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# City of Corpus Christi Water Distribution Standards

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Gustavo Gonzales  
Director, City of Corpus Water Department

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## SECTION 01 – General Conditions

### A. Scope

1. Overview – The Water Distribution System Standards (hereafter Water Standards) herein are general conditions and specifications relative to the design and construction of water mains to be built within the boundaries of the Certificate of Convenience and Necessity (CCN) jurisdiction of the City of Corpus Christi, as granted by the State of Texas, and shall govern in the planning, design, and installation of such work: providing that these specifications and/or amendments thereto shall not limit the City's right to change all or part of the rules, regulations and specifications as set out herein.
2. Enforcement of Water Standards – The Water Standards are divided into various sections. The document is to be read as a whole, and all requirements must be complied with. Enforcement of each paragraph is independent of the section that it is in and can be enforced at any stage of the development process.

### B. Administration

1. Ownership of Mains – After the City has accepted completion on the construction of the water mains, the mains will become sole property of the City and will be subject to its control and management.
2. Obligation for Service – Every customer who receives water service from the City will be subject to the City Charter and the Water Standards, and failure to comply with the Water Standards may result in the revocation of water service.
3. Conflicting Jurisdictions
  - a. Other Districts - When a proposed subdivision is located within the extraterritorial jurisdiction of the City and the potential consumer location is within an area served by a utility district outside the City's CCN, the Sub-divider and/or Developer shall furnish the City, before approval of the plat, a written statement from the authorized official of such utility to the effect that the utility is satisfied with the proposed utility improvements within their CCN.
  - b. OCL Areas in the City's CCN - OCL areas within the City's CCN jurisdiction shall comply fully to the Water Standards. An *OCL Water Contract* will be required from applicants who desire water and are located outside the City limits of Corpus Christi, Texas.
4. Extension Charges - Taps made to a water main for a main extension will be subject to an extension charge, as determined by the Superintendent of the Water Department in the water fee schedule.
5. Approved Materials – All materials used in the water distribution system shall be approved in accordance with Appendix B herein.
6. Variances and Waivers – Variances and waivers to the Water Standards may be requested on a case-by-case basis. Any request for deviations or variances from the Water Standards must be submitted to the Superintendent of the Water Department in writing and must have prior written approval by the Superintendent before it goes into effect. A response shall be provided by the Superintendent of the

Water Department to the requestor within thirty (30) calendar days of receiving the written request, or the variance request will automatically be granted.

7. Changing the Water Standards – Change(s) to these Water Standards shall be made by both the Superintendent of the Water Department and the City Engineer, and both signatures will be required for the change to take effect.

## SECTION 02 - DESIGN

### A. Design Administration

1. Regulations - The water distribution system design shall comply with the standards and regulations found in the Federal Registers and in the Texas Administrative Code, as enforced by the Texas Commission on Environmental Quality (TCEQ) and the Texas Department of Health, and shall conform to the requirement for peak hour customer demand and system operational demands, as determined by the Superintendent of the Water Department. Unless otherwise specified within these Water Standards, the design, location, materials and standards of construction of the water distribution systems shall be those commonly used and adopted by the industry for the intended area of application.
2. Civil Drawings – Civil or Utility Drawings shall be required for the construction of all main improvements to the water distribution system.
3. Engineered Drawings – The drawings for the extension or modification of the water distribution system shall be designed and sealed by an Engineer.
4. Sufficient Detail – All the drawings and details for the public water improvement project shall be in the plans that are submitted for review. Whenever the Superintendent of the Water Department assesses that more detail is needed in the proposed drawings, the Engineer shall provide more details or calculations before the plans can be approved.

### B. Water Lines

1. Location of Mains - All water mains shall be located on dedicated streets or public utility easements, as approved by the Superintendent of the Water Department.
2. Looping of Water Mains – Unless previously authorized to do so, all proposed water distribution system connections shall start and end at a source of potable water within the water distribution system.
3. Residential Loops – Residential Areas shall have distribution mains which will be looped to supply mains within the subdivision and the maximum length of the distribution mains shall be the shortest of the two following lengths: 3,000 feet, or a length that would, by fluid hydraulics, render the line incapable of producing the flows and pressures set out herein for the type of areas served, considering the pressures and flows that exist at the main's connection.

4. Mercantile and Industrial Loops - Mercantile Areas shall be looped using supply mains, and the maximum length of the supply mains shall be the shortest of the two following lengths: 3,000 feet, or a length that would, by fluid hydraulics, render the line incapable of producing the flows and pressures set out herein for the type of areas served, considering the pressures and flows that exist at the main's connection.
5. Alignment of Water Mains – All water mains shall be located in the public rights of way or in utility easements. The placement of the mains shall be along the dedicated streets between curb and sidewalk, or as approved by the Superintendent of the Water Department. All proposed public water lines, unless otherwise approved, shall be installed with an alignment of seven feet (7') off of and parallel to the street right of way. If installed in a public utility easement, the water main shall be centered if possible, or shall be located to one side, to maintain the required separation from wastewater lines.
6. Extensions - All new lots within the boundaries of the City's CCN must provide water mains along the entire street frontages of the property. Looped extensions of water mains shall be of adequate size to provide for fire flow and shall originate and end at points in the water distribution system which will provide for effective circulation and efficiency of operation, as determined by the Superintendent of the Water Department. The design of an extension shall take into effect the adequate capacity of present and future requirements for the area to be benefited, the distribution system efficiency, the ease of maintenance requirements for the main, and the anticipated life of such extensions, as determined by the Superintendent of the Water Department. Tapping Sleeve and valves shall be used to tie into the existing mains whenever possible, to reduce the possibility of service interruptions. No water main extension shall be connected to the system if the cost to the City is so great that in the opinion of the Superintendent of the Water Department, the expense is not justified on sound business principles.
7. Cul-de-Sacs – All proposed cul-de-sacs shall be looped.
8. Water Quality – Water quality must be addressed on all designs. If a dead-end main is proposed inside the property, the Engineer shall provide calculations and certify that the maximum average water age from the looped-main to the end of the dead-end main, taken on a weekly cycle, shall average less than twenty-four (24) hours per day. Automatic flushing devices, which shall become property of the Water Department, can be incorporated into the design, as determined by the Superintendent of the Water Department. If an acceptable design cannot support the dead-end main condition, the main must be looped.
9. Existing Dead-End Mains – Where a proposed development includes areas currently served by dead-end mains, required infrastructure improvements that provide for establishing distribution system looping, and elimination of dead-end mains shall be defined.
10. Temporary Dead-End Mains – Distribution system looping shall not be activated for service beyond the point where looping requirements are met. Dead-end mains may be temporarily permitted when an existing line is extended, and the further extension of the line is already programmed to begin construction within three (3) years.
11. Utility Easements – A utility easement is required within private property along all Arterial Streets and Collector Streets and wherever mains are proposed. The minimum width of public utility easements for water mains shall be fifteen feet (15'), except for utility easements along Collector

Streets, for which the requirement shall be a minimum of ten feet (10'). All Transmission Mains must be installed in utility easements that have a minimum of 25 feet (25') in width. No permanent structure shall be built on a utility easement. Anything that is built or placed in a utility easement shall be considered temporary and shall be subject to demolition and removal. The utility easements must be drawn on the construction plans, and a Plat shall not be approved nor shall a Certificates of Occupancy be issued until the associated utility easement has been recorded at the County Courthouse.

