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## Chapter 11: Reports

### Introduction

GEOPAK uses the cross section files to produce staking reports in the format required by CFLHD. The creations of staking reports are required on all CFLHD projects with proposed cross sections. These staking reports include Subgrade Template Report, Staking Detail Report and Blue Top Report.

With the development of FLH standard files and the x30 criteria, CFL has developed a Microsoft Visual Basic Application (MVBA) to generate a Subgrade Template Report. This new cross section report replaces the previously generated FHWA Slope Stake Report and the Red Top Report. Staking Detail Report and Blue Top Report are generated from cross section file through accessing the cross section reports. This chapter will describe the processes used to create the Subgrade Template Report, as well as the Staking Detail Report and Blue Top Report.

### Subgrade Template Report

The Subgrade Template Report VBA evaluates text elements within GEOPAK cross sections and produces a report based on the text elements found that match the user-specified search criteria. The Subgrade Template Report includes the red top stake locations plus points at all breaks in the roadway prism cross-section (i.e. ditch lines, hinge points, curb lines, sidewalks, benches, walls, etc.), plus the slope stake catch point and the reference hub point.

GEOPAK progresses from left to right across each cross section while preparing each report. To do this, the user will need to provide the level symbology of the existing ground and all the proposed elements required to progress through the points and lines, to be reported on, completely across the cross section.

The new Subgrade Template Report provides a better format for presenting staking data to contractors, is easier to understand, provide ease for quality control check, and the new report allows for unlimited number of template points.

Subgrade Template Point Identification Sheets were developed to help clarify the information contained in the Subgrade Template Reports. Subgrade Template Point Identification Sheets are used to identify template points along each typical cross section. Subgrade Template Point Identification Sheets should be downloaded from the CFLHD Website (CFLHD Template Drawings and Files) and modified with project specific information. Project specific Subgrade Template Point Identification Sheets should be included with the Subgrade Template Reports. [Click here](#) to download Subgrade Template Point Identification Sheets.



The Subgrade Template Report MVBA is available through the V8\_Resource.zip download on the CFLHD Website.

On the CFLHD network, this MVBA can be found at N:\Standards\V8\_RESOURCE\X\_30\Standards\MVBA directory.

## Workflow 1: Subgrade Template Report

To access this workflow, follow this link:

[http://www.cflhd.gov/resources/CADD/documents/Workflow\\_11.1\\_ReportsSubgradeTemplateReport\\_x30.pdf](http://www.cflhd.gov/resources/CADD/documents/Workflow_11.1_ReportsSubgradeTemplateReport_x30.pdf)

The CFL Subgrade Template Report MVBA will produce the following report. The report will be saved in the location specified and can be viewed and printed using any text editor application. UltraEdit is preferred for viewing and printing the CFL Subgrade Template Report.

11/27/2006

Test Project 1  
PFH 1-1(23)  
Mainline Road

Page# 1

SUBGRADE TEMPLATE REPORT (ft)										
Station	Left Side					Right Side				
	Cut/Fill	Slope	Distance	Elevation	Super	Super	Elevation	Distance	Slope	Cut/Fill
20+00.00	C 18.39 F 0.50	1:1.00 -1:4.00	25.57 7.17 5.17	794.53 776.13 776.63						
					-1.172%	-2.000%	776.55 775.66 771.66 772.32	6.94 9.60 9.77 10.42		F 0.88 F 4.00 C 0.65
Station	Easting	Northing	Elevation	Offset	Id	Slope	Horiz. Diff.	Vertical Diff.		
20+00.00	1888456.31	644253.59	794.96	-26.73	RefHub					
	1888455.42	644254.33	794.53	-25.57	SSC		-1.16	0.428		
	1888441.30	644266.13	776.13	-7.17	HPC	1:1.00	-18.39	18.39		
	1888439.76	644267.41	776.63	-5.17	Shld_SG	-1:4.00	-2.00	-0.50		
	1888438.32	644268.61	776.65	-3.30	Travelway	-0.012	-1.87	-0.02		
	1888435.79	644270.73	776.69	0.00	CL_SG	-0.012	-3.30	-0.03		
	1888433.26	644272.84	776.62	3.30	Travelway	-0.020	3.30	-0.06		
	1888430.46	644275.17	776.55	6.94	Shld_SG	-0.020	3.64	-0.07		
	1888428.41	644276.88	775.66	9.60	Top_Wall	-1:3.00	2.66	-0.88		
	1888428.29	644276.99	771.66	9.77	BOT_WALL_F	24.00:-1	0.16	-4.00		
	1888427.79	644277.41	772.32	10.42	SSW	1:1.00	0.65	0.65		
	1888427.22	644277.88	771.61	11.16	RefHub		0.74	-0.70		

