

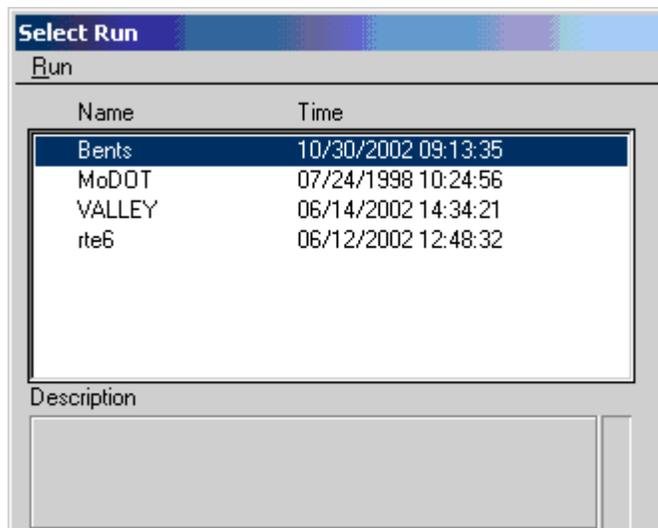
Exercise 17-1

This group exercise calculates the Class 1 and Class 2 excavation for Bents 3 & 4 of one of the Route 6 bridges. The bents are spread footings on rock.

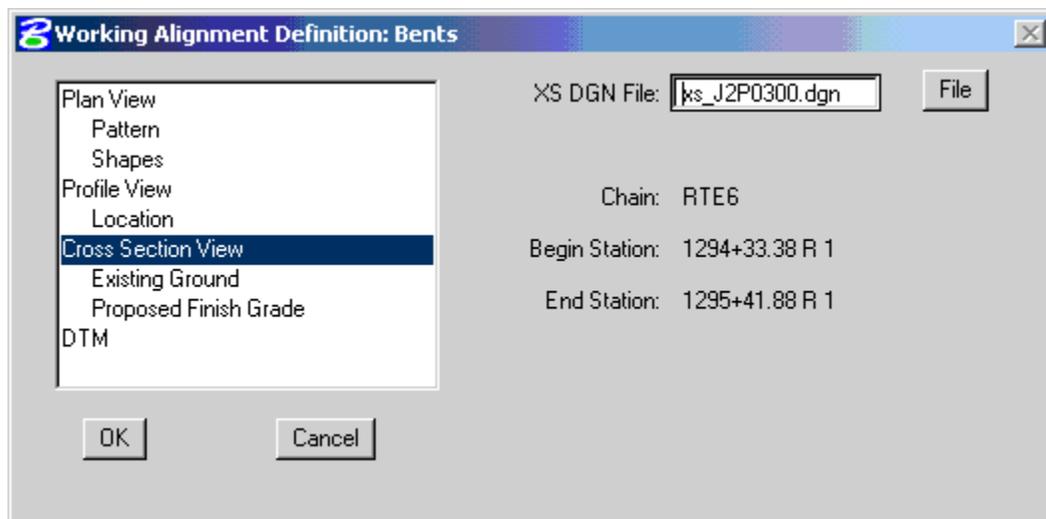
1. Open the MicroStation file `t:\br-proj\a_geopak\d2\j2p0300\data\xs_j2p0300.dgn`.

2. Open the project `t:\br-proj\a_geopak\d2\j2p0300\project\j2p0300.prj`.
Enter the project as user **userc** and go into **Road**.

3. Copy the **Rte6** working alignment to **Bents** and enter that working alignment.



4. Set the XS DGN File in the Working Alignment Definition (Under Cross Section View) to: `xs_j2p0300.dgn`, as shown in the following figure.



