

VIRGINIA DEPARTMENT OF TRANSPORTATION  
SPECIAL PROVISION FOR  
**Design-Build Project Schedule**

April 15, 2014

**Exhibit 11.1**

**1. General**

Design-Builder shall develop and maintain a project schedule, which shall be used by all involved parties to plan and execute all work required to complete the project. The project schedule will be used by the Department to monitor the project, assess progress, and evaluate the effects of time-related issues on the project. The project schedule shall be prepared, maintained, and submitted in accordance with this provision, unless otherwise directed in writing by the VDOT Project Manager.

- A. Scheduling Conference** – At the meeting held after the Date of Commencement, Design-Builder shall attend a Scheduling Conference with the VDOT Project Manager to discuss Design-Builder’s overall plan to accomplish the Work; the detail work plan for the initial one hundred and twenty (120) calendar days; and scheduling information, project specific requirements, and other key issues necessary for the preparation, maintenance and submittal of the project schedule.
  
- B. Project Scheduler** – For projects with awarded Contract Price of \$35 million or more, Design-Builder shall designate a Project Scheduler for the project and shall submit his/her qualifications for the VDOT Project Manager’s written approval prior to submission of the Preliminary or Baseline Schedule. The Project Scheduler must have at least three (3) years of verifiable experience in successfully preparing and maintaining schedules on large scale projects of similar type and complexity. Design-Builder shall provide current contacts for verification of the Project Scheduler’s qualifications and experience. The Project Scheduler shall be primarily responsible for the development and maintenance of the project schedule and shall be present in all scheduling meetings and discussions on major issues concerning the project schedule.

**2. Schedule Submission Requirements**

- A. Preliminary Schedule** – Unless otherwise stated in Exhibit 1, within fifteen (15) days of Design-Builder’s receipt of Department’s Notice to Proceed, Design-Builder shall submit to Department, for its review and approval, a Preliminary Schedule. At its discretion, Design-Builder may submit in lieu of the Preliminary Schedule, a Baseline Schedule according to Section 11.1.4 of the Agreement and Section 2.B below. Until such time as a Baseline Schedule has been approved by Department, Design-Builder shall provide an update of the Preliminary Schedule every month. The Preliminary Schedule will be used to monitor and assess progress of the Work until a Baseline Schedule is approved by the

Department. The Preliminary Schedule submission shall consist of:

1. **Preliminary Schedule**: A Preliminary Schedule prepared and submitted in the form of a Baseline Schedule as defined herein, showing at a minimum:
  - i) The detailed activities depicting the sequence and dates for any work planned during the first one-hundred and twenty (120) calendar days, including as applicable project milestones, review by the Department, FHWA, and other regulatory agencies; as well as environmental, permits, scope validation period, design, right-of-way, utility, and construction activities.
  - ii) Summary level activities depicting the sequence and general timing for work planned after the first one-hundred and twenty (120) calendar days. At Design-Builder's discretion, detailed activities may be shown in lieu of summary level activities.
  - iii) Quantities and dollar value of work associated with each activity for which Design-Builder expects to receive payment.
  - iv) The project critical path (based on the longest path).
2. **Preliminary Schedule Narrative**: A Preliminary Schedule Narrative describing the Design-Builder's overall plan to accomplish the entire scope of Work and the detailed plan for work planned during the initial one-hundred and twenty (120) calendar days. The narrative shall describe the sequence of work, means and methods, productivity, and other significant scheduling assumptions on which the Preliminary Schedule is based. The narrative shall also describe the project critical path (longest path), work planned during each construction season, and any known or foreseeable issues that may impact the schedule.
2. **Preliminary Earned Value Schedule**: A Preliminary Earned Value Schedule showing Design-Builder's anticipated monthly earnings for the entire Project. The Preliminary Earned Value Schedule shall be prepared using Department's Form C-13CPM, which shall be based on monthly costs data generated from the Preliminary Schedule. The Preliminary Earned Value Schedule submission shall include:
  - i) An Activity Cost-loading Report (ACR), showing a breakdown of the quantities and costs for each activity. The ACR shall be grouped by pay items and sorted by activity ID showing:
    - a) For each activity the Activity ID, Activity Name, Price/Unit, Budgeted Unit (quantity), Budgeted Cost, Actual Cost, Remaining Cost, and At Completion Cost.