Figure 11-13: Subgrade Template Report



The Subgrade Template Reports generated for construction should be accompanied with typical Subgrade Template Point Identification Sheets for the project. Subgrade Template Point Identification Sheet shown below identifies the template points in the Subgrade Template Report along a typical cross section.

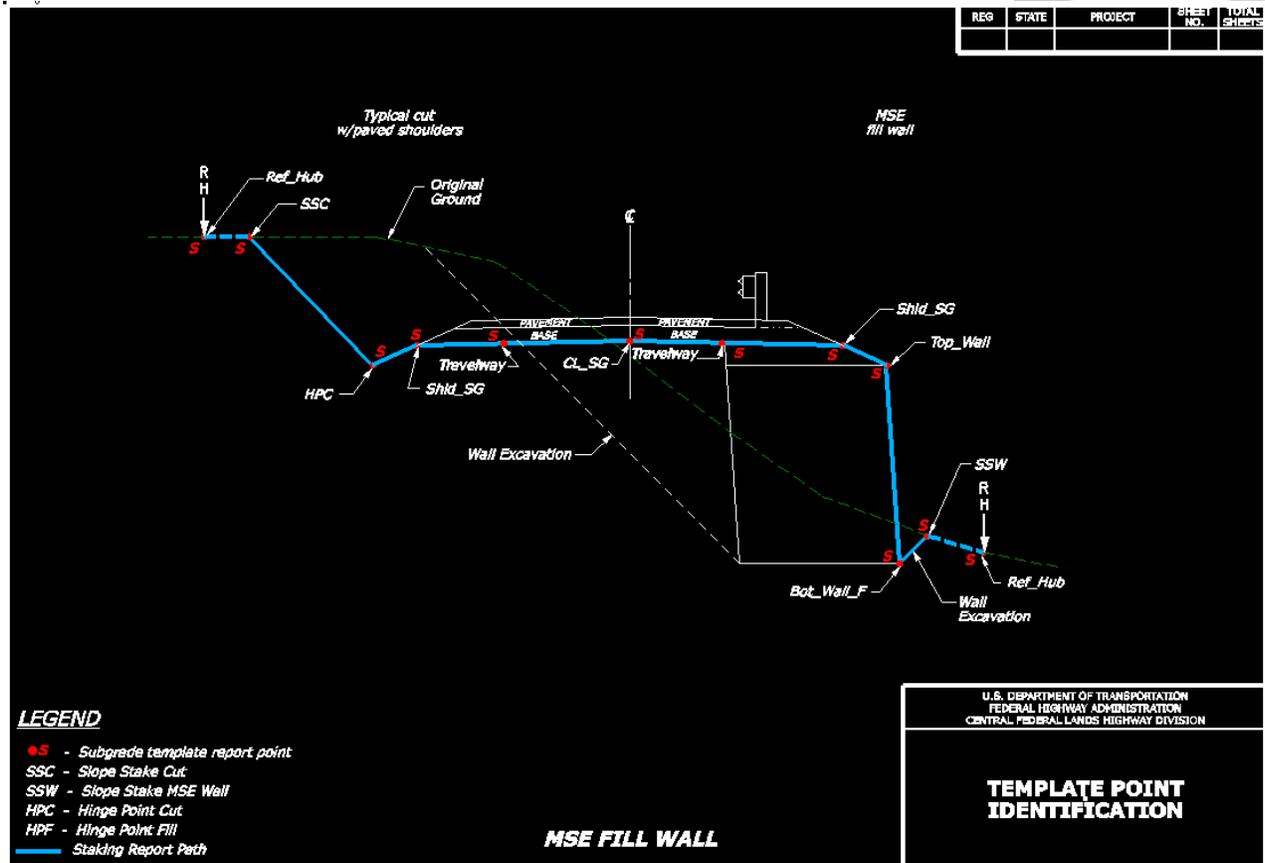


Figure 11-14: Subgrade Template Point Identification Sheet

## Cross Section Reports

Staking Detail Reports and Blue top reports are generated from cross section files by accessing the cross section reports. Workflow 2 will outline the steps involved in accessing cross section reports.

