

VOLLERS USES GPS SYSTEM ON GRADING EQUIPMENT IN CRANBURY

In recent years, automobile manufacturers have begun offering Global Positioning Systems as an option in the vehicles they produce. A Global Positioning System (GPS) is a satellite navigation system which can plot a course for a driver to travel between two specific points on the map. Advancement in the technology now allows for its use on construction equipment.

Vollers Excavating & Construction purchased the GPS equipment from Cleary Machinery for use on a recent project for the Rockefeller Group. Use of the equipment allowed Vollers to complete its grading activities completely free of surveying stakes. Savings on surveying costs are substantial. Vollers realized a 95% reduction on possible surveying costs compared to costs incurred had the firm not invested in the equipment.

There are several elements of GPS. The first of these is a Topcon Base Station which is encased in concrete adjacent to the office trailer. The Base Station consists of the GPS receiver and radio antenna. A second piece of equipment is the Topcon Survey Rover which allows for the contractor to check the grade anywhere on the site. The GPS system is attached to the construction equipment and a control box is mounted in the cab of the vehicle to provide constant grade, cross slope and position information to the operator.

Agtek Graphic Grade Software is utilized to place the site plan on the cab's computer. This equipment interfaces by transmitting satellite signals to the receiver that automatically adjusts the height of the equipment's blade for a precise grade.

When Vollers used this system on the Rockefeller Group's Crate & Barrel project in Cranbury, New Jersey, the firm was able to grade the property in approximately one-third of the time when compared with more traditional methods. The final grade was within one-half inch of accuracy. Furthermore, the Topcon system has exclusive access to the GLONASS positioning network which is a Russian satellite network, simi-



Topcon GPS control box provides data to the equipment operator.



GPS equipped Komatsu Motorgrader cuts grade for building pad.

lar to the GPS system. This provides signals from an additional nine satellites to achieve precise positioning.

The GPS network contains 24 satellites for a total of 33 satellites from which a firm can receive information. For the best accuracy, the system needs to receive signals from at least eight satellites so there is an

advantage to having access to as many satellites as possible.

According to Jim Cleary of Cleary Machinery, the investment in the Topcon GPS for construction equipment is approximately \$200,000. However, that cost should be recouped in the first year from the savings in surveying costs.