

UNIFORM DESIGN AND  
CONSTRUCTION STANDARDS  
FOR POTABLE WATER  
DISTRIBUTION SYSTEMS

SECTION 1

GENERAL  
REQUIREMENTS

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**SECTION 1**  
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# GENERAL REQUIREMENTS

# SECTION 1

## 1.00 GENERAL STATEMENT

The Las Vegas Valley Water District, and the Cities of Henderson, North Las Vegas, and Boulder City are governmental subdivisions of the State of Nevada which provide municipal water service. The Uniform Design and Construction Standards For Potable Water Distribution Systems presented herein has been adopted by the participating Agency's governing body and represent the minimum design and construction criteria for water distribution systems within the participating Agency's jurisdiction. The Contractor will be required to have a copy of these Standards on-site at all times during construction.

Except as expressly set forth in these Standards or otherwise directed by the Agency, the Developer or Contractor shall select the means, methods, and sequences for constructing facilities in accordance with these Standards. The participating Agency is not concerned with the means, methods, or sequences, only the results. The Developer, Engineer or Contractor may petition each Agency for a variance to these Standards on a case by case basis.

Except as expressly set forth in a written agreement approved by the governing body for the participating Agency, the Developer or the Contractor shall pay all costs of constructing facilities in accordance with these Standards. Except as expressly set forth in a written agreement approved by the participating Agency's governing body, the participating Agency assumes no liability for, and does not agree to pay any costs of constructing facilities. No statements, actions, or omissions of any participating Agency officer or employee may be construed as an assumption of liability for, or an agreement to pay any costs of constructing facilities. The participating Agency's governing body has not delegated any respective Agency officer or employee nor any other person any authority to assume liability for or agree to pay costs of constructing facilities.

Where there is a conflict between the Agency rules, regulations, or ordinances and these Uniform Design Standards, the Agency rules, regulations, or ordinances shall supersede these Standards.

# GENERAL REQUIREMENTS

# SECTION 1

## 1.01 DEFINITIONS

### 1.01.01 Accessible

When applied to an assembly or equipment, "accessible" means having access thereto, but which first may require the removal of an obstruction. "Readily accessible" means direct access without the necessity of removing any obstruction to gain access.

### 1.01.02 Agency

The Las Vegas Valley Water District (And District Managed Systems), located at:  
1001 South Valley View Boulevard  
Las Vegas, Nevada 89153; (702) 258-3165 or 258-3166.

The City of Henderson, located at:  
240 Water Street  
Henderson, Nevada 89015; (702) 267-3670.

The City of North Las Vegas, located at:  
2829 Fort Sumter Drive  
North Las Vegas, Nevada 89030; (702) 633-1275.

The City of Boulder City, located at:  
401 California Avenue  
Boulder City, Nevada 89005; (702) 293- 9200.

### 1.01.03 Agency's Representative

The individual duly authorized by the Agency to act as the agent for an Agency or a jurisdiction.

### 1.01.04 Air Binding

A condition in which air accumulates in the higher points of a distribution main thus restricting the flow of water in the main.

### 1.01.05 Air-Gap

A physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressurized receiving vessel. An "approved air-gap separation" shall be at least double the supply pipe diameter measured vertically above the vessel's overflow rim and in no case less than one (1) inch (2.54 cm).

## GENERAL REQUIREMENTS

## SECTION 1

- 1.01.06      Air-Relief
- Releasing of entrapped air during filling or releasing entrained air which will accumulate and cause flow resistance with subsequent downstream pressure loss and even complete flow blockage.
- 1.01.07      Air Vacuum Air Relief Valve (AVAR)
- An air valve placed at the summit of a pipeline (1) to release air automatically and prevent air binding and pressure buildup or (2) to allow air to enter a line if the internal pressure becomes less than that of the atmosphere.
- 1.01.08      Alternate Fire Service Meter
- (See "Fire Service Meter Type II".)
- 1.01.09      Altitude Control Valve
- A valve that automatically:
- A.      Shuts off the flow of water when the water level in a storage structure reaches a predetermined elevation; and
  - B.      Opens when the water level in the storage structure lowers to a predetermined elevation.
- 1.01.10      Angle Meter Stop
- (See "Meter Stop".)
- 1.01.11      Appurtenances
- Any machinery, appliances, structures and other parts of the main structure that will enable the main structure to function but is not considered part of the main structure.
- 1.01.12      Assessor's Parcel Number
- A number found in real property records. This number is assigned by Clark County to identify and track a particular parcel of land.
- 1.01.13      Aquifer
- A geologic formation, group of geologic formations, or part of a geologic formation that is capable of yielding ground water to a well or spring.