## Workflow 2: Access Cross Section Reports

To access this workflow, follow this link:

[http://www.cflhd.gov/resources/CADD/documents/Workflow\\_11.1\\_ReportsSubgradeTemplateReport\\_x30.pdf](http://www.cflhd.gov/resources/CADD/documents/Workflow_11.1_ReportsSubgradeTemplateReport_x30.pdf)



## Report Headers

All reports will require a header to describe the project and report type. The header can be modified by picking the **User>Preferences** button at the top of the XS Report dialog box. This will bring up the Report Header dialog box.

Figure 11-17: Reports Settings

The date, first two master headers and page number should be marked. The first master header should have the complete project name and number, i.e. ***Nevada Forest Highway Project FH 24-1(1)***.

The second master header should have the name of the road. The tolerance should be around the values shown. If GEOPAK stops at many cross sections these values can be adjusted.



The File pull down menu will allow you to save this information to a text file. If you are working on more than one project, you can easily import the correct information on subsequent runs.



Keep in mind that the Radius of Display Circle needs to be less than the smallest line segment on the proposed cross section. If the smallest line segment is the top of curb and it is .15 m (6 in.) then the Radius of Display Circle needs to be .1 (.25 ft.).



## Staking Detail Report

The Staking Detail Report is used to locate the catch points at each section. The Staking Detail button is located third from the bottom on the XS Report dialog box. When selected, you will get the following dialog box.

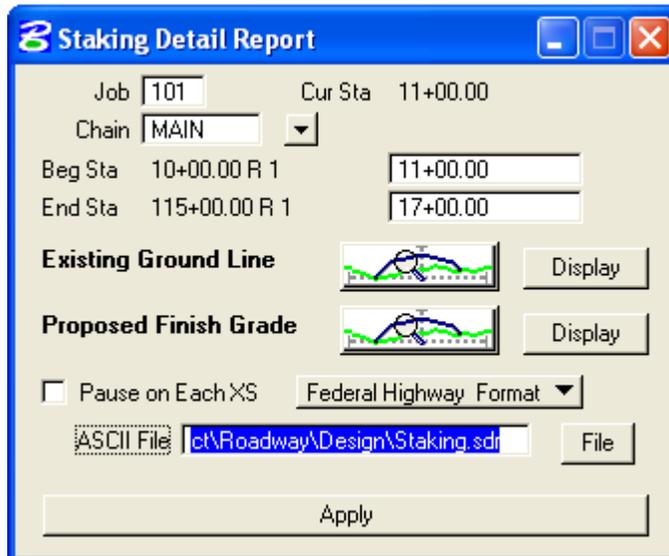


Figure 11-18: Staking Report Dialog

Select the Begin Station and End Station to run your report. To set the symbology values for the Existing Ground Line and Proposed Finish Grade, pick the symbology button  to get the following dialog boxes:

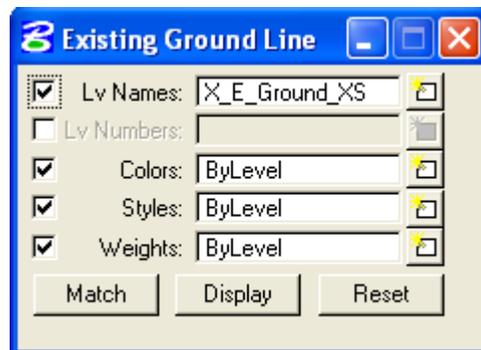


Figure 11-19: Existing Ground Line

Set the existing ground line symbology as shown above. GEOPAK progresses from left to right across each cross section while preparing each report. Proposed finished grade for standard ditch or fill section select the bottom of the pavement layer, ditch slope, cut slope and fill slope.

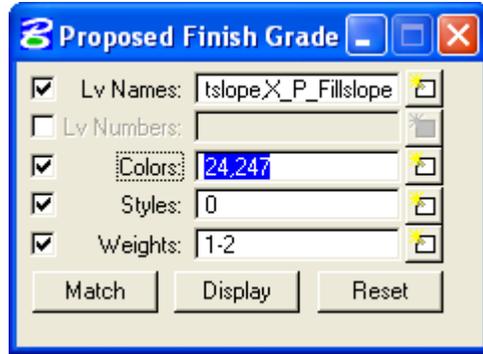


Figure 11-20: Proposed Finish Grade



If the working alignment definitions are setup in the project manager for existing ground and proposed finish grade, the symbology values will be shown when the symbology button is selected.

