

Corpus Christi Water Distribution Standards

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A1 City Recommended Distribution System Improvements (Water Master Plan)

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A3 Fire Hydrant Capacity versus Land Use (Zoning)

A map showing the 3 land use categories associated with each Class of Fire hydrant is provided that is based on the city's zoning map. However, the map may not depict schools and other institutions for which the Class 1,500 GPM Class fire hydrants apply.

Fire Hydrant Class:	Zoning:
750 GPM	FR, RE, RA, R1A, R1B, R1C
1,500 GPM	T1A, T1B, T1C, RTH, R2, A1, A1A, A2, AT, AB, and lands including public and private schools, colleges, universities and other public institutions as deemed appropriate by the City or water district.
3,000 GPM	All B and I zones

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Body

1 Scope

These standards facilitate the design and construction of water distribution systems within the City of Corpus Christi and its extraterritorial jurisdiction (ETJ). They include or cite policies, details, specifications, state requirements, administrative procedures and other information that shall apply to water distributions. They do not address treatment or process facilities or private construction or residential or commercial plumbing.

2 Construction Drawings (Plans) & Administration

2.1 Construction Drawings (Plans) for public water system shall be prepared by an engineer that is licensed in Texas or Texas Professional Engineer (Engineer).

2.2 Private Development Construction Drawings (Plans) for public water systems shall be submitted by the Engineer to the Director of Development services or his representative (review authority) for review and approval.

2.3 City Construction Drawings (Plans) that are administered by the City's engineering department shall be submitted by the Engineer to the City Engineer or his representative (review authority) for review and approval

2.4 Water districts other than the City of Corpus Christi that operate public water systems that are within the City's ETJ shall concurrently review and approve drawings in addition to the City.

2.5 Permits from outside agencies, such as Railroad, Highway Dept, Corps of Engineers, etc. shall be obtained from the permitting agency by the Engineer thru either the City Engineer or the Director of Development Services as applicable, as the signature of the ultimate owner / operator of the waterline may be required by the outside permitting agency. The Engineer shall submit the required permit applications and resolve issues associated with said permits.

2.6 Plan Size and format shall be legible, to scale and printable at a size of 11"x17". Plans shall typically be submitted as a single PDF of minimal size to facilitate electronic submission and distribution or less than 10 Meg.

2.7 Plan Submission Procedure (Preliminary through Record Drawing) shall involve:

Preliminary Submission by the Engineer in PDF via e-mail or CD shall be required.

Review Comments issues by the reviewing authority via e-mail shall be provided to the Engineer.

Discussion & Resolution of issues. Any issues or misunderstandings shall be discussed and resolved. If the plans are relatively complete and issues are minor, this may be accomplished by phone and the Engineer is requested to proceed and requested to submit a written Comment Resolution Summary. If there significant issues, the reviewing authority may request that the Engineer resubmit the drawings for a subsequent review, whereby Review Comments are reissued and the issues are revisited.

Comment Resolution Summary is written documentation of the resolution of all issues and misunderstandings. It shall be provided by the Engineer to the reviewing authority in electronic format via e-mail. Upon receipt of the Comment Resolution Summary, the final plans may be submitted.

Final Plans (originals) shall be submitted by the Engineer for approval of the review authority. The plans shall be signed and sealed by the Engineer, except for standard detail sheets that are signed other engineers. Plans shall be submitted with the appropriate transmittal letter or Memo. After the plans have been signed for approval, the Engineer shall be notified of such and asked to provide a single PDF of the plans to the review authority.

Approved Plans (PDF of the approved originals) shall be provided by Engineer for the formal distribution of the plans and approval letter by the review authority.

Addendums and Change Orders shall be prepared and submitted by the Engineer for review and approval of the reviewing authority. Prior to submission of the change order, the Engineer may discuss the issue with the review authority as appropriate to facilitate the process. The change order shall be submitted in PDF format and, if deemed appropriate, original sheets may be required for processing. Approved change orders shall be distributed by the review authority.

Record Drawings of the completed project shall be submitted by the Engineer in the form of Paper copy and PDF. Auto-Cad files shall be provided, if available. The submission shall include a transmittal letter and certificate of completion as applicable.

2.8 Plan Content Plans shall generally include a Location Map, Site plan, Plan – Profile sheets and details.

Locatation Map shall include north arrow, scale, streets, property

lines and such information that helps show the location of the project.

Site Plan or Water Base Map and Table of Quantities shall show a lay out the project with respect to existing waterlines and proposed improvements. In addition to the site plan a reduced scale drawing of 1"=200' shall be shown. A table of quantities for waterlines and fittings shall be included with the site plan.

Plans Sheets shall depict the proposed waterlines and other relevant material. All fittings and waterlines shall be identified on the plan sheets and dimensioned as appropriate. When the plans involve other utility and street work, it is not necessary to prepare plan sheets that are exclusively for waterlines.

Profiles are typically not required for waterlines less than 12 inches.

The City's Waterline Standard details shall be included with the set of plans. Other details may be provided as deemed appropriate by the Engineer and subject to approval by the reviewing authority.

3 Specifications shall conform to the City Standard Specifications (Appendix). The engineer may use additional specifications or other specifications, provided that they are do not conflict with the City Standard Specifications. Apparent errors or omissions to the City Standard Specifications that are encountered by the Engineer shall be identified. The Engineer shall notify the review authority so that the issue may be resolved.

4 Design Considerations

4.1 Waterline Alignment

Waterlines shall typically be placed in Street ROW and 4-feet behind the curb and on the opposite side of the street from sanitary sewer mains, if practical.

Arterial streets (ROW of 90 feet or more) will require a waterline on each side of the street as necessary for fire protection and service on each side of the street.

