Moapa Valley Water District

Design and Construction Standards 2012

INDEX

SECTION 1
GENERAL REQUIREMENTS

1.1 GENERAL STATEMENT

The Moapa Valley Water District is a publicly owned water utility and is a political subdivision of the State of Nevada created and effective on July 1, 1983 under NRS Chapter 477 for the purpose of creating a single governmental entity succeeding two governmental purveyors, the Overton Water District and the Moapa Valley Water Company which were organized in 1954 and 1959 respectively. The District is governed by a Board of Directors, who are elected by the public and which has jurisdiction over all its affairs. The purpose of these Design and Construction Standards is to define the standards and to obtain uniform and equitable treatment for all to whom they apply. The District may allow deviations from these Design and Construction Standards if satisfactory documentation is presented demonstrating sound engineering practices that are compatible with District facilities and operation. The Design and Construction Standards presented herein represent the design and installation standards for the water systems within the jurisdiction of the District.

1.2 DEFINITIONS

The following terms and definitions are used throughout these Design and Construction Standards.

1.2.1 **District**
"District" shall mean the Moapa Valley Water District, located at 601 North Moapa Valley Blvd.; Overton, Nevada 89040; (702)397-6893.

1.2.2 **Board**
"Board" shall mean the Board of Directors of the District.

1.2.3 **Director**
"Director" shall mean the Director of the Moapa Valley Water District or his duly appointed representative.

1.2.4 **Developer**
"Developer" shall mean the individual, corporation, or partnership that requires water services, either by the installation of a service lateral or by constructing a water main extension for a proposed or existing structure or structures.

1.2.5 **Contractor**
"Contractor" shall mean the construction firm properly licensed in the State of Nevada hired by a developer to install water facilities in accordance with these Design and Construction Standards.

1.2.6 **District's Representative**
"District's Representative" shall mean the individual duly authorized by the Director to act as agent for the District and includes inspection staff assigned to the developer's project.

1.2.7 **Developer's Engineer**
"Developer's Engineer" shall mean the consulting civil engineer, registered in the State of Nevada, who is working for a developer.

1.2.8 **Domestic Service**
"Domestic Service" shall mean a metered service connection through which water is obtained for all purposes exclusive of fire protection, including commercial and industrial uses.

1.2.9 **Private Fire Service**

"Private Fire Service" shall mean a metered or non-metered service connection through which water is obtained for fire protection exclusively.

1.2.10 **Combined Service**
"Combined Service" shall mean a metered service connection through which water is obtained for the dual purpose of fire protection and domestic use.

1.2.11 **Construction Water**
The water for construction purposes delivered through other than a standard metered service connection.

1.2.12 **Idler**
A spacer or length of pipe installed in lieu of a meter.

1.2.13 **Offsite Main**
Water mains, regardless of size, which extend from the District's existing system to within twenty feet of a development. (Excluding on-site mains)

1.2.14 **On-site Mains**
Water mains installed specifically to provide service to developments, and generally located within the development's boundaries.

1.2.15 **Public Water Facilities**
Water facilities that are owned by the District after completion.

1.2.16 **Private Water Facilities**
All water facilities not owned by the District after completion.

1.3 ABBREVIATIONS

Whenever the following abbreviations are used in these standards or on the plans, they are to be construed to be the same as the respective expressions represented.

ACI	American Concrete Institute
ACP	Asbestos Cement Pipe (AWWA C400)
ANSI	American National Standard Institute
ASTM	American Society of Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
DIP	Ductile Iron Pipe
NEMA	National Electric Manufacturers Association
PRV	Pressure Reducing Valve
PVC	Polyvinyl Chloride Pipe
SSPC	Steel Structures Painting Council

1.4 REFERENCE TO STANDARDS AND SPECIFICATIONS

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.

1.5 LINES, GRADES AND MEASUREMENTS

The Developer's Engineer will be responsible for bench marks and reference points needed for the water main installations. The Contractor shall be responsible for construction of the water facilities to the lines and grades shown on the plans.

1.6 RIGHT-OF-WAY

All water mains, services, and meters shall be located within dedicated public rights-of-way or within easements granted to the District of not less than 20 feet in width. All easements shall be granted to the District prior to approval of the water main extension plans.

1.7 WORKING HOURS

Except as otherwise provided for, the Contractor's normal working hours shall be limited to a normal consecutive 8-hour working day, 5 days per week (Monday through Friday), excluding Holidays recognized by the District. The daily starting time shall be at the discretion of the Contractor, but shall be reasonable and consistent. Should the Contractor desire to work outside the established normal working hours, with prior approval from the District, may do so by notifying the District Representative forty-eight (48) hours in advance of the additional hours to be worked, and by paying an overtime inspection fee of $55.00 per hour to provide for an inspector to be present. Overtime inspectors fees will be rounded off to the nearest one-half hour.

1.8 NIGHT WORK

The Contractor may be required or may be permitted to perform work at night upon approval of the District. In the event night work is ordered or permitted, the Contractor shall provide lighting and other facilities, which in the opinion of the District's Representative, is satisfactory and sufficient for proper and safe performance of the work.

1.9 INSPECTION

The Contractor shall furnish the District's Representative every reasonable facility for ascertaining whether the work is in accordance with the requirements and intentions of these standards.

All material furnished and all work done under these standards shall be subject to rigid inspection. Work performed in the absence of the prescribed inspection may be required to be taken out and replaced under proper inspection, and 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.

Work buried without the authority of the District's Representative shall, upon order of the District's Representative, be uncovered to the extent required, and the Contractor shall bear the entire cost of performing all the work and furnishing all materials necessary for the removal of the covering and it's subsequent replacement as directed and approved by the District's Representative.

The District's inspection is solely for the purpose of ascertaining that work is in accordance with these Design and Construction Standards.

1.10 NO PERSONAL LIABILITY

No District Representative shall be personally responsible for any liability arising during the project. No claim shall be made or filed, and neither the District nor any of its Representatives shall be liable for, or held liable to pay any money.

1.11 SAFETY

The Contractor's construction materials, equipment, methods and workmanship shall be in accordance with applicable local ordinances and state laws including the Federal and Nevada Occupational Safety and Health Acts.

1.12 MAINTENANCE AND GUARANTEE

The Developer hereby guarantees that all work constructed by him will meet fully all requirements of these standards. The developer shall make, at his own expense, any repairs or replacements made necessary by defects in materials or workmanship supplied by him that become evident within one (1) year after the date of acceptance of the work by the District, and to restore to full compliance with the requirements of these

standards, including the test requirements set forth herein for any part of the work constructed hereunder, which during said one-year period is found to be deficient with respect to any provisions of these standards. The Developer shall hold the District 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 District's Representative. If the Developer fails to make the repairs and or replacements promptly, the District may perform the work and/or have it performed and the Developer shall be liable to the District for the costs thereof. All repairs shall be guaranteed for an additional one (1) year period after the deficiency is corrected.

SECTION 2
DESIGN STANDARDS

2.1 GENERAL
The design shall include planning to meet present and future demands, population projections, per capita consumption, industrial expansion, area population densities, and fire flow requirements. These factors must then be considered to size the mains from various sources of supply to every point within the system. Other elements of design are selection of piping materials after consideration of the corrosivity of soil and water, the water main pressure requirements, location of mains with reference to property lines, sizing of service lines, location and size of line valves, PRV's and any other appurtenance required by the District.

2.2 PRESSURE
Main pipeline pressure shall maintain a minimum pressure of 40 psi during high consumption periods on the system and maximum static pressure of 110 psi during low consumption periods. Main pipeline through which prevailing water pressures will either exceed the maximum or fall below the minimum pressures will require the installation of pressure regulators, storage tanks, booster pumps, or any other device as required by the District. A residual pressure of 20 psi must be maintained in main pipelines while attempting to achieve specified fire flows.

2.3 CLASSES OF SERVICE
All services installed within the District shall be classified as either domestic, private fire, combined, or interim for billing purposes.

2.4 LINE LOCATION
All water facilities to be owned by the District shall be located within approved District right-of-ways or easements. Water meters shall be located outside of travel lanes and driveways and shall be protected from vehicle traffic, as determined by the District. Unless otherwise approved or specified, lines shall be seven (7) feet inside the thoroughfare(s) from back of curb.

2.5 CROSS-CONNECTIONS
No cross-connection shall be permitted between the District's water supply system and any contaminant or pollutant source without an approved Backflow Prevention Device as specified by the District.

2.6 FIRE HYDRANTS
Fire hydrant construction shall conform to the Clark County Uniform Fire Code and standards of the District. Approved fire hydrant suppliers include Waterous and Kennedy.

2.7 WATER MAIN SIZES
The size of any water main to be constructed as a part of the District distribution system shall be a minimum of eight (8) inches in diameter. The length of dead end water mains with fire hydrants shall conform to the requirements of the Uniform Fire Code of Clark County.

2.8 PIPE MATERIAL
Pipe material approved for District mains include the following:

Ductile Iron	AWWA Standard C-100
Polyvinyl chloride (PVC) 6" through 12"	AWWA Standard C-900
Polyvinyl chloride (PVC) 14" through 24" (CI OD Sizing System)	AWWA Standard C-905

The material approved for District service laterals include:

Polyethylene (PE) (1" - IPS, SDR 7) (1 1/2"- 2" - CTS, SDR9)	AWWA Standard C-901

2.9 LINE VALVES

Line valves should be located so that a break in the main would not necessitate shutting off more than approximately 600 feet in residential areas and 1000 feet in other areas. Some attention to the relationship of valves and fire hydrant locations is desirable to assure a wet hydrant in another section.
Line valves up to and including 12 inch nominal pipe size will be resilient-seated gate valves meeting ANST/AWWA C509 Standards. Pressure rating for valves shall be 200psi.
Line valves 14 inch nominal pipe size and larger will be as shown on the approved design plans and meeting ANSI/AWWA Standards. Pressure rating for valves shall be 200 psi.
All line valves to be iron body with a protective epoxy interior & exterior coating meeting ANSI/AWWA C550 Standards. Valves shall be manufactured by M&H, Kennedy, Waterous or a District approved equal.

2.10 SPECIAL VALVES

Air relief and air-vacuum relief valves may be required on pipeline high points and changes in grade, depending on the main size and terrain.
Pressure regulating valves will be required where it is necessary to reduce main line pressures as defined in Section 2.2.
Check valves will be used where it is required that the water flow in one direction only.

2.11 BOOSTER PUMPS AND TANKS

When pressure needs to be increased in an area, a pump station will be required. A pump taking suction from a feeder main will not be permitted. A pressure equalizing reservoir should be constructed at a ground elevation that will prevent wasted head loss. A pump station will be constructed to take suction from the reservoir.

2.12 WATER AND SEWER LINE CROSSINGS

See NAC 445A.6715 to 445A.

2.13 MINIMUM COVER OVER WATER MAINS

The following minimum covers from future grade shall be maintained unless otherwise shown on the drawings. A minimum of 48 inches of cover shall be maintained over pipe 12 inches in diameter and smaller where there is not an established street grade. Where there is an established street grade, and the street is 80 feet wide or more, 42 inches of cover shall be maintained over pipe 12 inches and smaller. Where there is an established street grade and the street is less than 80 feet wide, 36 inches of cover shall be maintained over pipe 12 inches in diameter and smaller. A minimum of 48 inches of cover shall be maintained over pipe 14 inches in diameter and larger.

2.14 SUBMITTAL REQUIREMENTS

The following are the requirements for drawings submitted to the District for approval of water main design. These requirements must be met and all easements and agreements executed and submitted prior to the District approving the plans for construction.

2.14.1 General

(a) All plans submitted to the District must be signed and have the stamp of a civil engineer who is registered within the State of Nevada, in accordance with applicable Nevada Revised Statutes.

(b) The Developer's engineer will submit to the District reproducible mylars of the design plans on all water designs.

(c) All plans submitted to the District for a plan check must be accompanied by a legal map and/or legal description of the property to be served.

2.14.2 General Drawing Requirements

Water plan drawings will be required to show, at a minimum, the following:

(a) Vicinity map
(b) Quantity and cost estimates
(c) General Notes
(d) North arrows

(e) Existing valves and fire hydrants
(f) Other utilities
(g) Street names
(h) Scales (horizontal and vertical)
(I) Distance from centerline of street
(j) Rights-of-way and/or easement lines
(k) Laterals
(l) Signature block
(m) Engineer's name
(n) Engineer's stamp
(o) All drawings shall be done on 24" x 36" sheets
(p) Show all stubs, valves, bends, reducers, meters, etc.
(q) Curve data on curved water mains.
(r) Show benchmark data
(s) Legend
(t) Driveway locations
(u) Fire hydrants
(v) Planning data

2.14.3 **Additional Drawing Requirements for Subdivisions**
In addition to the General Drawing requirements, the following will be required on subdivision plans:
(a) Lot and block numbers on all sheets
(b) Total number of lots to be served

2.14.4 **Additional Requirements for Above-ground Structures**
In addition to the General Drawing Requirements, above-ground structures and all above ground electrical and mechanical equipment shall be protected from physical damage by the one hundred (100) year flood. Booster pumping stations shall remain fully operational and accessible during a twenty-five (25) year flood.

SECTION 3
CONSTRUCTION STANDARDS

3.1 STANDARD SPECIFICATIONS

Whenever the words "Standard Specification" appear on the plans or in these standards, they shall refer to the Moapa Valley Water District Design and Construction Standards. Unless otherwise specified herein, the "Standard Specifications" shall apply.

3.2 CONTRACTOR'S LICENSE

The District requires that all contractors installing mains, laterals, and appurtenances above ground and underground structures provide evidence of the proper Class "A" license to do this type of construction. This standard applies to all facilities located within public rights-of-way and District easements which, when completed, will be maintained by the District.

3.3 CONTRACTOR'S RESPONSIBILITY

It shall be the Contractor's responsibility to perform construction as per approved plans. Any additions, deletions, or changes shall first meet with the approval of the District. All changes in design shall be made by the Developer's Engineer for the job.

3.4 24-HOUR NOTICE

The District requires a twenty four (24) hour working day notice prior to an inspection on any project which will belong to the District. Inspections shall take place between the hours of 7:00 a.m. and 3:00 p.m. Monday thru Friday.

3.5 CUT SHEETS

Prior to commencing construction on any project in which the water main is designed with a specific profile, cut sheets must be submitted to the District for approval. The cut sheets shall be prepared under the supervision of a Nevada Registered Professional Land Surveyor (PLS) or Professional Engineer. Cut sheets will show at a minimum the following requirements:

(a) Stationing that matches the approved plans
(b) hub elevations
(c) invert elevations
(d) cuts
(e) direction and distance of offset
(f) street names
(g) job title
(h) date of preparation
(I) bench mark data
(j) names of surveyors
(k) fittings, valves, and other appurtenant items

3.6 CONSTRUCTION STAKING

The District requires survey stakes necessary for the construction of the waterline in accordance with the project approved plans to include, but not limited to, the following:

(a) survey grade stakes at a minimum of 50 foot intervals along straight-of-ways and 25 foot intervals along curved alignments and through vertical curves to include all horizontal and vertical angle points and points of curvature.

(b) a minimum of two(2) survey grade stakes for appurtenances such as, but not limited to, fire hydrants, meters, vaults, back-flow preventers, etc.

3.7 FIELD CONTROL VERIFICATION

Prior to construction, the surveyor shall field verify horizontal and vertical control as shown on the project plans and report to the District, in writing, any discrepancies.

3.8 GRADE LINE

When the design of pipes larger than 12 inches in diameter has a profile with grades, the District will require that prior to installing any pipe, a grade line be set at the designed grades. A laser may be used in lieu of a grade line.

3.9 EARTHWORK

The Contractor shall perform all earthwork required for construction of all facilities, pipelines and appurtenances as specified or shown on the drawings.

3.9.1 Excavation

(a) Excavations, including the manner of supporting excavations and provisions for access to trenches, shall conform to applicable State industrial safety requirements. Excavation shall include, without classification, the removal of all materials of whatever nature that would interfere with proper execution and completion of the work. The Contractor shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavations, and all pumping, ditching, or other approved method for the removal or exclusion of water, including storm and waste water reaching the site of the work from any source so as to prevent damage to the work or adjoining property. If the Contractor is not expected to fully complete the work within any excavated area in a reasonable length of time, as determined by the District's Representative, the District's Representative may require the Contractor to backfill the excavation and re excavate when the work can be completed expeditiously.

(b) Excavations for pipelines shall be open-cut trenches with vertical sides up to the top of the pipe, unless otherwise shown on the drawings or provided herein. The bottom of the trench shall have a minimum width equal to the outside diameter of the pipe plus 20 inches. Except when otherwise ordered by the District's Representative, the trenches shall be excavated uniformly to the grade or depth shown on the drawings. All open trenches shall be plated or backfilled and patched at the end of each working day per the requirements of the Clark County Department of Public Works.

(c) Whenever the excavation is made below the grade shown on the drawings, or below the grade ordered, the trench shall be refilled to the required grade with suitable material approved by the District's Representative, and said material shall be brought to proper moisture content and compacted by mechanical means to 90% of maximum density in layers not exceeding six (6) inches in thickness.

(d) Excess material and excavated material determined unsuitable for backfill by the District's Representative, shall be removed from the site of the work.

(e) Where, in the District Representative's opinion, the bottom of the trench is flooded with water or is of unsatisfactory sub grade material, the District's Representative may order the contractor to over-excavate the trench and refill with imported aggregate bedding approved by the District's Representative.

3.9.2 Pipe Bedding

(a) The trench shall be excavated to a depth at least four (4) inches below the bottom of the pipe and bedding material shall be placed to the required grade of the bottom of pipe. Material used for bedding shall be sand or a well-graded granular, non plastic material (PI<10) of which not more that 15% will pass the No. 200 sieve, at least 50% will pass the No. 4 sieve, and all will pass the 1" sieve and will not soften when saturated. The Plasticity Index of the bedding material shall not exceed 10 and the soluble sulfate content shall be less than 0.3% by dry soil weight. Regardless of the method of placing the bedding, at least four (4) inches of clearance shall be provided beneath bell ends or pipe couplings.

(b) The bottom shall be free of rocks or other hard objects which would cause a bridge in the pipe support with bearing on sharp, hard points. The barrel of the pipe should lie directly on the compacted bedding and bell holes provided so there is a minimum of four (4) inches clearance beneath the pipe joints. The pipe shall be top loaded, leaving all couplings as exposed as possible, and pressure tested.

3.9.3 **Trench Backfill Operations**

(a) Pipe Zone Backfill - Unless otherwise specified, after the pipe is laid, the pipe zone shall be backfilled and compacted in at least two equal lifts for pipe 24 inches and larger, and one lift for pipe smaller than 24 inches to a minimum of 12 inches, maximum of 18 inches, above the top of the pipe with sand or well-graded granular non-plastic material (PI<10) of which not more than 15% will pass a No. 200 sieve, at least 50% will pass the No. 4 sieve, and all will pass the 1" sieve and will not soften when saturated. The soluble sulfate content shall be less than 0.3% by dry soil weight. The partially backfilled trench shall be compacted to not less than 90% of maximum density. No flooding or jetting will be allowed in the bedding and shading area of the pipe zone.

(b) Trench Backfill (Unpaved Area) - In unpaved areas, backfill above the pipe zone shall be "Selected Backfill" as specified in subsection 3.9.3 (d) of these standards. This backfill shall be placed in horizontal layers not to exceed 24" in thickness and shall be compacted to 90% of maximum density. Compaction shall be by mechanical means or flooding and jetting methods in accordance with the Clark County Department of Public Works requirements.

(c) Trench Backfill (Paved Areas)

1. In paved area with right-of-way of 60 feet or less, backfill above the pipe zone to level sixteen (16) inches below the bottom of the pavement shall be "Selected Backfill" as specified in subsection 3.9.3 (d) compacted to not less than 90% of maximum density. The backfill may be compacted by ponding and jetting unless the backfill material is such that it will not drain well or where the excavated trench walls or subgrade material is such that it will soften when saturated (Plastic Index greater than 3) compaction shall be by mechanical means: flooding and jetting will not be permitted under this condition.

2. Backfill material in the sixteen (16) inch depth beneath the pavement shall be of Type II gravel conforming to Clark County Department of Public Works requirements compacted to not less than 95% of maximum density by mechanical means.

(d) Selected Backfill - Material used for selected backfill shall be of a quality acceptable to the District's Representative and may consist of suitable material from excavation. It shall be free from sod, organic materials, rubbish, or debris. The backfill material shall have a sufficient amount of fine material to fill the voids between the coarse aggregate. In addition thereto, the material shall conform to the following requirements:

Sieve Size	Percentage of Weight Passing
4"	100
3"	80 - 100
No. 4	35 - 100

Percent by Weight Passing No. 200 Sieve	Plasticity Index Maximum
0 - 10.0	15
10.1 - 20.0	12
20.1 - 50.0	10

50.1 - 80.0	8
80.1 - 100.0	6

The liquid limit of the material shall not be greater than fifty (50). Stones or lumps exceeding three (3) inches in diameter (75 millimeters) shall not be used within the zone twelve (12) inches (300 millimeters) from the finished subgrade.

(e) Backfill in subdivisions shall be in accordance with Standard Plate No. 106.

(f) Backfill placed around structures shall be deposited in lifts not to exceed eight (8) inches in thickness, as measured before compaction. Material placed adjacent to structures shall have a soluble sulfate content of less than 0.3% by dry soil weight. The backfill shall be brought up evenly with each layer moistened to optimum moisture content plus or minus one (1) percent and compacted to 90% of maximum density.

(g) Trench Backfill for service laterals shall be in accordance with subsection 3.9.3 (d) and Standard Plate No. 101, 102, 103 and 104 except that sand backfill shall be used in the pipe zone and the minimum trench width shall be four (4) inches.

GENERAL NOTES
Moapa Valley Water District (MVWD)

1. ALL WORK TO CONFORM TO MVWD STANDARDS. (Construction Standard Plates Available upon request).

2. ALL WORK, EXCEPT AS MODIFIED HEREON OR BY NOTE 1, SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA.

3. WRITTEN NOTICE IS TO BE GIVEN THE MOAPA VALLEY WATER DISTRICT AT LEAST 48 HOURS PRIOR TO ACTUAL CONSTRUCTION.

4. ALL LINES TO BE INSTALLED, PRESSURE AND LEAKAGE TESTED AS PER AWWA STANDARDS. (PVC- C605, A-C PIPE- C603, DUCTILE IRON PIPE- C600 using 200 psi as the minimum test pressure).

5. ALL MAIN LINES SHALL BE DISINFECTED AS OUTLINED IN AWWA-C-651 (AS LATEST REVISED), "AWWA STANDARD FOR DISINFECTING WATER MAINS".

6. DEFLECTION ANGLES SHALL NOT EXCEED THE MANUFACTURERS SPECIFICATIONS.

7. ALL METERS SHALL BE LOCATED OUTSIDE OF DRIVEWAYS.

8. ALL VALVE BOXES TO BE PLACED OUTSIDE VALLEY GUTTERS AND 1/4" ABOVE FINISH GRADE.

9. TRACE WIRE REQUIRED TO BE INSTALLED ON ALL NEW LINES.

10. ALL NEW FIRE HYDRANTS TO BE EITHER "KENNEDY" K-81D, "MUELLER", "WATEROUS" OR APPROVED EQUAL, MECHANICAL JOINT SHOE AND TO BE INSTALLED / INSPECTED AS PER CLARK COUNTY FIRE DEPARTMENT SPECIFICATIONS.

11. ONLY MVWD STAFF IS AUTHORIZED TO OPERATE EXISTING VALVES, HYDRANTS, ETC.

12. MVWD IS LOCATED AT 601 N. MOAPA VALLEY BLVD, OVERTON, NV 89040, (702) 397-6893. HOURS: 8 A.M. TO 4:30 P.M.

13. 1-800-227-2600 USA NORTH CALL BEFORE YOU DIG (811) MUST BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ACTUAL CONSTRUCTION START TIME.