Bridge Manual

General Quantities - Section 2.5

Computation of Estimated Quantities

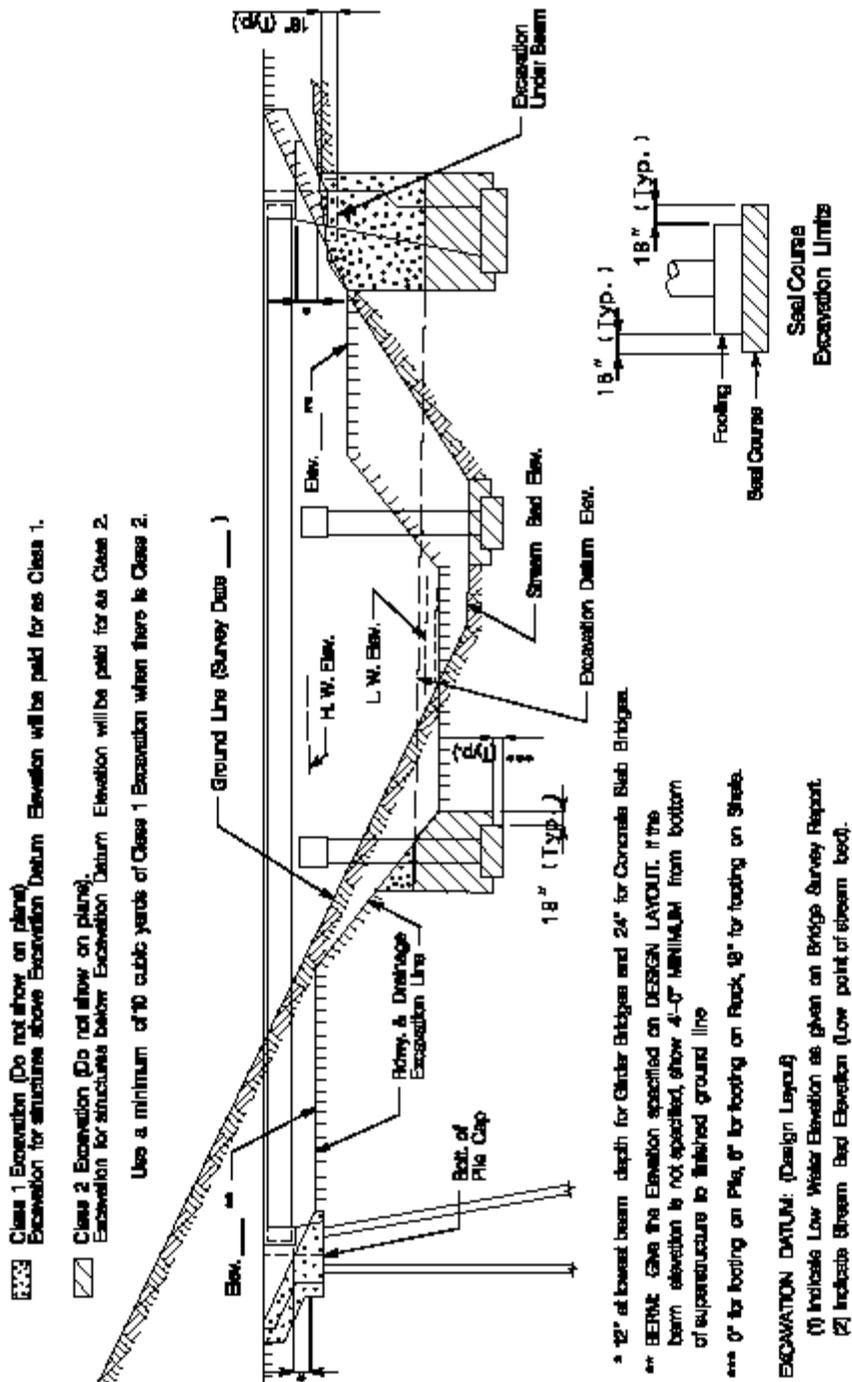
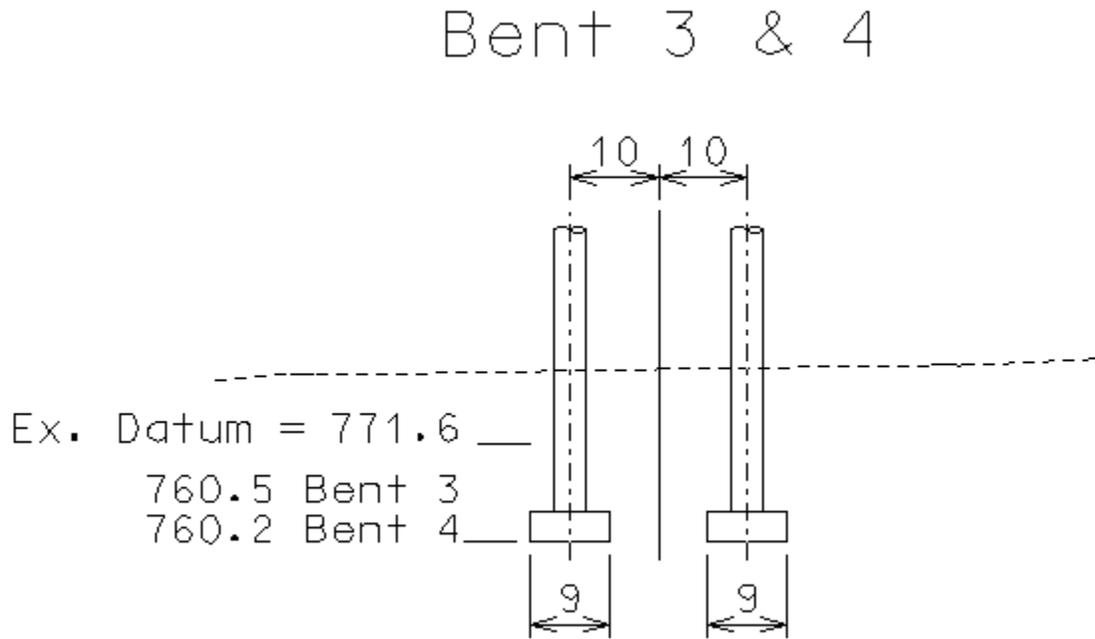


