Horizontal and Vertical Control

1 Introduction

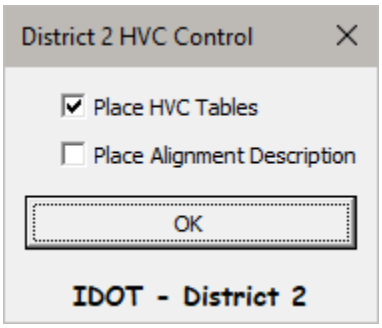
HorzVertControl.mvba is a MicroStation visual basic application created to place the horizontal and vertical control points in a table format and an alignment description using report files that were previously created. All elements are drawn using the correct IDOT symbologies and level assignments. Each Table is placed as a separate graphic group.

1.1 District 2 HVC Control

The *District 2 HVC Control* application is activated by use of the following key-in command:

vba run [HorzVertControl]modStart.Start

When the command is executed, the main dialog is displayed as shown below.



Place HVC Tables

Choose this check box to place a Horizontal Control Points, Survey Work Points, Bench Marks, Reference Tie Points, Apparent Property Corners or Chain Curves table.

Place Chain Description

Choose this check box to place the description of the selected chain.

OK

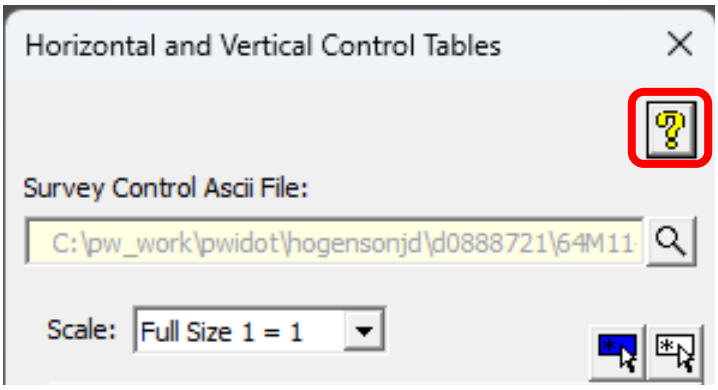
Pressing this button will display the dialog box of the selected HVC Control type.

Refer to section 1.2 for placing HVC tables and refer to section 1.4 for placing alignment descriptions.

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1.2 Operation – Place HVC Tables

The top portion of the dialog displays the various settings used for placing the *"Horizontal and Vertical Control Tables"*.





Click on the question mark to open a help file for this application.

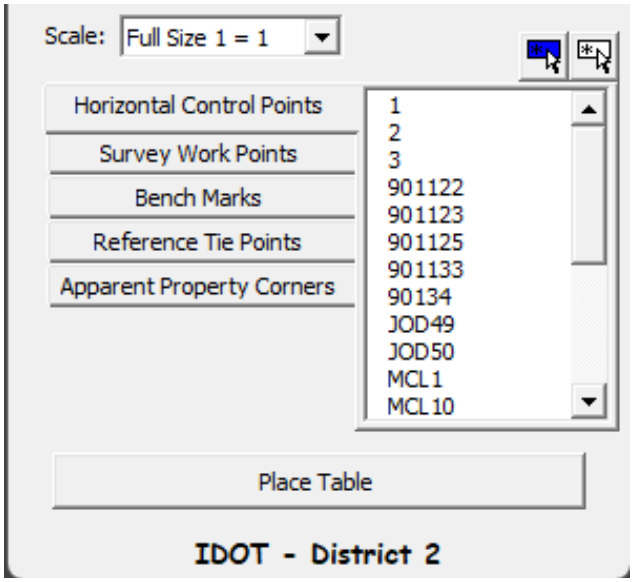
Survey Acsii File

Click on the magnifying glass to browse to the *"Survey Control Ascii"* file that will be read to populate the tables. This file must be in a certain format for the application to read it properly. See *"Appendix A"* for the instructions on how to create the *"Survey Control Ascii"* file.

Scale

Select the scale that the tables will be placed at.

The bottom portion of the dialog displays the points sorted by category.



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Horizontal and Vertical Control

Click in the desired *"Control Table"* tab to display the points for that category.

Horizontal Control Points

- All horizontal control points in the point number ranges of 1-99, 1000-1099 and 90000-91000000.

Survey Work Points

- All survey work points in the point number ranges of 100-199 and 1100-1199.

Bench Marks

- All bench mark points in the point number ranges of 400-499 and 1400- 1499.

Reference Tie Points

- All reference tie points in the point number ranges of 500-699 and 1500-1699.

Apparent Property Corners

- All apparent property corner points in the point number ranges of 700-999 and 1700-1999.

Select All 	Click on this button to select all the points in the active tab.
Select None 	Click on this button to clear all the selected points in the active tab.

Click on the ***"Place Table"*** button to draw the selected points in the proper HVC table format at a user defined data point in the design file.

Note – Use the annotation scale of *"Full Size 1 = 1"* for placing the various tables in a sheet model. The text placed using this setting will be annotative and will respond to annotation scale. The text placed using any one of the remaining scales will ***NOT*** be annotative.

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1.3 Examples of the HVC Tables

Horizontal Control Points

HORIZONTAL CONTROL POINTS							
POINT	NORTH	EAST	ELEVATION	ALIGNMENT	STATION	OFFSET	DESCRIPTION
1	2109465.5150	2218344.4018	864.0686	IL84	1390+69.09 R1	33.3399' RT	PIN SURVEY WORK POINT 64M11A E-LEVEL VALUE REF TO MCL401
2	2111663.4858	2219149.3786	881.0390	IL84	1415+43.95 R1	26.9732' RT	PIN SURVEY WORK POINT 64M11B E-LEVEL VALUE REF TO MCL402 MCL2
3	2119354.5366	2222461.4122	927.1345	IL84	1507+21.22 R1	42.1211' LT	PIN SURVEY WORK POINT 64M11C E-LEVEL VALUE REF TO MCL409 MCL410
901122	2113928.0791	2220956.5851	896.4500	IL84	1444+88.13 R1	27.2882' LT	IDOT CAP
901123	2112834.8148	2220450.6037	893.6690	IL84	1432+91.38 R1	35.9861' RT	IDOT CAP

Survey Work Points

SURVEY WORK POINTS							
POINT	NORTH	EAST	ELEVATION	ALIGNMENT	STATION	OFFSET	DESCRIPTION
100	2109668.4879	2218172.4533	865.0318	IL84	1392+73.59 R1	136.7887' LT	NAIL SURVEY WORK POINT 64M11A
101	2111534.4219	2218933.6738	879.4139	IL84	1413+01.63 R1	38.7204' LT	FOUND PIN SURVEY WORK POINT 64M11B E-LEVEL VALUE REF TO MCL402 MCL2
102	2119365.0889	2222218.9256	920.8896	IL84	1507+71.41 R1	279.2505' LT	NAIL SURVEY WORK POINT 64M11C
103	2119621.4735	2222294.8369	932.8344	IL84	1510+03.99 R1	167.4526' LT	NAIL SURVEY WORK POINT 64M11C
A0141	2115796.2526	2222630.1026	896.1590	IL84	1470+39.84 R1	24.2149' LT	POINT #1 IDOT CAP FROM P92-014-10 MCL108

Bench Marks

BENCH MARKS							
POINT	NORTH	EAST	ELEVATION	ALIGNMENT	STATION	OFFSET	DESCRIPTION
401	2109621.6050	2218248.3950	865.7030	IL84	1392+26.04 R1	61.2688' LT	CUT SQUARE S-HEADWALL ON HIGH RIDGE RD JUST W OF IL84 E-LEVEL VALUE REF TO MCL401
MCL400	2108959.3790	2218248.7150	888.2980	IL84	1385+63.83 R1	66.864' LT	R.O.W. MARKER, TOP
MCL401	2110330.0908	2218270.3982	900.8240	IL84	1399+29.57 R1	43.2172' LT	SIGN FOUNDATION, CHISELED SQUARE
MCL402	2111742.1971	2219228.4120	880.5080	IL84	1416+56.18 R1	24.2751' RT	CHIS SQ SE COR BOX CULVERT
MCL403	2112373.6643	2219850.6523	885.0930	IL84	1425+40.88 R1	40.9964' LT	RR SPIKE E-FACE OF P-POLE

Reference Tie Points

REFERENCE TIES						
POINT	NORTH	EAST	ALIGNMENT	STATION	OFFSET	DESCRIPTION
500	2108041.7700	2218310.0390	IL84	1376+52.41 R1	29.6731' RT	SIGN
501	2107944.4890	2218265.9590	IL84	1375+49.38 R1	39.4000' RT	END OF RCP
502	2108057.0760	2218363.9000	IL84	1376+83.53 R1	73.4558' RT	FENCE POST
505	2108958.6700	2218247.7530	IL84	1385+63.13 R1	67.8323' LT	POWER POLE
510	2111354.3600	2218880.9770	IL84	1411+31.14 R1	39.6797' RT	ROW MARKER

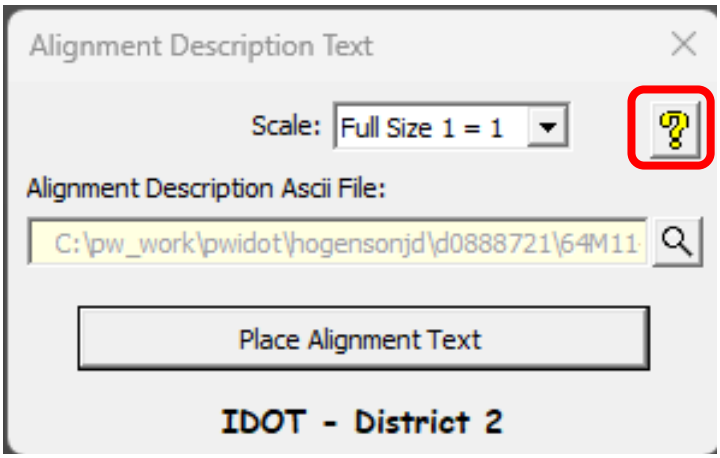
Apparent Property Corners

APPARENT PROPERTY CORNERS							
POINT	NORTH	EAST	ELEVATION	ALIGNMENT	STATION	OFFSET	DESCRIPTION
701	2127027.1218	2223475.8775	938.2300	IL84	1587+15.48 R1	35.8783' RT	NGS VINEGAR
709	2121384.3706	2222263.2668	932.6620	IL84	1527+57.46 R1	41.7854' LT	PROPERTY CORNER, PIN
710	2122449.3896	2222170.2560	921.2060	IL84	1538+26.53 R1	41.1807' LT	PROPERTY CORNER, PIN
711	2123672.3173	2222076.9128	928.5120	IL84	1550+50.49 R1	35.3084' RT	QUARTER CORNER, NAIL
715	2125132.3551	2222392.4146	944.0670	IL84	1565+38.34 R1	54.2812' LT	SECTION CORNER, PIN

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1.4 Operation – Place Alignment Description

The top portion of the dialog displays the various settings used for placing the *"Alignment Description Text"*.





Click on the question mark to open a help file for this application.

Scale

Select the scale that the alignment description text will be placed at.

