

1. All construction shall conform to Tucson Water Standard Specifications and Details. All work shall be performed by a contractor licensed by the State of Arizona, as determined by the Arizona Registrar of Contractors (A, A-12, A-16, K-80 and KA). A copy of the latest edition of the Tucson Water Standard Specifications and Details shall be on the project site at all times.
2. All materials used shall be new and must appear in the Approved Materials list, Appendix A. All PVC pipe shall be DR 14 class 306 unless otherwise specified.
3. Preconstruction Procedure:
 - a) All plans must be approved and signed by Tucson Water.
 - b) Work shall not commence until a written "NOTICE TO PROCEED" has been issued by Tucson Water.
 - c) The Contractor shall notify the Construction Section a minimum of three (3) days in advance of construction to request a preconstruction meeting. The Construction Section will schedule the time and place for the pre-construction meeting only after receiving the following items:
 - approved plans
 - construction file
 - "Certificate of Approval to Construct" from Pima County Department of Environmental Quality
 - signed construction agreement.
 - d) Any work done prior to the "NOTICE TO PROCEED" shall be removed by the contractor at the sole expense of the contractor.
 - e) The contractor is responsible for obtaining all permits required to complete the work.

4. Layout/Cut Sheet Submittal:

Note: An example of the standard layout/cut sheet forms are attached hereto for reference. Forms are available by contacting Tucson Water's Construction Section Office. No other format will be accepted. (See SD-105, sheets 8, 9 & section 215).

- a) Only complete, official Tucson Water Layout sheets will be accepted. Layout/Cut sheets shall be submitted to Construction Section and actual layout verified by the Engineer prior to issuance of "NOTICE TO PROCEED". These layout/cut sheets shall show all stationing and cuts for all valves, connections, hydrants, services, fittings, etc. to be included in the proposed system. All cuts will be to pipe invert. Stationing must begin at a known permanent point (such as monument or property pin) which will remain visible after completion of construction. Two full working days will be required for layout sheets review and approval. Layout/cut sheets may be submitted in phases on large projects. No work is allowed in areas that have no approved layout/cut sheets.
- b) An Arizona Registered Land Surveyor shall certify that the elevations on the official Tucson Water Layout sheets are the existing elevations and proposed final grades as of the date of survey. However, the new main shall never have less than 36" cover during construction. The certification is required on all cut sheets submitted throughout the project.

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- c) All projects will be stationed at a minimum of 50-foot intervals reference section 0215. Curves with a radius of 300 feet or less shall be stationed every 25 feet; curves with a radius of greater than 300 feet shall be stationed at a minimum of 50-foot intervals.
- d) Cuts for the end location of services, fire hydrants, and fire hydrant or fire service stub outs shall be shown to the top of curb or to final grade where no curb is to be constructed. All cuts will be to pipe invert. Stationing and cuts for fire hydrants and fire hydrant stub outs shall be shown both at the main and at their end locations. Stationing and cuts for services shall be shown at their end locations only.
- e) Layout/cut sheets shall show any unusual conditions such as extra cuts, extra cover, drainages, etc.
- f) Construction staking shall reflect the information shown on the layout/cut sheets. Stationing and cuts shown on the layout/cut sheets shall be hand lettered on the grade stakes. The distance and direction of the offset line (N, S, E or W) shall be shown in relation to the waterline, i.e. if the offset line is ten feet north of the waterline, the offset distance and direction will be "10' N."
- g) Off-set hubs shall be set far enough away from trench centerline to avoid being lost due to excavation or cave ins. Lost or damaged staking shall be immediately replaced at the sole expense of the Contractor.
- h) If inverts are provided on the approved plans, hub elevations for the offset line shall be shown in the "Hub Elevation column".
- i) The Contractor, at his or her expense, shall replace "in kind" any existing survey monumentation damaged or disturbed during construction (including property pins). This replacement shall be made by an Arizona Registered Land Surveyor and a Record of Survey will be required.
- j) Plan revisions will require new layout sheets.

5. The contractor is required by law to contact "Blue Stake" two (2) working days prior to any excavation to determine accurate utility locations. The Contractor shall keep all "Blue Stake" requests up-to-date, and comply with applicable Arizona Revised Statutes pertaining to "Blue Stake". Errors in Blue Stake must be reported to the Engineer immediately.
6. Water mains shall be installed after sewer installation and after grading of street and walk areas to within 6" of final grade.
7. Water mains shall be installed within the City limits with a minimum of 44" (forty-four inches) of cover from final grade except as otherwise noted on the approved plans.
8. Water mains installed within existing Pima County right-of-ways that are not at final grade (final grade shall be defined as an existing or proposed roadway that includes permanent curbs), shall be installed with a minimum 60" (sixty inches) of cover from the future final grade except as otherwise noted on the approved plans.
9. Adequate quantities of ABC and cold pavement patch mix to make temporary pavement patches shall be on job site before cutting existing pavement.

