Control Files

Control points are reference points at or near the project site that provide physical access to the project coordinate system. Control files contain coordinate data for the control points. In the case of GPS applications, they also provide the mathematical link between the GPS and project coordinate systems.

Importing and Opening a Control Point File

3D-Office provides an interface for working directly with control points through control files (*.gc3). Using a control file, you can add, edit, or delete control points, as well as view control point coordinates.

3D-Office imports points into 3D Project files from three file types:

- 3D control files (*.gc3)
- Pocket-3D controller files
  See “Importing From Pocket-3D” on page 9-2 for import details.
- Text files (*.txt)
  See “Importing Control Points from a Text File” on page 9-3 for import details.

Importing Control Points

Follow these steps to import control points from a 3D Control Point file into a 3D Project file.

1. With a 3D Project file open, click **Project ▸ Import control points ▸ From 3D control file (*.gc3)**.
2. On the ***Open*** dialog box, navigate to the location of the desired file, select it, and click **Open** (Figure 9-1). The information from the selected file is added to the 3D Project file.

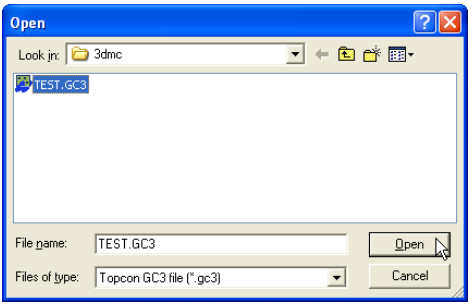

Figure 9-1. Open 3D Control Point File

Importing From Pocket-3D

Follow these steps to import a Pocket-3D controller control point file into a 3D Project file.

1. Connect the Pocket-3D controller to the computer and turn on the controller. See Appendix A for details.
2. With a 3D Project file open, click **Points ▸ Import points ▸ From Pocket-3D controller**. 3D-Office connects with the Pocket-3D controller and retrieves control point files.
3. On the ***Pocket-3D files*** dialog box, select the file to import and click **Open** (Figure 9-2 on page 9-3). The file type is automatically selected. The information from the selected file is added to the 3D Project file.

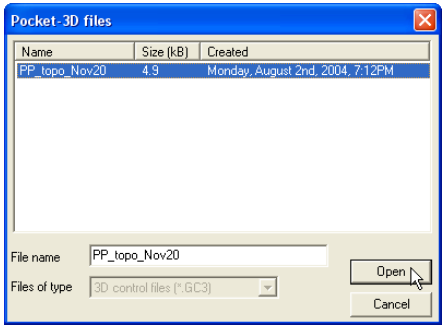

Figure 9-2. Select and Open Pocket-3D Control Point File

Importing Control Points from a Text File

Follow these steps to import control points from a text 3D control point file into a 3D Project file.

1. With a 3D Project file open, click **Project ▸ Import control points ▸ From text file**.
2. On the Select custom format dialog box, select the format type and click **Next** (Figure 9-3). See "Creating Custom Import/ Export Formats for Text Files" on page 2-2 for details on creating or editing import formats.

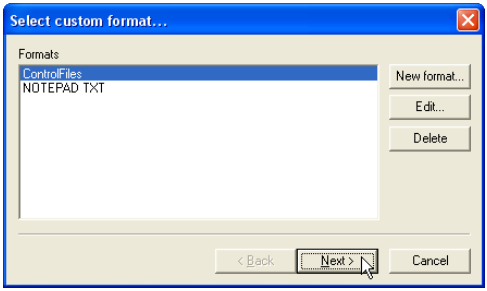

Figure 9-3. Select Format Type

3. On the ***Import points from text file*** dialog box, click **Browse**. Navigate to and select the desired *.txt file and click **Open**.

4. Click **Finish** to import the control points (Figure 9-4). The information from the selected file is added to the 3D Project file.

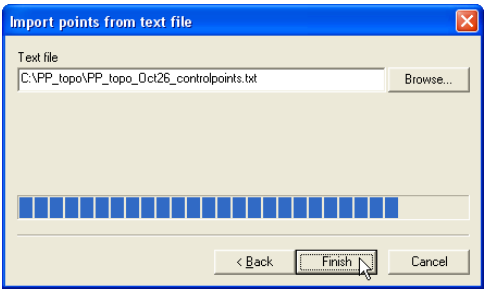

Figure 9-4. Open Control Point Text File

Opening a Control Point File

1. To open a control point file click **File ▸ Open**.
2. On the ***Open*** dialog box, navigate to the location of the file, select the file type as Control file (*.gc3), select the desired file, and click **Open** (Figure 9-5).

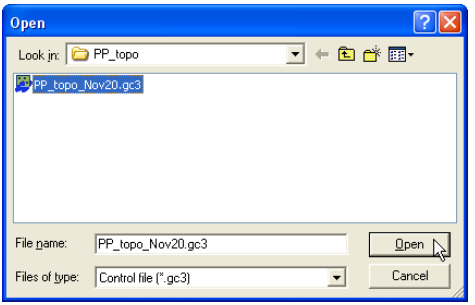

Figure 9-5. Open Control File

Opening a Pocket-3D File

If a Pocket-3D controller and the computer are connected, 3D-Office can open control point files directly from the controller. Once opened, the file can be exported to other files or saved to the computer. See Appendix A for details on connecting a computer and controller.

1. Click **File ▸ Open Pocket-3D file**.
2. On the ***Pocket-3D files*** dialog box, select the file type (*.gc3) and the desired file, then click **Open** (Figure 9-6).

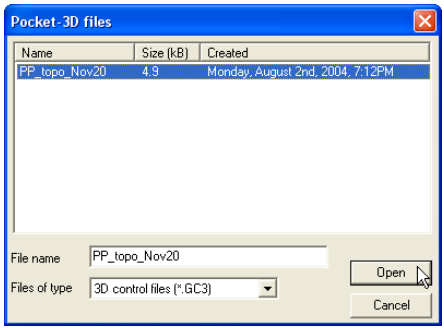

Figure 9-6. Select File and Click Open

The Pocket-3D control point file opens in 3D-Office.

Viewing Selected Control Point Information

The information button in 3D-Office opens a text file that displays various details about the selected entity or entities.

1. Using the select tool, click on or draw a rectangle around the desired point(s), then click the activated Information button (Figure 9-7).

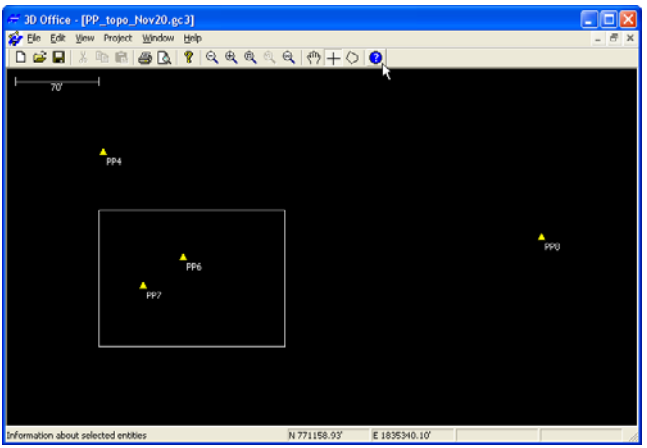

Figure 9-7. Select Control Point(s) and Click Information

2. Click the activated **information** button on the toolbar. A text file opens, displaying information on the selected control points (Figure 9-8). Any modification to this text file has no affect on the values stored in the control file.

