

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, CR-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 (12 inches and smaller) shall be DR 14 class 305 unless otherwise specified.
3. **PRE-CONSTRUCTION PROCEDURE**
 - a. All plans must be approved and signed by Tucson Water.
 - b. Work shall not commence until Tucson Water has issued a written Notice to Proceed.
 - c. The Contractor shall notify the Construction Section at least 3 days before construction to request a pre-construction meeting. The Construction Section will schedule the time and place for the pre-construction meeting only after receiving the following items:
 - approved plan
 - construction file
 - “Certificate of Approval to Construct” from the 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 his/her sole expense.
 - 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. No other format will be accepted. (See TW Standard Detail 105, sheets 10 and 12, and Section 0215.)

 - a. Only complete, official Tucson Water Layout sheets will be accepted. Layout/cut sheets shall be submitted to the Construction Section and actual layout verified by the Engineer prior to issuance of a 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) that will remain visible after completion of construction. Two full working days will be required for review and approval of layout sheets. Layout/cut sheets may be submitted in phases on large projects. No work is allowed in areas lacking approved layout/cut sheets.
 - b. An Arizona Registered Land Surveyor shall certify that the elevations on official Tucson Water Layout sheets are the existing elevations and proposed final grades as of the date of survey. This certification is required on all cut sheets submitted throughout the project.

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
6/16				

- c. All projects will be stationed at a minimum of 50-foot intervals; see Section 0215. Curves with a radius of 300 feet or less shall be stationed every 25 feet; curves with a radius greater than 300 feet shall be stationed at a minimum of 50-foot intervals.
 - d. Cuts for the end location of services, fire hydrants, ARV, DVA Blowoff Valve 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 10 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 Contractor's sole expense.
 - 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/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 Arizona 811 (formerly Arizona Blue Stake) two working days prior to any excavation to determine accurate utility locations. The Contractor shall keep all Arizona 811 requests up-to-date, and comply with applicable Arizona Revised Statutes pertaining to Arizona 811. Errors in Arizona 811 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 inches of final grade.
7. Water mains shall be installed within the City limits with a minimum 44 inches of cover from final grade, except as otherwise noted on the approved plans.

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
6/16				

8. Water mains installed within existing Pima County right-of-ways 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 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 the job site before cutting existing pavement.
10. All material and equipment required for a connection or tie-in shall be on the job site before authorization is given to commence work.
11. The bedding material, backfill material, compaction, and pavement patches shall be in accordance with Section 0209 or the requirements of the authority with jurisdiction over the right-of-way, whichever is more severe. The inspector has been authorized to assure compliance with other authorities' requirements.
12. "Joint-use-trench" with water and other utilities will not be permitted unless previously approved by Tucson Water. It shall comply with TW Standard Detail 108, and the joint trench detail must be in the approved plans. When electric, telephone, or gas facilities parallel water facilities, they shall not be installed with less than 5 feet 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 installing water facilities. Approved plans requiring revision shall be approved by Tucson Water before commencing the revised work.
14. Changes requiring a revision are as follows:
 - a. Adding or deleting new water mains
 - b. Rerouting a new water main more than 1 foot from original location
 - c. Adding, deleting, relocating, or changing the size of new water service
 - d. Adding, deleting, or changing the size of new fire service
 - e. Adding, deleting, or relocating a new fire hydrant
 - f. Changing easements
 - g. Changing owner/developer name
 - h. Reconfiguring parcels
 - i. Deleting any fittings

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

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
6/16				

15. All plans must meet the minimum pressure and storage requirements as set forth in Arizona Administrative Codes (AAC) R18-5-502 and 503.
16. Water service will be provided as shown on this plan. Any changes to parcel configuration may necessitate additional requirements.

It will be the developer's responsibility to provide and install meter boxes on all services. Services installed will comply with TW Standard Detail 309.

The Department shall have received sufficient documentation that all property easements, rights-of-way, and other lands for the Department's benefit 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 "finalized", 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 Prevention at 791-2650. A pressure drop is anticipated across the backflow device.

