TRIMBLE GEOMATICS OFFICE TECHNICAL NOTES

The Trimble Geomatics Office™ software is an important part of Trimble's total surveying solutions. Never has the collection, processing, and management of survey data been so easy.

Surveyors and engineers who work with data received from GPS, conventional or robotic total stations, digital levels, laser instruments, road design packages or GIS databases, appreciate its ease of use and common interface for all operations. Trimble Geomatics Office software provides a seamless link from design to field to completion, with powerful processing capabilities to generate the final data in whatever form is desired. Trimble Geomatics Office is the surveying software solution for the 21st Century.



COMPLETE SURVEY DATA PROCESSING

The Trimble Geomatics Office software takes land survey office software one step further by integrating common tasks into a single, unified package—tasks such as:

- · Processing of GPS, conventional, and digital level survey data
- Quality assurance and quality control of data (QA/QC)
- · Road design data import and export
- · Survey data import and export
- · Digital terrain modeling and contouring
- · Datum transformation and projections
- Creating ground coordinate systems and site definitions, based on hundreds of published coordinate systems from around the world
- · GIS data capture and data export
- · Selecting points and observations
- · Feature coding
- · Project reporting
- · Survey project management
- GPS baseline processing
- · Survey network adjustment for GPS and conventional data

With numerous **innovative** and **unique features**, the
Trimble Geomatics Office software is exceptionally **easy-to-use**, **intuitive** and **flexible**. **Visualization tools** such as background
maps and the Survey/Plan views help you "see" the data in
the context of the whole project. And powerful **spatial data management** capabilities bring a new level of productivity and
efficiency to the surveying and civil engineering office.





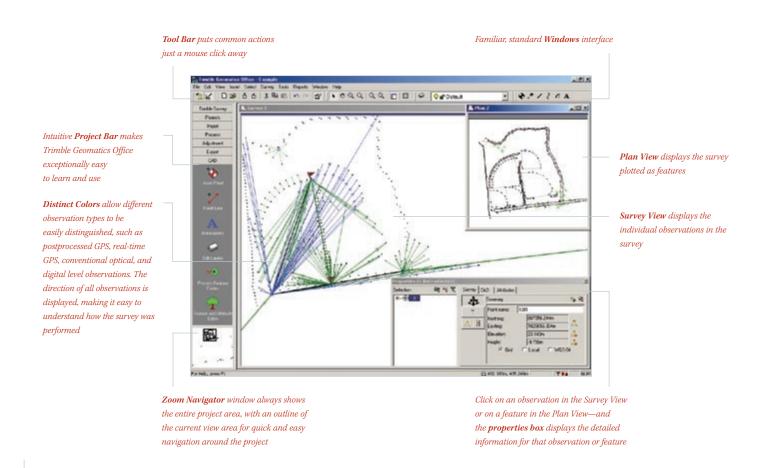
INTUITIVE VISUAL INTERFACE

In addition to the standard and familiar **Windows interface**, the Trimble Geomatics Office software features a **Project Bar** and **Tool Bar**, both set out to follow your workflow and designed to make the software easy to learn and use. Full Microsoft IntelliMouse support literally puts **real-time zoom** and **pan** functions at your fingertips.

The **Survey View** and **Plan View** allow you to switch seamlessly between a view of the survey displayed as observations and a view displayed as features on a plan. The Survey View shows you survey information, such as RTK base stations, conventional setups and control points. After processing feature codes, the Plan View shows topographic information, such as trees, fence lines, and roads. This complementary representation of data enables office operators to visualize what happened in the field, even if they did not collect the field data!

The Survey View is used to view raw data, analyze survey observations, process GPS baselines, and perform leastsquares network adjustments. GPS observations are shown as vectors and optical observations are shown as observations from the instrument point. Different observation types, such as postprocessed GPS, real-time GPS, conventional, laser, etc., are color-coded for instant recognition. View Filters allows observation types to be displayed or hidden in order to concentrate on a specific set of observations.

In the Plan View, the survey is displayed as a plot with features, point styles, lines and text annotations—just as it would be in a final plan. You can use this view to process feature codes, edit the features and line-work in the survey, and access the powerful RoadLink $^{\text{m}}$ and DTMLink $^{\text{m}}$ software.



IS INTEGRATED SURVEYING

Trimble Geomatics Office brings all your survey data together. Seamlessly.

