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STEVENS

Advanced Project Controls



Over the past two decades, Stevens has incorporated variations of our Advanced Project Controls system on numerous large high-profile capital projects with great success. These projects ranged from several hundred to over 1 million man hours in size.

The key driver of Stevens' Project Control is schedule, budget and resource management. Our methods help to measure project performance, anticipate problems, and make adjustments to keep the project on track. Communication between Stevens' timesheet application, accounting system and schedul-

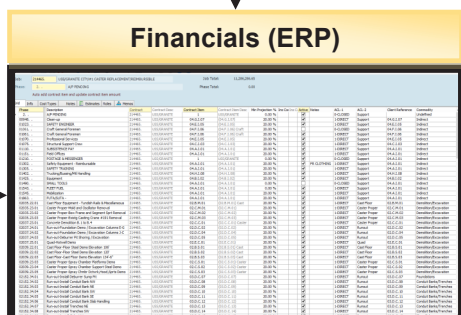
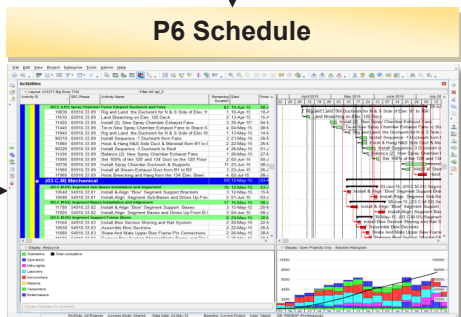
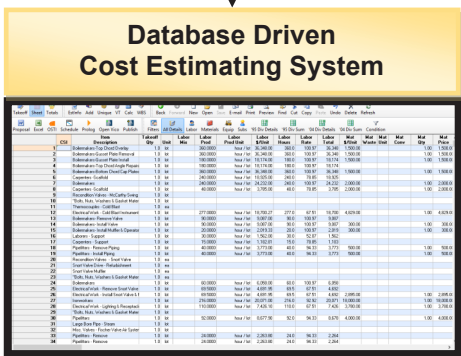
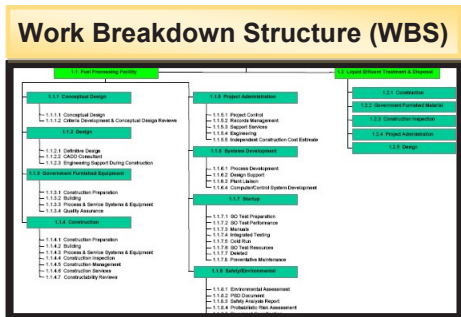
ing software are key to its success. Each piece plays a vital part in tracking the progress of the project and allows timely and accurate information, adaptable to virtually any project requirement and is highly customizable. Steven's Project Controls system is capable of meeting the most complex and demanding project reporting requirements.

Earned Value Management (EVM) is a vital by-product of Steven's Advanced Project Controls system.



Stevens Advanced Project Controls Management

SEC Advanced Project Controls (APC)



The Process Starts with a well defined WBS structure

A work breakdown structure (WBS) in project management is a deliverable-oriented decomposition of a project into smaller components. A work breakdown structure is a key project deliverable that organizes the team's work into manageable sections. An important design principle for work breakdown structures is called the 100% rule. The 100% rule states that the WBS includes 100% of the work defined by the project scope and captures all deliverables – internal, external, interim – in terms of the work to be completed, including project management. The 100% rule is one of the most important principles guiding the development, decomposition and evaluation of the WBS.

Database Driven Estimating System

Database driven estimating systems have the same features as spreadsheets but are able to incorporate and integrate multiple processes and procedures into a single entry solution. Many contractors are deserting spreadsheets and moving toward database driven estimating systems because they can incorporate more of their internal processes and procedures like lead tracking, proposal writing, project management, scheduling, and job cost accounting into their estimating system. SEC's estimating system communicates bi-directionally with our planning and scheduling systems. The system allows for benchmarking and can also consume BIM and other 3D models resulting in efficient and more accurate take-offs.

