Overview: Create profile views for an existing tile and the ground surface. The basis for the profiles will be a site survey that includes: 1) ground shots along the tile alignment with Tile Finder depths, and 2) other shots to define the ground surface.

Software: AutoCAD Civil 3D 2022, Civil 3D Workspace, Iowa NRCS C3D 2022 template, Spreadsheet: *Tile G shots converter for C3D FL Profile.xlsm*

Notation: Button to Press *Displayed Text* **Icon** Action {Text to Enter} *Menu Item…*

Prerequisite

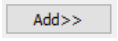
Follow the instructions for *Importing Survey Coordinate Point* and for creating *Original Ground Contours.*

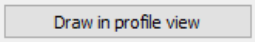
Create the Existing Tile Alignment and Profile View

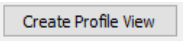
Create the alignment of the existing tile and outlet.

1. Tool Palette>NRCS 11x17B… Click *Plan Commands… Pipe CL*
2. Draw a line that represents the location of the existing tile. Use Osnap set to *Nodes* if wanting to snap to survey points. The line should be drawn at least to the end of the outlet, or even past it.
3. Click *Home… Create Design… Alignment… Create Alignment from Object*  …
4. Select the line that was drawn by clicking closer to the uphill end of the line. Press Enter
5. If the direction of the alignment is correct (typically with station 0+00 being the upstream end), press Enter. ({R} Enter to reverse)
6. Input the *Name* as {*Existing Tile Outlet*}.
7. On the General Tab, set *Site* to *None*.
8. Uncheck *Erase existing entities* if you want to keep the 2D polyline (recommended).
9. Check *Add curves between tangents* and set *Default radius* = {20}.
10. Click OK

Extract profile of the Original Ground along the existing tile and place it into a profile view.

11. Click *Home… Create Design… Profile… Create Surface Profile …*
12. Pulldown the alignment to *Existing Tile Outlet*.
13. Select *Ogrnd* surface… Click 

to apply to Profile.
14. In the Profile list verify that the style matches the type of surface E.g. (*Original Ground*)
15. Click 

16. Set the Profile View style to the Horizontal/Vertical scaling desired. E.g. (*A50Hx5V*)
17. Click 

18. Click a model space location in the drawing to place your created Profile View
19. Select the profile grid (it will turn blue or “highlighted”).

20. Right-click and Click *Display Order…* Click *Send to Back.* This is optional, but helps make the profiles more visible. Also toggle **Show/hide Lineweight** to *On* for even more visibility.

Create a Named View in order to find this Profile View easily later

21. Zoom to a full view of the profile view that you just created.
22. Click *View … View Manager… New…*
23. Input a View Name. E.g {*Profile Existing Tile Outlet*}
24. Open the advanced settings tab by clicking … On the View Properties tab Uncheck *Save layer snapshot with view.*
25. Click OK to go back to the *View Manager…* Click OK to exit the *View Manager.*

Data for tile flowline elevations from survey points.

26. Tile information was gathered using a Tile Finder to record tile depth along the alignment. These depths are then recorded typically with the surveyed ground elevations using the units of Inches to a depth of 36” (eg. 26”), and then Feet and Inches at depth greater than 36” (eg. 4’-1”).

Export the data for the ground shots with tile depth data & other tile flowline shots.

27. In *Toolspace… Toolbox… Reports Manager… Points…*
28. Double click on *Station Offset to Points*
29. In the Create Reports screen, select the alignment for the existing tile, E.g. {*Existing Tile Outlet*} in the lower left.
30. Click Deselect All.
31. The Create Reports box can be stretched/resized for the point list to be easier to read. Checkmark the individual shots in the table for exporting that have the tile depths referenced. Include the shot of the flowline of the tile outlet.
32. In the Save Report line, browse to the folder for your current project and input a file name, E.g. {*Tile depths*}. *Save as type: = Html files*.
    Click Save. Click Create Report. Click Done.
33. The report will open in your internet browser.
34. Open the *Tile G shots converter for C3D FL Profile.xlsm* spreadsheet. Enable Macros if box pops up.
35. From the *Station Offset to Points Report* screen in your internet browser, highlight the 5 columns of the points excluding the headers. Ctrl+C or right click to Copy.

