Section 2

PDF Takeoff Tutorial

Document Conventions

This tutorial uses standard software documentation conventions to explain how the software works. These conventions are described below.

Click/click on - Press the left mouse button (assuming the buttons are set to the default settings).

Double-click - Press the left mouse button twice in rapid succession.

Right-click - Press the right mouse button.

Click and hold - Press and hold down the left mouse button.

Shift/Ctrl + click - Press and hold down the Shift/Ctrl key, then press the left mouse button.

Click and drag - Press and hold the left mouse button, then move the mouse.

Ctrl + (Key) - Press the Ctrl key, then press the keyboard key noted in the step.

Press - Press a specified button a key on the keyboard.

Select - Use the mouse to pick an item on the screen or menu command.

Menu Commands - When documenting a menu command, the command is described using the following format: **Menu > Command**. If there is more than one level to the menu, it appears as a Submenu. For example, **Options > Sound Preference > Sound Card**.

Data Entry/File Names - If a file is specified in a procedure, or if specific text needs to be entered into a field as part of a procedure, it will appear inside double quote marks.

Zoom In/Out - Use the Page Up/Page Down Keys to increase/decrease the area of the job in view. If your system is equipped with a roller-wheel mouse, you can use the roller-wheel to zoom in/out.

Pan - Select the Pan tool, then click and drag to change the view of the job. If your system is equipped with a roller-wheel mouse, you can push down on the roller wheel and drag to pan.

Lesson Examples

Samples files for all tutorials are found in the **C:\AGTEK\Data** directory.

Saving Your Work

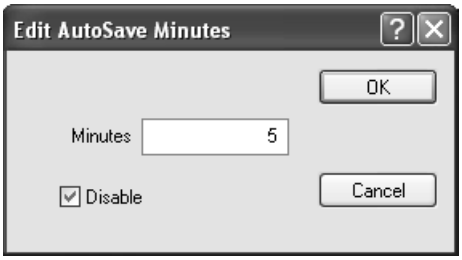
You should save your work often to avoid losing data in the event of an accidental closure or system crash. To Save your work:

- Select **File > Save**, name your job (if you are saving for the first time), then click the **Save** button.

AutoSave

AutoSave is a function of Sitework 4D that automatically backs-up your work in progress at a user-specified interval. With AutoSave enabled, Sitework 4D automatically asks you if you wish to open the most recent backup of the last open job file in the event of accidental closure or the computer crashes. An AutoSave will not occur unless at least one manual save has been completed. Even though the AutoSave function automatically saves the job, it is good practice to frequently save the job manually. To edit the AutoSave interval:

- Select **Options > AutoSave,** then set the interval in the Edit Autosave Minutes dialog box. A check next to the command on the menu indicates that it is enabled.



AutoSave allows you to set the interval between saves from 5 and 60 minutes. By default, the program sets the save interval to 5 minutes. It is recommended that this feature not be disabled. However, if you wish to turn off the Auto Save function, select the Disable check box, and click **OK**.

The Autosave.esw File

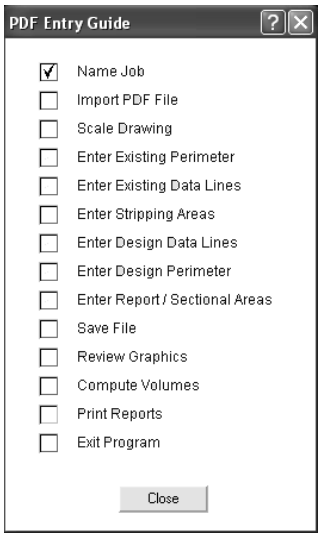
Autosave automatically saves to a file named Autosave.esw. The Autosave.esw file is located in the current working directory. This file is only created when the amount of time passed is greater than both the AutoSave interval and the amount of time since the last Save command was executed. If Earthwork 3D is closed using the Exit command from the file menu, any autosave file is deleted. If an autosave file is opened, be sure to save the file and either change the name of the file or choose the previous version of that file and overwrite it.

PDF Entry Overview

Sitework 4D can be used for dirt takeoff purposes when there is no CAD file available. This tutorial illustrates how to digitize a job using the images found in PDF, and TIF files, as a virtual plansheet. TIF files are treated the same as PDF files that contain no vector information.

PDF Guide

In the Guide menu, Sitework 4D contains guides for PDF, CAD, Tablet, and Haul Plan entry. This tutorial focuses on PDF entry. The PDF Guide can be accessed by selecting **Guide > PDF** or by pressing the **G** key. When a procedure is selected from the Guide, Sitework 4D will change to the proper mode, surface, and layer necessary for that procedure. The Guide displays a check mark in the corresponding box when an operation has been completed.



Data Entry Sequence

The following is the suggested data entry sequence when entering a takeoff using a PDF file.

Import and Scale PDF File

- Start a New Job
- Import the PDF
- Scale the Image and Verify Accuracy

Enter Existing Data

- Enter Existing Perimeter
- Enter Existing Data Lines
- Enter Stripping Areas

Enter Design Data

- Enter Design Data Lines
- Create Offset Lines
- Enter Design Perimeter
- Enter Report/Sectional Areas

Review Graphics

- Confirm Accuracy with 3D Mode

Compute Volumes

- A and V buttons
- Understanding the Report

Print Reports

- Send Report to Print Page
- Printing PDF
- Send Other Views to Print Page
- Send Images to Print Page

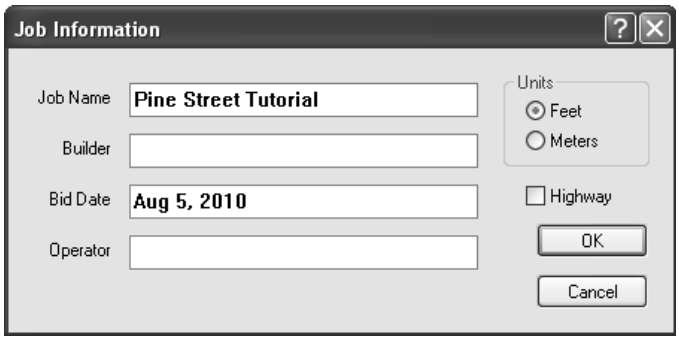
Lesson 1 - Importing and Scaling PDF File

This lesson will demonstrate how to import the Pine Street.pdf file, scale the file and review the accuracy of that scale. Training videos discussing PDF takeoffs can be found at http://www.agtek.com/trainingvideos.asp. It is recomended to watch the training videos before begining the tutorial.

Start a New Job

1. Double-click the Sitework 4D shortcut on the desktop or select **Start > All Programs > AGTEK > Sitework 4D,** and the Open dialog box is displayed.

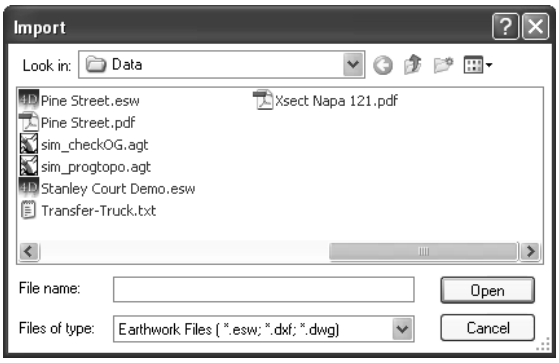
2. Click **New** to start a new job and the Job Information dialog box is displayed.



3. Enter a Job Name, Builder, Bid Date and Operator. Set the Units to Feet and click **OK**. Sitework 4D opens in the Entry Mode with a black screen.

Import the PDF

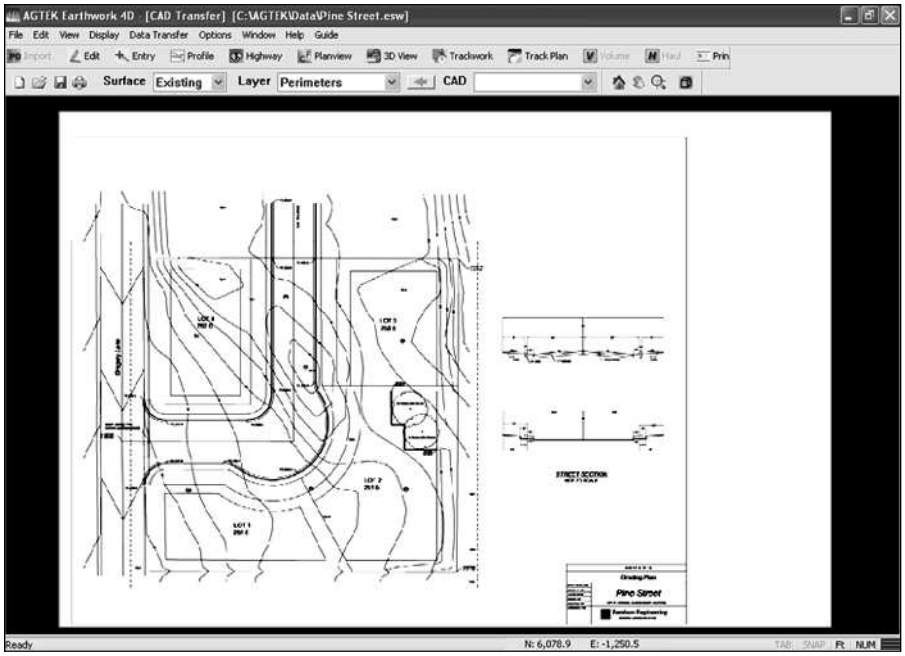
1. Select **File > Import**, or press the **G** key and select **Import PDF File** from the PDF Entry Guide, and the Import dialog box is displayed.



2. Select "Pine Street.pdf" from the C:/AGTEK directory, and click **Open**. The PDF image is displayed in the CAD Transfer Mode.

When opening an existing file, the PDF used to create the file can be re-imported by selected the annotated outline, right-clicking, and selecting **Import File**.

3. The L key rotates the image counter-clockwise while the R key rotates the image clockwise. Press the **L** key twice to properly align the drawing on the screen. It should appear similar to the illustration below.

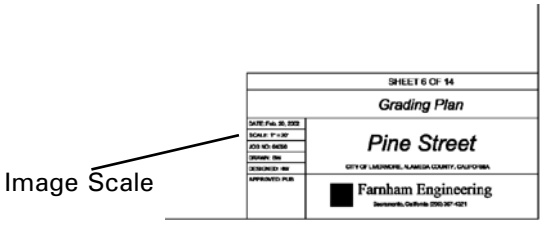


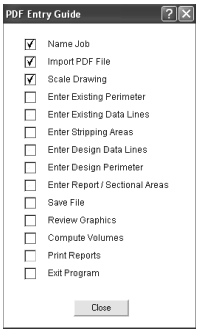
(Optional) Vectorize Image

When a PDF is imported it has either a green or red border. A red border indicates the file is a raster PDF and has no line work data available. A green border indicates a vector PDF and contains the information necessary to vectorize the file and create line work. That line work can then be transferred and turned into 3D data as though it were a CAD file. For information on transferring data and converting it to 3D, please see page 3-2 for the Modeling Tutorial

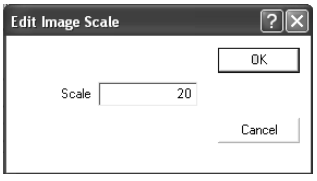
Scale the Image and Verify Accuracy

1. Most PDF's contain the scale of the image. Zoom into the lower-right side of this job and you can see that we are using a 20 scale.



