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Fall 2002

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Pipeline Rehabilitation

by Glenn D. Cooley, PE

A new technology that is emerging in underground infrastructure replacement is "pipe bursting." Pipe bursting is an installation method for replacing pipes, in place, with minimal excavation and surface disturbance. Bursting can be done on watermains, sewers and gas lines. Materials such as cast iron, ductile iron, steel, concrete, PVC and vitrified clay pipe can all be "burst."

The method uses either a static, pneumatic or hydraulic tool which is pulled through the pipe to be replaced with a winch. The tool exerts outward force on the old pipe causing it to break as the tool is winched forward. A replacement pipe, either polyethylene or PVC is attached to the tool or "head" and is pulled along as the head bursts the old pipe. In using pipe bursting, equal or larger diameter pipe can be installed because the head can expand the hole as it progresses.

Speed of replacement is much greater than with open cut. Bursting is especially applicable to trunk sewers or water transmission mains where there are few, if any, service connections. It is very beneficial where surface or subsurface obstructions limit space for new construction.

Limitations to bursting include the necessity to remove the old pipe from service during the replacement, individual excavations for re-connection of services, inability to traverse sharp bends and displacement of the ground surface in certain shallow installations.

Town, Village and School District Consolidate Facilities

Garrett M. Hacker, E.I.T

"The Town of Portland Intermunicipal Fueling Depot is a great example of communities working together to save the taxpayers money", was stated by New York State Senator Patricia McGee at a ribbon cutting ceremony in the Town of Portland, Chautauqua County on Tuesday August 6th. The Town of Portland was awarded a Quality Communities grant totaling $118,000.00 by the NYS Department of State to construct a gasoline/diesel fueling station on property adjacent to the Portland highway garage. The Town of Portland, Village of Brocton and Brocton Central School agreed that one petroleum fueling site is more cost effective than three. The centrally located site will enable municipal vehicles and equipment owned and operated by the Town, Village, School District, Town and Village Fire Departments and the Chautauqua County Sheriff Departments access to the site.

E&M Engineers and Surveyors met with Town, Village and School officials in the winter of 2001 to discuss the scope of the project and its proposed location. A topographic and boundary survey of the newly acquired site was conducted and preliminary cost estimates prepared. To reduce the overall project costs, the Town of Portland Highway Department agreed to grade the site, build the access road, trench all utilities from highway right-of-way to fuel pumps, pave the roadway and landscape the site.

Construction plans, specifications and bid

documents were prepared for the new fueling center in the Spring of 2002. An 8,000 gallon above ground split bulkhead (6,000 diesel , 2,000 gasoline) Lancaster Tank with double containment was specified based on current fuel usage and estimated future growth. Also specified was one gasoline and two diesel high capacity Gasboy dispensing units with suction pumps and automatic nozzles. A Monroe dry chemical fire suppression system with an automatic actuator protects both the diesel and gasoline dispensing units. With multiple municipalities and departments utilizing the site a Gasboy fleetkey fuel management system was installed to record and poll transactions. The fleetkey system and modem are housed in a pedestal located adjacent to the dispensing units. To initiate a transaction one simply inserts a preprogramed plastic key to identify the vehicle then punch their personal identification number on the keypad to identify the user. Transactions are polled once a day via a modem and saved to a computer located at the Brocton Central School where billing is managed.

Non Traditional Retaining Walls

by Roy Pedersen, PE

Retaining walls have long been used by engineers and builders for many types of projects. Typical uses are bridge abutments, building foundations, canal walls, or to support embankments on slopes which will then support other structures, or parking lots.

Traditionally, materials for the construction of retaining walls have been stone, concrete, steel, or wood.

Recently, development of geotextiles (fabrics to be buried in the earth) has opened up a new, often less expensive way to build retaining walls.

This technique, often called MSE walls for mechanically stabilized earth, consists of reinforcing earth with layers of geotextile fabric which allows the soil to be placed very close to a vertical face. These walls can be "faced" with several different types of materials, from concrete, to wood, to plastic "geocells" which are manufactured to work in conjunction with geotextiles.

The advantages of this type of wall are that a large deep excavation is not required, the assembly is relatively simple and doesn't required as much skilled labor. Another advantage is that the "facing" of these walls can be designed to blend in with the environment, even using vegetation to grow on the wall, which makes an aesthetically pleasing appearance to the face of the wall.