The values shown in the Existing Ground Line and Proposed Finish Grade sections will allow GEOPAK to progress through the top of subgrade. This is the path needed to get the correct report. The buttons to the right of the data field allow the user to select the values to populate the data field. The Reset button clears the values that populate the fields, Display highlights the elements that meet the criteria, and Match allows the user to pick the elements to include in the selection set.



The values shown in the Proposed Finish Grade are only for a standard ditch or fill section. There will need to be additional symbology added to the Proposed Finish Grade section if retaining walls and other elements are added to the cross sections.

Once the existing and proposed symbology has been selected, provide a name for the report and select Apply to process the Staking Detail Report.

05/04/2006		Project Number										Page# 1		
		Road Name												
STAKING DETAIL REPORT(Ft)														
STATION		Slope		Left Stake				Right Stake				Slope		
		C/F		DIST		ELEV		SUPER		ADJ.		C/F		
11+00.00	R 1	4.00:1.	C	2.14	24.00	7416.86	-0.020	7416.41	-0.020	7415.99	23.06	C	1.27	6.00:1.
12+00.00	R 1	4.00:1.	C	2.15	24.05	7420.00	-0.020	7419.54	0.001	7419.45	23.38	C	1.41	6.00:1.
13+00.00	R 1	4.00:1.	C	2.53	25.91	7423.38	-0.032	7422.66	0.032	7422.97	23.54	C	1.54	6.00:1.
14+00.00	R 1	4.00:1.	C	2.22	24.67	7426.20	-0.032	7425.79	0.032	7426.01	23.03	C	1.45	6.00:1.
15+00.00	R 1	4.00:1.	C	2.07	24.06	7429.17	-0.032	7428.92	0.032	7429.84	22.95	C	2.16	4.00:1.
16+00.00	R 1	6.00:1.	C	1.94	27.42	7432.17	-0.032	7432.04	0.032	7432.91	22.73	C	2.10	4.00:1.
17+00.00	R 1	6.00:1.	C	1.10	22.40	7434.46	-0.032	7435.17	0.032	7436.19	23.34	C	2.25	4.00:1.

Figure 11-21: Staking Detail Report



## Blue Tops Reports

Blue Tops reports indicate all breakpoints at the top of base course. There are two reports that are needed, the standard Blue Top Report and the XYZ Blue Top Report. The Blue & Red Top button is at the top of the XS Report dialog box. When selected, you will get the following dialog box.

Figure 11-22: Blue Top Report Dialog

The values defined in the Existing Ground Line and Proposed Finish Grade sections will allow GEOPAK to progress through the top of base course. This path is needed to get the correct report. For the Blue Tops, in the proposed finished grade, use the level symbology for the top of base course. You may need to include the top of pavement symbology if the foreslope has the same symbology along the base course as the pavement section. The only other information that is needed is in the Text button. Select the Text button to bring up the following dialog box:

Text	Header Label	Point Number	Feature	Description	Store in GPK
10	Centerline				N
11	Travel Way				N
12	Shoulder				N

Figure 11-23: Report Text Set



Review the cross section to select text at the points that you want reported. The text is placed in your cross sections on a level named X\_Text\_Search. The Header label is how the report will label that point. To add a point to the list for the report, type in the Text and Header Label for the point, and select the add button. If you want to change the header or text, highlight the line you want changed, make your modifications and hit modify. To delete a label, highlight the line to delete and pick the Delete button. The text set for your project can be saved as a \*.lis file by selecting File>save.



