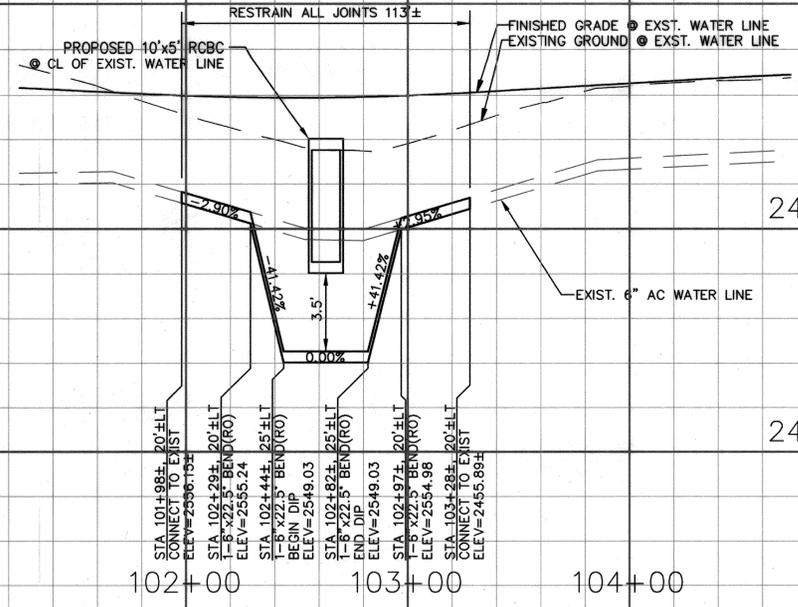
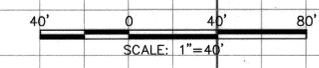
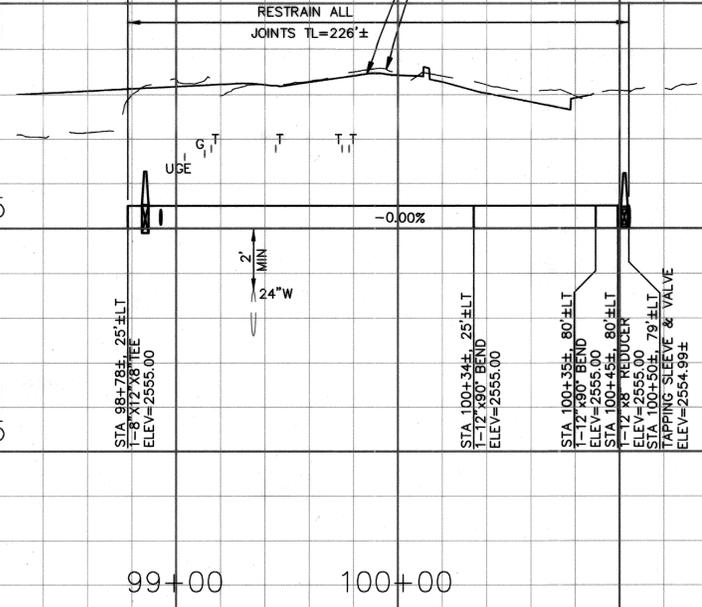


F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	STP-PPM-0(209)A	271	273	

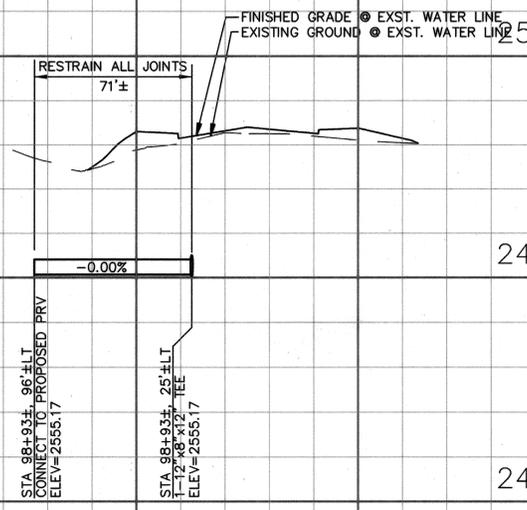


DETAIL A
SEE SHEET W11

*ALL STATIONING IS ALONG NORTHERN AVENUE CENTERLINE UNLESS OTHERWISE NOTED.



