TRIMBLE SITE POSITIONING SYSTEMS

Trimble

more tools for more jobs

• Estimators • Bid Team • Site Surveyor • Data Manager • Site Engineer/Grade Checker • Site Foreman/Supervisor • Project Manager • Geotechnical Engineer • Construction Inspector •

Trimble sets the standard for construction technology by developing highly productive, integrated and innovative solutions for the complete jobsite. Trimble Site Positioning Systems help contractors take control of the jobsite, perform tasks more productively, meet tighter specifications, and avoid rework.

THE RIGHT TOOLS TO DO THE JOB RIGHT.

Trimble® Site Positioning Systems give contractors targeted tools for every person on the jobsite; work at every stage is performed faster, with fewer errors and less material costs.

Trimble Site Positioning Systems provide:

- the ability to measure, stake, check, manage, inspect
- control and communications infrastructure
- tools to move data between the office, machines, and site personnel
- the confidence to finish projects on time, on cost, and on specification

From the field, truck, or office, any person on the construction site can be connected and equipped with accurate positioning, consistent digital design information and the ability to locate, measure and record information. Contractors can share information, track results instantly, make smarter decisions, and manage multiple jobsites with ease.

Data can be leveraged across more professionals on the jobsite, making every resource a direct contributor to the success of the project.

FLEXIBLE. CREATED FOR CONTRACTORS.

Trimble Site Positioning Systems combine positioning and communications technology with office and in-field software developed specifically for contractors. Simply select the best solution for each role or job function on the jobsite, and the rest is easy. It is all connected, scalable, and cost-effective.

The four main components:

- **Field Software:** Trimble SCS900 Site Controller Software provides an easy-to-use graphical interface that enables surveyors, grade checkers, site engineers, and foremen to do their jobs faster and more efficiently. Trimble SCS700 leverages the same design information, with streamlined workflows to suit the functions of site inspectors, project managers, and geotechnical engineers.
- **GNSS Receivers:** used in rover and vehicle configurations, they can be scaled to suit the accuracy and budget requirements of each function on the project.
- **Total Stations:** provide the highest possible degree of accuracy for site positioning, stakeout, measurement and machine control.
- **Office Software:** Business Center – HCE software serves as a scalable platform for all data-related activities from initial bid estimation through earthmoving and paving.

CONNECTED.

Connected Controller functionality decreases rework and miscommunication by wirelessly synchronizing data between the controller and the office.

Look for this symbol to see which systems come standard with Connected Controller functionality or are Connected Controller components.

scalable control: informed decisions

• Highways • Site Preparation • Earthworks • Landfill • Waste Disposal • Tunneling • Rail • Mining •

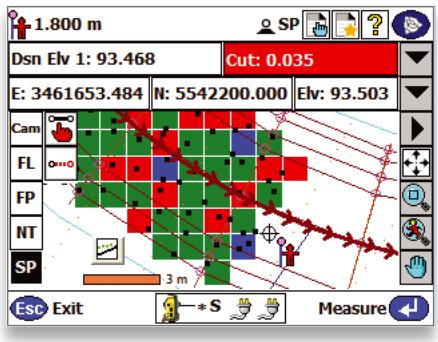
TRIMBLE SCS900 SITE CONTROLLER SOFTWARE

Trimble SCS900 Site Controller Software helps efficiently control and quantify site operations without relying on a contract surveyor for site measurement and stakeout.

SCS900 organizes information the way contractors work, using:

- **Sites:** Containing information that applies to everything you do on a single jobsite.
- **Designs:** A site can contain multiple designs. Each design contains data for a specific phase or activity of the project.
- **Work Orders:** Can contain instructions for jobs to be performed or the measurement results of a completed work task for quality assurance.