The CFL Default.lis file is located at  
N:\Standards\V8\_RESOURCE\X\_30\Standards\  
Preferences

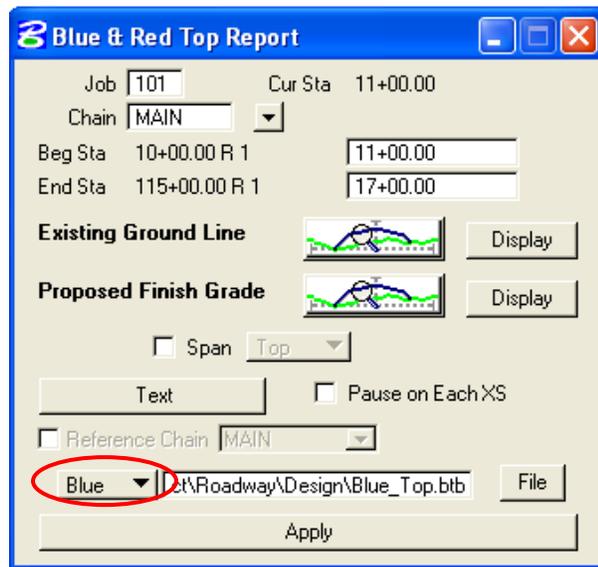


Figure 11-24: Blue Top Report Dialog

Prior to running the Blue Top Report, make sure the Blue button is shown in the Blue & Red Top report dialog box. Select Apply to process the report.



05/04/2006

Project Number  
Road Name  
BLUE TOPS REPORT(Ft)

Page# 1

STATION	Shoulder	Travel Way	Centerline	Travel Way	Shoulder
11+00.00R1 [MAIN]	7417.40 -12.00	7417.40 -11.81	7417.64 0.00	7417.40 11.81	7417.40 12.00
	-0.020	-0.020	-0.020	-0.020	
12+00.00R1 [MAIN]	7420.43 -12.00	7420.43 -11.81	7420.67 0.00	7420.72 11.81	7420.72 12.00
	-0.020	-0.020	0.005	0.005	
13+00.00R1 [MAIN]	7423.36 -12.00	7423.37 -11.81	7423.70 0.00	7424.03 11.81	7424.03 12.00
	-0.028	-0.028	0.028	0.028	
14+00.00R1 [MAIN]	7426.39 -12.00	7426.40 -11.81	7426.73 0.00	7427.06 11.81	7427.06 12.00
	-0.028	-0.028	0.028	0.028	
15+00.00R1 [MAIN]	7429.42 -12.00	7429.43 -11.81	7429.76 0.00	7430.09 11.81	7430.09 12.00
	-0.028	-0.028	0.028	0.028	

Figure 11-25: Blue Top Report

The XYZ Blue Top Report is the same as the Blue Top Report, just change the button that says **Blue** to **XYZ**. Provide a new name for the report and select Apply.

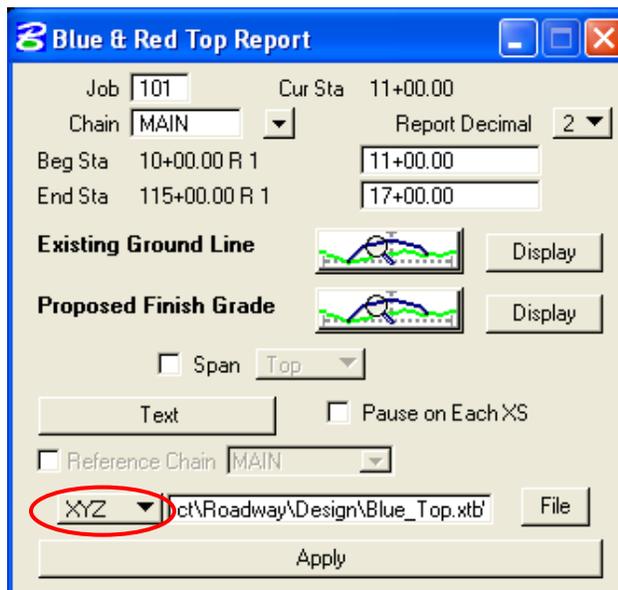


Figure 11-26: Blue Top Report Dialog



To differentiate the Blue Top Report and XYZ Blue Top Report, go back to the user button on the XS Report dialog box and add Blue Top XYZ Report to Master Header 3.



