Instant Civil 3D!

A Quick and Easy Guide

To Learning Autodesk Civil 3D 2019

Construction Supervision Workflow

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1 Exercise one _Prepare Project

Notes:

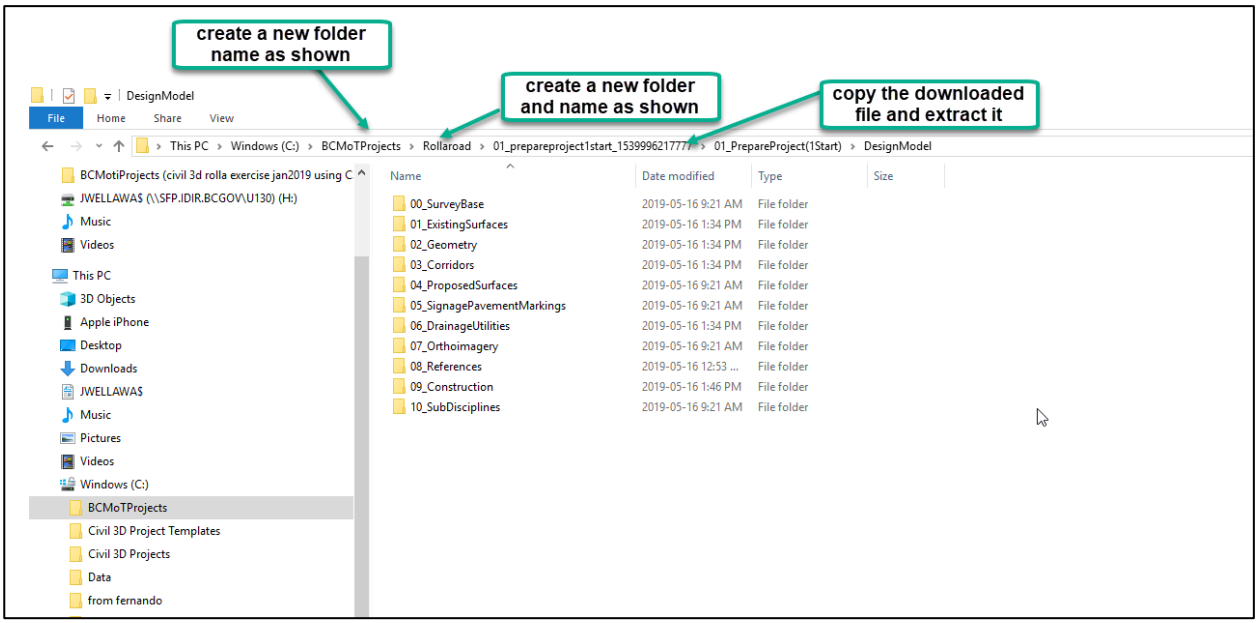
1. Always ensure working folders for data shortcuts and survey databases are set to the proper locations.
2. Data shortct folders translate to reference object folders and vice versa.
3. Data shortcut folders only work with C3D 2017 and later versions.
4. VCOG (Survey Combined Original Ground),(VSOG(Survey Surveyed Original Ground),VLOG(Survey LiDAR Original Ground).
5. Use Manage Data Shortcuts command to change construction corridor surface references and targets.

1.1 Introduction and Data Download(00.00)

These instructions go parallel to the video series.
Below the video you can see few icons that contain .zip files for both starting and finishing data set for all of the exercises.

Recommend creating folder in C drive called “BCMoTProject”.

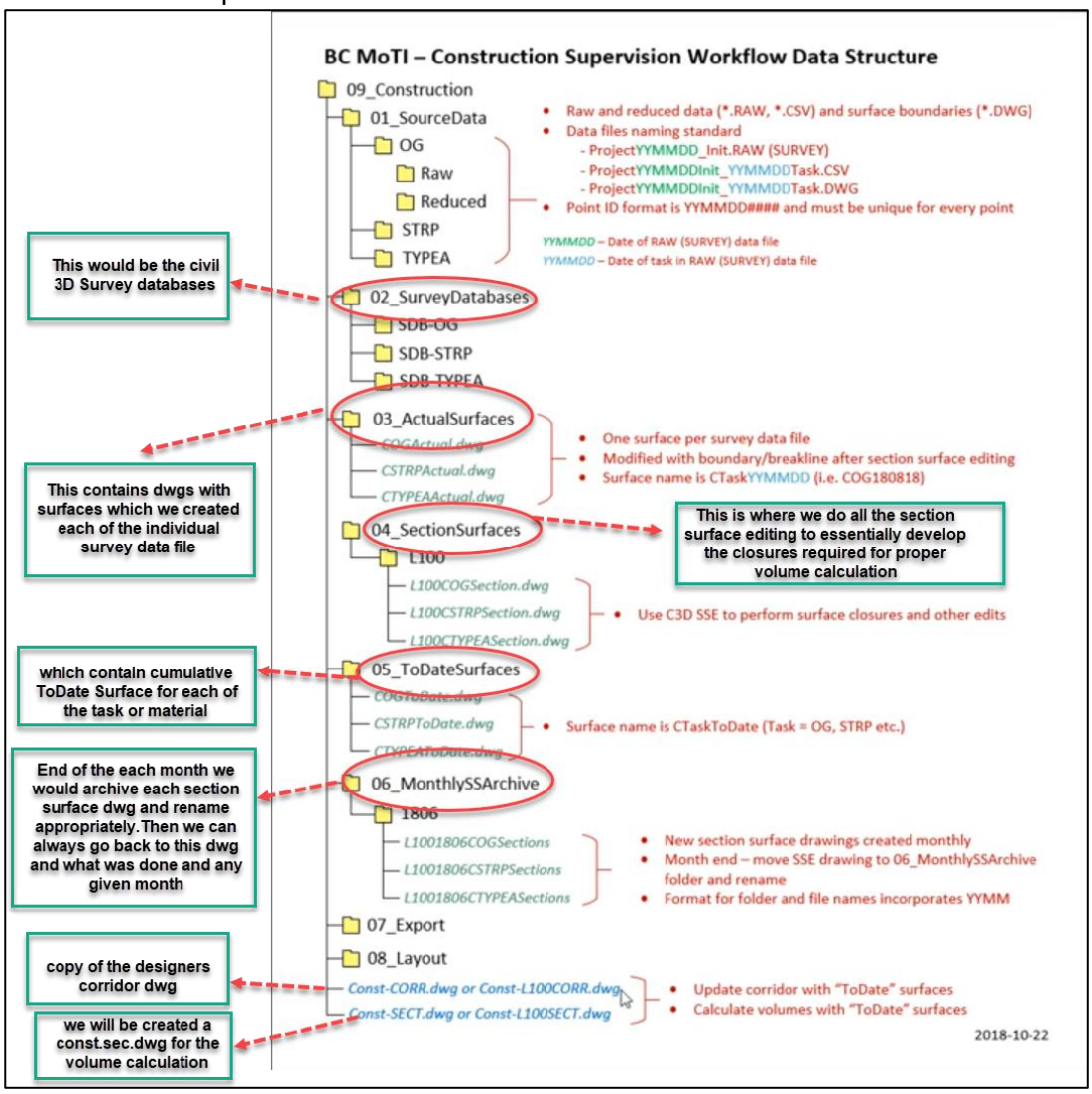
Follow the steps exactly what shown in below.



1.2 Review Construction Supervision Folder Structure(00.37)

You are going to be working in the design model ⟶09_ Construction (This is where all the construction supervision data will be created).

Following chart shows the folder structure for the construction supervision workflow with some descriptions next to it.

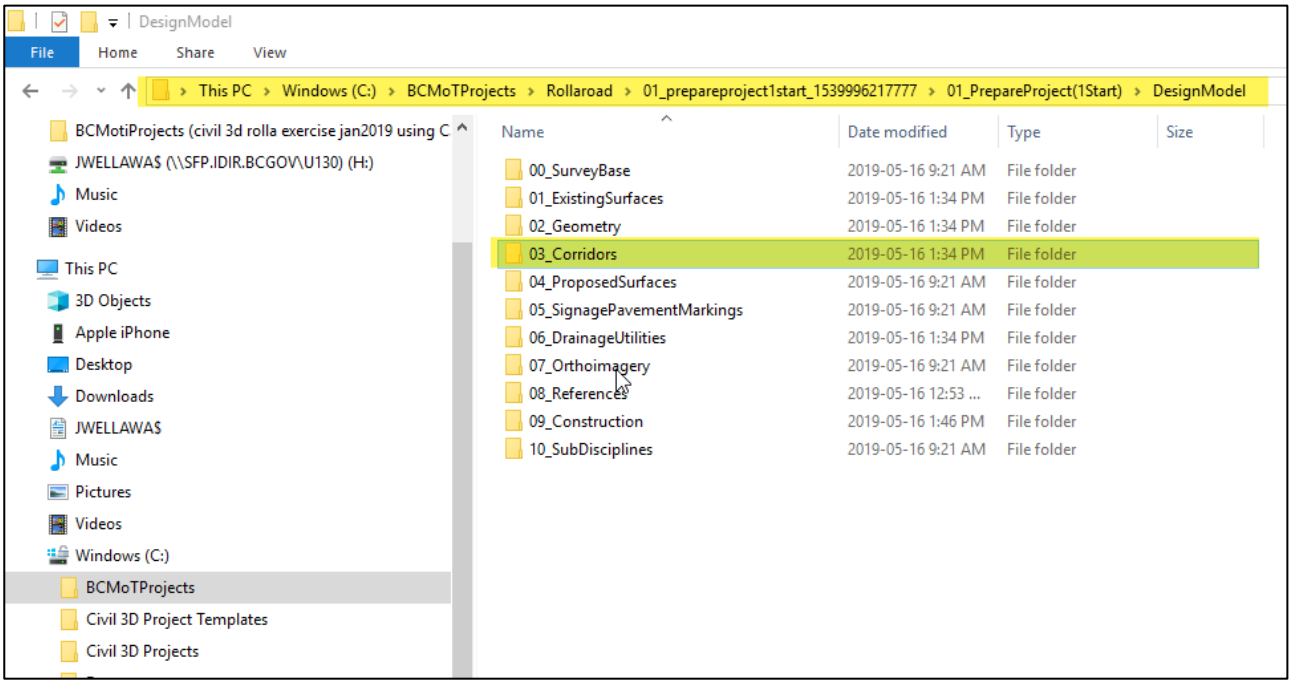


Actual surfaces are surfaces created directly from the construction survey data files and they will be updated after the section surface editing process. We are going to the section surface .dwg's and perform our closures and thats going to develop the new boundary for that surface. Then take the new boundary and add it back into the actual surfaces. Those surfaces (COGTodate/CSTRPActual/CTYPEAActual) are after the modification with the new boundary as a result of surface section editing. So the ActualSurfaces will be added to the ToDateSurfaces.

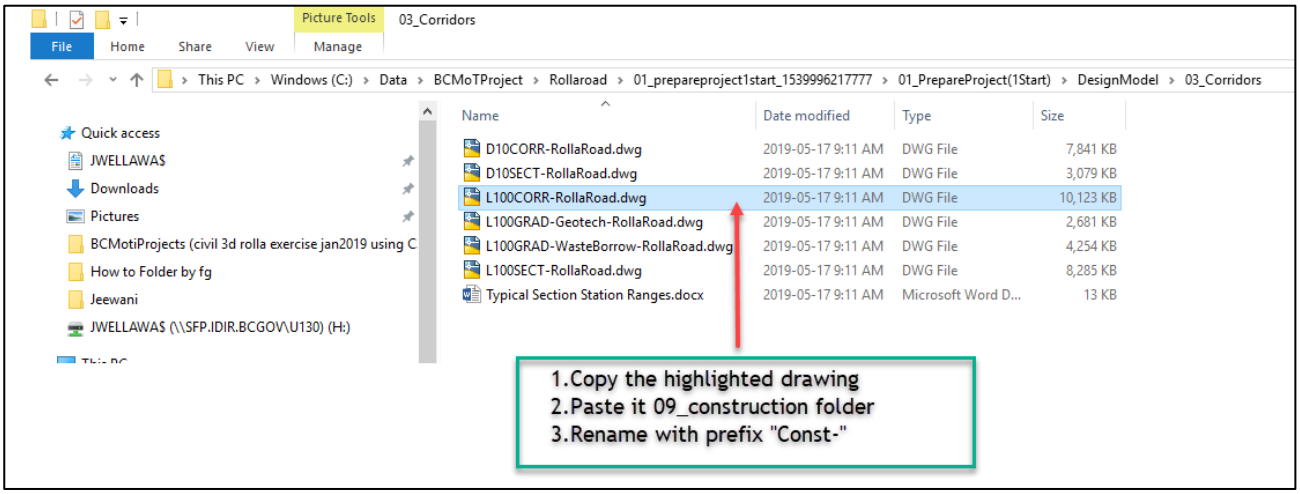
Important:
Getting a clear idea about this folder structure and how to store the information is a good data management practice.

1.3 Copy Designers Corridor Drawing(03.19)

Go to the design model and open the" 03_corridors"



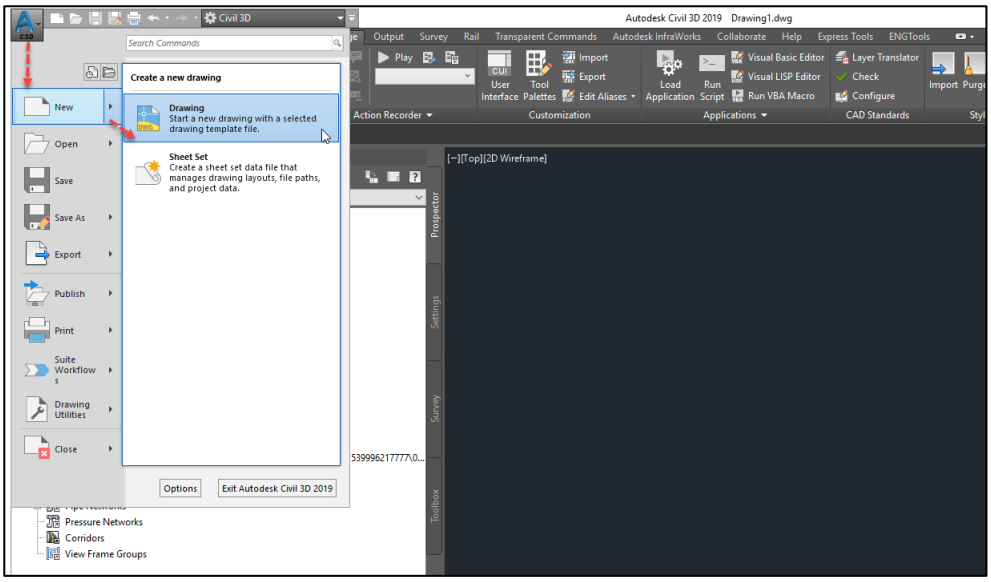
Copy the highlighted drawing → design model → 09_construcion → paste



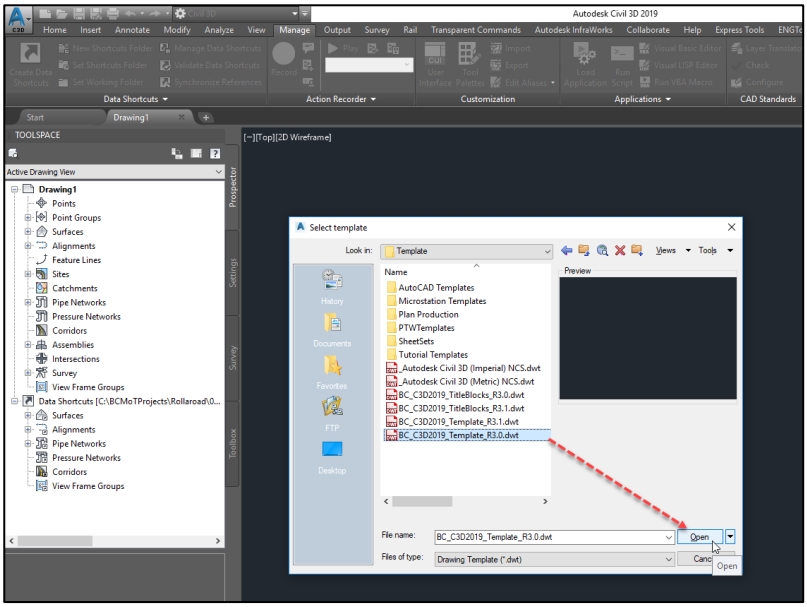
That corridor will be continually updated with the ToDateSurfaces information.

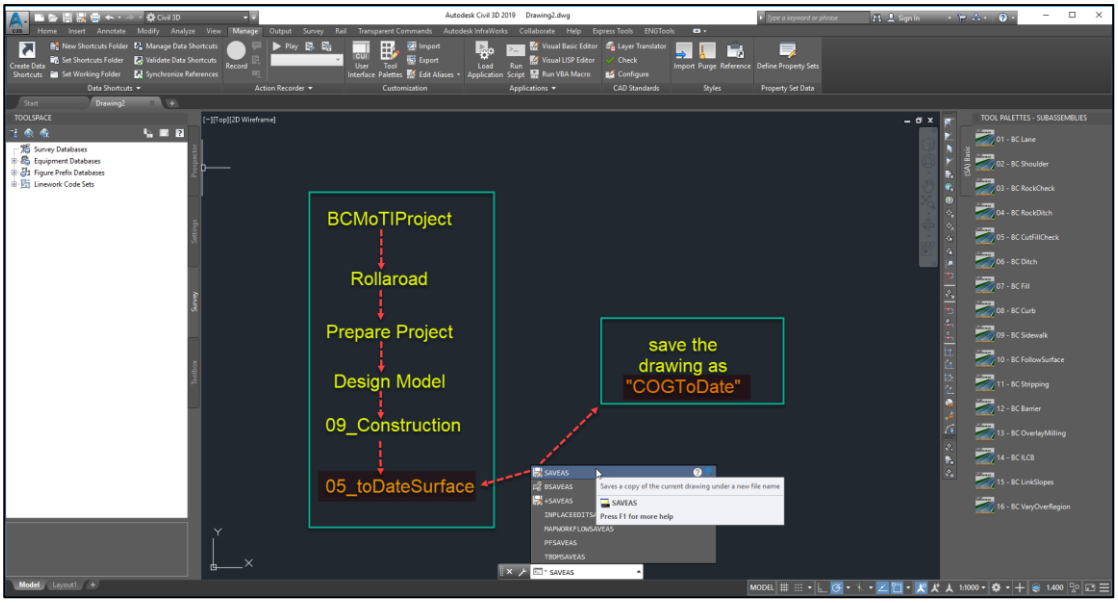
1.4 Create COGToDate Drawing(04.41)

Open civil3D-metric version.



Open the latest version of the ministry drawing template (BC-C3D2019-TEMPLATE_R3.0).

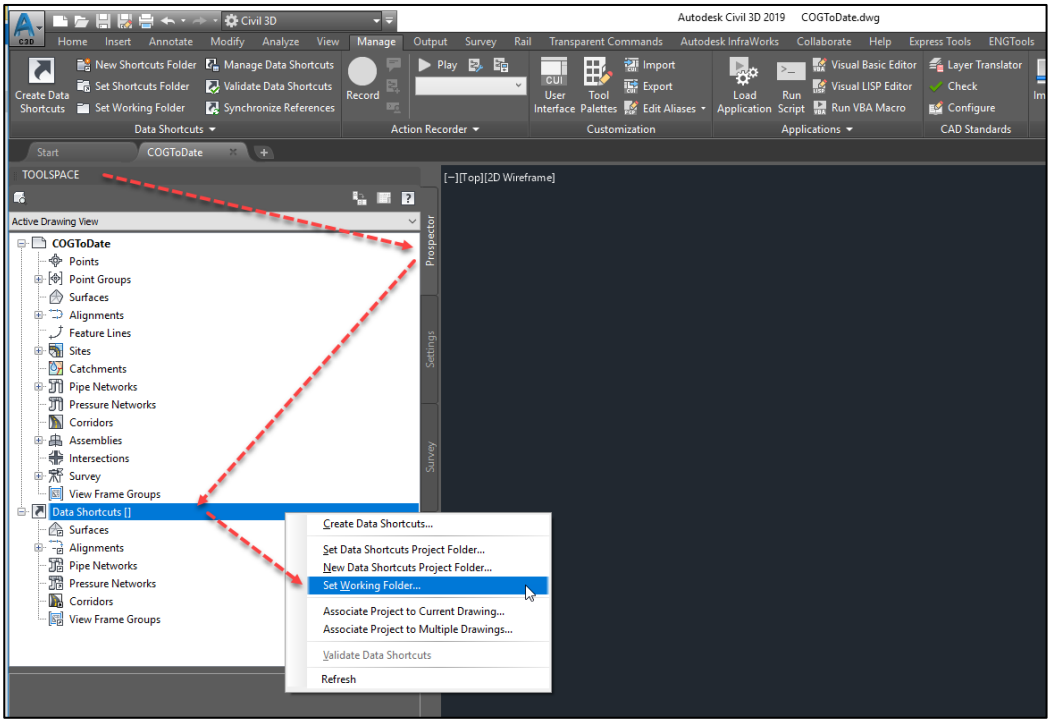




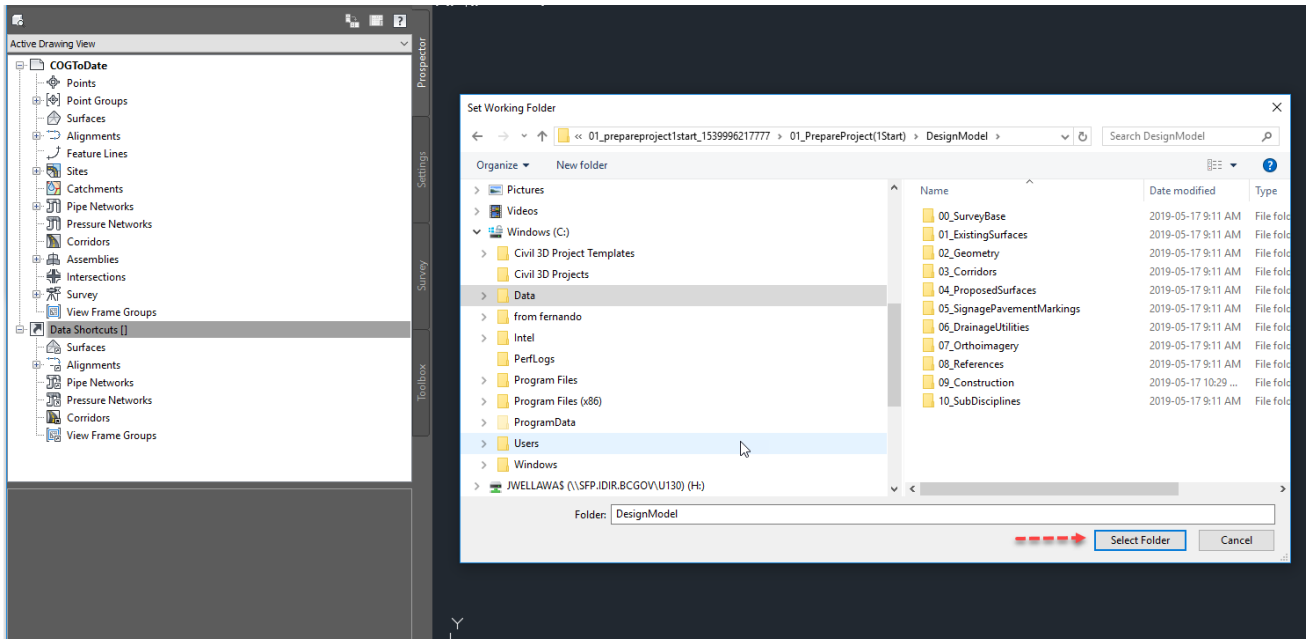
Now we have the drawing which is “Construction original ground to date”.

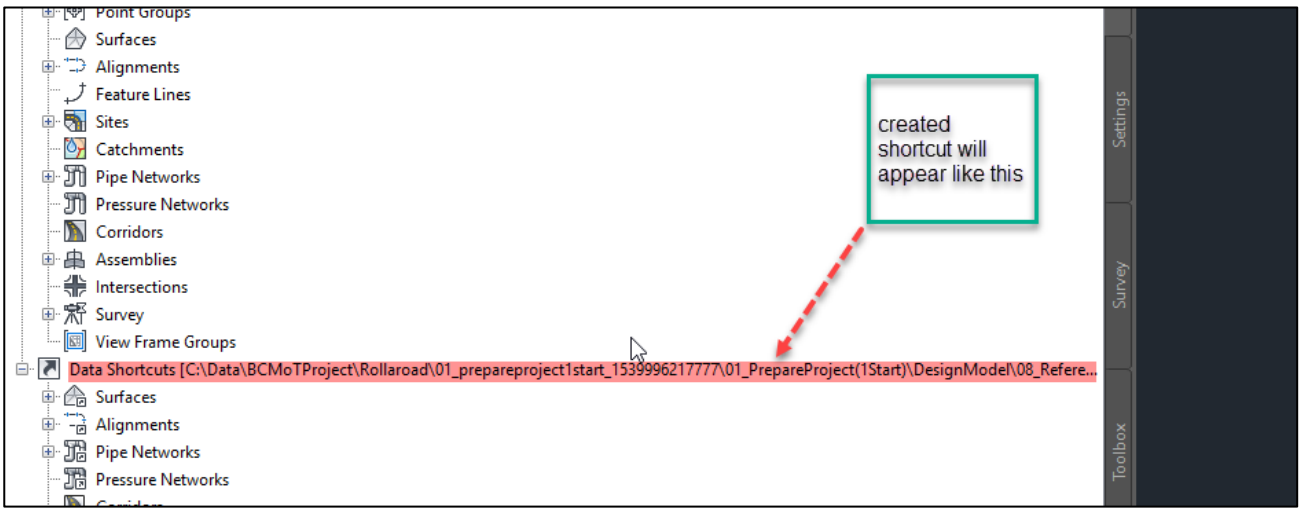
1.5 Set Data Shortcut Working Folder(06.20)

Set the working folder for the data shortcuts. This workflow construction supervision is heavily dependant on sharing data.



Right click on the data shortcut, browse to the Design Model folder, select folder creating a data shortcut.

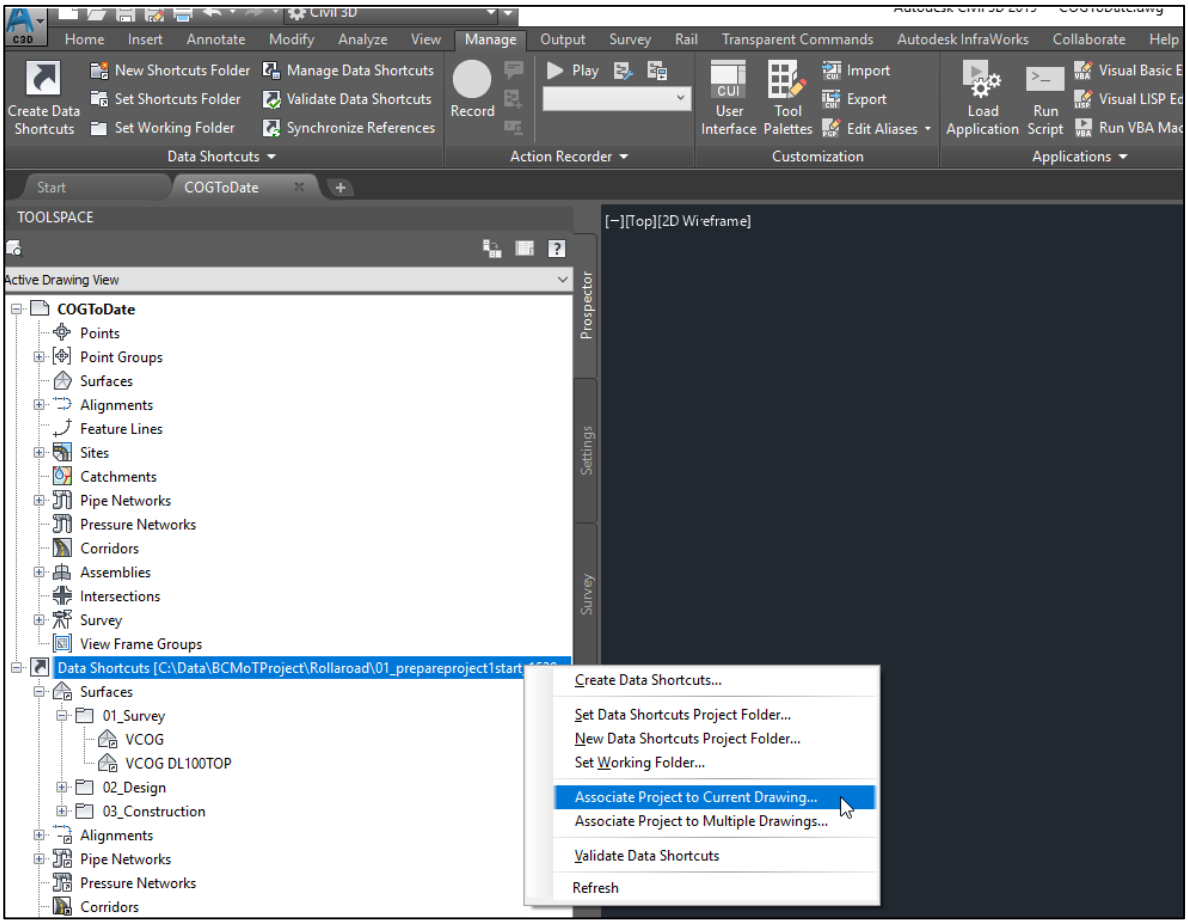




You will notice data shortcuts are organized into folders which is a benefit for construction supervision data management.

1.6 Associate Data Shortcut Project to Drawing (08.05)

Once you created or set the working folder for the data shortcut, strongly recommend that you associate project to current drawing.



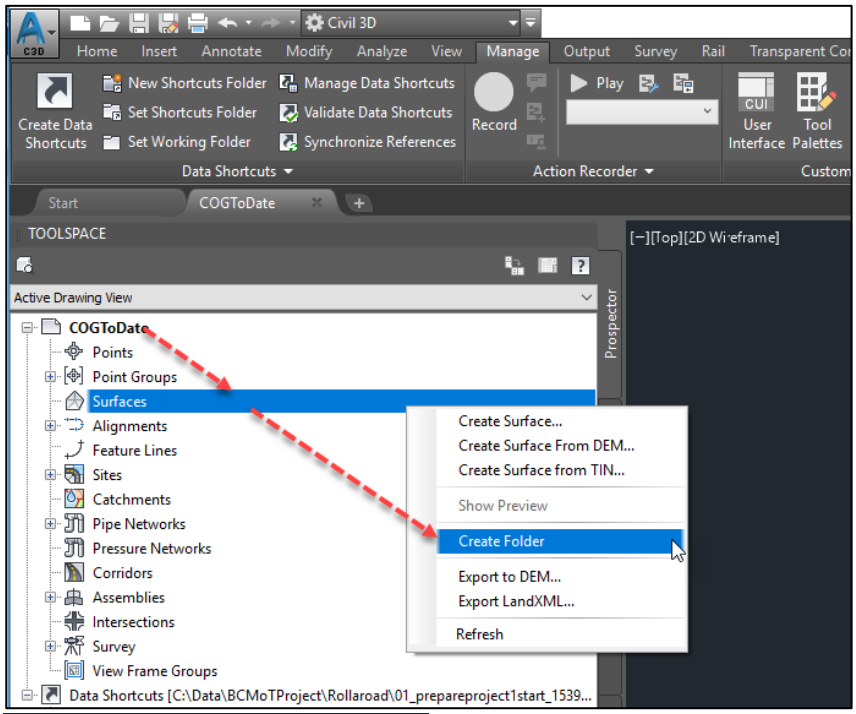
Data Shortcut has the working folder by default static and if you are working on many projects sometimes you may forget to change the location of the working folder.

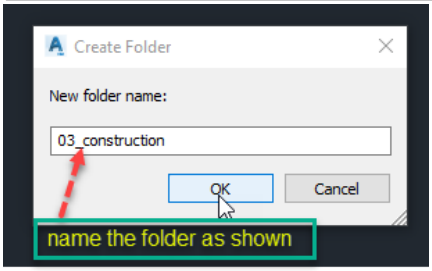
This will show the working folder and the project. In this case working folder will be the same. Press ok, if you change the data shortcut path and then come back to this drawing that path will be restored.

1.7 Create COGToDate Surface(08.45)

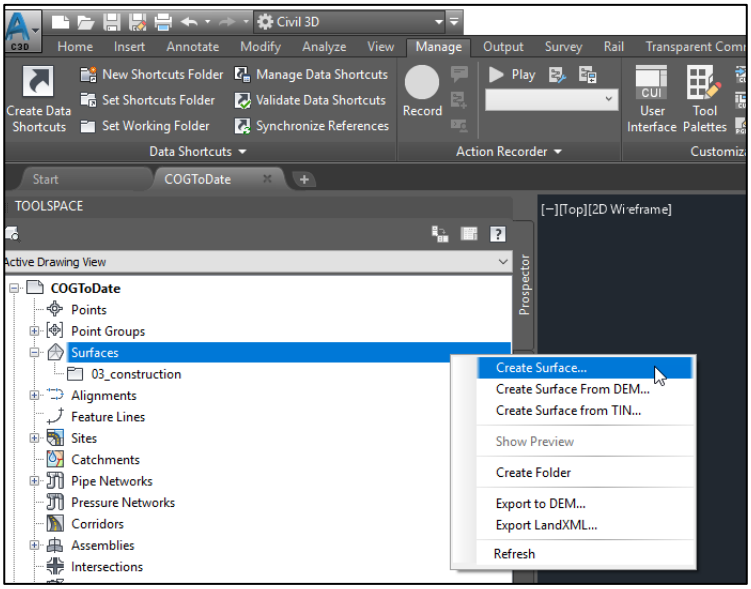
Let's make the COGToDate Surface as follows.

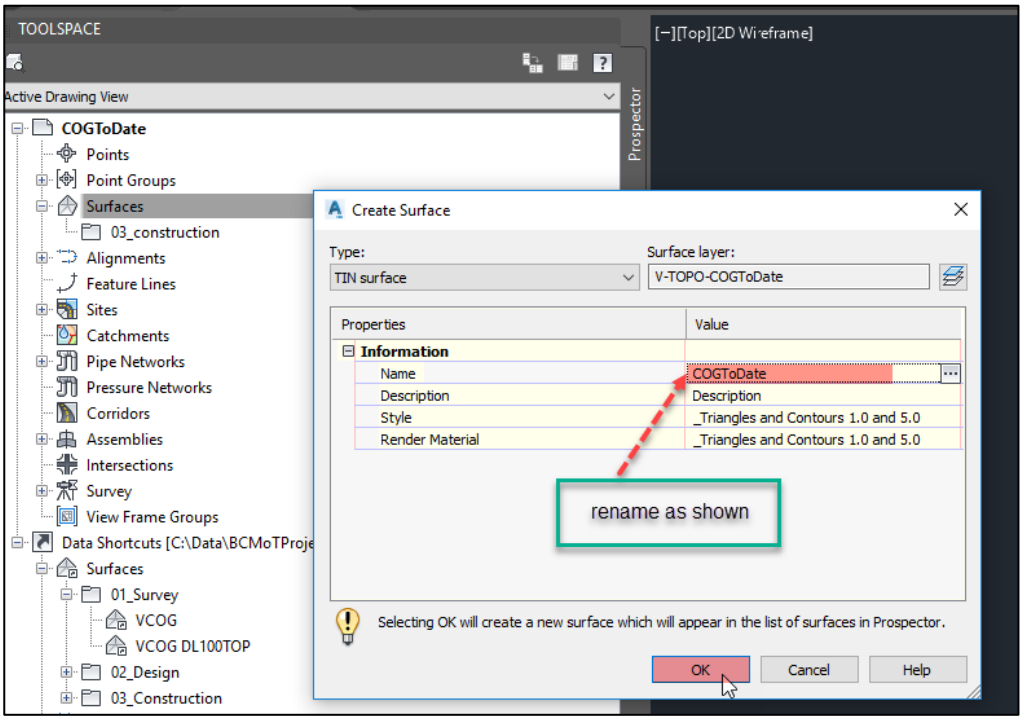
A. Create the folder first 03_construction

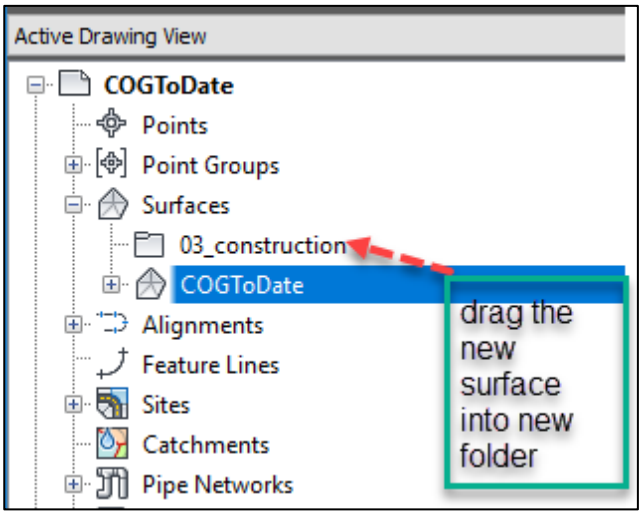


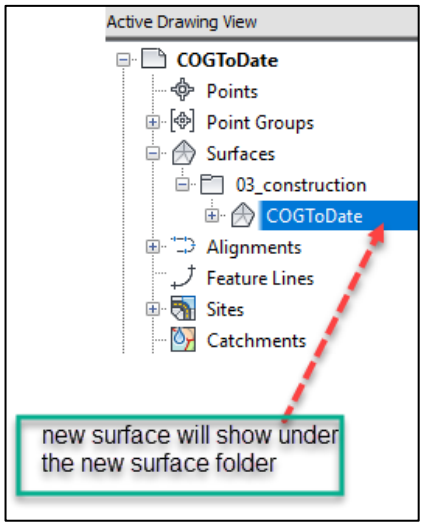


B. Create the new surface as follows





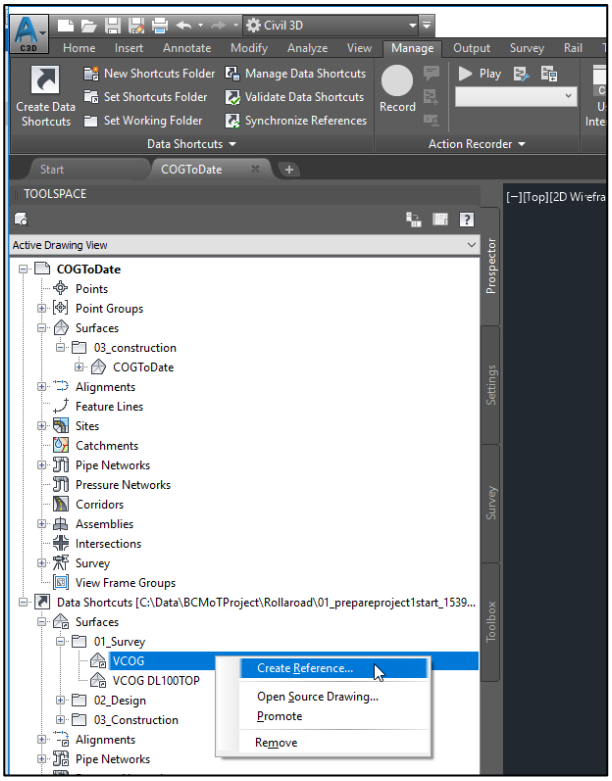


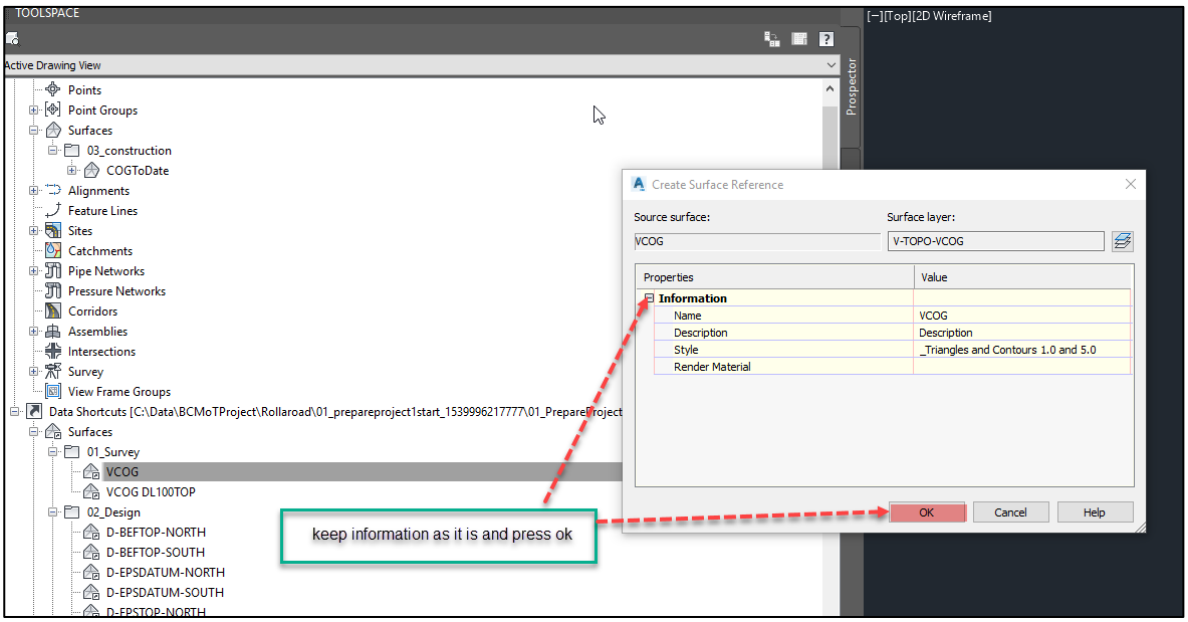


When we create a short cut for the surfaces it will also create a short cut for the “03_construction “ folder as well.

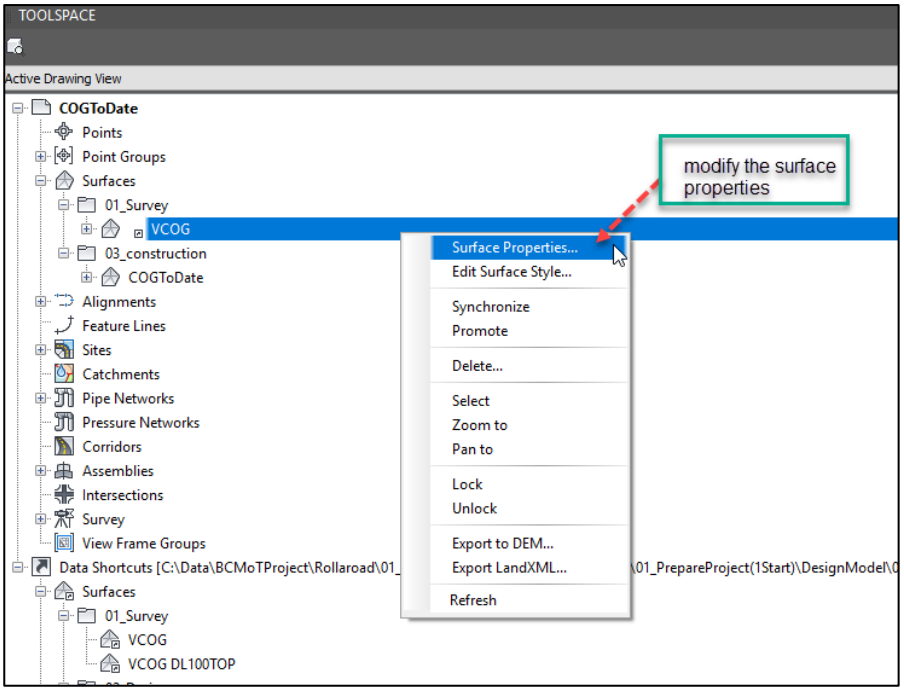
1.8 Create Refernce Object for VCOG Surface(09.24)

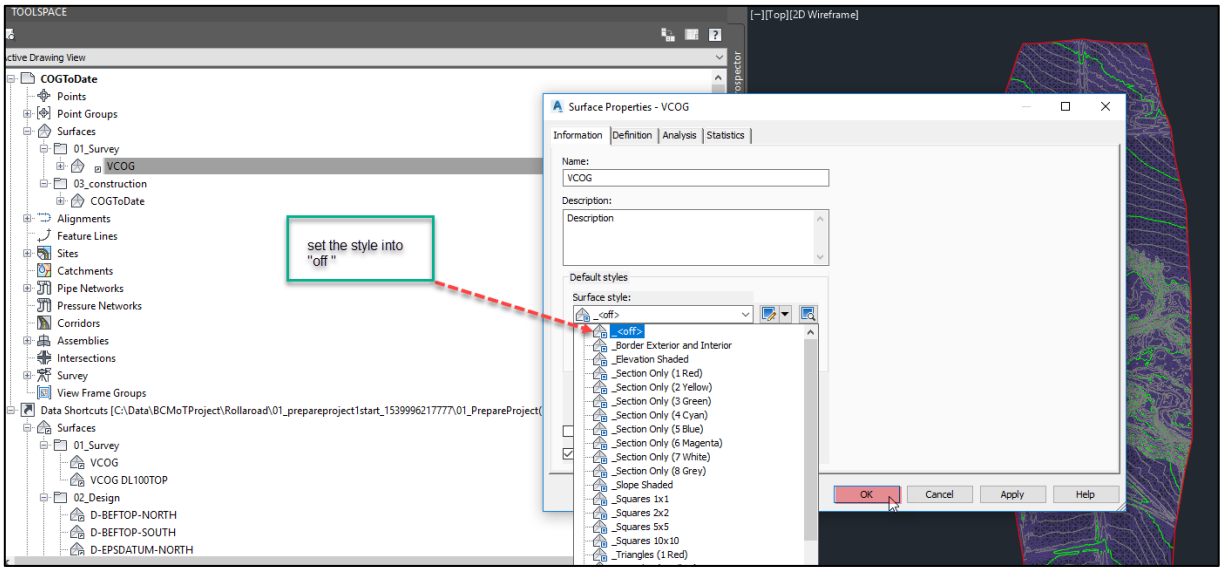
The starting surface COGToDate surface is VCOG surface.
To get the surface follow the steps as shown in the screen shots.





After that RTC on VCOG and select the “zoom to”.

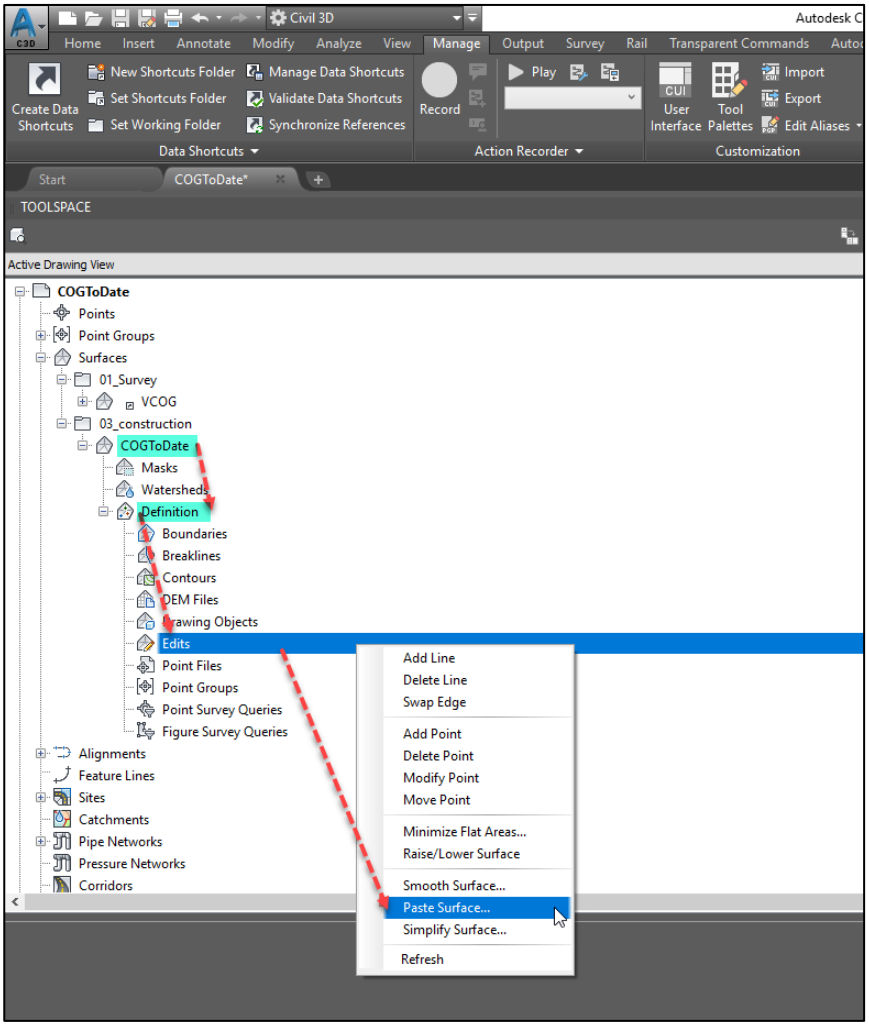


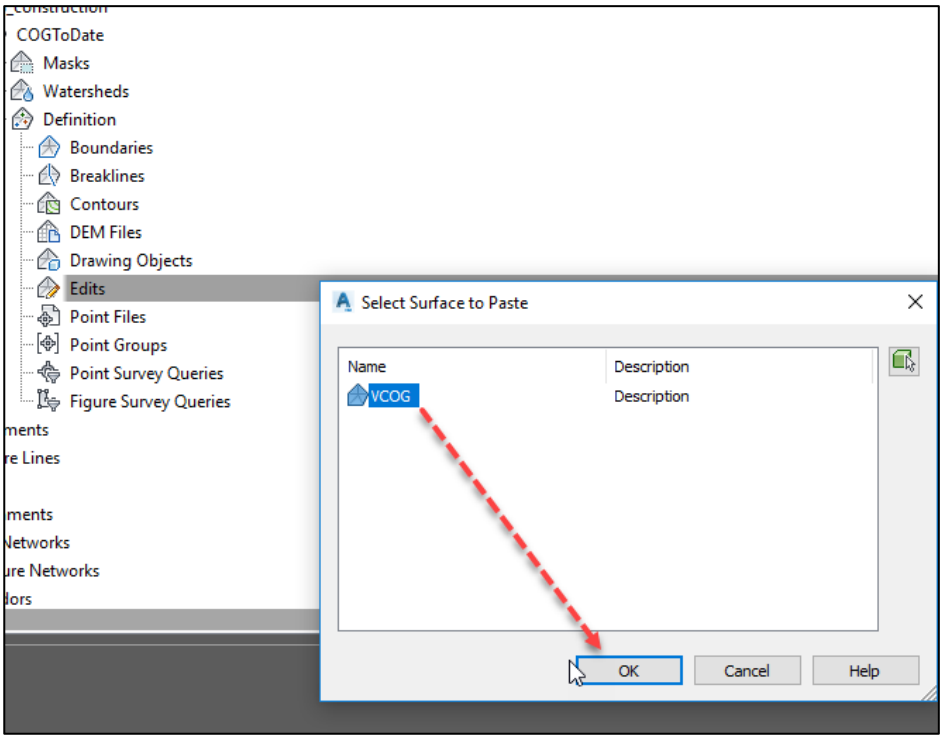


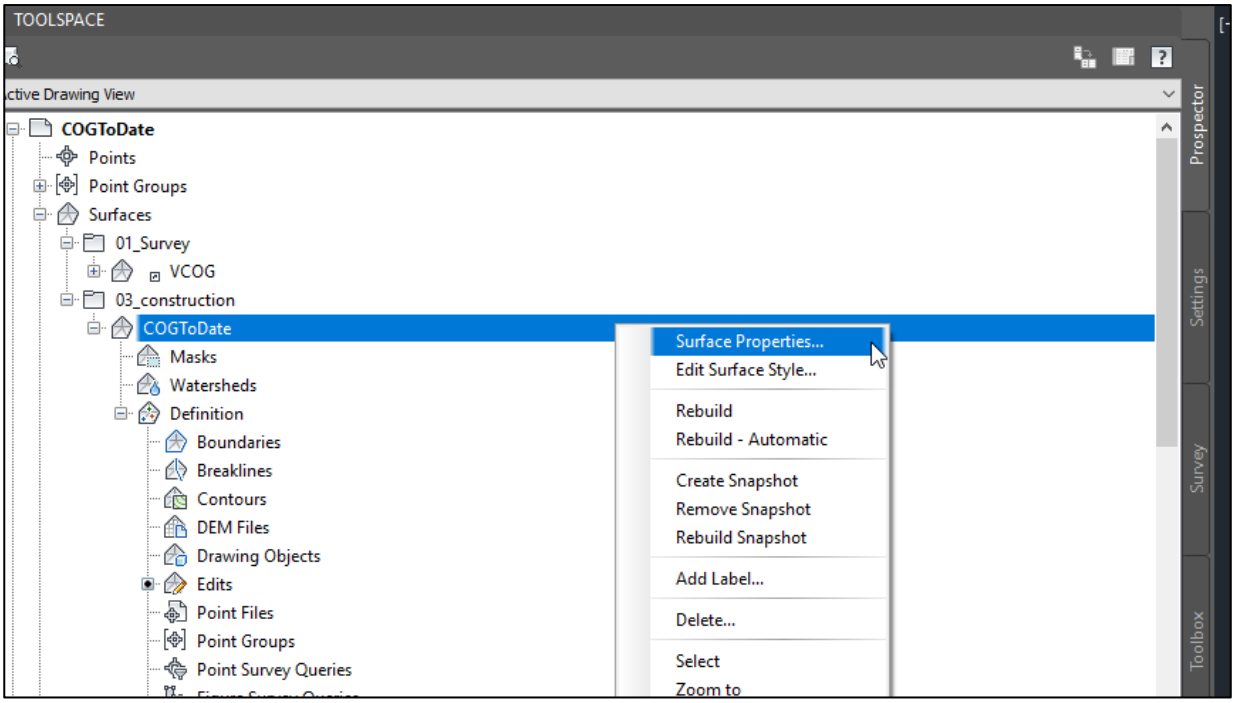
Click anywhere on the screen.

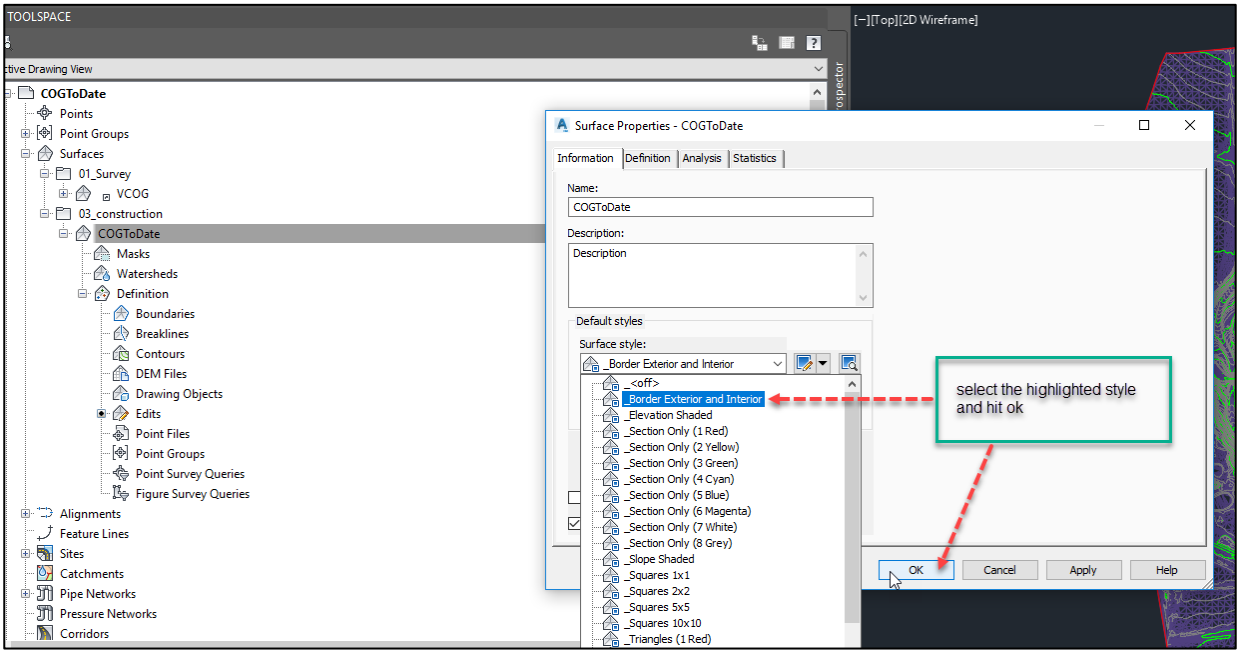
1.9 Paste VCOG into COGToDate(10.01).

To create COGToDate surface.



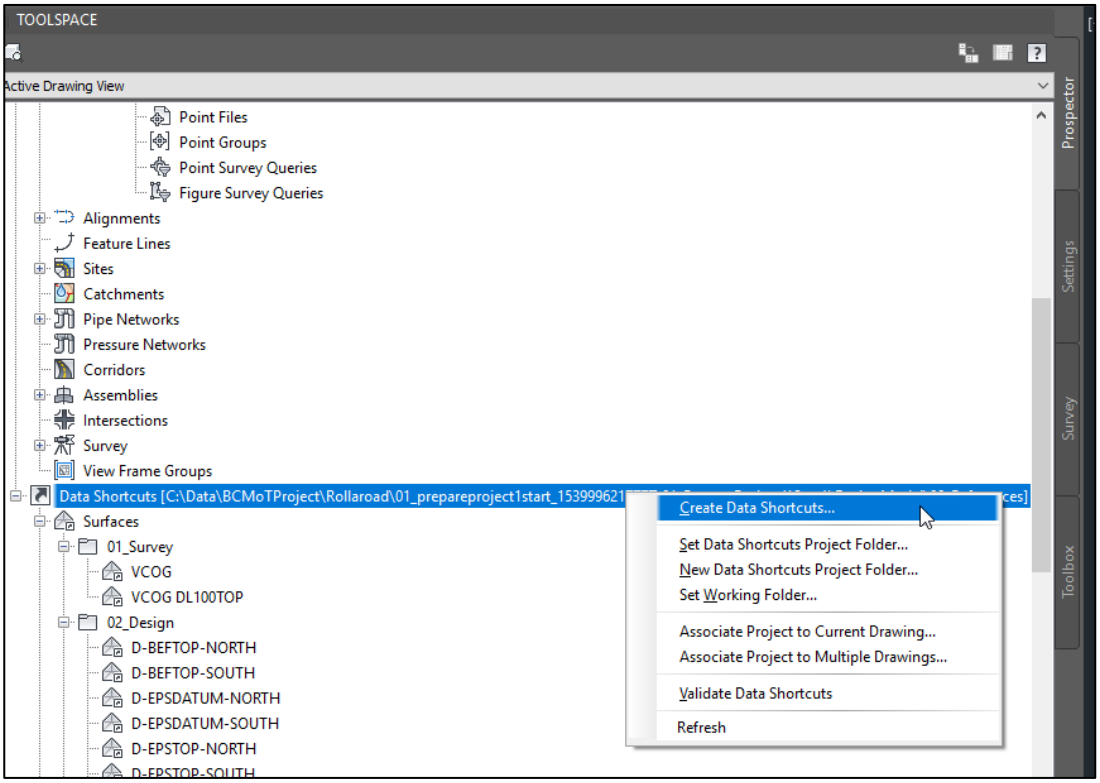


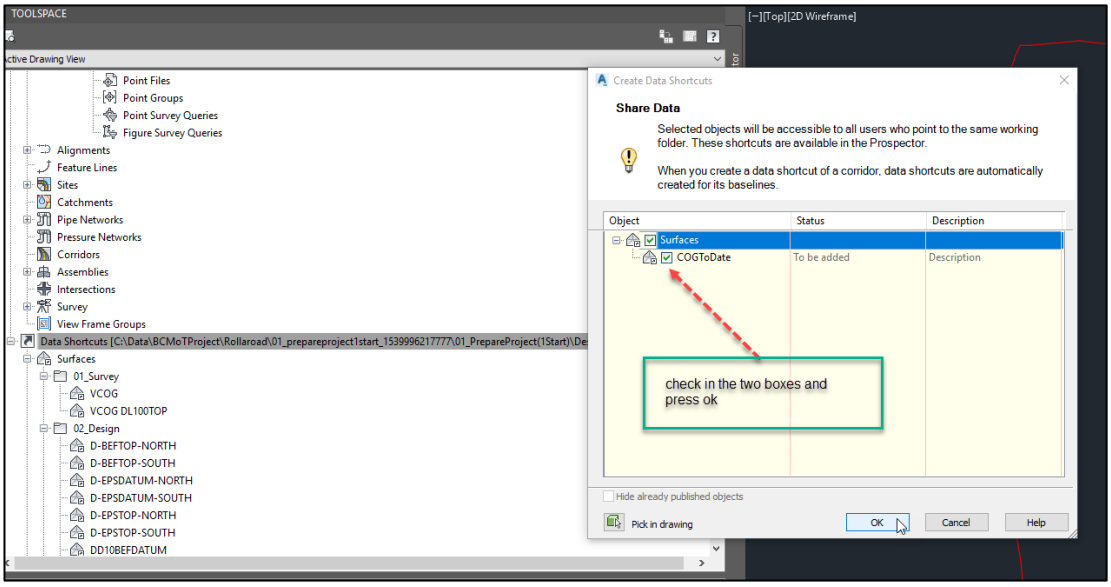


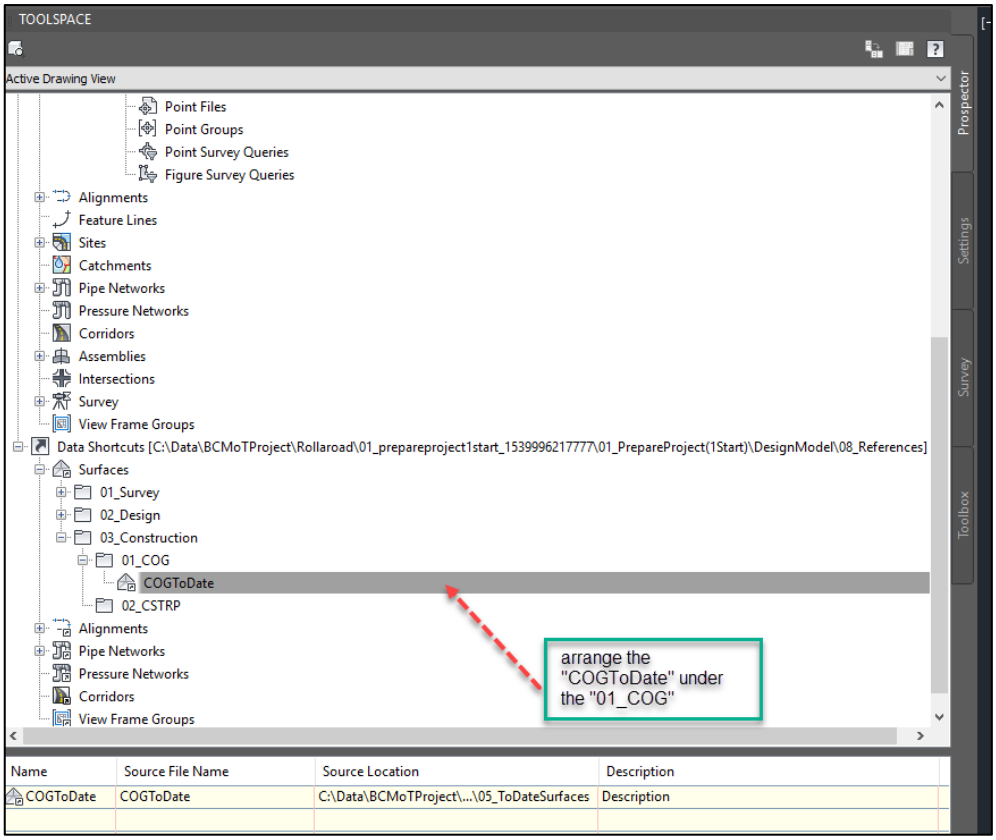


Save the drawing.

1.10 Create data Shortcut for COGToDate Surface(10.25).



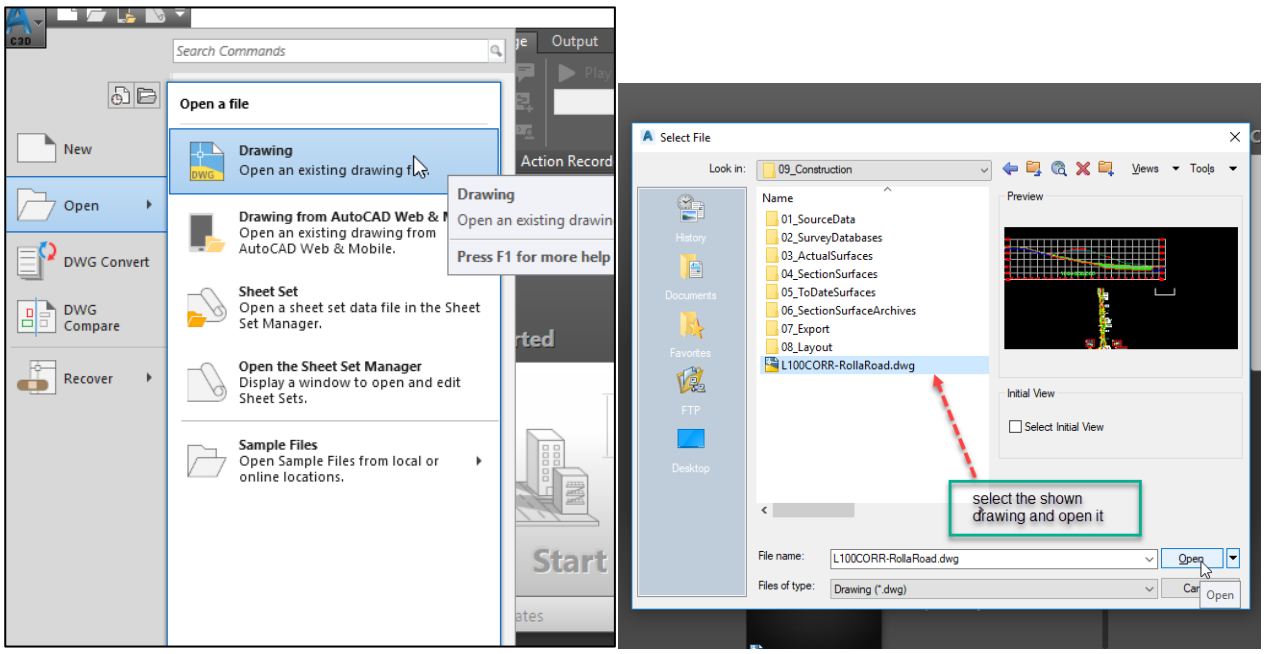


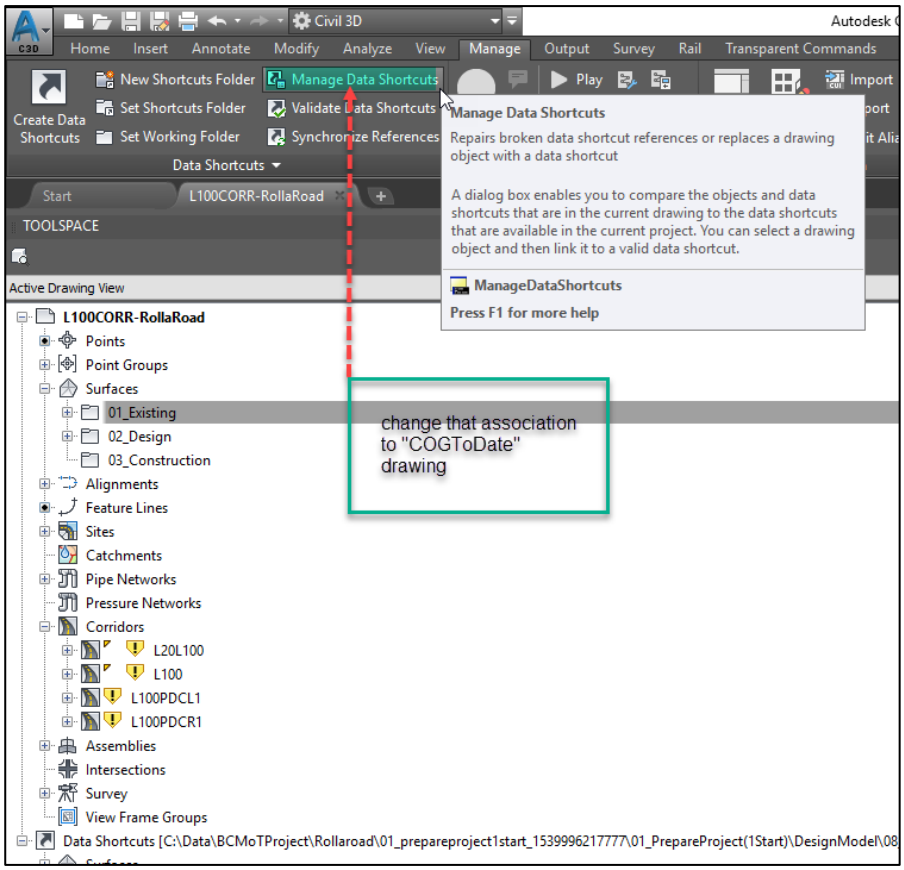


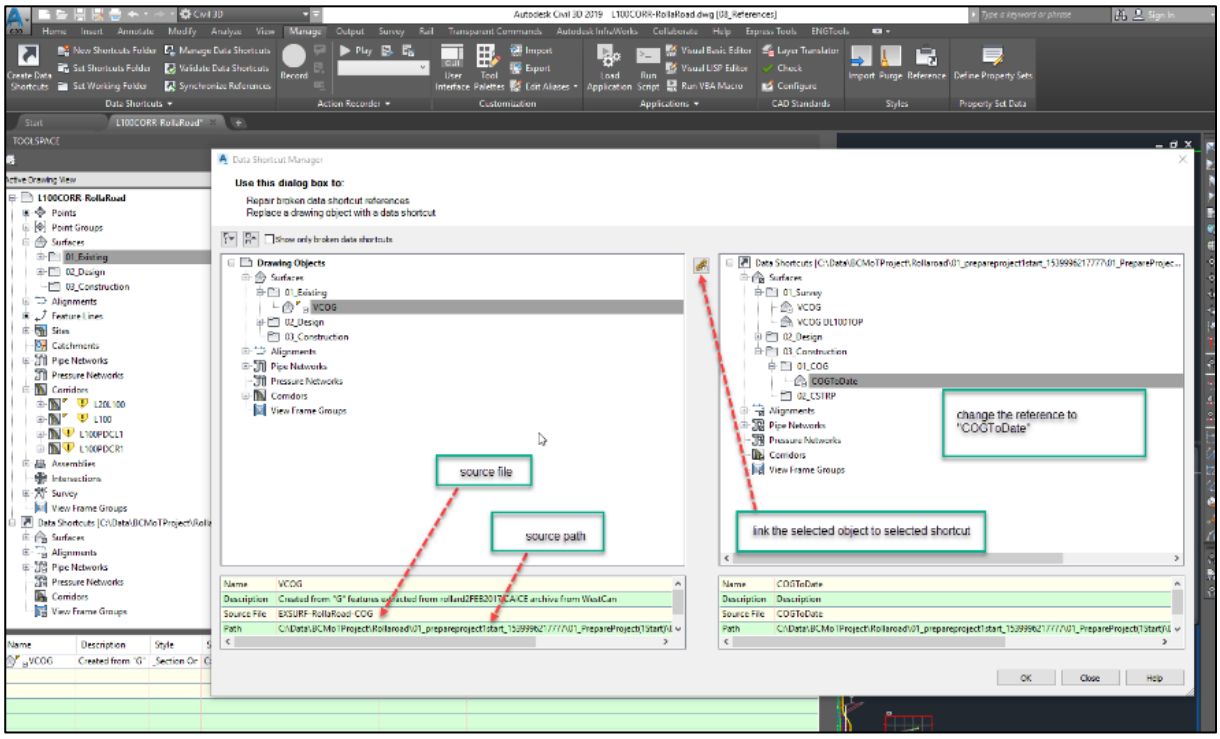
Save and close the COGToDate drawing.

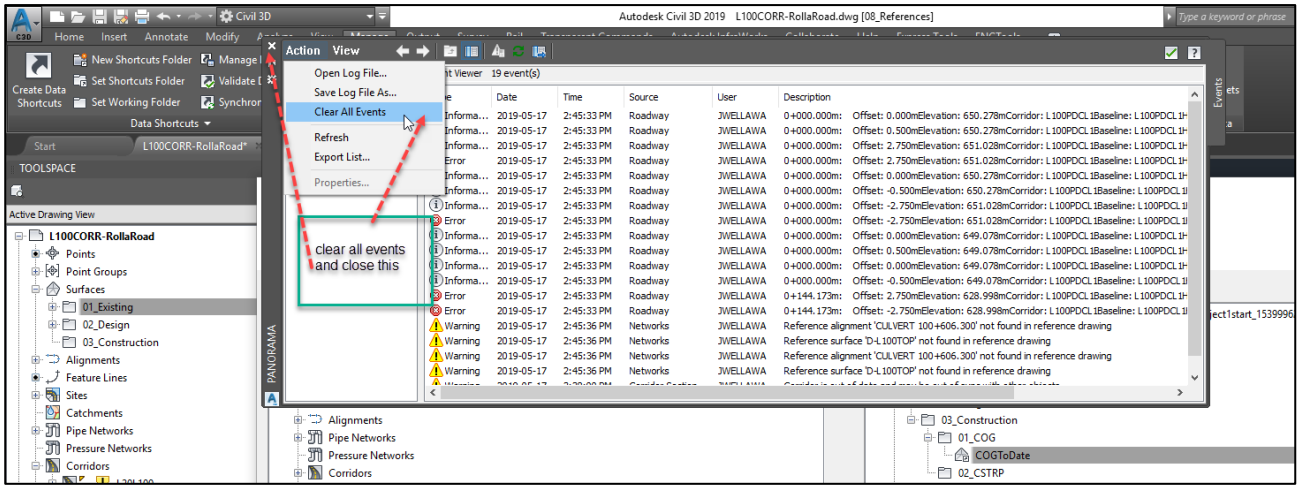
1.11 Construction Corridor Target Surface Update(10.53).

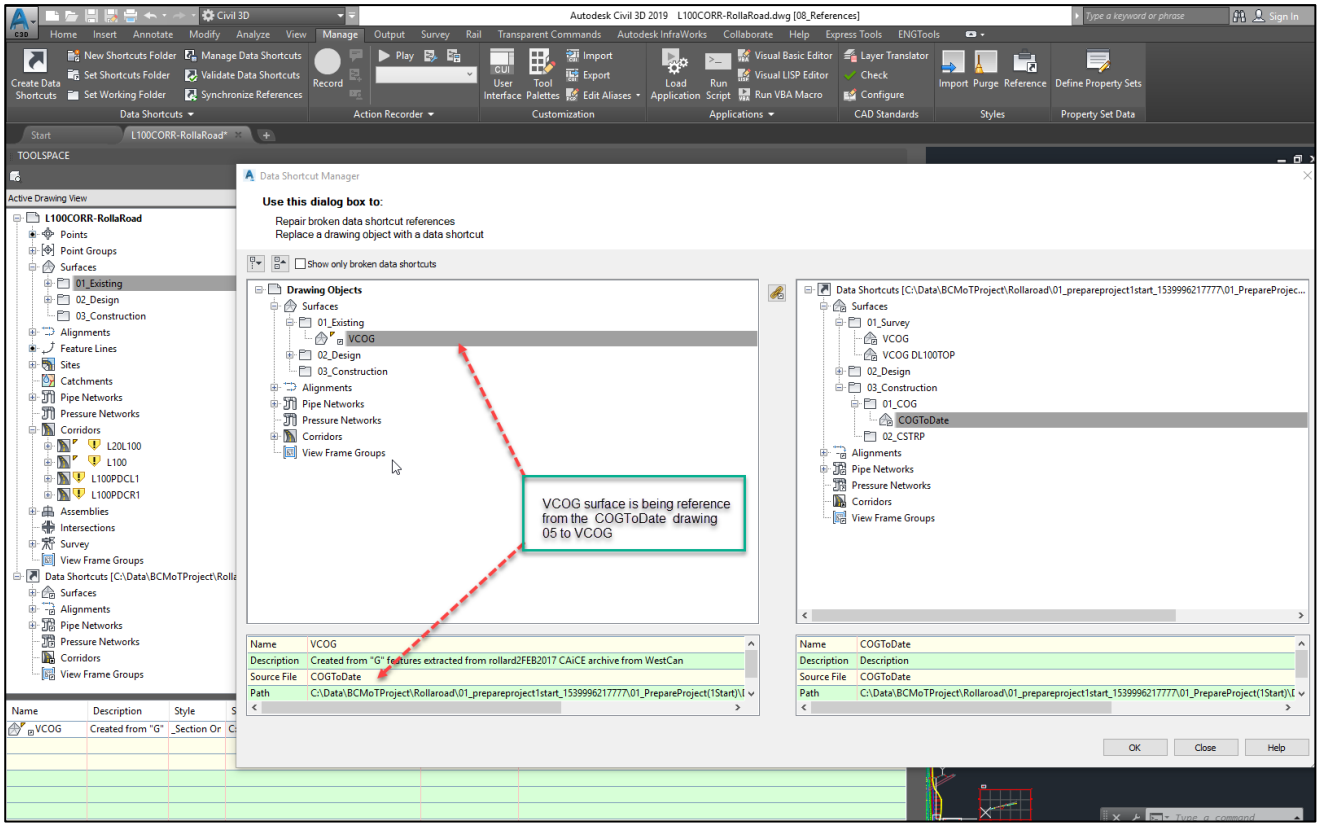
Next step is updated the corridor model L100-CORR-MODEL construction CORR-drawing to change the association of the target surface from VCOG surface surveying combined with original ground to the construction OGToDate surface.

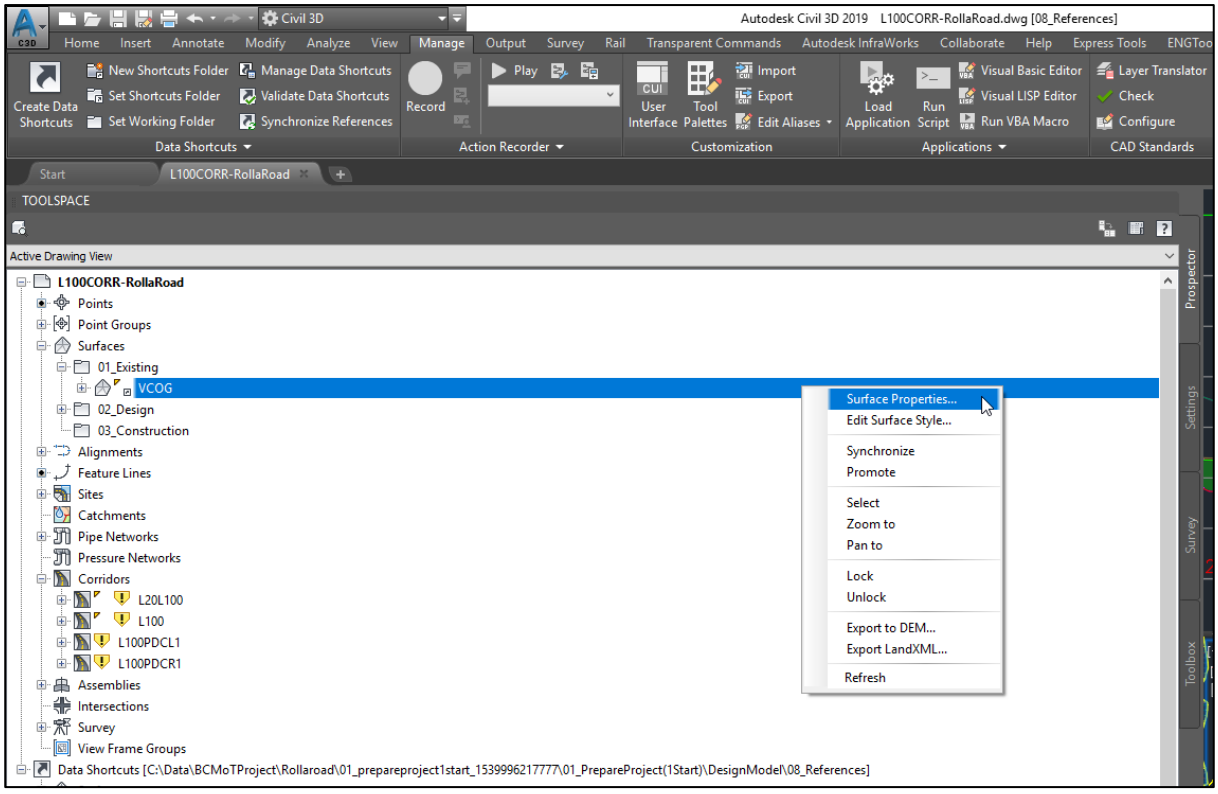



Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Output
Survey
Rail
Transparent Commands
New Shortcuts Folder
Set Shortcuts Folder
Set Working Folder
Manage Data Shortcuts
Validate Data Shortcuts
Synchronize References
Create Data Shortcuts
Data Shortcuts
Play
Import
Manage Data Shortcuts
Repairs broken data shortcut references or replaces a drawing object with a data shortcut
A dialog box enables you to compare the objects and data shortcuts that are in the current drawing to the data shortcuts that are available in the current project. You can select a drawing object and then link it to a valid data shortcut.
ManageDataShortcuts
Press F1 for more help
Start
L100CORR-RollaRoad
TOOLSPACE
Active Drawing View
L100CORR-RollaRoad
Points
Point Groups
Surfaces
01_Existing
02_Design
03_Construction
Alignments
Feature Lines
Sites
Catchments
Pipe Networks
Pressure Networks
Corridors
L20L100
L100
L100PDCL1
L100PDCR1
Assemblies
Intersections
Survey
View Frame Groups
Data Shortcuts [C:\Data\BCMoTProject\Rollaroad\01_prepareproject1start_1539996217777\01_PrepareProject(1Start)\DesignModel\08
change that association to "COGToDate" drawing


Data Shortcut Manager
Use this dialog box to:
Repair broken data shortcut references
Replace a drawing object with a data shortcut
Drawing Objects
Surfaces
01_Existing
VCOG
02_Design
03_Construction
Alignments
Pipe Networks
Pressure Networks
Corridors
View Frame Groups
source file
source path
Data Shortcuts
Surfaces
01_Survey
VCOG
VCOG DL10210P
02_Design
03_Construction
01_COG
COGToDate
02_CSTRP
Alignments
Pipe Networks
Pressure Networks
Corridors
View Frame Groups
change the reference to "COGToDate"
link the selected object to selected shortcut
OK
Close
Help


Open Log File...
Save Log File As...
Clear All Events
Refresh
Export List...
Properties...
clear all events and close this


Use this dialog box to:
Repair broken data shortcut references
Replace a drawing object with a data shortcut
VCOG surface is being reference from the COGToDate drawing 05 to VCOG


Civil 3D
Autodesk Civil 3D 2019 L100CORR-RollaRoad.dwg [08_References]
Home Insert Annotate Modify Analyze View Manage Output Survey Rail Transparent Commands Autodesk InfraWorks Collaborate Help Express Tools ENGToo
Create Data Shortcuts
New Shortcuts Folder
Set Shortcuts Folder
Set Working Folder
Manage Data Shortcuts
Validate Data Shortcuts
Synchronize References
Data Shortcuts
Record
Play
Action Recorder
User Interface
Tool Palettes
Import
Export
Edit Aliases
Customization
Load Application
Run Script
Visual Basic Editor
Visual LISP Editor
Run VBA Macro
Applications
Layer Translator
Check
Configure
CAD Standards
Start
L100CORR-RollaRoad
TOOLSPACE
Active Drawing View
L100CORR-RollaRoad
Points
Point Groups
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01_Existing
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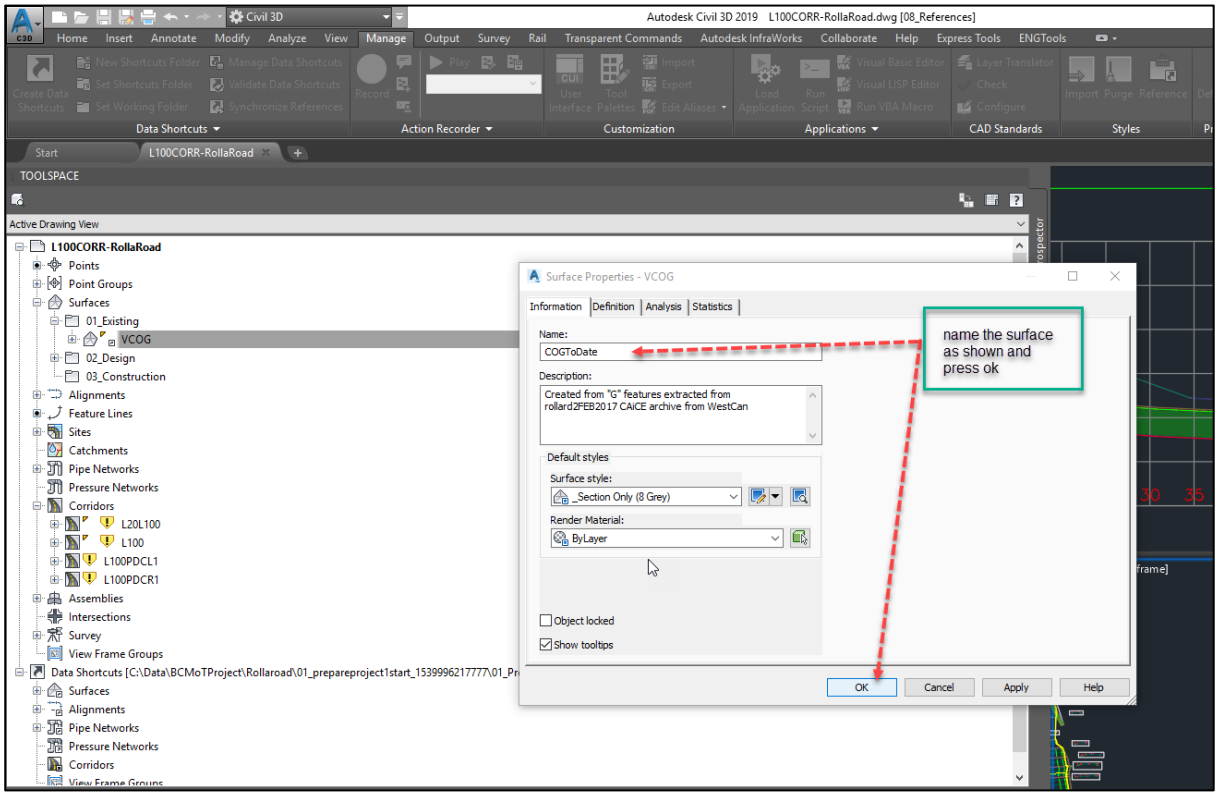
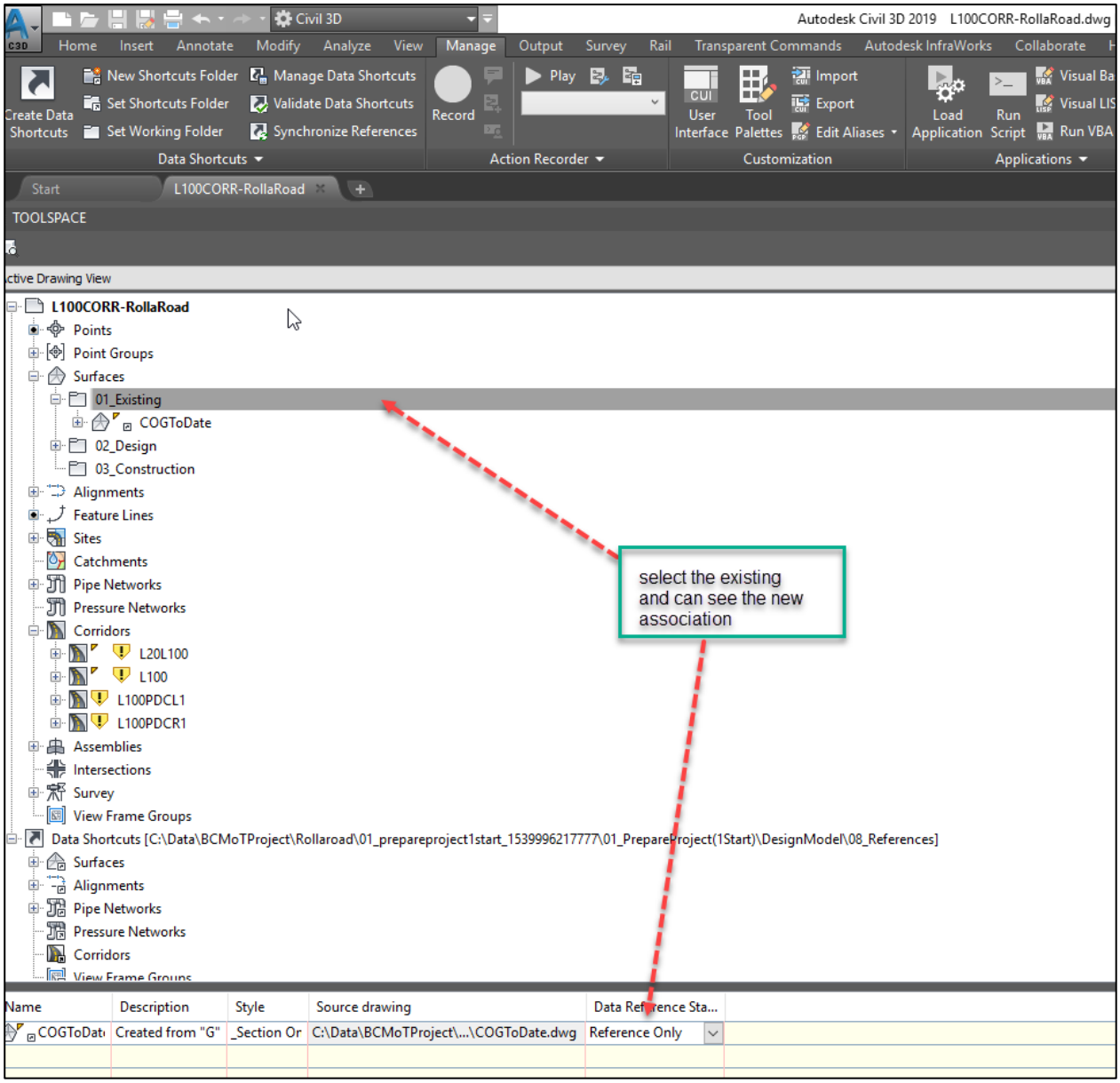
02_Design
03_Construction
Alignments
Feature Lines
Sites
Catchments
Pipe Networks
Pressure Networks
Corridors
L20L100
L100
L100PDCL1
L100PDCR1
Assemblies
Intersections
Survey
View Frame Groups
Data Shortcuts [C:\Data\BCMoTProject\Rollaroad\01_prepareproject1start_1539996217777\01_PrepareProject(1Start)\DesignModel\08_References]
Surface Properties...
Edit Surface Style...
Synchronize
Promote
Select
Zoom to
Pan to
Lock
Unlock
Export to DEM...
Export LandXML...
Refresh
Prospector
Settings
Survey
Toolbox


Civil 3D
Autodesk Civil 3D 2019 L100CORR-RollaRoad.dwg [08_References]
Start
L100CORR-RollaRoad
TOOLSPACE
Active Drawing View
L100CORR-RollaRoad
Surface Properties - VCOG
Information
Definition
Analysis
Statistics
Name:
COGToDate
Description:
Created from "G" features extracted from rollard2FEB2017 CAICE archive from WestCan
Default styles
Surface style:
_Section Only (8 Grey)
Render Material:
ByLayer
Object locked
Show tooltips
name the surface as shown and press ok
OK
Cancel
Apply
Help

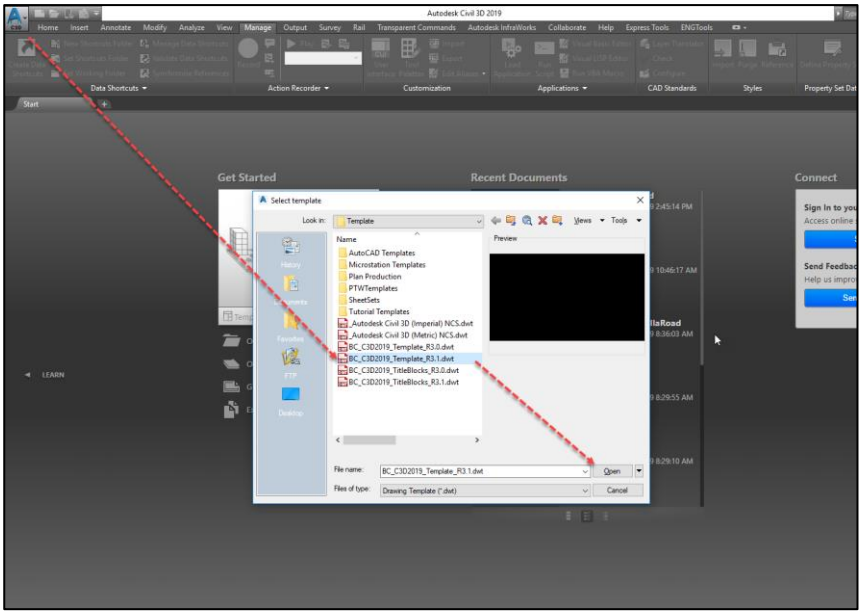


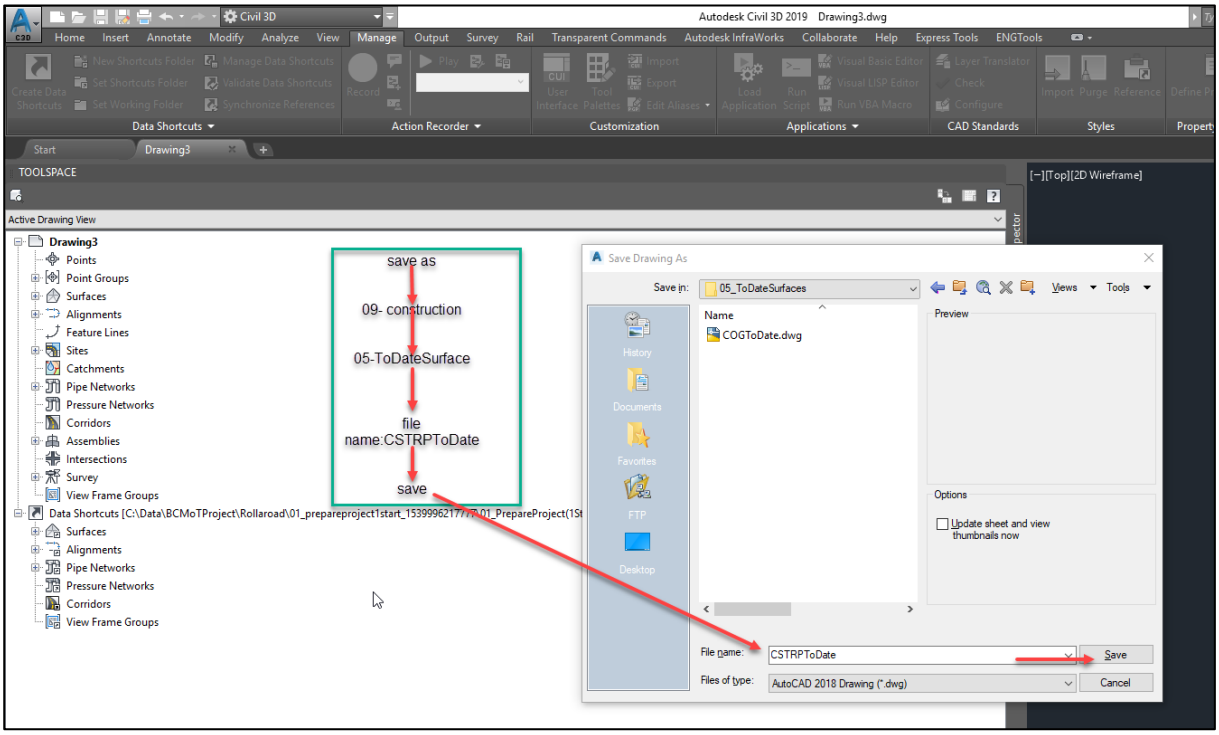
Save and close the Const-L100CORR-Rollaroad drawing.

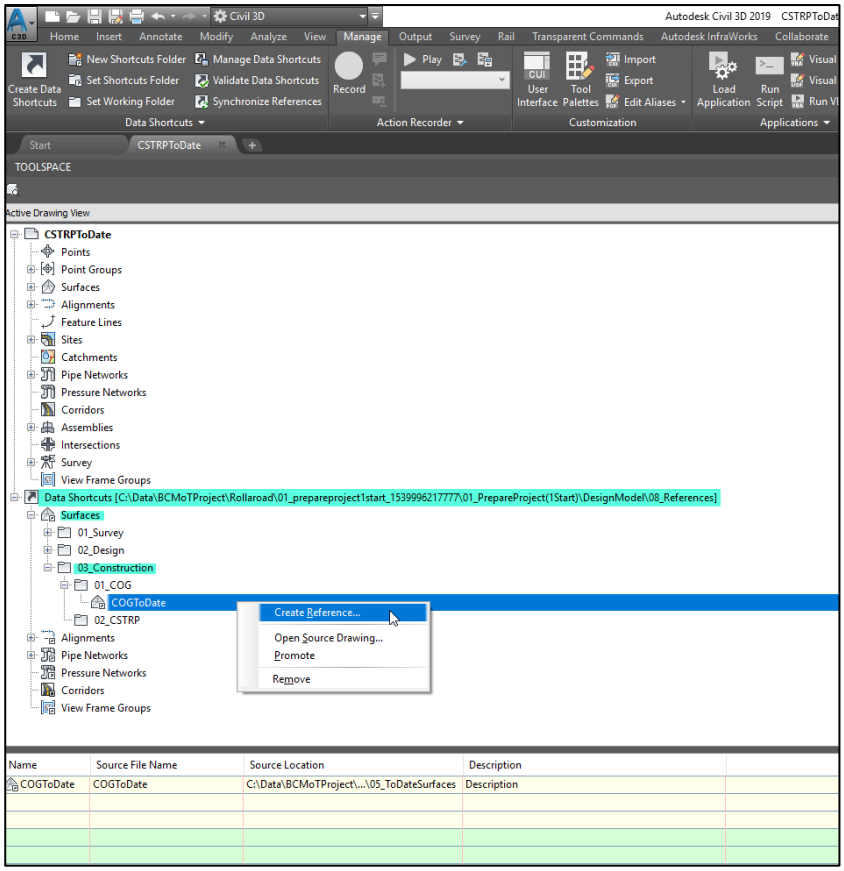
1.12 Create CSTRPToDate Drawing and Surface(14.06).

Creating a Construction stripping surface drawing. The starting point for the striping will be the COGToDate Surface.

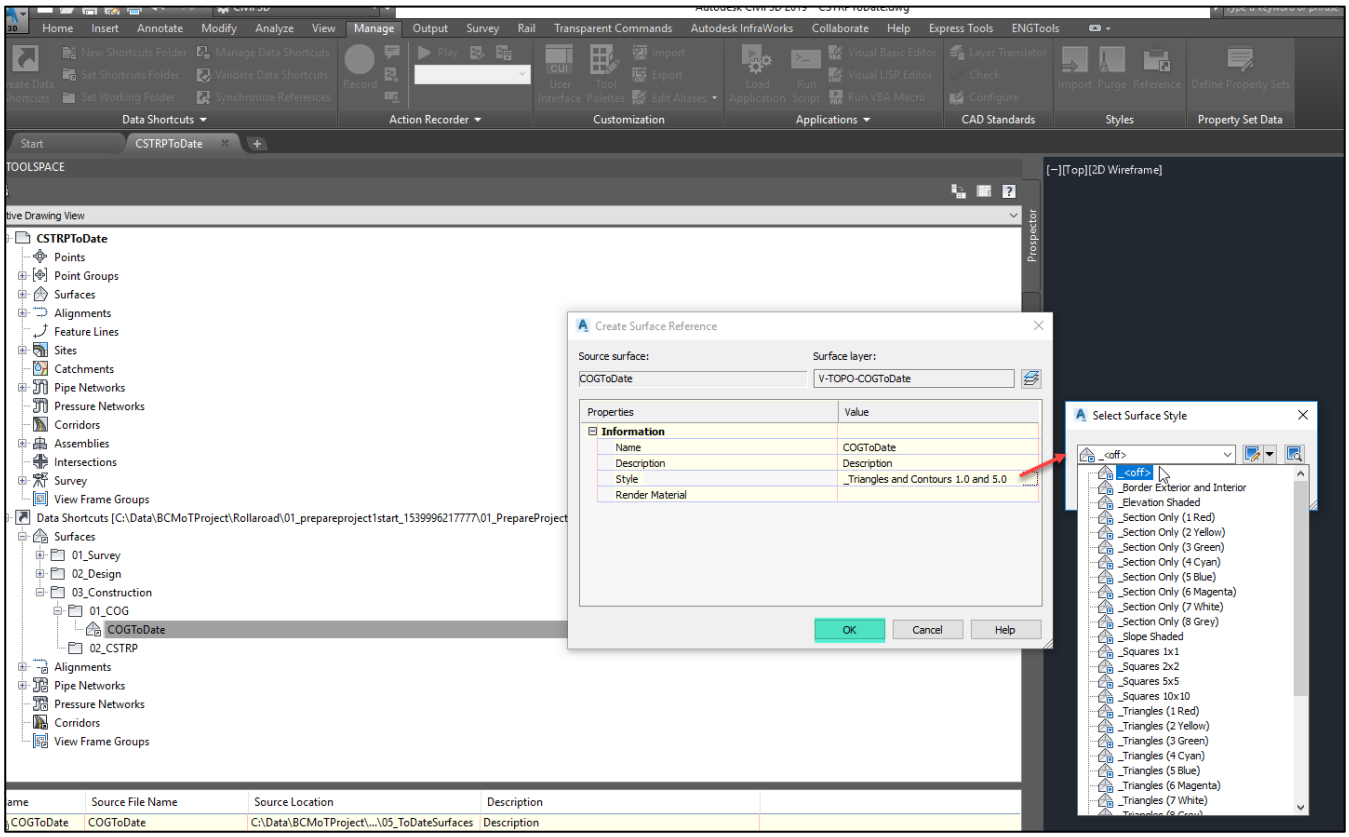
Let’s begin by creating a new drawing as follows.


Get Started
Recent Documents
Connect
Select template
Look in: Template
Name
AutoCAD Templates
Microstation Templates
Plan Production
PTWTemplates
SheetSets
Tutorial Templates
Autodesk Civil 3D (Imperial) NCS.dwt
Autodesk Civil 3D (Metric) NCS.dwt
BC_C3D2019_Template_R3.0.dwt
BC_C3D2019_Template_R3.1.dwt
BC_C3D2019_TitleBlocks_R3.0.dwt
BC_C3D2019_TitleBlocks_R3.1.dwt
Preview
File name: BC_C3D2019_Template_R3.1.dwt
Open
Files of type: Drawing Template (*.dwt)
Cancel

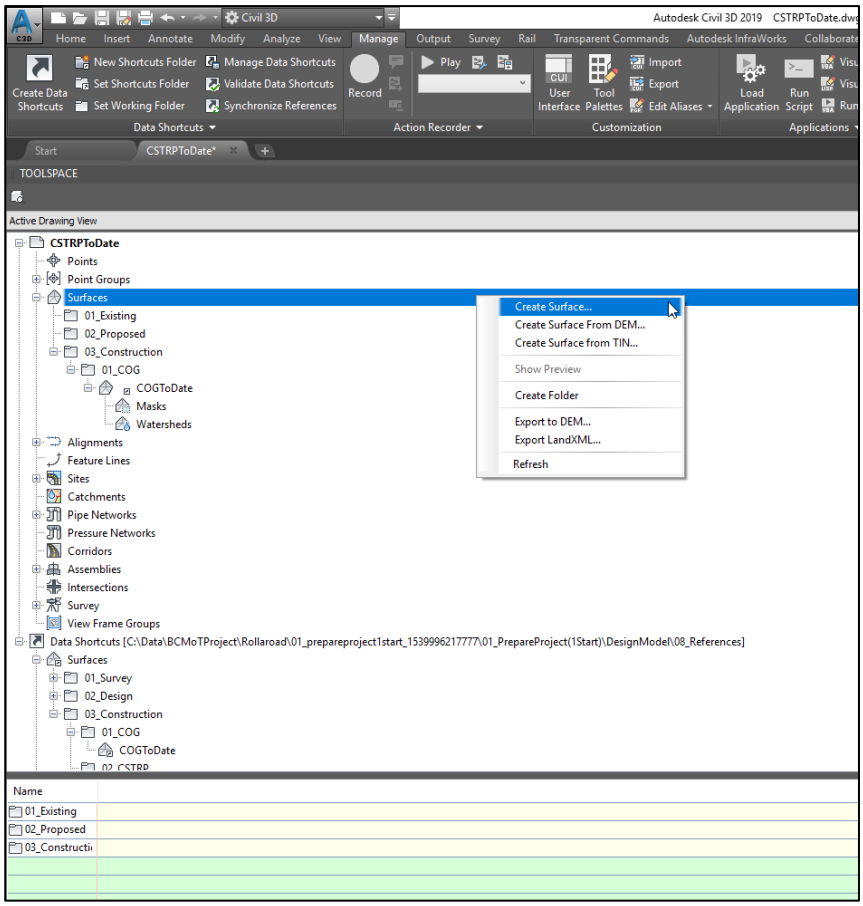

Civil 3D
Autodesk Civil 3D 2019 Drawing3.dwg
Home Insert Annotate Modify Analyze View Manage Output Survey Rail Transparent Commands Autodesk InfraWorks Collaborate Help Express Tools ENGTools
Data Shortcuts
Action Recorder
Customization
Applications
CAD Standards
Styles
Start
Drawing3
TOOLSPACE
Active Drawing View
[−][Top][2D Wireframe]
Drawing3
Points
Point Groups
Surfaces
Alignments
Feature Lines
Sites
Catchments
Pipe Networks
Pressure Networks
Corridors
Assemblies
Intersections
Survey
View Frame Groups
Data Shortcuts [C:\Data\BCMoTProject\Rollaroad\01_prepareproject1start_1539996217
Surfaces
Alignments
Pipe Networks
Pressure Networks
Corridors
View Frame Groups
save as
09- construction
05-ToDateSurface
file name:CSTRPToDate
save
Save Drawing As
Save in: 05_ToDateSurfaces
Views
Tools
Name
COGToDate.dwg
Preview
History
Documents
Favorites
FTP
Desktop
Options
Update sheet and view thumbnails now
File name: CSTRPToDate
Save
Files of type: AutoCAD 2018 Drawing (*.dwg)
Cancel

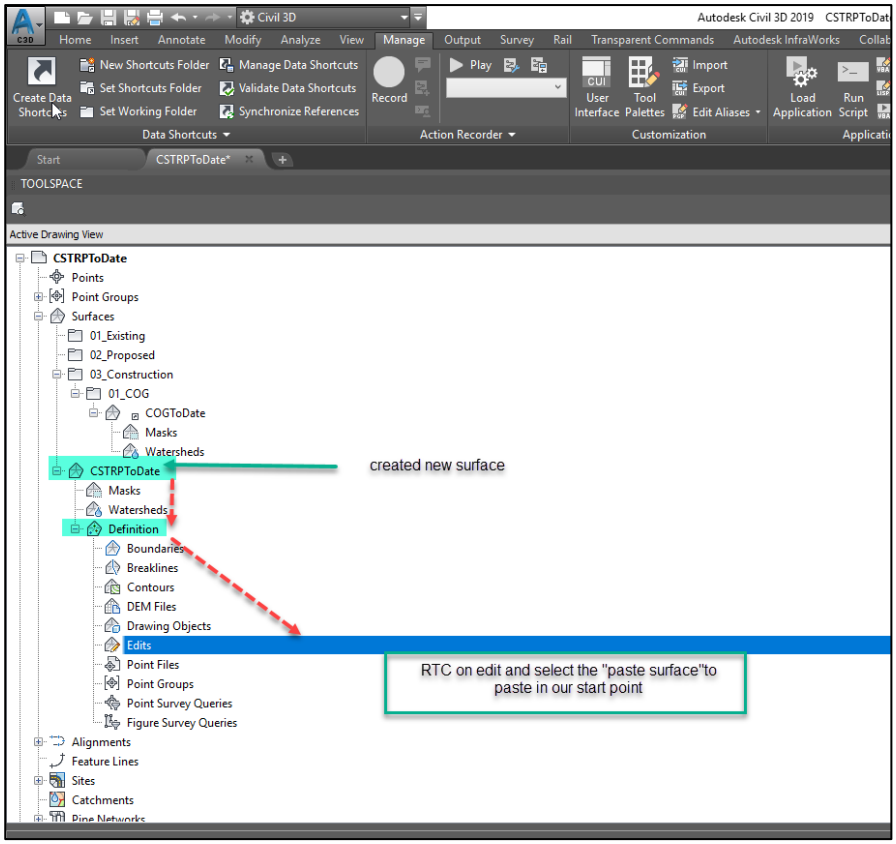


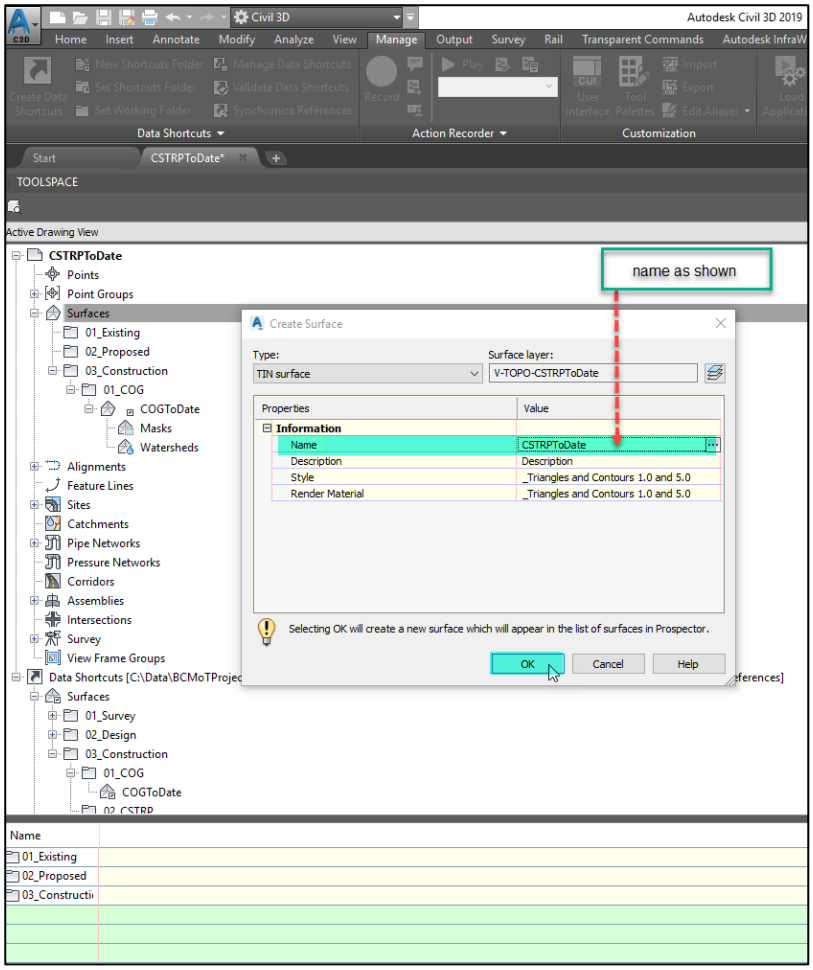
Next create the 01-COG folder.

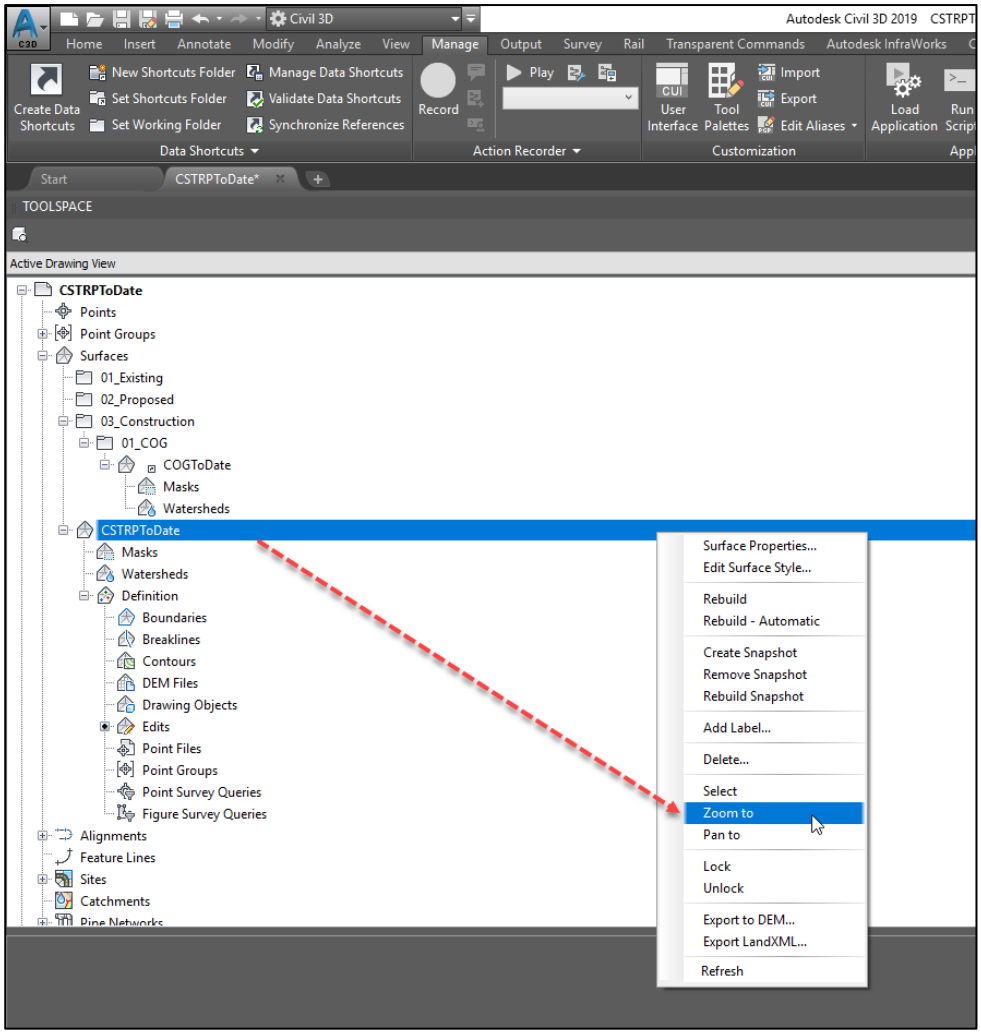


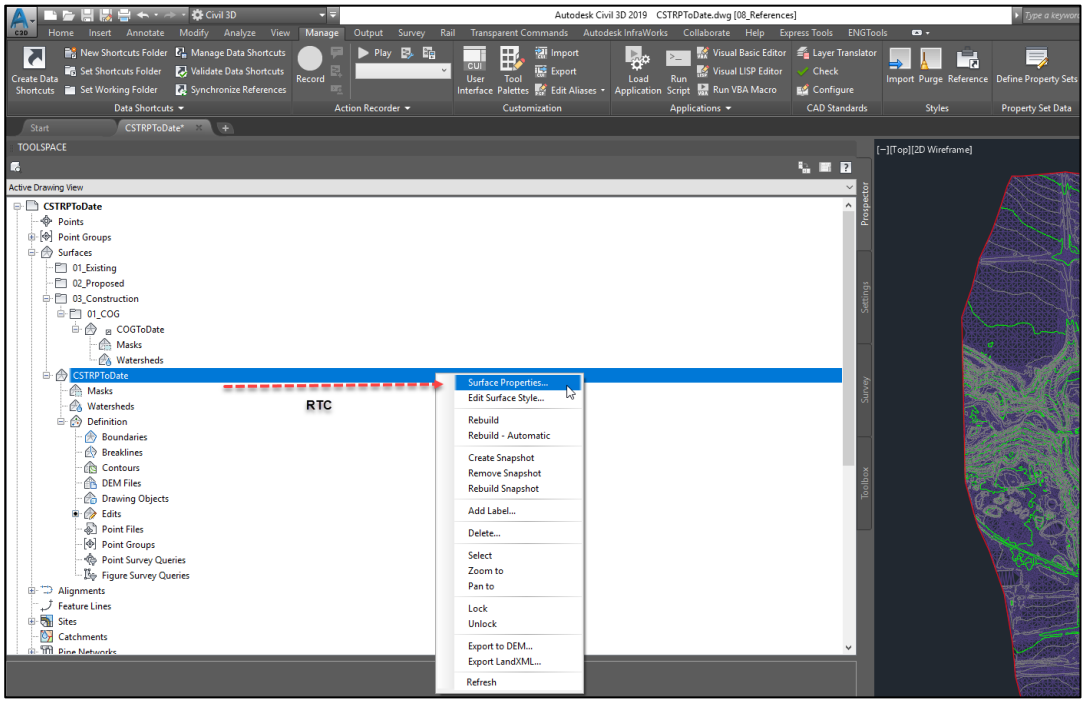
Now create the new surface called “CSTRPToDate”.