12. Water Line Easements – The purpose of “waterline easements” shall be to provide an easement for the water main only and to excluding all other utilities.
13. Pipe Sizes – Pipe sizes shall be those approved by the Superintendent of the Water Department and shall be designed to provide the required flow.
14. Minimum Size of Mains – The minimum size of any main on the water distribution system excluding the service lines for domestic and irrigation use shall be six inches (6”), unless otherwise approved by the Superintendent of the Water Department.
15. Separation from Sewer – The separation distances between the water main and the sanitary sewer system shall be in accordance with the applicable requirements of TCEQ.
16. Main Material – Mains used in the water distribution system shall be AWWA-approved for use on domestic water systems.
17. Distance from Buildings - No water main shall be installed within fifteen feet (15') horizontally to the nearest edge of a building foundation, and no building foundation shall be built within fifteen feet (15') horizontally from the outer edge of a water main.
18. Supply Mains - Supply mains in the distribution system shall be looped and shall not exceed three thousand feet (3,000') in length between the connections to another looped main.
19. Utility Clearance – Except for the clearances required by TCEQ between water mains and the Sanitary Sewer Systems, the water main shall be installed such that it has a minimum clearance of eighteen inches (18”) horizontally and vertically from all other utilities. No utilities shall be installed parallel to and immediately above or within eighteen inches (18”) horizontally in all directions from the outer edge of the water main.
20. Parallel Fire Protection – For streets that have a ninety-foot (90') or greater right of way width, as specified in the City Transportation Plan, parallel fire protection mains shall be required, one on each side along the street.
21. Concrete Streets – For concrete streets, the mains must be in utility easements or public street rights of way, away from under the concrete, all mains crossing the concrete street must be in an appropriately-sized casing, and service lines that cross under the concrete streets shall be increased one full size from that specified on the Standard Details (Appendix C).

### C. Valves and Fittings

1. Approved Valves – All valves must be AWWA approved, and the material shall be that as specified in the Standard Specifications (Appendix B).
2. Valve Spacing – For all mains except transmission mains, the maximum spacing between valves shall be no more than six-hundred feet (600') apart. Spacing and location of valves on a transmission main shall be approved by the Superintendent of the Water Department.
3. Minimum Number of Valves - The minimum number of valves in the immediate proximity of a “Tee” shall be two (2). The minimum number of valves in the immediate proximity of a “Cross” shall be three (3).
4. Valve Sizes – The size of the valve shall match the main that it supplies and shall connect to the main as approved by the Superintendent of the Water Department.
5. Non-Rising Stems - All valves in the water distribution system shall open left (counter clockwise), shall be parallel to the main, and shall be non-rising stem valves.
6. TS&V - Tapping sleeves shall be appropriate for the type and size of pipe to be tapped. Tapping sleeve and valve material shall be as specified in the Standard Specifications (Appendix B). Sleeves on asbestos-cement pipe shall be full-bodied stainless steel.
7. Stub-Outs – Stub-outs for future connections will not be permitted. Stub-outs shall be made for known uses only, with the approval from the Superintendent of the Water Department,
8. Gate Valves – Resilient-Seat Gate Valves shall be used for pipe sizes of twenty inches (20") or smaller, and shall be of a material specified in the Standard Specifications (Appendix B).
9. Butterfly Valves - Butterfly valves shall be used for sizes of twenty-four inches (24") and larger. These valves shall be clearly labeled as butterfly valves on the construction drawings, and the plans shall also be labeled with the number of turns to close.
10. Operating Wheels - Valves that are twenty-four inches (24") and larger and that are in vaults or above the ground shall have the main valve stem furnished with a combination hand wheel and operating nut.
11. Position Indicators – All valves that are above ground or in a vault, except for the OS&Y valves, shall be furnished with a position indicator.
12. Bypass Assemblies – Valves that are twenty-four (24) inches and larger shall have bypass assemblies.
13. Air-Release Valves – Air-Release Valves shall be used on Transmission Mains, wherever the professional Engineer determines that they are required.
14. Fittings – All fittings shall be mechanical joint ductile iron, or as approved by the Superintendent of the Water Department. Fittings that are three inches (3") or smaller shall be of brass, or as approved by the Superintendent of the Water Department.
15. Cast Iron Valve Boxes - Cast iron valve boxes shall be provided over all operating valve nuts. The word “water” shall be cast in the top cover. The boxes and lids shall be given a coat of hot tar dip.

The top cover shall be equal to the standard City of Corpus Christi pattern as detailed in the Standard Details (Appendix C). The extension pipe of the valve boxes shall be eight inch (8") C-900 PVC and shall extend from the valve box to the valve.

16. Valve Extensions – Valves extensions shall be provided for valve nuts that are more than five feet (5') in depth. Extensions shall be factory made, and the Superintendent of the Water Department shall approve the length and type of extension, before the extension is installed. The valve extensions shall have a valve box installed over them, and the extension pipe of the valve boxes shall be eight inch (8") C-900 PVC and shall extend from the valve box to the valve.

