



CITY OF HENDERSON

3rd Addendum – September 2007 **Uniform Design and Construction Standards for Potable Water Systems** **December 2003 (2nd Edition)**

GENERAL STATEMENT:

The “Uniform Design and Construction Standards for Potable Water Systems” (UDACS) addresses the design and construction requirements for water distribution systems. Generally, this shall include water mains and appurtenances 16-inches in diameter and smaller. For design and construction requirements related to mains larger than 16-inches in diameter, contact the City of Henderson Department of Utility Services, Technical Services Division for specific details.

The intent of this addendum is to clarify specific City of Henderson (City) requirements that may not be fully addressed within the UDACS document. Where discrepancies exist between the requirements of UDACS and this addendum, this addendum shall apply. If not amended by this addendum, the requirements as specified in UDACS shall apply. This 3rd addendum supersedes the 1st and 2nd.

1.01 Definitions

Add the following definition to this section:

High-Pressure Service – Any water service where expectant static water pressures exceed 100 psi.

1.01.31 Cement Slurry

Add the following to this definition: Cement slurry shall not exceed a two sack mix.

1.01.63 Easement

Easements shall not be less than 20-feet in width and shall be contained within a single parcel of land. The easement shall increase by 10-feet in width for each utility main added to the easement beyond a single main. All mains shall be centered in the available easement space. Unless otherwise allowed by the City, all utility easements in a subdivision, not within a public or private street, shall be within a common element. The easement width required may increase with a main deeper than standard.

2.01 Water Distribution System Pressure Zones

- 2.01.01 At the sole discretion of the City, in some instances it may be deemed appropriate to allow water services to exceed a static pressure of 100 psi. If approved by the City, a High-Pressure Disclosure shall be required in accordance with the City's requirements.

2.02 Water Distribution Main Sizes

- 2.02.01 The minimum water main size for any project will be based on the approved hydraulic analysis for that project. The minimum water main size may include pipe sizes up to 16-inches in diameter, based on the ultimate water system requirements for that pressure zone.

2.03 Hydraulic Analyses

- 2.03.06 The City requires acceptance of the hydraulic analysis prior to the project civil plan submittal, unless otherwise specified by the City.

2.04 Water Main Location

- 2.04.01 Public water mains not installed in a public or private street shall be restrained joint ductile, unless otherwise specified by the City.
- 2.04.02 Water mains installed within private streets, or within streets without a sidewalk immediately adjacent to the curb, shall be located a minimum of 10-feet from the back of curb line, unless otherwise specified by the City.

2.05 Full Frontage Extension Requirements

Unless otherwise specified by the City, all projects shall extend utilities full frontage within all public rights-of-way adjacent to the property/project.

2.09 Valves

- 2.09.01 Valve Location
H. Said shut-off valve shall be a minimum 6-inches in diameter.
- 2.09.02 Gate Valves
A. Gate valves may be used on all water main diameters up to and including 16-inches in diameter as required by the City.
- 2.09.03 Butterfly Valves
Butterfly valves are not approved for use within the City for water mains 16-inches in diameter and smaller without specific project approval.

2.09.04 Valve Stem Extensions
All valve stem extensions must be attached to the valve nut by means of set screws or other City approved methods. Universal joint stem extensions shall not be used within the City.

2.09.06 Special Valves
Where a “master” PRV installation is required, the engineer shall contact the City’s Department of Utility Services, Technical Services Division for specific design criteria.

2.12 Mechanically Restrained Joints

Mechanically restrained joints are not approved for use on any PVC pipe within the City.

Mechanically restrained joints are required on all ductile iron water mains larger than 12-inches in diameter where thrust restraint is required.

2.14 Service Laterals

2.14.01 Location
F. The service lateral point of connection shall not be within a street intersection, measured from curb return to curb return.

2.15 Meters

2.15.03 Installation
A. Standard Plates 1A or 1C shall be used for all services 2-inches or smaller in the City. The contractor shall be required to install all adapter pieces required in order to allow direct installation of the meter.

