



MVSD • YOUR COMMUNITY WATER SUPPLY
Member Cities: Youngstown and Niles
www.meanderwater.org

SCHEDULE GUIDANCE DOCUMENT

June 2019

MVSD Schedule Guidance Document

Contents

1. Purpose	1
2. Applicability and Basic Requirements	1
3. Baseline Schedule.....	3
3.1. General	3
3.2. Schedule Work Breakdown Structure and Activities	3
3.3. Baseline Schedule Development	7
3.4. Changes to Approved Baseline Schedule.....	8
4. Project Schedule Requirements/Completion	8
4.1 Project Start Date:	8
4.2 Constraint of Last Activity	8
4.3 Interim Completion Dates (Milestones)	9
4.4 Default Progress Data Disallowed	9
4.5 Out of Sequence Progress.....	9
4.6 Negative Lag	9
4.7 Definition of, and Conditions Relating to Float	9
5. Progress Schedule.....	9
5.1. Progress Updates	9
5.2. Schedule Narrative	10
6. Additional Guidance Applicable to Contractor Schedules Only	10
6.1. Schedule of Value Pay Items.....	10
6.2. Monthly Progress Schedule Submittal Requirements	10
7. Submittal of Schedules	12
7.1. Submittal File Formats	12

Exhibit A – Sample Design Schedule

Exhibit B – Sample Construction Schedule

1. Purpose

One of the most important tools the Mahoning Valley Sanitary District (MVSD) uses to achieve capital improvement projects on schedule and under budget is accurate, updated, current schedules. Accurate and updated schedules allow the District to effectively track and manage its projects at the program and project-by-project. The purpose of the Construction Progress Schedule is to allow the Contractor to prepare an orderly plan to aid in the timely completion of the Project.

For clarity, the term Project Manager is used for activities performed by the Consultant and/or Design Consultants Project Manager, depending on the party with contractual responsibility for their timely completion in accordance with applicable General Conditions.

The approved Construction Progress Schedule will be used to plan and execute the work, to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis for all progress payments.

This Schedule Guidance Document is designed to guide contractors and consultants in preparing and submitting acceptable schedules for use by the District.

2. Applicability and Basic Requirements

Contractors and consultants are responsible for preparing schedules as defined herein and as required in their contracts and agreements. A waiver allowing a contractor or consultant not to prepare a schedule in accordance with this Schedule Guidance Document may only be granted by the District's Chief Engineer or designee.

2.1 Definitions

Activity - A fundamental work element of a project. It contains all the necessary information to perform the required work. It is the lowest level of a work breakdown structure.

Actual Start Date - The point in time that work actually started on an activity.

Actual Finish Date - The point in time that work actually ended on an activity. Note: in some applications areas, the activity is considered "finished" when work is "substantially complete."

Baseline Schedule - The original plan against which your progress is measured. The baseline represents the original plan at the onset of the project of what you expect to happen. The baseline is saved once the schedule is presented to the stakeholders and other interested parties, and has been agreed to by all parties.

Critical Path - The path of activities through a network diagram that determines the project's earliest finish date. The critical path will generally change from time to time as activities are completed ahead of or behind schedule. Although normally calculated for the entire project, the critical path can also be determined for a milestone or subproject. The critical path is usually defined as those activities with float less than or equal to a specified value, often zero.

Critical Path Method (CPM) - A network analysis technique used to predict duration by analyzing which sequence of activities (which path) has the least amount of scheduling flexibility (the least amount of float). Early dates are calculated by means of a forward pass using a specified start date. Late dates are calculated by means of a backward pass starting from a specified completion date (usually the forward pass's calculated project early finish date).

Deliverable – Any measurable, tangible, verifiable outcome, result, or item that must be produced to complete a project or part of a project. Often used more narrowly in reference to an external deliverable, this is a deliverable that is subject to approval by the project sponsor or customer.

Duration – The number of working days (not including holidays or other non-working periods) to complete an activity or other project element.

Early Dates - Earliest an activity can start or finish based upon relationships and constraints. Calculated by the computer during the forward pass.

Filter - A limit on projects or activities that are displayed. Criteria you establish determine which items appear. A filter, once created, can be assigned to layouts.

Fragnet – A subdivision of a project network diagram usually representing some portion of project. A Fragnet is provided as part of a Time Impact Evaluation (TIE) Form DC-161.

Free Float - The amount an activity can slip without delaying the next activity. This could be important for resource management.

Late Dates – “Drop dead dates”. The latest an activity can start or finish without effecting the end date of the project. Calculated by the computer during the backward pass.

Milestone - A type of activity used to represent the beginning or the end of a major stage, or an important event in a project. Start and finish milestones cannot have durations.

Predecessor - An activity that must occur before another activity. A predecessor activity controls the start or finish date of its successors. An activity can have multiple predecessors.

Preliminary Schedule – Initial schedule prior to the baseline schedule reflecting how the contractor plans to proceed with constructing a project.

Recovery Plan – Contractor’s plan to bring the project back on schedule. This includes a revised CPM schedule and additional manpower and equipment.

Relationships Types

Finish to Start - The successor activity can begin only when the current activity completes

Finish to Finish – The finish of the successor activity depends on the finish of the current activity

Start to Start – The start of the successor activity depends on the start of the current activity

Start to Finish – The successor activity cannot finish until the current activity starts

Remaining Duration – The time needed to complete an activity.

Successor - An activity that must occur after another activity. An activity can have multiple successors, each with a different relationship to it. Every activity must have a successor except the project’s finish milestone.

Total Float - The amount of time an activity can be delayed without delaying the project finish date.

Updated Schedule – A schedule that truly reflects the current means and method how the project is progressing.

Work Breakdown Structure (WBS) - A deliverable-oriented grouping of project elements, which organizes and defines the total scope of the project. Each descending level represents an increasingly detailed definition of a project component.

