GENERAL - PLASTIC PIPE INSTALLATION

All polyethylene pipe and tubing specified by the District is approved for direct burial.

Install all plastic fittings on solid compacted ground without binding. Install protective sleeves at all service branches and transition fittings to protect against shear forces. Tape the sleeves in place.

Plastic pipe and tubing shall be buried 12" or greater from steam lines, hot water lines, power lines, and other sources of heat as required to avoid temperatures in excess of 140° F. as required by Minimum Federal Safety Standards. If 12" of clearance, or greater if required, is not possible, an effective barrier (e.g. insulator, casing, shield, spacers, etc.) shall be installed separating the plastic pipe from the source of heat.

Plastic pipe and tubing can be installed by trenching, plowing, boring, or inserting. Any of these four methods are approved and their application is only restricted by availability of the various types of equipment and site conditions.

Visually inspect all pipe and tubing during installation, and backfill all but the final connections. Allow the pipe or tubing to reach ground temperature before making final connections.

TRENCHING

Trench bottoms should be relatively smooth, continuous, uniform in depth, and free of rocks and other debris. When ledge rock, hardpan, or boulders are encountered, pad the bottom of the trench and backfill with fine grained fill material.

Though some joining can be accomplished above ground, final connections and joining which must be done in the excavation should be well planned to ensure that enough space is available to achieve proper alignment. Avoid buckling, gouging, and other physical damage when lowering the pipe or tubing into the ditch. Shore the trench or excavation walls when necessary according to C.S. 0.3.0.

Snaking the tubing along the bottom of the trench will provide for "slack" to be taken up as the tubing cools and contracts in the ditch.

PLOWING

Plowing is a method of installing plastic tubing with very little disturbance of the ground, as opposed to trenching.

When plowing in plastic services, start with a bell hole at the building and plow towards the main. The tubing should be strung out behind the machine in a manner that would eliminate snagging or tangling. Since the machine vibrates, the customer should be made aware of this before starting the operation near the building so they may remove any pictures or other items on the interior wall that may vibrate off.

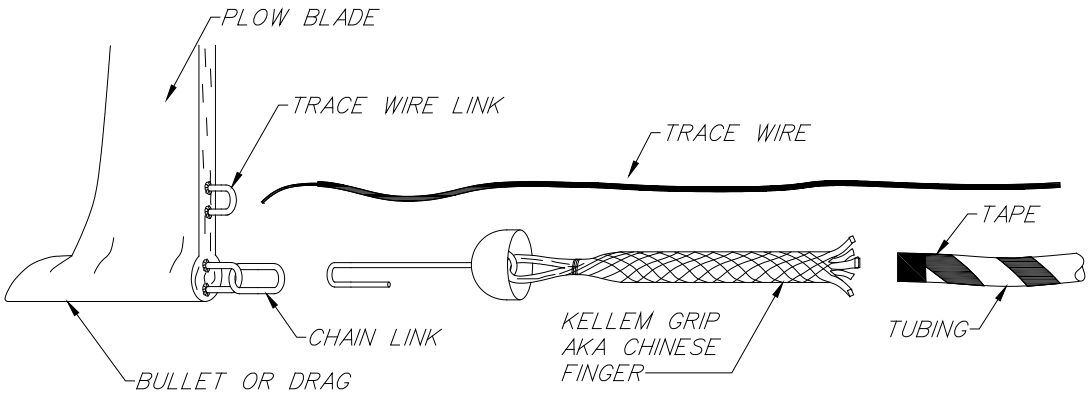

Fig 1

When plowing in plastic gas mains, start the plowing operation from a bell hole or excavation and plow away from it. String out the pipe behind the machine or on a pipe reel so the pipe will be easily uncoiled as the machine moves along. If a 90° bend is required, plow to the point of the 90° bend and dig a bell hole. Set the vibratory plow in the new direction and continue plowing.

Plowing will cause the plastic to stretch slightly. Sufficient time must be allowed for the plastic to shrink back to its original length.

Fig 1 shows the configuration for connecting the plastic tubing to the back of the plow blade. Wrap tape around the end of the tubing and stab the tubing all the way into the kellem grip. Pull on the kellem grip to make sure it grips the tubing tightly. Taping the end of the tubing keeps the kellem grip from slipping. Hook the Chinese Finger to the lowest hook on the back of the plow blade and the trace wire to the upper link. If there is only one link, tie the trace wire to the trailing end of the Chinese Finger.

HORIZONTAL BORING

When sidewalks, driveways, streets, trees, or other obstacles interfere with trenching or plowing, it may be necessary to bore under them. The boring method used will depend on location, type of soil, the length and the size of the bore.

A breakaway connection or approved method shall be used when pulling polyethylene pipe. The breakaway connection is designed to protect polyethylene pipe from overload during installation by directional drilling and is used between the pullback swivel and the polyethylene pipe puller.

Bore holes should not be larger than necessary. Where size of bore in relation to size of pipe is specified by the State, County, or City, these specifications must be complied with. See C.S. 0.1.4, 0.1.5, and 0.1.6.

Plastic pipe may be pushed or pulled through the bore hole being careful not to damage the pipe while inserting it. The lead end shall be closed to keep debris and dirt out of the pipe. The locating or trace wire must always be attached to the lead end of the plastic pipe when inserting it through a bore hole.

INSERTING SERVICES

The following steps should be followed to successfully insert plastic tubing into an existing gas service.