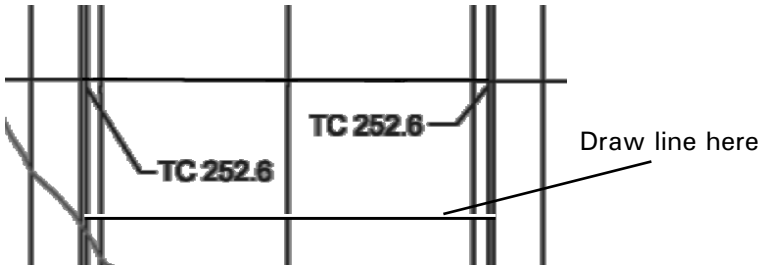


2. Select **Data Transfer > Image Scale**, or press the **G** key and select **Scale Drawing** from the PDF Entry Guide, and the Edit Image Scale box displays.



3. Enter "20", and click **OK**.
4. A dialog box displays advising you to verify the scale of the drawing using a known distance. Click **OK**.
5. In this example the street is 40 feet wide, which can be verified by viewing the street cross section on the right side of the drawing.

6. Switch to the Entry Mode by pressing the **E** key twice, or by clicking the **Entry Mode** button, confirm the Surface is set to Existing and set Layer to Annotation lines. Zoom into a section of the street.
7. Draw a line across the width of the street, from the top of curb to the top of curb. Place the cursor over one side of the street, click the mouse, drag the cursor to the other side of the street in a straight line, and click. Right-click to end the entry. Your screen should look similar to the illustration below.



8. Right-click to get the pointer, and then press the **E** key to switch to Edit Mode.
9. Click on the annotation line drawn in step 7 to select it.

10. Click the **Length Area** Button.
11. The Length and Area dialog box displays. The length of the selected line is displayed in the Line Length box. This box should read approximately 40 feet. Click **OK**.

Lesson 2 - Enter Existing Data

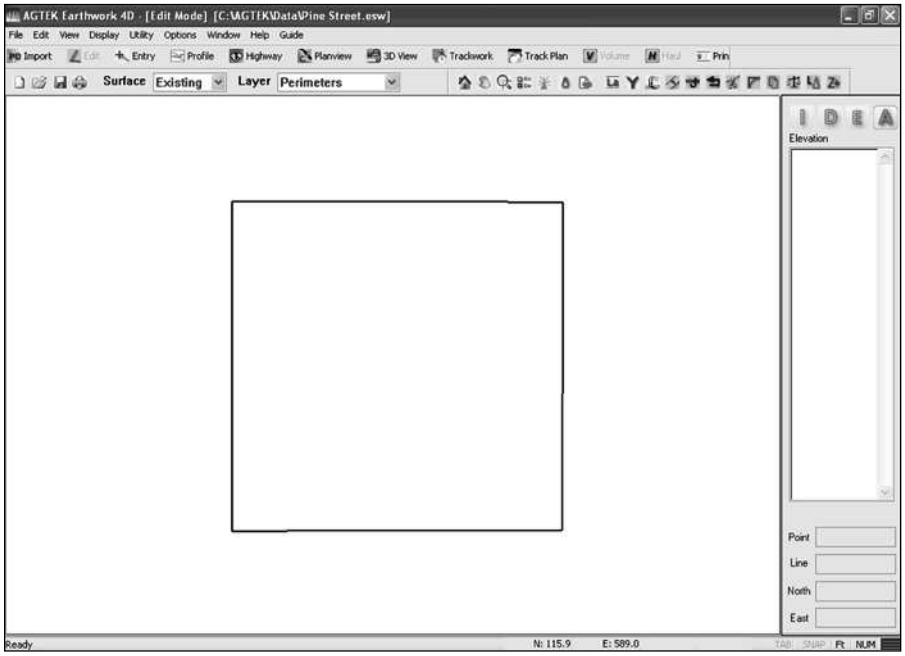
This lesson demonstrates entering the existing conditions of the job site, as well as the site limits and stripping areas.

Enter Existing Perimeter

The existing perimeter represents the limits of the job site. It also gives the computer a place to stop calculating, which will speed up volume calculations.

1. Press the **E** key to switch to Entry Mode and set the Surface to Existing and the Layer to Perimeter, or press the **G** key to open the Guide, and select **Enter Existing Perimeter** from PDF Entry Guide.
2. Zoom in to the lower, left portion of the job site.
3. Find the dashed line that surrounds the entire job site. Click on the lower-left corner of the dash line.
4. Pan to the right and click on the lower-right corner of the dashed line.
5. Click on the remaining two corners of the same dashed line.
6. Right-click to end the entry. Sitework 4D will automatically snap the Existing Perimeter closed.

7. Press the **Home** key on the keyboard to Zoom out and center the job. Right-click to get your arrow back, then press the **T** key, and your screen should look similar to the illustration below.



8. Press the **T** key to bring the PDF back.

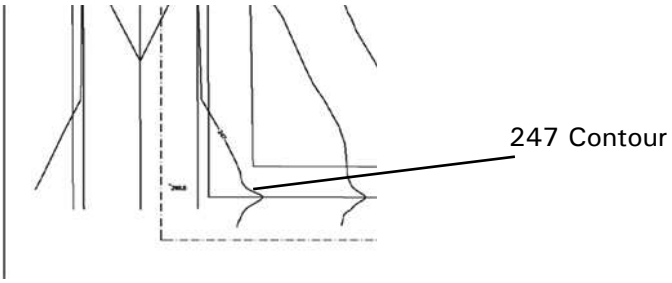
Enter Existing Data Lines

Existing data lines create a 3D representation of the ground prior to work being done.

Contour Lines

1. Confirm the Surface is set to Existing and change the Layer to Data Lines, or press the **G** key to open the Guide, and select **Enter Existing Data Lines** from the PDF Entry Guide.

2. Zoom into the lower left-hand portion of the job site and locate the contour with a 247 elevation. Enter the "247" using the keyboard.



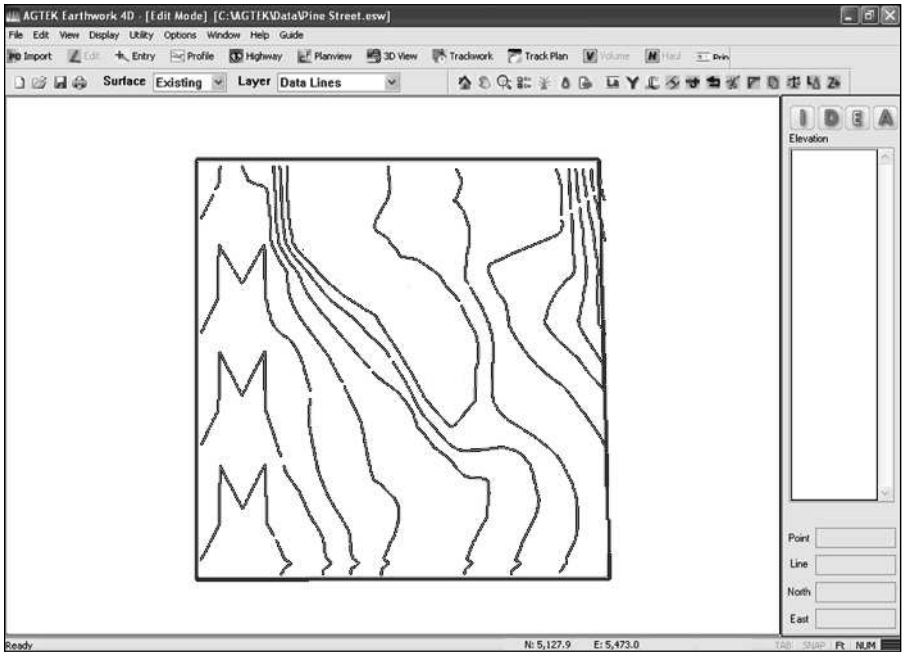
If you make a mistake entering a contour, press Backspace to delete the last point entered.

3. Begin the 247 contour by clicking at the end of the contour line.

4. Move along the contour line, clicking your mouse to enter points as you go, and right-click when the contour is completed.

Placing points only at the sharp angles of the M shaped contours results in straighter lines.

5. Repeat steps 3 and 4 to enter the remaining contour lines. For now, leave the closed contours in the middle of the job alone. After the entering the second consecutive contour, the program will enter Auto-icrement mode and jump to the next elevation for automatically i.e.: 248 will auto-icrement to 249. Right-click to get your arrow back, then press the **T** key and your screen should look similar to the illustration below.

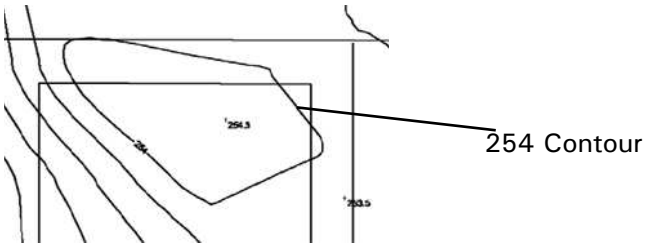


6. Press the **T** key twice to bring the PDF back.

7. Click the **Save** button to save your work.

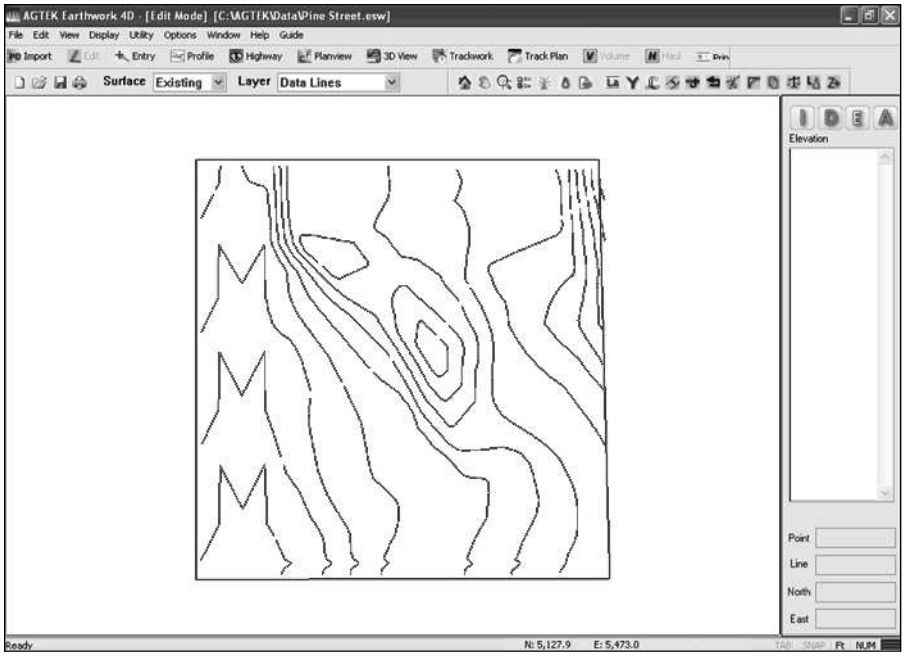
Closed Contours

1. Begin with the closed, 254 contour in the top-left portion of the job.



2. Enter "254" on the keyboard. Click along the line to enter points.
3. When nearing the start point of the data line, move the cursor over the starting point of the line and press the **F8** key to snap the contour closed.
4. A red 254 appears in the point list on the right if you have snapped the line closed correctly.
5. Right-click to end the entry.

