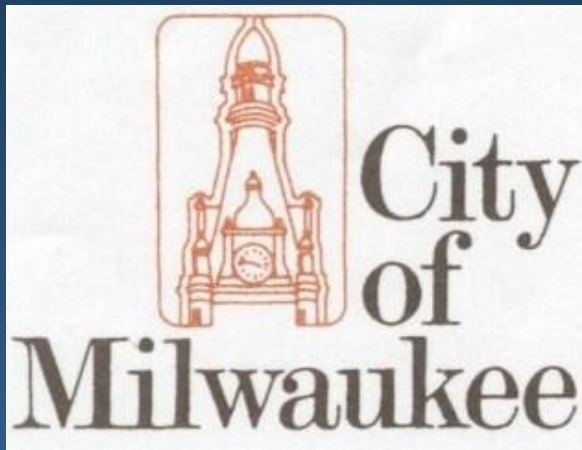




# *Minor and Major Stormwater Management System Concepts*



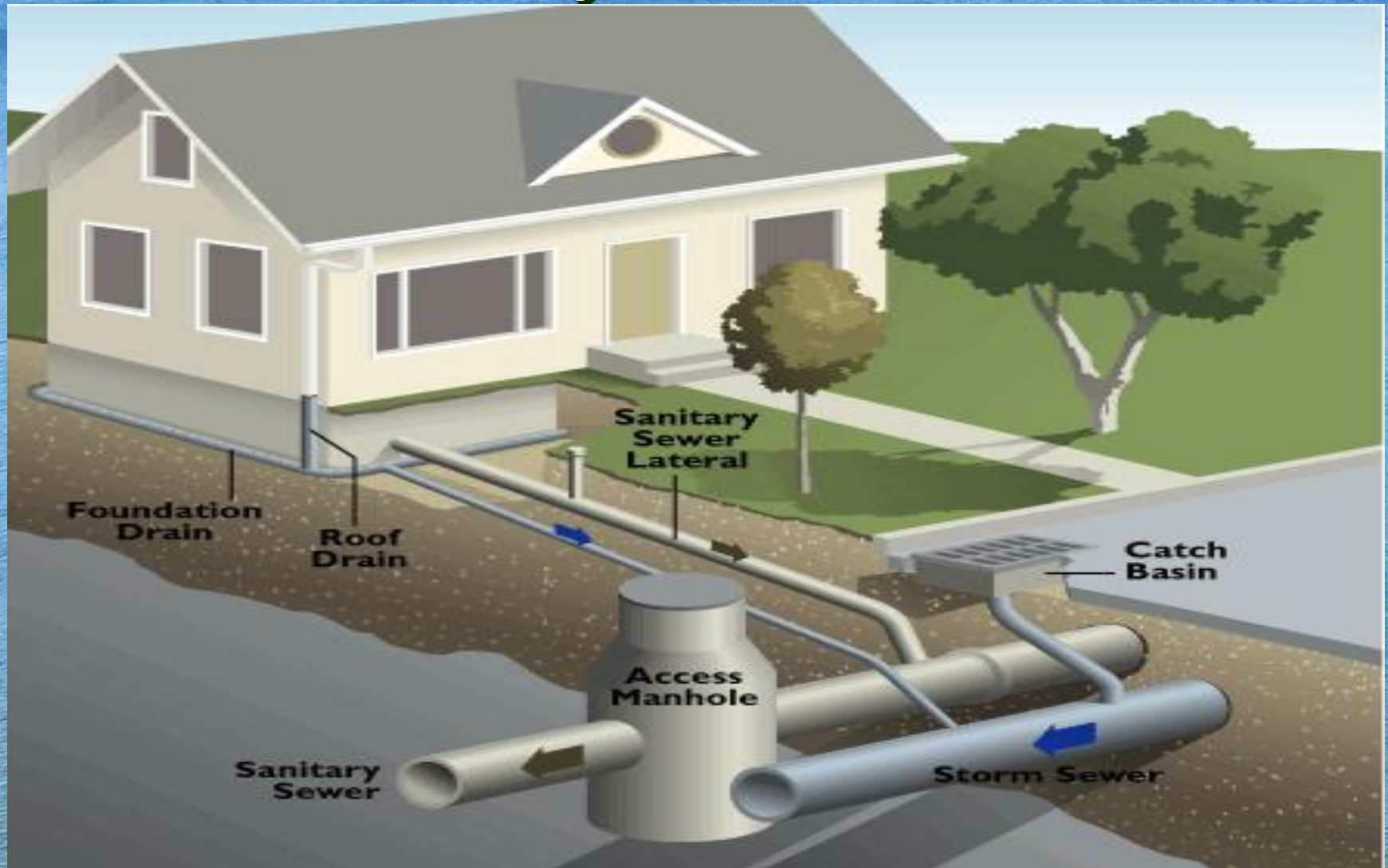
Presentation to City of Milwaukee Flooding  
Study Task Force

