ABES
Advanced Bridge Engineering Systems

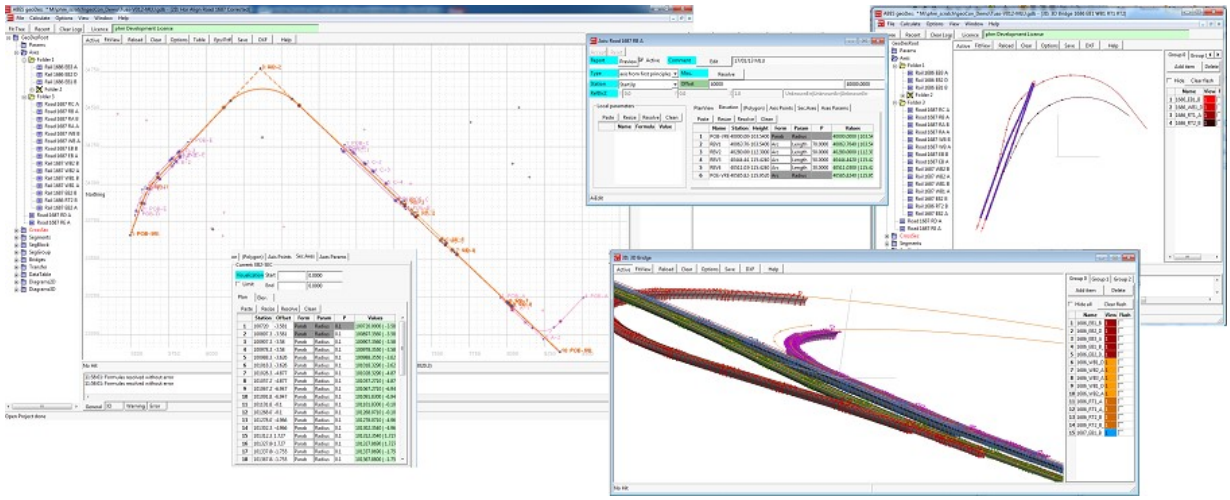
Product Information Sheet
ABES geoDes

ABES Engineering Software
Research and Development

ABES geoDes is a software product enabling detailed geometric modelling of segmental bridges.

ABES geoDes provides the following general functions:

- Bridge girder modelling based on road or railway alignments
- Flexible sub-structure modelling
- Extensive library of segments with specific properties including pre-cast and cast in-situ segments; but also expansion joints, closure pours etc.
- Consideration of variable cross-sections
- Detailed segmentation of bridge deck, piers and pylons
- Multiple bridge structures per project file



ABES geoDes includes a full suite of functions to define or re-produce road and railway alignments.

- Alignments can consist of straights, many types of transition curves, and arcs in plan view
- Straight lines, arcs, and parabolic curves in elevation
- Unlimited number of road or railway alignments can be combined within one model
- Secondary alignments at variable horizontal and vertical offsets
- On-ramps and off-ramps, intersections, fly-overs, etc.
- Flexible input options available to define sub-structure

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ABES geoDes allows for parametric cross-sections with variable measurements which adapt along road alignment.

- Simple definition of haunched girders, stepped plates, or diaphragms etc.
- Variable measurements defined by tables, or mathematical formulas
- Auxiliary lines to support complex geometric relationships
- Unlimited number of cross-sections to be combined within one model
- Cross-sections consist of unlimited number of outline polygons
- Each point on cross-section can be assigned additional properties for reporting purposes, or to serve as control points for geometry control

ABES geoDes manages typical segment groups (e.g. typical spans or cantilevers) to facilitate rapid data input for long and repetitive structures.

- Joint orientations to reflect bridge alignment (plan view and gradient) and casting yard realities (bulkhead orientations, segment centre lines etc.)
- Exact consideration of bearing locations and sub-structure connections
- Flexible definition of casting sequences
- Long-line and short-line casting, and any combination thereof
- Inclusion of stay cable anchors
- Consideration of pre-camber

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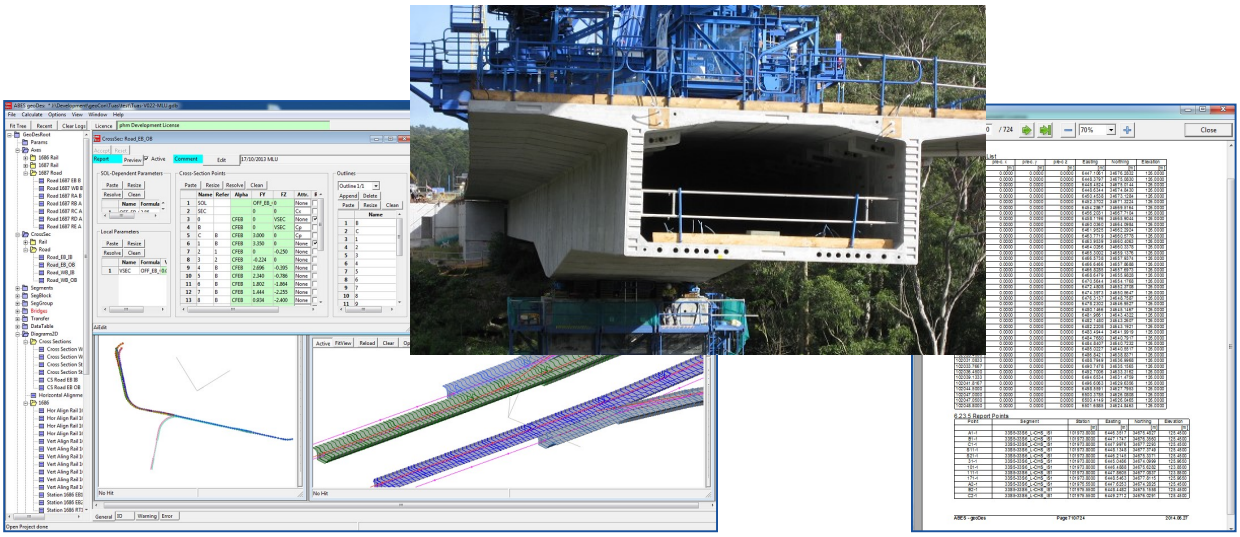
ABES geoDes calculates the detailed 3D geometry of each segment on a bridge individually.

- Ensures castability and constructability
- Various segment types including match-cast segments, pier segments, cast-in-situ segments, stitches, expansion joints etc.
- Casting sequence effects for long-line and short-line casting as well as in-situ casting are accounted for in joint orientations
- Combination of pre-cast and in-situ segments
- Each segment placed on 3D road alignment in a secant or tangential position according to user-defined rules
- Unlimited number and free positioning of geometry control points within each segment

ABES geoDes is driven by a highly functional graphical user interface.

- Instant 3D and 2D Graphical visualisation
- Data input table-driven and fully compatible with spreadsheet programs including cut-and-paste functionality to and from Excel
- Many tools for plausibility checks

ABES geoDes output is available in numerous data formats.

- Automated reports in .pdf format
- Spreadsheet-compatible tables with filters for data selection
- CAD-compatible .dxf files
- Text files
- .png and .eps graphic files