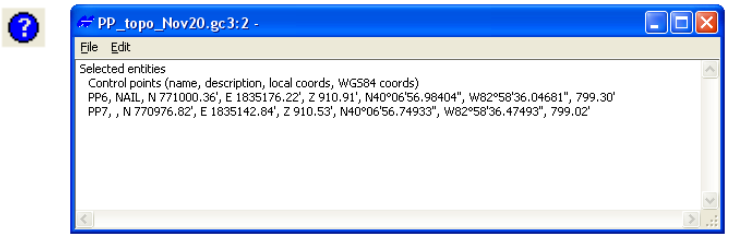

Figure 9-8. Information on Selected Entities

3. To save the information as a text file, click **File ▸ Save as**, enter a name and select a location for the file, then click **Save** (Figure 9-9).

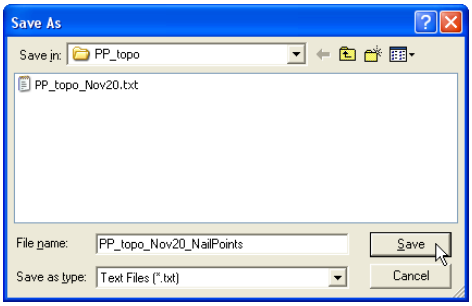

Figure 9-9. Save Control Point Information to a Text File

4. To copy the information to the clipboard, highlight the desired information and click **Edit ▸ Copy**.

Managing Control Points

Control points are surveyed points on or around a job site that provide reference coordinates for the project. As a project advances and changes, the current control points may need to be added to, revised or even removed.

To view the list of control points for adding, editing or deleting, click **Project ▸ Control points**. The ***Control points*** dialog box has the following four tabs (Figure 9-10 on page 9-9):

- The *Control points* tab lists all control points in the file and their respective information. The description is optional. The horizontal and vertical errors represent the fit between the project coordinates and the GPS coordinates. They should be within acceptable tolerances for the jobsite.

  See the following sections for adding, editing, or deleting control points.

- The *Coord System* tab selects to use localization or projection data for the job, and if a geoid is used for the job. A custom projection can be created.

  See “Using Coordinate System Data” on page 9-13 for details on this tab.

- The *Localization* tab displays tab displays the results of a localization computation. The fields on this tab are read-only and displays the numerical results of the localization computation.

  See “Viewing GPS Localization Information” on page 9-18 for details on this tab.

- The mmGPS Transmitters tab displays serial number and firmware revision of transmitters loaded into 3D-Office or included with the control point file. The adjustment status of the transmitter also displays. A new transmitter can be added, and if connected to the computer, a transmitter’s information can be loaded.

  See “Viewing and Adding mmGPS Transmitter Information” on page 9-20 for details on this tab.

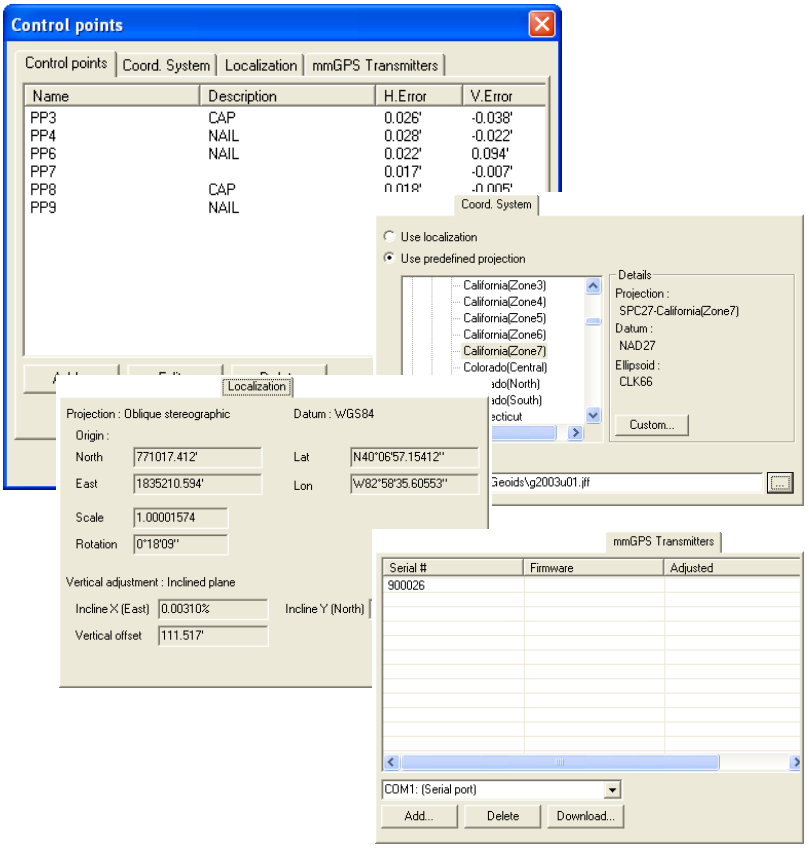

Figure 9-10. Control Points Dialog Box

Adding Control Points

The following steps describe how to add control points to the project.

1. Click **Project ▸ Control points** then click **Add** on the *Control points* tab (Figure 9-11).
2. Enter the following information and click **OK** (Figure 9-11):
   - A *Name* and *Description* (optional) for the control point.
   - The *North*, *East*, and *Elevation* project coordinates for the new control point.

- As needed, enable or disable the horizontal and vertical localization check boxes.

  In general, these boxes should be enabled for each point. However, certain scenarios may require only one of the localization check boxes to be enabled. For example, the project surveyor may indicate a certain Control Point has an elevation error or find the vertical error for a Control Point to be out of the tolerance range after localizing.
- The *WGS84* coordinates for the new control point.

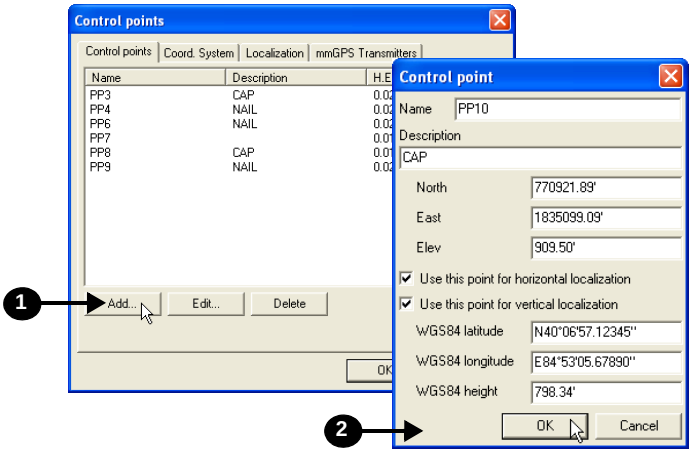

Figure 9-11. Add Control Point

The new control point is added to the control points list and a new localization is automatically computed. Click **OK** to view the new control point on the Plan View (Figure 9-12).

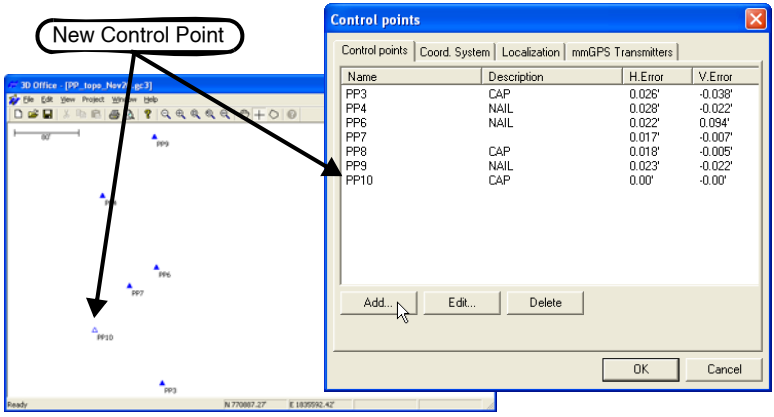

Figure 9-12. Control Point Added to File

Click **Cancel** on the ***Control points*** dialog box to leave the file unchanged, without adding the new control point. Or, after closing the dialog box, click **Edit ▸ Undo edit control points** to return the file to its original state.

