

Department of Public Works Environmental Engineering Section



City of Milwaukee Flooding Study Task Force

March 10, 2011



City of Milwaukee I/I Pilot Project

- The purpose of this project is to reduce clear water from entering into the sanitary sewer, ultimately reducing the chances of basement backups throughout the City
- This project consists of updating the existing plumbing of 5 City of Milwaukee owned homes
- These properties are located in the area bounded by: North 35th Street to West Fond Du Lac Avenue from West Nash Street to West Marion Avenue
- This area has reported approximately 450 basement backups in 2010
- Construction is currently underway and is estimated to be completed by the end of March 2011
- Once completed, this project will develop a procedure to rehabilitate the existing private plumbing, and eliminate inflow and infiltration from the Sanitary Sewer
- This project will cost \$95,000 to complete



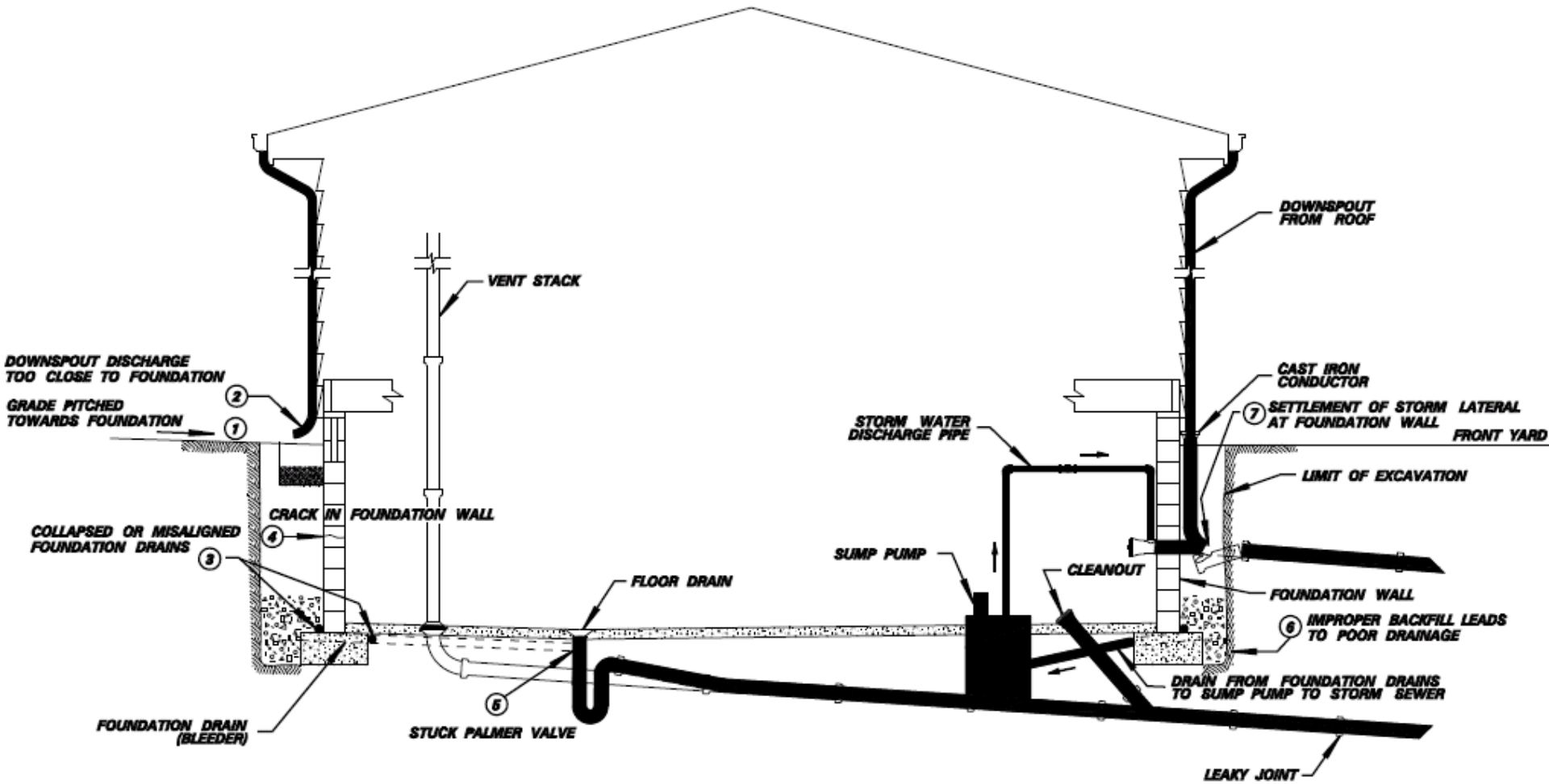
Project Status

Locations

- 4220 North 42nd Street
 - 3938 North 42nd Street
 - 4238 North 40th Street
 - 3825 North 40th Street
 - 3847 North 39th Street
- Currently 3 out of the 5 properties have had the plumbing rehabilitated in the basement
 - Lateral lining is expected to start next week
 - This project is expected to be completed by the end of March 2011



Private Plumbing Details



What is being done?



