SECTION 01 32 00

PROJECT PLANNING AND SCHEDULING

PART 1 – GENERAL

1.1 PURPOSE

A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 DEFINITIONS

A. The term “Baseline Schedule “, as used throughout the contract documents, shall refer to a fixed projection of the project schedule. It is the standard by which project performance is measured.

B. The term “Critical Path Method” (CPM), as used throughout the contract documents, is a technique used to predict project duration by analyzing which sequence of activities has the least amount of scheduling flexibility. Early dates are figured by a forward pass using a specific start date and late dates are figured by using a backward pass starting from a completion date. Most scheduling programs (e.g., Microsoft Project, Primavera) automatically calculate the Longest Path using the CPM to identify critical activities.

C. The term “Construction Schedule” (a.k.a. Work Progress Schedule as defined by the UGC), as used throughout the contract documents, shall refer to the schedule for the construction phase of the Project as developed, monitored and maintained, by the Contractor’s Scheduler, and as used by the Project Team during Pre-Construction and/or Construction Services.

D. The term “Data Date”, as used throughout the contract documents, shall refer to the day after the date through which a schedule is current. Everything occurring earlier than the data date is "as-built" and everything on or after the data date is "planned."

E. The term “Detailed Schedule”, as used throughout the contract documents, shall refer to a schedule with small-scale, well-defined activities that are typically less than 30 calendar days in length.

F. The term “Fragnet”, as used throughout the contract documents, shall refer to a copy of the Construction Schedule (or portion thereof) used to conduct an analysis of proposed changes or revisions to the Construction Schedule.

G. The term “Free Float”, as used throughout the contract documents, is the time by which an activity may be delayed or extended without affecting the start of any succeeding activity. Note: Free float can never be negative.

H. The term “Milestone Schedule”, as used throughout the contract documents, shall refer to a schedule with specific non-duration related activities, work packages, stages, or phase, typically marked by a high level event such as an approval, execution of a contract, notice to proceed, issuance of a set of documents, completion of work, etc.

I. The term “Longest Path”, as used throughout the contract documents, shall refer to the sequence of interdependent activities that aggregate to determine the minimum duration of a project.

1. The term “Critical Path”, as used throughout the contract documents, shall refer to the sequence of activities that determines the longest duration for the Project when the Longest Path has zero or less Total Float, the Longest Path becomes the Critical Path.

J. The term “Precedence Diagramming Method” (PDM), as used throughout the contract documents, shall refer to the relationship between activities by linking sequences with precedence relationships in the development of the Construction Schedule.

K. The term “Project Team”, as used throughout the contract documents, shall refer to the Owner, Architect, Design Consultants, User, Contractor and Subcontractors (as applicable) that are contracted and/or specifically assigned to the Project.

1. The term “Total Float”, as used throughout the contract documents, shall refer to the time by which an activity may be delayed or extended without affecting the total project duration or violating a target finish date (i.e. Substantial Completion Date).
2. Negative Total Float indicates that the Project is late, while Positive Total Float is the property of the

Project and does not belong to any one party (Refer to the UGC).

L. The term "Work Day", as used throughout the contract documents, shall refer to a day in which work is planned, excluding weekends and holidays.

1.3 PURPOSE

A. ***Time is an essential part of this contract. Therefore, the timely and successful completion of the Work requires careful planning and scheduling of all activities inherent in the completion of the Project.***

B. ***Acceptance of the Construction Schedule; or any subsequent update thereof, by the Owner is for format and extent of detail of the Construction Schedule only. Such "acceptance" does not indicate approval of the Contractor's means or methods, or of any change to the contract terms including without limitation any required contract Milestones.***

C. The Construction Schedule shall be developed to allow for a minimum amount of Total Float for the Project during Pre-Construction and/or Construction Services, and shall be formatted in a manner that facilitates reporting of progress and trends, identification of risks and opportunities, projecting upcoming activities, and forecasting of project milestones.

D. The Owner must be able to reasonably rely on the Contractor's Construction Schedule for projected activity dates in order to make accurate commitments to design professionals, contractors, vendors, user group(s), campus administration and other parties as necessary.

E. This specification applies to all project delivery methods, regardless of delivery method or contract type, whether the contracting firm is a General Contractor, Construction Manager-at-Risk (CM), or Design/Build Contractor (DB). Projects with multi-phase delivery, the requirements within shall pertain to each.

