

# TAKE THE GUESS WORK OUT OF EARTHWORKS



## STAKELESS GRADE CONTROL

- Reduce rework
- Use labor more efficiently
- Improve material usage
- Improve productivity

# 3D MACHINE CONTROL

*Nothing Moves Dirt Quicker...*

Construction is an industry of close tolerances, where precision and accuracy can make or break your bottom line. At the same time, the pressures of today's schedules and budgets mean you've got to get the job done faster and cheaper than ever before, while still maintaining profitability. Today you need to be able to perform all parts of the job more accurately than ever before—from estimating to completion. Today you need cutting-edge technology to make you more competitive in the earthmoving business.

At Trimble, we are not in the business of selling you software or machine control devices to get you through a job—rather, the big picture. Our construction process.

combined forces of Trimble and Spectra Precision look at the 3D Machine Control solutions are revolutionizing the total Today you can gain a competitive edge for your earthmoving projects with the blend of Trimble's space age technology software, and Spectra Precision's experience in automated earthmoving systems.



Discover the benefits

# *Nothing Finishes Faster*

Trimble offers you the most complete line of stakeless 3D earthmoving systems in the industry that save you time and money. With highly accurate, automated blade control, stakeless grading you can reduce costly mistakes, finish projects faster and make money.

And we are closing the gap between the field and office with powerful software for real-time data management, seamless data exchange, and a high level of quality control. Using Trimble software you can estimate, model, edit, data before sending it to the field. Whether dozer, grader, large or small, 3D Machine Control systems streamline your jobs from estimation through design to the finished project. Today, Trimble's cutting edge technologies make you more competitive so you can get the job done faster and cheaper—from concept to completion.



of 3D Machine Control

# From Concept To Completion.

## SITE PREPARATION



In today's changing world, shopping malls, car parks, residential housing and business parks are being developed and built at ever increasing rates. Using Trimble's earthmoving systems you can generate estimates for mass haulage, materials and labor. And on site you can move dirt faster than ever before, preparing the site ready for the layout and general construction.

## ROADWORK



With increased traffic worldwide, congestion is a reality for many of us. Today, road construction and the ongoing improvement of existing roads is happening all around us. Using Trimble's earthmoving systems you can complete the roading project with speed and precision, from bulk earth works to finished grade.

## AIRPORT CONSTRUCTION



Using Trimble's 3D earthmoving systems you can plan runway extensions, calculate labor, materials and schedules. And because our systems use very precise 3D positioning technologies, you can grade to an accuracy that ensures safe take-off and landing.

## GOLF COURSES



Constructing golf courses can be challenging, from the heavy earthworks required to shift huge quantities of earth, to the fine shaping and trimming of the greens. The undulating surface is difficult to grade exactly to the design specification, often resulting in rework and restaking. Using Trimble's 3D earthmoving systems allows you to move dirt quickly and accurately.

**E**arthmoving is a requirement of practically every construction job. Today Trimble stakeless earthmoving solutions are revolutionizing the way you move dirt. Our systems combine positioning technologies, design software and a powerful controls system, to achieve accurate machine and blade positioning in real-time as well as automating fine grade earth moving. By taking design data from the office and into the cab, operators can grade complex designs, such as vertical curves, transitions, super-elevated curves and complex site designs—all without stakes, stringlines or layout. And because the data is there in the field, the foreman or operator can quickly set the new grade or pad elevation right in the cab, without waiting for grade stakes to be set or repositioned.

Trimble offers a complete range of earthmoving and grade control solutions designed to meet the rugged demands of construction. Solutions that allow you to realize productivity gains, material savings and better estimations of the total job cost. Our solutions allow your operations to work more productively and profitably.