This type of retaining wall is being chosen by highway contractors for use as temporary embankments, as well, because of the inexpensive cost, as well as the ease of construction and removal.

An article in the October 2002 GFR magazine, written by Jim McGeary and Doug Lowry, gives an excellent discussion of this type of wall which was chosen for a new bridge in a remote area of Alaska. This magazine has a web site address of www.gfrmagazine.info.

In conclusion, retaining wall engineering and construction has a new "player" to choose from and we will be seeing more examples of this type of wall construction in the future.

ALTA/ACSM Land Title Survey

by James A. Nearhood

"A bureaucratic, self-serving, counter-productive sort of rip-off."

"Not so, Not so - a much needed base line for a specific use type of survey."

ALTA/ACSM Land Title Surveys are an increasing part of a land surveyors business. The need for these "special" surveys is based on land title insurance policies, but are now also used by a purchaser to get a clearer picture of the property by selecting optional items from Table A.

ALTA is the American Land Title Association. ACSM is the American Congress on Surveying & Mapping. NSPS is the National Society of Professional Surveyors.

Why Standards:

The need for some type of standard field and mapping performance was felt prior to 1962 when the first minimum standard detail requirement was adopted. Interstate developers and land title insurance companies found that there were varying levels of quality of surveys with many different methods and quantities of data shown on the maps received from different parts of the country and even among local surveyors. Thus these parties insisted that a set of standards be developed to assure them of a consistency in accuracy and content of any survey map they receive.

The survey map is only one part of the research which the title insurer examines and depends on. The reason for their concern for accuracy and content is that unlike Life or Accident Insurance the Land Title insurer expects and intends never to have to pay out on a Land Title insurance claim. Title insurance has been called risk elimination insurance.

History:

After the first set of standards were adopted in 1962 there were six revisions of the Minimum Standard Detail Requirements and Classifications of ALTA/ACSM Land Title Surveys. These were done to match the clients needs, adjust expectations as to what services a land surveyor could legally and reasonably perform and to reflect the changing technologies of the time. The current Standard was adopted by the ALTA, ACSM and NSPS in October of 1999.

Minimum Standard Detail Requirements:

The introduction discusses the need to know the evidence on the ground as it compares to matters of record and governmental regulation. It is then separated into eight sections listed below:

1. Method of requesting an ALTA/ACSM Land Title Survey and the information and records to be supplied to the surveyor.
2. Information about the land surveyor, name, address, etc.
3. Referenced to these Standards.
4. Graphic scale, north arrow, symbols and abbreviation legend, supplementary diagrams and map size.
5. Required items of applicable information:
    a. All data for mathematical dimensions and relationships of the boundary lines.
    b. Record bearings or angles or distance differences from existing site measurements.
    c. Relationship to nearest right-of-way lines and street information.
    d. Identifying titles of recorded plats, maps, right-of-way maps, etc, along with gores and overlaps.
    e. Evidence of monuments found on the premises and beyond.
    f. Character of evidence of possession found and its relationship to measured and record boundaries.
    g. Location of all buildings and street numbers.
    h. All easements evidenced by record documents and occupation.
    i. The character and location of all visible improvements and encroachments.
    j. Driveways and alleys.
    k. Evidence of cemeteries and burial grounds.
    l. Location of ponds, lakes, springs or rivers.
6. Requirements for map copies, paper prints and reproducibles, along with political jurisdiction, section, township, range, etc.
7. Water Boundaries
8. The certification to be shown on the survey with its form and choices of verbage.

Table A:
Optional Survey Responsibilities and Specifications
This is a full page list of 17 optional items a client may request to have shown on his survey. A few of them are; setting monuments, vicinity map, flood zone, elevation contour lines, zoning, building dimensions/height, other improvements, parking, utilities, adjoining owners, among others. The client would check off the items to be researched and/or to be located and shown on the map.

Accuracy Standards
for ALTA/ACSM Land Title Surveys:
These Accuracy Standards address positional uncertainty, positional tolerance and minimum angle, distance and closure requirements. This technical section lists definitions, computation methods and applications. There is a chart showing the different controlling factors and the related requirements.

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Conclusion

The client has a right to expect the resulting map to satisfy his needs. The surveyor has the duty to provide and expect to get paid for professional services. These standards allow both to be protected by knowing exactly what is needed and how to get the job done.

If you wish to have a full copy of the Standards let me know and I'll send one to you or you could download it from their website www.surveymap.org.