

AMENDED APPLICATION

W-01445A-10-0517

PART 4 OF 5 BAR CODE # 0000125117

To review remaining parts please see the following:

PART 1 OF 5 BAR CODED #0000125114

PART 2 OF 5 BAR CODED #0000125115

PART 3 OF 5 BAR CODED #0000125116

PART 5 OF 5 BAR CODED #0000125118

ARIZONA WATER COMPANY WORK AUTHORIZATION

W.A. NUMBER:
P.E. NUMBER:
BUDGET ITEM NO.:

SHEET NO .:

1-4763

Special 16 1 of 2

SYSTEM:

PINAL VALLEY

TAX CODE: 2100

PINAL VALLEY WORK TO START BY:

WORK TO START BY: WORK TO BE FINISHED BY: UPON AUTHORIZATION WITHIN 30 DAYS

DESCRIPTION OF WORK:

Pull and Replace the pump at Well #27. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

Distribution system high pressure and pressure surge spikes have resulted in historic well pump failures. As part of WA 1-4620 a new ground storage tank and booster station have been installed to relieve the well head pressure. The plan was to replace the well pump to match the pressure and flow requirements of the new system configuration at such time as the pump fails. The well production has dropped indicating possible worn impellers. Therefore, the pump is being replaced.

COST ESTIMA	TE	AUTHORIZATION	DATE
COST OF WORK: MATERIAL	0	PREPARED BY:	9/29/10
LABOR CONTRACT PORTION	1,500 45,930	Charles Briggs CB 10-05-2010	09-30-2010
OVERHEAD TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	11,383 \$ 58,813	Andy Haas AJH 10-7-10	9-30-10
FUNDS RECEIVED: CONTRIBUTIONS RECEIVED	0	APPROVED BY ENGINEERING: Fred Schneider 10-8-10	9-30-10
REFUNDABLE ADVANCES RECEIVED TOTAL CONTRIBUTIONS/ADVANCES	0	Joseph Harris	9/30/10
NET CASH REQUIRED COMMENTS:	\$ 58,813	SPECIAL ITEM EXCEEDING \$10,000; AUTHORIZED BY PRESIDENT: William Garfield	10-4-2010
Special to be finded from Contingency budget.	The 2010	SPECIAL ITEM EXCEEDING \$10,000; AUTHORIZED BY CHAIRMAN: APPROVED VIA FAX M. L. Whitehead	10/05/2010
18		CONSTRUCTION RELEASE:	TA

RELEASED TO CONSTRUCTION

Authorized by FRED SCHNEIDER Date OLDS IID

W.A. NUMBER: P.E. NUMBER:

Special 16

1-4763

WORK AUTHORIZATION - DETAIL SHEET

BUDGET ITEM NO .: SHEET NO .: 2 of 2 PLANT PROPERTY ACCOUNT QUANTITY YEAR INSTALLED AND W.A. NUMBER RETIREMENT PROPERTY UNITS PROJECT DESCRIPTION:

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST		TOTAL
	Labor to pull and replace pump	325	1	\$ 7,480.00	\$	7,4
	Install Simflo SC12C 8-stage pump	325	1	6,450.00		6,4
С	Video well	325	2	500.00		1,00
Ō.	Misc. buckles, bandits, and straps	325	1	125.00		1;
N	Brush and bail well	325	24	135.00		3,24
ı R	Install 8" column pipe	325	26	500.00		13,00
A	Install 3"x1-11/16 oil tube and shaft	325	20	656.00		13,12
C	Install 1/4" SS air line	325	1	863.00		86
T	Taxes	325	1	572.00		5
N	Performance and payment bond	325	1	80.00		
0						
R						
K	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345				
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345				
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345		· · · · · · · · · · · · · · · · · · ·		
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345				
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	NSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345				
	NSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345				
-	NSTALL SERVICE CONNECTIONS: SINGLE-LONG	345	<u></u> .			
ا	NSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345				
)T/	AL LABOR				\$	1,50
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR				\$	47,430	
/EI	RHEAD					11,383
	AL REFUNDABLE PORTION					, ,,,,,,,

AFH

CENTRALIA DE

Existing Pump Design

Design Condition: 500 gpm @ 888 ft TDH? Existing Pump: Goulds 12 WAMC 11-stages

Existing Notor: 200HP 1800 RPM VHS 440V 3-Phase 8" Column × 3" Oil Tube × 1-16" Shaft 682LF

Problems with Existing Pump Design

Pump designed for 150psi system pressure

15 minute flush to atmosphere draws water level down to bowls Offpump curve to right a when pump is turned into system, hammer from increased pressure causes bowls to drag

Lineshaft is undersized original pump K=2.41bs/ft, existing pump K=7.01bs/ft

Excessive stretch, extra lateral required

Ductile iron bowl requirement

New Pump Design

Pump through ATP into 15 Kgal storage tank + use boaster pump into 150psi system pressure Find pump curve with lower flow on pump to waste available Find pump curve with lower K value, lower maximum TDH, and more lateral

Static Water Level = 200-300ft Volatile

Dynamic Water Level = 500-657ft for 450-500gpm Volatile

Assume 575ft @ 450gpm

Column Pipe Friction Loss for 682LF of 8" Column × 3" Oil Tube × 1-1/16" shaft @ 450gpm Headloss = 1.0ft/100ft of column pipe

1.0ft (682ftpipe) = 6.82ft say 7ft 100ftpipe

Losses through ATP assume 10psi = 23.1ft say 25ft Assume 17-18ft tank is 8ft full about halffull TDH = 575ft + 7ft + 25ft + 8ft = 615ft TDH

Design Condition: 450 gpm @ 615ft TOH

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Bowl Assembly
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Choose Simflo SCI2C 8-stage 9.325" Full trim impeller

Design point on curve 450gpm@603ft

Cast Iron Maximum Bowl Working Pressure for Simflo SCIAC = 254psi 254psi 2.31ft = 586.74ft I psi Design TDH= 603ft

Design Curve w/9.325" impeller Shutoff head = 740ft <u>740ft</u> = 92.5ft/stage 8-stages <u>740ft-586.74ft</u> = 1.66 stages 92.5ft/stage

Boul Lateral Requirement

Impeller Thrust = Timp = K × HL × SG 8" Column × 3" Tube × 1-1/6" Shoft Timp = (6.51b/ft) (740ft) (1.0) = 48101bs = P

Lineshaft Elongation

e = PL = (4810165) (682ft) (12in/ft) = 0.6176in

EA (28.5×106psi) 11(1+1/16in) 4

Column and Tube Elongation

(clumn Load = TDH × SG × (KW-K) Specific Gravity SG = 1.0

for 8"column pipe KW = 16.71

Column Load = (740ft)(1.0)(16.71-6.51b/ft) = 7555.41bs

from Goulds table 200.B.05

linear interpolation

e= 0.033in + (7555.41bs-75001bs) (0.035in-0.033in) (682ft) = 0.2266in

(80001bs - 75001bs) (100ft)

Stretch = 0.6176in-0.2266in = 0.3910in

Stretch = HL [KC, - C2 + C3 (1 - 1/2 L)]

H = TDH in ft/1000 = 740/1000 = 0.74 L = Column Length in ft/1000 = 682/1000 = 0.682 K = Thrust Factor = 6.5165/ft For 8"Column × 3" Tube × 1- "16" Shaft $C_1 = 6.62510$ $C_2 = 24.40462$ $C_3 = 16.07294$

Stretch= (0.74)(0.682) [6.5(6.62510) - 24.40462 + (16.07294) (1-1/2 (0.682)) = 0.4755in

Required Lateral = Stretch + Impeller Clearance + Assembly Loss

Required Lateral = 0.4755 in + 0.125 in + 0.125 in = 0.7255 in

Use 0.75in Minimum Required Le

Max. Available Lateral = 0.812 in OK

Motor Bearing Load

Motor Bearing Load = Impeller Thrust + Dead Weight

Motor Bearing Load = (K)HL)(SG) + (Shaft Weight perft.) (Setting) + (Impeller Weight) (# of Impellers)

Motor Bearing Load = (6.5165/47)(7404) (1.0) + (7.6165/41)(6824) + (13.8165) (8 stages) = 10,103.6165 @ Shut (

Motor Bearing Load = (6.5165/ff) (603ff) (1.0) + (7.6165/ff) (682ff) + (13.8165) (85 tages) = 9,213.1 lbs @ Design Condition

Motor Sizing

Maximum HP on design pump curve = 92.8 HP HP at operating point \Rightarrow HP = $\frac{(GPM)(TDH)}{(3960)(Fump EFF)}$ $\frac{(450gpm)(603FH)}{(3960)(Fump EFF)}$ $\frac{(603FH)}{(603FH)}$ $\frac{(603FH)}{(603FH)}$

1-1/6" Lineshaft Mechanical Friction Loss HP/100ft = 1.40 HP = 1.40 HP 68aft = 9.548HP 100ft

Thrust Bearing Friction Loss in HP HP= Total Thrust × RPM × 0.0075 = (10,103.6 lbs) (1800 rpm)(0.0075) = 1.36 HP 100,000

Maximum Required HP = 92.8 + 9.548+ 1.36 = 103.7 HP

Select 100HP VHS motor Premium Efficiency

Motor Bearing Sizing.

US Notor 100HP VHS WPI Premium Efficiency motor normal bearing down thrust capacity = 6700165

Extra High Thrust (175%) bearing capacity = (175%) (6700165) = 11,725165

Maximum bearing load = 10,103.6165 < 11,725165

Use Extra High Thrust (175%) Bearings

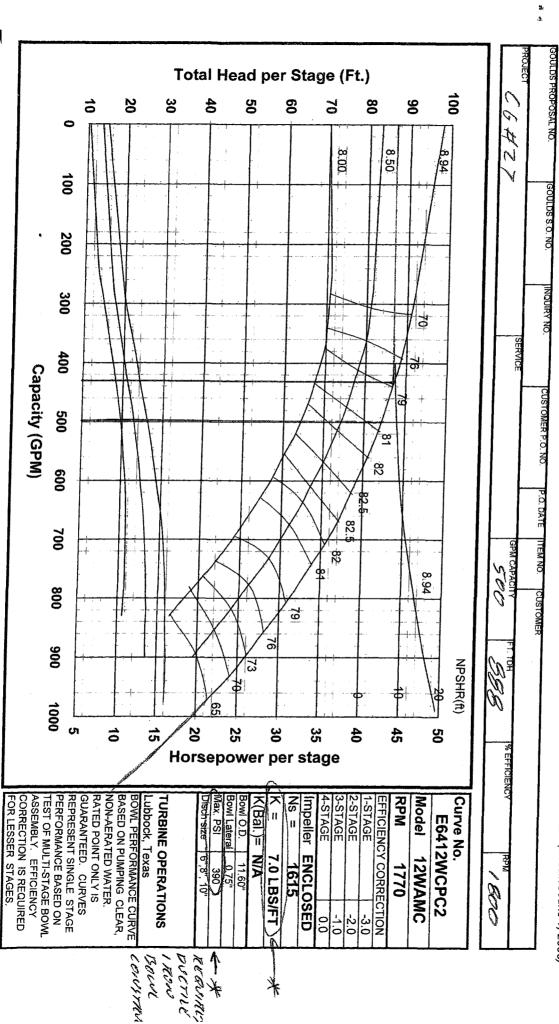


CXISTING TOWN

Turbine

Goulds Pumps

Model 12WANC (Effective June 1, 2006)



MGOULDS PUMPS

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C12WALC2 January, 2009

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Engineered for life



PROPOSEL



Pump

Size: SC12C (8 stage)

Type: VERTTURBINE Synch speed: 1800 rpm

Curve:

Specific Speeds:

Dimensions:

Vertical Turbine:

Suction: 6 in Discharge: 6 in

Impeller:

Ns: 1591

Nss: ---

Speed: 1770 rpm Dia: 9.325 in

Bowl size: 12 in Max lateral: 0.812 in Thrust K factor: 6.5 ib/ft

Pump Limits:

Temperature: ---Pressure: 254 psi g Sphere size: 0.656 in Power: ---Eve area: --- Search Criteria:

Flow: 450 US gpm

Head: 585 ft

Fluid

Water

SG: 1

Viscosity: 1.105 cP

Temperature: 60 °F

Vapor pressure: 0.2563 psi a Atm pressure: 11.25 psi a

NPSHa: ---

Motor

Standard: US Enclosure: TYPE 1 Size: 100 hp

Speed: 1800 Frame: ----

Sizing criteria: Max Power on Design Curve

Pump Selection Warnings:

Pump shutoff dP exceeds limit for the pump.

---- Data Point ---

Flow: Head: 450 US gpm 603 ft

Eff:

84.3% 81.1 hp

Power: NPSHr:

7.42 ft

---- Design Curve ----740 ft

Shutoff head:

Shutoff dP: 320 psi

Min flow:

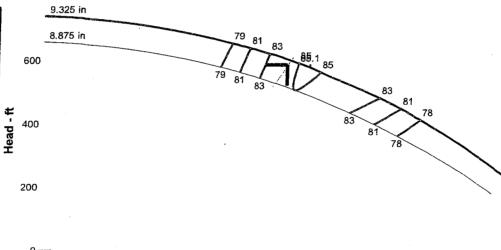
BÉP: 85.1% @ 491 US gpm

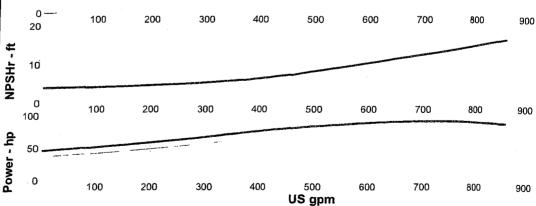
NOL power:

92.8 hp @ 695 US gpm

⇒ Max Curve --

92.8 hp @ 695 US gpm





Discharge size also available in 8".

errormance E	ainarinis.	STORY SERVED			
Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
540	1770	541	84.5	86.9	9.32
450	1770	603	84.3	81.1	7.42
360	1770	648	79.8	73.7	6.1
270	1770	673	61.5	66.7	5.53
180	1770	695	41	60.1	5.02

CASA GRANDE #27 – CASA GRANDE, AZ EQUIPMENT SPECIFICATIONS

Existing Well Information

Location:

Southwest of McCartney Rd. & Evans Rd.

Drilled by:

Zim Industries - 1998

Casing:

18" x .312 Roscoe Moss Copper Bearing Casing from 0'-1110'(bottom) with .070

Slot Ful-Flo perforations from 550'-670', 710'-790', and 830'-1090'

Pump:

Special Conditions

Goulds 12RAMC 11-stage 1800 RPM bowl assembly

Motor:

U.S. Electrical Motor 200 HP VHS 480V 3-phase motor 445TPA Frame

Column, Tubing, and Shaft: 8"x3"x1-11/16" Column, Tubing, and Shaft

Column, Luoling, and Shart. 8 x3 x1-11/10 Column, Luoling, and Shart

• Existing 200 HP VHS motor to be kept by Arizona Water Company and placed into inventory.

• All scrap materials, including those removed from the well, are to be removed from the well site and disposed of by the contractor.

• Re-use existing 1/4" SS air line.

Design Conditions

450 GPM @ 615' TDH. Pump setting 680 ft.

Equipment to be Furnished and Installed by Pump Company

- One Simflo SC12C 8-stage 1800 RPM bowl assembly (9.325" full trim impeller, 0.75" minimum lateral required, pump curve attached) or alternate with Arizona Water Company Engineering approval. Please provide alternative bowl assembly as a separate alternative in addition to the specified bowl assembly. Please include pump curve and required supporting information listed below for all alternative bowl assemblies.
- Video Well with downward and side scan video. Provide well video log and DVD copy.
- Brush and Bail well using cable tool rig if required.
- All miscellaneous bandits, buckles, straps, etc.
- All material subject to Arizona Water Company Standard Specifications (enclosed) except as noted.

Approved 125-HP VHS Motor Assemblies

U.S. Motors Emerson GE

- Motor shall be vertical hollow-shaft, squirrel cage, induction type, wired for three phase, 460 volts, 60 hertz current and shall comply with applicable NEMA Standards, premium efficiency.
- Motor shall be Class B design with Class F insulation. Motor shall have all copper windings.
- Motor shall be designed for continuous duty under rated full-load condition with a service factor of 1.15. Motor shall be capable of driving the pump continuously over the complete head-capacity range without the load exceeding the nameplate horsepower of the motor.
- Motor shall have weather protected NEMA WP-1 enclosures with stainless steel bird and rodent screens.

- Thrust bearings on the motor shall contain heavy-duty oil-lubricated type. Means shall be provided for visual inspection of the oil level while the motor is operating. Motors shall be filled with manufactures recommended oil.
- Thrust bearings shall be of ample capacity to carry the maximum hydraulic and mechanical thrust conditions encountered during pumping with an ample safety factory. The bearings shall be sized for a minimum 50,000 hour life when the pump is operating at +/- 25% of the max speed of rotation.
- The pump manufacture shall coordinate his design to properly mount the electric motor, make the shaft connection, and provide thrust values and other related information to the motor manufacturer.

Bowl Assembly Construction Materials

- 1. No left hand to right hand adaptations will be allowed for the oil tube assembly
- 2. No invoice will be accepted for payment unless accompanied by a "complete" installed pump equipment data sheet
- 3. Alternate bowl assemblies will be considered subject to final approval by Arizona Water Company's Engineering department

Included with Each Bid Should be a List Including:

Maximum Bhp
Operating Bhp
Overall efficiency at design conditions
Total down thrust at design conditions
Maximum down thrust throughout total pump range
Differential stretch at design condition
Maximum differential stretch
Allowable lateral for bowl assembly
Provide thrust rating for 125-HP VHS bearing assembly (lbs.)



CONTRACT

F-3-12-5

CONTRACTOR	Layne Christensen Company	DATE OF CONTRACT:	December 29, 2009
Address:	12030 E. Riggs Road	SYSTEM:	Casa Grande
	Chandler, AZ 85249-3701	W.A. #:	1-4620
DESCRIPTION OF WORK:	Pull and replace pump and motor, install pump assembly, video well, provide misc buckles, bandits and straps, brus and bail with cable tool rig as per attached proposal dated November 5, 2009	WORK SHALL BE COMPLETED ON OR BEFORE 30 CALENDAR DAYS AFTER COMMENCEMENT NOTICE IS ISSUED.	
		(Se	ee Paragraph 4, below).
		TOTAL (COST g taxes): \$15,135.00

THIS CONTRACT is made by and between ARIZONA WATER COMPANY, an Arizona corporation, (hereinafter referred to as the "Company"), and the CONTRACTOR named above.

- 1. The Contractor hereby certifies that it has read the Company's most recent *General Conditions of Contract* (copy attached), Construction Specifications and Standard Specification Drawings ("AWC Specifications") and related construction drawings, and understands that all provisions of said AWC Specifications, and related construction drawings, apply to work covered under this Contract, and which, by this reference, are incorporated herein.
- 2. The Contractor agrees, as an independent contractor, to furnish all of the labor, tools and certain materials required to perform the work described above for the Company, in accordance with the General Conditions of Contract and related construction drawings.
- The Company agrees to furnish to the Contractor, without any cost to Contractor, certain equipment and materials necessary to be used or expended in the performance of said work, as follows: NONE.
- 4. Work shall not commence upon this Contract until a written Commencement Notice has been given to the Contractor by the Company. In the event the Commencement Notice is not given to the Contractor by the Company within ninety (90) calendar days from the date of this Contract, the Contractor has the option to cancel the Contract by giving written notice of cancellation to the Company.

Upon the satisfactory completion of the work within the Contract time limit, the Company agrees to pay, in cash, to the Contractor the total cost of the work, including all taxes.

SPECIAL CONDITIONS:

ARIZONA WATER COMPANY	LAYNE CHRISTENSEN COMPANY
By: Audel J. Hall	By: David A Para o
Andrew J. Haas, ZT Title: Engineer afh	Title: ACCOUNT MANAGER

PROPOSAL

INCLUDING LABOR AND MATERIALS

In response to the Invitation To Bid from Arizona Water Company (the "Company"), and in accordance with the Company's ast recent General Conditions of Contract (copy attached), Construction Specifications and Standard Specification Drawings (the "AWC Specifications") thereto, and all applicable plans, the undersigned Contractor hereby proposes and agrees to furnish and to do everything required by the terms and conditions of the Company's standard construction contract (the "Contract") for the construction of CG #27 at Casa Grande, Arizona, at the following unit and/or total prices for the work described:

<u>ITEM</u>	<u>WORK</u>	QUANTITY & UNIT PRICE	TOTAL
1.	Labor to pull and replace pump and motor	Lot.	7408.00
2.	Simflo SC12C 8-stage 1800rpm pump assembly	l ea.	6450.00
3.	Video Well w/ side scan, video log, and DVD copy	1 ea.	500.00
4.	Misc. buckles, bandits, and straps	Lot.	125.00
5.	Brush and Bail with cable tool rig (Price Only)	per hr 135.00	XXXXXXXX
6.	8" Column Pipe (Price Only)	per lf 500.00	XXXXXXXX
7.	3" x 1-11/16" Oil Tube and Lineshaft (Price Only)	per lf 656.00	XXXXXXXX
8.	1/4"SS Air Line (Price Only)	690 lf 863. DO	XXXXXXXX
9.	US Motor 125HP VHS 480V 3-phase, premium efficiency, 175% capacity thrust bearings (Price Only)	1 ea. 8,176.25	XXXXXXXX
	All mobilization charges to be included in totals. 100% Performance & Payment Bonds are required.	Subtotal	14 483 00
	All scrap materials to be disposed of by contractor.	Taxes	572.00
	100% Perfo	Subtotal rmance & Payment Bonds%	15055.00 80.00
		Total	15,135.0C

The prices submitted in this Proposal are good for ninety (90) calendar days from the date of this Proposal. The work shall be completed within Thirty (30) calendar days after the Commencement Notice is issued.

At the sole discretion of the Company, the 100% performance and payment bonds may not be required.

The Contractor represents that this Proposal, in all respects, is fair and honest, is submitted in good faith, and is not submitted in collusion with any other company, firm or individual. The Contractor represents that it is not in debt or default to the Company. The Contractor further represents that it has visited the site of the work and is knowledgeable of its environment. Within five (5) days of the Contractor receiving the Contract for the performance of this work, the Contractor will execute the Contract and return it to the appropriate Company office.

The Contractor agrees to provide the Company with a current Certificate of Insurance with coverage in the minimum amounts required by the General Conditions of Contract, before this Proposal will be accepted for consideration. It is understood and agreed that, if a claim is received by the Company in connection with the work performed under Contract with the Company, the claim will be referred to the insurance carriers of the Contractor and the Company in accordance with the General Conditions of Contract.

referred to the insurance carriers of the Contractor and the Company in accordance with the General Conditions of Contract.

The Contractor is the holder of Arizona State Contractor's License No. 071734, Classification A D4

Contractor's Complete Business Address	
Layne Christensen	Co.
12030 E. Riggs Ro	
Chandler, AZ 8524	9

Layne Christensen Co
Contractor
By: 1 Dugo A Passe
Title: ACCOUNT MANAGER
Date:

CONSTRUCTION SPECIFICATIONS: E-8-1

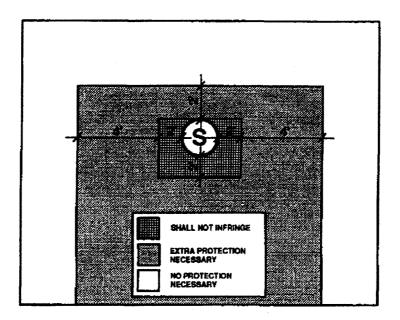
ERRATA 2010

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



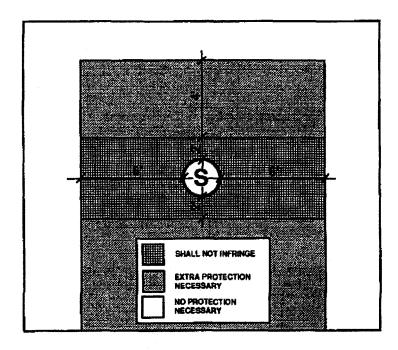
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

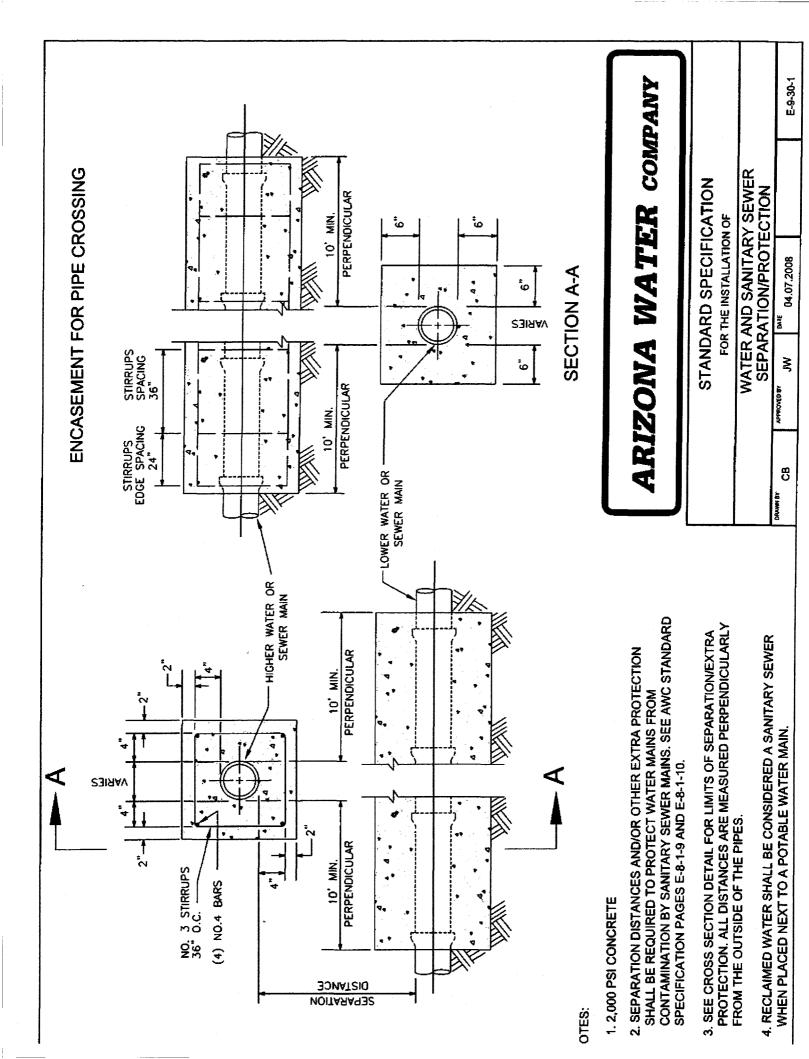
- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.

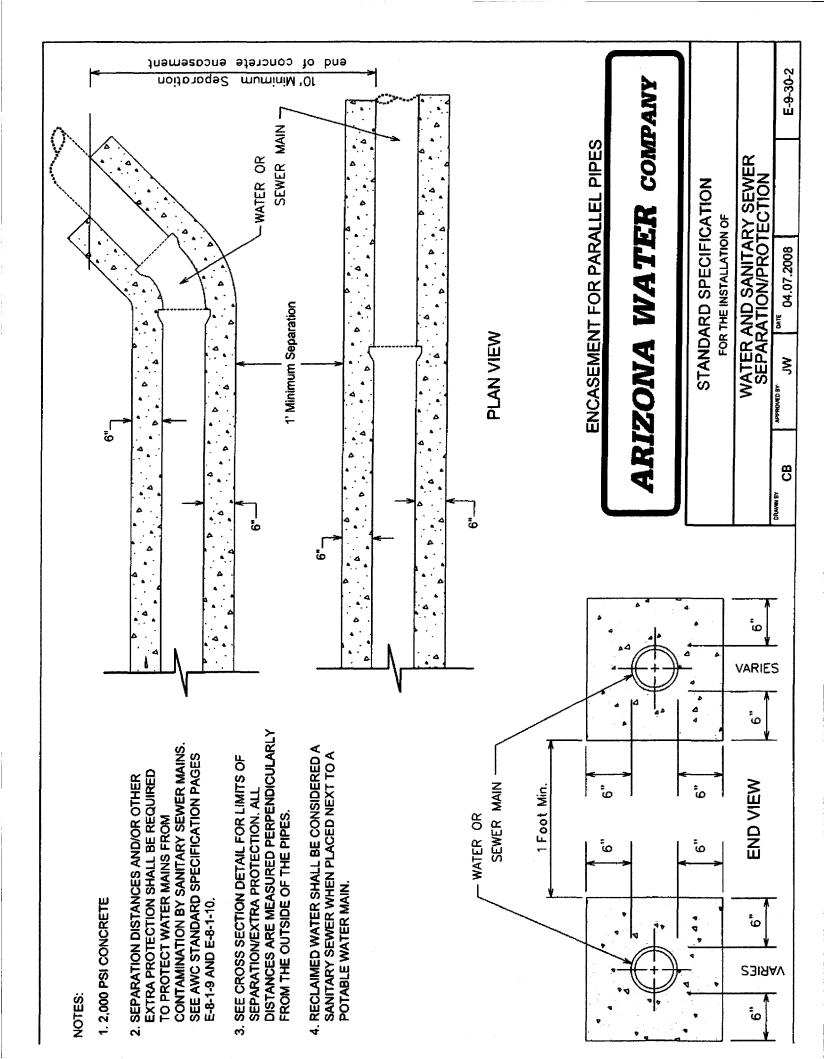


STANDARD SPECIFICATION DRAWINGS: E-9-1

ERRATA 2010

E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
E-9-22	INSTALLATION OF COLUMN PIPE, OIL TUBE AND LINE SHAFT
E-9-23	HOT TAP AND JUMPER METER CONNECTION
E-9-24	INSTALLATION OF TYPICAL WATER LINE ENCASEMENT
E-9-25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION
E-9-30 - 1	WATER AND SANITARY SEWER SEPARATION/PROTECTION PERPENDICULAR
E-9-30-2	WATER AND SANITARY SEWER SEPARATION/PROTECTION - PARALLEL





3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan Clow Valve Company 8121 N. 10th Avenue Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To: Subject: Jim Ryan - Clow Valve Company

Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

October 19, 2010

Page 2

We look forward to developing a long-term relationship with you and the Clow products. If I can be of any assistance, please call me.

Very truly yours,

Judica K Slusses
Fredrick K. Schneider

Vice President - Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger
US Pipe - Waterworks Marketing Consultants
34522 N. Scottsdale Road
Scottsdale, Arizona 85226

Re: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron <u>includes</u> 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USPI
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Tony Geiger - US Pipe

November 24, 2010

Subject:

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,

redrick K. Schneider

Vice President - Engineering

luca & Slund

afh

VIA EMAIL: TGEIGER4@COX.NET



SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

GENERAL CONDITIONS OF CONTRACT: E-4-1

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Invitation to Bid</u>. The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid.
- F. <u>Contract</u>. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. <u>Inspector</u>. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. ?40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons. and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage. destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law. ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all deslabor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. <u>LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME</u>

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

ARIZONA WATER COMPANY

CONSTRUCTION SPECIFICATIONS: E-8-1

ARIZONA WATER COMPANY

E-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Contract</u>. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

- Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- c. Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- a. A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5½" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color yellow, drain open, open direction left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 4" Pumper Nozzle, NST and 2 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)
 - (2) 1 4½" Pumper Nozzle, NST and 2 2½ " Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) $1 4\frac{1}{2}$ " Pumper Nozzle, NST and $2 2\frac{1}{2}$ " Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 2½" Hose Nozzles, NPT (Miami only.)

- (5) $1 3\frac{1}{2}$ " Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and $2 2\frac{1}{2}$ " Hose Nozzle, NST (Superior only.)
- b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x 3/4" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12"; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)
- I. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.
- m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.
- n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8 " x ¾" x ¾" for a ¾" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x ¾" x ¾" for a ¾" service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: 3/4", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes 3/4", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".
 - Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).
- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
 - (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
 - (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knock outs and adjustable frame.
 - (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x ¾" x 7", 5/8 x ¾" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Specification E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

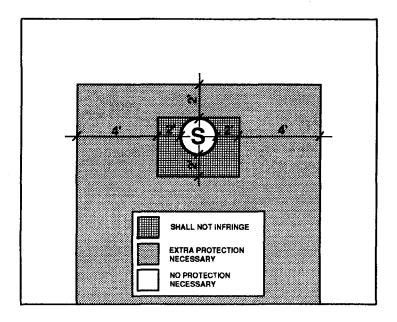
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



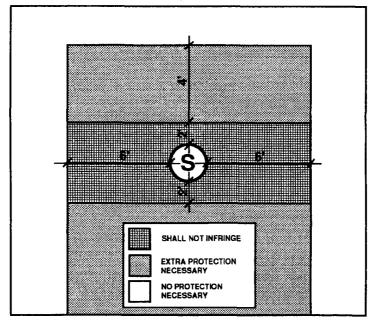
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - 2. Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°, 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS: E-9-1

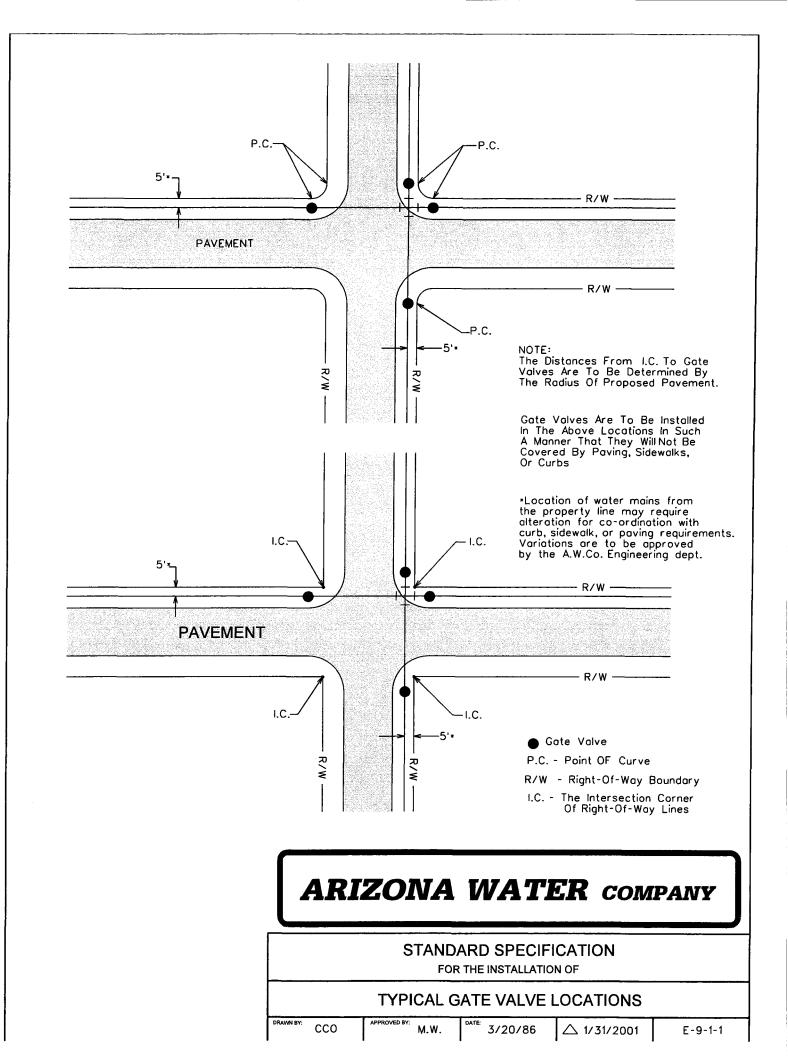
ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS

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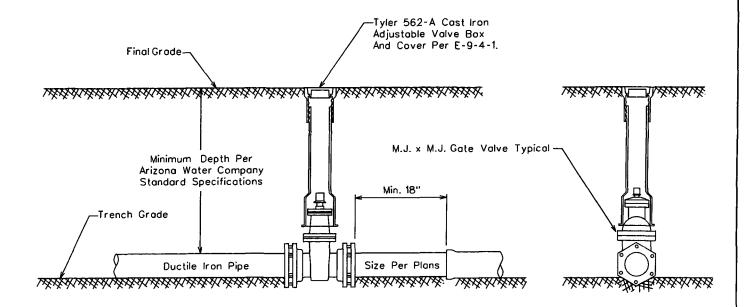


FOR 6" THROUGH 12" GATE VALVES

Mueller Resiliant Wedge Gate Volves Catalog Number A-2360-__ ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2361-__ ANSI/AWWA C509 Compliant



All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

E-9-2-1

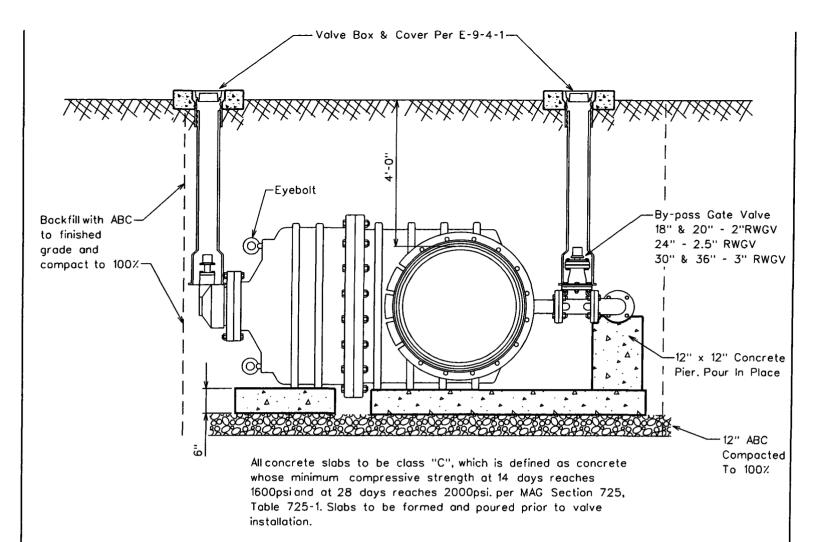
ARIZONA WATER COMPANY

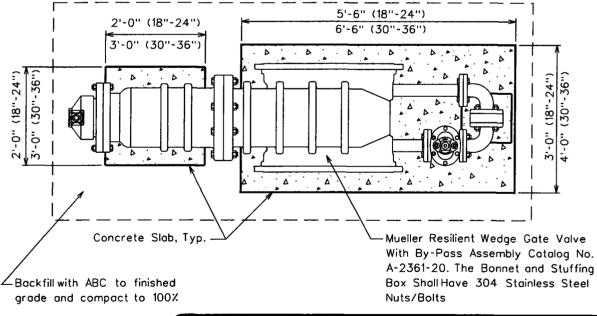
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VERTICAL GATE VALVES

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1986 \(\triangle 08.23.2006 \)





All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

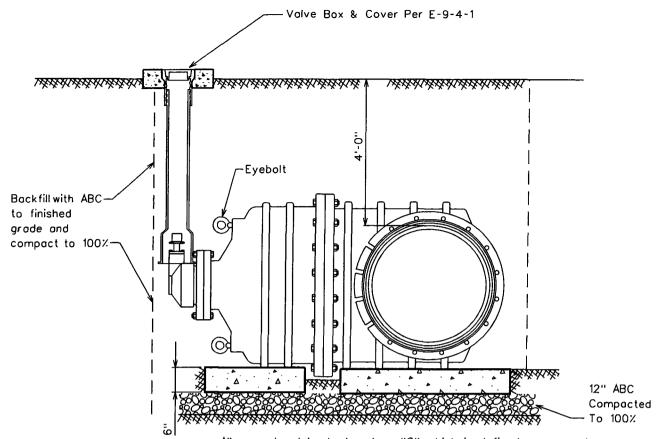
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

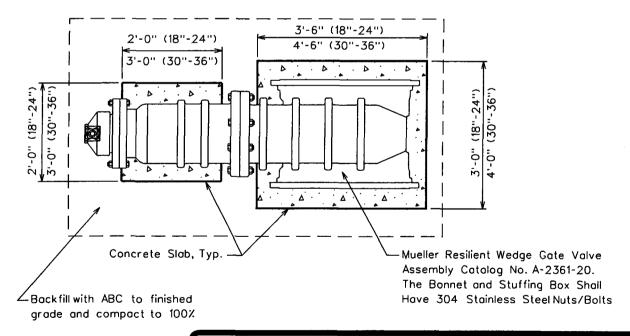
FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES
WITH BY-PASS FOR 18" AND LARGER VALVES

DRAWN BY: APPROVED BY: DATE:



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

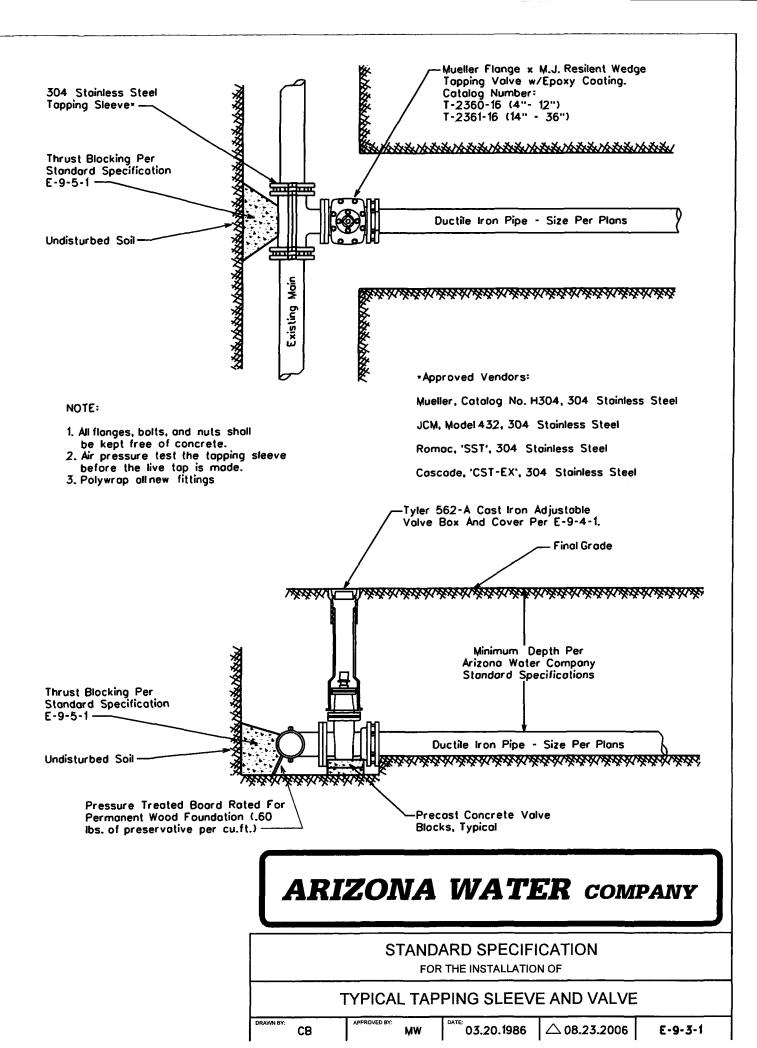
STANDARD SPECIFICATION

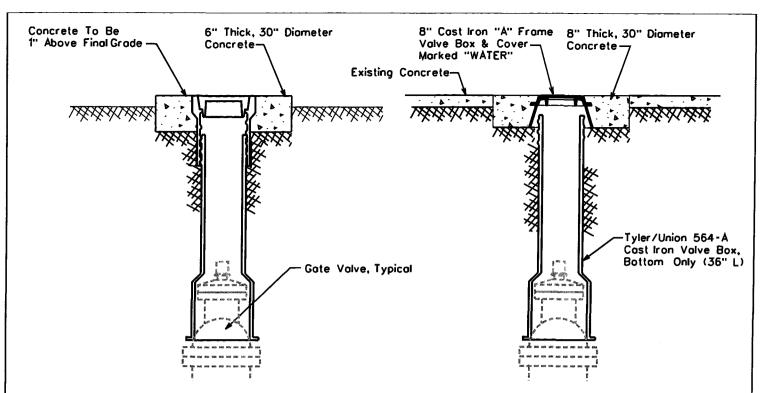
FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

DRAWN BY: APPROVED BY:

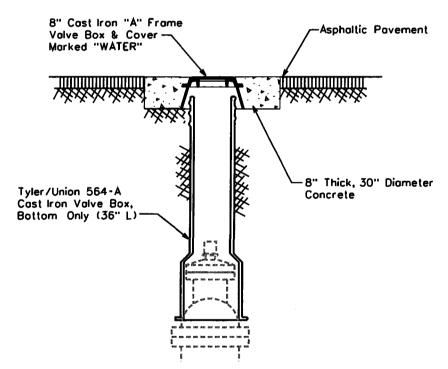
DATE:





NON-VEHICULAR VALVE BOX

CONCRETE VALVE BOX For Areas Subject To Vehicular Traffic



NOTE:

- 1. The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
- 2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"

For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"

- 3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
- 4. Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1,

ASPHALT VALVE BOX For Areas Subject To Vehicular Traffic

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

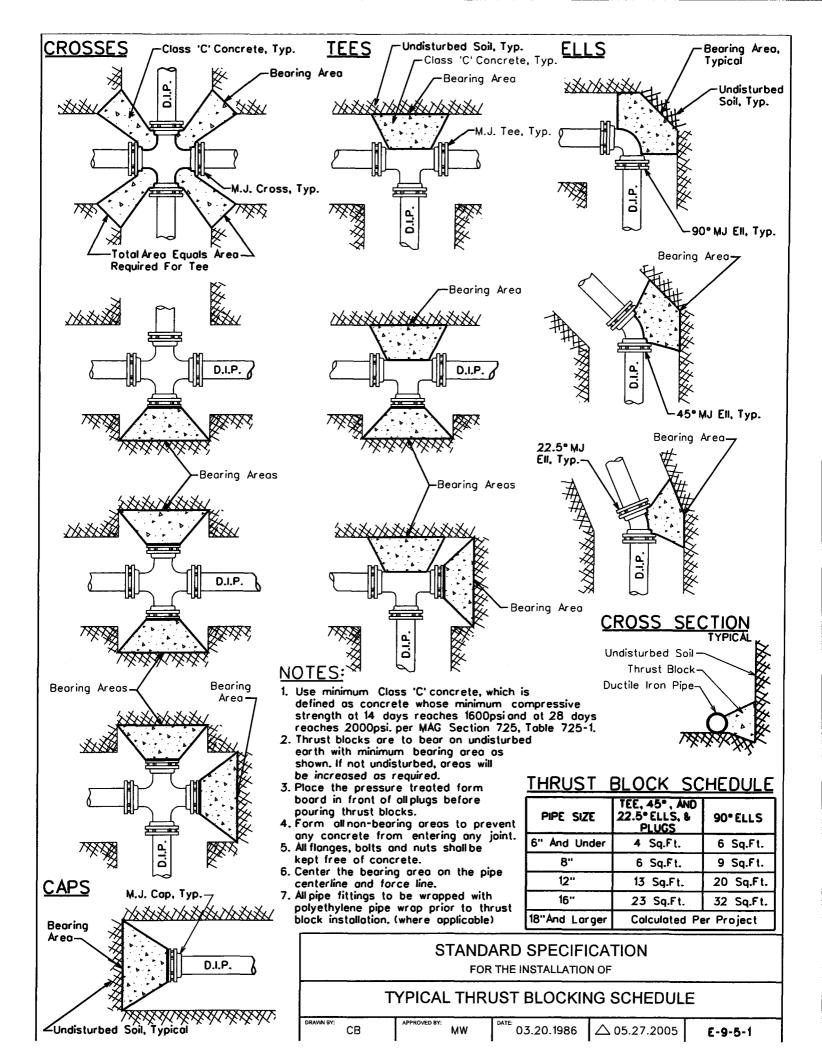
FOR THE INSTALLATION OF

TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC

CB

03.20.1986 🛆 8.24.2006

E-9-4-1

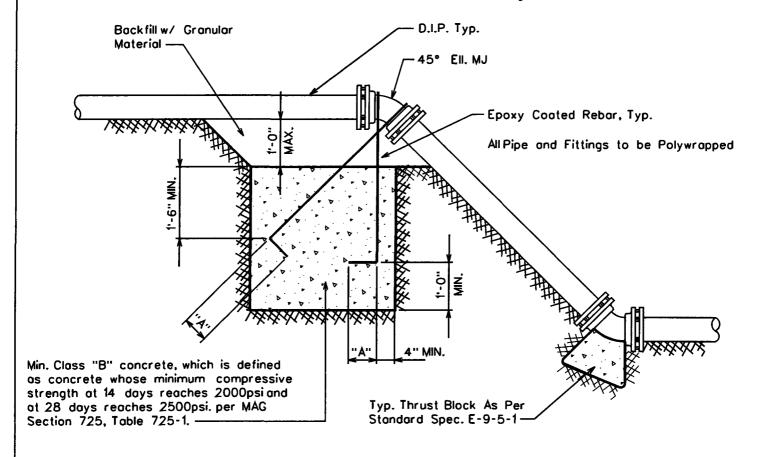


NOTES

- Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
- 2. Bars To Have 90° Hook © Their Ends, As Per Table Below.

Pipe Size	Min. Bar Size	"A" Dimension (Hook)	 Min. Block Dimension (WxHxL)
6"	• 6	6"	3'×3'×3'
8"	•6	9"	4'x3'x4'
12"	•8	9"	5'x4'x5'
16''	•9	12"	7'x6'x7'

* For 125 P.S.I. Working Pressure



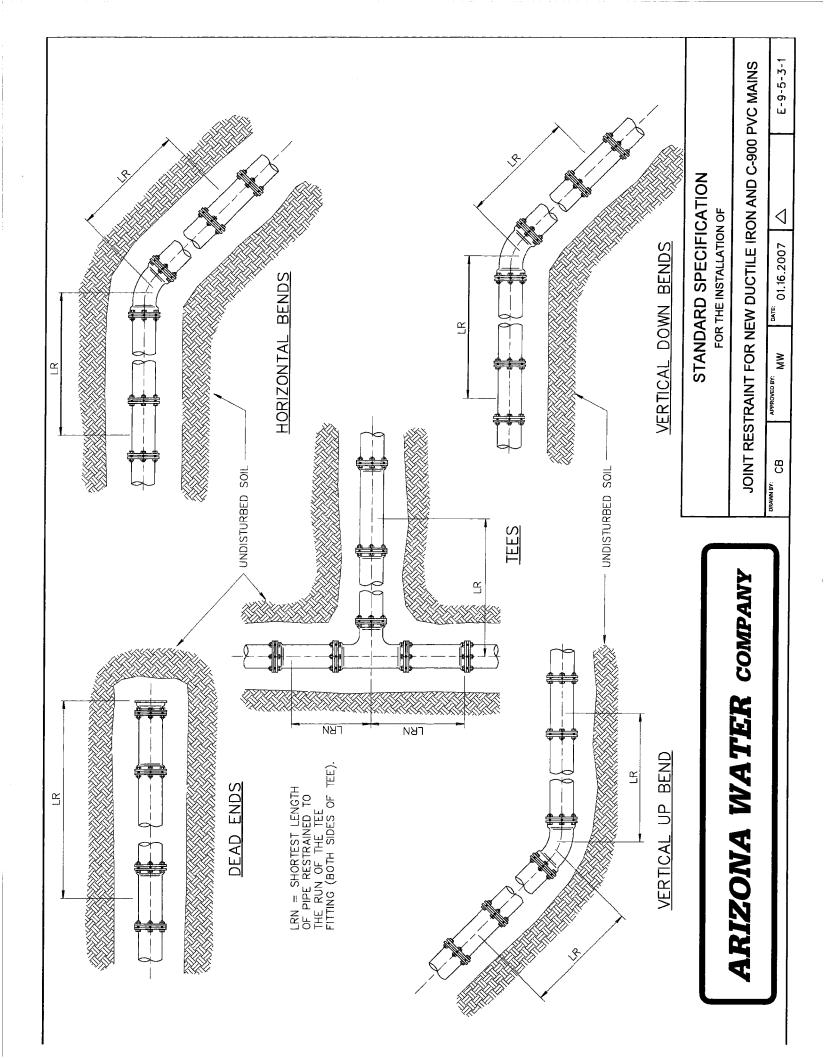
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

THRUST BLOCK FOR VERTICAL BENDS

JPK	APPROVED BY: MJW	7-5-96	△ 01.16.2007	E-9-5-2



			NON'S)		3,	V V	†	200	09	000	81	65		40	115	126	147	
		45' BEND FITTINGS 22-1/2' BEND FITTINGS			DEIND	23	ŭ		:0	α		ñ	10	11	- 3	12	14	16	2
		22-1/2° BE			מרוזט	9	σ		=	14	16	٥	18	21	120	7.2	25	29	
N PIPE	VERTICAL OFFSETS	FITTINGS	-	RFIND		7	10	1 0	2	16	2	20	21	24	1 6	97	28	33	
TILE IRO	ERTICAL	45° BEND	17/4/01	BF ND		1.5	18	70	44	29	72	- 0	38	4.3	100	ç	52	61	
RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE	>	FITTINGS	<u>a</u>	BEND	Ç	0	25	62	70	38	45		20	57	62	700	68	79	
		90° BEND	NWCC.	BEND	2.4	10	44	α		69	81		3.5	104	115		126	147	
ENGTHS	(IEES		I RN=10'	α	0	20	34		45	57	ä	00	78	06	5	001	121	
AINED 1		ᆜ		I RN=0	30	30	43	56		68	80	04	5	103	113	10.4	671	145	
RESTR	0	DEINDS		22-1/2.	4		2	ဖ	c	Ω	6	10	2 :	11	12	1.7	+	16	
	Sainta Introvidor			45.	7		10	13	4	۵	19	21	7	24	26	00	07	33	
	719011	711011		.06	18		75	32	20	000	45	5.	5 2	2/	62	X Y		79	
	NOMINAL	SIZE	1101	INCHES	4	0	٥	000	+	2	12	14		٥	9	20		74	

						_	7	_		+	,	_	_	_	_	_	_		
		DEAD	CINE	LINDS		72	100	701	133	0 10	601	187	211	+17	241	266	000	787	340
WRAP		22-1/2 BEND FITTINGS		OP Proposition	DENU	വ	7	,	တ	11		13	7,	2	٥١	<u>~</u>	CC	77	22
THS, LR, FOR DUCTILE IRON PIPE WITH POLYETHYLENF WRAP		22-1/2° BEI		DOWN CNIC	DEIND	14	00	20	26	CZ	35	37	42	107	0	53	αú	000	68
POLYET	VERTICAL OFFSETS	45' BEND FITTINGS	-	A CA	מרוזט	-	15	2 (- 3	23	210	7.7	31	72	10	38	41	į	4/
E WITH	/ERTICAL	45° BEND				30	42	1 1	CC	99	12)	83	100		110	121	777	141
NON PIP		SILTINGS	2	BEND		97	36	17	t	26	T C	Co	74	82		30	98	112	2
CTILE IF		90. BEND	NWOO	BEND	1	7/	102	133	2	159	187	ò	214	241	220	007	292	340	010
FOR DU	(IEES		LRN=10,	9	0	47	78		103	131	2	156	183	700	707	233	280	202
4S, LR,	,	<u>-</u>		LRN=0,	08	60	66	130		15/	185		711	238	283	202	289	337	
RESTRAINED LENGTH		BENDS		22-1/2.	יט	1 (,	თ	,	_	13	14	2	9	1,8	2 6	20	22	
AINED	I V L I V C	HORIZONIAL BENDS		45.	11	-	S.	19	7.0	67	27	7.4	70	34	37	5	41	47	
RESTR	710011	אַאַטה		.06	96	32	90	47	FE	20	65	77	+	82	06	5	38	113	
	NOMINAL	777	11.0	INCHES	4	4	o	00	-	2	12	11	+ (16	130	C	707	24	

NOTES:

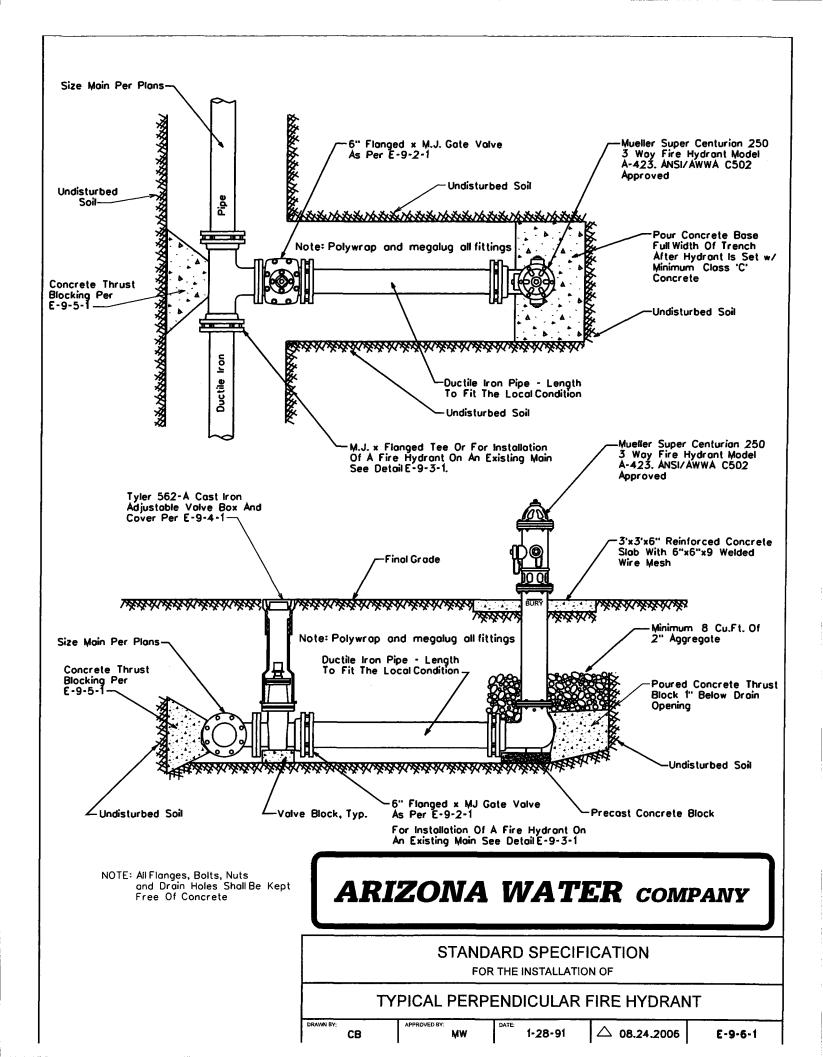
- 1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED. ALL LENGTHS ARE GIVEN IN FEET.
- 2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
- 3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
- 4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

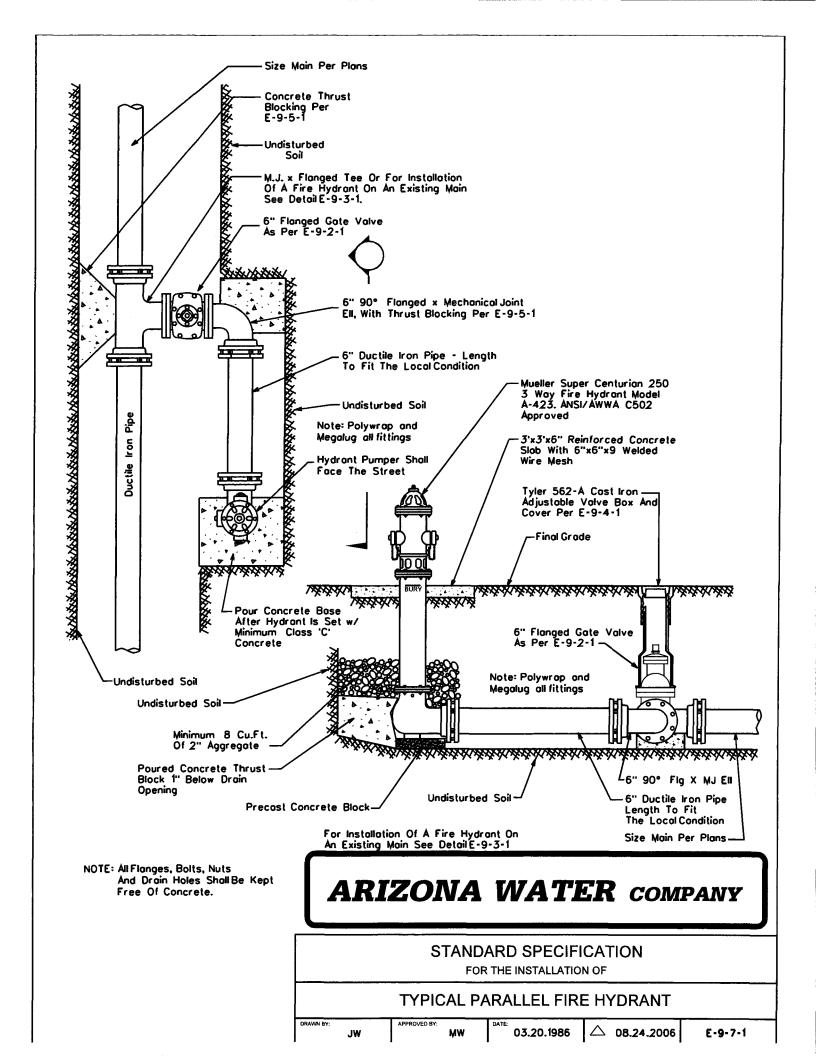
ARIZONA WATER COMPANY

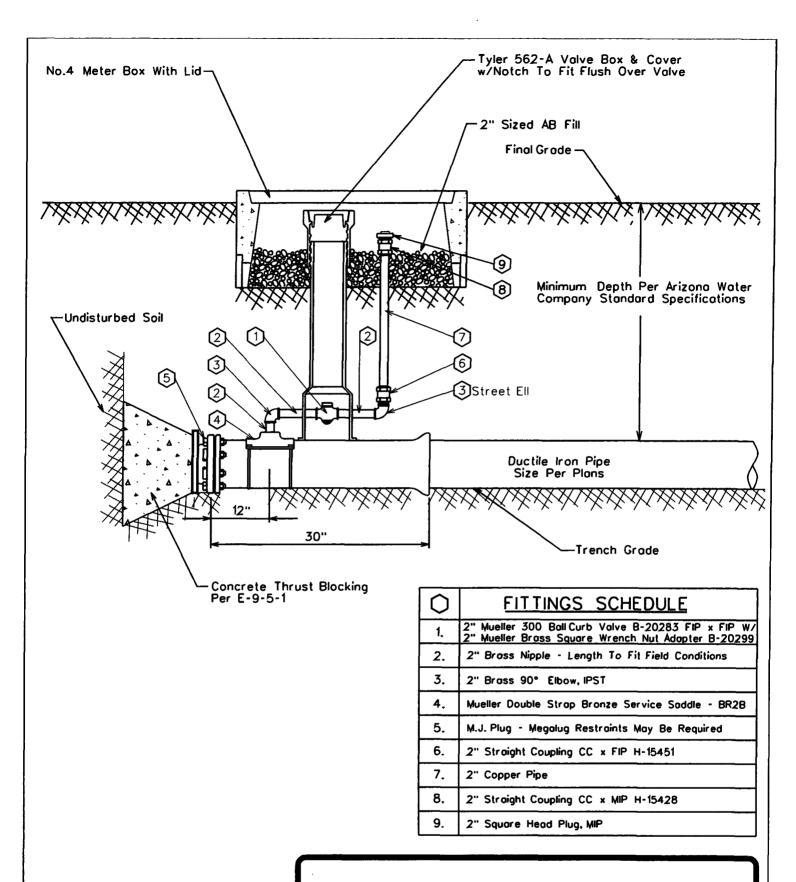
STANDARD SPECIFICATION FOR THE INSTALLATION OF

JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

	F-9-5-3-2	40001
	<	1
DATE	01.16.2007	
APPROVED BY:	₩	
DRAWN BY:	B	

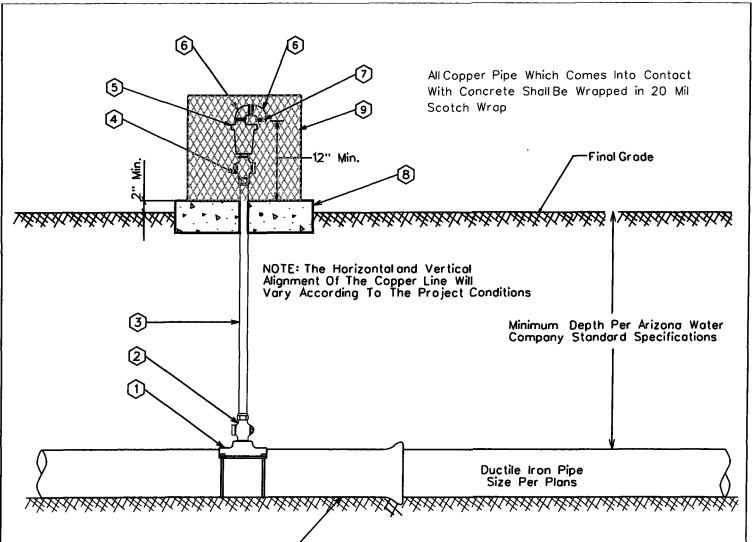






ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF										
	2" BLOWOFF ASSEMBLY									
DRAWN BY: CB	APPROVED BY:	03.20.1986	△ 03.21.2006	E-9-8-1						



GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.

Trench Grade

- 2. The valve shall have a \(\frac{1}{24} \) " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cast iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

\Diamond	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	1/2" Bross Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

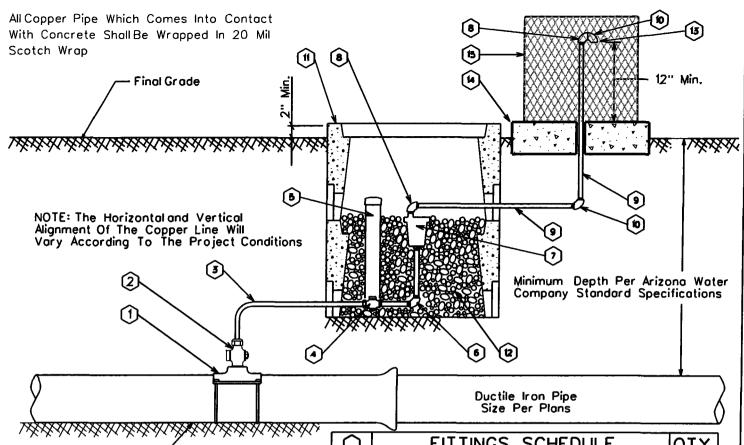
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL AIR RELEASE VALVE

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 \(\triangle 08.24.2006 \) E-9-8-2



GENERAL NOTES:

Trench Grade -

- The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- The valve shall have a ¾ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cost iron body and top flange with stainless steel float and trim.
- The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

0	FITTINGS SCHEDULE	QTY.
1,	Mueller BR2B Bronze Service Saddle - Double Strop	1
2.	1" Mueller B-25008 Toper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Regid
4.	1" Mueller B-25028 IP × Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cap (Loose Fit)	1
6.	1" x 4" Brass Nipple w/90° Elbow	1
7.	Crispin 1" Air Release Valve, Model AR10	1
8.	1/2" Bross Street Elbow	2
9.	½" Galvanized Pipe - Length as req'd	2
10.	1/2" Galvanized 90° Ell	2
11,	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	Ås Req'd
13.	No.16 Wire Mesh Screen (Non-Corrodible)	1
14.	4" Thick Concrete Pad - Class 'C' Concrete	1
15.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan	1

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

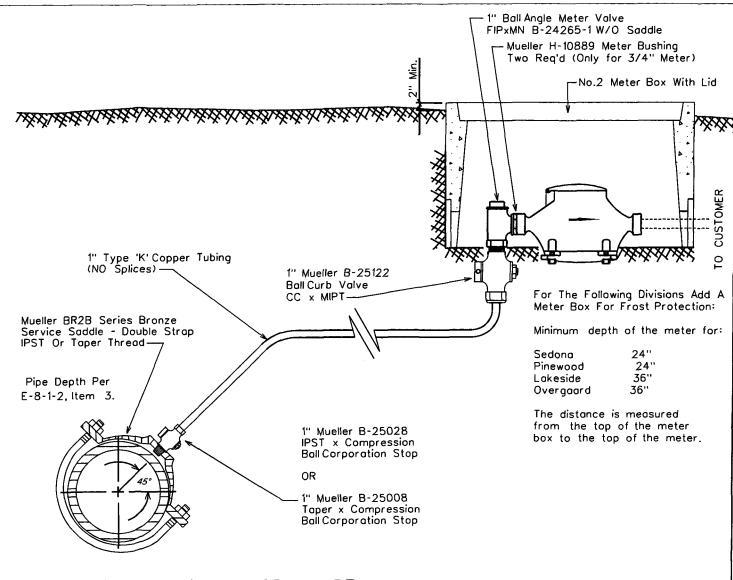
FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

MN BY: OR APPROVED BY: MAN DATE: O.Z. O.O. 100.7 A.O.

DATE: 03.20.1997 \(\triangle 08.24.2006 \)

F-A-8-3



SADDLE TAP TO CA, PVC, OR DIPIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

NOTE: Only the meter is supplied by Arizona Water Company

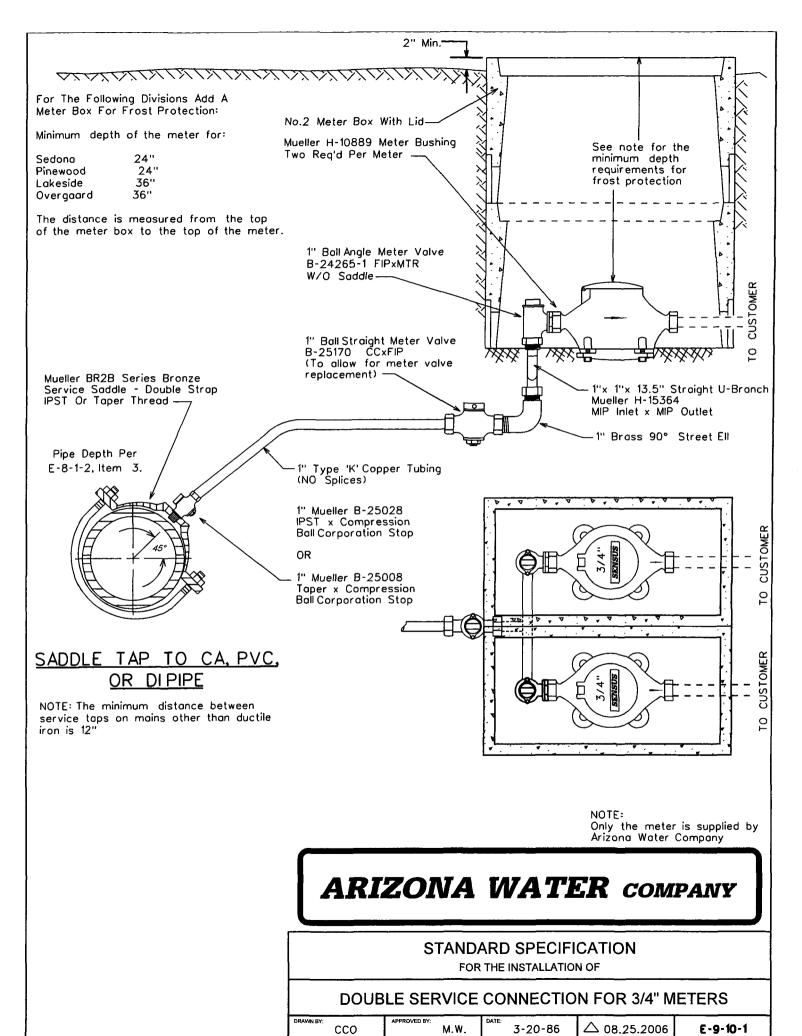
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

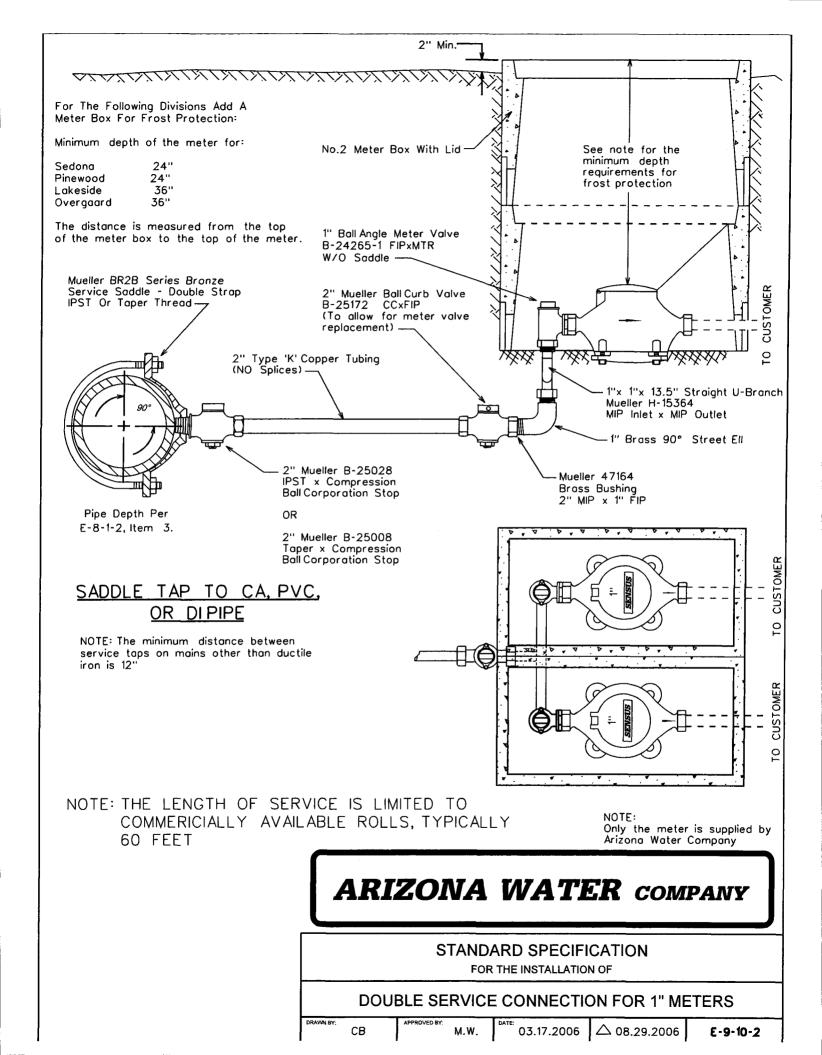
FOR THE INSTALLATION OF

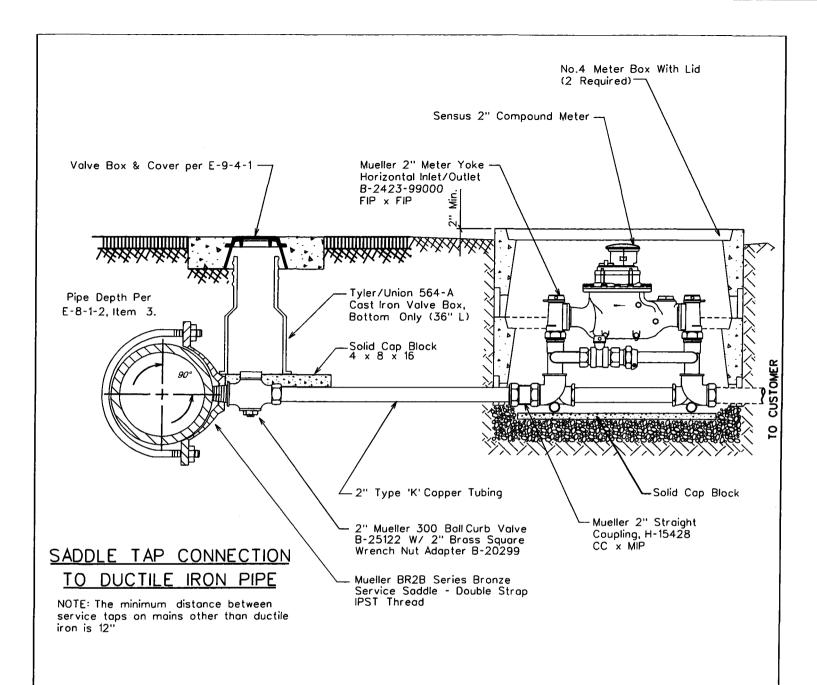
SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

DRAWN BY: CCO APPROVED BY: M.W. DATE: 3/20/86 \(\triangle 03.17.2006 \) E-9-9-1



△ 08.25.2006 E-9-10-1





NOTE: THE LENGTH OF SERVICE IS LIMITED TO COMMERICIALLY AVAILABLE ROLLS, TYPICALLY 60 FEET

NOTE:

Only the meter is supplied by Arizona Water Company

ARIZONA WATER COMPANY

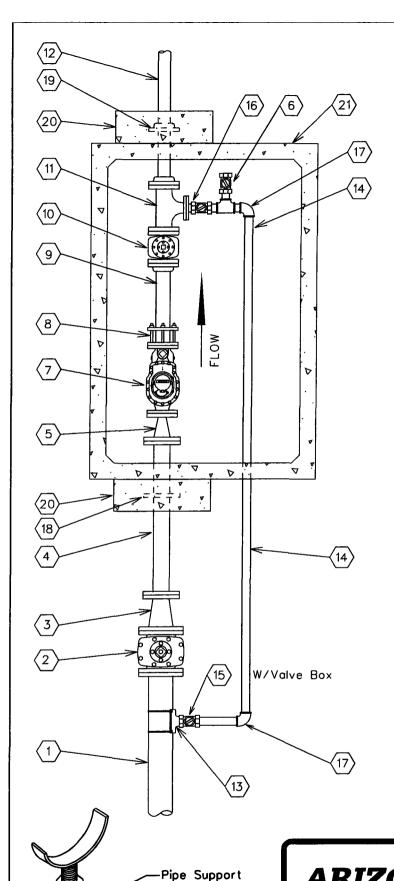
STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL 2" SERVICE CONNECTIONS

JW

3/20/86 \(\triangle 08.29.2006 \)

E-9-11-1



Conc. Block

No.	FITTINGS SCHEDULE					
1.	6" D.I.P.					
2.	6" G.V.B.&C. mj x flng					
3.	6"x4" Reducer flng x mj					
4.	4"x3'-0" D.I.P. Spool flng x pe					
5.	4" x 3" Reducer flng					
6.	2" Test Port					
7.	3" Compound Meter					
8.	3" F.C.A.					
9.	3"x2'-0" D.I. Spool flng x pe					
10.						
11.	3"x2" Flg Tee w/ 2" Companion Flange					
12.	3"x4'-0" D.I. Spool fing x pe					
13.	6"x2" Tapping Saddle					
14.	2" Copper Pipe					
15.	2" Mueller B25122 Ball Valve w/B20299 Nut					
16.	2" Locking Ball Valve (normally closed)					
17.	2" Mueller H-15526 90° Ell CC x CC					
18.	4" Megalug					
19.						
20.	24"x24"x8" Conc. Thrust Block P.I.P.					
21.	575-LA Conc. Vault					

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

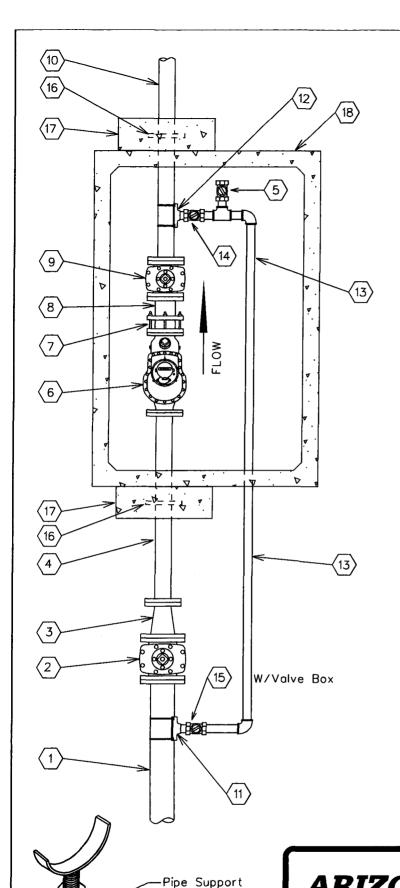
FOR THE INSTALLATION OF

3" COMPOUND METER

AN BY: CCO APPROVED BY: MW DATE: 10/5/1993

10/5/1993 \(\triangle 08.29.2006 \)

E-9-12-1



Conc. Block

No.	FITTINGS SCHEDULE				
1.	6" D.I.P.				
2.	6" G.V.B.&C. mj x flng				
3.	6"x4" Reducer fing x mj				
4.	4"x3'-0" D.I.P. Spool flng x pe				
5.	2" Test Port				
6.	4" Compound Meter				
7.	4" F.C.A.				
8.	4"x1'-0" D.I.P. Spool fing x pe				
9.	4" Gate Valve fing				
10.	4"x4'-0" D.I.P. Spool fing x pe				
11.	6"x2" Tapping Saddle				
12.	4"×2" Tapping Saddle				
13.	2" Copper Pipe				
14.	2" Ball Valve / Locking (Normally Closed)				
15.	2" Mueller B25122 Ball Valve w/B20299 Nut				
16.	4'' Megalug				
17.	24"x24"x8" Conc. Thrust Block P.I.P.				
18.	575-LA Conc. Vault				

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



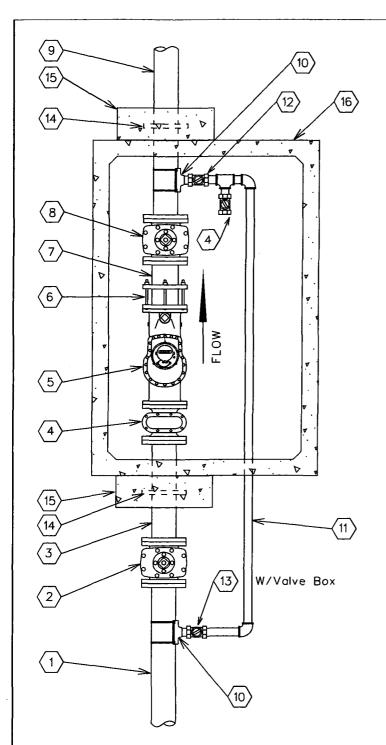
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

4" COMPOUND METER

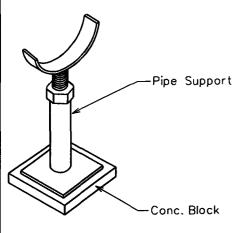
CCO

10/5/1993 △08.29.2006



No.	FITTINGS SCHEDULE					
1.	6" D.I.P.					
2.	6" G.V.B.&C. mj					
3.	6"x 3'-0" D.I.P. Spool flng x pe					
4.	2" Test Port					
5.	6" Compound Meter					
6.	6" F.C.A.					
7.	6"x 1'-0" D.I.P. Spool flng x pe					
8.	6" Gate Valve fing					
9.	6"x 4'-0" D.I.P. Spool flng x pe					
10.	6"x2" Tapping Saddle					
11.	2" Copper Pipe					
12.	2" Ball Valve / Locking (Normally Closed)					
13.	2" Mueller B25122 Ball Valve w/B20299 Nut					
14.	6'' Megalug					
15.	24"x24"x8" Conc. Thrust Block P.I.P.					
16.	575-LA Conc. Vault					

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



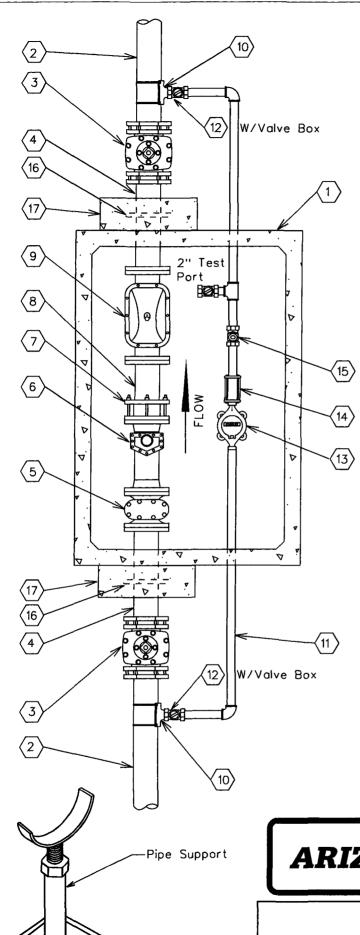
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TOR THE INSTALLATION OF

6" COMPOUND METER

DRAWN BY: CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle 08.29.2006 \) E-9-12-3



-Conc. Block

	T				
No.	FITTINGS SCHEDULE				
1.	575-LA Conc. Vault				
2.	6" D.I.P.				
3.	6" G.V.B.&C. m.j.				
4.	6" x 3'-0" D.I.P. SPool Piece flng x pe				
5.	6" Strainer				
6.	6" Turbo Meter				
7.	6" F.C.A.				
8.	6" × 2'-0" D.I.P. Spool Piece flng x pe				
	(TRIM SPOOL PIECE TO 3x THE PIPE DIA.)				
9.	6" Detector Check				
10.	6"x×N" Tapping Saddle				
11.	∗N" Copper Pipe				
12.	*N" Ball Valve (Locking)				
13.	×N" Meter				
14.	∗N'' Coup. Adapt.				
15.	∗N'' Flapper Check Valve				
16.	6" Megalug				
17.	24"x24"x8" Conc. Thrust Block P.I.P.				

*N - Size To Be determined By A.W.Co.

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
- 6. To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

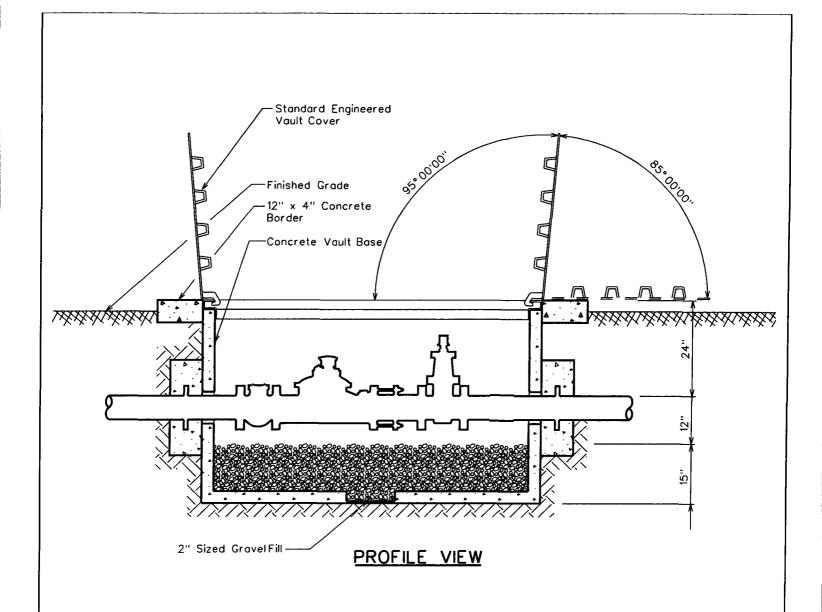
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

E-9-12-4

6" COMPOUND SERVICE

10/05/1993 △08.29.2006 CCO



CONCRETE VAULT & COVER SPECIFICATIONS

Vault - Base No. 575-BL

Cover - Standard Engineered Vault Cover

- . 4874 Aluminum Diamond Plate Cover For Non-Traffic Loading Areas
- . 4874 Galvanized Steel Diamond Plate Cover W/ H-20 Traffic Loading
- Double Torsion Spring Assisted Doors W/ Recessed Hasp & Safety Latches

NOTES

- Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill.
- Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

ARIZONA WATER COMPANY

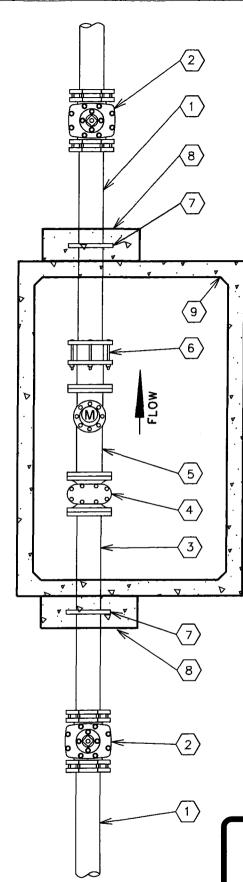
STANDARD SPECIFICATION FOR THE INSTALLATION OF

CONCRETE VAULT

CCO

10/5/1993 🛆 05.17.2001

E-9-12-5



No.	FITTINGS SCHEDULE			
1.	Ductile Iron Pipe			
2.	Gate Valve M.J.			
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)			
4.	Meter Strainer			
5.	Propeller Meter			
6.	Flanged Coupling Adapter			
7.	Megalug Gland (Thrust Anchor)			
8.	Concrete Thrust Block P.I.P.			
9.	Concrete Vault			

- 1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
- 2. Pipe support locations to be determined by field personnel.
- 3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings to are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

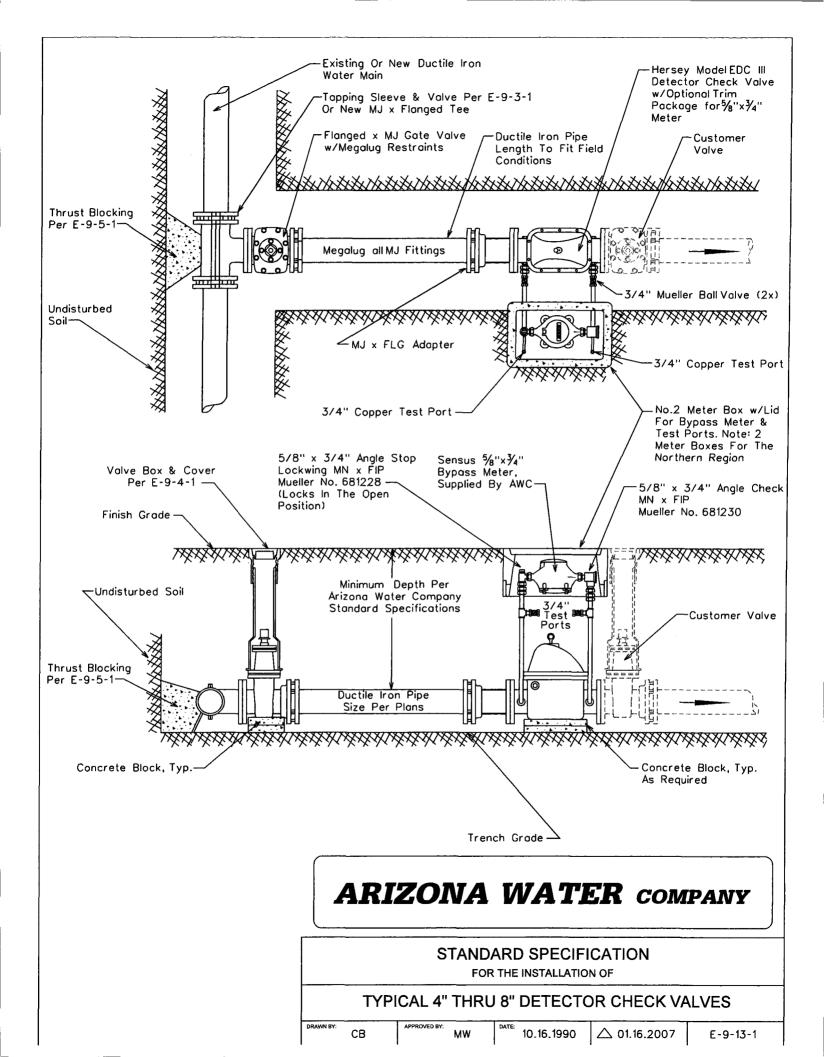
ARIZONA WATER COMPANY

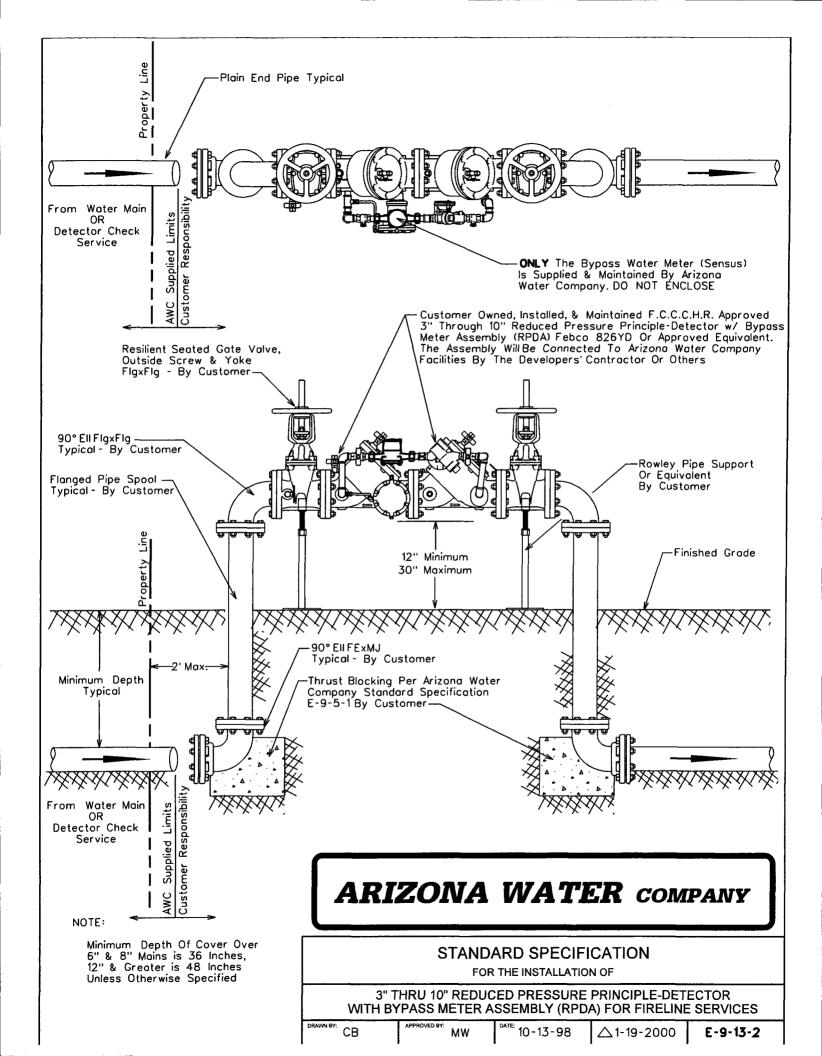
STANDARD SPECIFICATION

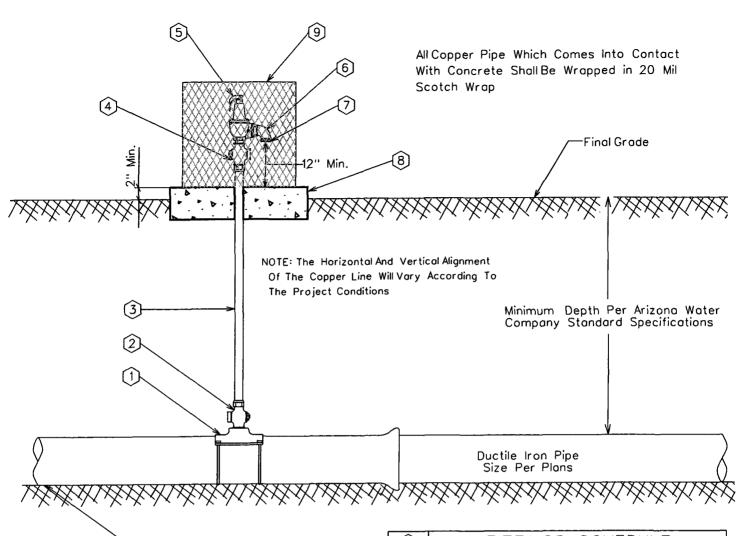
FOR THE INSTALLATION OF

NON-POTABLE PROPELLER METER

DRAWAI BY: JPK APPROVED BY: MW DATE: 7-20-95 \(\triangle \) E-9-12-6







1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.

-Trench Grade

2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psiW/ Bronze Body
6.	2" Bross Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

ARIZONA WATER COMPANY

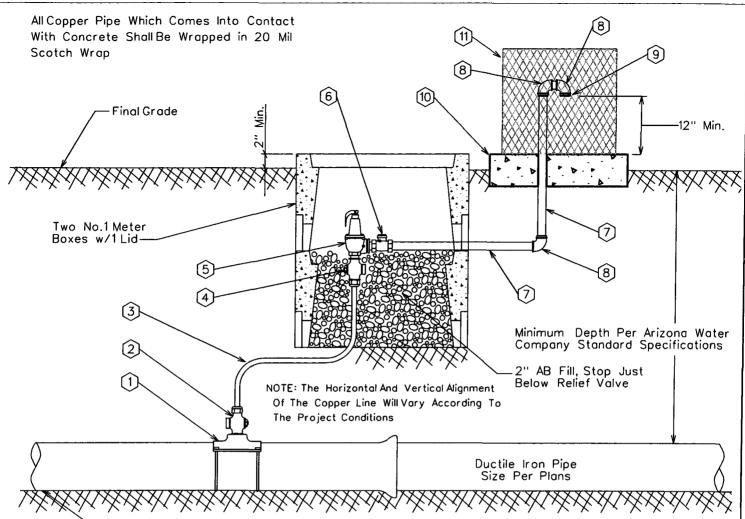
STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

DRAWN BY: CCO

3/20/1986 🛆 08.29.2006

E-9-14-1



-Trench Grade

- 1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
- The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

	<u>FITTINGS SCHEDULE</u>			
1.	Mueller BR2B Bronze Service Saddle - Double Strap			
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop			
3.	" Type 'M' Rigid Copper w/NO Splices - Field Fit			
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop			
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psiW/ Bronze Body			
6.	2" Bronze Check Valve Watts Series CV			
7.	2" Schedule 40 Cut Pipe - Field Fit			
8.	2" Brass Street Elbow			
9.	No.16 Wire Mesh Screen (Non-Corrodible)			
10.	4" Thick Concrete Pad - Class 'C' Concrete			
11.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan			

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

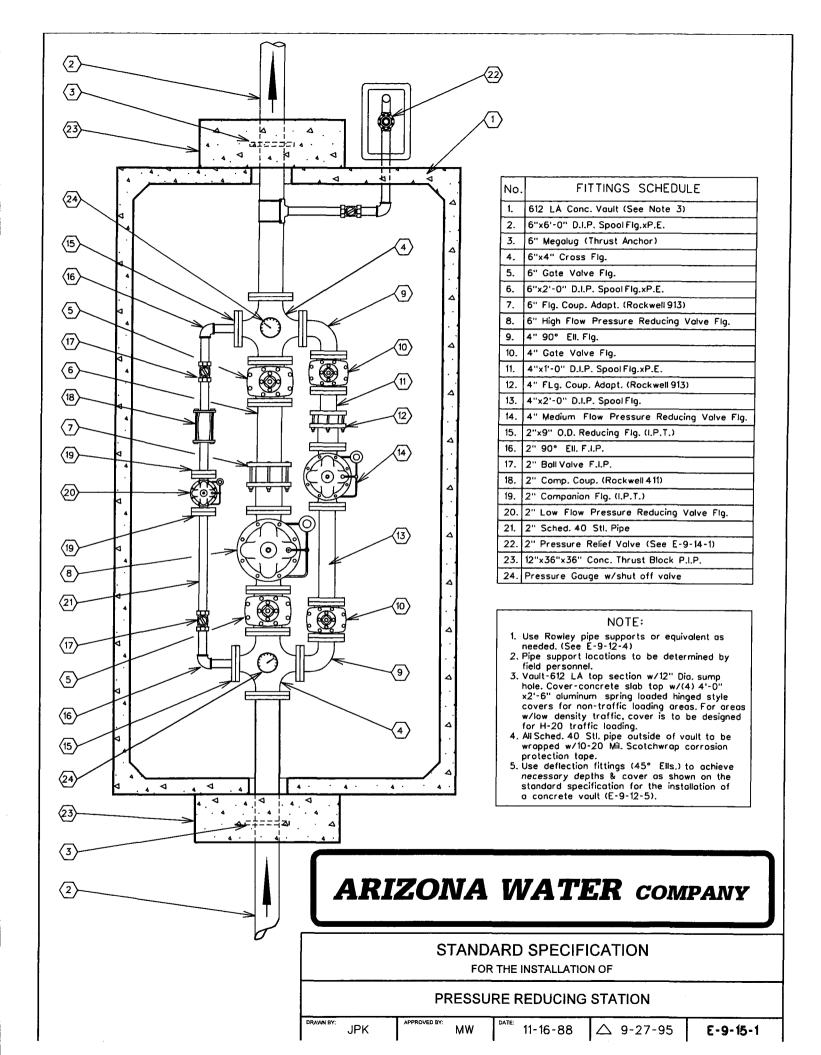
CCO

APPROVED BY

/ I™3/20

3/20/1986 | △08.29.2006

E-9-14-2



- 1. Specific Items To Be Painted Deer-O Pure White Enamel:
 - A. All Booster Pumps.
 - B. All Electrical Motors And Gas Engines.
 C. Well Pump Discharge Heads.
 D. Electrical Panel.
- 2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:
 - A. Well Shelter.
- 3. Specific Items To Be Painted OSHA Orange:
 - A. Electrical Conduit.
- 4. All Other Items To Be Painted With Either: (At Manager's Discretion)
 - A. Cholla Green
 - B. Forest Green
 - C. Sonora Beige
 - D. Red Rock
 - E. Rock Brown
 - F. Deer-O Pure White G. Elkhorn Cactus

STANDARD SPECIFICATION FOR THE INSTALLATION OF

PAINT COLOR SELECTION

CCO

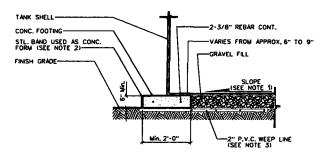
3/20/1986 🛆 2/13/2001 E-9-16-1

- 1. Tank shall conform to AWWA Specification D100-84 with exceptions noted below.
- 2. 1/4" minimun shell plote.
- 3. Minimum of 12" diameter roof vent, screened with No. 16 non-corrodible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the dollar plate.
- 4. Overflow pipe shall be the same diameter as the inlet pipe and shall terminate 12 to 24 inches above splash pad or a minimum of 2 averflow pipe diameters above weir box high water level.
- 5. Storage tank shall be placed upon adequately compacted base material.
- 6. 6" minimum floor mounted tank drain outlet to be located close to the outer shell.
- Tank and related fittings shall be enclosed with a 5 loot chain link fence with lockable gates and anti-personnel wire on top of fence.
- 8. Liquid levelshall be indicated by a target and target board on the outside surface of the tank
- 9. 24 inch diameter manholes shall be provided on the roof and on the shell near the bottom of the tank. The roof manhole cover shall averlop the manhole by at least 2 inches to provide a roin tight closure. Roof manhole shall be hinged and equipped with a lock. Shell manhole cover to be hinged and botted in place. "Tanks larger than a 60 foot diameter require 2 shell manholes.
- 10. Inside and autside ladders shall be located at the rool manhole. Outside ladder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within $\frac{1}{2}$ of shell with 10 gauge sheet steet.
- Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
- 12. The following information will be included with application for approval to construct:
- 15. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
- The welded steelstorage tank will be coated as per AWWA Specification D102, and N.S.F. Standard 61,

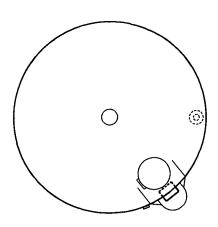
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

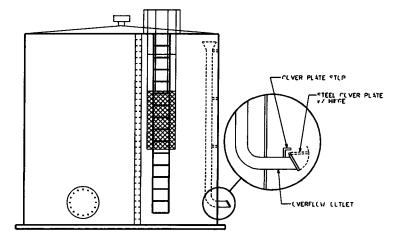
- 1. FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-0".
- 2. TOP OF STEEL BAND WUST BE MAINTAINED LEVEL TO WITHIN "".
- 3. INSTALL 8-2" DIA.x10"-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45"), PERFORATE 8-0" OF LINE WITH 1/2" DIA HOLES 6 6" O.C. PLUG INTERIOR END OF LINE w/2" CAP.



FOUNDATION DETAIL







PROFILE VIEW

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

DRAWN BY: JPK

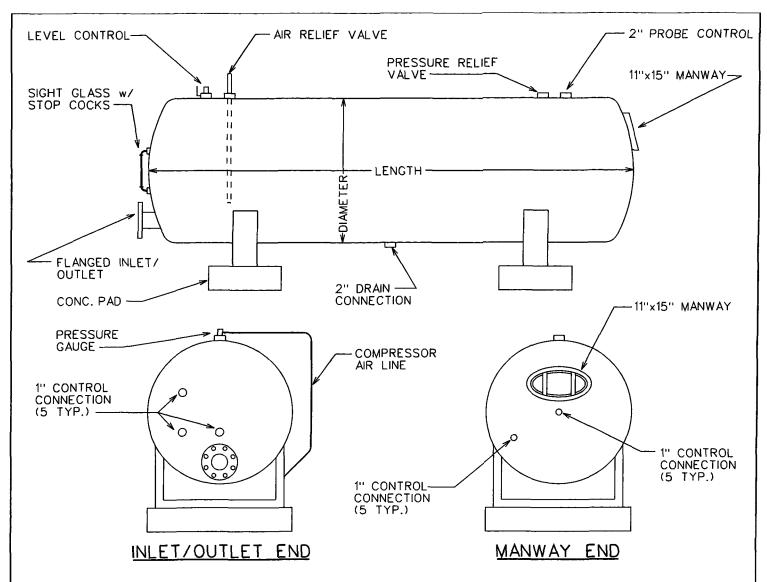
APPROVED BY:

MJW

10-17-88

∠ 2-12-96

E-9-17-1



- 1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
- 2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
- 3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
- 4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.
- 1. Tank Location
- 2. Tank Length _____
- 3. Tank Diameter
- 4. Tank Capacity
- 5. Maximum Working Pressure

STANDARD SPECIFICATION FOR THE INSTALLATION OF

HYDROPNEUMATIC TANK

DRAWN BY: JPK APPROVED BY: MW DATE: 3-20-1986 △ 01.16.2007 E-9-18-

NOT CONVERTED CAD

ARIZONA WATER COMPANY

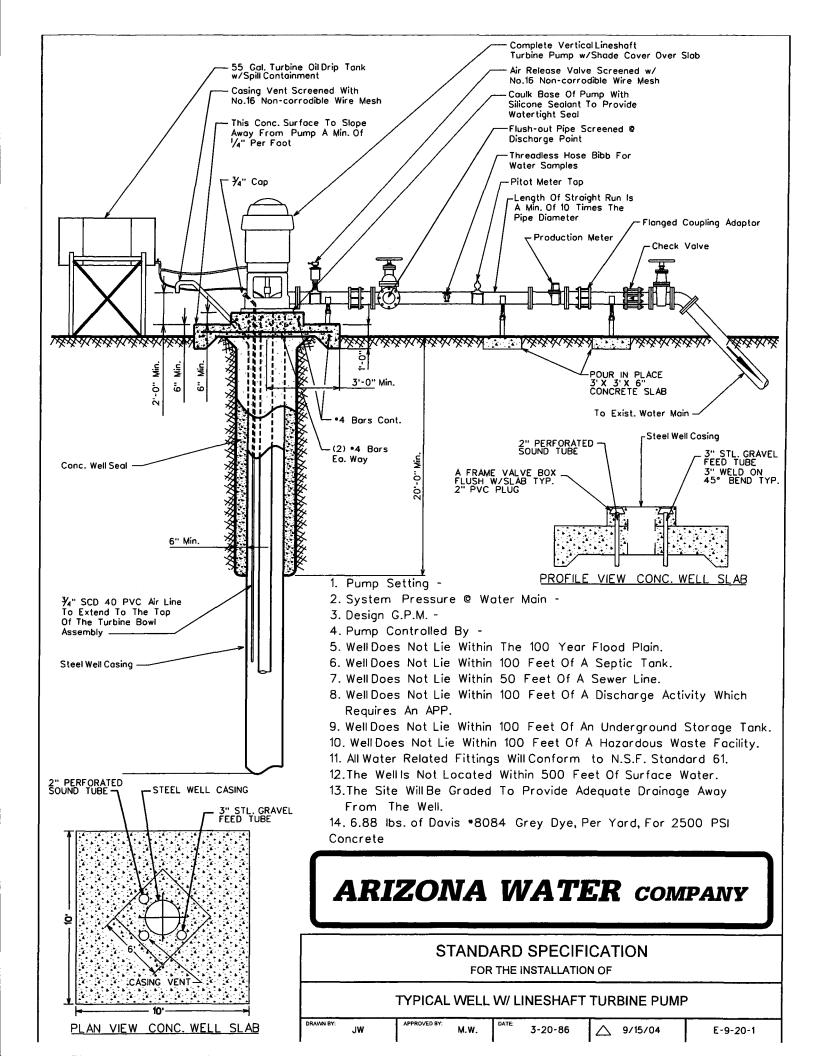
STANDARD SPECIFICATION

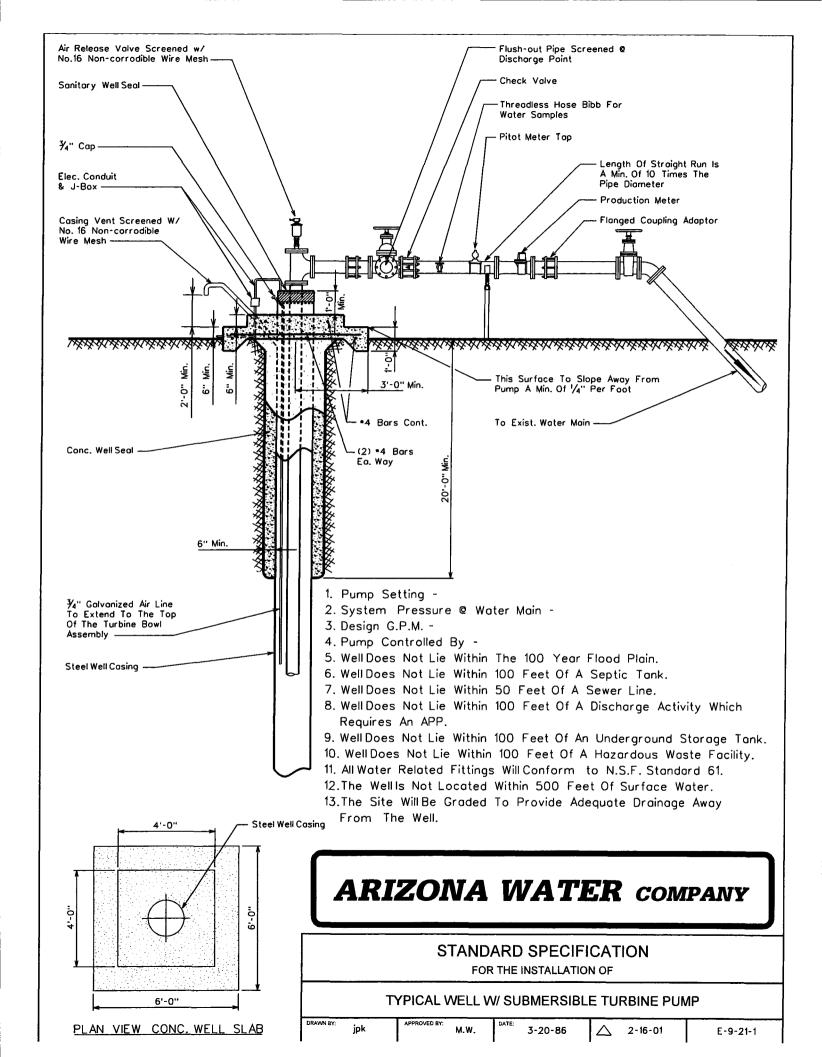
FOR THE INSTALLATION OF

WELL SHELTER

03.20.1986 \(\triangle 04.03.2001 \)

E-9-19-1





All New Purchases To Conform To The Following:

Column Pipe

Oil Tube - Peerless Type

```
11/2" O.D. - 14 Threads Per Inch Right Hand
2" O.D. - 12 " " " " "
21/2" O.D. - 10 " " " " "
3" O.D. - 10 " " " " " "
4" O.D. - 10 " " " " " "
```