14. VALVES SHALL BE MANUFACTURED BY KENNEDY, MUELLER, WATEROUD DISTRICT APPROVED EQUAL.

PLATE NO.	PLATE DESCRIPTION:
101	SERVICE INSTALLATION 5/8"–3/4" & 1" METER SIZES – IMPROVED AREA
102	SERVICE INSTALLATION 5/8"–3/4" & 1" METER SIZES – UNIMPROVED AREA
103	SERVICE INSTALLATION 1 1/2" & 2" METER SIZES – IMPROVED AREA
104	SERVICE INSTALLATION 1 1/2" & 2" METER SIZES – UNIMPROVED AREA
105	TYPICAL TRENCH SECTION BACKFILL SPECIFICATION UNPAVED AREAS FOR WATER MAINS
106	TYPICAL TRENCH SECTION BACKFILL SPECIFICATION PAVED AREAS FOR WATER MAINS
107	BLOW–OFF ASSEMBLY 6" THROUGH 24"
108	THRUST BLOCK INSTALLATION
109	VALVE BOX INSTALLATION AND ADJUSTMENT
110A	FIRE HYDRANT INSTALLATION – IMPROVED AREA
110B	FIRE HYDRANT INSTALLATION – UNIMPROVED AREA
111	BACKFLOW PREVENTION ASSEMBLY INSTALLATION 1", 1 1/2" & 2"
112A	AIR VAC VALVE ASSEMBLY INSTALLATION 1", 1 1/2" & 2" – IMPROVED AREA
112B	AIR VAC VALVE ASSEMBLY INSTALLATION 1", 1 1/2" & 2" – UNIMPROVED AREA
113	LARGE AIR VAC VALVE ASSEMBLY INSTALLATION 3" & LARGER
114	TRACE WIRE INSTALLATION
115	CHLORINATION REQUIREMENTS
UDACS #16	TRENCH SECTION BACKFILL SPECIFICATION UNIMPROVED AREAS
UDACS #17	TRENCH SECTION BACKFILL SPECIFICATION IMPROVED AREAS
UDACS #18	TRENCH SECTION BACKFILL SPECIFICATION IMPROVED AND UNIMPROVED AREAS
UDACS #19	TRENCH SECTION BACKFILL SPECIFICATION NOTES
UDACS #21	STORM DRAIN OR SANITARY SEWER EXISTING WATER MAIN CROSSING
UDACS #22	STORM DRAIN OR SANITARY SEWER NEW WATER MAIN CROSSING
UDACS #23	CASING INSTALLATION
UDACS #34	EXCAVATION FOR WET TAPS
UDACS #52	DOMESTIC TURBINE METER WITH BYPASS PROVISIONS
UDACS #56	COMPACT BACKFLOW PREVENTION ASSEMBLY 3" TO 10" DIAMETER
UDACS #57	DUAL COMPACT BACKFLOW PREVENTION ASSEMBLY 4" TO 10" DIAMETER
UDACS #58	DUAL CONVENTIONAL BACKFLOW PREVENTION ASSEMBLY 4" TO 10" DIAMETER
UDACS #75	VEHICULAR PROTECTION BOLLARD
UDACS #C–475	METER VAULT PLANS AND SECTIONS AND DETAILS

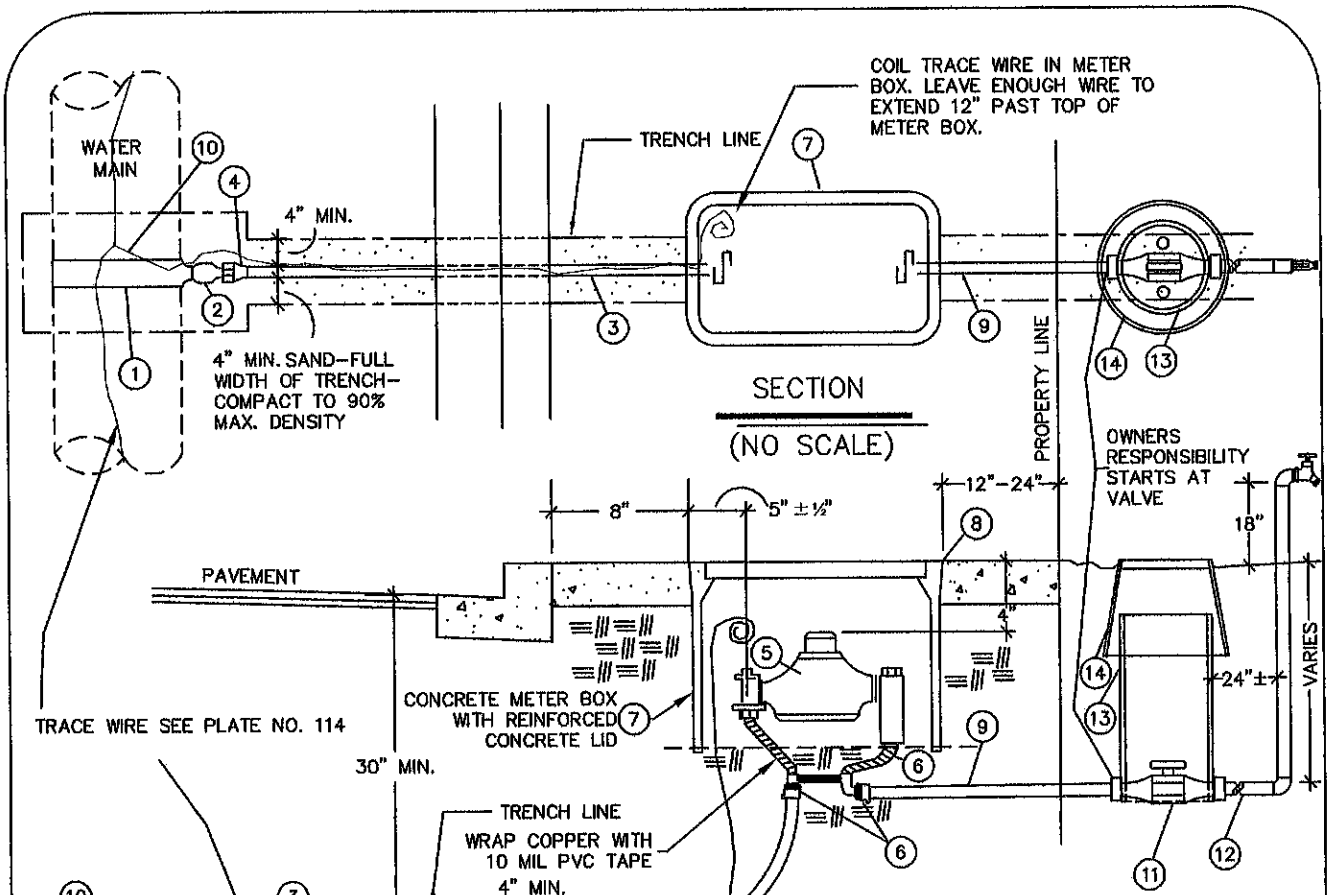
NOTE:

ALL PLATE DRAWINGS ARE NOT TO SCALE

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012 APPROVAL DATE APPROVED BY	INDEX TO STANDARD PLATES PAGE 14	STANDARD PLATE NO. 0



LEGEND:

1. ROMAC NYLON COATED STAINLESS STEEL SADDLE R101N-XXX OR APPROVED EQUAL, WRAPPED WITH 10 MIL PE FILM AND 10 MIL PVC TAPE.
2. 1" CORPORATION STOP FORD F500-4 1"M.I.P.X1"M.I.P. OR APPROVED EQUAL.
3. SDR-7 1" POLY. SERVICE LATERAL(I.P.S.) NO SPLICE BETWEEN CORP AND SETTER.
4. FORD C16-44-G 1"F.I.P.X1"P.E. PIPE GRIP JOINT OR APPROVED EQUAL.
5. METER BY MOAPA VALLEY WATER DISTRICT.
6. FORD 70-80 SERIES ANGLE COPPERSETTER WITH DUAL CHECK VALVES, MODEL VBHC72-82W-88-33 WITH A FORD C16-34-G ON THE INLET AND OUTLET FOR ⅝"-¾" METER; VBHC74-84W-88-44 WITH A FORD C16-44-G ON THE INLET AND A FORD LA81-44 FOLLOWED BY A FORD C16-44-G ON THE OUTLET FOR 1" METER, OR APPROVED EQUAL.
7. OLDCASTLE PRECAST CONCRETE UTILITY METER BOX B12BOX FOR ⅝"-¾" METERS, AND FOR 1" METERS OR APPROVED EQUAL.
8. INSTALL BOX LEVEL WITH CONCRETE SIDEWALK.
9. 1" SCH-40 PVC (LENGTH VARIES).
10. CONNECT TRACE WIRE TO MAIN TRACE WIRE. IF THERE IS NO MAIN TRACE WIRE, WRAP IT AROUND CORP STOP.
11. 1" SCH-80 PVC BALL VALVE WITH SXS SOCKETS.
12. 1" SCH-40 PVC PIPE WITH SLIP 90 TO SLIP 90X¾"F.P.T. WITH BRASS HOSE BIB AT 18" ABOVE GRADE.
13. 6" SDR35 SEWER PIPE (LENGTH VARIES) WITH 2" NOTCH FOR SHUTOFF VALVE ASSEMBLY.
14. NDS 107BC OR APPROVED EQUAL.

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

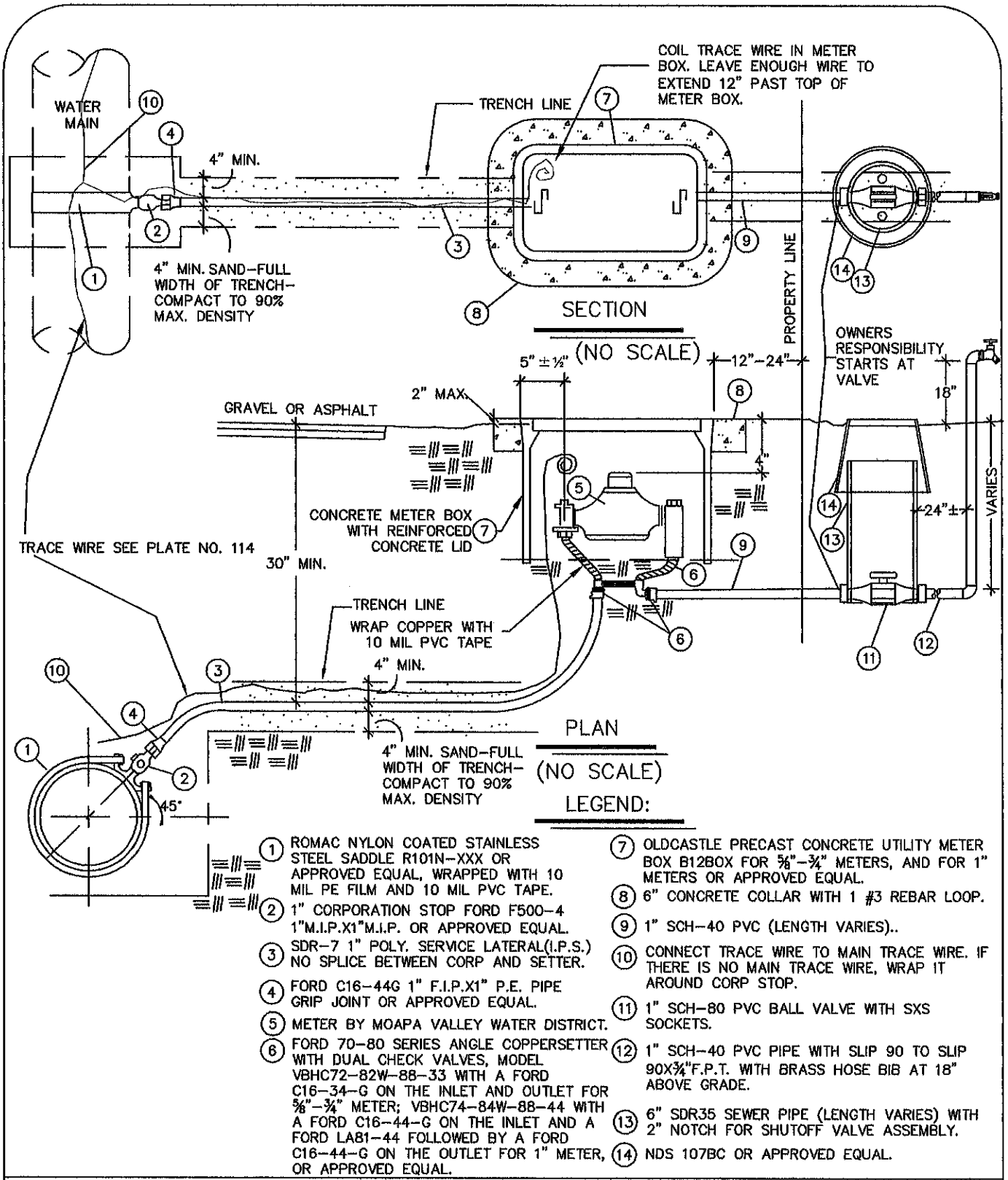
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

Ian Kelly
APPROVED BY

SERVICE INSTALLATION 5/8"-3/4" & 1" METER SIZES - IMPROVED AREA

STANDARD PLATE NO. 101



LEGEND:

1. ROMAC NYLON COATED STAINLESS STEEL SADDLE R101N-XXX OR APPROVED EQUAL, WRAPPED WITH 10 MIL PE FILM AND 10 MIL PVC TAPE.
2. 1" CORPORATION STOP FORD F500-4 1"M.I.P.X1"M.I.P. OR APPROVED EQUAL.
3. SDR-7 1" POLY. SERVICE LATERAL(I.P.S.) NO SPLICE BETWEEN CORP AND SETTER.
4. FORD C16-44G 1" F.I.P.X1" P.E. PIPE GRIP JOINT OR APPROVED EQUAL.
5. METER BY MOAPA VALLEY WATER DISTRICT.
6. FORD 70-80 SERIES ANGLE COPPERSETTER WITH DUAL CHECK VALVES, MODEL VBHC72-82W-88-33 WITH A FORD C16-34-G ON THE INLET AND OUTLET FOR ⅝"-¾" METER; VBHC74-84W-88-44 WITH A FORD C16-44-G ON THE INLET AND A FORD LA81-44 FOLLOWED BY A FORD C16-44-G ON THE OUTLET FOR 1" METER, OR APPROVED EQUAL.
7. OLDCASTLE PRECAST CONCRETE UTILITY METER BOX B12BOX FOR ⅝"-¾" METERS, AND FOR 1" METERS OR APPROVED EQUAL.
8. 6" CONCRETE COLLAR WITH 1 #3 REBAR LOOP.
9. 1" SCH-40 PVC (LENGTH VARIES)..
10. CONNECT TRACE WIRE TO MAIN TRACE WIRE. IF THERE IS NO MAIN TRACE WIRE, WRAP IT AROUND CORP STOP.
11. 1" SCH-80 PVC BALL VALVE WITH SXS SOCKETS.
12. 1" SCH-40 PVC PIPE WITH SLIP 90 TO SLIP 90X¾"F.P.T. WITH BRASS HOSE BIB AT 18" ABOVE GRADE.
13. 6" SDR35 SEWER PIPE (LENGTH VARIES) WITH 2" NOTCH FOR SHUTOFF VALVE ASSEMBLY.
14. NDS 107BC OR APPROVED EQUAL.

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

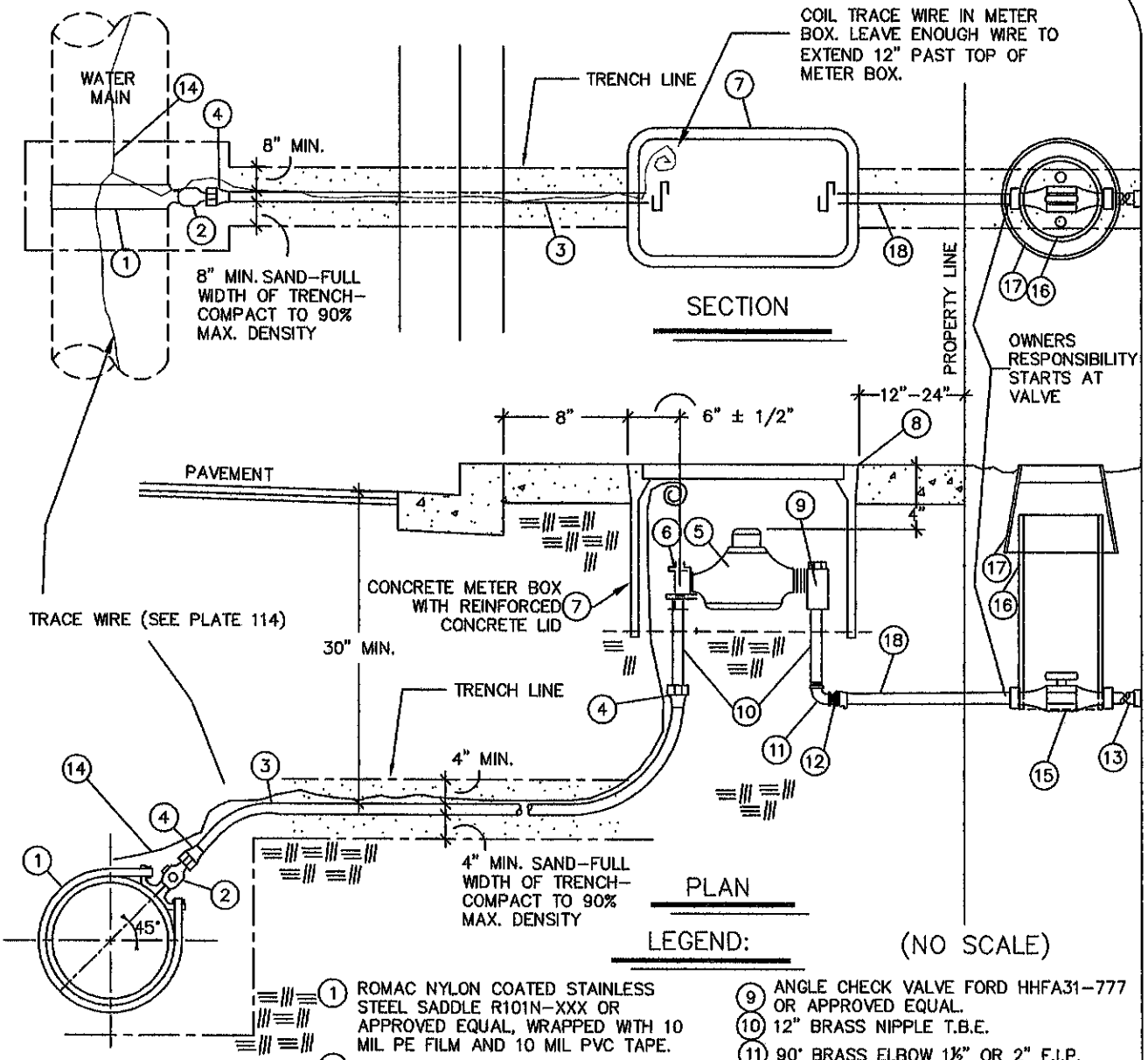
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

Jan Alley
APPROVED BY

SERVICE INSTALLATION 5/8"-3/4" & 1" METER SIZES – UNIMPROVED AREA

STANDARD PLATE NO. 102



METER SIZE	IDLER LENGTH	(3) MINIMUM SERVICE LATERAL SIZE
1 1/2"	13"	1 1/2"
2"	17"	2"

(1) ROMAC NYLON COATED STAINLESS STEEL SADDLE R101N-XXX OR APPROVED EQUAL, WRAPPED WITH 10 MIL PE FILM AND 10 MIL PVC TAPE.

(2) M.I.PXM.I.P. CORPORATION STOP

(3) SDR-9 POLY. SERVICE LATERAL (C.T.S.) NO SPLICE BETWEEN CORP AND SETTER.

(4) FORD F.I.P.XP.E. PIPE GRIP JOINT OR APPROVED EQUAL.

(5) METER BY MOAPA VALLEY WATER DISTRICT.

(6) ANGLE METER STOP FORD BFA13-666W FOR 1½" METER; BFA13-777W FOR 2" METER OR APPROVED EQUAL.

(7) OLDCASTLE PRECAST CONCRETE UTILITY METER BOX N30BOX FOR 1½" & 2" METERS, OR APPROVED EQUAL.

(8) INSTALL BOX LEVEL WITH CONCRETE SIDEWALK.

(9) ANGLE CHECK VALVE FORD HHFA31-777 OR APPROVED EQUAL.

(10) 12" BRASS NIPPLE T.B.E.

(11) 90° BRASS ELBOW 1½" OR 2" F.I.P.

(12) FORD X"M.I.P.X X"C.T.S. PIPE GRIP JOINT OR APPROVED EQUAL.

(13) 6"X1½" OR 2" SCH-40 PVC PIPE WITH CAP.

(14) CONNECT TRACE WIRE TO MAIN TRACE WIRE. IF THERE IS NO MAIN TRACE WIRE, WRAP IT AROUND CORP STOP.

(15) SCH-80 PVC BALL VALVE WITH SXS SOCKETS.

(16) 6" SDR35 SEWER PIPE (LENGTH VARIES) WITH 2" NOTCH FOR SHUTOFF VALVE ASSEMBLY.

(17) NDS 107BC OR APPROVED EQUAL.

(18) 1½" OR 2" SCH-40 PVC (LENGTH VARIES).

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

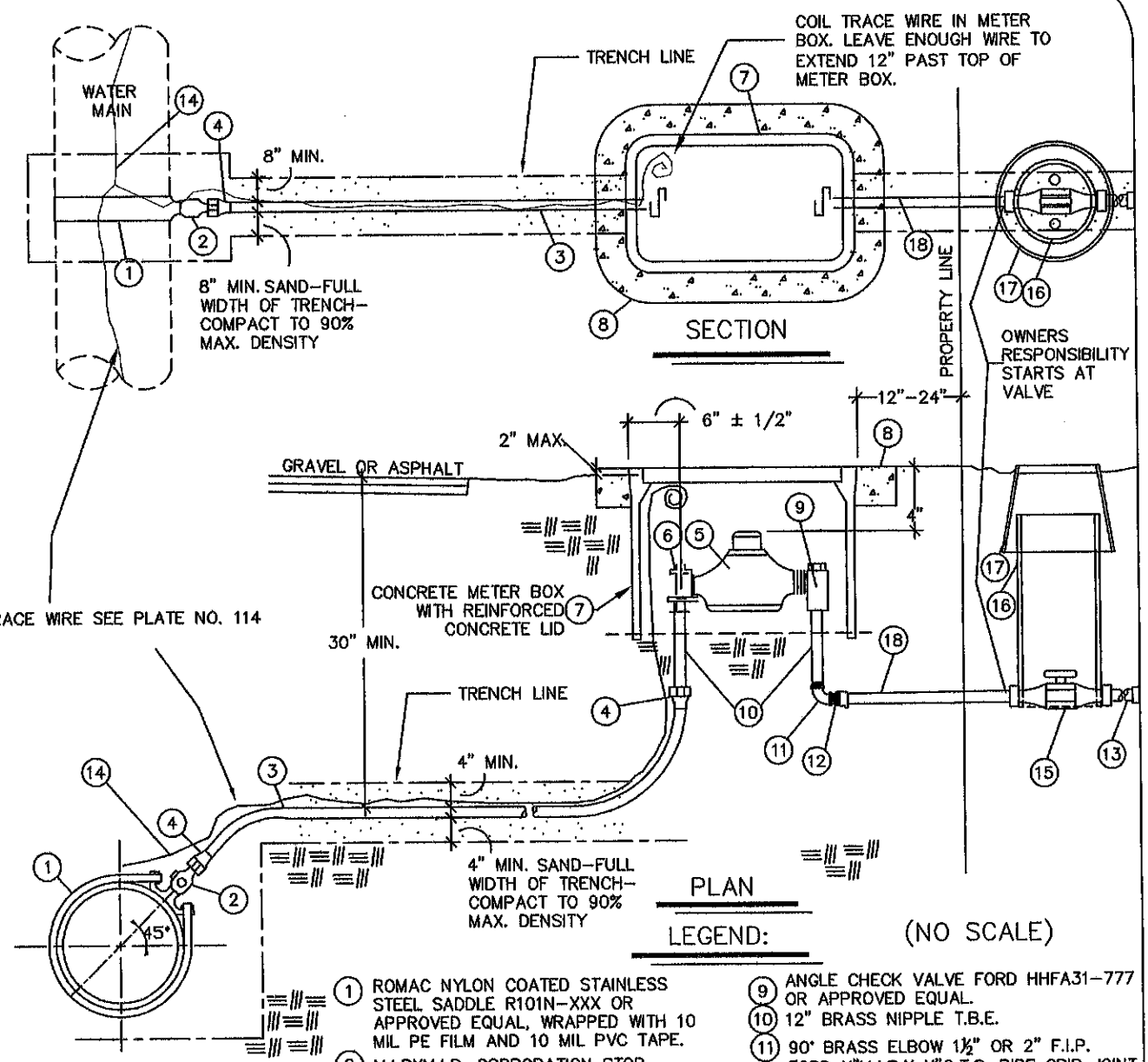
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

APPROVED BY

SERVICE INSTALLATION 1 1/2" & 2" METER SIZES -- IMPROVED AREA

STANDARD PLATE NO. 103



LEGEND: (NO SCALE)

1. ROMAC NYLON COATED STAINLESS STEEL SADDLE R101N-XXX OR APPROVED EQUAL, WRAPPED WITH 10 MIL PE FILM AND 10 MIL PVC TAPE.
2. M.I.PXM.I.P. CORPORATION STOP
3. SDR-9 POLY. SERVICE LATERAL (C.T.S.) NO SPLICE BETWEEN CORP AND SETTER.
4. FORD F.I.P.XP.E. PIPE GRIP JOINT OR APPROVED EQUAL.
5. METER BY MOAPA VALLEY WATER DISTRICT.
6. ANGLE METER STOP FORD BFA13-666W FOR 1½" METER; BFA13-777W FOR 2" METER OR APPROVED EQUAL.
7. OLDCASTLE PRECAST CONCRETE UTILITY METER BOX N30BOX FOR 1½" & 2" METERS, OR APPROVED EQUAL.
8. 6" CONCRETE COLLAR WITH 1 #3 REBAR LOOP.
9. ANGLE CHECK VALVE FORD HHFA31-777 OR APPROVED EQUAL.
10. 12" BRASS NIPPLE T.B.E.
11. 90° BRASS ELBOW 1½" OR 2" F.I.P.
12. FORD X"M.I.P.X X"C.T.S. PIPE GRIP JOINT OR APPROVED EQUAL.
13. 6"X1½" OR 2" SCH-40 PVC PIPE WITH CAP.
14. CONNECT TRACE WIRE TO MAIN TRACE WIRE. IF THERE IS NO MAIN TRACE WIRE, WRAP IT AROUND CORP STOP.
15. SCH-80 PVC BALL VALVE WITH SXS SOCKETS.
16. 6" SDR35 SEWER PIPE (LENGTH VARIES) WITH 2" NOTCH FOR SHUTOFF VALVE ASSEMBLY.
17. NDS 107BC OR APPROVED EQUAL.
18. 1½" OR 2" SCH-40 PVC (LENGTH VARIES).