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- 1.01.14      Atmospheric Vacuum Breaker
- A device consisting of a float check, a check seat, an air inlet port, and possibly a shutoff valve immediately upstream, designed to allow air to enter the downstream water line to prevent backsiphonage.
- 1.01.15      Auxiliary Water Supply
- A supply of water or system for the supply of water which is available to the premises of a customer of a public water system, other than the supply or system of the public water system established to provide water to the premises, including another public water system or any natural source of water.
- 1.01.16      Average Day Demand
- The average daily demand for water over a one (1) year period, as determined by historical data.
- 1.01.17      Backfill
- The material used to refill an excavation.
- 1.01.18      Backflow
- A hydraulic condition, caused by a difference in pressures, that causes non-potable water or other fluid to flow into a potable water system. (See “Backpressure” and “Backsiphonage”.)
- 1.01.19      Backflow Preventer
- The physical appurtenance or assembly designed to prevent backflow.
- 1.01.20      Backflow Prevention Assembly - Approved
- An assembly or means that has been investigated and approved by the Agency having jurisdiction. Approval shall be based on favorable laboratory and field evaluation by an approved backflow testing laboratory.
- 1.01.21      Backflow Testing Laboratory
- The Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California; or any other person or entity who the Nevada Division of Environmental Protection authority determines:

## GENERAL REQUIREMENTS

## SECTION 1

- A. Is competent and possesses the necessary facilities to investigate and evaluate backflow prevention assemblies; and
- B. Adheres to the testing and certification procedures set forth in the American Water Works Association Standards; and
- C. Is independent of any backflow prevention assembly manufacturer; and
- D. Performs one (1) year field evaluation in addition to laboratory testing.

### 1.01.22 Backpressure

A pressure that can cause water to backflow into the water supply when a user's water system is at a higher pressure than the public water system.

- A. Is caused by pumping, air pressure, steam, or the elevation of piping; and
- B. Could cause a reversal in the normal direction of flow at a particular point.

### 1.01.23 Backsiphonage

A form of backflow due to a reduction in system pressure which causes a negative or sub-atmospheric pressure to exist at a point in the Agency's water system allowing water from the customer's system to enter the Agency's supply system.

### 1.01.24 Ball Valve

A valve with the closing and opening mechanism formed in the shape of a ball with a hole. The valve is opened by rotating to the flow, allowing it to pass. The valve is closed when the hole is perpendicular to the flow.

### 1.01.25 Bell-shaped

Having an expanding rounded entrance.

### 1.01.26 Blow-Off Assembly

An assembly which consists of a valve that is installed at a low point, or at the end of a pipeline, and is used primarily for purging or blowing-off accumulated sediment from low spots or dead-ends in the main and for de-watering lines or reservoirs for repairs or inspections.

## GENERAL REQUIREMENTS

## SECTION 1

- 1.01.27      Butterfly Valve
- A valve in which a disk rotates on a shaft such that the valve is fully open when the disk is parallel to the axis of the pipe and fully closed when perpendicular.
- 1.01.28      Bypass Valve
- A small valve attached to a much larger valve to (equalize) pressure against the main valve seat when opening or closing the main valve.
- 1.01.29      Casing
- A.
- Conduit made of steel or other accepted materials used as a conduit for a pipe or main, installed through boring or open cut (See "Pipe Casing".); or
- B.
- A solid piece of pipe used to hold the formation open during the construction or use of a well; or
- C.
- The enclosure surrounding an impeller, into which the suction and discharge ports are machined.
- 1.01.30      Cement Grout
- A mixture of portland cement, sand, and water which contains at least seven (7) sacks of cement per cubic yard and not more than seven (7) gallons of clean water for each sack of cement.
- 1.01.31      Cement Slurry
- (See "CLSM - Controlled Low Strength Material".)
- 1.01.32      Certified Backflow Prevention Assembly Tester
- A person who is certified by the California/Nevada section of the American Water Works Association to test assemblies designed for the prevention of backflow.
- 1.01.33      Check Valves
- A valve that allows flow in one direction and that closes when the flow tries to reverse.

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1.01.34 Chlorination

The disinfecting process of adding chlorine to water to:

- A. Kill or inactivate organisms that cause disease; or
- B. Act as an oxidizing agent.

1.01.35 Chlorinator

A device used to add chlorine, or a compound that contains chlorine, to water.

1.01.36 Chlorine Residual

A concentration of chlorine species present in water after the oxidant demand has been satisfied.

1.01.37 Coliform Bacteria

A group of bacteria that inhabits the intestines of humans and animals, and is occasionally found in other habitats, including:

- A. All aerobic and facultative anaerobic, Gram-negative bacilli that do not form spores and which cause the production of gas through the fermentation of lactose; and
- B. All bacteria that produce a dark purplish-green colony with a metallic sheen when the membrane-filter technique is used for the identification of coliform.

1.01.38 Combined Service

A metered service connection through which water is obtained for the dual purpose of fire protection and domestic use.

1.01.39 Commitment for Water Service

A document pursuant to which a supplier of water acknowledges that it has assumed a legal obligation to supply water to property under development or proposed to be developed for residential, commercial, or industrial purposes. The document may indicate that the obligation is subject to certain conditions precedent, including, without limitation, the payment of fees, the dedication of water rights, or the construction and dedication of infrastructure.

## GENERAL REQUIREMENTS

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- 1.01.40      Concentric Reducer
- A reducer used to connect a larger pipe to a smaller pipe in such a manner as to align the center lines of both pipes.
- 1.01.41      Concrete
- A mixture of Portland cement, sand and water.
- 1.01.42      Construction Water
- Metered water delivered for construction purposes including, but not limited to, compaction and dust control.
- 1.01.43      Contamination
- A potable water quality impairment by sewage, industrial fluids, or waste liquids, compounds, or other materials to a degree that creates an actual or potential hazard to the public health.
- 1.01.44      Contractor
- The construction firm properly licensed in the State of Nevada retained to install water facilities in accordance with these Standards.
- 1.01.45      Controlled Low Strength Material (CLSM)
- Backfill material consisting of low strength, self-leveling concrete material per USS 208.02.07 (Known as the Blue Book), and as listed on the Interagency Quality Assurance Committee (IQAC) list. Backfill material must have a design compressive strength at an age of twenty-eight (28) days within the ranges required in the table below for the specified class:
- A.      Class I (50 to 150 psi): Specified when the maximum strength is of primary concern due to the desire to have material that can be excavated in the future with relative ease.
  - B.      Class II (150 to 300 psi): Specified where the minimum strength is of primary concern for pipe support.
  - C.      Class Special (as shown in project specifications or drawings): Specified where project unique criteria, such as erosion control, are the primary concern.

