

SECTION 013200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 SUMMARY

- A. The Work of this Section includes, but is not limited to, requirements for the following procedures:

1. Time for Completion and Liquidated Damages.
2. Sequencing requirements.
3. Phasing requirements.
4. Requirements for scheduling closeout activities.
5. Critical Path Method Schedule preparation and submission.
6. Photographic documentation of construction.

- B. Sustainable Design Intent: Refer to Section 018113 - SUSTAINABLE DESIGN REQUIREMENTS.

- C. Related work includes, but is not limited to, the following work under other Sections:

1. Section 011400 – WORK RESTRICTIONS: Hours of work and related scheduling criteria.
2. Section 012400 – SCHEDULE OF VALUES: Allocation of portions of the Work as line items in applications for payment.
3. Section 013100 – PROJECT MANAGEMENT AND COORDINATION: Contractor responsibility for coordinating the Work.
4. Section 013119 – PROJECT MEETINGS: Scheduling construction-related meetings.
5. Section 013300 – SUBMITTAL PROCEDURES: Coordination of submittal schedule with construction.
6. Section 014000 – QUALITY REQUIREMENTS: Special sequencing requirements required for inspection of building components prior to concealment.
7. Section 017700 – CLOSEOUT PROCEDURES: Requirements for Substantial Completion and Final Completion.

1.3 SUBMITTALS

- A. Preliminary Construction Schedule: Within 10 calendar days following receipt of the Notice to Proceed, submit a CD containing an electronic copy (PRX) and two paper copies for review by the Owner, Project Manager and the Architect. This preliminary schedule shall include the project contract dates, milestones, long lead items, major work activities and a critical path to completion. (approximately 100 to 150 schedule activities)

1. Acceptance of the Preliminary Construction Schedule by the Owner, Project Manager and Architect shall be a prerequisite to certification of the first Application for Payment.

- B. Complete and Detailed Construction Schedule: Within 45 calendar days following receipt of the Notice to Proceed, and at least 15 calendar days prior to submitting the second Application for Payment, submit a CD containing an electronic copy (PRX) and two paper copies of the complete and detailed schedule, to show entire schedule for entire construction period.
 - 1. Acceptance of the Complete and Detailed Construction Schedule by the Owner, Project Manager and Architect shall be a prerequisite to certification of the second Application for Payment.
- C. Monthly Schedule Update: With each monthly Application for Payment, submit a schedule update of the accepted Complete and Detailed Construction Schedule accompanied by a written narrative reporting on the progress of the Work and a CD containing an electronic copy (PRX) and two paper copies of the Monthly Schedule Update.
 - 1. Acceptance of the Updated Schedule each month by the Owner, Project Manager and Architect shall be a prerequisite to certification of the monthly Application for Payment.
- D. Daily Construction Field Reports: Submit two copies of the current week's field reports to the Owner's Project Manager and the Architect at the end of each week. (Electronic submission is acceptable)
- E. Special Reports: Submit two copies of special reports of unusual events at the site directly to Owner's Project Manager and a copy to the Architect, on the day of the occurrence. Distribute additional copies of report to parties affected by the occurrence.
- F. Construction Photographs: Submit construction photographs as specified herein.

1.4 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- A. It is understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion for each phase are essential conditions of this Contract, and it is further mutually understood and agreed that the Work embraced in this Contract shall be commenced by the date specified therein.
- B. The Contractor agrees that said Work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the Work in each phase described herein is a reasonable time for the completion of the same, taking into consideration the usual industrial and climatic conditions prevailing in this locality.
- C. It is further agreed that time is of the essence of each and every portion of the Contract and of the Contract Documents wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new limit fixed by such extension shall be of the essence of this Contract. Provided, that the Contractor shall not be charged with liquidated damages for any excess cost when the delay in completion of the Work is due:
 - 1. To any preference, priority, or allocation order duly issued by the Government;
 - 2. To unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including, but not restricted to: Acts of God, or of the public enemy; acts of the Owner; acts of another Contractor in the performance of a Contract with the Owner; fires, floods, epidemics, quarantine restrictions, strikes, and freight embargoes.
 - 3. To any delays of Subcontractors or suppliers occasioned by any of the clauses specified in subparagraphs 1. and 2. of this Paragraph.