Point	Station	Offset	Elevation	Description
2	1+88.05	53.248'	873.958'	(TILEFL)TILEFL
51	1+34.29	-0.002'	877.792'	(GFLAG3FT1IN)GFLAG3FT1IN
52	0+91.73	-0.039'	879.268'	(G4FT3IN)G4FT3IN
109	0+00.00	0.000'	881.300'	(G5FT6IN)G5FT6IN

36. Paste the data into Cell A4 of the spreadsheet on the Station Offset Tile Flowline tab.
37. For values that do not have usable data for tile flowline elevations delete cells A

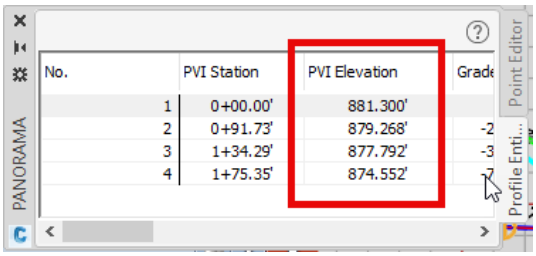
through E only for that row.

38. Sort the data by *Station* in increasing order using the dropdown button in cell to the right of Station 

, Click *Sort A to Z.*
39. Input the tile depth values from the Descriptions into the FT & Inches columns F & G for each point.
40. The results in column L are formatted as *Station [space] Elevation*.
41. Click Export Station Elevation to txt file.
42. Browse to the project data folder and input a name. E.g. {*Tile FL.txt*}
43. Click Save. Click Ok.
44. Quit out of the spreadsheet without saving.
45. Quit out of the *Station Offset to Points Report* internet browser screen

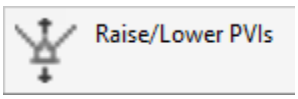
Import the profile of the existing tile flowline into the profile view.

46. Click *Home… Create Design… Profile… Create Profile from File …*
47. Browse to the .txt file with the "Station [space] Elevation" values of the tile flowline. E.g {*Tile FL.txt*}. Click Open.
48. In the Create Profile box: select Alignment = *Existing Tile Outlet*
49. Input Name = *Tile Flowline.*
50. General: Profile Style = *Flowline*
51. Label Set = *Finished*
52. Click OK
53. In the Profile View select the Flowline profile.
54. Right-click *Edit Profile Geometry*
55. On the Profile Layout toolbar click **Profile Grid View** 
56. Within the Profile Entities Panorama verify that the stations and elevations are correct. If needed double click on an elevation to edit the values.
57. Close the Profile Entities Panorama.



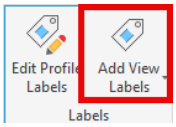
Create the profile of the top of the tile

58. On the Profile Layout toolbar click **Copy Profile**
59. PVI Range = *All*, Choose *Create New Profile*.
60. Click OK
61. Press ESC ESC
62. Select the copy of the flowline profile. (It will be on top since it is the most recent)
63. Right-click *Profile Properties*
64. On the Information tab change the name to {*Top of tile*} Click Ok.
65. Right-click *Edit Profile Geometry*
66. On the Profile Layout toolbar click **Raise/Lower PVIs**
67. Input the *Elevation change* as the tile diameter. E.g. {*6"*}
68. *PVI Range = All*. Click Ok.



69. Close the Profile Layout toolbar.

To place Station & Elevation labels on the existing tile Profile.



70. Select the profile (it will turn blue or "highlighted").
71. From the *Labels…Add View Labels* drop down … Click *Station Elevations* …
72. Select the Existing Tile Outlet profile view.
73. Osnap to the station value of the existing outlet.
74. Osnap to the elevation value of the existing outlet.
75. Repeat for additional locations. Press ESC to end the command.