METER SIZE	IDLER LENGTH	③ MINIMUM SERVICE LATERAL SIZE
1 1/2"	13"	1 1/2"
2"	17"	2"

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

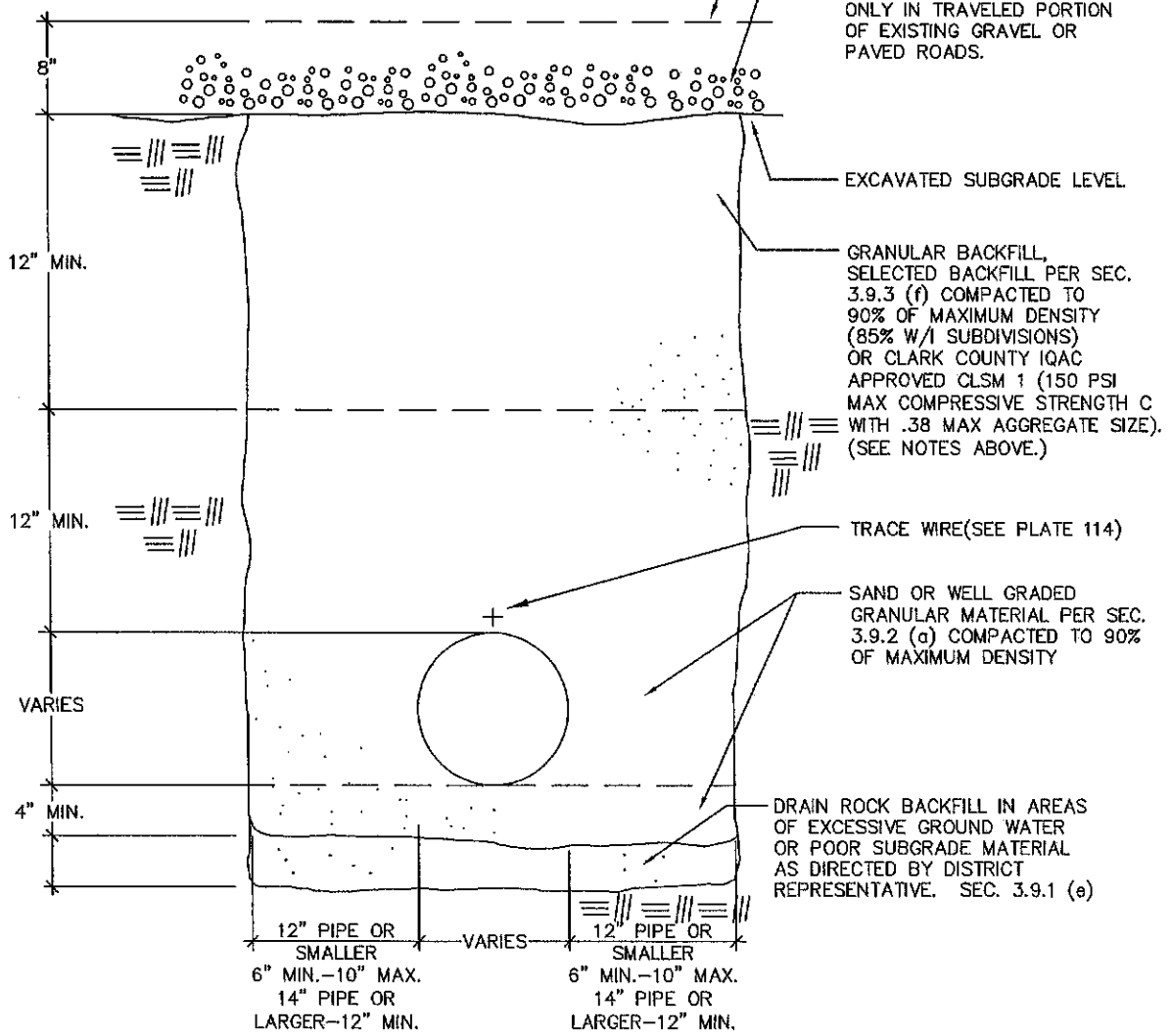
Tom Olley
APPROVED BY

SERVICE INSTALLATION 1 1/2" & 2" METER SIZES -- UNIMPROVED AREA

STANDARD PLATE NO. 104

PIPE COVER (UNLESS OTHERWISE SHOWN ON APPROVED DRAWINGS)			
SIZE	MINIMUM COVER	MAXIMUM COVER	GRADE
12" & SMALLER	36"	8'	IMPROVED
12" & SMALLER	48"	8'	UNIMPROVED
14" & LARGER	48"	8'	IMPROVED
14" & LARGER	48"	8'	UNIMPROVED

NOTES:
1. NO STONES OR LUMPS GREATER THAN 4" PERMITTED IN TRENCHES 2' OR LESS IN WIDTH. ALL BACKFILL TO CONFORM TO SEC. 3.9.3.
2. SLURRY CEMENT BACKFILL SHALL BE REQUIRED FOR ALL TRENCHES 8" OR LESS IN WIDTH AND WHERE SPECIFICALLY REQUIRED BY MOAPA VALLEY WATER DISTRICT.
3. THIS PLATE APPLIES TO THE INSTALLATION OF ALL SERVICE LATERALS. TRENCH WIDTH MINIMUMS OF 24" DO NOT APPLY TO LATERALS LESS THAN 4". SEC. 3.9.3.
4. AFTER RECEIVING WRITTEN APPROVAL FROM MVWD, CLSM 1 MAY BE USED/REQUIRED IN CERTAIN PIPE ZONE APPLICATIONS.



MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

MOAPA VALLEY WATER DISTRICT

AUGUST, 2013
APPROVAL DATE

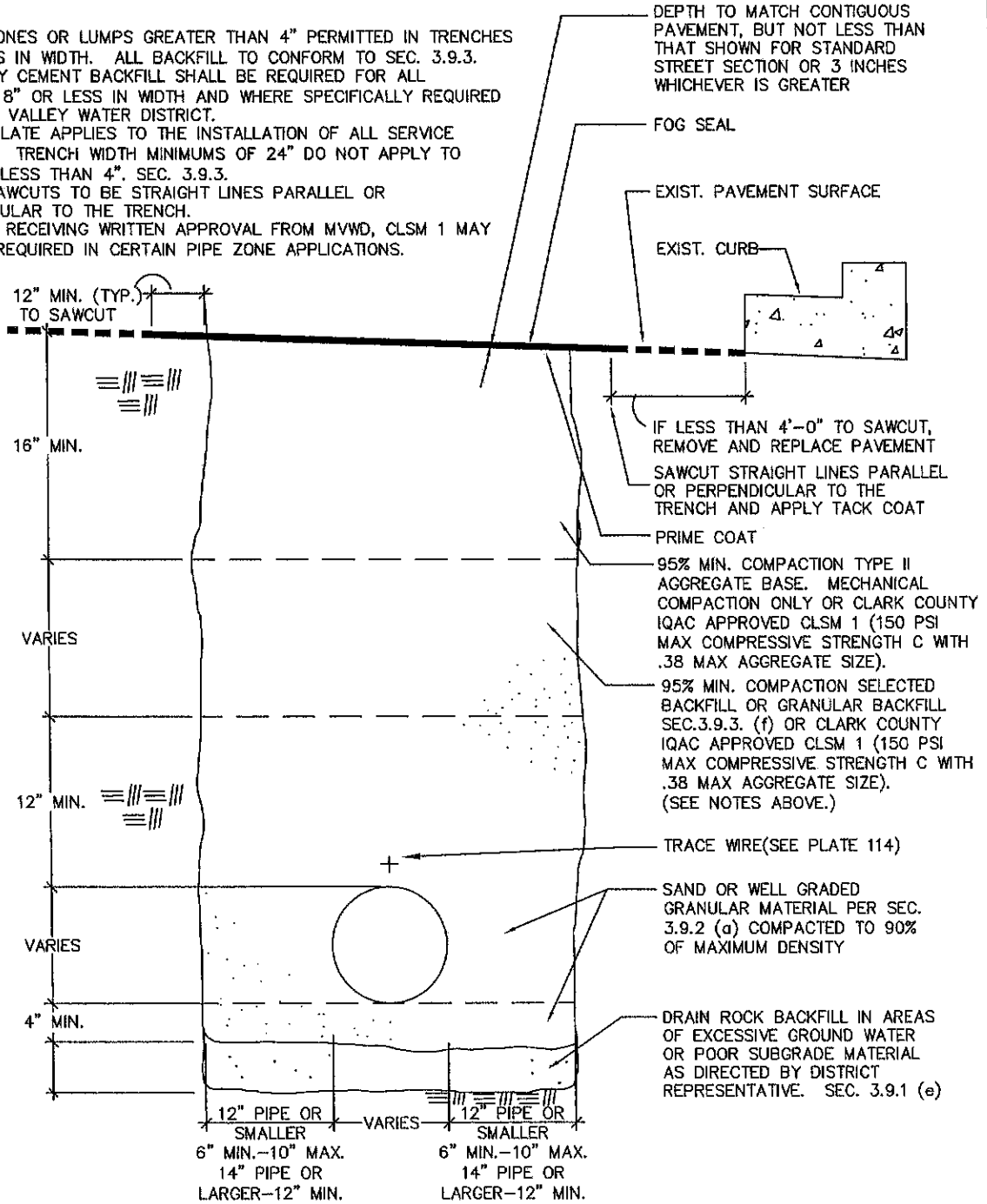
Jon Ashley
APPROVED BY

TYPICAL TRENCH SECTION BACKFILL SPECIFICATION UNPAVED AREAS FOR WATER MAINS

STANDARD PLATE NO. 105

PIPE COVER (UNLESS OTHERWISE SHOWN ON APPROVED DRAWINGS)			
SIZE	MINIMUM COVER	MAXIMUM COVER	GRADE
12" & SMALLER	36"	8'	IMPROVED
12" & SMALLER	48"	8'	UNIMPROVED
14" & LARGER	48"	8'	IMPROVED
14" & LARGER	48"	8'	UNIMPROVED

NOTES:
1. NO STONES OR LUMPS GREATER THAN 4" PERMITTED IN TRENCHES 2' OR LESS IN WIDTH. ALL BACKFILL TO CONFORM TO SEC. 3.9.3.
2. SLURRY CEMENT BACKFILL SHALL BE REQUIRED FOR ALL TRENCHES 8" OR LESS IN WIDTH AND WHERE SPECIFICALLY REQUIRED BY MOAPA VALLEY WATER DISTRICT.
3. THIS PLATE APPLIES TO THE INSTALLATION OF ALL SERVICE LATERALS. TRENCH WIDTH MINIMUMS OF 24" DO NOT APPLY TO LATERALS LESS THAN 4". SEC. 3.9.3.
4. ALL SAWCUTS TO BE STRAIGHT LINES PARALLEL OR PERPENDICULAR TO THE TRENCH.
5. AFTER RECEIVING WRITTEN APPROVAL FROM MVWD, CLSM 1 MAY BE USED/REQUIRED IN CERTAIN PIPE ZONE APPLICATIONS.



MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

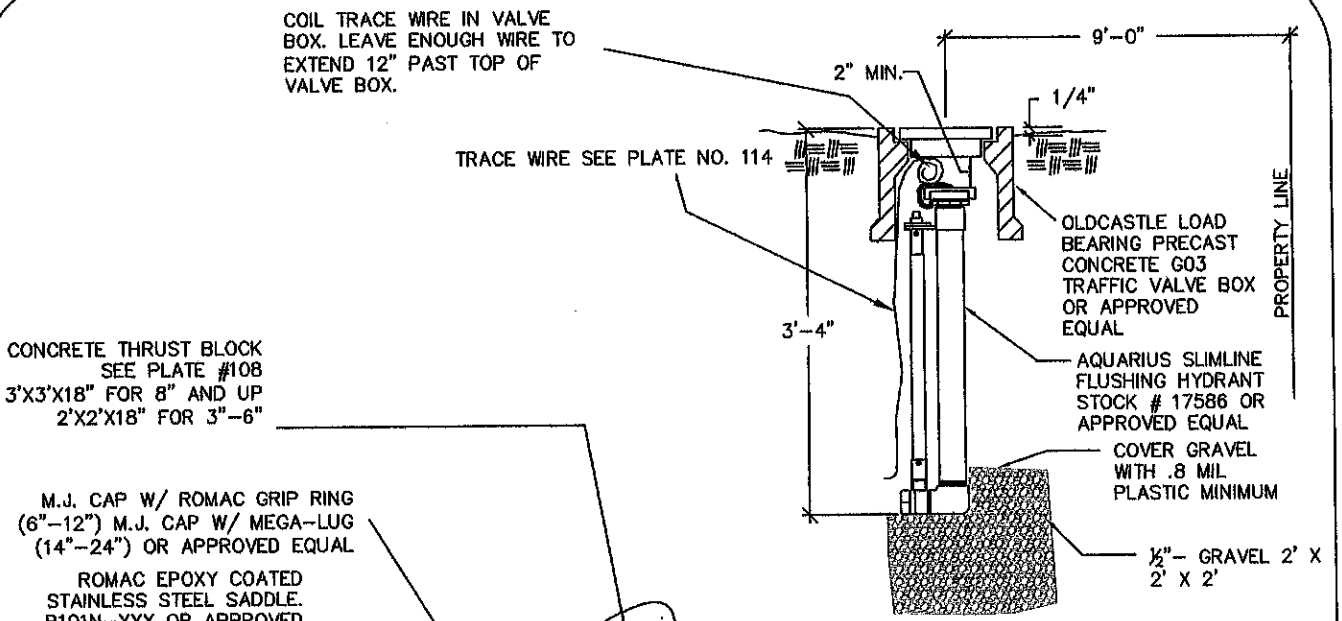
MOAPA VALLEY WATER DISTRICT

AUGUST, 2013
APPROVAL DATE

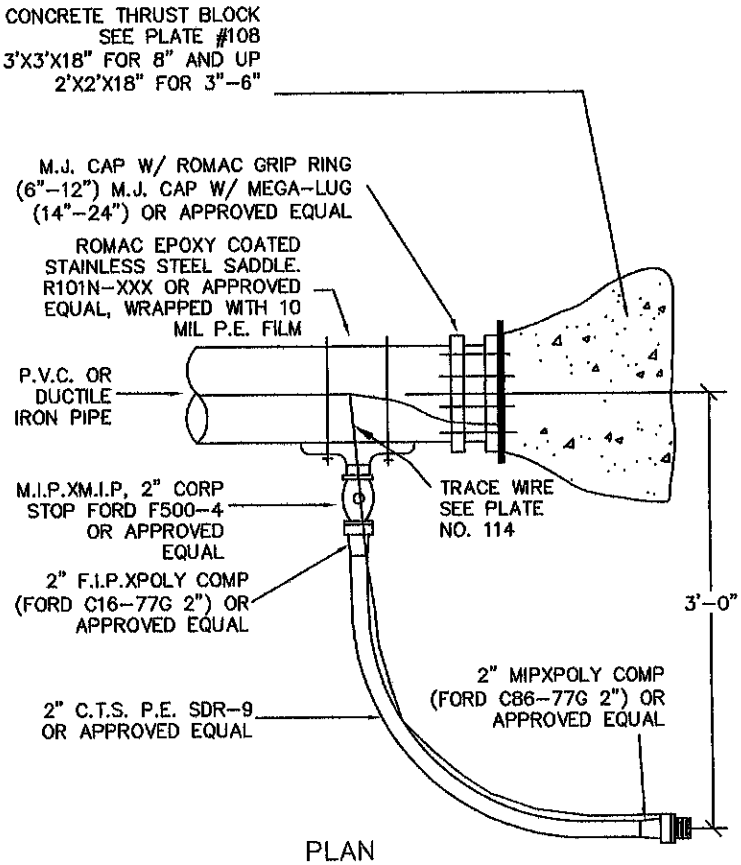
APPROVED BY

TYPICAL TRENCH SECTION BACKFILL SPECIFICATION PAVED AREAS FOR WATER MAINS

STANDARD PLATE NO. 106



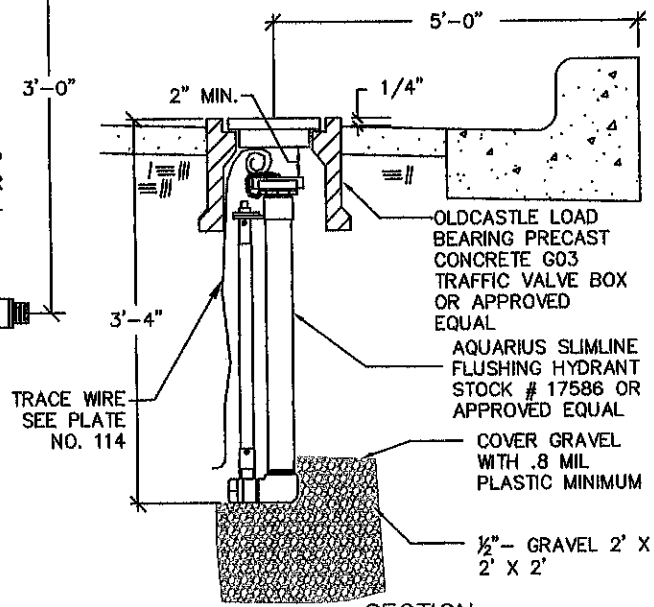
SECTION
UNIMPROVED AREA



PLAN

NOTE:

ALL FITTINGS SHALL BE 2"
ALL ASSEMBLIES TO REMAIN 5' OFF BACK OF CURB

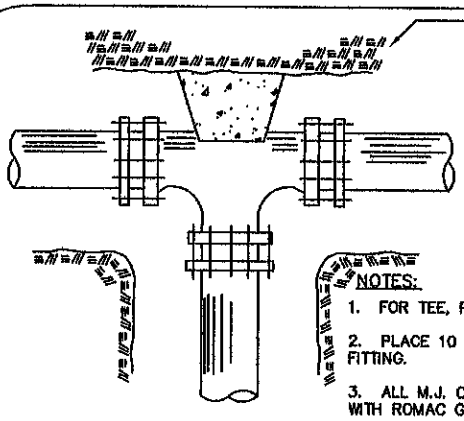


SECTION
IMPROVED AREA

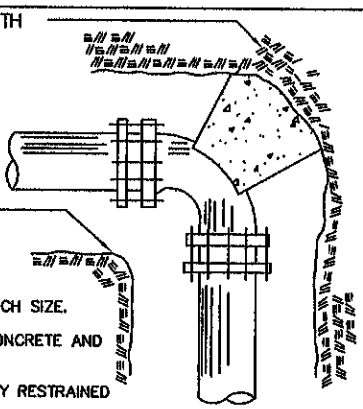
MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012 APPROVAL DATE Tom Dudley APPROVED BY	BLOW OFF ASSEMBLY 6" THROUGH 24"	STANDARD PLATE NO. 107



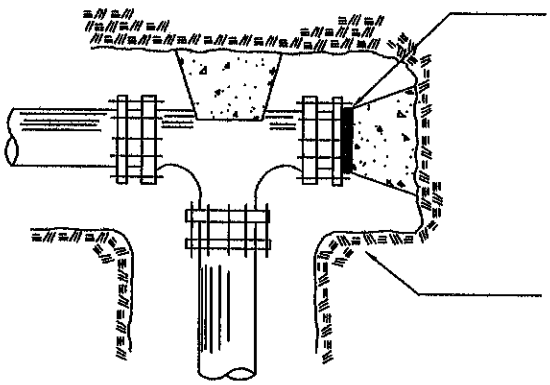
TEE



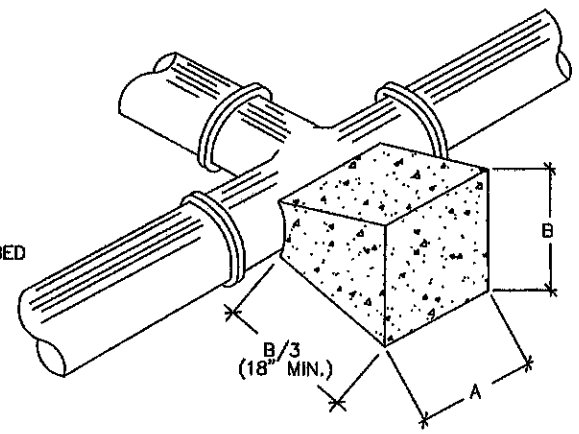
BENDS

NOTES:

1. FOR TEE, PROVIDE THRUST BLOCKING FOR BRANCH SIZE.
2. PLACE 10 MIL. POLYETHYLENE FILM BETWEEN CONCRETE AND FITTING.
3. ALL M.J. CONNECTIONS ARE TO BE ADDITIONALLY RESTRAINED WITH ROMAC GRIP RINGS.
4. BEARING SURFACE AREAS SHOWN IN THE CHART ARE MINIMUM. IF SOIL BEARING CAPACITY IS LESS THAN 2000 P.S.F. A SPECIAL DESIGN WILL BE REQUIRED FOR THE INSTALLATION.
6. POURED-IN-PLACE THRUST BLOCKS MUST BEAR ON UNDISTURBED EARTH AND MAY NOT COVER ANY NUT AND BOLT ACCESSORIES.
7. ALL CONCRETE SHALL BE CLASS "C" 3000 P.S.I. MINIMUM 28 DAYS COMPRESSIVE STRENGTH.
8. WRAP ALL FITTINGS WITH 10 MIL POLYETHYLENE FILM AND 10 MIL POLYETHYLENE TAPE.