#### D. Fire Protection

1. Fire Hydrant Specifications - Fire hydrants shall conform to AWWA standards and shall be as specified in the Standard Specifications (Appendix B).
  - a. Breakable Couplings – All fire hydrants shall be of the traffic-model type, equipped with safety breakable couplings on both the hydrant barrel section and the stem. The coupling shall be so designed that in case of a traffic collision, the barrel and the stem collar shall break before any other part of the hydrant breaks. Weakened steel or weakened cast iron bolts that are used in the breakable-barrel couplings will not be acceptable.
  - b. Shut-Off - The type of shut-offs for fire hydrants shall be of compression type only.
  - c. Nozzles - Fire hydrants shall be equipped with two (2) threaded hose nozzles of two-and-one-half inches (2 ½") inside diameter and one (1) larger nozzle of a four inch (4") inside diameter.
  - d. Nozzle Threads - The hose nozzles shall have two-and-one-half inch (2 ½") National Standard Thread (7 ½ threads per inch), and the larger nozzle shall have six (6) threads per inch, with an outside diameter of four-point-six-five-eight inches (4.658"), pitch diameter of four-point-five-four-three inches (4.543"), and a root diameter of four-point-four-zero-six inches (4.406").
  - e. Valve Opening - The minimum size of the main valve opening at the base of the fire hydrant shall not be less than five-and-one-fourth inches (5 ¼") inside diameter.
  - f. Valve Seat Ring - The valve seat ring shall not be made an integral part of the shoe. The valve seat ring shall be bronze and shall thread into a bronze drain ring.
  - g. Nozzle Cap Chains - Fire hydrants shall be supplied without nozzle cap chains.
  - h. Open Left - The fire hydrants shall open counter clockwise.
  - i. Color of Finish – The upper barrel, bonnet, and nozzle caps of the fire hydrant shall be painted chrome yellow.
  - j. Operating Nuts - The operating and cap nuts shall be tapered pentagon one-and-one-fourth inch (1 ¼") point-to-face at base and one-and-one-eighth inch (1 1/8") point-to-face at the top of the nut. The operating stem nut shall be made of bronze.

- k. Barrel Sections - The fire hydrant shall be made in two or more barrel sections with flanges connecting the upper barrel to the lower barrels and the lower barrel to the shoe.
  - l. Stainless Steel Bolts – Except for the bolts on the breakable coupling, the bolts on all flanges of the fire hydrant assembly shall be 304 or 316 stainless steel. The bolts on the breakable coupling shall be those specified by the manufacturer.
  - m. Weep Hole Mechanism - Fire hydrants shall drain through “weep holes” located at the seat of the fire hydrant, and the drain holes shall be in the open position when the fire hydrant is closed. Drain valves operating through springs or gravity are not acceptable.
2. Fire Hydrants Spacing – Fire hydrants shall be installed in utility easements or on public rights of way, at street intersections or between property lines, to avoid future driveway conflicts. In Residential Areas, fire hydrants shall be located so that there shall be a fire hydrant at a maximum spacing distance of 600 feet, as measured along the centerline of the street. In Mercantile and Industrial Areas, fire hydrants shall be located so that there shall be a fire hydrant at a maximum spacing distance of 300 feet, as measured along the centerline of the street. The spacing and location of fire hydrants on transmission mains will be determined by the Superintendent of the Water Department.
  3. Fire Flow – Main lines in Residential Areas shall be sized so that the minimum flow of water from any single fire hydrant shall be no less than seven-hundred-and-fifty (750) gpm with twenty (20) psi residual pressure with the domestic use of two (2) gpm for every lot in the subdivision. Main lines in Light Mercantile Areas shall be sized so that the minimum fire flow from any single fire hydrant shall be no less than one-thousand-five-hundred (1,500) gpm with twenty (20) psi residual pressure. Main lines in Principal Mercantile and Industrial Areas shall be sized so that the minimum fire flow from any single fire hydrant shall be not less than three-thousand (3,000) gpm with twenty (20) psi residual pressure.
  4. Fire Hydrant Barrier Protection – Whenever there is a risk of vehicular traffic damage, vertical barriers must be installed. The bollards shall be of six inch (6”) galvanized pipe, in a thirty-six inch (36”) deep by twelve inch (12”) in diameter concrete foundation, extending four feet (4’) above grade level, and shall be filled and top-round mounded with concrete. The bollards shall be spaced no more than six feet (6’) apart and shall be no closer than four feet (4’) from the fire hydrant.
  5. Maximum Distance to Residential Lots - The maximum distance from a fire hydrant to any residential lots shall be less than five-hundred feet (500’).
  6. Horizontal Clearances from Fire Hydrants - All fire hydrants shall have a four foot (4’) radius clear horizontal distance from the outer edge of the fire hydrant to any vertical obstruction and is or will be located near the fire hydrant. The fire hydrant shall be readily accessible to Fire Department use, at all times. The fire hydrant shall have a minimum of eighteen inches (18”) from the back of curb to the front edge of the larger nozzle connection, and the pumper nozzle shall be facing in the direction of the street, or in a direction that the fire truck can most readily access the fire hydrant. When located next to a side walk, the outer face of the large nozzle cap shall be no closer than six inches (6”) from the edge of the sidewalk.
  7. Fire Lines - Whenever private fire sprinkler systems, standpipe systems, hose cabinets, and other internal fire protection systems are installed, the public water distribution system shall be protected

using a double-check detector assembly. An above-ground double-check detector assembly installation is required, at the edge of the street right of way or the edge of the utility easement, in close proximity to the public water main. The above-ground piping and assembly shall be protected from freezing, as directed by the Fire Marshall. The aboveground piping and assembly shall have a concrete pad beneath it and shall be protected from vehicular traffic where applicable. The bollards shall be of six inch (6") galvanized pipe, in a thirty-six inch (36") deep by twelve inch (12") in diameter concrete foundation, extending four feet (4') above grade level, and shall be filled and top-round mounded with concrete. The bollards shall be spaced no more than six feet (6') apart and shall be no closer than four feet (4') from the assembly. The valves on both sides of the Double-Check Detector Assembly shall be OS&Y valves. Drawings for the installation of the FLDC must be provided by the Developer and approved by the Superintendent of the Water Department.

8. FLDC At Street Not Required – Under the following circumstances, exemptions from the requirement to install the Double Check Detector near the street right of way or utility easement shall be granted:
  - a. Less than 50 Feet – Whenever the distance from the main to the fire sprinkler system riser is less than fifty feet (50') from the main, the Double-Check Detector may be installed inside the building, at the riser.
  - b. Compound Meter – Whenever the water meter and underground water service line is sized so that the fire line flow is included in the size of the compound meter that feeds the building, the domestic line can be separated from the fire line piping inside the Mechanical Room, and the domestic water shall be protected from contamination with a Double-Check Detector on the fire line, inside the building, at the point of connection. Compound meters that are over four inches (4") in size shall be installed above ground, as specified in the Standard Details (Appendix C).
9. Private Fire Service Main – The private fire line shall be maintained by the owner. The fire line shall consist of the line that serves the building, from the outside face of the last fitting that solely feeds the private fire service main, as defined in NFPA-13.
10. Post-Indicator Valves – Post-indicator valves are required as specified in the National Fire Protection Association Codes.
11. Private Fire Hydrants - Private fire hydrants are not permitted. If a variance is granted, the portion of the fire hydrant assembly that is above the ground must be painted in the solid color of "red".
12. Fire Hydrants in Sidewalks - Fire hydrants shall not be installed in sidewalks, unless no other location is reasonably available. In that event, fire hydrants shall be located so that sidewalks have a minimum of three feet (3') radius of unobstructed sidewalk passageway around the fire hydrant.

