PLAINTIFF'S EXHIBIT

CAP-1743

Send to Joe Jackson, John Welch 1-14-81 mw W.R.P.

ARKANSAS WATER UTILITIES CORPORATION

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1/7/81

WFW - use & return

Bill —

Thought you may like to see the article "The Valley of the Drums" which appears on the back of this "Seven Sense" from Dickey — John

CAPCO JEN 0003980

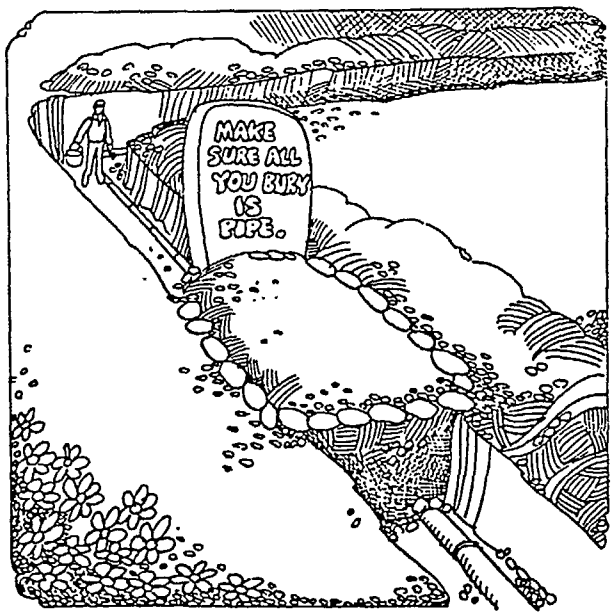
Sewer Sense

If you're the person who has to choose, make the choice you can live with.

The Case of the Invisible Menace

It had been a long hot day for Joe, and he was glad it would be over soon. He had only a few more pipe joints to assemble. He had been feeling uneasy all afternoon. Maybe indigestion. One thing for sure, he'd be glad to get out of the trench. He leaned down to ram the last joint home when the whole trench seemed to be spinning. He gasped, tried to stand up, staggered and collapsed. Luckily, his buddy found him in time. He hauled Joe out of the trench, applied artificial respiration and revived him!

What was the mystery behind Joe's blackout? Toxic gas. The unseen, invisible hazard that lurks in the trench.



Danger: CH_4 & H_2S

When establishing line and grade for sewer construction, the engineer may be unaware that the line crosses through a former dump. Then trenching may uncover an area producing Methane gas. Methane — a colorless and odorless explosive and a gas that can displace oxygen. Since the trench is a confined space, might not the life of the construction worker be endangered by oxygen starvation or, if he casually lights a cigarette, an explosion?

Again, the trenching operation may pass through an area where sulfurous materials are present. Often the odor of rotton eggs may be noticed. Unpleasant as this is, the trenching crew often stays on the job working in an atmosphere of H_2S — Hydrogen Sulfide. This gas anesthetizes the olfactory senses so that the warning odor can no longer be detected. Then it paralyzes the respiratory system.

Another Hidden Hazard

Pipe jointing for many years caused considerable risk. Using hot poured materials, mastic compounds and bitumuls, chemically-derived joints can be a problem. However, today most modern pipe manufacturers provide safe compression-type joints using elastomeric materials.

Yet there still are joints made with highly toxic components. One of the most prevalent is the solvent Methyl Ethyl Ketone. This too, could have been the cause of Joe's accident. Working all day in close quarters where safety precautions were not noted or applied, Joe could have inhaled the noxious fumes of this solvent hour after hour until he eventually lost consciousness. OSHA[2], ASTM[3], and product manufacturers recognize the need for testing, ventilating and making emergency equipment available when using hazardous, toxic materials in confined areas.

Built-in Protection

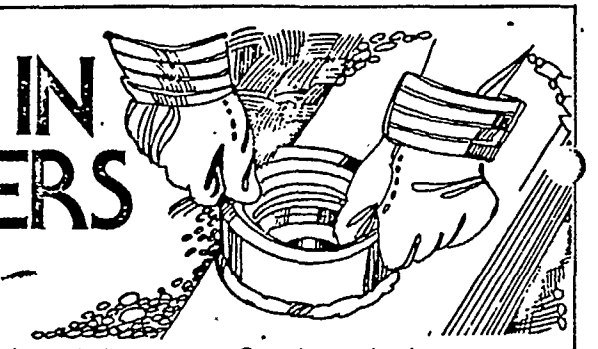
The potential problems of applying solvent welded joints can be eliminated by using safe compression joints. With a proven record of dependable performance, compression joints form a tight seal without dangerous adhesives or solvents.

