

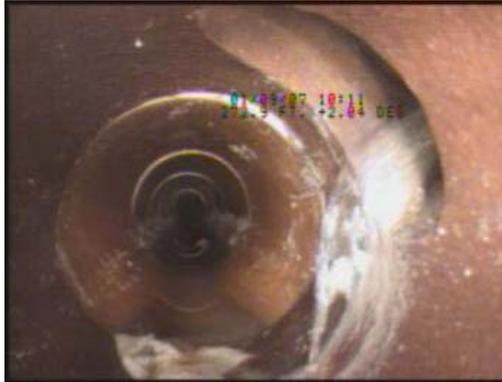


SANITARY SEWER SYSTEM C.M.O.M. PROGRAM

CAPACITY



MANAGEMENT



OPERATION

MAINTENANCE

Prepared by Bradley Bennett, P.E.

Certified Collection System Operator

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I. INTRODUCTION

The City of Urbana has developed a collection system's Capacity, Management, Operation, and Maintenance (CMOM) program designed to help optimize the performance of the sanitary sewer system. In accordance with Environmental Protection Agency (EPA) documents, the major objectives of Urbana's CMOM program include:

- 1.) Manage, operate and maintain at all times, all parts of the collection system so that the City of Urbana fully complies with the Clean Water Act.
- 2.) Provide sufficient capacity to convey base and peak flows without sanitary sewer overflows for all parts of the collection system.
- 3.) Implement feasible steps to stop and mitigate the impact of sanitary sewer overflows from any portion of the collection system.
- 4.) Provide timely notification of sanitary sewer overflows from the collection system to persons with reasonable potential for exposure to pollutants from such sanitary sewer overflows.
- 5.) Develop a written summary of the CMOM program and make it, and required program audits, available to the public upon request.

It is important to note that there are no piped overflow points within the City's sanitary sewer collection system. Therefore, any system overflows are related to sewer line blockages and/or excessive infiltration and inflow. When sewer line blockages occur, they are corrected and mitigated in accordance with City emergency response procedures. Generally, sewer line blockages are not directly related to wet weather conditions.

A. SANITARY SEWER SYSTEM DESCRIPTION

The Urbana sanitary sewer system services approximately 10 square miles of land within the corporate City limits, serving a population of 40,000 residents according to the 2007 census. Other significant statistics of the City of Urbana sanitary sewer system include:

- Annual average precipitation: 41 inches
- Miles of gravity sewer: 101 ranging in size from 4 inches to 15 inches in diameter
- 2,223 manholes

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- Interceptor sewers, pump stations, and wastewater treatment facilities are operated and maintained by the Urbana-Champaign Sanitary District (UCSD).
- All of Urbana's wastewater is treated at UCSD's Northeast Wastewater Treatment Plant.

B. SANITARY SEWER SYSTEM FUNDING

The City of Urbana's sanitary sewer system is funded by a utility fee based on potable water consumption. The utility fee provides a dedicated source of funds for the operation, maintenance, rehabilitation, and improvement of the City's sanitary sewer system.

Because the sanitary sewer utility fee is a user fee and not a tax, all properties regardless of ownership are required to pay for the services provided by the City's sanitary sewer system. This includes non-profit entities such as churches, schools and institutions, as well as properties owned by the City of Urbana, the State of Illinois, as well as the federal government.

In August 1980 the City Council approved Sewer Benefit Ordinance No. 8081-16 creating a sanitary sewer utility fee. Under the utility structure, all users of the sanitary sewer system are charged based on the amount they discharge, with the charges calculated to recover the full cost of operating, maintaining, rehabilitating, and improving the sanitary sewer collection system. The sanitary sewer utility fee is calculated by taking the average daily use multiplied by the fee rate. The average daily use is calculated by dividing the usage by the number of days in the reading.

Significant statistics from the sanitary sewer utility fee based on 2008-2009 fiscal year (7/1/2008 to 6/30/2009) financial data include:

- 13,350 customers billed
- \$ 877,868.71 in utility fees generated
- Annual Fee rate of \$2.60 per cubic foot of average daily water consumption

II. CMOM PROGRAM GUIDELINES

A. CMOM PROGRAM COMPONENTS

EPA's proposed CMOM program identifies six components that are generally necessary to meet the five performance standards identified in the Section I Part A of this report. These components are:

- 1.) Identify program goals consistent with the general standards.
- 2.) Identify administrative and maintenance functions responsible for implementing the CMOM program and chain of communication for complying with reporting requirements for sanitary sewer overflows (SSOs).
- 3.) Include legal authorities necessary for implementing the CMOM program.
- 4.) Address appropriate measures and activities necessary to meet the performance standards.
- 5.) Provide design and performance provisions.
- 6.) Monitor program implementation and measure its effectiveness.

B. PROGRAM GOALS

Program goals help determine the course of action needed to set a CMOM program in motion. Goals define the purpose and desired results of the CMOM program. Goals may reflect performance, safety, customer service, resource use, compliance, and other considerations.

C. ADMINISTRATIVE AND MAINTENANCE FUNCTIONS

Responsibilities for managing and implementing CMOM program activities need to be clearly defined, documented, and communicated. Job descriptions help ensure that all employees know specific responsibilities and individuals have proper credentials. Determination of staff requirements for a collection system requires a working knowledge of the system and consideration of key variables.

D. LEGAL AUTHORITIES

In order to implement an effective CMOM program, the City must have sufficient legal authority to authorize implementation activities. The proposed CMOM provision identifies five classes of activities that EPA generally believes are necessary for implementing a CMOM program:

- 1.) Control of infiltration and connections from inflow sources.
- 2.) Requirement that sewers and connections be properly designed and constructed.
- 3.) Ensure proper installation, testing, and inspection of new and rehabilitated sewers.
- 4.) Address flows from municipal satellite collection systems.
- 5.) Implement the general and specific prohibitions of the national pretreatment program (see 40 CFR 403.5).

E. MEASURES AND ACTIVITIES

Measures, activities and program requirements need to be tailored to the size, complexity and specific features of the collection system. The proposed CMOM provision specifically identifies eight general classes of measures and activities that EPA believes are generally appropriate and applicable for most municipal sanitary sewer collection system programs. The eight general measures and activities, which EPA proposed in 2001, are described below:

1. MAINTENANCE FACILITIES AND EQUIPMENT

Permittees need to provide adequate maintenance facilities and equipment. Maintenance facilities are locations where equipment, materials and personnel are dispatched and where operations records are kept. Increasingly, computer systems are used to manage maintenance records. Industry guidance recognizes that a properly planned and supported equipment yard is essential to collection system operation.

2. MAINTENANCE OF A COLLECTION SYSTEM MAP

One of the most typical problems in collection system management and maintenance is determining the locations of sewer lines and manholes. Determining such locations is best done by keeping appropriate collection system maps up-to-date. Many agencies keep large paper maps divided into overlapping, large-scale sections that can be bound into books that can be stored easily and taken into the field as needed. Maps and plans should be kept current by updating them when alterations or system additions occur.

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3. USE OF TIMELY, RELEVANT INFORMATION

Timely, relevant information plays a critical role in an effective CMOM program. A dynamic CMOM program focuses on planning, implementing, reviewing, evaluating and taking appropriate actions in response to available information. The key to these approaches is the ability to get information from staff in the field to managers. The use of timely, relevant information does not require that a computer or electronic database be used. A paper copy system to track information and data may be adequate. Regardless of the method for managing information, operators should have a written description of the procedures used, including procedures for operating and updating the system. If the system is computer-based, procedures should present any unique hardware and software requirements.

4. ROUTINE PREVENTATIVE OPERATION AND MAINTENANCE ACTIVITIES

A good preventive maintenance program is one of the best ways to keep a system in good working order and prevent service interruptions and system failures which can result in overflows and/or backups. In addition to preventing service interruptions and system failures, a preventive maintenance program can protect the capital investment in the collection system. Preventive maintenance activities should ensure that the permittee:

- 1.) Routinely inspects the collection systems and addresses defects or other problems.
- 2.) Investigates complaints and promptly corrects faulty conditions.
- 3.) Provides maintenance records, an adequate workforce and appropriate equipment in working order.
- 4.) Maintains and updates a schedule of planned activities.
- 5.) Preventive maintenance activities typically address:
 - a.) Planned, systematic, and scheduled inspections to determine current conditions and plan for maintenance and repairs.
 - b.) Planned, systematic, and scheduled cleaning and repairs of the system based on past history.
 - c.) Proper sealing and/or maintenance of manholes.
 - d.) Regular repair of deteriorating sewer lines.
 - e.) Remediation of poor construction.

- f.) A program to ensure that new sewers and connections are properly designed, inspected and constructed and new connections of inflow sources are prohibited.
- g.) A program to oversee lateral and private collection system installations that tie in to public wastewater collection systems.
- h.) A program to eliminate existing illegal inflow sources and a strategy for informing and educating the public about such sources.

5. PROGRAM TO ASSESS THE CAPACITY OF THE COLLECTION SYSTEM

A critical function of a collection system is to provide adequate capacity for wastewater flows. The capacity needs of a collection system change as the system ages, new connections are made, and existing connections change their water usage. Identifying reserve capacity, hydraulic deficiencies, and capacity needs is critical for effective asset management. The capacity assessment program should ensure procedures exist and are implemented for:

- 1.) Determining whether adequate capacity exists in downstream portions of the collection system and treatment facilities that will receive wastewater from new connections.
- 2.) Identifying existing capacity deficiencies in the collection system and at treatment facilities.

Capacity assurance also implies the need for a Master Plan, which is a study that documents the expansion of the collection system due to community growth and system improvements. System improvements can include rehabilitation and replacement of current pipes (and manholes) due to deterioration, as well as the need for greater conveyance capacity due to increased contribution to the system.

6. IDENTIFICATION AND PRIORTIZATION OF CAPACITY AND STRUCTURAL DEFCIENCIES AND CORRESPONDING REHABILITATION ACTIONS

Sanitary sewers are exposed to harsh internal and external environments. Structural condition assessment is a principle objective of any pipeline system inspection program and is important to cost-effective management of the collection system. The collection system agency should clearly identify the techniques used in the program, such as field inspections or closed-circuit television, identify areas of the collection system where various measures are employed, and describe criteria for identifying priorities for inspection and for correction. Efforts to rate the condition of system components can be used to help prioritize actions. Where rating systems are used for identifying the condition of

individual components of the collection system, the rating system should be explained.

7. TRAINING

Collection system employees are exposed to numerous challenging conditions, and adequate training, including safety training, is necessary for employees to meet these challenges. An organized training program is a necessity, regardless of agency size. Training programs should address safety procedures and include training (general operation and maintenance procedures) to ensure employees are adequately prepared to implement appropriate provisions of the CMOM program.

8. EQUIPMENT AND REPLACEMENT PARTS INVENTORIES

Providing adequate maintenance facilities and equipment typically includes a process for identifying critical parts needed for system operation, and maintenance of an adequate inventory of replacement parts. Without an adequate inventory of replacement parts, the collection system may experience extended overflow events in the event of a breakdown or malfunction including extended service outages for customers. The process for identifying critical parts can be based on a review of equipment and manufacturer's recommendations, supplemented by the experience of the maintenance staff. The amount and types of equipment and tools held by a utility depend on the size, age and condition of the system. The less corrective maintenance required and more scheduled preventive maintenance done, the fewer emergency supplies are required to be kept in stock.

F. DESIGN AND PERFORMANCE PROVISIONS

An effective program that ensures that new sewers (including building laterals/connections) are properly designed and installed can help avoid permanent system deficiencies that could create or contribute to future overflow events and/or operation and maintenance problems. Similarly, major rehabilitation and repair projects are opportunities to ensure that work is done correctly in a way that will minimize future problems. The proposed CMOM provision would require permittees to develop and implement programs to ensure:

- 1.) Requirements and standards are in place for the installation of new collection system components and for major rehabilitation projects.
- 2.) Procedures and specifications exist for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects that are implemented.

G. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

Accurate sewer performance information is an important part of improving collection system performance and is a core task of any asset management program. EPA's proposed CMOM provision would require permittees to monitor the implementation and, where appropriate, measure the effectiveness of elements of their CMOM programs. Satisfaction of this requirement typically would include identifying performance indicators to describe and track the implementation of various aspects of their CMOM programs. Performance indicators are ways to quantify and document the results and effectiveness of control efforts. Performance indicators also can be used to measure and report progress towards achieving goals and objectives and to guide management activities.

III. PROGRAM GOALS AND MISSION STATEMENT

The Mission Statement for Urbana's Sanitary Sewer Utility is "to prolong the life of the collection system infrastructure and transport wastewater to point of treatment without disruption or overflows, while meeting the needs of the Urbana's citizens, protecting surface and ground water resources, and complying with all Federal and State regulations".

Program goals for Urbana's Sanitary Sewer Utility include:

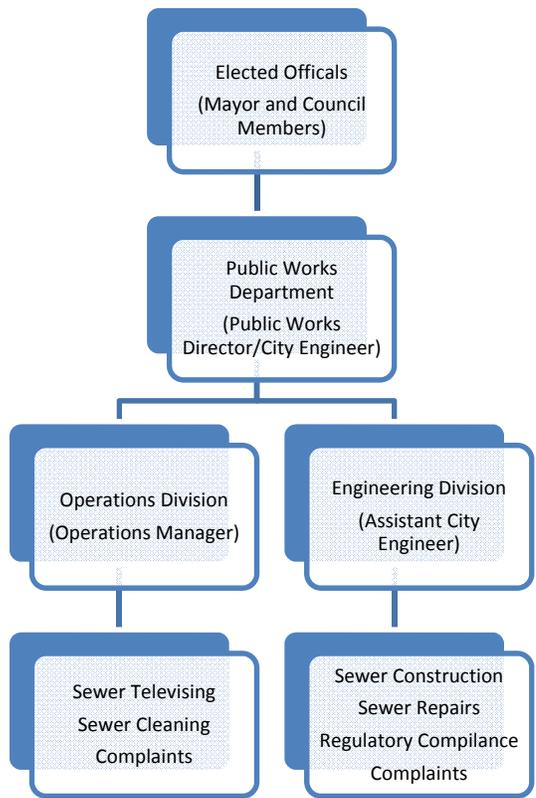
- 1.) Manage, operate and maintain collection system to provide uninterrupted sanitary sewer service for all residents in the service area.
- 2.) Implement programs and procedures to reduce and mitigate the impact of sanitary back-ups and sewer overflows in sanitary sewer system.
- 3.) Ensure that new sewers (including building laterals/connections) are properly designed and installed.
- 4.) Identification and prioritization of capacity and structural deficiencies in the sanitary sewer system.
- 5.) Implementation of cost-effective rehabilitation action on identified and prioritized structural or capacity deficiencies.
- 6.) Receive, document, and respond to all citizen complaints or problems relating to the sanitary sewer system. Response on backups and overflows shall be within 2-hours of the report of the incident. Response on all other complaints or problems shall be within 72 hours of the report of the incident.
- 7.) Provide timely notification of sanitary sewer overflows from the collection system to all persons with reasonable potential for exposure to pollutants from such sanitary sewer overflows.
- 8.) Comply with all state and federal regulations pertaining to the sanitary sewer system.
- 9.) Develop a written summary of the CMOM program and make it, and required program audits, available to the public via the City's website.

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IV. ADMINSTRATIVE AND MAINTENANCE FUNCTIONS

A. ORGANIZATIONAL CHART

A sanitary sewer utility requires good organization and competent staff to provide the quality services demanded by its customers. To facilitate this effort, the City has developed an organizational structure designed to be responsive to the needs of its customers while being fiscally responsible at the same time. The organizational chart presented below depicts the decision making hierarchy for the City of Urbana Sanitary Sewer Utility.



B. STAFFING PLAN

The Public Works Department is staffed during the hours of 7:30 A.M. to 4:30 P.M. on Monday through Friday. After the normal working hours, there is always one employee on-call covering any responses for the Public Works Department including the sanitary sewer system. Calls to the Public Works Department after normal working hours are routed to the Police Department Dispatch Staff. The Police Department Dispatch Staff can then contact the on-call Public Works Department employee to respond to any reported problems. To insure quick, reliable notification of a problem, a mobile telephone and pager is carried by the on-call staff.

C. SPECIFIC STAFFING

The City of Urbana sanitary sewer utility is staffed by a total of six (6) full-time employees organized by specific duties. The Operations Division has two (2) equipment operators and two (2) maintenance workers assigned to the operation and maintenance of the sanitary and storm sewer systems. Additionally two (2) seasonal maintenance workers are assigned to sanitary and storm sewer systems operation and maintenance from May to October. All operations staff assigned to the operation and maintenance of the sanitary and storm sewer systems are supervised by the Operations Manager.

A civil engineer and engineering technician from the Engineering Division are assigned to the operation, maintenance, rehabilitation, replacement, and improvement of the sanitary and storm sewer systems. All engineering staff assigned to the maintenance of the sanitary and storm sewer systems are supervised by the Assistant Civil Engineer.

The following job descriptions have been developed so as to clarify the City's expectations of its employees.

1. **Job Title:** Equipment Operator

General Statement of Duties: Removes snow from streets and parking lots and spreads cinders and salt; repairs and replaces sewer lines, inlets and manholes; cleans sewer lines; operates equipment as assigned; and provides direction and monitors field crews.

2. **Job Title:** Maintenance Worker

General Statement of Duties: Removes snow from streets and parking lots and spreads road salt; repairs and replaces sewer lines, inlets, and manholes; and cleans sewer lines.

3. **Job Title:** Civil Engineer

General Statement of Duties: Designs improvements and prepares construction plans; conducts field investigations of storm and sanitary sewer and drainage problems; assists in City compliance with NPDES Phase II Permit; prepares technical reports; inspects construction work; supervises work of permanent and part-time staff.

4. **Job Title:** Engineering Technician

General Statement of Duties: Surveys locations for storm, sanitary, pavement improvements, and miscellaneous sewer repairs; designs and prepares construction plans on Autocad; inspects projects during construction; calculates quantities and prepares pay estimates; and performs and documents biennial bridge inspections.

The Public Works Departments Administrative Staff also provides support by answering, documenting, and forwarding any phoned in complaints regarding the sanitary or storm sewer systems to the appropriate engineering or operations staff.

D. RECORD KEEPING

There are a myriad of record keeping activities associated with the operation and maintenance of a sanitary sewer utility. Therefore, accurate and complete record keeping is crucial. Equally important are the mechanisms for archiving and retrieving the collected data.

Historically, the system has been set up for manual, hard copy, records. Recently, more and more of this data is kept in digital format. The City is working on a systematic, electronic database system to keep their records including a Geographical Information System (GIS).

GIS is a collection of computer hardware, software, and geographic data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. With a GIS, it is possible link information (attributes) to location data, such as sewer complaints to addresses, maintenance records to sewer pipes or manholes within a system. Than it is possible to layer that information to provide a better understanding of how it all works together.

Currently, the City of Urbana keeps records on many activities including the following:

Item	Media Form	Where Kept	Responsible for Maintenance
Collection System:			
Sewer System Map	Electronic	Network Server – G.I.S.	Engineering
Sewer Lining Map	Electronic	Network Server – G.I.S.	Engineering

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Item	Media Form	Where Kept	Responsible for Maintenance
Collection System (continued):			
Sewer Point Repair Map	Electronic	Network Server – G.I.S.	Engineering
As-Built Drawings of Sewers	Electronic and Paper	Engineering Division Files and Network Server	Engineering
New Sewer Testing Data and Certification	Electronic and Paper	Engineering Division Files and Network Server	Engineering
Plumbing Permit Applications for Laterals	Paper	Building Safety Division	Building Safety
Sewer Televising Data	Electronic and Paper	Engineering Division Files and Network Server	Engineering
Manhole Inspection Data	Electronic and Paper	Engineering Division Files and Network Server – G.I.S	Engineering
Smoke Testing Data	Paper	Engineering Division Files	Engineering
Dye Testing Data	Paper	Engineering Division Files	Engineering
Sump Pump Disconnection Data	Paper	Engineering Division Files	Engineering
Sewer Maintenance Data – Cleaning and Televising Work Orders	Electronic and Paper	Operation Division Files and Work Order System on Network Server.	Operations
Complaint, Back-Up, and Sanitary Sewer Overflow Data	Electronic and Paper	Engineering Division Files and Network Server – G.I.S	Engineering
Ordinances and Standards:			
Sanitary Sewer Use	Electronic and Paper	City Clerk's Office	City Clerk
Sewer Benefit (Utility Fee)	Electronic and Paper	City Clerk's Office	City Clerk
Sanitary Sewer Construction Standards	Electronic and Paper	City website and Engineering Division Files	Engineering
City Code	Electronic	City website	Legal

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Item	Media Form	Where Kept	Responsible for Maintenance
Ordinances and Standards (cont.):			
Subdivision and Land Development Code	Electronic	City website	Community Development
Safety and Equipment Maintenance:			
Confined Space Entry Permits	Paper	Operations Division Files	Operations
Material Safety Data Sheets	Paper	Operations Division	Operations
Sewer Televising and Cleaning Equipment Operation and Maintenance Manuals	Paper	Operations Division	Operations
Sewer Televising and Cleaning Truck Service Logs	Electronic	Fleet Division	Fleet

E. EMERGENCY RESPONSE PROCEDURES

Effective emergency management planning requires considerable coordination and forethought. There are various types of emergencies and/or disasters that can have a very negative impact on the operation of the sanitary sewer system.