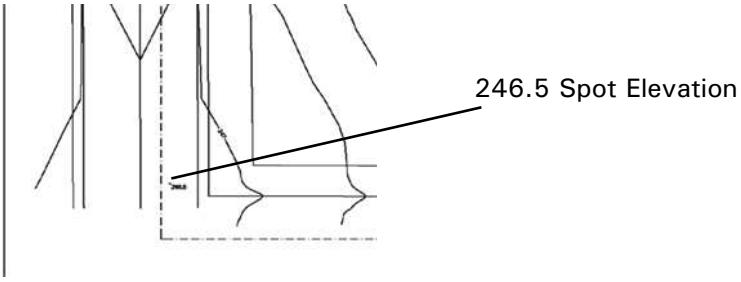
6. Repeat the above process for the remaining closed contours. Right-click to get your arrow back, then press the **T** key and your screen should look similar to the illustration below.



7. Press the **T** key twice to bring the PDF back.

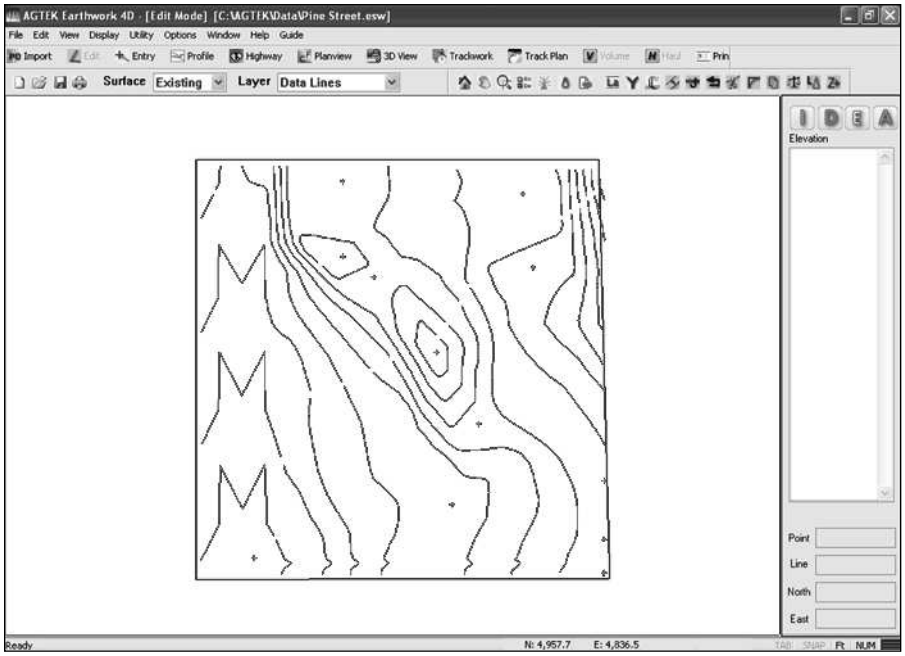
Spot Elevations

1. Locate the 246.5 spot elevation in the lower-left portion of the job site.



2. Enter "246.5" on the keyboard.
3. Click on the 246.5 spot elevation.
4. Right-click to end the entry.

5. Repeat this process to enter the remaining spot elevations. Right-click to get your arrow back, press the **Home** key, then press the **T** key and your screen should look similar to the illustration below.

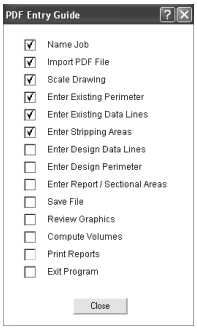


7. Press the **T** key twice to bring the PDF back.

6. Click the **Save** button to save your work.

Enter Stripping Areas

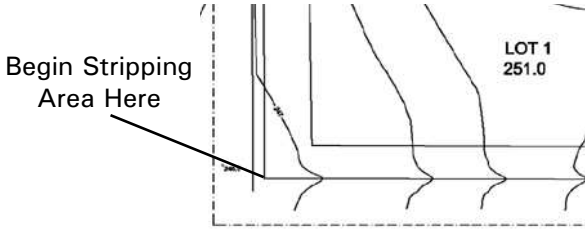
The stripping area removes a uniform depth from the existing ground surface.



1. Verify that Surface is still set to Existing and change the Layer to Stripping Areas. Click the Add Regions button, or press the **G** key to open the Guide and select **Enter Stripping Areas** on the PDF Entry Guide. The Stripping Areas dialog box displays.

2. Enter "Stripping 1" for the Area Name and ".5" for the Stripping Depth.

3. Click where the side walk for Gregory Lane intersects with the property line behind Lot 1.

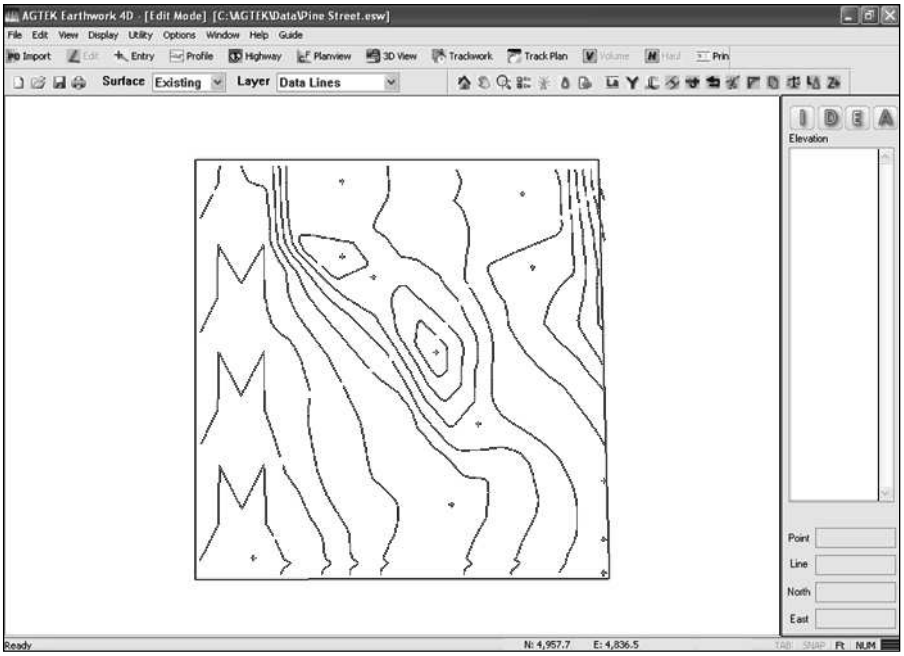


4. Pan up to, and click, where the same sidewalk intersects with the property line behind Lot 4.

5. Pan to the right, and click on the point labeled with a Northing/Easting at the far right of the job.

6. Continue down, and click on the point labeled with a Northing/Easting at the bottom-right of the job.

7. Right-click to end the entry. Sitework 4D will snap the Stripping Area closed for you. Right-click to get your arrow back, press the **Home** key, then press the **T** key and your screen should look similar to the illustration below.



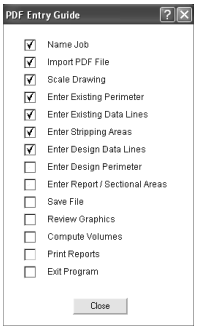
8. Press the **T** key twice to bring the PDF back.
9. Click the **Save** button to save your work.

Lesson 3 - Enter Design Data

This lesson demonstrates entering data for the intended design including subgrade and the limits of construction.

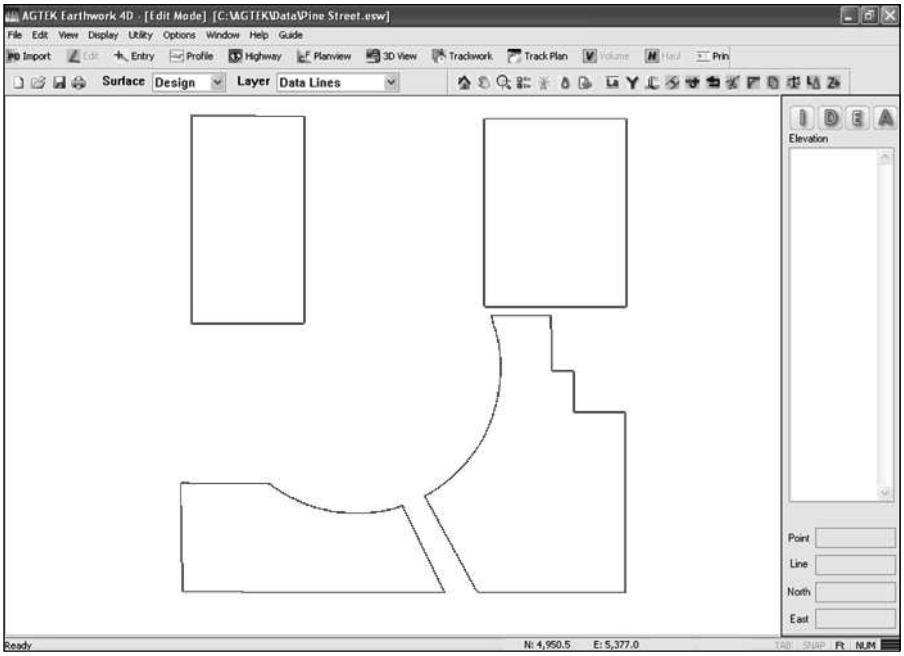
Enter Design Data Lines

Enter Building Pads



1. Change the Surface to Design and the Layer to Data Lines, or press the **G** key and select **Enter Design Data** from the PDF Entry Guide.
2. Find Lot 1 in the lower-left portion of the job and enter the “251” elevation using the keyboard.
3. Click on the bottom-left corner of Lot 1.
4. Continue tracing the line for Lot 1, clicking on the corners and using multiple points to create the curve on the top right. Before completing the lot, put the cursor over the start point of the lot line and press **F8** to snap the line closed.
5. Right-click to end the entry.
6. Repeat the above process for the remaining lots. The more points you use tracing the curves, the smoother your curves will be. Be sure to snap all pads closed using the **F8** key.