Whose function is safety in the trench? The design engineer, the purchasing agency, the product manufacturer, the contractor or the inspector? Is it everybody's job — a team effort — or nobody's responsibility. If it is nobody's, who tells Joe's widow?

1. An imaginative situation, but patterned on factual occurrences with even more tragic results.
2. Occupational Safety and Health Standard OSHA 2226 "Excavating and Trenching Operations".
3. ASTM F402-74 "Safe Handling of Solvent Cements Used for Joining Thermoplastic Pipe Fittings".

CAPCO JEN 0003981

MAKING TAPS IN CLAY PIPE SEWERS

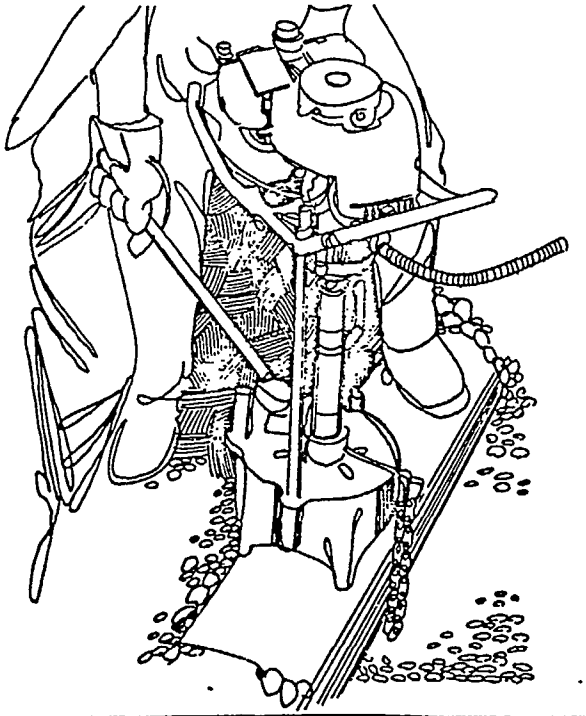


Within the past 20 years there have been dramatic restrictions on the allowable amount of infiltration and exfiltration permitted by design engineers and regulatory agencies for sanitary sewer systems. Today's vitrified clay pipe compression joints and precast manhole sections permit these tighter requirements to be met!

One area of sanitary sewer construction that some design engineers and regulatory agencies fail to cover in their guidelines and specifications is the proper way to tap into an existing vitrified clay sanitary sewer, one of the toughest building materials in use today. That it is so highly resistant to all abrasive and erosive action is attested to by over 100 years of outstanding service throughout the United States and in many parts of the world. This remarkable quality, formed in clay pipe through vitrification, also makes it one of the most difficult pipe materials to cut and tap. If there is any doubt about this quality of clay pipe, just ask someone who has had to cut a hole in clay pipe with a hammer and chisel. Fortunately, several methods of tapping clay pipe lines have been developed which make the hammer and chisel tools of the past. Two of the more common methods are described below.

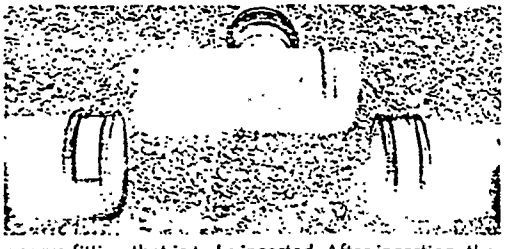
METHOD 1 - SADDLE ATTACHMENT

This method of tapping a clay pipe line requires a hole to be cut out of the barrel of the pipe with a coring machine. These machines were developed for use in the field to make connections to existing sanitary sewer lines without disrupting service. The pipe is cut with a diamond tipped cutter shell usually powered by air or gasoline depending on the particular equipment. Once the core has been removed, the service connection is attached to the pipe by one of two systems. One system of attaching the saddle to the pipe uses an epoxy seal, normally supplied by the manufacturer of the saddle. A second method requires the saddle to be clamped to the pipe using a rubber gasket seal to prevent leakage. Both of these systems are effective in making a quality connection which eliminates unwanted ground water.