- b) Pay item sub-totals of the budgeted units and costs for associated activities.
- c) The overall total budgeted cost for the Project.

ii) An Earned Value Schedule using the VDOT Form C-13CPM.

**B. Baseline Schedule** – Unless otherwise stated in Exhibit 1, within ninety (90) days of Design-Builder’s receipt of Department’s Notice to Proceed, Design-Builder shall submit to Department, for its review and approval, a Baseline Schedule showing the Design-Builder’s initial detailed plan to accomplish the entire scope of the Project according to the Agreement. If the Department does not approve such submission, Design-Builder shall revise and resubmit a Baseline Schedule to Department within seven (7) calendar days of its receipt of Department’s comments on such submission. This process shall continue until such time as the Department approves a Baseline Schedule. Upon approval of the Baseline Schedule, it will be established as the Project “**Schedule of Record (SOR)**”. The SOR is the official and only schedule with which all parties will plan and execute all work required to complete the Project and against which progress of the Project and the Design-Builder’s performance will be assessed. The Baseline Schedule submission shall consist of:

1. **Baseline Schedule:** A Baseline Schedule depicting the detailed activities required to complete the entire scope of the Project, including as applicable, work to be performed by subcontractors, the Department, and other involved parties. The Baseline Schedule shall be prepared according to the following:
  - i) Design-Builder shall prepare and maintain the Baseline Schedule using scheduling software that is capable of meeting all requirements of this provision. Design-Builder’s scheduling software shall be wholly compatible with the Department’s scheduling software system and shall have the capability of creating a back-up copy of the working schedule in “XER” format. The Department’s scheduling software system is the latest version of Primavera’s Project Management software (currently P6 version 7.0). At the Design-Builder’s request, secured access via the internet may be granted to allow the Design-Builder to develop and maintain its schedule in the Department’s scheduling software system. Submission of data from another software system where data conversion techniques or software is used to import into Primavera’s scheduling software is not acceptable and will be cause for rejection of the submitted schedule.
  - ii) For each schedule submission, the Project ID shall be unique and shall be defined using the Contract ID as a prefix followed by the submission number (i.e. C00012345DB12\_B01, C00012345DB12\_U01, etc.).

- iii) The project “Must Finish By” date shall be defined with a specified date equal to the “Final Completion” date of the Contract.
- iv) The Baseline Schedule shall be developed using a hierarchical WBS, broken down by major phases of the Project, as applicable (i.e. project milestones, project management, design, public involvement, environmental, right-of-way, utility, and construction, etc.). Each major phase of the Project shall be broken down by phase, stage, or feature, as applicable. Each phase, stage, or feature shall then be further broken down into rational work packages, as applicable.
- v) Each work package shall be broken down into discrete and definable activities, with activity durations generally twenty (20) working days or less. Longer durations may be allowed as approved by the VDOT Project Manager for certain administrative or level of effort activities that are typically performed over longer periods of time. The Work shall be broken down in sufficient details to identify the phase, stage, feature, type of work, deliverable, and specific location in which the work occurs, including as applicable:
  - a) Project milestones;
  - b) Administrative activities such as key submittals, notifications, and review by the Department, FHWA, and other regulatory agencies. Activity durations for submissions and approvals or consents required by the Department shall be no less than the Department’s minimum review duration identified in Section 3.1 of the General Conditions of Contract;
  - c) Design activities showing all work required to complete each stage of design and deliverable;
  - d) Public involvement activities;
  - e) Scope Validation Period;
  - f) Environmental and permitting activities;
  - g) Right-of-way acquisition activities showing all lots/parcels;
  - h) Utility relocations and adjustments activities broken down by type and specific location;
  - i) Procurement, fabrication, delivery activities of materials;