1. All references to Pre-Construction Services in this specification shall apply requirements for CM and DB contract types only.

1.4 RELATED DOCUMENTS

A. In addition to specific references indicated herein, the Contractor's attention is specifically directed, but not limited, to the following Sections and Documents, which include additional administrative requirements.

1. Uniform General and Supplementary General Conditions for University of Texas System Building Construction Contracts (UGC)
2. Owner's Special Conditions
3. Section 01 31 00 – Project Administration
4. Section 01 91 00 – Project Commissioning
5. Section 01 45 00 – Project Quality Control
6. Section 01 77 00 – Project Closeout Procedures

1.5 CONTRACTOR RESPONSIBILITY

A. The Contractor is responsible for planning, management, coordination, and scheduling of all activities from a Notice to Proceed for Construction to Final Completion of the Project within the time allotted by the Agreement.

B. The Contractor is responsible for keeping the Owner and the Project Team fully informed of schedule status and upcoming activities throughout the Project via the Construction Schedule.

C. The Contractor is solely responsible for scheduling and status of all activities related to Pre-Construction, procurement of materials and subcontractors, construction, testing, inspection, commissioning, and Project turn-over to the Owner.

D. The Contractor shall provide adequate and reasonable project planning in adequate detail throughout all Project phases as applicable and aspects of its work to ensure completion of all activities within the Contract Time.

E. The Contractor's Pre-Construction and Construction project management personnel shall actively participate in the planning and development of the Construction Schedule and shall be prepared to review such development and progress with the Owner, Architect, and any other members of the Project Team so that the planned sequences and procedures are clearly understood by all parties.

F. The Contractor is to plan for appropriate activity durations to allow for thorough review, procurement, submittal, installation, inspection, testing, and commissioning, of all work and/or systems in order to confirm contract compliance, including work relying on Owner participation or coordination.

PART 2 – PRODUCTS

2.1 CONSTRUCTION SCHEDULE DEVELOPMENT REQUIREMENTS

A. The Construction Schedule calendar shall be based on a 5 day work week.
   1. The term "Holidays", as used throughout the contract documents, shall refer to New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving (including the Friday after), Christmas Eve, Christmas and New Year's Eve.
   2. The Contractor may plan to work weekends and holidays, but the Construction Schedule shall be based on completing all work during normal workdays (and hours).

B. The Construction Schedule shall include a Work Breakdown Structure by assigning "Activity Codes" to ***every*** activity organized by project phase, stage, location, building, floor, area, elevation, system, etc.

C. The Construction Schedule shall assign "Responsibility Codes" (i.e.: create a responsibilities directory) for every contractor, subcontractor, supplier, fabricator, installer, design consultant, owner, and any other party responsible for the accomplishment of an activity.
   1. If a subcontractor(s) has been procured, the Contractor may substitute the associated Responsibility Code with a different code identifying the name of the subcontractor.
   2. The Contractor may use additional Secondary Activity and Responsibility Codes as necessary for monitoring, status, and reporting the Construction Schedule.

D. The Contractor shall assign a unique "Activity Identification" (Activity ID) and "Activity Description" to ***every*** activity, and they shall be meaningful, easily understood by the Project Team, similar to like activities at differing locations, and as shown on the Contractor's Schedule of Values.
   1. Activity Descriptions shall start with a verb to indicate what is to be done and end with a location (Example: Install metal studs - 3rd floor Bldg. B).
   2. A "Milestone" Activity shall refer to any major event or phase, or any other important point in the Project, including the following Activities:
   3. A "Detailed" Activity shall refer to a singular work event in the Project.
   4. A "Summary" Activity (i.e. Hammock) shall refer to a grouping (or a summary) of Milestone and/or Detailed activities in the Construction Schedule.

E. The Construction Schedule shall include all construction procurement "Administration" activities associated with the submittal, fabrication and delivery of work (as applicable).

