

AUTODESK GUIDANCE

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1. Combination Scale Factor
 - a. The CSF will be neglected for transverse measurements.
 - b. All bridge span lengths and stations in Infaworks will be grid dimensions.
 - c. All Inventor items will be built using ground dimensions.
 - d. Additional notes required to denote what is grid and what is ground
 - i. May need dual models for some scenarios when girders need to be in ground dimensions
2. Dimensions and Notes
 - a. All dimensions and notes will be placed in "Paper Space" at a 1:1 scale.
 - b. Standard details will be placed in "Paper Space" at the correct scale.
 - i. If detail needs modification place in Model Space at 1:1 scale and modify accordingly and place on sheet the same as any other detail.
 - c. Borings placed on Revit sheet at 1" = 20'-0".
3. Microstation to ACAD line weights
 - a. MS 0 = ACAD 0.09
 - b. MS 1 = ACAD 0.18
 - c. MS 2 = ACAD 0.25
 - d. MS 3 = ACAD 0.30
4. Greyscale Colors
 - a. 250 – 255
 - i. These will plot as their respective shades of grey
5. Sheet Size
 - a. All Autodesk sheets will be 11x17 (Autocad & Revit).

PROJECT FILES

ACAD_Template.dwt

S:\Bridge_CADD\Autodesk\Civil_3D\Templates

- Autodesk Drawings (Rehab)
- Details for Revit Import

ACAD_DeckGrid_Template.dwt

S:\Bridge_CADD\Autodesk\Civil_3D\Templates

- Autodesk Drawings (Deck Grids)

Sheet Set Template.dst

S:\Bridge_CADD\Autodesk\Civil_3D\Templates

- Sheet Sets for Autocad Drawings (Rehab)

Deck Grids Sheet Set Template.dst

S:\Bridge_CADD\Autodesk\Civil_3D\Templates

- Sheet Sets for Autocad Drawings (Deck Grids)

Bridge_071522.rte

S:\Bridge_CADD\Autodesk\Revit\Templates

- Revit Projects

Bridge_Details_090821.rvt

S:\Bridge_CADD\Autodesk\Revit\Templates

- Revit Standard Bridge Details for import into project

Bridge_Project_070722.rvt

S:\Bridge_CADD\Autodesk\Revit\Templates

- Revit Project created from template

Bridge_Tables_092021.rvt

S:\Bridge_CADD\Autodesk\Revit\Templates

- Revit Tables for import into project

STANDARD DRAWINGS

- **PDF:** BR_Std_Dwg_Binder
- **CAD:** BR_Std_Dwg.dwg
- **Sheet Set:** BR_Std_Dwg_Set

S:\Bridge_CADD\StdDwg\PDF
S:\Bridge_CADD\StdDwg\CAD
S:\Bridge_CADD\StdDwg\CAD

The following guide is for placing Autodesk Bridge Models and Design Files on BIM360 & PCMS.

INVENTOR

1. Place Inventor files on PCMS
 - a. Create a file folder in the DGN folder
 - i. Filename: XXXX000BRIVT001
 1. This should also be the name of the full model assembly in Inventor
 - b. Place all Inventor parts and assemblies in the above folder
 - i. Subfolders may be used to organize parts as needed
 - ii. 3D Model Filename: XXXX000BRIVT001.IAM
 - iii. See "REVIT" for filenaming of Inventor exports
 - c. Create a zip file of this folder
 - i. Zip file filename should match the folder filename
 - d. Place the above zip file on PCMS

INFRAWORKS

1. Place Infracore file on BIM 360
 - a. Sync the file to the Project Infracore folder on BIM360
 - i. Filename: XXXX000BRMAP001

REVIT

1. Place Revit file on PCMS
 - a. Create a file folder in the DGN folder
 - i. Filename: XXXX000BRRVT001
 1. This should also be the name of the base Revit file
 - b. Place all Revit exports from Inventor in this folder
 - i. Export Base file of concrete parts
 1. Filename: XXXX000BRRVT001.RVT
 - ii. Export all other files as needed
 1. Filename: XXXX000BRRVT001-XXXX.RVT
 - a. Suffix the additional parts filename with a description of what the export is (ex. -beams, -piles, rails,)
 - c. Create a zip file of this folder
 - i. Zip file filename should match the folder filename
 - d. Place the above zip file on PCMS

CIVIL 3D

1. Place Civil 3D files on BIM360
 - a. Terrain Filename: XXXX000BR**RETR**001.DWG
 - b. Alignment Filename: XXXX000BR**ALN**001.DWG
 - c. Borings Filename: XXXX000BR**COR**001.DWG
 - d. 3D Bridge Filename: XXXX000BR**GEN**001.DWG
 - i. This file will contain the Revit export for Road Design Plans
 - e. Map File Filename: XXXX000BR**MAP**001.DWG (Contains XREF of the above files)
 - i. The Map file is only needed if required by design.

AUTOCAD

1. NEW BRIDGE PROJECT
 - a. Place Autocad file on BIM360
 - i. 3D Model Filename: XXXX000BR**XXX**001.DWG (File class to be named per the object ex. BNT, PRD, RDE)
 - b. Place Civil 3D export to Autocad on BIM360
 - i. Terrain Filename: **ACAD**-XXXX000BR**RETR**001.DWG
 - ii. Alignment Filename: **ACAD**-XXXX000BR**ALN**001.DWG
 - iii. Borings Filename: **ACAD**-XXXX000BR**COR**001.DWG
2. REHAB PROJECT
 - a. Place Autocad file on PCMS
 - i. Rehab Filename: XXXX000BR**REH**001.DWG (Only one file per Rehab, All sheets in this file)

SHEET SET

1. Place Autocad Sheet Set file on PCMS
 - a. Sheet Set Filename: XXXX000BR**REH**001.DST
 - i. The sheet set is only required for Autocad Rehab projects.
 1. The filename should match the Autocad filename.

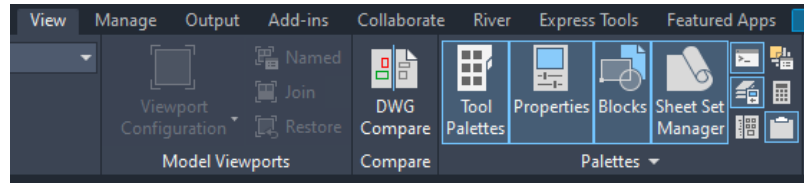
The following guide is to create new Sheet Sets in Autocad.

AUTOCAD

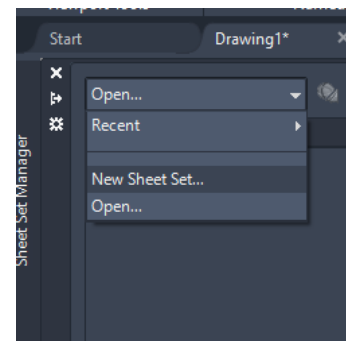
NEW SHEET SET

Open the Autocad file that contains your sheets

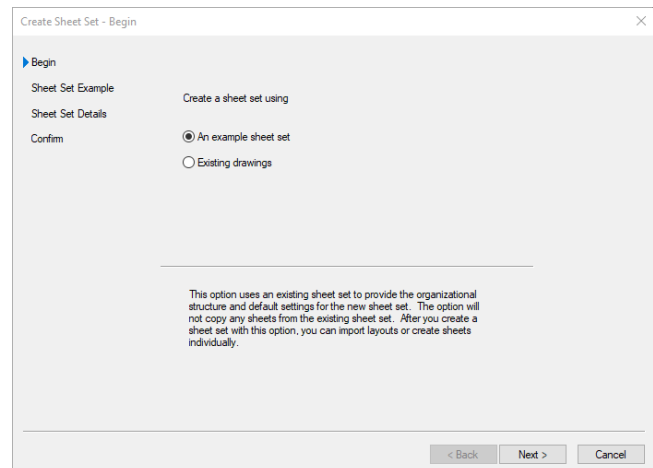
- Open the Sheet Set Manager
 - Location: View tab Palettes palette



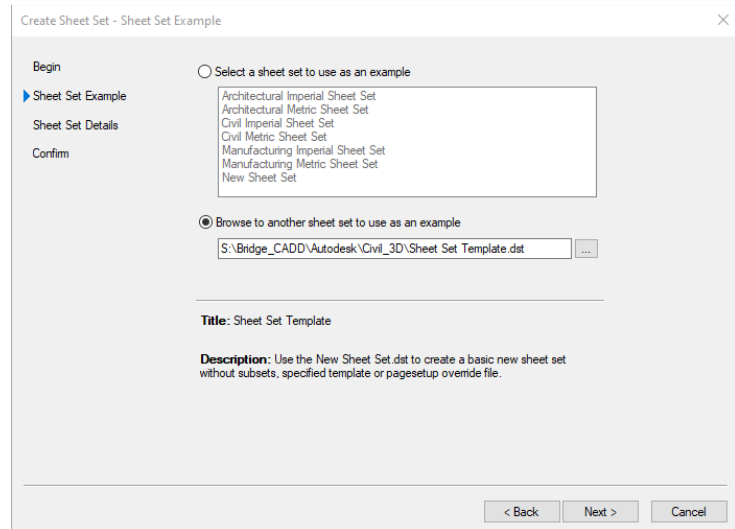
- In the Sheet set manager select New Sheet Set



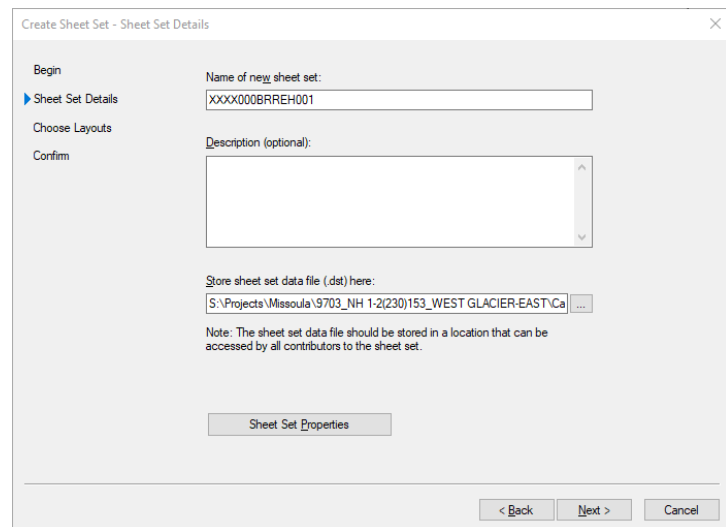
- Toggle Example Sheet Set
- Select Next