The City's Urban Transportation Plan shall be used to establish curb alignment from which waterlines would be aligned.

Along state or TXDOT ROW, waterlines shall typically be placed in a 15-foot easement abutting the ultimate TXDOT ROW.

Dimension and identify alignment of waterlines with respect property lines, easement lines or other baselines as appropriate in the construction drawings.

Under creeks and proposed drainage channels, waterlines shall be placed at least 3 feet below the maximum anticipated depth to of the channel.

Waterlines that are within private property shall be placed within a utility easement with a minimum width of 15-feet. Such waterlines shall not be placed within 15-feet of foundations of structures.

4.2 Waterline & Fire Hydrant Capacity

Capacity of public waterlines shall provide a minimum pressure of 20 PSI based on ultimate demand plus fire flow. If fire protection is not applicable the waterlines shall provide a minimum pressure of 35 PSI based on ultimate demand.

Capacity of Fire Hydrants shall be based on land use. Three standard classes of fire hydrants shall be used with minimum capacities for the applicable land uses being shown below. These capacities shall be based on a minimum residual pressure of 20 PSI. The land use or zoning for which each fire hydrant would apply is included in the appendix.

- Class 750 GPM
- Class 1,500 GPM
- Class 3,000 GPM

4.3 Classification and Waterline Sizing

Waterline sizing is simply the selection of the appropriate sized pipe to meet the capacity requirement set forth in Section 4.2 (above). To facilitate this task, we shall classify waterlines by use or application.

Transmission Lines are usually very large lines that transport large volumes of water from one region to another. The design of such lines requires expertise that is beyond the scope of these standards.

Grid Mains (Arterial Mains) are generally placed in grids of approximately 1 mile by 1 mile, which is typically the spacing of the arterial streets as designated in the City's Urban Transportation Plan. (Appendix) Grid shall be 16-inch, unless approved otherwise. Service connections are typically not allowed on a grid main.

Primary Supply Mains are required along C3 Collector Streets and be required along C2 Collectors per Urban Transportation Plan. (Appendix) Primary Supply Mains shall be 12-inch unless approved otherwise.

Secondary Supply Mains are required along minor collectors, C1, which may not be shown in the Urban Transportation Plan. Secondary Supply Mains shall be 8-inch, unless approved otherwise.

Distribution Line or Main are the smallest of the water mains. The minimum size of a distribution line shall be 6-inches. Distribution mains shall be looped and the maximum distance between interconnections shall not exceed 600 feet. Distribution lines serving more than 2 fire hydrants shall be at least 8-inches.

Service Lines or Connections, as they relate to the public distribution system, shall include the portion of the line from the main up to the meter or FLDCE & meter assembly for commercial applications as may be required by fire and plumbing codes. (City Standard Waterline Details & FLDCD with vault and meter vault details) Service lines vary with application from 1-inch and up. Service lines for single-family residential development with a minimum size of 1-inch shall be placed for each lot prior to construction of the street, where applicable.

4.4 Fitting & Appurtenances

Bends, Tees, Crosses, Reducers, etc. shall be of the Ductile Iron Mechanical Joint type and are required at intersections; branches, off-sets, etc. Such fittings shall be restrained and attached to a length of ductile iron pipe per City Standard Waterline Details and Standard Specifications.

Valves shall be required at branches. The number of valves at a connection shall typically be one less than the number of connections, for example a cross shall be abutted by three valves and a tee by two. Valves 16-inch and less shall be gate valves, with the exception of the corporation stop and angle meter stops that are required for the smaller service connections. Valves over 20-inch shall typically be butterfly valves.

Restraints shall be required to secure the waterline without the need for additional concrete thrust blocks.

Fire Hydrants shall be placed along public streets and in other areas as necessary for fire protection. The Class 750 GPM hydrants shall be spaced along public streets at a maximum distance of 600-feet or such that any building is within 500 feet of such hydrant. The Class 1,500 GPM or Class 3,000 GPM fire hydrants shall be spaced along public streets at a maximum distance of 300-feet. In addition to the hydrants along the streets, additional Class 1,500 GPM or Class 3,000 GPM fire hydrants shall be placed within commercial and designated areas as necessary to provide fire protection. Public mains shall be placed as required to support such hydrants and be no closer than 15 feet from

buildings or structures and within a utility easement with a minimum width of 15-feet.

5 Implementation of Work

5.1 Begin Work Work shall not begin prior to issuance of approved plans and a written work order by the City. The Contractor or person responsible for the work shall notify the City of Corpus Christi Inspection Department (880 3555) at least three working days in advance of beginning any work on public improvements. Public improvements include water, sanitary sewer, storm sewer and street or driveway work on or tying into public facilities.

5.2 Monitoring of waterline work will be done by City Staff, typically an inspector from the Construction Inspection Department and an inspector from the Water Department.

5.3 Protection of Existing Water System The existing water system shall remain in continuous operation, except for minor interruptions that may be necessary for connections or adjustments. Anything that impacts the operation of the existing water system, such as making connections to or operating valves of the existing system, shall be done only with approval and under the direct supervision of the Water Department.

5.4 Deviation from Plans shall require approval and documentation. The method by which this is achieved would dictate the method by which this is accomplished. Any changes in waterline size or alignment - quantity, size or type of fitting would require an approved plan revision or change order. The change order would depict the proposed revision and be prepared by the Engineer and be approved and distributed by the reviewing authority.

5.5 Interim operation and acceptance of water system The city reserves the right to accept or use the system for operation at any time. However the date of official acceptance of the water system will be upon the completion of the project with satisfactory test results and submission of accurate record drawings.