TEE(PLUGGED)



FITTING SIZE	TEES AND PLUGS		90° BENDS		45° BENDS & "Y"		22 1/2° BENDS		11 1/4° BENDS	
	A	B	A	B	A	B	A	B	A	B
4"	1'-9"	0'-9"	1'-9"	1'-0"	1'-3"	0'-9"	1'-0"	0'-6"	0'-6"	0'-6"
6"	2'-3"	1'-3"	2'-9"	1'-6"	2'-3"	1'-0"	1'-6"	0'-9"	1'-0"	0'-8"
8"	2'-9"	1'-9"	3'-6"	2'-0"	2'-6"	1'-6"	2'-0"	1'-0"	1'-0"	1'-0"
10"	3'-6"	2'-3"	4'-5"	2'-6"	3'-0"	2'-0"	2'-0"	1'-6"	1'-6"	1'-0"
12"	4'-0"	3'-10"	4'-8"	4'-8"	3'-8"	3'-3"	2'-0"	1'-6"	2'-0"	1'-0"
14"	5'-5"	3'-10"	6'-6"	5'-0"	4'-9"	3'-5"	3'-5"	2'-5"	2'-0"	1'-6"
16"	5'-0"	4'-6"	6'-6"	5'-3"	5'-0"	3'-8"	3'-6"	2'-8"	3'-0"	1'-8"
18"	5'-0"	4'-10"	6'-6"	5'-6"	5'-0"	3'-10"	3'-6"	2'-10"	3'-0"	1'-10"
20"	5'-0"	5'-0"	6'-0"	6'-0"	5'-0"	4'-0"	3'-6"	3'-0"	3'-0"	2'-0"
24"	6'-0"	6'-0"	7'-0"	7'-0"	5'-0"	5'-0"	4'-6"	3'-0"	3'-0"	3'-0"
30"	7'-6"	7'-6"	8'-0"	8'-0"	6'-3"	6'-3"	4'-9"	4'-6"	3'-3"	3'-3"

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

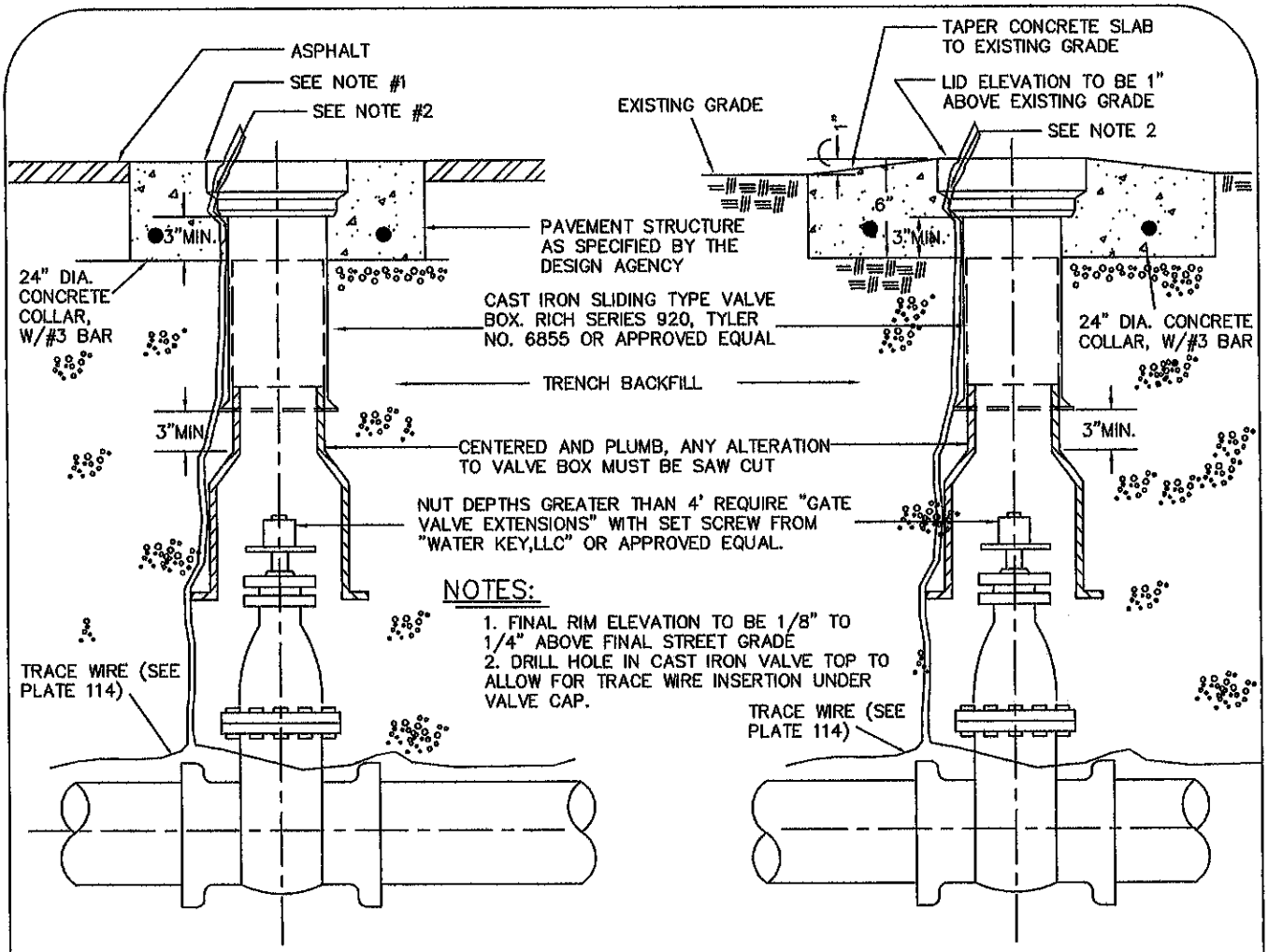
MOAPA VALLEY WATER DISTRICT

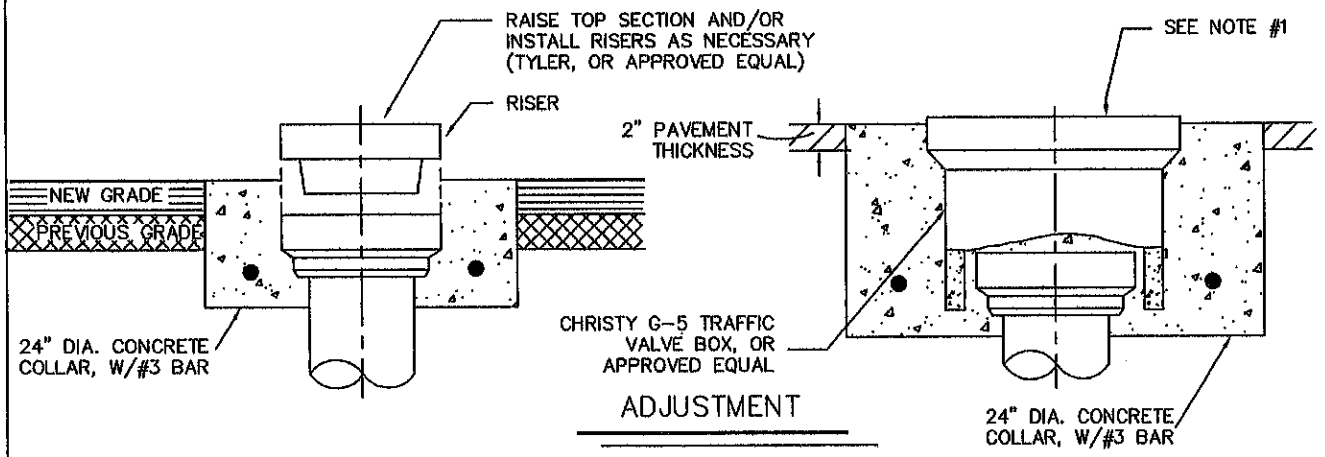
OCTOBER, 2012
APPROVAL DATE

APPROVED BY

THRUST BLOCK INSTALLATION

STANDARD PLATE NO. 108





MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

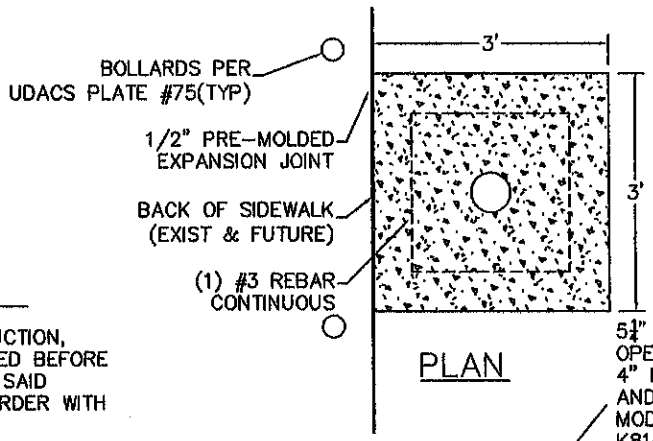
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

APPROVED BY

VALVE BOX INSTALLATION AND ADJUSTMENT

STANDARD PLATE NO. 109

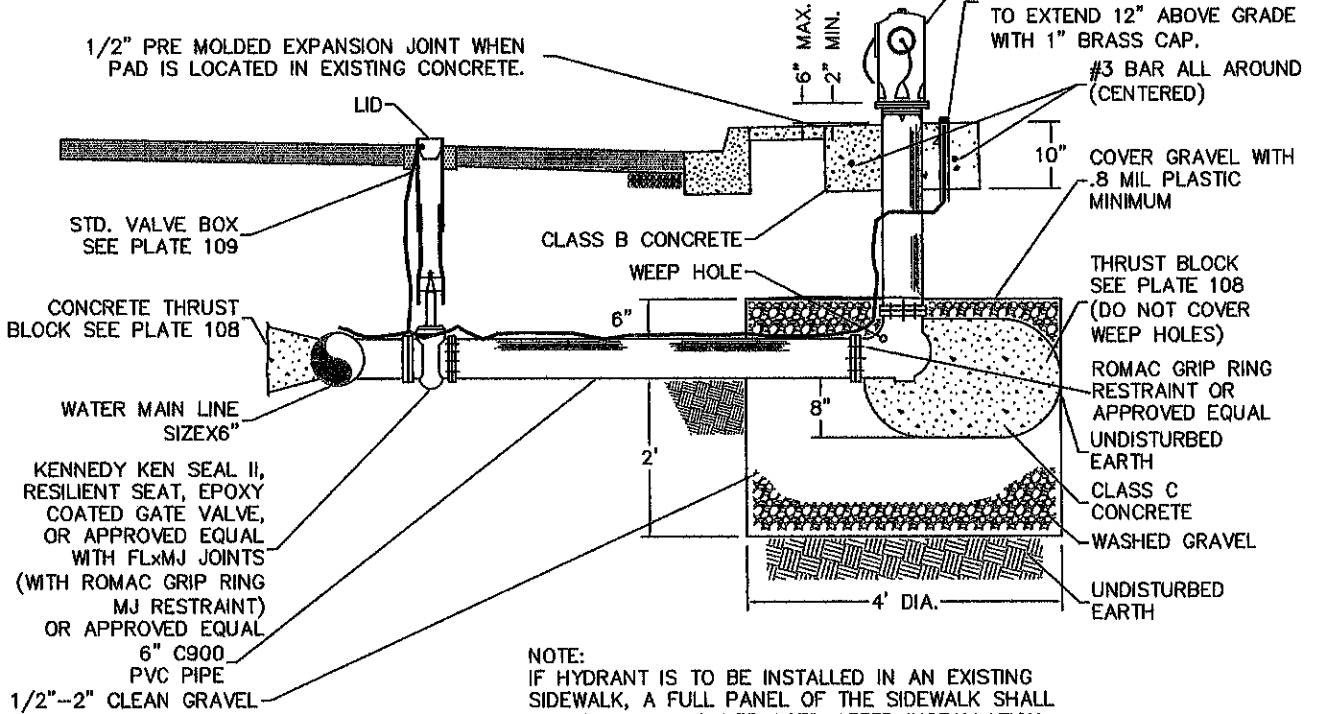


PLAN

CLARK COUNTY FIRE DEPARTMENT NOTES:

ON ANY NEW HOME OR BUILDING CONSTRUCTION, ACCESSIBLE HYDRANTS SHALL BE INSTALLED BEFORE ACTUAL CONSTRUCTION COMMENCES, AND SAID HYDRANTS SHALL BE IN GOOD WORKING ORDER WITH AN ADEQUATE WATER SUPPLY.

NO HYDRANT SHALL BE LOCATED WITHIN 15' OF ANY DRIVEWAY, 6' OF A POWER POLE, LIGHT STANDARD, OR ANY OTHER OBSTRUCTION.



NOTE:
IF HYDRANT IS TO BE INSTALLED IN AN EXISTING SIDEWALK, A FULL PANEL OF THE SIDEWALK SHALL BE REMOVED AND REPLACED AFTER INSTALLATION OF THE HYDRANT.

SECTION

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

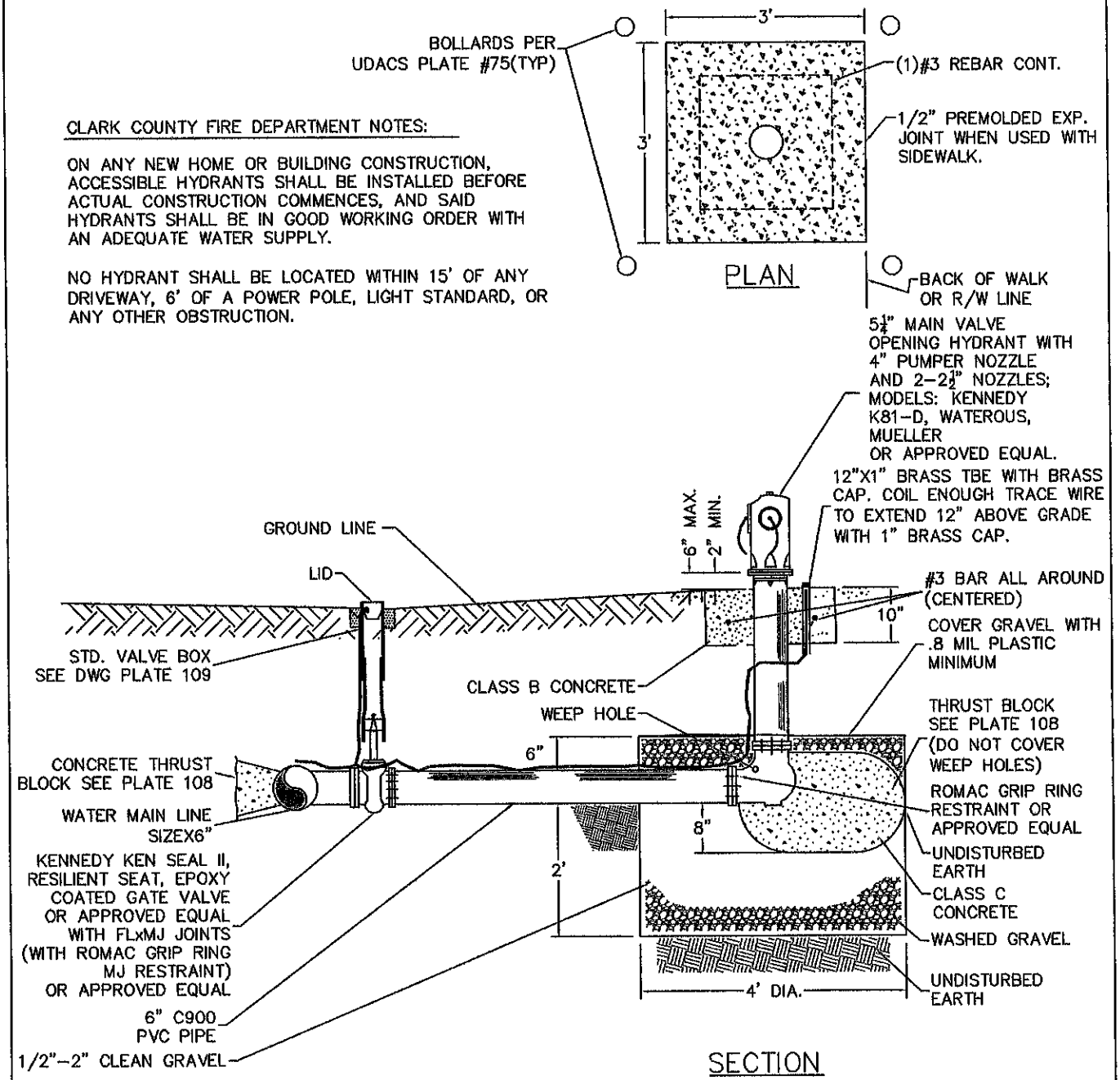
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

APPROVED BY

FIRE HYDRANT INSTALLATION
IMPROVED AREA

STANDARD PLATE NO. 110A



CLARK COUNTY FIRE DEPARTMENT NOTES:

ON ANY NEW HOME OR BUILDING CONSTRUCTION, ACCESSIBLE HYDRANTS SHALL BE INSTALLED BEFORE ACTUAL CONSTRUCTION COMMENCES, AND SAID HYDRANTS SHALL BE IN GOOD WORKING ORDER WITH AN ADEQUATE WATER SUPPLY.

NO HYDRANT SHALL BE LOCATED WITHIN 15' OF ANY DRIVEWAY, 6' OF A POWER POLE, LIGHT STANDARD, OR ANY OTHER OBSTRUCTION.

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

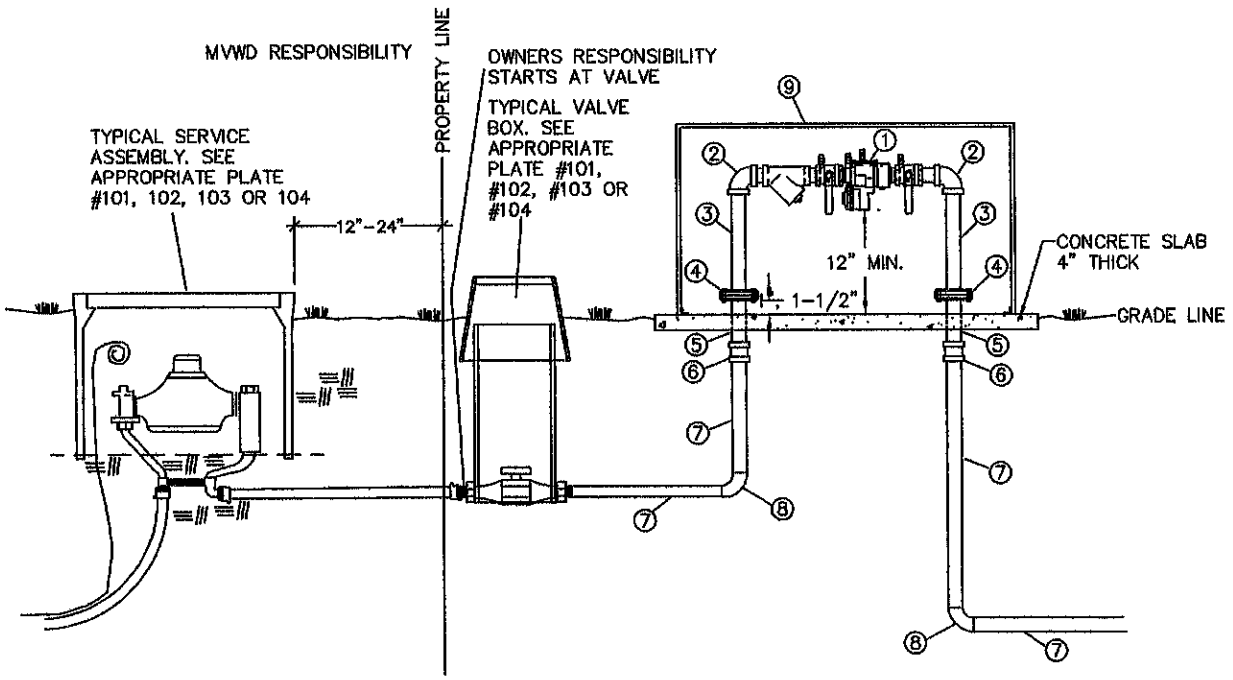
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

APPROVED BY

FIRE HYDRANT INSTALLATION
UNIMPROVED AREA

STANDARD PLATE NO. 110B



① 1", 1-1/2" OR 2" APPROVED BACKFLOW PREVENTION ASSEMBLY (SEE USC LIST OF APPROVED ASSEMBLIES)

② 1", 1-1/2" OR 2" BRASS STREET 90 DEG. ELBOW

③ 1", 1-1/2" OR 2"X12" BRASS TBE NIPPLE

④ 1", 1-1/2" OR 2" METER FLANGE KIT

⑤ 1", 1-1/2" OR 2"X6" BRASS TBE NIPPLE

⑥ 1", 1-1/2" OR 2" SCH80 PVC FEMALE ADAPTERS

⑦ 1", 1-1/2" OR 2" SCH40 PVC PIPE

⑧ 1", 1-1/2" OR 2" SCH40 PVC (SS) 90 DEG ELBOWS

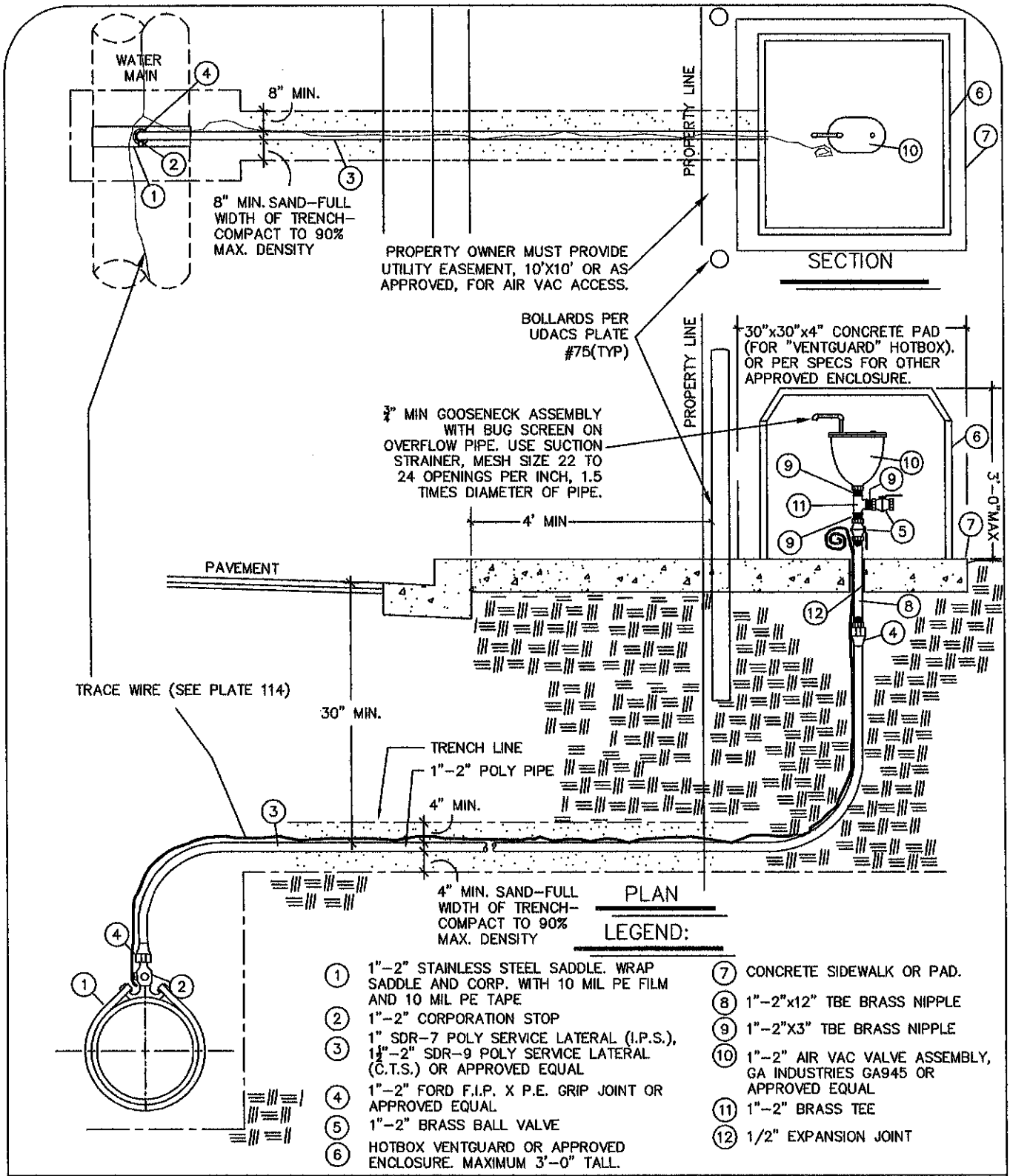
⑨ 1", 1-1/2" OR 2" REMOVABLE APPROVED FREEZE PROTECTION BACKFLOW ENCLOSURE, ANCHORED TO CONCRETE

NOTE:
FOR 3" THRU 10" BACKFLOW PREVENTION ASSEMBLIES, REFER TO UDAC SPECIFICATIONS.

