

# Water and Sanitary Sewer Design Manual



## SECTION 1 – INTRODUCTION

### 1.1 Purpose

The purpose of this Design Manual is to provide the policies and procedures governing the basic guidelines and design criteria for water and sanitary sewer facilities within the City of Waco and its Extraterritorial Jurisdiction (ETJ); and to assist developers and engineers with the design and preparation of construction drawings that meet the City's minimum requirements for acceptance.

This Design Manual is not intended to address all design conditions or specialized circumstances. Sound engineering judgment shall be utilized to ensure these minimum requirements are suitable for each designed improvement.

This Design Manual is applicable to all projects that involve the connection to, and extension or improvement of public water and/or sanitary sewer facilities that are located within City of Waco ETJ, or are intended to be, owned, operated, and maintained by the City of Waco. Deviations from these design criteria will not be accepted without an approved variance from the Director of the Water Utility Services Department (WUSD) or their designee.

### 1.2 Definitions

Whenever used in this Design Manual, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

**Bid Item** - A single Construction Contract item.

**CCN** – Certificate of Convenience and Necessity.

**City** - The City of Waco acting through its duly authorized representatives.

**City Council** - The duly elected and qualified governing body of the City of Waco, Texas.

**City Representative** - A duly authorized representative of the City of Waco which may include the Engineer, other duly authorized assistant, agent, engineer, inspector, or superintendent acting within the scope of the particular duties as instructed.

**Code** - City of Waco adopted Building, Electrical, Mechanical, Plumbing Codes and any other applicable local, state, or federal codes, latest revisions included.

**Contract Documents** - Includes but is not limited to: Contract Addenda (which pertain to the contract documents); solicitation, advertisement or Invitation for Bids or Request for Proposals; instruction to bidders; submitted Bid/Proposal including documentation accompanying the Bid/Proposal and any post-bid documentation when attached as an exhibit to the Contract; Bonds; general and supplemental conditions; permits from other agencies; Special Provisions; Plans; Standard Plans; Standard Specifications; Reference

Specifications; Change Directives and Change Orders; and all Modifications issued after the execution of the Contract.

**Contractor** – An individual, partnership, corporation, joint venture, or other legal entity that has a contract to perform work that is subject to the local rule of the City of Waco. In the case of work being done under permit issued by the City of Waco, the permittee shall be construed to be the Contractor. The term "prime contractor" shall mean Contractor.

**Critical Facilities** - Critical facilities are defined as those structures from which essential services and functions for victim survival, continuation of public safety actions, and disaster recovery are performed or provided.

**Cross-Connection** - An unprotected actual or potential connection, mechanical or hydraulic union between a potable water system and a recycled or any other non-potable water system that may allow non-potable water to pass into the potable water supply.

**Customer** - Any individual, developer, or other entity eligible for utility service.

**Dead-end Line** - A line in the water distribution system that is only fed from one end at the time of installation.

**Depth** - measurement, in vertical feet, from an existing or proposed ground surface to the TOP of a water main or the FLOW LINE of a sewer main. The City of Waco maintains minimum DEPTH standards for proposed water and sewer utility lines.

**Department** - The department having jurisdiction over work being performed, including but not limited to, Public Works, Parks & Recreation, and Water Utility Services.

**Developer** - An individual, partnership, corporation, or government entity performing a land improvement, constructing a subdivision, or financing a proposed improvement project.

**Development** - A project in which a developer is making changes to existing buildings or land. This may include extending a street or constructing storm drainage, water, and/or sanitary sewer facilities to provide service to one or more existing or proposed lots.

**Director** - The appropriately titled head of a City of Waco department, or their direct designee, such as a Deputy or Assistant Director.

**Drawings** - Those portions of the Contract Documents which are graphic representations of the scope, extent, and character of the Work to be furnished and performed by Contractor and which have been approved by Owner. Drawings may include plans, elevations, sections, details, schedules, and diagrams. Shop drawings are not Drawings as so defined.

**Easement (Utility)** - An authorization granted by a property owner to the City, the public, an individual, and/or a private utility corporation for installing and/or maintaining utilities over or under private land, together with the right to enter the property with machinery and vehicles necessary for the maintenance of the utilities.

**Engineer** – A state of Texas licensed professional engineer.

**Engineer of Record** - The Professional Engineer (P.E.) licensed in the State of Texas through the Texas Board of Professional Engineers and Land Surveyors (TBPELS) who is

responsible for the signing and sealing of construction plans, studies, calculations, and/or any other engineering documents in accordance with TBPELS's requirements for professional practice.

**Extraterritorial Jurisdiction (ETJ)** - Unincorporated areas in which the City has the authority to regulate the subdivision and platting of property.

**Fire Line** - A private water line for fire protection purposes connected to the City's water system. This line shall begin after the initial isolation valve directly off the water main and connects to a fire extinguishing system with an automatic sprinkler system, a standpipe system, a combined system, and/or private fire hydrants.

**Landowner** - The holder of the legal title to a property, including the owner's agents, successors, and assigns.

**Loading Analysis** - A water and/or sanitary sewer capacity analysis.

**Offsite Utilities** – utilities located beyond the boundary of the development site.

**On-Site Sewage Facilities (OSSF)** - Sanitary Sewer systems designed to treat and dispose of effluent on-site in accordance with 30 Texas Administrative Code, Chapter 285.

