Earned Value Method (EVM) and Earned Schedule (ES) Methodologies Comparison, Greece

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In the construction industry the management of a project is, without doubt, demanding and complex and at the same time challenging and exciting.

In the line process of planning-supervision-control, the last element enables the manager to determine the deviation range of actual practice from the original planning. Earned Value Method (EVM) is well established and standardised and is applicable to a wide range of problems. Despite clear advantages, several drawbacks exist. The effectiveness of the methodology, given its degree of sophistication, is limited when time, as opposed to cost, is the driving parameter. A supplementary approach, known as Earned Schedule (ES) method, although far from a panacea, represents a substantial improvement in the assessment of time variation and the prediction of the actual duration of a project. Interest in this method has significantly increased over the last few years, however actual implementation is limited to IT and high technology projects.

Both methodologies applied on the construction process of a highly complex balanced cantilever bridge in a remote section of Egnatia Odos highway in Northern Greece. The analysis also included a re-base lining of the construction schedule. The results from the analysis proved that the ES concept has a validity and superiority compared to EVM in forecasting the actual duration of project. The ES schedule metrics more accurately portray the construction project's schedule performance compared to the EVM equivalents, enabling an effective management of the bridge construction.

The bridge was built using the balanced cantilever method with an assymetric process. The bridge is twin deck with separated c'ways each with 13m deck. The overall lengths are 650m for the left and 570 for the right c'way with 6 and 5 spans repsectively. The maximum span length is 120m and max pier height reaches 65m. The bridge crosses a steep valley with a river at the valley bottom. Foundations comprise rock sockets, piles and spread footings only for the abutments. Piers have a mixed cross section either with rectangular hollow section or twin walls in order to adjust the stifness of tall and short piers and better accomodate the seismic forces (a=0.21g).

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