METHOD 2 - FITTING INSERTION

A second method of tapping into an existing line is to cut out a complete section of the barrel and replace it with a tee or wye fitting. A chain cutter is used to cut out a pipe section slightly longer than the barrel section of the tee or wye fitting that is to be inserted. After insertion, the fitting is joined to the cut ends of the line with two band seal connection couplings. These couplings must conform to the material and performance standards of ASTM C 425 for Compression Joints for Vitrified Clay Pipe and Fittings. This method of tapping is only limited by the availability of the fittings and cutting equipment.





Either Method 1 or Method 2 can provide a tight, trouble free connection to an existing sewer line. To insure good performance of the connection, it is extremely important to restore any bedding which may have been disturbed during the tapping operation.

In summary, several very good methods of making permanent connections into an existing main line sanitary sewer are available. Each system has features which may be advantageous in a particular situation. Contact your local clay pipe manufacturer for specific recommendations as to the best way to make service connections in your area.

1. See "Sewer Sense No. 7" for Gladding, McBean's article on Air Testing of Vitrified Clay Pipe.

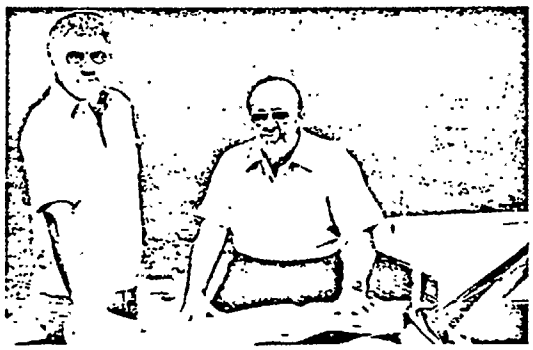
CAPCO JEN 0003982



VITRIFIED CLAY PIPE ALONG THE HISTORIC LINCOLN HERITAGE TRAIL

The City of Atlanta is located in Central Illinois 40 miles northeast of Springfield along the historic Lincoln Heritage Trail. It is believed that Atlanta was the final rest stop where Abraham Lincoln reviewed his speech in preparation for the beginning of the famous Lincoln-Douglas debates in 1858.

On June 2, 1980, the City of Atlanta received bids on a complete sanitary sewer system financed by the Farmers Home Administration, the Illinois E.P.A. and the Citizens of Atlanta. The project consisted of approximately 83,000 lineal feet of 6" thru 12" sanitary sewer pipe and fittings. The Consulting Engineer for the project was Crawford, Murphy & Tilly, Inc. of Lincoln, Ill. Carl Wieland, Manager of C.M. & T's, Lincoln office considered several types of



Ken Wiegand of Wiegand & Storrer, Inc. of East Peoria, Illinois (left) and Carl Wieland of Crawford, Murphy & Tilly, Inc. of Lincoln, Illinois.

sewer pipe materials including VCP, PVC plastic and truss pipe. However, Carl commented that "when considering types of material for the sewers, an engineer must consider service life, performance and economy. Clay pipe in relation to other types of sewer pipe is the only one which lives up to its expectations."

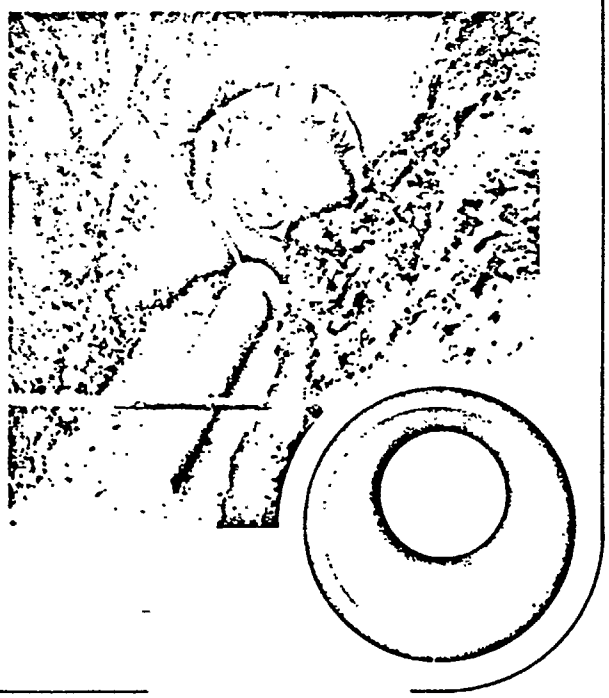
When the bids were opened and publicly read, the low bidder was Wiegand and Storrer, Inc. of East Peoria, Ill. Their bid was based on using Clow NO. BEL VCP and amounted to a total of $2,689,332.90. The second contractor's bid, which was based on installing plastic truss pipe, was almost $100,000.00 higher than the bid of Wiegand & Storrer, Inc. The closest bid based on using PVC plastic sewer pipe was almost $800,000.00 higher than the low bid for Clow NO. BEL VCP.

