Summary of Modifications/Changes in this Update

This Summary of Changes is for information only. It is not a part of the referenced document, and should not be used for project documentation.

U.S. Department of Veterans Affairs ♦ Office of Construction & Facilities Management

DATE OF THIS VERSION (new)
December 1, 2013

TITLE OF DOCUMENT (new title if applicable): Network Analysis Schedules – Major Projects

DATE OF VERSION BEING SUPERSEDED (old):
March 1, 2011

DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):
Network Analysis Schedules, 01 32 16.13

SUMMARY OF CHANGES IN THIS VERSION:

1. NAS Spec. was clarified to improve interpretation problem and better protect VA interest. Lines added in section 1.1A, 1.3A, 1.4A, B, C; 1.5A, D; 1.6C; 1.7A.1, 2.g, 3.d, 1.7A.6; 1.8A; 1.9A, A.3, A.5, A.6; 1.9B, C, D, F; 1.12A, B, C, D; 1.13C and D.

2. Significant clarifications were made in 1.9D – Parallel runs / Time Impact Analysis paragraph to remove confusion with the contractor community.

3. Removed any reference to use Primavera P3 version, and mandated the use of P6 version only by the contractors. The older P3 version has been discontinued by the software company.

4. Title of Spec. Section changed from “Network Analysis Schedules” to “Network Analysis Schedules – Major Projects”
SECTION 01 32 16.13
NETWORK ANALYSIS SCHEDULES – MAJOR PROJECTS

SPEC WRITER NOTES:
1. Coordinate this section with the paragraphs of FAR 52.232, VAAR 852.236 and Section 01 00 00, GENERAL REQUIREMENTS. Specifically Article, FAR 52.232-5 (PAYMENTS UNDER FIXED-PRICE CONSTRUCTION), Article, VAAR 852.236-83(PAYMENTS UNDER FIXED-PRICE CONSTRUCTION), and Article, OPERATIONS AND STORAGE AREAS, Paragraph "Phasing" in the Section 01 00 00, GENERAL REQUIREMENTS.
2. Delete between //-----// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.

PART 1- GENERAL

1.1 DESCRIPTION:
A. The Contractor shall develop a Network Analysis System (NAS) plan and schedule demonstrating fulfillment of the contract requirements, shall keep the network up-to-date in accordance with the requirements of this section and shall utilize the plan for scheduling, coordinating and monitoring work under this contract (including all activities of subcontractors, equipment vendors and suppliers). Conventional Critical Path Method (CPM) Precedence Diagramming Method (PDM) technique will be utilized to satisfy both time and cost applications. All schedule data and reports required under this specification section shall be based upon regular total float, not relative total float schedules. The NAS submitted by the contractor, approved by the VA becomes the official project schedule of record governing schedule management, oversight and actions on the corresponding contract.

1.2 CONTRACTOR'S REPRESENTATIVE:
A. The Contractor shall designate an authorized representative in the firm who will be responsible for the preparation of the network diagram, review and report progress of the project with and to the Contracting Officer's representative.
B. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the
requirements of this specification section and such authority shall not be interrupted throughout the duration of the project.

SPEC WRITER NOTE: In paragraphs 1.3, A; 1.3,B, and 1.3,C; (i) applies to competitively bid projects, (ii) applies to 8(a) projects and (iii) applies to RFP solicitations. Edit as required.

1.3 CONTRACTOR'S CONSULTANT:

A. To prepare the network diagram, and electronic compact disk(s), which reflects the Contractor's project plan, the Contractor shall engage an independent CPM consultant who is skilled in the time and cost application of scheduling using (PDM) network techniques for construction projects, the cost of which is included in the Contractor's bid. This consultant shall not have any financial or business ties to the Contractor, and shall not be an affiliate or subsidiary company of the Contractor, and shall not be employed by an affiliate or subsidiary company of the Contractor. The consultant is expected to provide unbiased professional service to the contractor and to the VA representatives in developing and maintaining the project schedule.

B. (i) Prior to engaging a consultant, and within 10 calendar days after award of the contract, // (ii) With the initial cost proposal, // (iii) With the initial response to the RFP // the Contractor shall submit to the Contracting Officer:
1. The name and address of the proposed consultant.
2. Sufficient information to show that the proposed consultant has the qualifications to meet the requirements specified in the preceding paragraph.
3. A list of prior construction projects, along with selected PDM network diagram samples on current projects which the proposed consultant has performed complete project scheduling services. These network diagram samples must show complete project planning for a project of similar size and scope as covered under this contract.