- D. Provided, further, that the Contractor shall, within ten (10) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the Contract, notify the Owner, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter.
- E. If the Contractor shall neglect, fail or refuse to substantially complete the Work within the time herein specified or any proper extension thereof granted by the Owner, the Contractor does hereby agree, as part of the consideration for the awarding of this Contract, to pay to the Owner the amount specified in the Agreement, not as a penalty but as liquidated damages for such breach of contract as herein set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the Work.
- F. The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodic estimates. This remedy to the Owner shall be cumulative to the remedies available to the Owner under law.
- G. Work Executed after Substantial Completion: The Architect will continue to execute their administrative responsibilities for the Contract, as provided in the General Conditions, beyond the specified date of Final Completion.
 - 1. If, due to delays on the Contractor's part in the completion of the Work, the Architect is required to continue in this role beyond the specified date for Final Completion, the Contractor shall be responsible to the Owner for costs for Additional Services of the Architect to perform additional administration duties, until the Work is complete.
 - 2. Refer to Section 011400 – Work Restrictions, for procedures required in cases where Contractor is responsible to the Owner for costs for Additional Services of the Architect.
- H. Liquidated Damages: Refer to INSTRUCTIONS TO BIDDERS, for provisions for, and amounts of, Liquidated Damages.

1.5 PHASING

- A. The project shall be phased in accordance with the phasing plans as described on the architectural drawings and in Document 002113 – INSTRUCTIONS TO BIDDERS and Section 011100 – SUMMARY OF WORK.

1.6 SEQUENCING REQUIREMENTS

- A. Exterior Envelope Construction and Inspection: Schedule the installation of materials comprising the exterior walls and roofs to minimize exposure of construction materials to damage by ultraviolet light, wind and weather. Notify the Architect prior to concealment of air barrier, to permit inspection and testing. Refer to Section 014000 – QUALITY REQUIREMENTS, and individual technical specification sections for specific requirements.
- B. Indoor Air Quality Provisions: Refer to Section 018119 – CONSTRUCTION INDOOR AIR QUALITY (IAQ) MANAGEMENT, for the following activities that will have an impact on scheduling:
 - 1. Sequencing required to minimize adsorption of airborne contaminants on new surfaces.
 - 2. Sequence of building flush-out with respect to completion, testing and balancing of mechanical systems.

- C. Commissioning: Refer to the Commissioning Section, for inspections, testing and related activities to be performed by Commissioning Agent during and after construction.

1.7 SCHEDULING REQUIREMENTS FOR CLOSEOUT

- A. General: Closeout scheduling shall be carefully coordinated with activities required for Commissioning and the approved Indoor Air Quality Management Plan. The following sequence of activities is a summary of requirements of many trades. Refer to other Division 1 Sections and Technical Sections for additional information as indicated.

- 1. The Contractor's attention is brought to the fact that no HVAC system shall be started up before the completion of all major finishes, casework installation and final cleanup.

- B. Initial Closeout Activities:

- 1. Commissioning Coordination Meeting: Schedule meeting well in advance of anticipated date for start-up of mechanical and electrical systems. At this meeting, the Commissioning Firm will distribute Pre-Functional Performance Test (PFPT) checklists, and scheduling requirements will be reviewed. Refer to Section 013119 – PROJECT MEETINGS.
 - 2. Confirmation of Completion of Finishes, Casework and Cleaning: The Contractor submit a letter confirming that all major finishes have been applied, all casework is installed and final cleanup has been completed.

- C. System Start-Up, Building Flush-out and Testing and Balancing.

- 1. The HVAC system shall be started up with new filters as specified in Section 230000 – Heating, Ventilating and Air Conditioning.
 - 2. Building Flush-Out: As part of the Indoor Air Quality Plan, the HVAC system shall be run for 28 calendar days with 100 percent fresh air. Disable carbon dioxide sensors during this time. Refer to Section 230000 – Heating, Ventilating and Air Conditioning for additional requirements for system operation.
 - 3. Testing and Balancing: After the building flush-out is complete, replace HVAC system filters, adjust HVAC system for normal operation and conduct tests for balancing the system.

- D. Substantial Completion: When system start-up and the related activities specified above have been completed on all mechanical and electrical systems, notify the Architect that the Project is Substantially Complete. Refer to Section 017700 – PROJECT CLOSEOUT, for additional requirements for Substantial Completion.