When a dry weather sanitary sewer back-up occurs the sewer cleaning equipment is used to clean the blocked sewer. If that effort is unsuccessful, the internal closed circuit television equipment is used to inspect the line to determine the exact nature of the obstruction. If more aggressive cleaning or root removal won't solve the problem, emergency underground utility locates are requested and the area is excavated to make the necessary repair.

When wet weather sanitary sewer overflows or basement back-up occur the Operations Staff check downstream collector and interceptor sewers to see if they are surcharged. If the downstream collector and interceptor sewers are surcharged, the line with the sanitary sewer overflow or basement back-up will be flagged for an internal televised pipe inspection to attempt to identify infiltration and inflow sources. The tributary area may also be targeted for smoke, sump pump inspections, and dye water flood testing to determine infiltration and inflow sources.

F. SANITARY SEWER OVERFLOW (SSO) NOTIFICATION

The City of Urbana is proactive in working to prevent releases of sanitary sewage into the
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environment. However, it is not possible to prevent all such events, and therefore, the City of Urbana has adopted the Chain of Communication for Reporting Sanitary Sewer Overflows which outlines the following public notification protocol:

- a) Contact local Illinois Environmental Protection Agency (IEPA) office within 24-hours of the event with Overflow Incident Report.
- b) Post sign(s) where appropriate at the site of a release event immediately upon discovery and confirmation of such an event and leave them up for up to one (1) week after the source of the release has been corrected to warn affected parties of potential health hazards associated with the SSO.
- c) Post Overflow Incident Report on City website so that it is available to public.

The "Overflow Incident Report" will contain the following information:

- a) Location of the SSO.
- b) Receiving water body, if any.
- c) Estimate of the volume of the SSO.
- d) A description of the sewer system component from which the release occurred, including, but not limited to, manholes, pipe, and pipe cracks.
- e) Estimated date and time when the SSO began and stopped or will be stopped.
- f) Cause or suspected cause of the SSO.
- g) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO and a schedule of major milestones for those steps.

Basement back-ups are not classified as SSO's by the City and are not subject to the SSO reporting requirements.

V. LEGAL AUTHORITIES

Proper control of the sanitary sewer system includes establishing appropriate ordinances to provide regulatory/legal authority to insure optimal performance and compliance with pertinent regulatory requirements. Applicable ordinances include 1) a rate ordinance establishing the cost of service, 2) a sewer use ordinance limiting the discharges into the system, and 3) wastewater pretreatment requirements to prevent the introduction of pollutants incompatible with the treatment works.

A. RATE ORDINANCE

In August 1980 the City Council approved Sewer Benefit Ordinance No. 8081-16 creating a sanitary sewer utility fee. The sanitary sewer utility fee is also covered under Sections 24-16 and 24-17 of the City Code. Under the utility structure, all users of the sanitary sewer system are charged based on the amount they discharge, with the charges calculated to recover the full cost of operating, maintaining, rehabilitating, and improving the sanitary sewer collection system. The sanitary sewer utility fee is calculated by taking the average daily use multiplied by the fee rate. A copy of the Sewer Benefit Ordinance No. 8081-16 is included in Appendix A. The applicable sections of the City Code are available on the City's website.

B. SEWER USE ORDINANCE

In July 1970 the City Council approved Sewer Use Ordinance No. 7071-26. Sanitary sewer use is also covered under Sections 24-23 to 24-43 of the City Code.

1. Control of infiltration and connections from inflow sources is covered under Section 24-39 of the City Code.
2. Requirements that sewers and connections be properly designed and constructed is covered under Section 24-38 of the City Code and the Sanitary Sewer Technical Standards adopted by the City on April 12, 2000.
3. Requirements that new or rehabilitated sewers are properly installed, tested, and inspected are covered Section 21-57 of the City Code and the Sanitary Sewer Technical Standards.

The City of Urbana does not have any municipal satellite collection systems tributary to it so no legal authorities are required as part of the CMOM program.

A copy of the Sewer Use Ordinance No. 7071-26 is included in Appendix B. The applicable sections of the City Code are available on the City's website. A copy of the Sanitary Sewer Technical Standards is included in Appendix C.

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C. WASTEWATER PRETREATMENT REQUIREMENTS

Wastewater pretreatment requirements are covered under the Sewer Use Ordinance No. 7071-26 and Section 24-39 of the City Code.

VI. MEASURES AND ACTIVITIES

A. EQUIPMENT AND MAINTENANCE FACILITIES

Adequate maintenance of the sanitary sewer system relies on the availability of equipment and parts. Maintenance facilities are locations where equipment, materials and personnel are dispatched and where operations records are kept. Industry guidance recognizes that properly planned and supported equipment facilities are essential to collection system operation.

1. Equipment

The City has the following equipment assigned to the operation and maintenance of the storm and sanitary sewer systems:

- One Tandem Vector Truck
- One single axle Vac-Con Truck
- One Cues Sewer Televising Truck with the following equipment:
 1. Self-Propelled Wheeled Mainline Camera
 2. Steerable Self-Propelled Mudmaster Large Pipe Camera
 3. Pole Mounted Camera
 4. Push Camera with Locating Device
- One Back Lot Easement Machine
- One Back Hoe
- One Dump Truck
- Two Pick-Up Trucks with Tools

2. Maintenance Facilities

The Equipment Services Division provides for the maintenance of and coordination for replacement of the City's sewer system maintenance equipment. The Equipment Services Division performs the following specific functions for the City's sewer system maintenance equipment:

- Perform preventive maintenance and repairs at proper intervals.
- Evaluate, rehabilitate and modify equipment to include minor accident damage.
- Oversee outside fueling services.
- Administer a repair record system.
- Evaluate equipment replacement and administer bidding process for purchasing new equipment.
- Train City personnel on proper operation of new equipment.

The Equipment Services Division is headed by the Fleet Manager and is staffed by three full time certified mechanics. It has its maintenance facilities located at Department of Public Works Building. The Equipment Services Division performs maintenance and repairs on all the sewer system maintenance equipment with the exception of the sewer televising truck cameras. The Equipment Services Division uses the Computerized Fleet Analysis Inc. software to track all maintenance activities pertaining to the sewer system maintenance equipment that they service. The Operations Division Staff performs some limited maintenance and repairs on the televising cameras with any additional maintenance or repairs being performed by E.J. Equipment.

B. MAINTENANCE OF COLLECTION SYSTEM MAP

One of the most typical problems in collection system management and maintenance is determining the locations of sewer pipes and manholes. Determining such locations is best done by keeping appropriate collection system maps up-to-date. Maps and plans should be kept current by updating them when alterations or system additions occur.

Accurate sewer mapping is a fundamental requirement for any Sewer Utility. This mapping allows staff to do a variety of activities including: 1) answer questions from current and potential customers; 2) visually establish system performance trends; 3) track maintenance and rehabilitation activities; and 4) facilitate the orderly extension of sewer service.

The Engineering Division created a Geographical Information System (GIS) for the sanitary sewer systems in 2005. GIS is a collection of computer hardware, software, and geographic data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. With a GIS, it is possible link information (attributes) to location data, such as sewer complaints to addresses, maintenance records to sewer pipes or manholes within a system. Than it is possible to layer that information to provide a better understanding of how it all works together.

All of the City's sanitary sewer manholes were located using a handheld global positioning system (GPS) unit to provide a +/- 3-ft accuracy for the GIS.

The sanitary sewer system GIS mapping is located on the City's network computer server. Paper copies are also carried in the vehicles used by the Operations Division Staff assigned to sewer system maintenance. The Civil Engineer and Information Technician in the Engineering Division are the only two persons allowed to make edits to the sanitary sewer GIS mapping.

The existing paper maps carried by Operations Division Staff are annotated with corrections as discrepancies are discovered. The Civil Engineer or Information Technician then edits the GIS mapping based on the annotated paper maps. The Civil Engineer or Information Technician is also responsible to adding new sewer construction from City infrastructure or development related activities to the GIS mapping system. GIS mapping revisions are performed on a continuous basis as soon as the data is available for inclusion in the GIS system.

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C. USE OF TIMELY AND RELEVANT INFORMATION

Timely and relevant information plays a critical role in an effective CMOM program. A dynamic CMOM program focuses on planning, implementing, reviewing, evaluating and taking appropriate actions in response to available information. The key to these approaches is the ability to get information from staff in the field to supervisors and engineering staff.

The Public Works Department has several programs and processes in place to ensure the use of timely, relevant information. These include:

1. Computerized Sewer Televising Data Management System

The Public Works Department uses the Granite XP software developed by Cues to manage all sewer televising data collected by the Operations Staff. Granite XP is a comprehensive data collection and management software offering flexibility, customization, and ease-of-use. Granite XP was designed with an asset-based architecture so a user can navigate to a particular asset (e.g., pipe segment) and view all inspections for that asset. Because this is the database structure on which asset management and Geographic Information Systems (GIS) are built, data integration is seamless.

Sewer televising data is downloaded onto the City's computer network once it is collected by Operations Staff utilizing the Granite XP software. That data is then immediately available to Operations Supervisors and Engineering Division Staff to evaluate to determine if additional maintenance and rehabilitation activities are required for a sanitary sewer pipe. The Supervisors and Engineering Staff also have access to all previous inspections for a pipe segment recorded using the Granite XP software. The sewer televising data can be exported for incorporation in City sewer lining and repair project documents.

2. Sewer Lining and Repair Databases

The Engineering Division developed and maintains a GIS database of all sanitary sewer pipes that have been rehabilitated using the cured-in-place pipe lining technology. The sewer lining database is available on the City network computer system to all City Staff. Operations Staff utilize the database to identify sewer pipes that have the cured-in-place liner installed and adjust their maintenance activities accordingly for those pipes. The Engineering Division uses the sewer lining database as a planning tool to identify sanitary sewer pipes for future lining projects. The plumbing inspector utilizes the sewer lining database to know where to require sewer lateral replacements to utilize a service saddle to connect to a lined sewer pipe rather than breaking in a new wye.

The Engineering Division developed and maintains a GIS database of all sanitary sewer pipes that have been repaired or replaced. The sewer repair database is available on the City

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network computer system to all Public Works Staff. Operations Staff utilize the database to identify sewer pipes that have had pipe repairs and adjust their maintenance activities accordingly. Sanitary sewer pipes with a multiple repairs can be identified and prioritized for future sewer lining and replacement projects. The sewer repair database can also be compared to the drainage and back-up complaint database to identify problematic lines.

3. Sanitary Back-Up and Compliant Databases

The Engineering Division developed and maintains a GIS database of all back-ups, overflows, and other complaints related to the sanitary sewer system. The back-up and complaint database is available on the City network computer system to all Public Works Staff. The Engineer Division staff can utilize the back-up and complaint database to evaluate the effectiveness of the CMOM program and identify problematic areas for future sewer repair and rehabilitation projects.

The Public Works Department has also developed a complaint logging procedure to ensure all complaints received regarding the sanitary sewer system are logged, receive an appropriate and timely response from the Engineering and Operation Division Staffs, and are entered into the back-up and complaint database. The complaint logging procedure is described in Section VI part D item 2.

4. Engineering and Operation Division Communications

The Engineering and Operations Divisions Staffs work closely together to identify, prioritize, and remediate any sanitary sewer problems with the City's sanitary sewer collection system. Quarterly the Engineering and Operations Staffs hold a "Sewer Crew" meeting to discuss sanitary sewer system issues and coordinate their efforts on resolving those issues.

D. ROUTINE PREVENTATIVE O&M ACTIVITIES

A good preventive maintenance program is one of the best ways to keep a system in good working order and prevent service interruptions and system failures which can result in overflows and/or backups. In addition to preventing service interruptions and system failures, a preventive maintenance program can protect the capital investment in the collection system. The primary goal of this CMOM is to develop a program to help insure optimal operation of the utility. Urbana's Sanitary Sewer Utility's Preventive maintenance activities include:

1. Routinely inspect the collection system and address defects or other problems

Operations Staff have averaged approximately 28,000 lineal feet of sanitary sewer internal pipe television inspections annually from 2003 to 2008. The 28,000 feet of annual televised

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pipe represents 5% of the sanitary sewer system on an annual basis so the entire system would be televised over a 20 year period. In this manner the utility is constantly monitoring the condition of the sewer lines and targeting appropriate corrective action for problems identified by the televising efforts.

Internal pipe televising efforts are prioritized for sewer lines using the following criteria from highest to lowest:

- a.) Lines where a back-up, blockage, complaint, or sanitary sewer overflow has occurred.
- b.) Problematic sewer lines indentified during systematic sewer cleaning activities.
- c.) Sewer lines in areas where the City is reconstructing, patching, or resurfacing streets or alleys.
- d.) Sewer lines identified for rehabilitation or replacement in the City's Capital Improvement Plan.
- e.) Systematic sewer televising efforts.

The Operations Staff that operate the sewer televising cameras have been trained and certified to use the Pipeline Assessment and Certification Program (PACP) developed by the National Association of Sewer Service Companies (NASSCO) for internal pipeline televising inspections. PACP coding was developed to provide standardization and consistency in the way the sewer pipe conditions are evaluated. The goal of PACP is to create a comprehensive and reliable reservoir of data to describe the sewer pipe that can be used in the prioritization, planning, and renovation of wastewater collection systems. The PACP system yields a numeric score of each sewer line televised that can be utilized to prioritize the sanitary sewer utility's rehabilitation, repair, and replacement efforts.

Internal sewer televising data is collected using the Granite XP software developed by Cues. The data is linked to the sanitary sewer system GIS map and stored on the City's network server for access by Operations and Engineering Staff. Internal sewer televising data can be viewed by simply clicking a pipe segment on the GIS sewer map in the Granite XP program. The user can view all internal pipe television inspection done for a particular segment captured using the Granite XP software. Data contained in the Granite XP software included the digital video of the inspection, inspection code data, pipe attribute data (diameter, material, and shape), and location utilizing the sanitary sewer GIS map.

Operations Staff have averaged approximately 60 sanitary sewer manhole inspections annually from 2004 to 2008. The 60 manhole inspections represent 2.5% of the sanitary sewer system on an annual basis so all sanitary sewer manholes would be inspected over a 40 year period. In this manner the utility is constantly monitoring the condition of the manholes and targeting appropriate corrective action for problems identified by the inspection efforts.

The Engineering Division reviews all the internal pipe televising and manhole inspection data to identify and prioritize sewer lines and manholes for repair, rehabilitation or replacement. The Engineering Division manages annual sewer point repair and cured-in-place sewer lining projects to address defects and other issues identified. The Engineering Division installed 7,800 lineal feet of cured-in-place sanitary sewer pipe liner annually from 2003 to 2008. The Engineering Division also completed 21 sanitary manhole or pipe repairs annually from 2003 to 2008.

2. Investigates complaints and promptly corrects faulty conditions.

The Public Works Department responds to all calls concerning the sanitary sewer system. The City has established the following procedure for documenting and responding to calls from users regarding the sanitary sewer system:

- a.) Calls are received by Public Works Administrative Staff during business hours or Police Dispatch during non-business hours.
- b.) During the call Administrative Staff or Police Dispatch fill out the top section of the complaint form that includes complaint location, contact information, and a brief description of problem. Information is saved electronically on the City's computer network system.
- c.) The Administrative Staff or Police Dispatch contacts Operations Staff (Sewer Crew) to respond to the complaint by radio during normal hours of operations. They contact emergency call-out person for calls received during non-business hours.
- d.) Operations Staff responds to the complaint and completes the middle section of the complaint form on a paper version that they will carry with them in their vehicles. They must fill in a description of what they observed and what response they made to the problem.
- e.) The Sewer Crew Supervisor fills in the middle section of the complaint form electronically after he receives the filled out paper version from the Operations Staff.
- f.) The Engineering Division (Civil Engineer) accesses the complaint forms electronically and investigates to determine if additional action is required. The Civil Engineer completes bottom section of the complaint form electronically.
- g.) The complaint form data is entered into GIS database for tracking and further analysis by the Engineering Division (Civil Engineer).

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A copy of the complaint form is included in Appendix D.

The Engineering Division reviews all the complaint data to identify and prioritize sewer lines and manholes for repair, rehabilitation or replacement. The Engineering Division manages an annual sewer point repair and cured-in-place sewer lining contract to address defects and other issues identified. The Engineering Division contracted for the installation of 7,800 lineal feet of cured-in-place sanitary sewer pipe liner annually from 2003 to 2008. The Engineering Division also contracted for 21 sanitary manhole or pipe repairs annually from 2003 to 2008.

The Sanitary Sewer Utility has averaged approximately 73 dry weather blockages and back-up complaints annually from 2003 to 2008. Of the 73 complaints, 42 were in private lines while the remaining 31 were in city-owned sewers. These back-ups did not result from surcharging during heavy rainfall events and are primarily related to root and grease blockages in the sewer lines.

The Sanitary Sewer Utility responded to 161 wet weather sanitary sewer overflows or sanitary sewer basement back-ups from 2004 to 2009. These SSOs and back-ups resulted from surcharging during heavy rainfall events in 2004, 2008, and 2009.

3.) Provides maintenance records, an adequate workforce and appropriate equipment in working order.

The Public Works Department owns and operates the equipment necessary to perform internal sewer cleaning, construct sewer repairs, and conduct televised inspections. A description of staff and equipment utilized for the sanitary sewer system is provided in Section IV part C. The Public Works Department sewer system equipment is described in Section VI part A. Maintenance practices for the equipment is described in Section VI part A.

Sewer cleaning activities are tracked through the Public Works Department's computerized work order system program. Sewer repairs and rehabilitation activities are tracked through the GIS databases described in Section VI part C. Sewer televising data is managed through the Granite XP software developed by Cues. Manhole inspection data is tracked through the GIS databases described in Section VI part C.

4.) Maintains and updates a schedule of planned activities.

The Public Works Department utilizes a Capital Improvement Plan (CIP) for prioritizing, scheduling, and funding all major infrastructure projects including sanitary sewer improvements. The CIP is updated annually per Section 3 of Council Resolution No. 8788-R14. This resolution also outlines funding policies for various types of capital improvement and maintenance projects and directs implementation to be through the

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budget process. The CIP is available on-line on the City website under the Engineering Division homepage.

The CIP is based on current conditions, policies, programs, priorities, fund balances, revenue projections, general cost estimates, and staff availability. A change in one or more of these factors may alter the projections. Some projects may also be programmed based on Council directives, development agreements, or other special considerations.

The Engineering Division reviews all the internal pipe televising, manhole inspection, and complaint data to identify and prioritize sewer lines and manholes for repair, rehabilitation or replacement for inclusion in the CIP.

Internal pipe televising and manhole inspection efforts are prioritized using the following criteria from highest to lowest:

- a.) Sewers where a back-up, blockage, complaint, or sanitary sewer overflow has occurred.
- b.) Problematic sewer lines indentified during systematic sewer cleaning activities.
- c.) Sewer lines and manholes in areas where the City is reconstructing, patching, or resurfacing streets or alleys.
- d.) Sewer lines or manholes identified for rehabilitation or replacement in the City's Capital Improvement Plan.
- e.) Systematic sewer inspection efforts.