7. When finished, press the **Home** key to zoom out and center the job. Right-click to get your arrow back, then press the **T** key and your screen should look similar to the illustration below.



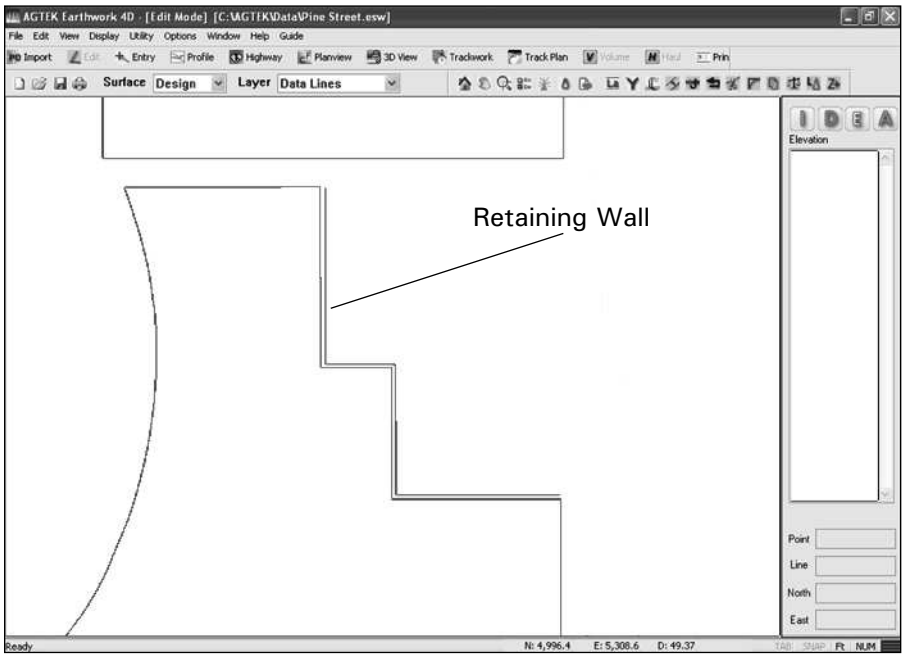
8. Press the **T** key twice to bring the PDF back.

9. Click the **Save** button to save your work.

Enter Retaining Wall

1. Zoom in to the retaining wall behind Lot 2.
2. Enter the top of wall elevation of “253.5”.
3. Beginning at the top, click on the corners of the retaining wall. Be sure that you do not cross the data line representing Lot 2.

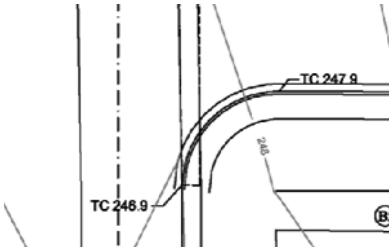
4. Right-click to end the entry.



Enter Curb Lines

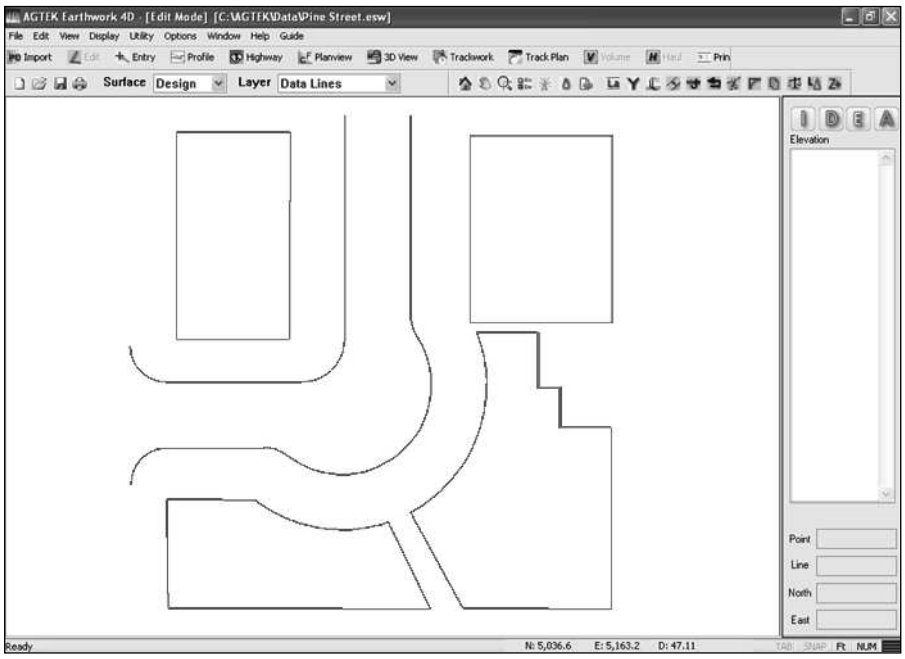
This exercise enters data lines with varying elevations.

1. Zoom into the left, center portion of the job and locate the top of curb line labeled 246.9.



2. Enter “246.9” using the keyboard and click on the beginning of the curb line.
3. Continue to follow the curb line, clicking to enter points as you go.
4. When you come to the first elevation change, enter “247.9” using the keyboard.
5. Move the cursor to the next elevation change, enter “248.7” on the keyboard and click on the elevation change. This keeps the line between the two elevations straight.
6. Continue the same process, entering elevation changes as you come to them, until you reach the 252.6 elevation at the top of the job.
7. After entering the 252.6 elevation, right-click to end the entry and move directly across the street.

8. Beginning with the 252.6 elevation, enter the second top of curb line using the process outlined above. When finished, right-click to get your arrow back, press the **Home** key, then press the **T** key and your screen should look similar to the illustration below.



9. Press the **T** key twice to bring the PDF back.

10. Click the **Save** button to save your work.

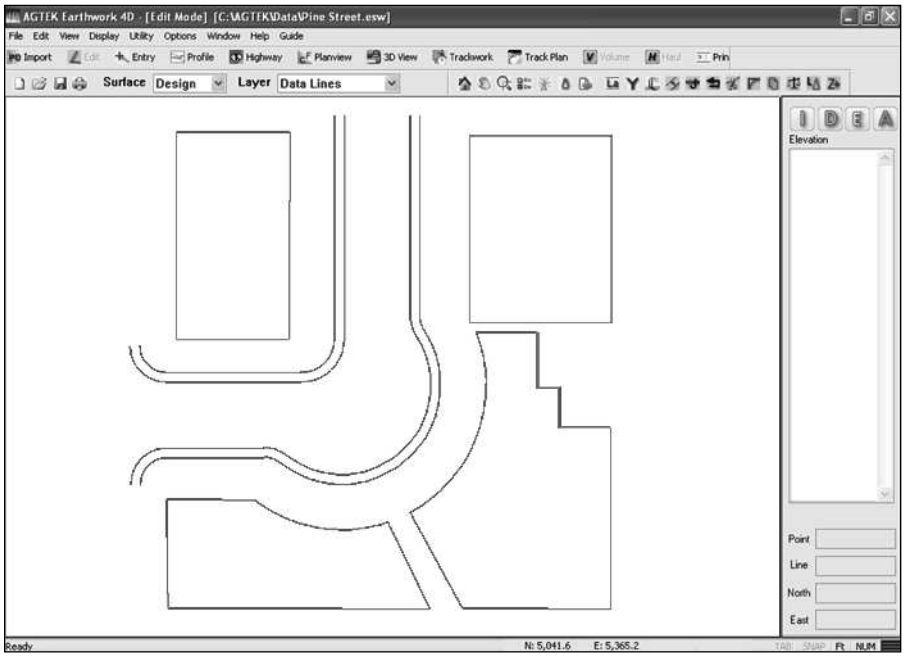
Offset Line Editor

This exercise uses the Offset Line Editor to create the street by offsetting the top of curb line. Offset lines are created by choosing distance and elevation or slope differences from a chosen reference line. The features of the Offset Line Editor are explained below. For more information regarding offset lines, see page 8-92.

Creating Offset Lines

1. Press the **E** key to switch to the Edit Mode, and click on the top of curb line nearest Lot 4.
2. Shift + Click the remaining top of curb line.
3. Click the **Offset Line Editor** button, and the Offset Line Editor box, as seen on previous page, displays.
4. To create the back of sidewalk lines set the Offset Direction to Right.
5. Be sure Connectors, Points Every, and Daylight are unchecked.
6. Enter “5.5” for the Offset Distance and “2” for the slope.

7. Click the **View** button for a preview of the offset lines.
8. Click **Apply,** and then **Close** to enter the offset lines and close the Offset Line Editor box. When finished, press the **T** key and your screen should look similar to the illustration below.



9. Press the **T** key twice to bring the PDF back.

Enter Design Contour Lines

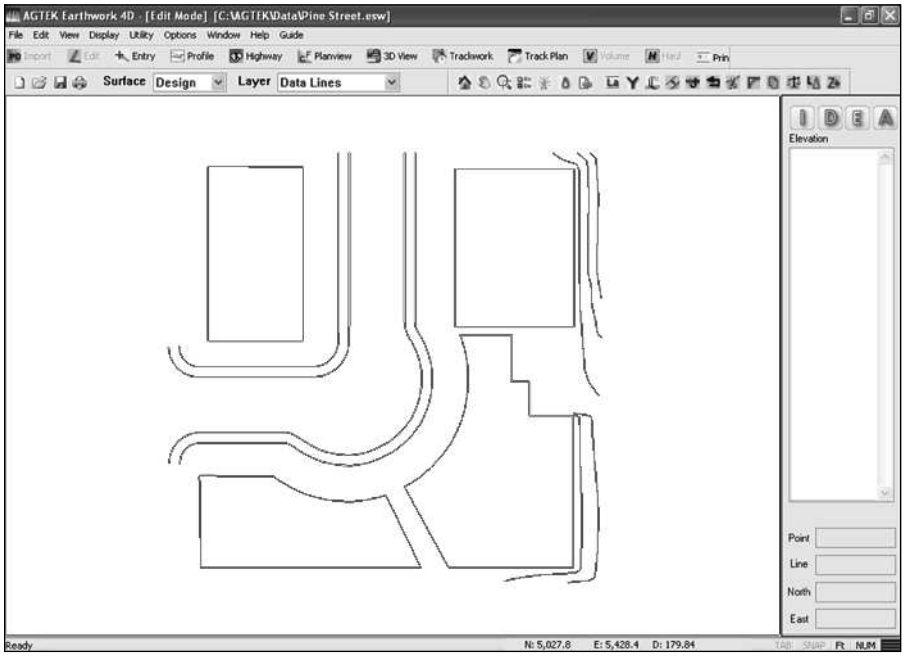
1. Press the **E** key, or click the Entry Mode button, to switch to Entry Mode.
2. Zoom into the bottom-right portion of the job and locate the 252 design contour.