Figure 2.5.2 - 6 Excavation Limits: Stream Crossings (Typical)

5. The figure from the Bridge Manual on the previous page shows the Class 1 & 2 excavation for footings in a streambed. As noted there, Class 1 excavation covers all material above the excavation datum, and Class 2 is for all excavation below the datum. Also, since the bents have footings on rock, the *** dimension in the figure is 6" (0.5').

The following figure shows a typical cross section for Bents 3 & 4. The spacing and size of the square footings is the same for both bents, as is the excavation datum. Only the elevation at the bottom of the footings varies from one bent to the next.



Based on these figures, excavation will extend out from the footings on all sides by 1.5' (18") and stop 0.5' above the bottom of the footing in this extended area. Directly under the footings, the excavation goes to the bottom of footing elevation. Cross sections starting 1.5' before each footing and ending 1.5' after the end of each one have already been created in the MicroStation file. The sections for Bent 3 go from Sta. 1294+33.375 thru Sta. 1294+45.375, while the sections for Bent 4 go from 1295+31.375 thru 1243+43.375.

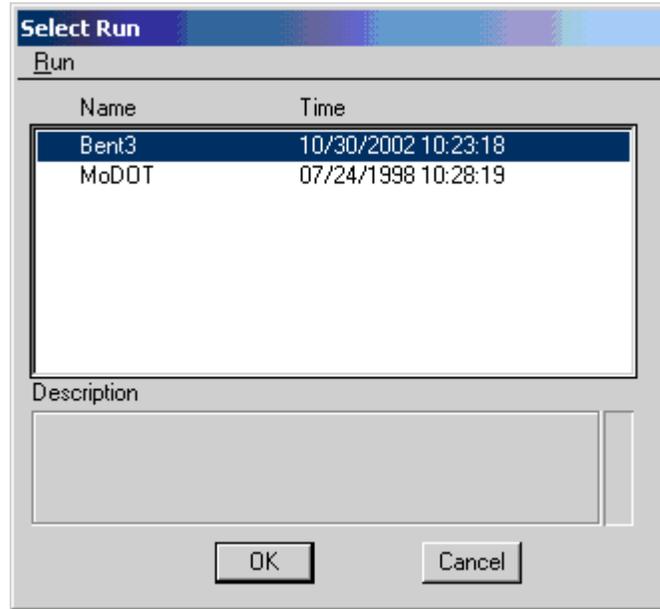
Cross sections of the footings have been added to each of the cross sections at the correct elevation. Only the bottom of footing line has been added for the sections before and after the footing. The excavation limits have also been added using a line drawn on level 60 using color 22. This limit line stops 6" above the bottom of footing at Stations 1294+33.375, 1294+34.855, 1294+43.905, & 1294+45.375 for Bent 3 and Stations 1295+31.375, 1295+32.855, 1295+41.905, & 1295+43.375 for Bent 4. The limit traces the bottom of the footing at all of the other sections.

The excavation datum has been draw in all cross sections at elevation 771.6 using a line on level 57 and color 0. The earthwork run will be set up using these drawn elements plus the existing ground line on level 57 and color 90.