Sanitary sewer lines are cleaned on a systematic basis using a quarter section grid system to divide the sanitary sewer system into different map page areas. An example of a previous sanitary sewer system cleaning schedule is provided below:

MAP PAGE AREA	Completion Date
45	May 30, 2001
57 & 56	August 31, 2001
68	November 1, 2001
70 & 69	April 5, 2002
47 & 46	June 14, 2002
67	August 30, 2002
79	April 15, 2003
82 & 83	September 17, 2003
80	December 1, 2003
81	June 8,2004
103	September 23, 2004
58	April 15,2005
102	June 10,2005
91	September 13, 2005
92	March 31,2006
59	May 31,2006
115	July 14,2006
93, 94 & 104	August 18, 2006
105 & 106	September 8, 2006
115	October 1, 2006
60, 61 & 62	November 17, 2006

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More frequent maintenance cleaning is routinely performed on reaches of sewer identified to have problems associated with excessive root intrusion or grease buildup. A copy of the Sanitary Sewer Systematic Cleaning Map is provided in Appendix E.

5.) Preventive maintenance activities

The Public Works Department accomplishes the following preventative maintenance activities for the sanitary sewer collection system:

- a.) Planned, systematic, and scheduled inspections to determine current conditions and plan for maintenance and repairs.

See Section VI part D for a description of the City's inspection activities.

- b.) Planned, systematic, and scheduled cleaning and repairs of the system based on past history.

Sanitary sewer lines are cleaned on a systematic basis using a quarter section grid system to divide the sanitary sewer system into different map pages areas. The sewer lines are hydro-jetted to remove debris, grease, and roots from the pipes using the Public Works Department's Vactor and Vac-Con sewer cleaning trucks. Debris, roots or grease is vacuumed from the manhole and disposed of in accordance with state and federal regulations in an approved landfill facility.

Root blockages identified during cleaning or televising activities are mechanically removed using a lumberjack or root cutter attachments to the hydro-jetting equipment. The City does not chemically treat root growth in its sanitary sewer lines.

Grease blockages identified during cleaning or televising activities are removed using a degreasing agent and the hydro-jetting equipment. More frequent maintenance cleaning is routinely performed on reaches of sewer identified to have problems associated with excessive root intrusion or grease buildup.

Operations Staff have averaged approximately 81,700 lineal feet of sewer pipe cleaning annually from 2003 to 2008. The 81,700 feet of annual pipe cleaning represents 16% of the sanitary sewer system on an annual basis so the entire system would be cleaned over a 7 year period. The Public Works Department completed its latest systematic sanitary sewer program in 2006 and is presently engaged in systematic cleaning of the storm sewer system. The storm sewer systematic cleaning program is anticipated to be completed by 2013 and then the City will begin systematic cleaning program of the sanitary sewer system. Due to the inclusion of the storm sewer system in the systematic cleaning program the

City is presently on a 12 to 14 year systematic cleaning frequency for its sanitary sewer system.

The Engineering Division reviews all the internal pipe televising, complaint, and manhole inspection data to identify and prioritize sewer lines and manholes for repair, rehabilitation or replacement. The Engineering Division manages an annual sewer point repair and cured-in-place sewer lining contract to address defects and other issues identified by priority. The Engineering Division installed 7,800 lineal feet of cured-in-place sanitary sewer pipe liner annually from 2003 to 2008. The Engineering Division also completed 21 sanitary manhole or pipe repairs annually from 2003 to 2008.

c.) Proper sealing and/or maintenance of manholes.

See Section VI part D for a description of the City's manhole inspection activities. A copy of the manhole inspection form is included in Appendix F. Manholes are also cleaned and defects identified during the systematic sewer cleaning program. The Engineering Division manages an annual sewer point repair contract to address manhole defects by priority. The Engineering Division completed 21 sanitary manhole or pipe repairs annually from 2003 to 2008.

All new sanitary manholes installed must have an external chimney seal, gasketed water-tight lid, and be vacuum tested to ensure that they are properly sealed to minimize infiltration and inflow.

d.) Regular repair of deteriorating sewer lines.

The Engineering Division manages an annual sewer point repair and cured-in-place sewer lining contract to address defects and other issues identified by priority. The Engineering installed 7,800 lineal feet of cured-in-place sanitary sewer pipe liner annually from 2003 to 2008.

e.) Remediation of poor construction.

New sanitary sewer and manholes must be constructed in accordance with the Sanitary Sewer Technical Standards (see Appendix C) to prevent the City from accepting pipe or manholes in poor condition. Additionally, the Public Works Department televises all new sanitary sewer pipe and inspects all new sanitary manholes prior to the City accepting that new infrastructure to ensure that they are in satisfactory condition. The developer or contractor is then responsible for correcting any deficiencies or problems with the sanitary sewer pipe or manholes before the City will accept ownership of that infrastructure.

Existing infrastructure that was constructed poorly is identified through the Public Works Departments sewer televising and manhole inspection efforts. Any existing poorly constructed infrastructure is then prioritized and addressed through the annual sewer point repair or cured-in-place sewer lining projects.

- f.) A program to ensure that new sewers and connections are properly designed, inspected and constructed and new connections of inflow sources are prohibited.

The City of Urbana adopted uniform standards in April 2000. These standards, entitled “Sanitary Sewer Standards” have been reviewed and updated several times since their initial adoption. The sanitary sewer standards establish acceptable materials and practices for the design and construction of additions and improvements to Urbana’s sanitary sewer system. The standards apply to both public and private sanitary sewer and to sanitary service sewer laterals. A copy of the sanitary sewer standards is included in Appendix C.

Additional sanitary sewer design standards are contained in the Urbana Subdivision and Land Development Code. The Subdivision and Land Development Code is available on the City’s website.

An Illinois Environmental Protection Agency (IEPA) construction permit must be obtained on all new public and private sanitary sewer construction. The Engineering Division reviews the proposed sanitary sewer plans and specifications to determine compliance with the City’s sanitary sewer standards before authorizing its approval on the IEPA permit application.

Additionally, the developer or property owner must retain an engineering consultant to inspect and certify that the new sanitary sewer was built in accordance with the plans and specifications approved by the Engineering Division. The engineering consultant must provide a certification statement, as-built drawings, and testing data (pipe pressure test, manhole vacuum test, and mandrel test if flexible pipe is used) to the Engineering Division before the City will accept ownership of the new sanitary sewer. Operations Staff also completes an internal televised pipe inspection and manhole inspections of all new sanitary sewer installations. Any pipe or manhole defects identified must be corrected by the developer or property owner before the City will assume ownership of the sewer.

- g.) A program to oversee lateral and private collection system installations or repairs that tie in to public wastewater collection systems.

In Urbana the maintenance of the sanitary and storm sewer service lateral up to the connection to the City’s sewer main is the responsibility of the property

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owner. Section 24-38 Paragraph (c) of the City Code for the City's policy on sewer service laterals states that "all costs and expenses incident to the installation, connection, repair, and maintenance of the building sewer shall be borne by the owner, and for such purposes, the owner is granted permission to excavate in the public right of way subject to the regulations of the director of public works". The connection to the main is typically a tee or wye which is considered part of the public sanitary sewer and thus the City's responsibility to maintain.

The Engineering Division analyzed the costs associated with the City taking over the ownership and maintenance of private sanitary sewer laterals and determined that it was cost prohibitive based on current funding mechanisms. The City has a program to take over the operation and maintenance of private sanitary sewer systems that serve multiple residential units.

The City will assume ownership of a private sanitary sewer after the City completes all the necessary infrastructure upgrades on the sewer to bring it up to City infrastructure standards. Private sanitary sewers eligible for conversion to a public sanitary sewer if they serve two or more properties and are prioritized based on the following criteria:

- Private sanitary sewers experiencing back-up problems
- Private sanitary sewers where street resurfacing or reconstruction projects are planned
- Private sanitary sewers located in public right-of-way

Property owners are responsible for providing the City an easement before a private sanitary sewer is eligible for conversion to a public sanitary sewer. All property owners have to provide easements before the City will assume ownership of a private sanitary sewer.

Infrastructure upgrades to the private sanitary sewers designated to become public sewers are funded out of a portion of the sanitary sewer repair and rehabilitation funds specifically set aside for private sanitary sewers. The property owners are not responsible for any costs for upgrading their private sanitary sewer lateral to a public sewer. These funds are generated by the Sewer Benefit Tax.

- h.) A program to eliminate existing illegal inflow sources and a strategy for informing and educating the public about such sources.

Non-wastewater discharges to the sanitary sewer system are prohibited by Section 24-39 of the City Code. The City plumbing inspector inspects sump pump installations and all sanitary plumbing on new construction to ensure that there are no illegal connections made to the sanitary sewer system.

The City also requires that storm sewer infrastructure to be installed that is readily accessible to all properties within new developments for sump pump discharges to be hooked to.

The City conducted extensive smoke testing and sump pump investigations in the 1980s to identify and eliminate illegal inflow sources. For example the City identified and disconnected 168 sump pumps illegally connected to the sanitary sewer in the Anderson Street Basin Area in 1986. Subsequent inspections including sump pump inspections and smoke testing by the Sanitary District in 2008 did not find sufficient numbers of illegal connections to make the sump pump inspections and smoke testing efforts cost effective.

The City presently identifies illegal inflow sources through its internal pipe televising program. Sump pump inspections and smoke testing are performed for areas where the internal televising has identified potential illegal inflow sources or complaint data indicate wet weather or sanitary sewer surcharging.

Information on illegal inflow sources is posted on the City's website for public access and the Public Works Department answers and investigates all citizen reports of illegal inflow sources.

E. PROGRAM TO ASSESS THE CAPACITY OF THE COLLECTION SYSTEM

The Urbana-Champaign Sanitary District (UCSD) completed a Long Range Facility Plan in December 2000 that included the City of Urbana's sanitary sewer system. The objectives of UCSD's Long Range Facility Plan included:

- 1.) Identify growth areas and develop population projections that will be used to size the capacity of treatment facilities required to serve the needs of the planning area for the next 20 years.
- 2.) Determine the sewer routing and sizing of interceptor sewer extensions which will best serve the growth areas identified.

Projected wastewater flows and proposed sewer infrastructure for Urbana's undeveloped areas are presented in chapters five and six of UCSD's Long Range Facility Plan.

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Urbana retained Greely and Hansen in 1978 to prepare a master plan for the City's existing sanitary sewer system. The master plan effort included:

- 1.) Collection of information and field survey data.
- 2.) Review of existing sanitary sewer condition and capacity.
- 3.) Development of a program of improvements to correct deficiencies in the existing sanitary sewer system.
- 4.) Preparation of estimated construction costs
- 5.) Evaluation of financing alternatives.
- 6.) Development of a Sanitary Sewer System Ordinance.

Peak wastewater flows were used to determine the required sewer capacities. The peak flows were based on the size of the service area and on estimated values for population density, average per capita flow, peak flow factor, and infiltration allowance. Peak wastewater flows for the four largest industrial and institutional water users were estimated based on water billing records. Available sewer capacities were estimated using the Manning equation and field survey data. Existing sanitary sewer system capacity deficiencies were identified by comparing required and available sewer capacities. The master plan identified 21,000 feet of sanitary sewer with insufficient capacity.

The Greely and Hansen master plan was completed and adopted by the City in September 1981. The Public Works Department has been implementing the recommendations of the Greely and Hansen master plan in accordance with the City's Capital Improvement Plan.

F. IDENTIFICATION AND PRIORTIZATION OF CAPACITY AND STRUCTURAL DEFCIENCIES AND CORRESPONDING REHABILITATION ACTIONS

The Public Works Department's internal pipe televising and manhole inspection efforts are described in Section VI part D. Sanitary sewer system repairs and rehabilitation activities are prioritized using the following criteria:

- 1.) Threat to public safety – sinkhole in street
- 2.) Threat to public health – loss of sewer service or basement back-up
- 3.) PACP numeric scoring – highest score receives highest priority

Manhole repairs are prioritized based on the same first two criteria as for sewer pipes above but are prioritized based on the severity of structural defects rather than the PACP score.

G. TRAINING

The City of Urbana has an extensive safety program to insure that the work environment for the employees is a safe and healthy one. At the same time, the program is also designed to protect the general public during the normal course of operating and maintaining the system. There is, of course, the need for training in the normal hazards associated with the general construction industry such as backhoe/loader use, basic electrical safety, fall protection, flagger safety, ladder safety, etc. Additionally, there are also several areas requiring specialized training including: bloodborne pathogens, material safety data sheets (MSDS), confined space entry, and hydrogen sulfide hazards. In addition to their general safety standards, the City has created several specific programs to help protect its employees.

- 1.) Bloodborne Pathogens Exposure Control Program –This program was written in conformance with OSHA 1910.1030 and was established to adopt universal precautions in order to prevent contact with blood or other potentially infectious materials.
- 2.) Hazard Communication Program –This program was written in conformance with OSHA 1910.1200 and established to insure that the hazards of all chemicals utilized for collection system maintenance are evaluated and that pertinent information is transmitted to potentially exposed employees.
- 3.) Confined Space Entry Program –This program was written in conformance with OSHA 1910.146 and was established to insure that employees do not enter potentially dangerous spaces without taking adequate and proper safety measures.

The City of Urbana also provides Pipeline Assessment and Certification Program (PACP) coding training for the two camera operators. PACP coding was developed to provide standardization and consistency in the way the sewer pipe conditions are evaluated. The goal of PACP is to create a comprehensive and reliable reservoir of data to describe the sewer pipe that can be used in the prioritization, planning, and renovation of wastewater collection systems. The PACP system yields a numeric score of each sewer line televised that can be utilized to prioritize rehabilitation, repair, and replacement efforts.

All sewer system Operations staff receive training from the equipment manufacturers regarding the proper operation of the two sewer cleaning trucks and the televising truck.

H. EQUIPMENT AND REPLACEMENT PARTS INVENTORIES

The Public Works Department maintains a spare parts inventory for its sewer maintenance equipment and materials required for sewer repairs. The Equipment Services Division maintains a spare parts inventory for the two sewer cleaning trucks and televising truck. The Operations Division Staff maintains a spare parts inventory for the limited maintenance and repairs they perform on the televising cameras. The Operations Division also maintains an inventory of

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hydro-jetting hoses, lumberjack cutter chains, root saw blades, and nozzles for the two sewer cleaning trucks.

The Public Works Department maintains an inventory of sewer pipe, precast concrete manhole parts, adjusting rings, and manhole frames/covers commonly used in sanitary sewer system repairs.

I. OVERHEAD SEWER PROGRAM

The City of Urbana and Urbana-Champaign Sanitary District have implemented a program to assist residents that have had any wet-weather sanitary sewer backups. Assistance is available through participating in a cost-sharing program between the City of Urbana, Urbana-Champaign Sanitary District, and property owners willing to install a sewage ejector system with overhead sewer lines, which eliminates (or substantially reduces) wet weather sanitary sewer basement backups.

To participate in the program, the property must be located within the city limits of Urbana. The property owner must complete an application and submit plans (usually prepared by the plumbing contractor) for the installation of the system to the Engineering Division for review. After the installation has been approved, the property owner will pay a licensed plumber and licensed electrical contractor to install the system. After the installation is complete, the City of Urbana will conduct final inspections of the plumbing, electrical, and sewer work. Once the installation has been approved, the property owner can submit a copy of the paid receipt to the Urbana Public Works Department for partial reimbursement (up to 75% of the cost of the project, not to exceed \$3,750).

A copy of the information packet for the Overhead Sewer Program is included in Appendix G.

J. GREASE CONTROL PROGRAM

Information on household grease control is posted on the City's website for public access. The City is also partnering with the Sanitary District to develop and implement a grease control program.

VII. DESIGN AND PERFORMANCE PROVISIONS

The City of Urbana adopted uniform sanitary sewer standards in April 2000. These standards, entitled “Sanitary Sewer Standards” have been reviewed and updated several times since their initial adoption. The sanitary sewer standards establish acceptable materials and practices for the design and construction of additions and improvements to Urbana’s sanitary sewer system. The standards apply to both public and private sanitary sewer and to sanitary sewer laterals. A copy of the sanitary sewer standards is included in Appendix C.

Additional sanitary sewer requirements are contained in the Urbana Subdivision and Land Development Code. The Subdivision and Land Development Code is available on the City’s website.

A plumbing permit from the Building Safety Division is required for all new sanitary sewer lateral construction and any repairs or replacements of sanitary sewer laterals. The plumbing inspector in the Building Safety Division inspects all new sanitary sewer laterals, any lateral repairs, and any lateral replacements.

An Illinois Environmental Protection Agency (IEPA) construction permit must be obtained on all new public and private sanitary sewer construction. The Engineering Division reviews the proposed sanitary sewer plans and specifications to determine compliance with the City’s sanitary sewer standards before authorizing its approval on the IEPA permit application.

Additionally, the developer or property owner must retain an engineering consultant to inspect and certify that the new sanitary sewer was built in accordance with the plans and specifications approved by the Engineering Division. The engineering consultant must provide a certification statement, as-built drawings, and testing data (pipe pressure test, manhole vacuum test, and mandrel test if flexible pipe is used) to the Engineering Division before the City will accept ownership of the new sanitary sewer. Operations Staff also completes an internal televised pipe inspection and manhole inspections of all new sanitary sewer. Any pipe or manhole defects identified must be corrected by the developer or property owner before the City will assume ownership of the sewer.

VIII. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

The Engineering Division prepares an Annual Sewer Activity Report that documents the following activities and items for the sanitary sewer collection system:

- 1.) Sewer pipe and manhole cleaning efforts.
- 2.) Internal televising and manhole inspection efforts.
- 3.) Root removal efforts.
- 4.) Grease removal efforts.
- 5.) Dry weather reported blockages and basement back-ups.
- 6.) Wet-weather sanitary sewer overflows and basement back-ups.
- 7.) Cured-in-place sewer lining rehabilitation efforts.
- 8.) Pipe and manhole repair efforts.
- 9.) Participation in the City's overhead sewer program.

The Annual Sewer Activity report is distributed to the local Illinois Environmental Protection Agency (IEPA) office, the Urbana-Champaign Sanitary District, and other satellite collection system communities. Additionally a copy of the Annual Sewer Activity Report is posted on the City's web-site for public access.

Approved by 2011-11
APPENDIX A - SEWER BENEFIT ORDINANCE

ORDINANCE NO. 8081-16

SEWER BENEFIT ORDINANCE

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF URBANA,
ILLINOIS, as follows:

Section 1. Definitions.

A. Residential Unit. Any lot having a building or structure, including trailer or modular home, which contains one or more dwelling units and has water metered service to any building or structure on such lot and any of which buildings or structures has a sanitary sewer connection.

B. Dwelling Unit. One (1) room or suite of two (2) or more rooms in a building, designed for and used by one (1) family for living and sleeping purposes, and containing its own kitchen and/or bathroom facilities.

C. Non-Residential Unit. Any building or any individual segregated portion of a building designed, utilized for or occupied by, any activity other than residential use and has water metered service to the building or structure and which building or structure has a sanitary sewer connection.

Section 2. Determination of Unit Category.

Determination of residential unit or non-residential unit classification for each parcel or property in the City of Urbana shall be made by the Comptroller on the basis of property codes at the Champaign County Supervisor of Assessment's Office. After the initial classification by the Comptroller, all properties shall continue to remain so classified unless and until a reclassification is made by the Comptroller based on all available evidence. The classification made by the Comptroller, except for error acknowledged by the Comptroller, shall remain the same until January 1st of each year regardless of change of use prior to January 1st of each year.

APPENDIX A - SEWER BENEFIT ORDINANCE

such residential unit as determined from the records of the Northern Illinois Water Corporation or its successor for the last full preceding calendar year. The amount will be amended annually on January 1st.

$$a = \frac{b}{c} \times d$$

a = amount to be paid by the individual residential unit.

b = billed water usage for the individual residential unit (in cubic feet).

c = total billed water usage for all residential units (in cubic feet).

d = \$327,630 (total dollars of public benefit funds and designated operation and maintenance funds to be generated annually by all residential units).

Provided, however, \$67,350 of the funds collected pursuant to this section shall be designated for the operation and maintenance of the sanitary sewer system of the City of Urbana and those funds shall not be available for any other purpose.

Section 4. Non-Residential Unit Charges.