C. The Contracting Officer has the right to approve or disapprove employment of the proposed consultant, and will notify the Contractor of the VA decision within seven calendar days from receipt of information. In case of disapproval, the Contractor shall resubmit another consultant within 10 calendar days for renewed consideration. The Contractor must have their CPM Consultant approved prior to // (i)
submitting any diagram, (ii) completion of contract negotiations, (iii) submission of their best and final offer. //

1.4 COMPUTER PRODUCED SCHEDULES

A. The contractor shall submit to the VA Senior Resident Engineer (SRE) and CPM Schedule Analyst (simultaneously), monthly computer processing of all computer-produced time/cost schedules and reports generated from monthly project updates. This monthly computer service will include: electronic file copies of up to five different reports (inclusive of all pages) available within the user defined reports of Primavera (P6) to the contracting officer’s representative; a hard copy listing of all project schedule changes, and associated data, made at the update and an electronic file of this data in Primavera (P6) batch format; and the resulting monthly updated schedule in a compressed electronic file in Primavera (P6), (PDM) format. These reports must be submitted within 10 calendar days of monthly update meeting and substantively support the contractor’s monthly payment request and the signed Look ahead report (with progress). The SRE shall identify the five different report formats that the contractor shall provide based upon the monthly schedule updates.

B. The contractor is responsible for the correctness and timeliness of the computer-produced reports. The Contractor is also responsible for the accurate and timely submittal (within 10 calendar days as noted above) of the updated project schedule and all CPM data necessary to produce the computer reports and payment request that is specified.

C. The VA may report errors in computer-produced reports to the Contractor’s representative within ten calendar days from receipt of reports, indicating approval or disapproval. In case of disapproval, the Contractor will reprocess the computer-produced reports and associated compact disk(s), when requested by the Contracting Officer’s representative, to correct errors which affect the payment and schedule for the project. In certain large and complex project, as determined by the Contracting Officer, this monthly reporting shall be formal submittal and approval process; meaning that the next month’s update shall not proceed without timely submittal and approval.
1.5 THE COMPLETE PROJECT NETWORK DIAGRAM SUBMITTAL

A. Within 30 calendar days (45 calendar days on projects over $50,000,000) after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review; two copies of the complete “Day 1” network diagram on sheets of paper 765 x 1070 mm (30 x 42 inches) and an electronic file in a compressed Primavera (P6), (PDM) format. The submittal shall also include three hard copies of a computer-produced activity/event ID schedule showing project duration; phase completion dates; and other data, including event cost. Each activity/event on the computer-produced schedule shall contain as a minimum, but not limited to, activity/event ID, description, duration, predecessor and successor relationships, trade code, area code, budget amount, manpower, early start date, early finish date, late start date, late finish date and total float. Work activity/event relationships shall be restricted to finish-to-start and start-to-start without lead or lag constraints. The lead or lag for the SS relationships may only be allowed in limited basis if justified in writing and must be approved by the Contracting Officer. Activity/event date constraints, not required by the contract, will not be accepted unless submitted to and approved by the Contracting Officer. The contractor shall make a separate written detailed request to the Contracting Officer identifying these date constraints and secure the Contracting Officer’s written approval before incorporating them into the network diagram. The Contracting Officer’s separate approval of the network diagram shall not excuse the contractor of this requirement. Logic events (non-work) will be permitted where necessary to reflect proper logic among work events, but must have zero duration. The complete working network diagram shall reflect the Contractor's approach to scheduling the entire project. The intermediate Phasing milestones shall be clearly shown in the schedule as per the contract requirements. The final network diagram in its original form shall reflect original contract scope of work and contain no contract changes or delays which may have been incurred during the final network diagram development period and shall reflect the entire contract duration as defined in the bid documents. These changes/delays shall be entered at the first update after the final network diagram has been approved. The Contractor should provide their requests for time and supporting time extension analysis for contract time as a
result of contract changes/delays, after this update, and in accordance with Article, ADJUSTMENT OF CONTRACT COMPLETION.