Survey Acsii File

Click on the magnifying glass to browse to the *"Alignment Description Ascii"* file that will be read to [lace the text. This file must be in a certain format for the application to read it properly. See *"Appendix B"* for the instructions on how to create the *"Alignment Description Ascii"* file.

Click on the ***"Place Alignment Text"*** button to draw the alignment description text at a user defined data point in the design file.

Note – Use the annotation scale of *"Full Size 1 = 1"* for placing the alignment description in a sheet model. The text placed using this setting will be annotative and will respond to annotation scale. The text placed using any one of the remaining scales will NOT be annotative.

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1.5 Example of Alignment Descriptions

Beginning alignment TURKEYHOLLOW description
==========

START () N 1,737,706.5740 E 2,165,789.1130 Sta 73+80.03 R1

Course from START to END N00°41'27.807"E Dist 2,619.9746'

END () N 1,740,326.3581 E 2,165,820.7123 Sta 100+00.00 R1

==========
Ending alignment TURKEYHOLLOW description

Beginning alignment PT_EQU description
==========

START () N 1,741,145.7620 E 2,166,649.2060 Sta 560+00.00

Course from START to PC N88°42'43.270"E Dist 1,035.1742'

Curve Data

P.I. Station 583+66.82 N 1,741,198.9624 E 2,169,015.4239
Delta = 47°09'46.90" (LT)
Degree = 01°52'41.25"
Tangent = 1,331.6417'
Length = 2,511.1759'
Radius = 3,050.6900'
External = 277.9703'
Long Chord = 2,440.8776'
Middle Ordinate = 254.7575'
P.C. Station 570+35.17 N 1,741,169.0302 E 2,167,684.1186
P.T. Station 256+51.99 N 1,742,195.5482 E 2,169,898.6488
C.C N 1,744,218.9495 E 2,167,615.5464

End Region

Equation: Sta 595+46.35 (BK) = Sta Bill 256+51.99 (AH) ----------

Begin Region II

Point PT N 1,742,195.5482 E 2,169,898.6488 Sta Bill 256+51.99

Course from PT to END N41°32'56.367"E Dist 1,883.9421'

END () N 1,743,605.4695 E 2,171,148.1926 Sta Bill 275+35.93

==========
Ending alignment PT_EQU description

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Horizontal and Vertical Control

Beginning alignment IL84 description
==========

START () N 2,107,876.5604 E 2,218,179.2252 Sta 1374+46.50 R1

Course from START to PC N30°58'39.024"E Dist 161.1461'

Curve Data

P.I. Station 1377+26.06 R1 N 2,108,116.2432 E 2,218,323.1131
Delta = 31°29'21.47" (LT)
Degree = 13°38'30.67"
Tangent = 118.4099'
Length = 230.8286'
Radius = 420.0000'
External = 16.3724'
Long Chord = 227.9345'
Middle Ordinate = 15.7582'
P.C. Station 1376+07.65 R1 N 2,108,014.7222 E 2,218,262.1674
P.T. Station 1378+38.48 R1 N 2,108,234.6484 E 2,218,322.0555
C.C N 2,108,230.8968 E 2,217,902.0722

Course from PT to PC N00°30'42.450"W Dist 1,922.9898'

Curve Data

P.I. Station 1401+67.15 R1 N 2,110,563.2270 E 2,218,301.2550
Delta = 31°59'52.12" (RT)
Degree = 04°02'58.23"
Tangent = 405.6816'
Length = 790.1652'
Radius = 1,414.8820'
External = 57.0109'
Long Chord = 779.9367'
Middle Ordinate = 54.8027'
P.C. Station 1397+61.47 R1 N 2,110,157.5615 E 2,218,304.8787
P.T. Station 1405+51.63 R1 N 2,110,909.1792 E 2,218,513.1387
C.C N 2,110,170.1997 E 2,219,719.7042

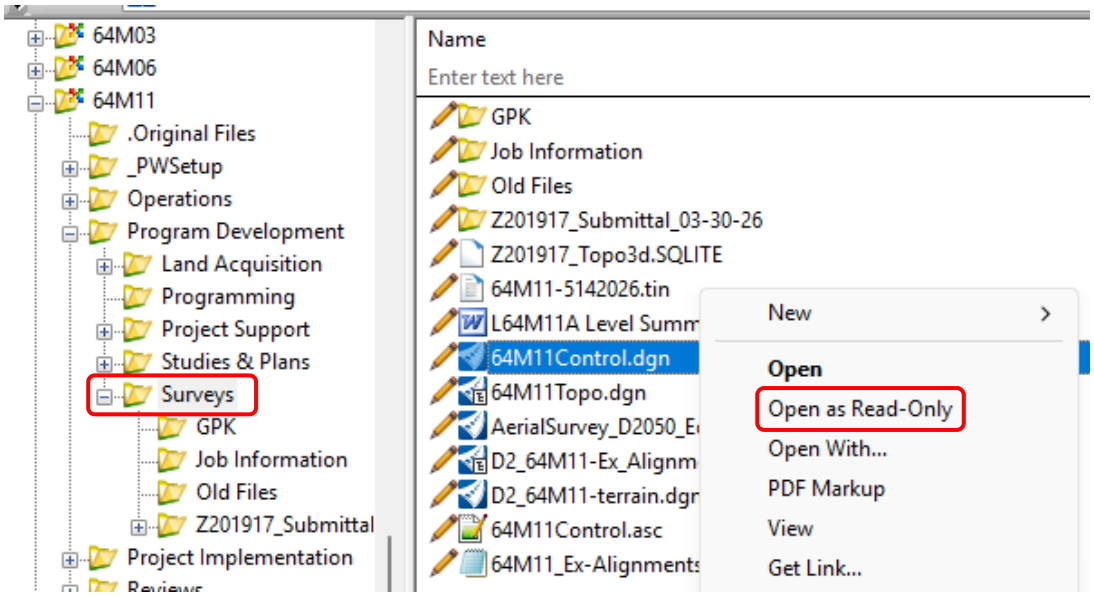
Note – The *"Horizontal and Vertical Control Tables"* dialog and the *"Alignment Description Text"* dialog will reappear after each table or chain description is placed in the design file.

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Appendix A

1 The following outlines the steps for creating the input file for the horizontal control tables and the placement in a table format.

1) Select the *****Control.dgn, where ***** is the contract number of your project. Right click on the file and select *"Open as Read-Only"*



Note - The *****Control.dgn can be found in the *"Surveys"* folder in ProjectWise.

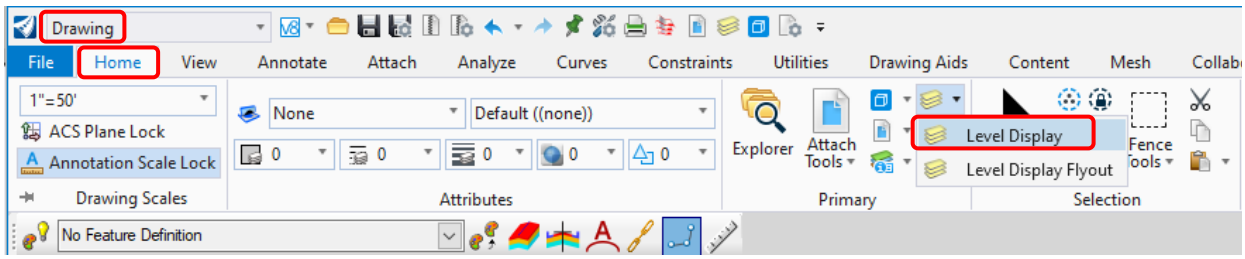
2) Click on *"Fit View"* to see the entire control drawing or key-in *"fit view extended"*.

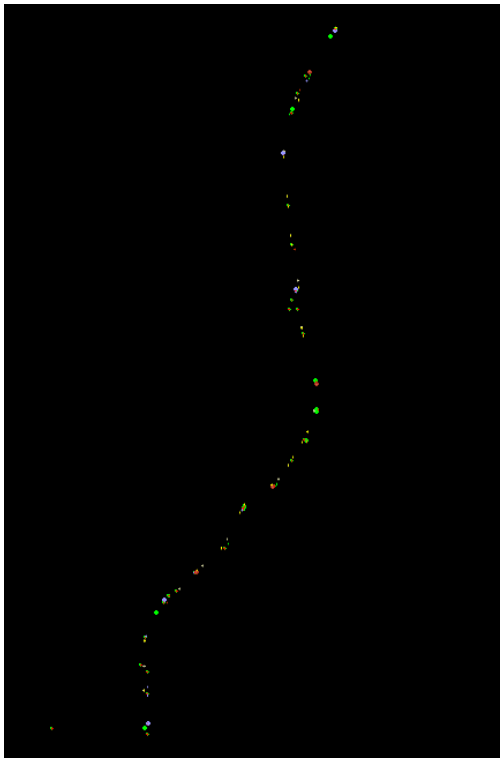


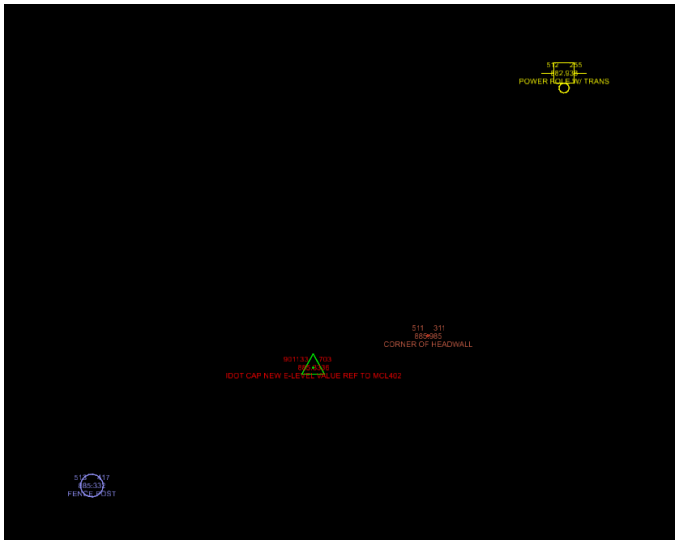
3) Turn all the levels on and turn the following levels off if they are used.
- Ge_Ex_Baseline
- Ge_Ex_Baseline_Small_Tic
- Ge_Ex_Baseline_Small_Tic_Sta
- Ge_Ex_Centerline
- Ge_Ex_Centerline_Small_Tic
- Ge_Ex_Centerline_Small_Tic_Sta
- Ge_Ex_Notation
- Topo_Ex_Roadway_Notes

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- The "Level Display" dialog can be accessed by going to the *"Drawing"* workflow, *"Home"* tab, *"Primary"* group, *"Level Display"*.

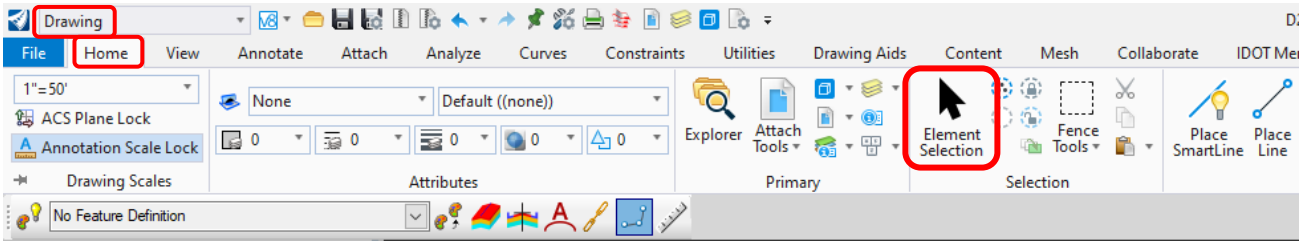






Basically, you just need to display all the control points and turn off any unnecessary elements, text, and raster images.