Line Shaft

```
3/4" O.D. - 10 Threads Per Inch Left Hand
1" O.D. - 14 " " " " "
1-3/16" O.D. - 10 " " " " " "
1-1/2" O.D. - 10 " " " " " "
1-11/16" O.D. - 10 " " " " " "
1-15/16" O.D. - 10 " " " " " "
2-3/16" O.D. - 10 " " " " " " "
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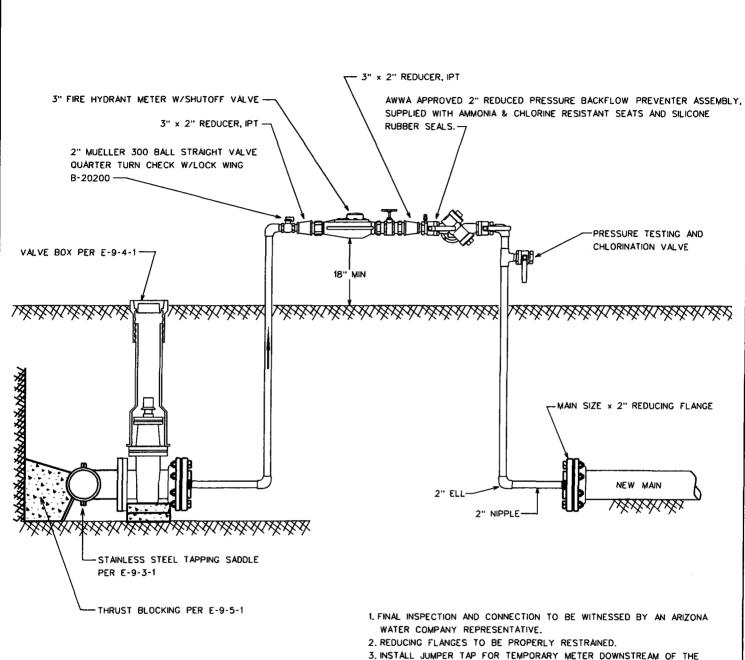
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

DRAWN BY: CCO APPROVED BY: DATE: 3/20/1996 \(\triangle 2/13/2001 \) E-9-22-1



- REDUCING FLANGE FOR PRESSURE AND BACTEE TESTING.
- 4. JUMPER ASSEMBLY MUST BE A MINIMUM OF 18" ABOVE FINISHED GRADE.
- 5. BACKFLOW ASSEMBLY REQUIRES CERTIFICATION.
- 6. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL ALL TESTING, BACTERIAL CLEARANCE AND FINAL INSPECTIONS HAVE BEEN OBTAINED.
- 7. ALL NEW PIPING SHALL BE PROPERLY RESTRAINED.

STANDARD SPECIFICATION FOR THE INSTALLATION OF

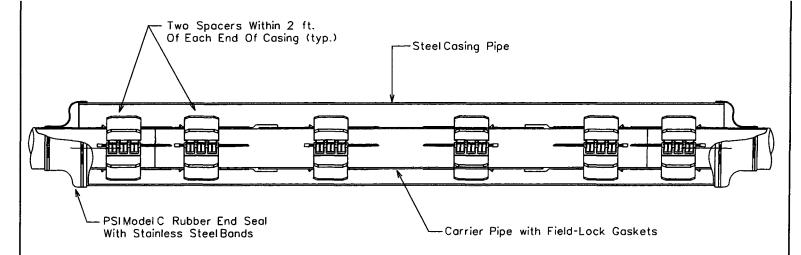
HOT TAP & JUMPER METER CONNECTION

CB

MJW

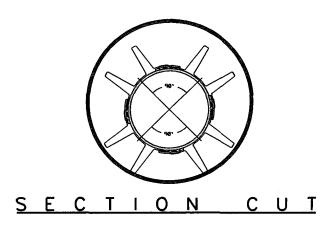
05.14.2004

E-9-23-1



CROSS SECTION

The casing spacers shall be the PSI Ranger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seal as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

*Thickness Of Skid To Extend A Minimum of $\frac{1}{2}$ " Above The O.D. Of The Pipe Bell or Gland.

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6''	16''	15.25"	STD.	.375	*x4x12
8''	18''	18.25"	STD.	.375	*x4×12
12"	22"	21.25"	STD.	.375	*x4×12
16''	28"	27.25"	STD.	.375	*x4×12
20"	32"	31.25"	STD.	.375	*x4x12
24"	36"	35.25"	STD.	.375	*×4×12
30"	48"	47.25"	STD.	.375	≖×4×12
36''	54"	53.25"	STD.	.375	*×4×12
48''	66''	65.25"	STD.	.375	*x4x12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL WATER LINE ENCASEMENT

DRAWN BY: DATE: 7 (00 (4000 A 00 07 0000)

CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCOPE - This specification describes a ARCH Chemicals Calcium Hypochlorite Tablet Chlorination System as manufactured by ARCH Chemicals, 501 Merritt Seven, P.O. Box 5204, Norwalk, CT, 06856-5204.

DESCRIPTION - The chlorination system shall be completely assembled, ready to install. The chlorination system shall be a ARCH Chemicals Calcium Hypochlorire Tablet Feeder, or its equivalent, and shall be supplied with all its components factory mounted.

COMPONENTS - The Chlorination system shall have the following components:

A. 1-X* ARCH Chemical solid calcium hypochlorite tablet feeder

B. Polyethylene system enclosure

C. Integrated, level controlled solution tank

D. Adjustable flow control valve

E. Manual oroff valve fat intel;

F. Chemical metering jump

G. Ohroff pump control switch

H. Walterpoof electrical junction box

I. Corrosion resistant sedebul «40 piping

J. Reverse flow check valves

K. Total solution output control valve

ELECTRICAL FIXTURES - The following electrical fixtures shall be provided:
A. Safety with: 2 pole, fused for 30 Amps, for 120 Voits, 60 cycle, single phase power.

CHLORINATOR DESIGN - The chlorination facility shall be designed and constructed in accordance with Arizona State Department of Health Engineering Bulletin Number 8 - "Disinfection of Water Systems". Latest Revision.

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

CHLORINATOR OPERATION - The chlorination facility shall be operated in accordance with Arizona State Department of Health, Engineering Bulletin Number 8, "Disinfection of Water Systems", Table 1, latest revision.

CHLORINATOR SYSTEM DESCRIPTION - ARCH Chemicals lablet chlorinator systems incorporate a pater chlorinator by the chlorinator which is designed to utilize ARCH Chemicals 1-7% so

chlorizativa which is designed to utilize ARCI/ Channicals 1-½" solid calcium hypochlorise tablets (Approved NSF Standard 50). Meets AWWA Standard B-300. Expensional to the Approved NSF Standard B-300. Expensional to mounted on a B-300. Expensional to the Calcium providelylene system enclosure. The infet water is spayed on the calcium hypochlorite tablet and collected in a solution tain. This chlorimated solution is then pumped out of the tank frough a charmical metering pump, This metering pump is then adjusted to obtain the desired CL residual.

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

HYPOCHLORINATOR COMPONENTS:

Chemical Metering Pump
 Pump Suction Connection
 Pump Dischage Connection
 Inner Water Assembly
 Inlet Water Solenoid Vaive
 Inlet Water Solenoid Vaive

6. Inlet Shut-Off Valve
7. Inlet Pressure Regulator
8. Inlet Water Pressure Gauge
9. Spray Nozzie Water Pressure Gauge
10. Inlet Stainer
11. Inlet Tubing Connection

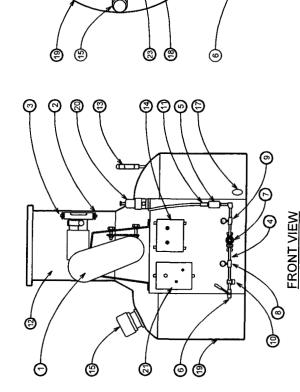
12. Dry Chemical Hopper
13. Suction Line
14. Electrical Control Box With Power On/Off
15. Electric Miser
16. Solution Discharge Connection
17. Tank Drain Valve

18. Observation Port 19. Mixed Chemical Holding Tank 20. Pressure Relief Valve 21. Pump Speed Control 22. High Level Shurd Froat Switch 23. Water Spray Nozzles

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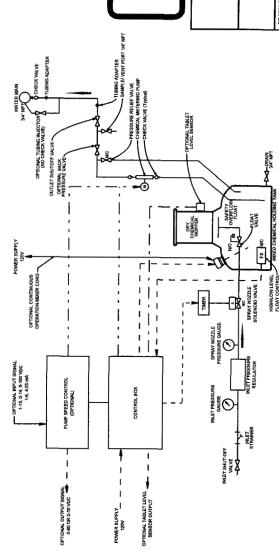
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HOPPER REMOVED FOR CLARITY TOP VIEW

Chlorinator Fluid Schematic



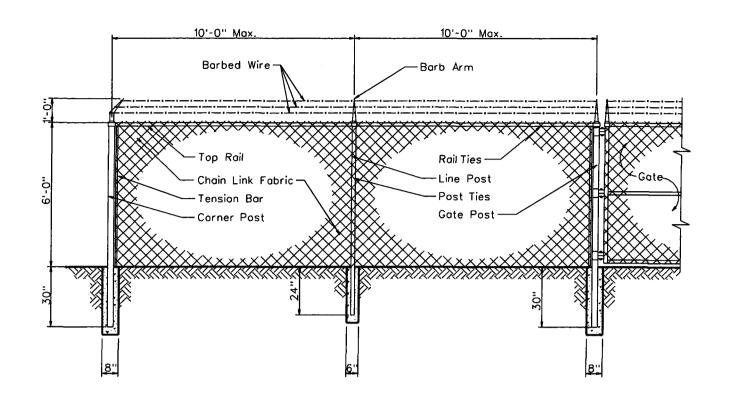
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR

L	◁
DATE	02-09-2000
APPROVED BY:	MW.
DRAWN BY:	80

E-9-25-1



Line Post: 1-7/8" O.D. 1.74 lbs. P/L.F. **ASTM A-256** End Post: 4.64 lbs. P/L.F. 2-7/8" O.D. ASTM A-256 Corner Post: 2-7/8" O.D. 4.64 lbs. P/L.F. **ASTM A-256** Gate Post: 2-7/8" O.D. 4.64 lbs. P/L.F. **ASTM A-256**

Top Roll: 1-5/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Chain Link Fabric: 9 Ga. 2" Mesh Galv. Before Weave

Barb/Knuckle

Fittings: Pressed Steel

Barb Wire: 2-1/2 Ga./2 Point

Borb Arm: 1 Piece/45° Arm

Tension Wire: 9 Ga./Galv.

Selvage:

Line Post Set: 6"x24" In Concrete

Terminal Post Set: 8"x30" In Concrete

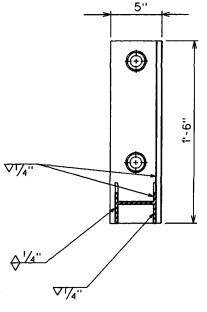
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CHAIN LINK FENCE

CCO APPROVED BY: MW DATE: 7/7/1992 \(\triangle \triangle 2/9/2001 \)

E-9-26-1

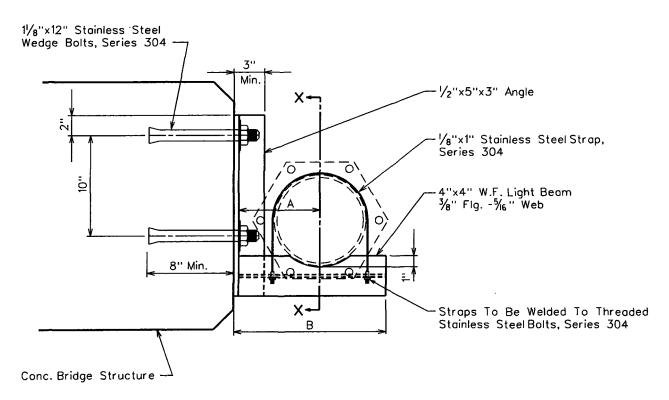


SECTION X-X

NOTES

- Minimum 2 Supports Per Joint Of Pipe.
- 2. All Bolts Shall Have A Lock Washer Under The Nut.
- 3. All Nuts Shall Be Stainless Steel Series 304.

PIPE SIZE	Α	В
8"	8"	15"
10''	9"	17''
12"	10''	19''



SUSPENSION DETAIL

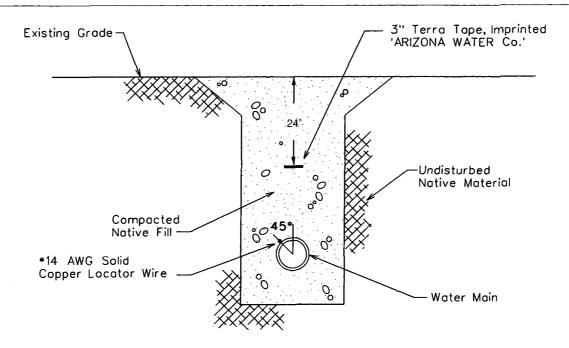
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

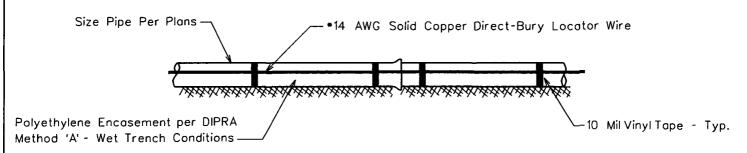
SIDE HUNG WATER LINE SUSPENSION

E-9-27-1

DRAWN BY: JPK APPROVED BY: MJW DATE: 7-12-96



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

- 1. All pipe shall have *14 AWG Solid Copper
 Direct-Bury Locator Wire Installed Directly To
 The Polywrap At 45° From The Vertical Center
 Of The Pipe and Shall Be Attached Using 10
 Mil Vinyl Tape.
- 2. The Locating Wire Shall Terminate At the Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

- 1. Use Terra Tape 3" Marking Tape As Manufactured
 By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
- 2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
- 3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe. A) The Backfill Shall Be Sufficiently Leveled So That The
- A) The Backfill Shall Be Sufficiently Leveled So That The Tape is installed On A Flat Surface.
- B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
- C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill Is Moved Into The Trench.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

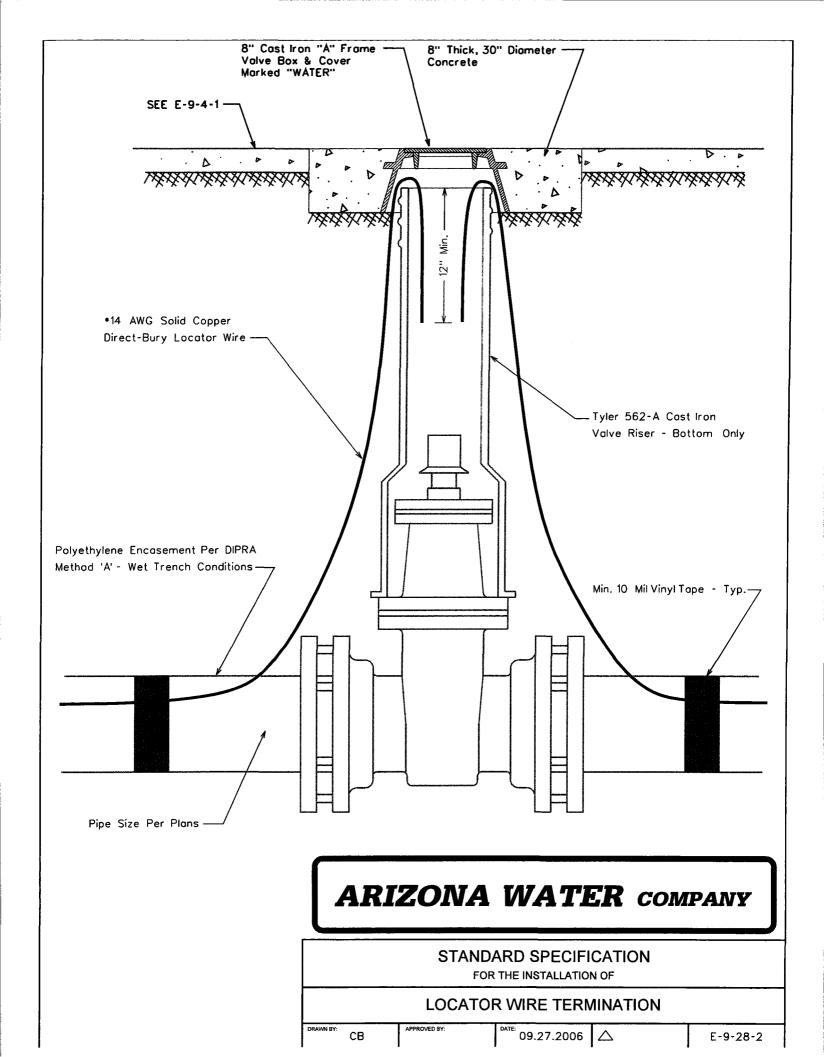
FOR THE INSTALLATION OF

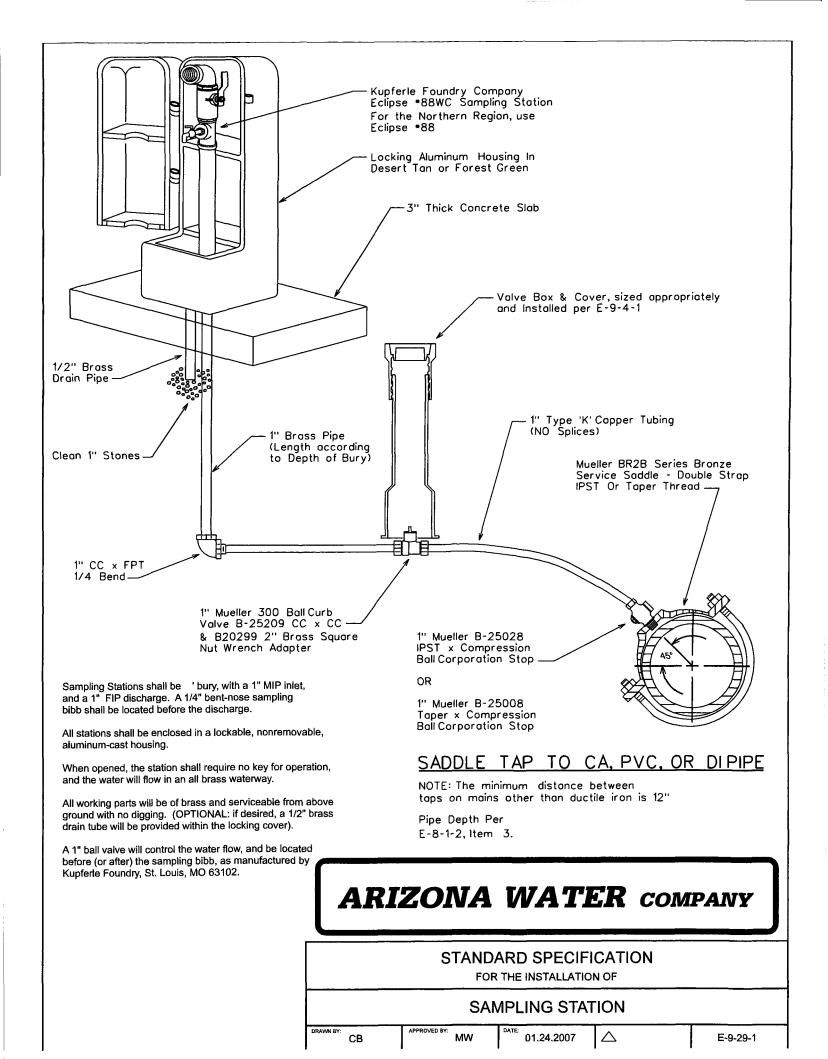
PIPE WARNING TAPE AND LOCATOR WIRE

N BY: APPROVE

03.24.1997 \(\triangle 09.27.2006 \)

E-9-28-1







Layne Christensen Co.

12030 E. Riggs Rd. Chandler, AZ. 85249 Phone: (480) 895-9404

Well Inspection Report

CLIENT:

ARIZONA WATER CO.

ADDRESS:

Kevin Pakka

CONTACT:

JOB LOCATION: Southwest of McCartney Rd. & Evans Rd.

WELL NUMBER: Casa Grande #27

JOB NUMBER:

1000-2333

SURVEYED BY: TONY LARSEN

DATE:

25-Oct-10

REVIEWED BY:

WATER LEVEL: 247'

WATER CONDITION: CLOUDY

TOTAL DEPTH:

CASING DIAMETER: 18" ID CASING

SURVEY DEPTH: 1098'

NOTES:

DEPTH	REMARKS		
0-	AT TOP OF CASING & PAD	Perioration:	140UVERED
14'	RUST BUILD UP ON CASING	551" 110 668"	
247'	STATIC WATER LEVEL (CLOUDY)	7/14 ⁰ 7/8 98 '	
250'	BUILD UP ON CASING	384° TQ 4090°	
350'	BUILD UP ON CASING		
551'	PERFORATIONS (LOUVERED)		
600'	BUILD UP ON CASING		
668'	BLANK CASING		
693'	PIECE OF PVC PIPE		
711'	PERFORATIONS (LOUVERED)		
750'	BUILD UP ON CASING		
788'	BLANK CASING		551.09
831'	PERFORATIONS (LOUVERED)		
850'	BUILD UP ON CASING		
900'	CLOUDY		
950'	BUILD UP ON CASING		
1000'	BUILD UP ON CASING		
1050'	CLOUDY	600' 01"	711'11"
1079'	PIECE OF PVC PIPE	600 01	
1085'	FOUR PIECES OF PVC PIPE		
1090'	BLANK CASING		
1098'	TOP OF SOFT FILL		
			
			022: 00"
		752' 04"	832.00
	- Letter and a second		
			Miss.
	002,000	1080, 01.,	1096' 07"
	902.00"	1000 01	1000 01



Layne Christensen Co.

12030 E. Riggs Rd. Chandler, AZ. 85249 Phone: (480) 895-9404

Well Inspection Report

CLIENT:

ARIZONA WATER CO.

ADDRESS:

SOUTHWEST OF McCARTNEY RD. & EVANS RD.

CONTACT:

Kevin Pakka

JOB LOCATION: CASA GRANDE, AZ

WELL NUMBER: CASA GRANDE #27

JOB NUMBER:

1000-2333

SURVEYED BY: TONY LARSEN

DATE:

29-Nov-10

REVIEWED BY:

WATER LEVEL: 238'

WATER CONDITION: CLOUDY

TOTAL DEPTH:

SURVEY DEPTH: 1093'

VIDEO AFTER BRUSHING

CASING DIAMETER: 18" ID CASING

REMARKS			
AT TOP OF CASING & PAD		Perforation	LOUVERED
STATIC WATER LEVEL (CLOUDY)			
PERFORATIONS (LOUVERED)			
CLOUDY			
BLANK CASING			
PERFORATIONS (LOUVERED)			
BLANK CASING			
PERFORATIONS (LOUVERED)			
CLOUDY			
PVC PIPE			
BLANK CASING			
TOP OF SOFT FILL			
			553' 04"
			000 07
	· · · · · · · · · · · · · · · · · · ·		
		_	
			600' 01"
			000 01
7E0: 02"	000* 04."		1004/ 002
(50.02	200_01		1091' 03"
	AT TOP OF CASING & PAD STATIC WATER LEVEL (CLOUDY) PERFORATIONS (LOUVERED) CLOUDY BLANK CASING PERFORATIONS (LOUVERED) BLANK CASING PERFORATIONS (LOUVERED) CLOUDY PVC PIPE BLANK CASING	AT TOP OF CASING & PAD STATIC WATER LEVEL (CLOUDY) PERFORATIONS (LOUVERED) CLOUDY BLANK CASING PERFORATIONS (LOUVERED) BLANK CASING PERFORATIONS (LOUVERED) CLOUDY PVC PIPE BLANK CASING TOP OF SOFT FILL	AT TOP OF CASING & PAD STATIC WATER LEVEL (CLOUDY) PERFORATIONS (LOUVERED) CLOUDY BLANK CASING PERFORATIONS (LOUVERED) BLANK CASING PERFORATIONS (LOUVERED) CLOUDY PVC PIPE BLANK CASING TOP OF SOFT FILL



WELL RECORD

TOP OF SHAFT	
TOP OF SHAFT	DATE: _//- dero
<u></u>	INSPECTOR Tim S.
= N	WA NO /- 4763
	STATICFT DYNAMICFT PUMP DISCHARGEGPM
Z S E	STATIC PRESSURE PSI DYNAMIC PRESSURE PSI
	MOTOR
	H.P. 200 MFGR U-S. Motor
	PHASE/CYCLE/VOLTS 3 / 60 / 480
	DISCHARGE HEAD
	TYPEx
	MECHANICAL SEAL
	TYPESIZE
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COLUMN	COLUMN ASSEMBLY
	FT. S.W.L.
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	TUDE CLEEK
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	CHEMICAL LINE SIZE / MATERIAL // DO AND SO SLUTPING
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√ 	SERIAL NO
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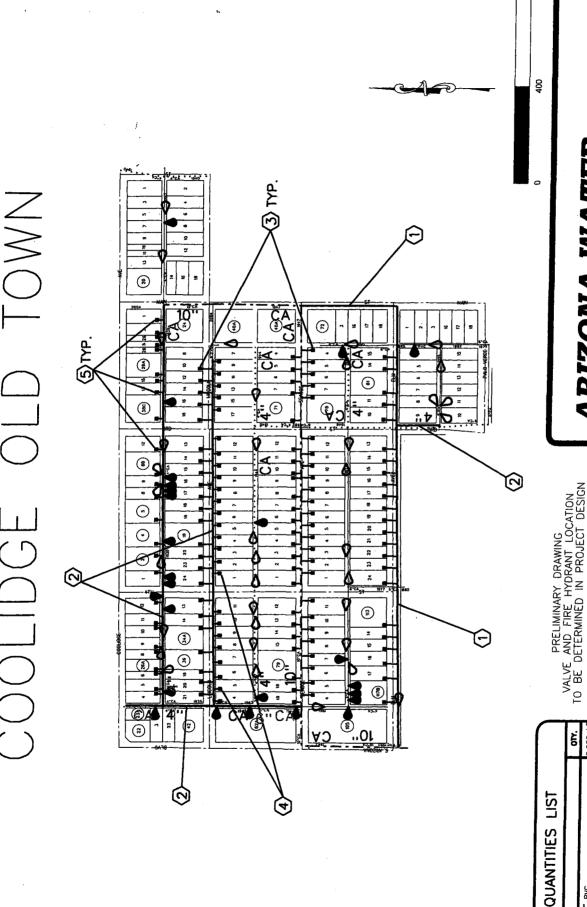


CONSTRUCTION COMPLETION NOTICE

CONSTRUCTION	12-20-10							
COMPLETION DATE:	72 20 10		WOR	(AUTHOR	RIZATION	NUMBER:	1-	4763
THE FOLLOWING RECOR	RD REQUIREMENT	TS ARE A	TTACHED:					PREPARED BY
1. CONSTRUCTION DRA		• • • • • • • • • • • • • • • • • • • •		•••••				NA
2. VALVE CARDS								NA
3. HYDRANT CARDS WI	TH COPY OF COV	/EK LEII	EK	••••••			_	NA
4. MATERIALS INSTALLI AND P.D.R. NUMBERS		-					D.S. 	D100
5. PRESSURE AND LEAF	KAGE TEST RESU	JLTS:			,			
DATE TESTED		_	n	o wat	er Fac	: Li tres	jus f	~!!ce
TIME STARTED			$\overline{}$					
TIME FINISHED								
PIPE DIAMETER			$\overline{}$					
FOOTAGE TESTED				\				
ALLOWABLE LEAKAGE		-						
LEAKAGE OBSERVED								
PRESSURE AT TEST POIN	NT							
COMPANY EMPLOYEE OF	BSERVING TEST (print)	···					
INITIALS OF EMPLOYEE								
6. DISINFECTION SAMP	LING:							
INITIAL SAMPLING		DATE				\		
(minimum 50 ppm ava	ailable chlorine)							
	PI						 _	
AFTER 24 HOURS DETEN							· · · · · ·	
(minimum 10 ppm free	e chlorine)				_			
	PF	<u> </u>						
							/	
AFTER SUFFICIENT FLUSH (water is clear and sys		DATE						\
residual is measured)							 +	
							<u> </u>	
BACTERIOLOGICAL SAMP	LE(S)	DATE						
		TIME						
	ATTA	снер Т	es 🗌 No	☐ Yes	□ No	☐ Yes ☐	No	Yes No
certify that construction on the a further certify that I have inspected	above Work Authorizat d the work done and h	tion was cor ave found it	npleted as of the	ne date show y and in acco	rdance with C	ompany specif	naterials ha ications.	ive been accounted.
Division Manager or Open	rations Superintendent (signatura)			12-20-	Date of No	tice	

ATTACH TO CONSTRUCTION & ENGINEERING FILE COPY OF WORK AUTHORIZATION





PROJECT DESCRIPTION

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

2,200 LF 4,000 LF 95 EA. 25 EA. 26 EA.

INSTALL 12" PVC

INSTALL 6" PVC

INSTALL SHORT SERVICE INSTALL LONG SERVICE

INSTALL SERVICE

ę.

INSTALL 2,200 LF OF 12" C-900 PVC, 4,000 LF OF 6" PVC AND 146 SERVICE CONNECTIONS BETWEEN COOLIDGE AVENUE AND ELM AVENUE.

PROJECT LOCATION

SERVICE LINE REPAIR/REPLACEMENT

0

WATER MAIN REPAIR/REPLACEMENT

S

APPROVED 81: AH/FS 0ATE: 12/29/2010

NW 1/4 SEC. 27-T.5S., R.8E.

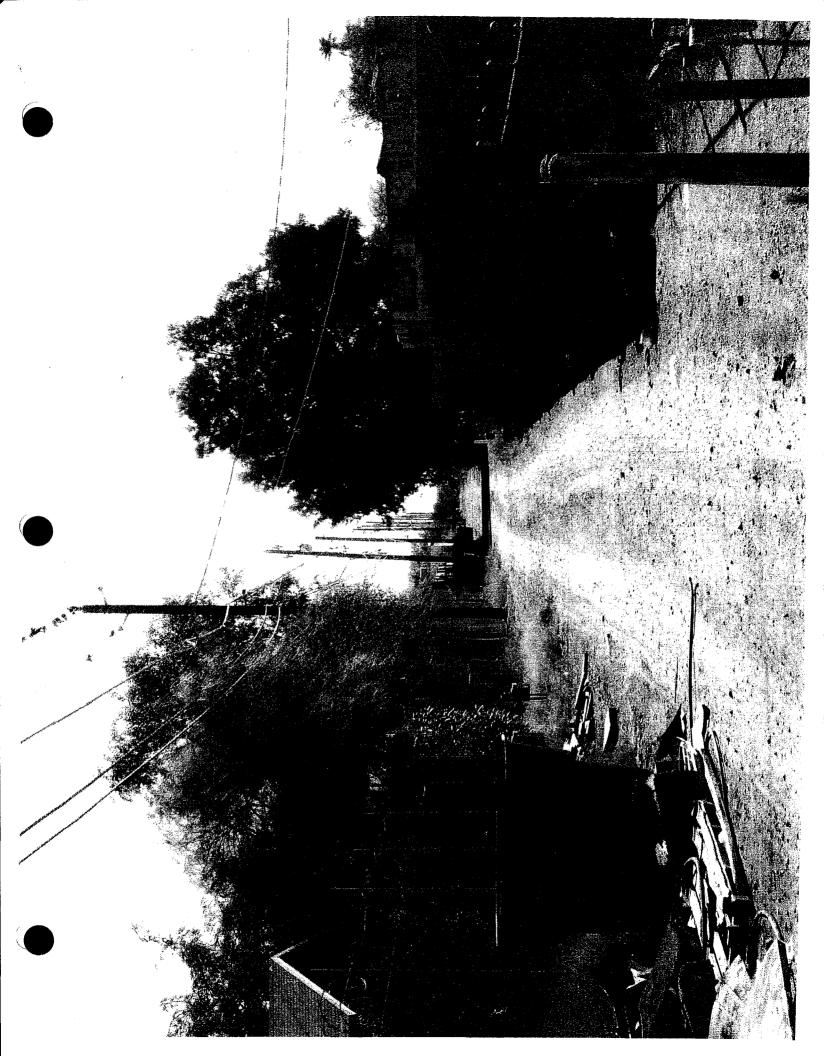
್ತು Coolidge Öld Town

LEAK LOCATION	SECTION	DATE	TYPE
1333 E Arbor Avenue	SW 1/4 Sec 20 T6S R6E	2002	Main Repair
1121 2nd Street	NW 1/4 Sec 28 T6S R6E	2002	Service Replacement
225 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	6/14/2006	Service Replacement
226½ N Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2005	Service Repair
229 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2007	Service Replacement
251½ W Elm Avenue	NW 1/4 Sec 27 T5S R8E	2000	Service Repair
265 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2008	Main Repair
280 W Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2001	Service Repair
280 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair
290 W Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2004	Service Replacement
300 Block of W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2009	Main Repair
300 Block of W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	3/5/2010	Main Repair
300 Block of W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	3/9/2010	Main Repair
300 Block of W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	3/15/2010	Main Repair
306 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	1/29/2007	Service Replacement
309-315 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2007	Service Replacement
312½ W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2007	Service Repair
318½ W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2008	Service Repair
321 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2009	Service Replacement
339 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	3/5/2010	Main Repair
348 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	5/3/2010	Service Repair
357 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2005	Main Repair
361 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2009	Service Repair
365 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair
367 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	4/22/2010	Main Repair
375 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	7/15/2009	Main Repair
375 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2010	Main Repair
376 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Replacement
393 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2009	Main Repair
400 Block of W Elm Avenue	NW 1/4 Sec 27 T5S R8E	9/22/2009	Main Repair
400 Block of W Elm Avenue	NW 1/4 Sec 27 T5S R8E	9/29/2009	Main Repair
401 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	12/18/2008	Main Repair
401 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2005	Service Repair
408 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair
411 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	5/3/2010	Service Repair
413 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	4/15/2010	Main Repair
431 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2006	Main Repair
438 W Elm Avenue	NW 1/4 Sec 27 T5S R8E	2006	Main Repair
441 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair
444 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2004	Service Replacement
447 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2/23/2006	Service Replacement
453 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	6/27/2008	Service Replacement
453 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2000	Service Replacement
457 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2007	Main Repair
464 W Elm Avenue	NW 1/4 Sec 27 T5S R8E	9/25/2009	Main Repair
643 S Arizona Boulevard	NW 1/4 Sec 27 T5S R8E	2004	Main Repair

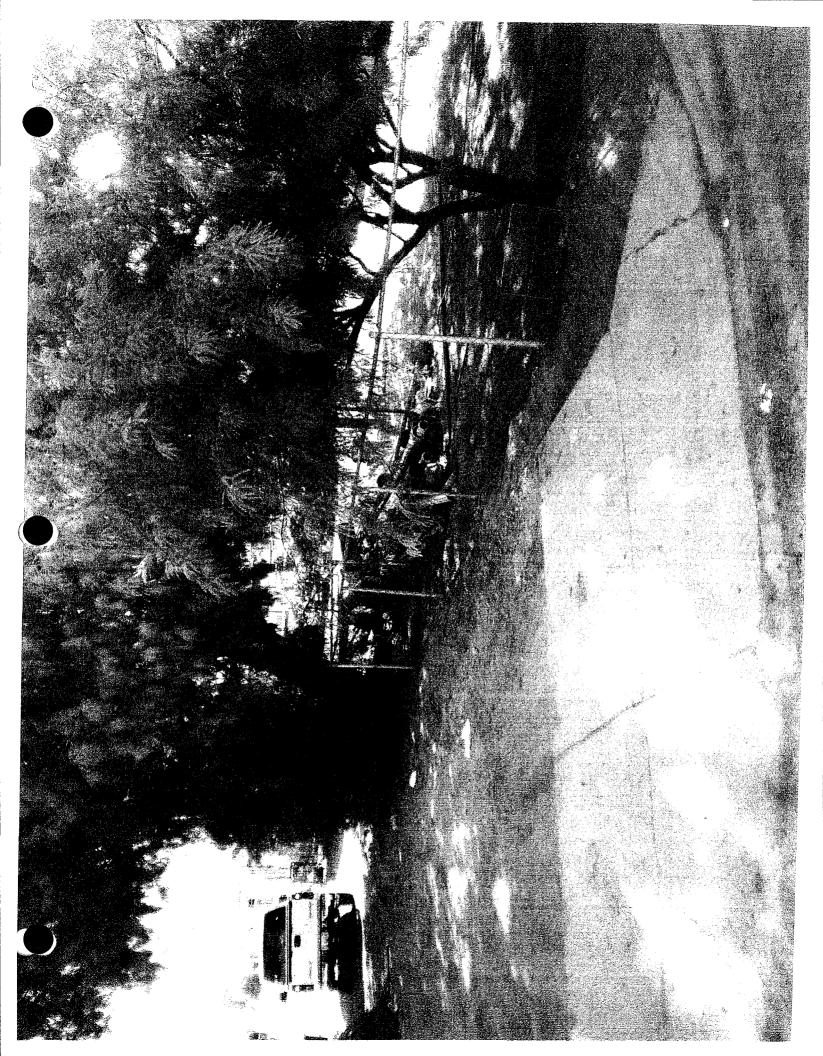
Coolidge Old Town

LEAK LOCATION	SECTION	DATE	TYPE
660 S Main Street	NW 1/4 Sec 27 T5S R8E	8/16/2010	Service Replacement
663 S 4th Street	NW 1/4 Sec 27 T5S R8E	2007	Service Replacement
716 S Arizona Boulevard	NW 1/4 Sec 27 T5S R8E	1/4/2008	Service Replacement
752 S Main Street	NW 1/4 Sec 27 T5S R8E	9/29/2008	Main Replacement
752 S Main Street	NW 1/4 Sec 27 T5S R8E	6/25/2009	Service Replacement
753 S Main Street	NW 1/4 Sec 27 T5S R8E	2006	Main Repair
753 S Main Street	NW 1/4 Sec 27 T5S R8E	2008	Service Repair
760 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2007	Service Repair
775 S 4th Street	NW 1/4 Sec 27 T5S R8E	2008	Service Repair
801 S Arizona Boulevard	NW 1/4 Sec 27 T5S R8E	9/26/2007	Service Repair
924 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	10/7/2009	Service Repair
W Lincoln Avenue & S Arizona Boulevard	NW 1/4 Sec 27 T5S R8E	6/14/2010	Main Repair













ARIZONA WATER COMPANY

WORK AUTHORIZATION

W.A. NUMBER:
P.E. NUMBER:
BUDGET ITEM NO.:
SHEET NO.:

1-4772

Special #22 1 of 2

SYSTEM: DIVISION: TAX CODE: PINAL VALLEY

PINAL VALLEY 2108 WORK TO START BY:
WORK TO BE FINISHED BY:

UPON AUTHORIZATION WITHIN 130 DAYS

DESCRIPTION OF WORK:

Coolidge Old Town Main Replacement project: Replace approximately 6,040 If of 4-inch and 200 If of 6-inch CA pipe with 3,320 If of 6-inch and 2,200 If of 12-inch C-900 PVC and tie over 162 service connections. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

The company has experienced several leaks on these waterlines due to age of the pipe and Tamarak tree roots growing into the couplings causing leaks and main breaks contributing to increasing water loss in the Coolidge system.

COST ESTIMATE		AUTHORIZATION	DATE	
COST OF WORK: MATERIAL		0	James Wilson gw 10/27/10	10/22/10
LABOR		9,974	REVIEWED FOR ESMT/ROW VERIFICATION:	10-22-2010
CONTRACT PORTION	· -	738,300	Charles Briggs CB 10-38-2010	
OVERHEAD TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	\$	179,586 927,860	Mike Loggins 76 (0-28-10	10-22-10
FUNDS RECEIVED: CONTRIBUTIONS RECEIVED		0	APPROVED BY ENGINEERING: FRUITE School By Engineering: Fredrick Schneider 3 10-29-1	10-22-10
REFUNDABLE ADVANCES RECEIVED TOTAL CONTRIBUTIONS/ADVANCES		0	Joseph Harris	10/22/10
NET CASH REQUIRED	\$	927,860	William Garfield	10-25-10
			SPECIAL ITEM EXCEEDING \$10,000; AUTHORIZED BY CHAIRMAN: approved via fax M. L. Whitehead	10/27/2010
			RELEASED CONSTRUCT CONSTRUCT Authorized by FRED SCHI	ION

W.A. NUMBER: P.E. NUMBER:

1-4772

BUDGET ITEM NO.:

Special #22

WORK AUTHORIZATION - DETAIL SHEET

			SHEE	NO.:	2 of 2
	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER	
RETIREMENT	343	4-inch CA pipe	4260	1939-1947	
PROPERTY	343	4-inch CA pipe	1780	1960-1961	
UNITS	343	6-inch CA pipe	200	1977	
PROJECT DESCRIPTION:					

Coolidge Old Town Main Replacement project: Replace approximately 6,040 If of 4-inch and 200 If of 6-inch CA pipe with 3,320 If of 6-inch and 2,200 If of 12-inch C-900 PVC and tie over 162 service connections.

L	-Inch and 2,200 if of 12-inch C-900 PVC and tie over 162 s	ervice connections.				
	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST		TOTAL
	12" C-900 PVC w/ all related fittings and pavement replacement	343	2,200	\$ 65.00	\$	143,000
1	6" C-900 PVC w/ all related fittings and pavement replacement	343	3,320	45.00		149,400
С	Tie into existing 4" CA with 4" TS*V and 4"x6" reducer	343	7	2,200.00		15,400
0	Remove cap and tie into existing 4" CA with 4"x6" reducer	343	2	1,500.00		3,000
N	Install new 5/8" service connection and tie over customer line	345	162	2,500.00		405,000
R	Replace existing 6" fire hydrant	348	5	4,500.00		22,500
Α						
C						
Т						
w						
0						
R						
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345				
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345				
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345				
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345				
TOT	AL CONTRACT WORK				\$	738,300
М						
A T						
Ė						
	SERVICE CONNECTIONS: DOUBLE-LONG	345				
1	SERVICE CONNECTIONS: DOUBLE-SHORT	345				
A L	SERVICE CONNECTIONS: SINGLE-LONG	345				
	SERVICE CONNECTIONS: SINGLE-SHORT	345				
	METERS	346				
TOT	AL MATERIALS				\$	-
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L						
ſ	TESTING FEE	343	1	\$ 1,000.00		1,000
в	PERMIT FEE	343	1	1,500.00		1,500
0	SURVEY FEE	343	1	4,500.00		4,500
R	FIELD INSPECTION	343	1	2,974.00		2,974
Ţ	NSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345				
Ì	NSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345				
-	NSTALL SERVICE CONNECTIONS: SINGLE-LONG	345				
	NSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			~	
TOTAL LABOR				\$	9,974	
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR			\$	748,274		
OVERHEAD				Ψ	179,586	
			•			
OT/	AL REFUNDABLE PORTION NON-RE	FOUNDABLE PORTION		COST ESTIMATE	Đ	927,860

AGREEMENT FOR CONSULTING SERVICES BETWEEN ARIZONA WATER COMPANY AND HANSEN ENGINEERING & SURVEYING

THIS AGREEMENT is made and entered into on this 15th day of October 2010, by and between Arizona Water Company, an Arizona corporation, hereinafter referred to as "Client", and Hansen Engineering & Surveying, an Arizona corporation hereinafter referred to as "Consultant".

RECITALS

WHEREAS, Client is authorized to and desires to retain Consultant to provide engineering design, post design and construction administration services to locate all above-ground structures/improvements (including, but not limited to: curb, gutter, sidewalks, fences, posts, signs, poles, manholes, utility lines, etc.) and locate all utility bluestake markings (for underground utilities) within the Right-of-Way as described in Exhibit A attached hereto.

WHEREAS, Consultant is agreeable to providing personnel and facilities necessary to perform the desired services within Client's required time; and

WHEREAS, Client desires to retain Consultant to perform the services in the manner, at the time, and for the compensation set forth herein;

NOW, THEREFORE, Client and Consultant agree as follows:

1. Description of Project.

Client and Consultant agree that Project is as described in Exhibit A, hereto, incorporated by reference herein and entitled "Scope of Work", dated October 14, 2010. If, during the course of Project, Client and Consultant agree to changes in Project, such changes shall be effective only after being incorporated in this Agreement by written amendment, signed by representative of Client and Consultant.

Scope of Consultant Services.

Consultant agrees to perform those services described hereafter. Unless modified in writing by both parties, duties of Consultant shall not be construed to exceed those services specifically set forth herein.

- a. <u>Basic Services</u>. Consultant agrees to perform those services described in the Scope of Work (the "Services"). Any tasks not specifically described in the Scope of Work will be Additional Services.
- b. <u>Additional Services.</u> Client shall pay Consultant all fees and costs incurred in performing Additional Services provided the services were authorized by Client in writing. Unless otherwise agreed in writing, Additional Services shall be compensated in

accordance with Consultant's standard billing rates at the time the Additional Services are performed.

c. <u>Litigation Assistance</u>. Unless specifically stated therein, the Scope of Work does not include assistance to support, prepare, document, bring, defend or assist in litigation undertaken or defended by Client. All such services required or requested of the Consultant by Client or any third party (except claims between Client and Consultant) will be reimbursed at Consultant's applicable rates for such litigation services.

3. Responsibilities of Client.

In addition to payment for the Services performed under this Agreement, Client shall:

- a. Assist and cooperate with Consultant in any manner necessary and within its ability to facilitate Consultant's performance under this Agreement.
- b. Designate in writing a person to act as Client's representative with respect to this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define Client's policies, make decisions and execute documents on Client's behalf.
- c. Furnish Consultant with all technical data in Client's possession including, but not limited to, maps, surveys, drawings, soils or geotechnical reports and any other information required by or useful to Consultant in performance of the Services under this Agreement.
- d. Notify Consultant of any known or potential health or safety hazards existing at or near the project site.
- e. Provide access to and/or obtain permission for Consultant to enter upon project related property during normal business hours, whether or not owned by Client, as required to perform and complete the Services.

4. Americans with Disabilities Act.

Any other provision of this Agreement to the contrary notwithstanding, unless otherwise specified in the Scope of Services, Client's contractors shall have sole responsibility as between Client and Consultant for compliance with the Americans With Disabilities Act ("ADA") 42 U.S.C. 12101 et. Seq. and the related regulations. Consultant shall provide client with applicable ADA criteria, which may be required.

5. Authorization and Completion.

In signing this Agreement Client grants Consultant specific authorization to proceed with work as described in Scope of Work and under the terms of this Agreement.

6. <u>Compensation.</u>

- a. <u>Amount.</u> For the Services described in Exhibit A, Client agrees to pay, and Consultant agrees to accept compensation in accordance with Exhibit B, attached hereto and incorporated herein. Where Consultant has provided Client with a breakdown of the total compensation into subtasks, such breakdowns are estimates only. Consultant may reallocate compensation between tasks, provided total compensation is not exceeded without the prior written approval of Client.
- b. Payment. As long as Consultant has not defaulted under this Agreement, Client shall pay Consultant within thirty (30) days of the date of Consultant's invoices for services performed and reimbursable expenses incurred under this Agreement. If Client has reason to question or contest any portion of any such invoice, amounts questioned or contested shall be identified and notice given to Consultant within thirty (30) days of the date of the invoice. Any portion of any invoice not contested shall be deemed to be accepted and approved for payment and shall be paid to Consultant within thirty (30) days of the date of the invoice. Client agrees to cooperate with Consultant in a mutual effort to resolve promptly any contested portions of Consultant's invoices.

In the event any uncontested portions of any invoice are not paid within thirty (30) days of the date of Consultant's invoice, interest on the unpaid balance shall accrue beginning with the 31st day at the rate of 1.5% per month, and Consultant shall have the right to suspend work per Article XV, Suspension of Work.

7. Responsibility of Consultant.

a. Standard of Care Professional Services.

Subject to the limitations inherent in the agreed scope of work as to the degree of care, amount of time and expenses to be incurred, and subject to any other limitations contained in this Agreement, Consultant shall perform the Services and any Additional Services in accordance with generally accepted standards and practices customarily utilized by competent engineering firms in effect at the time Services and any Additional Services are rendered. Consultant does not expressly or impliedly warrant or guarantee its Services.

b. Reliance upon Information Provided by Others.

If Consultant's performance of services hereunder requires Consultant to rely on information provided by other parties (excepting Consultant's subcontractors), Consultant shall not independently verify the validity, completeness, or accuracy of such information unless otherwise expressly engaged to do so in writing by Client.

c. Consultant's Opinion of Costs.

Client acknowledges that construction cost estimates, financial analyses and feasibility projections are subject to many influences including, but not limited to,

price of labor and materials, unknown or latent conditions of existing equipment or structures, and time or quality of performance by third parties. Client acknowledges that such influences may not be precisely forecasted and are beyond the control of Consultant and that actual costs incurred may vary substantially from the estimates prepared by Consultant. Consultant does not warrant or guarantee the accuracy of construction or development cost estimates, however, Consultant agrees to exercise its best Professional Judgment in rendering its opinions.

d. Construction Phase Services.

- 1. Consultant's Activities at Construction Site. The presence of Consultant's personnel at a construction site, whether as on-site representative, resident engineer, construction manager, or otherwise, does not make Consultant responsible for those duties that belong to Client and/or construction contractors or others, and does not relieve construction contractors or others of their obligations, duties, and responsibilities. including, but not limited to, construction methods, means, techniques, sequences, and procedures necessary for completing all portions of the construction work in accordance with the contract documents, any health or safety programs and precautions required by such construction work, and any compliance with applicable laws and regulations. Any inspection or observation of the contractor's work is for the purpose of determining that the work is proceeding in conformance with the intent of the project specifications and contract documents. Consultant has no authority to exercise control over any construction contractor in connection with their work or health or safety programs and precautions. Except to protect Consultant's own personnel and except as may be expressly required elsewhere in the Scope of Work, Consultant has no duty to inspect, observe, correct, or report on health or safety deficiencies of the construction contractor.
- 2. <u>Shop Drawing and Submittal Review</u>. If required by Consultant's Scope of Services, Consultant shall review shop drawings or other contractor submittals for general conformance with the intent of the contract documents. Except for services completed under direct contract to Consultant, Consultant shall not be required to verify dimensions, to engineer contractor's shop drawings or submittals, nor to coordinate shop drawings or other submittals with other shop drawings or submittals provided by contractor.
- 3. Record Drawings. Record drawings, if required, will be prepared, in part, on the basis of information compiled and furnished by others, and may not always represent the exact location, type of various components, or exact manner in which the Project was finally constructed. Except for services completed under direct contract to Consultant, Consultant is not responsible for any errors or omissions in the information from others that are incorporated into the record drawings.

e. Scope of Work.

1. Before preparing the scope of work, Consultant specifically acknowledges and agrees that it has inspected and familiarized itself with Client's project site. The Consultant has received, or had the opportunity to inquire about and/or request all relevant information concerning the Scope of Work from Client or any other source

Consultant deems necessary. The Scope of Work has been prepared by the Consultant and to the best of its knowledge includes all applicable work required to successfully complete project.

8. Asbestos/Hazardous Material.

Consultant and Consultant's subcontractors shall have no responsibility for the discovery, handling, removal, or disposal of, or exposure of persons to asbestos or hazardous or toxic materials that are present in any form at the project site. Professional services related to or in any way connected with the investigation, detection, abatement, replacement, use, specification, or removal of products, materials, or processes containing asbestos or hazardous or toxic materials are beyond the scope of this Agreement.

In the event Consultant encounters asbestos or hazardous materials at the jobsite, Consultant may, at its option and without liability for damages, suspend the performance of services on the Project until such time as Client and Consultant mutually agree on an amendment to this Agreement to address the issue, or Client retains another specialist consultant or contractor to identify, classify, abate and/or remove the asbestos and/or hazardous materials.

9. Consultant's Work Product.

a. Scope.

Consultant's work product which is prepared solely for the purposes of this Agreement, including, but not limited to, drawings, test results, recommendations and technical specifications, whether in hard copy or electronic form, shall become the property of Client when Consultant has been fully compensated as set forth herein. Consultant may keep copies of all work product(s) for its records.

Consultant and Client recognize that Consultant's work product submitted in performance of this Agreement is intended only for the project described in this Agreement. Client's alteration of Consultant's work product or its use by Client for any other purpose shall be at Client's sole risk.

b. Electronic Copies.

If requested, solely as an aid and accommodation to Client, Consultant may provide copies of its work product documents in computer-readable media ("electronic copies", "CADD"). These documents will duplicate the documents provided as work product, but will not bear the signature and professional seals of the registered professionals responsible for the work. Client is cautioned that the accuracy of electronic copies and CADD documents may be compromised by electronic media degradation, errors in format translation, file corruption, printing errors and incompatibilities, operator inexperience and file modification. Consultant will maintain the original copy, which shall serve as the official, archived record of the electronic and CADD documents.

10. <u>Indemnification</u>.

- The Consultant shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Consultant or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation. property of the Company or of the Consultant or of any subcontractor, or of any other person or persons, and the violation of any law, ordinance, rule, regulation, standard, or order resulting from, or in any manner arising out of, or in connection with, the performance of the work under the Contract, howsoever same may be caused. including, without limitation, the Company's active or passive negligence. The Consultant shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation. suits by employees or representatives of the Company or of the Consultant or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- b. Consultant shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 36.
- c. Consultant further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the project site of any material, substance, or waste, hazardous or nonhazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

11. Consultant's Insurance.

Consultant shall procure and maintain the following minimum insurance:

a. Commercial general liability insurance, including personal injury liability, blanket contractual liability and broad-form property damage liability coverage. The

combined single limit for bodily injury and property damage shall be not less than \$1,000,000.

- b. Automobile bodily injury and property damage liability insurance covering owned, non-owned, rented, and hired cars. The combined single limit for bodily injury and property damage shall be not less than \$1,000,000.
- c. Statutory workers' compensation and employer's liability insurance as required by state law.
- d. Professional liability insurance. The policy limit shall be not less than \$1,000,000.

Consultant shall either require each of its subconsultants to procure and to maintain the insurance specified in this section or insure its subconsultants in the Consultants own policy, in like amounts.

Client shall be named as additional insured on polices 1 and 2 above. Upon execution of this Agreement, Consultant will provide a certificate of insurance to Client. Consultant will keep the certificate current at all times while this Agreement is in effect. The Consultant will provide a 30-day written notice in the event the above policies are cancelled.

12. Confidentiality.

Consultant agrees it will maintain the confidentiality of all material it receives from Client and will not disclose, distribute, or publish to any third party such information without the prior permission of Client. Notwithstanding the foregoing, Consultant shall have no confidentiality obligation with respect to information that:

- a. becomes generally available to the public other than as a result of disclosure by Consultant or its agents or employees;
 - b. was available to Consultant prior to its disclosure by Client;
- c. becomes available to Consultant from a third party who is not, to the knowledge of Consultant, bound to retain such information in confidence.

In the event Consultant is compelled by subpoena, court order, or administrative order to disclose any confidential information, Consultant shall promptly notify Client and shall cooperate with Client prior to disclosure so that Client may take necessary actions to protect such confidential information from disclosure.

13. Subcontracts.

Consultant shall be entitled, to the extent determined appropriate by Consultant, to subcontract any portion of the services to be performed under this Agreement.

14. Suspension of Work.

Work under this Agreement may be suspended as follows:

- a. <u>By Client</u>. By written notice to Consultant, Client may suspend all or a portion of the Work under this Agreement if unforeseen circumstances beyond Client's control make normal progress of the Work impracticable.
- b. <u>By Consultant</u>. By written notice to Client, Consultant may suspend the work if Consultant reasonably determines that working conditions at the Site (outside Consultant's control) are unsafe, or in violation of applicable laws, or in the event Client has not made timely payment in accordance with Article VI, compensation

15. Termination of Work.

- a. This Agreement may be terminated <u>by Client</u> as follows: (1) for its convenience on thirty (30) days' notice to Consultant, or (2) for cause, if Consultant materially breaches this Agreement through no fault of Client and Consultant neither cures such material breach nor makes reasonable progress toward cure within fifteen (15) days after Client has given written notice of the alleged breach to Consultant.
- b. This Agreement may be terminated <u>by Consultant</u> as follows: (1) for cause, if Client materially breaches this Agreement through no fault of Consultant and Client neither cures such material breach nor makes reasonable progress toward cure within thirty (30) days after Consultant has given written notice of the alleged breach to Client.
- c. <u>Payment upon Termination</u>. In the event of termination, Consultant shall perform such additional work as is reasonably necessary for the orderly closing of the work. Consultant shall be compensated for all work performed prior to the effective date of termination, plus work required for the orderly closing of the work, including: (1) authorized work performed up to the termination date plus termination expenses, including all labor and expenses, at Consultant's standard billing rates, directly attributable to termination; (2) all efforts necessary to document the work completed or in progress; and (3) any termination reports requested by Client.

16. Assignment.

This Agreement is binding on the heirs, successors, and assigns of the parties hereto. Except as otherwise set forth under Article VIII, Assignment of Tasks to Affiliates, this Agreement may not be assigned by Client or Consultant without prior, written consent of the other.

17. No Benefit for Third Parties.

The services to be performed by Consultant are intended solely for the benefit of Client, and no benefit is conferred on, nor contractual relationship established with any person or entity not a party to this Agreement. No such person or entity shall be entitled to

rely on Consultant's services, opinions, recommendations, plans, or specifications without the express written consent of Consultant. No right to assert a claim against the Consultant, its officers, employees, agents, or consultants shall accrue to the construction Contractor or to any subcontractor, supplier, manufacturer, lender, insurer, surety, or any other third party as a result of this Agreement or the performance or nonperformance of the Consultant's services hereunder.

18. Force Majeure.

Consultant and Client shall not be responsible for delays caused by circumstances beyond their reasonable control, including, but not limited to: (1) strikes, lockouts, work slowdowns or stoppages, or accidents; (2) acts of God; (3) failure of Client to furnish timely information or to approve or disapprove Consultant's instruments of service promptly; and (4) faulty performance or nonperformance by Consultant or Client, Client's or Consultant independent consultants or contractors, or governmental agencies. Consultant and Client shall not be liable for damages arising out of any such delay, nor shall the Consultant or Client be deemed to be in breach of this Agreement as a result thereof.

19. Integration.

This Agreement represents the entire understanding of Client and Consultant as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered herein. This Agreement may not be modified or altered except in writing signed by both parties.

20. Severability.

If any part of this Agreement is found unenforceable under applicable laws, such part shall be inoperative, null, and void insofar as it conflicts with said laws, but the remainder of this Agreement shall be in full force and effect.

21. Choice of Law/Jurisdiction.

This Agreement shall be administered and interpreted under the laws of the State of Arizona Jurisdiction of litigation arising from the Agreement shall be in The State of Arizona.

22. Attorneys' Fees.

In the event any claim, controversy, or legal action arises under this Agreement, the prevailing party shall be entitled to recover from the other party all attorneys' fees, costs, expenses and other fees incurred by the prevailing party.

23. Notice Provisions.

Notices concerning this Agreement shall be in writing and sent by certified mail or by courier (such as Federal Express), or by hand-delivery addressed as follows:

To the Company:

Arizona Water Company

3805 North Black Canyon Highway Phoenix, Arizona 85015-5351

Attention: President

or

Arizona Water Company Post Office Box 29006 Phoenix, AZ 85038-9006 Attention: President

To Consultant:

Hansen Engineering & Surveying

115 S. Main Street

Coolidge, AZ 85228

Attention: President

Either party may change its address for purposes of this Section by giving written notice of such change of address to the other party

24. Authorization.

The persons executing this Agreement on behalf of the parties hereto represent and warrant that the parties have all legal authority and authorization necessary to enter into this Agreement, and that such persons have been duly authorized to execute this Agreement on their behalf.

IN WITNESS WHEREOF, each of the parties hereto has caused this instrument to be executed by their respective duly authorized officers as of the date first written above.

HANSEN ENGINEERING & SURVE an Arizona corporation	YING ARIZONA WATER COMPANY, an Arizona corporation
By: Taylor Hon	By: 0 By: 10/15/10
Its: Przs.	Its: REAL PROPERTY SPECIALIST



Exhibit A

REVISED 10-14-10
Proposal For Survey

Client: Arizona Water Company

Attn: Charles Biggs

Project: Coolidge / Valley Farms Corridor Topo

Date: October 14, 2010

Scope of Services

Project Corridor Survey Coolidge-Valley Farms, Arizona

COOLIDGE - Exhibit 1

Locate all above-ground structures/improvements (including, but not limited to: curb, gutter, sidewalks, fences, posts, signs, poles, manholes, utility lines, etc.) and locate all utility bluestake markings (for underground utilities) within the Right-of-Way of the following roads:

- Coolidge Avenue, from Arizona Boulevard to Main Street, South of the R/W centerline
- Lincoln Avenue, from Arizona Boulevard to Main Street, South of the R/W centerline
- Elm Avenue, from Arizona Boulevard to Main Street, The entire width of R/W
- Main Street, from Elm Avenue to Seagoe Avenue, West of the R/W centerline on Main
- Third Street, from Palo Verde Avenue to Elm Avenue, The entire width of R/W

The survey will also show all features 10 feet beyond the Right-of-Way, specifically: Locate all above-ground utilities (including, but not limited to: valves, power poles, guy lines, junction boxes, ditches, canals, etc.) and locate and identify all utility bluestake markings (for underground utilities).

VALLEY FARMS - Exhibit 2

Locate all above-ground structures/improvements (including, but not limited to: curb, gutter, sidewalks, fences, posts, signs, poles, manholes, utility lines, etc.) and locate all utility bluestake markings (for underground utilities) along the Roadway of the following road:

- Moore Road, from Vah Ki Inn Road to McGee Road, The entire width.
- Vah Ki Inn Road, from AWC well site, East to McGee Road, North of the R/W centerline of Vah Ki Inn

The survey will also show all features 10 feet beyond the Roadway, specifically: Locate all above-ground utilities (including, but not limited to: valves, power poles, guy lines, junction boxes, ditches, canals etc.) and locate and identify all utility bluestake markings (for underground utilities).

NOTE: Moore Road is described by centerline and no width is defined (Book 84 of Deeds, Page 164). For the purposes of the survey, the primary survey area will be the width of the road as it exists. The secondary survey area will be 10 feet beyond the width of the road on each side.

ADDITIONAL INFORMATION

Project Location: Coolidge: Northwest quarter Section 27, T.5S., R.8E.

Project Location: Valley Farms: Northwest quarter Section 20, T.5S., R.9E.

Deliverables:

1 complete printed set of the survey in its entirety on bond paper

1 compact disc with the electronic files of the survey in its entirety in AutoCAD format



Exhibit B

Proposal For Survey

Client: Arizona Water Company

Attn: Charles Biggs

Project: Coolidge / Valley Farms Corridor Topo

Date: October 14, 2010

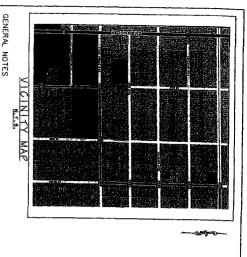
Project Fee

Total fee for services described in Exhibit A

\$7,400.00

Standard Time & Material Rates

1MC	$= \$ 85/H_{\rm F}$
2MC	= \$100/Hr
3MC	= \$135/Hr
Auto Cad 1	= \$ 55/Hr
Auto Cad 2	= \$ 60/Hr
Sr. Field Tech	= \$ 70/Hr
Engineering Tech 1	= \$ 60/Hr
Engineering Tech 2	= \$ 70/Hr
Land Surveyor	= \$100/Hr
Engineer	= 100/Hr



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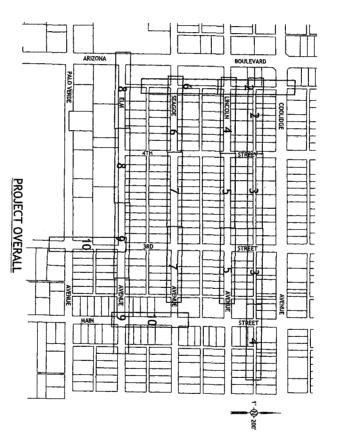
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ADEQ APPROVAL

REPLACE 6,200 L.F. OF 3" & 4" WITH 6,400 L.F. OF 6" & 12" C-900 P.V.C. IN AN ALLEY, ON LINCOLN, ELM, 3RD, AND MAIN STREETS

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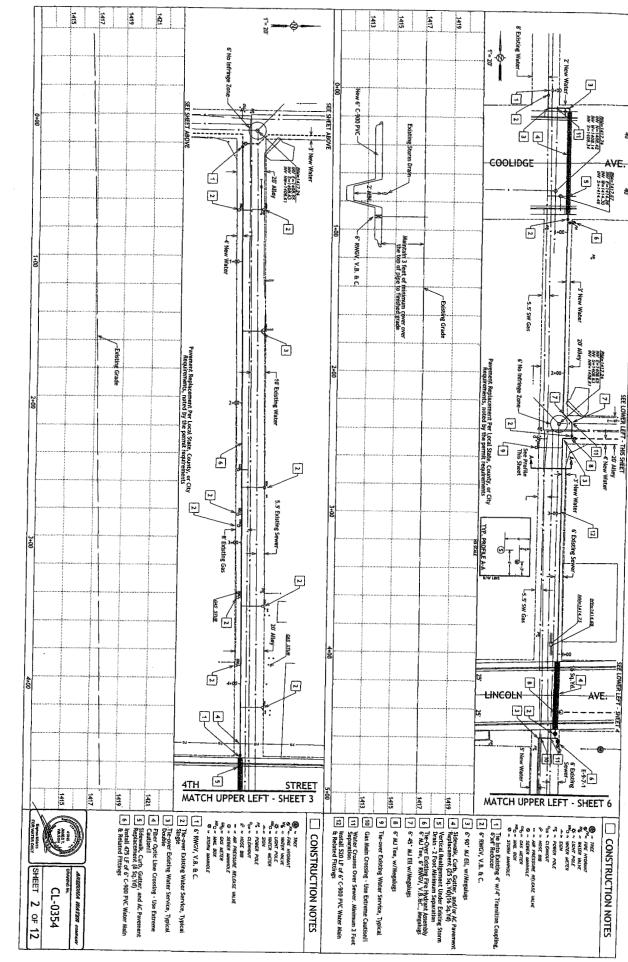
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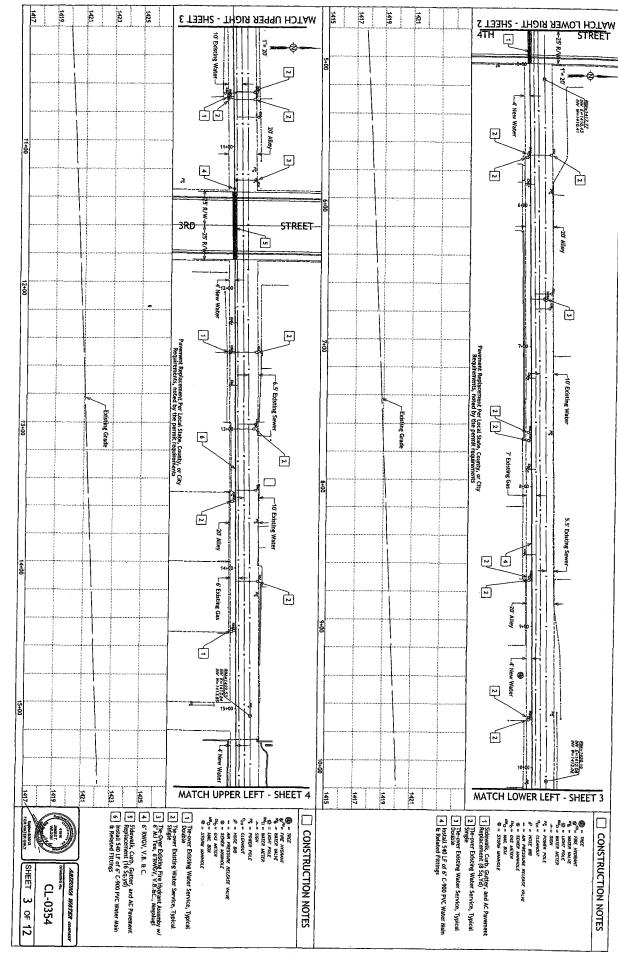
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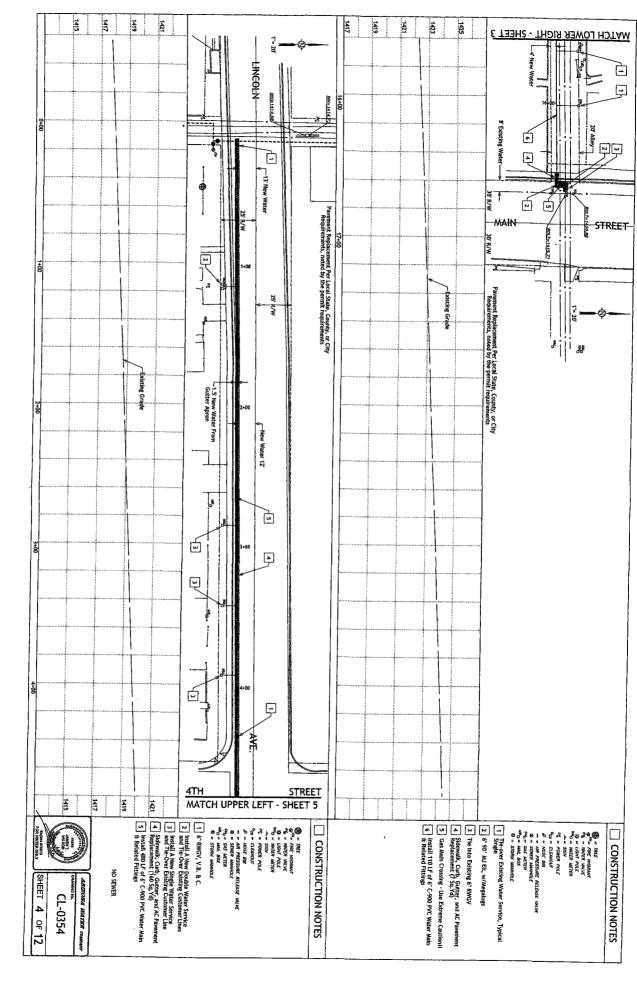
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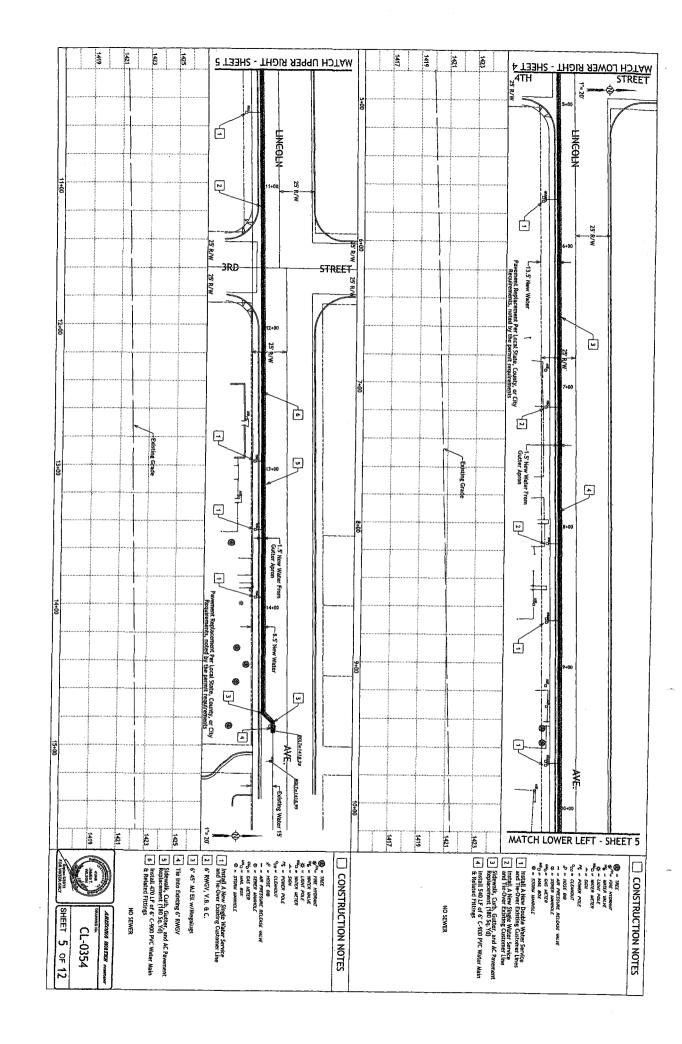
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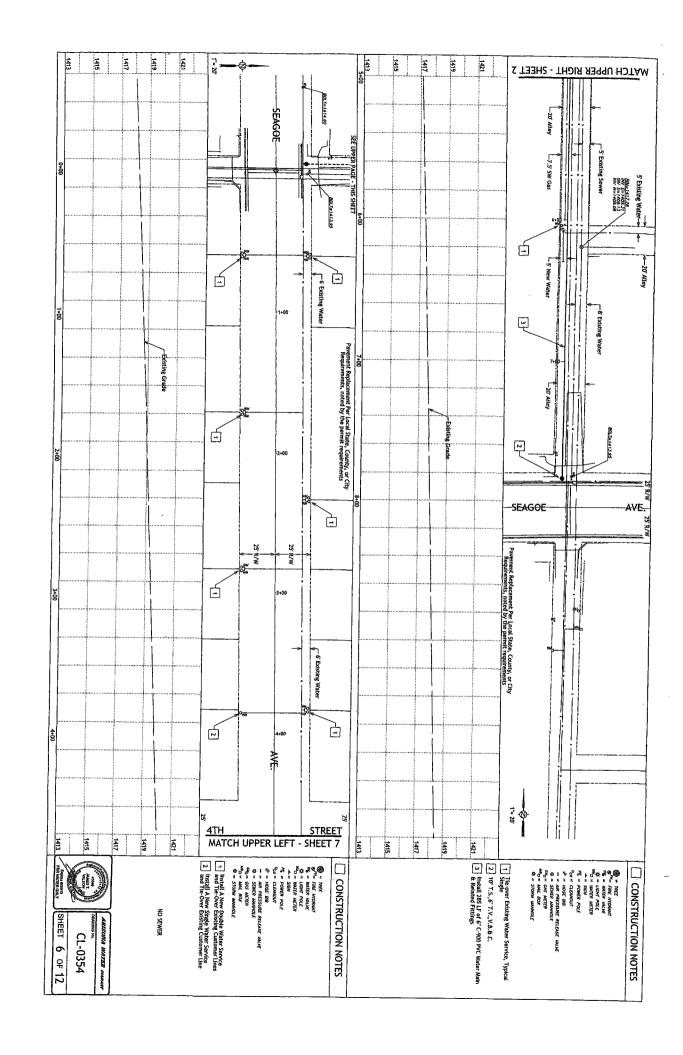


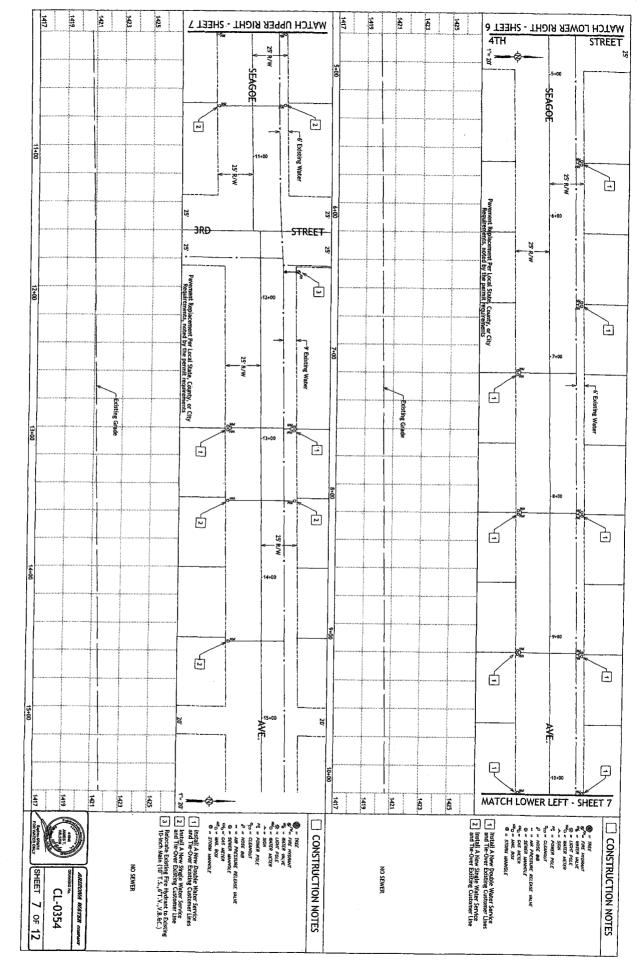
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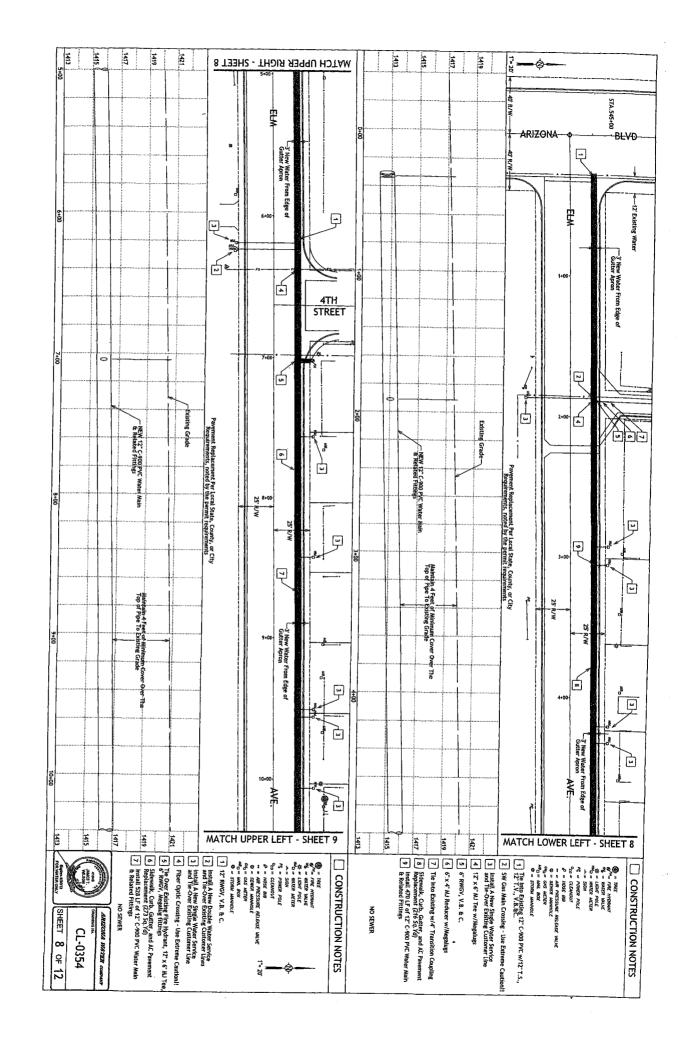


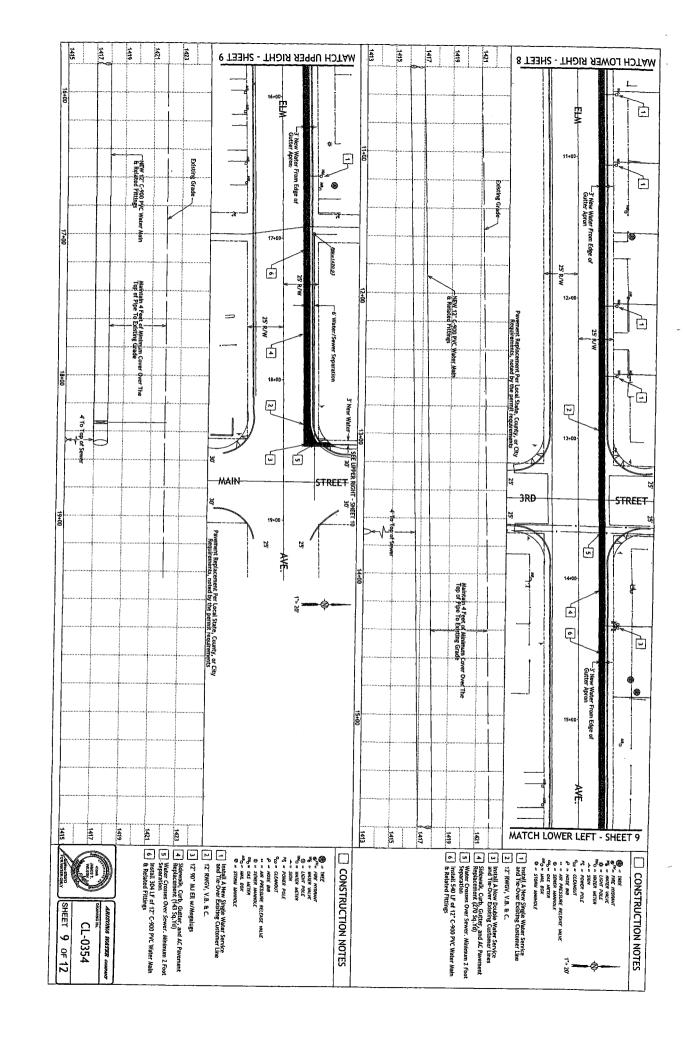


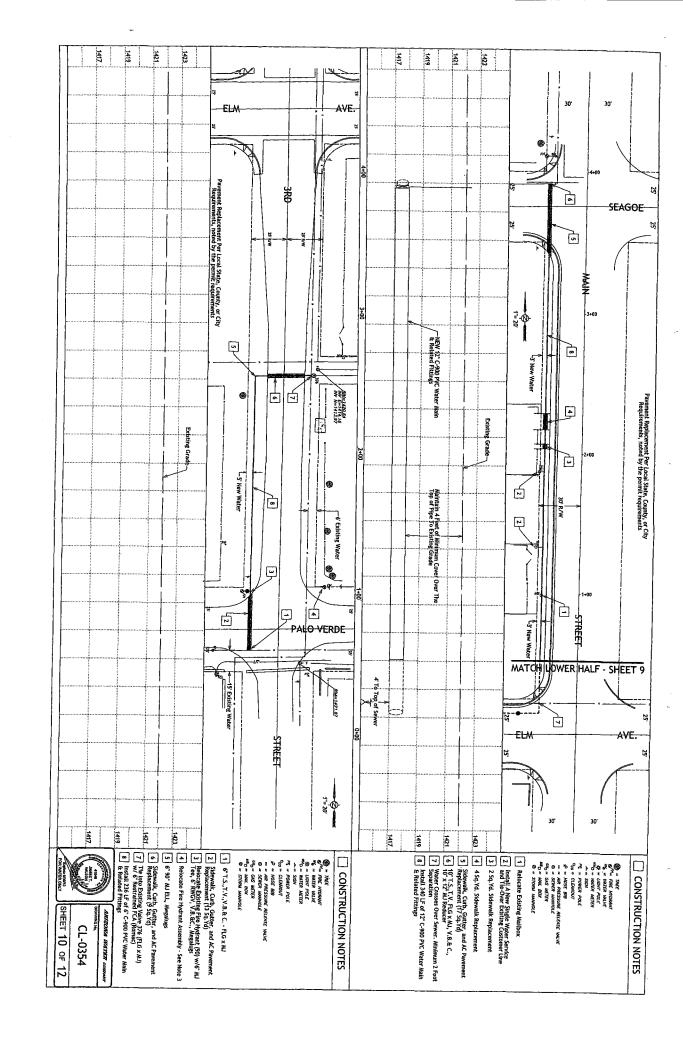




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lives shadhe speed forl mare than fire handed feel (560) is commercial and an invert than sight handed leet (600) is that addicts, twicolous may beel for twenty-ship makes yellopedification.

On all which has easily shallow per Shadded Specificities 1-5-24-1.

6. No votor plus shalipers through or come into contact with ony pert of a seesa technic. The prefuture haticontarpprocion between water makes and morbolics shallbe at it feet (67), measured from the center of the monthile.

dy construction performed ultimal by knowledge of the day extinction of operamendates. Addit for removalend redoctions of the Condector's appoints. Ultiful hydroxis, fromts, context and value basts, els. Tables delipted is finished green prior to the phinting of the applied concrete surface course by the Contraction where applicable.

c. Yhan unusedenolisius such es bel nel felief is, felpinay er hödge veränings preved to- mitter and some make travesilars registed from hödgest, but sprängrigiet salle ender enonly haabit departiment affertien and may appears reports for emberichalon to are attenues environtien standquat, materials and johls on a crassly-resse statis.

lider to decumplances withe horizontal expercises between sever make and water makes to less than two feet 12th, Aldistances are to be measured from the auticle of the sever make to the outside of the water make.

b. Verlies: What is water model by positelith or grossus is seen rank which our first I'z) above the seen or greater than the field 25 below the seen or greater than with first 250 below the seen of protection within reperiod, their protection about country of the seen of the seen of the reperiod to the position about the seen of the see

ladra as ultrumalances will be vertical separation of a sear main installed shave i valual main he lass than two test (27). All distances are to be measured from the valuals of the search main to the existen of the select main. Rater to the dispress shave for abujicación. rec Canstruction Branisps shalloficate the hastolepton capéraments. The drowings aboving these exceptions showhere been opproved by the oppropriate state each county hadin department.

(0) <u>PROTECTION OF WATER LIAMS NEWS SEWIES</u> in airbor to protect water mains from contomination water mains must conform to the fathwing regularance

4. The colorum separation beloess force make or prosess award so desirement and the first of the colorum separation separation of the colorum separation separation of the colorum separation sep

PROFILE VIEW



The Construction Greatups shalloficate the institution requirements. The decempts sharing these exceptions shallows been experved by the appropriate close easier county health department. Refer to the dayrum below for derification.

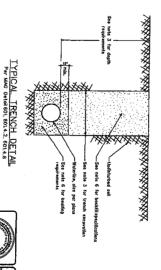


f. Sover mains (gravity, prossurs, tareel should kept a minimum of lity feel 15g's from driving mater wals, values the following enablians are meti Waler main pipe pressure tealed in place to 80 psiwithout executive tealegge, may be used for gravity sowers at distances greater late, whanty feel 1201 from shiddig water melt. State of Branch

 Wild'r made pile, persone teted is place to 199 gelulipad, accessive, leakage, may be used for personer same; not deren midst at distances greater than teachy back (2007 from attalking netur exit.
 He smitt leak-dissant field gratum, handbe environised wilden one baudead feet 1907s of a delaking under sext. h. Aldisloners are nessured perpondicionly from the estable of the sener mobile to the estable of the water mobil these experible requirements de not apply to wilding phanking at individual house service confections. chaokal-sibil dvelilo kan pja: with Magaleg thrust restraints a minimum feet an each elda af a sower er starm drain crossing.

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discione field effection for F and LP membeded joid desile Fan has it fine apprint, insuliny-tem discioned in J. Art of heavy insole 120-7 pr a discharaction, 107 hapht figs. for a mathema despect also banded about-field desily-field (ed. 1987), inclines field effection for F. F. or of LP years in John desile two plan is designed 157 to about in about 158 in 157 per alphanester in 157 pe dealmoum, joint detkeellon for 8" methandicalfaiet dustike iron pilpse is seven dispress, esseum minuliet (*",7%) or teurity-seven fisches (87%) per elghiteco-foot (18%) tengilo pilpse, for a metainoum source of one handrad forly-filice foot (148%). Allmain ikia valves shallconform to JAYNA C500 with a minimum marking pressure of 200 pet. cost iran fillings to be criment lived in occardance with AYMA CID4 and chop Inform to AXMA CIID with a milimum woulding prossore of 250 psi. Except for the solidge System - See Nate 41.



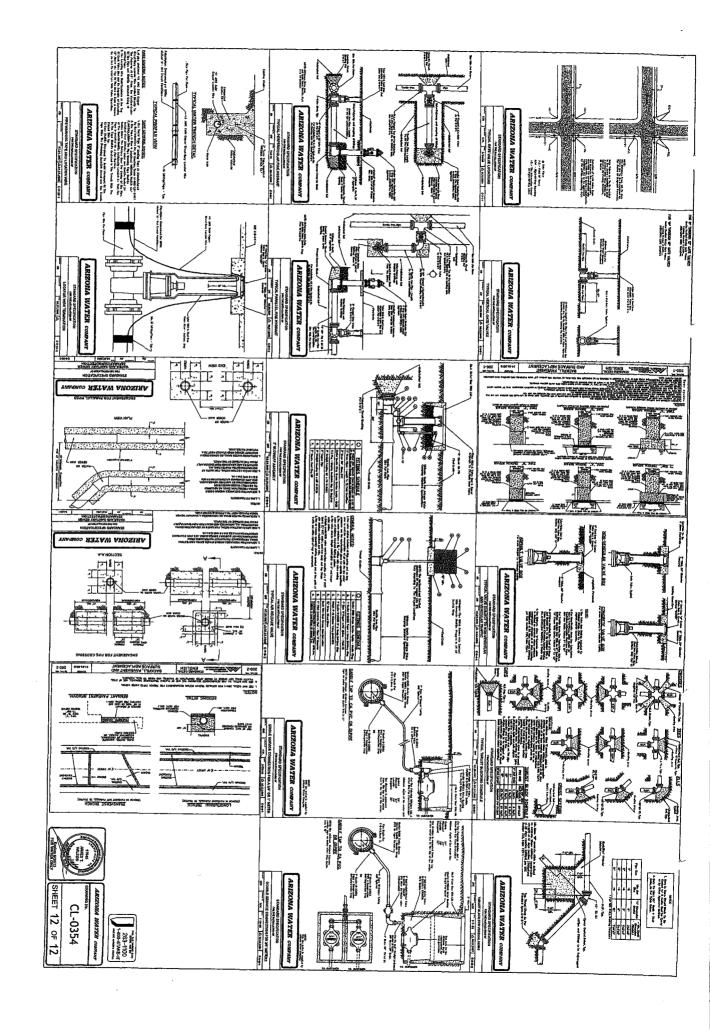




ARIZONA WATER comeon CL-0354

SHEET 11 OF 12

defices that Company graphes but in the jet profiles to enthed schied, to prove it in bettem of the treat was stopped from his or of the schied and the provent in the schied of the treat was stopped from his or O'l hade the ording war much. The healthest careed the made to all its publicate the part of the contract careed the made to all its publicate parts are contracted to the contract of the contract (a) and the made and the contract of the contra



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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY CERTIFICATE OF APPROVAL TO CONSTRUCT WATER FACILITIES

Page 1 Of 2

ADEO File No: 20100235

LTF No: 53493

System Name: Az Water Co-Coolidge

System Number:

11-014

Project Owner: Arizona Water Company

Address: P O Box 29006, Phoenix, AZ 85038

Project Location: Coolidge

County: Pinal

Description: REPLACE 6,200 LF OF 3-INCH AND 4-INCH WATER LINE WITH 6,400 LF OF 6-INCH AND 12-INCH C-900 PVC WATER LINE ON

LINCOLN ST., ELM ST., 3RD ST., MAIN STREET AND IN AN ALLEY,

IN COOLIDGE.

Approval to construct the above-described facilities as represented in the approved documents on file with the Arizona Department of Environmental Quality is hereby given subject to provisions 1 through 5 continued on page 2 through 2

- 1. This project must be constructed in accordance with all applicable laws, including Title 49, Chapter 2, Article 9 of the Arizona Revised Statutes and Title 18, Chapter 5, Article 5 of the Arizona Administrative Code.
- Upon completion of construction, the engineer shall fill out the Engineer's Certificate of Completion and forward it to the Central Regional Office located in Phoenix. If all requirements have been completed, that unit will issue a Certificate of Approval of Construction. R18-5-507(B), Ariz. Admin.Code. At the project owner's request, the Department may conduct the final inspection required pursuant to R18-5-507(B); such a request must be made in writing in accordance with the time requirements of R18-5-507(C), Ariz. Admin. Code.
- 3. This certificate will be void if construction has not started within one year after the Certificate of Approval to Construct is issued, there is a halt in construction of more than one year, or construction is not completed within three years of the approval date. Upon receipt of a written request for an extension of time, the Department may grant an extension of time; an extension of time must be in writing. R18-5-505(E), Ariz. Admin. Code.
- 4. Operation of a newly constructed facility shall not begin until a Certificate of Approval of Construction has been issued by the Department. R18-5-507(A), Ariz. Admin. Code.

Reviewed by: AD4

cc: File No: 20100235

Regional Office: Central

Owner: Arizona Water Company

County Health Department: Pinal

Engineer: Arizona Water Company Planning and Zoning/Az Corp. Commission

Engineering Review Database - Etr021

Engineering Review Section Water Quality Division

APPROVAL TO CONSTRUCT DRINKING WATER TRANSMISSION LINES ADEQ FILE No. 20100235 PAGE 2 OF 2: PROVISIONS CONTINUED

5. The Arizona Department of Environmental Quality's review of this application was subject to the requirements of the licensing time frames ("LTF") statute under Arizona Revised Statutes ("A.R.S.") § 41-1072 through § 41-1079 and the LTF rules under Arizona Administrative Code ("A.A.C.") R18-1-501 through R18-1-525. This Notice is being issued within the overall time frame for your application.

ADEQ hereby approves your application for Approval to Construct Water Facilities under A.R.S. § 49-351. Your copy is enclosed.

This decision is an appealable agency action under A.R.S. § 41-1092. You have a right to request a hearing and file an appeal under A.R.S. § 41-1092.03(B). You must file a written Request for Hearing or Notice of Appeal within 30 days of your receipt of this Notice. A Request for Hearing or Notice of Appeal is filed when it is received by ADEQ's Hearing Administrator as follows:

Office of Administrative Counsel Arizona Department of Environmental Quality 1110 W. Washington Street Phoenix, AZ 85007

The Request for Hearing or Notice of Appeal shall identify the party, the party's address, the agency and the action being appealed and shall contain a concise statement of the reasons for the appeal. Upon proper filing of a Request for Hearing or Notice of Appeal, ADEQ will serve a Notice of Hearing on all parties to the appeal. If you file a timely Request for Hearing or Notice of Appeal you have a right to request an informal settlement conference with ADEQ under A.R.S. § 41-1092.06. This request must be made in writing no later than 20 days before a scheduled hearing and must be filed with the Hearing Administrator at the above address.

Please contact Adrian Dumitrescu at 602-771-4201 or <u>ad4@azdeq.gov</u> if you have questions regarding this Notice or the Certificate of Approval to Construct.

Dec 29 10 12:57p

Public Works

520-709-3004

p.1



CITY OF COOLINGE PUBLIC WORKS DEPARTMENT

355 5 1st ST. COOLINGE AZ 65128-4418 520-723-4582 FAX: 520-723-3004 coolingeaz.com

PERMIT NO. 10-12-132-RWU

PERMIT TO USE RIGHT-OF-WAY (UTILITY COMPANIES)

A PERMIT IS HEREBY ISSUED to use the right-of-way described herein solely for the Scope of Work set forth below with the expressed understanding that all conditions, general and special, are part of this permit and must be faithfully performed to the satisfaction of the City of Coolidge, hereinafter referred to as "City," and in accordance with plans, specifications and special requirements approved by the City. Work under permit may commence as of the issuance date. This permit must be posted on site at all times. All work shall be completed by the expiration date set forth below.

THIS PERMIT IS FOR WORK IN CITY OF COOLIDGE RIGHT-OF-WAY ONLY. HOWEVER, ISSUANCE OF THIS PERMIT DOES NOT CONFIRM THE EXISTENCE OF CITY RIGHT-OF-WAY. VERIFICATION OF RIGHT OF WAY IS THE PERMITTEE'S RESPONSIBILITY.

IF GRADED OR DISTURBED AREA EQUALS OR EXCEEDS 0.1 AC., YOU MUST APPLY FOR A DUST CONTROL PERMIT FROM PINAL COUNTY AIR QUALITY CONTROL (520-868-6929)

LINEAR FEET: (TRENCHING)	5,600 Ln Ft (8'& 12" C-9	DO) PERM	NT FEE: TO SE COMPL	- 0 - ETED BY PUBLIC WORKS)
PERMITTEE NAME:	Arizona Water Company		-	
ADDRESS:	448 W. Central Ave. Cooli	ige, AZ 85128		
PHONE & FAX:	520-723-5346 Fa	x: 520-723-3081	Anager and the passing the same	
CONTRACTOR NAME & LICENSE	NO: Stave Ortiz: Senior Service	aman (520-705-4247)	# 244261-A	(Sahvero Pipeline)
SCOPE OF WORK:	Trench approx. 5,600 lf. fo	6" & 12" C-900 pice	in alley south	of Coalidae Ave
along south side of Lincoln, west side	te of Main & north side of Elm. I	etween Arizona Blvd	& Main Stree	t
			•	
LOCATION OF RIGHT-OF-WAY: S	ECTION: NW 27 TOWNSH	(IP: <u>5 - S</u>	RANGE:	9-E
ROAD NAME & OTHER INFORMA	TION: Coolidge Ave. Lin	coln Ave., Elm Ave., c	un Street, 3rd	Street & Main Ave.
SPECIAL CONDITIONS:	MAG compaction s	tandards apply. Den	sity <u>tests shall</u>	be provided
where non-slurry backfill is placed.	Traffic control plan shall be sub-	nitted for approval or	or to construc	tion.
	<u></u>	·		
DATE ISSUED: Jan 10, 201		ON DATE:		
ADDDOVED BY		CHYENG	INEER/INSP	ECTUR

THIS DOCUMENT MUST BE POSTED ON THE CONSTRUCTION SITE IN A CONSPICUOUS PLACE. NO WORK WILL BE ALLOWED TO TAKE PLACE INSIDE THE RIGHT-OF-WAY WITHOUT A VALID PERMIT ON SITE. THE PERMITTEE, CONTRACTOR, PERSON OR FIRM DOING THE WORK MUST GIVE VERBAL OR WRITTEN NOTICE OF THE DATE AND TIME WHEN SCOPE OF WORK WILL BEGIN TO THE INSPECTION SECTION BY CALLING THE PUBLIC WORKS OFFICE AT 520-723-4982 OR BY FAX AT 520-723-3004. SUCH NOTICE MUST BE RECEIVED BY THE INSPECTION SECTION AT LEAST 48 HOURS PRIOR TO THE TIME THE WORK WILL BEGIN. A FINAL NOTICE MUST BE GIVEN AND RECEIVED BY THE INSPECTION SECTION WITHIN 48 HOURS AFTER COMPLETION OF THE SCOPE OF WORK IN THE SAME MANNER AS FOR THE START NOTICE.



ARIZONA WATER COMPANY

Casa Grande Office: PO Box 11030 - Casa Grande, AZ 85130 - 1030 Voice: 520-836-8785 Fax: 520-836-2850

PROPOSAL/CONTRACT

CONTRACTOR: EAHUARO PIPELINE CORPORATION, INC.	SYSTEM:	Pinal Valley
ADDRESS: P.O. BOX 2989, GILBERT AZ 85299	W.A. No(s):	1-4772
	BID DUE DATE:	December 13,2010

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

- Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Confract, and the Company's Construction Specifications and Standard Specification Drawings (the "Specifications"), all of which are attached hereto. Confractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Confractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract. Specifications and Drawings.
- Contractor represents and warrants that it has satisfied and complied with the provisions of Section 8, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
- Confractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
- Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
- Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
- Contractor will furnish all tabor, tools, equipment and malartels required to complete the Project according to the General Conditions of Contract, Specifications and Drawings.

 No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax.

 Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company.

 The cost of materials incorporated into the Project which are exempt by Artzone Revised State Statutes ("A.R.S.") from the Contracting Tax, for eximplin, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. \$42-5061.8.6.), will not be included in the total cost of the lattor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and Indemnify the Company against any demand or obligation to pay the Contracting Tax.
- 7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor involces for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor—involces and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
- 8. The Estimated Total Cost of the Project, shown on Page 2, is besed on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withinter this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Data. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
- 9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gentl or CPM form, Identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, Including testag, training of Company Personnel and final Project Invokcing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
- 11. Following the Company's written notice of setisfactory completion of the Project, and upon receipt of the final Project invoke from Contractor, the Company shall pay Contractor the actual lobal cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
- 12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paregraph 10 may be deducted from the Company's payment of the final Project Invoice. This provision shelf not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

ANY C.A. PIPE REMOVED FROM THE GROUND MUST BE HAULED OFF AND DISPOSED OF PROPERLY

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
	ARIZONA WATER COMPANY
By: All Chr	By: Judiem & flower
Print Name: 1 TYLER JONES	Print Name FREDRICK K Schneider
Title: ESTIMATOR	Title: UP-angineuring
Date: 12-20-10	Date: /2-21-20/0



ARIZONA WATER COMPANY

Cata Grande Office: PO Box 13030 - Casa Grande , AZ 85130 - 1030

CONTRACTOR: SAHUARO PIPELINE CORPORATIO			PRC		ONTRACT
.	بلالا	INC.		Pinal Va	lley
AZ CONTRACTOR LICENSE NO: 244261 CLASSIFICATI	ON:	A		i	-4772
				BID DUE DATE:	
ADDRESS: PO. BOX 2989, GILBERT, AZ 85294	2			Decemi	per 13, 2010
, · , · ,				BID BOND REQUIRED	
				X Yes	No.
DESCRIPTION Replace 6,200 L.F. of 3" & 4" with 6,400 L.F. along Lincoln, Elm and Main Streets. At ConsEC.27. T5S R.8E.					▼ -
		חאט	PRICE	το	TAL COST
1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	ANTITY	LABOR	MATERIALS	LABOR_	MATERIALS
Tie into existing 4" w/ 4"quantum dresser and a 6" x 4" reducer w/ rtid ftgs	1	130.00	220.00	130.00	220.00
Install 6" C - 900 P.V.C. with related fittings	4,198	10.00	21.40	307. 134.00	
Tile Into existing 6° RWGV with related fittings	2	2(40.00	690.00	520.00	1,380.00
Install & Tap a 6" T.S. & a 6" T.V. Fig x MJ with related fittings	1		4005.0	000	00.CUU,I
install a 6" MJ x Fig Tee with a 6" Fig x MJ G.V. & Fine Hydrant w/ ritd ftgs	4	(A3.00	31107-0	0.00	2,069.00
Tie into existing valve # 376 (Fig x MJ) with restained FCA with related figs	1_	130.00	220.00		220.00
nstall & Tap a 10" T.S. w/ a 10" T.V. & a 10" x 12" reducer w/ related figs	_1	1,502.00			3998.00
nstall & Tap a 10"x 6" T.S. w/ e 6" T.V. & Install F.H. with related fittings	1_	in in the second		1.1048-00	4,302.00
		18.00	40.00	39,274.00	62.2
nstall a 12" x 6" MJ x Fig Tee with a 6" Fig x MJ G.V. & F.H. w/ rttd ftgs	_1	<u>692.00</u>	3.308.11		3,308.00
nstall & Tap a 12" T.S with a 12" T.V. with related fittings			4111-00	1,389.00	4.101.00
Remove existing 4° Tee & dresser in section of 4° C - 900 P.V.C.	_ <u>+</u>		348.00	512.00	348.00
terriove existing 10" x 4" cross & dresser in section of 10" C - 900 P.V.C.		902.00	748.00	902.00	748.00
temove two 10" x 4" Tee & Install new 10" x 4" with related fittings		(35.00	2,435.00	1,315.00	2.435.00
Remove existing 6" x 4" cross & Install a 6" x 4"MJ Tee with related fittings		719.00	531.00	719.00	531.00
temove / abandon existing fire hydrants 3. Total Labor to install Exempt Materials (add the amounts in column 1)		<u>350.00</u>	0.00	2,100.00	40.00
4. Total Exempt Materials (add the amounts in column 2)	********		***************	3 121,828.00	4.211,380.00
					-
	NIIIY 19	_LABOR_	MATERIALS	LABOR DO	MATERIALS MATERIALS
nstall a new 1° copper single service with related fittings (Long) stall a new 1° copper Double service with related fittings (Long)	12		390.00 Tuos.00	(0,840.00	7,410.00 9,180.00
Istall a new 1" copper bouble service with related fittings (Short)	42	655.00	350.00	(e, (400 · 00	#1000 V
stall a new 1° copper Double service with related fittings (Short)	17	35.00	(A10.00	5,670.00 4,590.00	13.800.00
bles a liew i copper popule service marrended mange (chert)	-''- .	270.00	DIO: DO	4.010.00	10,370.00
	•				
	119	340.00	90.00	42 840.00	10,710.00
etall 15 D.V.C. line & Tie Into customer line with related fittings	119	75.00	90.00	9 025 00	10.710.00
			AV:YV.	425.00	, 110.00
					32-31
	_				
stall 1" shut off valve & box with in 18" from meter with related fittings				775525.00	
				7 75,525.00	02,240.00
stall 1" shut off valve & box with in 18" from meter with related fittings 7. Total Labor to install Non-Exempt Materials (add the amounts in column 5)				7 75,525.00	02,240.00 \$ \$ 259 #3 W
stail 1" shut off valve & box with in 18" from meter with related fittings 7. Total Labor to install Non-Exempt Materials (add the amounts in column 5)	**********			7 75,525.00	\$259,593.00
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1	,	\$ 259,593.00
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1	s105,735.45	\$ 259,593 to
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)			1	s105,735.45	
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)			1	s105,735.45	12 19,742.50
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5) 8. Total Non-Exempt Materials (add the amounts in column 6) 9. Subtotal A (add lines 3, 7 and 8) 10. Contracting Tax Base (multiply the amount on line 9 by 0.65) 11. Applicable Contracting Tax Rate 12. Contracting Tax (multiply the amount on line 10 by line 11) 13. Subtotal 8 (add lines 4, 9 and 12)			1	s105,735.45	12 19,742.50 13 470,715 450

CONSTRUCTION SPECIFICATIONS: E-8-1

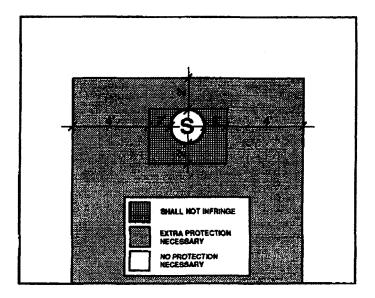
ERRATA 2010

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



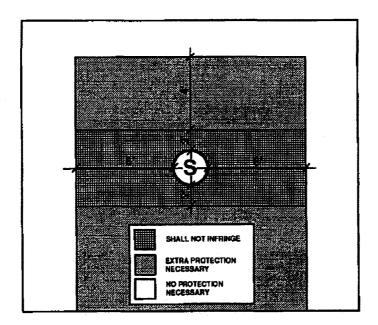
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

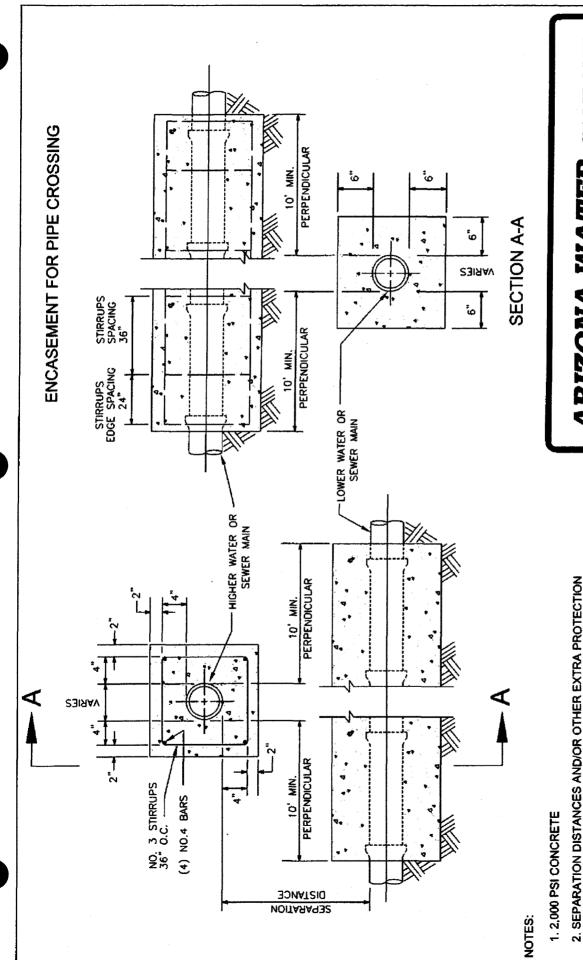
- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



STANDARD SPECIFICATION DRAWINGS: E-9-1

ERRATA 2010

E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
E-9-22	INSTALLATION OF COLUMN PIPE, OIL TUBE AND LINE SHAFT
E-9-23	HOT TAP AND JUMPER METER CONNECTION
E-9-24	INSTALLATION OF TYPICAL WATER LINE ENCASEMENT
E-9 - 25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION
E-9-30-1	WATER AND SANITARY SEWER SEPARATION/PROTECTION PERPENDICULAR
E-9-30-2	WATER AND SANITARY SEWER SEPARATION/PROTECTION - PARALLEL



CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD

SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.

SHALL BE REQUIRED TO PROTECT WATER MAINS FROM

PROTECTION, ALL DISTANCES ARE MEASURED PERPENDICULARLY 3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA

FROM THE OUTSIDE OF THE PIPES.

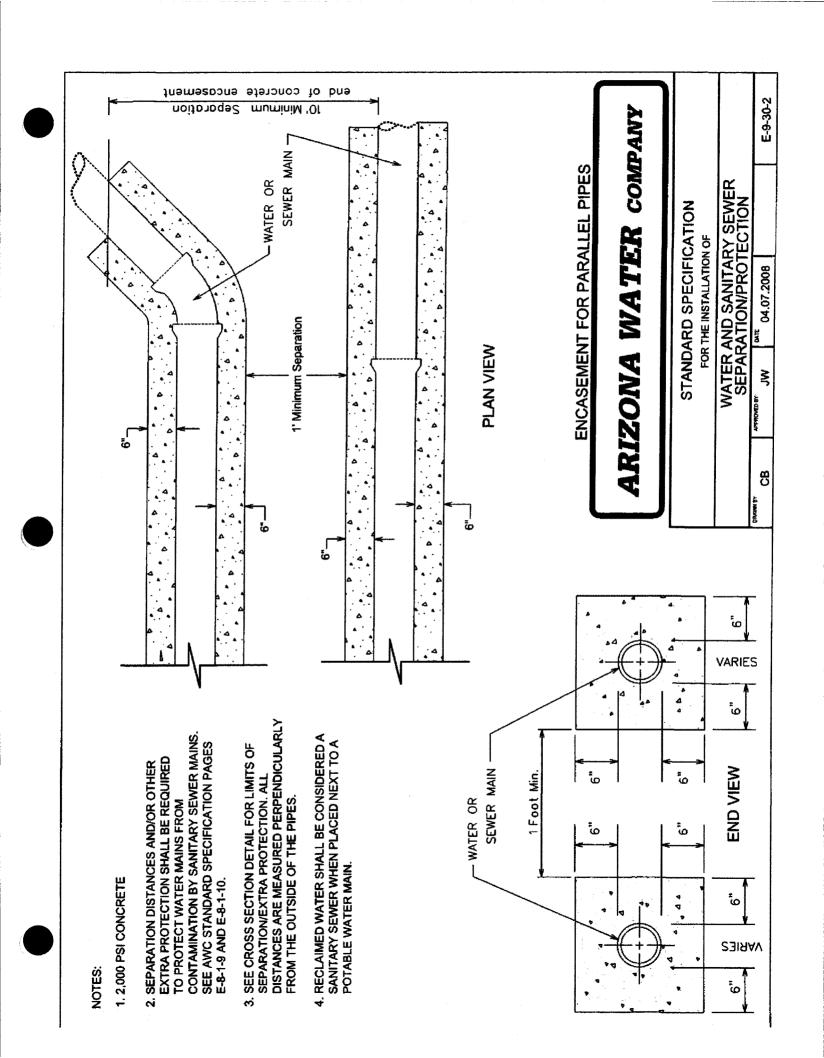
4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER

WHEN PLACED NEXT TO A POTABLE WATER MAIN.

STANDARD SPECIFICATION FOR THE INSTALLATION OF

WATER AND SANITARY SEWER SEPARATION/PROTECTION

E-9-30-1 04.07.2008 ₹ 8



3805 N, BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan Clow Valve Company 8121 N. 10th Avenue Phoenix, Arizona 85021

> Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves Re:

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydraut:

- Model F-2545
 - 51/4" MVO
 - 4½" pumper
 - 21/2" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

E-MAIL: mail@azwater.com

To:

Jim Ryan - Clow Valve Company

October 19, 2010

Subject:

Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the Clow products. If I can be of any assistance, please call me.

Very truly yours,

Fredrick K. Schneider

Vice President - Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

3805 N. BLACK CANYON HIGHWAY. PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger US Pipe – Waterworks Marketing Consultants 34522 N. Scottsdale Road Scottsdale, Arizona 85226

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Re:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USP1
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

E-MAIL: mail@azwater.com

To:

Tony Geiger - US Pipe

November 24, 2010

Subject:

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,

Fredrick K. Schneider

Vice President - Engineering

afh

VIA EMAIL: TGEIGER4@COX.NET



SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION

GENERAL CONDITIONS OF CONTRACT: E-4-1

F-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Invitation to Bid</u>. The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid
- F. <u>Contract</u>. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. <u>Inspector</u>. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

8. PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. **DISPUTES**

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. ?40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- The Contractor shall indemnify the Company against, and save and hold it harmless from any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons. and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage. destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. <u>LIENS</u>

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all deslabor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. <u>LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME</u>

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

CONSTRUCTION SPECIFICATIONS: E-8-1

F-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawi ngs and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Contract</u>. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, wi thout attempting to be inclusive, are:

- a. Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding m aterial will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color yellow, drain open, open direction left, 4' or 4'6" bury depending on application. For pumper and hose nozzle inform ation see below.
 - (1) 1 4" Pumper Nozzle, NST and 2 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San M anuel.)
 - (2) 1 4½" Pumper Nozzle, NST and 2 2½ " Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) $1 4\frac{1}{2}$ " Pumper Nozzle, NST and $2 2\frac{1}{2}$ " Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and $2 2\frac{1}{2}$ " Hose Nozzles, NPT (Miami only.)

- (5) $1 3\frac{1}{2}$ " Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and $2 2\frac{1}{2}$ " Hose Nozzle, NST (Superior only.)
- b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x 3/4" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12"; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and B UNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)
- I. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.
- m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.
- n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8 " x ¾" x ¾" for a ¾" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x $\frac{3}{4}$ " for a $\frac{3}{4}$ " service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: ¾", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes 3/4", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".
 - Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).
- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
 - (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
 - (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knock outs and adjustable frame.
 - (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8 x 3/4" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these S pecifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system .

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe befor e any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Speci fication E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

9. NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

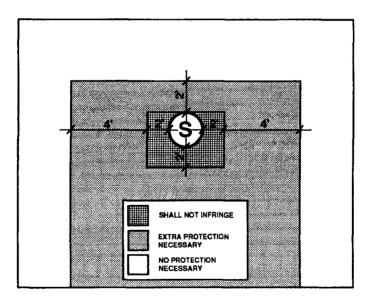
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running pa rallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below f or clarification.



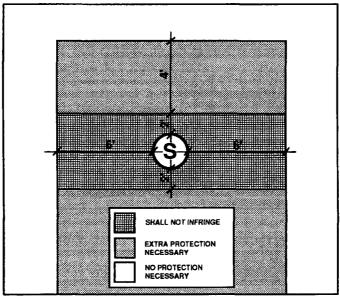
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°, 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

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STANDARD SPECIFICATION DRAWINGS: E-9-1

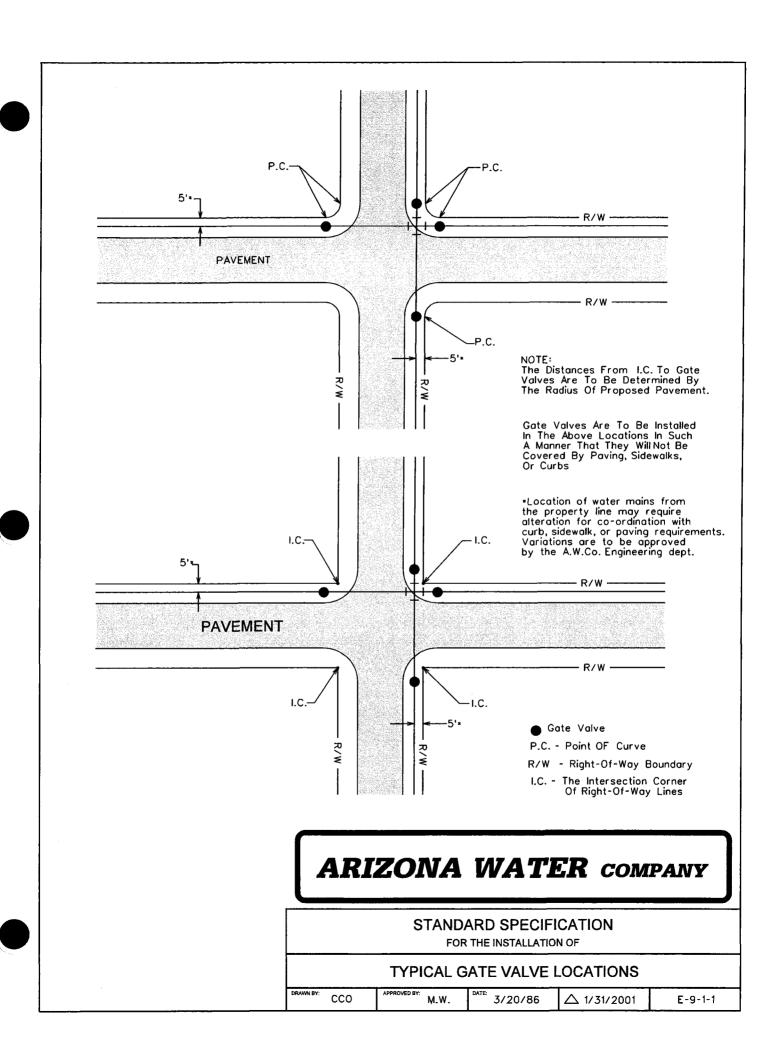
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STANDARD SPECIFICATION DRAWINGS

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E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9 - 29	INSTALLATION OF A TYPICAL SAMPLING STATION

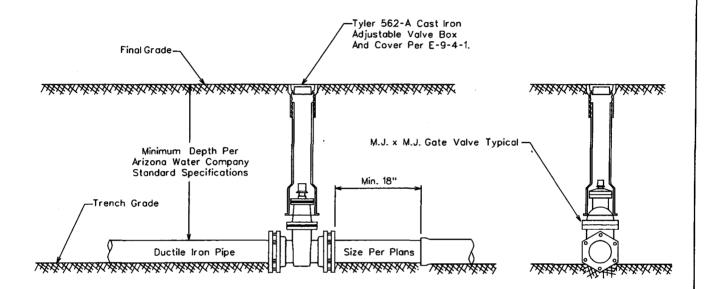


FOR 6" THROUGH 12" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2360-__ ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2361-__ ANSI/AWWA C509 Compliant



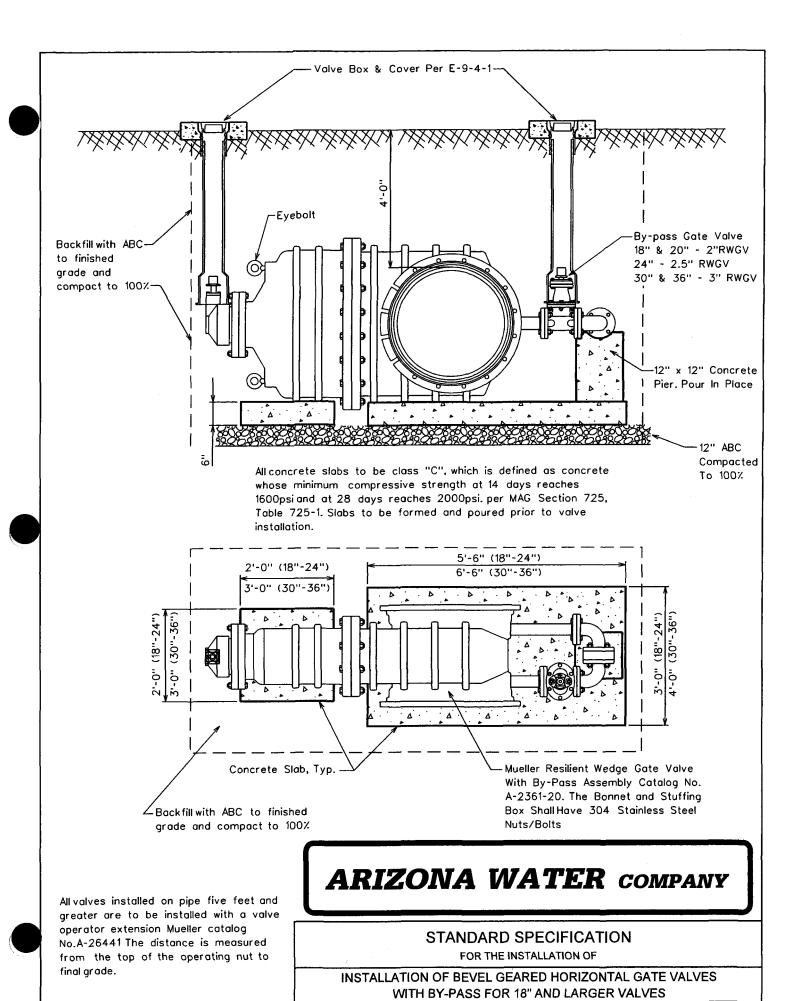
All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL VERTICAL GATE VALVES

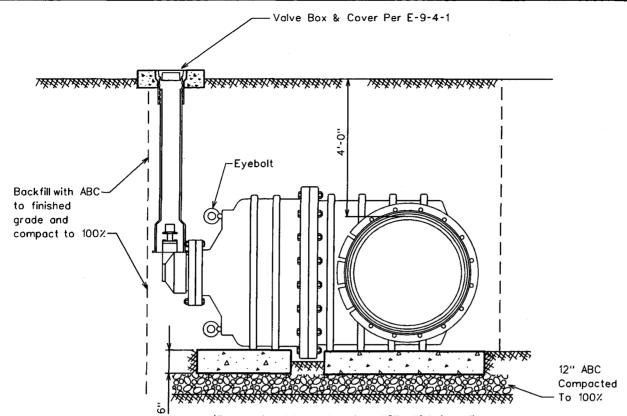
DRAWAI BY: CB APPROVED BY: NW DATE: 03.20.1986 △ 08.23.2006 **€-9-2-1**



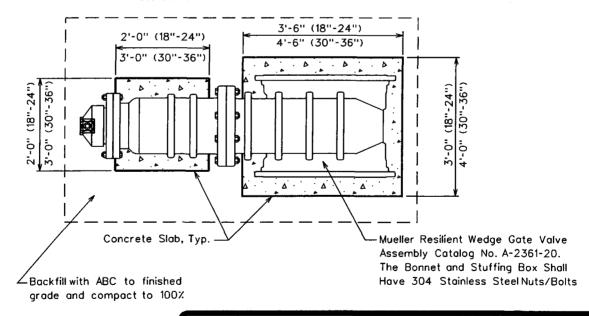
CB

12.07.2004

E-9-2-2



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

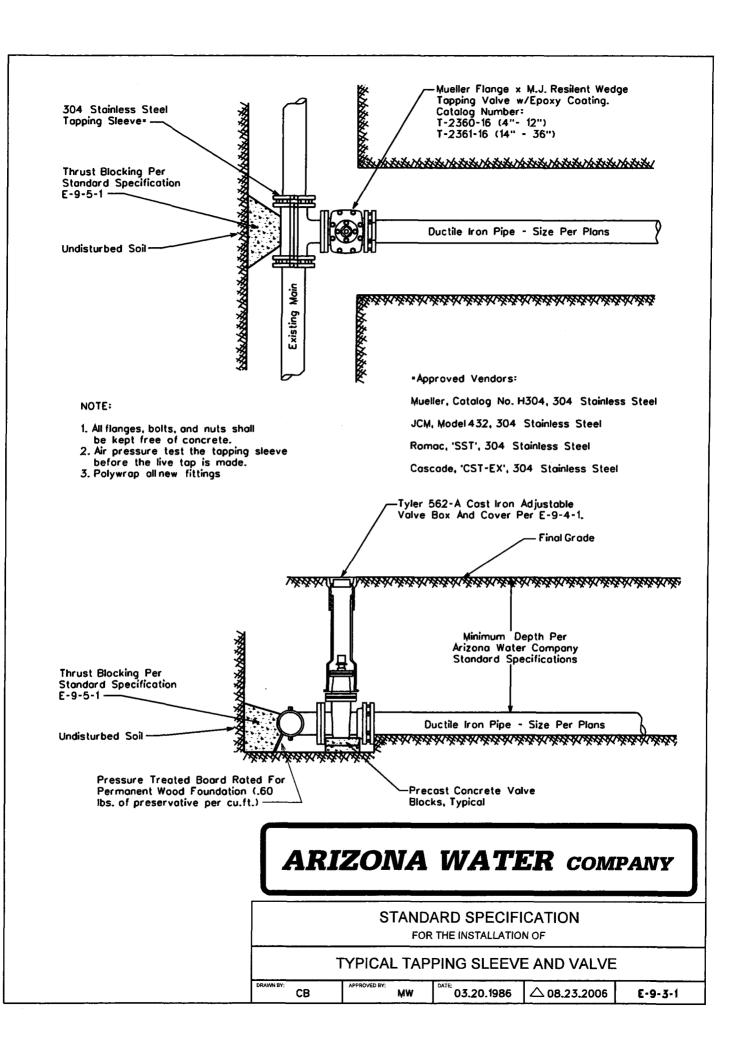
ARIZONA WATER COMPANY

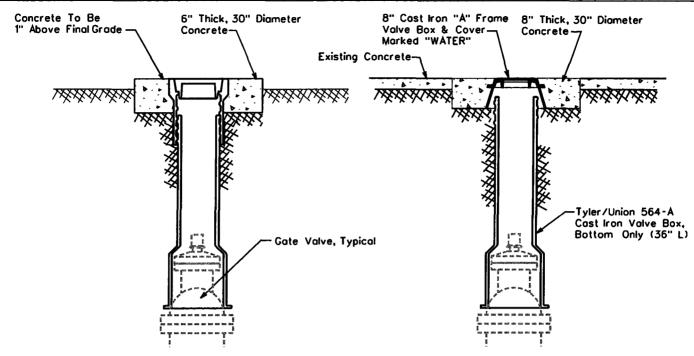
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

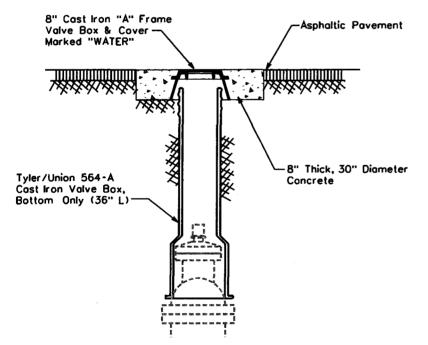
CB APPROVED BY: 12.07.2004 \(\triangle 5.13.2005 \) E-9-2-3





NON-VEHICULAR VALVE BOX

CONCRETE VALVE BOX For Areas Subject To Vehicular Traffic



NOTE:

- The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
- 2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"

For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"

- 3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
- Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

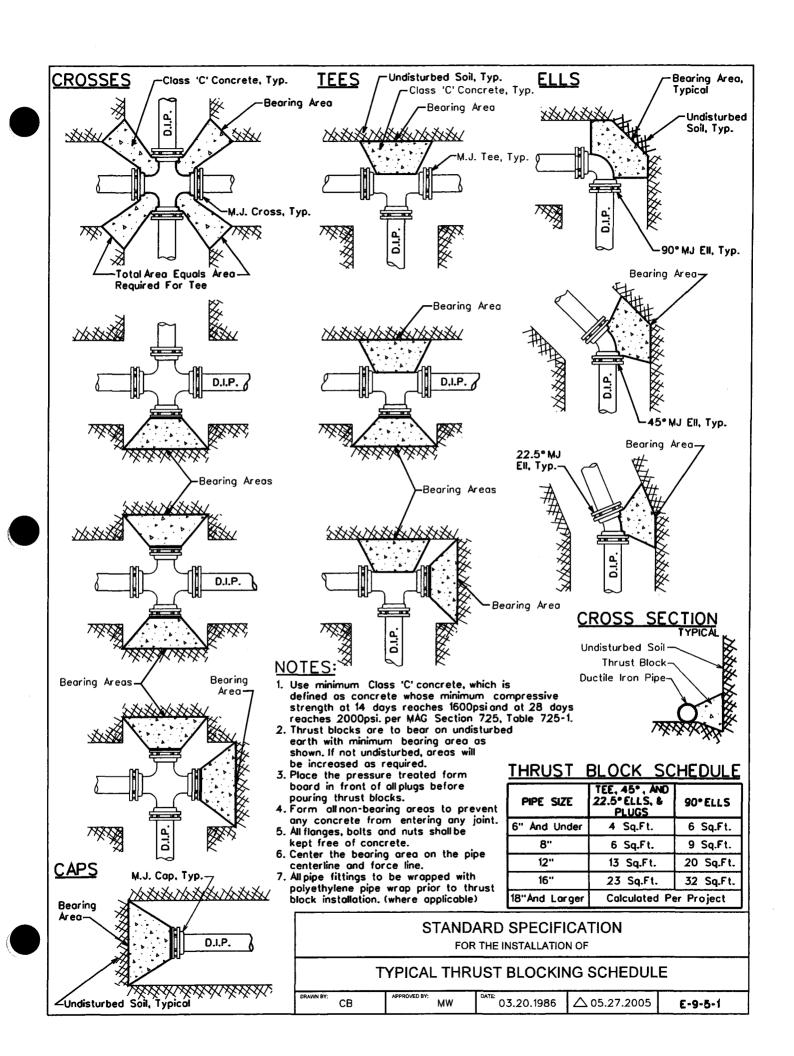
ASPHALT VALVE BOX
For Areas Subject To Vehicular Traffic

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC

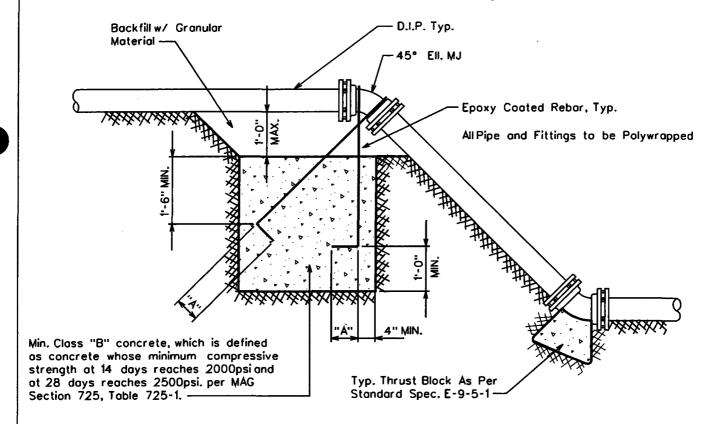


NOTES

- Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
- 2. Bars To Have 90° Hook © Their Ends, As Per Table Below.

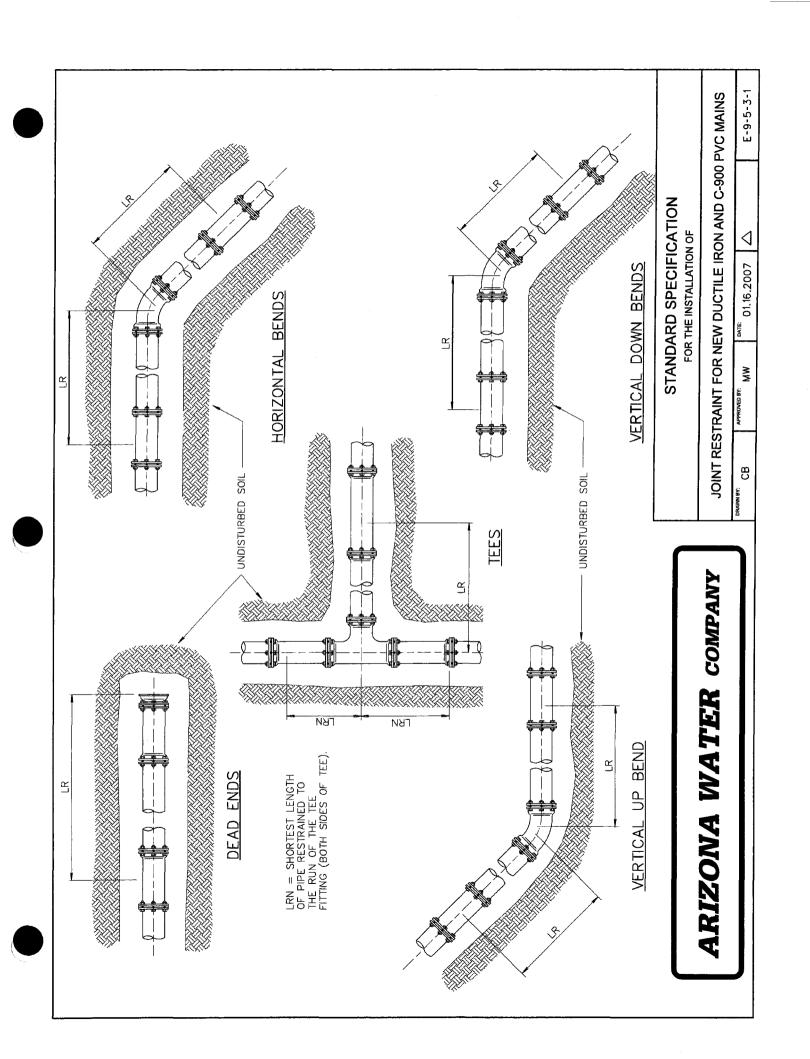
Pipe Size	Min. Bar Size	"A" Dimension (Hook)	 Min. Block Dimension (WxHxL)
6"	•6	6"	3'×3'×3'
8"	•6	9"	4'x3'x4'
12"	•8	9"	5'x4'x5'
16"	•9	12"	7'x6'x7'

• For 125 P.S.I. Working Pressure



ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF										
	THRUST BLO	OCK FOR VERT	TICAL BENDS							
JPK	APPROVED BY: MJW	7-5-96	△ 01.16.2007	E-9-5-2						



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001 13 11	ורב ואט	VERTICAL OFFSETS	45° BEND	NAMOO	BEND	1.7	LO	18	24	17	29	34	02	300	43	48	2	52	61			
, LR, FOR DUCTILE IRON PIPE	טחט אי	>	90" BEND FITTINGS	<u>a</u> l	BEND	9	0	25	32	3 3	38	45	7.1	5	57	62	5	99	79			
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LENGTHS, LR, FOR DUCTILE IRON PIPE WITH POLYETHYLENF WRAP		VERTICAL OFFSETS							10	S	22-1/2' BFI		N C	DEIND	14	20	213	56	62	70	٦/	42	100	9	53	αĽ	3 8	89				
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	ANIMON	PIPF	775	1 2	NCHEN	V	- (٥	∞	Ç	2	12	,	+	16	18		70	24													

- NOTES:

 1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED.

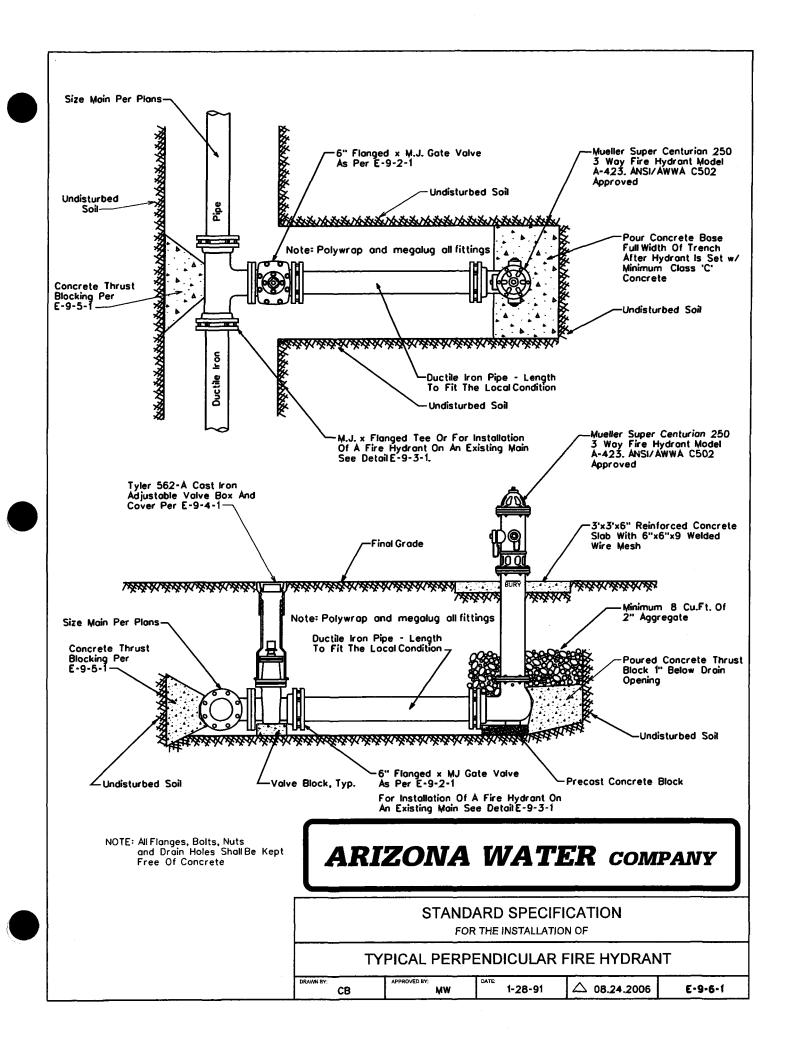
 ALL LENGTHS ARE GIVEN IN FEET.
 - 2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
- 3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
- 4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

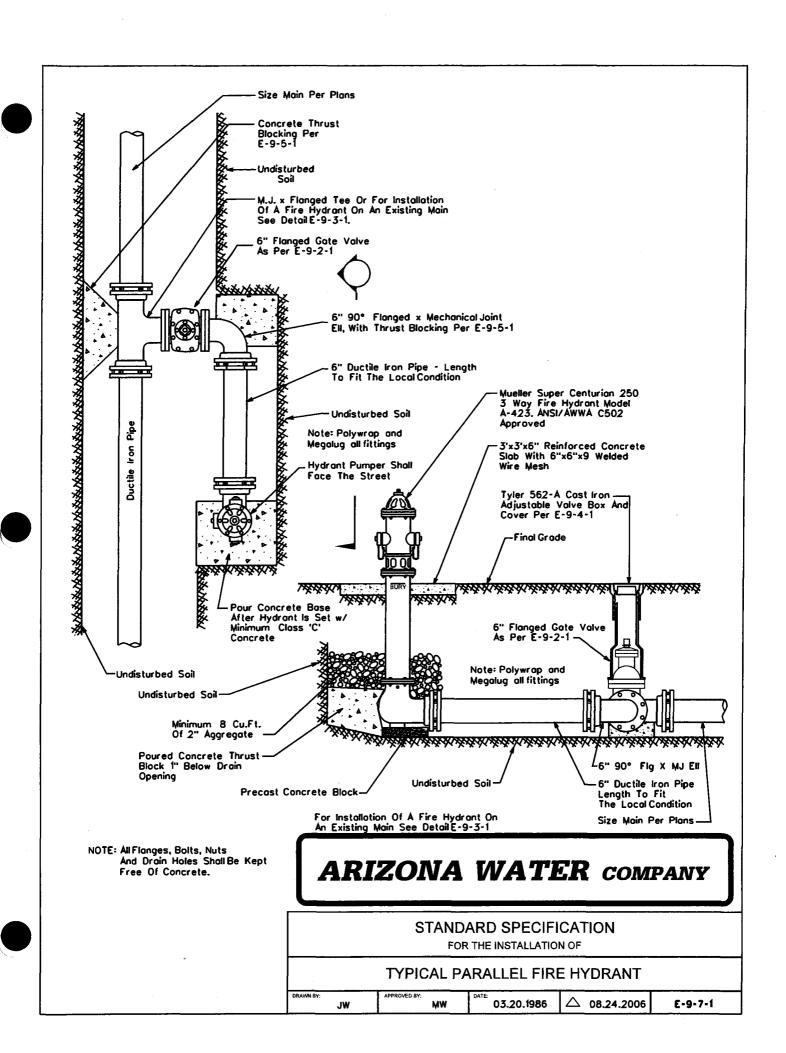
ARIZONA WATER COMPANY

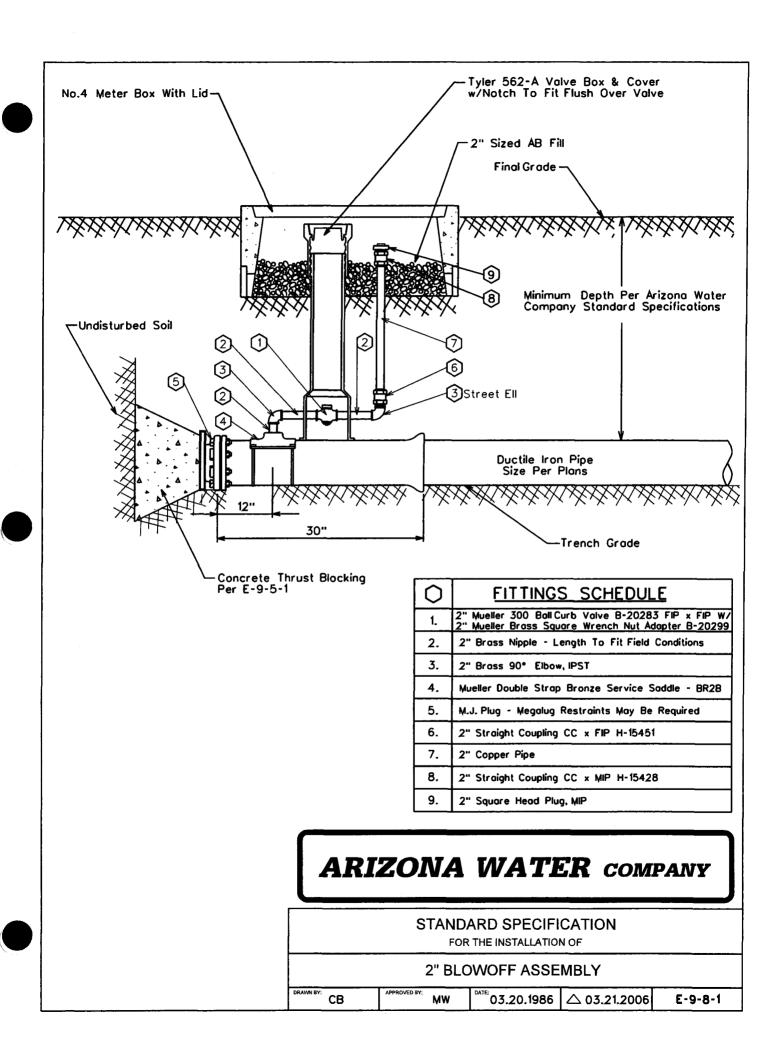
STANDARD SPECIFICATION FOR THE INSTALLATION OF

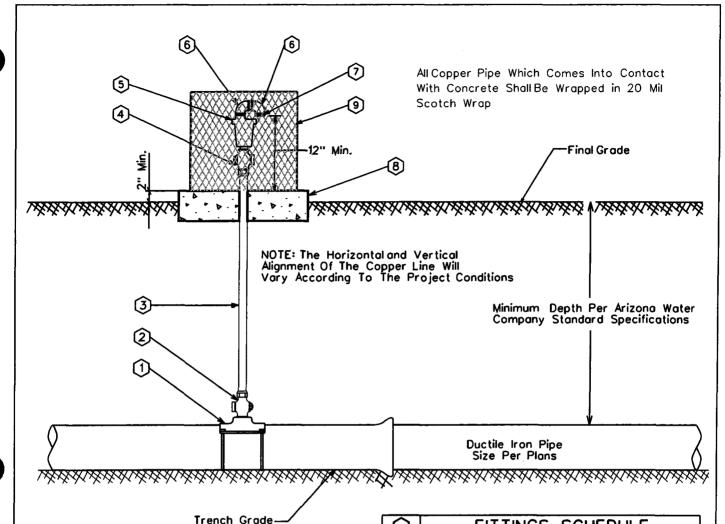
JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

	F-9-5-3-2	1
	\triangleleft	
DATE	01.16.2007	
APPROVED BY:	ΜW	
DRAWN BY:	3	









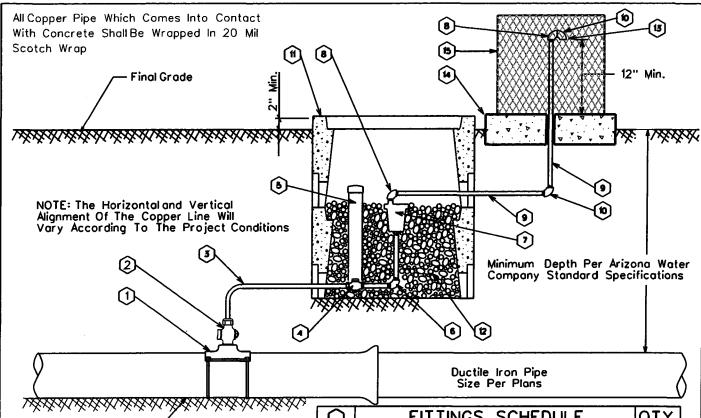
GENERAL NOTES:

- 1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- 2. The valve shall have a $\frac{6}{3}$ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & 1/2" IPST outlet, cast iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	1/2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF TYPICAL AIR RELEASE VALVE DRAWN BY: CB APPROVED BY: MW DATE 03.20.1997 △08.24.2006 E-9-8-2



GENERAL NOTES:

Trench Grade

- The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- The valve shall have a ¾ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- Crispin model AR10 valve construction consists of a 1" IPST inlet & 1/2" IPST outlet, cost iron body and top flange with stainless steel float and trim.
- The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

	FITTINGS SCHEDULE	QTY,
1.	Mueller BR2B Bronze Service Saddle - Double Strap	1
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Regid
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cap (Loose Fit)	1
6.	1" × 4" Brass Nipple w/90° Elbow	1
7.	Crispin 1" Air Release Valve, Model AR10	1
8.	1/2" Brass Street Elbow	2
9.	1/2" Galvanized Pipe - Length as req'd	2
10.	1/2" Galvanized 90° Ell	2
11,	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	As Req'd
13.	No.16 Wire Mesh Screen (Non-Corrodible)	1
14.	4" Thick Concrete Pad - Class "C' Concrete	1
15.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan	1

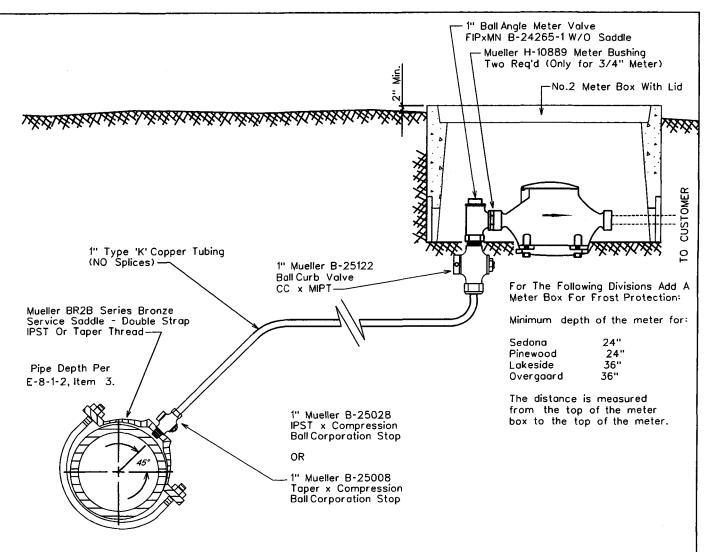
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

DRAWN BY: CB APPROVED BY: MW DATE 03.20.1997 \(\triangle 08.24.2006 \) E-9-8-3



SADDLE TAP TO CA, PVC, OR DIPIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

NOTE: Only the meter is supplied by Arizona Water Company

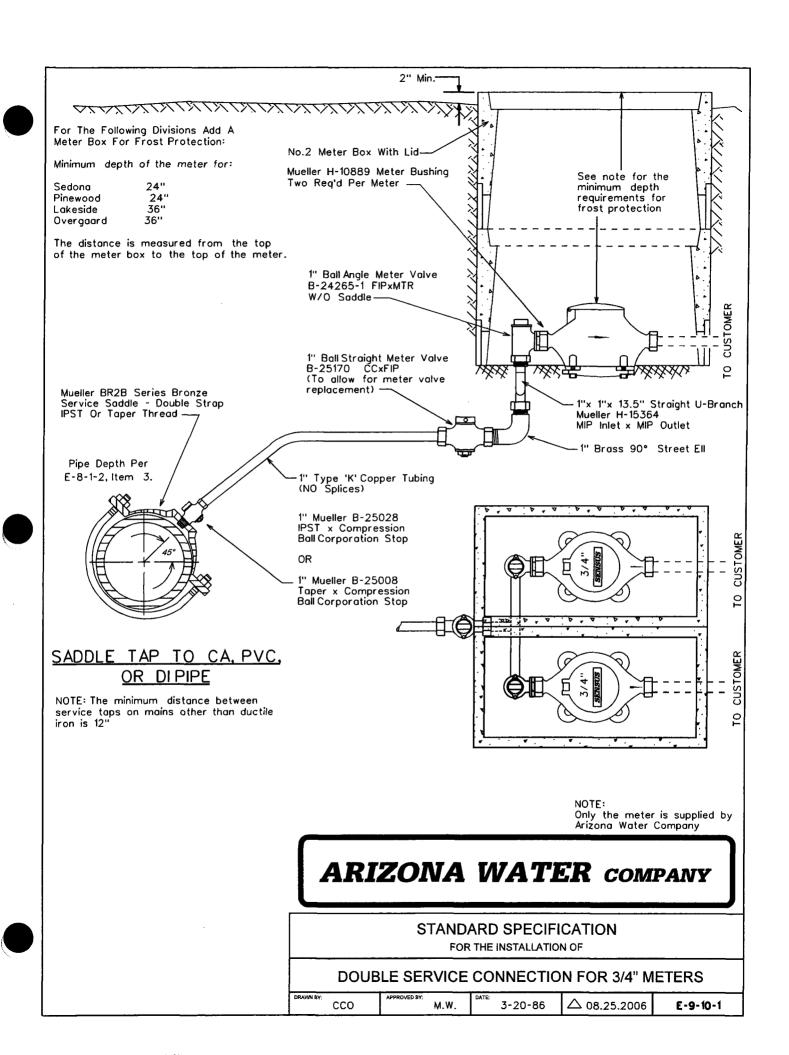
ARIZONA WATER COMPANY

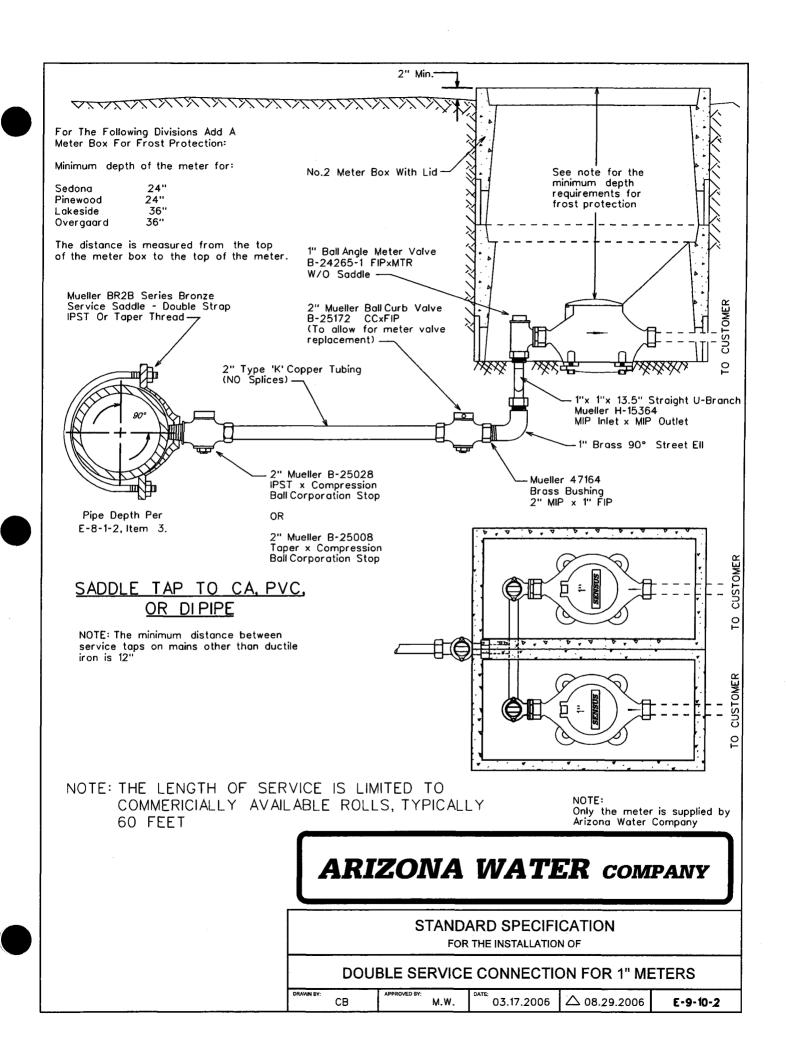
STANDARD SPECIFICATION

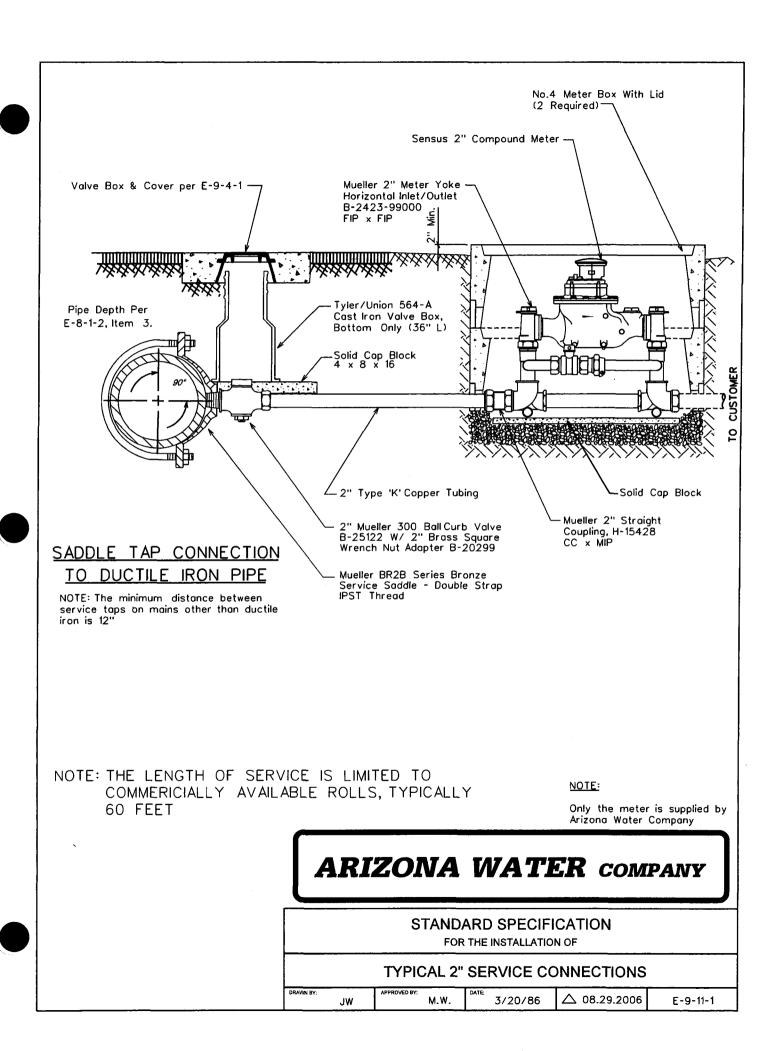
FOR THE INSTALLATION OF

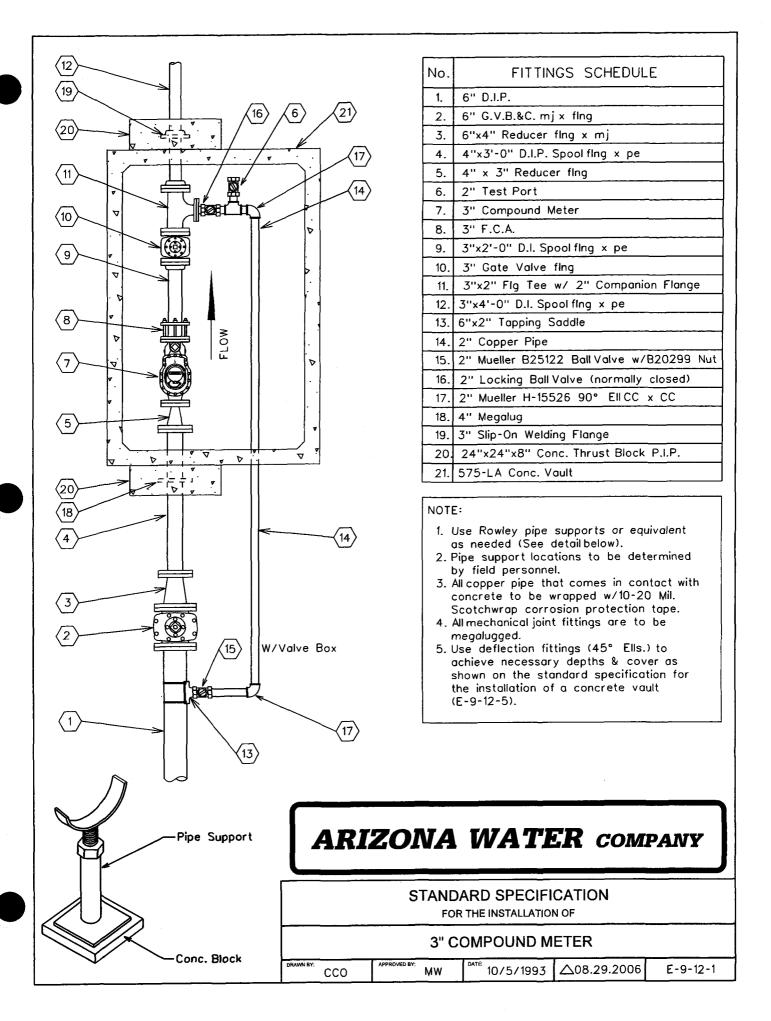
SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

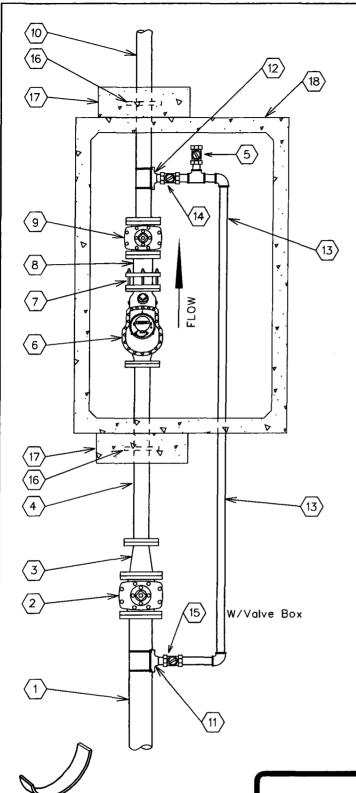
DRAWN BY: CCO APPROVED BY: M.W. DATE: 3/20/86 △ 03.17.2006 **E-9-9-1**











Pipe Support

-Conc. Block

No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" Reducer fing x mj
4.	4"x3'-0" D.I.P. Spool fing x pe
5.	2" Test Port
6.	4" Compound Meter
7.	4" F.C.A.
8.	4"x1'-0" D.I.P. Spool flng x pe
9.	4" Gate Valve flng
10.	4"x4'-0" D.I.P. Spool fing x pe
11.	6"x2" Tapping Saddle
12.	4"x2" Tapping Saddle
13.	2" Copper Pipe
14.	2" Ball Valve / Locking (Normally Closed)
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	4" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.
18.	575-LA Conc. Vault

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

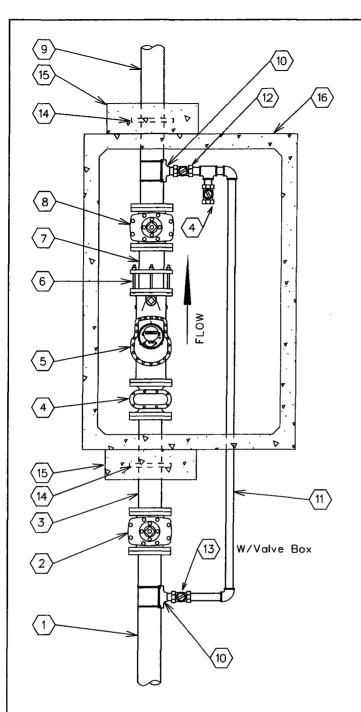


STANDARD SPECIFICATION FOR THE INSTALLATION OF

4" COMPOUND METER

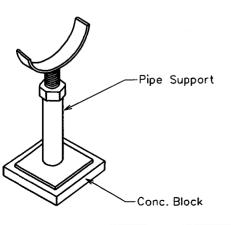
E-9-12-2

AN BY: CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle 08.29,2006 \)



No.	FITTINGS SCHEDULE							
1.	6" D.I.P.							
2.	6" G.V.B.&C. mj							
3.	6"x 3'-0" D.I.P. Spool flng x pe							
4.	2" Test Port							
5.	6" Compound Meter							
6.	6" F.C.A.							
7.	6"x 1'-0" D.I.P. Spool flng x pe							
8.	6" Gate Valve fing							
9.	6"x 4'-0" D.I.P. Spool flng x pe							
10.	6"x2" Tapping Saddle							
11.	2" Copper Pipe							
12.	2" Ball Valve / Locking (Normally Closed)							
13.	2" Mueller B25122 Ball Valve w/B20299 Nut							
14.	6" Megalug							
15.	24"x24"x8" Conc. Thrust Block P.I.P.							
16.	575-LA Conc. Vault							

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



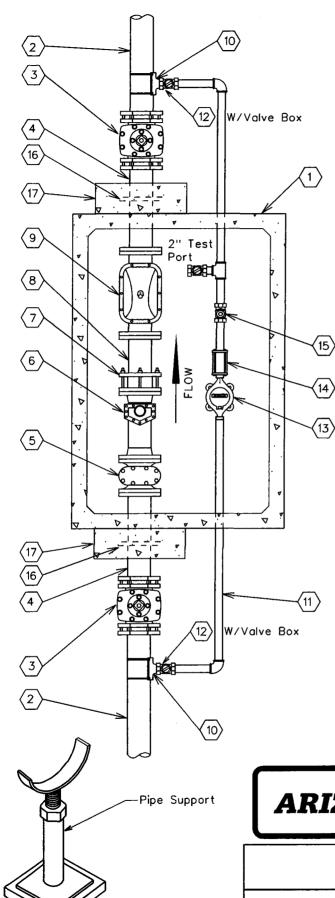
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

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DRAWN BY: CCO APPROVED BY: MW DATE: 10/5/1993 △08.29.2006 E-9-12-3



Conc. Block

No.	FITTINGS SCHEDULE
1.	575-LA Conc. Vault
2.	6" D.I.P.
3.	6" G.V.B.&C. m.j.
4.	6" x 3'-0" D.I.P. SPoolPiece flng x pe
5.	6" Strainer
6.	6" Turbo Meter
7.	6" F.C.A.
8.	6" x 2'-0" D.I.P. Spool Piece flng x pe
	(TRIM SPOOL PIECE TO 3x THE PIPE DIA.)
9.	6" Detector Check
10.	6"x=N" Tapping Saddle
11.	∗N" Copper Pipe
12.	∗N'' Ball Valve (Locking)
13.	∗N" Meter
14.	∗N" Coup. Adapt.
15.	∗N" Flapper Check Valve
16.	6" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.

*N - Size To Be determined By A.W.Co.

NOTE:

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
- 6. To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

ARIZONA WATER COMPANY

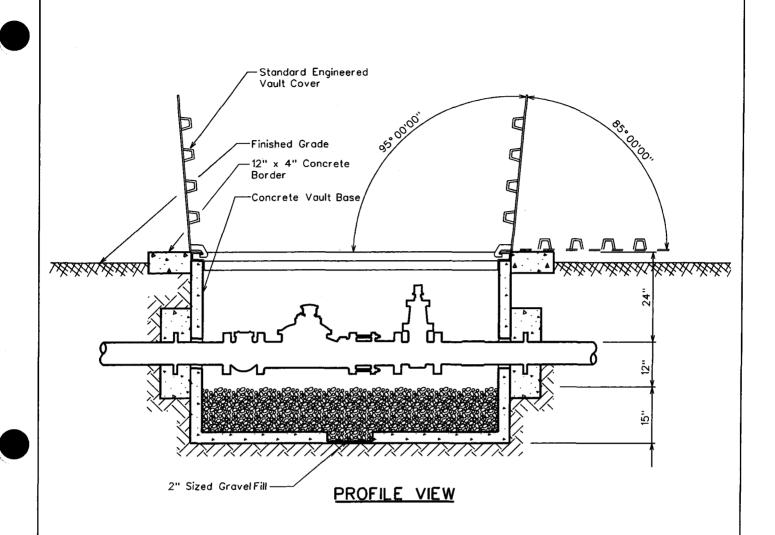
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND SERVICE

E-9-12-4

BY: CCO APPROVED BY: MW DATE: 10/05/1993 \(\triangle 08.29.2006 \)



CONCRETE VAULT & COVER SPECIFICATIONS

Vault - Base No. 575-BL

Cover - Standard Engineered Vault Cover

- . 4874 Aluminum Diamond Plate Cover For Non-Traffic Loading Areas Or
- . 4874 Galvanized Steel Diamond Plate Cover W/ H-20 Traffic Loading . Double Torsion Spring Assisted Doors W/
- Recessed Hasp & Safety Latches

NOTES

- Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill.
- Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

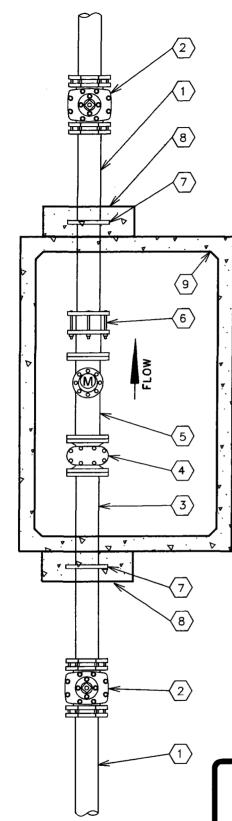
E-9-12-5

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CONCRETE VAULT

cco 10/5/1993 🛆 05.17.2001 MW



No.	FITTINGS SCHEDULE
1,	Ductile Iron Pipe
2.	Gate Valve M.J.
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)
4.	Meter Strainer
5.	Propeller Meter
6.	Flanged Coupling Adapter
7.	Megalug Gland (Thrust Anchor)
8.	Concrete Thrust Block P.I.P.
9.	Concrete Vault

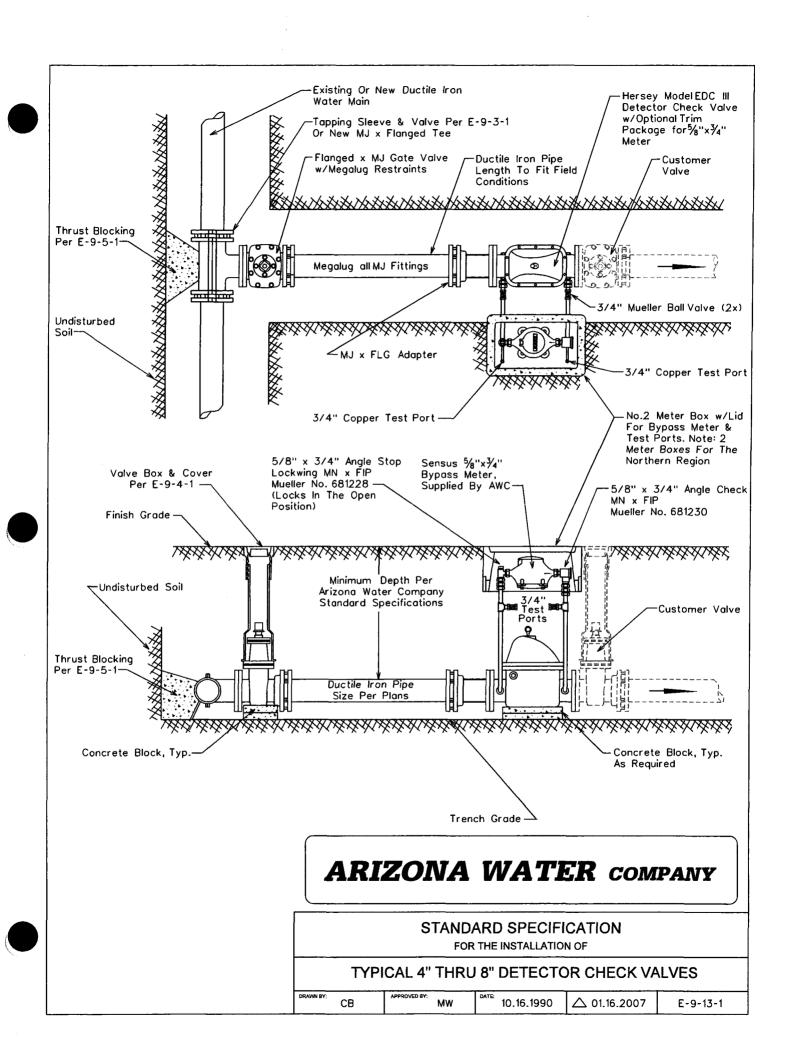
- 1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
- 2. Pipe support locations to be determined by field personnel.
- 3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- All mechanical joint fittings to are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

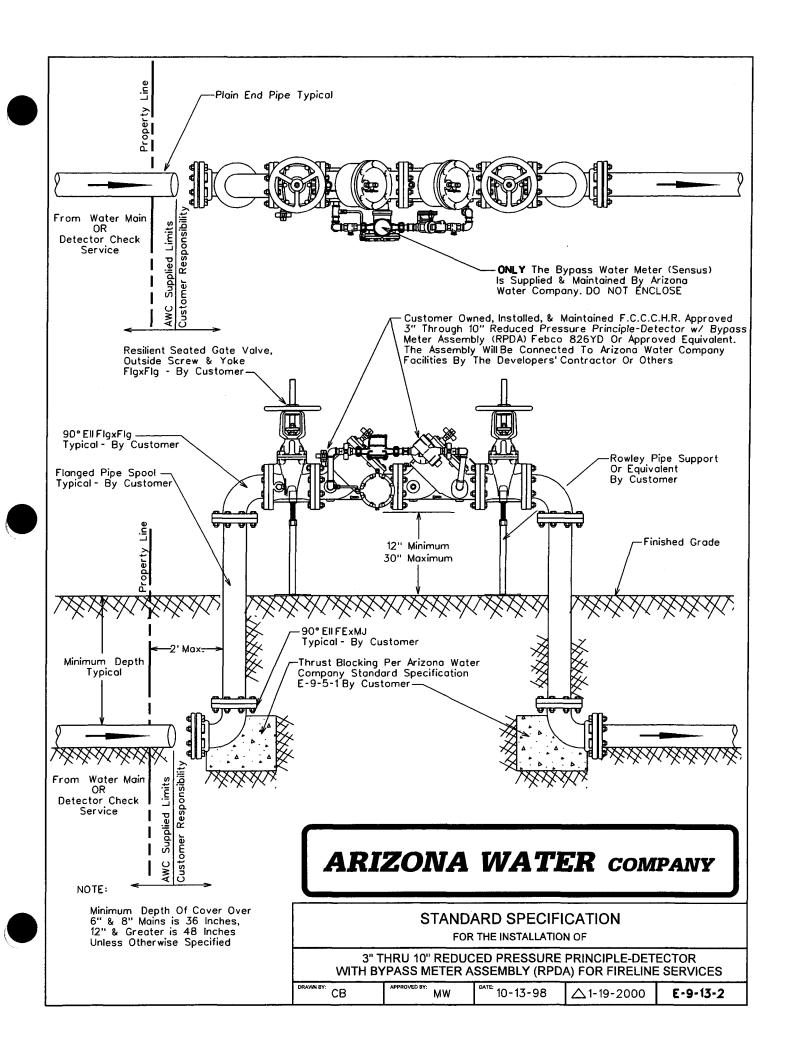
ARIZONA WATER COMPANY

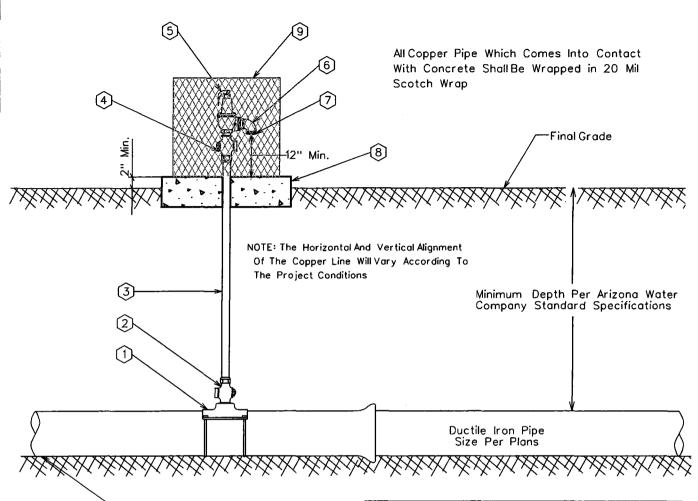
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

NON-POTABLE PROPELLER METER







1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.

-Trench Grade

2. The relief valve assembly and vandalenclosure shall be located out of the roadway, but within the right-of-way or easement.

Q	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3,	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

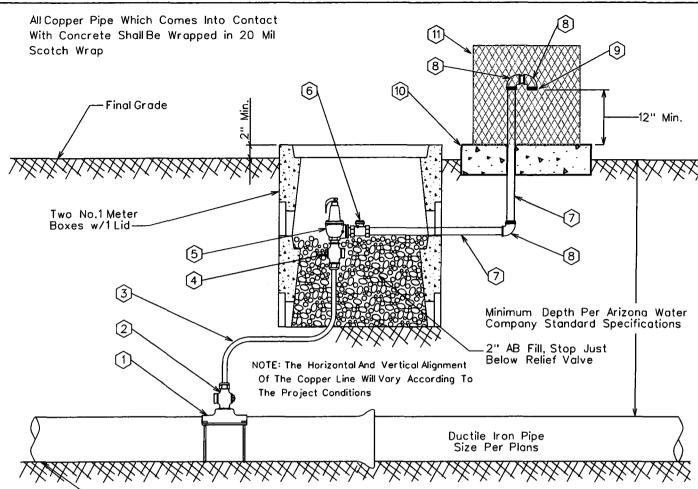
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

DRAWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 \(\triangle 08.29.2006 \) E-9-14-1



-Trench Grade

- Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
- 2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Bronze Check Valve Watts Series CV
7.	2" Schedule 40 Cut Pipe - Field Fit
8.	2" Bross Street Elbow
9.	No.16 Wire Mesh Screen (Non-Corrodible)
10.	4" Thick Concrete Pad - Class 'C' Concrete
11.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

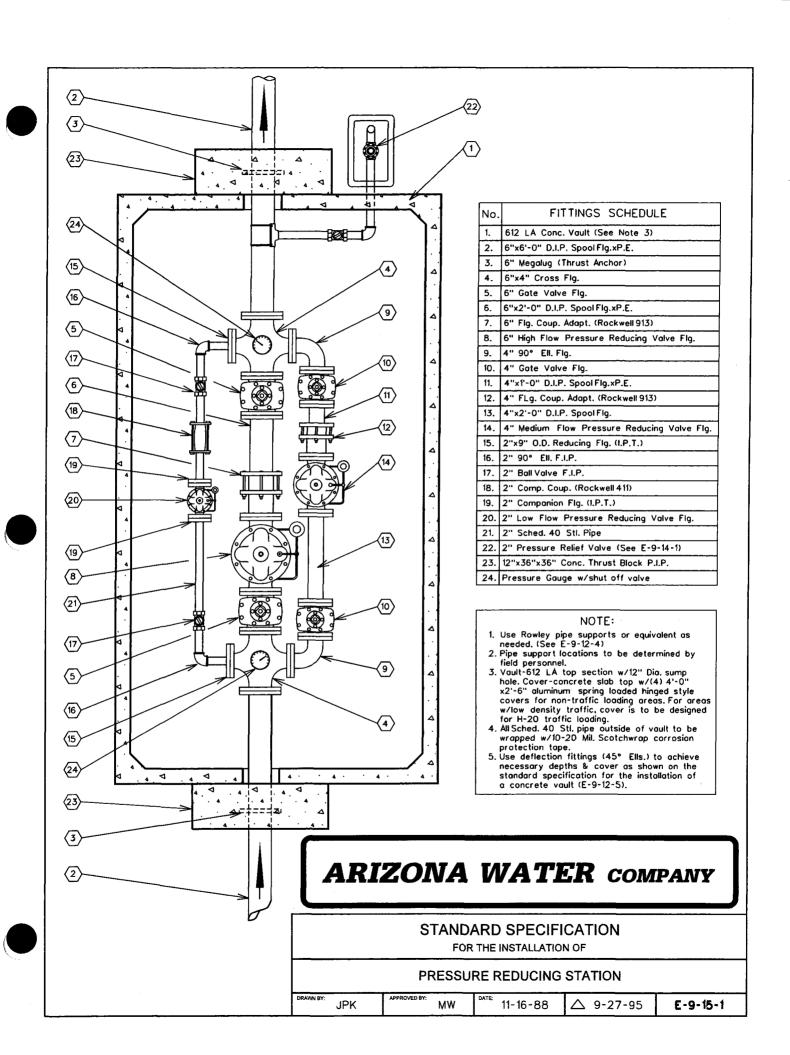
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

DRAWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 △08.29.2006 E-9-14-2



- 1. Specific Items To Be Painted Deer-O Pure White Enamel:
 - A. All Booster Pumps.
 - B. All Electrical Motors And Gas Engines.
 - C. Well Pump Discharge Heads.
 - D. Electrical Panel.
- 2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:
 - A. Well Shelter.
- 3. Specific Items To Be Painted OSHA Orange:
 - A. Electrical Conduit.
- 4. All Other Items To Be Painted With Either: (At Manager's Discretion)

 - A. Cholla Green B. Forest Green C. Sonora Beige D. Red Rock

 - E. Rock Brown
 - F. Deer-O Pure White
 - G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PAINT COLOR SELECTION

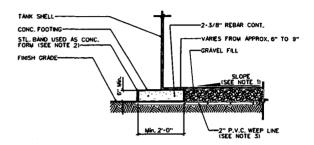
3/20/1986 \(\triangle \) 2/13/2001 CCO E-9-16-1

- t. Tank shall conform to AWWA Specification D100-84 with exceptions noted below.
- •2. 1/4" minimun shell plate.
- Minimum of 12" diameter roof vent, screened with No. 16 non-corrodible wire mesh, to be located on a 24" diameter round hinged monhole opening at the center of the tank to provide access to the dollar plate.
- Overflow pipe shall be the same diameter as the inlet pipe and shall terminate 12 to 24 inches above splash pod or a minimum of 2 overflow pipe diameters above weir box high water level.
- 5. Storage tank shall be placed upon adequately compacted base material.
- 6. 6" minimum floor mounted tank drain outlet to be located close to the outer shell.
- Tank and related fittings shall be enclosed with a 6 foot chain link fence with lockable gates and anti-personnel wire on top of fence.
- Liquid level shall be indicated by a target and target board on the outside surface of the tank.
- 9. 24 inch diameter monholes shall be provided on the root and on the shellnear the bottom of the tank. The root manhole cover shall overlap the manhole by at least 2 inches to provide a roin tight closure. Roof manhole shall be hinged and equipped with a lock. Shellmanhole cover to be hinged and botted in place. *Tanks larger than a 50 foot diameter require 2 shellmanholes.
- 10. Inside and outside ladders shall be located at the roof manhole. Outside ladder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within ½" of shell with 10 gauge sheet steet.
- Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
- 12. The following information will be included with application for approval to construct:
 - 1. Tank location
 2. Tank height
 3. Tank diameter
 4. Tank capacity
 5. Method of water level control
- 13. The storage lank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
- The welded steetstorage tank will be coated as per AWWA Specification D102, and N.S.F. Standard 61.

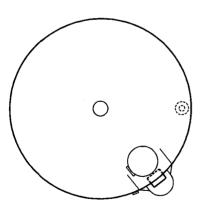
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

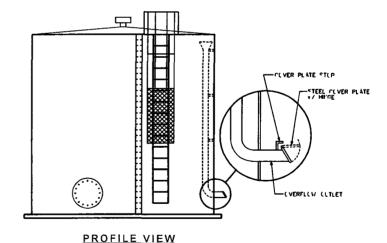
- 1. FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-0".
- 2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN 1/4".
- 3. INSTALL 8-2" DIA. x'0'-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45'), PERFORATE 8'-0" OF LINE WITH 1/2" DIA. HOLES # 6" O.C. PLUG INTERIOR END OF LINE W/2" CAP.



FOUNDATION DETAIL



PLAN VIEW



ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

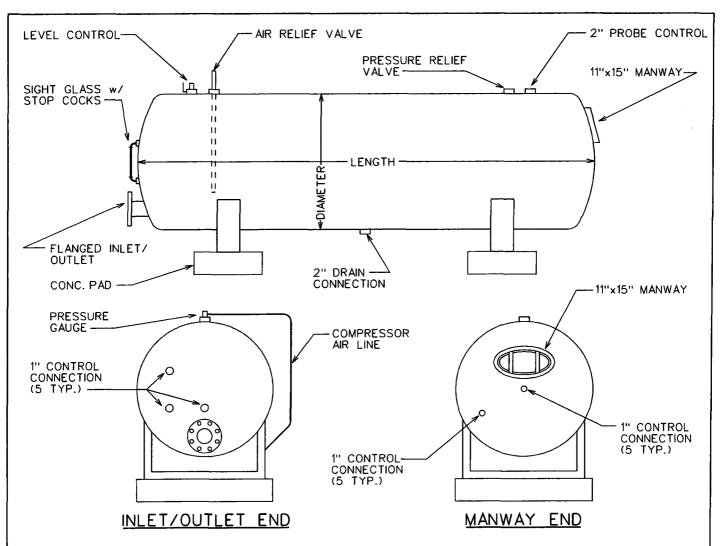
WN BY: JPK APPROVED

BY: MJW

10-17-88

△ 2-12-96

£-9-17-1



- 1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
- 2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
- 3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
- 4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.

1.	Tank	Location			

- 2. Tank Length _____
- 3. Tank Diameter _____
- 4. Tank Capacity _____
- 5. Maximum Working Pressure

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF HYDROPNEUMATIC TANK DRAWN BY: JPK APPROVED BY: MW DATE: 3-20-1986 \(\triangle \triangle 01.16.2007 \) E-9-18-1

NOT CONVERTED CAD

ARIZONA WATER COMPANY

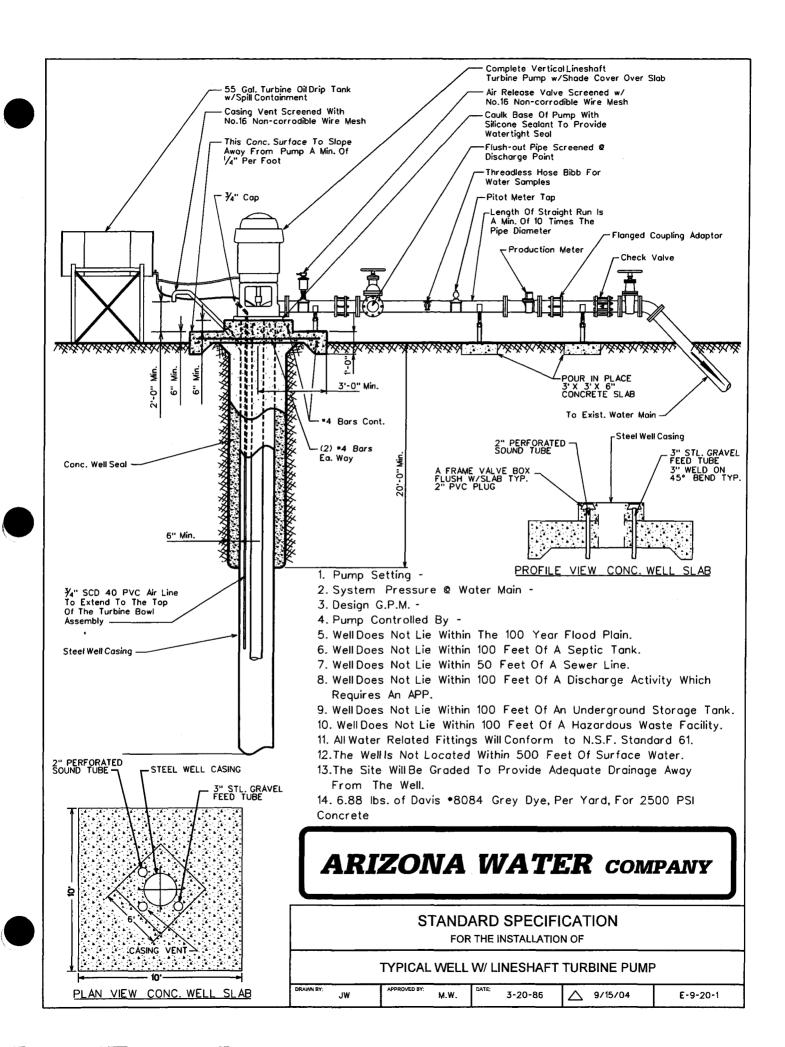
STANDARD SPECIFICATION

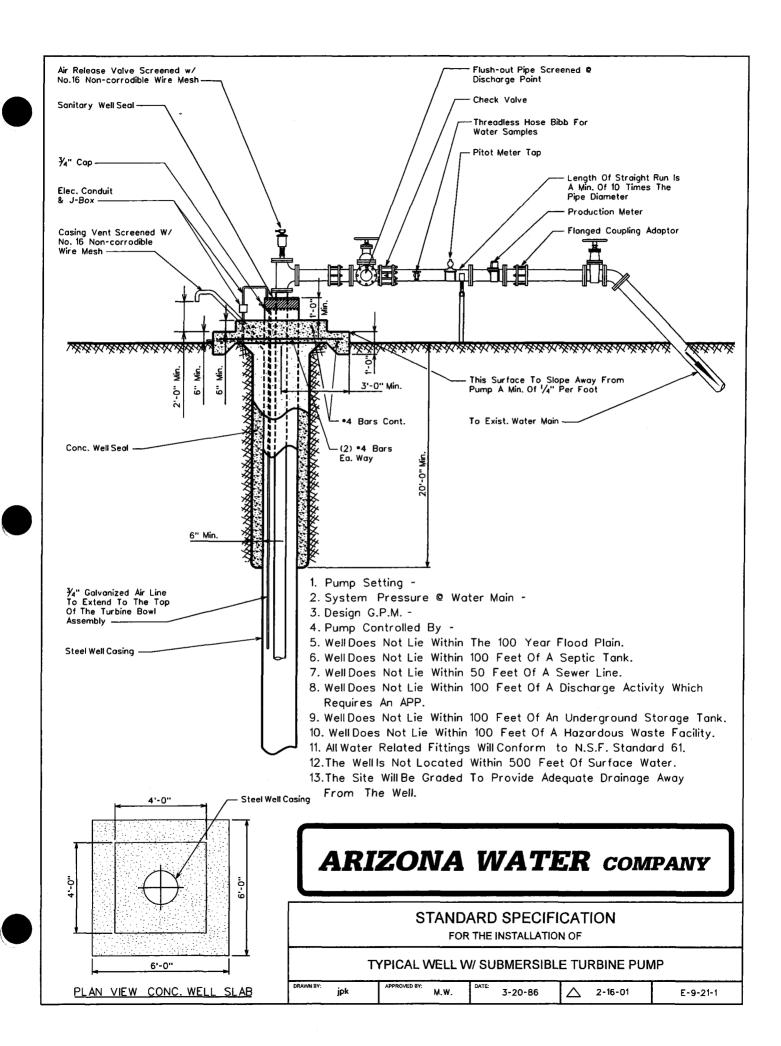
FOR THE INSTALLATION OF

WELL SHELTER

03.20.1986 \(\triangle 04.03.2001 CB

E-9-19-1





All New Purchases To Conform To The Following:

Column Pipe

Oil Tube - Peerless Type

