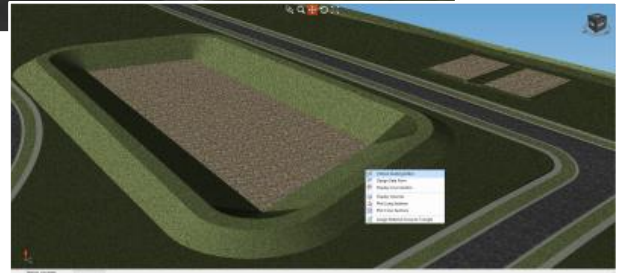
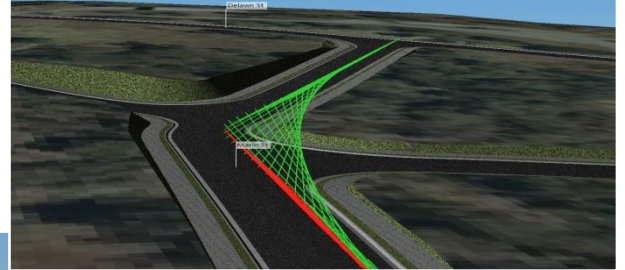
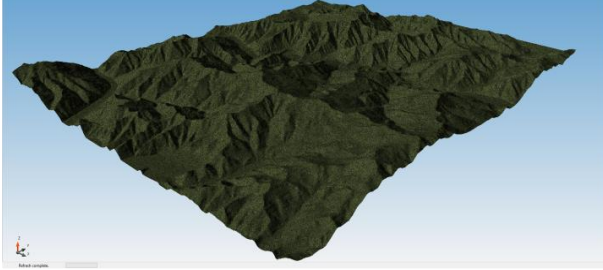


Civil Site Design

Design - Analyse - Visualise - Deliver



Delivering Comprehensive
Civil Design Solutions

Civil Design and Drafting

Here's how Civil Site Design can benefit you:

- ✓ Integrates design and drafting
 - Improve quality and design revision controls – as you make the changes the drafting updates
- ✓ Modern software with dynamic relationships between objects
 - One change – multiple updates. Save time keeping your objects co-ordinated
- ✓ Built for Civil 3D
 - Leverage Civil 3D surfaces and alignments
 - Outputs to Civil 3D objects
 - Surfaces
 - Alignments
 - COGO Points
 - Profiles
 - Corridors
- ✓ All-in-One Program – not modular!
 - Get Surface, Alignment, Road and Pipe tools in the one program
- ✓ Easy to learn
- ✓ Low cost

Retrofit your civil design office at a fraction of the cost of using alternate software.

About Civil Site Design

Civil Site Design was first developed in 2002 (originally named Advanced Road Design) to provide civil engineering design functionality in CAD software. With over 1,500 licenses sold in Australia and Internationally, Civil Site Design enables you to perform road, drainage and site design to Australian standards in AutoCAD Civil 3D.

Australian road designers are familiar with String and template based road design methodologies. Civil Site Design provides designers with these tools inside AutoCAD – so design and drafting occurs in the one software program.

Written in modern .NET, Civil Site Design is fast and dynamic – providing interactive tools so designers can try many “what if” design scenarios.

Civil Site Design is developed by the team at Civil Survey Solutions with offices in Melbourne, Sydney and Brisbane. Civil Survey Solutions is an Authorised Autodesk Developer.

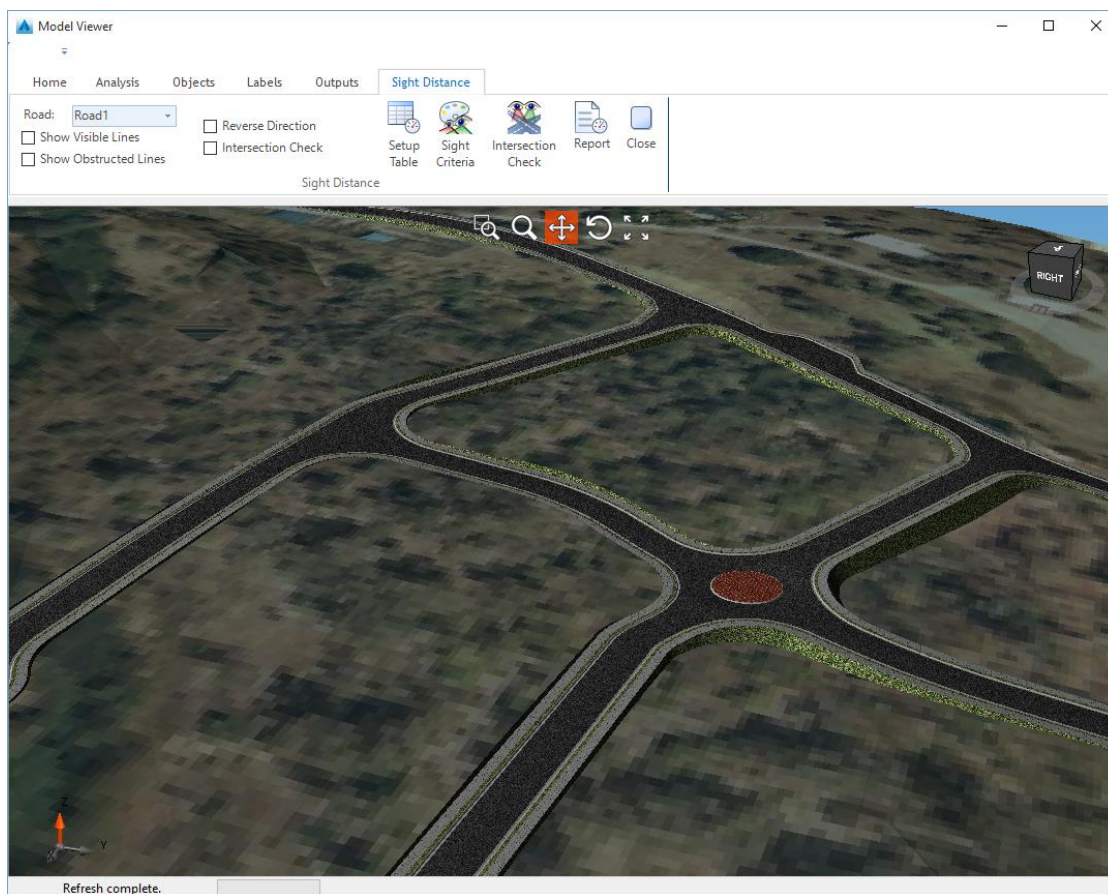
Civil Survey Solutions provides expert technical support, customisation and training services, focused on the civil, survey and associated industries.

Surfaces

Civil Site Design reads Civil 3D surfaces, and also includes a full terrain engine to create surfaces for representation in the drawing. These 'CSD' Surfaces can be exported to Civil 3D surfaces at the click of a button and then used in the final surface model and drafting output.



Surfaces and other models can be viewed in an interactive 3D viewing environment – the Model Viewer. The Model Viewer is a resizable window which will give you a fully rendered, navigable model of your design surfaces and Civil Site Design objects. Unlike Object Viewer in Civil 3D, the Model Viewer can be open whilst you undertake your design in the drawing, can be docked on any monitor, and updates whenever your design changes – for changes to Civil 3D surfaces, updates occur at the click of a button. As well, sight distance analysis can be applied, drive throughs can be viewed and fly over animations created.



