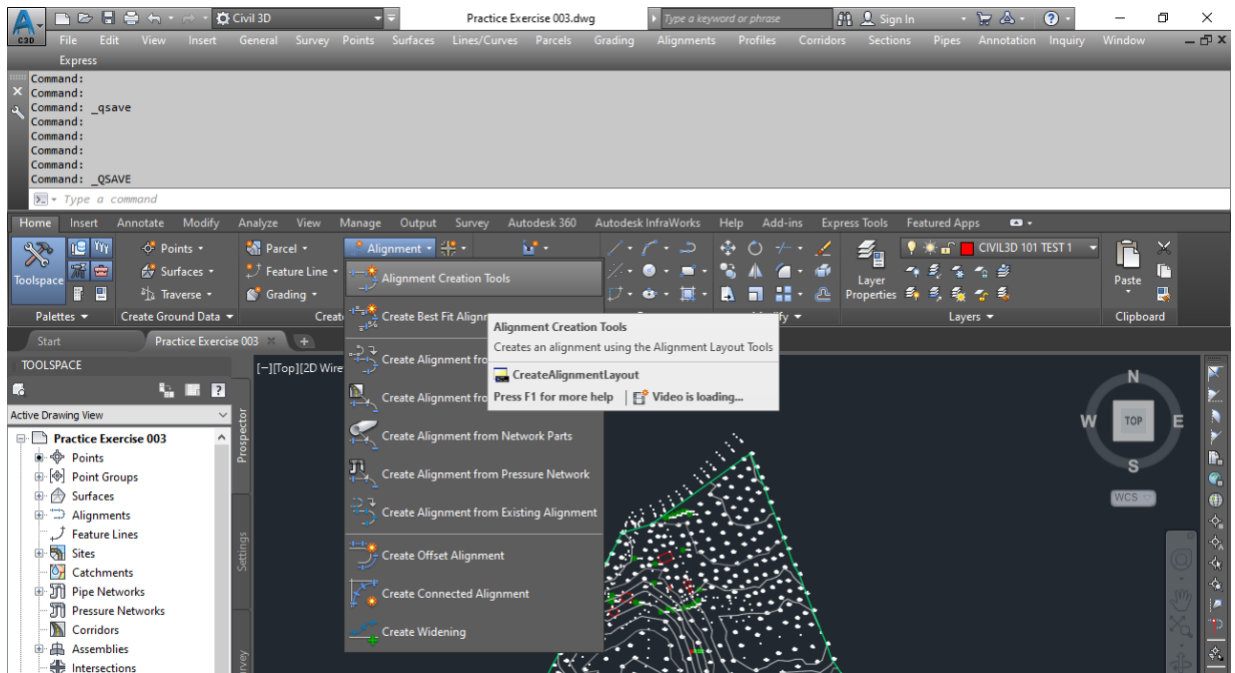


## Solution Exercise 3

# Create an Alignment and Surface Profile



1. Open Practice Exercise 003.dwg.
2. In the Create Design panel, click Alignment and choose Alignment Creation Tools.



3. Accept the default settings in the Create Alignment dialog box by clicking OK.

**Create Alignment - Layout**

Name:

Type:

Description:

Starting station:

General | Design Criteria

Site:

Alignment style:

Alignment layer:

Alignment label set:

OK Cancel Help

- In Alignment Layout Tools, choose Curve and Spiral Settings.

**Alignment Layout Tools - TEST ROAD**

Alignment Layout Tools toolbar:

Alignment Type:

Alignment Type:

Alignment Type:

Spiral Type: Clothoid

- Set Type to Clothoid and your curve and spiral settings to the 200' default radius.

