

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
OFFICE ENGINEER, MS 43
1727 30TH STREET
P.O. BOX 168041
SACRAMENTO, CA 95816-8041
FAX (916) 227-6214
TTY (916) 227-8454



*Flex your power!
Be energy efficient!*

**** WARNING ** WARNING ** WARNING ** WARNING ****
This document is intended for informational purposes only.

Users are cautioned that California Department of Transportation (Department) does not assume any liability or responsibility based on these electronic files or for any defective or incomplete copying, excerpting, scanning, faxing or downloading of the contract documents. As always, for the official paper versions of the bidders packages and non-bidder packages, including addenda write to the California Department of Transportation, Plans and Bid Documents, Room 0200, P.O. Box 942874, Sacramento, CA 94272-0001, telephone (916) 654-4490 or fax (916) 654-7028. Office hours are 7:30 a.m. to 4:15 p.m. When ordering bidder or non-bidder packages it is important that you include a telephone number and fax number, P.O. Box and street address so that you can receive addenda.

June 2, 2008

04-Ala-580-R12.6/21.2
04-290844
HPLUL-6204(070)

Addendum No. 1

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in ALAMEDA COUNTY IN AND NEAR LIVERMORE FROM 0.4 KM EAST OF GREENVILLE ROAD OVERHEAD TO 0.4 KM EAST OF PORTOLA AVENUE OVERCROSSING.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on June 24, 2008.

This addendum is being issued to revise the Notice to Contractors and Special Provisions.

In the Special Provisions, Section 2-1.03, "MANDATORY PREBID MEETING," the first paragraph is replaced as follows:

"The Department has implemented a pilot program to conduct a mandatory prebid meeting for selected construction contracts. The purpose of the meeting is to provide small businesses the opportunity to meet and interact with the prospective bidders and to increase participation in the performance of this contract. Prospective bidders must attend the mandatory prebid meeting scheduled at 10:00 am on June 10, 2008 at La Quinta Inn, 7700 Southfront Road, Livermore, CA 94551. The bidder's representative shall be a company officer, project superintendent or project estimator."

In the Special Provisions, Section 5-1.25, "RESPONSIBILITIES TO OTHER ENTITIES," is added as attached.

In the Special Provisions, Section 10-1.13, "COOPERATION," is replaced as attached.

In the Special Provisions, Section 10-1.14, "PROGRESS SCHEDULE (CRITICAL PATH METHOD)," is replaced as attached.

Addendum No. 1
Page 2
June 2, 2008

04-Ala-580-R12.6/21.2
04-290844
HPLUL-6204(070)

To Proposal and Contract book holders:

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the NOTICE TO CONTRACTORS section of the Notice to Contractors and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This office is sending this addendum by confirmed facsimile to all book holders to ensure that each receives it. A copy of this addendum is available for the contractor's use on the Internet Site:

http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Division of Engineering Services - Office Engineer

Attachments

5-1.25 RESPONSIBILITY TO OTHER ENTITIES

The Contractor shall be responsible for any liability imposed by law and for injuries to or death of any person including, but not limited to, workers and the public or damage to property, and shall indemnify and save harmless any county, city, agency or district, its officers and employees connected with the work, within the limits of which county, city, agency or district the work is being performed, all in the same manner and to the same extent conforming to the provisions in Section 7-1.12, "Indemnification and Insurance," of the Standard Specifications, for the protection of the State of California and all officers and employees thereof connected with the work.

10-1.13 COOPERATION

It is anticipated that work by another contractor may be in progress adjacent to or within the limits of this project during progress of the work on this contract. The following table lists contracts anticipated to be in progress during this contract.

Contract No.	Co-Rte-KP	Location	Type of Work
04-290834	Ala-580-21.2/30.7	Dublin, Pleasanton, Livermore	Freeway Widening and Pavement Rehabilitation
04-257604	Ala-580-26.0/27.4	Dublin, Pleasanton	Interchange Modification
04-4A5314	Ala-580-10.5/49.4	Alameda County	Traffic Operation Systems
04-171304	Ala-580	Livermore	New Interchange
04-233794	Ala-580	Dublin, Pleasanton	West Dublin BART Station
04-470804	Ala-580	Near Route 205	Truck Bypass

Comply with Section 7-1.14, "Cooperation," of the Standard Specifications.