Alignments

Civil Site Design reads Civil 3D alignment geometry and creates Civil 3D alignments directly in the drawing.

Site Grading

Built for rapid design of features such as building pads, retaining walls and detention basins, the dynamic grading tools automatically clean up internal overlapping corners and include radial and mitre options on external corners.

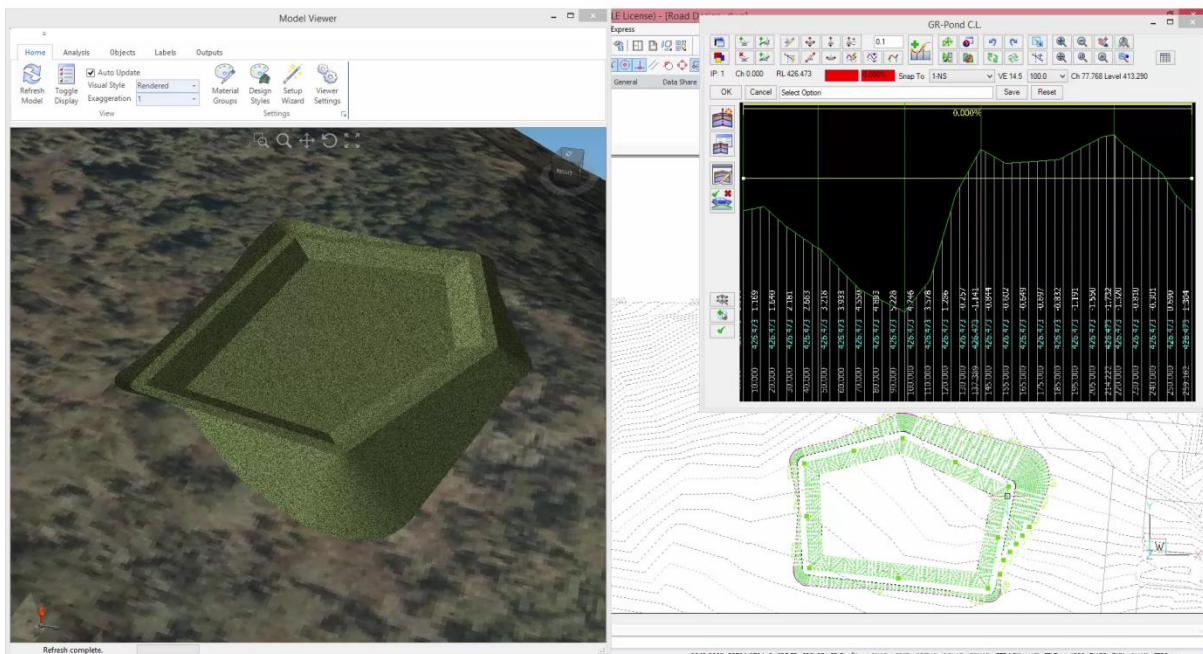
The surface and grading linework automatically updates as you edit your grading, so you get immediate feedback on the impact of your design changes, as you make them.



You can immediately review volume outputs after making design changes, enabling easy volume checking and optimisation. Overlay surfaces or use the CSD Surface Modelling tools to create one total dynamic surface model incorporating all your land development components – perfect for lot grading.

The grading tools support cross section templates and intelligent batter designs to address any site design requirements. As well, you can combine template and string based designs into the grading models to get the fine level of control you require.

The quick elevation viewer makes it even easier to make changes to your grading string levels and see the results. You can use both the vertical grading design tools and the quick elevation viewer to make edits to the design – change vertical IP positions along the grading, edit and add vertical curves, either in a grid view or using a graphical design long section display.



Road Design

Our philosophy of combining template and String based design, as well as automating common design elements such as intersections and cul-de-sacs, provides a familiar and complete set of tools for rapid creation and output of your road subdivision, reconstruction, rural, highway and other design projects.

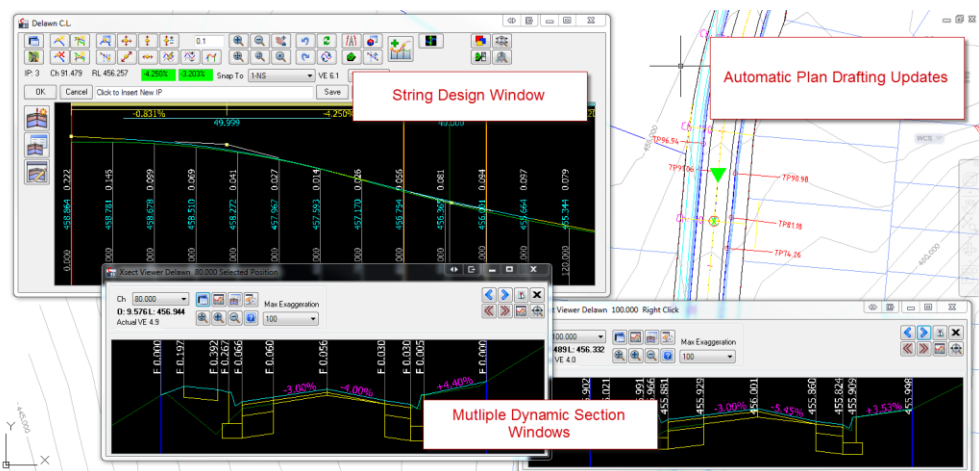


Create four dynamic and interactive views of your road design – plan, long section, cross section and model.

As you edit your road profile in the Vertical Grading Editor, watch your cross sections, plan drafting and interactive 3D model update in real time. You can show as many design objects as you like on screen, giving you the power to design multiple objects simultaneously and to immediately assess the interactions between design elements.

With the Vertical Design Windows you get complete access to any selected design element including editing the vertical design and cross-sections, establishing cut/fill bulking factors, generating summary volume reports and creating surface models of your designs.

Comprehensive vertical grading design tools allow you to establish a vertical design based on the surface levels or the vertical design of any other design element. With a centralised design centre



accessed from the Vertical Design Window you can easily edit your cross-sections including assigning alignment/String controls, varying widths and crossfalls and establishing design constraints.

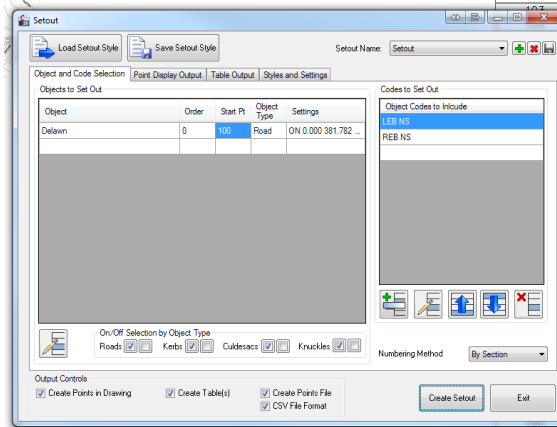
With dynamic interactions between elements, the ability to mix cross-section and String elements and the ability to build your own models using any collection of strings and codes from your designed road elements, it is easy to generate designs for any purpose, including road subdivisions, reconstruction works, car parks, open channels, general site regrading, and more.