```
1½" O.D. - 14 Threads Per Inch Right Hand
2" O.D. - 12 " " " " "
2½" O.D. - 10 " " " " "
3" O.D. - 10 " " " " "
4" O.D. - 10 " " " " "
```

Line Shaft

```
3/4" O.D. - 10 Threads Per Inch Left Hand
1" O.D. - 14 " " " " " "
1-3/16" O.D. - 10 " " " " " "
1-1/2" O.D. - 10 " " " " " "
1-11/16" O.D. - 10 " " " " " "
1-15/16" O.D. - 10 " " " " " "
2-3/16" O.D. - 8 " " " " " "
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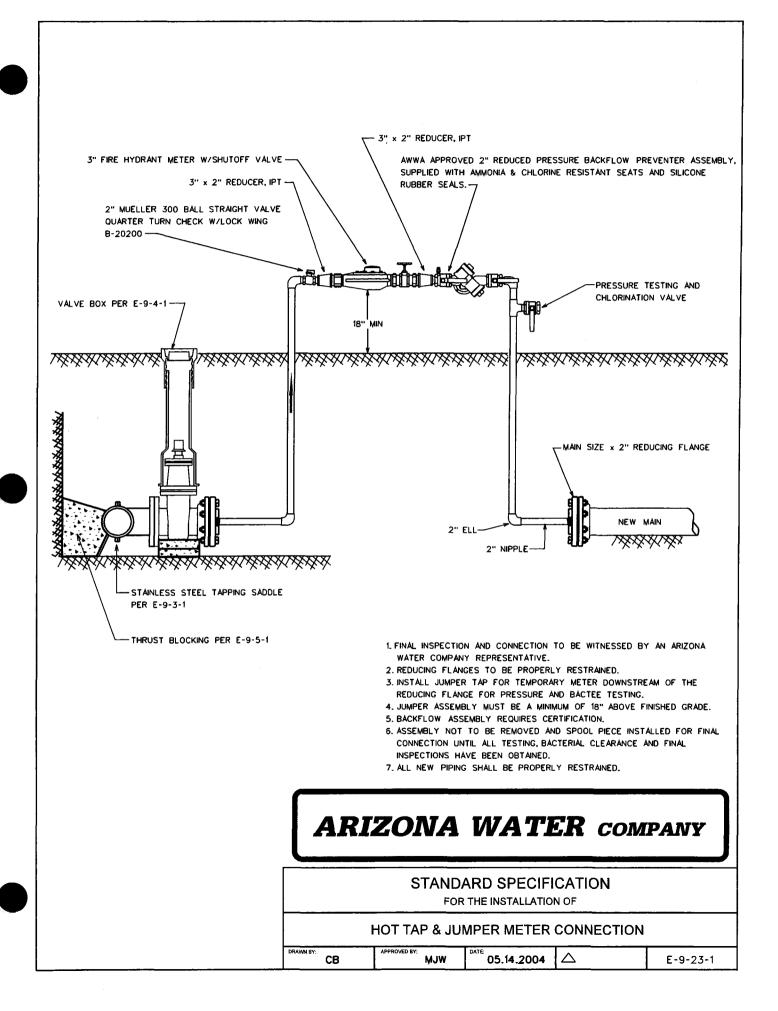
ARIZONA WATER COMPANY

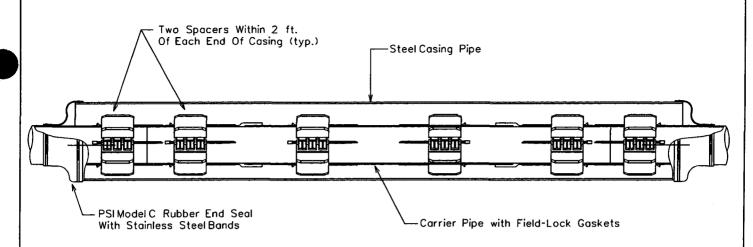
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

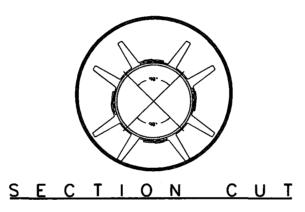
DATE: 3/20/1996 \(\triangle 2/13/2001 \) **E-9-22-1**





CROSS SECTION

The casing spacers shall be the PSI Ranger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seal as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

*Thickness Of Skid To Extend A Minimum of $\frac{1}{2}$ " Above The O.D. Of The Pipe Bell or Gland.

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6''	16''	15.25"	STD.	.375	*x4x12
8"	18''	18.25"	STD.	.375	*x4x12
12"	22"	21.25"	STD.	.375	*×4×12
16"	28"	27.25"	STD.	.375	≖x4x12
20"	32"	31.25"	STD.	.375	*x4x12
24"	36''	35.25"	STD.	.375	≖x4x12
30''	48"	47.25"	STD.	.375	≖x4x12
36"	54"	53.25"	STD.	.375	*x4x12
48"	66"	65.25"	STD.	.375	*x4x12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL WATER LINE ENCASEMENT

DRAWN BY: CB	APPROVED BY:	3/20/1996	△ 09.27.2006	E-9-24-1

CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCOPE - This specification describes a ARCH Chemicals Calcium Hypochlorite Tablet Chlorination System as manufactured by ARCH Chemicals, 501 Merritt Seven, P.O. Box 5204, Norwalk, CT, 06856-5204

DESCRIPTION - The chlorination system shall be completely assembled, ready to install the chlorination system shall be a ARCH Chemicals Calcium Hypochlorite Tablet Frederi. The chlorination system shall be a ARCH Chemicals Calcium Hypochlorite Tablet Frederi, and shall be supplied with all its components factory mounted.

- COMPONENTS The Chlorination system shall have the following components: A. 1-1% ARCH Chemical solid calcium hypochlorite tablet feeder

 - B. Polyethylene system endosure C. Integrated, level controlled solution tank D. Adjustable flow control valve Manual control valve (at inlet) F. Chemical metering pump C. Onfoli pump control valve (at inlet) F. Chemical metering pump C. Onfoli pump control valve H. Walasproof electrical junction box (L. Corresion reastant schedule 40 piping J. Reversa flow check valves K. Total solution output control valve

ELECTRICAL FIXTURES - The following electrical factures shall be provided:
A. Safely switht, 2 bit, used for 30 Amps, for 120 Volts, 60 cycle,
Single phase power.

CHLORINATOR DESIGN - The chlorination facility shall be designed and constructed in accordance with Arzona State Department of Hall Engineering Builetin Number 8 - "Dismisction of Vater Systems". Latest Revision.

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

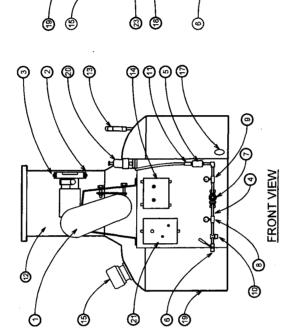
CHLORINATOR OPERATION - The chlorination facility shall be operated in accordance with Arizona State
Department of Health Engineering Bulletin Number 8. 'Disinfection of Water Systems',
Table 1, latest tevision.

CHLORIMATOR SYSTEM DESCRIPTION - ARCH Chemicals tablet chlorinator systems incorporate a patented chlorinator which is designed to fullize ARCH Chemicals - 1/4° solid calcium hypochiorite tablets (Approved NSF Standard 60). Meets AWWA Standard ASP Standard 60). Meets AWWA Standard BASP Standard 60). Meets AWWA Standard Chaptroved NSF Standard 60). Meets AWWA Standard Description of the Standard 60 and a polyethyten explaination and table 1/40 and 1/

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

HYPOCHLORINATOR COMPONENTS:

- 6. Inlet Shut-Off Valve
 7. Inlet Pressure Regulation
 8. Inlet Water Pressure Gauge
 9. Spray Nozzle Water Pressure Gauge
 10. Inlet Strainer
 11. Inlet Tubing Connection Chemical Metering Pump
 Pump Suction Connection
 Pump Discharge Connection
 Intel Water Assembly
 Intel Water Solenoid Valve
 Intel Water Solenoid Valve
- 12. Dry Chemical Hopper 3.5. Suckbol. Las. Suckbol. Las. Suckbol. Las. Electrical Control Box With Power On/Off 15. Electrical Mixer 16. Solution Discharge Connection 17. Tank Drain Vakve
- 18. Observation Port 19. Mixed Chemical Holding Tank 20. Pressure Relief Valve 21. Purp Speed Control 22. High Level Shart-Off Float Switch 23. Water Spray Nozzles



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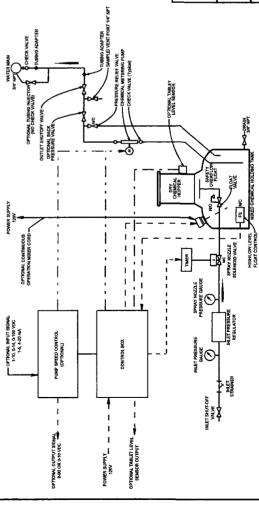
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HOPPER REMOVED FOR CLARITY

TOP VIEW

(2)

Chlorinator Fluid Schematic

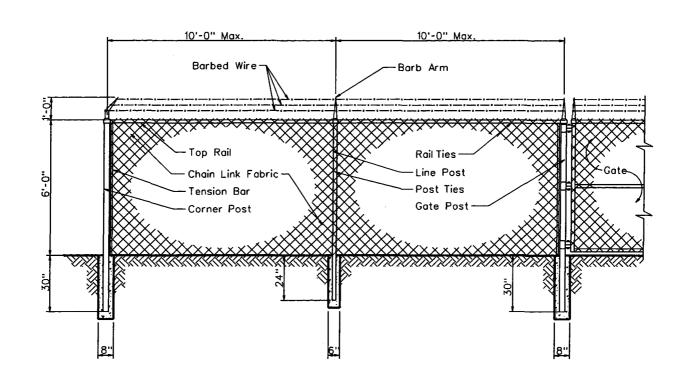


ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR

	E-9-25-1	
	◁	
DATE	02-09-2000	
APPROVED BY:	ΜM	
DRAWN BY:	83	



Line Post: 1-7/8" O.D. 1.74 lbs, P/L.F. ASTM A-256 End Post: 2-7/8" O.D. 4.64 lbs. P/L.F. **ASTM A-256** Corner Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256 Gate Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256 Top Roil: 1-5/8" O.D. 4.64 lbs. P/L.F. **ASTM A-256**

Chain Link Fabric: 9 Ga. 2" Mesh Galv. Before Weave

Selvage: Barb/Knuckle

Fittings: Pressed Steel

Barb Wire: 2-1/2 Ga./2 Point

Barb Arm: 1 Piece/45° Arm

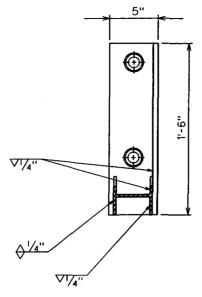
Tension Wire: 9 Ga./Galv.

Line Post Set: 6"x24" In Concrete

Terminal Post Set: 8"x30" in Concrete

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF CHAIN LINK FENCE DRAWN BY: CCO APPROVED BY: MW DATE: 7/7/1992 \(\triangle \triangle 2/9/2001 \) E-9-26-1

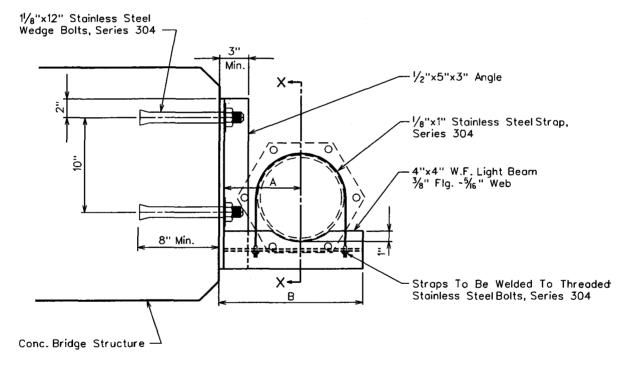


SECTION X-X

NOTES

- 1. Minimum 2 Supports Per Joint Of Pipe.
- 2. All Bolts Shall Have A Lock Washer Under The Nut.
- 3. All Nuts Shall Be Stainless Steel Series 304.

PIPE SIZE	Α	В
8"	8"	15"
10''	9''	17"
12"	10''	19''



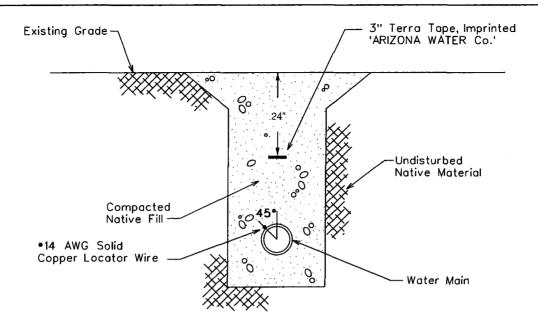
SUSPENSION DETAIL

ARIZONA WATER COMPANY

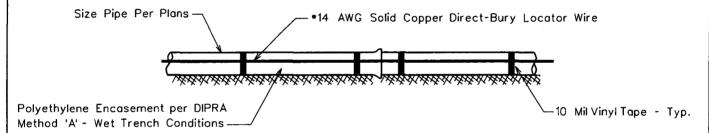
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

SIDE HUNG WATER LINE SUSPENSION



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

- 1. All pipe shall have *14 AWG Solid Copper Direct-Bury Locator Wire Installed Directly To The Polywrap At 45° From The Vertical Center Of The Pipe and Shall Be Attached Using 10 Mil Vinyl Tape.
- 2. The Locating Wire Shall Terminate At the Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

- 1. Use Terra Tape 3" Marking Tape As Manufactured By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
- 2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
- 3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe. A) The Backfill Shall Be Sufficiently Leveled So That The Tape Is Installed On A Flat Surface.
- B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
- C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill Is Moved Into The Trench.

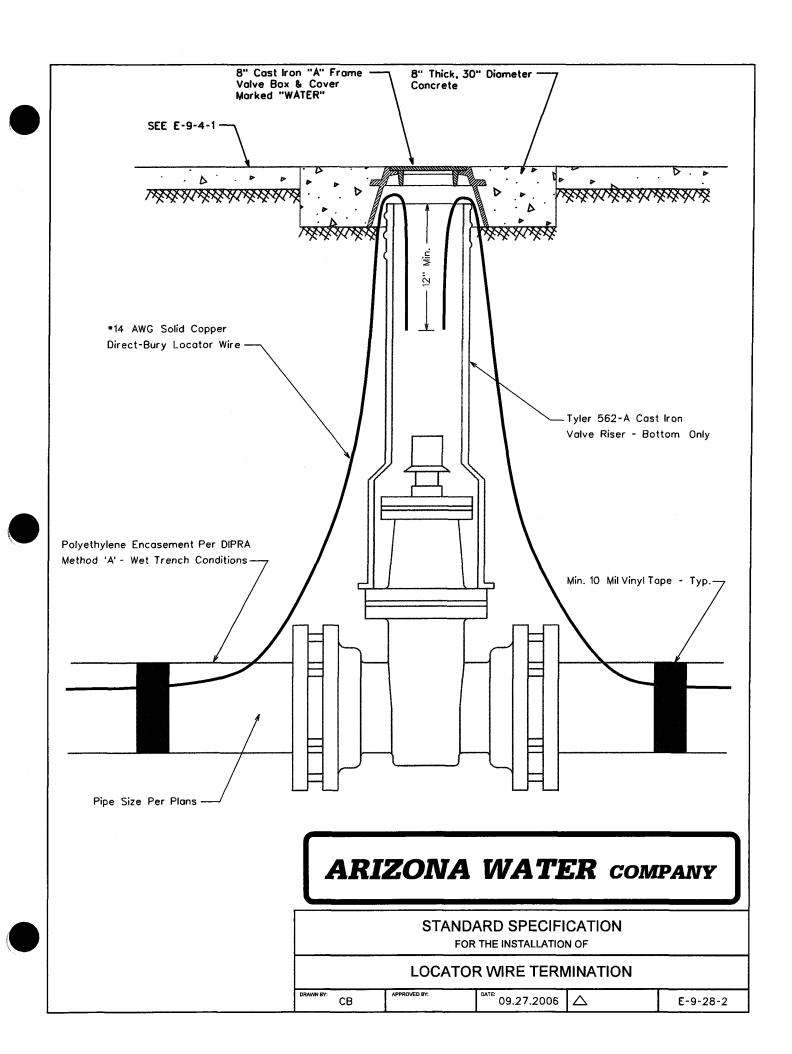
ARIZONA WATER COMPANY

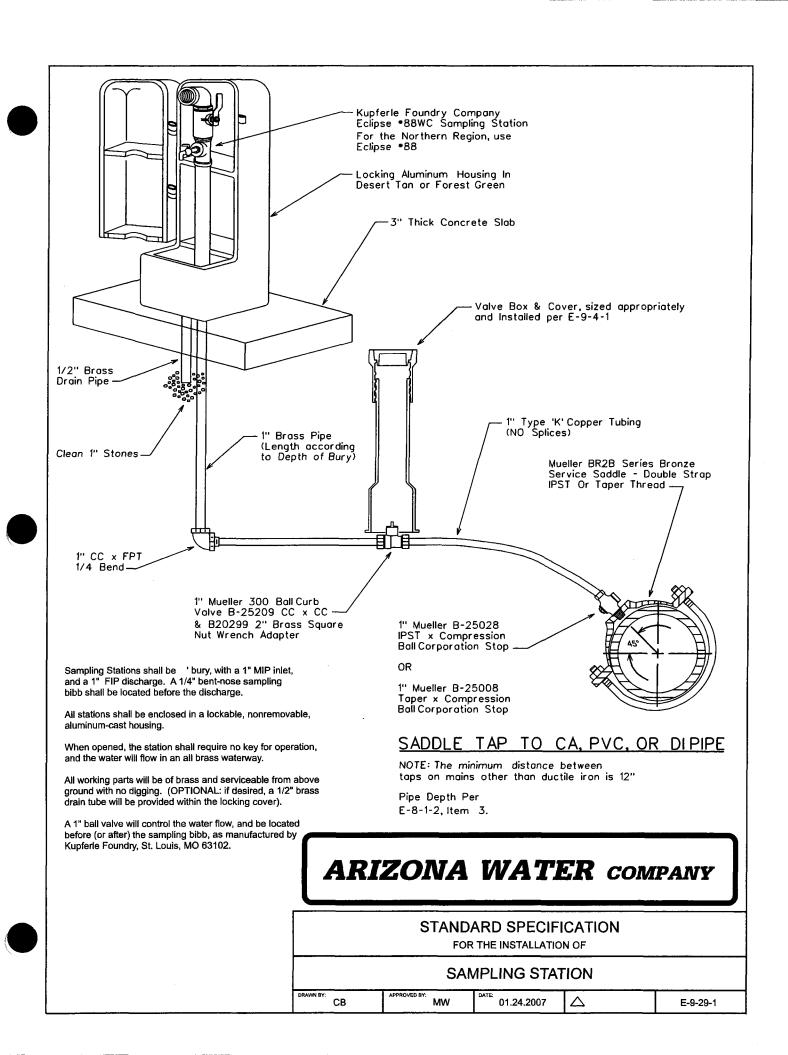
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PIPE WARNING TAPE AND LOCATOR WIRE

DATE: 03.24.1997 \(\triangle 09.27.2006 \) E-9-28-1







ENGINEERING REVIEW SECTION

DATA REQUIRED WITH ECC

INSTRUCTIONS:

Please complete the test data and submit this form with the Engineers Certificate of Completion. An Approval of Construction cannot be issued without the data identified below in accordance with Arizona Administrative Code (A.A.C.) R18-5-508(C). Please attach all supplemental information and calculations to this form.

DATA

2.

3.

RESSURE TEST DATA		T	ALLEY SERVE	- 40
Indicate Segment Tested	Lively	ECMITO GIH	Coll / lines	MAIO WATE
Pressure and Leakage Test Results (Pass/Fail)	PASSED	PASSED	PASSED	PASSED
Date Tested	3-1-11	3-2-11	3-23-11	3-23-11
Time Started	9:00	1:00	8:00	11:00
Time Finished	11:00	3:00	10:00	13:00
Pipe Diameter	6	12	6	6
Footage Tested	18104	16001	211015	273 LF
Allowable Leakage	2.17	3.84	2.53	. 33
Leakage Observed	0	-0-	0	0
Pressure at Test Point	205	200	Z00	200

Employee Observing the Test (Please Print Legibly)

Signature of Employee Observing the To

Show Show Should Show

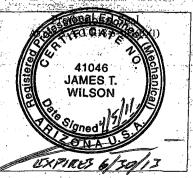
Initial Sampling	Date	3-2-11	3-3-11	3-24-11	3-25-1
(Minimum 50 ppm available chlorine)	Time	14:00	9:00	8:00	10:00
	ppin Cl ₂	100	100	200	200
After 24 Hours Detention Time	Date	3-3-11	3-4-11	3-28-11	3-28-1
(Minimum 10 ppm free chlorine)	Time	16:00	11:00	B:00	8:20
	ppin Cl₂	50	50	150	200
After Sufficient Flushing	Date	3-14-11	3-14-11	3-30-11	3-30-11
(Water is clear and system Cl2 residual is measured)	Time	8:00	9:00	8:00	8.30
	ppin Cl2	1.1	1.0	•8	1.0
Bacteriological Sampling(s):	Date:	3-14-11	3-14-11	3-30-11	3-30-11
and the control of the state of t The state of the state	Tine	9:20	9:00	9.40	8:35
	Attached (Y/N)	461	461	461	465
		Yes/No-	Yes/No	Yes/No	Yes/Na

Certification

I, STEVE ONT: 2..., certify that I have inspected the work performed and have found it to be satisfactory and in accordance with Arizona Administrative Code, Arizona Engineering Bulletins, and the

Authorized Persons Stonafure

4/1/11 Bate



FEBRUARY 3RD, 2009

PAGE 1 OF 1



ENGINEERING REVIEW SECTION

DATA REQUIRED WITH ECC

TRI		

1.

Please complete the test data and submit this form with the <u>Engineers Certificate of Completion</u>. An Approval of Construction cannot be issued without the data identified below in accordance with Arizona Administrative Code (A.A.C.) R18-5-508(C). Please attach all supplemental information and calculations to this form.

PRESSURE TEST DATA	ELM	**	•
Indicate Segment Tested	YTH /AZ BUYD		
Pressure and Leakage Test Results (Pass/Fail)	PASSED		
Date Tested	3-23-11		
Time Started	11:30		
Time Finished	13:30		
Pipe Diameter	12		
Footage Tested	544		
Allowable Leakage	1.31		
Leakage Observed	0		
Pressure at Test Point	200		
Employee Observing the Test (Please Print Legibly)	STEVE ORT:	2	
Signature of Employee Observing the Test	7-4		

Initial Sampling	Date	3-24-11			
(Minimum 50 ppm available chlorine)	Time	9:00			
	ppın Cl ₂	150			
After 24 Hours Detention Time	Date	3-28-11			
(Minimum 10 ppm free chlorine)	Time	10:00			
	ppın Cl ₂	150			
After Sufficient Flushing	Date	3-30-11			
(Water is clear and system Cl2 residual is measured)	Time	10:00			
·	ppm Cl ₂	1,0			
Bacteriological Sampling(s):	Date	3-30-11			
	Time	8:45			
	Attached (Y/N)	465			1
		Yes/No	Yes/No	Yes/No	Yes/No

Certification	Professional Seal
I, STEVE ONTIZ, certify that I have inspected the work performed and have found it to be satisfactory and in accordance with Arizona Administrative Code, Arizona Engineering Bulletins, and the approved specifications. Authorized Persons Signature Date	AS OF TEAT (B)(1) 41046 JAMES T. WILSON NAUS NAUS

FEBRUARY 3RD, 2009

3.



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007 (602) 771-2300 • azdeq.gov



APPROVAL OF CONSTRUCTION

Project Description:

AOC Permit for approximately 6,400 LF of 6-inch and 12-inch waterline and related fittings on Lincoln Street, Elm Street, 3rd Street and in an alley, in Coolidge.

Location:

Coolidge, Pinal County, AZ

Project Owner:

Arizona Water Company

Address:

P.O. Box 29006, Phoenix, AZ 85038

The Arizona Department of Environmental Quality (ADEQ) hereby issues an Approval of Construction for the above-described facility based on the following provisions of Arizona Administrative Code (A.A.C.) R18-5-507 et seq.

On December 16, 2010, ADEQ issued a Certificate of Approval to Construct for the referenced project.

On April 5, 2011 James T. Wilson, P.E., certified the following:

• A final construction inspection was conducted on April 1, 2011;

■ The referenced project was constructed according to the as-built plans and specifications and ADEQ*6 Certificate of Approval to Construct;

■ Water system pressure and leakage tests were conducted on March 1, 2, and 23, 2011, and the results were within the allowable leakage rates;

■ The applicant has the right to appeal this AOC Permit. Appeal information is on reverse side of this Permit.

Microbiological samples were collected on March 2, 3, 24, and 25, 2011 and analyzed on March 15 and 31, 2011 by Legend Technical Services, ADHS License No. AZ0004. The sample results were negative for total coliform.

This Approval of Construction authorizes the owner to begin operating the above-described facilities as represented in the approved plan on file with the ADEQ. Be advised that A.A.C. R18-5-124 requires the owner of a public water system to maintain and operate all water production, treatment and distribution facilities in accordance with ADEQ Safe Drinking Water Rules.

AD4

PWS No.: 11-014 LTF No.: 53493

Drinking Water Facilities Review Unit

Drinking Water Section

cc: TEU File No.: 20100235

CRO Approval of Construction File Pinal County Health Department

Pinal County Planning & Zoning Department

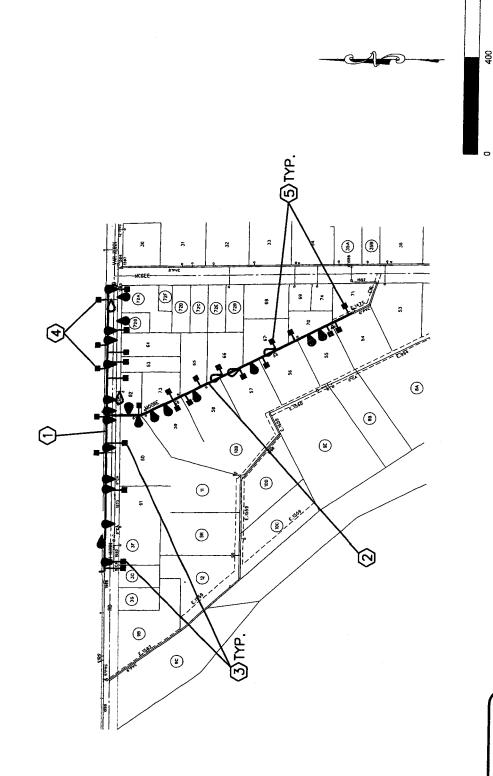
AZ Corporation Commission

Engineer

Northern Regional Office 1801 W. Route 66 • Suite 117 • Flagstaff, AZ 86001 (928) 779-0313 Southern Regional Office 400 West Congress Street • Suite 433 • Tucson, AZ 85701 (520) 628-6733

FARMS VALLE

(



WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE PRELIMINARY DRAWING VALVE AND FIRE HYDRANT LOCATION TO BE DETERMINED IN PROJECT DESIGN

,200 LF

INSTALL 12" PVC

INSTALL 6" PVC

ōŢ.

QUANTITIES LIST

WATER MAIN REPAIR/REPLACEMENT

13 EA

9 EA. S EA.

INSTALL SHORT SERVICE INSTALL LONG SERVICE

INSTALL SERVICE

.100

SERVICE LINE REPAIR/REPLACEMENT

0

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,200 LF OF 12" PVC, 1,100 LF OF 6" PVC AND 27 SERVICE CONNECTIONS ALONG VAH KI INN ROAD AND MOORE CIRCLE.

PROJECT LOCATION

APPROVED BY: AH/FS

S

рате: 12/29/2010

NW 1/4 SEC. 20-T.5S., R.9E.

N/A

Valley Farm៊ឺs

LEAK LOCATION	SECTION	DATE	TYPE
11133 E. Vah Ki Inn Road	NW 1/4 Sec 20 T5S R9E	10/2/2009	Main Repair
11877 Moore Road	NW 1/4 Sec 20 T5S R9E	9/26/2009	Service Repair
11983 Moore Road	NW 1/4 Sec 20 T5S R9E	8/14/2009	Main Repair
11983 Moore Road	NW 1/4 Sec 20 T5S R9E	6/30/2009	Main Repair
McGee Road Lot 72A	NW 1/4 Sec 20 T5S R9E	7/29/2009	Main Repair
Moore Road & Vah Ki Inn Road	NW 1/4 Sec 20 T5S R9E	8/31/2009	Main Repair
Moore Road Northwest corner of Lot 67	NW 1/4 Sec 20 T5S R9E	1982	Main Repair
Moore Road Northwest side of Lot 65	NW 1/4 Sec 20 T5S R9E	1990	Main Repair
Moore Road Northwest side of Lot 70	NW 1/4 Sec 20 T5S R9E	2000	Main Repair
Moore Road Southwest corner of Lot 57	NW 1/4 Sec 20 T5S R9E	1985	Service Replacement
Moore Road Southwest side of Lot 67	NW 1/4 Sec 20 T5S R9E	1983	Service Replacement
Moore Road Southwest side of Lot 70	NW 1/4 Sec 20 T5S R9E	1989	Main Repair
Moore Road West middle of Lot 73	NW 1/4 Sec 20 T5S R9E	1987	Main Repair
SW Corner of Vah Ki Inn Road & McGee	NW 1/4 Sec 20 T5S R9E	5/15/2009	Service Repair
Vah Ki Inn Road Lot 3F	NW 1/4 Sec 20 T5S R9E	2003	Main Repair
Vah Ki Inn Road Lot 72G	NW 1/4 Sec 20 T5S R9E	2009	Main Repair
Vah Ki Inn Road Middle of Lot 60	NW 1/4 Sec 20 T5S R9E	1982	Main Repair
Vah Ki Inn Road North middle of Lot 62	NW 1/4 Sec 20 T5S R9E	1983	Main Repair
Vah Ki Inn Road North middle of Lot 62	NW 1/4 Sec 20 T5S R9E	1988	Service Replacement
Vah Ki Inn Road North middle of Lot 63	NW 1/4 Sec 20 T5S R9E	1977	Main Repair
Vah Ki Inn Road North middle of Lot 64	NW 1/4 Sec 20 T5S R9E	1979	Main Repair
Vah Ki Inn Road Northeast corner of Lot 60	NW 1/4 Sec 20 T5S R9E	1984	Main Repair
Vah Ki Inn Road Northeast corner of Lot 61	NW 1/4 Sec 20 T5S R9E	2003	Main Repair
Vah Ki Inn Road Northeast corner of Lot 64 and Lot 72	NW 1/4 Sec 20 T5S R9E	1978	Main Repair
Vah Ki Inn Road Northwest corner of Lot 3F	NW 1/4 Sec 20 T5S R9E	2001	Service Repair
Vah Ki Inn Road Northwest corner of Lot 60	NW 1/4 Sec 20 T5S R9E	1987	Main Repair
Vah Ki Inn Road Northwest corner of Lot 61	NW 1/4 Sec 20 T5S R9E	1986	Main Repair
Vah Ki Inn Road Northwest corner of Lot 62	NW 1/4 Sec 20 T5S R9E	1981	Main Repair

ARIZONA WATER COMPANY WORK AUTHORIZATION

W.A. NUMBER: P.E. NUMBER:

BUDGET ITEM NO.:

1-4773

Special #24

		SHEET NU.:	<u>1 or </u>
SYSTEM: PINAL VALLEY			
DIVISION: PINAL VALLEY	WORK TO START BY:	UPON AUTHORIZATION	
TAX CODE: 2103	WORK TO BE FINISHED BY:	WITHIN 125 DAYS	

DESCRIPTION OF WORK:

Valley Farms Main Replacement project: Replace approximately 2,000 lf of 6-inch CA pipe with 1,300 lf of 12-inch and 700 lf of 6-inch C-900 PVC. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

The company has experienced several leaks on these waterlines due to age of the pipe and failing gaskets contributing to increasing water loss in the Coolidge system. A perion of these waterlines were replaced in 2004-2008.

COST ESTIMA	TE	AUTHORIZATION	DATE
COST OF WORK: MATERIAL		0 James Wilson on 10/27/10	10/22/10
LABOR	6,	200 REVIEWED FOR ESMIT/ROW VERIFICATION:	10-22-2010
CONTRACT PORTION	128,		
OVERHEAD TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	\$ 166,·	M / /	10-22-10
FUNDS RECEIVED: CONTRIBUTIONS RECEIVED		0 Fredrick Schneider 48 10-2	16-22-10
REFUNDABLE ADVANCES RECEIVED		0 APPROVED BY FINANCE:	10/22/00
TOTAL CONTRIBUTIONS/ADVANCES NET CASH REQUIRED	\$ 166,	O Goseph Harris SPECIAL ITEM EXCEEDING \$10,000; AUTHORIZED BY PRESIDENT WWW W SUMMER OF THE PROPERTY OF THE	10-73-2010
COMMENTS:		William Garfield SPECIAL ITEM EXCEEDING \$10,000; AUTHORIZED BY CHAIRMAN: APPROVED VIA FAX M. L. Whitehead	10/27/2010
		RELEASED CONSTRUCT CONSTRUCT Authorized by FRED SCHI Date 10 27 110	TION

W.A. NUMBER:

P.E. NUMBER: BUDGET ITEM NO.:

Special #24

1-4773

WORK AUTHORIZATION - DETAIL SHEET SHEET NO.: 2 of 2 PLANT PROPERTY ACCOUNT YEAR INSTALLED AND W.A. NUMBER RETIREMENT 343 6-inch CA pipe 2000 1935 PROPERTY UNITS PROJECT DESCRIPTION Valley Farms Main Replacement project: Replace approximately 2,000 If of 6-inch CA pipe with 1,300 If of 12-inch and 700 If of 6inch C-900 PVC. DESCRIPTION PLANT PROP ACCT QUANTITY UNIT COST 12" C-900 PVC w/ all related fittings 343 1,300 55.00 71,500 6" C-900 PVC w/ all related fittings and pavement replacement 343 700 45.00 31,500 Tie into existing 12" and 8" C-900 with 12"x8" tee and valves 343 4,500.00 4,500 0 Tie into existing 6" PVC 343 1 1,500.00 1,500 Ν Tie into existing 6" PVC with 12"x6" reducer 345 1 1,500.00 1,500 Tie over existing services to new main 348 22 800.00 17,600 R Α С Ţ W 0 R K 345 SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG 345 SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT SERVICE CONNECTIONS COMPLETE: SINGLE-LONG 345 SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT 345 TOTAL CONTRACT WORK 128,100 Α Т Ε R 345 SERVICE CONNECTIONS: DOUBLE-LONG 345 SERVICE CONNECTIONS: DOUBLE-SHORT SERVICE CONNECTIONS: SINGLE-LONG 345 SERVICE CONNECTIONS: SINGLE-SHORT 345 METERS 346 **TOTAL MATERIALS** \$ TESTING FEE 343 1 500.00 500 В 1 1,500.00 PERMIT FEE 343 1,500 O 343 1 2,500.00 SURVEY FEE 2,500 R 343 1 1,700.00 1,700 FIELD INSPECTION INSTALL SERVICE CONNECTIONS: DOUBLE-LONG 345 INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT 345 345 INSTALL SERVICE CONNECTIONS: SINGLE-LONG INSTALL SERVICE CONNECTIONS: SINGLE-SHORT 345 **TOTAL LABOR** \$ 6.200 SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR 134,300 OVERHEAD 32,232

NON-REFUNDABLE PORTION

AFH

TOTAL

166.532

COST ESTIMATE | \$

REFUNDABLE PORTION

AGREEMENT FOR CONSULTING SERVICES BETWEEN ARIZONA WATER COMPANY AND HANSEN ENGINEERING & SURVEYING

THIS AGREEMENT is made and entered into on this 15th day of October 2010, by and between Arizona Water Company, an Arizona corporation, hereinafter referred to as "Client", and Hansen Engineering & Surveying, an Arizona corporation hereinafter referred to as "Consultant".

RECITALS

WHEREAS, Client is authorized to and desires to retain Consultant to provide engineering design, post design and construction administration services to locate all above-ground structures/improvements (including, but not limited to: curb, gutter, sidewalks, fences, posts, signs, poles, manholes, utility lines, etc.) and locate all utility bluestake markings (for underground utilities) within the Right-of-Way as described in Exhibit A attached hereto.

WHEREAS, Consultant is agreeable to providing personnel and facilities necessary to perform the desired services within Client's required time; and

WHEREAS, Client desires to retain Consultant to perform the services in the manner, at the time, and for the compensation set forth herein;

NOW, THEREFORE, Client and Consultant agree as follows:

1. Description of Project.

Client and Consultant agree that Project is as described in Exhibit A, hereto, incorporated by reference herein and entitled "Scope of Work", dated October 14, 2010. If, during the course of Project, Client and Consultant agree to changes in Project, such changes shall be effective only after being incorporated in this Agreement by written amendment, signed by representative of Client and Consultant.

2. Scope of Consultant Services.

Consultant agrees to perform those services described hereafter. Unless modified in writing by both parties, duties of Consultant shall not be construed to exceed those services specifically set forth herein.

- a. <u>Basic Services.</u> Consultant agrees to perform those services described in the Scope of Work (the "Services"). Any tasks not specifically described in the Scope of Work will be Additional Services.
- b. <u>Additional Services.</u> Client shall pay Consultant all fees and costs incurred in performing Additional Services provided the services were authorized by Client in writing. Unless otherwise agreed in writing, Additional Services shall be compensated in

accordance with Consultant's standard billing rates at the time the Additional Services are performed.

c. <u>Litigation Assistance</u>. Unless specifically stated therein, the Scope of Work does not include assistance to support, prepare, document, bring, defend or assist in litigation undertaken or defended by Client. All such services required or requested of the Consultant by Client or any third party (except claims between Client and Consultant) will be reimbursed at Consultant's applicable rates for such litigation services.

3. Responsibilities of Client.

In addition to payment for the Services performed under this Agreement, Client shall:

- a. Assist and cooperate with Consultant in any manner necessary and within its ability to facilitate Consultant's performance under this Agreement.
- b. Designate in writing a person to act as Client's representative with respect to this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define Client's policies, make decisions and execute documents on Client's behalf.
- c. Furnish Consultant with all technical data in Client's possession including, but not limited to, maps, surveys, drawings, soils or geotechnical reports and any other information required by or useful to Consultant in performance of the Services under this Agreement.
- d. Notify Consultant of any known or potential health or safety hazards existing at or near the project site.
- e. Provide access to and/or obtain permission for Consultant to enter upon project related property during normal business hours, whether or not owned by Client, as required to perform and complete the Services.

4. Americans with Disabilities Act.

Any other provision of this Agreement to the contrary notwithstanding, unless otherwise specified in the Scope of Services, Client's contractors shall have sole responsibility as between Client and Consultant for compliance with the Americans With Disabilities Act ("ADA") 42 U.S.C. 12101 et. Seq. and the related regulations. Consultant shall provide client with applicable ADA criteria, which may be required.

5. Authorization and Completion.

In signing this Agreement Client grants Consultant specific authorization to proceed with work as described in Scope of Work and under the terms of this Agreement.

6. <u>Compensation.</u>

- a. <u>Amount.</u> For the Services described in Exhibit A, Client agrees to pay, and Consultant agrees to accept compensation in accordance with Exhibit B, attached hereto and incorporated herein. Where Consultant has provided Client with a breakdown of the total compensation into subtasks, such breakdowns are estimates only. Consultant may reallocate compensation between tasks, provided total compensation is not exceeded without the prior written approval of Client.
- b. <u>Payment.</u> As long as Consultant has not defaulted under this Agreement, Client shall pay Consultant within thirty (30) days of the date of Consultant's invoices for services performed and reimbursable expenses incurred under this Agreement. If Client has reason to question or contest any portion of any such invoice, amounts questioned or contested shall be identified and notice given to Consultant within thirty (30) days of the date of the invoice. Any portion of any invoice not contested shall be deemed to be accepted and approved for payment and shall be paid to Consultant within thirty (30) days of the date of the invoice. Client agrees to cooperate with Consultant in a mutual effort to resolve promptly any contested portions of Consultant's invoices.

In the event any uncontested portions of any invoice are not paid within thirty (30) days of the date of Consultant's invoice, interest on the unpaid balance shall accrue beginning with the 31st day at the rate of 1.5% per month, and Consultant shall have the right to suspend work per Article XV, Suspension of Work.

7. Responsibility of Consultant.

a. Standard of Care Professional Services.

Subject to the limitations inherent in the agreed scope of work as to the degree of care, amount of time and expenses to be incurred, and subject to any other limitations contained in this Agreement, Consultant shall perform the Services and any Additional Services in accordance with generally accepted standards and practices customarily utilized by competent engineering firms in effect at the time Services and any Additional Services are rendered. Consultant does not expressly or impliedly warrant or guarantee its Services.

b. Reliance upon Information Provided by Others.

If Consultant's performance of services hereunder requires Consultant to rely on information provided by other parties (excepting Consultant's subcontractors), Consultant shall not independently verify the validity, completeness, or accuracy of such information unless otherwise expressly engaged to do so in writing by Client.

c. Consultant's Opinion of Costs.

Client acknowledges that construction cost estimates, financial analyses and feasibility projections are subject to many influences including, but not limited to,

price of labor and materials, unknown or latent conditions of existing equipment or structures, and time or quality of performance by third parties. Client acknowledges that such influences may not be precisely forecasted and are beyond the control of Consultant and that actual costs incurred may vary substantially from the estimates prepared by Consultant. Consultant does not warrant or guarantee the accuracy of construction or development cost estimates, however, Consultant agrees to exercise its best Professional Judgment in rendering its opinions.

d. Construction Phase Services.

- Consultant's Activities at Construction Site. The presence of Consultant's personnel at a construction site, whether as on-site representative, resident engineer, construction manager, or otherwise, does not make Consultant responsible for those duties that belong to Client and/or construction contractors or others, and does not relieve construction contractors or others of their obligations, duties, and responsibilities. including, but not limited to, construction methods, means, techniques, sequences, and procedures necessary for completing all portions of the construction work in accordance with the contract documents, any health or safety programs and precautions required by such construction work, and any compliance with applicable laws and regulations. Any inspection or observation of the contractor's work is for the purpose of determining that the work is proceeding in conformance with the intent of the project specifications and contract Consultant has no authority to exercise control over any construction contractor in connection with their work or health or safety programs and precautions. Except to protect Consultant's own personnel and except as may be expressly required elsewhere in the Scope of Work, Consultant has no duty to inspect, observe, correct, or report on health or safety deficiencies of the construction contractor.
- 2. <u>Shop Drawing and Submittal Review</u>. If required by Consultant's Scope of Services, Consultant shall review shop drawings or other contractor submittals for general conformance with the intent of the contract documents. Except for services completed under direct contract to Consultant, Consultant shall not be required to verify dimensions, to engineer contractor's shop drawings or submittals, nor to coordinate shop drawings or other submittals with other shop drawings or submittals provided by contractor.
- 3. Record Drawings. Record drawings, if required, will be prepared, in part, on the basis of information compiled and furnished by others, and may not always represent the exact location, type of various components, or exact manner in which the Project was finally constructed. Except for services completed under direct contract to Consultant, Consultant is not responsible for any errors or omissions in the information from others that are incorporated into the record drawings.

e. Scope of Work.

1. Before preparing the scope of work, Consultant specifically acknowledges and agrees that it has inspected and familiarized itself with Client's project site. The Consultant has received, or had the opportunity to inquire about and/or request all relevant information concerning the Scope of Work from Client or any other source

Consultant deems necessary. The Scope of Work has been prepared by the Consultant and to the best of its knowledge includes all applicable work required to successfully complete project.

8. Asbestos/Hazardous Material.

Consultant and Consultant's subcontractors shall have no responsibility for the discovery, handling, removal, or disposal of, or exposure of persons to asbestos or hazardous or toxic materials that are present in any form at the project site. Professional services related to or in any way connected with the investigation, detection, abatement, replacement, use, specification, or removal of products, materials, or processes containing asbestos or hazardous or toxic materials are beyond the scope of this Agreement.

In the event Consultant encounters asbestos or hazardous materials at the jobsite, Consultant may, at its option and without liability for damages, suspend the performance of services on the Project until such time as Client and Consultant mutually agree on an amendment to this Agreement to address the issue, or Client retains another specialist consultant or contractor to identify, classify, abate and/or remove the asbestos and/or hazardous materials.

9. Consultant's Work Product.

a. Scope.

Consultant's work product which is prepared solely for the purposes of this Agreement, including, but not limited to, drawings, test results, recommendations and technical specifications, whether in hard copy or electronic form, shall become the property of Client when Consultant has been fully compensated as set forth herein. Consultant may keep copies of all work product(s) for its records.

Consultant and Client recognize that Consultant's work product submitted in performance of this Agreement is intended only for the project described in this Agreement. Client's alteration of Consultant's work product or its use by Client for any other purpose shall be at Client's sole risk.

b. Electronic Copies.

If requested, solely as an aid and accommodation to Client, Consultant may provide copies of its work product documents in computer-readable media ("electronic copies", "CADD"). These documents will duplicate the documents provided as work product, but will not bear the signature and professional seals of the registered professionals responsible for the work. Client is cautioned that the accuracy of electronic copies and CADD documents may be compromised by electronic media degradation, errors in format translation, file corruption, printing errors and incompatibilities, operator inexperience and file modification. Consultant will maintain the original copy, which shall serve as the official, archived record of the electronic and CADD documents.

10. <u>Indemnification.</u>

- The Consultant shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Consultant or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Consultant or of any subcontractor, or of any other person or persons, and the violation of any law, ordinance, rule, regulation, standard, or order resulting from, or in any manner arising out of, or in connection with, the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Consultant shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Consultant or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- b. Consultant shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 36.
- c. Consultant further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the project site of any material, substance, or waste, hazardous or nonhazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

11. Consultant's Insurance.

Consultant shall procure and maintain the following minimum insurance:

a. Commercial general liability insurance, including personal injury liability, blanket contractual liability and broad-form property damage liability coverage. The

combined single limit for bodily injury and property damage shall be not less than \$1,000,000.

- b. Automobile bodily injury and property damage liability insurance covering owned, non-owned, rented, and hired cars. The combined single limit for bodily injury and property damage shall be not less than \$1,000,000.
- c. Statutory workers' compensation and employer's liability insurance as required by state law.
- d. Professional liability insurance. The policy limit shall be not less than \$1,000,000.

Consultant shall either require each of its subconsultants to procure and to maintain the insurance specified in this section or insure its subconsultants in the Consultants own policy, in like amounts.

Client shall be named as additional insured on polices 1 and 2 above. Upon execution of this Agreement, Consultant will provide a certificate of insurance to Client. Consultant will keep the certificate current at all times while this Agreement is in effect. The Consultant will provide a 30-day written notice in the event the above policies are cancelled.

12. Confidentiality.

Consultant agrees it will maintain the confidentiality of all material it receives from Client and will not disclose, distribute, or publish to any third party such information without the prior permission of Client. Notwithstanding the foregoing, Consultant shall have no confidentiality obligation with respect to information that:

- a. becomes generally available to the public other than as a result of disclosure by Consultant or its agents or employees;
 - b. was available to Consultant prior to its disclosure by Client;
- c. becomes available to Consultant from a third party who is not, to the knowledge of Consultant, bound to retain such information in confidence.

In the event Consultant is compelled by subpoena, court order, or administrative order to disclose any confidential information, Consultant shall promptly notify Client and shall cooperate with Client prior to disclosure so that Client may take necessary actions to protect such confidential information from disclosure.

13. Subcontracts.

Consultant shall be entitled, to the extent determined appropriate by Consultant, to subcontract any portion of the services to be performed under this Agreement.

14. Suspension of Work.

Work under this Agreement may be suspended as follows:

- a. <u>By Client</u>. By written notice to Consultant, Client may suspend all or a portion of the Work under this Agreement if unforeseen circumstances beyond Client's control make normal progress of the Work impracticable.
- b. <u>By Consultant</u>. By written notice to Client, Consultant may suspend the work if Consultant reasonably determines that working conditions at the Site (outside Consultant's control) are unsafe, or in violation of applicable laws, or in the event Client has not made timely payment in accordance with Article VI, compensation

15. Termination of Work.

- a. This Agreement may be terminated <u>by Client</u> as follows: (1) for its convenience on thirty (30) days' notice to Consultant, or (2) for cause, if Consultant materially breaches this Agreement through no fault of Client and Consultant neither cures such material breach nor makes reasonable progress toward cure within fifteen (15) days after Client has given written notice of the alleged breach to Consultant.
- b. This Agreement may be terminated by Consultant as follows: (1) for cause, if Client materially breaches this Agreement through no fault of Consultant and Client neither cures such material breach nor makes reasonable progress toward cure within thirty (30) days after Consultant has given written notice of the alleged breach to Client.
- c. <u>Payment upon Termination</u>. In the event of termination, Consultant shall perform such additional work as is reasonably necessary for the orderly closing of the work. Consultant shall be compensated for all work performed prior to the effective date of termination, plus work required for the orderly closing of the work, including: (1) authorized work performed up to the termination date plus termination expenses, including all labor and expenses, at Consultant's standard billing rates, directly attributable to termination; (2) all efforts necessary to document the work completed or in progress; and (3) any termination reports requested by Client.

16. Assignment.

This Agreement is binding on the heirs, successors, and assigns of the parties hereto. Except as otherwise set forth under Article VIII, Assignment of Tasks to Affiliates, this Agreement may not be assigned by Client or Consultant without prior, written consent of the other.

17. No Benefit for Third Parties.

The services to be performed by Consultant are intended solely for the benefit of Client, and no benefit is conferred on, nor contractual relationship established with any person or entity not a party to this Agreement. No such person or entity shall be entitled to

rely on Consultant's services, opinions, recommendations, plans, or specifications without the express written consent of Consultant. No right to assert a claim against the Consultant, its officers, employees, agents, or consultants shall accrue to the construction Contractor or to any subcontractor, supplier, manufacturer, lender, insurer, surety, or any other third party as a result of this Agreement or the performance or nonperformance of the Consultant's services hereunder.

18. Force Majeure.

Consultant and Client shall not be responsible for delays caused by circumstances beyond their reasonable control, including, but not limited to: (1) strikes, lockouts, work slowdowns or stoppages, or accidents; (2) acts of God; (3) failure of Client to furnish timely information or to approve or disapprove Consultant's instruments of service promptly; and (4) faulty performance or nonperformance by Consultant or Client, Client's or Consultant independent consultants or contractors, or governmental agencies. Consultant and Client shall not be liable for damages arising out of any such delay, nor shall the Consultant or Client be deemed to be in breach of this Agreement as a result thereof.

19. Integration.

This Agreement represents the entire understanding of Client and Consultant as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered herein. This Agreement may not be modified or altered except in writing signed by both parties.

20. Severability.

If any part of this Agreement is found unenforceable under applicable laws, such part shall be inoperative, null, and void insofar as it conflicts with said laws, but the remainder of this Agreement shall be in full force and effect.

21. Choice of Law/Jurisdiction.

This Agreement shall be administered and interpreted under the laws of the State of Arizona Jurisdiction of litigation arising from the Agreement shall be in The State of Arizona.

22. Attorneys' Fees.

In the event any claim, controversy, or legal action arises under this Agreement, the prevailing party shall be entitled to recover from the other party all attorneys' fees, costs, expenses and other fees incurred by the prevailing party.

23. Notice Provisions.

Notices concerning this Agreement shall be in writing and sent by certified mail or by courier (such as Federal Express), or by hand-delivery addressed as follows:

To the Company:

Arizona Water Company

3805 North Black Canyon Highway Phoenix, Arizona 85015-5351

Attention: President

or

Arizona Water Company Post Office Box 29006 Phoenix, AZ 85038-9006 Attention: President

To Consultant:

Hansen Engineering & Surveying

115 S. Main Street

Coolidge, AZ 85228

Attention: President

Either party may change its address for purposes of this Section by giving written notice of such change of address to the other party

24. Authorization.

The persons executing this Agreement on behalf of the parties hereto represent and warrant that the parties have all legal authority and authorization necessary to enter into this Agreement, and that such persons have been duly authorized to execute this Agreement on their behalf.

IN WITNESS WHEREOF, each of the parties hereto has caused this instrument to be executed by their respective duly authorized officers as of the date first written above.

HANSEN ENGINEERING & SURVEYING an Arizona corporation	ARIZONA WATER COMPANY, an Arizona corporation		
By: Taylor Hose	By: 0/15/10		
Its: Przs.	its: REAL PROPERTY SPECIALIST		



Exhibit A

REVISED 10-14-10 Proposal For Survey

Client: Arizona Water Company

Attn: Charles Biggs

Project: Coolidge / Valley Farms Corridor Topo

Date: October 14, 2010

Scope of Services

Project Corridor Survey Coolidge-Valley Farms, Arizona

COOLIDGE - Exhibit 1

Locate all above-ground structures/improvements (including, but not limited to: curb, gutter, sidewalks, fences, posts, signs, poles, manholes, utility lines, etc.) and locate all utility bluestake markings (for underground utilities) within the Right-of-Way of the following roads:

- Coolidge Avenue, from Arizona Boulevard to Main Street, South of the R/W centerline
- Lincoln Avenue, from Arizona Boulevard to Main Street, South of the R/W centerline
- Elm Avenue, from Arizona Boulevard to Main Street. The entire width of R/W
- Main Street, from Elm Avenue to Seagoe Avenue. West of the R/W centerline on Main
- Third Street, from Palo Verde Avenue to Elm Avenue, The entire width of R/W

The survey will also show all features 10 feet beyond the Right-of-Way, specifically: Locate all above-ground utilities (including, but not limited to: valves, power poles, guy lines, junction boxes, ditches, canals, etc.) and locate and identify all utility bluestake markings (for underground utilities).

VALLEY FARMS - Exhibit 2

Locate all above-ground structures/improvements (including, but not limited to: curb, gutter, sidewalks, fences, posts, signs, poles, manholes, utility lines, etc.) and locate all utility bluestake markings (for underground utilities) along the Roadway of the following road:

- Moore Road, from Vah Ki Inn Road to McGee Road, The entire width.
- Vah Ki Inn Road, from AWC well site, East to McGee Road, North of the R/W centerline of Vah Ki Inn

The survey will also show all features 10 feet beyond the Roadway, specifically: Locate all above-ground utilities (including, but not limited to: valves, power poles, guy lines, junction boxes, ditches, canals etc.) and locate and identify all utility bluestake markings (for underground utilities).

NOTE: Moore Road is described by centerline and no width is defined (Book 84 of Deeds, Page 164). For the purposes of the survey, the primary survey area will be the width of the road as it exists. The secondary survey area will be 10 feet beyond the width of the road on each side.

ADDITIONAL INFORMATION

Project Location: Coolidge: Northwest quarter Section 27, T.5S.,R.8E.

Project Location: Valley Farms: Northwest quarter Section 20, T.5S., R.9E.

Deliverables:

1 complete printed set of the survey in its entirety on bond paper

1 compact disc with the electronic files of the survey in its entirety in AutoCAD format



Exhibit B

Proposal For Survey

Client: Arizona Water Company

Attn: Charles Biggs

Project: Coolidge / Valley Farms Corridor Topo

Date: October 14, 2010

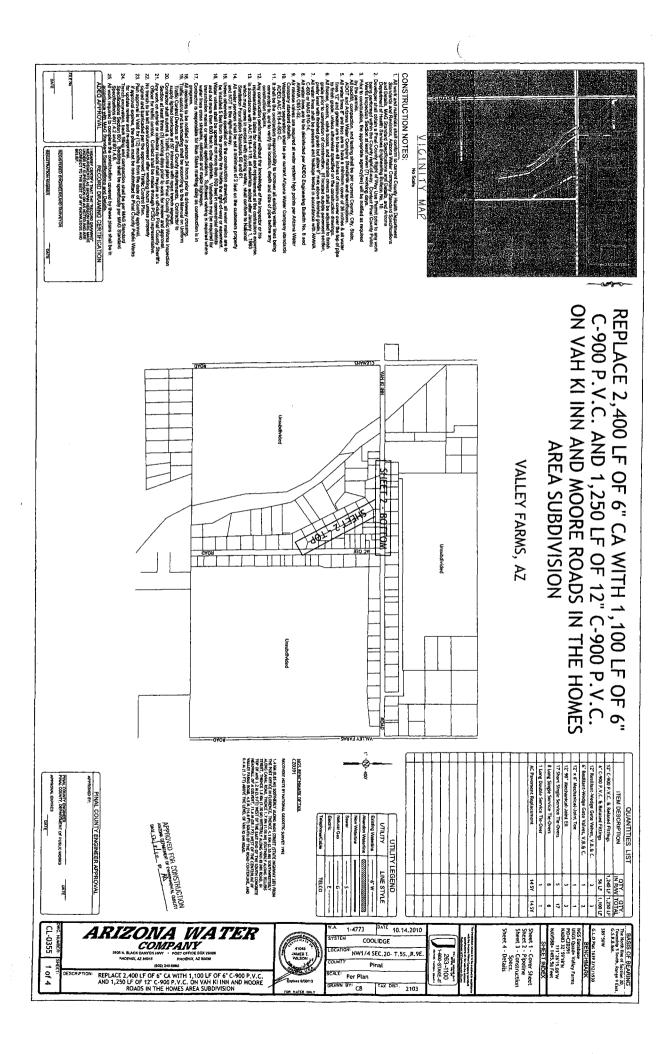
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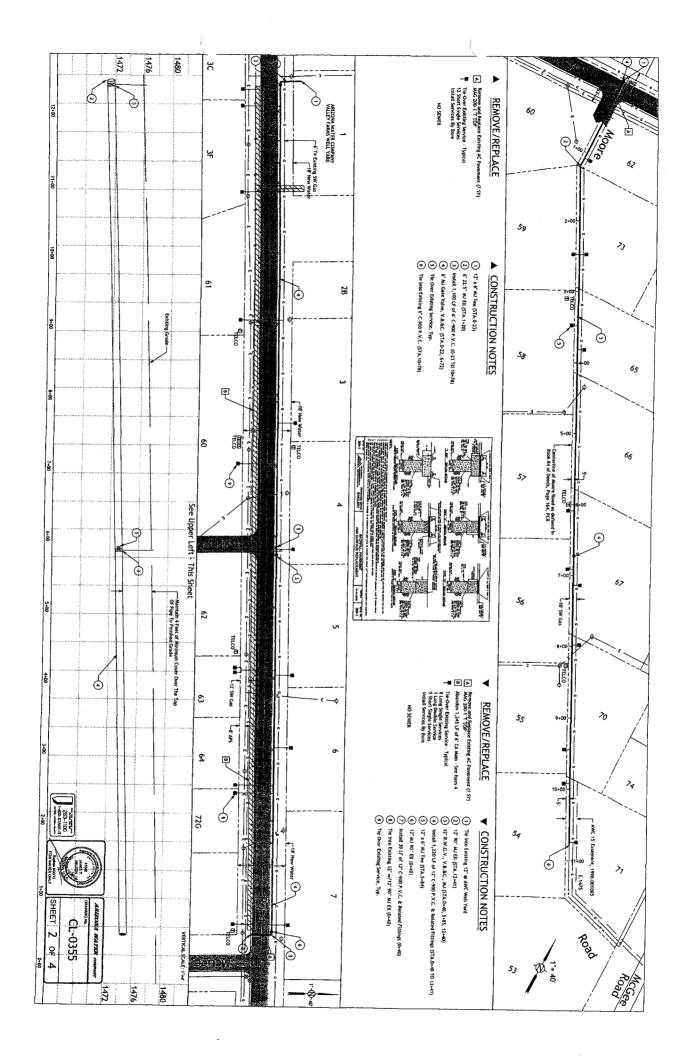
Total fee for services described in Exhibit A

\$7,400.00

Standard Time & Material Rates

1MC	= \$ 85/Hr
2MC	= \$100/Hr
3MC	= \$135/Hr
Auto Cad 1	= \$ 55/Hr
Auto Cad 2	= \$ 60/Hr
Sr. Field Tech	= \$ 70/Hr
Engineering Tech 1	= \$ 60/Hr
Engineering Tech 2	= \$70/Hr
Land Surveyor	= \$100/Hr
Engineer	= \$100/Hr





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OTHER PROTECTION

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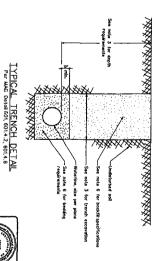
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All distances are measured perpendicularly from the outside of the sever mail the whiste of the water main. These separation requirements do not apply to stain, pumbing or individual noune service connections. No asplic lank/disposal liefd system shall be constructed within one hundred (1900) of a drhilling water well. hanicalaint ducite ron pipa with Magalag thrust restroints a misimum est on each side of a sewer or vitorm drain arassing.

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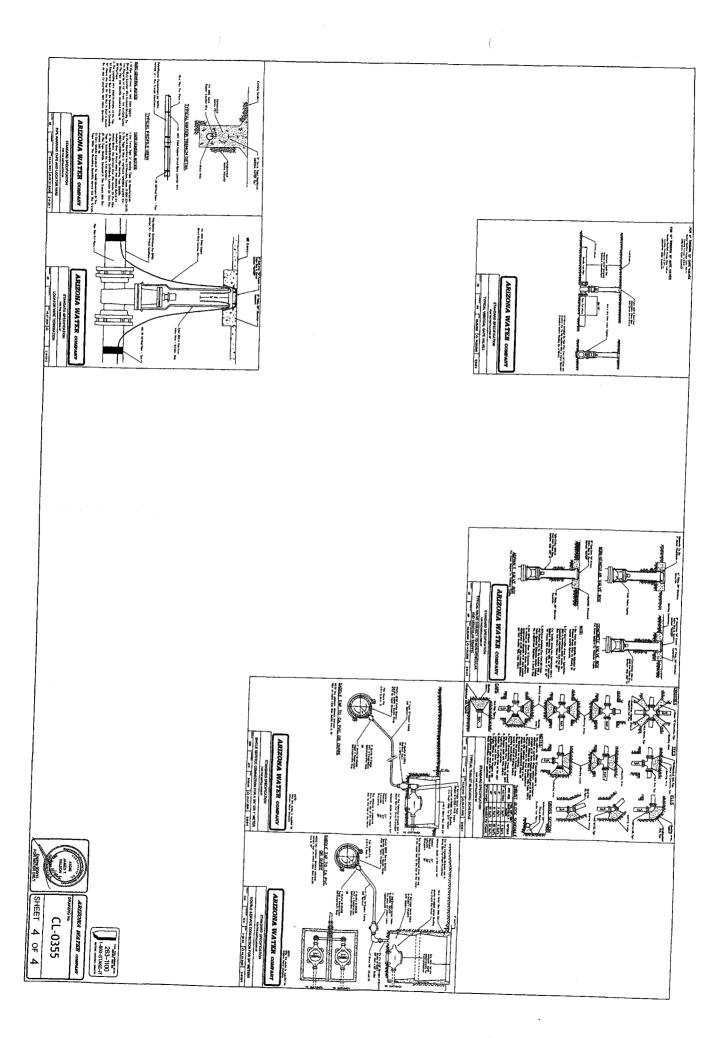
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ARIZONA WATER courses CL-0355

SHEET 3 OF 4



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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY CERTIFICATE OF APPROVAL TO CONSTRUCT WATER FACILITIES

Page 1 Of 2

ADEO File No: 20100232

LTF No: 53478

System Name: Arizona Water Co-Coolidge

11-014 **System Number:**

Project Owner: Arizona Water Company

Address: P O Box 29006, Phoenix, AZ 85038

Project Location: Coolidge

County: Pinal

Description: REPLACE 2,400 LF OF 6-INCH CA WATER LINE WITH 1,100 LF OF 6-INCH C-900 PVC & 1,250 LF OF 12-INCH C-900 PVC ON VAH KI

INN AND MOORE ROADS IN THE HOMES AREA SUBDIVISION, IN

COOLIDGE.

Approval to construct the above-described facilities as represented in the approved documents on file with the Arizona Department of Environmental Quality is hereby given subject to provisions 1 through 5 continued on page 2 through 2

- This project must be constructed in accordance with all applicable laws, including Title 49, Chapter 2, Article 9 of the Arizona Revised Statutes and Title 18, Chapter 5, Article 5 of the Arizona Administrative Code.
- Upon completion of construction, the engineer shall fill out the Engineer's Certificate of Completion and forward it to the Central Regional Office located in Phoenix. If all requirements have been completed, that unit will issue a Certificate of Approval of Construction. R18-5-507(B), Ariz. Admin.Code. At the project owner's request, the Department may conduct the final inspection required pursuant to R18-5-507(B); such a request must be made in writing in accordance with the time requirements of R18-5-507(C), Ariz. Admin. Code.
- 3. This certificate will be void if construction has not started within one year after the Certificate of Approval to Construct is issued, there is a halt in construction of more than one year, or construction is not completed within three years of the approval date. Upon receipt of a written request for an extension of time, the Department may grant an extension of time; an extension of time must be in writing. R18-5-505(E), Ariz. Admin. Code.
- 4. Operation of a newly constructed facility shall not begin until a Certificate of Approval of Construction has been issued by the Department. R18-5-507(A), Ariz. Admin. Code.

Reviewed by: AD4

Jának K. Desai, P.E. Unit Manager

12 08 2010 Date

cc: File No: 20100232

Regional Office: Central Owner: Arizona Water Company

County Health Department: Engineer: Arizona Water Company Planning and Zoning/Az Corp. Commission

Engineering Review Database - Etr021

Engineering Review Section Water Quality Division

APPROVAL TO CONSTRUCT DRINKING WATER TRANSMISSION LINES ADEQ FILE No. 20100232 PAGE 2 OF 2: PROVISIONS CONTINUED

5. The Arizona Department of Environmental Quality's review of this application was subject to the requirements of the licensing time frames ("LTF") statute under Arizona Revised Statutes ("A.R.S.") § 41-1072 through § 41-1079 and the LTF rules under Arizona Administrative Code ("A.A.C.") R18-1-501 through R18-1-525. This Notice is being issued within the overall time frame for your application.

ADEQ hereby approves your application for Approval to Construct Water Facilities under A.R.S. § 49-351. Your copy is enclosed.

This decision is an appealable agency action under A.R.S. § 41-1092. You have a right to request a hearing and file an appeal under A.R.S. § 41-1092.03(B). You must file a written Request for Hearing or Notice of Appeal within **30 days** of your receipt of this Notice. A Request for Hearing or Notice of Appeal is filed when it is received by ADEQ's Hearing Administrator as follows:

Office of Administrative Counsel Arizona Department of Environmental Quality 1110 W. Washington Street Phoenix, AZ 85007

The Request for Hearing or Notice of Appeal shall identify the party, the party's address, the agency and the action being appealed and shall contain a concise statement of the reasons for the appeal. Upon proper filing of a Request for Hearing or Notice of Appeal, ADEQ will serve a Notice of Hearing on all parties to the appeal. If you file a timely Request for Hearing or Notice of Appeal you have a right to request an informal settlement conference with ADEQ under A.R.S. § 41-1092.06. This request must be made in writing no later than 20 days before a scheduled hearing and must be filed with the Hearing Administrator at the above address.

Please contact Adrian Dumitrescu at 602-771-4201 or <u>ad4@azdeq.gov</u> if you have questions regarding this Notice or the Certificate of Approval to Construct.



PERMIT NO:

RUP1102-075

PINAL COUNTY DEPARTMENT OF PUBLIC WORKS

Highways, Flood Control, Fleet Maintenance, Emergency Services
P.O. Box 727 31 N. Pinal Street, Building F, Florence, AZ. 85132 (520) 866-6411 FAX (520) 866-7943

Utility Companies

A PERMIT IS HEREBY ISSUED for the Scope of Work set forth below with the expressed understanding that all conditions, general and special, as set forth herein are part of this permit and must be faithfully performed to the satisfaction of Pinal County, herein after referred to as "County," and is accordance with plans, specifications and special requirements approved by the county. Work under permit may commence as of the issuance date. This permit must be posted on site at all times. All work shall be completed by the expiration date set forth below.

IF GRADED OR DISTURBED AREA EQUALS OR EXCEEDS 0.1 AC., YOU MUST APPLY FOR A DUST CONTROL PERMIT FROM AIR QUALITY CONTROL (520-866-6929).

ENGINEERS COST ESTIMATE: \$0.00				
APPLICANT: ARIZONA WATER COMPANY/ROY FREEMAN				
ADDRESS: 448 W. CENTRAL AVE, COOLIDG	E, AZ 85128			
CONTACT PERSON: ROY FREEMAN	EMAIL: _			
CONTACT PHONE: 5208368785	CONTACT FAX: 52	08362850		
CONTRACTOR NAME & LICENSE NO: CENT	TRAL ARIZONA PIPELINE	164758 K-80		
ROAD TO 16601 VAH KI IN		NG VAH KI INN ROAD, WEST FROM MCGEE STALL APPROXIMATELY 1,100LF OF 6" C-900 I ROAD TO MCGEE ROAD.		
PROJECT#	CUBIC YARDS:	LINEAR FEET (trenching) 2350		
LOCATION OF RIGHT-OF-WAY: District: 2		Township: 5 S Range: 9 E		
START AT INTERSECTION OF VA ROAD NAME: OF RHODES COURT	.H KI INN ROAD AND MCGEE AT E	EAST END, END APPROXIMATELY 660LF EAST		
OTHER INFORMATION:				
SPECIAL CONDITIONS: To be constructed per Pinal County, Mag standards and plans designed by Arizona Water Company. DWG.# CL-0355. All test data to be submitted to pass final inspection.				
DATE ISSUED: 2/15/2011	EXPIRATION DATE:	6/15/2011		
Louie Arroyos	Phillip Garcia	520-251-2342		
ISSUED BY	INSPECTOR	INSPECTOR PHONE #		

THIS PERMIT IS FOR WORK IN PINAL COUNTY RIGHT-OF-WAY ONLY. HOWEVER, ISSUANCE OF THIS PERMIT DOES NOT CONFIRM THE EXISTENCE OF PINAL COUNTY RIGHT-OF-WAY.

THIS DOCUMENT MUST BE POSTED ON THE CONSTRUCTION SITE IN A CONSPICUOUS PLACE. NO WORK WILL BE ALLOWED TO TAKE PLACE INSIDE THE RIGHT-OF-WAY WITHOUT A VALID PERMIT ON SITE.

THE PERMITTEE, CONTRACTOR, PERSON OR FIRM DOING THE WORK MUST GIVE VERBAL OR WRITTEN NOTICE OF THE DATE AND TIME WHEN THE SCOPE OF WORK WILL BEGIN TO THE INSPECTION SECTION BY CALLING THE PUBLIC WORKS OFFICE AT 520-866-6411 OR BY FAX AT 520-866-7943.

SUCH NOTICE MUST BE RECEIVED BY THE INSPECTION SECTION AT LEAST 48 HOURS PRIOR TO THE TIME THE WORK WILL BEGIN, WORK IN THE RIGHT-OF-WAY WITHOUT A VALID PERMIT WILL BE CHARGED TRIPLE THE APPLICABLE AMOUNT. EXTENSIONS MUST BE APPLIED FOR BEFORE PERMIT EXPIRES OR PERMIT WILL NO LONGER BE VALID. A FINAL NOTICE MUST BE GIVEN AND RECEIVED BY THE INSPECTION SECTION WITHIN 48 HOURS AFTER COMPLETION OF THE SCOPE OF WORK IN THE SAME MANNER AS FOR THE START NOTICE.

Print Date: 3/14/2011

- 1. That the Licensee assumes the responsibility and all liability for injury or damage to said highway, or to any person while using said highway, caused by or arising out of the exercise of this permit or license. Licensee agrees to hold harmless and indemnify the County for claims arising out of the work performed under this permit; except such claims arising out of the County's sole negligence.
- That all work done shall be at the sole cost and expense of the Licensee and shall be done at such time and in such a manner as to be least inconvenient to the general public, and as directed by the agent of the Licensor. Work must be finished in the time specified on permit unless the appropriate renewal fees are paid prior to the expiration date.
- 3. That when the proposed work is completed, the Licensee shall repair the roadbed and replace the surfacing material thereon, and will leave the said road in as good a condition as it is now or better, so far as the road is affected by the Licensee.
- 4. If the subject of the permit or license fails to pass final inspection, the Licensee will remove or replace the same within such time as specified by written notice from the Licensor, or if at any time hereafter, any material used by the Licensee in replacing or reconstructing any part of said highway proves defective, the Licensee will replace the same with the kind and quality of material which the Licensor shall specify.
- 5. That if the title and possession of any property placed upon the right-of-way by the Licensee remains in said Licensee, the Licensee shall and will promptly perform all necessary repair work upon written notice from the Licensor, and will not permit or allow any condition to exist which would be a hazard or source of danger to the general public.
- 6. That if at any time hereafter the right-of-way, or any portion thereof occupied and used by the Licensee, may be needed or required by the Licensor, any permit or license granted in pursuance of this application may be revoked by the Licensor and all rights thereunder terminated and upon sufficient notice, the Licensee shall and will remove all property belonging to said Licensee.
- 7. That in the event that the work to be done under the authority of the permit or license necessitates the creation of any hazard or source of danger to any person or vehicle using said highway, said Licensee shall and will provide and maintain at all times during the existence of said hazard sufficient barriers, hanger signals, lanterns, detours in accordance with the Manual on Uniform Traffic Control Devices (M.U.T.C.D.) and shall and will take such other measures of precaution as the Licensor shall direct.
- 8. That if the work to be undertaken is of such a nature or character that the Licensor deems it necessary that said work be laid out or inspected by the Licensor, said Licensee will defray any and all expenses incurred by said Licensor and herein agrees to reimburse the Licensor and for that purpose will deposit with the Licensor a sum of money in the amount necessary to cover all cost incurred by the Licensor.
- 9. That in the event any property belonging to or the area occupied by such property being used by the Licensee within any portion of the right-of-way interferes with or is needed to construct, maintain, reconstruct, improve, or relocate any highway, street, road, drainage, or utility lines or structures pertaining thereto, by or for the Licensor or the general public, said Licensee shall at his own expense relocate, remove, lower or raise such property, within a reasonable time, when requested to do so by the Licensor in writing.
- 10. On or before the effective date of this permit the Licensee shall provide the following to the County Engineer:
 - a. A certificate of insurance confirming that the Licensee has obtained and maintains Public Liability and Property Damage insurance with a minimum combined single limit of \$1,000,000, said coverage to remain in force for the entire term for which the Permit is granted. All policies shall specify that the subject coverage is primary and shall identify the County as an additional insured. Satisfaction of this isurance requirement shall, in no way limit the Licensee's indemnity obligation as set forth in Paragraph 1 above. Fifteen days written notice of any change in coverage or cancellation of any policy shall be provided to the County Engineer.
- 11. It is the sole responsibility of the Licensee to maintain converage in force for the term of the permit and to name the County as an additional insured. Said coverage shall be primary and failure to conform to the above requirements shall not waive any responsibility of the Licensee.

I have read agree to abide by the terms, conditions and limitations listed above.

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CONSTRUCTION SPECIFICATIONS: E-8-1

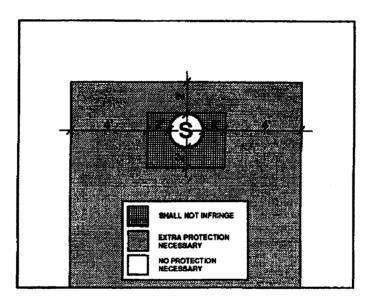
ERRATA 2010

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



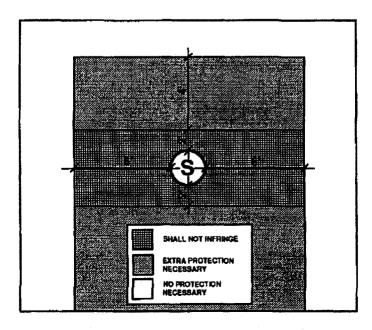
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

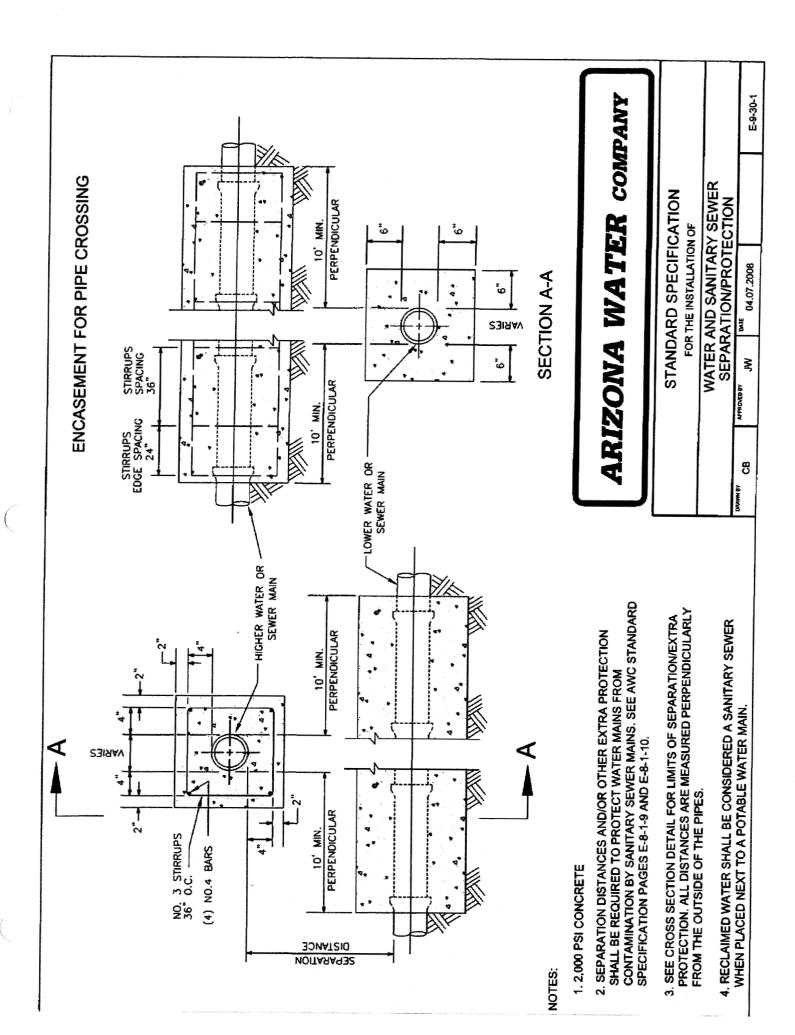
Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

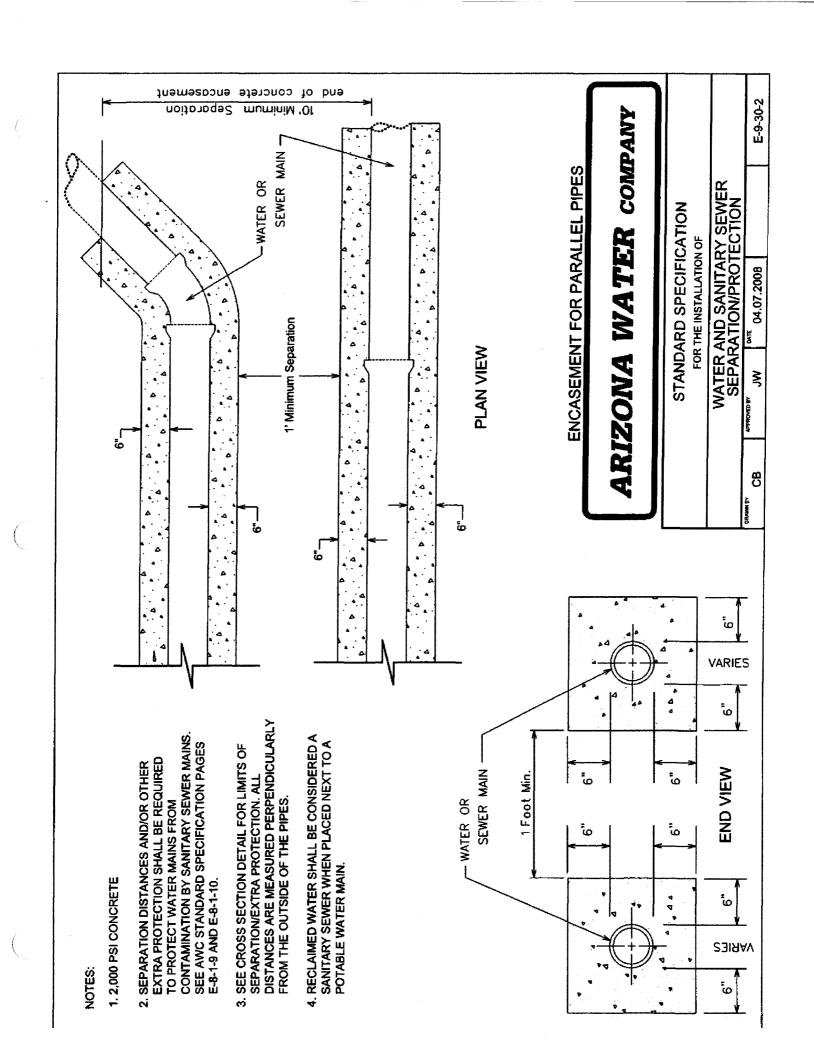
- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10") on either side of the water main. Refer to the diagram below for clarification.



STANDARD SPECIFICATION DRAWINGS: E-9-1
ERRATA 2010

E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
E-9-22	INSTALLATION OF COLUMN PIPE, OIL TUBE AND LINE SHAFT
E-9-23	HOT TAP AND JUMPER METER CONNECTION
E-9-24	INSTALLATION OF TYPICAL WATER LINE ENCASEMENT
E-9-25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION
E-9-30-1	WATER AND SANITARY SEWER SEPARATION/PROTECTION PERPENDICULAR
E-9-30-2	WATER AND SANITARY SEWER SEPARATION/PROTECTION - PARALLEL





3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006. PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan Clow Valve Company 8121 N. 10th Avenue Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To: Jim Ryan - Clow Valve Company

October 19, 2010

Subject:

Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the Clow products. If I can be of any assistance, please call me.

Very truly yours,

Judica & Sluss
Fredrick K. Schneider

Vice President - Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger
US Pipe – Waterworks Marketing Consultants
34522 N. Scottsdale Road
Scottsdale, Arizona 85226

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USP1
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Tony Geiger - US Pipe

November 24, 2010

Subject:

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,

Fredrick K. Schneider

Vice President - Engineering

afh

VIA EMAIL: TGEIGER4@COX.NET



SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION

GENERAL CONDITIONS OF CONTRACT: E-4-1

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Invitation to Bid.</u> The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid.
- F. <u>Contract</u>. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. <u>Inspector</u>. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

8. PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. ?40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons. and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all deslabor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. <u>LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME</u>

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

CONSTRUCTION SPECIFICATIONS: E-8-1

E-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawi ngs and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Contract</u>. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

- Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- c. Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following m aterials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color yellow, drain open, open direction left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 4" Pumper Nozzle, NST and 2 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San M anuel.)
 - (2) 1 4½" Pumper Nozzle, NST and 2 2½ " Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) $1 4\frac{1}{2}$ " Pumper Nozzle, NST and $2 2\frac{1}{2}$ " Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 2½" Hose Nozzles, NPT (Miami only.)

- (5) $1-3\frac{1}{2}$ " Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and $2-2\frac{1}{2}$ " Hose Nozzle, NST (Superior only.)
- FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC. 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x ¾" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12"; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and B UNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)
- I. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.
- m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.
- COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8 " x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x $\frac{3}{4}$ " x $\frac{3}{4}$ " for a $\frac{3}{4}$ " service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: ¾", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes ¾", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".
 - Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).
- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
 - (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
 - (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knock outs and adjustable frame.
 - (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8 x 3/4" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these S pecifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system .

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe befor e any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Speci fication E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

9. NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

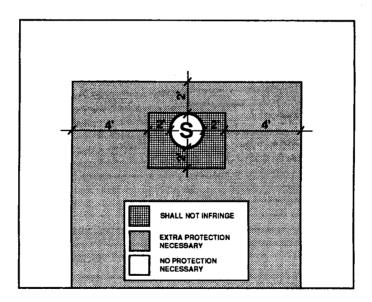
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below f or clarification.



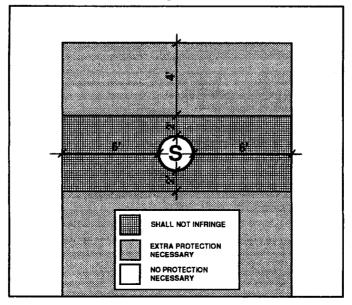
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°, 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

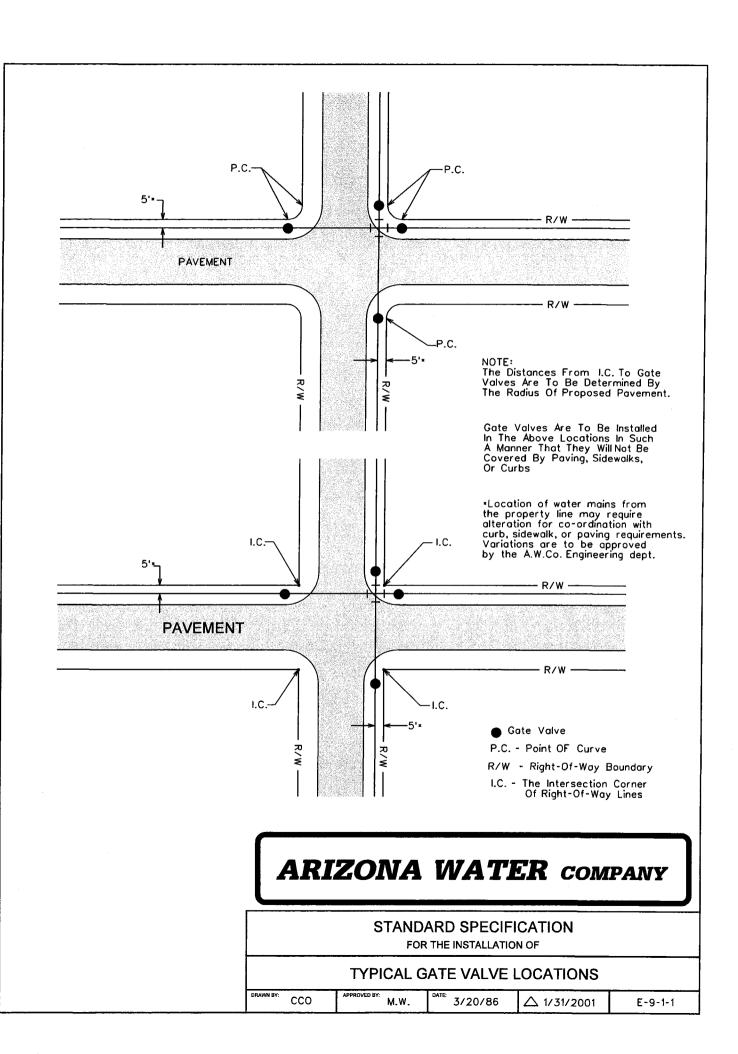
STANDARD SPECIFICATION DRAWINGS: E-9-1

STANDARD SPECIFICATION DRAWINGS

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E-9-2	INSTALLATION OF TYPICAL VERTICAL AND HORIZONTAL GATE VALVES
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E-9-4	INSTALLATION OF TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC
E-9-5	INSTALLATION OF TYPICAL THRUST BLOCKING SCHEDULE, THRUST BLOCK FOR VERTICAL BENDS, AND MEGALUG THRUST RESTRAINTS
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E-9-7	INSTALLATION OF TYPICAL PARALLEL FIRE HYDRANT
E-9-8	INSTALLATION OF TYPICAL 2" BLOWOFF DEVICE, AND AIR RELEASE VALVE
E-9-9	INSTALLATION OF TYPICAL SINGLE SERVICE CONNECTION FOR A $^3/_4{}^{\shortparallel}$ OR 1" METER
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E-9-11	INSTALLATION OF TYPICAL 2" SERVICE CONNECTION
E-9-12	INSTALLATION OF 3" COMPOUND METER, 4" COMPOUND METER, 6" COMPOUND METER, 6" COMPOUND SERVICE, CONCRETE VAULT, AND NON-POTABLE PROPELLER METER
E-9-13	INSTALLATION OF TYPICAL 4" THRU 8" DETECTOR CHECK VALVES AND 3" THRU 10" REDUCED PRESSURE PRINCIPLE DETECTOR WITH BYPASS METER ASSEMBLY (RPDA) FOR FIRE LINE SERVICES
E-9-14	INSTALLATION OF TYPICAL PRESSURE RELIEF VALVE ASSEMBLY
E-9-15	INSTALLATION OF TYPICAL PRESSURE REDUCING STATION
E-9-16	PAINT COLOR SELECTION
E-9-17	STEEL WATER STORAGE TANK
E-9-18	HYDROPNEUMATIC TANK
E-9-19	INSTALLATION OF WELL SHELTER

E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
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E-9-25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION

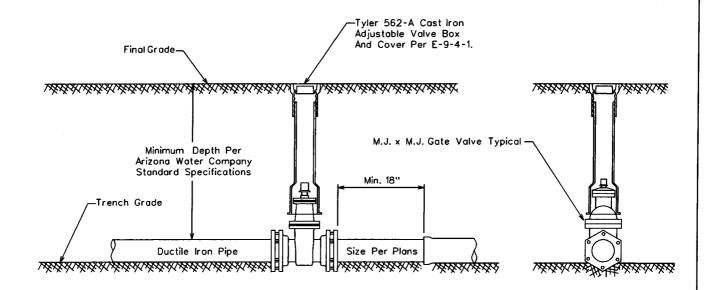


FOR 6" THROUGH 12" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2360-__ ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2361-_. ANSI/AWWA C509 Compliant



All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

E-9-2-1

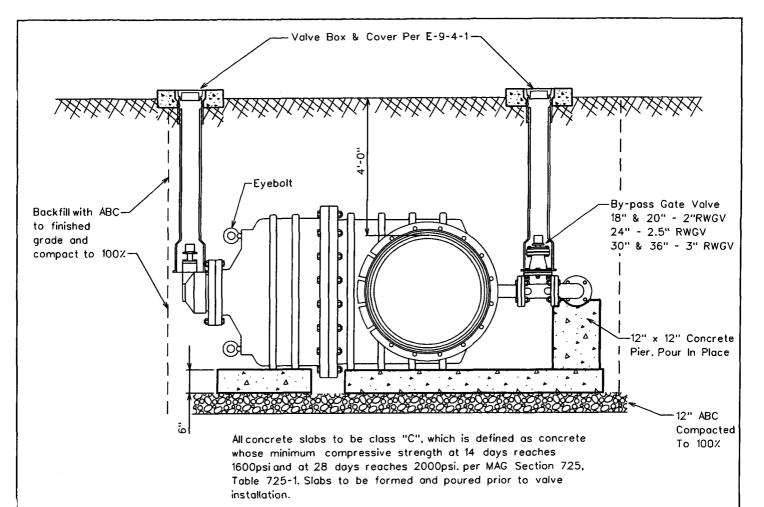
ARIZONA WATER COMPANY

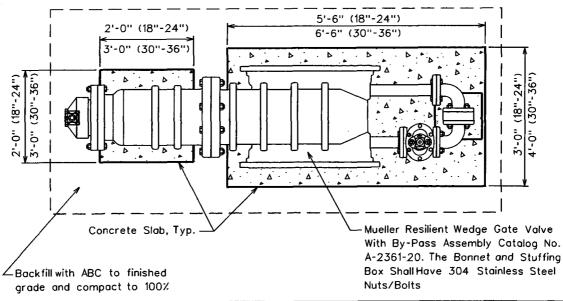
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VERTICAL GATE VALVES

DRAWN BY: APPROVED BY: MW 03.20.1986 △ 08.23.2006 CB





All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

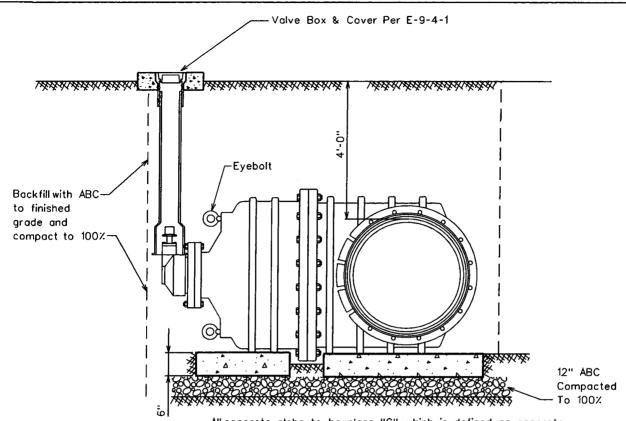
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

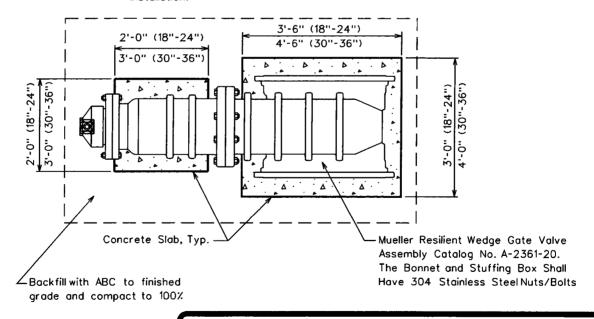
FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES
WITH BY-PASS FOR 18" AND LARGER VALVES

DATE: 12.07.2004 △ E-9-2-2



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi, per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



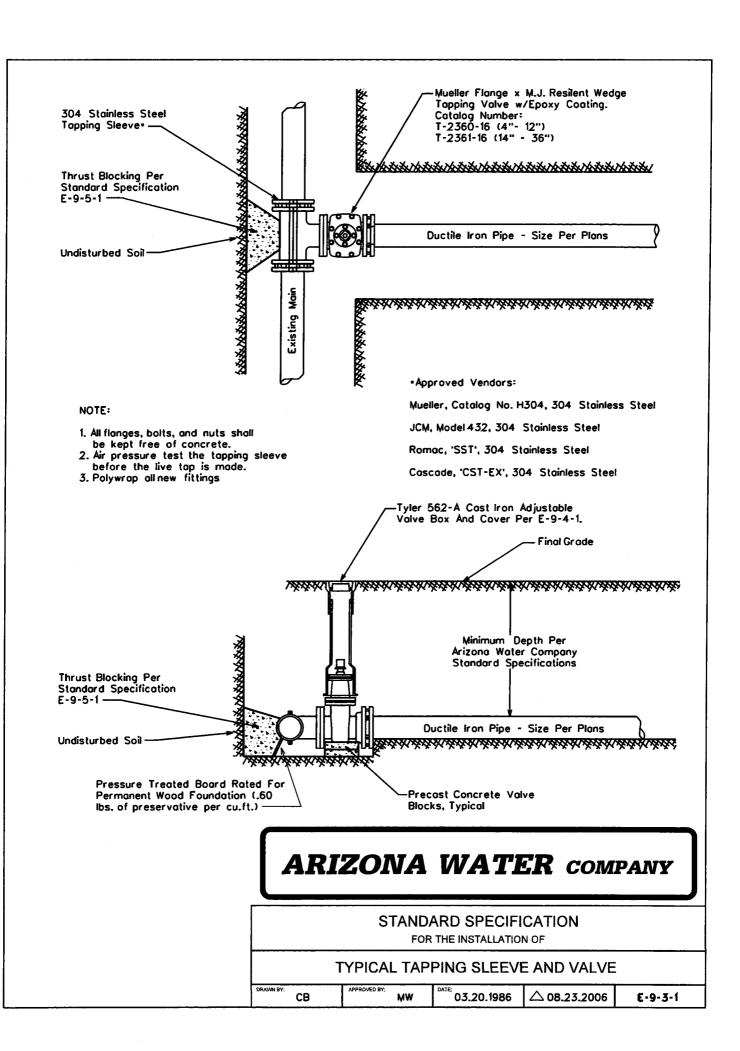
All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

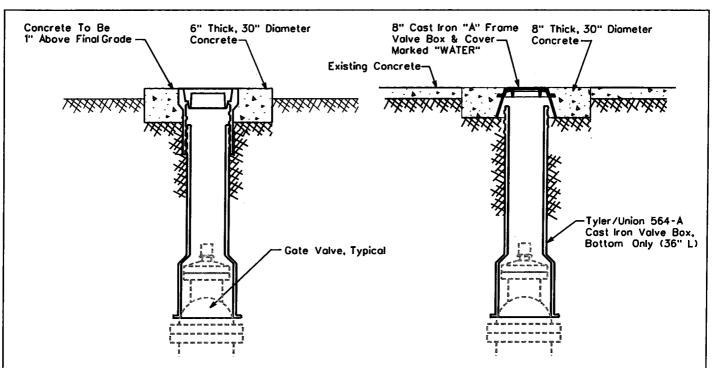
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

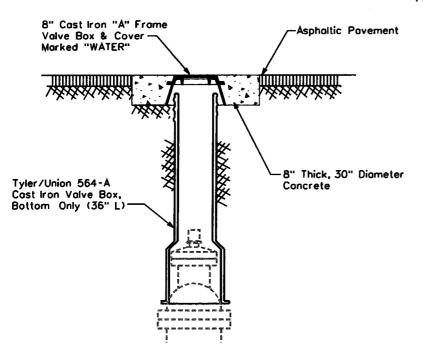
INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITHOUT A BY-PASS FOR 18" AND LARGER VALVES





NON-VEHICULAR VALVE BOX

CONCRETE VALVE BOX For Areas Subject To Vehicular Traffic



NOTE:

- The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
- 2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"

For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"

- All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
- 4. Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

ASPHALT VALVE BOX
For Areas Subject To Vehicular Traffic

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC

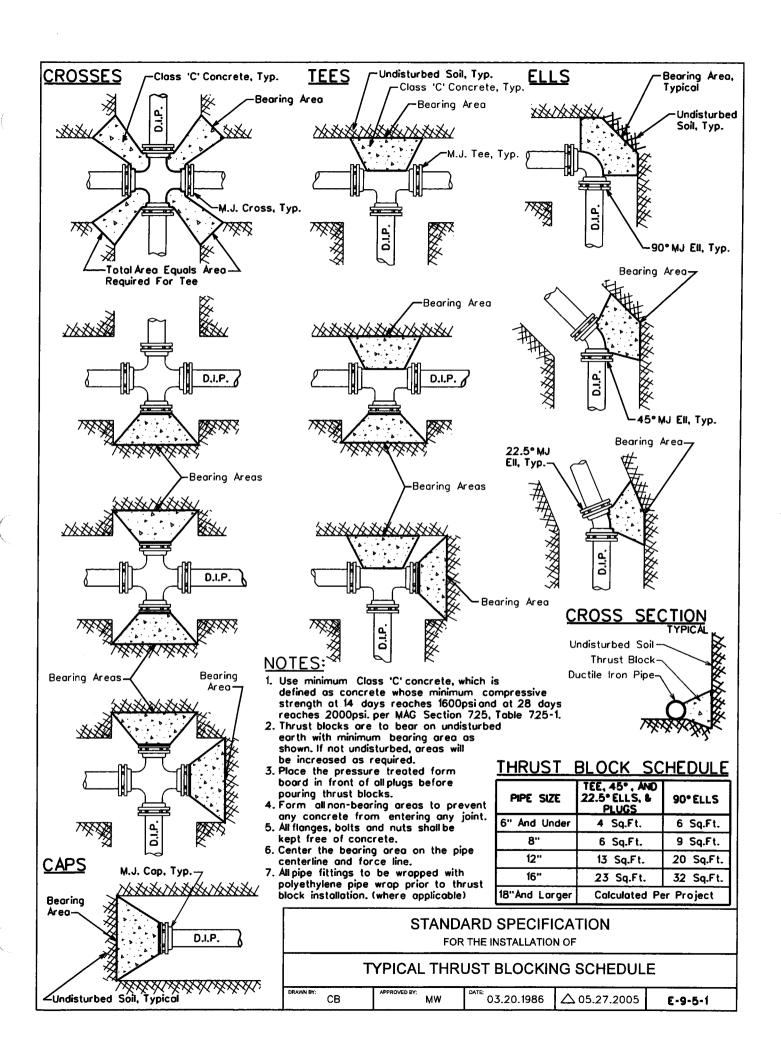
CB APPROVED BY:

MW

03.20.1986

△ 8.24.2006

E-9-4-1

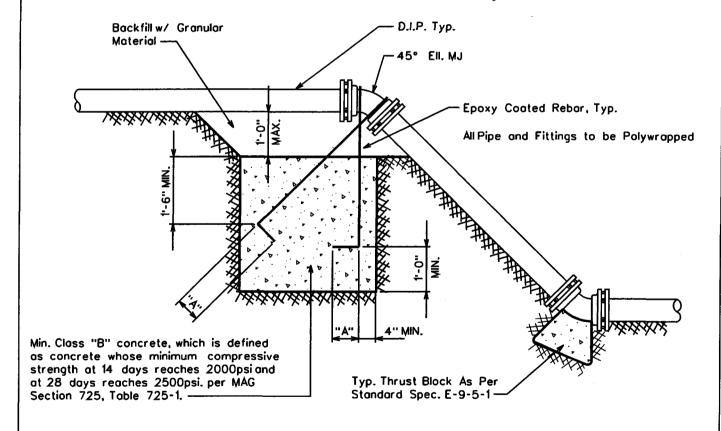


NOTES

- Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
- 2. Bars To Have 90° Hook & Their Ends, As Per Table Below.