Each non-residential unit shall pay an amount determined through the following formula, based upon the billed water usage of such non-residential unit as determined from the records of the Northern Illinois Water Corporation or its successor for the last full preceding calendar year. The amount will be amended annually on January 1st.

$$a = \frac{b}{c} \times d$$

a = amount to be paid by the individual non-residential unit.

b = billed water usage for the individual non-residential unit (in cubic feet).

c = total billed water usage for all non-residential units (in cubic feet).

d = \$52,500 (total dollars of public benefit funds and designated operation and maintenance funds to be generated annually by all non-residential units).

Provided, however, \$10,965 of the funds collected pursuant to this section shall be designated for the operation and maintenance of the sanitary sewer system

APPENDIX A - SEWER BENEFIT ORDINANCE

units and the water usage for the building or structure is not separately metered, the estimated water usage of each residential unit that receives water from the common meter shall be considered in the allocation of appropriate charge for such non-residential unit.

Section 6. Billing.

A. All buildings shall be created in the name of and forwarded to the property owner as shown in the records of the Supervisor of Assessments at the time of preparation.

B. Charges set forth herein for all units shall be computed and billed semi-annually and shall be due and payable within thirty (30) days from the date such bills are rendered. In the event a bill or statement remains unpaid after thirty (30) days from the date of its rendering, said charges shall then be delinquent, and there shall be added thereto a late-payment penalty in the amount of ten percent (10%) of the amount of such bills for each month, or part thereof, for which payment remains delinquent and outstanding.

C. Whenever the billable period is for less than the full billing period as maintained by the City, the charges for any portion of such period shall be prorated to the next period.

D. Bills rendered by the City for charges set forth in this Ordinance shall show thereon the name of the property owner, the permanent parcel number of the property for which the charges are rendered, the basis or rate upon which the charges are made, the amount due, when and where payable, the period for which charge is made, and any additional information deemed necessary by the City for the City's purposes.

Section 7. Delinquent Charges.

If a delinquency exists, the amount of penalty charges and the date of delinquency shall also be shown on the bill.

A. Whenever such charges become delinquent as set forth in Section 6 hereof, the same shall become and constitute a

APPENDIX A - SEWER BENEFIT ORDINANCE

Statements rendered for such charge shall be deemed notice to the owner of the property served. The claim for lien shall be made in the form of a sworn statement setting out (a) a description of the real estate, sufficient for the identification, (b) the amount or amounts of money due, and (c) the date or dates when such amount or amounts became delinquent. If all amounts shown due remain unpaid after recording as provided by law, the City may foreclose such lien in like manner and with like effect as in the foreclosure of mortgages on real estate. In the alternative, the City may in its discretion, file suit to collect such amounts as are delinquent and due against the owner of the real estate in a civil action, and shall collect, as well, all attorneys' fees incurred by it, the same to be fixed by order of the court. In addition to penalties and costs of lien, the property owners shall be liable for interest upon all unpaid balances after delinquency remaining from time to time unpaid at the rate of eight percent (8%) per annum.

B. In all cases where the charge has become delinquent and the City elects to file a statement thereof in the Office of Recorder of Deeds as hereinabove set forth, there shall be added in addition to the amount due the City such charges and expenses as are necessary and required to verify the legal description of the property to which the lien is to attach, plus a sum determined by the City Council as sufficient to cover the cost of preparation of such notices and forms required. In each instance, the Comptroller or a duly appointed and authorized employee of the City shall be authorized and directed to include such additional costs in the amount claimed due the City in the notice of lien.

Section 8. The failure of any owner of property to receive a bill or statement for charges shall not be grounds for non-payment or reason to extend or defer the date upon which payment is due or avoid the inclusion of penalties and interest. Owners of property

APPENDIX A - SEWER BENEFIT ORDINANCE

that the City mailed the bill to an address other than is required under Section 6 above, no late payment charges shall be made.

Section 9. Use of Funds.

The Comptroller of the City shall receive all revenues from charges set forth in this Ordinance, and deposit such revenues in the proper fund of the City. Revenues so deposited shall be disbursed as provided by Ordinance. Provided, however, the funds collected under this Ordinance shall be used for sanitary sewer construction, repair and maintenance, and/or capital debt retirement including interest and engineering and legal costs associated with the sanitary sewer system of the City, and the costs to administer this Ordinance.

Section 10. In the event any one or more of the provisions of this Ordinance, for any reason, shall be held to be illegal or invalid, such illegality or invalidity shall not affect the other provisions of this Ordinance, but this Ordinance shall be construed and enforced as if such illegal or invalid provisions had not been contained therein.

Section 11. This Ordinance shall become effective on the 1st day of January, 1981.

This Ordinance shall be published in accordance with the terms of Section 1-2-4 of the Illinois Municipal Code.

This Ordinance is hereby passed by the affirmative vote, the "ayes" and "nays" being called, of a majority of the City Council of the City of Urbana, Illinois, at a regular meeting of said Council on the 19th day of August, 1980.

PASSED by the City Council this 19th day of August, 1980.

Ruth S. Brookens
Ruth S. Brookens, City Clerk

APPROVED by the Mayor this 27th day of August.

APPENDIX A - SEWER BENEFIT ORDINANCE

CERTIFICATE OF PUBLICATION
IN
The News-Gazette

CITY OF URBANA, ILL.
RECEIVED

SEP 05 1980

CITY CLERK'S OFFICE

The undersigned, THE CHAMPAIGN NEWS-GAZETTE, INCORPORATED, by
M. S. Dera, its controller, does hereby
certify that said Corporation is the publisher of The News-Gazette and that the same is
a daily secular newspaper of general circulation published in Champaign, Champaign
County, Illinois, and which said newspaper had been regularly published for more
than six months prior to the first publication of the annexed notice; said publisher
further certifies that the annexed notice was published once each week for _____
consecutive weeks in said newspaper, namely on the following dates: _____

Sept 3, A. D. 19 80

, A. D. 19

, A. D. 19

, A. D. 19

, A. D. 19

Said publisher further certifies that the date of the first paper containing the said
notice was on the first date hereinabove set forth, and that the date of the last paper
containing the said notice was on the last date hereinabove set forth.

The Champaign News-Gazette, Incorporated
Controller

By [Signature]
PUBLISHER OF THE NEWS-GAZETTE

Publisher's fee \$ 125.16

ORDINANCE NO. 8081-16
SEWER BENEFIT ORDINANCE
BE IT ORDAINED BY THE CITY
COUNCIL OF THE CITY OF UR-
BANA, ILLINOIS, as follows:
Section 1. Definitions.
A. Residential Unit. Any lot having
a building or structure, including
trailer or modular home, which con-
tains one or more dwelling units and
has water metered service to any
building or structure on such lot and
any of which buildings or structures
has a sanitary sewer connection.
B. Dwelling Unit. One (1) room or
suite of two (2) or more rooms in a
building designed for and used by one
(1) family for living and sleeping pur-
poses containing its own kitchen
and bathroom facilities.
C. Non-Residential Unit. Any build-
ing or any individual segregated por-
tion of a building designed, utilized for
or occupied by any activity other than
residential use and has water metered
service to the building or structure and
which building or structure has a
sanitary sewer connection.
Section 2. Determination of Unit
Category.
Determination of residential unit
or non-residential unit classification for
each parcel or property in the City of
Urbana shall be made by the Com-
ptroller on the basis of property codes
at the Champaign County Supervisor's
Assessment's Office. After the initial
classification by the Comptroller, all
properties shall continue to remain so
classified unless and until a re-
classification is made by the Comptrol-
ler based on all available evidence.
The classification made by the Com-
ptroller, except for error acknowledged
by the Comptroller, shall remain the
same until January 1st of each year
upon which the charges are rendered.
Charges are rendered, the basis of rate
for the property for which the

COPY

ORDINANCE NO. 7071-26

AN ORDINANCE REGULATING THE USE OF PUBLIC AND PRIVATE SEWERS AND DRAINS, PRIVATE SEWAGE DISPOSAL, THE INSTALLATION AND CONNECTION OF BUILDING SEWERS, AND DISCHARGE OF WATERS AND WASTES INTO THE PUBLIC SEWER SYSTEMS: AND PROVIDING PENALTIES FOR VIOLATIONS THEREOF: IN THE CITY OF URBANA, COUNTY OF CHAMPAIGN, STATE OF ILLINOIS

Be it ordained and enacted by the Council of the City of Urbana, State of Illinois, as follows:

SECTION 27.8 - DEFINITIONS

Unless the context specifically indicates otherwise, the meaning of terms used in this ordinance shall be as follows:

"BOD" (denoting Biochemical Oxygen Demand) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20°C, expressed in milligrams per liter.

"Building Drain" shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys the public sewer.

"Building Sewer" shall mean that part of the building drain extending from the public sewer to a point five (5) feet outside of the inner face of the building wall. The building sewer is usually located partially on private property and partially on public property.

"Combined Sewer" shall mean a sewer receiving both surface runoff and sewage.

"Garbage" shall mean solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage, and sale of produce.

"Industrial Wastes" shall mean the liquid wastes from industrial manufacturing processes, trade, or business as distinct from sanitary sewage.

"Natural Outlet" shall mean any outlet into a water-course, pond, ditch, lake, or other body of surface or groundwater.

"Person" shall mean any individual, firm, company, association, society, corporation, or group.

"pH" shall mean the logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.

APPENDIX B - SEWER USE ORDINANCE

"Public Sewer" shall mean a sewer in which all owners of abutting properties can gain equal rights, and is controlled by public authority.

"Sanitary Sewer" shall mean a sewer which carries sewage and to which storm, surface, and groundwaters are not intentionally admitted.

"Sewage" shall mean the water-carried wastes from residences, business buildings, institutions, and industrial establishments.

"Sewage Treatment Plant" shall mean any arrangement of devices and structures used for treating sewage.

"Sewage Works" shall mean all facilities for collecting, pumping, treating, and disposing of sewage.

"Sewer" shall mean a pipe or conduit for carrying sewage.

"Shall" is mandatory; "May" is permissive.

"Slug" shall mean any discharge of water, sewage or industrial waste which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hours concentration or flows during normal operation.

"Storm Drain" (sometimes termed "storm sewer") shall mean a pipe or conduit which carries storm and surface waters and drainage, but excludes sewage and industrial wastes, other than unpolluted cooling water.

"Commissioner" shall mean the Commissioner of Public Works of the City of Urbana or his authorized deputy, agent, or representative.

"Suspended Solids" shall mean solids that either float on the surface of, or are in suspension in water, sewage, or other liquids, and which are removable by laboratory filtering.

"Watercourse" shall mean a channel in which a flow of water occurs, either continuously or intermittently.

"Appeal Board" shall mean the Plumbing Code Board of Appeals created under the Plumbing Code.

SECTION 27.9 - USE OF PUBLIC SEWERS REQUIRED

It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within the City of Urbana, or in any area under the jurisdiction of said City, any human or animal excrement, garbage, or other objectionable waste.

APPENDIX B - SEWER USE ORDINANCE

Except as hereinafter provided, it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended or used for the disposal of sewage.

The owner of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the city and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the city, is hereby required at his expense to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this ordinance, within one (1) year after date of official notice to do so, provided that said public sewer is within one hundred (100) feet of the property line.

SECTION 27.10 - PRIVATE SEWAGE DISPOSAL

Where a public sanitary sewer is not available under the provisions of Section 27.9, the building sewer shall be connected to a private sewage disposal system complying with the provisions of this section.

Before commencement of construction of a private sewage disposal system the owner shall first obtain a written permit signed by the Commissioner. The application for such permit shall be made on a form furnished by the city, which the applicant shall supplement by any plans, specifications, and other information as are deemed necessary by the Commissioner. A permit and inspection fee of ten dollars shall be paid to the city at the time the application is filed.

A permit for a private sewage disposal system shall not become effective until the installation is completed to the satisfaction of the Commissioner. He shall be allowed to inspect the work at any stage of construction and, in any event, the applicant for the permit shall notify the Commissioner when the work is ready for final inspection, and before any underground portions are covered. The inspection shall be made within seventy-two (72) hours of the receipt of notice by the Commissioner.

The type, capacities, location, and layout of a private sewage disposal system shall comply with all recommendations of the Department of Public Health of the State of Illinois. No permit shall be issued for any private sewage disposal system employing subsurface soil absorption facilities where the area of the lot is less than 10,000 square feet. No septic tank or cesspool shall be permitted to discharge to any natural outlet, any sanitary sewer, and storm drain, nor to the surface of the ground.

At such time as a public sewer becomes available to a property served by a private sewage disposal system, as provided in Section 27.10, Paragraph Four, a direct connection shall be made to the public sewer in compliance with this ordinance, and any septic tanks, cesspools, and similar private sewage disposal facil-

APPENDIX B - SEWER USE ORDINANCE

The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to the city.

No statement contained in this section shall be construed to interfere with any additional requirements that may be imposed by the Health Officer.

After the building sewer has been connected to a public sewer, a private sewage disposal system shall be cleaned of sludge and filled with clean bank-run gravel or dirt within thirty (30) days of connection with the public sewer.

SECTION 27.11 - BUILDING SEWERS AND CONNECTIONS

No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Commissioner.

There shall be two (2) classes of building sewer permits: (a) for residential and commercial service, and (b) for service to establishments producing industrial wastes. In either case, the owner or his agent shall make application on a special form furnished by the city. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Commissioner. A permit and inspection fee of ten dollars (\$10) for a residential or commercial building sewer permit and twenty-five dollars (\$25) for an industrial building sewer permit shall be paid to the city at the time the application is filed. The city will credit any applicant with the amount of inspection fee paid by applicant to the Urbana & Champaign Sanitary District, for which inspection the city may hold a contract with the said Sanitary District.

All costs and expenses incident to the installation and connection of the building sewer shall be borne by the owner. The owner shall indemnify the city from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.

A separate and independent building sewer shall be provided for every building; except where one building stands at the rear of another on an interior lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, court, yard, or driveway, the building sewer from the front building may be extended to the rear building and the whole considered as one building sewer.

Old building sewers may be used in connection with new buildings only when they are found, on examination and test by the Commissioner, to meet all requirements of this ordinance.

The size, slope, alignment, materials of construction, of a building sewer, and the methods to be used in excavating, placing of the pipe jointing, testing, and backfilling the trench, shall all conform to the requirements of the building and plumbing

APPENDIX B - SEWER USE ORDINANCE

The connection of the building sewer into the public sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the city. All such connections shall be made gastight and watertight. Any deviation from the prescribed procedures and materials must be approved by the Commissioner before installation.

The applicant for the building sewer permit shall notify the Commissioner when the building sewer is ready for inspection and connection to the public sewer. The connection shall be made under the supervision of the Commissioner or his representative.

All excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the city.

An excavation permit shall be secured for each hole dug in public property. The fee mentioned in Sec. 27.11 (2) includes the fee for one (1) excavation in city property. The fee for additional excavations made for any purpose shall be as specified elsewhere in the City Code.

Whenever a structure is demolished, which structure has been served by storm sewer connections or sanitary sewer connections, the connections shall be plugged at the edge of the property. Unless a permit has been issued for the immediate reconstruction of structures which will utilize the sewer connection, those connections shall be permanently plugged in a manner to prevent infiltration of groundwaters to the sewer system.

Materials for the construction of building sewers shall conform to both the Urbana Plumbing Code and the ordinance requirements of the Urbana & Champaign Sanitary District.

Any pipe laid along and in public streets, alleys, or easements which could connect more than one building sewer or could be extended to connect more than one building sewer shall be laid in straight lines not less than eight (8) inches in diameter and shall be laid on a minimum grade of four (4) feet per thousand (1,000) feet, and shall be constructed to a maximum depth to permit further extension thereto. When the maximum depth is in excess of that required to serve the building, the person building the sewer may apply to the City requesting the City to purchase the excess depth capacity. Such application will be considered only when it has been made at least two (2) weeks prior to the start of construction.

SECTION 27.12 - USE OF THE PUBLIC SEWERS

No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, sub-surface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer. Water from footing tiles may not be discharged to a storm sewer through a

APPENDIX B - SEWER USE ORDINANCE

storm sewers, or to a natural outlet approved by the Commissioner. Industrial cooling water or unpolluted process waters may be discharged, on approval of the Commissioner, to a storm sewer, or natural outlet.

No person shall discharge or cause to be discharged any of the following described waters or wastes to any public sewers:

1. Any gasoline, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid, or gas.
2. Any waters or wastes containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the sewage treatment plant, including but not limited to cyanides in excess of two (2) mg/l as CN in the wastes as discharged to the public sewer.
3. Any waters or wastes having a pH lower than 5.5 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the sewage works.
4. Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the sewage works such as, but not limited to, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, underground garbage, whole blood, paunch manure, hair and fleshings, entrails and paper dishes, cups, milk containers, or grass clippings, either whole or ground by garbage grinders.

No person shall discharge or cause to be discharged the following described substances, materials, waters, or wastes if it appears likely in the opinion of the Commissioner that such wastes can harm either the sewers, sewage treatment process, or equipment, have an adverse effect on the receiving stream, or can otherwise endanger life, limb, public property, or constitute a nuisance. In forming his opinion as to the acceptability of these wastes, the Commissioner will give consideration to such factors as the quantities of subject wastes in relation to flows and velocities in the sewers, materials of construction of the sewers, nature of the sewage treatment process, capacity of the sewage treatment plant, degree of treatability of wastes in the sewage treatment plant, and other pertinent factors. The substances prohibited are:

1. Any liquid or vapor having a temperature higher than one hundred fifty (150) °F (65°C).

APPENDIX B - SEWER USE ORDINANCE

3. Any garbage that has not been properly shredded. The installation and operation of any garbage grinder equipped with a motor of three-fourths (3/4) horsepower or greater shall be subject to the review and approval of the Commissioner.
4. Any waters or wastes containing strong acid iron pickling wastes, or concentrated plating solutions whether neutralized or not.
5. Any waters or wastes containing iron, chromium, copper, zinc, and similar objectionable or toxic substances; or wastes exerting an excessive chlorine requirement, to such degree that any such material received in the composite sewage at the sewage treatment works exceeds the limits established by the Commissioner for such materials.
6. Any waters or wastes containing phenols or other taste or odor-producing substances, in such concentrations exceeding limits which may be established by the Commissioner as necessary, after treatment of the composite sewage, to meet the requirements of the State, Federal, or other public agencies of jurisdiction for such discharge to the receiving waters.
7. Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the Commissioner in compliance with applicable State or Federal regulations.
8. Any waters or wastes having a pH in excess of 10.5.
9. Materials which exert or cause:
 - a. Unusual concentrations of inert suspended solids (such as, but not limited to, Fullers earth, lime slurries, and lime residues) or of dissolved solids (such as, but not limited to, sodium chloride and sodium sulfate).
 - b. Excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).
 - c. Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage treatment works.
 - d. Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein.
10. Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed, or are amenable to treatment only to such a degree that the sewage treatment plant effluent cannot meet the require-

APPENDIX B - SEWER USE ORDINANCE

may have a deleterious effect upon the sewage works, processes, equipment, or receiving waters, or which otherwise create a hazard to life or constitute a public nuisance, the Commissioner may:

1. Reject the wastes,
2. Require pretreatment to an acceptable condition for discharge to the public sewers,
3. Require control over the quantities and rates of discharge, and/or
4. Require payment to cover the added cost of handling the wastes not covered by existing taxes or sewer charges under the provisions of Section 27.12, paragraph four, sub-section 10.

If the Commissioner permits the pretreatment or equalization of waste flows, the design and installation of the plants and equipment shall be subject to the review and approval of the Commissioner, and subject to the requirements of all applicable codes, ordinances, and laws.

Grease, oil, and sand interceptors shall be provided when, in the opinion of the Commissioner, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand, or other harmful ingredients; except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by the Plumbing Inspector, and shall be located as to be readily and easily accessible for cleaning and inspection. Interceptors shall be cleaned sufficiently often to prevent wastes discharged into the sewer which exceed the limits established in paragraph four, sub-section 2, of this Section.

Where preliminary treatment or flow-equalizing facilities are provided for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner at his expense.

When required by the Commissioner, the owner of any property serviced by a building sewer carrying industrial wastes shall install a suitable control manhole together with such necessary meters and other appurtenances in the building sewer to facilitate observation, sampling, and measurement of the wastes. Such manhole, when required, shall be accessibly and safely located, and shall be constructed in accordance with plans approved by the Commissioner. The manhole shall be installed by the owner at his expense, and shall be maintained by him so as to be safe and accessible at all times.