Plotting and Publishing to Your Drafting Standards

As you complete section of your design you can publish it in the drawing, ready for plotting your tender and construction plans. Civil Site Design has all the tools you need to rapidly generate industry standard outputs of your designs directly inside your drawing, ready for immediate plotting.

With Civil Site Design you can interactively control the sheet layout, scales, layers and linetypes of your long and cross sections as well as what to present in your outputs. Plotting output styles can be saved for reuse, and you can output them to separate drawings or as layouts in the current drawing.

Point setout, plan drafting of the models and slope patterns are all created directly inside your drawing.

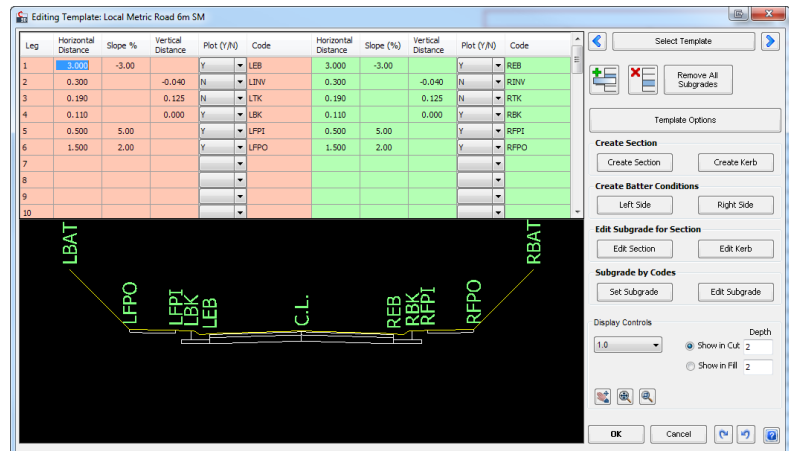


Code	Easting	Northing	Design Level	Depth to Existing
LEB	8489.659	28345.360	458.750	0.243
REB	8496.922	28344.726	458.567	0.030
LEB	8490.528	28355.322	458.667	0.166
REB	8497.791	28354.689	458.561	0.030
LEB	8491.397	28365.284	458.564	0.170
REB	8498.660	28364.651	458.505	0.030
LEB	8492.266	28375.246	458.396	0.090
REB	8499.529	28374.613	458.365	0.030
LEB	8493.135	28385.209	458.158	0.062
REB	8500.398	28384.675	458.156	0.030
LEB	8494.004	28395.171	457.853	0.048
REB	8501.267	28394.537	457.865	0.030
LEB	8494.873	28405.133	457.479	0.035
REB	8502.136	28404.500	457.504	0.030
LEB	8495.742	28415.095	457.056	0.047
REB	8503.005	28414.462	457.070	0.030
LEB	8496.610	28425.057	456.640	0.066
REB	8504.121	28424.402	456.616	0.030
LEB	8497.479	28435.020	456.251	0.088
REB	8505.041	28434.360	456.200	0.030
LEB	8497.571	28436.075	456.211	0.091
REB	8505.133	28435.415	456.158	0.030
LEB	8498.401	28445.183	455.881	0.117
REB	8506.124	28444.101	455.824	0.030
LEB	8499.857	28456.322	455.536	0.140
REB	8507.765	28453.739	455.484	0.030
LEB	8502.000	28465.349	455.211	0.143
REB	8509.965	28463.265	455.181	0.030
LEB	8504.822	28475.213	454.888	0.123
REB	8512.715	28472.647	454.915	0.030
LEB	8508.309	28484.862	454.559	0.091
REB	8516.007	28481.853	454.880	0.030
LEB	8512.442	28494.249	454.247	0.037
RFR	R519 R99	R490 R52	454.443	0.030

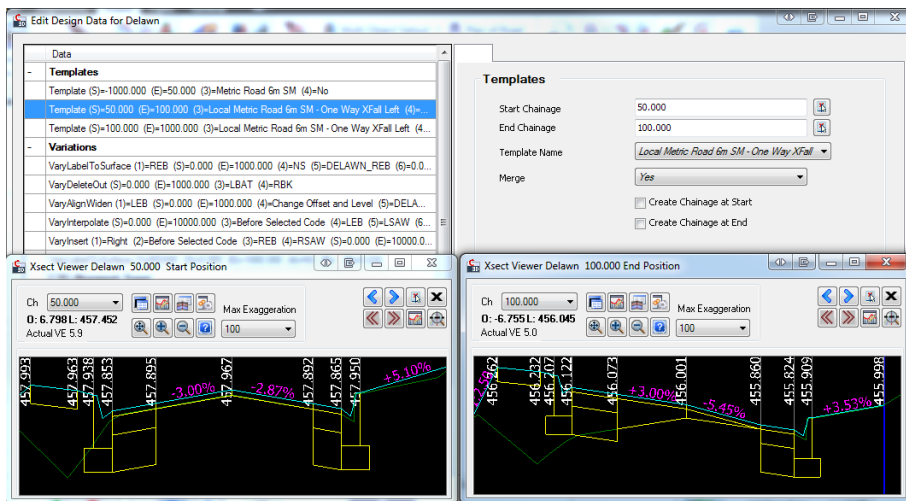
Templates

Design cross section templates are easy to create and edit, and can be saved to local or network setting locations for inclusion in any project.

With the Template Editor you can easily create any design cross section shape you require, with completely integrated multi-layer sub grade included. The subgrade tools allow you to accurately represent areas and volumes of infill, full depth pavement and subgrade extension out to table drains and batters.



Road reconstruction and mixed pavement treatment designs can be undertaken with confidence – volume reports are made section by section and account for all subgrade layers. The Cross Section Windows display all subgrade layers during the design process, providing transparency for designers to confirm the behavior at each section.



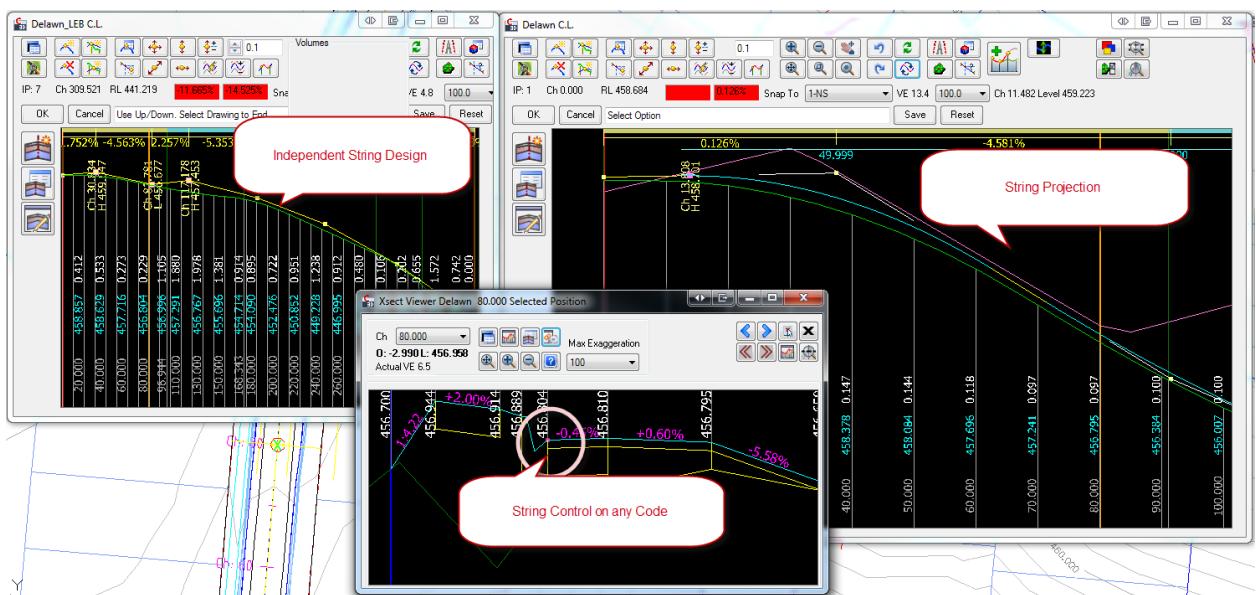
Multiple templates can be readily applied to any String object at user selected chainages and including transitions between templates via the centralised design data form, Conditional templates can also be applied based on the amount of cut and fill occurring at the design centerline.