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012 APPROVAL DATE APPROVED BY	BACKFLOW PREVENTION ASSEMBLY INSTALLATION 1", 1 1/2" & 2"	STANDARD PLATE NO. 111



LEGEND:

1. 1"–2" STAINLESS STEEL SADDLE. WRAP SADDLE AND CORP. WITH 10 MIL PE FILM AND 10 MIL PE TAPE
2. 1"–2" CORPORATION STOP
3. 1" SDR–7 POLY SERVICE LATERAL (I.P.S.), 1½"–2" SDR–9 POLY SERVICE LATERAL (C.T.S.) OR APPROVED EQUAL
4. 1"–2" FORD F.I.P. X P.E. GRIP JOINT OR APPROVED EQUAL
5. 1"–2" BRASS BALL VALVE
6. HOTBOX VENTGUARD OR APPROVED ENCLOSURE. MAXIMUM 3'–0" TALL.
7. CONCRETE SIDEWALK OR PAD.
8. 1"–2"x12" TBE BRASS NIPPLE
9. 1"–2"X3" TBE BRASS NIPPLE
10. 1"–2" AIR VAC VALVE ASSEMBLY, GA INDUSTRIES GA945 OR APPROVED EQUAL
11. 1"–2" BRASS TEE
12. 1/2" EXPANSION JOINT

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

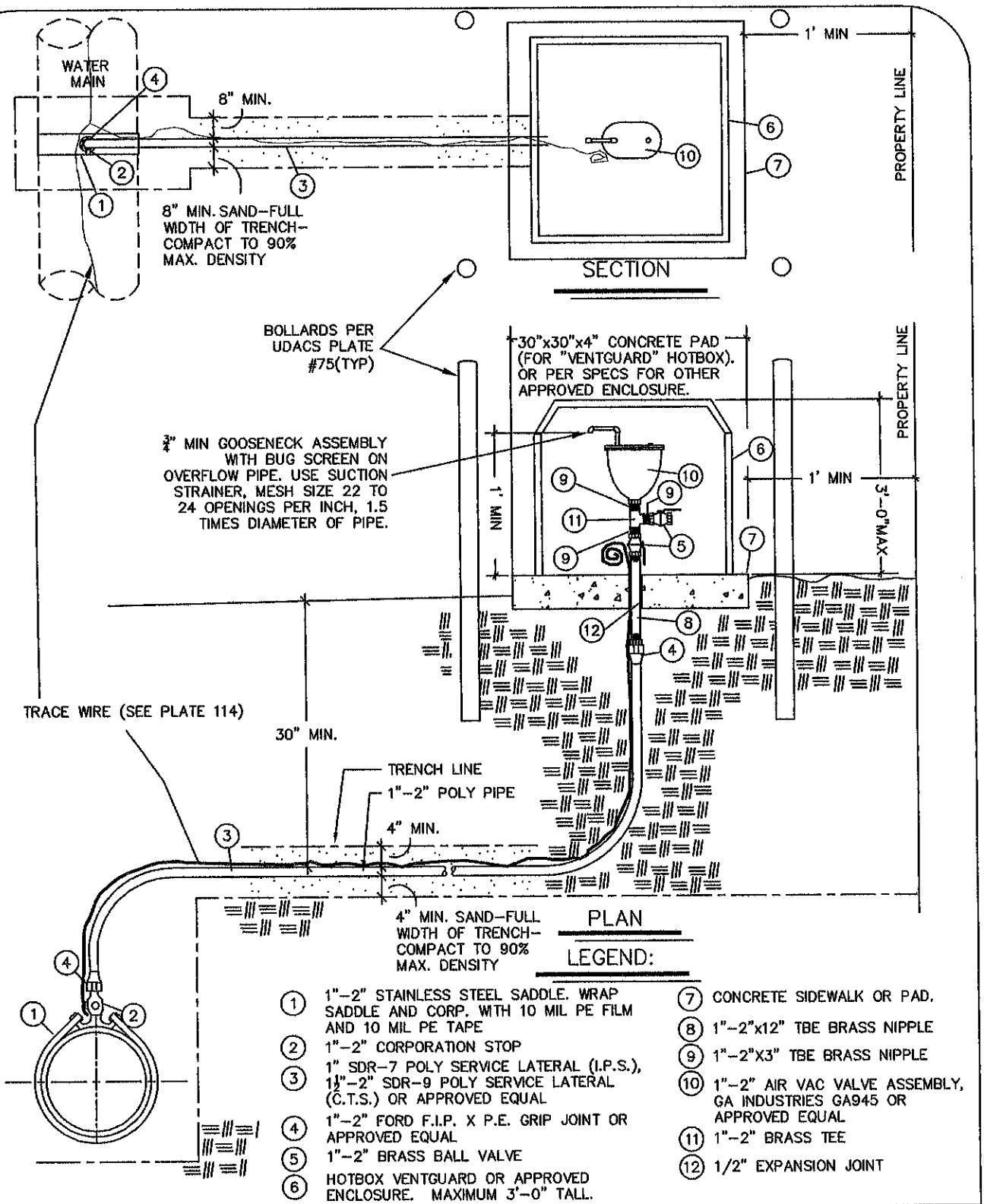
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

APPROVED BY

AIR VAC VALVE ASSEMBLY INSTALLATION
1", 1 1/2" & 2" – IMPROVED AREA

STANDARD PLATE NO. 112A



MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

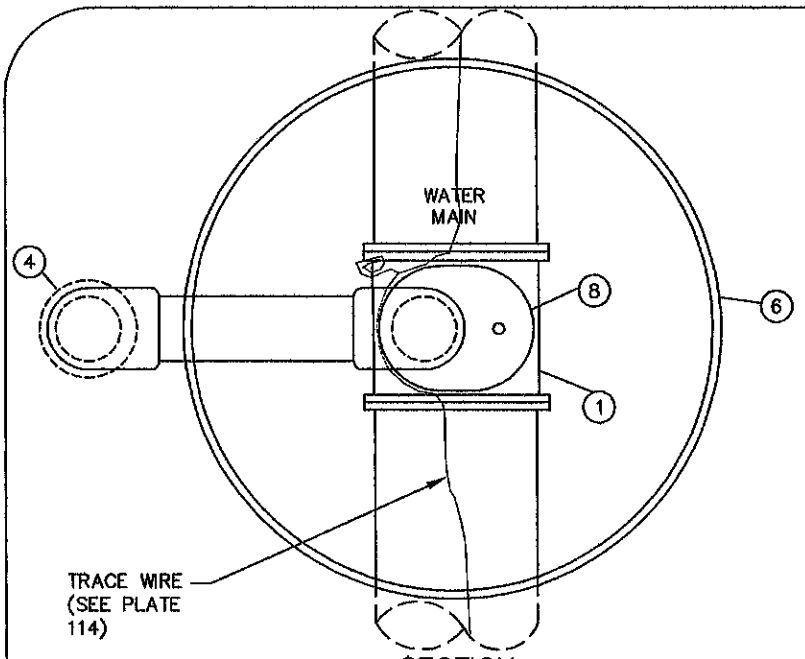
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

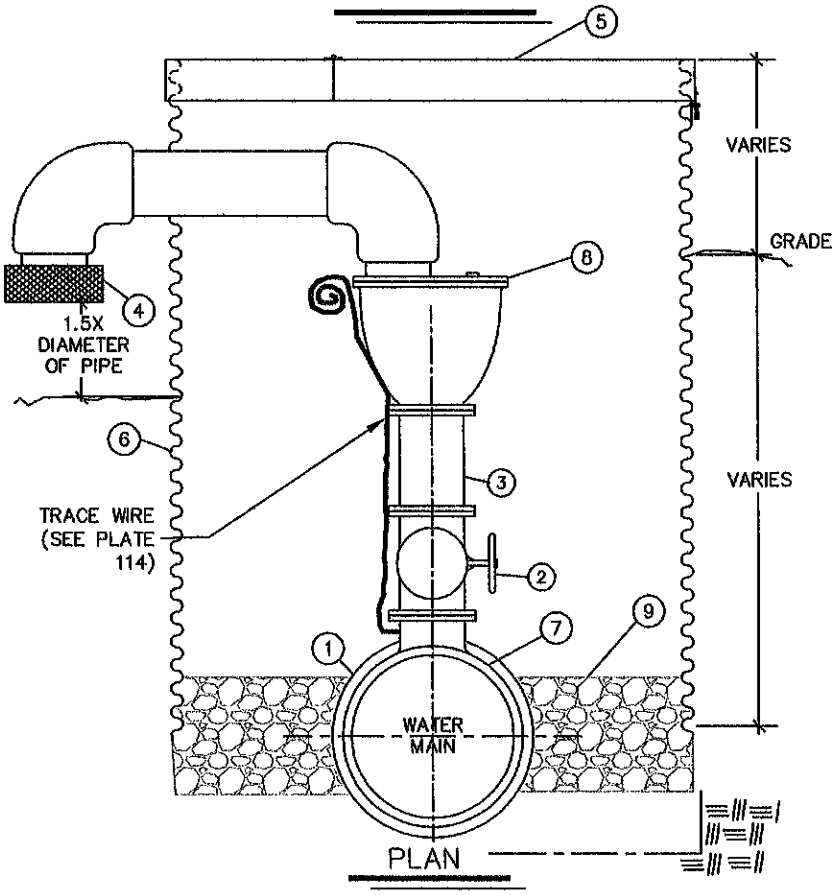
APPROVED BY

AIR VAC VALVE ASSEMBLY INSTALLATION 1", 1 1/2" & 2" – UNIMPROVED AREA

STANDARD PLATE NO. 112B



SECTION



PLAN

LEGEND:

1. REDUCING TEE. WRAP TEE WITH 10 MIL PE FILM AND 10 MIL PVC TAPE
2. SHUTOFF VALVE PER PLAN
3. DUCTILE IRON PIPE SPOOL, LENGTH VARIES, PER PLAN
4. PROVIDE BUG SCREEN ON OVERFLOW PIPE. USE SUCTION STRAINER, MESH SIZE 22 TO 24 OPENINGS PER INCH, 1.5 TIMES DIAMETER OF PIPE.
5. HINGED, 16 GAGE, GALVANIZED METAL LID, WELDED TO TOP OF PIPE.
6. 72" GALVANIZED CORRUGATED METAL PIPE, 16 GAGE, PER PLANS.
7. 14" OR 24" WATER MAIN.
8. AIR VAC VALVE ASSEMBLY, VALVEMATIC MODEL 206C OR APPROVED EQUAL
9. 12" OF WASHED 2"± GRAVEL

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

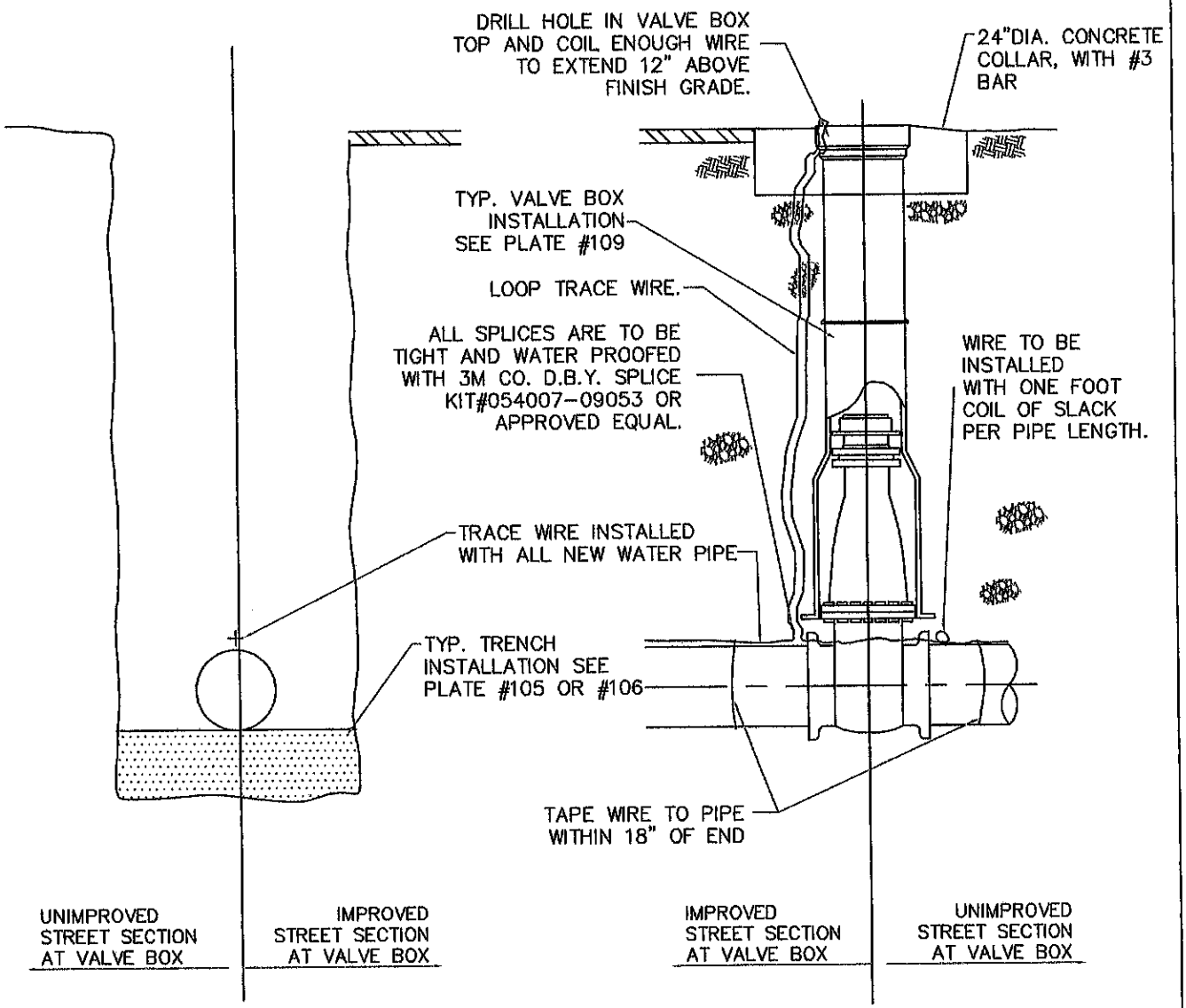
APPROVED BY

LARGE AIR VAC VALVE ASSEMBLY INSTALLATION
3" & LARGER

STANDARD PLATE NO.
113

NOTES:

1. TRACE WIRE TO BE 14 DIRECT BURY AWG OR LARGER SOLID COPPER INSULATED WIRE. (BARE COPPER WIRE PROHIBITED).
2. WIRE IS TO BE INSTALLED WITH SLACK, ONE FOOT COIL PER LENGTH.
3. WIRE IS TO BE ATTACHED TO ALL WATER APPURTENANCES.
4. WIRE IS TO BE INSTALLED WITH ALL NEW WATER LINES, METAL AND NON-METAL.
5. WIRE IS TO BE TAPED TO EACH SECTION OF PIPE WITHIN 18" OF EACH END AND ONCE IN THE MIDDLE
6. TRACEABILITY TEST IS TO BE PERFORMED BY THE CONTRACTOR AT ALL ACCESS POINTS PRIOR TO FINAL ACCEPTANCE.
7. OWNER MUST BE PRESENT DURING TESTING AND WILL DETERMINE ACCEPTANCE.



MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

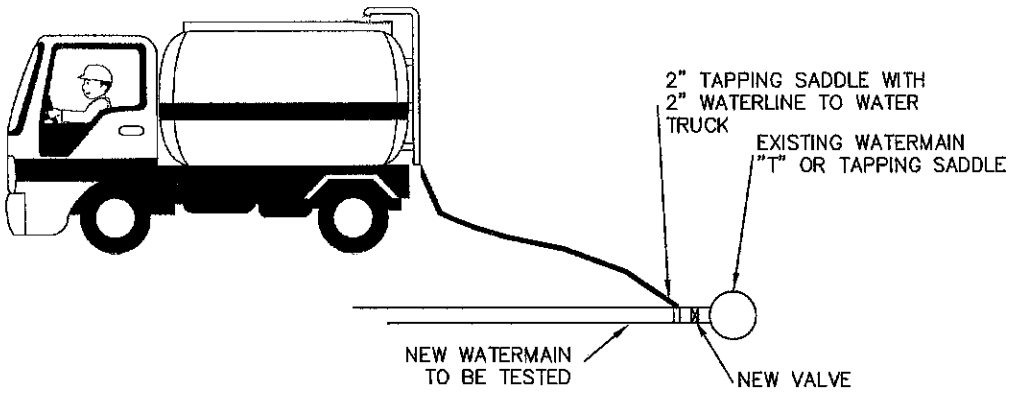
MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

APPROVED BY

TRACE WIRE INSTALLATION

STANDARD PLATE NO. 114



AMOUNT OF CHLORINE
REQUIRED FOR DISINFECTION
OF 100 FEET OF PIPE

I.D. OF PIPE	VOLUME OF WATER PER 100'	QUANTITY OF CALCIUM HYPOCHLORITE (65% AVAILABLE CHLORINE)	
		25 P.P.M.	50 P.P.M.
4"	65.3 GALS.	.34 OZ.	.69 OZ.
6"	146.5 GALS.	.77	1.54
8"	261.0 GALS.	1.37	2.75
10"	408.0 GALS.	2.15	4.29
12"	558.7 GALS.	2.94	5.88
14"	800.0 GALS.	4.21	8.42
16"	1047.0 GALS.	5.51	11.02
18"	1300.0 GALS.	6.84	13.68
20"	1635.7 GALS.	8.61	17.22
24"	2234.8 GALS.	11.76	23.52

NOTES:
CHLORINE SHALL BE PREMIXED IN A WATER TRUCK OR OTHER APPROVED CONTAINER BEFORE BEING INJECTED.

CHLORINE DOSAGE SHALL NOT EXCEED 50 PARTS PER MILLION WITHOUT PRIOR DISTRICT APPROVAL.

CHLORINE RESIDUAL OF 10 PARTS PER MILLION MUST BE PRESENT AFTER 24 HOURS.

MVWD STANDARD PLATES
P.O. BOX 257
LOGANDALE, NV 89021
(702)397-6893

MOAPA VALLEY WATER DISTRICT

OCTOBER, 2012
APPROVAL DATE

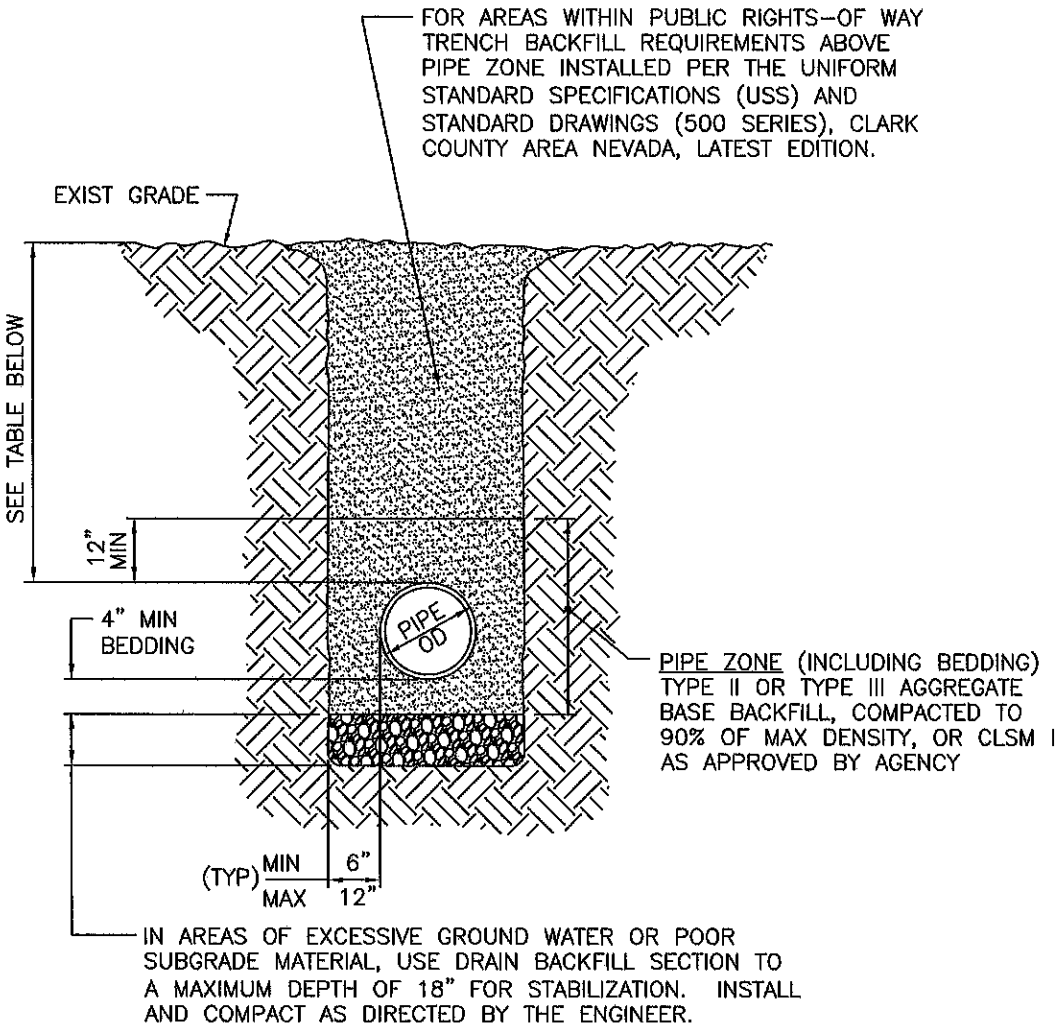
APPROVED BY

CHLORINATION REQUIREMENTS

STANDARD PLATE NO.
115

\\tsclient\Z\ENGINEERING\Construction & Design Standards\WORKING STANDARD PLATES\Working CAD Files Aug 2012\PLATE115-NEW.dwg, Layout1, 8/13/2013 2:33:56 PM, XPMUser

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



NOTES:

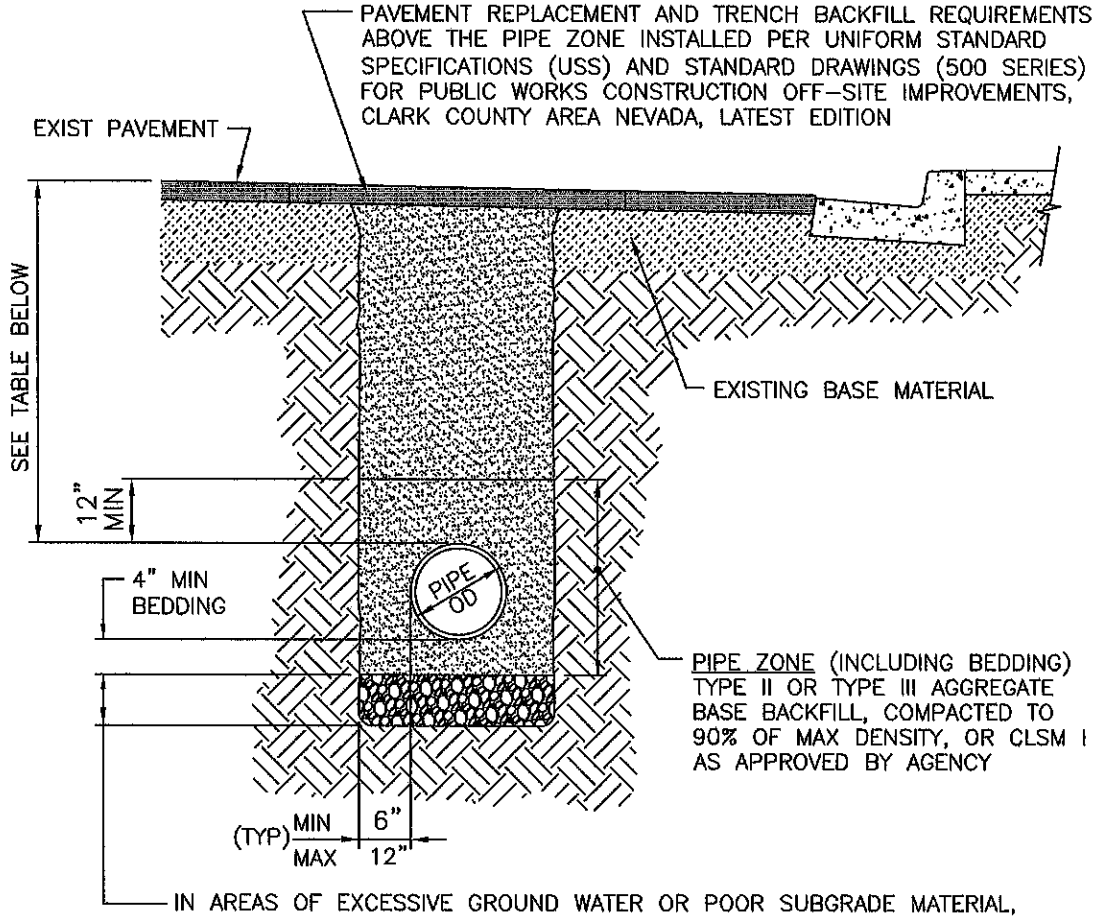
1. FOR TRENCH SECTION NOTES SEE UDACS PLATE 19.
2. THE AGENCY MAY REQUIRE AN ADDITIONAL TWO (2) FEET OF COVER IN ADDITION TO THE COVER SPECIFIED BELOW FOR PIPES SIXTEEN (16) INCHES AND GREATER IN RIGHT-OF-WAY WITHOUT AN ESTABLISHED STREET GRADE.