## E. Taps and Meters

1. Service Lines – All water service lines shall be metered. Water service lines shall be of materials as specified in the Standard Specifications (Appendix B). Service connections may be made on water lines that are twelve (12) inches and smaller. Water services from fire hydrant assembly configurations are permitted, provided that the service tap is made before the fire hydrant valve, allowing the fire hydrant to be shut off and serviced without the interruption of water service to the customer.

2. Domestic Meters – The location of all domestic water meters shall be specified in the drawings. More than one domestic water meter is permitted per different tenant on a single property. Whenever the Superintendent of the Water Department deems that buildings on a single property are spaced too far apart, more than one domestic water meter may also be allowed for a single tenant.
3. Separate Irrigation Meters – In addition to the domestic meters, separate water meters are permitted for lawn irrigation systems, and the irrigation water meter location shall be specified in the drawings. Whenever the Superintendent of the Water Department deems that landscaped areas on a single property are spaced too far apart, more than one irrigation water meter may also be allowed for a single tenant.
4. Obtaining Water Meters – All taps and meters shall be paid for and obtained at the Department of Development Services, and shall be accompanied with a Plumbing Permit application.
5. Sizing Larger Meters – Meters and/or taps that are larger than six inches (6”) shall be sized and quoted by the Superintendent of the Water Department, based on information provided by the Developer on a standard form provided by the Water Department. All meters that are larger than two inches (2”) shall be accompanied by drawings that will be reviewed and approved by the Superintendent of the Water Department. Three-inch (3”) and four-inch (4”) meters shall be installed in meter vaults, as specified in the Standard Details. Meters that are larger than four inches (4”) shall be installed above ground and shall have a four by eight (4 x 8) reinforced concrete pad below the meter, as approved by the Superintendent of the Water Department.
6. Meter Manifold – On meter manifolds, a one-and-one-half inch (1 ½”) tap will support a maximum of two (2), three-quarter inch (¾”) meters, and a two inch (2”) tap will support a maximum of six (6), three-quarter inch (¾”) meters. Any other more design configuration shall be sealed by the Engineer and shall be supported by calculations. The calculations shall be reviewed and approved by the Superintendent of the Water Department. Other design configurations shall be quoted by the Water Department and paid for and obtained at the Department of Development Services.
7. Residential Subdivision Pre-Taps – In all new residential subdivisions, the Developer shall provide either a single-service connection, consisting of a one inch (1”) service tap and a one inch (1”) single-service line, or a double-service connection, consisting of one-and-one-half inch (1 ½”) service tap and two (2) one inch (1”) service lines.
8. Water Department Makes Taps – Only the Water Department is permitted to make taps into active mains, and only the Water Department shall install City-read water meters.
9. Location of Meters – The water meters shall be located in grassy areas, at the edge of the public rights of way or utility easements. The Developer shall mark the requested location of the water meter with a two-by-four (2x4) stake. The Water Department shall make every effort to install the meter at the requested location. However, the location of the main and the accessibility to the requested location will determine the final placement of the water meter. If no marking is provided by the Developer, the Water Department shall place the meter in the most cost-effective location for the City.
10. Meter Vaults – Meter vaults are required for three inch (3”) and four inch (4”) meters. The meter vaults shall be manufactured per the Standard Details (Appendix C).

11. Larger Meter Requirements - Service meters of six inch (6”) or greater shall be installed above ground, as approved by the Superintendent of the Water Department. A concrete slab will be provided immediately below the meter for access to the meter, as specified in the Standard Details (Appendix C).

#### F. Backflow

1. Backflow Protection - The water distribution system shall be designed, installed, and maintained in such a manner so as to prevent contamination from outside sources. Backflow protection devices shall be installed to comply with the most current adopted version of the Plumbing Code.
2. Irrigation Systems - In irrigation systems, the public water supply shall be protected from contamination using a proper backflow protection device, as outlined in the most current adopted version of the Plumbing Code.
3. Fire Lines – All fire lines shall be protected with Double-Check Detector Assemblies.

## SECTION 03 - CONSTRUCTION

#### A. Construction Administration

1. Submittals – Upon request, the Developer shall provide specification sheets, showing complete details, dimensions, and materials used, for any of the materials that are proposed for construction of the water distribution system. Upon request, the manufacturer shall furnish the City with a certified letter stating that their material meets the specifications. Also, upon request, the Contractor, the sub-contractor, and/or the manufacturer shall furnish the City a certified copy of the physical tests of all materials used in the manufacture and installation of the material provided.
2. Field Drawings – A red-lined drawing of the proposed water construction shall be maintained on the job site by the Contractor. The approved changes to the drawings shall be promptly marked in red by the Contractor on the field drawings, at the time that the changes are made, and when the job is completed, the red-line drawing shall be turned in to the Engineer, who will produce the as-built drawings of the project.
3. As-Built Drawings – Before the Plat is recorded or the Certificate of Occupancy is issued, the Engineer shall provide a certified electronic copy of the “as-built” drawing, in AutoCad, in a CAD File format, for each project designed. The file shall be Georeferenced to the Projected Coordinate System: “NAD\_1983\_StatePlane\_Texas\_South\_FIPS\_4205\_feet.” The As-Built Drawing shall show the GPS Coordinates of all the new valves and fire hydrants, and the accuracy of the GPS Coordinates shall be to one (1) meter or less. A disk shall be provided to the Superintendent of the Water Department, before the final approval is given on the project.
4. Certification of Compliance – In addition to the transmittal of the As-Built Drawings and prior to the acceptance of such drawings, the Engineer shall submit a sealed letter, certifying that he/she has verified that the As-Built Drawings reflect what was built, and that the Drawings have been designed according to the Water Standards.