Editing Control Points

You can edit the name, description, coordinates, and localization for any control point. Editing coordinates will cause an automatic recomputation of the localization.

1. Click **Project ▸ Control points**, click the control point to edit, and click **Edit** (Figure 9-13 on page 9-12).
2. Edit the desired information and click **OK** (Figure 9-13 on page 9-12).

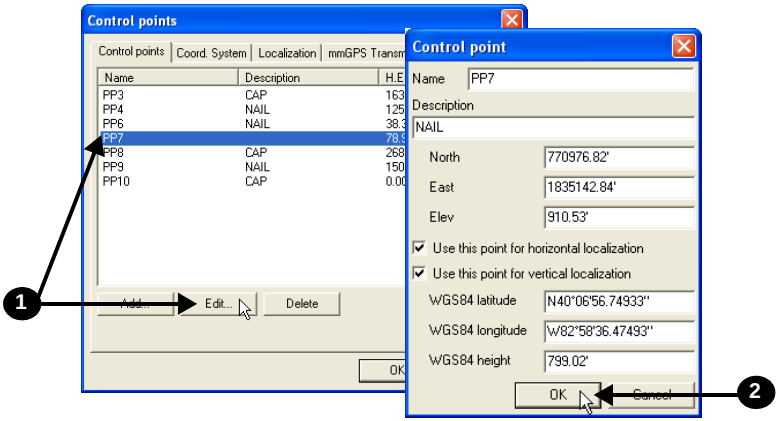

Figure 9-13. Edit Control Point

Click **Cancel** on the ***Control points*** dialog box to leave the file unchanged, without applying the edits to the control point. Or, after closing the dialog box click **Edit ▸ Undo edit control points** to return the file to its original state.

Deleting Control Points

Deleting a control point will remove it from the control point file and cause an automatic recomputation of the localization.

Click **Project ▸ Control points**, click the control point to delete, and click **Delete** (Figure 9-14). Click **Yes** at the confirmation.

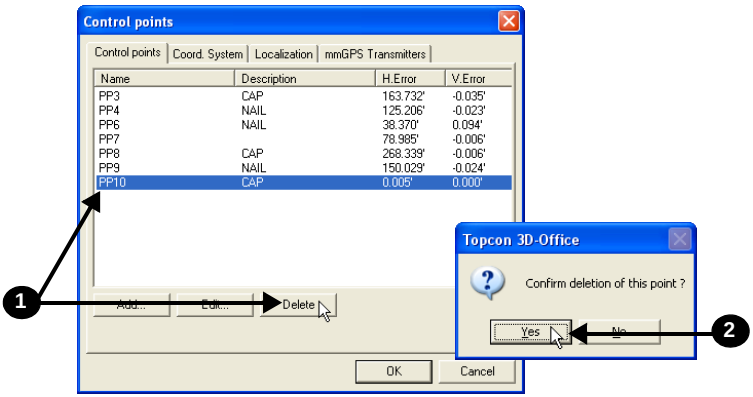

Figure 9-14. Select the Control Point to Delete and Confirm

Using Coordinate System Data

Coordinate system data represents the relationship between local positions and real-world global positions. The project can use coordinate data from either a localization or a projection.

Applying a Projection

3D-Office comes loaded with a number of projections from around the world. A projection contains the pre-defined transformation data that is used for the conversions between local and global positions.

1. Click **Project ▸ Control points**.
2. On the *Coordinate System* tab, select "Use predefined projection".
3. Navigate through the projection tree to select the projection for the applicable geographical area. Projection, datum, and elevation information will display (Figure 9-15).
4. If applying a geoid, select the option and click the browse button. See "Applying a Geoid" on page 9-15 for details.
5. Click **OK** to save the setting(s) and apply them to the project (Figure 9-15).

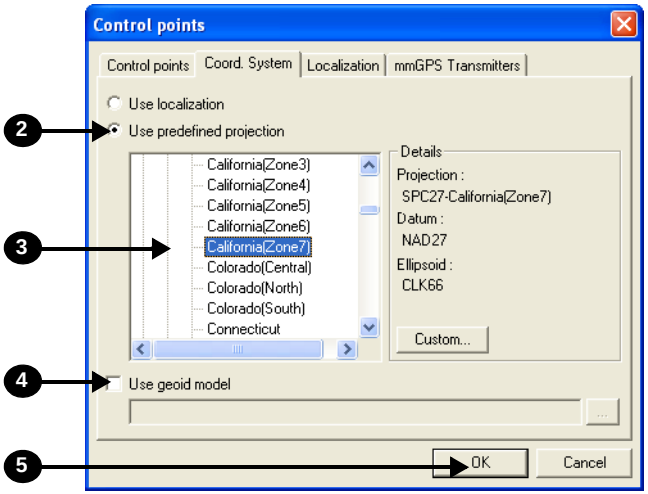

Figure 9-15. Select Projection

Creating a Custom Projection or Datum

A custom projection or datum can be created if no suitable pre-defined projections exists in the list.

1. Click **Project ▸ Control points**.
2. On the *Coordinate System* tab, select "Use predefined projection" and click **Custom**.
3. Enter the desired parameters for the projection. See "Creating a Custom Projection" on page 2-13 for details.
4. If creating a custom datum, click the browse button and enter desired parameters. See "Creating a Custom Datum" on page 2-14 for details.
5. Click **Ok** to save the custom projection (Figure 9-16).

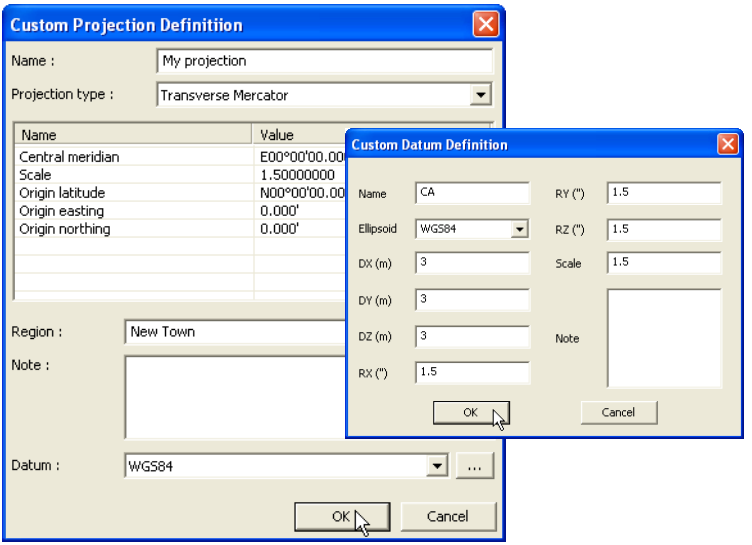

Figure 9-16. Create Custom Projection and/or Datum

Applying a Geoid

A geoid model can be used to transform the ellipsoidal heights measured by GPS (purely geometrical) to heights that are based on a physical reference surface, such as mean sea level. Over small regions there is little difference between the two reference surfaces, but for large projects the differences may be unacceptable. Working with a geoid model when surveying with GPS will ensure proper point measurements.

Geoid models for the United States have been developed by the National Geodetic Survey (NGS). The most recent model is called Geoid 2003. To keep the file size smaller, the continental United States is divided into a grid with eight zones; each zone has a geoid. Use Figure 9-17 to help you determine the geoid file to use for your project. For Geoid 2003, the files are numbered “g2003u01” to “g2003u08” to correspond to grids 1 to 8. Contact your local representative or Topcon Support with questions.