The Contractor must attend joint weekly meetings, at a time and location determined by the Engineer, to coordinate work and traffic control with the contractors for the above listed projects. The Contractor must bring to the meeting a detailed 3-week look ahead schedule that includes all work that may affect the public through traffic, noise or vibration, work that affects the operations of contracts listed above, and work that requires lane, ramp, freeway closures or COZEEP. The Contractor shall accommodate and coordinate with other project contractors when preparing operations and work schedule.

Should construction operation conflict arise with a project listed above, the Contractor shall immediately notify the Engineer. Further work, actions, or remediation will be prescribed by the Engineer.

Full compensation, up to 40 cumulative working hours, for any delays or stoppage of work to the Contractor's operations due to conflict with other projects listed above, regardless of the number of occurrences, including inefficiencies and loss of productivity, shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefore. Delays or stoppage of work resulting from the Contractor's failure to comply with any part of these special provisions will be the responsibility of the Contractor and will not be considered as part of the 40 cumulative working hours referenced above.

If, in the opinion of the Engineer, completion of the work is delayed or stoppage of work due to conflict with other projects listed above is beyond the 40 cumulative working hours referenced above, the State will compensate the Contractor for such delays to the extent provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

10-1.14 PROGRESS SCHEDULE (CRITICAL PATH METHOD)

Progress schedules will be required for this contract. Progress schedules shall utilize the Critical Path Method (CPM). Attention is directed to "Cooperation," and "Obstructions" of these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7, "Legal Relations and Responsibility," of the Standard Specifications. All schedules are required to reflect a reasonable plan to execute the contract scope of work. The Contractor shall be solely responsible for the content of the schedules and the execution of all contract requirements.

The provisions in Section 8-1.04, "Progress Schedule," of the Standard Specifications shall not apply.

DEFINITIONS

The following definitions apply to this section "Progress Schedule (Critical Path Method)":

- A. Activity: Any task, or portion of a project, which takes time to complete.
- B. Bar Chart (Gantt Chart): A graphic display of scheduled-related information, activities or other project elements are listed down the left side of the chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars.
- C. Baseline Schedule: The initial CPM schedule representing the Contractor's original work plan, as accepted by the Engineer.
- D. Contract Completion Date: The current extended date for completion of the contract shown on the weekly statement of working days furnished by the Engineer in accordance with Section 8-1.06, "Time of Completion," of the Standard Specifications.
- E. Controlling Operation: The activity considered at the time by the Engineer, within that series of activities defined as the critical path, which if delayed or prolonged, will delay the time of completion of the contract.
- F. Critical Path: The series of activities, which determines the earliest completion of the contract (Forecast Completion Date). This is the longest path of activities having the least amount of float.
- G. Critical Path Method: A mathematical calculation to determine the earliest completion of the contract represented by a graphic representation of the sequence of activities that shows the interrelationships and interdependencies of the elements composing a project.
- H. Data date: 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."
- I. Delay: The time period during which some part of the construction project has been extended beyond what was originally planned due to unanticipated circumstances. A delay occurs when the respective activity or group of activities, requiring additional time, impacts the completion of the successor construction activity and also extend the scheduled contract completion date. Concurrent Delay: Two or more delays occurring simultaneously or overlapping. Each delay when analyzed separately impacts the contract completion date.
- J. Early Completion Time: The difference in time between the current contract completion date and the Contractor's scheduled early forecast completion date as shown on the accepted baseline schedule, or schedule updates and revisions.
- K. Float: The amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any activity or group of activities in the network.
- L. Hammock Activity: An activity added to the network to span an existing group of activities for summarizing purposes.
- M. Milestone: A marker in a network, which is typically used to mark a point in time or denote the beginning or end of a sequence of activities. A milestone has zero duration, but will otherwise function in the network as if it were an activity.
- N. Narrative Report: A document submitted with each schedule that discusses topics related to project progress and scheduling.
- O. Near Critical Path: A path having 30 days or less of total float.
- P. Revision: A change in the future portion of the schedule that modifies logic, adds or deletes activities, or alters activities, sequences, or durations.
- Q. Scheduled Completion Date: The completion date of the last scheduled work activity identified on the critical path.
- R. State Owned Float Activity: The activity documenting time saved on the critical path by actions of the State. It is the last activity prior to the scheduled completion date.

- S. Tabular Listing: A report showing schedule activities, their relationships, durations, scheduled and actual dates, and float.
- T. Time Impact Analysis: A schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the current scheduled completion date.
- U. Time Scaled Logic Diagram: A schematic display of the logical relationships of project activities, drawn from left to right to reflect project chronology with the positioning and length of the activity representing its duration.
- V. Total Float: The amount of time that an activity may be delayed without affecting the total project duration of the critical path.
- W. Update Schedule: The modification of the CPM progress schedule through a regular review to incorporate actual progress to date by activity and to reflect the current plan to complete the project.