B. Within 30 calendar days after receipt of the complete project network diagram, the Contracting Officer or his representative will do one or both of the following:

1. Notify the Contractor concerning his actions, opinions, and objections.
2. A meeting with the Contractor at or near the job site for joint review, correction or adjustment of the proposed plan will be scheduled if required. Within 14 calendar days after the joint review, the Contractor shall revise and shall submit three hard copies of the revised network diagram, three copies of the revised computer-produced activity/event ID schedule and a revised electronic file as specified by the Contracting Officer. The revised submission will be reviewed by the Contracting Officer and, if found to be as previously agreed upon, will be approved.

C. The approved network diagram (Day 1) and the corresponding computer-produced schedule(s) shall constitute the approved baseline schedule until subsequently revised in accordance with the requirements of this section.

D. The Complete Project Network Diagram shall contain sufficient level of detailed work activities/events (following all requirements of item 1.7 below), to represent realistic work plan / sequence of construction and the critical path(s) to maintain the project schedule and monthly updates.

1.6 WORK ACTIVITY/EVENT COST AND TRADE RESOURCE DATA

A. The Contractor shall cost load all work activities/events except procurement activities. The cost loading shall reflect the appropriate level of effort of the work activities/events. The cumulative amount of all cost loaded work activities/events (including alternates) shall equal the total contract price. Prorate overhead, profit and general conditions on all work activities/events for the entire project length. The contractor shall generate from this information cash flow curves indicating graphically the total percentage of work activity/event dollar value scheduled to be in place on early finish, late finish. These cash flow curves will be used by the Contracting Officer to assist him in determining approval or disapproval of the cost loading.
In the event of disapproval, the Contractor shall revise and resubmit in accordance with Article, THE COMPLETE PROJECT NETWORK DIAGRAM SUBMITTAL. Negative work activity/event cost data will not be acceptable, except on VA issued contract changes.

B. The Contractor shall cost load work activities/events for guarantee period services, test, balance and adjust various systems in accordance with the provisions in the FAR 52.232 – 5 (PAYMENTS UNDER FIXED-PRICE CONSTRUCTION), Article, and VAAR 852.236 – 83(PAYMENTS UNDER FIXED-PRICE CONSTRUCTION).

C. In accordance with Article PERFORMANCE OF WORK BY THE CONTRACTOR in FAR 52.236 – 1 and VAAR 852.236 – 72, the Contractor shall submit, simultaneously with the cost per work activity/event of the construction schedule required by this Section, a responsibility code for all activities/events of the project for which the Contractor's forces will perform the work. This shall be the basis for the "Resource loading" of the schedule and the contractor shall provide "Manpower loading" reports by trades and the overall Trade manpower requirements, when requested by the contracting officer or his/her representatives.

D. The Contractor shall cost load work activities/events for ASBESTOS ABATEMENT. The sum of asbestos abatement work activity/event costs shall equal the value of the asbestos bid item in the Contractors' bid.//

E. The Contractor shall cost load work activities/events for all BID ITEMS. The sum of the cost loading for each bid item work activities/events shall equal the value of the item in the Contractors' bid.//

F. Work activities/events for Contractor bond shall have a trade code and area code of BOND.

1.7 NETWORK DIAGRAM REQUIREMENTS

A. Show on the network diagram the sequence and interdependence of work activities/events required for complete performance of all items of work. In preparing the network diagram, the Contractor shall:

1. Exercise sufficient care to produce a clear, legible and accurate network diagram, refer to the construction document(CD)drawing, CPM-1(Sample CPM Network). Computer plotted network diagrams shall legibly display and plot all information required by the VA CPM activity/event legend, otherwise the computer plotted network
diagram will not be accepted. If the computer plotted network diagram is not found acceptable by the contracting officer’s representative, then the network diagram will need to be hand drafted and meet legibility requirements. The contracting officer also require that the Day 1 network logic diagram (in its pure logic format and not the P6 drawn network schedule or PERT) shall be electronically transmitted to the VA. Group activities related to specific physical areas of the project, on the network diagram for ease of understanding and simplification. Provide a key plan on each network diagram sheet showing the project area associated with the work activities/events shown on that sheet.

