



## **CITY OF HENDERSON**

### **1<sup>st</sup> Addendum – 2010** **Uniform Design and Construction Standards for Potable Water Systems** **2010 (3<sup>rd</sup> 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 addendum supersedes all previous UDACS addenda.

#### **1.01 Definitions**

Add the following definition to this section:

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

##### 1.01.45 CLSM

Add the following to this definition: CLSM shall not exceed a two-sack mix.

#### **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 distribution 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**

2.03.01 A. 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 A. "Main Distance from Curb" specified in the table refers to back of curb as shown in Figure 2, Section 4.

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, unless otherwise specified by the City.

- B. Public water mains not installed in a public or private street may be required to be restrained joint ductile iron.

- B., C. 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.

## **2.05 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.

## **2.06 Water Main Materials**

- 2.06.02 Polyvinyl Chloride (PVC) Pressure Pipe C905

Polyvinyl chloride (PVC) pipe is not allowed for use for 16" through 24" pipe in the City of Henderson.

## **2.10 Pipe Casing**

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

## **2.11 Valves**

- 2.11.01 Valve Location

- I. Said valve shall be minimum 6 inches in diameter.

- 2.11.02 Gate Valves

- A. Gate valves shall be used on all water main diameters up to and including 16 inches in diameter as required by the City.

- 2.11.04 Valve Stem Extensions

Universal joint stem extensions shall not be used within the City.

2.11.06 Special Valves

- G. 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.

**2.15 Mechanically Restrained Joints**

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

**2.17 Service Laterals**

2.17.01 Location

- B. 14-gauge solid copper wire shall be used in lieu of locator ribbon.
- H. The service lateral point of connection shall not be within a street intersection, measured from curb return to curb return.

**2.18 Meters**

2.18.03 Installation

- A. Standard Plates 1 or 3 shall be used for services 2 inches or smaller in the City of Henderson service area. 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 installed in accordance with UDACS Standard Plate 3.

For services 3 inches and larger, installation of meters and vaults shall be in accordance with the Henderson Utility Guidelines (HUGS), current edition. Drawing C-475 shall not be used in the City of Henderson.

All backflow prevention assemblies shall remain privately owned and maintained by each individual property owner or property owner’s association and therefore do not require an easement.

- C. All meters and meter vaults shall be located outside of travel lanes and driveways, and shall be protected from vehicular traffic. The City requires that all vaults located behind the curb or sidewalk be readily accessible, 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 that 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.

**2.19 Existing/Abandoned Private Wells**

- 2.19.01 Parcels served by the public water system in the City of Henderson shall not be

allowed to keep an existing private well in service.

2.19.02 The City of Henderson does not allow connection to the public water system until abandonment of the existing well has been verified by a City representative.

## 2.20 **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. A company/individual certified to perform such test shall perform said testing. The following note shall appear on the drawing:

### **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 property owner or property owner's association shall have all backflow prevention devices tested upon installation and annually thereafter by a company or individual certified to perform such test.**

#### 2.20.01 Application

F. The backflow prevention assembly does not provide the required minimum level of protection.

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.

2.20.02 Dedicated fire systems utilizing a fire pump require an RPDA (reduced-pressure detector assembly) as the minimum level of backflow protection. If a glycol fire-suppression system is used, an RPDA (reduced-pressure detector assembly) is required. In such cases, the hydraulic analysis shall include the head loss associated with the RPDA.

## 2.21 **Fire Hydrants**

#### 2.21.01 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 determined during the civil plan review process. This configuration may require additional sidewalk or ductile iron pipe material for the hydrant lateral.

#### 2.21.06 Relocation/Abandonment of Fire Hydrants

The City does not allow a public hydrant to be reused. If a hydrant is to be

relocated, a new hydrant shall be installed.

## **2.22 Water and Sewer/Storm Main Crossings and Clearances**

2.22.01 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.

2.22.02 Crossing Separations (Mains) Pipe Lowering - Where a section of water main is being lowered due to a utility conflict, 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.

## **2.24 Taps 4 inches and larger**

### 2.24.03 Installation

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

## **2.26 Easements**

### 2.26.02 Size

- A. 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.
- B. All backflow prevention devices shall be installed outside of any meter easement.
- C. All backflow prevention assemblies shall remain privately owned and maintained and, therefore, do not require easements.
- D. Easements for public pressure reducing valves shall be in accordance with Henderson Utility Guidelines (HUGS).