**Curve and Spiral Settings**

Type:

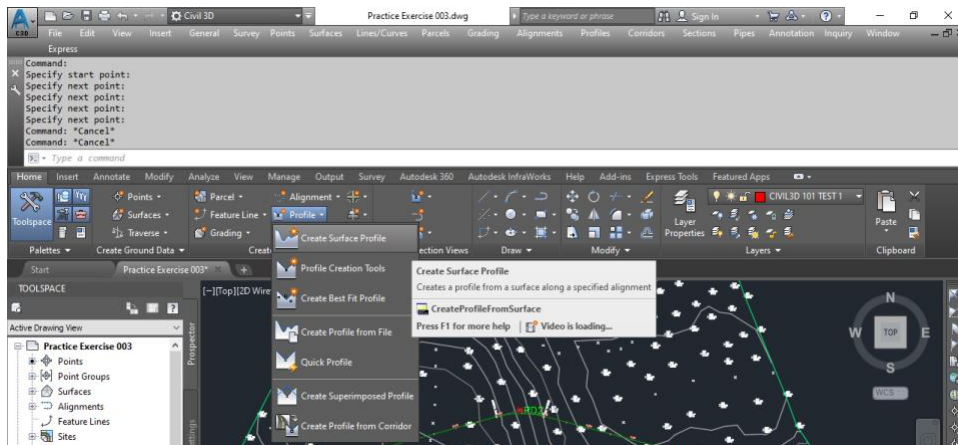
☐ Spiral in Length:  A value:

☒ Curve Default radius (applies to curve and spirals)

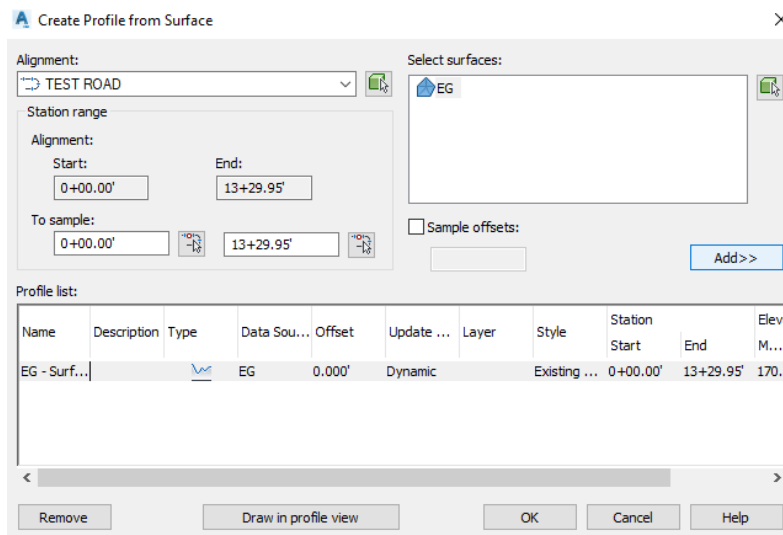
☐ Spiral out Length:  A value:

OK Cancel Help

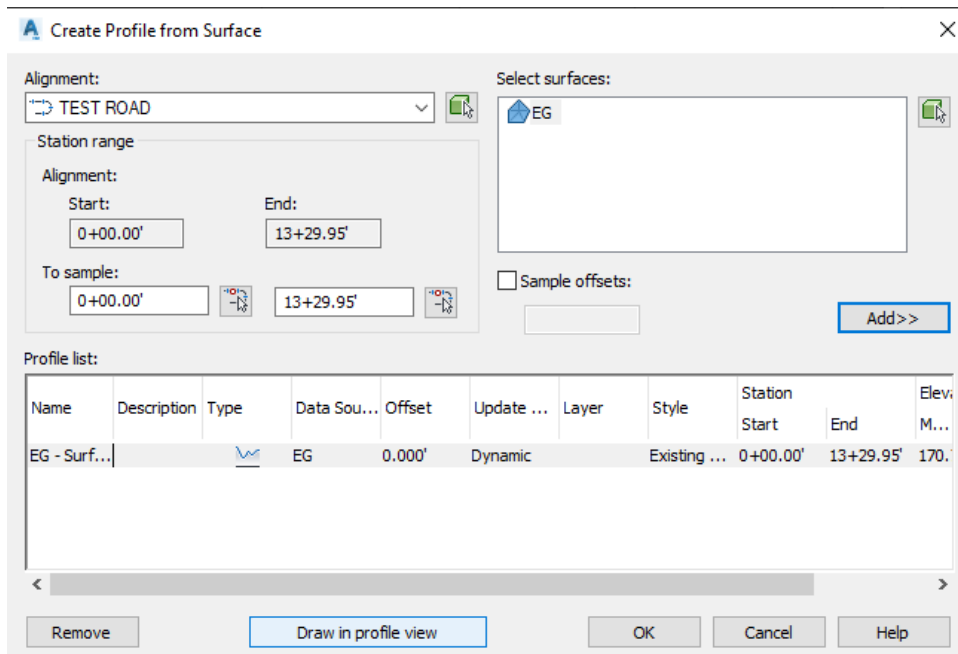
6. On the Alignment Layout Tools toolbar, click Tangent-Tangent (With Curves).
7. Set RD1 as the start point and specify points from RD1 through RD4 in numerical order. Press Enter to end the command.
8. In the Create Design panel, Click Profile and choose Create Surface Profile.