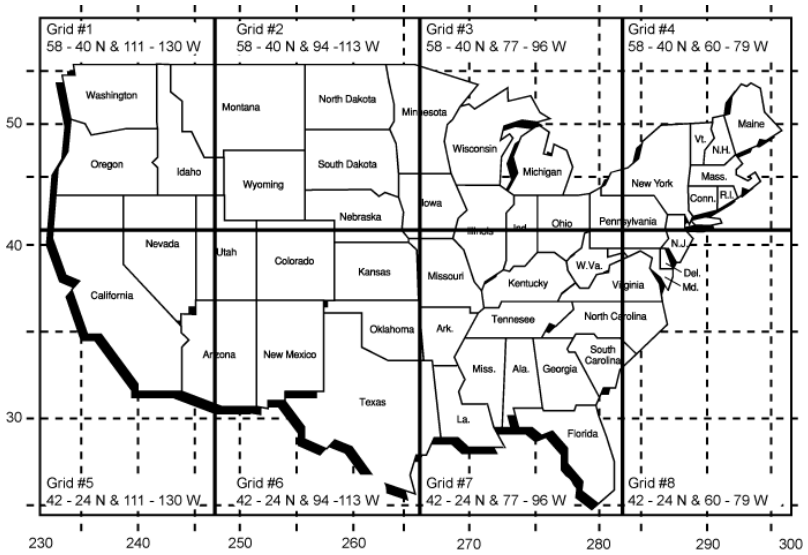

Figure 9-17. Geoid Grid for US

Note the following requirements for using geoid files:

- Only new projects can be assigned geoid files. If the file already has data (other than the master benchmark), the geoid function will be disabled.
- If the geoid file cannot be found when opening a project, a warning displays.
  - Press **OK**, then browse to the location of the geoid to update the folder where 3D-Office will find the geoid file.
  - Press **Cancel** to open the file without the geoid. Note that the warning will continue to display each time the project is opened.
- Once a project contains data, the geoid cannot be changed.
- Geoid files must be in the Topcon proprietary format (*.gff or *.jff). The latest files for the US and Australia are included on the software CD. Files from other sources can be converted to gff format using the Topcon Tools (or Topcon Link) program.

1. Click **Project ▸ Control points**.
2. On the *Coordinate System* tab, select "Use geoid model" and click the **browse** button.

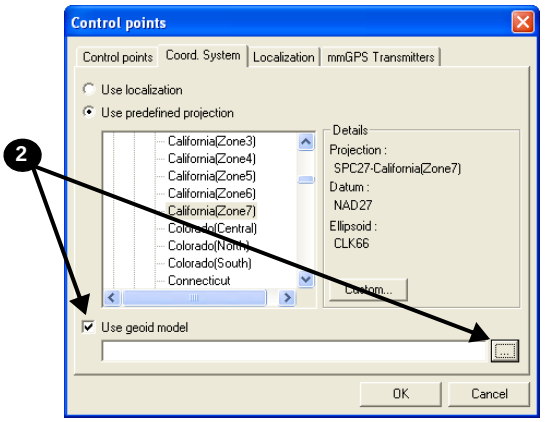

Figure 9-18. View Geoids

3. Navigate to the location of the geoid file, select it and click **Open** (Figure 9-19).
4. Click **OK** to save the setting(s) and apply them to the project (Figure 9-19).

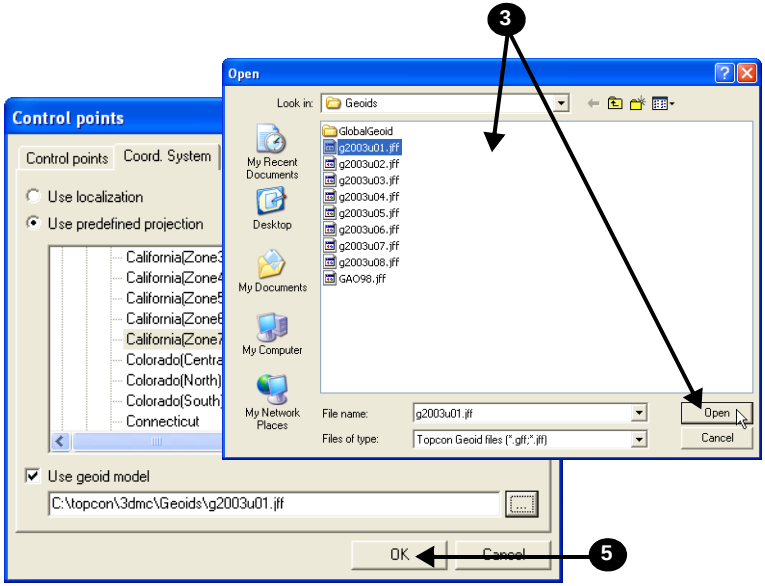

Figure 9-19. Apply Geoid File

Viewing GPS Localization Information

Localization is a mathematical transformation between global GPS coordinates and local project coordinates. If a project contains a localization, the localization information displays in the ***Control points*** dialog box.

1. Click **Project ▸ Control points**.
2. On the ***Control points*** dialog box and the *Localization* tab, view the following information (Figure 9-20):
   - The *Projection* and *Datum* used for the localization.
   - The horizontal coordinates of the *Origin* for both the project and GPS coordinate systems.
   - The *Scale* difference between the project and GPS coordinate systems.
   - The *Rotation* angle between the project and GPS coordinate systems.
   - The inclination (in percent) of the horizontal plane with respect to the X and Y axis, and the offset of the two coordinate system along the vertical axis.

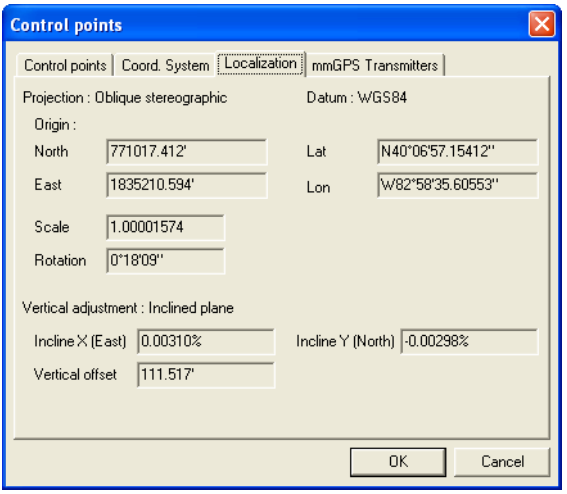

Figure 9-20. GPS Localization Information

Principles of GPS Localization

GPS systems are capable of precise positioning, but the positions computed are relative to a global reference system defined in terms of geographic latitude, longitude and height above a reference ellipsoid. To be useful for local site work, global GPS coordinates need to be transformed into local site coordinates, defined in terms of a distance north and east of some origin point and some distance above an elevation datum. These north, east, and elevation coordinates (NEZ) may be those of a regional coordinate system—for example, a state plane system in the United States—or they may be arbitrarily defined. NEZ coordinates must be defined in terms of the construction design data. In either case, a mathematical conversion is necessary to transform global GPS coordinates into NEZ coordinates relative to the local coordinate system. The transformation process is commonly known as “localization”.

The basic approach to calculating the mathematical transformation is to provide pairs of point coordinates for each control point on the project. A point pair consists of:

- local NEZ coordinates for the point and
- global latitude, longitude, and height coordinates for the point (measured as described in this section).

These pairs of points are needed to calculate a precise mathematical formula for transforming all global GPS coordinates generated in the GPS receiver to local NEZ coordinates for a particular project.

The following steps ensure a high-quality localization suitable for centimeter-level surveying.

- First, the local control points must be precisely measured. The quality of measurements directly affects the results of the localization.
- Second, the control points need to be located more or less evenly around the site. Generally, the more uniformly dispersed the control points the better. In contrast, if they are clustered together, the results will be less than ideal.

A good rule of thumb is to place control points evenly around the perimeter of the site or grading area. While not directly related to the quality of the localization, points should be placed in areas having easy access and few obstructions.

- GPS localization requires a minimum of three control points, but at least four or more well placed points should be used for better results.