Cross Section Editing and String Control

Editing and applying multiple templates isn't always the quickest or best design approach – Civil Site Design provides comprehensive support for you to apply String controls wherever they need to, and to assign String controls to any part of a design cross section.

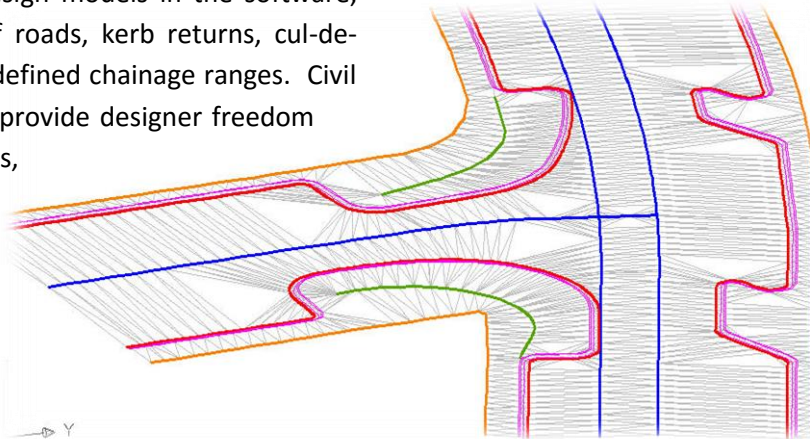
Strings are the building blocks in Civil Site Design, and any alignment can be quickly converted into a String for you to control the vertical design. You can attach Templates to a String, and you can use a String to control any element of your cross sections, such as for road widening, table drain inverts, retaining walls, and more.

Advanced design tools allow you to calculate String vertical designs from other design elements such as reference surfaces or other road design strings.



You Design It - Civil Site Design Will Model It

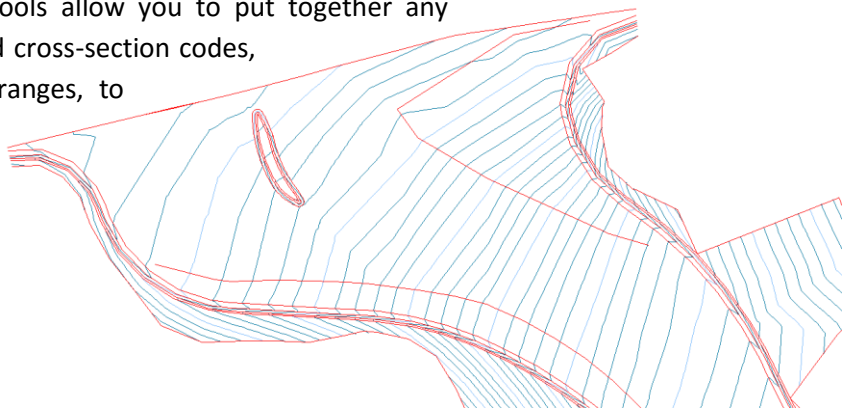
You can create your own design models in the software, applying any combination of roads, kerb returns, cul-de-sacs or other strings at user defined chainage ranges. Civil Site Design's modeling tools provide designer freedom – build models of car parks, retaining walls, building foundations, wetlands or any other feature using the Civil Site Design Model Manager.



Inside the Civil Site Design Model Manager, users tick on/off design elements to include in a model and have access to trim functions to remove any collection of codes or code groups (perfect for manual intersection trimming and code overlaps). As edits are being applied, the plan drafting in the drawing updates, so you have confidence on your modeling outcomes as you make changes.

There is a click button output to build a surface from any Model. Model results can be represented on your output cross sections for accurate section results. Long sections can be extracted through the model as required.

Civil Site Design's modeling tools allow you to put together any collection of roads, strings and cross-section codes, over user-selected chainage ranges, to allow for all your design requirements.



Integrated Driveway Design Tools

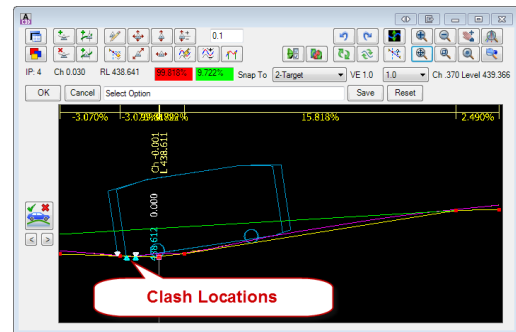


As well as providing comprehensive civil design tools for road and drainage/pipe projects, Civil Site Design integrates driveway tools into your design workflow to instantly identify and design to avoid vehicle clearance conflicts.

The driveway tools work from polylines in the drawing and link dynamically to both Road design cross sections and the property boundary. See your vehicle clearance requirements update as you edit your Road and vertically design your driveway to avoid vehicle clashes.

It's simple to use and gives you instant feedback:

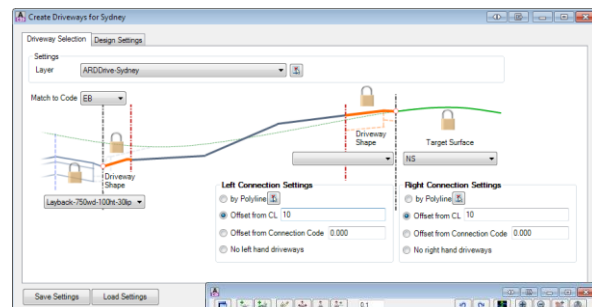
- ✓ Convert polylines into Driveways
- ✓ Click button vehicle clearance checking
- ✓ See vehicle clearance lines and all clashes
- ✓ Clash results update as you edit the driveway vertical design



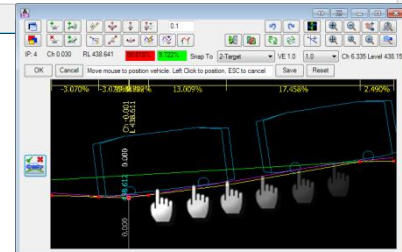
Creating and Designing Driveways

You set what part of the Road cross sections to connect to, add a layback and set where the driveway design ends (normally the property boundary).