1. Foundation Drain Disconnection

- The existing foundation drains are televised to determine if they are functioning properly
- The foundation drains are re-routed from sanitary sewer connections to a sump pit in the basement
- A sump pump with a battery backup is installed in the sump pit
- Electrical Services are installed to power the sump pump
- The collected water from the foundation drains is now discharged to the yard that previously was going to the sanitary sewers



2. Removal of Palmer Valve

- The foundation drains connect to the sanitary lateral through a palmer valve
- This valve and the connection is removed and replaced with a new floor drain
- Most homes built prior to 1955 have foundation drain connections to the sanitary lateral



3. Install Backflow Preventer

- A backflow preventer is installed on the existing sanitary lateral
- This blocks water from flowing back into the house from the sewer main in the street in the event of a flood



4. Rehabilitate existing Sanitary Lateral

- The existing sanitary laterals are televised
- A cleanout is installed in the yard on the sanitary lateral
- If necessary, the lateral is cleaned from the cleanout
- The sanitary lateral is rehabilitated with a cured-in-place lining method

Before



During



After



Challenges?

- Existing electric services at some locations have to be upgraded to provide dedicated service for the sump pump (additional cost)
- Locating areas in the basement where a sump pump can be installed due to existing conditions
- Evaluating the conditions and functionality of the foundation drains
- Locating an acceptable discharge location for the sump pump drain to meet the plumbing code



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Questions?



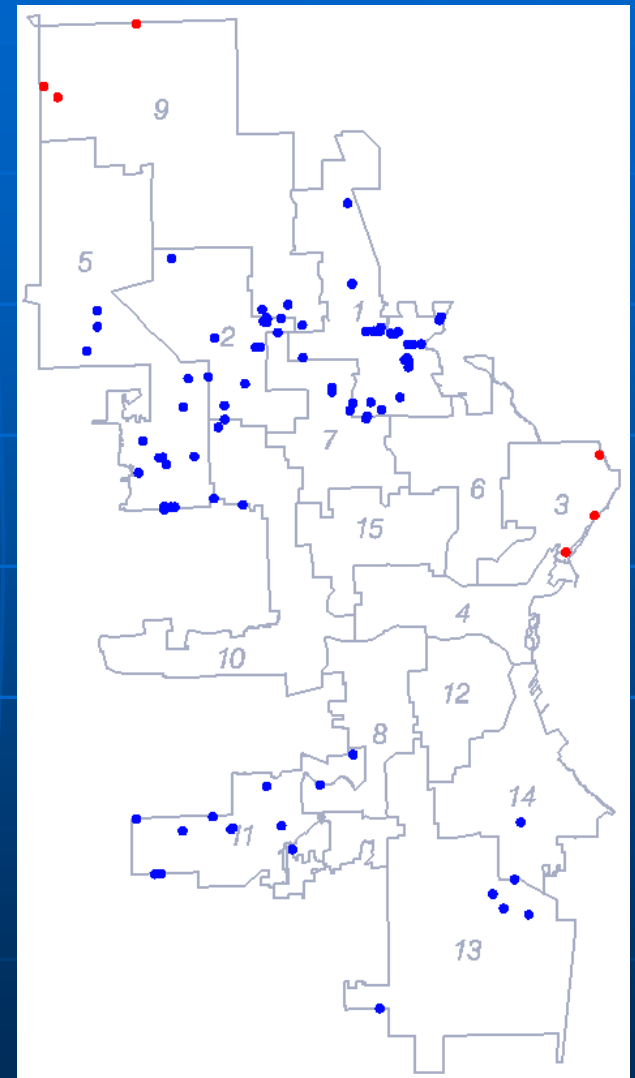
Sanitary Bypass Pump Station Locations

The City owns and maintains two types of pumping facilities, sanitary bypass pumps and sanitary lift stations

- Bypass Pumping Stations (83)
- Lift Stations (6)

Bypass pumps are located in areas where there has been a history of backwaters

Lift stations are located where gravity sewer service is not available, usually in low-lying areas



Sanitary Bypass Pump Station Locations

- Our records indicate that the original pumps were installed in the 1960s and 1970s
- Bypass pumps are located in areas where there has been a history of backwaters
- Generally pumps are programmed to turn on approximately 2 to 4 feet below the low basement elevation in the vicinity of the pump



Pump Operations During Last 10 Years

Reason	Precipitation		Clogged Sewers	Other *	Total
	Rain Events	Pump Runs			
2001	1	1	1	0	2
2002	1	1	0	3	4
2003	0	0	3	0	3
2004	2	19	0	1	20
2005	1	3	3	0	6
2006	1	1	0	2	3
2007	0	0	0	0	0
2008	1	30	1	0	31
2009	1	7	0	1	8
2010	3	69	2	1	72
Total	11	131	10	8	149

* Includes lift station equipment failure and contractor errors

