Laser Grading

Know what you're getting

by Grove Teates

We've become accustomed to hearing the term "laser grading" used in association with construction of various types of athletic fields. More and more frequently, laser-controlled equipment is being used to establish elevation and grade.

Proponents of the technology claim that lasers can accomplish these tasks with greater speed and efficiency than more traditional methods. If you're considering using laser grading on your field, make sure you're armed with the knowledge to make an informed decision.

What is laser grading?

Some still associate lasers with science fiction films and ray guns. But lasers have become important tools in today's world. Their medical and military applications are familiar to all of us.

In the turf industry, lasers are making headway as tools for athletic field construction. Laser grading uses a laser system to control various types of machinery: box blades, bulldozers, trenchers, and motorgraders. With the help of a 360-degree sensor, a laser can automatically control blades or cutting edges mounted to these machines to create a desired surface grade.

Courtesy: Level Best

Laser transmitters provide a 360-degree plane of laser light over an entire construction site. It acts as a beacon, and provides a continuous 360-degree reference to guide a laser-controlled machine.

Laser systems are available in level only, single, and dual grade configurations.

What should you look for?

Accuracy: Laser grading is generally more accurate than other methods. However, lasers do not necessarily guarantee accuracy.

You should specify the degree of accuracy you wish to attain with your project. Typically, a laser system can provide grading that's accurate to within 1/4 inch, and lasers can provide accuracy to within 1/8 inch.

Arm yourself with information before making your investment. Generally, inexpensive laser equipment will not provide the same accuracy that more expensive models will give you. Ask your contractor for details on the equipment that is to be used.

Laser operators also affect accuracy. Inexperienced or sloppy operators can impact the method's results. Your contractor's crew should always be qualified to operate the equipment necessary to do the job.

Equipment: Regardless of the type of grading system being used, the machinery must be well-maintained. Lasers only control the grading machines; they cannot provide the promised degree of accuracy if these machines are worn.

Courtesy: Level Best

One should also note whether the machine is laser controlled or laser indicated. The first term means that a signal received from a laser beam automatically controls the grading machine. The second term means that an operator must read the laser indicator and then proceed to operate the machine manually.

Automatic systems offer quicker results, and they protect against loss of accuracy due to operator error. Astute buyers ask which type of system they are getting for their investment. They seek information about the performance characteristics of the equipment that will be used, and they inspect the equipment's condition.

Machinery: Many types of construction machines can be equipped with laser control. Each type is suited to a specific job.

A box blade is well suited to a project that requires a finish or fine grade. A bulldozer is best suited to establish sub grade, and to move large quantities of dirt.

What type of equipment does your contractor propose to use for your project? Does this strategy best meet your needs? The answers to these questions will affect the cost and accuracy of the work performed.

References: Ask contractors for references to check the quality of their work. Ask former clients about accuracy, and ask them whether the job was completed on schedule.

Sorting through the terms

Single-Pole Receivers: This type of grading equipment relies on a single-pole laser receiver that's generally mounted in the middle of a cutting blade. It can be mounted to a bulldozer blade, a front-mount box on a skid steer, a three-point hitch drag box, or any of several configurations of small-wheeled pull boxes which are pulled by tractors.

Dual-Pole Receivers: This equipment uses two receivers: one mounted on each end of the cutting blade. Each controls its own end irrespective of the other.

Laser Transmitters: Most transmitting sources project a beam over a given distance. One should note that there is a degradation of accuracy over distance. Usually, 1/8 inch of accuracy is lost per 100 feet of distance from the transmitter.

An interested client should ask the contractor about the type of transmitter that will be used and the manufacturer's stated accuracy of that transmitter. It's also important to find out how the contractor proposes to use that piece of equipment to minimize the loss of accuracy in the overall project.

Like any capital purchase, an investment in laser equipment or laser grading services must be an informed one. It is entirely possible to hire a laser grader and not receive the results that you assumed came with the equipment and terminology.

Pay close attention to the job specifications. They must give a noted deviation over a given distance. This might be listed as "+/- 1/4-inch deviation over 200 feet," or it could be phrased "within 1/4-inch deviation over the plane of the field." Note the difference in terms. The above noted criteria are usual and standard in this industry.

You may rely on the specifications and not be so concerned with the methodology. When this is the case, the bid document must have enforceable and measurable parameters so that the contractor has to perform to the bid document.

Your methods of checking the contractor's performance must be clear and above reproach. The checking entity must be able to accurately check the desired grade.

A knowledgeable buyer coupled with a well-equipped, knowledgeable contractor can build a highly desirable, state of the art field. But the converse is also true, even if high-tech equipment is used. Buyers simply need to know what they're getting for their money.

Grove Teates can be reached at Alpine Services, Inc., 5313 Brookeville Rd., Gaithersburg, MD 20882; phone: (800) 292-8420; fax: (301) 963-7901; e-mail: asi@alpineservices.com.