

Readme for Advanced Road Design for Civil 3D, AutoCAD and BricsCAD

V17.01

This readme contains important information regarding the installation and use of Advanced Road Design versions as described above.

Advanced Road Design for Civil 3D is available for:

- Multiple AutoCAD Civil 3D based releases:
 - AutoCAD Civil 3D 2012 to AutoCAD Civil 3D 2017

Advanced Road Design for AutoCAD is available for:

- Multiple AutoCAD based releases:
 - AutoCAD 2012 to AutoCAD 2017
 - All AutoCAD derivatives (eg: AutoCAD Civil 3D, AutoCAD Map 3D) release versions 2012 to 2016
- BricsCAD V16 (32bit and 64bit installs)
- BricsCAD V17 (64bit version only)

Installation Instructions

You do not need to uninstall any previous versions of Advanced Road Design. This installation will install over the top of any previous ARD installation.

This version of the software will require an update to your license – from a V16 license to a V17 license.

We encourage you to visit the Civil Survey Solutions Subscription Centre:


<http://www.civilsurveysolutions.com.au/index.php/support-and-services/subscription/civil-survey-solutions-subscription> to view all your assets, obtain license keys and download the latest versions. You can also obtain Home Use licenses from this portal.


New and Improved Features



- Changing the Text Scale (DPI scale) using Windows is now better handled in the forms. Previously the text size would change however the form buttons would not. There is now auto scaling occurring across the forms so that buttons shouldn't disappear when text scaling is increased from 100%.

Site Tab

- The Grading Tab has been renamed SITE and includes new features

- Satellite Surface  Command
 - Allows type in and navigation to any location worldwide (via Google Earth) and extraction of both terrain data and geo-referenced image inserted in the drawing (in BricsCAD, the image is saved to file with an accompanying georeference file and must be inserted using the image insert command)

- Satellite Image  command
 - Allows type in and navigation to any location worldwide (via Google Earth) and extraction of a geo-referenced image inserted in the drawing.
 - In BricsCAD, the image is saved to file with an accompanying georeference file and must be inserted using the image insert command)

- Point Cloud  command
 - Allows x,y,z data to be imported into Model Viewer for review, editing and surface creation.
- Import Objects  command
 - Object data, sight distance lines and linemarking created/added in Model Viewer can be inserted in the drawing
 - Object data is inserted as a user definable block in the drawing – users pick the block associated with named objects in Model Viewer
 - Sight distance lines are drawn on separate layers for visible and obstructed sight lines
 - Linemarking is drawn as closed polylines with solid fill hatch

Model Viewer

- HECRAS 2D Export
 - Exports the surface data from Model Viewer as a GEOTIFF (.tif) able to be imported into HECRAS 5.0 or later as a Terrain
- HECRAS 2D Import
 - Imports the 2D flow results from HECRAS 5.0 or later into Model Viewer for 3D visualisation and animation of the flow/flood results
- Civil Site Design added as Additional Surfaces
 - If a Civil Site Design surface is added under Additional Surfaces in Toggle Display, the selected Material Style now applies to the surface

Note: This only applies for AutoCAD 2016 and 2017, Civil 3D 2016 and 2017 and BricsCAD V16 and V17

Alignments

- When the Edit Alignment form is open, grips display on the vertices of the created alignment. These can be moved graphically by clicking on the grips and selecting a new location, updating the alignment geometry.


Grading

- A directional arrow is displayed on the grading polyline selected, to clearly show the direction of the polyline
- You can now reverse the direction of the polyline used for grading, before creating the grading string
- You can now click on the Pick icon next to the Elevation and add an elevation by selecting a location in the drawing.

Pipes

- An error could be generated in the Reports, because some setting/s were incomplete. This error message no longer displays.
- When adding a catchment area and drawing/selecting the polyline for the Catchment Flow Length, the Flow Slope would report as NaN – this has been corrected and the slope is now reported from the surface
- New command can be typed in **ARDUV7ARRANGENETWORKS** to set the order of plotting multiple networks.