- Browse to the location of the Sheet Set Template
- Select Next

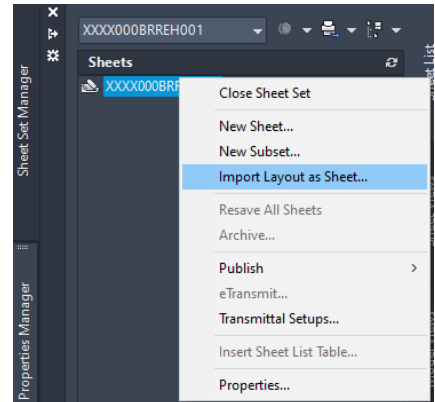


- Give the Sheet set a filename
 - This should match the filename of the Autocad drawing
 - Browse to the location where the file will be stored
 - This should be the same location as the Autocad drawing
 - Select Next
-
- Select Finish



ADDING SHEETS

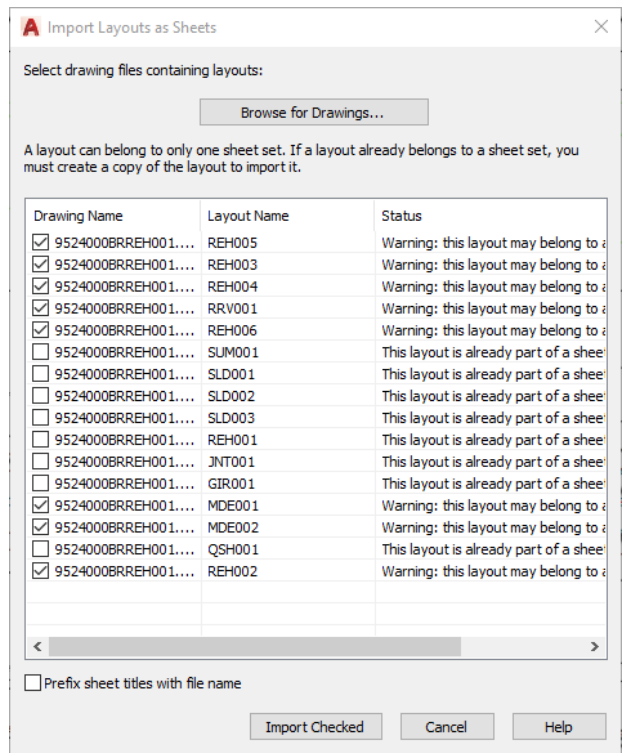
- Right Click on the new sheet set and select “Import Layout as Sheet”



- Browse and select your file that contains the sheets
- Select the Autocad layouts that you want to add to the Sheet set
- Select Import Checked

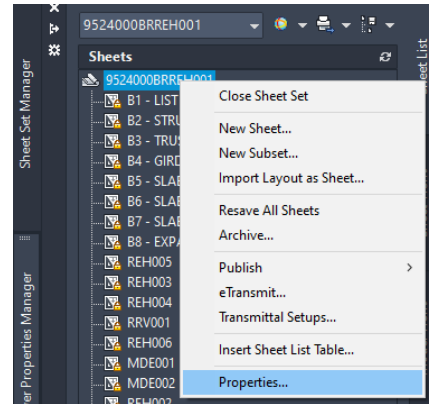
NOTE: Only sheets that are not part of a sheet set may be added.

NOTE: The sheets will now show up in the sheet list by the layout name



SETTING PROJECT INFORMATION

- Right Click on the new sheet set and select properties

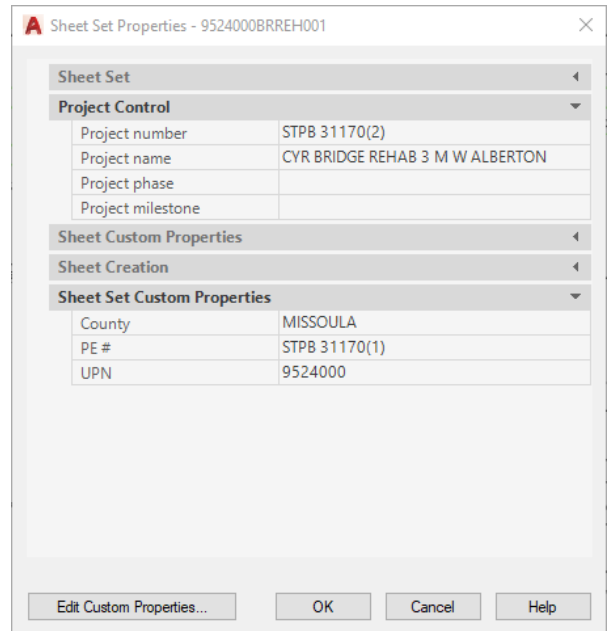


These Properties will fill in the information that is the same for all sheets in the set

- Under Project Control Fill in the following information
 - Project Number
 - This will be the Construction Number
 - Project Name

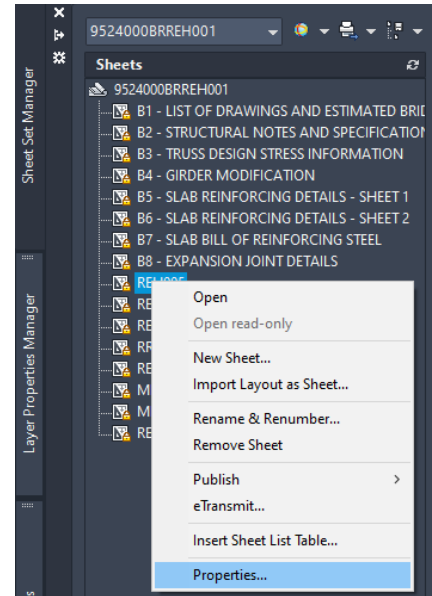
- Under Sheet Set Custom Properties Fill in the following information
 - County
 - PE #

- Select OK



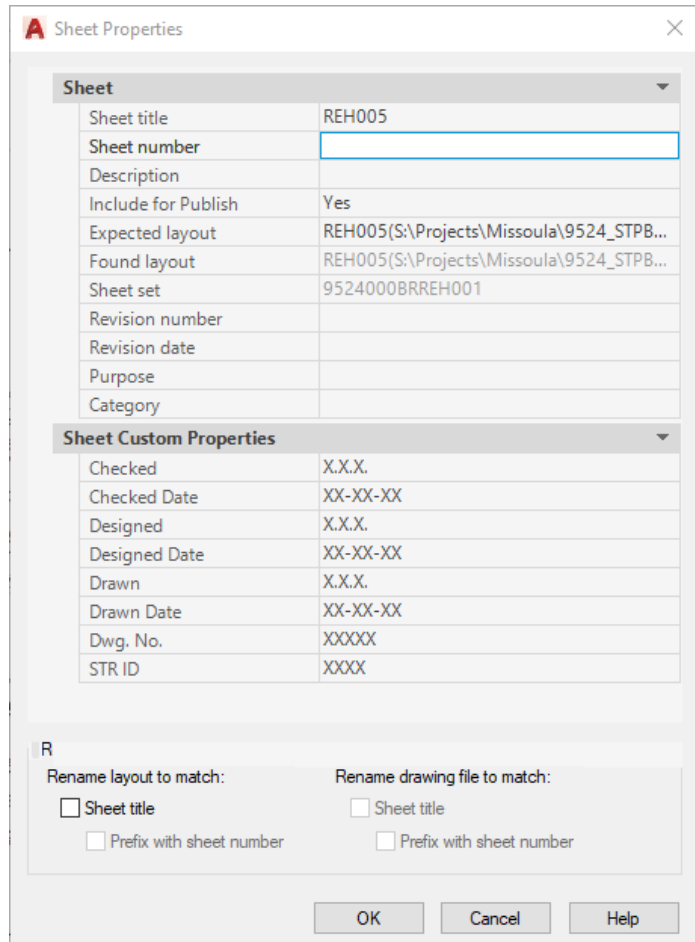
SETTING SHEET INFORMATION

Right Click on a sheet in the set and select properties



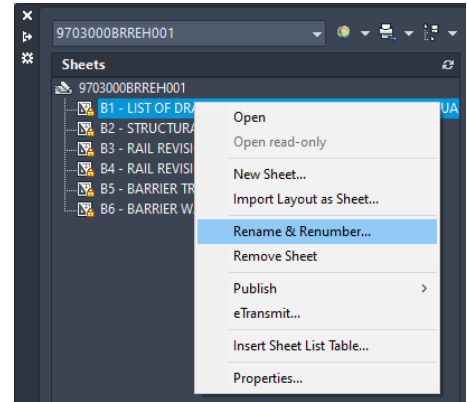
These Properties will fill in the information that is the same for all sheets in the set

- Under Sheet Fill in the following information
 - Sheet Title
 - This is what will appear in the upper right corner of the title block and in the list of drawings
 - Sheet Number
- Under Sheet Custom Properties Fill in the following information
 - Appropriate Initials and Dates for
 - Checked
 - Designed
 - Drawn
 - STR ID
 - Dwg. No.
 - Leave as “XXXXX” until the drawing numbers are assigned
- Select OK