Open each driveway in the Driveway Vertical Grading Editor window and choose what vehicle clearance template to apply. See the vehicle clearance line and all vertical clashes highlighted.



You can design the driveway by adding, deleting and editing IP's to remove clearance problems—updates will occur dynamically as you change the vertical design.

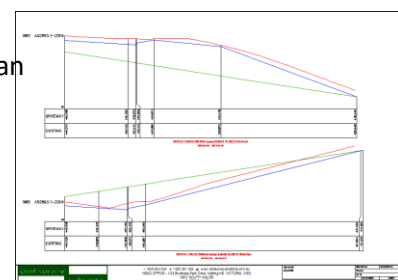


As well as including standard vehicle clearance templates as per Australian Standard AS2890.1-2004, you can create your own vehicle clearance templates to suit your local conditions, and check each for compliance.

Driveway Outputs

Plot long sections out for all your driveways, for each road. You can customise your plot output, including:

- ✓ Setting horizontal and vertical scales,
- ✓ Adding a title block and arranging the long sections
- ✓ Selecting what to display, including the vertical clearance lines



The plot preview updates as you make changes to the settings, showing you exactly what you'll get in AutoCAD when you click the plot button

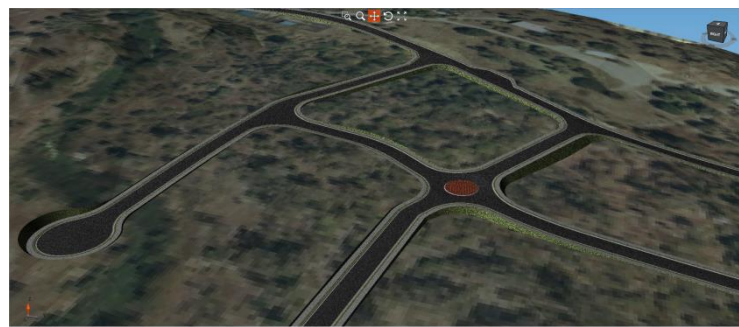
Road Subdivision Design Tools

With Civil Site Design you can automate your common road subdivision design processes using intelligent objects that can handle design elements such as intersections, kerb returns, cul-de-sacs and knuckles.

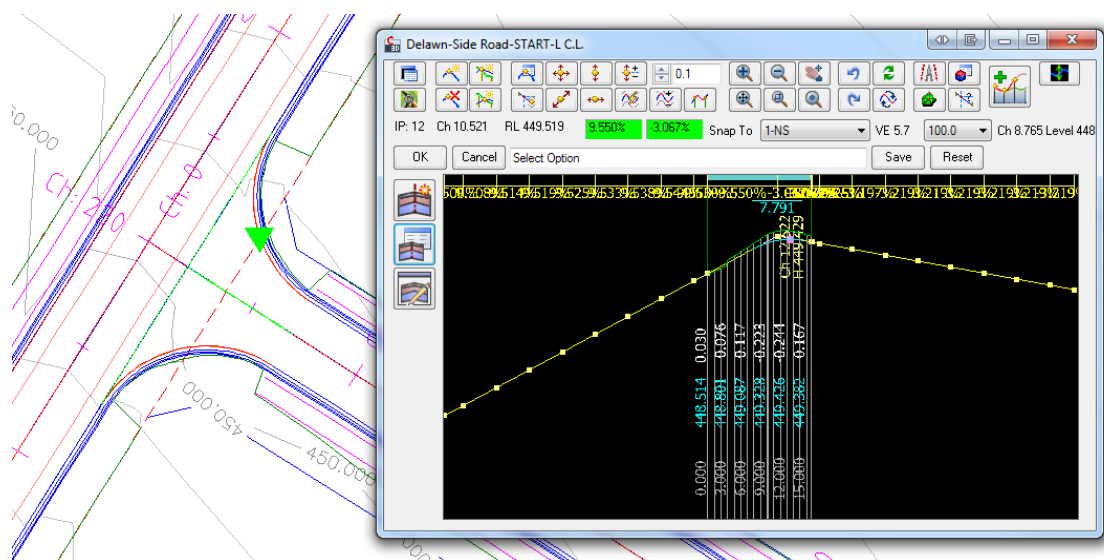
As you edit any of the subdivision objects the drafting linework updates in the drawing - at the click of a button a surface model is created incorporating all the road, kerb returns, cul-de-sacs and knuckles including all trimming of strings at intersections. As you make changes to Roads, all other intersection and road type objects automatically update to ensure design integrity in the model.

Intersections

Intersections are automatically created and incorporated into the road model, including dynamic connectivity for side and crossing roads and inclusion of kerb returns.



Kerb returns automatically and dynamically position themselves both horizontally and vertically to the intersecting roads. Design wizards allow for user creation of single or multi radius kerb returns, or your own alignments. The auto kerb return function creates multiple kerb returns at once, all matched to the intersecting roads and with cross-sections automatically matching between the main and side roads.

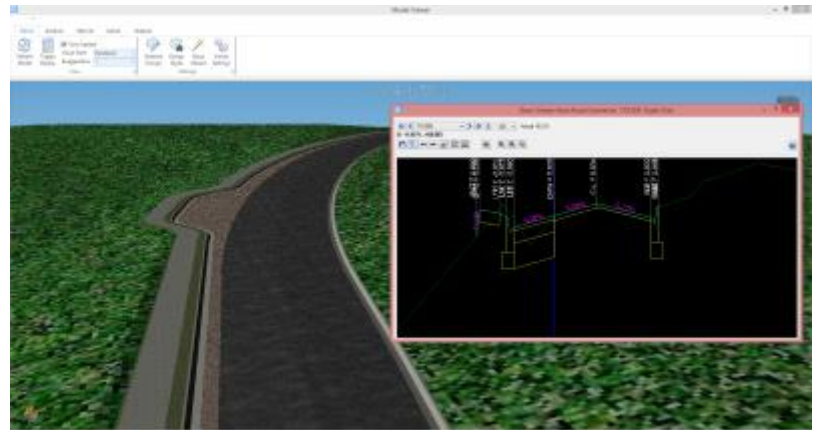


You have complete control over the kerb return geometry, with the software managing the connections to the roads start and end – redesign your roads knowing that the intersection geometry will automatically update.

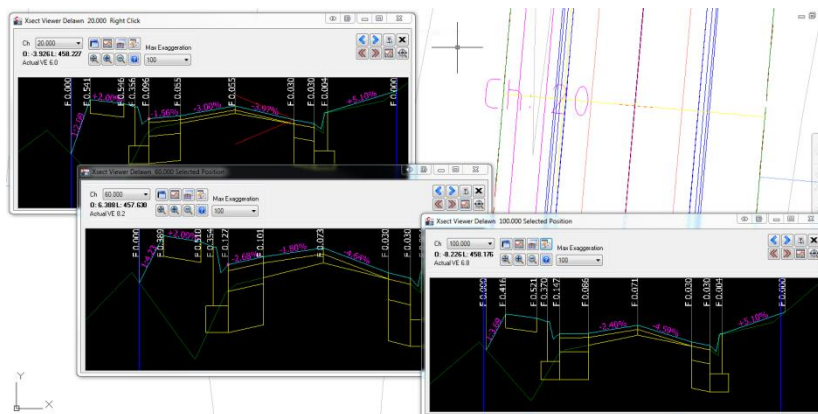
Road Reconstruction Tools

Civil Site Design has been developed with not only road design but also road reconstruction in mind.