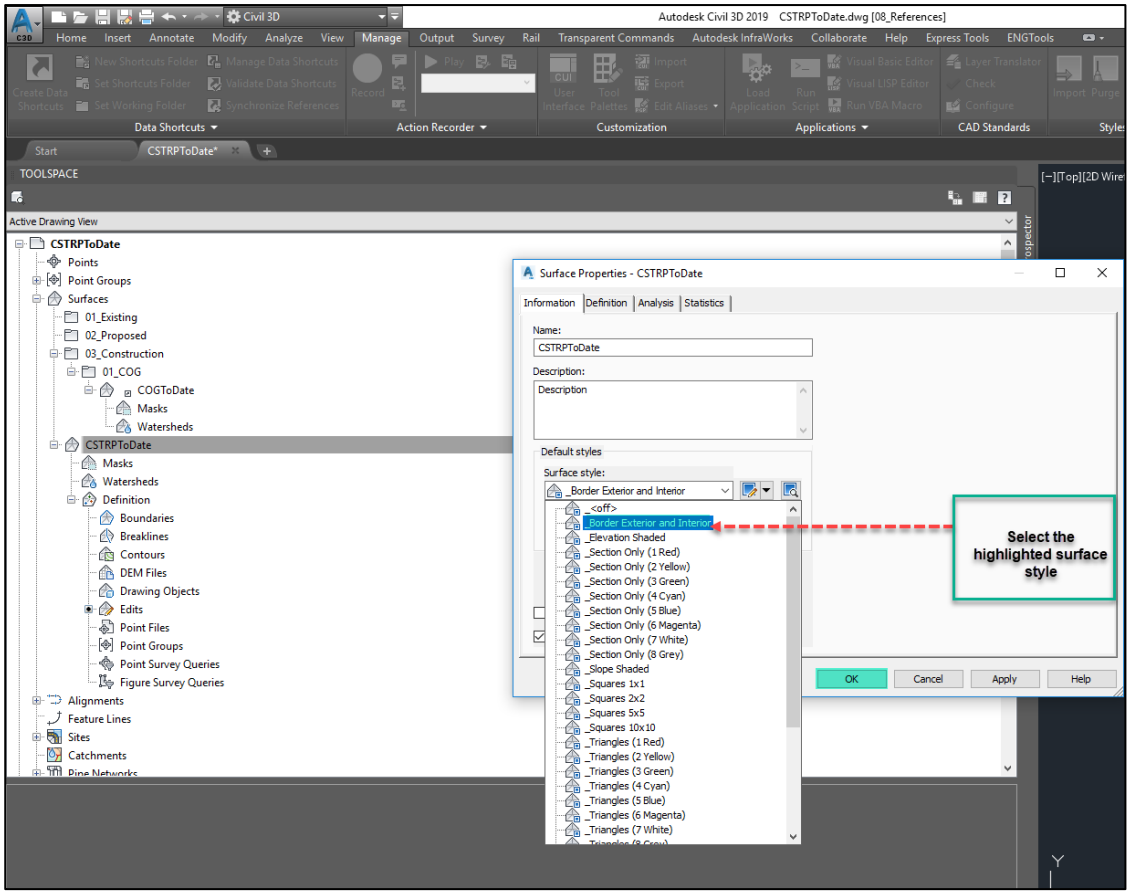



created new surface
RTC on edit and select the "paste surface"to paste in our start point

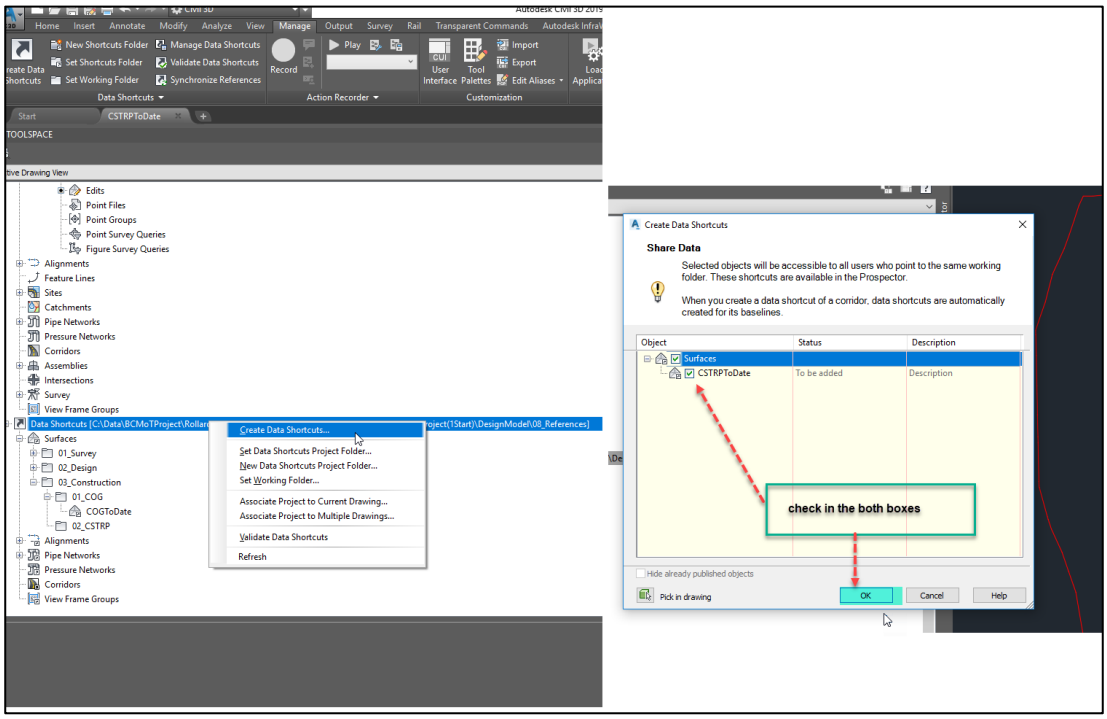

name as shown
Create Surface
Type:
TIN surface
Surface layer:
V-TOPO-CSTRPToDate
Properties
Value
Information
Name
CSTRPToDate
Description
Description
Style
_Triangles and Contours 1.0 and 5.0
Render Material
_Triangles and Contours 1.0 and 5.0
Selecting OK will create a new surface which will appear in the list of surfaces in Prospector.
OK
Cancel
Help

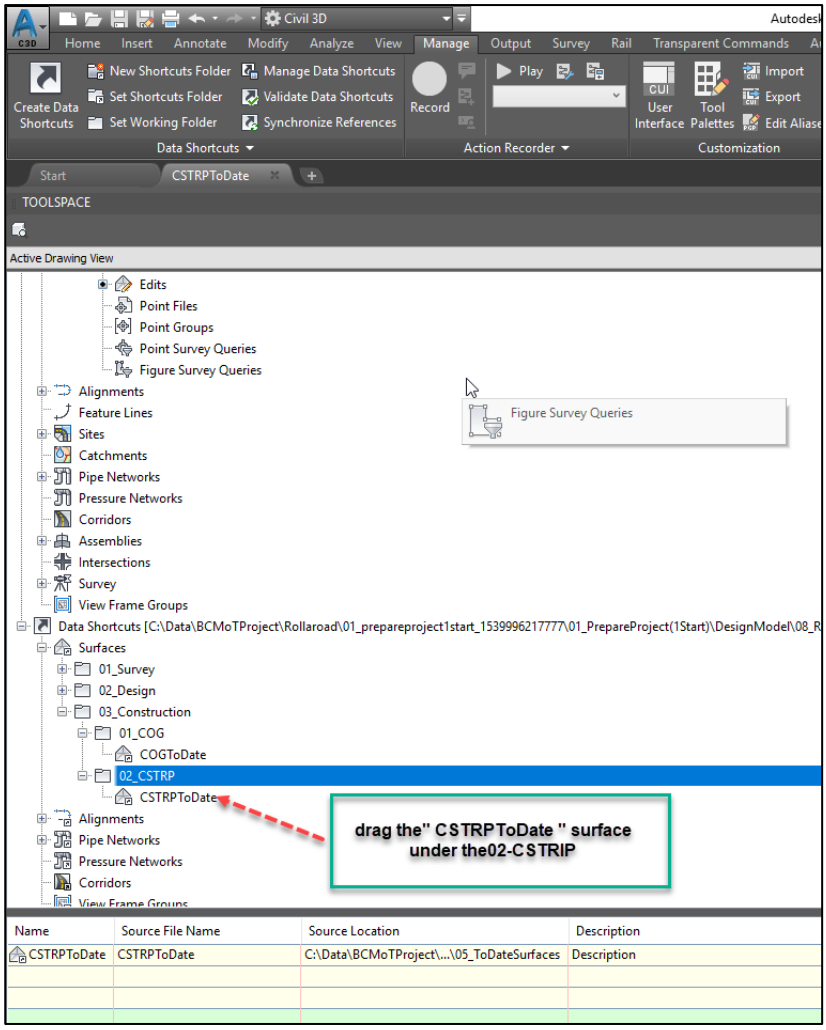

Civil 3D
Autodesk Civil 3D 2019 CSTRPT
Home Insert Annotate Modify Analyze View Manage Output Survey Rail Transparent Commands Autodesk InfraWorks
Create Data Shortcuts
New Shortcuts Folder
Set Shortcuts Folder
Set Working Folder
Manage Data Shortcuts
Validate Data Shortcuts
Synchronize References
Data Shortcuts
Record
Play
Action Recorder
User Interface
Tool Palettes
Import
Export
Edit Aliases
Customization
Load Application
Start
CSTRPToDate*
TOOLSPACE
Active Drawing View
CSTRPToDate
Points
Point Groups
Surfaces
01_Existing
02_Proposed
03_Construction
01_COG
COGToDate
Masks
Watersheds
CSTRPToDate
Masks
Watersheds
Definition
Boundaries
Breaklines
Contours
DEM Files
Drawing Objects
Edits
Point Files
Point Groups
Point Survey Queries
Figure Survey Queries
Alignments
Feature Lines
Sites
Catchments
Surface Properties...
Edit Surface Style...
Rebuild
Rebuild - Automatic
Create Snapshot
Remove Snapshot
Rebuild Snapshot
Add Label...
Delete...
Select
Zoom to
Pan to
Lock
Unlock
Export to DEM...
Export LandXML...
Refresh

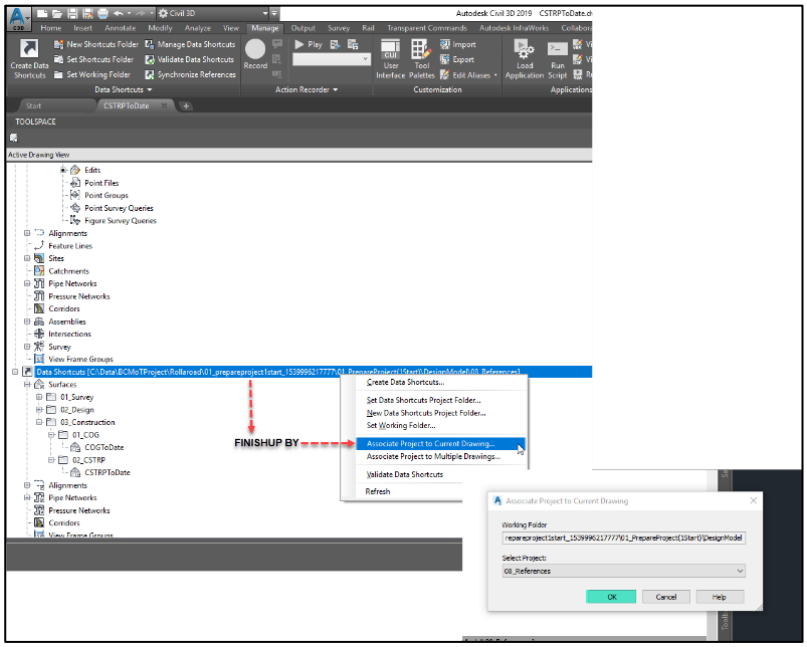

Autodesk Civil 3D 2019 CSTRPToDate.dwg [08_References]
RTC
[-][Top][2D Wireframe]
Surface Properties...
Edit Surface Style...
Rebuild
Rebuild - Automatic
Create Snapshot
Remove Snapshot
Rebuild Snapshot
Add Label...
Delete...
Select
Zoom to
Pan to
Lock
Unlock
Export to DEM...
Export LandXML...
Refresh



Save the drawing and create the data shortcut to that surface.



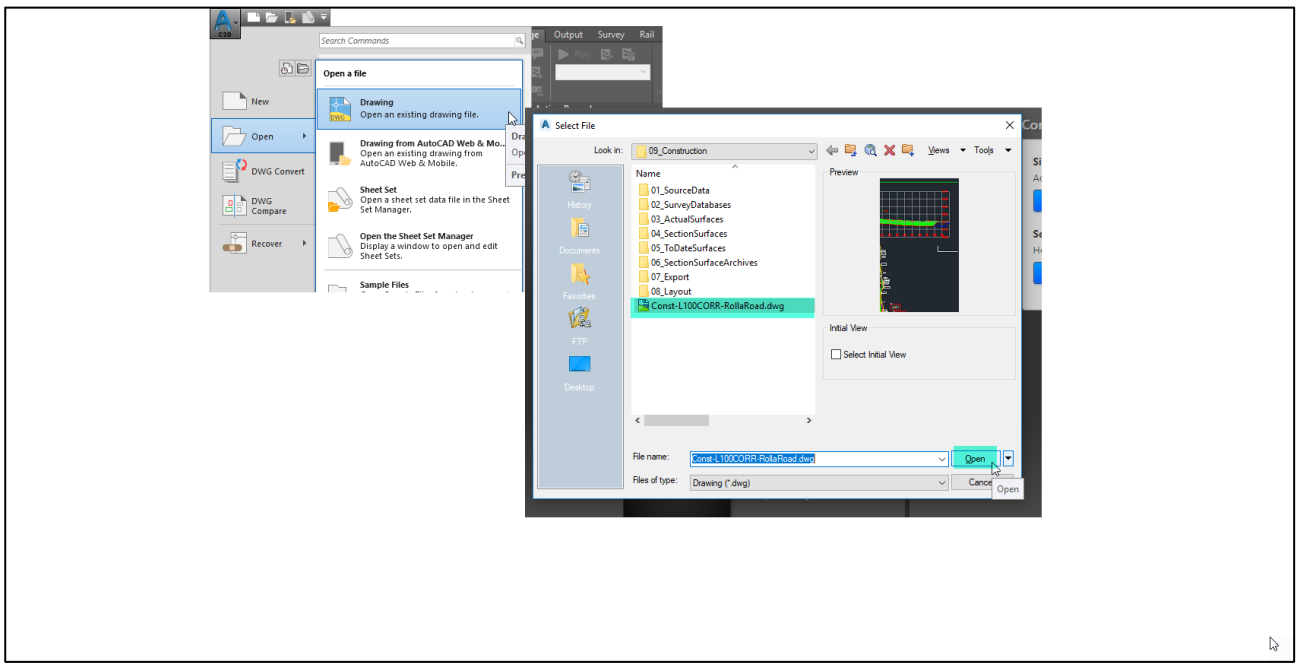


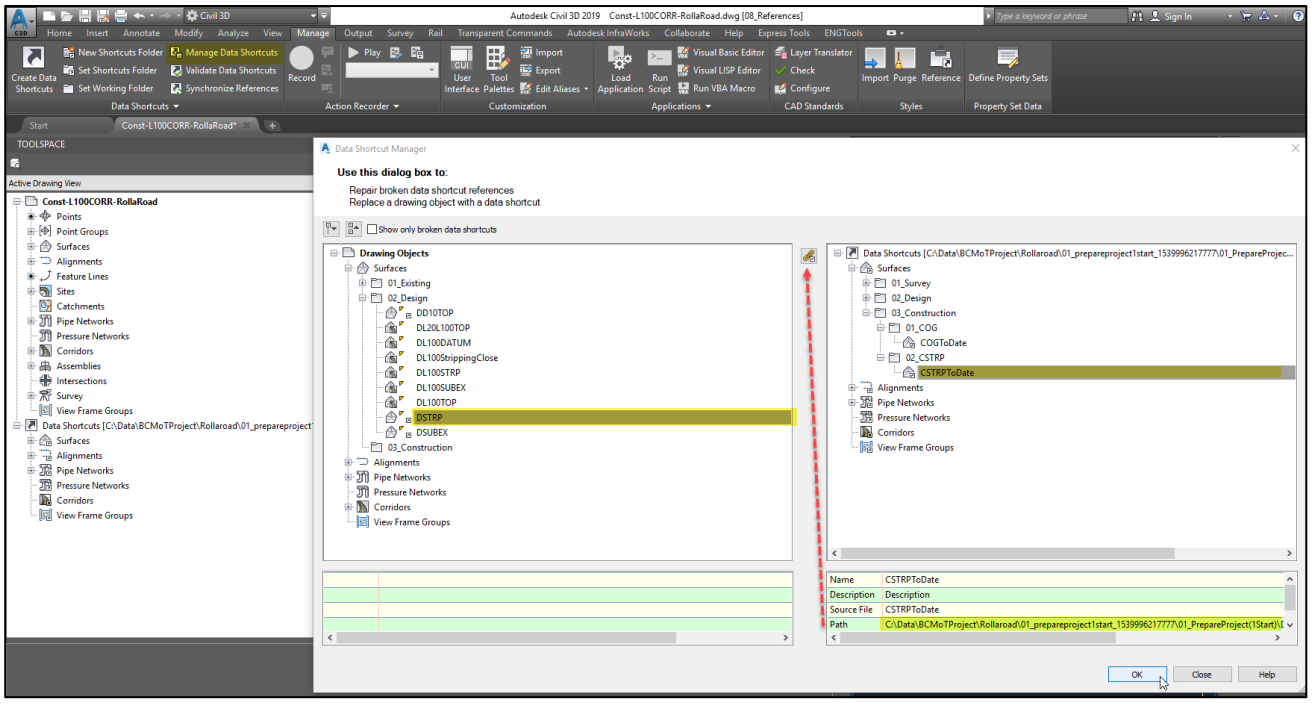


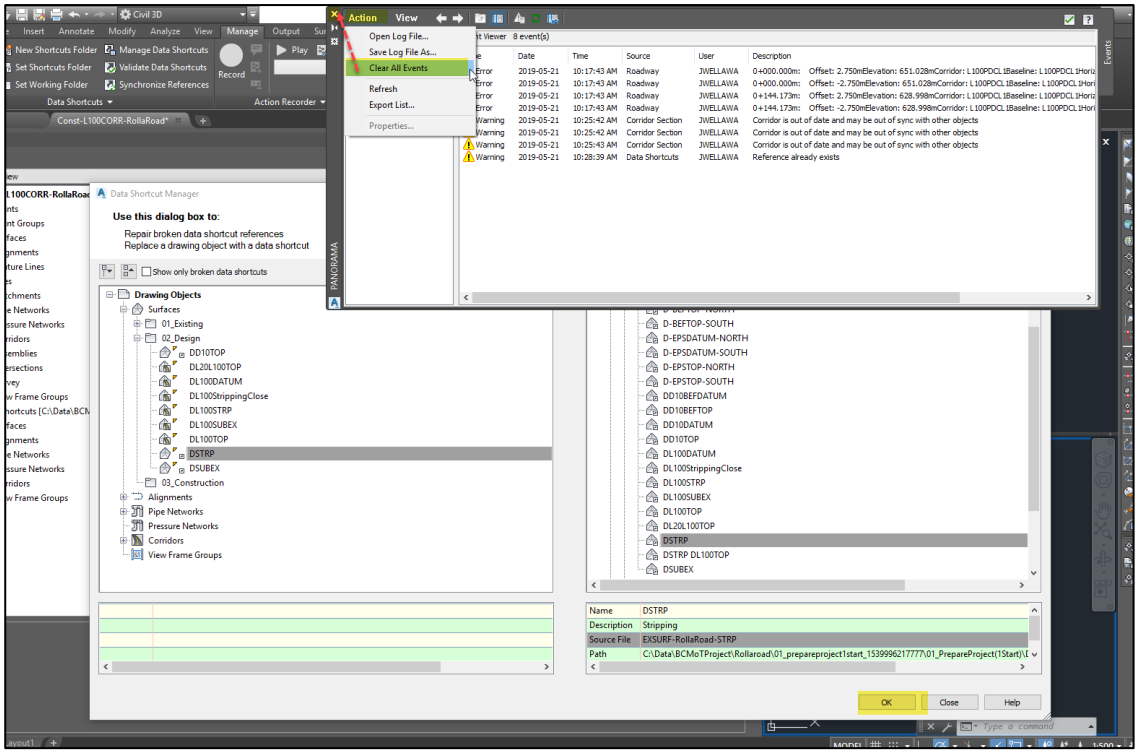
Save and close the “CSTRPToDate” drawing.

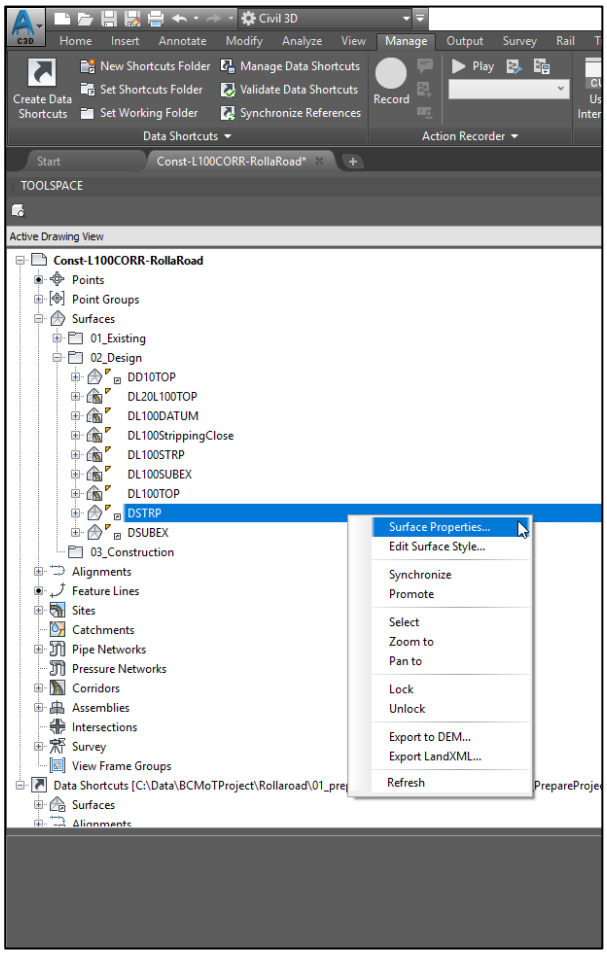
1.13 Construction Corridor target Surface Update(16.23).

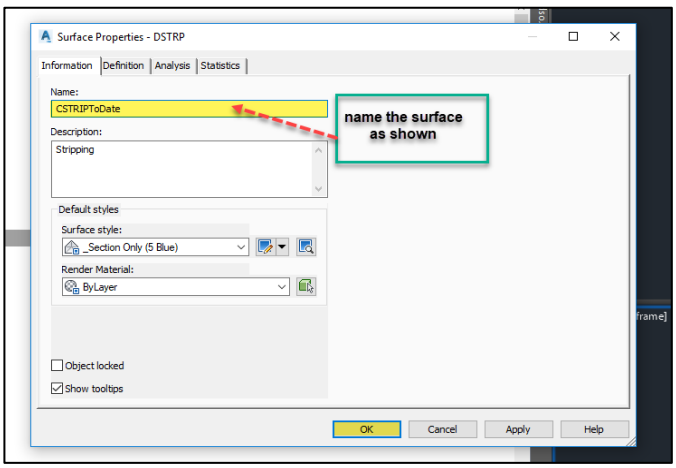
Open a new drawing as shown in below.

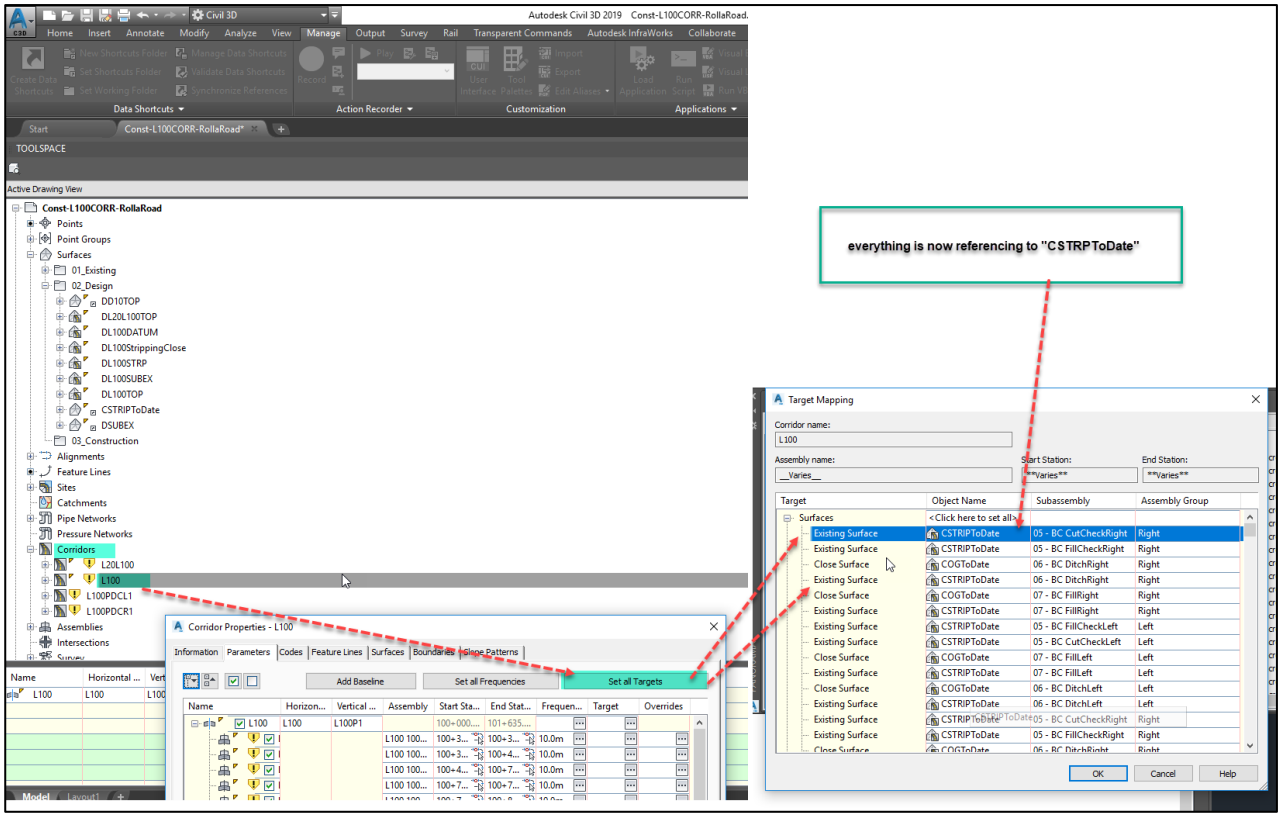





Action
View
Open Log File...
Save Log File As...
Clear All Events
Refresh
Export List...
Properties...
Data Shortcut Manager
Use this dialog box to:
Repair broken data shortcut references
Replace a drawing object with a data shortcut
Show only broken data shortcuts
Drawing Objects
Surfaces
01_Existing
02_Design
DD10TOP
DL20L100TOP
DL100DATUM
DL100StrippingClose
DL100STRP
DL100SUBEX
DL100TOP
DSTRP
DSUBEX
03_Construction
Alignments
Pipe Networks
Pressure Networks
Corridors
View Frame Groups
D-BEFTOP-SOUTH
D-EPSDATUM-NORTH
D-EPSDATUM-SOUTH
D-EPSTOP-NORTH
D-EPSTOP-SOUTH
DD10BEFDATUM
DD10BEFTOP
DD10DATUM
DL100DATUM
DL100StrippingClose
DL100STRP
DL100SUBEX
DL100TOP
DL20L100TOP
DSTRP
DSTRP DL100TOP
DSUBEX
Name DSTRP
Description Stripping
Source File EXSURF-RollaRoad-STRP
Path C:\Data\BCMoTProject\Rollaroad\01_prepareproject1start_1539996217777\01_PrepareProject(1Start)\L
OK
Close
Help


Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Output
Survey
Rail
New Shortcuts Folder
Set Shortcuts Folder
Set Working Folder
Manage Data Shortcuts
Validate Data Shortcuts
Synchronize References
Create Data Shortcuts
Record
Play
Data Shortcuts
Action Recorder
Start
Const-L100CORR-RollaRoad*
TOOLSPACE
Active Drawing View
Const-L100CORR-RollaRoad
Points
Point Groups
Surfaces
01_Existing
02_Design
DD10TOP
DL20L100TOP
DL100DATUM
DL100StrippingClose
DL100STRP
DL100SUBEX
DL100TOP
DSTRP
DSUBEX
03_Construction
Alignments
Feature Lines
Sites
Catchments
Pipe Networks
Pressure Networks
Corridors
Assemblies
Intersections
Survey
View Frame Groups
Surfaces
Surface Properties...
Edit Surface Style...
Synchronize
Promote
Select
Zoom to
Pan to
Lock
Unlock
Export to DEM...
Export LandXML...
Refresh


Surface Properties - DSTRP
Information
Definition
Analysis
Statistics
Name:
CSTRIPToDate
name the surface as shown
Description:
Stripping
Default styles
Surface style:
_Section Only (5 Blue)
Render Material:
ByLayer
Object locked
Show tooltips
OK
Cancel
Apply
Help



Save and close the drawing. This concludes the lesson on preparing a project for the construction supervision workflow.

2 Exercise two _COG and CSTRP Data and Surfaces

2.1 High Level Overview(00.00)

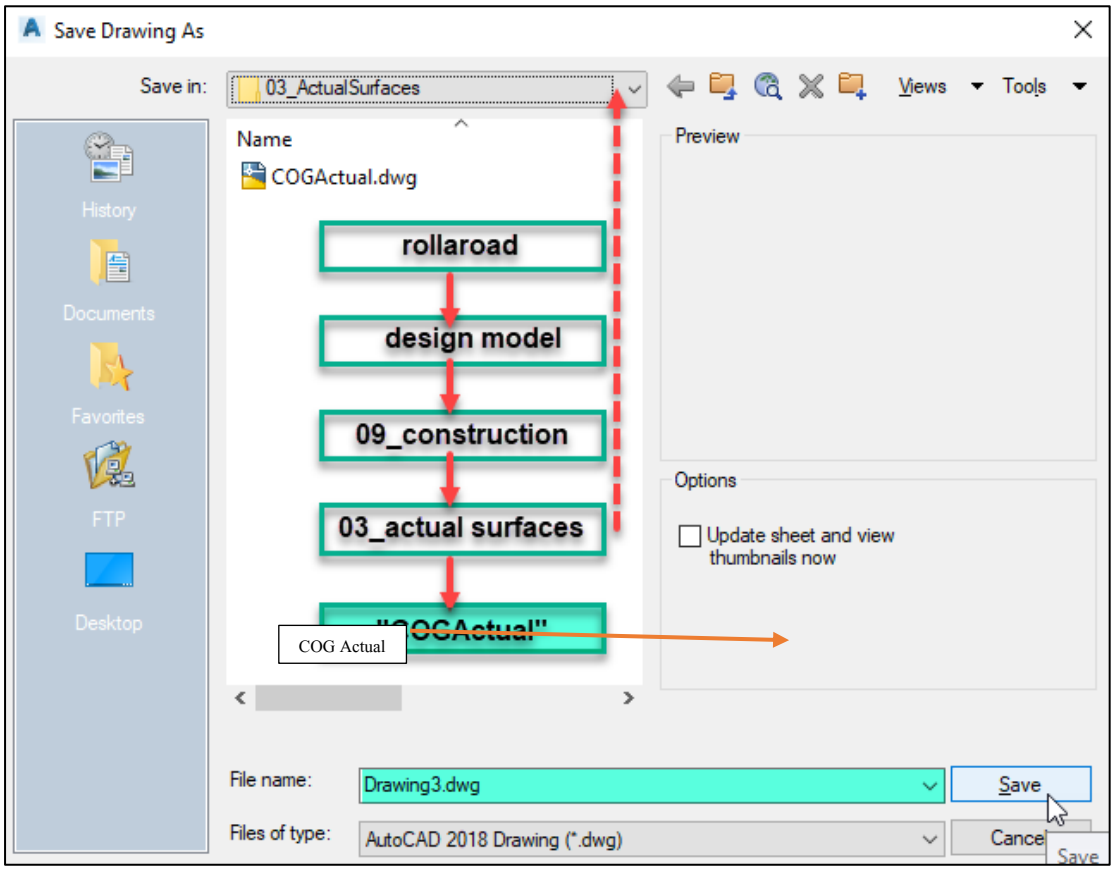
1. Adding surface boundaries can sometimes be problematic. Possible remedies include:
   i. Offset original boundary by 0.01m
   ii. Explode original boundary and pedit and rejoin
   iii. Ensure boundary polyline is closed
   iv. Ensuring no duplicate vertices or overlapping segments
   v. Not using a non-destructive breaklines
   vi. Redraw the boundary polyline
   vii. Suggestions on this are most welcome please!
2. Always make sure data shortcuts and survey database paths are correctly set.

In this section, import the construction original ground and construction stripping data. Each file will result and create an individual surface.

And we are working on “03-ActualSurfaces”.

Open a new drawing, select the recent template and “save as” COGActual.

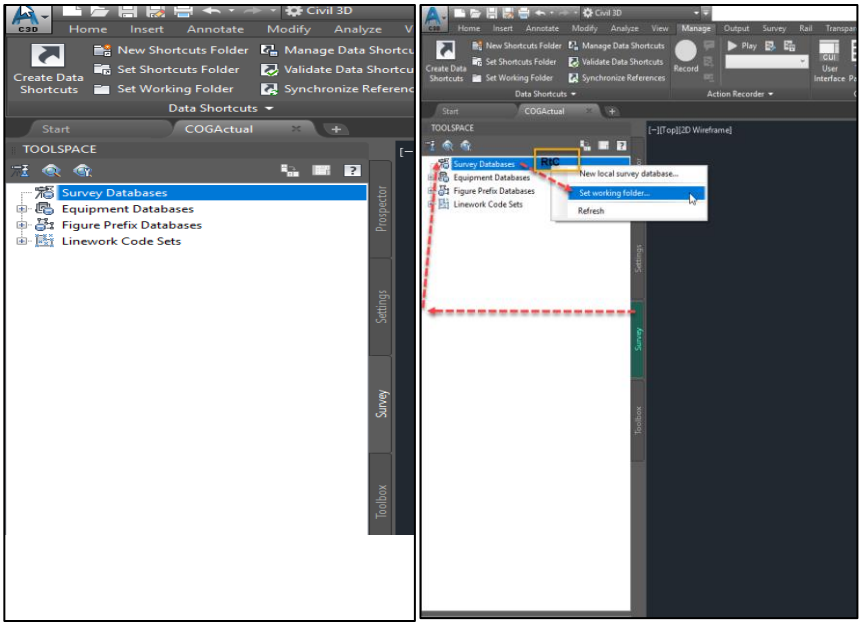
2.2 Create COGActual Drawing(01.47)



2.3 Set Working Folder and Create Survey Database(02.30)

Create Survey Database for the construction original ground data.

Go to survey tab in tool space and right click on Survey database.

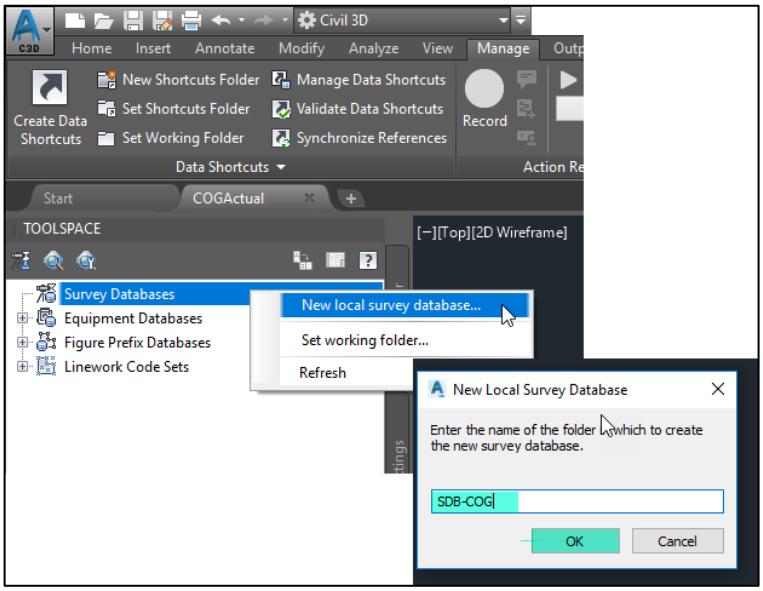


Browse to find out the “02_Survey database” which is in the

Rolla road → design model → 09_construction.

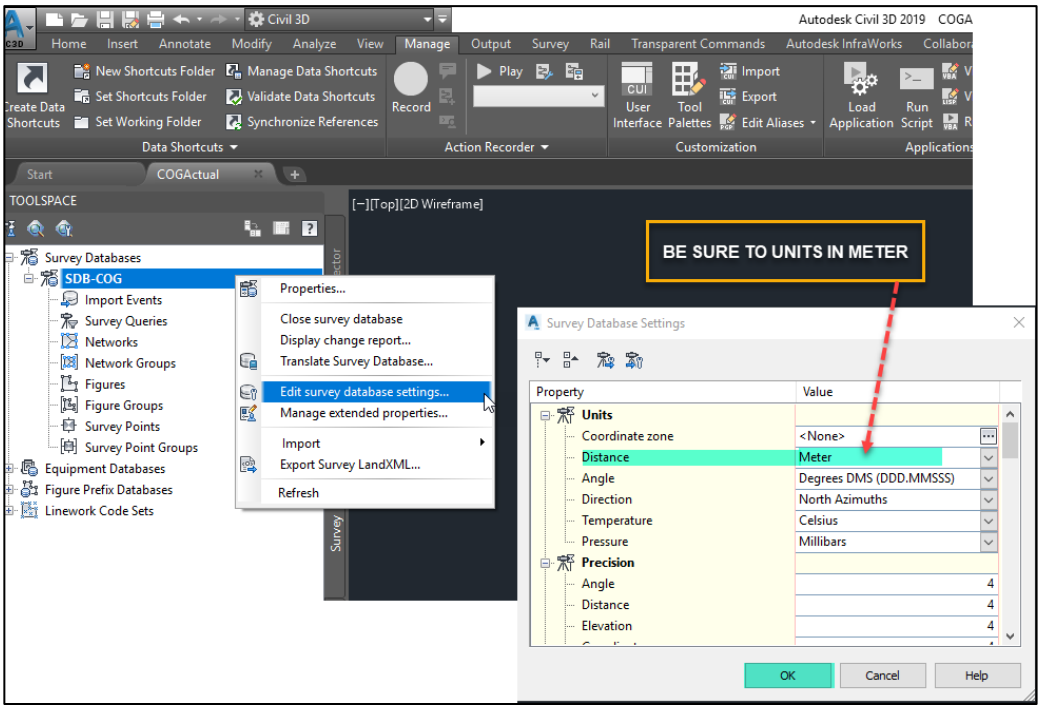
And therefore, when we create survey databases it will be in the above “02_ survey database” folder.

Now we can create new survey database by,



SDB is the prefix indicating that is actual survey data base,

Once survey database has been created just ensure the units have been set to meters.



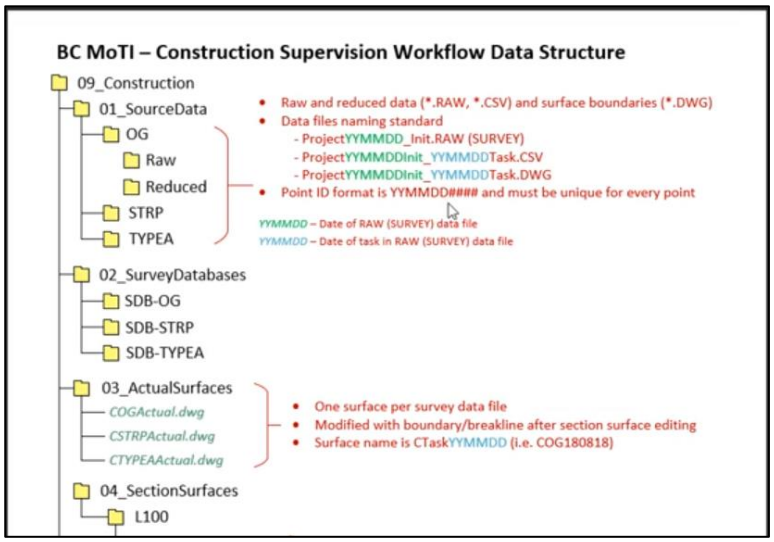
This completes the creation of construction original ground survey data base.

2.4 Review COG Data Files Names and Point ID Standards(04.42)

09_construction ⟶ 01_ Source data (this is where the all source data is located).

- OG
    1. Raw(all raw data stores in here).
    2. Reduced(Contains the point files as well as corresponding boundary for each of those point files).

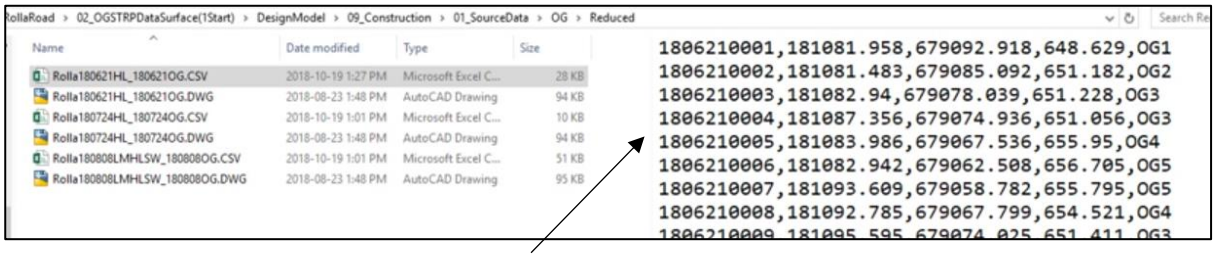
- STRP



According to the project folder structure diagram above, it has naming convention for the data file as well as point ID. Naming convention is very important throughout the process.

In the naming convention, you may have a raw data file with extention “raw” or survey that might be from trimble controller. Each of those raw data files you may have different tasks. You might have multiple OG and stripping data , from within that raw data file.

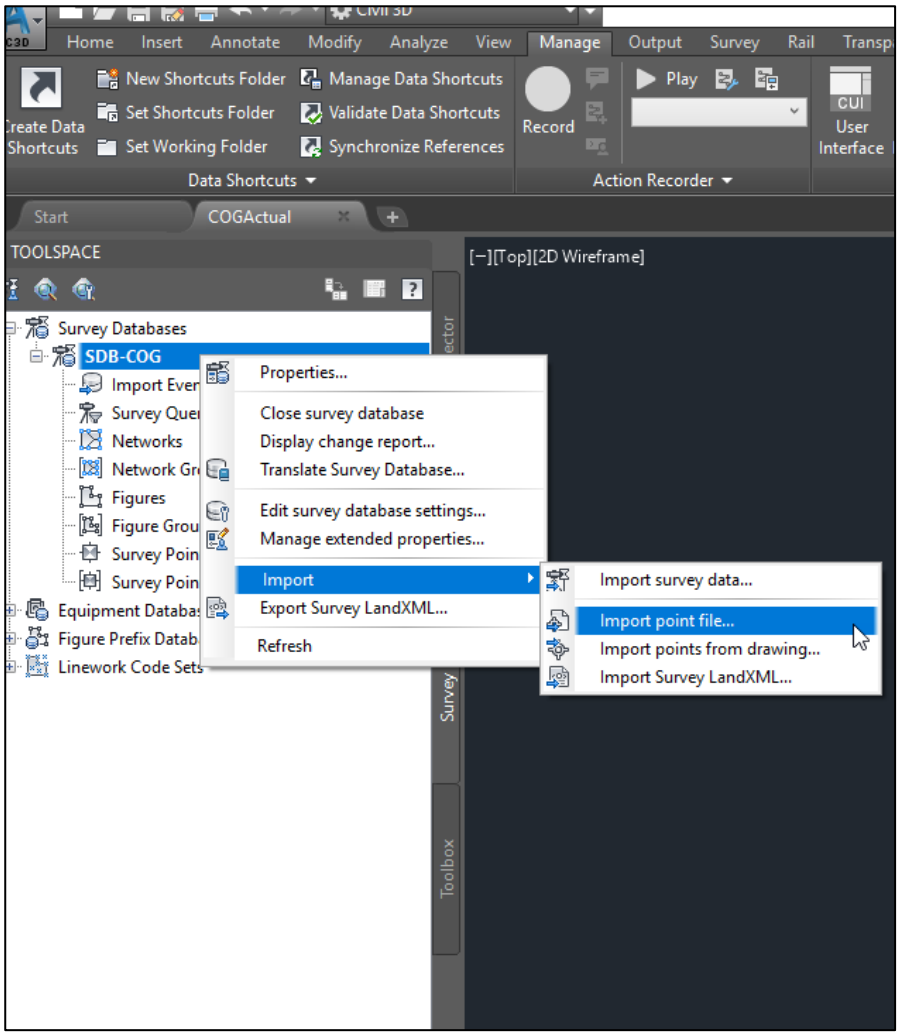
Make sure you have a look at the naming convention to see if it meets ministry terms of reference.



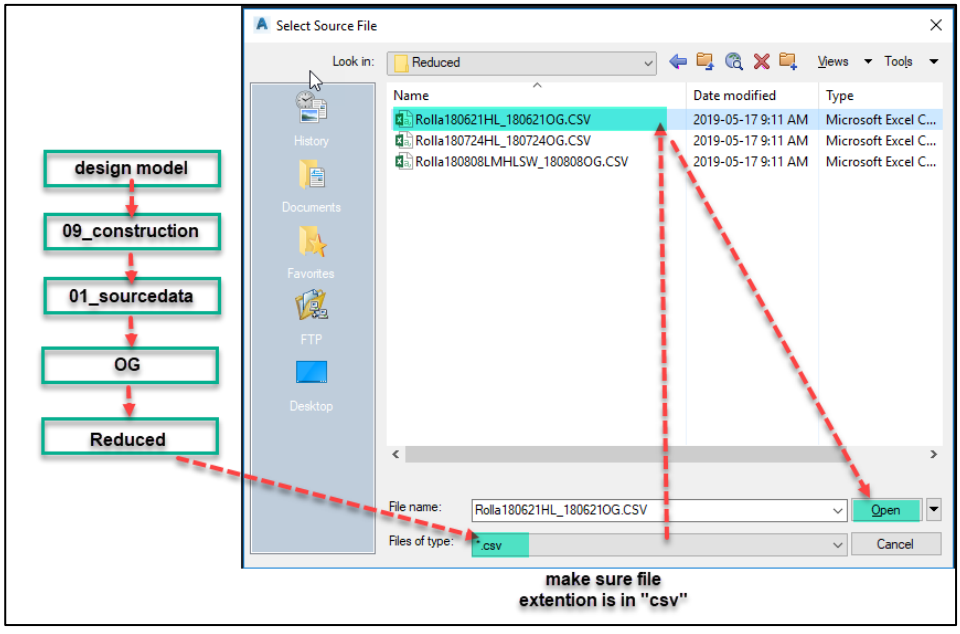
Point ID format that has the year, month, day and point number (four digits), allows proper point sorting.

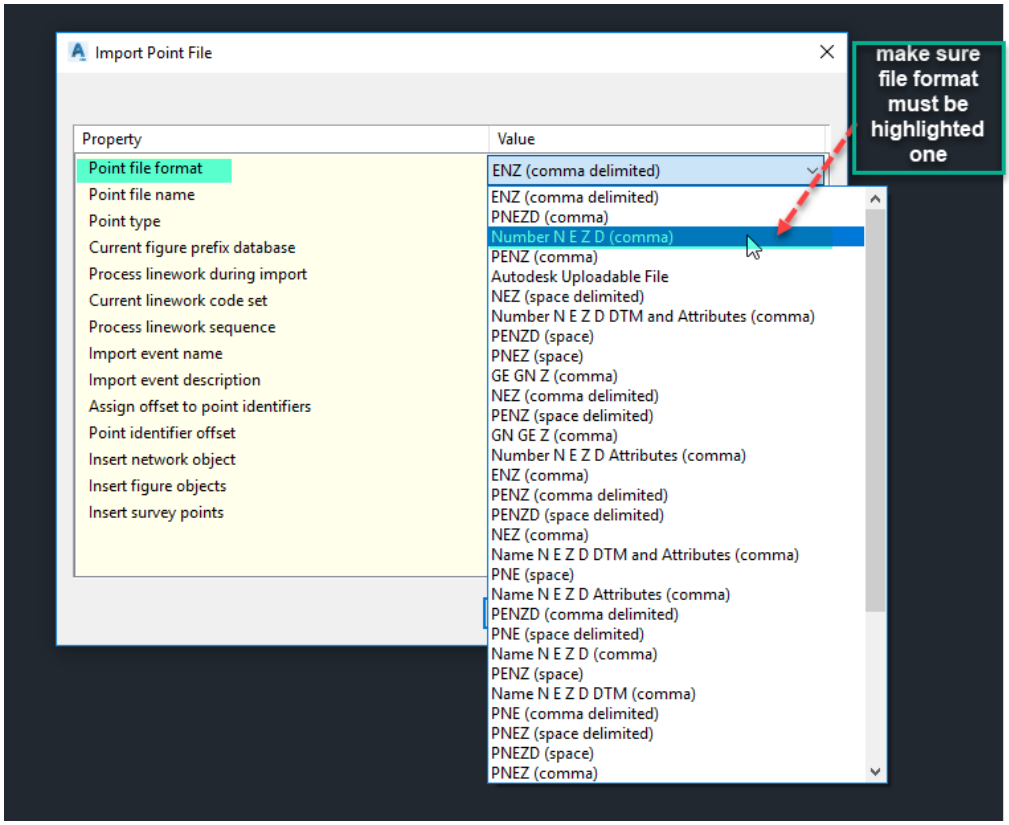
2.5 Import 1st COG Point file to SDB and DWG(06.39)

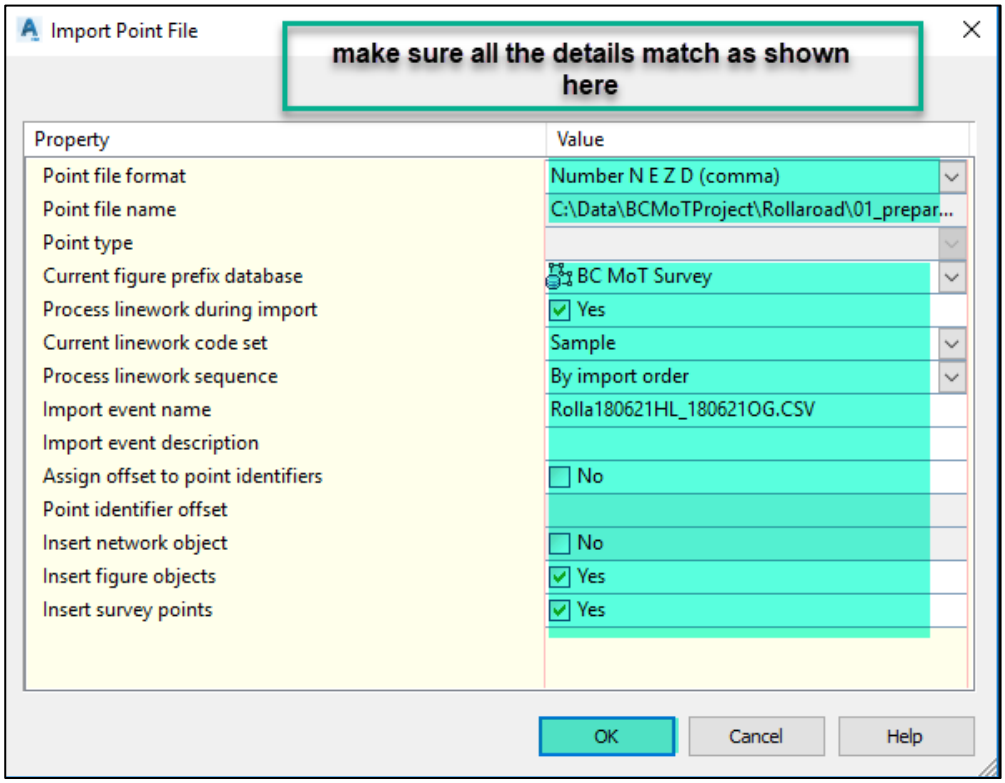
Import construction original ground survey data file, one at a time.



Browse to project folder.



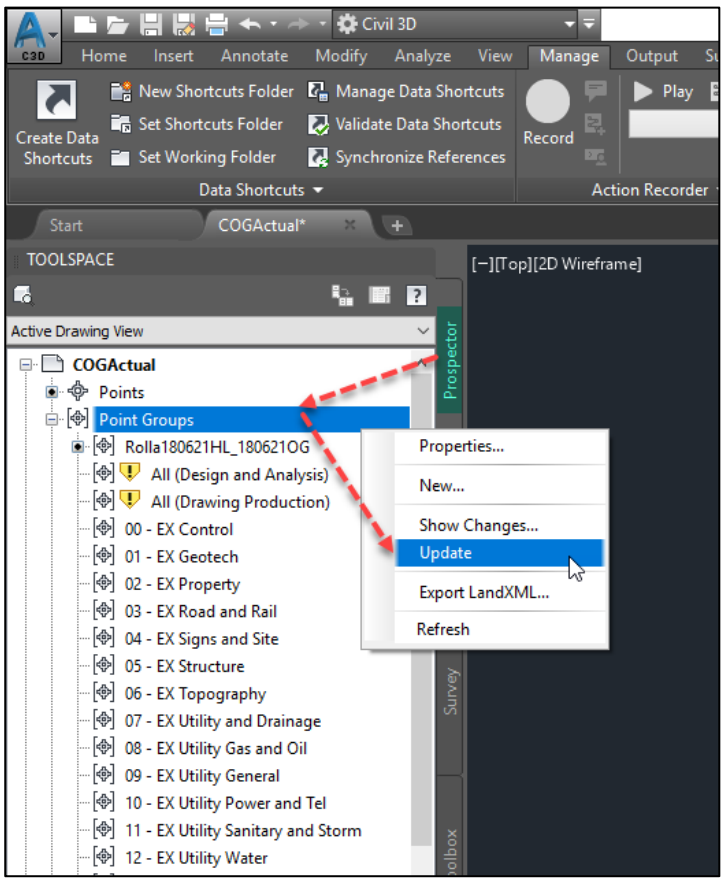




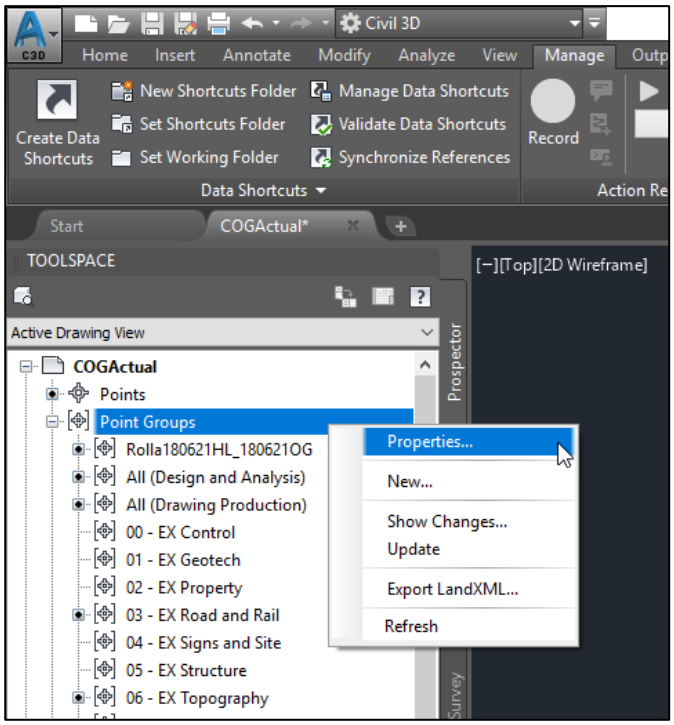
Civil 3D will import points to the drawing and generate the survey figures as soon as the import process is finished, do the following steps.

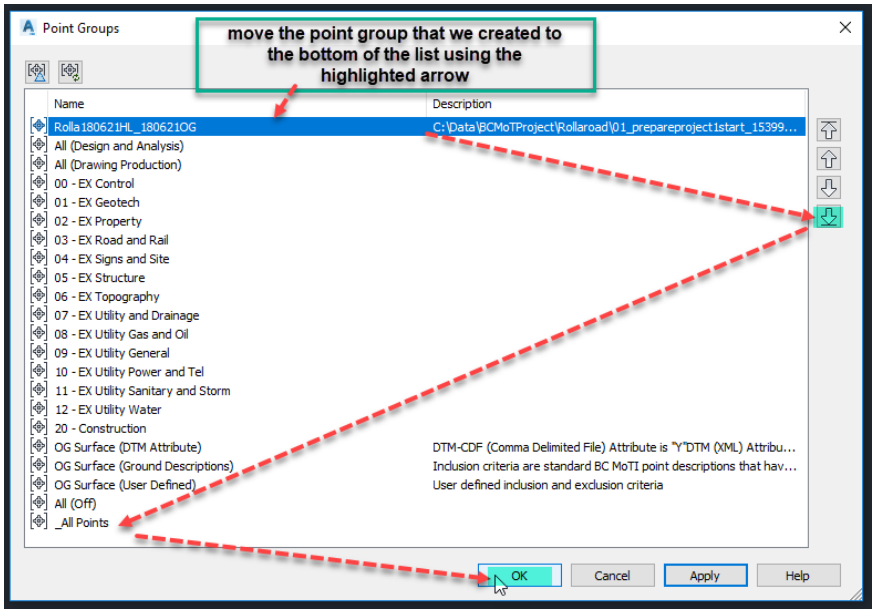
2.6 Update Point Group Definitions and Sort order (07.54)

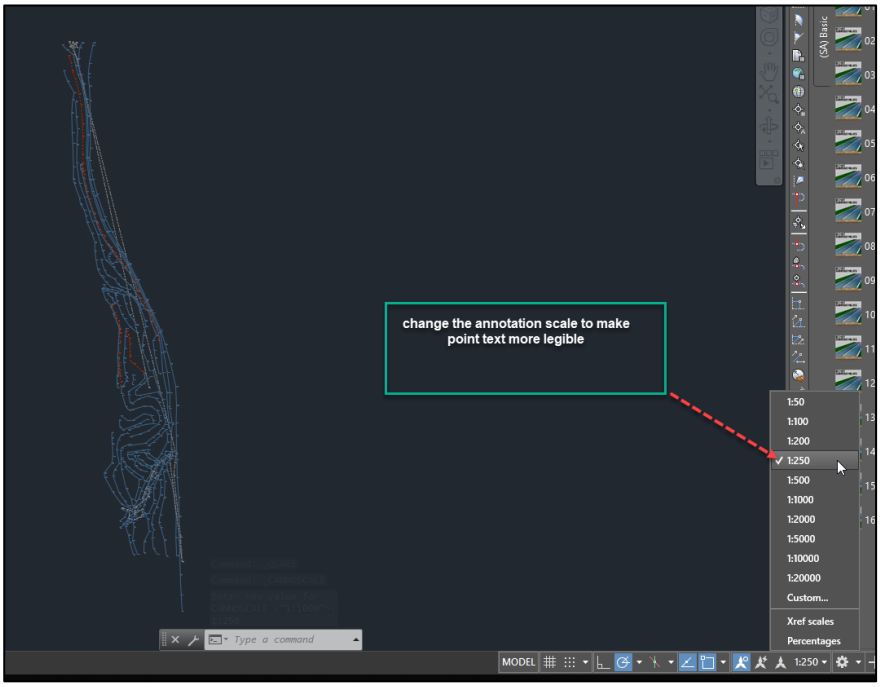
Now go to the Prospector tab.

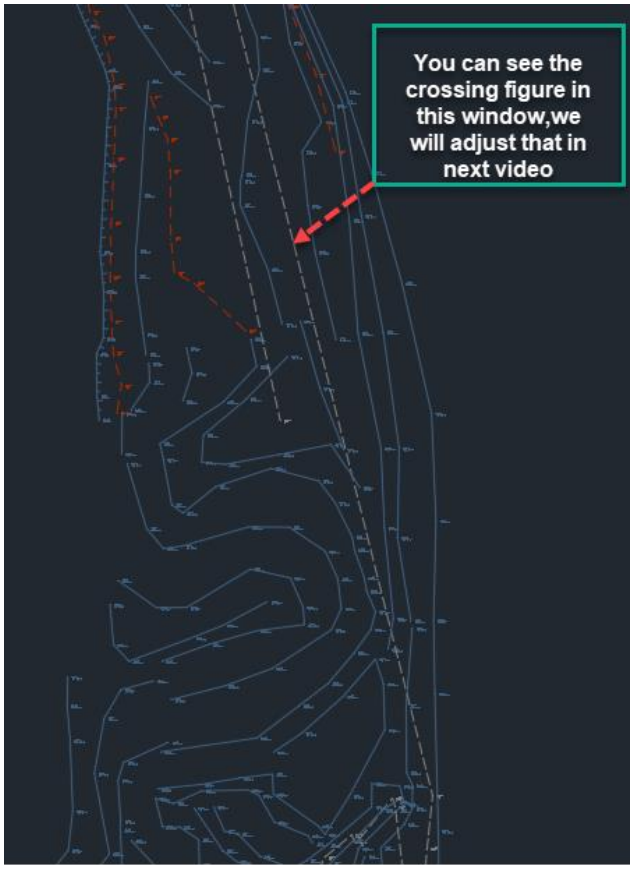


Select the point group and right click on it and select the properties.




Point Groups
move the point group that we created to the bottom of the list using the highlighted arrow
Name
Description
Rolla180621HL_180621OG
C:\Data\BCMoTProject\Rollaroad\01_prepareproject1start_15399...
All (Design and Analysis)
All (Drawing Production)
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
05 - EX Structure
06 - EX Topography
07 - EX Utility and Drainage
08 - EX Utility Gas and Oil
09 - EX Utility General
10 - EX Utility Power and Tel
11 - EX Utility Sanitary and Storm
12 - EX Utility Water
20 - Construction
OG Surface (DTM Attribute)
DTM-CDF (Comma Delimited File) Attribute is "Y"DTM (XML) Attribu...
OG Surface (Ground Descriptions)
Inclusion criteria are standard BC MoTI point descriptions that hav...
OG Surface (User Defined)
User defined inclusion and exclusion criteria
All (Off)
_All Points
OK
Cancel
Apply
Help

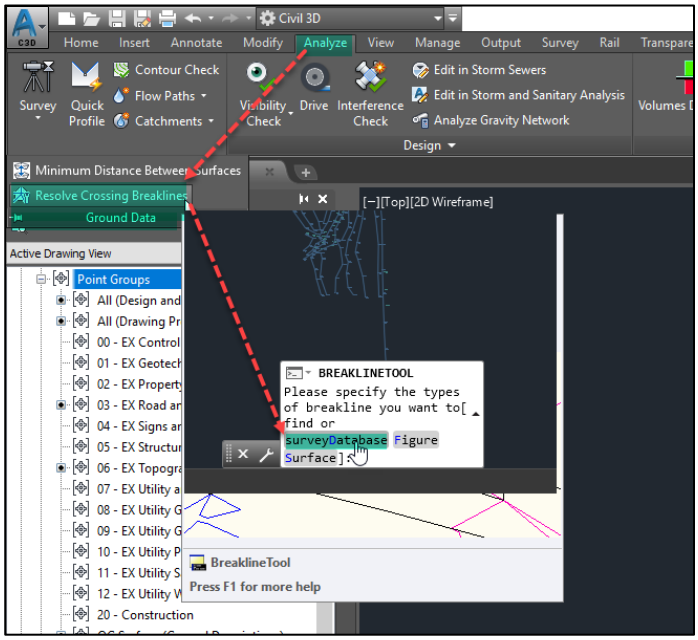

change the annotation scale to make point text more legible
1:50
1:100
1:200
1:250
1:500
1:1000
1:2000
1:5000
1:10000
1:20000
Custom...
Xref scales
Percentages
MODEL
Type a command



2.7 Identify Crossing Breakline Locations (08.37)

Rather than continuing with the import of the other surface data files, strongly recommend that you correct any crossing survey figures before moving to the next file.

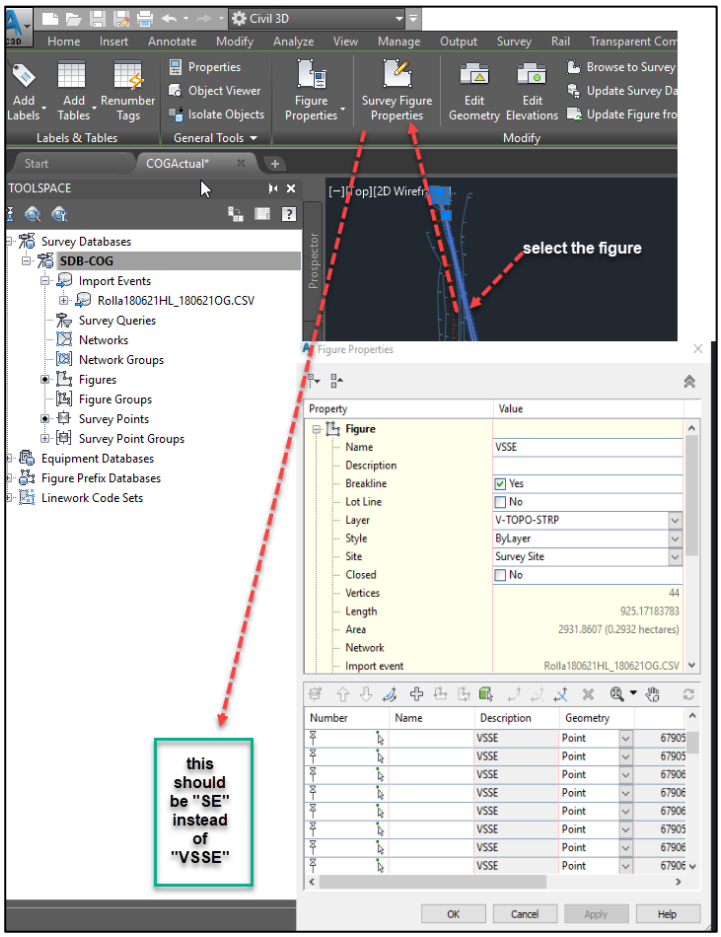
The following screen shot will guide you through the process to identify crossing breaklines.



2.8 Resolve Crossing Breaklines (10.59)

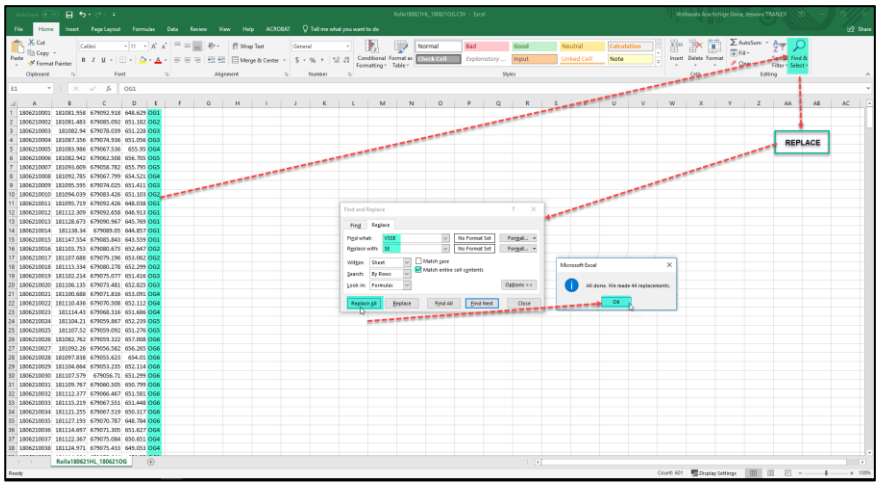
The problem with this survey figure is that the feature code (VSSE) is incorrect.

Click on the survey figure, civil 3D will be highlighted it in blue.

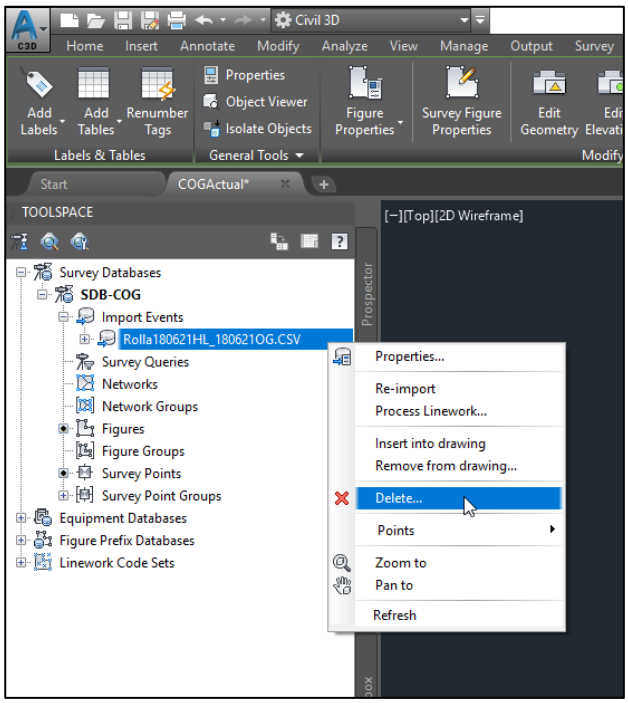


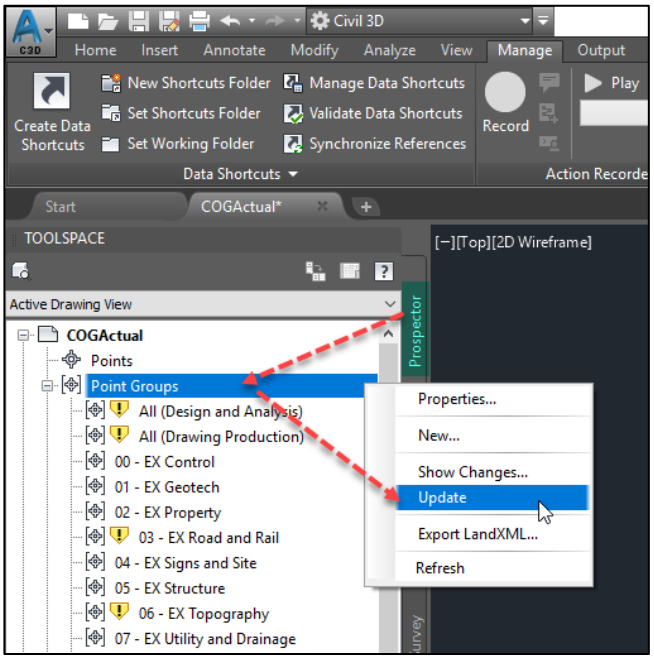
Rather than delete the figure, follow the instructions on the screen shot below.

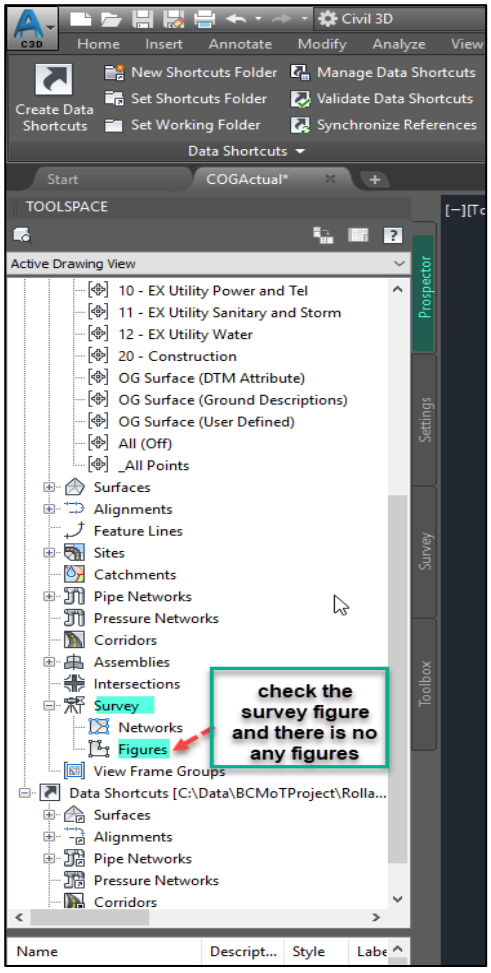
- Go to the “source data file” and edit that file.
- Select all cells and go to the format and select the “autofit column width”.
- Overwrite the existing file.

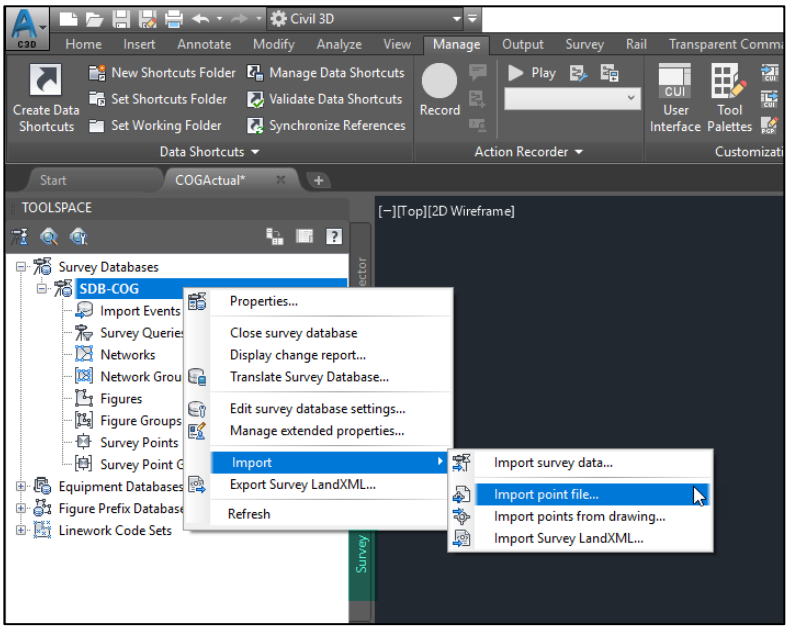


Now go back to civil 3d, need to delete the import event because it has wrong feature code (VSSE). Reimport the vetted file we fixed above.

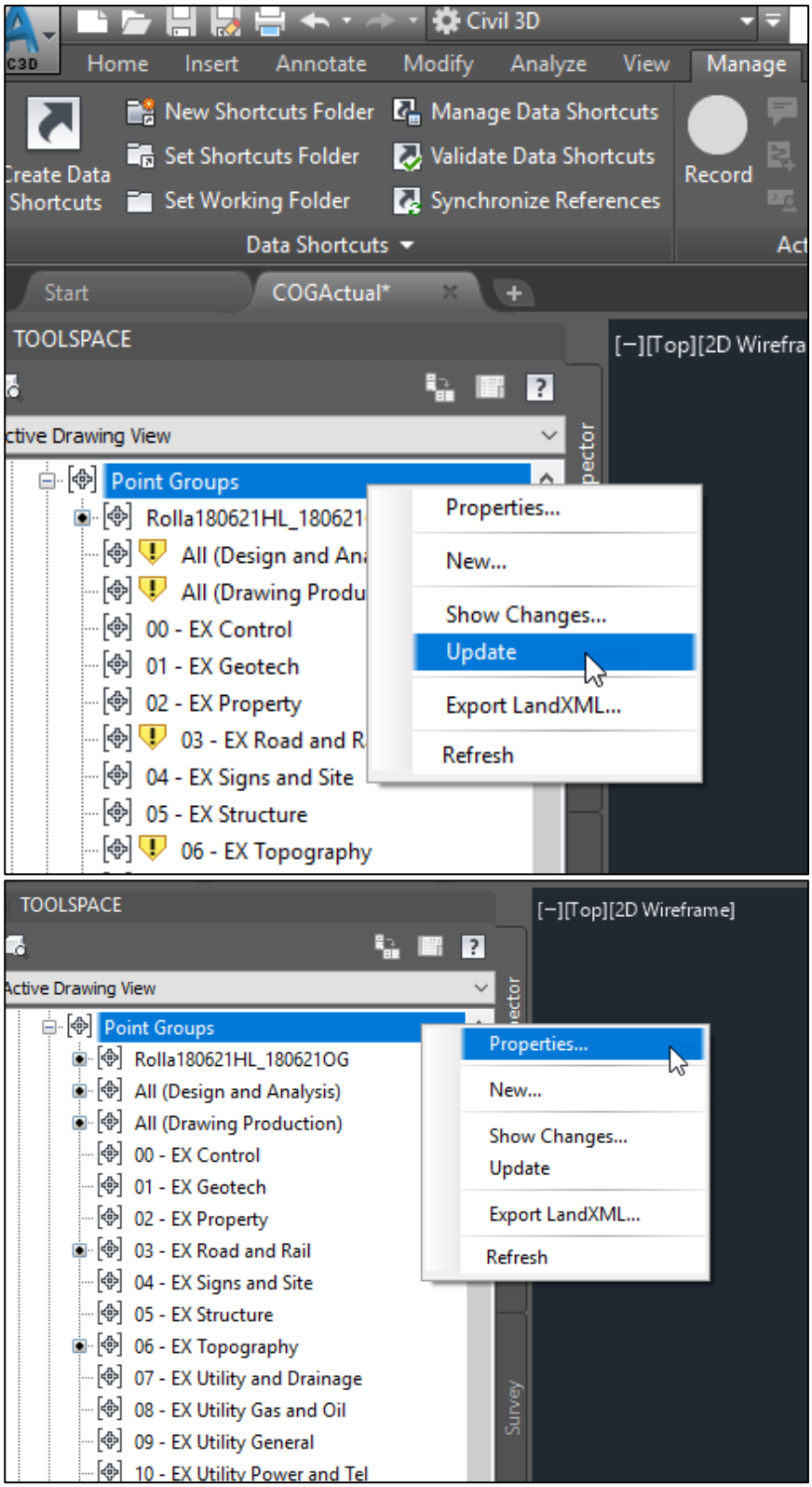


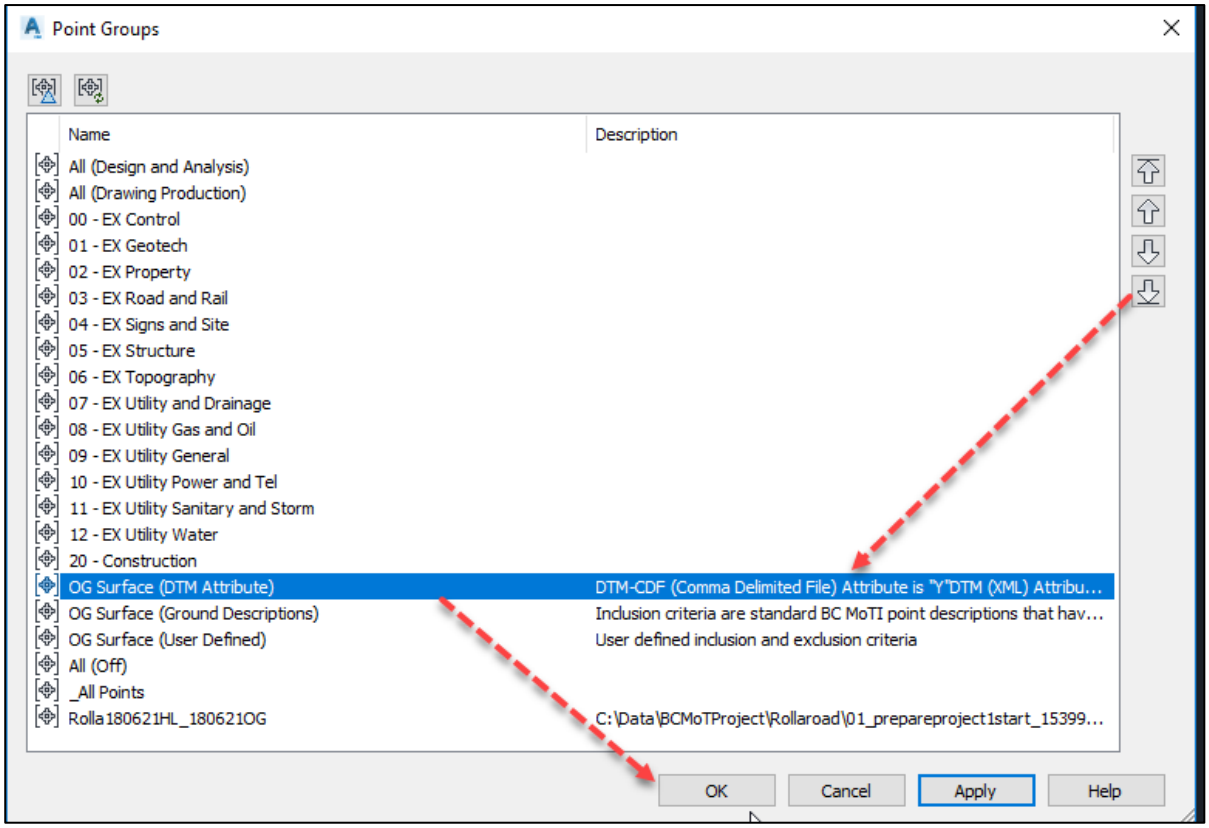




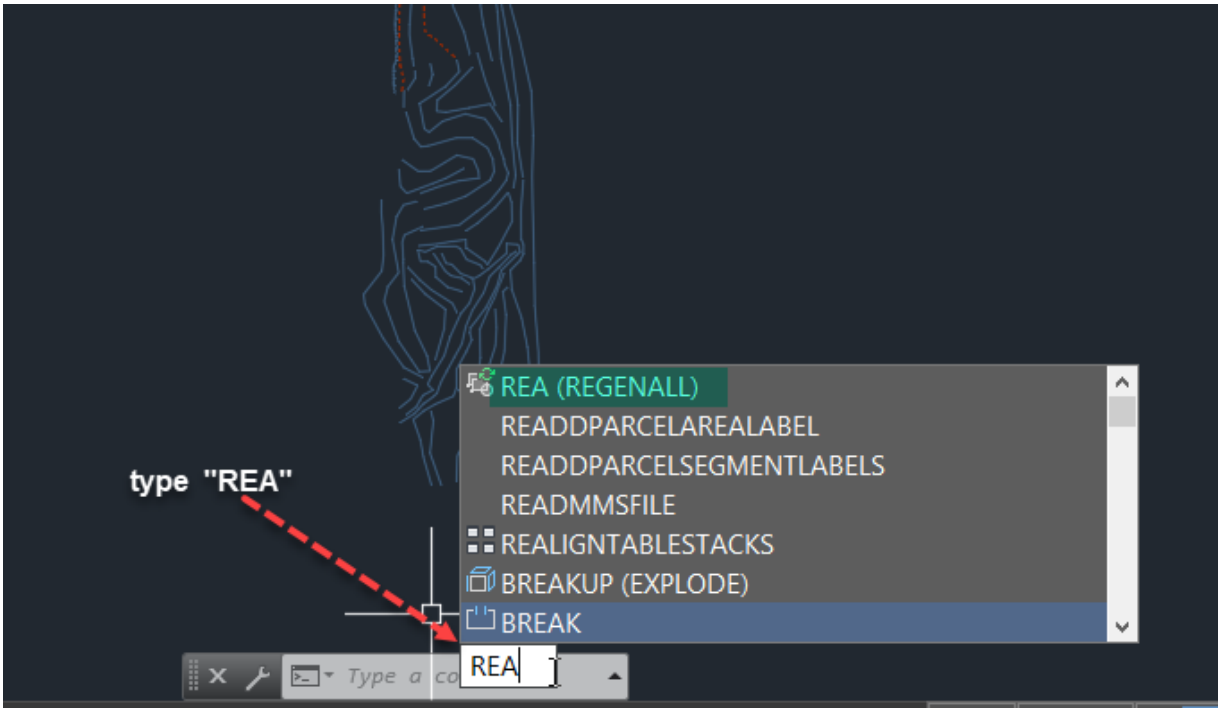


Go to prospector, update the point group, select point group right click on properties.

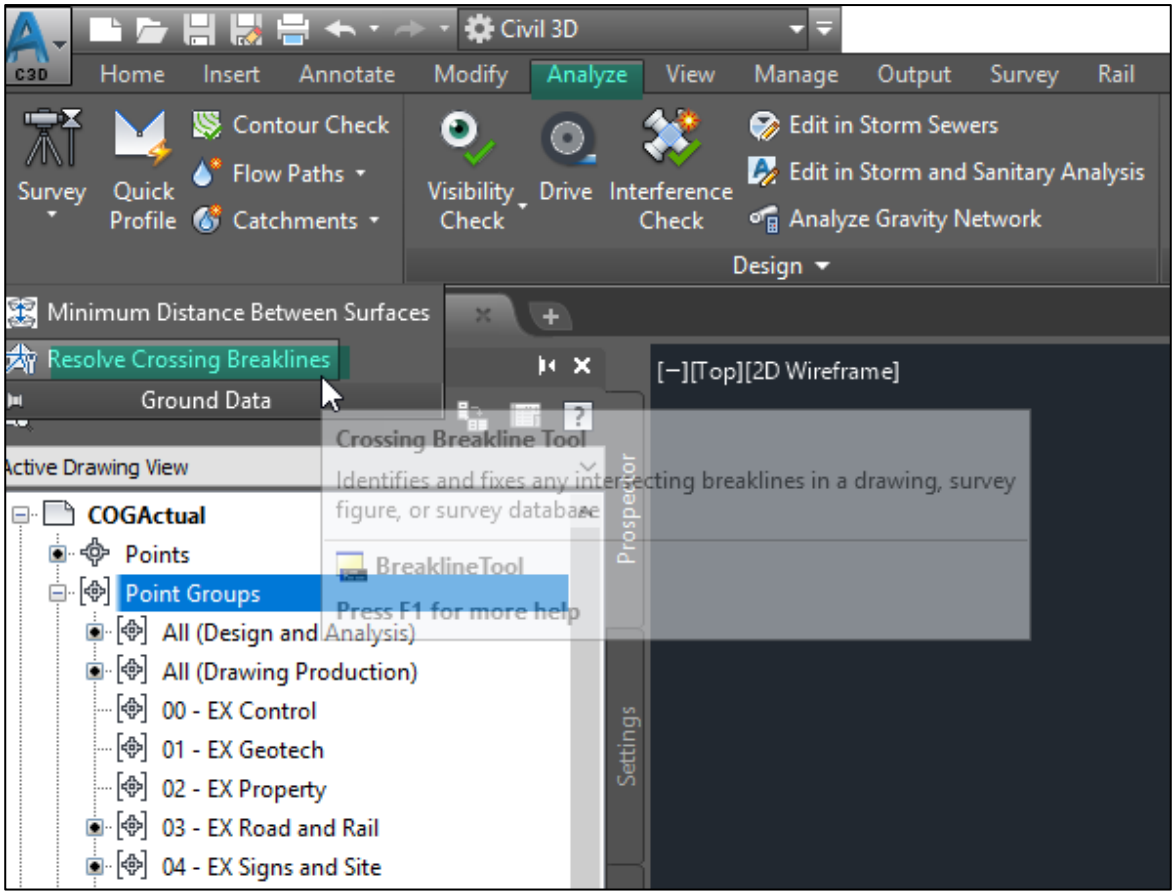


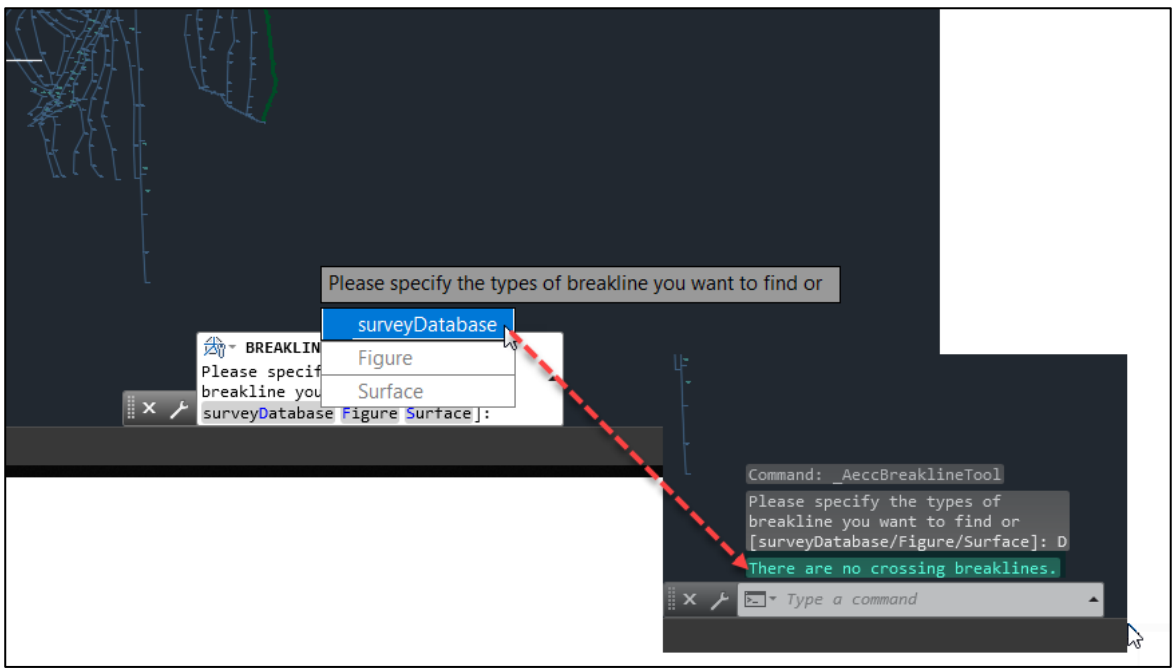


Type Regenall on command bar and enter, then you will able to see the points.

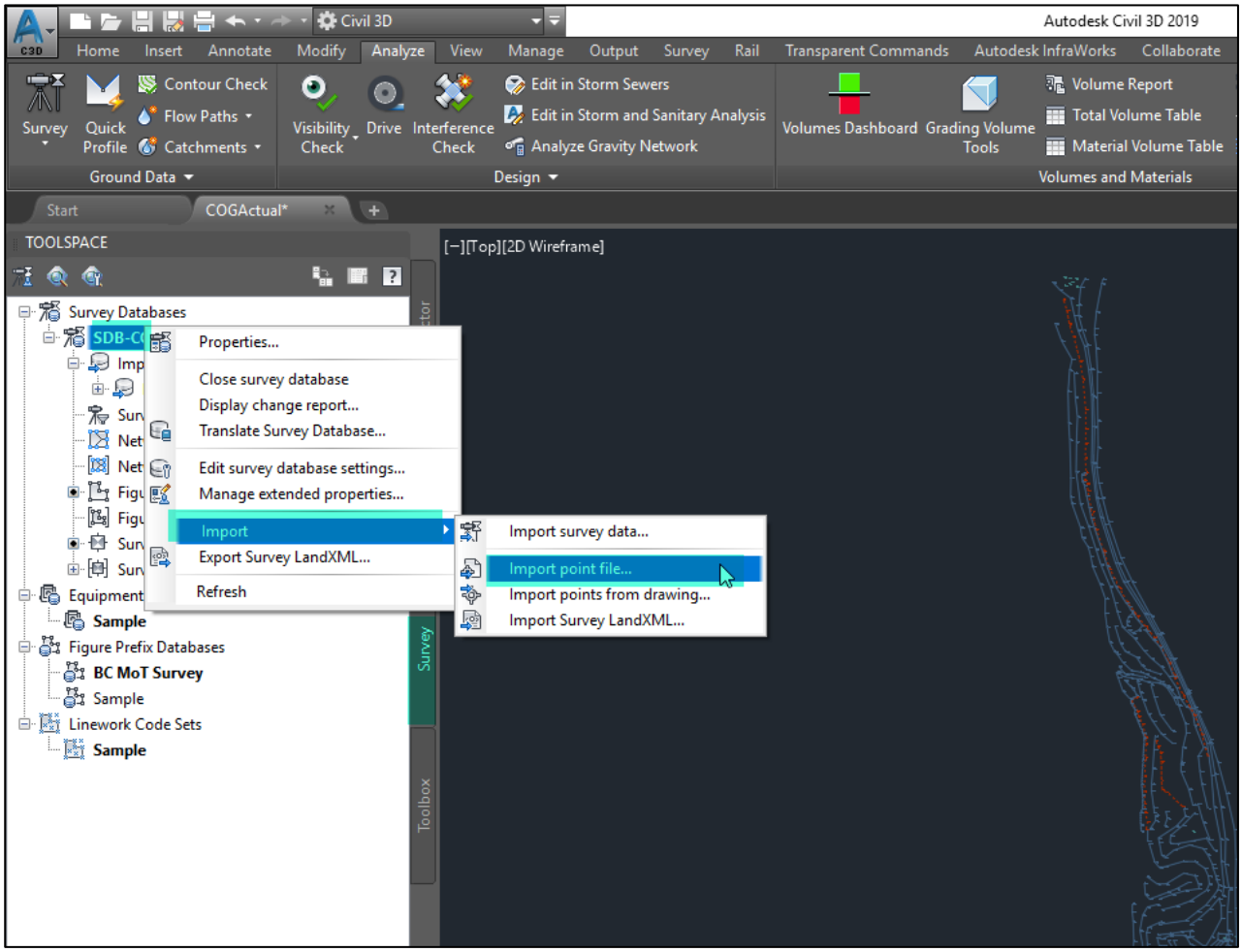


Check the crossing breakline again.

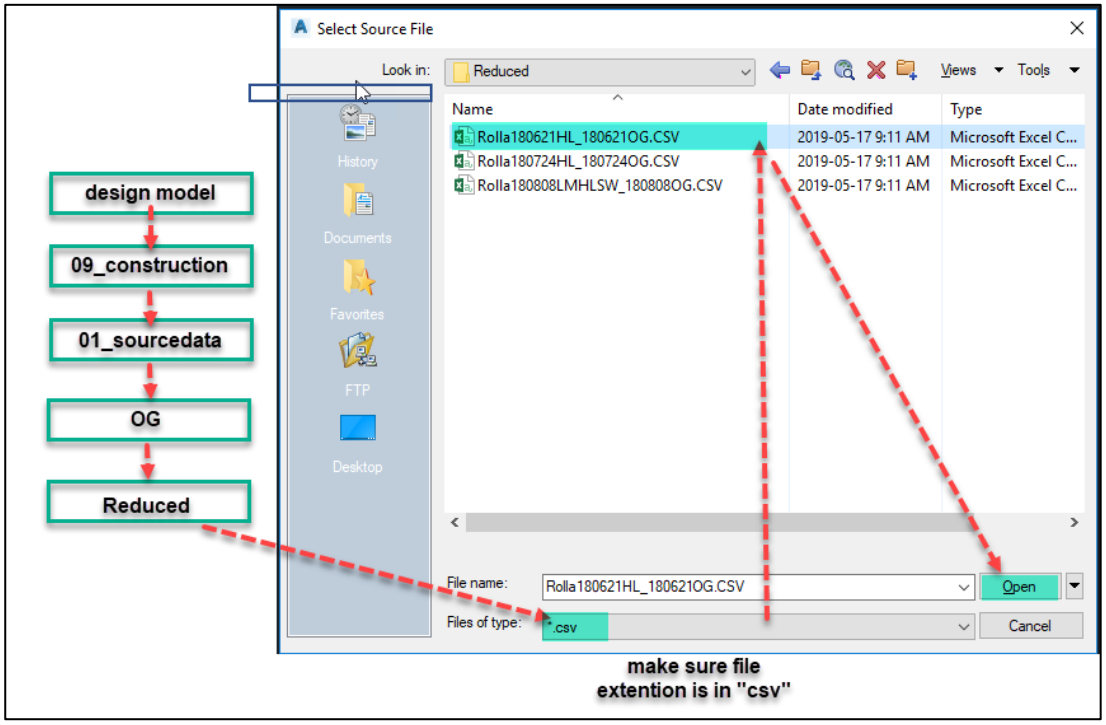

Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Output
Survey
Rail
Survey
Quick Profile
Contour Check
Flow Paths
Catchments
Visibility Check
Drive
Interference Check
Edit in Storm Sewers
Edit in Storm and Sanitary Analysis
Analyze Gravity Network
Design
Minimum Distance Between Surfaces
Resolve Crossing Breaklines
Ground Data
[−][Top][2D Wireframe]
Crossing Breakline Tool
Identifies and fixes any intersecting breaklines in a drawing, survey figure, or survey database
BreaklineTool
Press F1 for more help
Active Drawing View
COGActual
Points
Point Groups
All (Design and Analysis)
All (Drawing Production)
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
Prospector
Settings

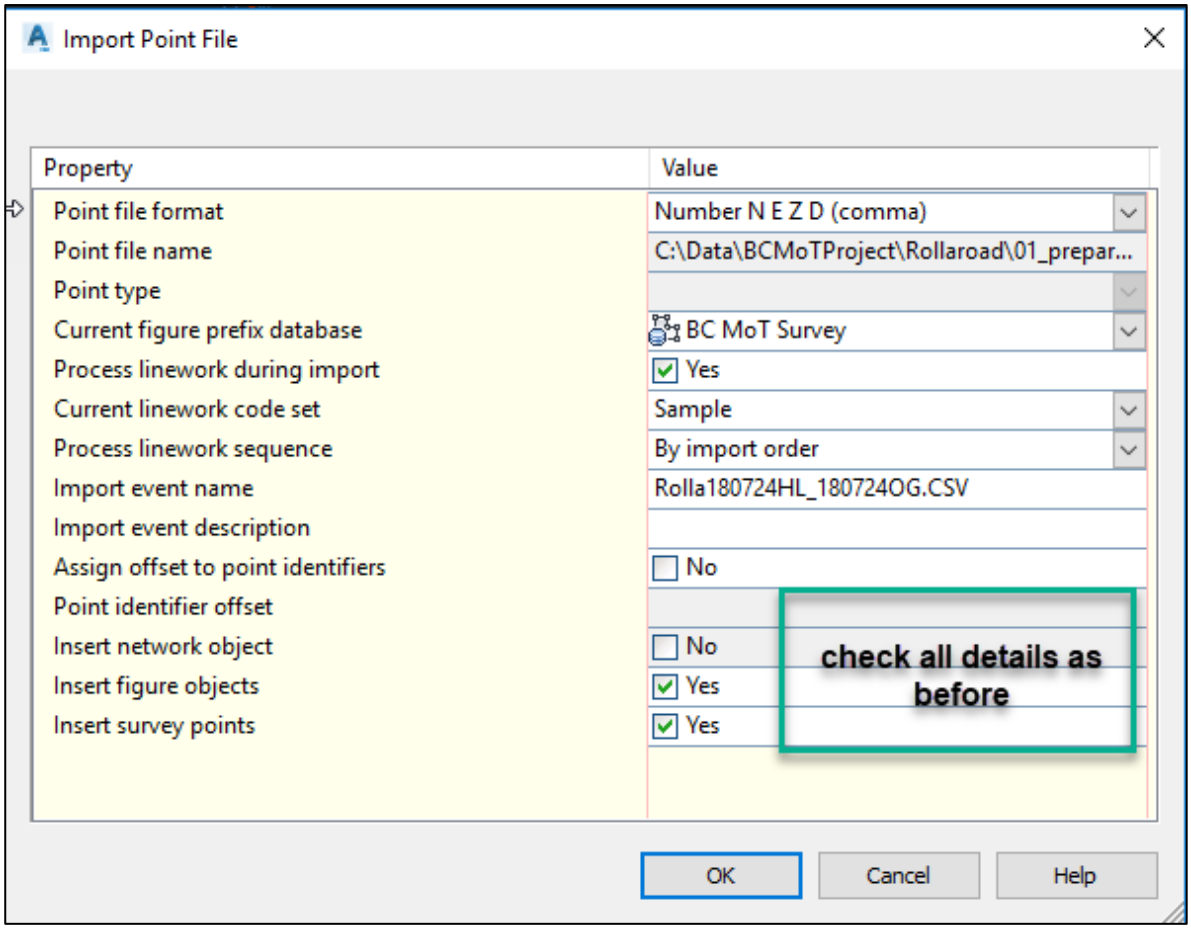

Please specify the types of breakline you want to find or
surveyDatabase
Figure
Surface
BREAKLIN
Please specif
breakline you
surveyDatabase Figure Surface]:
Command: _AeccBreaklineTool
Please specify the types of breakline you want to find or [surveyDatabase/Figure/Surface]: D
There are no crossing breaklines.
Type a command

2.9 Import 2nd and 3rd COG Data Files (14.20)

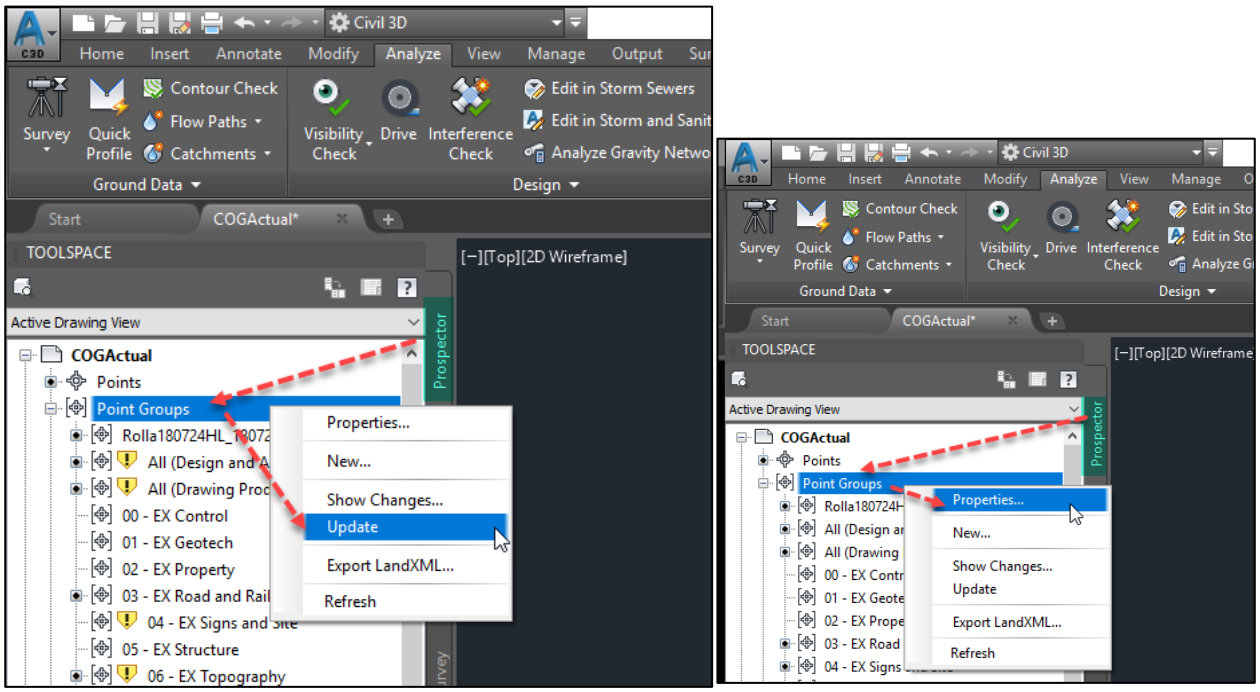


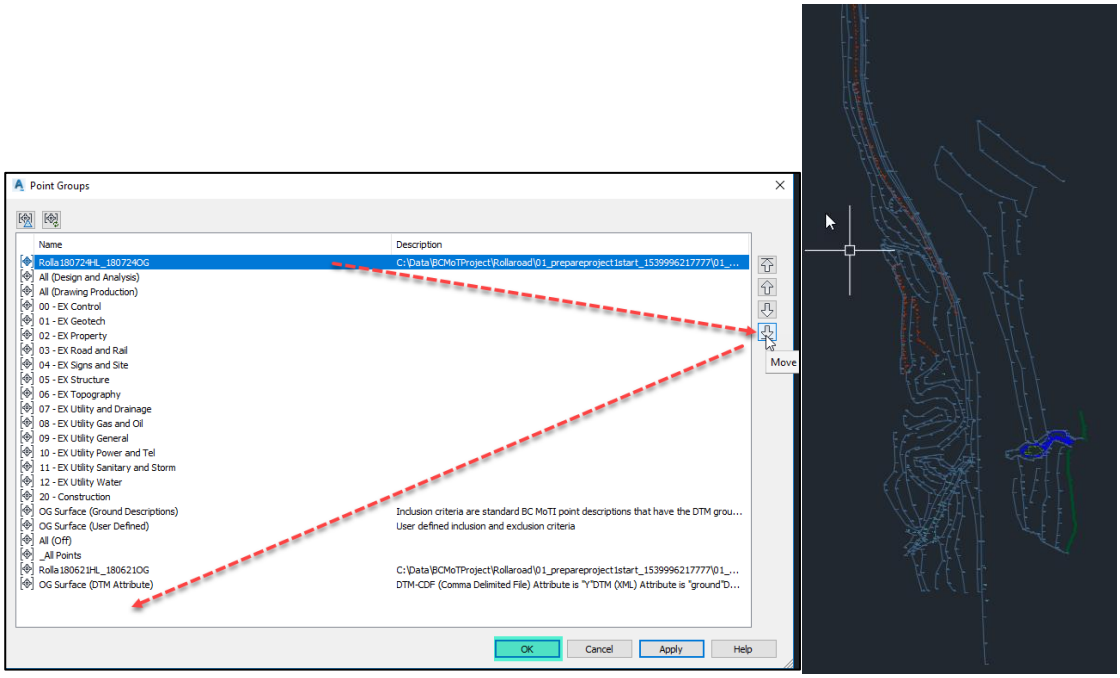
Select the second data file (Rolla180724HL-180724OG.CSV).





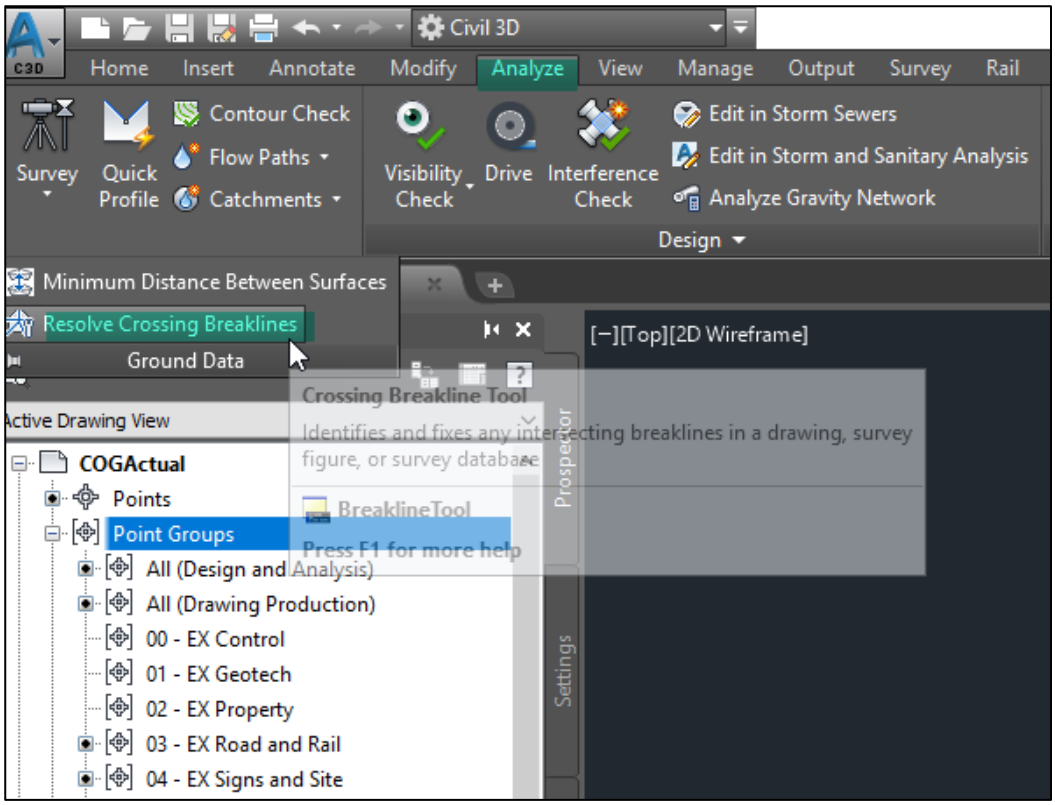
Civil3D will import the second file to the drawing, as we did the first file do the following steps,

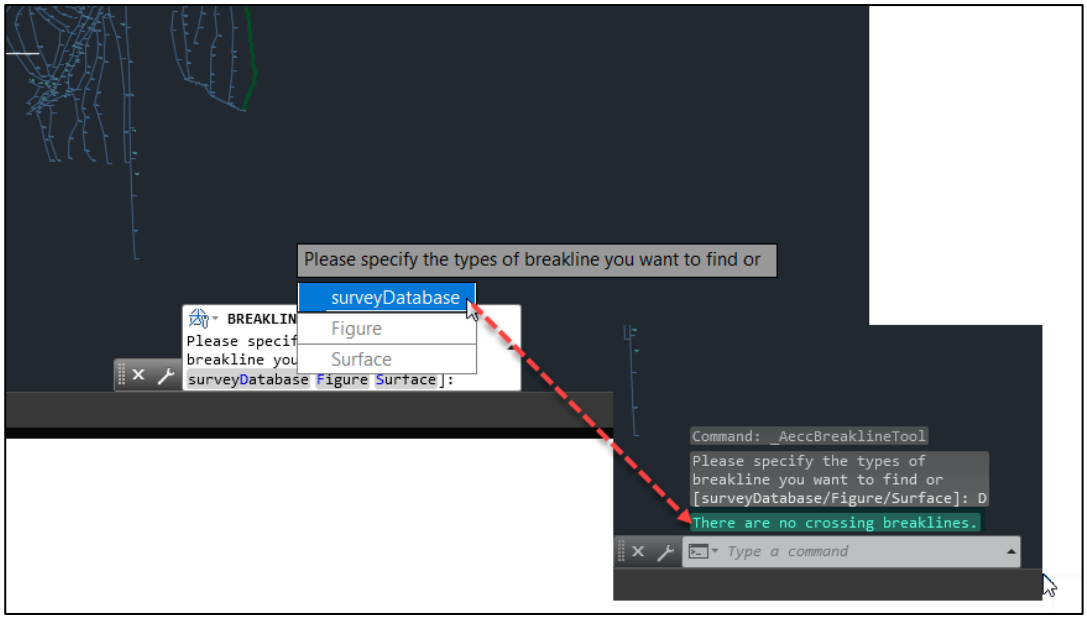




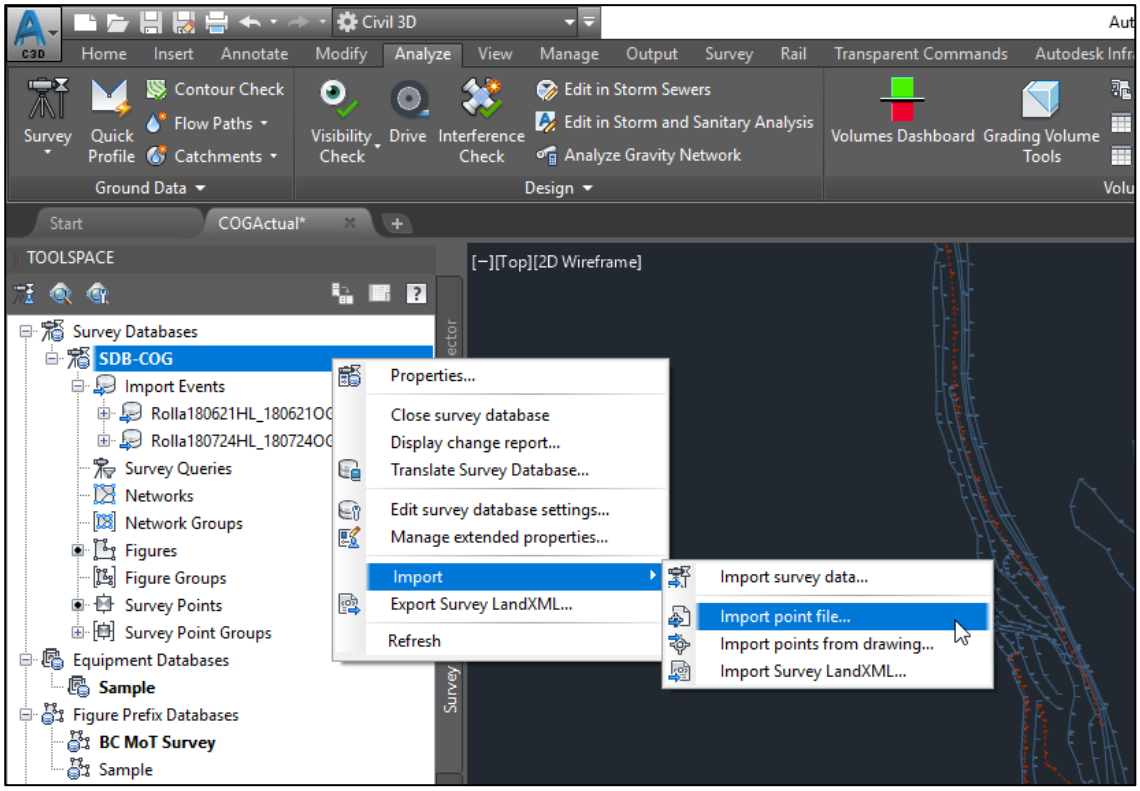
Now you can see the second set of points above picture.

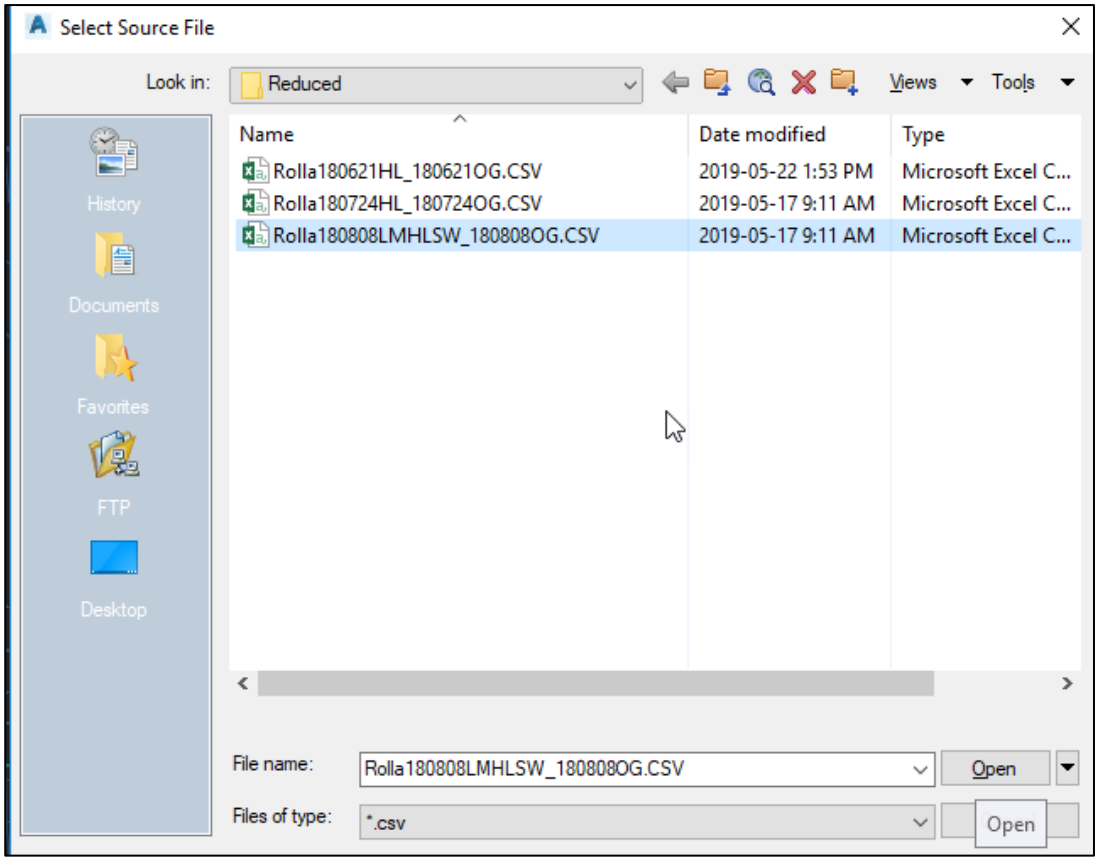
Finish up by going to “analyze tab” by ribbon and check the crossing breakline.

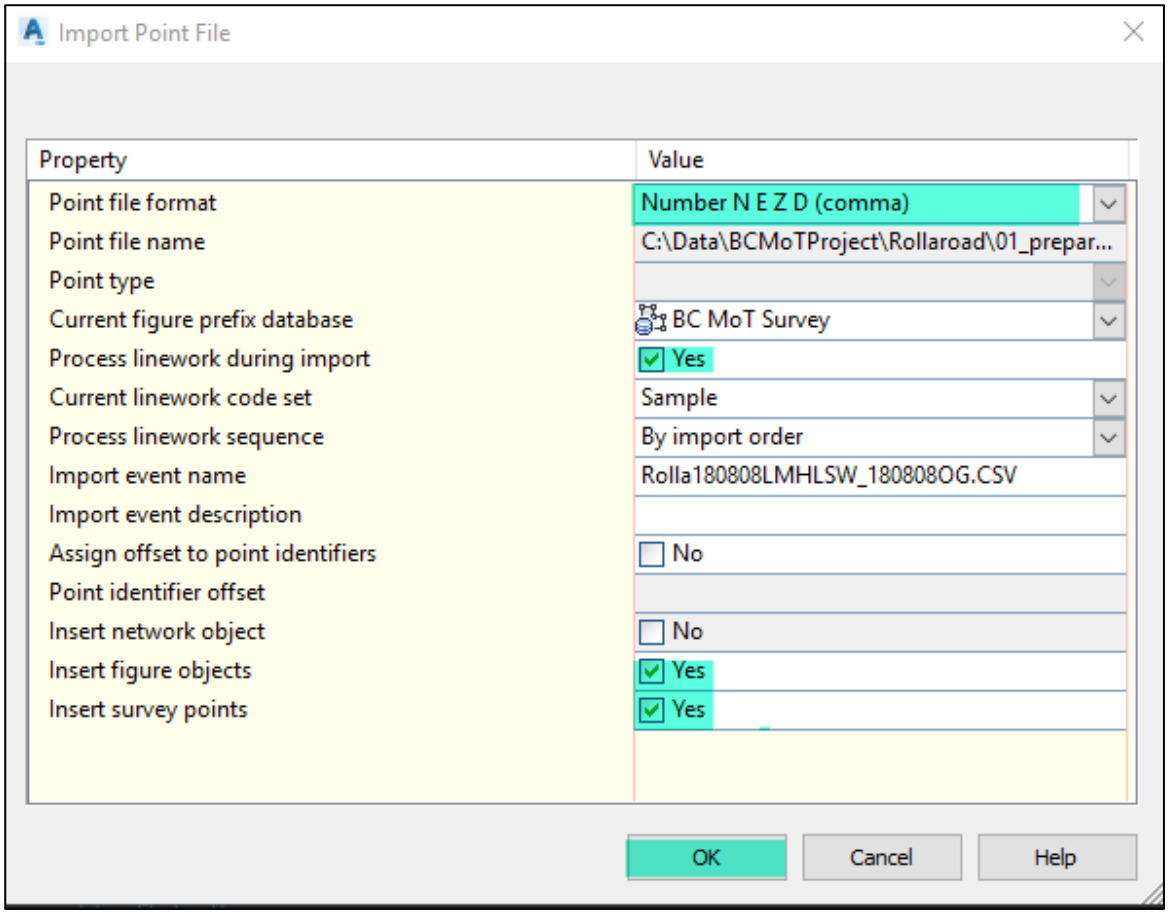




Import the final point file (Rolla 180808LMHLSW_ 180808og.csv) as shown below.

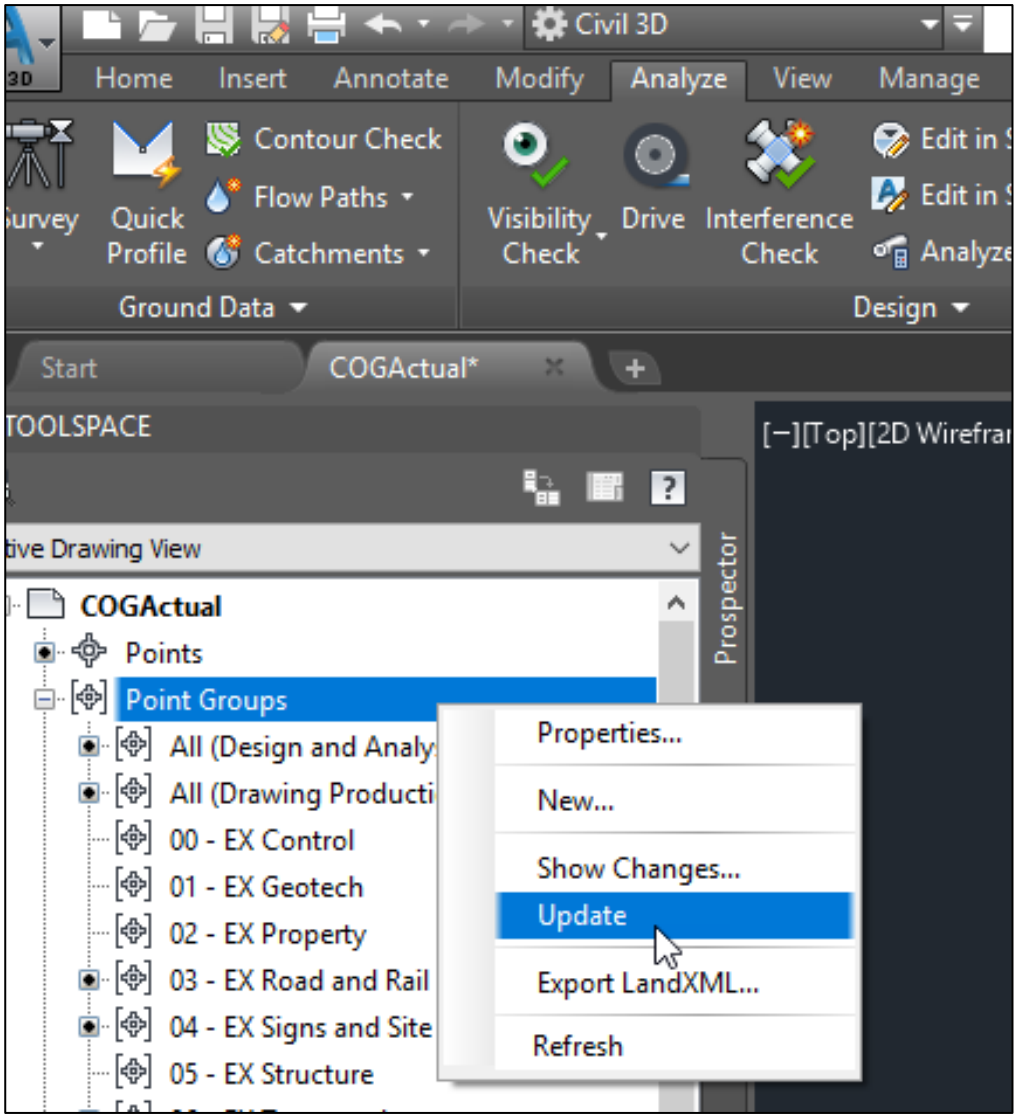



Select Source File
Look in:
Reduced
Views
Tools
History
Documents
Favorites
FTP
Desktop
Name
Date modified
Type
Rolla180621HL_180621OG.CSV
2019-05-22 1:53 PM
Microsoft Excel C...
Rolla180724HL_180724OG.CSV
2019-05-17 9:11 AM
Microsoft Excel C...
Rolla180808LMHLSW_180808OG.CSV
2019-05-17 9:11 AM
Microsoft Excel C...
File name:
Rolla180808LMHLSW_180808OG.CSV
Open
Files of type:
*.csv
Open


Import Point File
Property
Value
Point file format
Number N E Z D (comma)
Point file name
C:\Data\BCMoTProject\Rollaroad\01_prepar...
Point type
Current figure prefix database
BC MoT Survey
Process linework during import
Yes
Current linework code set
Sample
Process linework sequence
By import order
Import event name
Rolla180808LMHLSW_180808OG.CSV
Import event description
Assign offset to point identifiers
No
Point identifier offset
Insert network object
No
Insert figure objects
Yes
Insert survey points
Yes
OK
Cancel
Help

Civil 3D will import that data to the drawing.

Need to fix crossing break line according the above survey figure.


Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Contour Check
Flow Paths
Catchments
Quick Profile
Visibility Check
Drive
Interference Check
Ground Data
Design
Start
COGActual*
TOOLSPACE
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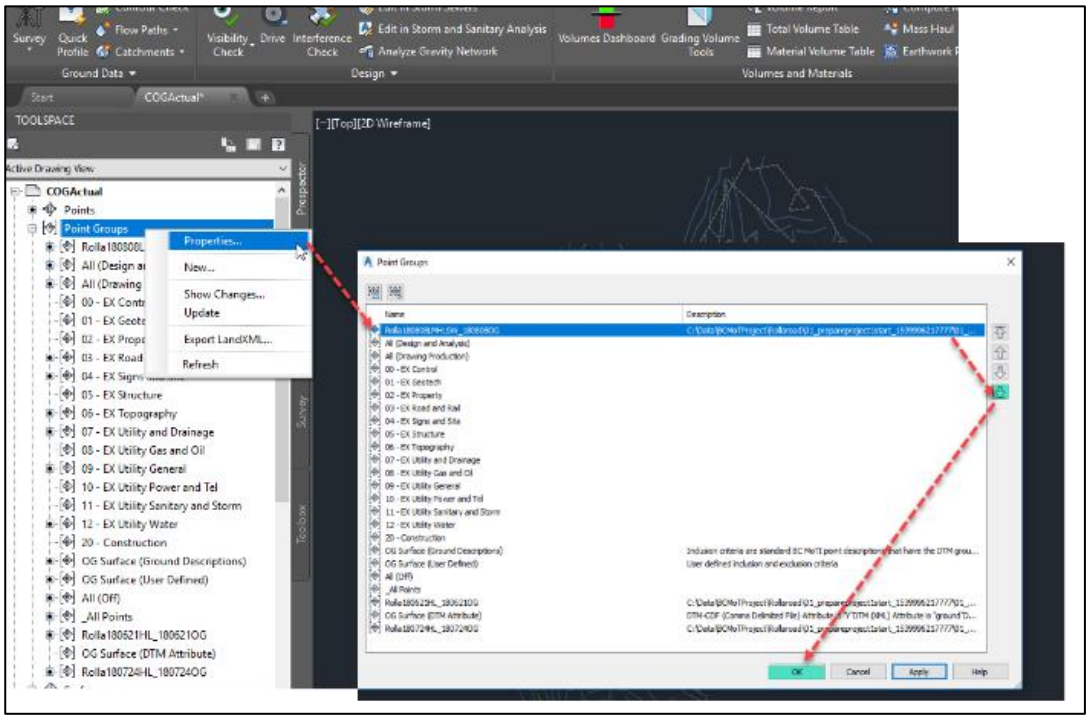
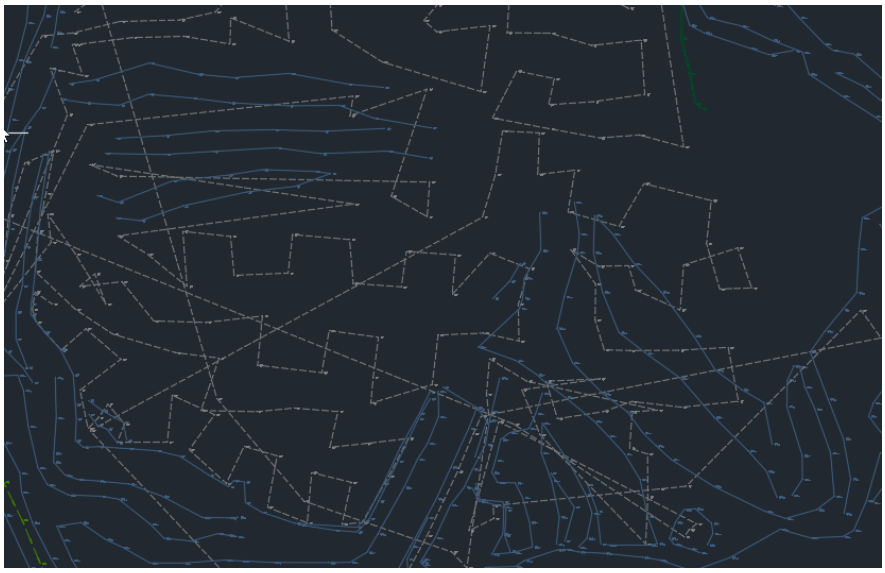
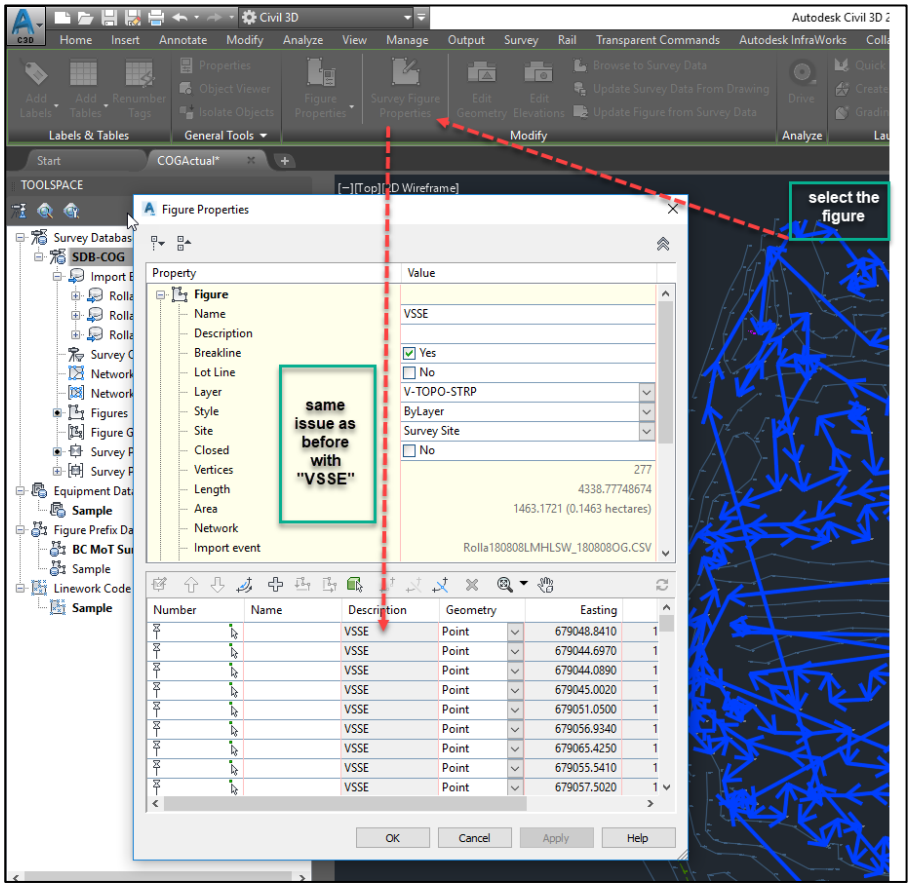
Prospector
COGActual
Points
Point Groups
All (Design and Analy
All (Drawing Producti
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
05 - EX Structure
Properties...
New...
Show Changes...
Update
Export LandXML...
Refresh

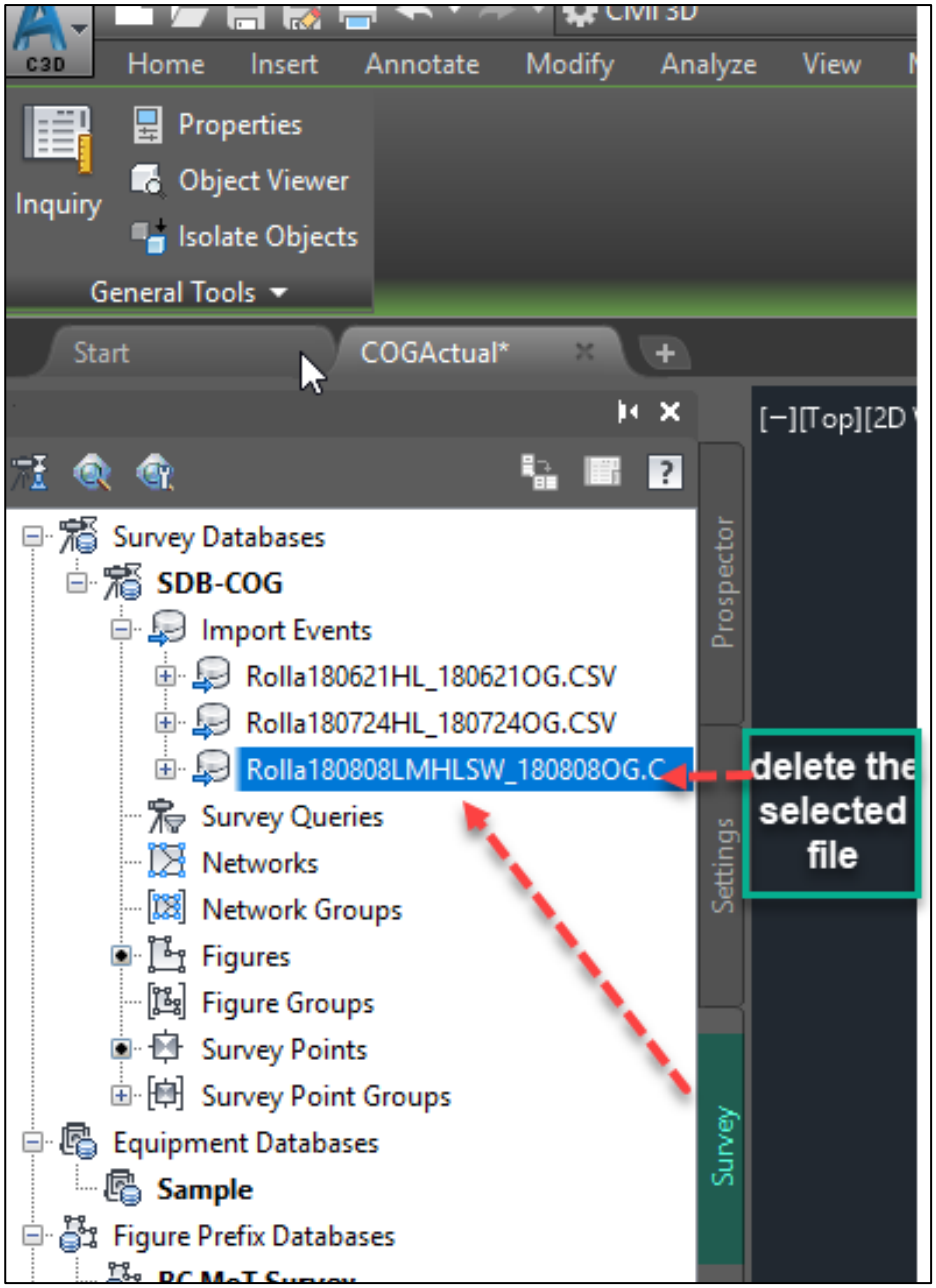




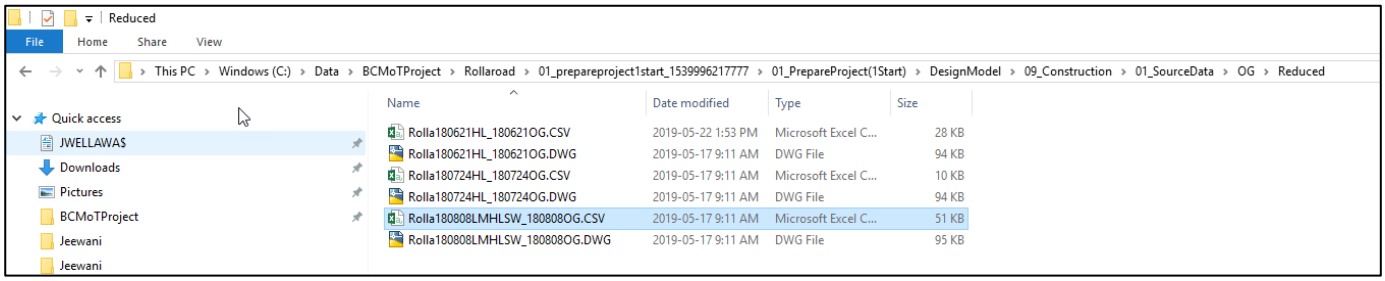
According to the figures we need to fix them. Let's identify the issue and fix as follows,

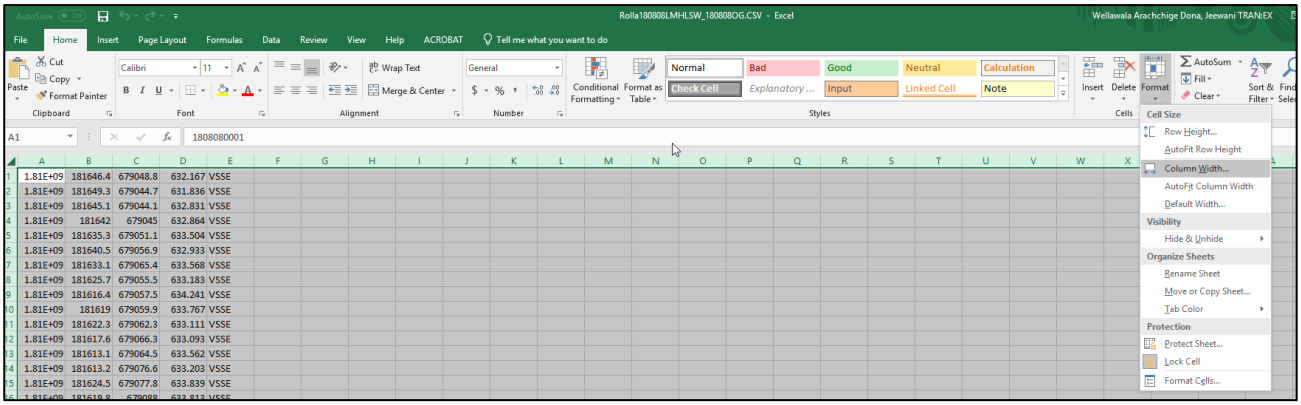


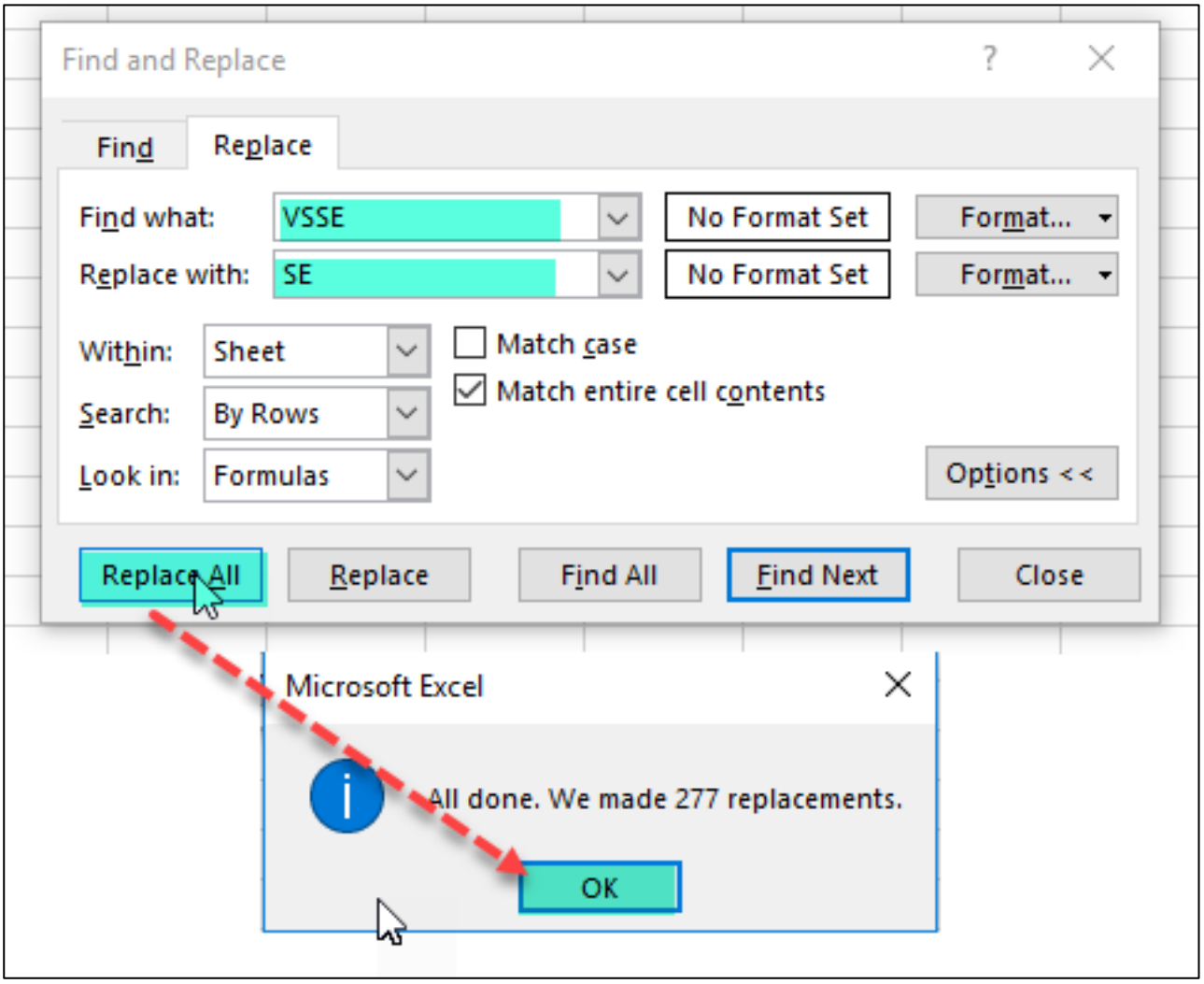
Incorrect survey feature codes are the problem.



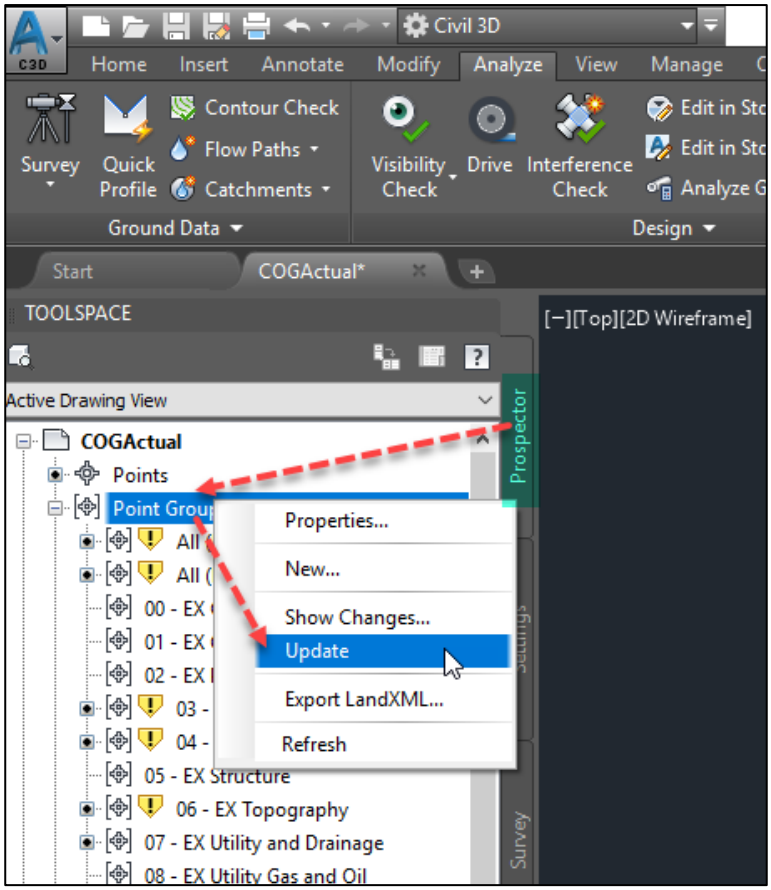
Locate the file and correct as shown below,







Save and overwrite the updated point file.


Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Survey
Quick Profile
Contour Check
Flow Paths
Catchments
Visibility Check
Drive
Interference Check
Edit in Stc
Edit in Stc
Analyze G
Ground Data
Design
Start
COGActual*
TOOLSPACE
[−][Top][2D Wireframe]
Active Drawing View
COGActual
Points
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Properties...
New...
Show Changes...
Update
Export LandXML...
Refresh
00 - EX
01 - EX
02 - EX
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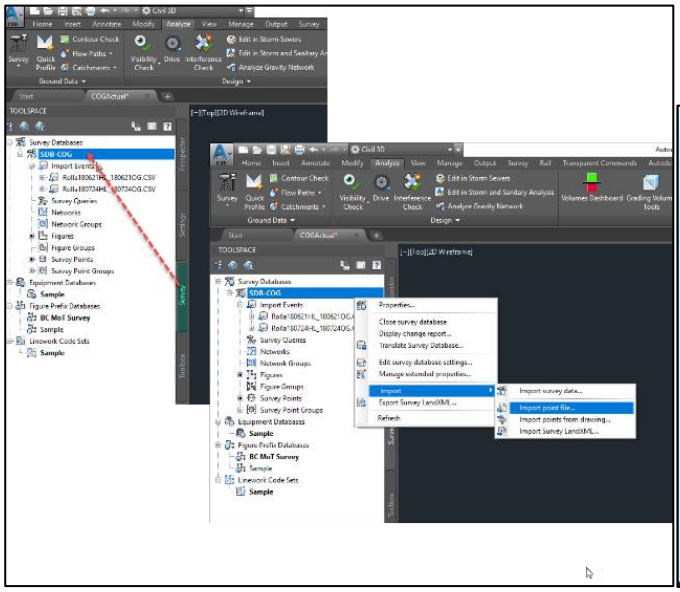
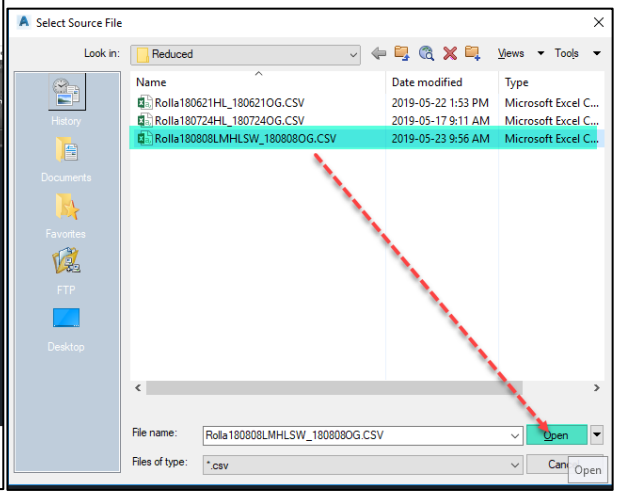
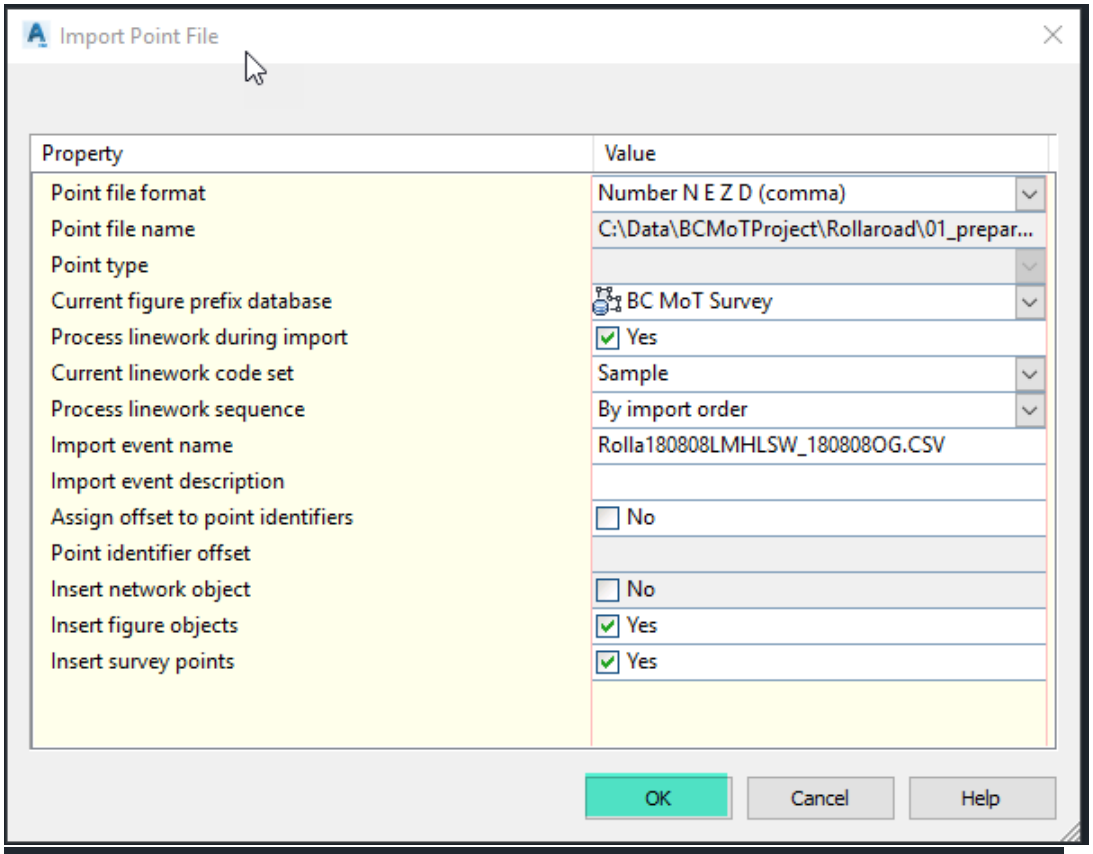
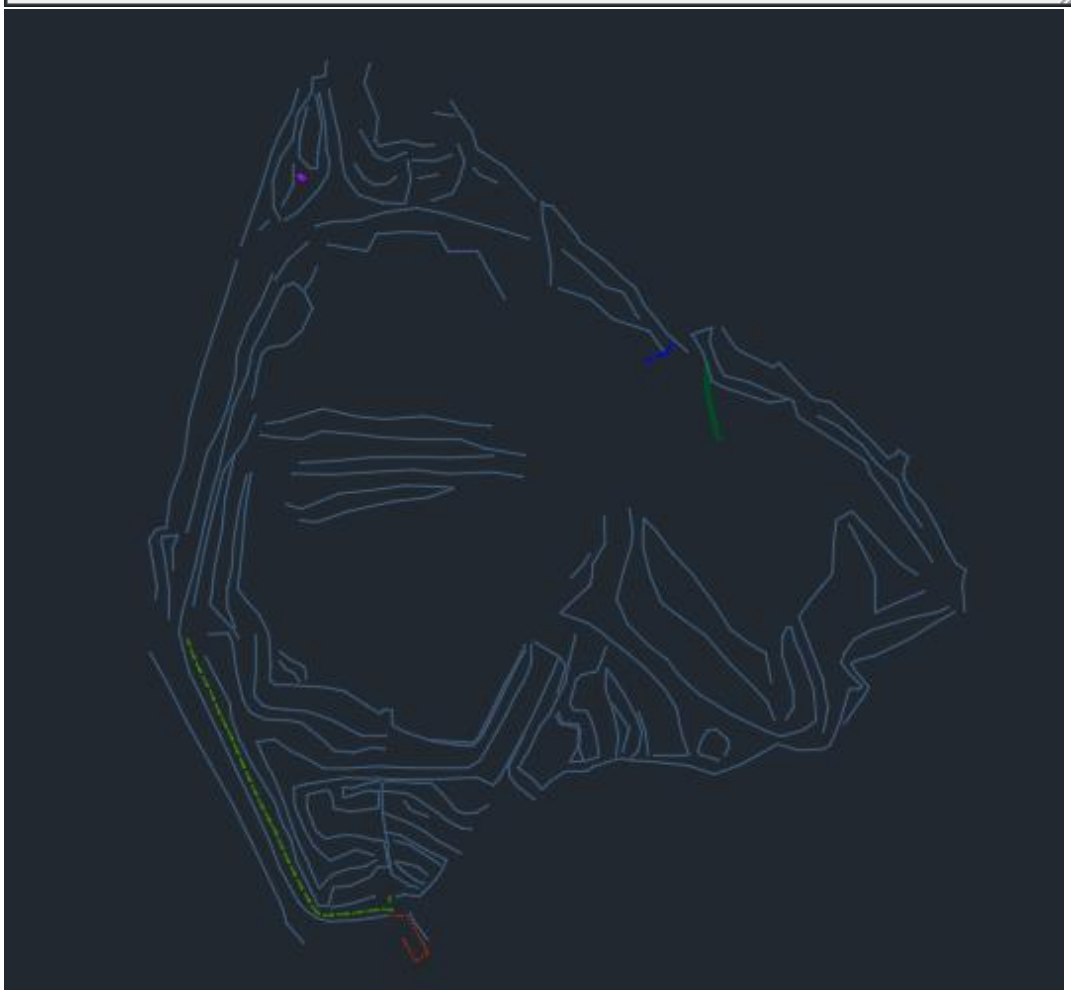
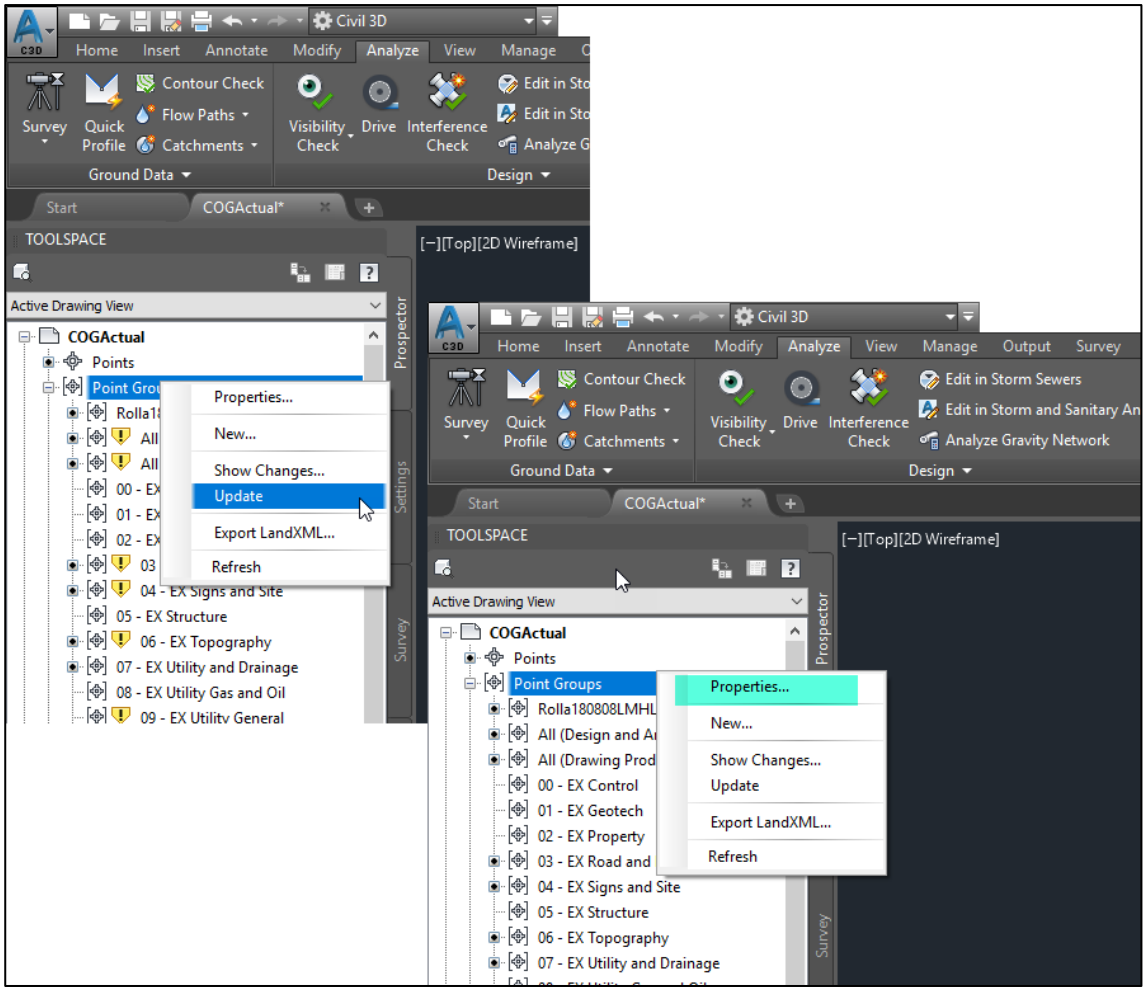
05 - EX Structure
06 - EX Topography
07 - EX Utility and Drainage
08 - EX Utility Gas and Oil
Prospector
Survey

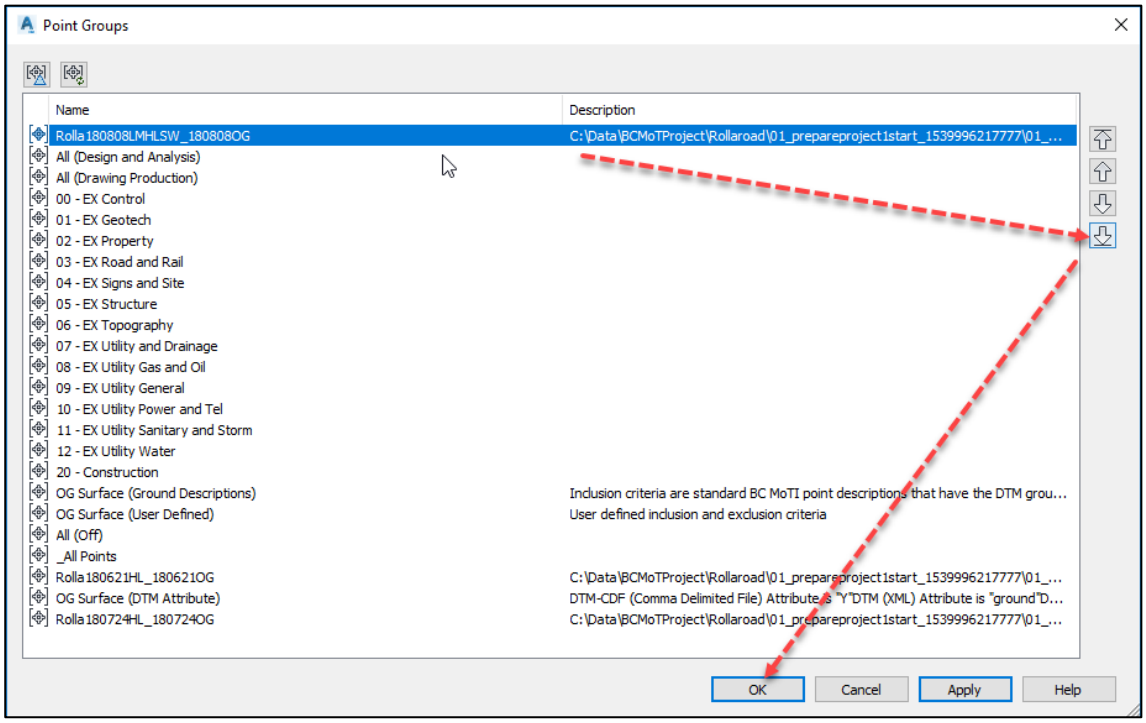


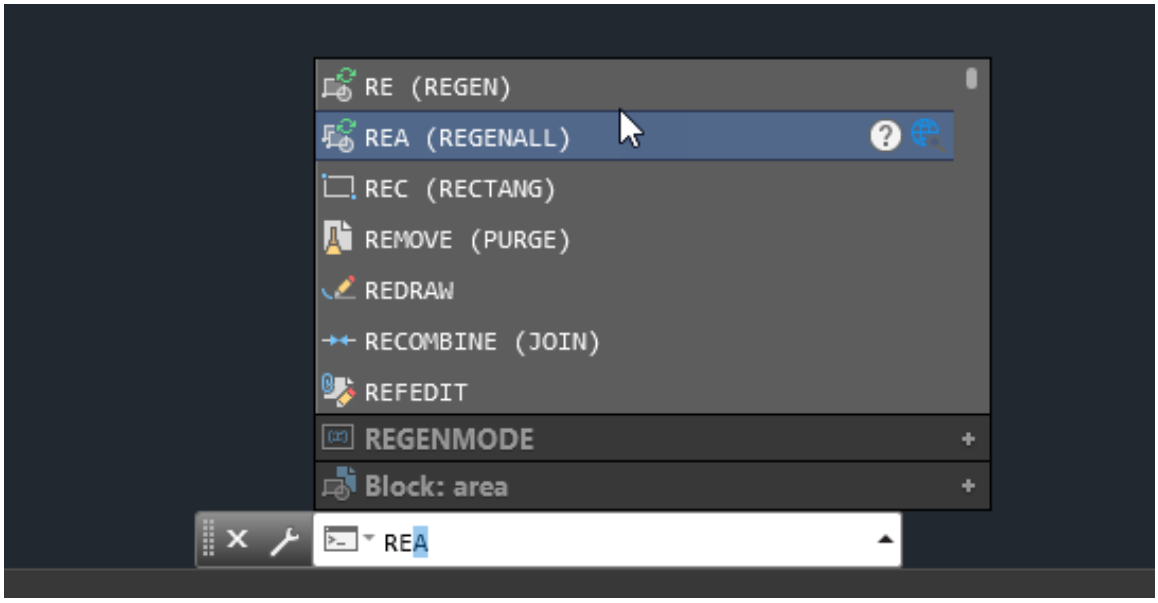

Select Source File
Look in:
Reduced
Views
Tools
Name
Date modified
Type
Rolla180621HL_180621OG.CSV
2019-05-22 1:53 PM
Microsoft Excel C...
Rolla180724HL_180724OG.CSV
2019-05-17 9:11 AM
Microsoft Excel C...
Rolla180808LMHLSW_180808OG.CSV
2019-05-23 9:56 AM
Microsoft Excel C...
History
Documents
Favorites
FTP
Desktop
File name:
Rolla180808LMHLSW_180808OG.CSV
Open
Files of type:
*.csv
Open

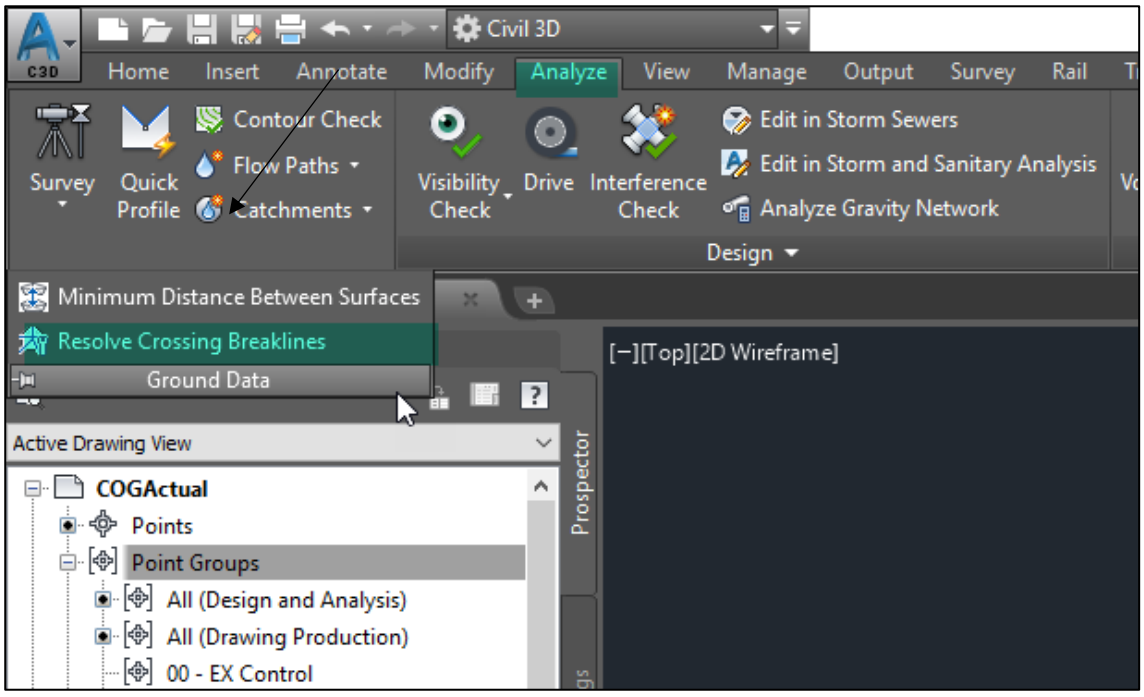

Import Point File
Property
Value
Point file format
Number N E Z D (comma)
Point file name
C:\Data\BCMoTProject\Rollaroad\01_prepar...
Point type
Current figure prefix database
BC MoT Survey
Process linework during import
Yes
Current linework code set
Sample
Process linework sequence
By import order
Import event name
Rolla180808LMHLSW_180808OG.CSV
Import event description
Assign offset to point identifiers
No
Point identifier offset
Insert network object
No
Insert figure objects
Yes
Insert survey points
Yes
OK
Cancel
Help

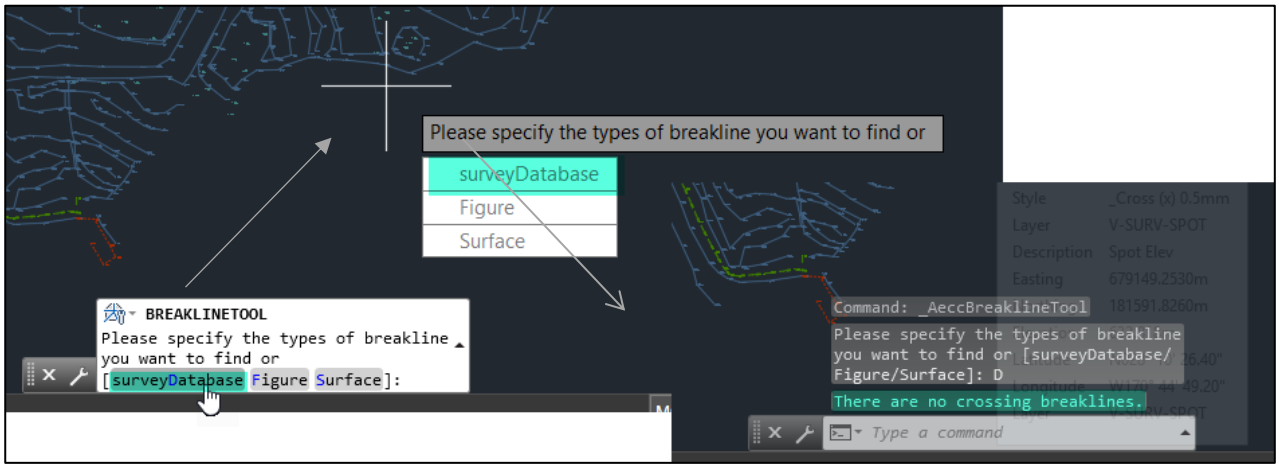



Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Survey
Quick Profile
Contour Check
Flow Paths
Catchments
Visibility Check
Drive
Interference Check
Ground Data
Design
Start
COGActual*
TOOLSPACE
[−][Top][2D Wireframe]
Active Drawing View
COGActual
Points
Point Groups
Properties...
New...
Show Changes...
Update
Export LandXML...
Refresh
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and
04 - EX Signs and Site
05 - EX Structure
06 - EX Topography
07 - EX Utility and Drainage
08 - EX Utility Gas and Oil
09 - EX Utility General
Edit in Storm Sewers
Edit in Storm and Sanitary An
Analyze Gravity Network
Prospector
Settings
Survey


Point Groups
Name
Description
Rolla180808LMHLSW_180808OG
C:\Data\BCMoTProject\Rollaroad\01_prepareproject1start_1539996217777\01_...
All (Design and Analysis)
All (Drawing Production)
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
05 - EX Structure
06 - EX Topography
07 - EX Utility and Drainage
08 - EX Utility Gas and Oil
09 - EX Utility General
10 - EX Utility Power and Tel
11 - EX Utility Sanitary and Storm
12 - EX Utility Water
20 - Construction
OG Surface (Ground Descriptions)
Inclusion criteria are standard BC MoTI point descriptions that have the DTM grou...
OG Surface (User Defined)
User defined inclusion and exclusion criteria
All (Off)
_All Points
Rolla180621HL_180621OG
C:\Data\BCMoTProject\Rollaroad\01_prepareproject1start_1539996217777\01_...
OG Surface (DTM Attribute)
DTM-CDF (Comma Delimited File) Attribute is "Y"DTM (XML) Attribute is "ground"D...
Rolla180724HL_180724OG
C:\Data\BCMoTProject\Rollaroad\01_prepareproject1start_1539996217777\01_...
OK
Cancel
Apply
Help



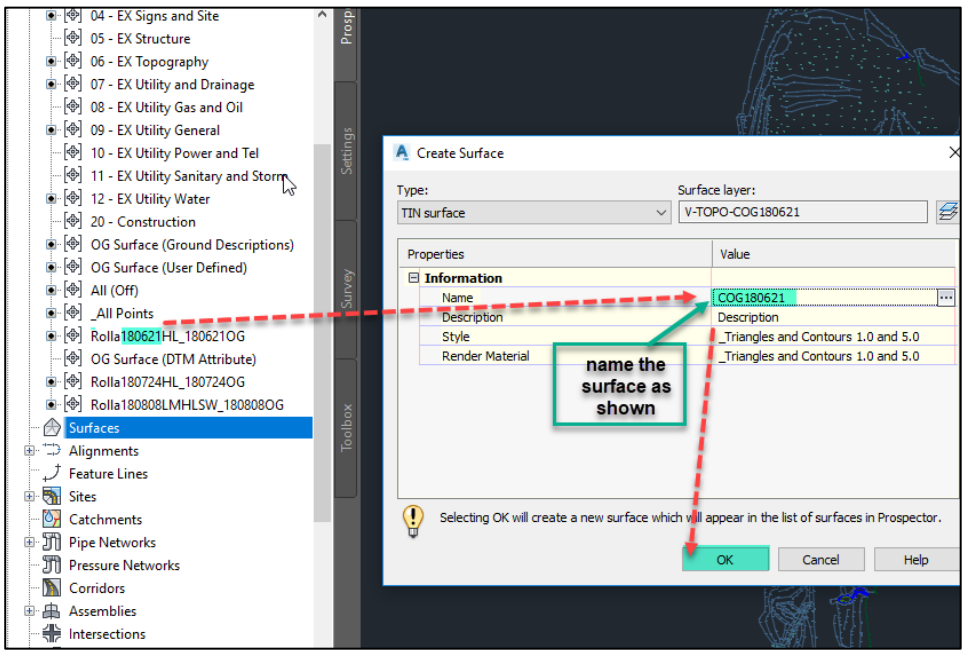




No longer having crossing break line anymore after above process.

2.10 Create COG Surfaces (Points, Breaklines and Boundaries) (19.29)

COG SURFACES-180621 (for the import events).



Surfaces

↓

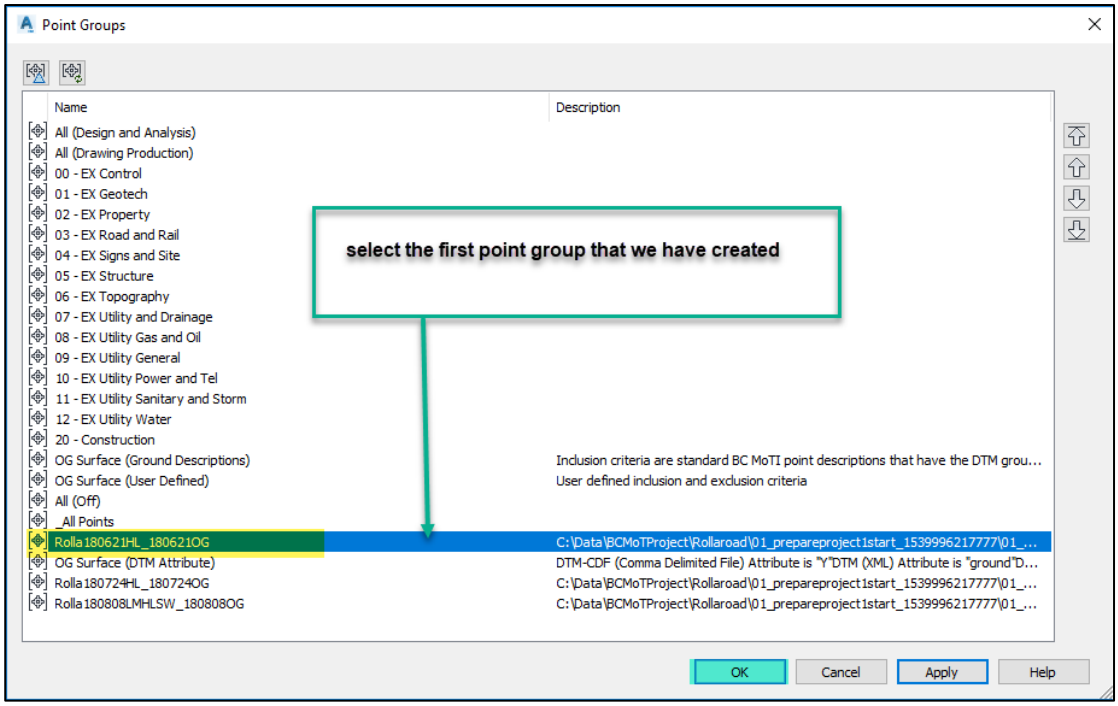
COG180621

↓

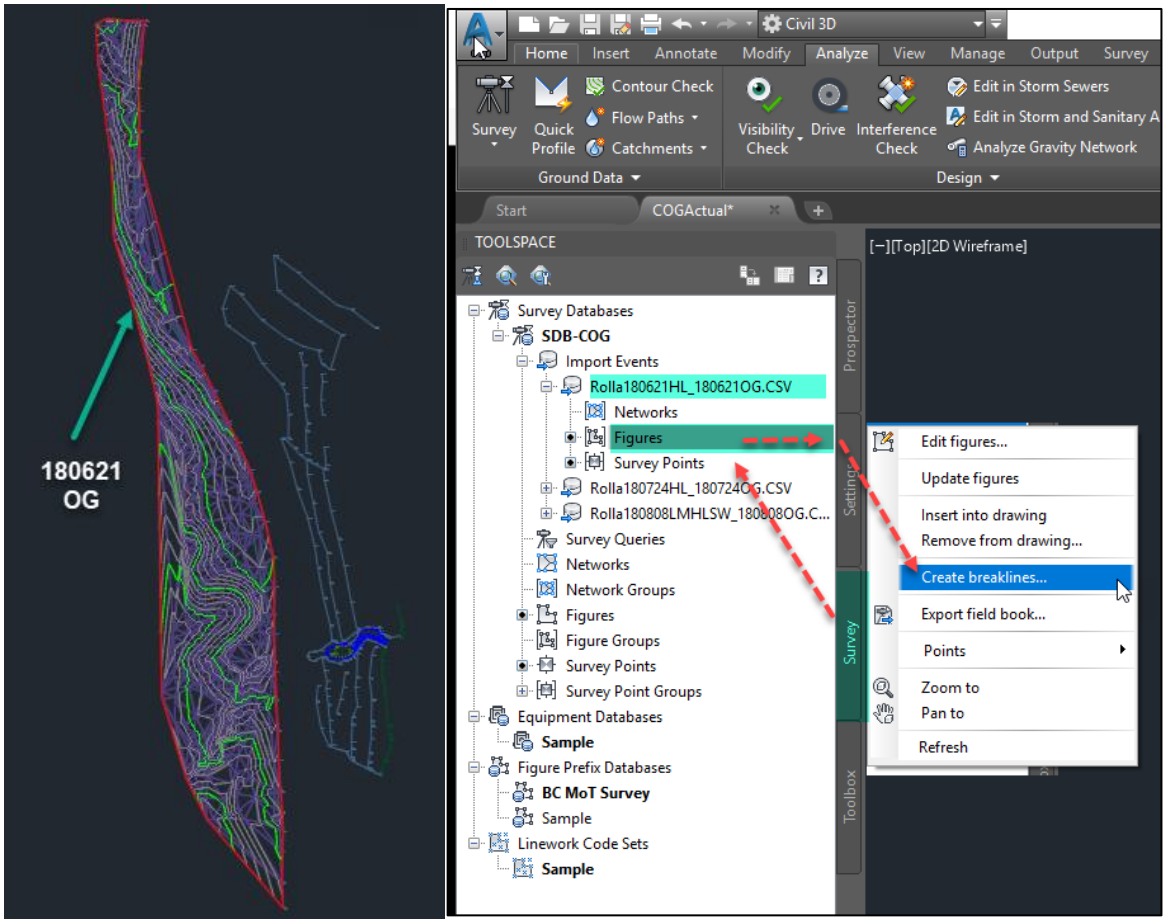
Definition

↓

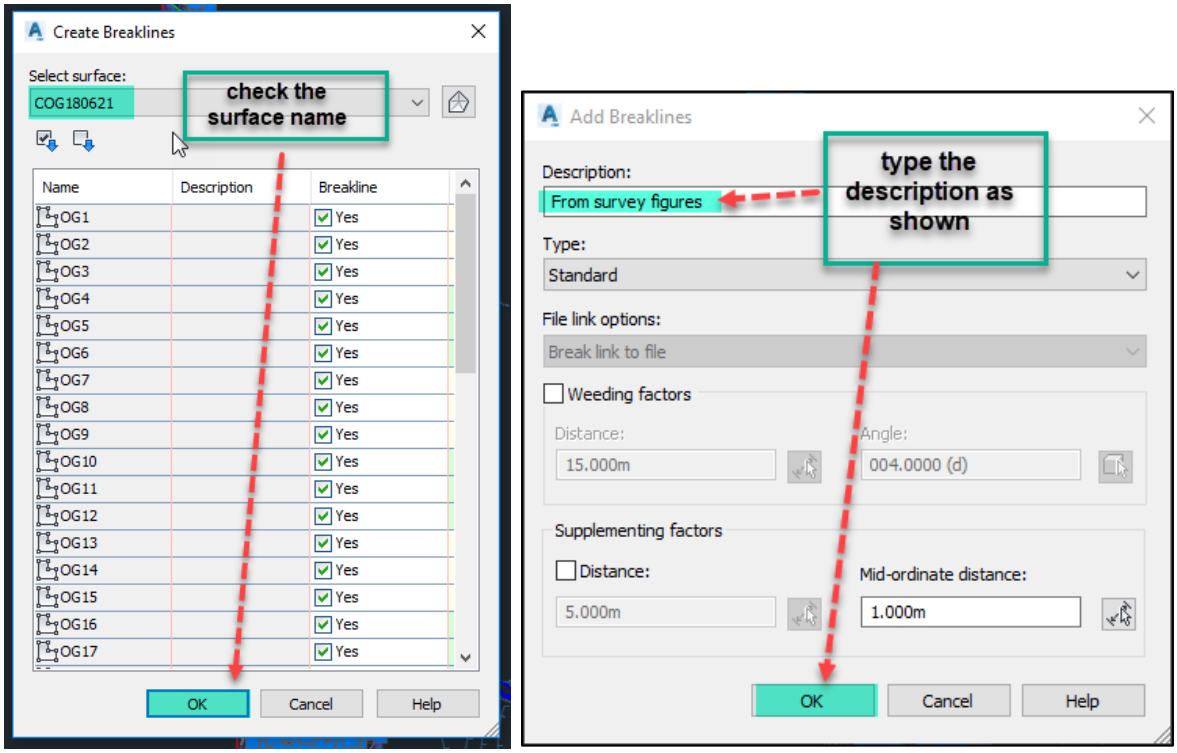
Point group → Right Click → Add

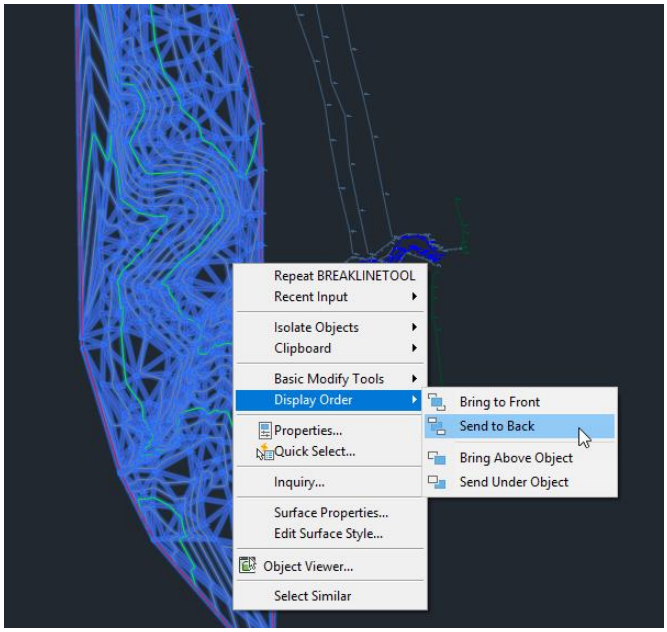


After adding the point group into the surface that we created, it will appear as below.


180621
OG
Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Output
Survey
Contour Check
Flow Paths
Catchments
Survey
Quick Profile
Visibility Check
Drive
Interference Check
Edit in Storm Sewers
Edit in Storm and Sanitary A
Analyze Gravity Network
Ground Data
Design
Start
COGActual*
TOOLSPACE
[−][Top][2D Wireframe]
Survey Databases
SDB-COG
Import Events
Rolla180621HL_180621OG.CSV
Networks
Figures
Survey Points
Rolla180724HL_180724OG.CSV
Rolla180808LMHLSW_180808OG.C...
Survey Queries
Networks
Network Groups
Figures
Figure Groups
Survey Points
Survey Point Groups
Equipment Databases
Sample
Figure Prefix Databases
BC MoT Survey
Sample
Linework Code Sets
Sample
Prospector
Settings
Survey
Toolbox
Edit figures...
Update figures
Insert into drawing
Remove from drawing...
Create breaklines...
Export field book...
Points
Zoom to
Pan to
Refresh

Breakline

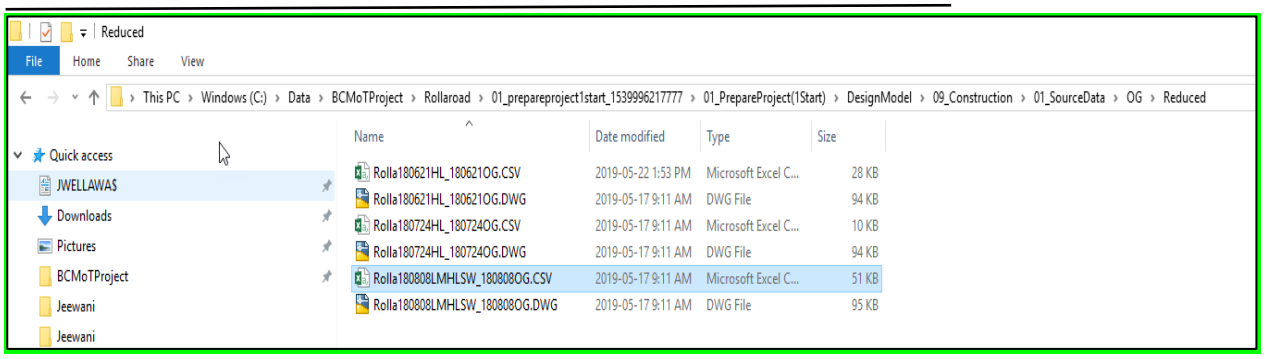

Create Breaklines
Select surface:
COG180621
check the surface name
Name
Description
Breakline
OG1
OG2
OG3
OG4
OG5
OG6
OG7
OG8
OG9
OG10
OG11
OG12
OG13
OG14
OG15
OG16
OG17
Yes
OK
Cancel
Help
Add Breaklines
Description:
From survey figures
type the description as shown
Type:
Standard
File link options:
Break link to file
Weeding factors
Distance:
15.000m
Angle:
004.0000 (d)
Supplementing factors
Distance:
5.000m
Mid-ordinate distance:
1.000m
OK
Cancel
Help

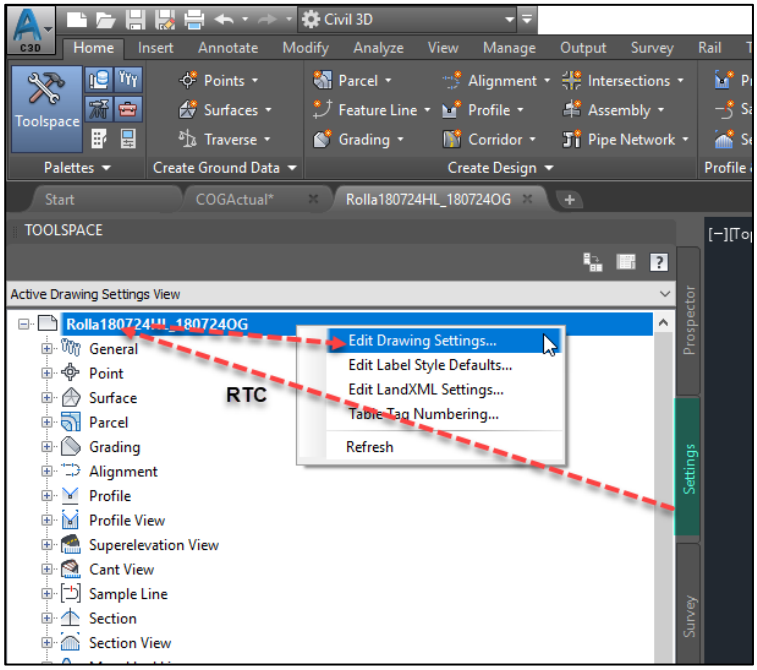


Add Boundaries

Boundary will need to be closed and be in 2D polyline.

Every surface has a corresponding import file and boundary.





Open the “corresponding drawing”

↓

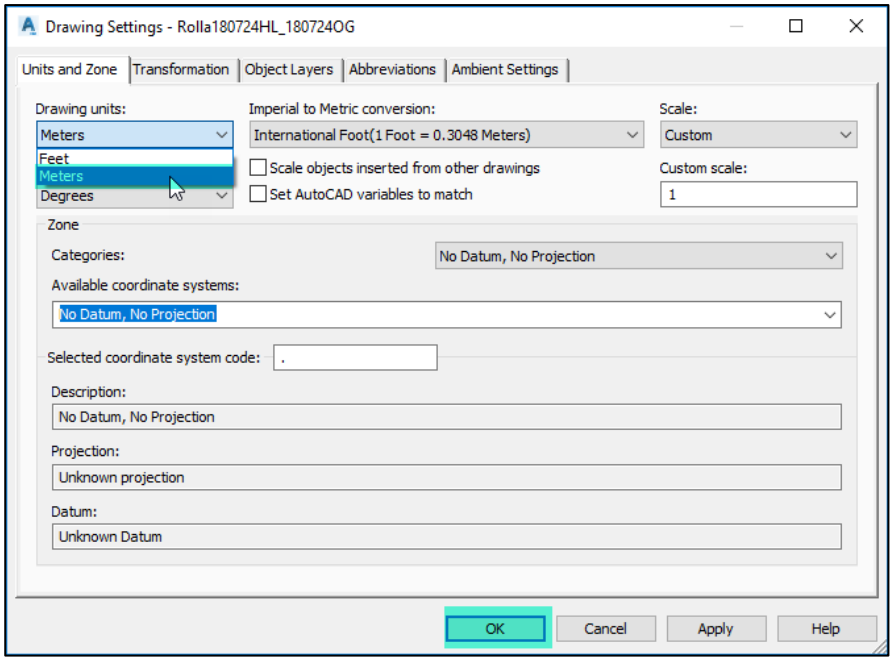
settings

↓

Select the drawing and right click

↓

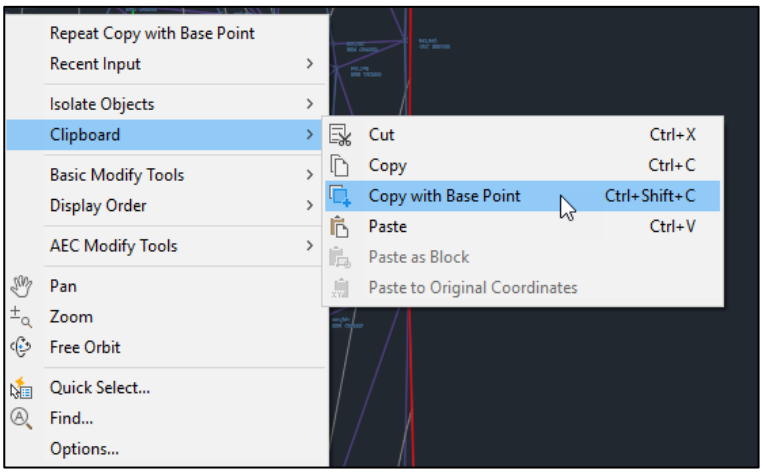
Change the units into “meters” and then hit ok



Save the drawing (this is very important).

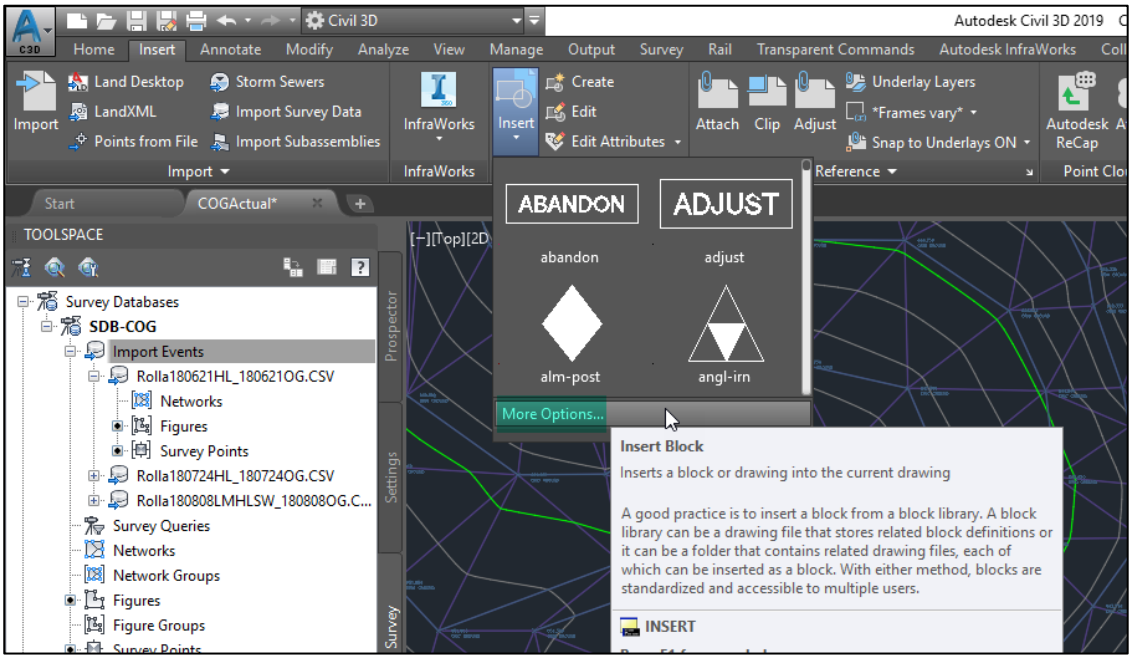
There are three methods to upload this drawing boundary.

1. Open drawing boundary and select it.
   Right click

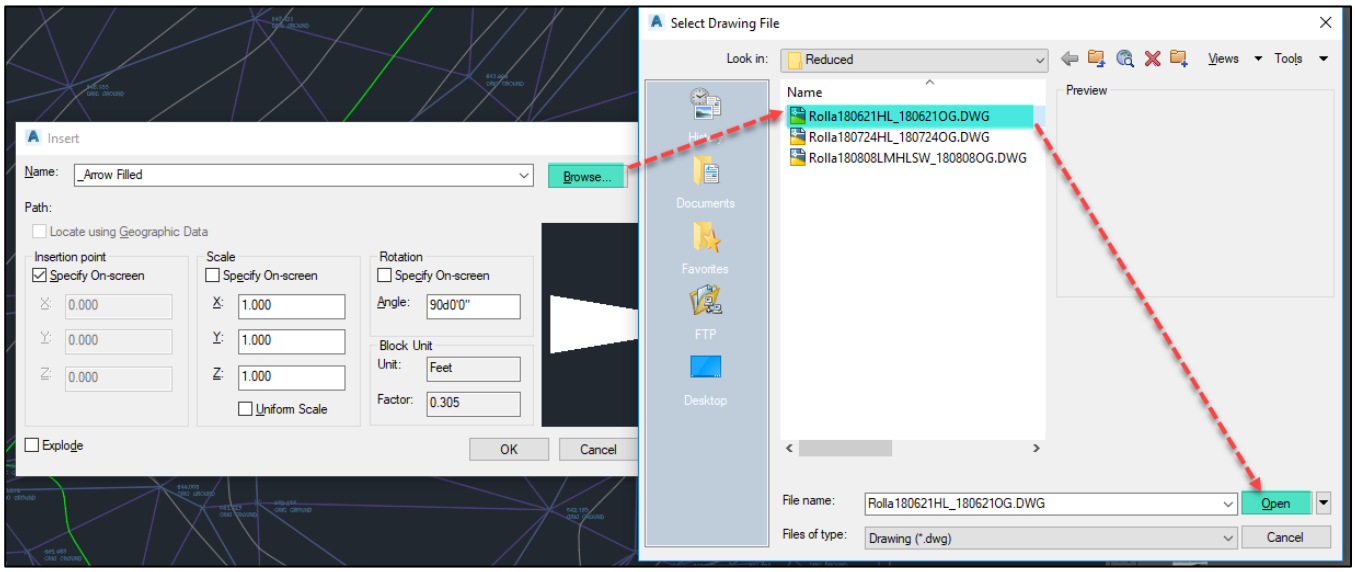


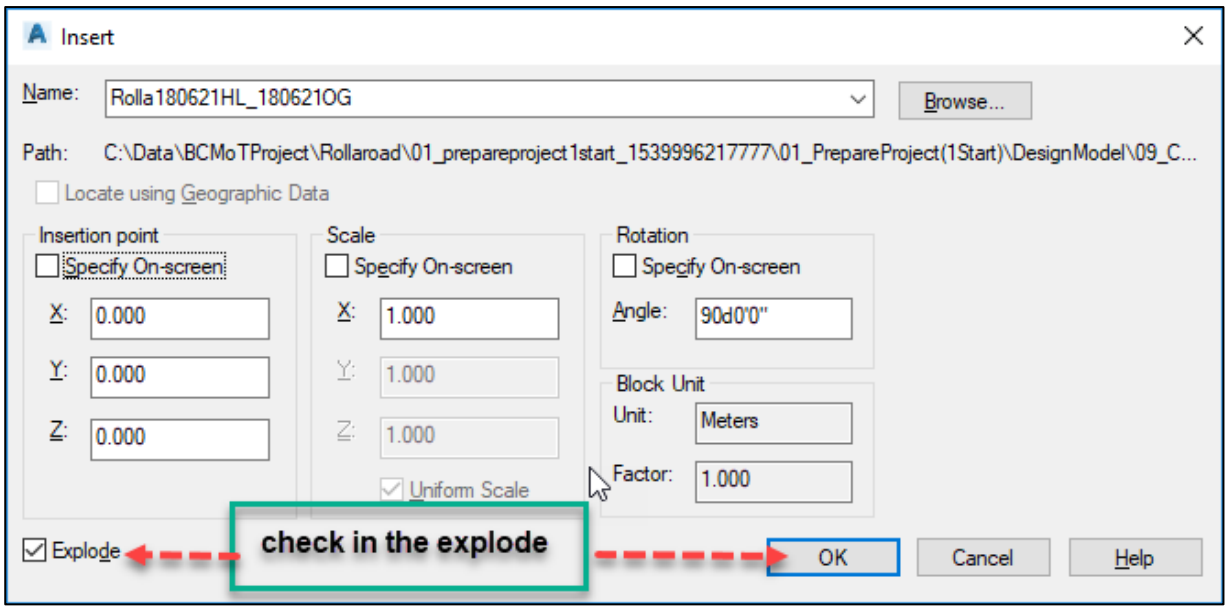
   The other two ways of inserting boundary do the following:

2. Switch to Insert ribbon.



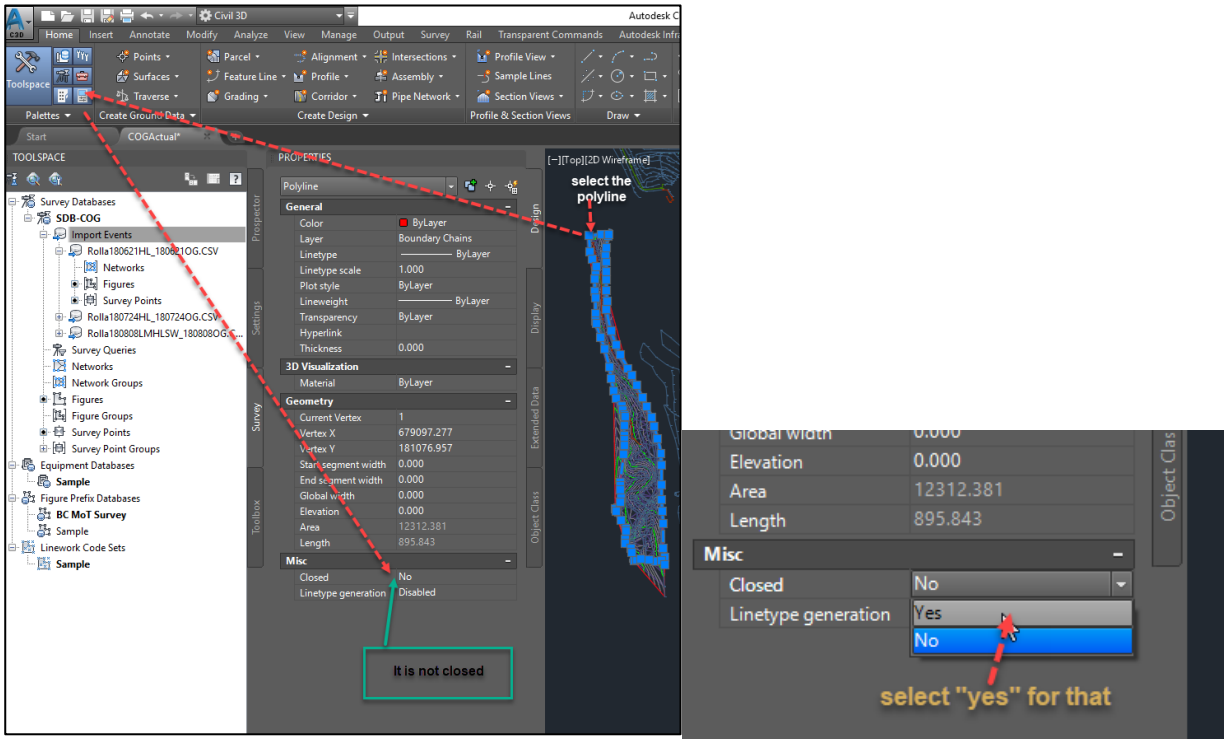
3. Type an “I” on command bar.



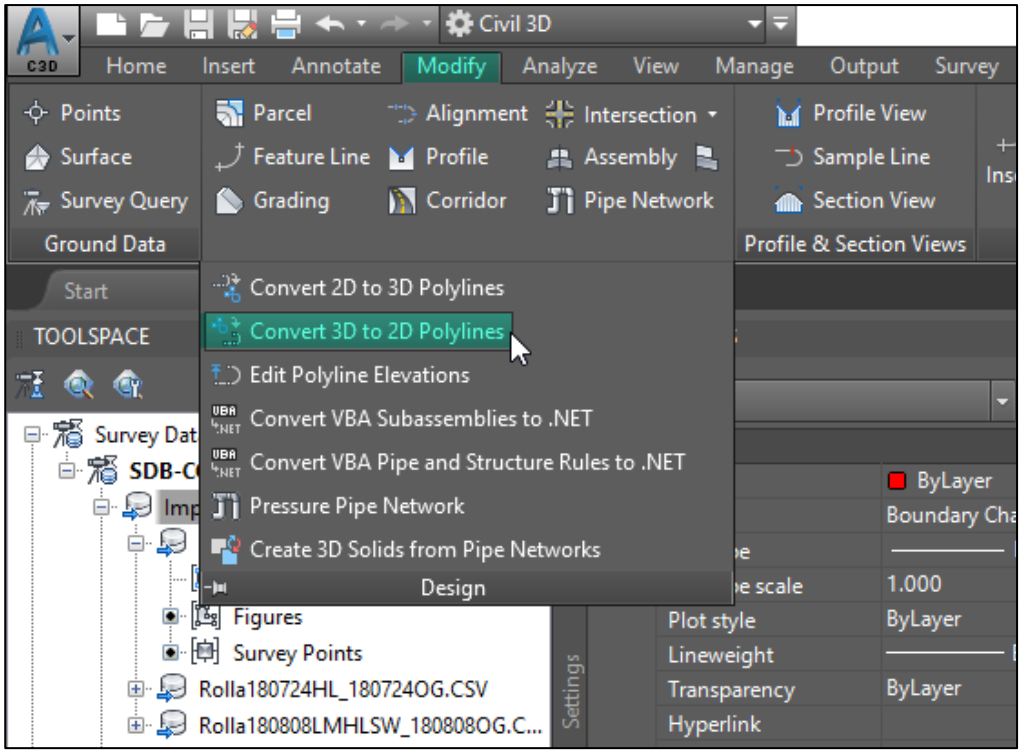


Now you can see the block explode into polyline. The end of third method.

Let's have a look in autocad properties to make sure the boundaries are closed or not.



If boundary is in 3D we will convert to 2D.

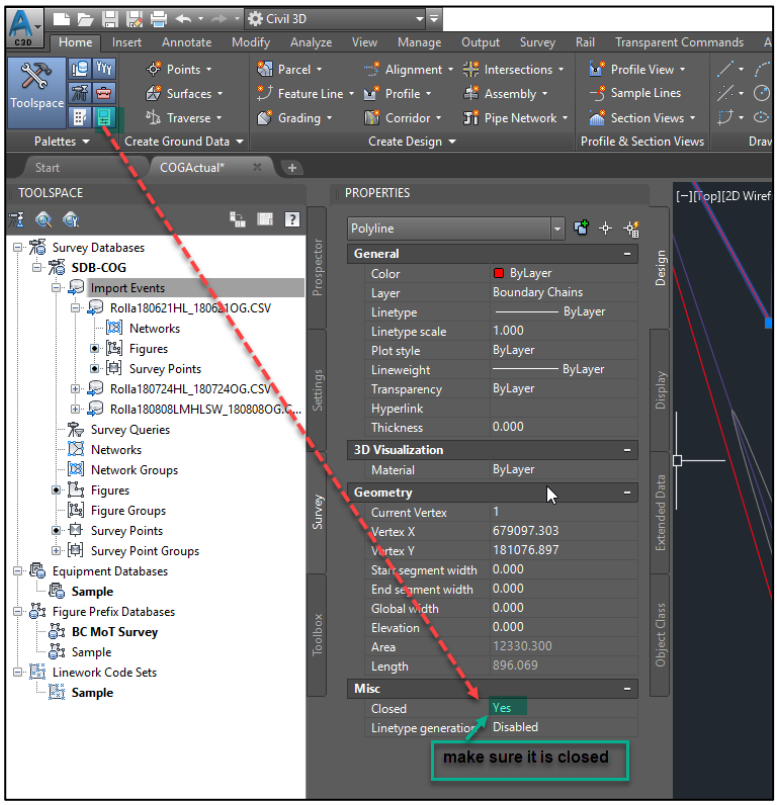


Recommend

Most often correct any issues with boundaries by offsetting the polyline.

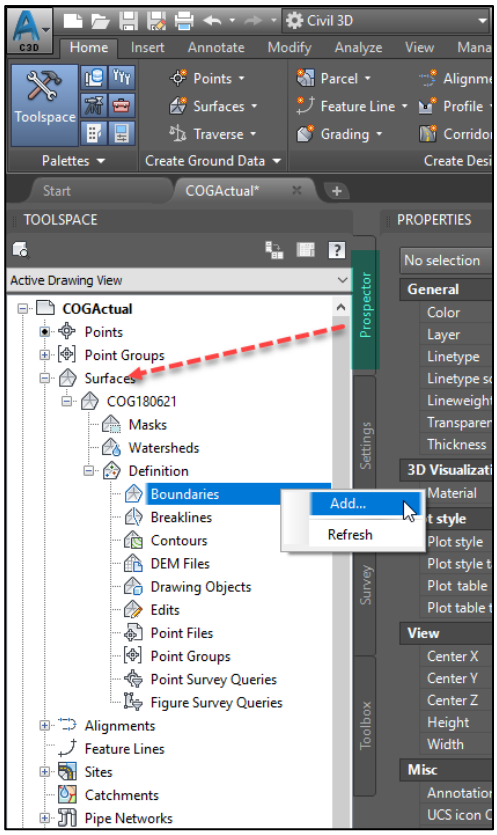
Offset the polyline to the outside 0.01 and delete the original one.

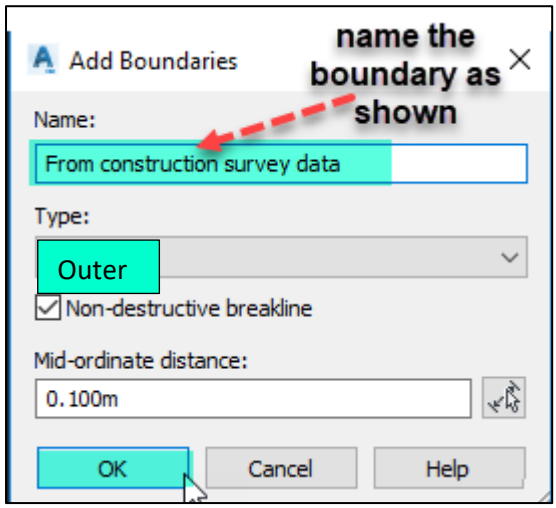
Double check with AutoCAD properties whether the polyline is closed or not.

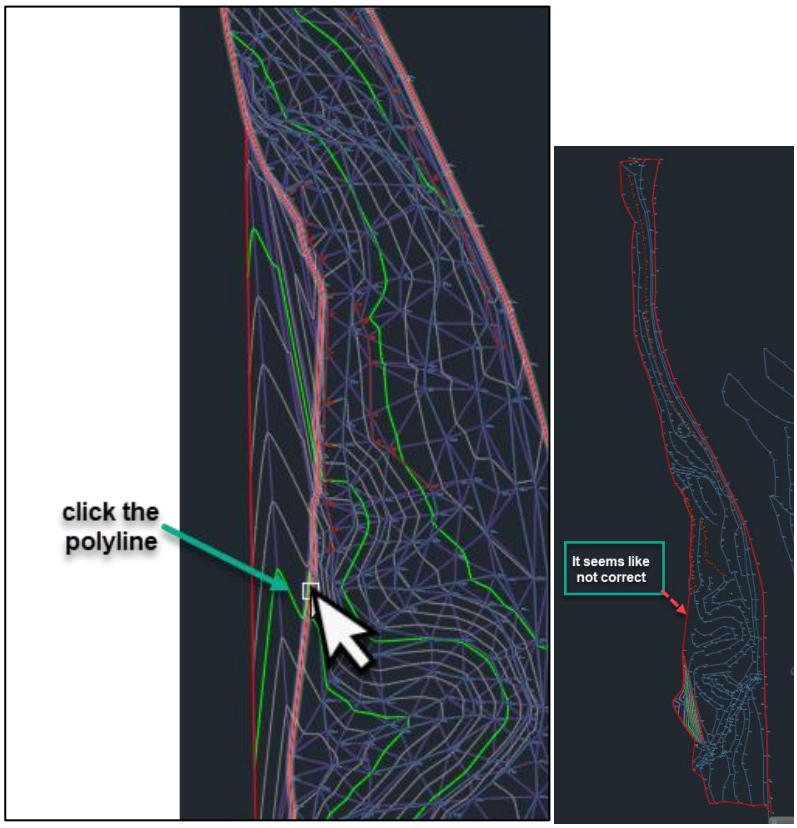


Update the surface.

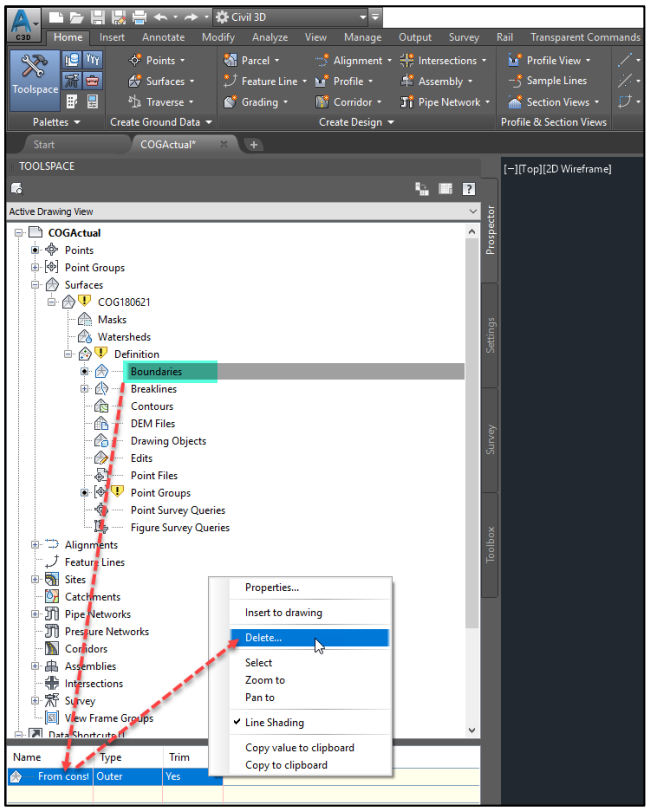
Let’s add a boundary to the surface.





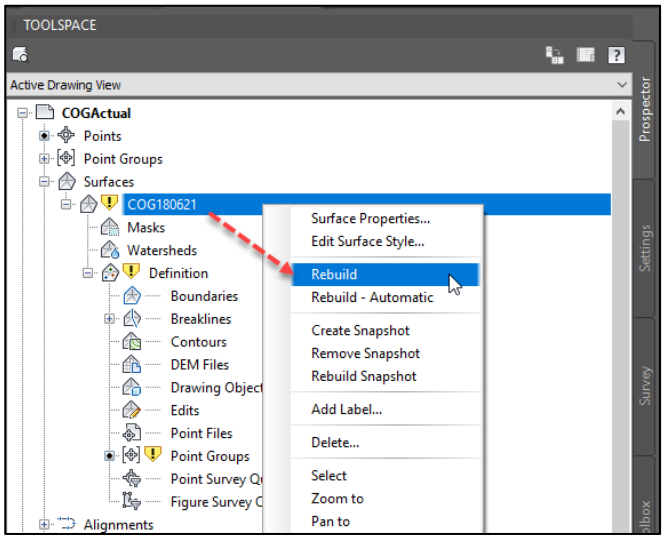


If you have to face this kind of boundary issues as above, follow the following steps, if not and all looks good go to page 58 to continue **“Create second surface -180724”.**

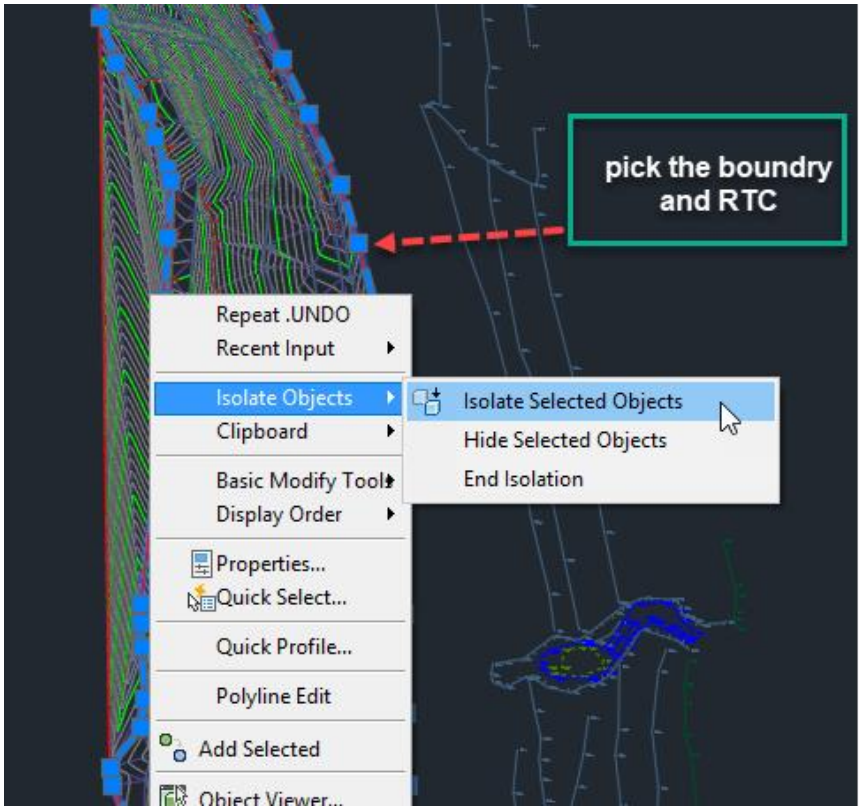


Delete the boundary definition from the surface.

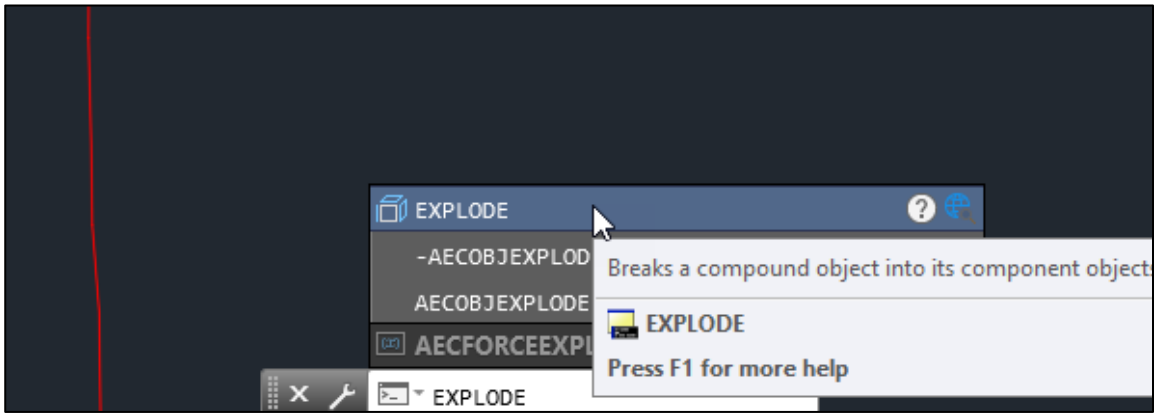
Then rebuild the surface.

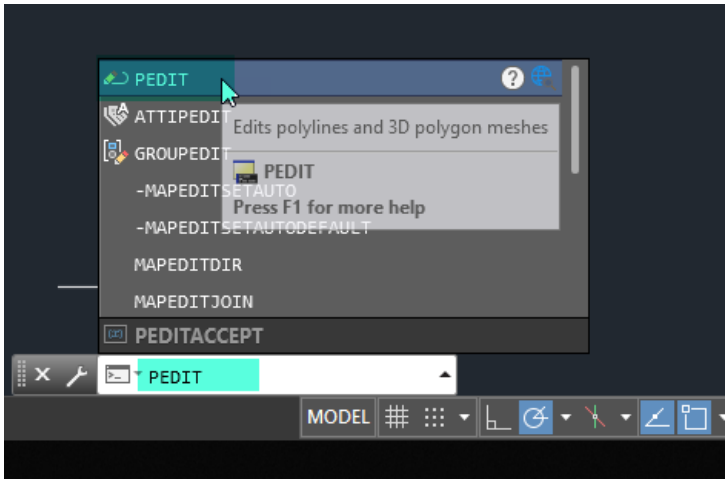


Explode” the polyline and “pedit” joining back together.



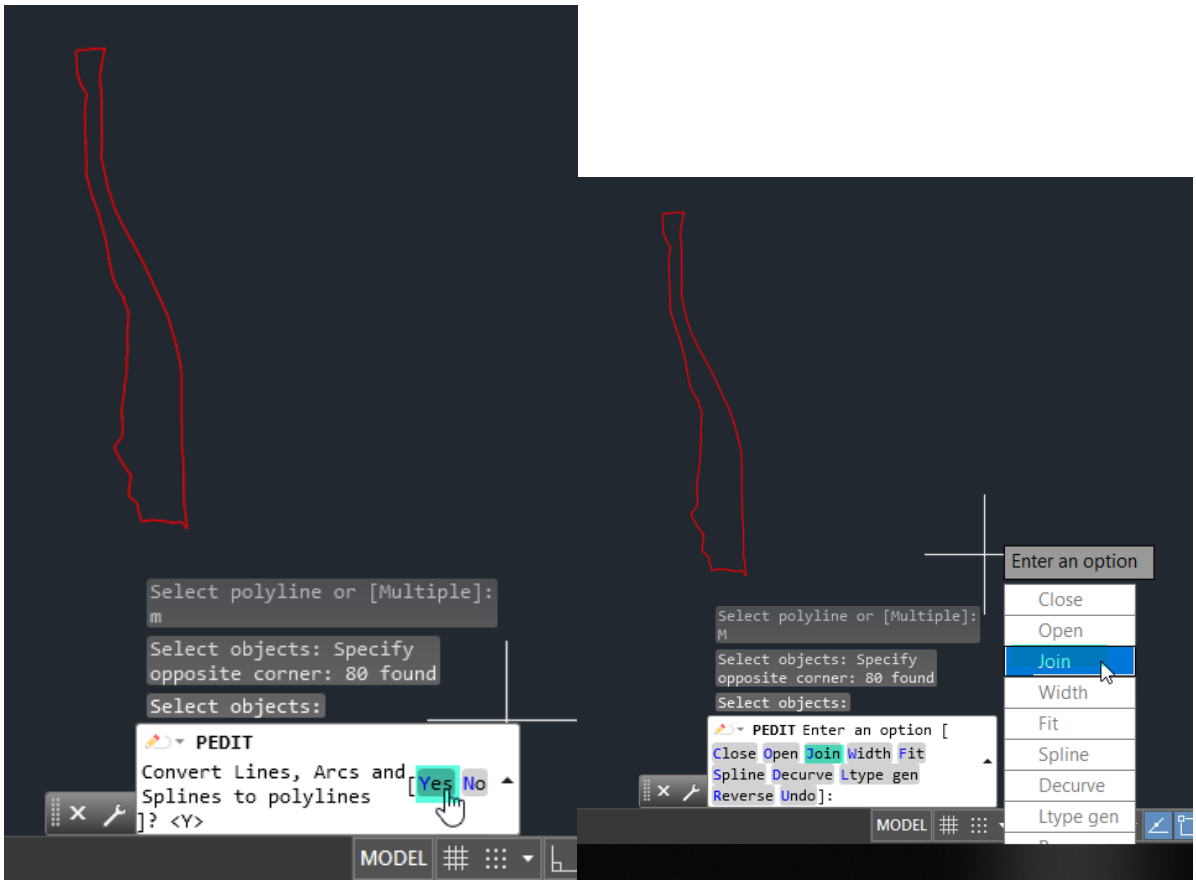
This is not layers turning off this is just isolating the display and then explode the polyline.



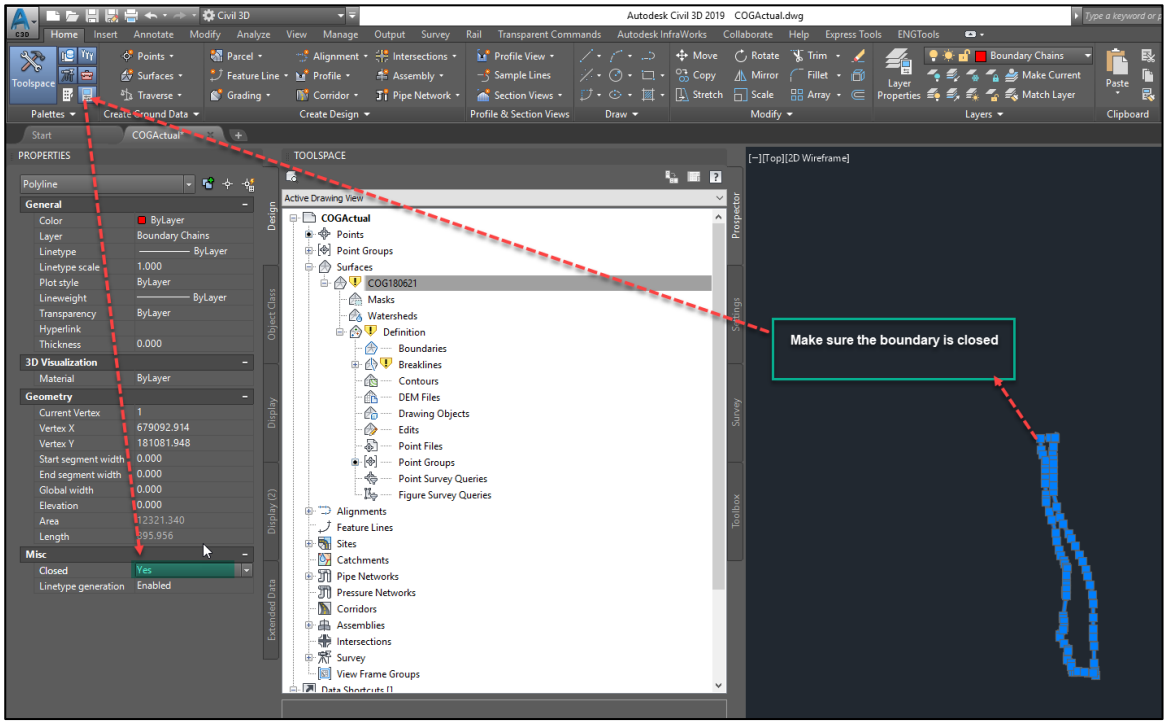


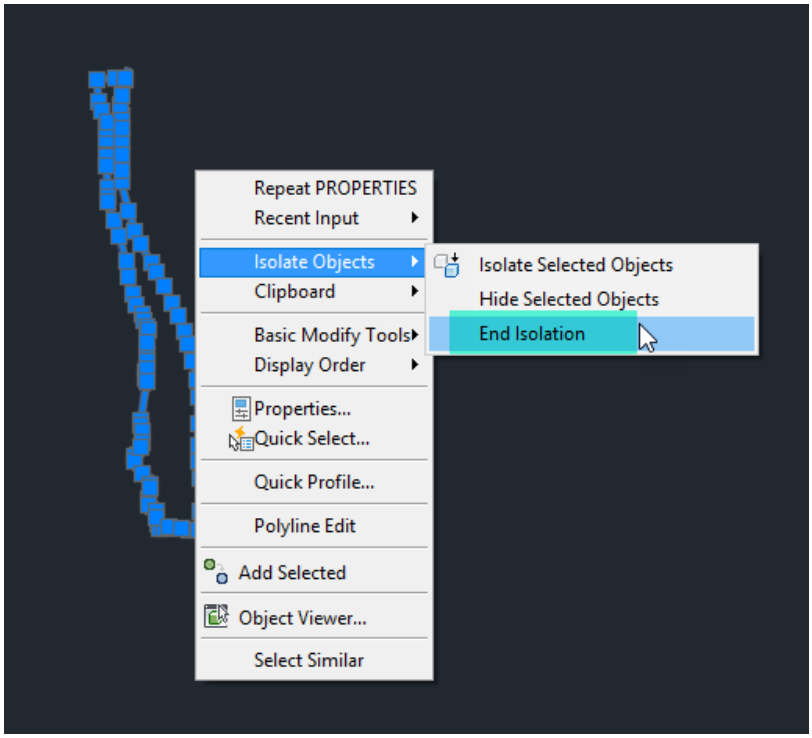
And type “m” for multiple command and select all and “enter”.

Next window will appear as follow and select “yes” for that.

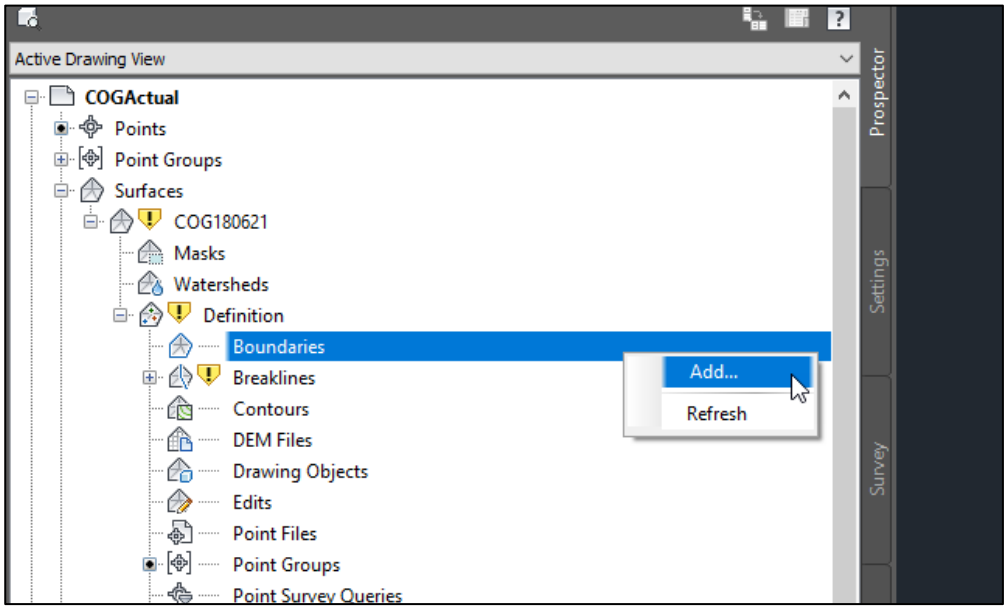


after all, “enter” twice.

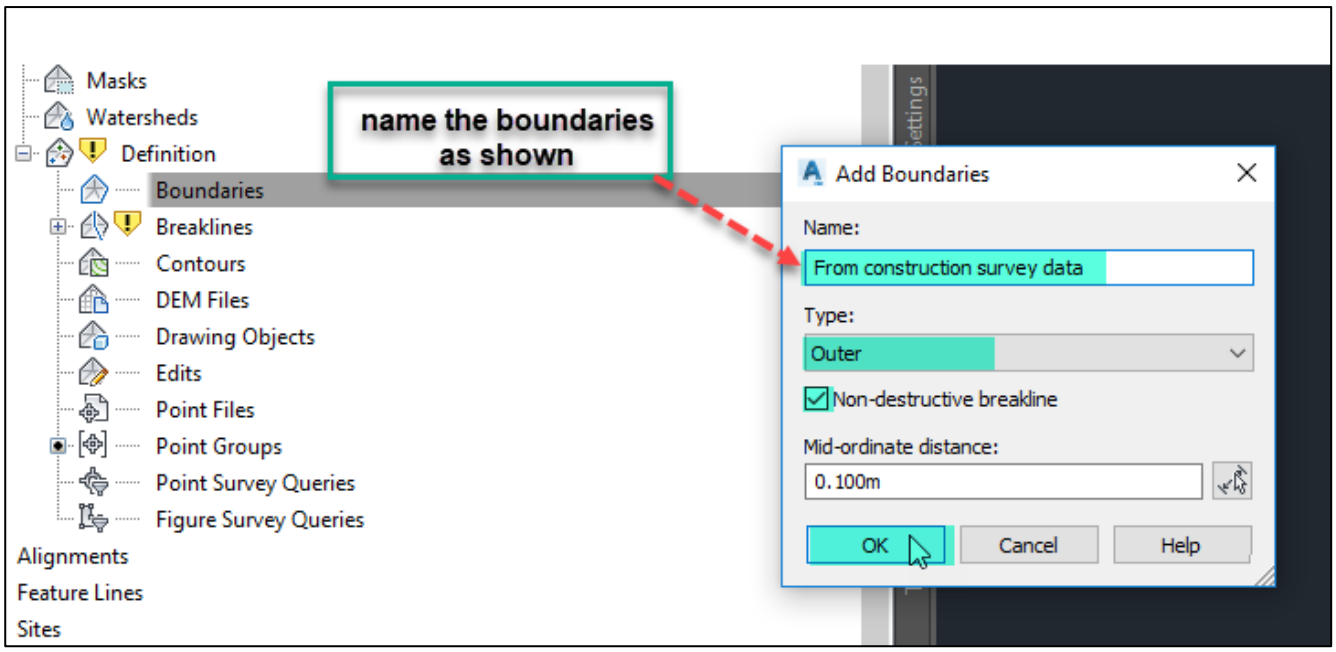




Now try again and try to define that boundary for a surface.

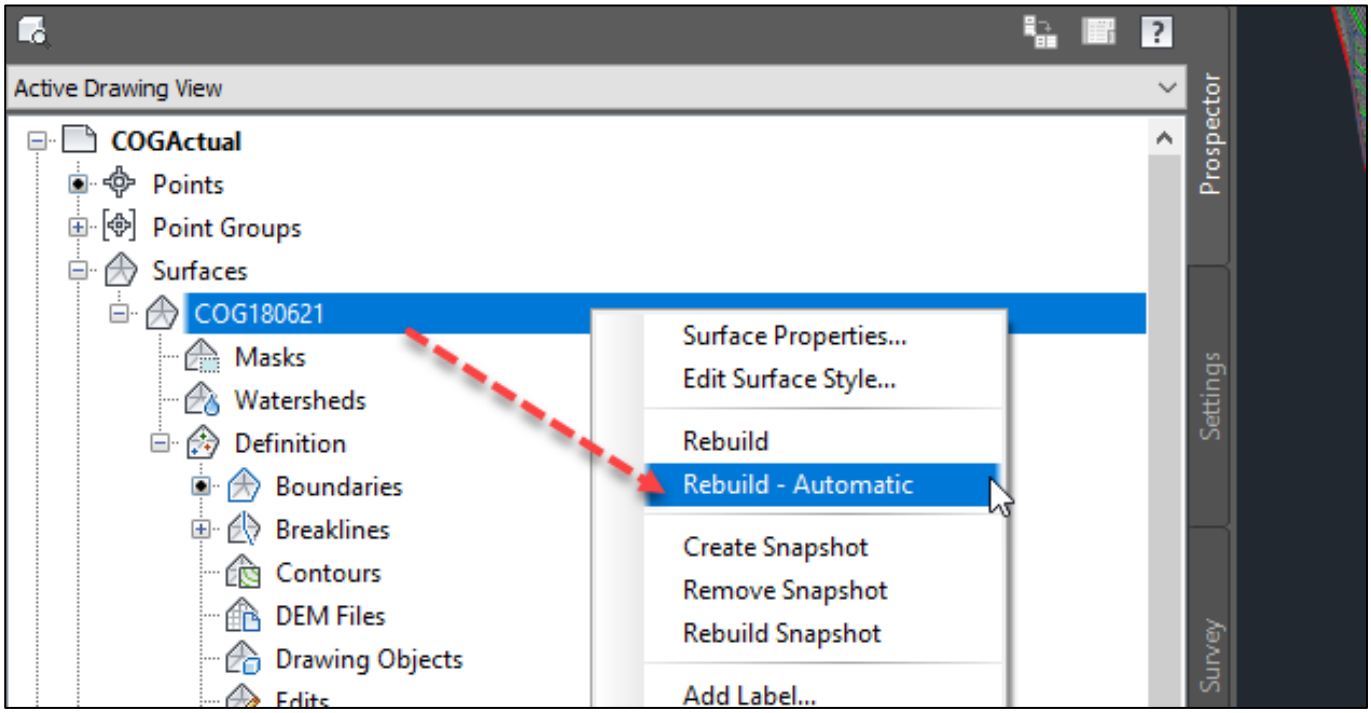


Back to surface collection .



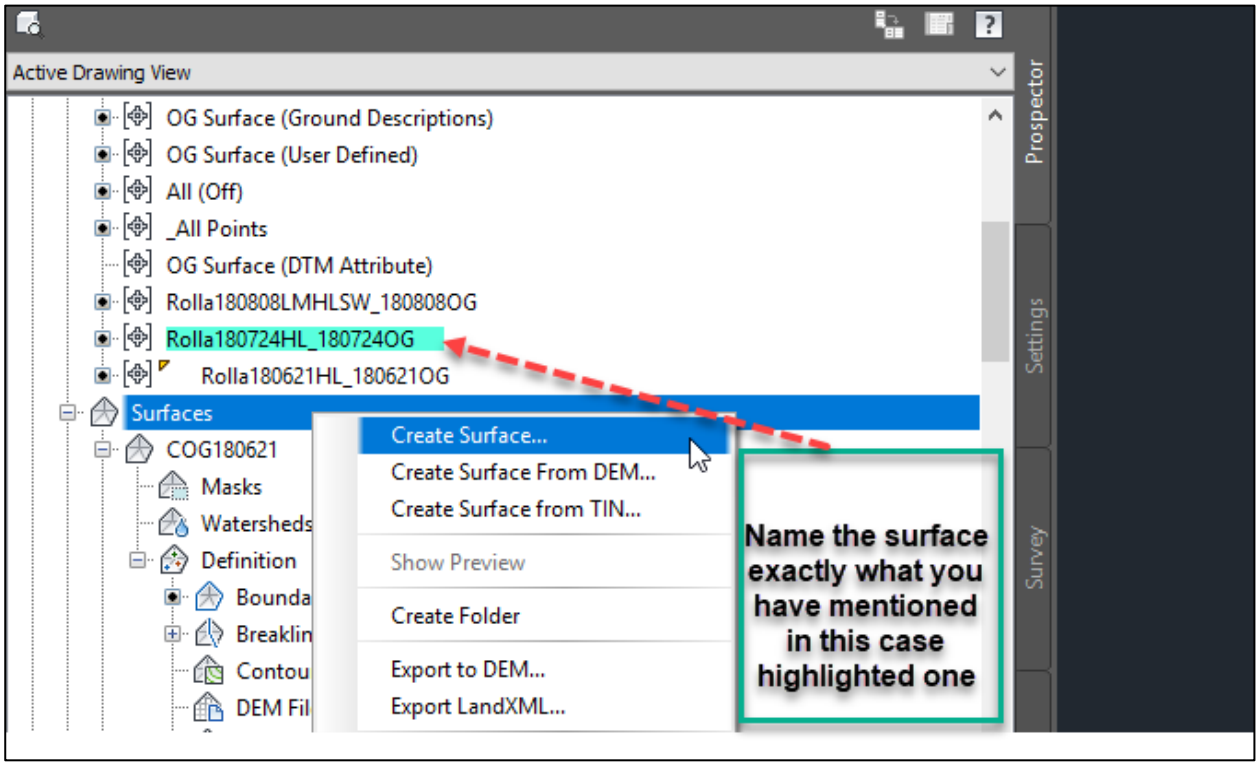
Pick the polyline boundary. That conclude the creation of the first surface.

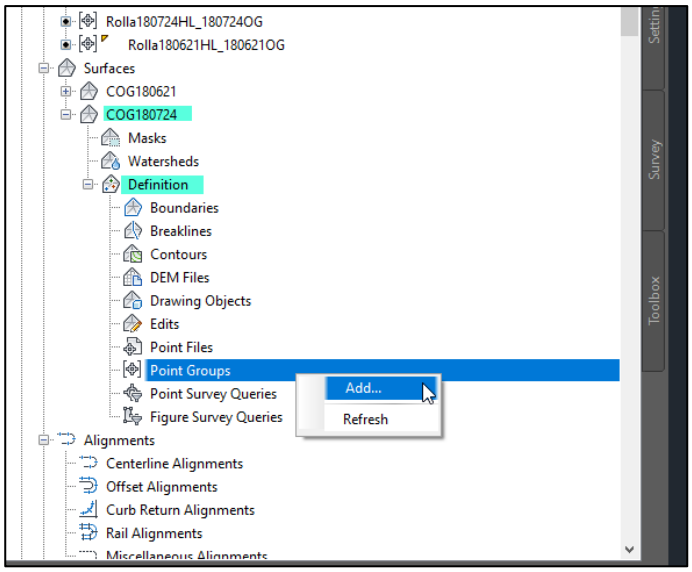
Turn on the “rebuild automatic” if there are any changes the surface will automatically update.

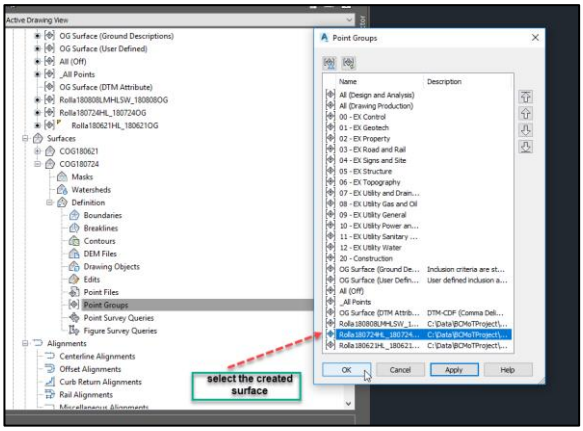


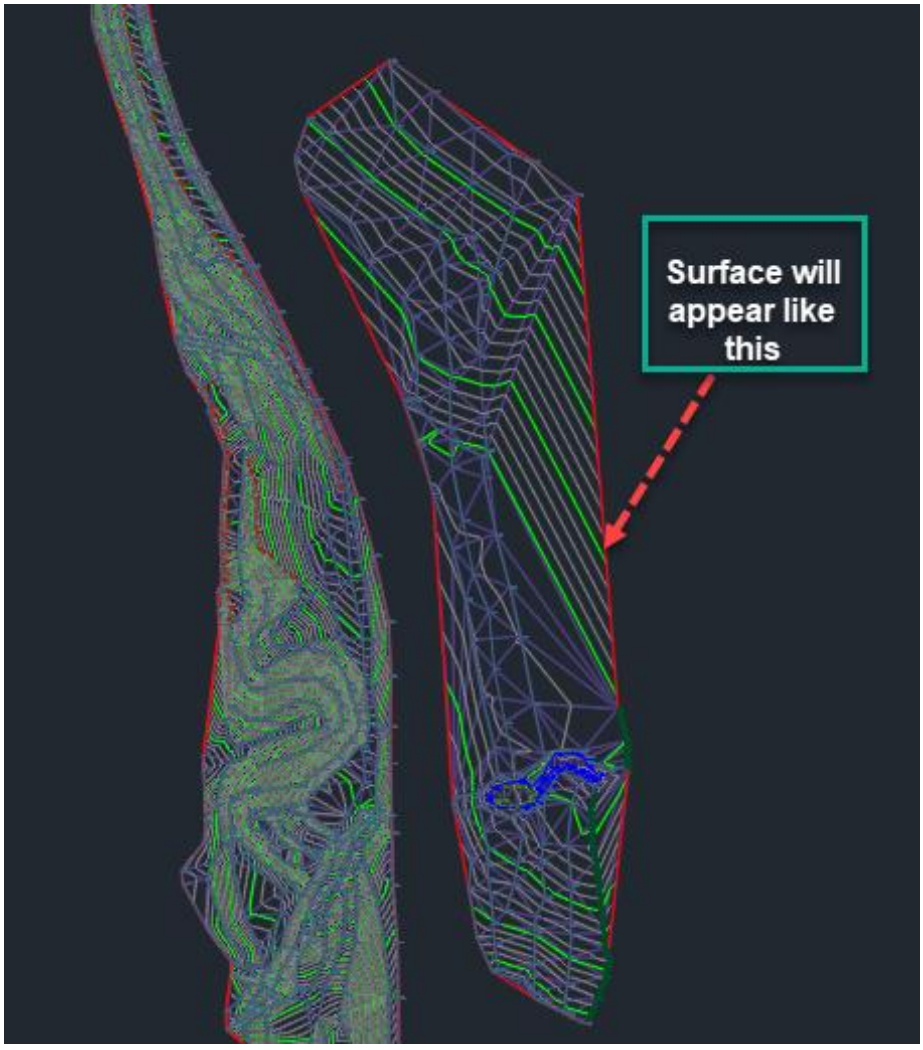
Correction end

Create second surface -180724

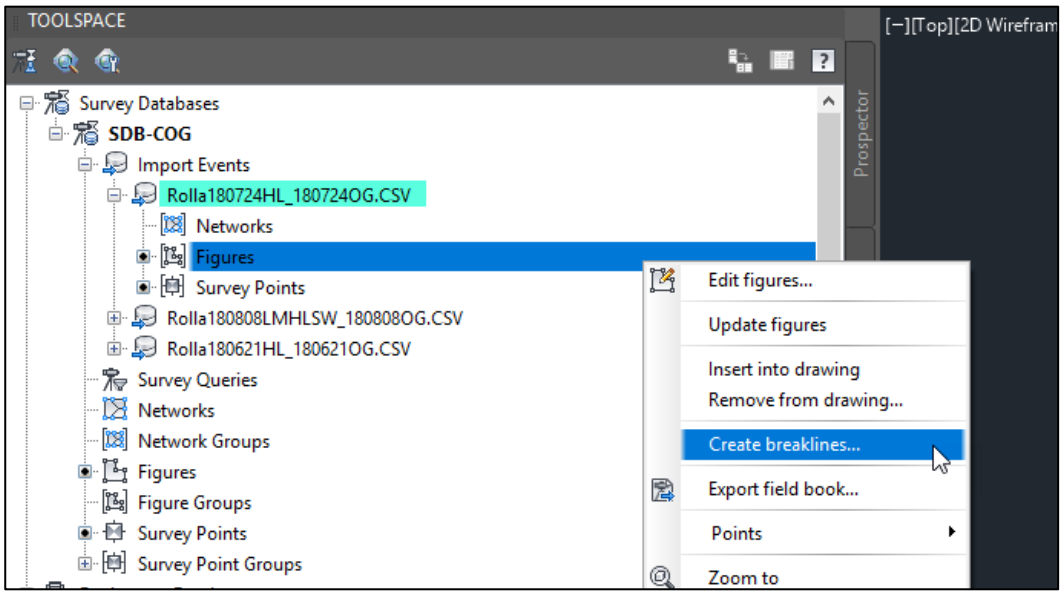


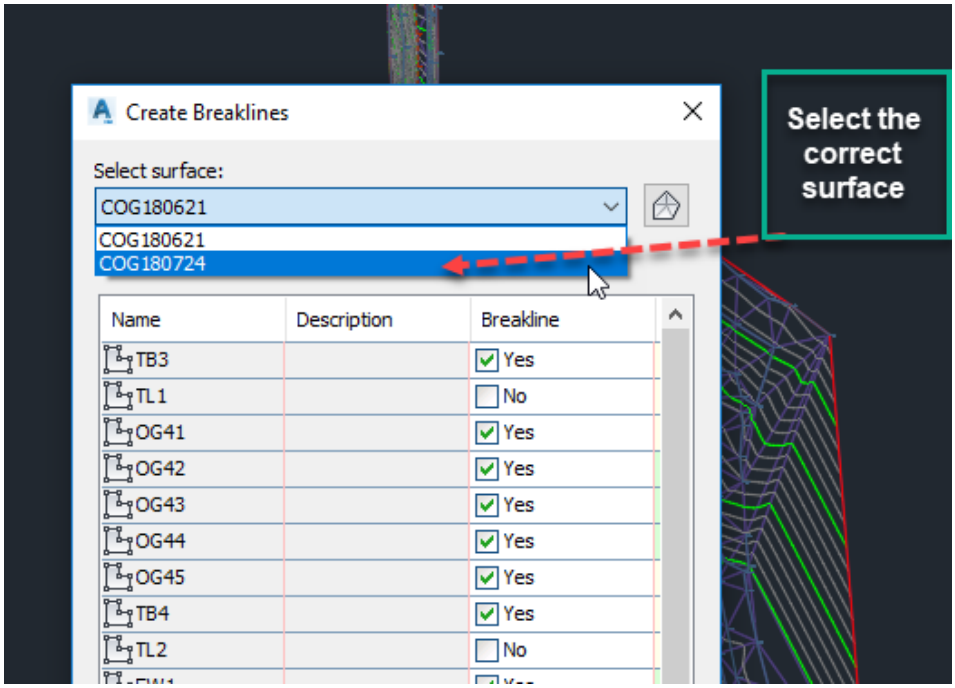


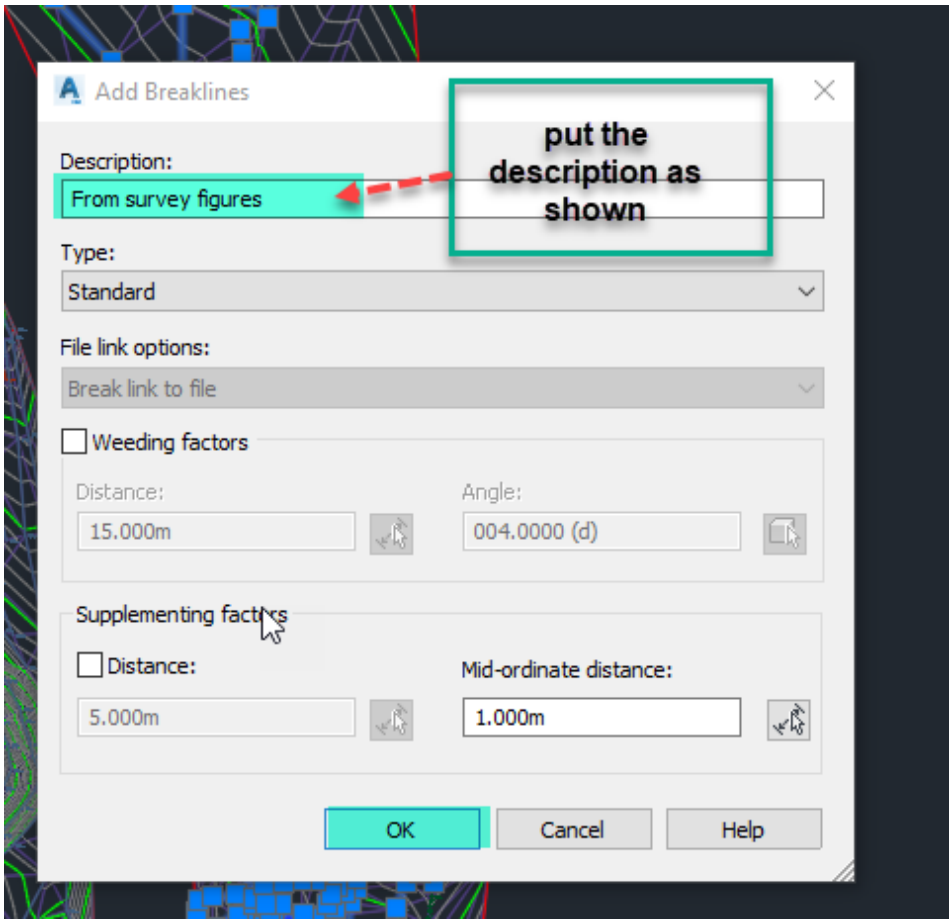




Go back to survey tab and select the second imported event.







Open the corresponding drawing file that contain the boundary.

Follow the same steps what we did for surface 1. From 2.10 (page no 47).

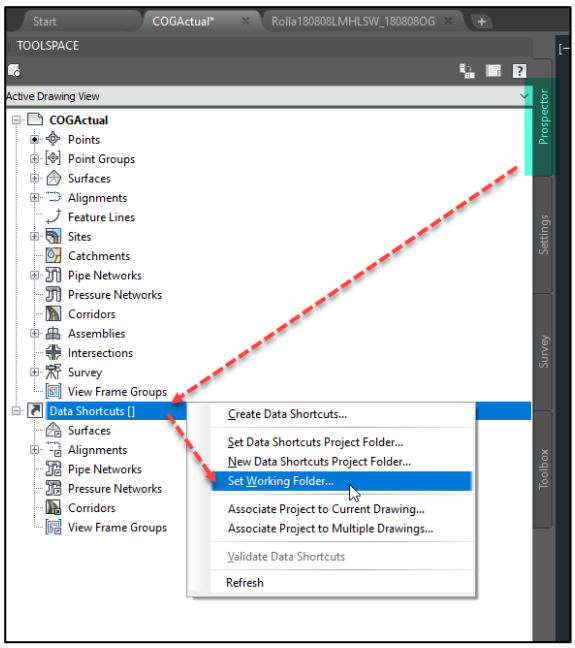
Create third surface- 180808

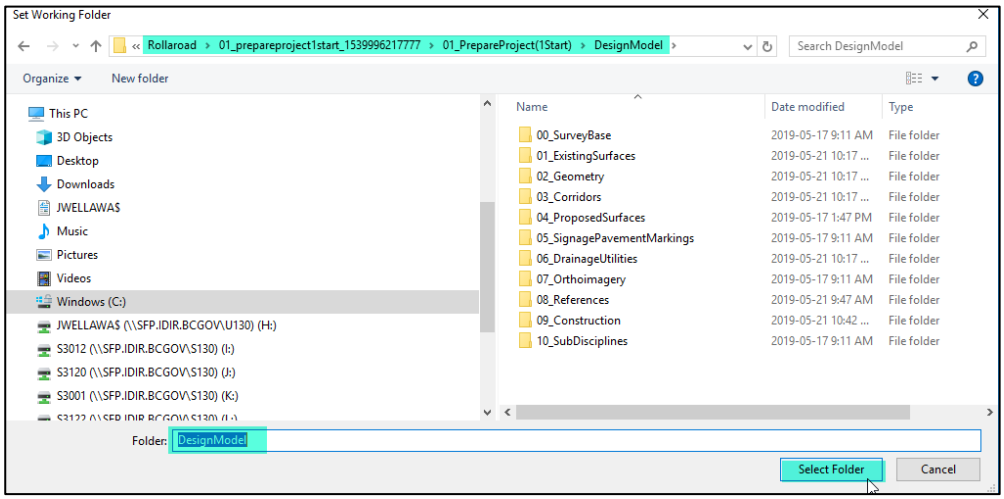
Create the third surface as surface 1 and 2 above.