5. Operation of Valves - No valve or other control device on the existing water distribution system shall be operated for any purpose by anyone, unless it is done under the direct supervision and direction of the Superintendent of the Water Department.
6. Tapping the Main – Contractors shall not be permitted to make taps on the main, unless they are under the direct supervision and direction of the Superintendent of the Water Department.
7. Notification of Interruptions – The Developer shall give two (2) business days notice to the Superintendent of the Water Department prior to notifying the affected residents about the interruption of service. The Developer shall notify the affected residents in writing at least twenty-four (24) hours before interrupting water service. [Ivan is to produce a Form for this purpose.]
8. Emergency Notification – Whenever unforeseeable events are such that interruptions to the water service must occur immediately, verbal and/or written notification shall be made by the Contractor to those who will be affected by the shut down. [Ivan is to produce a Form for this purpose.]

## B. Installation

1. Alignment Conflict – Mains shall be installed in accordance with the specified lines and grades. Fittings, valves, and fire hydrants shall be at the specified locations. Where the grade or alignment is obstructed by existing utility structures, such as conduits, ducts, pipes, and connections to sewers or drains, etc., the obstruction shall be protected at the Contractor's expense, in cooperation with the owners of such utility structures. Temporary support and adequate protection of all underground and surface utility structures encountered in the progress of the work shall be furnished by the Contractor. Costs of adjustment shall be borne by the Contractor.
2. Plumb Installations - All valves and fire hydrant stems shall be installed plumb, prior to the hydrostatic testing of the main.
3. Clearances
  - a. Parallel Utilities – No utilities shall be installed parallel to and immediately above or within eighteen inches (18") horizontally in all directions from the outer edge of the water main.
  - b. Crossing Utilities - Except for the separation between waste water systems and water systems, which must comply with TCEQ regulations, crossings of all utilities shall be located at a minimum distance of 18" from the outer face of the water main in all directions.
  - c. Depth of Cover - The depth of cover shall be measured from the surface of the finished grade to the top of the pipe barrel. Unless otherwise shown on the drawings, the depth of cover to finish grade shall be a minimum of thirty-six inches (36") and a maximum of forty-eight inches (48"). Approved deviations from these distances shall be promptly marked on the field drawings.
4. Polyethylene Wrapping - All ductile iron pipe, valves, and fittings, except pipe, valves and fittings which are located in encasement pipe or in concrete vaults, shall be wrapped with eight mil (8-mil) polyethylene material, which may be either black or clear. The wrapping shall be lapped in such a manner that all surfaces of the pipe, valves, and fittings, including joints, shall have a double thickness of polyethylene. Double thickness of polyethylene shall be lapped a minimum of eighteen inches (18") and the lap shall be placed in the lower quadrant of the pipe and in such a manner that

backfill material cannot fall into the lap. The polyethylene shall be secured in place with poly vinyl tape and/or twine at not more than six foot (6') intervals. If wrapping is applied before the pipe is placed in the trench, then special care shall be taken in handling the pipe, so that the wrapping is not damaged. Care shall also be exercised in backfilling around the pipe and fittings and in blocking fittings, so as not to damage the wrapping. Any wrapping that is damaged shall be repaired in a manner satisfactory to the Superintendent of the Water Department, so as to form the best protection to the pipes. The backfill shall be placed in a manner that will not injure the polyethylene wrapping and shall be compacted under, around the sides, and over the pipe in a manner that will reduce settlement to a minimum and as approved by the Superintendent of the Water Department.

5. Sand Encasement - All pipe and fittings, which are not enclosed in concrete vault or laid in an encasement pipe, shall be completely encased with a minimum of eight inches (8") of sand around the outer edge of the pipe. For pipes that are sixteen inches (16") and larger, the minimum thickness of the sand encasement shall be twelve inches (12") around the outer edge of the pipe. This encasement includes the bottom, sides and top of the pipe and fittings including bells, so that all portions of the main that are below the surface of the ground shall be encased, to insulate the pipe from the natural ground and from the backfill. The sand material shall be in accordance with the Standard Specifications (Appendix B). Sand shall be subject to testing, as directed by the Superintendent of the Water Department. If the sample does not meet the specifications herein, the sand shall be rejected, and all unapproved material shall be removed from the job site at the Contractor's expense.
6. Final Backfill Zone - This zone exists above the sand encasement, up to the surface of the ground. The material in the backfill zone shall be according to the Standard Specifications (Appendix B), and shall be appropriate to the type of pipe used.
7. Over-Excavation - Any part of the trench that is over-excavated shall be corrected with sand backfill. Over excavation may be required when the bottom of the trench is so soft that the encasement cannot support the pipe.
8. Trenches - Trenches shall be excavated true and parallel to the pipe center line with minimum clearances as specified. Trenches shall be wide and deep enough to account for the sand encasement. Where stumps or roots are encountered, they shall be removed flush with the sides of the trench.
9. Restraining the Main - Appropriate restrained fittings or adequately-sized thrust blocks shall be required at all Bends, Tees, incomplete Crosses, and at Blow-off valves. All main restraints shall be designed by the Engineer, shall be included in the drawings, and shall be approved before the work is done.
  - a. Restrained Joints - Restrained Fittings, Metal Harnesses, Tie Rods and Clamps or Swivel Fittings shall be used to prevent movement. Restraining devices and design configurations shall be specified by the Engineer and shall be job appropriate. All restrained fittings and devices shall be installed according to the manufacturer's specifications. Steel Rods and Clamps shall be galvanized or otherwise rust proof or coated with hot coal tar enamel. All fittings shall be wrapped with polyethylene wrapping.
  - b. Thrust Blocks - All thrust blocks shall be designed by the Engineer. Material for thrust blocks shall be a minimum of two-thousand eight hundred (2,800) psi concrete at twenty-eight (28) days

and shall be placed between undisturbed soil and the pipes and fittings being anchored. The blocking shall be placed, so that the pipe and fittings shall be accessible for repair.

10. Pipes and Fittings - Installation of pipe and fittings shall be done in accordance with manufacturer's recommendations, unless such recommendations conflict with the provisions herein, in which case the provisions herein shall prevail.
11. Pipe Deflection - Pipe deflection shall not exceed seventy-five percent (75%) of the maximum allowances recommended by the manufacturer.
12. Linear Locator Tape - A linear locator tape shall be installed directly above all new water pipes, on the surface of the sand encasement.