The City requires that all water services for custom home lots be constructed in accordance with UDACS Standard Plate 1C.

C. All meters and meter vaults shall be located outside of travel lanes and driveways, and shall be protected from vehicular traffic. For all vaults that are located behind the curb or sidewalk, the City requires that these vaults be constructed with the opening designed to provide unobstructed access from the curb/street side of the vault. At no time shall the vault be constructed in a location which would restrict in any manner, access to, and/or operation, and maintenance of the vault by City personnel. All meter vault lids adjacent to any roadway shall have a minimum AASHTO H-20 wheel load rating. The meter vault lid shall be configured with a covered recessed padlock hasp.

2.17 Backflow

All backflow prevention assemblies shall remain privately owned and maintained by each individual property owner or property owner's association. Once installed, the contractor shall be required to test all backflow prevention devices in the field and provide a copy of the test results to the City's Regulatory Program Section of the Department of Utility Services, prior to acceptance of the assembly. Said testing shall be performed by a company/individual certified to perform such test.

All fire service mains are private after the isolation valve at the point of connection to the public main, unless otherwise approved by the City.

2.17.02 Fire systems utilizing a fire pump require an RPPA or RPDA as the minimum level of backflow protection.

2.18 Fire Hydrants

2.18.01 Location and Spacing

- B. Depths of pipe, distances between fittings, etc. will be included on the civil improvement plans.
- D. Tracer wire installed with hydrant laterals shall terminate in a valve can assembly located in the shear pad of the hydrant.
- E. The configuration for a hydrant at a detached sidewalk location shall be worked out during the civil plan review process. This configuration may require additional sidewalk or ductile iron pipe material for the hydrant lateral.
- F. Existing fire hydrants shall not be relocated within the City. Any hydrant being installed is required to be a new hydrant and shall not be relocated from an existing hydrant location.

2.19 Water and Sewer/Storm Main Crossings and Clearances

2.19.01 B3 Concrete Encasement - The City does not allow the concrete encasement of any water mains or water service laterals. Sewer mains and sewer laterals shall only be considered for concrete encasement on a case-by-case basis.

2.19.02 Crossing Separations (Mains)

Pipe Lowering Utilizing Restrained Joint Ductile Iron Pipe

Where a section of water main is being lowered due to a utility conflict, the water main shall be constructed out of ductile iron pipe. All pipe joints shall be restrained in accordance with the City's requirements. No thrust blocks will be allowed. The plans shall clearly identify the length of water main to be restrained (i.e., from station x to station y). The engineer shall also submit all

calculations used to determine the required length of restrained pipe with the civil plan submittal.

2.21 Taps 4 inches and larger

2.21.03 Installation

At the sole discretion of the City, wet taps may be performed on mains up to and including 16-inches in diameter.

2.22 Line Stops

The design drawings for the project are required to show all calculations and details for any line stop application.

2.23 Easements

2.23.02 Size

A. All backflow prevention devices shall be installed outside of any meter easement.

B. Easements for public pressure reducing valve assemblies (PRV) shall have a minimum dimension of 25-feet x 20-feet, and shall be located immediately adjacent to the public right-of-way, unless otherwise approved by the City.

2.24 Plan Submittal

2.24.02 Water Plan Submittal Requirements

Any project with more than one utility plan sheet shall include a master utility plan sheet to show the entire project site on one sheet.

3.01 Standard Specifications

If any conflict between these standards and the Design & Construction Standards for Wastewater Collection Systems should arise, the water standards shall take precedent, unless otherwise approved by the City.

3.09 Record Drawings

Record Drawings shall be submitted in acceptable format in accordance with City requirements, prior to final acceptance. See City's Record Drawing requirements.

3.11 Pipe Installations

14-gauge solid copper wire shall be installed in all non-metallic water main installations as well as any service lateral not installed perpendicular to the main. Wire for hydrant laterals will terminate in a valve box in the shear pad. Wire for service laterals not perpendicular to the main shall terminate in the meter box for that service.