3 Enter “252” using the keyboard.

5. Enter the design contour lines by tracing the line with the mouse, clicking as you go.
6. Right-click to end the entry.

7. Repeat the above process for the four remaining contour lines. When finished, Right-click to get your arrow back.

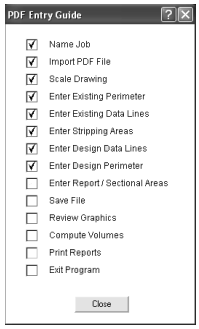
8. Switch to the Edit Mode and press the **T** key. Your screen should look similar to the illustration below.



9. Press the **T** key twice to bring the PDF back.

10. Click the **Save** button to save your work.

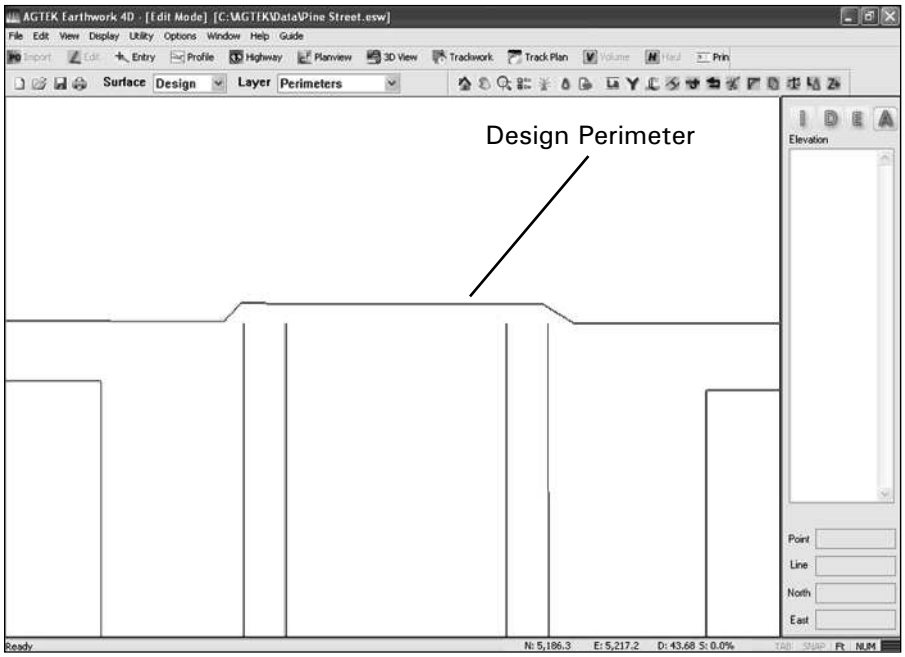
Enter Design Perimeter



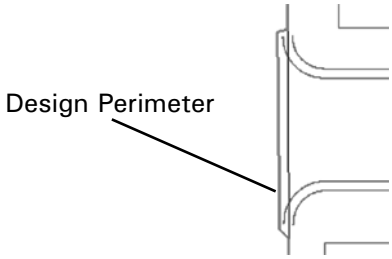
The Design Perimeter represents the limits of construction of your job. The Design Perimeter also tells the computer where to limit it's volume calculations. The Design Perimeter overrides all regions, sections, and areas, i.e. all dirt within the Design Perimeter will be counted, while all dirt outside of the Design Perimeter will be excluded from calculations. When the Design Perimeter is entered, you are asked to drape a Daylight line, at existing elevations, under the Design Perimeter. This will provide a smooth transition from the design to the surrounding conditions of the job site.

1. Press the **E** key to switch to the Entry Mode and set the Surface to Design and Layer to Perimeters, or press the **G** key, select **Enter Design Perimeter** from the PDF Entry Guide.
2. Right-click anywhere on the job and select **Display > Stripping Areas**.
3. Snap to the lower left corner of the Stripping Area using the **F8** key.
4. Continue to the right and then up, snapping to the corners of the Stripping Area as you encounter them.

5. Continue to left, across the top of the Stripping Area. When you come to the street, extend the perimeter beyond the street.



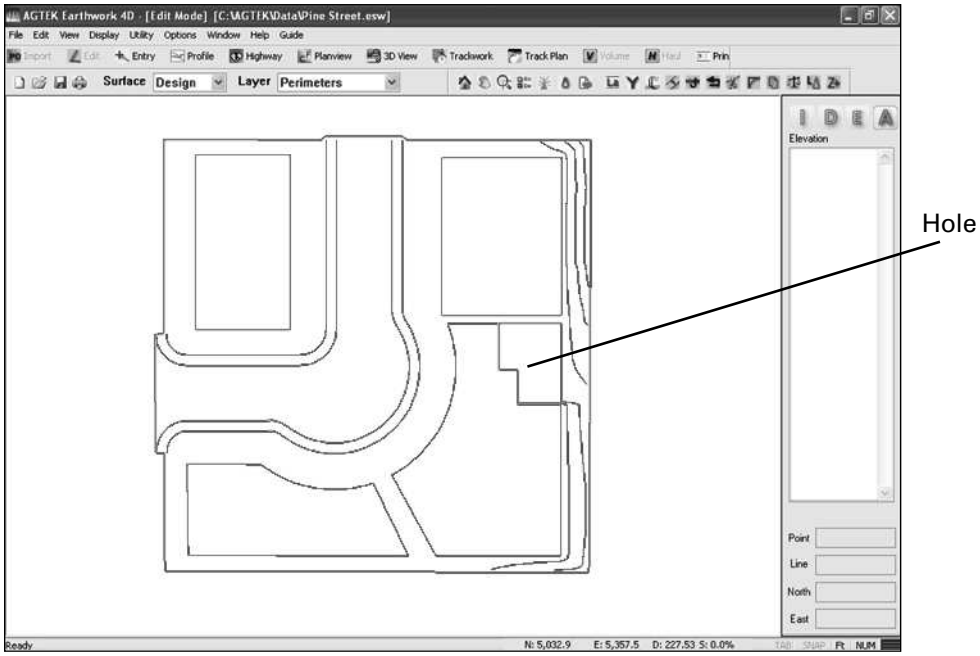
6. Continue to the left, and click on the top-left corner of the Stripping Area.
7. Continue down, extending the perimeter beyond the street.



Entering a perimeter withing a perimeter creates a hole in the job. Dirt quantities are not calculated withing this second perimeter.

8. Before returning to the starting point of the Design Perimeter, right-click to snap the perimeter closed.
9. Zoom in on the area behind the retaining wall at Lot 2 labeled "No Grading within Drip Line."
10. Enter a second Perimeter around the area behind the retaining wall by clicking at each of the corners. Be sure the Design Perimeter does not intersect with any design data lines.
11. Right-click to close the second perimeter and create a hole in the job. The contents of this hole will be removed from the calculations.

12. Right-click a second time and the Apply Drape Line dialog box is displayed. Click **Yes**. Right-click to get your arrow back, then press the **T** key, and your screen should look similar to the illustration below.



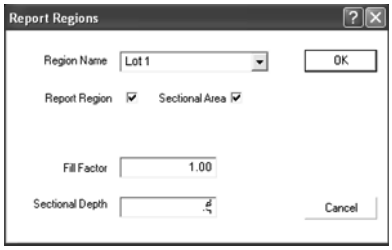
13. Press the **T** key twice to bring the PDF back.

Enter Report/Sectional Areas

Report Regions are used to break a job up into individual areas for calculation on the volume reports. Sectional Areas are used to modify the design surface by subtracting their depth from the design surface and then listing the area individually on the volume report.

Break Out the Building Pad Areas

1. Switch to the Entry Mode. Click the Add Regions button, or press the **G** key, and select **Enter Report/Sectional Areas** from the PDF Entry Guide, and the Report Regions dialog box is displayed.



2. Enter "Lot 1" for the Region Name and ".5" (six inches) for the sectional depth, and click **OK**. (On a metric job .5 equals half a meter, or 500mm.)
3. Move the cursor over the corner of Lot 1 and Line Snap (press the **F8** key twice in rapid succession) to the entire building pad.
4. Right-click to end the entry.
5. Repeat step 3 for the remaining building pads. Sitework 4D auto-increments the pad names (Lot 1, Lot 2, Lot 3...). Right-click to get your arrow back.

For the auto-increment to function, the region name must be entered with a space between the name and the number as in the example.

Enter Street Area

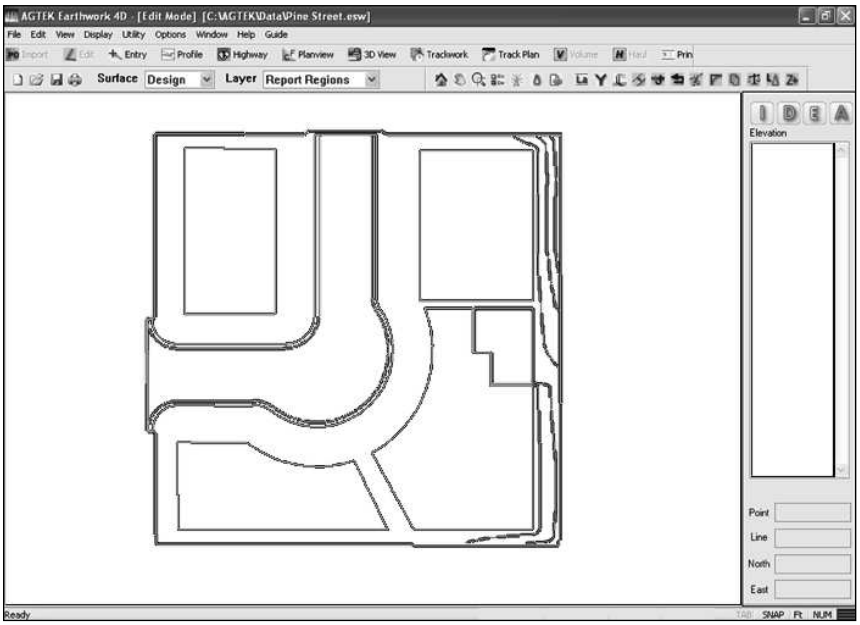
1. Click the Add Regions button, or press the **G** key and select **Enter Report/Sectional Areas** from the PDF Entry Guide, and the Report Regions dialog box displays.
2. Enter "Street" for the Name and "1.33" for Sectional Depth.
3. Zoom into where the street meets Gregory Lane. Move your cursor over the Southern TOC line and Line Snap (press **F8** twice in rapid succession on the same point) to the top of curb line.
4. Move the cursor to the top of the job, above the selected top of curb line, and press the **F8** key once. The snapped line will attach itself to the cursor.
5. Move directly across the street and Line Snap (press **F8** twice in rapid succession) to the other top of curb line.
6. Move back to where the street meets Gregory Lane, move the cursor above the end of the top of curb line and press **F8** once.
7. Right-click to snap the region closed, and end the Entry. Right-click again to get your arrow back.