All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this ordinance shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater," published by the American Public Health Association, and shall be

APPENDIX B - SEWER USE ORDINANCE

of constituents upon the sewage works and to determine the existence of hazards to life, limb, and property. (The particular analyses involved will determine whether a twenty-four (24) hour composite of all outfalls of a premise is appropriate or whether a grab sample or samples should be taken. Normally, but not always, BOD and suspended solids analyses are obtained from 24-hr. composites of all outfalls whereas pH's are determined from periodic grab samples.)

No statement contained in this Section shall be construed as preventing any special agreement or arrangement between the City and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the City for treatment, subject to payment therefore, by the industrial concern.

SECTION 27.13 - PROTECTION FROM DAMAGE

No unauthorized person shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the sanitary or storm sewerage systems. Any person violating this provision shall be subject to immediate arrest under charge of disorderly conduct.

SECTION 27.14 - POWERS AND AUTHORITY OF INSPECTORS

The Commissioner and other duly authorized employees of the City bearing proper credentials and identification shall be permitted to enter all properties during reasonable hours for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this ordinance. The Commissioner or his representatives shall have no authority to inquire into any processes including metallurgical, chemical, oil, refining, ceramic, paper, or other industries beyond that point having a direct bearing on the kind and source of discharge to the sewers or waterways or facilities for waste treatment.

While performing the necessary work on private properties referred to in Section 27.14, paragraph one above, the Commissioner or duly authorized employees of the City shall observe all safety rules applicable to the premises established by the company.

The Commissioner and other duly authorized employees of the City bearing proper credentials and identification shall be permitted to enter all private properties through which the City holds a duly negotiated easement for the purpose of, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance of any portion of the sewage works lying within said easement. All entry and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

APPENDIX B - SEWER USE ORDINANCE

Any person who shall continue any violation beyond the time limit provided in Section 27.15, paragraph one, shall be guilty of an unlawful act, and on conviction thereof shall be fined for each violation as provided in Section 1.6 of the Urbana City Code.

Any person violating any of the provisions of this ordinance shall become liable to the City for any expense, loss, or damage occasioned the City by reason of such violation.

ADOPTED by the City Council of the City of Urbana this 6th day of July, 1970.



Duane Eckerty, CITY CLERK

APPROVED by the Mayor of the City of Urbana this _____ day of July, 1970.



Charles M. Zippert, MAYOR

APPENDIX B - SEWER USE ORDINANCE

STATE OF ILLINOIS)
)
COUNTY OF CHAMPAIGN) SS.

I, DUANE ECKERTY, City Clerk of the City of Urbana, Illinois, and keeper of the records, files and seal of said City, do hereby certify that the foregoing is a true and exact copy of an ordinance entitled, "Sewers and Drains", page 3, Chapter 27 of the Code Book, adopted by the City Council of Urbana, Illinois, on the 6 day of July , A.D. 1970, as appears in the records and files in my office remaining.

Given under my hand and seal of said City of Urbana, Illinois, this 7 day of January , A.D. 1974.



CITY CLERK

(S E A L)

APPENDIX B - SEWER USE ORDINANCE

3/1/72

"Sanitary sewer" shall mean a sewer which carries sewage and to which storm, and groundwaters are not intentionally admitted.

"Sewage" shall mean the water-carried wastes from residences, business buildings, institutions, and industrial establishments.

"Sewage treatment plant" shall mean any arrangement of devices and structures used for treating sewage.

"Sewage works" shall mean all facilities for collecting, pumping, treating, and disposing of sewage.

"Sewer" shall mean a pipe or conduit for carrying sewage.

"Shall" is mandatory; "may" is permissive.

"Slug" shall mean any discharge of water, sewage or industrial waste which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hours concentration or flows during normal operation.

"Storm drain" (sometimes termed "storm sewer") shall mean a pipe or conduit which carries storm and surface waters and drainage, but excludes sewage and industrial wastes, other than unpolluted cooling water.

"Commissioner" shall mean the commissioner of public works of the city of Urbana or his authorized deputy, agent, or representative.

"Suspended solids" shall mean solids that either float on the surface of, or are in suspension in water, sewage, or other liquids, and which are removable by laboratory filtering.

"Watercourse" shall mean a channel in which a flow of water occurs, either continuously or intermittently.

"Appeal board" shall mean the Plumbing Code Board of Appeals created under the Plumbing Code.
(7-6-70.)

Sec. 27.9. Use of public sewers required.

It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within the city of Urbana, or in any area under the jurisdiction of said city, any human or animal excrement, garbage, or other objectionable waste.

It shall be unlawful to discharge to any natural outlet within the city of Urbana, or in any area under the jurisdiction of said city, any sewage or other polluted waters, except where suitable treatment has been provided in accordance with subsequent provisions of this ordinance.

Except as hereinafter provided, it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended or used for the disposal of sewage.

The owners of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the city and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the city, are hereby required at their expense to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this ordinance, within one (1) year after date of official notice to do so, provided that said public sewer is within one hundred (100) feet of the property line.
(7-6-70.)

Sec. 27.10. Private sewage disposal.

Where a public sanitary sewer is not available under the provisions of section 27.9, the building sewer shall be connected to a private sewage disposal system complying with the provisions of this section.

Before commencement of construction of a private sewage disposal system, the owner shall first obtain a written permit signed by the commissioner. The application for such permit shall be made on a form furnished by the city, which the applicant shall supplement by any plans, specifications, and other information as are deemed necessary by the commissioner. A permit and inspection fee of ten (\$10.00) dollars shall be paid to the city at the time the application is filed.

A permit for a private sewage disposal system shall not become effective until the installation is completed to the satisfaction of the commissioner. He shall be allowed to inspect the work at any stage of construction and, in any event, the applicant for the permit shall notify the commissioner when the work is ready for final inspection, and before any underground portions are covered. The inspection shall be made within seventy-two (72) hours of the receipt of notice by the commissioner.

The type, capacities, location, and layout of a private sewage disposal system shall comply with all recommendations of the Department of Public Health of the State of Illinois. No permit shall be issued for

**SANITARY SEWER STANDARDS
URBANA & CHAMPAIGN SANITARY DISTRICT
AND
AFFILIATED COMMUNITIES
CHAMPAIGN
URBANA
SAVOY**

Prepared by:

Intergovernmental
Joint Sanitary Sewer Technical Committee
April 12, 2000

APPENDIX C - SANITARY SEWER STANDARDS

Introduction

The Intergovernmental Agreement Regarding Sanitary Sewers, which was adopted in 1992 by the Urbana & Champaign Sanitary District (District), the City of Champaign, City of Urbana and Village of Savoy, provided for the creation of a Sanitary Sewer Technical Committee charged with the responsibility of coordinating and implementing certain responsibilities set forth in that Agreement. One of those responsibilities is to control connections to, and set standards for construction of, all municipal sanitary sewer systems tributary to the District. To that end, the Technical Committee adopted a set of standards in December, 1994.

This document represents the first major revision to those 1994 standards, incorporating policy and technical changes that expand and clarify the practices and requirements that apply to all sanitary sewers within the District.

It is the Sanitary Sewer Technical Committee's intent through these standards that it is clear to the development, architectural and engineering community what the District and each community's standards are. This will result in consistent plan and specification submittals and simplify installation methods and expectations for contractors.

Urbana & Champaign Sanitary District

By: _____
Executive Director

City of Urbana, Illinois

By: _____
Public Works Director

City of Champaign, Illinois

By: _____
City Engineer

Village of Savoy, Illinois

By: _____
Village Administrator

SANITARY SEWER STANDARDS

100.00 PIPE MATERIALS

Pipe materials used for sanitary sewers shall conform to the following materials which are expressly manufactured for transmitting sanitary sewage and shall comply with requirements of the Illinois Environmental Protection Agency:

Extra strength vitrified clay per ASTM C700, ductile iron per AWWA C150, gasketed PVC truss pipe per ASTM D2680, PVC profile pipe (18-inch diameter and larger) per ASTM F949 or ASTM F1803, **SDR 26 Solid Wall PVC pipe per ASTM D-3034**, and others approved by the Executive Director of the UCSD with the concurrence of the approving authority.

For trenchless construction, materials and methods will be approved on a case-by-case basis by the approving authority.

110.0 MANHOLES

Manholes shall comply with minimum standards in the "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS" and shall be a minimum of 48 inches in diameter. **An external manhole chimney seal shall be required on all new manholes.**

111.0 DROP MANHOLE CONNECTIONS

All drop manhole installations, including service lines, may be installed as either internal or external to the manhole structure, except for UCSD interceptor manholes which shall have only external drop assemblies. All drop assemblies shall comply with the appropriate provisions and details in the "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS". Internal drop assemblies will only be allowed if the clearance requirements specified in the IEPA "ILLINOIS RECOMMENDED STANDARDS FOR SEWAGE WORKS" are met. Internal drop assemblies will not be allowed in manholes 48 inches in diameter or smaller. In addition, the location and details of proposed internal drop assemblies must be approved by the approving authority prior to initiation of construction.

112.0 TERMINAL MANHOLE CONNECTIONS

Manholes at the upstream end of dead-end lines shall be constructed so that influent service connections are only attached to the manhole at the upstream side. Further, there shall be a minimum of 4 inches of elevation difference from the invert of the service connection to the invert of the outlet pipe. There shall also be a concrete channel constructed from the invert of the service connection to the channel of the bench outlet pipe. Details of the connection shall be approved by the appropriate agency prior to initiation of construction.

113.00 CONNECTIONS TO EXISTING MANHOLES

New connections made to any existing manhole shall be angled in the direction of flow, and shall be accomplished by core drilling through the wall of the manhole and installing an appropriately sized connector boot, such as *KOR n SEAL*® by NPC Inc., or approved equal.

114.0 UCSD INTERCEPTOR MANHOLE REQUIREMENTS

APPENDIX C - SANITARY SEWER STANDARDS

Manholes constructed on UCSD interceptor sewers shall conform to the "UCSD Interceptor Sewer Manhole Detail" attached to these Sanitary Sewer Standards.

120.00 SERVICE LATERALS

Service laterals and clean-outs shall be constructed of materials which comply with Section 100 of this document, plus those specifically outlined in the UCSD Ordinance, which includes PVC lines which meet ASTM D-3034, D-2241, D-2665; SDR-26 and Schedule 40, and ABS pipe which meets ASTM D2751, D2661; SDR-23.5 and Schedule 40.

PVC Pipe joints for SDR-26 shall be push-on-type with a bell-end groove to receive a synthetic rubber gasket. Solvent welded joints are not allowed. The joint shall be made in accordance with ASTM D-3212.

ABS joints shall be solvent-cemented. The cement shall meet the requirements of ASTM D-2235.

Schedule 40 PVC joints can be solvent-cemented. The cement shall meet the requirements of ASTM D-2564.

If laterals are constructed of 6-inch pipe, they shall have a minimum slope of 1/8-inch per foot. 4-inch pipe shall have a minimum slope of 1/4-inch per foot. All laterals shall be installed at a depth to serve the building it is designed to serve, but shall have a minimum cover of 42-inches unless otherwise approved on a case-by-case basis by the approving authority.

The end of the pipe shall be at no deeper than 7 feet below the existing grade and shall be staked with a 2 x 4 wood leader which extends to 1-ft above the ground.

121.0 CITY OF CHAMPAIGN

Each service connection must comply with the requirements of Section 120.00 and shall be installed to the property line.

122.0 CITY OF URBANA

Each service connection must comply with the requirements of Section 120.00 and shall be installed no closer than 5 feet to any property corner.

123.0 VILLAGE OF SAVOY

Each service connection must comply with the requirements of Section 120.00 except as modified in this Section. The minimum size shall be 6-inch and the line shall be placed to the property line.

124.0 PIPE BURSTING STANDARDS

1. CONTRACTOR'S QUALIFICATIONS

The Contractor shall have at least 1 year of experience working with their pipe bursting system.

Field joining of HDPE pipe shall be performed by competent personnel trained in the use of butt-fusion equipment and recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the HDPE pipe. All training shall be performed by a qualified representative of the manufacturer.

APPENDIX C - SANITARY SEWER STANDARDS

2. MATERIALS

Polyethylene Plastic Pipe shall be high-density polyethylene pipe and meet the applicable requirements of ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter, ASTM D1248, ASTM D3550.

All pipe installed shall be the same diameter or larger than the original sewer lateral and offer the same flow capacity. All pipe shall be made of virgin material. The pipe shall be homogenous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.

The minimum wall thickness of the polyethylene pipe shall be SDR-17. Minimum inside diameter shall be 4-inches.

If coiled HDPE pipe is utilized contractor shall provide equipment to straighten and reround coiled pipe to meet or exceed ASTM D-2513 quality requirements.

3. EQUIPMENT

BURSTING TOOL: The pipe bursting tool shall be designed and manufactured to force its way through existing pipe materials by fragmenting the pipe and compressing the old pipe sections into the surrounding soil as it progresses. The bursting unit shall generate sufficient force to burst and compact the existing pipe line. The pipe bursting tool shall be properly sized for the diameter of pipe to be rehabilitated.

The remotely controlled bursting unit shall pull the HDPE pipe with it as it moves forward. The bursting head shall incorporate a shield/expander to prevent collapse of the hole ahead of the PE pipe insertion. The bursting action of the tool shall increase the external dimensions sufficiently, causing breakage of the pipe at the same time expanding the surrounding ground. This action shall allow the HPDE pipe to be installed free of obstructions and damage.

The contractor shall provide a system of guide pulleys and bracing to minimize cable contact with the existing sewer facilities.

4. CONSTRUCTION METHODS

The Contractor shall install all pulleys, rollers, bumpers, alignment control devices and other equipment required to protect existing facilities and to protect the pipe from damage during installation. Lubrication may be used as recommended by the manufacturer. Under no circumstances shall the pipe be stressed beyond its elastic limit. The pipe bursting unit is to be centered in the pipe to be burst.

The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak proof joint. Butt-fusion joints shall be in accordance with ASTM Standard F2620. Threaded or solvent-cement joints and connections are not permitted.

All equipment and procedures used shall be used in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel trained by a manufacturer of HDPE pipe and/or fusing equipment.

The butt-fused joint shall be true alignment and shall have uniform roll-back beads resulting from the use of proper temperature and pressure. The joint shall be allowed

APPENDIX C - SANITARY SEWER STANDARDS

adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe.

All defective joints shall be cut out and replaced at no additional cost. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above. In addition, any section of the pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, pitting, variable wall thickness or any other defect of manufacturing or handling shall be discarded and not used.

The ends of the HDPE shall be connected to existing or new pipes using a coupling device. The new connection shall not compromise the structural stability or previous rehabilitation efforts in the mainline sewer serving the lateral. A Fernco Stock or Mission Standard coupling are acceptable for coupling the new HDPE to existing clay, concrete, or cast iron pipe for buried applications. Mission or Fernco couplings shall have rubber sleeves that conform to ASTM C 425 and ASTM C 1173 with 316 Series stainless steel clamps with nut and bolt or worm drive take-up. A bag of premixed concrete shall be installed under each Mission or Fernco coupling.

An ISCO Standard Coupling to IPS PVC or Poly-Cam Transition Coupling shall be used for coupling the new HDPE pipe to PVC pipe.

After all connections are made and inspected by the appropriate City or Village Inspector, the access pits shall be backfilled.

5. INSPECTION

The Contractor shall provide internal pipe televising inspection for the sewer lateral prior to the pipe bursting activities and after the pipe bursting activities have been completed. A copy of the internal pipe televising inspection shall be available to the City or Village Staff for their review for a period of 3 years after the installation is completed. Televising videos shall be in a MPEG-2 digital video format and shall be stored on CD or DVD discs. Discs shall be clearly labeled with the address of the installation, date performed, and contractor performing the work.

All pipe connections made must be inspected prior to backfilling and resurfacing.

130.00 PIPE BEDDING, HAUNCHING & INITIAL BACKFILL

Allowable materials for pipe bedding, haunching and initial backfill to 12 inches above the top of the pipe shall be one of the following materials: CA-6, CA-7, CA-9, CA-11, CA-13, CA-16, FA-5, FA-6, or FA-10, except in Savoy where FA-5 and FA-6 is not acceptable. Previously excavated material is not an allowable material, unless the material has been tested, at intervals and frequencies acceptable to the approving authority, by a certified laboratory and shown to meet the gradation requirements for one of the specified aggregate materials.

140.00 PIPE CONNECTIONS

141.00 WYES

Sewer wyes must be of the same material as the main-line piping, must comply with appropriate provisions of the "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN

APPENDIX C - SANITARY SEWER STANDARDS

CONSTRUCTION IN ILLINOIS” and shall be encased in granular bedding conforming to Section 130.00, except for the Village of Savoy where concrete encasement is required in lieu of granular encasement. Concrete encasement is not allowed elsewhere.

142.0 CONNECTIONS TO EXISTING SEWERS

If a connection is to be made where there is no wye, and the existing piping is smaller than 12 inches in diameter, a section of pipe shall be removed and a wye inserted with pipe couplings, conforming to Section 143.00, and new sections of pipe as needed. New connections to existing piping 12 inches in diameter or larger shall be made by core drilling the existing pipe and installing a flexible connector assembly such as *KOR n SEAL®* by NPC Inc., or approved equal. In the City of Urbana only, saddles may also be used on City Sewers 12 inches in diameter or larger, and if used shall be provided with 6 inches of concrete encasement. Saddles shall be properly supported in a granular base to minimize settlement.

143.00 PIPE COUPLINGS

Pipe couplings shall conform to the applicable portions of ASTM C-425, C-443, C-564, C-1173, and D-1869. They shall be made of elastomeric polyvinyl chloride, shall be specifically sized to fit the outer diameter of the pipes being joined, and shall have stainless steel take-up clamps to fit the appropriate outer diameter of the coupling. The take-up clamps shall be tightened to the manufacturers recommended torque value and the joints tested in accordance with Section 160.00, and the manufacturer’s recommendations. Testing may be waived at the discretion of the approving authority, provided that the installation passes visual inspection. After the connection has been inspected, tested where required, and approved by the approving authority, the entire connection shall be encased in granular fill to a minimum of 6 inches all around.

150.00 BACKFILL

Where the inner edge of the trench is within 2 feet of the edge of the pavement, curb, gutter, curb and gutter, stabilized shoulder or sidewalk, the sewer trench must be backfilled with CLSM meeting the approving authority’s specifications, or granular trench backfill, placed in uniform layers not exceeding 6 inches thick (loose measure) and compacted to 95% of Standard Proctor unless flowable fill is used, in which case, the fill shall be designed to have a compressive strength between 100 to 200 psi. For Urbana only, CLSM backfill is required within 2 feet of the back of curbs for all arterial streets.

Jetting and water-soaking is not allowed.

Outside of the pavement area, native soil may be returned to the trench, in accordance with the requirements of “STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS”, but the developer and/or contractor is responsible for repair of all settlement which occurs.

160.00 TESTING

Testing shall comply with provisions of the “STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS” with the following exceptions: 1) the maximum leakage shall be 200 gpd/in. dia./day/mile of pipe instead of 240, 2) all reaches shall be tested, 3) the specified air test times in the “Air Test Table” for 8, 10 and 12-inch pipe shall be modified so that test times for pipe lengths greater than 100 feet shall be incremental multiples of the time indicated for the 100 foot length, and 4) all manholes shall be vacuum tested in accordance with ASTM C1244-05a.

APPENDIX C - SANITARY SEWER STANDARDS

170.00 LAMPING

All main lines must be capable of transmitting a full circle of light between manholes. If the light cannot be seen, the sewer must be capable of passing a two-foot long cylinder, which has a diameter 1 inch less than the inside diameter of the pipe being tested.

180.00 PAVEMENT REPAIRS

All pavement repairs must meet requirements of the local agency which has jurisdiction.

181.00 CITY OF CHAMPAIGN PAVEMENT REPAIRS

For projects within the jurisdiction of the City of Champaign, all disturbed street and sidewalk areas shall be replaced in accordance with Section 442 of the IDOT Standard Specifications, with the following exceptions and additions.