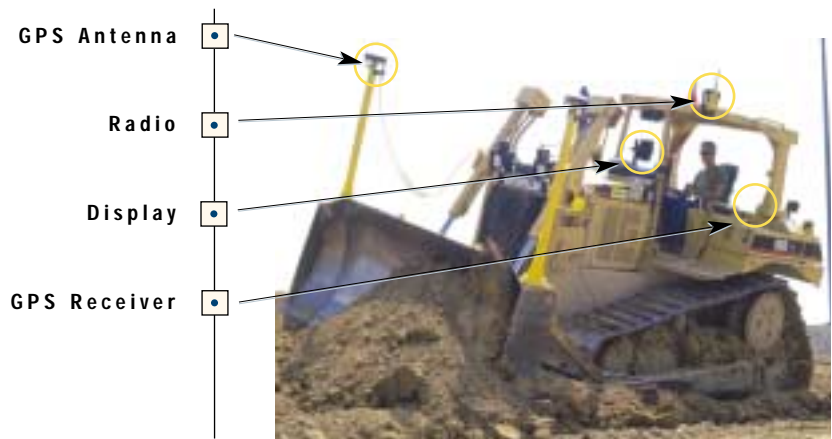
# Stakeless Earth

## SITEVISION GPS

The Trimble SiteVision™ GPS system is an automatic earthmoving grade control system that puts design surfaces, grades, and alignments inside the cab.

Precise to 30 mm (0.1 ft), the SiteVision GPS system enables operators to perform bulk earthworks in a stakeless environment, using either automatic or manual blade control.

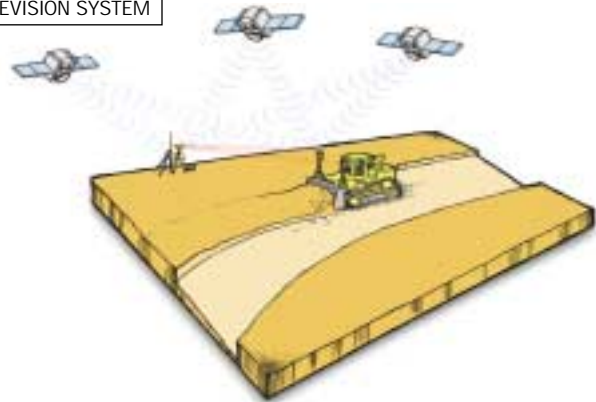
Moving dirt is faster, more efficient, and more predictable.



### HOW SITEVISION GPS WORKS

The GPS receiver on the machine computes the exact position of the GPS antennas many times per second. An on-board computer determines the exact position of each tip of the blade. It compares these positions to design elevation and computes the cut or fill to grade. This information is displayed on the screen in plan view, cross-section view, or text. The cut/fill data is passed to the SiteVision GPS lightbars, which guide the operator up/down for grade and right/left of a defined alignment. The cut/fill data is also used to drive the valves for automatic blade control.

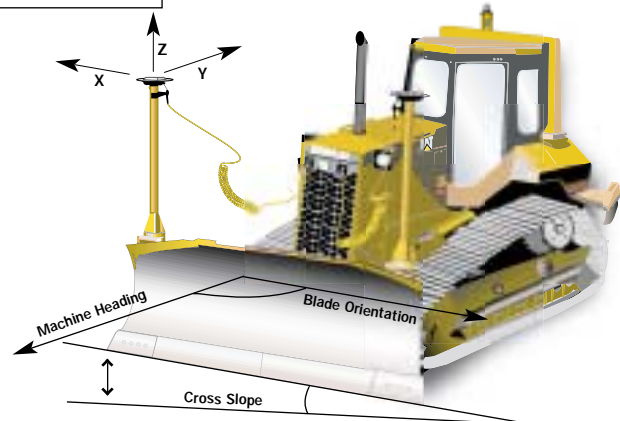
### SITEVISION SYSTEM



### WHY TWO ANTENNAS?

The patented two-antenna configuration is a unique advantage of the Trimble SiteVision GPS system. Using GPS, the exact position, very accurate cross slope, and heading of the blade are measured. This is especially advantageous for operations with dozers with angle blades (6-way blades), graders, and on complex design surfaces such as super elevation grading tasks.

### BLADE DIAGRAM



**SITEVISION GPS**

GPS GRADE CONTROL SYSTEM

IDEAL FOR BULK EARTHWORKS

# moving Solution

## BLADEPRO 3D



- Active Target
- Display
- Controls
- ATS

The Trimble BladePro® 3D machine control system is a revolutionary earthmoving system ideal for a range of construction applications—from site preparation to finished road grade work.