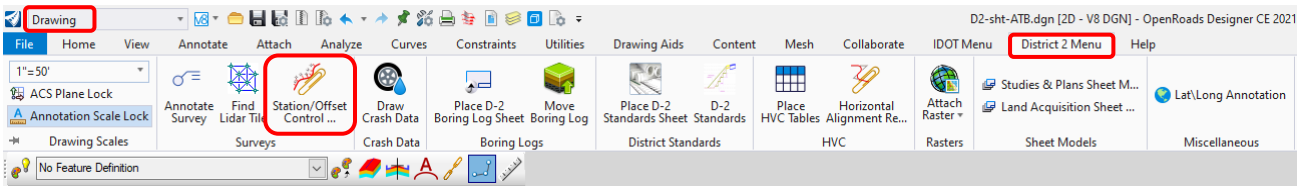
4) Select all the elements that are displayed by going to the *"Drawing"* workflow, *"Home"* tab, *"Selection"* group, *"Element Selection"*.



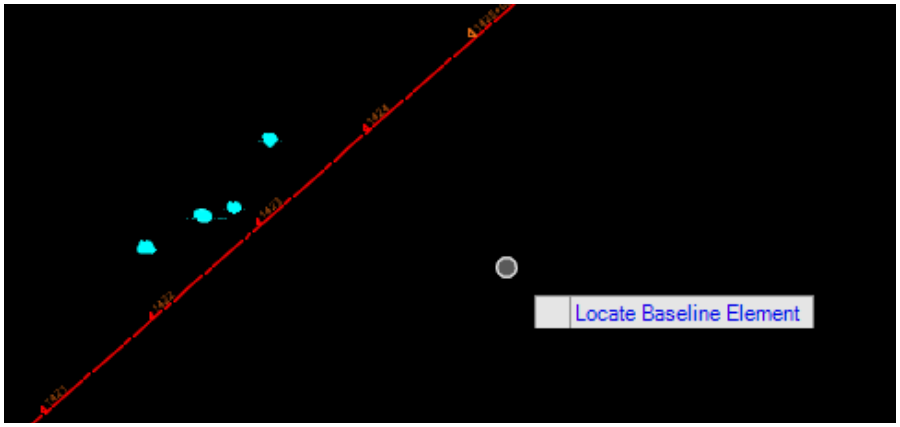
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5) Turn all the alignment (*"GE_*"*) levels back on. The alignment will be used to calculate the station and offset of the horizontal control points, survey work points, reference tie points, benchmarks, and apparent property corners.

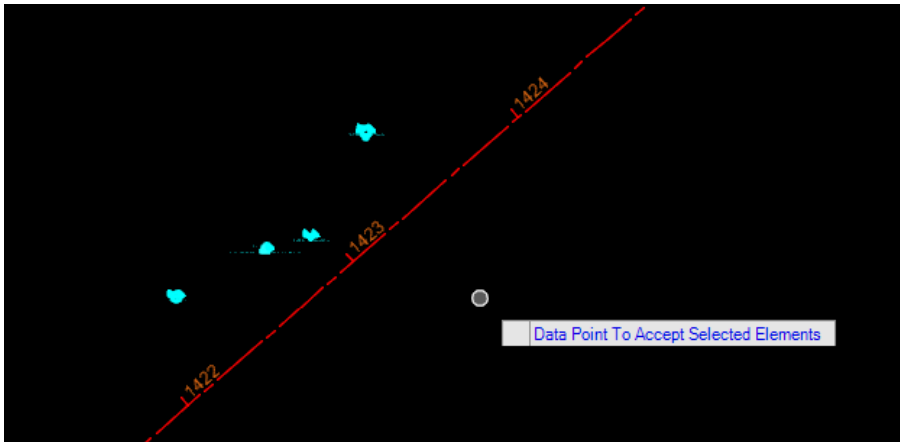
6) With the elements still selected, go to the *"Drawing"* workflow, *"District 2 Menu"* tab, *"Surveys"* group, *"Station/Offset Control Report"*.



- The first heads up prompt will ask for you to data point (left click) on the existing alignment. Move your cursor to be on the alignment and when it highlights data point (left click) to select it.



- The second heads up prompt will ask for you to data point (left click) to accept the selected alignment.

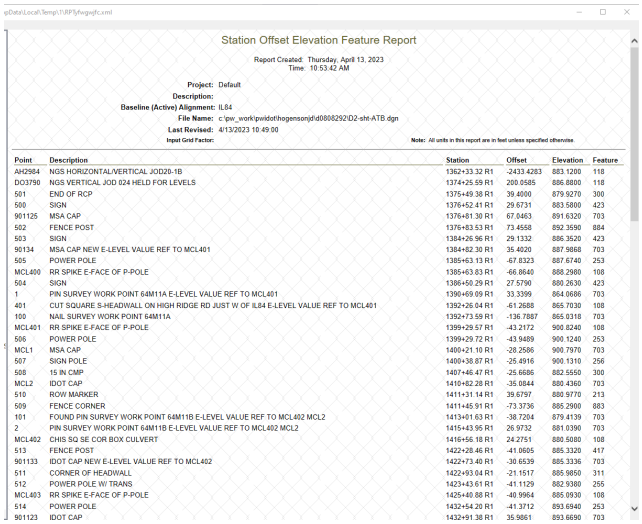


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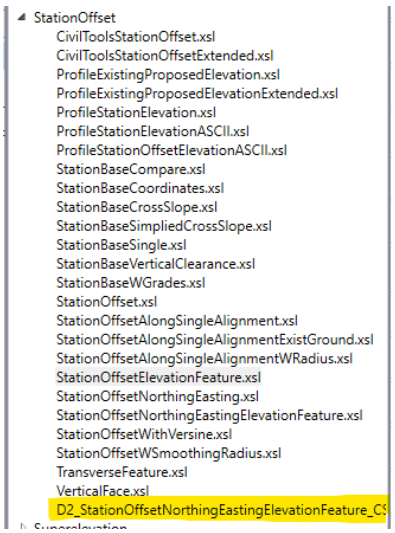
Horizontal and Vertical Control

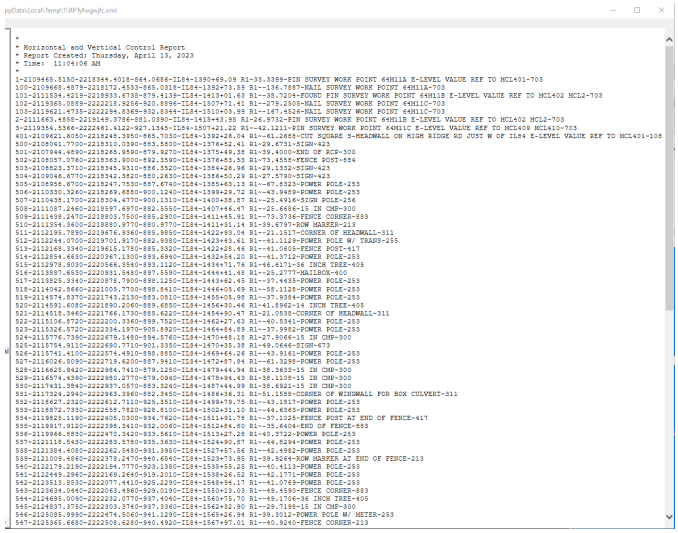
- The report dialog will open to a default report named *"Station Offset Elevation Feature Report"*.





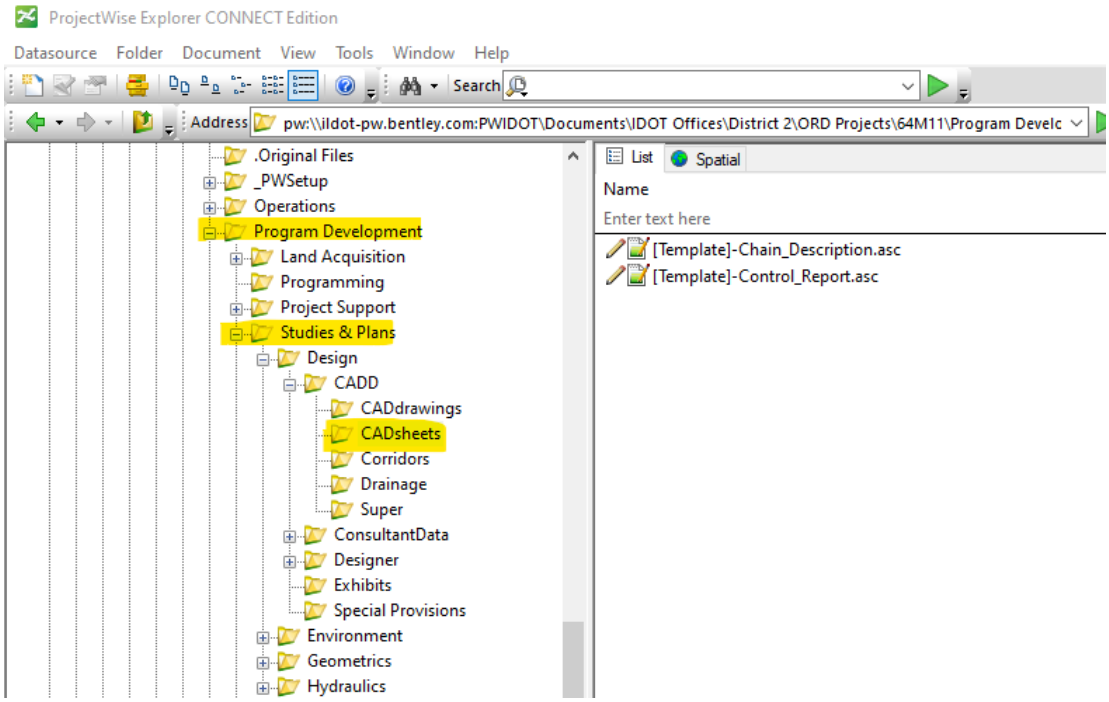
- Click on the *"D2_StationOffsetNorthingEastingElevationFeature_CSV.xsl"* report.





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7) With the *"D2_StationOffsetNorthingEastingElevationFeature_CSV.xsl"* report still open, in ProjectWise navigate to the *"\District 2\ORD Projects*****\Program Development\Studies & Plans\Design\CADD\CADsheets\"* folder, where ***** is the contract number of your project.