All pavement shall be replaced to its original thickness, material type or types, and grade with the following exceptions and additions:

1. Required Permit: Any work in the public right-of-way requires a permit and a description of that work shall be submitted in writing to the right-of-way inspector.
2. Minimum Thickness: If the old pavement was deficient, it must be replaced to current standards and thickness [concrete pavement minimum thickness is 8 inches, non-reinforced, bituminous pavement minimum thickness is 10 inches.]
3. Concrete Pavement Repair: All concrete patches shall be a modified IDOT Class C patch as shown on the attached drawing, with the exception of patches on Arterial and Major Collector streets (defined by the right-of-way inspector). The Arterial and Major Collector streets 8 inches or greater in depth shall be repaired using a modified IDOT Class B patch as shown on the attached drawing. One-inch deformed reinforcing bars shall be substituted for smooth dowels at any new mid-panel joint. Smooth dowel bars shall be used at any pre-existing contraction joint. Pre-existing contraction joints shall be replaced with an appropriate grooving tool. Concrete patch width shall coincide with the edge of full panels and shall have a minimum longitudinal distance of 6 feet. In large cuts, full panels shall be removed and replaced.
4. Full Depth Bituminous or Composite Pavement Repair: A preferred alternative to a full depth, 10-inch, multi-layer bituminous repair, is to construct a minimum of an 8-inch concrete base course, overlaid with a 2-inch hot-mix asphalt surface course.
5. Oil and Chip: Oil and Chip pavements shall be replaced with an 8-inch CA-6 compacted crushed stone base course, overlaid with a 3-inch hot-mix asphalt surface course.
6. Brick Streets: Brick streets shall be re-laid with original brick pavers on a one-inch sand cushion over a new 6-inch concrete base course. Sand shall be deposited over and between laid pavers and vibrated into place with a vibrating plate compactor. Damaged pavers shall be replaced with matching replacement pavers.
7. Pavement Removal: All pavement removals shall be accomplished with a full depth saw cut. A minimum 2-foot bench shall be maintained on all sides of an open excavation. Subgrade shall be compacted to the satisfaction of the right-of-way inspector and if necessary, repaired with granular backfill as instructed by the inspector.
8. Road Closure: Any road closure shall be coordinated with the City of Champaign right-of-way

APPENDIX C - SANITARY SEWER STANDARDS

inspector at least 72 hours in advance.

182.00 CITY OF URBANA & VILLAGE OF SAVOY

182.10 NEW PROJECTS

On projects involving new street construction, the street must be constructed in accordance with plans and specifications which have been approved by the City Engineer.

182.20 RENEWAL PROJECTS

Where sewer construction or reconstruction involves cutting existing concrete pavement, the pavement shall be replaced in-kind with the total thickness 2 inches greater than existing to a maximum of 10 inches. Where the surface is asphalt or oil and chip, a 6-inch concrete base shall be used and 2 inches of bituminous concrete shall be placed over the base.

As an alternative, the contractor shall be allowed to pour a full pavement depth of concrete with a black-colored surface to match the black color of the existing bituminous street pavement per the "PC Concrete Pavement Removal & Replacement" City detail. In general, these patches shall be no larger than 10 feet by 10 feet. However, for long and narrow patches, longitudinal and/or transverse joints shall be installed to match the joints in the existing pavement, or per IDOT specifications.

The surface of these patches shall be tinted black with a shake-on coloring during finishing in order to blend in with the existing bituminous surface and shall be approved by the City Engineer.

Brick pavement shall be replaced with a 6-inch concrete base, ½-inch sand cushion and brick surface. Replacement bricks shall be new and of the same dimensions, color and quality of those existing and all other materials must meet appropriate IDOT requirements.

190.00 MINIMUM CONSTRUCTED SLOPES FOR SANITARY SEWER INSTALLATION

The following tables list a penalty system that may be used for sanitary sewer lines that are installed at less than minimum slopes. The use of this penalty system is at the sole discretion of the given jurisdictional body.

191.00 PENALTY SYSTEM

8-Inch Diameter Line (standard designed @ 0.40%)

Constructed Slope* (%)	Penalty (%)	Velocity Range (ft/s) Kutter's Formula	Velocity Range (ft/s) Manning's Formula
≥ 0.38 but < 0.40	0	1.95 to 2.00	2.13 to 2.19
≥ 0.36 but < 0.38	25	1.89 to 1.95	2.08 to 2.13
≥ 0.34 but < 0.36	50	1.84 to 1.89	2.02 to 2.08
< 0.34	Remove and Replace	0.00 to 1.84	0.00 to 2.02

8-Inch Diameter Line (terminal 700 ft designed @ 0.60%)(velocities @ 1/3 depth of flow)

Constructed Slope* (%)	Penalty (%)	Velocity Range (ft/s) Kutter's Formula	Velocity Range (ft/s) Manning's Formula
≥ 0.58 but < 0.60	0	1.91 to 1.94	2.15 to 2.19
≥ 0.56 but < 0.58	25	1.87 to 1.91	2.12 to 2.15
≥ 0.54 but < 0.56	50	1.84 to 1.87	2.08 to 2.12
< 0.54	Remove and Replace	0.00 to 1.84	0.00 to 2.08

APPENDIX C - SANITARY SEWER STANDARDS

10-Inch Diameter Line (standard designed @ 0.28%)

Constructed Slope* (%)	Penalty (%)	Velocity Range (ft/s) Kutter's Formula	Velocity Range (ft/s) Manning's Formula
≥ 0.26 but < 0.28	0	1.91 to 2.00	2.05 to 2.13
≥ 0.24 but < 0.26	25	1.83 to 1.91	1.97 to 2.05
≥ 0.22 but < 0.24	50	1.76 to 1.83	1.88 to 1.97
< 0.22	Remove and Replace	0.00 to 1.76	0 .00 to 1.88

12-Inch Diameter Line (standard designed @ 0.22%)

Constructed Slope* (%)	Penalty (%)	Velocity Range (ft/s) Kutter's Formula	Velocity Range (ft/s) Manning's Formula
≥ 0.19 but < 0.21	0	1.87 to 2.00	1.98 to 2.08
≥ 0.18 but < 0.19	25	1.82 to 1.87	1.92 to 1.98
≥ 0.17 but < 0.18	50	1.77 to 1.82	1.87 to 1.92
< 0.17	Remove and Replace	0.00 to 1.77	0.00 to 1.87

192.00 PENALTY SYSTEM USE GUIDELINES

The owner's/developer's engineer may appeal the penalties if a detailed analysis can show that upstream/downstream flow conditions or other factors contribute to increased flows in the sewer reach in question. The jurisdictional body may choose not to allow the use of this penalty system in lieu of removal, if the jurisdictional body determines that upstream or downstream conditions are such that they contribute to reduced flows in the sewer reach in question.

The decision to allow the use of the penalty system outlined herein is at the sole discretion of the jurisdictional body.

The penalties shall be assessed in the form of non-refundable cash, in an amount determined from the official contractor's bid, or the replacement cost as determined by the jurisdictional body per industry standard prices.

If a sanitary system is laid at less than minimum slopes of 0.4% for 8-inch, 0.21 % for 10-inch, 0.28% for 12-inch, etc., the given jurisdictional body reserves the right to require full removal and replacement. Full removal and replacement shall include removing the substandard portion of the sewer main system and replacing it in its entirety. This work shall include required manholes, piping, bedding, haunching, backfill, grading, seeding, and all appurtenances and requirements associated with a sanitary sewer system installed within the Urbana-Champaign Sanitary District.

The following guidelines shall be used when considering the acceptance of substandard sanitary lines and the possible use of the penalty system:

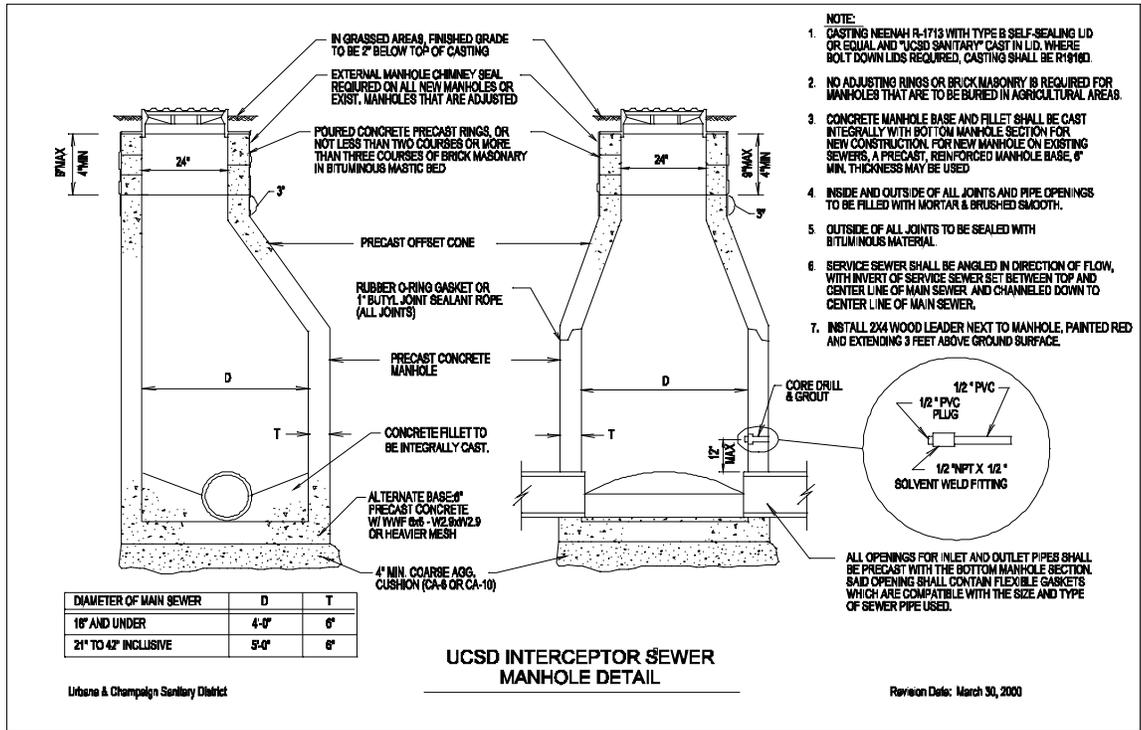
- It is the intent to follow the design requirements of all applicable regulatory agencies.
- Was there adequate observation by the Engineer?
- Was there adequate field documentation by the engineer? Adequate field documentation is considered to be a daily field report sheet or construction diary entries, including elevation checks entered into a field survey book. This documentation will be used to verify the other criteria listed herein.

APPENDIX C - SANITARY SEWER STANDARDS

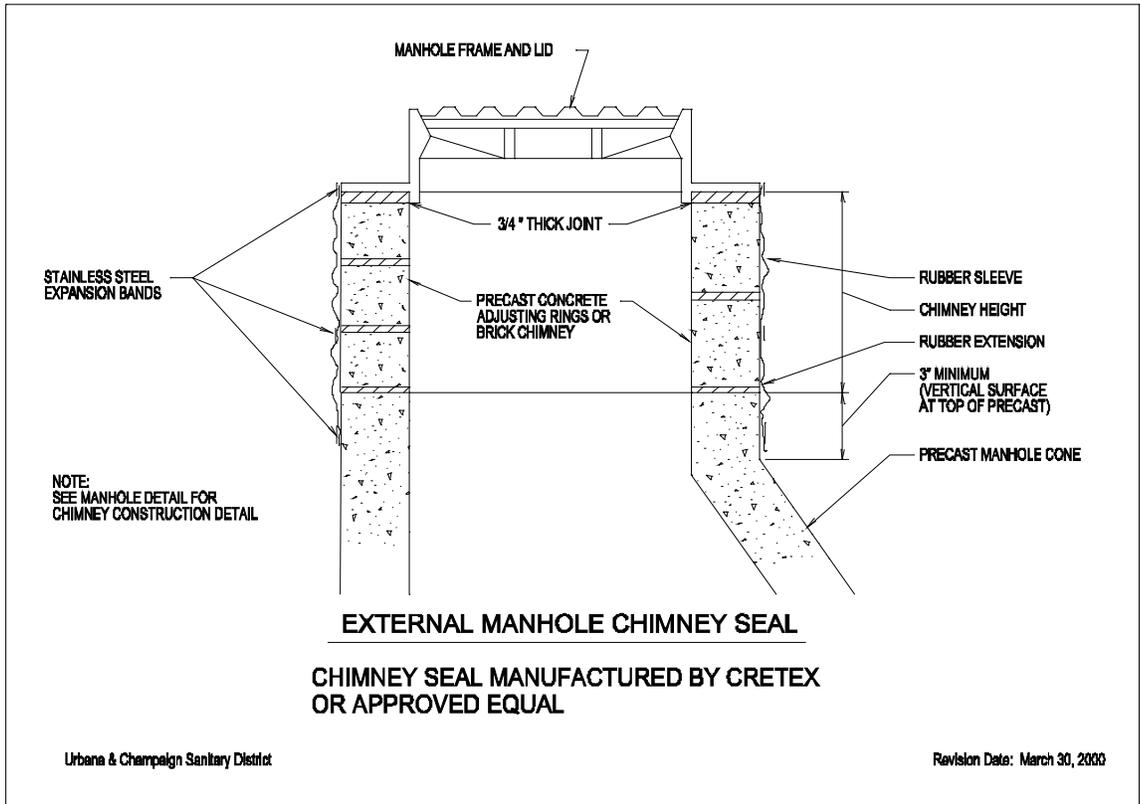
- Was an observer on site a minimum of 75% of the time during construction?
- Were adequate elevation checks made by the engineer? A minimal level of inspection would include one check per morning and one check per afternoon or a minimum of every 100 feet; whichever is more intensive. Elevation checks should also be made at the initial “start” or “restart” of pipe laying, within the initial 20 to 30 feet.
- Evaluation should be made of the Contractor’s overall performance history.
- Evaluation should be made of the number of requests the Contractor has made for acceptance of substandard construction over the previous 5 years.
 - 0 to 1 instances – eligible
 - 2 to 3 instances – marginal
 - greater than 3 instances – not eligible.

Evaluation should be made of the Contractor’s performance in the context of the direction given by the engineer on the project in question.

APPENDIX C - SANITARY SEWER STANDARDS



APPENDIX C - SANITARY SEWER STANDARDS



Public Works Complaint Form

Administration:

Date: _____ Time: _____ Call taken By: _____ Dept: _____

Name: _____

Address: _____

Phone: (h) _____ (w) _____ (cell) _____

Description of Problem: _____

CONTACT PUBLIC WORKS OPERATIONS STAFF

Operations:

Staff Responder Name: _____ Response Date: _____

Response Time: _____ Sewer Type: Storm/Sanitary

Ownership: Private/Public

Issue Observed: _____

Description of Response: _____

Engineering:

Type of Problem: Defect/Blockage/Roots/Grease/Surface Water Drainage/Street Flooding/Basement Backup/Blown Stool/Other

Overhead Sewer Problem Packet Sent: Yes/No

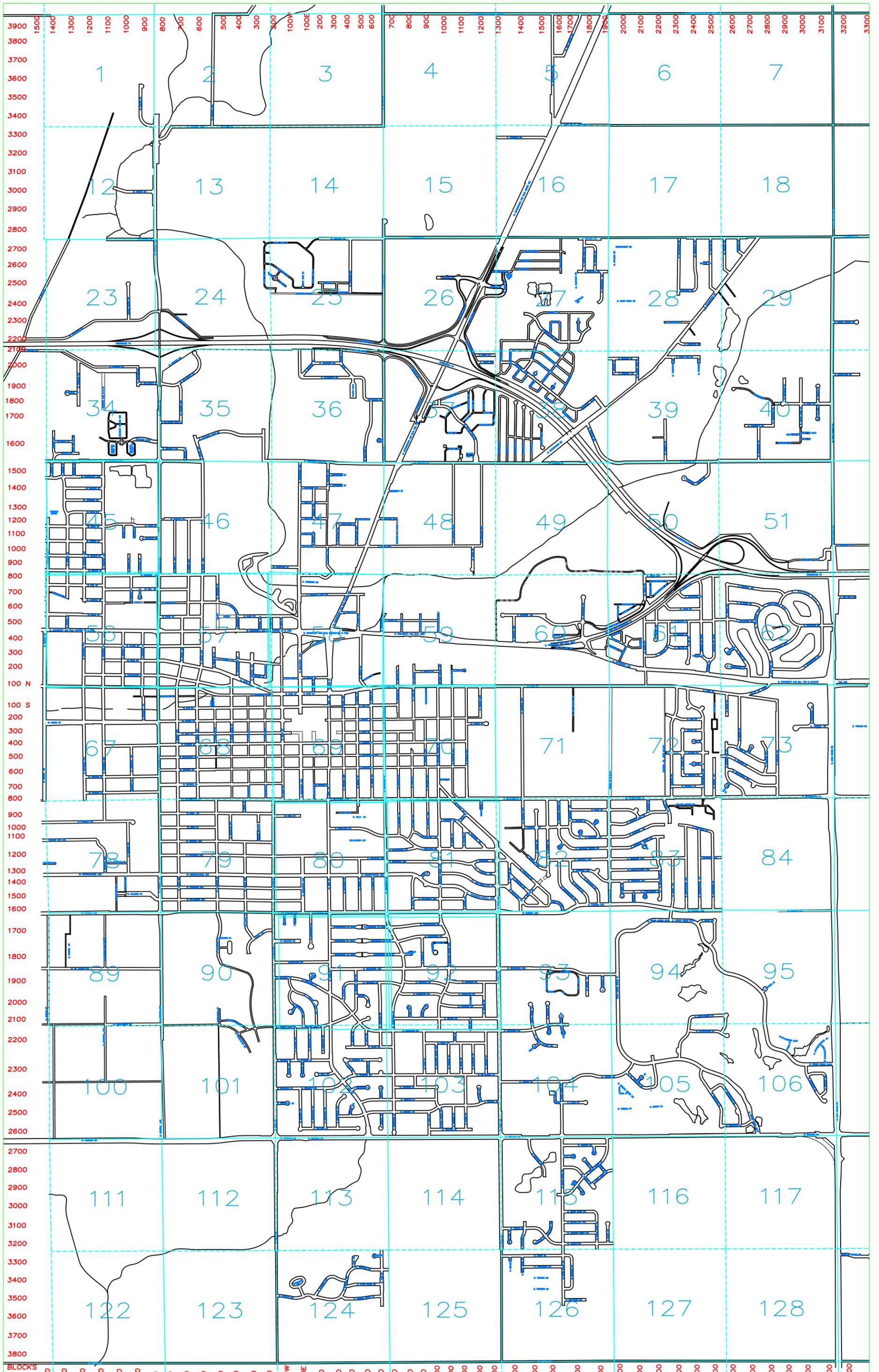
Overhead Sewer Program Participation: Yes/No

Follow-Up Action Required? _____

Problem Resolved? _____

Complaint Contact Email Address: _____

Date Entered into GIS Database: _____



APPENDIX E - SYSTEMATIC SEWER CLEANING MAP

APPENDIX F - MANHOLE INSPECTION FORM

Manhole Inspection
City of Urbana: Public Works Department

Inspection Date:
Inspected By:
Project:

Manhole Number:
Manhole Location:
Manhole Type: Sanitary/ San. Conflict/ San Drop/ San Flush Storm MH/Stm Inlet/Stm Conflict/Stm Outfall

Surface Information

Recent Precipitation? Rain/Snow/ Soil Condition: Wet/Damp/Dry/Frozen/Light Snow/Mod Snow/Hvy Snow
Ground Type: Grass/Pavement/Gutter/Ditch/Centerline/Buried/Other (explain)
Subject to Ponding Water? Yes/No Rim Grade: High/Low/Good

Manhole Cover (lid)

Type? Open/Closed/Sealed/Perforated/Bolted/Locking/Pedestal/Lightweight/Other (explain)
Rim Fit (cover in frame)? Poor/Fair/Good/Sealed Cover Diameter (inches)

Manhole Casting (Frame and Adjustment Rings)

Condition: Sound/Broken/Badly Rusted, Other (describe) Casting Height inches
Adjusting Ring Material (Height inches): Steel, Brick, Conc, Block, Other
Frame to Corbel Seal: None/Sound/Cracked/Deteriorated/Interior Rubber/External Rubber
Frame to Corbel Offset inches.

