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November 2008

Merge GPS with Construction and Streamline Post-Design

More and more projects are now being constructed using GPS. It can increase the efficiency, accuracy, and safety of construction activities, thereby improving the bottom line of land development projects during Post-Design. The novelty of using GPS in construction, however, means that it is essential to work with savvy contractors who know how to make the investment in this technology pay off.

GPS, or Global Positioning System, is best known for its use in navigation, but it has become indispensable for other uses as well. Land surveying can be made more efficient with GPS, and GPS is useful in construction inspection for verifying compliance with specifications and plans. GPS does not provide the same accuracy as surveying instruments, however, and cannot be used under dense tree cover or overhead structures. Understanding both the opportunities and limitations of this satellite-based technology is especially important for relatively new applications of GPS such as earthmoving.



GPS receivers can be mounted on equipment, such as bulldozers and backhoes, and integrated with a digital three-dimensional grading plan. This integrated system is, in turn, linked mechanically to the equipment for precise control. The system provides machine operators with continuous feedback on their position, allowing a fine-tuned and productive approach to grading. Less labor is needed to lay out grade stakes and to check grading during the earthmoving process, and the need to rework graded areas is reduced because initial accuracy is high.

The benefits of using GPS during construction are fully realized only when the proper front-end preparation takes place. Most importantly, the engineer's design needs to be translated from a two-dimensional grading plan to a 3-D digital model. While the engineer's data provide a base model, the contractor must add a dimension that suits the site and the equipment. The 3-D model must then be distributed to the GPS equipment and machine operators in the field. The real key to success lies in keeping that information current throughout construction. Given the variability of soil behavior, earthmoving strategies must be adjusted on an ongoing basis. Changes to the 3-D site plan require the contractor to be continually tracking whether operators have the most up-to-date information.

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Adding GPS technology to construction activities is a substantial up-front investment for contractors. Land development projects stand to benefit from this technology by working with contractors who understand that GPS-based grading is a process and not just a “plug and play” product. With the right equipment and project management, GPS can add value to Post-Design by reducing labor costs and enhancing productivity.



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