6. Choose **Earthwork** from the **Road Project** dialog.



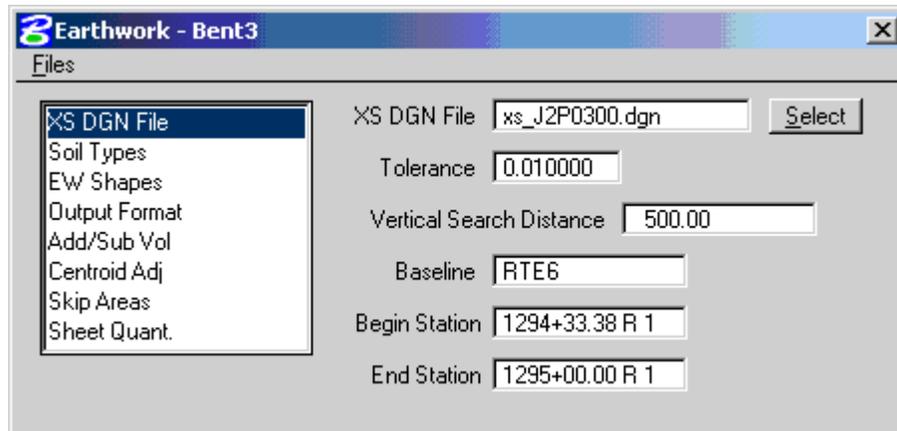
Copy the **MoDOT** run to **Bent3**, and enter the run.



7. In the **XS DGN File** section of the **Earthwork** dialog, set the following items:

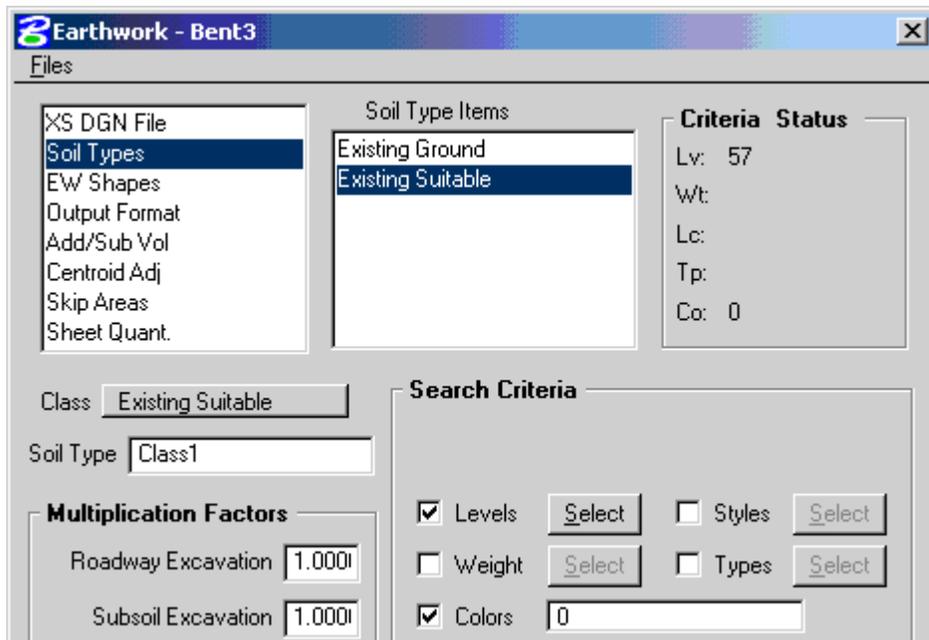
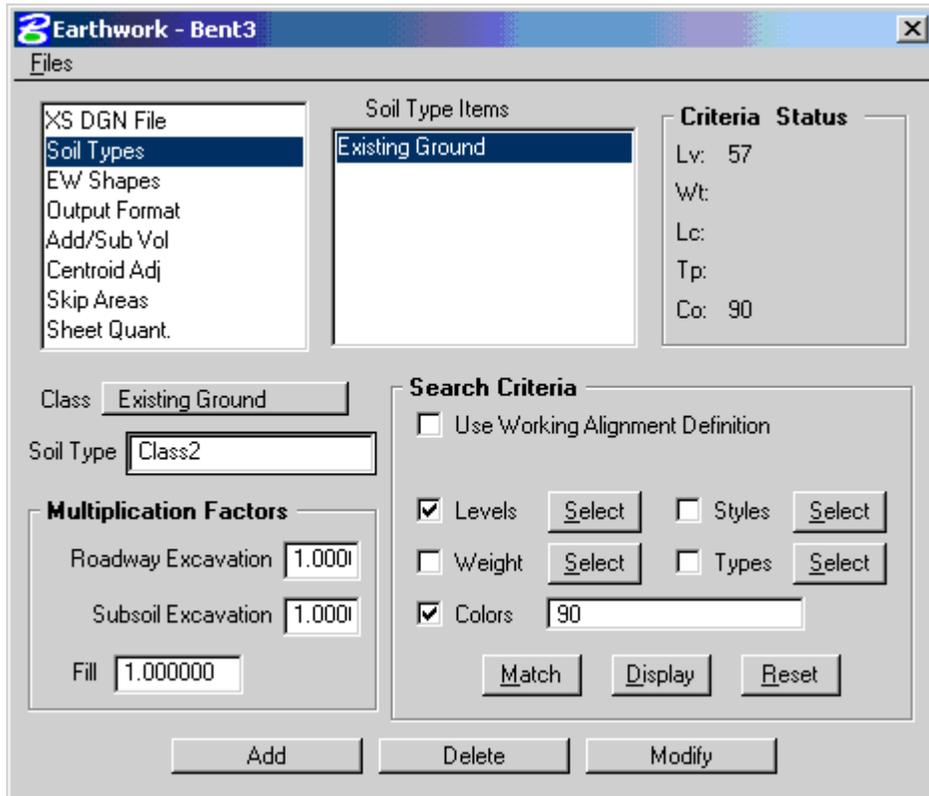
Begin Station **First Cross Section Station**
 End Station **1295+00 R 1**