PRECONSTRUCTION SCHEDULING CONFERENCE

The Engineer will schedule and conduct a Preconstruction Scheduling Conference with the Contractor's Project Manager and Construction Scheduler within 1 week after the bidder has received the contract for execution. At this meeting, the requirements of this section of the special provisions will be reviewed with the Contractor. The Contractor shall be prepared to discuss its schedule methodology, proposed sequence of operations, the activity identification system for labeling all work activities, the schedule file numbering system, and any deviations it proposes to make from the Stage Construction Plans.

The Contractor shall propose to the Engineer for approval a set of logical project codes, filters, and layouts, to group and organize the work activities. The Engineer may submit a scheduling shell project displaying an activity code dictionary consisting of fields populated with the Caltrans scheduling codes, filters, layouts, reports formats, and a resource dictionary to be incorporated into the schedule. Periodically, the Engineer may request the Contractor to utilize additional filters, layouts, or activity codes to further group or summarize work activities.

The Engineer and the Contractor shall review the requirements for all submittals applicable to the contract and discuss their respective preparation and review durations.

GENERAL SCHEDULE ITEMS

The Engineer's review and acceptance of schedules shall not waive any contract requirements and shall not relieve the Contractor of any obligation there under or responsibility for submitting complete and accurate information. Schedules that are rejected shall be corrected by the Contractor and resubmitted to the Engineer within 5 days of notification by the Engineer, at which time a new review will begin.

The Contractor shall be responsible for assuring that all work sequences are logical and the network shows a coordinated plan for complete performance of the work. Failure of the Contractor to include any element of work required for the performance of the contract in the network shall not relieve the Contractor from completing all work within the time limit specified for completion of the contract. If the Contractor fails to define any element of work, activity or logic, the Contractor shall correct such errors on the next schedule update and shall include an explanation in the schedule narrative. Any impacts as a result of this error or omission shall be mitigated by the Contractor at their own expense.

The following items are applicable to all schedules:

- A. The schedule shall identify all project characteristics, salient features, or interfaces, including those with outside entities that could affect time of completion.
- B. Schedule activities shall identify project start date, scheduled completion date, and project milestones
- C. Activity descriptions are not to be revised when the scope of the activity is changed. The existing activity shall be deleted and a new activity shall be added.
- D. The schedule shall be constructed using the Precedence Diagramming Method (PDM) technique.
- E. Scheduled activities shall show the identification of Work performed by the Contractor, subcontractors and suppliers
- F. All activities shall be assigned a new and unique Activity Identification Number.
- G. After acceptance of the Baseline Schedule, the original duration field shall not be modified. Any changes in duration shall be indicated utilizing the remaining duration field.
- H. All construction activities shall have durations of not more than 20 days, unless otherwise accepted by the Engineer. All activities should be of appropriate duration to progress the Work. The Engineer may request contractor to provide an additional detail of activities, including shop drawings or fabrication activities, in order to properly monitor the progress of Work.

- I. All activities, with the exception of the first and last activities, shall have a minimum of one predecessor and of one successor.
- J. Negative lags shall not be used.
- K. Contractor shall use retained logic when establishing schedule calculation.
- L. Once the Baseline Schedule is accepted, there shall be no modifications to the Project Calendar.
- M. The Contractor shall provide to the Engineer two copies of all schedules on electronic medium, together with printed copies of the network diagrams or bar charts and tabular reports described under "Project Schedule Reports", and the Schedule Narrative Report.
- N. Use of additional logic ties to represent resource sequencing should be kept to a minimum.
- O. Activities and milestones representing the interface with neighboring contractors, agencies, or other outside entities and as stated by these Special Provisions, shall be reflected in the schedule.
- P. Submittals, reviews, deferred submittal review periods, and outside agency submittal review periods shall be included in the schedule with sufficient duration being assigned to each activity. The Contractor shall be responsible for all impacts resulting from any re-submittal, the effects of partial or incomplete submittal.
- Q. All Construction Staging shall be identified on the schedule by the use of activity coding.
- R. Testing and settlement periods, utility notification and relocations, major traffic stage switches, and any other activity affecting the Work shall be identified on the project schedule.
- S. The baseline schedule shall be resource loaded.

