



Images: Croswell Engineers

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John Heddon
Design Office Manager
Croswell Engineers

Pioneering adoption of software pays dividends

Croswell Engineers is reaping the benefit of its pioneering implementation and adoption of AutoCAD Civil 3D software at its Johannesburg design office. The civil engineering practice has been using the software as its primary design package since the beginning of 2007, reducing project design time by 60%.

AutoCAD Civil 3D provides civil engineers, designers, surveyors and drafters with a comprehensive AutoCAD-based package for the design, drafting and management of a wide range of civil engineering project types, including site development and road design.

Croswell previously used a combination of programs - Autodesk's Land Development Desktop and Civil 3D software.

“Each version of Civil 3D has improved significantly, with the 2008 version raising the bar in terms of functionality and user friendliness,” says design office manager, John Heddon. “Add to this the localisation of the software to meet South African standards, and we have a program that's helped to reduce project design time by 60%.”

Established three decades ago, Croswell focuses on urban development. The practice has successfully completed over 1 200 commissions from local, provincial and national government departments as well as a wide range of private sector clients.

According to Heddon the high volume, and magnitude, of projects done by Croswell is directly attributable to Civil 3D.

“With just 20 people, we do at least two major projects a year – projects typically carried out by much larger practices.”



Croswell is currently using the software to design hydraulic and dry services for three big projects – the 90 hectare Lanseria Corporate Estate, north of Johannesburg; the 1400 hectare Royal Maluti Golf Estate near Clarence in the Free State; and the 510 hectare Monaghan Farm, in Blair Atholl, north of Johannesburg.

“Design of services, using Civil 3D is a pleasure,” says Heddon.

Projects created with Civil 3D use a dynamic engineering model that links design and production drafting. As a result, a change to one part of the design propagates throughout the entire project, greatly reducing drafting errors as well as the time it takes to implement design changes and evaluate ‘what-if’ scenarios.

Adjust a vertical design alignment, and the software automatically updates the road model, redisplay proposed contours, recalculates volumes, updates profile labels and corrects section plots for a road. Change the curve length of an alignment, and the profile, corridor model and plotted cross sections all update instantly.

“If I move something, I immediately see the impact of my decision on the overall design,” says Heddon. “What’s more, your model is like an object that sits in the background. Whereas before you had to actually generate your model, then you’d generate your contours, and then you’d insert them into your drawing and, finally, you’d load the model database. Now, you have your drawing with your model referenced in. That alone has reduced the drawing size from 10MB to 1MB and saves hours in a day.”

Croswell is using Civil 3D to design 4km of dual and single lane roads at the Lanseria Corporate Estate, Gauteng’s first environment-friendly and ecosensitively planned light industrial development. The software is also being used to design an innovative tanked stormwater system for the estate. Crosswell is using biofilters under the parking lots at Lanseria to clean stormwater, so it can be re-circulated for irrigation.

“We did the roads design first. Now we’re doing the platforms under the warehouses. And once that’s complete we’ll do the sewer design. That’s why the models are so important. Each model is being used to generate the next set of models.”

On Monaghan Farm, Croswell designers relied on Civil 3D’s easy revision system to meet the environmental needs of the estate, which offers exclusive country living. There will never be more than 305 properties, with an average size of 4 500 square metres, on the farm estate. Homes will be grouped in five separate villages, offering a secure environment, and an ethos of self-sustainability, with four hectares of communal gardens set aside for growing organic produce. Country club amenities will include a gym, pools, tennis and squash courts, business centre, restaurant and equestrian centre.

“The natural surrounds of the farm took precedence over man’s needs,” says Heddon. “Roads, for example, had to make way for trees. So we imported aerial photographs of the site and designed services around natural elements. Civil 3D was an enormous help in quickly fine tuning the design to meet the needs of the client.”

Croswell’s commitment to training has been key to the successful implementation of the software. “We trained all eight members of the design office and from that moment we were an AutoCAD Civil 3D-only design centre,” says Heddon.

He also paid tribute to the role of Autodesk reseller, Devotech, in the successful implementation of the software. “We couldn’t have done it without them.”