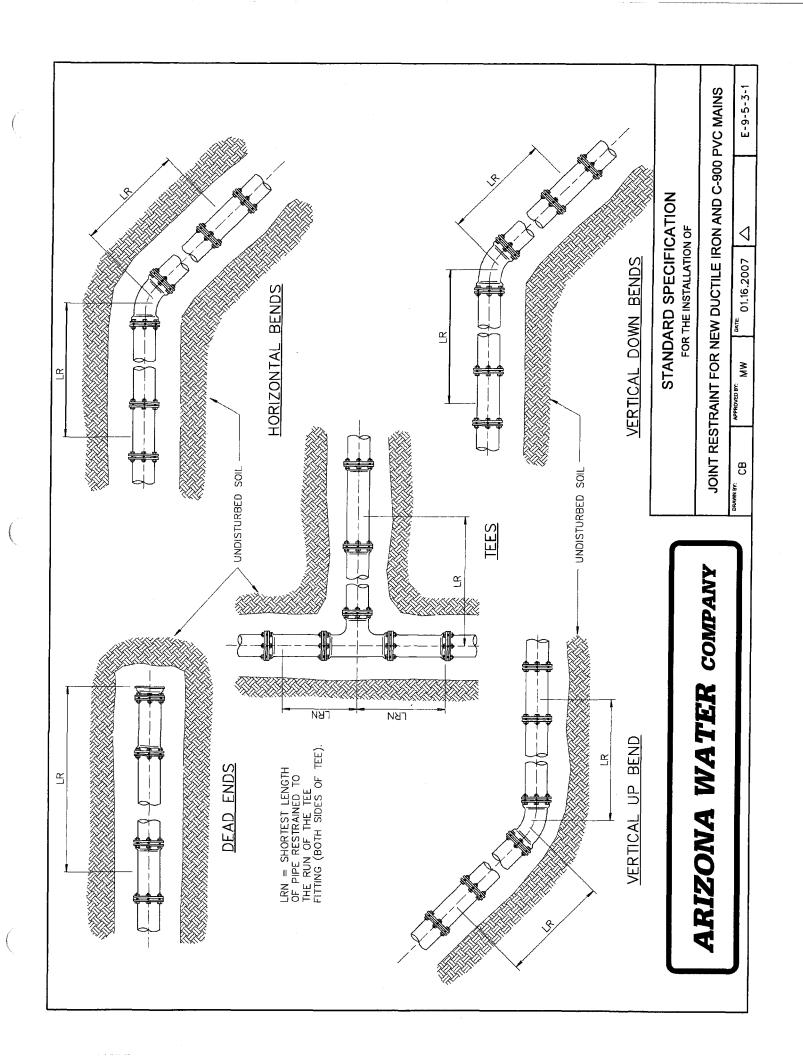
Pipe Size	Min. Bar Size	"A" Dimension (Hook)	 Min. Block Dimension (WxHxL)
6"	•6	6"	3'x3'x3'
8"	•6	9"	4'x3'x4'
12"	•8	9"	5'x4'x5'
16"	•9	12"	7'x6'x7'

* For 125 P.S.I. Working Pressure



ARIZONA WATER COMPANY

		ARD SPECIF		
	THRUST BL	OCK FOR VER	RTICAL BENDS	
DRAWN BY: JPK	APPROVED BY: MJW	7-5-96	△ 01.16.2007	E-9-5-2



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OLYETH	VERTICAL OFFSETS	FITTINGS		REND CN		=	15		5	23	7.0	/7	31	3.4		28	41		4/
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- NOTES:

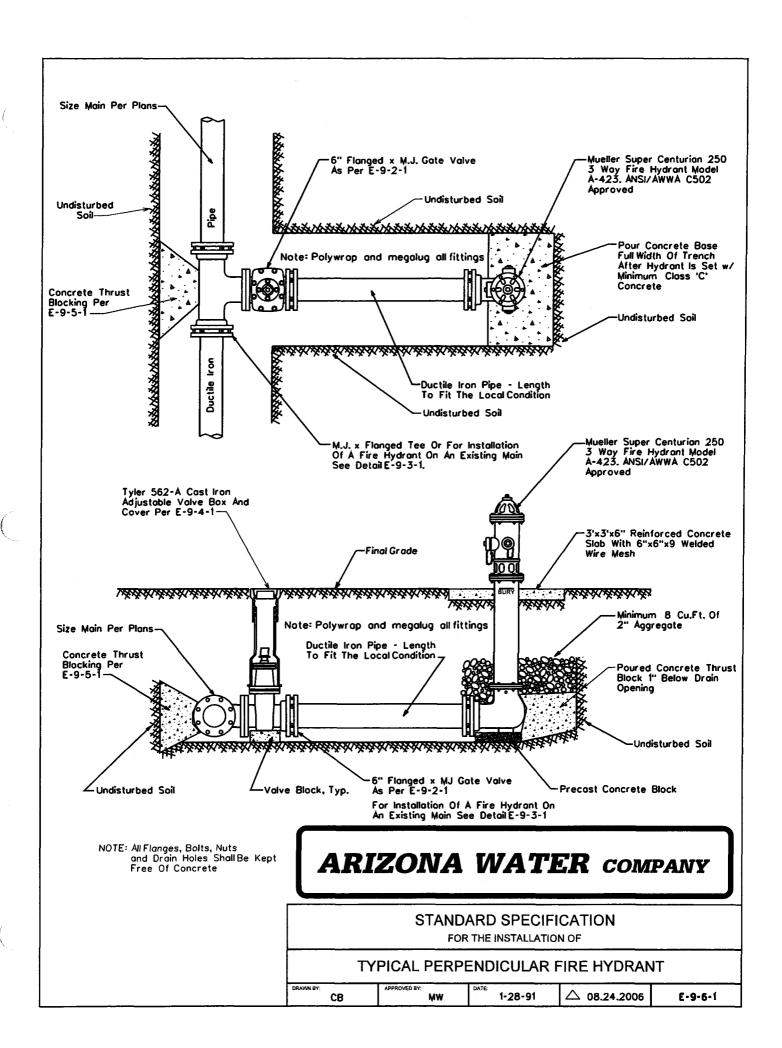
 1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED.

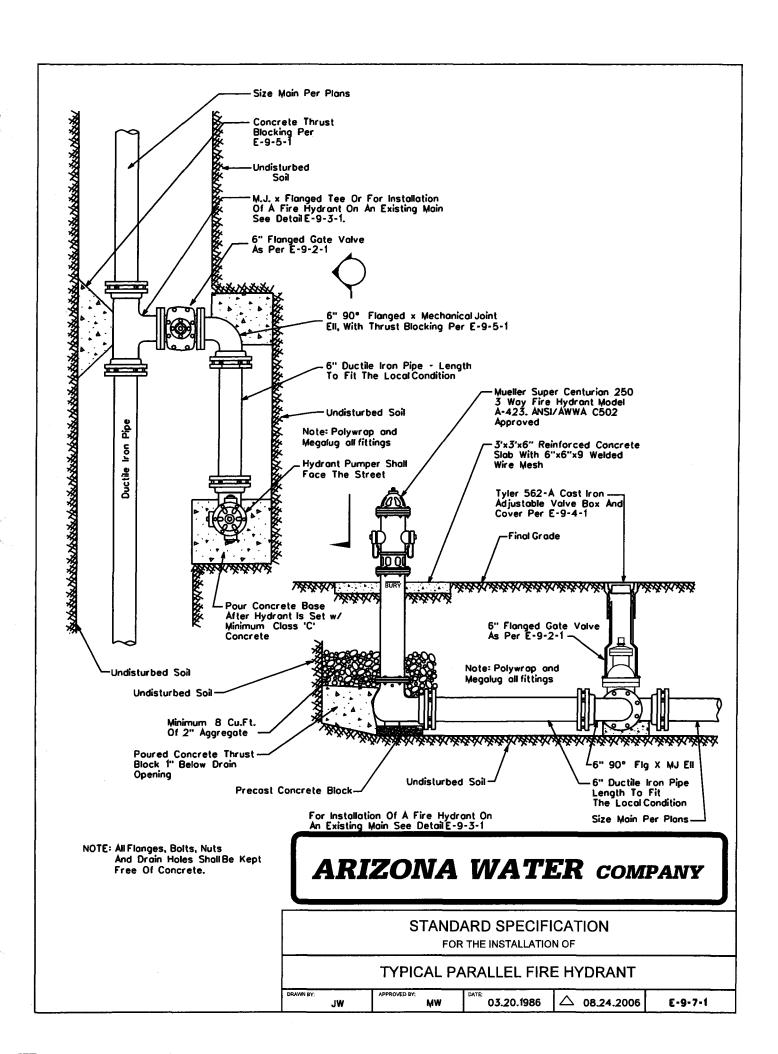
 ALL LENGTHS ARE GIVEN IN FEET.
 - 2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
- 3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
- 4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

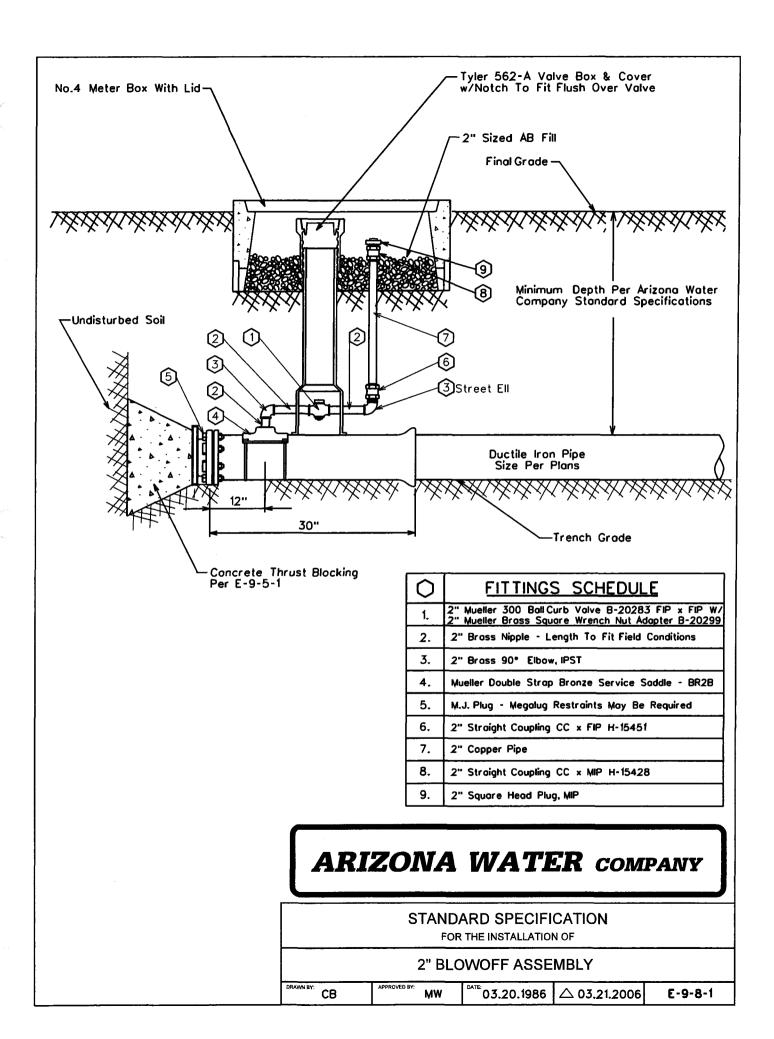
STANDARD SPECIFICATION FOR THE INSTALLATION OF

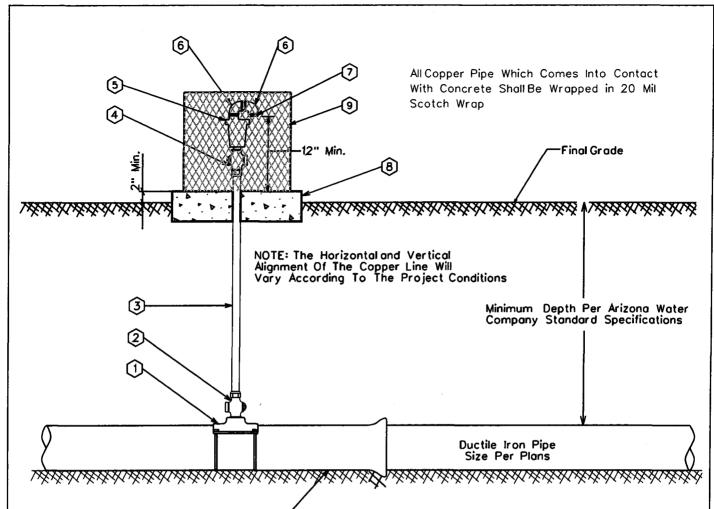
JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

E-9-5-3-	
◁	
DATE: 01.16.2007	
АРВОЙЕВ ВУ:	
DRAWN BY: CB	









GENERAL NOTES:

 The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.

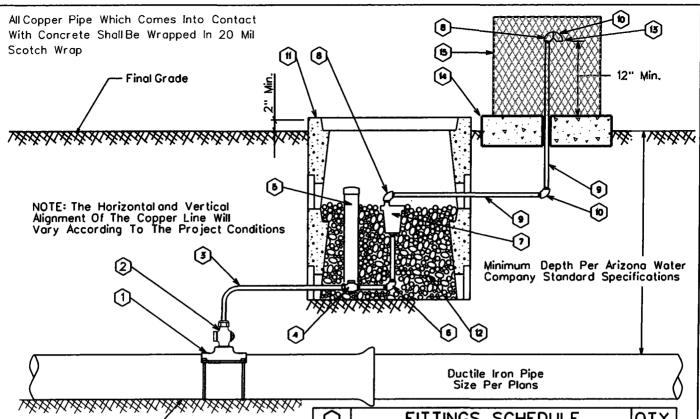
Trench Grade

- 2. The valve shall have a $\frac{1}{64}$ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & 1/2" IPST outlet, cost iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type "K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP × Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	1/2" Bross Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pod - Closs 'C' Concrete
9.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF TYPICAL AIR RELEASE VALVE DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 \$\triangle 08.24.2006 \text{E-9-8-2}



GENERAL NOTES:

Trench Grade -

- The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- 2. The valve shall have a 5/4" orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- Crispin model AR10 valve construction consists of a 1" IPST inlet & ½" IPST outlet, cast iron body and top flange with stainless steel float and trim.
- The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

0	FITTINGS SCHEDULE	QTY,
1,	Mueller BR2B Bronze Service Saddle - Double Strap	1
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Req'd
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cap (Loose Fit)	1
6.	1" x 4" Brass Nipple w/90° Elbow	1
7,	Crispin 1" Air Release Valve, Model AR10	1
8.	1/2" Brass Street Elbow	2
9.	1/2" Galvanized Pipe - Length as req'd	2
10.	1/2" Galvanized 90° Ell	2
11,	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	As Reg'd
13.	No.16 Wire Mesh Screen (Non-Corrodible)	1
14.	4" Thick Concrete Pad - Class 'C' Concrete	1
15.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan	1

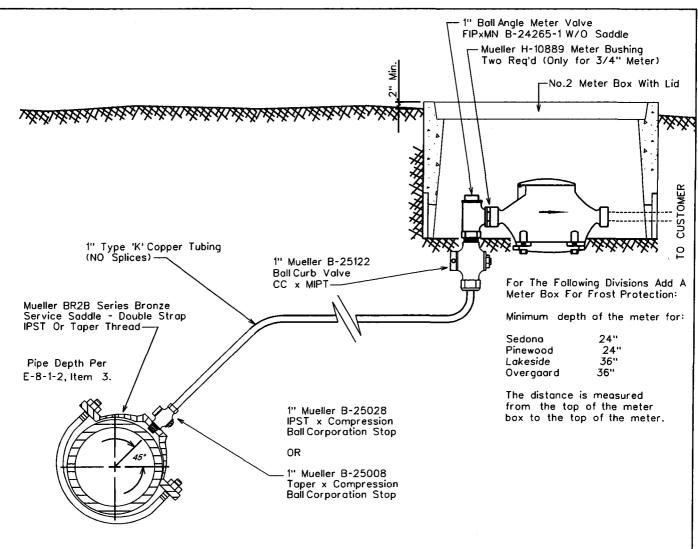
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

DRAWN 8Y: CB APPROVED 8Y: MW DATE: 03.20.1997 \(\triangle 08.24.2006 \) E-9-8-3



SADDLE TAP TO CA, PVC, OR DIPIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

NOTE: Only the meter is supplied by Arizona Water Company

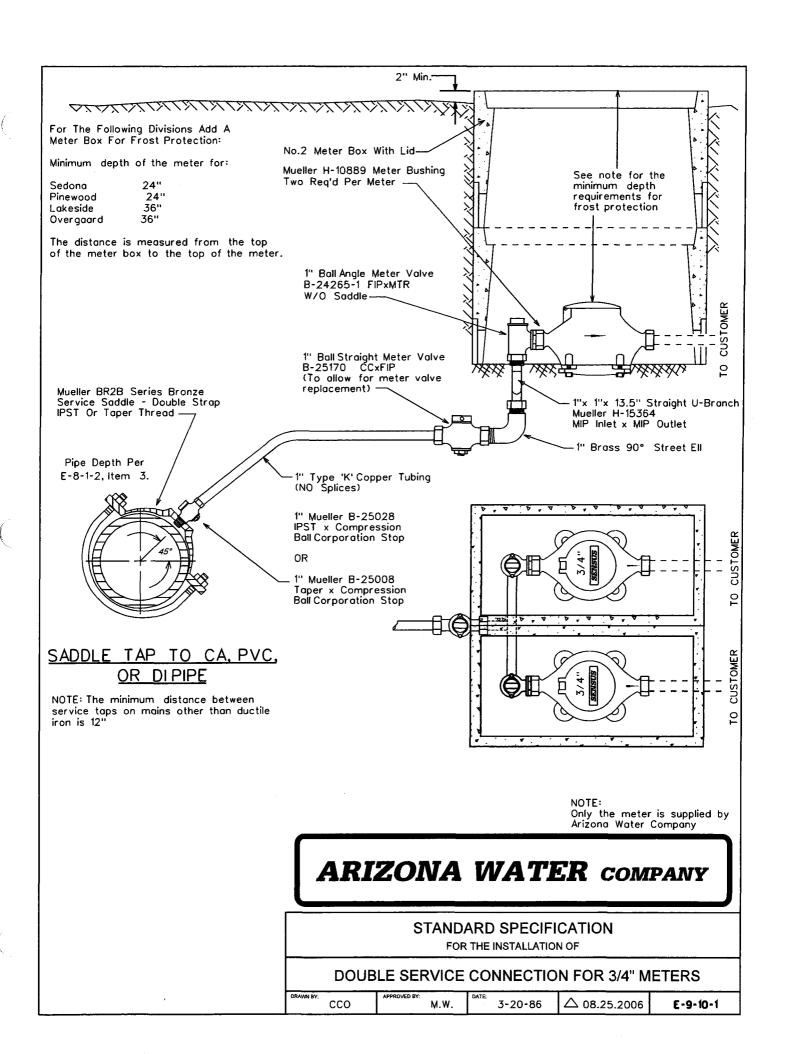
ARIZONA WATER COMPANY

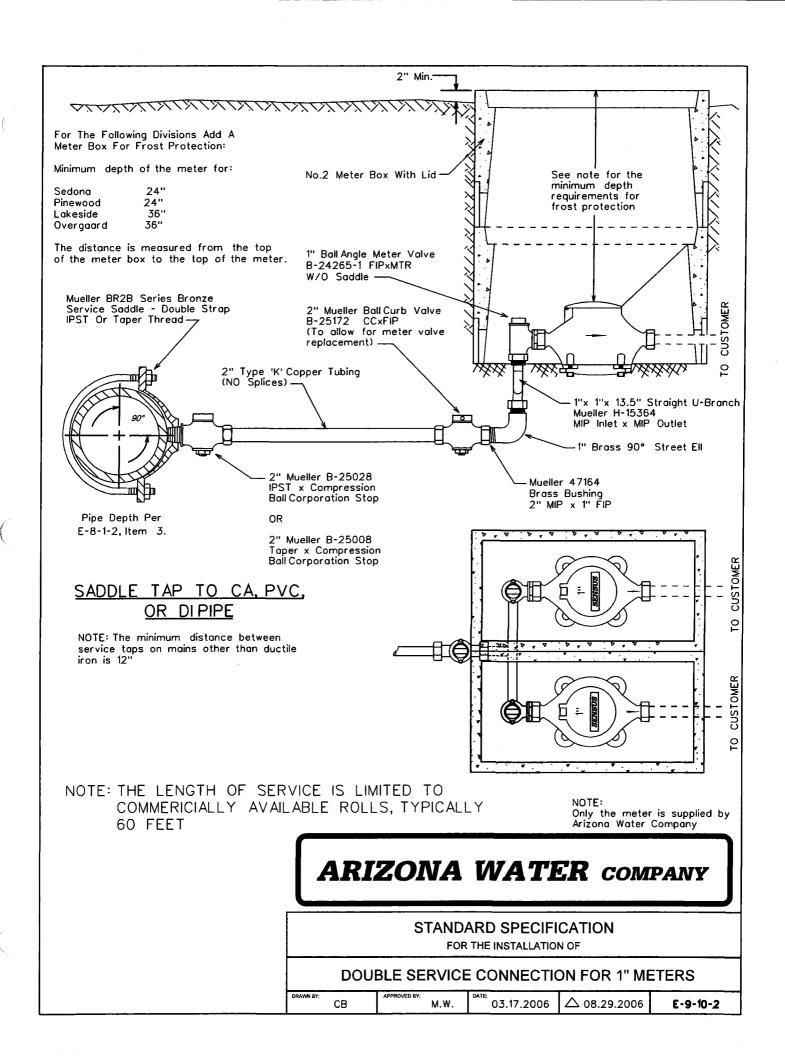
STANDARD SPECIFICATION

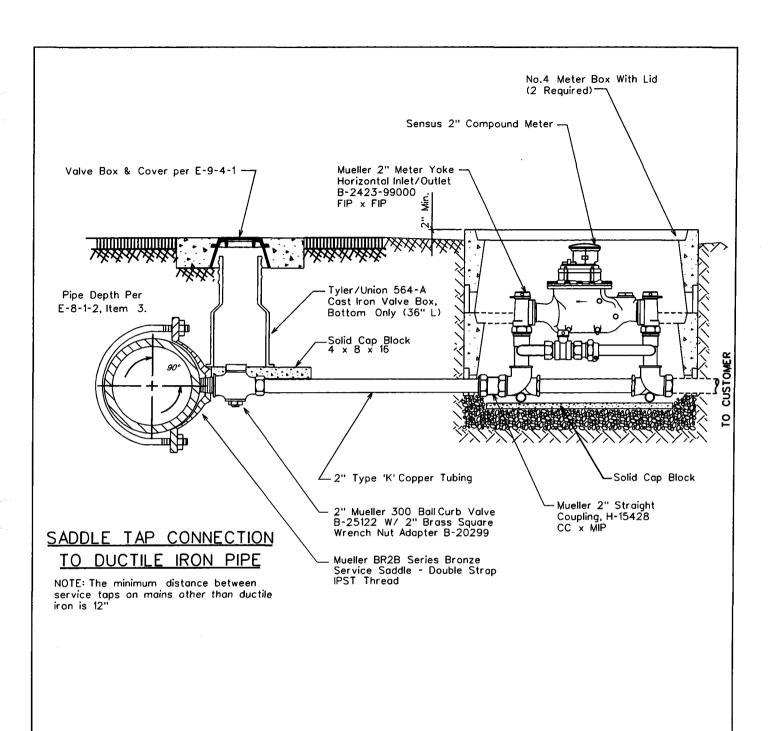
FOR THE INSTALLATION OF

SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

DRAWN BY: CCO APPROVED BY: M.W. DATE: 3/20/86 \(\triangle 0.3.17.2006 \) **E-9-9-1**







NOTE: THE LENGTH OF SERVICE IS LIMITED TO COMMERICIALLY AVAILABLE ROLLS, TYPICALLY 60 FEET

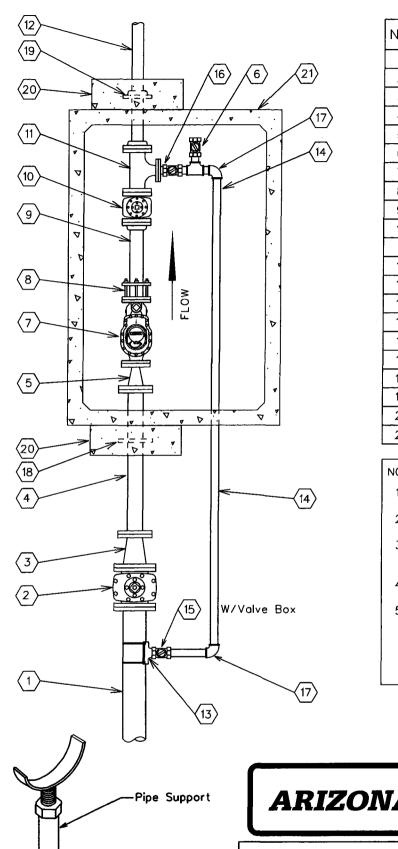
DRAWN BY:

JW

NOTE:

Only the meter is supplied by Arizona Water Company

ARIZONA WATER COMPANY



Conc. Block

No.	FITTINGS SCHEDULE				
1.	6" D.I.P.				
2.	6" G.V.B.&C. mj x flng				
3.	6"x4" Reducer flng x mj				
4.	4"x3'-0" D.I.P. Spool fing x pe				
5.	4" x 3" Reducer fing				
6.	2" Test Port				
7.	3" Compound Meter				
8.	3" F.C.A.				
9.	3"x2'-0" D.I. Spool fing x pe				
10.	3" Gate Valve fing				
11.	3"x2" Flg Tee w/ 2" Companion Flange				
12.	3"x4'-0" D.I. Spool flng x pe				
13.	6"x2" Tapping Saddle				
14.	2" Copper Pipe				
15.	2" Mueller B25122 Ball Valve w/B20299 Nut				
16.	2" Locking Ball Valve (normally closed)				
17.	2" Mueller H-15526 90° Ell CC x CC				
18.	4" Megalug				
19.	3" Slip-On Welding Flange				
20.	24"x24"x8" Conc. Thrust Block P.I.P.				
21.	575-LA Conc. Vault				

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

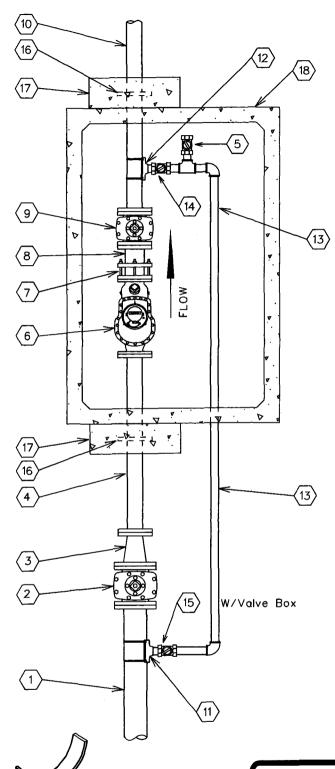
FOR THE INSTALLATION OF

3" COMPOUND METER

E-9-12-1

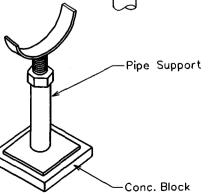
IVAN BY: APPROVED BY: DATE:

CCO | APPROVED BY: MW | DATE: 10/5/1993 | \(\triangle 08.29.2006 \)



No.	FITTINGS SCHEDULE				
1.	6" D.I.P.				
2.	6" G.V.B.&C. mj x flng				
3.	6"x4" Reducer flng x mj				
4.	4"x3'-0" D.I.P. Spool fing x pe				
5.	2" Test Port				
6.	4" Compound Meter				
7.	4" F.C.A.				
8.	4"x1'-0" D.I.P. Spool fing x pe				
9.	4" Gate Valve flng				
10.	4"x4'-0" D.I.P. Spool flng x pe				
11.	6"x2" Tapping Saddle				
12.	4"x2" Tapping Saddle				
13.	2" Copper Pipe				
14.	2" Ball Valve / Locking (Normally Closed)				
15.	2" Mueller B25122 Ball Valve w/B20299 Nut				
16.	4" Megalug				
17.	24"x24"x8" Conc. Thrust Block P.I.P.				
18.	575-LA Conc. Vault				

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



ARIZONA WATER COMPANY

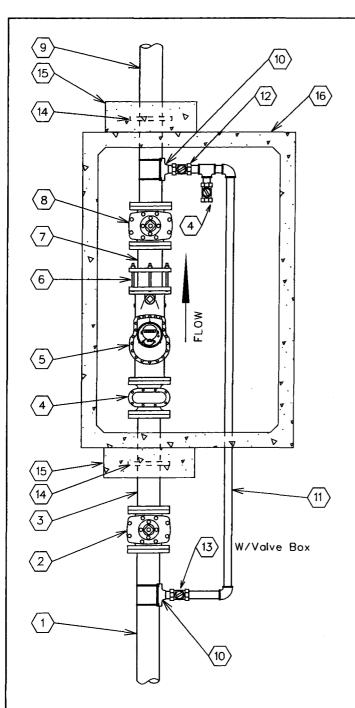
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

4" COMPOUND METER

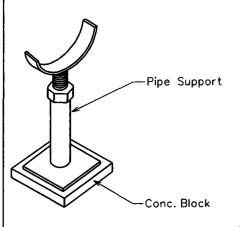
E-9-12-2

MW DATE 10/5/1993 △08.29.2006



No.	FITTINGS SCHEDULE					
1.	6" D.I.P.					
2.	6" G.V.B.&C. mj					
3.	6"x 3'-0" D.I.P. Spool fing x pe					
4.	2" Test Port					
5.	6" Compound Meter					
6.	6" F.C.A.					
7.	6"x 1'-0" D.I.P. Spool flng x pe					
8.	6" Gate Valve flng					
9.	6"x 4'-0" D.I.P. Spool flng x pe					
10.	6"x2" Tapping Saddle					
11.	2" Copper Pipe					
12.	2" Ball Valve / Locking (Normally Closed)					
13.	2" Mueller B25122 Ball Valve w/B20299 Nut					
14.	6" Megalug					
15.	24"x24"x8" Conc. Thrust Block P.I.P.					
16.	575-LA Conc. Vault					

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



ARIZONA WATER COMPANY

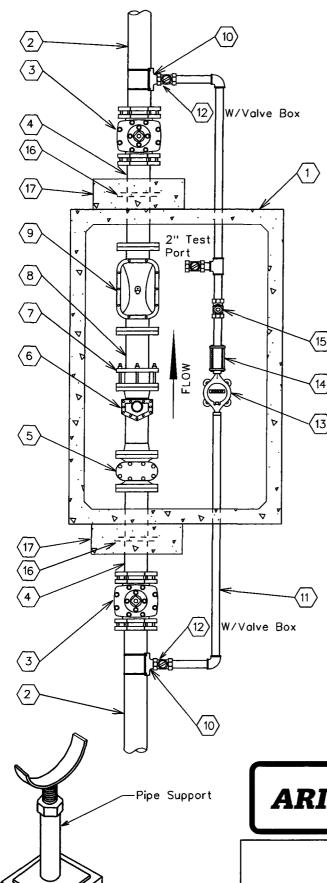
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND METER

E-9-12-3

CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle 08.29.2006 \)



Conc. Block

No.	FITTINGS SCHEDULE					
1.	575-LA Conc. Vault					
2.	6" D.I.P.					
3.	6" G.V.B.&C. m.j.					
4.	6" x 3'-0" D.I.P. SPool Piece flng x pe					
5.	6" Strainer					
6.	6" Turbo Meter					
7.	6" F.C.A.					
8.	6" x 2'-0" D.I.P. Spool Piece flng x pe					
	(TRIM SPOOL PIECE TO 3x THE PIPE DIA.)					
9.	6" Detector Check					
10.	6"x×N" Tapping Saddle					
11.	*N" Copper Pipe					
12.	∗N" Ball Valve (Locking)					
13.	×N" Meter					
14.	∗N" Coup. Adapt.					
15.	*N" Flapper Check Valve					
16.	6" Megalug					
17.	24"x24"x8" Conc. Thrust Block P.I.P.					

*N - Size To Be determined By A.W.Co.

NOTE:

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
- 6. To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

ARIZONA WATER COMPANY

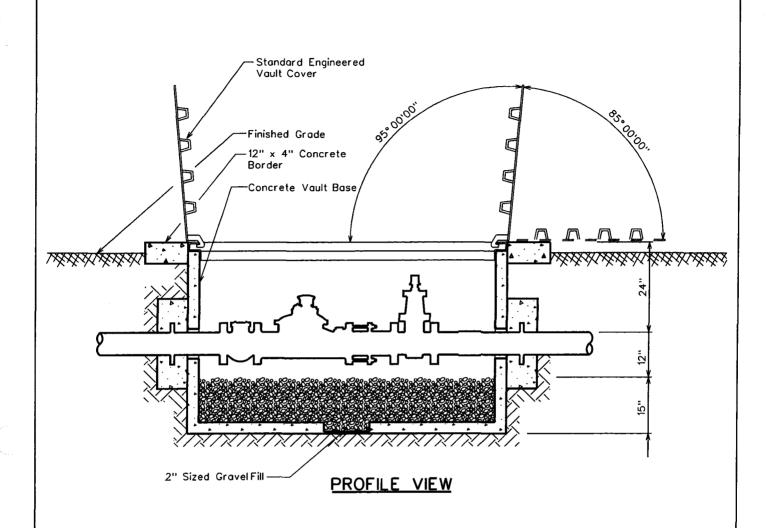
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND SERVICE

AVAN BY: CCO APPROVED BY: MW DATE: 10/05/1993 \(\triangle 08.29.2006 \)

E-9-12-4



CONCRETE VAULT & COVER SPECIFICATIONS

Vault - Base No. 575-BL

Cover - Standard Engineered Vault Cover

- . 4874 Aluminum Diamond Plate Cover For Non-Traffic Loading Areas Or
- . 4874 Galvanized Steel Diamond Plate Cover W/ H-20 Traffic Loading . Double Torsion Spring Assisted Doors W/ Recessed Hasp & Safety Latches

NOTES

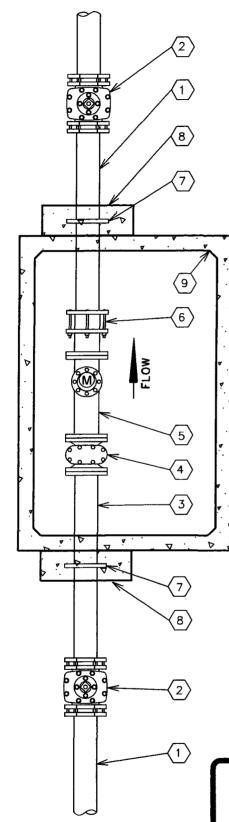
- Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill. Service Connections Larger Than 6" In
- Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

CONCRETE VAULT 10/5/1993 🛆 05.17.2001 CCO МW E-9-12-5



No.	FITTINGS SCHEDULE			
1.	Ductile Iron Pipe			
2.	Gate Valve M.J.			
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)			
4.	Meter Strainer			
5.	Propeller Meter			
6.	Flanged Coupling Adapter			
7.	Megalug Gland (Thrust Anchor)			
8.	Concrete Thrust Block P.I.P.			
9.	Concrete Vault			

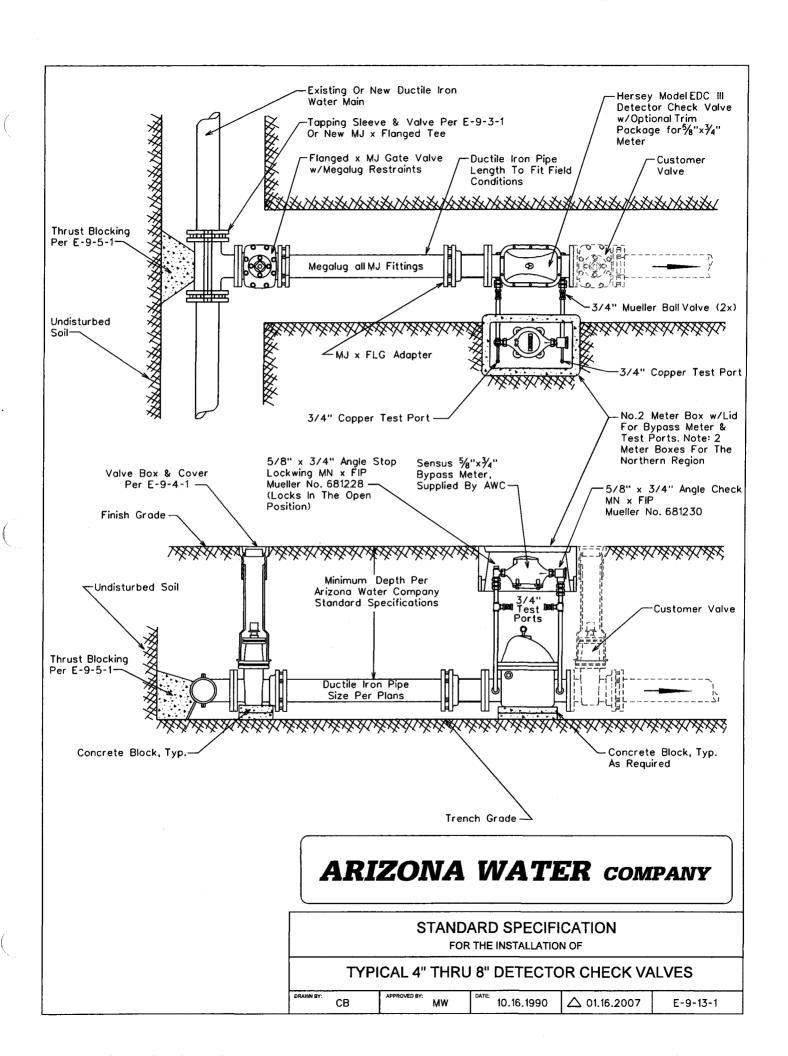
- 1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
- 2. Pipe support locations to be determined by field personnel.
- 3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings to are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

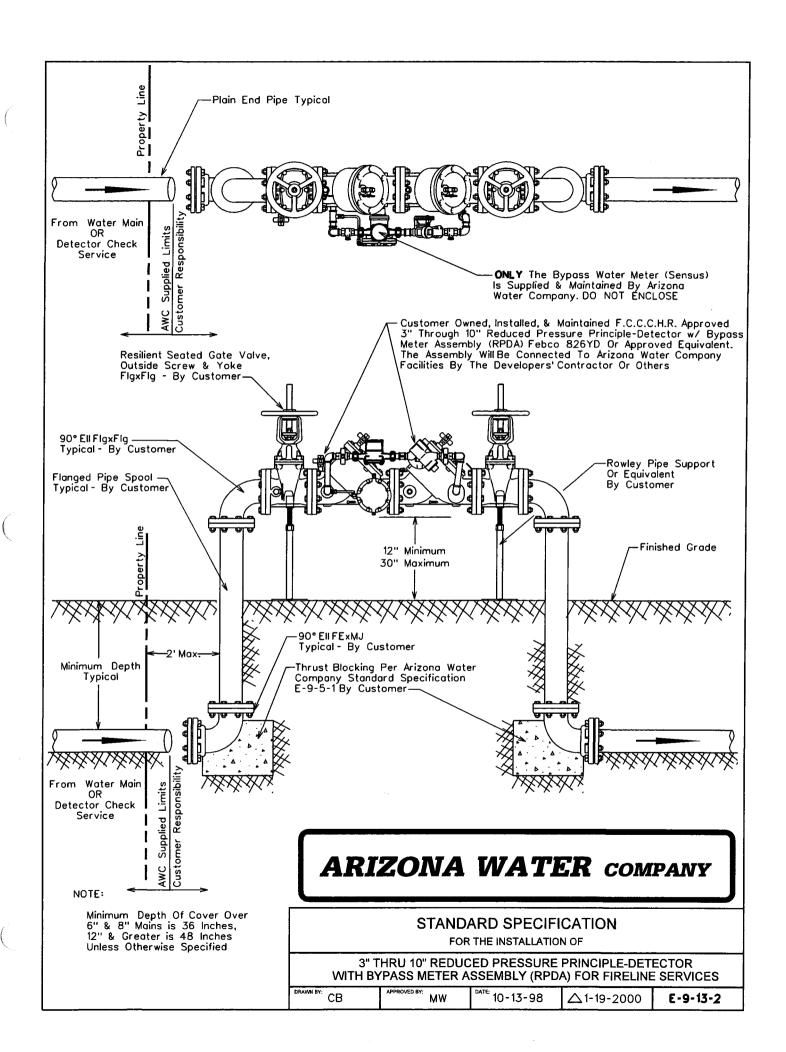
ARIZONA WATER COMPANY

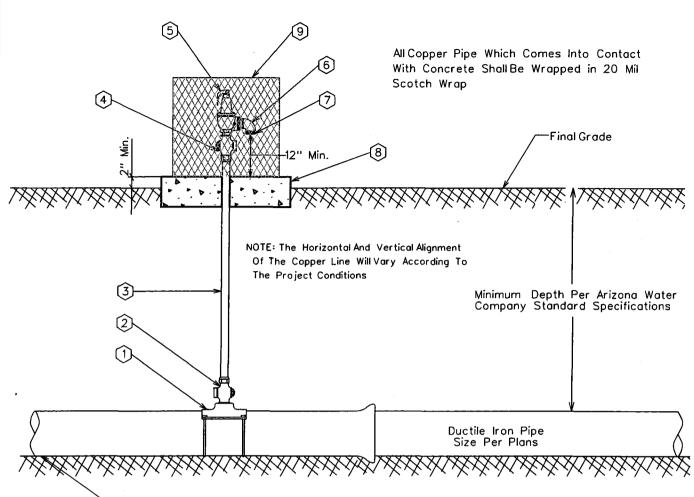
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

NON-POTABLE PROPELLER METER







 Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.

-Trench Grade

2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

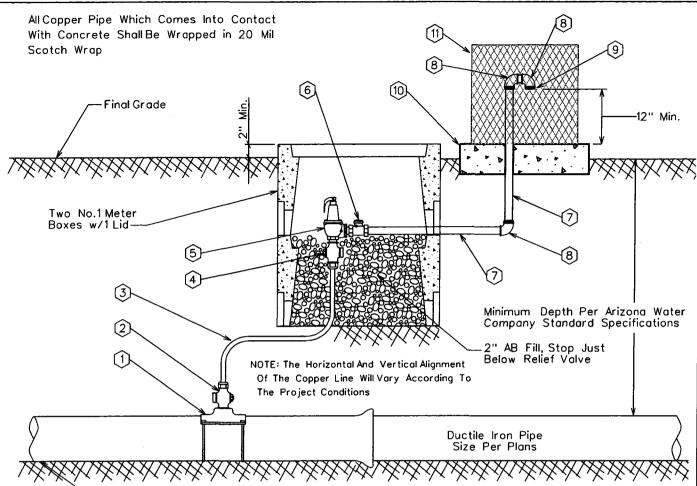
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

DRAWN BY: CCO APPROVED BY: MW DATE 3/20/1986 \(\triangle 08.29.2006 \) E-9-14-1



-Trench Grade

- 1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
- 2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

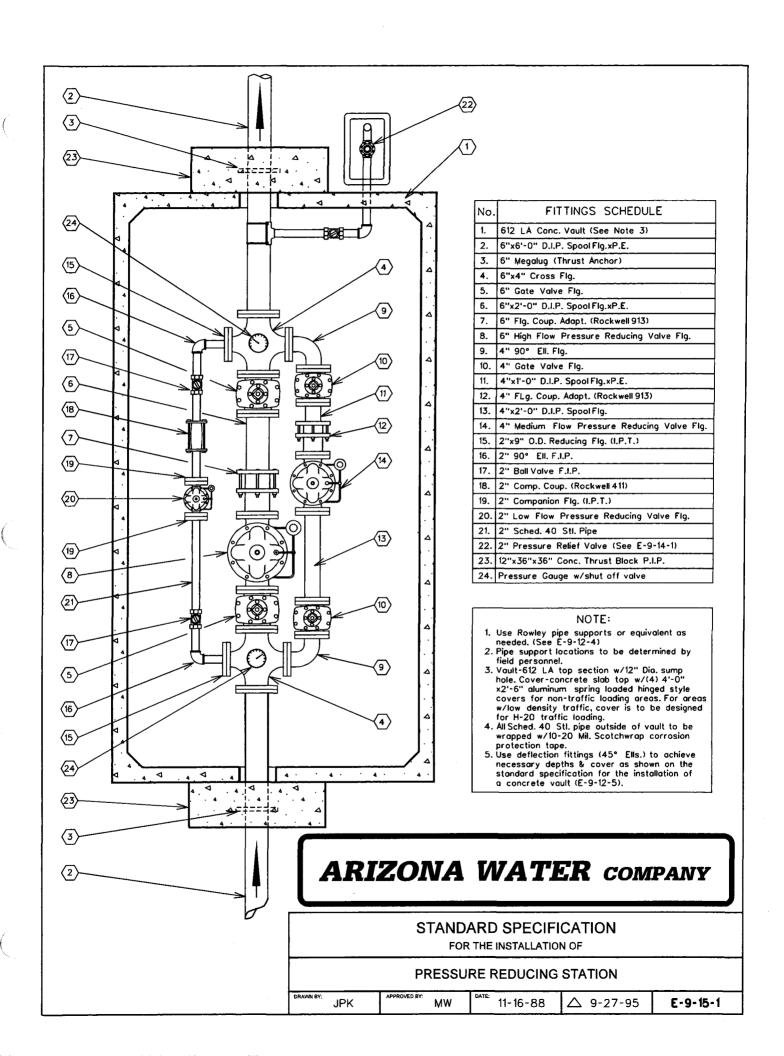
\bigcirc	FITTINGS SCHEDULE			
1.	Mueller BR28 Bronze Service Saddle - Double Strap			
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop			
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit			
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop			
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body			
6.	2" Bronze Check Valve Watts Series CV			
7.	2" Schedule 40 Cut Pipe - Field Fit			
8.	2" Brass Street Elbow			
9.	No.16 Wire Mesh Screen (Non-Corrodible)			
10.	4" Thick Concrete Pad - Class 'C' Concrete			
11.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan			

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

3/20/1986 CCO MW △08.29.2006 E-9-14-2



- 1. Specific Items To Be Painted Deer-O Pure White Enamel:
 - A. All Booster Pumps.
 - B. All Electrical Motors And Gas Engines.
 - C. Well Pump Discharge Heads.
 D. Electrical Panel.
- 2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:
 - A. Well Shelter.
- 3. Specific Items To Be Painted OSHA Orange:
 - A. Electrical Conduit.
- 4. All Other Items To Be Painted With Either: (At Manager's Discretion)

- A. Cholla Green
- B. Forest Green
- C. Sonora Beige D. Red Rock

- E. Rock Brown
 F. Deer-O Pure White
 G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PAINT COLOR SELECTION

APPROVED BY: 3/20/1986 \(\triangle \triangle 2/13/2001 \) ссо E-9-16-1

- 1. Tank shall conform to AWWA Specification 0100-84 with exceptions noted below.
- ·2. 1/4" minimum shell plate.
- Minimum of 12" diameter roof vent, screened with No. 16 non-corrodible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the dollar plate.
- Overflow pipe shall be the same diameter as the inlet pipe and shall terminole 12 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above we'r box high water level.
- 5. Storage tank shallbe placed upon adequately compacted base material.
- 6. 6" minimum floor mounted tank drain outlet to be located close to the outer shell.
- Tank and related fittings shall be enclosed with a 5 loot chain link fence with lockable gates and anti-personnel wire on top of fence.
- 8. Liquid level shall be indicated by a target and target board on the outside surface of the tank.
- 9. 24 inch diameter manholes shall be provided on the roof and on the shellnear the bottom of the tank. The roof manhole cover shall overlap the manhole by at least 2 inches to provide a rain light closure. Roof manhole shall be hinged and equipped with a lock. Shellmanhole cover to be hinged and botted in place. *Tanks larger than a 60 fool diameter require 2 shellmanholes.
- Inside and outside ladders shall be located at the roof manhole. Outside ladder shall be coged with tacking tray door. Battom 8 feet of cage shall be enclosed to within '\forall'' of shell with 10 gauge sheet steet.
- Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
- 12. The following information will be included with application for approval to construct:
 - Tank location

 Tank height

 Tank diameter

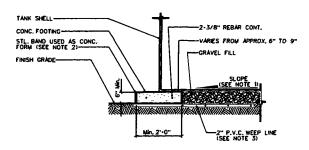
 Tank capacity

 Method of water level control
- 13. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
- The welded steel storage tank will be coated as per AWWA Specification D102, and N.S.F. Standard 61,

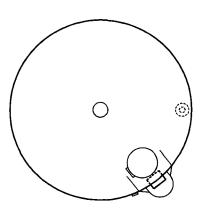
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

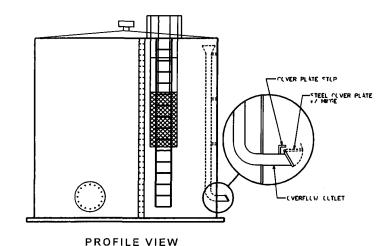
- FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10"-0".
- 2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN %".
- 3. INSTALL 8-2" DIA.*10'-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45'), PERFORATE 8'-0" OF LINE WITH 1/2" DIA HOLES @ 6" O.C. PLUG INTERIOR END OF LINE #/2" CAP.



FOUNDATION DETAIL



PLAN VIEW



ARIZONA WATER COMPANY

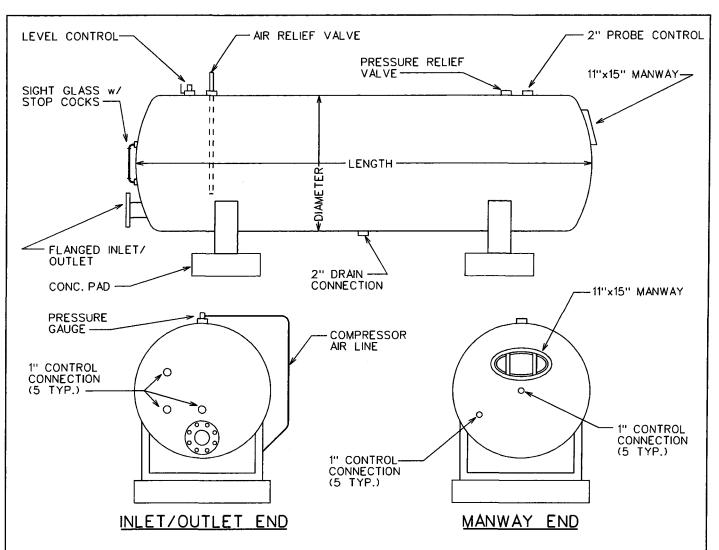
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

€-9-17-1

- ; ----



- 1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
- 2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
- 3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
- 4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.

- 2. Tank Length ______
- 3. Tank Diameter _____
- 4. Tank Capacity _____
- 5. Maximum Working Pressure ___

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF HYDROPNEUMATIC TANK DRAWN BY: JPK APPROVED BY: MW DATE: 3-20-1986 O1.16.2007 E-9-18-1

NOT CONVERTED TO CAD

ARIZONA WATER COMPANY

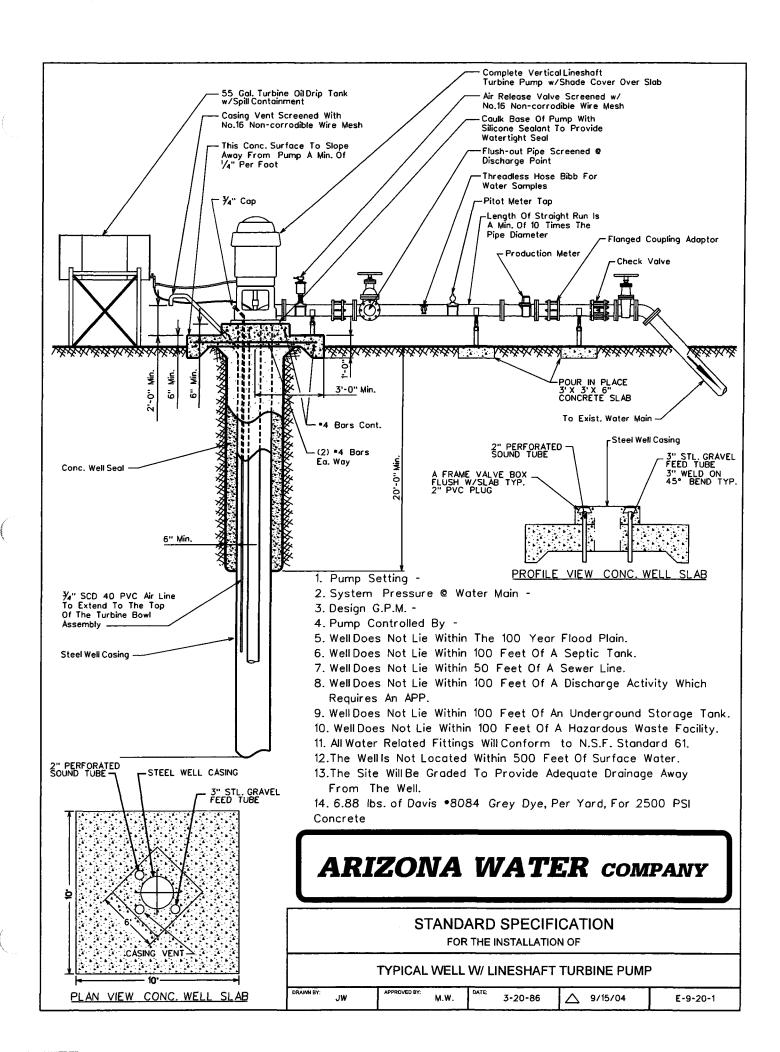
STANDARD SPECIFICATION

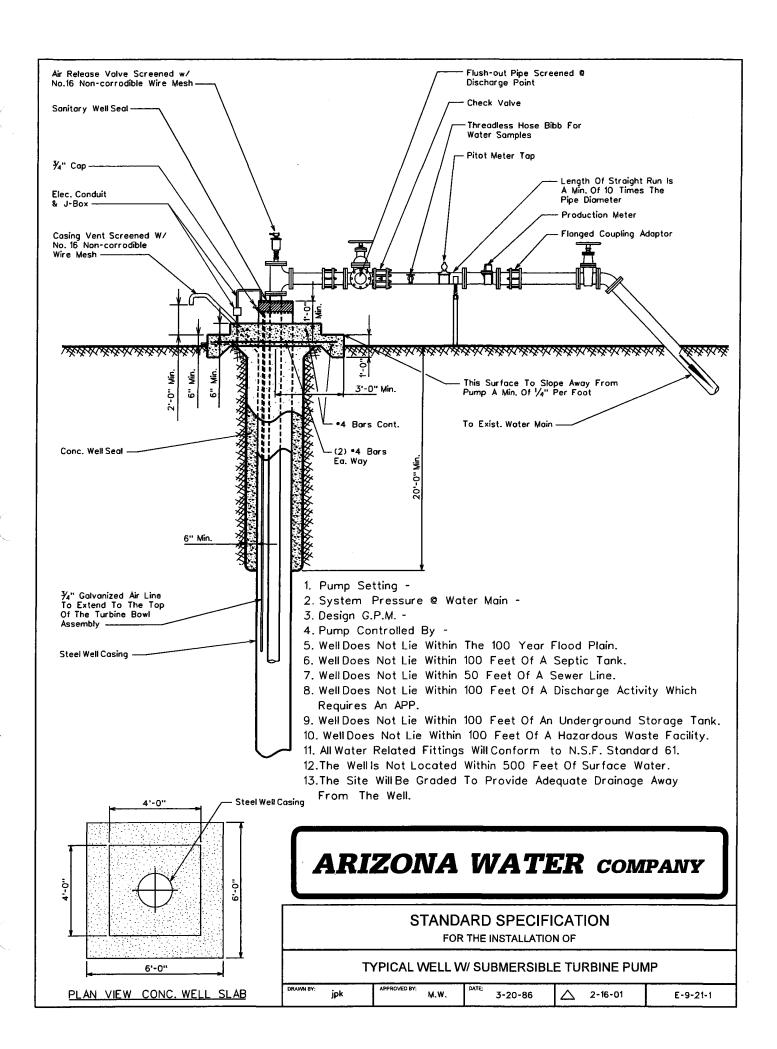
FOR THE INSTALLATION OF

WELL SHELTER

E-9-19-1

AN BY: CB APPROVED BY: DATE: 03.20.1986 \(\triangle 04.03.2001 \)





All New Purchases To Conform To The Following:

Column Pipe

Oil Tube - Peerless Type

```
1\( \frac{1}{2}\) \ O.D. - 14 Threads Per Inch Right Hand 2\( \text{O.D.} - 12 \) \( \text{V} \)
```