INTERIM BASELINE SCHEDULE

Within 2 weeks after approval of the contract or at the pre-construction conference, whichever is later, the Contractor shall submit to the Engineer an Interim Baseline Project Schedule which will serve as the progress schedule for the first 120 days of the project, or until the Baseline Schedule is accepted, whichever is sooner. The Interim Baseline Schedule shall utilize the critical path method of scheduling and be performed on the same software as the Baseline Schedule. The Interim Baseline Schedule shall depict how the Contractor plans to perform the work for the first 120 days of the contract. Additionally, the Interim Baseline Schedule shall show all required submittals, working drawings, and review periods, and shall provide for all permits, and other non-work activities necessary to begin the work. Beyond the first 120 days of the project, the Contractor shall depict the remainder of the project in a summary form, reflecting the duration of the contract, grouped by major project component. The summary schedule portion is for information purposes only and is to be used as a reference until the Baseline Schedule is accepted. The Interim Baseline Schedule submittal shall include the data files used to generate the schedule on electronic medium.

The Engineer shall be allowed 2 weeks to review the schedule and to provide comments, including the Contractor's application of the supplied activity codes. All comments are to be implemented into the Baseline Schedule. Re-submittal of the Interim Baseline Schedule is not required. Late review of the Interim Baseline Schedule shall not restrain the submittal of the Baseline Schedule. No contract payments shall be made to the Contractor until an Interim Baseline Schedule is submitted in accordance with the above requirements.

BASELINE SCHEDULE

Within 6 weeks of Notice to Proceed, Contractor shall submit to the Engineer a Baseline Project Schedule in accordance with the Contract Provisions. The Baseline Schedule shall have a data date of the day prior to the first working day of the contract. The Notice to Proceed Milestone shall be the date on which Notice to Proceed was specified in the Contract. The schedule shall not include any actual start dates, actual finish dates, or constraint dates (except for Contract Milestone dates, NTP, and Project Completion) and activities scheduled to start or finish between the data date and the run date shall reflect dates that can be attained. The NTP activity may have a start-no-earlier-than constraint and the Project Completion Activity may have a finish-no-later-than constraint. The Baseline Schedule shall meet interim milestone dates, contract milestone dates, stage construction requirements, internal time constraints, show logical sequence of activities, and must not extend beyond the number of days originally provided for in the contract.

All task activities shall be assigned to a project calendar. Each calendar shall identify a workweek, and holidays. Different calendars shall be used for work activities that occur on different work schedules. Activities for the preparation and the review of submittals; offsite fabrication, and material/equipment deliveries are to be assigned to the same calendar unless accepted by the Engineer. All non-activity periods for environmental work restrictions shall be identified with the appropriate calendars. The Baseline Schedule shall depict how the Contractor plans to complete the whole work involved, and shall show all activities that define the critical path. Multiple critical paths and near-critical paths shall be kept to a minimum, as determined by the Engineer.

The Contractor shall require each subcontractor to submit in writing a statement certifying that the subcontractor, major fabricators and suppliers have concurred with the Contractor's CPM baseline schedule including major update schedules, and that the subcontractor's related schedule has been incorporated accurately, including the duration of activities, labor and equipment loading.

State owned float shall be considered a resource for the exclusive use of the State. The Engineer may accrue State owned float by the early completion of review of any type of required submittal when it saves time on the critical path. The Contractor shall document State owned float by updating the State owned float activity on the next schedule update. State owned float shall be the second to last activity in the schedule of which the successor is the Scheduled Completion Date. No other activity shall be scheduled to occur during the Stated Owned Float Activity. The Contractor shall include a log of the action on the State owned float activity and include a discussion of the actions in the narrative report. The Engineer may use State owned float to mitigate past or future State delays by offsetting potential time extensions.

If the Contractor submits an early completion Baseline schedule that shows contract completion in less than 85 percent of the working days specified in these special provisions, the Baseline schedule shall be supplemented with resource allocations for every task activity to a level of detail that facilitates report generation based on labor craft and equipment class. The Contractor shall also submit to the Engineer time-scaled resource histograms of the labor crafts and equipment to be utilized on the contract. The resource allocations shall be shown to a level of detail that facilitates report generation based on labor crafts and equipment classes for the Contractor and subcontractors. Contractor shall optimize and level labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that resources are not duplicated in concurrent activities. The Engineer may review the Baseline schedule activity resource allocations using Means Productivity Standards or equivalent to determine if the schedule is practicable.