PART 2 - PRODUCTS

2.1 CRITICAL PATH METHOD SCHEDULE (CPM) GENERAL

- A. The purpose of the Construction Schedule shall be to:
 - 1. Assure adequate planning, scheduling and reporting during execution of the work by the Contractor;
 - 2. Assist the Contractor, Architect, Project Manager and Owner in monitoring the progress of the work and evaluating proposed changes to the Contract and the Construction schedule;

3. Assist the Owner, Project Manager, Architect and the Contractor in the preparation and evaluation of the Contractor's monthly progress payments.
- B. The Construction Schedules shall employ the Critical Path Method (CPM) for the planning, scheduling and reporting of the work to be performed under the contract and shall meet the following requirements:
1. The schedule shall be produced utilizing the most current version of Primavera Project Planner software system or equivalent and the data fully transferable to Primavera Project Planner.
 2. The type of schedule shall be time scaled Precedence Diagramming Method (PDM) with Finish to Start with zero (0) lag dependency relationship.
 3. Activity duration shall be in units of whole working days and shall be limited to a minimum of one (1) and a maximum of twenty (20) working days for each activity.
 4. The schedules and the corresponding completion dates shall meet the contract duration (remaining contract duration for the monthly updates) of the project. Failure by the Contractor to include any element of work required for performance of the Contract shall not excuse the General Contractor from completing all work within the Contract Time. Under no circumstances, shall the Contractor be entitled to an equitable adjustment in the event of failing to achieve an early completion schedule.
 5. The Contractor shall review the planned activity coding and activity ID format with the Project Manager prior to the development of the Detailed Construction Schedule. At a minimum, the Project Manager will require the following coding: Area, Location/Phase/Shift, Work Type/Trade, CSI Code, and a separate code for each subcontractor.
 6. Proposed durations assigned to each activity shall be the Contractor's best estimate of time required to complete the activity considering the scope and resources planned for the activity, utilizing the appropriate workday calendar.
 7. Seasonal weather conditions shall be considered and included in the planning and scheduling of all work influenced by high or low ambient temperatures and/or precipitation to ensure completion of all work within the Contract time. Seasonal weather conditions shall be determined by an assessment of average historical climatic conditions based upon the preceding ten (10) year records published for the locality by the National Ocean and Atmospheric Administration (NOAA).
 8. The OPM's acceptance of the Construction Schedule shall not relieve the Contractor of responsibility for timing, planning and scheduling of the Work, nor impose any duty on the Architect or Owner with respect to the timing, planning or scheduling of the Work.

2.2 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Within 10 calendar days following receipt of Notice to Proceed, prepare and submit for review prints and CD of the Preliminary Construction CPM Schedule covering the first 90 days of construction. The schedule shall be neatly organized and plotted, time-scaled from left to right on standard size sheets. The Preliminary Construction Schedule shall cover the following phases and/or activities:
1. Proposed mobilization, procurement and planned construction within the first 90 days after Notice To Proceed.
 2. Include a summary bar for major areas of the remainder of the Work and a cash requirement prediction based on indicated activities.

- B. The Preliminary Schedule shall be incorporated into the Complete and Detailed Schedule including all revisions directed by the Owner, Project Manager and Architect.

2.3 COMPLETE AND DETAILED CONSTRUCTION SCHEDULE

- A. Prepare and submit a comprehensive, fully developed Complete and Detailed CPM Construction Schedule within 45 days after Notice to Proceed and at least 15 days prior to the second Monthly application.
 - 1. The Complete and Detailed schedule shall incorporate the accepted Preliminary Construction Schedule with the Owner/Project Manager/Architect's comments
 - 2. Schedule shall be neatly organized, and plotted time scaled from left to right on Project standard size sheets with suitable notation relating the interface points among sheets.
 - 3. The General Contractor's Schedule shall consist of, but not be limited to, the following:
 - a. Proposed procurement, submittal preparation, submittal review, fabrication & delivery, construction, testing, commissioning, and permitting activities.
 - b. Proposed durations for activities.
 - c. Proposed sequencing of activities (predecessors & successors).
 - d. Milestone events as required by the Contract Documents and Division 1 of the Specifications.
 - 4. The following shall be depicted on the Schedule for each activity:
 - a. Concise description of the work represented by the activity (maximum forty-eight (48) characters). The work related to each activity shall be limited to one work trade and one area. All descriptions shall include area designations.
 - b. In developing the Schedule, the Contractor shall be responsible for assuring that subcontractor and supplier work at all tiers, as well as its own work, is included in the Schedule.
 - c. The Schedule as developed shall show the sequence and interdependence of activities required for complete performance of the work. The Contractor shall be responsible for assuring that all work sequences are logical and the Schedule shows a coordinated plan of the work.
 - d. Each activity shall have only one responsible party and will be coded accordingly.
 - 5. For the purposes of utilizing schedule targets, activity id's shall not be modified.
 - 6. The schedule shall employ retained logic.
 - 7. Any float suppression techniques identified shall be corrected by the Contractor.
 - 8. The Contractor shall utilize logic, durations, and appropriate calendar assignment to forecast dates, not activity constraints.