2.11 Create Data Shortcuts to 3XCOG Surfaces (32.38)

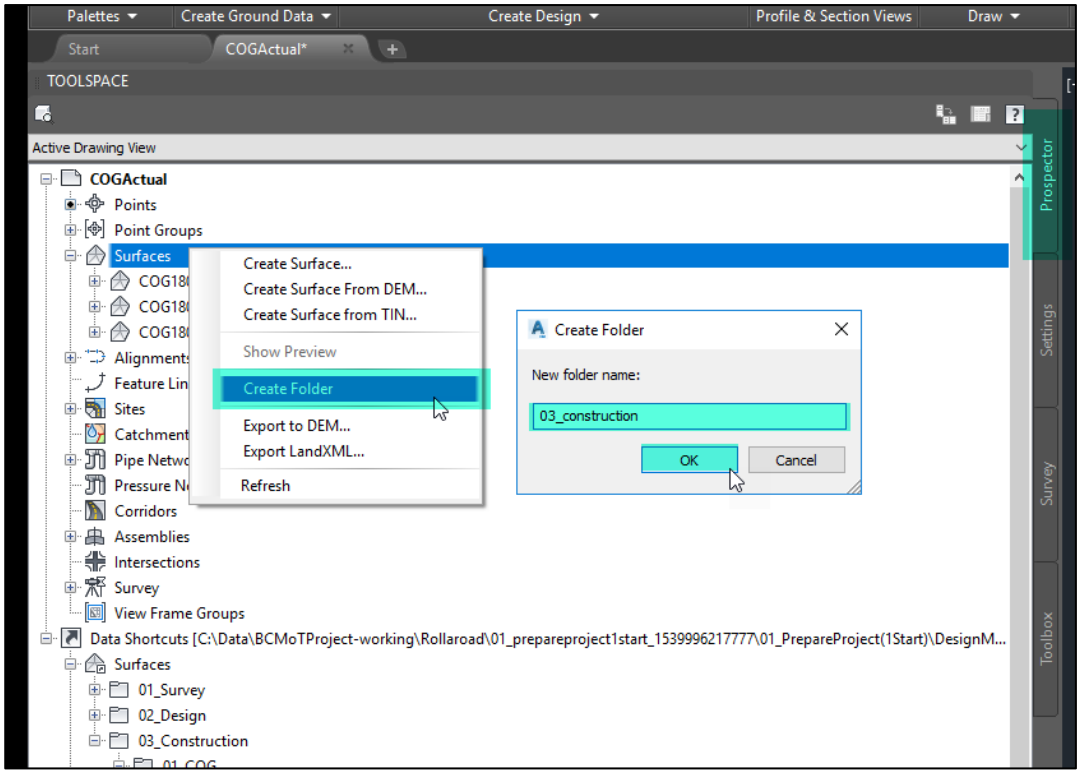
Next step is creating the “data shortcut”.

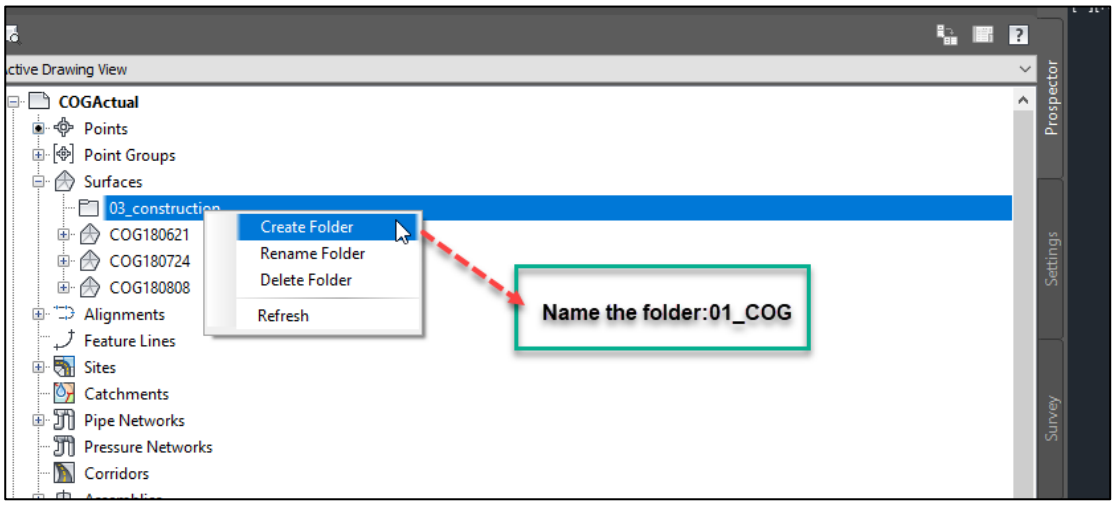
Check the “set working folder”.



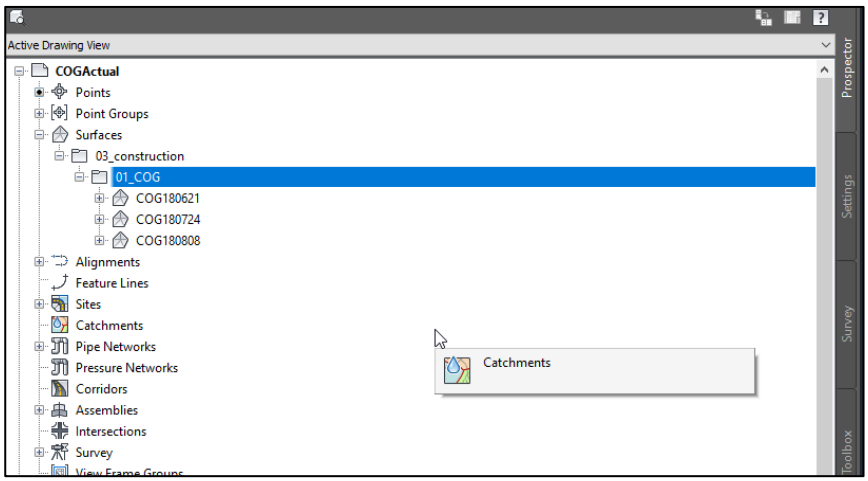


Create surface folder.

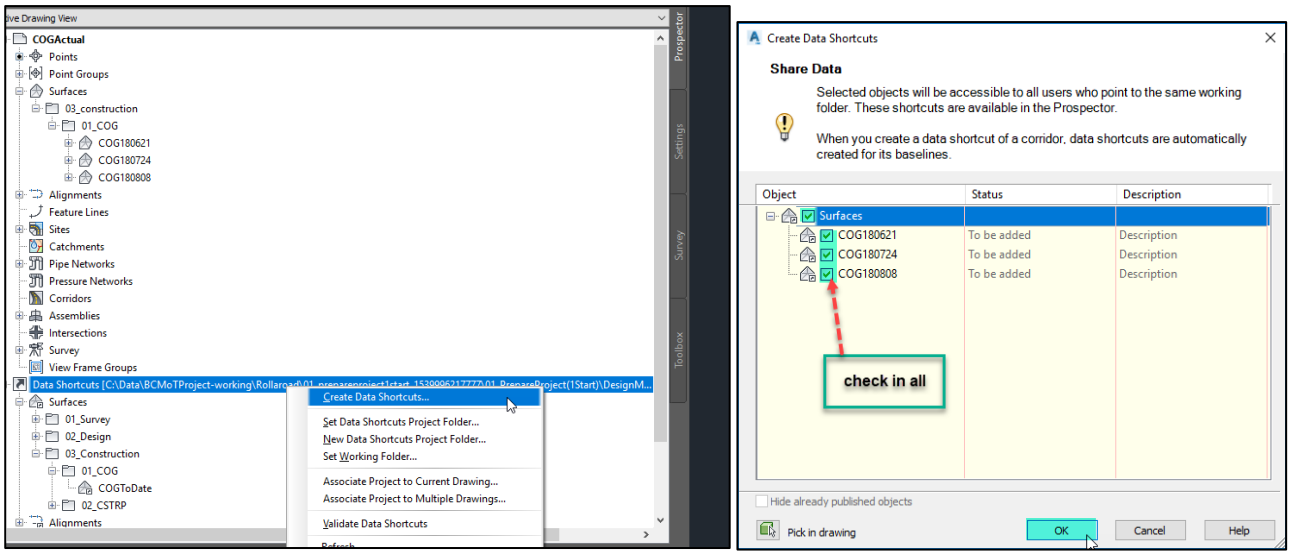




Drag the COG -3 surfaces into the 01_COG Folder.

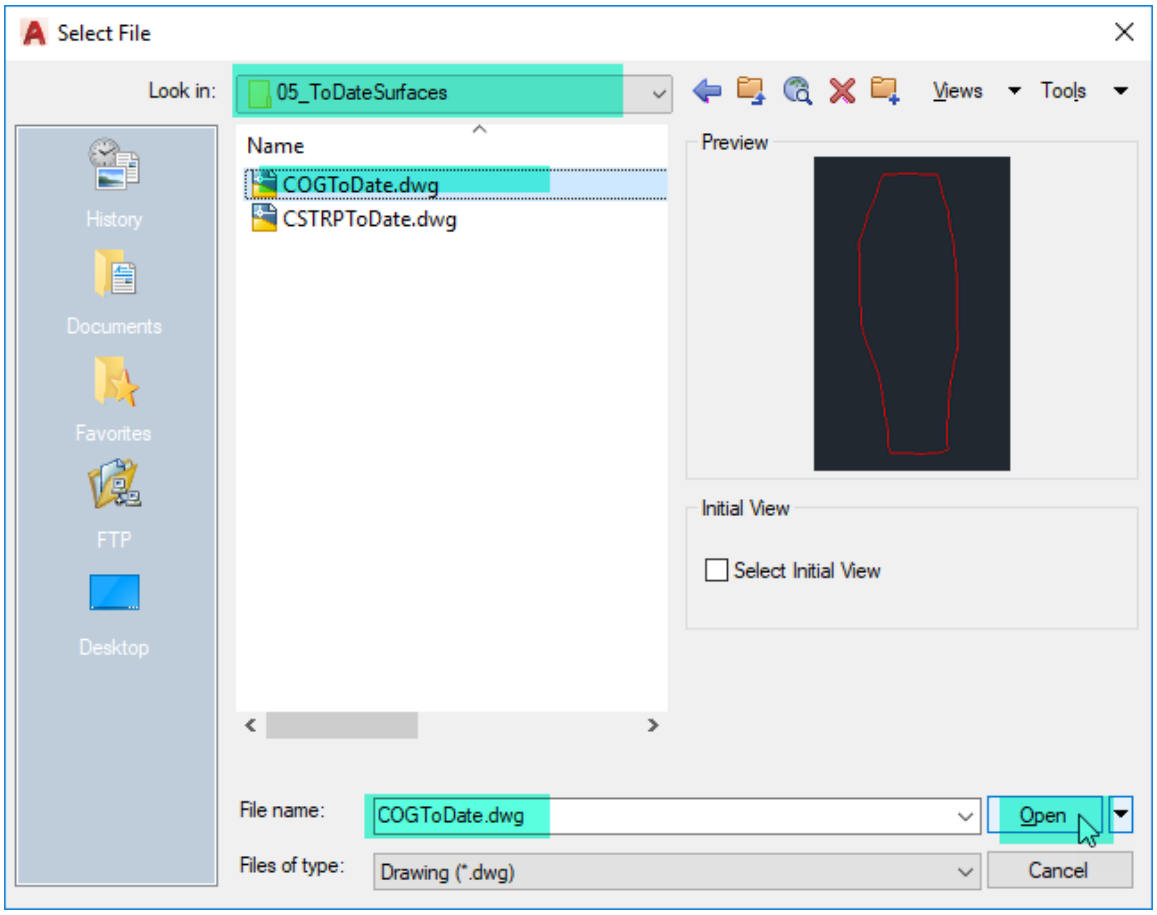


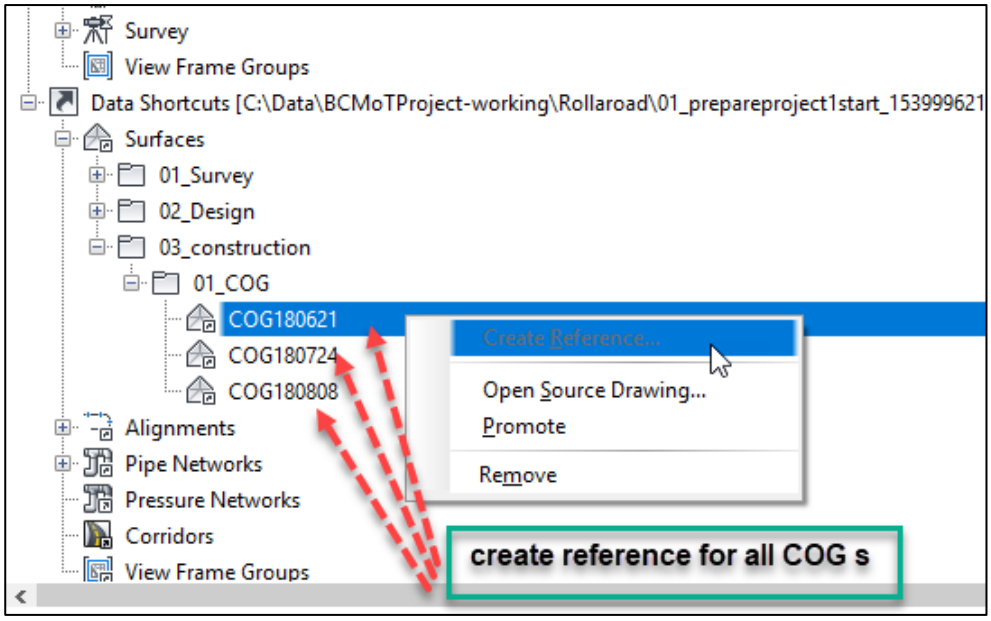
Let’s create the data shortcut.



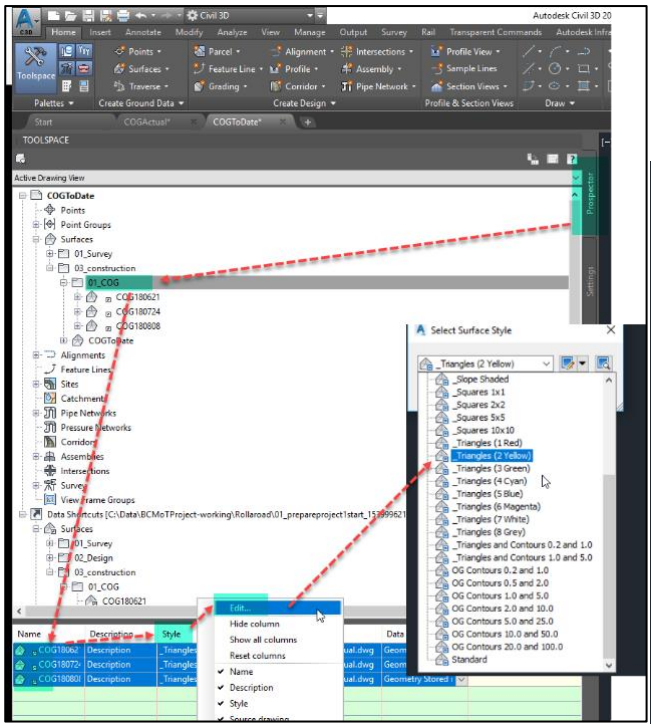
2.12 Update COGToDate Surface (34.10)

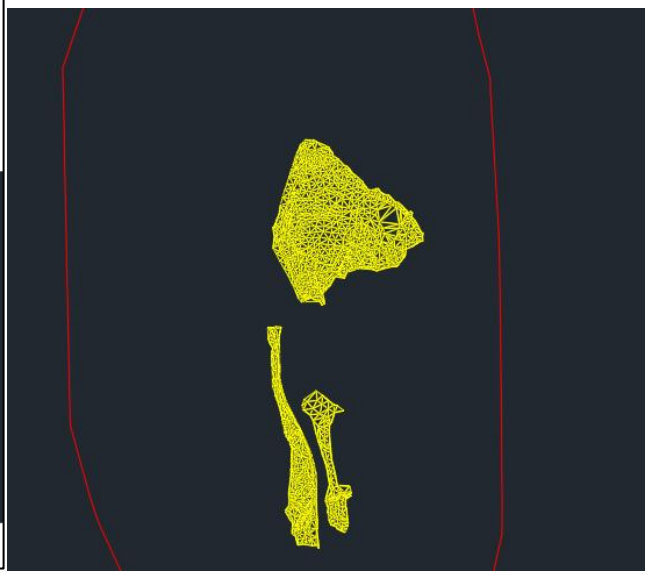
Now we have data shortcut to three surfaces, we can go back to the “COGToDate “drawing and update the surface by pasting in these three new surfaces.



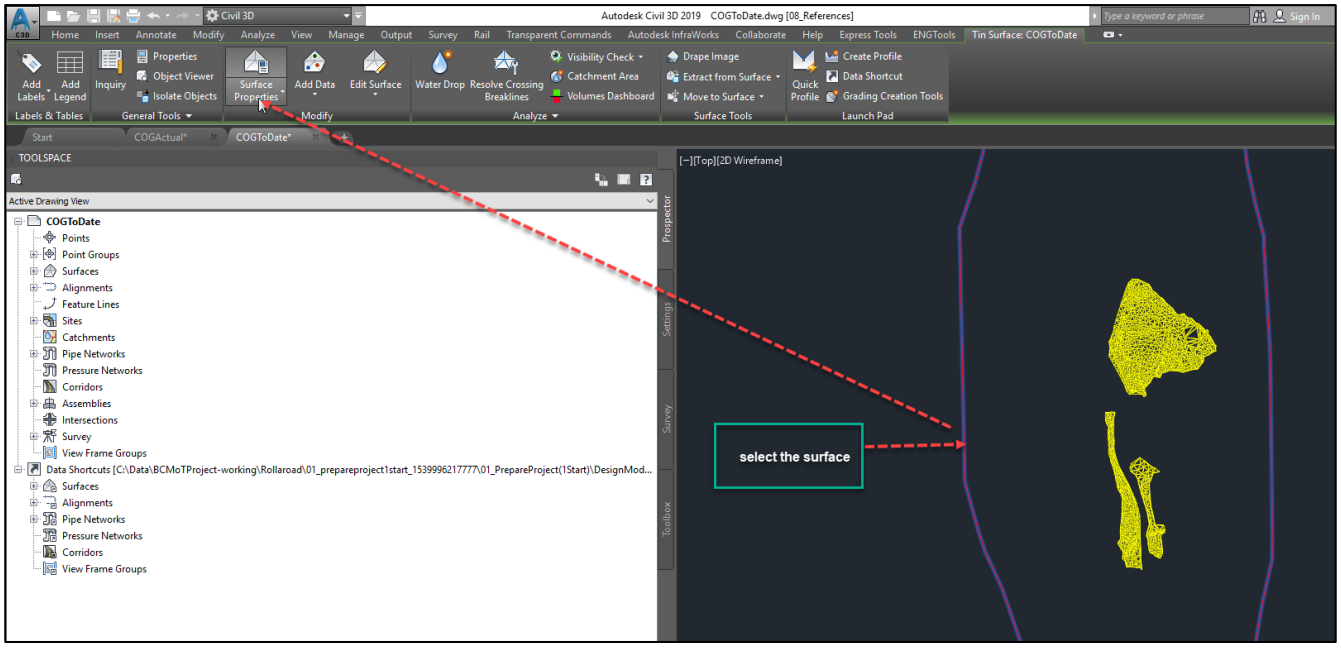


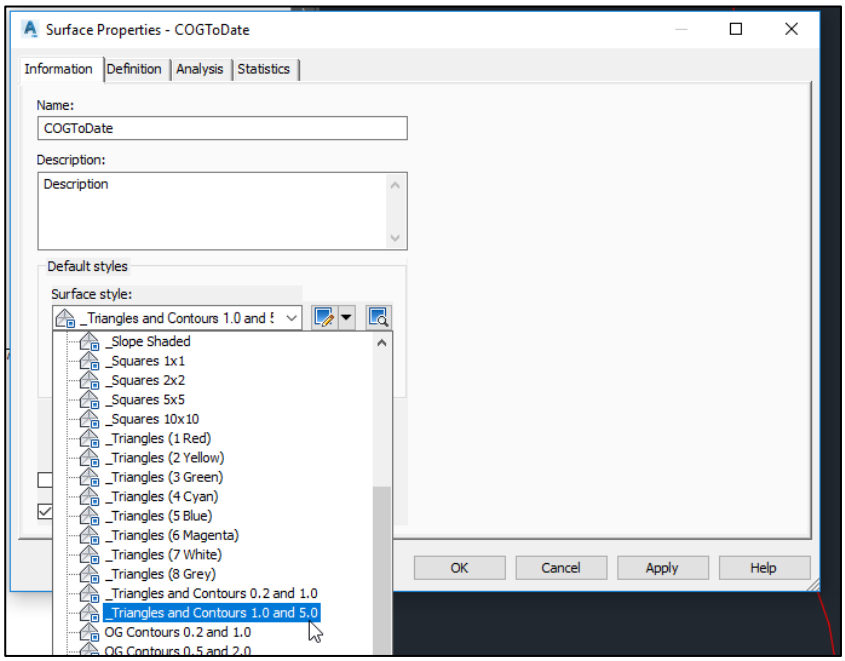
Then modify the properties of the 3 surfaces by selecting all as shown in below.

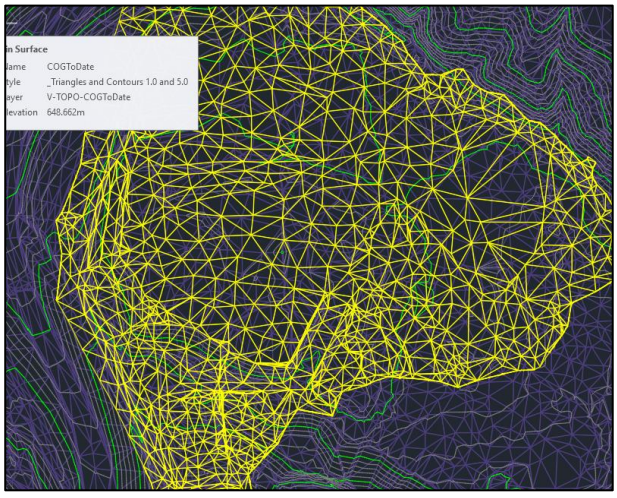




You will see the surfaces as above clearly.


Surface Properties
select the surface

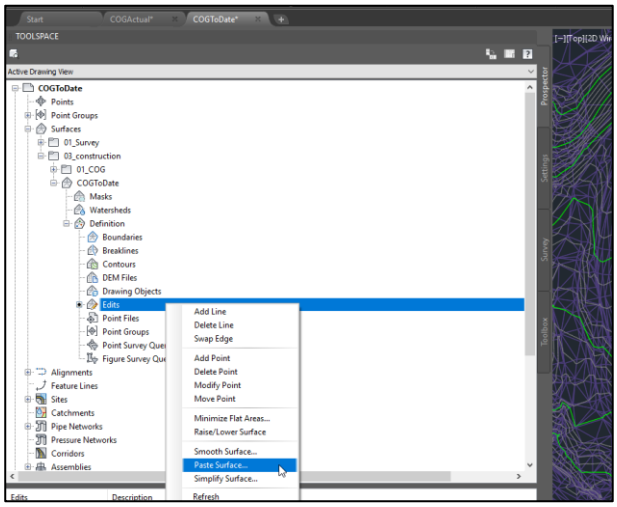

Surface Properties - COGToDate
Information
Definition
Analysis
Statistics
Name:
COGToDate
Description:
Description
Default styles
Surface style:
_Triangles and Contours 1.0 and 5.0
OK
Cancel
Apply
Help



Now we can modify the “COGToDate” as shown in above figure, those are independent surfaces not sharing triangulations.

Modify the “COGToDate”

In addition to paste in the VCOG, we can paste in 3 individual COG surface files.



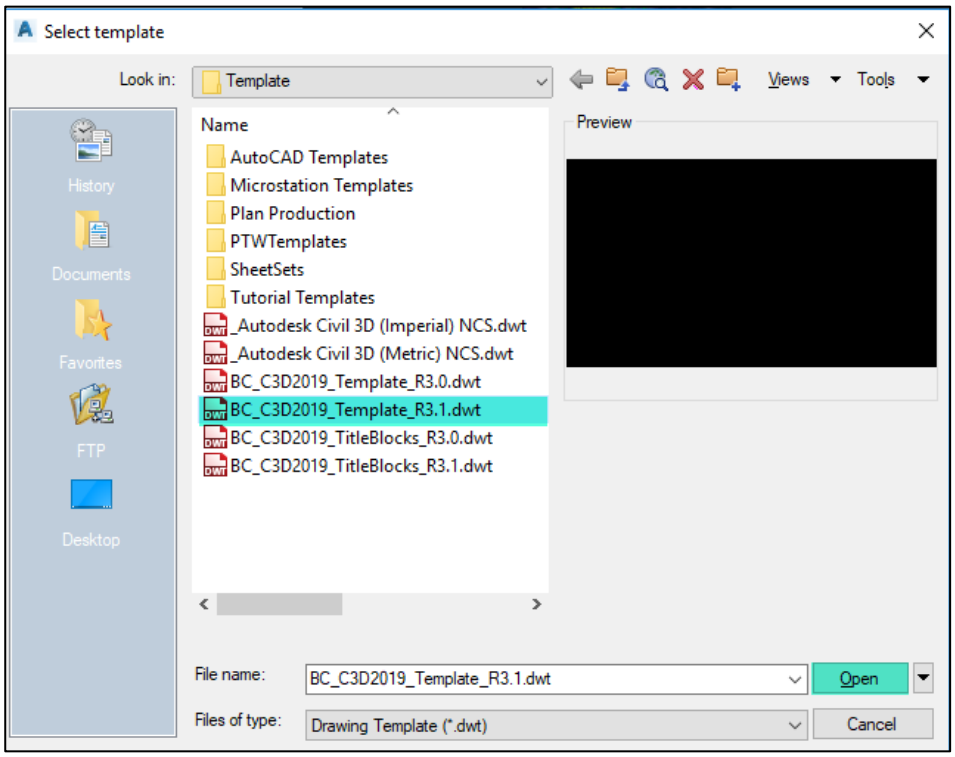
Select the surface one by one and paste it, if you zoom in closely you can see the differences.

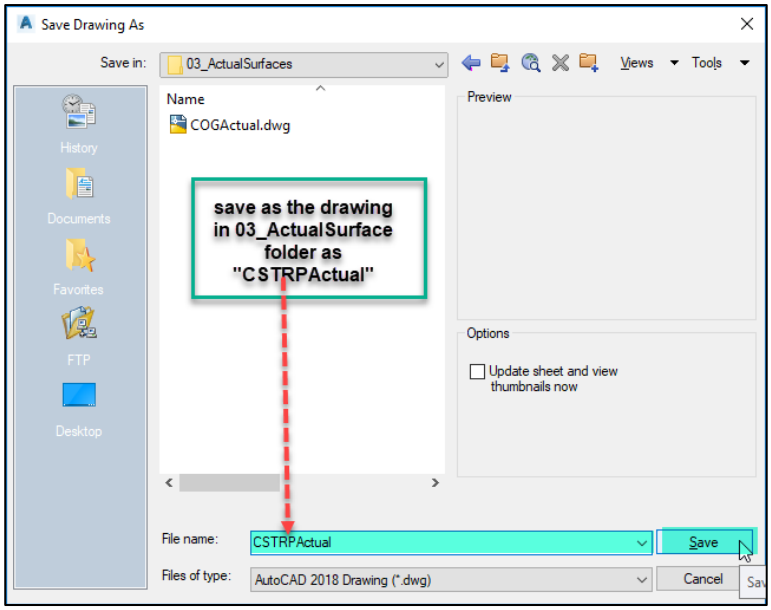
That concludes the exercise where we update the COGToDate drawing.

2.13 Create CSTRPActual Drawing and CSTRP SDB(37.18)

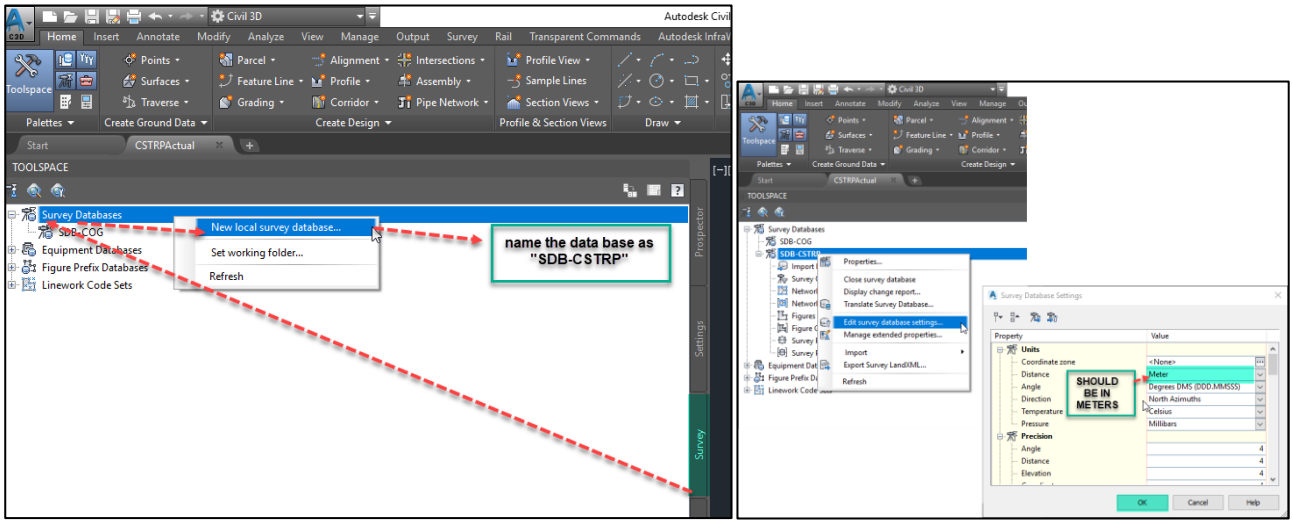
Repeat the same process as OG above for striping data (37.23).

Open a new drawing and select template as shown in below.

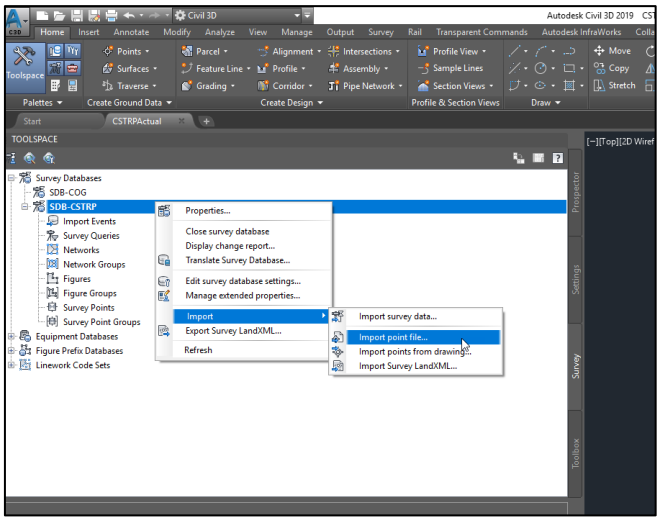




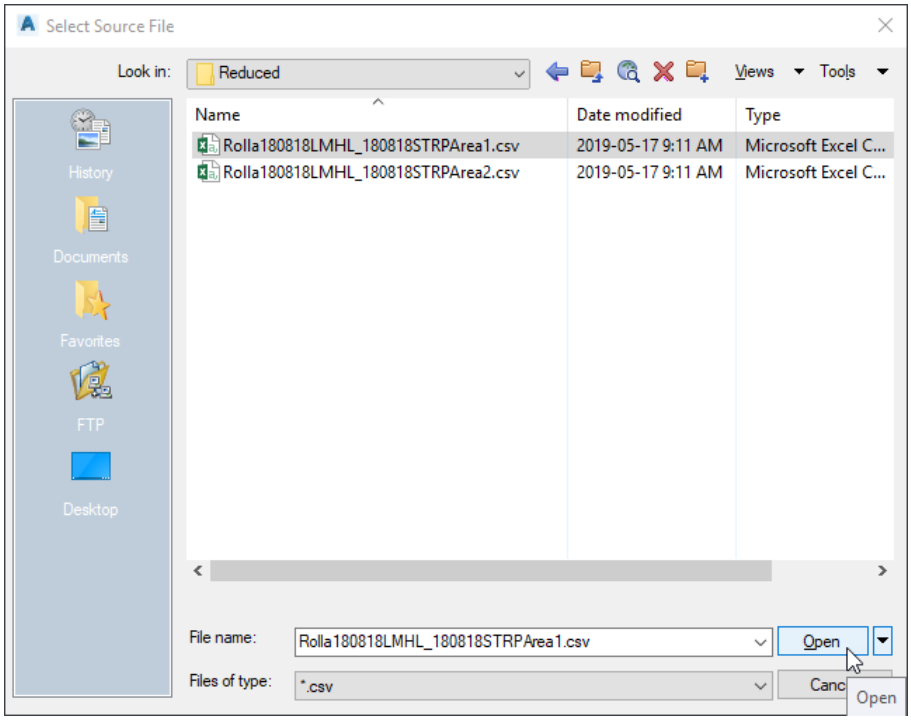
Now need to create the survey data base as follows.

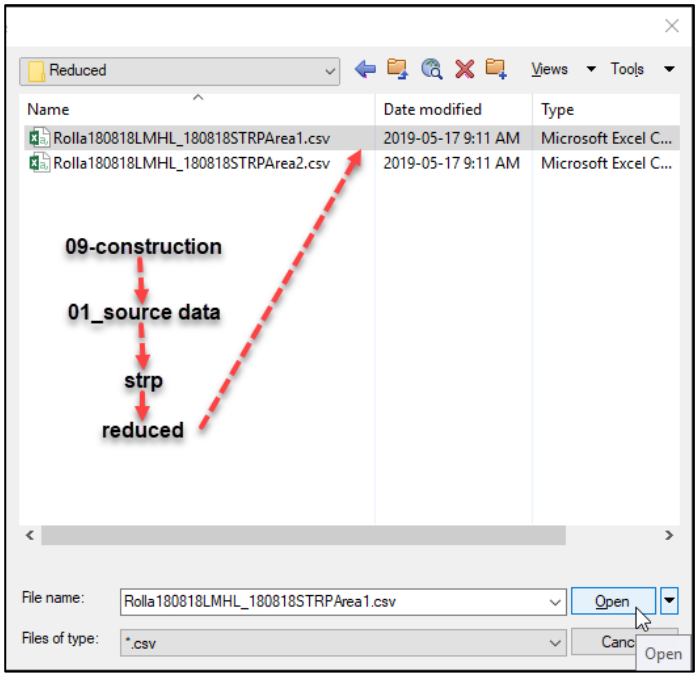


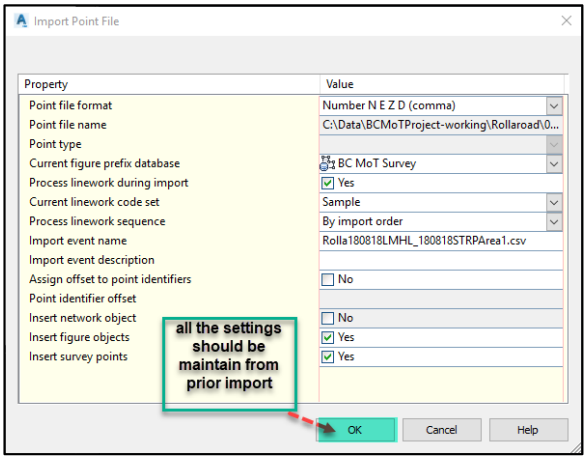
2.14 Import 1st CSTRP Survey Data File (38.21)

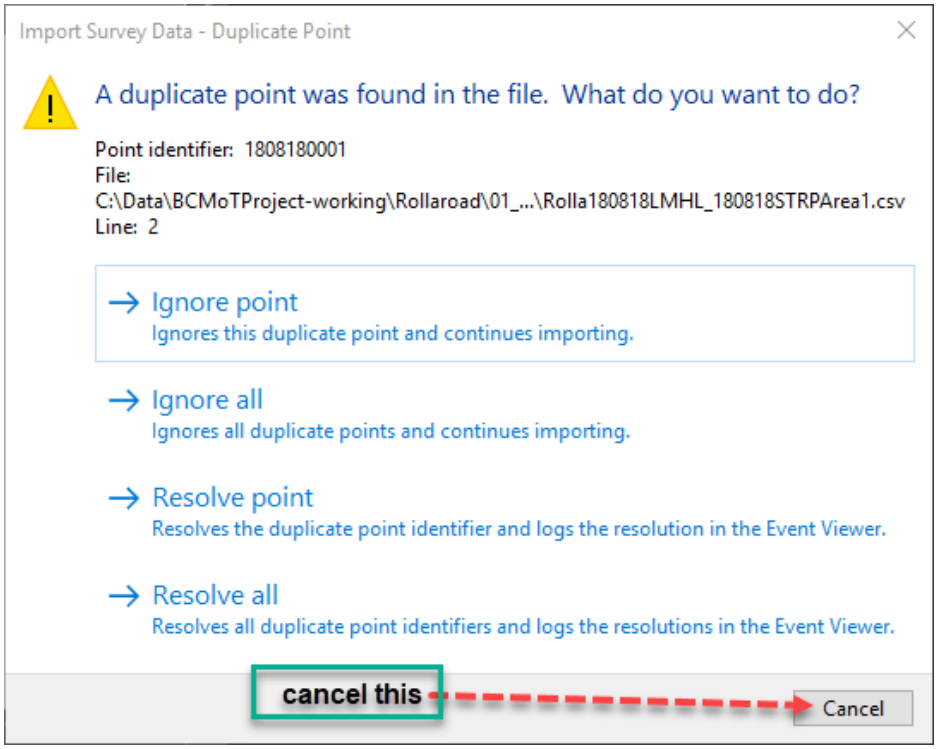


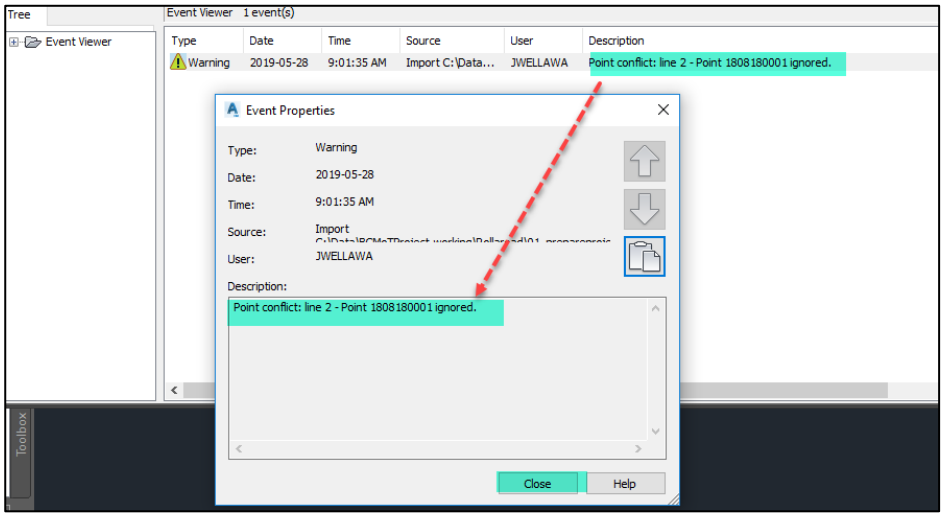
The first step is to import the CSTRP survey data file.


Select Source File
Look in:
Reduced
Views
Tools
History
Documents
Favorites
FTP
Desktop
Name
Date modified
Type
Rolla180818LMHL_180818STRPArea1.csv
2019-05-17 9:11 AM
Microsoft Excel C...
Rolla180818LMHL_180818STRPArea2.csv
2019-05-17 9:11 AM
Microsoft Excel C...
File name:
Rolla180818LMHL_180818STRPArea1.csv
Open
Files of type:
*.csv
Open

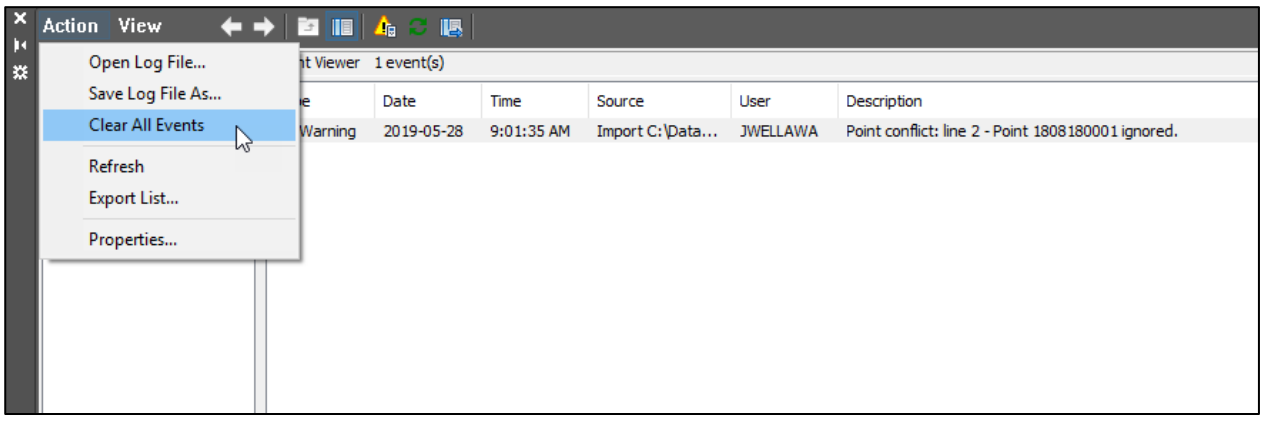

Reduced
Views
Tools
Name
Date modified
Type
Rolla180818LMHL_180818STRPArea1.csv
2019-05-17 9:11 AM
Microsoft Excel C...
Rolla180818LMHL_180818STRPArea2.csv
2019-05-17 9:11 AM
Microsoft Excel C...
09-construction
01_source data
strp
reduced
File name:
Rolla180818LMHL_180818STRPArea1.csv
Open
Files of type:
*.csv
Open

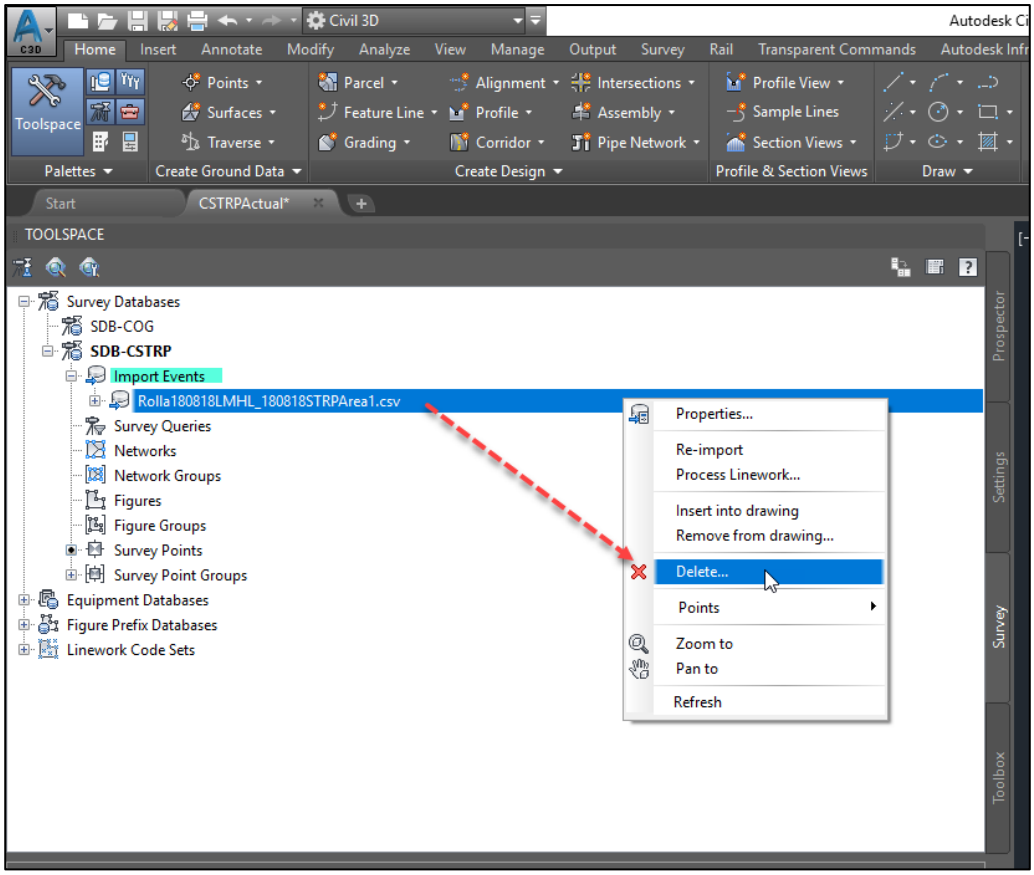

Import Point File
Property
Value
Point file format
Number N E Z D (comma)
Point file name
C:\Data\BCMoTProject-working\Rollaroad\0...
Point type
Current figure prefix database
BC MoT Survey
Process linework during import
Yes
Current linework code set
Sample
Process linework sequence
By import order
Import event name
Rolla180818LMHL_180818STRPArea1.csv
Import event description
Assign offset to point identifiers
No
Point identifier offset
Insert network object
No
Insert figure objects
Yes
Insert survey points
Yes
all the settings should be maintain from prior import
OK
Cancel
Help

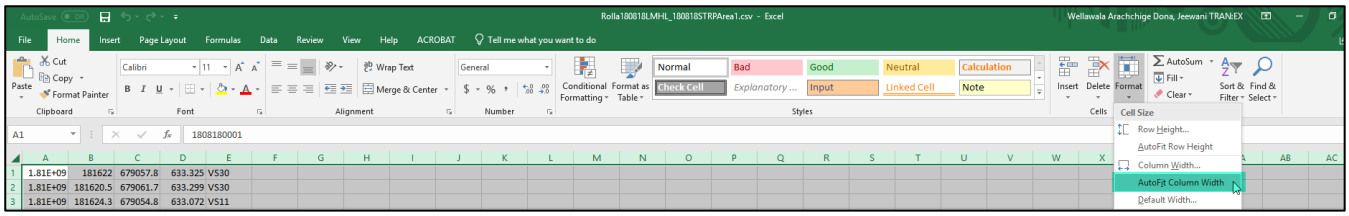


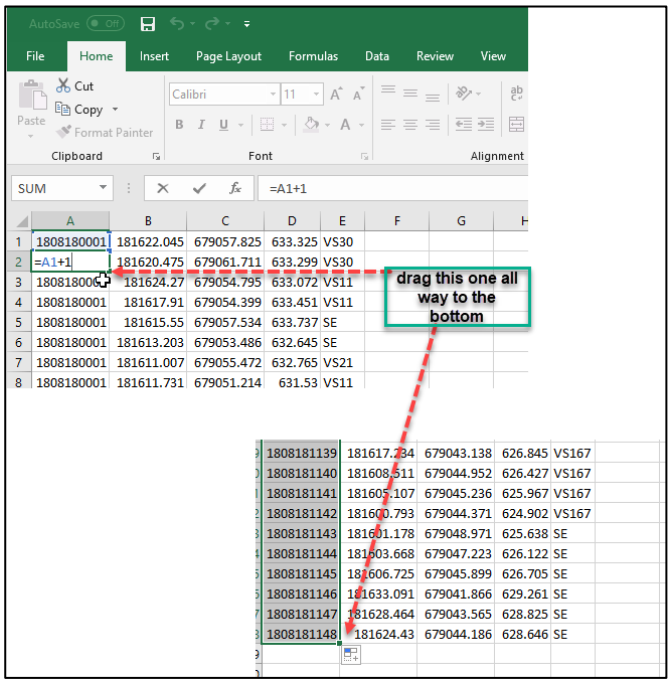


You will get this kind of error and solve as follows,

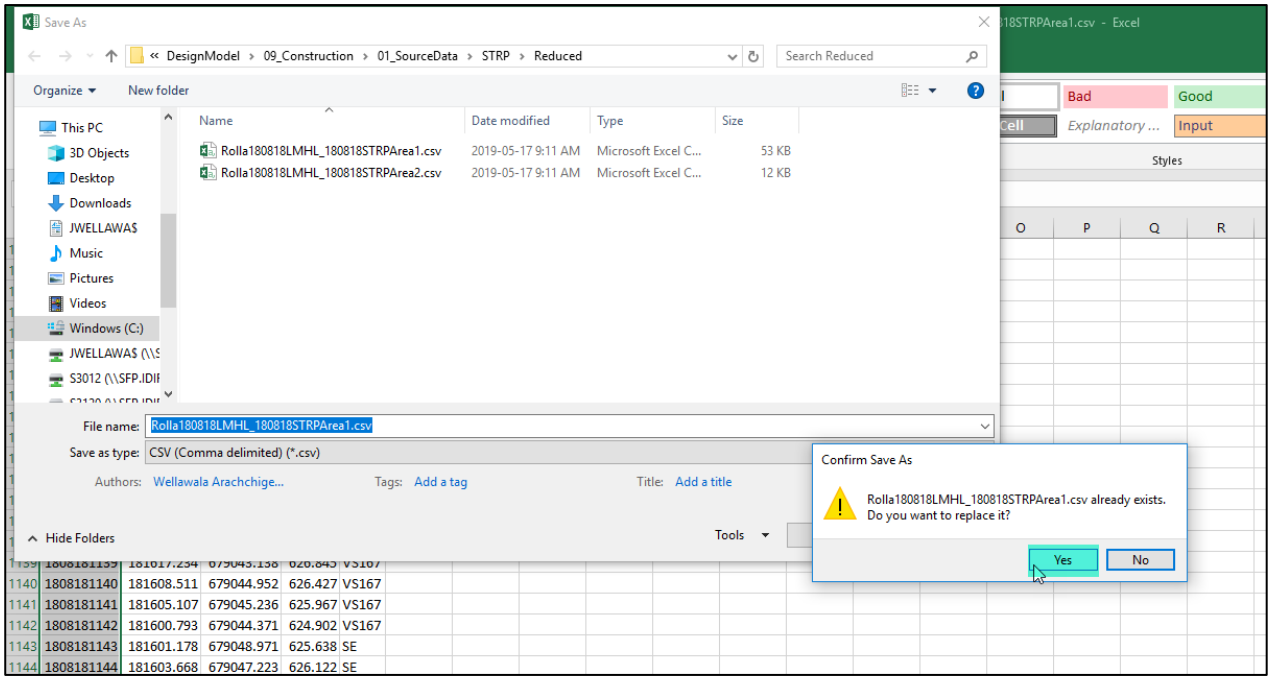




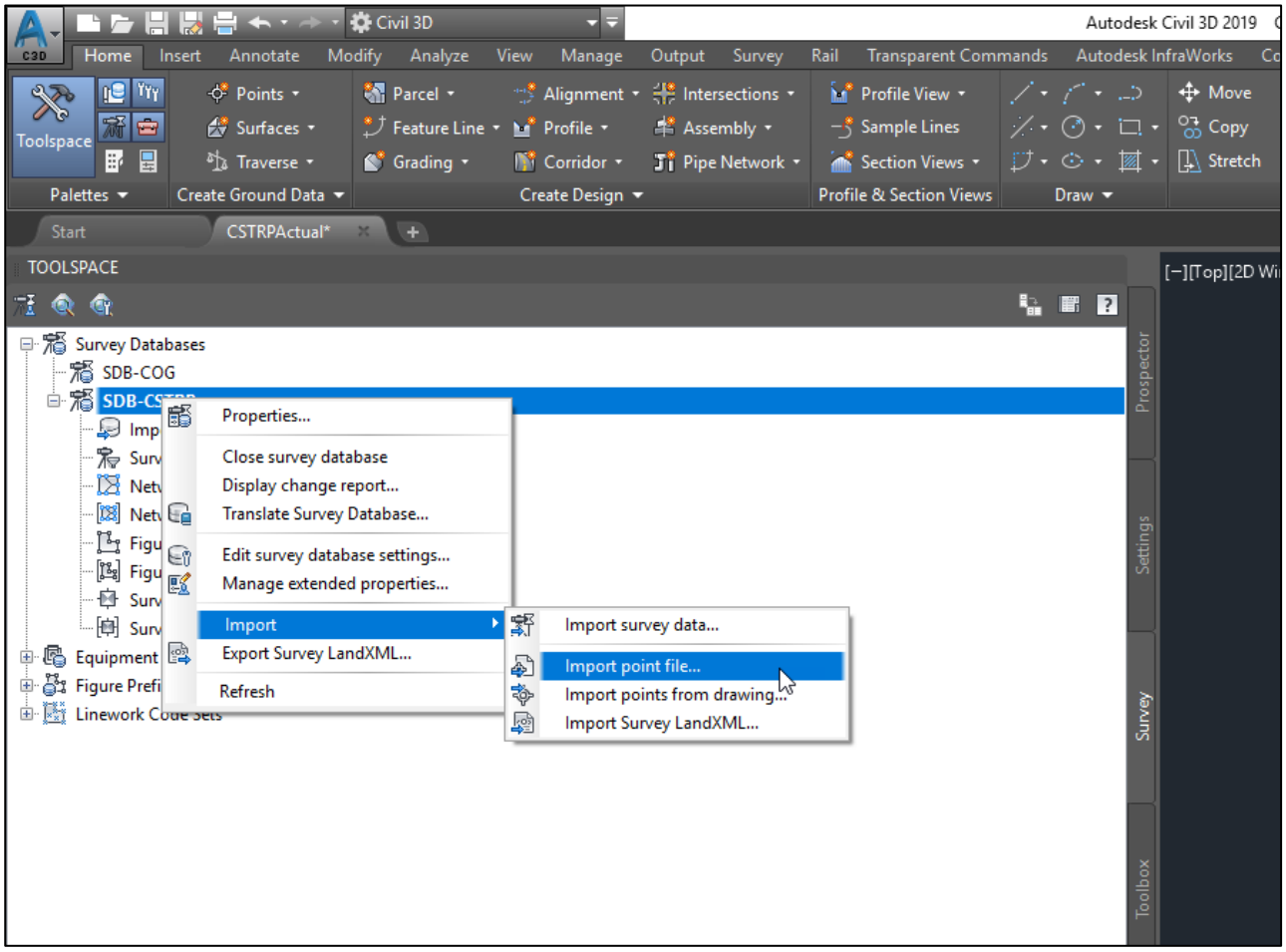




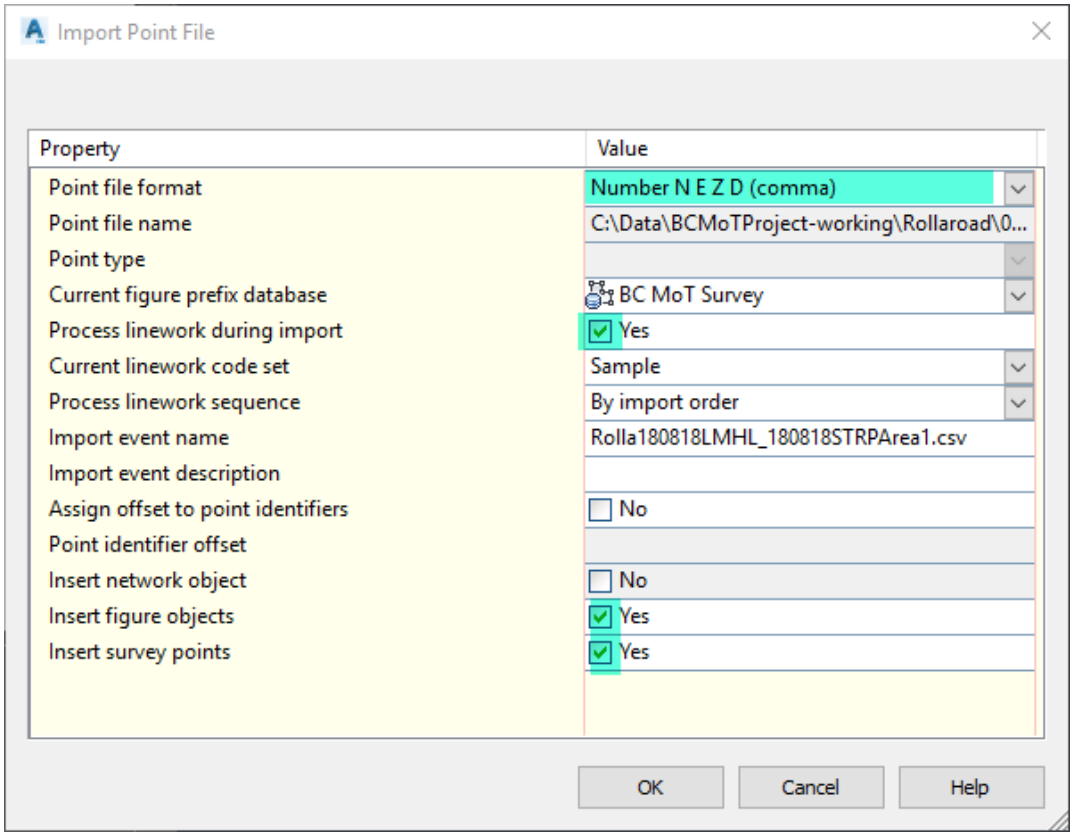
Now close and save the file and replace it as shown in below



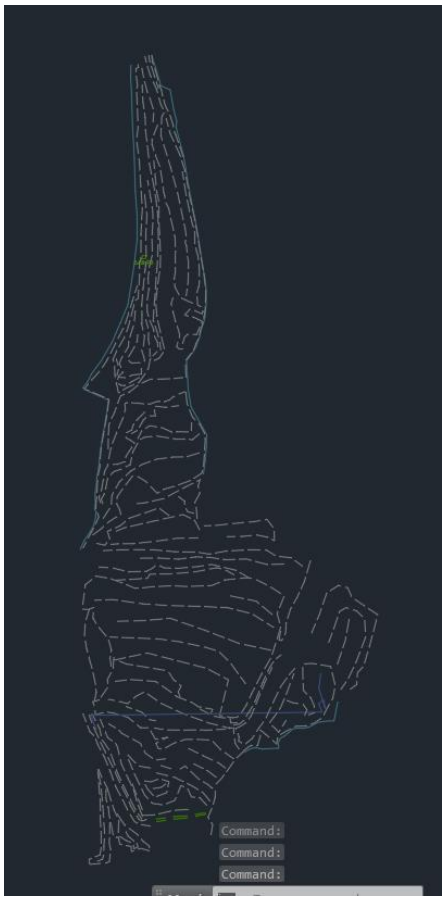
Go back to civil3D.

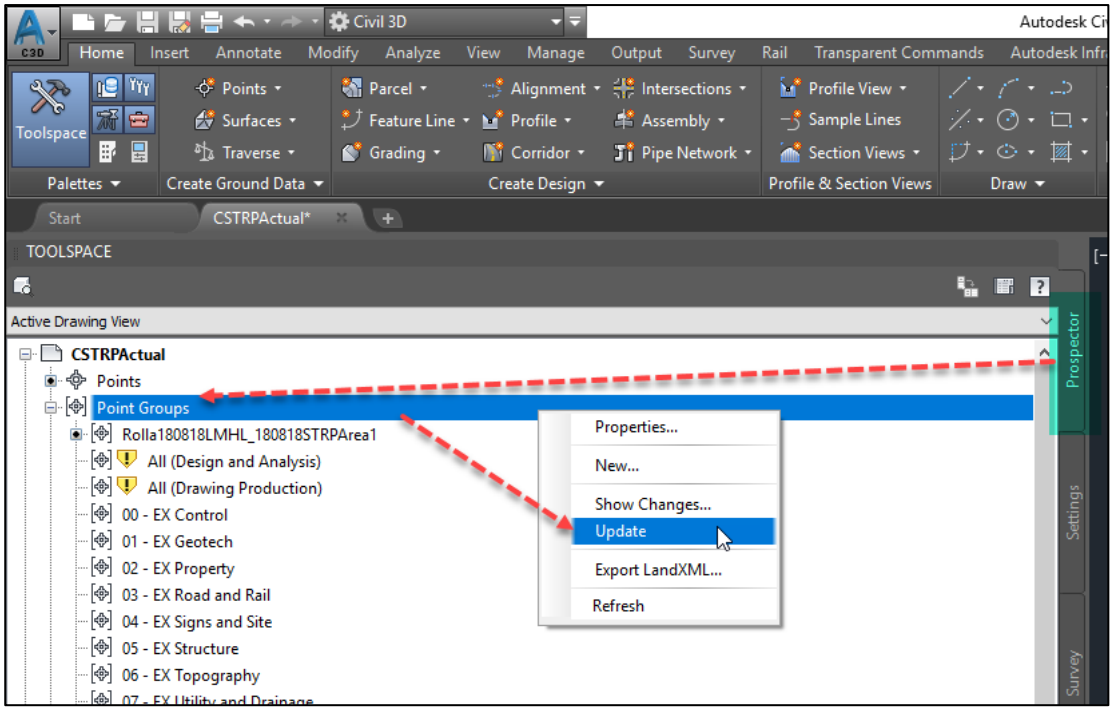


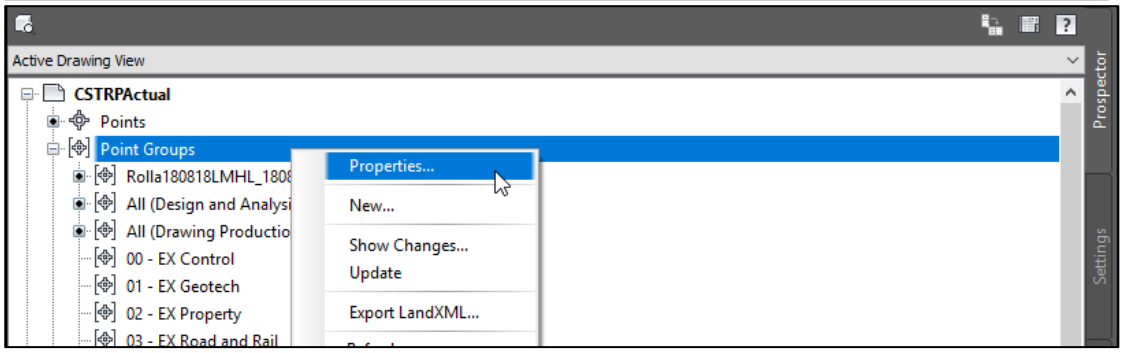
Open up the first point file and check the highlighted values.

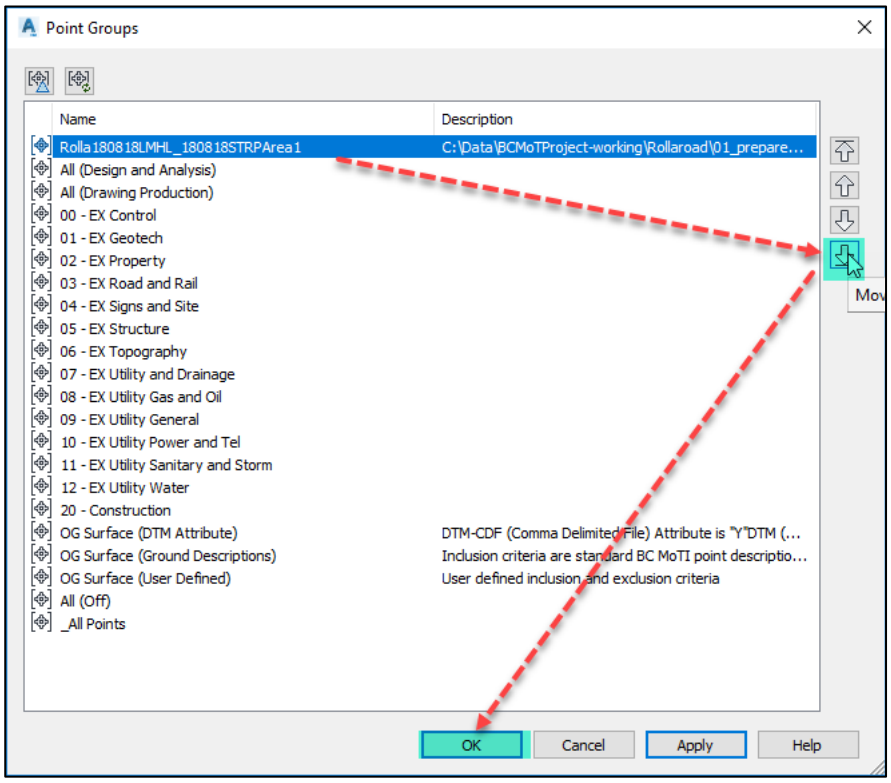


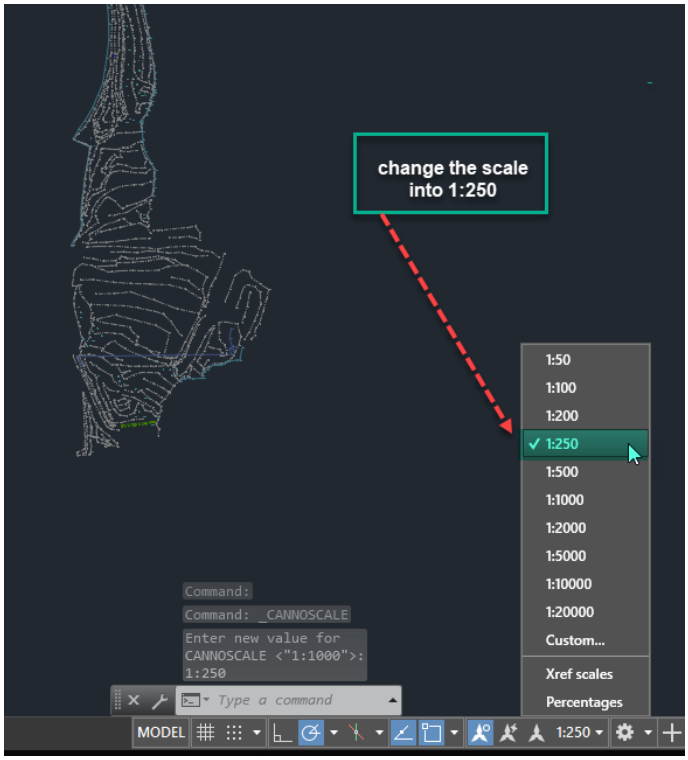
You will get the following survey figures.




Civil 3D
Autodesk Ci
Home
Insert
Annotate
Modify
Analyze
View
Manage
Output
Survey
Rail
Transparent Commands
Autodesk Infr
Toolspace
Points
Surfaces
Traverse
Parcel
Feature Line
Grading
Alignment
Profile
Corridor
Intersections
Assembly
Pipe Network
Profile View
Sample Lines
Section Views
Palettes
Create Ground Data
Create Design
Profile & Section Views
Draw
Start
CSTRPActual*
TOOLSPACE
Active Drawing View
CSTRPActual
Points
Point Groups
Rolla180818LMHL_180818STRPArea1
All (Design and Analysis)
All (Drawing Production)
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
05 - EX Structure
06 - EX Topography
Properties...
New...
Show Changes...
Update
Export LandXML...
Refresh
Prospector
Settings
Survey


Active Drawing View
CSTRPActual
Points
Point Groups
Properties...
New...
Show Changes...
Update
Export LandXML...
Prospector
Settings

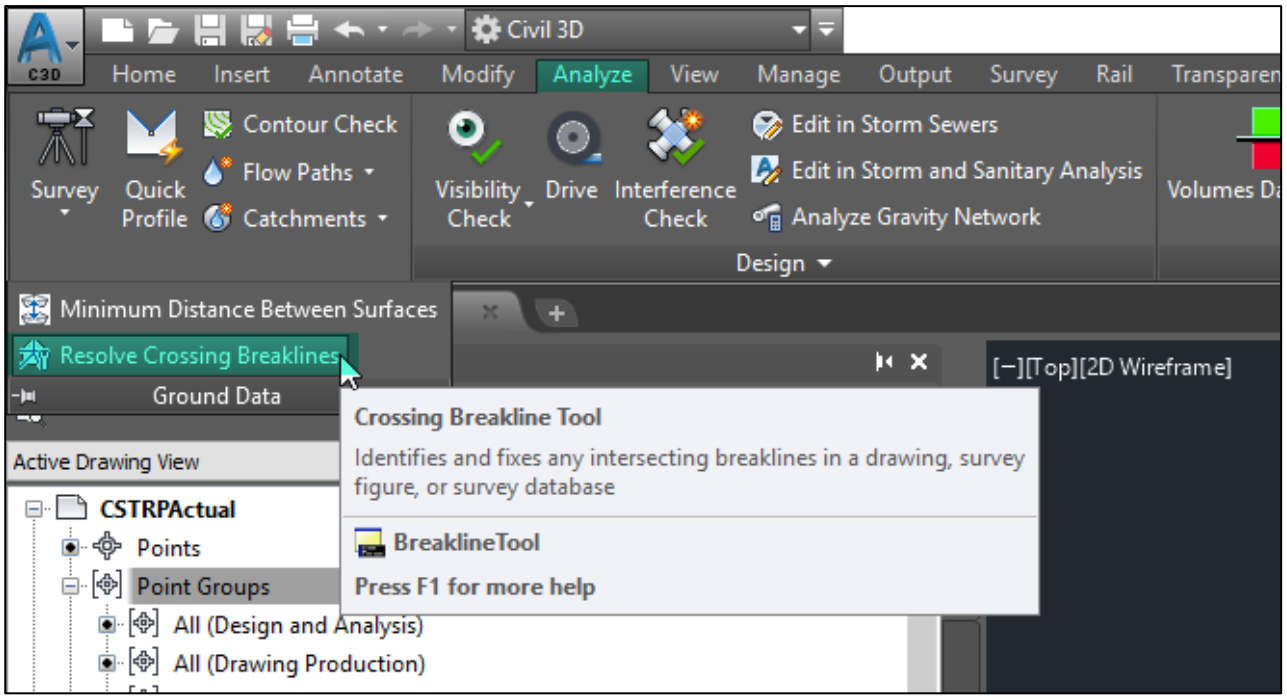

Point Groups
Name
Description
Rolla180818LMHL_180818STRPArea1
C:\Data\BCMoTProject-working\Rollaroad\01_prepare...
All (Design and Analysis)
All (Drawing Production)
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
05 - EX Structure
06 - EX Topography
07 - EX Utility and Drainage
08 - EX Utility Gas and Oil
09 - EX Utility General
10 - EX Utility Power and Tel
11 - EX Utility Sanitary and Storm
12 - EX Utility Water
20 - Construction
OG Surface (DTM Attribute)
DTM-CDF (Comma Delimited File) Attribute is "Y"DTM (...
OG Surface (Ground Descriptions)
Inclusion criteria are standard BC MoTI point descriptio...
OG Surface (User Defined)
User defined inclusion and exclusion criteria
All (Off)
_All Points
OK
Cancel
Apply
Help

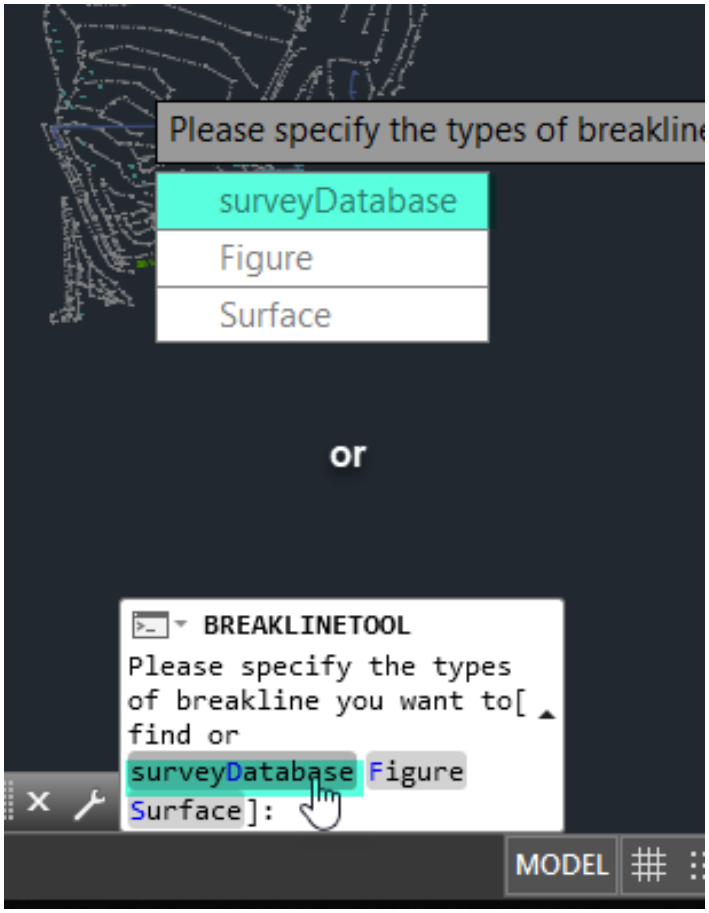


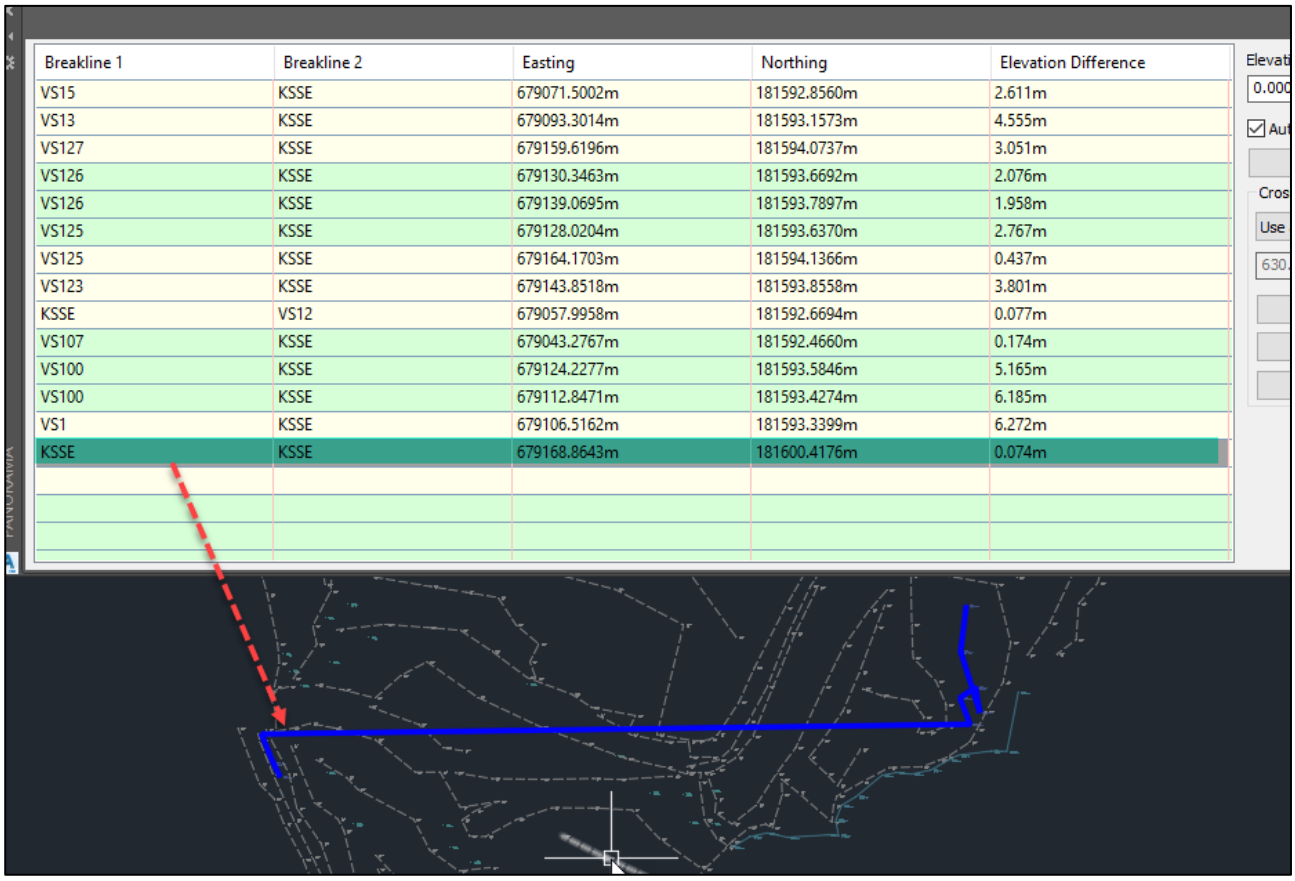
2.15 Resolve Crossing Breaklines(41.32)

Change the annotation scale to the 250.

We use this method just to identify the crossing breaklines.







Breakline 1	Breakline 2	Easting	Northing	Elevation Difference
VS15	KSSE	679071.5002m	181592.8560m	2.611m
VS13	KSSE	679093.3014m	181593.1573m	4.555m
VS127	KSSE	679159.6196m	181594.0737m	3.051m
VS126	KSSE	679130.3463m	181593.6692m	2.076m
VS126	KSSE	679139.0695m	181593.7897m	1.958m
VS125	KSSE	679128.0204m	181593.6370m	2.767m
VS125	KSSE	679164.1703m	181594.1366m	0.437m
VS123	KSSE	679143.8518m	181593.8558m	3.801m
KSSE	VS12	679057.9958m	181592.6694m	0.077m
VS107	KSSE	679043.2767m	181592.4660m	0.174m
VS100	KSSE	679124.2277m	181593.5846m	5.165m
VS100	KSSE	679112.8471m	181593.4274m	6.185m
VS1	KSSE	679106.5162m	181593.3399m	6.272m
KSSE	KSSE	679168.8643m	181600.4176m	0.074m

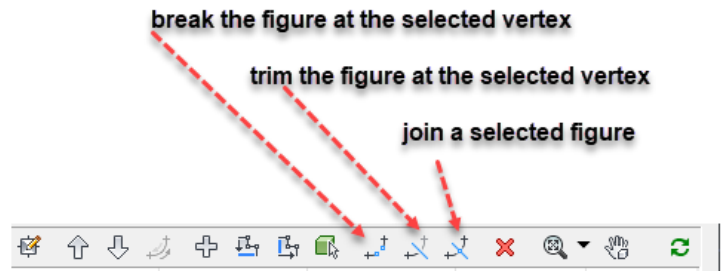
2.16 Edit Survey figure (42.19)

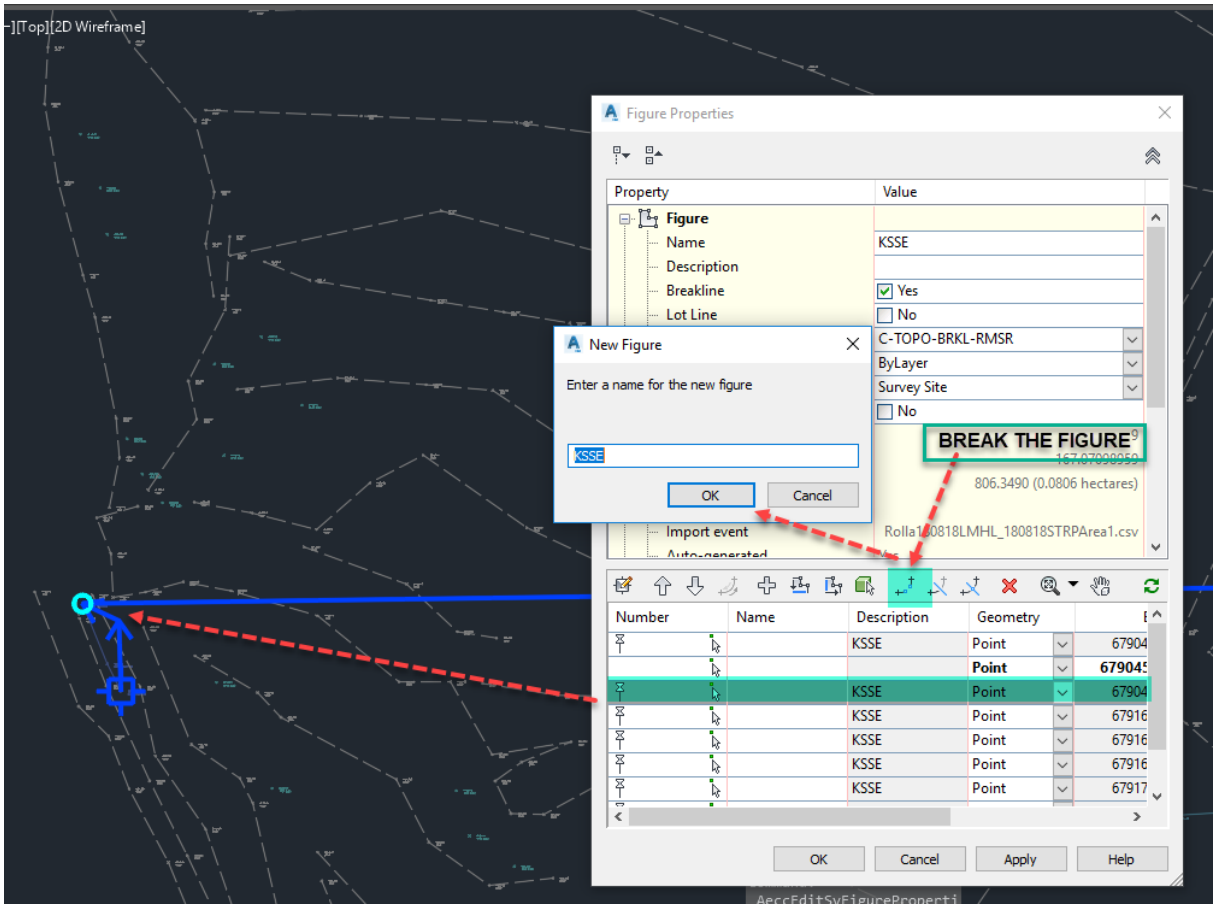
In this case no need to reimport the survey figure, need to edit the survey figure, (FURTHER CLARIFICATION WATCH THE VIDEO 2 AT 42.54).

1.Break the survey figure

2.Delete the segment

3.Clean up





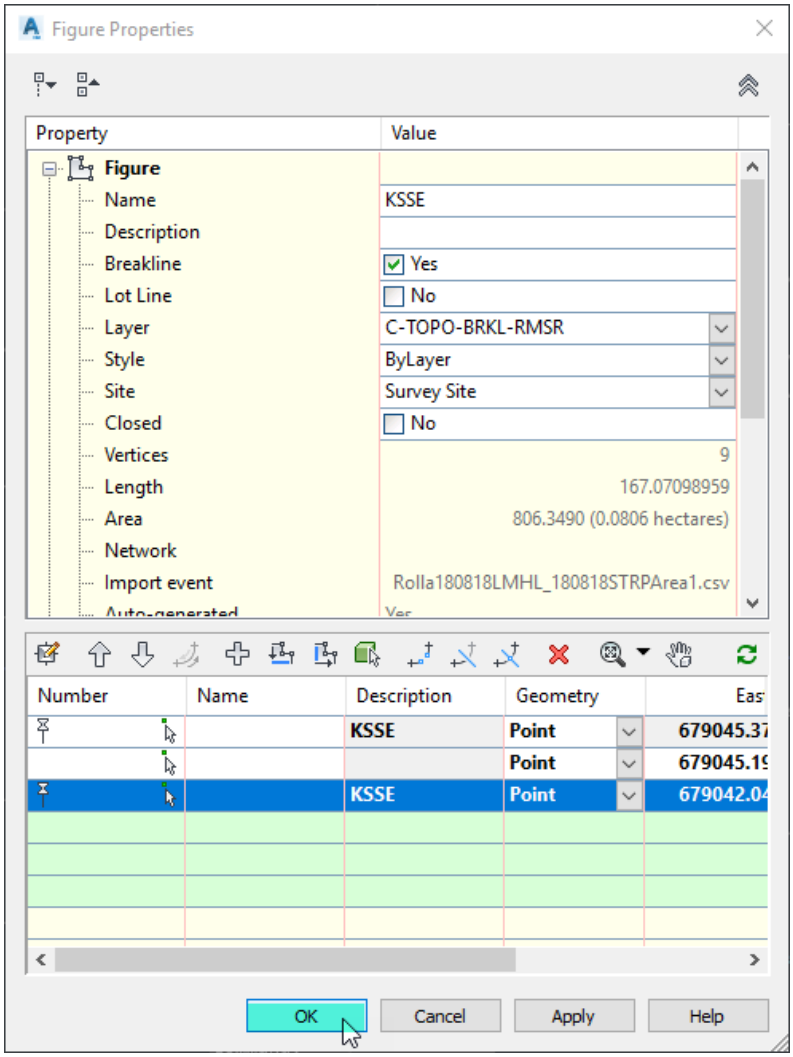
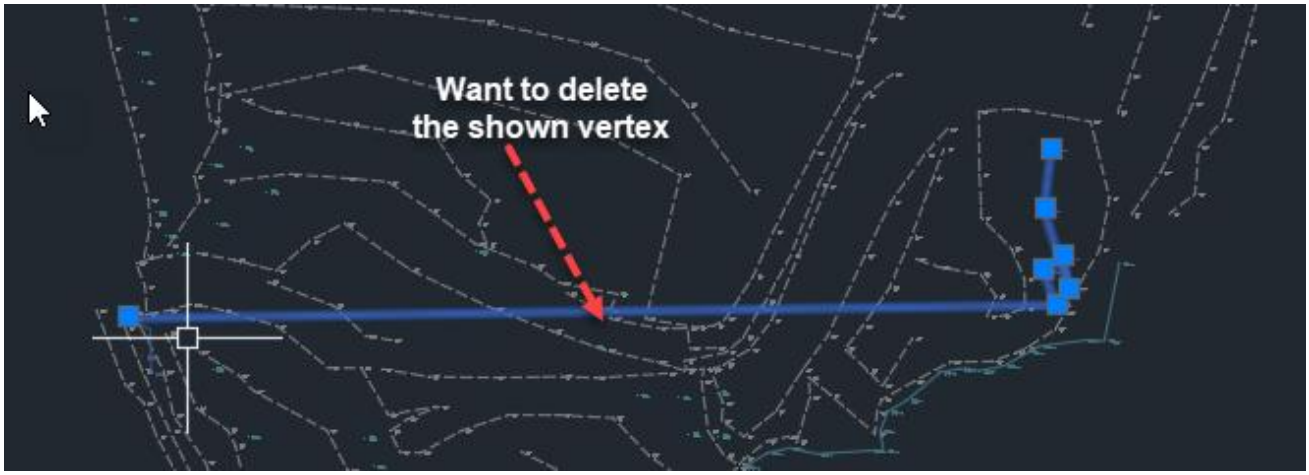
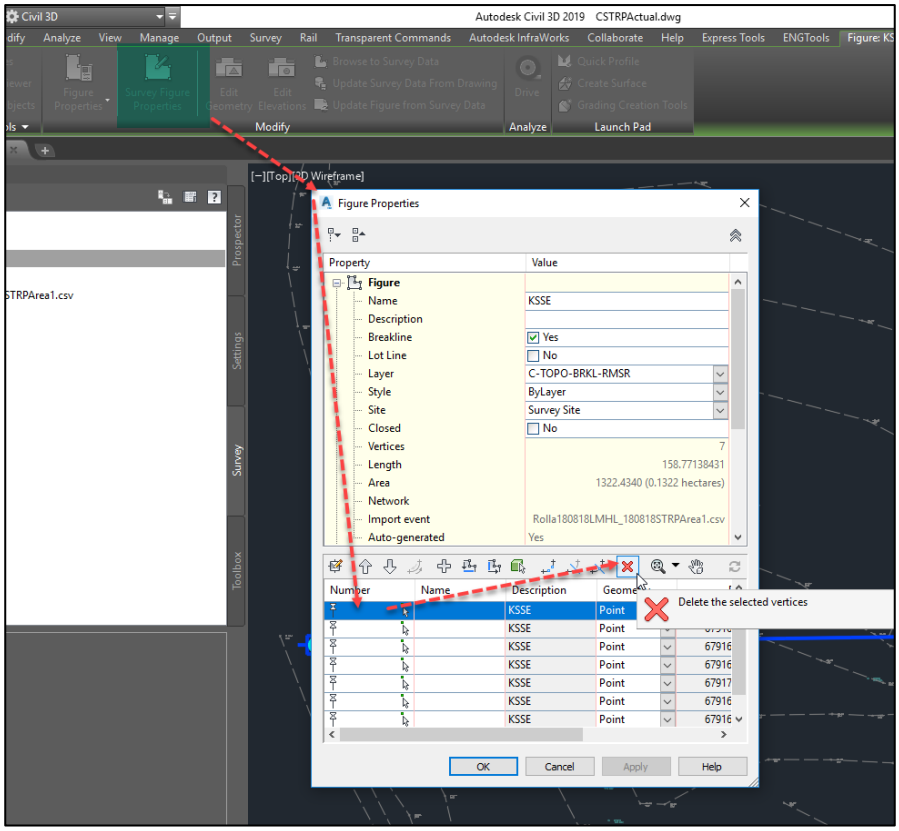
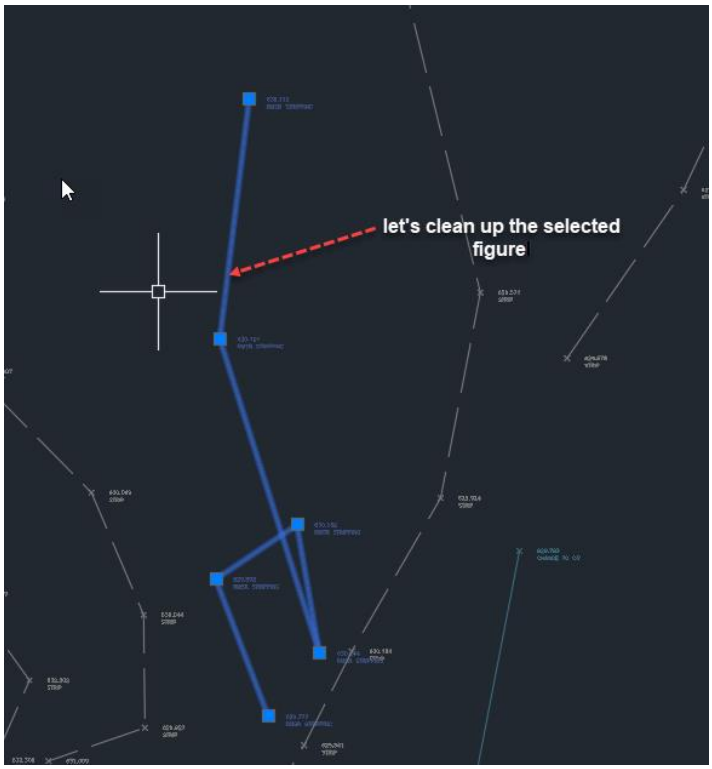
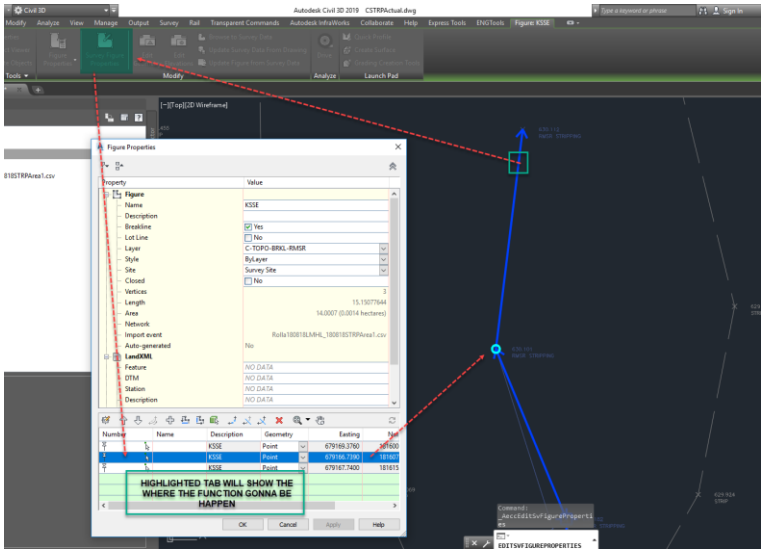


Figure Properties
Property
Value
Figure
Name
KSSE
Description
Breakline
Yes
Lot Line
No
Layer
C-TOPO-BRKL-RMSR
Style
ByLayer
Site
Survey Site
Closed
No
Vertices
9
Length
167.07098959
Area
806.3490 (0.0806 hectares)
Network
Import event
Rolla180818LMHL_180818STRPArea1.csv
Number
Name
Description
Geometry
KSSE
Point
679045.37
Point
679045.19
KSSE
Point
679042.04
OK
Cancel
Apply
Help

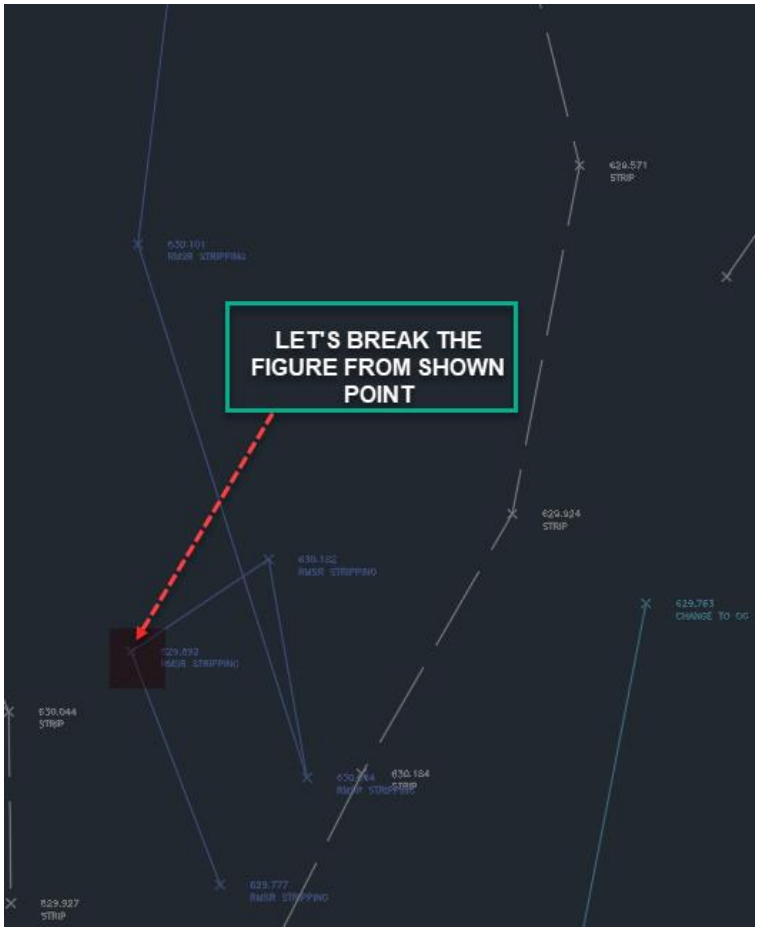

Want to delete
the shown vertex


Civil 3D
Autodesk Civil 3D 2019 CSTRPActual.dwg
Figure Properties
Property
Value
Figure
Name
KSSE
Description
Breakline
Yes
Lot Line
No
Layer
C-TOPO-BRKL-RMSR
Style
ByLayer
Site
Survey Site
Closed
No
Vertices
7
Length
158.77138431
Area
1322.4340 (0.1322 hectares)
Network
Import event
Rolla180818LMHL_180818STRPArea1.csv
Auto-generated
Yes
Number
Name
Description
Geometry
Point
Delete the selected vertices
OK
Cancel
Apply
Help


let's clean up the selected figure



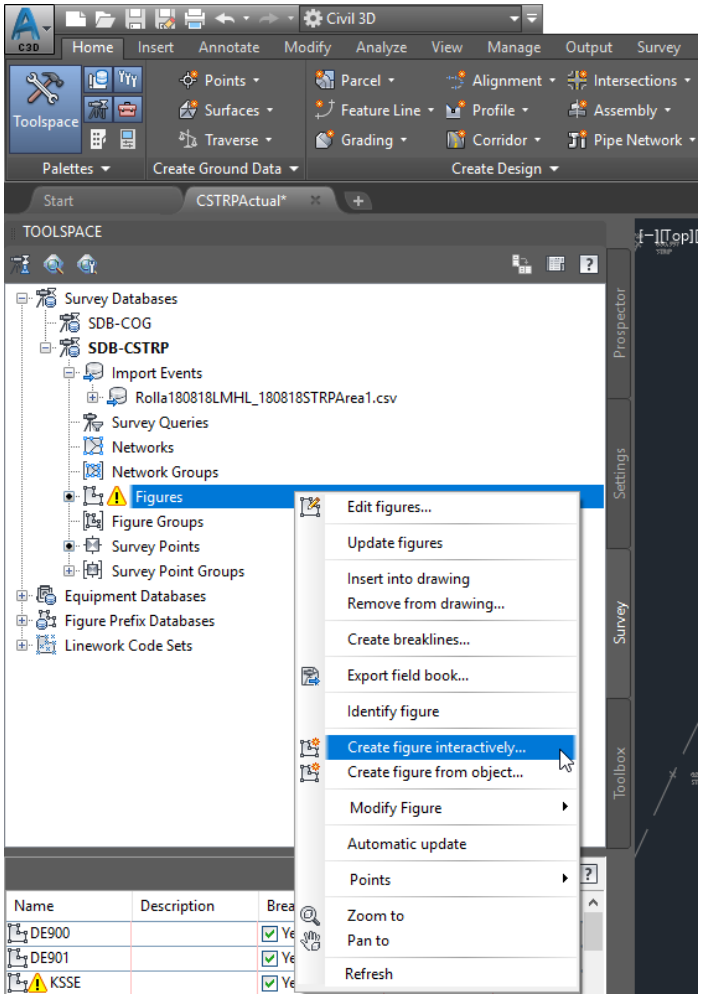
KEEP IN YOUR MIND: IN HERE YOU CAN'T USE "UNDO" COMMAND BECAUSE UNDO COMMAND DOES NOT MAKE CHANGES TO THE SURVEY DATABASE.



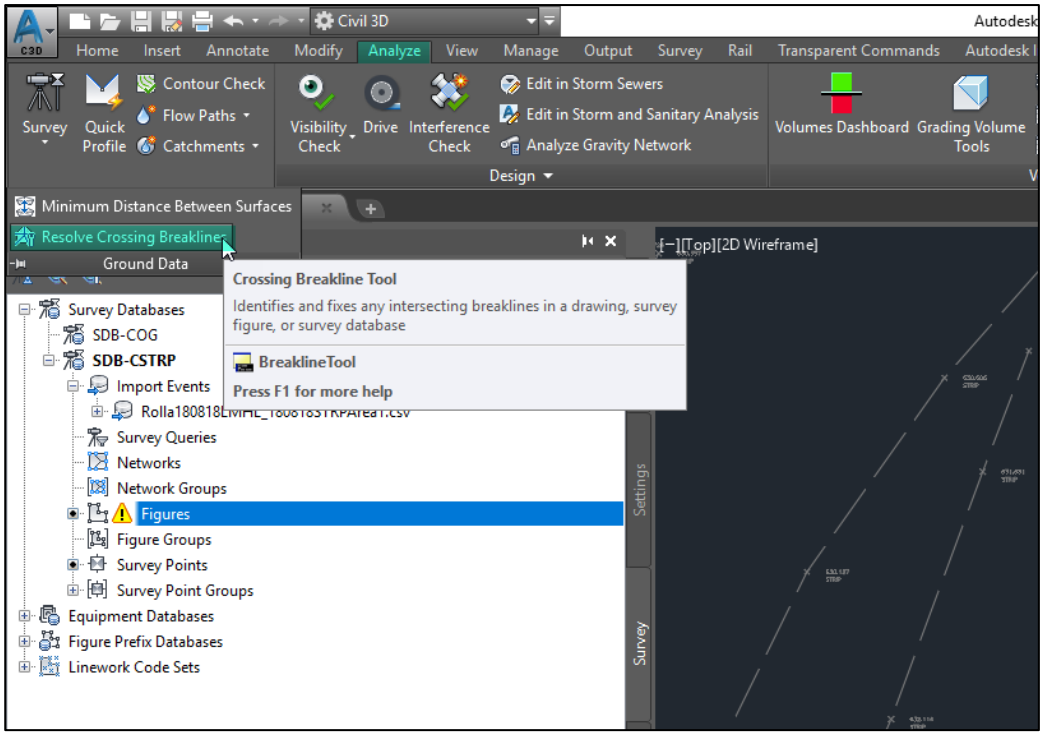
Make sure or do your best to ensure your survey figures are corrected in data source file, failing that use survey figure properties command to edit survey figures.

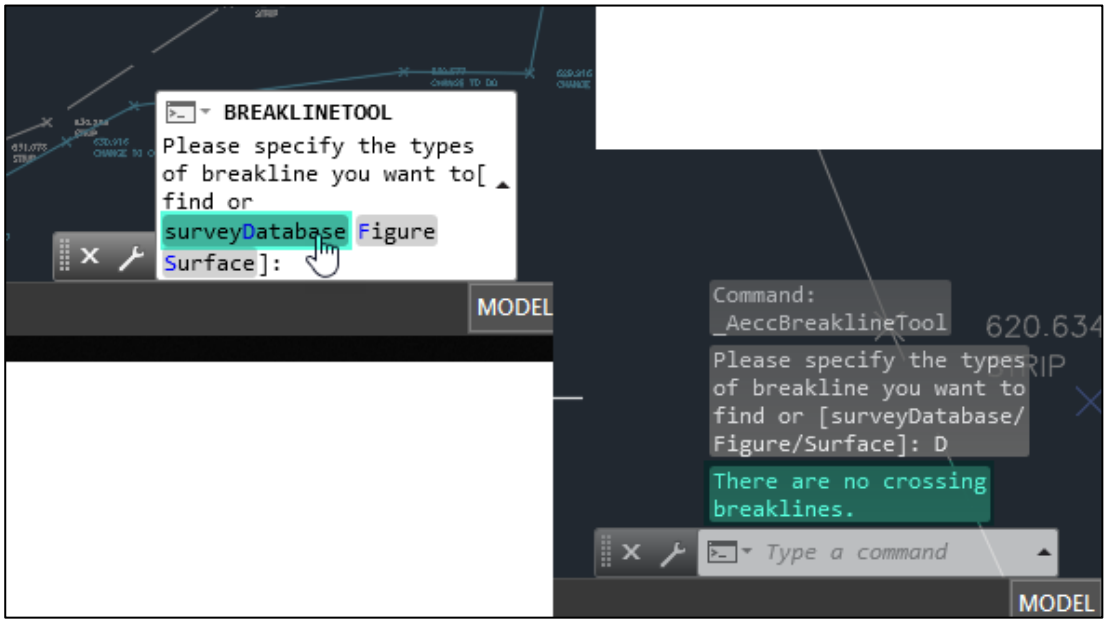
Option 2:

You can also create a new survey figure using a “create interactively” command, this will allow you to pick points to create survey figure.



Let’s go back to the analyse tab of the ribbon and expand the ground data – “Resolve Crossing Breaklines”.



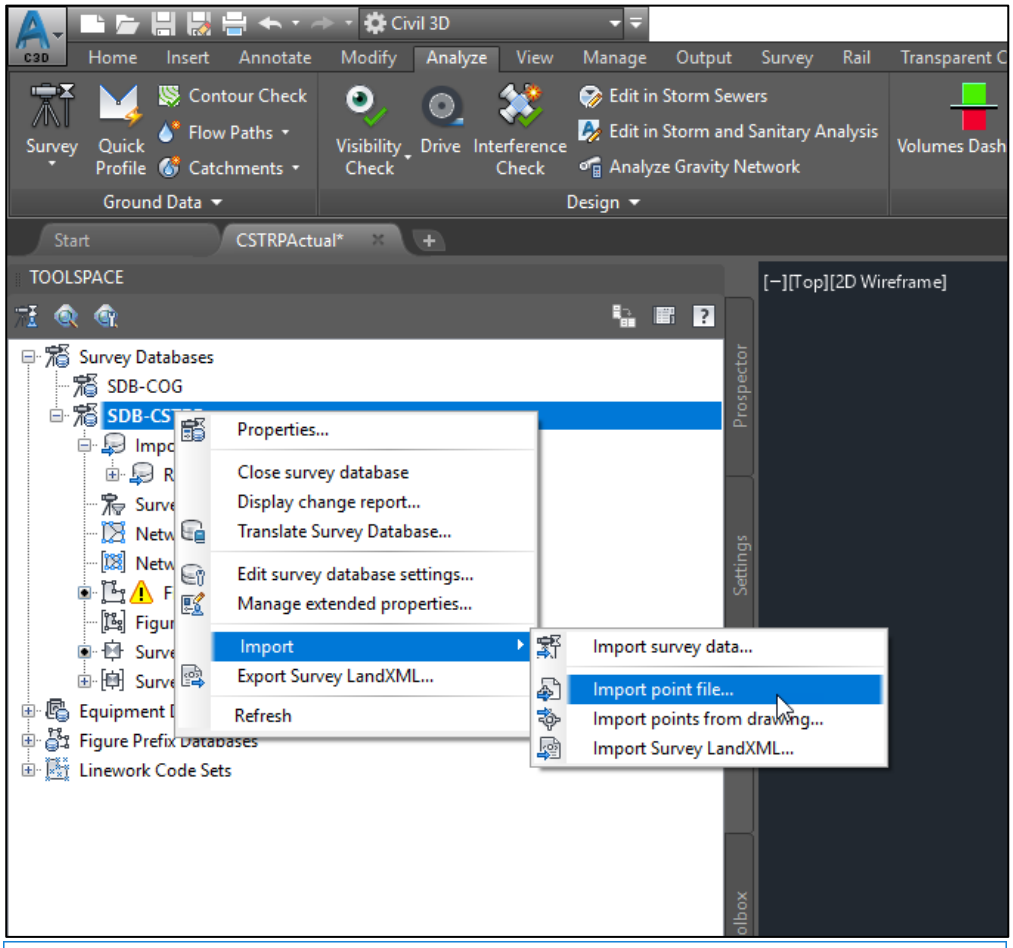


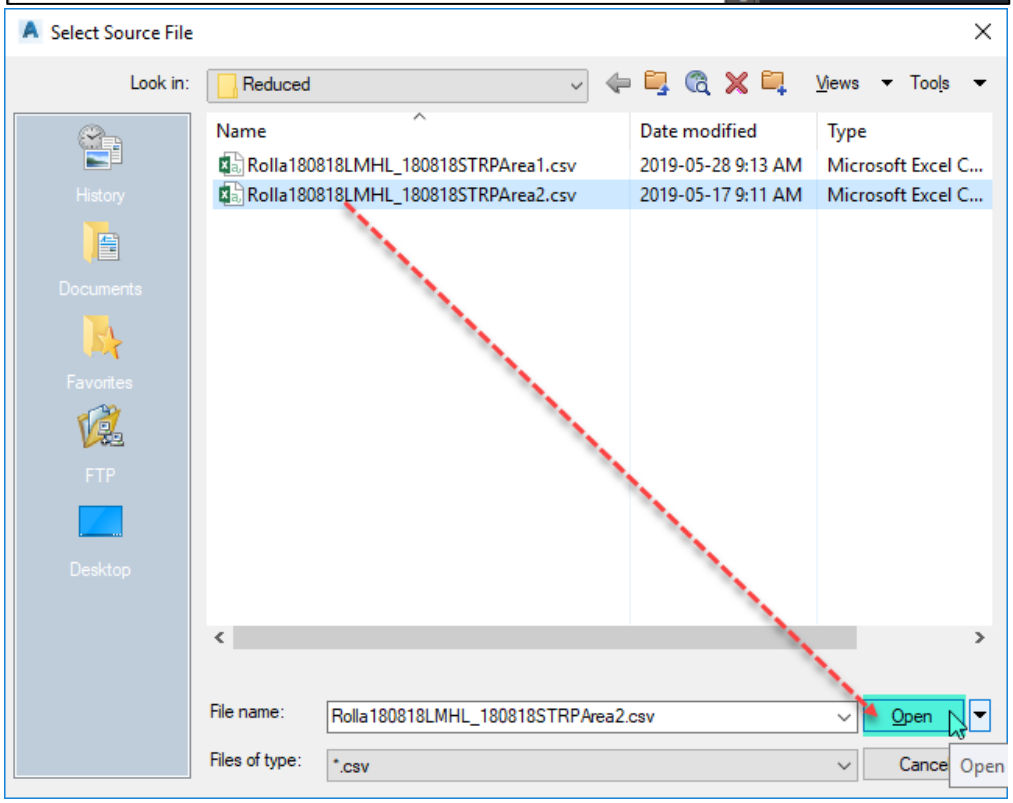
If there are some crossing break lines use the “survey figure properties” to adjust the break lines.

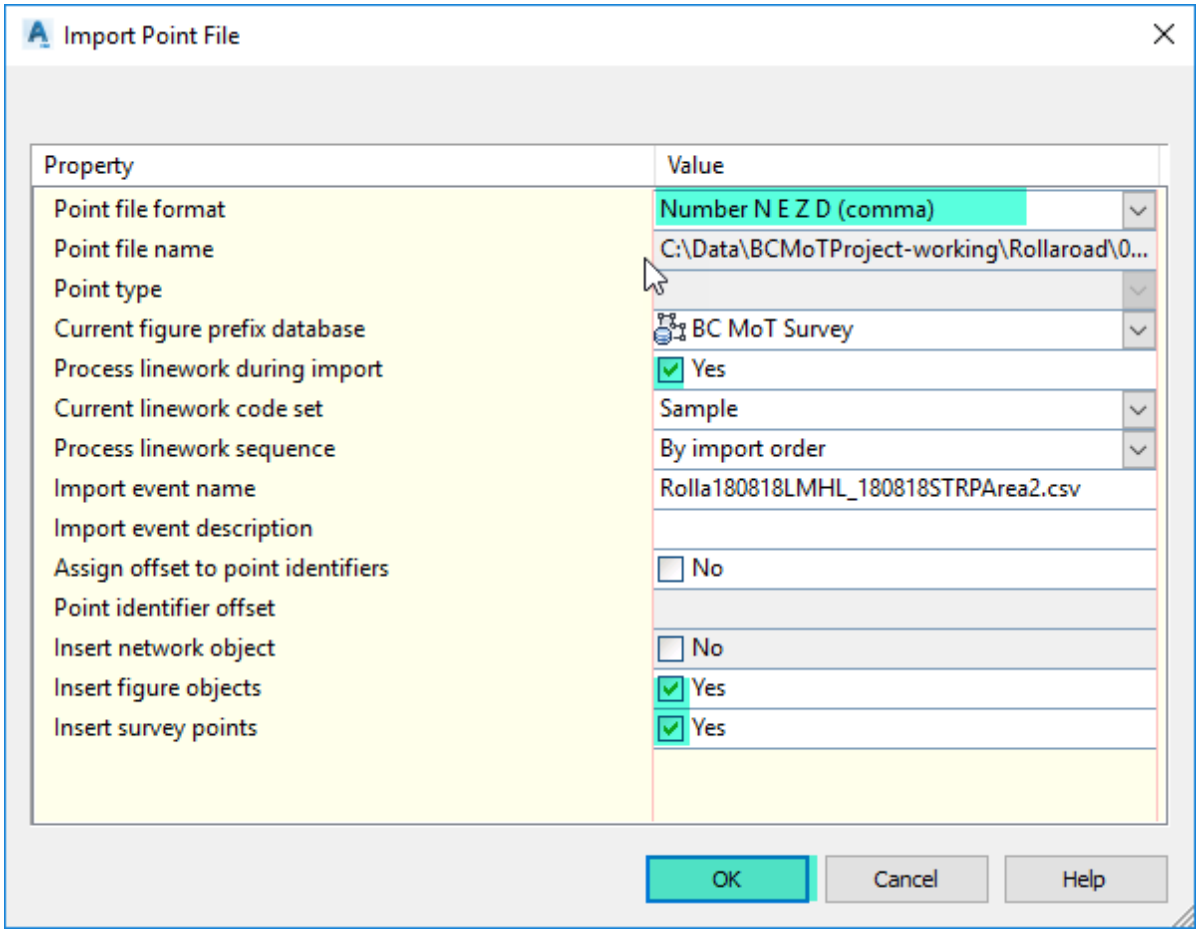
That conclude the creation for the import the collection for the first survey data file.

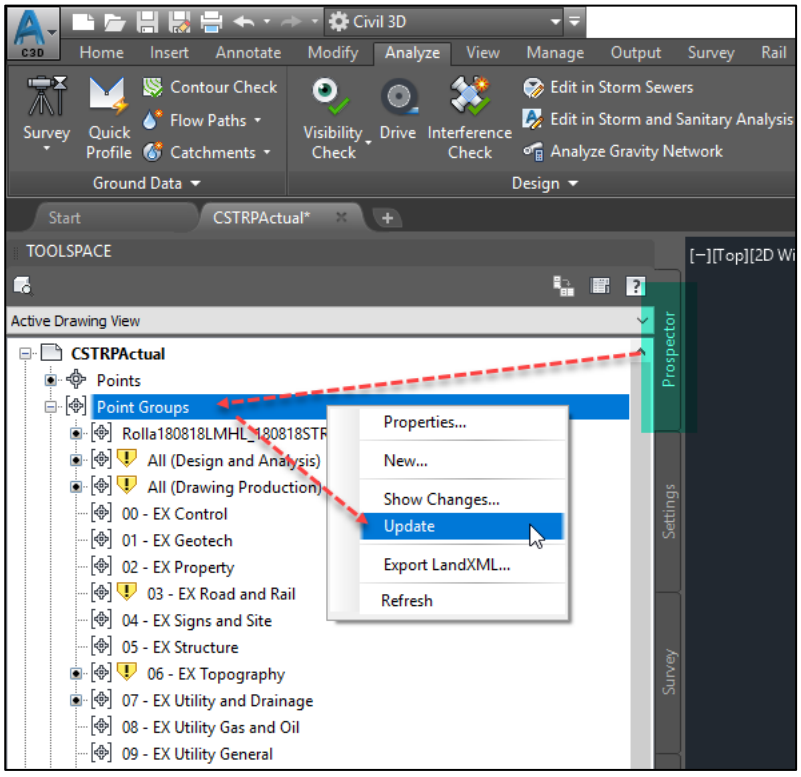
2.17 Import 2nd CSTRP Survey Data File(46.37)

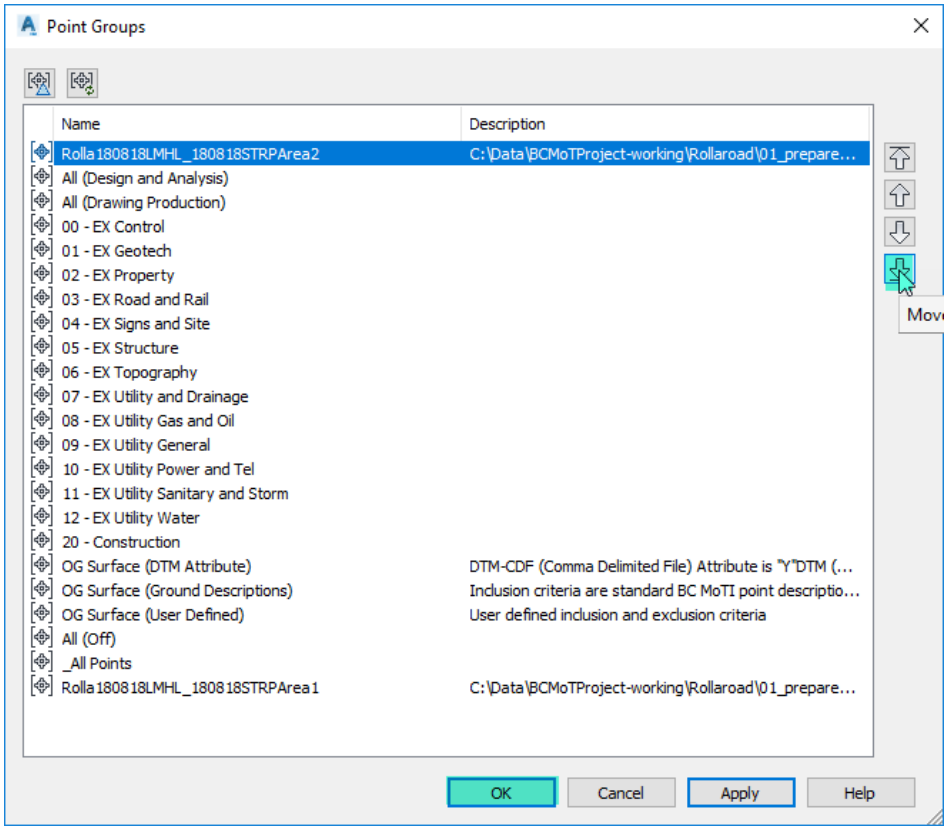
2nd one _ Let's import the second one for the stripping.






Import Point File
Property
Value
Point file format
Number N E Z D (comma)
Point file name
C:\Data\BCMoTProject-working\Rollaroad\0...
Point type
Current figure prefix database
BC MoT Survey
Process linework during import
Yes
Current linework code set
Sample
Process linework sequence
By import order
Import event name
Rolla180818LMHL_180818STRPArea2.csv
Import event description
Assign offset to point identifiers
No
Point identifier offset
Insert network object
No
Insert figure objects
Yes
Insert survey points
Yes
OK
Cancel
Help


Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Output
Survey
Rail
Survey
Quick Profile
Contour Check
Flow Paths
Catchments
Ground Data
Visibility Check
Drive
Interference Check
Edit in Storm Sewers
Edit in Storm and Sanitary Analysis
Analyze Gravity Network
Design
Start
CSTRPActual*
TOOLSPACE
[−][Top][2D Wi
Active Drawing View
CSTRPActual
Points
Point Groups
Rolla180818LMHL_180818STR
All (Design and Analysis)
All (Drawing Production)
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
05 - EX Structure
06 - EX Topography
07 - EX Utility and Drainage
08 - EX Utility Gas and Oil
09 - EX Utility General
Properties...
New...
Show Changes...
Update
Export LandXML...
Refresh
Prospector
Settings
Survey


Point Groups
Name
Description
Rolla180818LMHL_180818STRPArea2
C:\Data\BCMoTProject-working\Rollaroad\01_prepare...
All (Design and Analysis)
All (Drawing Production)
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
05 - EX Structure
06 - EX Topography
07 - EX Utility and Drainage
08 - EX Utility Gas and Oil
09 - EX Utility General
10 - EX Utility Power and Tel
11 - EX Utility Sanitary and Storm
12 - EX Utility Water
20 - Construction
OG Surface (DTM Attribute)
DTM-CDF (Comma Delimited File) Attribute is "Y"DTM (...
OG Surface (Ground Descriptions)
Inclusion criteria are standard BC MoTI point descriptio...
OG Surface (User Defined)
User defined inclusion and exclusion criteria
All (Off)
_All Points
Rolla180818LMHL_180818STRPArea1
C:\Data\BCMoTProject-working\Rollaroad\01_prepare...
OK
Cancel
Apply
Help

After all surface will appear as above.

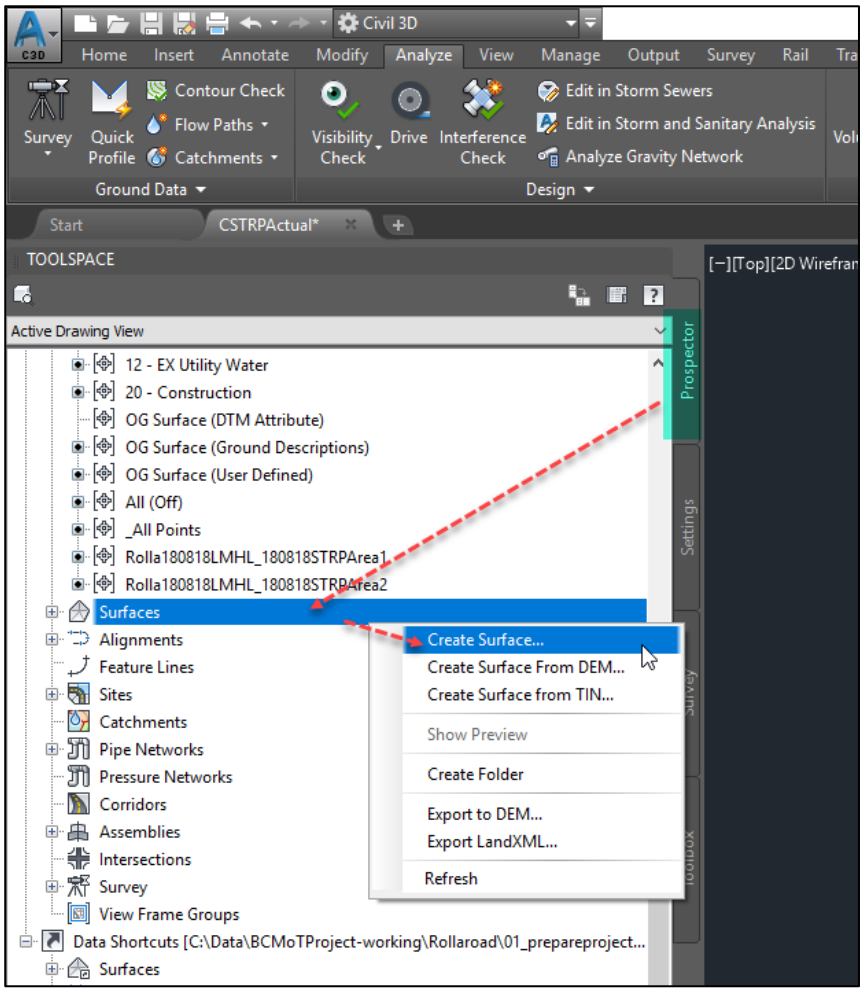
Now check the break lines for crossing as before.

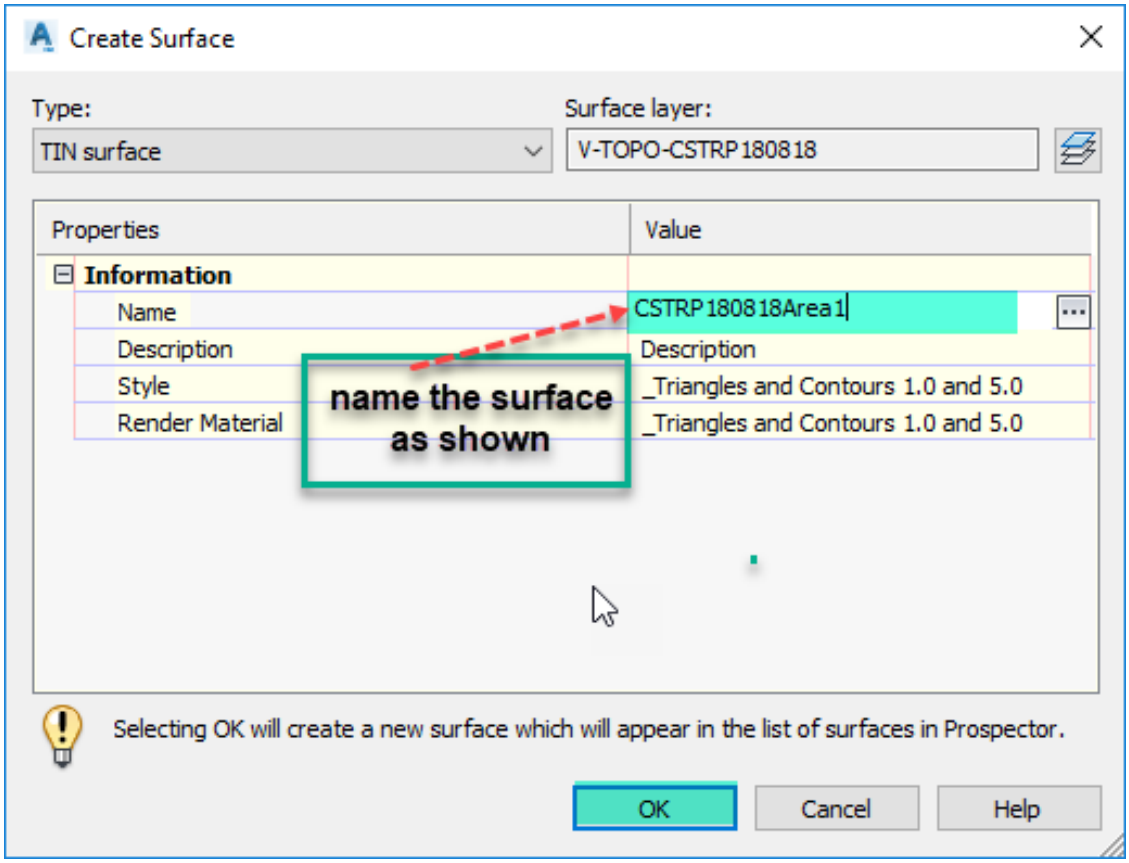
Analyze ⟶ Ground data ⟶ Resolve crossing break lines ⟶ Survey data base ⟶ No crossing break lines.