9. In the Create Profile from Surface dialog box, add the EG surface to the profile list.



10. Click Draw in Profile View.

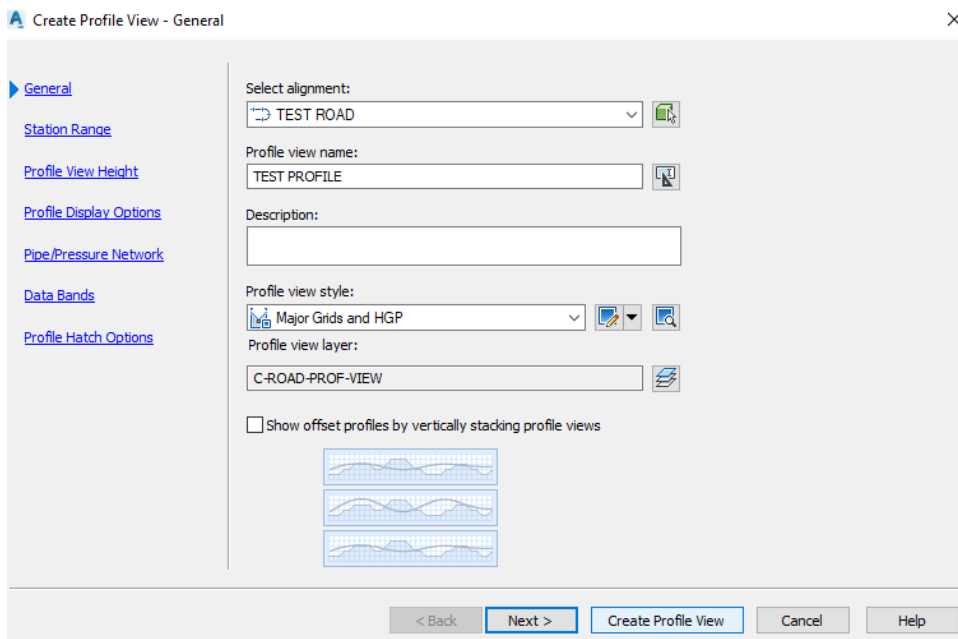


The "Create Profile from Surface" dialog box is shown. It includes fields for Alignment (TEST ROAD), Station range (Start: 0+00.00', End: 13+29.95'), and To sample (0+00.00', 13+29.95'). There is a "Select surfaces" section with a list containing "EG" and an "Add >>" button. A "Profile list" table is at the bottom, showing a single entry for "EG - Surf...".

Name	Description	Type	Data Sou...	Offset	Update ...	Layer	Style	Station Start	End	Elev...
EG - Surf...			EG	0.000'	Dynamic		Existing ...	0+00.00'	13+29.95'	170.1

Buttons at the bottom: Remove, Draw in profile view, OK, Cancel, Help.

