

# Technology Expedites Environmental Obligations

## Machine control gives H. L. Wiker a giant productivity boost

**Edited by Matthew Phair -- Constructioner, 4/18/2005**

For the site work contractor, environmental obligations are here to stay. Soil erosion and sediment control plans are an inescapable part of contract requirements in almost every area of the country. While the work tasks that are involved in meeting these responsibilities usually have little or no profit attached to them, the risks of non-compliance are substantial. Heavy fines and project shut downs are just two of the consequences that can result from ignoring these inescapable obligations.

Land disturbing activities like clearing and grubbing can't be started until sediment and erosion control measures are in place. Many site work contractors see them as a hurdle to jump before getting down to the real work of the project — get them finished and move on to the more productive and profitable operations on the site.

Recently a progressive contractor in Pennsylvania discovered that technology could expedite compliance with environmental requirements. H. L. Wiker and Sons started business as a family-owned operation back in 1988. Their headquarters is located in the midst of Pennsylvania Dutch country on a restored farmstead just outside of Lancaster.

As Wiker continues to expand, they have sought ways to gain more direct control over field operations. Driven by the escalating costs of consultants hired to perform stakeout tasks, they explored GPS technology that would enable them to perform their own layout, and ultimately purchased a Topcon HiPer+ survey system in the spring of 2004 from Productivity Products and Services in Saxonburg, Pa.

The newly purchased GPS+ survey system was put to work immediately in the hands of a project superintendent. Initially, the system was used to stakeout mass grading operations. Several weeks later, Wiker moved to the next level and purchased Topcon System Five fully automated controls for their Cat D6N. They would use this GPS-controlled dozer to bring large areas to subgrade fast and accurately following mass earth moving operations.

Wiker was recently awarded contracts for several phases of an extensive residential housing project on 300 acres located in Rapho Township, Lancaster County. The owner, Elm Tree Properties, plans to build 1,000 housing units on the site, ranging from single-family homes to higher density apartments. The project will be the largest residential subdivision in the county's recent history. Wiker's contracts for this project include all site preparation, utilities, curbs, and paving for a total cost of \$6 million.

In September 2004, the company began work on Phase 1. The scope of work included 17,250 cubic yards of topsoil stripping, 275,000 cubic yards of cut/fill excavation, 61,000 linear feet of underground utility installation, 30,640 linear feet of curb and gutter, and 45,000 square yards of asphalt paving.

Existing conditions on the undeveloped site included a stream flowing transversely across the northern end. Protection of this water resource was a major issue during the approval process. To create sufficient area for the planned development, the water course had to be relocated. The natural drainage pattern of the development area was directed toward the stream, causing even more concern about adequate protection. To ensure that this would be accomplished, the erosion and sediment control plan mandated completion of the stream relocation and grassing of disturbed areas prior to the commencement of any site grading in the development area.

Gene Eisenberger, Wiker's vice president of field operations, assigned site responsibilities for the Elm Tree Properties project to superintendent Jim Reiff. Working with Richard Breneman, vice president of Wiker, these three individuals form a dynamic project management team with premier technical knowledge and seasoned field experience. Understanding that the creek relocation was the first order of business, they allowed 22 working days in the schedule for this task. They formulated a strategic plan for earthwork operations, and mobilized the appropriate equipment. Breneman estimated the cost of this initial phase at \$30,000. This expense projection included the costs of layout work by others and time delays for waiting on surveyor's cut sheets.

With an aggressive approach to meeting environmental obligations, H. L. Wiker went to work. Using their new system, no grade stakes were needed for the excavation and grading of the new stream channel. The hydrologic design included a meandering low-flow ditch within the main channel that was too narrow to grade with a dozer or motor grader. Using creative machine techniques, the dozer operator tilted the blade and used the tip to scribe the ditch centerline. The machine control system enabled the operator to follow the path precisely. The ditch was then excavated and shaped with a backhoe.

Three days later, the creek relocation was completed. With the Topcon machine control technology, Wiker reduced the actual cost of this work to \$10,000 — 66-percent less than their estimate. Equally important, they gained 19 working days. This put them one month ahead of schedule, and enabled them to start work on more profitable areas of the site.

As Gene Eisenberger describes it, "I've been in excavation since 1974. It's the greatest thing that I've ever seen in construction since I've been in the industry."

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