Precise to  $\pm 5$  mm ( $\pm 0.02$ ft), the BladePro 3D machine control system combines the innovative Terramodel® software with position information and the BladePro dual control system to deliver an automated seamless fine grading solution.

Finishing earthmoving projects is faster and more precise.

### HOW BLADEPRO 3D WORKS

The BladePro 3D system measures the X-Y and Z coordinates, and compares that data to the preloaded digital terrain model. The design elevation and cross-slope for the current position are then calculated for the current position, and the system automatically moves the blade to the correct cut or fill position elevation and slope through the machine's hydraulic system. Grade and slope information along with the blade machine's position is displayed on the in cab display, a highly visible graphic color display, designed to provide a crisp view no matter how bright the sunlight.

### BLADEPRO 3D SYSTEM



### SENSOR INDEPENDENCE

Giving contractors the flexibility they need, the system can be used with a range of positioning sensors, allowing the contractor to choose the best measuring technology for the application. GPS is ideal for site preparation and bulk earthworks accurate to 30 mm (0.1 ft), while the ATS robotic total station, accurate to  $\pm 5$  mm ( $\pm 0.02$  ft) is ideal for finished grade work.

For complete flexibility, BladePro 3D can be used as a 2D machine control system. Our BladePro system uses either a Laser receiver and transmitter for flat plane work or the Tracer for following an existing reference line. BladePro systems are easily upgraded to our full BladePro 3D system.

- [1] Active Target
- [2] Laser Receiver
- [3] GPS Antenna
- [4] Tracer



## BLADEPRO 3D

FLEXIBLE EARTHMOVING SOLUTION

IDEAL FOR ALL PHASES FROM EARTHWORKS TO FINISHED GRADE

Using Trimble 3D earthmoving solutions you have complete control in the field, finish jobs faster, reduce rework and machine operation costs and reduce material overages, all significantly reducing the cost of getting the job done, allowing you to be more competitive and more profitable.

### IN CAB CONTROL

The site plan is displayed right in the cab, enabling operators to accurately determine position and control grade. Surveying and grade checking costs are dramatically reduced. Machine utilization is increased because the operator and the machine aren't waiting for surveyors to stake, or re-stake the job. Now the operator can spend more of the day being productive: moving dirt.

### FASTER JOB CYCLES

Placing grade information in the cab enables operators to make fast decisions with minimal supervision. Operators know where the grade is, as well as the locations of design elements, and are able to move more dirt each day. They can work regardless of wind, dust or darkness, finishing jobs faster.

### REDUCE REWORK

With the design information at their fingertips, operators never have to second guess or compromise, dirt is moved right the first time. This reduces the need for rework due to lack of correct information in the field, the job finishes sooner and costs less.

### LOWER OPERATING COSTS

Accurately controlling grade from within the cab means grade is achieved in fewer passes. The result is better machine utilization and fewer hours per volume of dirt moved, leading to lower fuel and maintenance costs. And because you are not using stakes, hubs or stringlines you are able to significantly reduce surveying and engineering costs.

### IMPROVE MATERIAL USAGE

With accurate grading, material usage is more controlled, allowing you to ensure that you only use what you really need. The result is reduced overages in base and sub-base materials, leading to better profits for your business.

### EXCELLENT RETURN ON INVESTMENT

Today many construction companies have found that 3D earthmoving systems from Trimble pay for themselves quickly and usually on the first project! Faster completion, less rework, less staking, less checking, lower costs, improved material usage all contribute to a better bottom line for you.