2. Show the following on each work activity/event:
   a. Activity/Event ID number.
   b. Concise description of the work represented by the activity/event. (35 characters or less including spaces preferred).
   c. Performance responsibility or trade code (five alpha characters or less): GEN, MECH, ELEC, CARP, PLAST, or other acceptable abbreviations.
   d. Duration (in work days.)
   e. Cost (in accordance with Article, ACTIVITY/EVENT COST DATA of this section and less than $9,999,999 per activity).
   f. Work location or area code (five characters or less), descriptive of the area involved.
   g. Manpower required (average number of men per day). Load manpower for each and every activity with proper trade codes in the “resource” field of P6 for ease of generating individual Trade and overall manpower profile required to plan and complete the project.
   h. The SYMBOL LEGEND format shown below and on the drawing, CPM-1 (Sample CPM Network) is mandatory and shall be followed in
preparing final network diagrams.

Show Network Diagram page number location(s) for all incoming/outgoing node connector(s).

3. Show activities/events as:
   a. Contractor's time required for submittal of shop drawings, templates, fabrication, delivery and similar pre-construction work.
   b. Contracting Officer's and Architect-Engineer's review and approval of shop drawings, equipment schedules, samples, template, or similar items.
   c. Interruption of VA Medical Center utilities, delivery of Government furnished equipment, and rough-in drawings, project phasing and any other specification requirements.
   d. All significant VC (VA furnished and Contractor installed) and VV (VA furnished and VA installed) equipment shall be clearly shown in the NAS Day 1 diagram. Any smaller VC and VV Equipment shall
also be logically grouped together and shown in the NAS diagram and the schedule.

e. Test, balance and adjust various systems and pieces of equipment, maintenance and operation manuals, instructions and preventive maintenance tasks.

f. Commissioning Activities – Based upon the project specific Commissioning plan and the specification section 01 91 00, the contractor shall include in the Day 1 CPM Diagram all the systems commissioning activities (see systems covered in Division 7, 8, 21, 22, 23, 26, 28, 31 and others as specified) such as start up, Pre-functional check list, Pre-test, individual component and system level Functional test, Operator’s training, O.& M. Manuals etc. (including any deficiency correction and re-testing). The majority of commissioning activities should be completed as part of the normal construction schedule and finalized prior to the construction contract completion date. To this end, it is imperative that the Commissioning Agent and the Contractor collaborate to integrate commissioning activities into the Contractor’s overall construction schedule. All commissioning activities shall be cost loaded as required in the earlier paragraphs.

The Commissioning Plan will identify critical commissioning activities and associated construction/start up tasks that must precede these activities to allow for successful execution of the commissioning activities. In order to coordinate these activities with the construction schedule, a Commissioning Duration Schedule should be provided by the Commissioning Agent to the VA RE and the Contractor to provide a rational basis for integration of commissioning into the Day 1 diagram and the construction schedule. The Commissioning Duration Schedule should include the following information:

1. Description of Commissioning Activity
2. Prerequisite Construction Tasks Required to Execute the Cx Activity
3. Elapsed Time Duration of Each Activity

Once the duration schedule is delivered to the Contractor, the Commissioning Agent will collaborate with the Contractor to integrate all commissioning activities into the fixed duration construction schedule in accordance with VA NAS requirements for scheduling the project.

SPEC WRITER NOTE: Use the following on multiple phased projects only.

g. VA inspection and acceptance activity/event with a minimum duration of five work days at the end of each phase and immediately preceding any VA move activity/event required by the contract phasing for that phase. Schedule these activities/events so that only one phase is scheduled for completion within the same 30 consecutive calendar day period (except for those phases immediately preceding the final acceptance). Maintain this scheduling condition throughout the length of the contract unless waived by the Contracting Officer’s representative in writing.

SPEC WRITER NOTE: Use the following on projects that require a separate bid item for asbestos abatement.

h. Work activities/events for the asbestos abatement bid item shall have a trade code of ASB.

SPEC WRITER NOTE: Use the following on projects that have bid items.

i. Bid items other than the Base Bid (ITEM 1) and Asbestos Abatement item shall have trade codes corresponding to the appropriate bid item number (e.g., ITM 3, ITM 4 and other items).

4. Show not only the activities/events for actual construction work for each trade category of the project, but also trade relationships to indicate the movement of trades from one area, floor, or building, to another area, floor, or building, for at least five trades who are performing major work under this contract.

