

CITY UTILITIES DESIGN STANDARDS MANUAL

**Book 3
Sanitary (SA)
SA4 Drawings and Submittals**

June 2015

SA4.01 Purpose

The purpose of this Chapter is to outline the minimum drawing and submittal requirements for sanitary sewer improvements. Requirements for sewers, building sewers, and lift stations are included. These requirements are intended to supplement Chapter 51 of the Fort Wayne Code of Ordinances and the Fort Wayne Water Pollution Control Utility Rules and Regulations.

Drawing and submittal requirements shall be discussed with City Utilities during the preliminary planning phase for all projects.

SA4.02 Sewers

This section expands on process and information listed in [Chapter GR5 – Project Coordination](#) Section GR5.02 and outlines information needed for approval of sanitary sewer projects. If a lift station is proposed, refer to Section SA4.04 for specific lift station submittal requirements.

1. Conceptual Review

When required, submit the following:

- Area map showing project location
- Proposed land usage
- Estimated wastewater flow
- Point of connection to existing sewer facilities
- Project schedule

A. An example Area Map is included as [Exhibit SA4-1](#).

B. Flow Computations

To calculate the estimated wastewater flow, a sanitary sewer service map is used. An example Sanitary Sewer Service Area Map is included in [Exhibit SA4-2](#). Typical information shown on the map includes, but is not limited to:

- A general location map showing all areas which could contribute flow to the proposed sanitary system.
 - Major streets shall be referenced.
 - A general layout of the proposed system with the tributary sewershed areas to each major element of the system clearly defined.
 - The basis for determining both the number of existing and future users together with the equivalent population for each area. The number of single-family and multi-family residential units or the type and size of all industrial, commercial, and institutional facilities shall be clearly stated. Refer to [Chapter SA5 – Sewer Design](#) for calculating design flows from various developments.
 - A use designation such as residential, commercial, or industrial, for each drainage area.
 - A designation for each sewer segment.
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- A designation for manholes. This designation shall be carried through to computation sheets.
- All proposed sewer sizes.
- All proposed sewer slopes.
- Adjacent future contributing areas
- The location of estimated or actual flow entering the system for outside areas. These areas shall include the same information required for the proposed project area.
- An adequate number of spot elevations and/or contours in project area to depict the natural drainage of the area.
- The connection point of the proposed sewer system to an existing public system.

Although an Area Map may be acceptable for Conceptual Approval, a more comprehensive Sanitary Sewer Service Area Map may be required for the actual project design.

2. Capacity Availability Notification

Upon review of the submittal, DVS will issue a statement addressing the existing system's ability to receive the proposed flow. The notification will express City Utilities' acceptance or denial of service to the proposed project and, if relevant, an explanation for the basis of denial.

3. Construction Documents

Upon granting a Conceptual Approval the design engineer shall complete construction drawings and specifications for the sanitary sewer project in accordance with all guidelines outlined in these Standards. The checklist found in [Exhibit SA4-3](#) shall serve as the guideline for the submittal of construction drawings. Items called for in the Exhibit shall be submitted in order for DVS to review the plans.

4. Construction Documents Approval

DVS will review the construction documents and issue written comments on the submittal. All review comments shall be addressed and construction documents updated appropriately. Upon completion of all City Utilities requirements, an approval letter shall be issued.

SA4.03 Building Sewers

1. Residential

Formal construction documents are not required for typical single family residential building sewers. Requirements for building sewers are listed in [Chapter SA6 – Building Sewers and Appurtenance Design](#).

2. Non- Residential

In general, the requirements for non-residential taps shall be as described in the following sections. Adherence to all Federal, State, and local regulations, codes, and statutes is also required.

In addition, all requirements of Chapter 51 of the Fort Wayne Code of Ordinances, Sections 51.030 through 51.041, are hereby incorporated herewith for commercial and industrial wastes. All submittals shall be transmitted to DVS.

A. Conceptual Review

When required submit the following:

- Area map showing project location
- Proposed land usage
- Estimated wastewater flow
- Point of connection to existing sewer facilities
- Project schedule
- Pollutants
- Federal Categorical Industrial User Classification, if applicable

B. Building Sewer Connection Notification

Upon review of the submittal, DVS will issue a statement addressing the existing system's ability to receive the proposed flow. The notification will express City Utilities' acceptance or denial of service to the proposed building sewer and, if relevant, an explanation for the basis of denial.

C. Construction Documents

Upon notification of approval for building sewer connection, construction drawings and specifications shall be completed for the non-residential building sewer in accordance with all guidelines outlined within these Standards and all relevant plumbing codes. The checklist found in [Exhibit SA4-3](#) shall serve as the guideline for the submittal of construction drawings. All items called for in the Exhibit as well as the completed checklist shall be submitted in order for City Utilities to review the drawings.

D. Construction Documents Approval

DVS will review the construction documents and issue written comments. All review comments shall be addressed and construction documents updated appropriately. Upon completion of all City Utilities requirements, an approval letter shall be issued.

SA4.04 Lift Stations

Lift Stations are intended to serve areas where it is unfeasible or cost prohibitive to install only gravity sanitary sewers. If a lift station is proposed a Conceptual Review must be completed to provide justification for a lift station. After approval of the Conceptual Review, the final design process may begin.

1. Conceptual Review

The purpose of a Concept Design Plan is to provide City Utilities with preliminary design data for proposed lift stations and related

appurtenances such as force mains. The preliminary data will allow City Utilities to determine compatibility with existing systems and will provide the foundation for justification of a lift station alternative.