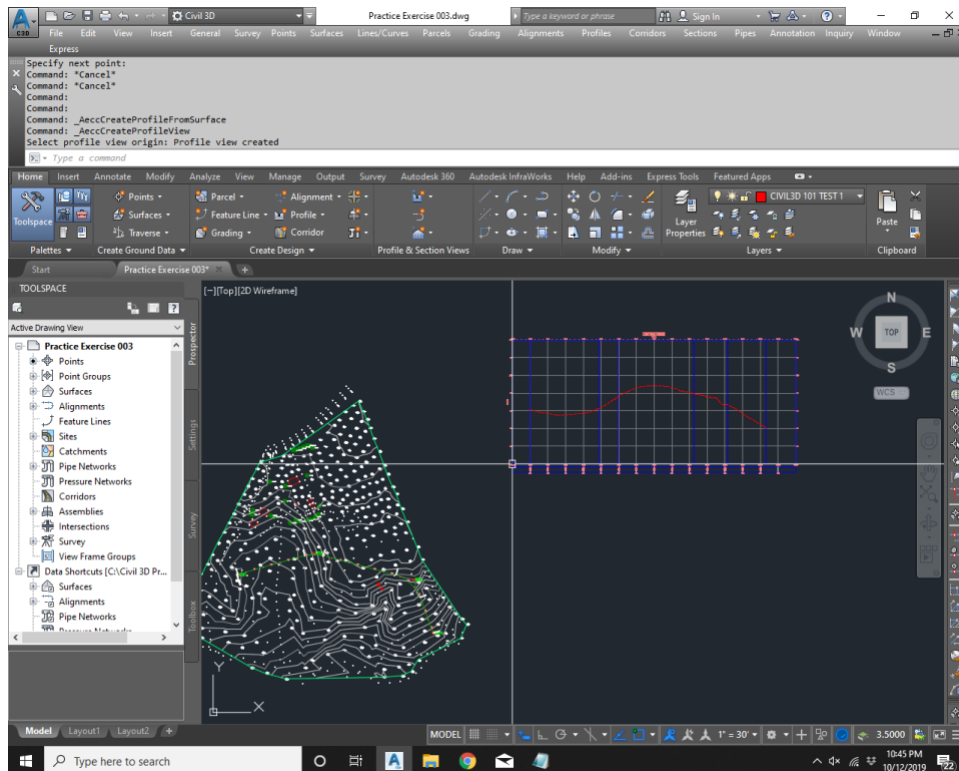
11. Accept all of the default profile view settings and click Create Profile View.



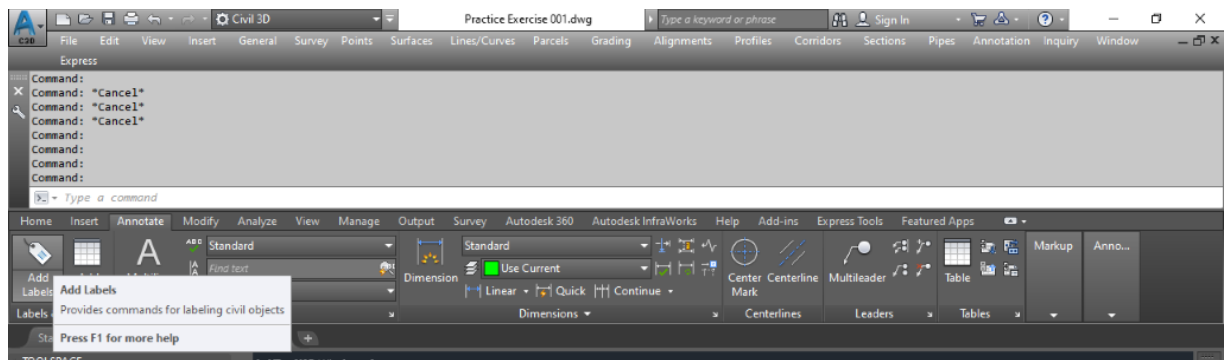
The "Create Profile View - General" dialog box is shown. It includes fields for Select alignment (TEST ROAD), Profile view name (TEST PROFILE), Description, Profile view style (Major Grids and HGP), and Profile view layer (C-ROAD-PROF-VIEW). There is a checkbox for "Show offset profiles by vertically stacking profile views" and a preview of three stacked profile views. Navigation buttons at the bottom include < Back, Next >, Create Profile View, Cancel, and Help.

Buttons at the bottom: < Back, Next >, Create Profile View, Cancel, Help.