Enter A Final Report/Sectional Area

Entering a final Report/Sectional Area will make sure that all dirt is included in a Report Region. Any dirt left outside of a Report Region will be listed as Unspecified on the report.

"Landscape" is used for this example because it will primarily in clude the landscape/ grass areas around the building pads.

1. Click the Add Regions button, or press the **G** key and select **Enter Report/Sectional Areas** from the PDF Guide, and the Report Regions dialog box will display.
2. Enter "Landscape" for the Name and "0" for Sectional Depth and click **OK**.
3. Move the cursor over a corner of the Design Perimeter, and Line Snap (press **F8** twice in rapid succession on the same point) to snap to the Design Perimeter.
4. Right-click to end the entry. Right-click to get your arrow back, then press the **T** key and your screen should look similar to the illustration below.



5. Press the **T** key twice to bring the PDF back.

6. Click the **Save** button to save your work.

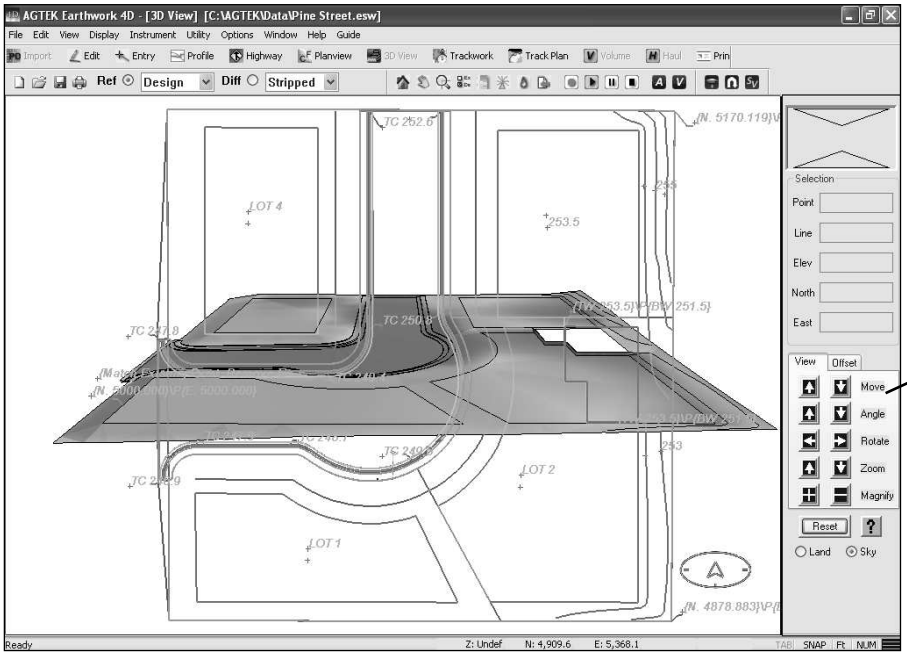
Lesson 4 - Review Graphics

The creation of 3D surfaces allows comparison of the surfaces for volumes. This lesson demonstrates how to verify the accuracy of the job with the 3D view, and specify the area to calculate and generate the volumes. The 3D Mode in Sitework 4D can be used to verify the accuracy of the job data. Using 3D controls to inspect the 3D surface and look for any errors which may have occurred during the data entry.

1. Switch to the 3D Mode, or select press the **G** key, and select Review Graphics from the PDF Guide. Make sure the Ref is set to Subgrade and the Dif is set to Stripped.

2. Use the controls described below to inspect the 3D surface for mistakes.

Be sure the finished surface (the surface you are calculating to) is on the left, and the begining surface (the one you are calculating from) is on the right.



3D Controls

Toolbar — Use the Toolbar to change the reference (Ref) and difference (Diff) surface to compare different surfaces in 3D View.

Overlay — The Overlay is the two-dimensional plan view of the job. Clicking on the Overlay moves the view to that position.

Terrain — The Terrain is the three-dimensional representation of the job. Use the Arrow keys to move around the Terrain View.

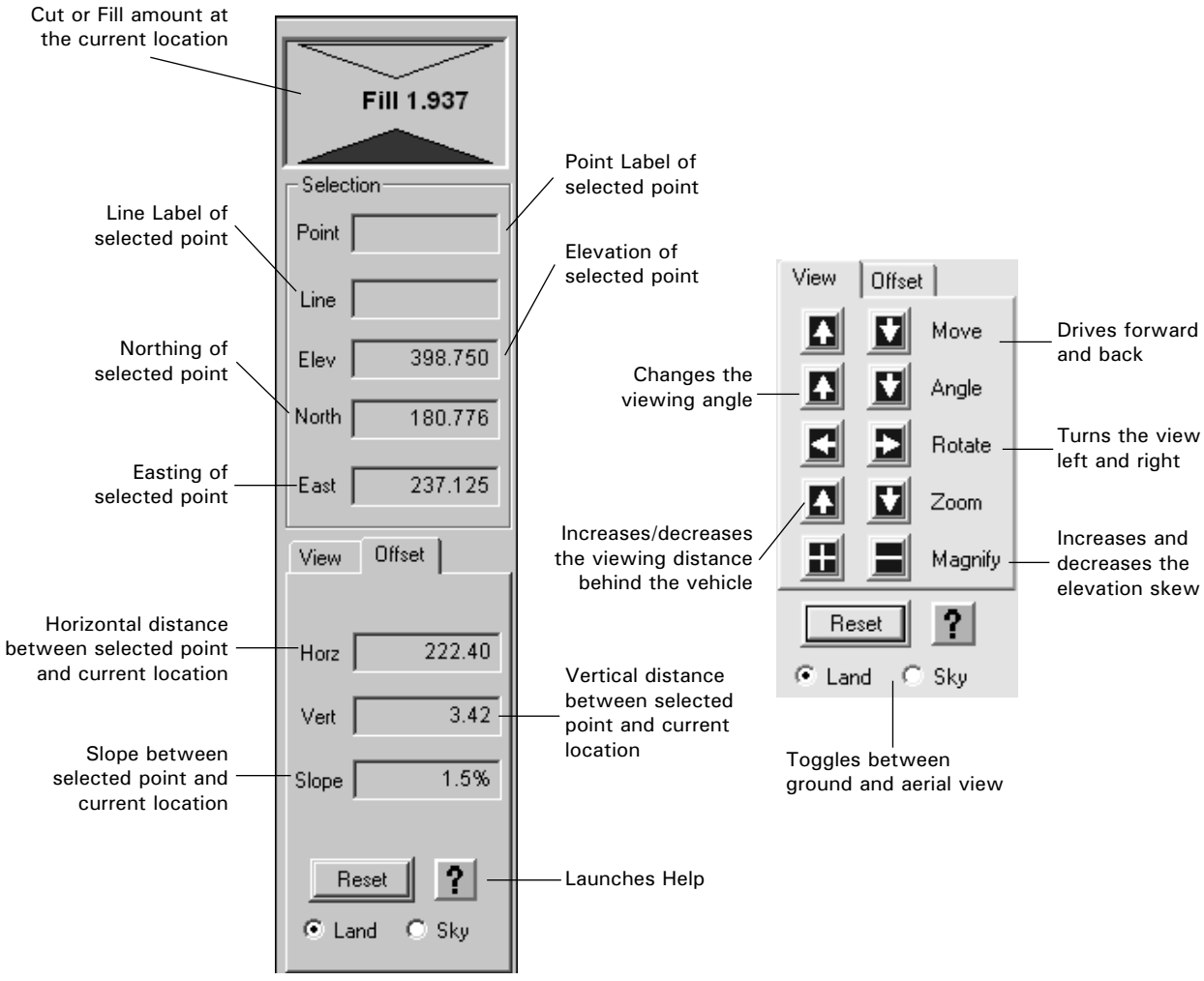
3D Controls — Use the 3D controls to inspect the terrain for any errors and to see how all of the data you have entered displays on the job.

Driving

Driving the 3D View is the easiest way to double check your work and the surface quality. It also can display the Subgrade and Stripping surfaces and calculate volumes.

Use the Arrow keys on the keyboard to drive through the site. The **Up** and **Down** arrows move forward and back. The **Right** and **Left** arrows turn. For additional clarity, you may want to turn the Overlay off by pressing the **O** key or by selecting **Display > Overlay**. The speed of the drive is based on the **Arrow Rate** setting, which is located on the **Edit** menu. Each arrow key press has a distance that the Arrow Rate controls. The speed of your computer and video adaptor can also affect screen speed.

Try using the 3D controls to change the views and get a feel for what they do. Also try changing the Reference and Difference surfaces to see the different views and comparisons.



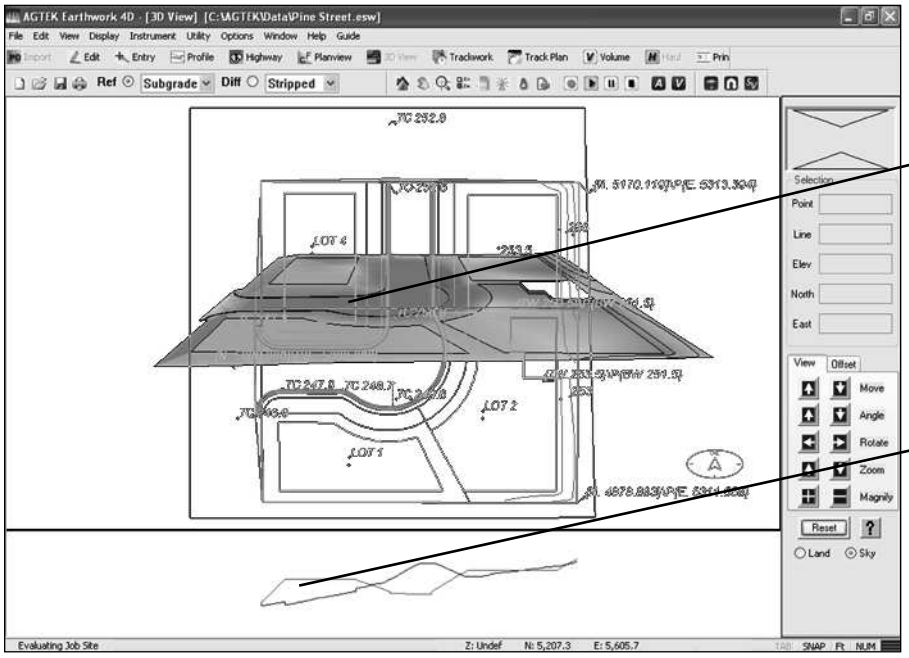
Lesson 5 - Calculating Volumes

Once the model has been verified, and any changes have been made, you can calculate volumes and compare surfaces.