PIPE DIAMETER (INCHES)	MINIMUM DEPTH OF COVER (INCHES)
TWELVE (12) AND SMALLER	SIXTY (60)
SIXTEEN (16) AND GREATER	SEVENTY-TWO (72) MINIMUM

NOT TO SCALE	FILE NAME: UDACS-16 DRAWN BY: SDM CHECKED BY: SPM	TRENCH SECTION BACKFILL SPECIFICATION UNIMPROVED AREAS	UDACS PLATE NO. 16 SHEET 1 OF 1

07:54 Plot ● 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udac-16.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



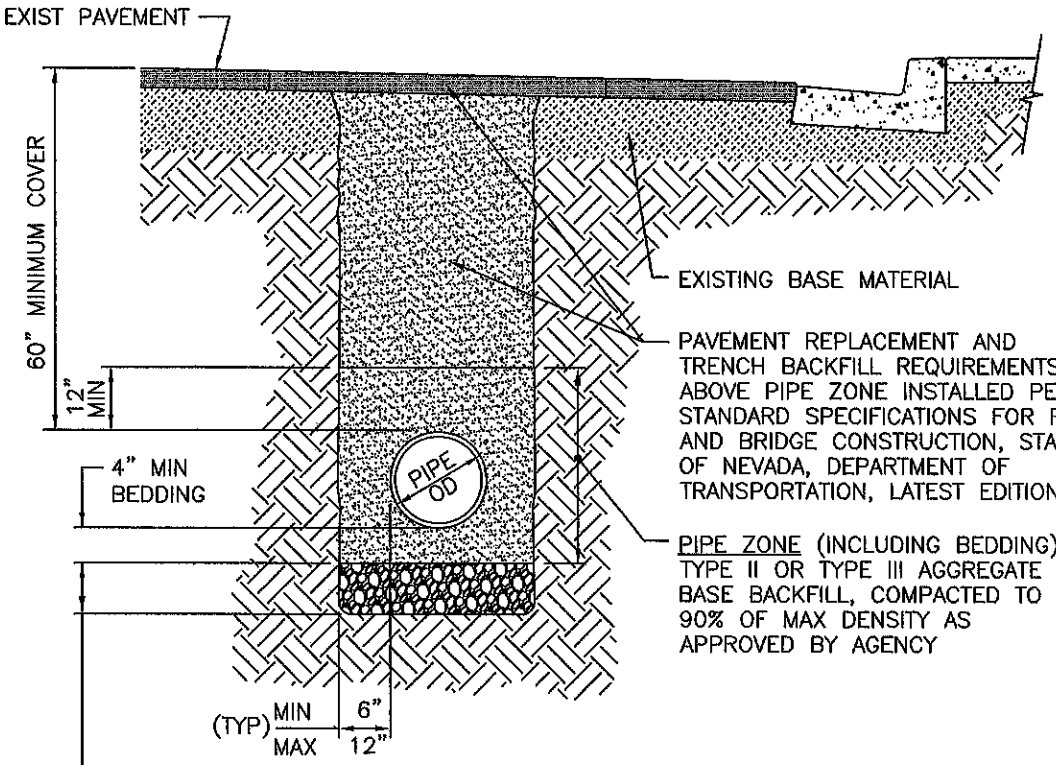
NOTE:
FOR TRENCH SECTION NOTES SEE UDACS PLATE 19.

ROW (FEET)	PIPE DIAMETER (INCHES)	MINIMUM DEPTH OF COVER (INCHES)
SIXTY (60) OR LESS	TWELVE (12) AND SMALLER	FORTY-TWO (42)
SIXTY (60) OR LESS	GREATER THAN TWELVE (12)	SIXTY (60)
GREATER THAN SIXTY (60)	TWELVE (12) AND SMALLER	FORTY-EIGHT (48)
GREATER THAN SIXTY (60)	GREATER THAN TWELVE (12)	SIXTY (60)
GREATER THAN SIXTY (60)	GREATER THAN SIXTEEN (16)	SEVENTY-TWO (72) MINIMUM

NOT TO SCALE	FILE NAME: UDACS-17 DRAWN BY: SDM CHECKED BY: SPM	TRENCH SECTION BACKFILL SPECIFICATION IMPROVED AREAS	UDACS PLATE NO. 17 SHEET 1 OF 1

08:01 Plot @ 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udac-17.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



NOTE:
FOR TRENCH SECTION NOTES SEE UDACS PLATE 19.

NOT TO SCALE	FILE NAME: UDACS-18 DRAWN BY: SDM CHECKED BY: SPM	TRENCH SECTION BACKFILL SPECIFICATION IMPROVED AND UNIMPROVED AREAS (NDOT STREET R/W)	UDACS PLATE NO. 18 SHEET 1 OF 1

08:04 Plot ● 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udac-18.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS

NOTES:

1. REFERENCES:
   UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA NEVADA, LATEST EDITION. (USS AND USD REFERENCES)

   INTERAGENCY QUALITY ASSURANCE COMMITTEE (IQAC)

2. ACCEPTABLE METHODS OF COMPACTION

   A. BEDDING AND PIPE ZONE AREAS
   MECHANICAL COMPACTION OR CLSM I
   (AS APPROVED BY AGENCY)

   B. ABOVE PIPE ZONE
   MECHANICAL COMPACTION OR CLSM I
   MECHANICAL COMPACTION ONLY FOR A MINIMUM OF TOP 16" IN PAVED AREAS (AS APPROVED BY AGENCY)

   C. NDOT RIGHT-OF-WAY: SEE NDOT PERMIT TERMS AND CONDITIONS

3. CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE AND FEDERAL SAFETY STANDARDS.

4. DURING CONSTRUCTION 24" MINIMUM COVER MUST BE MAINTAINED FROM TOP OF PIPE TO GRADE.

5. MINIMUM COVER IS REFERENCED TO FUTURE FINISHED FINAL GRADES AT PIPE OR TOP OF CASING UNLESS OTHERWISE SHOWN ON PROFILE DRAWINGS.

6. DIAGONAL PAVEMENT REPLACEMENT IS NOT PERMITTED.

7. PLACE/INSTALL PIPE LOCATOR RIBBON AND LOCATOR BALLS PER UDACS PLATE 15. (AS REQUIRED BY AGENCY)

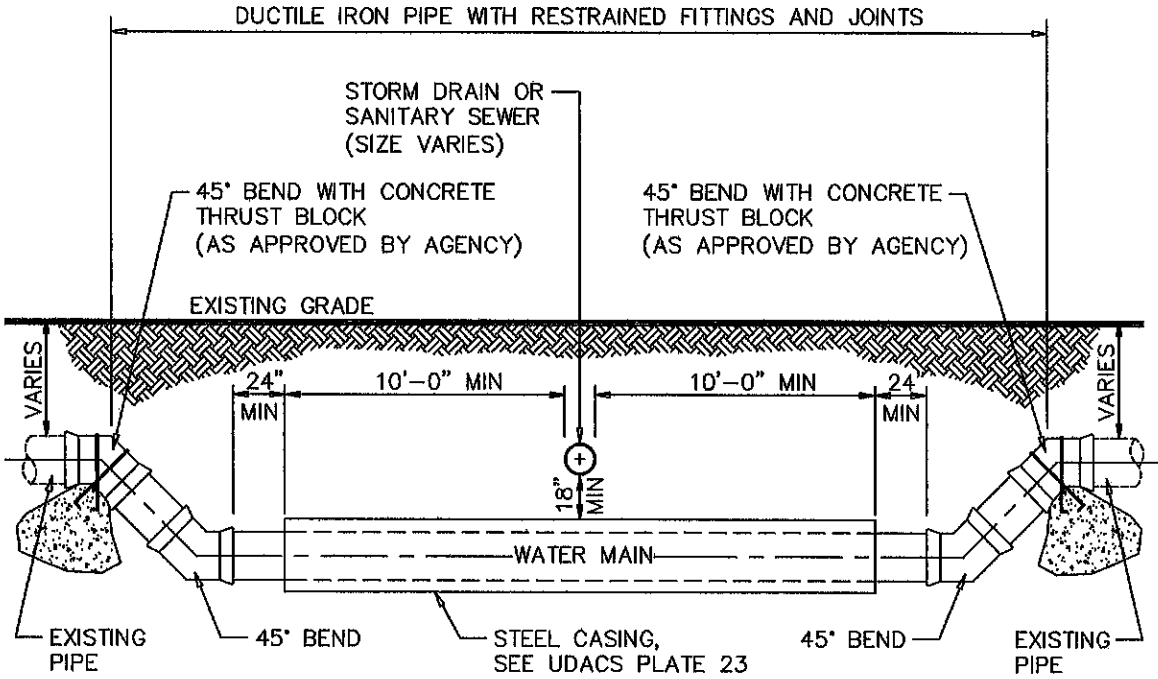
8. INSTALL CONCRETE DAMS AT MAXIMUM INTERVALS OF 400' TO THE HEIGHT OF THE DRAIN ROCK. (AS REQUIRED BY AGENCY)

9. IN THE EVENT OF A CONFLICT BETWEEN THE ABOVE REQUIREMENTS AND THE NDOT PERMIT, THE PERMIT REQUIREMENTS WILL TAKE PRECEDENCE.

NOT TO SCALE	FILE NAME: UDACS-19 DRAWN BY: SDM CHECKED BY: SPM	TRENCH SECTION BACKFILL SPECIFICATION NOTES	UDACS PLATE NO. 19 SHEET 1 OF 1

08:05 Plot @ 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udoc-19.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



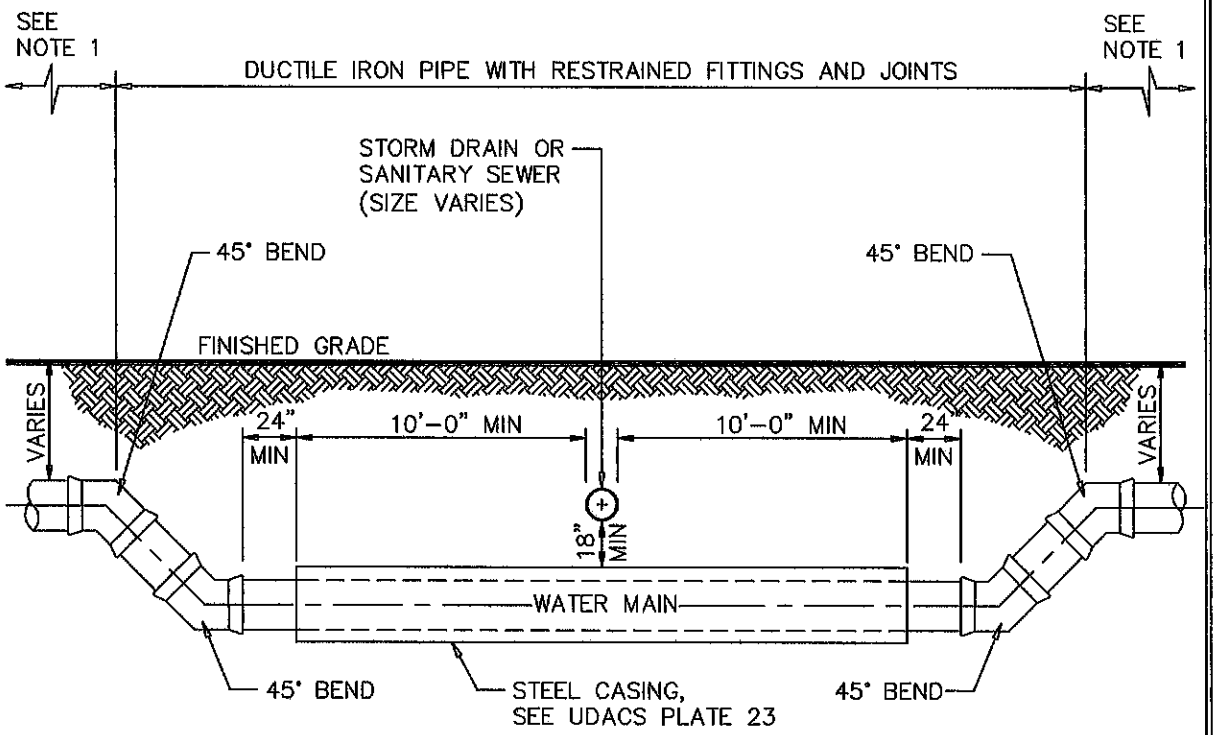
NOTES

1. IDENTIFY TRANSITION FROM DUCTILE IRON PIPE TO EXISTING PIPE ON PLANS IF PIPE MATERIAL CHANGES.
2. SEE UDACS PLATES 16, 17, 18, AND 19 FOR TRENCH BACKFILL REQUIREMENTS.

NOT TO SCALE	FILE NAME: UDACS-21 DRAWN BY: SDM CHECKED BY: SPM	STORM DRAIN OR SANITARY SEWER EXISTING WATER MAIN CROSSING	UDACS PLATE NO. 21 SHEET 1 OF 1

08:06 Plot @ 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udac-21.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



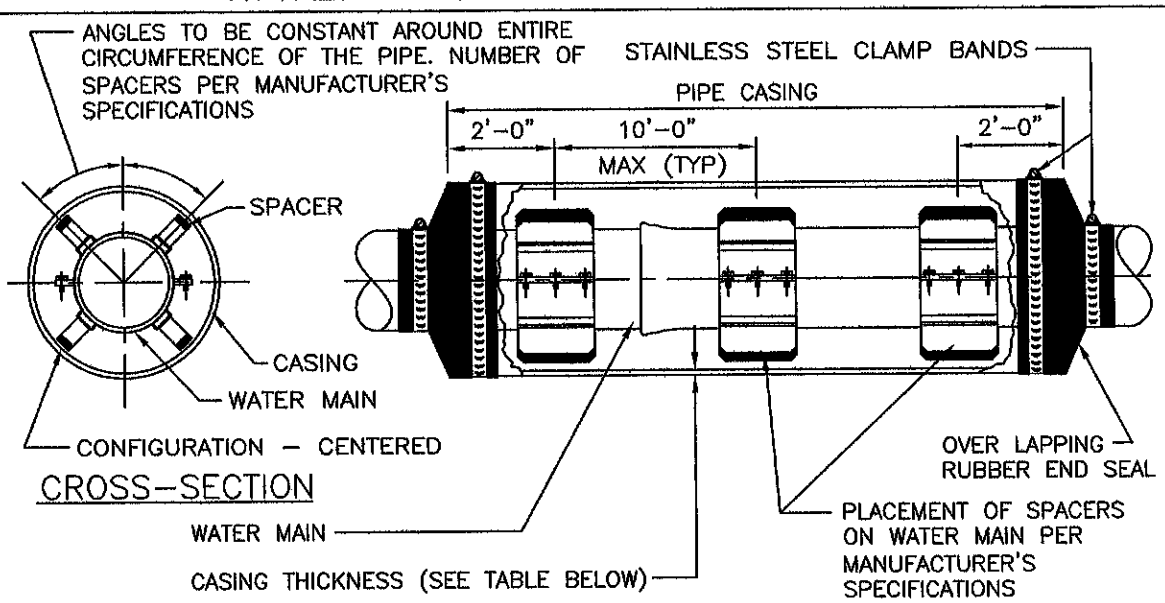
NOTES

1. PROVIDE LENGTH OF RESTRAINED JOINTS PAST 45° BEND (SUBMIT CALCULATIONS AND IDENTIFY ON PLANS).
2. IDENTIFY TRANSITION FROM DUCTILE IRON PIPE ON PLANS IF PIPE MATERIAL CHANGES.
3. SEE UDACS PLATES 16, 17, 18, AND 19 FOR TRENCH BACKFILL REQUIREMENTS.

NOT TO SCALE	FILE NAME: UDACS-22 DRAWN BY: SDM CHECKED BY: SPM	STORM DRAIN OR SANITARY SEWER NEW WATER MAIN CROSSING	UDACS PLATE NO. 22 SHEET 1 OF 1

08:09 Plot @ 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udac-22.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



CASING TABLE		
PIPE SIZE	CASING OD	THICKNESS *
6"	16"	1/4"
8"	18"	1/4"
10"	20"	5/16"
12"	24"	5/16"
16"	30"	3/8"
18"	30"	3/8"
20"	36"	1/2"
24"	42"	1/2"

* CASING INSTALLATIONS OVER 25 FEET BELOW FINISHED GRADE TO HAVE THICKNESS DETERMINED BY A NEVADA LICENSED PROFESSIONAL ENGINEER.

* CASING INSTALLATIONS UNDER RAILROAD TRACKS TO HAVE THICKNESS DETERMINED BY A NEVADA LICENSED PROFESSIONAL ENGINEER AND APPROVED BY UNION PACIFIC RAILROAD.

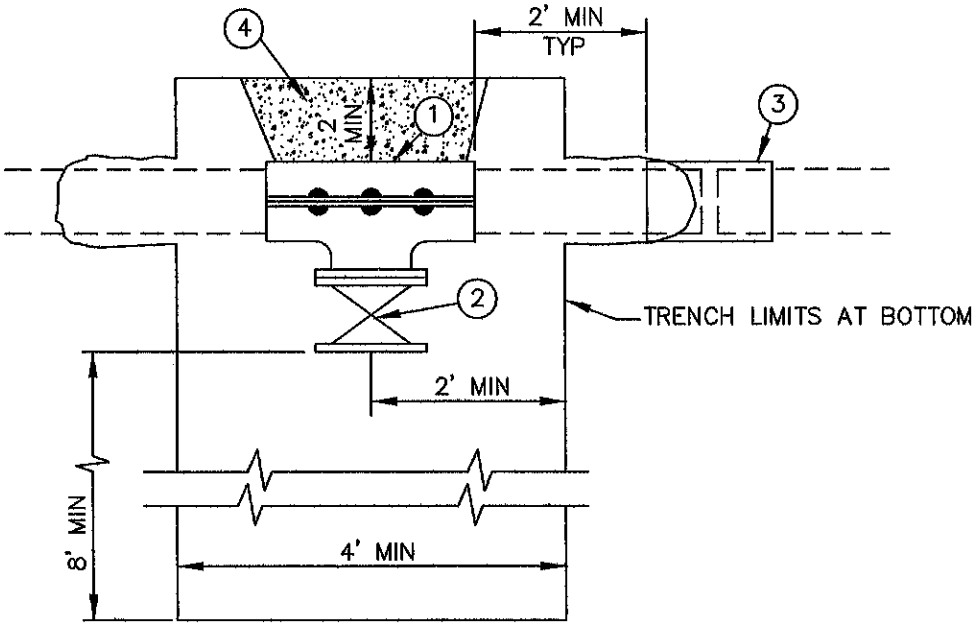
NOTES:

1. STEEL PIPE CASING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A283, GRADE B, C, OR D. ALL JOINTS SHALL BE WELDED. INTERIOR JOINTS SHALL BE GROUND TO A SMOOTH FINISH. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWWA C206, "AWWA STANDARD FOR FIELD WELDING OF STEEL WATER PIPE." COATINGS FOR STEEL CASING ARE NOT REQUIRED.
2. STEEL PIPE CASING SHALL BE INSTALLED SYMMETRICAL ABOUT WATER MAIN CENTERLINE (TYP). PIPE CASING SHALL BE LAID TRUE TO LINE AND GRADE WITH NO BENDS OR CHANGES IN GRADE FOR THE FULL LENGTH OF THE CASING.
3. AGENCY APPROVED CASING SPACERS AND END SEALS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. USE A "CENTERED" CONFIGURATION AND PROVIDE THE MANUFACTURER WITH THE FOLLOWING: (PIPE OD, CASING ID, AND CASING LENGTH).
4. ALL PIPE JOINTS WITHIN THE CASING ARE TO BE EXTERNALLY RESTRAINED.
5. CASING TO BE FILLED (IF REQUIRED). SEE AGENCY FOR FILL MATERIALS AND ADDITIONAL REQUIREMENTS.
6. CASINGS INSTALLED BY JACK AND BORE METHOD SHALL BE INSTALLED TO THE GRADE SHOWN ON THE DRAWINGS, WITH A MAXIMUM VERTICAL DEVIATION OF +0' AND −2', AND A MAXIMUM HORIZONTAL DEVIATION OF ±2' PROVIDED THE ALIGNMENT DOES NOT CONFLICT WITH OTHER UTILITIES AND/OR RIGHTS-OF-WAY.

NOT TO SCALE	FILE NAME: UDACS-23 DRAWN BY: SDM CHECKED BY: SPM	CASING INSTALLATION	UDACS PLATE NO. 23 SHEET 1 OF 1

08:10 Plot @ 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udoc-23.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



ITEM	DESCRIPTION
(1)	TAPPING SLEEVE
(2)	GATE VALVE
(3)	COUPLING, COLLAR, FITTING, VALVE OR SERVICE SADDLE
(4)	CONCRETE THRUST BLOCK, SEE UDACS PLATE 31

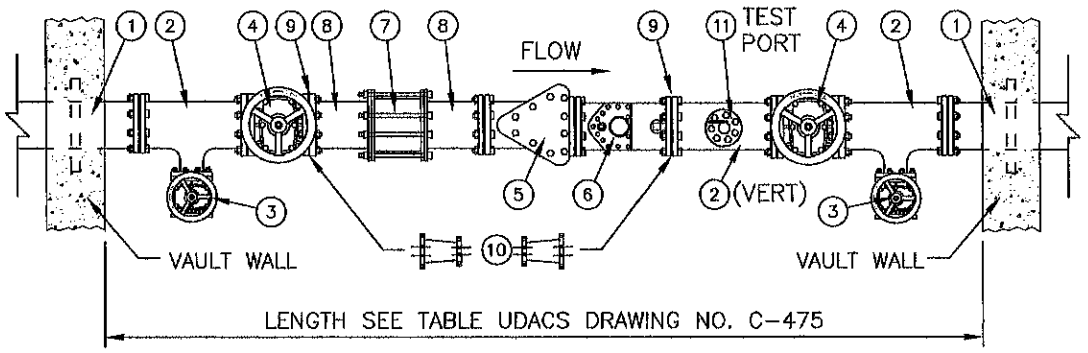
NOTES:

1. CLEARANCE FROM A COLLAR OR PIPE JOINT SHALL BE A MINIMUM OF 2 FEET FROM THE EDGE OF TAPPING SLEEVE TO COLLAR OR PIPE JOINT. THE EXISTING PIPE SHALL BE EXPOSED SUFFICIENTLY TO ENSURE THAT SUCH MINIMUM CLEARANCE IS PROVIDED.
2. TRENCH SHALL MEET ALL LOCAL, STATE AND FEDERAL REQUIREMENTS.
3. VALVE TO BE SUPPORTED DURING THE WET TAP PROCESS.
4. USE AN AGENCY APPROVED TAPPING SLEEVE BASED ON PIPE MATERIAL AND TAP SIZE.
5. ALL TAPS TO BE COMPLETED ON HORIZONTAL PIPE ALIGNMENTS ONLY.