### C. Valves

1. Elevation of Valve Boxes - The top of valve boxes shall be flush with finish grade. In cultivated areas, the top of the valve box shall be set twenty-four inches (24") below natural ground and long enough to be raised to natural ground at a future date.
2. Valve Vaults - All geared valves shall be set in reinforced concrete vaults, as designed by an Engineer. The vaults shall have spring-loaded aluminum access lids, and the wrench nut of the valve shall be readily accessible for operation through the vault opening. If valve vaults are installed in areas of traffic, they must be equipped with aluminum H-20 traffic-loading lids, and the Developer must provide submittals that document the engineered lid. Drawings for the installation of the valve vault must be provided by the Developer and approved by the Superintendent of the Water Department. Vaults shall be constructed in a manner that will permit minor valve repairs and afford protection to the pipe from impact or settlement where it passes through the vault walls.
3. Cast Iron Valve Boxes - Cast iron valve Boxes shall be firmly supported, free and clear of the valve, and maintained centered and plumb over the wrench nut of the valve, with the box cover flush with the surface of the finished grade.
4. Tapping Sleeve and Valves - All tapping sleeve and valves shall be hydrostatically tested and approved before they are installed. The Tapping Sleeve and Valve shall pass with zero (0) leakage for five (5) minutes prior to tapping.

### D. Fire Hydrants

1. Fire Hydrant Assemblies - Fire hydrants shall be connected to the main using a six inch (6") ductile iron pipe and restrained fittings. Fire hydrant assemblies shall be constructed as per the Standard Details (Appendix C).
2. Breakable Coupling - The bottom flange of the fire hydrant shall be installed between two inches (2") and six inches (6") above the finished grade, with a typical distance of three inches (3"), so that the fire hydrant can be sheared off when hit by a vehicle. The bolts that are used for the breakable coupling shall be those specified by the manufacturer.
3. Fire Hydrant Location - Fire hydrants shall be installed between the curb and the sidewalk in such a manner as to provide complete accessibility, and also in such a manner that the possibility of damage

from vehicles or of injury to pedestrians will be minimized. Horizontal clearance distances from fire hydrant must be maintained.

4. Fire Hydrant Support - A thrust block shall be provided at the bowl of each fire hydrant and shall be placed so as not to obstruct the drainage outlet of weep hole of said fire hydrant.

#### E. Meters and Taps

1. Tapping the Main – Tapping of the main shall be made by the Water Department only. The Contractor shall coordinate all work with the Superintendent of the Water Department, at least seventy two (72) hours prior to the requirement of the tap being made. It is strictly prohibited for the Contractor to tap the main, unless approval by and directly supervised by the Superintendent of the Water Department.
2. Costs for Tapping the Main - The Contractor shall be responsible for all of the costs associated with tapping the main. Fee schedules are provided for taps and meters of four inches (4”) or less. For taps and meters that are larger than six inches (6’), prices will be provided by the Superintendent of the Water Department. Developer shall allow ten (10) business days for the work to be performed.
3. Curb Markings – Pre-tap locations shall be marked with a brass “W” or a stamped “W” of approximately one-and-one-half inch (1 ½”) in size on the curb, at the location that the pre-tap was made.
4. Meter Yoke - The distance of the meter yoke below the finished grade shall be twelve inches (12”), and the distance behind the curb shall be two feet (2’).

#### F. Backflow

1. Construction Meters – The Developer shall ensure that a Reduced-Pressure-Principle backflow device is located at the downstream side of the construction meter, to protect the water distribution system from contamination during its use.
2. Testing Backflow Devices – It shall be the responsibility of the Developer to have all backflow devices tested and certified upon installation, relocation, repairs, and annually. Verification of the testing shall be made by providing a Testing Certificate to the Backflow Prevention Office of the City of Corpus Christi whenever the device is tested.

#### G. Inspections

1. Water Inspections - All public water improvements shall be inspected by the Superintendent of the Water Department, who will view the installation of all of the public water improvements and will assist the City Engineer to ensure that the improvements are built according to the plans and specifications. The Developer shall give the Superintendent of the Water Department at least a seventy-two (72) hour notice for an inspection. Acceptance of the public water mains shall not be made by the City Engineer without prior approval from the Superintendent of the Water Department.
2. Conditional Acceptance – A “Conditional Acceptance” for plat recordation purposes shall not be issued until after the hydrostatic and bacteriological tests on the new portion of the water distribution system has passed, until the underground portion of the main has been approved for cover by the

Superintendent of the Water Department, and until the main has been put in service. This Conditional Acceptance shall by no means exempt the contractor from the responsibility of fixing any repairs that may be needed on the new main from the date of installation through the one-year warranty period.

3. Acceptance of Main – Acceptance of the main shall not be made, until all of the proposed work is inspected and approved by the Superintendent of the Water Department.
4. Testing Procedures
  - a. Hydrostatic Test - The Contractor shall provide all of the materials, equipment, and labor necessary to accomplish the hydrostatic testing of the new water main. The Contractor will not be ready for the test until it has been confirmed that all valves are accessible and open, all fire hydrants are properly set, and all curb and gutter has been installed.
    - (1) Preparation for Hydro – Water for filling the line shall be provided by the City of Corpus Christi through a water meter connection assigned to the Contractor. A gauge and meter for testing shall be supplied by the City, but the test pump with the appropriate connection points, as approved by the Superintendent of the Water Department, shall be furnished by the Contractor. The meter shall be connected directly to the main being tested, but shall be protected against extreme pressures by the use of a one inch (1”) safety relief valve, set at the test pressure plus ten (10) psi and specified by the City, as depicted in the Standard Details (Appendix C).
    - (2) 2-Hour Test – The first hydrostatic test shall be a two (2) hour test, at a pressure of one-hundred-and-fifty (150) psi. The allowable leakage during this portion of the test shall be based on the sum of the leakage allowed in the AWWA standards for the type and quantities of pipe and appurtenances being used. This allowable leakage shall be calculated by the Engineer, based on the material quantities of the actual main installed. The required document shall be signed and sealed by the Engineer and made available to the Superintendent of the Water Department prior to the test. The results of the test shall be recorded and kept by the Superintendent of the Water Department until such time as the warranty on the project has expired.
    - (3) 48-Hour Test – The second type of hydrostatic test shall be made no less than forty-eight (48) hours after the successful completion of the first hydrostatic test. This test shall be for twenty-four (24) hours at City pressure. There shall be zero (0) leakage allowance during this test. During the test, all exposed pipe, fittings, valves, fire hydrants, and joints may be carefully examined, and if they are found to be leaking, they shall be corrected immediately by the Contractor. If the leaking is due to cracked or defective material, the material shall be replaced by the Contractor, and the test will have to be repeated.

This process shall continue until the pipeline passes both hydrostatic tests and is accepted by the Superintendent of the Water Department.