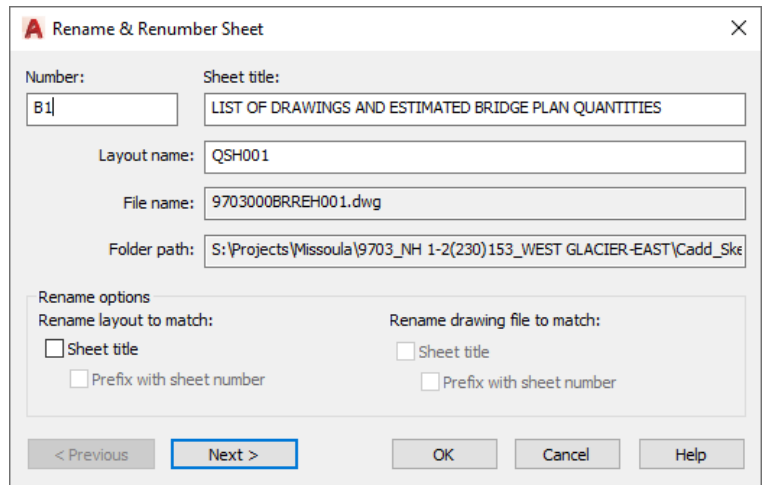
SETTING SHEET NUMBERS AND TITLES

Right Click on the first sheet in the list and select Rename & Renumber



Fill in the following information

- Number
 - This is the sheet number for the sheet that will appear in the title block
- Sheet Title
 - This is the title of the sheet that will appear in the title block
- Layout name
 - Leave this as is



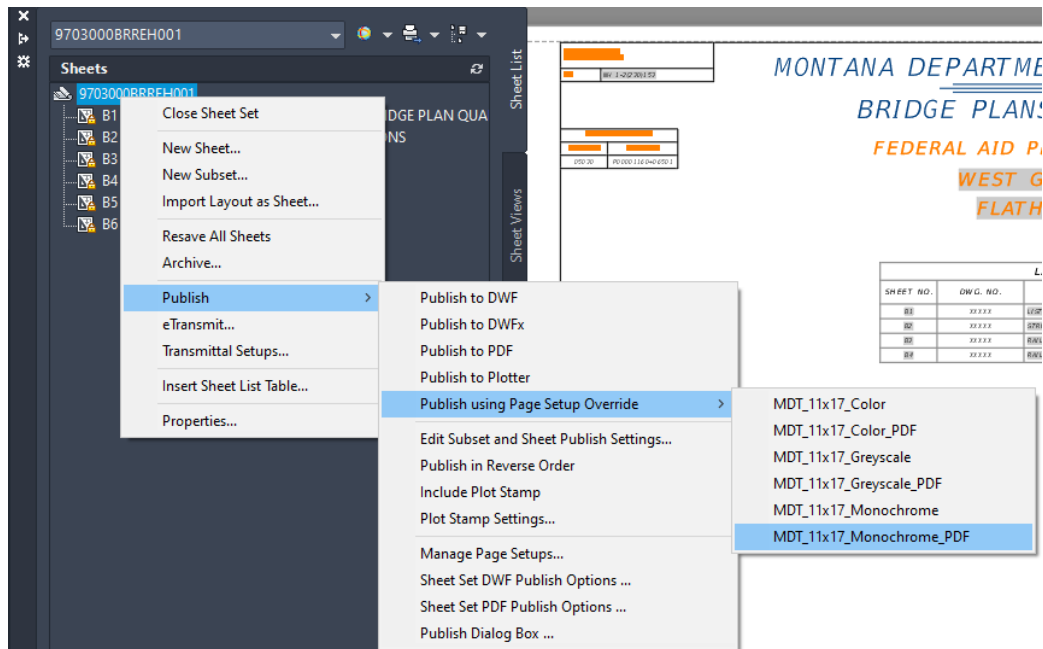
Do **NOT** check the Rename layout check box at the bottom

Press Next to proceed to the next sheet in the list

Press OK when done numbering and naming the sheets

NOTE: These can also be set under the Sheet Properties with the Sheet Title & Sheet Number fields. See “Setting Sheet Information” section of this guide for additional details.

PLOTTING

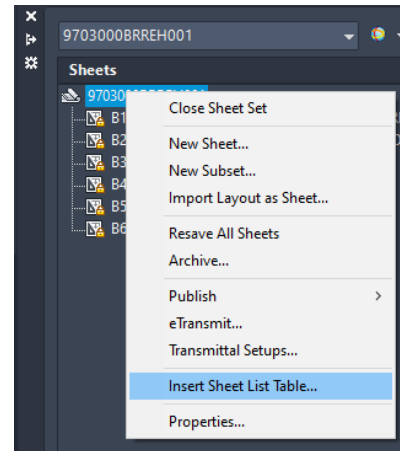


- Plot full sheet set
 - Right click on the sheet set name
- Plot single sheet
 - Right click on the sheet that needs plotting

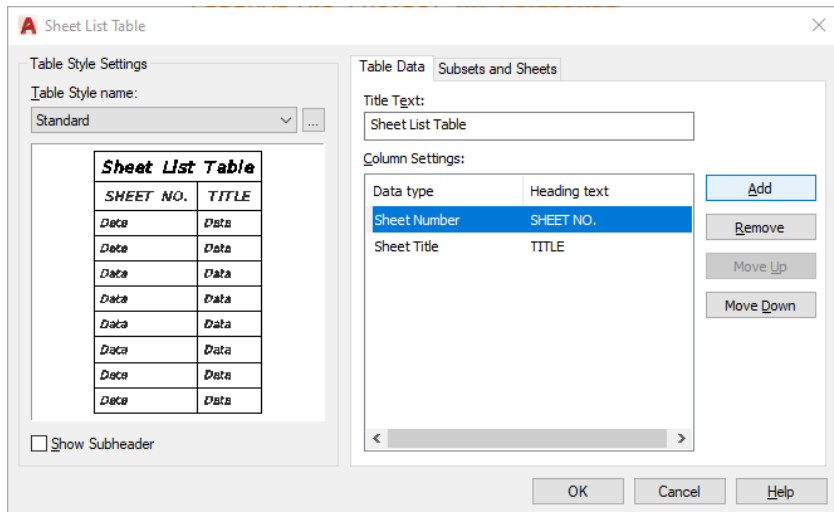
- Select Publish
 - Publish using Page Setup Override
 - Select the required plot style for the set
 - MDT_11x17_Color
 - MDT_11x17_Color_PDF
 - MDT_11x17_Greyscale
 - MDT_11x17_Greyscale_PDF
 - MDT_11x17_Monochrome
 - MDT_11x17_Monochrome_PDF

LIST OF DRAWINGS

Right click on the sheet set name and select Insert Sheet List Table



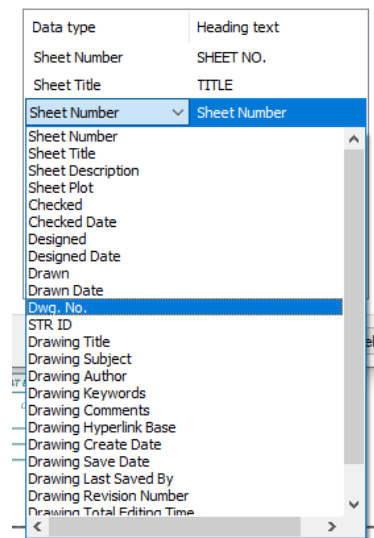
Change the Title Text from “Sheet List Table” to LIST OF DRAWINGS



Click Add and a new row will be added to the list of columns, this will be com the drawing number

Click on the sheet number text of the new row and select “Dwg. No.” from the list

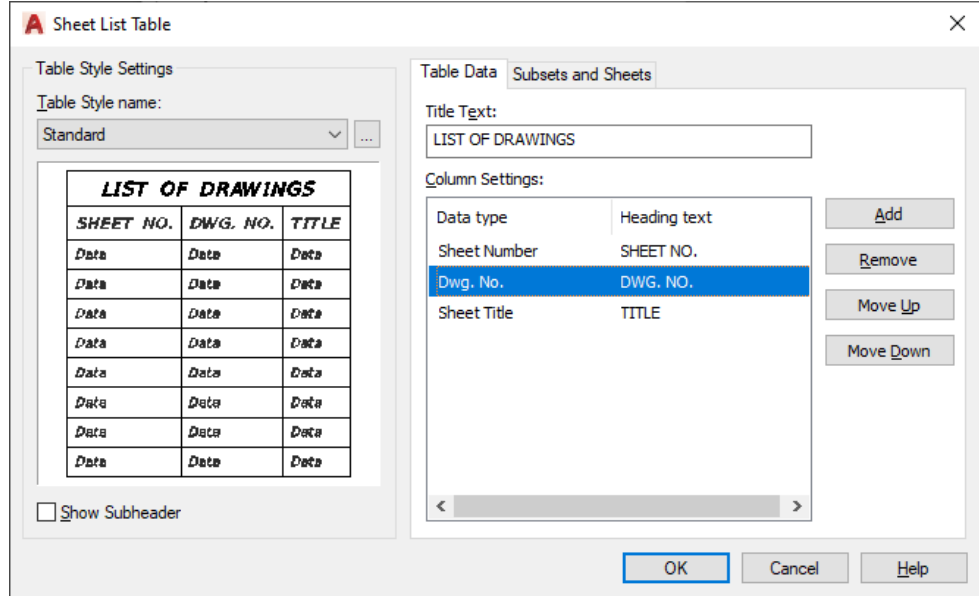
Double click the text “Dwg. No.” under the Heading text column and change the text to DWG. NO.



Make sure the “Dwg. No.” row is selected and click move up to move this row between the “Sheet No.” and “Title” rows.

