

# **CITY UTILITIES DESIGN STANDARDS MANUAL**

**Book3**

**Sanitary (SA)**

**SA6 Building Sewer and Appurtenance Design**

June 2015

### SA6.01 Purpose

This Chapter establishes the technical design and construction criteria for gravity building sewers connected to City Utilities sewers. Any variances from these design standards must be approved through City Utilities Development Services (DVS).

1. Plumbing Codes

Building sewers shall conform to the latest adopted version of the **Indiana Plumbing Code (IPC) 675 IAC 16** and to these standards, whichever is more restrictive.

2. Covered in this Chapter

- Buildings Serviced
- Building Sewer Location, Length and Spacing
- Building Sewers Crossing Drainage Ways
- Hydraulic Design
- Building Sewer Pipe
- Building Sewer Appurtenances
- Building Sewer Connections to Main Line Sewers
- Connections Using an Existing Building Sewer
- Future Connections

3. Covered in Other Chapters

- Materials of Construction ([Chapter MA4 – Common Materials and Testing Requirements](#) and [Chapter MA6 – Sanitary Sewer Materials and Testing Requirements](#))
- Gravity Sanitary Sewers ([Chapter SA5 – Sewer Design](#))
- Manholes ([Chapter SA7 – Manhole Design](#))
- Lift Stations ([Chapter SA8 – Lift Station and Force Main Design](#))
- Private Pressure Sewer Connections ([Chapter SA9 – Low Pressure Sewer Systems](#))

4. Prohibited Connections

No building sewer with any of the following sources of clear water shall be connected to the City's sewer system:

- Foundation or footing drains, by gravity or sump pump
- Yard drains
- Storm drain connections
- Roof drains/downspouts
- Sump pump discharges
- Heat pump discharges
- Cooling water discharges
- Any other sources of surface runoff or groundwater

### SA6.02 Buildings Serviced

1. Separate Building Sewer

A separate and independent building sewer shall be provided for every building, except where one building stands at the rear of another. The building sewer from the front building may be extended to the rear building and the whole considered as one building sewer. Calculations supporting sizing must be provided. Prior approval for such configuration and sizing must be obtained from DVS.

2. Gravity Sewer Service

Gravity building sewer connections shall be constructed for homes or buildings where the lowest elevation to have sanitary services is one (1) foot or more above the top of the manhole casting elevation of the first upstream manhole on the public sewer to which the connection is proposed to be made. [Exhibit SA6-1](#) illustrates acceptable and unacceptable connection situations.

In instances where this one foot distance is not achievable and in areas susceptible to back-ups, proper backflow prevention shall be required. If the first upstream manhole is at a higher elevation due to the natural topography of the area, an alternate method may be selected by City Utilities for the purpose of determining the feasibility of gravity connection.

3. Non-Gravity Sewer Service

For instances in which gravity flow is not feasible, wastewater carried by building sewers shall be pumped by an approved means and subsequently discharged to the building sewer or mainline sewer.

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### SA6.03 Building Sewer Location, Length and Spacing

The location, maximum length, and spacing of laterals shall be as follows:

1. Location

The location of the building sewer shall be as follows:

- All properties shall be served from the street, alley or easement side of the property.
- A building sewer shall not cross the property of another private owner unless such private owner has granted a permanent easement for such building sewer which is duly recorded in the Office of the Allen County Recorder.
- Building sewers shall not be located within ten (10) feet of any existing or proposed water well.
- Where a building sewer location unavoidably lies within fifty (50) feet of a drinking water well, pressure grade pipe material shall be used and comply with 327 IAC 8-3.2-8 Water Main Material per 327 IAC 3-6-9 Separation of collection systems from water mains and drinking water wells.

2. Distance of Building Sewer from Property Line
  - The minimum horizontal distances between the building sewer and the property line is eight (8) feet.
  - Refer to Standard Drawing [SAN 1-1](#) Building Sewer Standard for Crossing Street.
3. Spacing Between Adjacent Building Sewers
  - The minimum horizontal distance between adjacent building sewers and their connections is sixteen (16) feet.
  - Refer to Standard Drawing [SAN 1-1](#) Building Sewer Standard for Crossing Street.

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#### SA6.04 Building Sewers Crossing Drainage Ways

Building sewers shall be separated from existing or proposed water bodies by a minimum twenty (20) feet, horizontally as measured from the outside edge of the building sewer to the top of the bank.