Corbel Information (cone or flat top)

Type: Cone/Flat Top Construction: Precast Concrete/Brick/Block/Other (describe)
Condition: Sound/Cracked/Deteriorated/Roots

Wall Information

Construction: Precast Concrete/Concrete/Brick/Block (describe). Condition: Sound/Cracked/Deteriorated/Roots

Bench/Trough Information

Construction: Precast Concrete/Concrete/Brick/Block/Clay/Can't Determine/ (describe)
Condition: Sound, Cracked, Deteriorated Evidence of Inflow? YES/NO Inflow Severity Rating (1 dry-10 flow)
Deposition: None/Mud/Sludge/Roots/Debris..... Needs Cleaned: No/Soon/ASAP (notify supervisor)

Pipe Seal Information

Condition: Good/Fair/Poor

Miscellaneous

Steps Condition: Safe/Unsafe/Rusted/Missing/Loose/None.....Number of Steps
Manhole inside Diameter: Oval, Round - 24"/36"/48"/72"/Other. Inspection Depth (ft/in)
Evidence of recent surcharging: Yes/No.....Surcharge Depth (feet/inches)
Surcharge contained inside of manhole? YES/No -Notify Supervisor.

Comments:

Four horizontal lines for writing comments.



OVERHEAD SEWER PROGRAM



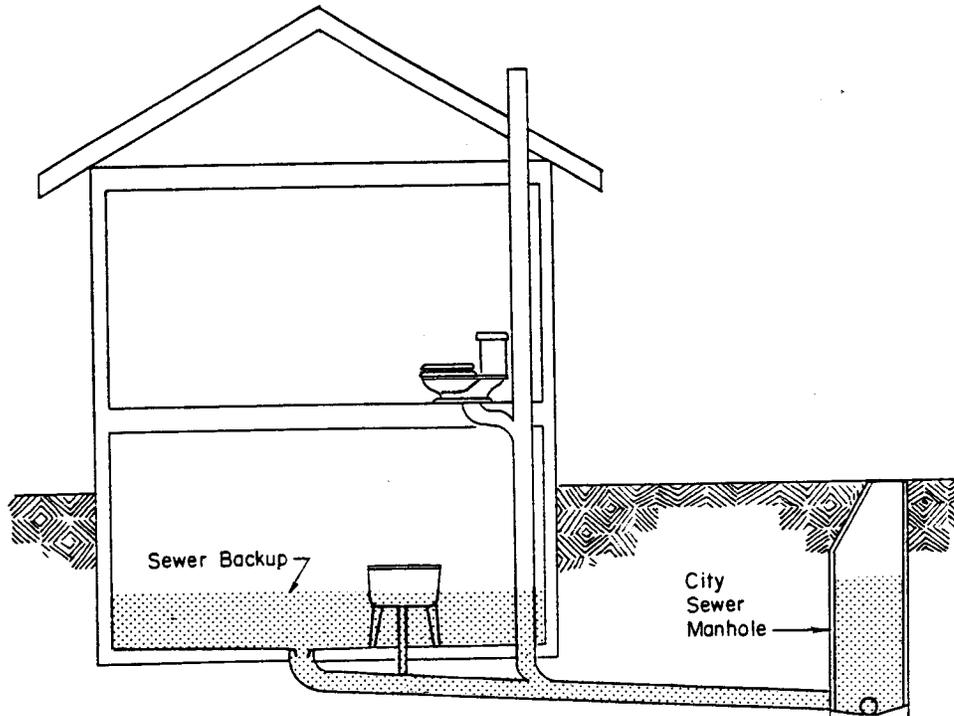
OVERHEAD SEWER PROGRAM

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INTRODUCTION

Sometimes the sanitary sewer system cannot handle the water received during a heavy rain or flood. Because of footing drains, loose pipe joints, or some other reason, the sewer mains become overloaded and back-up into basements and lower levels as shown on the graphic below:



No one who has experienced a sanitary sewer backup will soon forget it. In addition to the physical damage caused by sanitary sewer backups, there is a constant fear that a backup will happen again. The City of Urbana and Urbana-Champaign Sanitary District want to help families, residing in Urbana's city limits, who have had any sanitary sewer backup occurrences. Assistance is available by participating in a cost-sharing program with the City of Urbana, Urbana-Champaign Sanitary District, and property owners willing to install a sewage ejector system with overhead sewer lines, which would *essentially eliminate* (or substantially reduce) sanitary sewer backups.

PROGRAM DESCRIPTION

In 1985, the City initiated a sewer benefit tax to repair and replace aging and deteriorating sanitary sewer lines. Although the City has spent approximately \$500,000 each year to perform work on publicly owned sanitary sewer mains, some sanitary sewer backups still occur. The City of Urbana and the Urbana-Champaign Sanitary District have developed a program to help Urbana homeowners, who still have regular sewer backups, pay for the installation of a sewage ejector system with overhead plumbing to eliminate backup problems.

To participate in the program, the property must be located within the city limits of Urbana. The property owner must complete an application and submit plans (usually prepared by the plumbing contractor) for the installation of the system to the Urbana Public Works Department for review. After the installation has been approved, the property owner will pay a licensed plumber and licensed electrical contractor to install the system.

After the installation is complete, the City of Urbana will conduct final inspections of the plumbing, electrical, and sewer work. Once the installation has been approved, the property owner can submit a copy of the paid receipt to the Urbana Public Works Department for partial reimbursement (up to 75% of the cost of the project, not to exceed \$3,750).

DISCLAIMER

The purpose of this program is to reduce substantially the occurrence of sanitary sewer backups. An unexpected sewer collapse or obstruction, power failure, extreme weather conditions or other unforeseen factors could cause a backup. Therefore, the City does not guarantee that a sanitary sewer backup will never occur.

LIABILITY

The City of Urbana assumes no responsibility for any defective work or other damage, injury or loss resulting from any act of negligence by the

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Contractor or property owner while installing, operating, or maintaining the sewage ejector system with overhead plumbing.

ELIGIBILITY REQUIREMENTS

To participate in the Overhead Sewer Program, the applicant must:

-  Own and reside in the property for which the application is completed.
-  Submit proof that a sanitary sewer backup occurred. (A copy of an insurance claim or a sewer report from the City will be acceptable. Be sure to include the date(s) of the backup, information about the extent of damage resulting from the backup, and any other information you feel would be helpful in determining your eligibility.)
-  Submit bids from three plumbing (licensed in the State of Illinois) and three electrical contractors (licensed by the City of Urbana).
-  Return the application form to the Urbana Public Works Department, Engineering Division Attn: Brad Bennett.

If you have any questions about overhead sewers or about obtaining quotes from licensed contractors and analyzing their proposals, please contact Brad Bennett at 384-2316. We are happy to answer any questions you may have.

INSTALLATION PROCESS

Before authorizing the installation of the overhead sewer, the applicant should:

-  Secure three bids from plumbing contractors and electrical contractors for the overhead sewer system. **A diagram of the plumbing layout for the proposed overhead sewer system must be attached to each bid.** (The applicant may choose any qualified contractors, but the City will reimburse the applicant based upon the lowest bids of the qualified contractors.)
-  Complete the application form and submit it with all bids to the Engineering Division Attn: Brad Bennett at the Urbana Public Works Department 706 South Glover Avenue Urbana, IL 61802.

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 The Engineering Division will review the application and notify applicants of their approval by mail. Once approval has been received from the City the applicant can:

- ◆ Hire a Contractor to install the overhead sewer system.
- ◆ The Contractor will be responsible for obtaining all required plumbing and electrical permits from the City. The Contractor shall contact the City of Urbana plumbing and electrical inspectors for final inspection of the overhead sewer system.
- ◆ Pay the contractors for the work completed. Please keep the receipts!

 Once the installation has been completed and inspected, reimbursement for the overhead sewer will occur when the applicant submits a copy of the bills and a paid receipt to the Engineering Division Attn: Brad Bennett.

The applicant will receive reimbursement for 75% of the cost of the project, up to \$3,750.

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OVERHEAD SEWER PROGRAM

APPLICATION FOR REIMBURSEMENT

Please print or type the following information:

Date: _____

I/We, _____, am/are the property

(Name of property owner)

owner(s) and primary resident(s) of the house located at _____

(Address of property)

Urbana, Illinois _____ (Zip Code)

I/We experienced sanitary sewer backups on the following dates:

Table with 3 columns: Date of Backup, Type of Damage/Extent of Damage, Type of Evidence Supporting the Extent of the Damage.

*Please attach copies of evidence. Please attach additional sheets as necessary.

Please check all of the following that apply:

- I/We submitted bids from three plumbing and three electrical contractors... I/We completed _____ percentage of the work by myself/ourselves...

I/We understand that as part of this program, the City of Urbana assumes no liability for any defective work or other damage, injury, or loss resulting from any act or omission of the Contractor in the performance of this work.

I/We also understand that the installation of an overhead sewer is not a guarantee against future sanitary sewer backups.

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Signature of Property Owner

Signature of Property Owner

Please mail the application and documentation to:

Brad Bennett
Civil Engineer
Urbana Public Works Department
706 South Glover Avenue
Urbana, Illinois 61802

For Office Use Only

- Diagram of plumbing layout approved by the Engineering Division.
- Three bids attached and application approved by Engineering Division.
- Approval letter mailed to applicant.
- The completed work was inspected and approved by the City of Urbana's Plumbing Inspector.
- The completed work was inspected and approved by the City of Urbana's Electrical Inspector.
- Payment for the completed project has been made. (Receipts are included.)

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MINIMUM OVERHEAD SEWER SYSTEM REQUIREMENTS TO QUALIFY FOR COST SHARE PROGRAM

- 1) Overhead Sewer System shall pump water from below grade levels only, all above grade plumbing fixtures are required to gravity drain.
- 2) Overhead Sewer Systems shall be designed and installed in accordance with the attached details.
- 3) A battery back up, high water and pump malfunction alarm mounted within the interior space of the residence is recommended for all installations when a pump failure could cause flooding without the owner being immediately aware of such condition (such as pumped laundry fixtures).
- 4) A sketch illustrating the proposed Overhead Sewer Installation and including the following information shall be submitted with each application:
 - a) Floor plan (not to scale) of existing lower level or basement sanitary plumbing. This Sketch shall display the location of all lower level fixtures, floor drains, and wet drains serving upper level fixtures. When needed approximate elevations of pipe may be shown in reference to basement floor. "+76" = 76" above basement floor, "-12" = 12" below basement floor. All existing items shall be shown by dashed lines. Proposed items shall be shown with continuous lines. Profile views are NOT required. (See attached sample sketches & diagrams for reference)
 - b) Proposed location of the sanitary lift station plotted on the plan of the existing. All proposed items shall be shown by solid continuous lines.
 - c) Proposed relocation of any sewer drain piping required to separate the upper (gravity) and lower (pumped) systems.
 - d) Note describing proposed pump station venting location & whether this is an existing vent or proposed new vent.
 - e) Diagram of proposed pump station and sanitary force main.

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- 5) All plumbing work shall conform to current Illinois plumbing codes and acceptable practices.
- 6) All plumbing work performed within the residence or within 5' of the outside building wall must be performed by an Illinois licensed plumber.
- 7) The bid shall state in writing if the owner will need to separately perform any additional finish carpentry or other work in order to conceal any newly installed plumbing within a finished living space, upper or finished lower levels.
- 8) An exterior non-separated (House fully pumped) system can be installed only with the specific approval of the City of Urbana Engineering Division. Each installation will have to be individually reviewed and approved by engineering. Please contact the City of Urbana Engineering Division at (217) 384-2316 if an exterior, non-separated (House fully pumped) system is being considered.

OVERHEAD SEWER SYSTEM SKETCH CHECKLIST

- North arrow
- Existing items shown by dashed lines
- Proposed items shown by continuous lines
- All existing lower level fixtures and drains are shown & labeled
- All existing wet drains serving upper level are shown
- Existing elevations are shown on all drain lines above lower level floor (as measured at the waste stack)
- Proposed approximate elevations of all
- Proposed location of sanitary lift station is shown
- Proposed pump venting location is shown
- Note regarding additional finish requirements (if not included in bid) to conceal proposed venting, or other piping.

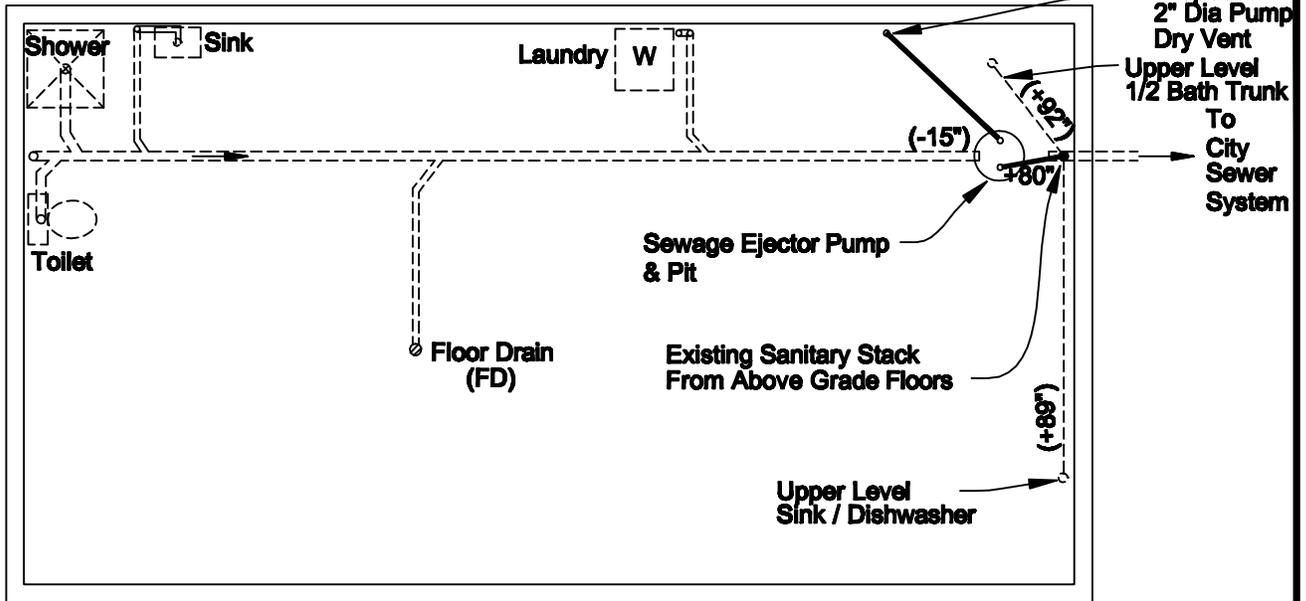
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A large grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for sketching an overhead sewer system.

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OVERHEAD SEWER SYSTEM
SKETCH FORM

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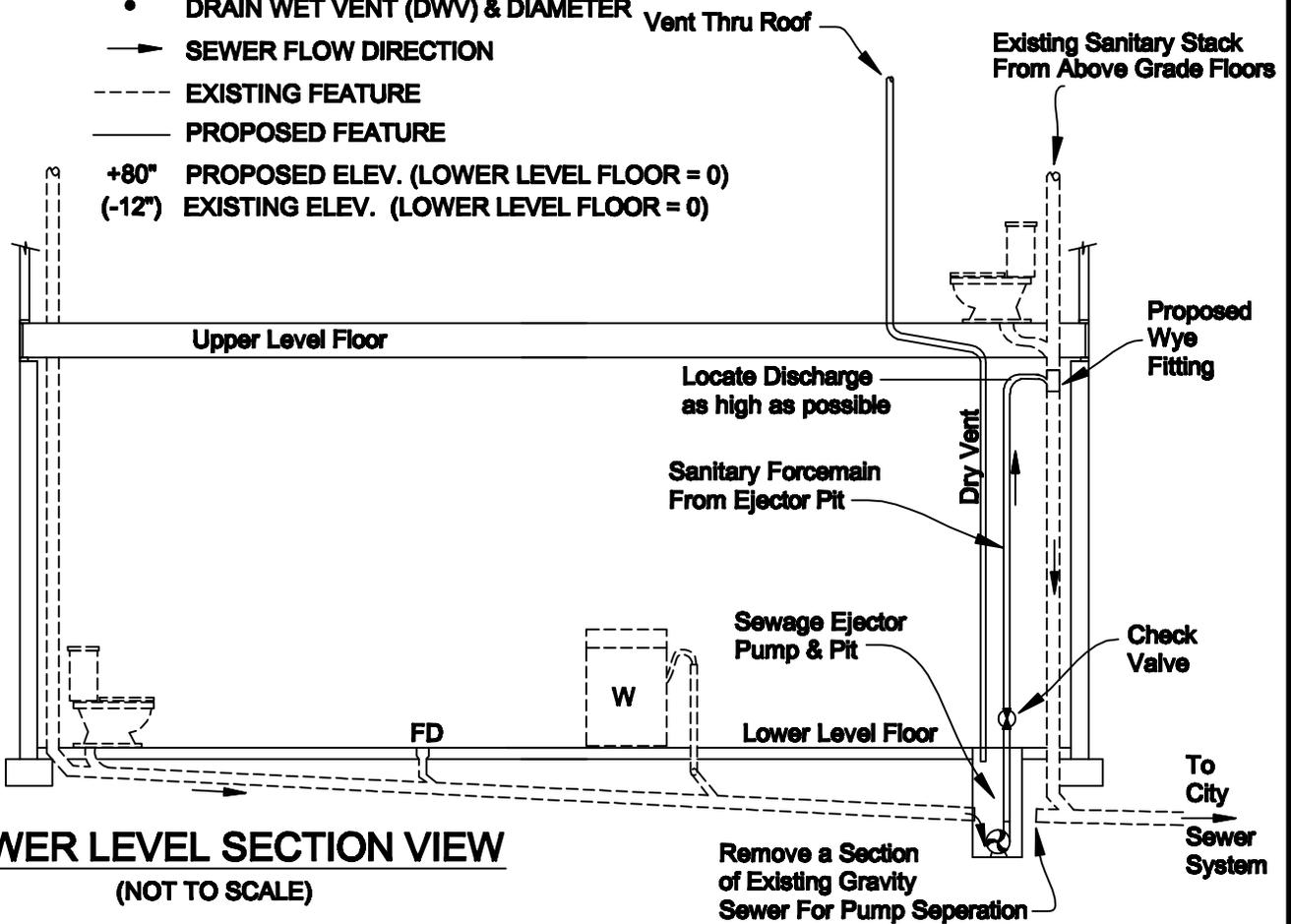


LEGEND

- DRY VENT LOCATION
- DRAIN WET VENT (DWV) & DIAMETER
- ➔ SEWER FLOW DIRECTION
- - - EXISTING FEATURE
- PROPOSED FEATURE
- +80" PROPOSED ELEV. (LOWER LEVEL FLOOR = 0)
- (-12") EXISTING ELEV. (LOWER LEVEL FLOOR = 0)

LOWER LEVEL PLAN VIEW

(NOT TO SCALE)