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- D. Class I and II CLSM: The mix shall result in a product having a slump in the range of six (6) to ten (10) inches (150 to 250mm), at the time of placement.

1.01.46 Corporation Stops

A water service shutoff valve located on a service lateral at the connection to the water main. This valve cannot be operated from the ground surface because it is buried and there is no valve box. Also called a corporation cock.

1.01.47 Cross-Connection

An unprotected connection or structural arrangement, whether actual or potential, between a public water system and any other source or system, through which it is possible to introduce into any part of the public water system any used water, industrial fluid, gas, or substance other than the potable water intended to supply the system. The term includes any bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other temporary or permanent devices through which or because of which backflow can occur.

1.01.48 Cross-Connection Control

The installation of an approved backflow prevention assembly at the water service connection to any customer's premises where it is physically or economically not feasible to find, and permanently eliminate or control, all actual or potential cross-connections within the customer's water system; or, it shall mean the installation of an approved backflow prevention assembly on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connections which cannot be effectively eliminated or controlled at the point of cross-connection.

1.01.49 Curb Stop

A shutoff valve in a water service line buried near the curb of a customer's premises, with a box or housing over the valve extending to the surface of the ground for access to the valve.

1.01.50 Dead-End Mains

A water main which ends in a cap, plug, or blow off. The design and use of dead-end mains is to be avoided (cul-de-sacs) due to water quality problems, and distribution system reliability considerations.

## GENERAL REQUIREMENTS

## SECTION 1

- 1.01.51      Design and Construction Standards for Waste Water Collection Systems  
Minimum design and construction criteria for sanitary sewer systems within the jurisdiction of the participating agencies.
- 1.01.52      Dedicated Public ROW's  
A plot of ground which, by owner definition, has been reserved for the public's use or betterment. The uses are, but not limited to, utilities, roadways, and flood control.
- 1.01.53      Detector Tape  
A metallic tracer tape or wire which is detectable by electronic finders running along the pipe crown.
- 1.01.54      Developer  
The individual, corporation or partnership that requires water service, either by a service lateral installation or by constructing a water main extension for proposed or existing structure(s).
- 1.01.55      Developer's Engineer  
(See "Engineer".)
- 1.01.56      Disinfection  
The process of destroying or inactivating pathogenic organisms (bacteria, viruses, fungi, and protozoa) by either chemical or physical means.
- 1.01.57      Distribution Main  
Any pipe in a distribution system that allows a service line connection.
- 1.01.58      Distribution Storage  
(See "Reservoir".)
- 1.01.59      Domestic Service  
A metered service connection through which water is obtained for all purposes, including residential, commercial, and industrial uses, exclusive of fire protection.

## GENERAL REQUIREMENTS

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1.01.60 Double Check Detector Assembly (DCDA)

An assembly composed of a line-sized, approved, double check valve assembly and a bypass line water meter with an approved, meter-sized, double check valve assembly. Used for fire protection only.

1.01.61 Double Check Valve Assembly

An assembly which:

- A. Is composed of two independently acting, approved check valves; and
- B. Has tightly closing, resilient seated shutoff valves attached at each end; and
- C. Is fitted with properly located, resilient seated test cocks; and
- D. Has been tested and approved, in accordance with AWWA Standard C510, "Double Check Valve Backflow Prevention Assembly", by an approved backflow testing laboratory.

1.01.62 Double Strap Service Saddle

A "Service Saddle" that has a wide band or two separate bands with two (2) bolts to tighten to achieve a leak-proof seal. (See "Service Saddle".)

1.01.63 Easement

An acquired legal right to the use of land owned by others, or a plot of land reserved under County recording that allows the Agency ingress and egress to Agency facilities on private property (outside the public ROW).

1.01.64 Eccentric Reducer

A reducer used to connect a larger pipe to a smaller pipe in such a manner that one edge of both pipes is aligned.

1.01.65 Emergency

A situation in which an unusual calamity, including a flood, fire, storm, earthquake, drought, civil disturbance, accidental spill of a hazardous material, or similar occurrence, disrupts the provision of water by a public water system or endangers the quality of water provided by a public water system.