5. Break up the work into activities/events of duration no longer than 20 work days each, except as to non-construction activities/events
(i.e., procurement of materials, delivery of equipment, concrete and asphalt curing) and any other activities/events for which the Contracting Officer may approve the showing of a longer duration. The duration for VA approval of any required submittal, shop drawing, or other submittals shall not be less than 20 work days. Refer to drawing CPM-1 for VA approval activities/events which will require minimum duration longer than 20 workdays. The construction time as determined by the CPM schedule from early start to late finish for any sub-phase, phase or the entire project shall not exceed the contract time(s) specified or shown.

6. Describe work activities/events clearly, so the work is readily identifiable with clear scope for assessment of completion. Activities/events labeled "start," "continue," or "completion," are not specific and will not be allowed. Lead and lag time activities will not be acceptable, except when justified and must be approved in writing by the Contracting Officer.

7. Uniquely number each activity/event with numbers ranging from 1 to 99998 only. The network diagram should be generally numbered in such a way to reflect either discipline, phase or location of the work.

B. Submit the following supporting data in addition to the network diagram, activity/event ID schedule and electronic file (s). Failure of the Contractor to include this data will delay the review of the submittal until the Contracting Officer is in receipt of the missing data:

1. The proposed number of working days per week.
2. The holidays to be observed during the life of the contract (by day, month, and year).
3. The planned number of shifts per day.
4. The number of hours per shift.
5. List the major construction equipment to be used on the site, describing how each piece relates to and will be used in support of the submitted network diagram work activities/events.
6. Provide a typed, doubled spaced description, at least one page in length, of the plan and your approach to constructing the project.

C. To the extent that the network diagram or any revised network diagram shows anything not jointly agreed upon, it shall not be deemed to have been approved by the Contracting Officer. Failure to include any element of work required for the performance of this contract shall not
excuse the Contractor from completing all work required within any applicable completion date of each phase regardless of the Contracting Officer's approval of the network diagram.

D. Compact Disk Requirements and CPM Activity/Event Record Specifications: Submit to the VA (Senior Resident Engineer and CPM Schedule Analyst) an electronic file(s) containing one file of the data required to produce a Primavera (P3 or P6), (PDM) produced schedule, reflecting all the activities/events of the complete project network diagram being submitted.

1.8 PAYMENT TO THE CONTRACTOR:

A. Monthly, the contractor shall submit the AIA application and certificate for payment documents G702 & G703 reflecting updated schedule activities and cost data in accordance with the provisions of the following Article, PAYMENT AND PROGRESS REPORTING, as the basis upon which progress payments will be made pursuant to Article FAR 52.232-5 (PAYMENTS UNDER FIXED-PRICE CONSTRUCTION), and VAAR 852.236-83(PAYMENTS UNDER FIXED-PRICE CONSTRUCTION). The Contractor is entitled to a monthly progress payment upon approval of estimates as determined from the currently approved updated computer-produced calendar-dated schedule unless, in special situations, the Contracting Officer permits an exception to this requirement. All manual payments prior to the approval of the Day 1 diagram and the baseline schedule shall use the activities from the schedule under development or any other schedule of values as approved by the contracting officer or his/her representative. Monthly payment requests shall include: one hard and electronic copies of up to five different reports (inclusive of all pages) available within the user defined reports of Primavera (P6), (PDM) to the contracting officer’s representatives; a listing of all project schedule changes and associated data, made at the update; and an electronic file(s) of the resulting monthly updated schedule in a compressed Primavera (P6), (PDM) format. These must be submitted with and substantively support the contractor’s monthly application and certificate for payment request documents.

B. When the Contractor fails or refuses to furnish to the Contracting Officer the information and the associated updated Primavera (P6), (PDM) schedule in electronic format, which, in the sole judgment of the Contracting Officer, is necessary for processing the monthly progress
payment, the Contractor shall not be deemed to have provided an estimate and supporting schedule data upon which progress payment may be made.

