Devotech Professional Extensions

Devoted to the success of your business

Autodesk
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Architecture, Engineering & Construction
Authorised Training Center
Consulting Specialised

DEVOTECH PROFESSIONAL EXTENSION

Version 4.2

Introduction

Through our continual involvement on some of South-Africa's major projects such as the Gautrain Rapid Rail, King Shaka International Airport, Green Point Stadium and the Moatize Coal Project to name a few, the need was identified for specialised functionality in AutoCAD Civil 3D. This gave birth to the Devotech Professional Extension.

Developed specifically for the South-African Civil Engineering Industry, the Devotech Professional Extensions is fully compatible with AutoCAD Civil 3D. It is a complete localised solution, which provides a single, fully integrated platform for all design analysis and production aspects of Civil Engineering Projects.

The Devotech Professional Extensions is an extension to the AutoCAD Civil 3D functionality, but adjusted to standards used by Civil Engineering companies in South Africa.

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Templates

Before you seriously consider launching Civil 3D in your company you need to have a proper template based on your company or local standards. In Civil 3D almost all of the drafting is done for you automatically. The graphical element of a Civil 3D entity is defined by a Civil 3D style. For instance, Civil 3D knows the layer to place a road center line on based on its Civil 3D Style. A graphical standard is imperative to deploying Civil 3D in your company.

In AutoCAD Civil 3D, drawing templates (dwt) are the key to success of every project. Every design starts from a drawing template. The basis of the template is either company or client standards. This is the most important part of the project, since all output, design parameters etc. are based on this template. Devotech Africa has created a template based on standards, developed for numerous consulting firms as well as client specifications (like SANRAL). This development took place over the past 6 years, working closely with our customers. This template allows you to finalise a project up to 40% faster than other standard templates available for AutoCAD Civil 3D. Devotech Africa's drawing templates are compatible to work on both the British and American versions of AutoCAD Civil 3D.
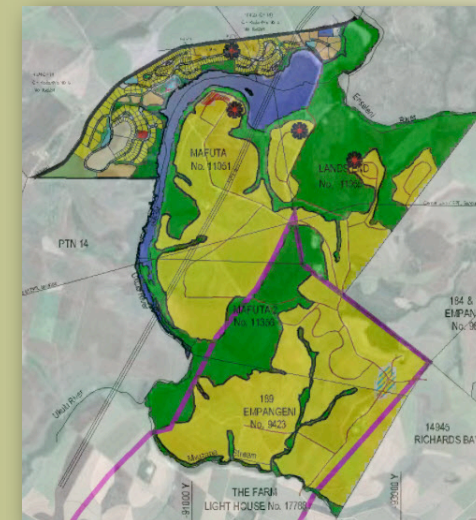
The Devotech Template has:

- Over 1900 locally programmed styles;
- Over 1000 default settings;
- An intuitive guidance throughout all style sets.

TOWN PLANNING

Our software boasts a full Town Planning module based on South African standards.

Each parcel \ erf can be zoned. All town planning zones are color coded according to local standards.

Zoning Summary Tables makes it easy to calculate the combined areas based on the zoning, as well as the percentage of these zones based on the complete project.

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Assemblies

Devotech Africa has developed a number of localised sub-assemblies based on South African and local authority standards. This includes sub-assemblies for layer works (up to 10 layers with extended layers on both sides), road rehabilitation, local kerbs etc. Several of the current sub-assemblies were customised to conform to South African standards.

Devotech Africa has developed a specialised assembly for bulk pipelines, which accommodate stepped excavations for accurate volume calculations when working with large diameter pipes.

Functions

Devotech Africa developed specific functionality for AutoCAD Civil 3D which consultants from South Africa became used to from the use of their previous design software. The result of this functionality allows the user to seamlessly translate data from other design software to AutoCAD Civil 3D. The Devotech Professional Extensions allows the user to read data sets natively from applications such as Civil Designer, Model Maker, TechnoCAD applications and other GIS applications, thus there are no need to convert the data sets. This option is vital in AutoCAD Civil 3D as most project surveys and existing designs are based on these formats. Devotech Africa continually adds new functionality to the Devotech Professional Extensions, which originates from customer requests.