Working Schedule – A schedule utilized for duration of a project for creation of the baseline schedule and updates.

2.2 Basic Elements to Schedule Delivery

There are three (3) basic elements to schedule submittals.

1. **Baseline Schedule.** Initial schedule submitted before work begins that will serve as the baseline for measuring progress and departures from the schedule. The **Baseline Schedule** is prepared by the contractor or consultant at the beginning of the project and submitted to the District for review and approval.
2. **Progress Schedule.** Monthly submittal of a progress schedule documenting progress on the project and any changes anticipated. The **Progress Schedule** is prepared monthly by the contractor or consultant and submitted to the District.
3. **Schedule Narrative.** Concise narrative that highlights changes in the schedule, expected delays, key schedule issues, etc., along with a cash flow graph or summary table. The **Schedule Narrative** is submitted to the District monthly in conjunction with the Progress Schedule.

The computer software utilized by the Project Manager to produce the project schedule will be Primavera Products as marketed by Primavera Systems, Inc. or a substitution accepted by the District. The software utilized by the Project Manager must be able to produce a cost loaded CPM schedules with clearly defined logic.

3. Baseline Schedule

3.1. General

The contractor or consultant will develop a cost loaded Schedule using the software version required in Section 2 and the Critical Path Method (CPM).

The District will inform the contractor or consultant of the Project Code (Oracle Number) for the Project. The file naming convention is demonstrated in the examples below.

Baseline

Format. Project Number_ACRONYM_DocumentType_Date_ Example.

G102_PSB_ScheduleBaseline_09162011_.XER

Monthly Update

Format. ProjectCode(oracle number)_ACRONYM_DocumentType_Date_ Example.

G102_PSB_ScheduleUpdate_09162011_.XER

Monthly Schedule Narrative

Format. ProjectCode(oracle number)_ACRONYM_DocumentType_Date_ Example.

G102_PSB_ScheduleNarrative_09162011_.DOC

The approved Baseline Schedule is a part of the contract or agreement by reference. The contractor or consultant has the sole responsibility to correct any latent defects in its Baseline Schedule and perform to the subsequently revised schedule.

The contractor or consultant will use the Baseline Schedule to coordinate and monitor the work (including the activities of subcontractors, equipment vendors and suppliers).

The contractor or consultant must keep a copy of the approved baseline schedule.

3.2. Schedule Work Breakdown Structure and Activities

3.2.1. Work Breakdown Structure (WBS)

The District's Work Breakdown Structure (WBS) is designed to meet the basic reporting needs for

the District's financial and tracking systems. The consultant and/or contractor's project-specific WBS should work within this basic framework and provide additional detail to efficiently deliver and track the work.

WBS elements that are definitely not a part of the scope of services need not be included in the schedule. Note that as many subtasks and activities as desired may be included underneath the WBS elements.

3.2.2. Critical Path Method

The Critical Path Method (CPM) of network calculations will be used to generate the schedule. The Schedule Manager shall provide the schedule in either the Precedence Diagram Method (PDM) or the Arrow Diagram Method (ADM)

3.2.3. Activities

Activities are the discrete elements of work that make up the schedule. They should be organized underneath the umbrella of the WBS as described in Exhibit A.

The following information should be provided for each activity:

3.2.3.1. Activity ID Number

- Use a four-digit number left justified in the activity I.D. field.
- Alphanumeric activity numbers are NOT acceptable.

3.2.3.2. Activity Description

Activity descriptions should adequately describe the activity and in some cases the extent of the activity. Examples of acceptable descriptions might include "install pipeline between Avenue A and Avenue B", "water line route layout", etc.).

3.2.3.3. Activity Durations (Applies to Contractor Schedules Only)

The activity duration will be based upon the physical amount of work that is to be performed for the stated activity and are limited to 20 working days. If work is to exceed 20 days, then break the work down so the work will be completed within a 20 day time frame.

Submit the following data to support the schedule calendar as it relates to durations. Failure of the Project Manager to include this data will delay the review of the submittal until the District receives the missing data.

The proposed number of working days per week.

The holidays to be observed during the life of the contract (by day, month and year).

The planned number of shifts per day.

The number of hours per shift.

Break up the work into activities of a duration no longer than 20 work days each, except as to non-construction activities (e.g., procurement of materials, delivery of equipment, concrete and asphalt curing) and any other activities for which the Owner may approve a longer duration.

3.2.3.4. Activity Durations (As Applied to Consultant Schedules Only)

Activities should be selected that adequately describe the work to be performed. In selecting activities to complete the schedule, activities generally should be either

- 30 days in duration or less, or
- \$50,000 in value or less, or
- a clear example of a level of effort activity over its duration (e.g., CA support during

construction), or

- an intense task of duration greater than 30 days, but less than 180 days, that is amenable to accurately estimating percent complete monthly (e.g., 30% design plan preparation – statused based on percent of 30% plan sheets completed each month).

The intent of this requirement is to ensure that the activities are segmented sufficiently to adequately track progress.

3.2.3.5. Activity Start and Finish Dates

Activity start and finish dates will only be accepted if calculated by the software.

Actual activity start and finish dates may not be assigned in a baseline. However they must accurately be assigned in the working version of the schedule (see Section 4 Progress Schedule).

3.2.3.6. Activity Relationships

All activities, except the first activity, shall have a predecessor(s). All activities, except the final activity, shall have a successor(s).

Use only finish-to-start relationships with no leads or lags to link activities, or use start-to-start relationships with lags no greater than the predecessor duration to link activities.

Use of finish-to-finish relationship is permitted when both activities are already linked with a start-to-start relationship. All activities will be logically tied with a predecessor and a successor. The only exception to this rule will be for the project start and project finish milestones.