05/04/2006

Project Number  
Road Name  
Blue Top XYZ Report

Page# 1

Station	X	Y	Z	Offset	ID	SLOPE
11+00.00R1 [MAIN]	522716.48	1832103.42	7417.40	-12.00	Shoulder	
	522716.61	1832103.29	7417.40	-11.81	Travel Way	-0.020
	522724.95	1832094.92	7417.64	0.00	Centerline	-0.020
	522733.29	1832086.56	7417.40	11.81	Travel Way	-0.020
	522733.42	1832086.42	7417.40	12.00	Shoulder	
12+00.00R1 [MAIN]	522787.30	1832174.02	7420.43	-12.00	Shoulder	-0.020
	522787.43	1832173.88	7420.43	-11.81	Travel Way	-0.020
	522795.77	1832165.52	7420.67	0.00	Centerline	0.005
	522804.11	1832157.15	7420.72	11.81	Travel Way	0.005
	522804.24	1832157.02	7420.72	12.00	Shoulder	
13+00.00R1 [MAIN]	522857.22	1832244.95	7423.36	-12.00	Shoulder	-0.028
	522857.36	1832244.82	7423.37	-11.81	Travel Way	-0.028
	522865.96	1832236.74	7423.70	0.00	Centerline	0.028
	522874.57	1832228.65	7424.03	11.81	Travel Way	0.028
	522874.71	1832228.52	7424.03	12.00	Shoulder	

Figure 11-27: Blue Top XYZ Report



CFLHD has developed a Geopak 3-port criteria file (chk\_xs\_report.3pc) that will allow the designer to do a visual quality check of the information in the Blue Top Report. The Geopak 3-port criteria file and input file is available through the V8\_Resource.zip download on the CFLHD Website.

On the CFLHD network, this 3-port criteria and input file can be found at N:\Standards\V8\_RESOURCE\X\_30\Standards\3PC directory.

For CFLHD projects, with the development of the Subgrade Template Report, the Red Top Reports will no longer be required.



## Printing Staking Reports

Open any of the staking reports using Ultra Edit. Change the printer to landscape orientation as shown below.

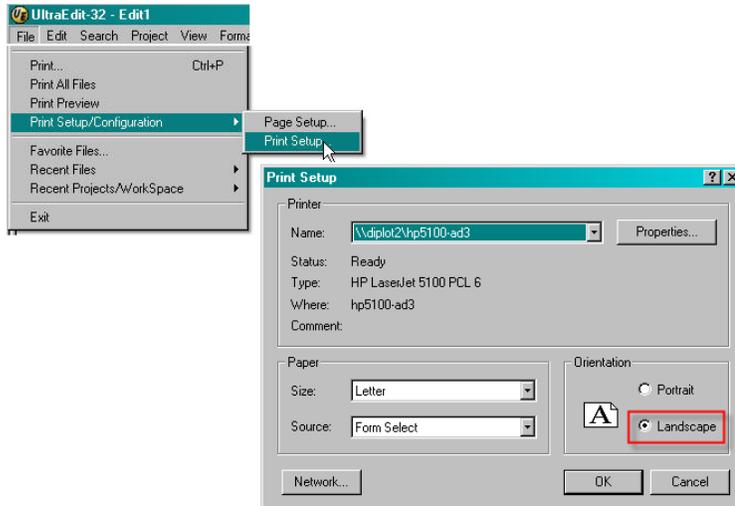


Figure 11-28: Landscape Orientation

Change the text size to 8 as shown below.

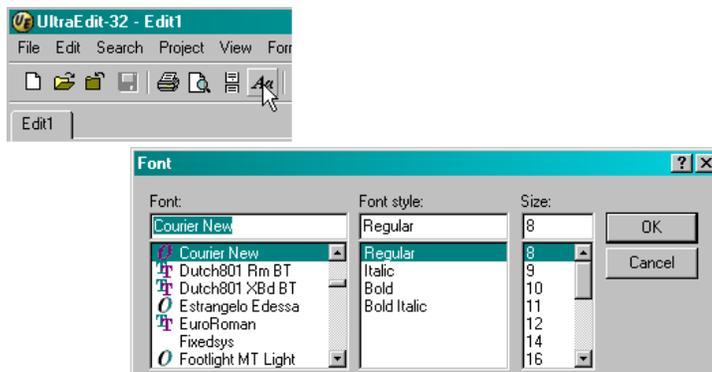


Figure 11-29: Change Font Size

Replace the date with a page break character. Go to Search, then Replace, and then enter the date shown in the staking report into the first data field as shown below.