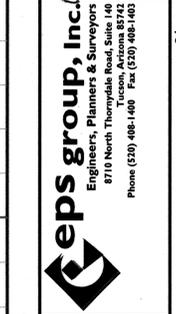
DETAIL B
SEE SHEET W11



DETAIL C
SEE SHEET W11

Date	11/12
SW	SW
Drawn	SW
Checked	AW
Proj. Engr.	AW

No.	Revision Description	Engineer	Date



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License No. 43732
State of Arizona

MAGEE RD. WATER PROFILES
MAGEE RD.
LA CAÑADA DR. - ORACLE RD. (SR 77)
PROJECT NO. 4MRLCO

Pima County Department of Transportation

Priscilla S. Cornelia, P.E., Director

MAGEE RD. IMPROVEMENTS - LA CAÑADA DR. TO ORACLE RD. (SR 77) - PROJECT NO. 4MRLCO

SPECIAL SPECIFICATIONS FOR PRESSURE REDUCING VALVE AND GAUGES

PRESSURE GAUGES FOR PRESSURE REDUCING VALVE

All gauges shall be 0-300 psi, 2 1/2" diameter, liquid filled, stainless steel case, with 1/4" NPT connection. Gauges shall be Ashcroft type 1009 grade 1A or approved equal. Gauges shall face north.

PRESSURE REDUCING VALVES

4", 6", & 8" Pressure Reducing Valve

The pressure reducing valve shall maintain a constant downstream pressure regardless of varying inlet pressure. This valve shall be hydraulically operated, diaphragm-actuated, globe, or angle pattern valve. It shall contain a resilient, synthetic disc, having a rectangular cross-section, contained on 3 1/2 sides by a disc retainer and forming a tight seal against a single removable seat insert. The diaphragm assembly containing a valve stem shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. This diaphragm assembly shall be the only moving part and form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm shall consist of nylon fabric bonded with synthetic rubber and shall not be used as a seating surface. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the valve or pilot controls. The valve shall be equipped with a position indicator, valve stem riser & sight glass with top air bleed. All necessary repairs shall be possible without removing valve from the line.

The valve shall be an Ames (Watts) 910G stainless steel pressure reducing valve as manufactured by Ames (Watts).

The piping to the PRV from the pilot valve shall be flex hose. The pilot control shall be a direct-acting, adjustable, with a range of 30-300 psi, spring loaded, normally open, diaphragm valve, designed to permit flow when controlled pressure is less than the spring setting. The control system shall include a fixed orifice. The pilot valve shall be an Ames (Watts) ARD pilot valve.

FOR LOW PRESSURE APPLICATIONS: Pilot 0-30 psi and gauges 0-100 psi. (Use red spring in pilot valve)

50-175 psi and gauges 0-200 psi (Use green spring in pilot valve)

300 psi and gauges 0-350 psi (Use stainless steel spring in pilot valve)

2" Pressure Reducing Valve

The pressure reducing valve shall consist of a bronze body and bronze bell housing, shall have separate access caps for the plunger and strainer, and shall have a bolt to adjust the downstream pressure. The pressure reducing valve shall be of the balance d-piston design and shall reduce pressure in both flow and no-flow conditions. The bronze bell housing and access caps shall be threaded to the bronze body and shall not require the use of ferrous screws. The pressure reducing valve shall be a Wilkins 600 as manufactured by Zurn-Wilkins, Paso Robles, California.

All components shall be insulated, including sight glass & braided hoses.

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Date	SHM	SHM	AUH	AUH
11/12				
11/12				
11/12				
11/12				