Plan review and approval by Tucson Water New Development 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.

17. Shutdown of the existing water system requiring the operation of Tucson Water valves shall be coordinated through a City of Tucson Water Department Construction Inspector. The Contractor shall notify Tucson Water at least 14 working days before scheduling a shutdown for a tie-over or connection. Any transmission main 12 inches and larger shall NOT be shut down during peak season (April 1 through October 1) unless written approval is given by TW Engineer or the TW Construction Section.

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
6/16				
SHEET 4 OF 13				

18. Existing dead-end mains shall be thoroughly flushed before tie-ins are made to new mains.
19. 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 TW Standard Detail 500. All fire hydrant laterals shall be class 350 ductile iron.
20. 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 paralleling the curb, sidewalk, or water main. This 3-foot 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. All meter boxes must be installed according to Tucson Water Specifications. Meter boxes broken or removed by the Contractor will be replaced or reset in accordance with Tucson Water Specifications at his/her expense.
21. Set angle meter stops 8 inches behind back of curb in streets with curbs, and 8 inches minimum/10 inches maximum below finished grade; see TW Standard Details 309 and 310.
22. Set angle meter stops 3 feet from property line in streets without curbs, and 8 inches minimum/10 inches maximum below finished grade; see TW Standard Detail 309 and 310.
23. 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 feet.
24. 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 TW Standard Detail 300.
25. The project will not be accepted if it includes any work not shown on approved plans, revisions, or otherwise approved by Tucson Water.
26. Final acceptance will not be granted until the Construction Section has received sieve analysis and plasticity results, along with passing microbiological test results. The soils test shall be performed and certified by a registered engineer.

After final flushing and before acceptance of the new work, 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(s) of the new system must be rechlorinated and a new microbiological test taken.

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
8/09				

27. When 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, and 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 29 herein. All services are to be tapped on the side of the main facing the property served by the meter.

28. When existing water services are to be abandoned, the Contractor shall be responsible for removing and disposing of all associated materials relevant to the abandoned service (SD-350), in accordance with the approved plans and salvage note number 29 herein.

29. ABANDONED MATERIALS

A. VALVE BOXES. 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, and the valve box and lid removed. Riser pipe shall be cut a minimum of 15 inches below finished grade. Surplus broken asbestos-cement shall be disposed of per the Pima County Department of Environmental Quality.

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 95 percent maximum density as determined in AASHTO T 99 Method A, and the area left in an undisturbed manner, as it was prior to salvage.

2. PAVED AREAS

A square 2'-6" by 2'-6" minimum shall be saw-cut around the valve box and lid. The concrete collar shall be totally broken and removed, and the valve box and lid salvaged. Risers shall be cut a minimum of 15 inches below finished grade. Surplus broken cement-asbestos material shall be disposed of in accordance with TW Standard Detail 105, note number 29 and Subsection 0204.0302(B). 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 specified in Section 923-2 of the PAG Standard Specifications for Public Improvements, 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/her utmost to accomplish a smooth patch to the Engineer's satisfaction. If the pavement patch is unacceptable, it shall be redone at the Contractor's sole expense until deemed acceptable.

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
6/16				

B. CEMENT-ASBESTOS PIPE HANDLING AND TRANSFER

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

C. OTHER MATERIALS

All valves 24 inches and larger shall be salvaged and delivered to a Tucson Water location at no cost to the Agency. Valves shall be unloaded and placed at a location under the direction of a Tucson Water representative. Items such as, but not limited to, valve boxes, 16 inch valves and smaller, blind flanges, pipe and fittings are no longer salvaged by Tucson Water. These items are the Contractor's responsibility and are to be disposed of at no expense to Tucson Water.

Any items to be salvaged will be identified on the plans or in the Special Specifications, and TW SECTION 0204

30. 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 any new construction, whether or not the meters and service lines are 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/her trenching and water main installation operations. The Contractor shall promptly notify the Engineer when said damages occur. All costs associated with the Contractor's water service maintenance work shall be included in the price cost per foot. See TW SD-375.