12. Pick the lower-left corner of the profile view window.

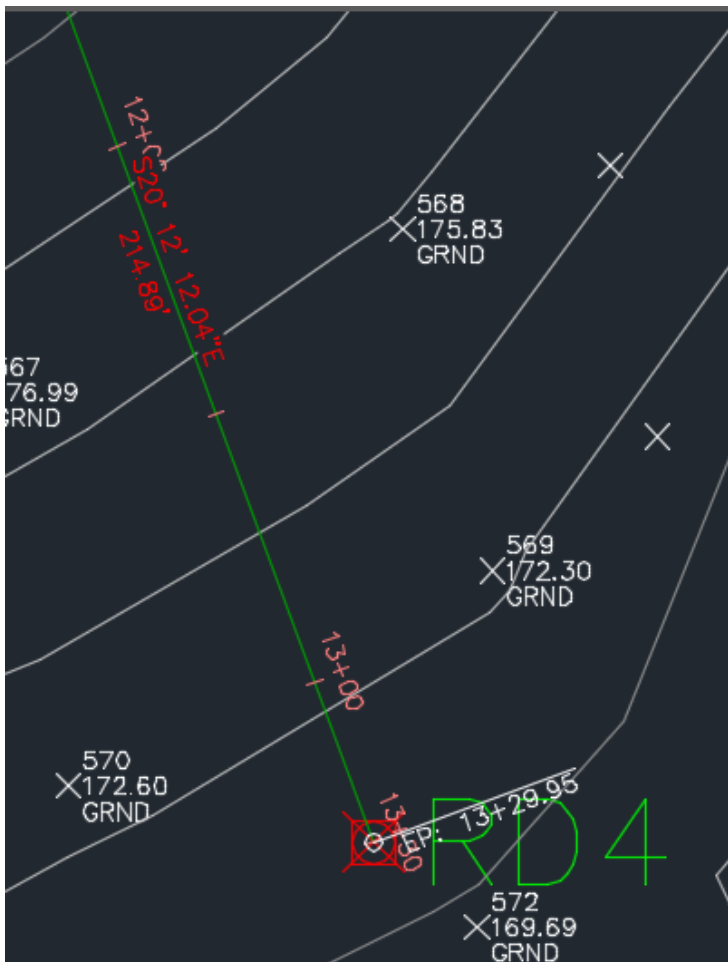
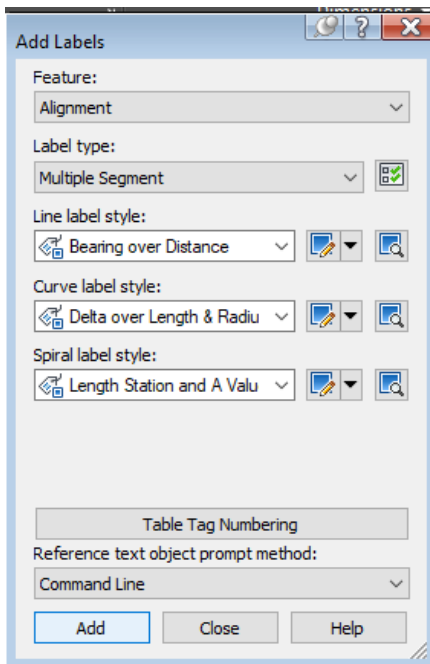


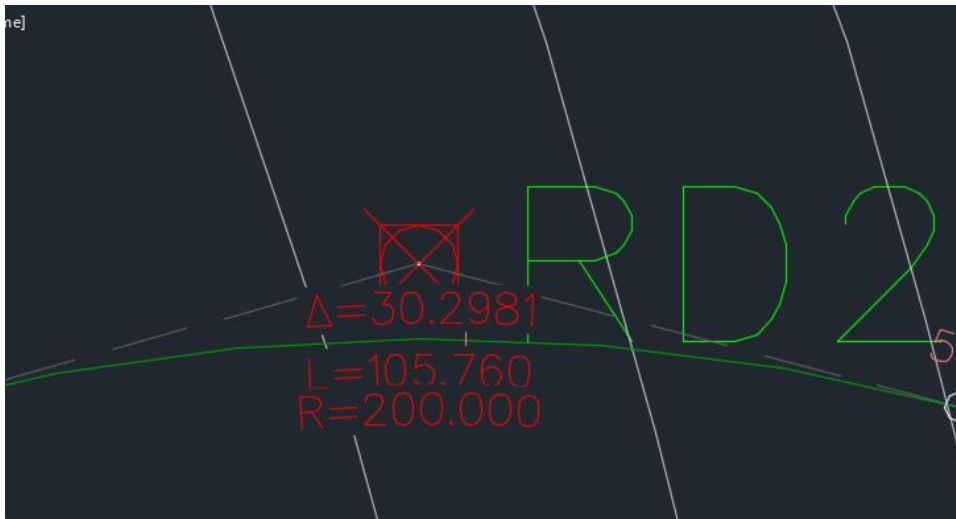
13. Select the Annotate tab of the ribbon bar and click Add Labels.