3.2.4. Level of Detail Required

With the exception of the preliminary schedule submission, the Progress Schedule shall include an appropriate level of detail. Failure of the Project Manager to develop or update the schedule or provide resource information will result in the disapproval of the schedule.

3.2.4.1. Procurement Activities:

Prepare the schedule in chronological order of submittals. Show specification section of the submittal, name of contractor and generic description of work covered. Include activities to cover the complete procurement process to include but not limited to: submittal, review, approval, resubmittal, procurement, fabrication, delivery, permits, and similar pre-construction work.

3.2.4.2. Manpower:

Activities shall have an estimate of the average number of workers per day that are expected to be used during the execution of the activity.

Identification of manpower, material, or equipment restrictions, as well as any activity requiring unusual shift work, such as two shifts per day, six day work week, specified overtime, or work at times other than regular days or hours shall clearly be identified in the Project Schedule.

Critical or near Critical Paths resulting from the use of manpower or equipment restraints shall be kept to a minimum. Near Critical Paths are defined as paths having 10 workdays or less of total float.

3.2.4.3. Cost:

All activities shall be cost loaded in a logical manner tying to each Design Consultant's planned activities and/or the Contractor's Schedule of Values.

3.2.4.4. Responsibility:

All activities shall be identified in the Construction Progress Schedule by the party responsible to perform the work. Responsibility includes, but is not limited to, the Contracting Firm, the Subcontracting Firm, Contractor Workforce, or Agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

3.2.4.5. Work Orders, Change Order or Claim Number:

Any activity that is added or changed by a work order, change order or used to justify any claimed time, shall be identified by change order code that changed the activity. Activities may not belong to more than one change order. Only Construction Progress Schedule changes that have been previously approved by the District shall be included in the schedule submission. The narrative report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

The Contractor shall prosecute the work in accordance with the approved Construction Progress Schedule. Out of sequence construction, defined as a change from the Construction Progress Schedule in the Contractor's actual operation requires documentation in the monthly Schedule Narrative.

Upon the approval of a work the agreed upon work order activities, activity durations, logic and impacts shall be reflected in the next schedule submittal by the Schedule Manager.

No change to the approved activities, original activity durations, logic, interdependencies, milestones, planned sequence of operations, or resource loading of the Construction Progress Schedule shall be made without prior approval from the DISTRICT. If the Contractor desires to make a change to the approved Construction Progress Schedule, the Contractor shall request permission from the DISTRICT in writing, stating the reasons for the change as well as the specifics, such as the proposed changes in activities, original activity durations, logic, interdependencies, milestones, planned sequence of operations, or resource loading of the baseline Construction Progress Schedule. The DISTRICT shall respond within 14 calendar days after the receipt of the Contractor's request.

If the DISTRICT considers the Construction Progress Schedule change requested by the Contractor to be a major change, it may require the Contractor to revise and submit for approval, without additional cost to the Owner, all of the affected portions of the network diagrams, and any schedule reports, or construction equipment reports deemed necessary to show the probable effect on the entire project. The proposed network revision and required reports shall be submitted to the DISTRICT within seven calendar days after the DISTRICT notifies the Contractor that the requested revision is a major change. Only upon the approval of the requested change by the DISTRICT may it be reflected in the next Construction Progress Schedule update submitted by the Contractor.

A change will be considered of a major nature if the time estimated for an activity or sequence of activities is varied from the original plan to the degree that there is reasonable doubt that the Contract Completion date or milestones will be met, or if the change impacts the work of other Contractors at the job site. Changes to activities having adequate float may be considered as minor changes, except that an accumulation of minor changes may be considered a major change when such changes affect the Contract Completion date or milestones.

Work order allowance items will be Level of Effort or as accepted by the DISTRICT. A custom resource curve (30%, 30% and 40% Spending for 90%, 95% and 100% Duration Complete) should be used in allowance items.

3.2.4.6. Seasonal Weather Conditions

Any winter shutdown periods proposed shall be shown using non-work calendars. The activity can be assigned to a calendar indicating time periods of non-work. These custom calendars can be

created to show days, weeks, or months of non-work. Seasonal weather conditions shall be considered and included in the planning and scheduling of all work.

3.2.5 Milestone Activities

Milestone dates are defined in calendar days following the date set forth in the Notice to Proceed and are required to be met by all Consultants and Contractors. Time is of the essence for the completion of Milestones and for the Contract Completion date.

The following milestone activities (i.e., important events on a project that mark critical points in time) are of particular interest to the District and should be reflected in the Project Schedule for all phases of work, as applicable.

3.2.5.1. Consultant Schedule (Engineering Design Example)

- Notice to Proceed
- Basis of Design Report Submittal
- 30 percent Plans and Specification Submittal
- 60 percent Plans and Specification Submittal
- 90 percent Plans and Specification Submittal
- Design Complete
- Specific/General Allowance – Note: District can provide a custom resource curve for allowance spending for the baseline schedule, if the consultant does not have a planned time to utilize the allowance funding. Normally, a backload curve (30%, 30%, and 40% Spending for 90%, 95%, and 100% Duration Complete) is used.

3.2.5.2. Contractor Schedule

- Notice to Proceed (Construction)
- Draft Baseline Schedule submittal
- Preparation and submission of shop drawings, submittals, and any required re-submittals (if applicable)
- Mobilization
- Fabrication and delivery of equipment and materials (if applicable)
- Substantial Completion
- Construction Complete
- Specific/General Allowance – Note: District can provide a custom resource curve for allowance spending for the baseline schedule, if the consultant does not have a planned time to utilize the allowance funding. Normally, a backload curve (30%, 30%, and 40% Spending for 90%, 95%, and 100% Duration Complete) is used.

