

E&M Engineers and Surveyors, PC

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Springville, New York 14141
(716) 592-2851

Bradford, Pennsylvania 16701
(814) 362-5546

www.emengineers.com

Picture This

By: Chris Ernst, P.E.

Before your summer construction jobs get started, take a few minutes and grab the still or video camera and capture the existing conditions of your project location. The old saying that a “picture is worth a thousand words” has never been more true. Keeping a photo or videotape record of existing conditions will protect the project owner, the Engineer, the contractor completing the work and the landowner from problems after the job is finished.

The project owner will be protected by assuring that the contractor has completed the job without disturbing areas just beyond the project limits or has returned the disturbed areas to the existing conditions. The project owner will also be protected by preventing frivolous lawsuits from other landowners that may be affected by the project. An example of this would be a municipality installing a sewer main across a private landowner that claims his property was disturbed due to the project and repairs were not made. With a photo record, the municipality would be able to go back and compare whether or not the disturbance truly occurred or if the landowner is just trying to get something for nothing.

The contractor will be protected in essentially the same manner as the project owner in that they will have proof of existing conditions and they will be protected from completing extra work at their cost or having to fight a frivolous lawsuit. The photo record will also prevent problems between the contractor and the

project owner. The landowner will also be protected by allowing them to prove that damage to their property did indeed occur due to the project.

A photo or video record will also be of value from a historical standpoint for a municipality. The community will have a record of buildings that may be removed or other changes that are made due to the project. The photos or videos may be of great interest to future generations, even though it may not seem very interesting now.

Having a photo or video record of existing conditions is something that we make sure is always taken care of before the construction project begins.

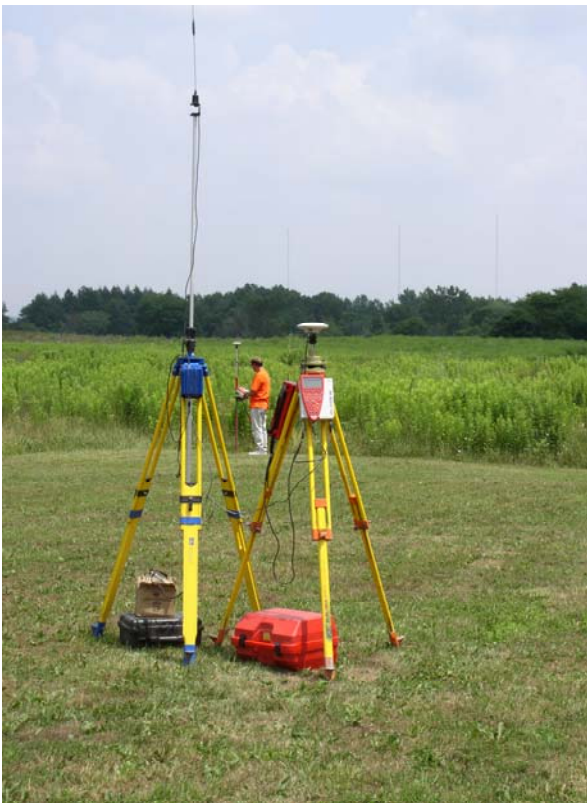
Technology In Use

By: Al Vanderpoel, P.E.

We have often written about advances in technology, and how the savings are passed along to you, the client, in any number of different ways. But until you see a specific example, it is often hard to visualize just how the new technology ends up being a benefit. I recently had a project that fit perfectly as an example.

First, I will give some background on this specific project. A few years ago, we designed a trail around the Marilla Reservoir in Bradford Township, McKean County. The trail included a covered bridge, (which was the subject of a previous newsletter article,) and two other bridges, in order to make a one mile loop

around the reservoir. The trail is essentially done now, and is a jewel in the Bradford area. In my mind, there are very few other trails east of the Mississippi that rival this trail for scenery and pleasant walking conditions. The Bradford Water Authority built this first trail with grant money, and recently obtained a second grant to extend a trail from the back portion of this trail to a National Forest trail, approximately three miles to the west. The extended trail follows the west side of Marilla Creek and runs up to the headwater springs. The terrain is spectacular along this route.