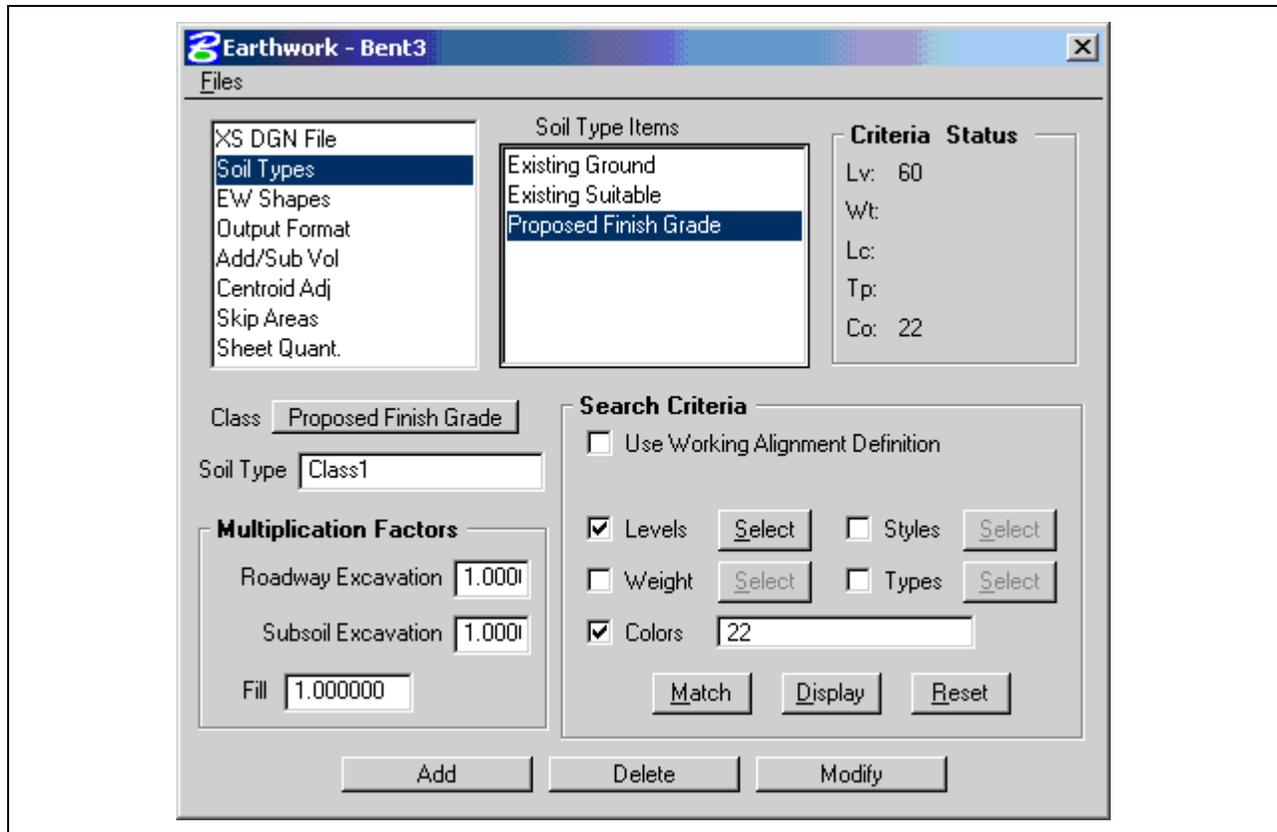
The **XS DGN File** and **Baseline** have already been set by the Working Alignment Definition. The rest of the values are defaults, which do not need to be modified.