3.3. Baseline Schedule Development

The contractor or consultant will designate an authorized representative (Project Scheduler) responsible for developing and updating the schedule and preparing reports. It is recommended that a qualified scheduler develop the baseline schedule.

The contractor's or consultant's initial schedule submittal will contain NO progress and represent the planned work for the duration of the project. Once approved by the District, this schedule will become the baseline against which all future variance analysis will be performed.

The use of activity external constraint dates and lags on relationships is discouraged unless specified or approved by the District. An example of an external constraint date is "concrete placement will begin no later than January 1." The reason for this requirement is that it creates an artificial (rather than calculated) critical path.

The baseline Schedule will consider delivery lead times, construction and access constraints and the coordination of construction with District operations.

3.3.1. Safety Requirements

Schedule performance should never take precedence over safety. Project schedules must allow work to be performed in a safe manner.

The contractor or consultant cannot reduce safety or worker protection in order to shorten schedules, recover lost time or accelerate the work.

3.3.2. Inclement Weather

Refer to climatology data for anticipating work that can be affected by inclement weather. Historical rain days can be reviewed from the following web site:

<https://www.ncdc.noaa.gov/cdo-web/search>

3.4. Changes to Approved Baseline Schedule

The approved baseline schedule is the basis for measuring progress on the project (see Section 4, Progress Schedule). As such, the contractor or consultant should develop the baseline schedule considering the realistic delivery of the work tasks and likely constraints.

Changes to the approved baseline schedule may only be considered under limited circumstances. If warranted, any changes will require PRIOR approval by the Districts' Chief Engineer or designee. Project circumstances that could be considered by the District as potentially warranting re-baselining include the following.

- Modifications to the contract or agreement affecting the scope of the work to be performed and associated schedule
- District-directed significant changes in schedule to meet District needs
- Significant delays, well beyond customary review times and coordination, caused by District or by acts of God

4. Project Schedule Requirements/Completion

4.1 Project Start Date:

The Construction Progress Schedule may start no earlier than the date that the Notice to Proceed (NTP) was issued. The Schedule Manager shall include as the first activity in the Construction Progress Schedule an activity called "Notice to Proceed." The "Notice to Proceed" activity shall have: an "ES (early start) constraint, a constraint date equal to the date that the NTP was issued, and a zero day duration.

4.2 Constraint of Last Activity

Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the Critical Path. The Schedule Manager shall include as the last activity in the Project Schedule an activity called "Contract Complete". The "Contract Complete" activity shall have a: "LF" (late finish) constraint, a constraint date equal to the completion date equal to the date identified in the NTP for the project, and a zero day duration.

4.3 Interim Completion Dates (Milestones)

Contractually specified interim completion dates (Milestone dates) shall also be constrained to show negative float if early finish date of the last activity in that phase falls after the interim completion date.

4.4 Default Progress Data Disallowed

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in the CPM Scheduling Software Systems. Actual Start and Finish dates and Remaining Durations on the CPM Schedule shall match those dates provided from Contractor Daily Reports for every in progress or completed activity and insure that the data contained on the Daily Reports is the sole basis for schedule updating. Failure to comply may result in the disapproval of schedule.

4.5 Out of Sequence Progress

Activities that have posted progress without predecessors being completed (Out of Sequence Progress) shall be allowed only by the case by case approval of the Owner. The DISTRICT may direct that changes in schedule logic be made to correct any or all Out of Sequence Work.

4.6 Negative Lag

Lag durations contained in the schedule shall not have a negative value.

4.7 Definition of, and Conditions Relating to Float

Float is defined as 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 in the schedule. Total float is defined as the amount of time any given activity or path of activities may be delayed before it will affect the project completion time.

Float is not time for the exclusive use or benefit of the Contractor, and shall be used in the best interest of completing the project on time.

Extensions of time for performance required under the General Conditions pertaining to equitable time adjustment will be granted only to the extent that the equitable time adjustment exceeds total float in the activity or path of activities affected at the time approval was issued for the change.

Use of float suppression techniques such as preferential sequences, special lead/lag logic restraints, extended activity times, or imposed dates, other than as required by the Contract, shall be cause for rejection of the Construction Progress Schedule

5. Progress Schedule

As described in Section 3, the baseline schedule is used to coordinate and monitor the work. The contractor or consultant is required to keep a copy of the approved baseline schedule.

The Progress Schedule is simply a copy of the approved baseline schedule that will be statused monthly. In other words, progress on the project will be shown monthly as an update of the schedule that will be compared to the approved baseline schedule.

Note that the Progress Schedule will be statused (data date) through month end, although the submittal date must comply with Section 6.2 of this document.

5.1. Progress Updates

The contractor or consultant should show on the progress schedule update the following:

- The actual dates that activities start
- The actual dates that activities finish

- The remaining duration of activities in progress
- The percent complete of all activities on the schedule (0 percent to 100 percent complete).

5.2. Schedule Narrative

The progress schedule will be accompanied monthly by a concise schedule narrative that explains the submitted schedule. The purpose of the schedule narrative is to:

- Speed review time
- Explain variances from baseline on critical path activities
- Explain to the District logic changes and potential schedule conflicts related to dependences.
- Concisely summarize the projected cash flow for the project based on the statused schedule.

If the project is on schedule, and no significant issues related to schedule exist, then the schedule narrative is extremely brief. On the other hand, if the project is falling behind, and/or there are significant conflicts and obstacles to meeting the baseline schedule, then the schedule narrative should describe these issues and what steps will be necessary for the project to recover. Sharing this information ensures that the entire project team will be aware of the issues and have opportunity to assist where applicable.

The cash flow graph/table summarizes the past and future projected costs, by month, of delivering the work.

6. Additional Guidance Applicable to Contractor Schedules Only

In addition to the requirements in Sections 1-5 of this Schedule Guidance Document, the contractor's schedule will include the following.