NOT TO SCALE	FILE NAME: UDACS-34 DRAWN BY: SDM CHECKED BY: SPM	EXCAVATION FOR WET TAPS	UDACS PLATE NO. 34 SHEET 1 OF 1

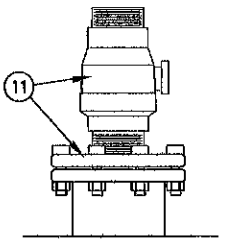
08:14 Plot ● 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udac-34.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



ITEM NO.	DESCRIPTION	QTY.
(1)	22" FLANGED WALL SPOOL WITH THRUST RING	2
(2)	FLANGED DUCTILE IRON TEE	3
(3)	4" FLANGED GATE VALVE WITH BLIND FLANGE	2
(4)	FLANGED GATE VALVE	2
(5)	STRAINER	1
(6)	DOMESTIC METER (TURBINE)	1
(7)	SLEEVE TYPE COUPLING	1
(8)	FLANGED x PLAIN END SPOOL (ADJUST LENGTH AS REQUIRED)	2
(9)	INSTALL ADJUSTABLE PIPE SUPPORTS	2
(10)	INSTALL FLANGED REDUCER (SEE NOTE 4)	2
(11)	6" x 2" TAPPED BLIND FLANGE, 2" CORP STOP (MALE IPT x MALE IPT)	1

TEST PORT DETAIL



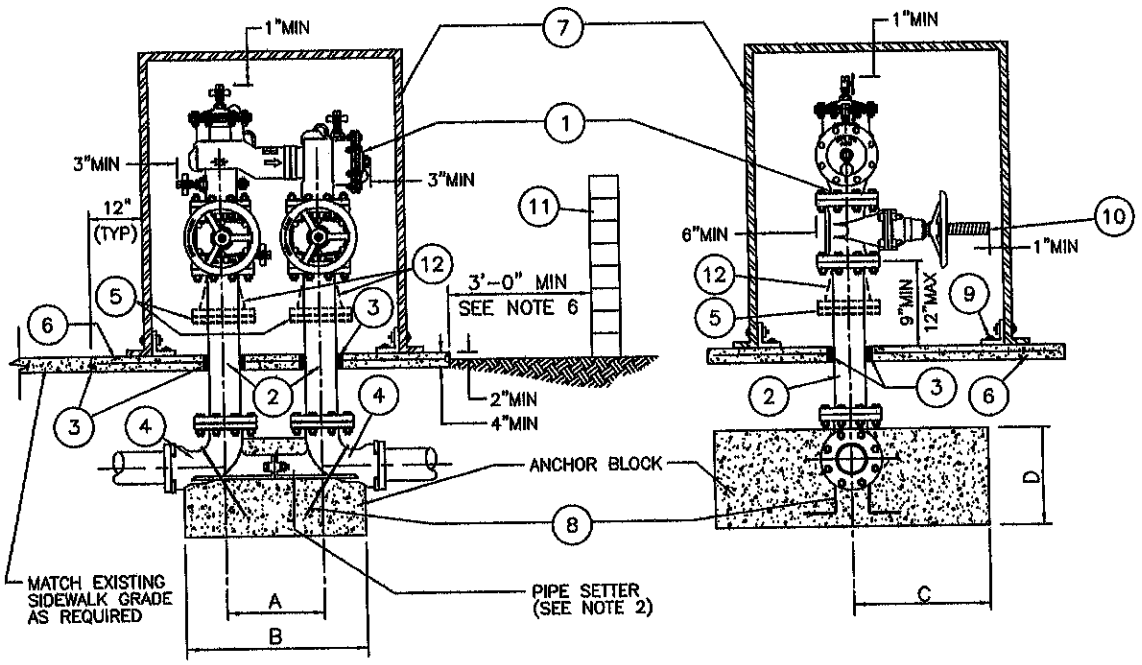
NOTES

1. GATE VALVES SHALL BE NON-RISING STEM OR OS&Y TYPE AS APPROVED BY AGENCY.
2. ALL PIPING, FITTINGS, AND APPURTENANCES SHALL CONFORM TO APPLICABLE AGENCY SPECIFICATIONS.
3. ALL PIPING, FITTINGS, AND APPURTENANCES TO BE FACTORY EPOXY COATED AND LINED.
4. 3" OR 4" METER REQUIRES 6" PIPING AND VALVES W/6" x 3" OR 6" x 4" REDUCER AS SHOWN.
5. SEE UDACS C-475 FOR VAULT DESIGN AND STRUCTURAL REQUIREMENTS.

NOT TO SCALE	FILE NAME: UDACS-52 DRAWN BY: SDM CHECKED BY: SPM	DOMESTIC TURBINE METER WITH BYPASS PROVISIONS	UDACS PLATE NO. 52 SHEET 1 OF 1

11:49 Plot @ 08/20/09 I:\UDACS\section 5 - standard plates\UDACS Standard Plates\new udac-52.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



ANCHOR BLOCK SIZING REQUIREMENTS

ASSEMBLY SIZE	3"	4"	6"	8"	10"
A	12-1/2"	16"	16"	18-1/2"	21"
B	18"	26"	26"	30"	36"
C	15"	21"	21"	24"	27"
D	6"	12"	12"	16"	20"

NOTES

1. ENCLOSURE SIZE AND CONCRETE PAD TO BE DETERMINED USING MINIMUM CLEARANCES SHOWN.
2. PIPE SETTER MAY BE OMITTED WITH PRIOR APPROVAL BY THE AGENCY HAVING JURISDICTION.
3. DIFFERENCE IN ELEVATION NOT PERMITTED AT 90° BENDS BELOW GRADE, UNLESS PRIOR APPROVAL OBTAINED FROM THE AGENCY HAVING JURISDICTION.
4. INSTALL BOLLARDS AS REQUIRED. SEE UDACS PLATE 75.
5. APPROVING AGENCY MAY REQUIRE INSTALLATION OF A REDUCER. INSTALL REDUCER PRIOR TO AND/OR AFTER 90° BEND ON INLET/OUTLET PIPING.
6. IN ORDER TO ALLOW FOR ACCESS AND MAINTENANCE OF BACKFLOW ASSEMBLIES A MINIMUM OF THREE (3) FEET ADJACENT TO BACKFLOW ASSEMBLY PAD SHALL BE LEVEL AND FREE OF SHRUBBERY AND OBSTRUCTIONS (TYP).
7. 3" ASSEMBLY – 6" RISERS WITH REDUCER (6" x 3"), 6" 90° BENDS WITH NO SETTER.

NOT TO SCALE	FILE NAME: UDACS-56 DRAWN BY: SDM CHECKED BY: SPM	COMPACT BACKFLOW PREVENTION ASSEMBLY 3" - 10" DIAMETER	UDACS PLATE NO. 56 SHEET 1 OF 2

09:04 Plot ● 02/09/09 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udacs-56.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS

LEGEND

(1) APPROVED REDUCED PRESSURE PRINCIPLE ASSEMBLY
APPROVED REDUCED PRESSURE DETECTOR ASSEMBLY
APPROVED DOUBLE CHECK VALVE ASSEMBLY
APPROVED DOUBLE CHECK DETECTOR ASSEMBLY

ALL ASSEMBLIES TO BE FACTORY COATED. ABOVE GRADE PIPING TO BE PAINTED. SEE SECTION 3, PROTECTIVE COATINGS

(2) THREADED FLG x PE DUCTILE IRON PIPE, PRESSURE CLASS 350.

(3) 1/2" EXPANSION JOINT MATERIAL

(4) FLG x MJ OR FLG x FLG 90° DUCTILE IRON BEND (WITH SETTER). NO SETTER REQUIRED FOR 3" ASSEMBLY

(5) RESTRAINED ADAPTER FLANGE.

(6) CONCRETE PAD – 3000 PSI (4" THICK) WITH WELDED WIRE FABRIC, 4 x 4 – W1.4 x W1.4

(7) AGENCY APPROVED ENCLOSURE

(8) NO. 4 REBAR. (WRAP EXPOSED PORTION OF REBAR WITH 10 MIL DIELECTRIC PLASTIC TAPE WITH 1/2 OVERLAP)

(9) ANCHOR PER MANUFACTURERS REQUIREMENTS

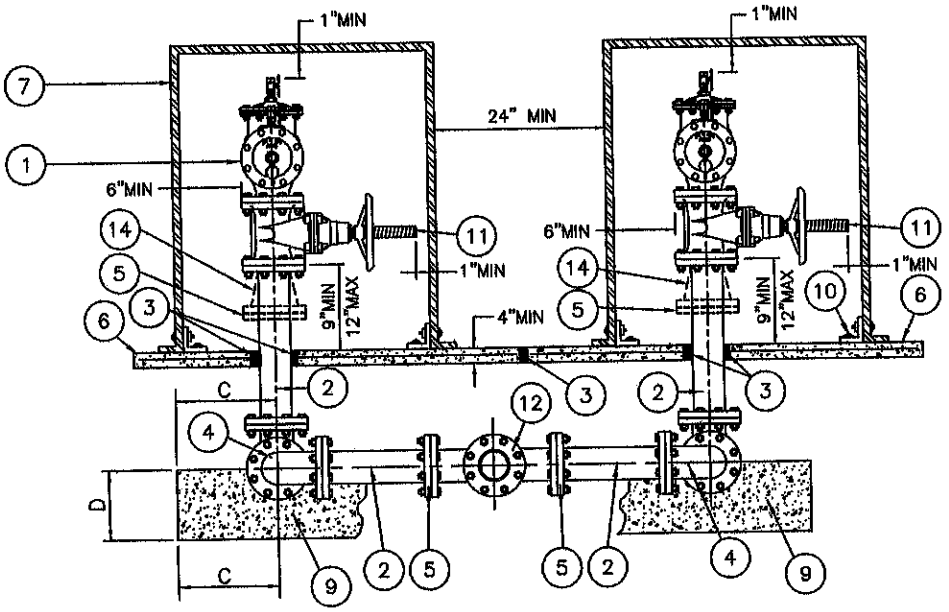
(10) FOR OS & Y VALVE INSTALLATIONS VALVE STEM TO MAINTAIN 1" (MIN) CLEARANCE FROM INSIDE WALL OF ENCLOSURE OR AS APPROVED BY AGENCY

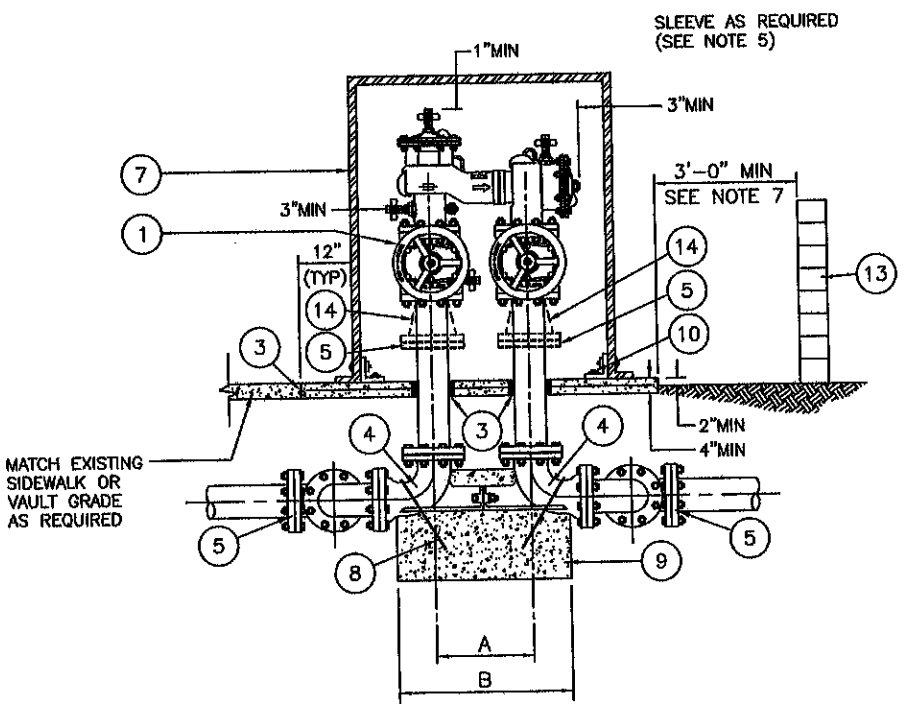
(11) RETAINING WALL, FENCE, OR OTHER OBSTRUCTION (EASEMENT)

(12) DI FLG CONCENTRIC (6" x 3") OR ECCENTRIC (6" x 4") REDUCER

NOT TO SCALE	FILE NAME: UDACS-56 DRAWN BY: SDM CHECKED BY: SPM	COMPACT BACKFLOW PREVENTION ASSEMBLY 3" - 10" DIAMETER	UDACS PLATE NO. 56 SHEET 2 OF 2

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



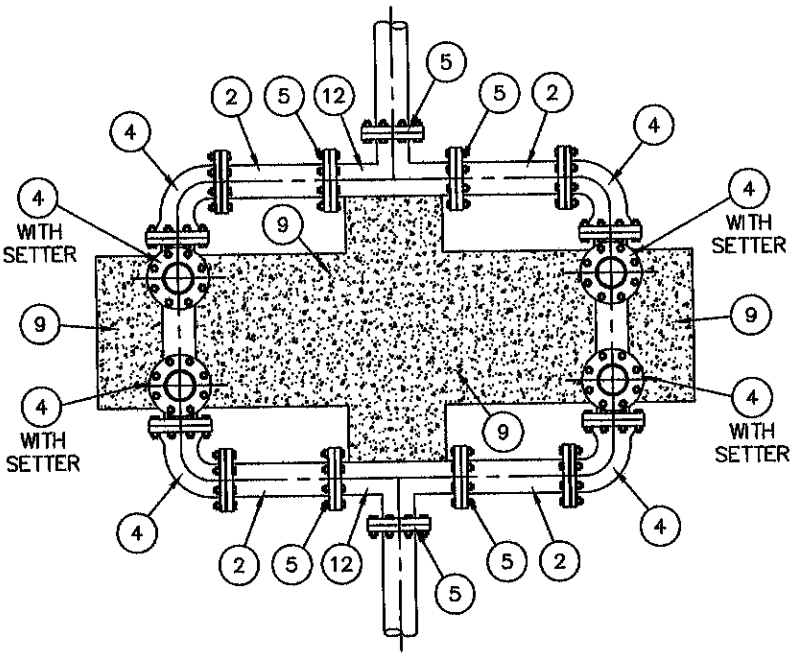


NOTE:
FOR LEGEND AND NOTES SEE SHEETS 2 AND 3

NOT TO SCALE	FILE NAME: UDACS-57 DRAWN BY: SDM CHECKED BY: SPM	DUAL COMPACT BACKFLOW PREVENTION ASSEMBLY 4" - 10" DIAMETER	UDACS PLATE NO. 57 SHEET 1 OF 3

09:09 Plot ● 02/09/09 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udacs-57.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



FORM CONCRETE ANCHOR/THRUST BLOCKS AS SHOWN.
DO NOT ENCASE PIPING OR FLANGES WITHIN CONCRETE.

ANCHOR BLOCK SIZING REQUIREMENTS

ASSEMBLY SIZE	4"	6"	8"	10"
A	16"	16"	18-1/2"	21"
B	26"	26"	30"	36"
C	21"	21"	24"	27"
D	12"	12"	16"	20"

NOT TO SCALE	FILE NAME: UDACS-57 DRAWN BY: SDM CHECKED BY: SPM	DUAL COMPACT BACKFLOW PREVENTION ASSEMBLY 4" - 10" DIAMETER	UDACS PLATE NO. 57 SHEET 2 OF 3

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS

LEGEND:

(1) APPROVED REDUCED PRESSURE PRINCIPLE ASSEMBLY
APPROVED REDUCED PRESSURE DETECTOR ASSEMBLY
APPROVED DOUBLE CHECK VALVE ASSEMBLY
APPROVED DOUBLE CHECK DETECTOR ASSEMBLY

ALL ASSEMBLIES TO BE FACTORY COATED. ABOVE GRADE PIPING TO BE PAINTED. SEE SECTION 3, PROTECTIVE COATINGS.

(2) FLG x PE DUCTILE IRON PIPE (CUT TO FIT), PRESSURE CLASS 350
FLG x FLG DUCTILE IRON PIPE, PRESSURE CLASS 350

(3) 1/2" EXPANSION JOINT MATERIAL.

(4) FLG x FLG 90° DUCTILE IRON BEND
(WITH SETTER FOR BACKFLOW ASSEMBLY BENDS).

(5) RESTRAINED ADAPTER FLANGE.

(6) CONCRETE PAD – 3000 PSI (4" THICK) WITH WELDED WIRE FABRIC, 4 x 4 – W1.4 x W1.4

(7) AGENCY APPROVED ENCLOSURE

(8) NO. 4 REBAR. (WRAP EXPOSED PORTION OF REBAR WITH 10 MIL DIELECTRIC PLASTIC TAPE WITH 1/2 OVERLAP)

(9) CONCRETE ANCHOR/THRUST BLOCK

(10) ANCHOR PER MANUFACTURERS REQUIREMENTS

(11) FOR OS & Y VALVE INSTALLATIONS VALVE STEM TO MAINTAIN 1" (MIN) CLEARANCE FROM INSIDE WALL OF ENCLOSURE OR AS APPROVED BY AGENCY.

(12) FLG x FLG DUCTILE IRON TEE (CONNECT TO TEE WITH NEW FLANGED PIPE OR RESTRAINED FLANGE ADAPTERS).

(13) RETAINING WALL, FENCE, OR OTHER OBSTRUCTION (EASEMENT)

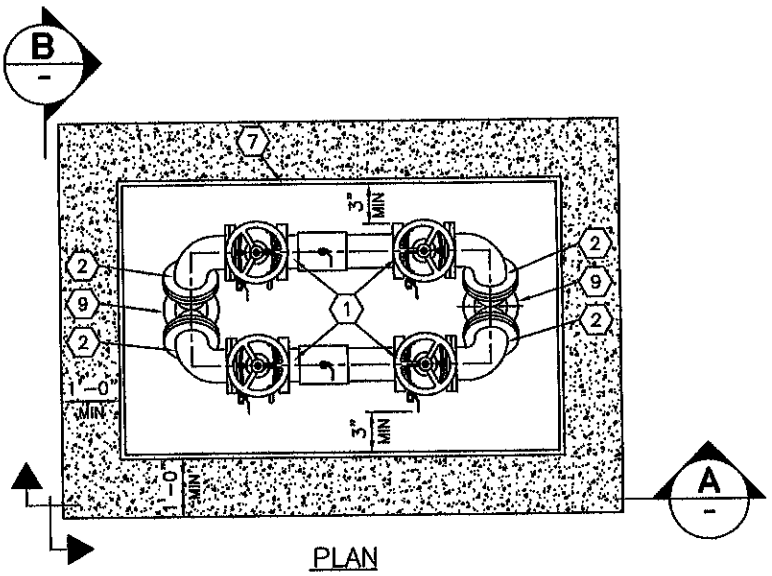
(14) DI FLG ECCENTRIC (6" x 4") REDUCER

NOTES:

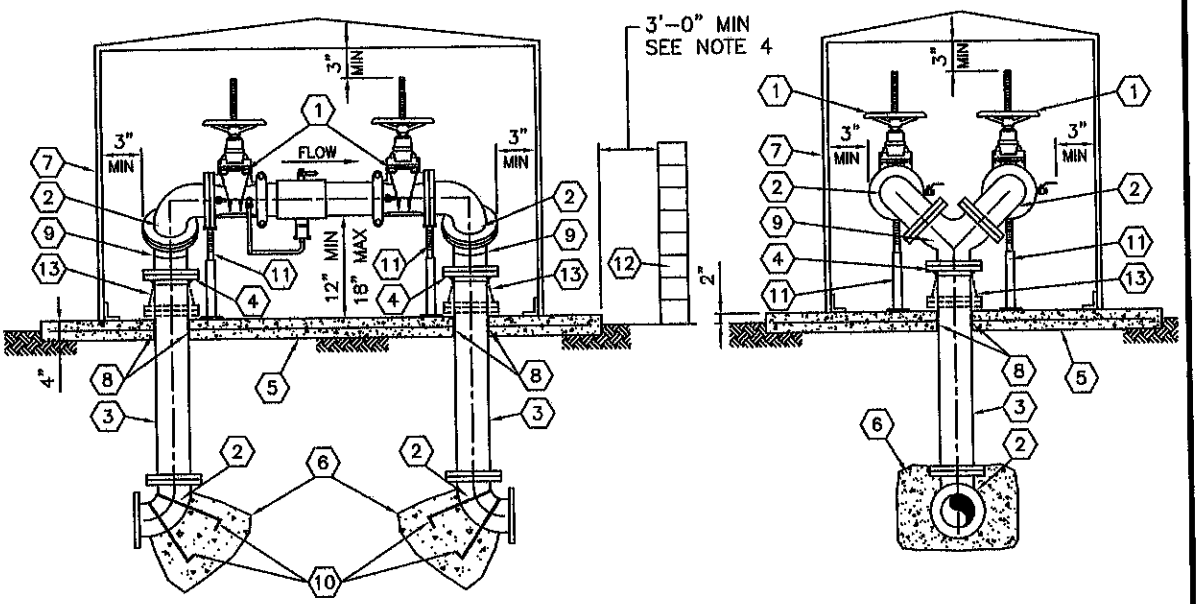
1. ENCLOSURE SIZE AND CONCRETE PAD TO BE DETERMINED USING MINIMUM CLEARANCES SHOWN. MATCH SIDEWALK OR VAULT ELEVATION.
2. PIPE SETTER MAY BE OMITTED WITH PRIOR APPROVAL BY THE AGENCY HAVING JURISDICTION.
3. DIFFERENCE IN ELEVATION NOT PERMITTED AT 90° BENDS BELOW GRADE, UNLESS PRIOR APPROVAL OBTAINED FROM THE AGENCY HAVING JURISDICTION.
4. INSTALL BOLLARDS AS REQUIRED. SEE UDACS PLATE 75.
5. APPROVING AGENCY MAY REQUIRE INSTALLATION OF A FLANGED REDUCER. INSTALL FLANGED REDUCER PRIOR TO AND/OR AFTER 90° BEND ON INLET/OUTLET PIPING.
6. ADDITIONAL SPOOLS MAY BE INSTALLED TO ADJUST TO EXISTING SITE CONDITIONS AS APPROVED BY THE AGENCY HAVING JURISDICTION.
7. IN ORDER TO ALLOW FOR ACCESS AND MAINTENANCE OF BACKFLOW ASSEMBLIES A MINIMUM OF THREE (3) FEET ADJACENT TO BACKFLOW ASSEMBLY PAD SHALL BE LEVEL AND FREE OF SHRUBBERY AND OBSTRUCTIONS (TYP).