2.2 PROJECT SCHEDULING REQUIREMENTS

A. The Contractor's Schedule shall use the "Precedence Diagramming Method" as the scheduling technique in the development of the Construction Schedule.
   1. "Retained Logic" is the required mode of Construction Schedule processing.
   2. Appropriate logic relationships must be in place and complete, while the Construction Schedule shall be free of any mandatory and/or late finish constraints.
      a. The use of a late finish constraint on the schedule's last activity is allowed, typically the Substantial Completion milestone.
   3. Except for the Notice to Proceed for Construction (Preconstruction for CM and DB) and the final Substantial Completion Date Milestone, activities shall not have "open ends".
   4. The Contractor's Schedule shall not use a "progress override" mode option in developing or updating the Construction Schedule.

B. Estimated construction Activity Durations shall be stated in workdays (i.e. Monday through Friday).
   1. Maximum duration for any Detailed Activity shall be 30 workdays.
   2. Minimum durations for any submittal shall be 20 workdays, unless approved by the Owner.
   3. Minimum durations for any Owner Inspection activity (i.e. concealed space, above ceiling, substantial and final completion) shall be at least 3 workdays per inspection and re-inspection, per work area.

C. Estimated remaining Activity Durations shall be stated in workdays, as of the Data Date of every Construction Schedule update.

D. All construction material and equipment related activities shall be preceded by an associated administrative activity, including procurement, submittal, fabrication and delivery.
   1. Administrative activities may have durations longer than 30 workdays to reflect realistic procurement, review or lead times.

2.3 CONSTRUCTION SCHEDULE ANALYSIS REQUIREMENTS

A. The Contractor's Scheduler shall use the Critical Path Analysis (CPA) technique to determine the overall Project duration through the analysis of the durations of each of the activities, their schedule dependencies,

and their resultant float.

B. In accordance with the UGC, the Construction Schedule shall include at least ***10%*** Total Float from the effective date of Notice to Proceed for Construction Services to the Substantial Completion Date.
   1. If the project warrants the planning of work to occur on Saturday and/or Sunday, the respective days shall be used in the calculation of the Total Float requirements. (i.e. Normal 5-day work week x 10% = 0.5 days of Total Float required, while an Accelerated 6-day work week x 10% = 0.6 days of Total Float required)

C. Total Float shall not be shown as a single activity, but rather the resultant of the relationship between the early and late finish dates or early and late start dates of each Activity. The allocation of project float shall be determined by the project team as conditions warrant.

D. Refer to the Owner's Special Conditions for amendments to the Total Float requirement, including inclusion of Weather Days in the Construction Schedule.

2.4 COORDINATION WITH OTHER DOCUMENTS AND WORK

A. The Construction Schedule shall be coordinated with the Contractor's Submittal Schedule and Schedule of Values, as required by the UGC and Specification Section 01 31 00. (i.e.: the work breakdown structure shall be arranged, numbered, and described consistently across the various documents).
   1. Cost and/or resource loading of the Construction Schedule are allowed.
      a. If the Contractor elects to cost-load the Construction Schedule, the Contractor shall provide a separate Schedule of Values in the format required by Specification Section 01 31 00 - Project Administration.
   2. The Total Float is intended to be used proportionally with the duration of the project; therefore, the Construction Schedule is not required to have any remaining Total Float at the ***actual*** Substantial Completion date. (i.e.: 10% of 0 days remaining = 0 days of Total Float required)

PART 3 – EXECUTION

3.1 CONSTRUCTION PHASE BASELINE SCHEDULE SUBMITTAL

A. The Baseline Construction Schedule shall be submitted to the Owner with the required Total Float and a current Data Date (less than or equal to 5 workdays) as prescribed by the UGC (or as accepted by the Owner in the Project Planning and Scheduling Workshop).
   1. The Contractor is responsible for submitting the Baseline Construction Schedule within the prescribed time regardless of when Subcontractors are procured and brought on to the project.
   2. For CM and DB projects, the Construction Schedule may include Milestone and/or Summary Activities for the remaining work that has not been approved in an executed GMP Proposal for Construction Services.
      a. Once the "full" scope of the Project has been approved (i.e.: the last Stage GMP Change Order has been executed), the Contractor's Scheduler shall coordinate with the Owner's Designated Representative to "reset" the Baseline Construction Schedule.
   3. The minimum 10% Total Float (or as amended by the Owner's Special Conditions) shall remain in the Construction Schedule from the Notice to Proceed for Construction Services until the Baseline Schedule is accepted by the Owner, regardless of any delays incurred by the Project without affecting the Substantial Completion Date.
   4. No activity shall have a Total Float amount greater the minimum Total Float identified by the Longest Path plus 45 days.
   5. The Owner reserves the right to withhold any and all payments related to the Construction Schedule and/or General Conditions if a Baseline Construction Schedule is not submitted, or is not acceptable to the Owner. If the parties cannot agree on a Baseline Schedule, the Owner may deduct any monies related to Project Scheduling, and or costs associated with schedule recovery.
      a. If the Baseline Construction Schedule has not been accepted by the Owner, each successive baseline submittal shall be updated to status the current progress of the work it is accepted by the Owner.
   6. A Baseline Construction Schedule that does not have at least the minimum amount of Total Float at submission shall result in the Contractor forfeiting all claims to Construction Schedule extensions and/or delays as a result of contract changes and/or excusable delays as described in the UGC.
   7. Once the initial Construction Schedule has been accepted, it shall be referred to as the ***Baseline*** Construction Schedule, and shall be used for all future Construction Schedule updates and reports as