SURVEY

Geo-referencing your images , drawings and shape files to the proper positions can be time consuming. The *Geo-reference Wizard* will assist you to quickly get existing drawings, images and shape files into the proper scale and coordinate systems.

With the *Map Lookup Wizard* you can quickly identify the position of your project by providing the LatLong or UTM coordinates on the South African grid. From this grid you can then identify the appropriate 1:50 000 map references.

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Surfaces

With the *South African Coordinate Translator* you can quickly translate your surface that was created from survey data into the correct survey quadrant without editing the survey data.

Most surveyors in South Africa either uses Model Maker or Civil Designer to generate triangulated surface data. With our *Model Maker (TOT)*, and *Civil Designer (DAT)* functions, you will be able to generate Civil 3D surfaces from this survey data with it's triangulation without any additional editing.

In the mining industry, analysis software can only work with gridded surface data at specific grid intervals. Gridded surface models can now be created in seconds by selecting the surface and any polygonal area that will define the extents of the analysis area.

A dynamic Survey Grid can be created for your designs, with the option to either use full grids, or cross markers with their respective grid annotations.

Alignments

Import Horisontal Alignments from CSV files provides you the ability to interact with designs from other software without manually capturing the existing designs.

SANRAL and AASHTO Design Standards is available to ensure the correct design parameters are followed throughout your design.

Profiles

Engineers prefer to use applications like Microsoft Excel to do design checks on their designs. For this reason we have provided functionality to *Export Specified Profiles* and *Export All Profiles* at specified intervals to a CSV format file.

When we design roads or pipe networks, we often need to do *Minimum and Maximum Depth Calculations* between two profiles. This feature will not only calculate the difference between two profiles, but also allows you to trace the position on your profile view where the design doesn't meet the criteria.

Create Profiles from Pipes gives you the functionality to create profiles for the outside top, crown, center, invert, outside bottom and pipe trench depths based on pipe geometry. These profiles can be used with our specialised assemblies to build corridors for accurate quantity take-offs.

Change your profile view (long section) lengths globally to fit any size title block. You can also use the pipe network clean-up tool to add or remove network part automatically to your profile views.

Water Networks

The Devotech Professional Extension (DPX) gives you comprehensive design tools which makes it perfect for networked systems as well as bulk pipelines. The DPX includes local manufacturer's catalogues.

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DPX provides the designer the ability to use the full potential of all Civil 3D structures and pipes, using the respected EPANET analysis engine for it's calculations - all saved within your Civil 3D drawing.

With DPX you can:

- Create pipe networks from multiple CAD objects. This includes lines, polylines and 3D polylines (Easily convert old AutoCAD drawings or drawings created in other CAD software to an intelligent network that can be analysed);

- Create pipe networks from Wadiso, EPANET and EPASWMM input files;

- Create pipe networks from the design files of TechnoCAD WaterMate;

- Import network parts from a Microsoft Excel spreadsheet. The part will be added to your existing pipe horizontal alignment;

- Create water, stormwater or sewer networks from GPS receiver field date collection, like Juno handheld devices;

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- Do complete water analysis from within your Civil 3D application, without exporting data. Networks can be exported for integration with other design applications;

- Design within your long sections by:
  - inserting structures in long section - this allows easy placement of air valves and scour valves based on the topology of the area (high and low points);

- moving your structures in long section along the horisontal alignment;

- find the position of your structures in plan by selecting it from the long section (trace structures);

- Manipulate pipe inverts levels, manhole cover levels and sump depths for complete networks or separate branches of a network. You can also adjust your network vertically, by specifying a vertical offset, up or down. This feature is handy when you need to change pipe diameters, but maintain a specified cover for your pipes;

- Export network branches to Vent-o-mat for air valve analysis;

- Analyse network bends to determinate horizontal, vertical, combined and allocated bend angles and update long sections accordingly. Bends can be categorised by user defined angles;

- Automatically map pipes and structures to the appropriate alignments for automatic updates of design information in your long sections;

- Automated pipe quantities by network (Excavation, backfill, pipe lengths, bends etc.);

- Automated house connections for water and sewer networks;

- Grade multiple pipes based on the elevations of two selected pipes or structures to get equal grades for all pipes between;

- Dynamic and user defined design parameters can be displayed on profile views, labels and tables. Global editing of user defined fields to add part information globally;

- Change pipes globally from one catalog to another;

- Support for steel pipes and welded bends;

- Export all network data as well as design information in CSV format;

- Display the cumulative 3D lengths of pipes in your profile bands, to enable pipe ordering by chainage of your project.