- j) Construction start-up activities such as mobilization, staging area, surveying, clearing and grubbing, construction access, etc.;
  - k) Maintenance of Traffic activities;
  - l) Construction activities broken down by phase, stage, feature, type of work, and specific location, as applicable;
  - m) Other necessary miscellaneous activities that consume time such as installation and removal of temporary systems or structures such as causeways, shoring, etc.; as well as settlement period, load test, curing, demolition, testing and acceptance period, punch list, clean-up, demobilization, etc.
- vi) Each activity shall be named to identify the phase, stage, feature, type of work, and specific location in which the work occurs, as applicable.
  - vii) Activity calendars shall be assigned using project-level calendars. Use of global calendars is not allowed and shall be cause for rejecting the schedule.
  - viii) Activity codes shall be defined and assigned to the individual activities to allow for filtering, grouping, and sorting of activities by project phase, responsibility, area, phase, stage, feature, work type, Work Orders, DBE, and other major work category, as applicable. Activity codes shall be assigned using project-level activity codes. Use of global activity codes is not allowed and shall be cause for rejecting the schedule.
  - ix) Constraints shall be used sparingly and on a case by case basis, as necessary. Constraints such as “Mandatory Start” or “Mandatory Finish” that violate network logic are not allowed and shall be cause for rejecting the schedule. If the Contract includes a specified start-no-earlier-than milestone, then the Contract milestone activity shall be constrained with a “Start On or After” constraint, with a date equal to the date specified in the Contract. If the Contract includes a specified Interim Milestone or Substantial Completion Milestone, then the Contract interim completion milestone activity or substantial completion milestone activity shall be constrained with a “Finish On or Before” constraint, with a date equal to the date specified in the Agreement.
  - x) The Baseline Schedule shall be cost-loaded and shall be the basis for the monthly progress payments as well as for assessing progress. Each activity associated with a pay item for which Design-Builder expects to receive payment shall be cost-loaded, using the scheduling software “Material” resource type and according to the following:
    - a) A material resource shall be defined for each pay item shown in the

Schedule of Items submitted in the Proposal, or a subsequently revised Schedule of Items approved by the VDOT Project Manager. Pay item ID codes shall be congruent to the extent possible with the VDOT five-digit standard and non-standard pay item numbers (for example: 00100 – Mobilization).

- b) Each proposed pay item material resource shall indicate the Resource ID, Resource Name, Unit of Measure, and Price/Unit as shown in the Schedule of Items. The pay item material resource ID shall be unique and shall be defined using the Contract ID as a prefix followed by the pay item number (i.e. C00012345DB12.00100).
  - c) The “Auto Compute Actuals” and “Calculate costs from units” boxes for each pay item material resource shall be marked.
  - d) A project-specific 20-80 resource curve shall be defined in the scheduling software using the Contract ID as a prefix and assigned to each assigned pay item resource to allocate costs to each associated activity over its duration based on the 20-80 earned value progress payment rules, according to Part 4, Article 6, and Section 6.2.
  - e) The budgeted units and cost for each assigned pay item resource shall be defined to indicate the quantity and dollar value of work that the activity represents.
  - f) The aggregate budgeted units and costs for all activities associated with a pay item shall equal the total quantity and value of the proposed pay item as shown in the Schedule of Items.
  - g) The aggregate budgeted costs for all activities shall equal the current total Contract Price. Current total Contract Price will be considered to mean the current Contract amount including the original Contract Price and any approved adjustments for authorized changes to the Work. Anticipated payments or payments for adjustments such as asphalt, fuel, steel, retainage, incentives, disincentives, etc., shall not be included.
- xi) For projects with awarded Contract Price of \$35 million or more, the Baseline Schedule shall be resource-loaded to indicate the labor (manpower), material (re-usable materials), and equipment (machinery or equipment) required to accomplish each activity that represents a major operation. The Baseline Schedule shall be resource-loaded according to the following:
- a) Project-specific labor resources using “Labor” resource type as