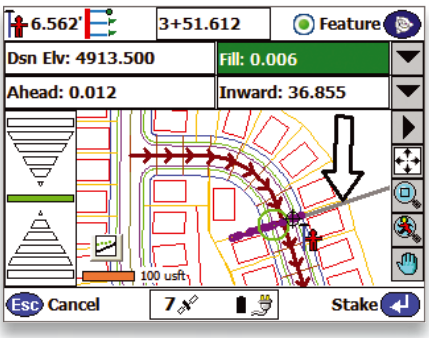
An intuitive interface makes SCS900 easy to learn and use with Trimble GNSS or total station equipment for tasks such as grade checking, staking or measuring as-builts. As a connected controller solution, SCS900 increases productivity from day one. Advanced communications help contractors realize significant savings by eliminating the time and cost of driving data files to and from the field. Engineers can send design changes and work orders to field crews, who can transfer progress reports, on-site problems, and as-built data back to the office at the touch of a button. This connectivity reduces delays and increases the likelihood that projects finish on time and under budget.



ROADING

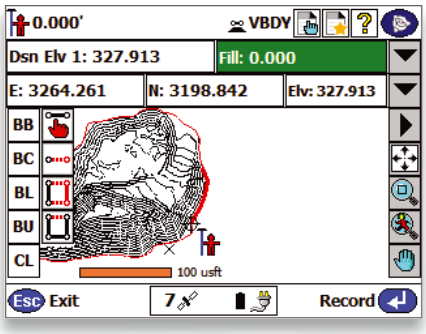
The Trimble SCS900 Roading Module supports road and highway projects by incorporating full alignment geometry, station equations, width transitions and multiple roadways within a selected job. It is a single solution to all road staking needs – from roadway features to catch points to custom subgrades.

In addition, grade checking functions allow contractors to easily perform as-built checks and quality control.



ADVANCED MEASUREMENT

The Trimble SCS900 Advanced Measurement Module improves informed decision-making by capturing additional information with each measured point; for example, photos, dimensions, conditions and material type add more valuable information about a feature than just its position. This information can be remotely sent back to the office and analyzed in Business Center – HCE.



TUNNELING

Using the SCS900 Tunneling Module, a Trimble Tablet and the SPS930 Universal Total Station, tunnel contractors can more efficiently address the daily measuring and positioning requirements of tunneling and blasting projects. Contractors can reduce work stoppage time for manual measurements while also monitoring progress in real time.

the right tools for every job

• Site Positioning • Control and Base Setup • As-built Survey • Grade Checking • Progress Volumes • Site Measurements • Control of Material • Road Staking •

TRIMBLE TABLET

The Trimble Tablet is a rugged, versatile and wirelessly connected tablet computer that can be used with Trimble Site Positioning GNSS or total stations. With its Windows 7 operating system it can run Microsoft® applications as well as the SCS900 software... delivering the functionality and data management capabilities of SCS900 with the larger screen and ease-of-use of a tablet PC. It is ideal for jobsite supervisors, foremen and project managers who coordinate activities from a vehicle.

TRIMBLE TSC3

The Trimble TSC3 controller is a wirelessly connected, rugged, adaptable handheld controller for GNSS or total station operation.

It gives supervisors, foremen, grade checkers, and site engineers total control over their on-site tasks. Designed for the rigors of outdoor heavy and highway construction site operations, the TSC3 offers a 3G modem, built-in camera, GPS and long battery life in a lightweight, shock, dust and water resistant package.

Site Reconnaissance • Progress Monitoring • Inspection • Locating • Geotechnical Measurements

TRIMBLE TCA1

Optimized for site reconnaissance, site management, and site inspection, the Trimble TCA1 is a pocket sized controller featuring onboard GPS, wireless communications, a camera and the Trimble SCS700 software.

TRIMBLE SCS700 SITE SOFTWARE

The Trimble SCS700 Site Controller Software leverages the same design data used by the engineers, grade checkers and supervisors who use SCS900 software. Site inspectors can leverage the built-in camera, bar code scanner, GPS and measurement functions of SCS700 to record important information such as material type or condition, photos, date and time. They can record as-builts and compare against the design to verify that work was completed properly.The built-in connectivity of the TCA1 allows users to easily and quickly send information back to the office.