The Baseline schedule submitted to the Engineer shall comply with all limits imposed by the contract, with all specified intermediate milestone and contract completion dates, and with all constraints, restraints or sequences included in the contract. The degree of detail shall include the general requirements as stated above including, but not limited to:

- A. All purchases, submittals, submittal reviews, manufacture, fabrication, tests, delivery, and installation activities for all major materials and equipment, including submittal of requests for audits of manufacturers and fabricators in conformance with "Manufacturing and Fabrication Qualification Audit for Materials" of these special provisions;
- B. Identification of interfaces and dependencies with preceding, concurrent and follow-on contractors, railroads, and utilities as shown on the plans or specified in the specifications;
- C. Identification of each utility relocation and interface as a separate activity, including activity description and responsibility coding that identifies the type of utility and the name of the utility company involved;
- D. Actual tests, submission of test reports, and approval of test results;
- E. All start-up, testing, training, and assistance required under the Contract;
- F. Punchlist and final clean-up;
- G. Identification of any manpower, material, or equipment restrictions, as well as any activity requiring unusual shift work, such as double shifts, 6 or 7-day weeks, specified overtime, or work at times other than regular days or hours. Any unusual shift periods will be specified in the Contract otherwise all activities shall be scheduled as a regular Working Day.
- H. Identification of each and every ramp closing and opening event as a separate one day activity, including designation by activity coding and description that it is a north-bound, south-bound, east-bound, west-bound, and entry or exit ramp activity;

In no event shall the baseline schedule exceed 750 construction activities, exclusive of submittals, review periods, and fabrication/delivery activities. The Engineer will be allowed 2 weeks to review and accept or reject the baseline project schedule submitted. Rejected schedules shall be resubmitted to the Engineer within 1 week, at which time a new 2 week review period by the Engineer will begin. The baseline schedule submittal is not complete until the scheduling equipment and software are provided.

EARLY AND LATE COMPLETION SCHEDULES

The Contractor may show early completion time on any schedule provided that the requirements of the contract are met. Early completion time shall be considered a resource for the exclusive use of the Contractor. The Contractor may increase early completion time by improving production, reallocating resources to be more efficient, performing sequential activities concurrently or by completing activities earlier than planned. The Contractor may also submit for approval a cost reduction incentive proposal in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications that will reduce time of construction.

After approval of the Baseline Schedule, should Contractor show a scheduled completion date that is later than the contract completion the Contractor shall provide a detailed explanation for the scheduled completion date in the schedule narrative. During any period in which the schedule shows negative float, the Engineer may require a recovery schedule depicting how the Contractor intends to bring the project back to the approved project completion date. This recovery schedule is in addition to the updated schedule.

The Engineer may adjust contract working days for ordered changes that affect the scheduled completion date, in conformance with the provisions in Section 4-1.03, "Changes," of the Standard Specifications. The Contractor shall prepare a time impact analysis to determine the effect of the change in conformance with the provisions in "Time Impact Analysis" specified herein, and shall include the impacts acceptable to the Engineer in the next update schedule.

SCHEDULE RESOURCE ALLOCATIONS / LOADING

The Baseline Schedule shall be supplemented with resource allocations for every major task activity to a level of detail that facilitates report generation based on jobhours for labor craft, equipment class, fabricators, and suppliers. The Contractor shall also submit to the Engineer time-scaled resource histograms of the labor crafts and major equipment to be utilized on the contract.

The Contractor shall optimize labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that resources are not over committed in concurrent activities.

The Baseline schedule submitted to the Engineer shall include:

- A. Separate resource graphs for the Contractor's labor, equipment and critical path labor, with an accompanying analysis of each.
- B. Equipment and labor shall be differentiated by a cost account code within the resource dictionary.

Added or changed activities to Updates, Revisions, and other schedules require, at a minimum, the same resource requirements as the baseline schedule.

PROJECT SCHEDULE TABULAR REPORT

A Tabular Schedule Report shall be produced for each schedule update on 8 ½ x 11 medium. This tabular report shall show the following information and is to be produced by the Scheduling Software:

- A. Activity number and description;
- B. Original, actual and remaining durations;
- C. Early start date (by calendar date);
- D. Early finish date (by calendar date);
- E. Actual start date (by calendar date);
- F. Actual finish date (by calendar date);
- G. Late start date (by calendar date);
- H. Late finish date (by calendar date);
- I. Identify activity calendar ID;
- J. Total Float; and
- K. Percent complete.