6.1. Schedule of Value Pay Items

Schedule of Values Pay Items (Work) shall be loaded into the scheduling software using the labor and materials resource types showing the quantity of work to be done along with the corresponding value of the work measured in dollars. It is intended that Earned Value will be calculated as the schedule resources are progressed.

6.2. Monthly Progress Schedule Submittal Requirements

6.2.1. General Submittal Requirements

All schedules must be submitted in their native format (.xer file) as well as in a PDF format. The District will review, accept or reject the schedule within five (5) days of receipt of the baseline or monthly progress submittal.

6.2.2. Baseline Schedules for Professional Service Contracts

Baseline schedules for design contracts shall be uploaded directly to the *Design Folder* on the project PMS (PMWeb). Draft project baseline schedules must be submitted within thirty (30) calendar days after the formal notice to proceed from the District or as required by the Professional Services Agreement. Final, approved baseline schedules shall be completed within 45 days of the Notice To Proceed.

6.2.3. Monthly Progress Updates for Professional Service Contracts

Design consultants are required to submit progress schedule updates no later than the last Friday of the month. Monthly progress updates must be statused (data date), including projections of progress for all activities, through the end of the current month. Subsequent monthly invoices shall be based on the same data date to establish the projects current earned value, and submitted no later than the 20th of the subsequent month. All monthly schedule updates shall be submitted using the *Schedule Reviews* workflow on the PMS (PMWeb) site and shall be provided each month for the duration of the contract. Updates shall include all the requirements of section 4. *Progress Updates* (of this document) and are a required part of the Consultant invoice review and approval process. Failure to provide timely monthly schedule updates will stop or delay approval and payment of submitted invoices.

6.2.4. Baseline Schedules for Construction Contracts

Baseline schedules for construction contracts shall be submitted using the *Submittal Review* workflow on the PMS (PMWeb). Draft project baseline schedules must be submitted within thirty (30) calendar days after the formal Notice To Proceed from the District, and final, approved baseline schedules shall be completed within 90 days of the Notice to Proceed (or as specified in the Contract Documents).

6.2.5. Monthly Progress Updates for Construction Contracts

Construction contractors are required to submit progress schedule updates no later than the than 20th day of each month (or as required by the Contract). Monthly progress updates must be statused (data date), including projections of progress for all activities, through the end of the current month. Monthly updates shall be submitted using the *Schedule Reviews* workflow on the PMS (PMWeb) site and shall be submitted each month for the duration of the contract. Updates shall include all the requirements of section 4. *Progress Updates* (of this document) and are a required part of the pay application review and approval process. Failure to provide timely monthly progress updates will stop or delay approval and payment of submitted pay requests.

6.2.6. Two Week Look Ahead and Critical Path Schedules

The Project Manager shall provide a two-week Look Ahead Schedule and a Critical Path Schedule for review at the Progress Meeting that occurs closest to the 15th of each month. The Look Ahead and Critical Path Schedule will be based on the most recent monthly update and will show only those activities that are scheduled to begin or are in progress during the week before and for two weeks after the 15th of the current month. The two-week Look Ahead and Critical Path Schedule reports will contain the following information for each activity and will be required from the Contractor throughout the duration of the project unless directed otherwise by the DISTRICT.

Activity I.D.

1. Activity Description
2. Original Duration
3. Remaining Duration
4. Early Start Date
5. Early Finish Date
6. Percent Complete
7. Total Float
8. Bar Graph Presentation

7. Submittal of Schedules

7.1. Submittal File Formats

Every time that a schedule or report is submitted (baseline and monthly progress) the following file formats are required.

7.1.1. Baseline Schedule

Submit the schedule in native file format (see below)

Also submit a .pdf of the bar chart schedule consisting of the following columns:

- Activity ID
- Activity Name
- Duration
- Start Date
- Finish Date
- Float
- Cost

7.1.2. Progress Schedule

Submit the schedule in native file format (see below).

Also submit a .pdf of the bar chart schedule consisting of the following columns:

- Activity ID
- Activity Name
- Physical Percent Complete
- Duration
- Start Date
- Finish Date
- Total Float
- Budget Total Cost
- Actual Total Cost
- Remaining Total Cost

7.1.3. Schedule Narrative

Submit the schedule narrative in .doc format with each progress schedule update. The monthly narrative report is to include:

9. Activities started in the month (with actual start dates).
10. Activities completed during the month (with actual start and completion dates).
11. Activities in progress (with estimated remaining durations).
12. Activities scheduled to start in the next month (with estimated start dates).
13. A list of approved logic changes.
14. A list of proposed logic changes, new activities, and deleted activities.
15. Recommendations for adjusting the Construction Progress Schedule to meet milestone completion and Contract completion dates (include why the schedule needs adjusted, e.g., change order, weather, contractor resources, etc.).

Documentation of issues and unexpected delays including weather related delays.

16. Attach copies of the Contractors' weekly schedule reports.

7.1.4. Native Schedule File Formats

The native file structure is to export the schedule as follows:

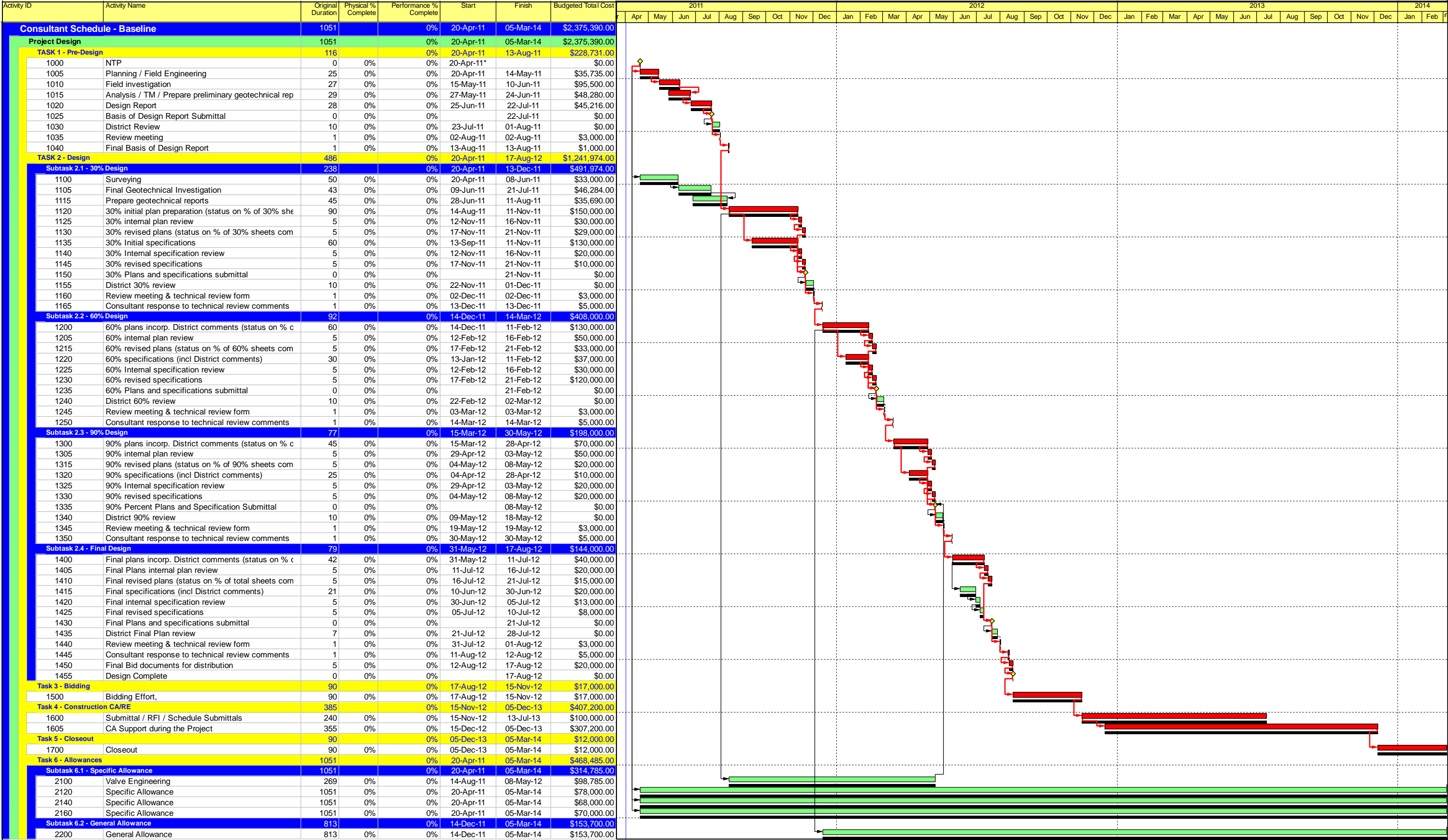
In Primavera 6

- Export the file as an xml file.