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- 1.01.66      Engineer
- The consulting Civil Engineer, licensed in the State of Nevada, who is responsible for the design submitted for a Developer, Owner, or Agency.
- 1.01.67      Existing public water system
- A system for providing to the public, water for human consumption through pipes or other constructed conveyance and is operational.
- 1.01.68      Final Map
- A final map has the meaning ascribed to it in NRS 278.0145.
- 1.01.69      Finished Water or Potable Water
- Water that is safe and satisfactory for drinking and cooking.
- 1.01.70      Fire Authority
- The county, city, town, special district, or Agency responsible for fire protection in the area of service of a public water system.
- 1.01.71      Fire Demand
- The total quantity of water required for protection from fire, as determined by the fire authority and expressed in gallons per minute for a specified number of hours.
- 1.01.72      Fire Flow
- The rate of the flow of water, as determined by the fire authority and expressed in gallons per minute, which:
- A.      Is required for protection from fire; and
  - B.      Can be delivered from a distribution system at a residual pressure of twenty (20) psi within the distribution system.
- 1.01.73      Fire Service Meter (Combination - Fire and Domestic)
- A meter designed and sized for domestic and fire service, in accordance with AWWA Standard C703, "Cold-Water Meters - Fire Service Type", consisting of one of the following types:

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### TYPE I:

A main-line proportional type meter having an unobstructed passageway of essentially the full pipe size for measuring high flow rates, with a bypass meter, with check valve of appropriate size for measuring domestic low flow rates. The meter shall have an automatic valve mechanism for diverting low flow rates through the bypass meter.

### TYPE II:

A main-line turbine meter (Class II) having an UL/FM fire service strainer, with a bypass meter with check valve of appropriate size for measuring domestic low flow rates. The meter shall have an automatic valve mechanism for diverting low flow rates through the bypass meter.

### TYPE III:

A mainline turbine meter (Class II) having an UL/FM fire service strainer.

#### 1.01.74 Fire Sprinkler System

A system of piping which is connected to a public water system and has sprinklers that automatically discharge water over the area of a fire.

#### 1.01.75 Flexible Coupling

A joint between two pipes that allows one of the pipes to be deflected without disturbing the other pipe.

#### 1.01.76 Flowable Backfill

(See "CLSM – Controlled Low-Strength Material".)

#### 1.01.77 Gate Valve

A mechanical device used to turn on or shut off the flow of water in a distribution or piping system. It is operated by turning a stem that raises or lowers a disk. This disk covers the flow way, pressing against a seat when closed; it moves into a space above the flow way when open, providing an unrestricted flow.

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- 1.01.78      Globe Valve
- A valve that has a round opening to let liquid pass and that closes when a stem is turned to press a disk against the round opening. Globe valves are used in plumbing where numerous openings and closings are anticipated.
- 1.01.79      Head
- A measure of water pressure expressed as the height of a column of water in feet or meters that would produce the corresponding pressure. This measurement may be called hydrostatic head.
- 1.01.80      Head Loss
- A reduction in pressure as a result of friction.
- 1.01.81      Header
- A pipe fitting with several branches for the conveyance of water.
- 1.01.82      Health Authority
- The officers and agents of the State of Nevada Division of Environmental Protection, Bureau of Safe Drinking Water:
- |                        |   |
|------------------------|---|
| Southern Nevada Office | 2030 East Flamingo Road, Suite 230<br>Las Vegas, Nevada 89119.    |
| Northern Nevada Office | 901 South Stewart Street, Suite 4001<br>Carson City, Nevada 89701 |
- 1.01.83      Hydraulic Analysis
- The engineering process used to determine the pressure and flow requirements for a networked system of water mains and appurtenances either existing or proposed. (See "Section 2.03".)
- 1.01.84      Hydraulic Grade Line (HGL)
- If a pipe is under pressure, the HGL is the level water would rise to in a tube connected to the pipe freely vented to atmospheric pressure. Also, equal to the pressure at a given point in the distribution system, in feet, plus the elevation.

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- 1.01.85      Idler
- "Idler" is a length of pipe installed in lieu of a meter (use of an idler is not allowed).
- 1.01.86      Inspector
- The Agency representative authorized to make detailed inspections for compliance with these standards.
- 1.01.87      Irrigation Service
- A metered service connection through which water is obtained for the sole purpose of meeting the water needs of growing plants.
- 1.01.88      Isolation Valve
- A valve, including a ball valve, butterfly valve, gate valve, globe valve, or other type of valve, installed in a pipeline to shut off the flow of water in a portion of the pipeline for the purpose of inspection or repair.
- 1.01.89      Junction Node
- A point in a hydraulic analysis where there is an input, demand or known set of values not subject to variation in the analysis.
- 1.01.90      Maximum Day Demand
- The maximum daily demand for water over a one-year period, as determined by historical data.
- 1.01.91      Mechanical Joint
- A flexible connection of two pipes or fittings with a gasket compressed by lugs and bolts.
- 1.01.92      Mechanically Restrained Joint
- A pipe joint which has been secured using a method of thrust restraint in addition to the typical mechanical joint fitting.
- 1.01.93      Meter Box
- An enclosure constructed of approved materials protecting one or more water meters installed in the ground outside and allows access for a person to read the meters.

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- 1.01.94      Meter Stop or Angle Meter Stop
- A service fitting with a valve incorporated used in setting water meters to allow a cut off of service.
- 1.01.95      Mil
- One-thousandth part of an inch or .001 inch.
- 1.01.96      Network Hydraulic Analysis
- (See "Hydraulic Analysis".)
- 1.01.97      Nominal Size
- The commercial designation used by manufacturers for the diameter of a casing or pipe.
- 1.01.98      Non-Potable
- Water that may contain objectionable pollution, contamination, minerals, or infective agents and is considered unsafe, unpalatable, or both for drinking. Non-potable water sources include, but are not limited to, sewer water, storm water, reclaimed water, and dedicated fire lines.
- 1.01.99      Optimum Moisture Content
- The water content (expressed in percent, dry weight) at which a given soil can be compacted to its maximum density by means of a standard method of compaction.
- 1.01.100     Owner
- The individual, corporation, or partnership who owns the parcel of land to be developed.
- 1.01.101     Peak Hour Demand
- The volume of water which must be supplied by a public water system to meet the greatest demand per hour of its customers for any hour during a yearly period.