2.4 MONTHLY SCHEDULE UPDATE REPORTS

- A. Monthly Schedule Update Report: Evaluate the status of the work as of the 25th of each month to show actual progress and to identify problem areas. Update the Complete and Detailed Construction schedule and print a schedule summary. Include approved Change Orders and Construction Change Directives within the updated schedule
- B. The Contractor shall furnish sufficient forces, offices, facilities and equipment at no additional cost to the Owner, and shall work such hours as necessary, within any local restrictions or agreements incorporated into the Contract, to ensure the prosecution of the work in accordance with the current monthly Project Schedule Update. Should the monthly update show that the Contractor is fourteen (14) or more work days behind schedule, the Contractor shall prepare a

Recovery Schedule at no additional cost to the Owner explaining and displaying how the General Contractor intends to reschedule the work in order to regain compliance with the contract. The provision of this paragraph may include the Contractor increasing the hours of work, the number of shifts, overtime operations and/or the amount of construction plant and equipment or working on Saturdays, Sundays and holidays, within agreed working hours or variance granted, provided the General Contractor gives reasonable notice to the Owner.

2.5 RECOVERY SCHEDULE

- A. When directed by the Project Manager/Architect, the Contractor shall develop a Recovery Schedule with a detailed narrative for all the remaining work based on the last accepted Monthly Schedule Update. The Recovery Schedule shall represent the Contractor's current work sequence plan and shall forecast completion of the remaining work within remaining contract durations. The Recovery Schedule narrative shall enumerate the Contractor's work plan including increases to crew sizes and/or extended shifts to complete work within remaining contract durations. The Recovery Schedule shall conform to requirements set forth in Paragraph 1.04 (Complete and Detailed Construction Schedule).
- B. The Contractor shall be responsible to develop mitigation measures for all delays, regardless of the responsibility for the delays, and to identify all time and cost impacts to the work associated with those mitigation measures. Whenever it is possible for the Contractor to mitigate delay without added cost, the Contractor shall do so. The Contractor shall mitigate all delays as efficiently and economically as possible, with the objective of minimizing both the time and cost impact of the delay, regardless of the responsibility of the delay.
- C. Unless circumstances otherwise require, the Contractor shall not pursue mitigation action for which it expects the Owner/Architect to be liable, prior to notifying the Owner/Architect and receiving Owner/Architect authorization to proceed with the mitigation action. Any action taken by the Contractor prior to receiving approval from the Owner/Architect shall be at the Contractor's risk.

2.6 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report, recording events at the site. Report the following information, as applicable.
 - 1. List of subcontractors at the site, and approximate count of personnel.
 - 2. High and low temperatures, general weather conditions (when exterior work is in progress)
 - 3. Meetings and significant decisions.
 - 4. Accidents, unusual events, and emergency procedures.
 - 5. Stoppages, delays, shortages, losses.
 - 6. Meter readings and similar recordings.
 - 7. Services connected, disconnected.
 - 8. Orders and requests of governing authorities.
 - 9. Change Orders received, implemented.
 - 10. Equipment or system tests and start-ups.
 - 11. Partial Completions, occupancies.
 - 12. Substantial Completions authorized.
- B. At the end of each week, compile the daily reports for the preceding week. Have the Contractor's Superintendent sign the daily reports and prepare a brief outline of the Work anticipated for the coming work week. Submit 1 copy to the Owner/Owner's Project Manager and place 1 copy in the Project Record Documents file.

2.7 CONSTRUCTION PHOTOGRAPHS

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.
- B. Photographer: Engage a qualified photographer to take construction photographs.
- C. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- D. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Owner.
- E. Preconstruction Photographs: Before commencement of excavation, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- F. Periodic Construction Photographs: Take 20 photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- G. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as project record documents. Architect and Owner will inform photographer of desired vantage points.

PART 3 - EXECUTION

3.1 SCHEDULING THE WORK

- A. The Contractor shall perform the Work in accordance with the approved CPM Schedule.
 - 1. If during the progress of the job the Contractor misses a start date of an activity on the critical path, the Contractor shall, within five (5) working days, advise the Architect in writing of action proposed to bring the Work up to schedule, and shall submit a revised CPM Schedule indicating such action, together with a typed list of such revisions.
 - 2. If the Contractor fails to submit a revised schedule within the specified time or if the Architect is not convinced of the efficacy of the measures proposed, the Owner may, at

its option, require the Contractor to accelerate the progress of the Work, without additional cost to the Owner, by increasing the work force or the hours of work, or by other reasonable means approved by the Architect.

END OF SECTION