IS Integrated Surveying* is the key to fast and efficient surveying. The ability to seamlessly integrate a wide range of different survey data types is at the very heart of the Trimble Geomatics Office software.

The software offers the freedom to use any survey instrument required for the job—a survey-grade GPS receiver, a conventional or robotic total station, a digital level, or a laser rangefinder.

Designed to handle every type of survey data that the surveyor and engineer are ever likely to use, the software has unrivalled data integration capabilities and can read in data such as:

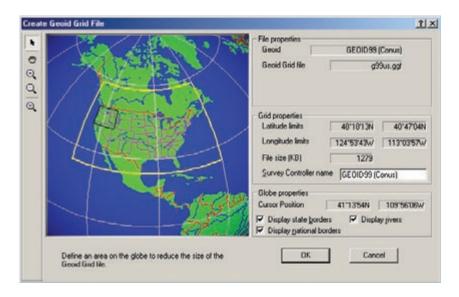
- Trimble field software files containing any combination of data from real-time and raw GPS, conventional and robotic (Trimble and third-party) and laser rangefinder observations
- Real-Time Kinematic (RTK) GPS data
- · Raw GPS data, both Trimble and RINEX
- Direct download from the Trimble 5600 series and Geodimeter[®] optical total stations
- Raw conventional observations from Trimble's TDS controllers
- Raw conventional observations in other manufacturers' native formats, including Leica, Nikon, SDMS, Sokkia, and Topcon
- Digital level data (Trimble DiNi, and Leica)
- Road design data in more than 20 different native formats used worldwide, including: AutoDesk Civil Design, Terramodel*, Geodimeter, InRoads, SDMS, MXROAD, CLIP and DRD.
- · Custom ASCII data

The software supports a **two-way flow of digital data**, allowing data to be loaded into the Trimble controller running Trimble field software for use in the field, such as:

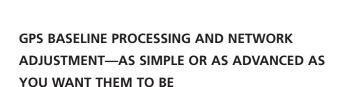
- Points of all kinds, including control points, data points and design points
- Datum and projection parameters
- Digital terrain models (Grid or TIN)
- · Geoid models
- · Combined datum grid files
- · Road design files—complete with full alignment geometry
- Feature and attribute libraries
- · GIS data dictionary files

Data can also be exported in any one of over **30 data formats** for third-party survey, design, CAD and GIS software including AutoCAD, ArcView, MapInfo, Microstation and many more.

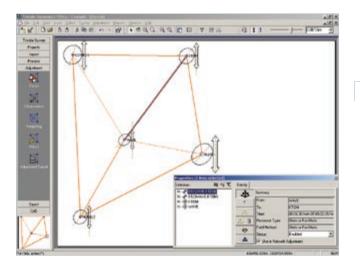
If you need to **share observations** between projects, simply use the Trimble Data Exchange Format to export the data you need, and import it to another project. All observation data is maintained.



Graphically select geoid subgrids to for sending to Trimble field software



The WAVE™ Baseline Processing and Network Adjustment modules in the Trimble Geomatics Office software are designed to be simplicity itself for those who just need the right answers fast—while advanced controls can be accessed for those who need more control over the processing of their data.



Intelligent default parameter values ensure that users who only want to press a button and see the right answers fast can do just that.

For the advanced user, advanced controls can be accessed using **Styles**, allowing the user to take control of baseline processing parameters or network adjustment parameters.

Extensive QC tools provide fast and accurate assessment of data quality, while visual cues, such as red flags, instantly alert the user to out-of-tolerance data. Data can also be browsed and queried visually using the graphical **Timeline** display.

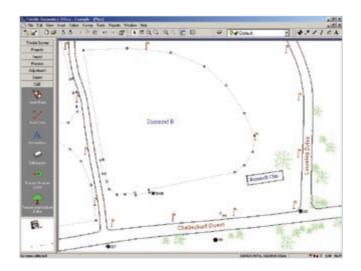
The fast and powerful least-squares **Network Adjustment** module is also accessed from the Survey View. Vectors can be included or excluded from the adjustment with the click of the

mouse and observations can be queried or disabled graphically using simple point-and-click techniques. Combining GPS and conventional data in a network adjustment is simple; you get the results you need with identical workflows, no matter what data you have in the project.