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- 1.01.102      pH
- A measure of the acidity or alkalinity of a solution such that a value of 7 is neutral on a scale ranging from zero (0) to fourteen (14). Lower numbers represent acidic solutions, and higher numbers represent alkaline solutions.
- 1.01.103      Pipe Casing
- A protective conduit into which a pipe is inserted.
- 1.01.104      Pipe Zone
- The full trench excavation width from the top of the compacted pipe foundation to an elevation at least 12 inches above the outside top of the pipe bell.
- 1.01.105      Plumbing Code
- Except as otherwise modified by local ordinance pursuant to NRS 444.340 to 444.430, inclusive, the International Plumbing Code or Uniform Plumbing Code as adopted by the Agency having jurisdiction.
- 1.01.106      Potable Water
- Water that is safe and satisfactory for drinking and cooking, meeting all applicable standards.
- 1.01.107      Pressure Reducing Valve (PRV) or Pressure Regulator
- A control valve that opens to allow flow if the downstream pressure is less than a certain value and that closes when the set pressure is reached. A pressure reducing valve ensures that the downstream pressure does not become too high. It is used on house services where the distribution pressure is high and in other situations that require reductions from higher-pressure planes to lower-pressure planes.
- 1.01.108      Pressure Regulating Valve
- A device for controlling pressure in a pipeline or pressurized tank.
- 1.01.109      Pressure Relief Valve
- A valve that opens automatically when the water pressure exceeds a preset limit.

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- 1.01.110      Pressure Vacuum Breaker (PVB)
- A backflow protection device to prevent water from being drawn back into a water supply when the line is closed. The assembly opens to the atmosphere, thus preventing a vacuum in the line, such as an irrigation line.
- 1.01.111      Pressure Zones
- Geographical areas of a distribution system which are served by a tank, reservoir, or pump system having a specified source head. A pressure zone may be completely isolated from the remaining distribution system or it may be interconnected through open, closed, and pressure regulating valves.
- 1.01.112      Private Fire Service
- An approved service connection through which water is obtained exclusively for fire protection.
- 1.01.113      Private Water Facilities
- "Private Water Facilities" are all water facilities not owned by the Agency after completion.
- 1.01.114      Property Line Frontage
- The length of private property to which a main is being installed essentially parallel to in the public ROW or easement. That portion of the property or easement along the ROW.
- 1.01.115      Proportional Meter
- A device where a certain proportion of the total flow is diverted through a bypass meter and measured. The measuring bypass meter gears are adjusted to indicate, on its register dial, the total water volume passing through the whole unit. The flows in the bypass line and the main pipe are proportional to the ratio of the areas of the bypass line and the main pipe.
- 1.01.116      Public Water Facilities
- The water facilities owned, operated, and maintained by the Agency after completion and acceptance.

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1.01.117 Public Water System (As Defined By NRS 445A.235)

Any system, regardless of ownership, that provides the public with water for human consumption through pipes or other constructed conveyances, if the system has fifteen (15) or more service connections, as defined in NRS 445A.843, or regularly serves twenty-five (25) or more persons. The term includes:

- A. A facility for the collection, pumping, treatment, storage, or distribution of water which is controlled by the operator of the system and used primarily in connection with the system; and
- B. A facility for the collection or storage before treatment of water which is not controlled by the operator of the system but is used primarily in connection with the system.

1.01.118 Raw Water

Water that is not suited for human consumption without treatment.

1.01.119 Reaction Blocking

(See "Thrust Block".)

1.01.120 Reclaimed Water

Non-potable water that, as a result of tertiary treatment of domestic wastewater by a public agency, is suitable for a direct beneficial use or a controlled use that would not otherwise occur. The level of treatment and quality of the reclaimed water shall be approved by the public health authority having jurisdiction.

1.01.121 Reduced Pressure Detector Assembly (RPDA)

An approved assembly designed to protect against non-potable pollution and contamination which is composed of a reduced pressure principle assembly and a bypass that contains a water meter and another reduced pressure principle assembly that has been tested and approved, in accordance with AWWA Standard C511, "Reduced-Pressure Principle Backflow Prevention Assembly", by an approved backflow testing laboratory.

1.01.122 Reduced Pressure Principle Assembly (RPPA)

An assembly that contains:

- A. Two independently acting approved check valves; and

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- B. A hydraulically operating, mechanically independent pressure relief valve that is located between the approved check valves and below the upstream check valve; and
- C. Has properly located, resilient, seated test cocks and tightly closing, approved shutoff valves at each end of the assembly; and
- D. Is designed to protect against pollution and contamination under conditions of backsiphonage or backpressure by discharging to the atmosphere; and
- E. Has been tested and approved, in accordance with AWWA Standard C511, "Reduced Pressure Principle Backflow Prevention Assembly", by an approved backflow testing laboratory.

1.01.123 Reducer

A pipe or pipe fitting that has a smaller opening at one end than at the other end. (See "Concentric Reducer and Eccentric Reducer".)

1.01.124 Residual Pressure

The pressure remaining in the mains of a water distribution system when water is being withdrawn from the distribution system at a particular rate of flow.