Unless otherwise specifically allowed by the City, no galvanized or black iron pipe shall be used. All proposed water system mains and appurtenances must be selected from the latest edition of the City's Approved Materials List. It shall be the Contractor's sole responsibility to obtain the latest edition of this document.

- 3.11.01 Polyvinyl Chloride (PVC) Pressure Pipe C-900
All water main pipe on the discharge side of any fire pump shall be a minimum Class 200 DR 14.

3.13 Connections to Existing Facilities

Temporary Interruption in Utility Service-Procedure

Water service to existing customers shall remain in service at all times during construction. Line stops may be required in order to keep existing water mains in service. However, if the City determines the service must be disrupted in order to accomplish the proposed work, the contractor shall follow the City's established procedure for water main shutdowns.

3.18 Appurtenances

- 3.18.10 C Valve Stem Extensions
Extensions must be attached to the valve nut by means of setscrews or other City approved methods. Universal joint stem extensions shall not be used within the City.

3.22 Service Laterals

3.22.01 Location

- C. Whenever a non-metallic service lateral is not installed perpendicular to the water main, locator wire shall be attached to the lateral and terminate in the meter box.
- E. The service point of connection shall not be within a street intersection, measured from curb return to curb return.

3.22.02 Lateral Installation

- D. Unless otherwise specifically approved by the City, the contractor shall be required to test all meters 3-inches and larger, in the field, after installation is complete. A copy of the test results must be provided to the City's Meter Services Section of the Department of Utility Services, prior to acceptance of the service. Said testing shall be performed by a company/individual certified to perform such test.

- E. The following shall constitute the minimum requirement for the City's acceptance of water meter service lateral installations 2-inches and smaller:
- 1) Meets all requirements of the UDACS as amended.
 - 2) Meter box shall be clean and free of all debris.
 - 3) A minimum clearance of 2-inches is provided below the spacer.
 - 4) Angle meter stop is centered, leveled and reasonably straight. Any service found with a non-functioning angle meter stop shall be rejected.
 - 5) Meter box and lid are free from cracks/breaks.
 - 6) All materials utilized conform to the latest edition of the City's Approved Materials List.
 - 7) All appropriate adapters are provided (by contractor) as necessary to install requested meter.

3.23 Backflow Prevention Assemblies

All backflow prevention assemblies shall remain privately owned and maintained by each individual property owner or property owner's association. Once installed, the contractor shall be required to test all backflow prevention devices in the field and provide a copy of the test results to the City's Regulatory Program Section of the Department of Utility Services, prior to acceptance of the assembly. Said testing shall be performed by a company/individual certified to perform such test.

Unless otherwise specifically stated within this standards document, all backflow prevention assembly installations shall meet the University of Southern California Foundation for Cross Connection Control and Hydraulic Research Manual requirements.

3.24 Valves

3.24.02 Butterfly valves are not approved for use within the City for water mains 16-inches in diameter and smaller without specific project approval.

SECTION 4
TABLES AND REFERENCES

TABLE A	Domestic Water Meter Chart Characteristics The City does not allow the installation of 5/8-inch x 3/4-inch meters.
TABLE B	Fire Service Water Meter Chart Characteristics Approved as written.
TABLE C	Backflow Prevention Assembly Characteristics Approved as written.
TABLE D	Detector Check Valve (DCV) Flow Characteristics Approved as written.
TABLE E	Backflow Assemblies – Type Required Approved as written.
TABLE F	Inspection Charge Statement of Authorization and Responsibility Contact the City’s Quality Control Section of the Public Works Department for specific requirements.
TABLE G	Backfill Materials Approved as written. See Addenda to Standard Plates 6A, 6B and 6C.
Figure 1	Minimum Horizontal Water/Septic Tank Separation Approved as drawn.
Figure 2	Typical Underground Utility Locations in Residential Streets Approved as drawn. (Except where otherwise approved by the City)

SECTION 5
STANDARD PLATES

UDACS
Plate
No.

Changes/Additions/Deletions

No. 1A & 1C A waterworks brass fitting terminating with female thread and plug shall be used to terminate tailpiece. Type K soft copper or tube size polyethylene must be used for service lateral material. All fittings shall be waterworks quality and selected off of the City's Approved Materials List.