PROJECT SCHEDULE NARRATIVE

The Monthly Update Schedule submitted to the Engineer will be accompanied by a Schedule Narrative Report. The report shall describe the physical progress during the report period, plans for continuing the work during the forthcoming report period, actions planned to correct any negative float, and an explanation of potential delays or problems and their estimated impact on performance, milestone completion dates, forecast completion date, and the overall project completion date. In addition, alternatives for possible schedule recovery to mitigate any potential delay or cost increases shall be included for consideration by the Engineer.

The report shall follow the outline set forth below:

- A. Work completed during the period;
- B. Description of the current critical path;
- C. Description of current problem areas;
 - o Current and anticipated delays;
 - o Cause of the delay;
 - o Corrective action and schedule adjustments to correct the delay; and
 - o Impact of the delay on other activities, milestones, and completion dates;

- D. Changes in construction sequences;
- E. Pending items and status thereof;
 - o Permits;
 - o Change Orders;
 - o Time Extensions; and
 - o Non-Compliance Notices;
 - o Notice of Potential Claims
- F. Contract completion date(s) status;
- G. Ahead of schedule and number of days; and
- H. Behind schedule and number of days; and
- I. Response to Previous Schedule Comments
- J. Reconciliation to key contract dates including CCO's, weather days, and time extensions

PROJECT SCHEDULE NETWORK DIAGRAM (BAR CHART)

Network diagrams or bar charts shall be sorted and grouped in a format requested by the Engineer reflecting the breakdown per the activity codes. They shall show a continuous flow of information from left to right per the project sorting and grouping codes. The primary paths of criticality shall be clearly and graphically identified on the diagrams or charts. The network diagram or bar chart shall be prepared on E-size sheets (91.5 cm x 122 cm), shall have a title block in the lower right-hand corner, and a timeline on each page. The critical path shall be depicted in Red. Portions of the network diagram on which all activities are complete need not be reprinted and submitted in subsequent updates. However, the submitted schedule and the related reports shall constitute a clear record of progress of the work from award of contract to final completion.

MONTHLY UPDATE SCHEDULE

The Contractor shall submit a Monthly Updated Schedule and related reports to the Engineer once in each month within 1 week of the data date. The proposed update schedule prepared by the Contractor shall include all information available as of the 20th day of the month, or other data date as established by the Engineer.

On a date determined by the Engineer, the Contractor shall meet with the Engineer to review the monthly update schedule. At the monthly progress meeting, the Contractor and the Engineer shall review the updated schedule and shall discuss the content of the Narrative Report. The Engineer will be allowed 2 weeks after the meeting to review and accept or reject the update schedule submitted. Rejected schedules shall be resubmitted to the Engineer within 1 week, at which time a new 1 week review period by the Engineer will begin. All efforts shall be made between the Engineer and the Contractor to complete the review and the acceptance process prior to the next update schedule data date. To expedite the process, a second meeting between the Engineer and the Contractor may be held.

SUBMITTAL REQUIREMENTS

The Baseline and Monthly Schedule Updates shall include, at a minimum, the following reports in the quantities as shown:

- A. Contractor's Transmittal Letter;
- B. 2 copies of the Project Schedule Tabular Report (21.6 cm x 28 cm size);
- C. 2 copies of the Project Schedule Narrative Report;
- D. 1 set of the Project Schedule Network Diagrams (Bar Charts) (E-Size-color);
- E. 2 copies of the schedule on electronic medium, compressed into a single file, with access restriction removed, sent to the Engineer. This is to be submitted on CD-ROM;
- F. 1 copy of the schedule (as above) e-mailed to the Engineer.

WEEKLY SCHEDULE PROGRESS MEETINGS

The Engineer and the Contractor shall hold weekly scheduling meetings to discuss the near term schedule activities, to address any long-term schedule issues, address the weekly controlling operation, and to discuss any relevant technical issues. This weekly meeting can be a part of the Weekly Progress Meeting held with the Contractor.

The Contractor shall develop a rolling 4-weeks schedule identifying the previous week worked and a 3-week look ahead. It shall provide sufficient detail to include the actual and planned activities of the Contractor and all the subcontractors for offsite and construction activities, addressing all activities to be performed and to identify issues requiring engineering action or input. The schedule shall identify all construction activities that may affect the public through traffic, noise or vibration, and work that requires lane, ramp, freeway closures or COZEEP.

Each activity in the 4 week rolling schedule should be identified by an associated CPM schedule activity ID numbering system as indicated in the Baseline schedule or the last accepted update schedule. This schedule should not be hand written.

