

## "Bridging the Gap"

Highway structures represent a significant publicly owned asset that form an integral part of the transport infrastructure and are often prominent features of the community and its heritage. The principles of Asset Management are fundamental to deriving long-term strategies, and the need to develop tools and procedures to support the effective management of highway structures has become widely recognised in recent years.

In February 2000 the County Surveyors Society (CSS) report "Funding for Bridge Maintenance" identified the requirement for a Bridge Condition Indicator, which could be used to measure and monitor the condition of highway bridges.

By April 2002, the CSS had published guidance documents for Bridge Inspection Reporting and Evaluation of the Bridge Condition Indicator (BCI), which has subsequently been put forward as a Best Value Performance Indicator (BVPI). However, it was widely recognised by the engineering community that the BCI alone was not sufficient to assess the fitness for purpose of highway structures, or the performance of a highway authority in managing the structures stock.

The Highways Agency developed a balanced set of Performance Indicators for trunk road structures, and local highway authorities, with funding from the Department for Transport, commissioned further work to ensure their needs were met. This work led to the following Indicators being identified:

- Availability of the structure for use by traffic.
- Reliability of the structure in supporting the traffic loading, taking into account the consequences of failure.
- Condition as a function of severity and extent of damage. This implicitly measures aesthetics, and durability together with the potential impact on reliability.
- Maintenance Backlog with a view to ensure sustainable programmes of work and to minimise whole life costs.
- Asset Value as a function of reconstruction costs, residual life and loss of service potential to ensure that the asset base is preserved and enhanced for future generations.
- Cost Efficiency in delivering maintenance and renewal work.

An Excel spreadsheet system was produced, on behalf of CSS, to derive and display the indicators. However, many users were finding that their existing bridge management systems were not being developed in the way that was required, and this was highlighted further by the inability of the systems to link with the Excel spreadsheet.

With modules for Cyclic Inspections, Conditions Surveys, General Maintenance and Works Ordering, Condition Projection and Modelling, Mobile Data Collection, Embedded Reporting and Mapping, all referenced to the National Street Gazetteer, Insight already provided better facilities for bridge management in many areas.

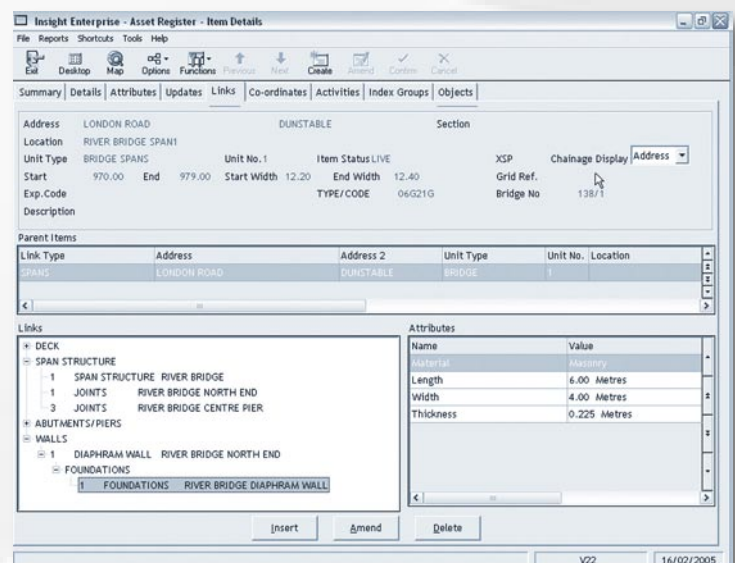
With the addition of the spreadsheet, produced automatically from the data in these modules, Insight now had facilities that were way in advance of the systems that had been used in the past.

When developing products, Symology always recognise that there may be other specialist facilities that could be incorporated to beneficial effect. To address these issues Symology established a Bridges and Structures Sub-Group so that interested customers could actively participate in further development of the product.

In keeping with Symology's "Integrity" ethos, the company announced at the first meeting that the Bridges & Structures solution would be available free of charge to existing customers who had already purchased the system modules which form part of the solution.

For the second User Sub-Group meeting, 23 people representing 12 local authorities were in attendance. At this meeting it was demonstrated how the CSS Guidance Addendum, and all the views previously expressed by the users, had been incorporated into the system.

At the core of this demonstration was the newly re-developed Asset Register module, with facilities to store and display asset attributes in a true hierarchical structure, mirroring real life scenarios.