defined in the scheduling software shall be defined and assigned to indicate labor classification, trade, or crew that will perform the work. The labor Resource ID shall be unique and shall be defined using the Contract ID as a prefix followed by a unique code (e.g. C00012345C01.Pipe – Drainage Pipe Crew). Also, the Max Units/Time shall be defined for each labor resource to establish the daily availability limits. Budgeted Units shall be defined for each assignment to establish the total units of time required to perform the activity.

- b) Project-specific material resources using “Material” resource type as defined in the scheduling software shall be defined and assigned to indicate re-usable material that will be used to perform the work. The material Resource ID shall be unique and shall be defined using the Contract ID as a prefix followed by a unique code (e.g. C00012345C01.CF1 – Column Forms Set #1). Also, the Max Units/Time shall be defined for each material resource to establish the daily availability limits. Budgeted Units shall be defined for each assignment to establish the total units of time required to perform the activity.
  - c) Project-specific equipment resources using “Non-Labor” resource type as defined in the scheduling software shall be defined and assigned to indicate equipment or machinery that will be used to perform the work. The non-labor Resource ID shall be unique and shall be defined using the Contract ID as a prefix followed by a unique code (e.g. C00012345C01.CRN – Crane). Also, the Max Units/Time shall be defined for each non- labor resource to establish the daily availability limits. Budgeted Units shall be defined for each assignment to establish the total units of time required to perform the activity.
  - d) Assigned resource calendars shall be defined using the Contract ID as a prefix.
- xii) The project schedule software settings shall be defined according to the following Primavera P6 settings:
- a) Schedule dates shall be shown in the “Month-Day-Year” date format, with 2-digit numbers for the month, day, and year (e.g. 05-01-13).
  - b) Duration type for all activities shall be specified as “Fixed Duration & Units”.

- c) The “Drive activity dates by default” checkbox in the Project Details Resources tab shall be marked.
- d) The “Link Budget and At Completion Cost for not started activities” checkbox in the Project Details Calculation tab shall be marked.
- e) The “Reset Remaining Cost and Units to Original” in the Project Details Calculation tab shall be specified.
- f) The “Subtract Actual from At Completion” under “When updating actual units or costs” in the Project Details Calculation tab shall be specified.
- g) The “Recalculate Actual Units and Cost when duration % complete changes” checkbox in the Project Details Calculation tab shall be marked.
- h) The “Update units when costs changes on resource assignments” checkbox in the Project Details Calculation tab shall be marked.
- i) The “Link Actual and Actual This Period Units and Cost” checkbox in the Project Details Calculation tab shall be marked.
- j) Specify “Retained Logic” in the Scheduling Options dialog box for scheduling progressed activities.
- k) Specify “Longest Path” in the Scheduling Options dialog box for defining critical activities.
- l) Specify “Finish Float = Late Finish – Early Finish” in the Scheduling Options dialog box as the schedule calculation option to compute total float.

xiii) The project schedule shall be calculated using the precedence diagram network logic method (PDM) and the Critical Path Method (CPM). The use of resource-leveling to determine sequence, order, or timing of the activities is not allowed and shall be cause for rejecting the schedule.

2. **Baseline Schedule Narrative**: A Baseline Schedule narrative describing Design-Builder’s overall plan to accomplish the Work, as reflected on the Baseline Schedule including, as applicable:

- i) Project milestones including, as applicable Contract milestones and other key events such as start/finish dates for each major phase or stage of the project, major traffic switches, etc.