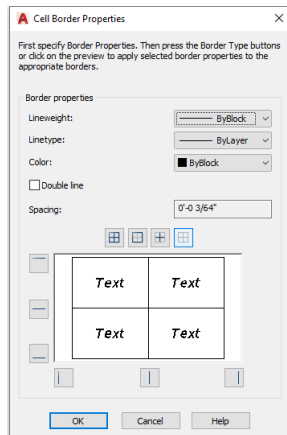
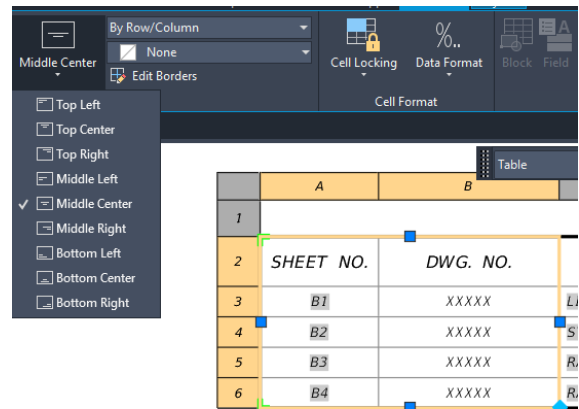
The dialog box should match what is shown here

Click Ok



Locate a point at which to insert the table

Format the table remove the column and row borders and set the “Sheet No.” and Dwg. No.” columns to center justified. The column and row borders should show up grey if they are turned off



	A	B	C
1	LIST OF DRAWINGS		
2	SHEET NO.	DWG. NO.	TITLE
3	B1	XXXXX	LIST OF DRAWINGS AND ESTIMATED BRIDGE PLAN QUANTITIES
4	B2	XXXXX	STRUCTURAL NOTES AND SPECIFICATIONS
5	B3	XXXXX	RAIL REVISION DETAILS - SHEET 1
6	B4	XXXXX	RAIL REVISION DETAILS - SHEET 2

The following guide is to create deck grids in Autocad.

Each structure will get its own deck grid drawing, sheet set and pdf of the deck grids.

This procedure will require the detailer to only draw the outline of the bridge with the appropriate centerlines and annotations. **Make no other modifications to the file or the sheets.**

AUTOCAD

Create a new Autocad file

- Template = ACAD_DeckGrid_Template.dwt
- Filename = MDT Structure ID
- Save Location =

Draft the outline of the bridge

- Draft the bridge such that the following is met
 - Extreme end of bridge is located on the line $Y = 0$
 - This will be the end of slab or edge of paving notch
 - Left face of rail is located on the line $X = 0$
 - All Annotations are within the deck grid boundary boxes

Any object that extends outside of the boundary boxes will not appear on the sheets

- Annotate the bridge with the following in model space at a 1" = 5'-0" annotation scale.

Annotating in model space will allow for copying the required annotations from sheet to sheet.

The annotation scale will be previously set in the Template

- CL Roadway
 - Each sheet containing the bridge
- Face of rail (each side)
 - Each sheet containing the bridge
- End of slab or Edge of Paving Notch
 - Beginning and end of bridge
- Draft the bridge using the following layers
 - DG_Centerlines
 - All centerlines used for the bridge (CL Roadway, CL Bents)
 - DG_Slab
 - Outline of the bridge
 - DG_Text-Dimensions
 - All annotations

SHEET SET

Create a new Sheet Set, See MDT Guidance Autodesk Sheet Sets for additional information.

- Template = Deck Grids Sheet Set Template.dst
- Filename = MDT Structure ID
- Save Location =

Fill in the 6 fields in the “Sheet Set Custom Properties” Section Only. This information will populate the title block on all sheets.

- Bridge Name
 - Use the name listed in SMS
- MDT STR. ID
- NBI Number
- Route
 - Use the route listed in SMS
- Ref Point
 - Use the Reference Point listed in SMS
- Number of Sheets
 - This will be the total number of sheets; this is also the number located in the deck grid boundary that is on the last sheet containing the bridge

Add only the sheets containing the bridge to the sheet set

- Rename and Renumber
 - Will need to fill in the number box in the dialog
 - All other information to remain as is
 - This will number the sheets correctly in the title block

Plot the sheet set

Verify ALL levels are turned on and thawed before plotting

- Publish
 - Publish using Page Setup Override
 - MDT_DeckGrid_11x17_Greyscale_PDF
 - Save the pdf to the same location as the Autocad file and Sheet Set using the structure number as the file name

The following is a brief synopsis for the Workflow 3.14159265. Additional information on the topics can be found elsewhere in the Autodesk Guidance document.

FILE MANAGEMENT

- All Inventor and Revit files will be placed on PCMS for this workflow
- Place all Inventor files in a folder
 - Filename: XXXX000BRIVT001
- Place all Revit files in folder
 - Filename: XXXX000BRRVT001
 - This needs to match the file name of the initial export from Inventor

INVENTOR

EXPORT REVIT FILES

- Export Concrete Parts
 - These are only the parts that require reinforcing in Revit.
 - Caps, Backwalls, Diaphragms, Slabs. Ect.
 - This file will have the filename that matches the folder created above.
- Export other parts as required
 - Beams, Riprap, Rails, Joint Fillers, Piles, Ect.
 - Filename: XXXX000BRRVT001-Beams

REVIT

Open the Revit file XXXX000BRRVT001.RVT containing the bridge model

IMPORT STANDARDS

- Open the Bridge_Project from the Template location
 - Transfer project standards from this file to your file
- Import views from the file
 - Use the Bridge_Project file
 - Copy all available details, tables, and sheets

FILE SETUP

- Set View Range in the view titled "Level 1"
 - Set the following (Upon completion of this step you bridge should be visible)
 - Top = Unlimited
 - Cut = An Elevation Above the bridge
 - Bottom = Unlimited
 - Depth = Unlimited
 - Rename this view to "SITE"
 - Turn on all the "Site" Items in Visibility/Graphics

- Link Road Alignment into file
 - Set this file to the center of the bridge
 - This file should contain a point at CL Bridge.
 - This file should contain a mark for locating other files
 - Rotate alignment to horizontal
 - This should match the bridge orientation
- Set True north in the file
- Set or Verify Project North in the file
- Set the project coordinates at the CL Bridge

LINK ADDITIONAL REVIT FILES

- Link all additional Revit files created from the Inventor exports

LINK TERRAIN

- Link in the terrain file
 - This is a published surface from Civil 3D
 - User will need to publish this file
 - Large Terrain files will require clipping before publishing

DETAIL BRIDGE

- Create views and levels as necessary to detail the bridge
 - Some of these items will require set up by the user
 - See RevitSettings.pdf

The following is the best practice for Workflow 3.14159265 for building the Inventor model and placing the alignment and terrain in Revit.

CIVIL 3D

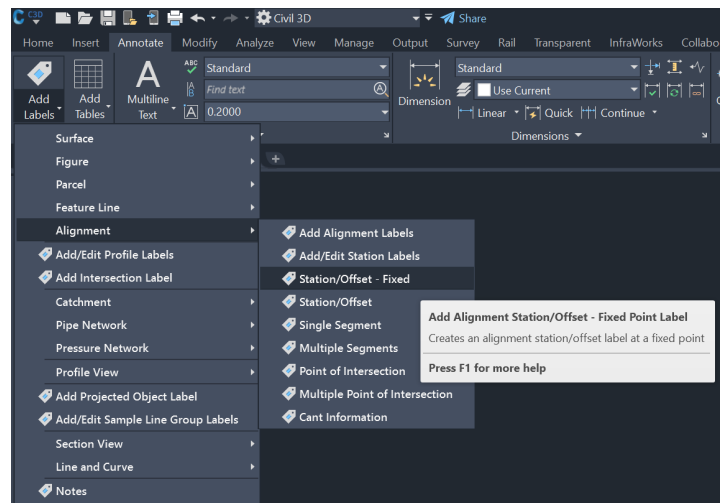
- In Civil 3D set proxy graphics = 1
 - This is required to be set for the alignment to go into Revit

LOCATE POINT ON ALIGNMENT

- Locate a point on the alignment
 - Point is at CL Bridge at CL Roadway
 - This should match the X,Y,Z point in Inventor
- Start the point command
 - Type 'so'
 - This is also found on the "Transparent" tab "Station Offset"
- Select the Alignment
- Key in the station and press enter
- Key in the offset and press enter
 - This should be zero
- You now have a point on the alignment

ANNOTATE ALIGNMENT POINT

- Annotate the Point
- From the "Annotate" expand "Add Labels" expand "Alignment" Select "Station/Offset – Fixed"
- Select the alignment
- Select the previously created point
- This will give you the coordinates for the center of your bridge for use in Revit later.



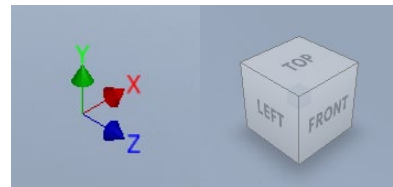
ADDITIONAL ITEMS TO CONSIDER

- Place additional 2D line work items in this file as required for the plan set.
 - Existing Bridge Outline
 - Existing Bridge Substructure
 - Utilities
 - Boring Locations

INVENTOR

MODEL SETUP

- Orientate the bridge model assembly with the top of the bridge on the top view, and ahead on-line along the “X” axis from left to right.
 - Individual model parts can be drawn in any axis or orientation.
- Model will contain most if not all elements necessary for the final bridge plans



EXPORT REVIT FILES

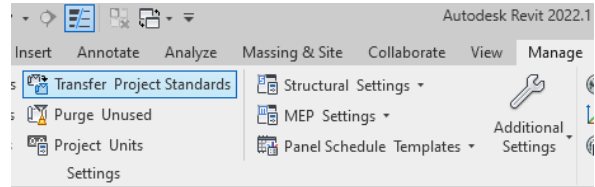
- Export Concrete Parts
 - These are only the parts that require reinforcing in Revit.
 - Caps, Backwalls, Diaphragms, Slabs, ect.
 - This file will have the filename that matches the folder created above.
- Export all other parts as needed
 - These exports will be of parts that need to be shut off independently of other parts
 - Additionally, these exports should be thought out such that a change to a particular component wouldn't necessarily change other components throughout the entire bridge.