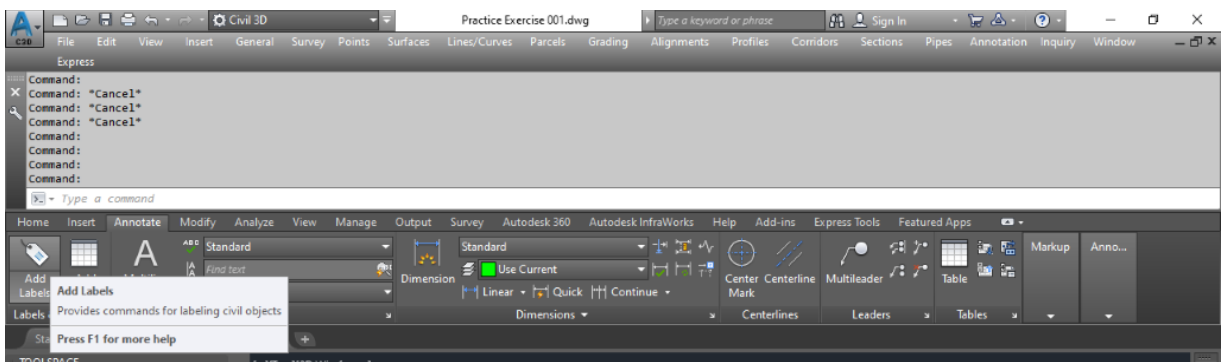
14. Change the Feature to Alignment and the Label Type to Multiple Segment. Make sure a label with bearing and distance is selected for Line Label Style and delta

and length for Curve Label Style. Click Add and select TEST ROAD.

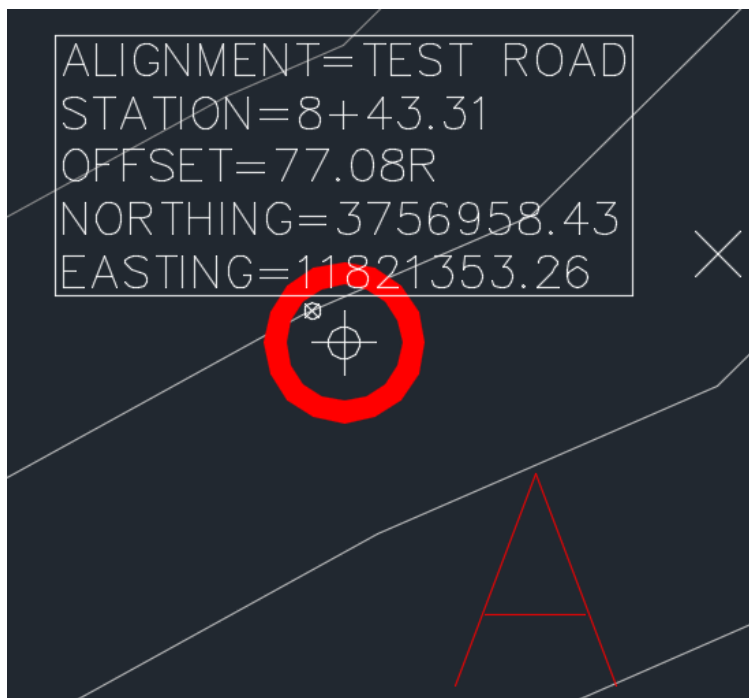
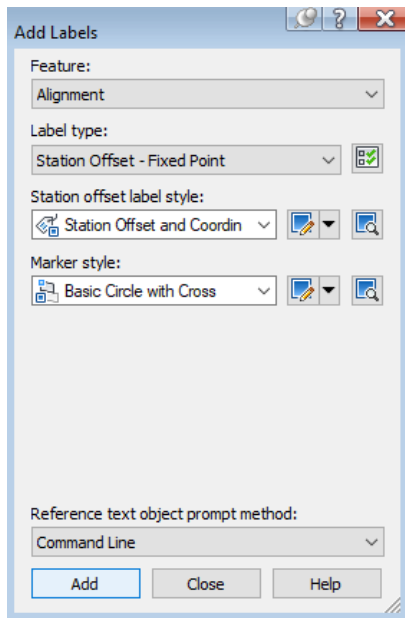