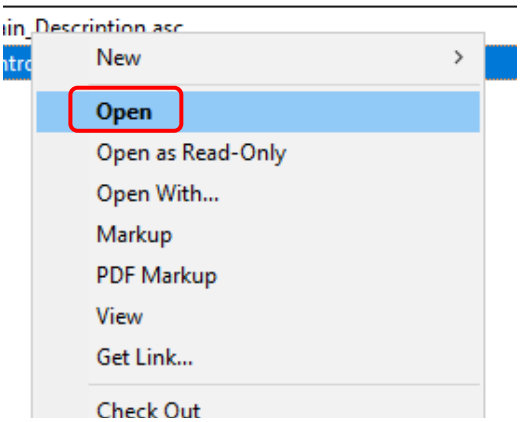


8) There will be two blank text files (*.asc) in the *"CADsheets"* folder for use with the control reports and for the chain descriptions. If either of the *.asc files have a [Template] in the name, you will need to rename it before opening it.

   For example:

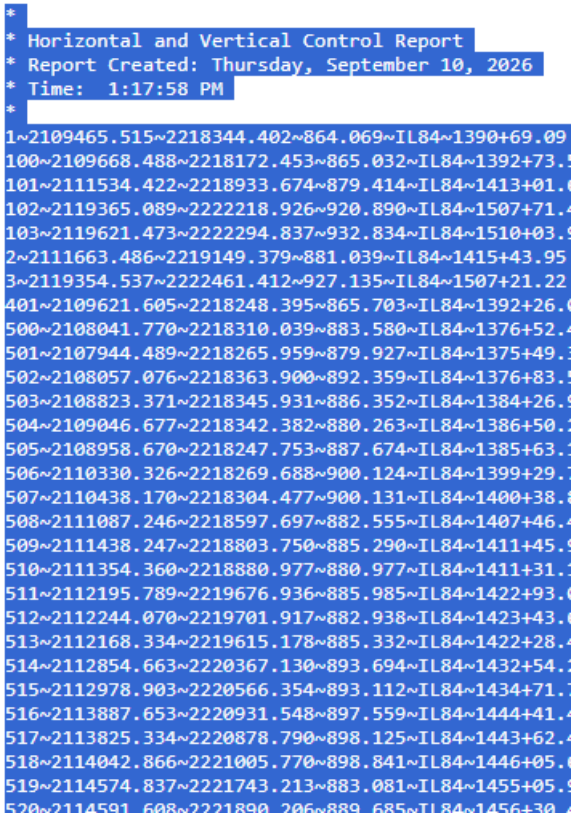
- [Template]-Chain_Description.asc ➔ 12345-Chain_Description.asc
- [Template]-Control_Report.asc ➔ 12345- Control_Report.asc

9) Open the *"*****- Control_Report.asc"* file by double clicking on it or right click and select *"Open"*. Where ***** is the contract number of your project.

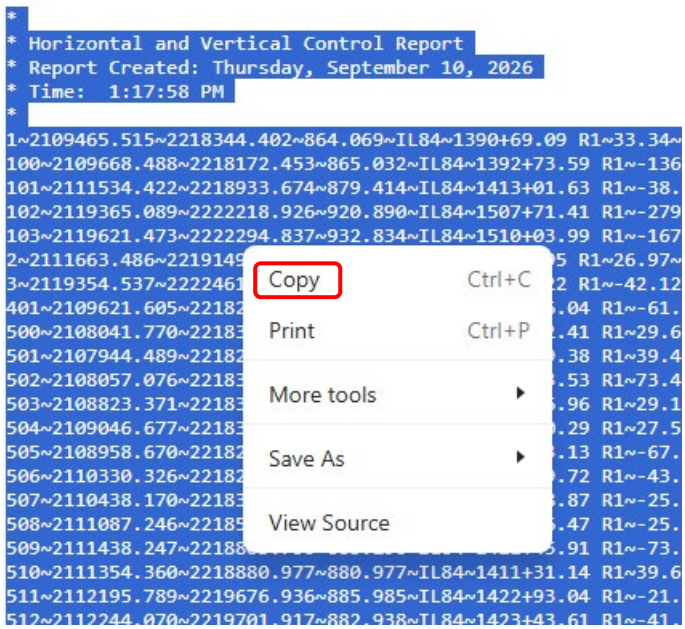


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10) In the *"D2_StationOffsetNorthingEastingElevationFeature_CSV.xsl"* report, left click in the body of the report then press *"Ctrl + A"* on the keyboard to select all text.



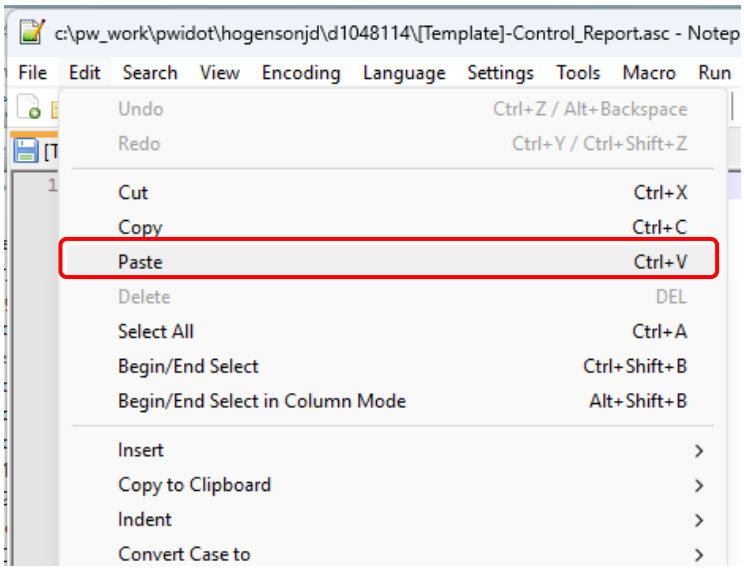
11) In the *"D2_StationOffsetNorthingEastingElevationFeature_CSV.xsl"* report, right click in the body of the report and select *"Copy"*.



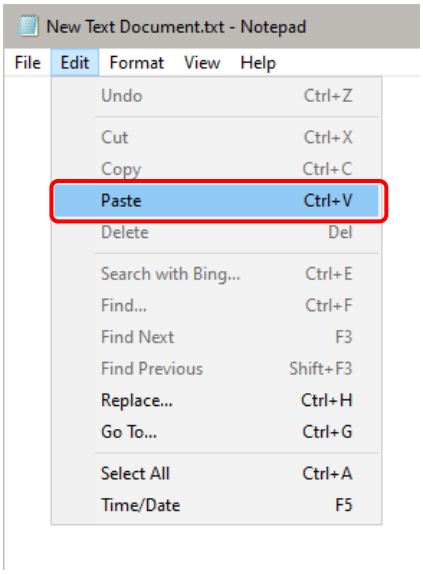
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12) In the *"*****- Control_Report.asc"* file go to *"Edit > Paste"* or right click and select paste or press *"Ctrl + V"* on your keyboard.

Using Notepad++

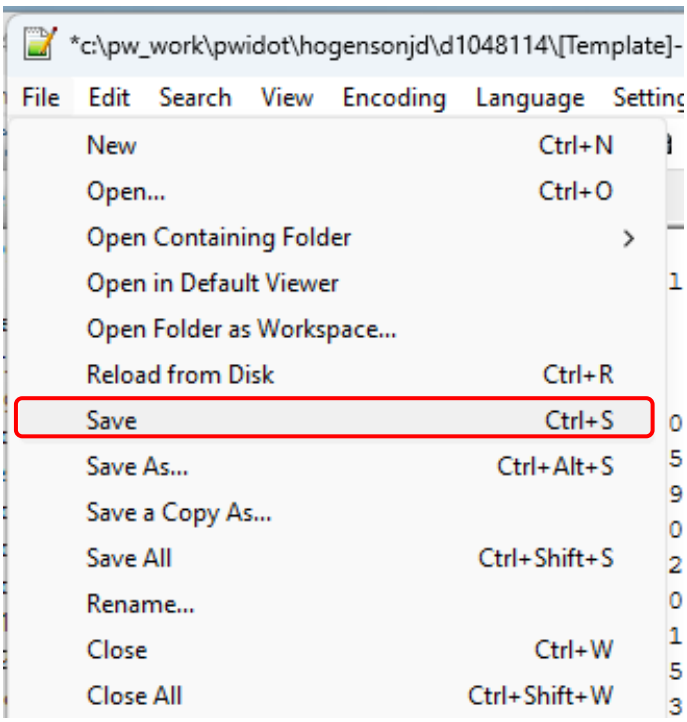


Using Notepad

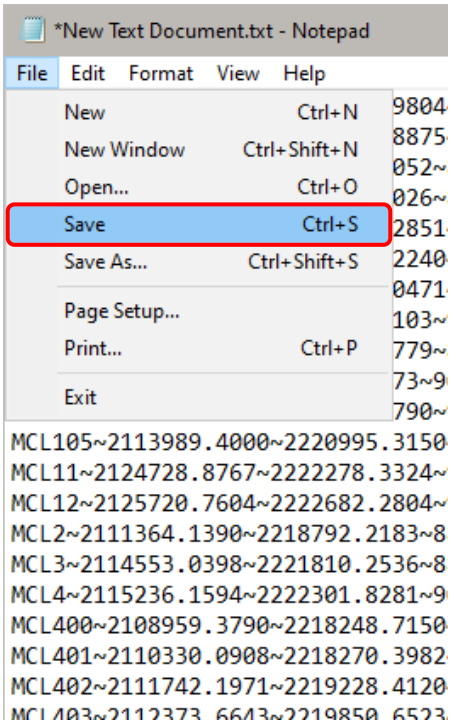


13) Go to *"File > Save"* or press *"Ctrl + S"* on your keyboard.