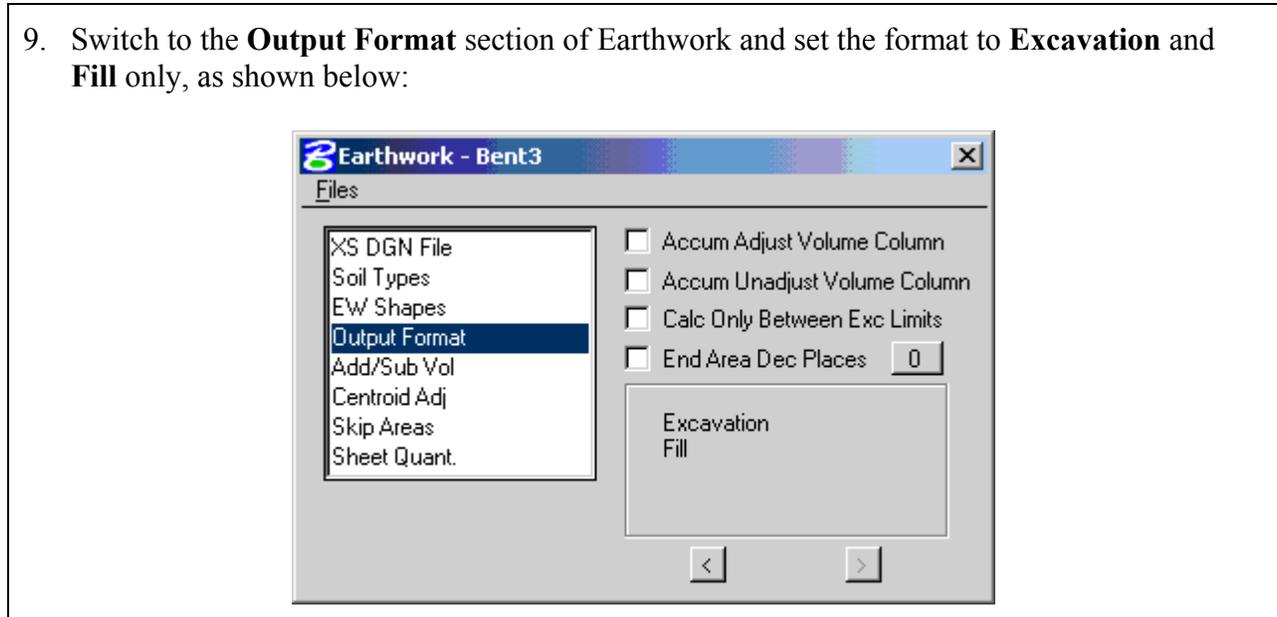
8. In the **Soil Types** section, created the following **Soil Type Items**:

<u>Class</u>	<u>Soil Type</u>	<u>Level</u>	<u>Colors</u>
Existing Ground	Class2	57	90
Existing Suitable	Class1	57	0
Proposed Finish Grade	Class1	60	22





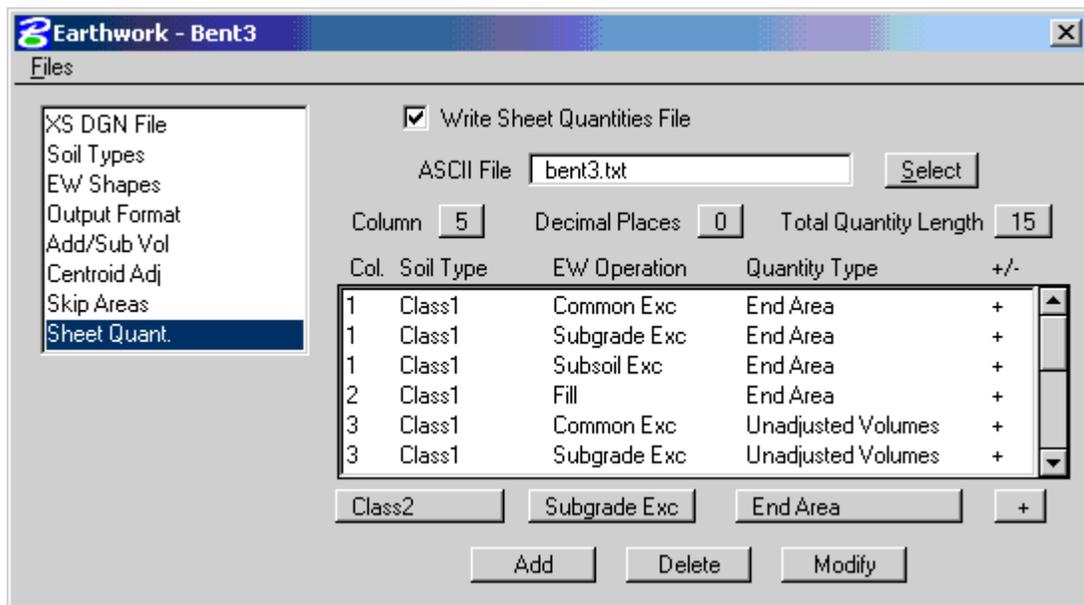
- Switch to the **Output Format** section of Earthwork and set the format to **Excavation** and **Fill** only, as shown below:



10. In the **Sheet Quant.** Section, toggle on the **Write Sheet Quantities File**.

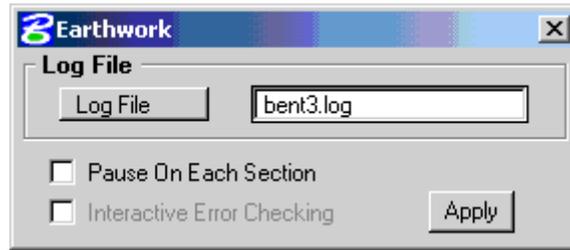
ASCII file: **bent3.txt**
 Decimal Places: **0**
 Total Quantity Length **15**

<u>Col.</u>	<u>Soil Type</u>	<u>EW Operation</u>	<u>Quantity Type</u>	<u>+/-</u>
1	Class1	Common Exec	End Area	+
1	Class1	Subgrade Exec	End Area	+
1	Class1	Subsoil Exec	End Area	+
2	Class1	Fill	End Area	+
3	Class1	Common Exec	Unadjusted Volumes	+
3	Class1	Subgrade Exec	Unadjusted Volumes	+
3	Class1	Subsoil Exec	Unadjusted Volumes	+
4	Class1	Fill	Unadjusted Volumes	+
5	Class2	Common Exec	End Area	+
5	Class2	Subgrade Exec	End Area	+
5	Class2	Subsoil Exec	End Area	+
6	Class2	Common Exec	Unadjusted Volumes	+
6	Class2	Subgrade Exec	Unadjusted Volumes	+
6	Class2	Subsoil Exec	Unadjusted Volumes	+



11. Save the settings for the run (**Files > Save Settings**).

12. Run the earthwork run (**Files > Run**). The following dialog will appear:

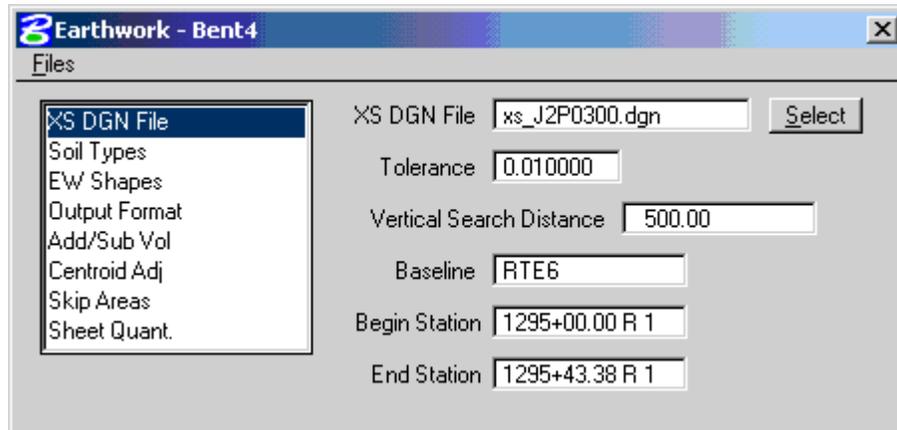


Set the **Log File** to **bent3.log**.