A. Concept Design Plan

When required submit the following:

- Ultimate tributary area with corresponding land use categories as defined by City Utilities
- Municipal boundaries
- Phase boundaries
- Preliminary lift station location
- Preliminary force main location
- Preliminary air release valve locations
- Pertinent flood elevations

B. Engineering Report

When required submit the following:

1. Data Collection and Review

- Discuss proposed development phasing (flows, timing, etc.)
- Obtain and review existing mapping, utility information, and other available data
- Results of a site visit and tour of the area
- If needed, results of a preliminary design field survey for verification of critical elevations

2. Analysis and Solutions - Compute design flow calculations which include:

- Flow projections
- A chart or table showing development phase and phase completion dates
- Projected cumulative average and peak flows for each phase of development
- Estimate total dynamic head (TDH)
- A system head loss versus flow rate chart, typically graphical, with proposed manufacturer's pump curves for the selected pumps superimposed over the chart
- A chart showing the minimum and maximum cycle times for each phase of development with the maximum time between cycles based on average daily flows
- A chart showing the minimum and maximum number of cycles/pump/hour for each phase. The maximum number of starts per hour shall be based on peak flows.
- A chart showing the maximum residence time that sewage will remain in the force main
- The ultimate peak flow's impact on the existing collection system. City Utilities shall be consulted for this information.

- Preliminary development and location of the lift station and force main system. The development shall be broken down by phase and shall be completed for build-out development.

3. Recommendations and Report

- Briefly describe all alternatives explored. The possibility of gravity service must be addressed.
- Recommend a specific solution.
- Complete a life cycle cost effective analysis, refer to [Chapter GR 11- Life Cycle Cost Analysis](#).
- Prepare a brief Engineering Report documenting the analysis and recommendations.
- Discuss how the lift station could be modified as future phases develop.

Submit the Engineering Report to City Utilities for review and approval.

2. Final Design

Upon granting Conceptual Approval, construction drawings and specifications shall be prepared and submitted. The following paragraphs outline requirements of the Final Design phase:

A. Field Survey and Subsurface Investigations

Complete final design field survey as required to define topography and surface features, tie station to the alignment of the pipe, locate above and below ground utilities, and tie the proposed project alignment into existing monumentation of record.

- Process field survey information and provide existing condition drawings and electronic files, if available.
- Complete subsurface investigation as needed to identify the geotechnical properties and subsurface conditions.

B. Design

Complete the design and submit the following:

- Hydraulic, structural and other computations to define the final lift station improvements
- Wet well calculations
- Force main calculations
- Pump curve/system curve in feet of total dynamic head versus flow in gallons per minute with the following labels: Pump Curve; Single Pump Operation Curve; Two-Pump Operating Curve; Three-Pump Operating Curve (if applicable); Design Point(s); Operation Points; and Operating Envelope
- Total dynamic efficiency at the operating point(s)
- Pump cycle time
- Valve configuration
- Float setting calculations

- Buoyancy calculations
- Force main pressure and, for larger stations, water hammer calculations
- Need for air-release and/or combination air/vacuum release valves
- Odor control calculations or assumptions
- Electrical calculations and/or power requirements
- Materials and product selections in accordance with [MA6 – Sanitary Sewer Materials and Testing Requirements](#)
- Location of the proposed improvements and temporary or permanent right-of-way needs.

C. Construction Documents

Submit the following:

- Plan and profile drawings for the project. The drawings should be developed in accordance with all provisions of the Standards
- Project specifications
- A field review of the proposed layout to identify any constraints not readily identified during surveying

SA4.05 Permits, Fees, and Contracts

The following additional information for water permits, tap fees and service contracts shall be used in addition to the requirements and information provided in [Chapter GR4 - Contracts, Fees, and Permits](#). The [Fort Wayne Code of Ordinances](#) and the [Fort Wayne Sewer Utility General Rules and Regulations](#) shall also be referenced for additional information.

1. Local Permits

The local tap permits shall be obtained from DVS for all connections to the City's sewer system. A drawing or sketch of the tap location shall be included with the Sewer Tap Permit Information Form.

2. State Permits

- A. An IDEM construction permit shall be obtained from IDEM prior to commencement of any water main extension construction. The permit is in accordance with 327 IAC 3-2.1. Permit applications may be obtained from the following address:

Indiana Department of Environmental Management
Office of Water Quality – Mail Code 65-42
Facilities Construction Section
100 North Senate Avenue, room N1255
Indianapolis, IN 46204-2251
website: www.in.gov/idem/water/permits

The IDEM permit may be issued by City Utilities using "Local Permitting Authority" in accordance with 327 IAC 8-2.1. Standard forms utilized by City Utilities for the local review process are found in [Exhibit GR4-2](#). City Utilities may be consulted for more

information regarding the appropriateness, requirements and procedures of using “Local Permitting Authority” with a particular project.

3. Fees

A. Local Tap and Permit Fees

Fees shall be assessed at the time of application for a water tap permit. The cost of all permits and tap fees shall be per the most recent City ordinance.

B. Permit Application Fees for State Permits

Permit application fees for state permits shall be determined by the respective state agency at the time of permit application.

C. Additional Fees

Area connection fees and inspection fees may be assessed by the Board of Public Works. These fees will be determined in the water contract issued for the specific project. In addition, local connection reimbursements as detailed in the project water contract may apply on a case-by-case basis.

4. Contracts

Whenever a developer extends the City water system, the developer shall be required to enter into a water contract with City Utilities. A copy of a standard contract is available from DVS upon request.