REVIT

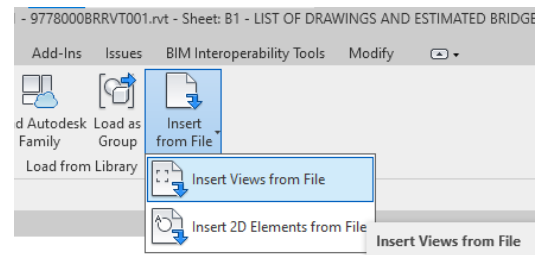
Open the Revit file XXXX000BRRVT001.RVT containing the concrete bridge parts

IMPORT STANDARDS

- Open the Bridge_Project from the Template locations
- Transfer project standards from this file to your file

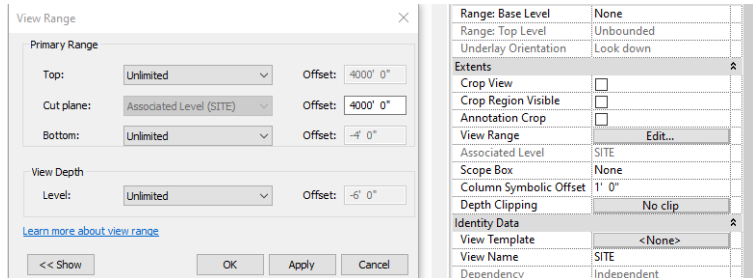


- Import views from the file
 - Use the Bridge_Project file
 - Copy all available details, tables, and sheets

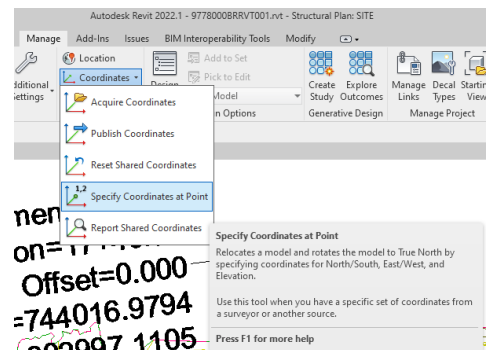


FILE SETUP

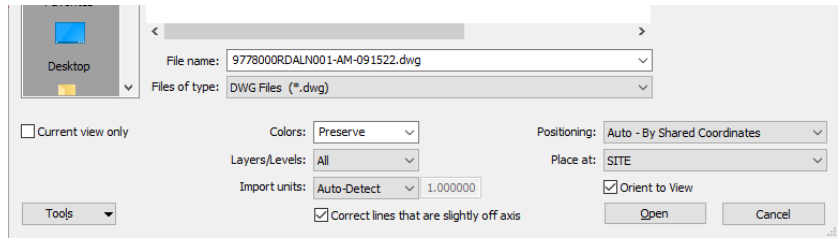
- Set View Range in the view titled "Level 1"
 - Set the following
 - Top = Unlimited
 - Cut = An Elevation Above the bridge
 - Bottom = Unlimited
 - Depth = unlimited
 - Rename this view to "SITE"
 - Turn on all the "Site" Items in Visibility/Graphics



- Set the project coordinates at the CL Bridge
 - These should match the coordinates from the Civil 3D alignment
 - Choose the point that is the project base point
- Relocate the Survey Point back to coincident with the Project Base Point.

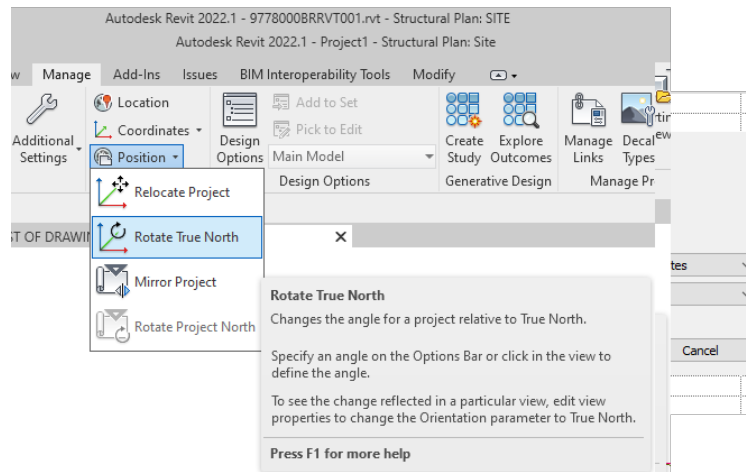


- Link Road Alignment into file
 - From the “Insert” tab select “Link Cad”
 - This file should contain a point at CL Bridge.



- Rotate alignment to horizontal
 - This should match the bridge orientation
 - Rotate the alignment about the Project Base Point

- Set True north in the file



Verify Coordinates are correct after setting True North

LINK TERRAIN

- Link in the terrain file
 - This is a published surface from Civil 3D
 - User will need to publish this file
 - Large Terrain files will require clipping before publishing
- From the “Insert” tab select “Link Topography”
 - Select the file from BIM360

The following are the required settings for the various items in Revit.

CONTENTS

GRIDS

LEVELS

ELEVATIONS

SECTIONS

DETAIL VIEWS

CONTOUR LABELS

SPOT ELEVATIONS

GRIDS

SYSTEM FAMILY: GRID

The screenshot shows the 'Type Properties' dialog box for a 'System Family: Grid'. The 'Type' is set to 'Grid 1'. Below the 'Type Parameters' section, there is a table with the following parameters and values:

Parameter	Value
Graphics	
Symbol	MDT_Grid Head - Circle - Reg Text : Grid
Center Segment	Continuous
End Segment Weight	1
End Segment Color	RGB 000-000-160
End Segment Pattern	Grid Line
Plan View Symbols End 1 (Default)	<input checked="" type="checkbox"/>
Plan View Symbols End 2 (Default)	<input checked="" type="checkbox"/>
Non-Plan View Symbols (Default)	Both

At the bottom of the dialog, there are buttons for '<< Preview', 'OK', 'Cancel', and 'Apply'. A link 'What do these properties do?' is also present.

LEVELS

SYSTEM FAMILY: LEVEL

Type Properties

Family: System Family: Level Load...

Type: Level 1 Duplicate... Rename...

Type Parameters

Parameter	Value
Constraints	
Elevation Base	Project Base Point
Graphics	
Line Weight	1
Color	RGB 000-000-160
Line Pattern	Dash - Tight
Symbol	MDT_Level Head Circle : Level Head Circle
Symbol at End 1 Default	<input checked="" type="checkbox"/>
Symbol at End 2 Default	<input type="checkbox"/>

[What do these properties do?](#)

<< Preview OK Cancel Apply

ELEVATIONS

SYSTEM FAMILY: ELEVATION

Type Properties

Family: System Family: Elevation Load...

Type: Elevation 1 Duplicate... Rename...

Type Parameters

Parameter	Value
Graphics	
Elevation Tag	Elevation 1
Callout Tag	Callout Tag 1
Reference Label	Sim
Identity Data	
View Template applied to new views	<None>
New views are dependent on template	<input checked="" type="checkbox"/>

[What do these properties do?](#)

<< Preview OK Cancel Apply

GRAPHICS / ELEVATION TAG

Type Properties

Family: System Family: Elevation Tag Load...

Type: Elevation 1 Duplicate... Rename...

Type Parameters

Parameter	Value
Graphics	
Elevation Mark	MDT_Elevation Mark Body_Circle : Filled

[What do these properties do?](#)

<< Preview OK Cancel Apply

GRAPHICS / CALLOUT TAG

Type Properties

Family: System Family: Callout Tag Load...

Type: Callout Tag 1 Duplicate... Rename...

Type Parameters

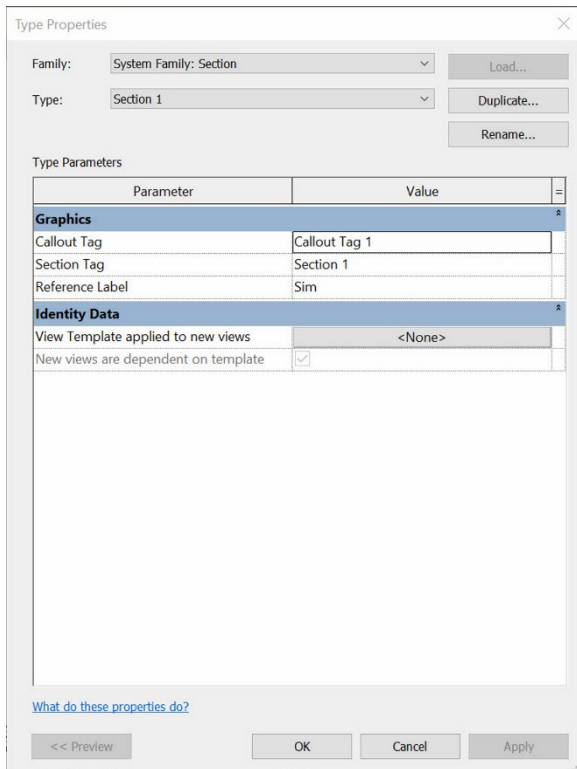
Parameter	Value
Graphics	
Callout Head	MDT_Callout Head : Callout Head
Corner Radius	1/16"

[What do these properties do?](#)

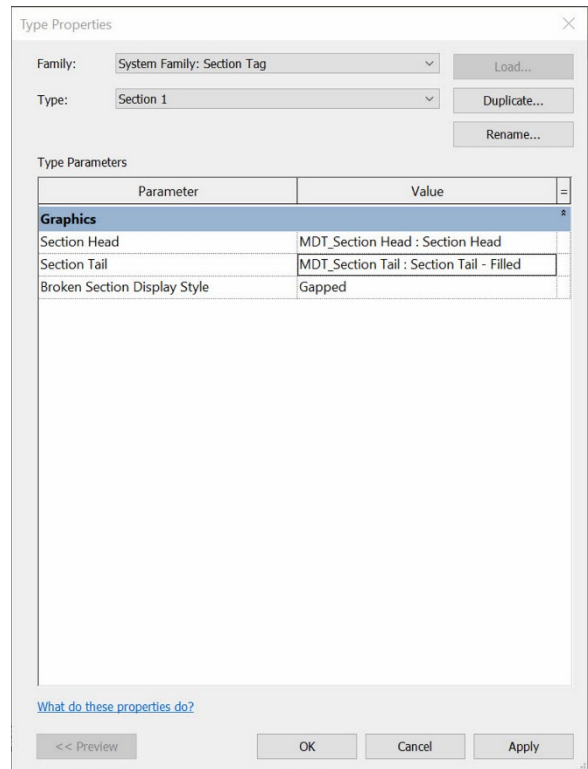
<< Preview OK Cancel Apply

SECTIONS

SYSTEM FAMILY: SECTIONS



GRAPHICS / SECTION TAG



GRAPHICS / CALLOUT TAG

- See ELEVATIONS for Callout Tag Settings

DETAIL VIEWS

SYSTEM FAMILY: DETAIL VIEW

The screenshot shows the 'Type Properties' dialog box for a 'System Family: Detail View'. The 'Type' is set to 'Detail View 1'. The 'Type Parameters' table is as follows:

Parameter	Value
Graphics	
Callout Tag	Callout Tag 1
Section Tag	Detail View 1
Reference Label	Sim
Identity Data	
View Template applied to new views	<None>
New views are dependent on template	<input checked="" type="checkbox"/>

At the bottom of the dialog, there are buttons for '<< Preview', 'OK', 'Cancel', and 'Apply'. A link 'What do these properties do?' is also present.