Line Shaft

```
3/4" O.D. - 10 Threads Per Inch Left Hand
1" O.D. - 14 " " " " "
1-3/16" O.D. - 10 " " " " "
1-1/2" O.D. - 10 " " " " "
1-11/16" O.D. - 10 " " " " "
1-15/16" O.D. - 10 " " " " " "
2-3/16" O.D. - 8 " " " " " "
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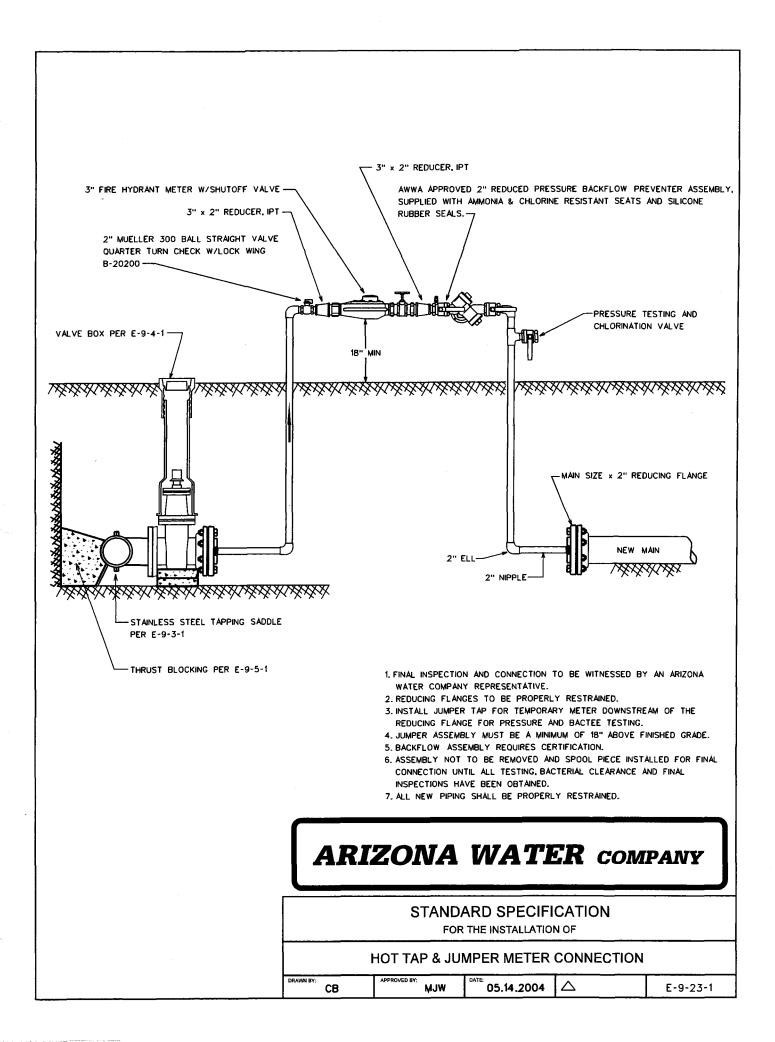
ARIZONA WATER COMPANY

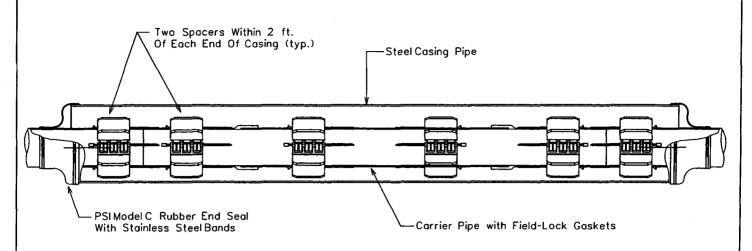
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

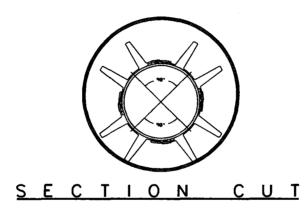
DRAWN BY: CCO APPROVED BY: DATE: 3/20/1996 \(\triangle 2/13/2001 \) E-9-22-1





CROSS SECTION

The casing spacers shall be the PSI Ranger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seal as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

*Thickness Of Skid To Extend A Minimum of $\frac{1}{2}$ " Above The O.D. Of The Pipe Bell or Gland.

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6''	16"	15.25"	STD.	.375	≖x4×12
8''	18''	18.25"	STD.	.375	*x4x12
12"	22"	21.25"	STD.	.375	*x4x12
16"	28"	27.25"	STD.	.375	≖x4x12
20"	32"	31.25"	STD.	.375	*x4x12
24"	36"	35.25"	STD.	.375	*×4×12
30''	48"	47.25"	STD.	.375	*x4x12
36"	54"	53.25"	STD.	.375	*x4x12
48"	66"	65.25"	STD.	.375	*x4x12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

DRAWN BY:	APPROVED BY:	3/20/1996	△ 09.27.2006	E-9-24-1

CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCOPE - This specification describes a ARCH Chemicals Calcium Hypochlorite Tablet Chlorination System as manufactured by ARCH Chemicals, 501 Mentit Seven, P.O. Box 5204, Norwalk, CT, 06856-5204,

DESCRIPTION - The chlorination system shall be completely assembled, ready to install. The chlorination system shall be ARCH Chemicals Calcium Hypothlorine Tablet Tree chlorination system shall be supplied with all its components factory mounted. Feedeld: or its equal than 10 shall be supplied with all its components factory mounted.

COMPONENTS - The Chlorination system shall have the following components: A. 1-3," ARCH Chemical solid calcium hypochlorite tablet feede

- A 1-3" ARCH Chartness some concessions.

 C. Integrated, level controlled solution tank
 C. Integrated, level controlled solution tank
 E. Maiusable integrated and adjustable integrated.

 E. Manual on'off valve (at inlet)
 F. Chemical meeting burney
 G. Orlorif pump control switch
 H. Waterproof electrical junction box
 I. Corrosion resistant schedule 40 plping
 J. Reverse flow check valves
 K. Total solution output control valve

ELECTRICAL FIXTURES - The following electrical factures shall be provided:
A. Safely swith, 2, but, used for 30 Amps, for 120 Volts, 60 cycle, single phase power.

CHLORINATOR DESIGN - The chlorination facility shall be designed and constructed in accordance with Artons State Department of Health Engineering Bulletin Number 8 - "Disinfection of Video Systems", Latest Revision.

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

☻

CHLORINATOR OPERATION - The chlorination facility shall be operated in accordance with Arizona State Department of Health Engineering Bulletin Number 8, "Distribution of Water Systems," Table 1, letest revision,

➂

6 (2)

CHLORINATOR SYSTEM DESCRIPTION - ARCH Chemicals tablet chlorinator systems incorporate a patentied chlorinator systems incorporate a patentied adhirance and chlorinator winkly is designed to utilize ARCH Chemicals 1-XX solid additing the adhirance (Approved NSF Standard 60). Meest AWWA Standard 50), Meest AWWA Standard on a polyethylene system enchaster. The Meet water is sprayed on the calculuit that bather and collected in a solubion table. This chlorinated solutil is then pumped out of the tank through a chemical meeting pump is then adjusted to obtain the desired CL residual.

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

HYPOCHLORINATOR COMPONENTS:

Chemical Metering Pump
 Pump Suction Connection
 Pump Discharge Connection
 Inter Water Assembly
 Inter Water Solenoid Valve
 Inter Water Solenoid Valve

6. Inlet Shut-Off Valve
7. Inlet Pressure Regulator
8. Inlet Water Pressure Gauge
9. Spray Nozzle Water Pressure Gauge
10. Inlet Starfaren
11. Inlet Tubing Connection

0

©

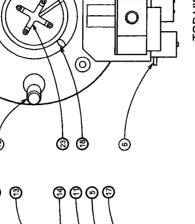
☻

Θ

12. Dry Chemical Hopper
3. Suction. Last S. Suction. Last S. Suction. Last S. Suction. Last S. Electric Morton Box With Power On/Off
5. Electric Morton Discharge Connection
17. Tank Drain Valve.

18. Observation Port 19. Mixed Chemical Holding Tank 20. Pressure Relief Valve 21. Pump Speed Confrol 22. High Level Shru-Off Float Switch 23. Water Spray Nozzles

(3) P 0 (o) 0 0 (2) ➂ (2) ⊚



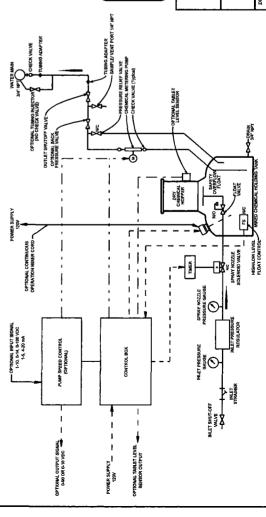
TOP VIEW HOPPER REMOVED FOR CLARITY

9

FRONT VIEW

(2)

Chlorinator Fluid Schematic

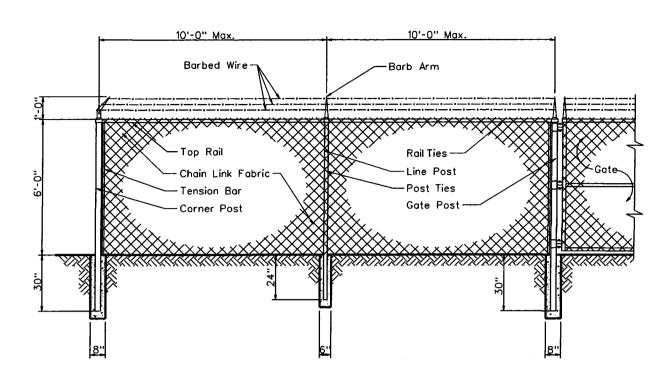


ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR

	E-9-25-1	
	<	
DATE	02-09-2000	
APPROVED BY:	MM	
DRAWN BY:	83	



Line Post: 1-7/8" O.D. 1.74 lbs. P/L.F. **ASTM A-256** End Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256 Corner Post: 2-7/8" O.D. 4.64 lbs. P/L.F. **ASTM A-256** Gate Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256 Top Roi≥ 1-5/8" O.D. 4.64 lbs, P/L.F. ASTM A-256

Chain Link Fabric: 9 Ga. 2" Mesh Galv. Before Weave

Selvage: Barb/Knuckle Filtings: Pressed Steel Barb Wire: 2-1/2 Ga./2 Point 1 Piece/45° Arm Barb Arma Tension Wire: 9 Ga./Galv.

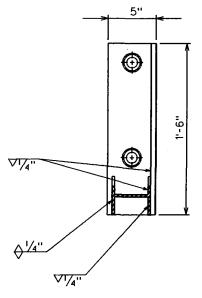
6"x24" In Concrete Line Post Set: Terminal Post Set: 8"x30" In Concrete

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CHA	IN LI	NK F	ENCE

7/7/1992 CCO MW △ 2/9/2001 E-9-26-1

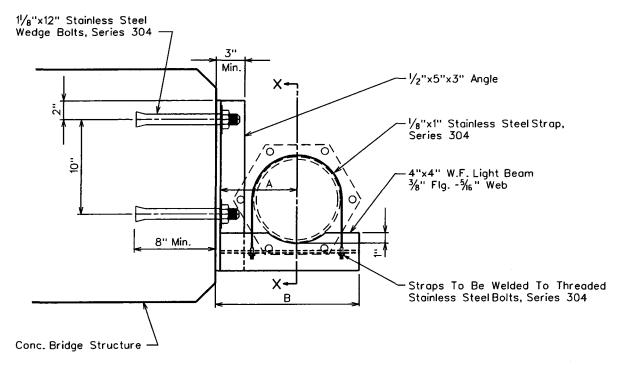


SECTION X-X

NOTES

- Minimum 2 Supports Per Joint Of Pipe.
- 2. All Bolts Shall Have A Lock Washer Under The Nut.
- 3. All Nuts Shall Be Stainless Steel Series 304.

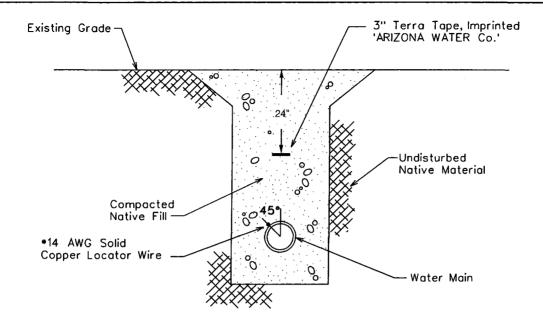
PIPE SIZE	Α	В
8"	8"	15''
10"	9"	17''
12"	10''	19''



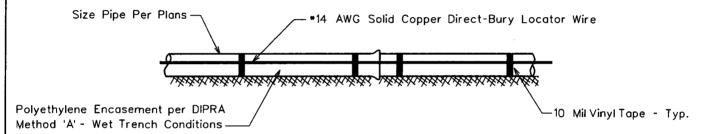
SUSPENSION DETAIL

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF							
SIDE HUNG WATER LINE SUSPENSION							
DRAWN BY: JPK	APPROVED BY:	7-12-96		E-9-27-1			



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

- 1. All pipe shall have •14 AWG Solid Copper
 Direct-Bury Locator Wire Installed Directly To
 The Polywrap At 45° From The Vertical Center
 Of The Pipe and Shall Be Attached Using 10
 Mil Vinyl Tape.
- The Locating Wire Shall Terminate At the Top
 Of Each Valve Box and Be Capable of Extending
 12" Above the Top Of The Box In Such A Manner
 So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

- 1. Use Terra Tape 3" Marking Tape As Manufactured
 By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
- 2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
- 3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe.

 A) The Backfill Shall Be Sufficiently Leveled So That The Tape Is Installed On A Flot Surface.
- Tape Is Installed On A Flat Surface.

 B) The Tape Shall Be Centered In The Trench With The
- B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
- C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill's Moved Into The Trench.

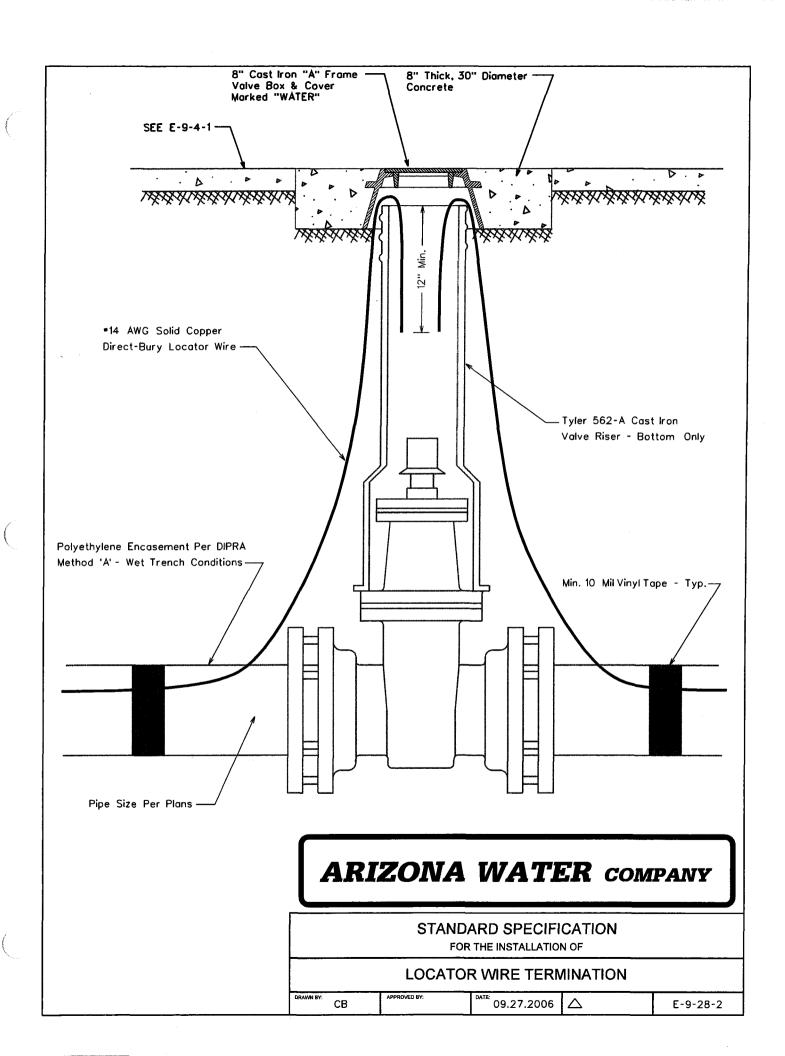
ARIZONA WATER COMPANY

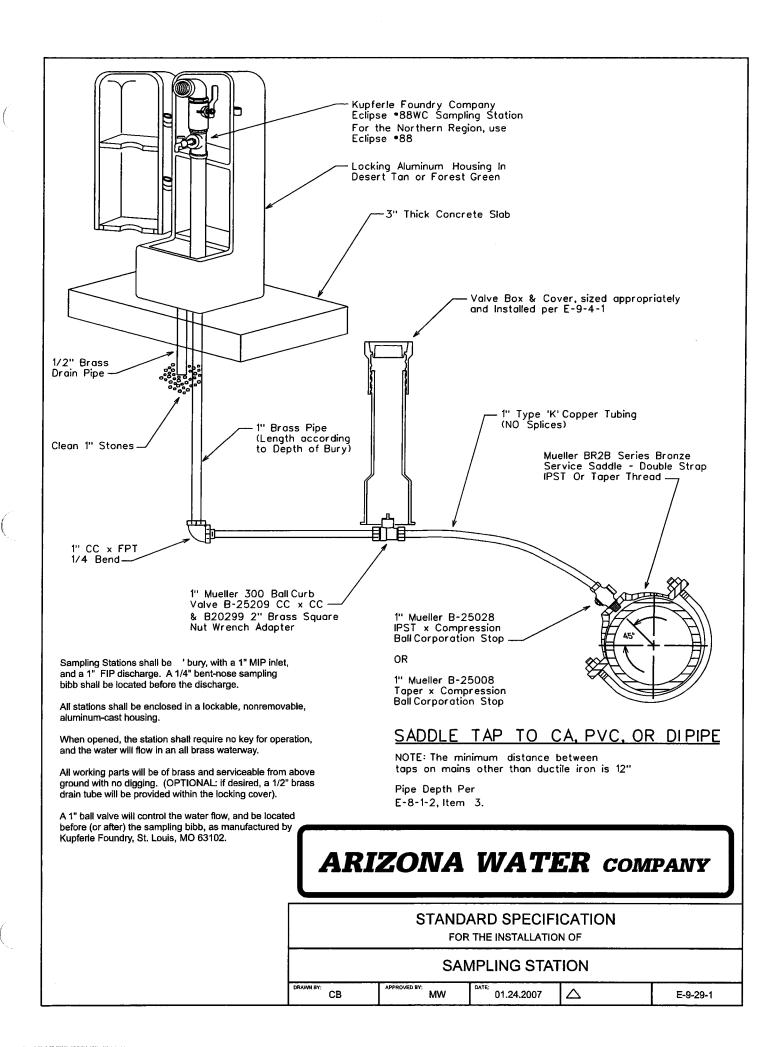
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PIPE WARNING TAPE AND LOCATOR WIRE

DRAWN BY: CB APPROVED BY: DATE: 03.24.1997 △09.27.2006 E-9-28-1







ENGINEERING REVIEW SECTION DATA REQUIRED WITH ECC

Instructions

Please complete the test data and submit this form with the <u>Engineers Certificate of Completion</u>. An Approval of Construction cannot be issued without the data identified below in accordance with Arizona Administrative Code (A.A.C.) R18-5-508(C). Please attach all supplemental information and calculations to this form.

DATA

1.

PRESSURE TEST DATA			and the second s	
Indicate Segment Tested	VAPEGING AF	mader.		
Pressure and Leakage Test Results (Pass/Fail)	PASSED	PASSED		
Date Tested	9/1/11	4/1/11		
Time Started	12:00	/2:00		
Time Finished	14:00	14:00		
Pipe Diameter	12"	6"		
Footage Tested	1241	1112		
Allowable Leakage	3, 0	Z.0		
Leakage Observed	<u> </u>	0		
Pressure at Test Point	200	200		
Employee Observing the Test (Please Print Legibly)	STENE OR	Til		
Signature of Employee Observing the Test	Stort	Straff		

DISINFECTION SAMPLING					
Initial Sampling	Date	4-1-11	4-1-11		
(Minimum 50 ppm available chlorine)	Time	16:00	16,00		
	ppm Cl ₂	200	200		
After 24 Hours Detention Time	Date	4-4-4	4-4-11		
(Minimum 10 ppm free chlorine)	Time	8:00	8:60		
AND THE PROPERTY OF THE PROPER	ppm Cl ₂	200	200		
After Sufficient Flushing	Date	4-4-11	4-4-11		
(Water is clear and system Cl2 residual is measured)	Time	10:0t	10:30		
	ppm Cl ₃	1.0	1.0		
Bacteriological Sampling(s):	Date	4-5-11	4-5-11	Parallel Par	
	Time	12:10	11; 49	100	
	Attached (Y/N)	465	465		
:		Xey/No	Yes/No	Yes/No	Yes/No

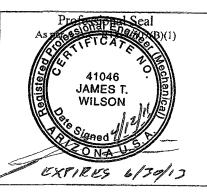
Certification

3.

I, STEVE ONT, certify that I have inspected the work performed and have found it to be satisfactory and in accordance with Arizona Administrative Code, Arizona Engineering Bulletins, and the approved specifications.

Authorized Persons Signature

4/11/11 Date





ARIZONA DEPARTMENT ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007 (602) 771-2300 • azdeq.gov



APPROVAL OF CONSTRUCTION

Project Description:

AOC Permit for approximately 2,400 LF of 6-inch waterline and related fittings on

Vah Ki Inn Road and Moore Road in Coolidge. Homes area subdivision.

Location:

Coolidge, Pinal County, AZ

Project Owner:

Arizona Water Company

Address:

P.O. Box 29006, Phoenix, AZ 85038

The Arizona Department of Environmental Quality (ADEQ) hereby issues an Approval of Construction for the abovedescribed facility based on the following provisions of Arizona Administrative Code (A.A.C.) R18-5-507 et seq.

On December 8, 2010, ADEQ issued a Certificate of Approval to Construct for the referenced project.

On April 12, 2011 James T. Wilson, P.E., certified the following:

■ A final construction inspection was conducted on April 11, 2011;

■ The referenced project was constructed according to the as-built plans and specifications and ADEQ4s Certificate of Approval to Construct;

Water system pressure and leakage tests were conducted on April 1, 2011, and the results were within the allowable leakage rates;

The applicant has the right to appeal this AOC Permit. Appeal information is on reverse side of this Permit.

Microbiological samples were collected on April 5, 2011 and analyzed on April 6, 2011 by Legend Technical Services. ADHS License No. AZ0004. The sample results were negative for total coliform.

This Approval of Construction authorizes the owner to begin operating the above-described facilities as represented in the approved plan on file with the ADEQ. Be advised that A.A.C. R18-5-124 requires the owner of a public water system to maintain and operate all water production, treatment and distribution facilities in accordance with ADEO Safe Drinking Water Rules.

AD4

PWS No.: 11-014 LTF No.: 53478

Mahager

Drinking Water Facilities Review Unit

Drinking Water Section

cc: TEU File No.: 20100232 CRO Approval of Construction File Pinal County Health Department Pinal County Planning & Zoning Department AZ Corporation Commission Engineer

Northern Regional Office 1801 W. Route 66 • Suite 117 • Flagstaff, AZ 86001 (928) 779-0313

Southern Regional Office 400 West Congress Street • Suite 433 • Tucson, AZ 85701 (520) 628-6733

ARIZONA WATER COMPANY WORK AUTHORIZATION

			3.1.2.1.1.0.1	101
SYSTEM:	PINAL VALLEY			
DIVISION:	PINAL VALLEY	WORK TO START BY:	UPON AUTHORIZATION	
TAX CODE:	2223	WORK TO BE FINISHED BY:	WITHIN 60 DAYS	

DESCRIPTION OF WORK:

Install approximately 2,470 LF of 12" & 1,500 LF OF 16" DIP with polywrap and related fittings to serve Arizona City Water Campus. From Well #28 South along Lamb Road then East along Heather Street to AWC'S new Water Campus in Arizona City. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

APPROVED 2010 BUDGET ITEM (WA 1-4617)

COST ESTIMA		AUTHORIZA	DATE		
COST OF WORK: MATERIAL		0	PREPARED BY: James Wilson	11/15/10	11/9/10
LABOR		0	REVIEWED FOR ESMITROW VERIF	ICATION:	11-09-2010
CONTRACT PORTION		251,225	Charles Briggs CB	11-15-2010	11-01 2010
OVERHEAD		60,294	REVIEWED BY:		
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	\$	311,519	Mike Loggins	ML 11-15-10	11-9-18
FUNDS RECEIVED:			APPROVED BY ENGINEERING:	la o	
CONTRIBUTIONS RECEIVED		0	Fredrick Schneider	Mars 11.16-1	11-9-10
REFUNDABLE ADVANCES RECEIVED		0	APPROVED BY FINANCE:	70	
TOTAL CONTRIBUTIONS/ADVANCES		0	Joseph Harris		11/9/10
NET CASH REQUIRED	\$	311,519	AUTHORIZED BY PRESIDENT:	1. 1:A	
COMMENTS:			William Garfield	sujur	11-15-10
			CONSTRUCTION RELEASE:		

FILE COPY

RELEASED TO CONSTRUCTION

ARIZONA WAT _R COMPANY

W.A. NUMBER: P.E. NUMBER:

NUMBER:

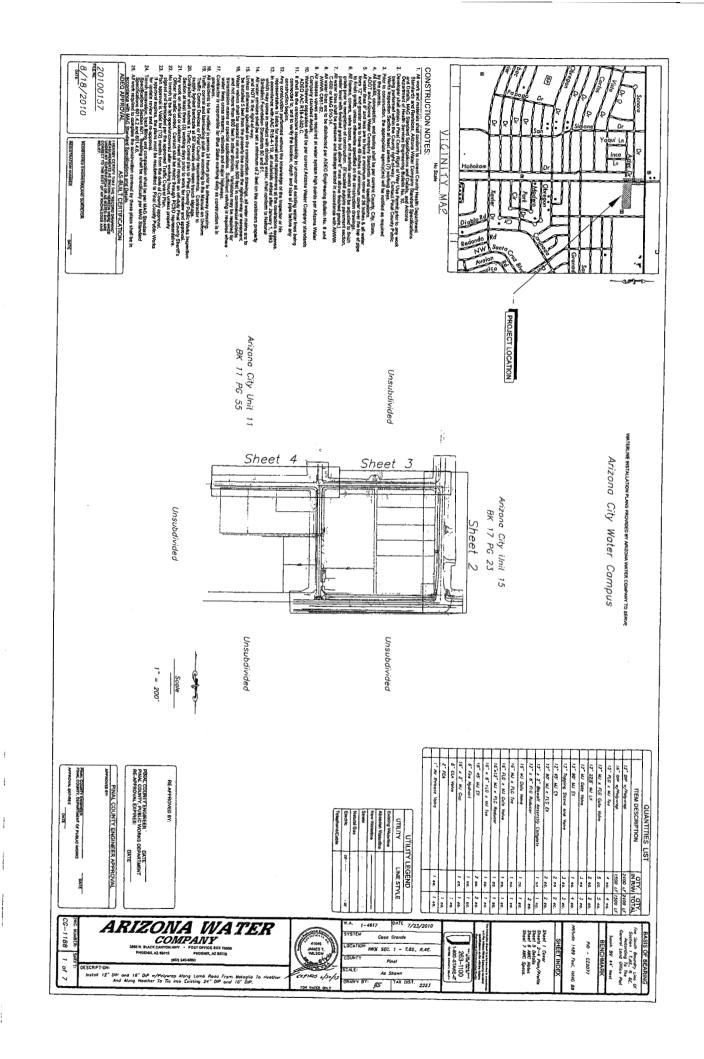
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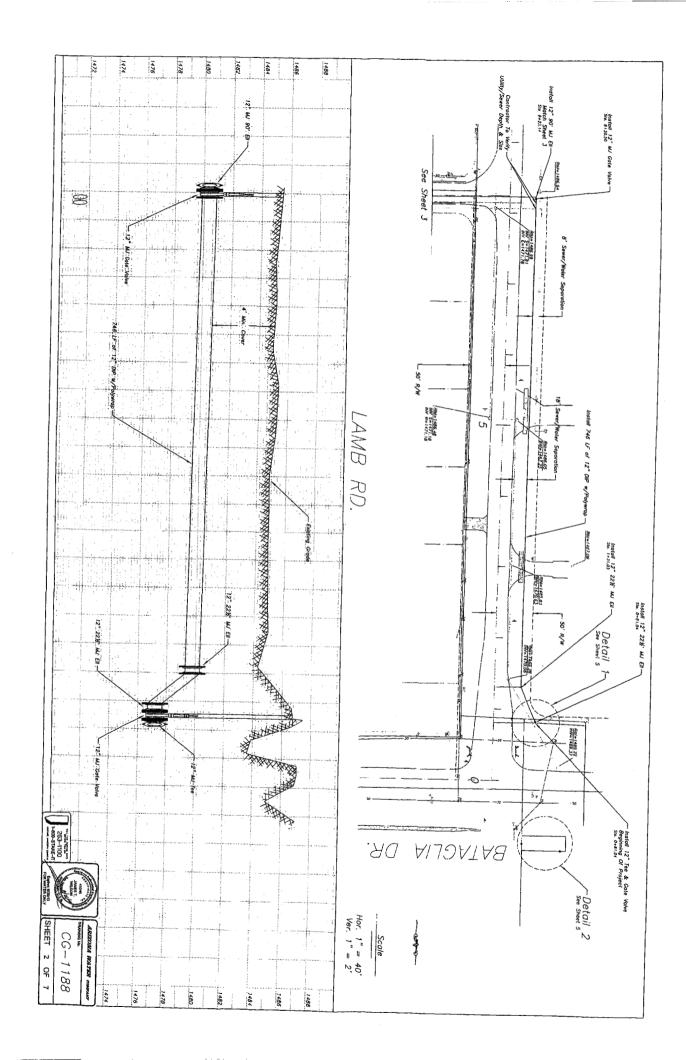
WORK AUTHORIZATION - DETAIL SHEET

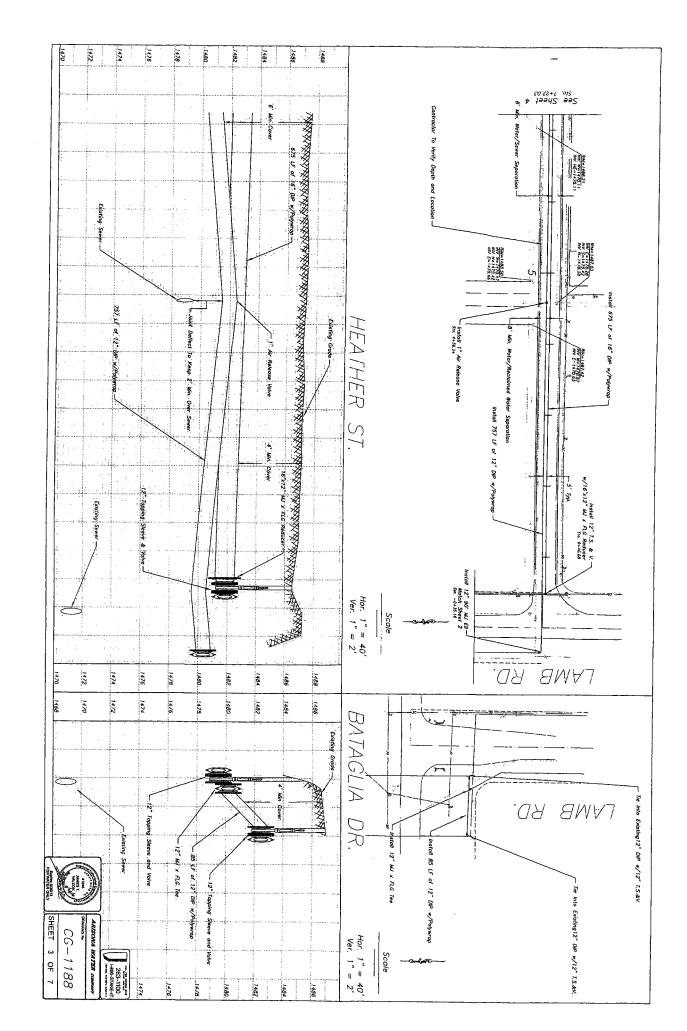
BUDGET ITEM NO.:

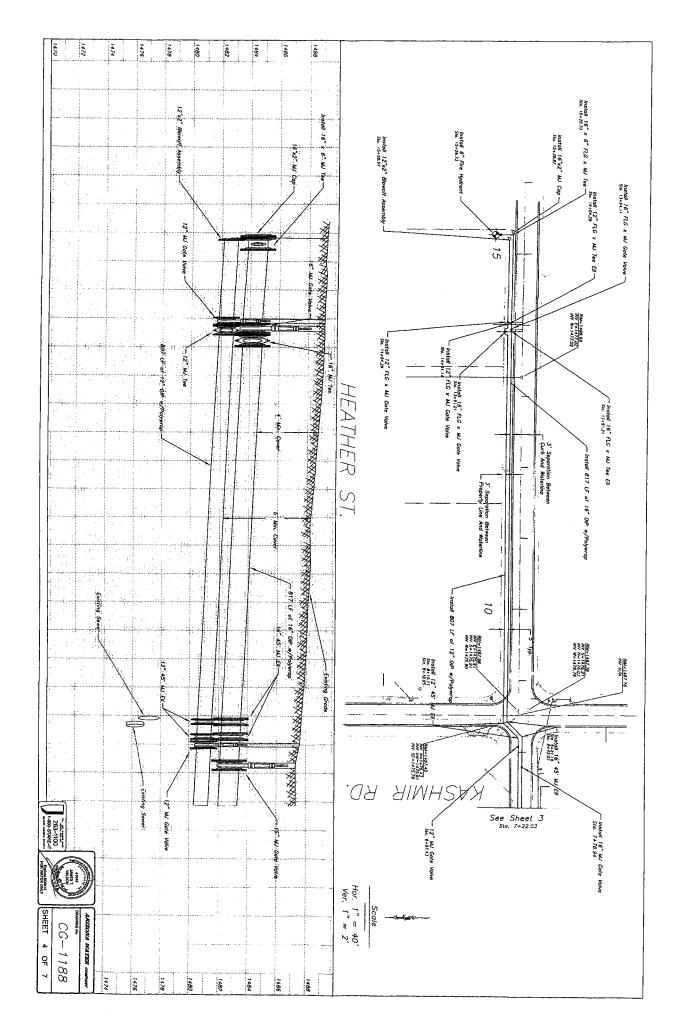
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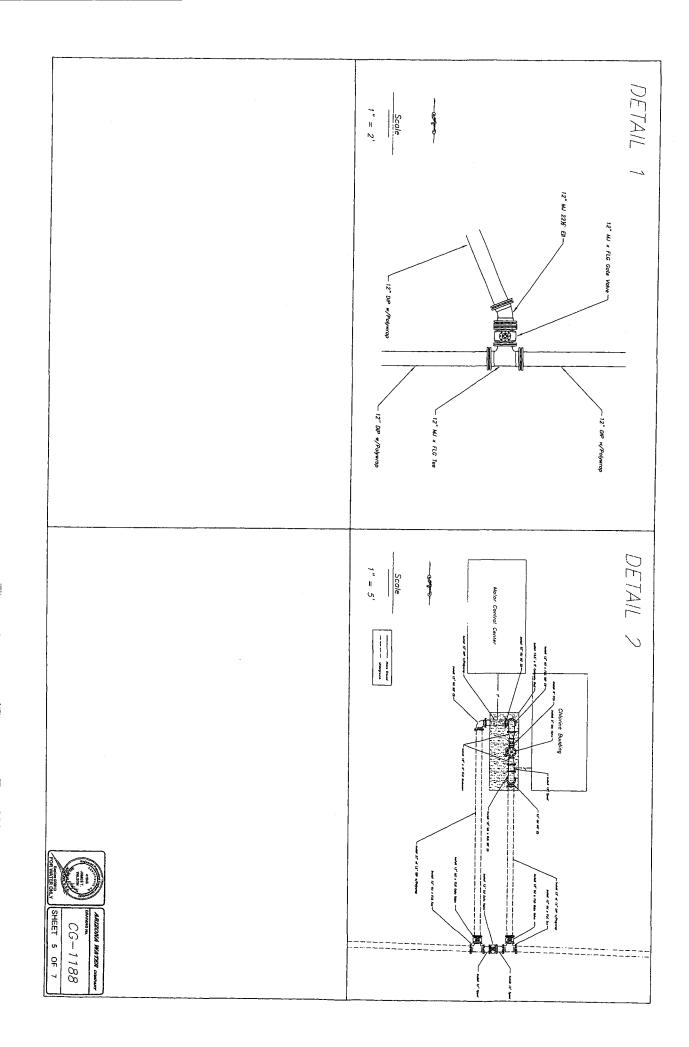
						SHEET NO.:	2 of
P	ETIREMENT	PLANT PROPERTY ACCOUNT	UNIT DESCRI	PTION	QUANTITY	YEAR INSTALL	ED AND W.A. NUMBER
	ROPERTY				- 	 	
	NITS					 	
•							
PRO	JECT DESCRIPTION:						
i F	nstall approximately 2,47 From Well #28 South alo	70 LF of 12" & 1,50 ng Lamb Road the	00 LF OF 16" DIP wit in East along Heathe	th polywrap an er Street to AW	d related fitting: 'C'S new Water	s to serve Arizona Campus in Arizor	City Water Campus na City.
	 	DESCRIPTION		PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
	Tie into existing 12" DIP w		\/ \w/related fittings	PLANT PROPACCT			
	Install a 12" TS with a 12"			 	2		
			MUXFIG TEULGEI			5,277.43	5,27
	Install 12" DIP with polywr		·		2,470	41.05	101,394
С	Install 16" DIP with polywr			 	1,500	50.57	75,855
O N	Install a 12" MJ Gate valve		<u> </u>		3	921.00	2,763
T	Install a 12" FigxMJ Gate		ings		4	2,657.00	10,628
R	Install a 16" MJ Gate valve		······································		1	4,568.00	4,568
A	Install a 16" MJxFig GV wi				1	1,990.00	1,990
C T	Install a 16"x6" FigxMJ Te		V w/related fittings		1	1,987.00	1,987
•	Install a 6" Fire Hydrant wi	th related fittings			1	2,502.00	2,502
W	Provide Slurry back fill		,	<u> </u>	1	10,000.00	10,000
O R	T-top pavement replaceme		,		1	15,000.00	15,000
K	Performance and Payment	Bond		 	1	6,584.22	6,584
	Contractors Tax			 	1	2,278.63	2,279
	SERVICE CONNECTIONS COMPL	ETE: DOUBLE-LONG		345			
	SERVICE CONNECTIONS COMPL	ETE: DOUBLE-SHORT		345			
	SERVICE CONNECTIONS COMPL	ETE: SINGLE-LONG		345			
	SERVICE CONNECTIONS COMPL	ETE: SINGLE-SHORT		345			·
	AL CONTRACT WORK						\$ 251,225
M							
A T							
Ė	SERVICE CONNECTIONS: DOUBL	E-LONG		345			
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I A	SERVICE CONNECTIONS: SINGLE	-LONG		345			
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S	METERS			346			
гот	AL MATERIALS						\$ -
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	TESTING FEE						
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o	SURVEY FEE						
R I	FIELD INSPECTION						
	INSTALL SERVICE CONNECTIONS	: DOUBLE-LONG		345			
- 1	INSTALL SERVICE CONNECTIONS	: DOUBLE-SHORT		345			
ŀ	INSTALL SERVICE CONNECTIONS			345			
1	INSTALL SERVICE CONNECTIONS			345			
ОТ	AL LABOR				1		\$ -
_	TOTAL - CONTRACT WORK, N	MATERIALS AND LAR	OR				
		AND LAD				<u> </u>	\$ 251,225
	RHEAD						60,294
OT	AL REFU	NDABLE PORTION	NON-REFUNI	DABLE PORTION	1	COST ESTIMATE	\$ 311,519











ONCITE MON. ON THE RESTRECTIONS OF WATER DISTRIBUTION SYSTEM ONCITE MON.

A. Degeste Per with Tempery' Writine Year Empry' mean mittel Control, ord share againsts, ory oblishe at Nation Writer are provided by the process in tended at 1805 Herb Berker Conyrn, Phenels, Artena 2005-535; Wall Office Ber 2000, Preside, Artena - 2005.

<u>Collocias</u>. The end "Collector" means either as individual or alter folly employed to do the work as shann an the Candination Drawings and or serted herein.

desork is to be completed in a sale, watermarks conver and in occardence with here Comutaction Specifications day deviation beretrom must be opened in vising by the Company. <u>Senstruction Drawings.</u> The worst "Construction Uraumys" mean plans pared by ar on polast of witche Years Company. Opinical The word 'Contract" means the written desument taked to stock tentract when such decument not been signed by as officer to altering of both the Contractor and the Conteauty.

institutes est certam sin he conformants of approximation paging species and he cent of controlled in our replaced and he below he ha was de since. Chapital of our repetition, about imparity in he showing, we to "printerconstitute on private for start centure, 3. Maring when required in the start depth. 6. Comits or marined in the start depth. 6. Comits or marined in the centure of the start of the centure of the cen

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4-1/2" Pumper Hotzin, HST med Yeo + 2-1/2" Hose Notzies, NST. Hörs only' Apoche Janstian, Arisono City, Leikside, Oresle, Overgeard, Imreck, Sedend, Sierra Vista, Maile Tank and Mikkelman,)

(II) One. (*)** Promot Heater, 655 and fine : 5/1/2" fines Mardes, 40% differe unp.).

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06180104 CHCK V4.46' vuster/ Hersey CDC B./Fox Sedy, Including 5/6" . 3/4" from Kil frim Hil Pert He, 4" * 252062, 6" * 762062, 6" * 262062, 6" * 262065, 6" * 262065, 6"

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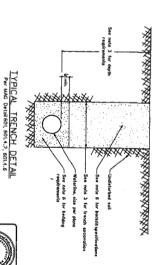
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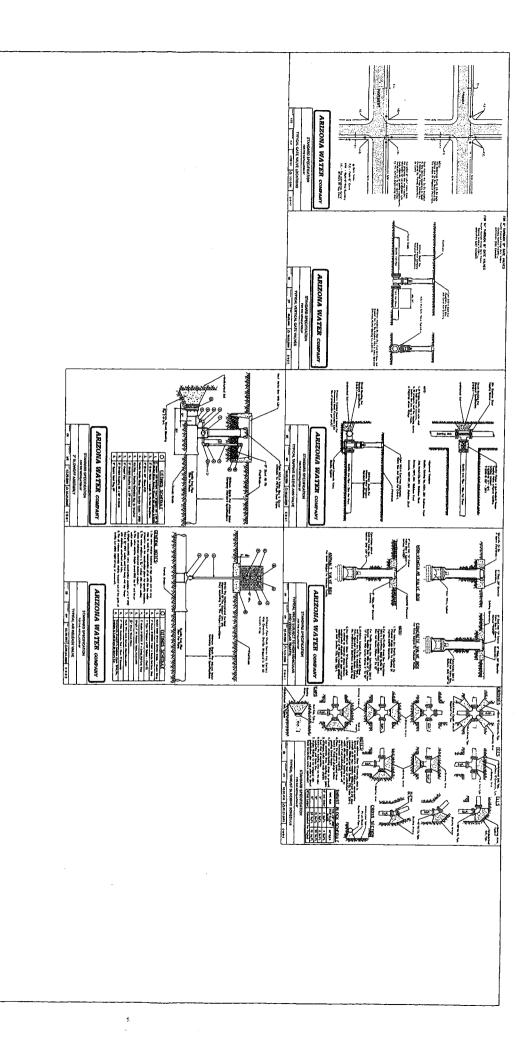




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ARIZONA WATER CHONT

SHEET 6 OF 7





SHEET 7 OF 7



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY CERTIFICATE OF APPROVAL TO CONSTRUCT WATER FACILITIES

Page 1 Of 3

LTF No: 52943

County: Pinal

ADEQ File No: 20100157

System Name: Az Water Company System Number: 11-009

Project Owner: Arizona Water Company

Address: P O Box 29006, Phoenix, AZ 85038

Project Location: Arizona City

Description: ARIZONA CITY WATER CAMPUS. ATC PERMIT TO CONSTUCT

APPROXIMATELY 2,400 LF OF 12-INCH AND 1,500 LF OF 16-INCH DIP WATERLINES AND RELATED FITTINGS. TO SERVE FUTURE

WATER CAMPUS AND TIE INTO EXISTING CASA GRANDE

DISTRIBUTION WATER SYSTEM.

Approval to construct the above-described facilities as represented in the approved documents on file with the Arizona Department of Environmental Quality is hereby given subject to provisions 1 through 7 continued on page 2 through 3

- 1. This project must be constructed in accordance with all applicable laws, including Title 49, Chapter 2, Article 9 of the Arizona Revised Statutes and Title 18, Chapter 5, Article 5 of the Arizona Administrative Code.
- 2. Upon completion of construction, the engineer shall fill out the Engineer's Certificate of Completion and forward it to the Central Regional Office located in Phoenix. If all requirements have been completed, that unit will issue a Certificate of Approval of Construction. R18-5-507(B), Ariz. Admin.Code. At the project owner's request, the Department may conduct the final inspection required pursuant to R18-5-507(B); such a request must be made in writing in accordance with the time requirements of R18-5-507(C), Ariz. Admin. Code.
- 3. This certificate will be void if construction has not started within one year after the Certificate of Approval to Construct is issued, there is a halt in construction of more than one year, or construction is not completed within three years of the approval date. Upon receipt of a written request for an extension of time, the Department may grant an extension of time; an extension of time must be in writing. R18-5-505(E), Ariz. Admin. Code.
- 4. Operation of a newly constructed facility shall not begin until a Certificate of Approval of Construction has been issued by the Department. R18-5-507(A), Ariz. Admin. Code.

Reviewed by: FMS

Janak K. Desai, P.E. Unit Manager

Engineering Review Section Water Quality Division

cc: File No : 20100157

Regional Office: Central Owner: Arizona Water Company

County Health Department: Pinal
Engineer: Arizona Water Company
Planning and Zoning/Az Corp. Commission

Engineering Review Database - Etr021

APPROVAL TO CONSTRUCT POTABLE WATERLINES ADEQ FILE No. 20100157 PAGE 2 OF 3: PROVISIONS CONTINUED

5. Approval of Construction (AOC) will not be issued until data is obtained and verified for Pressure and Leakage Testing and Disinfection Sampling of all potable water lines. Engineering Bulletin No. 10, Chapter 2.E.20, Disinfection Requirements; requires that..."Every new, modified or reconditioned groundwater source shall be disinfected after placement of final pump equipment". Information on disinfection procedures can be obtained from "Engineering Bulletin No. 8, "Disinfection of Water Systems".

It is recommended that the Engineer's Certificate of Completion (ECC) Data Required Sheet be completed in full, showing actual pressures and sampling data. Data required with ECC sheet can be found under heading - Safe Drinking Water and subheading - Technical Engineering/Plan Reviews

http://www.azdeq.gov/function/forms/appswater.html#sdw.

- 6. Before construction of a modification, expansion, or alteration of this distribution system begins, a separate Approval to Construct applicable to each addition must be obtained. A.A.C. R18-5-505(B).
- 7. The Arizona Department of Environmental Quality's review of this application was subject to the requirements of the licensing time frames ("LTF") statute under Arizona Revised Statutes ("A.R.S.") § 41-1072 through § 41-1079 and the LTF rules under Arizona Administrative Code ("A.A.C.") R18-1-501 through R18-1-525. This Notice is being issued within the overall time frame for your application.

ADEQ hereby approves your application for Approve to Construct Drinking Water Facilities under A.R.S. § 49-351. Your copy is enclosed.

This decision is an appealable agency action under A.R.S. § 41-1092. You have a right to request a hearing and file an appeal under A.R.S. § 41-1092.03(B). You must file a written Request for Hearing or Notice of Appeal within **30 days** of your receipt of this Notice. A Request for Hearing or Notice of Appeal is filed when it is received by ADEQ's Hearing Administrator as follows:

Office of Administrative Counsel Arizona Department of Environmental Quality 1110 W. Washington Street Phoenix, AZ 85007 APPROVAL TO CONSTRUCT POTABLE WATERLINES ADEQ FILE No. 20100157 PAGE 3 OF 3: PROVISIONS CONTINUED

The Request for Hearing or Notice of Appeal shall identify the party, the party's address, the agency and the action being appealed and shall contain a concise statement of the reasons for the appeal. Upon proper filing of a Request for Hearing or Notice of Appeal, ADEQ will serve a Notice of Hearing on all parties to the appeal. If you file a timely Request for Hearing or Notice of Appeal you have a right to request an informal settlement conference with ADEQ under A.R.S. § 41-1092.06. This request must be made in writing no later than **20 days** before a scheduled hearing and must be filed with the Hearing Administrator at the above address.

Please contact Frank M. Smaila at (602) 771-4237 or fms@azdeq.gov if you have questions regarding this Notice or the Certificate of Approved to Construct.







PERMIT

RUP1011-288

PINAL COUNTY DEPARTMENT OF PUBLIC WORKS

Highways, Flood Control, Fleet Maintenance, Emergency P.O. Box 727 31 N. Pinal Street, Building F, Florence, AZ. 85132 (520) 867

- AS (520) 866-7943

Utility Companies

A PERMIT IS HEREBY ISSUED for the Scope of Work set forth below with the expressed inderstanding that all conditions, general and special, as set forth herein are part of this permit and must be faithfully percented to the satisfaction of Pinal County, herein after referred to as "County," and is accordance with plans, specifications and special requirements approved by the county. Work under permit may commence as of the issuance date. This permit the posted on site at all times. All work shall be completed by the expiration date set forth below.

IF GRADED OR DISTURBED AREA EQUALS OR EXCEEDS 0.1 AC., YOU MUST APREA FOR A DUST CONTROL PERMIT FROM AIR QUALITY CONTROL (520-866-6929).

ENGINEERS COST	ESTIMATE:	\$0.00			terner.			
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CONTACT PERSON	: ROY FREEM	IAN		EMAIL	: RFREE	van@AZWA	TER.COM	
CONTACT PHONE:	5208368785		CONTA	CT FAX:	5208362a	. M. O.F. T. O. John Will His Period Substitute Substitute		
CONTRACTOR NAM	ME & LICENSE	NO:						
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Louie	Arroyos		Jack La	wson			520-251-2343	
ISSUED BY		INSPE		Section of the sectio	NSPI	CTOR PHON	E#	
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INSIDE THE RIGHT-OF-W THE PERMITTEE, CONTR	RACTOR, PERSON	OR FIRM DOIL	NG THE WORK MUST	GIVE VERB	AL OR WE	SANGTICE OF	THE DATE AND	TIME
WHEN THE SCOPE OF W AT 520-868-7943. SUCH NOTICE MUST BE	RECEIVED BY TH	E INSPECTION	SECTION AT LEAST	48 HOURS I	PRIOR TO LE	E TIME THE W	QRK WILL BEGI	V. WORK
IN THE RIGHT-OF-WAY V	<u>VITHQUT A VALID</u>	PERMIT WILL	BE CHARGED TRIPL	THE APPL	ICABLE AMC	UNT. EXTENS	IONS MUST BE	<u> APPLIED</u>

Print Date: 11/19/2010

FOR BEFORE PERMIT EXPIRES OR PERMIT WILL NO LONGER BE VALID. A FINAL NOTICE MUST BE GIVEN AND RECEIVED BY THE INSPECTION SECTION WITHIN 48 HOURS AFTER COMPLETION OF THE SCOPE OF WORK IN THE SAME MANNER AS FOR THE START NOTICE.

- 1. That the Licensee assumes the responsibility and all liability for injury or damage to said highway, or to any person while using said highway, caused by or arising out of the exercise of this permit or license. Licensee agrees to hold harmless and indemnify the County for claims arising out of the work performed under this permit; except such claims arising out of the County's sole negligeence.
- 2. That all work done shall be at the sole cost and expense of the Licensee and shall be done at such time and in such a manner as to be least inconvenient to the general public, and as directed by the agent of the Licensor. Work must be finished in the time specified on permit unless the appropriate renewal fees are paid prior to the expiration date.
- 3. That when the proposed work is completed, the Licensee shall repair the roadbed and replace the surfacing material thereon, and will leave the said road in as good a condition as it is now or better, so far as the road is affected by the Licensee.
- 4. If the subject of the permit or license falls to pass final inspection, the Licensee will remove or replace the same within such time as specified by written notice from the Licensor, or if at any time hereafter, any material used by the Licensee in replacing or reconstructing any part of said highway proves defective, the Licensee will replace the same with the kind and quality of material which the Licensor shall specify
- 5. That if the title and possession of any property placed upon the right-of-way by the Licensee remains in said Licensee, the Licensee shall and will promptly perform all necessary repair work upon written notice from the Licensor, and will not permit or allow any condition to exist which would be a hazard or source of danger to the general public.
- 6. That if at any time hereafter the right-of-way, or any portion thereof occupied and used by the Licensee, may be needed or required by the Licensor, any permit or license granted in pursuance of this application may be revoked by the Licensor and all rights thereunder terminated and upon sufficient notice, the Licensee shall and will remove all property belonging to said Licensee.
- That in the event that the work to be done under the authority of the permit or license necessitates the creation of any hazard or source of danger to any person or vehicle using said highway, said Licensee shall and will provide and maintain at all times during the existence of said hazard sufficient barriers, hanger signals, lanterns, detours in accordance with the Manual on Uniform Traffic Control Devices (M.U.T.C.D.) and shall and will take such other measures of precaution as the Licensor shall direct.
- 8. That If the work to be undertaken is of such a nature or character that the Licensor deems it necessary that said work be laid out or inspected by the Licensor, said Licensee will defray any and all expenses incurred by said Licensor and herein agrees to reimburse the Licensor and for that purpose will deposit with the Licensor a sum of money in the amount necessary to cover all cost incurred by the Licensor.
- 9. That In the event any property belonging to or the area occupied by such property being used by the Licensee within any portion of the right-of-way interferes with or is needed to construct, maintain, reconstruct, improve, or relocate any highway, street, road, drainage, or utility lines or structures pertaining thereto, by or for the Licensor or the general public, said Licensee shall at his own expense relocate, remove, lower or raise such property, within a reasonable time, when requested to do so by the Licensor in writing.
- 10. On or before the effective date of this permit the Licensee shall provide the formiving to the County Engineer:
 - a. A certificate of Insurance confirming that the Licensee has obtained and maintains Public Liability and Property Damage Insurance with a minimum combined single limit of \$1,000,000, said coverage to remain in force for the entire term for which the Permit is granted. All policies shall specify that the subject coverage is primary and shall identify the County as an additional insured. Satisfaction of this isurance requirement shall, in no way limit the Licensee's indemnity obligation as set forth in Paragraph 1 above. Fifteen days written notice of any change in coverage or cancellation of any policy shall be considered the County Engineer.
- 11. It is the sole responsibility of the Licensee to maintain converage in force for the term of the permit and to name the County as an additional insured. Said coverage shall be primary and fail to be conform to the above requirements shall not waive any responsibility of the Licensee.

nave read agree to abide by the terms, conditions and limitations listed above

Print Date: 11/19/2010

Pinal County
Development Services
Department of Public Works



P.O. Box ⁷⁷ 31 North John House Bidg F Florence, Associa 85732

ENGINEERING & TRANSPORTATION & FLOOD CONTROL & RECYCLING-SOLID WASTE & EMERGENCY MANAGEMENT

DUE TO THE RAPID GROWTH WITHIN PINAL COUNTY IT IS TO REPARTIVE THAT WE ALL WORK TOGETHER AS A TEAM!

INSPECTIONS

- Once the permit has been issued the following steps need to occur.
 - 1. The Inspection Section will notify you of the inspector assigned at the job.

 Contact the inspector to set up a pre-construction meeting. This will help to
 ensure that everyone is on the same page. If you're unable to a 21 contact, call
 the Permit Tech at 520-866-6033 and she will coordinate.
 - 2. When the job is ready to begin, notice must be received by the presention Section at least 48 hours prior to the time that work will begin. This can be done by either fax at 520-866-7943 or telephone at 520-866-6033.
 - Through the course of the job, inspection requests must be above to a small country inspector.
 - 4. A final notice must be given and received by the Inspection Section 48 nours after completion of the scope of work in the same manner as for the second 48 nours.
- If revisions of any kind are made you must notify the Inspection is loop.
 - 1. If this does not occur the project will be shut down by the inse-
 - 2. You also face the possibility of having to undo the work that had a long occurred.

YOUR COOPERATION WOULD BE GREATLY APPRECIA:



MEMORANDUM FROM PUBLIC WORKS DEPARTMENT

DATE:

DECEMBER 10, 2008

TO:

ALL WHO REQUIRE PERMITTED WORK IN PINAL COUNTY ROW

CC:

GREGORY STANLEY, P.E. PUBLIC WORKS DIRECTOR/COUNTY ENGINEER

AJ BLAHA, P.E. PUBLIC WORKS DEPUTY DIRECTOR

FROM:

MANNY NAVARRO, INSPECTION SECTION CHIEF

RE:

NOTIFICATION OF PRECONSTRUCTION MEETING

PRIORITY: HIGH

In order to provide good customer service, this is to inform you that it is the responsibility of the permittee to notify the Inspection Section of the time and date of the Pre-construction meeting. The contact information for the Inspector is listed on the bottom of the permit. If the Inspector can not be reached, the second point of contact will be the Permit Technician, Breanna Uribe-Gonzalez at 1-520-866-6033. Notification should be done 48 hours prior to the Pre-construction.

Failure to notify the Inspection Section will result in revoking the permit and your job will be shut down until this has been corrected.

Your full attention to this matter is greatly appreciated.

Thank you.

ATE: 10/27/2010 BY: YVONN	E HERNANDEZ	PR	DJECT NUMBER		
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□ per your request * □ for review	REVIEW STATUS	ist 2n	d 3rd 1	Other	
MS INCLUDED: ONE SET OF APPROVED OFFSITE	WATERLINE IMPRO	VEMENT PLANS			
MMENTS:		3			

Please return to:.

Ken Buchanan Assistant County Manager

Development Services



Project Name: Arizona City Water Campus

Reviewed By: Mario S. Saldivar

Case #: SPR-012-10 Review Status: Offsite Water Improvements _ 2nd Rvw Date: 10/19/10

		view Status: Offsite Water Improvements _2nd Rvw
Sheet #	Comment #	RESPOND TO ALL COMMENTS AND REDLINES.
		PLANS CONSISTED OF 7 SHEETS. PREVIOUS SUBMITTAL CONSISTED OF 7 SHEETS.
·		PREVIOUS REDLINES AND COMMENTS ADDRESSED SATISFACTORILY, PLANS
		RECOMMENDED FOR APPROVAL
	 	RECOMMENDED FOR AFFROVAL
		NOTE: The air release assembly will be required to be placed out of the County right-of-way at
		time of construction.
		
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ARIZONA WATER COMPANY

Casa Grande Office : F.O. Roy 11035 - Casa Grande, AZ 95230 - 1630 Volce 1880-838-9785 Faix : 825-816-3890

PROPOSAUCONTRACT

CONTRACTOR CONTRACTOR ARIZONA PIDELINE CONTRACTOR I	VA Cas	s Grande
ADDRESS PR BOX 338 Copyldag AZ 55186	W.A. 1794	1-4617
	Novembe	er 3, 2010

CONTRACTOR SUBMITS the PROPOSAUGONTHACT IN ARIZONA WATER COMPARY, an Arisona substitute (the "Company") to perform the work and complete the project described on Page 2 (the Traject), as an independent prime contractor.

- Controlled that 5 this a controlled state of the controlled inflations, and account the Controlled Controlled that seems of December of the specific plant and Africa construction depositions and Sunday December of Controlled the specific plant and Africa construction depositions and sunday to the Project (Fig. 5). Controlled the United Sunday of Controlled Sunday
- 2. Contractor represents and wanters that it has setted and complied with the provisions of Section 6. Contractor Understands A 2-3 6-65 Monking Conditions, of the Genéral Conditions of Contract prior to submitting this Producting Conditions.
- 3 Contractor represents that this Proposition from the formation is fair and mones in the respects. Is submitted in good failth and in not submitted in the sub
- Prior to the pointing-nonment of work, Committee will supprise the Company a list of all restorate to be used in the Property. The instruction of remodel, once and quantity included in this Proposal/Contract.
- 6. Currector will burden at later, tools, equipment and majorists required to complicit the Project according to the General Contracts of Contracts to be incorporated into the Project are unique to general and Contracts will not always be incorporated into the Project are unique and Contracts will not always be Contracted with the Contracted will say the project are the Contracted and the Project involve from the Contracted will not project and Contracted and the Project involve from the Contracted and the Project and the Project are contracted and the Project and
- Compagn will install deathed accounting regards of all melothes purchased and inserptioned time the Project. Such records we exceed an autoporting enginet verter involves for all integrable purchased. Following sempletian of the Project, Compagn will not itemated accounting to the Compagn will helicide all supporting original verter involves into sempleting original integral integral into the Project, and the disposition of such materials will remain Compagn expension of expension of engagement thereof. The Compagn will not pay Confrictor for materials all remain Compagned into the Project, and the disposition of such materials will remain Compagned and other accounting time.
- The Trimment Trial Sold of the Trains at their on a trial to interpreted while and makes and makes to at the state to the
- 9. Prior to the commencement of work, Contractor will provide this Company with a southled construction achievable, in other Gentle or DPM form, Identifying the least to be performed from this date of the written Commencement Notice through completion of the Project, including testing, frething of Company Personal and final Project Involving. Contractor will separate the Comments of with things and the Comments of with the Comments of with the Comments of th
- 10 Contractor will not commence work on the Project until the Company gives Contractor is written Commencement Notice. Contractor will not commence work on the Project until the Company gives Contractor in the Commencement Notice in Commencement Notice.
- Pollowing the Company's within notice of activaciony sum platfor of the Project involve from Comfactor, the Company shall pay Contractor the social state cost of the Project, which will be calculated as anown on Page 3, except they optical labor and majorate quantified control of the substituted for the national labor and materials quantified and the Commaning Few will be received based on such actival labor and materials quantified and the Commaning Few will be received based on such actival labor and majorate over the control of the Commaning Few will be received based on such actival labor and majorate over the control of the Commaning Few will be received based on such activation and majorate over the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control of the Company shall pay Control of the control
- 12. The amount of negligable figuidated damages for Contractor's filling to deliver of perform within the Sine Edition is Paragraph to may be deducted from the Conspiny's applied of the Sine Project American American Sine Indiana and thing the Contract of American American Indiana of Contract Indiana Indiana

SPECIAL CONDITIONS:

MUST COMPLY WITH PINAL COUNTY REQUIREMENTS INCLUDING BEDDING OF PIPE, SLURRY & T. TOP ASPHALT REPLACEMENT, POT HOLE OR OVER EXCAVATE THE SEWER LINE / RECLAIMED WATERLINE CROSSING AT LAMB ROAD & HEATHER TO CONFIRM THE MINIMUM 2' SEPERATION REQUIREMENT.

CONTRACTOR	PROPOSALCONTRACT ACCEPTED:
CENTRAL ARTOMA PIDELINE PONTRACTORS IN	ARIZONA WATER COMPANY
syclustic vite	By: Judle K fluid
Pant Name: CLINYDAI IN ALTE	Print Name: FREDRICK K. SCHNEIDER
TIME: PRESIDENT	THE: VP-ENGINEERING
Date: - 11-8-10	Onte: 11-15-10

NOV.0312010 14:26 520 835 2850

AZ WATER CO

1720 7.003/003



ARIZONA WATER COMPANY

Casa Standa Office I P.C. Mun 11030 - Com Stande, AZ \$6230 - 1058 Visina : 920-026-0785 | Fau: \$20-026-0030 PROPOSAL/CONTRACT CONTRACTORS INT. Casa Grande CLASSIFICATION: K. 80 AZ CONTRACTOR LICENSE NO: LOC 1-4617 November 3, 2010 EID DONO REGIMEN X You Install approximately 2470' of 12" & 1500' of 16" D.L.P. with polywrap and related fittings DESCRIPTION to serve The Arizone City Water Campus. From Well # 28 South along Lamb Rd then OF PROJECT east sions Heather Street to Arizona Water Company's New water Campus in Arizona City, AZ, Located in a portion of the NW 1/2 SEC, 1 T.85. - R.6E, Per DWG CG - 1189 UNIT PRICE TOTAL COST 1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6) ONAMITY Tie in to existing 12" D.I.P. with an 12" T.S. & 12" T.V. with masted fittings install a 12" T,S, with a 12" Fig. T.Y. with an 18" x 72" MJ x Fig reduce: install 12 Duckle from Pipe with polyers p & related fittings 2.470 Install 16" Ducthe Iron Pise with palywres & related fittings 1,500 install a 12" MJ Gate valve with related fittings inefall a 12" Pig x MJ Gate valve with related fittings install a 18" MJ Gate valve with retated fittings Install a 16" MJ x Pie SV with related fittings inttall a 16" x 6" Fla x MJ. Toe with a 6" Fla x MJ GV w /releted fitte (FH) Install a 6" Fire Mydrant with related filtings Slurry backfill regularments glong Heather beween Lamb Rd & Kashmir Rd 7 - Top payered regiscement at the intersection of Heather & Keshmir Rd Pot hole I over excavate the Seveni Recipioned weterline to metrizin 2' sep Price only Par Ft to ship seal Heather St from Lamb Rd to Kashmir Rd. 3, Torse Labor to histori Exempt Walleriale (add the amounts in column 1) 4. Total Exempt Materials (add the smourts in column 2) 1231441 S &. NON-EXEMPT MATERIALD LIVANITTY LABOR YAT EREAL LABOR MATERIALS 1 7, Tutal Labor to India? Non-Exempt Meterials (add the amounts in column 5). 8. Total Non-Exempt Meteriets (and the errounts in column 6) 9. Subtoff A (add lines 3, 7 and 6) 111102.50 10. Contracting Tax Base (multiply the simount on line 9 by 0.65) 11. Applicable Confracting Text Rate 111 16.7 % 12. Contracting Tex (multiply the empurition line 10 by line 11) 13. Suborai à jack ines 4, 9 ans 12) 14, 100% Performance and Payment Sonds Cost

NOTE: The Tallmared Total Cost moludes all labor and materials for backful, payerment replacement, one seal, and smills and includes all labor and materials for backful, payerment replacement, one seal, and smills and includes all labor and materials for backful, payerment replacement, one seal, and smills and includes all labor and materials for backful.

15. Estimated Total Cost (add lines 13 and 14).

CONSTRUCTION SPECIFICATIONS: E-8-1

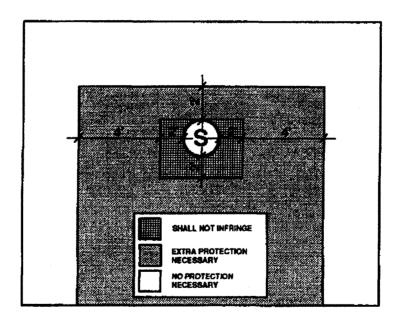
ERRATA 2010

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



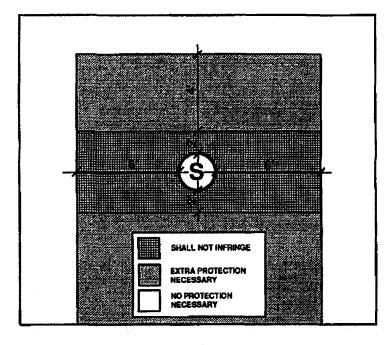
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

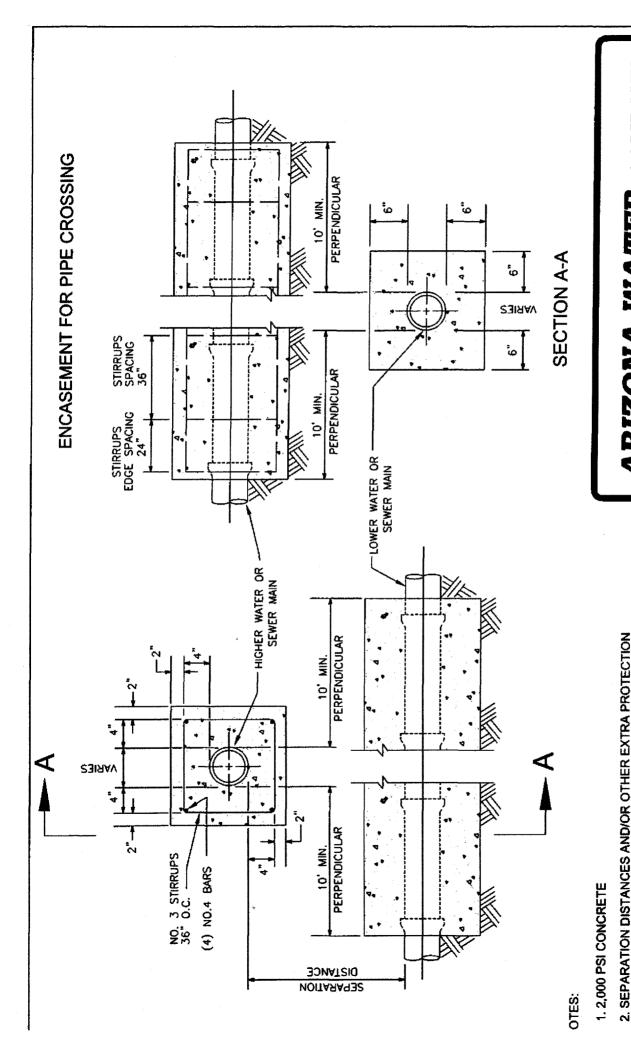
Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



STANDARD SPECIFICATION DRAWINGS: E-9-1
ERRATA 2010

E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
E-9-22	INSTALLATION OF COLUMN PIPE, OIL TUBE AND LINE SHAFT
E-9-23	HOT TAP AND JUMPER METER CONNECTION
E-9-24	INSTALLATION OF TYPICAL WATER LINE ENCASEMENT
E-9-25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION
E-9-30-1	WATER AND SANITARY SEWER SEPARATION/PROTECTION PERPENDICULAR
E-9-30-2	WATER AND SANITARY SEWER SEPARATION/PROTECTION – PARALLEL



CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD

SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.

SHALL BE REQUIRED TO PROTECT WATER MAINS FROM

3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY

FROM THE OUTSIDE OF THE PIPES.

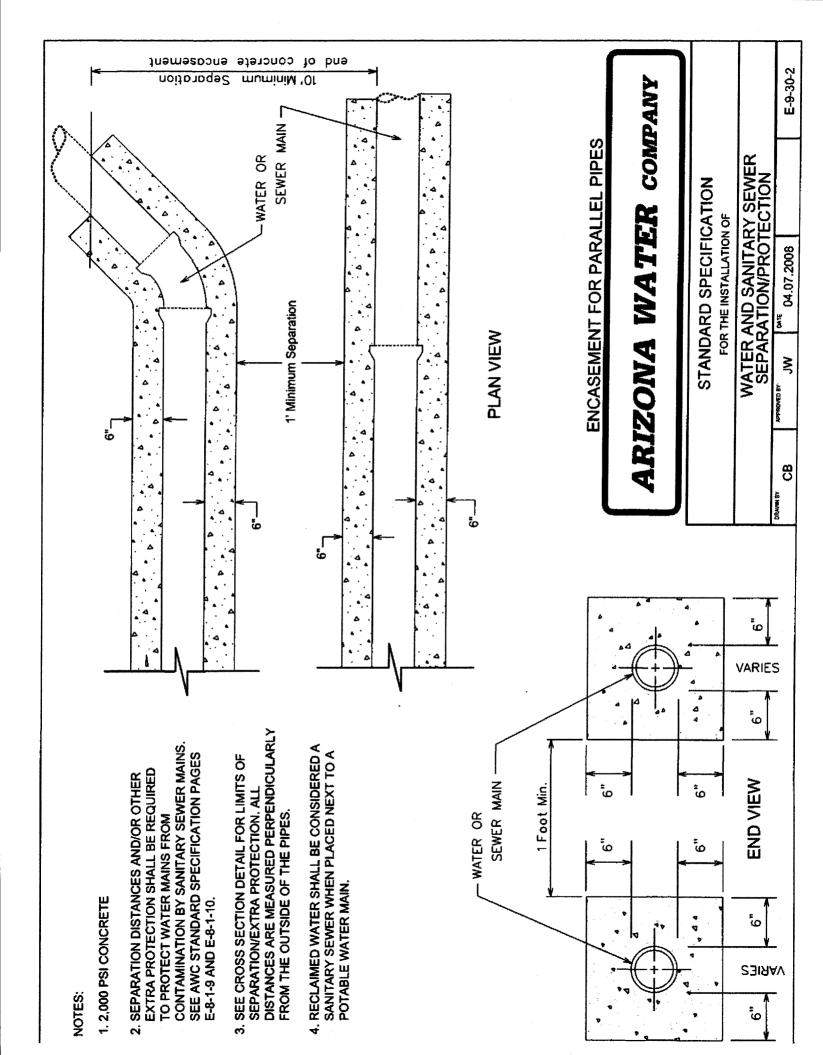
4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER

WHEN PLACED NEXT TO A POTABLE WATER MAIN.

STANDARD SPECIFICATION FOR THE INSTALLATION OF

WATER AND SANITARY SEWER SEPARATION/PROTECTION

DALWH BY CB APPROVED BY DATE 04.07.2008 E-9-30-1



3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan Clow Valve Company 8121 N. 10th Avenue Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Jim Ryan - Clow Valve Company

October 19, 2010

Subject:

Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the Clow products. If I can be of any assistance, please call me.

Very truly yours,

Juduca & Slund

Vice President - Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger
US Pipe – Waterworks Marketing Consultants
34522 N. Scottsdale Road
Scottsdale, Arizona 85226

Re: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USPI
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Tony Geiger - US Pipe

November 24, 2010

Subject:

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,

Fredrick K. Schneider

Vice President - Engineering

luca & Slund

afh

VIA EMAIL: TGEIGER4@COX.NET



SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

GENERAL CONDITIONS OF CONTRACT: E-4-1

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Invitation to Bid</u>. The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid
- F. <u>Contract</u>. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. <u>Inspector</u>. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. ?40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense. penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons. and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits. concerning such injury to or death of any and all persons, and concerning such damage. destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law. ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all deslabor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. <u>LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME</u>

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

CONSTRUCTION SPECIFICATIONS: E-8-1

E-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Contract</u>. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

- a. Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- c. Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- a. A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color yellow, drain open, open direction left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 4" Pumper Nozzle, NST and 2 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)
 - (2) 1 4½" Pumper Nozzle, NST and 2 2½ " Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) $1 4\frac{1}{2}$ " Pumper Nozzle, NST and $2 2\frac{1}{2}$ " Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 2½" Hose Nozzles, NPT (Miami only.)

- (5) 1 3½" Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and 2 2½" Hose Nozzle, NST (Superior only.)
- b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x ¾" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12"; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - 1. TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)
- I. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.
- m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.
- n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8 " x ¾" x ¾" for a ¾" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" for a 3/4" service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: ³/₄", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes 3/4". 1". and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".
 - Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).
- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
 - (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
 - (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knock outs and adjustable frame.
 - (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x ¾" x 7", 5/8 x ¾" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Specification E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

9. NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

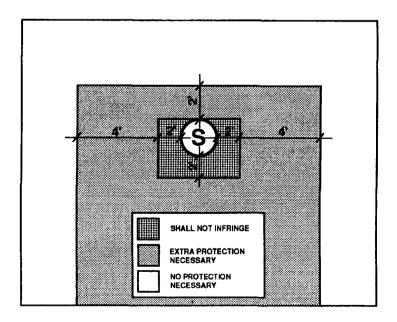
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



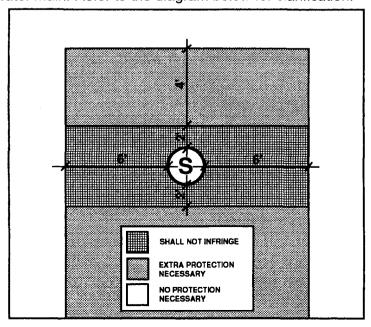
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- i. Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°, 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

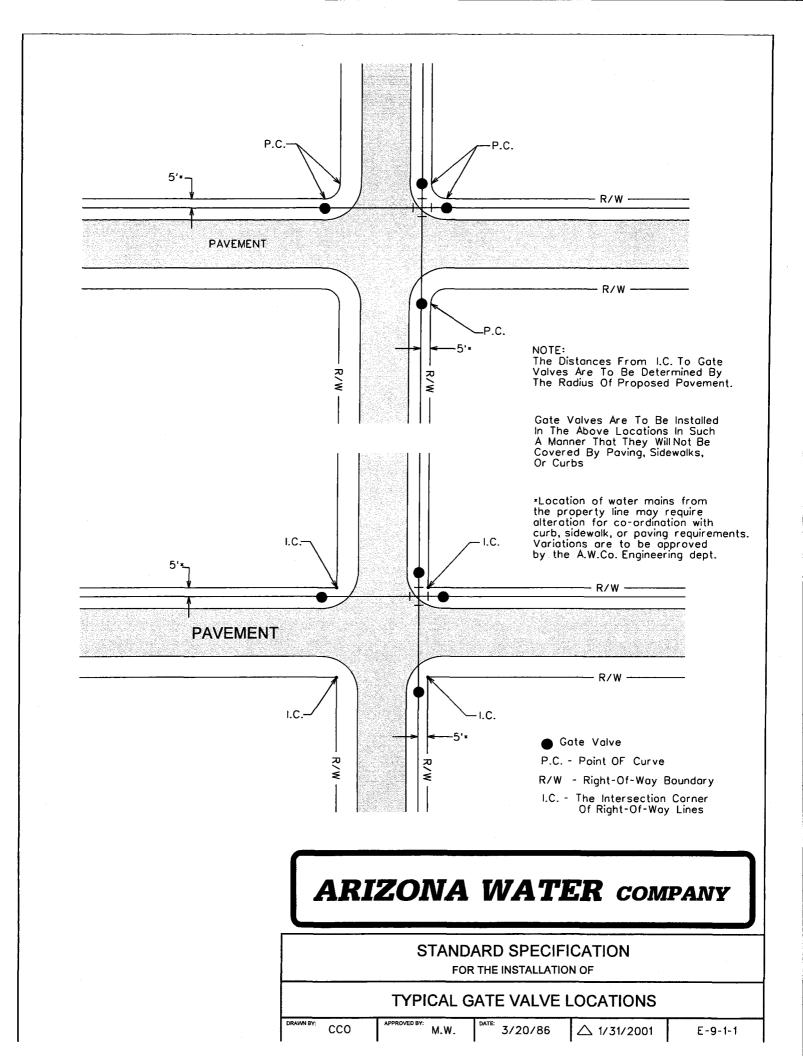
STANDARD SPECIFICATION DRAWINGS: E-9-1

STANDARD SPECIFICATION DRAWINGS

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E-9-4	INSTALLATION OF TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC
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E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION

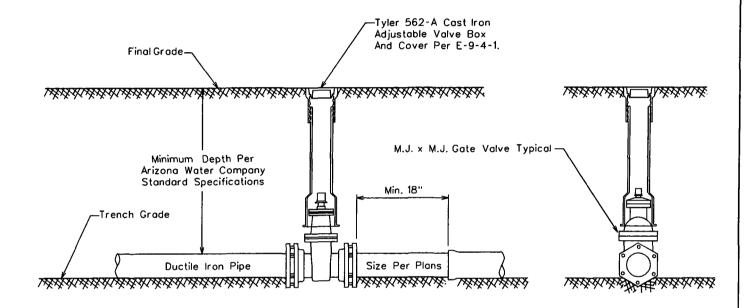


FOR 6" THROUGH 12" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2360-__ ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2361-__ ANSI/AWWA C509 Compliant



All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

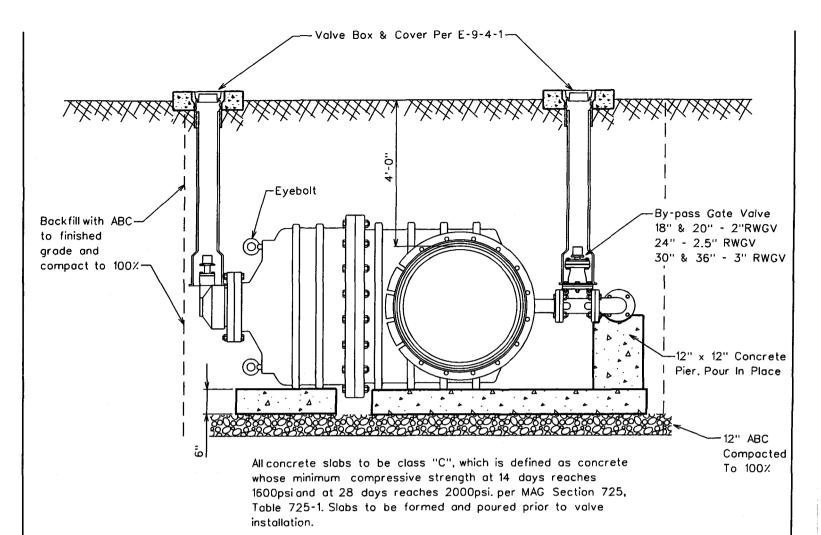
TYPICAL VERTICAL GATE VALVES

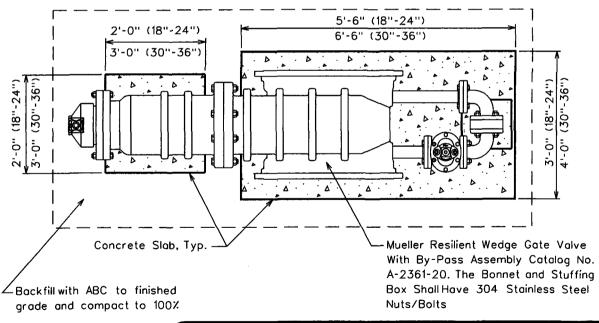
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All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

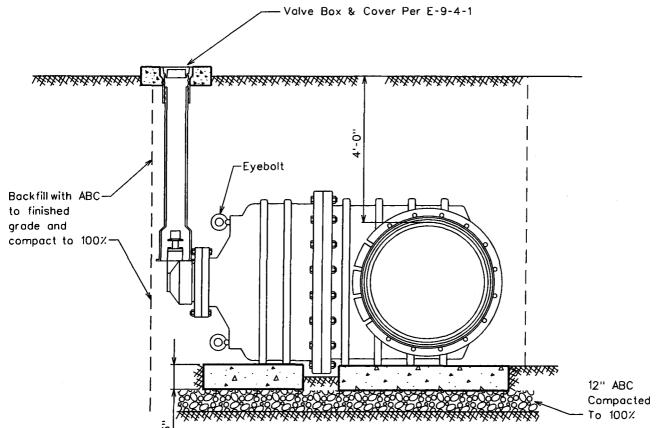
FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES
WITH BY-PASS FOR 18" AND LARGER VALVES

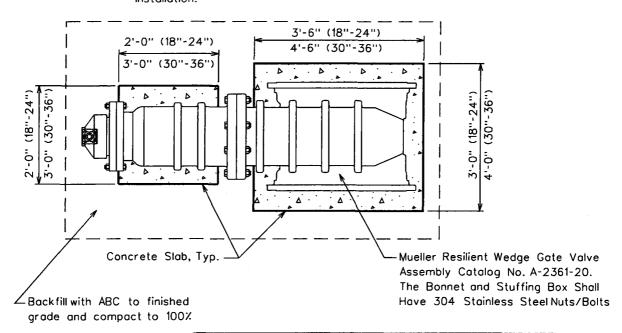
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All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

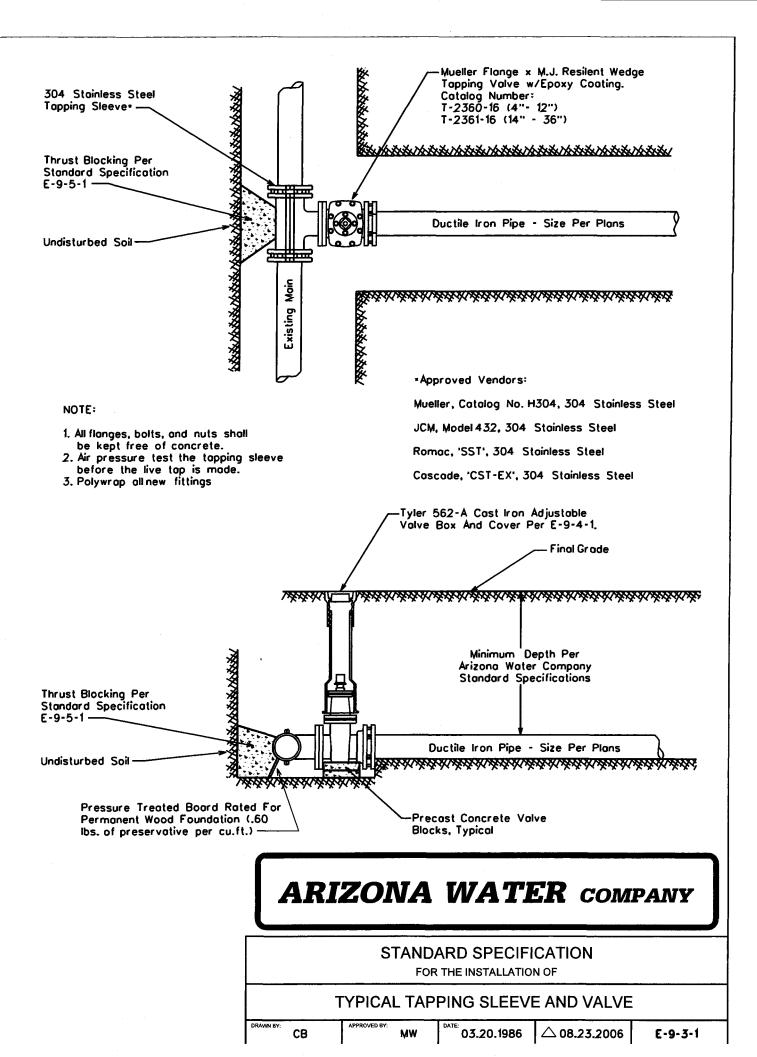
STANDARD SPECIFICATION

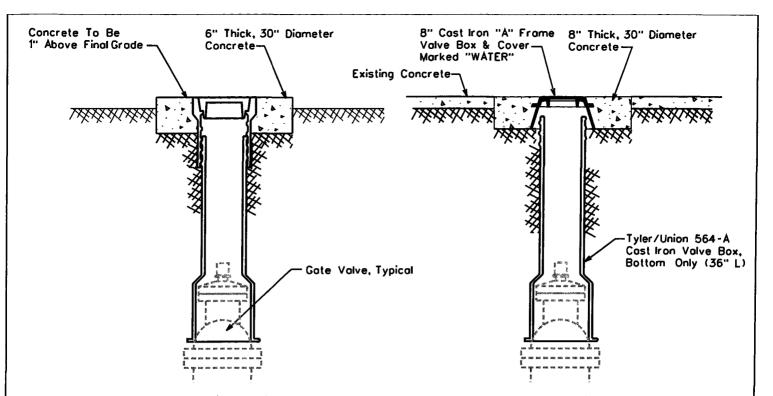
FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

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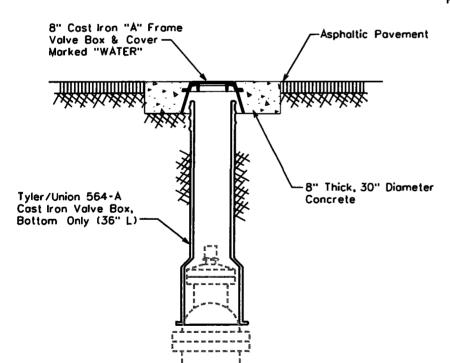
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NON-VEHICULAR VALVE BOX

CONCRETE VALVE BOX For Areas Subject To Vehicular Traffic



NOTE:

- 1. The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
- 2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"

For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron
"A" Frame With Cover. Valves 4" To 12"

- 3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
- 4. Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

ASPHALT VALVE BOX For Areas Subject To Vehicular Traffic

ARIZONA WATER COMPANY

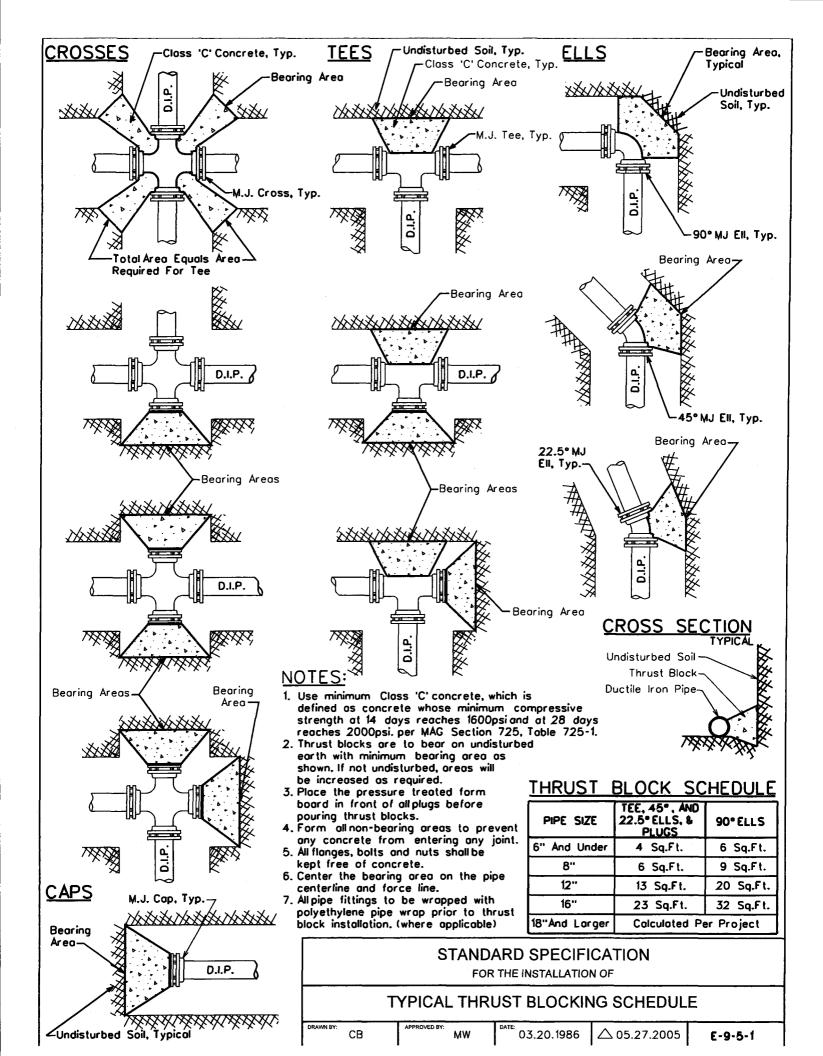
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC

03.20.1986 \(\triangle \) 8.24.2006

E-9-4-1

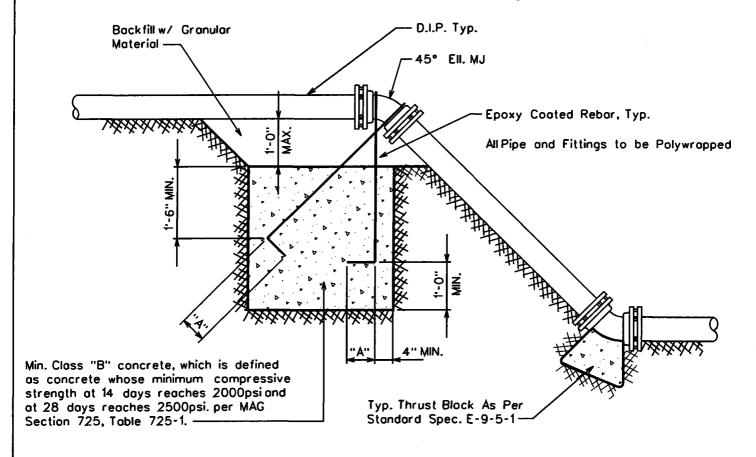


NOTES

- Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
- 2. Bars To Have 90° Hook © Their Ends, As Per Table Below.

Pipe Size	Min. Bor Size	"A" Dimension (Hook)	 Min. Block Dimension (WxHxL)
6"	•6	6"	3'×3'×3'
8"	•6	9"	4'x3'x4'
12"	•8	9"	5'x4'x5'
16"	•9	12"	7'x6'x7'

* For 125 P.S.I. Working Pressure



ARIZONA WATER COMPANY

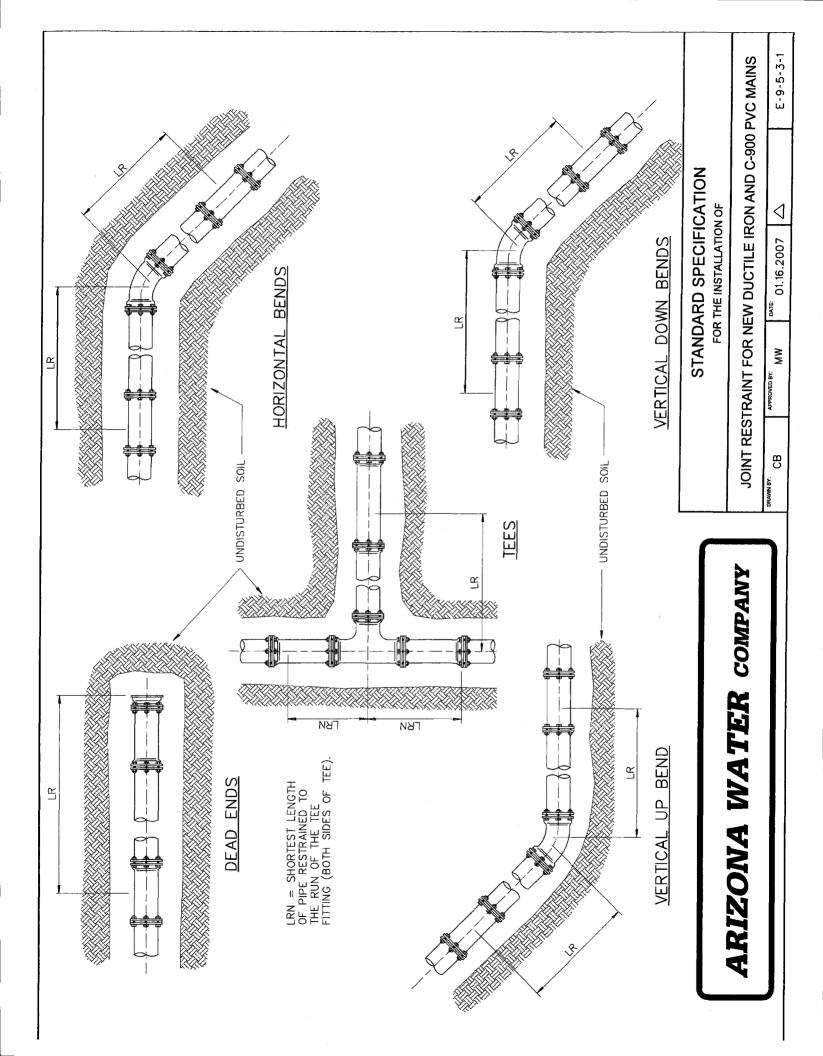
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

THRUST BLOCK FOR VERTICAL BENDS

THROOT BEOOK! ON VENTIONE BEINDO

RAWN BY: JPK APPROVED BY: MJW DATE: 7-5-96 △ 01.16.2007 **E-9-5-2**



	T	_	_		Т	Т	Т	Т	Т	Т	Т	Т	Т	Т
			FNDS		31	44	- α <u>α</u>	000	δά	6	104	115	126	147
		22-1/2 BEND FITTINGS	Cil	BEND	14.) 'C	9	α	σ	10	1-1	12	14	16
		22-1/2° BE	TAMO C	BEND	9	6	1	14	16	18	21	23	25	29
N PIPE	OFFSETS	45' BEND FITTINGS	017	BEND	7	10	13	16	19	21	24	26	28	33
TILE IRO	VERTICAL OFFSETS	45° BEND	NWOO	BEND	13	18	24	29	34	38	43	48	52	61
RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE	>	FITTINGS	di i	BEND	18	25	32	38	45	51	57	62	68	79
		90° BEND	NWCC	BEND	31	44	58	69	81	92	104	115	126	147
	Ç	TEES			80	20	34	45	57	68	79	06	100	121
		<u>.</u>		I RN=0,	30	43	56	68	80	91	103	113	125	145
	007	HORIZONTAL BENDS		22-1/2	4	5	9	8	o	10	11	12	14	16
	- - - - - -			42.	7	10	13	16	19	21	24	26	28	33
	74.00	יאואטרו		.06	18	25	32	38	45	51	57	62	68	79
	NOMINAL	717	717	NCHES	4	9	80	10	12	14	16	18	20	24

			FNDS) i	7.2	103	122	55	507	200	4 7	147	007	287		
VRAP		22-1/2 BEND FITTINGS	2	BFND	2	7	. 0	7.7	1 7	را تا	1,6	2 0	2000	20		
1YLENE		22-1/2° BE	144100	BEND	14	20	26	202	25	3,5	77	72	200	0 00		
POLYETI	OFFSETS	45° BEND FITTINGS		BEND	11	15	10	26	200	2,7	74	38	41	47		
MTH F	VERTICAL OFFSETS	45° BEND	NWOO	BEND	30	42	55	99	77	80	100	110	121	141		
3THS, LR, FOR DUCTILE IRON PIPE WITH POLYETHYLENE WRAP	>	FITTINGS	di i	BEND	26	36	47	56	S &	74	82	90	98	113		
		90' BEND	NWOO	BEND	72	102	133	159	187	214	241	266	292	340		
	Ų.	TEES			18	47	78	103	131	156	183	207	233	280		
IS, LR,	H	<u> </u>		LRN=0'	69	66	130	157	185	211	238	263	289	337		
LENGT				22-1/2.	5	7	6	1	13	15	16	18	20	22		
RESTRAINED LENG	I V LNC	HORIZONTAL BEND		7		45.	11	15	19	23	27	31	34	37	41	47
RESTR	71901	71701		.06	26	36	47	56	65	74	82	90	98	113		
	NOMINAL	77.0	717	INCHES	4	9	∞	10	12	14	16	18	20	24		

NOTES

- 1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED. ALL LENGTHS ARE GIVEN IN FEET.
- 2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
- 3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
- 4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

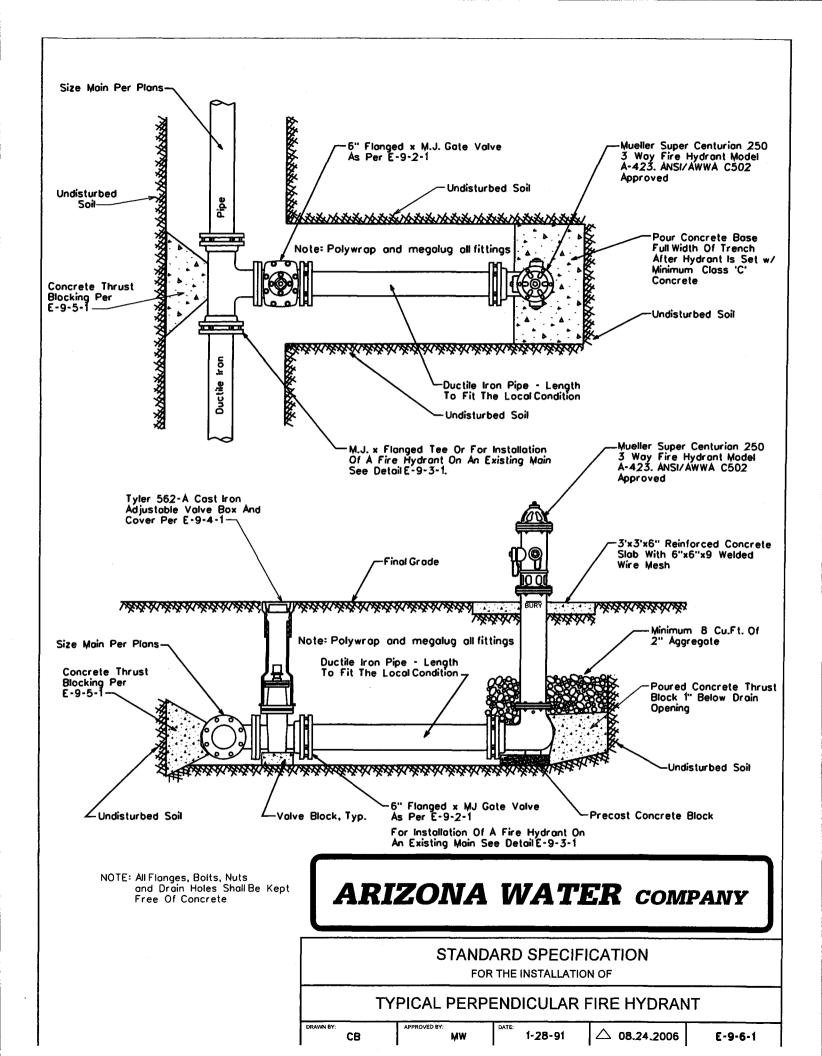
ARIZONA WATER COMPANY

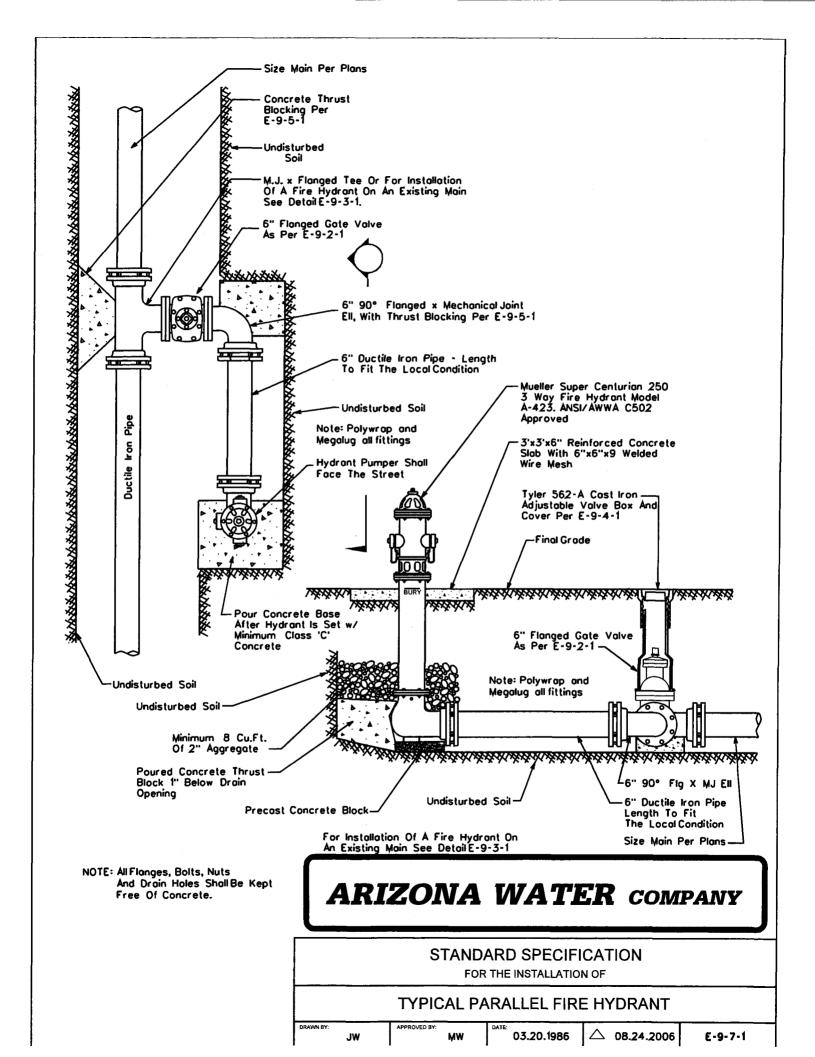
STANDARD SPECIFICATION FOR THE INSTALLATION OF

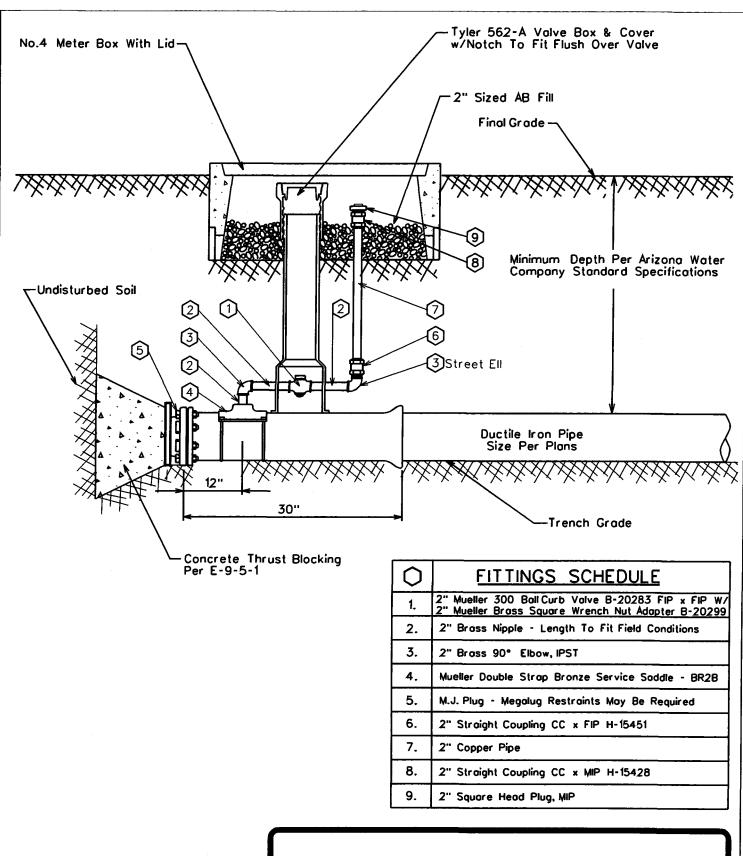
JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

abla	
DATE: 01.16.2007	
APPROVED BY: MW	
DRAWN BY: CB	

E-9-5-3-2





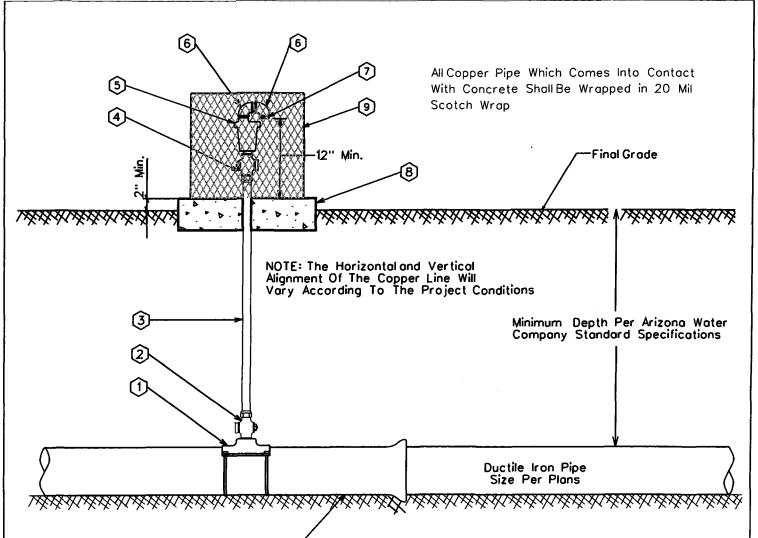


STANDARD SPECIFICATION FOR THE INSTALLATION OF

2" BLOWOFF ASSEMBLY

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1986 △ 03.21.2006

E-9-8-1



GENERAL NOTES:

 The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.

Trench Grade

- 2. The valve shall have a \(\frac{1}{64} \) " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & ½" IPST outlet, cast iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP × Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	1/2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leof Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL AIR RELEASE VALVE

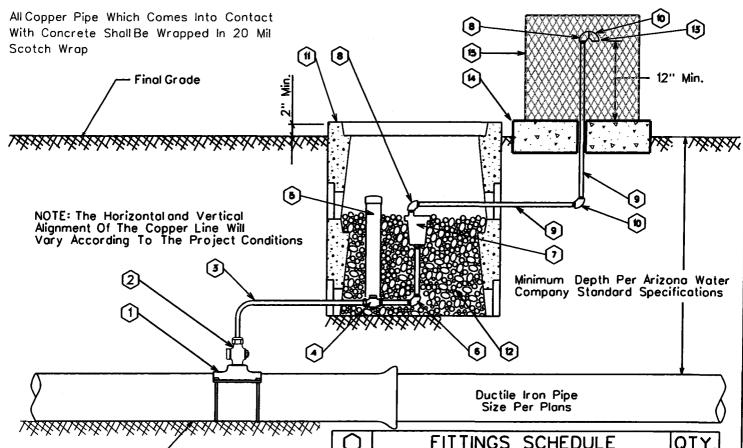
03.20.1997 \(\triangle 08.24.2006 \) E-9-

CB

APPROVED BY:

V 03.20

△08.24.200



GENERAL NOTES:

Trench Grade

- The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- 2. The valve shall have a 1/4 " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & 1/2" IPST outlet, cast iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

4. 1" Mueller B-25028 IP x Comp. Ball Corp Stap 5. 3" PVC Pipe w/ Cap (Loose Fit) 6. 1" x 4" Brass Nipple w/90° Elbow 7. Crispin 1" Air Release Valve, Model AR10 8. ½" Brass Street Elbow 9. ½" Galvanized Pipe - Length as req'd 10. ½" Galvanized 90° Ell 2 11. Number 1 Meter Box	_			
2. 1" Mueller B-25008 Taper x Comp. Ball Corp Stop 1 3. 1" Type 'K' Copper w/NO Splices - Field Fit As Req'd 4. 1" Mueller B-25028 IP x Comp. Ball Corp Stop 1 5. 3" PVC Pipe w/ Cap (Loose Fit) 1 6. 1" x 4" Brass Nipple w/90° Elbow 1 7. Crispin 1" Air Release Valve, Model AR10 1 8. ½" Brass Street Elbow 2 9. ½" Galvanized Pipe - Length as req'd 2 10. ½" Galvanized Pipe - Length as req'd 2 11. Number 1 Meter Box 2 12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) As Req'd 13. No.16 Wire Mesh Screen (Non-Corrodible) 1 14. 4" Thick Concrete Pod - Class 'C' Concrete 1 15. Guardshack, Model GS-1, Available From BPDI, Inc.		0	FITTINGS SCHEDULE	QTY.
3. 1" Type 'K' Copper w/NO Splices - Field Fit 4. 1" Mueller B-25028 IP x Comp. Ball Corp Stop 5. 3" PVC Pipe w/ Cap (Loose Fit) 6. 1" x 4" Brass Nipple w/90° Elbow 7. Crispin 1" Air Release Valve, Model AR10 8. ½" Brass Street Elbow 9. ½" Galvanized Pipe - Length as req'd 20. ½" Galvanized Pipe - Length as req'd 11. Number 1 Meter Box 12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) 13. No.16 Wire Mesh Screen (Non-Corrodible) 14. 4" Thick Concrete Pad - Class 'C' Concrete 15. Guardshack, Model GS-1, Available From BPDI, Inc.		1,	Mueller BR2B Bronze Service Saddle - Double Strap	1
4. 1" Mueller B-25028 IP x Comp. Ball Corp Stop 1 5. 3" PVC Pipe w/ Cap (Loose Fit) 1 6. 1" x 4" Brass Nipple w/90° Elbow 1 7. Crispin 1" Air Release Valve, Model AR10 1 8. ½" Brass Street Elbow 2 9. ½" Galvanized Pipe - Length as req'd 2 10. ½" Galvanized Pipe - Length as req'd 2 11. Number 1 Meter Box 2 12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) As Req'd 13. No.16 Wire Mesh Screen (Non-Corrodible) 1 14. 4" Thick Concrete Pad - Class 'C' Concrete 1 15. Guardshack, Model GS-1, Available From BPDI, Inc.		2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop	1
5. 3" PVC Pipe w/ Cap (Loose Fit) 6. 1" x 4" Brass Nipple w/90° Elbow 7. Crispin 1" Air Release Valve, Model AR10 8. 1/2" Brass Street Elbow 9. 1/2" Galvanized Pipe - Length as req'd 10. 1/2" Galvanized Pipe - Length as req'd 2. 11. Number 1 Meter Box 12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) 13. No.16 Wire Mesh Screen (Non-Corrodible) 14. 4" Thick Concrete Pad - Class 'C' Concrete 15. Guardshack, Model GS-1, Available From BPDI, Inc.		3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Req'd
6. 1" x 4" Brass Nipple w/90° Elbow 1 7. Crispin 1" Air Release Valve, Model AR10 1 8. ½" Brass Street Elbow 2 9. ½" Galvanized Pipe - Length as req'd 2 10. ½" Galvanized 90° Ell 2 11. Number 1 Meter Box 2 12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) As Req'd 13. No.16 Wire Mesh Screen (Non-Corrodible) 1 14. 4" Thick Concrete Pad - Class 'C' Concrete 1 15. Guardshack, Model GS-1, Available From BPDI, Inc.		4.	1" Mueller B-25028 IP × Comp. Ball Corp Stop	1
7. Crispin 1" Air Release Valve, Model AR10 1 8. ½" Brass Street Elbow 2 9. ½" Galvanized Pipe - Length as req'd 2 10. ½" Galvanized 90° Ell 2 11. Number 1 Meter Box 2 12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) As Req'd 13. No.16 Wire Mesh Screen (Non-Corrodible) 1 14. 4" Thick Concrete Pod - Class 'C' Concrete 1 15. Guardshack, Model GS-1, Available From BPDI, Inc.		5.	3" PVC Pipe w/ Cap (Loose Fit)	1
8.		6.	1" x 4" Brass Nipple w/90° Elbow	1
9. ½" Galvanized Pipe - Length as req'd 2 10. ½" Galvanized 90° Ell 2 11. Number 1 Meter Box 2 12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) As Req'd 13. No.16 Wire Mesh Screen (Non-Corrodible) 1 14. 4" Thick Concrete Pad - Class 'C' Concrete 1 Guardshack, Model GS-1, Available From BPDI, Inc.	ſ	7.	Crispin 1" Air Release Valve, Model AR10	1
10.		8.	1/2" Brass Street Elbow	2
11. Number 1 Meter Box 2 12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) 13. No.16 Wire Mesh Screen (Non-Corrodible) 14. 4" Thick Concrete Pad - Class 'C' Concrete 15. Guardshack, Model GS-1, Available From BPDI, Inc.		9.	½" Galvanized Pipe - Length as req'd	2
12. 2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve) 13. No.16 Wire Mesh Screen (Non-Corrodible) 14. 4" Thick Concrete Pad - Class 'C' Concrete 15. Guardshack, Model GS-1, Available From BPDI, Inc.		10.	1/2" Galvanized 90° EII	2
13. No.16 Wire Mesh Screen (Non-Corrodible) 14. 4" Thick Concrete Pad - Class 'C' Concrete 15. Guardshack, Model GS-1, Available From BPDI, Inc.	ſ	11,	Number 1 Meter Box	2
13. No.16 Wire Mesh Screen (Non-Corrodible) 14. 4" Thick Concrete Pad - Class 'C' Concrete 15. Guardshack, Model GS-1, Available From BPDI, Inc.		12.		As Req'd
Guardshack, Model GS-1, Available From BPDI, Inc.		13.		1
		14.	4" Thick Concrete Pod - Closs 'C' Concrete	1
		15.		1

ARIZONA WATER COMPANY

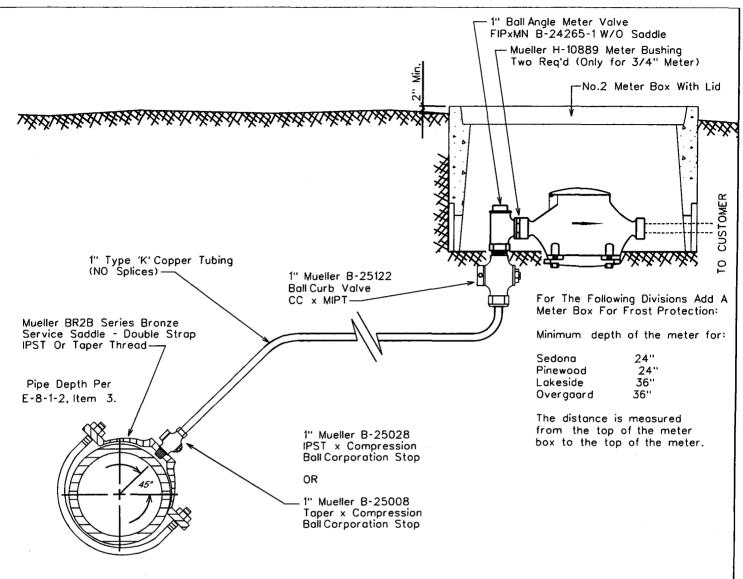
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

E-9-8-3

PRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 △ 08.24.2006



SADDLE TAP TO CA, PVC, OR DIPIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

NOTE: Only the meter is supplied by Arizona Water Company

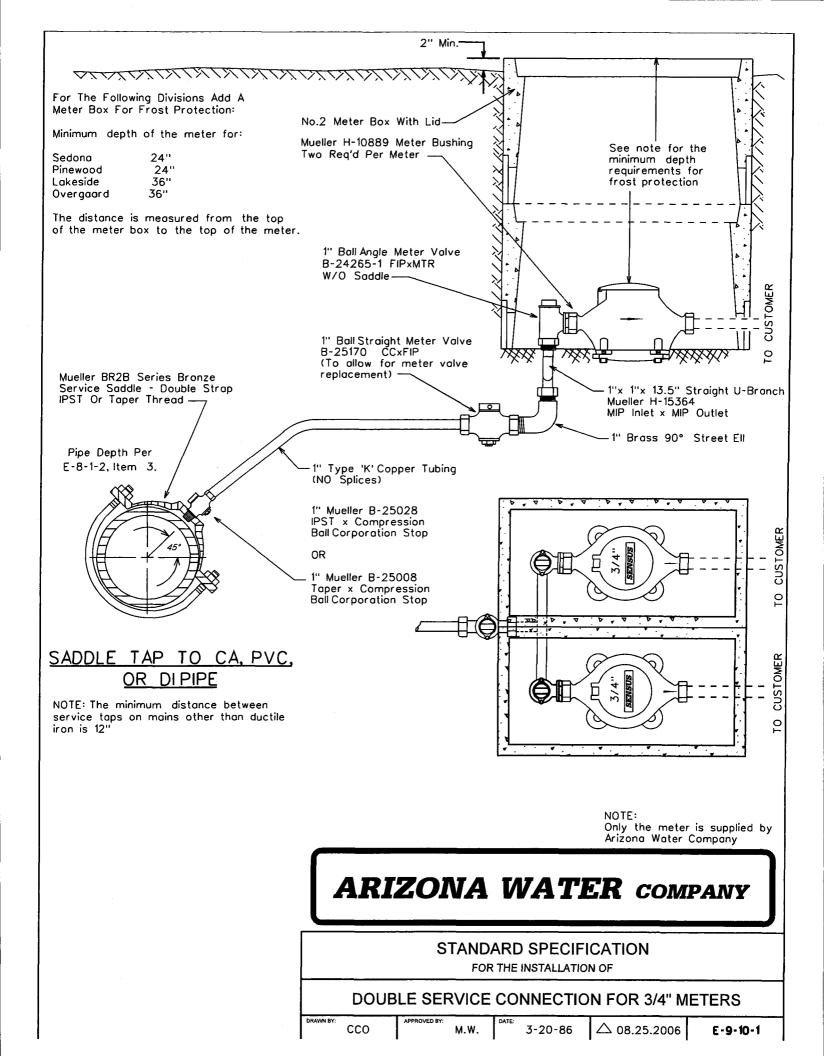
ARIZONA WATER COMPANY

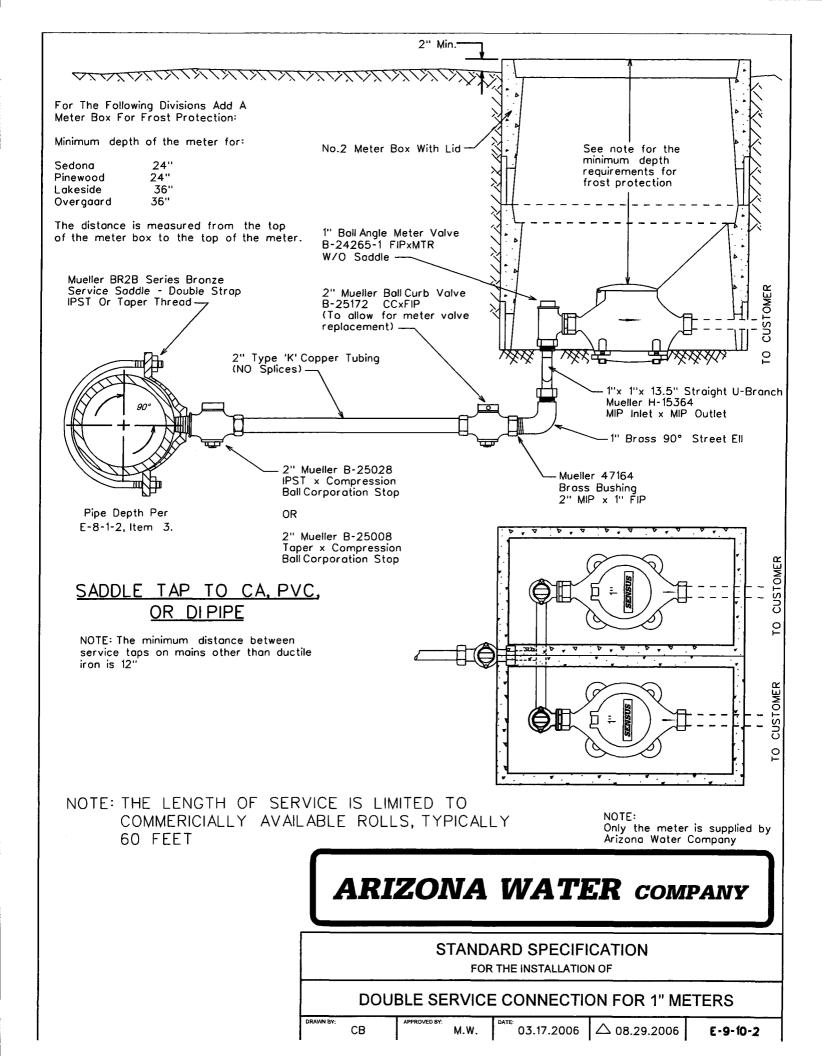
STANDARD SPECIFICATION

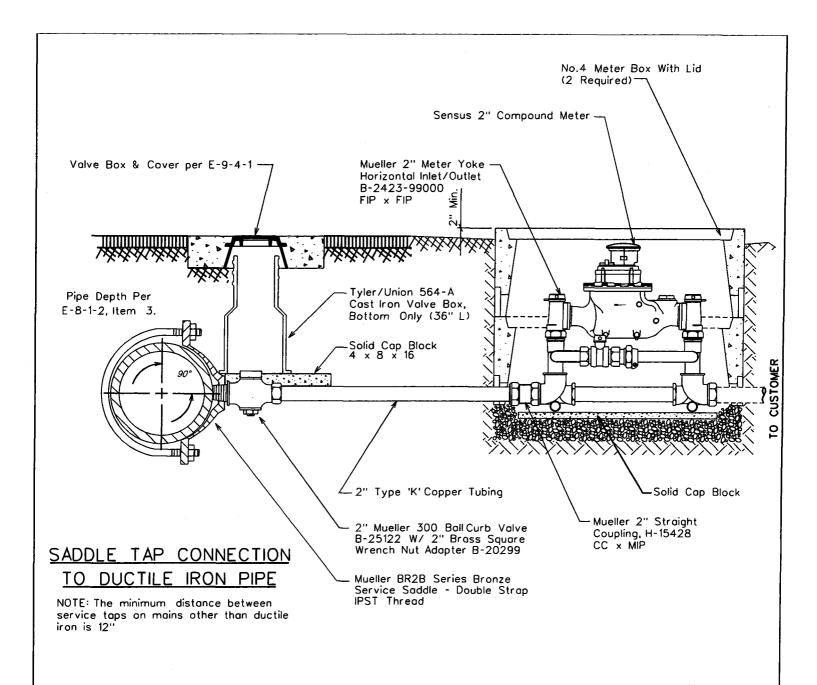
FOR THE INSTALLATION OF

SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

DRAWN BY: CCO APPROVED BY: M.W. DATE: 3/20/86 \(\triangle 03.17.2006 \) **E-9-9-1**







NOTE: THE LENGTH OF SERVICE IS LIMITED TO COMMERICIALLY AVAILABLE ROLLS, TYPICALLY 60 FEET

NOTE:

Only the meter is supplied by Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL 2" SERVICE CONNECTIONS

BY: APPROVED BY:

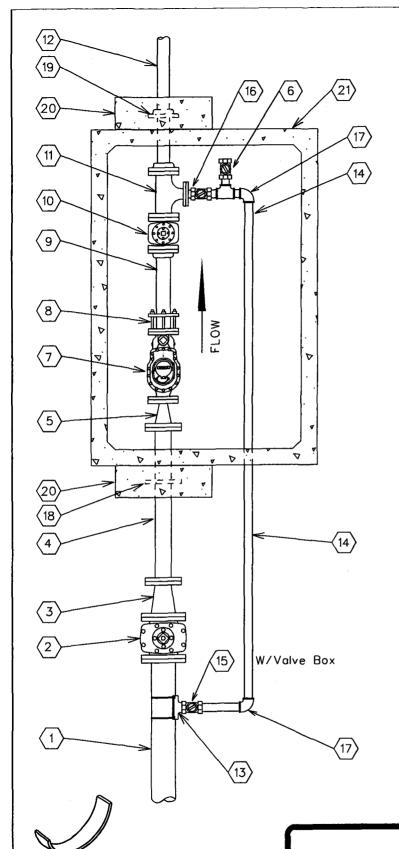
JW

M.W.

3/20/86

△ 08.29.2006

E-9-11-1



Pipe Support

Conc. Block

No.	FITTINGS SCHEDULE						
1.	6" D.I.P.						
2.	6" G.V.B.&C. mj x flng						
3.	6"x4" Reducer flng x mj						
4.	4"x3'-0" D.I.P. Spool fing x pe						
5.	4" x 3" Reducer flng						
6.	2" Test Port						
7.	3" Compound Meter						
8.	3" F.C.A.						
9.	3"x2'-0" D.I. Spool flng x pe						
10.	3" Gate Valve fing						
11.	3"x2" Flg Tee w/ 2" Companion Flange						
12.	3"x4'-0" D.I. Spool fing x pe						
13.	6"x2" Tapping Saddle						
14.	2" Copper Pipe						
15.	2" Mueller B25122 Ball Valve w/B20299 Nut						
16.	2" Locking Ball Valve (normally closed)						
17.	2" Mueller H-15526 90° Ell CC x CC						
18.	4'' Megalug						
19.	3" Slip-On Welding Flange						
20.	24"x24"x8" Conc. Thrust Block P.I.P.						
21.	575-LA Conc. Vault						

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

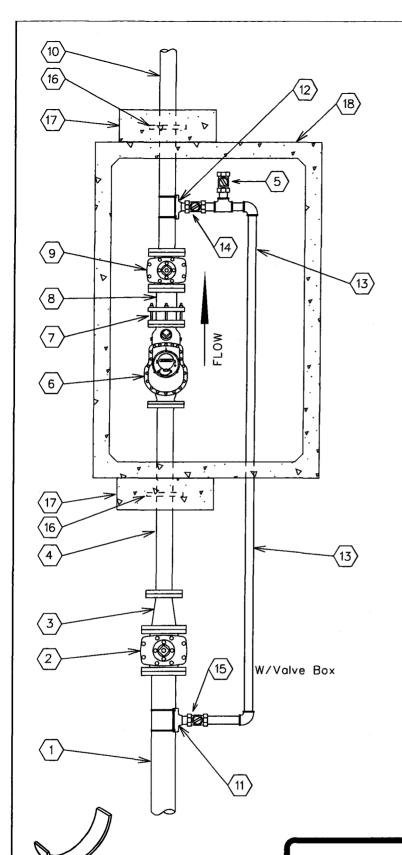
FOR THE INSTALLATION OF

3" COMPOUND METER

E-9-12-1

O COMI COND METER

CCO APPROVED BY: MW 10/5/1993 \(\triangle 08.29.2006 \)



No.	FITTINGS SCHEDULE							
1.	6" D.I.P.							
2.	6" G.V.B.&C. mj x flng							
3.	6"x4" Reducer fing x mj							
4.	4"x3'-0" D.I.P. Spool fing x pe							
5.	2" Test Port							
6.	4" Compound Meter							
7.	4" F.C.A.							
8.	4"x1'-0" D.I.P. Spool fing x pe							
9.	4" Gate Valve fing							
10.	4"x4'-0" D.I.P. Spool fing x pe							
11.	6"x2" Tapping Saddle							
12.	4''x2'' Tapping Saddle							
13.	2" Copper Pipe							
14.	2" Ball Valve / Locking (Normally Closed)							
15.	2" Mueller B25122 Ball Valve w/B20299 Nut							
16.	4" Megalug							
17.	24"x24"x8" Conc. Thrust Block P.I.P.							
18.	575-LA Conc. Vault							

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



Pipe Support

Conc. Block

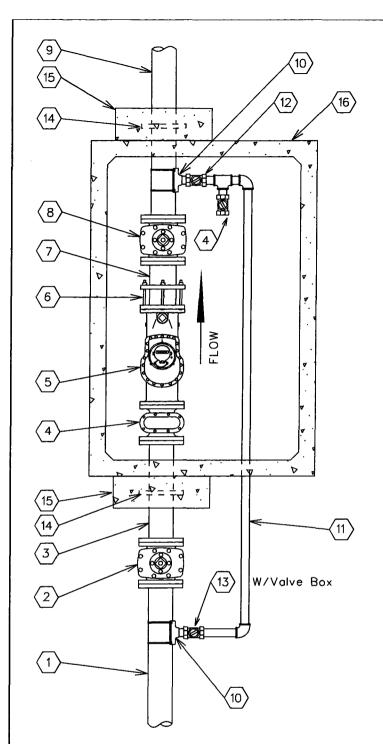
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

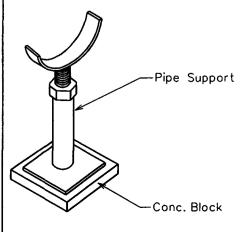
4" COMPOUND METER

10/5/1993 △08.29.2006 CCO



No.	FITTINGS SCHEDULE						
1.	6" D.I.P.						
2.	6" G.V.B.&C. mj						
3.	6"x 3'-0" D.I.P. Spool flng x pe						
4.	2" Test Port						
5,	6" Compound Meter						
6.	6" F.C.A.						
7.	6"x 1'-0" D.I.P. Spool flng x pe						
8.	6" Gate Valve fing						
9.	6"x 4'-0" D.I.P. Spool flng x pe						
10.	6"x2" Tapping Saddle						
11.	2" Copper Pipe						
12.	2" Ball Valve / Locking (Normally Closed)						
13.	2" Mueller B25122 Ball Valve w/B20299 Nut						
14.	6" Megalug						
15.	24"x24"x8" Conc. Thrust Block P.I.P.						
16.	575-LA Conc. Vault						

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



ARIZONA WATER COMPANY

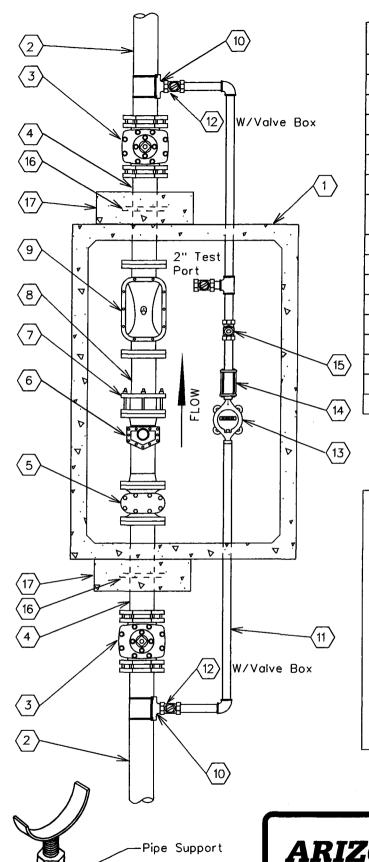
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND METER

E-9-12-3

AVAN BY: CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle 08.29.2006 \)



-Conc. Block

No.	FITTINGS SCHEDULE					
1.	575-LA Conc. Vault					
2.	6" D.I.P.					
3.	6" G.V.B.&C. m.j.					
4.	6" x 3'-0" D.I.P. SPool Piece flng x pe					
5.	6" Strainer					
6.	6" Turbo Meter					
7.	6" F.C.A.					
8.	6" x 2'-0" D.I.P. Spool Piece flng x pe					
L	(TRIM SPOOL PIECE TO 3x THE PIPE DIA.)					
9.	6" Detector Check					
10.	6''x∗N'' Tapping Saddle					
11.	∗N'' Copper Pipe					
12.	∗N'' Ball Valve (Locking)					
13.	×N" Meter					
14.	∗N'' Coup. Adapt.					
15.	∗N" Flapper Check Valve					
16.	6" Megalug					
17.	24"x24"x8" Conc. Thrust Block P.I.P.					

*N - Size To Be determined By A.W.Co.

NOTE:

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
- 6. To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

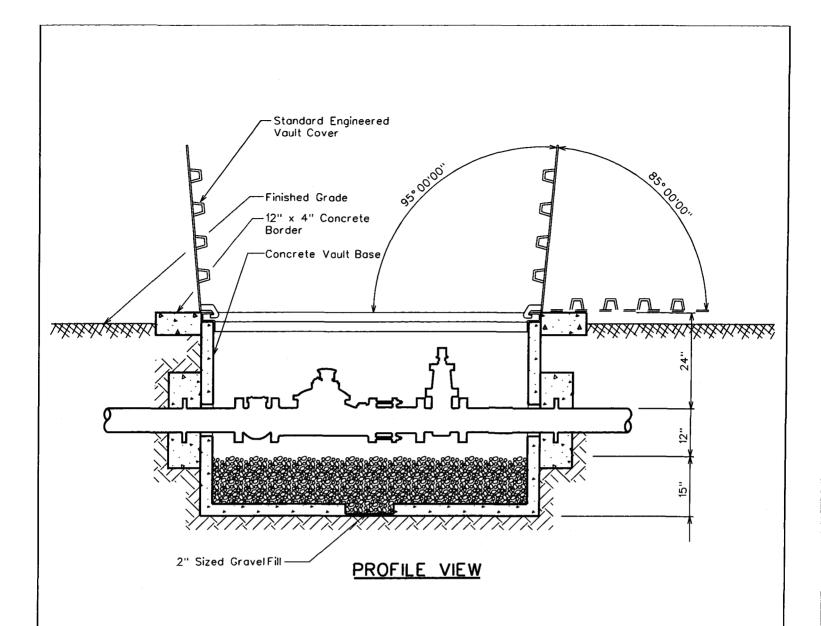
FOR THE INSTALLATION OF

6" COMPOUND SERVICE

O COMP COND SERVICE

CCO MW

DATE: 10/05/1993 \(\triangle 08.29.2006 \)



CONCRETE VAULT & COVER SPECIFICATIONS

Vault - Base No. 575-BL

Cover - Standard Engineered Vault Cover

- . 4874 Aluminum Diamond Plate Cover For Non-Traffic Loading Areas Or
- . 4874 Galvanized Steel Diamond Plate Cover W/ H-20 Traffic Loading
- . Double Torsion Spring Assisted Doors W/ Recessed Hasp & Safety Latches

NOTES

- Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault
- Cover To Top Of Gravel Fill.

 2. Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

ARIZONA WATER COMPANY

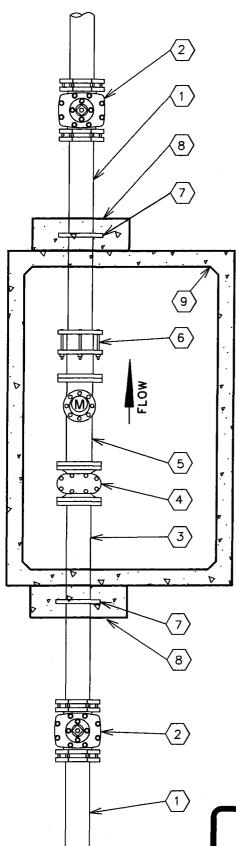
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

CONCRETE VAULT

CCO

10/5/1993 🛆 05.17.2001



No.	FITTINGS SCHEDULE					
1.	Ductile Iron Pipe					
2.	Gate Valve M.J.					
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)					
4.	Meter Strainer					
5.	Propeller Meter					
6.	Flanged Coupling Adapter					
7.	Megalug Gland (Thrust Anchor)					
8.	Concrete Thrust Block P.I.P.					
9.	Concrete Vault					

- 1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
- 2. Pipe support locations to be determined by field personnel.
- 3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings to are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

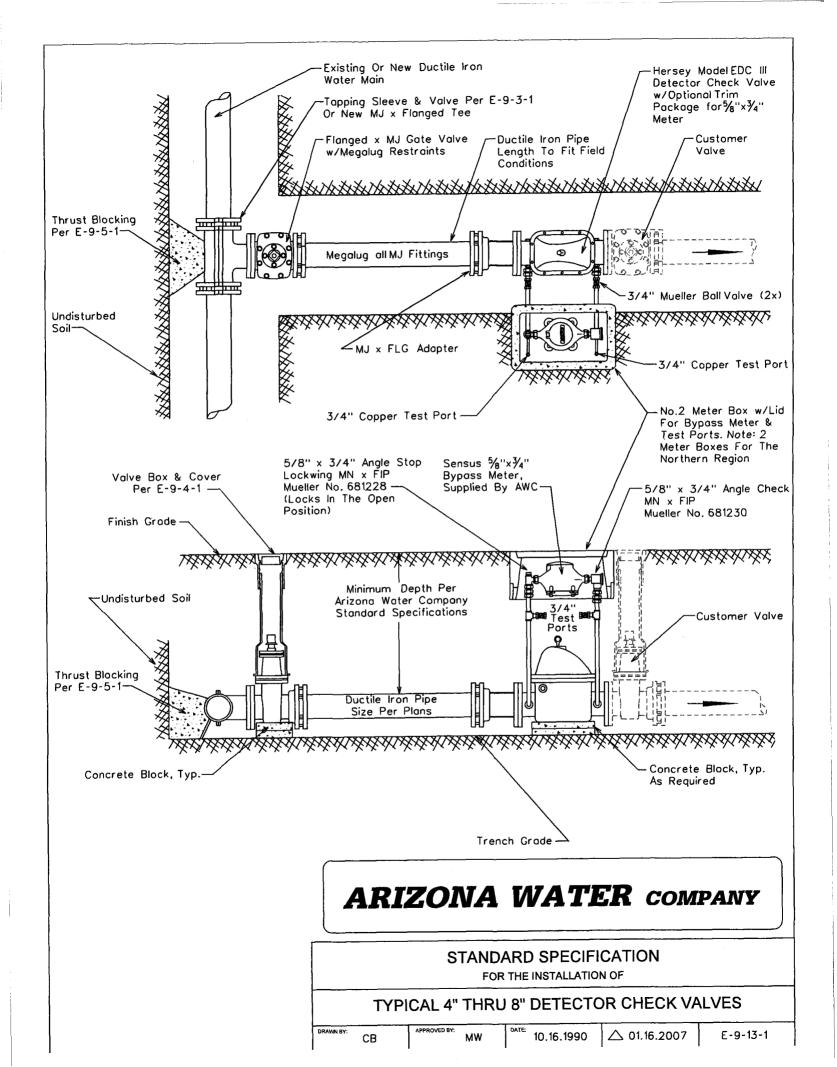
ARIZONA WATER COMPANY

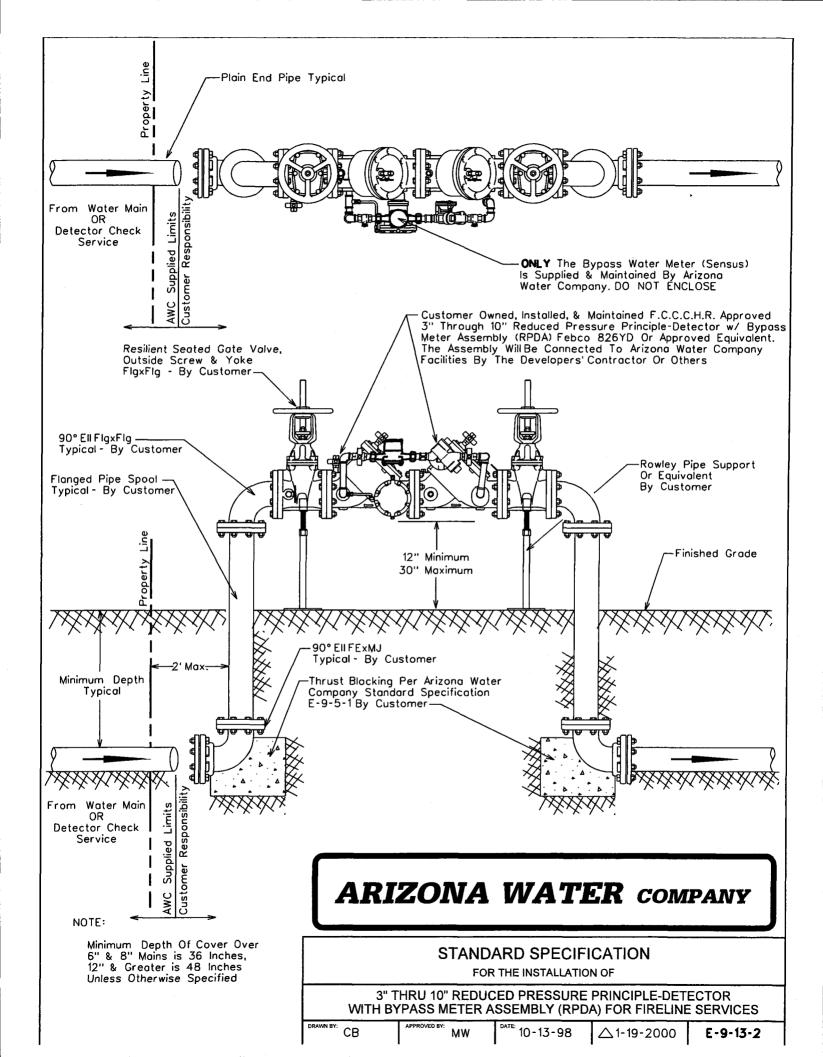
STANDARD SPECIFICATION FOR THE INSTALLATION OF

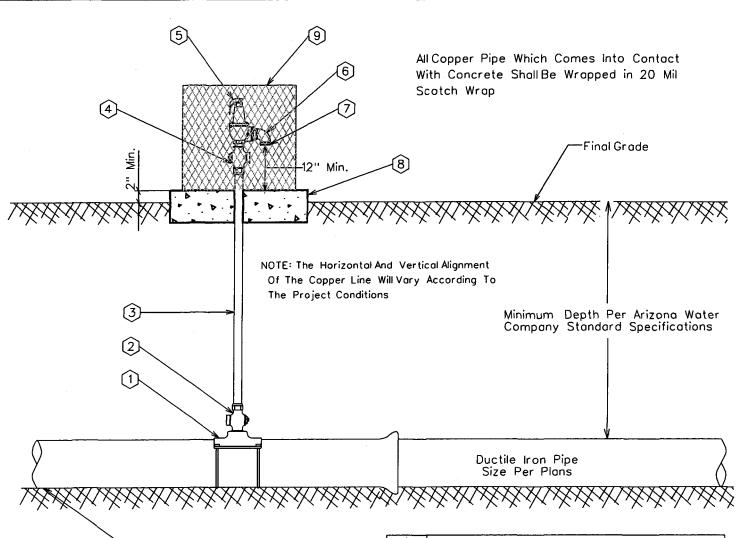
NON-POTABLE PROPELLER METER

JPK

7-20-95







1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.

-Trench Grade

2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

0	<u>FITTINGS SCHEDULE</u>
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3,	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

ARIZONA WATER COMPANY

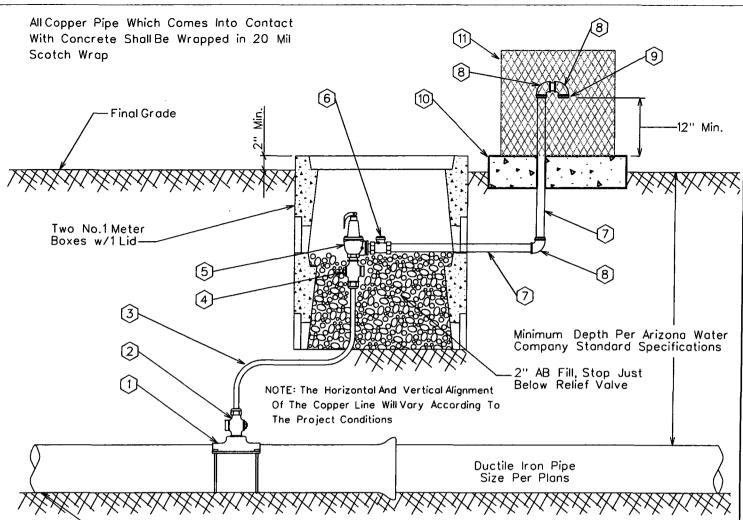
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

E-9-14-1

DRAWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 △ 08.29.2006



-Trench Grade

1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.

2. The relief valve assembly and vandalenclosure shall be located out of the roadway, but within the right-of-way or easement.

\bigcirc	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Bronze Check Valve Wotts Series CV
7.	2" Schedule 40 Cut Pipe - Field Fit
8.	2" Brass Street Elbow
9.	No.16 Wire Mesh Screen (Non-Corrodible)
10.	4" Thick Concrete Pad - Class 'C' Concrete
11.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

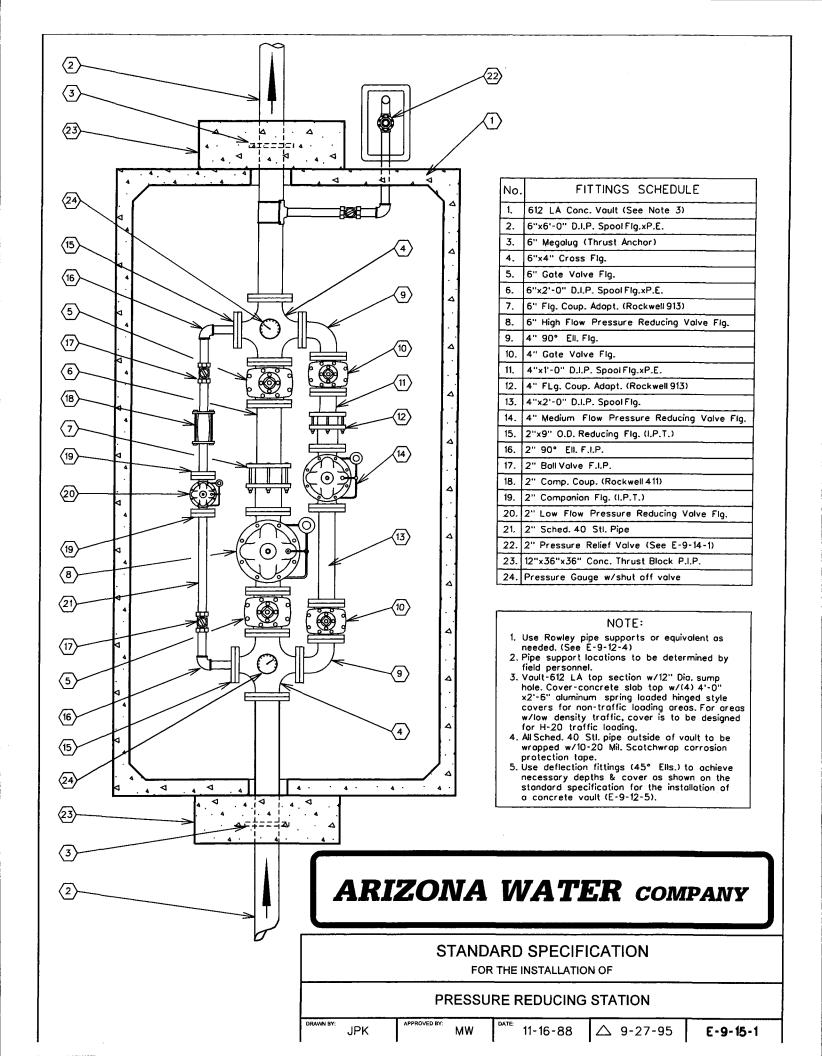
FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

CCO

MW

3/20/1986 △08.29.2006 E-9-14-2



- 1. Specific Items To Be Painted Deer-O Pure White Enamel:
 - A. All Booster Pumps.
 - B. All Electrical Motors And Gas Engines.
 - C. Well Pump Discharge Heads.
 - D. Electrical Panel.
- 2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:
 - A. Well Shelter.
- 3. Specific Items To Be Painted OSHA Orange:
 - A. Electrical Conduit.
- 4. All Other Items To Be Painted With Either: (At Manager's Discretion)
 - A. Cholla Green
 - B. Forest Green
 - C. Sonora Beige D. Red Rock

 - E. Rock Brown
 - F. Deer-O Pure White G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

PAINT COLOR SELECTION

E-9-16-1

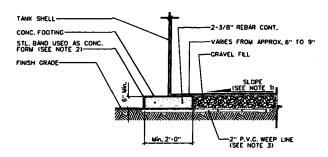
3/20/1986 🛆 2/13/2001 CCO

- t. Yank shall conform to AWWA Specification D100-84 with exceptions noted below.
- 3. Winimum of (2" diameter roof vent, screened with No. 16 non-corrodible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the dollar plate.
- 4. Overflow pipe shall be the same diameter as the inlet pipe and shall terminate t2 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above we'r box high water level.
- 5. Storage tank shall be placed upon adequately compacted base material.
- 6. 6" minimum floor mounted tank drain outlet to be located close to the outer shell.
- Tank and related fittings shall be enclosed with a 6 (oot chain link fence with lockable gates and anti-personnel wire on top of fence.
- 8. Liquid levelshall be indicated by a target and target board on the outside surface of
- 9. 24 inch diameter manholes shall be provided on the roof and on the shell near the bottom of the tank. The roof manhole cover shall overlop the manhole by at least 2 inches to provide a rain tight closure. Roof manhole shall be hinged and equipped with a lock. Shell manhole cover to be hinged and batted in place. *Tanks larger than a 50 foot diameter require 2 shell manholes.
- 10. Inside and outside ladders shall be located at the roof manhole. Outside ladder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within $\frac{1}{2}$ of shell with 10 gauge sheet steet.
- 11, Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
- 12. The following information will be included with application for approval to construct:
 - 1. Tank location 2. Yank height... 3. Tank diameter _ 4. Tank capacity__ 5. Method of water level control
- 13. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
- 14. The welded steel storage tank will be cooled as per AWWA Specification D102, and N.S.F. Standard 61.

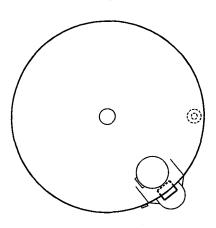
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

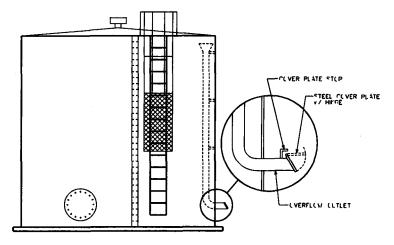
- 1. FINSH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-O".
- 2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN 1/8".
- 3. INSTALL 8-2" DIA.x10"-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45"), PERFORATE 8-0" OF LINE WITH ½" DIA HOLES @ 6" O.C. PLUG INTERIOR END OF LINE W/2" CAP.



FOUNDATION DETAIL



PLAN VIEW



PROFILE VIEW

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

APPROVED BY: WLM

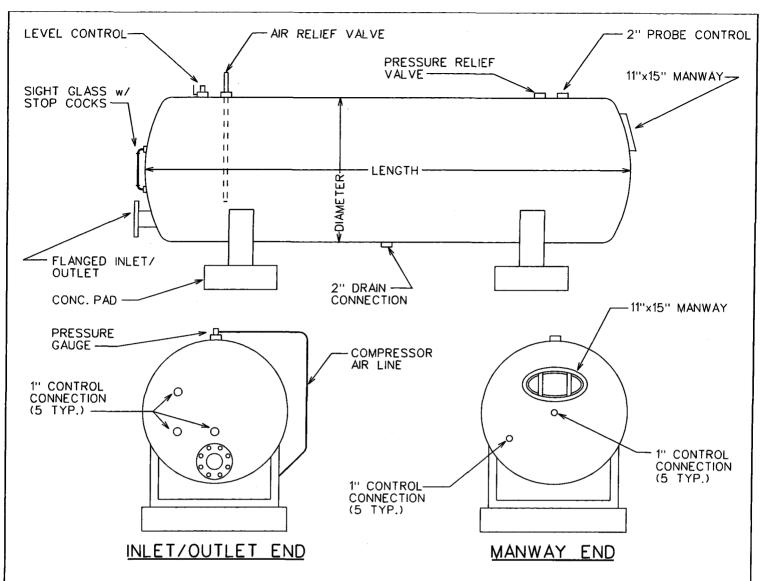
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.IPK

10-17-88

△ 2-12-96

E-9-17-1



- 1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
- 2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
- 3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
- 4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.
- 1. Tank Location
- 2. Tank Length _____
- 3. Tank Diameter
- 4. Tank Capacity _____
- 5. Maximum Working Pressure

ARIZONA WATER COMPANY

NOT CONVERTED TO CAD

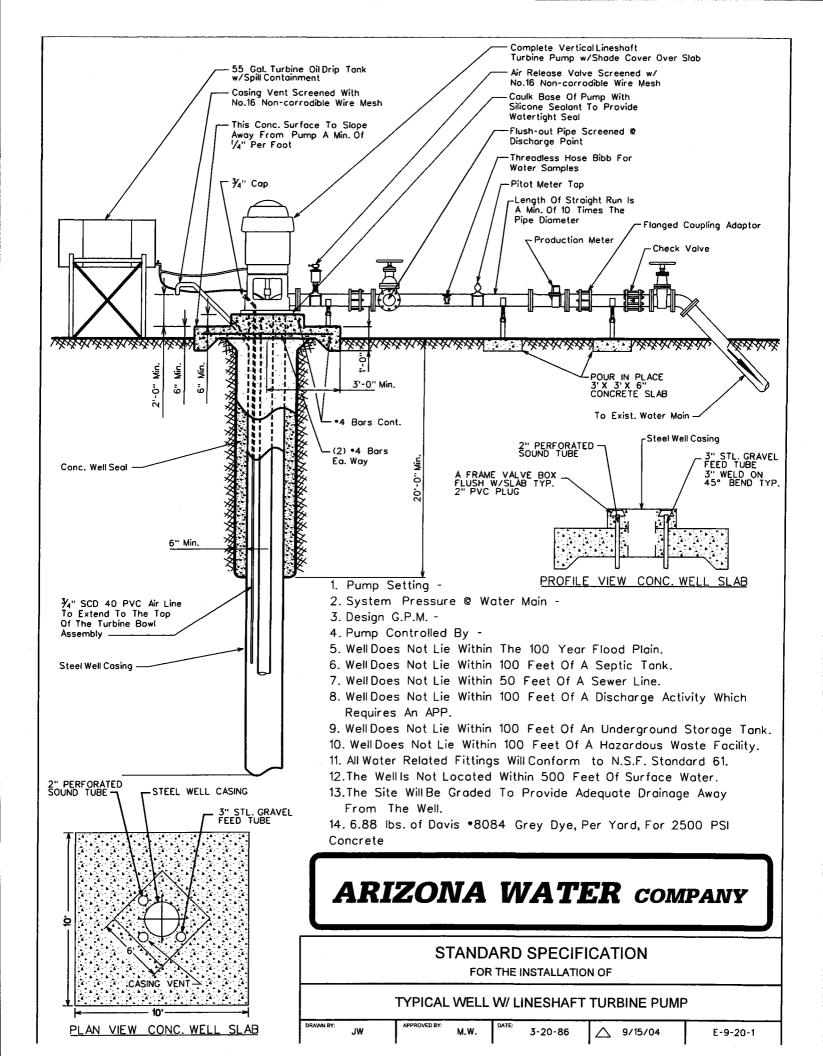
ARIZONA WATER COMPANY

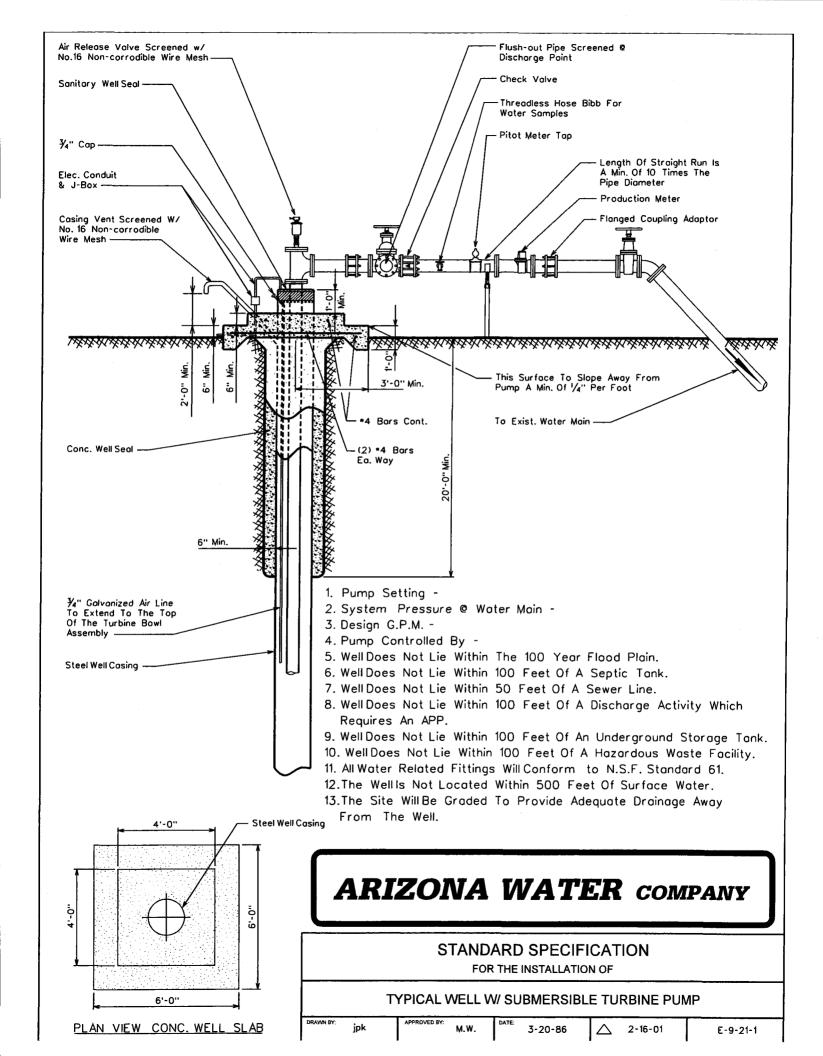
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

WELL SHELTER

DATE 03.20.1986 △04.03.2001 **E-9-19-**





All New Purchases To Conform To The Following:

Column Pipe

Oil Tube - Peerless Type