1.01.125 Restrained Joints:

The use of mechanical means to counter the forces created by internal pressures of a pipe at a valve or fitting, used to stop the flow or change the direction of flow, eliminating or reducing the requirement for thrust blocks and thrust anchors. (See "Mechanically Restrained Joint".)

1.01.126 Sack of Cement

One cubic foot (or 94 pounds) of cement.

1.01.127 Sanitary Sewer

An underground system of sewer lines for the collection and conveyance of wastewater from a home or community.

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- 1.01.128      Sanitary Survey
- An on-site evaluation of a public water system to determine whether the water sources, facilities, equipment, processes, administration, operation, and maintenance of the system are adequate for the production and distribution of safe and reliable drinking water.
- 1.01.129      Service Connection
- The point of connection between a public water system and the water system used by a customer of the public water system, at which the public water system loses its authority and control over the water;
- If a meter is installed at a connection between a public water system and the water system used by a customer of the public water system, the downstream end of the meter shall be considered the point of service connection.
- 1.01.130      Service Line or Lateral for Water
- The pipe and all appurtenances located between a water main of a distribution system and service connection.
- 1.01.131      Service Saddle
- An assembly of circumferential metal strap or straps on a pipe where a connection is to be made which allows for the use of a threaded corporation stop.
- 1.01.132      Set Point
- The pressure or flow that an automatic control is designed to maintain.
- 1.01.133      Sewer
- (See “Sanitary Sewer” or “Storm Drain”.)
- 1.01.134      Sewer Main
- Those pipelines designed and installed to receive tributary wastewater flows from one or more service laterals.
- 1.01.135      Sewer Service Lateral
- A pipe or conduit that connects a building or other property to a sewer main.

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- 1.01.136      Soil Bearing Capacity
- The maximum unit pressure which a soil will withstand without failure or, without settlement to an amount detrimental to the structural integrity or function.
- 1.01.137      Spacer
- A length of perforated pipe installed in lieu of a meter or idler on a temporary basis while facilities are under construction.
- 1.01.138      Spool
- A short section of flanged pipe between two (2) fittings.
- 1.01.139      Standards
- The Uniform Design and Construction Standards for Potable Water Distribution Systems (UDACS), latest edition as amended by each Agency.
- 1.01.140      Standard Plates
- The illustrations in Section 5 of the Uniform Design and Construction Standards for Potable Water Distribution Systems, latest revision as amended by each Agency, also referred to as UDACS Plates.
- 1.01.141      Static Pressure (Head)
- When water is not moving, the vertical distance from the specific point of interest to the water surface. The static pressure is the static head multiplied by the specific weight of water.
- 1.01.142      Storm Drain
- A system of channels, pipelines, box culverts, and appurtenances for the collection and conveyance of surface drainage and other materials deposited into and borne by surface water to a point of disposal.
- 1.01.143      Subdivision
- Subdivision has the meaning ascribed to it in NRS 278.320.

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- 1.01.144      Supplier of Water
- A person or other entity, including a governmental entity, which owns or operates a public water system.
- 1.01.145      Surge Pressure
- A momentary increase in the pressure of water in a pipeline caused by a sudden change in the velocity or the direction of flow of the water.
- 1.01.146      Tail Piece
- The portion of the service lateral extending from the meter to the property line or backflow device.
- 1.01.147      Tapping Pit
- An excavation used for the purpose of performing a tap (wet or dry) to the distribution system.
- 1.01.148      Tapping Sleeve
- A sleeve used in making a wet connection where a single branch line is to be tapped into a water main under pressure.
- 1.01.149      Temporary Fire Hydrant
- A fire hydrant classified as "temporary" due to its projected useful life and in no way reflects a lesser standard of construction. Its installation will be the same as a permanent fire hydrant.
- 1.01.150      Temporary Service
- Includes all service connections for temporary delivery of water for use during the construction of subdivisions, other construction projects, and in certain instances, for emergency services.
- 1.01.151      Tentative Map
- Tentative map has the meaning ascribed to it in NRS 278.019.
- 1.01.152      Thrust Anchor
- A block of concrete that is cast in place below a fitting and tied to the fitting with anchor rods for the purpose of anchoring the fitting against vertical thrust.

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- 1.01.153      Thrust Block
- A block of concrete, which may contain reinforcing steel, placed and sized to counteract the thrust or force developed in a water main when it changes direction abruptly.
- 1.01.154      Transmission Main
- Large diameter pipelines used exclusively for moving water from one point to another. Valved outlets, if allowed, are typically at uniform distances and there are no service laterals allowed from the pipe. A water main that transports water from the main supply or source to a distant area where the water is distributed through distribution lines.
- 1.01.155      Treatment Facility
- A facility that contains various processes for the treatment of water for a public water system.
- 1.01.156      Type II Backfill Material
- An aggregate fill material with a specific sieve analysis, plasticity index and proctor as listed in Section 704 of the Uniform Standard Specifications for Public Works Construction Off-Site Improvements, Clark County, Nevada.
- 1.01.157      Type III Backfill Material
- Also known as Type II Backfill Material (Modified). The soluble sulfate content shall not exceed 0.3 percent by dry weight of soil. The mineral shall be clean, hard, durable, free from any frozen lumps, deleterious matter, and harmful coatings. In addition thereto, the material shall conform to the gradation requirements of Type II aggregate base as per Section 704 of the Uniform Standard Specifications for Public Works Construction Off-Site Improvements, Clark County, Nevada.
- 1.01.158      Union
- A mechanical coupling or adapter that is used to connect two pieces of pipe.