- b. Bacteriological Test - To insure the public health, safety and general welfare of the population served by the City of Corpus Christi, the Superintendent of the Water Department shall have water-licensed personnel supervise and direct all main sterilization, taps, connections and

operations according to the requirements of the TCEQ. The Contractor shall disinfect the new water main, in accordance with AWWA standards.

- (1) Preparation for Bacti – All pipe, valves, fire hydrants, and fittings shall be stored on timbers and kept clean. Where soil or other substances have come in contact with the water surfaces of the pipe or fittings, the interior shall be washed and sterilized with a two percent solution of calcium hypochlorite.
- (2) Bacti Test – After the main has passed the hydrostatic test, the new line shall be slowly filled with a solution of water and a concentrated calcium hypochlorite solution, and allowed to stand for forty-eight (48) hours. After the sterilization period is completed, one end of the new line shall be connected to an existing pipe that is the same size or larger and shall be flushed by the Contractor, under the direct supervision of the Superintendent of the Water Department. The hypo-chlorinated water shall be disposed of in accordance with TCEQ regulations. After the flushing of the new main, a sample shall be taken, and then after a forty-eight (48) hour incubation period, the results of the bacteriological test shall be obtained. If the sample does not pass TCEQ purification standards, the sterilization procedure shall be repeated. Two series of bacteriological test failures shall require the Contractor to “pig” the system before any more bacteriological samples shall be collected. No new piping shall be accepted as part of the distribution system prior to the time that the new system can be sterilized, tested, and accepted by the Superintendent of the Water Department.

# Appendix A – Definitions

*The vocabulary used in this document has the usual and customary definitions of words, as used in the industry and in the dictionary, unless otherwise noted in this section or in City Ordinance No. 4168, municipal planning, and engineering practices, and hereby shall supersede the normal and customary use of the word.*

**approved drawings** – drawings that have been stamped approved and signed by the Development Services Engineer or the City Engineer

**auto flusher** – a device that is attached to the water main which can be programmed to release water automatically at certain intervals for the purpose of flushing the water main

**AWWA** - American Water Works Association

**backflow protection** - the prevention of a contaminant from getting into the potable water either by mechanical means or by a physical air gap

**Backflow Testing Certificate** – a certificate or report by a State-licensed and City-registered Backflow Assembly Tester that certifies the test and maintenance of a backflow device

**bypass assembly** – an assembly which consists of tees, valves, and piping that is connected to either side of a device for the purpose of reducing pressure to the device by isolating the device and allowing water to bypass around the device

**CCN** - Certificate of Convenience and Necessity, as defined in the Texas Water Code

**CDBG** – Community Development Block Grant

**CIP** – is used as an acronym for Capital Improvement Program or for Cast Iron Pipe, whichever is applicable

**City** – the City of Corpus Christi, Texas, a municipal Corporation

**City contracts** – are contracts that are made between the City and any other entity or individual. The responsibility for final enforcement of contracts involving the City is by City Charter vested in the City Manager

**City Attorney** - the City Attorney of the City of Corpus Christi, Texas, or his/her duly authorized assistants or agents

**City Council** - the Council of the City of Corpus Christi, Texas

**City Engineer** - the City Engineer of the City of Corpus Christi, Texas, or his/her duly authorized representative

**City Manager** - the Manager of the City of Corpus Christi

**Commercial Projects** - these are building-permit projects that include public improvements such as fire hydrants, fire lines, and FLDC vaults and/or any other public water improvements

**Conditional Acceptance** – the time in the project after the hydrostatic and bacteriological tests have passed and the underground portion of the main has been accepted by the Superintendent of the Water Department

**Contractor** – the Utility Contractor who installs the water main

**Dead-End Main** – Any water main that terminates at a point other than a connection to another line or main which provides for distribution system looping

**Developer** – the one that is proposing to improve their property by adding or modifying City mains

**Development Services Engineer** - the Engineer in the Special Services Section of the Department of Development Services, in the City of Corpus Christi, Texas, or his/her duly authorized representative

**Distribution System Looping** – Alignment or routing of water distribution mains in combination with associated mains that provide service to each adjoining property using a minimum of two independent routes of water flow

**Engineer** – a professional engineer, licensed in any of the State of Texas

**ETJ** – Extraterritorial Jurisdiction

**fee schedule** – same as water fee schedule

**finish grade** - the level of the top surface of the anticipated improvement

**fire line** - a term used to define a water main that is privately owned and maintained, that is governed by the National Fire Protection Association regulations, and that is connected to the water distribution system by means of a Double-Check Detector assembly

**FLDC Vault** – the Fire Line Detector Check (FLDC) vault which consists of a Double-Check Detector Assembly with outside-stem-and-yoke (OS&Y) valves on both sides inside a vault, as per the Standard Details (Appendix C)

**gpm** - gallons per minute

**GPS** – Global Positioning System

**industrial areas** - will be defined as high density areas that include the following Zoning Districts (as defined in City Zoning Ordinance No. 6106):

- I-1 - Limited Industrial District
- I-2 - Light Industrial District
- I-3 - Heavy Industrial District

**main** - is a collective term that includes AWWA-approved pipes, fittings, valves, fire hydrants, and other appurtenances required for the water distribution system:

**distribution mains** – are mains in Residential areas of the water distribution system that are 6” in diameter

**grid mains** – are mains that are identified in the Water Distribution Master Plan

**supply mains** – are mains in the water distribution system that are 8” or 12” in diameter

**service lines** – are water lines that serve the property and are located between corporation stop at the Distribution or Supply Main and the curb stop at the water meter

**transmission mains** – are mains used to transport large volumes of water from one part of the water distribution system to another and that are sized sixteen (16) inches or larger

**Major Water Projects** - are projects whose designs are coordinated through the City Engineering Department and approved by the City Engineer which consist of CIP, CDBG, NIP, TxDOT, and other public water improvement projects and which are approved by the City Engineer and/or the Superintendent of the Water Department; acceptance for the construction of the water mains on these projects shall not be made without the approval from the Superintendent of the Water Department

**mercantile areas (light mercantile)** – are defined as low-to-medium density areas that include the following Zoning Districts (as defined in City Zoning Ordinance No. 6106):

- R-TH - Townhouse Dwelling District
- R-2 - Multiple Dwelling District
- A-1 - Apartment House District
- A-1A - Apartment House District
- A-2 - Apartment House District
- AT - Apartment Tourist District
- AB - Professional Office District