GRAPHICS / CALLOUT TAG

- See ELEVATIONS for Callout Tag Settings

GRAPHICS / SECTION TAG

- See SECTIONS for Section Tag Settings

CONTOUR LABELS

SYSTEM FAMILY: CONTOUR LABELS

The Type Properties dialog box is shown with the following settings:

- Family: System Family: Contour Labels
- Type: Contour Label 1

Parameter	Value
Graphics	
Color	Black
Text	
Text Font	Verdana
Text Size	1/16"
Bold	<input type="checkbox"/>
Italic	<input checked="" type="checkbox"/>
Underline	<input type="checkbox"/>
Label primary contours only	<input checked="" type="checkbox"/>
Units Format	1235 [USft]
Other	
Elevation Base	Project Base Point

Buttons: << Preview, OK, Cancel, Apply

TEXT / UNITS FORMAT

The Format dialog box is shown with the following settings:

- Use project settings:
- Units: US survey feet
- Rounding: 0 decimal places
- Rounding increment: 1
- Unit symbol: None
- Suppress trailing 0's:
- Suppress 0 feet:
- Show + for positive values:
- Use digit grouping:
- Suppress spaces:

Buttons: OK, Cancel

COLOR choice is up to the user

SPOT ELEVATIONS

SYSTEM FAMILY: SPOT ELEVATIONS

TEXT / UNITS FORMAT

Type Properties

Family: System Family: Spot Elevations Load...

Type: Vertical Duplicate...

Rename...

Type Parameters

Parameter	Value
Constraints	
Elevation Base	Project Base Point
Rotate with Component	<input type="checkbox"/>
Graphics	
Leader Arrowhead	BR_Arrowhead
Leader Line Weight	1
Leader Arrowhead Line Weight	5
Color	RGB 128-000-064
Symbol	<none>
Text	
Width Factor	1.000000
Bold	<input type="checkbox"/>
Italic	<input checked="" type="checkbox"/>
Underline	<input type="checkbox"/>
Suppress Spaces	<input type="checkbox"/>
Text Size	1/16"
Text Offset from Leader	1/16"
Text Font	Verdana
Text Background	Opaque
Text Offset from Symbol	1/4"
Text Orientation	Horizontal
Text Location	In-line with Leader
Primary Units	
Units Format	1234.57 []
Elevation Indicator	Elev.
Elevation Indicator as Prefix/Suffix	Prefix
Top Indicator	
Bottom Indicator	
Top Indicator as Prefix/Suffix	Prefix
Bottom Indicator as Prefix/Suffix	Prefix
Alternate Units	
Alternate Units	None
Alternate Units Format	1235 [mm]
Alternate Units Prefix	
Alternate Units Suffix	

[What do these properties do?](#)

<< Preview OK Cancel Apply

Format

Use project settings

Units: Feet

Rounding: 2 decimal places Rounding Increment: 0.01

Unit symbol: None

Suppress trailing 0's

Suppress 0 feet

Show + for positive values

Use digit grouping

Suppress spaces

OK Cancel

COLOR choice is up to the user

The following guide is to get OpenRoads alignments and terrain into Autodesk for bridge modeling.

Download the following road design files from DMS

- XXXX000XXALN001.DGN (OpenRoads Alignment file)
- XXXX000XXETR001.DGN (OpenRoads Terrain file)

OPEN ROADS

TERRAIN EXPORT

Open the XXX000XXETR001.DGN file in OpenRoads

- Select the terrain boundary line
- Hover mouse over selected boundary line until dialog box pops up
- Expand the 3rd Option from the left (Export Terrain Model)
- Select LandXML Export



Enter the appropriate values in the Next 3 dialog box popups at the cursor.

Enter a Project Name

Left Click to accept

Enter Export Value	
Export Options:Project Name	Anaconda West

Enter a project description

(This may be left blank)

Left Click to accept

Enter Export Value	
Export Options:Project Description	

Verify "Export Both" is the current value

Left Click to accept

Enter Export Value	
Export Options:Export Options	Export Both

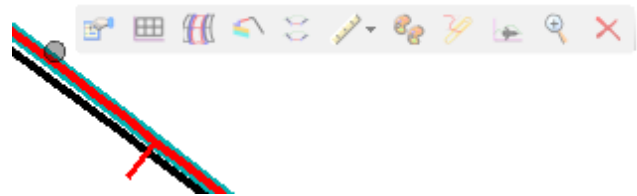
Save the file to BIM360 in the Civil 3d folder with the following filename

Filename: XXXX000BRETR001.XML

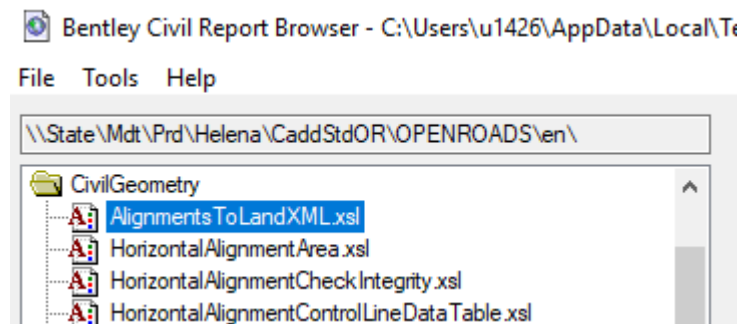
ALIGNMENT EXPORT

Open the XXX000XXALN001.DGN file in OpenRoads

- Select the alignment
- Hover mouse over selected alignment until dialog box pops up
- Expand the 4th Option from the right (Horizontal Geometry Report)



Select "AlignmentsToLandXML.xml" from the CivilGeometry folder (This should be the first option in the list)

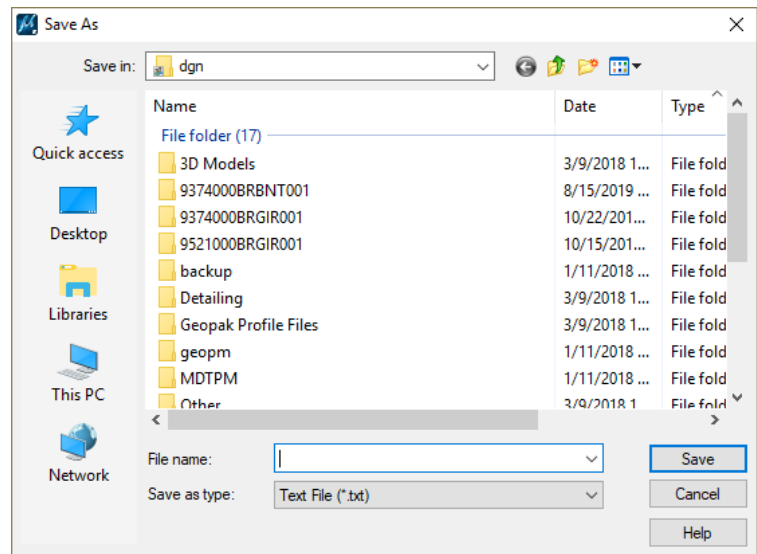


Do a File > Save As

Save the file to BIM360 in the Civil 3D folder with the following filename

New Filename: XXXX000BRALN001.XML

LEAVE THE "Save as type" SET TO "Text File (*.txt)"



CIVIL 3D

Create a new file from the Template: C3D_Template.dwt

Save the new file as:

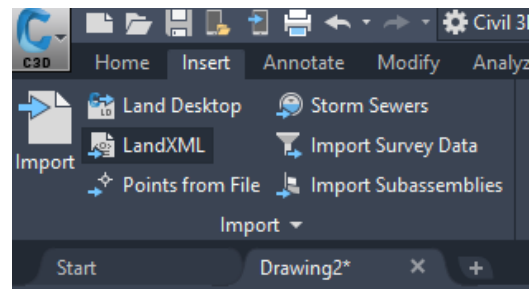
- Alignment: XXXX000BRALN001.DWG
- Terrain: XXXX000BRETR001.DWG

TERRAIN IMPORT

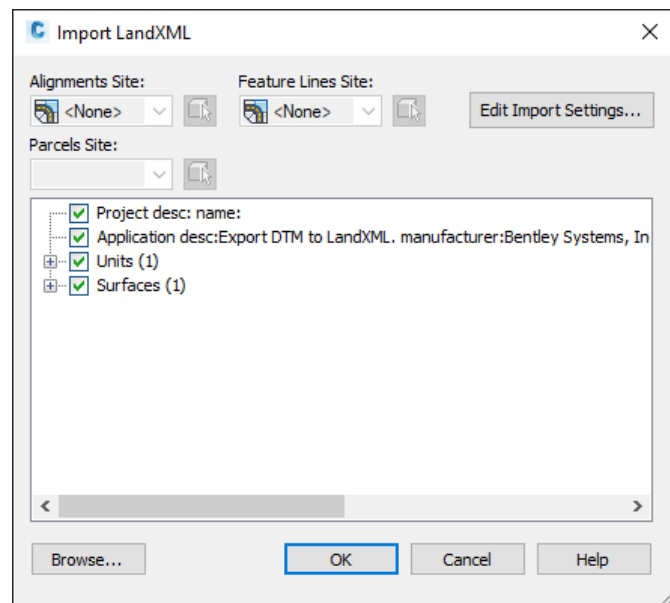
Open the XXXX000BRETR001.DWG file

From the "Insert" tab select "LandXML"