February 24, 2011

Michael G. Hahn, P.E., P.H.

SEWRPC Chief Environmental Engineer

# Sanitary and Storm Sewer Systems





# Minor and Major Urban Stormwater Management Systems

## ➤ Minor System

- Operates frequently (Five- to 10-year design storm frequency)
- Designed to minimize inconvenience during small rainfall and snowmelt events
- Components:
  - Urban streets: Gutters, storm sewers
  - Rural streets: Roadside swales, culverts
  - Both: Detention basins, infiltration facilities, low impact development features

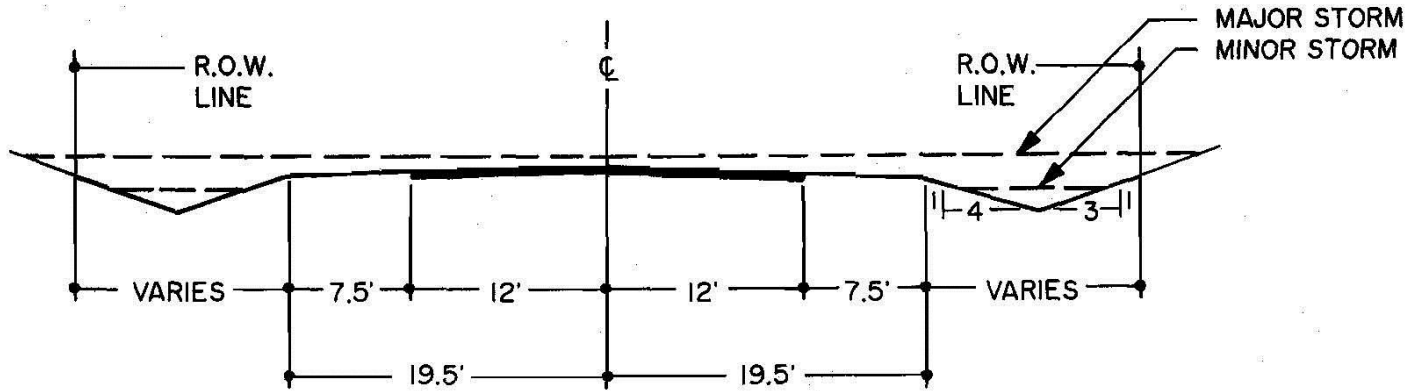


# Minor and Major Urban Stormwater Management Systems

## ➤ Major System

- Operates infrequently (100-year design storm frequency)
- Designed to avoid damaging inundation of buildings during large rainfall and snowmelt events
- Components (minor system components plus):
  - Urban and rural streets: Entire street cross section, major detention facilities, major open channels
  - Overland flow routes to receiving streams

### ROADWAY WITH ROADSIDE SWALE



### ROADWAY WITH CURB AND GUTTER