Roads

- Enhanced GENIO Export  command
 - This command allows for the user to select what codes to export from each string, set code name adjustments and assign 6D or 10D controls to any string in the output
- When a surface has been created to represent the existing ground and the name is not the same as that referred to in the Active Drawing Settings, a message is regularly displayed advising that the default surface is missing, or that it's been created with dummy coordinates. This message has been suppressed. If only one

surface exists in the drawing when a command is run, that surface is automatically set as the default sampled surface

- The Compute Superelevation form has been revamped to include an image describing the different inputs in the form.
- CAD Output Command Outputs
 - Users can now tick on to output to CAD objects
 - Height Shading
 - Slope Arrows
 - Slope Shading
 - Direction Shading

Note: Currently the option for surface outputs MUST be set to All Surfaces for this output to apply. The output will only apply to currently displayed surface analysis.
- The Model Builder select form has been redesigned to make it clear that there are two options for creation
 - From scratch (user sets all strings to include and all trims)
 - Linked to Auto Model (road network objects are automatically included and road trimming assigned. These update when Build Model is opened, if new roads are added or kerb geometry changes, etc)
 - Edit

Note: Translation for the new terms is only applied for Civil 3D 2016 and 2017, AutoCAD 2016 and 2017 and BricsCAD V16 and V17
- New command added to delete roundabouts: **arduv7DeleteRBWithMissingAlignments**
 - This command deletes any roundabout with a missing alignment for the central island. If there are other things missing (eg: kerbs, roads, outer island) the user can choose to delete these strings as well.
- BETA command – **arduv7AssignAllTemplatesToRoad**
 - This command will generate cross section outputs for every template created.

Process:

 - Create a dummy Road String, with 1m spacings
 - Start the above command and select this road – each template will be applied at 1m spacings
 - Plot the outputs

Data Share

- A new 'Multi' select button in the Read Share form allows users to select a folder containing multiple shared folders from multiple drawings, instead of having to pick individual folders representing each project.

Resolved Issues

- A translation file is used by the software to modify some text in the forms. Previously this translation file was disabled.

Note: This only applies for AutoCAD 2016 and 2017, Civil 3D 2016 and 2017 and BricsCAD V16 and V17

Alignments

- When using the Create Alignment command, the command could fail to utilise the geometry if there were lots of vertices, close together. The algorithm has been improved to handle these cases.

Grading

- Improvements have been made to reduce the instances of the polyline geometry falling 'out of sync' with the grading string geometry. An issue was found with the Plot to Layout command in Cross Section Plots triggering the loss of synchronisation.
- Users can type the command **arduv7ResetEventFlags** if synchronisation is lost between the polyline and the associated grading string

Pipes

- An error could be generated in the Reports, because some setting/s were incomplete. This error message no longer displays.
- When adding a catchment area and drawing/selecting the polyline for the Catchment Flow Length, the Flow Slope would report as NaN – this has been corrected and the slope is now reported from the surface
- Pipe networks with a trailing space (blank) would not correctly save
- The 3D Output command would not output 3D polylines for a network that contained spaces in the network name.
- The Auto Services command was adding the cover and pipe diameter to the Obvert selection method when a 3D polyline was used.

Roads

- When a surface has been created to represent the existing ground and the name is not the same as that referred to in the Active Drawing Settings, a message is regularly displayed advising that the default surface is missing, or that it's been created with dummy coordinates. This message has been suppressed. If only one surface exists in the drawing when a command is run, that surface is automatically set as the default sampled surface
- Renaming a Road String did not transfer changes into Model Builder. This has been addressed.
- An issue could occur with propagation of a kerb check report in Notepad when a Road was edited in the Vertical Grading Editor. This resulted from rebuilding of Built Model/s that are linked to Auto Model. This notepad display has been suppressed.
- Vertical Grading Editor
 - Design Data Form
 - Copy Codes command has been optimised to improve speed when editing. Because of the updating process, having multiple, and particularly cross referenced, Copy Codes could result in slow edit response in the Vertical Grading Editor when IP's were being adjusted.
 - Grid Editor Form
 - An error message could display when editing values in the grid editor if a cross section window was also displayed. The Vertical Grading Editor not update until the refresh button was pressed. This has been addressed.
- Kerb Returns
 - When a kerb return was deleted, it would not be fully removed from the system until the corresponding alignment was deleted. This issue has been resolved.