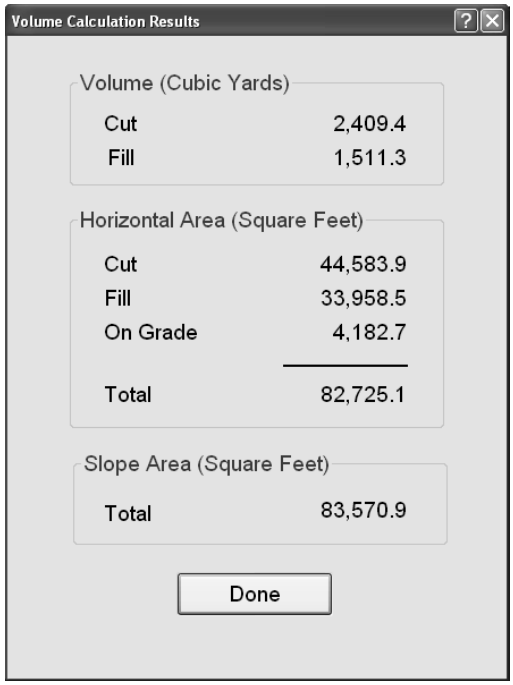
1. While still in 3D Mode, specify the Surfaces to be used. For our example, set the Reference surface to Subgrade and the Difference surface to Stripped.
2. Define the Volume Area. Click the **A button** on the Utility Tool Bar to create a bounding box (using the Design Perimeter) around the entire job. This determines the limits of the volume calculation.
3. Calculate the Volume. Click the **V button** on the Utility Tool Bar, or select **Utility > Calc Volume,** to begin volume calculations

During the volume calculation, cross sections display at the bottom of the screen with blue representing the Subgrade and green the Stripped surface. A line displays on the overlay showing the corresponding location of the cross section. The calculation can be paused by pressing the **Spacebar** or aborted by pressing **Esc**. When paused, the **I** key on the keyboard will move across the site incrementally. Pressing the **Spacebar** again will resume the volume calculation. When the calculation finishes, the Volume Calculation Results are displayed.

Be sure the finished surface (the surface you are calculating to) is on the left, and the begining surface (the one you are calculating from) is on the right.



These numbers represent uncompacted cut and fill between the two surfaces. The Horizontal Area represents plan view areas with no slope adjustment and is broken down into Cut, Fill, and On-grade square footage. Slope Area represents a slope adjusted square footage. It is the total surface area, excluding vertical surfaces like curb faces. Press **Done** to close the dialog box. These volume numbers can be recalled by clicking the Volume Report button on the tool bar.



The Volume Report

Once you click **Done** in the Volume Calculations Results dialog box, the Volume Report is displayed. You can also access the report after volumes have been calculated by selecting **Window > Volume Report,** or by clicking the Volume Report button.

The Volume Report displays area, volume, and depth for stripping and sectional areas. The total area, cut/fill, strata, and on grade area for each report region and sectional area are displayed, if created. The report also displays the Cut-Fill volumes, compaction ratios and their impact on the volumes, import/export data, and volume change per 0.1 foot of elevation change, which is useful for balancing the site. The data in the volume report should be similar to the illustration below.

Job: Pine Street PDF Tutorial
Units: Ft-CY
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Volume Report
Subgrade vs. Stripped

	Area				Volume		Comp/Ratio		Compact		Export	Change
	Total	Cut	Fill	OnGrade	Cut	Fill	Cut	Fill	Cut	Fill	-Import	Per .1 Ft
Landscape	29,881	9,511	17,821	2,549	319	672	1.00	1.00	319	672	-353	111
Lot 1	7,358	0	7,358	0	0	498	1.00	1.00	0	498	-498	27
Lot 2	11,666	7,864	2,955	847	290	50	1.00	1.00	290	50	240	43
Lot 3	8,645	7,103	1,120	422	251	17	1.00	1.00	251	17	234	32
Lot 4	7,580	2,654	4,703	223	143	274	1.00	1.00	143	274	-131	28
Lot Sub:	**35,249**	**17,621**	**16,136**	**1,492**	**684**	**839**			**684**	**839**	**-155**	**130**
Sidewalk 1	2,038	1,946	0	92	105	0	1.00	1.00	105	0	105	8
Sidewalk 2	1,441	1,391	0	50	47	0	1.00	1.00	47	0	47	5
Sidewalk Sub:	**3,479**	**3,337**	**0**	**142**	**152**	**0**			**152**	**0**	**152**	**13**
Street	14,113	14,113	0	0	1,254	0	1.00	1.00	1,254	0	1,254	52
Regions Total	**82,722**	**44,582**	**33,957**	**4,183**	**2,409**	**1,511**			**2,409**	**1,511**	**898**	**306**

Stripping Qtys	Plane Area	Slope Area	Depth	Volume
Stripping	81,992	82,195	0.500	1,522

Sectional Qtys	Plane Area	Slope Area	Depth	Volume
Landscape	29,881	30,572	0.000	0
Lot 1	7,358	7,388	0.500	137
Lot 2	11,666	11,698	0.500	217
Lot 3	8,645	8,674	0.500	161
Lot 4	7,580	7,605	0.500	141
Lot Sub:	**35,249**	**35,365**		**656**
Sidewalk 1	2,038	2,057	0.330	25
Sidewalk 2	1,441	1,455	0.330	18
Sidewalk Sub:	**3,479**	**3,512**		**43**
Street	14,113	14,118	1.330	695
Sectional Total	**82,722**	**83,567**		**1,394**

Lesson 6 – Printing Reports

Sitework 4D can print the Overlay and Terrain graphics along with Volumes and Profiles. The Print Preview Window allows the user to import graphics and resize, move, and add text.

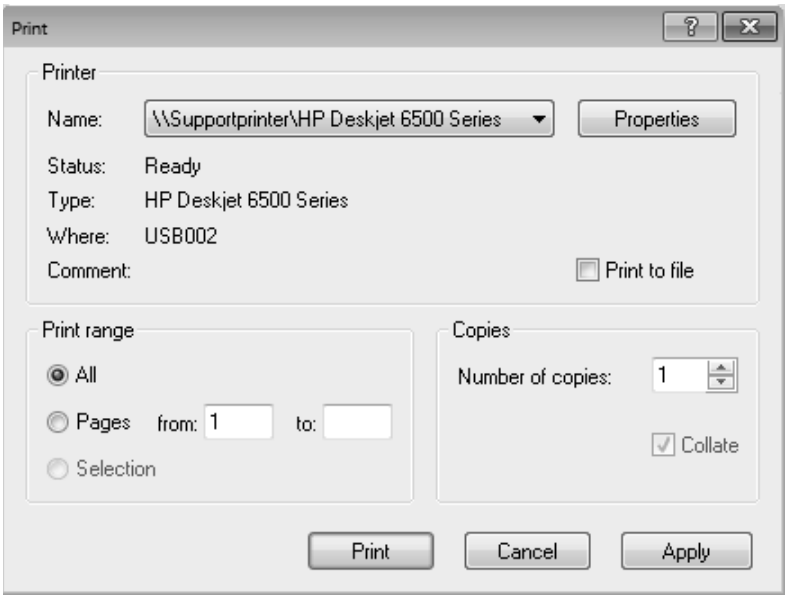
Set up the Printer

Before printing, the printer should be configured. Sitework 4D uses the printer specified to size the screen and margins.

1. Select **File > Open**, and choose Pine Street.esw. Click **Open**.

To configure a printer when using Windows XP, select **File > Print**, and click the **Printer** button

2. Select **File > Print** to configure the printer.



3. Verify your printer and its settings and click **Apply**.

Send Graphics to the Print Page

Selecting **File > Send to Print Page s**ends the current screen view to the Print Page.

1. Click the **3D View** button on the tool bar. The job is shown in 3D View mode.

2. Use the keyboard arrows and the 3D Controls to show a Terrain view you want to print, then select **File > Send to Print Page,** or click the **Send to Print Page** button.

3. If both the Overlay and Terrain are visible, the program asks which you want send. Select **Send Terrain,** and click **OK**.

The Print Page Window

The Print Page displays a representation of the page with the Terrain as an object on the page. The white area is the printable area on the page. The gray area represents the printer's margins.

Selecting Objects

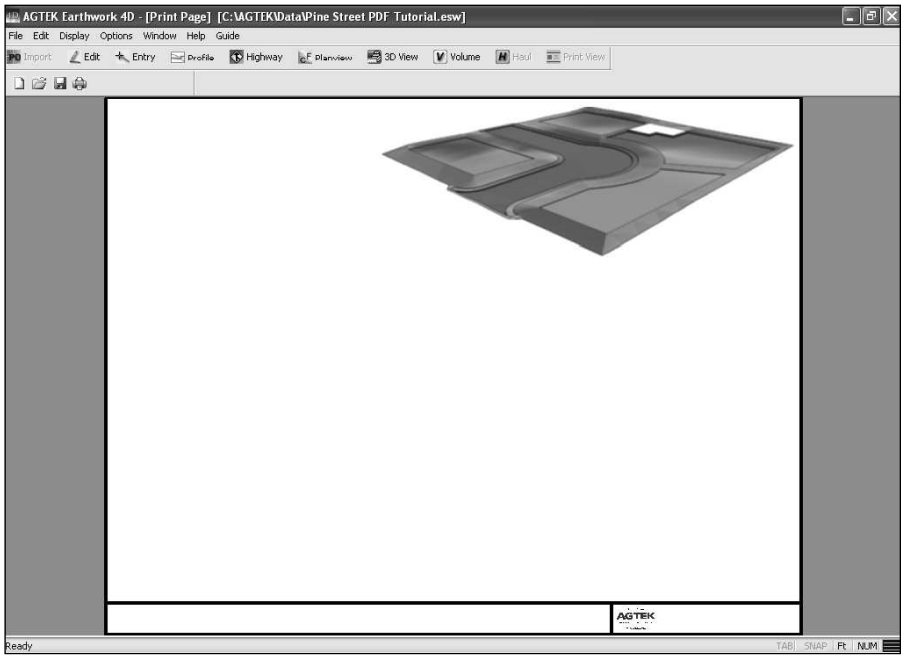
The Terrain object can be picked by clicking on it. A picked object displays four blocks around the object. In case of multiple overlapping objects, Shift + click cycles between objects.