CPM Scheduling—Oracle Primavera P6

SEC uses Oracle's P6 PPM for most of its planning and scheduling requirements. P6 is the de facto standard for managing large capital projects. A master schedule is created in Primavera P6 from the work packages, showing the sequence of the work as well as the relationships between the work activities. The master schedule can be further managed in P6 to provide project, intermediate and detailed schedules. While developing the schedule, technical and other milestones are identified and completion dates are forecasted. Resources are loaded in P6 for the applicable WBSs providing for time-phased performance review. Finally, baseline schedules are set-up to monitor variances between the planned and actual performance, and planned and actual costs and units.

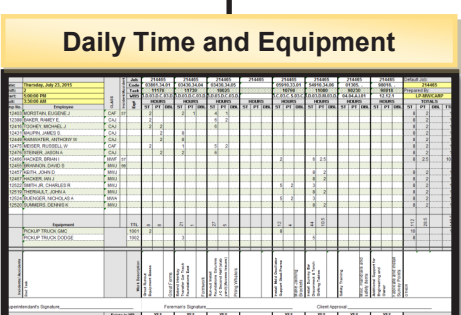
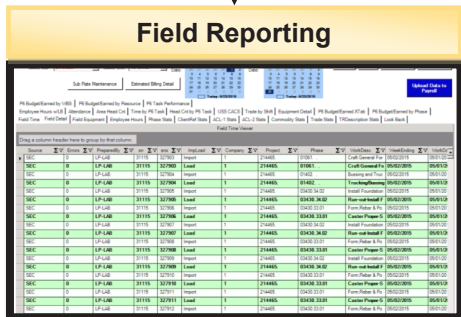
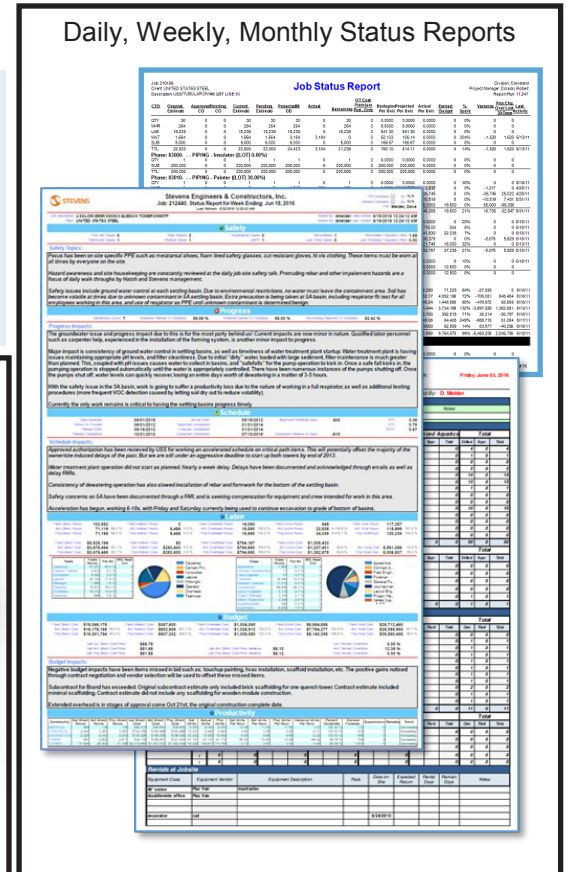
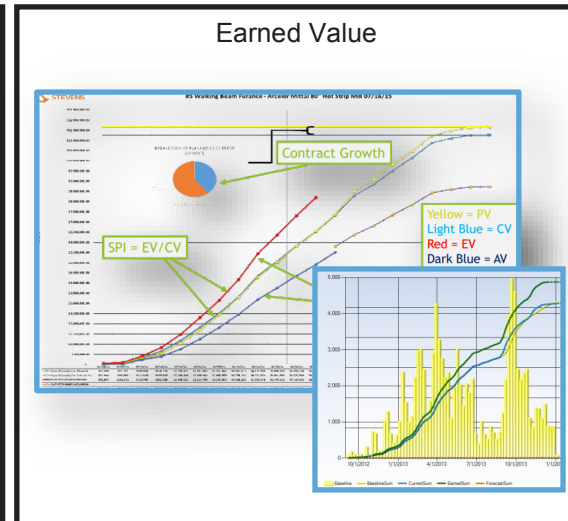
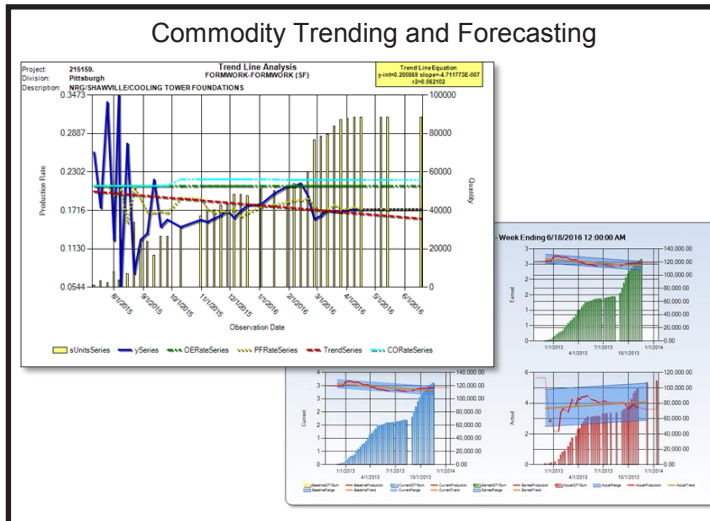
Financials (ERP) - VISTA by Viewpoint