- Model Builder
 - Grading Strings were not being fully referenced into Model Builder – they were not displaying when they were included/excluded and codes couldn't be edited for the grading strings. This has been addressed – grading strings can be included in Model Builder equally with other strings.
 - Deleting a Built Model now deletes the display of that model from the drawing
 - Previously, Model Builder was not including a sample to trim the Side Road at the start/end of kerb strings.
 - Auto Model wasn't properly represented in Model Builder when roundabouts were included. The kerb RDUM code was continuing to be included on the kerb strings, which overlapped the roundabout strings.
- Intelligent Sections
 - The Test Intercept control was not being correctly applied in all geometry conditions
 -
- Long Section Plots
 - The Hatch command could fail if the design surface did not extend for the full length of the alignment
- Cross Section Plots
 - If explode was ticked on, some objects in the plotted output were not refreshing when replots were applied.
 - Very close section spacing (within .005) could cause the Section Manager to generate an error.
 - Trailing decimals were being incorrectly truncated. The 'zero' values were being removed, rather than rounding.
 - CSD Built Models
 - If the trimming of the CSD Built Model (in the Configure form) was not set to use the cross section extents, then nothing would display for the sections of the CSD Built Model.
 - Improved the pickup of codes set to plot, for presentation of offsets. Previously, the selected codes didn't always match the code list configured in the CSB Built Surface form
 - When referencing a CSD Built Model or design surface, the first and last sections often would not display fully.
 - When Boundary by Layer is used and the layer is outside the surface, the label is no longer drawn at a y value of zero on the sections.
- Plan Linework updating
 - When a Grading String was included in model Builder, the plan linework didn't always update fully when the model was edited.
- Cul-de-sacs
 - Previously, the LIP code couldn't be used to create a cul-de-sac if EB code was used for the default intersection connection code
 - Running Update All Roads could result in part of the cul-de-sac to not display in certain projects
- Superelevation
 - Users now select a superelevation table when they start the superelevation command and this populates the list of Maximum Superelevation values available. Previously, the list of maximum superelevation options did not necessarily correlate with the available values in the superelevation table selected
 - A save and load style option has been added to superelevation to make it easier to pre-set the design controls to apply
- Auto Model Datum
 - Some improvements have been made to handling subgrade when the bottom of the kerb subgrade is higher or lower than the bottom of the pavement subgrade. There is still a (smaller) distance with a sloped subgrade section to 'transition' across the vertical step between the pavement and kerb bottom

- Set Road Defaults
 - In the Set Road Defaults form the default left and right batters were set to zero (resulting in no batters). This has been changed back to 1 (as it was previously)
 - Two redundant columns have been removed from the form.
Note: This only applies for AutoCAD 2016 and 2017, Civil 3D 2016 and 2017 and BricsCAD V16 and V17
- Roundabouts
 - If any data for a roundabout is missing (eg: the central island is deleted) then the roundabout is not loaded into Auto Model (previously the Roads could continue to be trimmed even after a roundabout was deleted)
 - You cannot delete a Road String that is being used by a Roundabout – you will need to delete the Roundabout first using the command `arduv7DeleteRBWithMissingAlignments`

Data Share


- Previously, the surface display in the source drawing would be replicated to the receiving drawing. This resulted in the inability to separately position contour labels in the receiving drawing. This problem has been resolved.
- When Sync Share was run, any new objects created in the source drawing would be included in the share across to the receiving drawing. This behaviour has been addressed – new items are added by running the Add Share command only.

Known Issues

Surfaces

- Volume Surface Output (AutoCAD and BricsCAD only)
 - Using the Create/Update button in the Surface Manager on a surface created via the Volume Report command will result in the elevation data being removed. If this occurs, simple redo the Volume surface output – it will then build using all the data you've added in Surface Manager
- Combined Surface Output command
 - Using the Create/Update button in the Surface Manager on a surface created via the Combined Surface command will result in the elevation data being removed. If this occurs, simple redo the Combined Surface output – it will then build using all the data you've added in Surface Manager