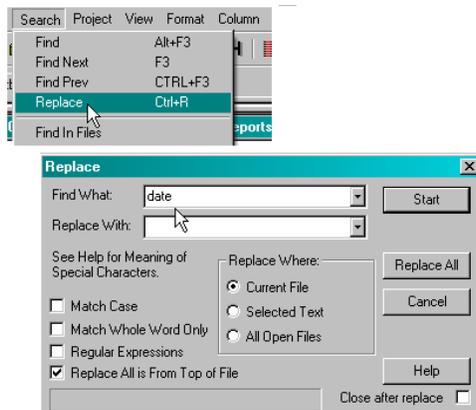


Figure 11-30: Replace the Date with a Page Break Character

Go to View, ASCII Table and select Dec# 12. Click on Insert Char and insert a page break character as shown below.

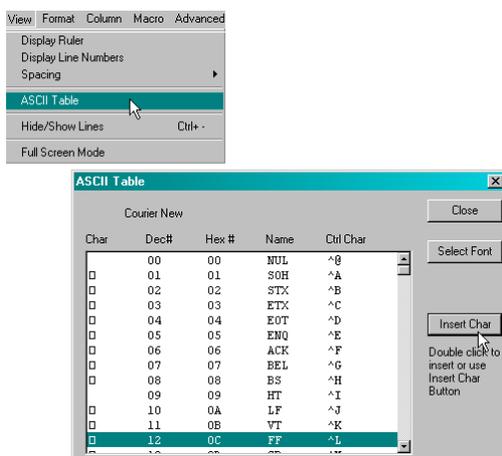


Figure 11-31: Insert Page Break Character

Cut and paste page break character into the second data field of the Replace dialog box and click on Replace All as shown below.

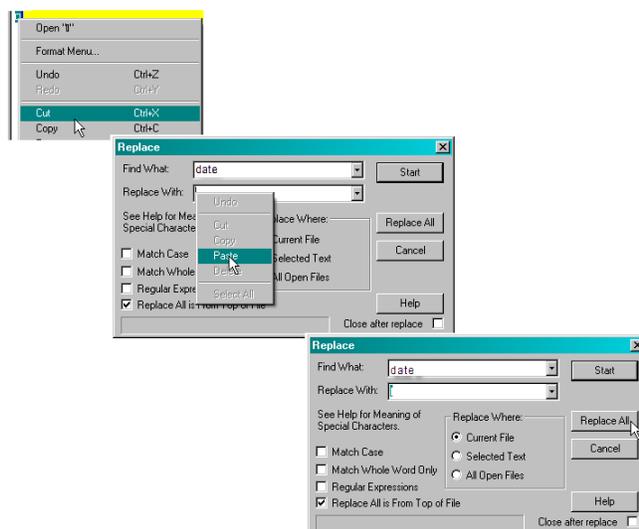


Figure 11-32: Cut and Past Page Break Character and Replace All



Go to the File pull down menu from the main menu at the top of the screen and select Print Preview to view your document. Click on close. Select Print from the File pull down menu and select your printer with the down arrow next to the first data field as shown below. Click on OK to print your staking report.

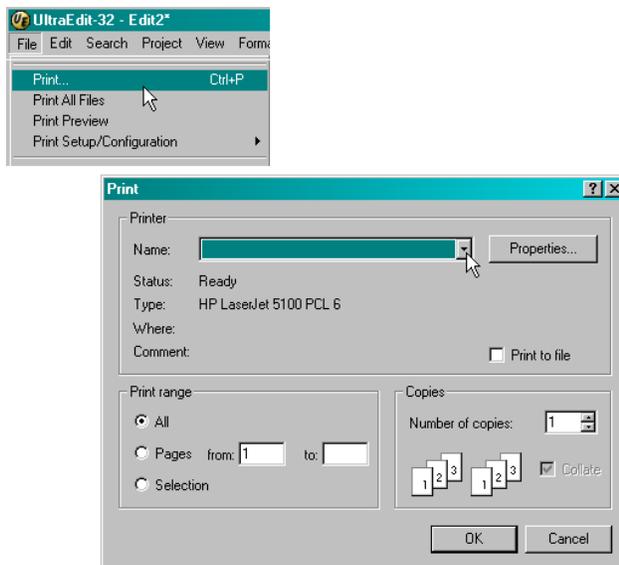


Figure 11-33: Print Staking Report

**Related links:** Using Knucklehead's Guide for GEOPAK Road 2004 Edition.

[XYZ Reports](#)