```
1½" O.D. - 14 Threads Per Inch Right Hand
2" O.D. - 12 " " " " "
2½" O.D. - 10 " " " " " "
3" O.D. - 10 " " " " " " "
4" O.D. - 10 " " " " " "
```

Line Shaft

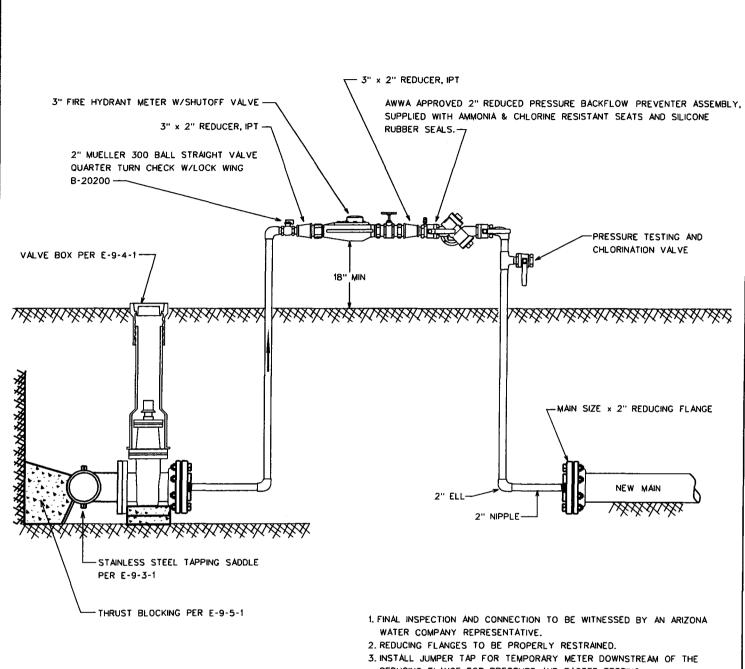
```
3/4" O.D. - 10 Threads Per Inch Left Hand
1" O.D. - 14 " " " " "
1-3/16" O.D. - 10 " " " " "
1-1/2" O.D. - 10 " " " " "
1-11/16" O.D. - 10 " " " " "
1-15/16" O.D. - 10 " " " " " "
2-3/16" O.D. - 10 " " " " " " "
2-7/16" O.D. - 8 " " " " " "
```

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

DRAWN BY: CCO APPROVED BY: DATE: 3/20/1996 \(\triangle 2/13/2001 \) E-9-22-1



- REDUCING FLANGE FOR PRESSURE AND BACTEE TESTING.
- 4. JUMPER ASSEMBLY MUST BE A MINIMUM OF 18" ABOVE FINISHED GRADE.
- 5. BACKFLOW ASSEMBLY REQUIRES CERTIFICATION.
- 6. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL ALL TESTING, BACTERIAL CLEARANCE AND FINAL INSPECTIONS HAVE BEEN OBTAINED.
- 7. ALL NEW PIPING SHALL BE PROPERLY RESTRAINED.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

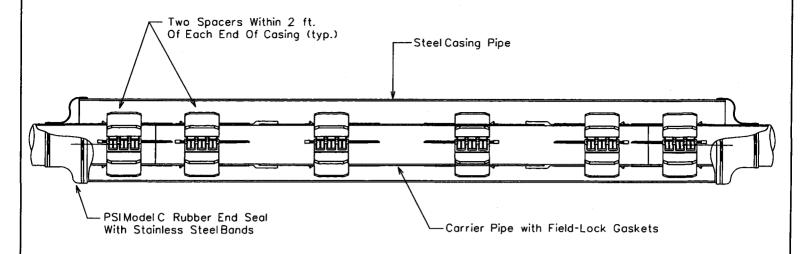
HOT TAP & JUMPER METER CONNECTION

CB

MJW

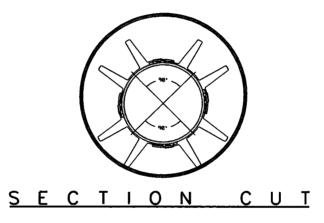
05.14.2004

E-9-23-1



CROSS SECTION

The casing spacers shall be the PSI Ranger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seal as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8'' - 10.82''	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36'' - 41.84''	36" - 46.00"
48" - 55.94"	48" - 60.00"

*Thickness Of Skid To Extend A Minimum of $\frac{1}{2}$ " Above The O.D. Of The Pipe Bell or Gland.

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6''	16''	15.25"	STD.	.375	*x4×12
8''	18''	18.25"	STD.	.375	≖x4×12
12"	22"	21.25"	STD.	.375	*x4×12
16"	28"	27.25"	STD.	.375	*x4×12
20''	32"	31.25"	STD.	.375	≖x4x12
24"	36"	35.25"	STD.	.375	≖x4×12
30''	48"	47.25"	STD.	.375	≖x4x12
36"	54"	53.25"	STD.	.375	*x4x12
48''	66''	65.25"	STD.	.375	≖x4x12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL WATER LINE ENCASEMENT

DRAWN BY: __ APPROVED BY: DATE: 7 / 00 / 4000 A 00 07 0000

CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCOPE - This specification describes a ARCH Chemicals Catclum Hypochlorite Table! Chlorination System as manufactured by ARCH Chemicals, 501 Mertit Seven, P.O. Box 5204, Norwalk, CT, 08856-5204,

DESCRIPTION - The chlorination system shall be completely assembled, ready to install. The chlorination system shall be a ARCH Chemicals Calcium Hypochlorite Tablet Feeder, or its equivalent; and shall be supplied with all its components factory mounted.

COMPONENTS - The Chlorination system shall have the following components:
A 1-X" ARCH Chemical solid calcium hypochlorite tablet leader

R. Polyethylene system endosure
C. Integrated, tevel controlled solution tank
D. Adjustable flow control valve
E. Manuel on off valve (et inlet)
F. Chemical metering burn
G. Orfort purpo control swiftch
H. Waterproof electrical junction box
I. Corrosion resistant schedule 40 piping
J. Reverse flow check valves
K. Total solution output control valve

ELECTRICAL FIXTURES - The following electrical fixtures shall be provided:
A. Safety switch, 2 pote, fused for 30 Amps, for 120 Volls, 60 cycle, single phase power.

CHLORINATOR DESIGN - The chlorination facility shall be designed and constructed in accordance with Artona State Department of Health Engineering Bulletin Number 8 - "Disinfection of Water Systems": Latest Revision.

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

CHLORINATOR OPERATION - The chlorination facility shall be operated in accordance with Arizona State Department of Health Engineering Bulletin Number 8. 'Disinfection of Water Systems', Table 1. latest ravision.

CHLORINATOR SYSTEM DESCRIPTION - ARCH Chemicals tablet chlorinator systems incorporate a patented chlorinator which is designed to utilize ARCH Chemicals 1-½* solid calcium hypocholine fabilise ARCH Standard 60; Meets AWAWA Standard 2-300. EPA Registration # 1258-1179. The chlorinator is mounted on a polytorylyter experien mentosure. The inlet water is sprayed on the calcium hypocholine tablet and collected in a solution fairt. This chlorinated solution is then pumped out of the tank through a chemical meeting pump. This metering pump is then adjusted to obtain the desired CL residual.

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

HYPOCHLORINATOR COMPONENTS:

Chemical Metering Pump
 Pump Suction Connection
 Pump Discharge Connection
 Inlet Water Assembly
 Inlet Water Solenoid Valve

6. Inlet Shut-Off Valve
7. Inlet Pressure Regulator
8. Inlet Water Pressure Gauge
9. Spray Nozzle Water Pressure Gauge
10. Inlet Strainer
11. Inlet Tubing Connection

12. Dry Chemical Hopper 13. Suction Line 14. Electrical Control Box With Power On/Off 15. Electric Miss. 16. Solution Discharge Connection 17. Tank Drain Valve

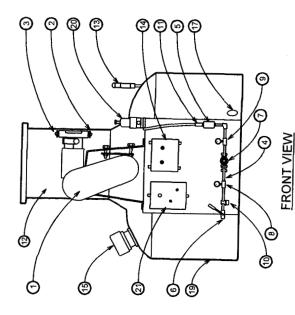
18. Observation Port 19. Mixed Chemical Indicing Tank 20. Pressure Relief Valve 21. Pump Spead Control 22. High Level Shut-Or Float Switch 23. Water Spray Nozzles

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HOPPER REMOVED FOR CLARITY TOP VIEW

Chlorinator Fluid Schematic

OPTIONAL TABLET OPTIONAL TUBING INJEC (NO CHECK VALVE) A-DRAIN 34'-NPT CHEMICAL HOPPER PUMP SPEED CONTROL (OPTIONAL) CONTROL BOX DPTIONAL OUTPUT SIGNAL 0-80 OR 9-10 VDC SENSOR OUTPUT POWER SUPPLY 120V

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

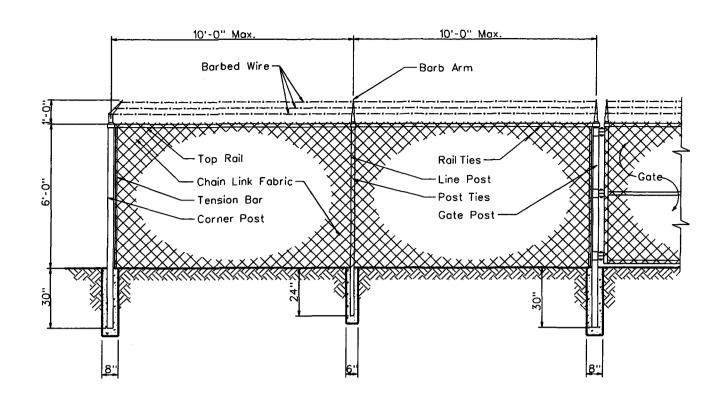
CALCIUM HYPOCHLORITE TABLET CHLORINATOR

DATE ₹ CB

02-09-2000

4

E-9-25-1



Line Post: 1-7/8" O.D. 1.74 lbs. P/L.F. ASTM A-256

End Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Corner Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Gote Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Top Roi 1-5/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Chain Link Fabric: 9 Ga. 2" Mesh Galv. Before Weave

Selvage: Barb/Knuckle

Fillings: Pressed Steel

Barb Wire: 2-1/2 Ga./2 Point

Borb Arm: 1 Piece/45° Arm

Tension Wire: 9 Ga./Galv.

Line Post Set: 6"x24" In Concrete

_

Terminal Post Set ≥ 8"x30" In Concrete

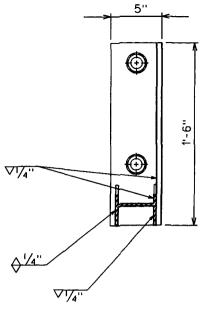
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

CHAIN LINK FENCE

DRAWN BY: CCO APPROVED BY: MW DATE: 7/7/1992 \(\triangle 2/9/2001 \) E-9-26-1

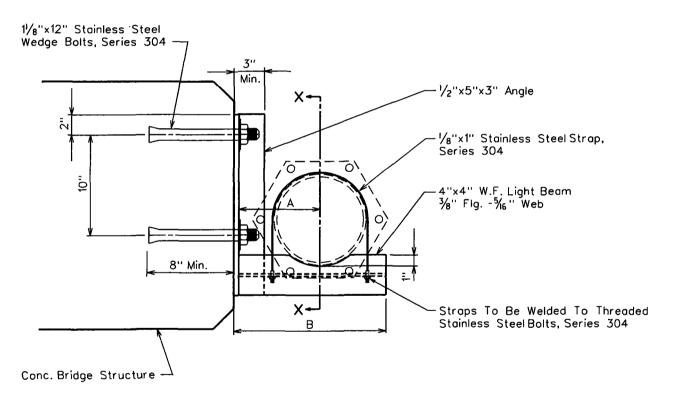


SECTION X-X

NOTES

- Minimum 2 Supports Per Joint Of Pipe.
- 2. All Bolts Shall Have A Lock Washer Under The Nut.
- 3. All Nuts Shall Be Stainless Steel Series 304.

PIPE SIZE	Α	В
8''	8''	15''
10''	9"	17''
12''	10''	19''



SUSPENSION DETAIL

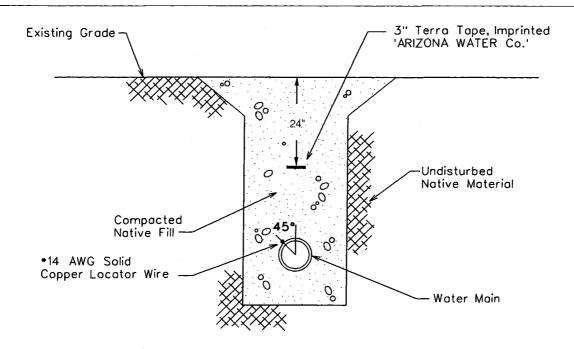
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

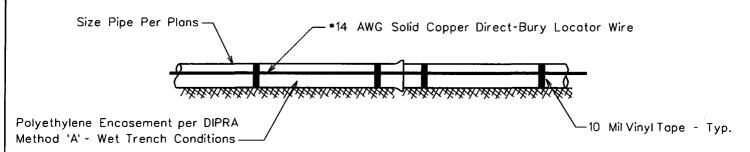
SIDE HUNG WATER LINE SUSPENSION

SIDE HONG WATER LINE SOOI ENGION

JPK APPROVED BY: MJW DATE: 7-12-96 \(\triangle \) E-9-27-1



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

- All pipe shall have *14 AWG Solid Copper Direct-Bury Locator Wire Installed Directly To The Polywrap At 45° From The Vertical Center Of The Pipe and Shall Be Attached Using 10 Mil Vinyl Tape.
- 2. The Locating Wire Shall Terminate At the Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

- 1. Use Terra Tape 3" Marking Tape As Manufactured By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
- 2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
- 3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe.

 A) The Backfill Shall Be Sufficiently Leveled So That The Tape Is Installed On A Flat Surface.
 - B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
 - C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill Is Moved Into The Trench.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

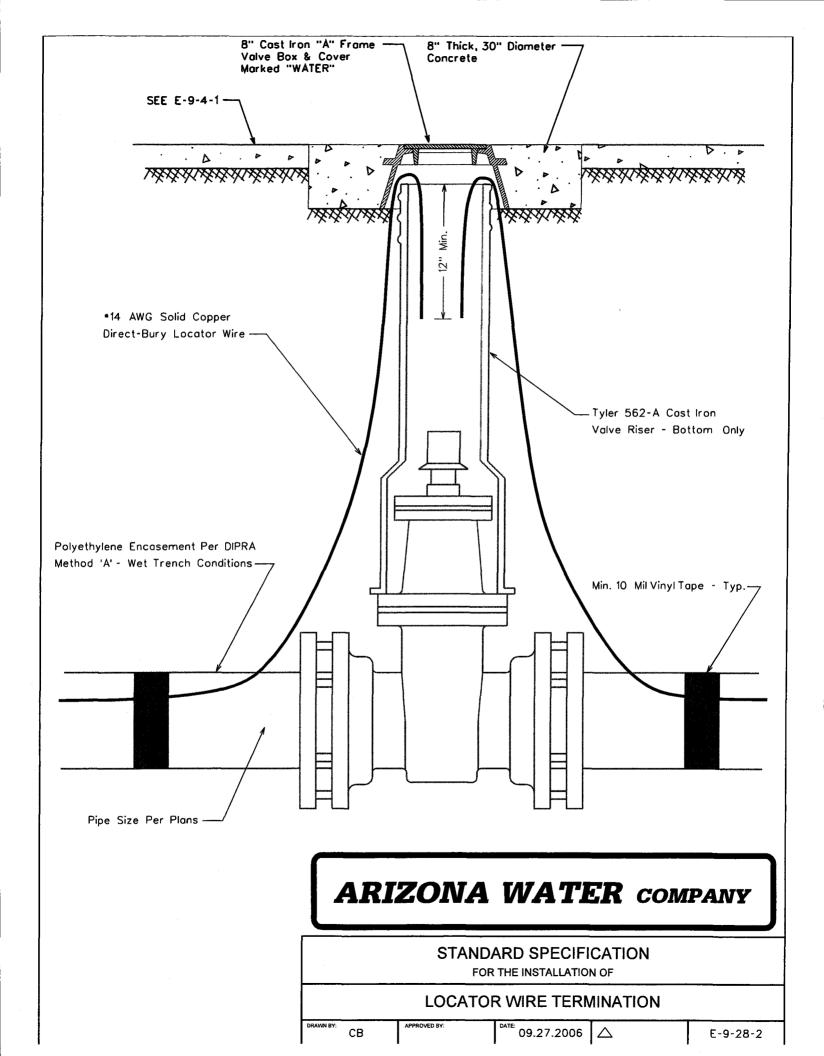
PIPE WARNING TAPE AND LOCATOR WIRE

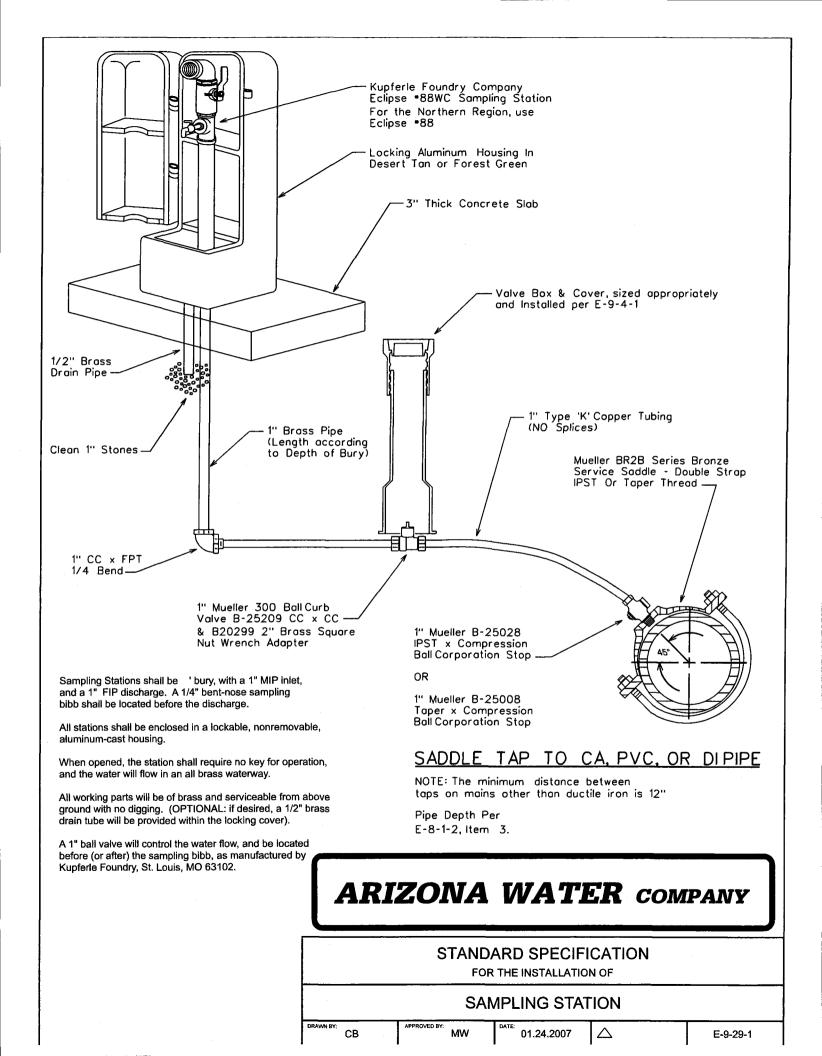
THE TOTAL THE ESSITION WINE

CB I

DATE 03.24.1997 △09.27.2006

E-9-28-1







KIM

ENGINEERING REVIEW SECTION

DATA REQUIRED WITH ECC

Please complete the test data and submit this form with the Engineers Certificate of Completion. An Approval of Construction cannot be issued without the data identified below in accordance with Arizona Administrative Code (A.A.C.) R18-5-508(C). Please attach all supplemental information and calculations to this form.

DATA

2.

3.

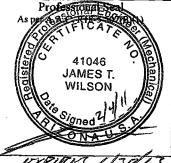
Indicate Segment Tested LAmb + Hock Well #28 HEATHER Pressure and Leakage Test Results (Pass/Fail) PASS <u> Pass</u> <u> PASS</u> 1-13-11 -18-11 Date Tested 12-21-10 Time Started 9:30 AM 9:35 AM 1:30 Am Time Finished 1:35 AM <u>3 on</u> Pipe Diameter 104' Footage Tested <u>2510</u> Allowable Leakage 0.02496 Leakage Observed Pressure at Test Point Employee Observing the Test (Please Print Legibly) Wante Beinel Wayne Blinel Signature of Employee Observing the Test

DELKHIZERIONESAMUEINE EREFERE		1.4			Sar Feetra
Initial Sampling	Date	12-27-10	12-27-10	1-18-11	
(Minimum 50 ppm available chlorine)	Time	2:20 00	2:45 pm	11:40 Am	
	ppm Ci ₂	2000cm	200 pom	BODOOM	
After 24 Hours Detention Time	Date	12-28-10	12-28-10	1-19-4	
(Minimum 10 ppm free chlorine)	Time	2:30 pm	2:30 om	1:30 pm	
	ppm Cl ₂	150 000	150 com	100 ppm	
After Sufficient Flushing	Date	12-28-10	12-28-10	1-19-11	
(Water is clear and system Cl2 residual is measured)	Time	3:45 am	3:45 pm	2:46 pm	
	ppm Cl ₂	0.6	0.5	0.8	
Bacteriological Sampling(s):	Date	12-28-10	12-28-10	1-19-11	
	Time	40m	40m	3pm	
	Attached (Y/N)	14		V	
		(Yes/No	Yes/No	YeszNo	Yes/No

I, ________, certify that I have inspected the work performed and have found it to be satisfactory and in accordance with Arizona Administrative Code, Arizona Engineering Bulletins, and the approved specifications.

Authorized Persons Signature

/-20-11 Date



expires 6/39/13

FEBRUARY 3RD, 2009

PAGE 1 OF 1



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Henry R. Darwin Acting Director

1110 West Washington Street • Phoenix, Arizona 85007 (602) 771-2300 • azdeq.gov

APPROVAL OF CONSTRUCTION

Project Description:

Arizona City Water Campus. AOC Permit for approximately 2,400 LF of 12-inch and 1,500 LF of 16-inch DIP Waterlines and Related Fittings. Installed along Lamb Road from Bataglia Drive to Heather Street and along Lamb Road to East of Kashmir Road in Arizona City. To serve Future Water Campus and Tie into existing Casa Grande Distribution Water System.

Location:

Arizona City, AZ

Project Owner:

Arizona Water Company, c/o Mr. James T. Wilson

Address: P.O. Box 29006, Phoenix, AZ 85038

The Arizona Department of Environmental Quality (ADEQ) hereby issues an Approval of Construction for the above-described facility based on the following provisions of Arizona Administrative Code (A.A.C.) R18-5-507 et seq.

On August 18, 2010, ADEO issued a Certificate of Approval to Construct for the referenced project.

On February 4, 2011 James T. Wilson, P.E., certified the following:

■ A final construction inspection was conducted on January 20, 2011;

■ The referenced project was constructed according to the as-built plans and specifications and ADEQ*s Certificate of Approval to Construct;

■ Water system pressure and leakage tests were conducted on December 21, 2010 and January 13 & 18, 2011, and the results were within the allowable leakage rates;

■ The water storage system was disinfected according to an ADEQ-approved method; and

■ The applicant has the right to appeal this AOC Permit. Appeal information is on reverse side of this Permit.

Microbiological samples were collected on December 28, 2010 and January 19, 2011 and analyzed on December 29, 2010 and January 20, 2011 by Legend Technical Services, Inc., ADHS License No. AZ0004. The sample results were negative for total coliform.

This Approval of Construction authorizes the owner to begin operating the above-described facilities as represented in the approved plan on file with the ADEQ. Be advised that A.A.C. R18-5-124 requires the owner of a public water system to maintain and operate all water production, treatment and distribution facilities in accordance with ADEQ Safe Drinking Water Rules.

Jahak K. Desai, P.E., Manager Drinking Water Facilities Review Unit

Drinking Water Section

FMS

PWS No.: 11-009 LTF No.: 53769

c: TEU File No.: 20100157

CRO Approval of Construction File
Pinal County Health Department

Pinal County Planning & Zoning Department

AZ Corporation Commission

Engineer

Ms. Karen E. Berry, ADEQ Field Inspector

Ms. Deborah L. Schadewald-Kohler, ADEQ Field Inspector

MAR 14 2011

ARIZONA WATER COMPANY PHOENIX - ENGWEERING

Southern Regional Office

400 West Congress Street • Suite 433 • Tucson, AZ 85701

(520) 628-6733

5733

Northern Regional Office 1801 W. Route 66 • Suite 117 • Flagstaff, AZ 86001 (928) 779-0313

RIGHT TO APPEAL INFORMATION

The Arizona Department of Environmental Quality's review of this application was subject to the requirements of the licensing time frames ("LTF") statute under Arizona Revised Statutes ("A.R.S.") § 41-1072 through § 41-1079 and the LTF rules under Arizona Administrative Code ("A.A.C.") R18-1-501 through R18-1-525. This Notice is being issued within the overall time frame for your application.

ADEQ hereby approves your application for Approval of Construction Drinking Water Facilities under A.R.S. § 49-351. Your copy of the Approval of Construction Permit is on the reverse side of this Right to Appeal Information sheet.

This decision is an appealable agency action under A.R.S. § 41-1092. You have a right to request a hearing and file an appeal under A.R.S. § 41-1092.03(B). You must file a written Request for Hearing or Notice of Appeal within 30 days of your receipt of this Notice. A Request for Hearing or Notice of Appeal is filed when it is received by ADEQ's Hearing Administrator as follows:

Office of Administrative Counsel Arizona Department of Environmental Quality 1110 W. Washington Street Phoenix, AZ 85007

The Request for Hearing or Notice of Appeal shall identify the party, the party's address, the agency and the action being appealed and shall contain a concise statement of the reasons for the appeal. Upon proper filing of a Request for Hearing or Notice of Appeal, ADEQ will serve a Notice of Hearing on all parties to the appeal. If you file a timely Request for Hearing or Notice of Appeal you have a right to request an informal settlement conference with ADEQ under A.R.S. § 41-1092.06. This request must be made in writing no later than **20 days** before a scheduled hearing and must be filed with the Hearing Administrator at the above address.

Please contact Frank M. Smaila at (602) 771-4237 or fms@azdeq.gov if you have questions regarding this Notice or the Certificate of Approved of Construction.

WA 1-4802

ARIZONA WATER COMPANY

WORK AUTHORIZATION

W.A. NUMBER:

1-4802

P.E. NUMBER:

BUDGET ITEM NO.

NO.;		/-	7	bV.	L	والطب	-
	 				1	of	2

			SHEET NO.:	1 of 2
SYSTEM:	PINAL VALLEY			
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION	
TAX CODE: O	to3	WORK TO BE FINISHED BY:	WITHIN 60 DAYS	
DESCRIPTION C	DF WORK:			

Pull and replace the pump at Well #23

FACTORS JUSTIFYING WORK:

Approved 2011 Budget Item (\$80,000)

COST ESTIMATE			AUTHORIZATION DATE		
COST OF WORK: MATERIAL		0	James Wilson 9W 2/14/11 2/10/11		
LABOR		5,000	REVIEWED FOR ESMI/ROW VERIFICATION:		
CONTRACT PORTION		65,191	Charles Briggs CB 02-15-2011		
OVERHEAD		10,529	REVIEWED BY:		
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	\$	80,720	Mike Loggins		
FUNDS RECEIVED:			APPROVED BY ENGINEERING: 2-11-11		
CONTRIBUTIONS RECEIVED		0	Fredrick Schneider 4/2-17-11		
REFUNDABLE ADVANCES RECEIVED		0	APPROVED BY FINANCE:		
TOTAL CONTRIBUTIONS/ADVANCES		0	Joseph Harris 4 Hyll		
NET CASH REQUIRED	\$	80,720	AUTHORIZED BY PRESIDENT: (A Julyana M. Mysakialli 2-15-201)		
COMMENTS:			William Garfield 2-15-2011		
		j	CONSTRUCTION RELEASE:		

RELEASED TO CONSTRUCTION

Authorized by FRED SCHNEIDER Date 2 15 20 11

ARIZONA WATE ! COMPANY

WA NUMBER P.E. NUMBER:

B-1

1-4802

WORK AUTHORIZATION - DETAIL SHEET

BUDGET ITEM NO .: SHEET NO. 2 of 2 PLANT PROPERTY ACCOUNT YEAR INSTALLED AND W.A. NUMBER Simflo SV12C 7-stage pump 2004 1-3644 RETIREMENT 325 PROPERTY UNITS PROJECT DESCRIPTION: Pull and replace the pump at Well #23 PLANT PROP ACCT UNIT COST DESCRIPTION QUANTITY TOTAL Provide and Install Simflo SV12C 7-Stage pump assembly 325 1 11,200.00 11,200 325 580 0.25 143 Provide and Install 3/4" PVC sounding line 957 Provide and Install 1/4" SS air line 325 580 1.65 Miscellaneous materials 325 1 600.00 600 O 2 1,400.00 2,800 325 Video Well Т 325 22 708.50 15,587 Provide and Install 10"x20' column pipe 936.00 13,104 14 Provide and install 3"x1-15/6"x20' tube and shaft 325 Brush and Bail well С 40 150.00 6.000 325 T 325 14,800.00 14,800 Clean casing with "Well Clean" W 0 R 345 SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG 345 SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT 345 SERVICE CONNECTIONS COMPLETE: SINGLE-LONG 345 SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT TOTAL CONTRACT WORK \$ 65,191 М Α T Ε 345 R SERVICE CONNECTIONS: DOUBLE-LONG 1 345 SERVICE CONNECTIONS: DOUBLE-SHORT 345 SERVICE CONNECTIONS: SINGLE-LONG 345 s SERVICE CONNECTIONS: SINGLE-SHORT 346 METERS \$ TOTAL MATERIALS L TESTING FEE Α В PERMIT FEE 0 SURVEY FEE R 5,000.00 5.000 325 FIELD INSPECTION INSTALL SERVICE CONNECTIONS: DOUBLE-LONG 345 345 INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT 345 INSTALL SERVICE CONNECTIONS: SINGLE-LONG INSTALL SERVICE CONNECTIONS: SINGLE-SHORT 345

NON-REFUNDABLE PORTION

AFH

TOTAL LABOR

OVERHEAD

TOTAL

COST ESTIMATE

\$

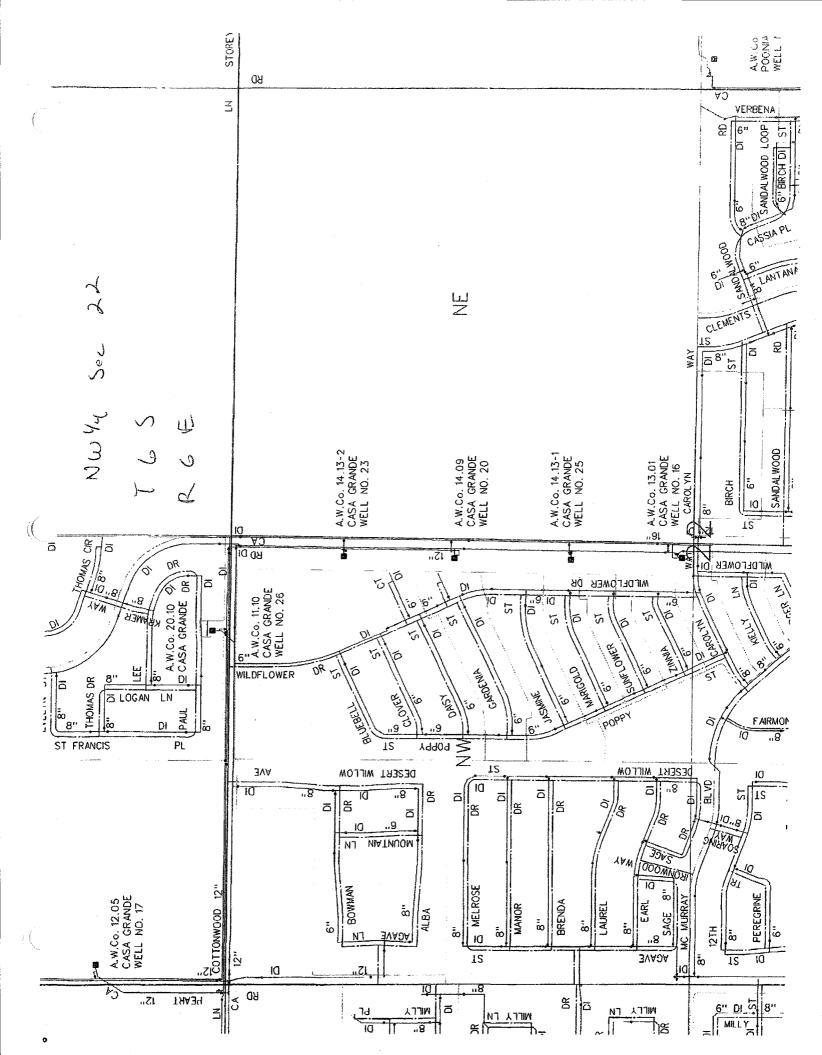
5,000

70,191

10,529 80,720

SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR

REFUNDABLE PORTION



LAST INSTALLO ZOOY

SIMPLO \$ 9VIZC-7 STG W/B"STRAINVIA.

PUMP SETTING 5BZ'

1 10'x 3"x 1-1% cowmo rese of som.

I "PUL, 2/4" PUC of 3/8" AIR LINE.

PRUSS @ DISCHMAGE W/ ALL DIHLA WILL TUNNE # = 30 pro w/0 18417 78-43 756

NOVBN

STATIC	DYNAMIC	FLOW
7/2	338 26	1032 10/10
719	349 70	900 4/10
324	347 27	900 10/09
3/7	347 /20/	1140 4/09
324	356 32 /	080 10/08
319	344 25 1	000 4/08
333	377 44 /	040 10/07
* 727	375 52 1.	170 4/07
·	<i>l</i> /	•

TDH = SYST PAUSS + LIFT + COLUMN COSS + MISC.

TOH = 100'+375+15'+20' £ 410'

REPLACE EXISTING FUMP IN KIND TUE TO LONDOWITY W- GIMFLO PUMPS.

* GUE ATTACHE SHUTTS FUR LATERAL CALCS.

MAX LAT @ DEMONTOAD = . BEZ < , 937 MAX AVAILABLE.

MIN. CALC. TDH

TDH (ft)≐	410
Column Length (ft)=	600
Thrust Factor, K (lb/ft)=	15.1
Column Diameter (in)=	10
Tubing Diameter (in)=	3
Shaft Diameter (in)=	1.9375
C1=	5.05473
C2=	30.69061
C3=	19.87294
H=	0.41
L=	0.6

Stretch (in)=

0.432345656

Impeller Clearance &

Assembly Loss (in)=

0.24

Required Lateral (in)=

0.672345656

Dead Head

TDH (ft)=	550
Column Length (ft)=	600
Thrust Factor, K (lb/ft)=	15.1
Column Diameter (in)=	10
Tubing Diameter (in)=	3
Shaft Diameter (in)=	1.9375
C1=	5.05473
C2=	30.69061
C3=	19.87294
H=	0.55
L=	0.6

Stretch (in)=

0.622095148

Impeller Clearance &

Assembly Loss (in)=

0.24

Required Lateral (in)=

0.862095148

Company: az water Name: James Date: 1/19/2011



Pump:

Size: SV12C (7 stage)

Type: VERTTURBINE Synch speed: 1800 rpm

Specific Speeds:

Dimensions:

Vertical Turbine:

Speed: 1770 rpm Dia: 9.114 in Impeller:

Ns: 3060 Nss: -

Suction: 8 in Discharge: 8 in

Bowl size: 12 in Max lateral: 0.937 in Thrust K factor: 15.1 lb/ft Search Criteria:

Flow: 1500 US gpm

Head: 410 ft

Fluid:

Water SG: 1

Viscosity: 0.9695 cP

Temperature: 70 °F

Vapor pressure: 0.3632 psi a Atm pressure: 14.7 psi a

NPSHa: ---

Motor:

Standard: US Enclosure: TYPE 1

Size: 200 hp Speed: 1800 Frame: ----

Sizing criteria: Max Power on Design Curve

Pump Limits:

Temperature: ---Pressure: 353 psi g Sphere size: 1.187 in

Power: ---Eye area: ---

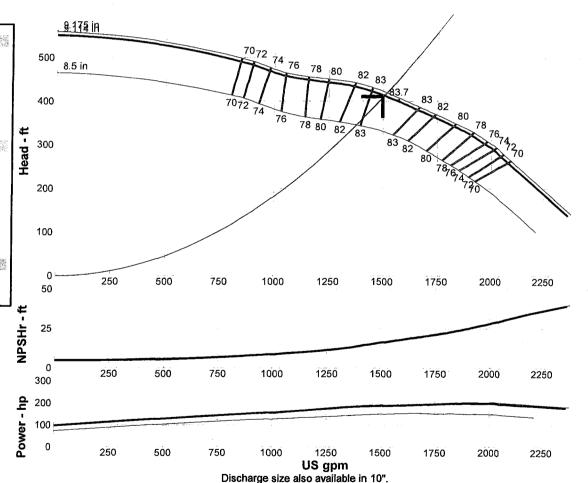
---- Data Point ----Flow: 1500 US gpm 413 ft Head: 83.3% Eff: Power: 188 hp NPSHr: 16.2 ft ---- Design Curve ----550 ft off head: Shutoff dP: 238 psi Min flow BEP: 83.7% @ 1572 US gpm

NOL power:

199 hp @ 1902 US gpm -- Max Curve --

Max power:

204 hp @ 1915 US gpm



Performance Evaluation: 36 Flow Speed Head Efficiency Power **NPSHr** US gpm ft rpm hp ft 1800 1770 348 80.5 197 22.5 1500 1770 413 83.3 188 16.2 1200 1770 446 79 171 11 900 1770 482 72 152 8 600 508 1770 49.8 134 6.81



CASA GRANDE WELL #23 – CASA GRANDE AZ EQUIPMENT SPECIFICATIONS

Existing Well Information

Location:

On Arizola Road. approx. 600' south of Cottonwood Lane.

Drilled by:

Layne-Western 1989

Casing:

18" Steel from 0'-1005' with 1/8"x3" saw cut perforations from 390'-990'

Pump:

Simflo SV12C 7-stage turbine pump

Motor:

US 300 HP 1775 RPM 460V 3 phase motor

Special Conditions

• All scrap materials removed from the well including any pump, motor, column, tube, shaft and bailed material are to be removed and disposed of by the contractor.

Design Conditions

1500 GPM @ 410' TDH.

Pump setting 580 ft.

Equipment to be Furnished and Installed by Pump Company

- One Simflo SV12C 7-stage (full trim) bowl assembly or alternate with Arizona Water Company Engineering approval
- 580 ft. 3/4" I.D. SCH 40 solvent weld PVC sounding line.
- 50 ft. 1/4" Baski Stainless Steel air line.
- Video Well.
- All miscellaneous bandits, buckles, tape, etc.
- All material subject to Arizona Water Company Standard Specification OE-11-22 (enclosed) except as noted

Bowl Assembly Construction Materials

- 1. No left hand to right hand adaptations will be allowed for the oil tube assembly
- 2. No invoice will be accepted for payment unless accompanied by a "complete" installed pump equipment data sheet
- 3. Alternate bowl assemblies will be considered subject to final approval by Arizona Water Company's Engineering department

Included with Each Bid Should be a List Including:

Maximum Bhp

Operating Bhp

Overall efficiency at design conditions

Total down thrust at design conditions

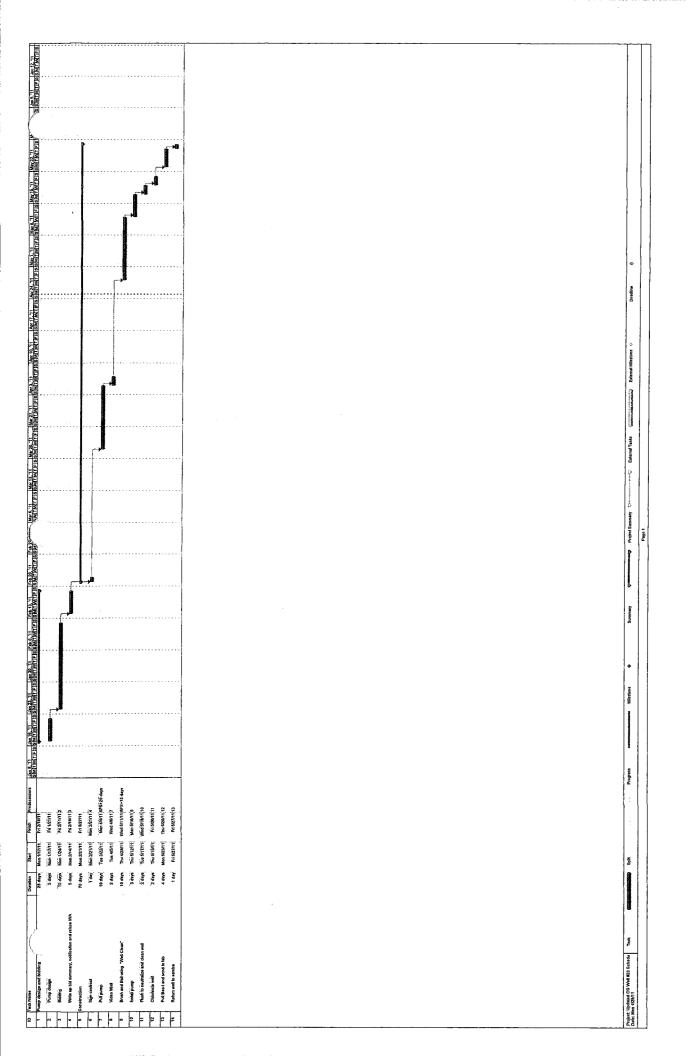
Maximum down thrust throughout total pump range

Differential stretch at design condition

Maximum differential stretch

Allowable lateral for bowl assembly

Provide thrust rating for 125-HP VHS bearing assembly (lbs.)





Pinal Valley - Casa Grande 220 E. 2nd Street, Casa Grande, Az 85122 Ph: 520-836-8785 FX; 520-836-2850

PROPOSAL/CONTRACT

CONTRACTOR	KP VENTURES	SYSTEM:	PINAL VALLEY
ADDRESS:	PO BOX 2411	W.A. No(s);	1-4802
CITY ST ZIP:	COTTONWOOD, ARIZONA 86326	BID DUE DATE:	February 4, 2011

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

- Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction
 Specifications and Standard Specification Drawings. (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plane and related construction
 drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this
 Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract,
 Specifications and Drawings.
- Contractor represents and warrants that it has satisfied and compiled with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract, prior to submitting this Proposal/Contract.
- Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
- Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
- And to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
- 6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be Incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project ofter Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 8.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
- 7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project. Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
- 8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposet/Contract during a ninety-day (90) period commencing on the Bid Due Data. The Company may accept this Proposet/Contract by signing and malling, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposet/Contract during such ninety-day (90) period. Contractor may cancel this Proposet/Contract by giving written notice of cancellation to the Company.
- 9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
- 10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project writing Commencement Notice is issued.
- 11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
- 12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
KP VENTURES /	ARIZONA WATER COMPANY
By: Kennak Wat	By: Judium K Share
Print Name: Keniny Porter	Print Name: Fredrick K. Schneider, PE
Title: President	Title: Vice President - Engineering
Date: 2/3/11	Date: 2-22-2011



CONTRACTOR: KP VENTURES

PO BOX 2411

AZ CONTRACTOR LICENSE NO:

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande 220 E. 2nd Street, Casa Grande, Az 85122 Fh: 520-836-8785 FX: 520-836-2850

COTTONWOOD, ARIZONA 86326

PROPOSAL/CONTRACT			
	SYSTEM:		
	PINAL VALLEY		
	W.A. No(s);		
	1-4802		
- MICOLO	BID DUE DATE:		
	February 4, 2011		
	BID BOND REQUIRED		
	Yes V No		

D	ESCRIPTION

ADDRESS:

CITY ST ZIP

OF PROJECT:

Pull and replace the vertical turbine pump at Casa Grande Well #23.

CLASSIFICATION:

		אַט	OT PRICE	TOT	AL COST
1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragr	TITMANO (8 HOE	LABOR	MATERIALS	LABOR	MATERIALS
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	(244)	THE PERSON NAMED IN	*		
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. 3. Total Labor to Install Exempt Materials (add the amounts in column 1)	1		***************************************	3	
4. Total Exempt Materials (add the amounts in column 2)		********		***************************************	4
					Bandaran Angele Contraction of the Contraction of t
5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS.
Provide and install Simflo SV12C 7-Stage full trim pump assembly	1	3,000.00	8,200.00	3,000.00	8,200.00
Provide and install 3/4" solvent weld PVC	580		0.247		143.26
Provide and Instell 1/4" Baski Stainless Steel air line with gauge and valve	580	*	1.65002		957.01
All miscellaneous materials (bandits, buckles, tape etc.)	1		400.00		400.00
Video Well	1		1,400.00		1,400.00
Provide and install 10"x20" column pipe (price only)			708.50		
Provide and install 3"x1-15/16"x20' tube and shaft (price only)	1		936.00		
Brush and Gail well using cable tool rig (price only S/hr.)	1	**************************************	150.00		
Rebuild 300HP VHS motor (Clean, dip and bake) (price only)	1		5,280.00		
		************		(§)	
		*****			*
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)	***************************************	. 4 . • • (
8. Total Non-Exempt Materials (add the amounts in column 6)	*		*************************		11,100.27
9. Subtotel A (add lines 3, 7 and 8)		- >>	·····		14,100.27
Contracting Tax 8see (multiply the amount on line 9 by 0.65) Applicable Contracting Tax Rate		*****************	44 P	9,165.17	
		**************		acoustic consumeration of the part of	
12. Contracting Tax (multiply the amount on line 10 by line 11) 13. Subtotal B (add lines 4, 9 and 12)		v*******************	, , + p	1	
14, 100% Performance and Payment Bonds Cost		* * * * * * * * * * * * * * * * * * * *		*	1 14,773.91
FA. 100% CERTAINSTICE SIN CAMPIENT DONGS POST				······································	4
15. Estimated Total Cost (add lines 13 and 14)		*******	11,6-2,	·~v•v	<u>s 14,773.91</u>

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

Paga 2

E-3-11-5,6 KP Ventures Proposal Contract 1-4802 CG Well #23 | 1/20/2011

01/20/09 | FKS | E-3-11-5/6

CONSTRUCTION SPECIFICATIONS: E-8-1

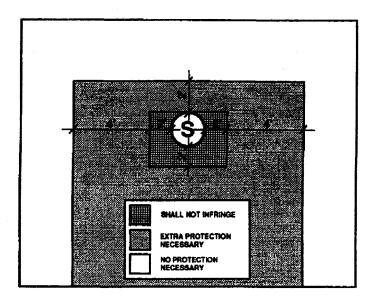
ERRATA 2010

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



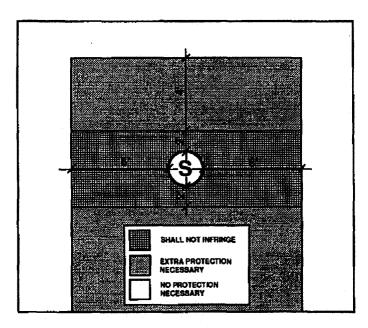
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

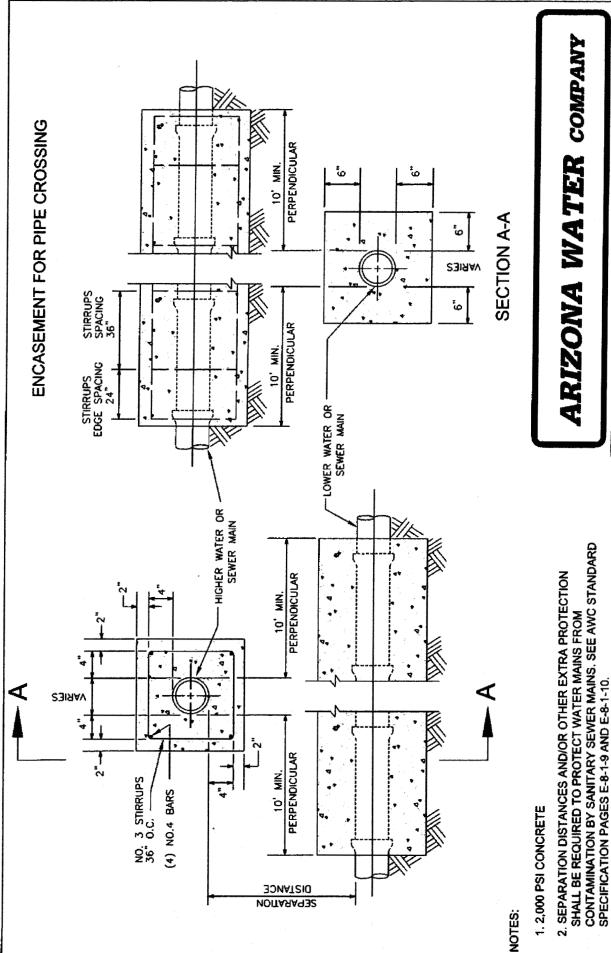
- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10") on either side of the water main. Refer to the diagram below for clarification.



STANDARD SPECIFICATION DRAWINGS: E-9-1

ERRATA 2010

E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
E-9-22	INSTALLATION OF COLUMN PIPE, OIL TUBE AND LINE SHAFT
E-9-23	HOT TAP AND JUMPER METER CONNECTION
E-9-24	INSTALLATION OF TYPICAL WATER LINE ENCASEMENT
E-9-25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION
E-9-30-1	WATER AND SANITARY SEWER SEPARATION/PROTECTION PERPENDICULAR
E-9-30-2	WATER AND SANITARY SEWER SEPARATION/PROTECTION - PARALLEL



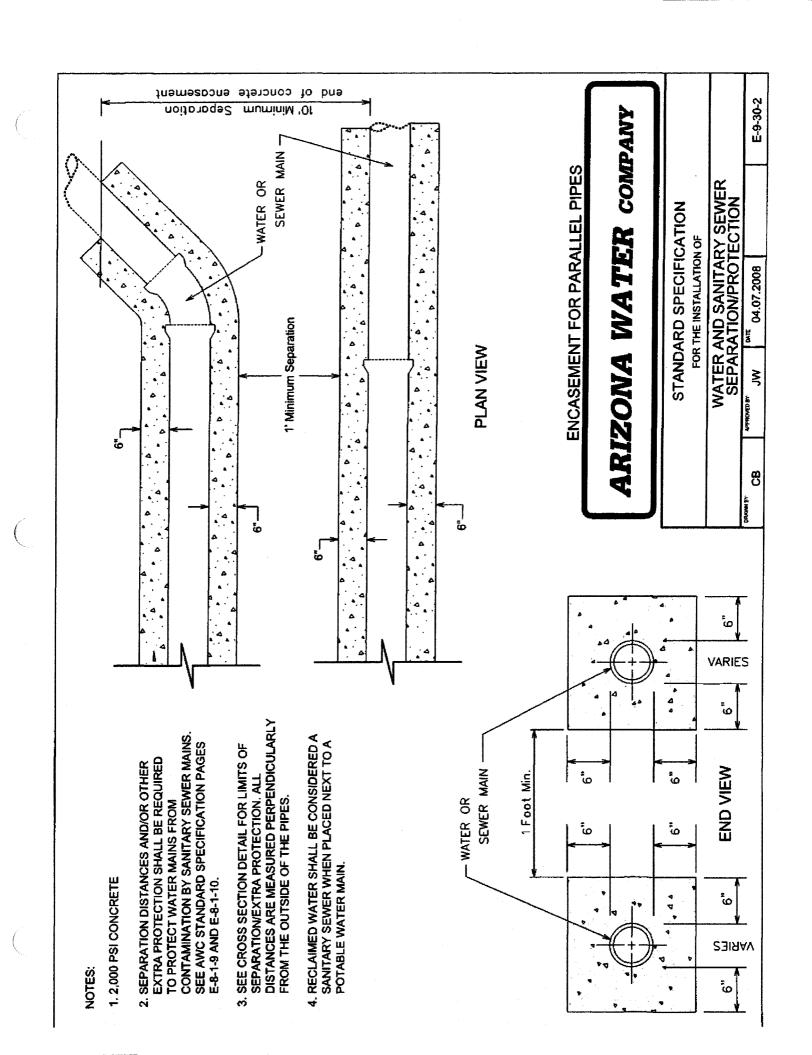
STANDARD SPECIFICATION FOR THE INSTALLATION OF

> PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES. 3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA

4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER WHEN PLACED NEXT TO A POTABLE WATER MAIN.

WATER AND SANITARY SEWER SEPARATION/PROTECTION

E-9-30-1 04.07.2008 DAZE ₹ 8



3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan Clow Valve Company 8121 N. 10th Avenue Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Jim Ryan - Clow Valve Company

October 19, 2010

Subject:

Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the Clow products. If I can be of any assistance, please call me.

Very truly yours,

Fredrick K. Schneider

Vice President - Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger
US Pipe – Waterworks Marketing Consultants
34522 N. Scottsdale Road
Scottsdale, Arizona 85226

Re: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - = 4½" pumper
 - 21/2" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USP1
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Tony Geiger - US Pipe

November 24, 2010

Subject:

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,

Fredrick K. Schneider

Vice President - Engineering

afh

VIA EMAIL: TGEIGER4@COX.NET



SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION

GENERAL CONDITIONS OF CONTRACT: E-4-1

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Invitation to Bid</u>. The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid.
- F. <u>Contract</u>. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. <u>Inspector</u>. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

8. PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. ?40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons. and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage. destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all deslabor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. <u>LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR</u> EXTENSION(S) OF TIME

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

CONSTRUCTION SPECIFICATIONS: E-8-1

E-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawi ngs and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Contract</u>. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

1. **GENERAL**

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, wi thout attempting to be inclusive, are:

- a. Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- c. Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color yellow, drain open, open direction left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 4" Pumper Nozzle, NST and 2 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San M anuel.)
 - (2) 1 4½" Pumper Nozzle, NST and 2 2½ " Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) 1 4½" Pumper Nozzle, NST and 2 2½" Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 2½" Hose Nozzles, NPT (Miami only.)

- (5) 1 3½" Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and 2 2½" Hose Nozzle, NST (Superior only.)
- b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x $\frac{3}{4}$ " Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12"; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and B UNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)
- I. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.
- m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.
- n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8 " x ¾" x ¾" for a ¾" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x $\frac{3}{4}$ " for a $\frac{3}{4}$ " service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: ¾", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes ¾", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".
 - Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).
- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
 - (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
 - (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knock outs and adjustable frame.
 - (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8 x 3/4" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these S pecifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe befor e any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Speci fication E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

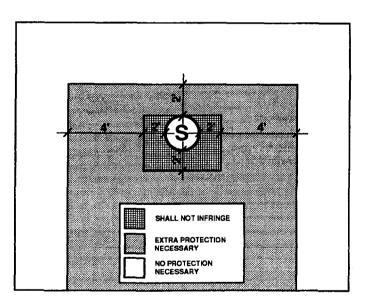
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running pa rallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below f or clarification.



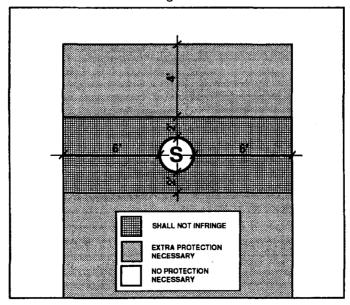
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°, 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS: E-9-1

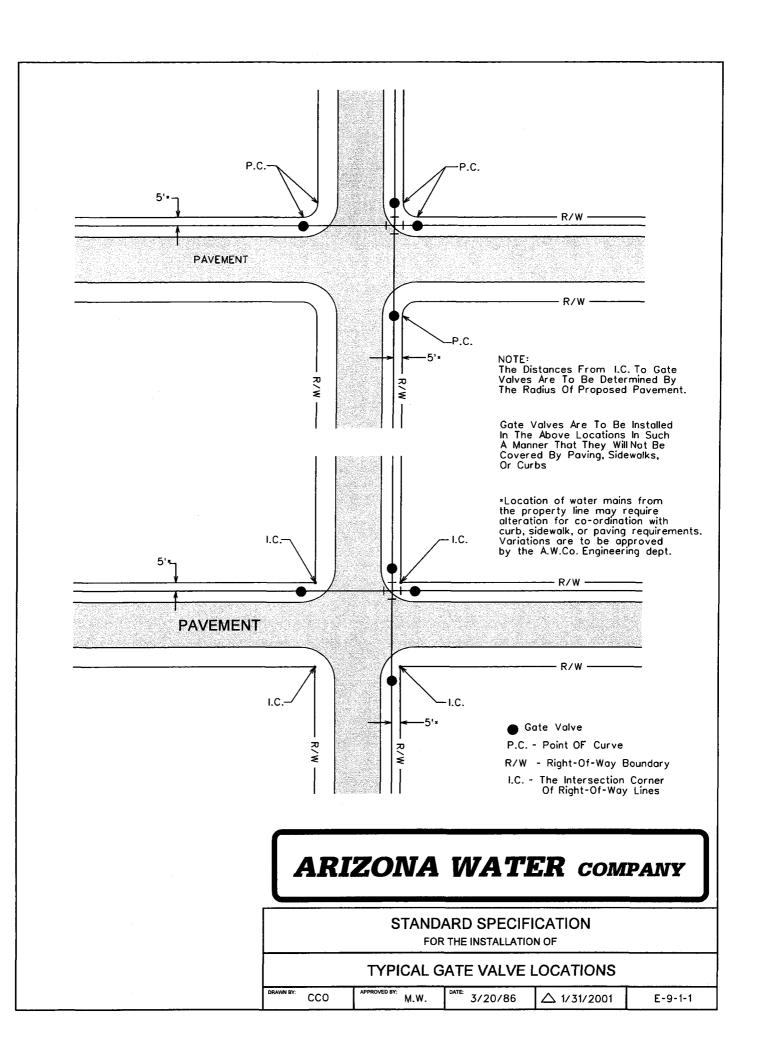
ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS

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E-9-4	INSTALLATION OF TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC
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E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION

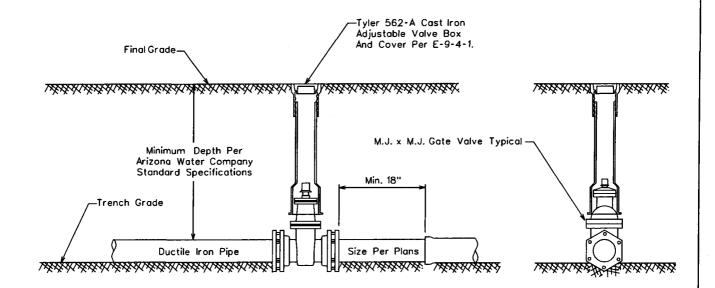


FOR 6" THROUGH 12" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2360-__ ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2361-__ ANSI/AWWA C509 Compliant



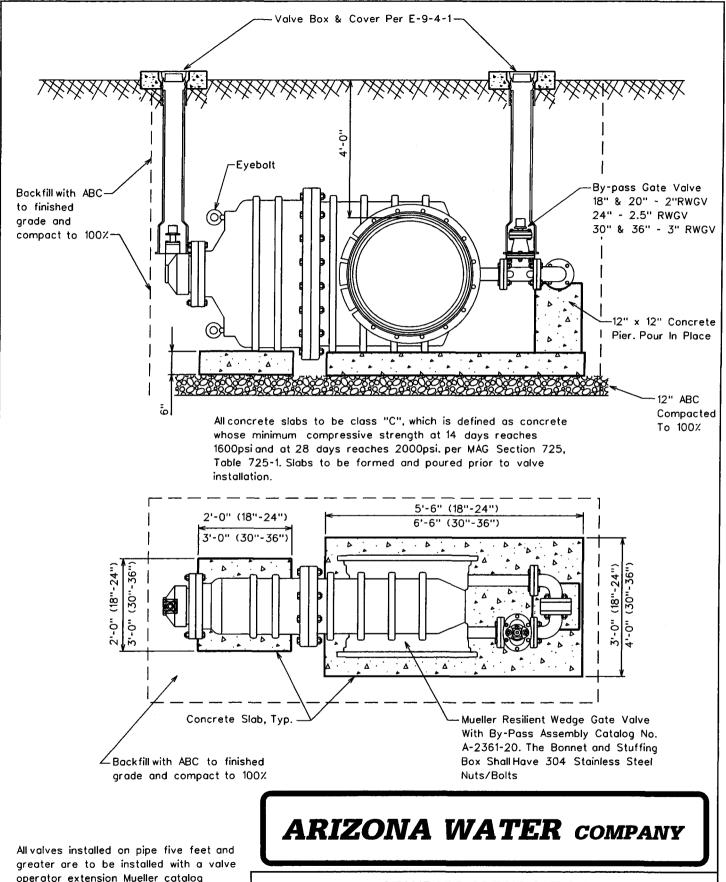
All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL VERTICAL GATE VALVES

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1986 \(\triangle \triangle 08.23.2006 \) E-9-2-1



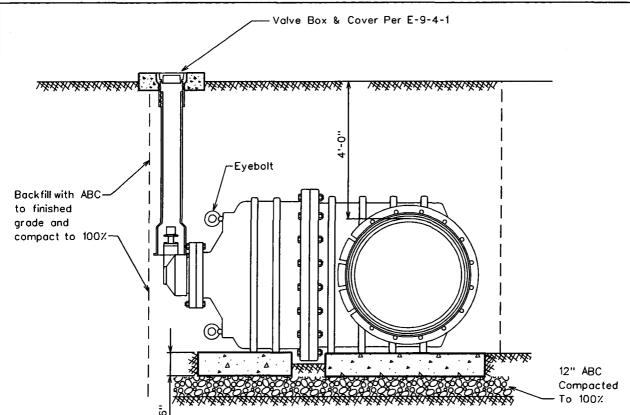
All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

STANDARD SPECIFICATION

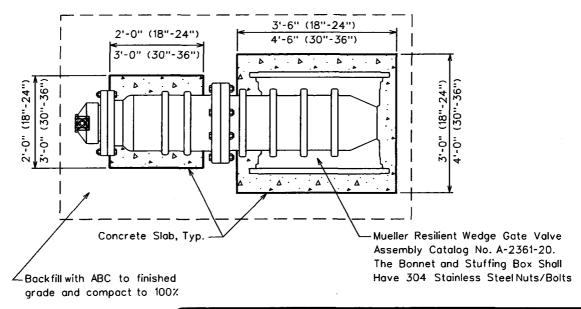
FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITH BY-PASS FOR 18" AND LARGER VALVES

DAAWN BY: CB APPROVED BY: DATE: 12.07.2004 △ E-9-2-2



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi, per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

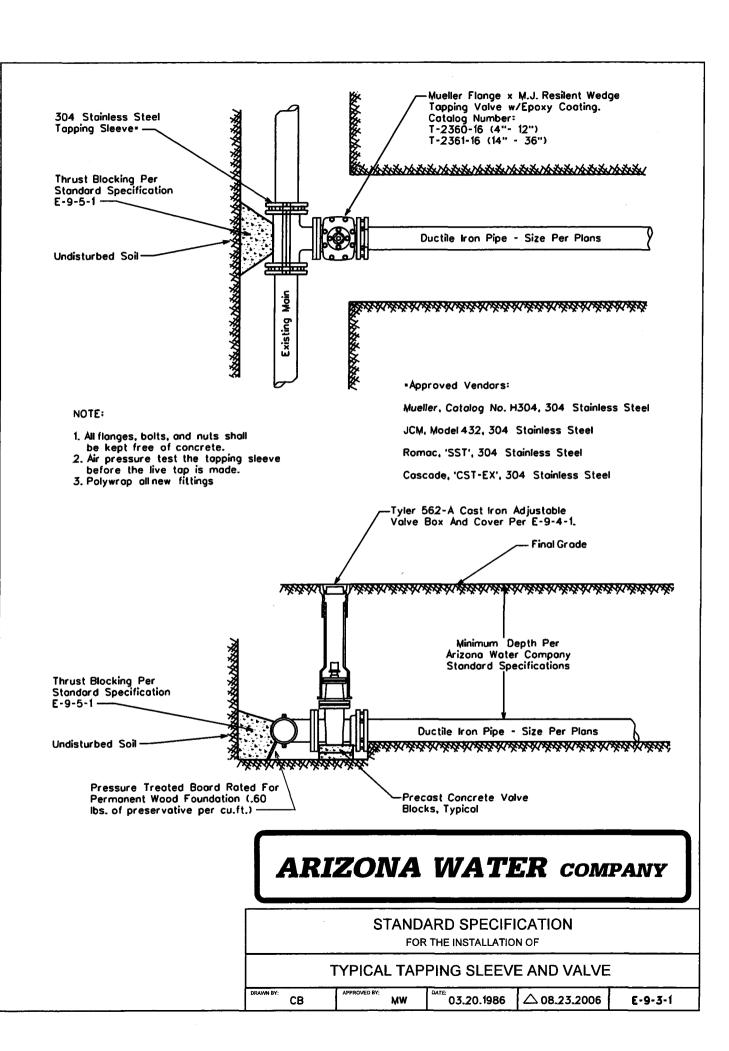
ARIZONA WATER COMPANY

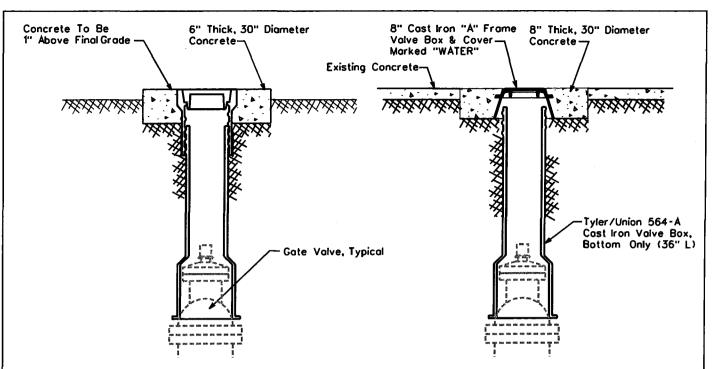
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

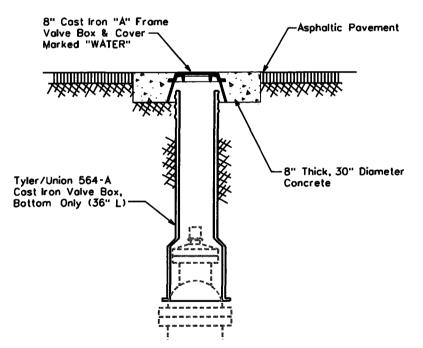
CB APPROVED BY: 12.07.2004 \(\triangle 5.13.2005 \) E-9-2-3





NON-VEHICULAR VALVE BOX

CONCRETE VALVE BOX For Areas Subject To Vehicular Traffic



NOTE:

- The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
- 2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"

For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"

- 3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
- 4. Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

ASPHALT VALVE BOX
For Areas Subject To Vehicular Traffic

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC

PRAWN BY:

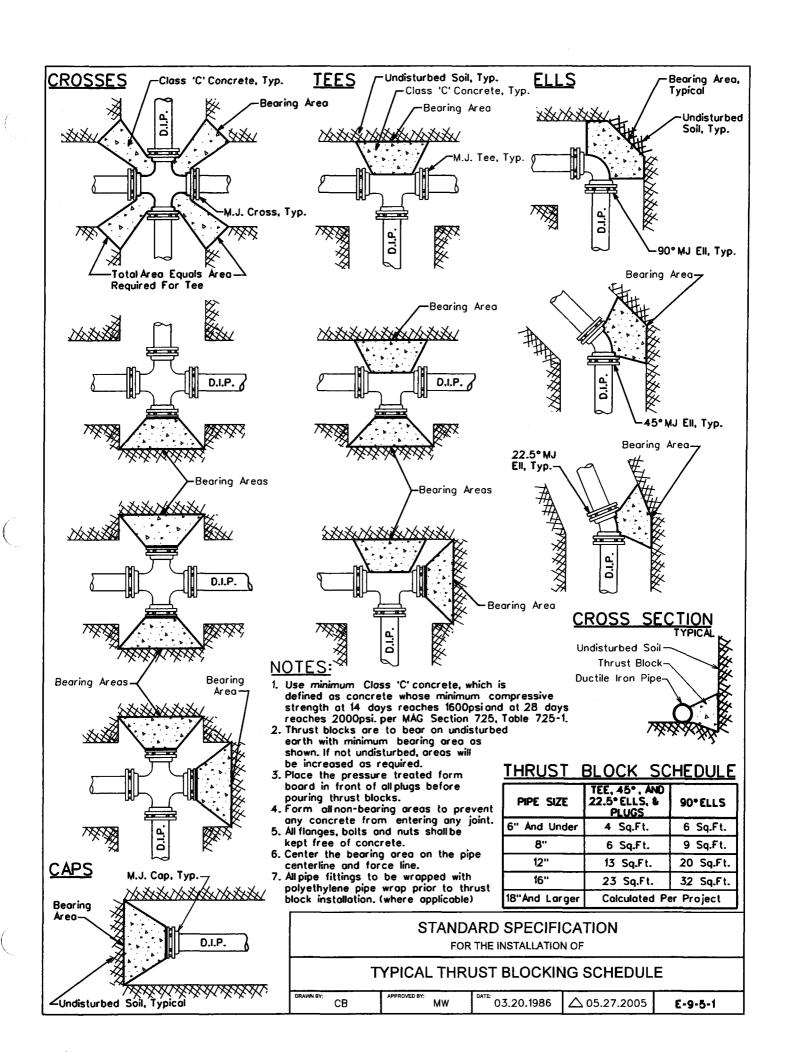
APPROVED BY:

MW

03.20.1986

△ 8.24.2006

E-9-4-1

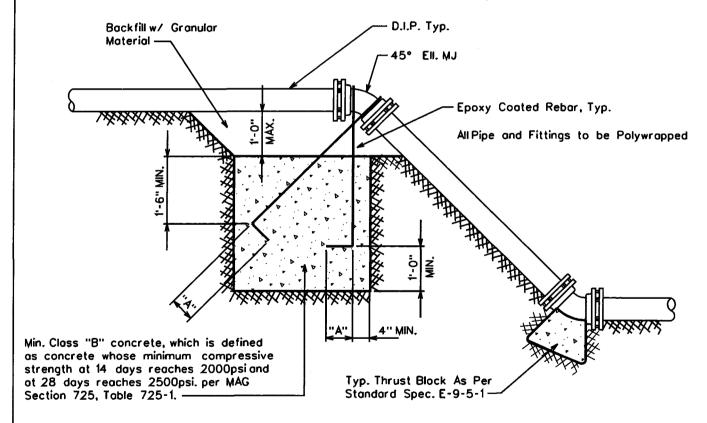


NOTES

- Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
- 2. Bars To Have 90° Hook © Their Ends, As Per Table Below.

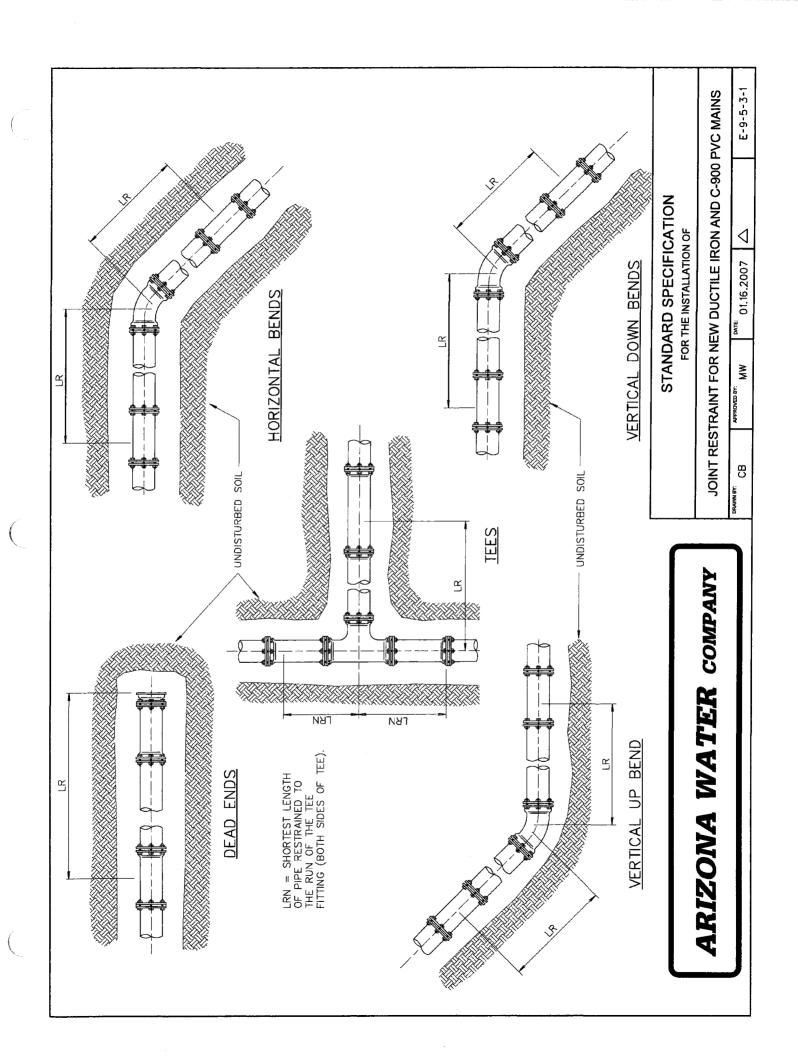
Pipe Size	Min. Bar Size	"A" Dimension (Hook)	 Min. Block Dimension (WxHxL)
6"	•6	6"	3'x3'x3'
8"	•6	9"	4'x3'x4'
12"	•8	9"	5'x4'x5'
16"	•9	12"	7'x6'x7'

* For 125 P.S.I. Working Pressure



ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF THRUST BLOCK FOR VERTICAL BENDS DRAWN BY: JPK APPROVED BY: MJW DATE: 7-5-96 \(\triangle 01.16.2007 \) E-9-5-2



			FNDS)) j	31	44	α		60	0 0	104	11.7	126	147
		BEND FITTINGS	٤	BEND		5	9	0 00		01	2 5	12	14	16
2	10	22-1/2° BEI	14800	BEND	9	6	11	14	16	2 8	21	2.3	25	29
N PIPE	OFFSETS	FITTINGS	į	BEND	7	10	13	19	0	2 2	24	26	28	33
FILE IRO	VERTICAL OFFSETS	45° BEND	NAVOC	BEND	13	18	24	29	34	38	43	48	52	61
RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE	>	FITTINGS	Qi i	BEND	18	25	32	38	45	51	57	62	68	79
, LR, FC		90° BEND	2000	BEND	31	44	58	69	84	92	104	115	126	147
ENGTHS,	Ç	TEES			ω	20	34	45	57	68	79	06	100	121
AINED L	F	_		LRN=0'	30	43	56	68	80	91	103	113	125	145
RESTR		HORIZONTAL BENDS		22-1/2	4	5	9	∞	o	10	11	12	14	16
				42.	7	10	13	16	19	21	24	56	28	33
	700	ZNOL		.06	18	25	32	38	45	51	57	62	68	79
	NOMINAL	77.7	11.0	INCHES	4	9	œ	10	12	14	16	18	20	24

		DEAD	SCN))	7.5	102	122	200	801	18/	214	241	288	200	267	040
WRAP		ID FITTINGS		N C	e c			, ;		2	15	16	2 8	2 2	22	77
LENGTHS, LR, FOR DUCTILE IRON PIPE WITH POLYETHYLENE WRAP		22-1/2' BEND FITTINGS	- WAICO	BEND	14	20	96	02	25	2/	42	48	53	200	89	3
OLYET	OFFSETS	45' BEND FITTINGS	QI -	BEND	11	15	10	26	57	/7	31	34	22	4	47	`-
WITH	VERTICAL OFFSETS	45° BEND	NWOO	BEND	30	42	55	99	77	,	83	100	110	121	141	
ON PIPE	>	FITTINGS	<u>a</u>	BEND	26	36	47	56	7.0	3	74	82	06	86	113	
STILE IR		90' BEND	NWOO	BEND	72	102	133	159	187		214	241	266	292	340	
FOR DUC	ú	3		LRN=10'	18	47	78	103	131		126	183	207	233	280	
IS, LR,	, F	IEES		LRN=0	69	66	130	157	185		7117	238	263	289	337	
LENGTH	טעאַןט	DENDS		22-1/2.	5	7	o	11	13	1	2	16	18	20	22	
RESTRAINED	IATMOVIDOU			45.	11	15	19	23	27	1,7	0	34	37	41	47	
RESTR	71901	7200		.06	26	36	47	99	65	7.7	+/	82	90	98	113	
	NOMINAL	777	11.0	INCHES	4	9	80	10	12	1,1	+	16	18	20	24	

- NOTES:

 1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED.

 ALL LENGTHS ARE GIVEN IN FEET.

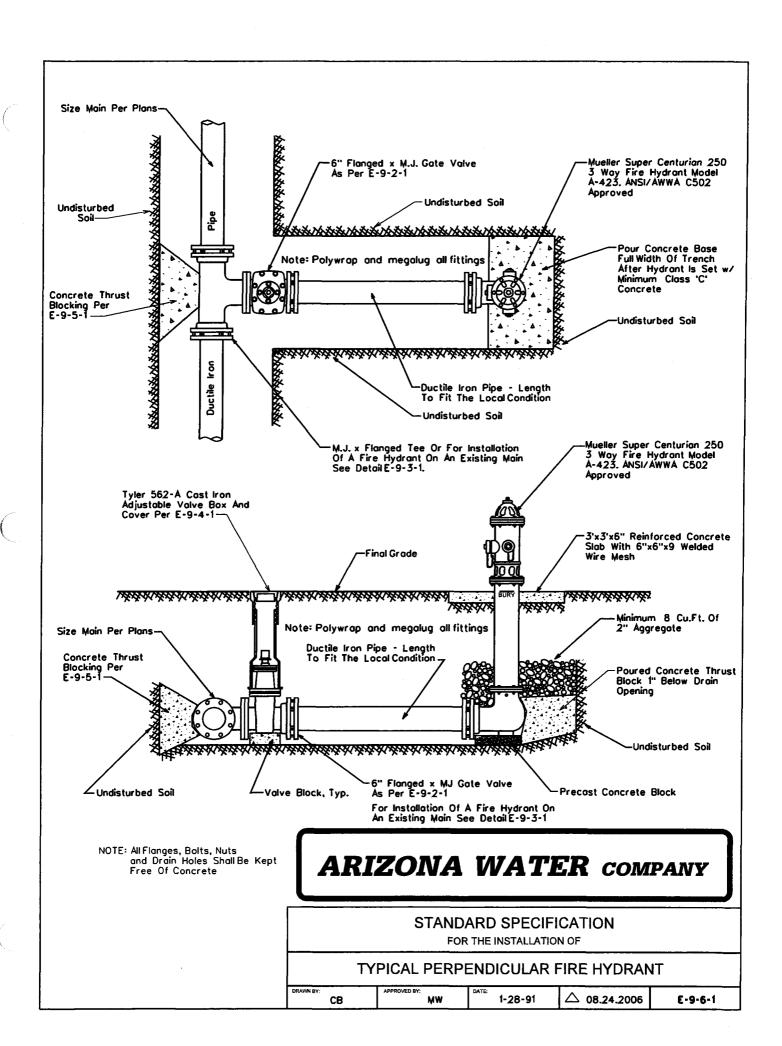
 FUNCTEN 200 PSI
 - 2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
- 3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
- 4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

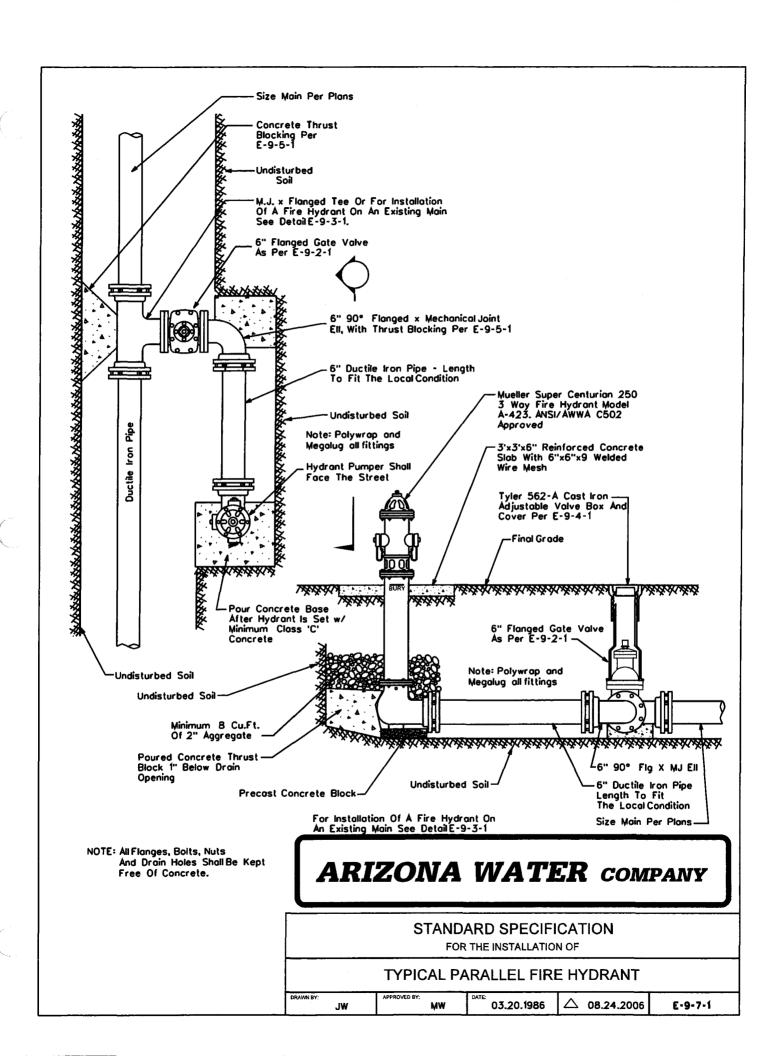
ARIZONA WATER COMPANY

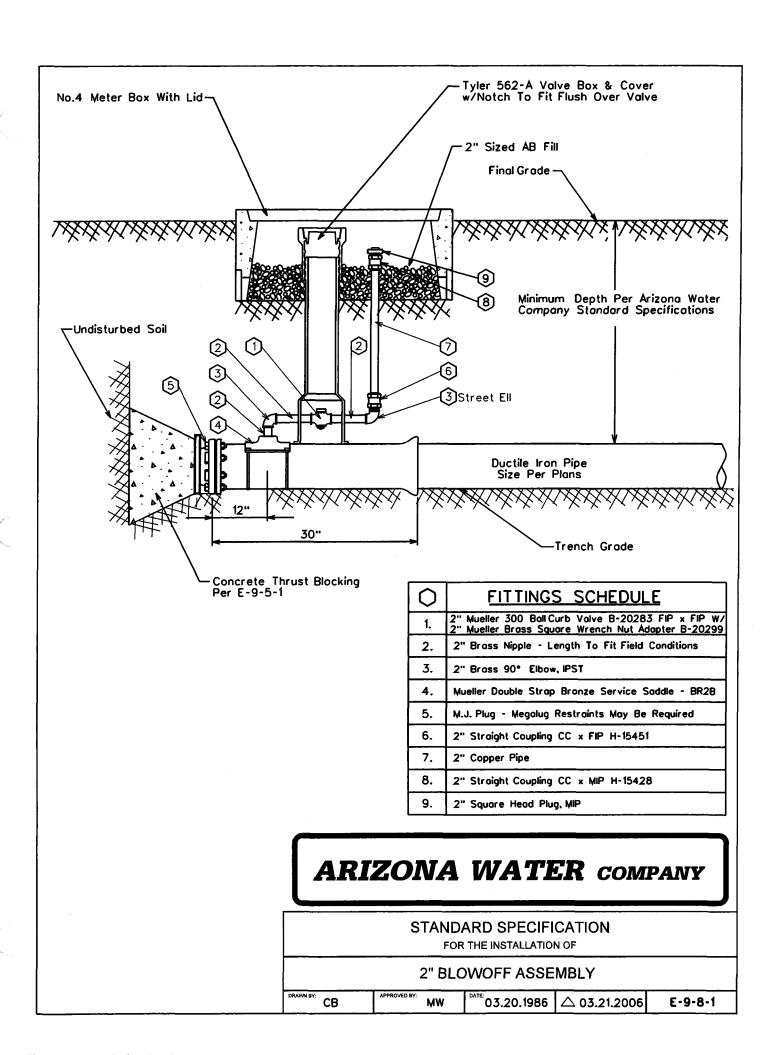
STANDARD SPECIFICATION FOR THE INSTALLATION OF

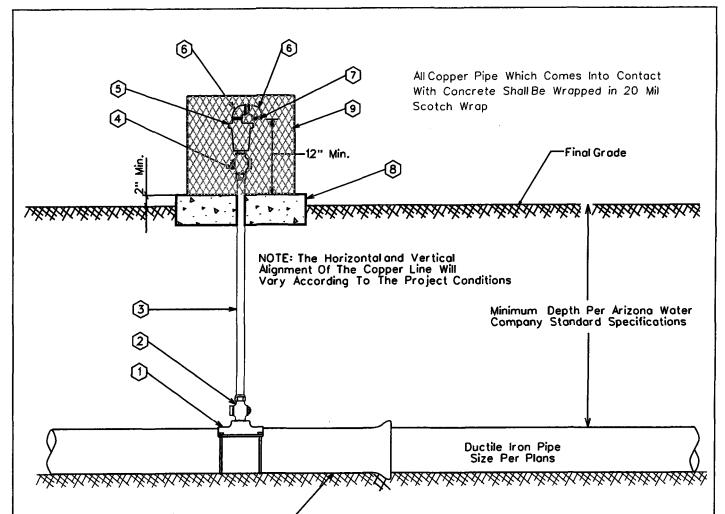
JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

	E-9-5-3-2	
	4	
DATE	01.16.2007	
APPROVED BY:	MΜ	
DRAWN BY:	85	









GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.

Trench Grade

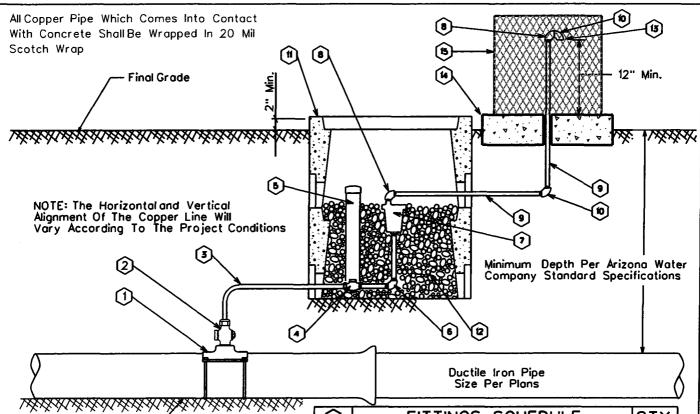
- 2. The valve shall have a 1/4" orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & ½" IPST outlet, cast iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

CB

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP × Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	1/2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF TYPICAL AIR RELEASE VALVE APPROVED BY: MW DATE: 03.20.1997 △08.24.2006 E-9-8-2



GENERAL NOTES:

Trench Grade

- The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- The valve shall have a ¾ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cast iron body and top flange with stainless steel float and trim.
- The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

0	FITTINGS SCHEDULE	QTY.
1.	Mueller BR2B Bronze Service Saddle - Double Strap	1
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Req'd
4.	1" Mueller B-25028 IP × Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cap (Loose Fit)	1
6.	1" × 4" Brass Nipple w/90° Elbow	1
7.	Crispin 1" Air Release Valve, Model AR10	1
8.	1/2" Brass Street Elbow	2
9.	1/2" Galvanized Pipe - Length as req'd	2
10.	1/2" Galvanized 90° Ell	2
11,	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	As Regid
13.	No.16 Wire Mesh Screen (Non-Corrodible)	1
14.	4" Thick Concrete Pad - Class 'C' Concrete	1
15.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan	1

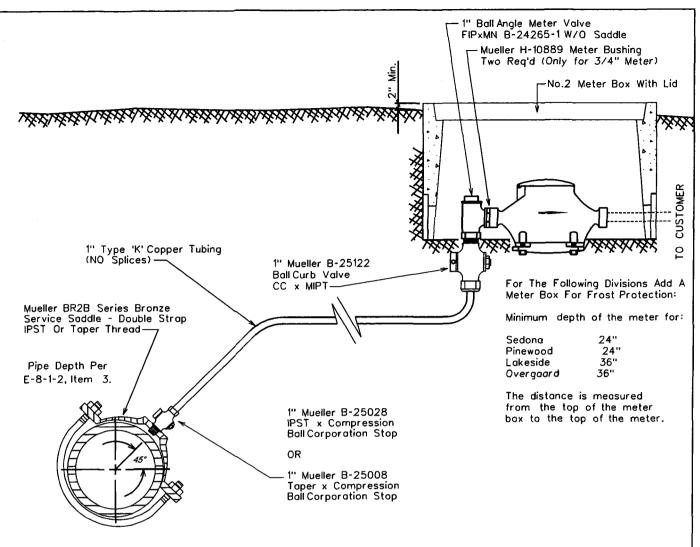
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 \(\triangle 08.24.2006 \) E-9-8-3



SADDLE TAP TO CA, PVC, OR DIPIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

NOTE: Only the meter is supplied by Arizona Water Company

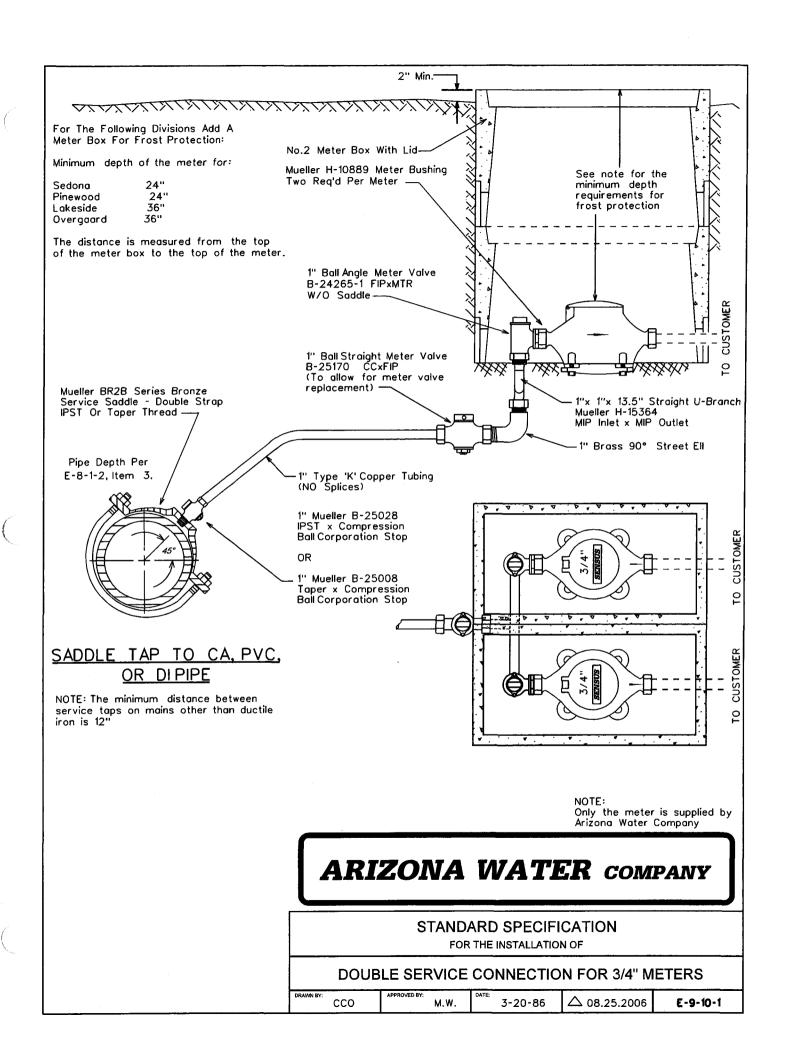
ARIZONA WATER COMPANY

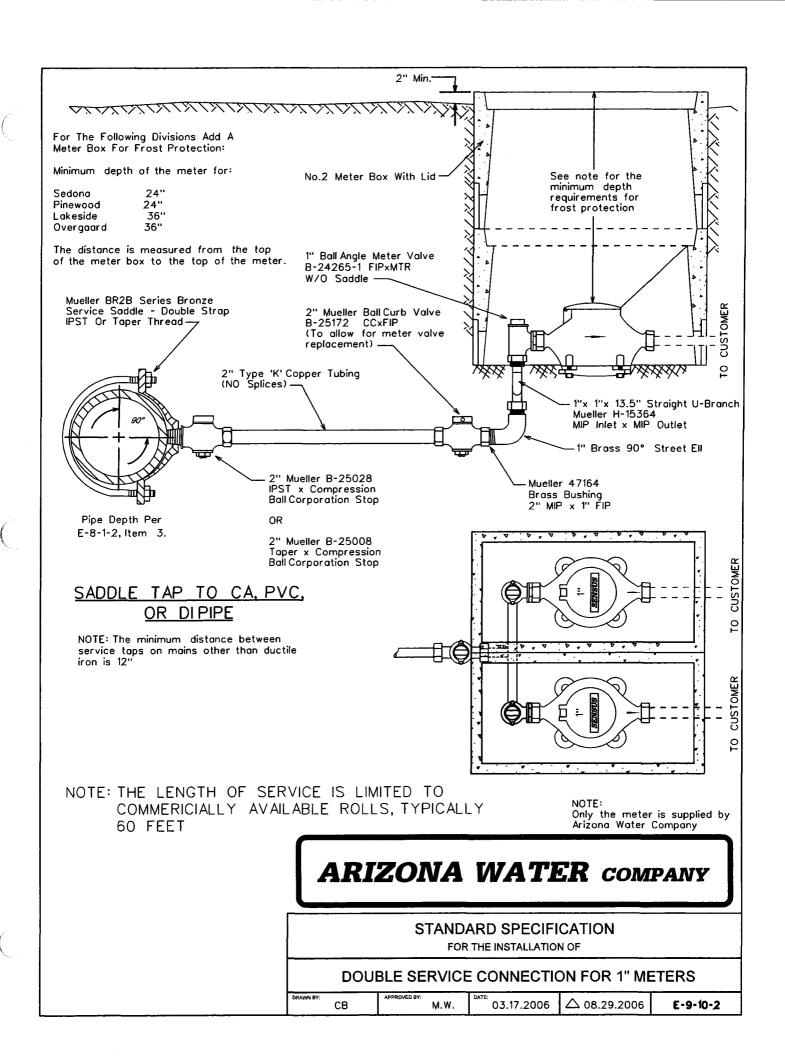
STANDARD SPECIFICATION

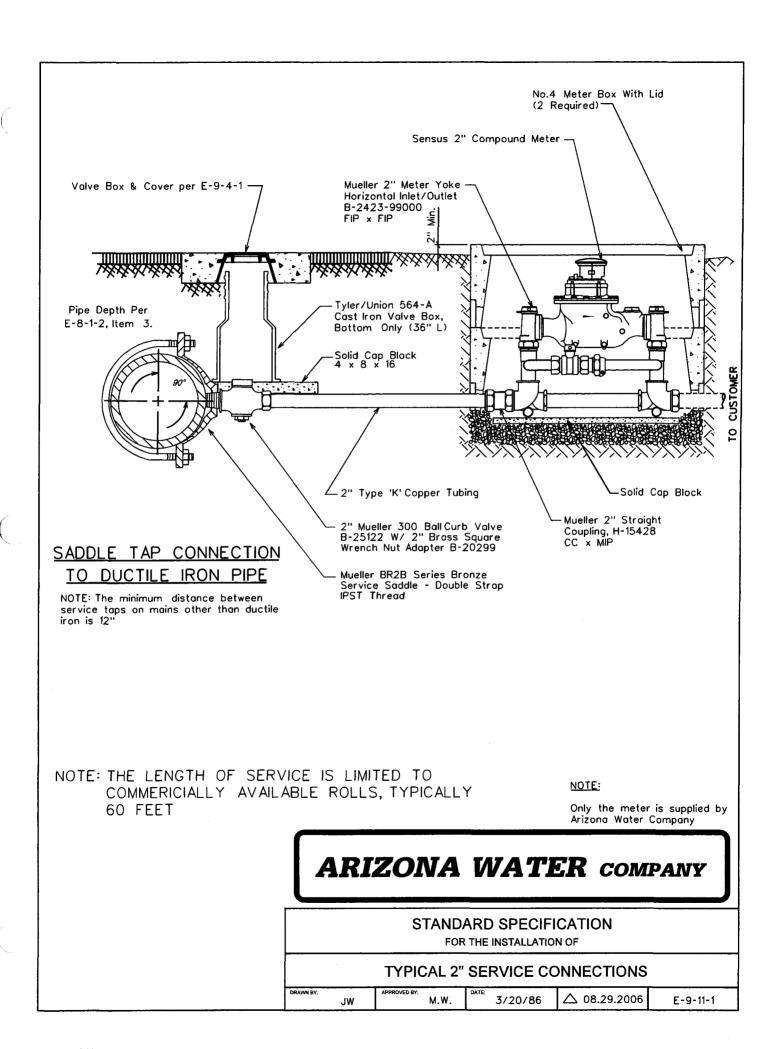
FOR THE INSTALLATION OF

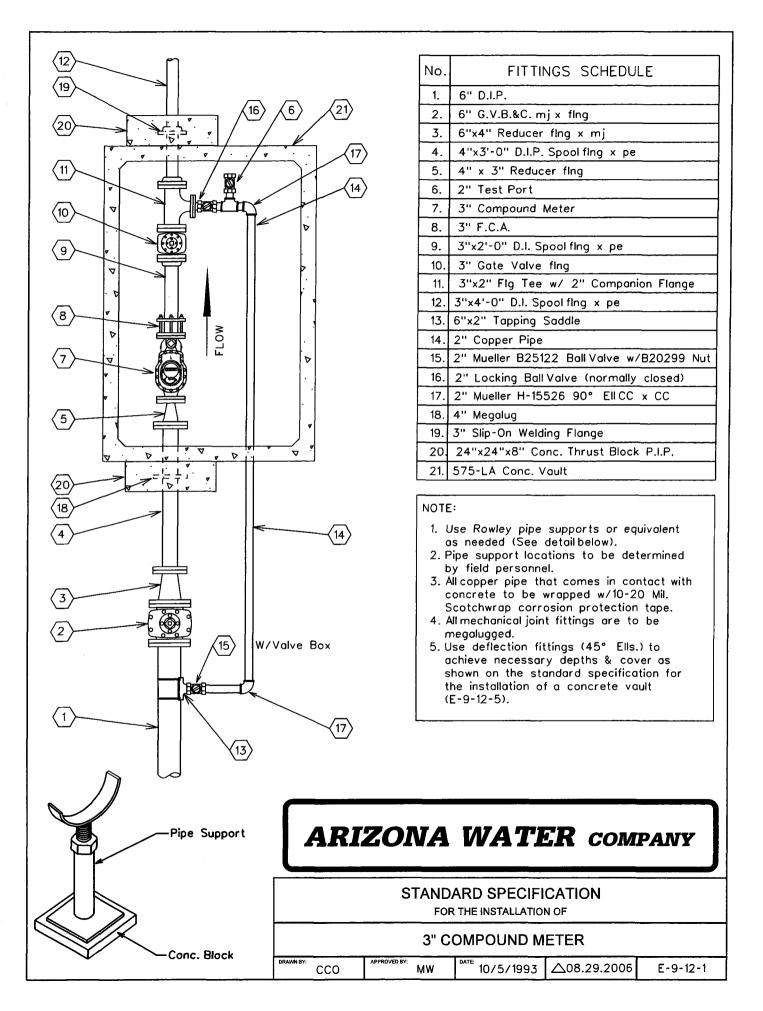
SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

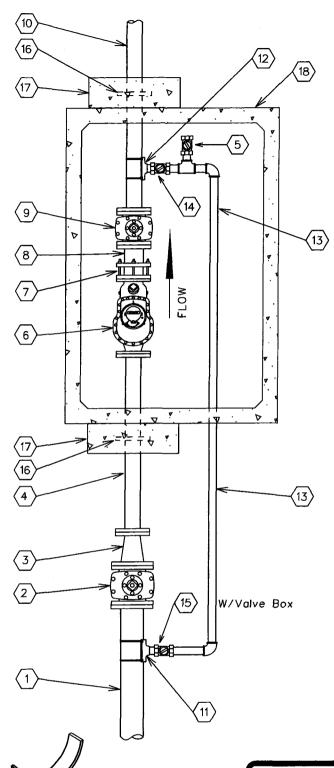
DRAWN BY: CCO APPROVED BY: M.W. DATE: 3/20/86 △ 03.17.2006 **E-9-9-1**







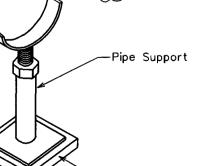




No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" Reducer flng x mj
4.	4"x3'-0" D.I.P. Spool fing x pe
5.	2" Test Port
6.	4" Compound Meter
7.	4" F.C.A.
8.	4"x1'-0" D.I.P. Spool flng x pe
9.	4" Gate Valve fing
10.	4"x4'-0" D.I.P. Spool flng x pe
11.	6"x2" Tapping Saddle
12.	4"x2" Tapping Saddle
13.	2" Copper Pipe
14.	2" Ball Valve / Locking (Normally Closed)
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	4" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.
18.	575-LA Conc. Vault

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



Conc. Block

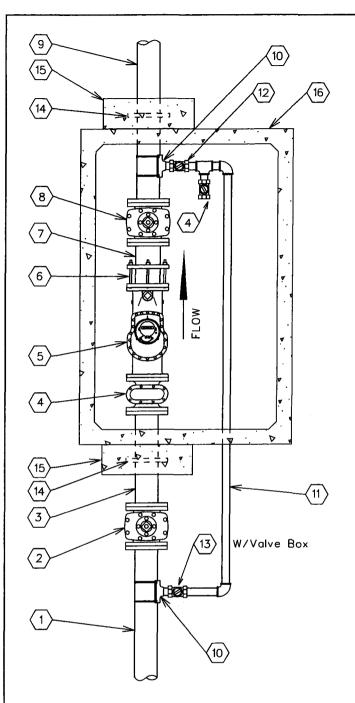
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

4" COMPOUND METER

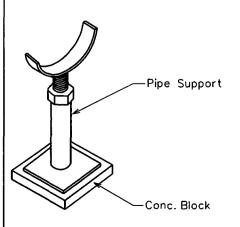
DRAWN BY: CCO APPROVED BY: MW DATE 10/5/1993 \(\triangle 08.29.2006 \) E-9-12-2



No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj
3.	6"x 3'-0" D.I.P. Spool fing x pe
4.	2" Test Port
5.	6" Compound Meter
6.	6" F.C.A.
7.	6"x 1'-0" D.I.P. Spool flng x pe
8.	6" Gate Valve flng
9.	6"x 4'-0" D.I.P. Spool flng x pe
10.	6"x2" Tapping Saddle
11.	2" Copper Pipe
12.	2" Ball Valve / Locking (Normally Closed)
13.	2" Mueller B25122 Ball Valve w/B20299 Nut
14.	6" Megalug
15.	24"x24"x8" Conc. Thrust Block P.I.P.
16.	575-LA Conc. Vault

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



ARIZONA WATER COMPANY

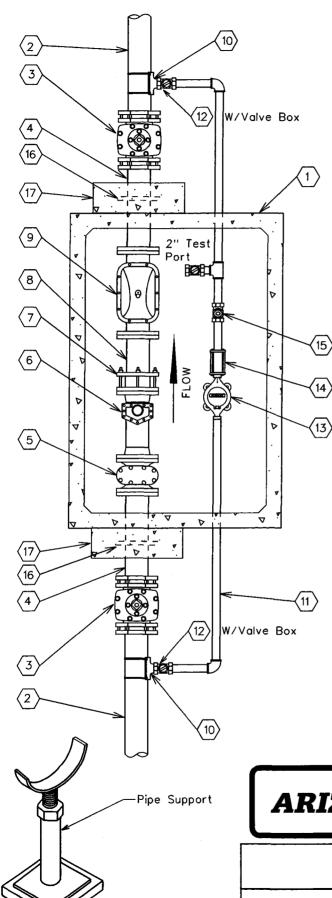
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND METER

AWN BY: CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle 08.29.2006 \)

6 E-9-12-3



Conc. Block

No.	FITTINGS SCHEDULE
1.	575-LA Conc. Vault
2.	6" D.I.P.
3.	6" G.V.B.&C. m.j.
4.	6" x 3'-0" D.I.P. SPool Piece flng x pe
5.	6" Strainer
6.	6" Turbo Meter
7.	6" F.C.A.
8.	6" x 2'-0" D.I.P. Spool Piece flng x pe
	(TRIM SPOOL PIECE TO 3x THE PIPE DIA.)
9.	6" Detector Check
10.	6"x*N" Tapping Saddle
11.	∗N'' Copper Pipe
12.	×N'' Ball Valve (Locking)
13.	∗N" Meter
14.	∗N" Coup. Adapt.
15.	*N" Flapper Check Valve
16.	6" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.

*N - Size To Be determined By A.W.Co.

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
- To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

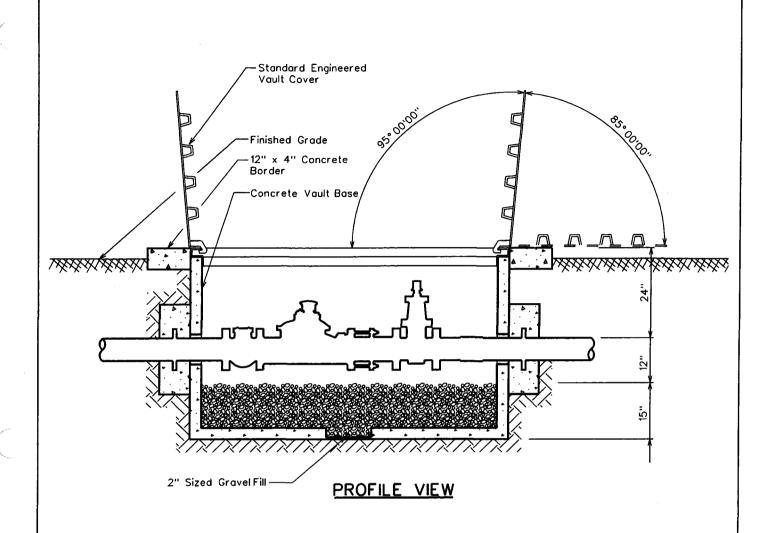
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND SERVICE

DRAWN BY: CCO APPROVED BY: MW DATE: 10/05/1993 \(\triangle 08.29.2006 \) E-9-12-4



CONCRETE VAULT & COVER SPECIFICATIONS

Vault - Base No. 575-BL

- Cover Standard Engineered Vault Cover . 4874 Aluminum Diamond Plate Cover For Non-Traffic Loading Areas

 - . 4874 Galvanized Steel Diamond Plate Cover W/ H-20 Traffic Loading . Double Torsion Spring Assisted Doors W/ Recessed Hasp & Safety Latches

cco

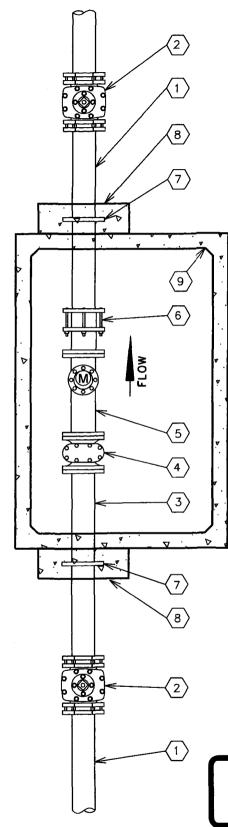
NOTES

- Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill.

 Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A W Co. Engineers A.W.Co. Engineers.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF **CONCRETE VAULT** △ 05.17.2001 10/5/1993 E-9-12-5



No.	FITTINGS SCHEDULE
1.	Ductile Iron Pipe
2.	Gate Valve M.J.
3.	D.I.P. SpoolPiece Flg x Pe (10xDia.)
4.	Meter Strainer
5.	Propeller Meter
6.	Flanged Coupling Adapter
7.	Megalug Gland (Thrust Anchor)
8.	Concrete Thrust Block P.I.P.
9.	Concrete Vault

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
- 2. Pipe support locations to be determined by field personnel.
- All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings to are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

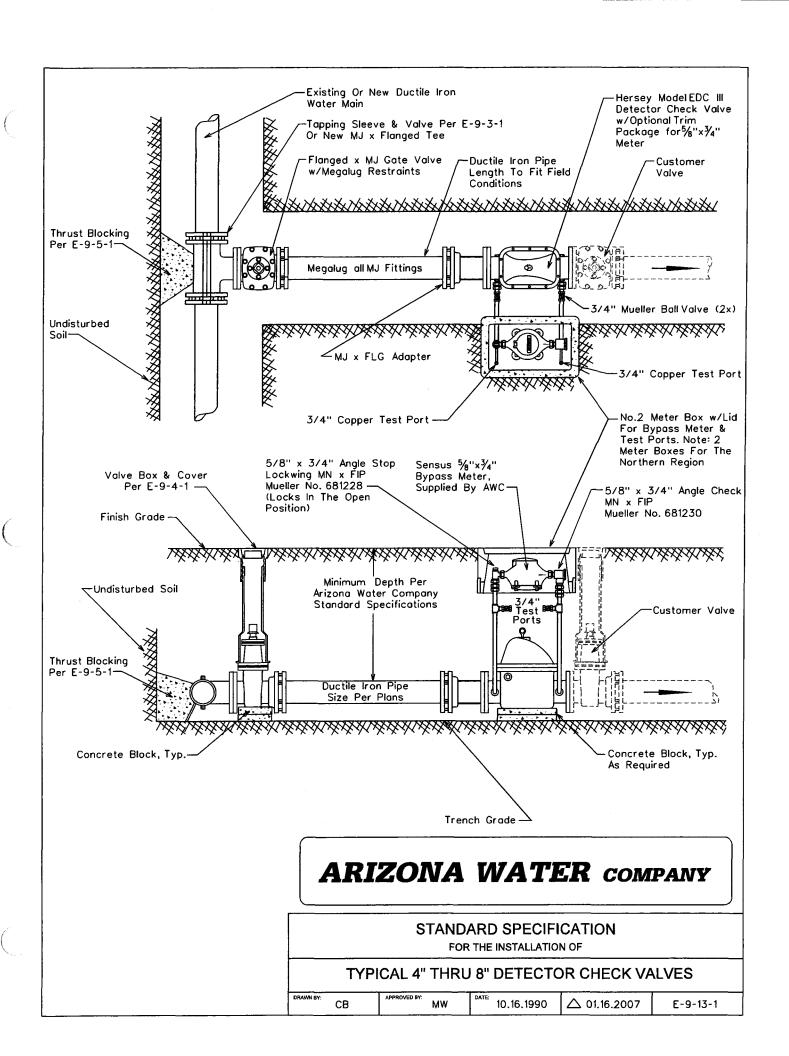
ARIZONA WATER COMPANY

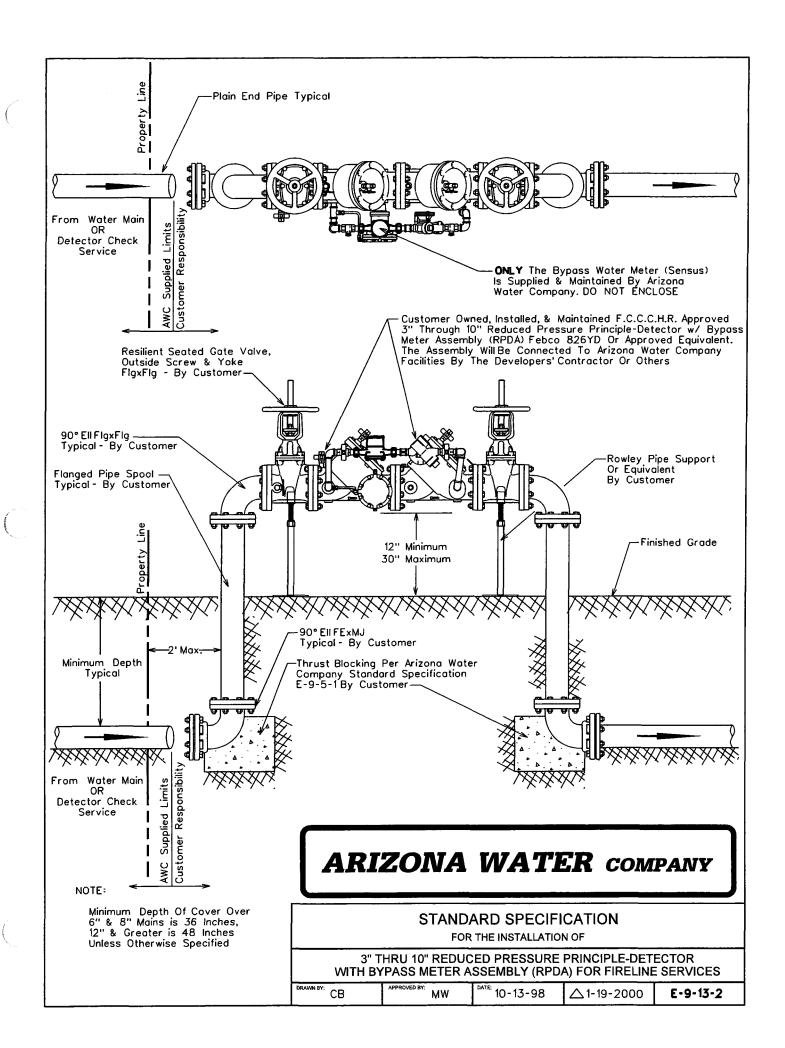
STANDARD SPECIFICATION

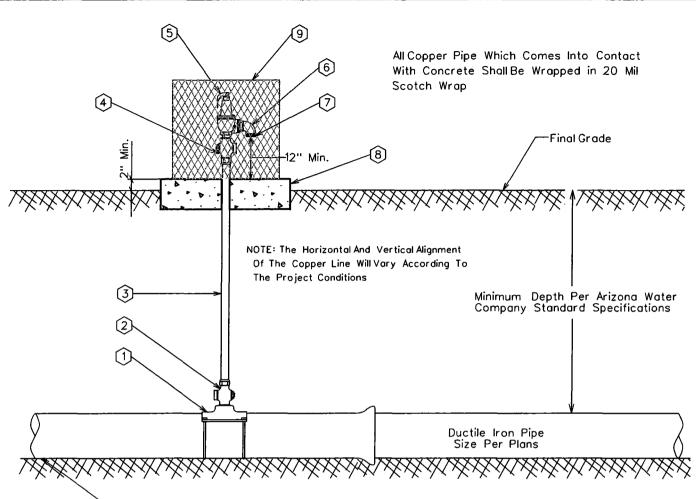
FOR THE INSTALLATION OF

NON-POTABLE PROPELLER METER

DRAWN BY: JPK APPROVED BY: MW DATE: 7-20-95 \(\triangle \) **E-9-12-6**







NOTE:

 Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.

-Trench Grade

2. The relief valve assembly and vandalenclosure shall be located out of the roadway, but within the right-of-way or easement.

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

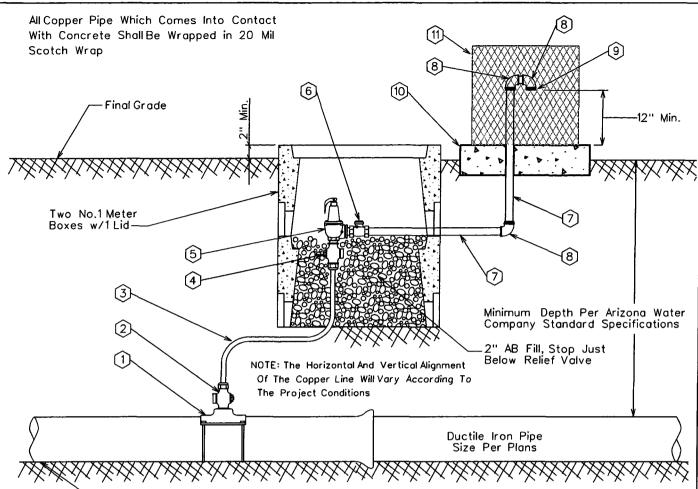
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

DRAWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 \(\triangle 08.29.2006 \) E-9-14-1



NOTE:

-Trench Grade

- 1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
- The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

\bigcirc	FITTINGS SCHEDULE						
1.	Mueller BR2B Bronze Service Saddle - Double Strap						
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop						
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit						
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop						
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body						
6.	2" Bronze Check Valve Watts Series CV						
7.	2" Schedule 40 Cut Pipe - Field Fit						
8.	2" Bross Street Elbow						
9.	No.16 Wire Mesh Screen (Non-Corrodible)						
10.	4" Thick Concrete Pad - Class 'C' Concrete						
11.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan						

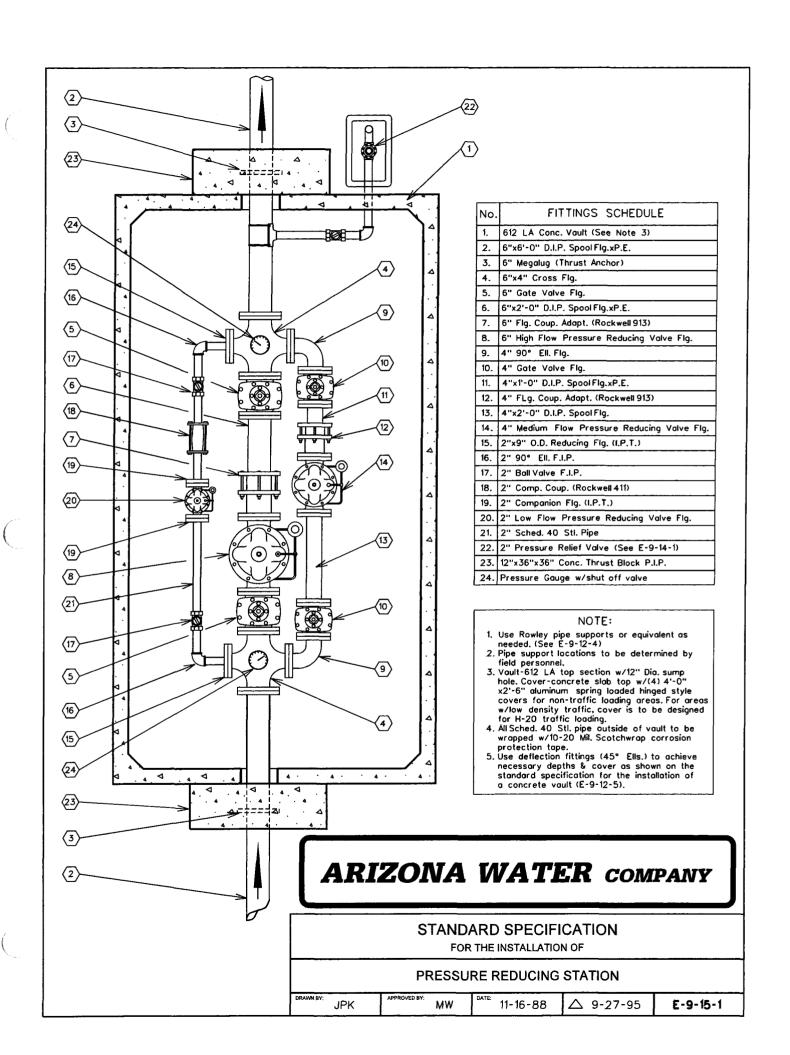
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

DRAWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 \(\triangle 08.29.2006 \) E-9-14-2



- 1. Specific Items To Be Painted Deer-O Pure White Enamel:
 - A. All Booster Pumps.
 - B. All Electrical Motors And Gas Engines.
 C. Well Pump Discharge Heads.
 D. Electrical Panel.
- 2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:
 - A. Well Shelter.
- 3. Specific Items To Be Painted OSHA Orange:
 - A. Electrical Conduit.
- 4. All Other Items To Be Painted With Either: (At Manager's Discretion)

 - A. Cholla Green B. Forest Green
 - C. Sonora Beige D. Red Rock

 - E. Rock Brown
 F. Deer-O Pure White
 G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PAINT COLOR SELECTION

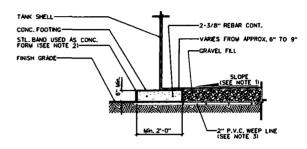
3/20/1986 \(\triangle \) 2/13/2001 CCO E-9-16-1

- 1. Tank shall conform to AWWA Specification D100-84 with exceptions noted below.
- •2. ¼" minimun shell plote.
- Minimum of 12" diameter roof vent, screened with No. 16 non-corrodible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the dollar plate.
- Overflow pipe shall be the same diameter as the inlet pipe and shall terminate t2 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above weir box high water level.
- 5. Storage tank shallbe placed upon adequately compacted base material.
- 6. 6" minimum floor mounted tank drain outlet to be located close to the outer shell.
- Tank and related fittings shall be enclosed with a 6 loot chain link fence with lockable gates and anti-personnel wire on top of fence.
- 8. Liquid levelshall be indicated by a target and target board on the outside surface of the tank.
- 9. 24 inch diameter manholes shall be provided on the roof and on the shell near the bottom of the tank. The roof manhole cover shall overlop the manhole by at least 2 inches to provide a rain light clasure. Roof manhole shall be hinged and equipped with a lock. Shellmanhole cover to be hinged and botted in place. *Tanks larger than a 60 foot diameter require 2 shellmanholes.
- 10. Inside and outside lodders shall be located at the roof markole. Outside lodder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within $\frac{1}{2}$ ° of shell with 10 gauge sheet steet.
- Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
- 12. The following information will be included with application for approval to construct:
 - 1. Tank location
 2. Tank height
 5. Tank diameter
 4. Tank capacity
 5. Method of water level control
- 13. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
- The welded steel storage tank will be coated as per AWWA Specification D102, and N.S.F. Standard 61.

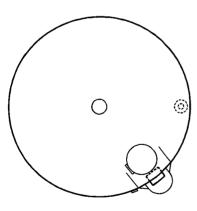
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

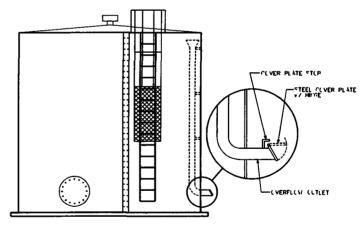
- FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-0".
- 2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN "."
- 3. INSTALL 8-2" DIA x10'-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45'), PERFORATE 8'-0" OF LINE WITH 1/2" DIA HOLES Ø 6" O.C. PLUG INTERIOR END OF LINE W/2" CAP.



FOUNDATION DETAIL







PROFILE VIEW

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

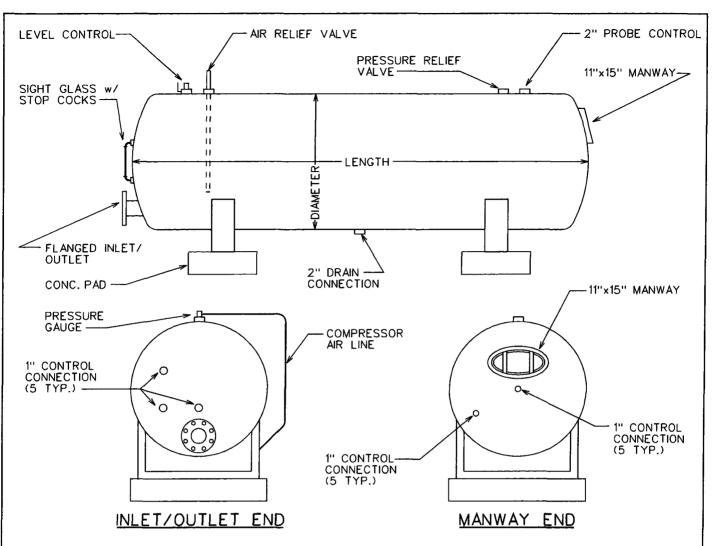
FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

BY: JPK APPROVED BY: MJW DATE: 10-17-

10-17-88 🛆 2-12-96

E-9-17-1



- 1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
- 2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
- 3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
- 4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.

1.	Tank	Location		
----	------	----------	--	--

- 2. Tank Length _____
- 3. Tank Diameter _____
- 4. Tank Capacity
- 5. Maximum Working Pressure ___

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

HYDROPNEUMATIC TANK

DRAWN BY: JPK APPROVED BY: MW DATE: 3-20-1986 \(\triangle \triangle 01.16.2007 \) E-9-18-1

NOT CONVERTED TO CAD

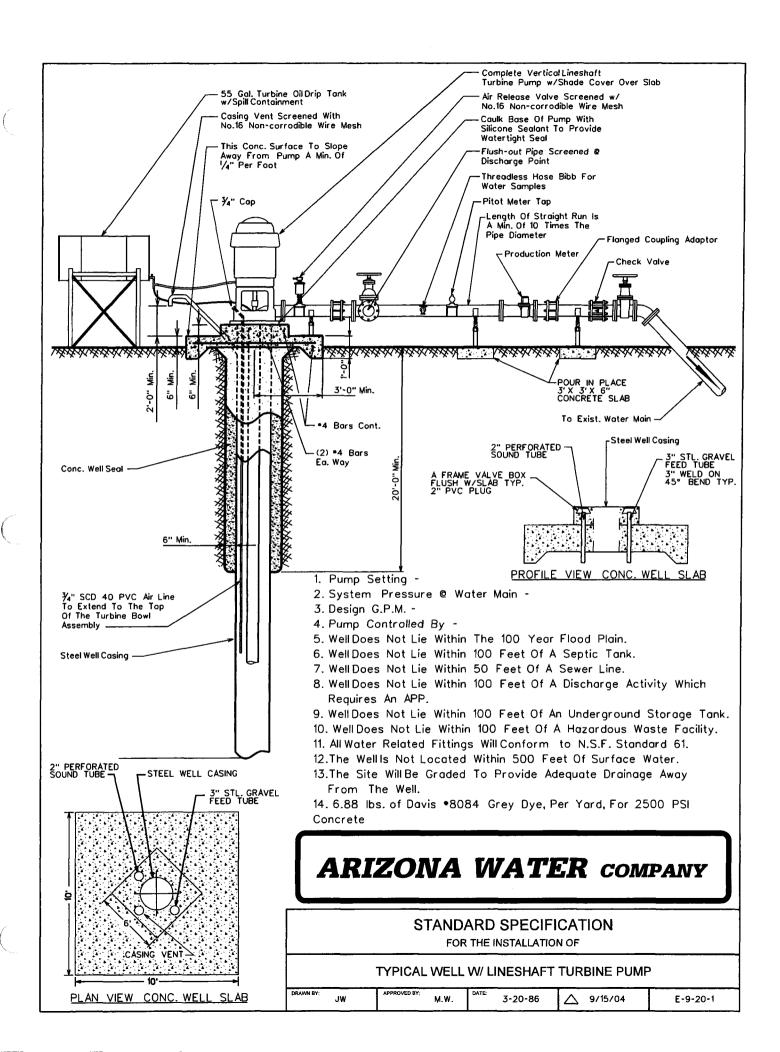
ARIZONA WATER COMPANY

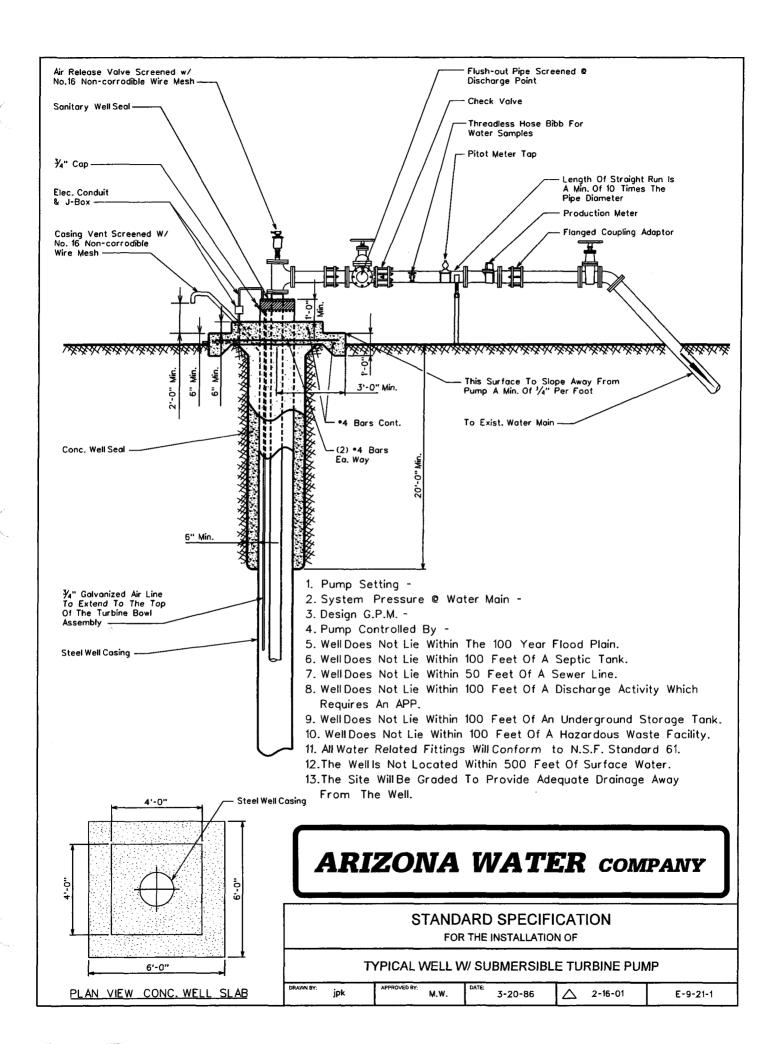
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

WELL SHELTER

CB APPROVED BY: DATE: 03.20.1986 \(\triangle 04.03.2001 \) E-9-19-1





All New Purchases To Conform To The Following:

Column Pipe

Oil Tube - Peerless Type

```
1½" O.D. - 14 Threads Per Inch Right Hand
2" O.D. - 12 " " " " "
2½" O.D. - 10 " " " " "
3" O.D. - 10 " " " " "
4" O.D. - 10 " " " " "
```

Line Shaft

```
3/4" O.D. - 10 Threads Per Inch Left Hand
1" O.D. - 14 " " " " "
1-3/16" O.D. - 10 " " " " " "
1-1/2" O.D. - 10 " " " " " "
1-11/16" O.D. - 10 " " " " " "
1-15/16" O.D. - 10 " " " " " "
2-3/16" O.D. - 8 " " " " " "
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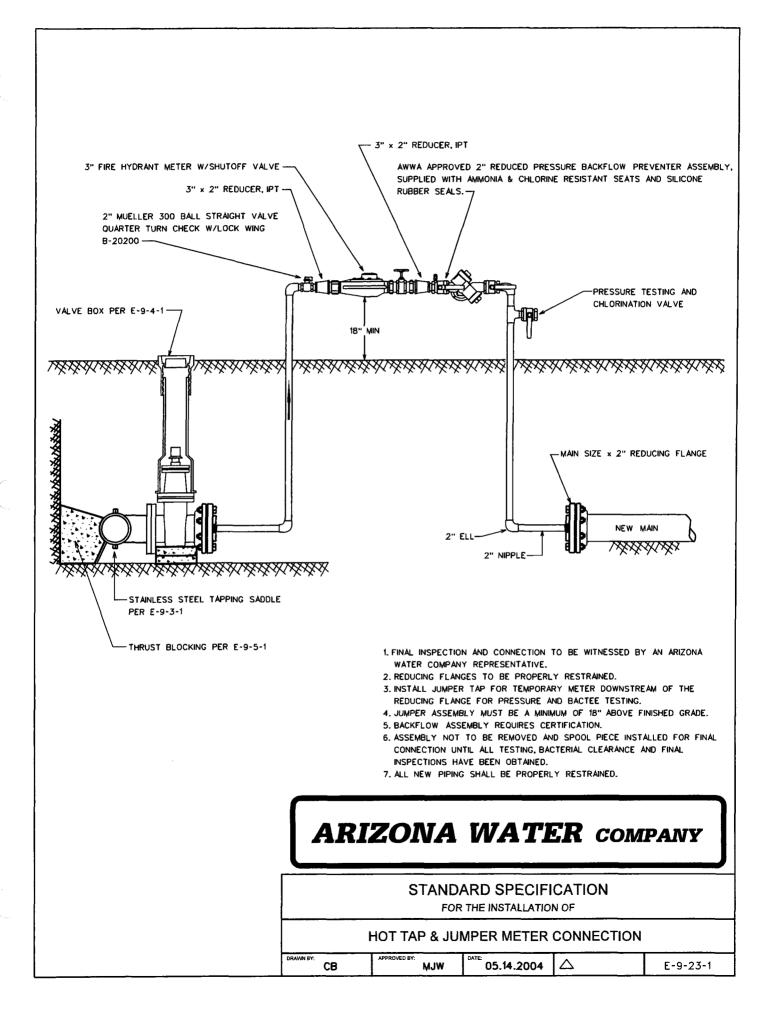
ARIZONA WATER COMPANY

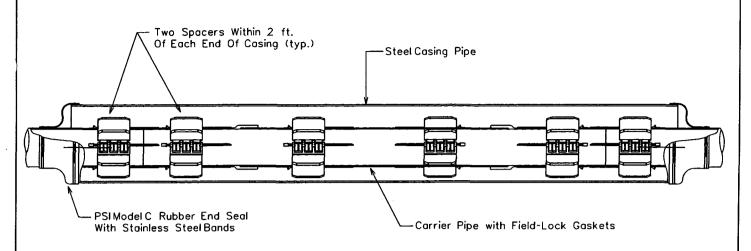
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

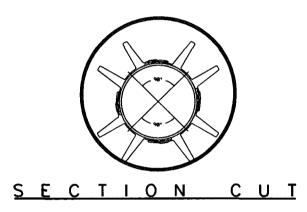
DATE 3/20/1996 \(\triangle 2/13/2001 \) **E-9-22-1**





CROSS SECTION

The casing spacers shall be the PSI Ranger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seal as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

*Thickness Of Skid To Extend A Minimum of $\frac{1}{2}$ " Above The O.D. Of The Pipe Bell or Gland.

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6''	16''	15.25"	STD.	.375	*x4x12
8''	18''	18.25"	STD.	.375	*x4×12
12"	22"	21.25"	STD.	.375	*x4x12
16''	28''	27.25"	STD.	.375	*x4x12
20"	32"	31.25"	STD.	.375	*x4x12
24"	36''	35.25"	STD.	.375	*x4x12
30''	48''	47.25"	STD.	.375	*x4x12
36"	54''	53.25"	STD.	.375	*x4x12
48"	66"	65.25"	STD.	.375	*x4×12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL	. WATER I	LINE EN	ICASEMENT
---------	-----------	---------	------------------

DRAWN BY:	APPROVED BY:	DATE: 3/	20/1996	\triangle	09.27.2006	E-9-24-1

CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCOPE - This specification describes a ARCH Chemicals Calcium Hypochlorite Tablet Chlorination System as manufactured by ARCH Chemicals, 501 Merritt Seven, P.O. Box 5204, Norwalk, CT, 06856-5204,

DESCRIPTION - The chlorination system shall be completely assembled, ready to install. The chlorination systems hall be a ARCH Chemicals Stalium Hypochlorite Tablet Feder, in the supplied with all its components factory mounted.

- COMPONENTS The Chlorination system shall have the following components: A. 1-37" ARCH Chemical solid calcium hypochlorite tablet feeder

 - R. Polywhysine system enclosure
 C. Integrated, level controlled solution fank
 D. Adjustable flow, control valve
 E. Manual ondy Yawe (at Infe)
 E. Chemical metering pump
 C. Ohoff pump op the pump
 H. Wakeproof electrical junction box
 C. Corrision resistant schedule 40 pping
 J. Reverse flow check valves
 K. Total solution output control valves

℗

Θ

ELECTRICAL FIXTURES - The following electrical fixtures shall be provided:
A. Safely swith: 2, but she to show it is not 120 Volts, 80 cycle,
Single phase power.

CHLORINATOR DESIGN - The chlorination facility shall be designed and constructed in accordance with Arizon a State Department of Health Engineering Bulletin Number 8 - "Disinfection of Vider (Vider Systems", Latest Revision.

(2)

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

CHLORINATOR OPERATION - The chlorination facility shall be operated in accordance with Arizona State Departed of Velatin Engineering Bulletin Number 5, 'Disinfection of Water Systems.' Tobjer, Intest revision.

➂

6 (2)

CHLORINATOR SYSTEM DESCRIPTION - ARCH Chemicals tablet chlorinator systems incorporate a patented chlorinator winth is telesigned to utilize ACH Chemicals - 1/3" solid calcum hypochlorite tablets (Approved NSF Standard 60), Neets ANWA Standard 60, Neets ANWA Standard 20,00 EAA Registration at 1/28-1178. The unouthed on a polyethyhere system enchosure. The intel water is sprayed on the calcum hypochlorite ballet and collected in a solidor hat. This chick thought hat. This chick the solid on the tank through a chemical melering pump. This melering pump is then adjusted to obtain the desired CL residual.

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

HYPOCHLORINATOR COMPONENTS:

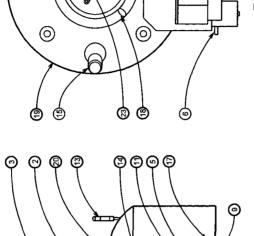
Chemical Metering Pump
 Pump Suction Connection
 Pump Dischage Connection
 Inlet Water Assembly
 Inlet Water Solenoid Valve
 Inlet Water Solenoid Valve

6. Inlet Shut-Off Valve
7. Inlet Pressure Regulator
8. Inlet Water Pressure Gauge
9. Spray Mozzie Water Pressure Gauge
10. Inlet Strainer
11. Inlet Tubing Connection

18. Observation Port 19. Mixed Chemical Holding Tank 20. Pressure Relief Valve 21. Pump Speed Control 22. High Level Shut-Off Float Switch 23. Weter Spray Nozzles

12. Dry Chemical Hopper S. Subford. Las Subford. Las Subford. Las Electrical Control Box With Power On/Off Electric Mixer 15. Selectric Mixer 16. Solution Discharge Connection 17. Tank Dien Valve

(8) P 0 **(**0 0 0 ☻ (2) ⑱ (6)



FRONT VIEW

9

Chlorinator Fluid Schematic

HOPPER REMOVED FOR CLARITY TOP VIEW

OPTIONAL TUBING INJECT (NO CHECK VALVE)

PTIONAL TABLET LEVEL SENSOR DRY CHEMICAL HOPPER 0PTIONAL IMPUT SIGNAL 1-10, 0-14, 0-100 VDC 1-5, 4-20 mA PUMP SPEED CONTROI (OPTIONAL) MLET PRESSURE GAUGE

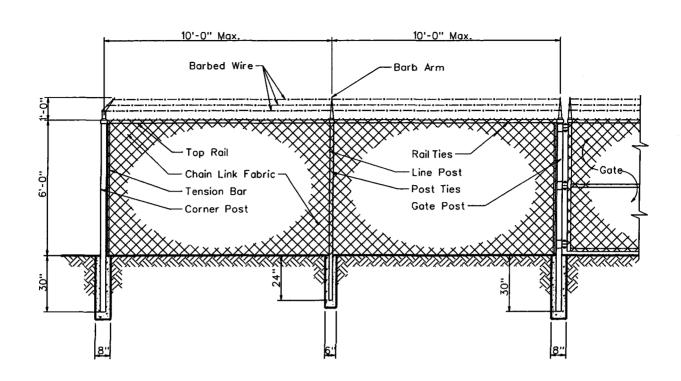
OPTIONAL TABLET LEVEL SENSOR OUTPUT

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR

	E-9-25-1	
	4	
DATE:	02-09-2000	
APPROVED BY:	MW	
JAWN BY:	8	



Line Post: 1-7/8" O.D. 1.74 lbs. P/L.F. **ASTM A-256** End Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256 Corner Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256 Gate Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256 Top Roi∷ 1-5/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Chain Link Fabric: 9 Ga. 2" Mesh Galv. Before Weave

Selvage: Barb/Knuckle

Fittings: Pressed Steel

Barb Wire: 2-1/2 Ga./2 Point

Barb Arm: 1 Piece/45° Arm

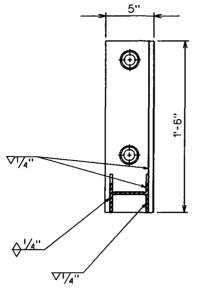
Tension Wire: 9 Ga./Galv.

Line Post Set: 6"x24" In Concrete

Terminal Post Set: 8"x30" In Concrete

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF CHAIN LINK FENCE DRAWN BY: CCO APPROVED BY: MW DATE: 7/7/1992 \(\triangle \triangle 2/9/2001 \) E-9-26-1

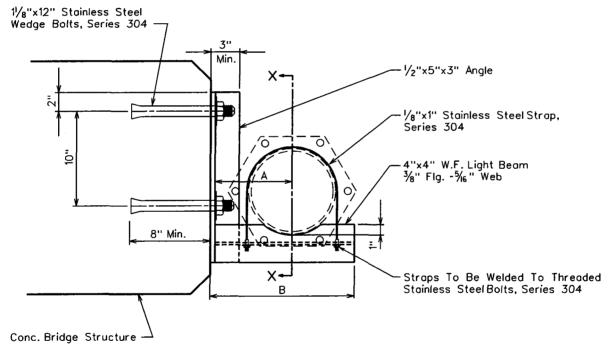


SECTION X-X

NOTES

- Minimum 2 Supports Per Joint Of Pipe.
- 2. All Bolts Shall Have A Lock Washer Under The Nut.
- 3. All Nuts Shall Be Stainless Steel Series 304.

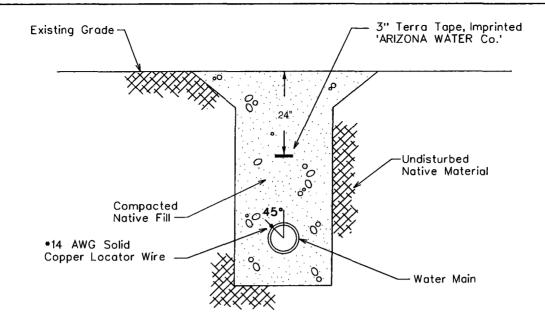
PIPE SIZE	Α	В
8"	8''	15"
10''	9"	17"
12"	10''	19''



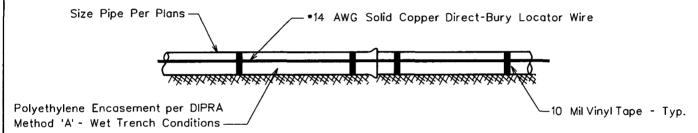
SUSPENSION DETAIL

ARIZONA WATER COMPANY

		9	ARD SPECIF		
	(SIDE HUNG \	WATER LINE	SUSPENSIO	N
DRAWN 8Y:	JPK	APPROVED BY:	7-12-96	\triangle	E-9-27-1



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

- All pipe shall have •14 AWG Solid Copper Direct-Bury Locator Wire Installed Directly To The Polywrap At 45° From The Vertical Center Of The Pipe and Shall Be Attached Using 10 Mil Vinyl Tape.
- 2. The Locating Wire Shall Terminate At the Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

- 1. Use Terra Tape 3" Marking Tape As Manufactured By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
- 2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
- 3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe.

 A) The Backfill Shall Be Sufficiently Leveled So That The Tape Is Installed On A Flat Surface.
- B) The Tape Shall Be Centered in The Trench With The Printed Side Up.
- C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill Is Moved Into The Trench.

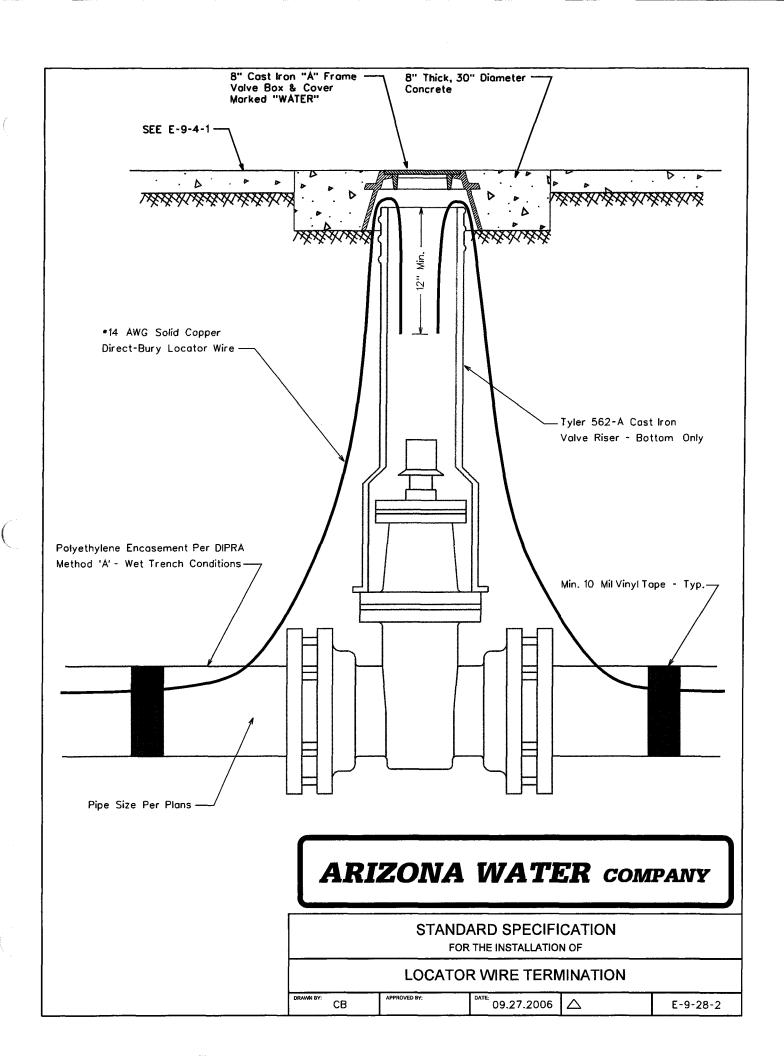
ARIZONA WATER COMPANY

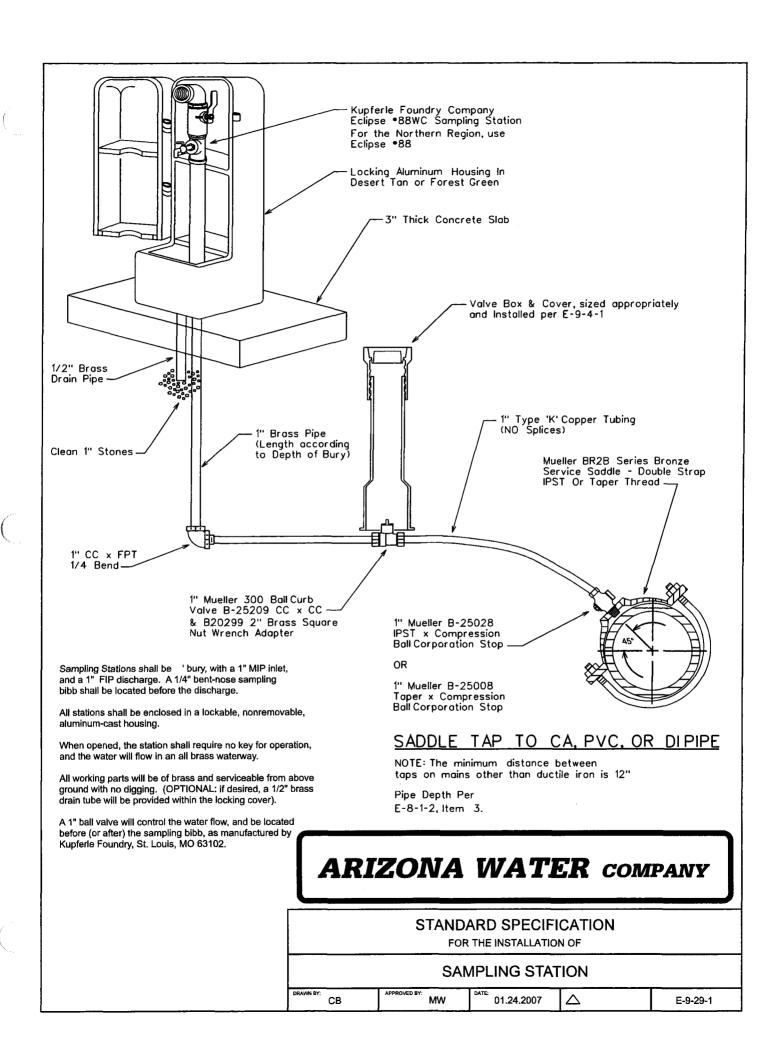
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

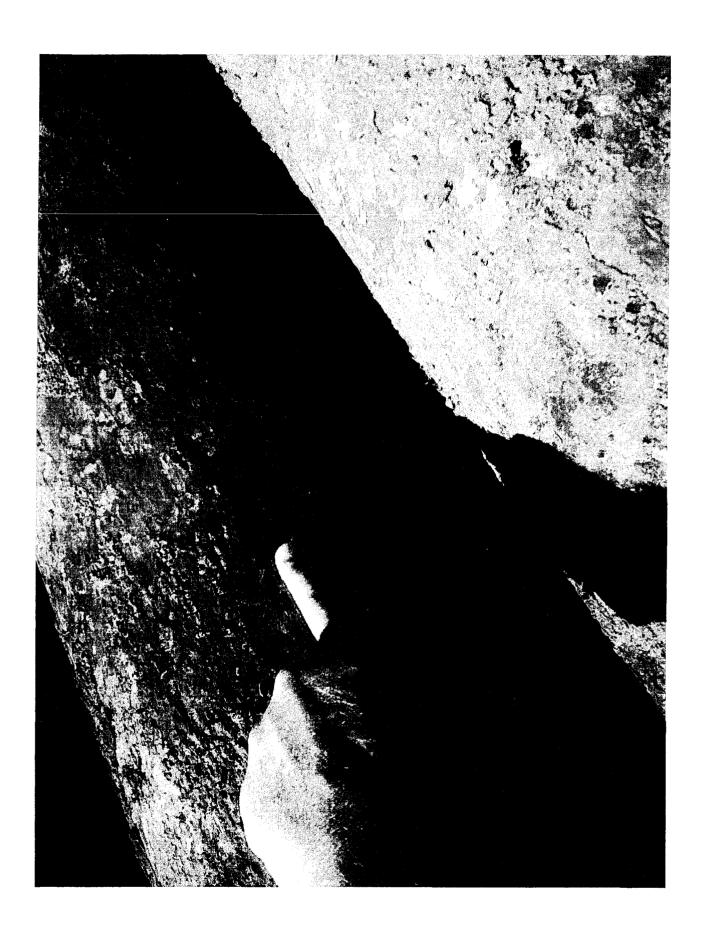
PIPE WARNING TAPE AND LOCATOR WIRE

DRAWN BY: CB APPROVED BY: DATE: 03.24.1997 \(\triangle 09.27.2006 \) E-9-28-1

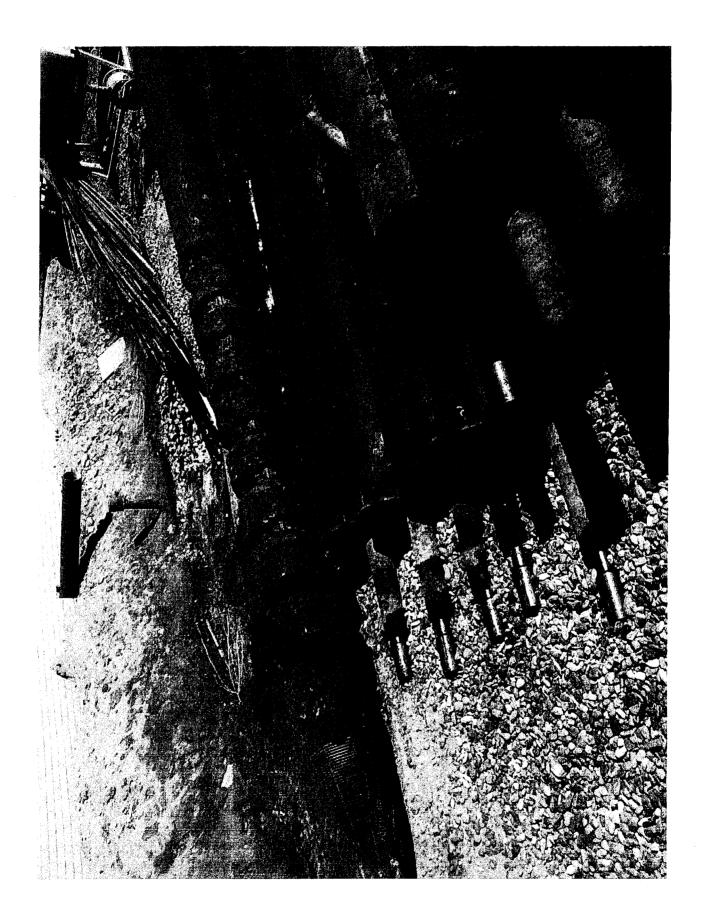






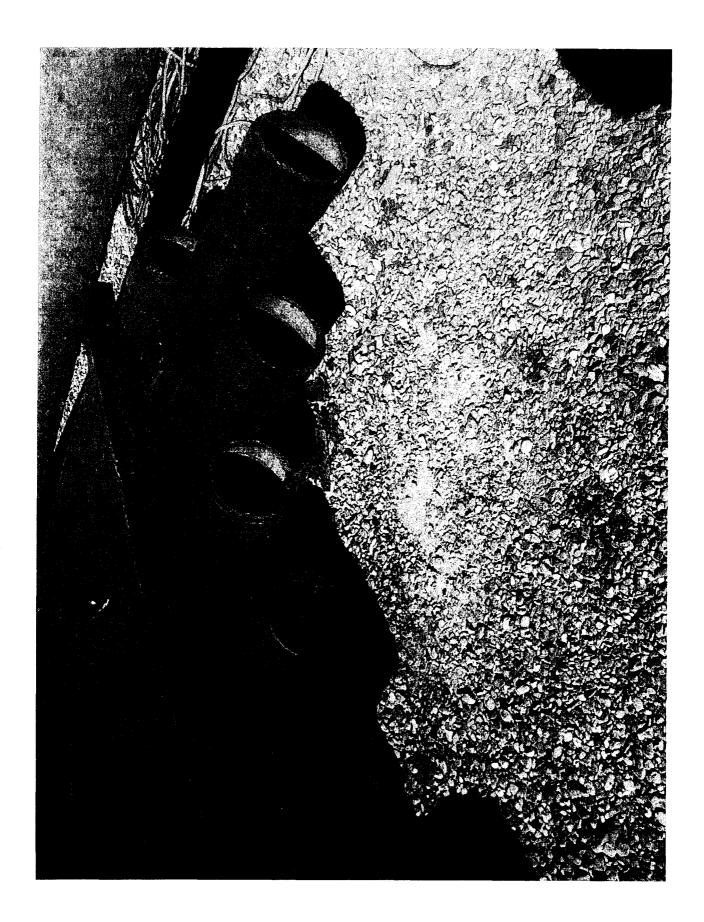


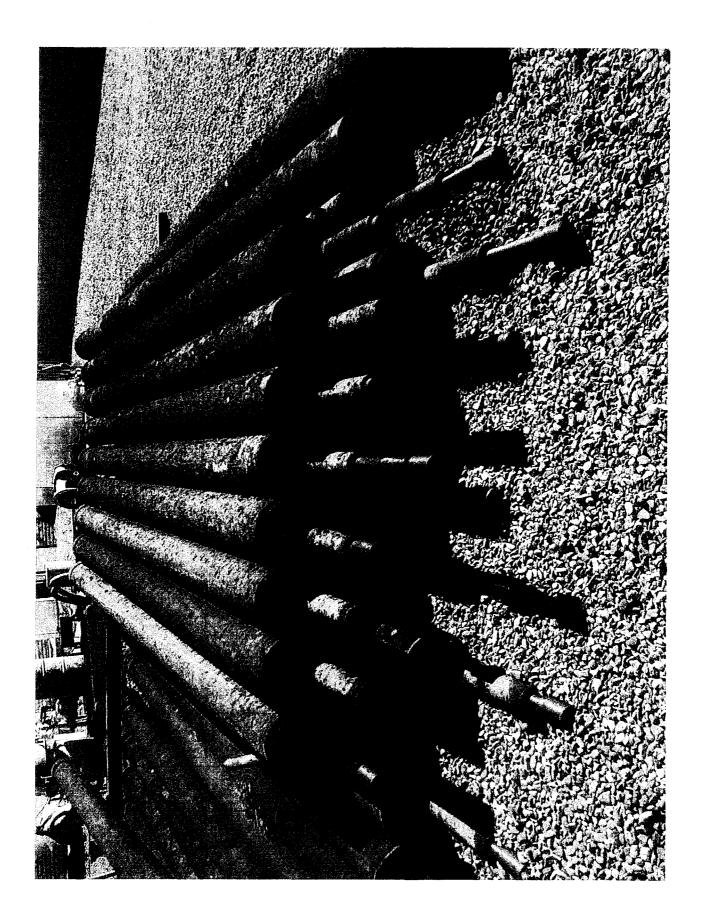


















WELLBORE

Southwest Exploration Services, LLC

VIDEO REPORT

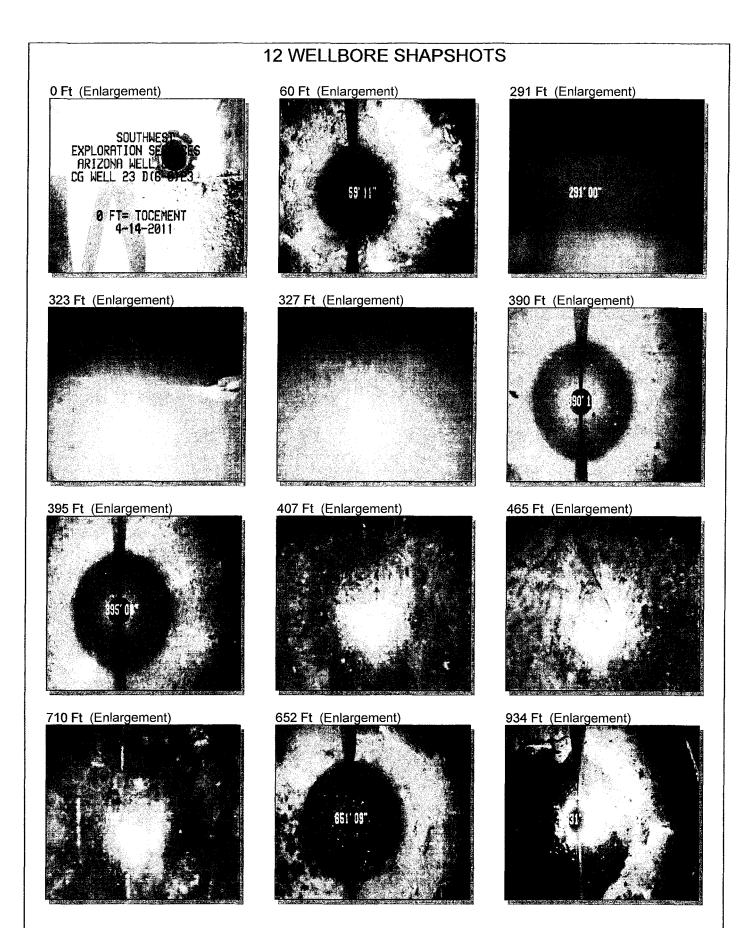
1730 W Sunrise Blvd Suite B-104 Gilbert, AZ. 85233
Phone: (480) 926-4558 Fax: (480) 926-4579 Web: www.swexp.com

			_	•				
Client:	K. P. Ventures				Survey Date:	April 14, 2011		
Address:	P.O. Box 2411				_Invoice:		_Run:	1
City:	Cottonwood		_State: AZ	_Zip:	_Well Name:_	CG Well 23		
Requested	By: K. P. Ve	ntures		_P.O.:	_Well Owner:	City of Casa Gr	ande	
Сору То:				Camera: Laval	S.S. Color C	amera - Long L.I	-1.	
Reason Fo	r Survey: Gener	al Inspection			_Zero Datum:	Top of Casing		
Location: S	.W section of Ar	izola and Cotto	nwood, Ca	sa Grande, AZ.	Depth:	0 Ft Vehic	le: 290	
Field: Casa	Grande				_Type Perfs:_	Vertical Slots		
Csg. I.D.@	Surface 18 In.	_I.D. Reference	Measured	Casing Buil	dup: <u>Modera</u>	te, Increasing W	/ Depth	
Operator: C	raig Neff	_Lat.:	Long.:_		_Sec:	Twp:	_Rge:	

Wellbore Snapshots	True Depths: (SideScan-Feet)	WELLBORE / CASING INFORMATION
t (See Other Side) 60 Ft (See Other Side)	0	Zero point side scan top of casing
SOUTHARSE EXPLORATION SPECIES	60	Downhole view showing rust flacking off of casing
FTW TOCEPENT	291	Static Water Level (SWL)
d-31-2011	323	One of several metal bands found lodged against casing in well
Ft (See Other Side) 323 Ft (See Other Side)	327	Highest evidence of possible perforations, top of vertical slots
_261**2***Ba	390	Down view showing partially encursted buildup on casing screen
nrw .	395	Down view showing increased partially encursted buildup on casing screen
Ft (See Other Side) 390 Ft (See Other Side)	407	Side view showing encrusted perforations
Pt (See Other Side)	465	Side view showing heavier encrusted nodules
	652	Down view showing heavy encrustation on casing walls
	710	Side view showing encrusted/filled perforations
Ft (See Other Side) 407 Ft (See Other Side)	934	Total depth of video log
RSC OF		
Ft (See Other Side) 710 Ft (See Other Side)	7	
Ft (See Other Side) 934 Ft (See Other Side)		
No.		

Notes: Oil floating at water surface. Pieces of strap metal found lodged against well casing.

Page Number: 1



WA 1-4803

ARIZONA WATER COMPANY WORK AUTHORIZATION



W.A. NUMBER:
P.E. NUMBER:
BUDGET ITEM NO.:
SHEET NO.:

1-4803

1-4803 1 of 2

SYSTEM:

PINAL VALLEY

DIVISION: TAX CODE: 0403

CASA GRANDE

WORK TO START BY:

WORK TO BE FINISHED BY:

UPON AUTHORIZATION

WITHIN 60 DAYS

DESCRIPTION OF WORK:

Pull and replace the pump and motor at Well #14. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

The pump has failed. 2011 Approved Budget Item (\$45,000)

COST ESTIMA	TE		AUTHORIZATION	DATE	
COST OF WORK: MATERIAL		0	PREPARED BY: James Wilson 9w 3/29/11	3/22/11	
LABOR		3,000	REVIEWED FOR ESWIT/ROW VERIFICATION:	12 72 224	
CONTRACT PORTION	· · · 	27,781	Charles Briggs CB 3-30-2011	03-22-2011	
OVERHEAD TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.		4,617 35,398	Mike Loggins ML 3-30-11	3-22-11	
FUNDS RECEIVED: CONTRIBUTIONS RECEIVED		0	APPROVED BY ENGINEERING: Fredrick Schneider 4 84-6-11	3-24-11	
REFUNDABLE ADVANCES RECEIVED		0	APPROVED BY FINANCE: Joseph Harris	3/26/4	
TOTAL CONTRIBUTIONS/ADVANCES NET CASH REQUIRED COMMENTS:	\$ 3		AUTHORIZED BY PRESIDENT: William W Marfull	3.30.2011	
			William Garfield CONSTRUCTION RELEASE:		

FILE COPY

RELEASED TO CONSTRUCTION

Authorized by FRED SCHNEIDER Date 330 2011

AFH

W.A. NUMBER: P.E. NUMBER: BUDGET ITEM NO .:

1-4803

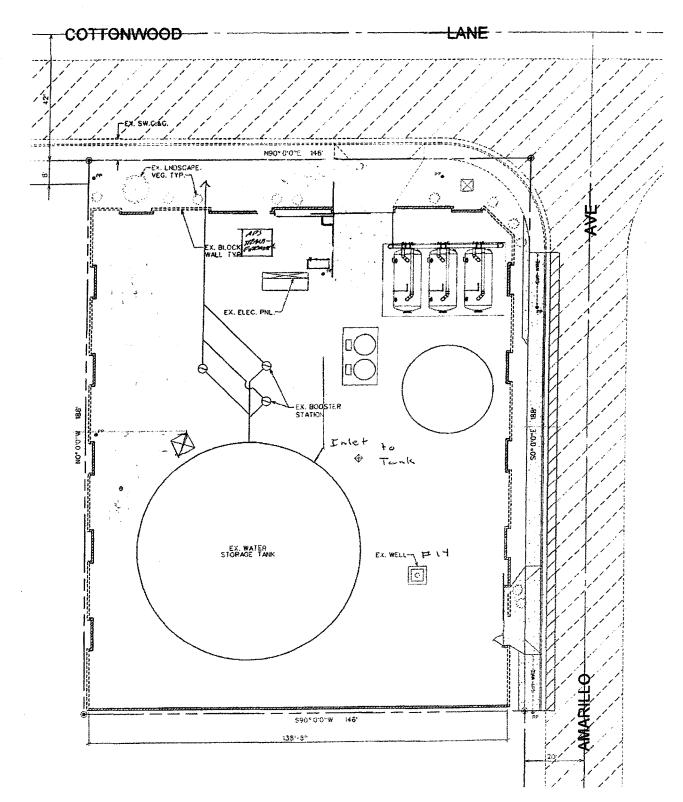
1-4803 2 of 2

WORK AUTHORIZATION - DETAIL SHEET SHEET NO .: YEAR INSTALLED AND W.A. NUMBER PLANT PROPERTY ACCOUNT QUANTITY Grundfos 230-S-400-10 Pump 2005 1-3827 2005 1-3827 RETIREMENT 325 Franklin 40 HP submersible motor 325 PROPERTY 260 2005 1-3827 325 4" Galvanized column pipe UNITS

PROJECT DESCRIPTION:

Pull and replace the pump and motor at Well #14								
	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST		TOTAL		
	Labor to pull and replace the pump and motor	325	1	\$ 2,250.00	\$	2,250		
	Install Goulds 6CLC 10-Stg. submersible pump	325	1	2,808.54		2,809		
С	Install 40HP submersible motor	325	1	3,544.13		3,544		
0	Install 3" Flowmatic 80DIX check valve w/knock out plugs	325	2	414.48		829		
N	Install 3/4" PVC sounding line	325	550	0.30		165		
T R	Miscellaneous materials	325	1	95.00		95		
A	Install 1/4" SS air line	325	1	1,391.50		1,392		
С	Install 3"x21' column pipe	325	13	142.51		1,853		
T	Video Well	325	2	650.00		1,300		
w	Brush and bail well	325	60	165.00		9,900		
0	Install 4AWG 4 wire submersible pump cable	325	550	5.15		2,834		
R	Contracting Tax	325	1	496.85		497		
K	Performance and payment bond	345	1	312.72		313		
		345						
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345						
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345						
тот	AL CONTRACT WORK				\$	27,781		
								
М								
A								
T E								
R	SERVICE CONNECTIONS: DOUBLE-LONG	345						
1	SERVICE CONNECTIONS: DOUBLE-SHORT	345						
A	SERVICE CONNECTIONS: SINGLE-LONG	345						
	SERVICE CONNECTIONS: SINGLE-SHORT	345						
	METERS	346						
тот	AL MATERIALS				\$	_		
						-		
					-	·		
L A	TESTING FEE	325	1	\$ 500.00	-	500		
_	PERMIT FEE							
\sim	SURVEY FEE							
R	FIELD INSPECTION	325	1	2,500.00		2,500		
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345				-,-30		
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345						
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345						
	INSTALL SERVICE CONNECTIONS: SINGLE-EONG	345						
TOT					\$	3,000		
	TOTAL LABOR SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					30,781		
OVERHEAD						4,617		
		NI DEFINITION OF COSTION I		COST FORTILITE	\$			
тот	AL REFUNDABLE PORTION NO	N-REFUNDABLE PORTION		COST ESTIMATE	Φ	35,398		

AFH



(

SITE PLAN

- i" *20'-0"---

The state of the s	months and the second		_
ETATIC	prison	c Frow	arre
269	447	160	10/04
マグア /	521	230	1/09
204	311	170	10/08
287	484	150	4/08
243	450	145	10/07
257	479	150	4/07
709	354 426	170	10/06
24/	391	140	10/05
1057	ruco	7/05	,
AV	4251	167 spm	

TDH = 425 + 20 + 95" = (540') & 165570.

MMRAD"

CASA GRANDE WELL #14 – CASA GRANDE, AZ EQUIPMENT SPECIFICATIONS

Existing Well Information

Location:

1147 E. Cottonwood Ln. (1/4 Mile East of Trekell)

Casa Grande, AZ 85122

Drilled by:

H.S. Pixler & Son - 1973

Casing:

20" Mild Steel from 0-1199'.

Pump:

Grundfos 230-S-400 10-Stage submersible pump.

Motor:

Franklin 40 HP 480V 3 phase, 3600 RPM submersible motor.

Special Conditions

• All scrap materials removed from the well including the pump, motor, column and bailed materials are to be removed and disposed of by the contractor.

Design Conditions

165GPM @ 540' TDH. Pump setting: 550 ft.

Equipment to be Furnished and Installed by Pump Company

- One Goulds 6CLC 10-stage submersible pump.
- One 40HP 480V 3 phase, 3600 RPM motor from approved list below.
- Two 3" Flomatic 80DIX check valves with break out plugs.
- 550 ft. 3/4" I.D. SCH 40 solvent weld PVC sounding line.
- Video Well
- All miscellaneous bandits, buckles, tape, etc.

Approved Alternate 40-HP Submersible Motor Assemblies

Hitachi.