**mercantile areas (principal mercantile)** – are defined as medium-to-high density areas that include the following Zoning Districts (as defined in City Zoning Ordinance No. 6106):

- B-1 - Neighborhood Business District
- B-1A - Neighborhood Business District
- B-2 - Bayfront Business District
- B-2A - Barrier Island Business District
- BD - Corpus Christi Beach Design District
- B-3 - Business District
- B-4 - General Business District
- B-5 - Primary Business District
- B-6 - Primary Business Core District

**meter yoke** - the end of the service line that has the curb stop, to which the meter attaches

**NFPA** – National Fire Protection Association

**NIP** – Neighborhood Improvement Program

**OCL** - property that is located Outside of the City Limits

**OCL Water Contract** - the “Standard Form Contract for Providing Water Where Property is Situated Partly or Wholly Beyond City Limits” form that is signed by an applicant and whose requirement is based on the City Code of Ordinances, Article VIII Water Service Outside City, Section 55-110 -114

**OS&Y** – Outside Stem and Yoke

**pigging the line** – the process of pulling a device known as a “pig” through a pipe, for the purpose of removing any debris from the inside of the main

**Plumbing Code** – the most current Plumbing Code adopted by the City Council

**private fire service line** – as defined by NFPA-13

**Professional Engineer** – the same as the Engineer

**psi** - pounds per square inch

**residential areas** - are defined as low density areas that include farm buildings, one-family dwellings, travel trailer park districts, and manufactured home districts, and that are found in the following Zoning Districts (as defined in City Zoning Ordinance No. 6106):

- F-R - Farm-Rural District
- RE - Residential Estate District
- RA - One-family Dwelling District
- R-1A - One-family Dwelling District
- R-1C - One-family Dwelling District
- T-1A - Travel Trailer Park District
- T-1B - Manufactured Home Park District
- T-1C - Manufactured Home Subdivision District

**ROW** - public Right Of Way

**“Shall” & “May”** - as used herein, the word “shall” is mandatory, the word “may” is permissive

**Standard Details** - the drawing details that are maintained and approved by the Superintendent of the Water Department and are found in Appendix C herein

**Standard Specifications** – the water distribution system specifications maintained and provided by the City Engineering Department

**Sub-divider** - the terms, “sub-divider” and “developer”, are synonymous and are used interchangeably, as set out in the City Platting Ordinance, No.4168

**Subdivisions** - the division of any lot, tract or parcel of land into two or more parts, lots, or sites, as set out in the City Platting Ordinance, No. 4168

**Subdivision and Commercial Projects** – are plans for subdivisions and commercial projects drawn up by the Developer which are approved by the City Engineer or the Development Services Engineer

**Superintendent of the Water Department** - the Director or Superintendent of the Water Department of the City of Corpus Christi, Texas, or his/her duly authorized representative

**TCEQ** – the Texas Commission on Environmental Quality

**temporary dead-end condition** – a condition which temporarily creates a dead-end main, where a complete extension for a looped line is already programmed to begin construction within three years

**TS&V** - Tapping Sleeve and Valve(s)

**TxDOT** – the Texas Department of Transportation

**UE** - utility easement; a portion of land, described by meets and bounds and recorded at the Nueces County Courthouse which gives the City the right to access and maintain the mains

**Water Department Engineer** – the person who is employed by the Water Department who is responsible for making engineering decisions for the Water Department or a designee as appointed by the Superintendent of the Water Department

**water fee schedule** – the fee schedule adopted by City Council which outlines the fees for public water services provided by the Water Department

**water distribution system** – the system which consists of all mains in the water distribution system of the City of Corpus Christi

**Water Inspector**- an individual, licensed by TCEQ with at least a Class C Water License, and that acts on behalf of the City Water Department

**Water Master Plan** – a plan that projects the future development of the water distribution system and that is updated periodically by the City

**Water Standards** – the directions and requirements contained herein and is also known as the City of Corpus Christi Water Distribution System Standards

# Appendix B – Standard Specifications

[Approved Product List on Water Website]

[Application Sheet on Water Website]

## Product Approval Process

### 1. Product Approval Administration

- a. **New products shall be reviewed by the Product Review Committee. The application must be completely filled out for a product to be reviewed.**
- b. **Revisions to the City of Corpus Christi Approved Product List shall be issued at the end of each calendar quarter. Applications must be received a minimum of 4-weeks prior to the end of each quarter to be considered for approval for that quarter.**
- c. **Failure to submit any of the items on the Product Approval Submittal Items can be grounds for disapproval of product**

### 2. Product Approval Submittal Items

- a. **The Applicant shall provide Eight (8) copies of the application shall be received at:  
Approved Product List  
City Water Department  
P.O. Box 9277  
Corpus Christi, TX 78469-9277**
  - b. **The Applicant shall provide a list of existing installations of product, including the specific locations where the product can be accessed for review.**
  - c. **The Applicant shall provide a description of the material and construction procedures, including relevant industry standards – e.g. ASTM, AWWA, etc., special manufacturing process and quality control measures used in the manufacturing and installation of your product.**
  - d. **The Applicant shall indicate if there are any special conditions (such as pipe size) for optimal performance of the product, and the conditions of the requirements shall be specified. Where appropriate, engineering data required for proper application of the product shall be included. Relevant Safety factors and pressure, temperature, or environmental limits shall be identified.**
  - e. **The Applicant shall identify any variances to the Water Distribution Standards that are requested.**
- The Applicant shall provide a Certification of Compliance to all applicable City of Corpus Christi standards and codes.**

**The Applicant shall provide an Engineering Design Guide and an Installation Guide for the proposed product. Should engineering certification not be a part of the standard printed documents, a letter should be provided from the manufacturer that the Engineering Design Guide was prepared under the supervision of a Registered Professional Engineer. The name, seal, registration number and expiration date of the supervising engineer shall be included in either the design guide as the accompanying letter.**

**The Application shall provide the names, addresses, phone numbers, and job identification references of client references.**

**The Applicant shall provide copies of tests conducted by independent testing companies showing conformance with industry standards and City specifications established for the product.**

**The Applicant shall provide information relating to patents, licenses and/or franchises held on the product. Specification descriptions and relevant data such as patent (license) number and date issued shall be provided.**

**The Applicant shall provide any other related information to the product. Although not required, our application submittal may include other data to assist the Committee in evaluating the product for use on any projects. This information could include brochures, videotapes, product samples and/or photographs. The Committee cannot be responsible for return of these materials. One (1) copy of video tapes and product samples is sufficient for Committee review.**

# Appendix C – Standard Details

Final Draft