Contacted after the bid opening, Engineer, Carl Wieland, said "I was glad to see vitrified clay pipe bid (low) in Atlanta, because in comparing it to other types of sewer pipe materials, VCP is the only one which measures up to my expectations. I feel more confident that VCP will give the City a sewer system that will remain in service for generations."

Mayor Richard McKowen of Atlanta comments that "The Town Council Members investigated various types of sewer pipe and we concluded that for our money, clay pipe had more to offer regarding reliability. The Council Members concur with our Engineer, Crawford, Murphy & Tilly, Inc. that vitrified clay pipe is the best pipe material to use because of its lasting properties."

Wiegand & Storrer, Inc., of East Peoria, Ill. has been in the sewer and water construction business for over 30 years. Ken Wiegand, Purchasing Agent and Job Co-ordinator states that Wiegand & Storrer, Inc. has "installed over a half million feet of Clow NO. BEL sewer pipe over the last eight years in communites throughout Central Illinois. Most of the sewer pipe we have installed was subject to an air acceptance test and our success with Clow NO. BEL sewer pipe has been excellent." While working on the bid for Atlanta, I conferred with every member of our organization, from men who handle the pipe in the trench, to our President, Les Storrer, and after looking at PVC, truss pipe and clay, we unanimously agreed that Clow NO. BEL clay pipe was the only pipe we had enough confidence in to use on the job. The depth of the sewers on this project range from 7 feet to 18 feet deep and will be air tested for acceptance."

In a time when getting the most for your money has the highest priority, one cannot ignore the fact that long terms savings must be considered in today's decisions. Contractors Less Storrer and Ken Wiegand of Wiegand and Storrer, Inc., Design Engineer, Carl Wieland of Crawford, Murphy & Tilly, Inc., Mayor Richard McKowen and the citizens of Atlanta, Ill. all know that Vitrified Clay Pipe is "the choice you can live with".



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THE VALLEY OF THE DRUMS

Deep in the western hills of Kentucky lies a valley whose name evokes a quiet recollection of ancient Indian customs. This is the Valley of the Drums. But — this is no hallowed sanctuary for fallen warriors. It is an infamous cemetery, a graveyard of 17,000 partially buried drums of hazardous wastes. Many of these barrels are in various stages of deterioration, with some having burst, spilling their evil contents onto the innocent ground, that thin protector of the groundwater beneath.

By extraordinary coincidence of place and interest, there lives in Louisville, Kentucky, some twenty miles from the Valley, a citizen by the name of Glenn Scott. In June of 1979, Mr. Scott, exercising his rights under law, petitioned the U.S. Environmental Protection Agency (EPA) to ban the manufacture and use of asbestos-cement water pipe. Mr. Scott maintained, confirmed by the Administrator of EPA, that asbestos is a known carcinogen and expressed his concern that asbestos fibers may leach out of the asbestos-cement pipe and contaminate the water supplies directly.

The Administrator granted Mr. Scott's petition. As a result, EPA is now evaluating the use of asbestos-cement as a water pipe, and, by extension, its use as a sanitary sewer pipe. The purpose of the investigation is to determine the extent to which the use of this material may contaminate the water supplies directly and indirectly. In the case of its use as a water pipe, this would involve the effects of leaching and abrasion. In the case of sewer pipe, it would involve the effects of abrasion, combined with the corrosion of the cement in the sewer atmosphere, leaving the asbestos fibers free to pass through the treatment plant back into the water supply cycle.

Asbestos is simply one among many materials and products causing anxiety in EPA and in the Congress. The House of Representatives recently passed the Hazardous Waste Containment Act of 1980 in an effort to restrain the insidious dangers lurking in the thousands of Love Canals and Drum Valleys all over this land. The Act would generate a fund to do this through taxation of petrochemical feedstocks, the raw materials used in the manufacture of a host of products, including plastic water and sewer pipes.

It is said that everybody's business is nobody's business. For safety today and tomorrow — be the one who cares. Specify the natural and durable product which comes from the goodness of the earth — vitrified clay pipe.

E. J. Newbould, President, NCPI

Because of space limitations in "Sewer Sense", a complete discussion of technical subjects is often not possible. For further information, write the NCPI Director of Research, P.O. Box 310, Crystal Lake, Illinois 60014.

Sewer Sense