Pleuger

Franklin

Jacuzzi

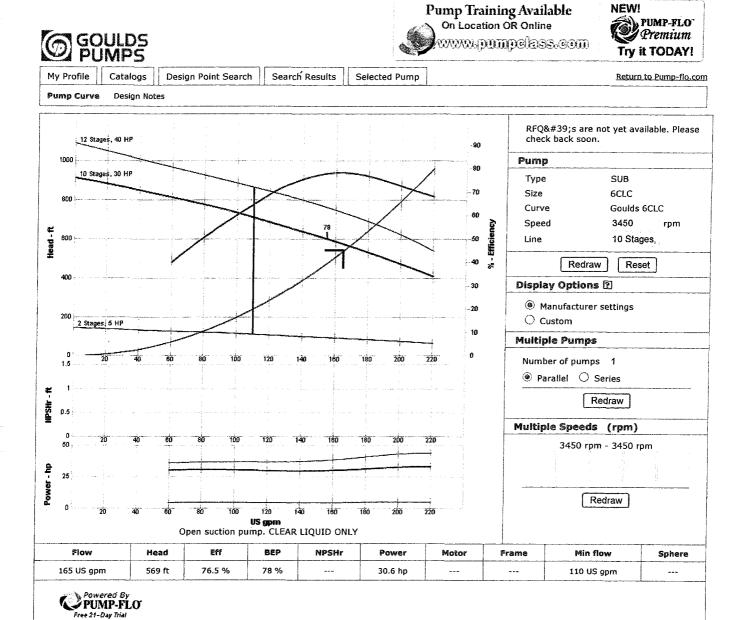
CentriPro

Included with Each Bid Should be a List Including:

Maximum Bhp

Operating Bhp

Overall efficiency at design conditions



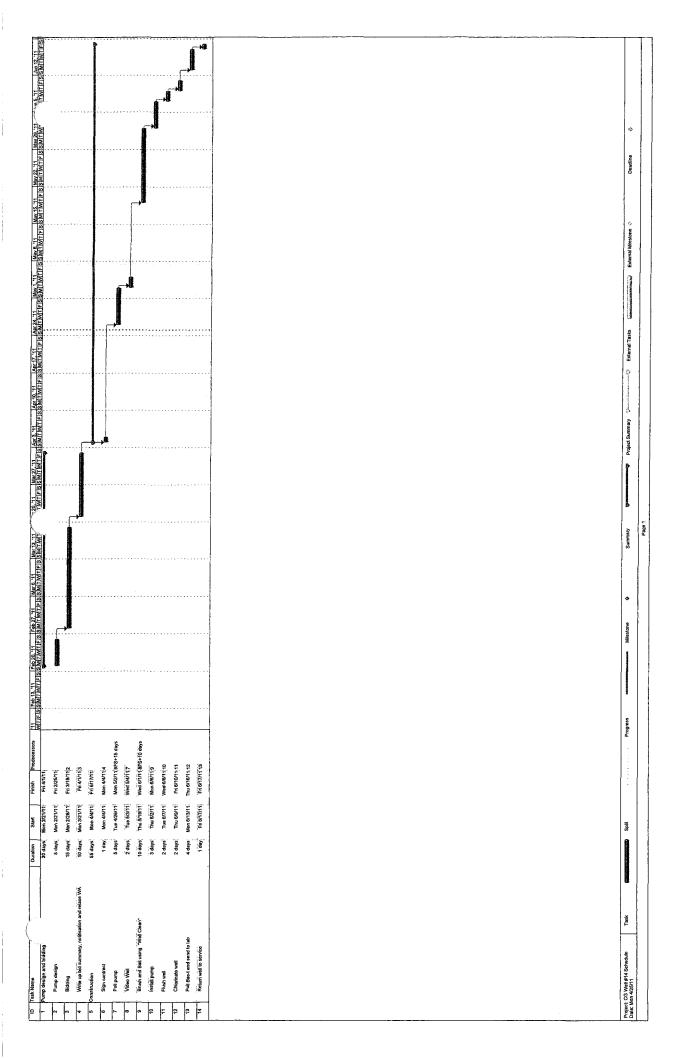








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Pinal Valley - Casa Grande 220 E. 2nd Street, Casa Grande, Az 85122 Ph: 520-836-8785 FX: 520-836-2850

PROPOSAL/CONTRACT

CONTRACTOR	E COOLIDGE ENGINE & PUMP	SYSTEM:	PINAL VALLEY
ADDRESS:	P. O. BOX 957	W.A. No(s):	1-4803
CITY ST ZIP:	COOLIDGE, ARIZONA 85128	BID DUE DATE:	March 18, 2011

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

- 1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
- Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
- Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entify or person.
- Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
- 5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
- 6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full flability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
- 7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
- 8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
- 9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
- 10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 30 calendar days after the Commencement Notice is issued.
- 11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
- 12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

All miscellaneous fittings required to provide a complete pump assembly to be included in the proposal. Contractor to provide complete pumping equipment submittal package for approval prior to start of construction. Design Conditions: Variable flow, constant pressure. 400-1200gpm @ 162 TDH

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
COOLIDGE ENGINE & PUMP	ARIZONA WATER COMPANY
By: Isalus Mans	By: Judun K Shand
Print Name: JACK MONE	Print Name: Fredrick K. Schneider, PE
Title: Owner I MANARINA PARTIE	Title: Vice President - Engineering
Date: 3-15-11	Date: 4-6-11



Pinal Valley - Casa Grande 220 E. 2nd Street, Casa Grande, Az 85122 Ph: 520-836-8785 FX: 520-836-2850

PROPOSAL/CONTRACT

CONTRACTOR: COOLIDGE ENGINE & PUMP				PINAL VALLEY		
					W.A. No(s):	
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:				BID DUE DATE:	-4803	
						40 0040
ADDRESS:	P. O. BOX 957				March BID BOND REQUIRE	<u>18, 2010 </u>
CITY ST ZIP	COOLIDGE, ARIZONA 85128				Yes	√ No
DESCRIPTION OF PROJECT:	Pull and replace the submersible pump	and mo	tor at Ca	asa Grande	e Well #14.	
			Ų	INIT PRICE	TC	TAL COST
1-2. MATERIA	ALS EXEMPT FROM CONTRACTING TAX (per Paragraph	6) QUANTITY	/ LABOR	MATERIALS	_LABOR_	MATERIALS
					1	2
	to Install Exempt Materials (add the amounts in column 1) pt Materials (add the amounts in column 2)				3	4
5-6. <u>NON-EXE</u>	MPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
Labor to pull and	replace the pump assembly	1			2,250.00	
Provide and insta	Il Goulds 6CLC 10-Stage submersible pump	1		2,808.54		2,808.54
	Il 40 HP submersible pump motor	1		3,544.13		3,544.13
Provide and insta	Il 3" Flomatic 80DIX check valve with knock out plugs	2		414.48		414.43
Provide and insta	II 3/4" solvent weld PVC	550		165.00	5	165.00
Provide and insta	Il all misc. materials (Buckles, bandits, tape etc)	1		95.00	•	95.00
∕ideo Weli		1	<u>650.00</u>		650.00	
	Baski Stainless Steel air line with gauge and valve	Lot		1,391.50		
Price Only - Brush	n and Bail well using cable tool rig (Price/hr.)	1	165.00			
	G 4 wire submersible pump cable	550		2,833.60		
Price Only - 3"x21		1		142.51		
	o install Non-Exempt Materials (add the amounts in column 5)				7 2,900.00	
	kempt Materials (add the amounts in column 6)		*******			s 7,027.15
9. Subtotal A (a	add lines 3, 7 and 8)	••••••				9 9,927.15

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

14. 100% Performance and Payment Bonds Cost

15. Estimated Total Cost (add lines 13 and 14)

11. Applicable Contracting Tax Rate

13. Subtotal B (add lines 4, 9 and 12)

10. Contracting Tax Base (multiply the amount on line 9 by 0.65)

12. Contracting Tax (multiply the amount on line 10 by line 11)

12496.85

13 10,424.85

10 6,452.65

CONSTRUCTION SPECIFICATIONS: E-8-1

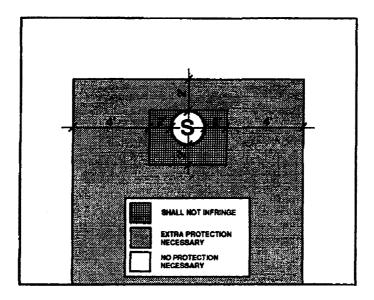
ERRATA 2010

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



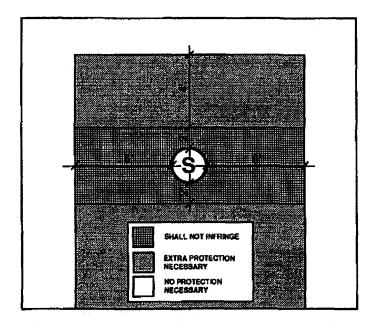
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

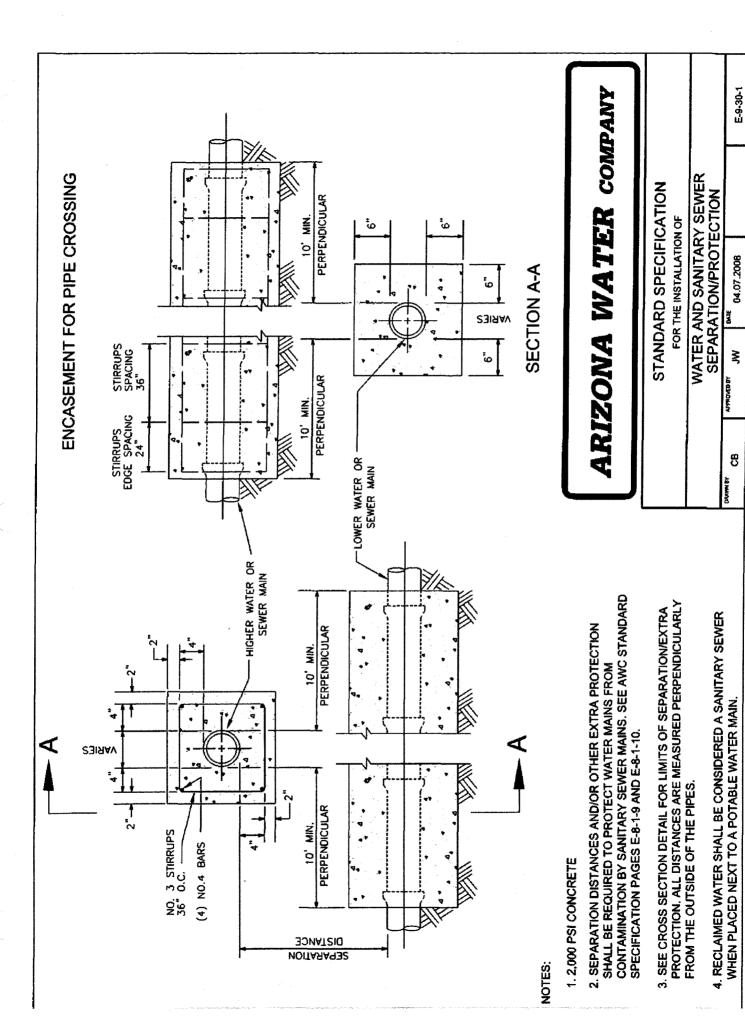
- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.

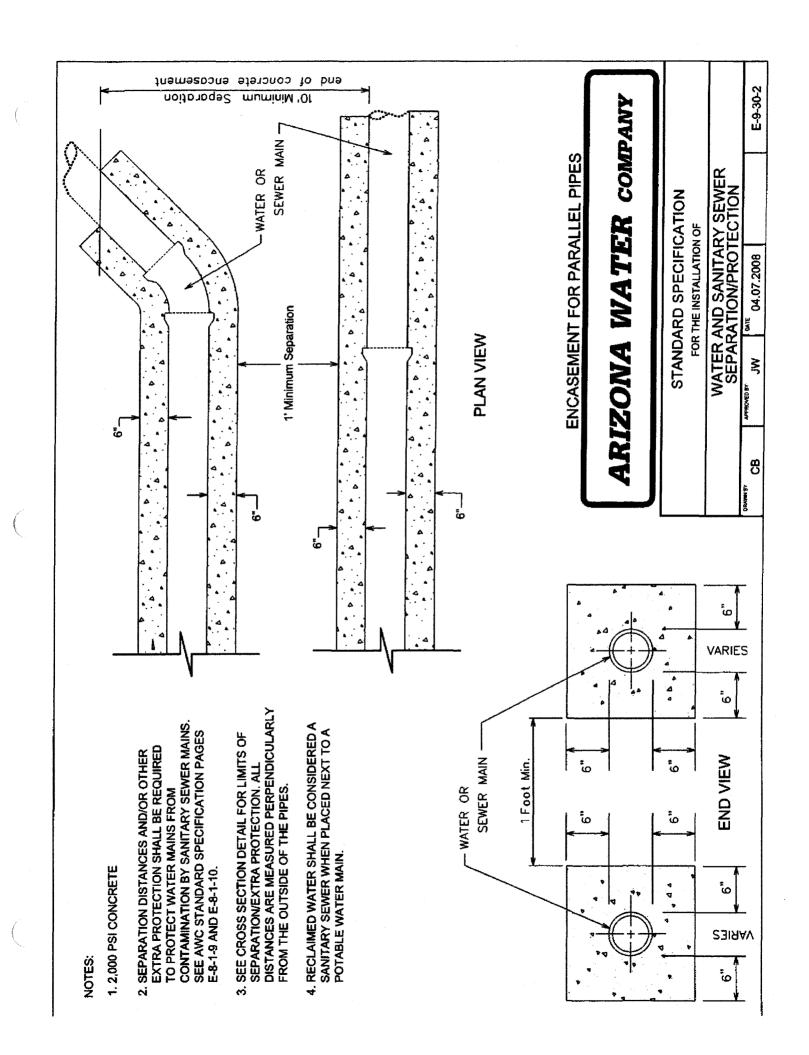


STANDARD SPECIFICATION DRAWINGS: E-9-1

ERRATA 2010

E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
E-9-22	INSTALLATION OF COLUMN PIPE, OIL TUBE AND LINE SHAFT
E-9-23	HOT TAP AND JUMPER METER CONNECTION
E-9-24	INSTALLATION OF TYPICAL WATER LINE ENCASEMENT
E-9-25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION
E-9-30-1	WATER AND SANITARY SEWER SEPARATION/PROTECTION PERPENDICULAR
E-9-30-2	WATER AND SANITARY SEWER SEPARATION/PROTECTION - PARALLEL





3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006. PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan Clow Valve Company 8121 N. 10th Avenue Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 51/4" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 Low Zinc Bronze Stem
 - Size range 14" thru 48"

To: Jim Ryan - Clow Valve Company

October 19, 2010

Subject: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the Clow products. If I can be of any assistance, please call me.

Very truly yours,

Judica K Slund

Vice President - Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 * P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 * FAX: (602) 240-6878 * WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger US Pipe – Waterworks Marketing Consultants 34522 N. Scottsdale Road Scottsdale, Arizona 85226

Re: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USP1
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Tony Geiger - US Pipe

November 24, 2010

Subject:

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,

Fredrick K. Schneider

Vice President - Engineering

afh

VIA EMAIL: TGEIGER4@COX.NET



SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION

GENERAL CONDITIONS OF CONTRACT: E-4-1

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. Company. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Invitation to Bid</u>. The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid.
- F. <u>Contract</u>. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. <u>Inspector</u>. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

8. PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. **DISPUTES**

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. ?40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons, and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all deslabor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. <u>LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME</u>

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

CONSTRUCTION SPECIFICATIONS: E-8-1

E-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawi ngs and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Contract</u>. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

- a. Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding m aterial will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following m aterials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color yellow, drain open, open direction left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 4" Pumper Nozzle, NST and 2 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San M anuel.)
 - (2) 1 − 4½" Pumper Nozzle, NST and 2 − 2½ " Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) $1 4\frac{1}{2}$ " Pumper Nozzle, NST and $2 2\frac{1}{2}$ " Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and $2 2\frac{1}{2}$ " Hose Nozzles, NPT (Miami only.)

- (5) $1-3\frac{1}{2}$ Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and $2-2\frac{1}{2}$ Hose Nozzle, NST (Superior only.)
- b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x 3/4" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12"; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and B UNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)
- I. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.
- m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.
- COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8 " x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x $\frac{3}{4}$ " x $\frac{3}{4}$ " for a $\frac{3}{4}$ " service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: ¾", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes 3/4", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".
 - Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).
- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
 - (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
 - (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knock outs and adjustable frame.
 - (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8 x 3/4" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these S pecifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe befor e any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Speci fication E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditi ons warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit:

NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

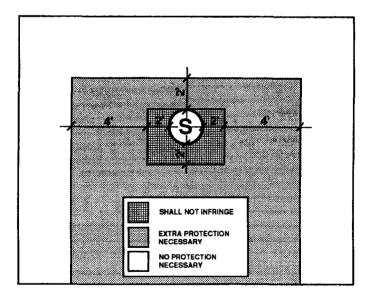
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below f or clarification.



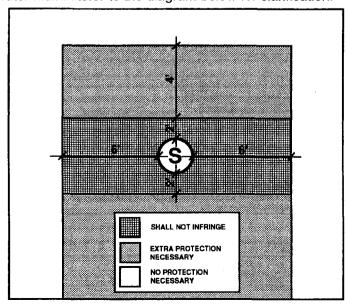
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°, 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS: E-9-1

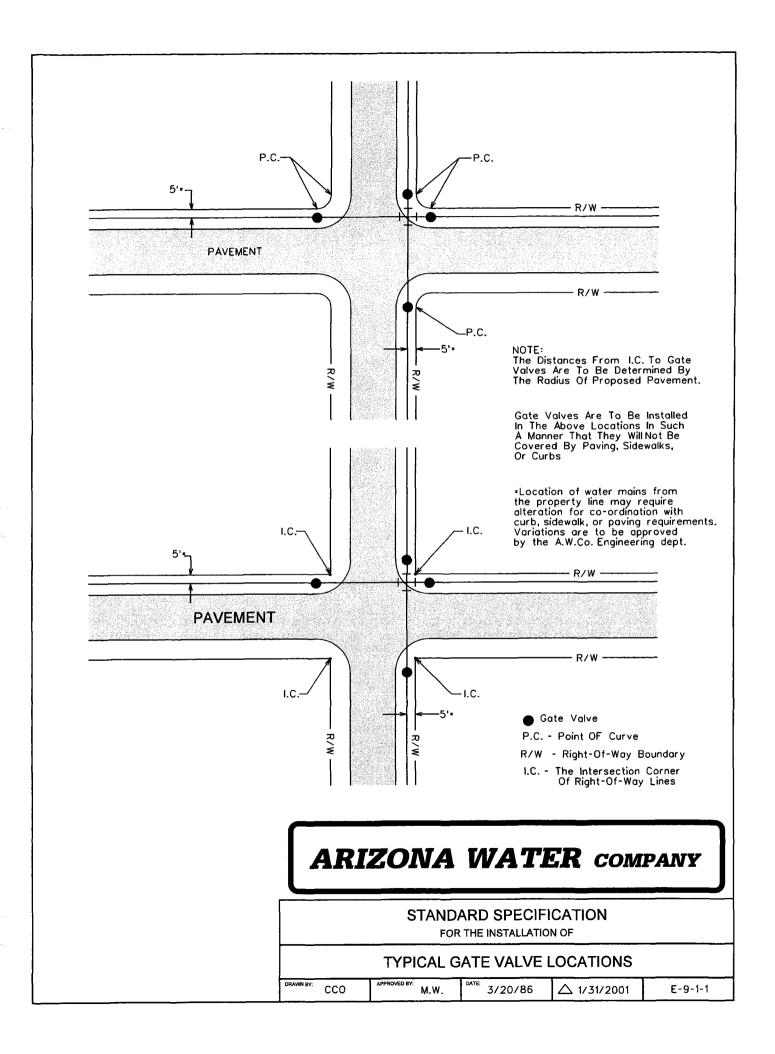
ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS

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E-9-2	INSTALLATION OF TYPICAL VERTICAL AND HORIZONTAL GATE VALVES
E-9-3	INSTALLATION OF TYPICAL TAPPING SLEEVE AND VALVE
E-9-4	INSTALLATION OF TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC
E-9-5	INSTALLATION OF TYPICAL THRUST BLOCKING SCHEDULE, THRUST BLOCK FOR VERTICAL BENDS, AND MEGALUG THRUST RESTRAINTS
E-9-6	INSTALLATION OF TYPICAL PERPENDICULAR FIRE HYDRANT
E-9-7	INSTALLATION OF TYPICAL PARALLEL FIRE HYDRANT
E-9-8	INSTALLATION OF TYPICAL 2" BLOWOFF DEVICE, AND AIR RELEASE VALVE
E-9-9	INSTALLATION OF TYPICAL SINGLE SERVICE CONNECTION FOR A $^3/_4{}^{\shortparallel}$ OR 1" METER
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E-9-13	INSTALLATION OF TYPICAL 4" THRU 8" DETECTOR CHECK VALVES AND 3" THRU 10" REDUCED PRESSURE PRINCIPLE DETECTOR WITH BYPASS METER ASSEMBLY (RPDA) FOR FIRE LINE SERVICES
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E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
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E-9-25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
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E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION

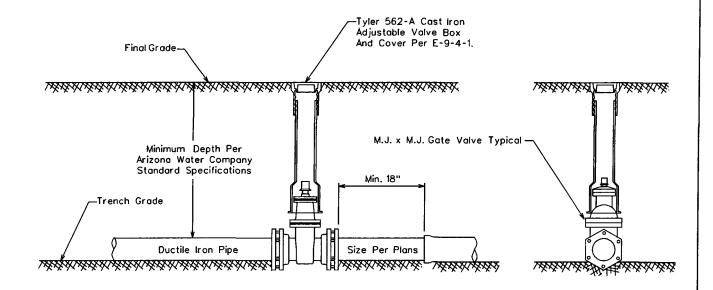


FOR 6" THROUGH 12" GATE VALVES

Mueller Resiliant Wedge Gate Valves Catalog Number A-2360-__ ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

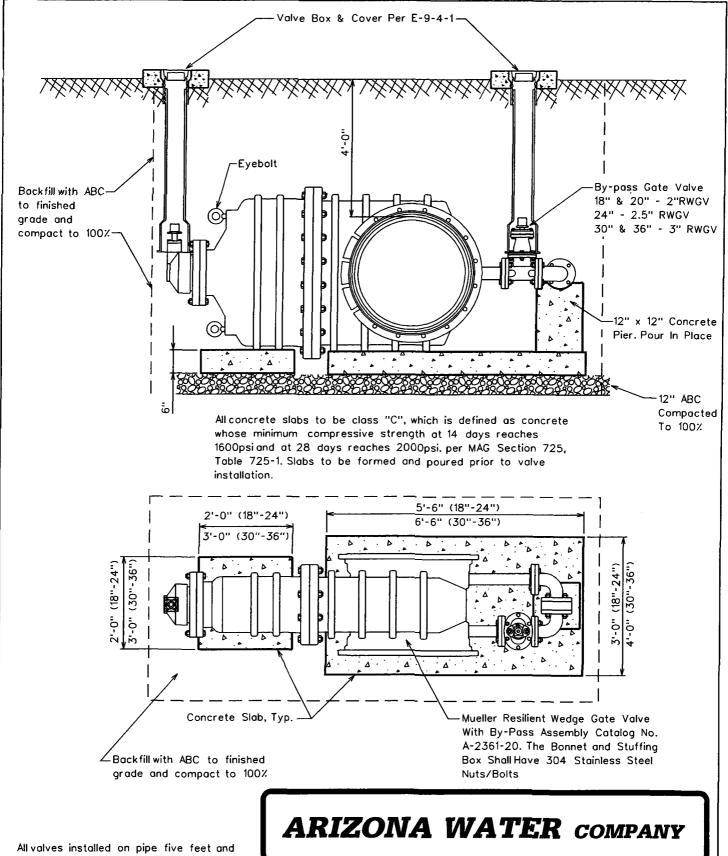
Mueller Resiliant Wedge Gate Valves Catalog Number A-2361-__ ANSI/AWWA C509 Compliant



All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF TYPICAL VERTICAL GATE VALVES DRAWN BY: CB APPROVED BY: MW DATE 03.20.1986 \$\triangle 08.23.2006 \text{E-9-2-1}

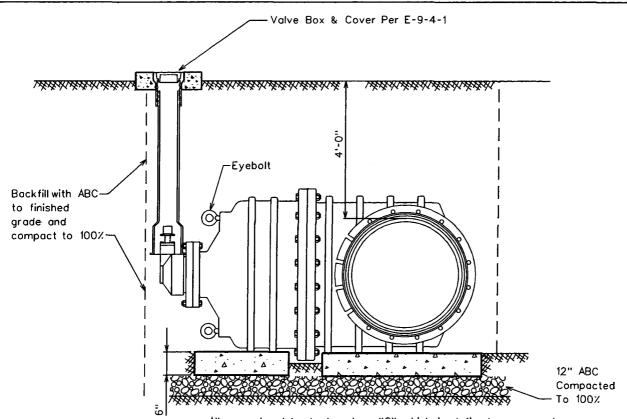


All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

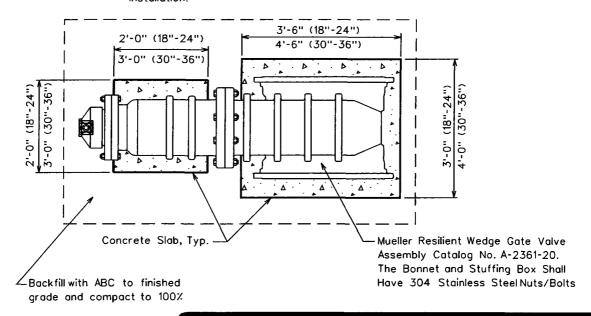
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES
WITH BY-PASS FOR 18" AND LARGER VALVES



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

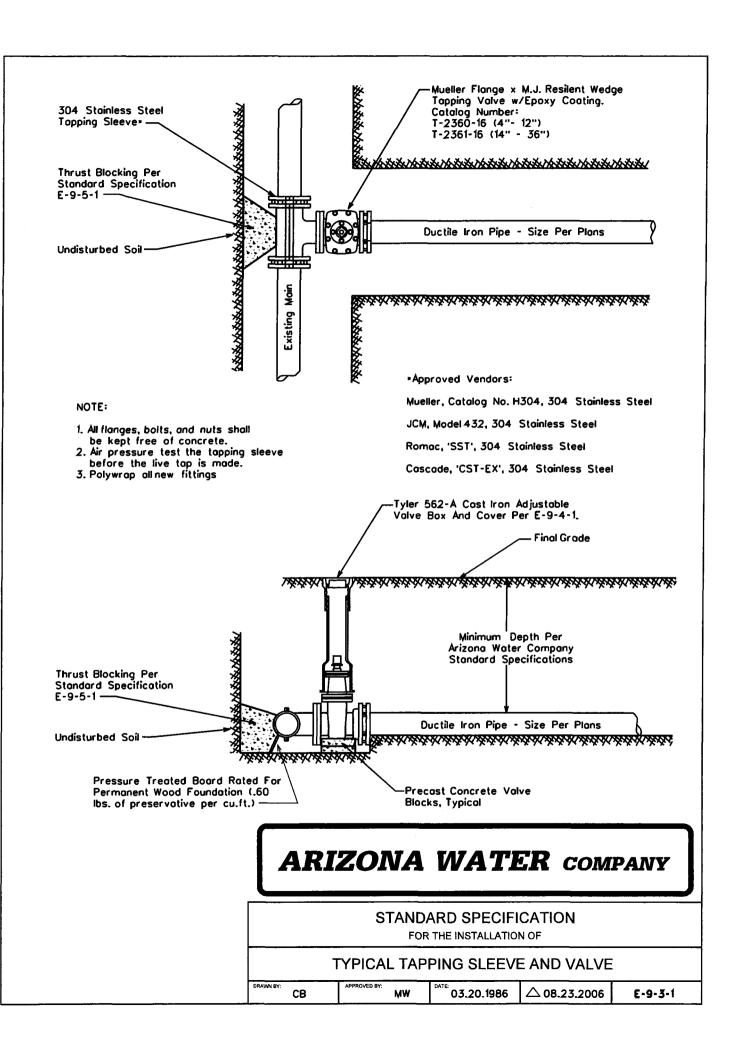
ARIZONA WATER COMPANY

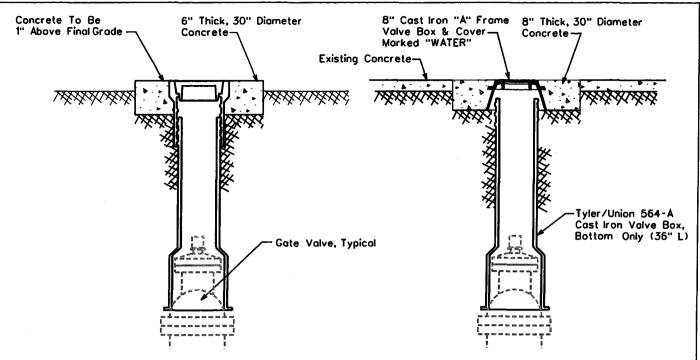
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

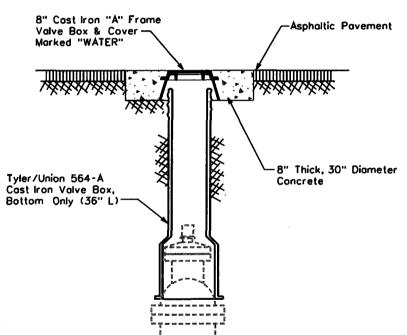
DRAWN BY: CB | APPROVED BY: | DATE: 12.07.2004 | △ 5.13.2005 | E-9-2-3





NON-VEHICULAR VALVE BOX

CONCRETE VALVE BOX For Areas Subject To Vehicular Traffic



NOTE:

- The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
- For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"

For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"

- 3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
- Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

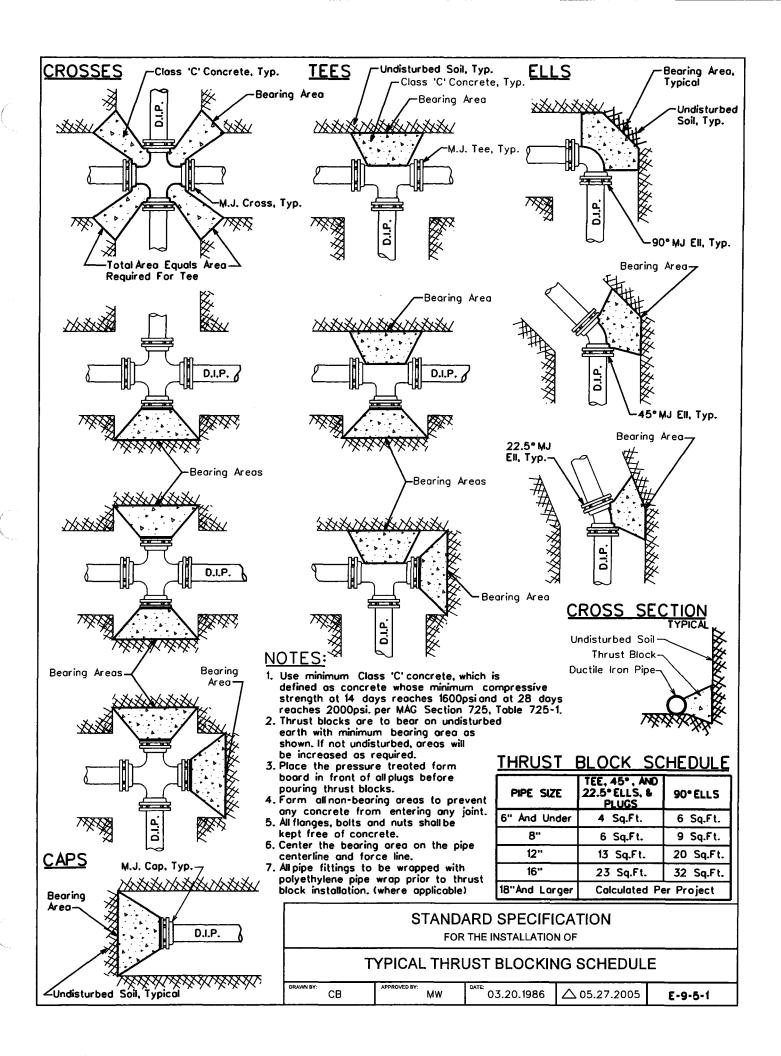
ASPHALT VALVE BOX For Areas Subject To Vehicular Traffic

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC

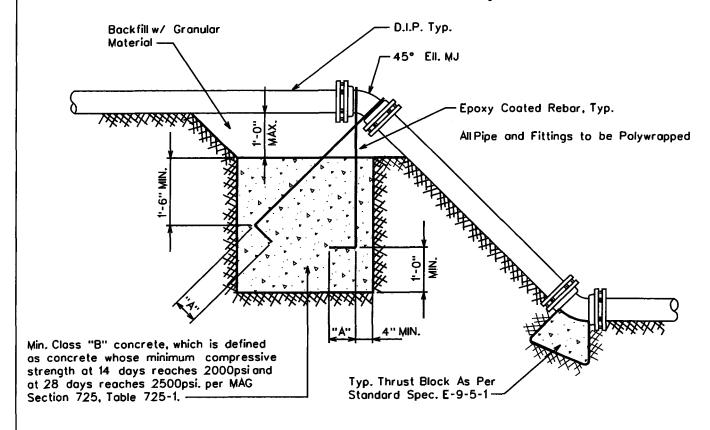


NOTES

- Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
- 2. Bars To Have 90° Hook © Their Ends, As Per Table Below.

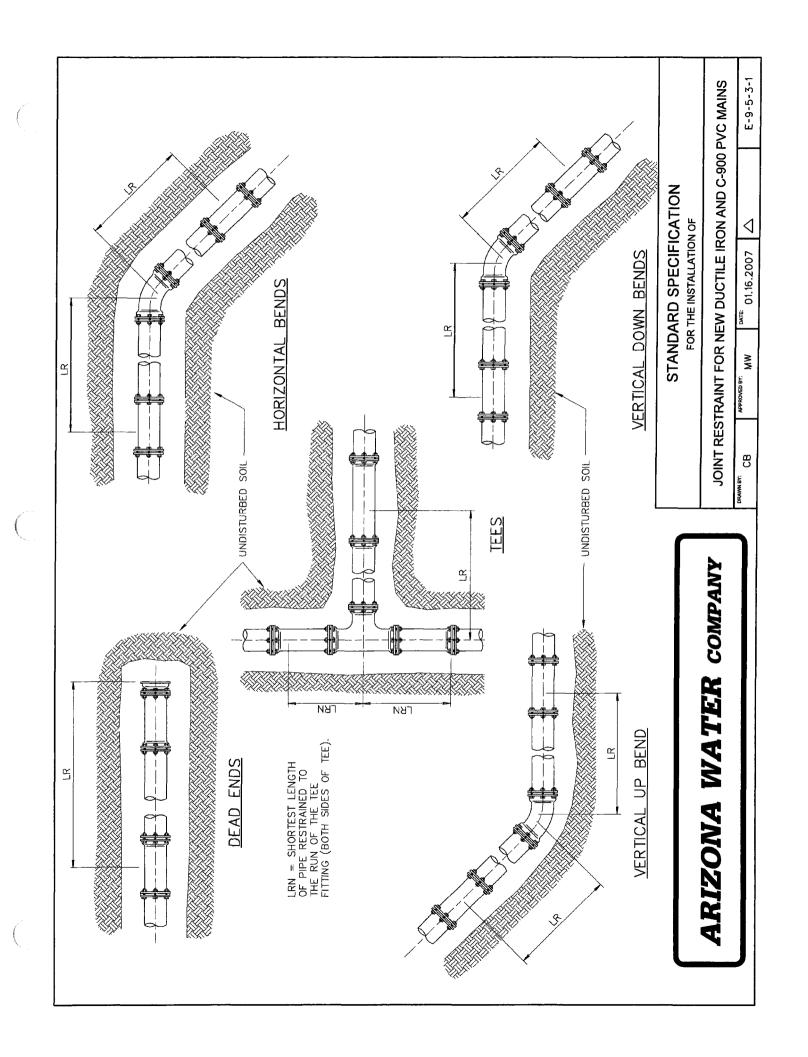
Pipe Size	Min. Bar Size	"A" Dimension (Hook)	 Min. Block Dimension (WxHxL)
6"	•6	6"	3'×3'×3'
8"	•6	9"	4'x3'x4'
12"	•8	9"	5'x4'x5'
16"	•9	12"	7'x6'x7'

* For 125 P.S.I. Working Pressure



ARIZONA WATER COMPANY

		ARD SPECIFI				
	THRUST BLO	OCK FOR VER	TICAL BENDS			
DRAWN BY: JPK	APPROVED BY: MJW	DATE: 7-5-96 🛆 01.16.2007 E-9-5-				



Ι.							_	_	_	_									
			DEAD	FNDA)		3	77	++	58	69	3 2	٥١	92	104	116	CII	126	147
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			22-1/2' BE		N CN		٥	6	, =	=	4	16	2 0	0	21	2.0	22	67	29
	Jdld V	OFFSETS	FITTINGS	-	REND	1	,	10	7 7	2	16	10	2 6	7	24	96	200	70	33
	ILE IRO	VERTICAL OFFSETS	45° BEND	ואאיטע	BEND	17	2	18	24	7.7	29	34	82	3	43	48	5.2	35	61
	FOR DUCTILE IRON PIPE VERTICAL OFFSET	FITTINGS	QI.	BEND	α	2	25	32	100	38	45	Ĭ.	1	5/	62	α.c.	3	/9	
	, LR, FC		90° BEND	NWOO	BEND	41	5	44	58	3	60	81	42		104	115	126	2	14/
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	AINED L	F	<u>n</u>		LRN=0'	30		43	56	83	000	80	91	404	201	113	125	177	C+-
1000	RESTRAINED LENGTHS, LR,		DEINDS		22-1/2.	4		ഹ	9	α	0	<i>σ</i>	10	1,1		12	14	10	0
		IATMORIGOL			42.		,	10	13	16	2	19	21	70	± 7	26	28	7.7	33
			711011		.06	18	į	52	32	82	3	45	51	57		62	68	70	6)
		NOMINAL	SIZE	1	INCHES	4	ď	٥	8	10		1.2	14	16	2 0	18	20	24	

_		_					_	-		_	-	_		_	_	_	_	_	
			DEAD	FNDA	505		72	207	102	133	150	80	187	214	4,50	147	266	202	7.10
	WRAP		22-1/2' BEND FITTINGS		d d	DEIND	ഹ	7		න	11		13	15	16	2	200	20	22
i	LENGTHS, LA, FOR DUCTILE IRON PIPE WITH POLYETHYLENE WRAP		22-1/2' BEI		DOWN BEND	2	14	20	207	97	32	77	2/	42	ΔV	P	53	58	000
į	POLYET	VERTICAL OFFSETS	45' BEND FITTINGS	l	REND		=	15	2	3	23	200	/7	31	34	1	28	41	47
i i i	MIN.	FRTICAL	45. BEND	TWO C	N C		20	42		CC	99	77		88	100	1,0	2	121	141
140	NO.	_	90' BEND FITTINGS	0	BEND	90	70	36	77	,	56	85	3	/4	82	S	S	86	113
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01 21	13, LA,	F	<u></u>		LRN=0,	69		66	130		157	185	211	717	238	263		289	337
IFNOTE	רבואסור	BENDS	בהיים		22-1/2.	ις		7	o	1		13	15	2 (91	18	ç	70	22
AINED	ווירן	IATINOSIZOL	1		45.	11		15	6	5	52	27	71	1	34	37	7.7	-	47
RESTRAINE	11531	HORIZ	7		.06	26	,	36	47	3	20	65	74		22	06	ac	080	113
		NOMINAL	SIZE		INCHES	4	(٥	∞	1	2	12	14		٥	80	20	77	24

NOTEN.

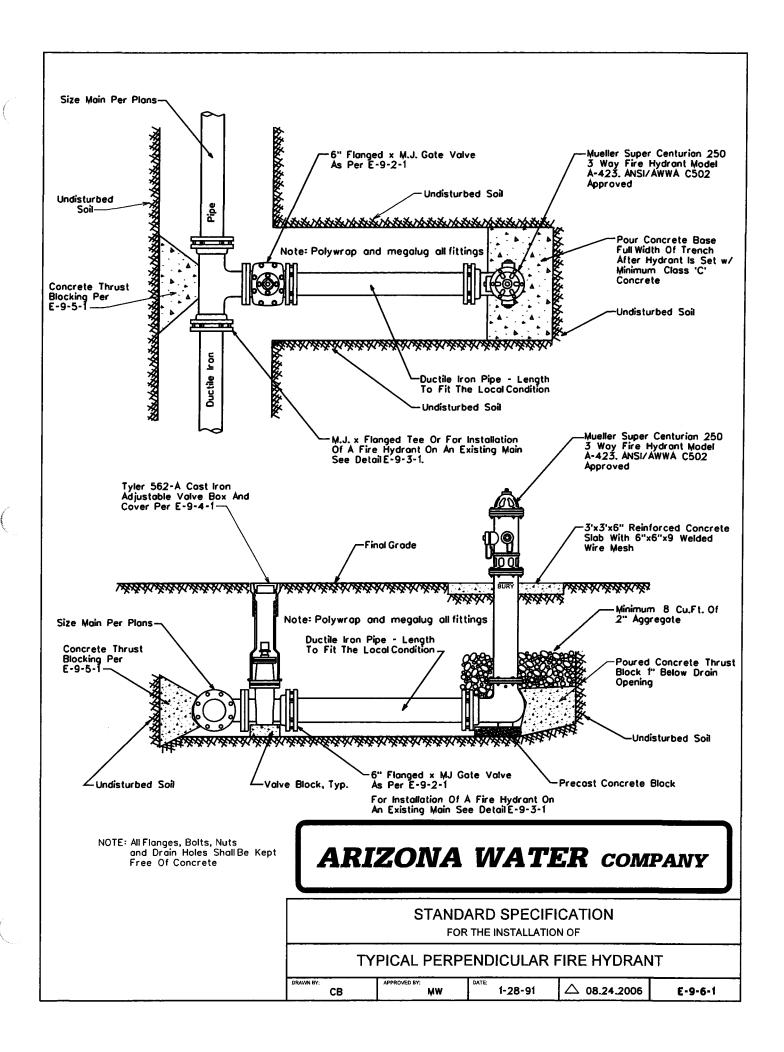
- 1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED. ALL LENGTHS ARE GIVEN IN FEET.
 - 2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
- 3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
- 4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

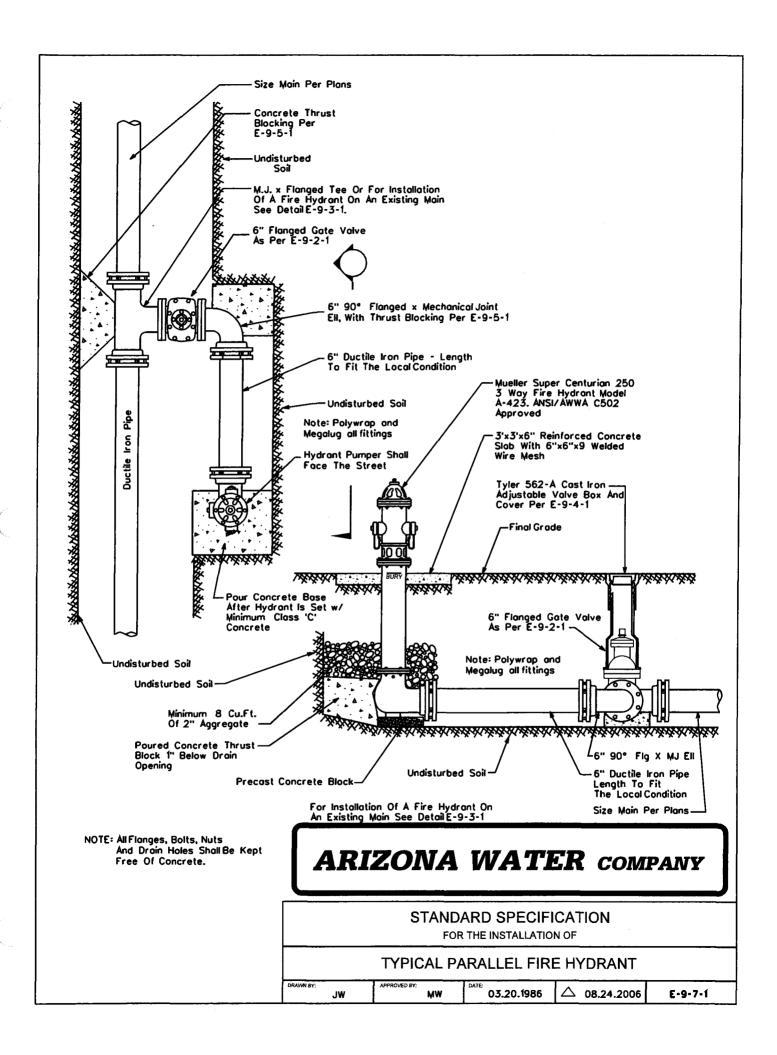
ARIZONA WATER COMPANY

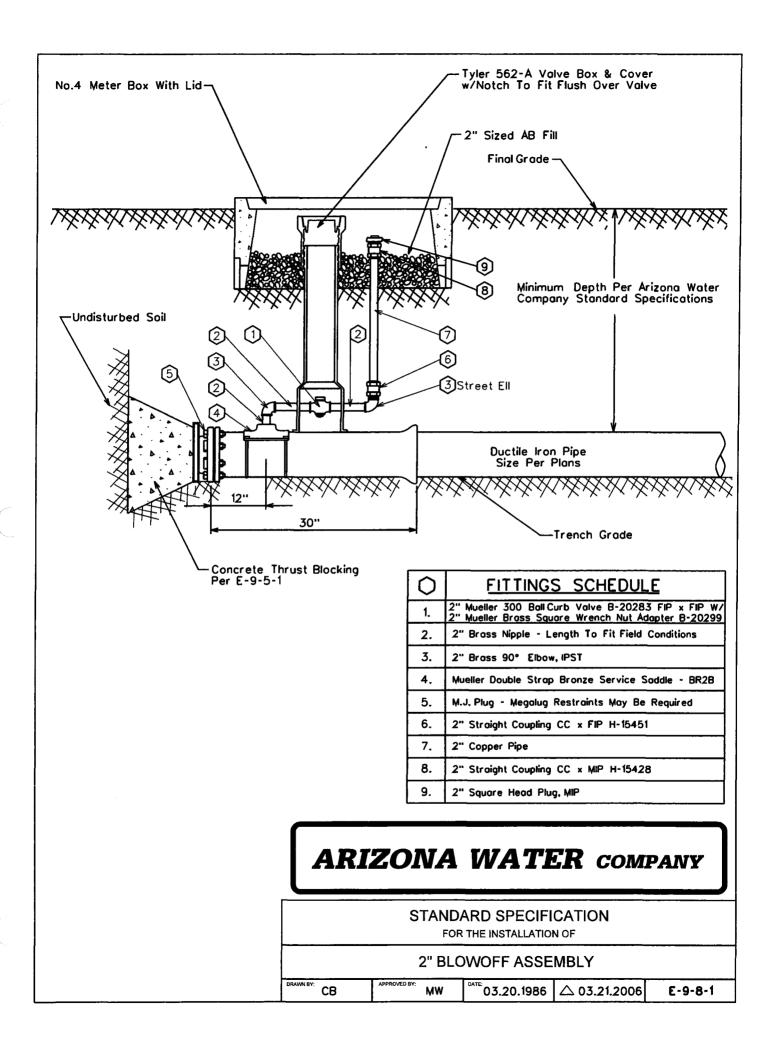
STANDARD SPECIFICATION FOR THE INSTALLATION OF

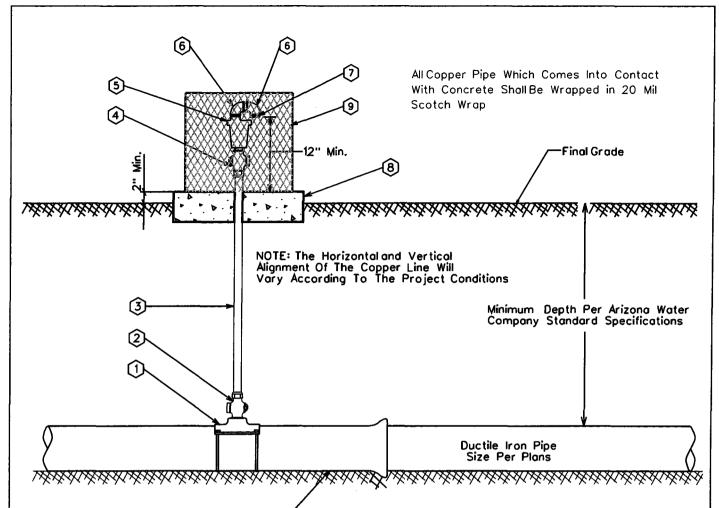
JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

E-9-5-3-2	
◁	
DATE: 01.16.2007	
APPROVED BY:	
СВ	









GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.

Trench Grade-

- 2. The valve shall have a 3/4" orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & 1/2" IPST outlet, cast iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

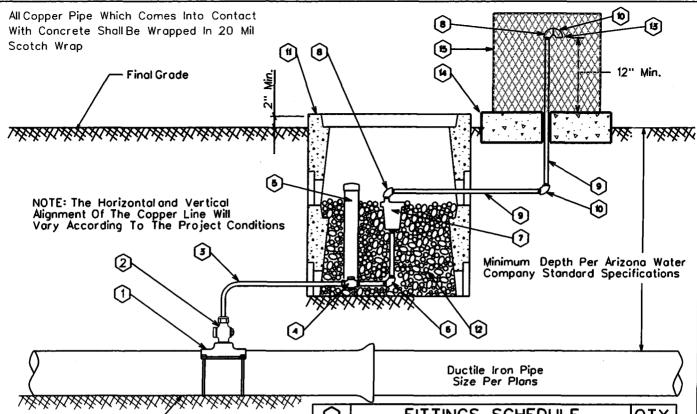
\bigcap	FITTINGS SCHEDULE
	THE THOS SCHEDOLL
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP × Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	1/2" Bross Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pod - Closs 'C' Concrete
9.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL AIR RELEASE VALVE

RAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 △08.24.2006 E-9-8-2



GENERAL NOTES:

Trench Grade

- The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- The valve shall have a ¾ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- Crispin model AR10 valve construction consists of a 1" IPST inlet & ½" IPST outlet, cast iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

	<u> </u>	
0	FITTINGS SCHEDULE	QTY.
1,	Mueller BR2B Bronze Service Saddle - Double Strap	1
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Regid
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cap (Loose Fit)	1
6.	1" × 4" Brass Nipple w/90° Elbow	1
7.	Crispin 1" Air Release Valve, Model AR10	1
8.	1/2" Bross Street Elbow	2
9.	1/2" Galvanized Pipe - Length as req'd	2
10.	1/2" Galvanized 90° Ell	2
11,	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	As Req'd
13.	No.16 Wire Mesh Screen (Non-Corrodible)	1
14.	4" Thick Concrete Pad - Class 'C' Concrete	1
15.	Guardshack, Model GS-1, Available From BPDI, Inc. Available in Leaf Green Or Desert Tan	1

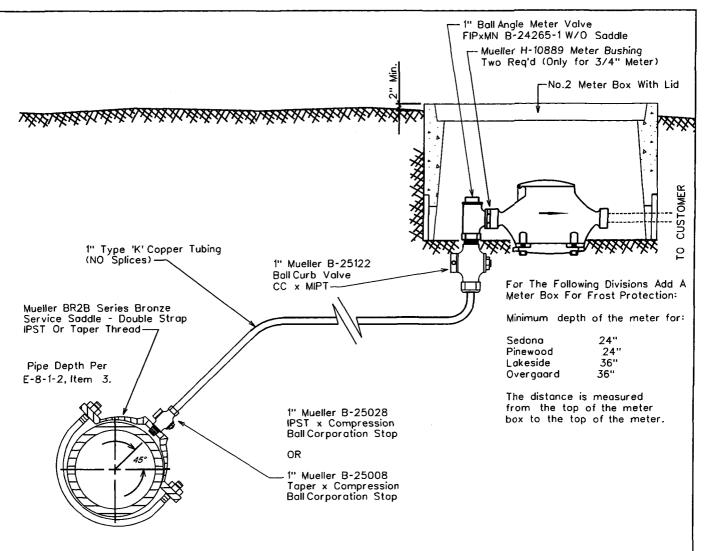
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 △08.24.2006 E-9-8-3



SADDLE TAP TO CA, PVC, OR DIPIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

NOTE: Only the meter is supplied by Arizona Water Company

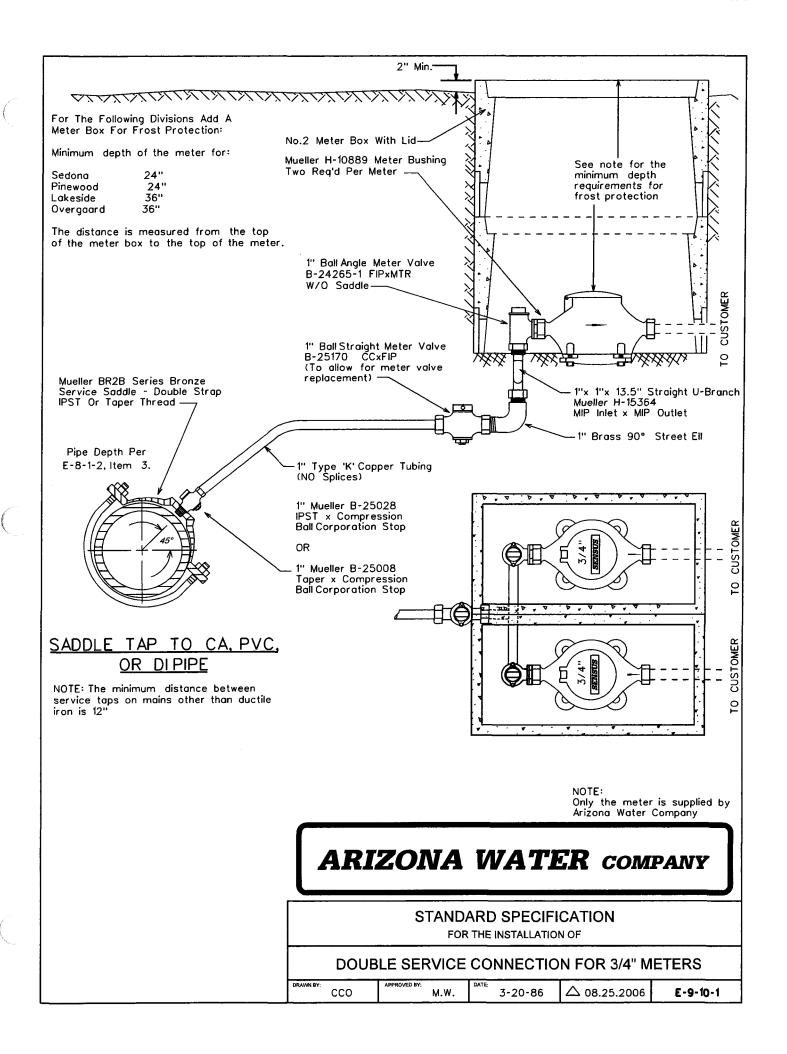
ARIZONA WATER COMPANY

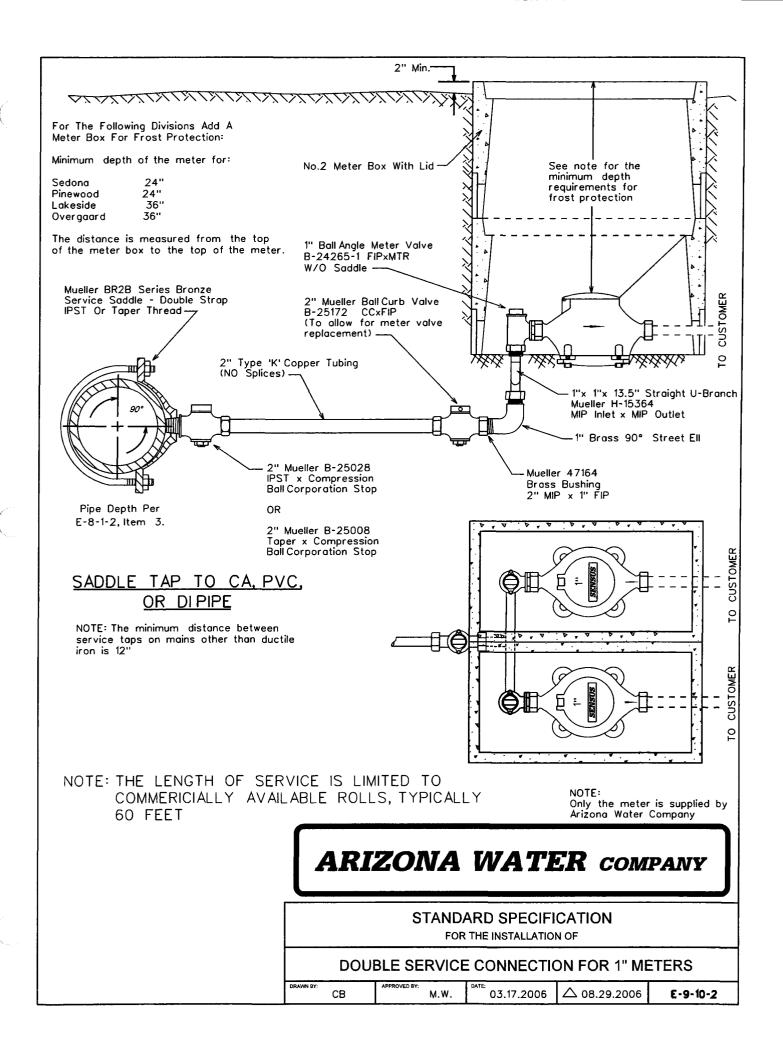
STANDARD SPECIFICATION

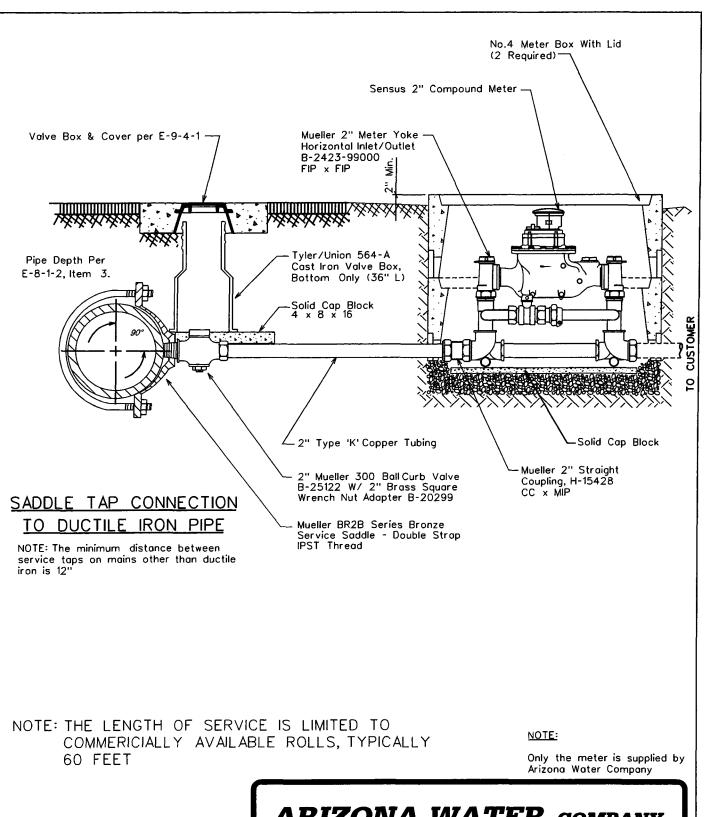
FOR THE INSTALLATION OF

SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

DRAWN BY: CCO APPROVED BY: M. W. DATE: 3/20/86 \(\triangle 03.17.2006 \) E-9-9-1







ARIZONA WATER COMPANY

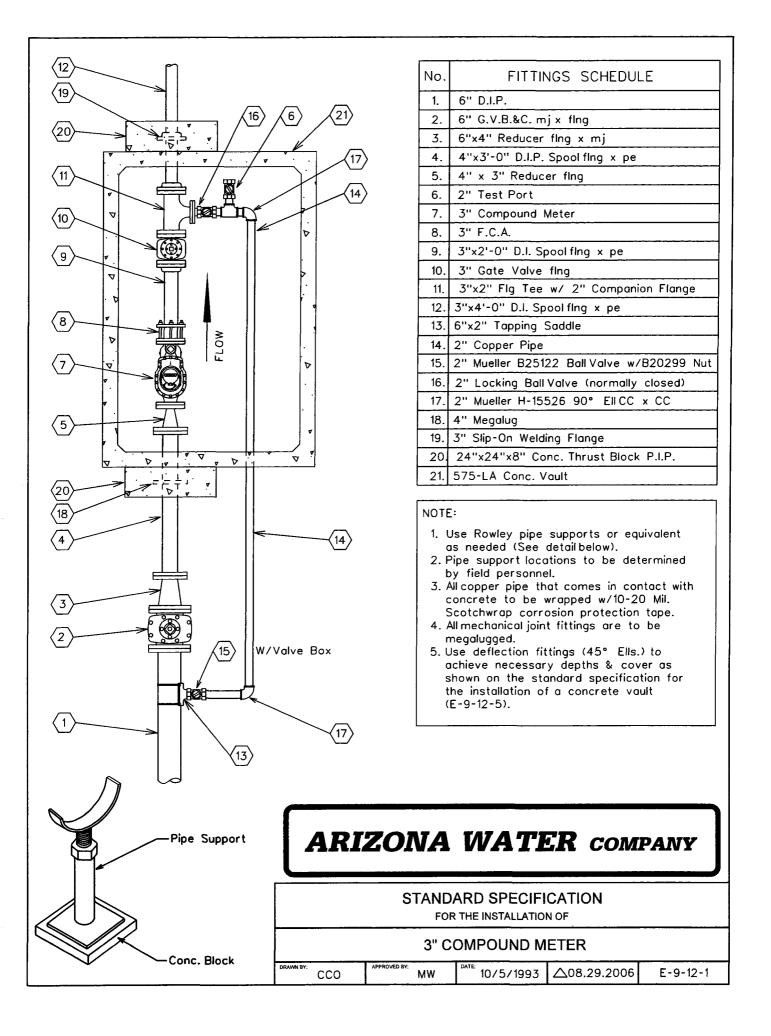
STANDARD SPECIFICATION

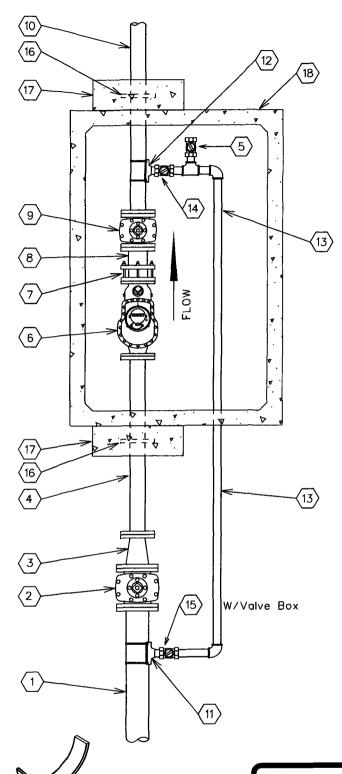
FOR THE INSTALLATION OF

TYPICAL 2" SERVICE CONNECTIONS

E-9-11-1

DRAWN BY: APPROVED BY: △ 08.29.2006 3/20/86 M.W.

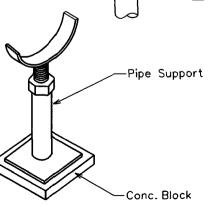




No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" Reducer flng x mj
4.	4"x3'-0" D.I.P. Spool flng x pe
5.	2" Test Port
6.	4" Compound Meter
7.	4" F.C.A.
8.	4"x1'-0" D.I.P. Spool flng x pe
9.	4" Gate Valve fing
10.	4"x4'-0" D.I.P. Spool flng x pe
11.	6"x2" Tapping Saddle
12.	4"x2" Tapping Saddle
13.	2" Copper Pipe
14.	2" Ball Valve / Locking (Normally Closed)
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	4" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.
18.	575-LA Conc. Vault

NOTE:

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



ARIZONA WATER COMPANY

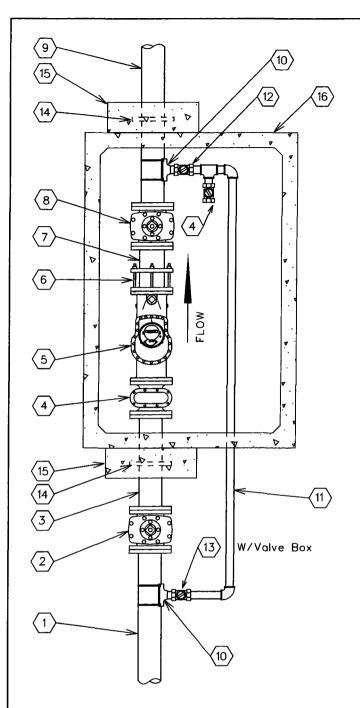
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

4" COMPOUND METER

E-9-12-2

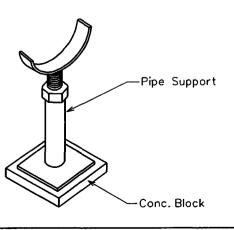
CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle 08.29.2006 \)



No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj
3.	6"x 3'-0" D.I.P. Spool fing x pe
4.	2" Test Port
5.	6" Compound Meter
6.	6" F.C.A.
7.	6"x 1'-0" D.I.P. Spool flng x pe
8.	6" Gate Valve fing
9.	6"x 4'-0" D.I.P. Spool flng x pe
10.	6"x2" Tapping Saddle
11.	2" Copper Pipe
12.	2" Ball Valve / Locking (Normally Closed)
13.	2" Mueller B25122 Ball Valve w/B20299 Nut
	6" Megalug
15.	24"x24"x8" Conc. Thrust Block P.I.P.
16.	575-LA Conc. Vault

NOTE:

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



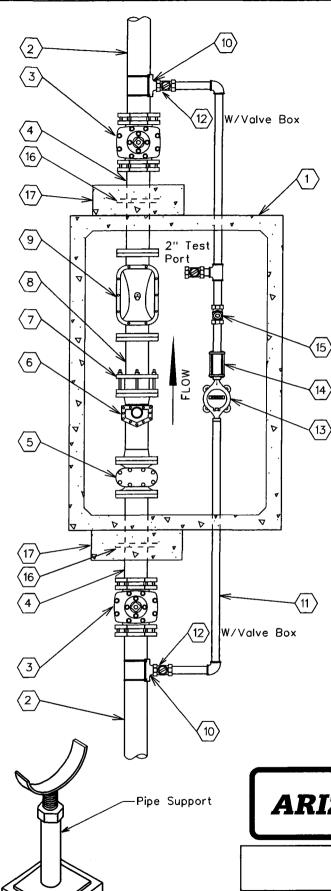
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND METER

DRAWN BY: CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle 08.29.2006 \) E-9-12-3



Conc. Block

No.	FITTINGS SCHEDULE
1.	575-LA Conc. Vault
2.	6" D.I.P.
3.	6" G.V.B.&C. m.j.
4.	6" x 3'-0" D.I.P. SPoolPiece flng x pe
5.	6" Strainer
6.	6" Turbo Meter
7.	6" F.C.A.
8.	6" x 2'-0" D.I.P. Spool Piece flng x pe
	(TRIM SPOOL PIECE TO 3x THE PIPE DIA.)
9.	6" Detector Check
10.	6"x×N" Tapping Saddle
11.	*N" Copper Pipe
12.	∗N'' Ball Valve (Locking)
13.	∗N" Meter
14.	×N" Coup. Adapt.
15.	∗N" Flapper Check Valve
16.	6" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.

*N - Size To Be determined By A.W.Co.

NOTE:

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
- 6. To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

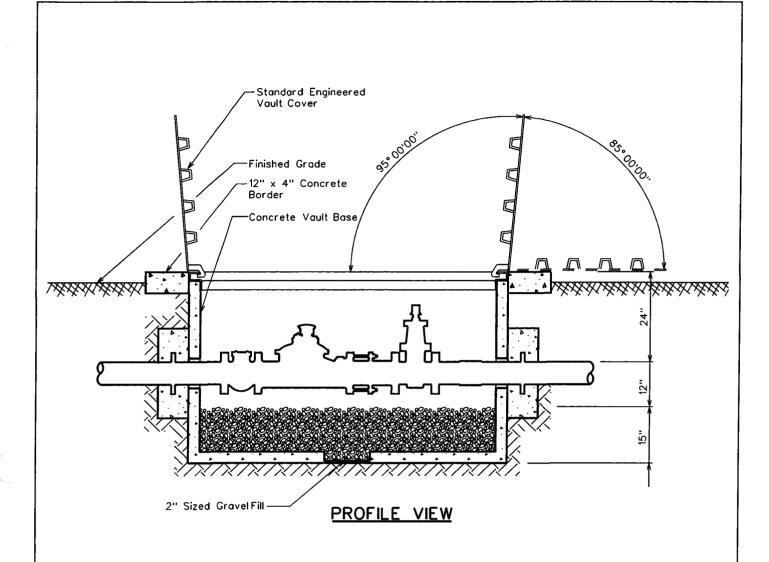
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND SERVICE

DRAWN BY: CCO APPROVED BY: MW DATE: 10/05/1993 \(\triangle 08.29.2006 \) E-9-12-4



CONCRETE VAULT & COVER SPECIFICATIONS

Vault - Base No. 575-BL

Cover - Standard Engineered Vault Cover

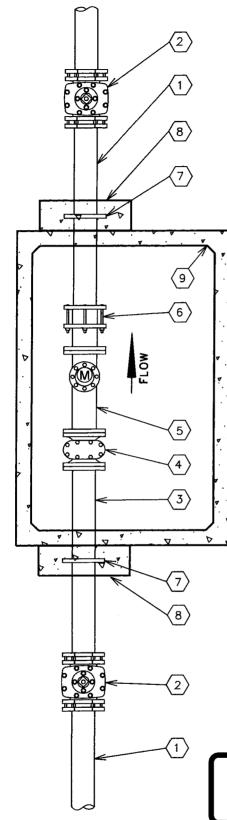
- . 4874 Aluminum Diamond Plate Cover For Non-Traffic Loading Areas
 - u, .,.c ∩r
- . 4874 Galvanized Steel Diamond Plate
- Cover W/ H-20 Traffic Loading
 Double Torsion Spring Assisted Doors W/
 Recessed Hasp & Safety Latches

NOTES

- Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill.
 Service Connections Larger Than 6" In Diameter Will Conform To The Same
- Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF CONCRETE VAULT DRAWN BY: CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle \triangle 05.17.2001 \) E-9-12-5



No.	FITTINGS SCHEDULE
1.	Ductile Iron Pipe
2.	Gate Valve M.J.
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)
4.	Meter Strainer
5.	Propeller Meter
6.	Flanged Coupling Adapter
7.	Megalug Gland (Thrust Anchor)
8.	Concrete Thrust Block P.I.P.
9.	Concrete Vault

NOTE:

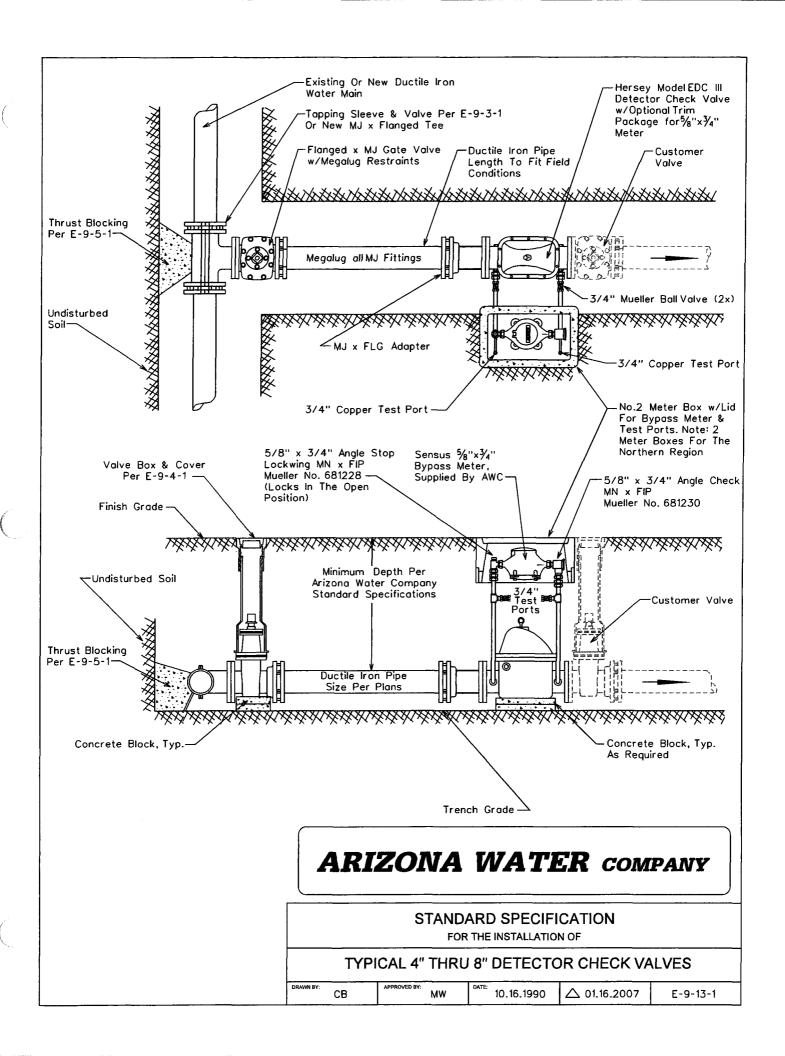
- 1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
- 2. Pipe support locations to be determined by field personnel.
- 3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings to are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

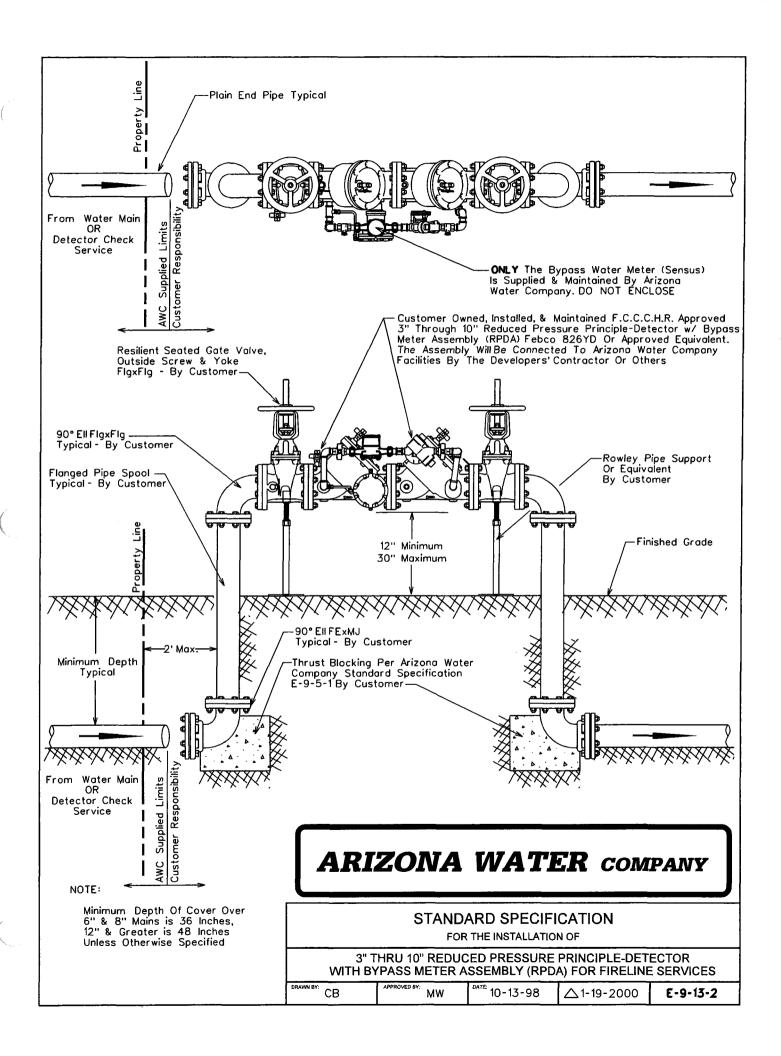
ARIZONA WATER COMPANY

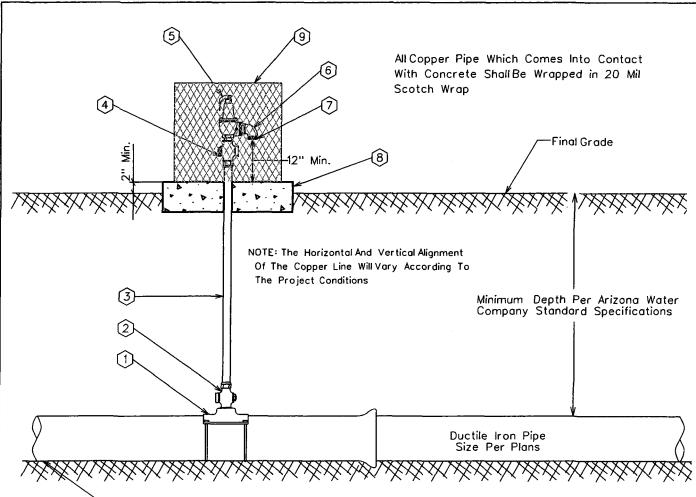
STANDARD SPECIFICATION FOR THE INSTALLATION OF

NON-POTABLE PROPELLER METER

DRAWN BY: JPK APPROVED BY: MW DATE: 7-20-95 🛆 E-9-12-6







NOTE:

1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.

-Trench Grade

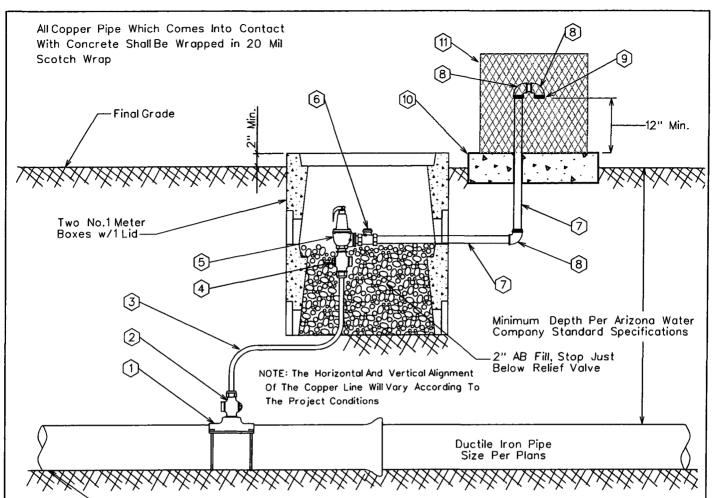
2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5,	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY				
DRAWN BY: CCO	APPROVED BY:	3/20/1986	△ 08.29.2006	E-9-14-1



NOTE:

-Trench Grade

- 1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
- 2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Bronze Check Valve Watts Series CV
7.	2" Schedule 40 Cut Pipe - Field Fit
8.	2" Brass Street Elbow
9.	No.16 Wire Mesh Screen (Non-Corrodible)
10.	4" Thick Concrete Pad - Class 'C' Concrete
11.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

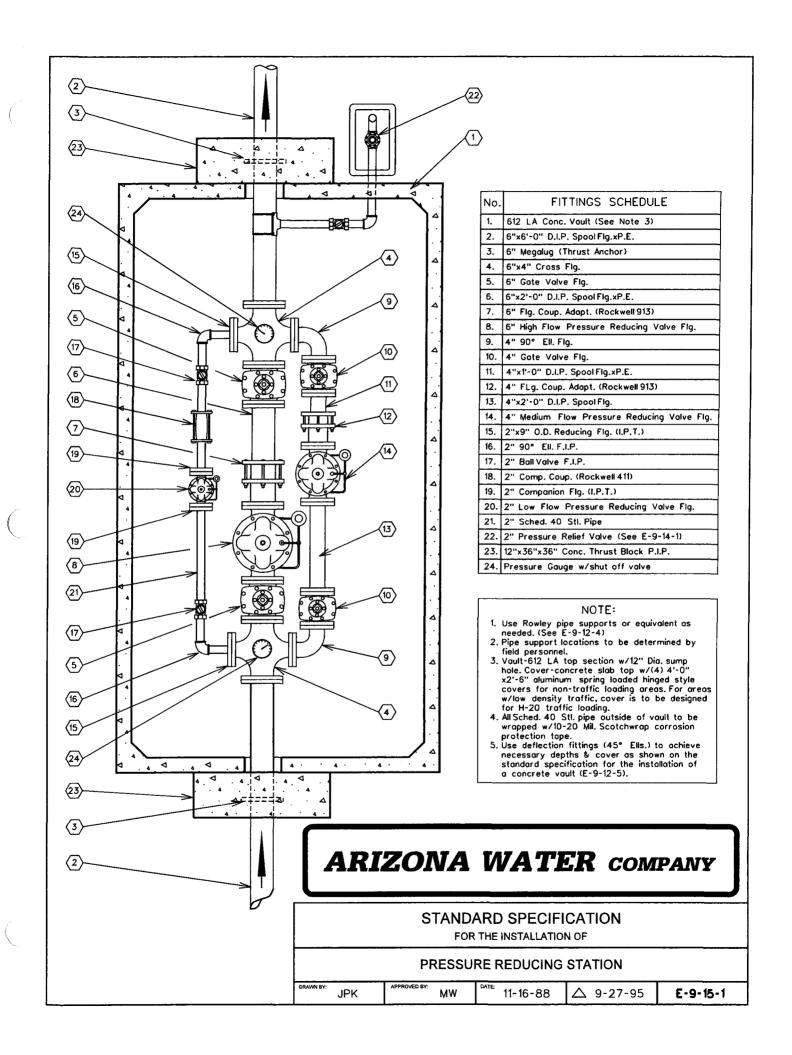
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

AVWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 \(\triangle 08.29.2006 \) E-9-14-2



- 1. Specific Items To Be Painted Deer-O Pure White Enamel:
 - A. All Booster Pumps.
 - B. All Electrical Motors And Gas Engines.
 - C. WellPump Discharge Heads. D. ElectricalPanel.
- 2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:
 - A. Well Shelter.
- 3. Specific Items To Be Painted OSHA Orange:
 - A. Electrical Conduit.
- 4. All Other Items To Be Painted With Either: (At Manager's Discretion)
 - A. Cholla Green
 - B. Forest Green
 - C. Sonora Beige D. Red Rock

 - E. Rock Brown
 F. Deer-O Pure White
 G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

PAINT COLOR SELECTION

△ 2/13/2001 CCO 3/20/1986 E-9-16-1

- 1. Tank shall conform to AWWA Specification 0100-84 with exceptions noted below.
- •2. 1/4" minimun shell plate.
- Minimum of 12" diameter roof vent, screened with No. 16 non-corrodible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the dollar plate.
- 4. Overflow pipe shall be the same diameter as the inlet pipe and shall terminate 12 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above were box high water level.
- 5. Storage tank shall be placed upon adequately compacted base material.
- 6. 6" minimum floor mounted tank drain autlet to be located close to the outer shell.
- Tank and related fittings shall be enclosed with a 6 loot chain link fence with lockable gates and anti-personnel wire on top of fence.
- 8. Liquid level shall be indicated by a target and target board on the outside surface of the tank.
- 9. 24 inch diameter monholes shall be provided on the roof and on the shell near the battom of the tank. The roof manhole cover shall overlop the manhole by at least 2 inches to provide a rain light clasure. Roof manhole shall be hinged and equipped with a lock. Shell manhole cover to be hinged and batted in place. "Tanks larger than a 50 foot diameter require 2 shell manholes.
- 10. Inside and autside ladders shall be located at the roof manhole. Outside ladder shall be caged with tacking trap door. Bottom 8 feet of cage shall be enclosed to within $\frac{1}{2}$ " of shell with $\frac{1}{2}$ 0 gauge sheet steet.
- Finished tank shall be disinfected in occordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
- 12. The following information will be included with application for approval to construct?
 - Tonk location

 Tonk height

 Tonk diameter

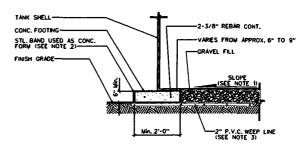
 Tonk capacity

 Method of water fevel control
- 15. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
- The welded steel storage tank will be coated as per AWWA Specification D102, and N.S.F. Standard 61,

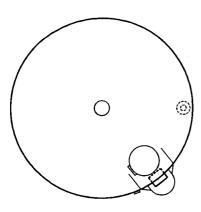
*Exceptions to AWWA Specification D100-84

EQUIDATION NOTES

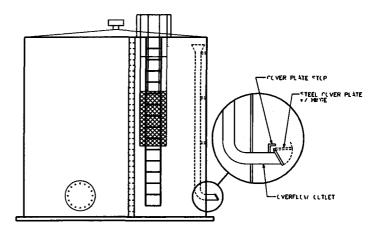
- FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10"-0".
- 2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN 1/8".
- 3. INSTALL 8-2" DIA.xiO'-O" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45'), PERFORATE 8'-0" OF LINE WITH 1/2" DIA HOLES @ 6" O.C. PLUG INTERIOR END OF LINE W/2" CAP.



FOUNDATION DETAIL







PROFILE VIEW

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

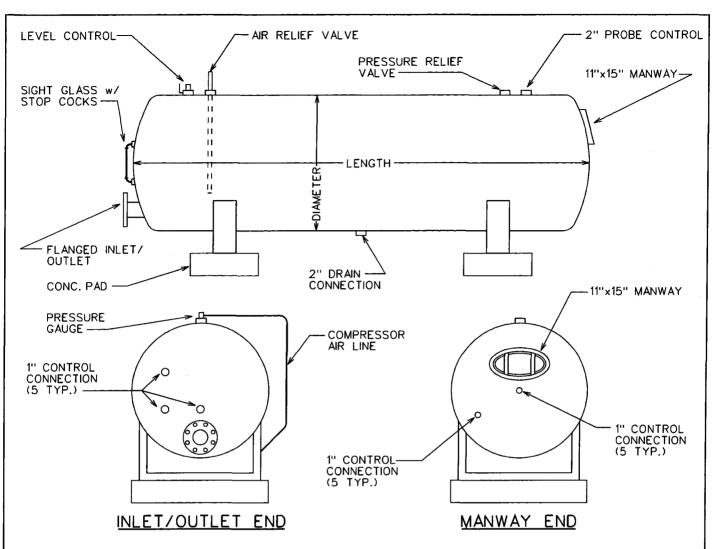
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2-12-96

E-9-17-1

DRAWN BY: APPROVED BY: DATE:

NBY: JPK APPROVED BY: MJW DATE: 10-17-88



- 1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
- 2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
- 3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
- 4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.
- 1. Tank Location ____
- 2. Tank Length _____
- 3. Tank Diameter
- 4. Tank Capacity _____
- Maximum Working Pressure

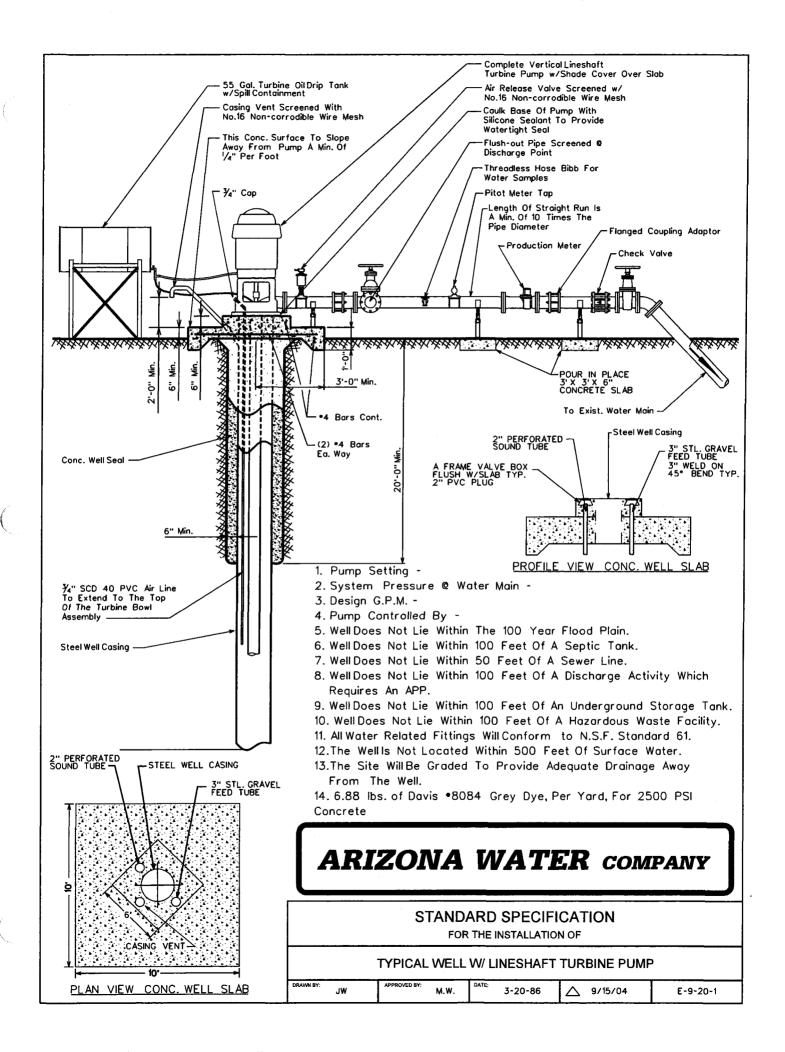
ARIZONA WATER COMPANY

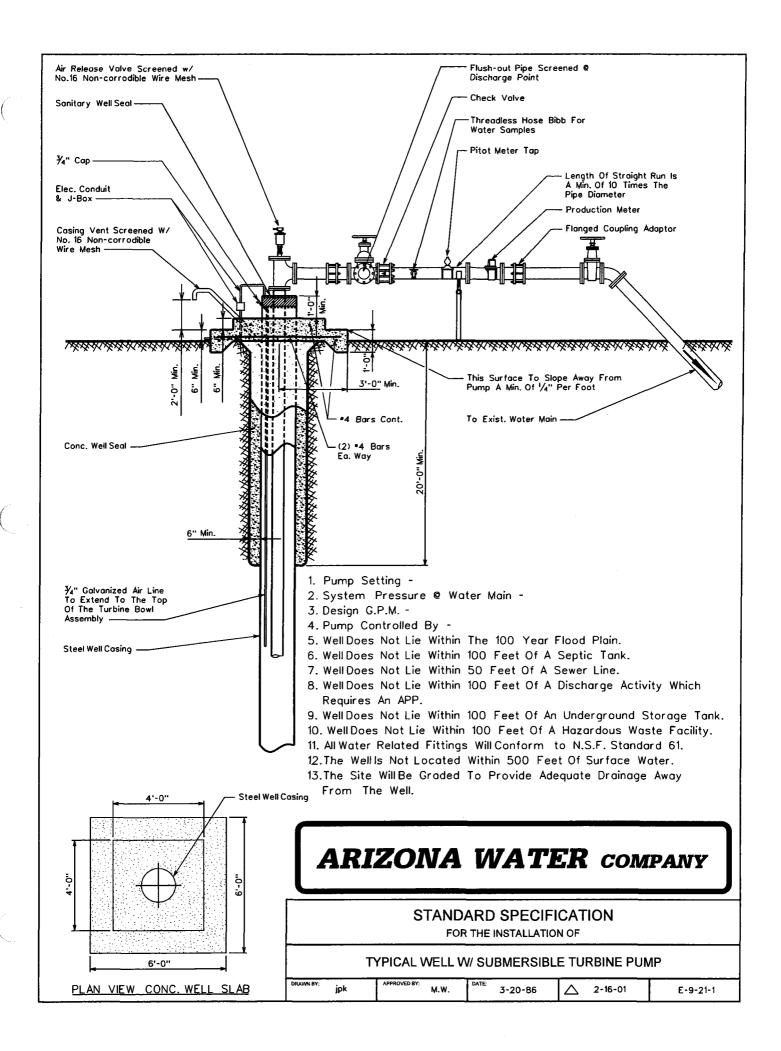
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ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF WELL SHELTER

DRAWN BY: CB APPROVED BY: DATE: 03.20.1986 △04.03.2001 **E-9-19-1**





All New Purchases To Conform To The Following:

Column Pipe

```
4" I.D. - 8 Threads Per Inch Tapered ¾" Per Foot Right Hand
6" i.D. - 8
8" I.D. - 8
                                 11
                                       11
                                                            ••
10" I.D.- 8
              11
                     11
                         11
                                                            \mathbf{n}
                                           11
                                                 11
             11
12" I.D.- 8
                                                            ...
14" I.D.- 8
```

Oil Tube - Peerless Type

```
1\big/2\big| O.D. - 14 Threads Per Inch Right Hand
2\big| O.D. - 12 \big| \big| \big| \big| \big| \big| \big| 2\big|/2\big| O.D. - 10 \big| \big
```

Line Shaft

```
3/4" O.D. - 10 Threads Per Inch Left Hand
1" O.D. - 14 " " " "
                                        ...
                                                    ш
1-3/16" O.D. - 10
  1-1/2" O.D. - 10
                          ...
                                 11
                                       11
                                              . .
                                                    ...
1-11/16" O.D. - 10
                          11
                                 11
                                       11
1-15/16" O.D. - 10
                         11
                                 11
                                       - 11
                                             - 11
                                                    11
2-3/16" O.D. - 10
                          - 11
                                  - 11
2-7/16" O.D. - 8
```

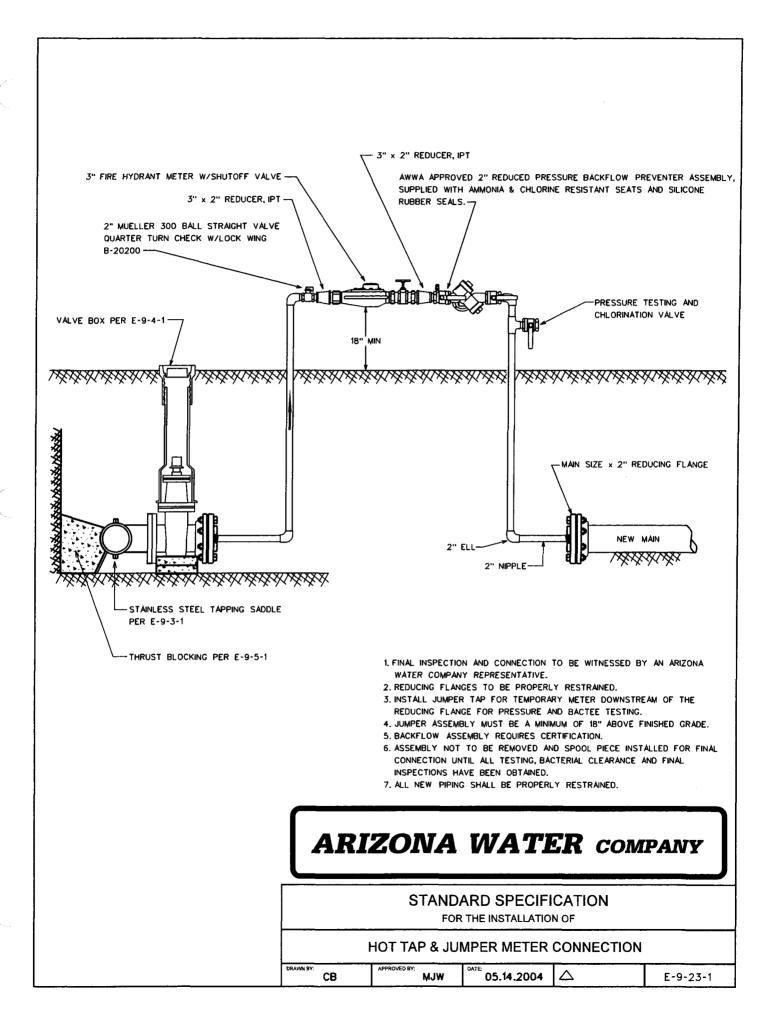
ARIZONA WATER COMPANY

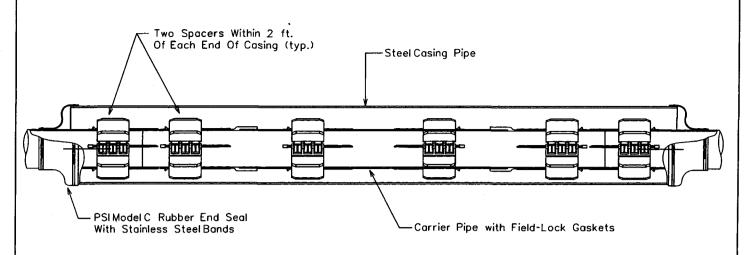
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

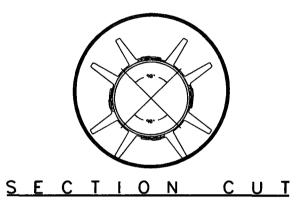
DRAWN BY: CCO APPROVED BY: DATE: 3/20/1996 \(\triangle 2/13/2001 \) E-9-22-1





CROSS SECTION

The casing spacers shall be the PSI Ranger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seal as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

*Thickness Of Skid To Extend A Minimum of $\frac{1}{2}$ " Above The O.D. Of The Pipe Bell or Gland.

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6''	16"	15.25"	STD.	.375	≖x4x12
8''	18''	18.25"	STD.	.375	*x4x12
12"	22"	21.25"	STD.	.375	•x4×12
16"	28"	27.25"	STD.	.375	≖x4x12
20"	32"	31.25"	STD.	.375	*x4x12
24"	36"	35.25"	STD.	.375	≖x4x12
30''	48"	47.25"	STD,	.375	≖x4x12
36"	54"	53.25"	STD.	.375	≖x4x12
48"	66''	65.25"	STD.	.375	•x4x12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL	MATERI	LINE ENCASEMENT
	VVA 11-15	HAL LIACASLIVILIA

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DRAWN BY:	APPROVED BY:	DATE:	3/20/1996	△ 09.27.2006	E-9-24-1

CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCOPE - This specification describes a ARCH Chemicals Calcium Hypochlorite Tablet Chlorination System as manutactured by ARCH Chemicals, 501 Menritt Seven, P.O. Box 5204, Norwalk, CT, 06856-5204,

DESCRIPTION - The chlorinetion system shall be completely assembled, ready to install. The chlorinetion system shall be a ARCH Chemicals Calcium Hypochlorite Tablet Feeder, or its culturation, and shall be supplied with all its components factory mounted.

COMPONENTS - The Chlorination system shall have the following components:

A. 1-X.* ARCH Chemical solid calcium hypochlorite tablet feeds

A 1-VX. ARVI. Chromisma sourcements represent the Polyethylene system enclosure Crimagrates, level controlled solution tank. D. Adjustable flow control valve at hiely E. Amanual oroff valve fat hiely F. Chemical metering pump. F. Chemical metering pump or Control valve at hiely F. Chemical metering pump. F. Chemical metering pump. F. Chemical metering pump. F. Chemical metering pump. F. Chemical metering burg. A. Walanproof electrical junction box. I. Corresion resistant schodule 40 piping J. Reversa flow check valves.

ELECTRICAL FIXTURES - The following electrical factures shall be provided:
A. Seffey with: , Lower based for 30 Amps, for 120 Volts, 60 cycle, single phase power.

CHLORINATOR DESIGN - The chiorination facility shall be designed and constructed in accordance with Artizon State Dependent and State Dependent State Designed Fugineering Bulletin Number 8 - "Disinfection of Video Gylder

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

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CHLORINATOR OPERATION - The chlorination facility shall be operated in accordance with Arizona State Department of Health Engineering Bulletin Number 8, 'Disinfection of Walter Systems', Table 1, latest revision.

CHLORINATOR SYSTEM DESCRIPTION - ARCH Chemicals tablet chlorinator systems incorporate a patented cholorinator which is designed to tutize ARCH Chemicals -1/3 solid calcium hypochhorine tablets (Approved NSF Standard 60). Meets AVWM Standard Proportionine tablets (Approved NSF Standard 60). Meets AVWM Standard SAGU EPA Registration #1. ESSE 11/3. First Architorator is mounted on a polyvetrylene system enchoaure. The intel water is sprayed on the calcium prochorine tablet and collected in a solution tank. This explorated solution is then pumped out of the tank through a chemical meeting pump. This metering pump is then adjusted to obtain the desired CL residual.

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ම (2)

Chemical Metering Pump Pump Suction Connection Pump Discharge Connection Innet Water Assembly Inlet Water Solenoid Valve Inlet Water Solenoid Valve

HYPOCHLORINATOR COMPONENTS:

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

6. Inlet Shut-Off Valve
7. Inlet Pressure Regulator
8. Inlet Water Pressure Gauge
9. Spray Nozzle Water Pressure Gauge
10. Inlet Strainer
11. Inlet Tubing Connection

12. Dry Chemical Hopper 3. Suddon Lines Box With Power Ch/Off 14. Electrical Control Box With Power Ch/Off 15. Electric Wildow Discharge Connection 15. Solution Discharge Connection 17. Tank Drain Valve

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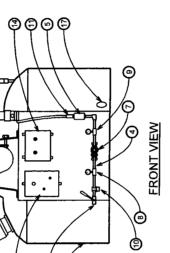
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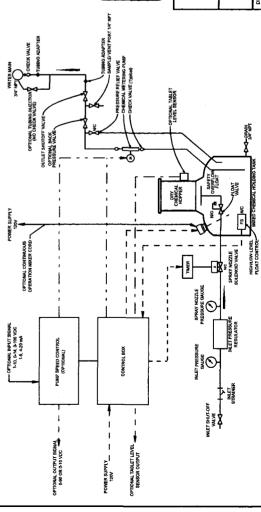
18. Observation Port 19. Mixed Chemical Holding Tank 20. Pressure Relief Valve 21. Pump Speed Control 22. High Level Shru-Chif Float Switch 23. Water Spray Nozzles

(3) P 0 **(**0 0 0 (2) (6) **(3)** (2) **6**



TOP VIEW HOPPER REMOVED FOR CLARITY

Chlorinator Fluid Schematic



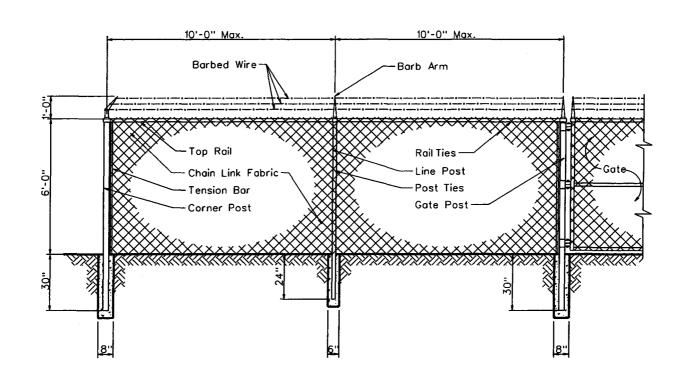
STANDARD SPECIFICATION

ARIZONA WATER COMPANY

FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR	
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	E-9-25-1	
	◁	
DATE	02-09-2000	
APPROVED BY:	MM	
RAWN BY:	83	



Line Post: 1-7/8" O.D. 1.74 lbs. P/L.F. ASTM A-256

End Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

 End Post:
 2-7/8" O.D.
 4.64 lbs. P/L.F.
 ASTM A-256

 Corner Post:
 2-7/8" O.D.
 4.64 lbs. P/L.F.
 ASTM A-256

 Gate Post:
 2-7/8" O.D.
 4.64 lbs. P/L.F.
 ASTM A-256

Top Rox: 1-5/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Chain Link Fabric: 9 Ga. 2" Mesh Galv. Before Weave

Selvage: Barb/Knuckle
Fittings: Pressed Steel

Barb Wire: 2-1/2 Ga./2 Point **Borb Arm:** 1 Piece/45° Arm

-

Tension Wire: 9 Ga./Galv.

Line Post Set: 6"x24" In Concrete

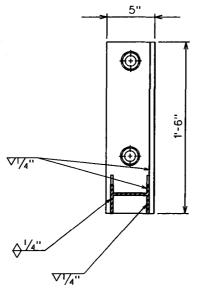
Terminal Post Set: 8"x30" In Concrete

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CHAIN LINK FENCE

DRAWN BY: CCO APPROVED BY: MW DATE: 7/7/1992 \(\triangle \triangle 2/9/2001 \) E-9-26-1

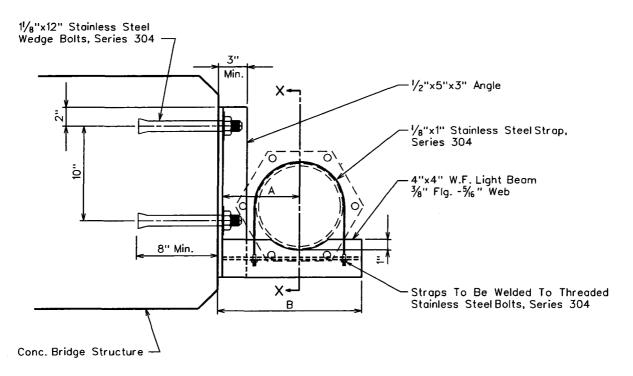


SECTION X-X

NOTES

- 1. Minimum 2 Supports Per Joint Of Pipe.
- 2. All Bolts Shall Have A Lock Washer Under The Nut.
- 3. All Nuts Shall Be Stainless Steel Series 304.

PIPE SIZE	Α	В
8"	8''	15''
10''	9''	17"
12"	10''	19''



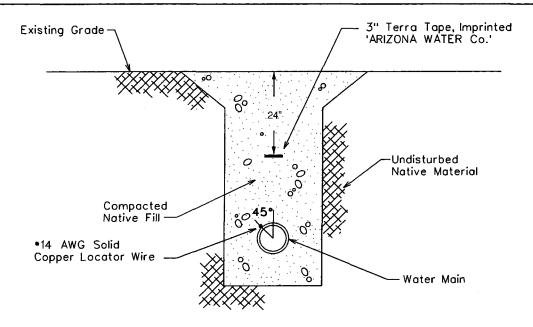
SUSPENSION DETAIL

ARIZONA WATER COMPANY

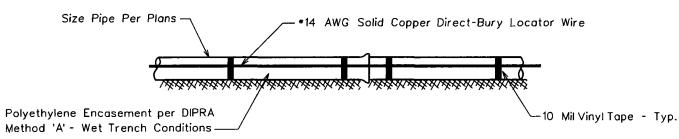
STANDARD SPECIFICATION FOR THE INSTALLATION OF

SIDE HUNG WATER LINE SUSPENSION

DRAWN BY: JPK | APPROVED BY: MJW | DATE: 7-12-96 | C | E-9-27-1



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

- 1. All pipe shall have *14 AWG Solid Copper Direct-Bury Locator Wire Installed Directly To The Polywrap At 45° From The Vertical Center Of The Pipe and Shall Be Attached Using 10 Mil Vinyl Tape.
- 2. The Locating Wire Shall Terminate At the Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

- 1. Use Terra Tape 3" Marking Tape As Manufactured By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
- 2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
- 3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe.
 A) The Backfill Shall Be Sufficiently Leveled So That The Tape Is Installed On A Flat Surface.
- B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
- C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill Is Moved Into The Trench.

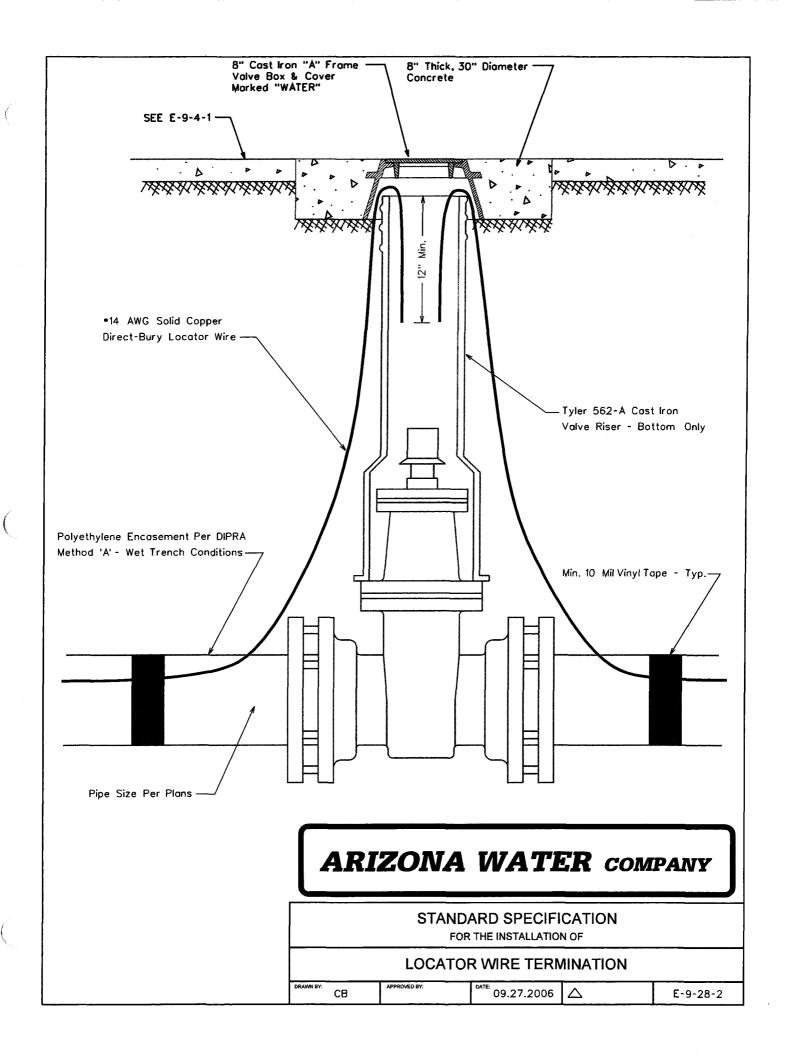
ARIZONA WATER COMPANY

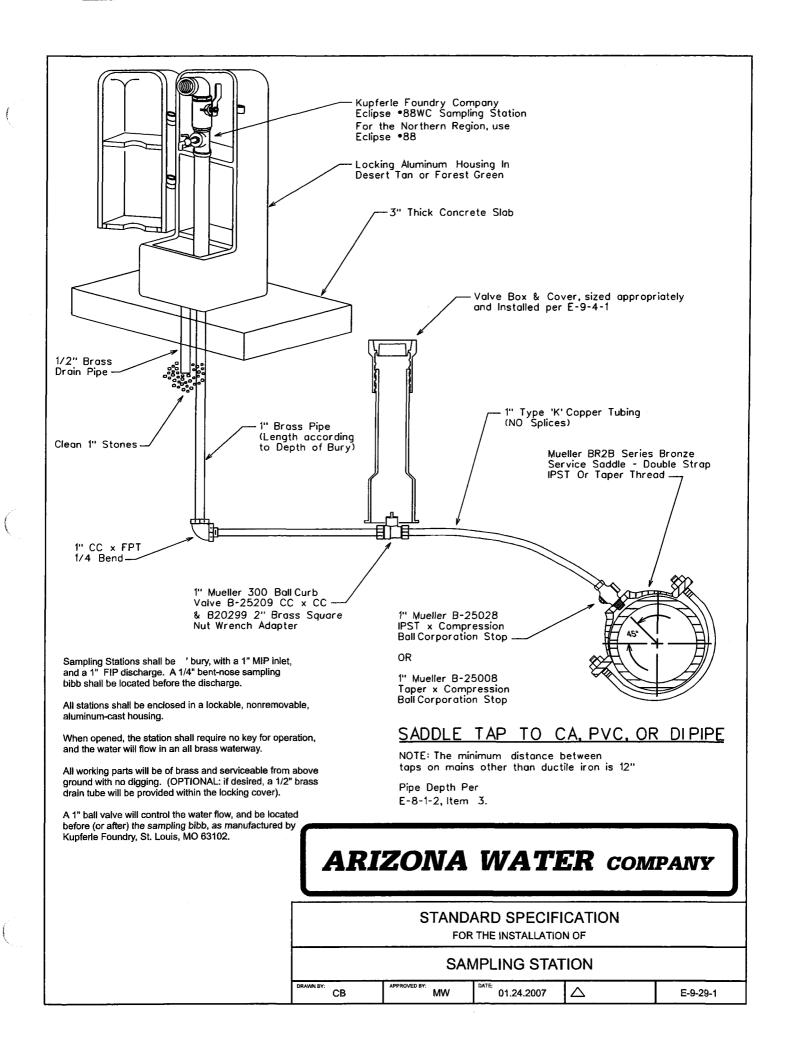
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

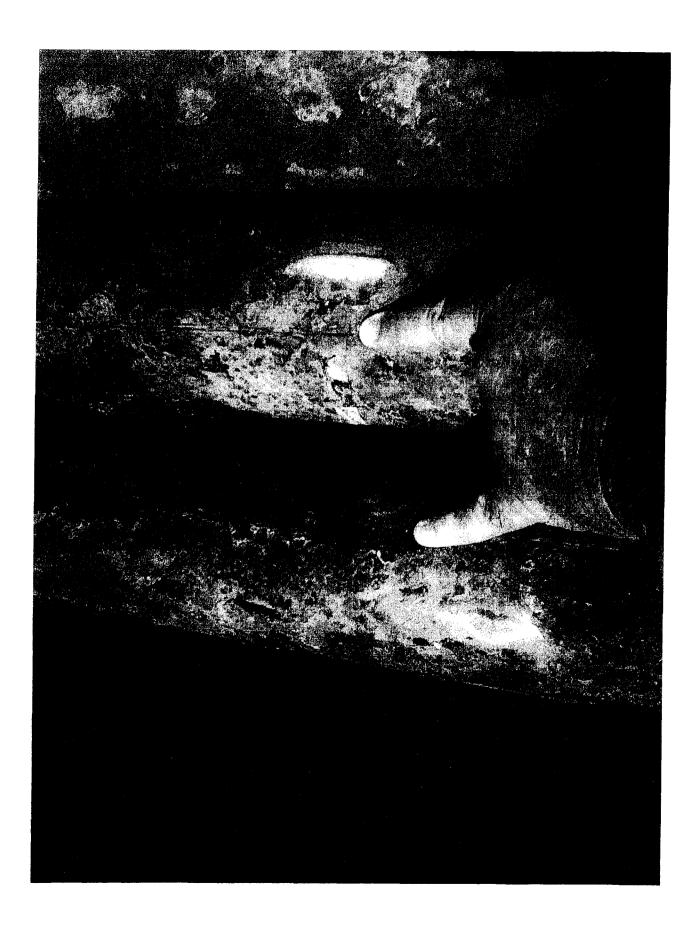
PIPE WARNING TAPE AND LOCATOR WIRE

CB DATE 03.24.1997 \(\triangle 09.27,2006 \) E-9-28-1



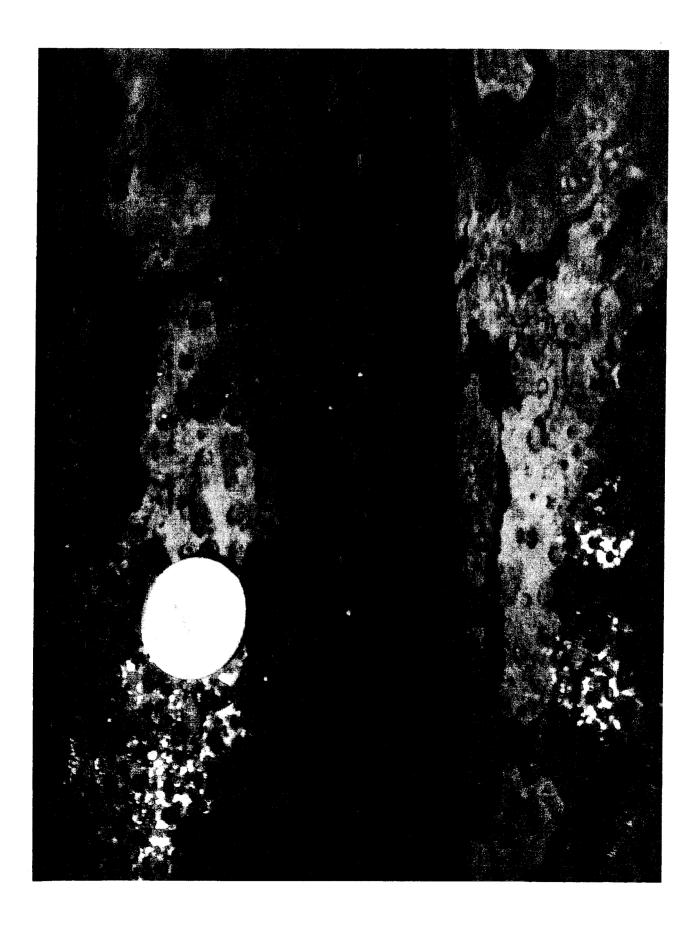


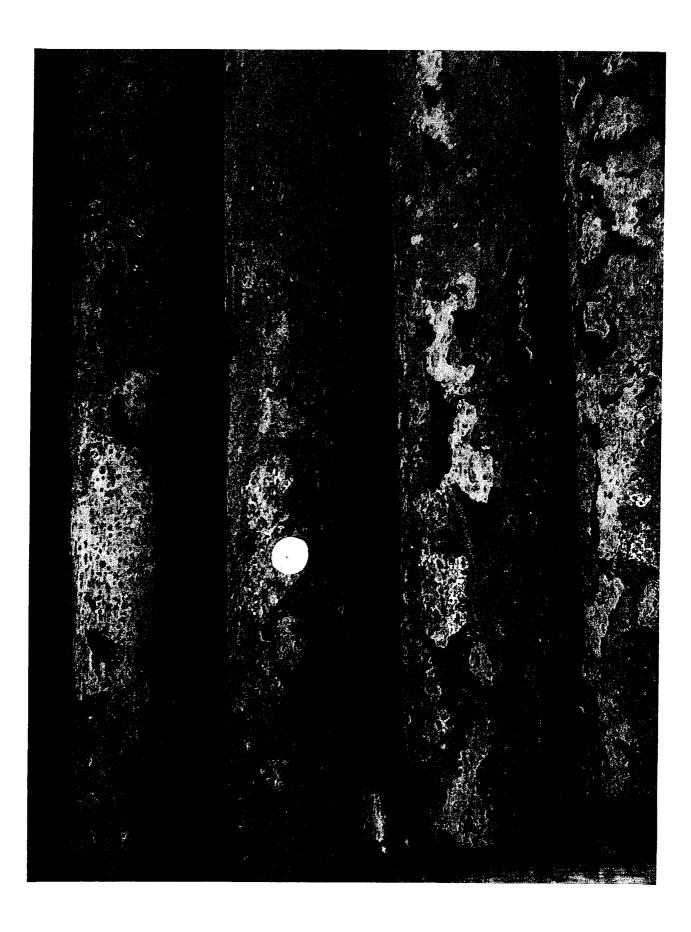


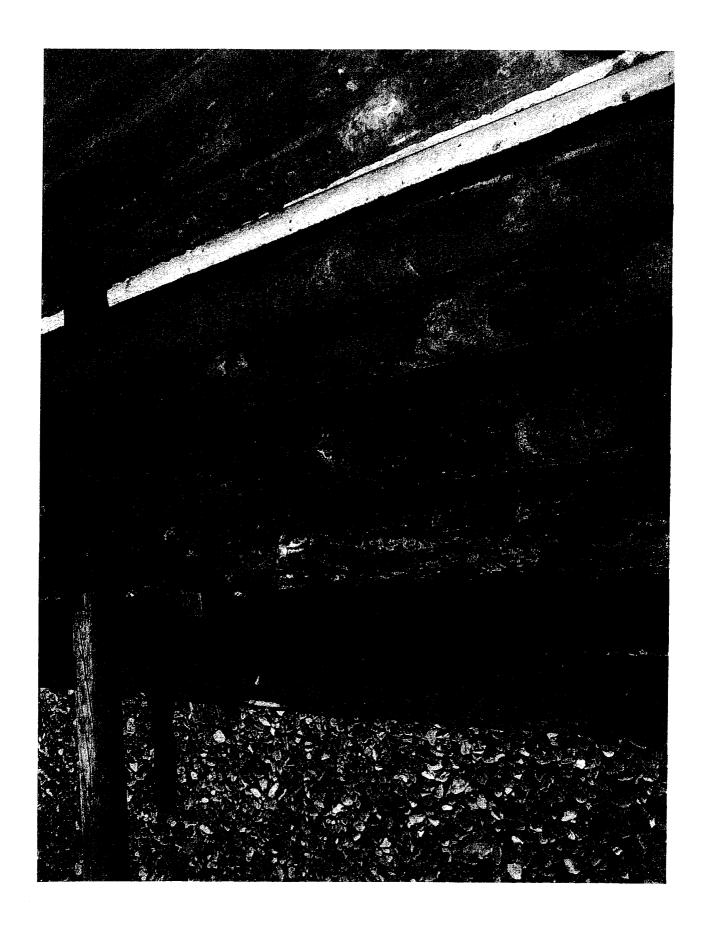


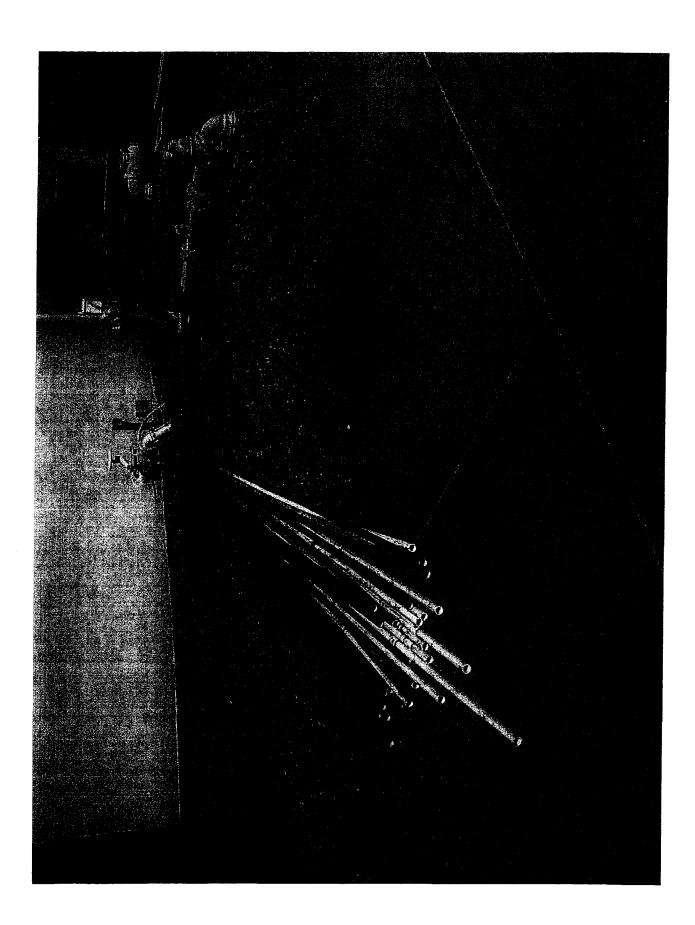


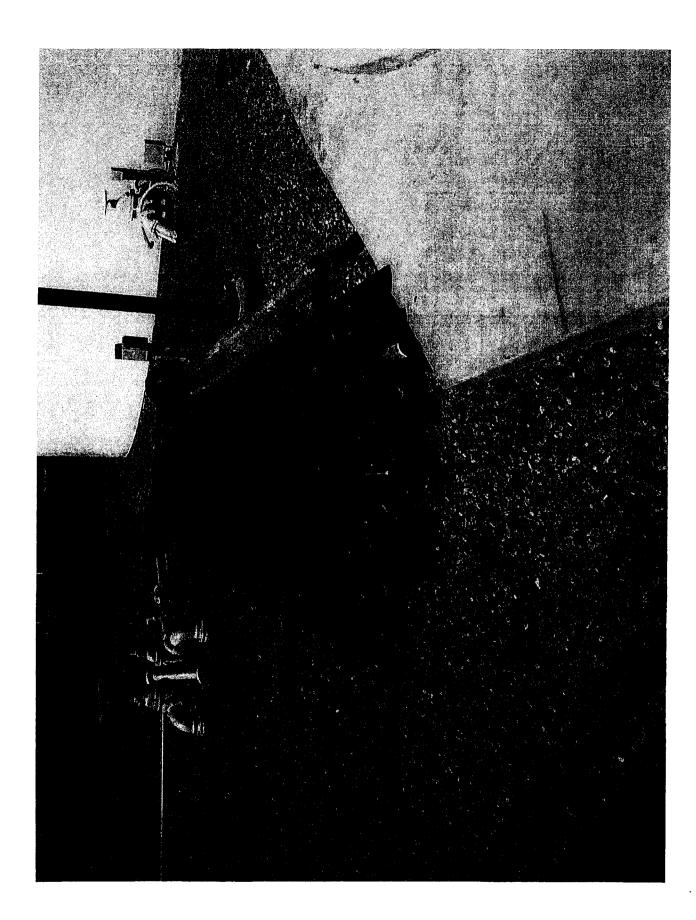


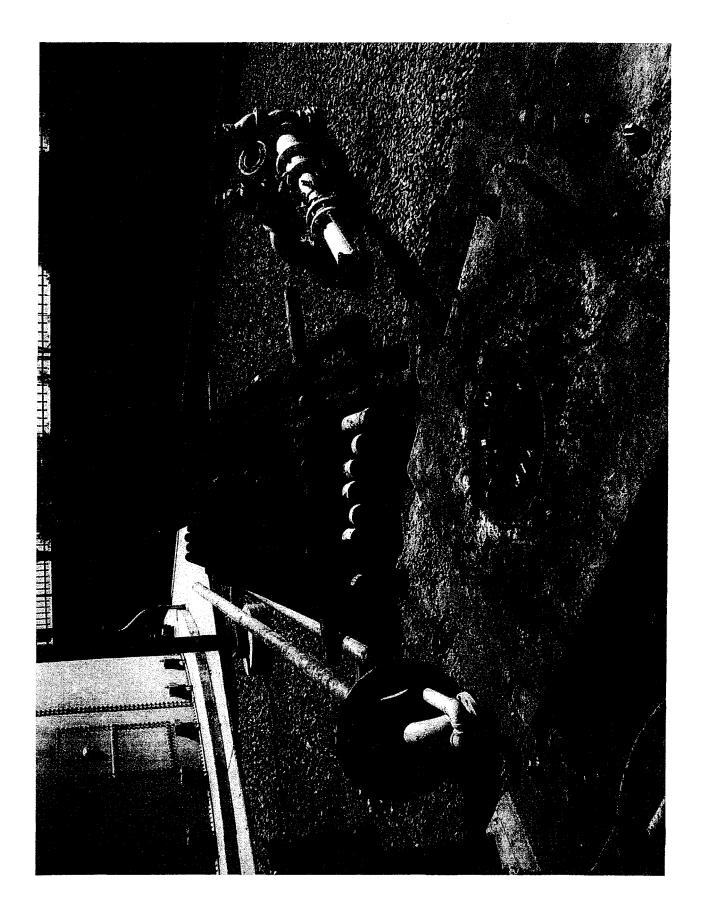














1-4807

1-4807 1 of 2

ARIZONA	WATER	COMPANY
WORK AUTHOR	<i>IZATION</i>	

	SYSTEM:
ĺ	SYSTEM: DIVISION:

COOLIDGE

TAX CODE: 2103

PINAL VALLEY

WORK TO START BY: WORK TO BE FINISHED BY: **UPON AUTHORIZATION** WITHIN 60 DAYS

DESCRIPTION OF WORK:

Install Grading and Drainage Improvements at the Valley Farms Water Campus. Construct in accordance with Pinal County requirements, attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

2011 Approved Budget Item (\$38,000)

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK: MATERIAL	0	James Wilson 900 3/17/11	2/25/11
LABOR	3,700	REVIEWED FOR ESMT/ROW VERIFICATION:	02-28-2011
CONTRACT PORTION	25,290	Charles Briggs CB 03-17-2011	
OVERHEAD TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	\$ 33,339	Mike Loggins AC 3-17-11	2-28-11
FUNDS RECEIVED: CONTRIBUTIONS RECEIVED	0,	APPROVED BY ENGINEERING: **PROVED BY ENGINEERING: **BULLIUM SULLIAN **Fredrick Schneider #\$ 3-18-11	3-1+11
REFUNDABLE ADVANCES RECEIVED TOTAL CONTRIBUTIONS/ADVANCES	0	Joseph Harris	3/1/4
NET CASH REQUIRED COMMENTS:	\$ 33,339	AUTHORIZED BY PRESIDENT: William Garfield CONSTRUCTION RELEASE:	3-2-2011

FILE COPY

RELEASED TO CONSTRUCTION

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: P.E. NUMBER: BUDGET ITEM NO :: SHEET NO .:

1-4807

1-4807 2 of 2

PLANT PROPERTY ACCOUNT UNIT DESCRIPTION YEAR INSTALLED AND W.A. NUMBE QUANTITY RETIREMENT PROPERTY UNITS PROJECT DESCRIPTION: Install Grading and Drainage Improvements at the Valley Farms Water Campus. PLANT PROP ACCT QUANTITY UNIT COST TOTAL 342 23,790.00 \$ 23,790 Install Grading and Drainage Improvements 1 \$ 342 1 1,500.00 Remove elevated tank foundations 1,500 C 0 N T R С T W 0 R K 345 SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG 345 SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT SERVICE CONNECTIONS COMPLETE: SINGLE-LONG 345 345 SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT TOTAL CONTRACT WORK 25,290 M Α Т E 345 R SERVICE CONNECTIONS: DOUBLE-LONG SERVICE CONNECTIONS: DOUBLE-SHORT 345 Α 345 SERVICE CONNECTIONS: SINGLE-LONG 345 SERVICE CONNECTIONS: SINGLE-SHORT 346 METERS TOTAL MATERIALS \$ 342 1 \$ 500.00 500 TESTING FEE В PERMIT FEE 0 342 1,700.00 1,700 SURVEY FEE FIELD INSPECTION 342 1,500.00 1,500 INSTALL SERVICE CONNECTIONS: DOUBLE-LONG 345 345 INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT 345 INSTALL SERVICE CONNECTIONS: SINGLE-LONG INSTALL SERVICE CONNECTIONS: SINGLE-SHORT 345 TOTAL LABOR \$ 3,700 SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR \$ 28,990 **OVERHEAD** 4,349 COST ESTIMATE | \$ 33,339 NON-REFUNDABLE PORTION TOTAL REFUNDABLE PORTION



P.O. Box 727 31 North Pinal Street, Bldg F Florence, Arizona 85232

SHEET BY SHEET SUBMITTAL REQUIREMENTS FOR SPECIFIC SITE PLAN SUBMITTAL

ALL SHEETS

- 1. Sheet Size: 24" x 36"
- 2. Preferred Scale: 1" = 20'
 Scales of 1" = 10', 1" = 30', 1" = 40', and 1" = 50' are allowed with approval of the Departments of Planning and Development and Public Works
- 3. Each sheet must have a border, $\frac{1}{2}$ " from the top bottom and right side, and a minimum of 1 $\frac{1}{2}$ " in from the left side
- 4. All sheets need to have a Title Heading including type of plan, and name of development. Include location of project by quarter section, township, and range or if available, the site address. This information should be centered and at the top of each sheet
- 5. d
- 6. All lettering should be legible and readable from bottom of sheet and/or right side of sheet.
- 7. Pinal County assigned case number "SPR-000-00", lower right corner of sheets (assigned after 1st formal review)
- 8. Number pages in lower right hand corner of each sheet above the border in format: 1 of (# of sheets). This numbering should be for this specific set of plans
- 9. The plan should be oriented so that North is at the top of the sheet
- 10. All information within the submittal must be consistent and accurate
- 11. All sheets must be sealed and signed by responsible party (Engineer/Architect). Plans submitted for final review and approval must have original wet seal and signature

COVER SHEET

- 1. All information requested on "All Sheets"
- 2. Title to include "SPECIFIC SITE PLAN", "FOR", then the project name and project address.
- 3. Owner, Developer, Engineer, Architect information (address, phone number, contact person), locate under the title heading
- 4. Legal Description of property
- 5. Vicinity map identifying the subject property, the adjoining streets and the major streets including the area within one mile radius of the site with a North arrow.
- 6. Sheet Index
- 7. Blue Stake notification
- 8. PZ/PZ-PD case number if applicable



P.O. Box 727 31 North Pinal Street, Bldg F Florence, Arizona 85232

9.	Add approval and re-approval block: (to lo	val and re-approval block: (to lower right corner of sheet)		
	PINAL COUNTY SPECIFIC SITE PLAN APPROVAL:			
	Public Works Department	Date		
	Planning & Development Department	Date Date		
Δ	PINAL COUNTY SPECIFIC SITE PLAN I	RE - APPROVAL:		
	Public Works Department	Date		
	Planning & Development Department	Date		
	Δ (this space is to be used to ide	ntify the amended sheets or "A" sheets)		
	Y SHEET An A.L.T.A./A.C.S.M. Land Title Survey ce Arizona.	rtified by a Registered Land Surveyor registered in the State of		
	ECTUAL SITE PLAN			

AF

- All information requested on "All Sheets
- 2. Site Data Table including:
 - a. Parcel number
 - b. Zoning
 - c. Setbacks
 - d. Gross Floor Area
 - e. Height
 - Parking calculations f.
 - Total Land Area
 - Impervious surface
 - Percent of Open Space
 - Any other pertinent information
- 3. North arrow
- Provide correct boundary information for property. Adjust as needed if any right-of-way is to be dedicated. (All Right-of-Way to be dedicated must be recorded prior to plan approval)
- Clearly identify and label project boundary line (must be able to distinguish line type)
- 6. Existing use of adjacent property, (ie. GR, CR-2, CR-4, CB-1, Cl-1, etc.)
- 7. Existing and Proposed Structures. Specify uses, square footage and maximum height of proposed buildings
- Existing and Proposed streets



P.O. Box 727 31 North Pinal Street, Bldg F Florence, Arizona 85232

- 9. Proposed lighting fixtures
- 10. Landscaped area(s)
- 11. Existing and Proposed curb cuts
- 12. Add notes that are applicable:
 - a. All signs are approved by separate permit;
 - b. All mechanical units and dumpsters will be screened from the public;
- 13. Location, dimensions and details of existing and proposed:
 - a. Streets;
 - b. Driveways;
 - c. Curb cuts;
 - d. Parking areas (show individual stalls 10'x20') including all handicap spaces;
 - e. Drive aisle widths;
 - f. Accessible routes from handicap parking to building entrances;
 - g. Detached or attached sidewalks and/or walkways;
 - h. Trash facilities:
 - Existing and proposed Walls and/or Fences (including material);
 - j. Signs & mechanical units;
 - k. Existing and proposed easements;
- 14. All relevant Dimensions Including:
 - a. Separations between buildings;
 - b. Setbacks from property lines;
 - c. Existing and proposed streets (right-of-way);
 - d. Alleys:
 - e. Sidewalks and/or walkways;
 - f. Landscaped areas and islands;
 - q. Building footprints:
 - h. Detention/retention ponds:
 - Structures
- 15. Label all Surfaces so that the Materials used can be determined.
- 16. Provide radii for all arcs used on curbs.