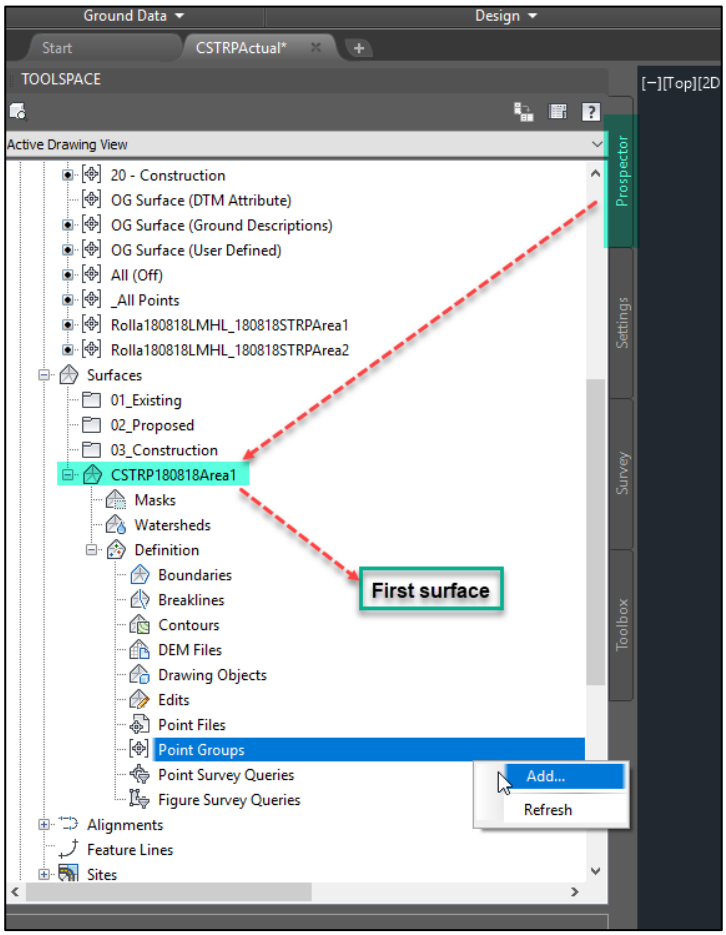
That conclude the exercise where we import the stripping data files.

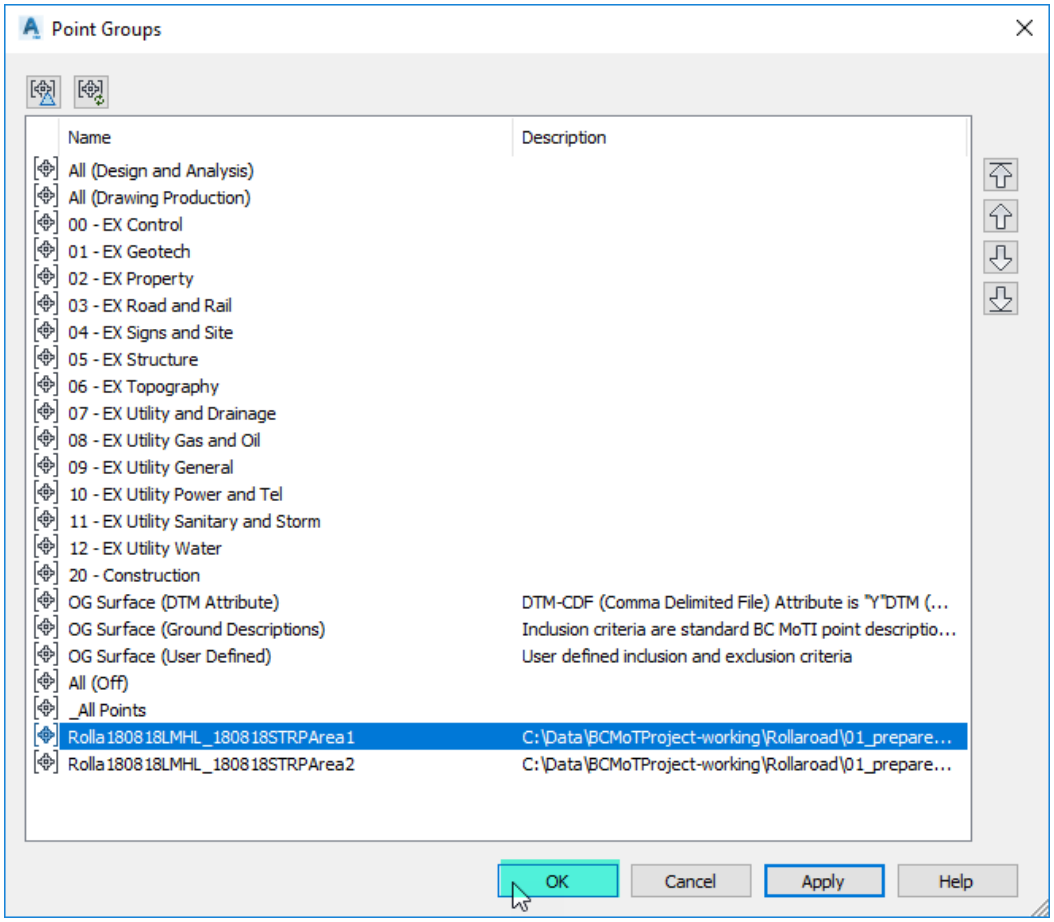
2.18 Create 2XCSTRP Surfaces (Point groups,Breaklines and Boundaries)(47.49)

Create the surfaces for above stripping point groups.

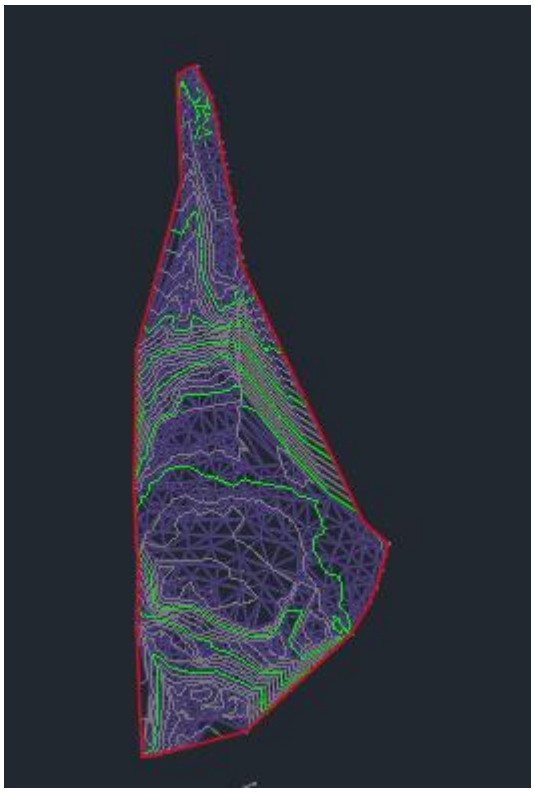



Create Surface
Type:
TIN surface
Surface layer:
V-TOPO-CSTRP180818
Properties
Value
Information
Name
CSTRP180818Area1
Description
Description
Style
_Triangles and Contours 1.0 and 5.0
Render Material
_Triangles and Contours 1.0 and 5.0
name the surface as shown
Selecting OK will create a new surface which will appear in the list of surfaces in Prospector.
OK
Cancel
Help


Ground Data
Design
Start
CSTRPActual*
TOOLSPACE
[−][Top][2D
Active Drawing View
Prospector
Settings
Survey
Toolbox
20 - Construction
OG Surface (DTM Attribute)
OG Surface (Ground Descriptions)
OG Surface (User Defined)
All (Off)
_All Points
Rolla180818LMHL_180818STRPArea1
Rolla180818LMHL_180818STRPArea2
Surfaces
01_Existing
02_Proposed
03_Construction
CSTRP180818Area1
Masks
Watersheds
Definition
Boundaries
Breaklines
Contours
DEM Files
Drawing Objects
Edits
Point Files
Point Groups
Point Survey Queries
Figure Survey Queries
Alignments
Feature Lines
Sites
First surface
Add...
Refresh

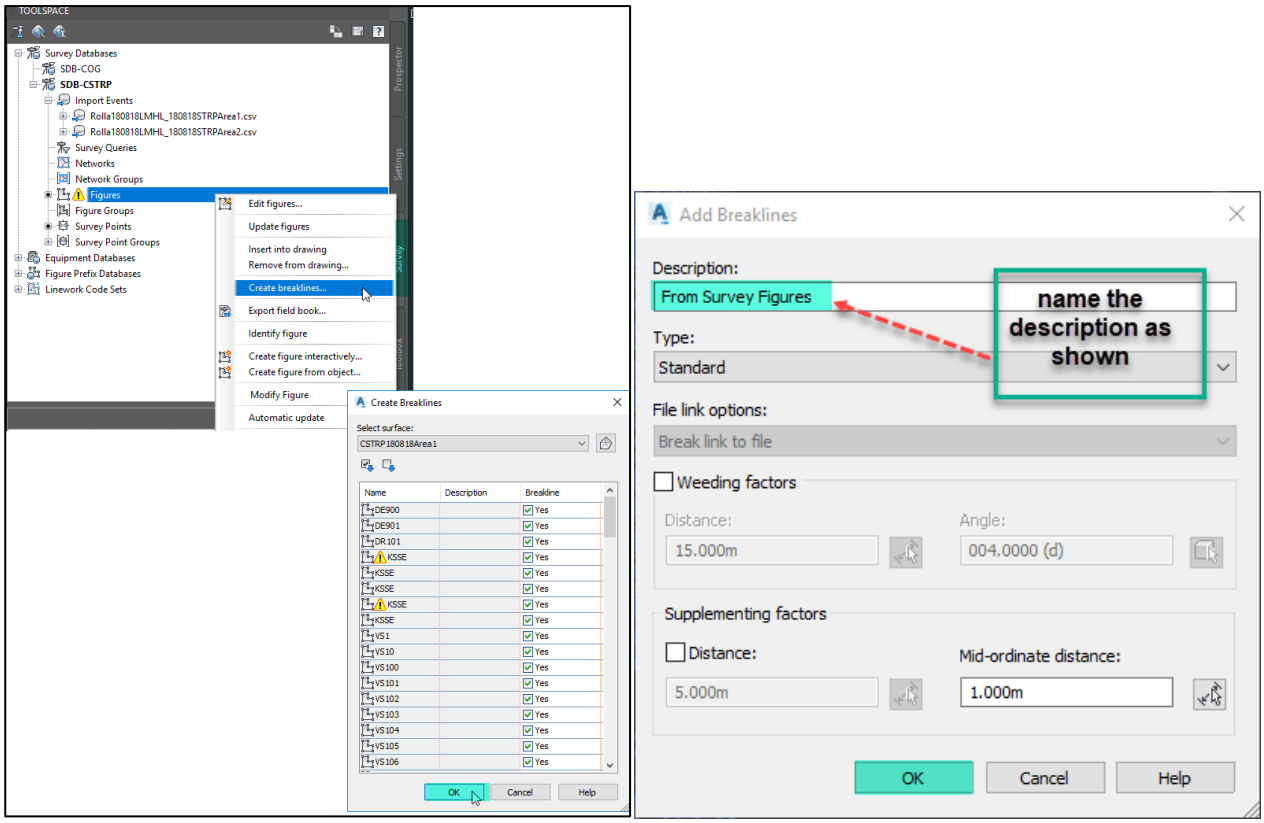


After adding up the points it will appear as follows,

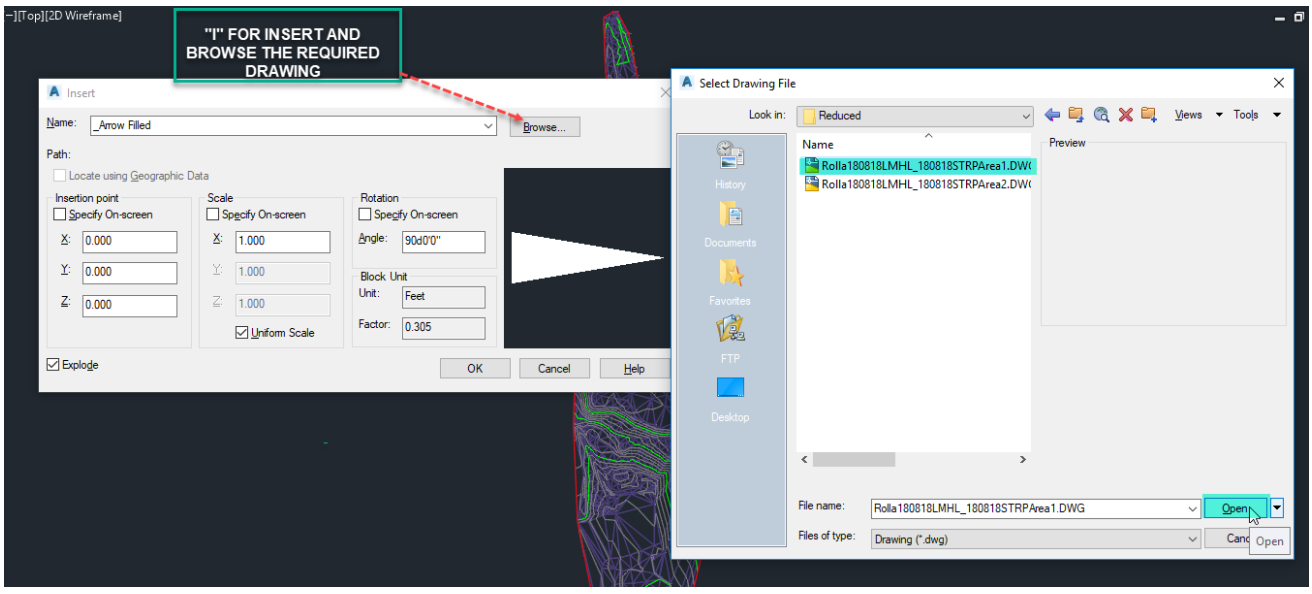


Then let’s work on the breaklines.

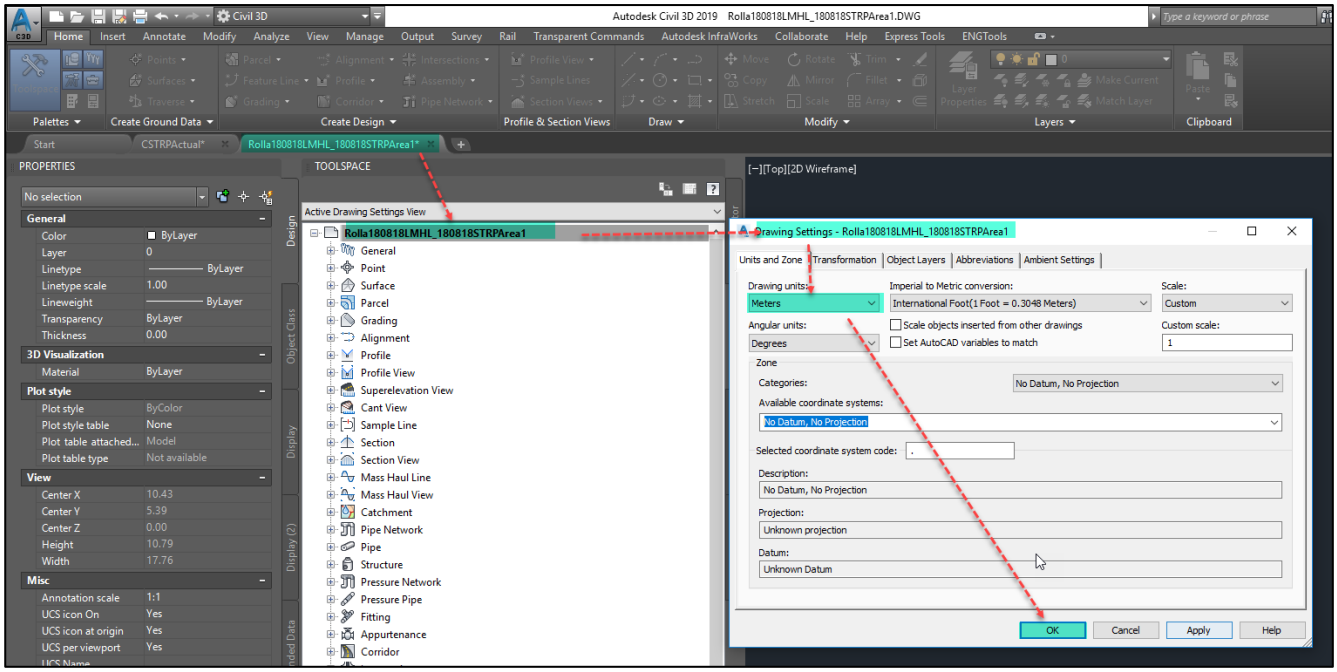
Go back to survey tab.

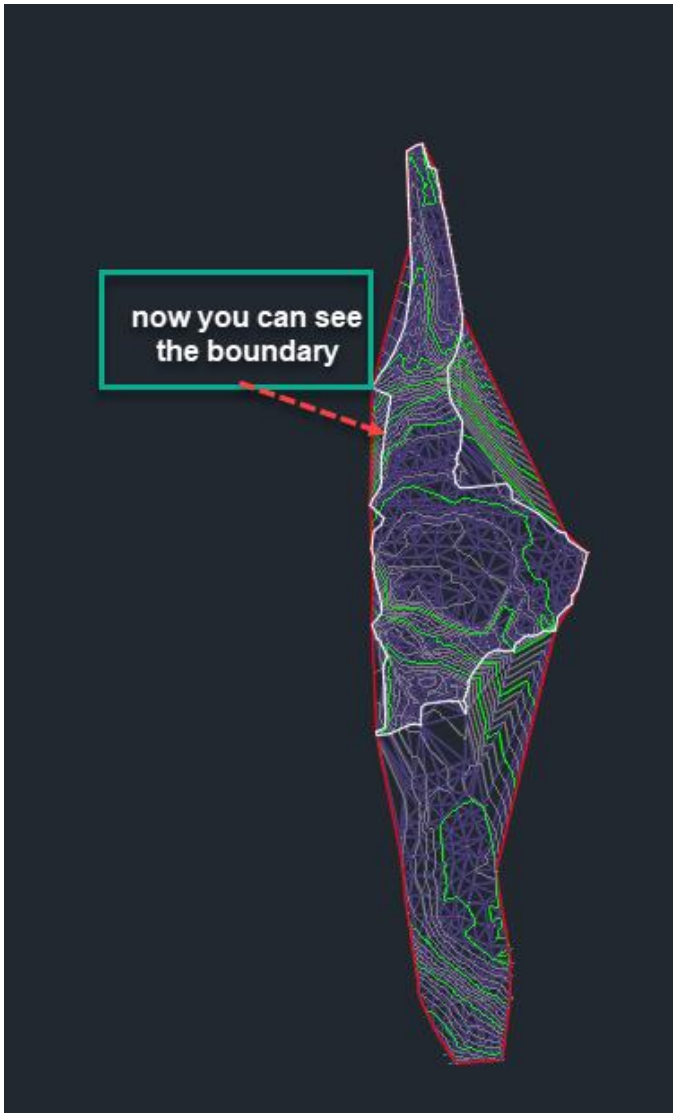


Final step is “adding up the boundary”.



Before you browse the boundary, open the required drawing and adjust the drawing units in to “meters “and save the drawing.

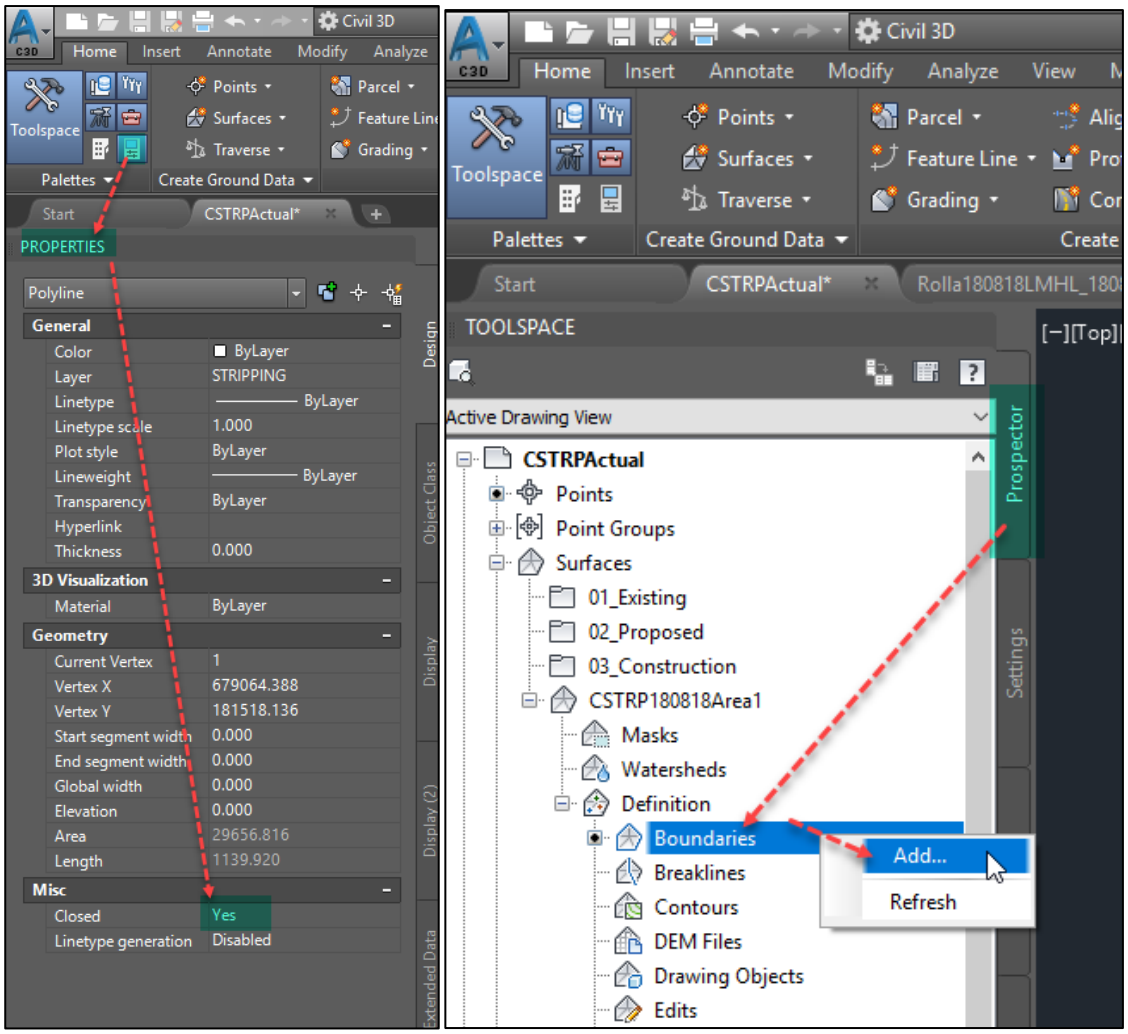




After that offset the boundary to the outside 0.01m and delete the original one.

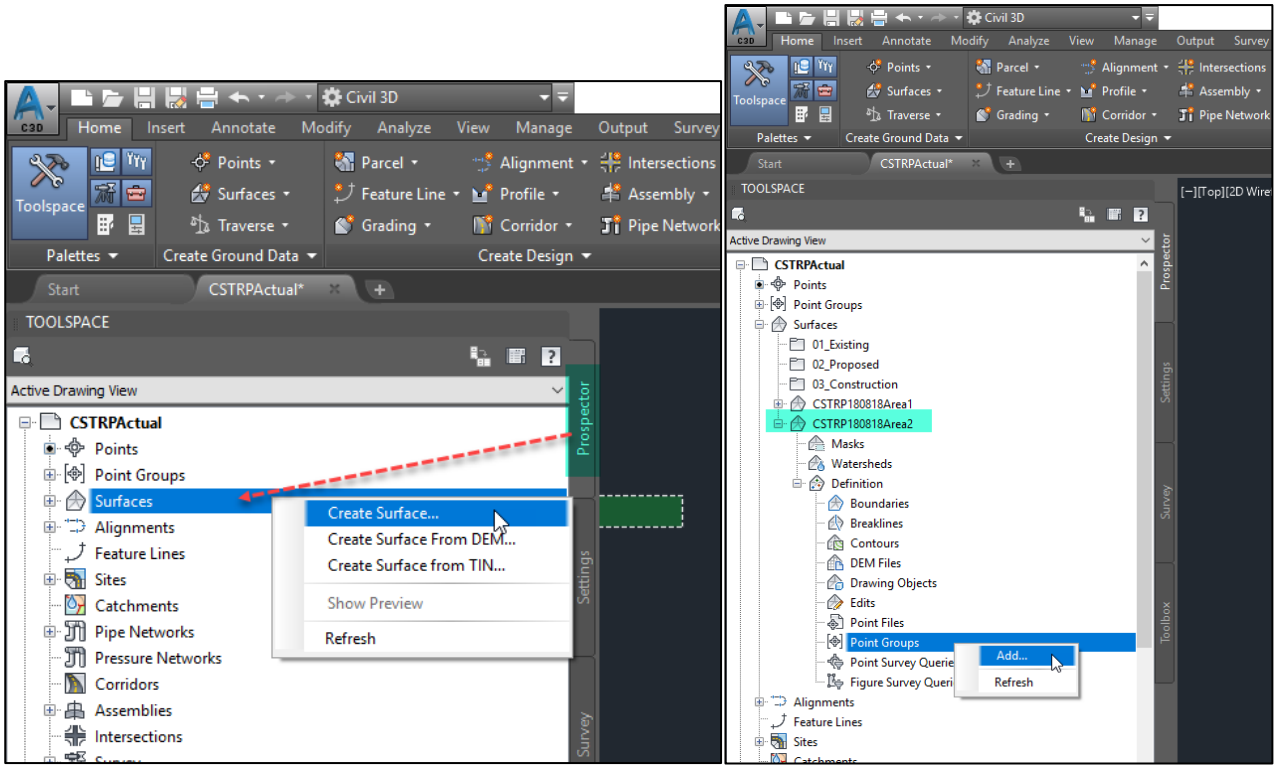
Check whether the boundary closed or not.

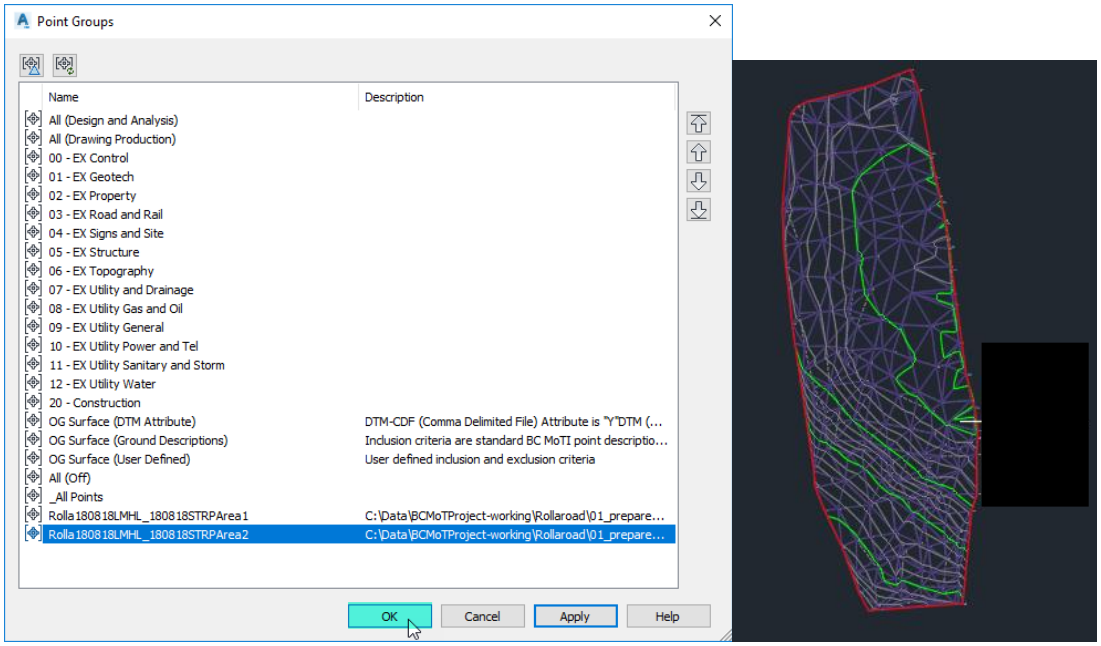
Select the boundary and check the properties.

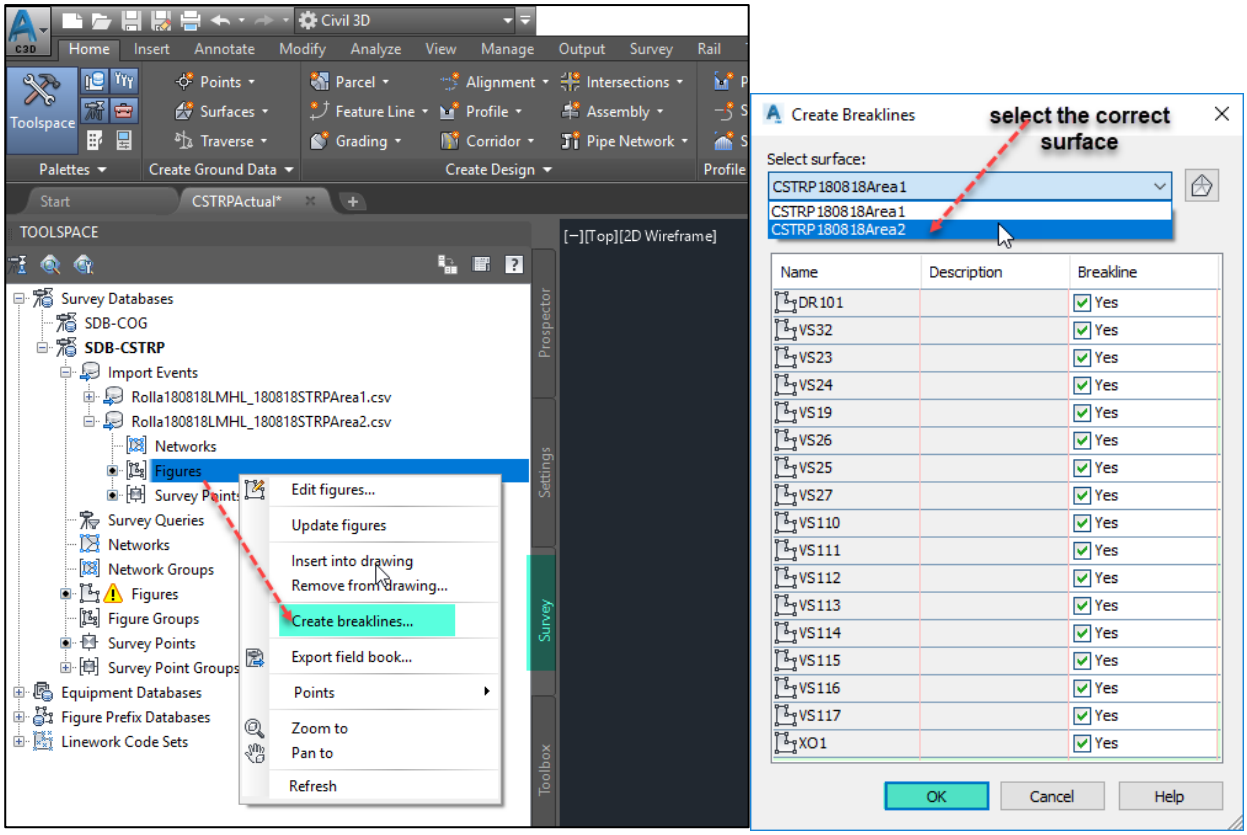


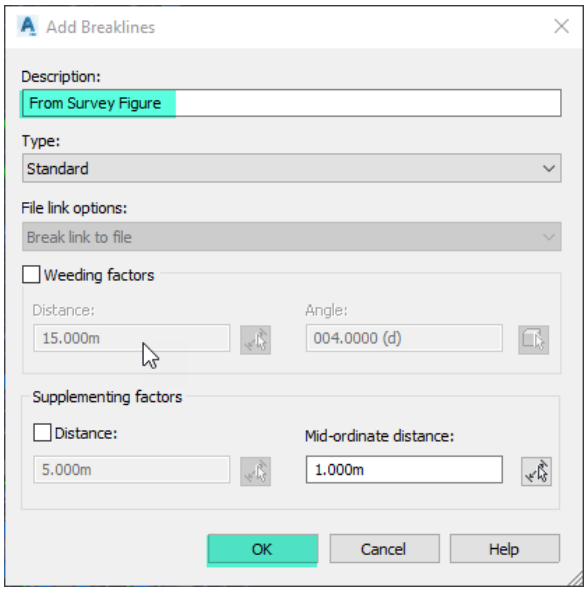
Name the boundary as “From construction survey data”. This is very important because we going to replace this boundary with a new boundary that created section surface editing process.

Now create the 2nd surface.


Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Output
Survey
Toolspace
Points
Surfaces
Traverse
Parcel
Feature Line
Grading
Alignment
Profile
Corridor
Intersections
Assembly
Pipe Network
Palettes
Create Ground Data
Create Design
Start
CSTRPActual*
TOOLSPACE
Active Drawing View
CSTRPActual
Points
Point Groups
Surfaces
Alignments
Feature Lines
Sites
Catchments
Pipe Networks
Pressure Networks
Corridors
Assemblies
Intersections
Create Surface...
Create Surface From DEM...
Create Surface from TIN...
Show Preview
Refresh
Prospector
Settings
Survey
01_Existing
02_Proposed
03_Construction
CSTRP180818Area1
CSTRP180818Area2
Masks
Watersheds
Definition
Boundaries
Breaklines
Contours
DEM Files
Drawing Objects
Edits
Point Files
Point Groups
Point Survey Queries
Figure Survey Queries
Add...
Refresh
Alignments
Feature Lines
Sites
Toolbox


Point Groups
Name
Description
All (Design and Analysis)
All (Drawing Production)
00 - EX Control
01 - EX Geotech
02 - EX Property
03 - EX Road and Rail
04 - EX Signs and Site
05 - EX Structure
06 - EX Topography
07 - EX Utility and Drainage
08 - EX Utility Gas and Oil
09 - EX Utility General
10 - EX Utility Power and Tel
11 - EX Utility Sanitary and Storm
12 - EX Utility Water
20 - Construction
OG Surface (DTM Attribute)
DTM-CDF (Comma Delimited File) Attribute is "Y"DTM (...
OG Surface (Ground Descriptions)
Inclusion criteria are standard BC MoTI point descriptio...
OG Surface (User Defined)
User defined inclusion and exclusion criteria
All (Off)
_All Points
Rolla180818LMHL_180818STRPArea1
C:\Data\BCMoTProject-working\Rollaroad\01_prepare...
Rolla180818LMHL_180818STRPArea2
C:\Data\BCMoTProject-working\Rollaroad\01_prepare...
OK
Cancel
Apply
Help

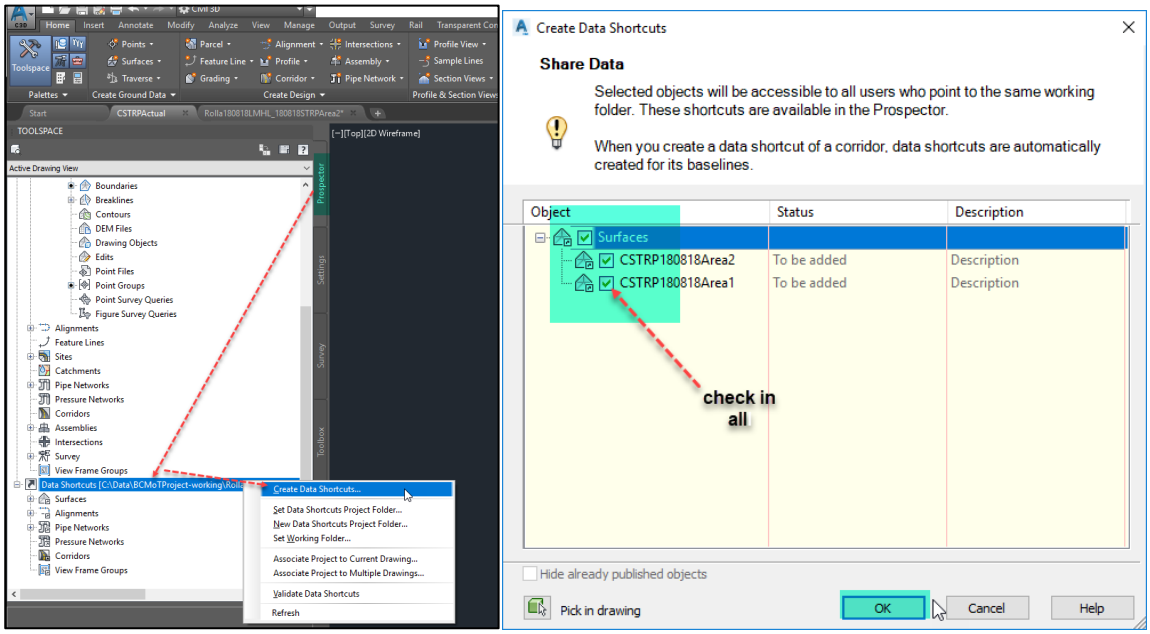


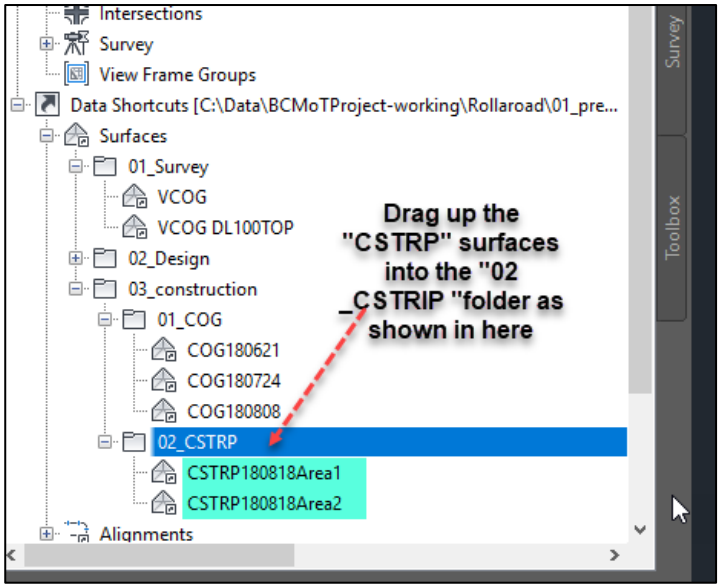


Be sure to check the corresponding drawing units as before and follow the exact steps until the end of surface two as above (page 79).

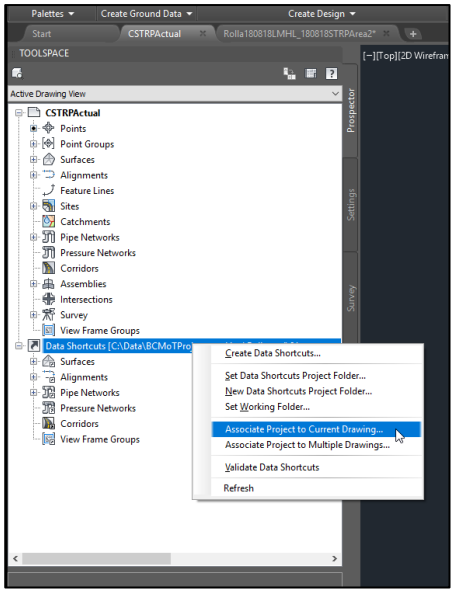
2.19 Create Data Shortcuts to 2xCSTRP Surfaces(54.18)

Create the data shortcut for the above two surfaces.



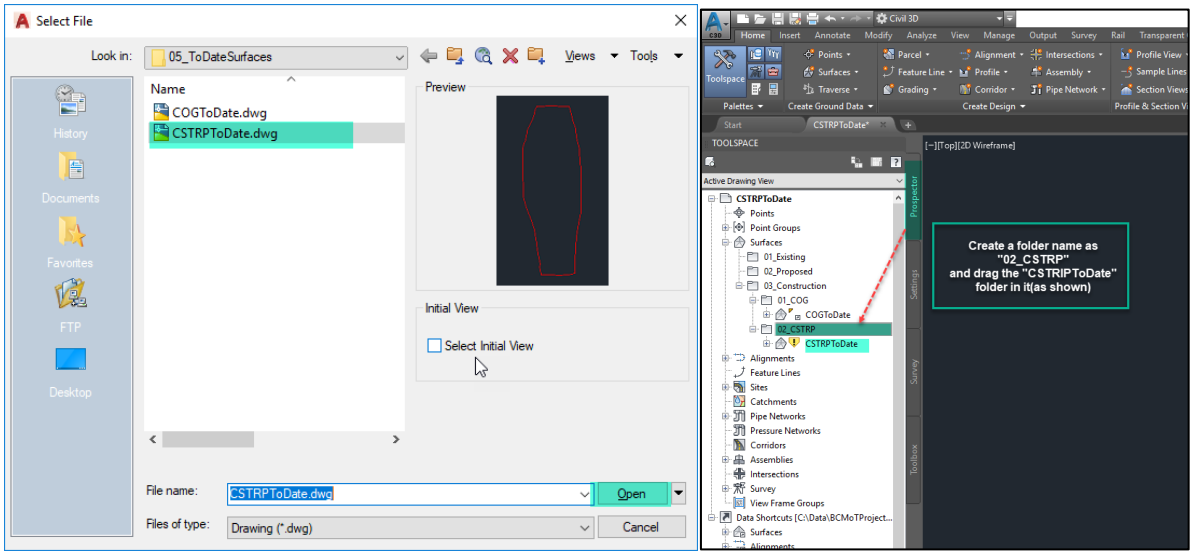


That conclude the creation of individual surfaces, and at last do the followings.



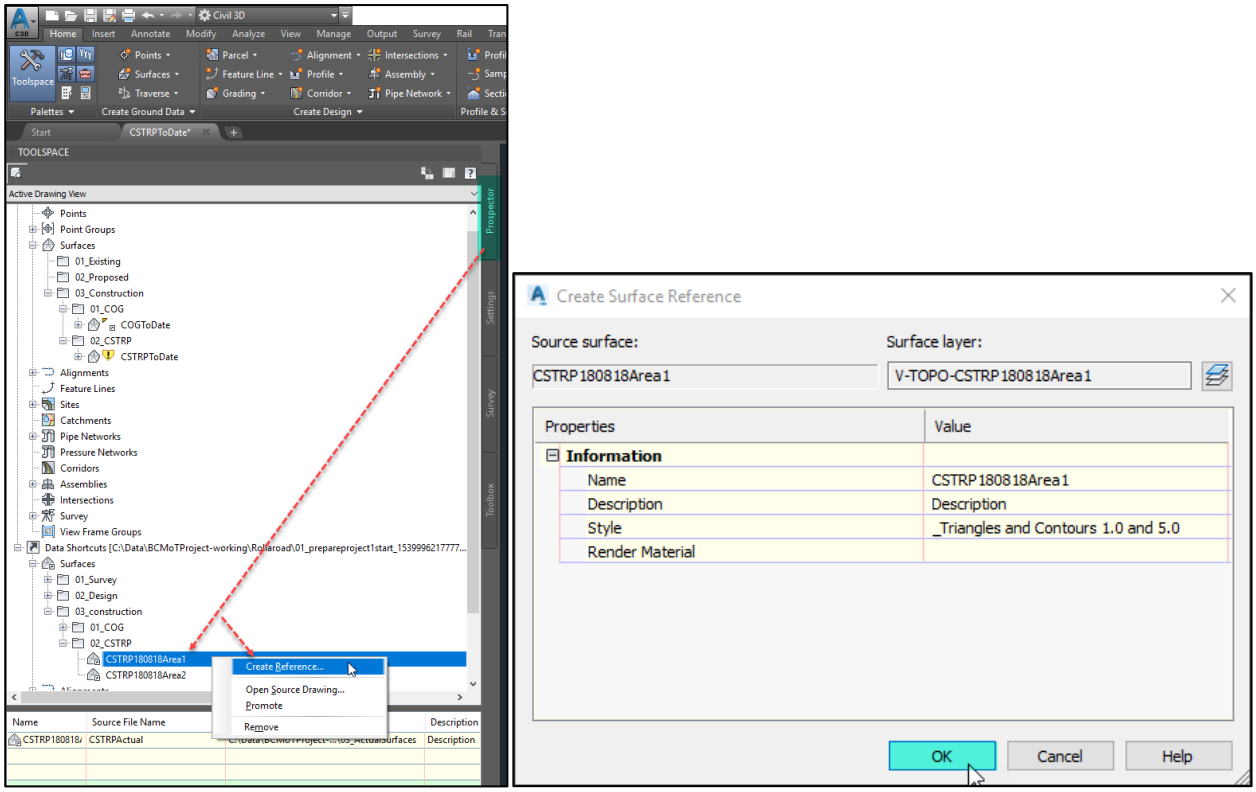
2.20 Update CSTRPToDate Surface(55.21)

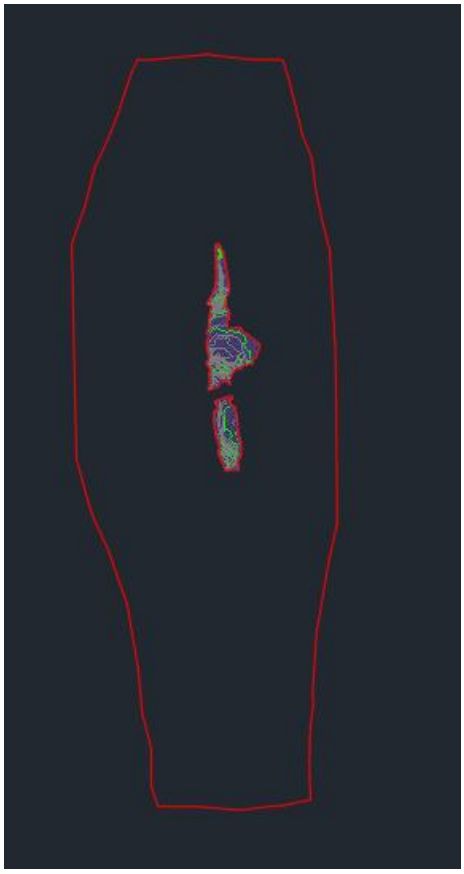
Final step is to update the “CSTRPToDate” Surface, you may close the “CSTRPActual” and open up the “CSTRPToDate” drawing.



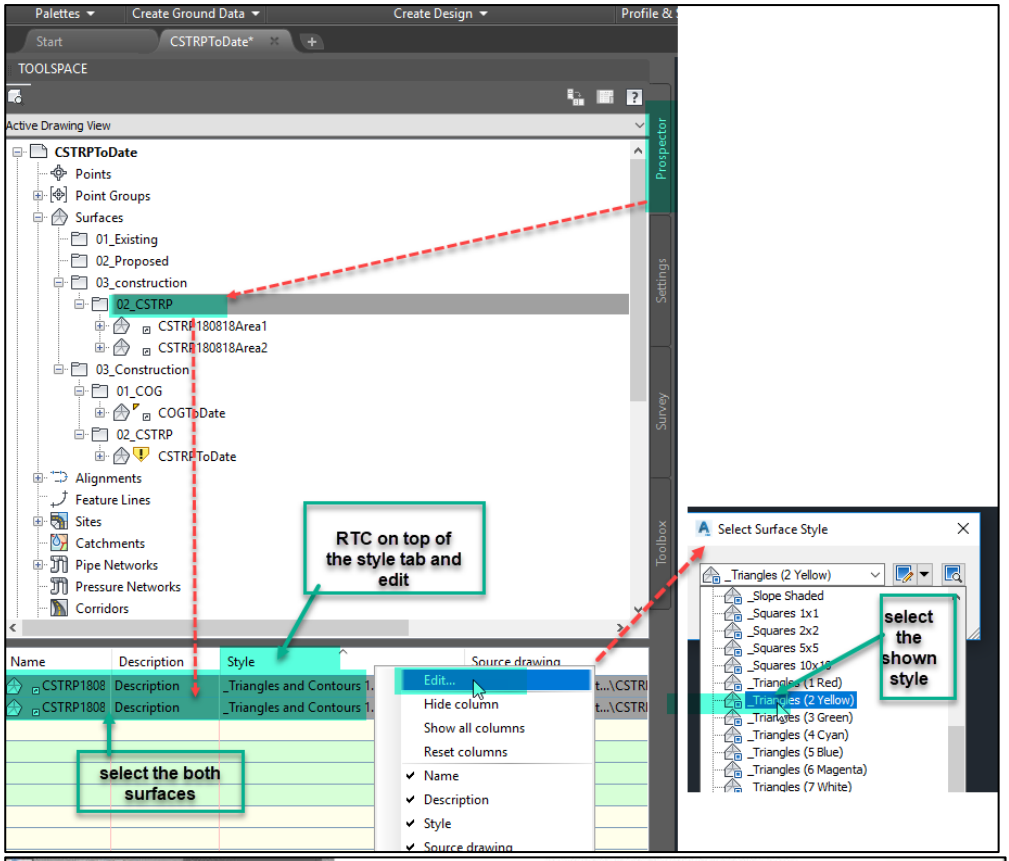
To update CSTRPToDate surface, we need two stripping surfaces that we created.

Go back to “Data shortcuts” and create reference for both surfaces.

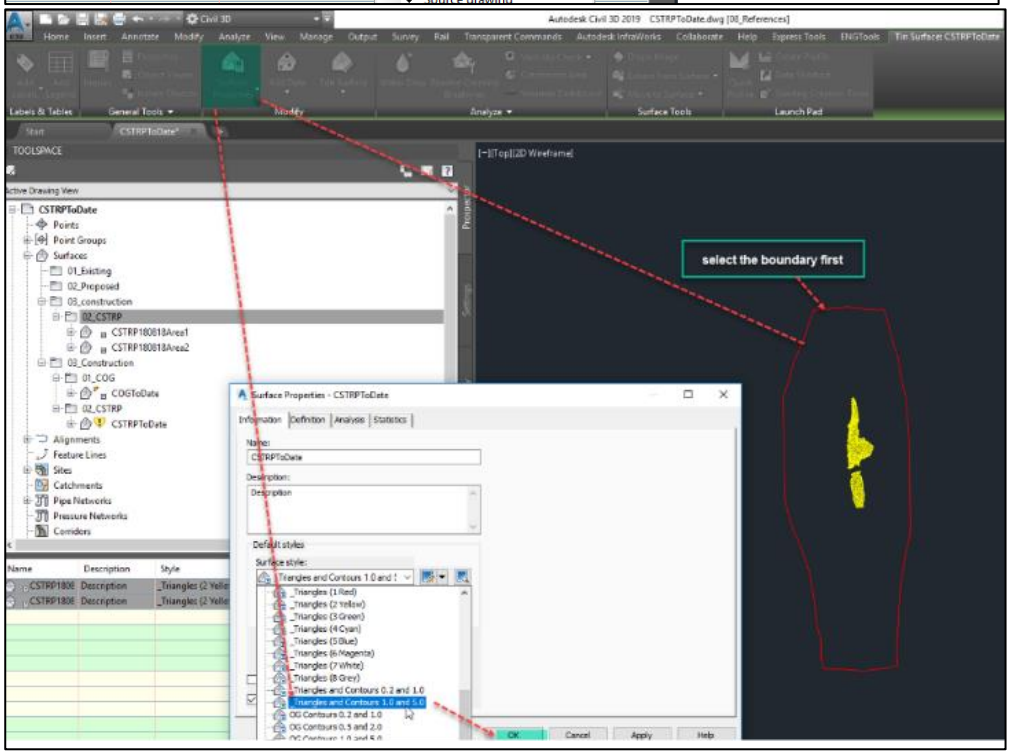




Now let's modify the area 1 and area 2 properties.

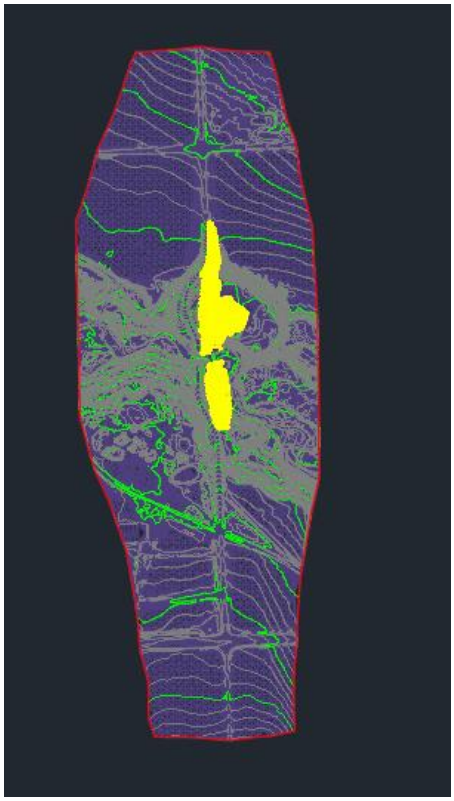


Now modify the CSTRPToDate surface property.

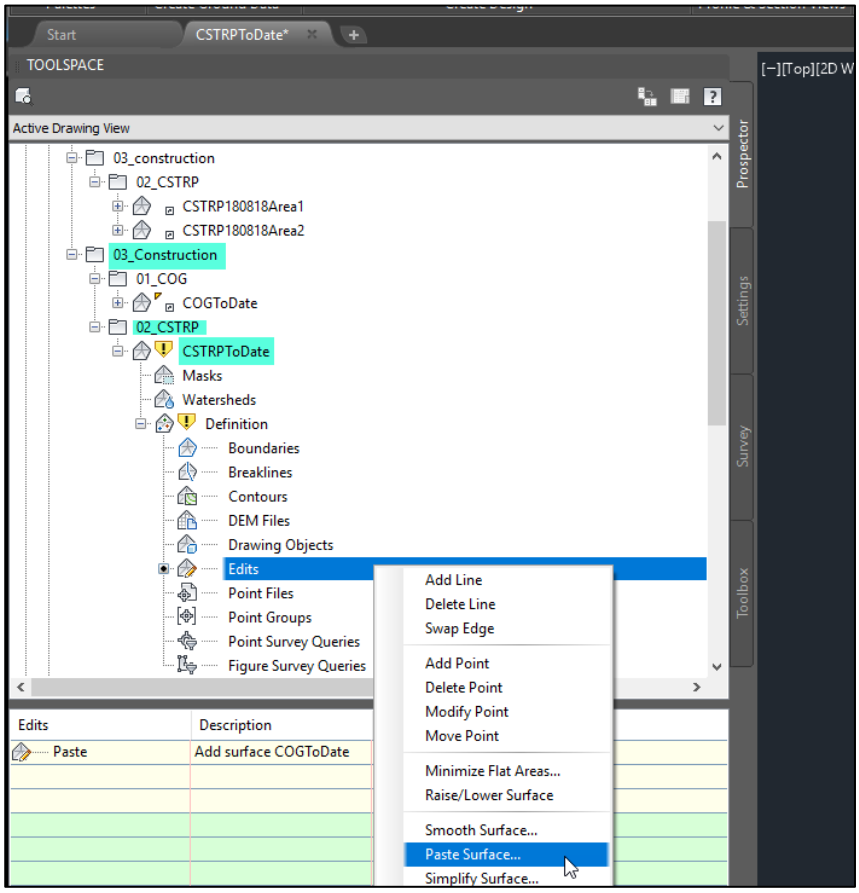


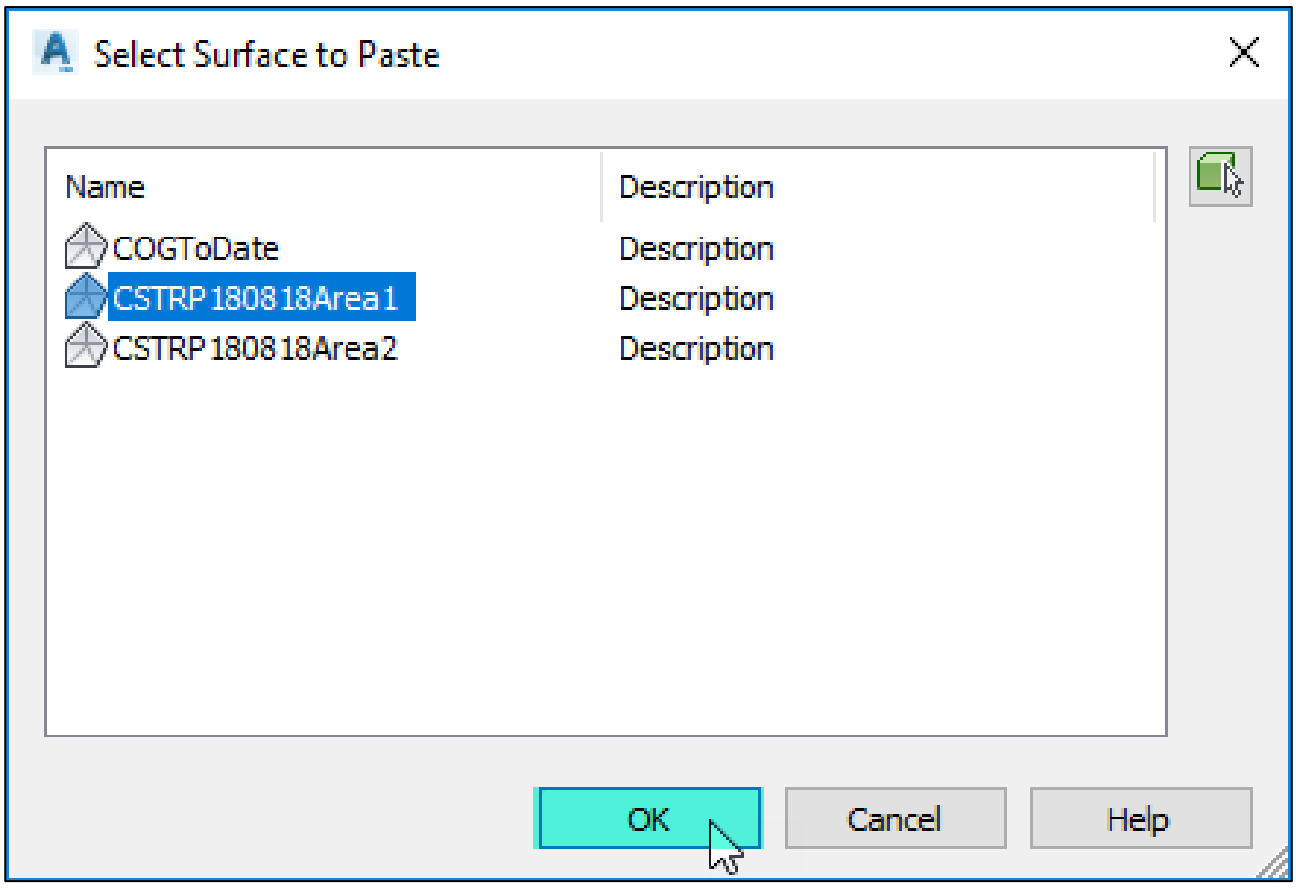
Changing the surface style in to “Triangles and Contours 1.0 and 5.0”.

It will appear as follows,



Final step will be pasted that data in to the surface.





Do the same steps as above for the “Area 2” as well.

Finish up by saving the drawing and that concludes the exercise on creating the stripping surfaces as well as the lesson on importing the OG and striping data and creating the OG and stripping surfaces.

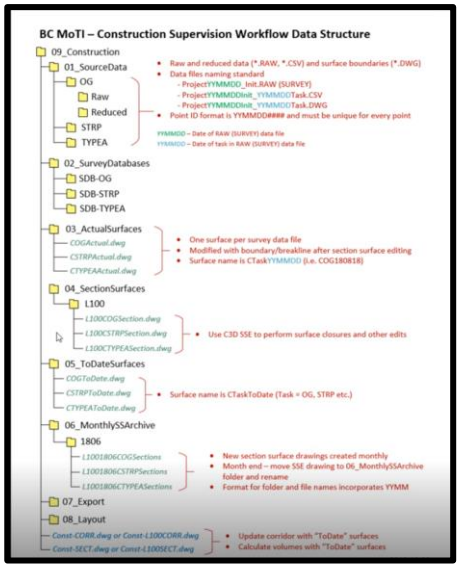
3 Exercise three_CSTRP Surface Closures

3.1 High Level Overview

In this lesson we are going to perform our section surface editing for the stripping data and that will involve working in the L100CSTRPSection.dwg and this is to get our closures to facilitate volume calculation for stripping surfaces.

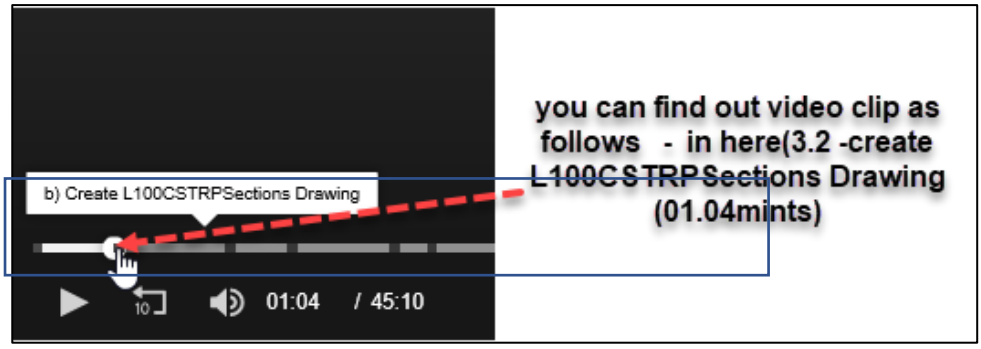
In a nut shell about this process ,we are going to perform our closures that going to perform new surface boundary and then use that new surface boundary to update the CSTRPActual drawing. That will propagate back in to the CSTRPToDate drawing and after that we will be able to update corridor models and run them against to our construction surfaces.

The first step is to create the construction stripping drawing for the L100 alignment (that’s this drawing L100CSTRPSection.dwg). The reason needs to be alignment paste in because alignments are required to create sample lines and section views.



Important:

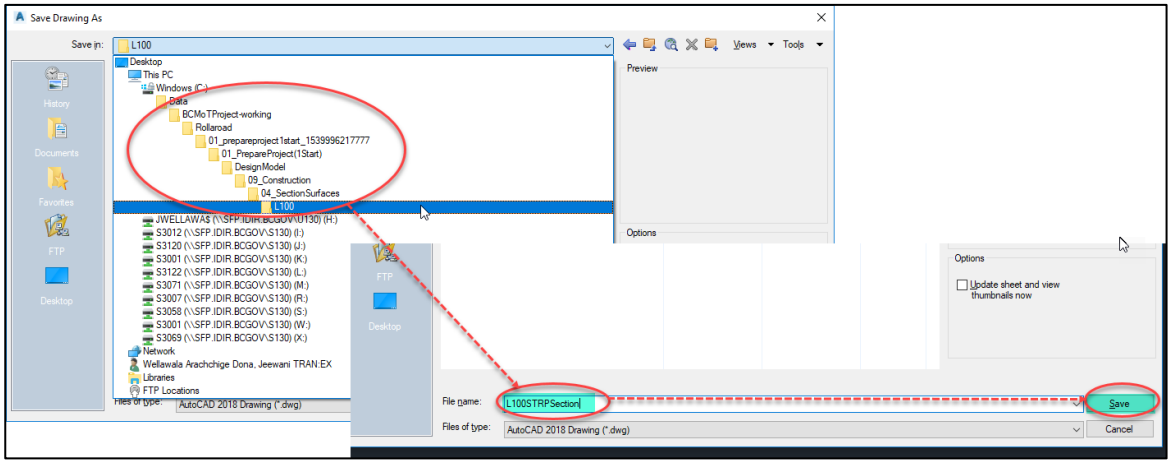
Download the attached file in the video 3 and work on that.



3.2 Create L100CSTRPSections Drawing(01.04)

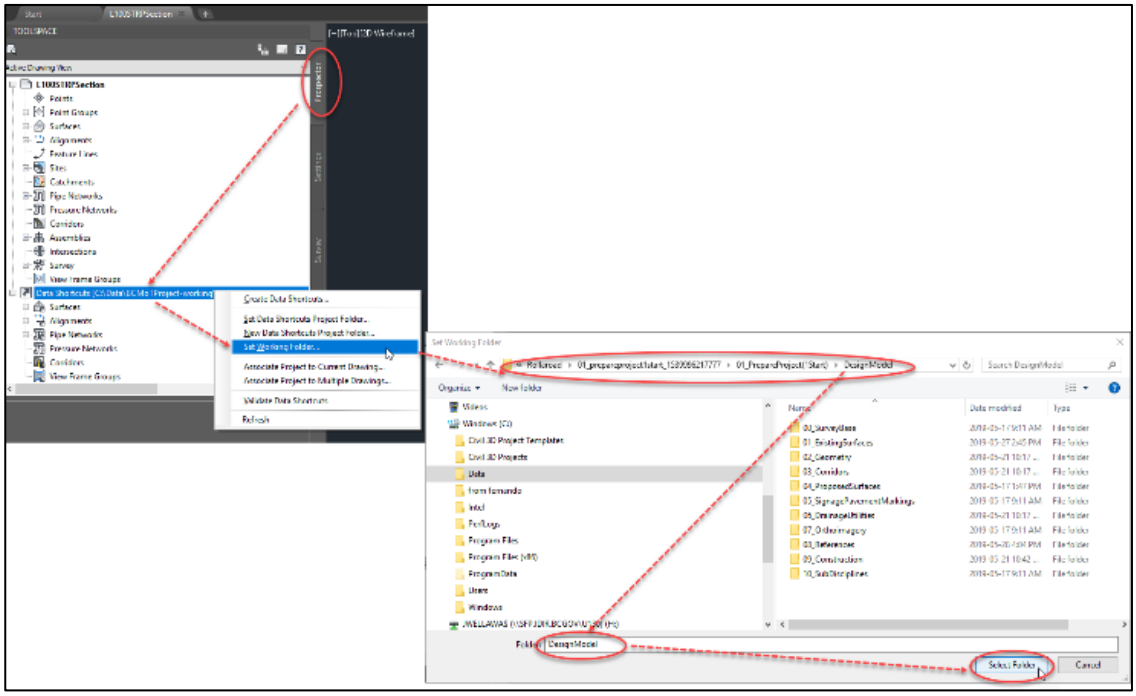
Let's go to the Civil 3D and the application menu choose "new "and open up a latest version of the ministry's drawings template.

Save as shown in below:



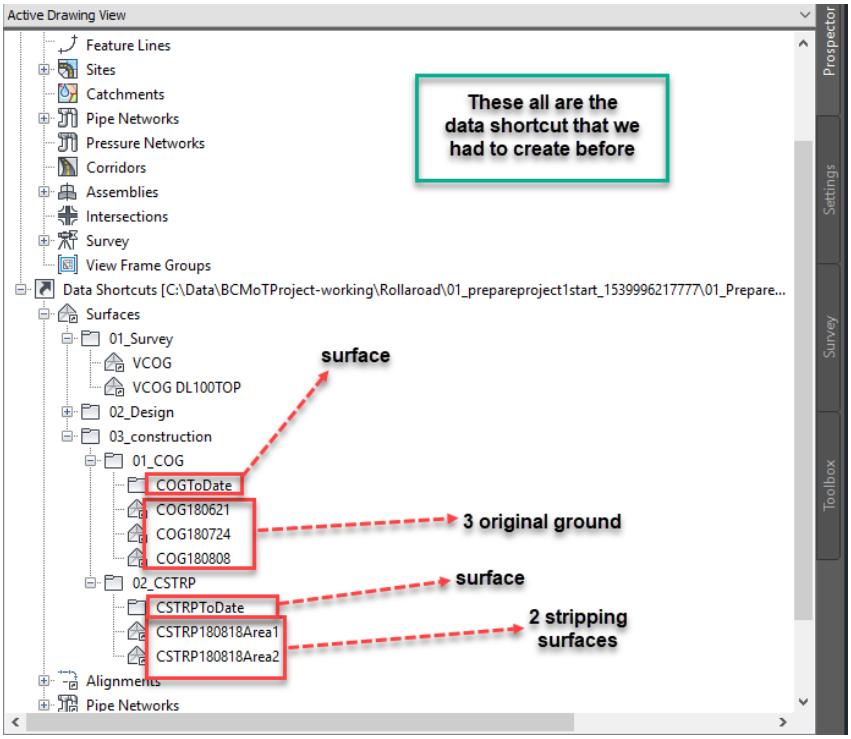
3.3 Data Shortcut Working Folder and Project Association(02.31)

Browse to our project and choose the “Design Model” folder for the project.



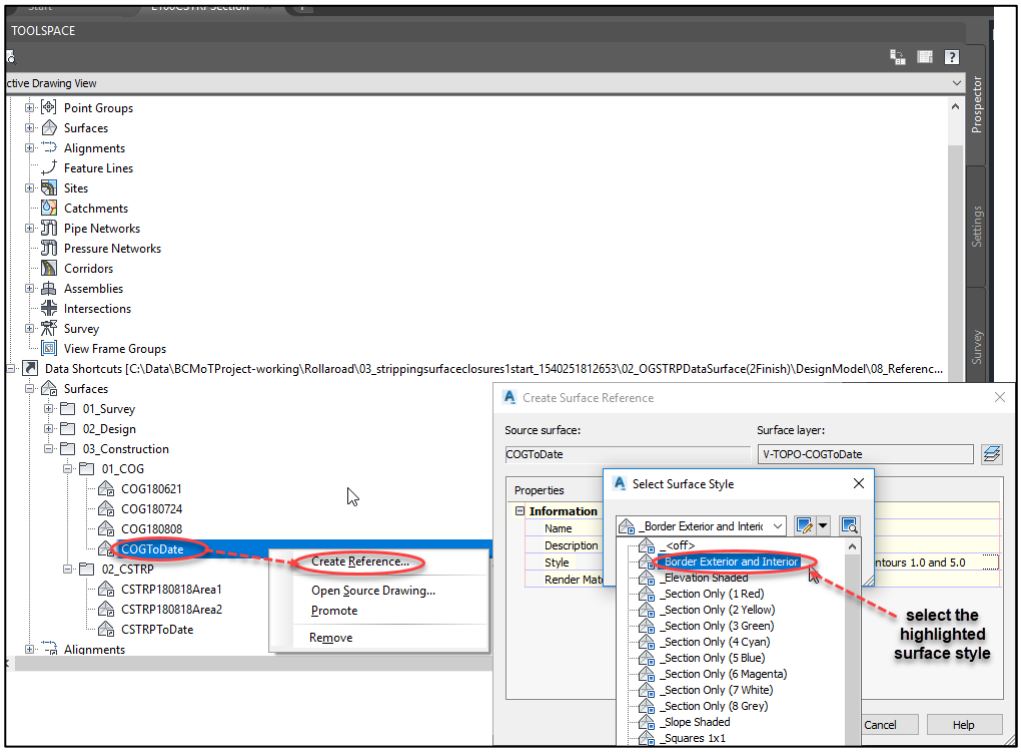
Just let you remind below what we have created before,

Important:
In any case if your current drawing didn’t show up the “COGToDate drawing” be sure to right click on “data shortcut” and “set the working folder” and “associate project to current drawing”.

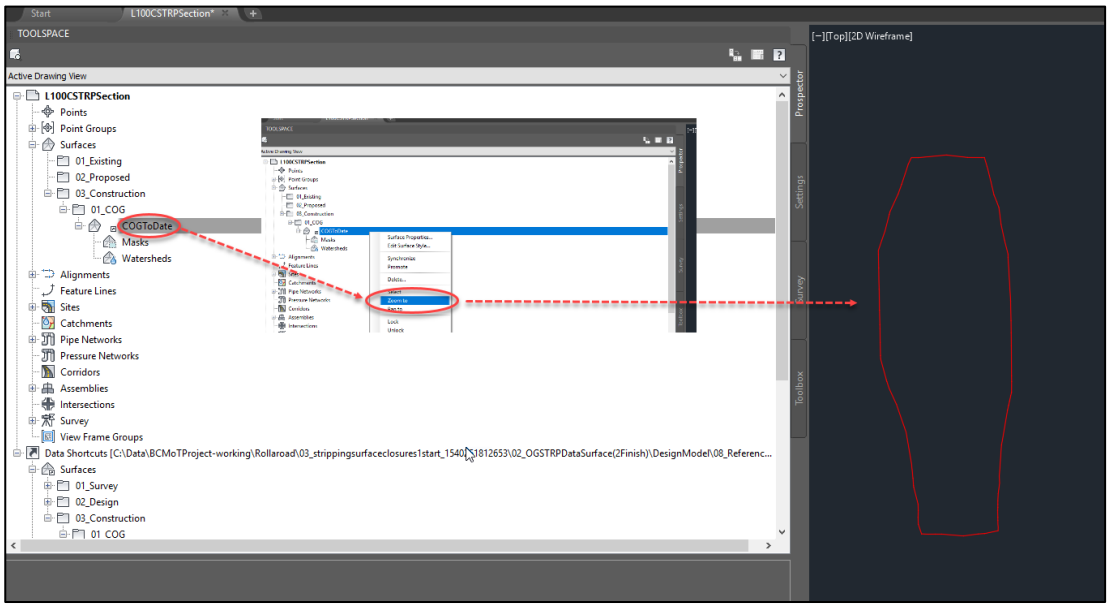


3.4 Create Reference to “COGToDate “and “2 X COG Stripping Surfaces”(03.19).

We can create references for the COGToDate as below.

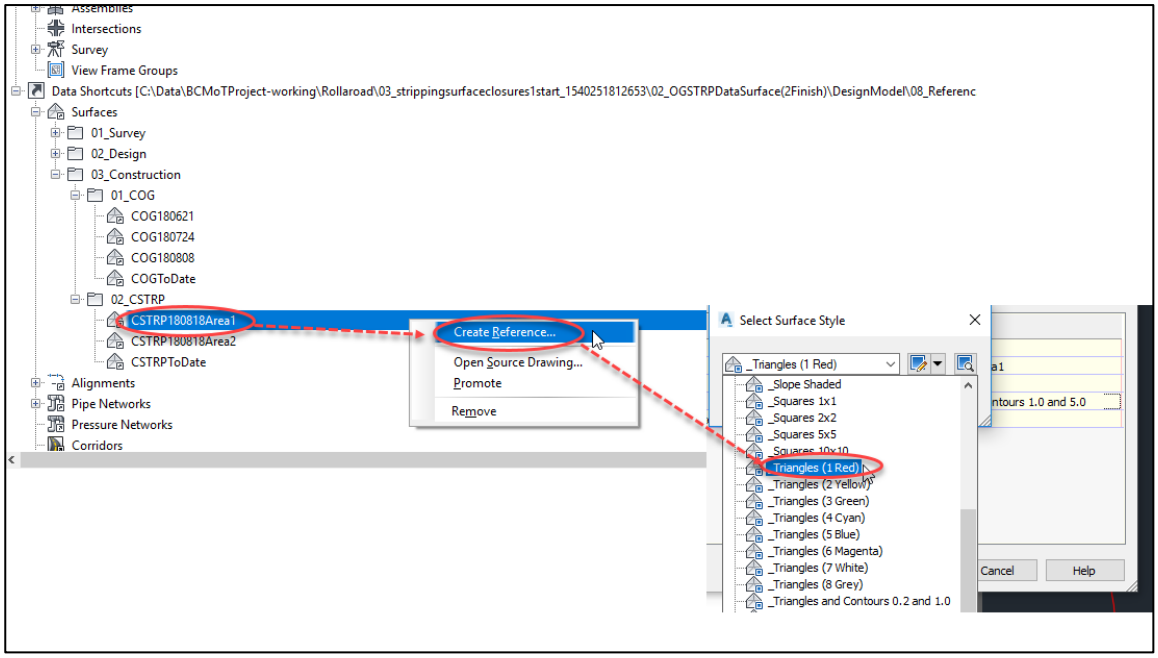


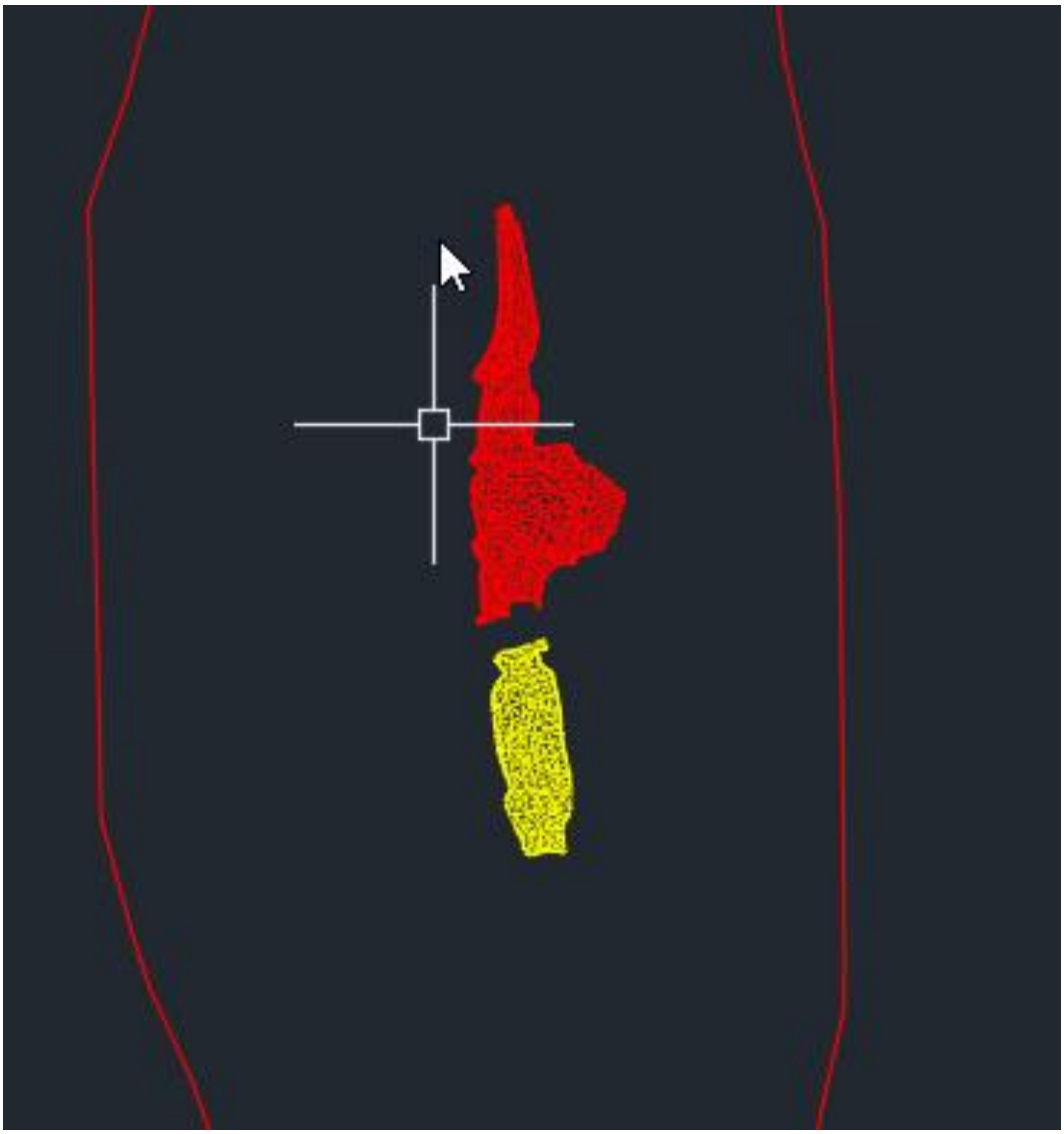
Now we have a reference object for the COGToDate surface.



For the two stripping surfaces:

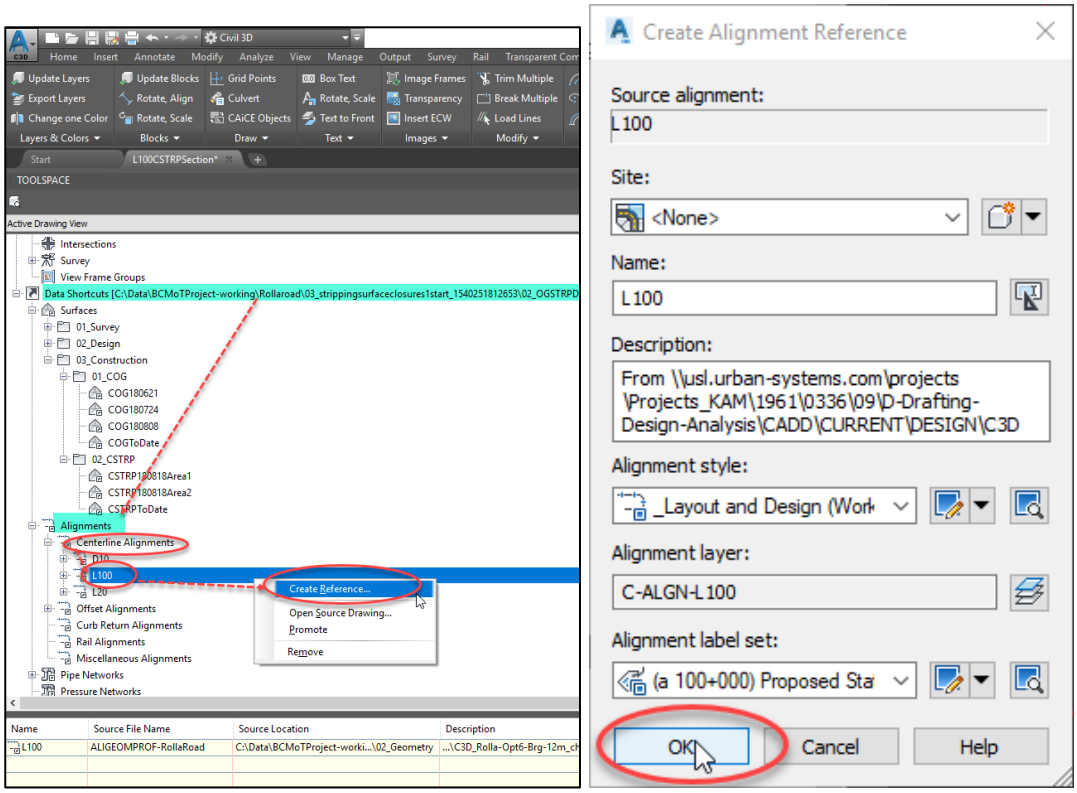
Back down to the data shortcut and do the following steps,





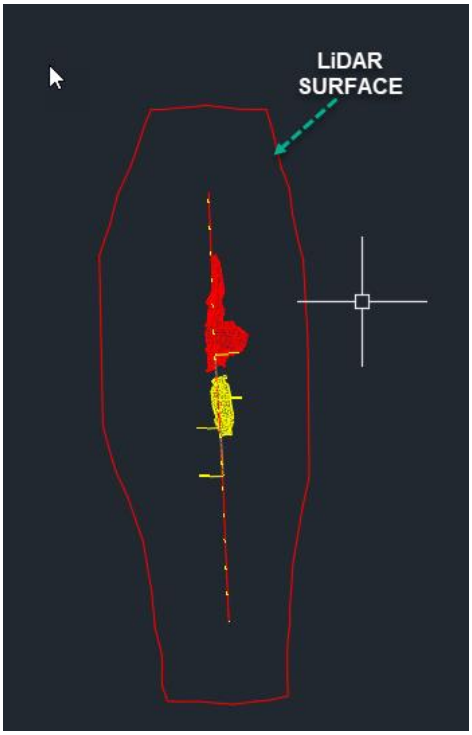
And for the area 2 use the Triangle (2 yellow)

3.5 Create L100 alignment Reference object(04.39)

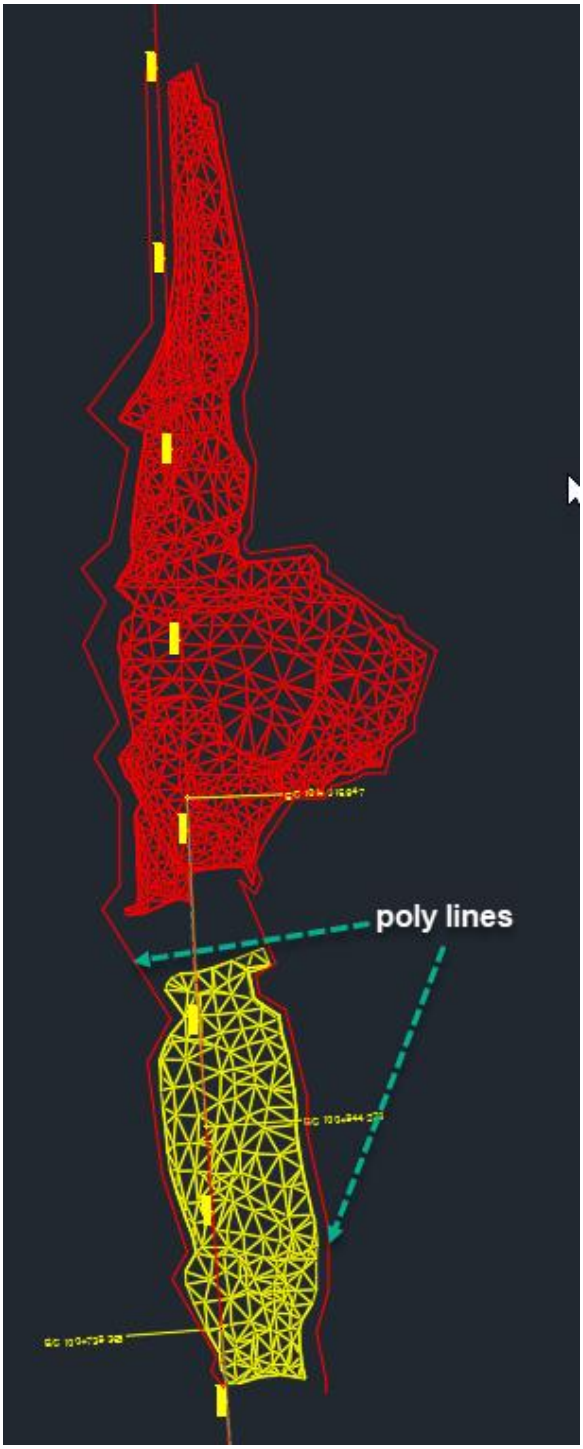


3.6 Create Alignments to Control Sample Line Widths(05.09)

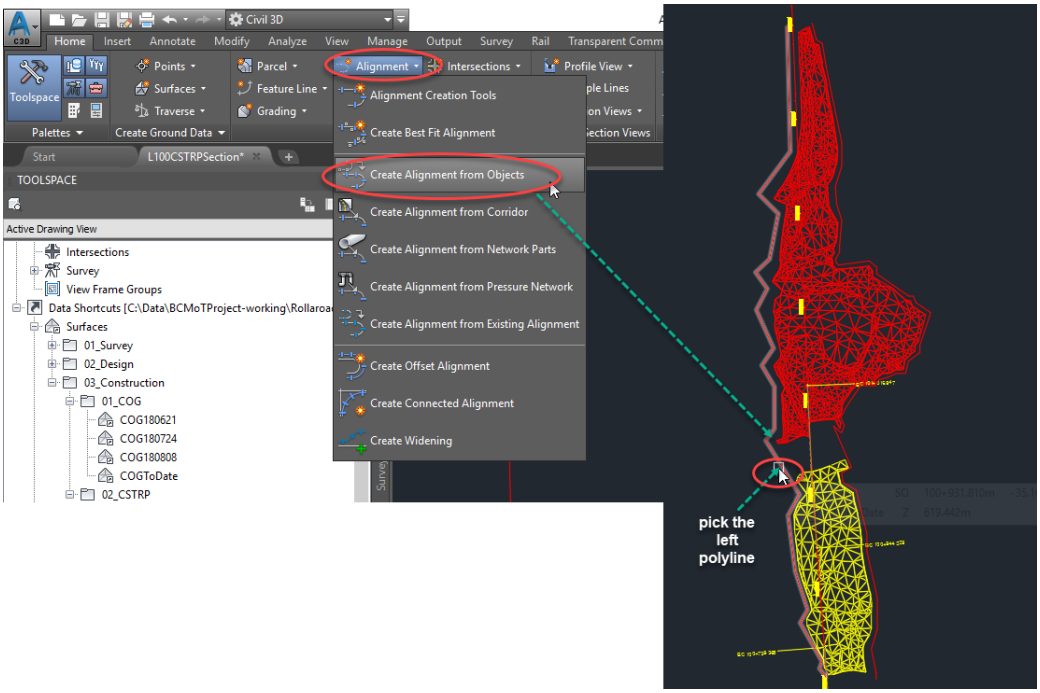
To optimize the space ,I'm going to create two alignments that gonna be used to control the width of the sample lines.



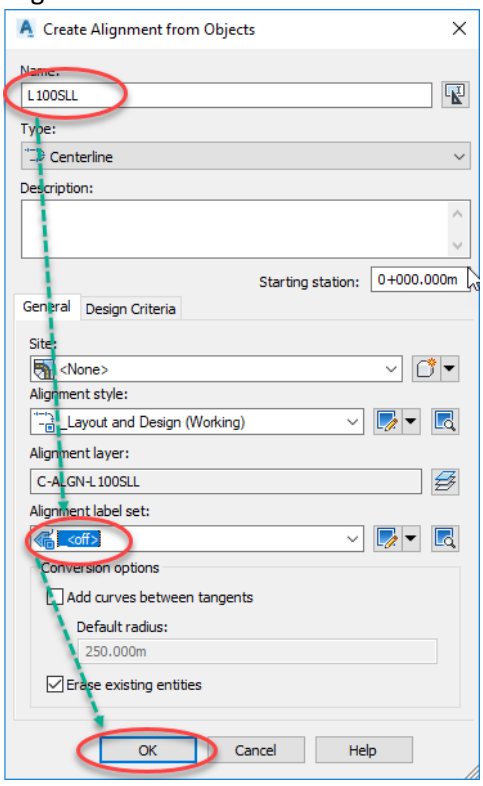
Let’s create the couple of polylines.
Turn off the Osnap by pressing F3 and type ” P line “on command bar.



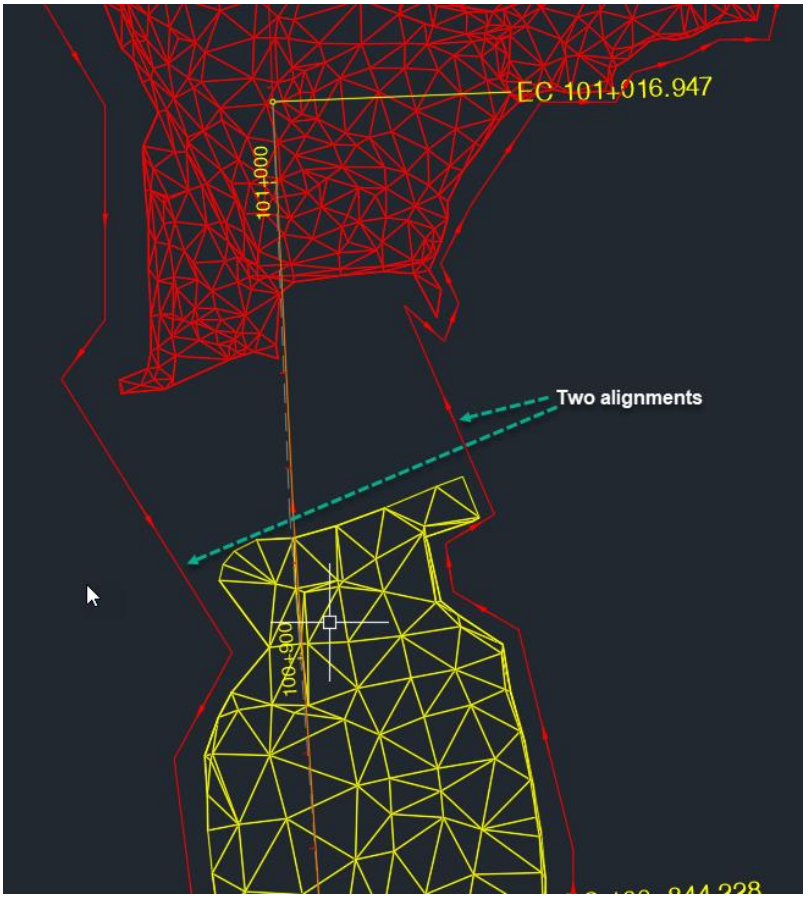
Doesn’t need to be perfect just follow along relatively close to the surface data so that won’t create unnecessary long sample line.
Direction of these resulting alignment does not a matter because alignments are control the width of the sample line.
Case like this, where we have significant amount of data to the right hand side,we don’t have to use uniform sample line, we can control the width with these alignments.



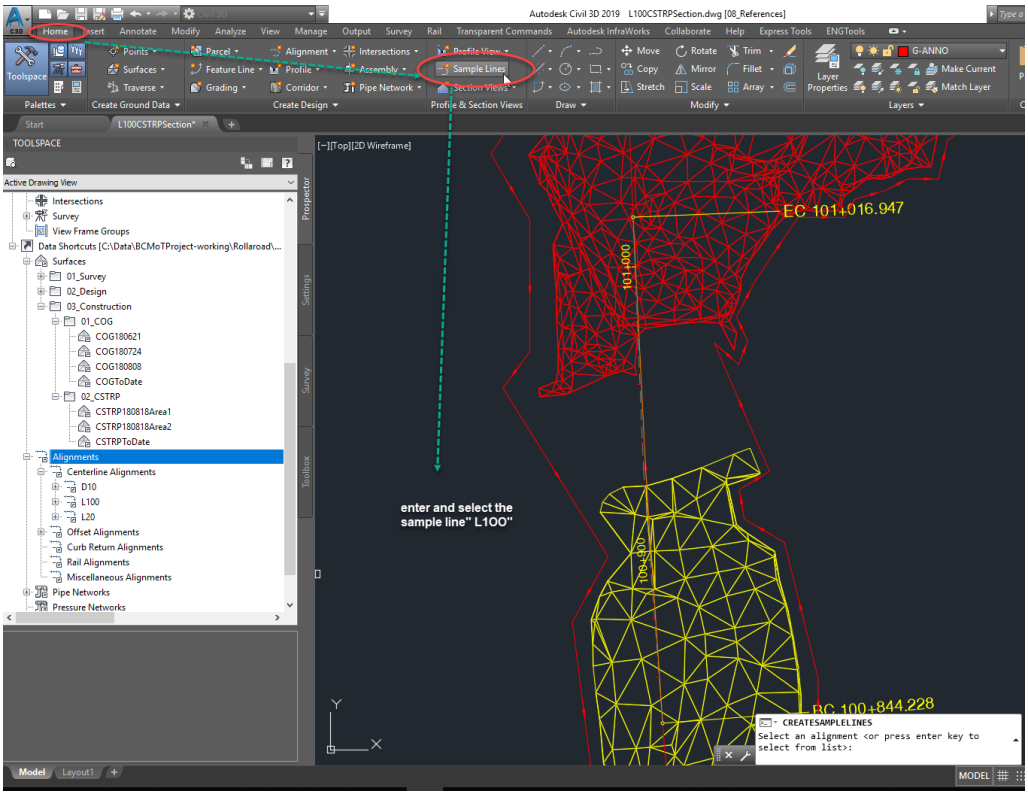
Just press enter at this stage and name the alignment as below(L100SLL) and turn off the alignment label.



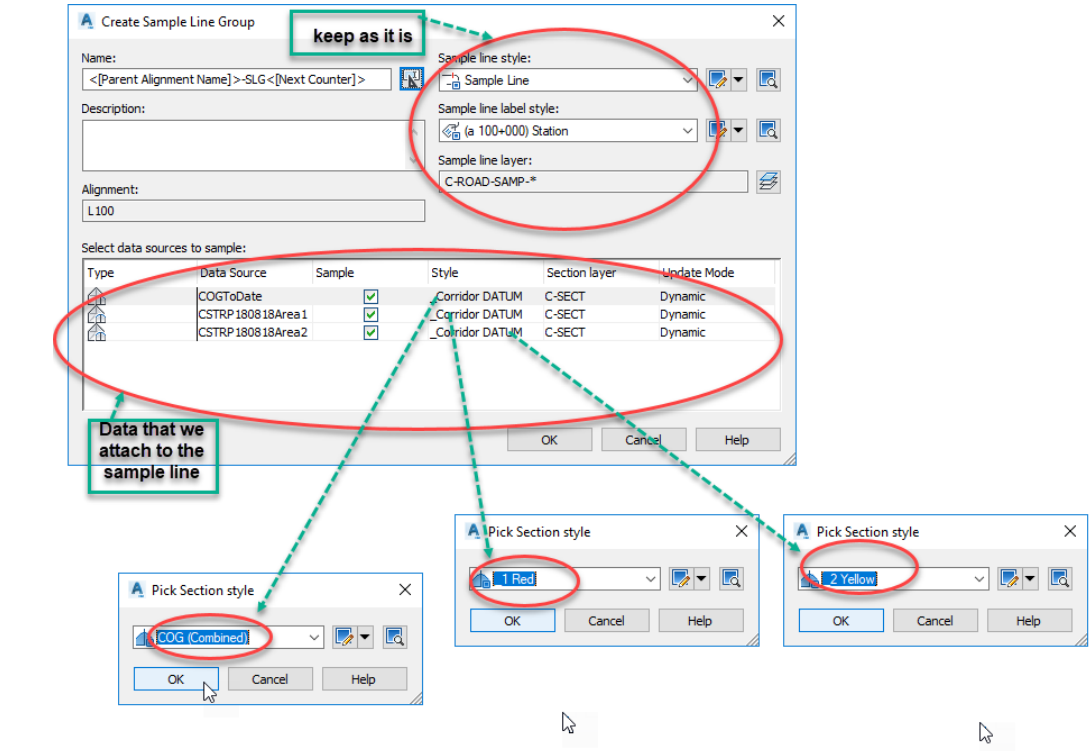
Repeat the same thing for the right polyline and name it as “L100SLR”.

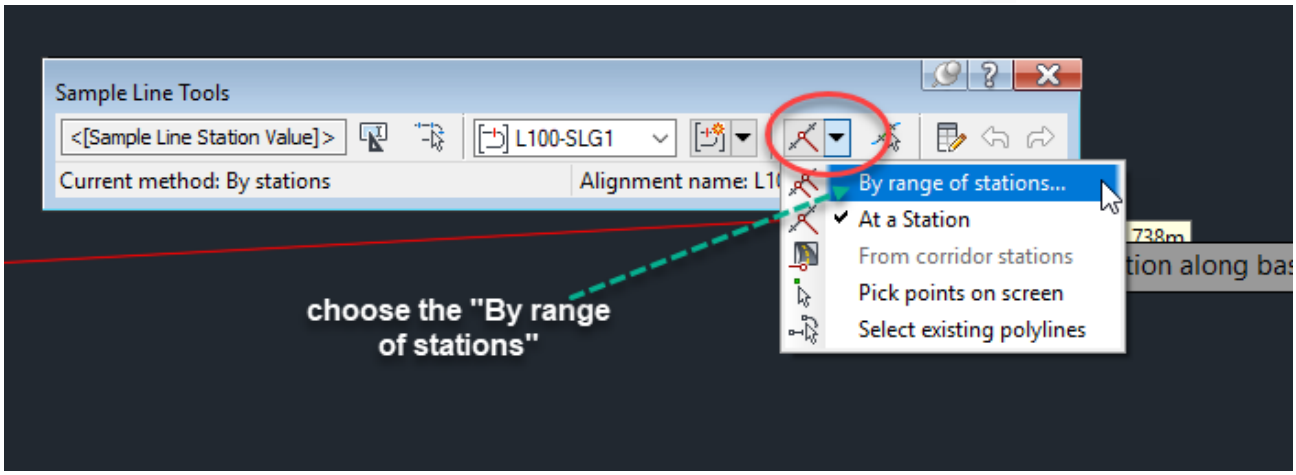


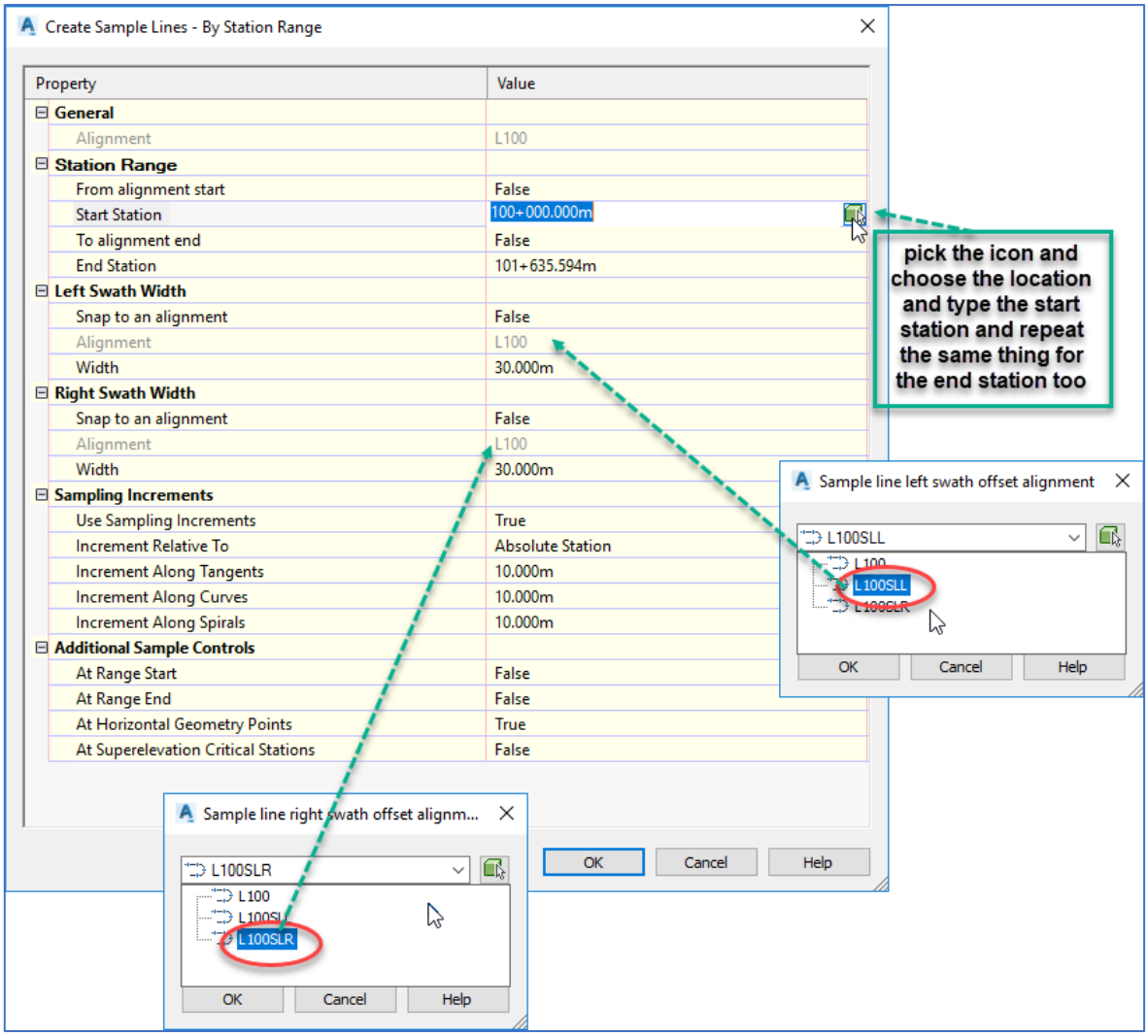
3.7 Create Sample Lines(07.42)

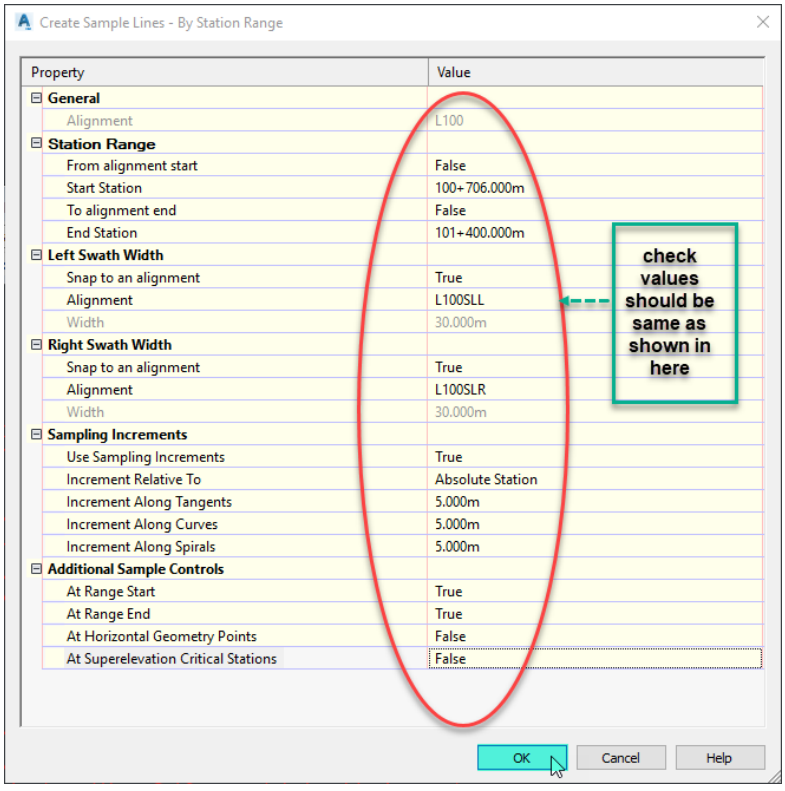


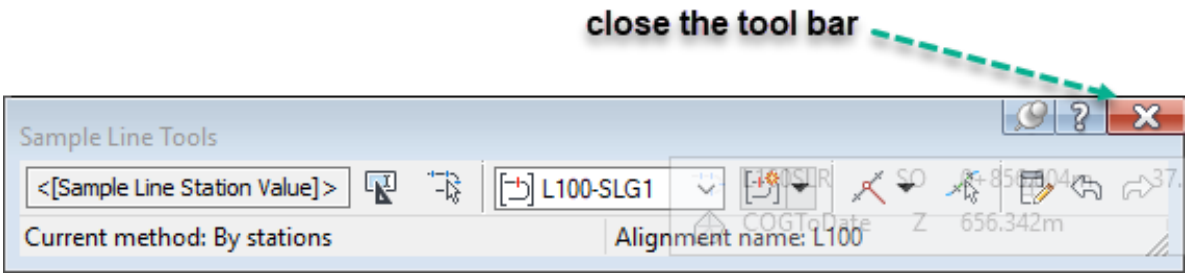
Change the section style as follows,


Create Sample Line Group
keep as it is
Name:
<[Parent Alignment Name]>-SLG<[Next Counter]>
Description:
Alignment:
L100
Sample line style:
Sample Line
Sample line label style:
(a 100+000) Station
Sample line layer:
C-ROAD-SAMP-*
Select data sources to sample:
Type
Data Source
Sample
Style
Section layer
Update Mode
COGToDate
CSTRP180818Area1
CSTRP180818Area2
_Corridor DATUM
C-SECT
Dynamic
Data that we attach to the sample line
OK
Cancel
Help
Pick Section style
COG (Combined)
1 Red
2 Yellow

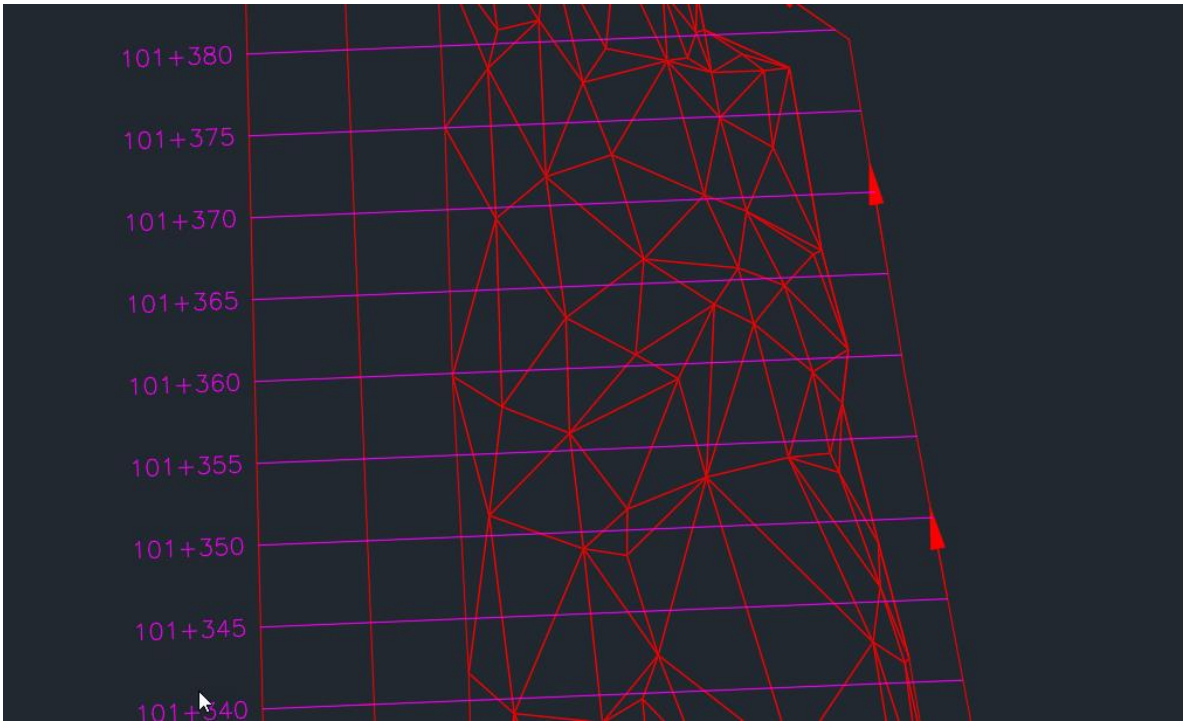

Sample Line Tools
<[Sample Line Station Value]>
L100-SLG1
Current method: By stations
By range of stations...
At a Station
From corridor stations
Pick points on screen
Select existing polylines
choose the "By range of stations"


Create Sample Lines - By Station Range
Property
Value
General
Alignment
L100
Station Range
From alignment start
False
Start Station
100+000.000m
To alignment end
False
End Station
101+635.594m
Left Swath Width
Snap to an alignment
False
Alignment
L100
Width
30.000m
Right Swath Width
Snap to an alignment
False
Alignment
L100
Width
30.000m
Sampling Increments
Use Sampling Increments
True
Increment Relative To
Absolute Station
Increment Along Tangents
10.000m
Increment Along Curves
10.000m
Increment Along Spirals
10.000m
Additional Sample Controls
At Range Start
False
At Range End
False
At Horizontal Geometry Points
True
At Superelevation Critical Stations
False
OK
Cancel
Help
pick the icon and choose the location and type the start station and repeat the same thing for the end station too
Sample line left swath offset alignment
L100SLL
L100
L100SLL
L100SLR
OK
Cancel
Help
Sample line right swath offset alignm...
L100SLR
L100
L100SLL
L100SLR
OK
Cancel
Help


Create Sample Lines - By Station Range
Property
Value
General
Alignment
L100
Station Range
From alignment start
False
Start Station
100+706.000m
To alignment end
False
End Station
101+400.000m
Left Swath Width
Snap to an alignment
True
Alignment
L100SLL
Width
30.000m
Right Swath Width
Snap to an alignment
True
Alignment
L100SLR
Width
30.000m
Sampling Increments
Use Sampling Increments
True
Increment Relative To
Absolute Station
Increment Along Tangents
5.000m
Increment Along Curves
5.000m
Increment Along Spirals
5.000m
Additional Sample Controls
At Range Start
True
At Range End
True
At Horizontal Geometry Points
False
At Superelevation Critical Stations
False
check values should be same as shown in here
OK
Cancel
Help

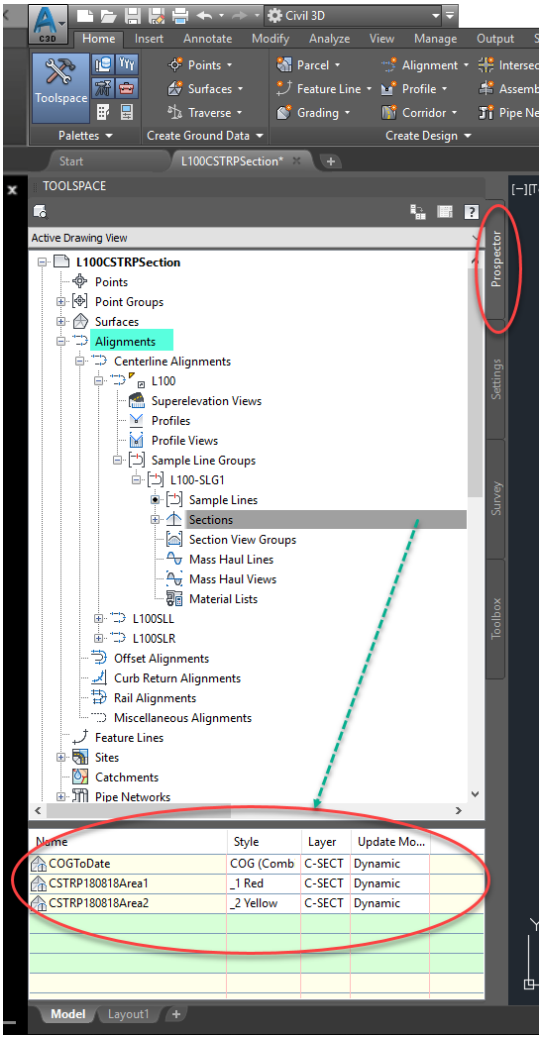


Finally you will get the following image.

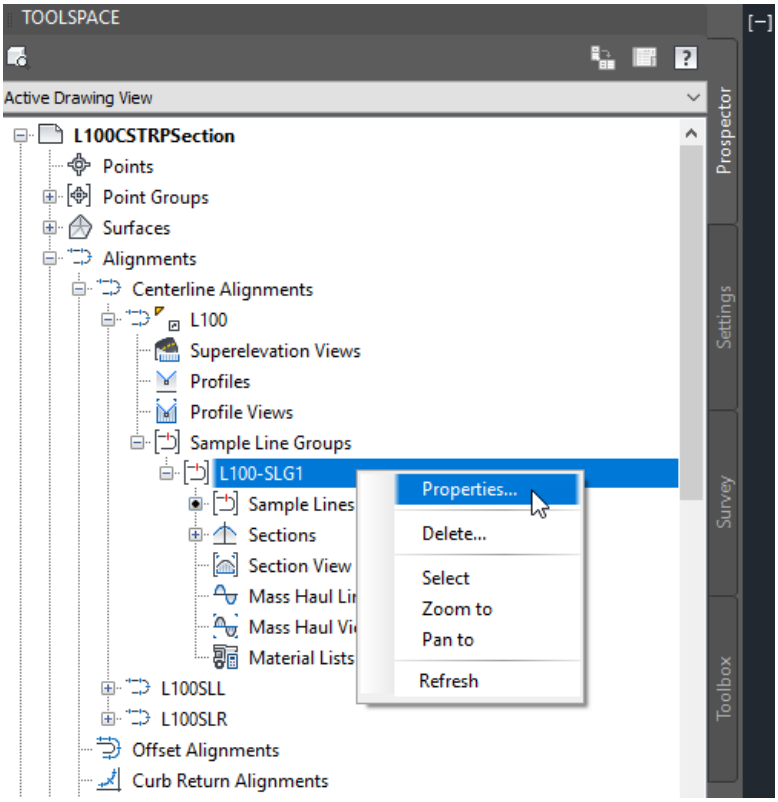


3.8 Review Sample Line and Section Data in Prospector(11.42)

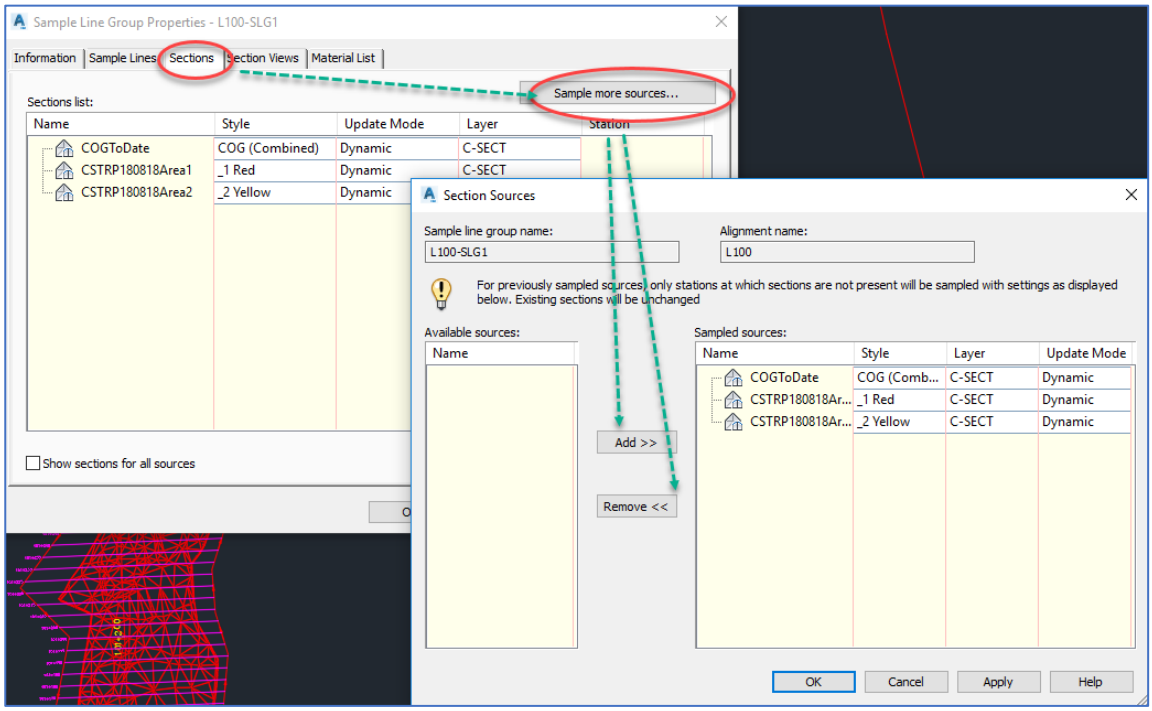
Following window will show you the section data that we have attached to those sample line.



Any time you can modify the sample line properties of the sample line group.

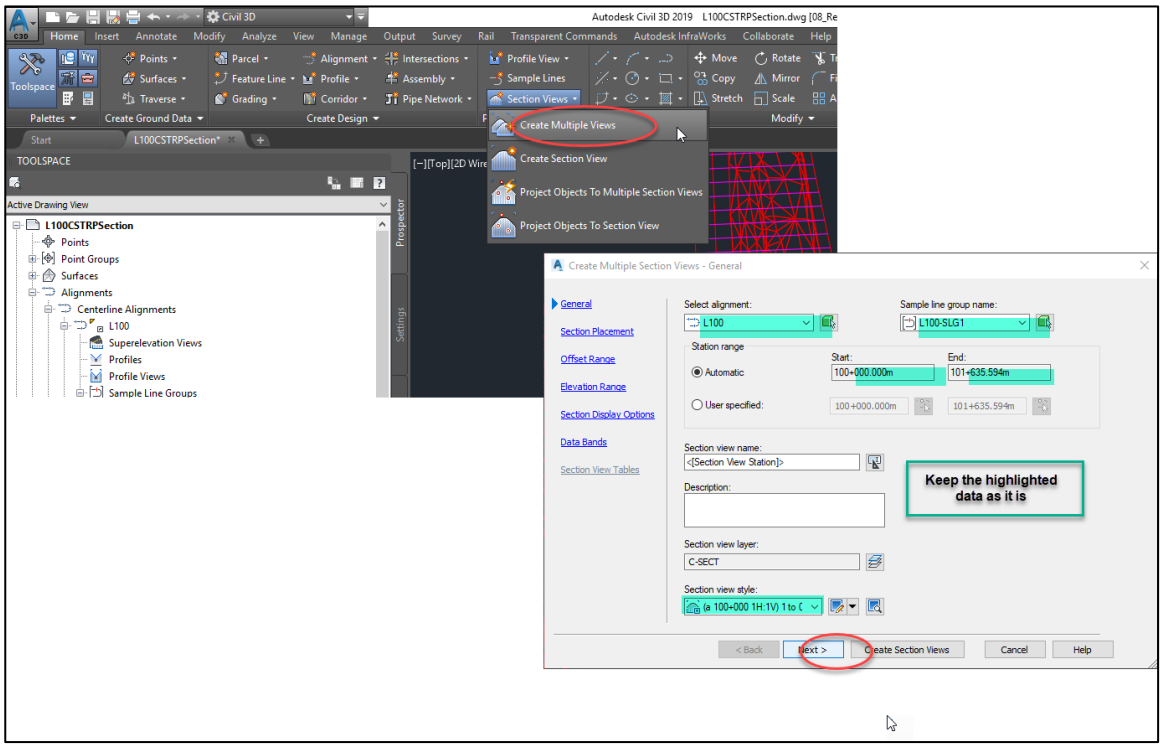


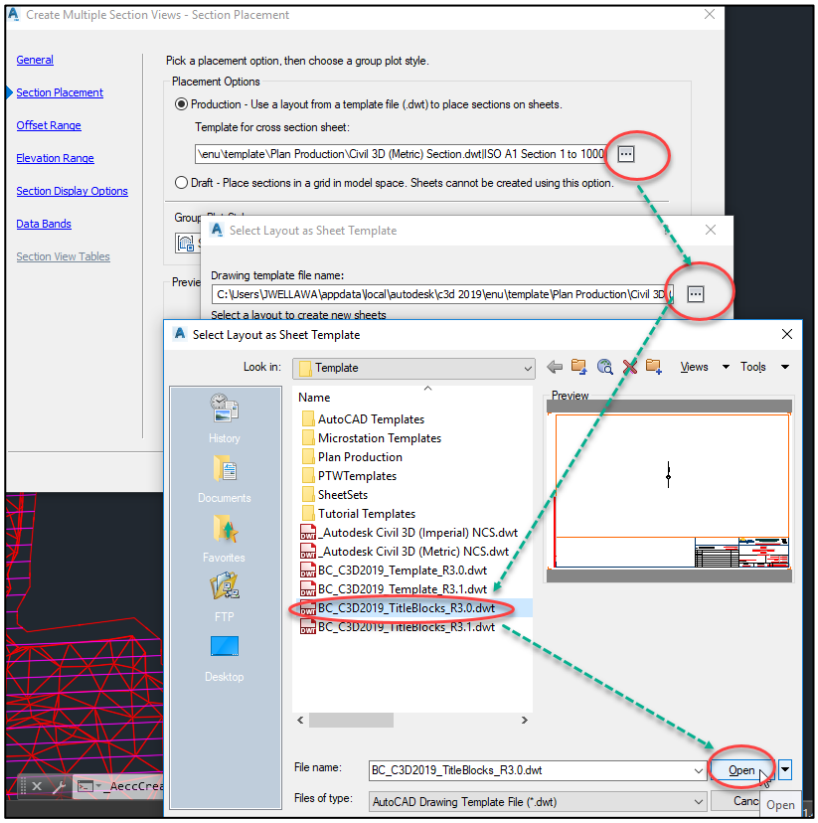
You can add or remove the data to those sample line.