- ii) Work to be performed by the Department and other involved parties, including when the work must be performed.
  - iii) The proposed overall sequence of Work, including where the work will begin and how the work will progress.
  - iv) A description of the project critical path (based on the longest path).
  - v) Scheduling assumptions including, the proposed means and methods, anticipated daily production rates, and general procedures for accomplishing major operations that are expected to drive the schedule.
  - vi) A log identifying the schedule constraints used in the Baseline Schedule and reason for using each constraint.
  - vii) A description of the project calendar(s) used in the Baseline Schedule, identifying the Calendar ID, standard number of work days per week, number of shifts per day, and number of hours per day as well as the anticipated number of non-working days per month for each calendar with considerations, as applicable, for holidays, normal weather conditions; as well as for seasonal or other known or specified restrictions (i.e. traffic, local events, environmental, permits, utility, etc.).
  - viii) The Contractor's resource plan indicating the number of crews, crew make-up, and major equipment needed to accomplish the Work as planned. The resource plan shall also describe how Design-Builder plans on meeting the resource requirements.
  - ix) A log of the applicable DBE participation activities in the schedule for which the Design-Builder intends to claim credit for attaining the DBE goal required in the Contract. The list shall indicate the proposed start/finish dates and durations of the DBE participation activities.
  - x) Any known or foreseeable issues that may impact the schedule. Also, describe how the issues will impact the schedule and any actions taken or needed to avoid or mitigate the impact.
3. **Baseline Earned Value Schedule:** A Baseline Earned Value Schedule showing Design-Builder's anticipated monthly earnings for the entire Project. The Baseline Earned Value Schedule submission shall include:
- i) An Activity Cost-loading Report (ACR) generated from the Baseline Schedule, showing a breakdown of quantities and costs for each activity. The ACR shall be grouped by pay item and sorted by activity ID showing:
    - a) For each activity the Activity ID, Activity Name, Price/Unit,

Budgeted Unit (quantity), Budgeted Cost, Actual Cost, Remaining Cost, and At Completion Cost.

b) Pay item sub-totals of the budgeted units and costs for associated activities.

c) The overall total budgeted cost for the Project.

ii) An Earned Value Schedule using the VDOT Form C-13CPM, which shall be based on monthly costs data generated from the Baseline Schedule.

**C. Schedule Updates** – On or before the tenth (10<sup>th</sup>) day of each month and as part of the monthly reports required by Section 11.1.9 of Part 3 of the Agreement, Design-Builder shall submit to Department, for its review and approval, an update of the Baseline Schedule (“**Schedule Update**”). The Schedule Update shall reflect the current status of the Project and the plan to complete the remaining work as of the first (1<sup>st</sup>) day of the month (data date). If Department does not approve such submission, Design-Builder shall revise and resubmit a Schedule Update to Department within seven (7) calendar days of its receipt of Department’s comments on such submission. The Schedule Update submission shall consist of:

1. **Schedule Update**: A Schedule Update showing the as-built status of completed and ongoing activities; as well as the sequence and dates during which the remaining activities are scheduled to be completed as of the data date. The Schedule Update shall be based on the most recent approved Schedule and shall be prepared according to the following:

i) All activities that are completed prior to the current data date shall show actual start and finish dates. All on-going activities shall show actual start dates and remaining duration to indicate the amount of time required to complete the remaining work as of the current data date.

ii) Activity percent complete for on-going activities shall be based on amount of work completed as of the current data date relative to the total amount of work planned.

iii) Actual units and cost for each assigned work item resource shall be updated based on the 20-80 earned value progress rules (i.e. 20% at initiation and 100% at completion), in accordance with Part 4, Article 6, and Section 6.2.

iv) Activity logic shall be modified as necessary to correct out-of-sequence progress for on-going and remaining activities to reflect the Design- Builder’s current plan for completing the remaining work.