Using Notepad++



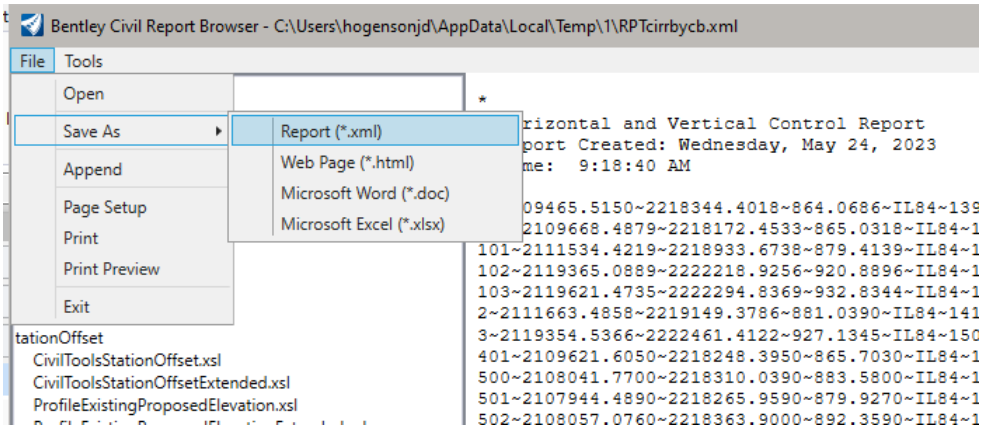
Using Notepad



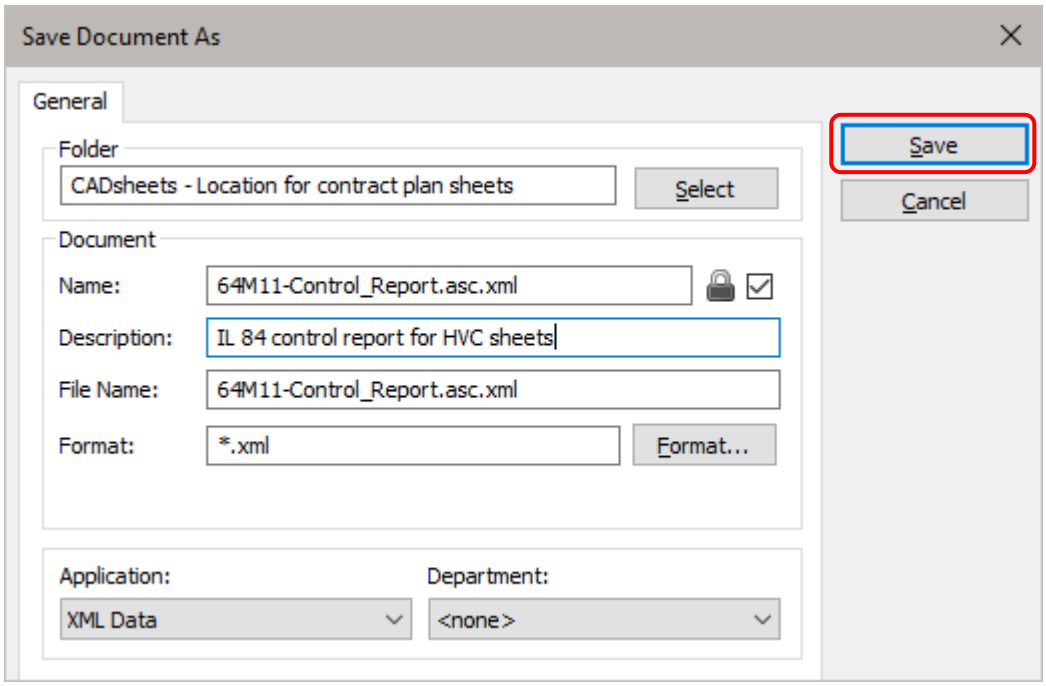
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14) Close the *"*****- Control_Report.asc"* file and check it back into ProjectWise.

15) The *"D2_StationOffsetNorthingEastingElevationFeature_CSV.xml"* report can be saved for archival proposes. To save this file go to *"File > Save As > Report (*.xml)*.

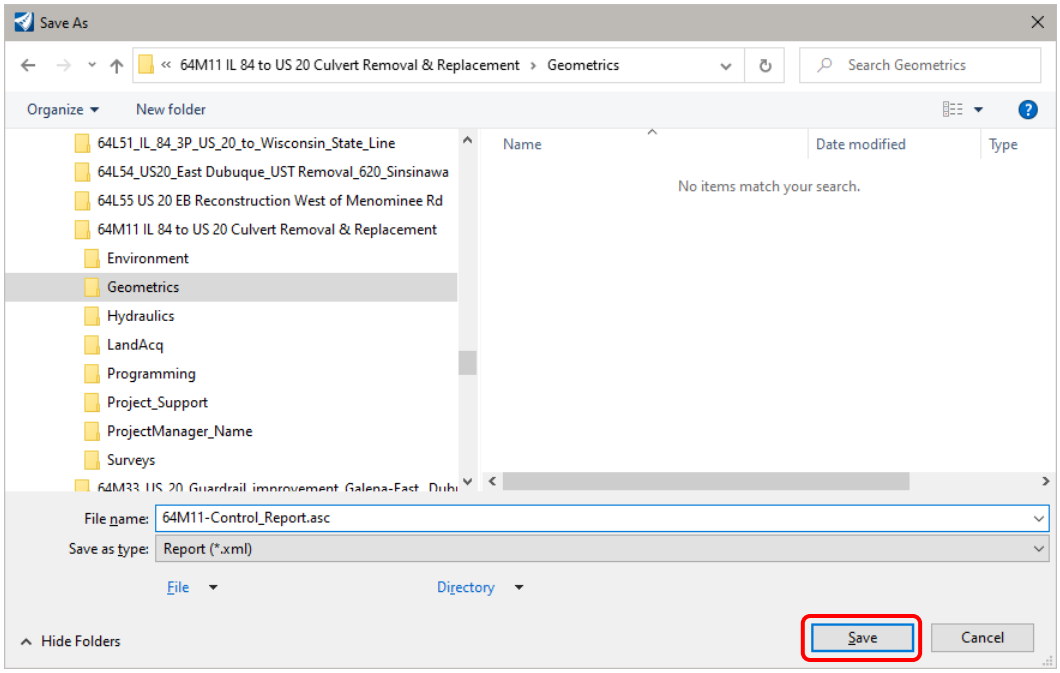


- The report can be saved to ProjectWise or elsewhere. To save the report outside of ProjectWise click on *"Cancel"* to open the Windows *"Save As"* dialog to navigated to a local drive folder or a network folder.



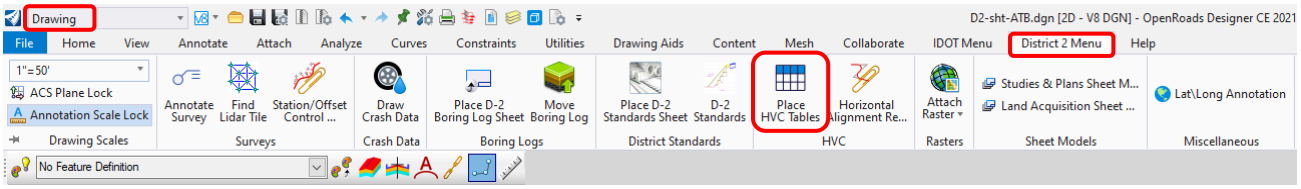
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- Navigate to the desired folder location, fill in the file name field and click on *"Save"*.

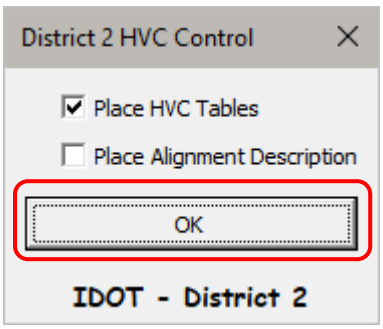


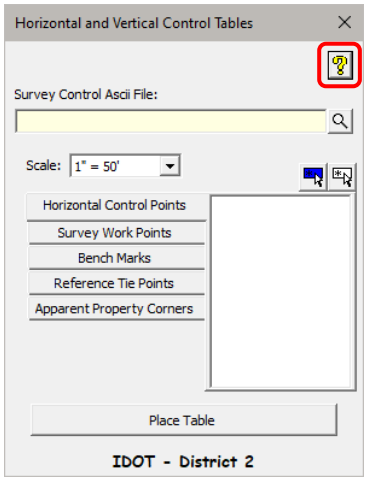
16) The *"*****- Control_Report.asc"* file is ready to be used with the *"Place HVC Tables"* application.

- Go to the *"Drawing"* workflow, *"District 2 Menu"* tab, *"HVC"* group, *"Place HVC Tables"*.



- In the *"District 2 HVC Control"* dialog select *"Place HVC Tables"* and click *"OK"*. For additional information on using the *"Horizontal and Vertical Control Tables"* application, click on the *"Help"* icon.





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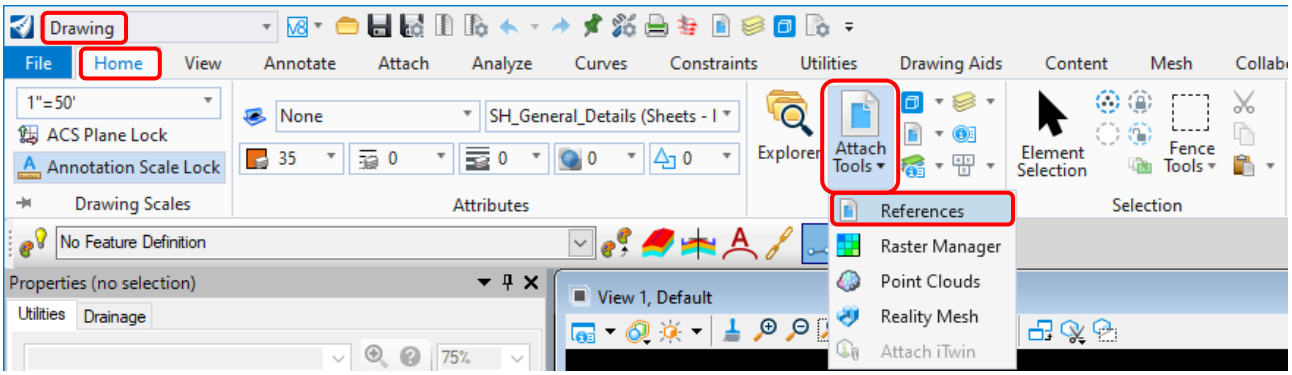
Appendix B

1. The following outlines the steps for creating the alignment descriptions for placement on the HVC Sheets.

    1) Open the D2_*****-sht-ATB.dgn file, where ***** is the contract number of your project.

    2) Attach the *****Control.dgn as a reference, where ***** is the contract number of your project.

        - Open the "References" dialog by going to the *"Drawing"* workflow, *"Home"* tab, *"Primary"* group, *"Attach Tools"*, *"Reference"*.

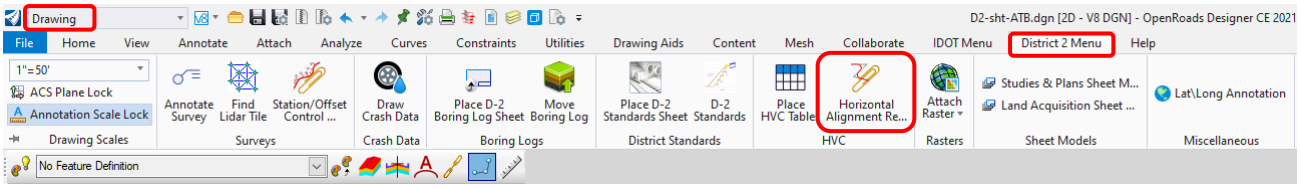


Note - The *****Control.dgn can be found in the *"Surveys"* folder in ProjectWise.

3) Click on *"Fit View"* to see the entire control drawing or key-in *"fit view extended"*.

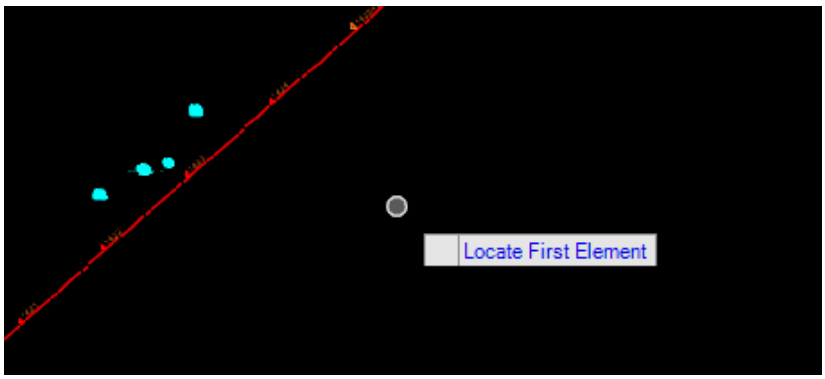


4) Go to the *"Drawing"* workflow, *"District 2 Menu"* tab, *"HVC"* group, *"Horizontal Alignment Report"*.