The City requires all service installations include the use of a spacer in order to verify the proper spacing is being provided to facilitate the future installation of the meter.

The following shall constitute the minimum requirement for the City's acceptance of water meter service lateral installations 2-inches and smaller:

- 1) Meets all requirements of the UDACS as amended.
- 2) Meter box shall be clean and free of all debris.
- 3) A minimum clearance of 2-inches is provided below the spacer.
- 4) Angle meter stop is centered, leveled and reasonably straight. Any service found with a non-functioning angle meter stop shall be rejected.
- 5) Meter box and lid are free from cracks/breaks.
- 6) All materials utilized conform to the latest edition of the City's Approved Materials List.
- 7) All appropriate adapters are provided (by contractor) as necessary to install requested meter.

The contractor shall be required to install all adapter pieces required in order to allow direct installation of the meter.

No. 1B UDACS Plate No. 1B is not allowed for use within the City of Henderson service area.

No. 1D UDACS Plate No. 1D is not allowed for use within the City of Henderson service area.

**No. 6A, 6B
& 6C**

Use of crushed rock in dry conditions for bedding of flexible conduits is an acceptable alternative if requested by the contractor. Crushed rock bedding material has an advantage as it will consolidate and provide the required density with far less compactive effort than required for Type II. It is important to note that whenever crushed rock is used, in wet OR dry conditions, water stops must be constructed within the bedding material at a maximum spacing of 400-feet. This is important to prevent the pipe bedding from becoming a french drain for local groundwater and/or from over-irrigation. These dams shall consist of an unreinforced concrete wall with a minimum thickness of 6-inches, extending the full width of the trench and to a height equal to the established water table or the top of the pipe, whichever is greater.

No. 7

Clean, 1/2-inch to 2-inches of gravel shall be installed for drain rock around the vertical shoe, at the location of the weep holes.

The maximum bury depth for a ninety (90) degree shoe hydrant shall be 60-inches (i.e., 5-feet). Such installations shall be made with a restrained joint connection to the ductile iron lateral (See above requirement). If the depth of the lateral to the hydrant exceeds the depth for the proper installation of a 5-foot bury, ninety (90) degree shoe hydrant (as described above), a vertical shoe hydrant is required to be installed, with the maximum bury depth to the "vertical shoe" not to exceed 5-feet. If a "vertical shoe" hydrant is used, it shall also have a restrained joint connection to the hydrant lateral. The contractor shall contact the City for additional information or clarification.

In all cases where there is a sidewalk that is 5-feet or less in width, the fire hydrant and pad shall be constructed in accordance with Condition "C" or "G" as shown on sheet 2 of UDACS Plate No. 7.

The configuration for a hydrant at a detached sidewalk location shall be worked out during the civil plan review process. This configuration may require additional sidewalk and/or alternative pipe material.

No. 8

All valve boxes in improved streets shall have a 24-inch diameter concrete collar in accordance with DWG No. 517 of the Clark County Area "Uniform Standard Drawings for Public Works Construction Offsite Improvements". All valve box lids shall meet the minimum requirements of the City, including meeting the minimum weight and height requirements.

No. 16

The City does not allow the casing to be filled with sand and/or grout.

No. 17B

The City does not allow any backflow prevention devices to be installed within the same vault as the associated water meter. This standard plate is not allowed within the City's service area.

No. 27 14-gauge plastic coated solid copper wire shall be used in lieu of the magnetic pipe locator ribbon, and shall be installed beneath the pipe, extended to the sidewalk in a separate utility box. The wire will be terminated by following the fire hydrant laterals and shall not be over 1,000-feet apart.

It shall be the contractor's responsibility to contact the City in order to determine whether or not locator balls are required. If required, they shall be installed in accordance with the City's requirements.

No. 37 The minimum gate valve size within the City is 6-inch. Item number 4 shall be a 6-inch gate valve.

C-475 Unless otherwise approved by the City, the height of the riser shall not exceed 24-inches. (See Riser Detail, Section E.)