- v) The project schedule shall be calculated using the current data date.
2. **Schedule Update Narrative**: A Schedule Update Narrative describing the current status of the project, any deviations from scheduled performance, and any changes in Design-Builder's work plan, and the current work plan for accomplishing the remaining work as of the data date. The Schedule Update Narrative shall include a description of:
- i) The current status of project milestones including a description of any deviations from the date(s) specified in the Contract. If a milestone activity is scheduled to occur later than the date specified in the Contract, provide an explanation stating why the milestone date is forecasted to occur late and any actions taken or proposed to correct the delay.
  - ii) The current status of the Project in terms of progress earnings percent complete based on the actual total earnings to date relative to the current approved Contract value; as well as any progress deficiencies relative to planned progress as indicated on the SOR. If progress is falling behind, describe reasons for the deficiency and any actions taken or proposed to correct the progress deficiency.
  - iii) The project critical path and any deviations from the SOR.
  - iv) The work performed since the previous Schedule Update and any deviations from the work scheduled.
  - v) Any major changes in the Contractor's work plan in terms of sequence of construction, shifts, means and methods, manpower, equipment, or materials.
  - vi) Any changes made to the SOR since the previous submission. A Claim Digger report (or equivalent) may be used to identify the changes.
  - vii) Number of days lost due to adverse weather or other factors during the current update period. Provide a list of the lost days, including a description and start/finish times of the weather event or factor; activities affected and how the activities were affected, and any impacts on the critical path or project milestones. Also, describe any actions taken or proposed to mitigate any resulting delays.
  - viii) The status of pending issues such as access, permits, conflicts with other related or adjacent work, Work Orders, time extension requests, etc.
  - ix) Any problems encountered or anticipated since the previous submission, including an explanation of any corrective actions taken or required to mitigate or avoid the effects.

- x) Work planned for the next update period and any actions needed to be taken by the Department or other involved parties.
2. **Schedule Update Earned Value**: A Schedule Update Earned Value showing the actual progress earnings to date and the projected earnings for each remaining month, as of the data date. The Schedule Update Earned Value submission shall include:
- i) An Activity Cost-loading Report (ACR) showing the updated cost data in the current Schedule Update as of the data date.
  - ii) An updated Form C-13CPM showing the actual earnings to date and projected monthly earnings for the remaining periods as of the data date based on cost data generated from the current Schedule Update.

**D. Revised Baseline Schedule** – If Department believes that the Work is being performed significantly different from the SOR, or major modifications in logic, activity duration, manpower, or cost are necessary, or are required to incorporate approved changes in the Work, it will submit a written request to Design-Builder. Design-Builder shall respond in writing within seven (7) days, either agreeing with Department’s proposed revision, and henceforth providing a “**Revised Baseline Schedule**”, as required by the VDOT Project Manager, or providing justification why the requested revisions should not be accomplished. If revisions cannot be agreed upon either through written correspondence or subsequent meetings, Department and Design-Builder shall agree to attempt to resolve the issues through the dispute resolution process of Article 10 in the General Conditions of Contract. If the Department and the Design-Builder cannot agree on the proposed revisions, the Design-Builder shall proceed under the previously approved Baseline Schedule. At no time shall Design-Builder continue to reflect items of non-concurrence from Department in the Schedule Updates. The Revised Baseline Schedule shall be prepared and submitted in the form of a Baseline Schedule, according to Section 2.B above, except it shall reflect the current status of the completed and on-going activities and actual earnings to date as of the current data date. Upon approval by the Department, the Revised Baseline Schedule shall replace any previously approved Baseline Schedule as the SOR for the remainder of the Project.

**E. Final As-built Schedule** – As part of its submission of Final Application for Payment, Design-Builder shall submit the final Schedule Update (**Final As-built Schedule**). The Final As-built Schedule shall show the actual start and finish dates for all activities in the schedule. Design-Builder shall certify in writing that the Final As-built Schedule accurately reflects the dates on which all activities contained in the schedule were actually performed. The Final As-built Schedule shall be submitted in the form of a Schedule Update according to Section 11.1.5 above.