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10. All material and equipment required for a connection or tie-in shall be on the job site before authorization is given to commence the work.
11. The bedding material, backfill material, compaction and pavement patches shall be in accordance with section 0209 or, the requirements of the authority that has jurisdiction over the right-of-way whichever is more severe. The inspector has been authorized to assure compliance with the other authorities' requirements.
12. "Joint-use-trench" with water and other utilities will not be permitted unless previously approved by Tucson Water and shall comply with SD-108, and the joint trench detail must be on the approved plans. When electric, telephone or gas facilities parallel water facilities, they shall not be installed with less than 5' horizontal clearance from the water main unless the system has been approved for "Joint-Use-Trench". In an approved joint use trench, the minimum vertical separation at any location shall be 12 inches.
13. Only approved plans shall be used for the installation of water facilities. Approved plans requiring revision shall be approved by Tucson Water prior to start of the revised work.

All plans must meet the minimum pressure and storage requirements as set forth in Arizona Administrative Code (AAC) R18-5-502 & 503.

Changes requiring a revision are as follows:

1. Adding or deleting new water mains.
2. Rerouting of new water main more than 1' from original location.
3. Adding, deleting, relocating or changing the size of new water service.
4. Adding, deleting or changing the size of a new fire service.
5. Adding, deleting or relocating a new fire hydrant.
6. Changing easements.
7. Change in owner/developer name.
8. Reconfiguration of parcels.

Any other changes to approved plans shall be revised at the discretion of the Construction Inspector.

14. Water service will be provided as shown on this plan. Any changes to parcel configuration may necessitate additional requirements.

As of July 1, 2003, it will be the responsibility of the developer to provide and install meter boxes on all services. Services installed will be in compliance with Tucson Water SD-309.

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The Department shall have received sufficient documentation that all property easements rights of way and other lands for the benefit of the Department have been properly transferred to the Department, either through the execution and delivery of Deeds, approved Final Plats, easement recordings or other instruments satisfactory to the Department. The subject Water Plan will not be “finaled”, nor will water meters be released, until such time that the Department has determined compliance.

For service protection backflow prevention requirements contact Tucson Water Backflow Section at 791-2650. A pressure drop is anticipated across the backflow device.

Plan review and approval by Tucson Water – New Development Unit does not constitute approval of private plumbing. Private plumbing includes all backflow protection and plumbing from the water meter to the premises and fire services beyond the right-of way or easement lines. Contact the appropriate backflow prevention officials, city or county, for private plumbing review.

Any construction, including foundation, walls, trees, etc. is prohibited in the public water or public utility easement.

Separate meters may be used for irrigation and domestic service. Domestic and irrigation service shall not be interconnected.

Any reclaimed water service shall not be turned on until it has been inspected and approved by Tucson Water Backflow Prevention Section.

Tucson Water reserves the right to implement zone boundary changes in the future as needed, which may affect certain lots’ estimated water pressures.

15. Existing dead-end mains shall be thoroughly flushed before tie-ins are made to the new mains.
16. Fire hydrants shall be set at curb returns, common lot lines, or as indicated on approved plans, as directed by the responsible fire authority, and in accordance with Standard Detail SD-500. All fire hydrant laterals shall be class 350 ductile iron.
17. The Owner/Developer shall have all curb stops located and is responsible for their protection during all phases of construction until water meters are installed. Water services shall be set in a flat strip of land, which parallels the curb, sidewalk or water main. This 3' strip of land shall not exceed the top of curb or sidewalk nor be below the bottom of curb or sidewalk. The Owner/Developer shall be responsible for protecting all curb stops during all phases of construction.

No meters will be released prior to final acceptance without written permission from the engineer.

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applicant must reschedule installation. After meter installation, the Owner/Developer is responsible for the protection of the meter and meter box until the account is transferred to the homeowner. All meter boxes must be installed according to the Tucson Water Specifications. Meter boxes broken or removed by the Contractor will be replaced or reset in accordance with Tucson Water specifications at his expense.

The account transfer will not take place until meter boxes are installed according to specifications.