Use the TCA1 to:

- **Record site issues with photos that reference the 3D design**
- **Navigate to points of interest, lines, roads**
- **Reference grade checks**
- **Manage utilities or inventory with barcodes**
- **Query designs, distances, areas, slopes**
- **Document progress for insurance claims**

GNSS: scalable, reliable precision

TRIMBLE GNSS RECEIVERS

Ideal for:

- Larger jobsites
- Tasks where accuracy requirements are 8 millimeters (0.03 feet) and above
- Sites with a reasonably unobstructed view of the sky

OUTSTANDING FLEXIBILITY

Trimble Site Positioning receivers are scalable to meet the accuracy requirements of specific tasks and fit your budget. Trimble offers GNSS (Global Navigation Satellite System) receivers both in integrated and modular forms. With integrated Trimble 360™ receiver technology, the SPS985 GNSS smart antenna and the SPS855 modular receiver can "see" more GNSS constellations and signals than traditional GPS, so you can expect greater accuracy in more challenging conditions such as under tree canopy and in urban areas. That also means more uptime using the system and more productivity for your field crews.

BASE STATIONS AND ACCURACY

Because the atmosphere distorts satellite signals, high accuracy GNSS positioning requires a base station receiver and a rover receiver, both of which receive the same satellite signals at the same time. The base station is anchored on a fixed point and can thus calculate the correction needed to offset the atmospheric distortion. It then sends those corrections via radio to the rover. Base station and rover data are processed together in the rover receiver to produce an accurate rover position.

Modular Receiver:

The Trimble SPS855 GNSS Modular Receiver and Zephyr 2 Geodetic Antenna make the ideal base station for providing GNSS corrections for rovers and machine control.

GNSS ACCURACY

Trimble system modularity lets you select the accuracy level you need for the job:

- Precision GNSS Receivers can provide accuracies of 8 millimeters horizontal (0.03 feet) and 15 millimeters (0.05 feet) vertical
- Location GNSS Receivers can provide accuracies of 100 millimeters (0.3 feet) horizontal and 20-100 millimeters (0.06 to 0.3 feet) vertical
- Integrated GPS in the Trimble Tablet, TSC3, and TCA1 controller deliver multi-meter level accuracy

Smart Antenna:

The ultra-rugged SPS985 GNSS Smart Antenna provides everything you need in one compact unit: GNSS receiver, wireless communications, antenna, battery, and Bluetooth for cable-free operation. It is ideal as a rover system mounted on a range pole, ATV, or truck, but can be used as a temporary base station as well.

total stations: total control

TRIMBLE TOTAL STATIONS

Ideal for:

- **Smaller sites or combined with GNSS on larger sites**
- **Tasks where the accuracy requirements are very tight: 3 millimeter (0.01 feet)**
- **Measuring dangerous or inaccessible locations**
- **High precision machine control and guidance**

HIGH ACCURACY PERFORMANCE

Trimble Site Positioning Total Stations provide very high accuracy, high performance one-person 3D positioning. Trimble SPS930, SPS730 and SPS630 Universal Total Stations provide the greatest range for robotic and reflectorless operation, the fastest update rates, and the tightest accuracy available to meet the needs of the highest precision measurement, stakeout or machine control functions on-site. Equipped with high speed 3Hz scanning and long range (over 2 kilometers or 1.2 miles) DR Plus reflectorless measurement capability, they are well suited for rapid surface and stockpile scanning, and ideal for operations in inaccessible areas or areas where safety is an operational concern.