**Onsite Utilities** – utilities located on the development site.

**Ordinance** - A law, statute, or regulation enacted by the City.

**Permittee** - The person or legal entity requesting a construction permit or other permits from the City in order to perform construction in the right-of-way, and such term includes any agent, employee, or other representative designated by the person requesting a construction or other such permit.

**Pipe Size** – The nominal measurement of the internal diameter of a utility pipe. Pipes shall only be considered equal in size when the actual internal diameters are equivalent.

**Plans** - The drawings, profiles, cross sections, working drawings, and supplemental drawings, or reproductions thereof, approved by the Engineer of Record, which show the location, character, dimensions, and/or details of the Work.

**Private Facilities or Improvements** - Any improvements on private property where a public entity (e.g. the City) is not considered the owner.

**Private Projects** - Work subject to City inspection, control, and approval, involving private funds not administered by the City. These projects generally involve work that will not be dedicated to the City once the work is inspected, approved, and accepted.

**Project Manual** - That portion of the Contract Documents which may include the following: introductory information, bidding requirements, Contract forms, and General and Supplemental Provisions, General and Supplementary Conditions, General Requirements, and Specifications.

**Property** - An undivided tract or parcel of land which is, or in the future may be, offered for sale, conveyance, transfer, or improvement.

**Public Facilities or Infrastructure** - Public facilities and/or improvements including water lines, sanitary sewer mains, storm drains, paving, or other similar improvements constructed within public right-of-way or easements.

**Reference Specifications** - Those bulletins, standards, rules, methods of analysis or test, codes, and specifications of other agencies, engineering societies, or industrial associations referred to in the Contract Documents. These refer to the latest edition, including amendments in effect and published at the time of advertising the project or issuing the permit, unless specifically referred to by edition, volume, or date.

**Right-of-Way (ROW)** - The area on, below, or above a public roadway, highway, street, public sidewalk, alley, or waterway in which the City has a legal interest through dedication, easement, fee title, or adverse possession for transportation use. The term does not include the electromagnetic spectrum above a right-of-way with regard to wireless telecommunications.

**Roadway** - The portion of a street reserved for vehicular use. This will generally be an improved surface.

**Service Connection** - The branch of pipe, owned by the City, extending from the public water line or sanitary sewer main to the approximate location of the property or easement boundary (depicted in the standard details) that is intended to provide direct retail service to a property.

**Special Project Provisions** - Written requirements that are unique to the respective project. These are issued as part of the Contract Documents.

**Specifications** - Technical Specifications, Standard Specifications, Reference Specifications, Special Project Provisions, and specifications in Supplemental Agreements between the Contractor and the Owner.

**Standard Detail or Plans** - Details of standard structures, devices, or instructions referred to on the Plans or in the Specifications via title or number.

**Standard Specifications** - The Standard Specifications for Construction for the City of Waco, Texas (latest edition).

**State** - The State of Texas.

**Storm Drain** - Any conduit and appurtenances intended for the reception and transfer of stormwater.

**Street** - The entire width within the boundary lines of the Right-of-Way open to the public for vehicular, bicycle, and pedestrian travel.

**SUE** - Subsurface Utility Engineering, an investigation to determine utility location, size, material, age, type, etc.

**Technical Specifications** - Detailed material and installation specifications that are typically prepared by the Engineer and are specific to a project.

**Utility** - Tracks, overhead or underground wires, pipelines, conduits, appurtenances, ducts, structures, water lines, sanitary sewer mains, or storm drains owned, operated, or maintained in or across a public right-of-way or easement.

**Work** - The entire completed construction, or the various separately identifiable parts thereof, required to be furnished under the Contract Documents.

**WUSD** – Water Utility Services Department

### 1.3 References

The following references should also be reviewed in conjunction with this Design Manual:

- *Waco Development Guide*, latest edition
- *City of Waco Code of Ordinances*, latest edition
- *City of Waco Standard Specifications for Construction*, latest edition
- *City of Waco Manual of Standard Details*, latest edition
- *Texas Administrative Code (TAC), Title 30, Chapter 217: Design Criteria for Domestic Wastewater Systems*
- *Texas Administrative Code (TAC), Title 30, Chapter 285: On-Site Sewage Facilities*
- *Texas Administrative Code (TAC), Title 30, Chapter 290, Subchapter D: Rules and Regulations for Public Water Systems*
- *Texas Administrative Code (TAC), Title 43, Part 1, Chapter 21, Subchapter C: Utility Accommodation*
- *Title 40 Code of Federal Regulations (40 CFR), Subsection 403*
- *State of Texas, Texas Engineering Practice Act and Rules Concerning The Practice of Engineering and Professional Licensure*, latest edition
- *Texas Manual of Uniform Traffic Control Devices (TMUTCD)*
- *International Building Code (IBC)*, latest adopted
- *International Fire Code (IFC)*, latest adopted
- *International Plumbing Code (IPC)*, latest adopted
- *National Electric Code (NEC)*, latest adopted

## 1.4 Revision Log

Date	Page	Description	Initials

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