18. Set angle meter stops 8" behind back of curb in streets with curbs, and 8" minimum/10" maximum below finished grade, see SD-310, 311.
19. Set angle meter stops 3' from property line in streets without curbs, and 8" minimum/10" maximum below finished grade, see detail SD-310, 311.
20. Angle meter stops shall not be installed at the same lot corner as the electric service or transformer. Where this cannot be accomplished, the water service and the electrical service or transformer must have a minimum horizontal separation of 10'.
21. The contractor shall have all water valves identified and located prior to paving and shall have all valve boxes set to final grade after paving in accordance with SD-300.
22. The project will not be accepted if it includes any work that is not shown on approved plans, revisions or otherwise approved by Tucson Water.
23. Final acceptance will not be granted until passing microbiological test results have been received and the Construction Section receives sieve analysis and plasticity results. The soils test shall be performed and certified by a registered engineer.

After final flushing and before the new work is accepted, microbiological tests shall be performed and shall show the absence of coliform organisms (no coliform organisms shall be detected in any samples). Once the microbiological test has passed, tie-ins to the existing system must be made within 14 days. Failure to complete tie-ins in the specified time will require a microbiological re-test. Should the re-test fail, the portion or portions of the new system must be rechlorinated and a new microbiological test taken.

24. Where existing water services are to be relocated, the Contractor shall be responsible for relocating those services to the new locations as shown on the approved plans. Relocation work shall include, but not be limited to, new services saddles and taps, new service pipe, angle meter stops, ball valves, tracer wire, detector tape, setting new meters, (provided by Tucson Water) and meter boxes, all work necessary to reconnect the Private Plumbing. Any and all work must be in accordance with Tucson Water specifications. The Contractor shall salvage all existing meters and boxes in accordance with note number 26 herein. All services are to be tapped on the side of the main facing the property that the meter serves.
25. Where existing water services are to be abandoned, the Contractor shall be responsible for removing and disposing of all associated materials relevant to the

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abandoned service, including closing and plugging the existing corporation stop, in accordance with the approved plans and the salvage note number 26 herein.

26. ABANDONED MATERIALS:

A. The Contractor is to abandon valve boxes as follows:

1. UNPAVED AREAS:

The concrete collar shall be totally broken, removed and disposed of off the job site. The valve box and lid shall be removed. Riser pipe shall be cut a minimum of 15" below finish grade. Surplus broken asbestos-cement shall be disposed of per the Department of Environmental Quality, Pima County.

The riser shall be backfilled with aggregate base course. All areas of unpaved ground disturbed by this salvage operation shall be backfilled with aggregate base course compacted to a minimum of 85% maximum density as determined in AASHTO Test Designation T-99, Method A, and the area left in an undisturbed manner as it was prior to this salvage operation.

2. PAVED AREAS:

A square 2'-6" X 2'-6" minimum shall be saw-cut around the valve box and lid. The concrete collar shall be totally broken and removed. The valve box and lid shall be salvaged. Risers shall be cut a minimum of 15" below finish grade. Surplus broken cement-asbestos material shall be disposed of in accordance with SD-105 note number 26C. The riser shall be filled with aggregate base course. The area disturbed by this salvage operation shall be backfilled with aggregate base course compacted to the minimum densities as specified in Section 923-2 of the Pima County, City of Tucson Specifications for Public Improvement and brought up to match the bottom of the asphalt pavement. This square shall then be patched per these specifications. The Contractor shall do his utmost to accomplish a smooth patch to the satisfaction of the Engineer. If the pavement patch is unacceptable it shall be redone at the sole expense of the Contractor until deemed acceptable.

B. CEMENT-ASBESTOS PIPE HANDLING AND TRANSFER

The Contractor shall be responsible for the proper removal, transfer and disposition of cement-asbestos pipe from the construction site. Specific requirements for handling and disposal of cement-asbestos material shall be obtained from the Department of Environmental Quality, Pima County, and (520) 243-7400.

C. OTHER MATERIALS

Items such as, but not limited to, fire hydrants, valve boxes, valves, blind flanges pipe and fittings are no longer salvaged by Tucson Water. These items are the responsibility of the Contractor and are to be disposed of at no expense to Tucson Water.

Any items that are to be salvaged will be identified on the plans or in the Special Specifications.

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27. WATER SERVICE MAINTENANCE

The Contractor shall maintain water service at all times and shall minimize water service interruption to existing water services during all construction activities within the project area. The Contractor shall support all existing meters and service lines found in conflict with new water main alignments whether or not shown on Plans across the trench. Existing water meters shall remain in place and are not to be disturbed and/or relocated by the Contractor during water main trenching and installation operations and shall remain accessible for reading or maintenance during construction.

The Contractor shall be held liable for any damages to existing water meters and/or service lines that occur during his trenching and water main installation operations. The Contractor shall give prompt notification to the Engineer when said damages occur.