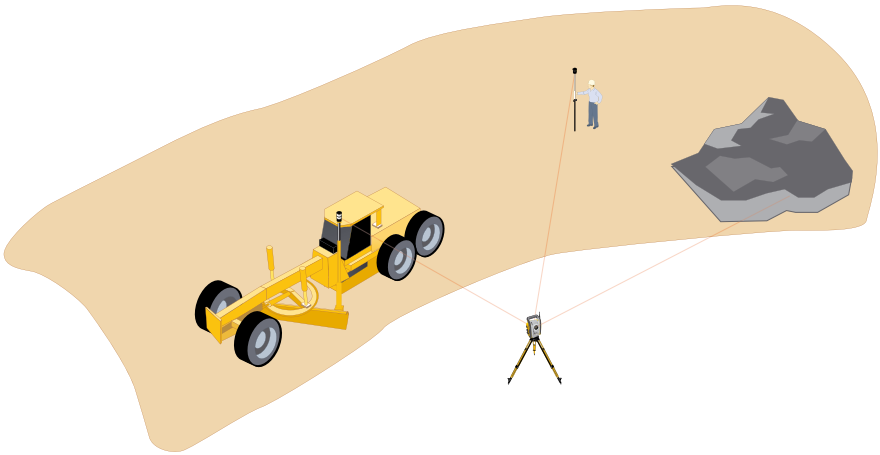
TRIMBLE MULTITRACK

Trimble MultiTrack™ technology locks on and tracks prisms for stakeout, measurement, grade control and monitoring applications. Active targets provide enhanced tracking performance and guaranteed lock to the correct target, even in dusty construction site conditions with multiple targets and machines in operation.

UNIVERSAL MACHINE CONTROL

Trimble Universal Total Stations can provide highly accurate machine guidance for excavation, grading, compaction, milling, and paving projects. Using the same Trimble total station, your machines can work to tight construction tolerances, save expensive materials, avoid rework and get to grade faster.

Total Stations:
The Trimble Universal Total Stations were designed specifically for the high traffic scenarios typically found on a construction site.



TOTAL STATIONS ACCURACY

Total Stations use optics and/or laser beams to measure angles and distances. By first measuring to known points, the Trimble total station calculates its own position relative to these control points, and then calculates the position of the measurement target in 3D.

In robotic mode, the total station measures the position of the target and reports that position information via radio link to the controller. The SCS900 software on the controller is then able to compare the position with the design information to give the user cut/fill information, progress volumes and stakeout information. Since nobody mans the total station, a single person can do the measurements.