- User defined fields on all pipes and structures to store any additional user data;

- Change Pipe Diameter for multiple selected pipes;

- Edit and view all network part data from one easy to use dailog;

- Update Profile View Bands with Design Data from water analysis;

- Remove duplicate pipes and structures from networks.

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Storm Water and Sewer

The Devotech Professional Extension (DPX) gives you comprehensive design tools which makes it perfect for storm water networks. The DPX includes local manufacturer's catalogues.

DPX provides the designer the ability to use the full potential of all Civil 3D structures and pipes, using the respected EPASWMM analysis engine or the Autodesk Storm and Sanitary Analysis application for it's calculations - all saved within your Civil 3D drawing.

Your designs can also be exported to enable analysis in other design applications.

All features available from the water networks, are also available for storm water and sewer design.

Network Catalogs

STORM WATER STRUCTURES:

- Null Structure;
- ROCLA Manholes;
- Inlets;
- Grid Inlet;
- Kerb Inlet;
- Field Inlet;
- Junction boxes;
- Weholote Manholes;
- Orifice;
- Wiers;
- Outlet;
- Outfall;
- Storage Units

CULVERTS:

- ROCLA Rectangular Portals SABS 986;
- ROCLA SATS SAR Rectangular Portals SABS 986;

STORM WATER PIPES:

- uPVC Class 34;
- uPVC Class 51;
- ROCLA Interlocking Class 50D SANS 677;
- ROCLA Interlocking Class 75D SANS 677;
- ROCLA Interlocking Class 100D SANS 677;
- ROCLA Spigot and Socket Class 50D SANS 677;
- ROCLA Spigot and Socket Class 75D SANS 677;
- ROCLA Spigot and Socket Class 100D SANS 677;
- Petzetakis SWP Weholite HDPE;

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WATER NETWORK STRUCTURES:

- Null Structure;
- Pressure Network;
- Reservoir;
- Pump;
- Tank;
- Junction;
- Single House Connection;
- Double House Connection;
- Fire Hydrant;
- Air Valve;
- Scour Valve;
- Pressure Reducing Valve;
- Pressure Sustaining Valve;
- Pressure Breaker Valve;
- Flow Control Valve;
- Throttle Control Valve;
- General Purpose Valve;
- Isolating Valve;
- Actuating Valve;
- Non Return;
- Expansions Joint;
- Vertical Thrust Block;
- Horizontal Thrust Block;
- Combined Thrust Block;
- Saddle;
- Fire Hose Reel
- Crossings;
- Road Crossing;
- Rail Crossing;
- Conveyor Crossing;
- Pipe Crossing.

WATER NETWORK PIPES:

- HDPE PE 100 PN 10 SABS ISO 4427 and DIN 8074;
- ROCLA Pressure Pipes T2 SANS 676;
- ROCLA Pressure Pipes T4 SANS 676;
- ROCLA Pressure Pipes T6 SANS 676;
- ROCLA Pressure Pipes T8 SANS 676;
- Steel Pressure 25 Bar;
- Marley Pressure;
- Petzetakis HDPE PE 100 PN 10 SABS ISO 4427 and DIN 8074;
- Petzetakis HDPE PE 100 PN 12.5 SABS ISO 4427 and DIN 8074;
- Petzetakis HDPE PE 100 PN 16 SABS ISO 4427 and DIN 8074;
- Petzetakis uPVC PN9 SABS 966 Part 1;
- Petzetakis uPVC PN12 SABS 966 Part 1;
- Duroflo uPVC Class 4 SABS 966 Part 1;
- Duroflo uPVC Class 6 SABS 966 Part 1;
- Duroflo uPVC Class 9 SABS 966 Part 1;
- Duroflo uPVC Class 12 SABS 966 Part 1;
- Duroflo uPVC Class 16 SABS 966 Part 1;
- Duroflo uPVC Class 20 SABS 966 Part 1;
- Hall Longmore Spirally Welded (Saw);
- Xinxing Ductile Iron Pipes TYTON Joint (Class K9)

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