LOWER LEVEL SECTION VIEW

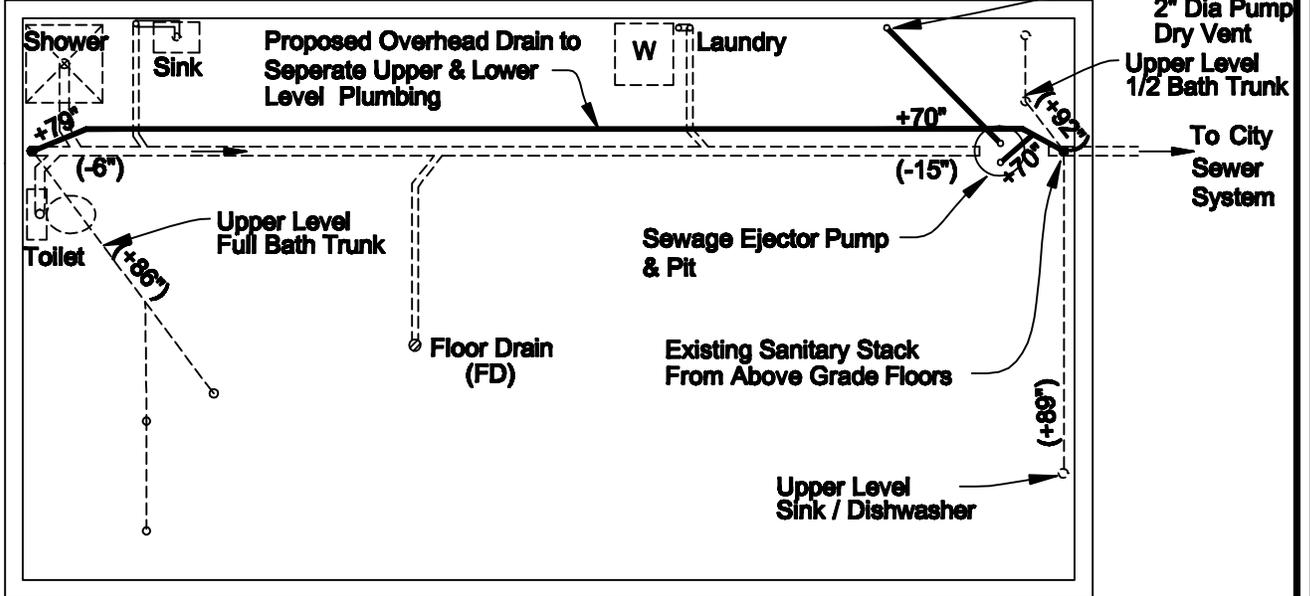
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OVERHEAD SEWER SYSTEM
INTERIOR PIT - SINGLE WASTE STACK

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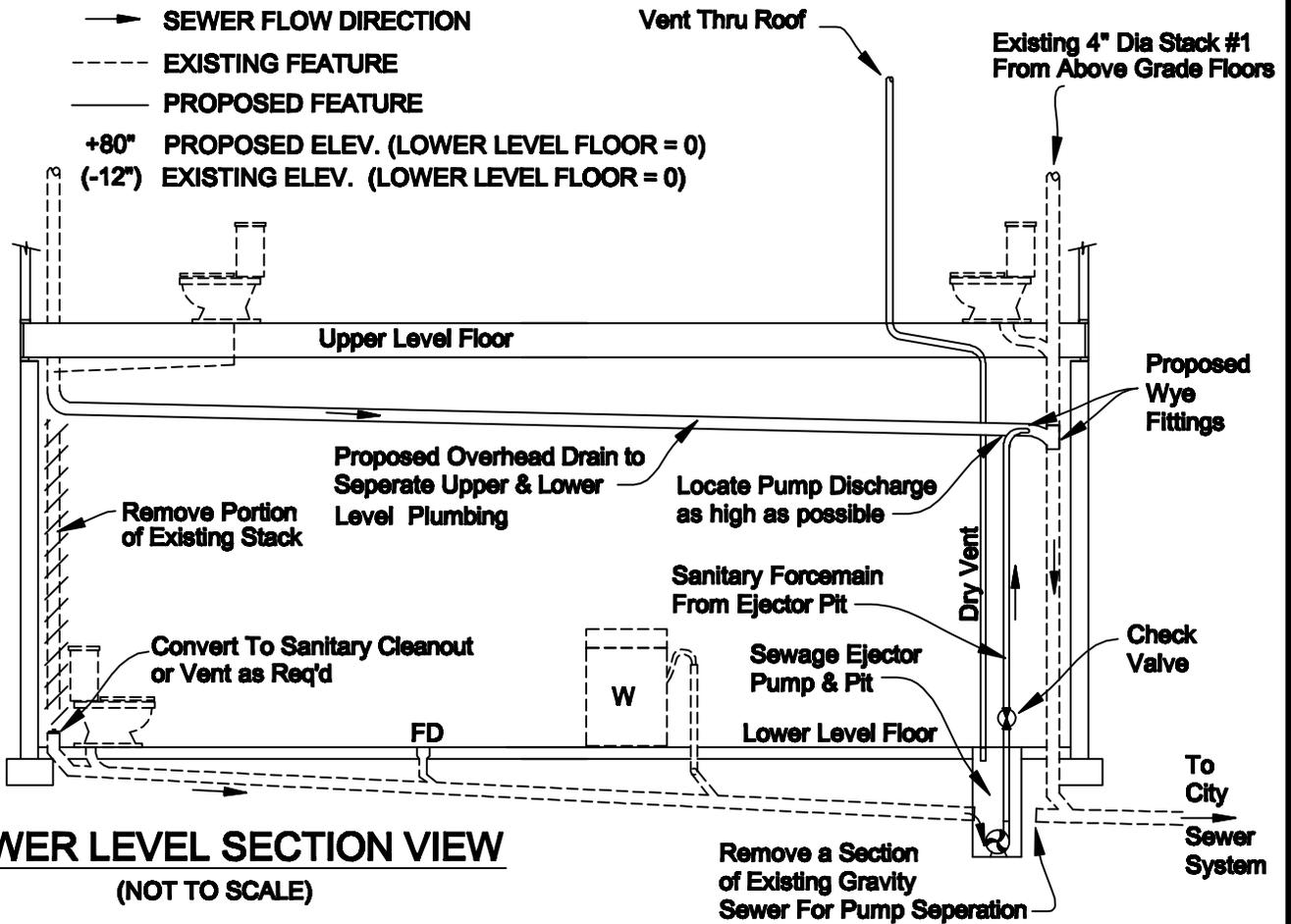


LEGEND

- DRY VENT LOCATION
- DRAIN WET VENT (DWV) & DIAMETER
- ➔ SEWER FLOW DIRECTION
- EXISTING FEATURE
- PROPOSED FEATURE
- +80" PROPOSED ELEV. (LOWER LEVEL FLOOR = 0)
- (-12") EXISTING ELEV. (LOWER LEVEL FLOOR = 0)

LOWER LEVEL PLAN VIEW

(NOT TO SCALE)



LOWER LEVEL SECTION VIEW

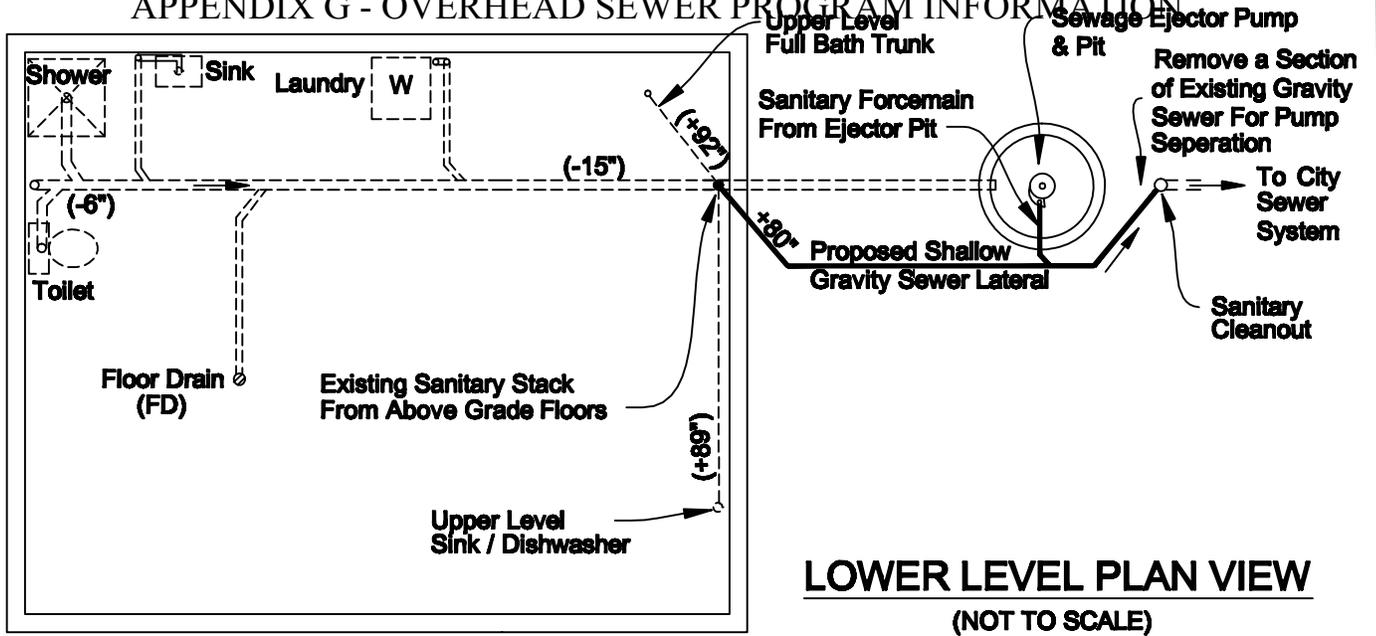
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OVERHEAD SEWER SYSTEM 12
INTERIOR PIT - MULTIPLE WASTE STACKS

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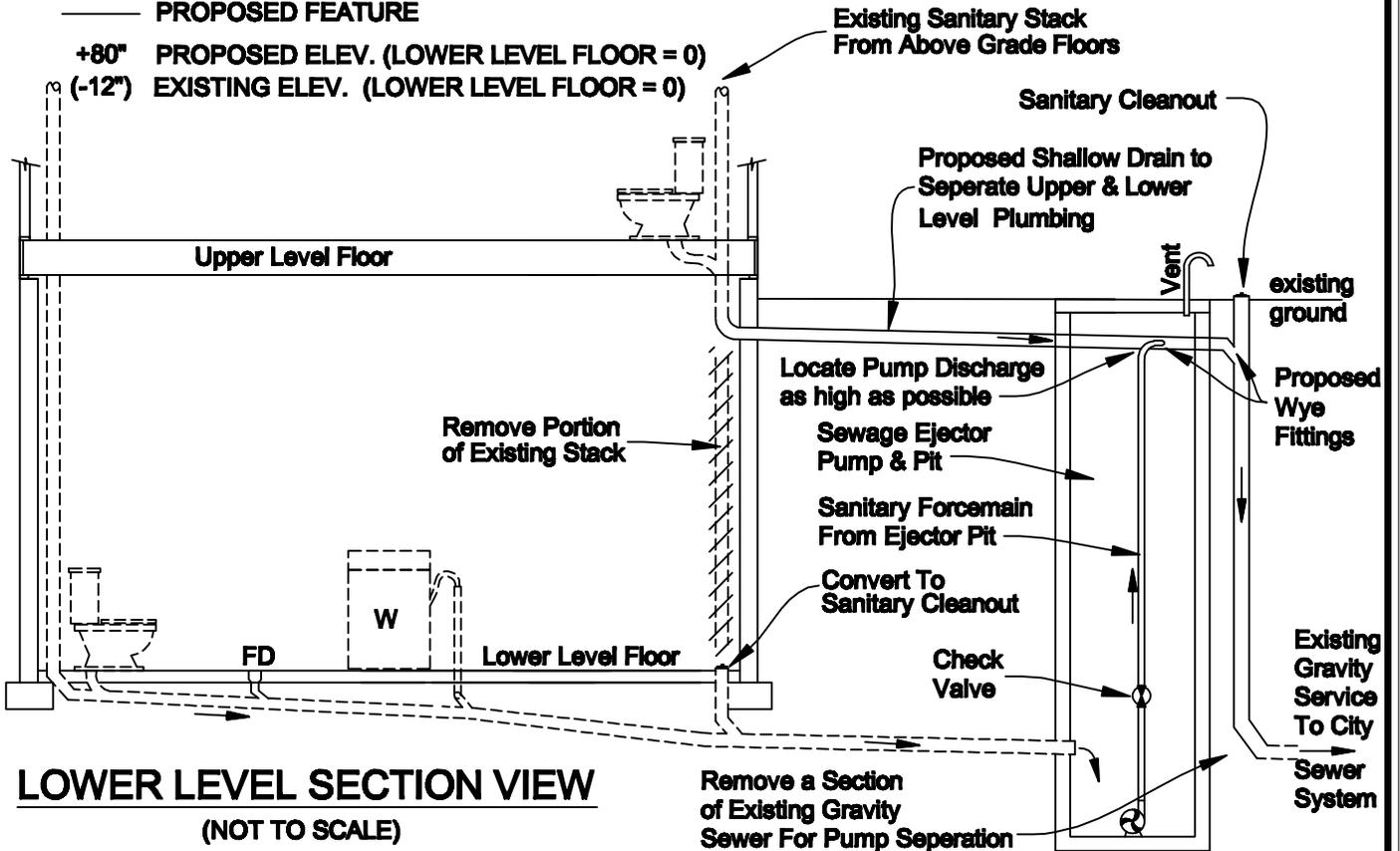
LOWER LEVEL PLAN VIEW
(NOT TO SCALE)

LEGEND

- DRY VENT LOCATION
- DRAIN WET VENT (DWV) & DIAMETER
- ➔ SEWER FLOW DIRECTION
- EXISTING FEATURE
- PROPOSED FEATURE

NOTE: A High Water and Pump Malfunction Alarm shall be installed within the residence on all Exterior Sewage Ejector Systems

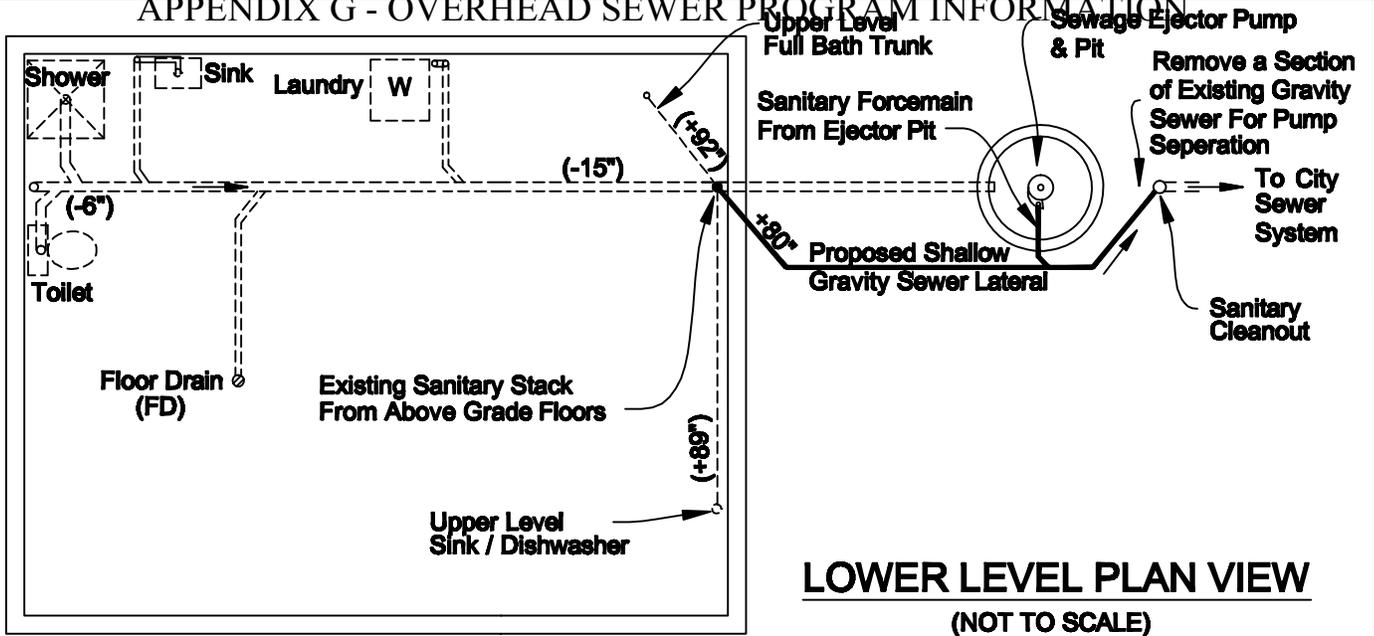
+80" PROPOSED ELEV. (LOWER LEVEL FLOOR = 0)
(-12") EXISTING ELEV. (LOWER LEVEL FLOOR = 0)



LOWER LEVEL SECTION VIEW
(NOT TO SCALE)



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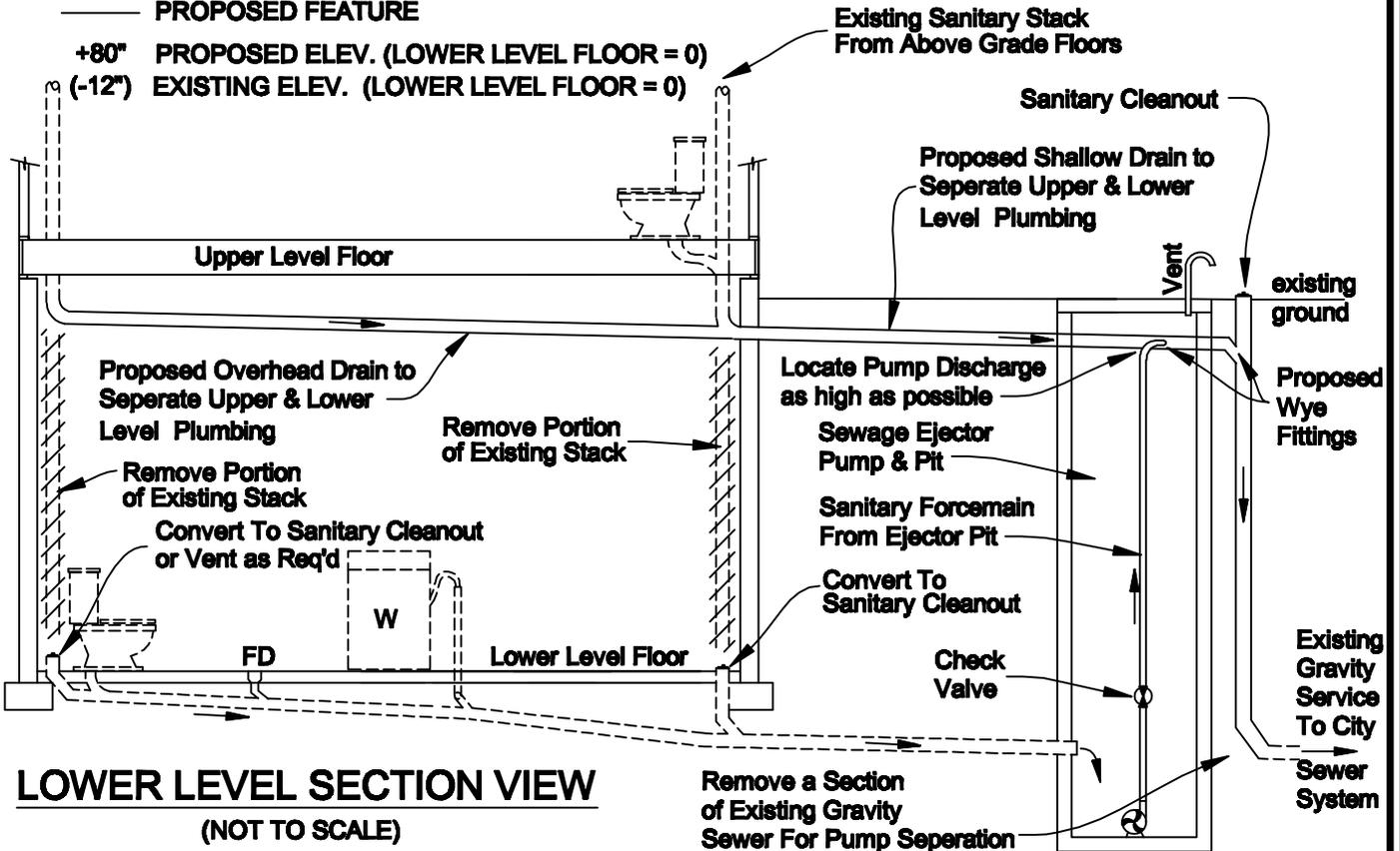


LEGEND

- DRY VENT LOCATION
- DRAIN WET VENT (DWV) & DIAMETER
- SEWER FLOW DIRECTION
- - - EXISTING FEATURE
- PROPOSED FEATURE

NOTE: A High Water and Pump Malfunction Alarm shall be installed within the residence on all Exterior Sewage Ejector Systems

+80" PROPOSED ELEV. (LOWER LEVEL FLOOR = 0)
 (-12") EXISTING ELEV. (LOWER LEVEL FLOOR = 0)



LOWER LEVEL SECTION VIEW
(NOT TO SCALE)