All costs associated with water service maintenance work by the Contractor shall be included in the price cost per foot.

28. DAMAGE TO EXISTING UTILITIES

Utility locations are shown on the Plans for design purposes only. In general, the locations of existing major utilities, above ground and underground are indicated on the drawing for drafting purposes only.

This information has been obtained from utility maps, field survey work and from descriptions provided by the various agencies involved and represents the best information available. Tucson Water does not guarantee the accuracy or completeness of this information and it is to be understood that other facilities not shown on the drawings may be encountered during the course of the work.

Under State Law (ARS 40-360-21), the Contractor shall contact all utilities in order to determine the location of their respective utilities prior to any excavation. The Contractor shall be responsible for any damages to existing utilities and shall be responsible for any necessary repairs at his own expense.

The Contractor shall be required to contact "Blue Stake" (1-800-782-5348) two (2) working days prior to any excavation to determine accurate utility locations. The Contractor shall keep all "Blue Stake" requests up-to-date, and shall comply with applicable Arizona Revised Statutes pertaining to "Blue Stake".

The Blue Stake Center is available for the convenience of the Contractor by calling 1-800-782-5348, two (2) working days prior to construction.

29. All submittals shall include the Tucson Water Plan Number or they will be rejected.

30. OBSTRUCTIONS

Any obstructions including, but not limited to, stakes set by engineers, mail boxes, gravel, rocks, trees, shrubbery, lawn, landscaped or open areas, fences, embankments, curbs, gutters, unpaved streets, alleys, driveways, sidewalks, drain spouts, pipe lines, sprinkler systems, storm drains, sewers, house connection sewers, conduit, utility poles, traffic signs or controls, etc., shall be supported or protected from injury by the Contractor during construction and until completion of the work. In the case of shrubbery and lawns which are removed or damaged, it shall

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be the Contractor's responsibility to replace them, using acceptable nursery methods. In any event, however, the Contractor is liable and responsible for the repair and replacement of any damaged obstructions with in kind materials and in as good as or better than the original condition, as determined by the engineer.

31. Tucson Water Representatives shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication or manufacture of the materials to be used. Tucson Water Representatives shall not be authorized to alter or waive the provisions of the contract. Tucson Water Representatives shall be authorized to issue instructions in keeping with the design intent of the plans and specifications. Tucson Water Representatives shall not act as foreman for the Contractor; however, Tucson Water Representatives shall have the authority to reject defective materials or work. Tucson Water Representatives shall be the sole interpreter of the specifications.

Tucson Water Representatives failure during the progress of work to discover or reject materials or work not in accordance with the plans specifications shall not be considered an acceptance of the work or materials or a waiver of defects. The failure of the Tucson Water Representatives to properly perform inspections, tests or approvals required by the Plans and Specifications does not relieve the Contractor from the responsibility for the means, methods, techniques, sequences or scheduling of the construction or obligation to perform the work in strict accordance with Plans and Specifications.

Failure of Tucson Water Representatives to note unsafe working conditions or conditions dangerous to the general public, or to stop work on account of such conditions, shall not relieve the Contractor of sole responsibility for such conditions. In this connection, the Contractor warrants the Contractor is fully familiar with all the safety requirements of the current edition of the Occupational Safety and Health Act promulgated by the Federal Government and implemented by the State of Arizona, and the Contractor shall be solely responsible for implementing and enforcing the same at all times. The contractor shall also indemnify and defend the Engineer and the Agency from any and all claims arising from or caused by, such unsafe conditions.

Items of work requiring inspection prior to being backfilled by the contractor, include but are not limited to trench depth and location, pipe materials and installation, pipe fittings and installation, thrust restraints, fire hydrant installation, temporary plugs, taps and tie-ins, services, drain assembly, bedding, and detectable and marking tape installation.

Any work done or materials used without inspection by Tucson Water Representatives may be ordered uncovered and removed or replaced at the contractor's expense even if the uncovered work is determined to be acceptable.

32. **APPROVED MATERIALS**
All materials used for construction of Tucson Water projects must be listed in Appendix A "Approved Materials" or approved through the project submittal process. Any item not listed in the appendix will not be allowed for use in the Tucson Water system unless approved through the project submittal process.
33. All fittings, valves, flexible couplings, and repair clamps shall be encased with a 10-mil polyethylene in accordance with AWWA C-105 Method C.

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- 34. All lateral lines 3" or larger shall use flange to RT or flange to mechanical valves. Laterals 3" or smaller shall use corporation stops.
- 35. All lead fittings and lead services shall be removed and replaced with materials contained in the Approved Materials list.
- 36. All mains abandoned in place shall be filled with grout.

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