No.	Revision	Description	Engineer	Date



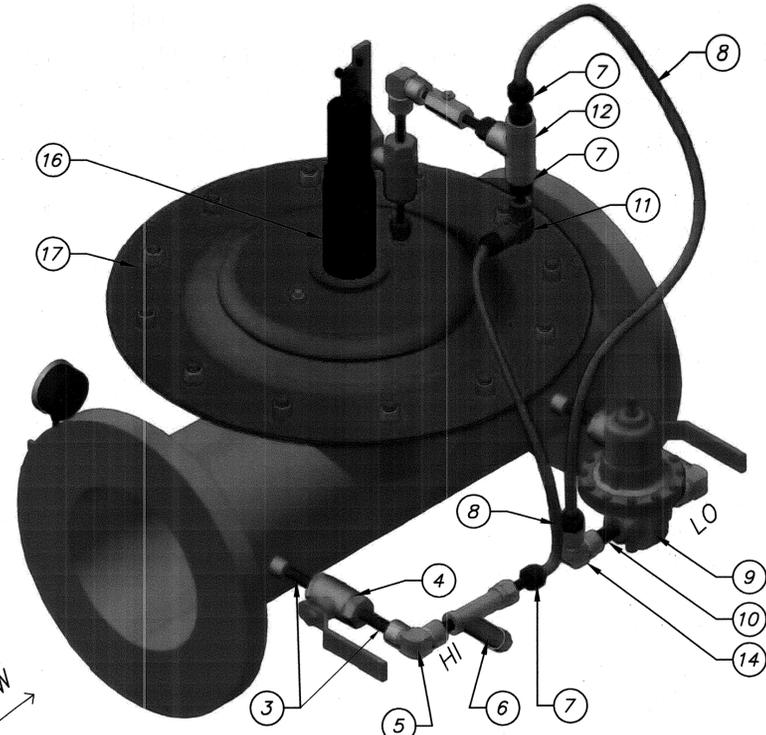
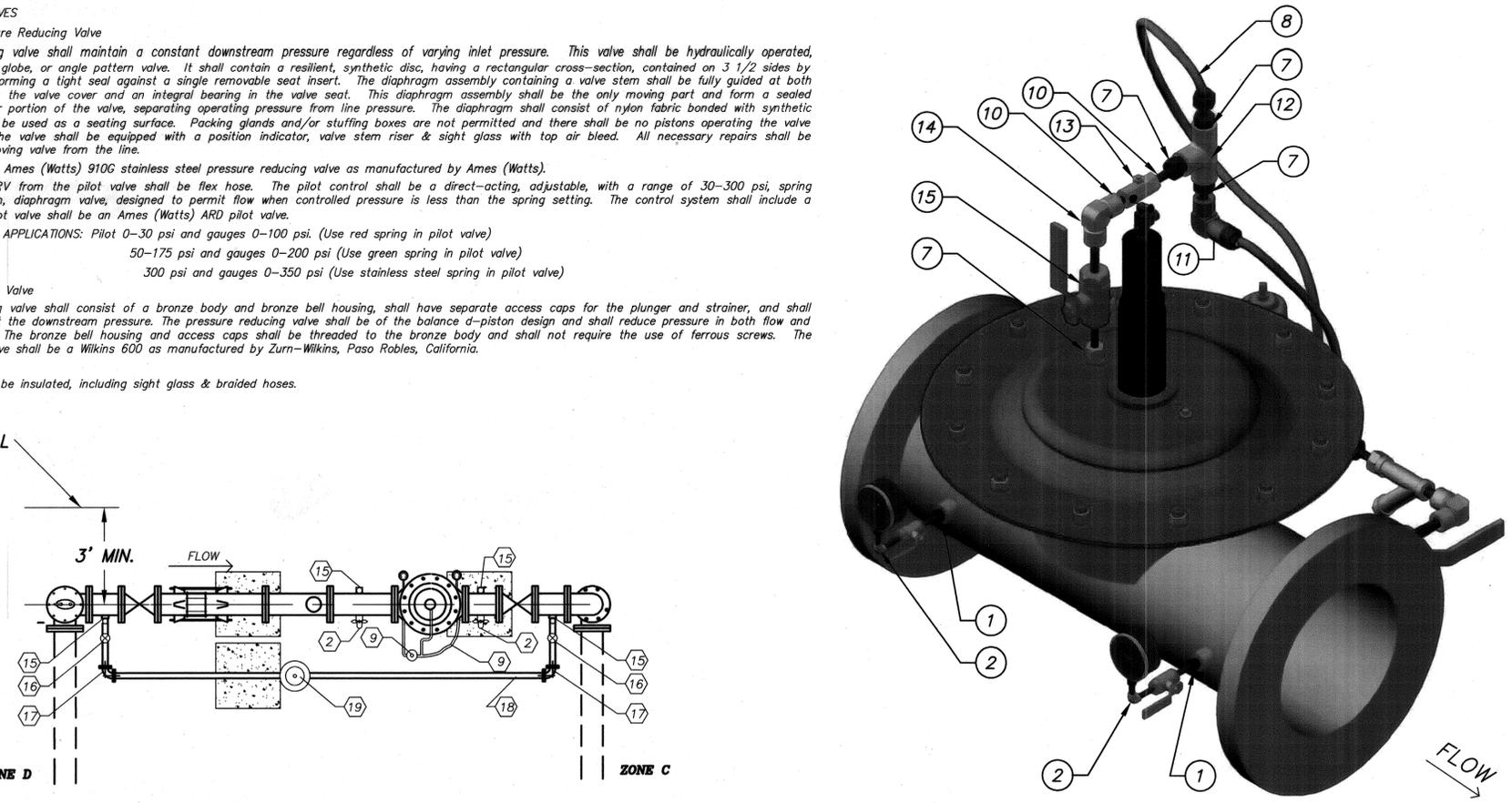
eps group, inc.
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 8110 North Phoenix Tucson, Arizona 85742
 Phone (520) 888-1460 Fax (520) 888-1463