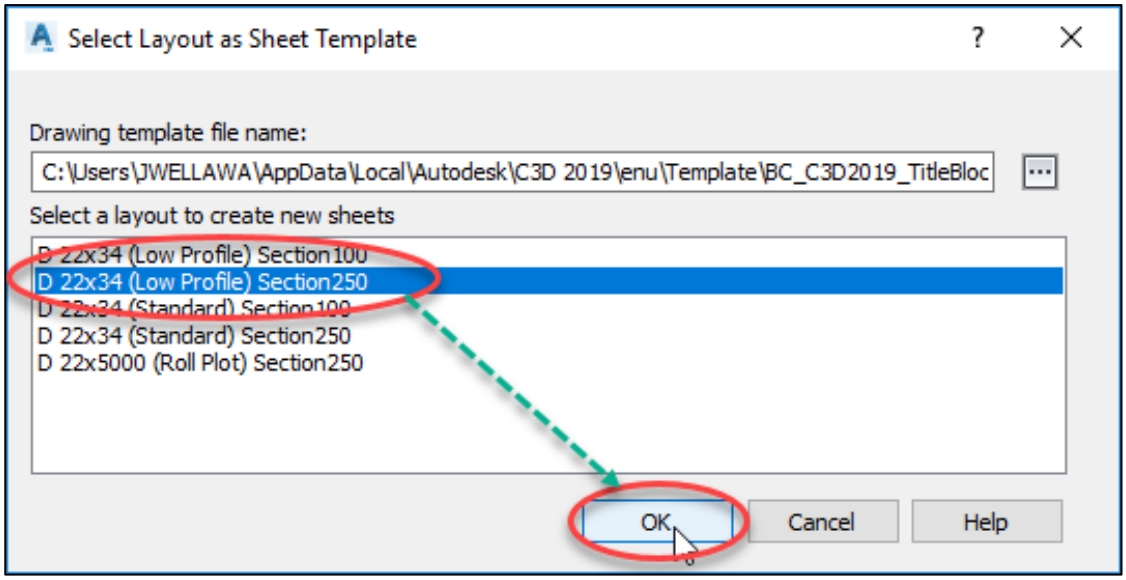


3.9 Create section views(12.18)

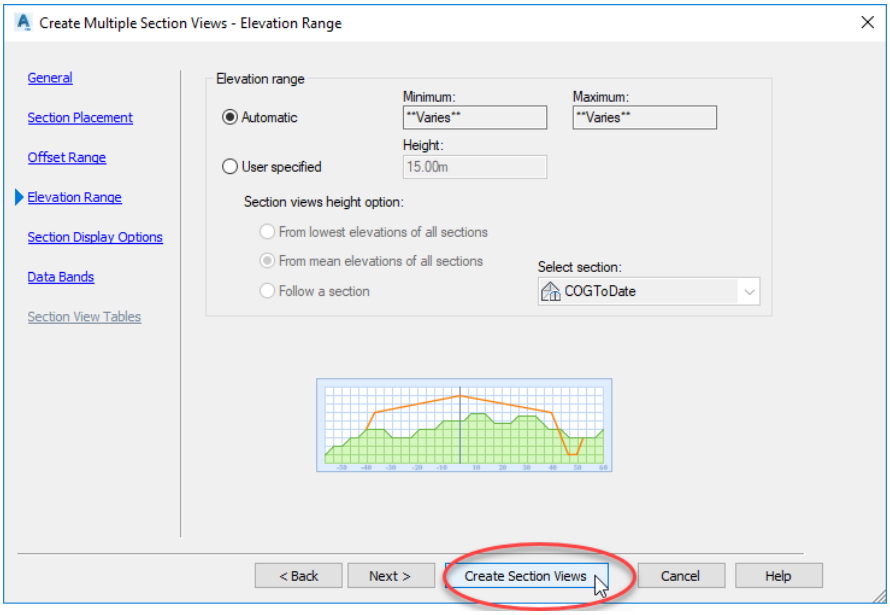
First of all change the annotation scale to 250.

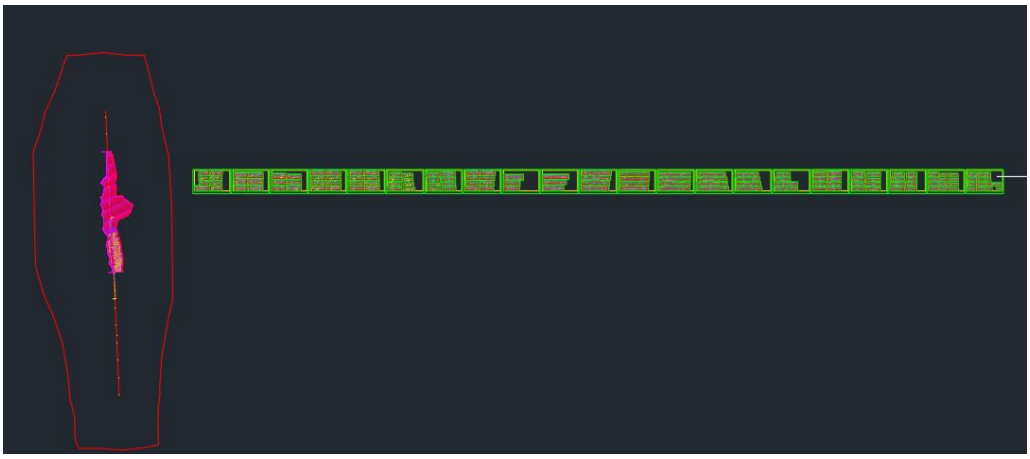






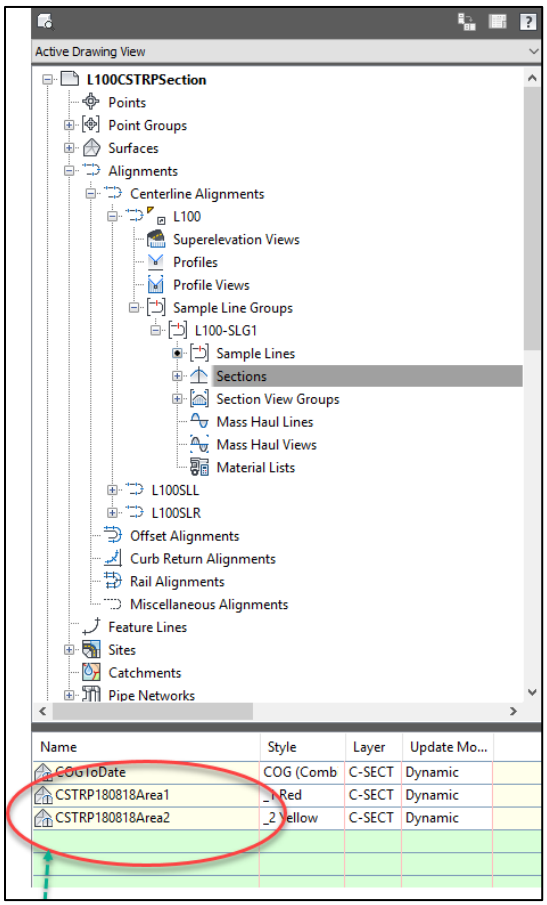
After this just skip the windows ,we don't need to change any details for now and the last window press the "create section views" button drop those section views into the drawing as follows.





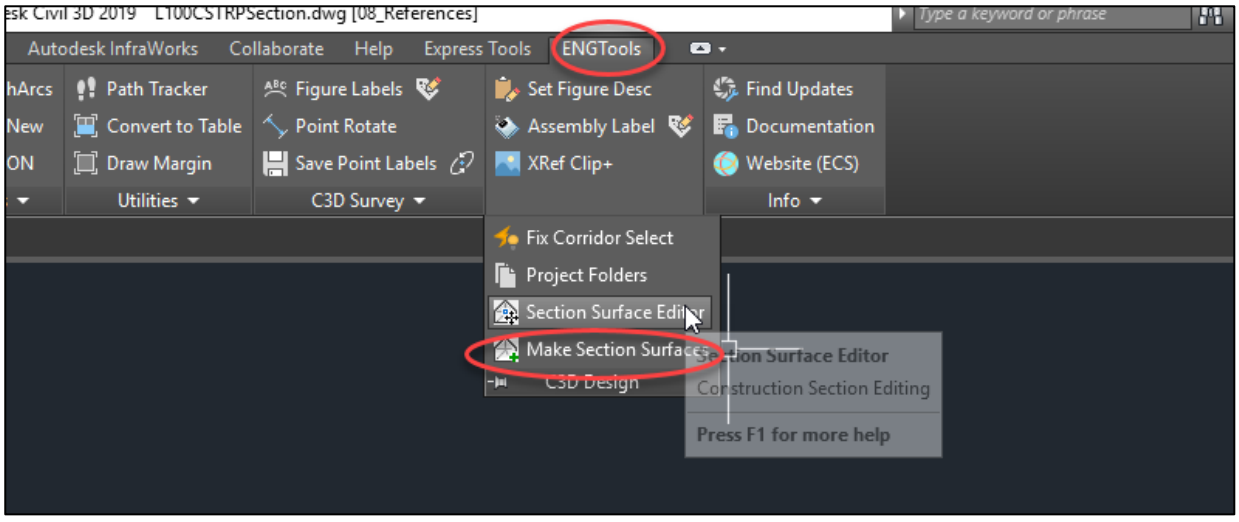
3.10 Create Section Surface Data(15.52)

To refresh your memory,what we have on the sample line is section data that is dynamic to the surfaces.

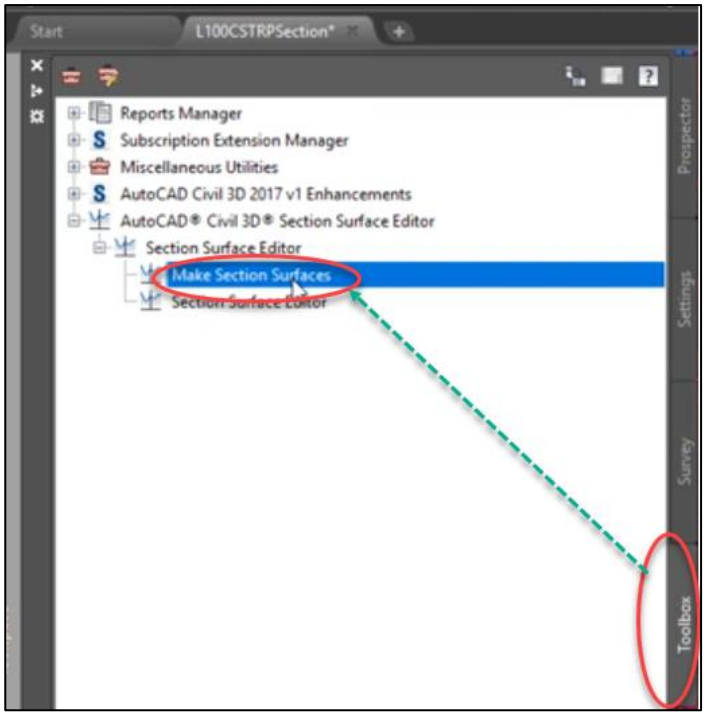


Any of those above surfaces are changed and the section data on the sample lines changed and that will be reflected in section views.

We need to do create section surface data that will allow to edit information in cross section which will result in changes to the surface and that's where the section surface editor utility comes in a play
You can access to the section surface editor in two places as shown in below.



Or
In a Toolspace,



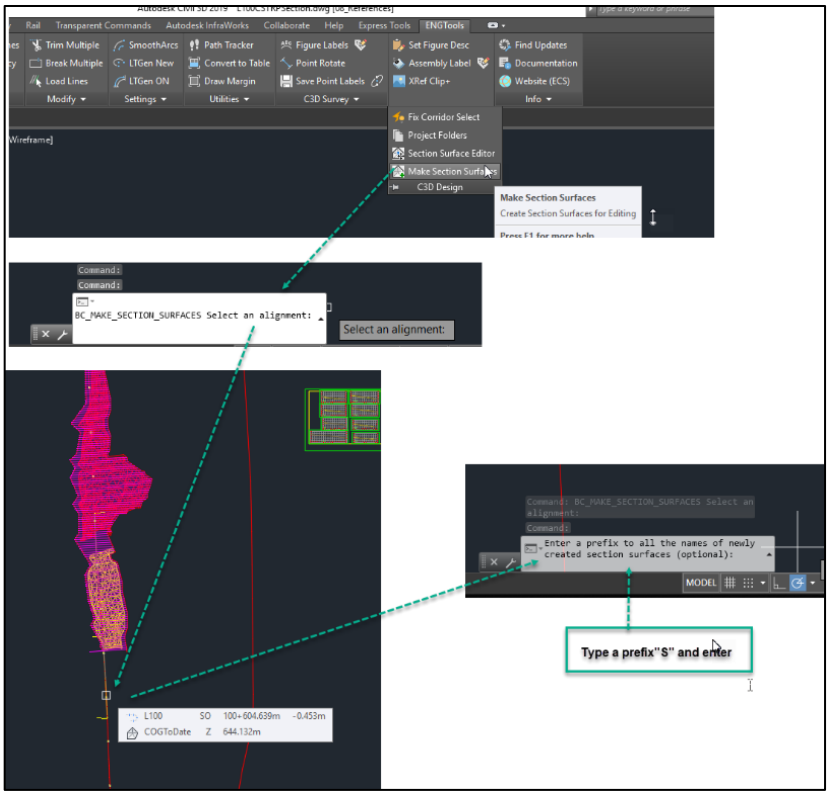
What is the purpose of this?

To create another sets of surfaces

- Two new stripping surfaces
- COGToDate surface

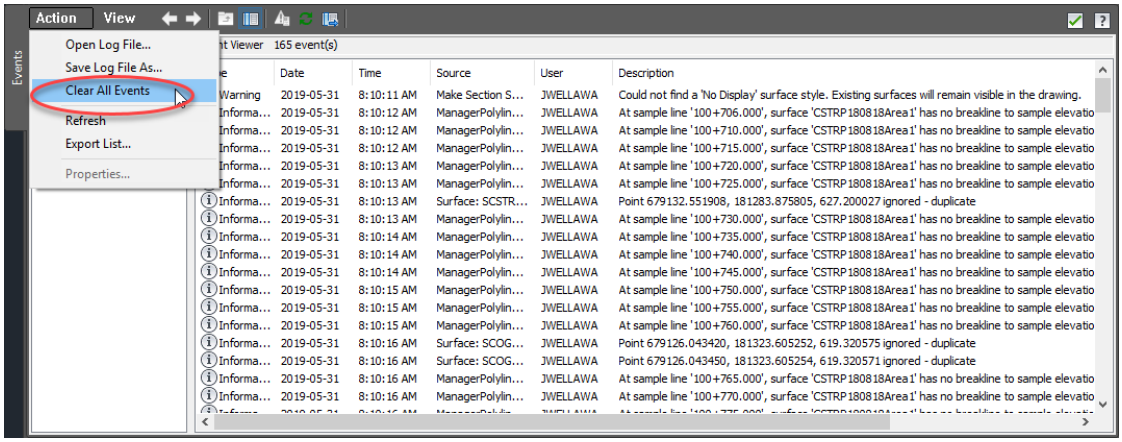
And it's going to replace the data on the sample with those section surfaces.

Let's follow the steps as shown in below:

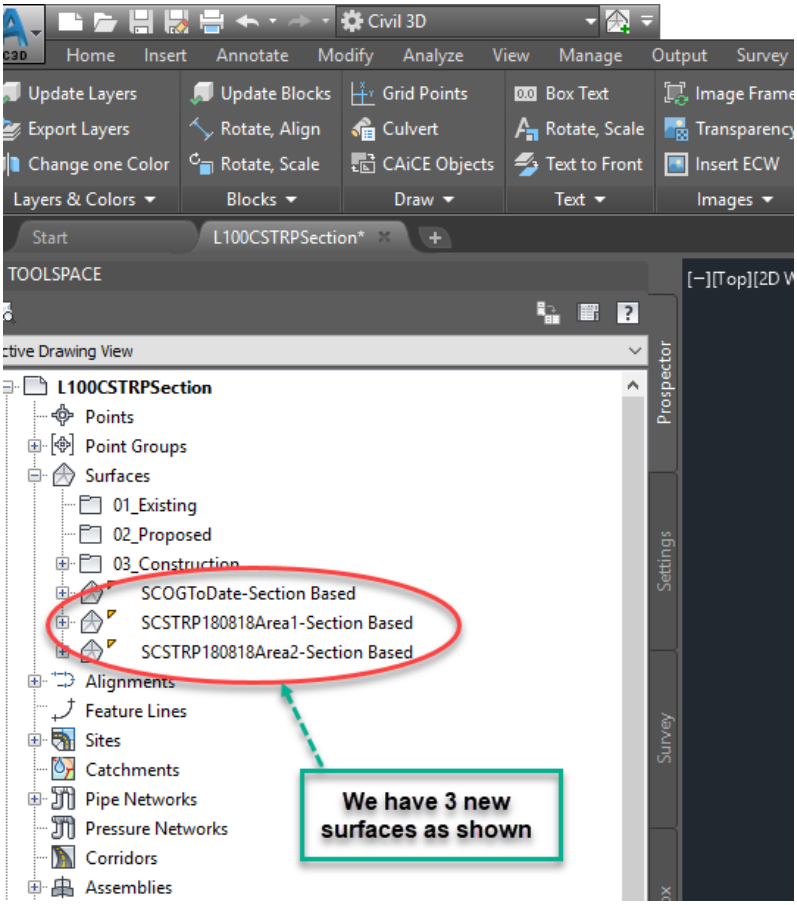


Civil 3D goes through and create section surfaces what it is essentially does,it' s going to create breakline data consisting of 3D polylines for each of the 3 surfaces and it is going to create those 3 section surfaces and those section surfaces will be added to the sample lines replacing the original surface section data.

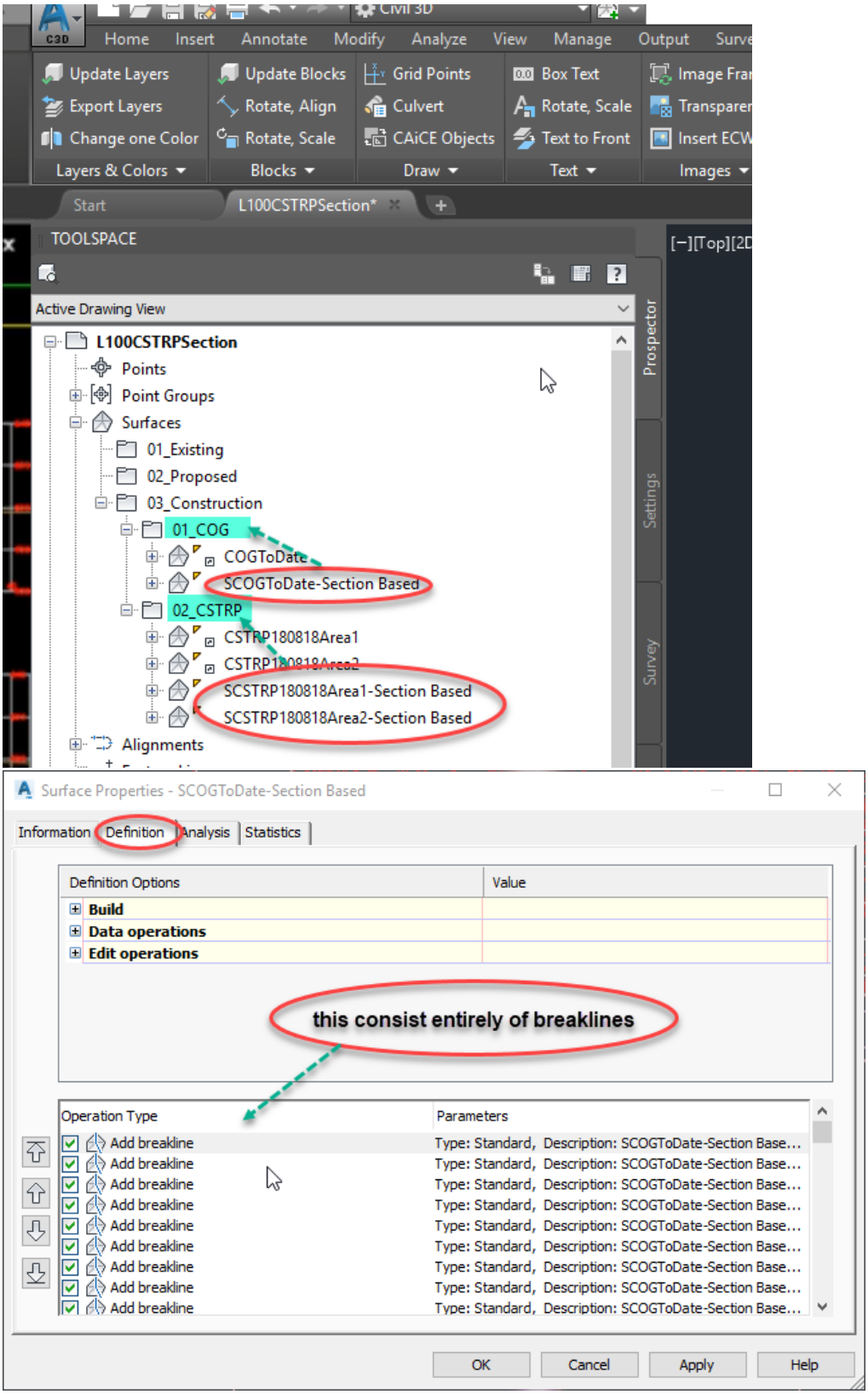
Section surfaces made panorama displays at this point unnecessarily huge amount of warning and notifications.Just clear the events and close that window.



3.11 Review Section Surfaces(18.42)

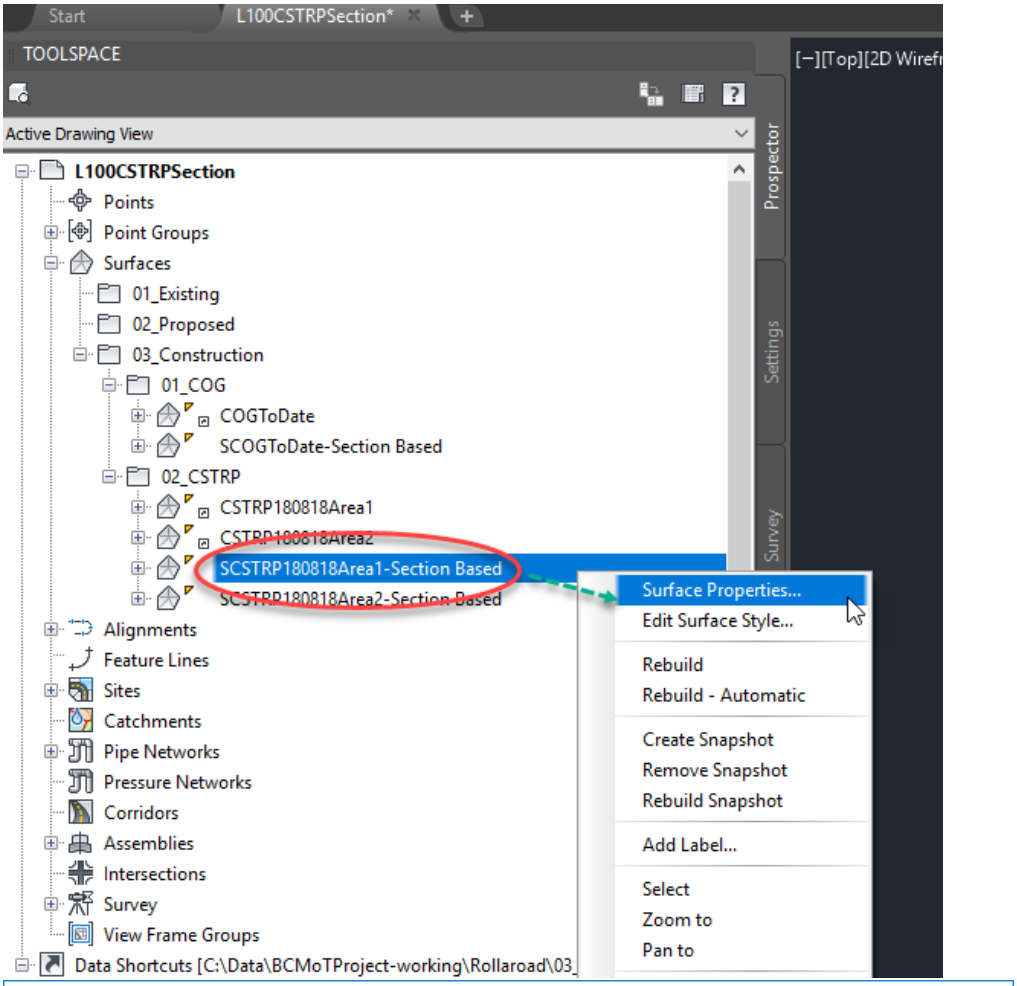


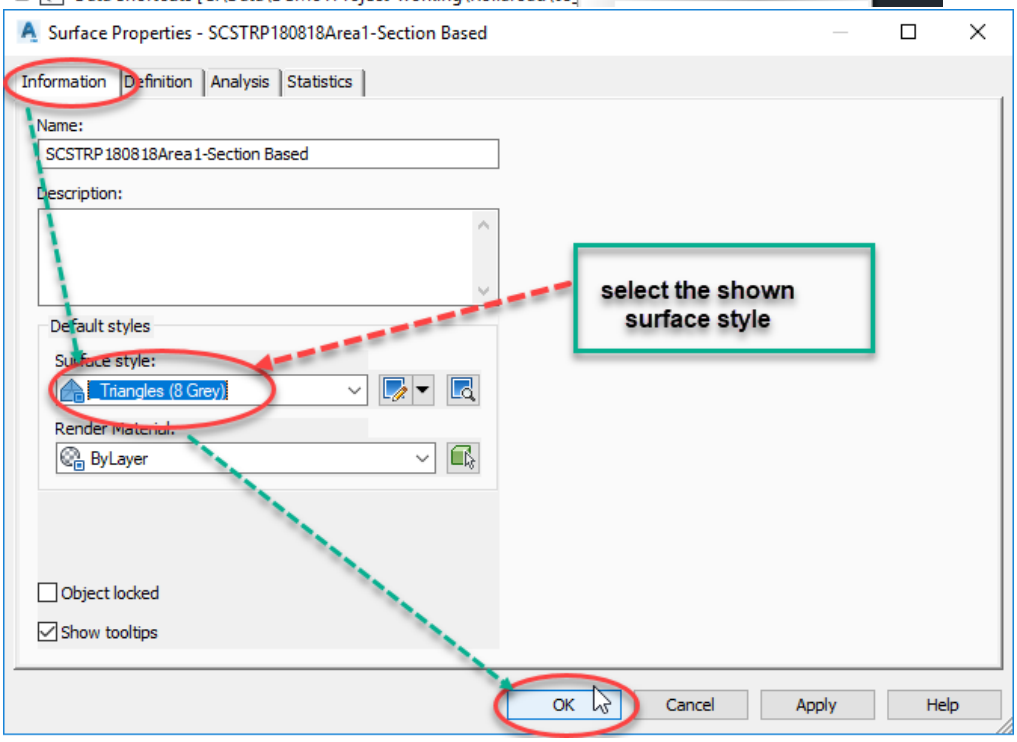
And move those new drawings into the right folders.



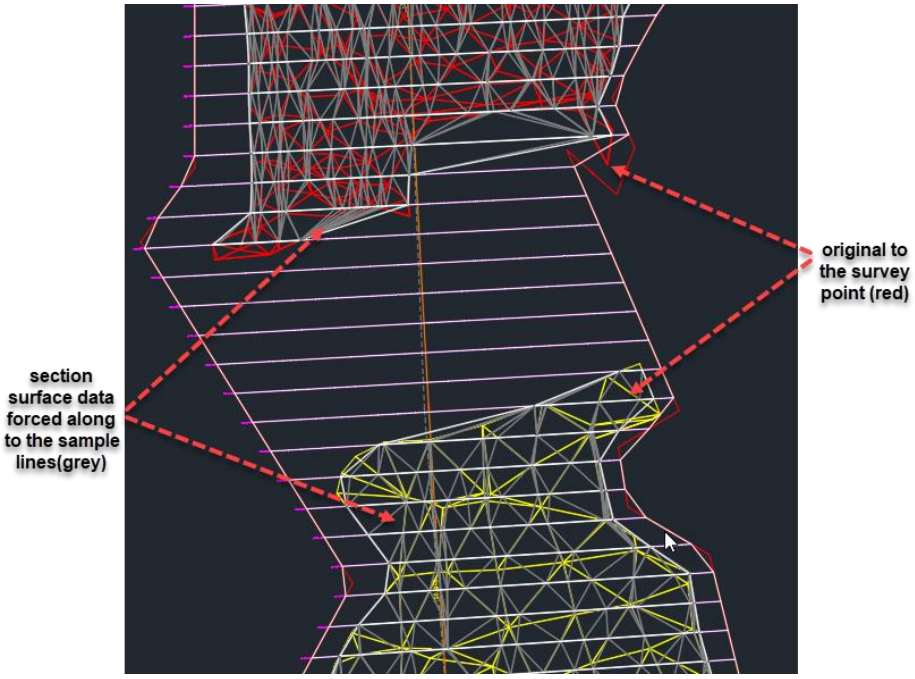
Trangulation has been forced along the sample line, you can see the white polylines and those are the breaklines.

You can see the new section surfaces with traingulation forced along sample lines. Let’s modify the Area 1.





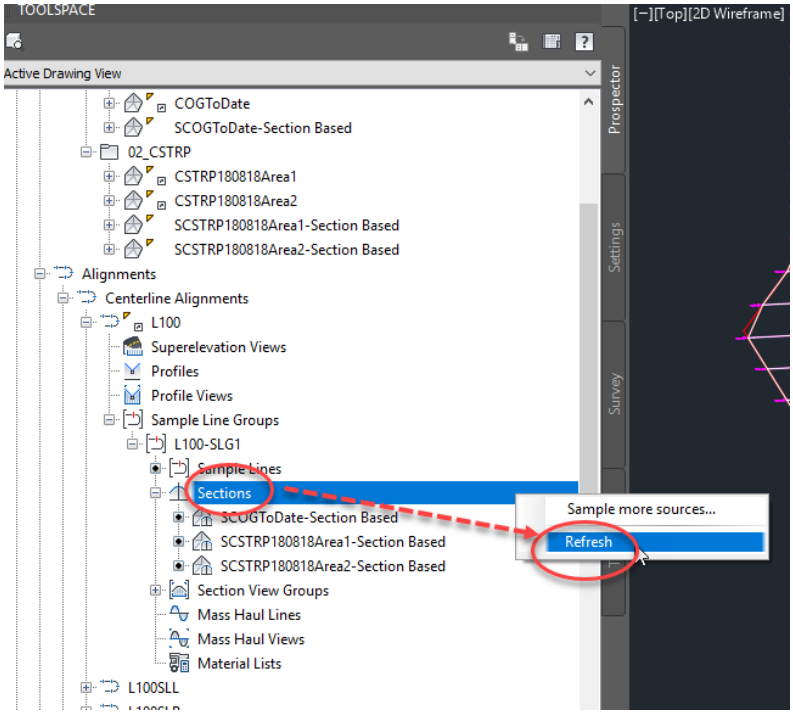
Select the same surface style for the area two as well.



3.12 Refresh Section data in Sample Line Group(21.02)

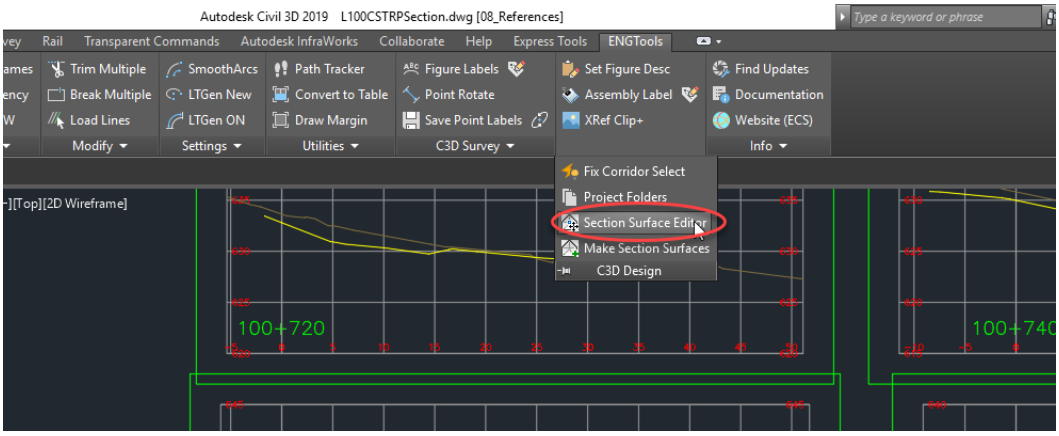
If we go down to the sample line group it doesn't make itself evidence right away but if you go the section and right click on it and press"update" it will give some sense.

And you can see section surface data on the sample line and the other section data has been removed.

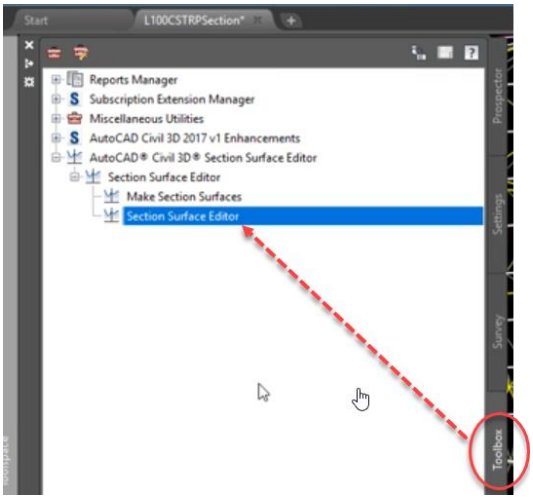


3.13 Review Section Surface editor(SSE)(21.29)

Section data has been created and you can use section surface editor to close off all of the suface data.

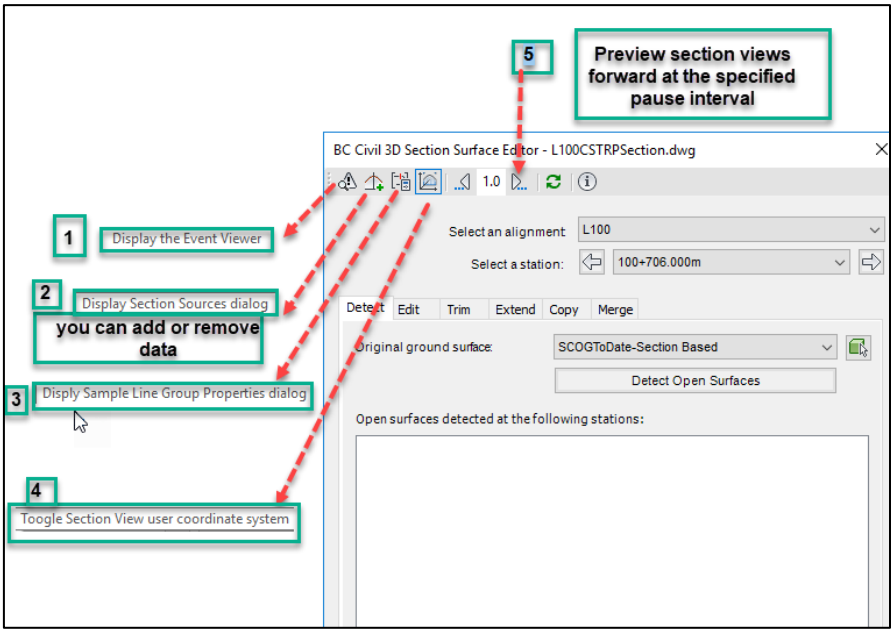


Or



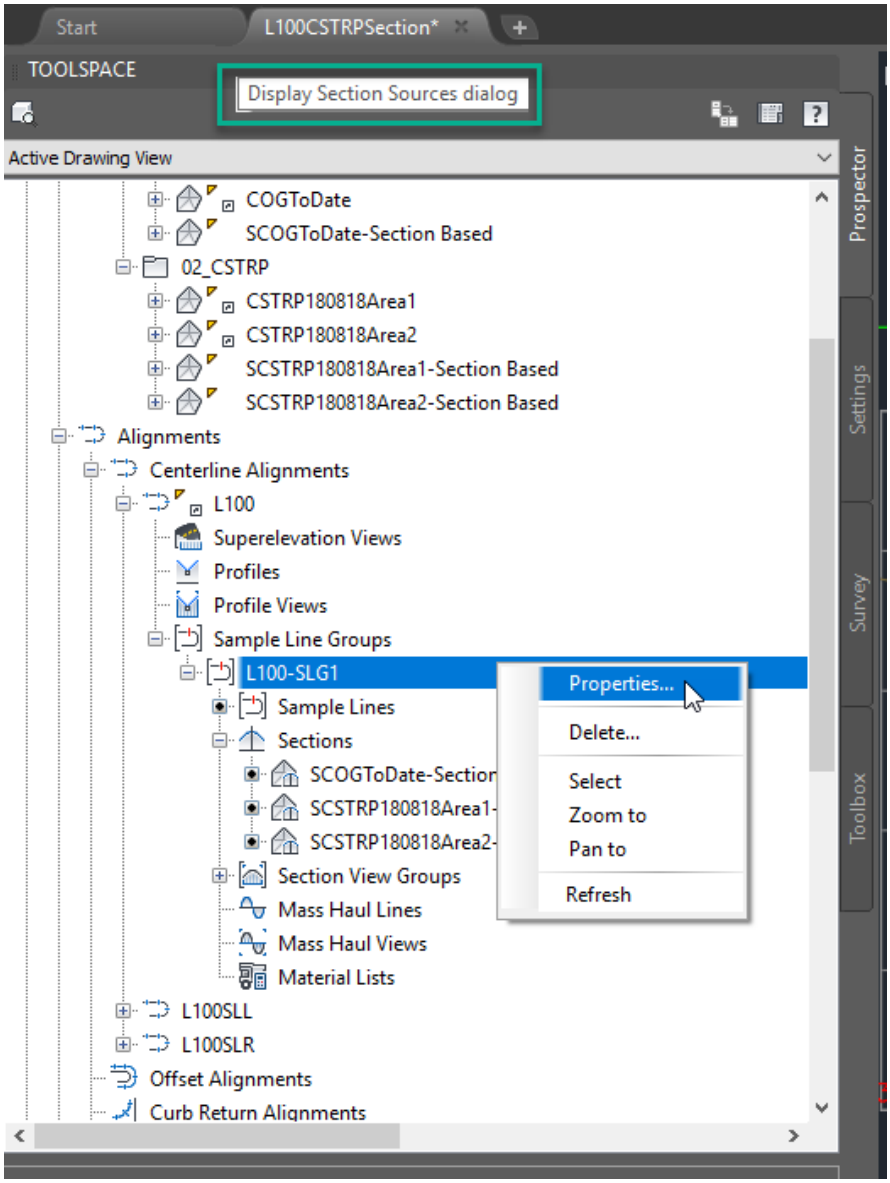
As soon as you launch sectioin surface editor you can see the dialog.

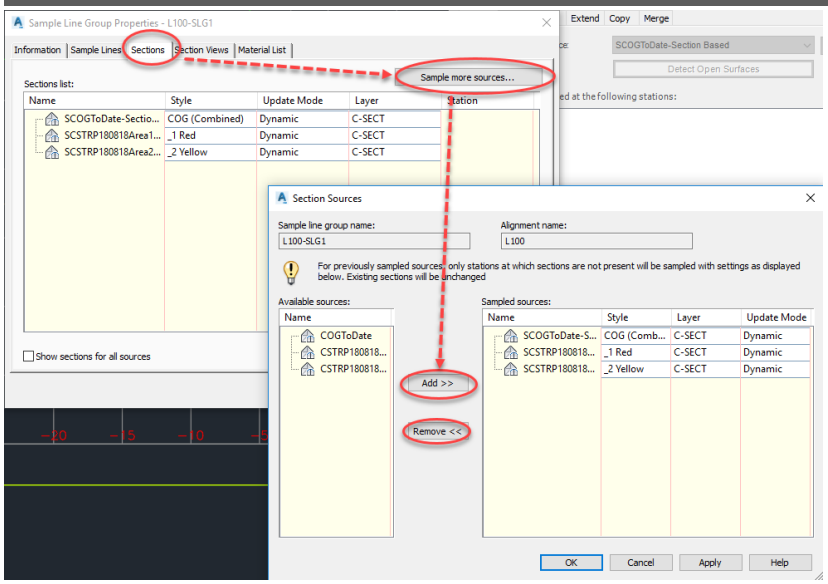
This dialog known as motlist dialog which means we can zoom in and navigate in the drawing and we can draw ,erase and can perform any commands while this dialog is active.



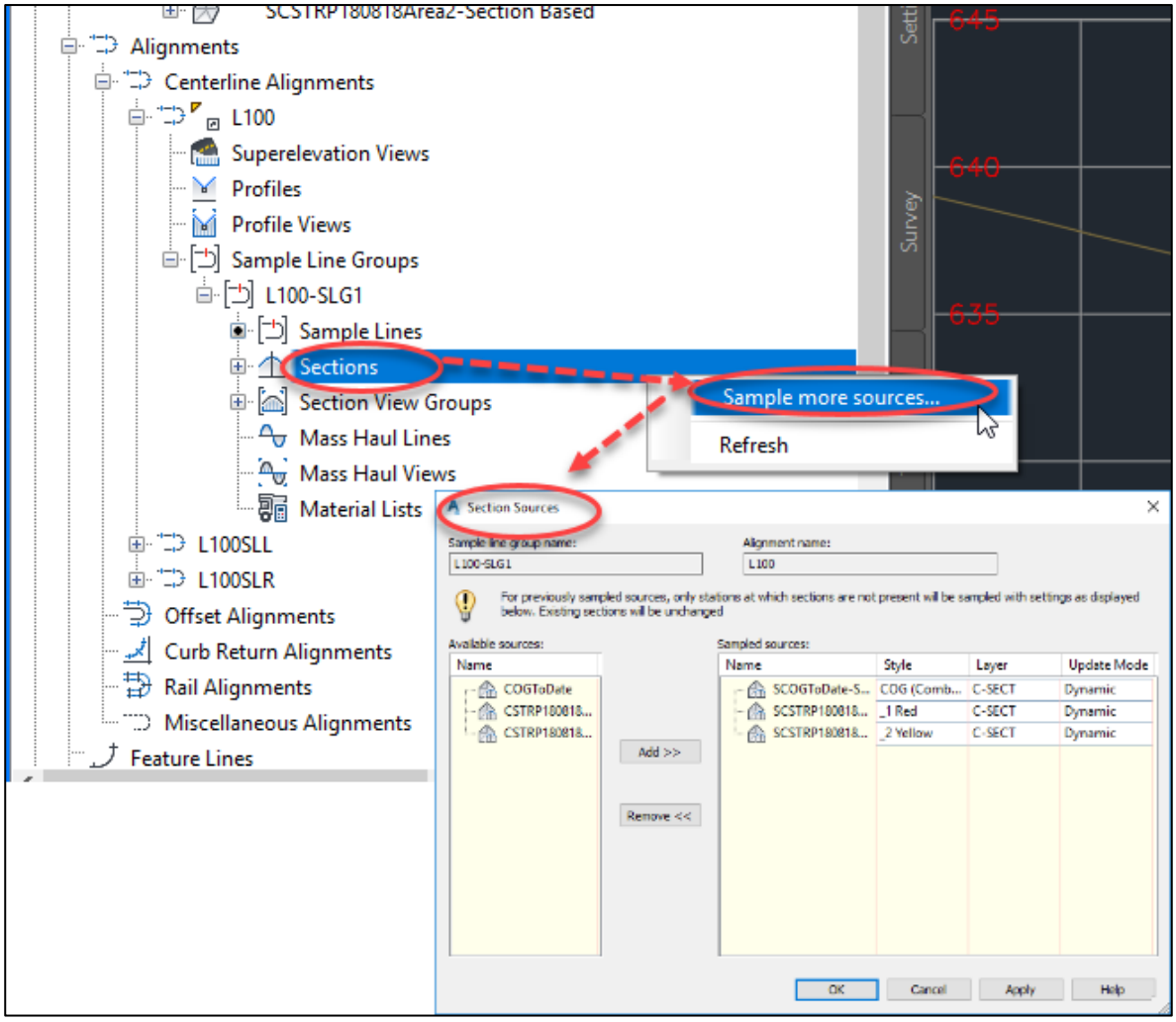
Motlist dialog box

2 Brief explantion how to access the " Display Section Sources dialog" other than the icon shown above.

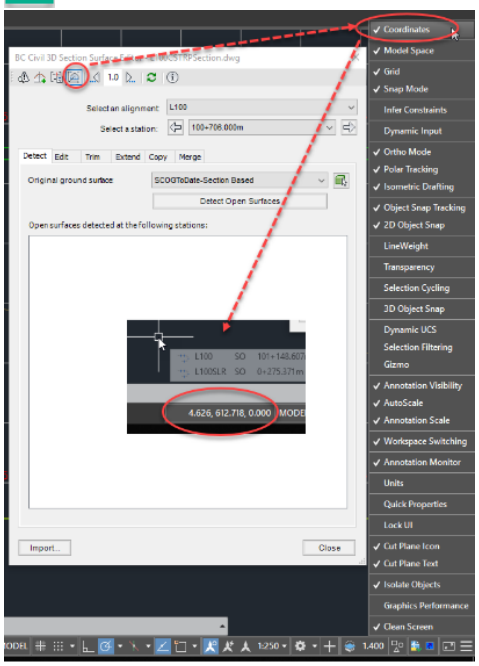

Start
L100CSTRPSection*
TOOLSPACE
Display Section Sources dialog
Active Drawing View
COGToDate
SCOGToDate-Section Based
02_CSTRP
CSTRP180818Area1
CSTRP180818Area2
SCSTRP180818Area1-Section Based
SCSTRP180818Area2-Section Based
Alignments
Centerline Alignments
L100
Superelevation Views
Profiles
Profile Views
Sample Line Groups
L100-SLG1
Sample Lines
Sections
SCOGToDate-Section
SCSTRP180818Area1-
SCSTRP180818Area2-
Section View Groups
Mass Haul Lines
Mass Haul Views
Material Lists
L100SLL
L100SLR
Offset Alignments
Curb Return Alignments
Properties...
Delete...
Select
Zoom to
Pan to
Refresh
Prospector
Settings
Survey
Toolbox


Sample Line Group Properties - L100-SLG1
Information
Sample Lines
Sections
Section Views
Material List
Sample more sources...
Sections list:
Name
Style
Update Mode
Layer
Station
Section Sources
Sample line group name:
L100-SLG1
Alignment name:
L100
Available sources:
Sampled sources:
Add >>
Remove <<
OK
Cancel
Apply
Help

or

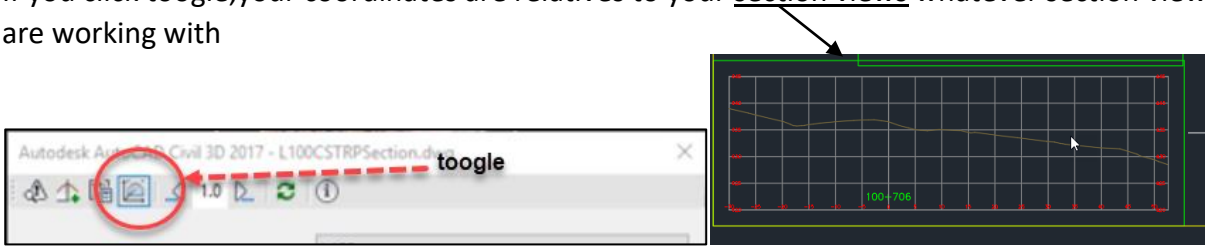


4

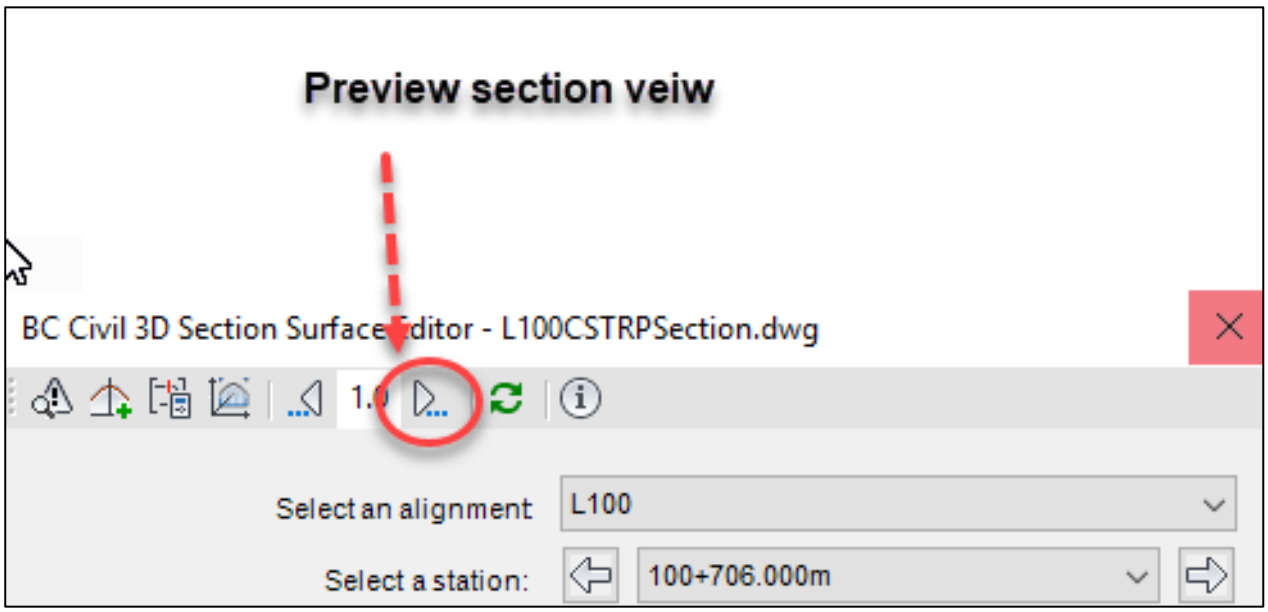


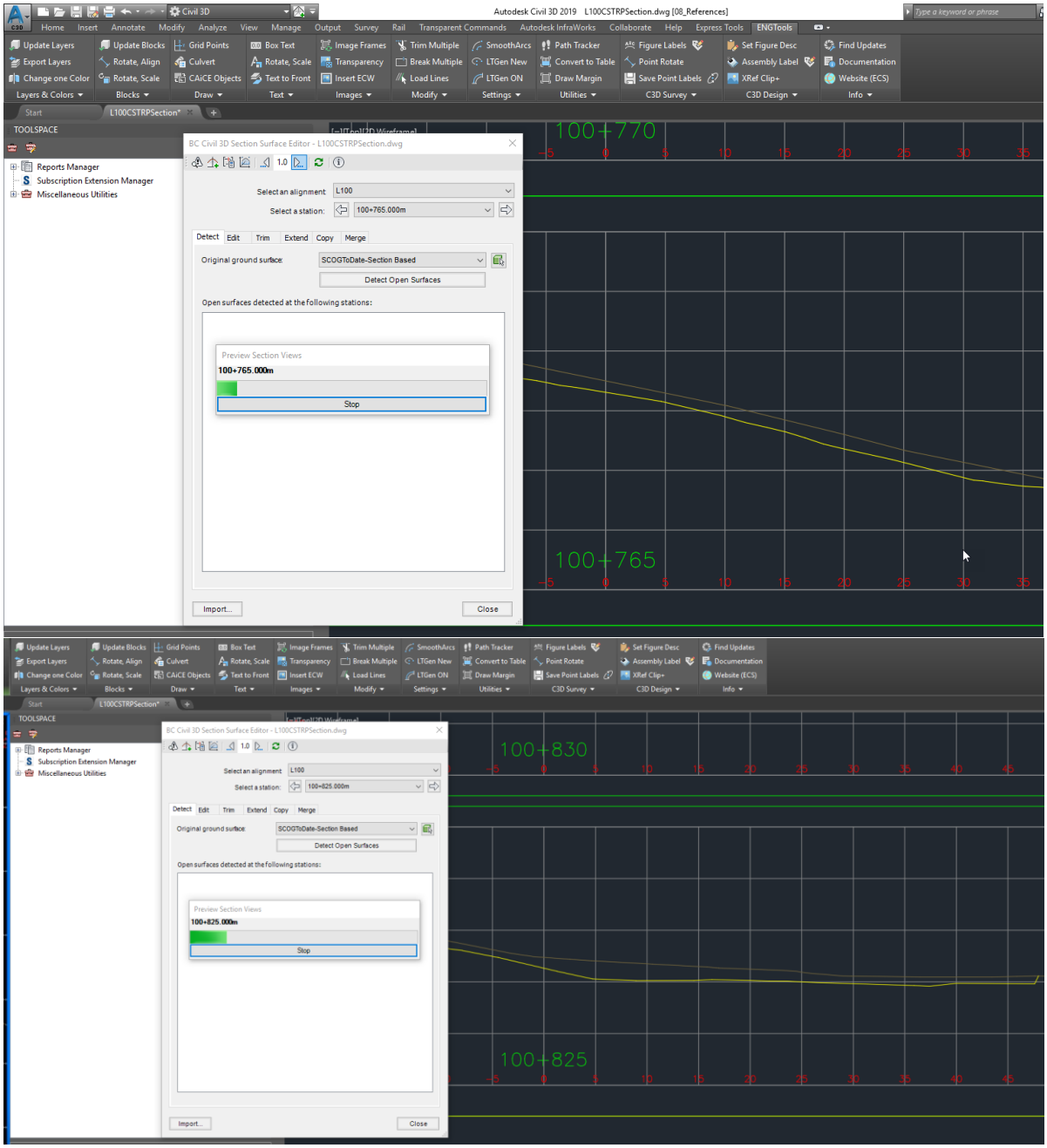
If you move your mouse around the co-ordinates that's "UTM" coordinates.

If you click toogle,your coordinates are relatives to your section views whatever section view you are working with

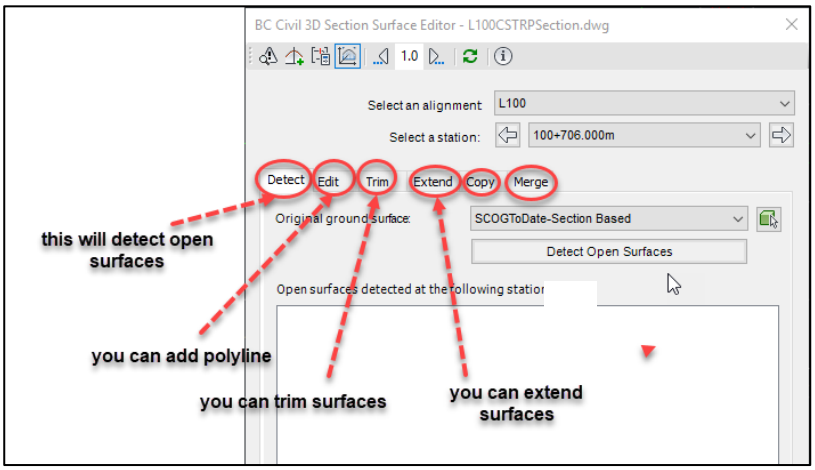


5 This allow you to preview your station at an increment every second whats happening it's navigating to the individual section veiws. That's always useful if you interested in getting a quick field for the surfaces.



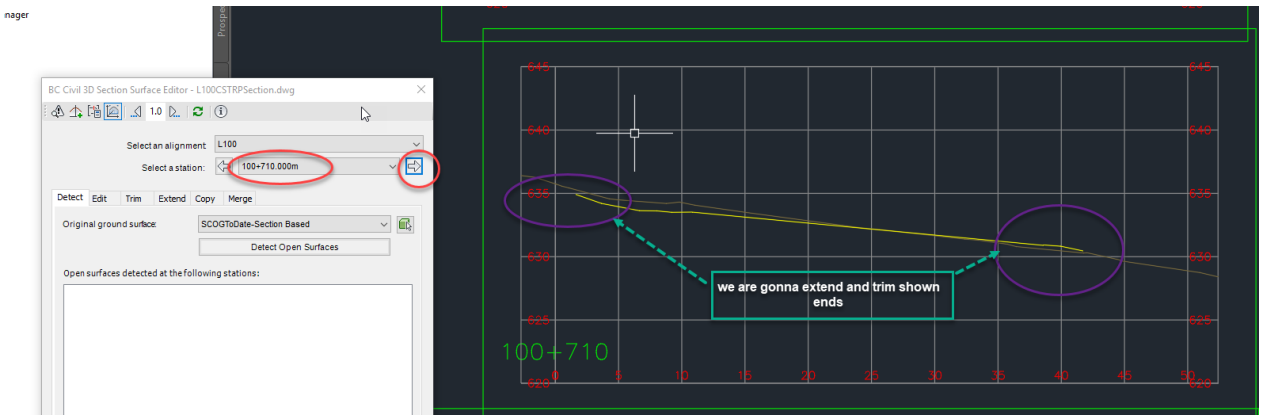


Let's have a look below tabs…

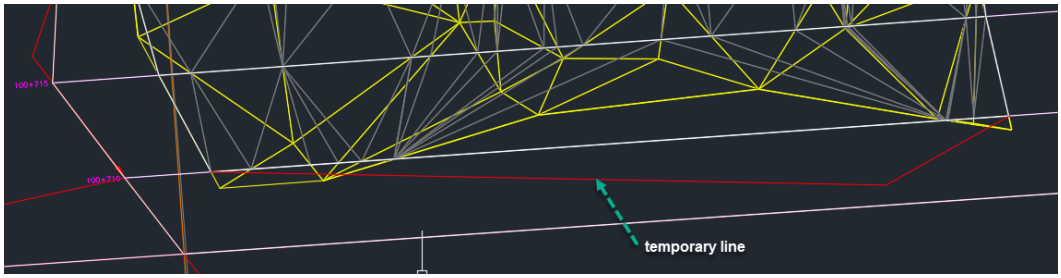


3.14 Extend and Trim Single Station(28.37)

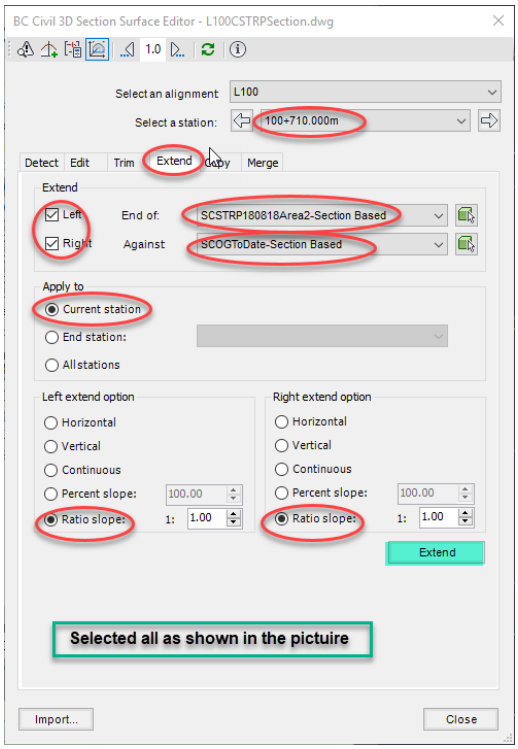
Now we are going to edit few individual stations before batch editing everything.
Go to the ENGTool tab and select the section surface editor.
Let's go to the 1st station.

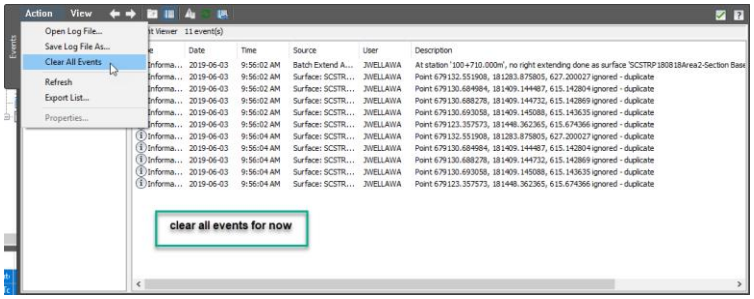


Just draw the temporary line then we can see the location of the limit of the surface data.

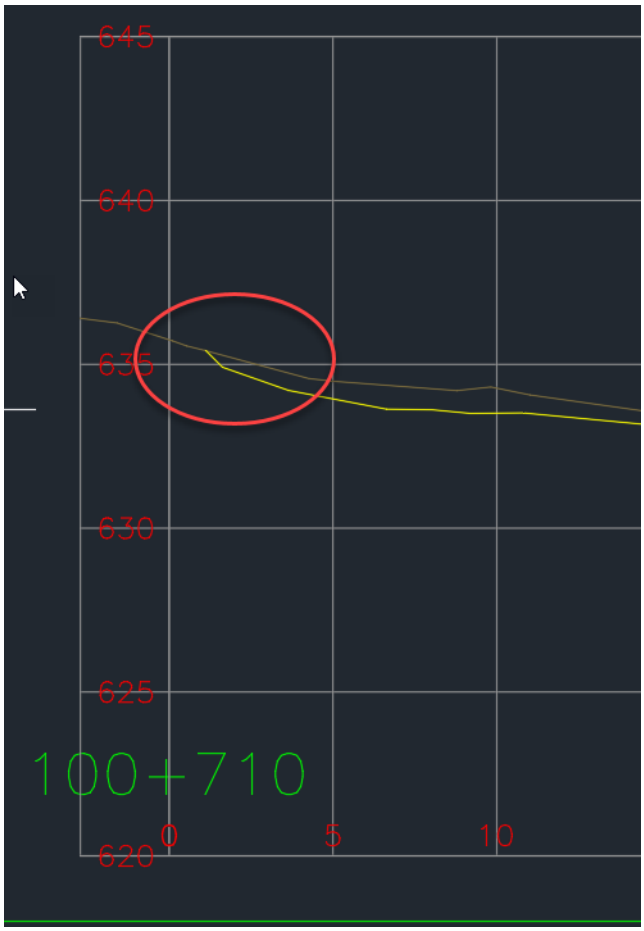


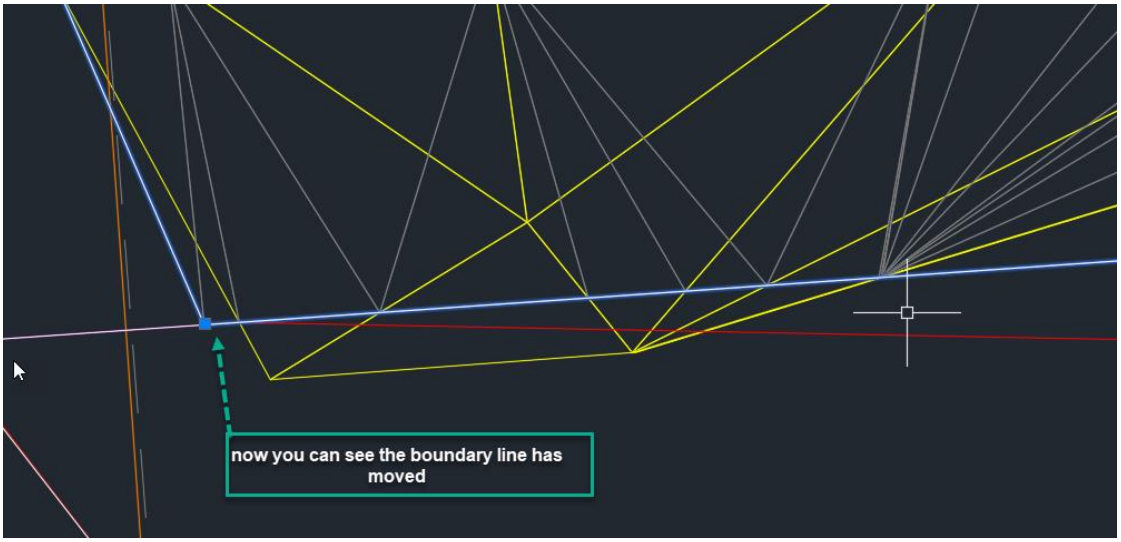
Select the all necessary data for “extend” as shown in below window.



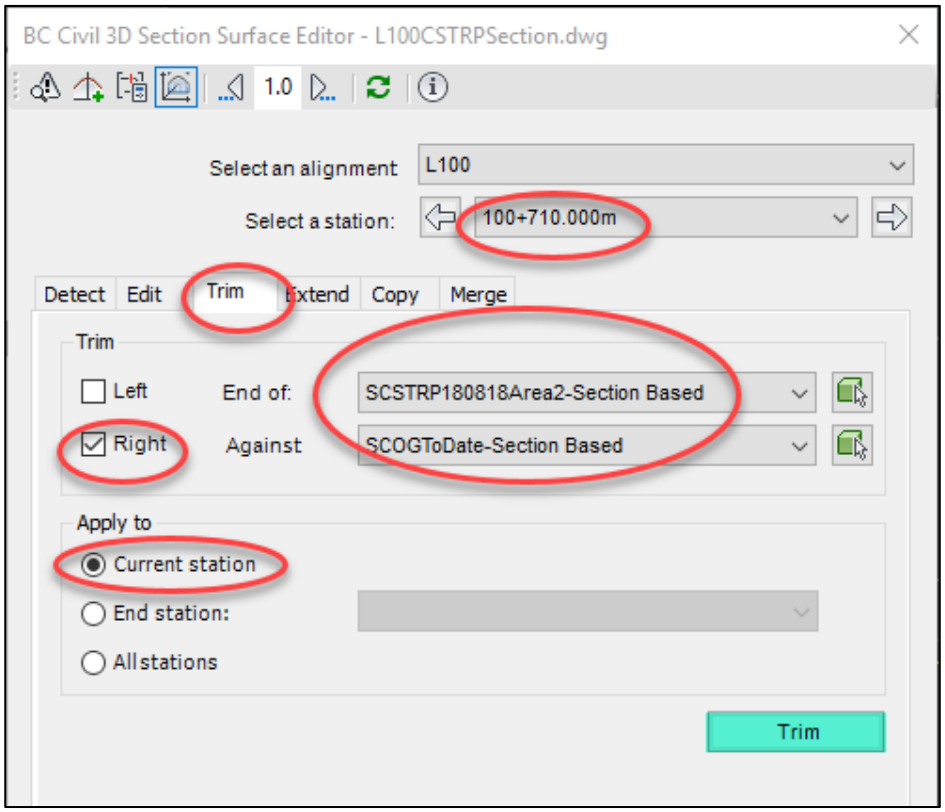


It is extended as below .

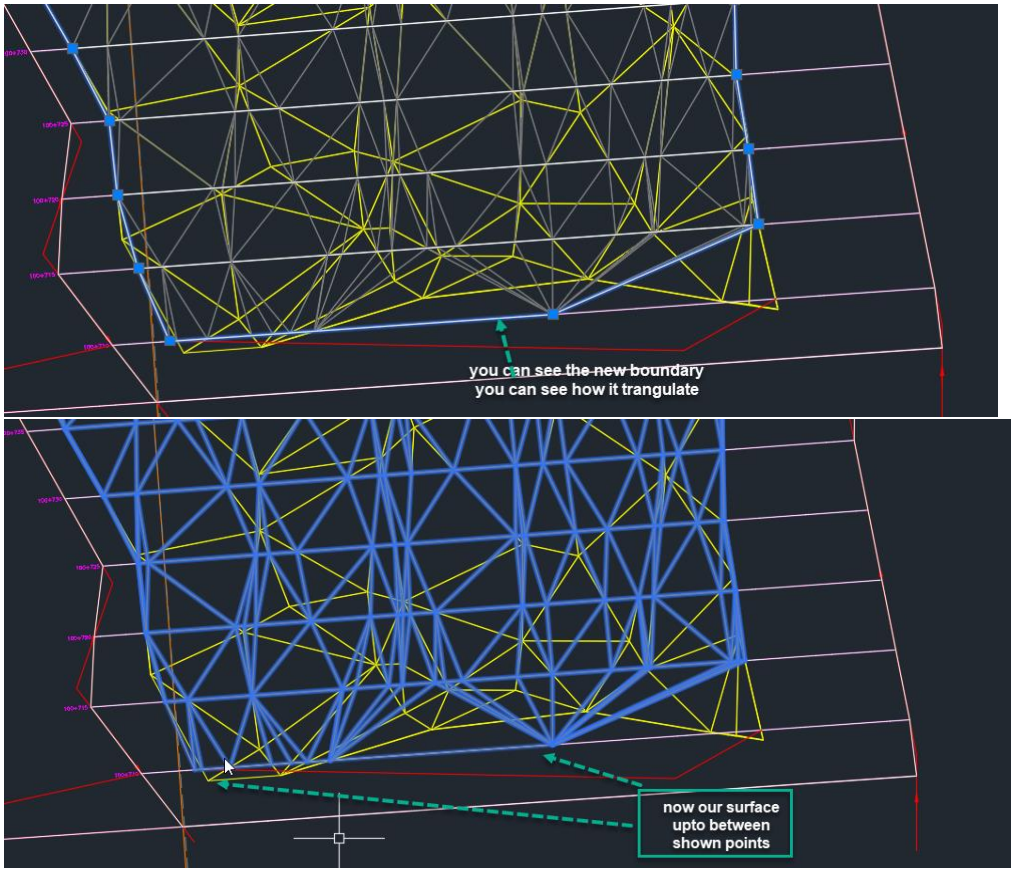




Let’s do trimming part as below.



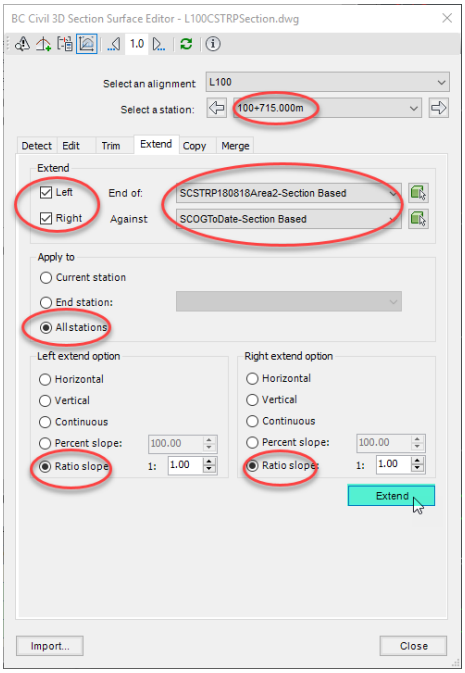
After trim command “clear the all events”



Get rid of the reference line.That’s all essentially nuts and bolts of the simple trim and extend.

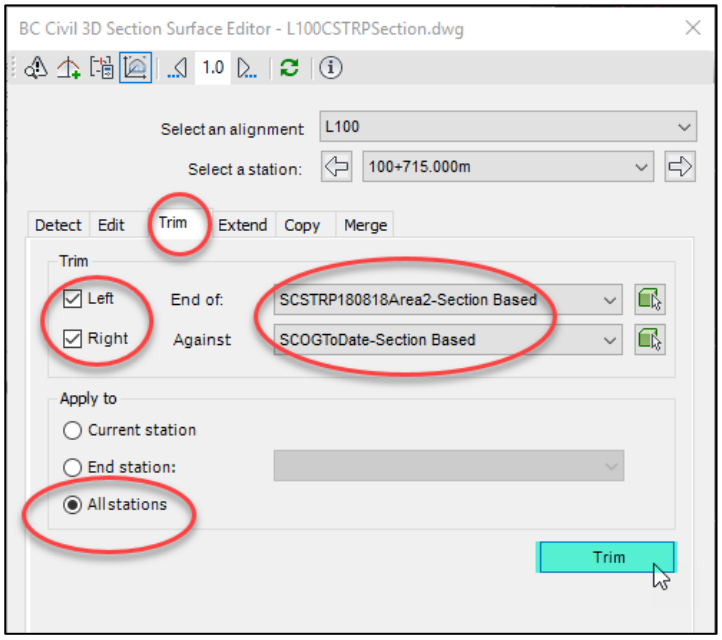
3.15 Extend and Trim All Stations(Both Surfaces)(30.35)

After the station 100+710, we are going to trim every other station in area two.



It will take few seconds to complete the command and close the panorama window by “clear all events”.

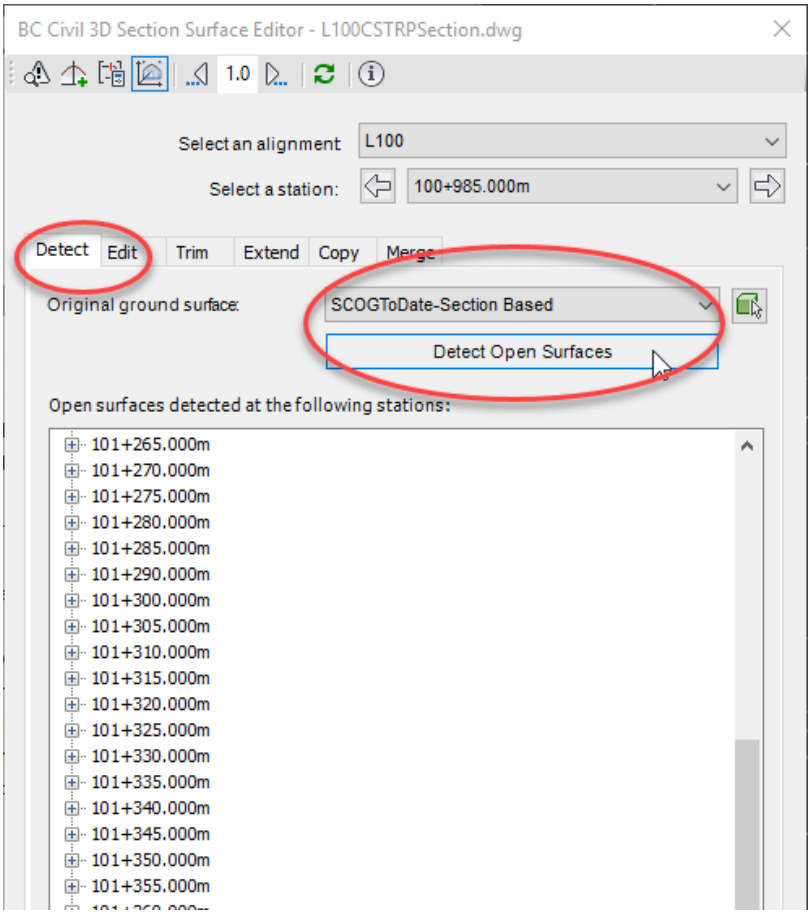
If you navigate stations through now you can see the differences.
Afterwards, we are going to do “trim” command for all the stations.



Now we have closure on everyone of the area 2 surface.
Now let’s do the same extend and trimming process for area 1 as above.

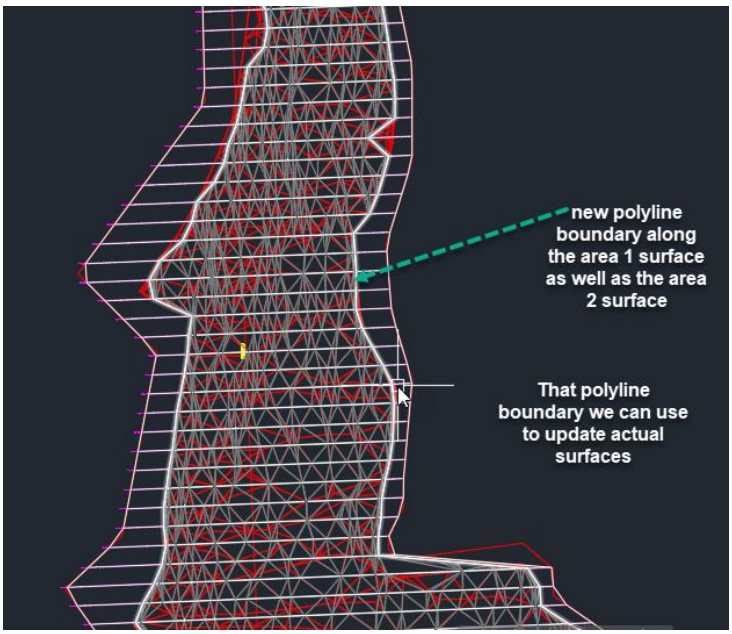
3.16 Detect Open Surfaces(34.59)

We can detect any open surfaces by going through following window



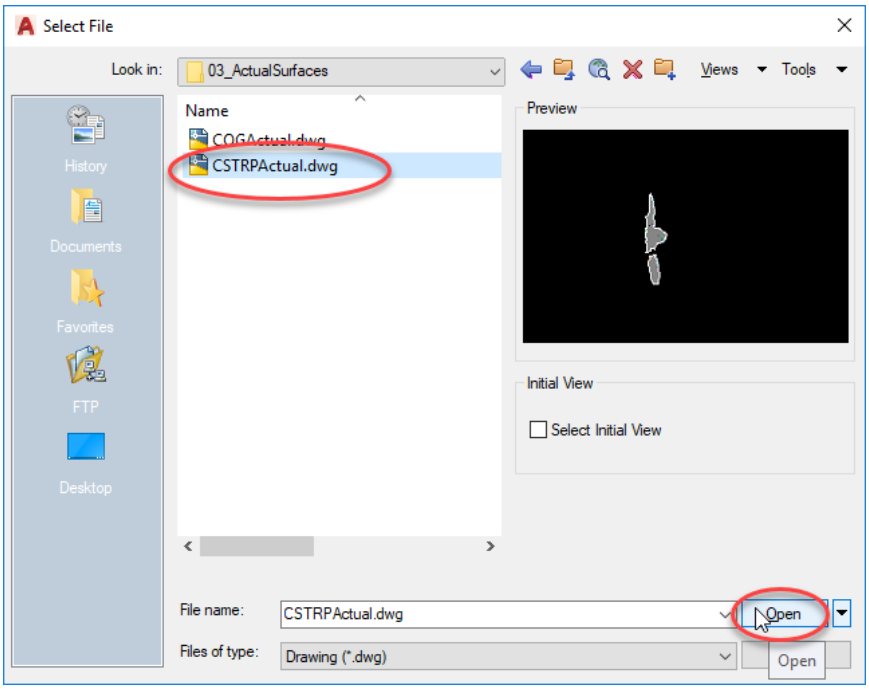
3.17 Review Resulting Boundaries(35.55)

Go back to plan view area 1 surface and you can see the difference between the original data(red) and area surface.

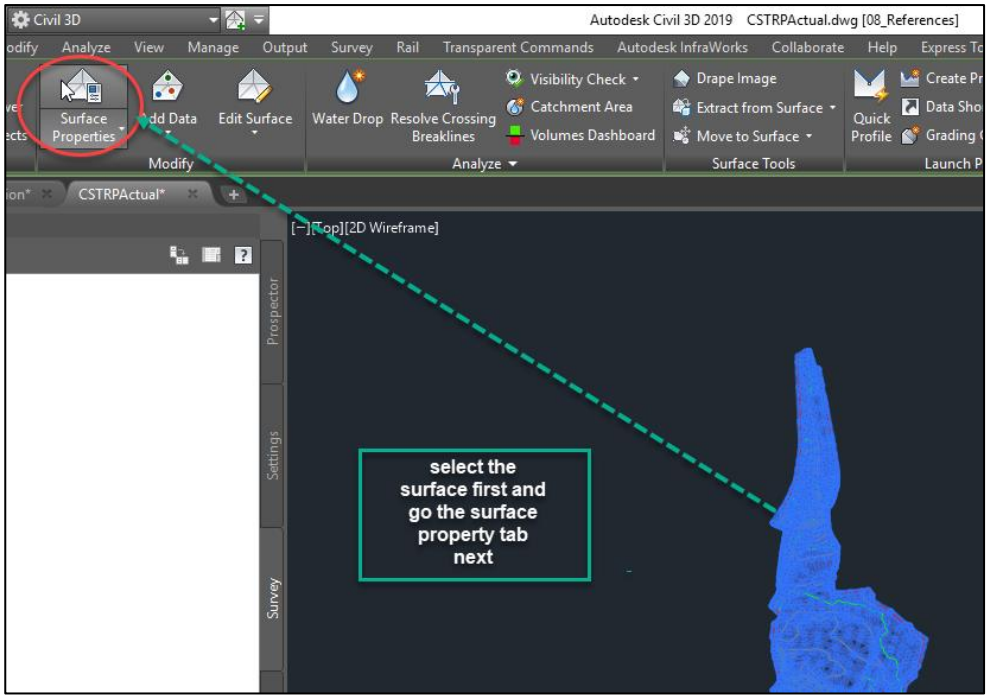


3.18 Update CSTRPActual Surfaces with New Boundaries and Breaklines(36.42)

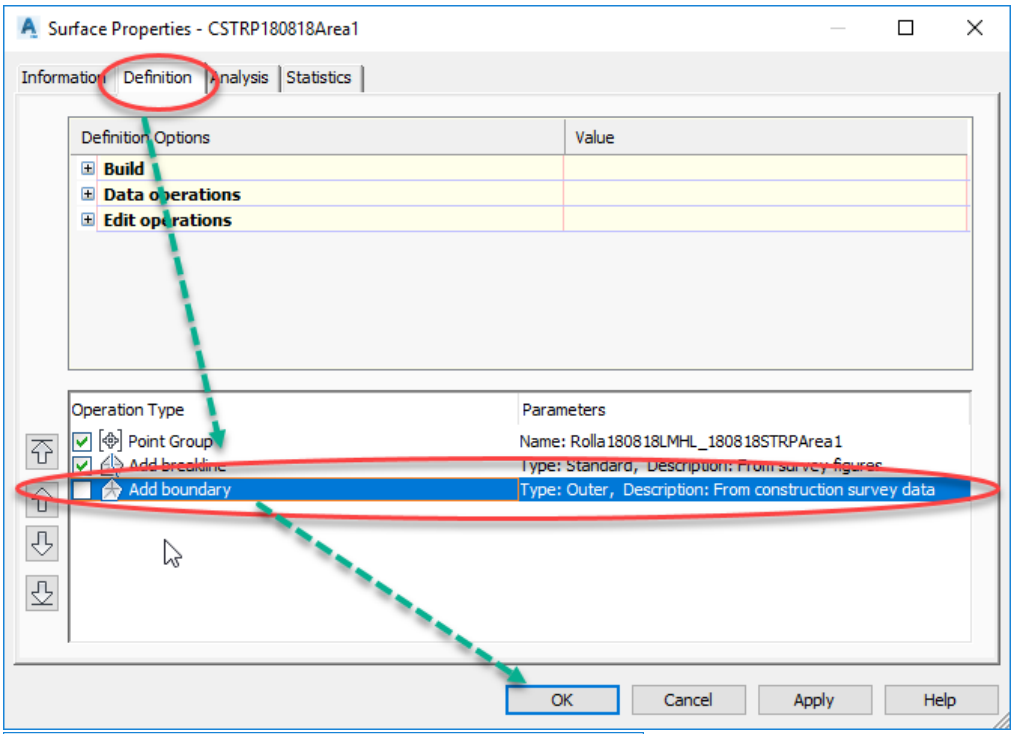
Now we have the new boundaries and go back to the application menu and open up the "CSTRPActual" Surfaces to update with new information.

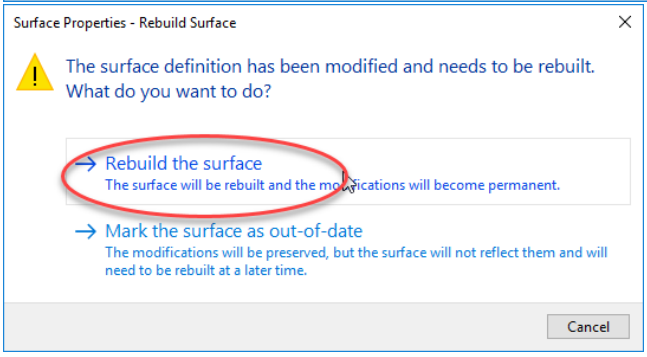


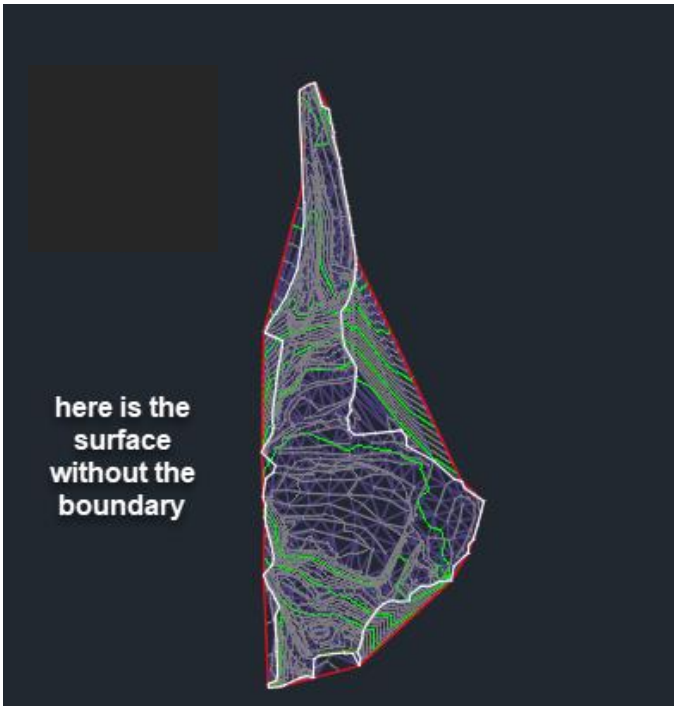
First step is to remove the original boundary definitions.



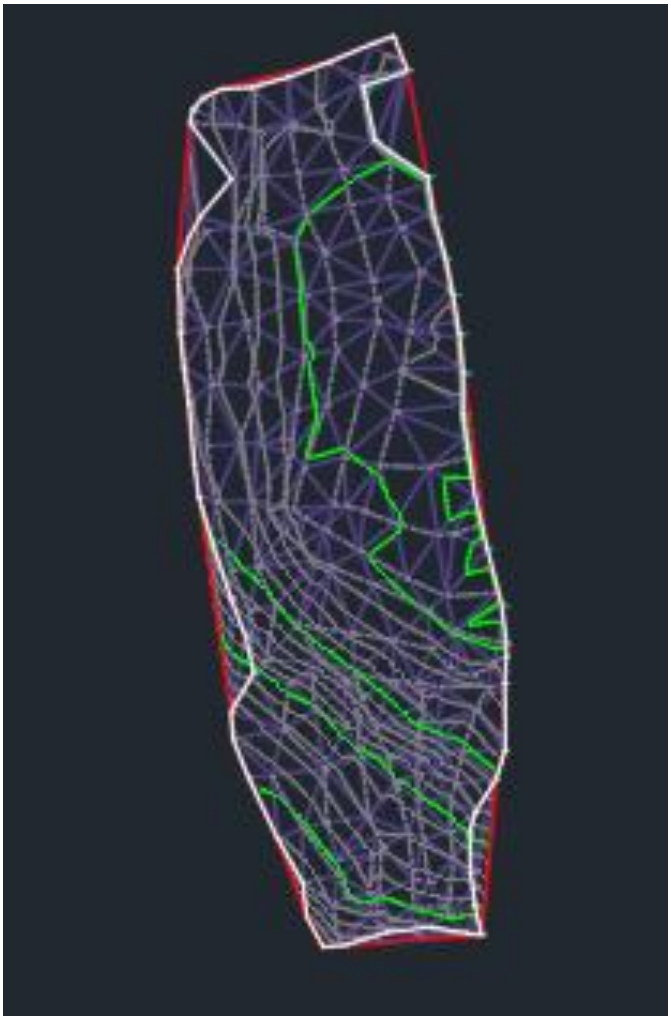
Unchecked the add boundary box.



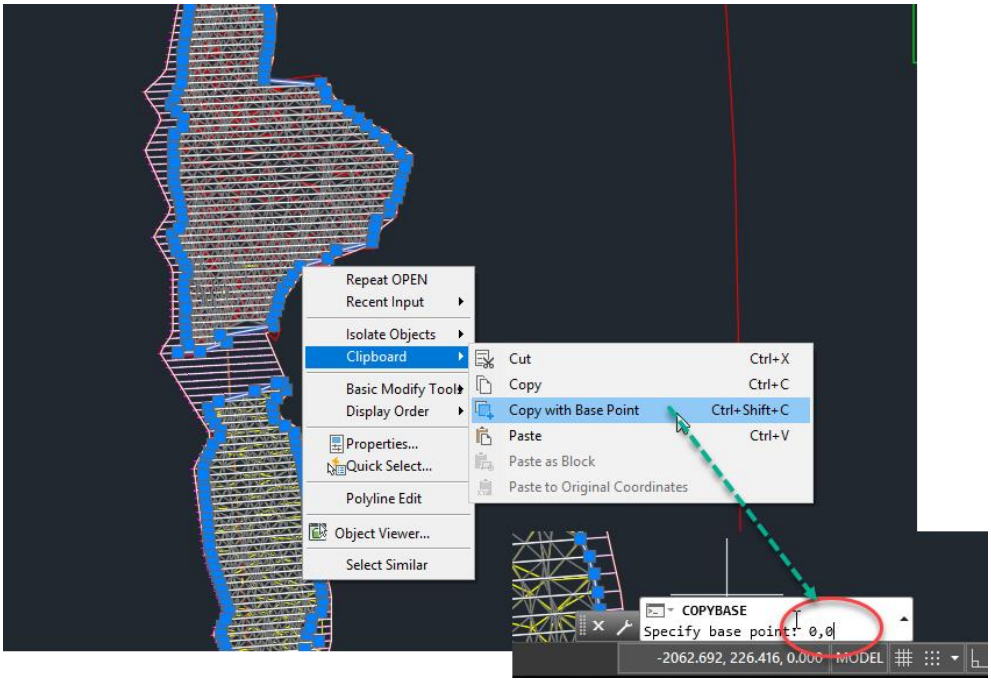


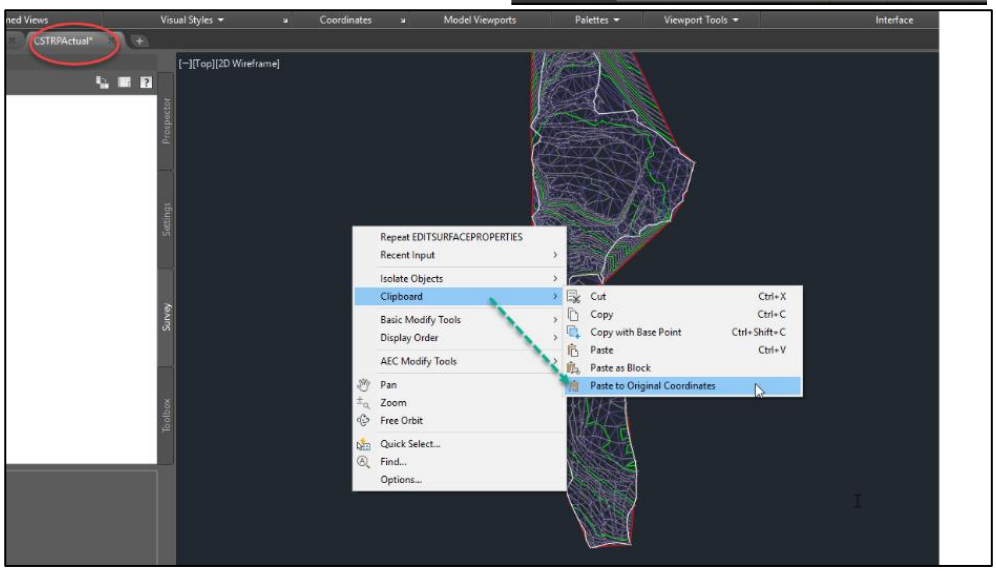


Do the exactly same thing for the second surface.



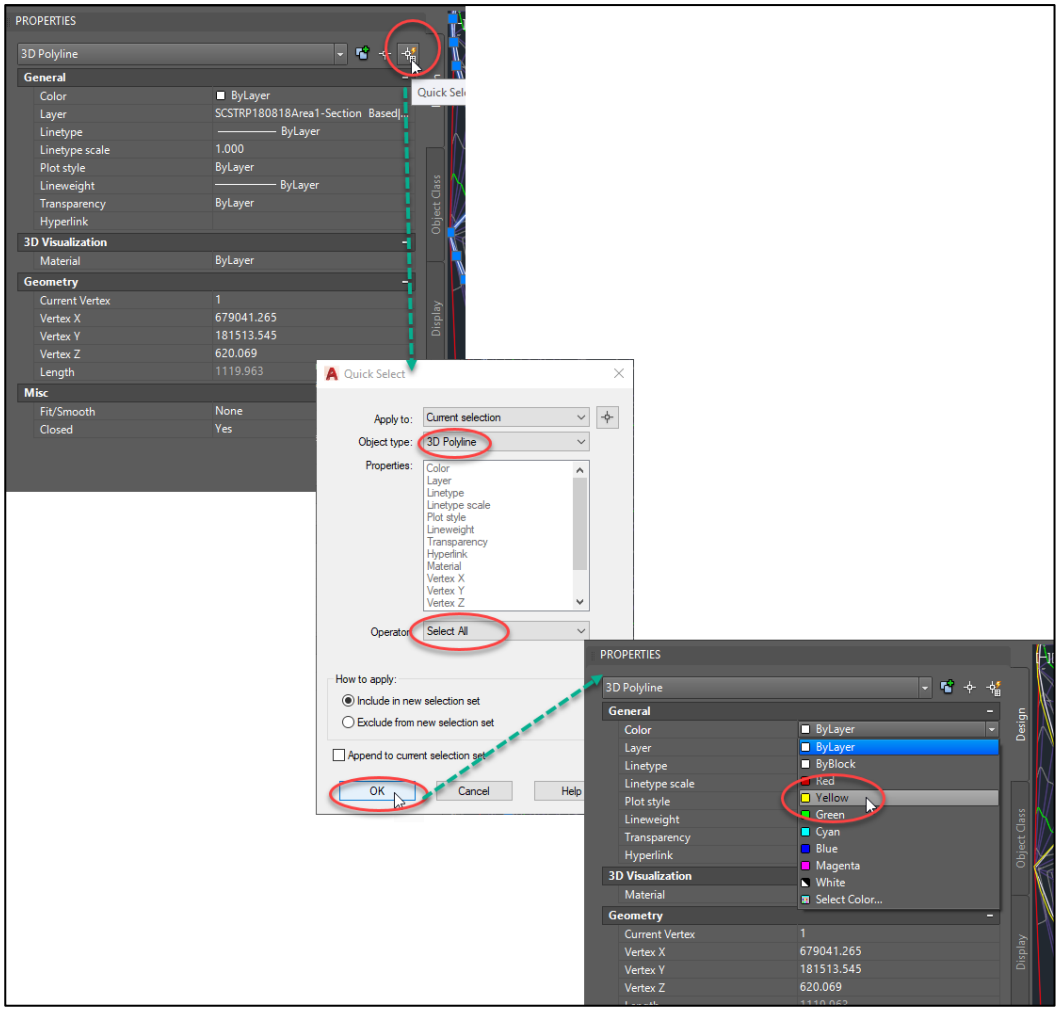
Go back to the L100CSTRPSection drawing and we are going to take polyline boundaries from each of the surfaces that is the new boundary resulting from the section surface editing process.





To identify the difference between the two boundaries new created boundary is 3D line to make it easier to identify .

Go to the home tab and select the properities.



Resolve Crossing Breaklines.

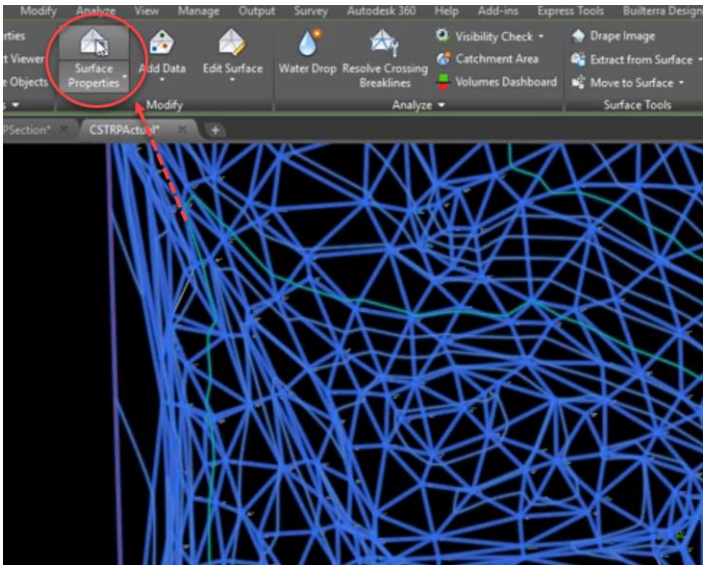
3.19 Use last breakline elevation at intersection(40.39)

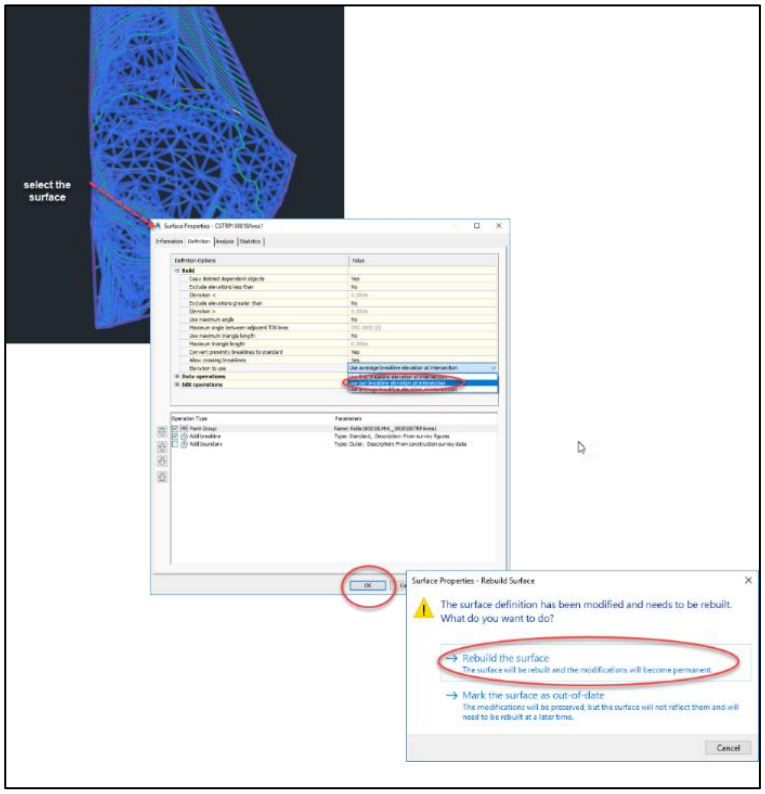
Let's modify the surface properties as follows,

Under build,

Allow crossing breaklines - "yes"

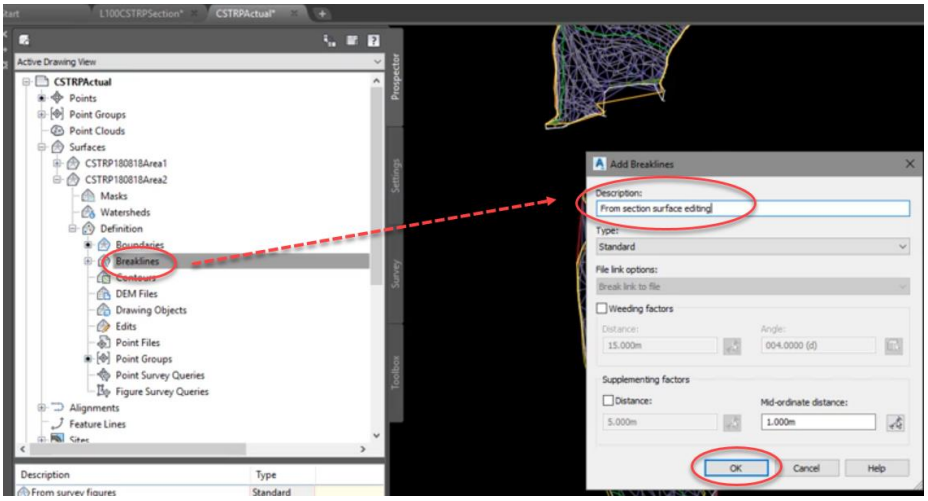
Elevation to use - "use last breakline elevation at intersection"



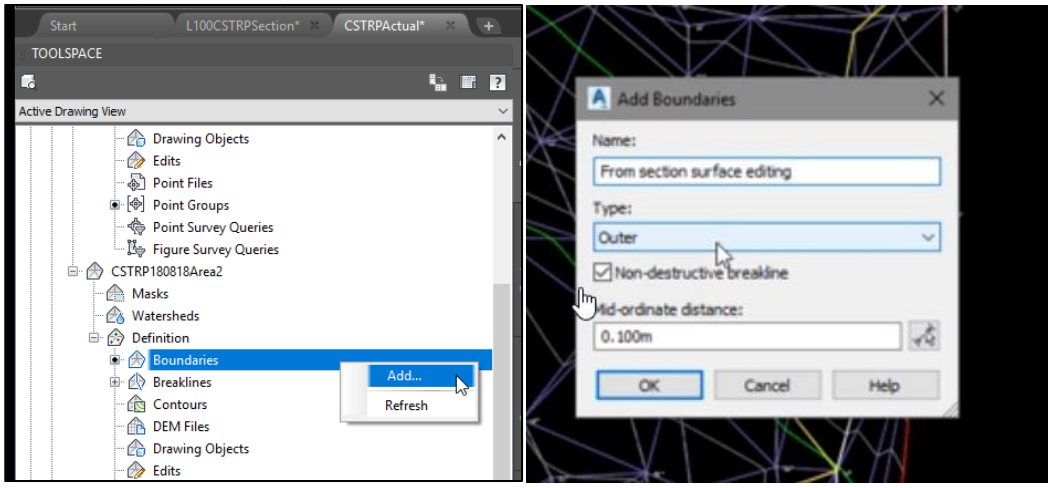


Rebuild the surface and fix the triangulation (you still get the breakline cross messages but now we know that we paused the triangulation along to last breakline).

Now we can add boundary to the surface.



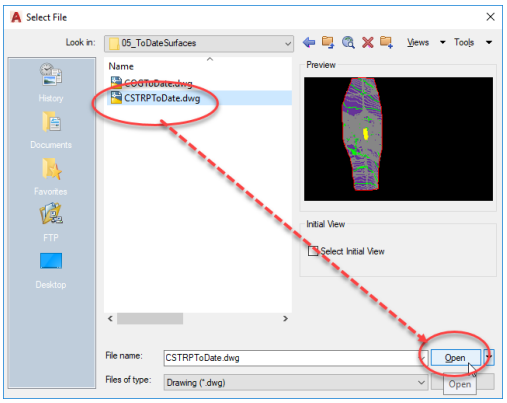
Click the yellow 3D polyline that will contain trangulation of the surface because we form to breakline along and that ensures closure.(1st surface).



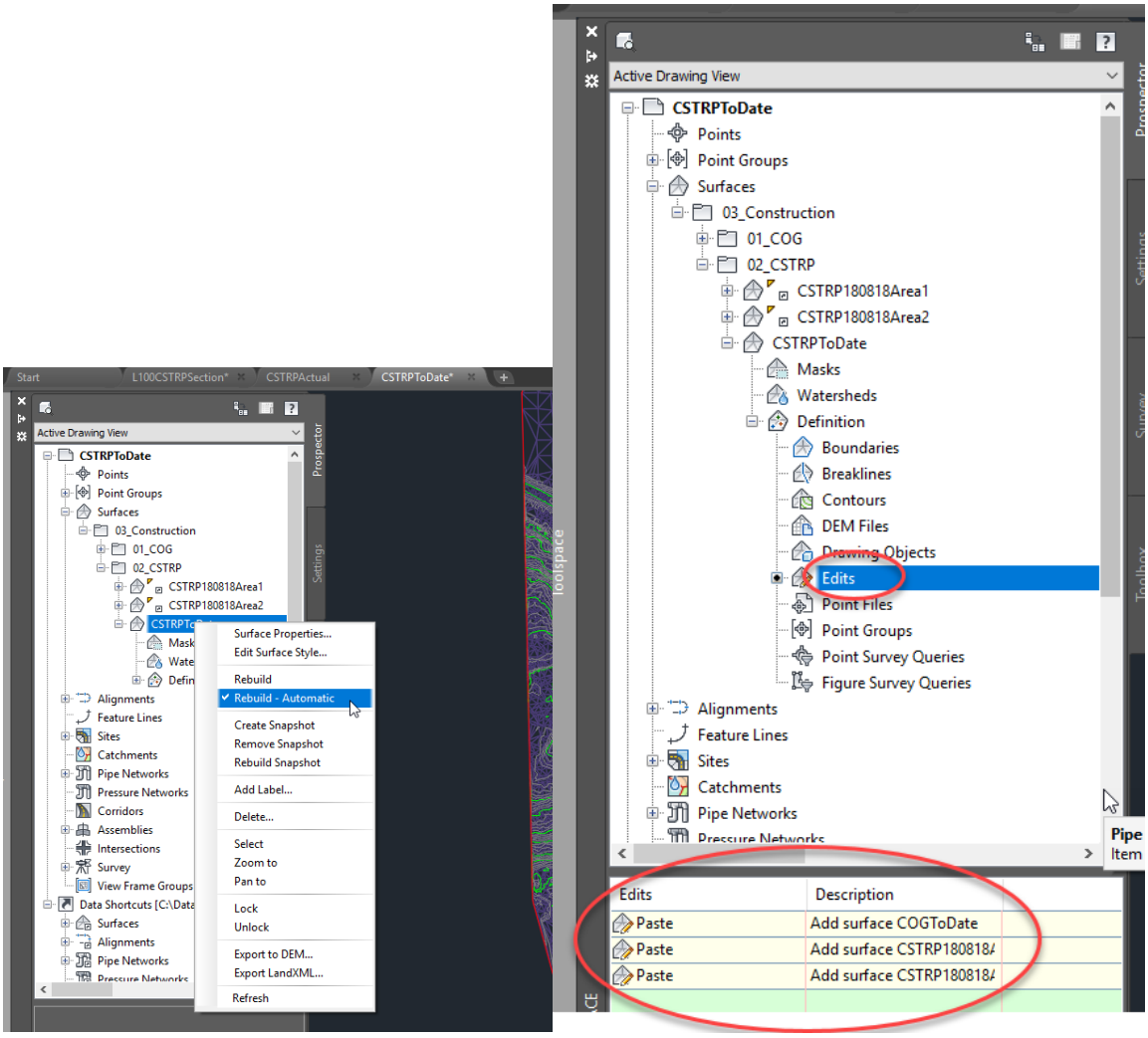
Save the drawing and do the same thing for the second surface.

3.20 Update CSTRPToDate Surface(43.53)

Final step to update the CSTRPToDate Surface



Simply by the fact that we open this drawing the references to the CSTRPActual surfaces have been reloaded and then CSTRPToDate Rebuild automatic.



This concludes update to the actual surfaces and ToDateSTRP surface based on using the new boundary from the section surface editing process.

4 Exercise four_Corridor Updates and volumes

Notes:

1. Volume calculation can be tricky in C3D.

2. A StrippingClose surface between CSTRP and COG is required to calculate overstripping volumes.

3. Volume SubCriteria can be useful when calculating volumes.

4. At 27:15 the statement should be end area volume calculation.

5. Should consider using Quantity Takeoff Criteria that defines materials from a sample line group. Need to be careful to allow for select materials so that a large amount of materials is not generated.

4.1 High Level Overview(00.00)

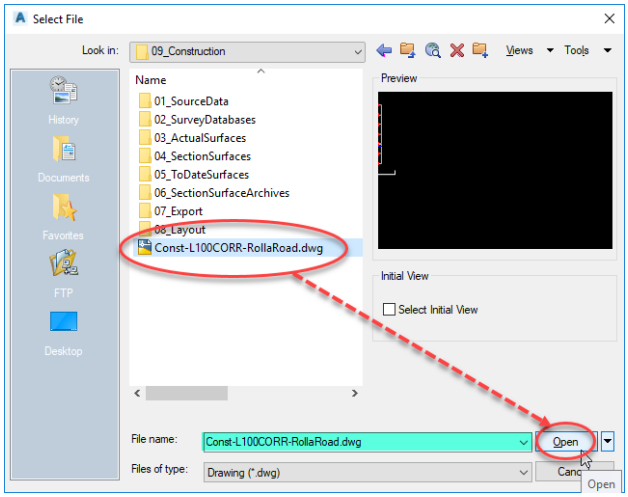
In this lesson we are going to open the construction corridor dwg (Const.CORR.dwg or Const- L100CORR.dwg) and rebuild the corridor. Now you recall from an earlier lesson that we rereferncе the surfaces and that drawing so that the corridor target COGToDate surface and COGToDate drawing and CSTRPToDate surface and CSTRPToDate drawing.

It uses the target the VCOG that was the survey combined original ground suface and DSTRP(design stripping)surface.

We need to know rebuild the corridor against those construction surfaces.

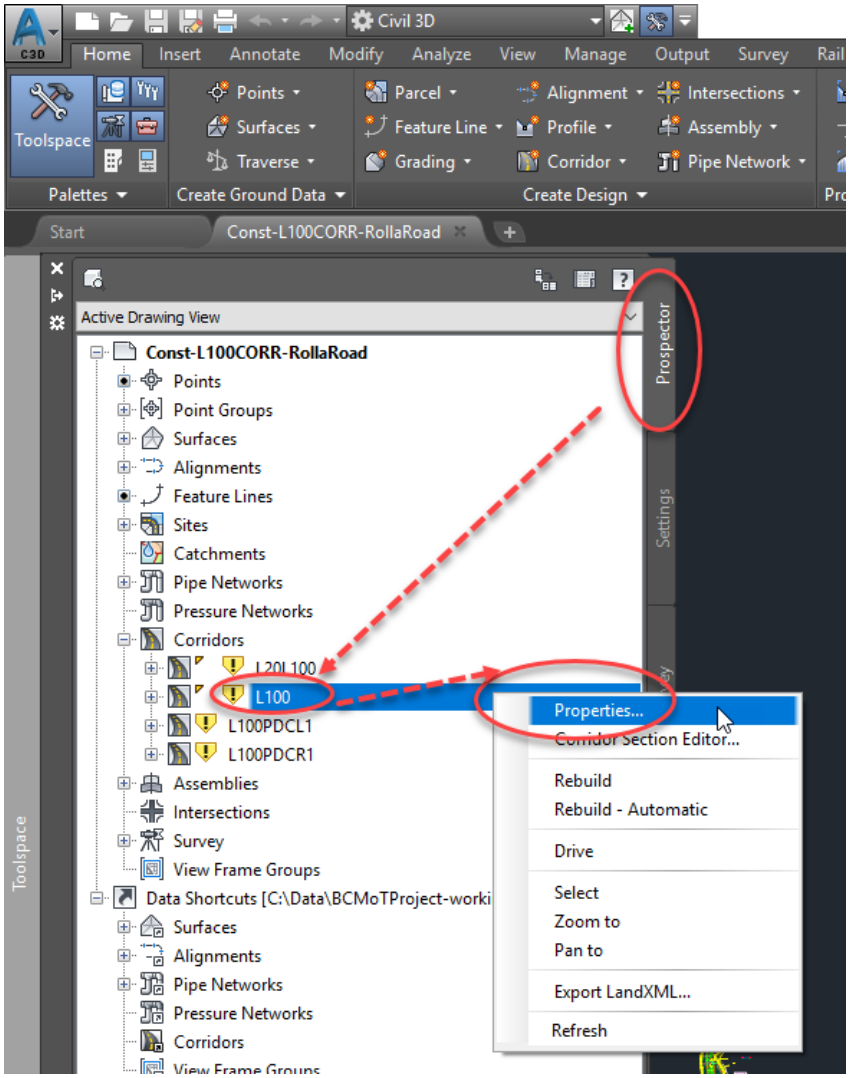
What we need to do here just rebuilup this corridor dwg" Const.CORR.dwg or Const-L100CORR.dwg" and after that we are going to buildup our const.section drawing(Const.SECT.dwg or Const.L100SECT.dwg) and calculate volumes per month.

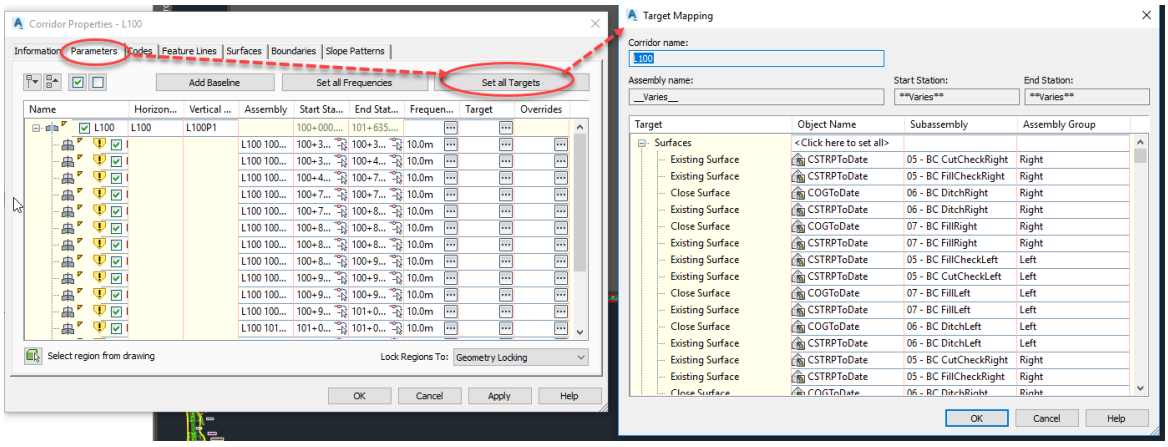
4.2 Open Construction Corridor Drawing and Rebuild Corridor(00.59)



When you open up the drawing there will be some error massages, don't worry about those because designers will takecare about those.

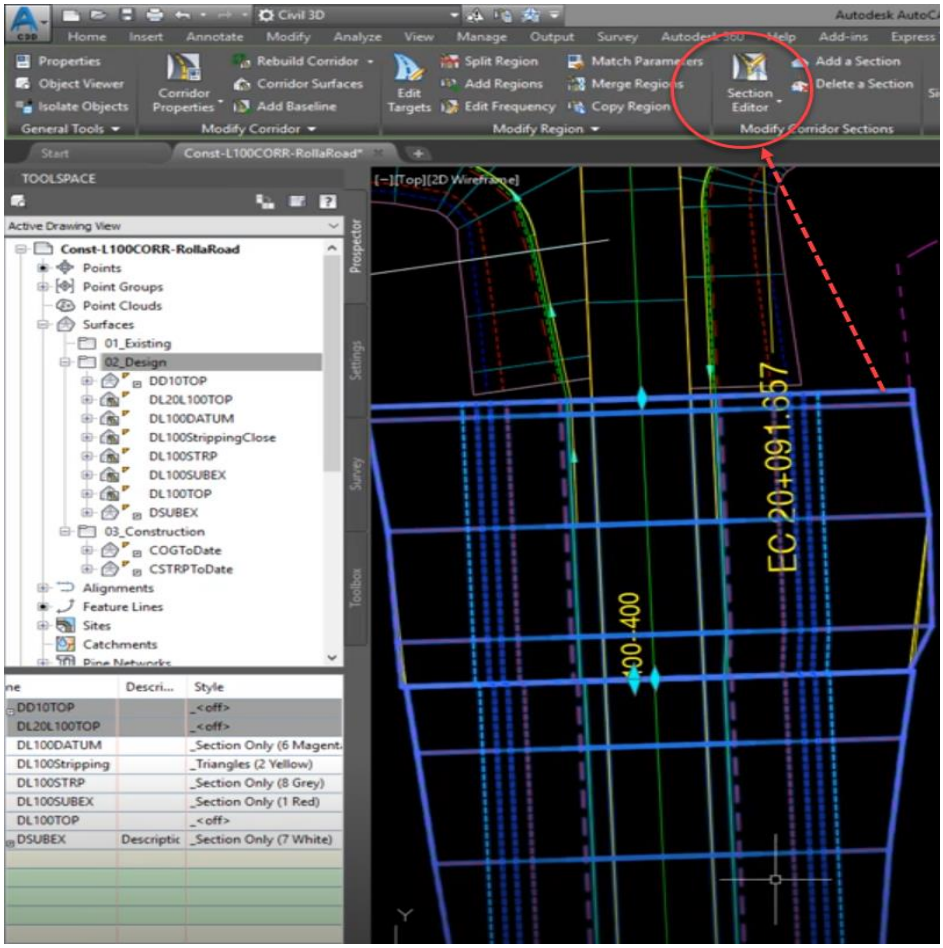
Maximize the veiwport and Just go the the prospector tab.





After set all target you can see we are referencing the CSTRPToDate and COGToDate then press ok and it will force to rebuild the corridor.

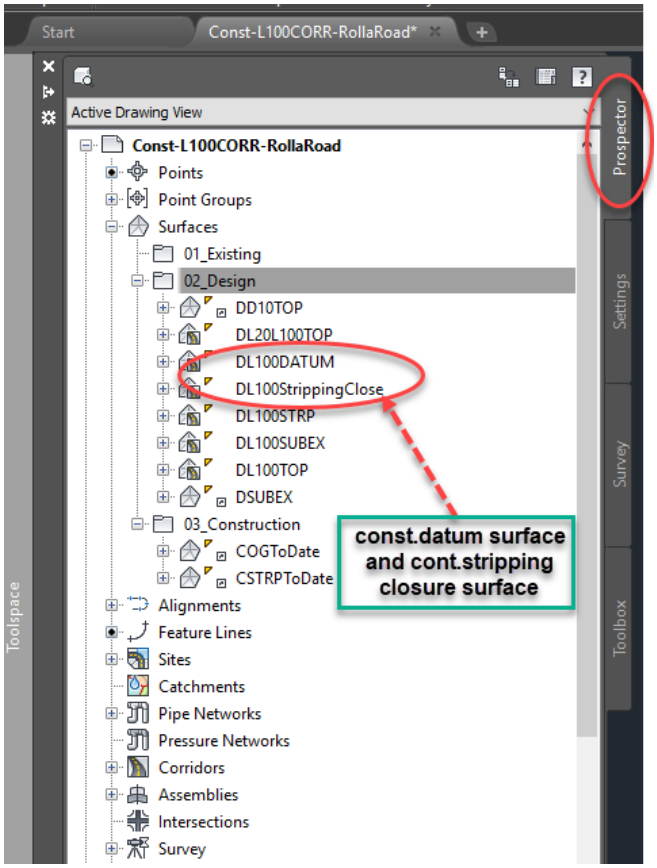
Now corridor has been updated based on those surfaces if you wanna you could use corridor section editor for that pick any link and go to the section editor then you can review any changes to that surface data in here.



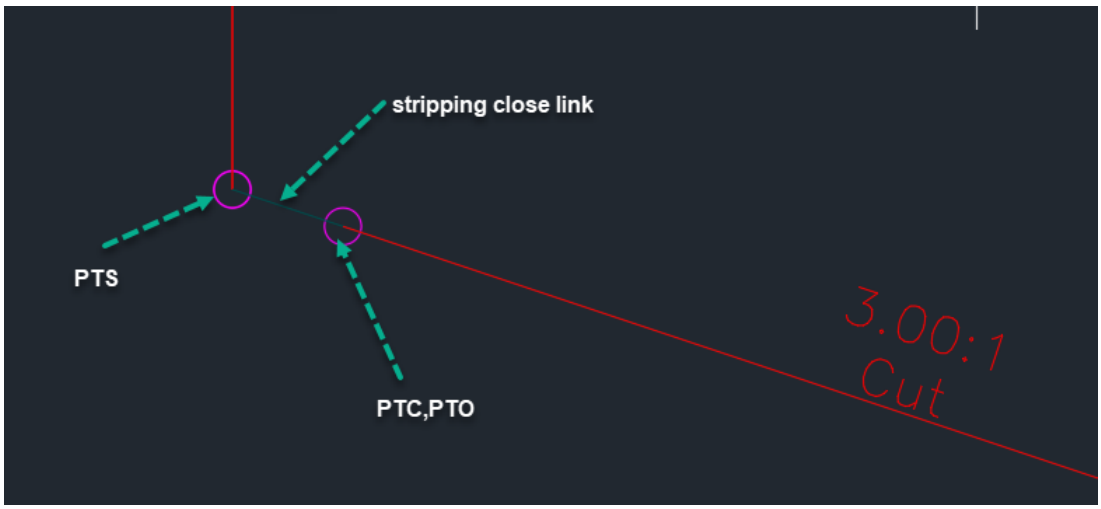
You can review any changes to that surface data in here.We can scroll through our section and review our data in the corridor section editor.
This cocludes the exercise where we update corridor in the construction corridor drawing.
Remember always to close the corridor section editor when you done before saving the drawing.

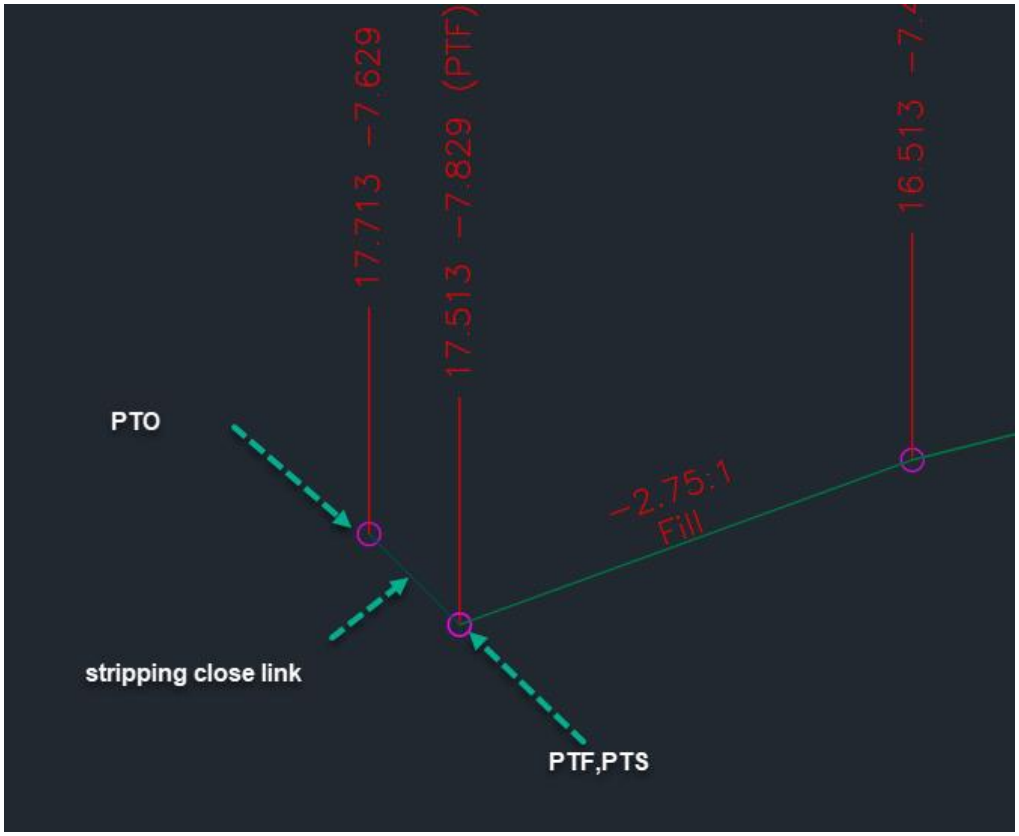
4.3 Rename Surfaces and Create Data Shortcuts(03.41)

In order to do volume calculation we need a little bit a extra data here. We are going to create a construction datum surface as well as the construction stripping closure surface.