Featuring advanced cross-section subgrade tools, independent vertical and/or horizontal control over any part of your cross-section, and the ability to form models using any collection of independently graded strings and cross-section codes, Civil Site Design is the premium design tool for road reconstruction works.



Specific vertical design tools are included to help automate road reconstruction processes, including creating a vertical design based on resheet/overlay depths, match surface controls and String/code projections, as well as displaying design 'envelopes' (projections from another String/code at grade) in the Vertical Grading Editor Window.



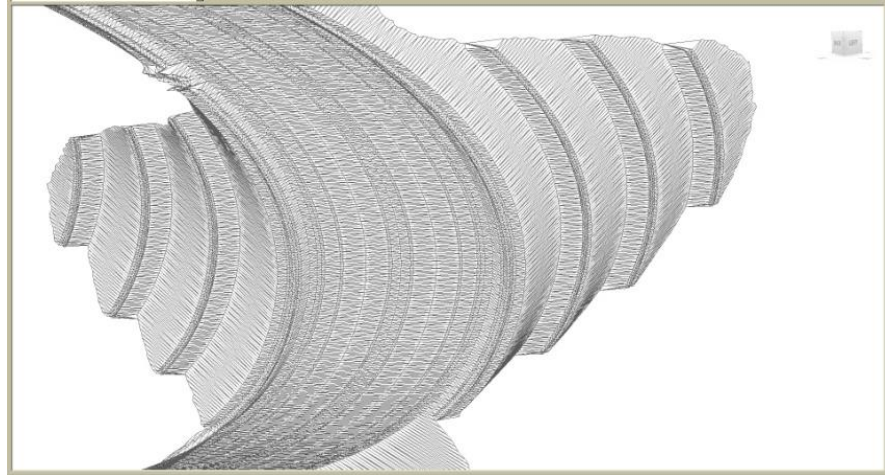
The ability to show multiple dynamic Cross Section Windows of any collection of chainages takes the guess work out of road reconstruction – track the impact of changing any vertical design on the cross section crossfalls, levels or depths as you make design changes.

Using the subgrade design tools you can generate accurate volume outputs through multiple layers, with automatic adjustment of pavement layer depths to match existing surfaces.

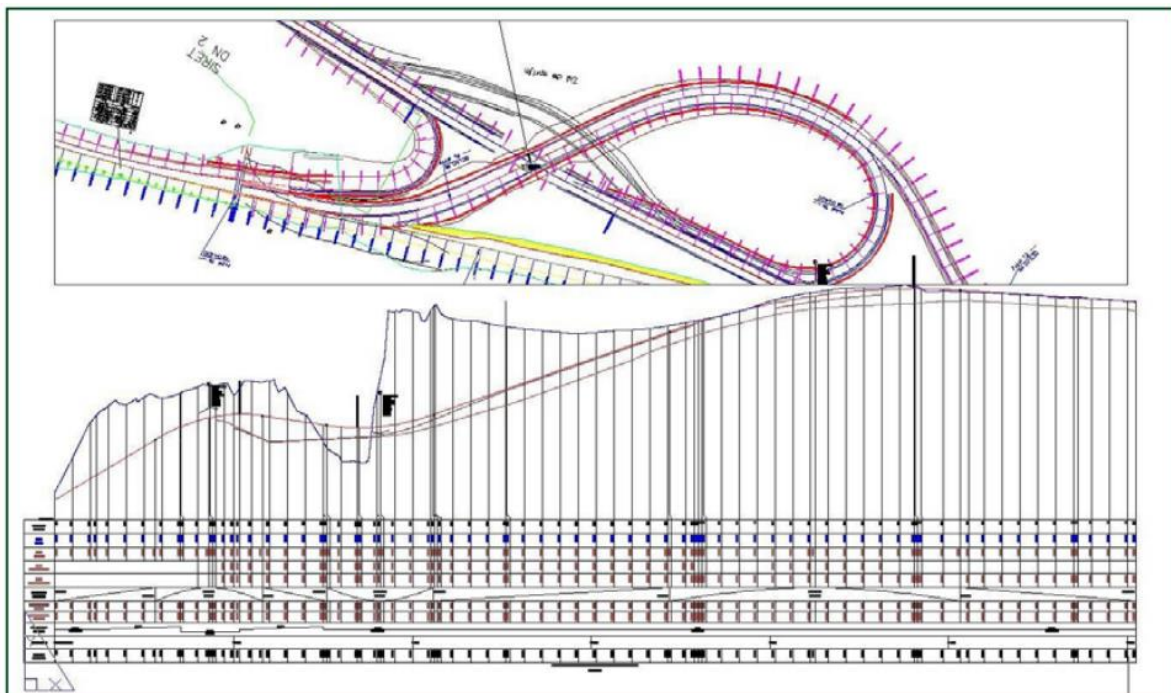


Major Road and Highway Design

When doing larger scale designs that may include service roads, multiple divided carriageways and grade separated intersections you need complete user control. Automating batter design, editing sections, and scalability are critical factors in your design efficiency.



The Civil Site Design design environment is a proven performer on large scale projects, with customers reporting excellent performance when designing single projects in excess of 50km and incorporating independently graded table drains, superelevation and intelligent batter embankments.



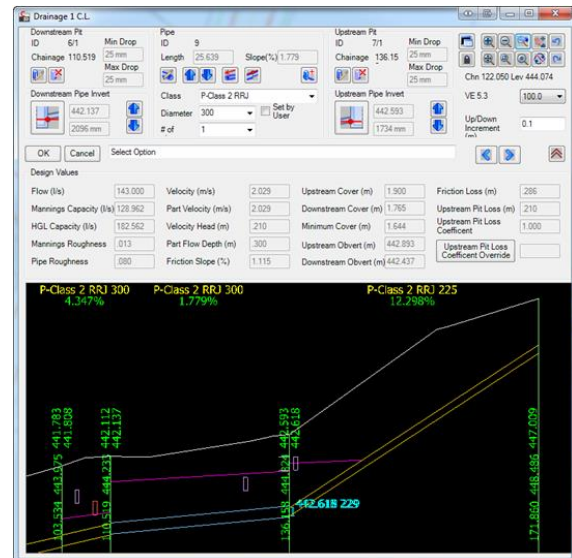
Civil Site Design includes specific design tools for highway designers in managing grade separated roads, as well as intelligent design tools for managing multiple benching conditions and open drains.

Pipe Design

Civil Site Design Pipes includes all the tools you need to quickly create your pipe networks and avoid crossing services and other pipe networks.

Working inside AutoCAD you can create and design Stormwater Drainage Networks, Sewer Networks and undertake general pipe design. Service obstruction checks are included in the design process for you to quickly optimise your designs and avoid conflicts between underground services.