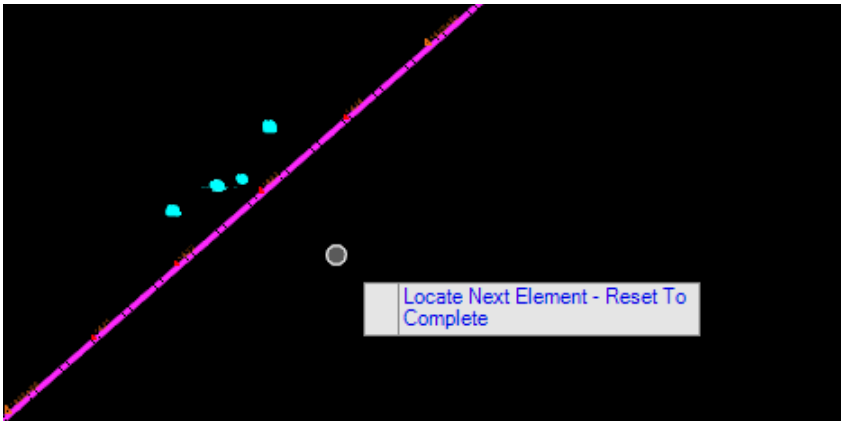


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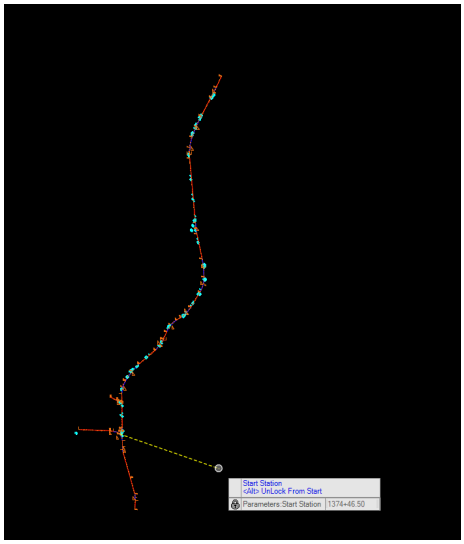
- The first heads up prompt will ask for you to data point (left click) on the existing alignment. Move your cursor to be on the alignment and when it highlights data point (left click) to select it.

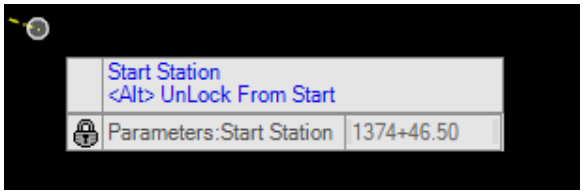


- The second heads up prompt will ask for you to reset (right click) to accept the selected alignment.



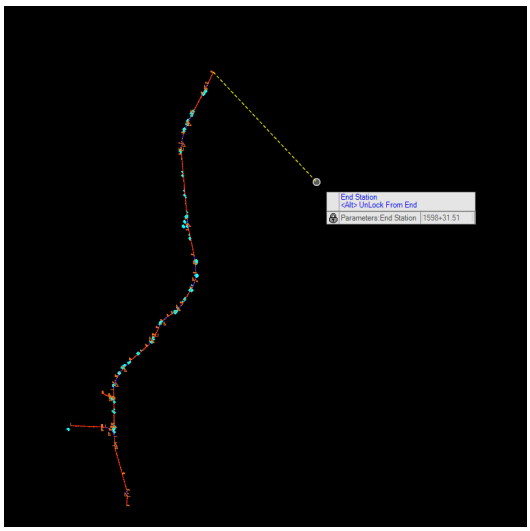
- The third heads up prompt will ask for you to identify the *"Start Station"* for the report. Press *"Alt"* on your keyboard. This will lock the start station at the beginning of the alignment. Data point (left click) to accept.

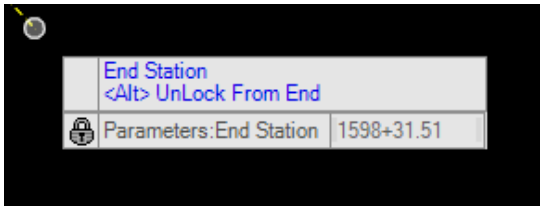




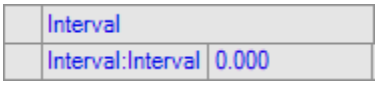
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- The fourth heads up prompt will ask for you to identify the *"End Station"* for the report. Press *"Alt"* on your keyboard. This will lock the end station at the end of the alignment. Data point (left click) to accept.





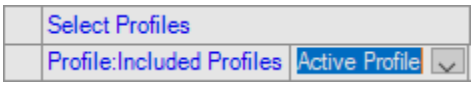
- The fifth heads up prompt will ask for you to key-in an interval value. Key-in "*0.000"* if it is not already in the *"Interval"* field. Data point (left click) to accept.



- The sixth heads up prompt will ask for you to *"Include Event Points"*. Select *"All"* in the drop down. Data point (left click) to accept.



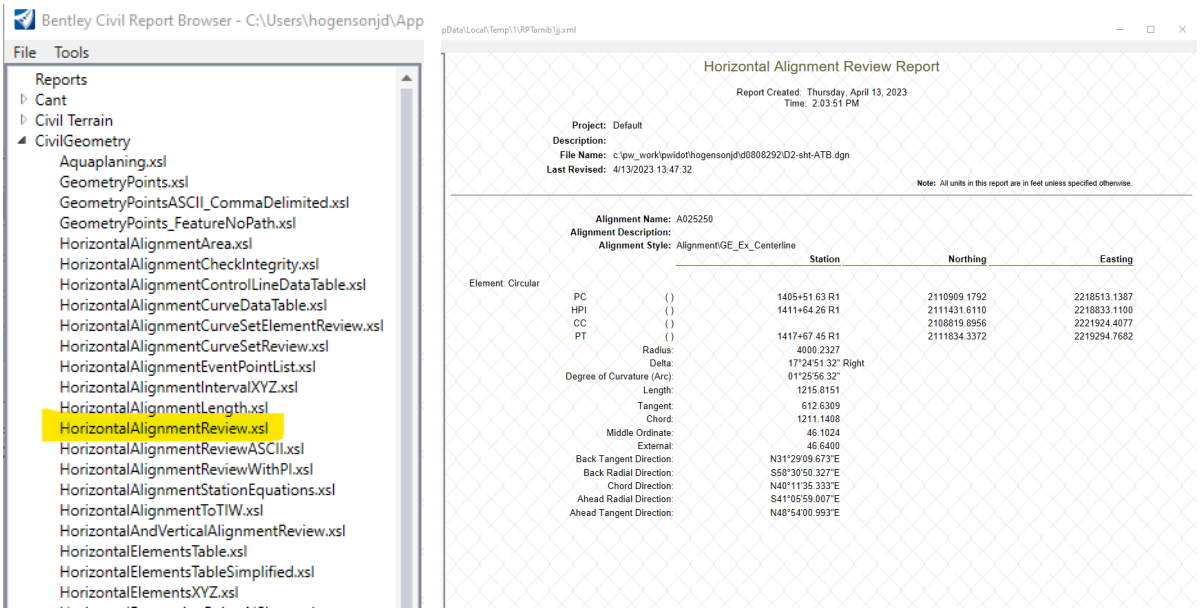
- The seventh heads up prompt will ask for you to select the profile that is associated with the selected profile. Select *"Active Profile"* in the drop down. Data point (left click) to accept.



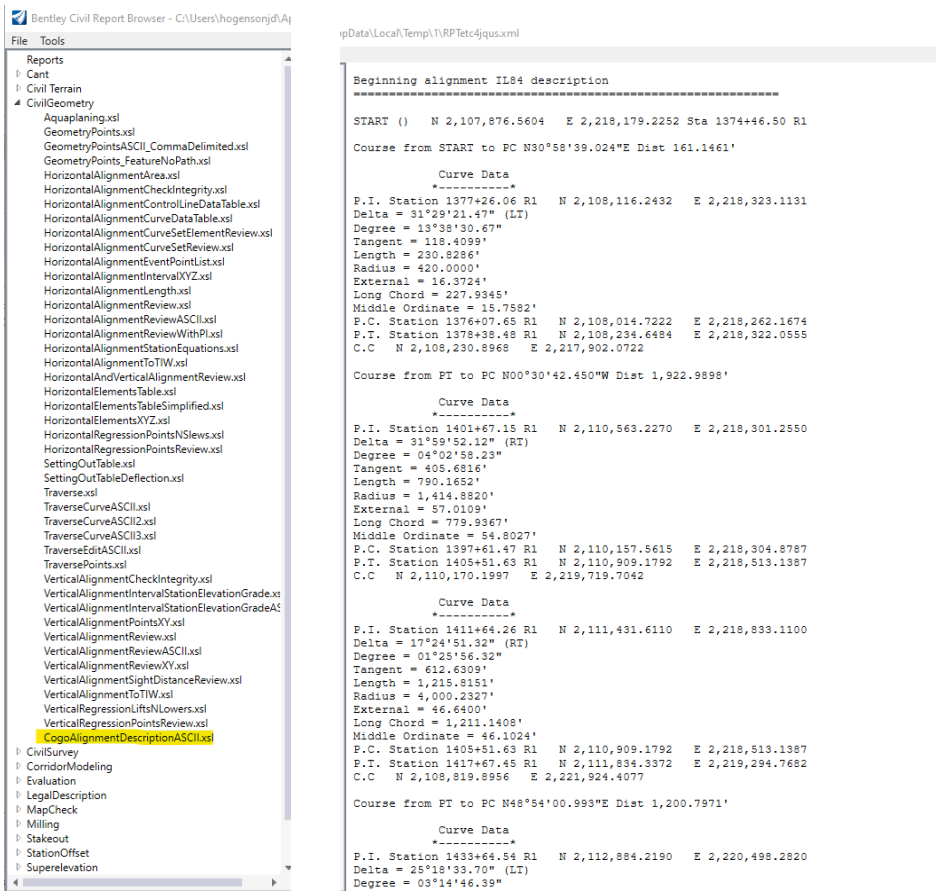
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Horizontal and Vertical Control

- The report dialog will open to a default report named *"Horizontal Alignment Review Report"*.