CIVIL SHEET(S) (Including Onsite Grading & Drainage, Paving and Utility)

(NOTE: Offsite improvements such as paving, water or sewer line extensions will need to be submitted as separate plans from the Specific Site Plan. They should be submitted initially at the same time as the Specific Site Plan. The offsite plans should be titled as "Offsite Paving Plan for <u>project name</u>", or "Offsite Waterline Plan for <u>project name</u>", etc. Offsite plans will use a different approval block. See below at end of Civil Sheets section.)

- 1. All information requested on "All Sheets"
- Benchmark, include elevation, description, datum, (must be NAVD 88 Datum) and location
- 3. Onsite Temporary Benchmark
- 4. Basis of Bearings
- 5. Blue Stake notification on each sheet
- 6. Quantities List(for offsite improvements)
- Legend, identifying grades, symbols, lines etc., proposed and existing
- B. Existing and proposed structures, streets and alleys



P.O. Box 727 31 North Pinal Street, Bldg F Florence, Arizona 85232

- 9. All existing and proposed utilities and service lines, include size and type and provide dimension to property line.
- 10. Show any existing easements of record with appropriate recording information. Include dimension and tie easements to the property boundary.
- 11. Sheet reference shown at all match lines.
- 12. Provide correct boundary information for property. Adjust as needed if any right-of-way is to be dedicated. Right-of-way dedication to be completed prior to plan approval. Include complete boundary information, including angles or bearings and distances, along with ties to two (2) Section, Quarter Section corners or major intersections. Label and provide description of monuments
- 13. Boundary line of development site should be a heavy solid line on all sheets in plan.
- 14. Existing and proposed drainage channel and facilities, and any area subject to a 100 year flood.
- 15. Existing contour lines of the subject area shown in intervals not to exceed two (2) feet. Also provide spot elevations on existing infrastructure such as curb and gutter and centerline of adjacent streets.
- 16. Provide finished floor elevations for ground floor of existing and proposed buildings.
- 17. Provide retention calculations on plan sheet. Show retention required and retention provided along with the formula used for the calculations. Calculations are to be for a 100 year, 2 hour storm event, label as such.
- 18. Provide at least two cross sections across property, to include proposed building(s) and retention basins.
- → 19. Retention basins; maximum 3' depth and maximum 4:1 slopes. Basins shall have 6" of free board from highwater elevation to overflow outfall of basin.
 - 20. Label type of erosion control to be used in basins and swales.
 - 21. Provide As-Built Certification as follows:

AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE "RECORD DRAWING" MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

REGISTERED ENGINEER/LAND SURVEYOR DATE

REGISTRATION NUMBER

22. Add the followings general notes:

GENERAL NOTES

- Developer shall obtain a Pinal County Right-of-Way Use Permit prior to any work being performed within the county right-of-way. Contact the Pinal County Public Works Inspection Section at least seven (7) days prior to work.
- 2. Drainage Report and Grading plan shall be in accordance with the current Pinal County Drainage Ordinance.
- A storm water pollution prevention plan (SWPPP) shall be submitted to Pinal County prior to issuance of construction permits. (If applicable, sites of 1 acre or more).
- 4. Any work done in a drainage channel or wash must comply with state and federal regulations.
- All work required to complete the construction within the County right-of-way covered by these plans shall be in accordance with the Pinal County Design Manual and applicable MAG standard specifications and details.
- All frames, covers, valve boxes and manhole covers shall be adjusted to finished grade prior to completion of paving or related construction.









Pinal County Development Services

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- 7. Contractor is responsible for Blue Stake marking as construction is in progress.
- 8. No trench to be left open/uncovered after working hours.
- Traffic control and barricading shall be according to the Manual on Uniform Traffic Control Devices and/or Pinal County requirements.
- Any work on Arterial or Collector roads shall require an off-duty Pinal County Sheriff's Officer for traffic control. Contact shall be made through the PCSO representative.
- 11. All retention basins must drain any storm event within 36 hours. The owner is responsible for any basin failing to meet the requirement and must take corrective action to bring the basin into compliance with this criteria as well as Pinal County Standards and Drainage Ordinance.
- 12. All dry wells shown on this project shall be maintained by the owners and are to be replaced by owners when they cease to drain the surface water in a 36 hour period. Regular maintenance of the dry well's silting chamber is required to achieve the best operation of the drywells. The owner shall be responsible for registering the drywells with ADEQ. Dry well grate elevation shall be a minimum 0.3' ft. above the bottom of retention basin. (to allow for silt accumulation)
- 13. An approved set of plans shall be maintained on the job site at all times while work is in progress. Deviation from the plans shall not be allowed without an approved plan revision.
- 14. Any work performed without the approval of the County Engineer and/or all work and material not in conformance with the specifications is subject to removal and replacement at the contractor's expense.
- 23. The following Approval Block is to be used for Offsite Improvement Plans only.

APPROVED BY:

PINAL COUNTY ENGINEER	DATE
PINAL COUNTY PUBLIC WORKS	DEPARTMENT
APPROVAL EXPIRES:	
	DATE

LANDSCAPE SHEET(S)

- 1. All information requested on "All Sheets"
- 2. <u>Clearly</u> identify and label project boundary line (must be able to distinguish line type)
- 3. Plant Materials List showing plant symbols and names
- 4. Label all the surfaces so that materials used for surfaces may be determined
- 5. Show irrigation system
- 6. Blue Stake Notification
- 7. Add Pinal County Landscaping notes:
 - a. Developer shall obtain a Pinal County Right-of-Way Use Permit prior to any work being performed within the county right of way. Contact Pinal County Public Works Inspection Section at least 7 working days prior to work
 - b. All plant material placed within public rights-of-way shall be on the Active Management Area Low Water Use Plant List and approved by the Arizona Department of Water Resources.
 - c. All plant material shall meet the minimum standards and specifications of the Arizona Nurserymen's Association or Arizona Association of Nurserymen.
 - d. All trees placed in public rights-of-way shall be pruned up and maintained at a seven (7) foot minimum canopy height.



Pinal County Development Services

P.O. Box 727 31 North Pinal Street, Bldg F Florence, Arizona 85232

- e. All plant material placed within sight visibility triangle easements shall have a maximum growth height of 24 inches. Total height of landscaping with the sight visibility triangle easements shall not exceed 24 inches (measured from top of curb) including all berms/mounds.
- f. All landscaping and irrigation including those within drainage ways and rights-of-way shall be maintained by the homeowner's association or owner.
- g. No plant material shall be placed within three (3') feet or trees within seven (7') feet of a fire hydrant, light pole, electrical or communications box.
- h. Eucalyptus trees and Saguaro cacti shall not be placed in County rights-of-way.
- i. Turf grasses shall not be place in County rights-of-way except as follows:
 - 1. For erosion control within drainage ways; and
 - 2. When reclaimed water can be used for the irrigation system.
- j. Trees placed within seven (7') feet of a concrete structure shall have a root barrier installed adjacent to the structure.
- 8. Add Pinal County Irrigation notes:
 - a. All mainline pipe shall be a minimum of schedule 40.
 - b. Sleeves shall be a minimum of twice the diameter of the line size.
 - c. All mainlines and irrigation equipment shall be placed in the landscape areas outside of County rights-of-way and public utility easements (PUE's)
 - d. Controller wirers that are direct burial shall be No. 14 or better, bundled and tied or wrapped every twelve (12') feet. During installation, wires shall have a 24" loop tied at all direction changes greater than 30 degrees and shall be untied prior to trench fill in.
 - e. Flush caps shall be placed in a valve box at the end of all laterals.
 - f. All valves, pressure regulators and other devices shall be placed in an appropriately sized box with a minimum of two (2") inches of pea gravel.
 - g. Any and all reclaimed water used for irrigation shall conform to ADEQ Arizona Administrative Code R18-11, Article 3, Reclaimed Water Quality Standards. All reclaimed water lines shall be dissimilar in appearance from potable water lines.

LIGHTING PLAN AND PHOTOMETRIC(S)

- 1. All information requested on "All Sheets"
- 2. Clearly identify and label project boundary line (must be able to distinguish line type)
- 3. Show Location, Type, height, and Wattage of all Exterior Light Fixtures. (include cutsheets)
- 4. Show Photometric Study on Plan



December 1, 2008

John Knobbe 3805 N. Black Canyon Hwy Phoenix, AZ 85015

Re: SPR-026-08

Project Name: AZ Water Co., Valley Farms Well & Tank Site

Dear Mr. Knobbe:

On November 6, 2008, you submitted revised Specific Site Plans for a second Site Plan Review. The comments received to date by the departments of Development Services are as follows:

Planning & Development - APPROVED AS SUBMITTED.

Public Works - APPROVED AS SUBMITTED.

If you have questions concerning this review, you may contact us at the numbers listed below:

Planning & Development – (520) 866-6671 Public Works (520) 866-6454

Sincerely,

Helen Johnson

Site Plan Review Coordinator

Helen Johnson

(520) 866-6671

Ken-Buchanan Assistar≵ County Manager

Development Services



PROJECT NAME:

ARIZONA WATER VALLEY FARMS

WELL & TANK SITE

REVIEWED BY:

MELISSA PARSONS

SPR-026-0	8 SP	ECIFIC SITE PLAN-2 ND REVIEW DATE: NOVEMBER 10, 2008
SHEET#	COMMENT #	RESPOND TO ALL COMMENTS AND GREENLINES.
		NO COMMENTS
		

**Submit a written response to all comments on this sheet in addition to revised plans at the time of re-submittal.



PINAL COUNTY DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT SECTION

HIGHWAYS-FLOOD CONTROL-FLEET MAINTENANCE-EMERGENCY SERVICES-WASTE MANAGEMENT P.O. BOX 727, 31 N. FLORENCE ST., FLORENCE, AZ 85232 PHONE (520) 866-6411 FAX (520) 866-6511 TDD 866-6523

Project Name:

ARIZONA WATER CO. - VALLEY FARMS WELL &

Reviewed By:

LESTER CHOW

TANK SITE

40/04/00

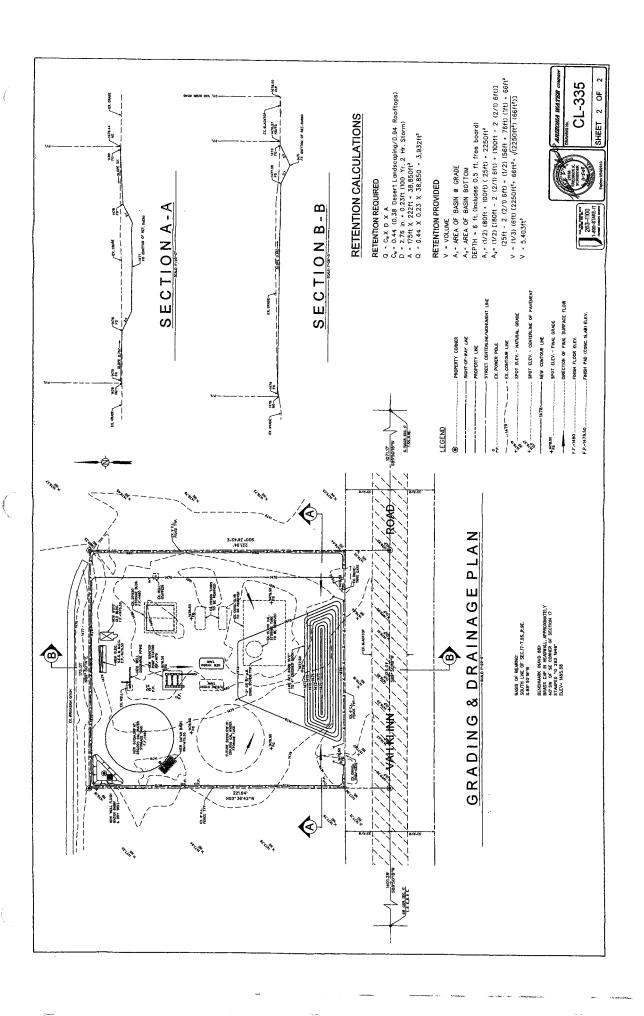
	SPR-026-08 I	Review Status: SITE PLAN 2ND REVIEW Date: 12/01/08	
Sheet #	Comment #	RESPOND TO ALL COMMENTS AND REDLINES.	
		PLANS CONSISTED OF _2_ SHEETS.	
		ALL PREVIOUS COMMENTS HAVE BEEN ADDRESSED. SITE PLAN APPROVED.	
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Planning Dept. (Melissa Parsons) -- had no comments -- 11/10/08

PANCE OF THE BOY CARN'S CL-335 in a second BOX 29006 VICINITY MAP ARIZONA WATER SHEET INDEX SPECIFIC SITE PLAN FOR ARIZONA WATER COMPANY VALLEY FARMS WELL & TANK SITE - 16601 E. VAH KI INN ROAD - COOLIDGE, AZ 85228 OWNER/DEVELOPER/ENGINEER
ACROHI WITES BOX 38008
PHODEN, AZ 85098-5008
OWICE 1602 3404-6809 f.W. (602) 244-288
CONTACT - MASS WILSON SITE DATA TABLE
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Case Grande Office: P.O. Box 11030- Case Grande, AZ 55239-1030 Voice \$20-836-8783 - Fax \$20-836-2850

PROPOSAL/CONTRACT

CONTRACTOR:	J. wise	Coolidse
ADORESS:	585] wilson Drive	W.A. No(0): 1-4494
		FEBRUSKY 27,2009

CONTRACTOR SUBMITS In a PROPOSAL CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

- Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plane and related construction drawings for the Project (the "Drawings"), copies of which are attached hereto. The General Conditions of Contractor and Drawings are incorporated into the Proposal/Contract. Contractor affirms that all work and meterials to be furnished or purchased for the Project will be in strict conformance with the General Conditions and Drawings.
- 2. Contractor represents and warrants that it has satisfied and compiled with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposed/Contract.
- Contractor represents that this Proposal/Contract[®] fair and honset in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or serson.
- 4. Contractor actinowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
- Prior to the commencement of work, Contractor will authorit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part
 number, price and quantity included in this Propositi/Contract.
- 6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No meterials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project also Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are example by Artzona Revised State Statuse ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or harger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. \$42-5981 8.8.), will not be included in the label cost of the labor and interesting upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and intelliging the Company against any demand or obligation to pay the Contracting Tax.
- Contractor will methical accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor involces for all materials purchased. Following completion of the Project, Contractor will submit an itemated accounting to the Company which will include all supporting original vendor involces and auticacions evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the deposition of such materials will remain Contractor's responsibility.
- 8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contractor with ocet of the required Performance and Payment Bonds. Contractor with not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period communicing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
- 9. Prior to the commencement of work, Contractor well provide the Complety with a detailed construction schedule. In either Cantil or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including leating, training of Company Personnel and final Project invoicing. Confractor will provide the Company with a copy of such construction achedule documenting the progress of work on the Project at least monthly.
- 10. Contractor will not commence work on the Project within Company gives Contractor a written Commencement Notice. Contractor will complete the Project within calendar days after the Commencement Notice is feased.

 11. Potowing the Company a written notice of satisfacility congressor of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor for

2.

- 11. Policeting Tel-Strapeny's witten notice of satisfacility completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shell pay Contractor in actual local coal of the Project, which will be calculated as shown on Page 2, except that social labor and meterial quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contractor Tax will be necelculated based on such actual labor and materials quantities.
- 12. The amount of applicable liquidated demages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project livelos. This provided shall not liquil the Company's ability to terminate this Proposal/Contract for Contractor's unsaffafedory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawlings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
J. Wise	ARIZONA WATER COMPANY
By:	sy: Koy Freeman.
Print Name: Barry Weschy	Print Name: Roy FREEMAN
Title: V.O	THE OPERATIONS SUPERINTENDENT.
Date: 7-27-01	Date: 3-2-09



Casa Granda Office: P.O. Box 11095- Casa Granda, AZ85230-1090 Volos 520-836-9785 - Fax \$20-836-2650

PRO	POS	ΔI / (CNO	TRACT

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				ISYSTEM:	
CONTRACTOR TT	· • •			Coulidge	
CONTRACTOR: J. WISE CO	<u>π-ρ</u> ,			W.A. No(a):	
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AZ CONTRACTOR LICENSE NO: 07647	CLASSIFICATION:	A			
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				GID BOND REQUIRE	9
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OF PROJECT: Install one concrete tank ring, on Water Company ('AWC') Dwg. C Road - Coolidge, AZ. A portion of	L-335 and Brown Tank & Stee	('BT&S') W(R.9 E.	D-263. Site Lo	and drainage pe cation: 16601 E	e Arizona E Vah Ki Inn
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install grading and drainage per AWC Dwg. CL-\$35	4	20,290	3500	20,240	3500
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3. Total Labor to Install Exempt Materials (add the amounts	te column ()				
Total Exempt Materials (add the amounts in column 2)	III NAMELIES 1/			28,190	JAM EN
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5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
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6. Total Non-Exempt Materials (add the amounts in column 8)					
9. Subtotal A (add lines 3, 7 and 8)	******************				39,690
10. Contracting Tax Base (multiply the amount on line 9 by 0.60	5)	1 18 54 perefft 1 - / 1 - 1 1 7 7 1 9 1		25,148	1000
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3, Subtotal B (add lines 4, 9 and 12)	[10.000.414.315.414.615.144.605.414.614.114.105.	****************			65,201
4. 100% Performance and Payment Bonda Cost	*** ***	* * * * * * * * * * * * * * * * * * * *	***************		93.6
			41 -		
5. Estimated Total Cost (add lines 13 and 14)	***************************	****************		7	
*				7	3,790
					<i>y</i>

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pevernent replacement, chip seel, and traffic control necessary for the Project,

CONSTRUCTION SPECIFICATIONS: E-8-1

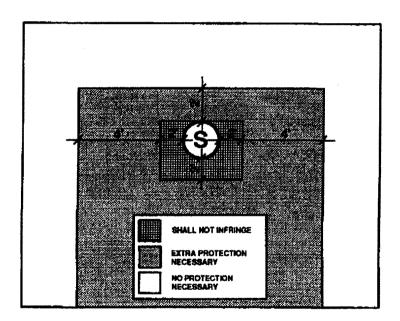
ERRATA 2010

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



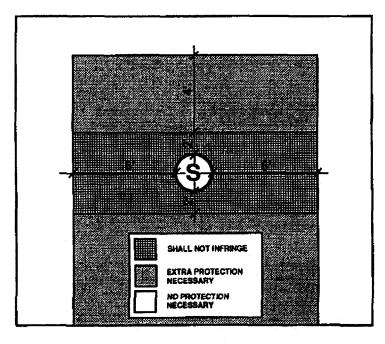
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

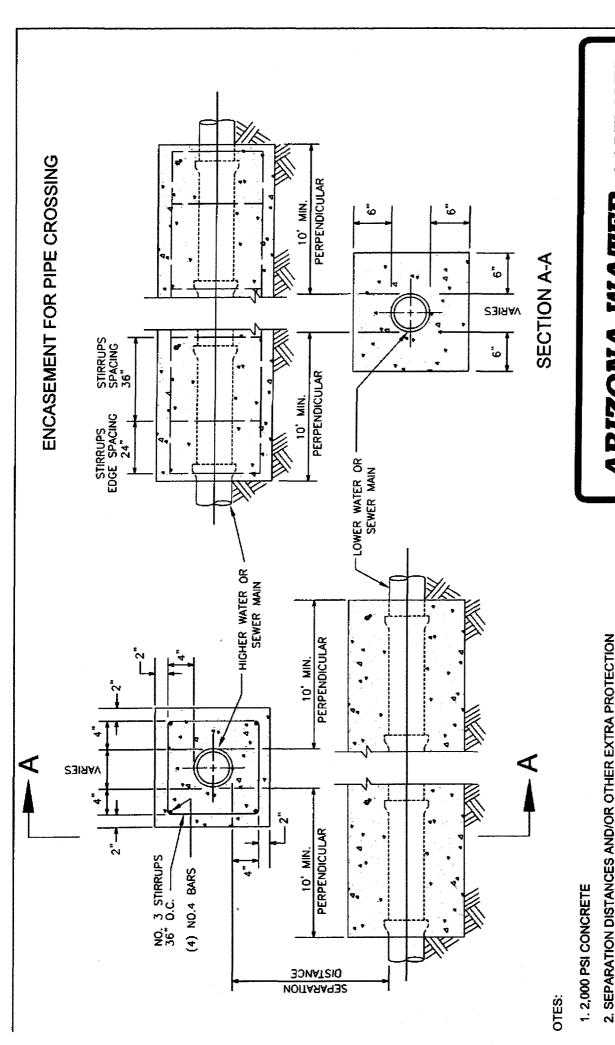
- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



STANDARD SPECIFICATION DRAWINGS: E-9-1

ERRATA 2010

E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
E-9-22	INSTALLATION OF COLUMN PIPE, OIL TUBE AND LINE SHAFT
E-9-23	HOT TAP AND JUMPER METER CONNECTION
E-9-24	INSTALLATION OF TYPICAL WATER LINE ENCASEMENT
E-9-25	INSTALLATION OF CALCIUM HYPOCHLORITE TABLET CHLORINATOR
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION
E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION
E-9-30 - 1	WATER AND SANITARY SEWER SEPARATION/PROTECTION PERPENDICULAR
E-9-30-2	WATER AND SANITARY SEWER SEPARATION/PROTECTION - PARALLEL



CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD

SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.

SHALL BE REQUIRED TO PROTECT WATER MAINS FROM

PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY 3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA

FROM THE OUTSIDE OF THE PIPES.

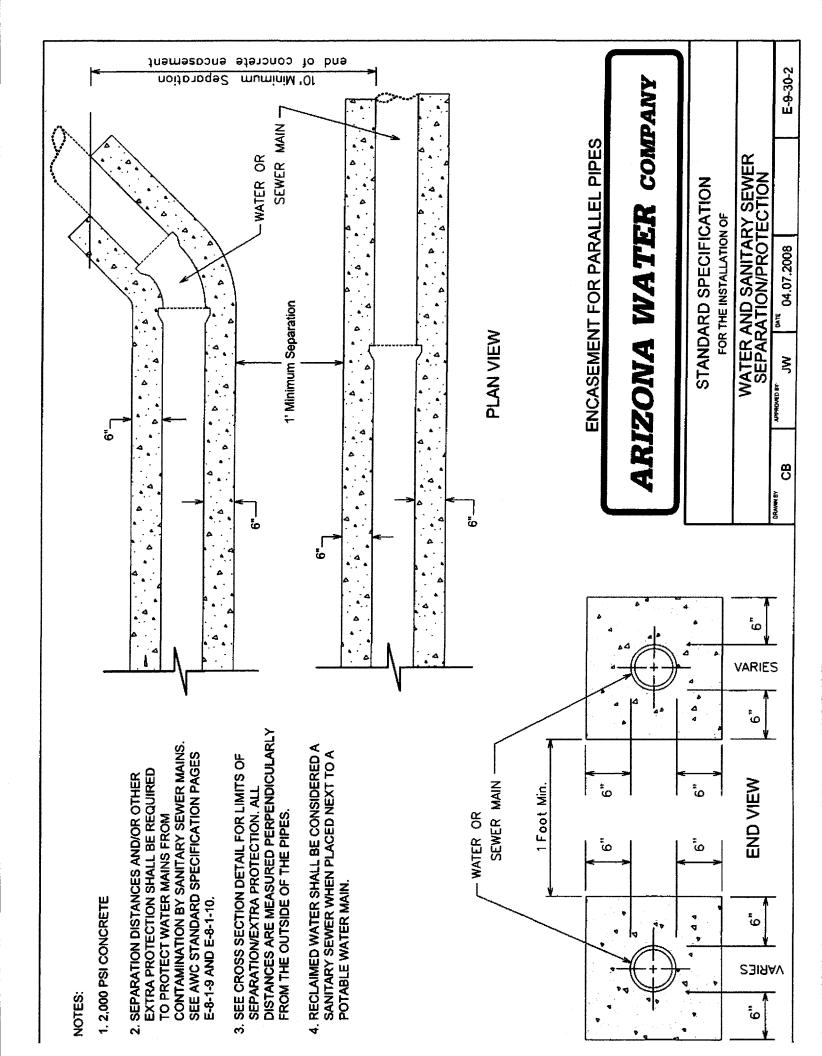
WHEN PLACED NEXT TO A POTABLE WATER MAIN.

STANDARD SPECIFICATION FOR THE INSTALLATION OF

WATER AND SANITARY SEWER SEPARATION/PROTECTION

04.07.2008 ₹ 8 4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER

E-9-30-1



3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan Clow Valve Company 8121 N. 10th Avenue Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 5¼* MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Jim Ryan - Clow Valve Company

October 19, 2010

Subject:

Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the Clow products. If I can be of any assistance, please call me.

Very truly yours,

Ludua K Illust

Vice President - Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

3805 N. BŁACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006 PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger
US Pipe - Waterworks Marketing Consultants
34522 N. Scottsdale Road
Scottsdale, Arizona 85226

Re: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron <u>includes</u> 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USPI
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts
 & Low Zinc Bronze Stem
 - Size range 14" thru 48"

To:

Tony Geiger - US Pipe

November 24, 2010

Subject:

US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,

redrick K. Schneider

Vice President - Engineering

uluca & Slund

afh

VIA EMAIL: TGEIGER4@COX.NET



SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

GENERAL CONDITIONS OF CONTRACT: E-4-1

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Invitation to Bid</u>. The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid.
- F. <u>Contract</u>. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. <u>Inspector</u>. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. ?40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense. penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons. and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage. destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all deslabor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. <u>LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME</u>

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

CONSTRUCTION SPECIFICATIONS: E-8-1

ARIZONA WATER COMPANY

E-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. <u>Company</u>. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. <u>Company's Authorized Representative</u>. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. <u>Contractor</u>. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. <u>Construction Drawings</u>. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. <u>Contract</u>. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

- Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- c. Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- a. A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color yellow, drain open, open direction left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 4" Pumper Nozzle, NST and 2 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)
 - (2) 1 4½" Pumper Nozzle, NST and 2 2½ " Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) $1 4\frac{1}{2}$ " Pumper Nozzle, NST and $2 2\frac{1}{2}$ " Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 2½" Hose Nozzles, NPT (Miami only.)

- (5) $1 3\frac{1}{2}$ " Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and $2 2\frac{1}{2}$ " Hose Nozzle, NST (Superior only.)
- b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x ¾" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12"; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)
- I. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.
- m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.
- n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8 " x ¾" x ¾" for a ¾" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" for a 3/4" service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: 3/4", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes ¾", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".
 - Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).
- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
 - (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
 - (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knock outs and adjustable frame.
 - (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x ¾" x 7", 5/8 x ¾" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Specification E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch ($1\frac{1}{2}$ ") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

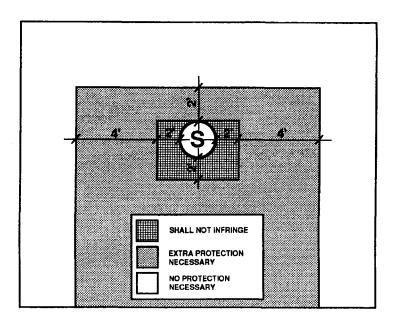
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



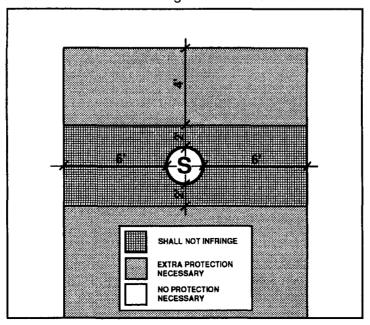
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°, 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS: E-9-1

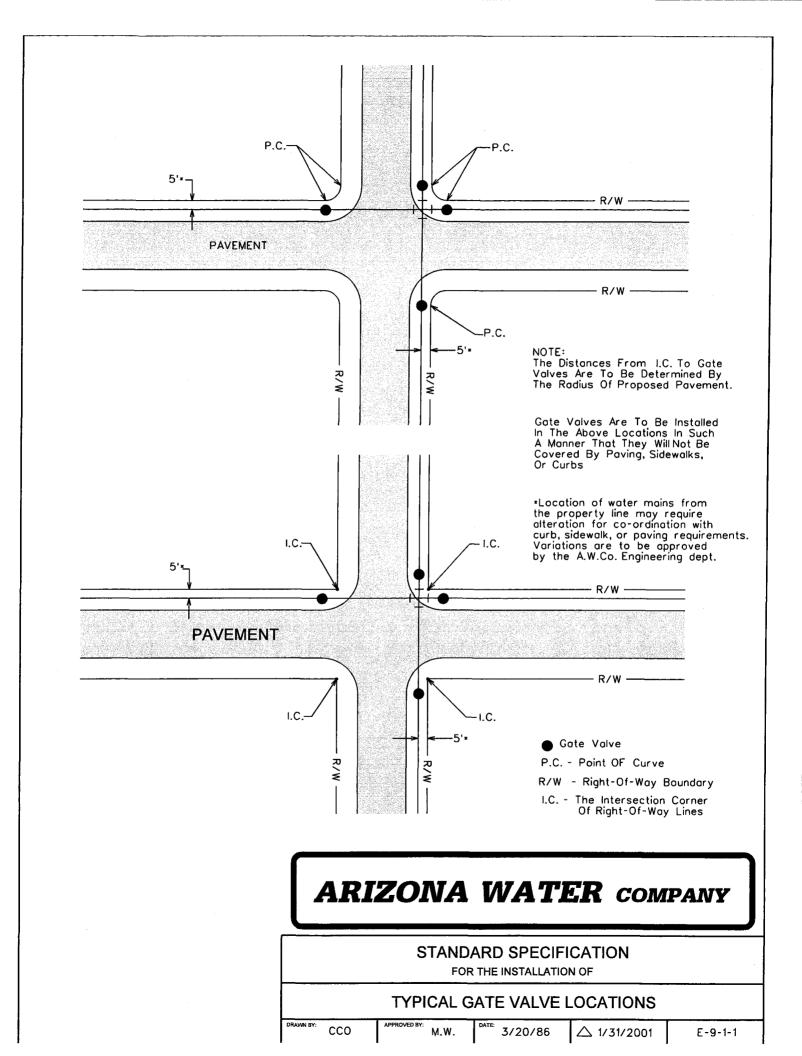
ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS

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E-9-4	INSTALLATION OF TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC
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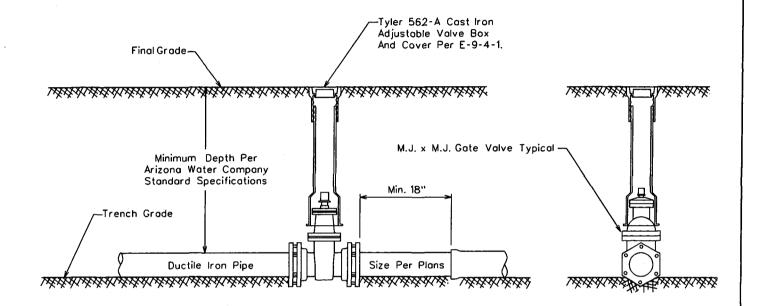


FOR 6" THROUGH 12" GATE VALVES

Mueller Resiliant Wedge Gate Volves Catalog Number A-2360-__ ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resiliant Wedge Gate Volves Catalog Number A-2361-__ ANSI/AWWA C509 Compliant



All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VERTICAL GATE VALVES

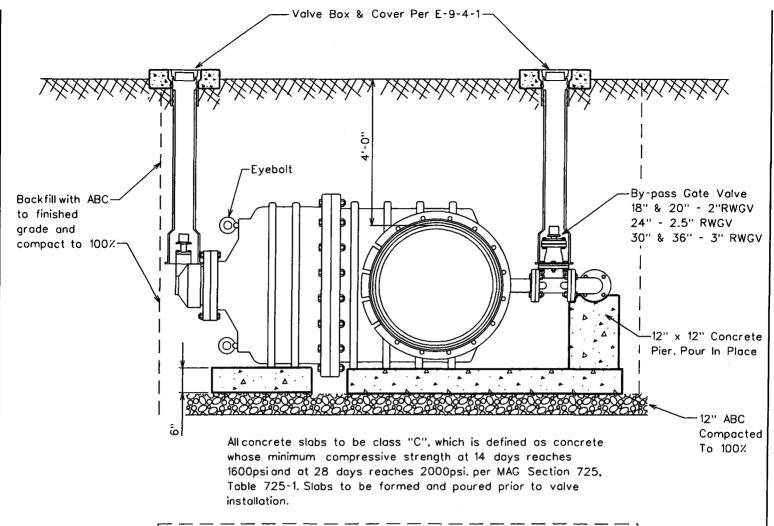
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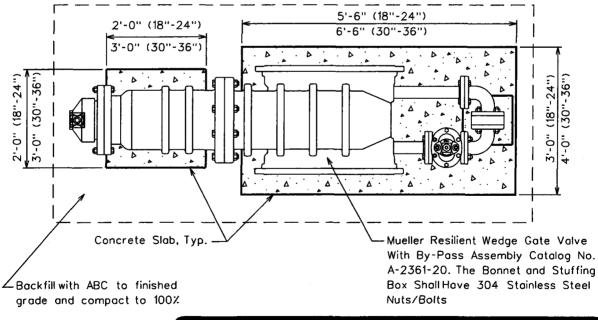
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All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

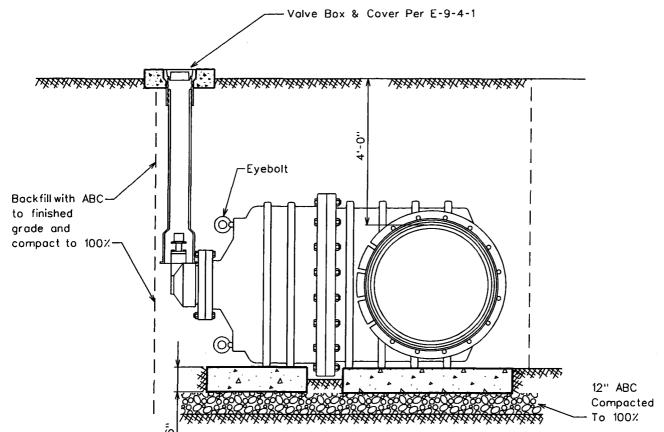
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

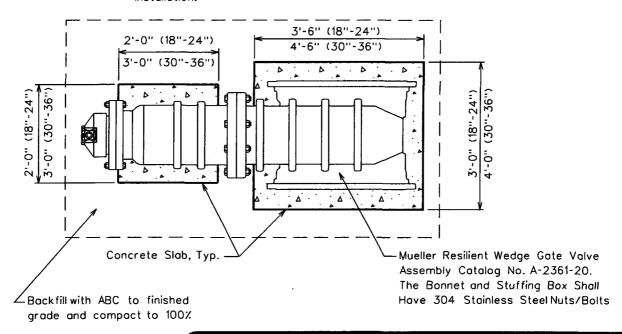
INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES
WITH BY-PASS FOR 18" AND LARGER VALVES

AWN BY: APPROVED BY:

TE:



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

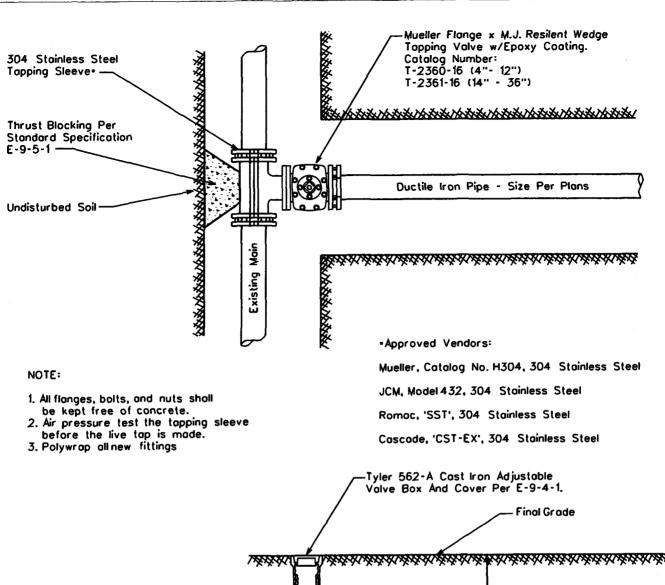
FOR THE INSTALLATION OF

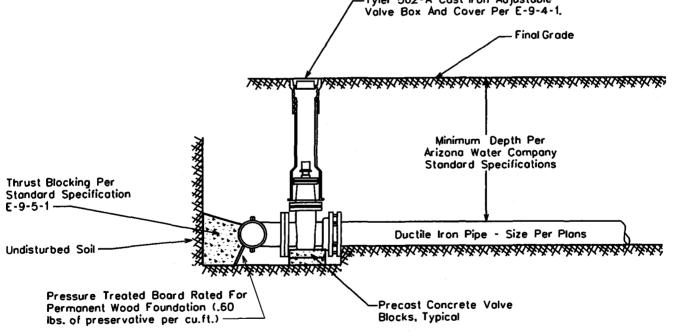
INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES
WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

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ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL TAPPING SLEEVE AND VALVE

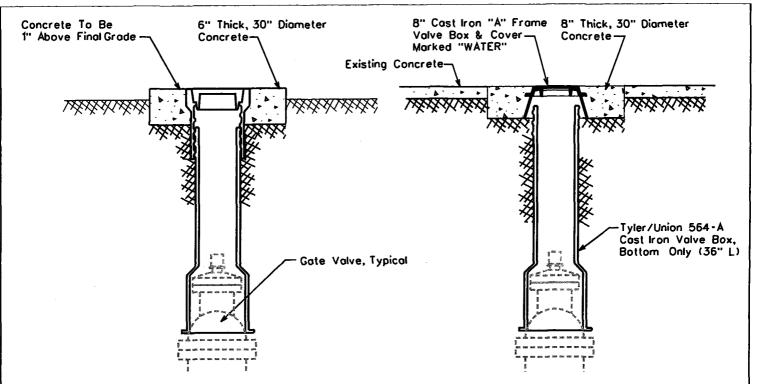
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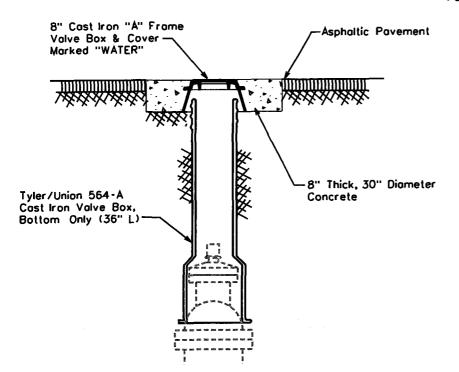
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E-9-3-1



NON-VEHICULAR VALVE BOX

CONCRETE VALVE BOX For Areas Subject To Vehicular Traffic



NOTE:

- The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
- 2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"

For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"

- 3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cop
- 4. Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

ASPHALT VALVE BOX
For Areas Subject To Vehicular Traffic

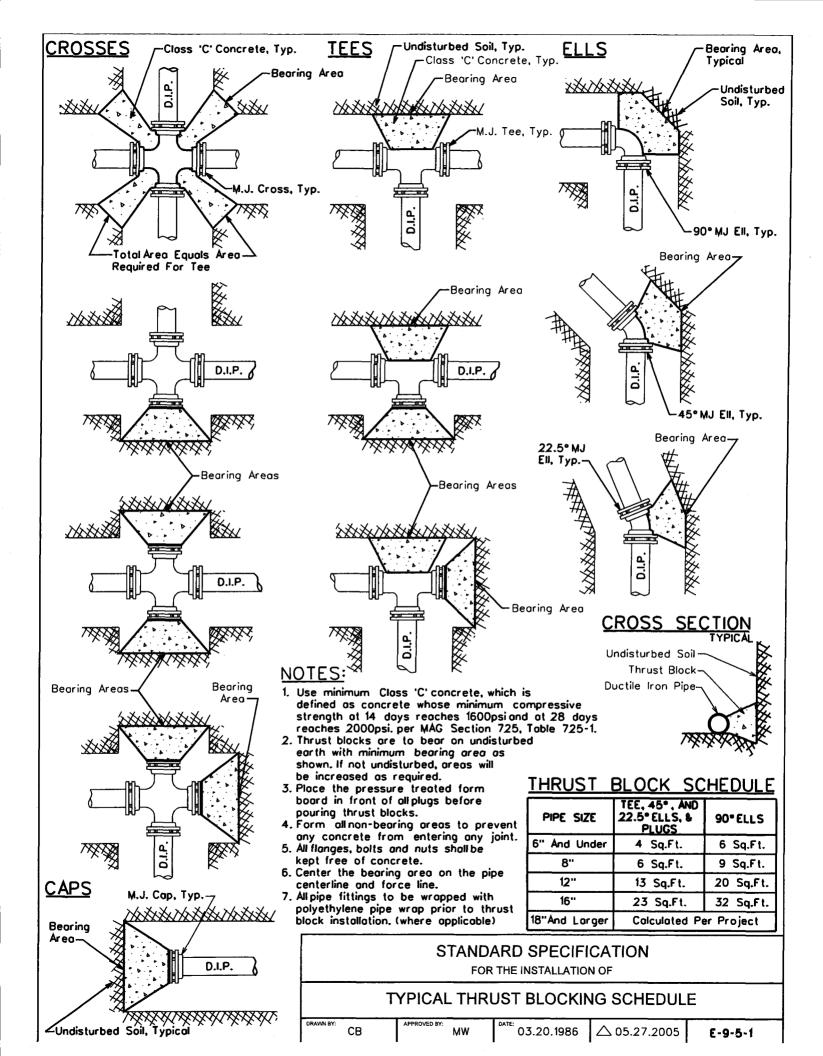
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC

AWN BY: CB APPROVED BY: MW DATE 03.20.1986 \(\triangle \text{ 8.24.2006} \) E-9-4-1

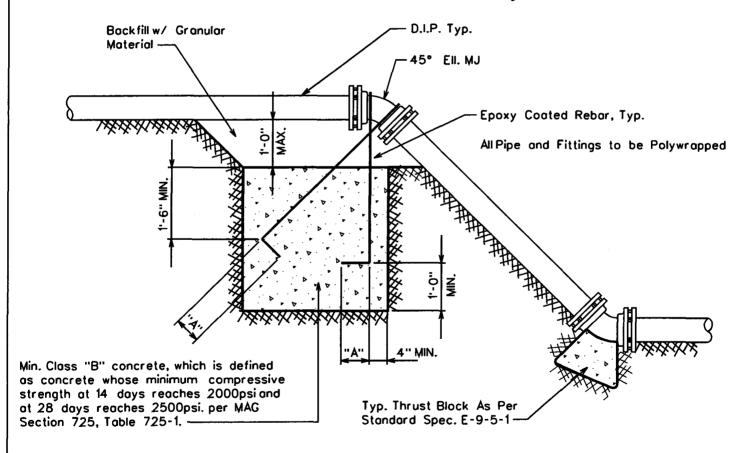


NOTES

- Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
- 2. Bars To Have 90° Hook © Their Ends, As Per Table Below.

Pipe Size	Min. Bar Size	"A" Dimension (Hook)	 Min. Block Dimension (WxHxL)
6"	•6	6"	3'x3'x3'
8"	•6	9"	4'x3'x4'
12"	•8	9"	5'x4'x5'
16"	•9	12"	7'x6'x7'

- For 125 P.S.I. Working Pressure



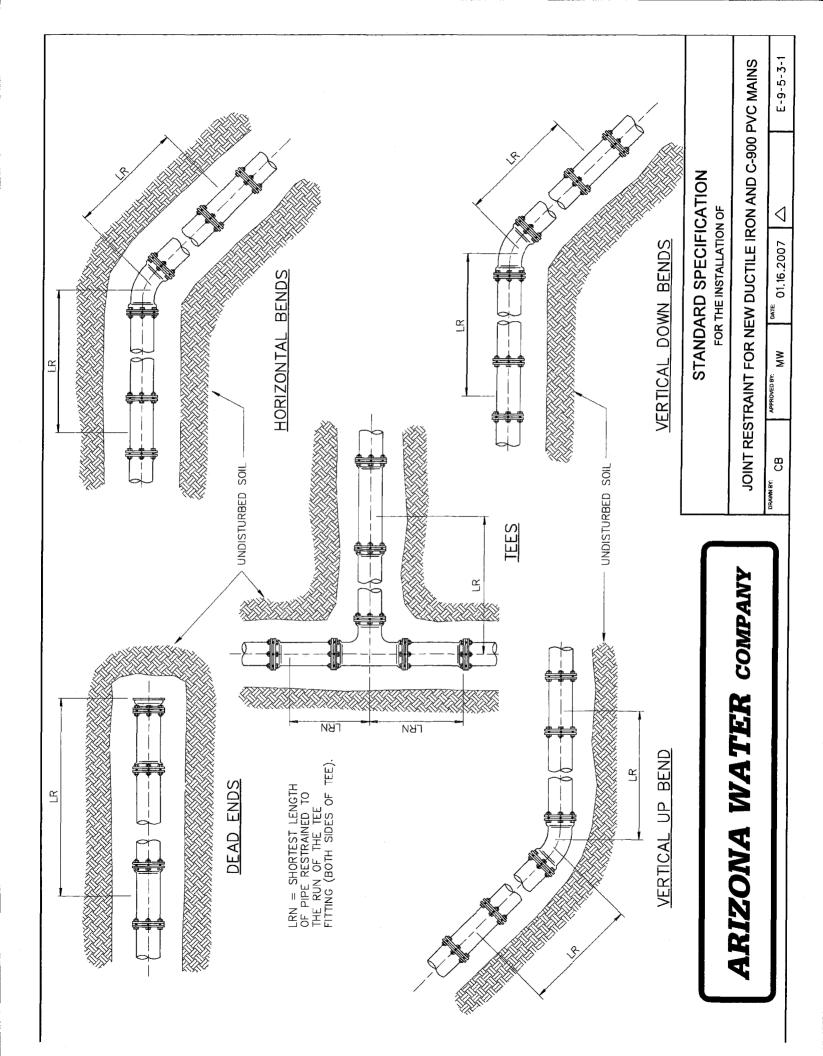
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

THRUST F	SLOCK FOR	VERTICAL	RENDS
		V LIV I I CAL	DLINDS

DRAWN BY: JPK	APPROVED BY: MJW	7-5-96	△ 01.16.2007	E-9-5-2



		DEAD	ENDS		31	44	58	69	84	92	104	115	126	147
		FITTINGS	Q	BEND	23	5	9	80	6	10	11	12	14	16
		45° BEND FITTINGS 22-1/2° BEND	INNOC	BEND	9	6	1	14	16	18	21	23	25	29
A PIPE	OFF SETS	FITTINGS	<u>a</u>	BEND	7	10	13	16	19	21	24	26	28	33
ILE IROI	VERTICAL OFFSETS	45° BEND	NWOU	BEND	13	18	24	29	34	38	43	48	52	61
N DUCT	N	FITTINGS	dil	BEND	18	25	32	38	45	51	57	62	68	79
, LR, FC		90' BEND FITTINGS	NWOO	BEND	31	44	58	69	81	92	104	115	126	147
RAINED LENGTHS, LR, FOR DUCTILE IRON PIPE	Ç	را ا		I RN=10	8	20	34	45	57	68	79	90	100	121
AINED L	į. F	IEES		I RN=0'	30	43	56	68	80	91	103	113	125	145
RESTR	001	DENUS		22-1/2.	4	5	9	8	6	10	11	12	14	16
	HORIZONTAL BENDS			45.	7	10	13	16	19	21	24	26	28	33
	7	1 2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3		.06	18	25	32	38	45	51	57	62	68	79
	NOMINAL	7 <u>7</u> 7	SIZE	INCHES	4	9	80	10	12	14	16	18	20	24

		DEAD	ENDS -		72	102	133	159	187	214	241	266	292	340
WRAP		AD FITTINGS	=	BEND	2	7	o	-	13	15	16	18	20	22
THS, LR, FOR DUCTILE IRON PIPE WITH POLYETHYLENE WRAP		22-1/2° BEND FITTINGS	INMOO	BEND	14	20	26	32	37	42	48	53	58	89
POLYETH	OFFSETS	FITTINGS	<u>a</u>	BEND	11	15	19	23	27	31	34	38	41	47
WITH F	VERTICAL OFFSETS	45° BEND	NWOU	BEND	30	42	55	99	77	89	100	110	121	141
ON PIPE	^	90' BEND FITTINGS	dII	BEND	26	36	47	56	65	74	82	06	98	113
STILE IR		90. BEND	NWOO	BEND	72	102	133	159	187	214	241	266	292	340
FOR DUC	·	<u>ე</u>		LRN=10'	18	47	78	103	131	156	183	207	233	280
S, LR, I	<u> </u>	IEES		LRN=0'	69	66	130	157	185	211	238	263	289	337
LENGTH	0	DEINDS		22-1/2.	2	7	6	11	13	15	16	18	20	22
RESTRAINED LENG	F	JORIZONIAL BENUS		45.	11	15	19	23	27	31	34	37	41	47
RESTR	10011	7 NOL -		.06	56	36	47	56	92	74	82	90	86	113
	NOMINAL	77.0	375	INCHES	4	9	80	10	12	14	16	18	20	24

NOTES:

- 1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED. ALL LENGTHS ARE GIVEN IN FEET.
- 2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
- 3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
- 4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

ARIZONA WATER COMPANY

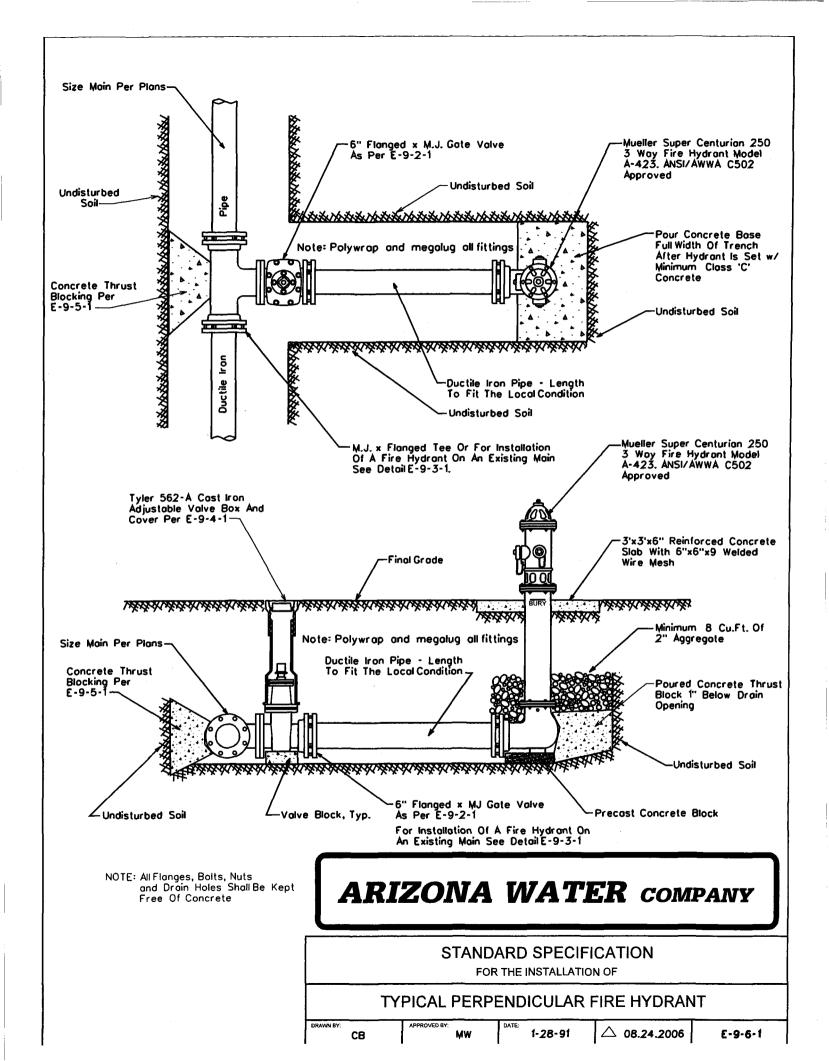
STANDARD SPECIFICATION FOR THE INSTALLATION OF

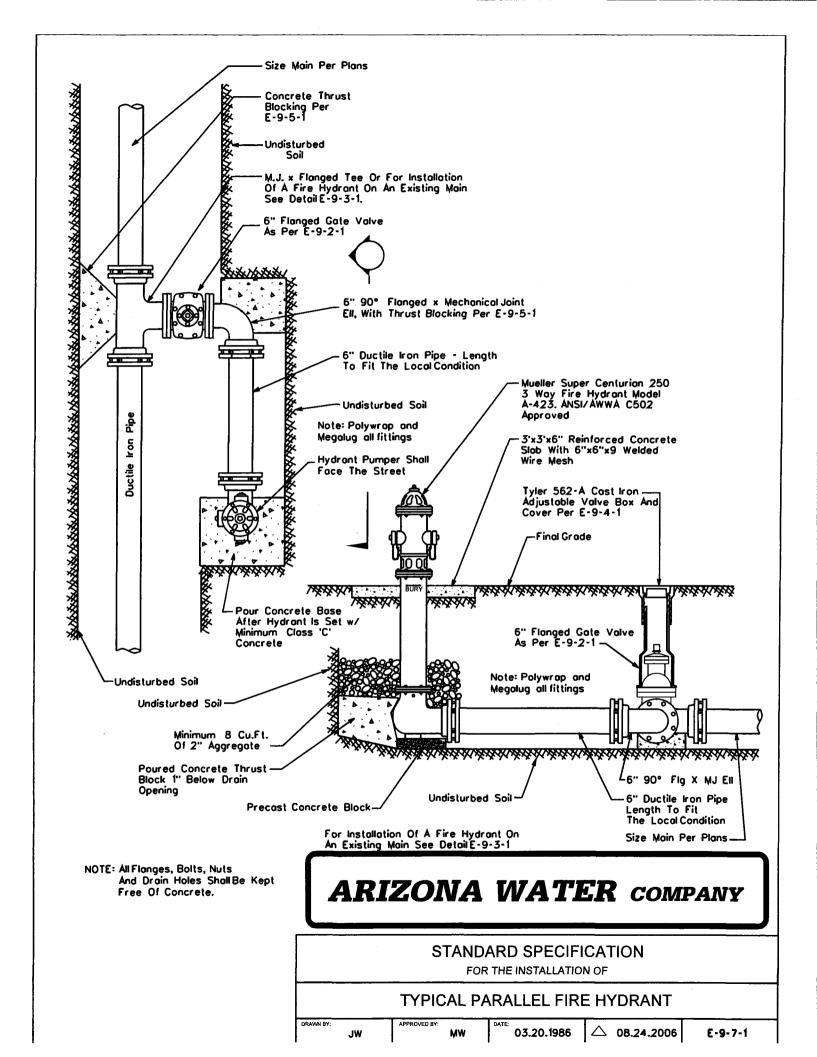
JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

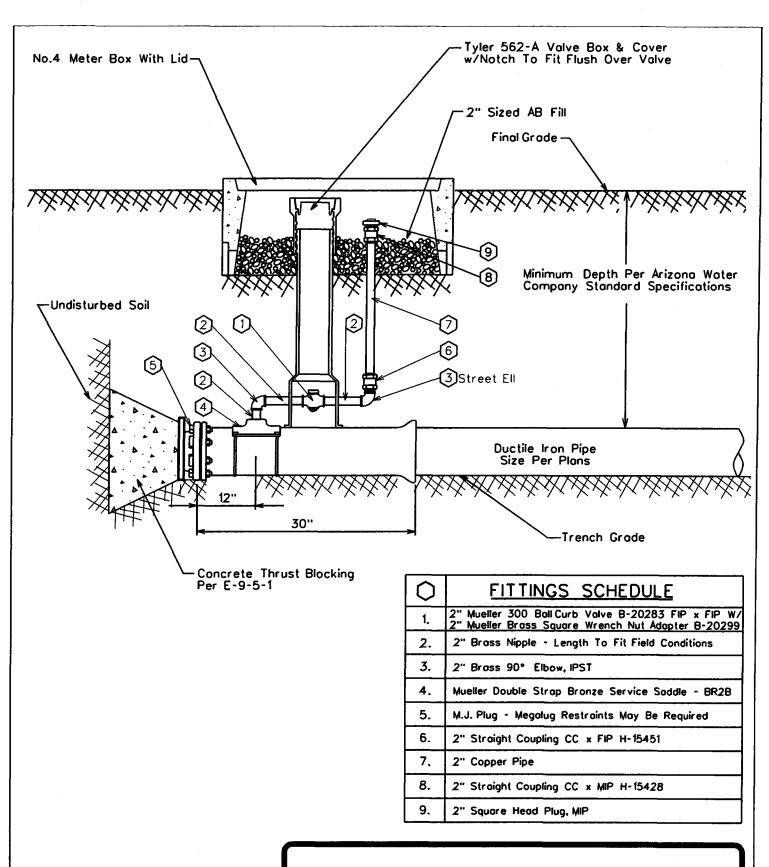
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DATE 01.16.2007

E-9-5-3-2





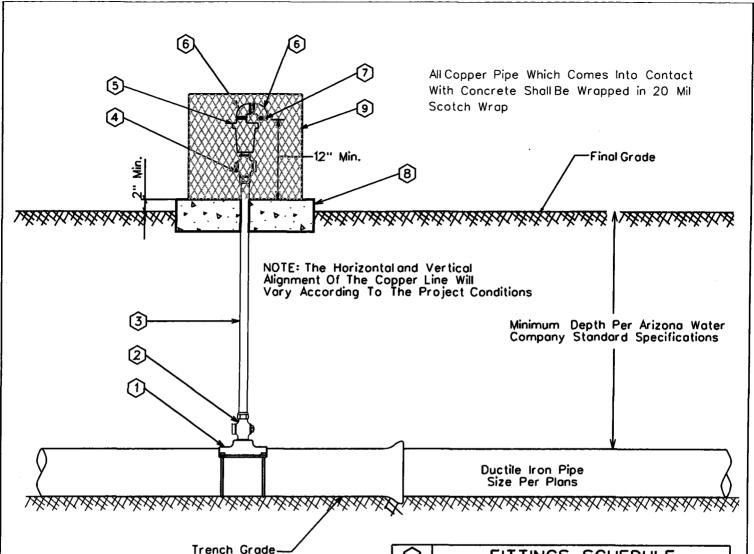


ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

2" BLOWOFF ASSEMBLY

E-9-8-1



GENERAL NOTES:

- The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- 2. The valve shall have a $\frac{1}{4}$ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & 1/2" IPST outlet, cost iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

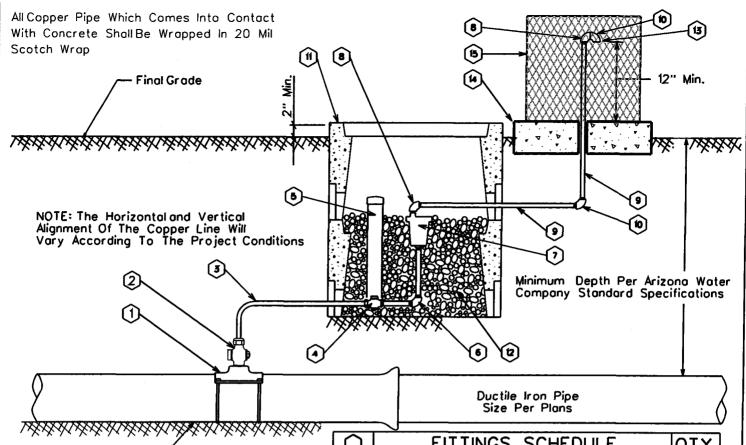
\bigcirc	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper × Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP × Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	1/2" Bross Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL AIR RELEASE VALVE

CB APPROVED BY: MW DATE: 03.20.1997 \(\triangle 08.24.2006 \) E-9-8-2



GENERAL NOTES:

Trench Grade

- The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
- The valve shall have a ¼ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
- 3. The valve shall be Crispin model AR10 for 6" and larger water mains.
- 4. Crispin model AR10 valve construction consists of a 1" IPST inlet & 1/2" IPST outlet, cast iron body and top flange with stainless steel float and trim.
- 5. The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

0	FITTINGS SCHEDULE	QTY,
1.	Mueller BR2B Bronze Service Saddle - Double Strap	1
2.	1" Mueller B-25008 Toper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Req'd
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cap (Loose Fit)	1
6.	1" x 4" Brass Nipple w/90° Elbow	1
7,	Crispin 1" Air Release Valve, Model AR10	1
8.	1/2" Bross Street Elbow	2
9.	1/2" Galvanized Pipe - Length as req'd	2
10.	1/2" Galvanized 90° EII	2
11,	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	As Req'd
13.	No.16 Wire Mesh Screen (Non-Corrodible)	1
14.	4" Thick Concrete Pad - Class 'C' Concrete	1
15.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan	1

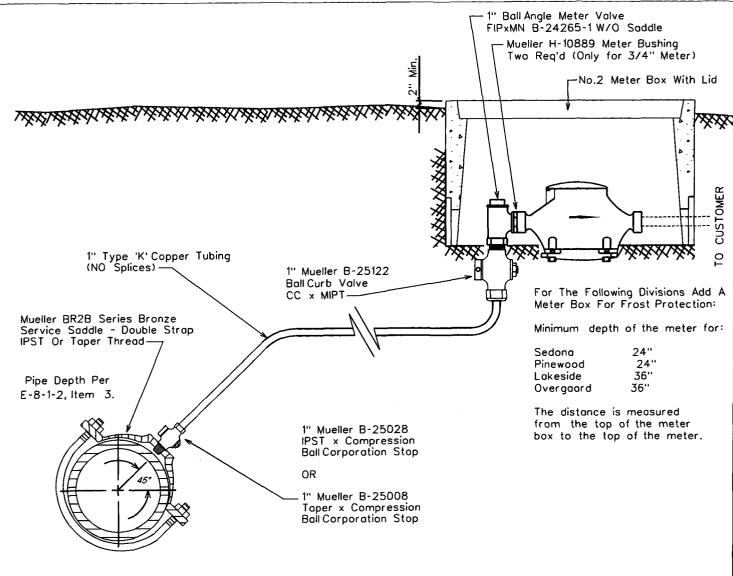
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

CB APPROVED BY: MW DATE: 03.20.1997 \(\triangle 08.24.2006 \)



SADDLE TAP TO CA, PVC, OR DIPIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

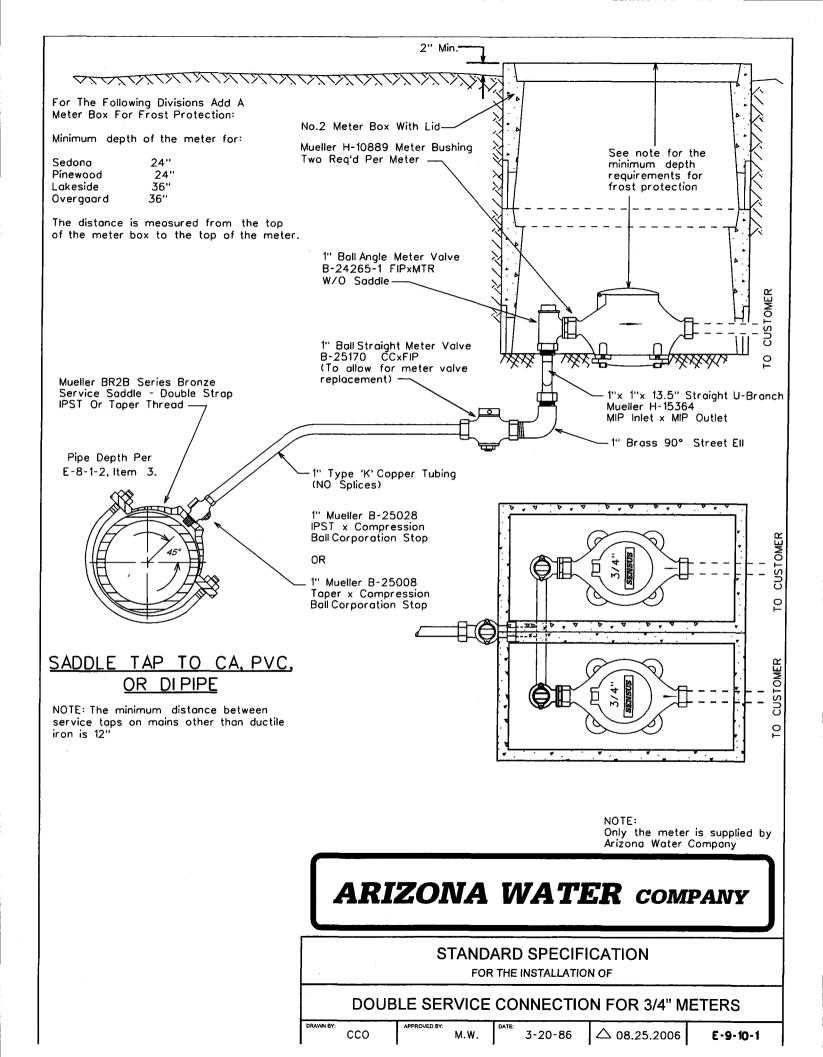
NOTE: Only the meter is supplied by Arizona Water Company

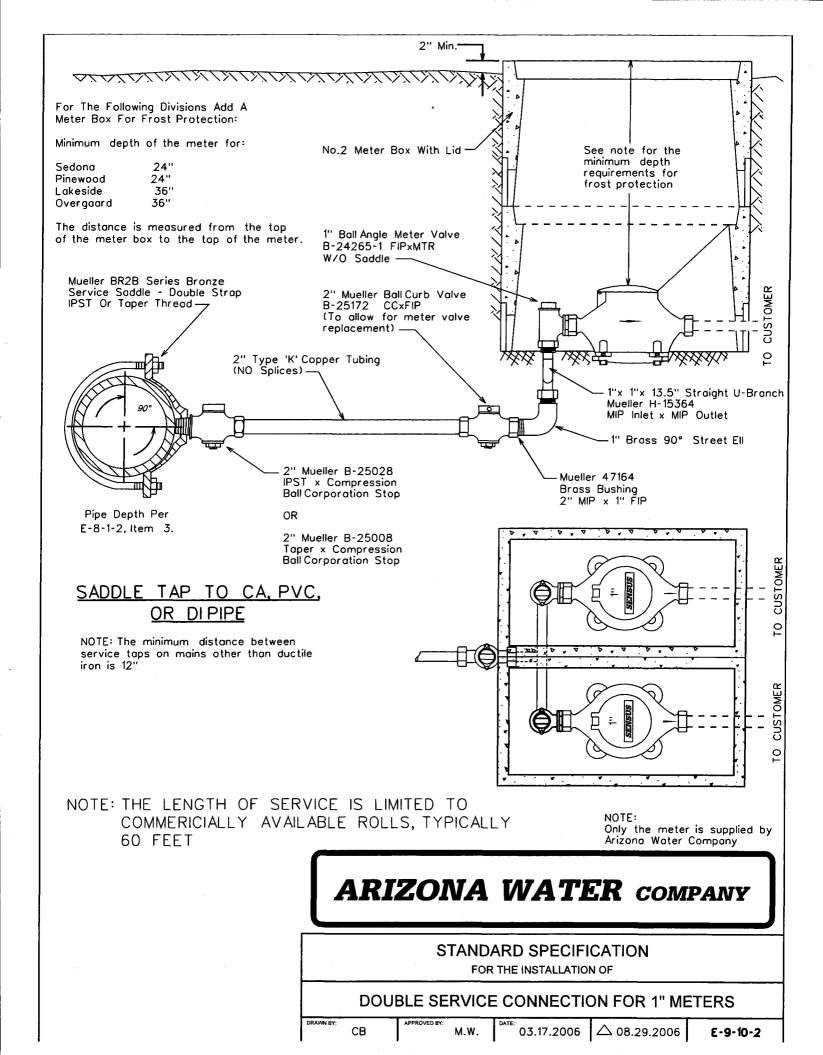
ARIZONA WATER COMPANY

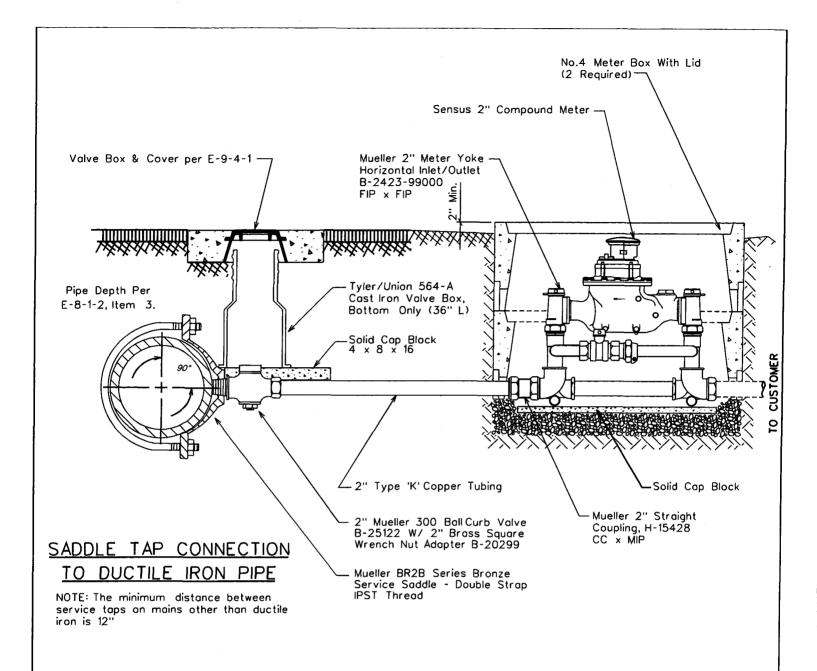
STANDARD SPECIFICATION FOR THE INSTALLATION OF

SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

DRAWN BY: CCO APPROVED BY: M.W. DATE: 3/20/86 \(\triangle 03.17.2006 \) E-9-9-1







NOTE: THE LENGTH OF SERVICE IS LIMITED TO COMMERICIALLY AVAILABLE ROLLS, TYPICALLY 60 FEET

NOTE:

Only the meter is supplied by Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

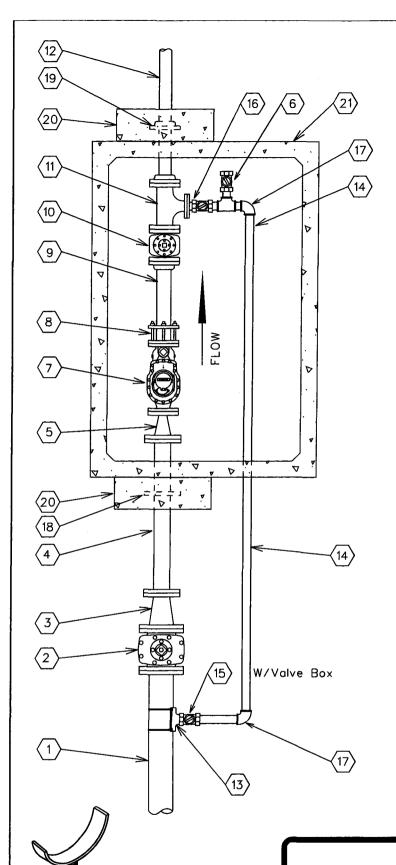
TYPICAL 2" SERVICE CONNECTIONS

TITIONE 2 DERIVIDE CONNECTIONS

JW APPROVED BY:

W. | 3

E-9-11-1



Pipe Support

Conc. Block

No.	FITTINGS SCHEDULE								
1,	6" D.I.P.								
2.	6" G.V.B.&C. mj x flng								
3.	6"x4" Reducer fing x mj								
4.	4"x3'-0" D.I.P. Spool flng x pe								
5.	4" x 3" Reducer flng								
6.	2" Test Port								
7.	3" Compound Meter								
8.	3" F.C.A.								
9.	3"x2'-0" D.I. Spool fing x pe								
10.	3" Gate Valve fing								
11.	3"x2" Flg Tee w/ 2" Companion Flange								
12.	3"x4'-0" D.I. Spool flng x pe								
13.	6"x2" Tapping Saddle								
14.	2" Copper Pipe								
15.	2" Mueller B25122 Ball Valve w/B20299 Nut								
16.	2" Locking Ball Valve (normally closed)								
17.	2" Mueller H-15526 90° Ell CC x CC								
18.	4" Megalug								
19.	3" Slip-On Welding Flange								
20.	24"x24"x8" Conc. Thrust Block P.I.P.								
21.	575-LA Conc. Vault								

NOTE:

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

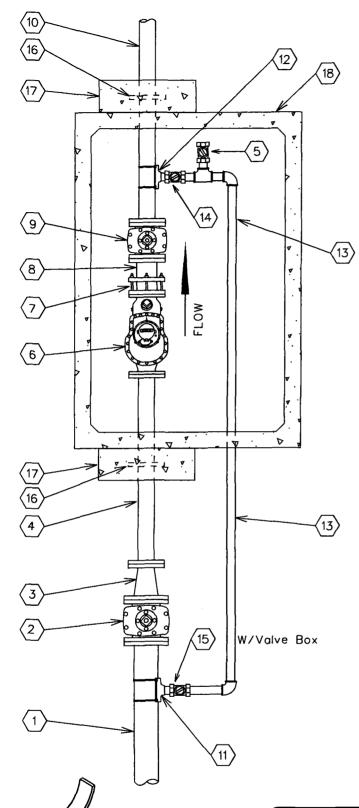
3" COMPOUND METER

3 COMPOUND WETER

CCO

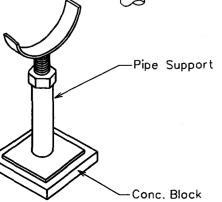
10/5/1993 △08.29.2006

E-9-12-1



No. FITTINGS SCHEDULE 1. 6" D.I.P. 2. 6" G.V.B.&C. mj x flng 3. 6"x4" Reducer flng x mj 4. 4"x3'-0" D.I.P. Spool flng x pe 5. 2" Test Port 6. 4" Compound Meter 7. 4" F.C.A. 8. 4"x1'-0" D.I.P. Spool flng x pe 9. 4" Gate Valve flng 10. 4"x4'-0" D.I.P. Spool flng x pe 11. 6"x2" Tapping Saddle 12. 4"x2" Tapping Saddle 13. 2" Copper Pipe 14. 2" Ball Valve / Locking (Normally Closed) 15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug 17. 24"x24"x8" Conc. Thrust Block P.I.P.						
 6" G.V.B.&C. mj x flng 6"x4" Reducer flng x mj 4"x3'-0" D.I.P. Spool flng x pe 2" Test Port 4" Compound Meter 4" F.C.A. 4"x1'-0" D.I.P. Spool flng x pe 4" Gate Valve flng 4"x4'-0" D.I.P. Spool flng x pe 6"x2" Tapping Saddle 4"x2" Tapping Saddle 2" Copper Pipe 2" Ball Valve / Locking (Normally Closed) 2" Mueller B25122 Ball Valve w/B20299 Nut 4" Megalug 	No.	FITTINGS SCHEDULE				
 6"x4" Reducer flng x mj 4"x3'-0" D.I.P. Spool flng x pe 2" Test Port 4" Compound Meter 4" F.C.A. 4"x1'-0" D.I.P. Spool flng x pe 4" Gate Valve flng 4"x4'-0" D.I.P. Spool flng x pe 6"x2" Tapping Saddle 4"x2" Tapping Saddle 2" Copper Pipe 2" Ball Valve / Locking (Normally Closed) 2" Mueller B25122 Ball Valve w/B20299 Nut 4" Megalug 	1.	6" D.I.P.				
4. 4"x3'-0" D.I.P. Spool flng x pe 5. 2" Test Port 6. 4" Compound Meter 7. 4" F.C.A. 8. 4"x1'-0" D.I.P. Spool flng x pe 9. 4" Gate Valve flng 10. 4"x4'-0" D.I.P. Spool flng x pe 11. 6"x2" Tapping Saddle 12. 4"x2" Tapping Saddle 13. 2" Copper Pipe 14. 2" Ball Valve / Locking (Normally Closed) 15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug	2.	6" G.V.B.&C. mj x flng				
 2" Test Port 4" Compound Meter 4" F.C.A. 4"x1'-0" D.I.P. Spool fing x pe 4"x4'-0" D.I.P. Spool fing x pe 6"x2" Tapping Saddle 4"x2" Tapping Saddle 4"x2" Tapping Saddle 2" Copper Pipe 2" Ball Valve / Locking (Normally Closed) 2" Mueller B25122 Ball Valve w/B20299 Nut 4" Megalug 	3.	6"x4" Reducer fing x mj				
6. 4" Compound Meter 7. 4" F.C.A. 8. 4"x1'-0" D.I.P. Spool flng x pe 9. 4" Gate Valve flng 10. 4"x4'-0" D.I.P. Spool flng x pe 11. 6"x2" Tapping Saddle 12. 4"x2" Tapping Saddle 13. 2" Copper Pipe 14. 2" Ball Valve / Locking (Normally Closed) 15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug	4.	4"x3'-0" D.I.P. Spool flng x pe				
 4" F.C.A. 4"x1'-0" D.I.P. Spool flng x pe 4" Gate Valve flng 4"x4'-0" D.I.P. Spool flng x pe 6"x2" Tapping Saddle 4"x2" Tapping Saddle 2" Copper Pipe 2" Ball Valve / Locking (Normally Closed) 2" Mueller B25122 Ball Valve w/B20299 Nut 4" Megalug 	5.	2" Test Port				
 8. 4"x1'-0" D.I.P. Spool fing x pe 9. 4" Gate Valve fing 10. 4"x4'-0" D.I.P. Spool fing x pe 11. 6"x2" Tapping Saddle 12. 4"x2" Tapping Saddle 13. 2" Copper Pipe 14. 2" Ball Valve / Locking (Normally Closed) 15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug 	6.	4" Compound Meter				
 9. 4" Gate Valve fing 10. 4"x4'-0" D.I.P. Spool fing x pe 11. 6"x2" Tapping Saddle 12. 4"x2" Tapping Saddle 13. 2" Copper Pipe 14. 2" Ball Valve / Locking (Normally Closed) 15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug 	7.	4" F.C.A.				
10. 4"x4'-0" D.I.P. Spool flng x pe 11. 6"x2" Tapping Saddle 12. 4"x2" Tapping Saddle 13. 2" Copper Pipe 14. 2" Ball Valve / Locking (Normally Closed) 15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug	8.	4"x1'-0" D.I.P. Spool flng x pe				
 6"x2" Tapping Saddle 4"x2" Tapping Saddle 2" Copper Pipe 2" Ball Valve / Locking (Normally Closed) 2" Mueller B25122 Ball Valve w/B20299 Nut 4" Megalug 	9.	4" Gate Valve fing				
 12. 4"x2" Tapping Saddle 13. 2" Copper Pipe 14. 2" Ball Valve / Locking (Normally Closed) 15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug 	10.	4"x4'-0" D.I.P. Spool flng x pe				
 13. 2" Copper Pipe 14. 2" Ball Valve / Locking (Normally Closed) 15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug 	11.	6"x2" Tapping Saddle				
14. 2" Ball Valve / Locking (Normally Closed)15. 2" Mueller B25122 Ball Valve w/B20299 Nut16. 4" Megalug	12.	4"x2" Tapping Saddle				
15. 2" Mueller B25122 Ball Valve w/B20299 Nut 16. 4" Megalug	13.	2" Copper Pipe				
16. 4" Megalug	14.	2" Ball Valve / Locking (Normally Closed)				
	15.	2" Mueller B25122 Ball Valve w/B20299 Nut				
17. 24"x24"x8" Conc. Thrust Block P.I.P.	16.	4'' Megalug				
	17.	24"x24"x8" Conc. Thrust Block P.I.P.				
18. 575-LA Conc. Vault	18.	575-LA Conc. Vault				

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



ARIZONA WATER COMPANY

STANDARD SPECIFICATION

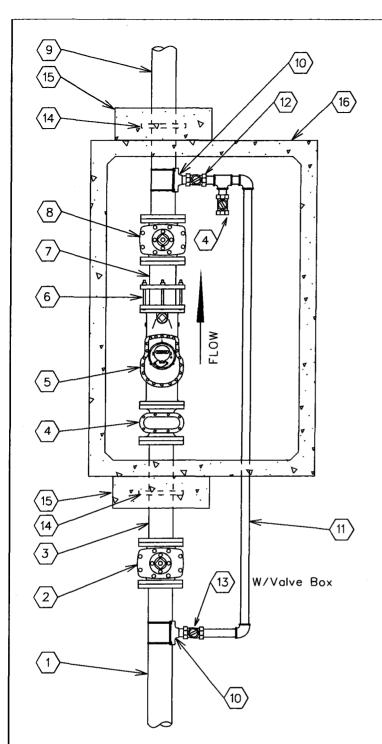
FOR THE INSTALLATION OF

4" COMPOUND METER

CCO

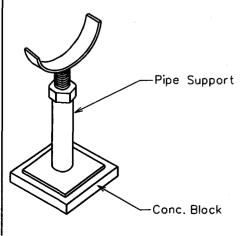
10/5/1993 \(\triangle 08.29.2006 \)

E-9-12-2



No.	FITTINGS SCHEDULE				
1.	6" D.I.P.				
2.	6" G.V.B.&C. mj				
3.	6"x 3'-0" D.I.P. Spool flng x pe				
4.	2" Test Port				
5.	6" Compound Meter				
6.	6" F.C.A.				
7.	6"x 1'-0" D.I.P. Spool fing x pe				
8.	6" Gate Valve fing				
9.	6"x 4'-0" D.I.P. Spool flng x pe				
10.	6"x2" Tapping Saddle				
11.	2" Copper Pipe				
12.	2" Ball Valve / Locking (Normally Closed)				
13.	2" Mueller B25122 Ball Valve w/B20299 Nut				
14.	6" Megalug				
15.	24"x24"x8" Conc. Thrust Block P.I.P.				
16.	575-LA Conc. Vault				

- Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



ARIZONA WATER COMPANY

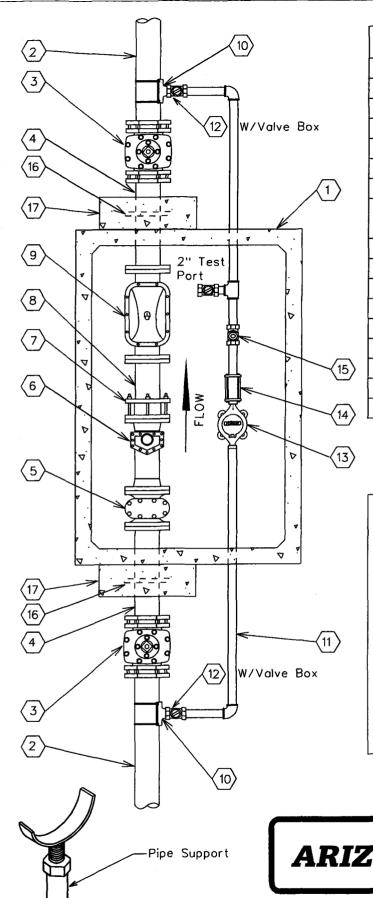
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND METER

E-9-12-3

AWN BY: CCO APPROVED BY: MW DATE: 10/5/1993 △08.29.2006



-Conc. Block

No.	FITTINGS SCHEDULE
1.	575-LA Conc. Vault
2.	6" D.I.P.
3.	6" G.V.B.&C. m.j.
4.	6" x 3'-0" D.I.P. SPool Piece flng x pe
5.	6" Strainer
6.	6" Turbo Meter
7.	6" F.C.A.
8.	6" x 2'-0" D.I.P. Spool Piece fing x pe
	(TRIM SPOOL PIECE TO 3x THE PIPE DIA.)
9.	6" Detector Check
10.	6"x×N" Tapping Saddle
11.	∗N" Copper Pipe
12.	∗N" Ball Valve (Locking)
13.	×N" Meter
14.	∗N'' Coup. Adapt.
15.	∗N" Flapper Check Valve
16.	6" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.

*N - Size To Be determined By A.W.Co.

NOTE:

- 1. Use Rowley pipe supports or equivalent as needed (See detail below).
- 2. Pipe support locations to be determined by field personnel.
- 3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
- 6. To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

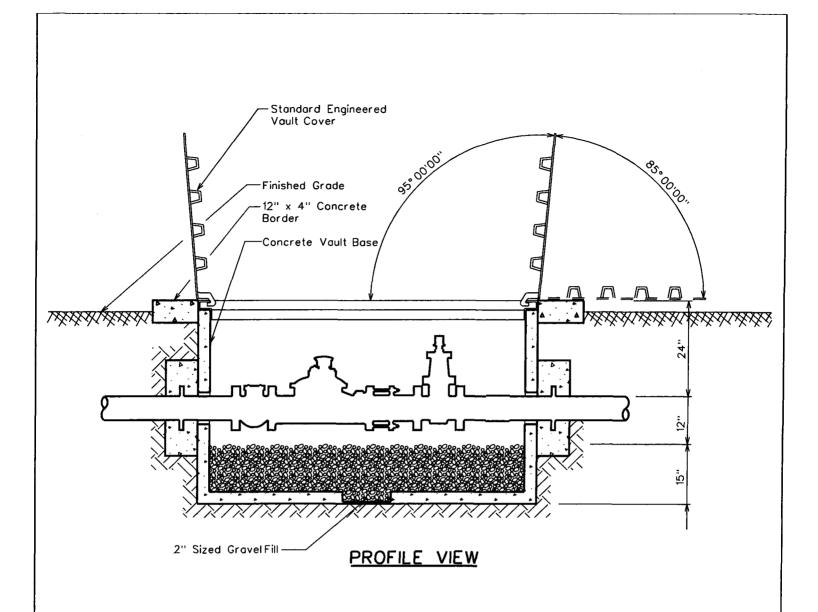
FOR THE INSTALLATION OF

6" COMPOUND SERVICE

CCO

^{DATE:}10/05/1993 △08.29.2006

E-9-12-4



CONCRETE VAULT & COVER SPECIFICATIONS

Vault - Base No. 575-BL

Cover - Standard Engineered Vault Cover

- . 4874 Aluminum Diamond Plate Cover For Non-Traffic Loading Areas
 - Or
- . 4874 Galvanized Steel Diamond Plate Cover W/ H-20 Traffic Loading
- . Double Torsion Spring Assisted Doors W/ Recessed Hasp & Safety Latches

NOTES

- . Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill.
- Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

E-9-12-5

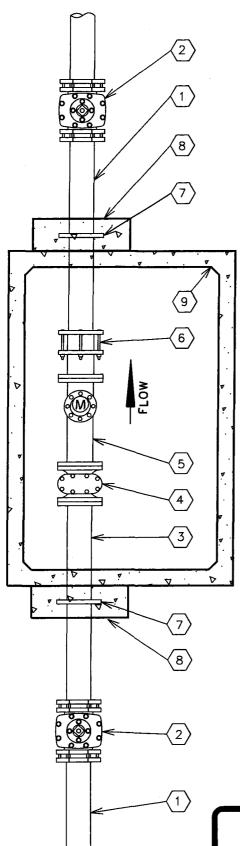
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CONCRETE VAULT

CONONLIE VACEI

AN BY: CCO APPROVED BY: MW DATE: 10/5/1993 \(\triangle \triangle 05.17.2001



No.	FITTINGS SCHEDULE
1.	Ductile Iron Pipe
2.	Gate Valve M.J.
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)
4.	Meter Strainer
5.	Propeller Meter
6.	Flanged Coupling Adapter
7.	Megalug Gland (Thrust Anchor)
8.	Concrete Thrust Block P.I.P.
9.	Concrete Vault

- 1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
- 2. Pipe support locations to be determined by field personnel.
- 3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
- 4. All mechanical joint fittings to are to be megalugged.
- 5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

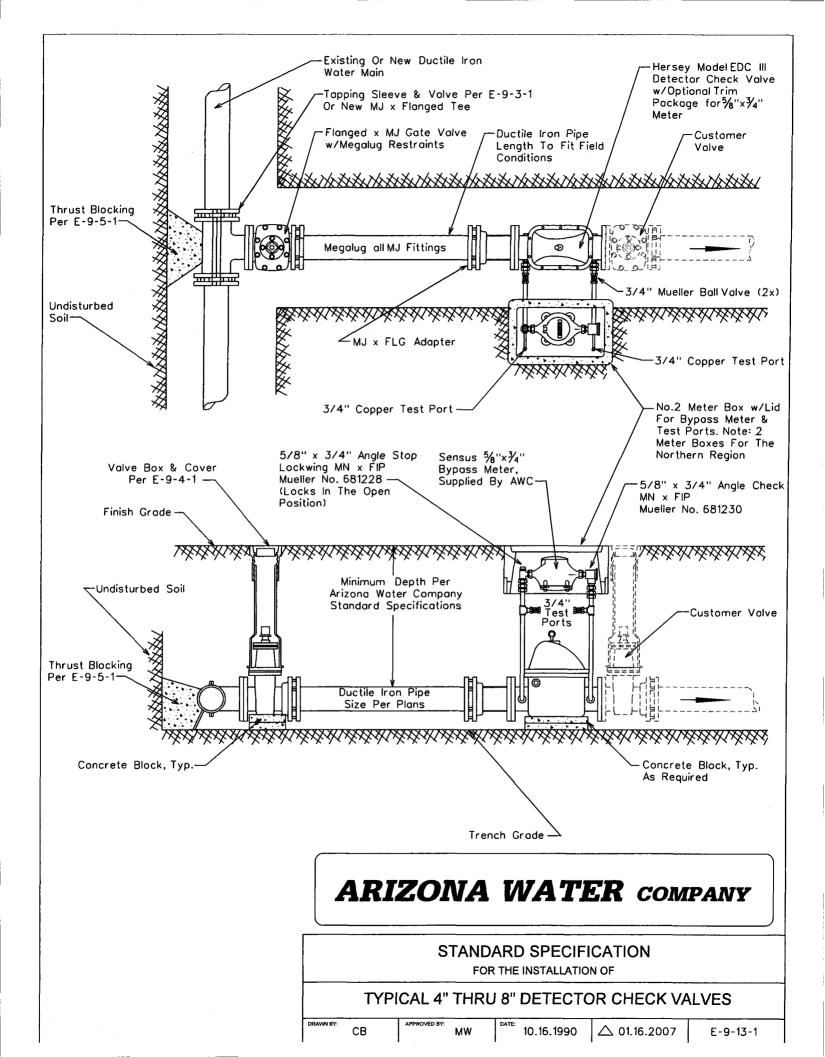
ARIZONA WATER COMPANY

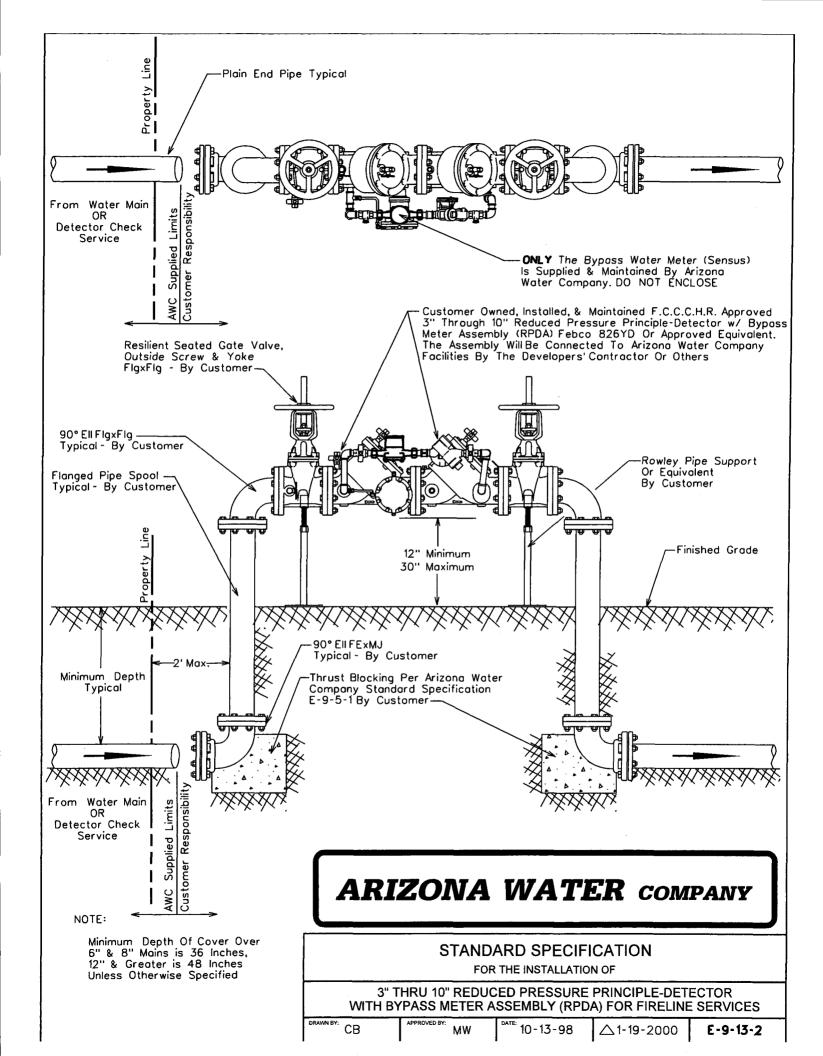
STANDARD SPECIFICATION

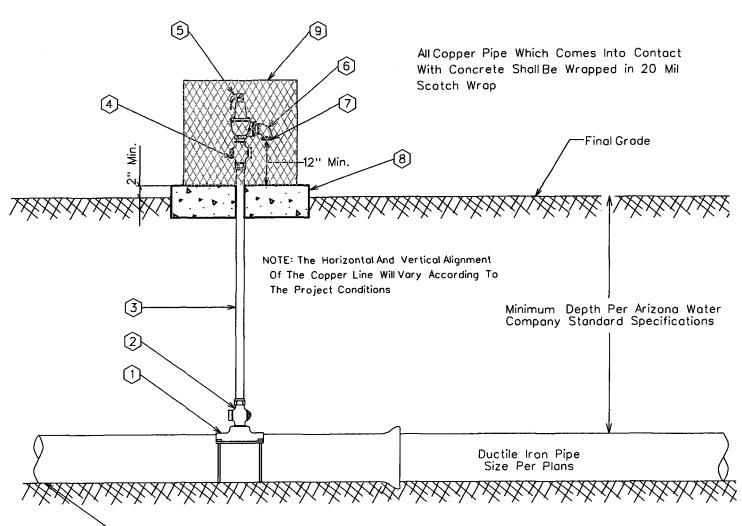
FOR THE INSTALLATION OF

NON-POTABLE PROPELLER METER

DRAWN BY: JPK APPROVED BY: MW DATE: 7-20-95 △ E-9-12-6







1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.

-Trench Grade

2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrodible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

ARIZONA WATER COMPANY

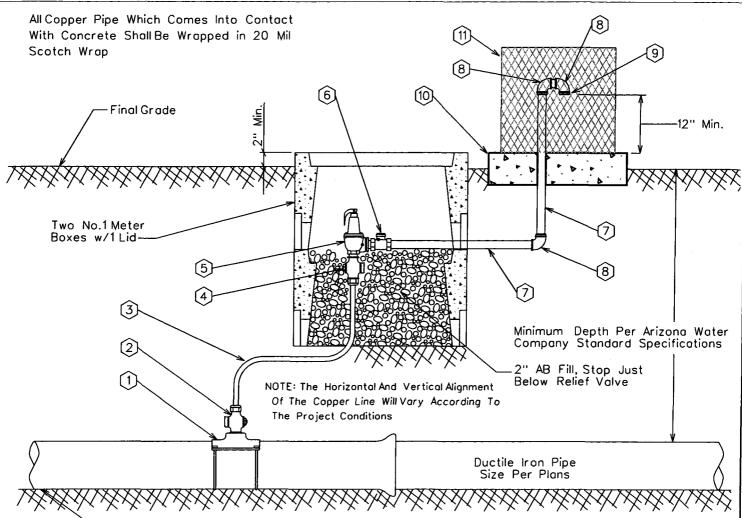
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

E-9-14-1

CCO APPROVED BY: MW DATE: 3/20/1986 \(\triangle 08.29.2006 \)



-Trench Grade

- 1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
- 2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

0	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Bronze Check Valve Watts Series CV
7.	2" Schedule 40 Cut Pipe - Field Fit
8.	2" Brass Street Elbow
9.	No.16 Wire Mesh Screen (Non-Corrodible)
10.	4" Thick Concrete Pad - Class 'C' Concrete
11.	Guardshack, Model GS-1, Available From BPDI, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

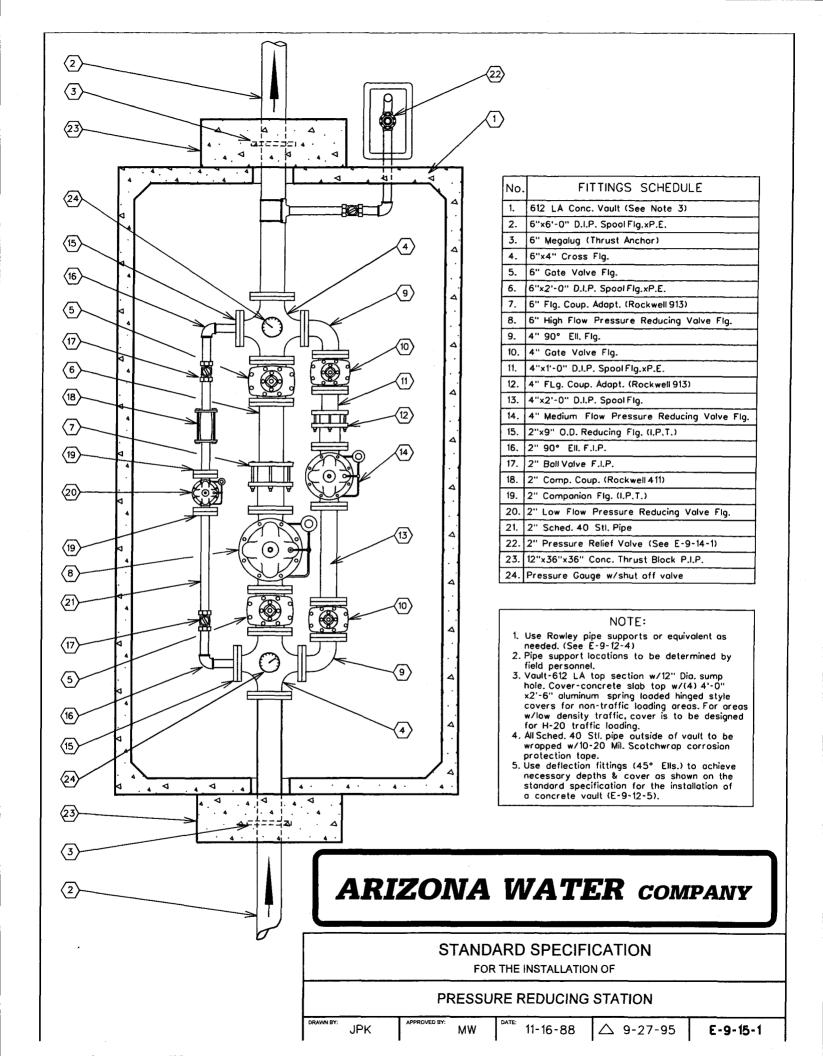
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

DRAWN BY: CCO

3/20/1986 \(\triangle 08.29.2006 \)



- 1. Specific Items To Be Painted Deer-O Pure White Enamel:
 - A. All Booster Pumps.
 - B. All Electrical Motors And Gas Engines.
 - C. Well Pump Discharge Heads.D. Electrical Panel.
- 2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:
 - A. Well Shelter.
- 3. Specific Items To Be Painted OSHA Orange:
 - A. Electrical Conduit.
- 4. All Other Items To Be Painted With Either: (At Manager's Discretion)
 - A. Cholla Green
 - B. Forest Green
 - C. Sonora Beige D. Red Rock

 - E. Rock Brown
 F. Deer-O Pure White
 G. Elkhorn Cactus

STANDARD SPECIFICATION FOR THE INSTALLATION OF

PAINT COLOR SELECTION

E-9-16-1

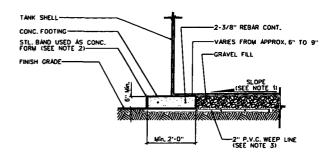
APPROVED BY: 3/20/1986 🛆 2/13/2001 CCO

- 1. Tank shall conform to AWWA Specification D100-84 with exceptions noted below.
- ·2. 1/4" minimun shell plote.
- 3. Minimum of 12" diameter roof vent, screened with No. 16 non-correctible wire mesh, to be localed on a 24" diameter round hinged monhole opening at the center of the tank to provide occess to the dollar plate.
- 4. Overflow pipe shall be the same diameter as the inlet pipe and shall terminate 12 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above weir box high water level.
- 5. Storage tank shallbe placed upon adequately compacted base material.
- 5. 6" minimum floor mounted tank drain outlet to be located clase to the outer shell,
- Tank and related fittings shall be enclosed with a 6 foot chain link fence with tockable gates and anti-personnel wire on top of fence.
- 8. Liquid level shall be indicated by a target and target board on the autside surface of
- 9. 24 inch diameter manholes shall be provided on the roof and on the shell near the battom of the tank. The roof manhole cover shall overlop the manhole by at least 2 inches to provide a rain tight closure. Roof manhole shall be hinged and equipped with a lock. Shellmanhole cover to be hinged and balled in place. *Tanks larger than a 60 foot diameter require 2 shell manholes.
- 10. Inside and outside lodders shall be located at the roof manhole. Outside lodder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within $\frac{1}{2}$ " of shell with 10 gauge sheet steel.
- Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
- 12. The following information will be included with application for approval to construct:
 - L. Tank location 3. Tank diameter 4. Tank capacity___ 5. Method of water level control
- 15. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
- 14. The welded steel storage tank will be coated as per AWWA Specification D102. and N.S.F. Standard 61.

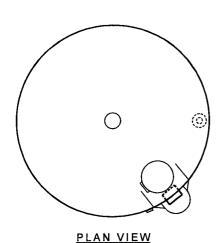
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

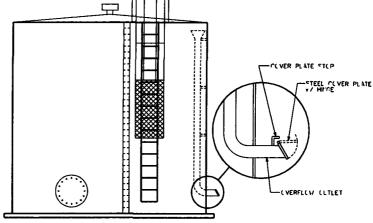
- 1. FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-0".
- 2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN 1/6".
- 3. INSTALL 8-2" DIA.x'0'-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45'-), PERFORATE 8'-0" OF LINE WITH 1/2" DIA HOLES @ 6" O.C. PLUG INTERIOR END OF LINE W/2" CAP.



FOUNDATION DETAIL







ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

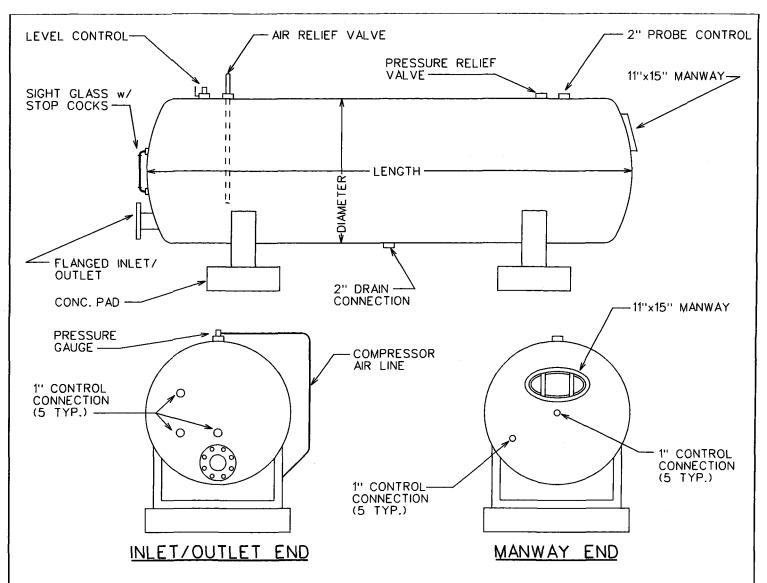
DRAWN BY:

JPK

APPROVED BY: 10-17-88 M.IW

△ 2-12-96

E-9-17-1



- 1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
- 2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
- 3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
- 4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.
- 1. Tank Location _____
- 2. Tank Length
- 3. Tank Diameter _____
- 4. Tank Capacity
- 5. Maximum Working Pressure

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

HYDROPNEUMATIC TANK

E-9-18-1

NOT CONVERTED TO CAD

ARIZONA WATER COMPANY

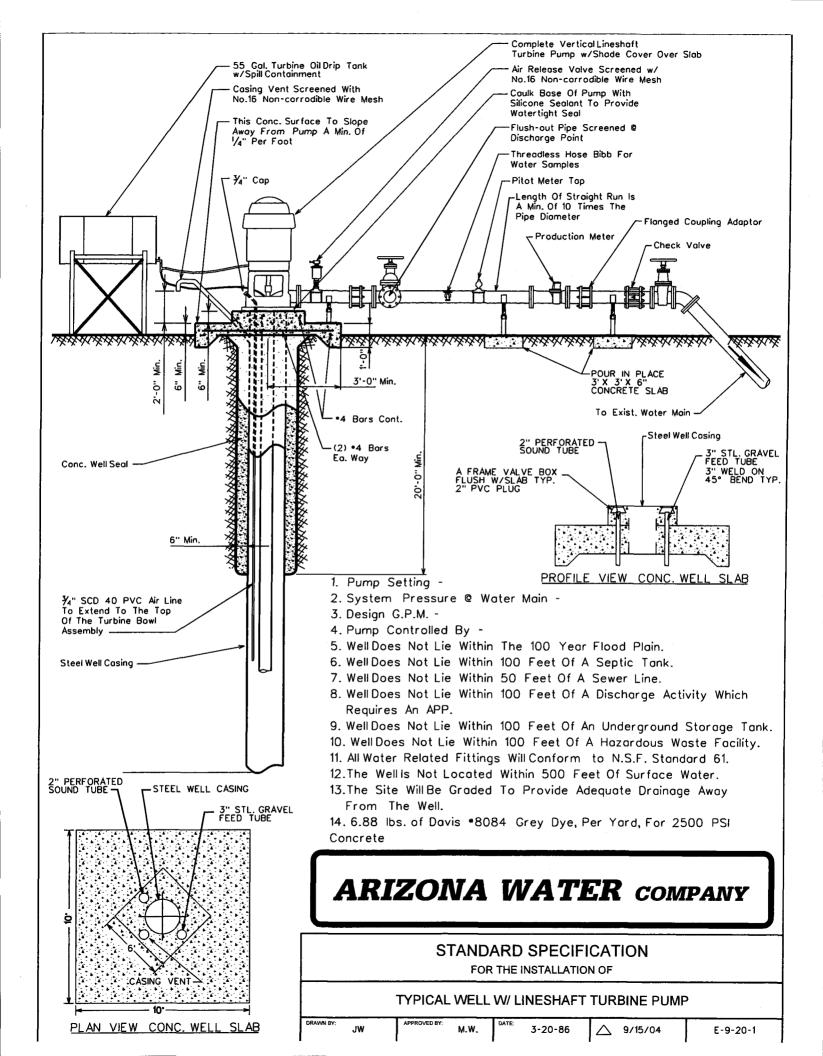
STANDARD SPECIFICATION FOR THE INSTALLATION OF

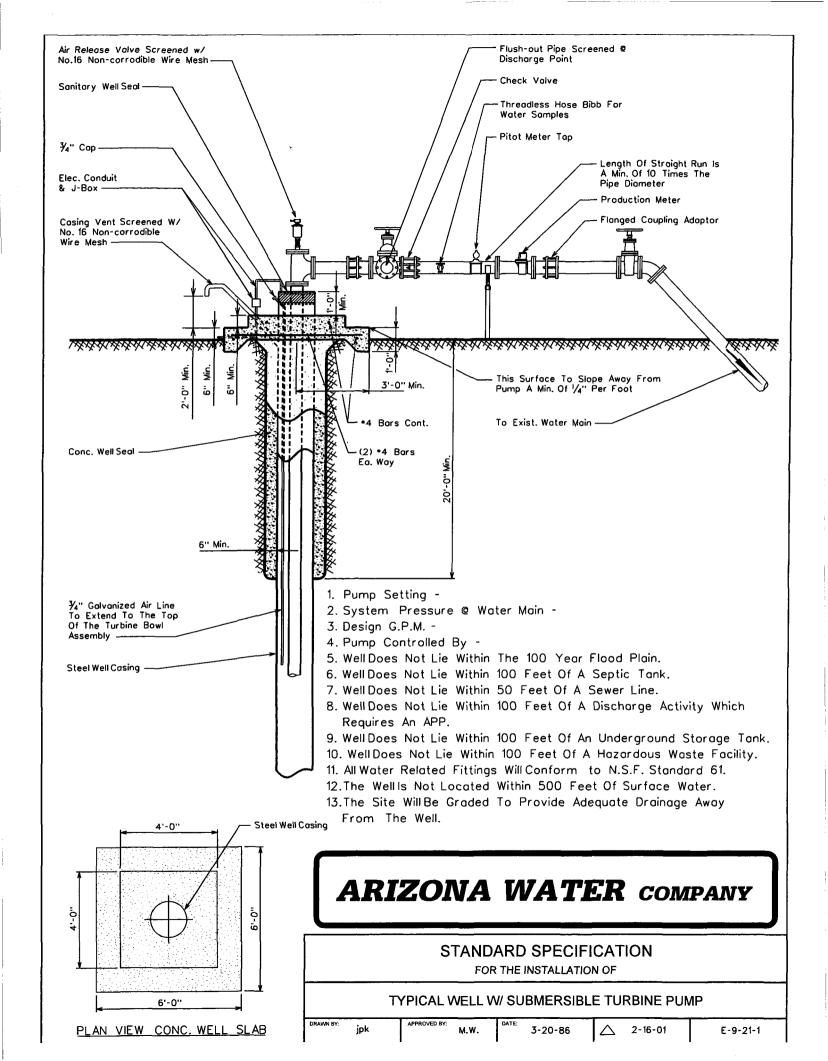
WELL SHELTER

CB APPROVED BY

03.20.1986 \(\triangle 04.03.2001 \)

E-9-19-1





All New Purchases To Conform To The Following:

Column Pipe

Oil Tube - Peerless Type

```
1½" O.D. - 14 Threads Per Inch Right Hand
2" O.D. - 12 "" " " "
2½" O.D. - 10 " " " " "
3" O.D. - 10 " " " " "
4" O.D. - 10 " " " " "
```

Line Shaft

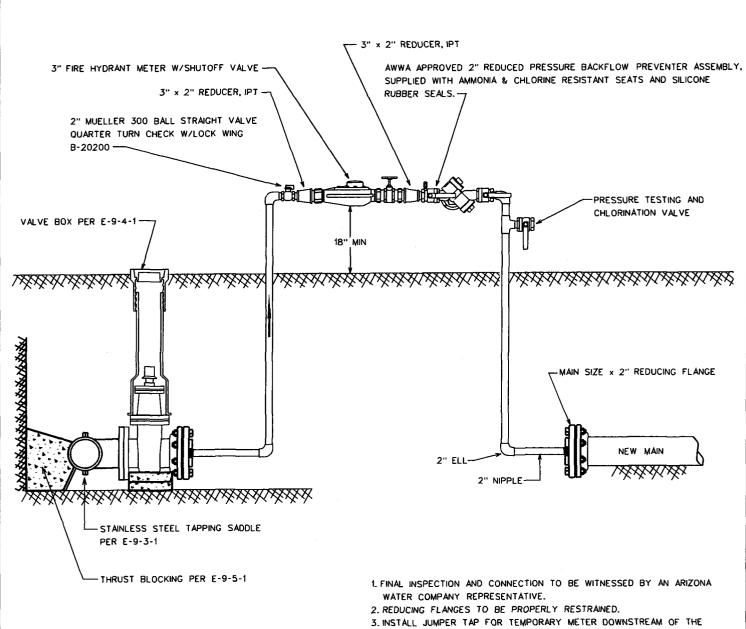
```
3/4" O.D. - 10 Threads Per Inch Left Hand
1" O.D. - 14 " " " " "
1-3/16" O.D. - 10 " " " " "
1-1/2" O.D. - 10 " " " " "
1-11/16" O.D. - 10 " " " " "
1-15/16" O.D. - 10 " " " " " "
2-3/16" O.D. - 10 " " " " " "
```

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

DRAWN BY: CCO APPROVED BY: DATE: 3/20/1996 \(\triangle 2/13/2001 \) E-9-22-



- INSTALL JUMPER TAP FOR TEMPORARY METER DOWNSTREAM OF THE REDUCING FLANGE FOR PRESSURE AND BACTEE TESTING.
- 4. JUMPER ASSEMBLY MUST BE A MINIMUM OF 18" ABOVE FINISHED GRADE.
- 5. BACKFLOW ASSEMBLY REQUIRES CERTIFICATION.
- 6. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL ALL TESTING, BACTERIAL CLEARANCE AND FINAL INSPECTIONS HAVE BEEN OBTAINED.
- 7. ALL NEW PIPING SHALL BE PROPERLY RESTRAINED.

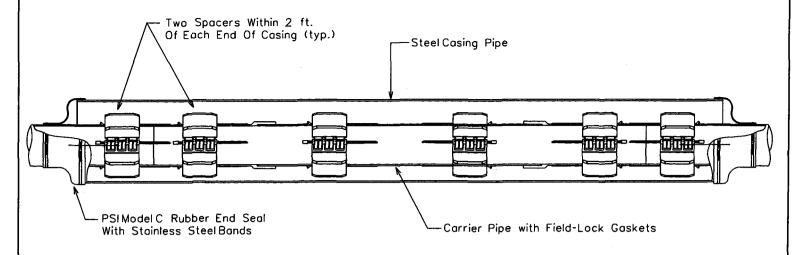
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

HOT TAP & JUMPER METER CONNECTION

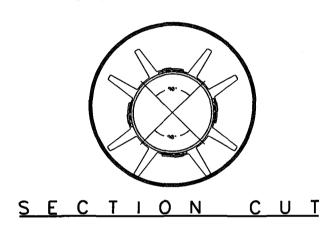
CB

MJW 05.14.2004 \(\triangle \triangl



CROSS SECTION

The casing spacers shall be the PSI Ranger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seal as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

DRAWN BY:

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

*Thickness Of Skid To Extend A Minimum of $\frac{1}{2}$ " Above The O.D. Of The Pipe Bell or Gland.

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6''	16''	15.25"	STD.	.375	*x4x12
8"	18"	18.25"	STD.	.375	≖x4×12
12"	22"	21.25"	STD.	.375	*x4×12
16"	28"	27.25"	STD.	.375	*x4×12
20"	32"	31.25"	STD.	.375	*x4×12
24"	36"	35.25"	STD.	.375	*×4×12
30"	48"	47.25"	STD.	.375	*x4x12
36''	54"	53.25"	STD.	.375	*x4x12
48''	66''	65.25"	STD.	.375	≖x4×12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL WATER LINE ENCASEMENT

DATE: 7:00:1000 A 00 07 0000

THE TOTAL VICTORIES

APPROVED BY:

CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCOPE - This specification describes a ARCH Chemicals Calcium Hypochlorite Tablet Chlorination System as manufactured by ARCH Chemicals, 501 Merritt Seven, P.O. Box 5204, Norwalk, CT, 06856-5204.

DESCRIPTION - The chlorination system shall be completely assembled, ready to install. The chlorination system shall be a ARCH Chemicals Calcium Hypochlorite Tablet Feeder, or its equivalent, and shall be supplied with all its components factory mounted.

COMPONENTS - The Chlorination system shall have the following components:

A. 1-V3 ACRUST Chemical solid calculum hypochlorite tablet feeder

B. Polyethylene system andostus

C. Integrated, level controlled solution tank

D. Adjustable flow control valve

E. Manual onforf valve (fai itel)

F. Chemical metering pump

G. Ohoff pump control swirtch

H. Waterproof electrical junction box

I. Corrosion resistent schedule 4D piping

J. Reverse flow check valves

K. Told solution output control valve

ELECTRICAL FIXTURES - The following electrical fixtures shall be provided:
A. Safety switth, 2 pole, fused for 30 Amps, for 120 Volts, 80 cycle, single phase power.

CHLORINATOR DESIGN - The chlorination facility shall be designed and constructed in accordance with Azona State Department of Health Engineering Bulletin Number 8 - "Disinfection of Water Systems: Latest Revision.

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

CHLORINATOR OPERATION - The chlorination facility shall be operated in accordance with Arizona State Department of Health Engineering Bulletin Number 8, "Disinfection of Water Systems", Table 1 least revision.

CHLORINATOR SYSTEM DESCRIPTION - ARCH Chemicals tablet chlorinator systems incorporate a patented chlorinator which is designed to utilize ARCH Chemicals. "V's solid calcium hypochlorite tablets (Approved NEF Standard 60), Meets AMWA Standard 8-30, CEP A Registration # 125-177 The chlorinator is mounted on a polyethylene system enclosure. The infet water is sprayed on the calcium hypochlorite tablet and collected in a solution tank. This chlorinated solution is then pumped out of the lank through a chemical meeting pump. This metering pump is then adjusted to obtain the desired CL residual.

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

HYPOCHLORINATOR COMPONENTS:

Chemical Metering Pump
 Pump Suction Connection
 Pump Dischage Connection
 Innet Water Assembly
 Inlet Water Solenoid Vaive

6. Inlet Shut-Off Valve
7. Inlet Pressure Regulator
8. Inlet Walter Pressure Gauge
9. Spray Nozzie Water Pressure Gauge
10. Inlet Strainer
11. Inlet Tubing Connection

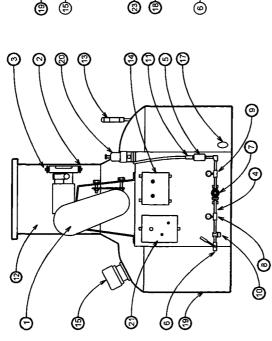
12. Dry Chemical Hopper 13. Suddon Line 14. Electrical Control Box With Power On/Off 15. Electric More 16. Solution Discharge Connection 17. Tank Drain Valve

18. Observation Port 19. Mixed Chemical Holding Tank 20. Pressure Relief Valve 21. Pump Spread Control 22. High Level Shut-Off Float Switch 23. Widter Spray Nozzles

(3)

0

0

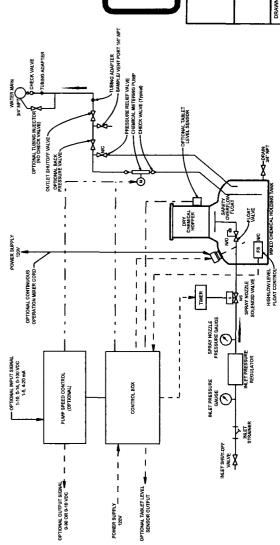


P **(**0 0 (8) (2) **6**

TOP VIEW HOPPER REMOVED FOR CLARITY

FRONT VIEW

Chlorinator Fluid Schematic



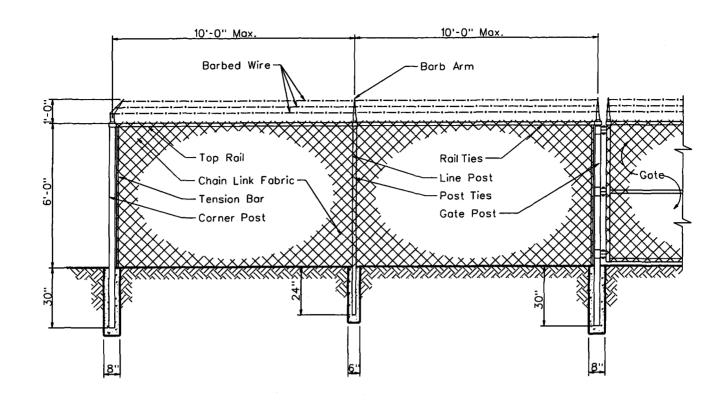
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR

DRAWN BY: CB APPROVED BY: MW DATE: 02-09-2000		< The state of the state o</th
<u> </u>	DATE	0
DRAWN BY: CB	APPROVED BY:	MW.
1	DRAWN BY:	89

E-9-25-1



Line Post: 1-7/8" O.D. 1.74 lbs. P/L.F. ASTM A-256

End Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Corner Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Gote Post: 2-7/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Top Rai: 1-5/8" O.D. 4.64 lbs. P/L.F. ASTM A-256

Chain Link Fabric: 9 Ga. 2" Mesh Galv. Before Weave

Selvage: Barb/Knuckle

Fillings: Pressed Steel

Borb Wire: 2-1/2 Ga./2 Point

Borb Arm: 1 Piece/45° Arm

Tension Wire: 9 Ga./Galv.

Line Post Set: 6"x24" In Concrete

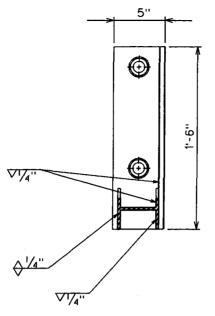
Terminal Post Set: 8"x30" In Concrete

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CHAIN LINK FENCE

DRAWN BY: CCO APPROVED BY: MW DATE: 7/7/1992 \(\triangle \triangle 2/9/2001 \) **E-9-26-1**

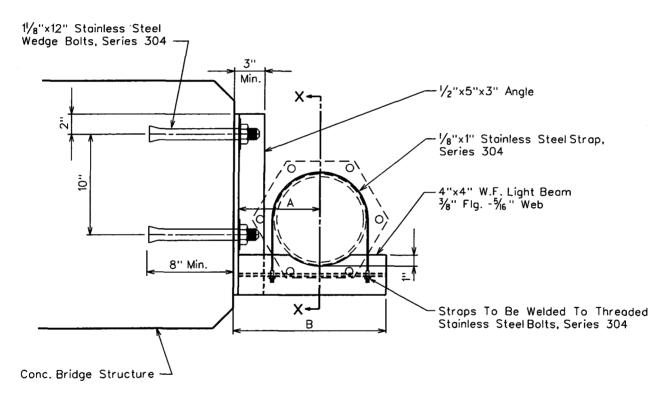


SECTION X-X

NOTES

- 1. Minimum 2 Supports Per Joint Of Pipe.
- 2. All Bolts Shall Have A Lock Washer Under The Nut.
- 3. All Nuts Shall Be Stainless Steel Series 304.

PIPE SIZE	Α	В
8''	8''	15''
10''	9"	17''
12"	10''	19''



SUSPENSION DETAIL

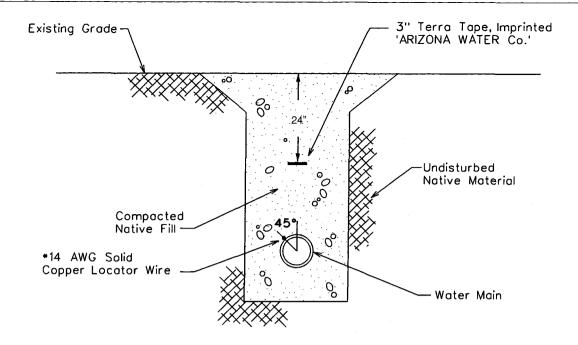
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

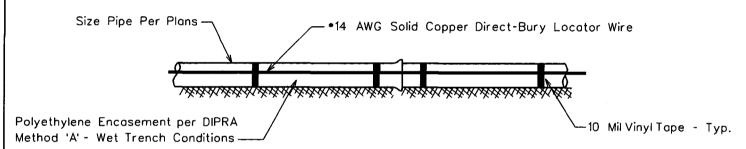
FOR THE INSTALLATION OF

SIDE HUNG WATER LINE SUSPENSION

DRAWN BY: JPK | APPROVED BY: MJW | DATE: 7-12-96 | C | E-9-27-1



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

- 1. All pipe shall have *14 AWG Solid Copper Direct-Bury Locator Wire Installed Directly To The Polywrap At 45° From The Vertical Center Of The Pipe and Shall Be Attached Using 10 Mil Vinyl Tape.
- 2. The Locating Wire Shall Terminate At the Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

- 1. Use Terra Tape 3" Marking Tape As Manufactured By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
- 2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
- 3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe. A) The Backfill Shall Be Sufficiently Leveled So That The Tape Is Installed On A Flot Surface.
- B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
- C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill's Moved Into The Trench.

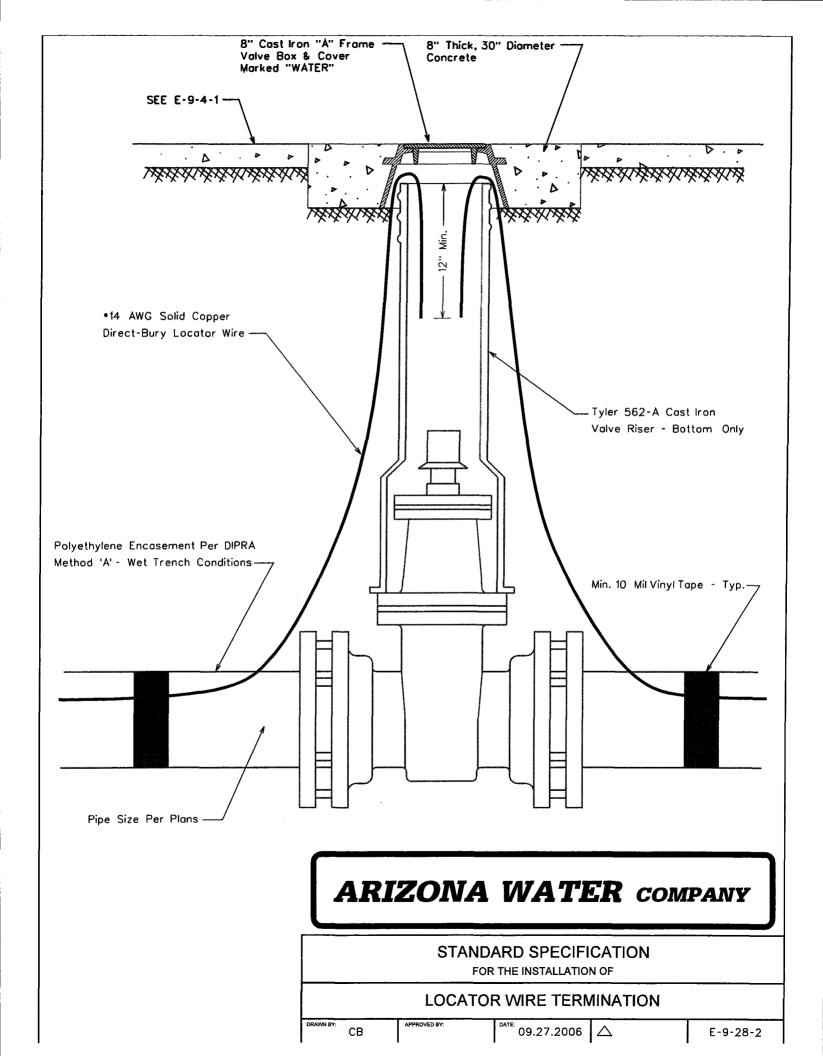
ARIZONA WATER COMPANY

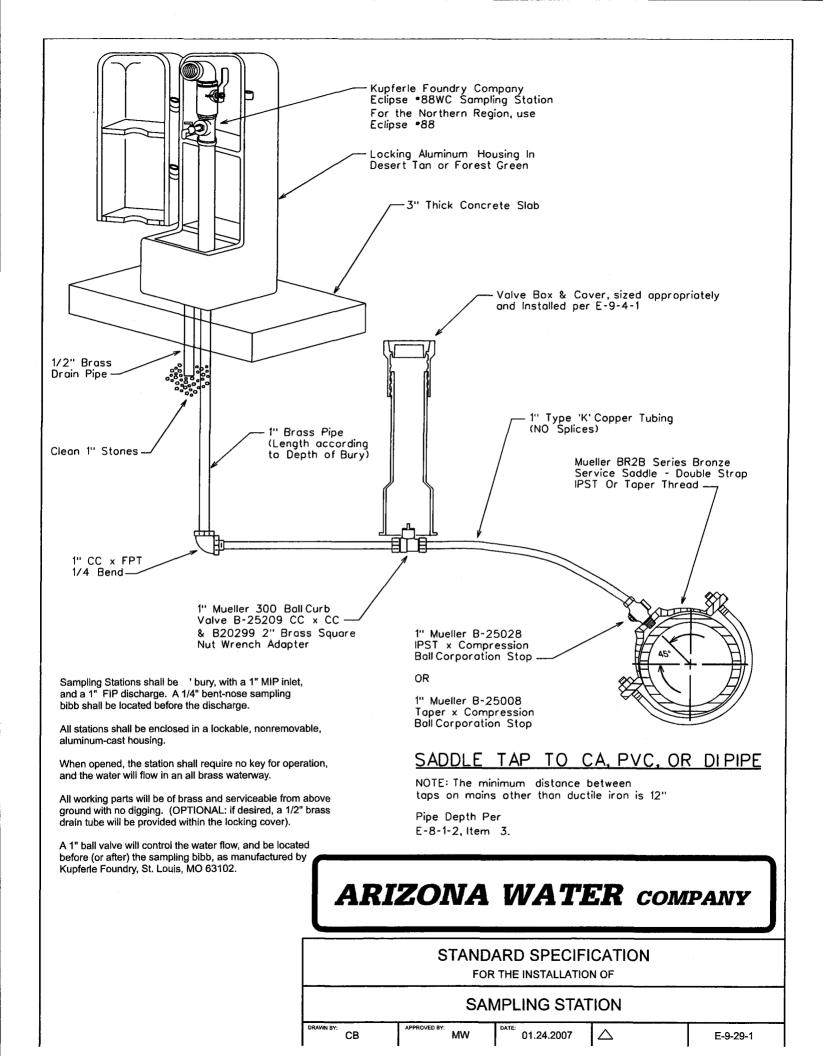
STANDARD SPECIFICATION FOR THE INSTALLATION OF

PIPE WARNING TAPE AND LOCATOR WIRE

CB

03.24.1997 \alpha 09.27.2006







CONSTRUCTION COMPLETION NOTICE

CONSTRUCTION COMPLETION DATE:	12/21/09	WORK A	UTHORIZATION	NUMBER:	3-4494	
THE FOLLOWING RECORD REQUIREMENTS ARE ATTACHED:						
1), CONSTRUCTION DRAV	VINGS WITH "AS BUILT"					
2. VALVE CARDS						
	LAODY OF COVER LET	TPD.				
3. HYDRANT CARDS WITH	H COPY OF COVER LET	IEK				
4. MATERIALS INSTALLEI AND P.D.R. NUMBERS.		ON THE REVERS	E SIDE OF THE W	.A. WITH R.Ø.S.		
5. PRESSURE AND LEAK	AGE TEST RESULTS:					
DATE TESTED	_		/	/		
TIME STARTED	_					
TIME FINISHED	\ _			····		
PIPE DIAMETER	_					
FOOTAGE TESTED	<u> </u>					
ALLOWABLE LEAKAGE						
LEAKAGE OBSERVED						
PRESSURE AT TEST POINT						
COMPANY EMPLOYEE OBS	SERVING TEST (print)	/				
INITIALS OF EMPLOYEE						
6. DISINFECTION SAMPL	.ING:					
INITIAL SAMPLING	DATE					
(minimum 50 ppm avai	lable chlorine) тіме					
	PPM Cl ₂					
AFTER 24 HOURS DETENT	ION TIME DATE					
(minimum 10 ppm free	chlorine) TIME					
	PPM Cl ₂					
AFTER SUFFICIENT FLUSH	ING DATE					
(water is clear and syst	om Cl.					
residual is measured)	PPM Ct ₂					
BACTERIOLOGICAL SAMPL	E(S) DATE					
	TIME					
/	ATTACHED	Yes No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
I certify that construction on the ab	pove Work Authorization was c the work done and have found	completed as of the it to be satisfactory a	date shown above and in accordance with (Company specificat	rials have been accounted. ions.	
Division Manager of Co.	tions Superintendent (signature)			/-/2-/6 Date of Notice		
	O CONSTRUCTION & EN	IGINEEDING EII	E CORV OF MOR			