The backbone of SEC's project control system is a customized version of the award winning VISTA by Viewpoint construction software. In addition, Stevens has a web-based project reporting system to provide project management metrics. Project cost information is collected according to established accounting principles on a daily and weekly basis. Every night, automated IT processes are run to access Viewpoint data and generate reports for every active project. These reports provide information on each project's transactions related to actual costs, as well as procurement and contract activities.

APC Reporting

Advanced Project Control (APC) Reporting

The intelligence built into SEC's Advanced Project Control system (APC) is adaptable to the most demanding project reporting requirements. Complex reporting that would normally require many hours of dedicated staff can now be readily produced on-demand at virtually any frequency in time. Stevens' APC is able to provide key performance indices (KPIs) for each project. The planned performance is measured against the actual performance for each WBS element, as well as budgeted costs against the actual costs, and the KPIs are generated. Using these metrics, the cost and schedule performance of the project can be managed, and a performance forecast can be created for the remaining activities. Types of reporting includes Earned Value, Schedule Performance Index (SPI), Cost Performance Index (CPI), Commodity Productivity, Trending and Forecasting, and comprehensive Job Status Reporting.



SEC Field Reporting Module

At the core of SEC's Advanced Project Control system is our proprietary Field Reporting program. The program was developed using state-of-the-art .Net technology and SQL Server. The program can be adapted to virtually any project requirements. The program seamlessly integrates with systems such as estimating, scheduling and financial systems among others. The Field Reporting Module captures detailed data down to the scheduled task level. Analysis can be performed at various levels of detail including Work Breakdown Structure (WBS), Phase, Client Reference, Area, Commodity, Trade, and Classification. Attendance and head count metrics are also available as needed. Data can be easily exported for analysis in Excel pivot tables.

Daily Time and Equipment

Another proprietary system developed by SEC is the our Daily Time and Equipment tracking program. Time and equipment is recorded directly against the active project schedule tasks. Records are automatically translated to the proper financial system codes for import into our accounting system for processing. Detailed time and equipment records are maintained against scheduled tasks. The system also advises the user of the current status of the scheduled task along with financial indicators. The real-time communications with the P6 schedule and financial system dramatically reduces incorrect time and equipment entries and allows for reconciliation of the data long before incorrect information gets into the system.

Document Management

A key function of any successful project is maintaining up-to-date and easily accessible project documents. SEC relies on secure access to our SharePoint systems to maintain project documentation. Documents are fully indexed and searchable for easy and rapid retrieval. SEC maintains job specific SharePoint sites with roles, workflows and security tailored to that environment. Job specific sites can be securely accessed over the internet from any desktop or mobile device with appropriate security credentials.