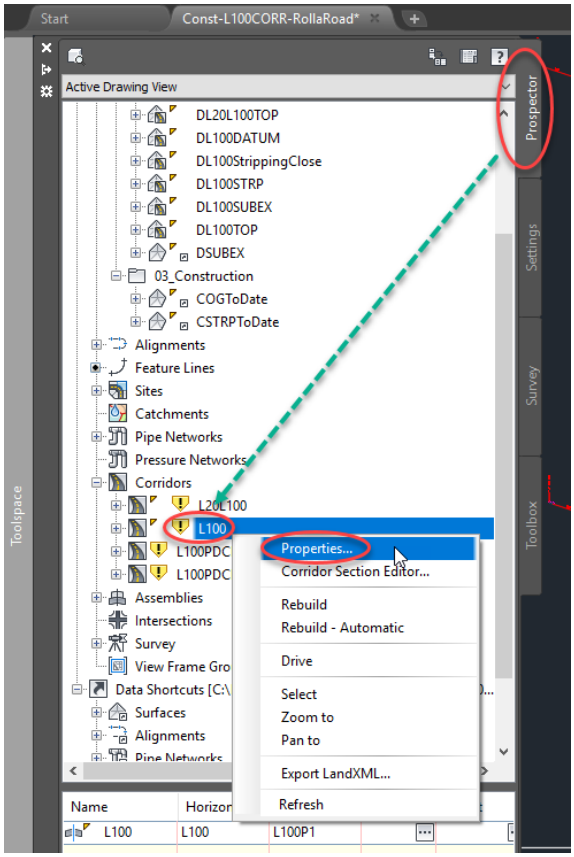


DL100StrippingClose is created by using stripping close link between the PTS and PTC,PTO in cut and also between PTO AND PTF,PTS.

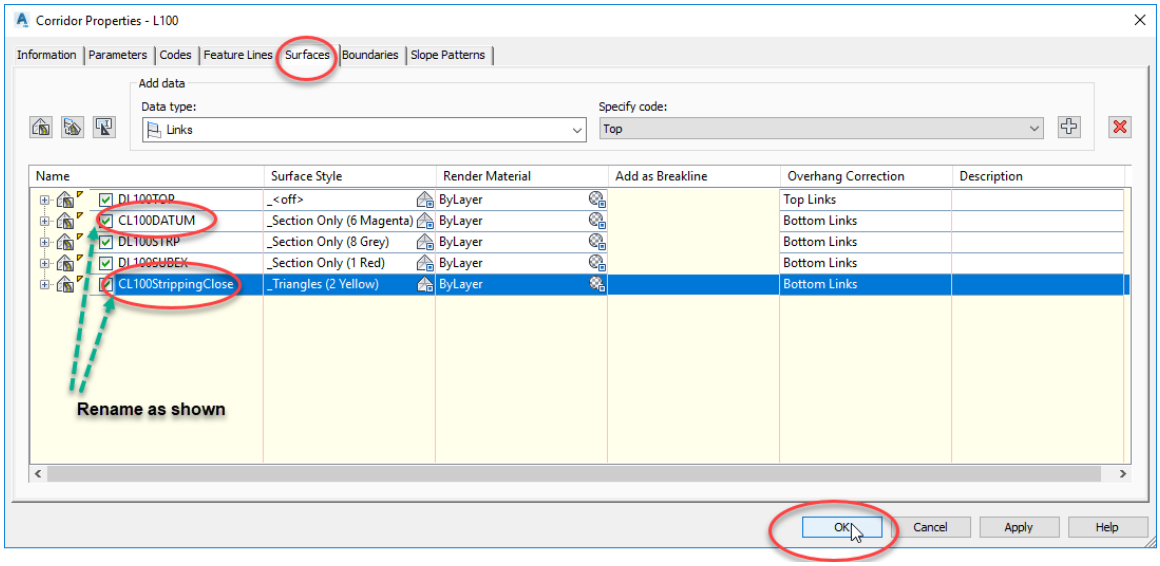




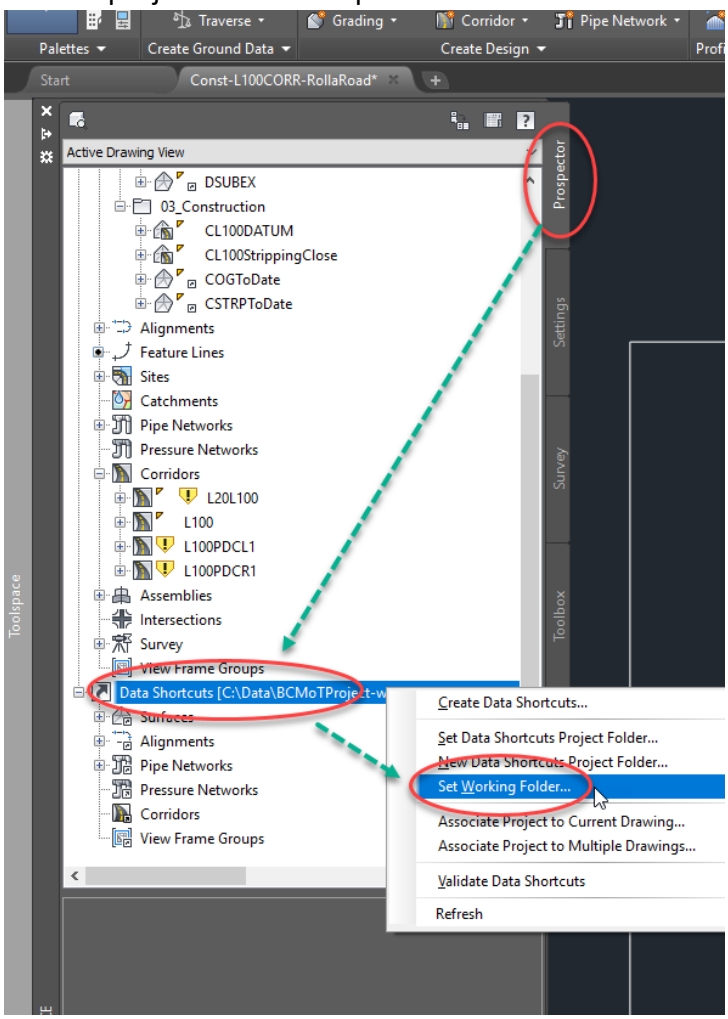
Those are required to facilitate over stripping volume calculations. Those are corridor surfaces in our L100 corridor if you modify the corridor properties we have the DL100DATUM and DL100StrippingClose.

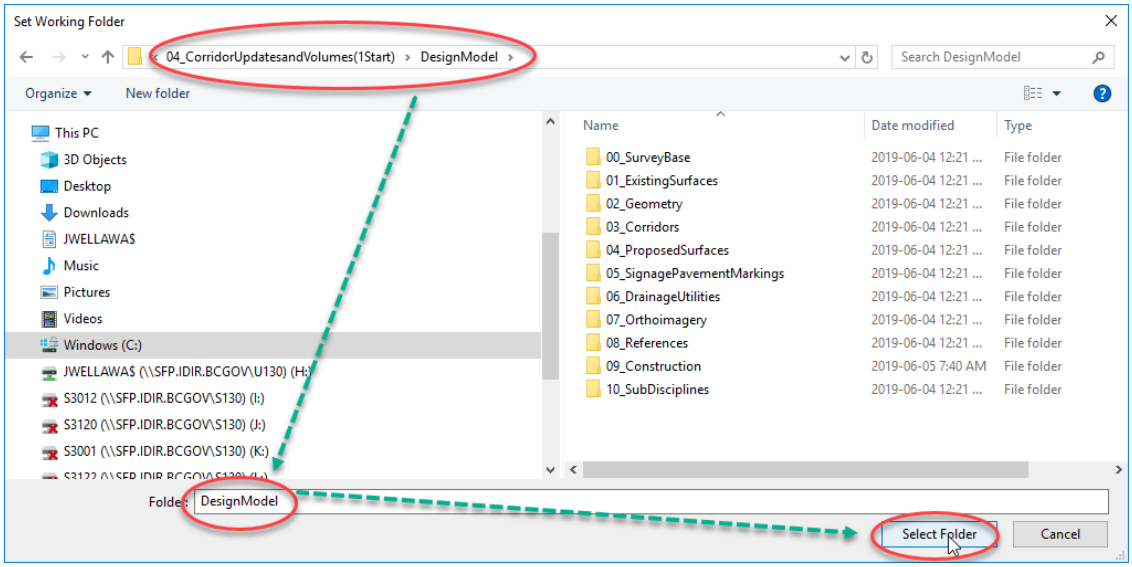


Now what we can do just rename the Links as CL100DATUM and CL100Stripping Close.

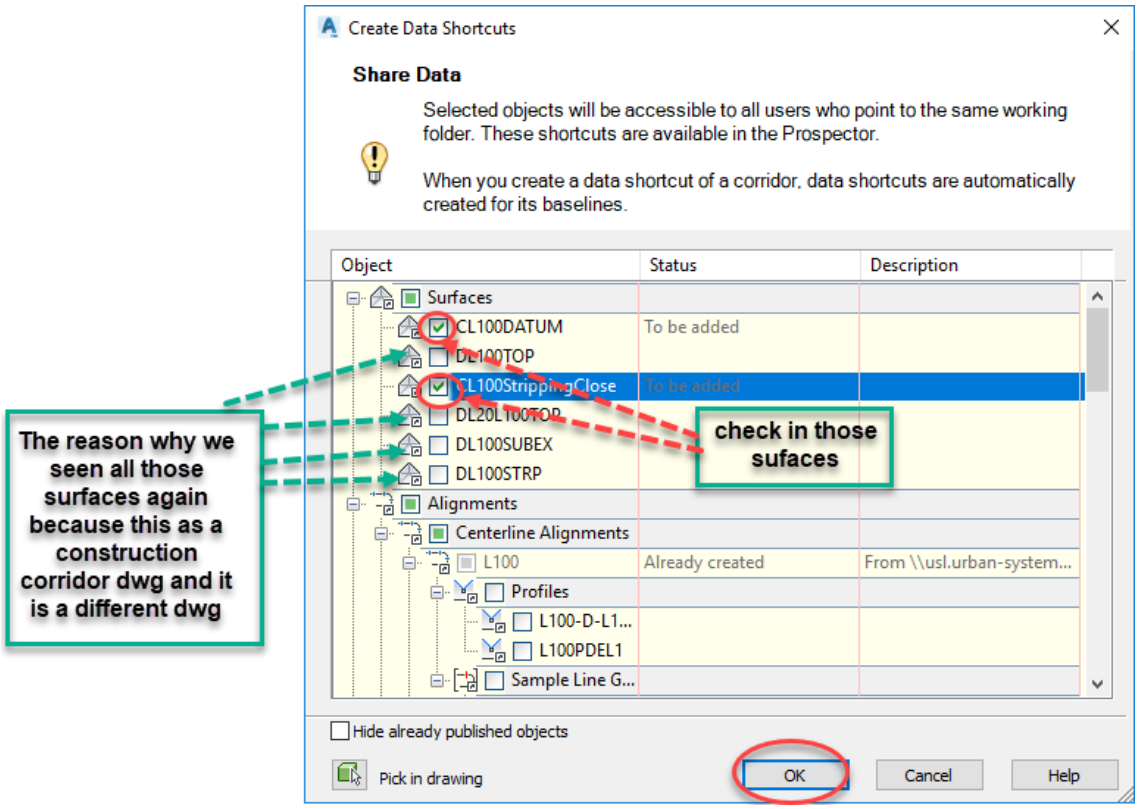


That could also been done in our surfaces collection and drag those surfaces into construction folder to keep our surfaces organize and save the drawing.
Make sure that data shortcut working folder is the DesignModel folder for the current project. This an important task.

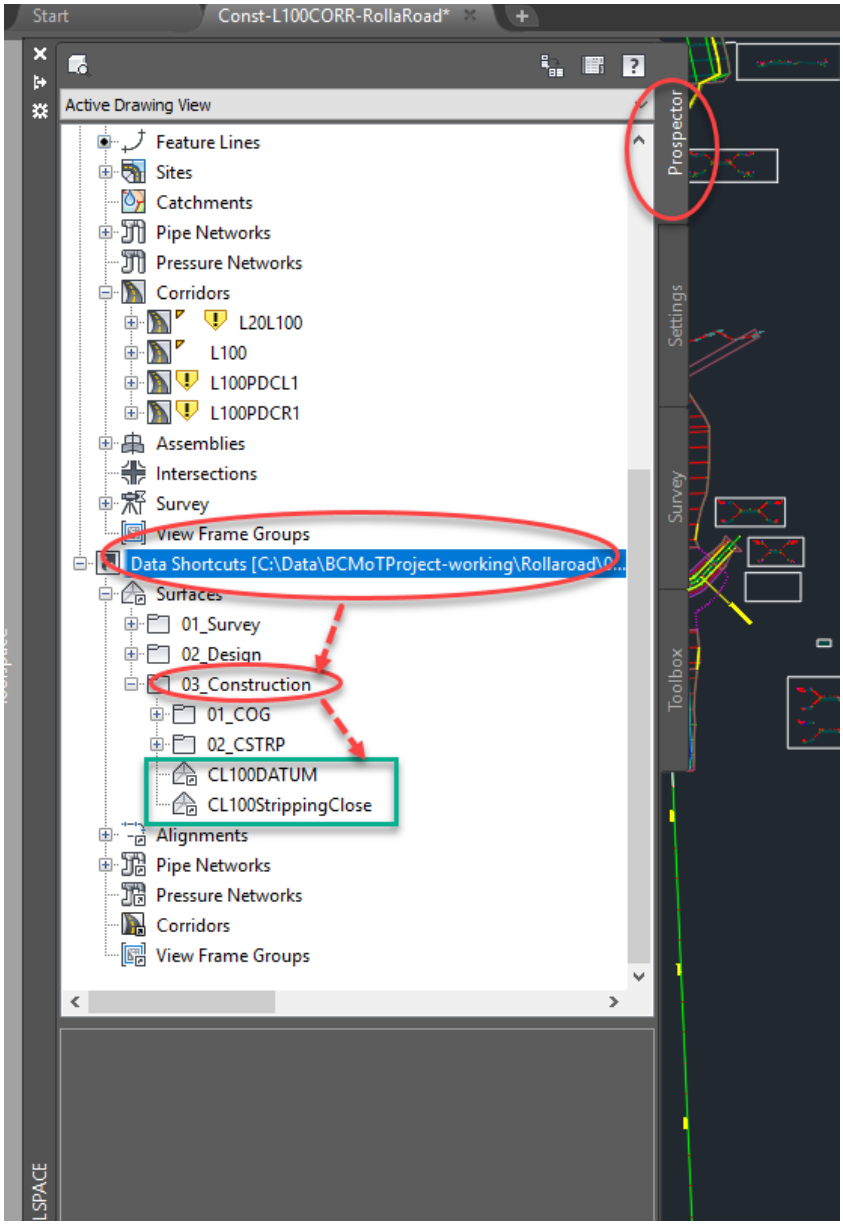




Then create the data shortcut for those two surfaces.



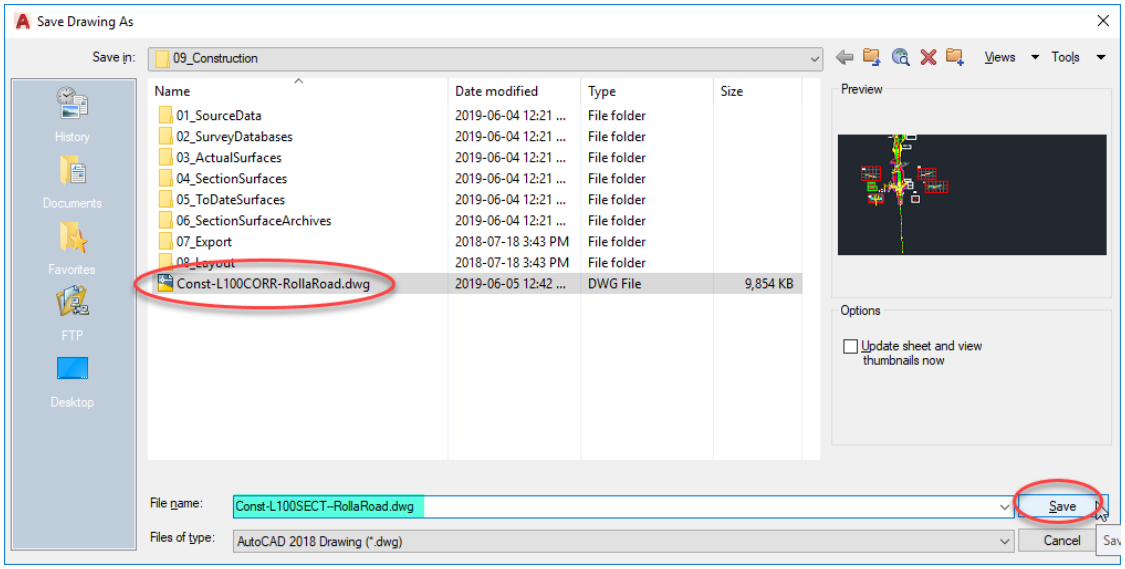
You can find out data shortcut for those surfaes as follows.



Finishup by saving and closing the construction corridor drawing.

4.4 Create Section Drawing for Volume Calculations(06.13)

In this section we are going to calculate the volume , for that let's open up a new drawing and save as "Const-L100SECT-RollaRoad"

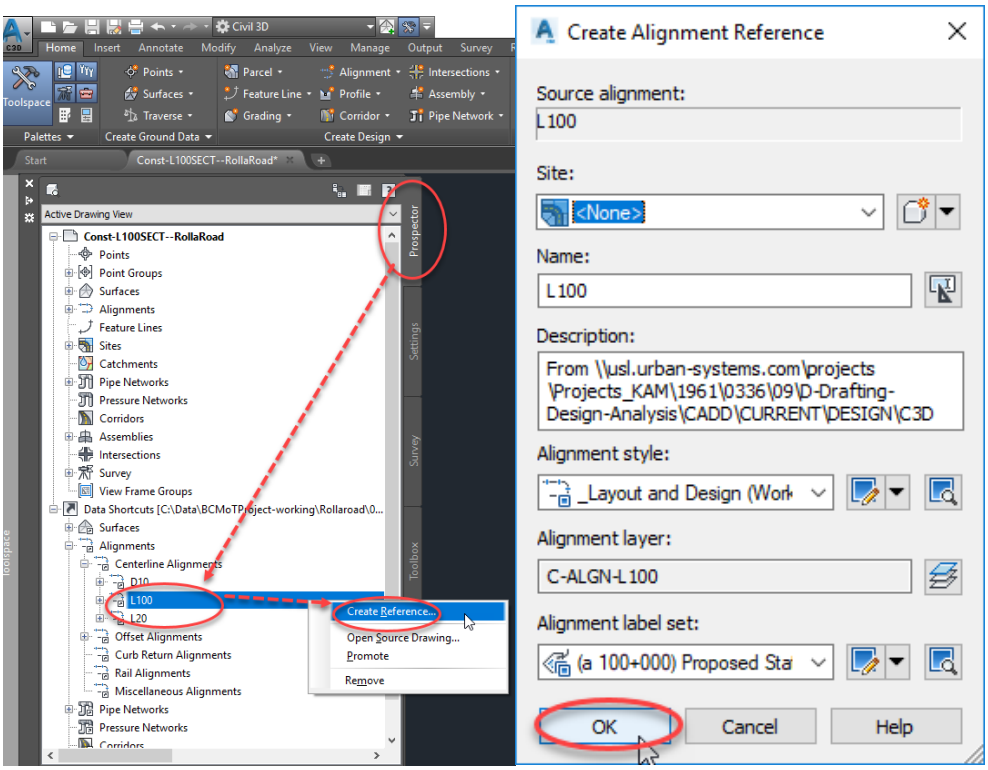


Be sure to ensure data short cut working folder is correct and associate the dwg to current dwg.Try to remember to do this for each and every new drawing.

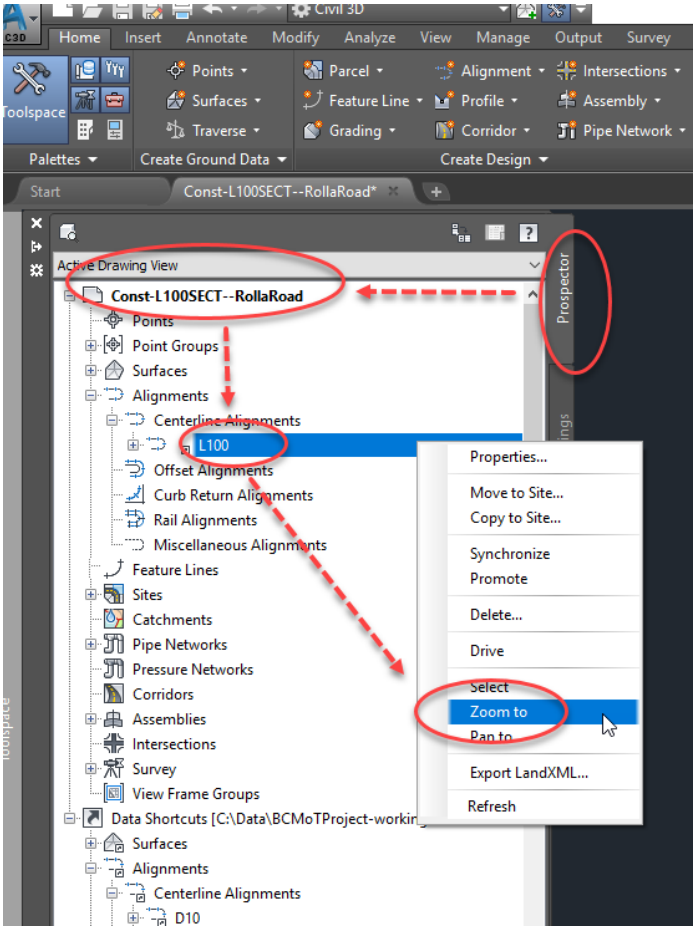
4.5 Create Reference Object for L100 Alignment(06.51)

There are number of data types that required for sections.

- Alignment



It is only being used to create the sample line.



4.6 Attach Corridor Drawing as External Reference(07.36)

Two resons for that,

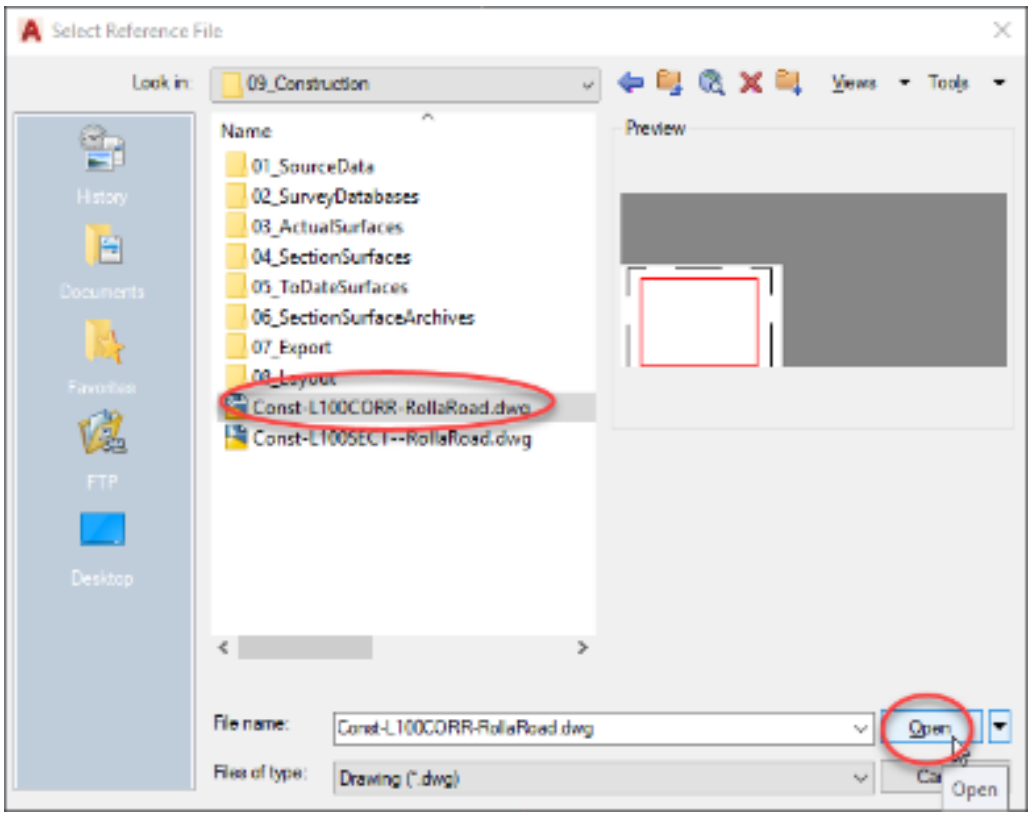
- We are able to pull surface data through that external reference volume calculation.
- We can use the assembly in certain frequency in corridor for the bases in our sample line locations.

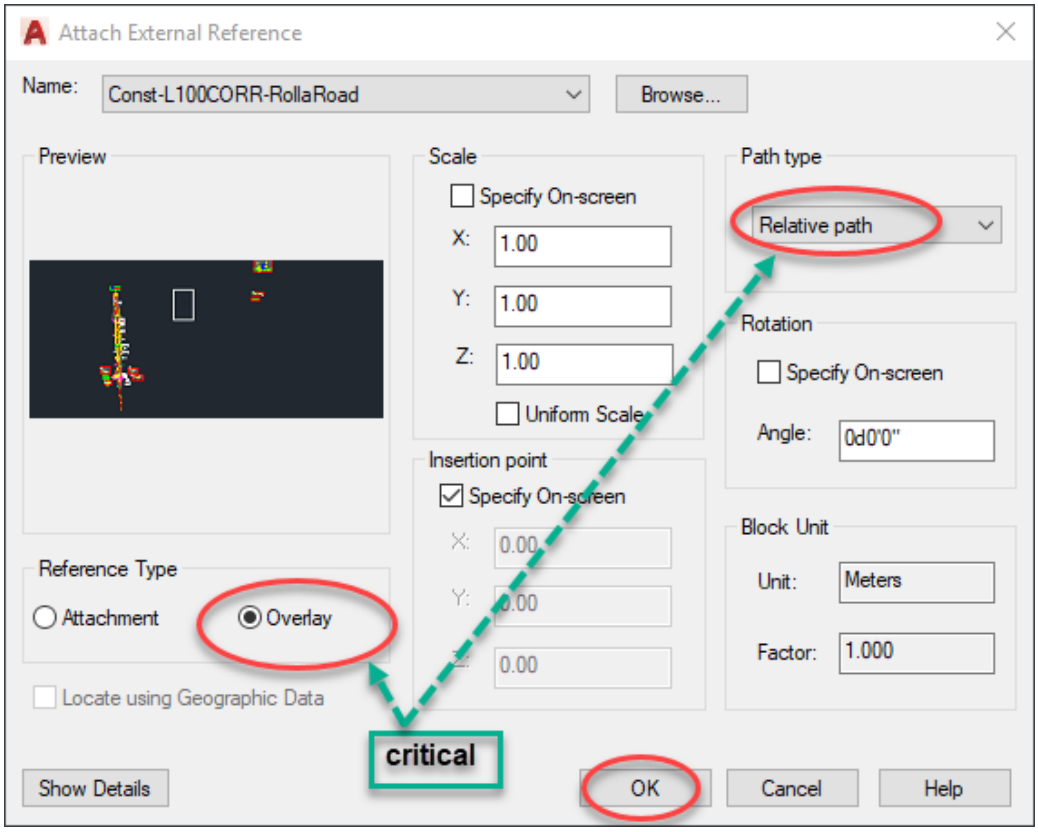
We can attach corridor drawing in two ways,

- **XREF(C3D 2016)**
- **Data shortcut(C3D 2018/2019)-Refernce object from a corridor data shortcut**

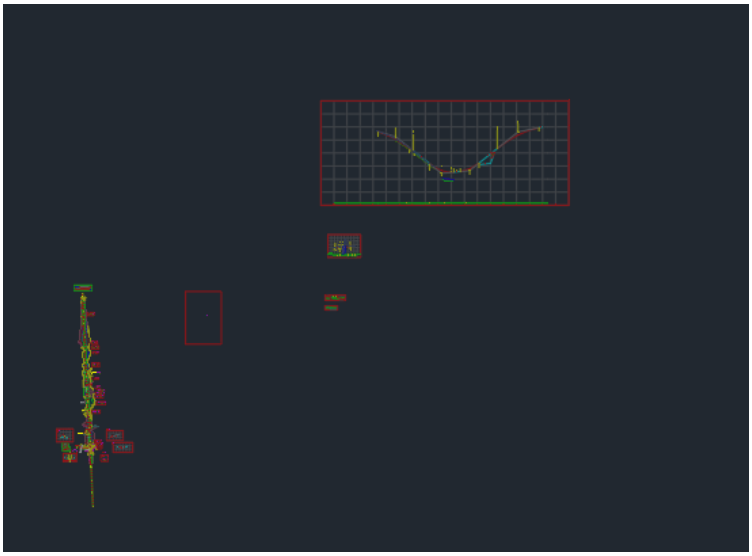
In here I'm going to explain how to do "XREF".

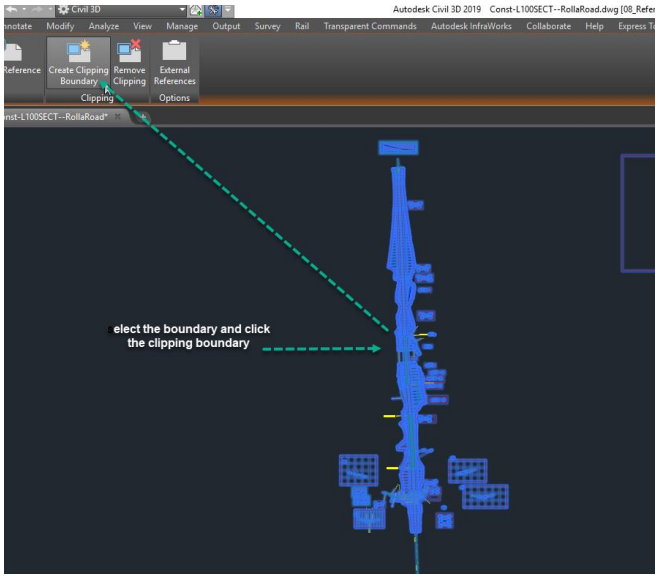
Type a command "XA" on command bar and browse to corridor drawing in 09_construction folder.

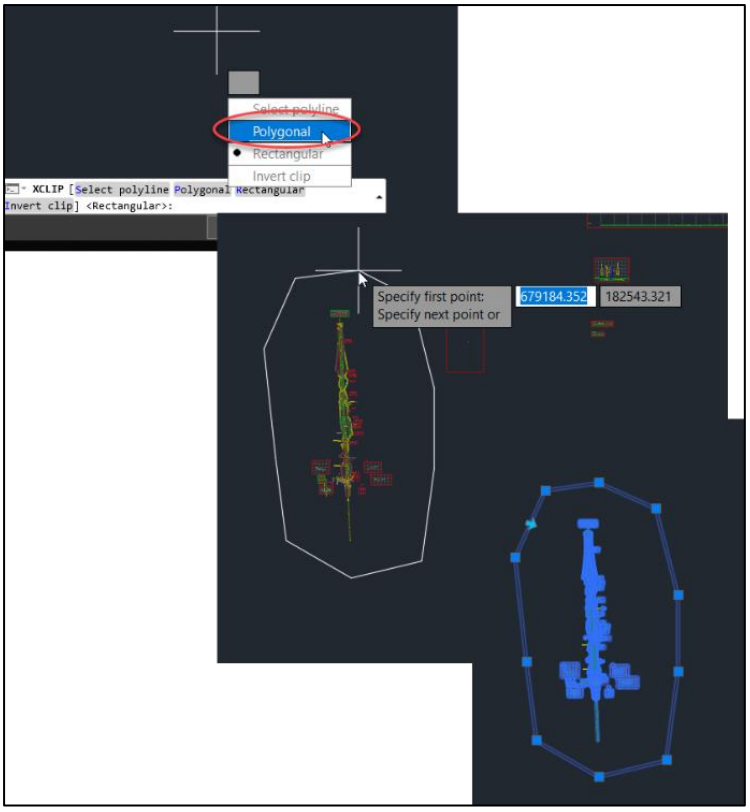

Select Reference File
Look in:
09_Construction
Views
Tools
Name
01_SourceData
02_SurveyDatabases
03_ActualSurfaces
04_SectionSurfaces
05_ToDateSurfaces
06_SectionSurfaceArchives
07_Export
Const-L100CORR-RollaRoad.dwg
Const-L100SECT--RollaRoad.dwg
Preview
History
Documents
Favorites
FTP
Desktop
File name:
Const-L100CORR-RollaRoad.dwg
Open
Files of type:
Drawing (*.dwg)
Open


Attach External Reference
Name:
Const-L100CORR-RollaRoad
Browse...
Preview
Scale
Specify On-screen
X:
1.00
Y:
1.00
Z:
1.00
Uniform Scale
Path type
Relative path
Rotation
Specify On-screen
Angle:
0d0'0"
Insertion point
Specify On-screen
X:
0.00
Y:
0.00
Z:
0.00
Block Unit
Unit:
Meters
Factor:
1.000
Reference Type
Attachment
Overlay
Locate using Geographic Data
critical
Show Details
OK
Cancel
Help

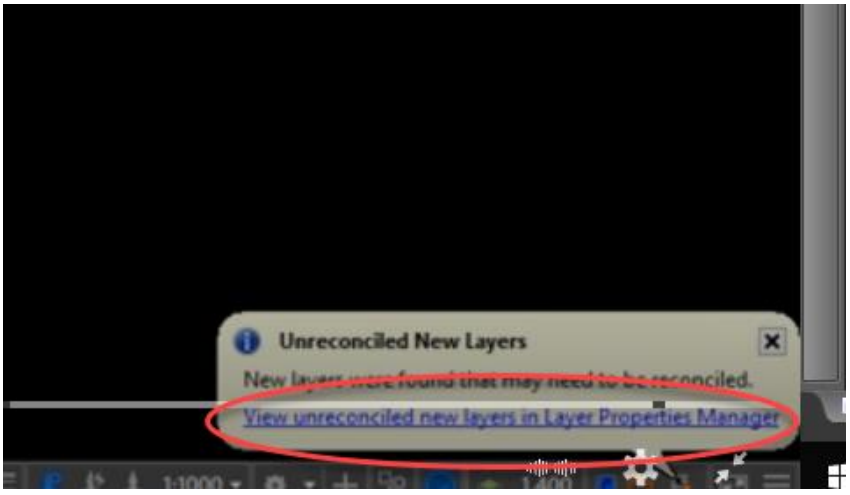
If you want to make the following drawing little bit clean follow the steps as shown below.

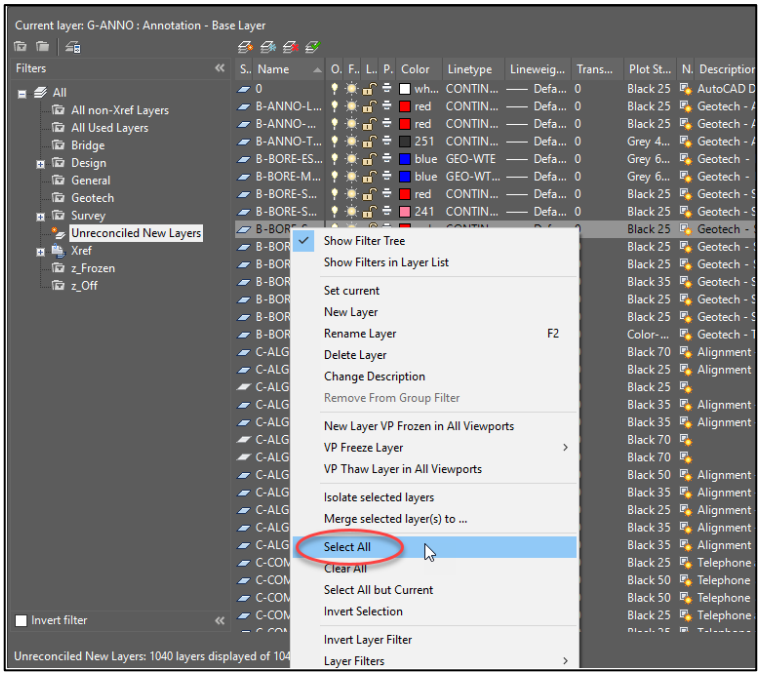


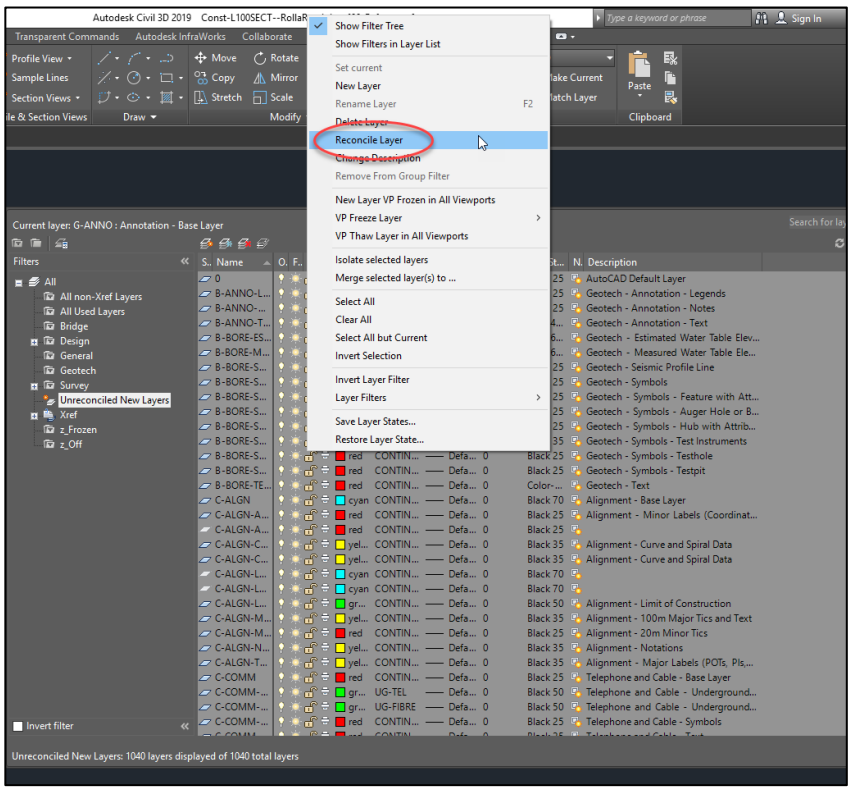




After subtract the other data ,you need to reconcile the layers.







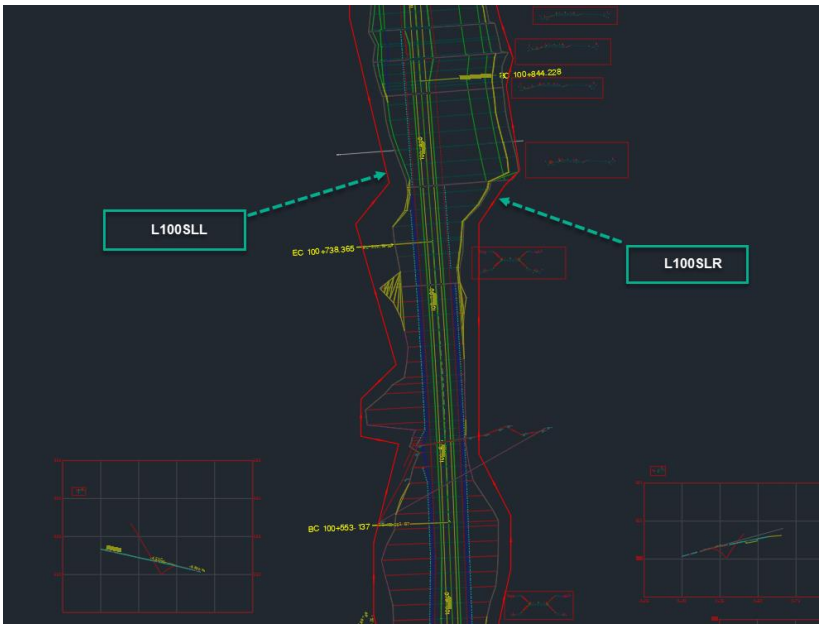
After reconcile the layer close the layer properties and save the drawing.

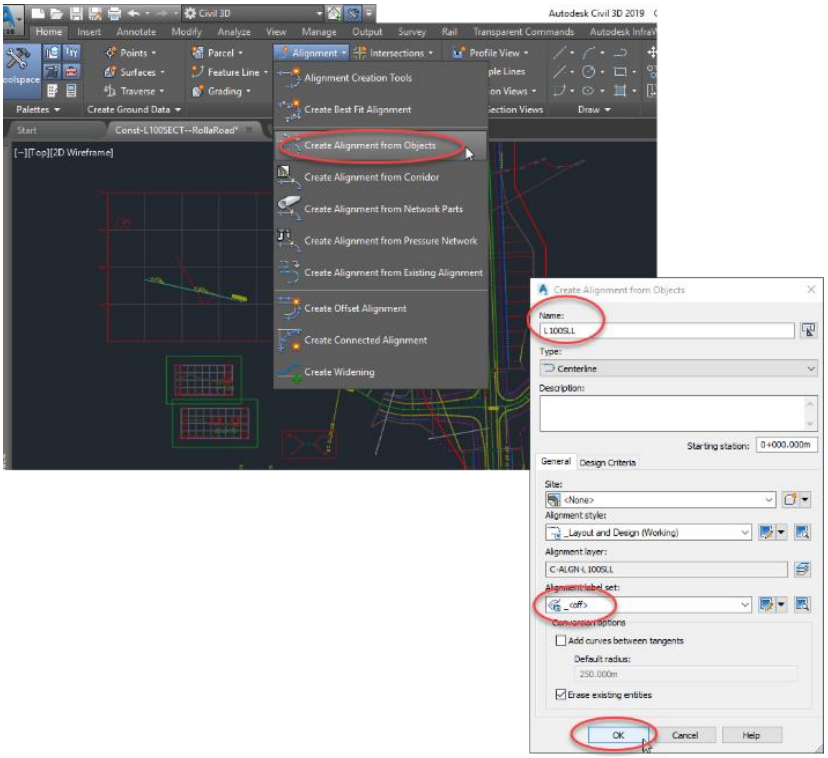
4.7 Create Alignments to control Sample Line Widths (This is an optional step it's all about optimzing data and system resourses)(09.39)

Create couple polylines just follow along the limits of L100CORR and those lines doesn't have to be perfect but atleast it will give us something that we can use to control our

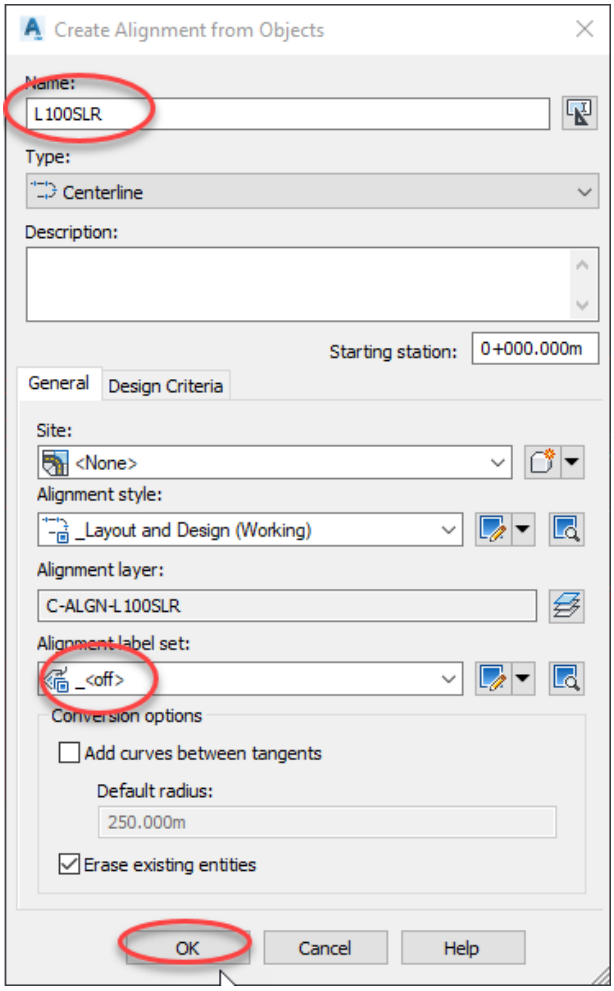
sample line widths both left and right hand side. Just try to approximate and this is an optional step but Andrew has found that anything you can do in civil 3D to manage the data, specially when you dealing with large amounts of LiDAR data ,we will go long way in the whole work flow.

Now we have two alignments that we can use to control the sample line widths L100SLL & 100SLR.





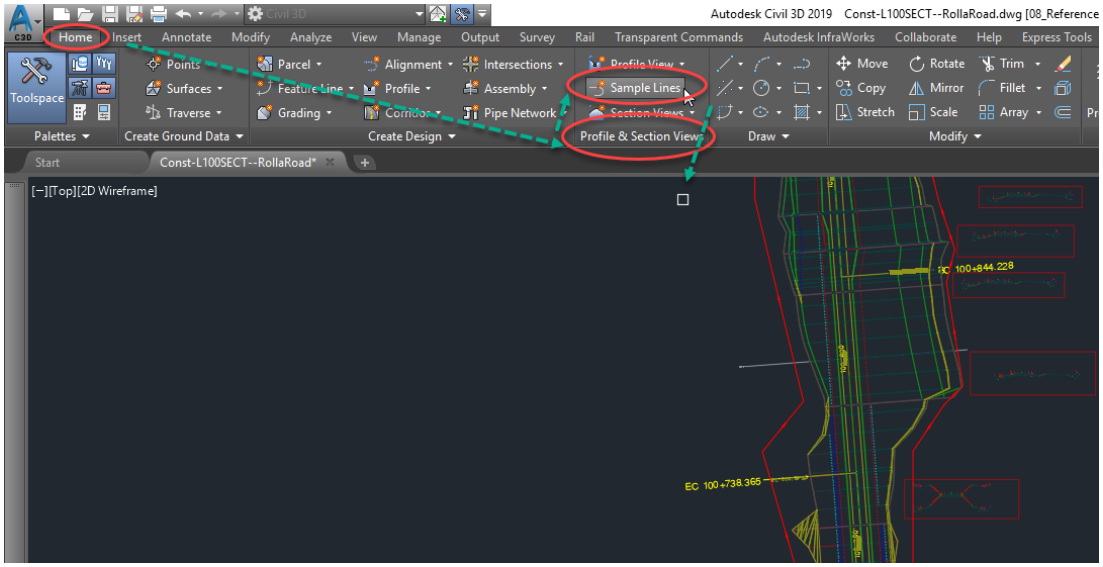
Do the same thing for the right side as well.

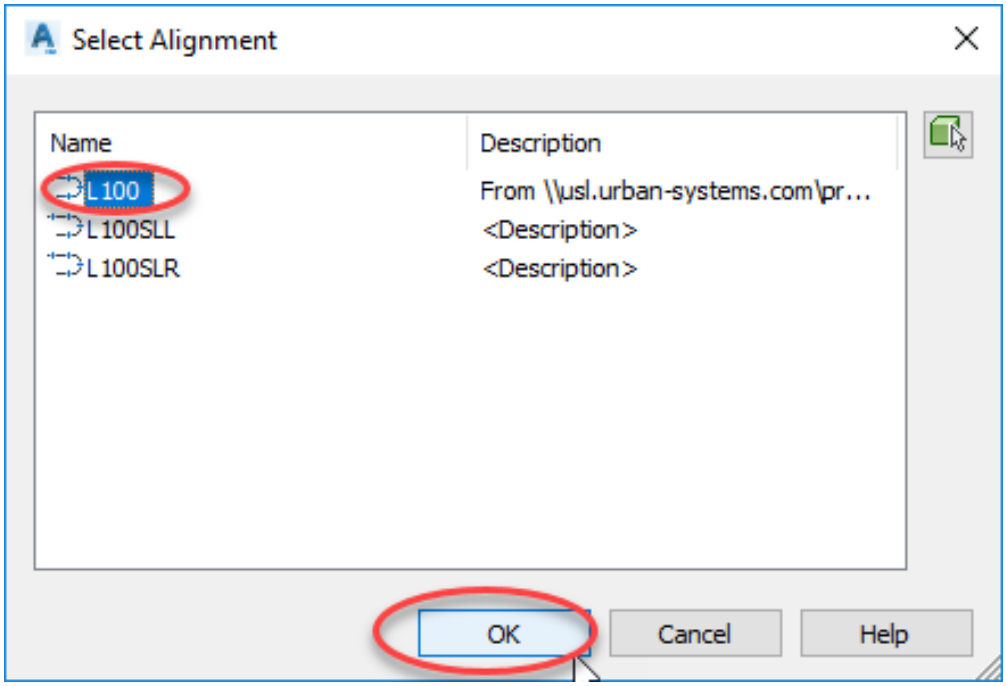


4.8 Create Sample Lines and Attach Data(11.28)

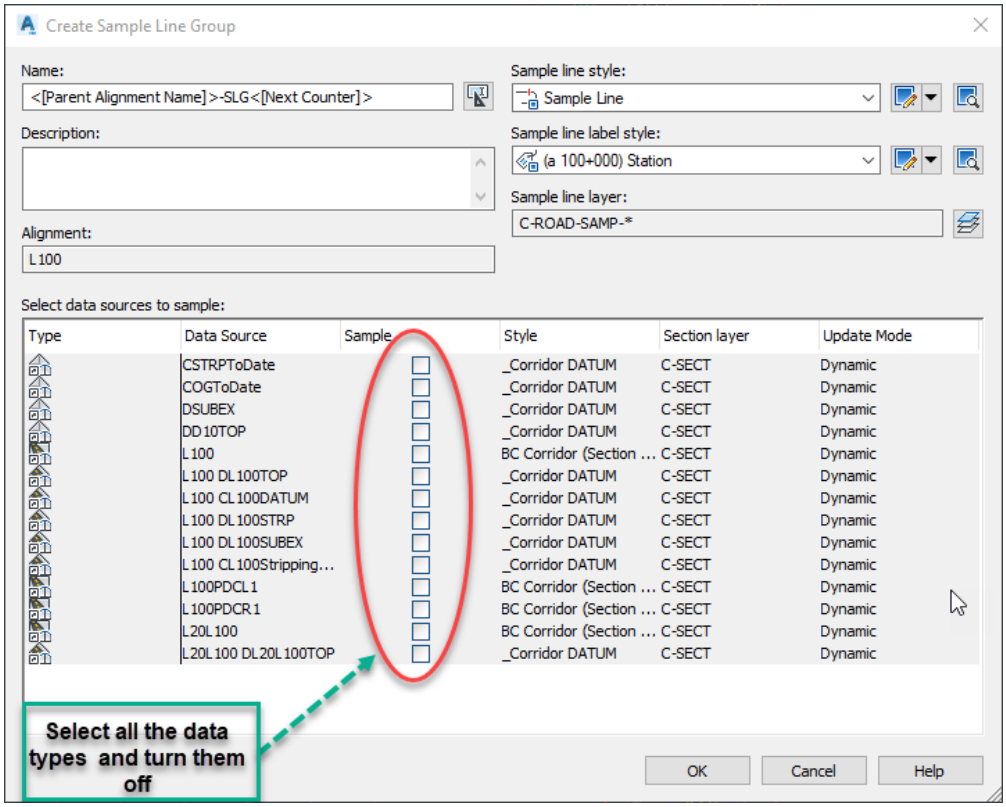
Choose the “sample lines” command in “profile and section views “panel In home tab.

Pick the L100 alignment by graphically or press enter.

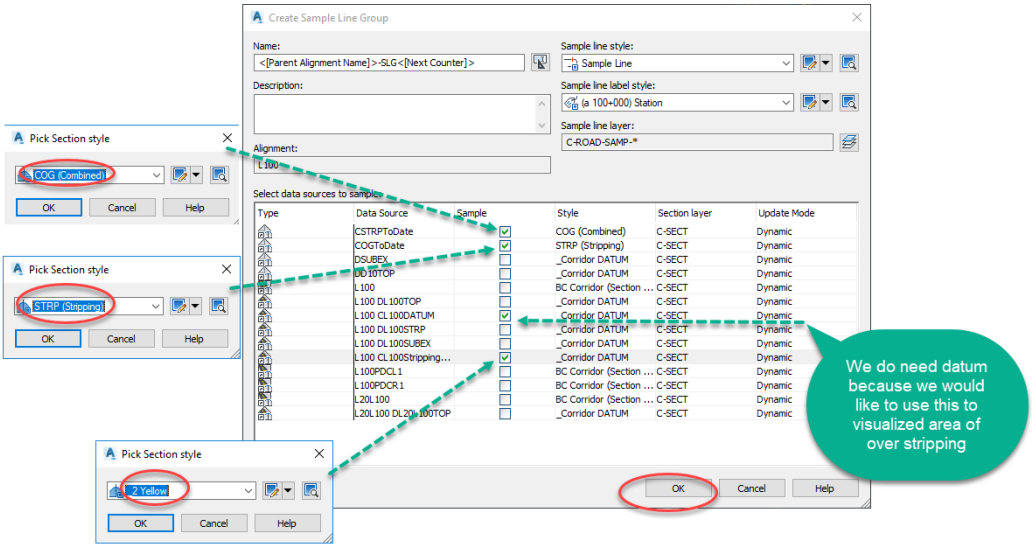




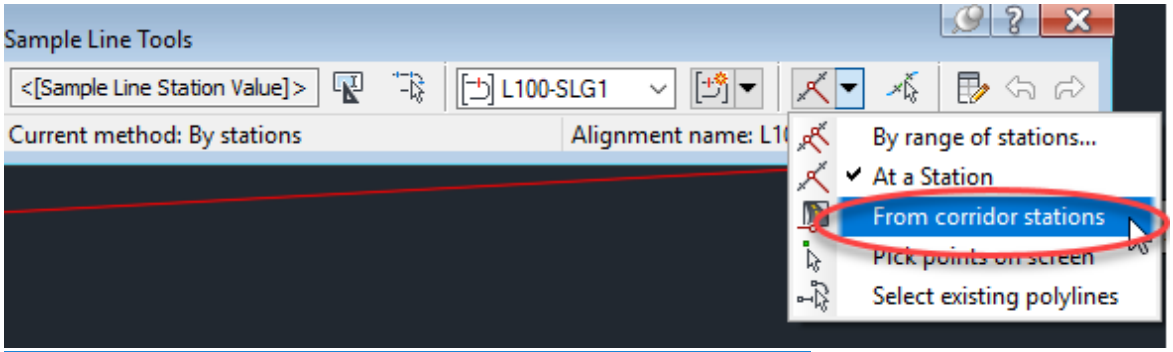
After that, below window will show you which data we can choose to attach to the sample line and all those information come to the xref.

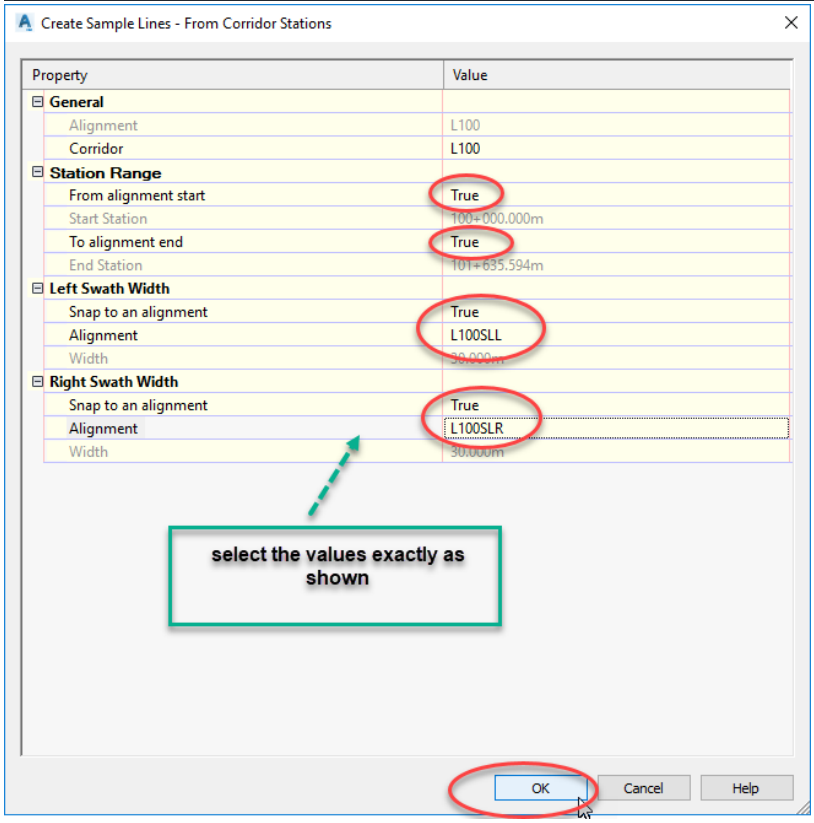


Let's go through and figure this out what we need exactly and choose the highlighted style as shown in below.



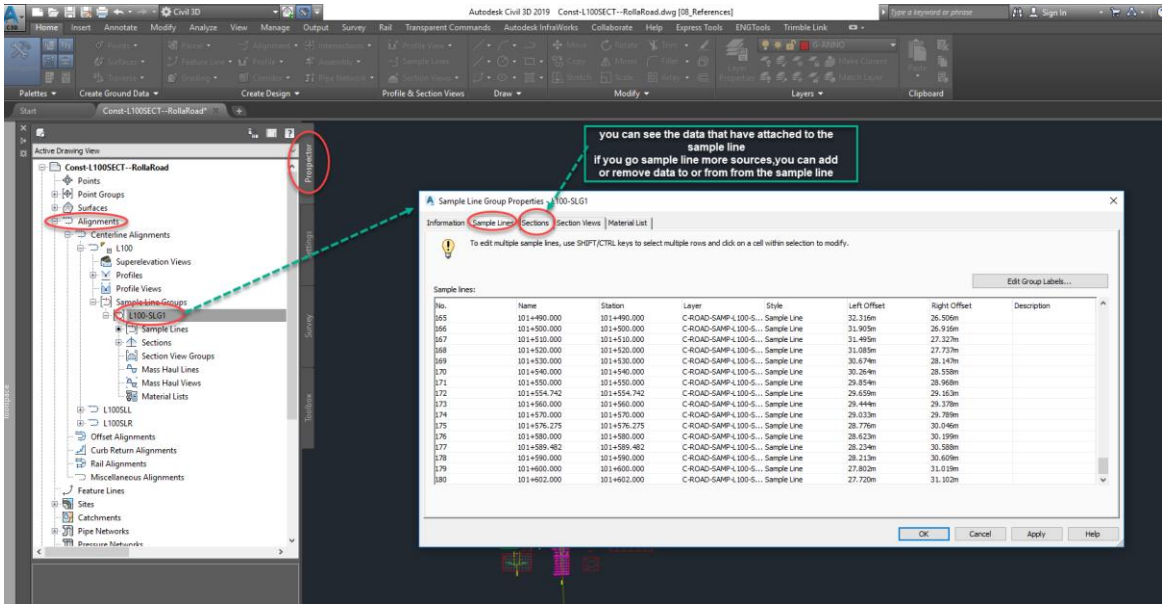
After creating sample line group choose the “from corridor stations” in sample line tool.





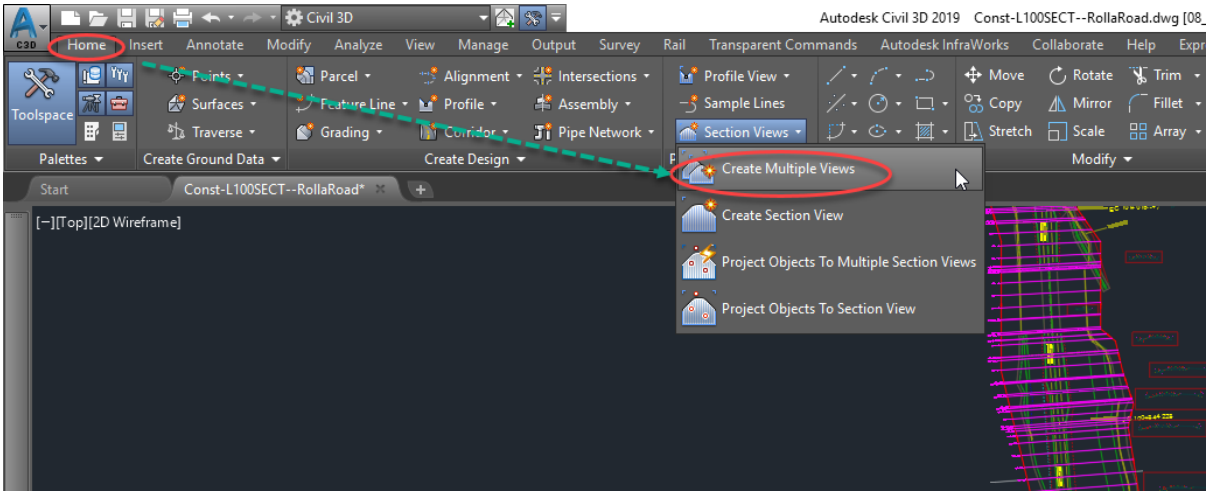
At last we can close the sample line toolbar.

And what that above process physically did, go to prospector tab and just have a look as follows.

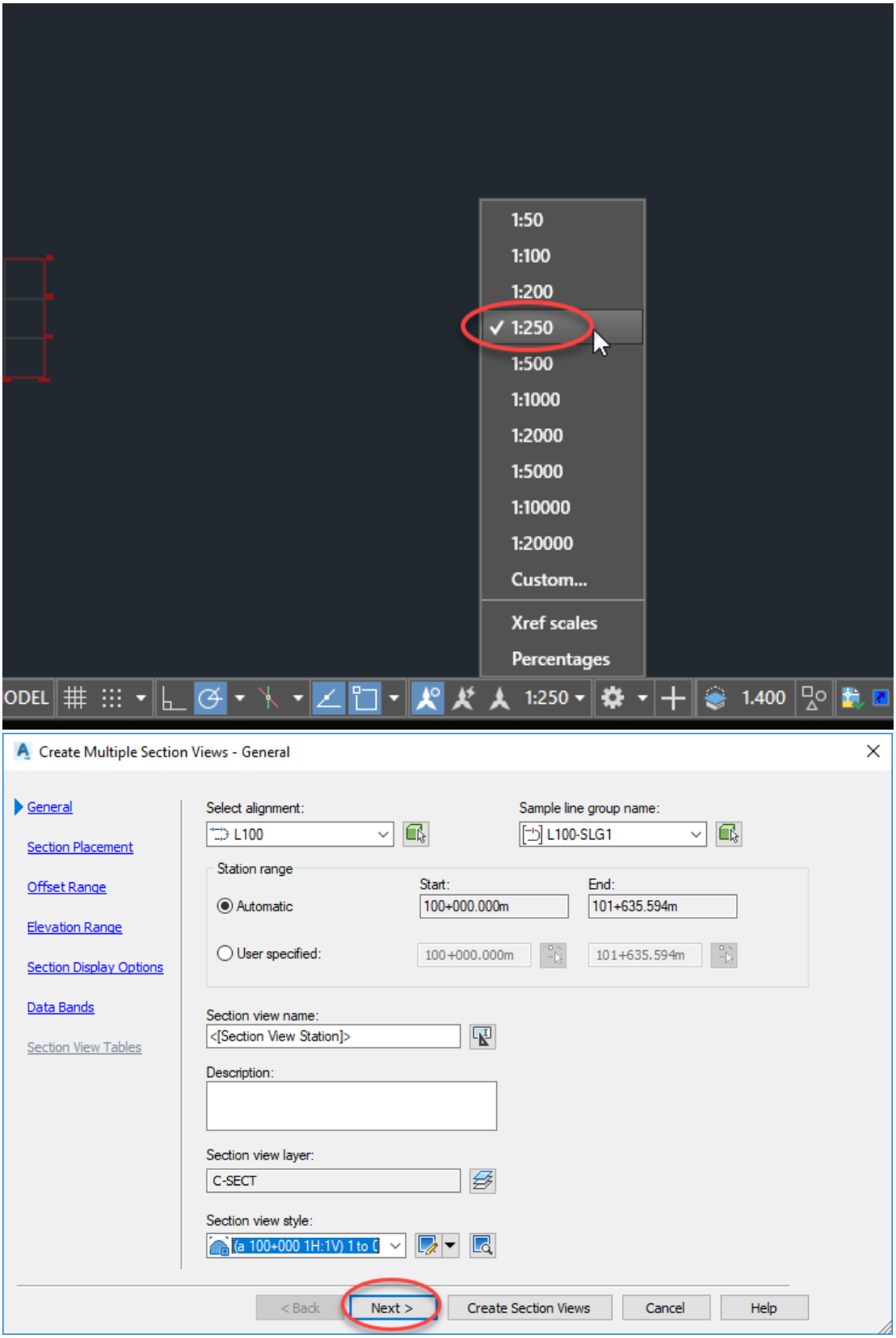


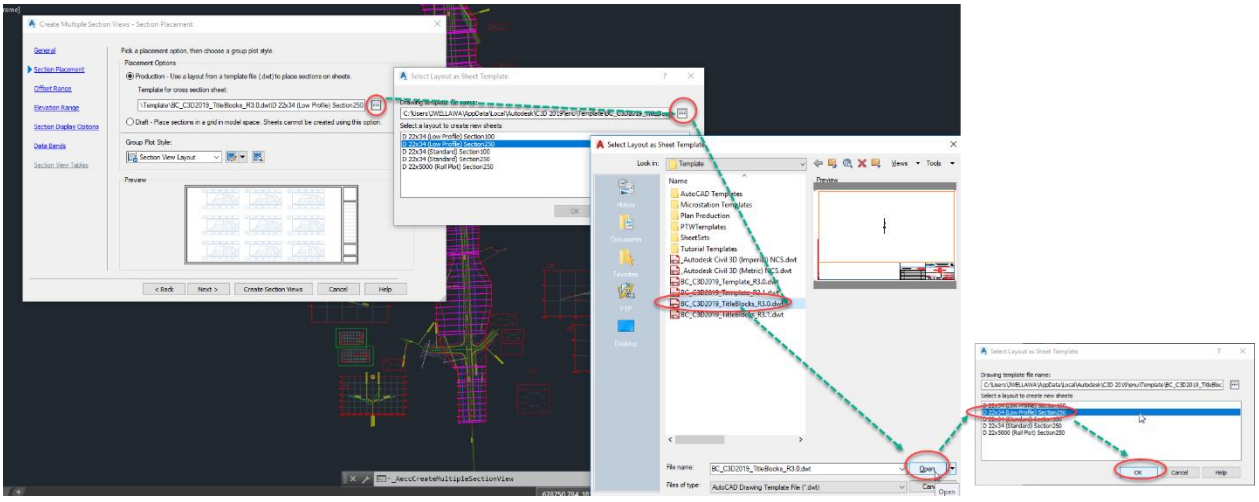
4.9 Create Section Views(15.58)

Section views are required to calculate the volumes but they are difinetly important if you want to make sure volumes have been calculated corectly because we can shaded areas.



Set the annotation scale to the 250.


1:50
1:100
1:200
1:250
1:500
1:1000
1:2000
1:5000
1:10000
1:20000
Custom...
Xref scales
Percentages
1:250
1.400
Create Multiple Section Views - General
General
Section Placement
Offset Range
Elevation Range
Section Display Options
Data Bands
Section View Tables
Select alignment:
L100
Sample line group name:
L100-SLG1
Station range
Start:
End:
Automatic
100+000.000m
101+635.594m
User specified:
100+000.000m
101+635.594m
Section view name:
<[Section View Station]>
Description:
Section view layer:
C-SECT
Section view style:
< Back
Next >
Create Section Views
Cancel
Help



After that you can accept default for the offset range, elevation range and section display. And then press the “create section views”.

Pick a location in the drawing and civil 3D is going to essentially create 180 section views showing different data types. Now we have

- COGToDate
- CSTRPToDate
- CORRDatum
- STRPClose

Save your drawing often.

4.10 Review Section Data in Section views(18.41)

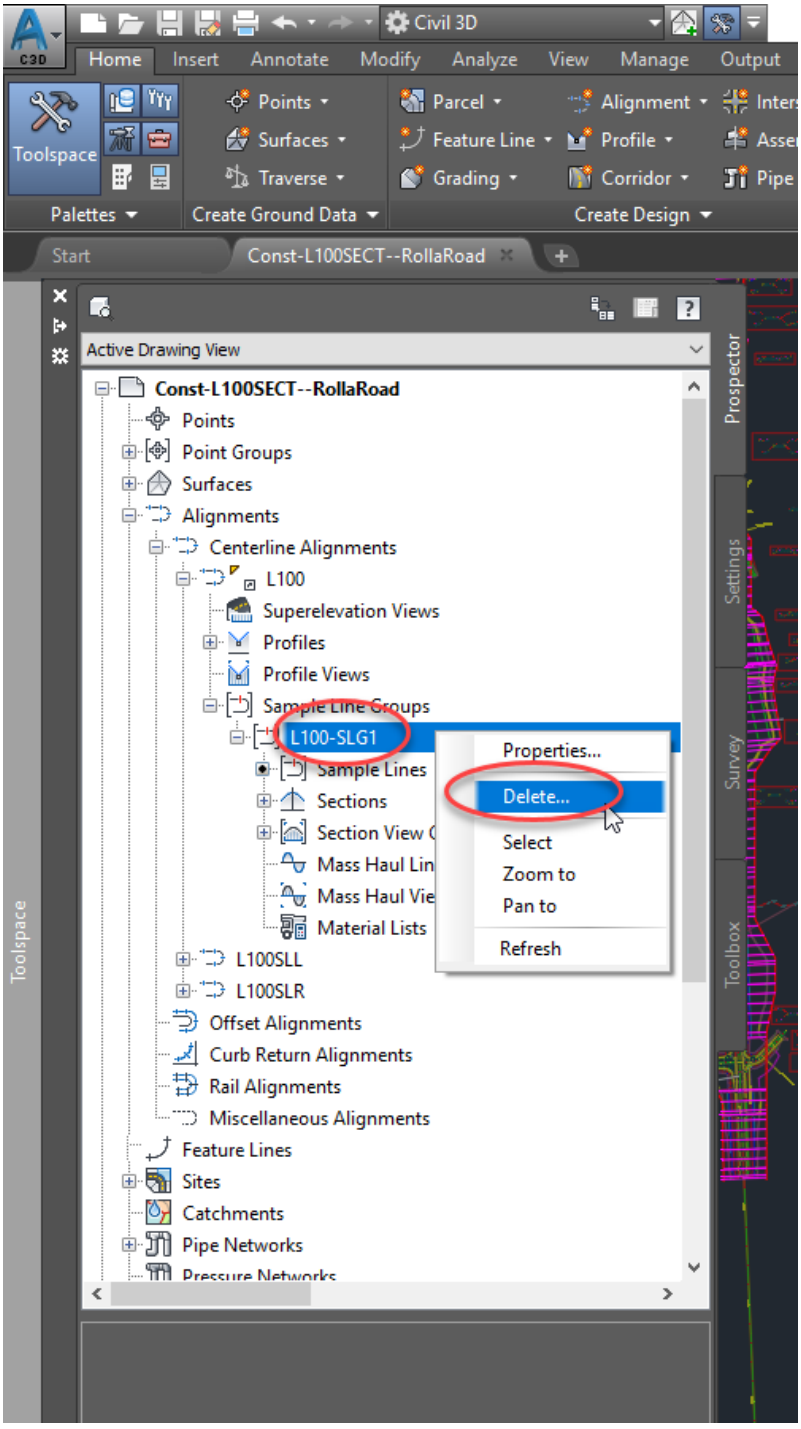
4.11 Delete Sample Line Group(20.30)

This is probably a good idea to include that individual stripping surfaces atleast in plan view and that way you can control sample line width.

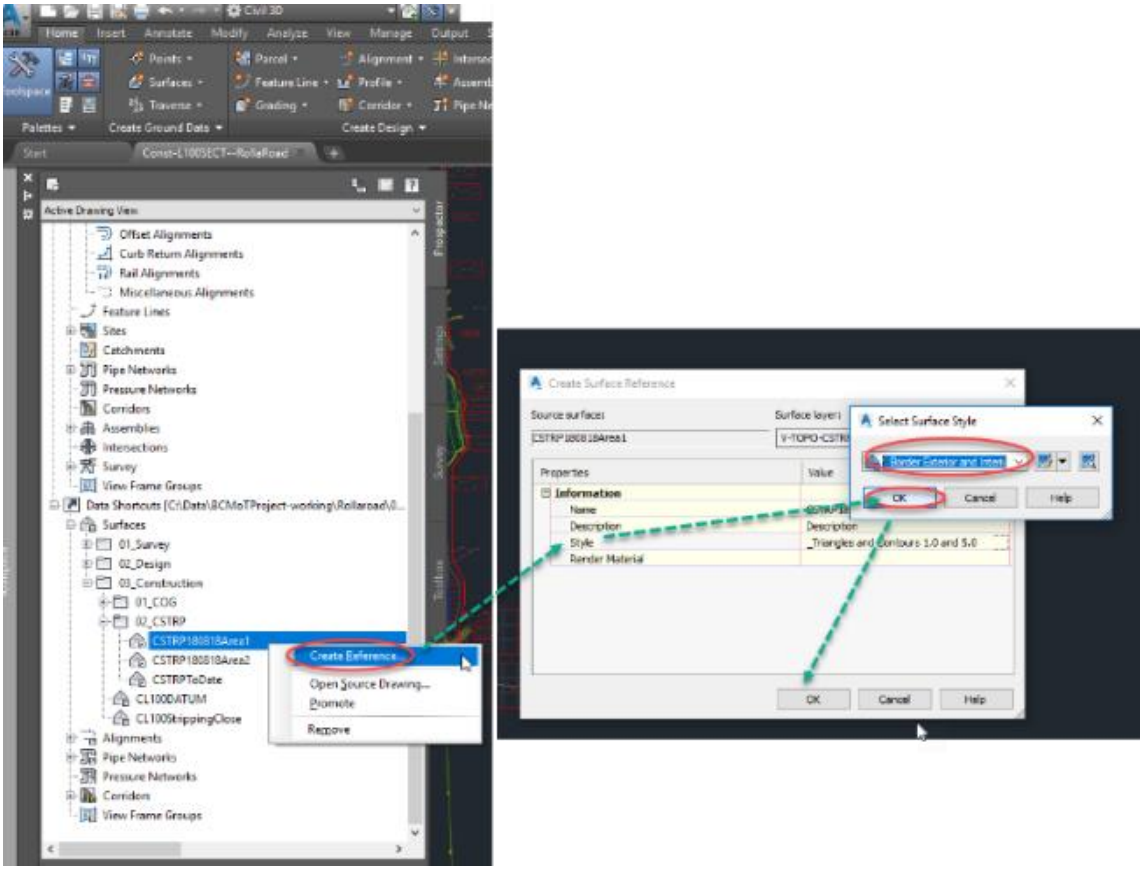
This conclude the preliminary creation of sample line and section views.

Now I'm going to recreate my sample line group.

- Delete the existing group



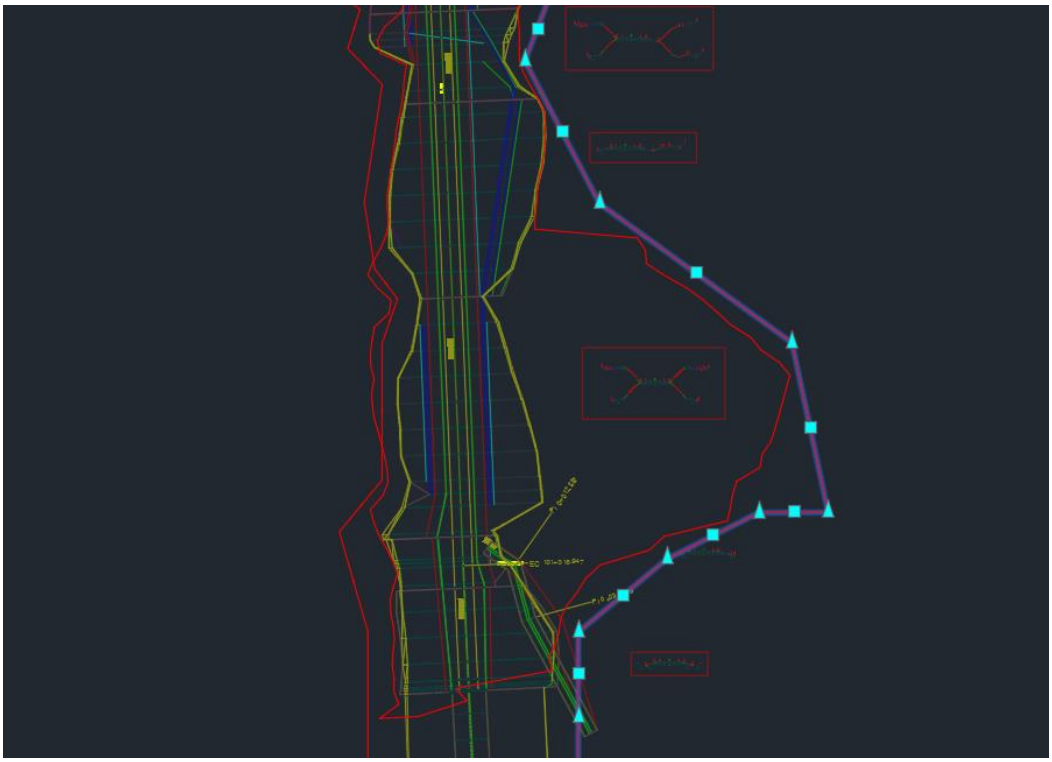
4.12 Create Reference to 2XCSTRP Surfaces(21.40)



Create the refernce for area 2 as well.

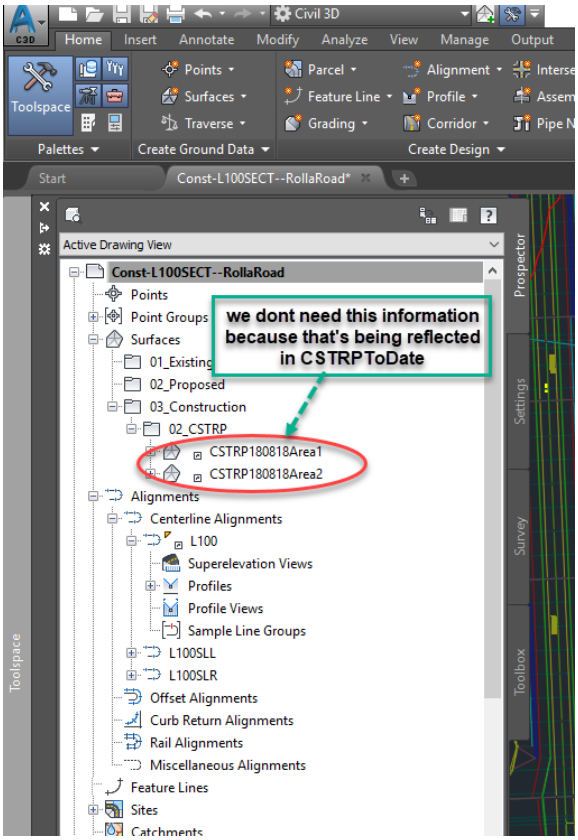
4.13 Update Sample Line alignment Geometry(22.12)

Sample line width can be controlled by this alignment.



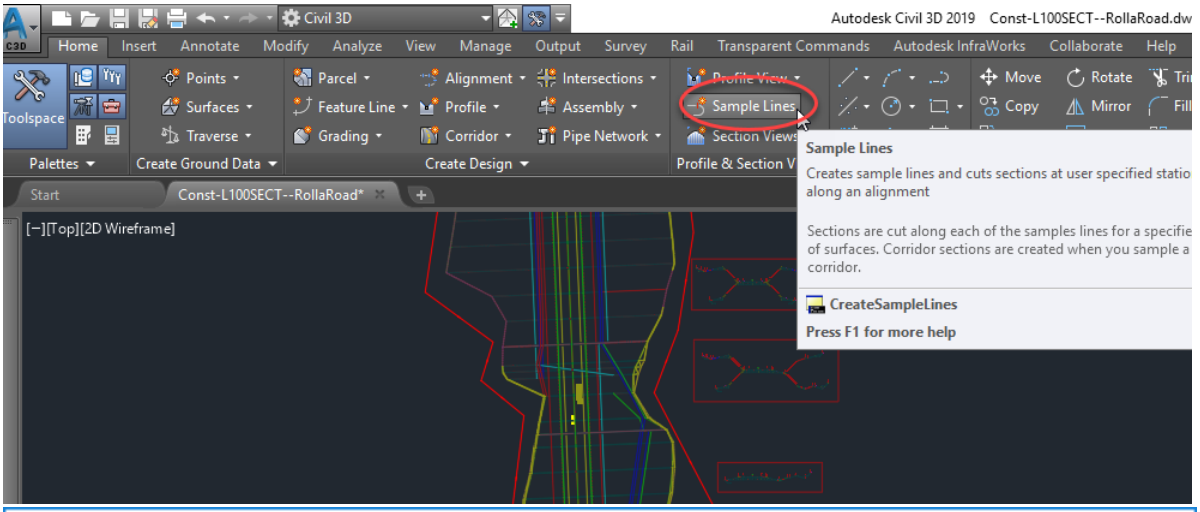
4.14 Delete 2 x CSTRP Reference Surfaces(23.06)

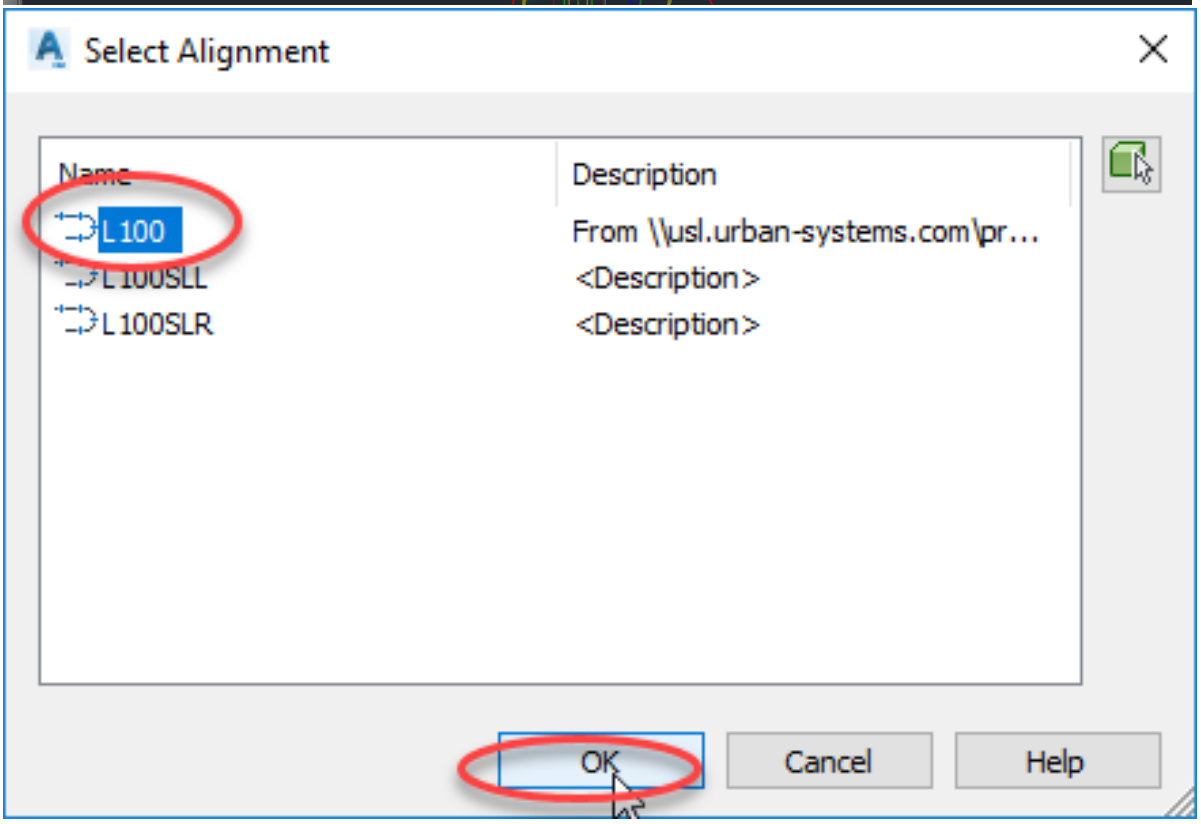
Upto this step we have added two surfaces and we are ready to create sample lines again.

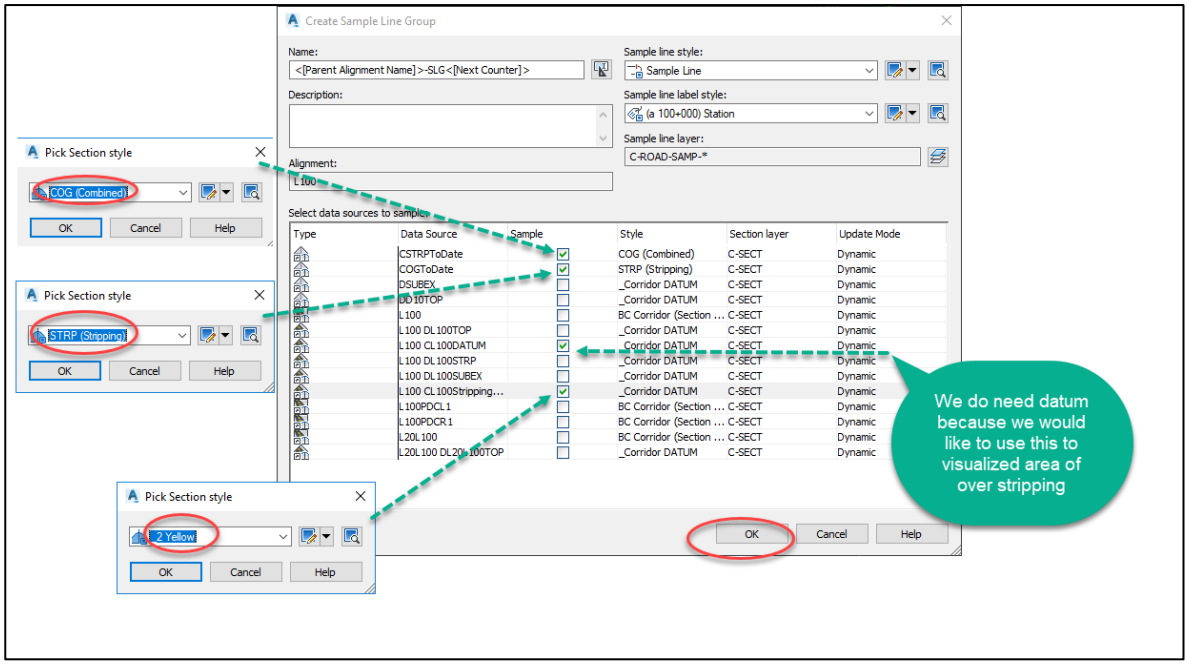


Just delete those two surfaces.

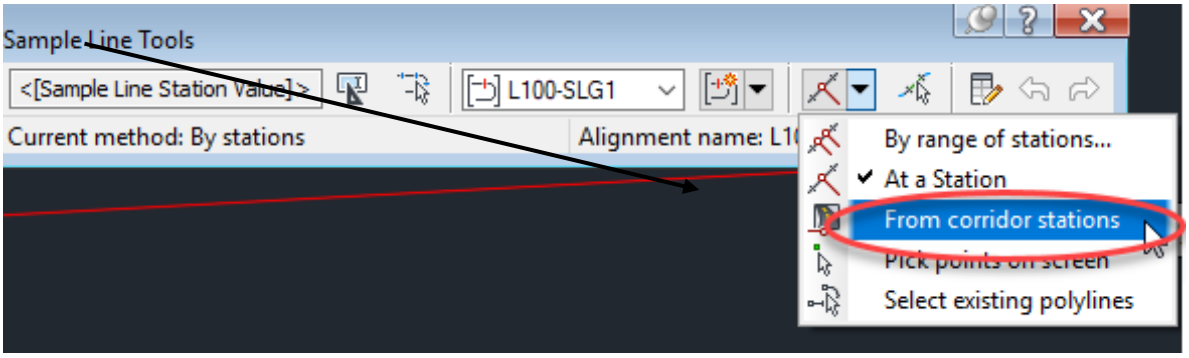
4.15 Create Sample Lines and Section Views(23.32)

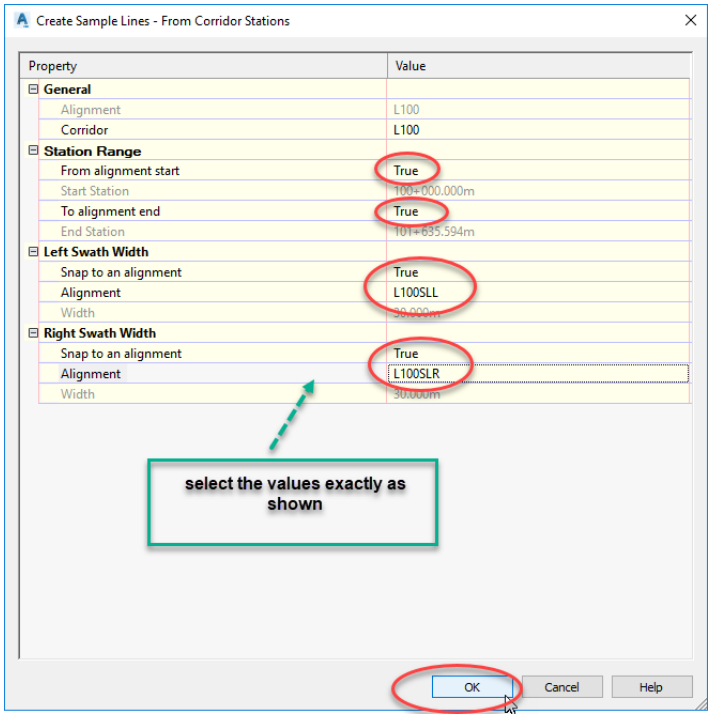




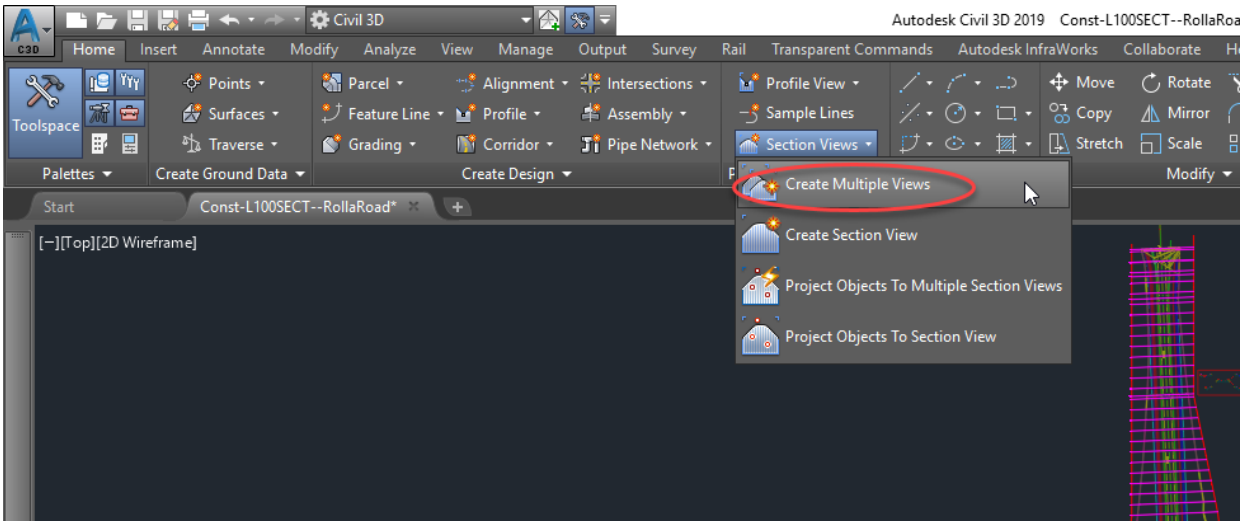


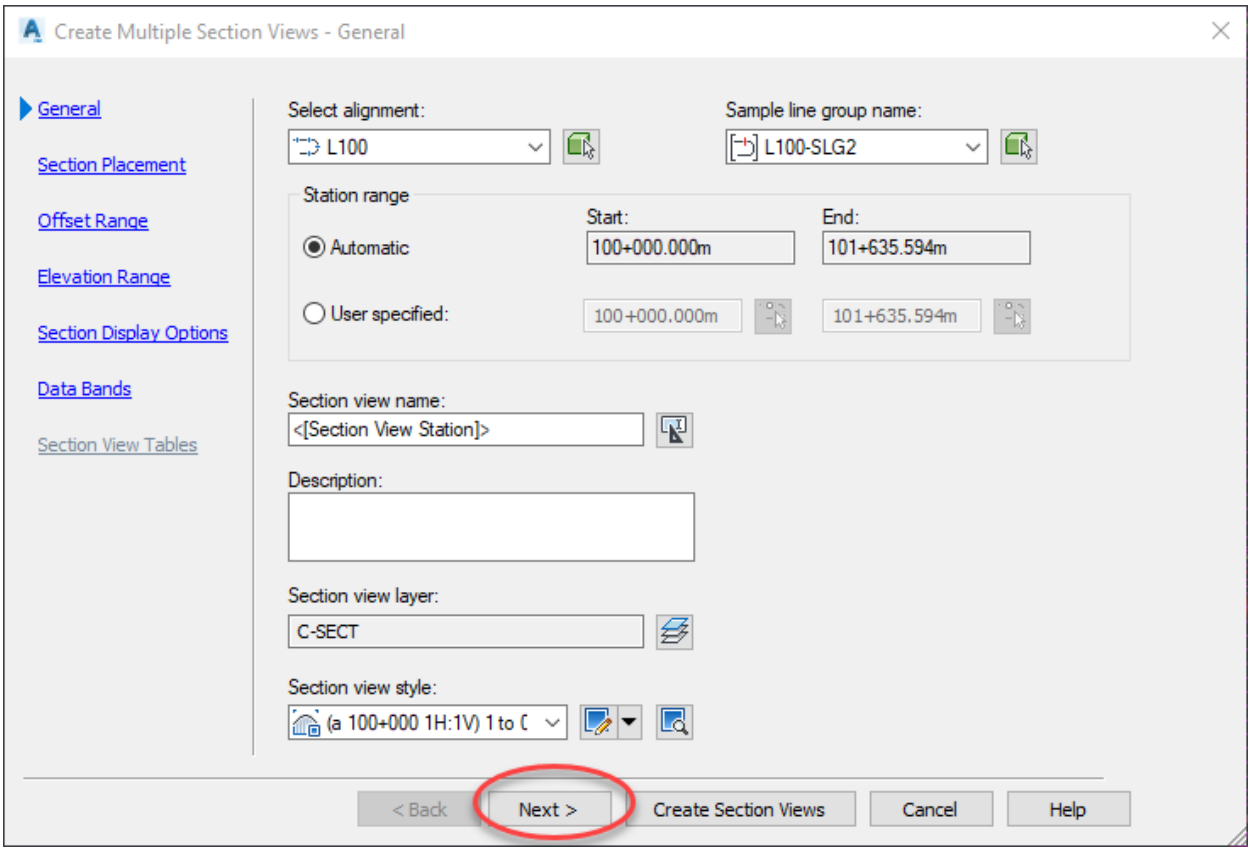
If you wanna double check the above window just click on the shown command





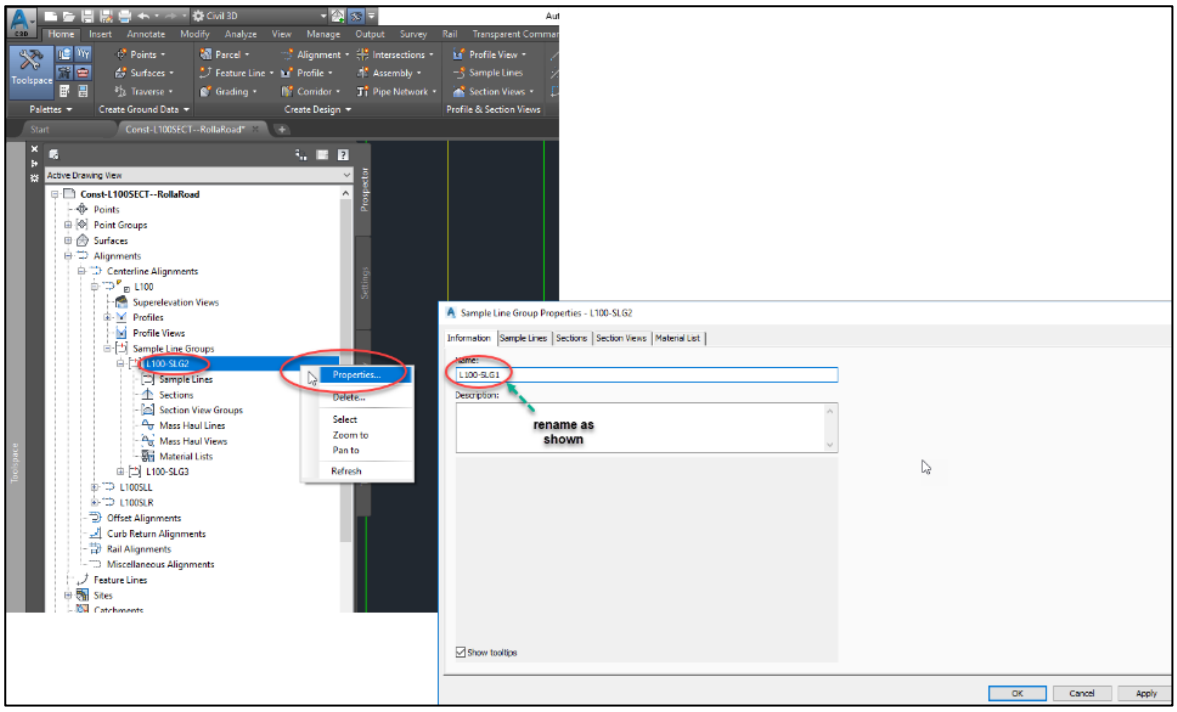
Let's create the section views

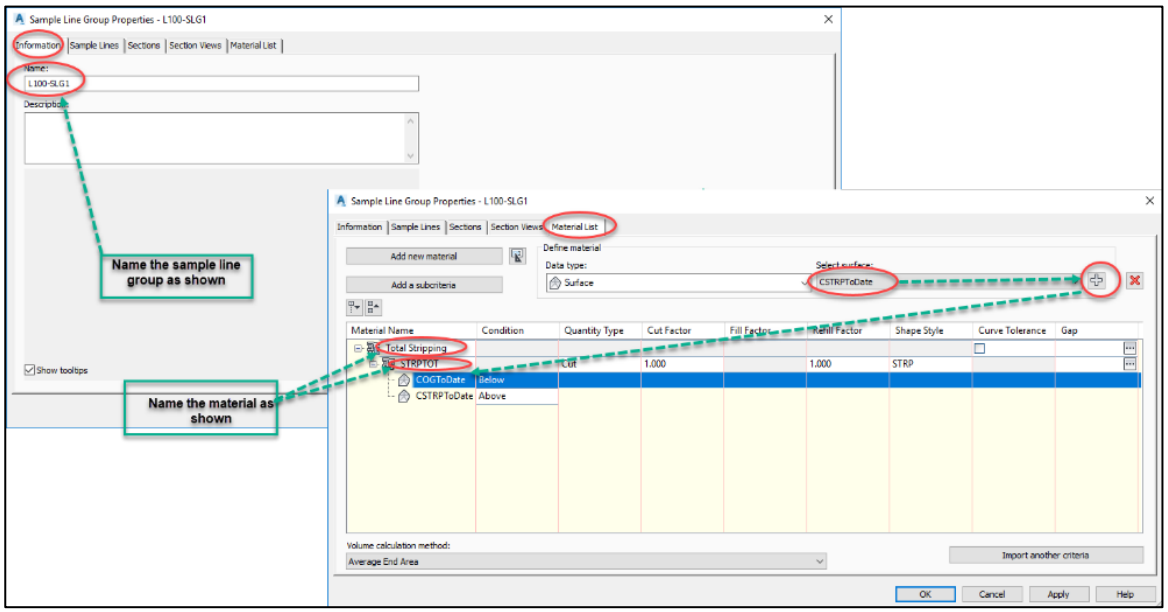


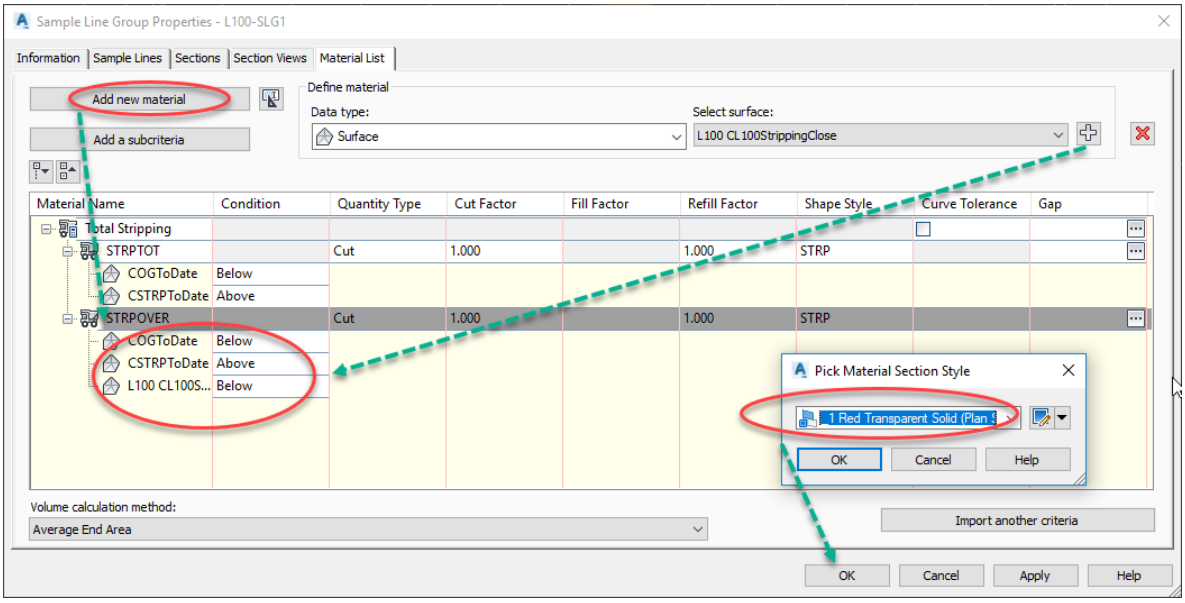


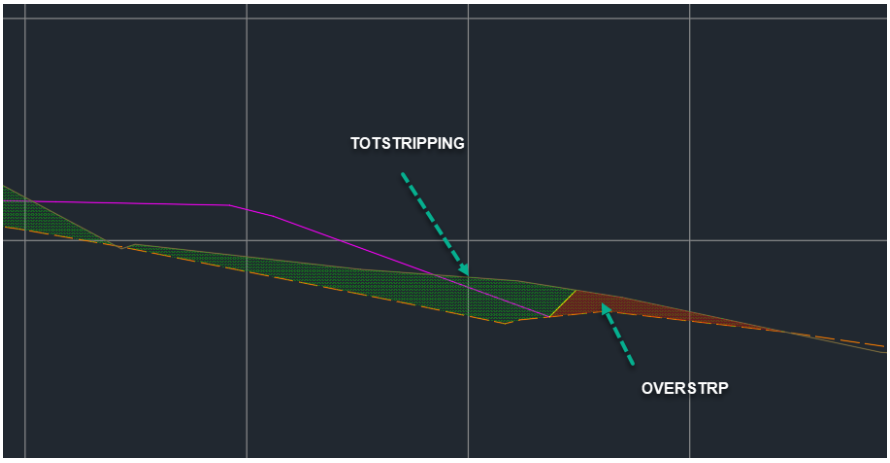
Just go through all windows as before untill get "create section view "window.
Civil 3D will produce 180 section views in the drawing.

4.16 Calculate STRP and STRPOver Volumes(25.39)

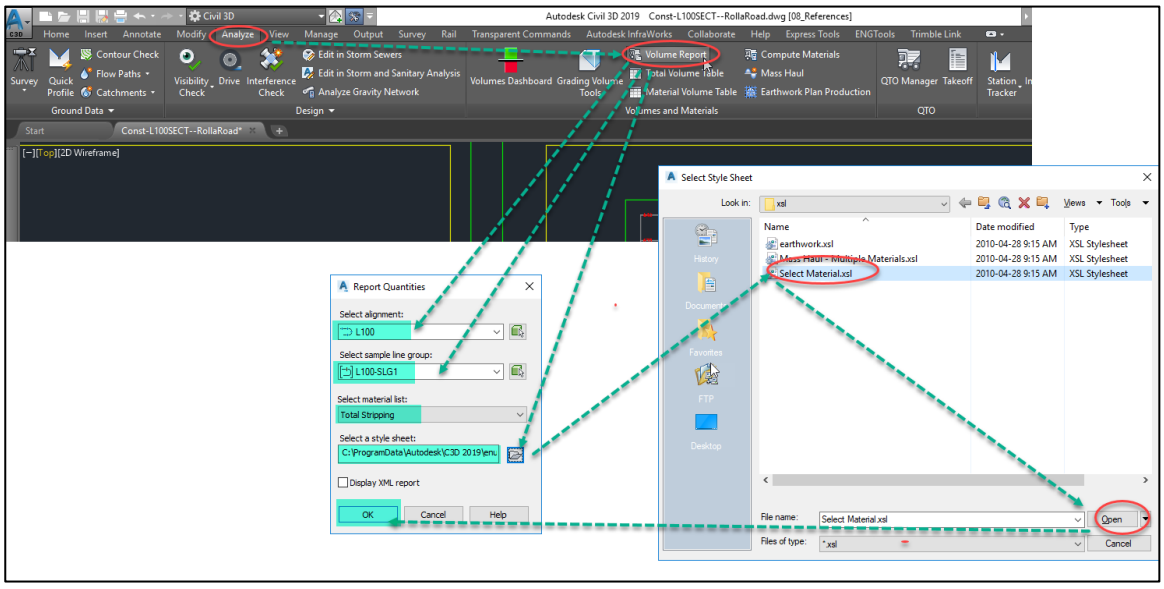


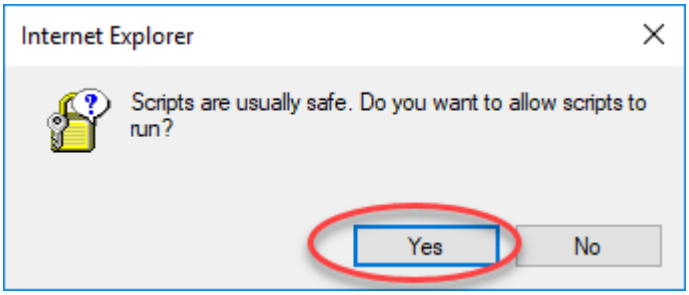






4.17 Report Volumes(32.15)





After all steps you could able to get the material report as follows.

Material Report

Project: C:\Users\JWELLAWA\appdata\local\temp\Const-L100SECT--RollaRoad_1_23986_ee18fde1.sv$
Alignment: L100
Sample Line Group: L100-SLG1
Start Sta: 100+330.000
End Sta: 101+602.000

	Area Type	Area	Inc.Vol.	Cum.Vol.
		Sq.m.	Cu.m.	Cu.m.
Station: 100+330.000				
	STRPTOT	0.00	0.00	0.00
	STRPOVER	0.00	0.00	0.00
Station: 100+332.665				
	STRPTOT	0.00	0.00	0.00
	STRPOVER	0.00	0.00	0.00
Station: 100+340.000				
	STRPTOT	0.00	0.00	0.00
	STRPOVER	0.00	0.00	0.00
Station: 100+340.026				
	STRPTOT	0.00	0.00	0.00
	STRPOVER	0.00	0.00	0.00
Station: 100+350.000				
	STRPTOT	0.00	0.00	0.00
	STRPOVER	0.00	0.00	0.00
Station: 100+360.000				
	STRPTOT	0.00	0.00	0.00
	STRPOVER	0.00	0.00	0.00
Station: 100+370.000				
	STRPTOT	0.00	0.00	0.00

Station: 100+720.000				
	STRPTOT	21.70	108.62	108.73
	STRPOVER	2.24	11.19	11.19
Station: 100+730.000				
	STRPTOT	17.87	197.86	306.58
	STRPOVER	1.25	17.44	28.63
Station: 100+738.365				
	STRPTOT	26.33	184.87	491.45
	STRPOVER	1.01	9.45	38.08
Station: 100+740.000				
	STRPTOT	26.99	43.57	535.03
	STRPOVER	1.54	2.08	40.16
Station: 100+750.000				
	STRPTOT	29.22	281.03	816.05
	STRPOVER	2.12	18.32	58.48
Station: 100+760.000				
	STRPTOT	51.24	402.31	1218.36
	STRPOVER	5.18	36.52	95.00
Station: 100+770.000				
	STRPTOT	52.80	520.21	1738.57
	STRPOVER	6.48	58.31	153.31
Station: 100+775.000				
	STRPTOT	47.20	250.01	1988.58
	STRPOVER	4.21	26.73	180.04
Station: 100+780.000				
	STRPTOT	56.87	260.17	2248.75
	STRPOVER	0.00	10.53	190.57
Station: 100+790.000				
	STRPTOT	82.75	698.08	2946.83
	STRPOVER	0.00	0.01	190.58
Station: 100+800.000				

	STRPOVER	0.00	0.00	7129.08
Station: 101+550.000				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+554.742				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+560.000				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+570.000				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+576.275				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+580.000				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+589.482				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+590.000				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+600.000				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08
Station: 101+602.000				
	STRPTOT	0.00	0.00	27571.34
	STRPOVER	0.00	0.00	7129.08

5 Exercise five_Feild Instructions,Unsuitable TYPED

5.1 Introduction and Overview (00.00)

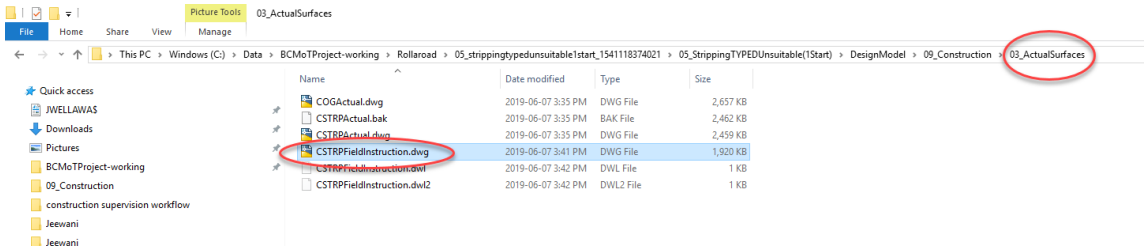
This lesson deals with a scenario where the ground modeler has received a field instruction regarding the stripping.

There is TYPE D unsuitable material that is to be removed, which has been identified over a particular station range. Stripping volumes are calculated between the COG surface and a surface that is consistently 0.3m below COG. The volume of TYPE D Unsuitable is calculated between the "0.3m lowered" surface and the surveyed stripping horizon.

Refer to the diagram (detailed explanation) at last this lesson.

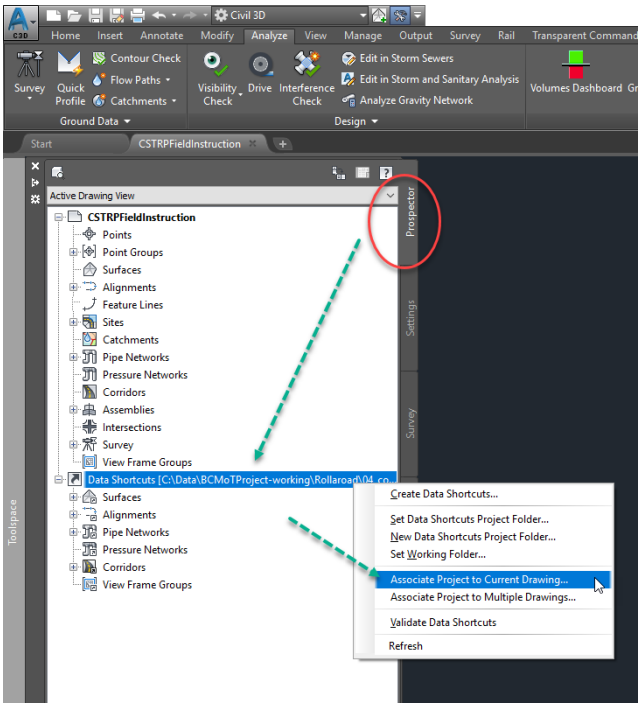
5.2 Create CSTRPField Instructions Drawing(00.43)

Open up a new template and save as the “CSTRPFieldinstruction” in 03_ActualSurfaces folder.



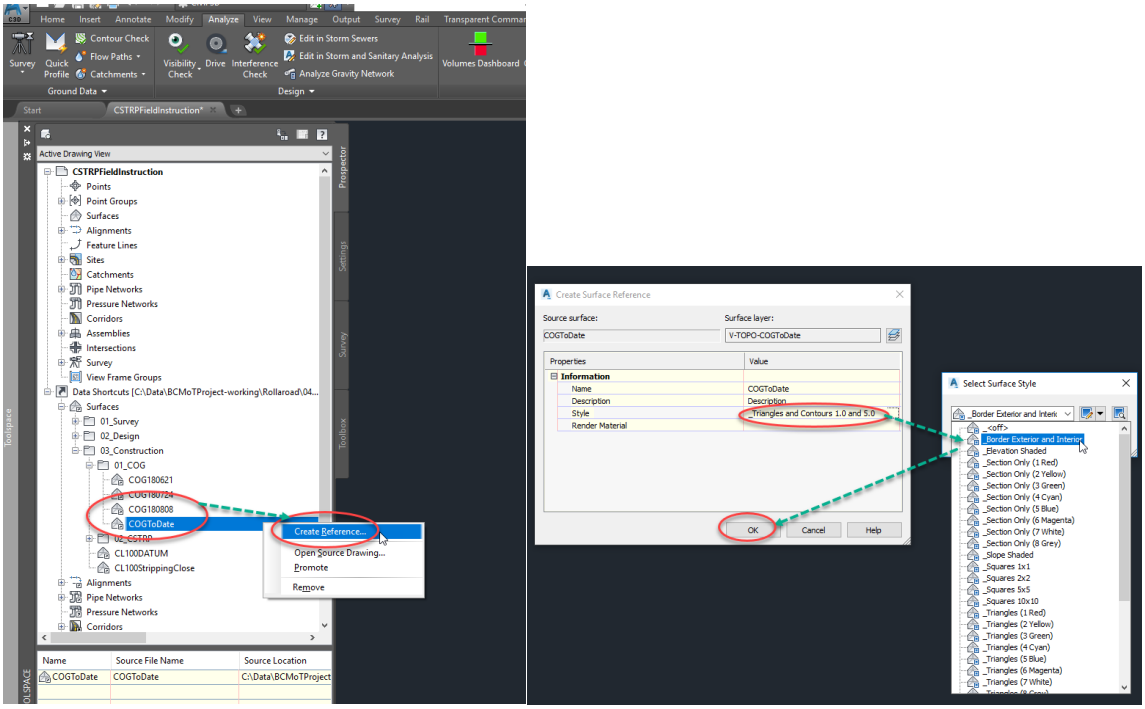
Now we have a new drawing that we can use to create the surface.

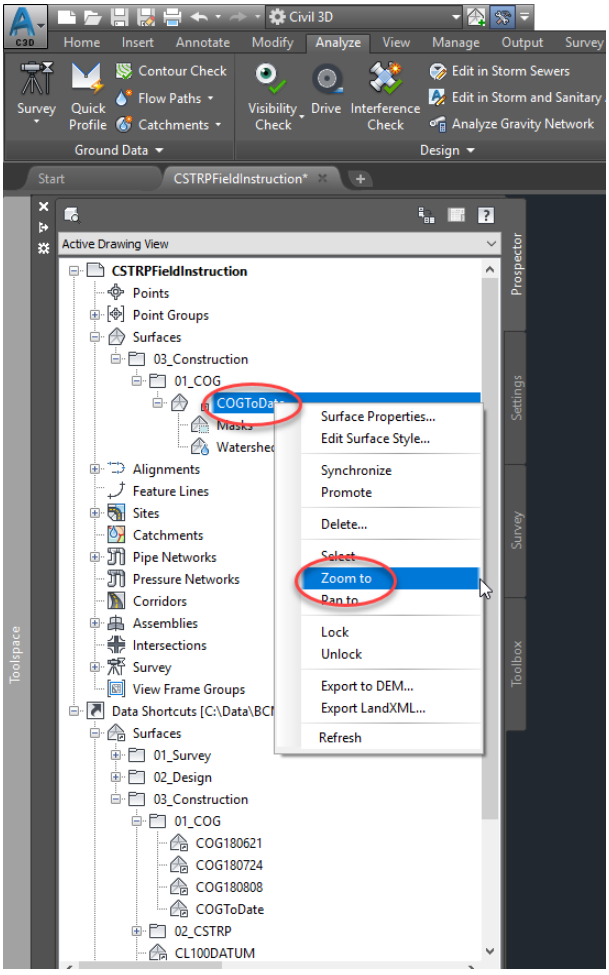
5.3 Associate Data Shortcut Project to Drawing(01.42)



5.4 Create Reference to COGToDate Surface(01.55)

First thing we need to create the surface is COGToDate surface.

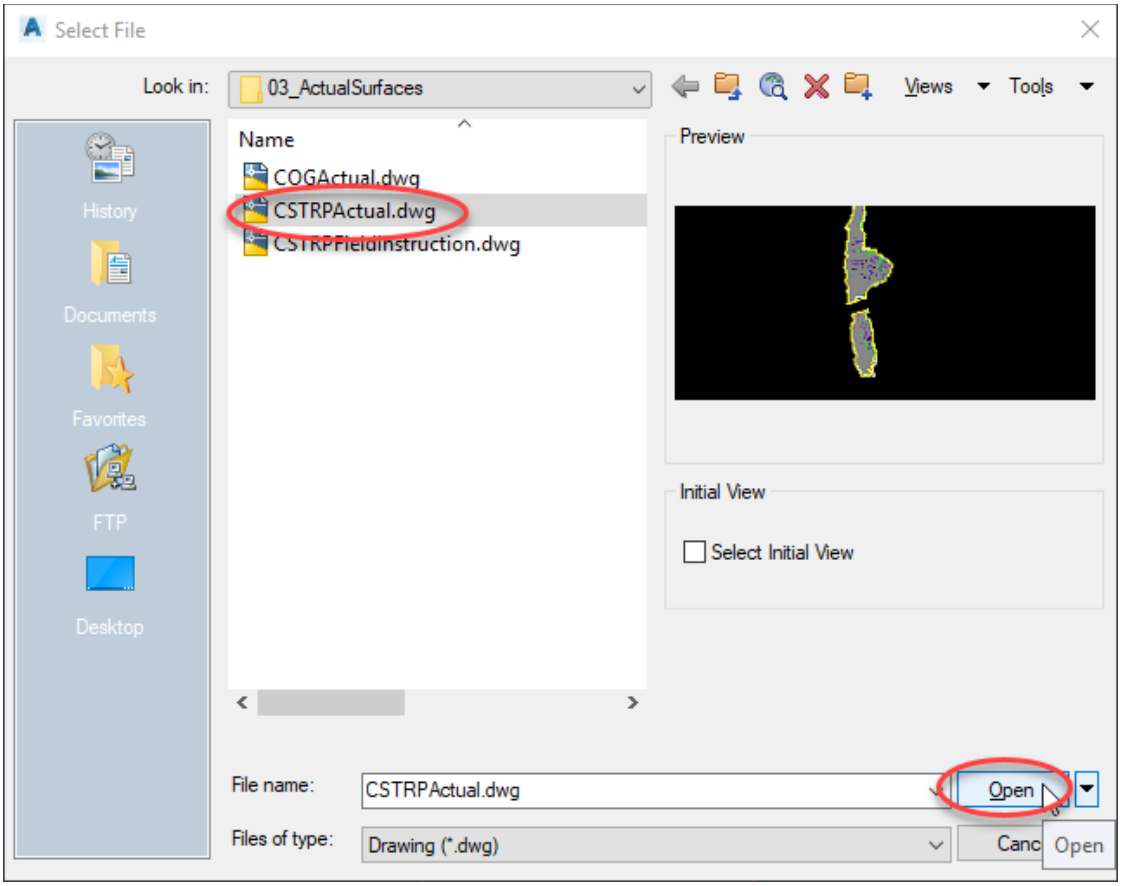


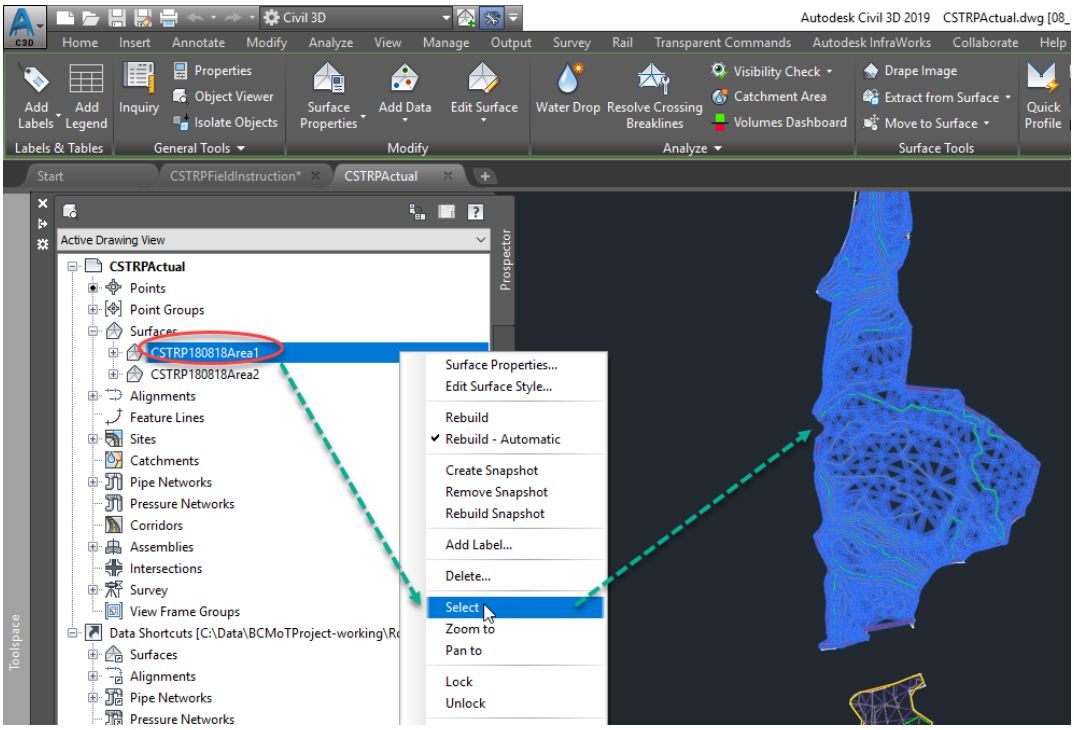


5.5 Copy Boundary Polylines from CSTRPActual Drawing(02.35)

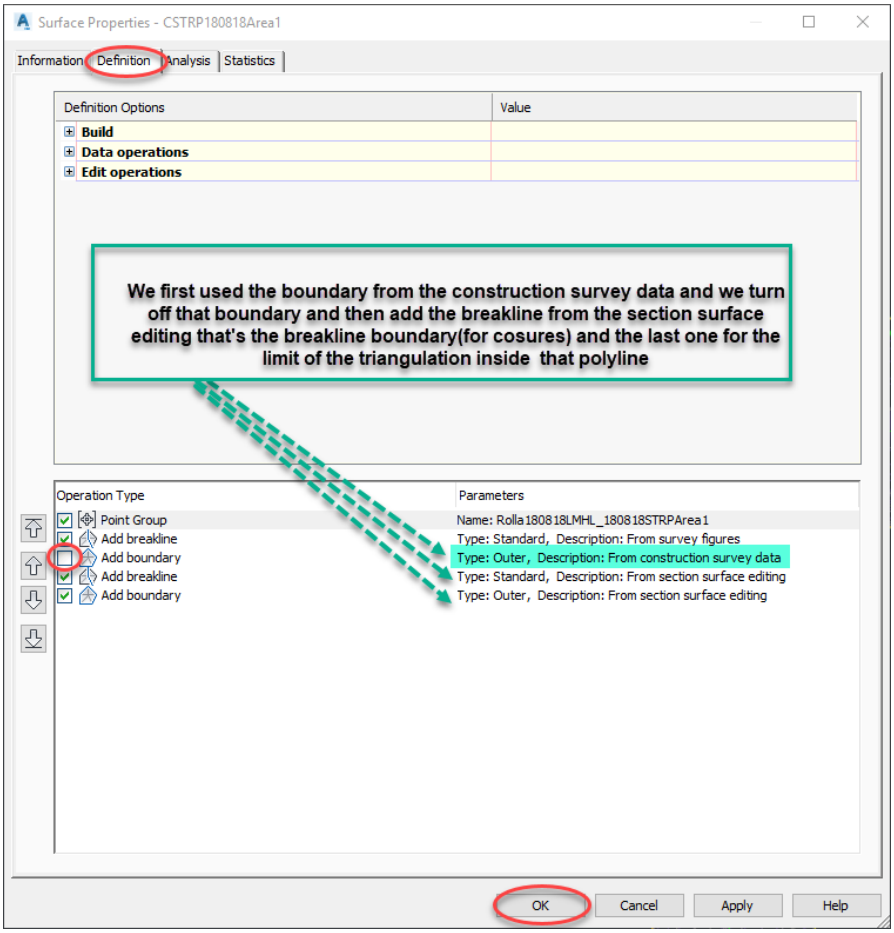
The boundary for this 0.3m drop surface are going to be the “100+720 to 101+210”station range and the limits of the stripping actual surfaces based on have done the section surface editing.