After adjustment, each station's horizontal and vertical error ellipses are displayed in the Survey View for quick and easy inspection of network quality. Fixing control points for the network adjustment is also quick and easy, enabling you to achieve the high quality results you need... fast.

QUICK AND SIMPLE CAD WORK IN THE PLAN VIEW

Tidying up the survey for delivery to the client is quick and simple using the Trimble Geomatics Office software. Maximum use has been made of toolbars, graphics and the mouse commands to make the software exceptionally intuitive and easy to learn. Powerful feature code processing quickly transforms raw survey observations into a final plan. The software allows the user to define and customize feature codes, point and line styles, and other CAD elements. And if you need to take a closer look at a feature, all properties for any feature are instantly displayed at the click of the mouse.



PROCESSING ROAD DESIGN DATA IS FAST AND EASY WITH TRIMBLE GEOMATICS OFFICE

Using the innovative RoadLink software, engineers and surveyors alike can now take just about any road design out into the field and perform stakeout with ease.

The Trimble Geomatics Office software is designed to read in almost any type of road design data that you need to work with. Importing road design data is so easy—just follow the wizard!

It gives you full control of how the road design is imported. You can even import cross-section data to use as templates! Design files in the following native formats (among others) can be imported directly into the Trimble Geomatics Office software:

- AutoDesk Civil Design CAiCE
- CLIP

- Cremer
- DRD
- EaglePoint

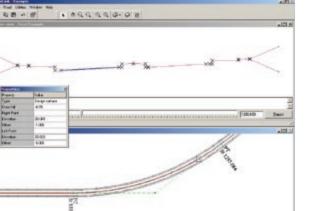
- FastMap
- Geodimeter
- Geopak

- InRoads
- ISPOLIstram
- · Leica RoadEd

- ModelMaker
- MXROAD
- NRG

- REB
- **SDMS**

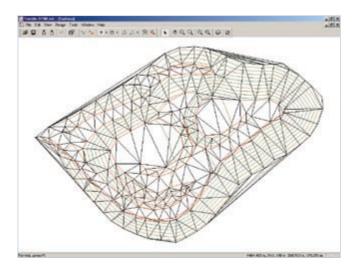
- SDRmap TRIMMAP
- Wild
- SELM Terramodel · Teku CAD



Design data can be graphically displayed, edited, and then loaded into Trimble field software as a Job file for stakeout on site. The file allows the horizontal and vertical alignments and templates—not just a list of points—to be taken into the field. This enables any station and offset to be specified for stakeout, providing the field crew with the flexibility required in the construction environment.

When stakeout is complete, the Job file with as-staked positions can be transferred back to the Trimble Geomatics Office software for a quality control check. The staked points are shown on a plan of the site and cut sheets can be prepared in a wide variety of cut sheet report formats to meet your needs.

Creating contour surface models and volume calculations is a breeze with Trimble DTMLink. If you already have a contour model in the popular 3D Faces AutoCAD format, you can import it to DTMLink, as well as export any surface created in DTMLink in the 3D faces format. Sending digital terrain models to the Trimble Survey Controller software for stakeout is simple, and you have the choice of using a gridded DTM or a Triangulated Irregular Network (TIN).



Both RoadLink and DTMLink are included with the Trimble Geomatics Office software at no additional cost.

OUTSTANDING QUALITY ASSURANCE AND QUALITY CONTROL CAPABILITIES (QA/QC)

Quality control of survey data is more important today than it has ever been. With outstanding QA/QC capabilities you can be sure that your surveys are always produced to the high standards your clients expect.

Every module of the Trimble Geomatics Office software is loaded with features to help you maintain the highest standards of quality and quickly spot problem data.

Red Flags are automatically displayed on the Survey View to visually alert the user to the presence of out-of-tolerance data or other potential problems—such as a processed GPS baseline that does not meet the tolerance criteria set in the processing style. The flag is also displayed on the status bar when such observations are present. Double-click

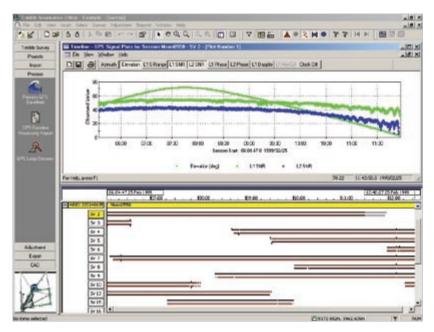
on this icon when it is present; all the red-flagged points and/or observations are instantly selected for you to review and edit. In fact, a double-click on any icon in the status bar automatically activates the function that the icon represents.