SCHEDULE REVISIONS

If the Contractor desires to make a change to the accepted schedule, the Contractor shall request permission from the Engineer in writing, stating the reasons for the change, and proposed revisions to activities, logic and duration. A detailed list of all proposed schedule changes such as logic, duration, lead/lag, forecast completion date, additions and deletions shall be submitted with the revision schedule. The Contractor shall submit for acceptance an analysis showing the effect of the revisions on the entire project. The analysis shall include:

- A. An updated schedule not including the revisions. The schedule shall have a data date just prior to implementing the proposed revisions and includes a project completion date;
- B. A revised schedule that includes the proposed revisions. The schedule will have the same data date as the updated schedule and include a project completion date;
- C. The Contractor should add resources for all new activities, also adjust resources for those activities that their remaining duration were changed;
- D. A narrative explanation of the revisions and their impact to the schedule;
- E. Computer files of the updated schedule and the revised schedule sequentially numbered or renamed for archive (record) purposes.

The Engineer will provide a response within 2 weeks to Contractor's proposed schedule revisions. Within 3 weeks, the Contractor shall submit a revision schedule for acceptance. In addition, a revision schedule shall be submitted when requested by the Engineer, or when any of the following occurs:

- A. There is a significant change in the Contractor's operations that will affect the critical path;
- B. The current updated schedule indicates that the contract progress is 4 weeks or more behind the planned schedule, as determined by the Engineer; or
- C. The Engineer determines that an approved or anticipated change will impact the critical path, milestone or completion dates, contract progress, or work by other contractors.

The Engineer shall be allowed 2 weeks to review and accept or reject a schedule revision. Rejected schedule revisions shall be revised and resubmitted to the Engineer within 2 weeks, at which time a new 2 week review period by the Engineer will begin. Only upon acceptance of a change by the Engineer shall it be reflected in the next schedule update submitted by the Contractor. The revised schedule shall also include a narrative explanation of the revisions and their impact to the schedule.

TIME IMPACT ANALYSIS

When the Contractor requests a time adjustment due to contract change orders or delayed activities or if the Contractor or the Engineer considers that an approved or anticipated change will impact the critical path or contract progress, the Contractor shall submit to the Engineer a written Time Impact Analysis illustrating the impact of each change or delay to the current contract completion date or milestone completion date, utilizing the current accepted schedule. Each Time Impact Analysis shall include a schedule update (an accepted schedule with a data date within the previous month of the event) reflecting the "before conditions", and schedule revision reflecting the "after condition", both with the same data dates, demonstrating how the Contractor proposes to incorporate the change order or delay into the current schedule. The schedule revision shall include the sequence of activities and any revisions to the existing activities to demonstrate the impact of the delay, or change into the schedule. The Time Impact Analysis shall also include proposed mitigation measures or work arounds including but not limited to alternate work calendars, re-sequencing of other activities, or performing work activities out-of-sequence to minimize the impact of the change order or the delayed activities.

Each Time Impact Analysis shall demonstrate the estimated or actual time impact based on the events of delay, the estimated or actual date of the contract change order work performance, the status of construction at that point in time, and the event time computation of all activities affected by the change or delay. The event times used in the analysis shall be those included in the latest accepted update of the current schedule in effect at the time the change or delay was encountered.

Time extensions will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total or remaining float along the critical path of activities from the time of actual delay, or from the time the contract change order work is performed. Mitigation measures shall be included in the analysis. The Time Impact Analysis shall also consider the use of State owned float as a mitigation measure. Time extensions will not be granted nor will delay damages be paid unless:

- A. The delay is beyond the control and without the fault or negligence of the Contractor and its subcontractors or suppliers, at any tier; and
- B. The delay extends the actual performance of the work beyond the currently accepted contract completion date.
- C. The delay impacts a fabrication or construction activity – delays to the Contractor's submittal or shop drawing process must impact a successor fabrication or construction activity. The Time Impact Analysis shall be based on the impact to fabrication or construction activities.

Time Impact Analyses shall be submitted within 3 weeks after the start of the activity initiating the delay occurs or after initiation of the contract change order. The schedule files will be submitted on electronic medium along with the Time Impact Analysis, which shall include a narrative description of the delay, its impact on contract completion or milestone dates and proposed mitigation measures. Mitigation measures utilized to minimize the impact of the change order or delay shall include but are not limited to work arounds, re-sequencing of work, alternate work calendars, increased resources, expedited procurement and use of State owned float.