1.9 PAYMENT AND PROGRESS REPORTING

A. Schedule update meeting - Monthly job site schedule update meeting shall be held on dates mutually agreed to by the Contracting Officer (or Contracting Officer's representative) and the Contractor. Contractor and his CPM consultant will be required to attend all monthly update meetings. Presence of Subcontractors during update meeting is optional unless required by the Contracting Officer (or Contracting Officer's representative). The Contractor shall update the project schedule and all other data required by this section shall be accurately filled in and completed (Pencil copy) prior to the monthly update meeting. The Contractor shall provide this information to the Contracting Officer or the VA representative in completed form three work days in advance of the update meeting. The contractor shall use only approved previous month’s schedule to report progress (% complete) in “pencil copy” and shall not change this in shape or form. Logic or duration changes for future incomplete activities should be entered later and shown in the resulting reports. Job progress will be reviewed to verify:

1. Actual start and/or finish dates for updated/completed activities/events.

2. Remaining duration, required to complete each activity/event started, or scheduled to start, but not completed.

3. Logic, time and cost data for change orders (CO), and supplemental agreements (SA) that are to be incorporated into the network diagram and computer-produced schedule. Submit “Fragnets” for each CO and SA for VA approval prior to monthly parallel run. Changes in activity/event sequence and duration should be made pursuant to the provisions of following Article, ADJUSTMENT OF CONTRACT COMPLETION.

4. Percentage for completed and partially completed activities/events.

5. Logic and duration revisions required by this section of the specifications, particularly if the Day 1 logic / sequence have changed significantly, which could potentially alter or impact the critical path of the schedule. Highlight and request VA approval.
prior to making any logic, durations, manpower and cost loading changes.

6. Activity/event duration and percent complete shall be updated independently, meaning that the Remaining Durations (RD) shall be reviewed for all “in-progress” activities and entered manually based on remaining work content, and shall not be left to “auto-calculate” by the software.

B. Schedule Narrative - The Contractor, in addition to the 5 schedule reports noted earlier, shall submit a narrative report as a part of his monthly update reporting prepared after the update meeting, in a form agreed upon by the Contractor and the Contracting Officer. The narrative report shall include, at a minimum, a description of major problem areas; current and anticipated delaying factors and their estimated impact on performance of other activities/events and completion dates; and an explanation of corrective action being taken or proposed. This monthly schedule narrative should also briefly discuss the potential schedule risks / mitigation effort, as required by the item 1.13 below. This report is in addition to the daily reports pursuant to the provisions of Article, DAILY REPORT OF WORKERS AND MATERIALS in the GENERAL CONDITIONS.

C. After completion of the joint review and the Contracting Officer's approval of all entries, the contractor will generate an updated computer-produced calendar-dated schedule and submit to the contracting Officer’s representative with reports in accordance with the Article, COMPUTER PRODUCED SCHEDULES, specified. These reports shall be submitted within 10 calendar days after the monthly update meeting to the SRE and the VA CPM analyst simultaneously via electronic media, as noted earlier.

D. Parallel Runs / Time Impact Analysis - After completing the monthly schedule update, the contractor’s CPM consultant shall rerun all current period contract change(s) as a batch against the prior approved monthly project schedule with the approved “Fragnet” (Frags of networ or sub-network) logic and durations. The analysis shall only include original workday durations and schedule logic agreed upon by the contractor and the SRE for the contract change(s), and preferably shall be submitted as a part of the C.O. proposal and before any physical C.O. work is performed. Fragnt logic shall include only relevant procurement and physical C.O. work activities, and shall not
include any RFI (Request For Information) or non-work activities time.

Note: If timely resolution of the RFI is potentially impacting the contract schedule, in contractor’s opinion, the contractor must provide tangible proof and immediately submit in writing to the Contracting Officer’s review. When there is a disagreement on logic and/or durations, the consultant shall use the schedule logic and/or durations provided and approved by the SRE. The contractor must also allocate cost and average manpower loading to each CO or SA fragnet activities as required by the section 1.7 - Network Diagram Requirements. Note: Insertion of any CO or SA activities into the CPM database with faulty logic ties like NTP (predecessor) and Project complete (successor) and zero (0)duration will not be accepted. The proper “Fragnet” logic and durations must be used as approved by the SRE, tied to the related physical work area of the schedule. After each rerun update, the resulting electronic project schedule data file shall be appropriately identified and submitted to the VA SRE and the CPM Analyst in accordance to the requirements listed in articles 1.4 and 1.7. This electronic submission is separate from the regular monthly project schedule reports requirements and shall be submitted to the SRE within fourteen (14) calendar days of completing the regular schedule update meeting. Before inserting the contract changes durations, care must be taken to ensure that only the original durations of the change will be used for the analysis, not the reported durations (as-built) after the progress. In addition, once the final network diagram is approved, the contractor must recreate all manual progress payment updates on this approved network diagram and associated reruns for contract changes in each of these update periods as outlined above for regular update periods. This will require detailed record keeping for each of the manual progress payment updates.