Roads

- Cross Section Plots
 - Update when VGE Closes
 - You need to click on the Update Intersection Match Ins  button to refresh the output plots – close does not auto refresh output plots
- Grading
 - You must apply a template to the grading if you expect boundaries to be applied
 - Boundaries (and trimming) is not correctly applied if you include curve/s in your source grading CL polyline, and the offsets to codes extend beyond the radial point of the curve/s
 - Grading is designed to do overlap correction between adjoining lines – it will not resolve overlap where intermediate lines/curves would need to be ignored in order to find an intercept point.
- Intelligent Sections
 - Ticking on the box to emulate the batter conditions for both cut and fill situations will not work for fill situations, except where the user has set a negative value for the minimum value on any conditional elements. This is 'as designed' however the toggle name is misleading. If the toggle is on, only the one conditional table is applied for both cut and fill situations.
- Section Volumes
 - An inaccuracy in volumes could result when the subgrade was extended to surface. This issue has been resolved
- Renaming Roads
 - When renaming a Road or other string, Model Builder must be closed in order to register the change.
- Roundabouts
 - After creating and deleting a roundabout, the temporary surfaces created as part of the roundabout process may remain in the drawing and resist deletion.
- Auto Model Datum
 - Some improvements have been made to handling subgrade when the bottom of the kerb subgrade is higher or lower than the bottom of the pavement subgrade. There is still a (smaller) distance with a sloped subgrade section to 'transition' across the vertical step between the pavement and kerb bottom
 - A spurious message can appear for particular intersections indicating that the kerb RDUM code is missing subgrade data, even though the kerb may in fact have subgrade data included. The user is encouraged to confirm the subgrade applied to the kerb return by viewing a cross section of the kerb return string, in the event that the message displays.

Pipes

- Add Catchment – Compute Tc
 - When compute Tc is ticked on and the user selects a polyline from the drawing (or draws one) the slope value will report NaN instead of a value if the drawn polyline goes outside the Design surface. This affects AutoCAD and BricsCAD customers only – user type in off slope is required
- Create Services - Polylines outside the Existing and Design surfaces
 - If polylines are snapped onto or outside the surface and used to create services, expect errors with the elevations assigned to any pipes/pits outside the surface.

Tables (BricsCAD Customers Only)

- If you cannot create BricsCAD tables from the Advanced Road Design table output commands, there is an option to revert to standard CAD entry tables. The process is:
 - Open the Active Drawing Settings > Styles Tab
 - Tick on the option 'Draw Tables as Lines and Text'

When you select table output, the pick list of available table styles will change to match with the ARD Table Styles you have set up.

About Editing the BricsCAD Table output – ARD Table Styles

Users can edit the table output by opening the file `ardtablestyles.txt` in the **ARD Settings** folder – this table sets out the text font, text heights (and row heights) for the title, headings and data rows. Edit in Notepad as required: A view of a sample file is below for your reference and to 'see' the format of the file

```

1 #Arial-3.5 to 2.5mm Font
2 Title,Arial,7.5,3.5
3 Head1,Arial,6.5,2.5
4 Head2,Arial,6.5,2.5
5 Data,Arial,5.5,2.5
6 #Arial-5.0 to 2.5mm Font
7 Title,Arial,9.0,5
8 Head1,Arial,6.5,2.5
9 Head2,Arial,6.5,2.5
10 Data,Arial,5.5,2.5
11 #Arial-5.0 to 2.5mm Font-2 line Title
12 Title,Arial,13.0,5
13 Head1,Arial,6.5,2.5
14 Head2,Arial,6.5,2.5
15 Data,Arial,5.5,2.5
16 #Arial-3.5 to 2.5mm Font-2 line Title
17 Title,Arial,11.5,3.5
18 Head1,Arial,6.5,2.5
19 Head2,Arial,6.5,2.5
20 Data,Arial,5.5,2.5
21 #ISOCP-3.5 to 2.5mm Font
22 Title,ISOCP,11.5,3.5
23 Head1,ISOCP,6.5,2.5
24 Head2,ISOCP,6.5,2.5
25 Data,ISOCP,5.5,2.5
26 #ISOCP-5.0 to 2.5mm Font-2 line Title
27 Title,ISOCP,13.0,5
28 Head1,ISOCP,6.5,2.5
29 Head2,ISOCP,6.5,2.5
30 Data,ISOCP,5.5,2.5
31 #ISOCP-5.0 to 2.5mm Font-2 line Title
32 Title,ISOCP,13.0,5
33 Head1,ISOCP,6.5,2.5
  
```


Important information - .NET Framework 3.5.1

If you're experiencing issues running Advanced Road Design (i.e. you receive an *'Unknown command'* whilst running the software), ensure that Microsoft .NET Framework 3.5.1 is turned on. You can turn on Microsoft .NET Framework 3.5.1 by following these steps...

1. Type 'Windows Features' in the Windows Start menu
2. Run 'Turn Windows Features on or off'.
3. Ensure Microsoft .NET Framework 3.5.1 is ticked on.