Screen shot of the new Asset Register module, showing a true hierarchic representation of a Bridge and the individual attributes of the selected sub-component

Having been suitably impressed by the sub-group demonstration, John Kinns and Barry Holmes of Jacobs Babtie (representing Bedfordshire County Council) were keen to incorporate the Symology Bridges and Structures solution into their existing Insight Asset Management system, to replace their existing BridgeMAN system.

Consequently detailed discussions took place with Symology personnel to ensure all of the following issues were addressed and could be implemented:

- Bridge asset register unit types and standard attributes automatically created.
- Bridge inspection activities, with standard bridge elements/defects, severities, severity descriptions and extents automatically created.
- Bridge No and Bridge Type/Code display.
- Photographs and documents.
- Special defects for Inspectors and Engineers Comments automatically created.
- NSG references applied to bridge locations.
- Assess the migration requirements of the BridgeMAN data to the Insight asset register.
- Production of completed Bridge Inspection form for client purposes.
- Embedded Mapping functionality.
- Addendum to CSS Guidance Notes for recording Retaining Wall and Signal Gantry inspections.
- Implications of hierarchical asset register upgrade, allowing visible links of all structure elements.
- Development commitment to ensure full compliance with the forthcoming Bridges Code of Good Practice.

Symology carried out the work involved in converting the existing BridgeMAN data and importing it into Insight. A working Bridges and Structures solution, fully populated with the whole of Bedfordshire's bridges and structures stock, was provided within 6 days. Jacobs Babtie were now in a position to record inspection data for the condition of bridges, retaining walls and signal gantries, and to produce Bridge Condition Indicators for single-span bridges, whole bridges and the entire bridge stock, from a single integrated system.

The Bridge Condition Indicator is generated using an extended version of the original CSS spreadsheet, which allows the full graphical output to be displayed or reproduced as hard copy. The Indicator results can be stored after each BCI process run, with the associated condition data, allowing trend analysis modelling to be employed. The spreadsheet produced with each BCI process run is linked and stored for archiving purposes.

Insight for Structures is available as a stand-alone system or as part of an Integrated Asset Management System.

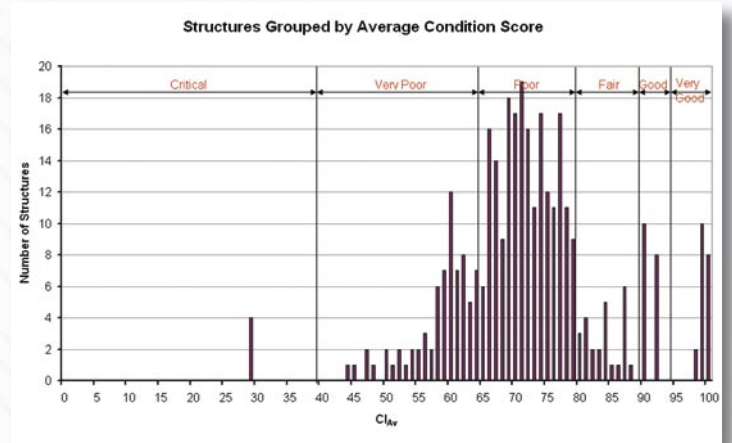
If you require further information regarding this solution, or if you would like to arrange for a demonstration, then please do not hesitate to contact one of the following people:

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 Steve McKeown (Blackburn Office) - 01254 663360  
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or e-mail  
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The latest version of Insight also provides users with the ability to produce Structural Condition Indicators for the condition of Bridges, Retaining Walls and Signal Gantries, from the specially extended Symology spreadsheet.

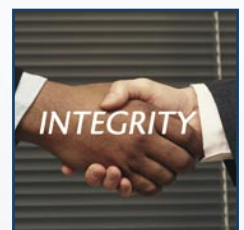
This new spreadsheet, not only calculates the 3 indicators, but also combines them in the CI Output, CI Critical Graph and CI Average Graph. The CI Average Graph incorporates the bandings of condition, as detailed in the CSS Addendum, and a pie chart is included for fast assimilation of overall status.



Example output of Average Bridge Condition Scores

John Kinns and Barry Holmes of Jacobs Babtie are delighted with the comprehensive solution that Bedfordshire County Council now have for Bridges and Structures.

John Kinns said "We have been highly impressed with the commitment of Symology in developing a comprehensive solution for Bridges and Structures. The system currently meets the basic requirements for producing performance indicators, and in its final form should provide significant additional specialised facilities for Bridge Asset Managers. We are looking forward to implementing the latest version, and believe Symology are capable of producing a comprehensive asset management facility. The fact that the system can be integrated with the National Street Gazetteer, Street Works Register, Highway Maintenance operations and Street Lighting Maintenance operations ensures that Bedfordshire should have a truly integrated asset management system."



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