EXHIBIT A

SAMPLE DESIGN SCHEDULE

Exhibit B - Example Baseline Consultant Schedule



Actual Work Critical Remaining Work Baseline Schedule
Remaining Work Milestone

Consultant Schedule - Baseline

Exhibit C - Example Progress Consultant Schedule

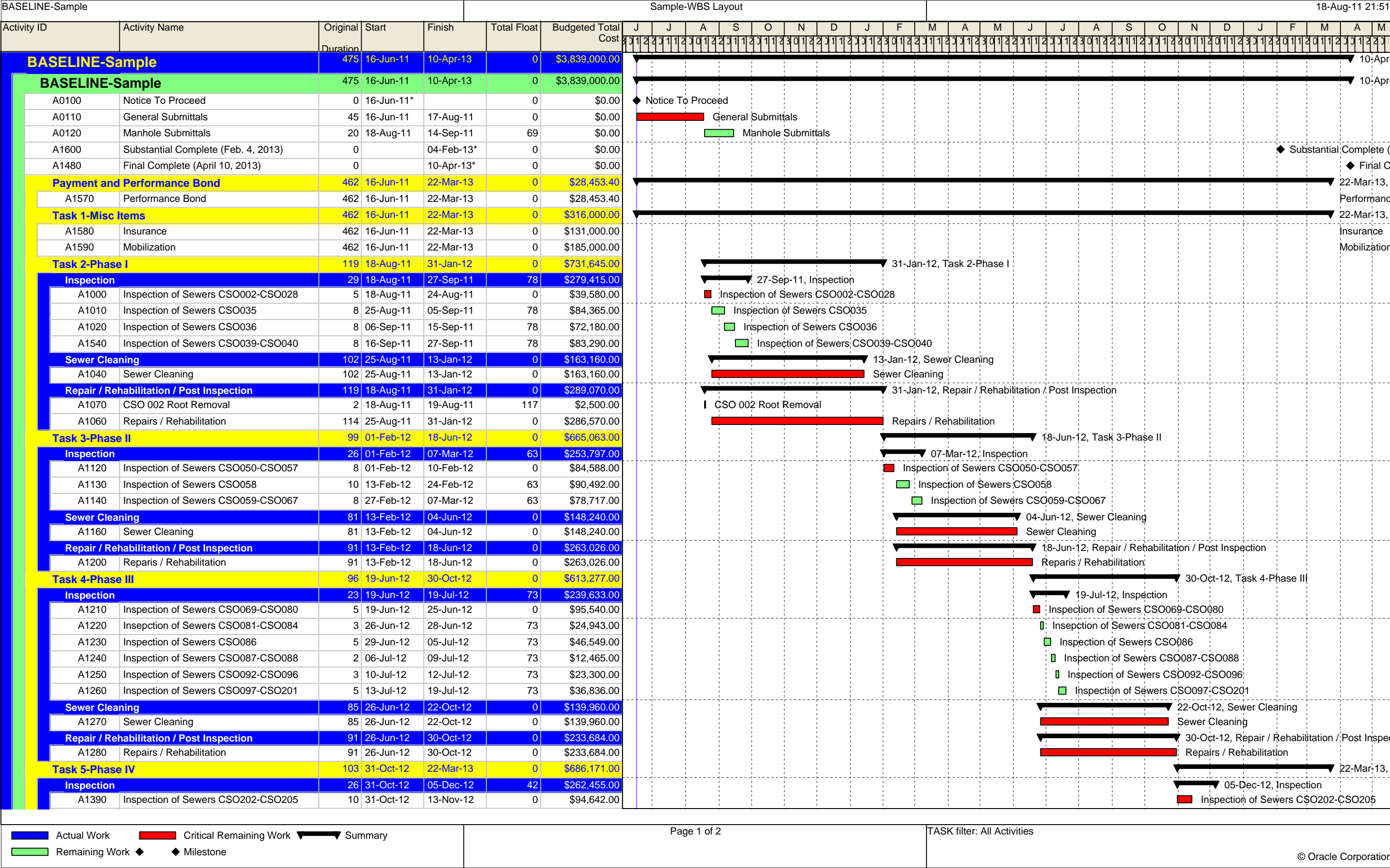
Activity ID	Activity Name	Original Duration	Physical % Complete	Performance % Complete	Start	Finish	Budgeted Total Cost	2012												2013												2014			
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
Consultant Schedule - Monthly Update																																			
Project Design		1051		18.49%	20-Apr-11 A	05-Mar-14	\$2,375,390.00																												
Task 1 - Pre-Design		116		100%	20-Apr-11 A	13-Aug-11 A	\$228,731.00																												
1000	NTP	0	100%	100%	20-Apr-11 A		\$0.00																												
1005	Planning / Field Engineering	25	100%	100%	20-Apr-11 A	14-May-11 A	\$35,735.00																												
1010	Field investigation	27	100%	100%	15-May-11 A	10-Jun-11 A	\$95,500.00																												
1015	Analysis / TM / Prepare preliminary geotechnical rep	29	100%	100%	27-May-11 A	24-Jun-11 A	\$48,280.00																												
1020	Design Report	28	100%	100%	25-Jun-11 A	22-Jul-11 A	\$45,216.00																												
1025	Basis of Design Report Submittal	0	100%	100%		22-Jul-11 A	\$0.00																												
1030	District Review	10	100%	100%	23-Jul-11 A	01-Aug-11 A	\$0.00																												
1035	Review meeting	1	100%	100%	02-Aug-11 A	02-Aug-11 A	\$3,000.00																												
1040	Final Basis of Design Report	1	100%	100%	13-Aug-11 A	13-Aug-11 A	\$1,000.00																												
Task 2 - Design		486		15.58%	20-Apr-11 A	17-Aug-12	\$1,241,974.00																												
Subtask 2.1 - 30% Design		238		39.33%	20-Apr-11 A	13-Dec-11	\$491,974.00																												
1100	Surveying	50	100%	100%	20-Apr-11 A	08-Jun-11 A	\$33,000.00																												
1105	Final Geotechnical Investigation	43	100%	100%	09-Jun-11 A	21-Jul-11 A	\$46,284.00																												
1115	Prepare geotechnical reports	45	100%	100%	28-Jun-11 A	11-Aug-11 A	\$35,690.00																												
1120	30% initial plan preparation (status on % of 30% she	90	35%	35%	14-Aug-11 A	11-Nov-11	\$150,000.00																												
1125	30% internal plan review	5	0%	0%	12-Nov-11	16-Nov-11	\$30,000.00																												
1130	30% revised plans (status on % of 30% sheets com	5	0%	0%	17-Nov-11	21-Nov-11	\$29,000.00																												
1135	30% Initial specifications	60	20%	20%	13-Sep-11 A	11-Nov-11	\$130,000.00																												
1140	30% Internal specification review	5	0%	0%	12-Nov-11	16-Nov-11	\$20,000.00																												
1145	30% revised specifications	5	0%	0%	17-Nov-11	21-Nov-11	\$10,000.00																												
1150	30% Plans and specifications submittal	0	0%	0%		21-Nov-11	\$0.00																												
1155	District 30% review	10	0%	0%	22-Nov-11	01-Dec-11	\$0.00																												
1160	Review meeting & technical review form	1	0%	0%	02-Dec-11	02-Dec-11	\$3,000.00																												
1165	Consultant response to technical review comments	1	0%	0%	13-Dec-11	13-Dec-11	\$5,000.00																												
Subtask 2.2 - 60% Design		92		0%	14-Dec-11	14-Mar-12	\$408,000.00																												
1200	60% plans incorp. District comments (status on % c	60	0%	0%	14-Dec-11	11-Feb-12	\$130,000.00																												
1205	60% internal plan review	5	0%	0%	12-Feb-12	16-Feb-12	\$50,000.00																												
1215	60% revised plans (status on % of 60% sheets com	5	0%	0%	17-Feb-12	21-Feb-12	\$33,000.00																												
1220	60% specifications (incl District comments)	30	0%	0%	13-Jan-12	11-Feb-12	\$37,000.00																												
1225	60% Internal specification review	5	0%	0%	12-Feb-12	16-Feb-12	\$30,000.00																												
1230	60% revised specifications	5	0%	0%	17-Feb-12	21-Feb-12	\$120,000.00																												
1235	60% Plans and specifications submittal	0	0%	0%		21-Feb-12	\$0.00																												
1240	District 60% review	10	0%	0%	22-Feb-12	02-Mar-12	\$0.00																												
1245	Review meeting & technical review form	1	0%	0%	03-Mar-12	03-Mar-12	\$3,000.00																												
1250	Consultant response to technical review comments	1	0%	0%	14-Mar-12	14-Mar-12	\$5,000.00																												
Subtask 2.3 - 90% Design		77		0%	15-Mar-12	30-May-12	\$198,000.00																												