### 3. Schedule Submittal Format and Reports

Unless otherwise approved in writing by the VDOT Project Manager, Design-Builder shall submit for each Preliminary Schedule, Baseline Schedule, Schedule Update, or Baseline Revision Schedule submission, the following submittal items and reports, in the formats specified below. Each electronic file submittal shall have a unique file name prefixed by the Contract ID to identify the Contract and type, number, item, and data date of the submission (e.g. C00012345DB01\_B01\_01-01-13.xer, C00012345DB01\_B01\_Narrative\_01-01-13.pdf, C00012345DB01\_B01\_FormC-13CPM\_01-01-13.xlsx, etc.). The submittals shall include.

1. A transmittal letter to the VDOT Project Manager, identifying the date of submittal and which Schedule is being submitted for review.
2. Two (2) sets of data compact disks (“CD”) containing a backup copy of the working schedule in the Primavera proprietary exchange format (“XER”) file format; as well as other required electronic file submittals as defined in Section 11.1.8.4 below. Each CD shall be labeled to indicate the Contract ID, type of submission, filename, and data date.
3. Two (2) sets of paper copies of the following schedule reports:
  - i) Schedule calculation log.
  - ii) A legible time-scaled bar-chart plot of the Schedule, organized by WBS, to show for each activity the Activity ID, Activity Name, Original Duration, Remaining Duration, Start and Finish dates, Activity Percent Complete, and Total Float. The bar-chart plot shall identify the project critical path (longest path).
4. Electronic file copies by email of the following:
  - i) A backup copy of the working schedule in “XER” file format.
  - ii) A copy of the time-scaled bar-chart plot of the project schedule in “PDF” file format.
  - iii) A tabular Predecessor and Successor Report (PSR) in “PDF” file format to show the predecessors and successors for each activity. The PSR shall be sorted by WBS and in ascending order by Activity ID and shall show for each activity:
    - a) Activity ID;
    - b) Activity Name;
    - c) Original Duration;
    - d) Remaining Duration;
    - e) Early Start;

- f) Early Finish;
- g) Late Start;
- h) Late Finish;
- i) Free Float;
- j) Total Float;
- k) Critical (“Yes” or “No”);
- l) For each predecessor/successor activity, show the Activity ID, Activity Name, Relationship Type, Lag, Free Float, Total Float, Driving (“Yes” or “No”), and Critical (“Yes” or “No”).

iv) A copy of the schedule narrative in “PDF” file format.

v) A copy of the Activity Cost-loading Report (“ACR”) in “PDF” file format.

vi) A working file copy of the Earned Value Schedule (Form C-13CPM) in “xls” or “xlsx” file format.

vii) A copy of the Earned Value Schedule S-Curve in “PDF” file format.

#### **4. Monitoring the Work and Assessing Progress**

The VDOT Project Manager will monitor the Work regularly and assess progress of the Work monthly relative to the SOR to identify deviations from Design-Builder’s scheduled performance and to determine if progress is satisfactory according to the following:

**A. Monthly Progress Meetings** – At the monthly progress meeting held in accordance with Part 4 General Conditions, Article 2, Section 2.1.8, Design-Builder shall furnish a detailed 4-week look-ahead schedule based on the current schedule update and shall discuss the current status of the project, on-going work, and work planned for the following four (4) weeks.

**B. Progress Evaluation** – Progress will be evaluated by the VDOT Project Manager at the time of the monthly progress pay application on the basis of the Design-Builder’s latest approved Schedule Update. The Design-Builder’s actual progress will be considered unsatisfactory if any of the following conditions occur:

- i) The actual total earnings percentage for work completed to date, based on the current Pay Application, falls behind the anticipated cumulative late earnings percentage indicated in the SOR by one (1) percent or more.
- ii) The current projected completion date of a Contract milestone is more than fourteen (14) days after the milestone completion date specified in the Agreement, as applicable.
- iii) The current calculated completion date of the project is more than thirty (30) days after the lattermost of the Final Completion date or its extension.