Building sewers crossing proposed or existing lakes, ponds, and/or retention or detention areas (either wet or dry) are prohibited.

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#### SA6.05 Hydraulic Design Criteria

1. Minimum Slopes

Building sewers shall be laid on a minimum slope of 2.08% (1/4" per foot).

For building sewers eight (8) inches and larger, follow Figure SA5.03 Minimum Allowable Slopes located in [Chapter SA5 – Sewer Design](#).

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#### SA6.06 Building Sewer Pipe

1. Size

- The minimum allowable diameter for gravity building sewers shall be six (6) inches.
- Larger pipe sizes for commercial and industrial connections shall be approved on a case-by-case basis.

2. Depth

The minimum pipe depth from the finished grade to the crown of a building sewer shall be three (3) feet.

3. Material

Pipe materials shall be in accordance with [Chapter MA6 – Sanitary Sewer Materials and Testing Requirements](#).

4. Bedding

Pipe bedding requirements shall be in accordance with [Chapter MA4 – Common Materials and Testing Requirements](#).

5. Backfill

Backfill classifications, materials, and methods of compaction shall be in accordance with [Chapter MA4 – Common Materials and Testing Requirements](#).

6. Applied Loads

All sewers shall be designed to prevent damage from applied loads both during and after construction. Load allowance shall be based upon trench width and depth. In instances in which standard strength pipe is not sufficient, extra strength pipe or special construction methods shall be specified. All loading requirements must be taken into account when considering material selection and installation methods.

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### SA6.07 Building Sewer Appurtenances

1. Cleanouts

A cleanout shall be provided adjacent to all building structures. The cleanout shall be located between five (5) and ten (10) feet of the exterior building wall. The adapter shall be located at least five (5) feet from the exterior building wall.

Cleanout shall be extended to match grade in paved areas. Cleanouts shall be extended to above grade in non-paved areas.

Cleanouts shall be spaced a maximum of every one hundred (100) feet.

Cleanouts shall match the size of the building sewer pipe up to a maximum of eight (8) inches.

The cleanout cover shall be threaded-type, water tight, and capped at all times. Covers within paved areas shall be metallic and able to withstand traffic loads.

Cleanouts installed under concrete or asphalt pavement shall be extended flush with the pavement and have a concrete collar.

Refer to the following hotlinks for cleanout details:

- Standard Drawing [SAN-1](#) Building Sewer Connection Layout
- Standard Drawing [SAN-2](#) Standard Sanitary Cleanout
- Standard Drawing [SAN-3](#) Standard Sanitary Cleanout in Pavement

2. Grease Interceptors and Sand/Oil Separators

Any building sewer which will have or has the potential of discharging waste containing grease, oil, sand, or similar substances, having quantity and characteristics above that of a normal single family residence waste, shall have a grease interceptor and/or a sand/oil separator installed. The structure shall provide, at all times, the

effective removal of grease, oil, sand, and/or similar substances before discharge to the main line sewer.

Installation of a grease interceptor and/or sand/oil separator will be required when any of the following conditions exist:

- Abnormal maintenance of the sewer has been required to prevent the occurrence of blockages, back-ups, etc., and evidence indicates that the cause of this abnormal maintenance is the result of the discharge of prohibited wastes and/or wastes in excess of limitations set out in [the Fort Wayne Water Pollution Control Utility \(Wastewater Utility\) General Rules and Regulations](#).
- There exists a concentration of persons discharging prohibited wastes into a public sewer without the benefit of any grease interceptor and/or sand/oil separator.
- The results of laboratory analysis have demonstrated that the strength of wastes being discharged into the public sewer is in excess of the limitations set out by the **Fort Wayne Code of Ordinances Chapter 51 - Sewers**.

Requirements for grease interceptors:

- Must be located outside the building
- If facility has one of the following, then a grease interceptor is required:
  - 3- or 4-basin sink
  - Pre-rinse sink
  - Pots & pans sink
  - Wok station
  - Soup kettle
- If facility has one of the following, then a grease interceptor is recommended:
  - Floor drains in food prep area
  - Mop sink
- The following CANNOT go through a grease interceptor:
  - Garbage disposal
  - Dishwasher
  - Domestic waste
- The minimum capacity of a grease interceptor is 1,000 gallons.
- Refer to Standard Drawing [STR-24](#) and Standard Drawing [STR-24-1](#) for a detail of a 1,000 gallon heavy duty grease interceptor structure and a 1,500 gallon heavy duty grease interceptor structure, respectively.