15. Select the Annotate tab of the ribbon bar and click Add Labels.

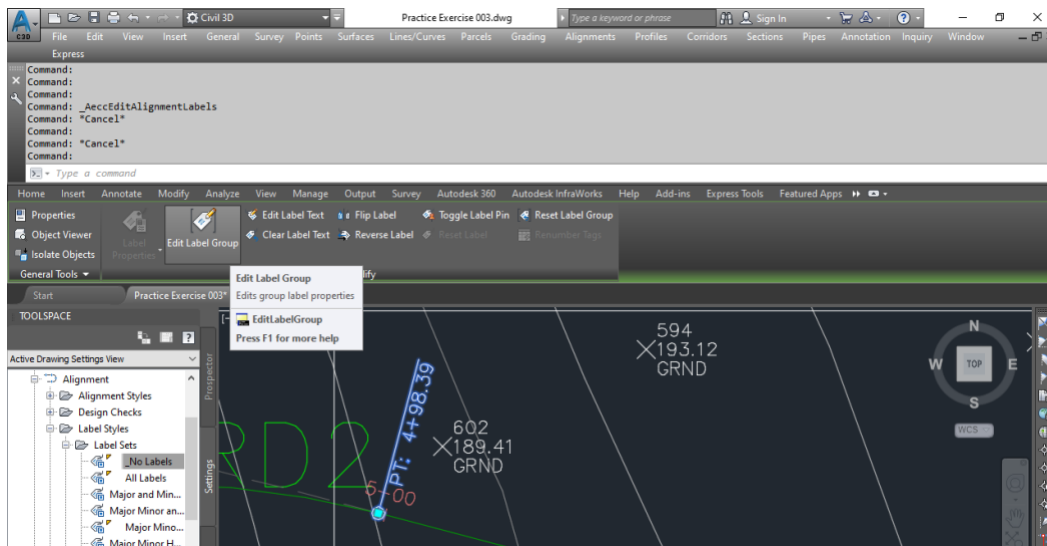


16. Change the Feature to Alignment and the Label Type to Station Offset – Fixed Point. Make sure a label with station and offset is selected for Station Offset Label Style. Click Add. Select TEST ROAD and then navigate to the center of circle A and click.