NOT TO SCALE	FILE NAME: UDACS-57 DRAWN BY: SDM CHECKED BY: SPM	DUAL COMPACT BACKFLOW PREVENTION ASSEMBLY 4" - 10" DIAMETER	UDACS PLATE NO. 57 SHEET 3 OF 3

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS



PLAN



SECTION A

SECTION B

NOT TO SCALE	FILE NAME: UDACS-58 DRAWN BY: SDM CHECKED BY: SPM	DUAL CONVENTIONAL BACKFLOW PREVENTION ASSEMBLY 4" - 10" DIAMETER	UDACS PLATE NO. 58 SHEET 1 OF 2

08:43 Plot ● 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udac-58.dwg

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS

LEGEND:

(1) APPROVED REDUCED PRESSURE PRINCIPLE ASSEMBLY
APPROVED REDUCED PRESSURE DETECTOR ASSEMBLY
APPROVED DOUBLE CHECK VALVE ASSEMBLY
APPROVED DOUBLE CHECK DETECTOR ASSEMBLY

(2) FLG x FLG DUCTILE IRON 90° BEND

(3) FLG x PE DUCTILE IRON PIPE, PRESSURE CLASS 350 (CUT TO FIT)

(4) ADAPTER FLANGE (RESTRAINED)

(5) CONCRETE PAD – 3000 PSI (4" THICK) WITH WELDED WIRE FABRIC, 4 x 4 – W1.4 x W1.4

(6) CONCRETE THRUST/ANCHOR BLOCK

(7) AGENCY APPROVED ENCLOSURE

(8) 1/2" EXPANSION JOINT MATERIAL

(9) FLANGED DUCTILE IRON WYE

(10) NO. 4 REBAR (WRAP EXPOSED REBAR WITH 10 MIL DIELECTRIC TAPE)

(11) APPROVED ADJUSTABLE PIPE SUPPORT

(12) RETAINING WALL, FENCE, OR OTHER OBSTRUCTION (EASEMENT)

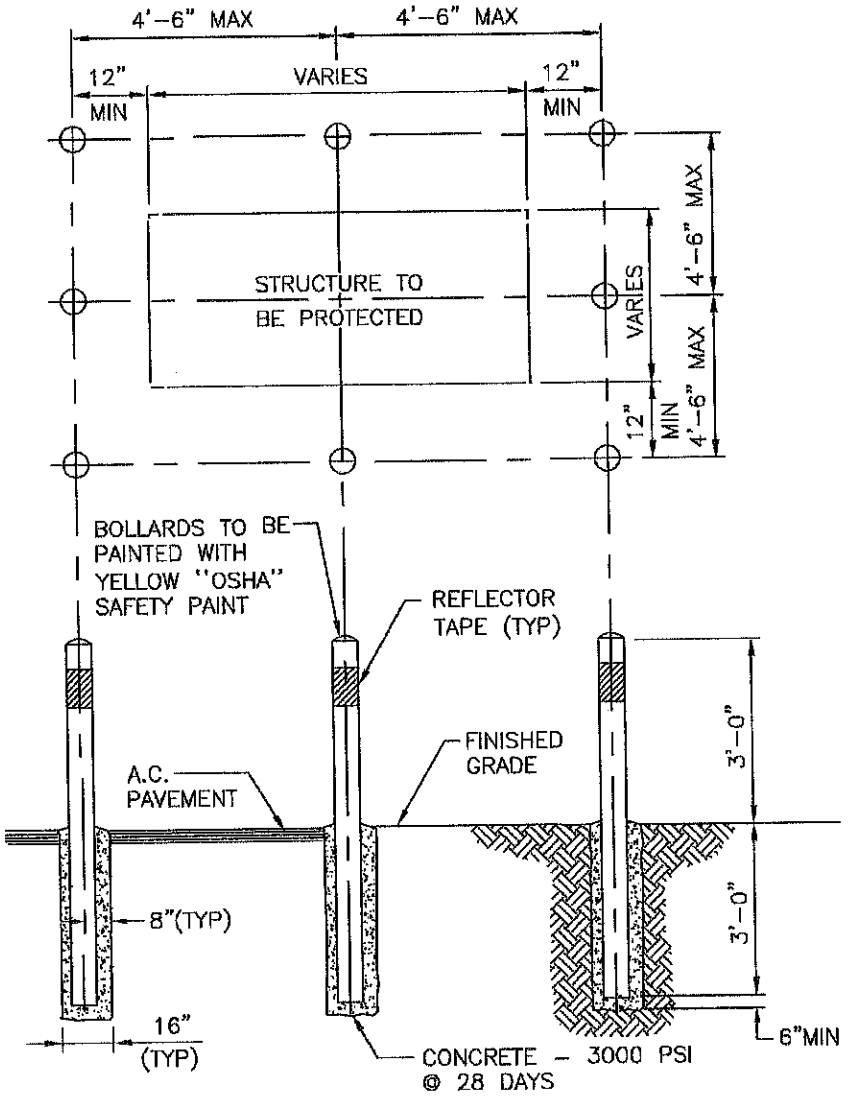
(13) DI FLG CONCENTRIC REDUCER (6"x 4")

NOTES:

1. ENCLOSURE SIZE AND CONCRETE PAD TO BE DETERMINED USING MINIMUM CLEARANCES SHOWN.
2. TOP OF CONCRETE PAD TO BE FLUSH WITH SIDEWALK WHEN POURED AGAINST SIDEWALK OR VAULT.
3. INSTALL BOLLARDS AS REQUIRED. SEE UDACS PLATE 75.
4. IN ORDER TO ALLOW FOR ACCESS AND MAINTENANCE OF BACKFLOW ASSEMBLIES A MINIMUM OF THREE (3) FEET ADJACENT TO BACKFLOW ASSEMBLY PAD SHALL BE LEVEL AND FREE OF SHRUBBERY AND OBSTRUCTIONS (TYP).
5. OS & Y VALVES REQUIRED ON DOUBLE CHECK VALVE BACKFLOW ASSEMBLIES.
6. ALL ASSEMBLIES TO BE FACTORY COATED. ABOVE GRADE PIPING TO BE PAINTED. SEE SECTION 3, PROTECTIVE COATINGS.

NOT TO SCALE	FILE NAME: UDACS-58 DRAWN BY: SDM CHECKED BY: SPM	DUAL CONVENTIONAL BACKFLOW PREVENTION ASSEMBLY 4" - 10" DIAMETER	UDACS PLATE NO. 58 SHEET 2 OF 2

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS

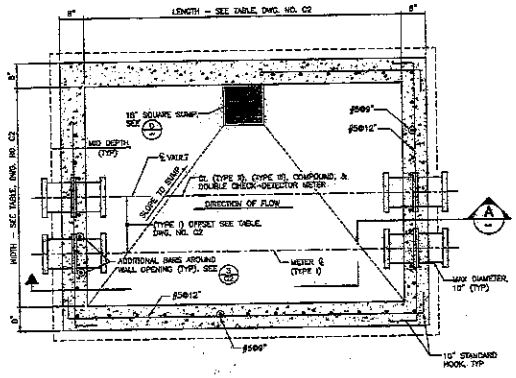


NOTES

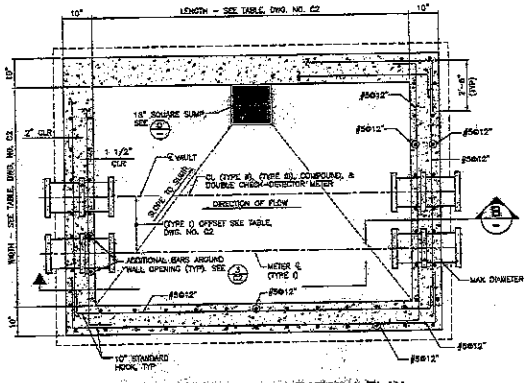
1. BOLLARD TO BE 4" SCH. 40 STEEL PIPE, 6'-0" LONG AND FILLED WITH CONCRETE.
2. BOLLARDS ON SIDE NOT ACCESSIBLE TO VEHICLES MAY BE OMITTED BY THE APPROVING AGENCY.
3. PLACE 6" WIDE, WHITE CLASS 4 REFLECTIVE TAPE, 4" DOWN FROM TOP, FOR A FULL DIAMETER ON ALL BOLLARDS.
4. CONTRACTOR TO ASSURE THAT BOLLARDS ARE PLACED TO ALLOW FULL ACCESS TO THE PROTECTED FACILITY.

NOT TO SCALE	FILE NAME: UDACS-75 DRAWN BY: SDM CHECKED BY: SPM	VEHICULAR PROTECTION BOLLARD	UDACS PLATE NO. 75 SHEET 1 OF 1

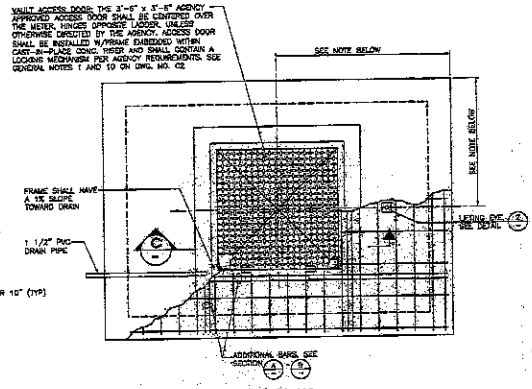
08:52 Plot ● 12/31/08 I:\UDACS\section 5 - standard plates_New Numbered Updated Plates\new udac-75.dwg



NON TRAFFIC-BEARING VAULT SECTIONAL PLAN

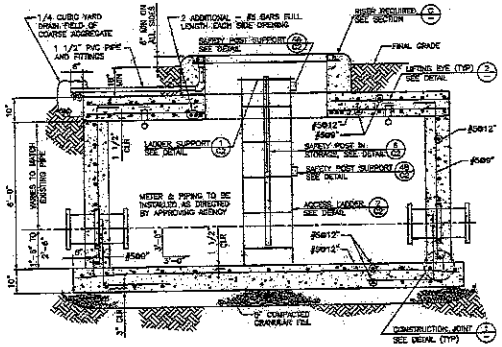


TRAFFIC-BEARING VAULT SECTIONAL PLAN

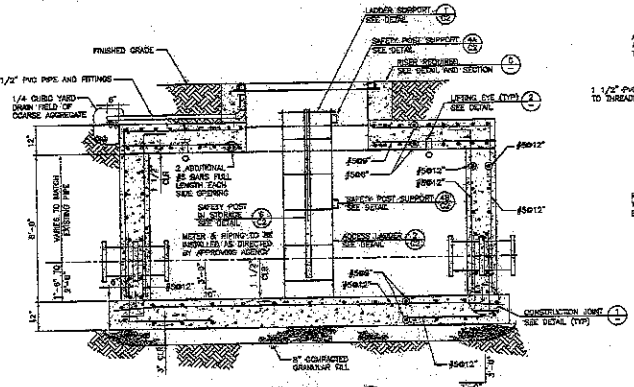


TOP PLAN

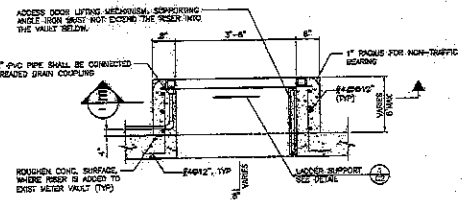
NOTE: FOR GENERAL NOTES SEE DWG. NO. C2.



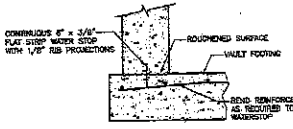
SECTION A



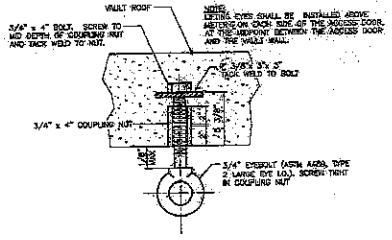
SECTION B



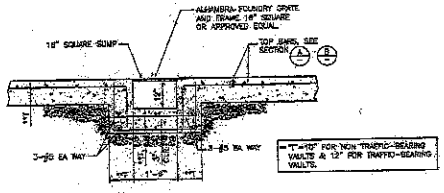
SECTION C



CONSTRUCTION JOINT DETAIL 1

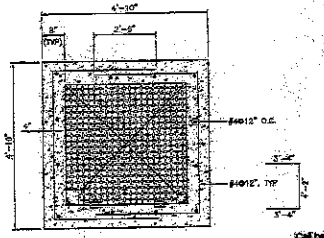


LIFTING EYE DETAIL 2



DRAIN SUMP SECTION D

"T"=10" FOR NON-TRAFFIC-BEARING VAULTS & 12" FOR TRAFFIC-BEARING VAULTS.



RISER PLAN E

LAS VEGAS VALLEY WATER DISTRICT
1001 S. VALLEY VIEW BLVD.
LAS VEGAS, NEVADA 89153

VERIFY SCALE
1" IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS

METER VAULT PLANS AND SECTIONS

DRAWING NUMBER
C-475

SHEET 1 OF

GENERAL NOTES

METER VAULT DESIGN BASED ON AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", 17TH EDITION, 2002.

1. MATERIALS SHALL BE IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

GRANULAR FILL	TYPE II PER UNIFORM STANDARD SPECIFICATIONS. SUBSECTION 704.03.04.
CEMENT	ASTM C150, TYPE V.
FINE AGGREGATE	CLEAN NATURAL SAND PER ASTM C33.
COARSE AGGREGATE	CRUSHED STONE OR WASHED GRAVEL, GRADING SIZE NO. 67, PER ASTM C33.
CONCRETE	MAXIMUM WATER TO CEMENT RATIO = 0.4
SOIL WEIGHT	130 pcf MAXIMUM
SOIL PRESSURE	60 pcf MAXIMUM (AT REST) 2,000 psf MINIMUM (AT FOOTING)
F'c	4,500 PSI (TYP)
WATER PRESSURE	NO GROUNDWATER PRESENT
REINFORCING STEEL	ASTM 615 GRADE 60.
CURING COMPOUND	CURING COMPOUNDS SHALL BE WHITE PIGMENTED, RESIN BASED, CONFORM TO ASTM C309 – LIQUID MEMBRANE FORMING COMPONENTS FOR CURING CONCRETE AND COMPLIANT WITH LOCAL VOC REQUIREMENTS. SEE AGENCY FOR APPROVED COMPOUNDS.
ACCESS DOORS:	
NON-TRAFFIC BEARING VAULTS	AGENCY APPROVED (ALUMINUM)
TRAFFIC BEARING VAULTS	AGENCY APPROVED (GALVANIZED STEEL)
ACCESS LADDER STEEL	HOT DIP GALVANIZED AFTER FABRICATION, PER ASTM A123, A153, & A385.
PLATE AND BARS	ASTM A36 STEEL
PVC PIPE AND FITTINGS	ASTM D1785 & D2466
WALL SPOOLS	AGENCY APPROVED
WATERSTOP	EXTRUDED ELASTOMERIC POLYVINYL CHLORIDE WATERSTOP; CONTINUOUS 6" x 3/8" FLAT STRIP WITH 1/8" RIB PROJECTIONS.

MISCELLANEOUS METALS FOR LADDER SUPPORTS, LIFTING EYES, ETC:

STEEL PLATES AND BARS	ASTM A36 STEEL
BOLTS	ASTM A307.

HOT-DIP GALVANIZED AFTER FABRICATION PER ASTM A123, A153, & A385.

2. USING MATERIALS ACCEPTABLE TO THE APPROVING AGENCY, A TENTATIVE CONCRETE MIX SHALL BE DESIGNED, TESTED, AND SUBMITTED TO THE APPROVING AGENCY FOR APPROVAL. THE MIX SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4500 PSI. CONCRETE SHALL BE BATCHED BY A READY-MIXED CONCRETE SUPPLIER ACCEPTABLE TO THE APPROVING AGENCY AND SHALL CONFORM TO ASTM C94. THE SLUMP OF THE CONCRETE DELIVERED SHALL NOT EXCEED 4".

3. ALL CAST-IN-PLACE CONCRETE SHALL BE ACCURATELY FORMED AND PROPERLY PLACED AND FINISHED AS SHOWN ON THE DRAWINGS. FORM WORK SHALL CONFORM TO ACI 347 INCLUDING RECOMMENDATIONS FOR CONSTRUCTION TOLERANCES AND MINIMUM ELAPSED TIME BEFORE FORM REMOVAL. CONCRETE SHALL BE PROTECTED FROM MOISTURE LOSS FOR 7 DAYS. CONCRETE MAY BE CURED BY APPLICATION OF AGENCY APPROVED MEMBRANE CURING COMPOUND.

4. REINFORCING STEEL SHALL BE ACCURATELY FORMED AND SHALL BE FREE FROM LOOSE RUST, SCALE, AND CONTAMINANTS WHICH REDUCE BOND. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, DETAILS OF REINFORCEMENT SHALL CONFORM TO AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", 17TH EDITION, 2002. REINFORCING STEEL SHALL BE ACCURATELY POSITIONED ON AGENCY APPROVED SUPPORTS OR SPACERS, AND SHALL BE SECURED IN PLACE WITH WIRE TIES.

5. EMBEDMENTS SHALL BE ACCURATELY POSITIONED IN FORMS AND SECURELY ANCHORED. THE ACCESS DOOR AND FRAME SHALL BE INSTALLED AT PLAN GRADE FOR TRAFFIC BEARING VAULTS, AND 6" ABOVE PLAN GRADE IN A CAST-IN-PLACE RISER FOR NON TRAFFIC BEARING VAULTS.

6. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION OF THE VAULT WITH THE APPROVING AGENCY. UNLESS OTHERWISE DIRECTED, THE CONTRACTOR SHALL FURNISH AND INSTALL METER, VALVES, PIPING AND APPURTENANCES.

7. THE CONTRACTOR SHALL INSTALL ALL VAULTS ON 8" GRANULAR FILL, COMPACTED TO 95% OF MAXIMUM DENSITY PER ASTM D1557. THE CONTRACTOR SHALL NOT BACKFILL THE METER VAULT UNTIL THE APPROVING AGENCY HAS INSPECTED AND APPROVED THE METER VAULT. NATIVE MATERIAL MAY BE USED AS BACKFILL UNLESS FOUND UNACCEPTABLE BY THE APPROVING AGENCY. BACKFILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED BY MECHANICAL MEANS TO 90% OF MAXIMUM DENSITY PER ASTM D1557. IN TRAFFICWAYS, COMPACTED GRANULAR FILL SHALL BE PLACED 18" BELOW PAVEMENT AND COMPACTED TO 95% OF MAXIMUM DENSITY PER ASTM D1557.

8. THE DESIGN OF THE METER VAULT IS APPLICABLE FOR BURIAL DEPTHS TO 5'-0". FOR DEPTHS GREATER THAN 5'-0", THE METER VAULT MUST BE MODIFIED BY A NEVADA LICENSED CIVIL ENGINEER FOR AGENCY APPROVAL.

9. BACKFILL ABOVE TOP OF COVER SLAB SHALL NOT BE LESS THAN 18" MINIMUM (TYP).

10. TRAFFIC BEARING VAULTS SHALL BE LOCATED WHERE THEY ARE NOT SUBJECT TO CONTINUOUS TRAFFIC LOADING. TRAFFIC BEARING VAULTS MAY BE LOCATED IN TRAFFIC LANES, BUT THE VAULT LIDS ARE TO BE LOCATED OUT OF THE WHEEL PATH.

11. THE DESIGN OF THE METER VAULT IS BASED ON THE PARAMETERS LISTED WITHIN NOTE 1 ABOVE. WHEN SITE CONDITIONS DO NOT MEET THE ABOVE REQUIRED CRITERIA, THE METER VAULT MUST BE MODIFIED BY A NEVADA LICENSED CIVIL ENGINEER FOR AGENCY APPROVAL.

12. THE VAULT CONSTRUCTION SHALL COMPLY WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", 17TH EDITION, 2002 AND ALL OTHER APPLICABLE CODES AND REGULATIONS.

13. SPECIAL INSPECTIONS ARE REQUIRED FOR CONCRETE, REINFORCING STEEL, EXCAVATION AND BACKFILL WHEN REQUIRED BY APPROVING AGENCY.

TABLE NO. 1 - METER VAULT SIZES

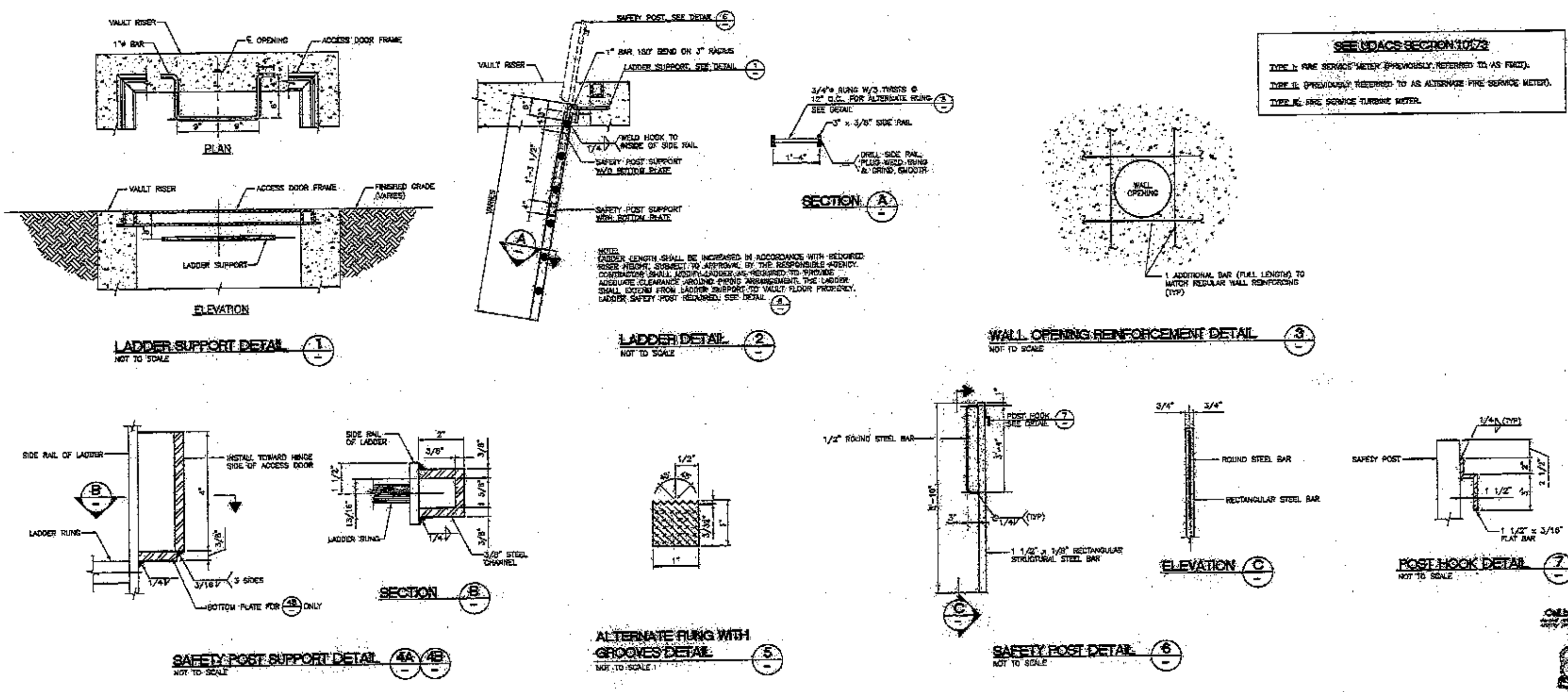
METER TYPE		METER SIZE	LENGTH L	WIDTH W	OFFSET	UDACS PLATE NO.
COMPOUND	WITH BYPASS	4"	12'-0"	6'-0"	---	50
		6"	12'-0"	6'-0"	---	
COMPOUND WITH DOUBLE CHECK VALVE	WITH BYPASS	4"	16'-0"	8'-0"	---	51
		6"	14'-0"	8'-0"	---	
TYPE I	WITH BYPASS	6" x 3"	12'-0"	7'-0"	11"	53
		8" x 4"	14'-0"	8'-0"	17"	
		10" x 6"	15'-0"	8'-4"	17"	
TYPE II	WITH BYPASS	6" x 2"	14'-0"	8'-0"	---	54
		8" x 2"	14'-0"	8'-0"	---	
		10" x 2"	16'-0"	8'-0"	---	
TYPE III	WITH BYPASS	6"	12'-0"	6'-0"	---	55
		8"	14'-0"	8'-0"		
DOMESTIC TURBINE	WITH BYPASS	3"	12'-0"	6'-0"	---	52
		4"	12'-0"	6'-0"	---	
		6"	12'-0"	6'-0"	---	
		8"	12'-0"	6'-0"	---	
DOUBLE CHECK DETECTOR ASSEMBLY (DCDA)	WITHOUT BYPASS	4"	10'-0"	6'-0"	---	60
		6"	10'-0"	6'-0"	---	
		8"	10'-0"	6'-0"	---	
		10"	10'-0"	6'-0"	---	

SEE UDACS SECTION 10073

TYPE I: FIRE SERVICE METER (PREVIOUSLY REFERRED TO AS FMCT).

TYPE II: (PREVIOUSLY REFERRED TO AS ALTERNATE FIRE SERVICE METER).

TYPE III: FIRE SERVICE TURBINE METER.



Call before you Dig
Call 811
1-800-227-2600

LAS VEGAS VALLEY WATER DISTRICT
1001 S. VALLEY VIEW BOULEVARD
LAS VEGAS, NEVADA 89153

VERIFY SCALE
BAR REPRESENTS ONE AND ONE-HALF INCHES ON ORIGINAL

UNIFORM DESIGN STANDARDS FOR WATER DISTRIBUTION SYSTEMS

METER VAULT DETAILS

SCALE: NONE

DRAWN BY: CHRISTOPHER A. WINSCH 8/31/09
CHECKED BY: DANA A. JUNES 8/31/09
RECOMMENDED BY: PETER V. JAUNSI
APPROVED BY: SHAWN T. BOLLES

C-DRAWING NUMBER
C-475