Layout and create your pipe network by either clicking on screen or create directly from polylines or alignments. Whilst the initial pipe layout is based on minimum slopes and covers, the multiple Vertical Design Windows allow you to quickly adjust any pipe sizes and levels to achieve your desired outcomes.



From The Vertical Design Window interface you can see all crossing pipes and services, including clash detection. Edit pipes and pits by setting invert/obvert levels or move pipes up and down by increment. Insert in-line pipes wherever you require and review the pit drops and pipe levels.

Civil Site Design Pipes is synchronised with the Roads module, enabling both the pit levels and offsets to be directly connected to a road element and with dynamic updates as the road element is edited. All pipe networks can be displayed on the road Vertical Grading and Cross Section Windows to confirm locations relative to the road design.

The Reports Manager builds customised reports from any combination of attributes stored by the software and can be exported as comma separated files (CSV) for review in your preferred spreadsheet program or as an AutoCAD table in the drawing. Create pit and pipe schedules directly from your designs.

Using the Long Section plotting tools you can rapidly generate an industry standard output for your designs directly inside the drawing with control over the sheet layout and data included. Publish directly to the drawing as separate files or as layouts in the current drawing.

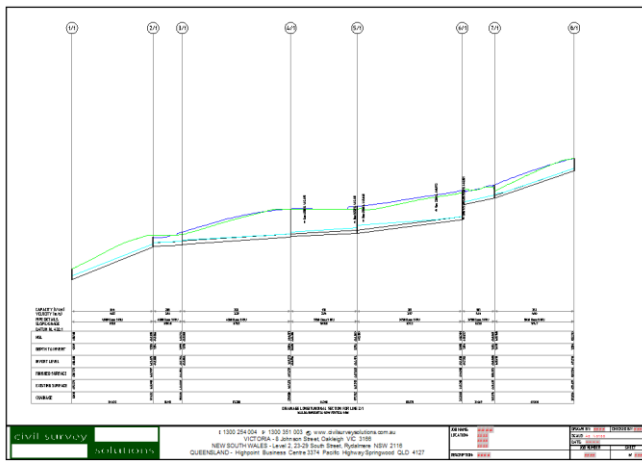
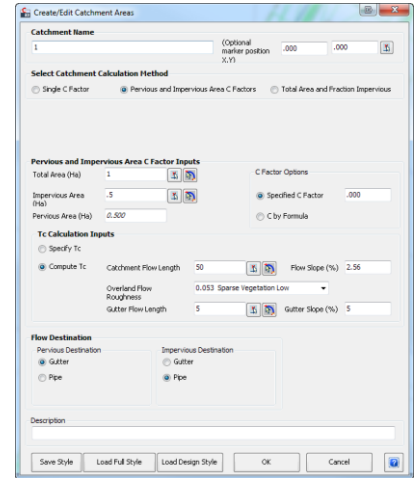
Stormwater Drainage

Built specifically for the Australian stormwater drainage designer and applying the principles of the Australian Rainfall and Runoff manual, Civil Site Design Pipes is a complete tool for designers wanting to create underground stormwater drainage systems.

Easily create drainage catchments directly from a Surface and polyline – catchment style libraries allow you to easily assign catchment criteria for common catchment types.

When a network is created the design flows are calculated and pipe sizes and levels are automatically assigned to manage the flows as well as minimum cover, slope and flow velocities.

As you make changes to pipe sizes and levels the Hydraulic Grade Line and all design information for each pipe automatically updates.



Using the Long Section plotting tools you can rapidly generate industry standard outputs of your designs directly inside the drawing, complete with HGL and other stormwater details and ready for immediate plotting. Publish directly to The drawing as separate files or as layouts in the current drawing.

Previous | Pipes Drainage Pipe-1 | Pipes Drainage Pipe-2

ology - Drainage 1 Return Period: 10yrs Location: Default

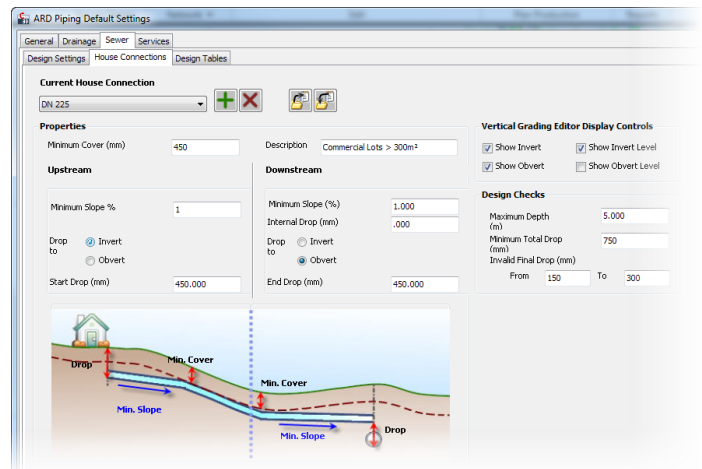
Pipe Connecting (Downstream Upst)	Pipe ID	Pipe Class	Pipe Diameter (mm)	Pipe Length (m)	Pipe Mannings n	Pipe Flow Time (min)	Pipe Design Tc (min)	Pipe Rainfall Intensity (mm/hr)	Upstream Pervious Areas (Ha)	Upstream Impervious Areas (Ha)	Upstream Single Catchment Areas (Ha)	Total Upstream Areas (Ha)	Total Effective Areas (Ha)	Pipe Flow (l/s)	Specified Inflow to Pipe (l/s)	Total Pipe Flow (l/s)	Remarks
1/1-2/1	1/1-2/1	Class 2 RRJ	225	33.1	0.013	0.43	16.68	62.75	0.205	0.205	0.035	0.444	0.268	43.2	53.2		
2/1-3/1	2/1-3/1	Class 2 RRJ	225	96.6	0.013	0.25	16.22	63.31	0.205	0.205	0.035	0.444	0.268	43.5	10.0	53.5	
3/1-4/1	3/1-4/1	Class 2 RRJ	225	13.3	0.013	0.21	16.07	63.76	0.205	0.205	0.035	0.444	0.268	43.8		43.8	
4/1-5/1	4/1-5/1	Class 2 RRJ	225	26.8	0.013	0.41	15.66	64.68	0.205	0.205	0.035	0.444	0.268	44.5		44.5	
5/1-6/1	5/1-6/1	Class 2 RRJ	225	7.0	0.013	0.11	15.69	64.91	0.205	0.205	0.035	0.444	0.268	44.6		44.6	
6/1-7/1	6/1-7/1	Class 2 RRJ	225	25.5	0.013	0.39	15.11	65.76	0.205	0.205	0.035	0.444	0.268	45.2		45.2	
7/1-8/1	7/1-8/1	Class 2 RRJ	225	68.2	0.013	1.11	6.00	96.00	0.000	0.000	0.000	0.239	0.145	37.4		37.4	
P 2	7/1-P 2	Class 2 RRJ	225	36.3	0.013	0.00	5.00	193.00	0.000	0.000	0.000	0.000	0.000	0.0		0.0	
P 2 1/2	Pipe 1	Class 2 RRJ	225	96.7	0.013	0.00	5.00	193.00	0.000	0.000	0.000	0.000	0.000	0.0		0.0	RRJ Fittings
7/1 1/3	7/1-1/3	Class 2 RRJ	225	7.5	0.013	0.26	14.85	66.34	0.000	0.000	0.000	0.285	0.187	19.8		19.8	

Sewer Design

Civil Site Design Pipes incorporates a comprehensive set of sewer pipe design tools.