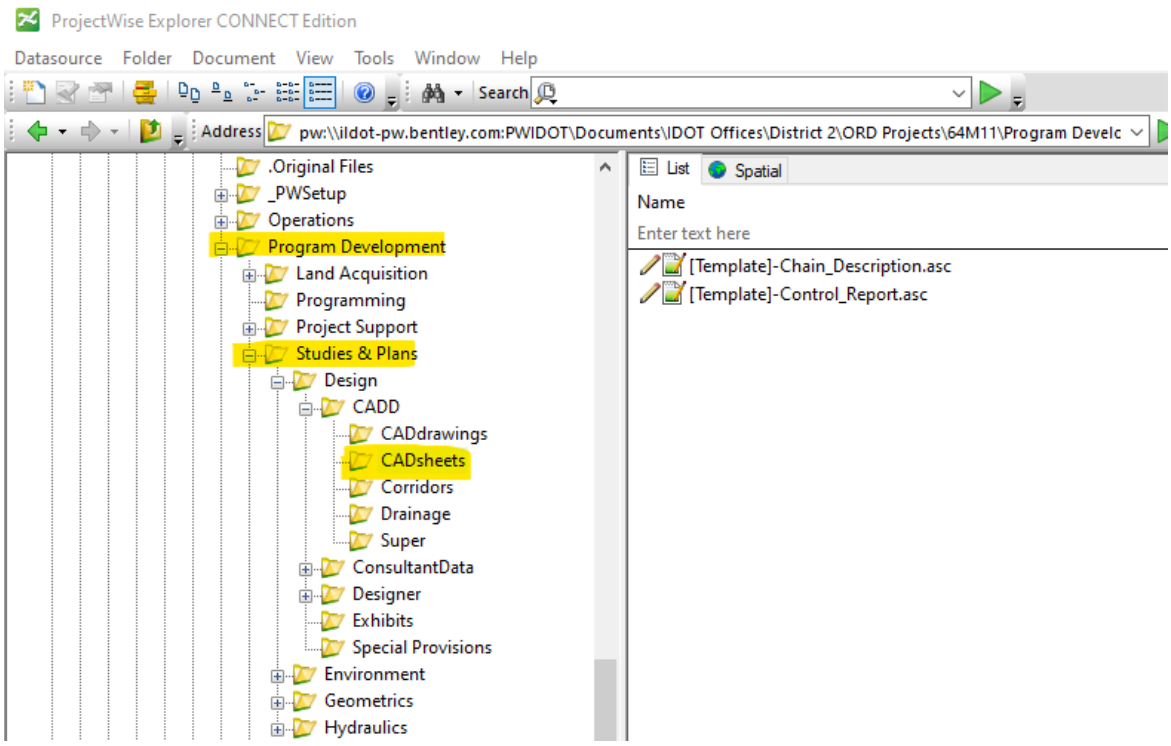


- Click on the *"CogoAlignmentDescriptionASCII.xsl"* report.



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5) With the *"CogoAlignmentDescriptionASCII.xsl"* report still open, in ProjectWise navigate to the *"\District 2\ORD Projects*****\Program Development\Studies & Plans\Design\CADD\CADsheets\"* folder, where ***** is the contract number of your project.

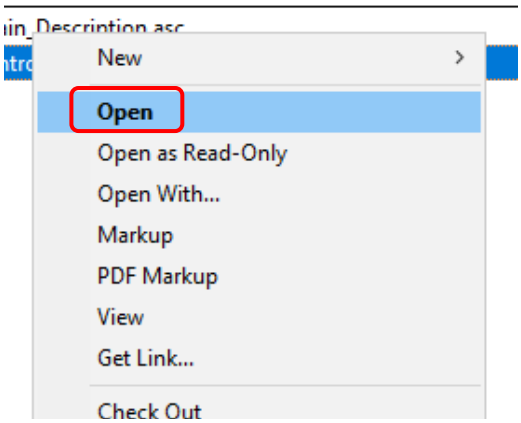


6) There will be two blank text files (*.asc) in the *"CADsheets"* folder for use with the control reports and for the chain descriptions. If either of the *.asc files have a [Template] in the name, you will need to rename it before opening it.

   For example:

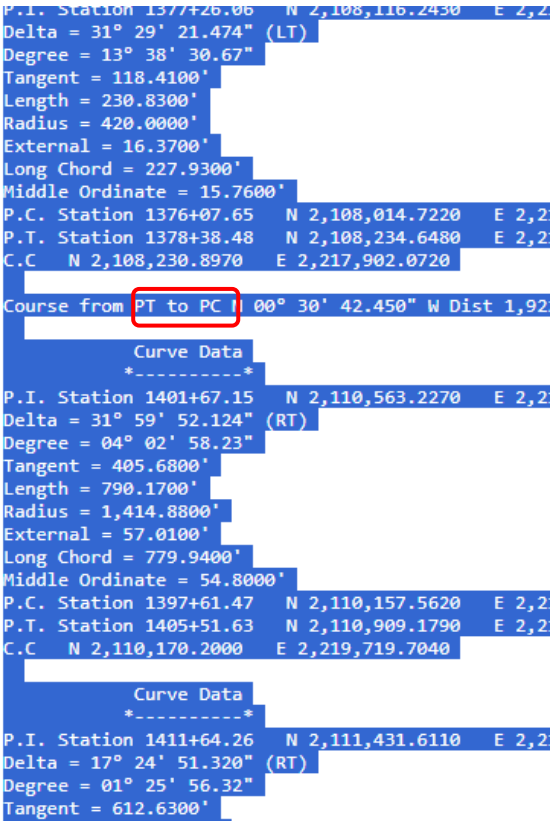
   - [Template]-Chain_Description.asc ➔ 12345-Chain_Description.asc
   - [Template]-Control_Report.asc ➔ 12345- Control_Report.asc

7) Open the *"*****- Chain_Description.asc"* file by double clicking on it or right click and select *"Open"*. Where ***** is the contract number of your project.

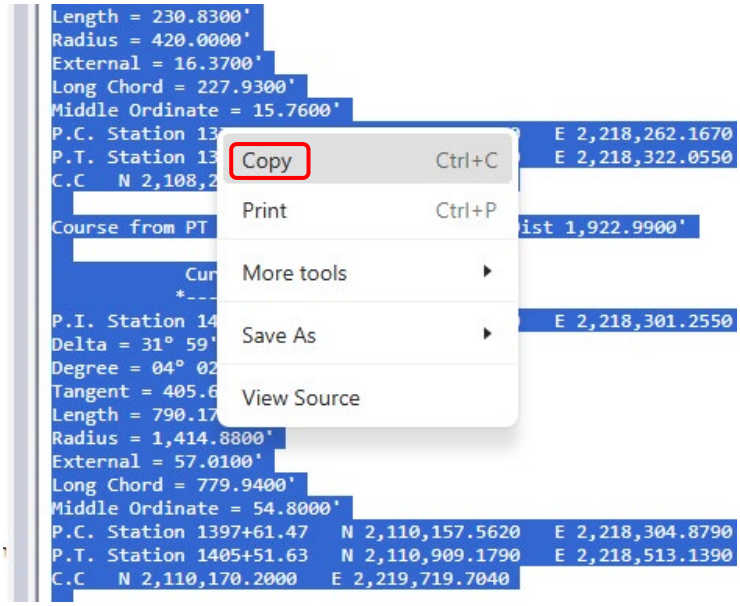


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8) In the *"CogoAlignmentDescriptionASCII.xsl"* report, left click in the body of the report then press *"Ctrl + A"* on the keyboard to select all text.



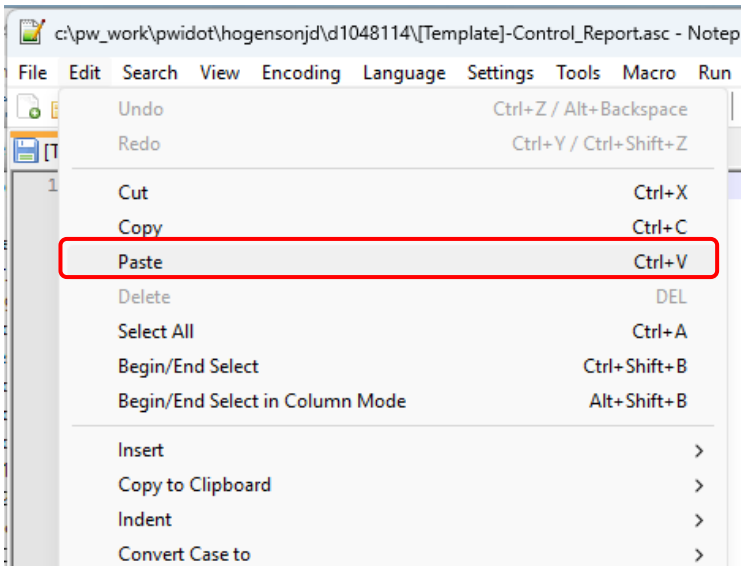
9) In the *"CogoAlignmentDescriptionASCII.xsl"* report, right click in the body of the report and select "Copy". As an alternative, press "Ctrl + C" on the keyboard to copy the selected text.



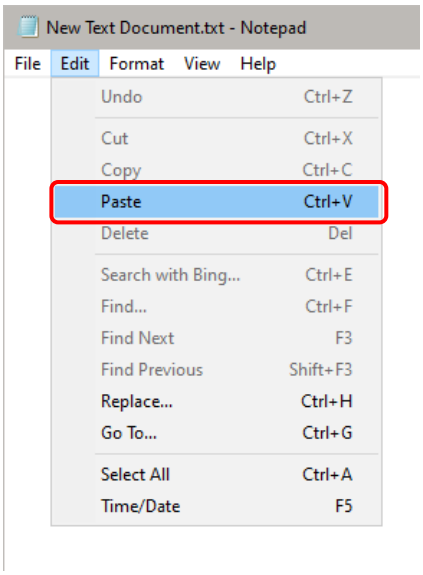
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10) In the *"*****- Chain_Description.asc"* file go to *"Edit > Paste"* or right click and select paste or press *"Ctrl + V"* on your keyboard.

Using Notepad++

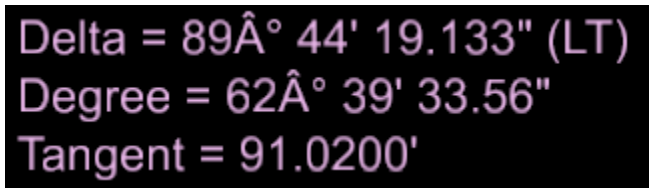


Using Notepad

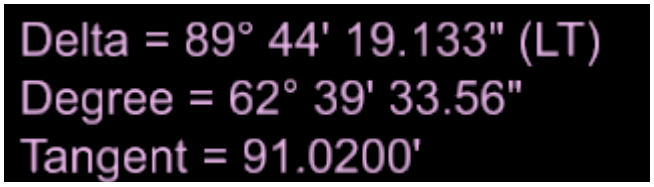


Note – When the text is pasted into the text file it is in a *"UTF-8"* format and any text string with the degree symbol will add an extra "A" character before the degree symbol. Saving the text file to *"ANSI"* will ensure that the degree symbol will be formatted correctly when placed in a *.dgn file.

Example text in "UTF-8" format.



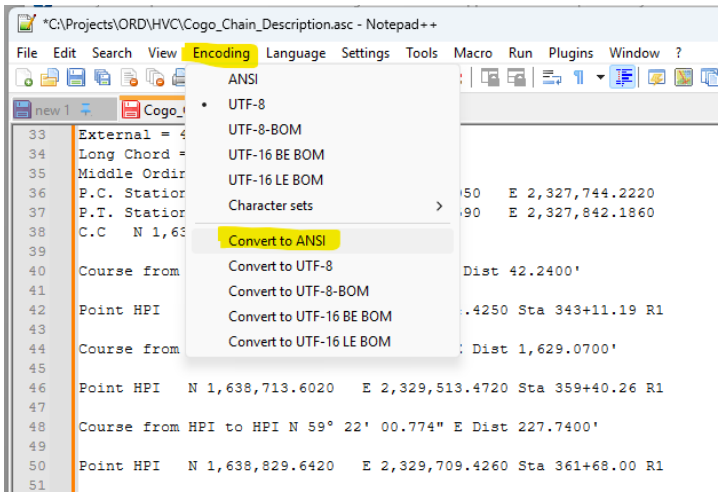
Example text in "ANSI" format.



