Communications and Electrical Conduit and Manholes

Provides Infrastructure Needed to Support Communications Systems and Electrical Facilities for Traffic Signals and Street Lighting

- ***Conduit*** protects and provides a path for communications, traffic and street lighting cables

- ***Manholes*** provide access points to maintain and pull fiber and copper cables

Types of Conduit Systems

1. **Communications** – Provides a path for communications, traffic control and telecommunications and cable TV cables.

   - Utilized by various City Agencies : DCD, DPW, Fire, Police, Health, Traffic Control.
   - Excess capacity leased to Telecommunications and Cable TV companies.

2. **Electrical** - This system provides a path for traffic control and street lighting cables.

(Communication cables must remain separate from the higher voltage electrical cables)

Conduit Installation Program

- Conduit systems are relocated/replaced due to paving conflicts/geometric changes (curb relocation, bridge reconstruction, significant grade changes, etc.)

- Conduit projects are based on prioritized requests received from Communications and Traffic Engineering. These installations include new conduit paths as well as increasing capacity of existing conduit systems.

- Conduit is installed in conjunction with State, County, and local paving projects whenever possible to save on construction costs and cost sharing opportunities on DOT Connecting Highway projects.

Existing Conduit Facilities

- **565 miles of conduit, measured end-to-end**

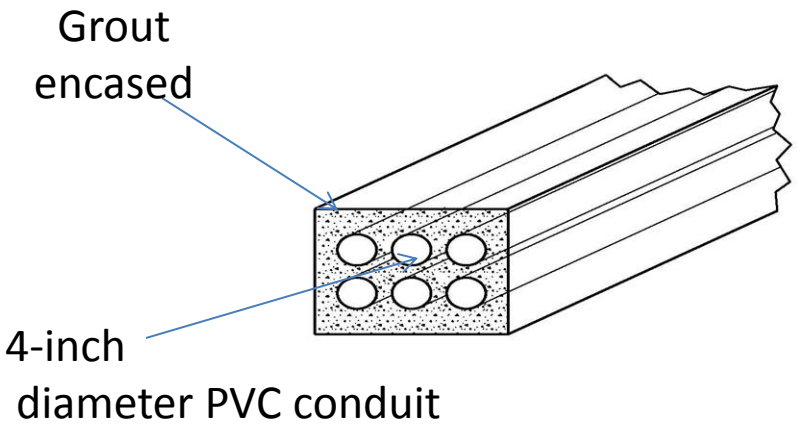
  9% Iron pipe (1888—1905)

  19% Clay tile (1905-1930)

  55% Fiber (1930–1980)

  17% PVC (1980- Present)

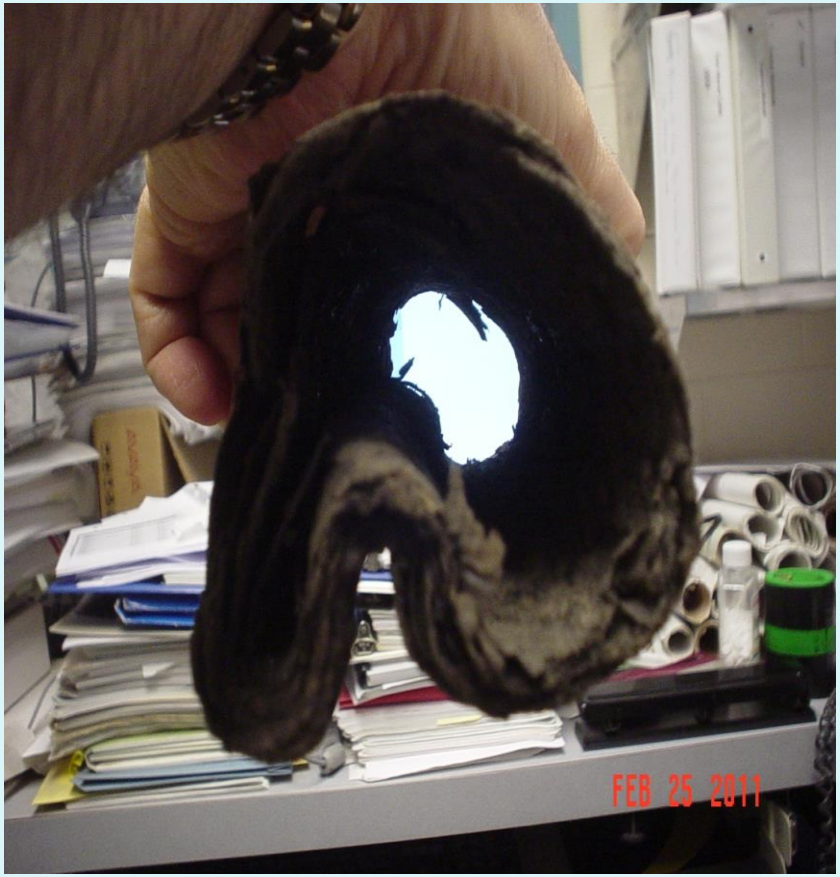
Typical Conduit Package Cross-Section



Ducts

PVC Pipe in Clay Duct

Fiber Duct



New Conduit with Pull Ropes

Existing Manhole Facilities

7,543 Active Manholes

43% Brick Manholes (1888 – 1950)

40% Block Manholes (1950 – 1980)*

17% Precast Concrete Manholes (1980 – Present)

* Block manholes fail at a faster rate; no reinforcement used during installation

Manhole Condition

- Currently manholes are not inspected on a regular schedule
- Inspection record data base created in 1988
- Over 50% of manhole inspection reports are at least 20 years old
- 400 Need to be repaired: typical cost $2,000 – $14,000 per manhole
- 200 Need to be replaced: typical cost $20,000 - $25,000 per manhole
- Approximately 2,000 manholes exceed 75 years in age
- 2012 – Manhole Inspection
  - 322 Manholes inspections were completed for paving projects at a cost of $35,775.00

Collapsed Manhole Cover

Failed Brick Manhole

Block Manhole Repair

Manhole Rehab Program

7543 Manhole → **100 MHS annually**
75 yrs

80 repair	80 @ $4,700*	= $376,000
20 replace	20 @ $23,500*	= $470,000
	100	$846,000

Work needed based upon manhole condition reports:

Repair 400 manholes @ $4,700* =	$1,880,000
Replace 200 manholes @ $23,500* =	$4,700,000
	$6,580,000

*average cost per 2011 service orders

Budget History

	Conduit Installations New /Replacement	Manhole Rehab (Repair/Replace)
2013	1,736,700	450,000
2012	1,156,000	300,000
2011	800,000	200,000
2010	1,000,000	200,000
2009	400,000	200,000
2008	400,000	200,000

New Program Elements and Goals

- **Major Projects** in addition to the normal paving program
  - Zoo Interchange Project
  - DOT Bridge Rehab Projects
- **Manhole Inspection**
  - Develop manhole inspection program on a 5 to 10 year cycle
- **Manhole Maintenance**
  - Develop a regular replacement/repair program based on the manhole inspection condition reports