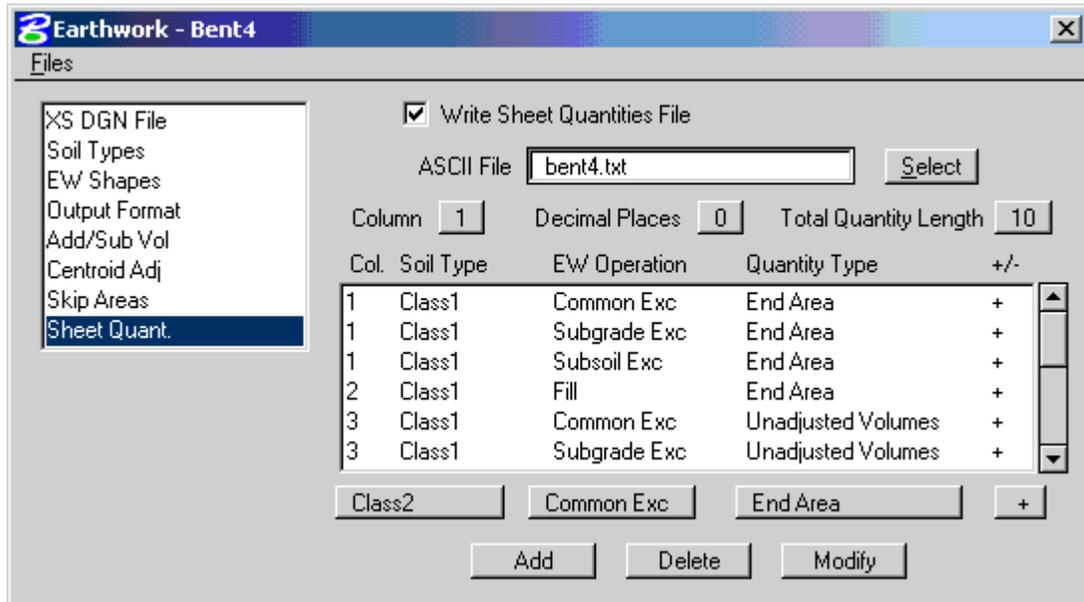
13. Repeat the process for Bent 4, by going back into Earthwork. This time however, copy the **Bent3** run and name it **Bent4**. Go into the new run. By copying the Bent3 run, everything is already set except for the station range and the name of the Sheet Quantity file.

14. Under XS DGN File, change the station range to the following:

Begin Station **1295+00 R 1**
 End Station **Last Cross Section Station**

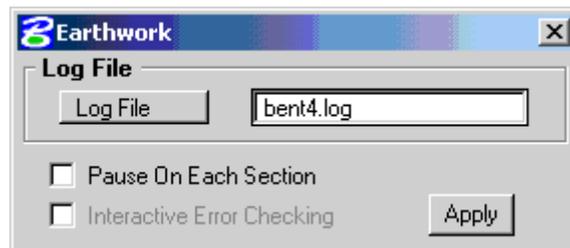


15. In the **Sheet Quant.** section, name the file **bent4.txt**.



16. Save the settings for the run (**Files > Save Settings**).

17. Run the earthwork run (**Files > Run**). The following dialog will appear:



Set the **Log File** to **bent4.log**.

18. Open D&C Manager, and use the Earthwork Text File Labels 3PC Tool to set up the cross section sheet labels as shown below:

Earthwork Text Labels

Earthwork Text File

Earthwork Text File to be Created

Warning: Prefixes and Suffixes cannot contain a space.

Column 1 Prefix	<input "="" type="text" value="C="/>	Suffix	<input type="text" value="_SF"/>
Column 2 Prefix	<input "="" type="text" value="F="/>	Suffix	<input type="text" value="_SF"/>
Column 3 Prefix	<input "="" type="text" value="C="/>	Suffix	<input type="text" value="_CY"/>
Column 4 Prefix	<input "="" type="text" value="F="/>	Suffix	<input type="text" value="_CY"/>
Column 5 Prefix	<input "="" type="text" value="C="/>	Suffix	<input type="text" value="_SF"/>
Column 6 Prefix	<input "="" type="text" value="C="/>	Suffix	<input type="text" value="_CY"/>
Column 7 Prefix	<input type="text"/>	Suffix	<input type="text"/>
Column 8 Prefix	<input type="text"/>	Suffix	<input type="text"/>
Column 9 Prefix	<input type="text"/>	Suffix	<input type="text"/>

19. Repeat the last step for Bent 4:

Earthwork Text Labels

Earthwork Text File

Earthwork Text File to be Created

Warning: Prefixes and Suffixes cannot contain a space.

Column 1 Prefix	<input "="" type="text" value="C="/>	Suffix	<input type="text" value="_SF"/>
Column 2 Prefix	<input "="" type="text" value="F="/>	Suffix	<input type="text" value="_SF"/>
Column 3 Prefix	<input "="" type="text" value="C="/>	Suffix	<input type="text" value="_CY"/>
Column 4 Prefix	<input "="" type="text" value="F="/>	Suffix	<input type="text" value="_CY"/>
Column 5 Prefix	<input "="" type="text" value="C="/>	Suffix	<input type="text" value="_SF"/>
Column 6 Prefix	<input "="" type="text" value="C="/>	Suffix	<input type="text" value="_CY"/>
Column 7 Prefix	<input type="text"/>	Suffix	<input type="text"/>
Column 8 Prefix	<input type="text"/>	Suffix	<input type="text"/>
Column 9 Prefix	<input type="text"/>	Suffix	<input type="text"/>