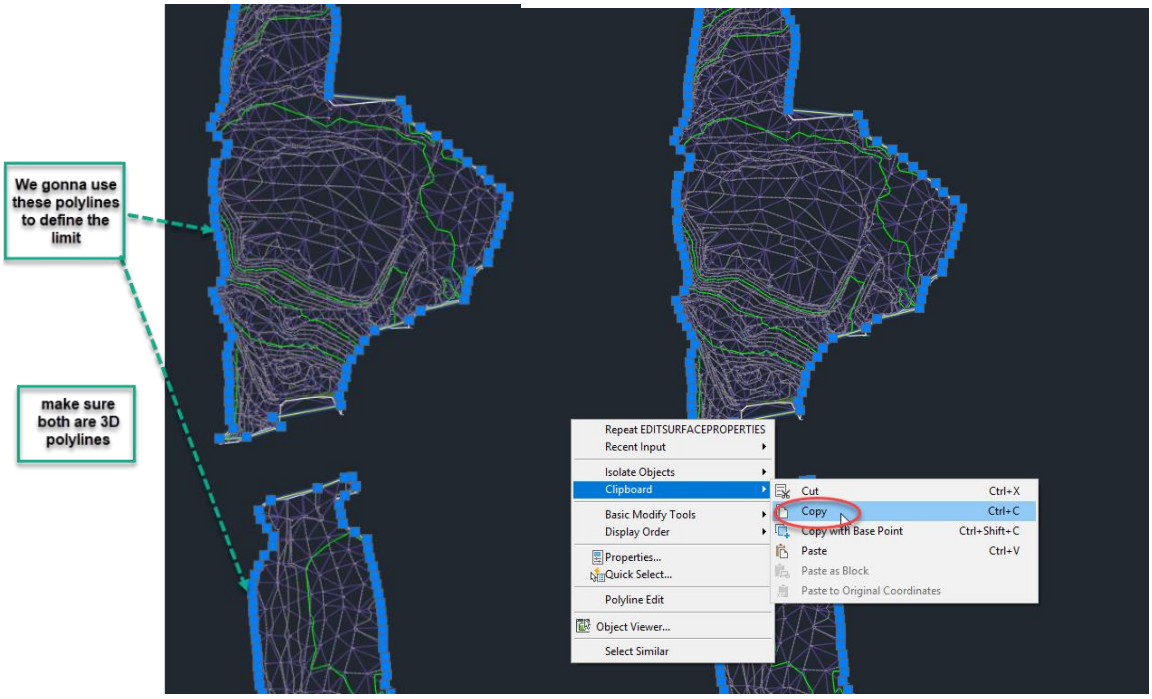
Open up the CSTRPActual dwg

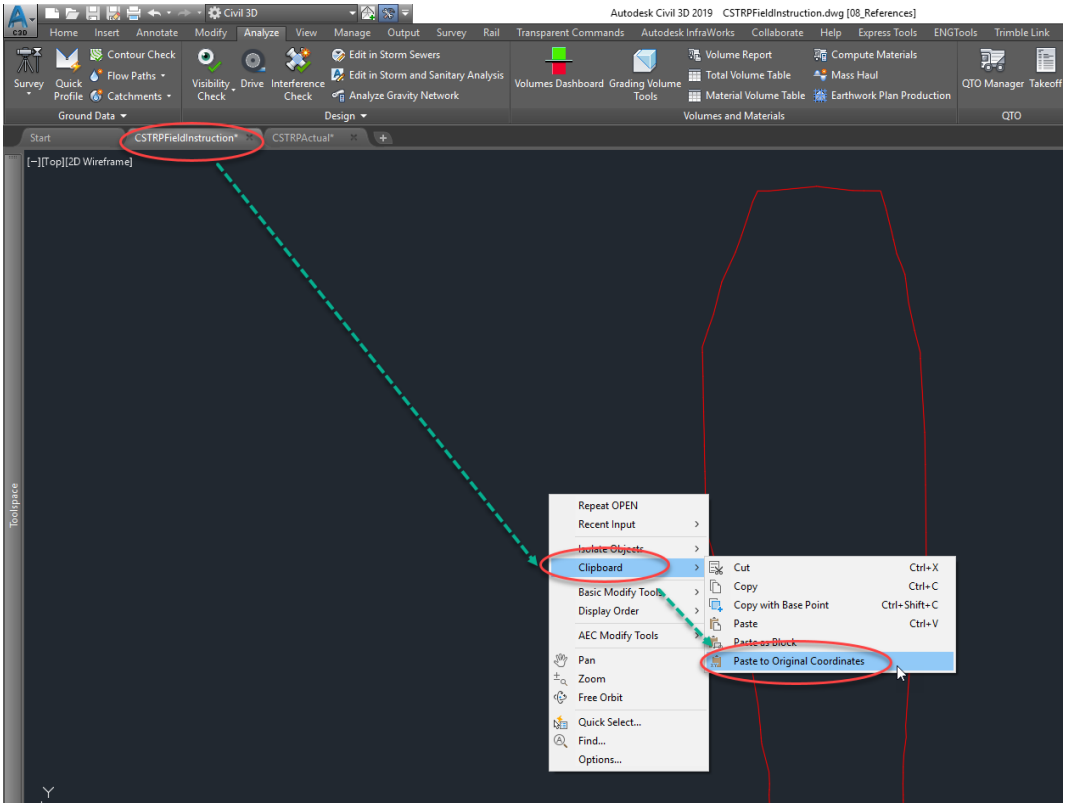





Boundary definition was defined by this 3D polyline that came from the section surface editing process.If i modifty the properties of this surface ....

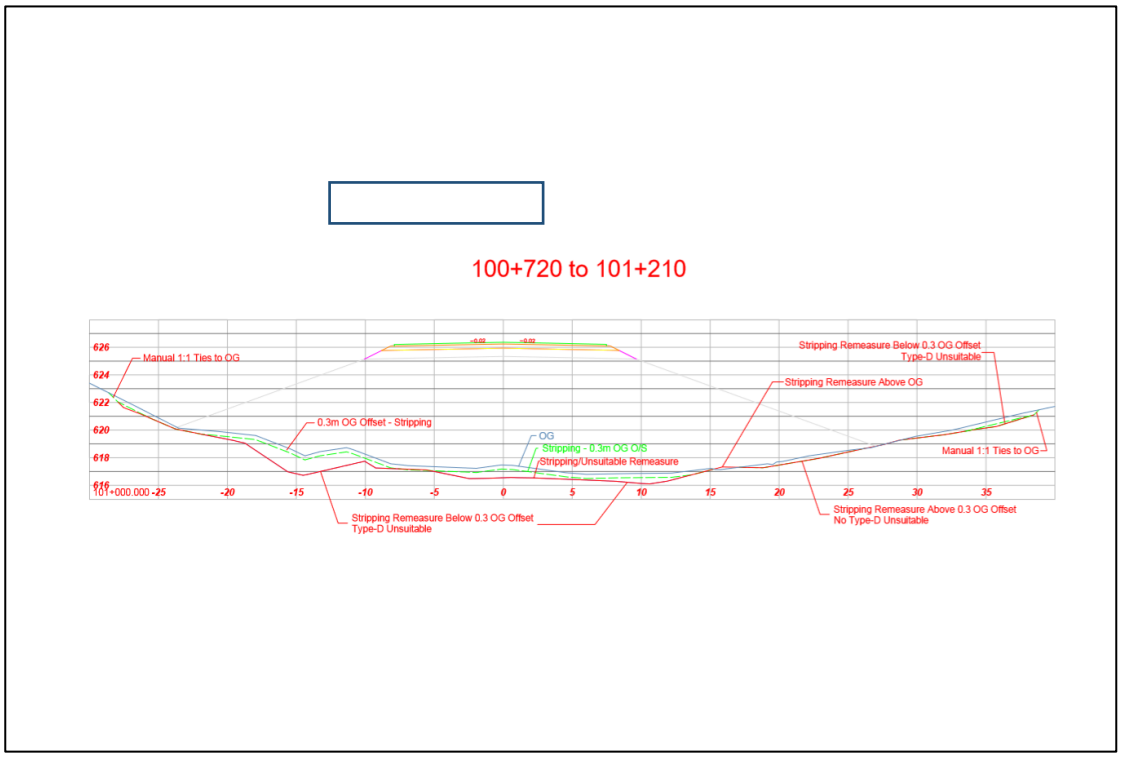

Surface Properties - CSTRP180818Area1
Information
Definition
Analysis
Statistics
Definition Options
Value
Build
Data operations
Edit operations
We first used the boundary from the construction survey data and we turn off that boundary and then add the breakline from the section surface editing that's the breakline boundary(for cosures) and the last one for the limit of the triangulation inside that polyline
Operation Type
Parameters
Point Group
Name: Rolla180818LMHL_180818STRPArea1
Add breakline
Type: Standard, Description: From survey figures
Add boundary
Type: Outer, Description: From construction survey data
Add breakline
Type: Standard, Description: From section surface editing
Add boundary
Type: Outer, Description: From section surface editing
OK
Cancel
Apply
Help


We gonna use these polylines to define the limit
make sure both are 3D polylines
Repeat EDITSURFACEPROPERTIES
Recent Input
Isolate Objects
Clipboard
Basic Modify Tools
Display Order
Properties...
Quick Select...
Polyline Edit
Object Viewer...
Select Similar
Cut Ctrl+X
Copy Ctrl+C
Copy with Base Point Ctrl+Shift+C
Paste Ctrl+V
Paste as Block
Paste to Original Coordinates

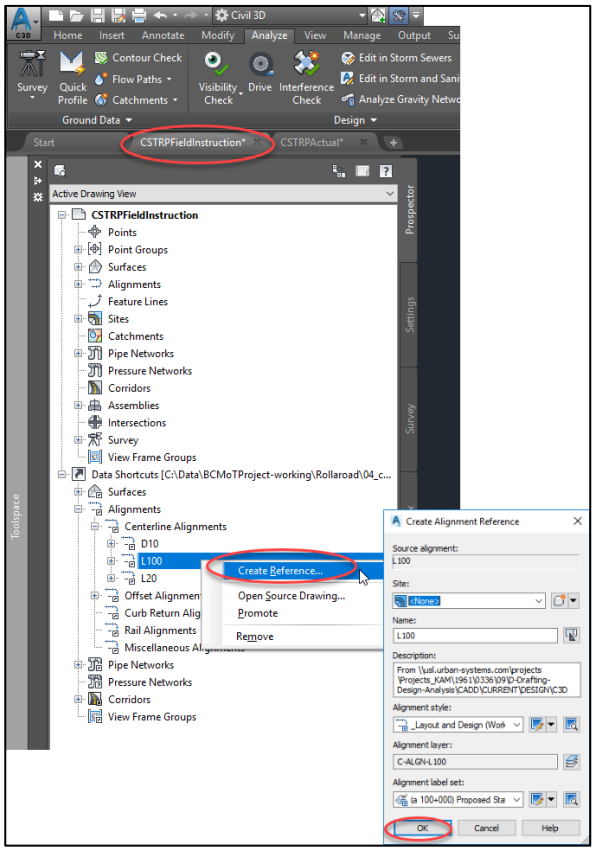

Civil 3D
Autodesk Civil 3D 2019 CSTRPFieldInstruction.dwg [08_References]
Home Insert Annotate Modify Analyze View Manage Output Survey Rail Transparent Commands Autodesk InfraWorks Collaborate Help Express Tools ENGTools Trimble Link
Contour Check
Flow Paths
Catchments
Edit in Storm Sewers
Edit in Storm and Sanitary Analysis
Analyze Gravity Network
Volume Report
Total Volume Table
Material Volume Table
Compute Materials
Mass Haul
Earthwork Plan Production
QTO Manager
Takeoff
Ground Data
Design
Volumes and Materials
QTO
Start
CSTRPFieldInstruction*
CSTRPActual*
[−][Top][2D Wireframe]
Repeat OPEN
Recent Input
Clipboard
Basic Modify Tools
Display Order
AEC Modify Tools
Pan
Zoom
Free Orbit
Quick Select...
Find...
Options...
Cut Ctrl+X
Copy Ctrl+C
Copy with Base Point Ctrl+Shift+C
Paste Ctrl+V
Paste as Block
Paste to Original Coordinates

5.6 Create Refernce for L100(04.14)

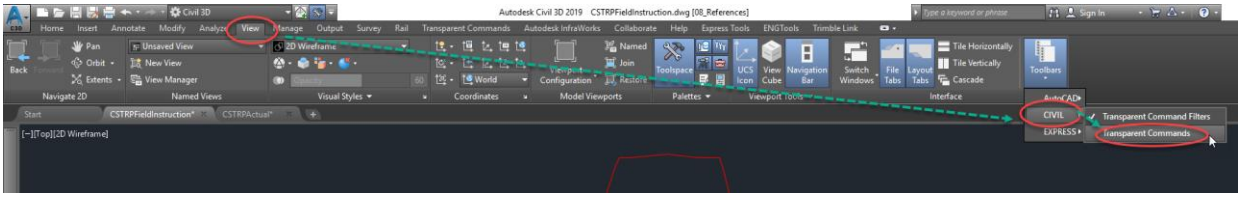
Limits along the alignment once again 100+720 to 101+210 this station range.



We are going to get the alignment to the drawing and draw some polylines to define those lmits using the transparent command.



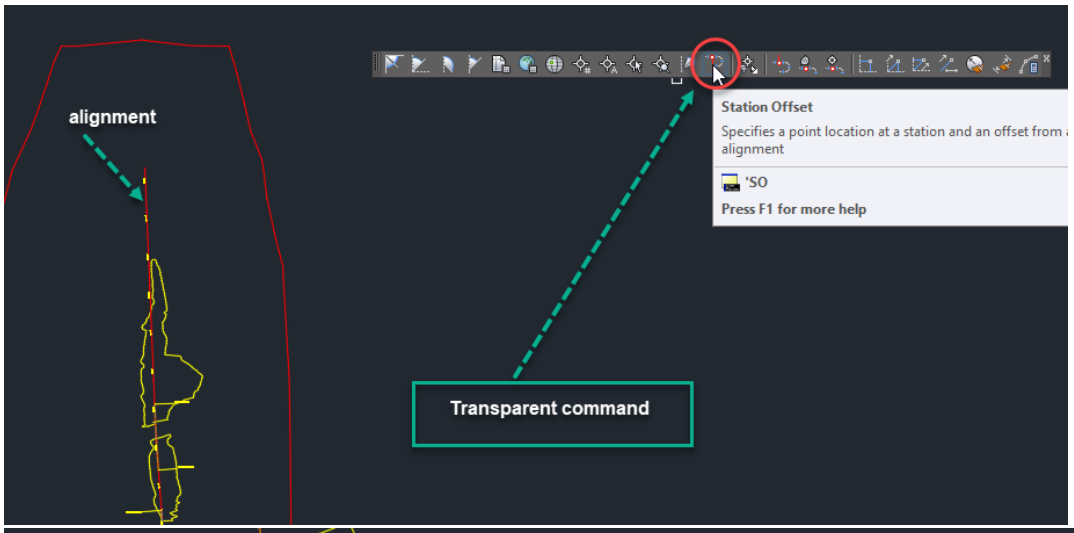
5.7 Establish Station Limits for Strapping(04.41)



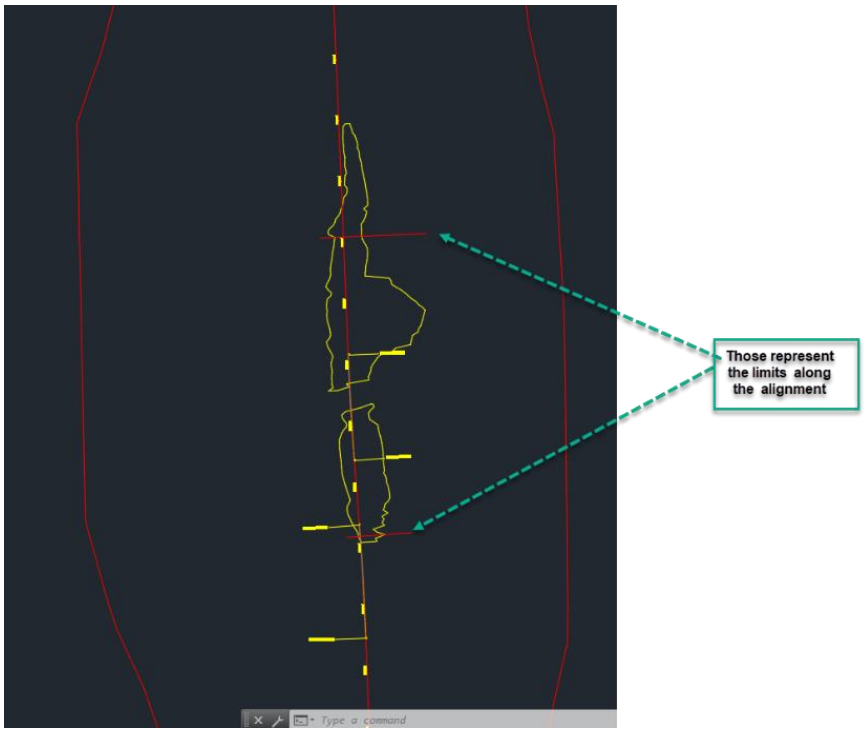
According to the diagram we are going to draw a line for station 100+720.

- Create poly line
- Use the transparent command
- Pick the alignment
- Station is going to be 100720
- Pick the offset location
- Type another station 100720
- Pick the offset location

  Basically you are drawing a line from station and offset.

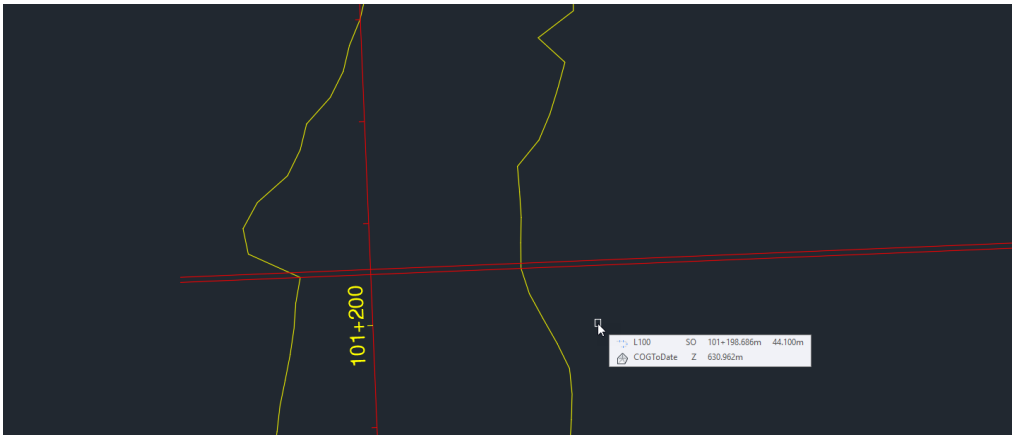


Go back to the pdf and check the next station is 101210
And then do the same steps as above.



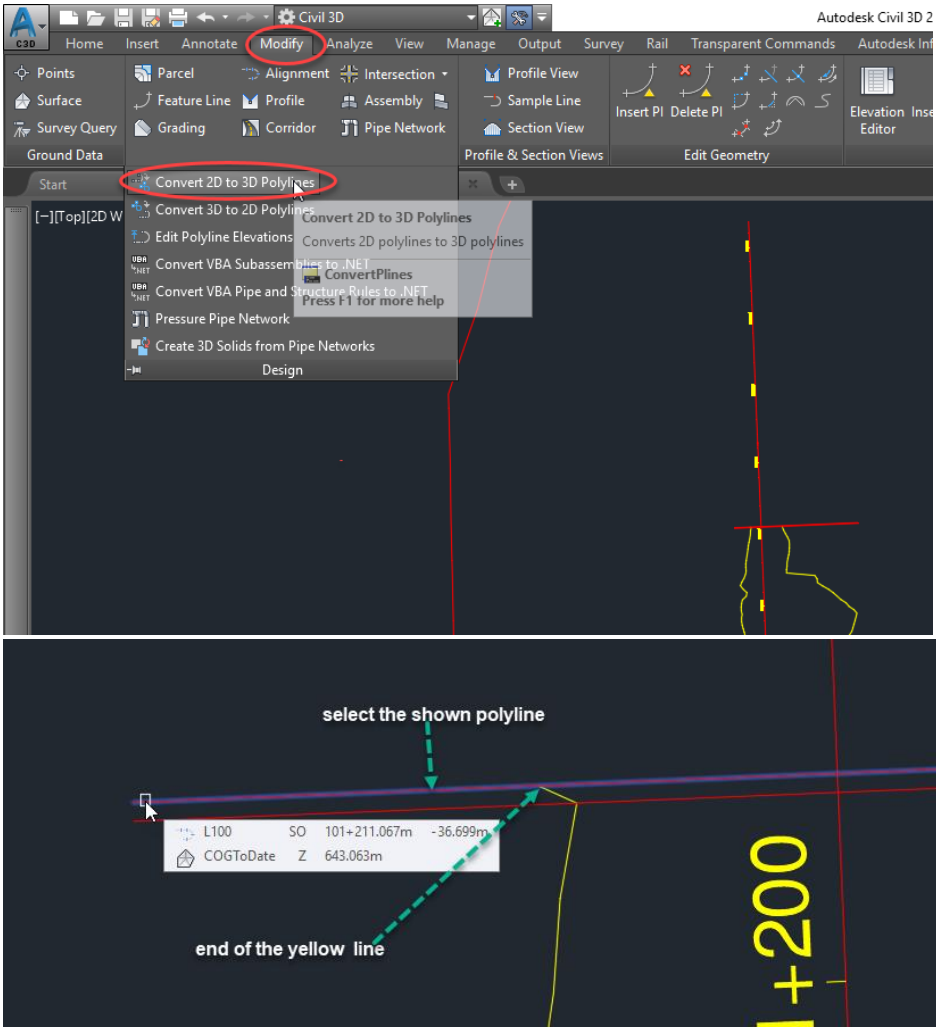
5.8 Trim Boundary Polylines at Station Limits(07.00)

Next step is to create entities we can acually use in our surfaces.we going to be created new surface and we need to define both breaklines and boundary data along these perimeters.
Offset the red line 1m to the north as shown in below



and ensure that we capulate the surface data if you recall those stations that we created.
offset the bottom line to the outside.
Let's run the trim command.There is a cutting edge and select the 3D polyline for the trim.

5.9 Convert 2D to 3D Polyline(08.00)

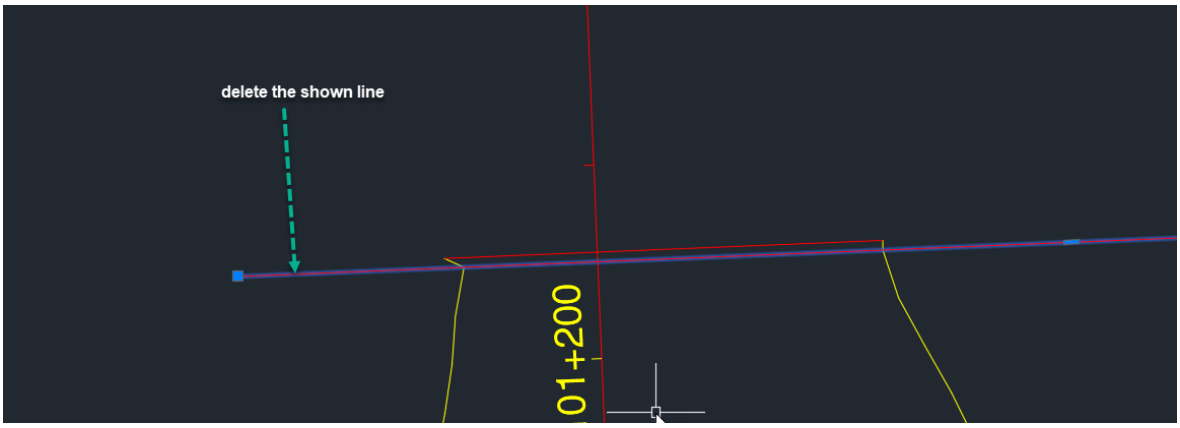


5.10 Snap Ends of station 3D Polyline to Trimmed Boundary(08.17)

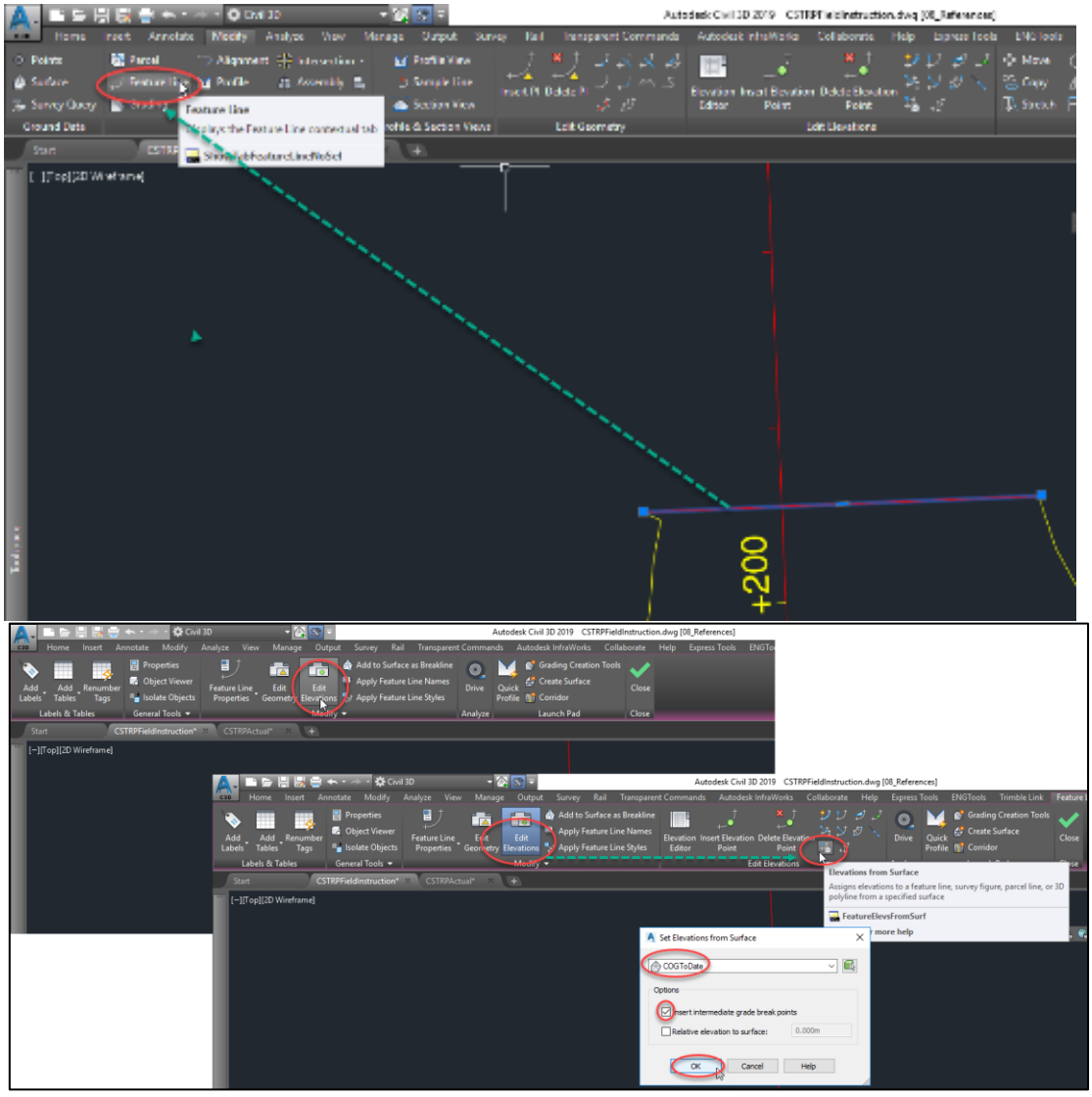
Now we have 3D polyline are able to snap vertices to different elevations at the end of the yellow as shown above.

- Pick the grip and zoom in snap to the end point.

Type the “id “command.



5.11 Add elevation Point from Surface on Polyline Segment(08.49)



5.12 Snap Endpoints Again(09.28)

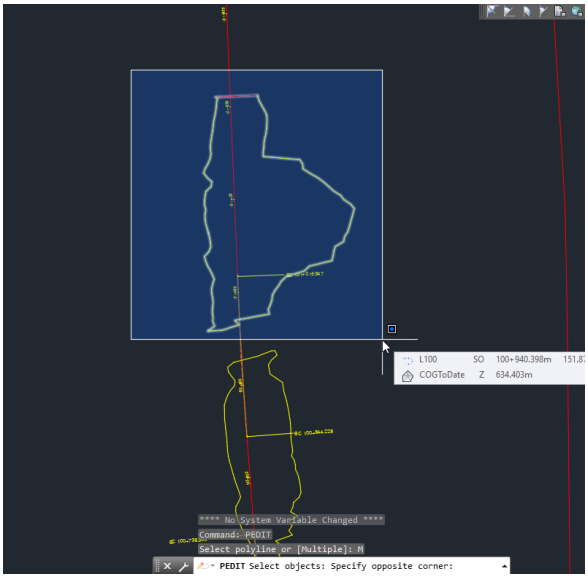
Type ID command on command bar and for yellow gives 639.793 and red gives 639.039.

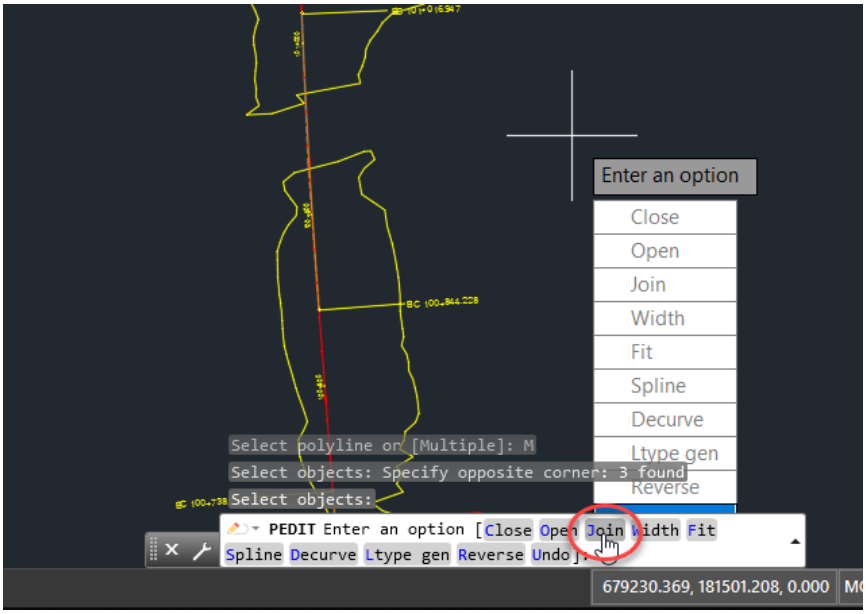
In order to join these two to make a boundary we need to snap back to the end point and do the same thing for the other end.

5.13 Join 3D Polylines(10.03)

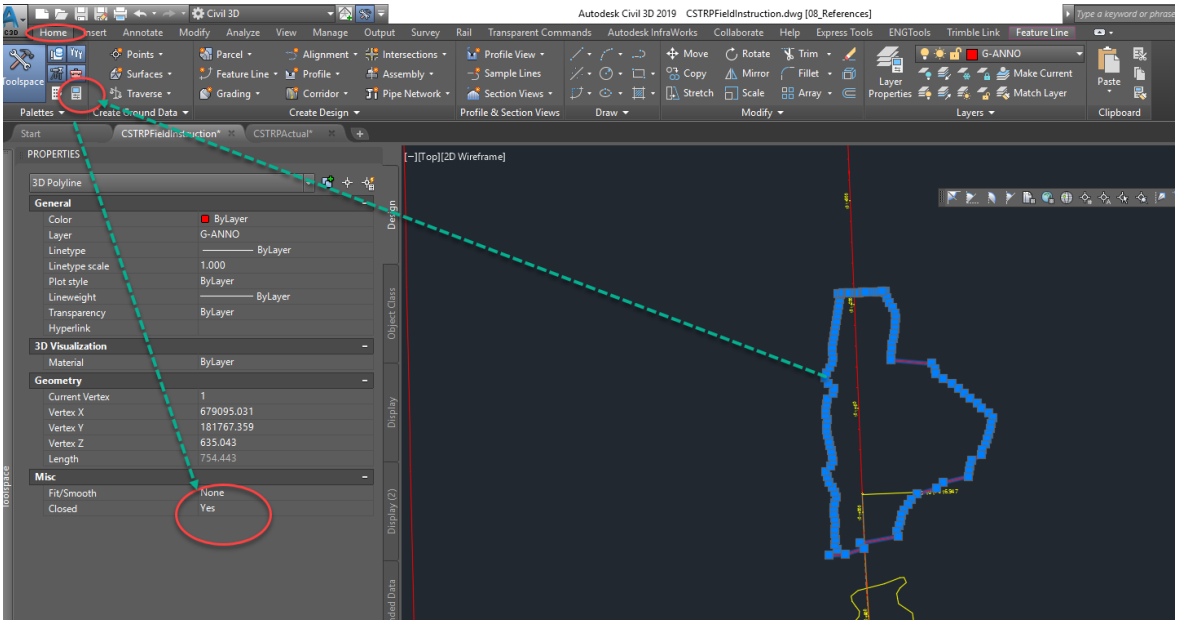
“Pedit” command for join and select multiple.

Window select the following,





Check the poly line properties whether to check is it closed or not.

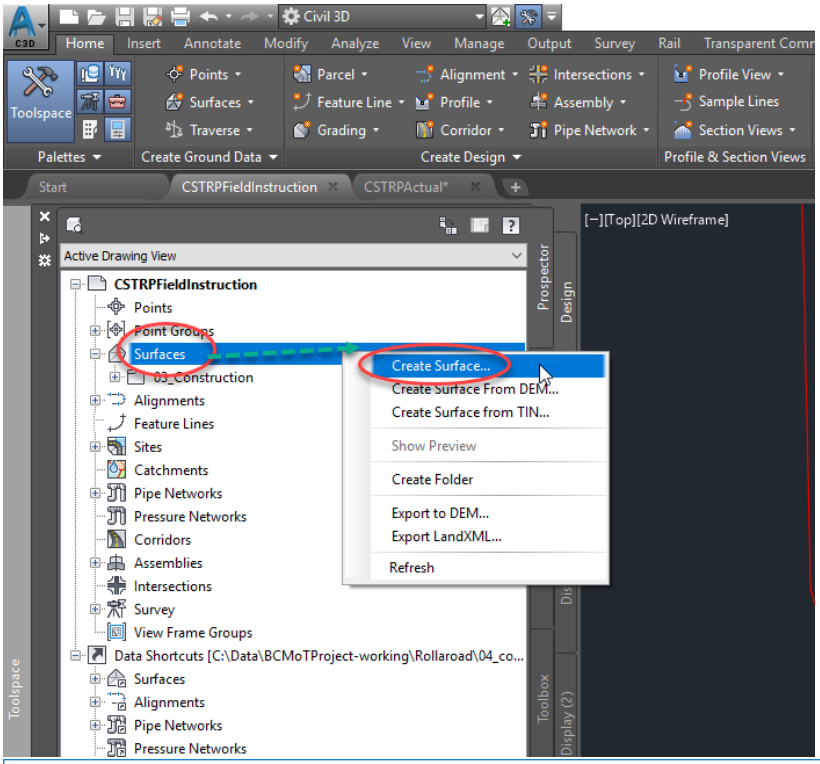


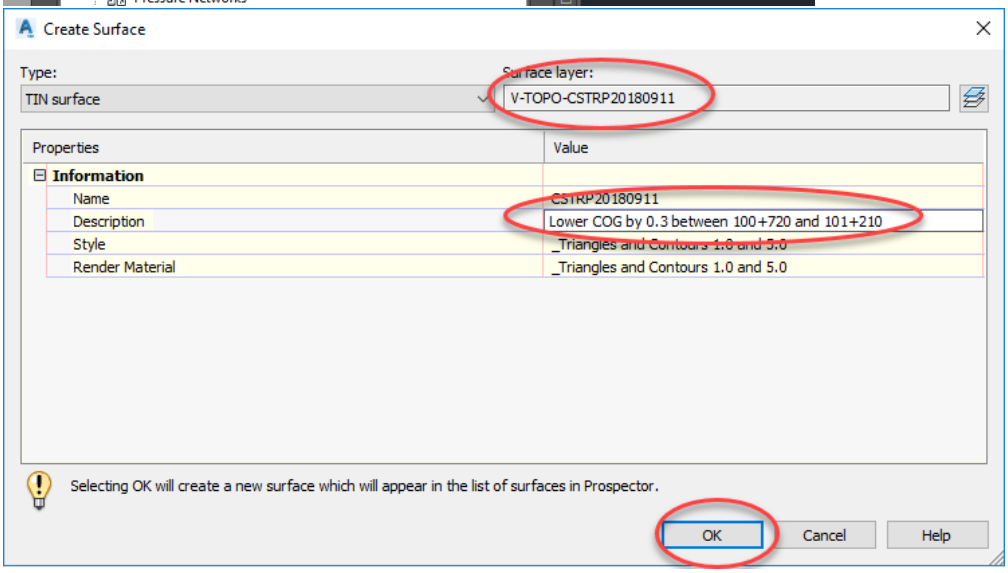
5.14 Repeat Process on South Survey(10.34)

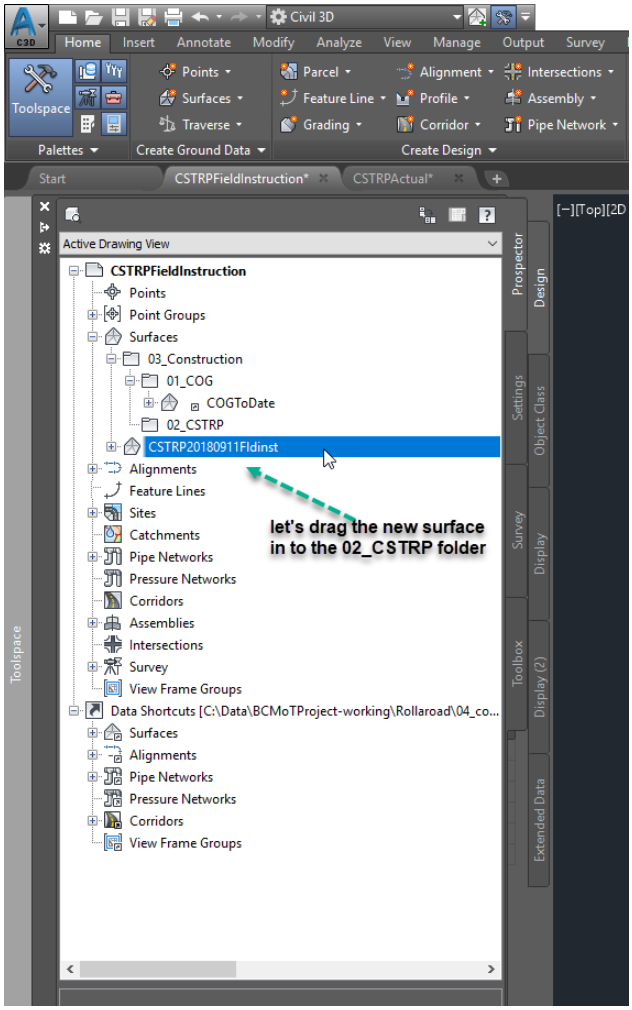
Follow the exact steps start from “5.11”(page no 152)

5.15 Create CSTRP20180911Fldinst Surface(12.25)

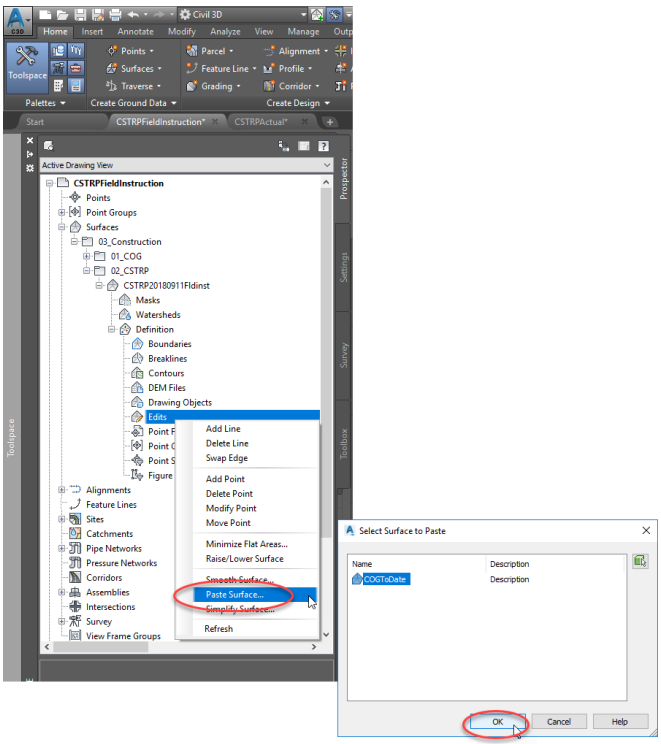
First of all let’s create the new folder and then create a new surface as follows.

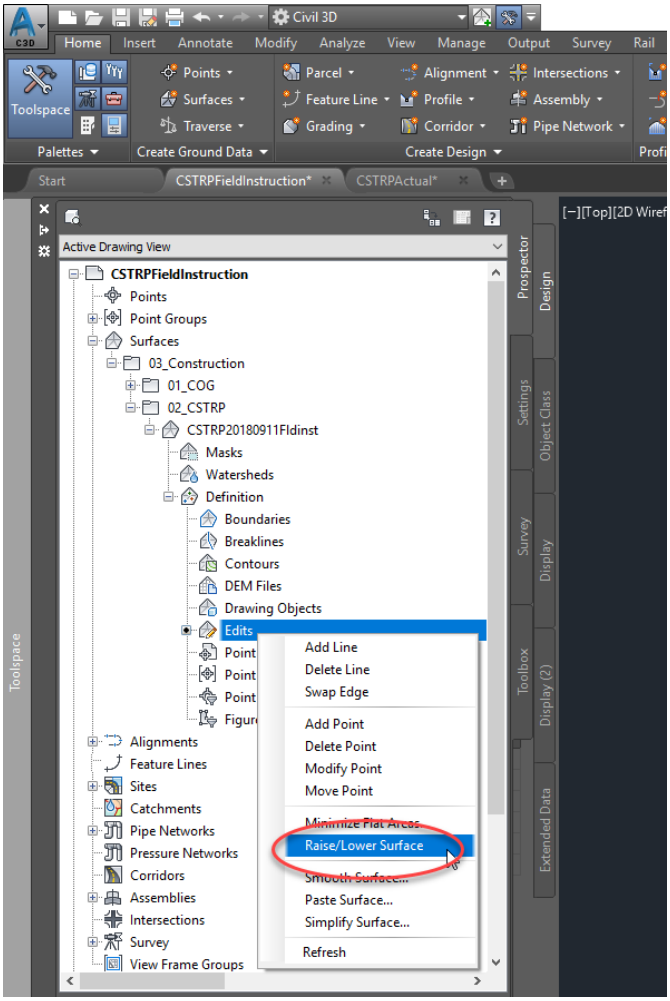

Civil 3D
Home
Insert
Annotate
Modify
Analyze
View
Manage
Output
Survey
Rail
Transparent Comm
Toolspace
Points
Surfaces
Traverse
Parcel
Feature Line
Grading
Alignment
Profile
Corridor
Intersections
Assembly
Pipe Network
Profile View
Sample Lines
Section Views
Palettes
Create Ground Data
Create Design
Profile & Section Views
Start
CSTRPFieldInstruction
CSTRPActual*
[−][Top][2D Wireframe]
Active Drawing View
CSTRPFieldInstruction
Points
Point Groups
Surfaces
03_Construction
Alignments
Feature Lines
Sites
Catchments
Pipe Networks
Pressure Networks
Corridors
Assemblies
Intersections
Survey
View Frame Groups
Data Shortcuts [C:\Data\BCMoTProject-working\Rollaroad\04_co...
Surfaces
Alignments
Pipe Networks
Pressure Networks
Create Surface...
Create Surface From DEM...
Create Surface from TIN...
Show Preview
Create Folder
Export to DEM...
Export LandXML...
Refresh
Prospector
Design
Toolbox
Display (2)
Toolspace


Create Surface
Type:
TIN surface
Surface layer:
V-TOPO-CSTRP20180911
Properties
Value
Information
Name
CSTRP20180911
Description
Lower COG by 0.3 between 100+720 and 101+210
Style
_Triangles and Contours 1.0 and 5.0
Render Material
_Triangles and Contours 1.0 and 5.0
Selecting OK will create a new surface which will appear in the list of surfaces in Prospector.
OK
Cancel
Help



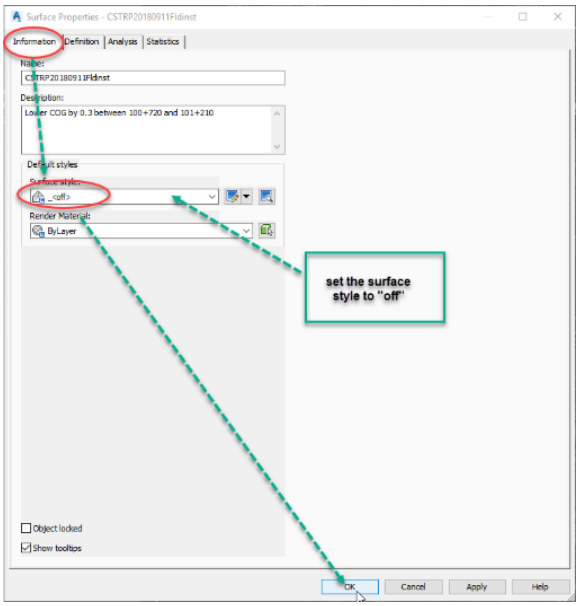
Strating point for the surface will be the COGToDate.Take that surface paste in and lower by 0.3 .





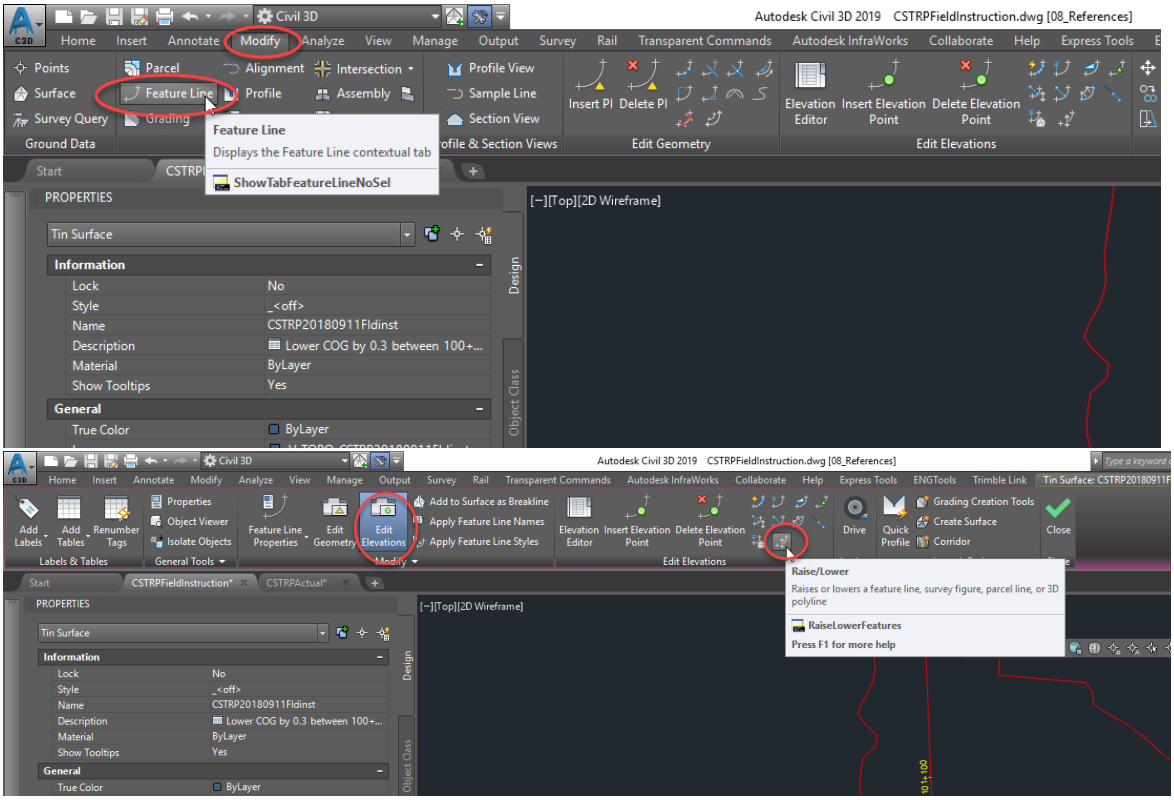
On command line, specify the elevation as negative 0.3

After that pick the surface and modify the surface properties.



5.16 Lower 3D Polylines by 0.3m(14.27)

Now we have “CSTRP20180911Fldinst” surface has created and we can go back to polyline and those red 3D polyline represents the COGToDate surface at this elevation and this needs to be lowered so then we can use as the breakline.



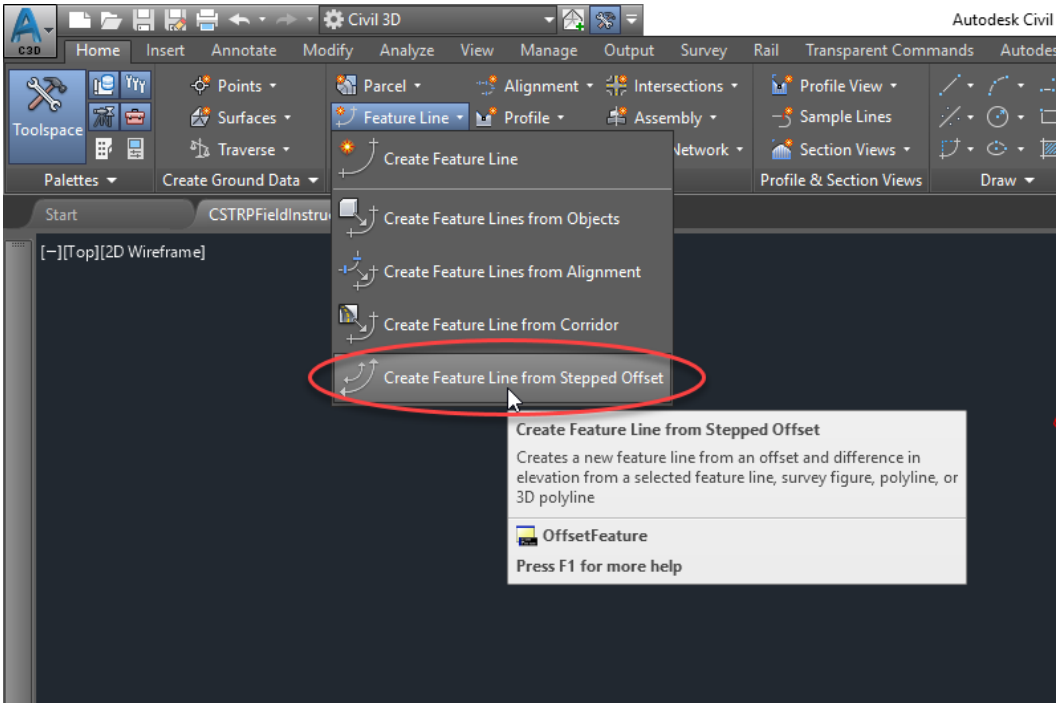
Select the 3D polyline and lower by 0.3m .

Now this represants 0.3m below at that limit.

5.17 Offset Polyline to surface Closure Location(15.16)

Now we are going to perform our closures in the plan view using the actual model.

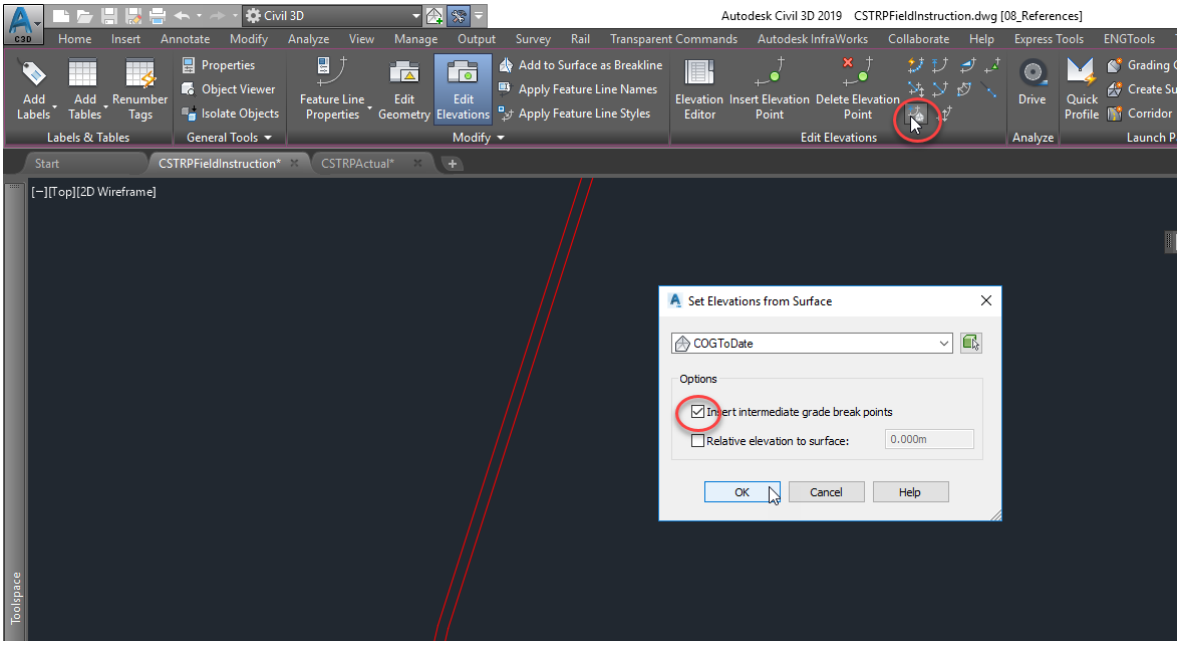
What we can do here is offset horizontally,



Offset by 0.1m to outside and specify the elevation difference as “0” .

5.18 Add Elevations from Surface to Closure Polyline(16.10)

Now go back to the “feature line” command and select the “elevations from surface” command and drag that back to the COGToDate Surface to form our closure.

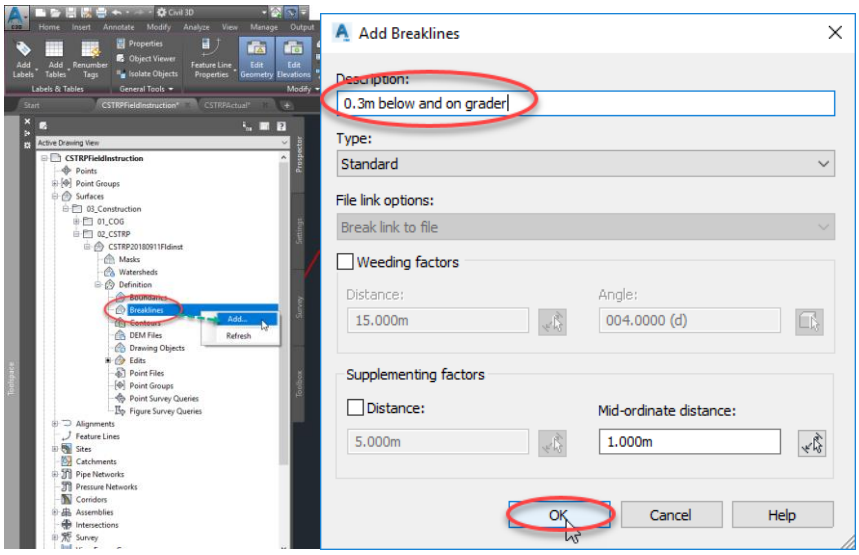


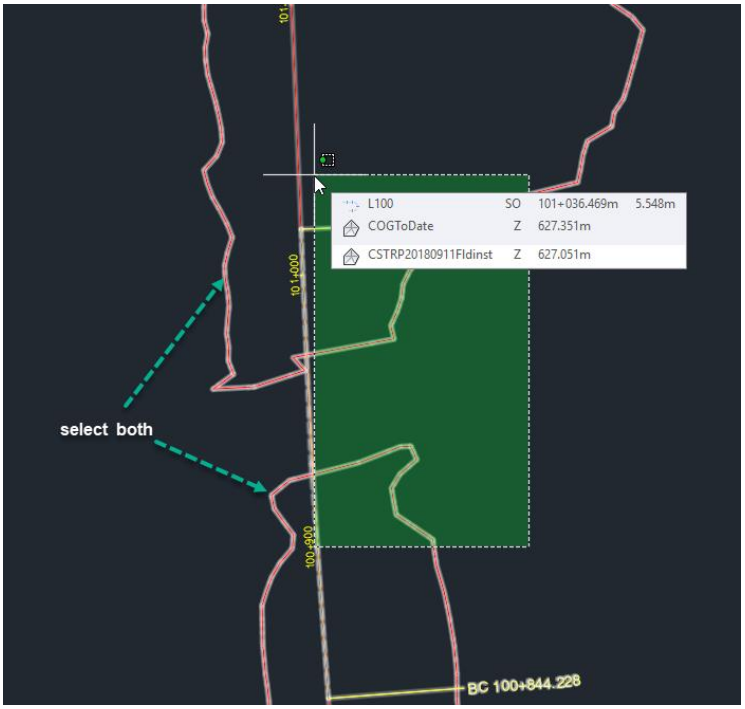
We will insert intermediate grade break points and there is a resulting boundary.

5.19 Repeat Lower,Offset and Add Elevations for South Surface(16.39)

Now we have all the information that we can use to build the surface.

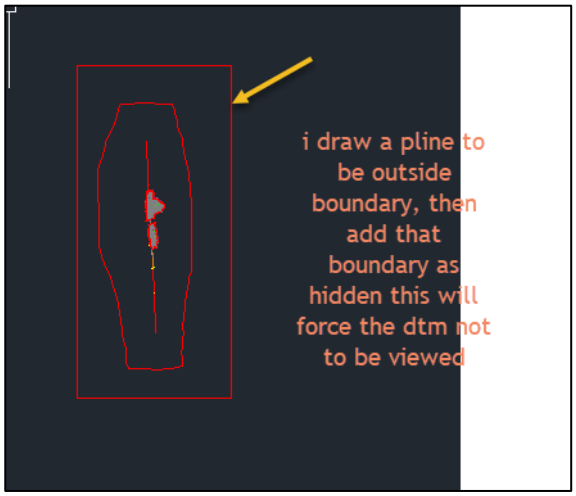
5.20 Define Breakline Data(17.34)

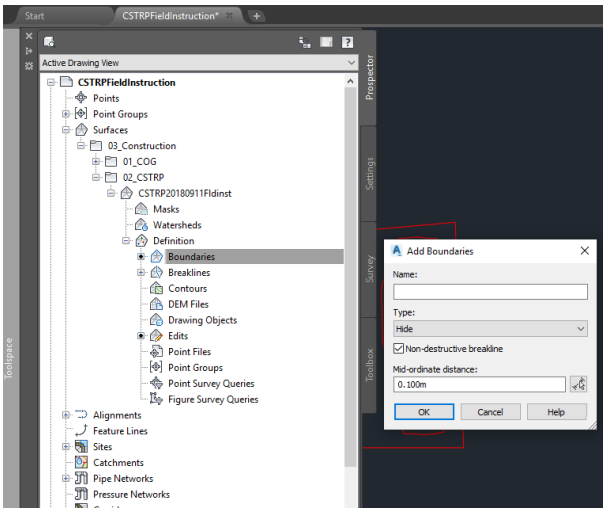


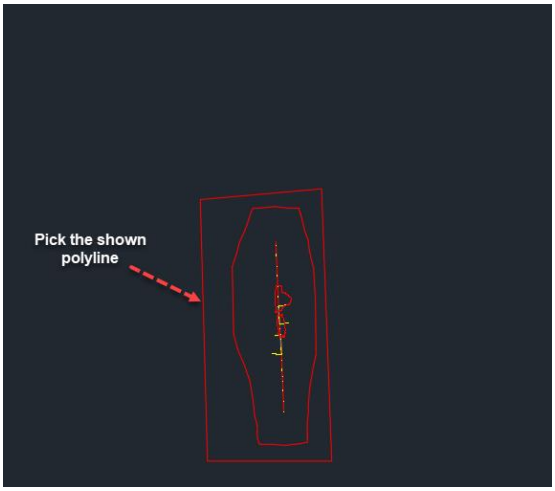


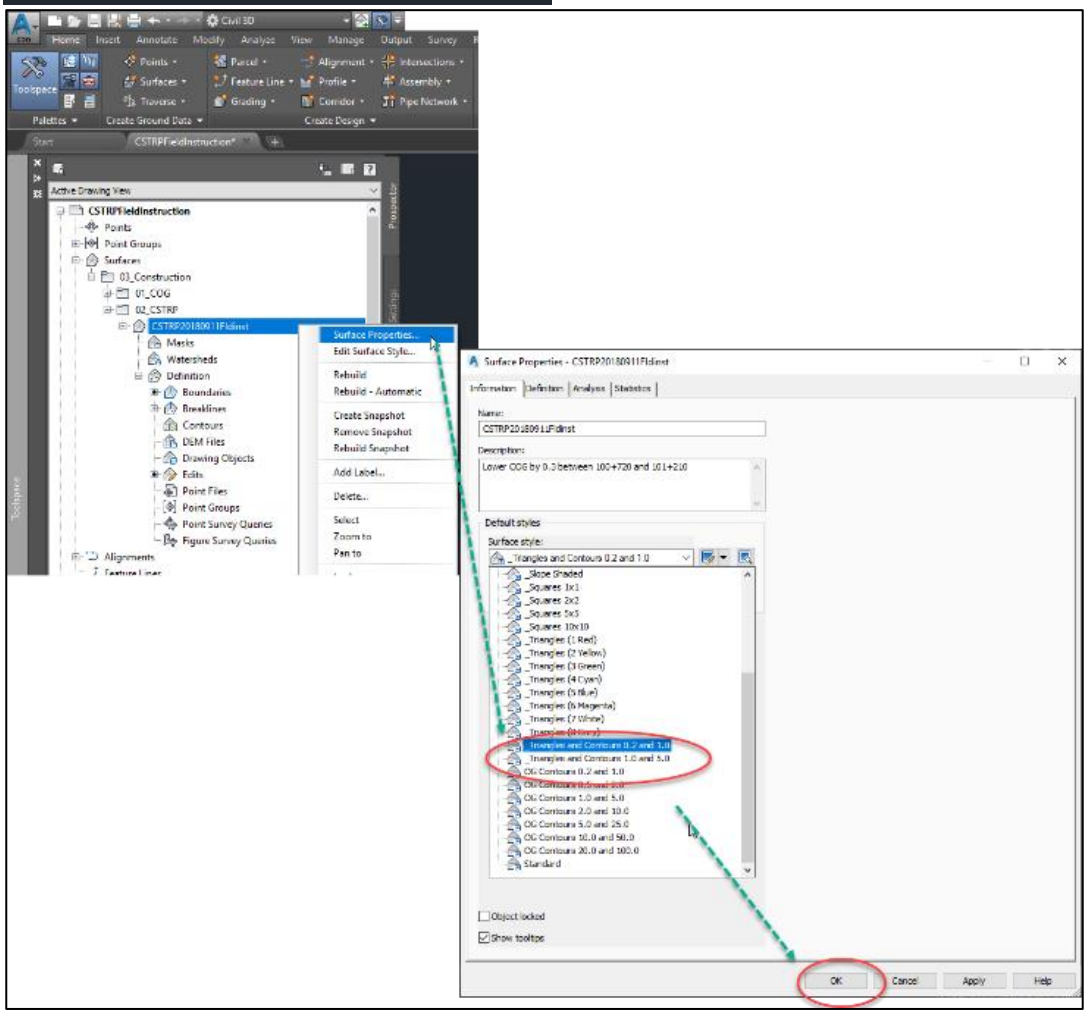
Pick the 4 boundaries as shown above, the surfaces will re-triangulate and rebuilt although we don't see it.

5.21 Add Hide Boundary(18.16)



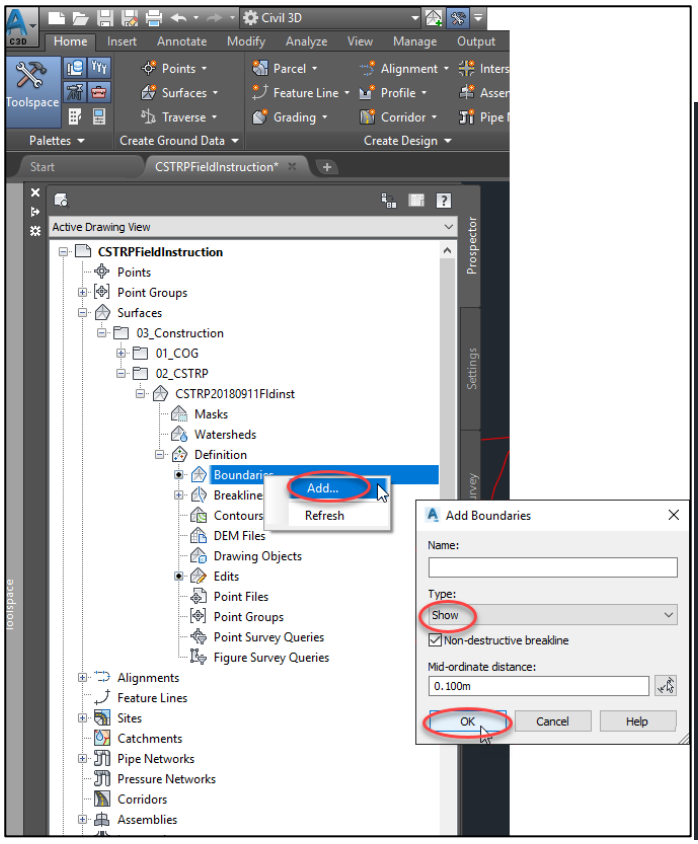


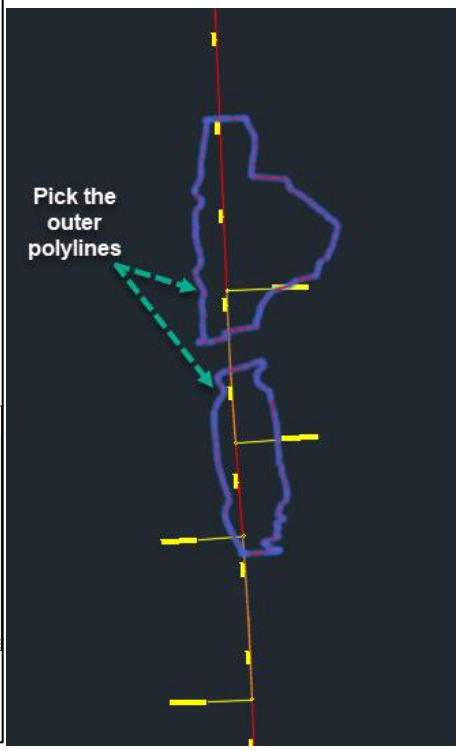




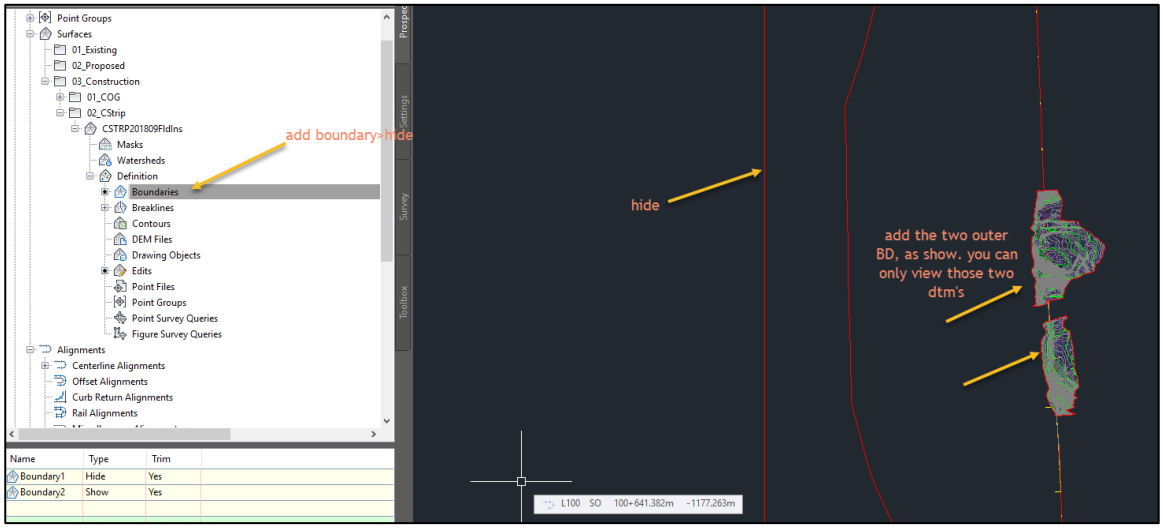
You did’t see anything because we’ve hidden it.

5.22 Add Show Boundaries(18.39)





And press enter,Now we have completed the creation of CSTRP20180911Fldinst surface

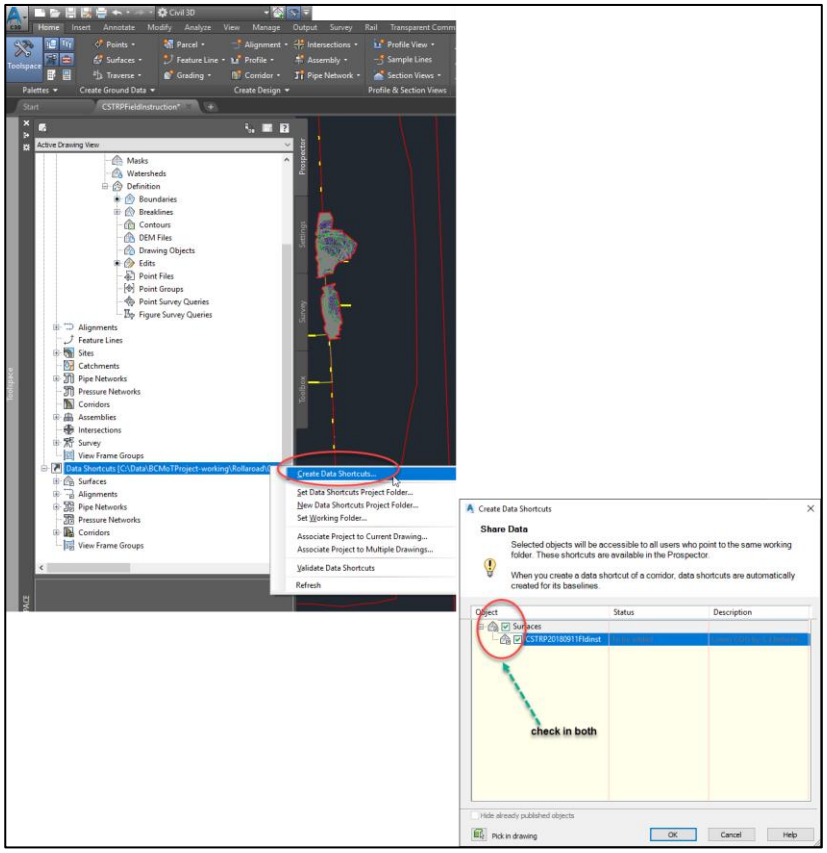


This time you can only view the two surfaces within those two boundaries.

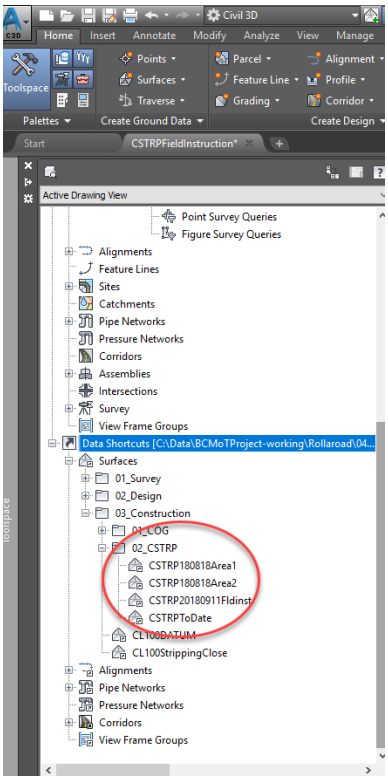
That completes the creation of the CStrip20180911FldInst.

5.23 Create Data Shortcuts(19.06)

Next step is to make that information that surface available and data shortcut collection.



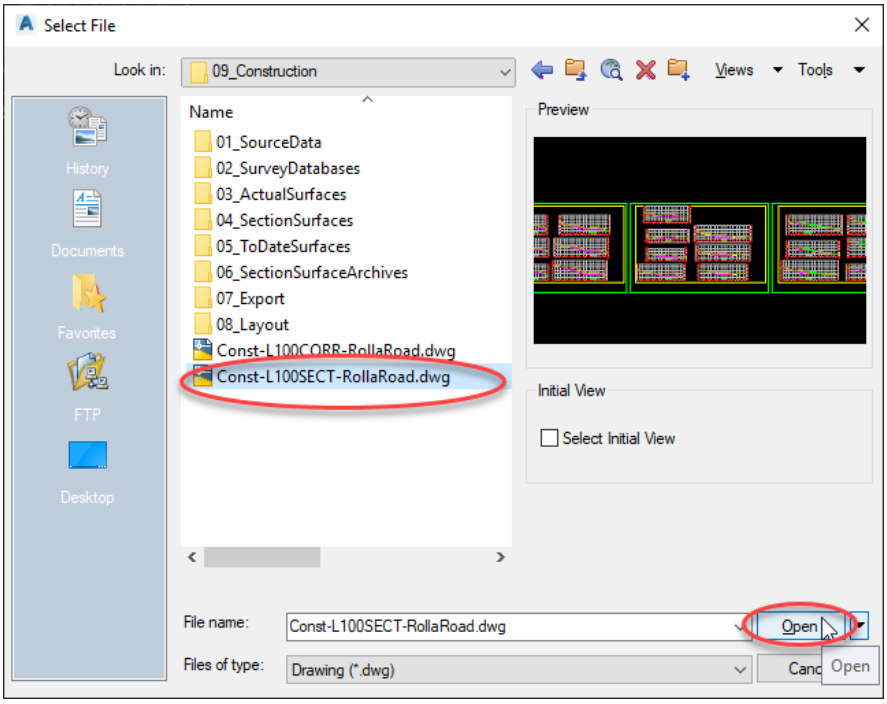
Now it is showing that new additional datashortcut under the sourse location 03_construction.



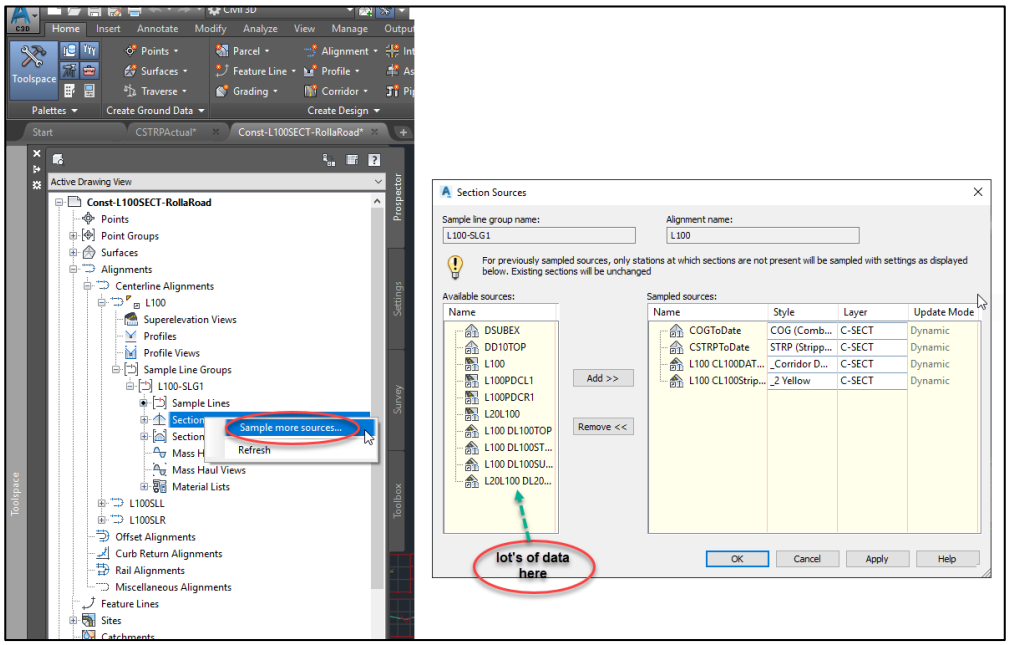
Save and Close the drawing.

5.24 Add CSTRPFldinst Surface Data to Sections Drawing(19.59)

Open up the “Const.L100SECT-RollaRoad” drawing and add that data to section drawing. From there we can calculate the volumes.

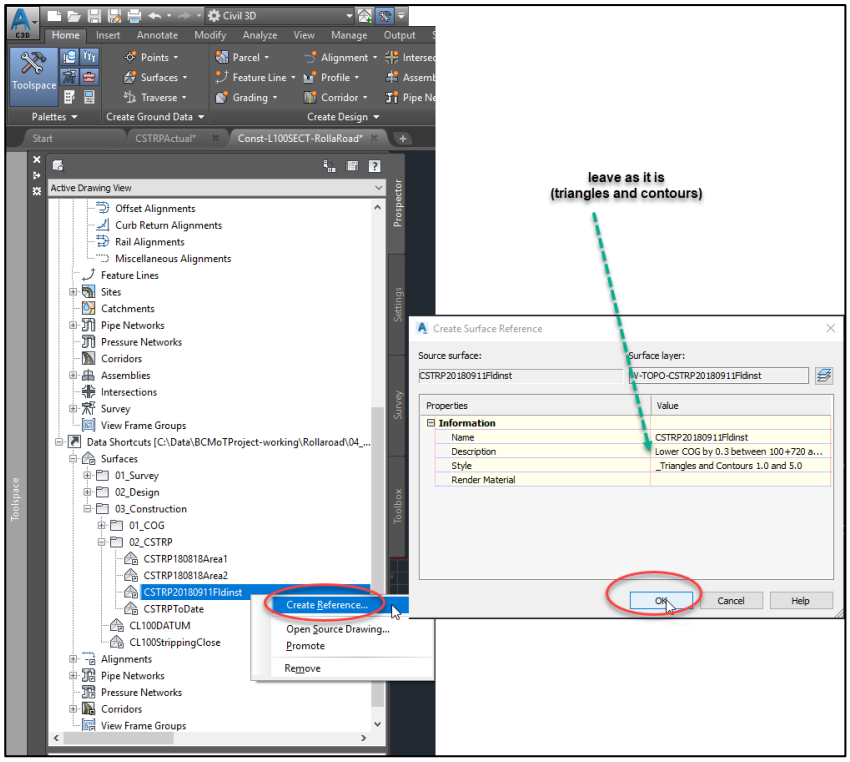


We need the alignment for the sample line group but all the section data on the sample line originate from the Rolla model.

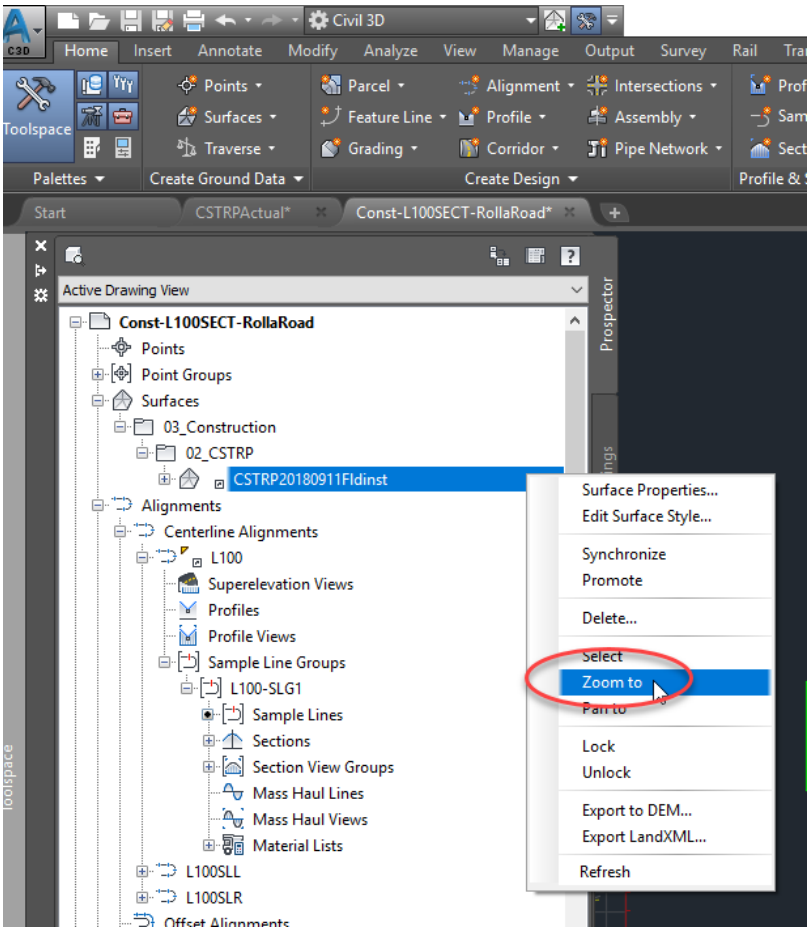


That Rolla model has been attached as an external reference in to the drawing. All of that data available to populate the sample lines coming through the XREF. That XREF is the corridor drawing.

We need the Field instruction stripping surface.

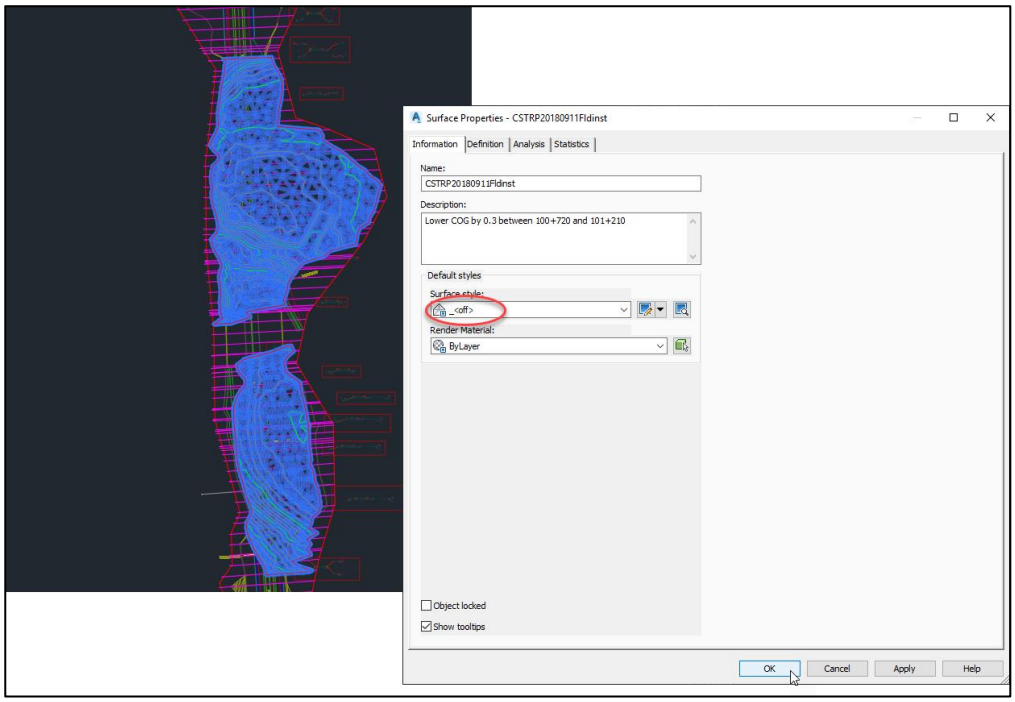


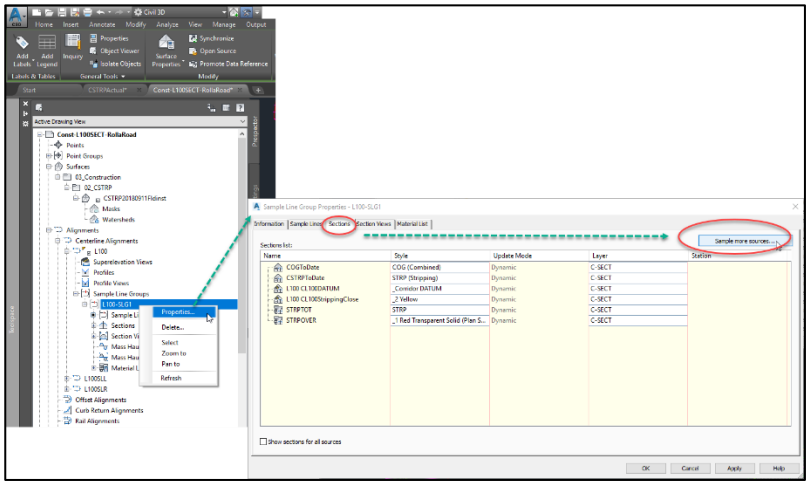
That's now been added in our surfaces collection under 02_CSTRP.

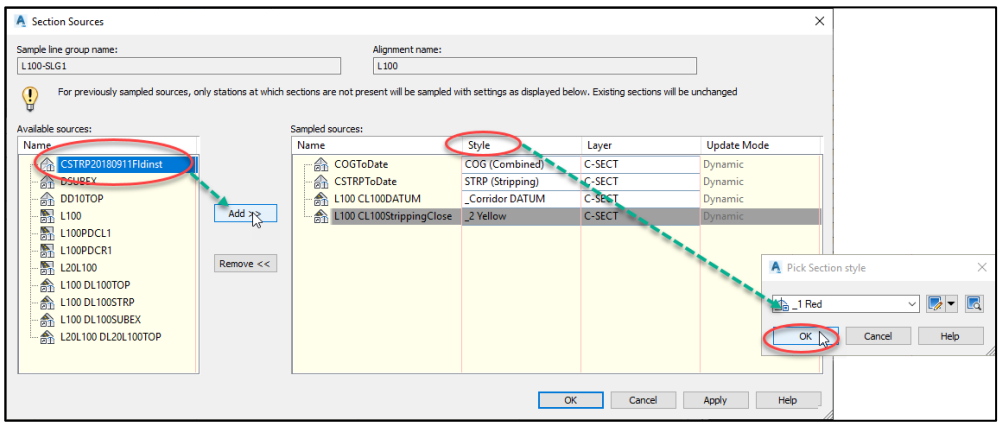


Select the both surfaces and go through the surface properties and make the surface style to off.

We can now add that to sample lines.

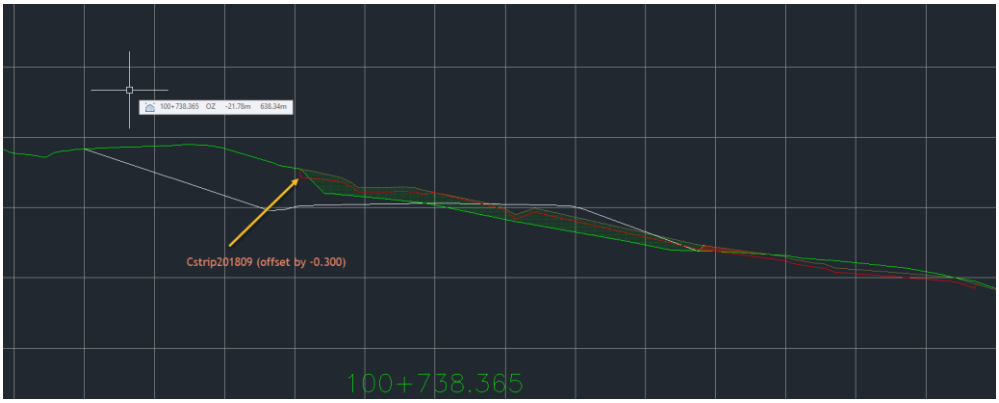






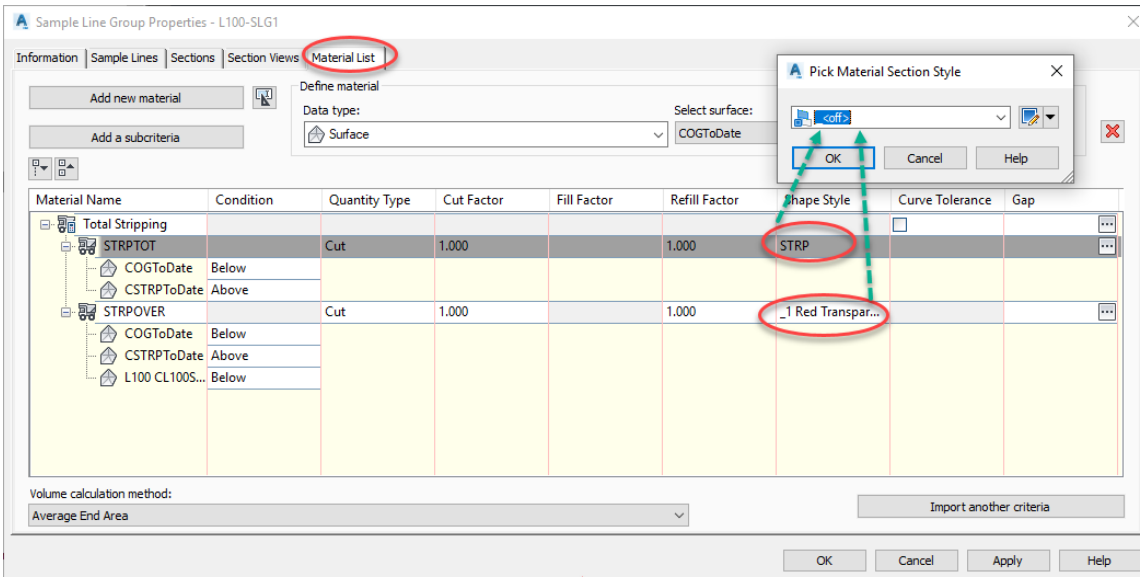
After that click ‘ok’ and it will take few minutes to update the sample line and the section view because they have quite a bit data.

This concludes the exercise where we add the field instruction stripping data which is 0.3m below COG to our Const-L100SECT-Rollaroad drawing where we end up to calculate volume.

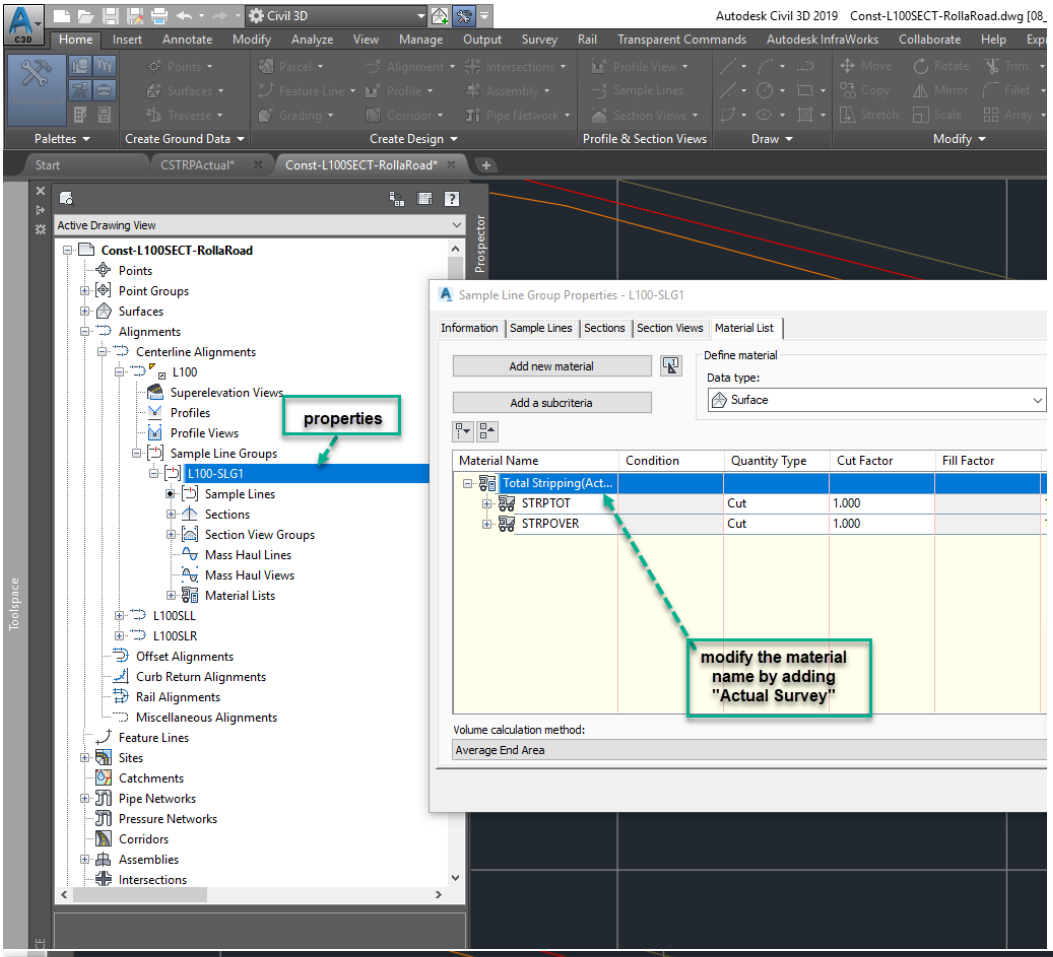


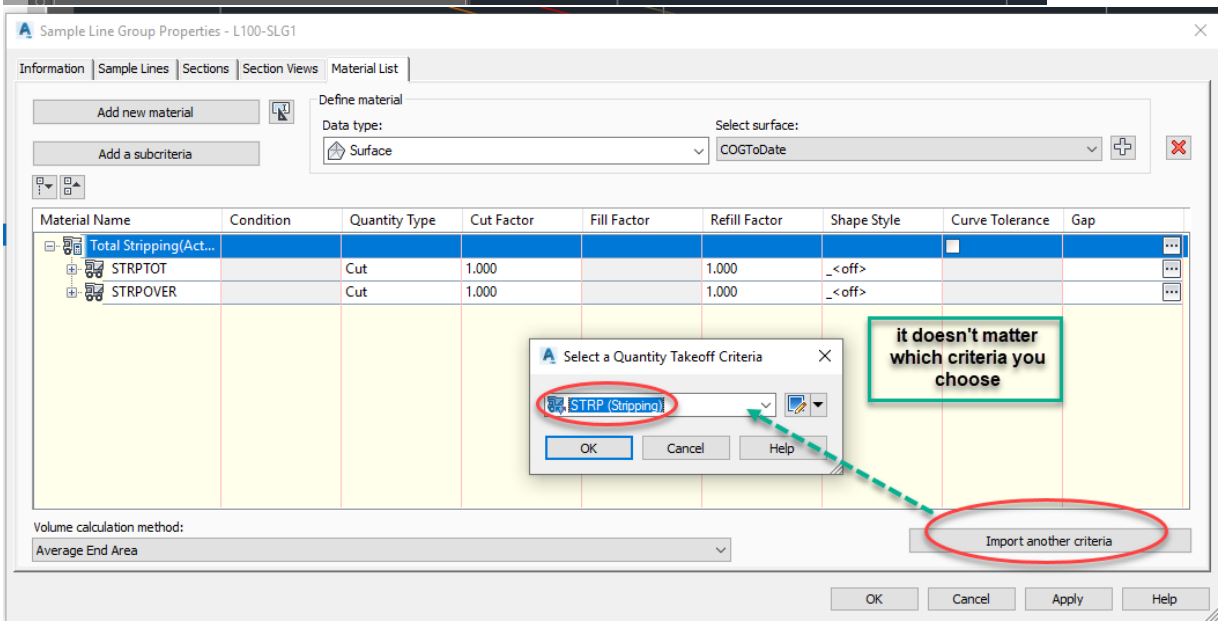
5.25 Calculate and Report Volumes(23.42)

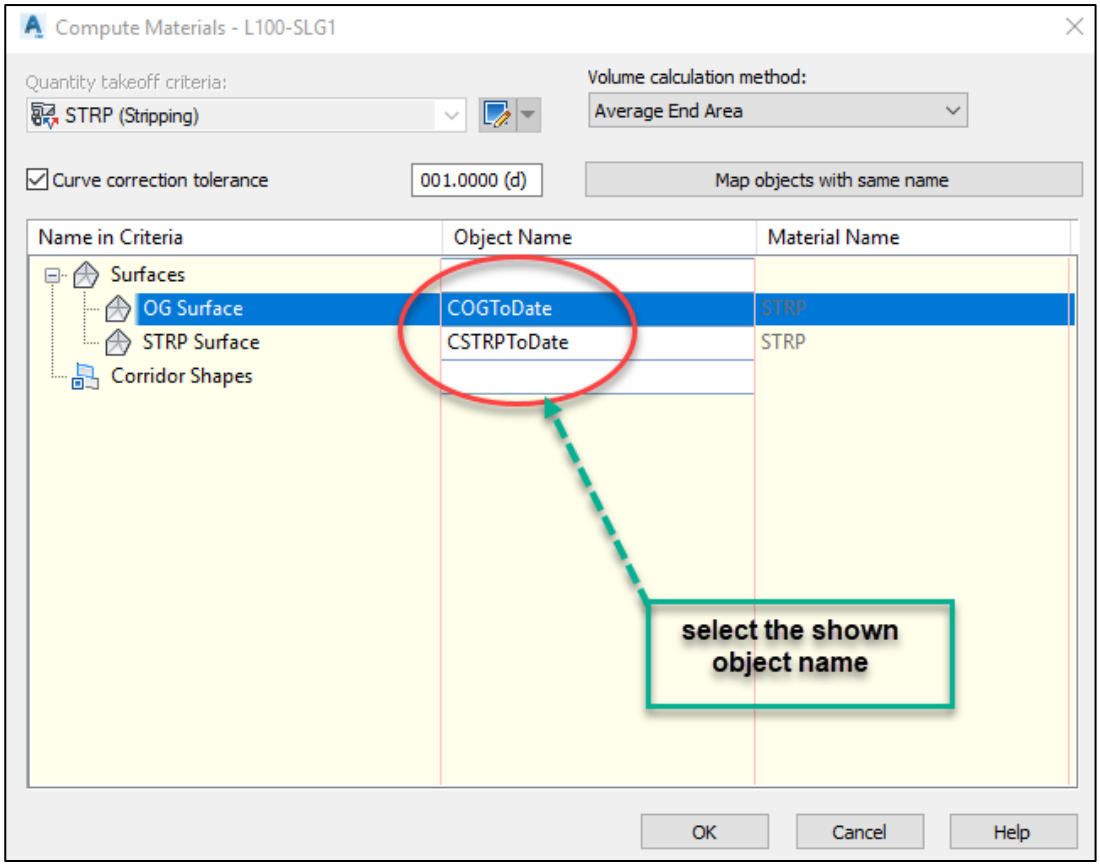
Go to the Sample line group properties just to help keep our volume clear and easy to understand.

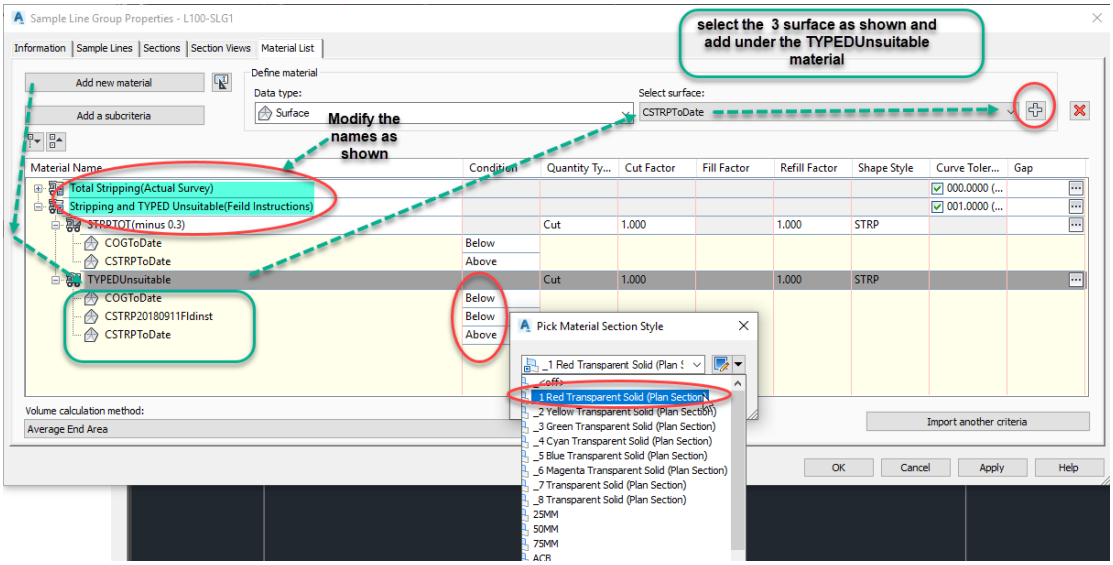


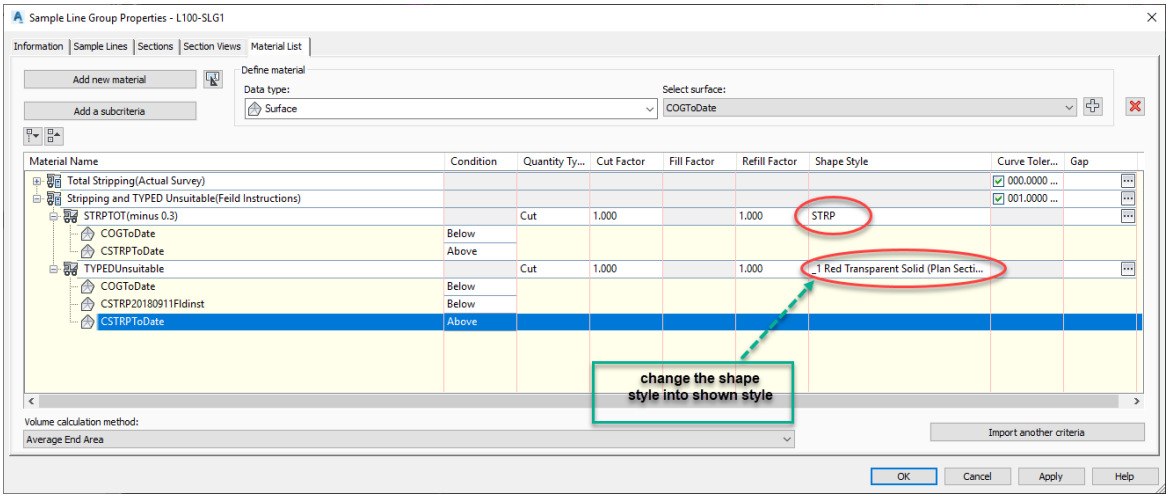
Volume is been calculated for the initial round but not displayed.
Now we are going to calculate type D unsuitable and stripping.


properties
modify the material name by adding "Actual Survey"

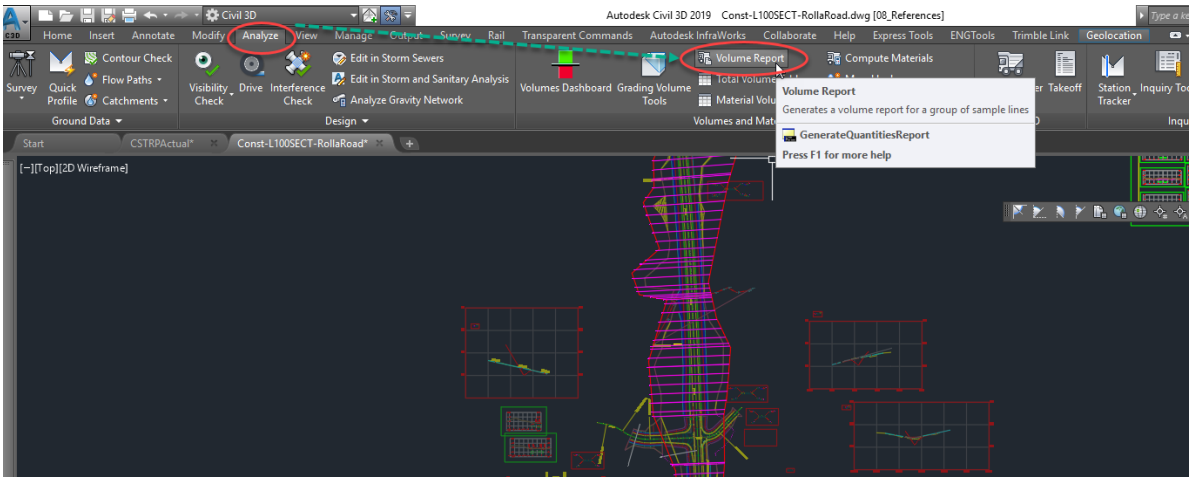

it doesn't matter which criteria you choose

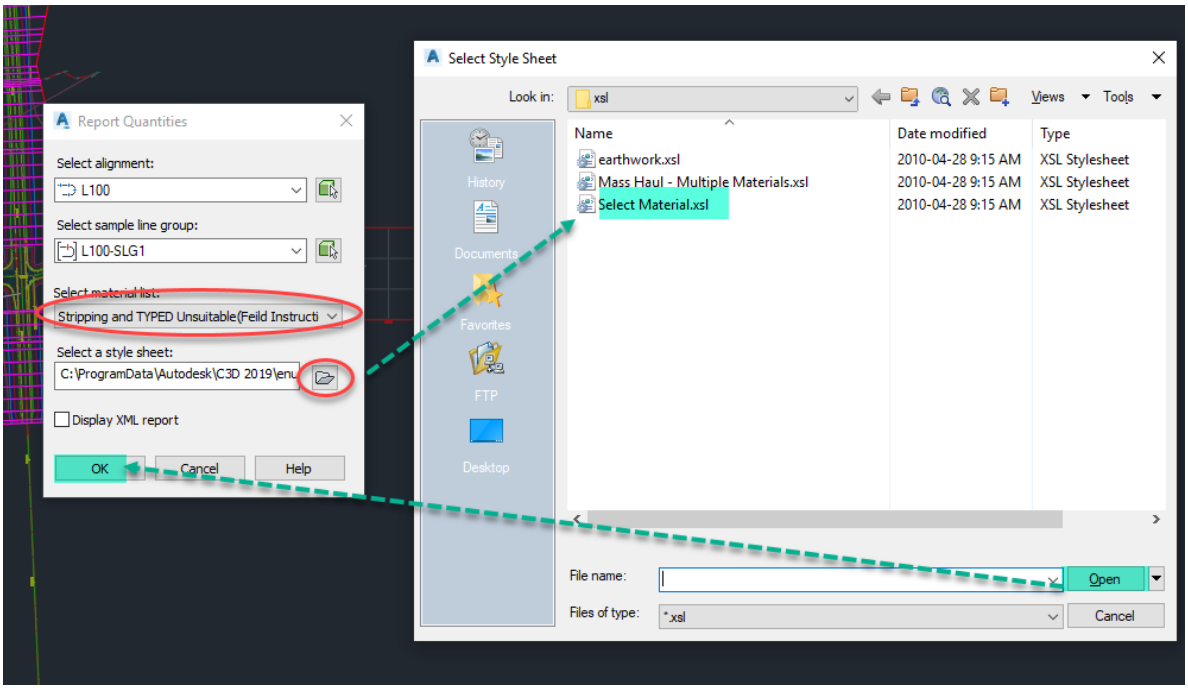

Compute Materials - L100-SLG1
Quantity takeoff criteria:
STRP (Stripping)
Volume calculation method:
Average End Area
Curve correction tolerance
001.0000 (d)
Map objects with same name
Name in Criteria
Object Name
Material Name
Surfaces
OG Surface
COGToDate
STRP
STRP Surface
CSTRPToDate
STRP
Corridor Shapes
select the shown object name
OK
Cancel
Help

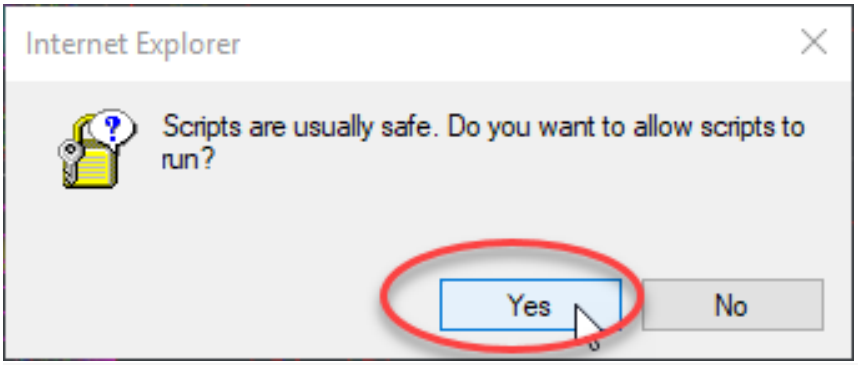

Sample Line Group Properties - L100-SLG1
select the 3 surface as shown and add under the TYPEDUnsuitable material
Information
Sample Lines
Sections
Section Views
Material List
Add new material
Add a subcriteria
Define material
Data type:
Surface
Select surface:
CSTRPToDate
Modify the names as shown
Material Name
Condition
Quantity Ty...
Cut Factor
Fill Factor
Refill Factor
Shape Style
Curve Toler...
Gap
Total Stripping(Actual Survey)
Stripping and TYPED Unsuitable(Feild Instructions)
STRPTOT(minus 0.3)
Cut
1.000
1.000
STRP
COGToDate
Below
CSTRPToDate
Above
TYPEDUnsuitable
Cut
1.000
1.000
STRP
COGToDate
Below
CSTRP20180911FIdinst
Below
CSTRPToDate
Above
Pick Material Section Style
1 Red Transparent Solid (Plan Section)
_2 Yellow Transparent Solid (Plan Section)
_3 Green Transparent Solid (Plan Section)
_4 Cyan Transparent Solid (Plan Section)
_5 Blue Transparent Solid (Plan Section)
_6 Magenta Transparent Solid (Plan Section)
_7 Transparent Solid (Plan Section)
_8 Transparent Solid (Plan Section)
25MM
50MM
75MM
Volume calculation method:
Average End Area
Import another criteria
OK
Cancel
Apply
Help



Let’s forcus on volume calculation.







Material Report

Project: C:\Users\JWELLAWA\appdata\local\temp\Const-L100SECT-RollaRoad_1_12332_7150017e.sv$
Alignment: L100
Sample Line Group: L100-SLG1
Start Sta: 100+330.000
End Sta: 101+602.000

	Area Type	Area	Inc.Vol.	Cum.Vol.
		Sq.m.	Cu.m.	Cu.m.
Station: 100+330.000				
	STRPTOT(minus 0.3)	0.00	0.00	0.00
	TYPEDUnsuitable	0.00	0.00	0.00
Station: 100+332.665				
	STRPTOT(minus 0.3)	0.00	0.00	0.00
	TYPEDUnsuitable	0.00	0.00	0.00
Station: 100+340.000				
	STRPTOT(minus 0.3)	0.00	0.00	0.00
	TYPEDUnsuitable	0.00	0.00	0.00
Station: 100+340.026				
	STRPTOT(minus 0.3)	0.00	0.00	0.00
	TYPEDUnsuitable	0.00	0.00	0.00
Station: 100+350.000				
	STRPTOT(minus 0.3)	0.00	0.00	0.00
	TYPEDUnsuitable	0.00	0.00	0.00
Station: 100+360.000				
	STRPTOT(minus 0.3)	0.00	0.00	0.00
	TYPEDUnsuitable	0.00	0.00	0.00
Station: 100+370.000				
	STRPTOT(minus 0.3)	0.00	0.00	0.00
	TYPEDUnsuitable	0.00	0.00	0.00
Station: 100+380.000				
	STRPTOT(minus 0.3)	0.00	0.00	0.00

Additional Notes:

Workflow Considerations

Workflow Sequence

03_ConstSurfaces - point data imported here, and survey files used to create construction surfaces during the payment period

04_SectionSurfaces - construction surfaces are referenced in to here for closures

05_ToDateSurfaces - project aggregate surfaces representing the current state of the project. Created by repeatedly pasting in monthly section surfaces

Const-SECT.dwg - sample lines and section views for volume calculations. Volumes are calculated against the ToDate surfaces.

06_Monthly Archives - should contain i) renamed section surface drawing and ii) renamed section (volume calculation) drawing, along with supporting documentation, spreadsheets, correspondences etc. required to back up the calculation

Monthly Archive Considerations

- Identify important items for the archive

- Volume reports sent from ground modeling staff to onsite MoTI field representative to generate progress estimate payments and records

- Need properly documented survey records (spreadsheet summarizing source survey data file particulars). Volume issues relate to data.

- Generated monthly volumes do not necessarily correlate with payment certificates

- Computed volumes can be supplemented with field measurements (LxWxD) as well as load counts

- Computed volumes for progress payments are "estimates". The "final" payment can be discussed / negotiated, and this is where disputes may arise

- Process should support the creation of monthly earthworks volumes spreadsheets showing details of calculations with drawing / calculation references

- What should the MoTI representative receive as part of the monthly submission? Supporting spreadsheets?

- Email correspondence with survey descriptions and field instructions should be part of the archive

- Design corridor assembly insertion locations as documented in ToR. Construction supervision should not be updating models with the exception of references to new construction surfaces (COG, CSTRP, CTYPED, CTYPEA etc.)

- How to address a "negotiated" payment item (between neat and actual)

- Need to consider how to address design revisions (incorporate these into an active project by construction supervision?)

- Need to meet with PM's to discuss design costs, design deliverables etc. (extra design costs for design modeling?)

Section Surface Editor Notes

Notes on SSE

1. Utility to navigate section views (without having to create section surfaces) similar to SSE would be useful. SSE requires the creation of section surfaces to navigate section views.

2. Edit tab - not working well at all. Need ability to graphically add and move vertices on the section surface. Add polyline command not working properly

3. Ability to choose which surfaces are to be used for creating section surfaces

Mark Lam - Problem with Polylines

Problem: Section surface loses its attribute as a section polyline, becoming a plain polyline

Recapping our session:

-You suggested adding polyline that lost its attribute of “section polyline” using the Edit functions in SSE back to the surface

New Problem: The problem reported by civil3d is that a break line exists for that station on the surface, and it won’t over-write and thus the section surface is not created

Workaround:

1) Add the polyline to a new surface e.g. “test”

2) Merge “test” and the desired actual surface

Section Surface Editor Notes (October 11, 2018)

1. Section Surface Editor (SSE) commands
(Make Section Surfaces and Section Surface Editor) are available from Ministry ENGTools ribbon tab and from Toolspace ⟶Toolbox.

2.SSE is critical to Ministry construction supervision workflow, however it needs improvement. The Ministry is actively trying to resolve SSE deficiencies.

3.A list of known issues are as follows:

a.Unable to select the surfaces from which section surfaces are created

b.Section surfaces have an unwanted “-Section Based” suffix which makes the surface name too long and can not be removed

c.When editing section surfaces, the chosen surfaces to no remain in the drop-down menu and revert to alphabetical sorting. SSE should retain previous selections between the table. This lends itself to performing operations on the wrong surfaces

d.Trim command only works on the extreme left and right side of the section data, and not on internal segments
e.Section and surface style names are not sorted in the style selection drop-down menus

f.SSE looks for a “hard coded” _No Display surface style

g.Troubles with adding polylines to section data

h.Should be able to select multiple vertices for deletion

i.Create layer names for 3D polyline / break lines use split vertical bar “|” in layer name, which is reported as an error when running audit command

j.Problems with adding section data (and subsequent section surface data) after initial section surface data has already been created

k.Panorama should report errors / warnings that are indicative to problems

l.General interface and “flow” of SSE commands could use improvement

m.Problems merging surfaces

n.Finicky when inputting a negative value for copying surfaces

Corridor Notes:

1. Use the Manage Data Shortcuts command to update construction corridor surface references and targets.
2. A Stripping Close link code and surface is required to simplify the calculation of over stripping.

Meeting Notes:

Meeting Notes - October 31, 2018, 2pm
Attendees: Bob Gourley, Sean Potter, Mark Lam, Fernando Di Lorenzo, Greg Toews, Jemay Zheng, Darwin Tyacke, Ken White (RFB)

Regrets: Fernando Gonzales

1. The intent of the meeting was to discuss the Ministry construction supervision development process

2. Ken White is concurrently running the Rolla Road project using CAiCE and is providing data and project support

3. AW will meet with BG and FD to discuss the TYPED Unsuitable field instruction procedure and record video afterwards

4. AW will provide C3D2016 data for those who do not have access to 2017 or later versions of C3D

5. It seems like we are getting close to receiving SSE compiled 2018/2019 versions and source code

6. A significant development effort is required to improve SSE

Meeting Notes - December 12, 2018, 10am
Attendees: George Der, Kristen Mackay, Darwin Tyacke, Stacey Weightman, Bob Gourley, Patrick Edge, Mark Lam, Ken Blood, Ken White, Nando DiLorenzo, Fernando Gonzales

Regrets: Jemay Zheng, Greg Toews, Sean Potter

1. Meeting Intent - to discuss and solicit feedback on the Construction Supervision workflow

2. Material Specific SDB's - these are required to keep data organized and facilitate the ground modeling process. It is understood that a SDB may contain multiple materials. Standardized SDB queries can be used to extract material specific data from different SDB's

3. Survey Coding Issues - it was noted that in some circumstances construction survey codes do not conform to Ministry survey coding standards. Communication with Ministry Representatives as to the importance of these survey codes is required. Adherence to Ministry survey coding standards should be stipulated in the contract

4. Surface per Survey File - the Rolla Road sample project indicates that 1 surface per survey file. This is to be done at the ground modeler's discretion. Multiple files can be aggregated to form a single surface

5. 03_ActualSurfaces Folder and Drawing Names - the 03_ActualSurfaces folder and drawings are renamed so that the word *Actual* is replaced with *Const*

6. Record Keeping - monthly archives should include drawings and any supporting documents, spreadsheets and correspondence summary that clearly explain how the final numbers were arrived at. Monthly payments are based on estimates and the reconciliation of differences occurs at project completion. Clear and concise records are required to support payment negotiation. Folder structure and naming standards for records is still under development

7. Section Surface Editor - the Ministry has the source code for SSE and is currently rewriting to fix bugs and improve functionality. All are encouraged to provide feedback and suggestions on how this utility can be improved

8. Manual Calculations - sometimes manual volume calculations are performed that have no impact on Civil 3D data

9. QA/QC Folder - there was a suggestion to create QA/QC folder as part of the folder structure for check shots and other items relating to QA/QC requirements

10. Construction Layout - construction supervision is sometimes required to check contractor stakes. This can be facilitated by i) exporting reports from corridor models ii) exporting corridor section data using Trimble Link and ii) exporting surfaces. All are dependent on having well formed and accurate corridor models.