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- 1.01.159      Vacuum Breaker
- A mechanical device that allows air into a piping system and thereby prevents the backflow that could result when a partial vacuum creates a siphoning action. Used only when backsiphonage is present. Not to be used where backpressure is present.
- 1.01.160      Valve Box
- A housing that encloses the operating nut of a valve and extends to the ground surface, allowing an access opening for an operating or valve key to be inserted and connected to the operating nut so that the valve may be opened and closed.
- 1.01.161      Warning Tape Or Locator Ribbon
- A plastic tape of the color reserved for the applicable utility (i.e., blue tape for potable water).
- 1.01.162      Wastewater
- Water which, as a result of domestic, commercial, or industrial use, contains physical, chemical, or biological impurities.
- 1.01.163      Water Commitment
- An Agency determined allocation of water committed to a land parcel (property) which allows for the continued development of that land parcel.
- 1.01.164      Water Hammer
- The phenomenon of pressure oscillation that occurs in pipes when a valve is opened or closed very rapidly, creating a sound similar to someone hammering on a pipe. When a valve position is changed quickly, the water pressure in a pipe increases and decreases in a very quick sequence, potentially causing serious damage to the system.
- 1.01.165      Water Main
- The water pipe, typically located beneath the ground, from which domestic water supply is delivered to the service pipe leading to specific premises. (Also See “Distribution Main”, and “Transmission Main”.)

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1.01.166 Water Project

The initial construction, renovation, modification, or expansion of the collection, pumping, treatment, storage transmission, or distribution facilities of a public water system.

1.01.167 Water Service Lateral

A pipe that conveys water from a water main to the point of use of the water.

1.01.168 Wet Tap

A connection made to an existing water main in which the main connected to remains in full service during the connection. (Also referred to as a hot tap).

1.01.169 Zone of Pressure

An area within a distribution system where the pressure in the water main is maintained within certain specified limits.

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## 1.02 ABBREVIATIONS

AC	Asphaltic Concrete	NAVD 88	North American Vertical Datum of 1988
ACI	American Concrete Institute	NDOT	Nevada Department Of Transportation
ACP	Asbestos Cement Pipe	NEMA	National Electric Manufacturers Association
ADA	Americans with Disabilities Act	NPLS	Nevada Professional Land Surveyor
AG	Air Gap separation	NPE	Nevada Professional Engineer
ANSI	American National Standard Institute	NRS	Nevada Revised Statutes
ASA	American Standard Association	NSF	National Sanitation Foundation
ASTM	American Society of Testing and Materials	OD	Outside Diameter
AVAR	Air Vacuum Air Relief (valve)	PL	Property Line
AWS	American Welding Society	POC	Point of Connection
AWWA	American Water Works Association	ppm	Parts Per Million
BC	Back of Curb	PRV	Pressure Reducing Valve
BM	Bench Mark	PSF	Pounds per Square Foot
BSW	Back of Sidewalk	PSI	Pounds per Square Inch
C&G	Curb and Gutter	PVB	Pressure Vacuum Breaker
CIP	Cast Iron Pipe	PVC	PolyVinyl Chloride pipe (AWWA C900, C905)
CL	Centerline	RCP	Reinforced Concrete Pipe
CLSM	Controlled Low Strength Material	ROW	Right-Of-Way
CMP	Corrugated Metal Pipe	RPDA	Reduced Pressure Detector Assembly
CRSI	Concrete Reinforcing Steel Institute	RPPA	Reduced Pressure Principle Assembly
DCDA	Double Check Detector Assembly	SCCP	Steel Cylinder Concrete Pipe (AWWA C303)
DCVA	Double Check Valve Assembly	SNWA	Southern Nevada Water Authority
DI	Drop Inlet	SNWS	Southern Nevada Water System
DIP	Ductile Iron Pipe (AWWA C151)	SSPC	Steel Structures Painting Council
EL	Elevation	STA	Station
EX	Existing	SW	Sidewalk
FG	Finish Grade	UDACS	Uniform Design and Construction Standards for Potable Water
FH	Fire Hydrant	UPC	Uniform Plumbing Code
FMCT	Proprietary name for Class I Combination Fire And Domestic Meter By Hersey Meters	USD	Uniform Standard Drawings for Public Works Construction Off-Site Improvements, Clark County Area, Nevada, commonly knows as the "Blue Book"
FPS	Feet Per Second	USS	Uniform Standard Specifications for Public Works Construction Off-Site Improvements, Clark County Area, Nevada, commonly known as the "Blue Book"
FSM	Fire service meter	W	Water
FT	Foot		
G	Gas		
GA	Gauge		
GPM	Gallons Per Minute		
HGL	Hydraulic Grade Line		
ID	Inside Diameter		
IPC	International Plumbing Code		
IPS	Iron Pipe Size		
IQAC	Inter-Agency Quality Assurance Committee		
LF	Linear Feet		
mg/L	Milligrams per Liter		
MLCP	Mortar Lined and Coated Pipe (AWWA C200 & C205)		
NAC	Nevada Administrative Codes		
NDEP	Nevada Division of Environmental Protection		

1.03 REFERENCE TO STANDARDS AND PUBLICATIONS

Any reference made in these Standards or on approved drawings to any specification, standard, method, or publication of any scientific or technical society or other organization shall, in the absence of a specific designation to the contrary, be understood to refer to the specification, standard, method, or publication in effect as of the date the work is performed.