**C. Progress Deficiency and Schedule Slippage** – When a monthly progress evaluation shows that the actual progress of the Work is unsatisfactory, the VDOT Project Manager will issue a written notice of unsatisfactory performance to the Design- Builder. Within 14 days from the date of receipt of the VDOT Project Manager’s notice, Design-Builder shall respond by submitting a written statement describing any actions taken or proposed by the Design-Builder to correct the progress deficiency. If the Design-Builder’s response includes a proposed recovery plan, the current progress schedule update shall be modified accordingly to show the Design-Builder’s proposed recovery plan. Design-Builder may submit to the VDOT Project Manager a written explanation and supporting documentation to establish that such delinquency is attributable to conditions beyond its control. If the VDOT Project Manager approves the Design-Builder’s recovery plan, the modified progress schedule update showing the recovery plan will be treated as the current update and will not replace the SOR.

If the Design-Builder fails to respond within the time required, or the response is unacceptable, its prequalification status may be changed as provided in Section 102.01 of Part 5, and the Design-Builder may be temporarily disqualified from bidding on contracts with the Department as provided in Section 102.08 of Part 5, if progress remains unsatisfactory at the time of preparation of the next monthly progress estimate. The VDOT Project Manager may postpone taking these actions when a time extension is under consideration.

## **5. Schedule Impact Analysis (SIA)**

In the event of an excusable delay that extends the completion date of the project beyond the Final Completion date, for which Design-Builder is seeking an extension of the contract time limit, it shall submit a request for an adjustment to the Agreement within the time period specified in Article 8 of Part 4 – General Conditions, unless directed otherwise in writing by the Engineer. For requests for prospective changes or delays Design-Builder shall prepare and submit a SIA based on the TIA method. For requests for other delays Design-Builder shall prepare and submit a SIA based on the Contemporaneous Impact Analysis method. The Design-Builder shall submit along with its request for an adjustment to the Contract a SIA statement and applicable SIA schedules in accordance with the following:

### **1. SIA Statement** – The SIA statement shall include the following.

- i) A description of the delay event, including time, date, and location of the event, if appropriate.
- ii) An explanation of why the delay constitutes a change to the Agreement, including references to applicable portions of the Contract.
- iii) A description of the activities or work items affected and any impact on the

project critical path, milestones, or completion date of the project, as applicable.

- iv) A description and reasons for any shifts in the project critical path relative to the preceding schedule update for each schedule update contemporaneous with the delay event, as applicable.
- v) A description and reasons for any revisions made to the SIA schedules since the previous submission, including added or deleted activities, and changes in logic, activity durations, calendars, and constraints.
- vi) A SIA summary showing for each SIA schedule as described herein, the data date and calculated completion dates for all applicable milestones and the project completion date. The SIA summary shall also show any differences in the calculated finish dates for each successive SIA schedule relative to the previous SIA schedule. Any schedule slippages shall be categorized appropriately as excusable compensable, excusable non-compensable, or non-excusable.
- vii) Any actions taken or needed to avoid or mitigate the delay impacts.
- viii) Any additional information needed to justify the request or facilitate timely resolution of the issue.

**2. SIA Schedules** – The SIA submission shall include as applicable:

- i) The SOR in place prior to the date the delay event started, showing the project critical path, affected activities, and any applicable milestones.
- ii) The most recently accepted project schedule update in place prior to the date the delay event started, showing the affected activities, project critical path, and any applicable milestones, including any variances in the durations and completion dates relative to the SOR.
- iii) A pre-delay schedule update showing the current status of the affected activities, project critical path, and any applicable milestones, including any variances in the durations and completion dates relative to the most recently accepted project schedule update in place prior to the date the delay event started.
- iv) Any contemporaneous project schedule updates submitted during the delay event showing the current status of the delay event, affected activities, project critical path, and any applicable milestones, including any variances in the durations and completion dates relative to the previous submission.
- v) A post-delay impacted schedule, showing the current status of the delay event, affected activities, project critical path, and any applicable milestones, including any variances in the durations and completion dates relative to the previous submission.