Viewing and Adding mmGPS Transmitter Information

Millimeter GPS (mmGPS) combines the elevation accuracy of a laser with the horizontal and vertical accuracy of GPS+ receivers to provide millimeter accuracy while grading or surveying. The system provides multiple rover support for machine and pole mounted sensors.

3D-Office can display transmitter information when included with a control point file or can load new transmitters and respective information.

1. Click **Project ▸ Control points**.
2. On the ***Control points*** dialog box and the *mmGPS Transmitters* tab, view the following information loaded mmGPS transmitters (Figure 9-20):
   - The *Serial number* (up to four).
   - The *Firmware* revision.
   - Whether or not the transmitter has been *Adjusted* (calibrated).

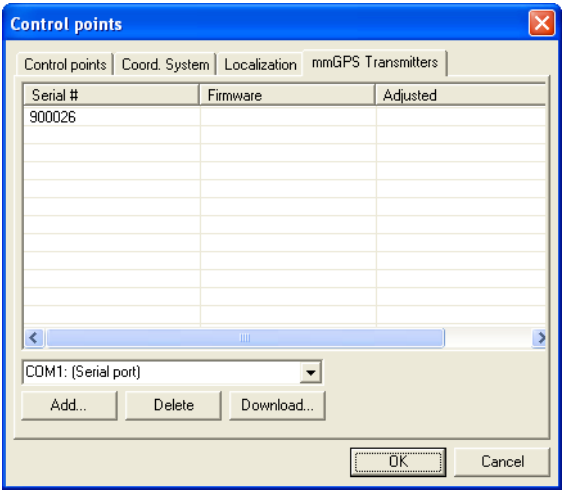

Figure 9-21. mmGPS Transmitter Information

Adding a mmGPS Transmitter

1. Click **Project ▸ Control points**.
2. On the ***Control points*** dialog box and the *mmGPS Transmitters* tab, click **Add**.
3. Enter the serial number of the new transmitter and press **Enter** (Figure 9-22).

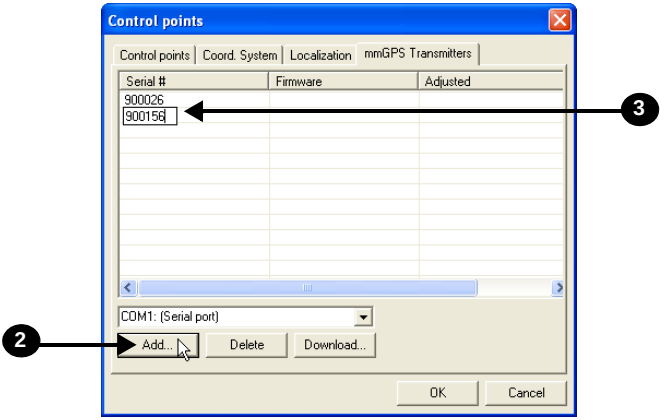

Figure 9-22. Add New Transmitter

Downloading mmGPS Transmitter Calibration Data

Calibration data for mmGPS transmitters includes firmware revision and any adjustment (calibration) performed to fix errors in incline in the self-leveling mechanism of the transmitter. The adjustment process applies an offset to the transmitter.

1. Connect a mmGPS transmitter to the computer running 3D-Office (refer to the transmitter's documentation for details). Turn on the transmitter.
2. In 3D-Office, click **Project ▸ Control points**.
3. On the ***Control points*** dialog box and the *mmGPS Transmitters* tab, select the COM port of the computer that is connected to the transmitter.
4. Select a transmitter and click **Download**.
5. Click **Ok** at the confirmation (Figure 9-23).

   3D-Office connects to the mmGPS transmitters and downloads calibration data.

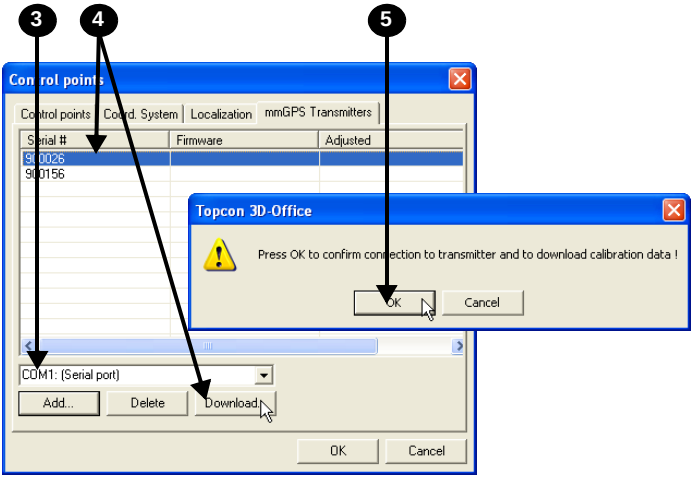

Figure 9-23. Download Transmitter Calibration Data

Exporting Control Points

3D-Office exports control points from a 3D Control Point or 3D Project file to a control files (*.gc3) and text files, as well as to a Pocket-3D controller.

Exporting Control Points to a Control File

Use this process to keep copies of files or track progress.

1. Select the points to export and click **Project ▸ Export control points ▸ To 3D control file (*.gc3)**.
2. On the ***Save As*** dialog box, do one of the following (Figure 9-24):
   - To overwrite an existing control file, navigate to the location of the file and select it, then click **Save**,
   - To save to a new file, navigate to the desired folder, type a name for the new file, and click **Save**.

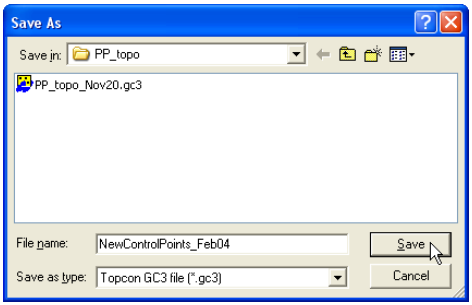

Figure 9-24. Save Control File

Exporting Control Points to a Pocket-3D Controller

1. Connect the Pocket-3D controller to the computer and turn on the controller (see Appendix A for details). Run Pocket-3D on the controller.
2. Select the points to export and click **Points ▸ Export control points ▸ To Pocket-3D controller**.

   3D-Office connects to the Pocket-3D controller and retrieves control files.
3. On the ***Pocket-3D files*** dialog box, do one of the following and click **Save** (Figure 9-25):
   - Select a file in which to save the desired information.
   - Enter a new file name or keep the default file name to save a new file to the controller's memory.

   The file type is automatically selected.

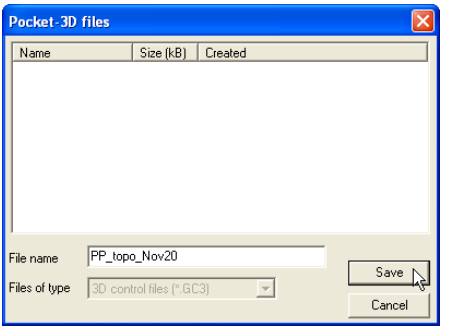

Figure 9-25. Save File to Pocket-3D Controller

The information from the selected file is saved in the Pocket-3D controller's memory or added to the selected file in the controller.

Exporting Control Points to a Text File

1. Select the points to export and click **Points ▸ Export control points ▸ To text file**.
2. On the ***Select custom format*** dialog box, select the format type and click **Next** (Figure 9-26). See "Creating Custom Import/ Export Formats for Text Files" on page 2-2 for creating new formats or editing current formats.