E. After VA acceptance and approval of the final network diagram and the schedule, and after each monthly update, the contractor shall submit to the Contracting Officer electronic copies of a revised complete network diagram showing all completed and partially completed activities/events, contract changes and logic changes made on the intervening updates or at the first update on the final diagram. The Contracting Officer may elect to have the contractor do this on a less frequent basis, but it shall be done when requested by the Contracting Officer.
F. Schedule Coordination/ Progress review meeting - Following approval of the CPM schedule updates, the VA, the General Contractor, its approved CPM Consultant, RE office representatives, and all subcontractors needed, as determined by the SRE, shall meet to discuss the monthly updated schedule. The main emphasis shall be to address work activities to avoid slippages of project schedule and to identify any necessary corrective actions required to maintain project schedule during the reporting period. The Government representatives and the Contractor should conclude the meeting with a clear understanding of those work and administrative actions necessary to maintain project schedule status during the reporting period. This schedule coordination meeting shall be chaired by the VA SRE and will occur after each monthly project schedule update meeting utilizing the resulting schedule reports from the previous schedule update. If the project is behind schedule, discussions should concentrate on ways to prevent further slippage as well as ways to improve the project schedule status, as appropriate. Furthermore, the critical Change Orders that impact the contract schedule, the contractor must include a reasonable “work-around” plan or re-planning effort (submit narrative) including revised logic sequence for the downstream base contract work, durations adjustments and crew re-allocation from less critical to the new critical path areas, without adversely impacting the change order cost to the government to minimize the impact of the time delay. This should not be implied as a direction to accelerate the schedule, rather reasonable mitigation effort within the current work plan.

1.10 RESPONSIBILITY FOR COMPLETION
A. Whenever it becomes apparent from the current monthly progress review meeting or the monthly computer-produced calendar-dated schedule that phasing or contract completion dates will not be met, the Contractor shall execute some or all of the following remedial actions:
1. Increase construction manpower in such quantities and crafts as necessary to eliminate the backlog of work.
2. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of work.
3. Reschedule the work in conformance with the specification requirements.
B. Prior to proceeding with any of the above actions, the Contractor shall notify and obtain approval from the Contracting Officer for the proposed schedule changes. If such actions are approved, the CPM revisions shall be incorporated by the Contractor into the network diagram before the next update, at no additional cost to the Government.

1.11 CHANGES TO NETWORK DIAGRAM AND SCHEDULE

A. Within 30 calendar days after VA acceptance and approval of any updated computer-produced schedule, the Contractor will submit a revised network diagram, the associated compact disk(s), and a list of any activity/event changes including predecessors and successors for any of the following reasons:

1. Delay in completion of any activity/event or group of activities/events; indicate an extension of the project completion by 20 working days or 10 percent of the remaining project duration, whichever is less. Such delays which may be involved with contract changes, strikes, unusual weather, and other delays will not relieve the Contractor from the requirements specified unless the conditions are shown on the CPM as the direct cause for delaying the project beyond the acceptable limits.

2. Delays in submittals, or deliveries, or work stoppage are encountered which make rescheduling of the work necessary.

3. The schedule does not represent the actual prosecution and progress of the project.

4. When there is, or has been, a substantial revision to the activity/event costs of the network diagram regardless of the cause for these revisions.

B. CPM revisions made under this paragraph which affect the previously approved computer-produced schedules for Government furnished equipment, vacating of areas by the VA Medical Center, contract phase(s) and sub phase(s), utilities furnished by the Government to the Contractor, or any other previously contracted item, must be furnished in writing to the Contracting Officer for approval.

C. Contracting Officer's approval for the revised network diagram and all relevant data is contingent upon compliance with all other paragraphs of this section and any other previous agreements by the Contracting Officer or the VA representative.
D. The cost of revisions to the network diagram resulting from contract changes will be included in the proposal for changes in work as specified in Article, FAR 52.243 -4 (CHANGES), VAAR 852.236 - 88 (CHANGES - SUPPLEMENTS), and will be based on the complexity of the revision or contract change, man hours expended in analyzing the change, and the total cost of the change.

E. The cost of revisions to the network diagram not resulting from contract changes is the responsibility of the Contractor.