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Using Notepad++

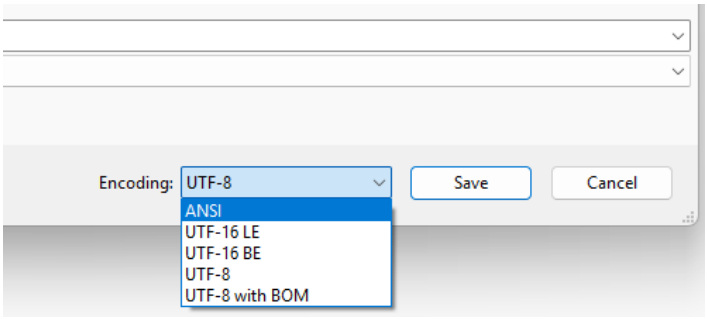
1) After pasting the copied text, go to *"Encoding > Convert to ANSI"*.



Using Notepad

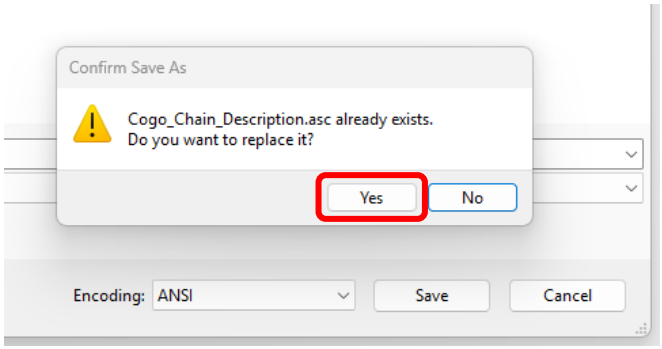
2) After pasting the copied text, go to *"File > Save As"*.

- In the lower right corner of the *"Save As"* dialog, change the encoding format from *"UTF-8"* to *"ANSI"*.



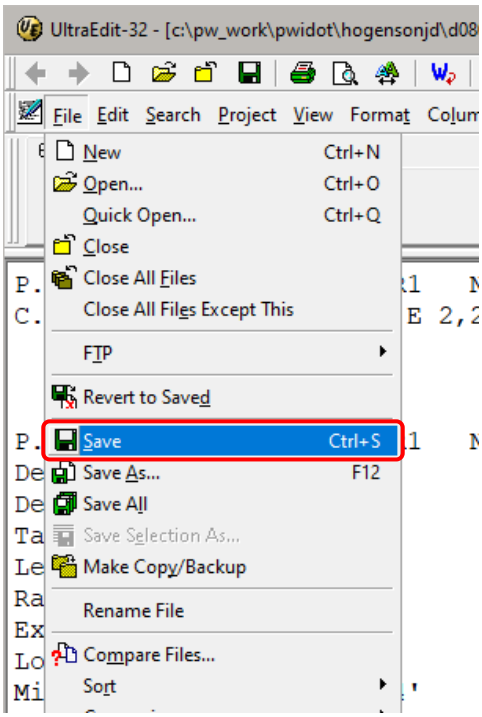
- Click on *"Yes"* to save the file in *"ANSI"* format.

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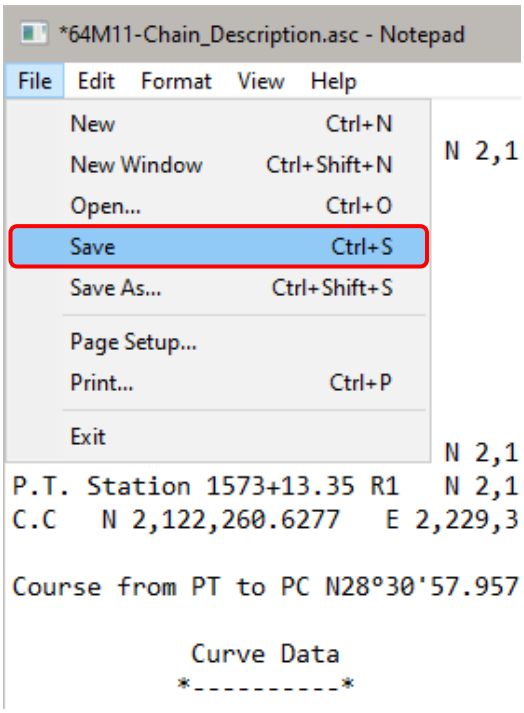


11) Go to *"File > Save"* or press *"Ctrl + S"* on your keyboard.

Using UlltraEdit



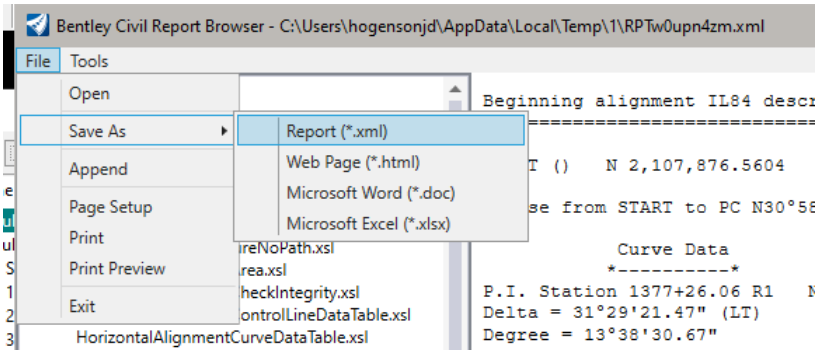
Using Notepad



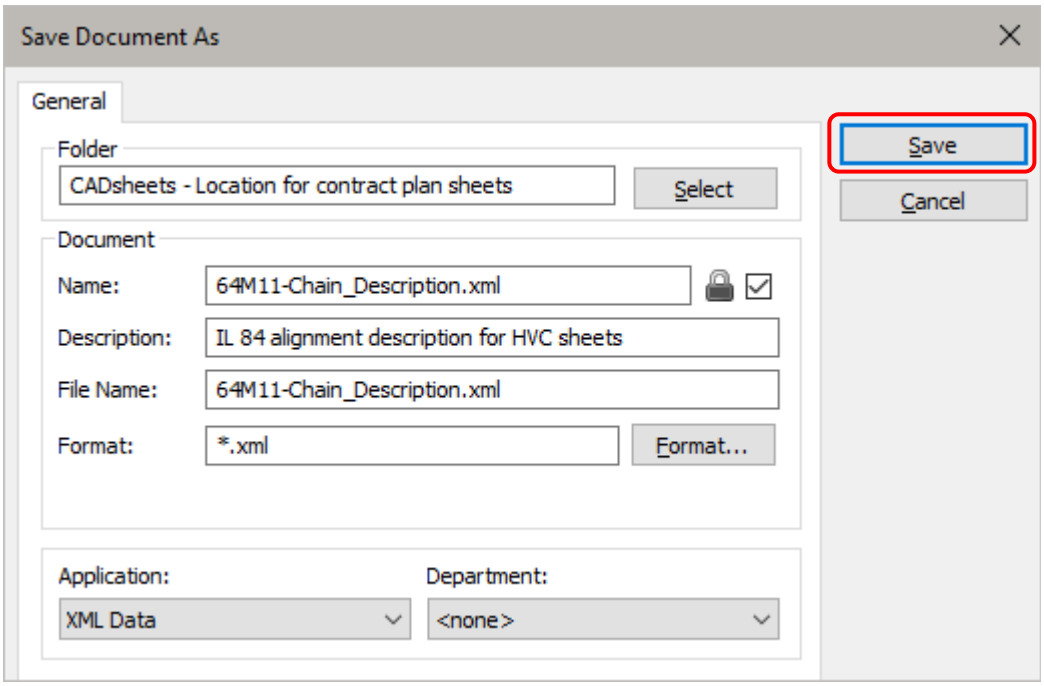
12) Close the *"*****- Chain_Description.asc"* file and check it back into ProjectWise.

13) The *"CogoAlignmentDescriptionASCII.xml"* report can be saved for archival proposes. To save this file go to *"File > Save As > Report (*.xml)*.

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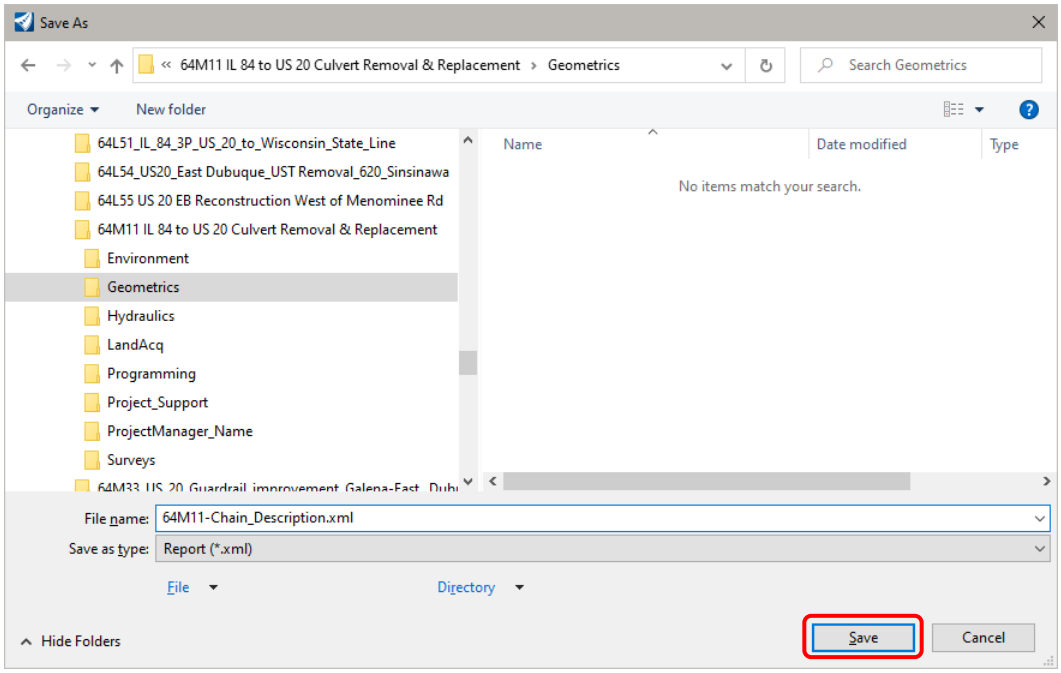


- The report can be saved to ProjectWise or elsewhere. To save the report outside of ProjectWise click on *"Cancel"* to open the Windows *"Save As"* dialog to navigated to a local drive folder or a network folder.



- Navigate to the desired folder location, fill in the file name field and click on *"Save"*.

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14) The *"*****- Chain_Description.asc"* file is ready to be used with the *"Place HVC Tables"* application.

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