The Timeline window provides a graphical display of observed data over time. Customizable displays allow the advanced user to analyze different combinations of correlated variables for quality control or troubleshooting purposes. Timeline can be used to display dependent baselines, providing both the flexibility to determine independent

and full control of what is passed to a network adjustment—just another way to help you process the data you need!

To check the quality of your postprocessed network, simply use the Loop Closures report. You have the choice of letting the Trimble Geomatics Office software perform the report either on the entire network or on a selection you define by using any of the extensive selection tools available.

For first-time users—and for those who just need their results fast—the Trimble Geomatics Office software makes the maximum use of intelligent default values and graphical tools, such as the ability to graphically disable and edit observations for quick and painless completion of high-quality surveys.



Timeline displays GPS tracking and satellite information.

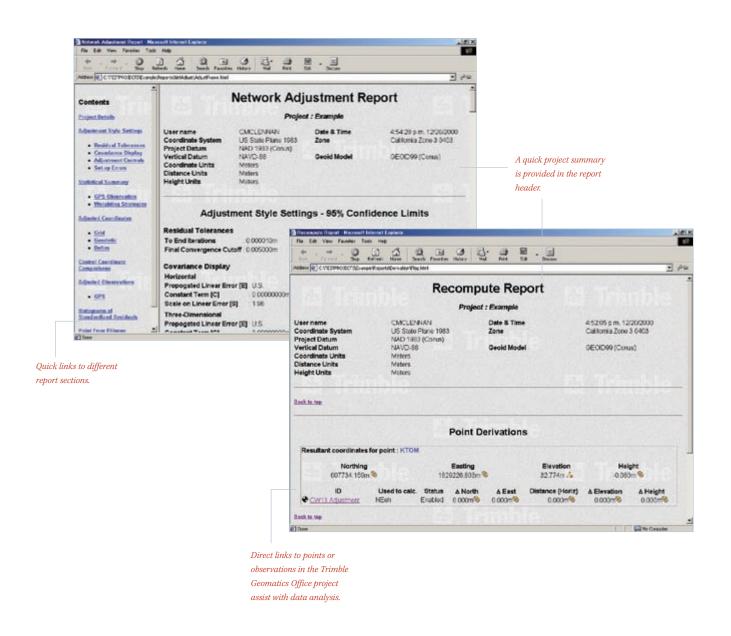
POWERFUL AND PROFESSIONAL HTML PROJECT REPORTS

Deliver your surveys to clients with the professionally presented HTML reports produced by the Trimble Geomatics Office software. The HTML format makes an excellent presentation of data and is easily read by word processing and web browsing software.

Hyperlinks are automatically generated in these reports. They make for easy browsing and allow the reader to quickly jump to

relevant sections or straight to the point or observation in the graphics window, all with just a click of the mouse.

Over 14 standard report formats can be generated automatically by the Trimble Geomatics Office software. Custom report formats can also be generated quickly and saved for future use.





CONCLUSION

The collection, processing, and management of data has never been so easy. For surveyors and engineers who work with survey data from GPS, optical or laser instruments, road designs or GIS, Trimble Geomatics Office is the software solution for the 21st Century.

To find out more about how the Trimble Geomatics Office software can save you time, money and effort, contact your Trimble Distribution Partner or nearest Trimble office.

MINIMUM HARDWARE REQUIREMENTS

The minimum requirements for the computer running the Trimble Geomatics Office software are:

- Pentium-based computer, 150 MHz or faster with 32 MB RAM and a 1 GB hard drive
- SVGA color 800 × 600
- · Keyboard with mouse or trackball
- CD ROM drive

The Trimble Geomatics Office software operates under Microsoft* Windows* 95/98/Me/2000/NT 4.0 operating system or later. Microsoft Internet Explorer version 4 may be required for some of the features described.

RECOMMENDED HARDWARE REQUIREMENTS

The recommended requirements for the computer running the Trimble Geomatics Office software are:

- Pentium-based computer, 266 MHz or faster with 128 MB RAM and a 1 GB hard drive
- XGA color 1024 × 768
- Keyboard and Microsoft IntelliMouse
- 24 speed or faster CD ROM drive

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