1.04 LINES, GRADES, AND MEASUREMENTS

The Developer's Engineer will be responsible for the establishment of such benchmarks and reference points needed for the water main installations. The Contractor shall be responsible for water facility construction to the lines and grades shown on the approved water plans.

1.05 RIGHT-OF-WAY

All water mains, services, and meters shall be located within dedicated public ROW's or within permanent easements granted to the Agency. The size of the easements shall be as determined by the Agency (See Section 2.04). All easements shall be granted to the Agency prior to water plan approval.

1.06 OVERTIME INSPECTION FEE

Unless otherwise approved by the Agency, the Contractor will be required to pay an overtime inspection fee as established by the Agency for each hour or each portion of each hour thereof, to provide for an Inspector to be present should the Contractor work outside the established normal working hours as established by the Agency. The Contractor will also be required to pay overtime charges for Inspection services during any Agency approved holidays.

1.07 NIGHT WORK

In the event night work is permitted, the Contractor shall provide lighting and other facilities which, in the opinion of the Agency's Representative, are satisfactory and sufficient for proper work inspection and the Agency Representative's safety.

1.08 INSPECTION

1.08.01 Duties of Inspector

Inspectors employed by the Agency will be authorized to inspect all work performed 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. The Inspector will not be authorized to alter or waive the provisions of the plans and specifications.

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The Inspector will, however, have the authority to reject work or materials until any questions at issue can be referred to the Engineer, and a decision made.

Work inspection by an authorized Agency Representative shall not be construed as direct control of the individual workmen and the work. The direct control shall be the sole responsibility of the Developer and/or the Contractor.

### 1.08.02 Inspection of Work

The Contractor shall furnish the Agency every reasonable facility, as determined by the Agency, for safely ascertaining whether the work is in accordance with the requirements and intention of these Standards.

All materials furnished and all work done under these Standards shall be subject to inspection. Work performed or covered in the absence of prescribed inspection shall be uncovered or taken out and replaced under proper inspection. The entire cost of removing and replacement, including the cost of all materials taken, shall be borne by the Contractor irrespective of whether the work is found to be defective or not.

Failure to reject any defective work or materials shall not in any way prevent later rejection if such defect(s) are discovered, or obligate the Agency to final acceptance.

The Agency's inspection is only for the purpose of ascertaining the work is in accordance with these Standards. The Agency does not assume any responsibility to inspect for the benefit of any person.

### 1.08.03 Scheduling of Inspection

No work shall begin until the water plans have been approved for construction by the Agency. Following water plan approval, notice shall be given to the Agency two (2) working days prior to the start of construction. Inspections will be requested following Agency established procedures.

## 1.09 INDEMNITY

The Developer and his Contractor shall indemnify and hold harmless the Agency, its officers, agents, and employees from all damages and costs to which they may be put by reason of injury to person or property resulting from the Contractor's negligence or carelessness in the work performance or in guarding the same, or from any improper materials, implements, or appliances used in its construction, or by or on account of any act or omission by the Contractor or its agents.

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### 1.10 GUARANTEE

The Developer shall guarantee that the entire work constructed by him will fully meet all requirements in these Standards. The Developer will perform, at his own expense, any repairs or replacements made necessary by defects in materials or workmanship supplied by him which become evident within one (1) year after the final acceptance date. Repairs or replacements shall be made in full compliance with the requirements in these Standards, including the test and guarantee requirements set forth herein. The Developer shall hold the Agency harmless from claims of any kind arising from damage due to said defects. The Developer shall make all repairs and replacements promptly upon receipt of verbal notice followed by written orders for same from the Agency's Representative. If the Developer fails to make the repairs and replacements promptly, the Agency may do the work and the Developer shall be liable to the Agency for the cost thereof.

### 1.11 RULES AND REGULATIONS

The Agency's rules, regulations, and ordinances shall be adhered to at all times. Copies are available at each Agency's office. Regulations as established in Nevada Revised Statutes (NRS), and Nevada Administrative Codes (NAC) shall also be complied with at all times.

### 1.12 PRE-APPROVED MATERIALS LIST

A Pre-Approved Materials List is available at each Agency's office. This list contains all materials and appurtenances that are pre-approved for installation in the public water system. Any individual, corporation, or other entity may submit to the Agency other materials for approval. Each submittal must include documentation demonstrating, to the Agency's satisfaction, the material meets the technical and performance requirements set forth in these and other applicable standards. In addition, a history of use at other locations and names and phone numbers of contacts for reference is required. The submittal must also demonstrate, to the Agency's satisfaction, the use of the proposed material is in conformance with the Agency's goal of developing a reliable and efficient distribution system with minimal maintenance requirements and maximum life. The individual agencies may be contacted to obtain the specific process for obtaining material approvals within their Agency.

All manufactured materials (pipe, valves, fittings, meters, etc.) shall be new and suitable for use in municipal potable water distribution systems. Used or refurbished materials are not permitted. Materials shall meet the minimum standards of AWWA, ASTM, NSF, IQAC, or certifying entity acceptable to the Agency. Unless otherwise identified in these Standards, each Agency shall have sole control over the approval and acceptance of materials to be incorporated into its system. Each Agency, at its discretion, may approve, qualify, restrict, or remove materials from its pre-approved materials list. Specific approval procedures for new materials and manufacturers are under sole Agency control. References made to particular materials in these Standards do not imply these materials are approved by all Agencies.