Moving and Sizing Objects

To move an object, click and hold the object then drag it to the desired location.

To resize an object, click on an item, then click and hold the lower right selection block. The arrow changes to a double-headed arrow. By moving the cursor away from, or closer to, the object, you can resize it.

- Select the Terrain object, drag it to the left side of the page, and increase the size to similar to the illustration below.



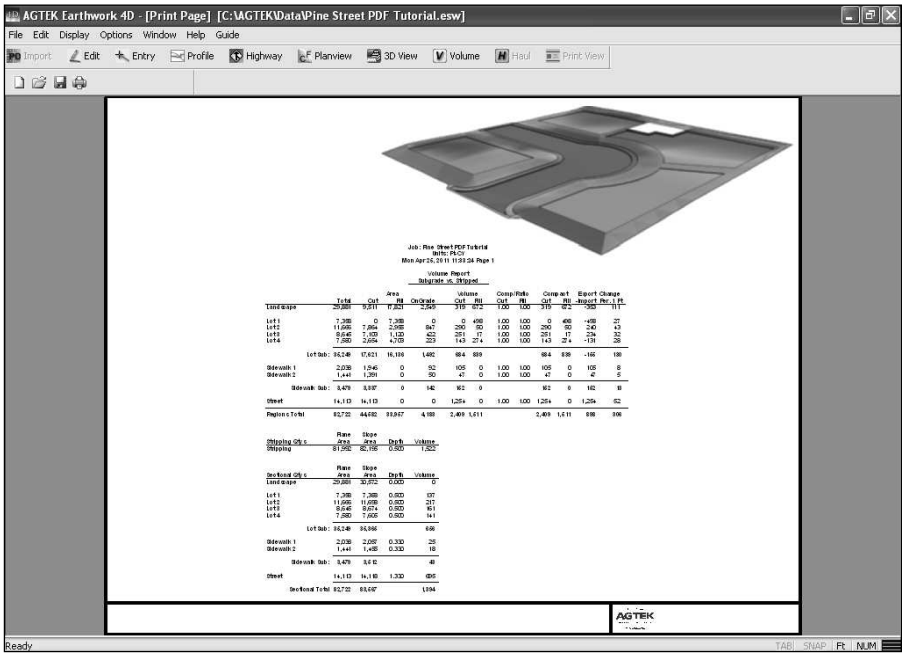
Adding Other Objects

The Print Preview window supports multiple objects. Next we'll add the Volumes Report to the page.

1. Click the **Volumes Report** button or select **Window > Volumes Report**. The Volumes Report shows the volumes and areas calculated earlier.

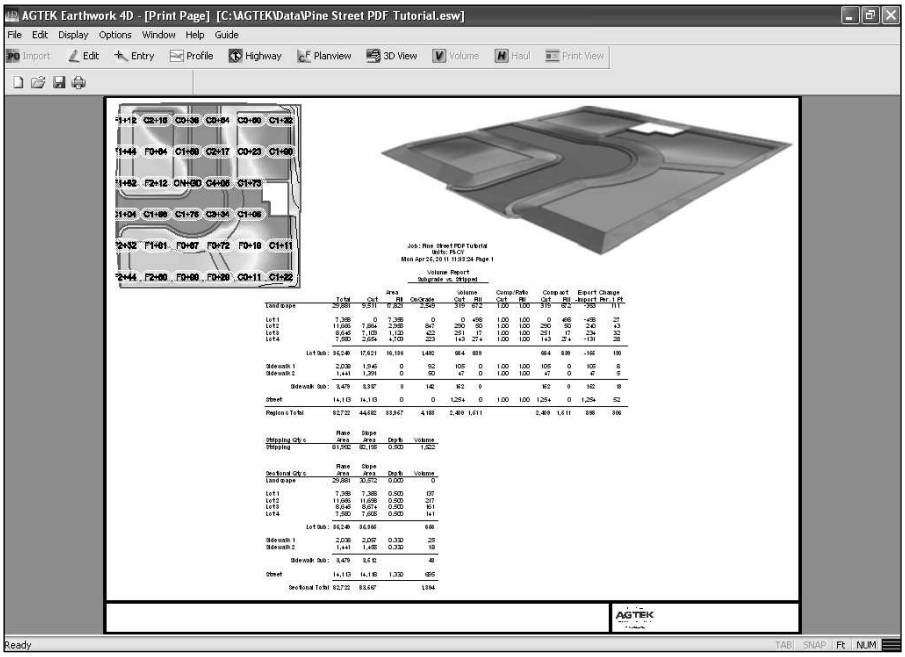
2. Select **File > Send to Print Page** and the report transfers to the Print Preview window.

The Volumes Report can be moved and resized using the same methods as the Terrain object. Move and size the report until the page looks similar to the illustration below.



Print The Report

1. Click the **Plan View** button or select **Window > Plan View**.
2. Send the image to the Print Page and switch back to the Print Page to resize and view the results. Your Print Page should look similar to the illustration below.
3. When you are satisfied with the results, click the **Print** button from the Selection Tool Bar or choose **File > Print**.

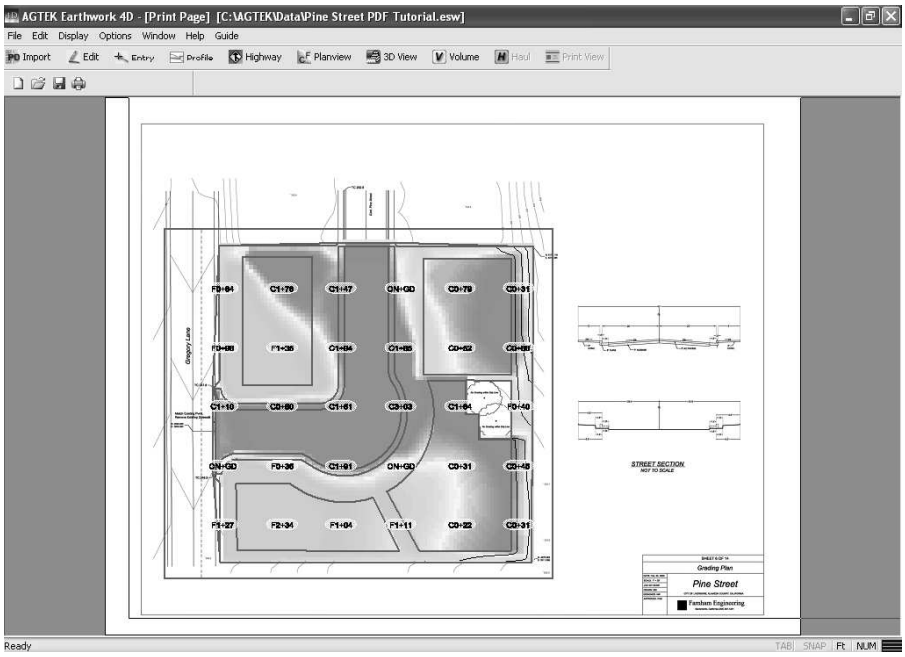


Printing the PDF

The PDF can also be sent to the print page, as it appears on screen.

1. Select each object on the print page and press the **Delete** key to delete the item and clear the Print Page of it's contents.

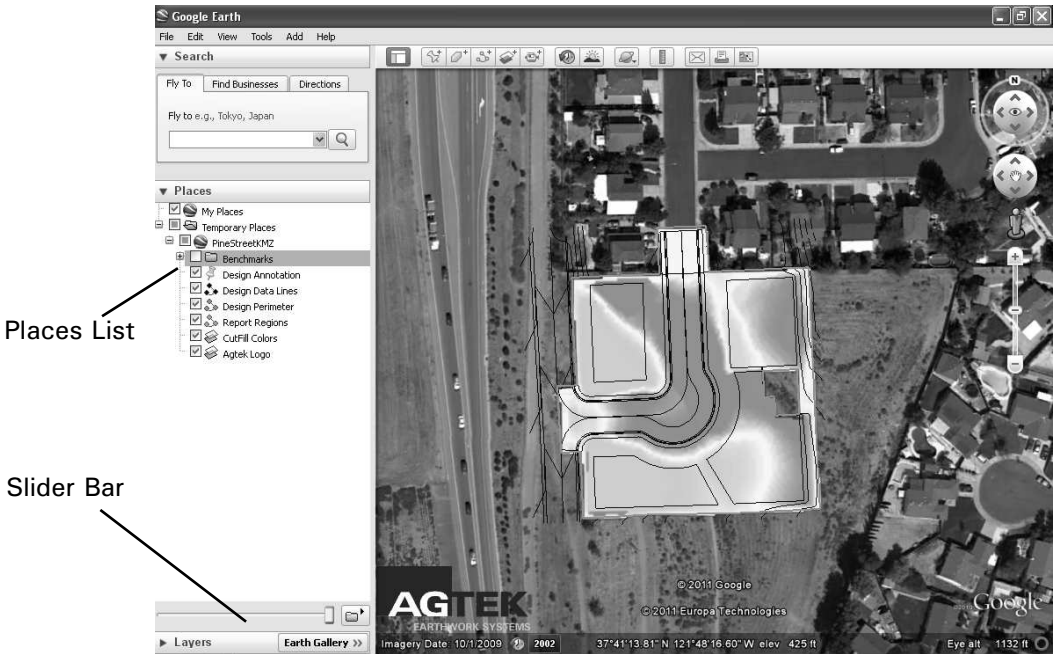
2. Switch to the **Planview Mode**.
3. Press the **T** key twice to display the PDF behind the planview of the job.
4. Click the **Send to Print Page** button and the Print Page displays.
5. The image can now be positioned and sized as desired on the Print Page.



Sending a File to Google Earth

Sitework 4D has the ability to send your job to Google Earth so you can view it in the real world conditions. When your job is sent to Google Earth, a .kmz is created which can then be shared with anyone who has Google Earth. This example uses the PineStreetKMZ.esw file. At least two benchmarks with Lat and Long coordinates are required to successfully export a .kmz file. For information on assigning Lat and Long coordinates to benchmarks see page 5-2. For more information on exportied files to GoogleEarth, watch the training videos available at http://www.agtek.com/trainingvideos.asp.

1. Open Sitework 4D and the Open dialog box displays.
2. Select the "PineStreetKMZ.esw" file and click **Open**.
3. Switch to Planview Mode. Only what is displayed in the planview mode will be displayed in GoogleEarth. Set the Ref to Design and the Dif to Stripped.
4. Select **File > Export KMZ,** and the Save As dialog box is displays.
5. Enter "PineStreet" for the file name and click **Save**.
6. Google Earth opens automatically and displays the job site with the Sitework 4D job laid over it.



The opacity of a layer can be adjusted by selecting the layer in the Places list on the left and adjusting the slider bar below. An unwanted layer can be turned off by clearing the layer in the list on the left.