Sewer house/property connections are included in the design tools and can check depth controls and minimum levels along the sewer network. Each house connection can be viewed in a Vertical Design window for editing and adjustment.

The sewer network will automatically adjust to ensure compliance with the minimum house connection levels, and you will be alerted if sewer pipe edits result in any compliance issues with house/property connections.



Interactive vertical design windows are able to display any branch of pipes in a network and complete with editing tools you can quickly and easily design a system to avoid all conflicts and service the house/property connection. All house connections, service obstructions and other networks display as crossing pipes, including clearance controls - as you make changes to pipe sizes and levels you can immediately identify and address any conflicts.

Detailed and specific reporting tools for sewer designers enable quick identification of any house/property connection issues.

Using the Long Section plotting tools you can rapidly generate industry standard outputs of your designs directly inside the drawing, including house connection controls and ready for immediate plotting. Publish directly to the drawing as separate files or as layouts in the current drawing.

Plan drafting occurs directly in the drawing including selected attributes from your design specific to sewer design.

Drafting

You never leave the Civil 3D and AutoCAD drawing environment using Civil Site Design. Since the drafting outputs in the model update as design changes are made, revision control is far easier to manage and with much less risk of forgetting to update outputs when a design change is applied.

You can select the layers to output information.

Long sections and cross sections created from your design can be output to layouts on your preferred title blocks, saving you time between design and final drafting.

Your pipe designs output to long sections in layouts or to external files, and the design tables for setout and documentation can output directly to The drawing as AutoCAD tables.

Reports

Civil Site Design includes a comprehensive set of reports, outputting both as external text files and into the drawing as AutoCAD tables.

Alignment information can be readily outputted to user definable AutoCAD tables – you pick what information you want and how it is arranged and click the button for it to be displayed in The drawing ready for plotting. Alignment tables detail the alignment geometry, and curve tables enable quick setout of curves along the alignment.

As part of the road design process users can quickly generate setout reports, section volume reports, cross section listing reports, vertical design reports and more.

For road set out, set out all points for all road design objects at once – label in the drawing, generate AutoCAD tables and display the setout locations on your long sections. Reports are customisable – pick what information to place in each column and output both to the drawing and to file.

The Pipes design processes include a myriad of text and drawing output tables – quickly set up your own output table in The drawing showing pipe and pit geometry and hydraulic information suitable for stormwater design.

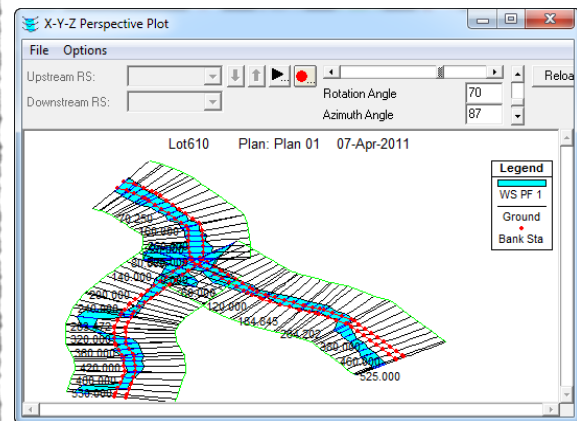
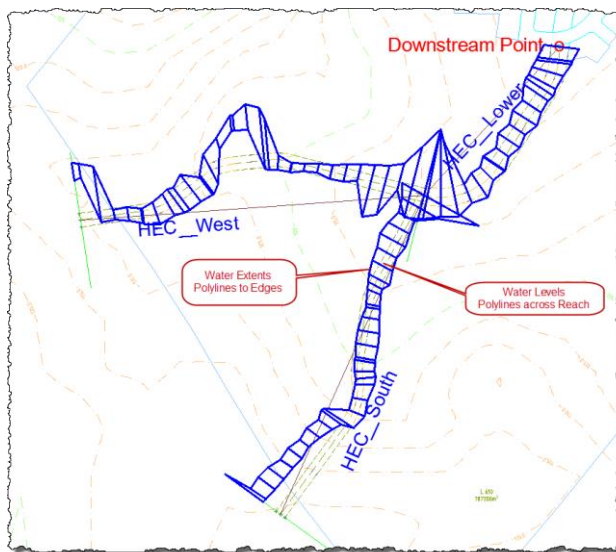
Links

Civil Site Design interfaces with other design programs that support Land XML transfer. Via LandXML users can share surface and alignment data, as well as export Road data for upload to survey equipment.

For pipe design, Civil Site Design shares data with:

- WaterCom Drains: export pit, pipe, catchment and bypass geometry from Civil Site Design directly to WaterCom Drains to save hours setting up your data. Data can also be exported from Drains and imported into Civil Site Design for plotting of long sections to AutoCAD
- PC Drain: use the PC Drain link to export pipe, pit and catchment data to PC Drain for further analysis, design and output from PC Drain

Civil Site Design for HEC-RAS provides users with the ability to transfer section data to HEC-RAS for river analysis, including assignment of Mannings coefficients, defining overbank areas, skewed sections, houses and ineffective areas. Waterline results can be exported out and back to Civil Site Design for presentation in the drawing and construction of a water surface.



Services

Training

Civil Site Design is easy to learn – with most operators able to complete road, drainage, sewer design after only a few days training.

Civil Survey Solutions can provide onsite project based training; class room training or web based training sessions.

Civil Survey Solutions creates its own training course ware with Australian data sets.

Quick Start Customisation Packages

The software comes complete with a wide variety of presentation styles, which can be easily edited by the user to meet your company standards.

Whilst the drafting outputs are fully customisable, we recognise that you may want a kick-start to getting your company standard drafting results in the settings. In order to address this demand we can offer a Quick Start Customisation Package, which includes:

- Consultation with you regarding your work processes and how your outputs are managed
- Analysis of your project outputs and drawings/drawing templates to understand your drafting standards (layers, linetypes, blocks, etc)
- Development and delivery of the following Civil Site Design settings/standards for immediate use at your organisation:
 - ✓ Setting layers used by Civil Site Design
 - ✓ 4 x Surface Styles (includes contour labeling styles)
 - ✓ 2 x Alignment Styles and 2 x Annotation/Label Sets
 - ✓ 1 x Alignment Table Style
 - ✓ 2 x Cross Section Templates
 - ✓ Default Road Settings
 - ✓ 1 x Road Long Section Plot Style
 - ✓ 1 x Road Cross Section Plot Style
 - ✓ 1 x Setout Output Style
 - ✓ 1 x Rainfall table (ARR Maps or Bureau of Meteorology) added
 - ✓ 5 x Pit Types (including pit performance curves, if supplied)
 - ✓ 1 x Pipe Long Section Style
 - ✓ Default Pipe Settings

Please contact us for pricing to deliver customisation services.

About Civil Survey Solutions

Civil Survey Solutions is an Autodesk Partner, Authorised Developer and Authorised Training Centre with offices in New South Wales and Victoria, focusing on the sale and support of Autodesk based civil engineering and survey software.