## **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 on mylar, in accordance with City requirements, prior to final acceptance. See the City's Mylar As-Built Requirements outlined in the Bond Reduction / Release Application.

### **3.11 Pipe Installations**

A single locator ball shall be installed at a depth of approximately 3 feet at all locations specified in UDACS Plate 15, Note 2. In addition, 14-gauge solid copper wire shall be installed in all non-metallic water main installations and any service laterals 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.

#### **3.11.02 Polyvinyl Chloride (PVC) Pressure Pipe C-905**

Polyvinyl chloride (PVC) pipe is not allowed for use in the City of Henderson for pipe 16" through 24" in diameter.

### **3.14 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.

### **3.19 Appurtenances**

#### **3.19.08 A Valve Boxes and Covers**

Valve boxes and covers shall be selected from the City's Approved Materials List.

#### **3.19.08 C Valve Stem Extensions**

Universal joint stem extensions shall not be used within the City.

### **3.24 Service Laterals**

#### **3.24.01 Location**

B. 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.

#### 3.24.02 Lateral Installation

- F. 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 shall 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.
- G. The following shall constitute the minimum requirements for the City's acceptance of water meter service lateral installations 2 inches and smaller:
  - 1) Meet 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.

### 3.25 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. A company/individual certified to perform such test shall perform said testing.

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

### 3.26 Valves

3.26.02 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.
- 
- Figure 1** Minimum Horizontal Water/Septic Tank Separation  
Approved as drawn.
- Figure 2** Typical Underground Utility Locations  
Approved as drawn (except where otherwise approved by the City).

**SECTION 5  
STANDARD PLATES**

**UDACS Plate No.    Changes/Additions/Deletions**

**No. 1, 3, 7**

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 from the City's Approved Materials List. Preformed polyfoam pipe insulation is not allowed in the City of Henderson service area. 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. 5/8" meters are not allowed for use within the City of Henderson service area.

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 requirements for the City's acceptance of water meter service lateral installations 2-inches and smaller:

- 1) Meet 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. 2, 4, 5, 6**

UDACS Plates No. 2, 4, 5 and 6 are not allowed for use within the City of Henderson service area.

**No. 9**

Wherever a gap occurs between the meter box collar and the backflow prevention assembly concrete pad, either the concrete pad shall be extended to eliminate the gap, or a water quality sleeve shall be installed on the pipe the full length of the gap.

**No. 15**

14-gauge plastic-coated solid copper wires 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. A single locator ball shall be installed at a depth of approximately 3 feet at all locations indicated in note 2.

**No. 21**

Thrust blocks are not allowed on lowered waterline sections in the City of Henderson. Refer to UDACS Plate 22 for lowered waterlines for both existing water main crossings and new water main crossings.

- No. 23** The City does not allow the casing to be filled with sand and/or grout.
- No. 31** 5° bends are not allowed for use within the City of Henderson. Thrust blocks are not allowed on pipes larger than 12 inches in diameter.
- No. 36** Prefomed polyfoam pipe insulation is not allowed in the City of Henderson service area.
- No. 39** 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. Universal joint stem extensions shall not be used in the City.
- No. 40 & 41** The hydrant shall have a restrained joint connection to the hydrant lateral. No thrust block shall be used at the ninety (90)-degree bend. The contractor shall contact the City for additional information or clarification.
- In all cases where there is a sidewalk that is 5 feet wide or less, the fire hydrant and pad shall be constructed in accordance with Condition “C” or “G” as shown on sheet 2 of UDACS Plate No. 40.
- The configuration for a hydrant at a detached sidewalk location shall be determined during the civil plan review process. This configuration may require additional sidewalk and/or alternative pipe material.
- No. 51** The City does not allow any backflow prevention devices to be installed within the same vault as the associated water meter. UDACS Plate No. 51 is not allowed within the City’s service area.
- No. 56-60** Wherever a gap occurs between the meter box collar and the backflow prevention assembly concrete pad, either the concrete pad shall be extended to eliminate the gap, or a water quality sleeve shall be installed on the pipe the full length of the gap.
- No. 50-55** UDACS Plates No. 50-55 shall not be used in the City of Henderson. Refer to the Henderson Utility Guidelines (HUGS) for configuration of 3-inch and larger meters.
- C-475** Drawing C-475 shall not be used in the City of Henderson. Refer to the Henderson Utility Guidelines (HUGS) for meter vault installations.