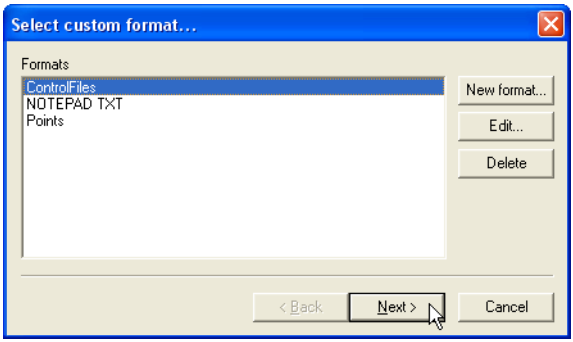

Figure 9-26. Select Custom Format

3. On the ***Export points to text file*** dialog box, click **Browse**. Navigate to the desired location in which to save the file, select a current file to replace or type a name for a new file. Click **Save**.
4. Enable *Append to existing file* to add the control points to an existing file.
5. Enable the view results box to automatically open the text file when the export completes. If needed, select the desired *Viewer*.

6. Click **Finish** to export the selected points to a text file (Figure 9-27).

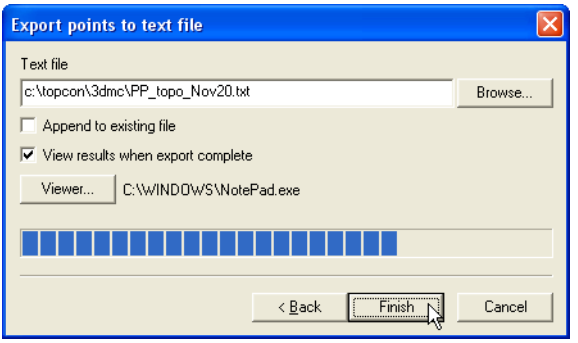

Figure 9-27. Exporting Points to Text File

The selected *Viewer* opens and displays the exported points in the specified format (Figure 9-28).

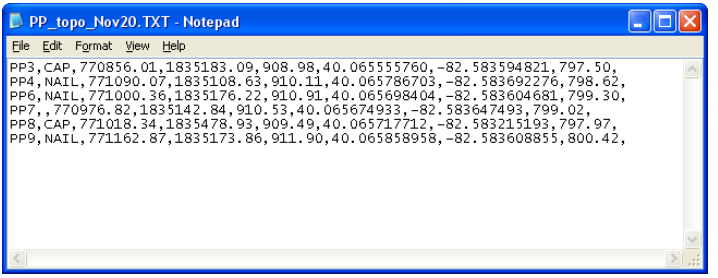

Figure 9-28. Exported Control Points in Text Editor Window

Cut/Fill Files

Cut/fill files provide relative height information between two surfaces. These files can be used to determine cut and fill volumes between surfaces and to ascertain the high and low excavation areas within a project. 3D-Office creates cut/fill files through the surface comparison function.

Opening a Cut/fill File

3D-Office opens current cut/fill files or creates cut/fill files through the compare surface function.

1. To open a cut/fill file (*.cf3), click **File ▸ Open**.
2. On the ***Open*** dialog box, navigate to the location of the file, select the file type as Cut/fill plot (*.cf3), select the desired file, and click **Open** (Figure 10-1).

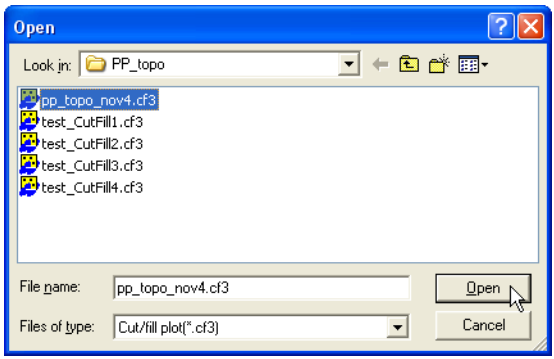

Figure 10-1. Open Cut/fill File

Viewing Plot Properties

To view the cut/fill plot properties, click **Cut/Fill ▸ Plot properties**. The Properties dialog box displays the following (Figure 10-2):

- Total area of surface model
- Total cut and fill volumes
- Total balanced volume
- Cut/fill minimum and maximum values
- Effective cut/fill ratio (cut volume to fill volume)

This information also displays in the title bar when printing the graph.

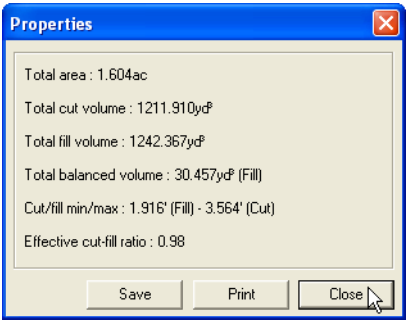

Figure 10-2. Plot Properties

Saving Plot Properties to a Text File

1. Click **Cut/Fill ▸ Plot properties** and click **Save** (Figure 10-3 on page 10-3).
2. Navigate to the location in which to save the text file, enter a name for the file, and click **Save**.

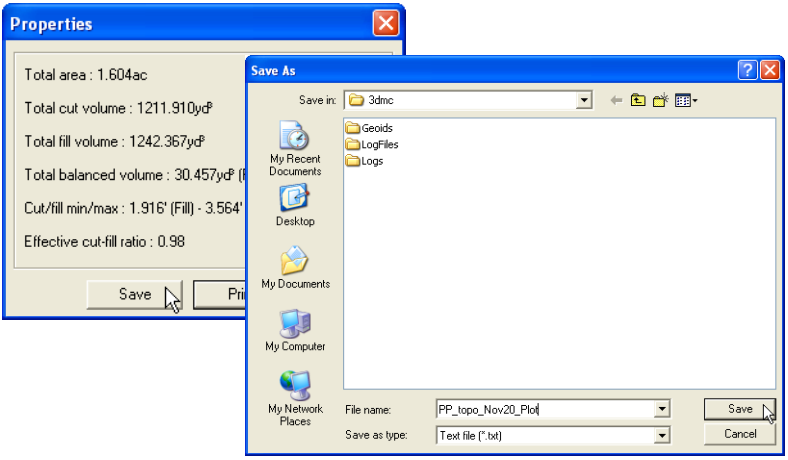

Figure 10-3. Save Plot Properties As Text File

Printing Plot Properties

1. Click **Cut/Fill ▸ Plot properties** and click **Print** (Figure 10-4).
2. On your system's print dialog box, select desired settings and click **Print**.

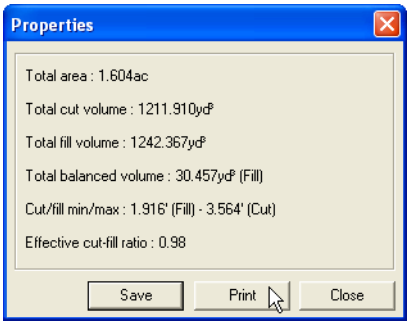

Figure 10-4. Print Plot Properties As Text File

Creating a Cut/fill File

Cut/fill files are created through the compare surfaces function using TIN surfaces, plane surfaces, or road alignments in a 3D Project file. The "compare surfaces in current file" option is only available in 3D Project files, not 3D Plane, 3D TIN, or 3D Alignment files.

1. Click one of the following menu options to compare two surfaces in the same file.
   - **Plane ▸ Compare current plane surface ▸ With other surface in this project**
   - **TIN ▸ Compare current TIN surface ▸ With other surface in this project**
2. On the ***Surfaces*** dialog box, select the following and click **OK** (Figure 10-5):
   - The *Surface of type* from the drop down list.
   - The desired surface in the surface list

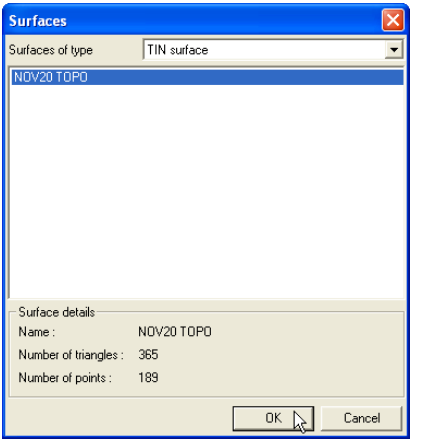

Figure 10-5. Select Surface to Compare

3D-Office compares the two surfaces and opens a Cut/Fill file displaying contours and/or a grid of cut/fill values, depending on the display settings (Figure 10-6).

