



Communications and Electrical Conduit and Manholes Program

City of Milwaukee
Department of Public Works
March, 2014

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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

Underground Communications and Electrical Conduit

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

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

9% Iron pipe (1888—1905)

19% Clay tile (1905-1930)

54% Fiber (1930—1980)

18% PVC (1980- Present)

Ducts

PVC Pipe in Clay Duct



DPW Conduit and Manholes

Fiber Duct



March, 2014

Conduit Installation Completed – 2013

(Major Paving Projects)

- City Paving
 - Capitol Drive, 84th Street to Mayfair Road
 - 27th Street, St. Paul Avenue to Highland Boulevard
- WISDOT - Zoo Interchange Reconstruction
 - Bluemound Road, Glenview to 92nd
- Milwaukee County
 - Perimeter Road Bridge



New Conduit Installation – 2014

(With Major and Local Street Paving Program)

- Connecting Highway Paving Projects
 - 27th Street, Howard Avenue to Oklahoma Avenue
 - Howell Avenue, College Avenue to Grange Avenue
- Local Street Paving Projects
 - Bradley Road, 76th Street to 81st Street
 - 107th Street, Good Hope Road to Fond du Lac Avenue

Conduit System Under Design – 2013/2014

(WISDOT Major Construction Project Initiatives)

- Zoo Interchange Reconstruction
- Stadium Freeway North Bridge Replacements
- IH43/IH 94 (North/South Freeway) Bridge Replacements
- Appleton Avenue Reconstruction, 76th Street to 107th Street

Underground Communications and Electrical Manholes

Existing Manhole Facilities

7,551 Active Manholes

43% Brick Manholes (1888 – 1950)

39% Block Manholes (1950 – 1980)

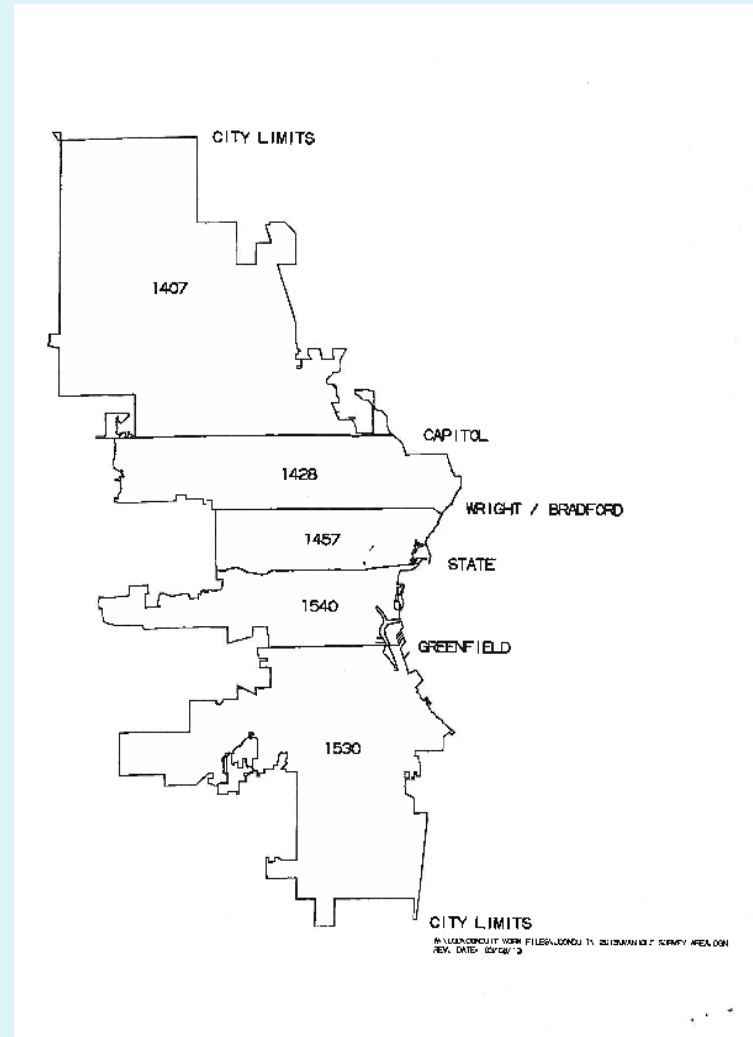
18% Precast Concrete Manholes (1980 – Present)

Notes:

- Approximately 2,000 manholes exceed 75 years in age
- Block manholes fail at a faster rate; no reinforcement used during installation

Manhole Condition Assessment

- Manhole Inspection Program Initiated in 2013
- Manholes to be inspected once every five years
- Inspections completed in the North Central Area in 2013 (Wright Street to Capitol Drive)



2013 Manhole Inspections

- 1428 Manholes Contracted to be Surveyed
- 1345 Surveys Completed
 - 83 Manholes Unable to be Surveyed due to being asphalted over, unable to access, unable to locate, etc.
- Manhole Survey Results
 - 111 Manholes Need to be Replaced or Have Major Repairs
 - 22 Manholes Require Deck Roof Replacement
 - 263 Require Chimney or Corbel Repair

2013 Inspection – Deteriorated Roofs, Chimneys and Corbels



2013 Inspection – Manholes Recommended for Replacement

51



6222



260



6216



Manhole Capital Improvement Program: Funding Levels

- Current and Prior Year Manhole Capital Program Funding Levels

–	2014	\$750,000
–	2013	\$450,000
–	2012	\$300,000
–	2011	\$200,000
–	2010	\$200,000

- 2015 Capital Improvement Program Request to be Developed Based on a Regular Replacement and Repair Program Using Actual Manhole Condition Data

Manhole Repair and Replacement Costs

- Manhole Repair
 - \$2,000 to \$15,000

- Manhole Replacement
 - \$20,000 to \$25,000