Requirements for sand/oil separators:

- If facility has one of the following, then a sand/oil separator is required:
  - Repair garage with trench or floor drain
  - Car washing facility
  - Trench drains

- Factories where oily & flammable liquid wastes are produced
- Hydraulic elevator pits
- Refer to Standard Drawing [STR-24-2](#) for a detail of a 1,000 gallon sand/oil separator.

For grease interceptors and sand/oil separators, refer to the following standards for more detailed information:

- International Plumbing Code Section 1003 Interceptors and Separators
- Uniform Plumbing Code Section 1014 Grease Interceptors and Section 1016 Sand Interceptors
- IAPMO/ANSI American National Standard for Prefabricated Gravity Grease Interceptors

### 3. Control Manholes

When required by City Utilities, a control manhole shall be included in the building sewer design.

If a grease interceptor or sand/oil separator exists or is required, then a control manhole is required.

If flow from the building sewer is expected to 50,000 gpd or greater, then a metered control manhole may be required by DVS. This requirement will be determined on a case by case basis.

All speculative (spec) buildings are required to install a control manhole.

Control manholes require the approval of the Industrial Pretreatment Coordinator.

For control manholes greater than four (4) feet in depth, manhole steps are permitted.

Refer to Standard Drawing [STR-11-2](#) for the Non-Metered Control Manhole detail.

Refer to Standard Drawing [STR-11-1](#) for the Metered Control Manhole detail.

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#### SA6.08 Building Sewer Connection to Main Line Sewer

The building sewer shall connect to the main line sewer using a manufactured mainline fitting. The preferred method of connection to RCP is a Kor-N-Tee connection.

Saddle connections are allowed only if a manufactured fitting does not exist and the mainline pipe is 15-inch diameter or larger.

Saddle connections to vitrified clay pipe (VCP) are not permitted.

The building sewer shall not protrude into the mainline.

Refer to the following Standard Drawings for service connection details:

- Standard Drawing [SAN-4](#) Shallow Building Sewer Connection

- Standard Drawing [SAN-5](#) Deep Building Sewer Connection
- Standard Drawing [SAN-6](#) Cut-In Wye Method
- Standard Drawing [SAN-7](#) Saddle Connection

When tapping a cured-in-place (CIP) sewer pipe, the following method applies:

- The host pipe (original pipe) regardless of material must be removed where the tap is to go. Once the CIP liner is exposed, the liner must be core drilled. The host pipe should be removed to an extent beyond the new tap to allow the Kor-N-Tee to be placed directly in the CIP liner.

Where connections to manhole structures are necessary, rubber water stop joints or rubber gaskets (boots) shall be specified for water tightness between the pipe and the manhole. When new holes into manholes are required, core drilling of the new hole shall be specified. This will require a "Special Sewer Tap Approval". Refer to [Exhibit SA6-2](#) for the Special Sewer Tap Approval form.

Direct connection of a building sewer to a sewer larger than 18-inches in diameter is prohibited.

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#### SA6.09 Low Pressure Sewer Connection to Main Line Sewer

Refer to Standard Drawing [SAN-9-3](#) Low Pressure Sewer System Installation for details regarding pressurized building sewer connections to main line sewers.

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#### SA6.10 Connections Using an Existing Building Sewer

Existing building sewers may be used in connection with new buildings only when they are found, upon examination and testing, to meet the current code requirements for building sewers.

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#### SA6.11 Future Connections

Building sewer installed for future connections shall be terminated at the street right-of-way or easement and shall be properly plugged with a manufactured plug to ensure a watertight seal.

A tracer wire shall be installed terminating at a metal locator rod at the end of the plugged line to within one 1-foot of the finished grade. The tracer wire is to be attached to the locator rod with a brass or stainless steel clamp. Tracer wire shall be installed above and along the non-metallic building sewer to the building and grounded.

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#### SA6.12 Proper Abandonment of Building Sewer

Every abandoned building sewer, or part thereof, shall be plugged or capped in an approved manner within 5-feet of the property line.