# A New "View" on an Old Problem – The Tender

By John Vaughan Williams,
InterCalc Associates

**Civil engineering and construction companies working on 'linear projects' such as roads, rail, pipelines, etc. are required to constantly improve their approach and methods of working in relation to tendering for new work or the provision of cost estimates for major projects.**

**Planners have the need to provide rapid production of concepts through to the detailed planning and monitoring of all activities on projects.**

**This industry has not, to date, been well served by the providers of commercial software.**

Tender return documentation is never slim; for a major gas pipeline it may typically require up to 150 pages of mixed text and data, together with a variety of tabulations of cost, rate and resource. The estimator needs to provide planning documents displaying resource against activity, time or location, together with the perceived risks down to activity level.

The planning documents will be used to illustrate an understanding of the project, identify rates of production, float in operations and the risks associated with individual disciplines – such as design, procurement and construction.

Such planning documents may be difficult to comprehend or assemble by those not versed in their use; varying as they do from the conventional Gantt chart, to the less well known time-location charts.

The ability to create links between activities to enable full project evaluation requires specialist skills, particularly in the integration of cost data and graphic planning documentation.

*Pipeline section welding*

For any organisation, there are three key principles against which planning documents should be judged. They must:

**(a)** Show a clear understanding of the effect of the rate of production against cost and risk to management and the client.

**(b)** Show the effect of contract and other constraints in both time and location.

**(c)** Show the philosophy of the project to management and the client in a clear and immediate fashion.

These principles are not only valid during tender preparation, but also during the execution of the project from start to finish. Such an organisational requirement inevitably brings with it a

high cost in skills which, as a fixed overhead, may absorb much management time and effort.

## ▶ Time–Distance-diagrams

How is the estimator to achieve a standard of work which is both integrated and meets all the requirements of tender and cost estimate preparation?

As a practising estimator, it has been my recent pleasure to use a Time–Distance software package called TILOS produced by Linear project GmbH. The software is robust and supports data exchange with planning software such as Primavera P3, MS Project, Asta Powerproject,as well as MS Excel.

TILOS allows for major changes to the plan to be made quickly. It is easy to learn due to the familiar MS Windows style interface.

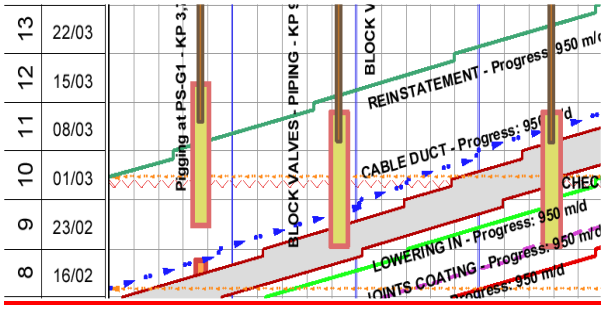


*Figure 1 Typical section of a Time–Location diagram*

Spreadsheets provide the commercial data required and allow the user to calculate rates of production and quantities for each activity, together with the start and finish dates. This is used to import into TILOS for the generation of both the draft Gantt and Time–Location charts. Rates of production together with the contractor's weather and other risks are similarly imported.

TILOS shows all the tender resources and activities with rates of production, moves or lock-outs and restraints by date or ground condition associated with any special section demonstrated, together with test section and crossing sequence by timing and method.

Tender and production data are shown in different 'views' to meet the needs of those who have to use and review the documents. The 'views' can be varied, for example to:

**(a)** Provide senior management with an overall view of the project showing principle activities, constraints, resource usage and cost & material graphs;

**(b)** Provide a project manager with a highly detailed view of construction methods and activities, including moves and lock-outs, together with linkage between activities;

**(c)** Provide a highly detailed view of a section of a project, or sub-project, for control of specialist sub-contractor or complex activities;

**(d)** Provide the rapid creation of engineering concepts across time and activities within a fixed calendar to test them for their feasibility.

## ▶ Rapid change a major benefit

Given that the majority of my career has been within the construction industry, the ability to quickly change resources by value, time or location in both the planning and commercial documents within a tender using a simple copy and paste technique is a major benefit. The other benefit of TILOS is on post-award to the contractor as a progress tracking tool and in the evaluation of compensation events.

The table form of data entry for tracking progress makes it straightforward for non-technical staff to produce 'forecast' against 'actual' reports. Changes in events, or the project, can be quickly forecast in value, time and impact and compensations quantified, where necessary, on a daily basis.

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*Figure 2 "Front – end" Welding*

do not claim to possess a high level of software knowledge, but in use, I have found TILOS to be straight forward and it is now central to my preparation of tender, or cost estimates. Importantly, it allows me to immediately update data when changes occur. Of equal importance to me is that TILOS can provide real-time monitoring of progress on any project on a day to day basis with a straightforward data entry method that is suited to administration staff.

**John Vaughn Williams**

John Vaughn Williams has worked in the energy industry for 40 years, during which time he has worked as Project and Construction Manager in the UK and other markets. He currently supplies an estimating service to pipeline contractors and others in the gas and related energy industries.