31. DAMAGE TO EXISTING UTILITIES

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

This information has been obtained from utility maps, field survey work, and 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 existing utilities prior to any excavation. The Contractor shall be responsible for any damages to existing utilities and shall make any necessary repairs at his/her own expense.

The Contractor shall be required to contact Arizona 811 two working days prior to any excavation to determine accurate utility locations. The Contractor shall keep all Arizona 811 requests up-to-date, and shall comply with applicable Arizona Revised Statutes pertaining to Arizona 811.

Arizona 811 is available for the Contractor's convenience by calling 811 two working days prior to construction.

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
6/16				

32. OBSTRUCTIONS

Any obstructions including, but not limited to, stakes set by engineers, mailboxes, 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, conduits, utility poles, dry utilities, 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 that are removed or damaged, it shall 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 to a condition as good as or better than the original, as determined by the Engineer.

33. Tucson Water Representatives shall be authorized to inspect all work and furnished materials. 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 and specifications shall not be considered an acceptance of the work or materials, or a waiver of defects. The failure of 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 the plans and specifications.

The 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 that he/she 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 uncovered work is deemed acceptable.

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
6/16				

34. **APPROVED MATERIALS AND SUBMITTALS**

All materials used for construction of Tucson Water projects must be listed in the Approved Materials List (Appendix A) or approved through the project submittal process. Any item not listed in Appendix A will not be allowed for use in the Tucson Water system unless approved through the project submittal process.

Submittals are required for special components and water materials 16 inches and larger, or products not in the Approved Materials List. Submittals for water work are not required for items in the Tucson Water Approved Materials List unless otherwise noted. All submittals shall include the Tucson Water Plan Number or they will be rejected.

35. All fittings, valves, flexible couplings, and repair clamps shall be encased with an 8-millimeter polyethylene wrap in accordance with AWWA C105 Method C.

36. All lateral lines 3 inches or larger shall use flange to flange or flange to mechanical valves. Laterals 3 inches or smaller shall use corporation stops.

37. All lead fittings and lead services shall be removed and replaced with materials contained in the Approved Materials List.

38. All mains abandoned in place shall be per TW Standard Detail 350, unless otherwise noted.

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

40. **INACTIVITY ON PROJECTS WITH A NOTICE TO PROCEED**

- a. Once work commences on a project, it will receive daily inspection (Mon - Fri, holidays excluded)
- b. After 2 consecutive work days of inactivity, daily inspection will cease (unless notified by the contractor)
- c. Any work done while inspection is discontinued will be rejected and removed
- d. Inspection will not recommence until the inspector has received 24-hour notice of work continuing

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				SHEET 9 OF13
5/17				



TUCSON WATER LAYOUT SHEET
WATERLINE

REFERENCE
SECTION 0215

ENGINEERING FIRM: _____ PHONE: _____ DATE: _____
PROJECT NAME: _____ TUCSON WATER PLAN NO. _____
STREET LOCATION: _____ MINIMUM COVER REQ: _____

NOTE ANY SPECIAL CONDITIONS: _____

I HEREBY CERTIFY THAT THESE ARE THE EXISTING GRADES AS OF THE
DATE OF SURVEY AND THAT THE GIVEN CUTS WILL PROVIDE THE MINIMUM
REQUIRED COVER.

SEAL OF REGISTRANT

STATION	DESCRIPTION	HUB ELEVATION	INVERT ELEVATION	CUT OR FILL	OFFSET

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				SHEET 10 OF 13
12/16				

ENGINEERING FIRM: _____ PHONE: _____ DATE: _____
PROJECT NAME: _____ TUCSON WATER PLAN NO. _____
STREET LOCATION: _____ MINIMUM COVER REQ: _____

[illegible]



SEAL OF REGISTRANT

[illegible]

*FINISH GRADE WILL BE USED WHERE NO CURBS ARE TO BE INSTALLED.

ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
12/16				



ISSUED:		STANDARD DETAIL		DETAIL NO.
6/97		GENERAL CONSTRUCTION NOTES		SD-105
REVISED:				
12/16				