Select the XXXX000BRALN001.XML created above from BIM360



Verify the Import LandXML dialog box matches what is shown here

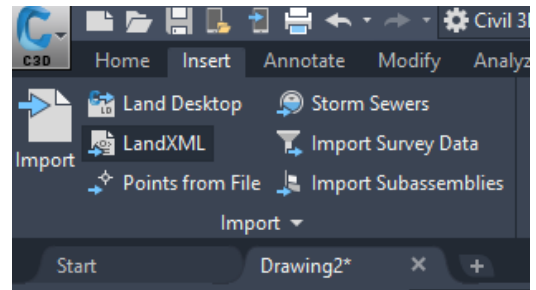


ALIGNMENT IMPORT

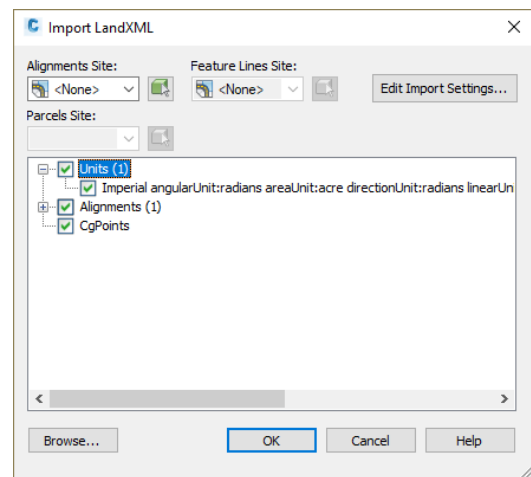
Open the XXXX000BRALN001.DWG

From the “Insert” tab select “LandXML”

Select the XXXX000BRALN001.XML created above from BIM360



Verify the Import LandXML dialog box matches what is shown here



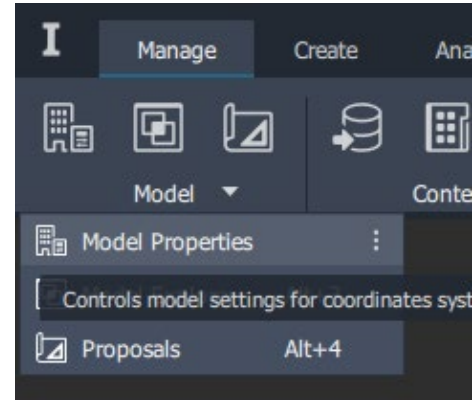
INFRAWORKS

Create a new file or open an existing file

New Filename: XXXX000BRMAP001 (There is no file extension when creating Infracworks files)

The initial model will need its model properties set for the proper coordinate system

Select the "Model Properties" from the "Model" tab

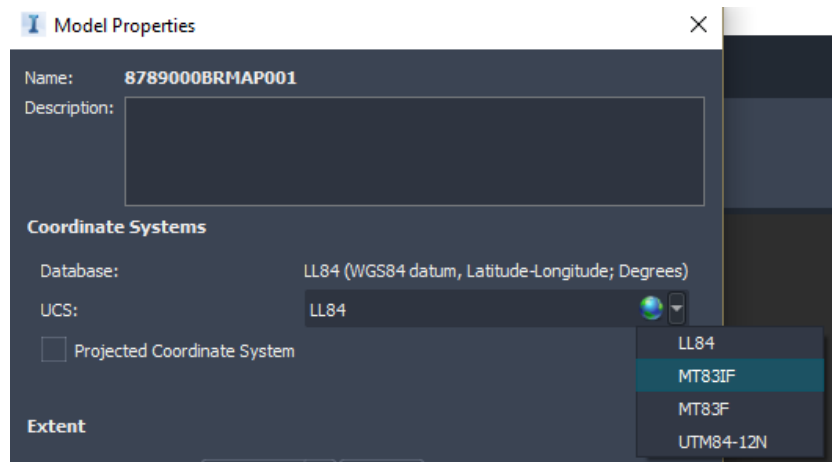


Expand the USC box and Select the MT831F coordinate system

If this option is not available

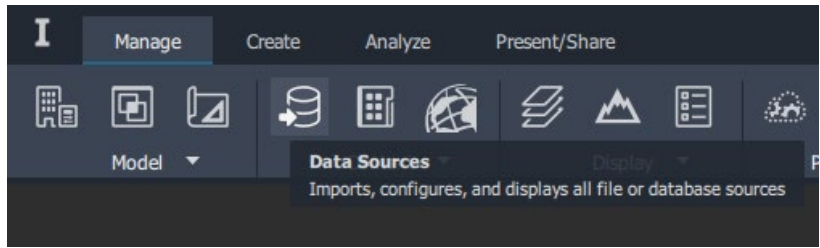
Select the "Globe" icon and scroll down and select the following

- USA, Montana
 - MT831F

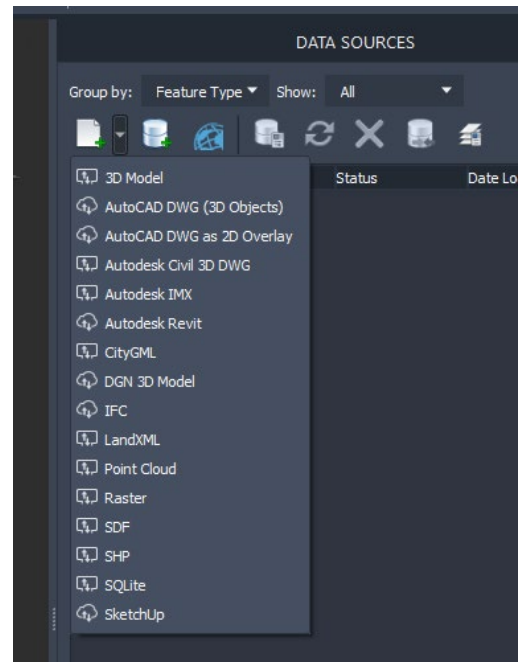


TERRAIN IMPORT

Open the “Data Source” toolbox



Add a data source by “Autodesk Civil 3D DWG”

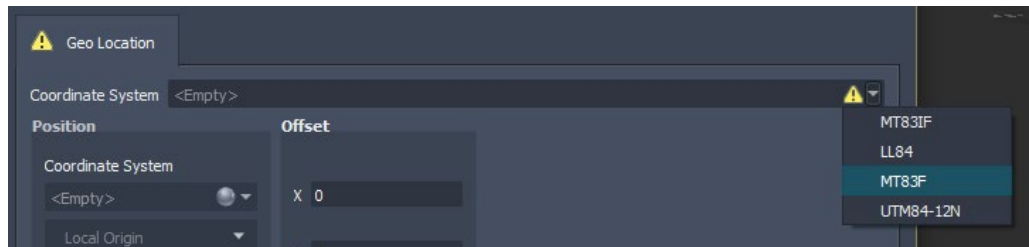


Select the terrain file XXXX000BRETR001.DWG created in the Civil 3D Terrain import section.

This data source now needs to be configured.

Double click on the newly added data source

Change the coordinate system to MT83IF

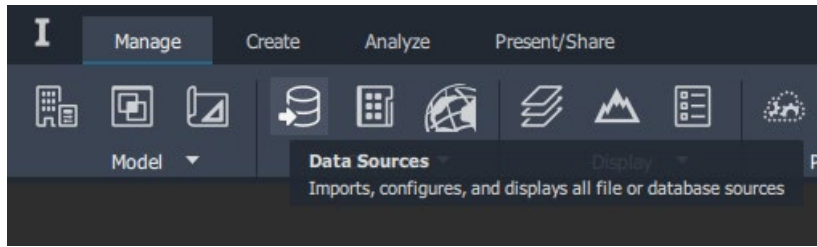


Select Close and Refresh at the bottom of this box when finished

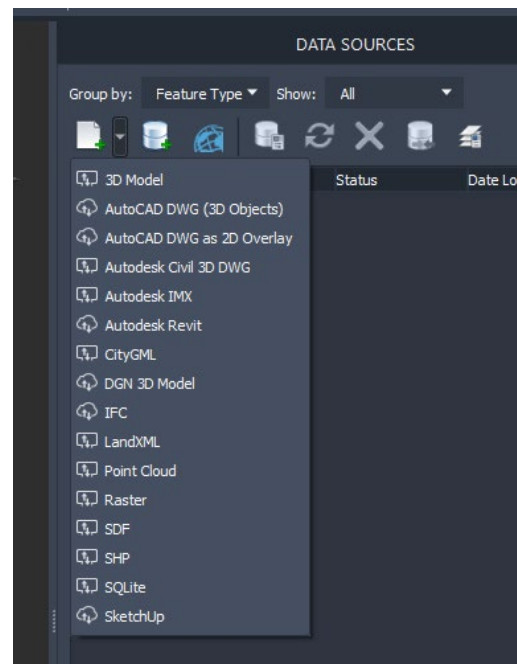
The terrain is now loaded into the model.

