypes, and samples.

Contractor interfaces and furnishing of items.

Interfaces with Separate Contracts.

Regulatory agency approvals.

Punch list.

Procurement Activities: Include procurement process activities for long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.

Phase inspections and department relocations.

Each Contractor-furnished and Government-furnished piece of equipment.

Quality control testing and inspections.

Demonstration and training.

Revise first subparagraph below if startup and testing of more complex equipment and systems require significantly more than 15 days.

Startup and Testing Time: Include no fewer than 15 days for startup and testing.

Commissioning Time: Include no fewer than 15 days for commissioning.

Initial Red Zone Meeting.

Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Contractor's administrative procedures necessary for certification of Substantial Completion. Include Contractor's inspection, Government's inspection, and inspection corrections as separate activities.

Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion. Include Contractor's inspection, Government's inspection, and inspection corrections as separate activities.

Constraints: Subject to Government approval, include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

Retain first six subparagraphs below if applicable; coordinate with requirements in Section 01 10 00 "Summary."

**[Addition/Alteration Project Phasing: Arrange list of activities on schedule by phase.]**

Work under Government's Separate Contracts: Include a separate activity for each contract.

Work by Contractor: Include a separate activity for each portion of the Work performed by Contractor.

Products Ordered in Advance: Include a separate activity for each product. Delivery dates indicated stipulate the earliest possible delivery date.

Contractor-Furnished and Government-Furnished Products: Include a separate activity for each product. Delivery dates indicated stipulate the earliest possible delivery date.

Work Restrictions: Show the effect of the following items on the schedule:

Coordinate list below with work restrictions listed in Section 01 10 00 "Summary."

Coordination with existing construction.

Limitations of continued occupancies.

Uninterruptible services.

Partial occupancy before Substantial Completion.

Use-of-premises restrictions.

Provisions for future construction.

Seasonal variations.

Environmental control.

Retain "Work Stages" Subparagraph below for large projects and complicated small projects. Consider limiting it to critical work or important subcontracts.

Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

Subcontract awards.

Submittals.

Purchases.

Mockups.

Fabrication.

Sample testing.

Deliveries.

Installation.

Tests and inspections.

Adjusting.

Curing.

Retain first subparagraph below when required under indoor environmental quality provisions of applicable Division 01 sustainable design requirements Section.

Building flush-out.

Startup and placement into final use and operation.

Commissioning.

Insert critical work and subcontracts here if requirement to indicate stages of the Work is limited only to those elements.

Retain "Construction Areas" Subparagraph below for high-rise buildings, multiple-building projects, and other complex structures. Revise to suit Project. Delete for small projects and for large single-story and single-volume projects.

Insert a list of major areas here if specific scheduling is required. List might include nonbuilding work, such as roads, parking, landscape development, and similar work.

Retain "Milestones" Paragraph below if the Contract Documents include requirements for certain work to be completed by specific dates.

Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

Constrain contractually specified milestones to show negative float if the early finish date of the last activity in that phase falls after the milestone date.

Include between 3 and 18 interim milestones. Suggested interim milestones include the following:

HVAC start-up.

Phase start to include sub-phase start.

Phase completion to include sub-phase completion.

Telecommunications and IT systems installation complete.

POSM/Data installation complete.

Refrigeration system complete.

Security system complete.

Fire alarm system complete.

Government-furnished equipment installation complete.

Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

See Section 01 29 00 "Payment Procedures" for cost reporting and payment procedures.

Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

Unresolved issues.

Unanswered Requests for Information.

Rejected or unreturned submittals.

Notations on returned submittals.

Pending modifications affecting the Work and the Contract Time.

Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities.

Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

As the Work progresses, indicate Final Completion percentage for each activity.

Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

* + - * 1. Distribution: Distribute copies of approved schedule to Contractor, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

Post copies in Project meeting rooms and temporary field offices.

When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

* + - 1. STARTUP CONSTRUCTION SCHEDULE

Delete this article for small or less-complex projects where time is less critical. Retain for larger or more complicated projects, even if Project requires CPM construction schedule; coordinate with startup network diagram.

Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within 10 days of date established for the Notification of Award and not less than five days prior to preconstruction conference.

* + - * 1. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 120 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

Gantt-chart schedule output format described in this article is adequate for many projects. Delete this article if Project size and complexity justify CPM construction schedule.

* + - 1. CPM SCHEDULE REQUIREMENTS

CPM schedules are more complex than Gantt-chart schedules. Delete this article if not required. See the Evaluations.

Prepare network diagrams using AON (activity-on-node) format.

Projects using CPM schedules should begin with a startup network diagram of type described in "Startup Network Diagram" Paragraph below or with a startup Gantt-chart schedule as described in "Startup Construction Schedule" Article.

* + - * 1. Startup Network Diagram: Submit diagram within 10 days of the Notification of Award and not less than five days prior to preconstruction conference. Outline significant construction activities for the first 120 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

Revise "CPM Schedule" Paragraph below to suit Project.

* + - * 1. CPM Schedule: Prepare Contractor's Construction Schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.

Use a cost- and resource-loaded CPM schedule for Projects with Contract Amount exceeding ten million dollars.

Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.

Failure to include any work item required for performance of this Contract must not excuse Contractor from completing all work within applicable completion dates.

Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.

Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.

Subparagraph below coordinates between working days of time and calendar days. the Contract Time is in calendar days.

Use "1 workday" as the unit of time for individual activities. Indicate nonworking days and holidays, including federal holidays, incorporated into the schedule to coordinate with the Contract Time.

Revise "CPM Schedule Preparation" Paragraph below to suit Project.

CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

Preparation and processing of submittals.

Mobilization and demobilization.

Purchase of materials.

Delivery.

Fabrication.

Utility interruptions.

Installation.

Work by Contractor that may affect or be affected by Contractor's activities.

Testing and inspection.

Commissioning.

Punch list and Final Completion.

Activities occurring following Final Completion.

Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates to be consistent with Contract milestone dates. Actual start and completion dates to be consistent with Quality Control Reports and Daily Construction Reports.

Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.

Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

Subnetworks on separate sheets are permissible for activities clearly off the critical path.

Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Contractor's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, sustainable design documentation, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.

Each activity cost to reflect an appropriate value subject to approval by Contractor.

Total cost assigned to activities to equal the total Contract Sum.

Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

* + - * 1. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

Contractor or subcontractor and the Work or activity.

Description of activity.

Main events of activity.

Immediately preceding and succeeding activities.

Early and late start dates.

Early and late finish dates.

Activity duration in workdays.

Total float or slack time.

Average size of workforce.

Dollar value of activity (coordinated with the schedule of values).

Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

Identification of activities that have changed.

Changes in early and late start dates.

Changes in early and late finish dates.

Changes in activity durations in workdays.

Changes in the critical path.

Changes in total float or slack time.

Changes in the Contract Time.

Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.

In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.

In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.

Prepare list for ease of comparison with payment requests, coordinate timing with progress meetings.

Retain first subparagraph below if this report is the prime mechanism for checking payment requests.

In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.

Subparagraph below automatically results in monthly, biweekly, or other reporting frequency, depending on desired frequency of progress meetings.

Submit value summary printouts one week before each regularly scheduled progress meeting.

Insert articles for other schedules and lists to suit Project, depending on complexity.

* + - 1. REPORTS

Daily Construction Reports: Prepare a daily construction report using Contractor Production Report form included in Project Manual.

"Material Location Reports" and "Site Condition Reports" paragraphs below are examples of reports that can prove useful. Delete both if not required or revise to suit Project. See the Evaluations.

Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List to be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

Material stored prior to previous report and remaining in storage.

Material stored prior to previous report and since removed from storage and installed.

Material stored following previous report and remaining in storage.

Revise "Site Condition Reports" Paragraph below to suit Project and special Contractor requirements.

Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

Retain "Unusual Event Reports" Paragraph below if Contractor is sensitive about public relations.

* + - * 1. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Contractor in advance when these events are known or predictable.

Submit unusual event reports directly to Contractor within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

Insert other required reports.

1. PRODUCTS (Not Used)
2. EXECUTION (Not Used)

END OF SECTION