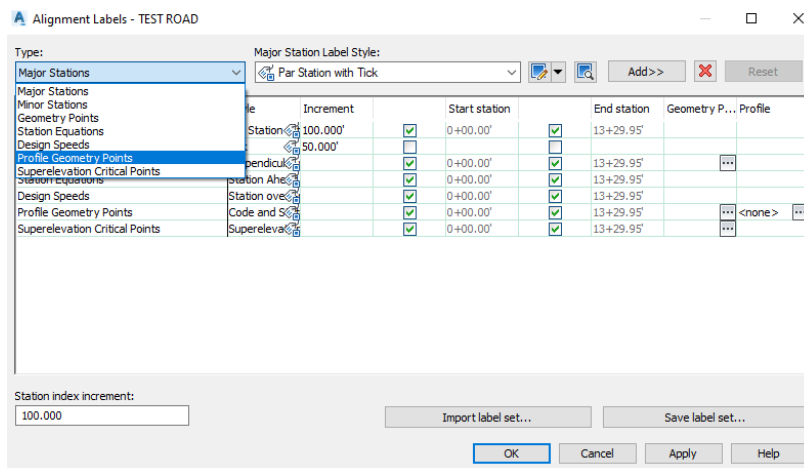


17. Select any of the geometry point labels along the alignment, click Edit Label Group, and choose Edit Label Group.

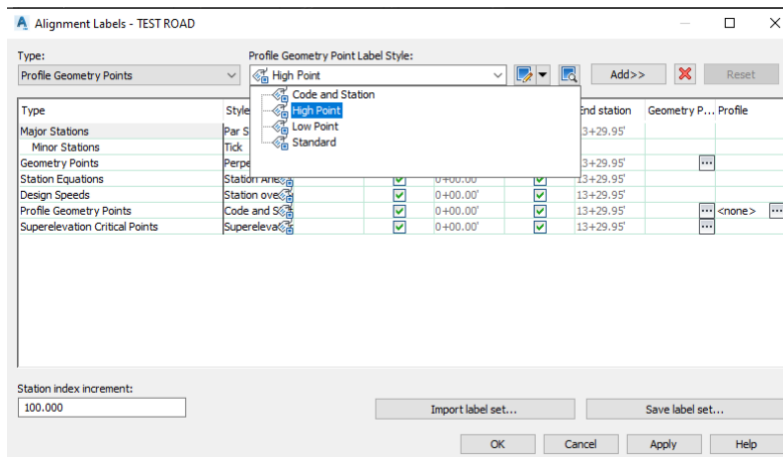




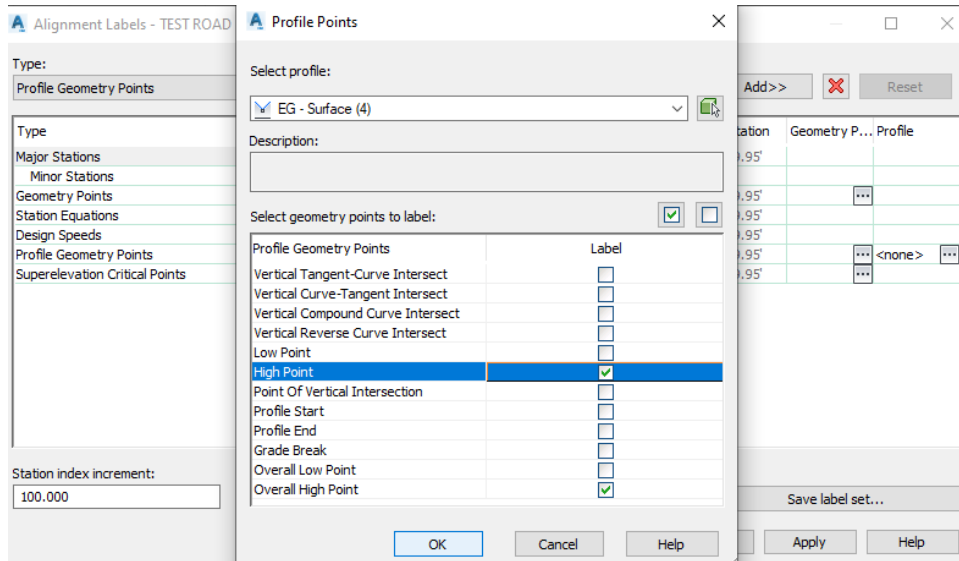
18. Select Profile Geometry Points from the Type drop-down menu.



19. Select Hight Point from the Point Geometry Point Label Style menu.



20. Add high points to the label group, set the profile to the surface profile, and select both High Point and Overall High Point as geometry points to label. Click OK.



## **ANSWERS**

What is the bearing and distance of the tangent section between RD3 and RD4?

i. Bearing: S20°12'12.04"

ii. Distance: 214.89

What is the Land  $\Delta$  of the curve at PI RD2?

iii. L: 105.76

iv.  $\Delta$ : 30.3

What is the station offset at the center of circle A?

v. Sta: 8+43.31

vi. Offset: 77.08

What is the station of the high point elevation of the surface profile? 7+35.52