"Target 1".

a. For CM and DB projects, the Construction Schedule may include Milestone and Summary activities until 30 days prior to the submittal of a Guaranteed Maximum Price (GMP) Proposal for Construction Services but shall include Detailed Activities for at least the first 90 days of Construction Services when submitted with the GMP Proposal.

3.2 UPDATING THE CONSTRUCTION SCHEDULE

A. Once the Baseline Construction Schedule (or the GMP summary schedule) has been accepted, the Contractor's Schedule shall be updated at least once a month at least 5 workdays prior to any application for payment.
   1. Construction Schedule updates shall be based on actual works progress, current logic and remaining durations.

3.3 MONTHLY CONSTRUCTION SCHEDULE REPORTS

A. The Data Date for all Construction Schedule Update Reports shall be current within 5 workdays of submission to the Owner's Designated Representative.
   1. The Owner, at any time, may request additional Construction Schedule reports.

3.4 CONSTRUCTION SCHEDULE SLIPPAGE

A. If the Total Float used by the project exceeds the rate of construction duration spent, or the Total Float is negative, the Contractor's schedule update shall include a Recovery Schedule to make immediate revisions to the work force, work-hours, shifts, material deliveries or any other aspects of the work for review and acceptance by the Owner's Designated Representative as part of the following month's update. (i.e.: if the project has 50% of the original construction duration remaining, but only has 25% of the original Total Float remaining, the Contractor shall submit a Recovery Schedule).
B. The Contractor's Schedule shall submit the "Recovery Plan" to the Owner's Designated Representative as required in the UGC, clearly describing all the changes in schedule or work enacted and/or planned in order to ensure completion by the contract Substantial Completion Date.
   1. The Owner shall have the right to review and comment on any "Recovery Plan" activities that include Owner participation or affect any Owner consultants or outside contractors.
C. Once the Owner's Designated Representative accepts the "Recovery Plan", the proposed revision shall be incorporated into the Construction Schedule.

3.5 CONSTRUCTION SCHEDULE CHANGES

A. If the Owner or Architect issues a Change Order Proposal, the Contractor shall submit a ***proposed*** fragnet revision for all proposed contract changes that affect the Substantial Completion Date or remaining Total Float with the Change in Work Cost Analysis Form.
   1. Proposed fragnet revisions shall be accompanied by a narrative listing of the affected activities including a statement of the expected overall impact of the change proposed.

3.6 EXCUSABLE DELAYS AND TIME EXTENSIONS

A. Excusable delays shall be administered per the UGC.
B. If an excusable delay extends the Contract Substantial Completion Date, the Owner's Designated Representative may extend the contract time by the number of excusable calendar days lost on the Construction Schedule, or take other actions as appropriate under terms of the Agreement.
   1. Change Order Proposal pricing that does not impact the Substantial Completion Date or does not include a proposed fragnet revision prior to approval by the Owner's Designated Representative, shall not be due a time extension.
C. Once the Owner's Designated Representative accepts a time extension and authorizes the Contractor to proceed with the contract change, the proposed revision shall be incorporated into the Construction Schedule.

END OF SECTION 01 32 00

REVISION LOG

The following is provided for convenience to the Owner, Architect/Engineer and Contractor to track changes between annual document issuances and is not to be considered by any party to be contractual or 100% complete.

Date	**Paragraph Revised**