1300	90% plans incorp. District comments (status on % c	45	0%	0%	15-Mar-12	28-Apr-12	\$70,000.00																												
1305	90% internal plan review	5	0%	0%	29-Apr-12	03-May-12	\$50,000.00																												
1315	90% revised plans (status on % of 90% sheets com	5	0%	0%	04-May-12	08-May-12	\$20,000.00																												
1320	90% specifications (incl District comments)	25	0%	0%	04-Apr-12	28-Apr-12	\$10,000.00																												
1325	90% Internal specification review	5	0%	0%	29-Apr-12	03-May-12	\$20,000.00																												
1330	90% revised specifications	5	0%	0%	04-May-12	08-May-12	\$20,000.00																												
1335	90% Percent Plans and Specification Submittal	0	0%	0%		08-May-12	\$0.00																												
1340	District 90% review	10	0%	0%	09-May-12	18-May-12	\$0.00																												
1345	Review meeting & technical review form	1	0%	0%	19-May-12	19-May-12	\$3,000.00																												
1350	Consultant response to technical review comments	1	0%	0%	30-May-12	30-May-12	\$5,000.00																												
Subtask 2.4 - Final Design		79		0%	31-May-12	17-Aug-12	\$144,000.00																												
1400	Final plans incorp. District comments (status on % c	42	0%	0%	31-May-12	11-Jul-12	\$40,000.00																												
1405	Final Plans internal plan review	5	0%	0%	11-Jul-12	16-Jul-12	\$20,000.00																												
1410	Final revised plans (status on % of total sheets com	5	0%	0%	16-Jul-12	21-Jul-12	\$15,000.00																												
1415	Final specifications (incl District comments)	21	0%	0%	10-Jun-12	30-Jun-12	\$20,000.00																												
1420	Final internal specification review	5	0%	0%	30-Jun-12	05-Jul-12	\$13,000.00																												
1425	Final revised specifications	5	0%	0%	05-Jul-12	10-Jul-12	\$8,000.00																												
1430	Final Plans and specifications submittal	0	0%	0%		21-Jul-12	\$0.00																												
1435	District Final Plan review	7	0%	0%	21-Jul-12	28-Jul-12	\$0.00																												
1440	Review meeting & technical review form	1	0%	0%	31-Jul-12	01-Aug-12	\$3,000.00																												
1445	Consultant response to technical review comments	1	0%	0%	11-Aug-12	12-Aug-12	\$5,000.00																												
1450	Final Bid documents for distribution	5	0%	0%	12-Aug-12	17-Aug-12	\$20,000.00																												
1455	Design Complete	0	0%	0%		17-Aug-12	\$0.00																												
Task 3 - Bidding		90		0%	17-Aug-12	15-Nov-12	\$17,000.00																												
1500	Bidding Effort,	90	0%	0%	17-Aug-12	15-Nov-12	\$17,000.00																												
Task 4 - Construction CA/RE		385		0%	15-Nov-12	05-Dec-13	\$407,200.00																												
1600	Submittal / RFI / Schedule Submittals	240	0%	0%	15-Nov-12	13-Jul-13	\$100,000.00																												
1605	CA Support during the Project	355	0%	0%	15-Dec-12	05-Dec-13	\$307,200.00																												
Task 5 - Closeout		90		0%	05-Dec-13	05-Mar-14	\$12,000.00																												
1700	Closeout	90	0%	0%	05-Dec-13	05-Mar-14	\$12,000.00																												
Task 6 - Allowances		1051		3.62%	20-Apr-11 A	05-Mar-14	\$468,485.00																												
Subtask 6.1 - Specific Allowance		1051		5.39%	20-Apr-11 A	05-Mar-14	\$314,785.00																												
2100	Valve Engineering	269	15%	15%	14-Aug-11 A	08-May-12	\$98,785.00																												
2120	Specific Allowance	1051	1%	1%	20-Apr-11 A	05-Mar-14	\$78,000.00																												
2140	Specific Allowance	1051	1%	1%	20-Apr-11 A	05-Mar-14	\$68,000.00																												
2160	Specific Allowance	1051	1%	1%	20-Apr-11 A	05-Mar-14	\$70,000.00																												
Subtask 6.2 - General Allowance		813		0%	14-Dec-11	05-Mar-14	\$153,700.00																												
2200	General Allowance	813	0%	0%	14-Dec-11	05-Mar-14	\$153,700.00																												

 Actual Work
 Critical Remaining Work
 Baseline Schedule
 Remaining Work
 Milestone

Consultant Schedule - Monthly Update

EXHIBIT B

SAMPLE CONSTRUCTION SCHEDULE



UPDATE-Sample				Sample-WBS Layout												18-Aug-11 22:11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Activity ID	Activity Name	Physical % Complete	Original Duration	Start	Finish	Total Float	Remaining Total Cost	1	2	3	0	1	2	0	1	1	2	0	0	1	2	3	0	1	2	2	0	1	1	2	0	0	1	2	0	1	1	2	0	1	1	2	0	0	1	2	0	0	1	2	2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	A1400	Inspection of Sewers CSO206-CSO224	0%	8	14-Nov-12	23-Nov-12	42	\$87,852.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</