connect for better control

TRIMBLE CONNECTED SITE SOLUTION COMPONENTS

Connected Controller

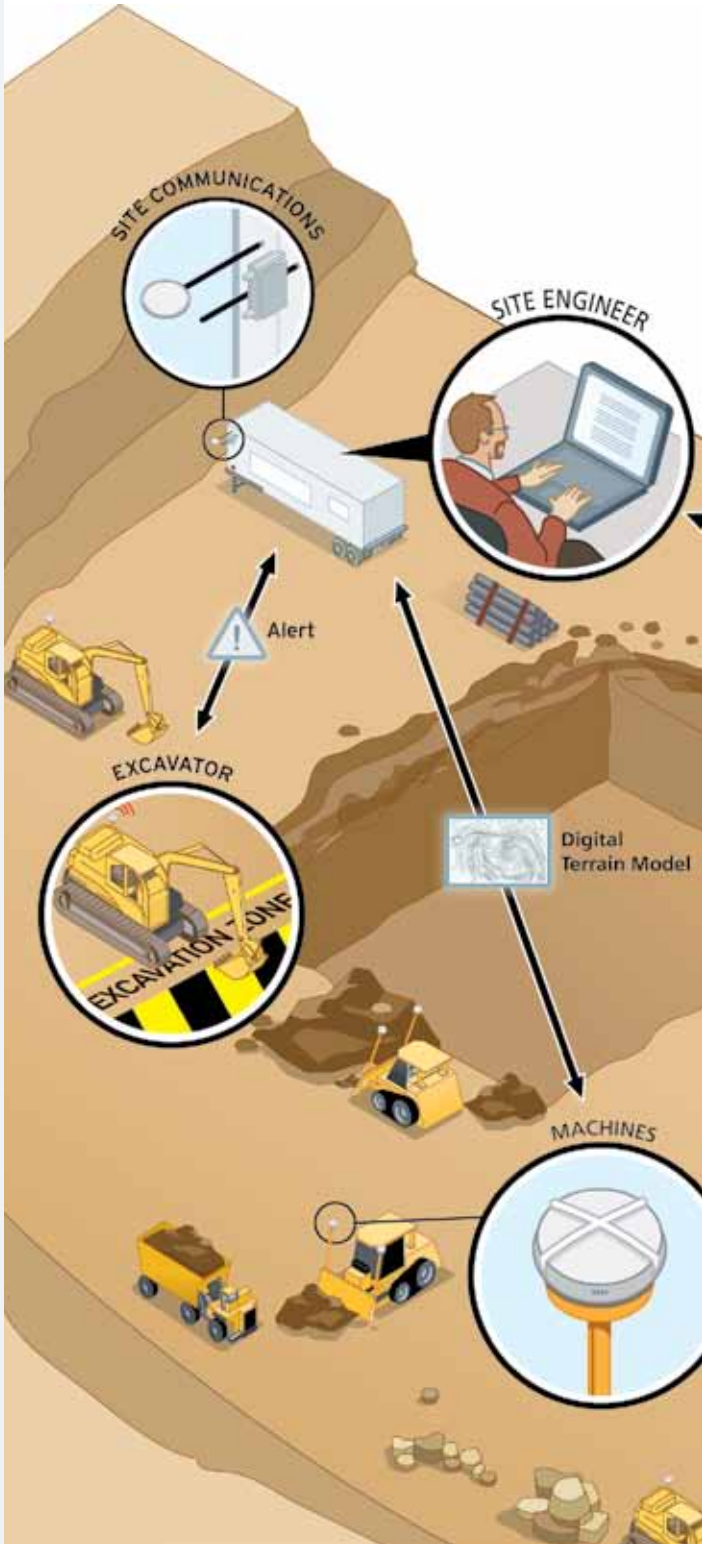
The Trimble Connected Controller solution wirelessly syncs Trimble Site Positioning Systems in the field with the office and allows the Trimble controller to receive GNSS corrections via the Internet. A grade checker can receive the design model, create new measurements and then send the measurement and stakeout results back to the office for review. Design changes originating in the office can also be sent to the controller so field crews are rapidly updated with current information. All of this is accomplished without personnel ever leaving the site or their desk, dramatically increasing productivity and reducing costs.

Connected Office

The Trimble Connected Office solution allows contractors to create 3D construction models, perform data preparation and takeoff, wirelessly sync data, monitor site productivity, and manage fleets and assets. The 3D design model created in the office can be sent to machines and controllers in the field, increasing efficiency, reducing rework and saving money. Additionally, a complete view of site productivity including materials quantity and movement, volume and compaction data, and fleet and asset management information can be shared across the organization to enable rapid decision-making and better communication.

Connected Machine

Now standard in all Trimble Grade Control Systems, the Trimble Connected Machine solution helps contractors manage their assets and see what machines are doing. Machines can collect as-built measurement data for office delivery, and receive GNSS corrections using the Internet. A 3D design created in the office can be sent to the machine operator for faster, more precise grading and earthmoving. Additionally, the machine can be used for volume measurements, so expensive measurements by grade checkers occur less frequently. Drive-time and rework are also minimized, as both the office and machines in the field are kept up-to-date with the latest information.