A response to each Time Impact Analysis by the Engineer will be made within 3 weeks after receipt of the Time Impact Analysis. The Engineer's review shall utilize actual data unless it is appropriate to use estimated data and shall consider the effects of concurrent delays. Resolution of each Time Impact Analysis by the Engineer shall be completed after all effects of the disruption are documented, which may include mitigation measures. A copy of the Time Impact Analysis accepted by the Engineer shall be returned to the Contractor and the accepted schedule revisions illustrating the impact of the contract change orders or delays shall be incorporated into the project schedule during the first update after acceptance. The Engineer may, at his option, construct and utilize the project as-built schedule or other method to determine adjustments in contract time.

FINAL SCHEDULE UPDATE

Within 3 weeks after the acceptance of the contract by the Director, the Contractor shall submit a final update of the schedule with actual start and actual finish dates for all activities. This schedule submission shall be accompanied by a certification, signed by an officer of the company and the Contractor's Project Manager stating "To the best of my knowledge, the enclosed final update of the project schedule reflects the actual start and completion dates of the activities contained herein."

EQUIPMENT AND SOFTWARE

The Contractor shall provide for the State's exclusive possession and use a complete computer system specifically capable of creating, storing, updating and producing CPM schedules. Before delivery and setup of the computer system, the Contractor shall submit to the Engineer for approval a detailed list of all computer hardware and software the Contractor proposes to furnish. The minimum computer system to be furnished shall include the following:

- A. Complete computer system, including Microsoft ergonomic keyboard, wireless mouse, 53.3 cm flat panel color monitor, Intel Pentium Duo Core micro processor chip, or equivalent, or better;
- B. Computer operating system software, compatible with the selected processing unit, for Windows XP Professional or later, or equivalent;
- C. Minimum 2 GB of random access memory (RAM) and 512 MB Video Card
- D. A 400 gigabyte minimum hard disk drive, a CD-ROM Drive 24x, a CD-DVD Readable/Writable Drive, a Combo USB/SD/Card Reader, 100 MB Ethernet Card

- E. A color-ink-jet plotter with a minimum 36 Megabytes RAM, capable of 762 dots per cm color, 1524 dots per cm monochrome, or equivalent. Capable of printing fully legible, time scaled charts, and network diagrams, in four colors, with a minimum size of 91.5 cm by 122 cm (E size) and is compatible with the selected system. Plotter paper and ink cartridges will be provided throughout the contract. HP Designjet 1055 CM, equivalent or later. Contractor shall provide all necessary maintenance, ink and supplies for the printer throughout the duration of the project.
- F. Microsoft Office Professional (latest version)
- G. Scheduler Analyzer Pro – a suite of programs to assist in schedule analysis, the latest version for Windows XP
- H. Caltrans Approved Antivirus and Encryption Software
- I. CPM software shall be the latest Primavera Project Planner Version 3.1

The Contractor shall furnish schedule software and all original software instruction manuals to the Engineer with submittal of the baseline schedule. The furnished schedule software shall become the property of the State and will not be returned to the Contractor. The State will compensate the Contractor in conformance with the provisions in Section 4 1.03, "Extra Work," of the Standard Specifications for replacement of software which is damaged, lost or stolen after delivery to the Engineer.

The Contractor shall instruct the Engineer in the use of the software and provide software support until the contract is accepted. Within 20 working days of contract approval, the Contractor shall provide a commercial 8 hour training session for 2 Department employees in the use of the software at a location acceptable to the Engineer. It is recommended that the Contractor also send at least 2 employees to the same training session to facilitate development of similar knowledge and skills in the use of the software.

PAYMENT

Progress schedule (critical path) will be paid for at a lump sum price. The contract lump sum price paid for progress schedule (critical path) shall include full compensation for all labor, materials (including computer hardware and software), tools, equipment, paper, plotter ink, and incidentals; and for doing all the work involved in preparing, furnishing, updating and revising CPM progress schedules. Also for maintaining and repairing the computer hardware and training the Engineer in the use of the computer hardware and software as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Payments for progress schedule (critical path) will be made as follows:

- A. Interim baseline schedule accepted, then 10 percent payment for progress schedule (critical path) will be made.
- B. Baseline schedule accepted, then 10 percent (20 percent if no interim baseline is required) payment for progress schedule (critical path) will be made.
- C. Monthly update schedules accepted, then 75 percent payment for progress schedule (critical path) will be made equally for each update.
- D. Final schedule update accepted, then 5 percent payment for progress schedule (critical path) will be made.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications, shall not apply to the item of progress schedule (critical path). Adjustments in compensation for the project schedule will not be made for any increased or decreased work ordered by the Engineer in furnishing project schedules.