1. Squarely cut the existing service. If the existing service is metallic, ream or file the end(s) of the pipe to prevent the plastic tubing from being cut or gouged during insertion.

2. A "snake" or fish tape may be pushed through the existing service to ensure there are not any obstructions such as old valves, 90° bends, or scale and corrosion that would prevent the tubing from being inserted.

3. Tape the trace wire to the end of the tubing. Apply tape over the end of the tubing to prevent debris from entering.

4. Push the tubing through the existing service. If the tubing hits an obstruction, do not force it. Protective plastic sleeves shall be taped in place at all points where plastic tubing is entering or exiting rigid pipe.

Caution: Do not insert new plastic tubing through the body of a service valve or main valve.

INSERTING MAINS

When inserting plastic pipe into cast iron or steel casing, care should be taken to prevent damage to the plastic pipe. All cast iron main or steel casing ends shall be reamed or filed to remove the sharp edges. Short pieces of split tubing, tape, or similar material may be placed over the end of the casing to prevent damage to the pipe during insertion. See Fig 2. The lead end of the plastic pipe will be covered or plugged to keep out dirt and debris. The casing ends shall be sealed with foam, as in Fig 3, to prevent water from getting between the walls of the pipe and the casing.

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NOTE: *See Standard 11.2.2 when installing trace wire with plastic through casing.*

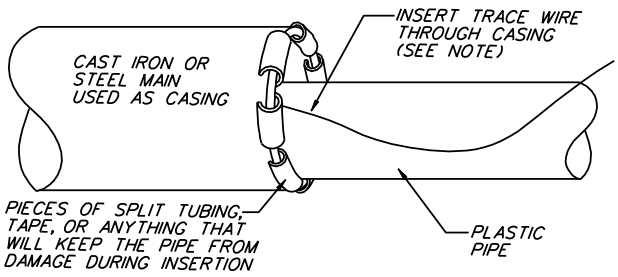

Fig 2

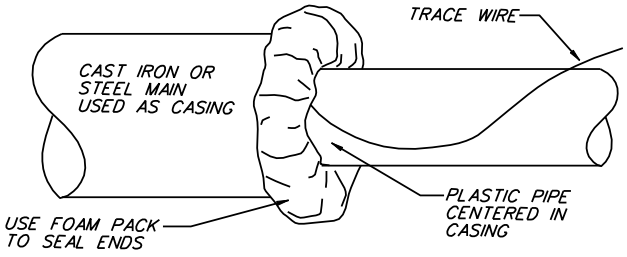

Fig 3

BACKFILLING

Any State and local requirements on backfilling and restoration of streets must be observed. See C.S. 0.1.4, 0.1.5, and 0.1.6 for compaction requirements in roadways and public right of ways.

Plastic pipe should be laid on undisturbed or well-compacted soil. When rock, ledge, hardpan or boulders are encountered, the trench bottom should be undercut at least 6” and refilled with good-bearing small-particle-size soil. Backfill material for at least 6” over the plastic pipe should be select, fine material free from stone. If trench is wide enough, sidefills should first be compacted. To prevent damage to plastic pipe when using heavy equipment (such as hydro-hammers), compact the backfill in at least 24” lifts.

When plastic fittings, valve boxes, pipe, service risers, etc. could be damaged by machine powered tamping equipment, the backfill material must be hand tamped in 6" layers. Care must be taken not to damage the pipe with a pneumatic hand tamper. Generally, compaction is considered adequate if all the excavated material is compacted back into the excavation.

Revision

The latest revision is detailed on the following page(s).

Pages affected: #1 & #2

METROPOLITAN UTILITIES DISTRICT	Construction Standard	No: 11.2.1
		Page: 1 of 5
Prepared by: ~~D.J. Satterfield~~Rich Baird	Plastic Pipe Installation	Supersedes: ~~11-11-19~~2-7-20
Approved by: ~~Jeff Schovanec~~ James Bartels		Effective: ~~2-7-20~~
The latest revisions can be found at the end of this document		

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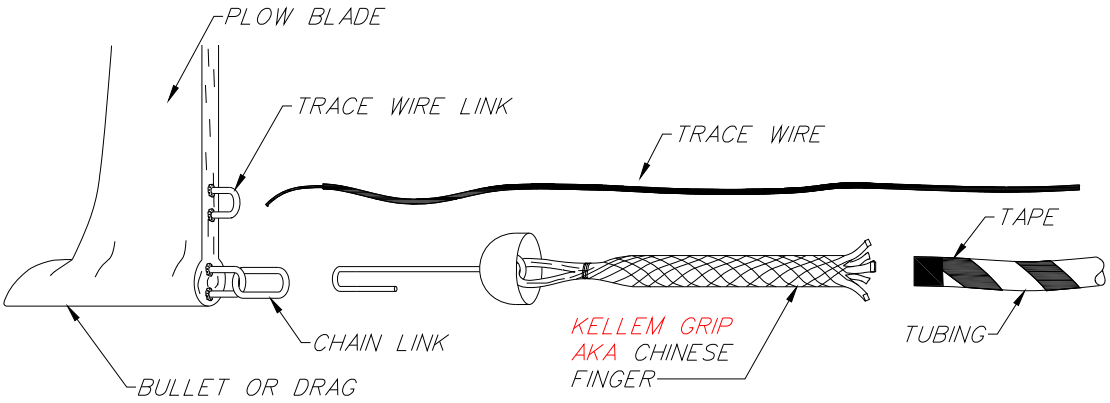

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