Global Positioning System

The challenge with designing this trail was completing a ground survey to pick up location points and identify culvert and walkway locations. Three miles of survey with a traditional instrument through some very heavy brush and small timber was going to take a long time. The solution was to use a global

positioning system (GPS) unit, and record the points without making a full base line record. We estimate that the use of the GPS unit cut the survey time to 20% of the man hours that otherwise would have been required, and also completed the project considerably quicker than through a traditional survey.

By using the GPS technology of downloading the trail route and culvert locations directly onto a USGS topography map, we were also able to provide a map, and list the culvert locations for the trail. The simplicity of this design provides an adequate plan in a short period of time, at a very low cost to the Client.

This is just one example of how the advances in technology have improved engineering services. We at E & M Engineers and Surveyors continually strive to stay on top of new developments, and make our services more efficient for you, our Client.

Bradford High Installs Rubber Track

by: Roy Pedersen, P.E.

Bradford Area High School has recently completed a long awaited rubber track overlay project. The project, completed by S.M. Gleason & Co., Inc., of Bradford, PA, at a cost of \$225,000 resulted in a 5 lane red colored, polyurethane/rubber track. The high jump pad, pole vault runway, and long/triple jump runway were also coated with a red rubber surface.

The rubber surface is more forgiving to runners legs and joints and should prevent injuries and hopefully produce faster times.

Other work done as part of this project included a raised handicap seating platform on the home side of the field, reworking of the on/off ramps of the home side bleachers, and the installation of a considerable amount of

new sidewalks and fencing.

Prior to this project, in a separate contract with Fessenden Construction Co., a concrete floodwall was installed around the perimeter of the field to prevent flash floods from flowing onto the track.



Rubberized Running Track

Town Recovers Original Well Field

By: Jeffrey C. Bahret, P.E.

The Frewsburg Water District located within the Town of Carroll, Chautauqua County, New York, has been struggling with its potable water supply for a number of years. The area in and around the Hamlet of Frewsburg provides poor soil/aquifer characteristics for developing water well sources. In most cases, when a 200 gpm+ aquifer is identified and developed, it is contaminated with either high iron or manganese. These secondary contaminants are not public health problems. However, they do produce negative aesthetic characteristics such as stained plumbing fixtures and laundered clothes, foul tastes, and odors. The iron and manganese can be removed, but it is a costly process compounded by the disposal of the residual iron and manganese sludges. Without a municipal waste water treatment plant which this material

can be pumped to; its ultimate disposal can be a problem.

Without a doubt, the best quality water within the Frewsburg Water District was developed from the original system source well field (Wells #1 and #2A). Unfortunately, these wells were prohibited from being used for the past 15 years due to the contamination with Trichloroethene (TCE). This particular volatile organic compound, which is used in industrial operation as a cleaning solvent, found its way into the regional water supply from a local manufacturing facility. NYSDEC mandated site clean up operations were successful at the manufacturing facility. However, as with all VOC's, the trace amount of TCE which earlier escaped the site remain within the water supply aquifer. With continuous pumping, it might take 100 years to remove all the TCE present at a contamination level between 1 and 20 parts per billion. A reliable method had to be found to remove the TCE to place this well field back into service. Fortunately, TCE has a relatively high Henry's Law Constant, which make removal by "air-stripping" the clear choice.



TCE Stripping Building

The mechanism of air stripping is that contaminated water is dispersed suitably on the surfaces of the packing as a thin film.

The packing is contained in a vertical fiberglass tower or stand pipe. Uncontaminated air is introduced at the bottom of the packed column tower. In accordance with defined physical laws, molecules of the dissolved solute (TCE) are driven to cross the water/air interface in an attempt to reach a natural equilibrium of concentration in air and water. It is evident from this visualization that the amount of air supplied (driving force) for a given amount of water is a key consideration in the stripper design.

The Frewsburg Water District, TCE Stripper System for wells #2A and #1 will go online this month. The new facility is complete with a separate chlorination and natural gas standby generator rooms. It is designed to treat and pump into the distribution system 200 gallons per minute via a telemetry signal from the north side finished water storage tank