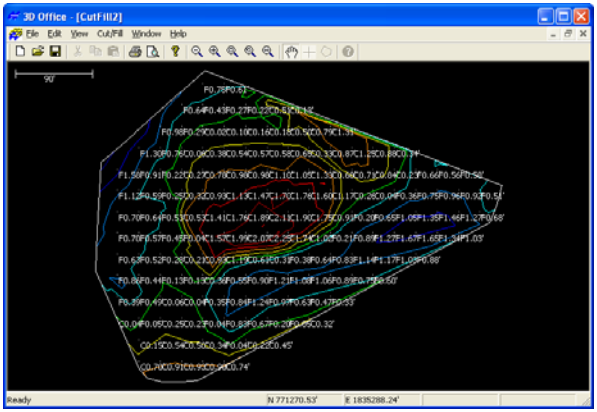

Figure 10-6. Cut/fill File for Compared Surfaces

3. Save the cut/fill file. Click **File ▸ Save as**, navigate to the desired located, type a name for the file, and click **Save**.

Comparing Surfaces in Different Files

Saving surfaces in different files allows you to track grading progress. 3D-Office supports this approach to project management through the compare surface function. Comparing surfaces in different files creates a cut/fill file of the highs and lows of the overlapping surfaces.

1. Depending on the type of file open, click one of the following:
   - For 3D Plane files, **Plane ▸ Compare plane surface ▸ With 3D surface file**
   - For 3D TIN files, **TIN ▸ Compare TIN surface ▸ With 3D surface file**
   - For 3D Project files, **Plane ▸ Compare current plane surface ▸ With 3D surface file** or **TIN ▸ Compare current TIN surface ▸ With 3D surface file**
2. On the ***Open*** dialog box, navigate to the folder in which the file resides, select the *Files of type* from the drop down list (either TN3 files, PL3 files, or RD3 files), select the desired file and click **OK** (Figure 10-7).

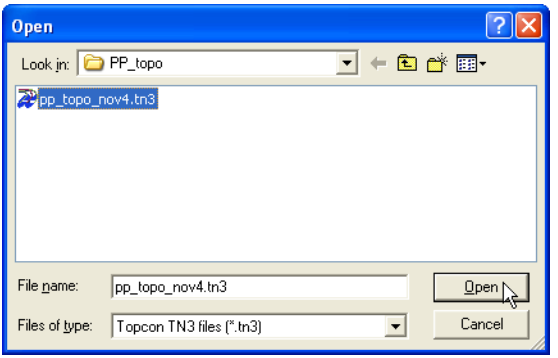

Figure 10-7. Select Surface to Compare

NOTICE

The selected surface file must overlap with the current surface, otherwise, no comparison is possible.

3D-Office compares the two surfaces and opens a Cut/Fill view displaying the results of the comparison (Figure 10-8).

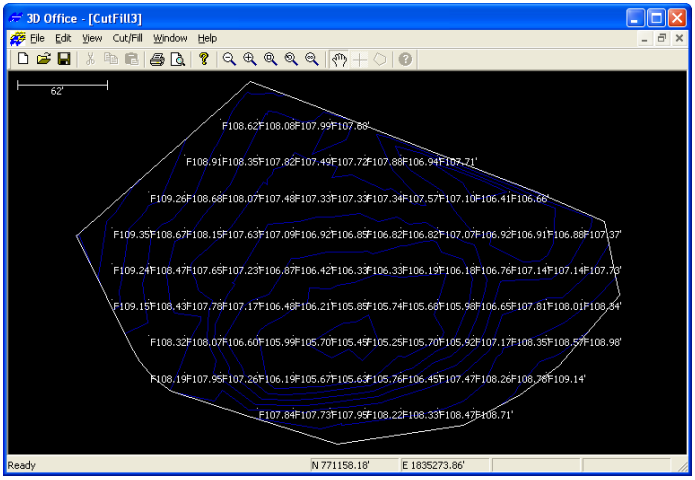

Figure 10-8. Cut/fill File for Compared Surfaces

3. View the cut/fill information. See “Cut/Fill Files” on page 10-1 for details on cut/fill surface files.
   - If needed, re-compare the surface files after making desired adjustments in the original 3D surface files (for example, changing the Direction of mainfall for a plane file).
   - Save the cut/fill file. Click **File ▸ Save as**, navigate to the desired located, type a name for the file, and click **Save**.

Setting Plot Options

The ***View Options*** dialog box sets various cut/fill display options, and the type of units to use for various project quantities.

1. With a cut/fill file open, click **Cut/Fill ▸ Plot options**.
2. On the *Cut/fill* tab, select and enter the following information (Figure 10-9 on page 10-9):
   - Enable *Show boundaries* to display the boundary of the surface.
   - Enable *Show breaklines* to display any breaklines in the surface definition.
   - Enable *Show grid of cut/fill values* to display a grid of cut/fill values.
   - Type a value in *Grid interval* to set the spacing of the cut/fill grid lines.
   - Enable *Show contours* to display contours of the cut/fill surface.
   - Enable *Show solid colored regions* to display the cuts and fills as solid colors. The color grid describes the colors associated with a cut/fill value.
   - Type a value in *Color interval* to change the cut/fill range value associated with the corresponding color.
3. Click the *Units* tab. See “Setting Project Units” on page 2-15 for a description of the fields on this tab.

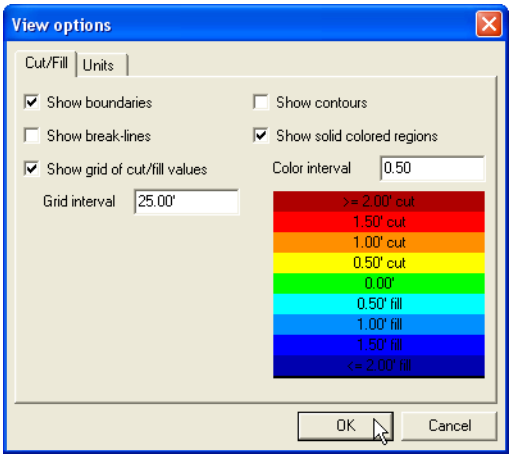

Figure 10-9. Set Cut/fill View Options

Notes:

Connecting a Computer and Controller

Connecting the Pocket-3D controller and a computer will allow files to be transferred between devices for jobsite and file management.

Connect your device and computer using the desired connection method: serial cable, USB cable (Figure A-1), ethernet cable to connect to a network, or Bluetooth® wireless technology.

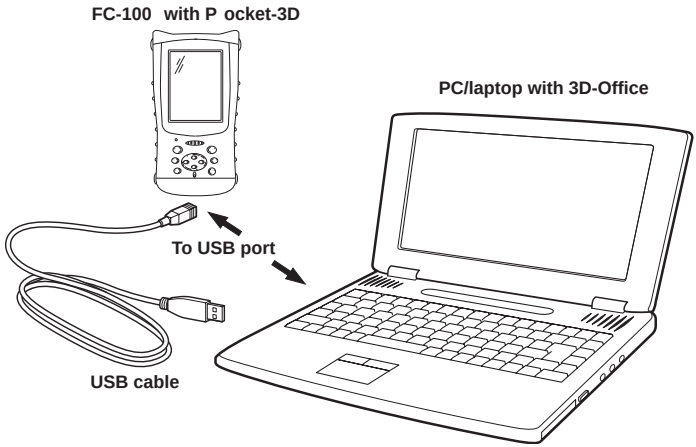

Figure A-1. Connect Controller and Computer

Regardless of the connection method, Microsoft® ActiveSync® must be installed on the computer to transfer data between a Pocket-3D controller and a computer with 3D-Office. ActiveSync establishes a connection between the computer and a mobile device, such as a TPS Controller. The mobile device must have the Windows CE operating system. ActiveSync is available for free from the Microsoft website (http://www.microsoft.com).