Stevens and EVM



When it comes to job costs, the one thing every contractor needs is perspective. If costs are running low, that's probably a good thing — but it could be that you're not making much progress through the job schedule and the project is in danger of falling extremely behind. If costs are running high, that's generally a bad thing — unless the scope of the job is shifting and you stand an excellent chance of recouping much of those high costs in change orders.

With project data coming at you from all directions, obtaining the perspective needed to properly assess these situations isn't easy. One way to process this information more efficiently and draw critical strategic conclusions is Earned Value Management (EVM).

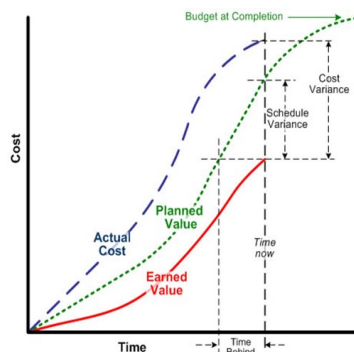
EVM is a systematic process used to measure project performance at various times throughout the life of a project. EVM helps project managers to determine whether a project is over or under budget, or if the project is on schedule. Project managers can also use EVM to compare the actual work performed to the work that was originally planned for the project at a specific period, and to forecast project performance.

Monitoring your project's performance involves determining whether you're on, ahead of, or behind schedule and on, under, or over budget. But just comparing your actual expenses with your budget can't tell you whether you're on, under, or over budget — which is where EVM comes in.

Measuring Progress

Under EVM, every project begins with a detailed plan that identifies the work to be accomplished and, as the job progresses, compares "planned value" with "earned value."

Planned value is the authorized work combined with the approved budget and authorized timeframe, while earned value is the authorized work completed and its original budget. The difference between the two is schedule variance; the difference between earned value and actual costs is cost



variance.

For example, consider a task budgeted for \$1,000. On a given day, you find you've spent the \$1,000 and are happy to see you're right on target. But a closer look using EVM reveals that the work is behind schedule and you've actually reached only \$750 in earned value. Thus, what appears to be an on-budget task is really a cost overrun.

Reassurance

Because EVM helps you know exactly where you are every step of the way, you can be assured that you are being billed for only work that was done in accordance with the contract.

Avoiding Anxiety

EVM measures job progress in dollars, giving you an unbiased assessment of both cost and schedule performance. Granted, you probably know how much you spend as a job progresses. But you may not take into account how much work has been accomplished.

For instance, let's say you have a \$1 million project that's scheduled to take six months to complete. After four months, you've spent \$600,000 — much more than you anticipated when you planned the job. With no more information, you're likely to panic.

EVM can provide such insights — improving your cash flow, serving as an early warning system, preventing scope creep and keeping the team focused on work that needs to be completed.

How does Stevens Utilize Earned Value Management?

Utilization of Work Breakdown Structure (WBS) - Project managers at Stevens' measure key project deliverable that organizes the team's work into manageable



sections. A project budget can be allocated to the top levels of the work breakdown structure, and department budgets can be quickly calculated based on the each project's work breakdown structure. By allocating time and cost estimates to specific sections of the work breakdown structure, a project schedule and budget can be quickly developed.

Use of Resource loaded

schedule - Project-related schedules consist of a timeline with details on allocated resources, planned activities and preset milestones. The resource loaded schedule of a project provides a great visual representation of how available project resources are allocated to scheduled activities.

Analyzing cost while executing project

Planned Value and Actual Cost are two very basic elements of earned value management which give you a basic overview of your project status. Planned Value is the money that you should have spent as per the schedule. Actual Cost is the amount of money you have spent to date. Once you have this information you can find the current status and compare it with the planned progress. These two values assist in determining the trend of variance which gives warning of cost overrun. Measuring these variables while the project is in progress allows Stevens to stay within budget and deadline.

Forecasting Cost at completion.

The Estimate at Completion (EAC) gives you the forecasted value of the project when it is completed. It tells you how much you expect to spend to complete the project. In other words, you can reliably predict the amount of money that the project will cost you at the end.