1.12 ADJUSTMENT OF CONTRACT COMPLETION

A. The contract completion time will be adjusted only for causes specified in this contract. Request for an extension of the contract completion date by the Contractor shall be submitted within reasonable time frame (within 1 month of the issuance of the Change order or Supplemental Agreement) and must be supported with a justification, CPM data and supporting evidence as the Contracting Officer may deem necessary for determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof based on revised activity/event logic, durations (in work days) and costs is obligatory to any approvals. The schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved in this request. The Contracting Officer's determination as to the total number of days of contract extension will be based upon the current computer-produced calendar-dated schedule for the time period in question and all other relevant information.

B. Actual delays in activities/events which, according to the computer-produced calendar-dated schedule, do not affect the original or extended contract completion dates shown by the critical path in the network, will not be the basis for a change to the contract completion date. The Contracting Officer will within a reasonable time after receipt of such justification and supporting evidence, review the facts and advise the Contractor in writing of the Contracting Officer's decision. The burden of proof to request the time extension is the sole responsibility of the contractor, and the contractor is required to revise the Time analysis or provide further documentation when requested by the Contracting Officer.
C. The Contractor shall submit each request for a change in the contract completion date to the Contracting Officer in accordance with the provisions specified under Article, FAR 52.243-4 (CHANGES), VAAR 852.236 – 88 (CHANGES – SUPPLEMENTS). The Contractor shall include, as a part of each change order proposal, a sequence of activities showing all CPM logic revisions (Fragnets), duration (in work days) changes, and cost changes, manpower loading for work in question and its relationship to other activities on the approved network diagram.

D. All delays due to non-work activities/events such as RFI’s, WEATHER, STRIKES, and similar non-work activities/events shall be analyzed on a month by month basis. Any weather related delays claimed by the contractor must be “above and beyond” the “normal weather” pattern (10 year average) and shall be supported by the data shown in the National Oceanic and Atmospheric Administration (NOAA) for the region of the country where the project site is located. The weather delay analysis shall be submitted to the VA within 30 calendar days after the weather event has passed.

1.13 Construction Schedule Risk Analysis / Mitigation Plan

A. **Schedule Risk Analysis** – The contractor shall conduct the statistical schedule risk analysis based on the above detailed construction activities in the Day 1 approved diagram, identifying major schedule risk areas and recommended risk mitigation plans as outlined below.

B. The risk analysis shall be conducted by a person or firm skilled in the statistical method of schedule risk analysis based on the (PDM) network techniques for major construction projects, preferably in the major health care related projects. The cost of this service shall be included in the Contractor's proposal.

C. The Contracting Officer has the right to approve or disapprove the Person or firm designated to perform the risk analysis.

1.14 Risk Analysis Format / Requirements / Submittals

A. **Risk Analysis Software / Format** – Within 45 calendar days (60 calendar days on projects over $50,000,000) after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review; a qualification of a consultant or a representative to perform Risk Analysis, a software to be utilized, the method of performing the
analysis, the format of presenting the data and the reports for VA approval.

B. **Conduct Risk Analysis / Submittals** – Based on the approved software / format, the consultant shall perform statistical risk analysis on the detailed approved Day 1 diagram and the baseline schedule. The contractor shall review and utilize any previous Risk analysis performed by the A/E of record based on the “semi-detailed” (yet at an overall level) construction logic and schedule to ensure the continuity of previous schedule risk analysis. The contractor’s project manager and Superintendent shall identify the major schedule risk areas and possible risk mitigation strategy/plan and record it in a narrative format, with *electronic file submission* to the VA. The risk analysis exercise shall be performed or updated at least on a quarterly basis or as directed by the VA Contracting officer.

C. The submittal shall include three copies of a computer-produced risk analysis results, predicting the various meaningful probability curves of achieving the contract schedules. It shall also include a detailed narrative list of all major and minor potential and specific schedule and cost risk areas and impact of them on the overall project, and a contractor’s recommendations of mitigating the identified risks which must be addressed by the VA Project and Resident engineer teams to maintain the contract schedule.

D. The contractor shall, as a part of Risk monitoring, shall prepare a detailed Project Risk Register (PRR), identifying each risk items, risk assessment and its response plan. This PRR, at the discretion of the SRE and the CO, shall be discussed in a monthly risk management meeting for mitigation.

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