THE TRIMBLE CONNECTED SITE

When used together, Connected Office, Connected Controller and Connected Machine solutions revolutionize the way construction is done and create the Trimble Connected Site. The Trimble Connected Site transforms the construction industry by utilizing technology to improve efficiency and productivity, while minimizing waste and expense. With the potential to save time and cost at every stage, and virtually eliminate some steps in the plan design, construct and operate process, the Trimble Connected Site can improve the efficiency and sustainability of construction projects, resulting in the earlier completion of a higher quality project at a lower cost.

the information enabled site

DEPENDABLE TECHNOLOGY. DEPENDABLE SUPPORT.

The experienced construction professionals at your SITECH dealership will advise you on the right technology for your job and provide you with local customer service, personalized training and technical support. If you're new to construction technology, your local SITECH dealer will get your up to speed and will be there to help you through every step of the implementation.

With Trimble technology and SITECH support on your sites, you're in a stronger, more competitive position. You'll experience new levels of productivity and be profitable, project after project.

	SPS985 Precision Rover and TSC3	SPS985 Precision Rover and Trimble Tablet	SPS985 Location Rover with Precise Vertical and Trimble Tablet	SPS985 Location Rover and Trimble Tablet	SPS855 Location Rover with Precise Vertical and Trimble Tablet	SPS855 Location Rover and Trimble Tablet	SPS630 SPS730 SPS930 UTS with TSC3	SPS630 SPS730 SPS930 UTS with Trimble Tablet	SPS620 SPS720 Total Station with TSC3	TCA1 with SCS700
Site Surveyor	R	A					R		A	
Site Engineer Grade Checker	R	A					R		A	
Site Foreman Supervisor			R	A	A	A				
Project Manager				A		A				R
Geotechnical Engineer										R
Site Inspector										R
Small Site Contractors	A	R					R	A		

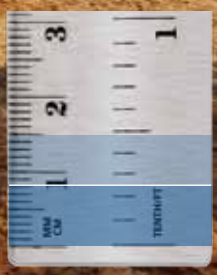
R = Trimble Recommends

A = Alternative

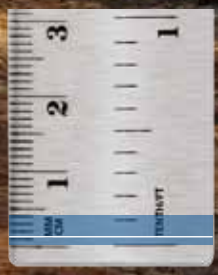
Note: All SPS GNSS rover solutions will require corrections, either from a SPS985 Base Station or other Internet Correction Service

Accuracy of Trimble SPS930 Universal Total Station					
Distance (m)	Horizontal (mm)	Vertical (mm)	Distance (ft)	Horizontal (ft)	Vertical (ft)
100	3	1	300	0.01	0.01
500	7	5	1500	0.02	0.02
1000	12	11	3000	0.04	0.04

Trimble GNSS Accuracy	
Real - Time Kinematic	
Horizontal accuracy	8 mm + 1 ppm RMS (0.03 ft + 1 ppm RMS)
Vertical accuracy	15 mm + 1 ppm RMS (0.05 ft + 1 ppm RMS)
Trimble® VRS™	
Horizontal accuracy	8 mm + 0.5 ppm RMS (0.03 ft + 0.5 ppm RMS)
Vertical accuracy	15 mm + 0.5 ppm RMS (0.05 ft + 0.5 ppm RMS)



Trimble Precision GNSS Accuracy is 8mm (0.03 ft) Horizontal and 15 mm (0.05 ft) Vertical



Trimble Total Station Accuracy @ 100 m is 3mm (0.01 ft) Horizontal and 1mm (0.003 ft) Vertical

TRIMBLE: THE CONSTRUCTION TECHNOLOGY STANDARD

Trimble provides the tools and support to let you integrate planning, design, site positioning, machine control and asset management information throughout the construction life cycle for more efficient operations and higher profits. Visit your SITECH technology dealer today to learn how easy it is to utilize technology that makes significant improvements in project workflow, dramatically increases your production, improves your accuracy and lowers your operating costs.

YOUR SITECH HEAVY CIVIL CONSTRUCTION TECHNOLOGY PROVIDER

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