Follow the procedure below to establish a connection between the computer and a Pocket-3D controller using Microsoft ActiveSync.

1. If needed, download and install Microsoft ActiveSync, following the on-screen instructions from microsoft.com and the ActiveSync Install Wizard.
2. Connect your device and computer using the desired connection method (serial cable, USB cable, ethernet cable to connect to a network, or Bluetooth® wireless technology).
3. Switch on the Pocket-3D controller and computer.
4. Start Microsoft ActiveSync.
5. Click **Next** on the ***Get Connected*** dialog box (Figure A-2).

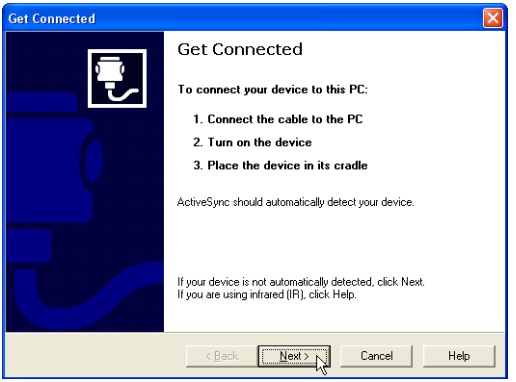

Figure A-2. Connect Using ActiveSync

The computer establishes a connection with the device. If the device is switched on, the ***Connected*** dialog box displays. The system tray also displays a green ActiveSync circle, indicating a successful computer-to-device connection (Figure A-3).

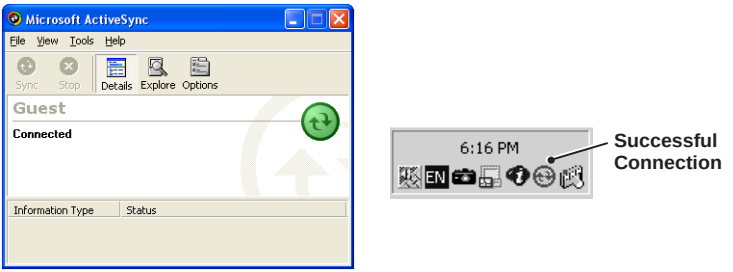

Figure A-3. Connection Established

If the computer has only one COM port:

1. Start Microsoft ActiveSync.
2. Click **File ▸ Connection Settings** (Figure A-4).

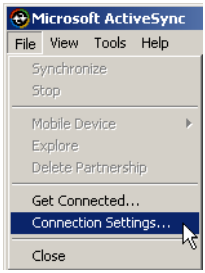

Figure A-4. Open Connection Settings

3. On the ***Connection Settings*** dialog box, click and enable the following parameters (Figure A-5):
   - "Allow network (Ethernet) and Remote Access Service (RAS) server connection with this desktop computer"
   - "Show status icon in Task bar"

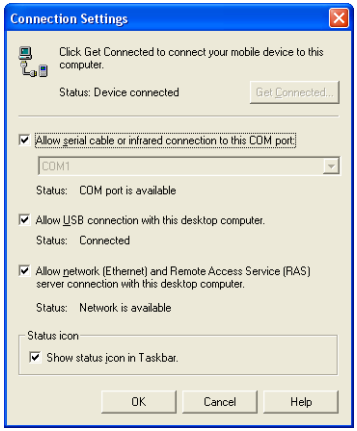

Figure A-5. Connection Settings

In this case, ActiveSync does not request the COM Port after disconnecting the TPS controller from the computer. The COM Port connects the computer with a TPS GPS+ receiver or Total Station.

If there are two or more COM ports on the computer:

1. Start Microsoft ActiveSync.
2. Click **File ▸ Connection Settings**.
3. On the ***Connection Settings*** dialog box, set the following parameters (Figure A-6):
   - click and enable "Allow serial cable or infrared connection to this COM port"
   - select a COM port from the drop-down list (usually COM 1)

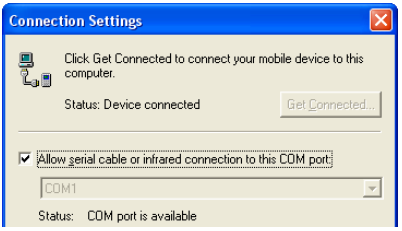

Figure A-6. Connection Settings for Multiple COM Ports

In this case, Microsoft ActiveSync requests the COM Port after disconnecting the controller and computer. The COM Port is available only for devices that use the Windows CE operating system.

Use separate COM Ports for computer-to-controller connections and computer-to-receiver/Total Station connections.

When reconnecting the Pocket-3D controller and TPS Controller, use the same serial interface port set in the ***Connection Settings*** dialog box.

Hot Keys

Table B-1 lists common keyboard shortcuts, or hot keys, for some 3D-Office functions.

Table B-1. AGForm-3D Hot Keys

Press This...	To Perform this Function...
Ctrl+A	Selects all (in active view).
Ctrl+C	Copies the selected information to the clipboard.
Ctrl+N	Opens a new 3D Project.
Ctrl+O	Displays the ***Open*** dialog box for selecting a file to open.
Ctrl+P	Displays the ***Print*** dialog box for printing the Plan View.
Ctrl+S	Saves the project.
Ctrl+V	Pastes copied information to the selected location.
Ctrl+X	Cuts the selected information for pasting to the clipboard.
Ctrl+Y	Redoes the last operation.
Ctrl+Z	Undoes the last operation.
Esc	Quits the Measure distance/area, create new polyline, and TIN profile view functions.
Arrow keys	When in 3D simulation mode, pans the screen left, right, up, and down (also depends on the type of simulation).
=	When in 3D simulation mode for TIN files, zooms in.
-	When in 3D simulation mode for TIN files, zooms out.
F2	When in 3D simulation mode for TIN files, changes the view from inside the machine's cab. When in the Points List view, allows in-place editing.
F3	When in 3D simulation mode for TIN files, changes the view from outside the machine's cab.
F4	When in 3D simulation mode for TIN files, changes the view from above the machine.
Tab	When in 3D simulation mode for TIN files, changes the machine to the next machine in the Machine menu.

Hot keys that correspond to a menu option are listed next to the menu option (Figure B-1).

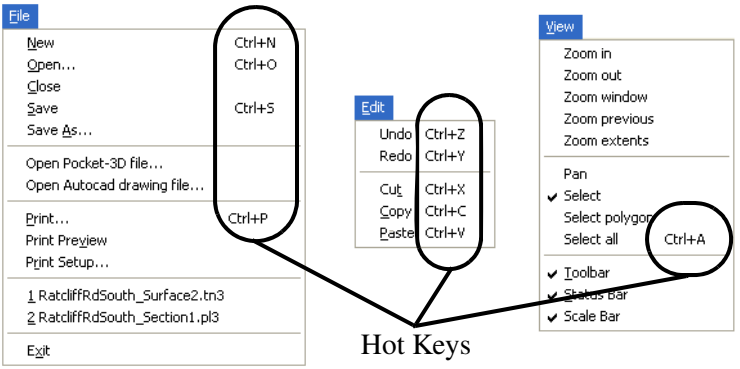

Figure B-1. Menu Examples with Hot Keys

Index

Numerics

A

B

C

M

N

O

P

R

S

T

U

V

W

X

Topcon Positioning Systems, Inc.
7400 National Drive, Livermore, CA 94551
800·443·4567 www.topcon.com

ISO 9001:2000
FM 68448

3D-Office User's Manual
P/N: 7010-0684 Rev. B 05/06 250