ALIGNMENT IMPORT

Open the “Data Source” toolbox



Add a data source by “Autodesk Civil 3D DWG”

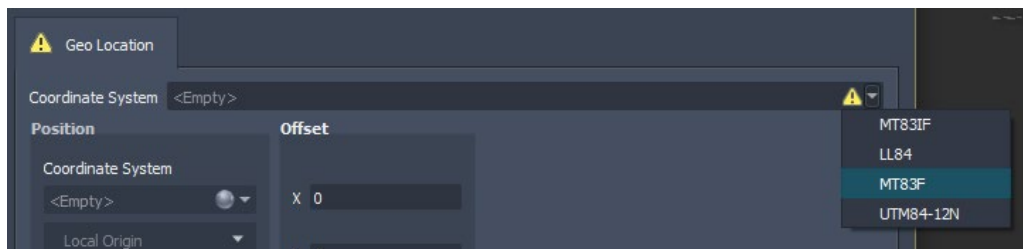


Select the alignment file XXXX000BRMAP001.DWG created in the Civil 3D alignment import section.

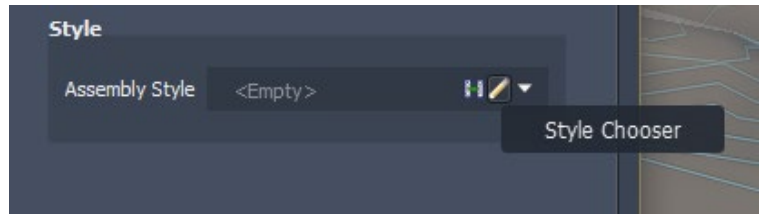
This data source now needs to be configured.

Double click on the newly added data source

Change the coordinate system on the “Geolocation” tab to MT83IF



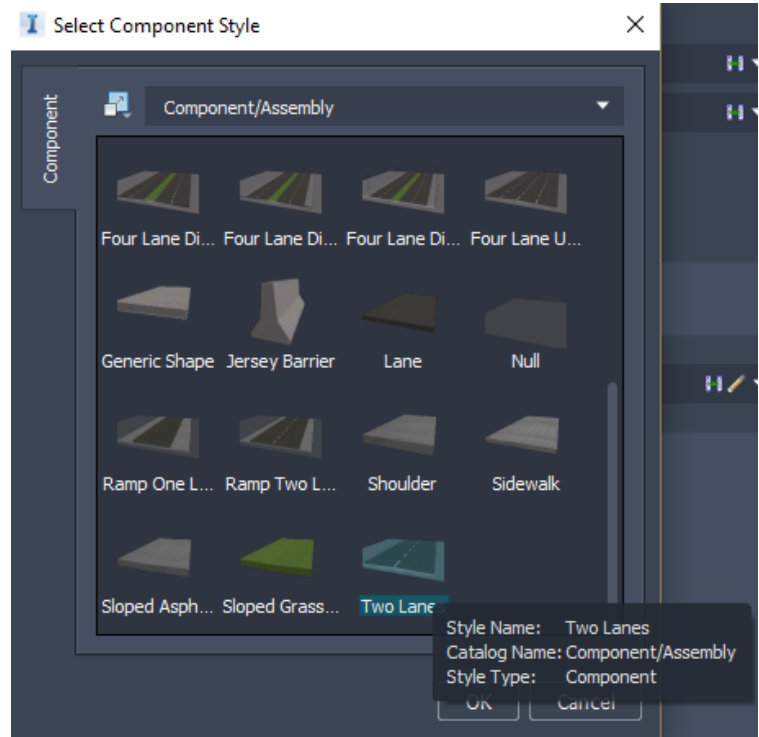
Click on the style chooser on the "Common" tab > Style Section > Assembly Style



Browse to the style

Component/Assembly/Two Lanes and press OK

Currently the "Two Lanes" style comes into the model as 4 Lanes. Just use the outside 2 lanes as shoulders or delete them based on the needs of the model.



Select Close and Refresh at the bottom of this data source configuration when finished

The alignment is now loaded into the model.

The following guide is to clip Open Roads terrain for use in Infracore, Civil 3D and Revit.

Download the following file from BIM360

- XXXX000RDETR001.DGN (Open Roads Terrain file)

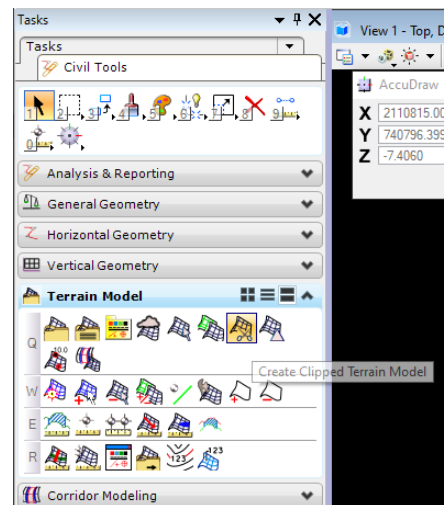
OPEN ROADS

TERRAIN CLIP

Open the XXXX000RDETR001.DGN file

Locate a rectangle or closed shape at the boundary of the area to be clipped.

- From Civil Tools / Terrain Model
 - Create Clipped Terrain Model
- Select the boundary of the existing terrain model
- Next select the clipping boundary
 - This is the rectangle created earlier
- Right click to reset



Enter the appropriate values in the next 3 boxes

Set Horizontal value = 0

Horizontal Offset	
Horizontal Offset	0.0000

Left Click to accept

Set Vertical Offset value = 0

Vertical Offset	
Vertical Offset	0.0000

Left Click to accept

Set Clipping Method to "External"

Clipping Method	
Clipping Method	External

Left Click to accept

The terrain has now been clipped where the boundary lines intersected the existing terrain. Use this new boundary line for exporting to Infracore, Civil 3D and Revit.

The following guide is to clip Civil 3D terrain for use in Infracore and Revit.

Download the following file from BIM360

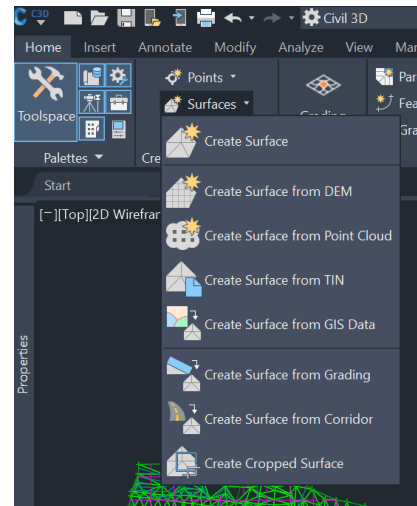
- XXXX000RDETR001.DWG (Civil 3D Terrain file)

CIVIL 3D

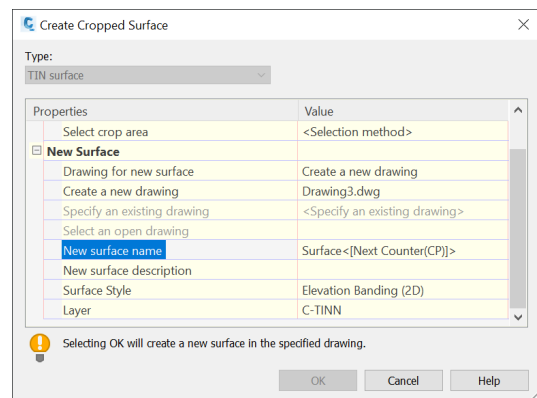
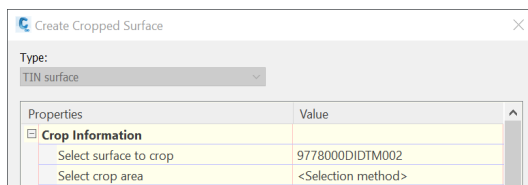
TERRAIN CLIP

Open the XXXX000RDETR001.DWG file

- From “Home” tab expand “Surfaces” and select “Create Cropped Surface”
 - The file is required to be saved before using this command



- Click in the “Selection Method” Area of the “Select Crop Area”
 - Draw a rectangle around the area you want to keep
- Click in the “Create a new Drawing” Area and Select a template for the new file
- Set the layer for which to place the surface on
 - Layer = C-TINN
- Select “OK”



- Go to the new file that was created and save the file
- Zoom extents and your terrain should show up

The following guide is to publish Civil 3D terrain for use in Revit.

Download the following file from BIM360

- XXXX000RDETR001.DWG or your clipped terrain (Civil 3D Terrain file)

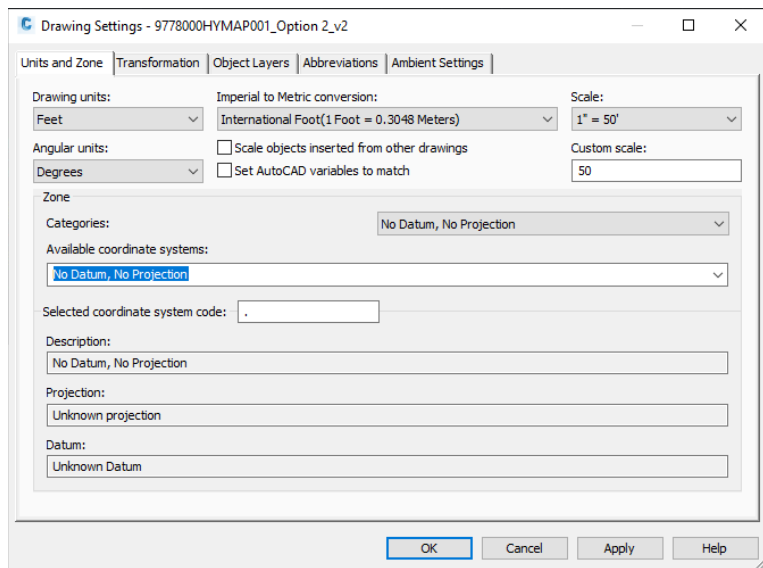
CIVIL 3D

PUBLISH TERRAIN

Open the XXXX000RDETR001.DWG file or the clipped terrain file

Verify that the file has no coordinate system set

- From “Toolspace” on the “Setting” tab right click on the name of the file
- Select “Edit Drawing Settings
- Verify Coordinate System
 - No Datum, No Projection
- Click OK



- From “Output” tab select “Publish Surfaces”

- Verify the surface you want is checked
- Specify and output file location
 - This needs to be on BIM360
- Click OK