**ESTIMATE FOR JOB #RP24767**

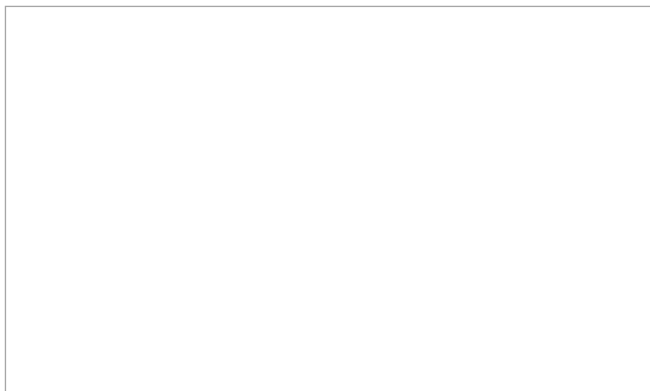
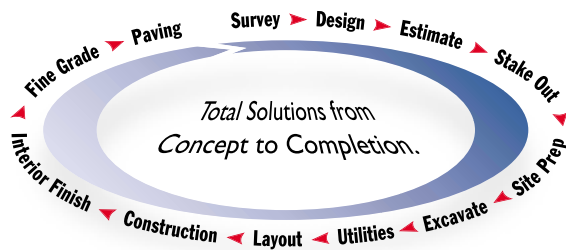
Bid Item	Quantity	Unit Price	Total Cost	Adjusted For Trimble 3D Machine Control	Adjusted Total
			31,570.00		31,570.00
	LS		9,120.00		9,120.00
Mobilization	5,700.00	1.60	50,000.00	-40,000.00	10,000.00
Silt Fence			13,999.75		13,999.75
Survey Staking	110.60	126.58	408,750.00	-19,620.00	389,130.00
Clearing and Grubbing	327,000.00	1.25	223,975.00	-3,612.50	220,362.50
Mass Excavation	14,450.00	15.50	230,011.50	-3,333.50	226,678.00
Install Aggregate Roadbase Material	13,334.00	17.25			
Fine Grading					
<b>Project Totals</b>			<b>967,426.25</b>	<b>-66,566.00</b>	<b>900,860.25</b>

**Tools for the future.  
From a long tradition of innovation.**

The construction industry is more demanding and competitive than ever before. Trimble, through the combination with Spectra Precision the pioneer of the machine control industry, helps you improve your processes and productivity with the most complete range of earthmoving and grade control solutions. Trimble's innovative solutions are based on decades of construction industry experience—in positioning technologies including laser, total station and GPS with control systems, wireless communications, and software. All this resulting in a line of rugged, field proven products—from practical solutions for the general contractor to the most sophisticated machine control systems.

Streamline your process, minimize downtime, lower costs and boost profitability with Trimble, the world leader in construction solutions.

And every Trimble purchase is supported by the industry's largest global service and support system, with partners who understand the technology, the applications and your business needs. From concept to completion, Trimble positions you for success.



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**NORTH AMERICA**

Trimble Engineering and Construction Division  
5475 Kellenburger Road,  
Dayton, Ohio 45424-1099  
U.S.A.  
800-538-7800 (Toll Free in U.S.A.)  
+1-937-233-8921 Phone  
+1-937-233-9004 Fax  
www.trimble.com

**EUROPE**

Trimble GmbH  
Am Prime Parc 11,  
65479 Raunheim,  
GERMANY  
+49-61422-1000 Phone  
+49-61422-1550 Fax

**LATIN AMERICA**

Trimble Navigation Limited  
6505 Blue Lagoon Drive,  
Suite 120,  
Miami, FL 33126  
U.S.A.  
+1-305-263-9033 Phone  
+1-305-263-8975 Fax

**AFRICA & MIDDLE EAST**

Trimble Navigation Limited  
P.O. Box 17760,  
Jebel Ali Free Zone,  
Dubai,  
UAE  
+971-4-881-3005 Phone  
+971-4-881-3007 Fax

**ASIA-PACIFIC**

Trimble Navigation Australia Pty Limited  
Level 1/123 Gotha Street,  
Fortitude Valley, QLD 4006,  
AUSTRALIA  
+61-7-3216-0044 Phone  
+61-7-3216-0088 Fax

**CHINA**

Trimble Export Limited  
Representative Office  
Suite 16D, Building 2 Epoch Center,  
4 Beiwa Road, Haidian District,  
Beijing, 100089  
P.R. CHINA  
+86-10-6847-7756 Phone  
+86-10-6847-7786 Fax

[WWW.TRIMBLE.COM](http://WWW.TRIMBLE.COM)

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Spectra Precision  
is now part of Trimble