PRV STATION DETAIL
 MAGEE RD.
 LA CAÑADA DR. - ORACLE RD. (SR 77)
 PROJECT NO. 4MRLCO

Priscilla S. Cornello, P.E., Director
 Pima County Department of Transportation

MAGEE RD. IMPROVEMENTS - LA CAÑADA DR. TO ORACLE RD. (SR 77) - PROJECT NO. 4MRLCO

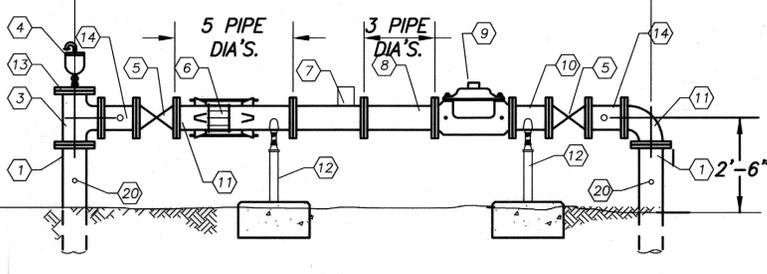


- PRV COMPONENTS**
- 1/2" x 1/4" S.S. (STAINLESS STEEL) REDUCING BUSHING
 - 1/4" S.S. BALL VALVE
1/4" S.S. NIPPLES
1/4" S.S. 90° BEND
1/4" S.S. COUPLINGS
2 1/2" PRESSURE GAUGE (PER SPEC'S. THIS SHEET) (face gauges to the north)
 - 1/2" S.S. NIPPLES
 - 1/2" S.S. BALL VALVE OR ISOLATION COCK
 - 1/2" S.S. 90° BEND
 - 1/2" Y-STRAINER (STAINLESS STEEL)
 - 1/2" x 3/8" S.S. REDUCING BUSHING
 - 3/8" S.S. BRAIDED FLEX HOSE
 - 3/8" PILOT CONTROL VALVE
 - 3/8" S.S. NIPPLES
 - 3/8" S.S. FIXED ORIFICE 90° BEND
 - 1/2" S.S. TEE
 - S.S. ADJUSTABLE OPENING SPEED CONTROLLER
 - 3/8" S.S. 90° BEND
 - 3/8" S.S. BALL VALVE
 - POSITION INDICATOR WITH SIGHT GLASS AND AIR BLEED
 - STAINLESS STEEL PRV (PER SPEC'S. THIS SHEET)

1 TYPICAL P.R.V. EQUIPMENT (ISOMETRIC, NOT TO SCALE)
 (6" PRV SHOWN; APPURTENANCE SIZING MAY VERIFY WITH P.R.V. SIZE)

TYPICAL 6" PRV STATION
 1"=2'

PROFILE OF NEW PIPING (2" bypass not shown on profile)
 1"=2'



MECHANICAL EQUIPMENT

- 6" PIPE, (VERT)
- 3/4" THRED-O-LET, 3/4" CORP. W/HOSE BIB & VACUUM BREAKER
- 6" TEE
- 1" AIR RELEASE
- 6" GATE VALVE W/HAND WHEEL & RESILIANT SEAT
- 6" STANDARD STEEL SPOOL PIECE (S.S.S.P.) (5 PIPE DIA'S.) W/FLEX COUPLING & HARNESS
- 6" PROPELLER FLOW METER
- 6" S.S.S.P. (3 PIPE DIA'S.)
- 6" PRESSURE REDUCING VALVE STAINLESS STEEL, SEE DETAIL 1, THIS SHEET FOR P.R.V. COMPONENTS
- 6" S.S.S.P.
- 6"x90" BEND
- PIPE SUPPORTS, STYLE 'A'
- 6" BLIND FLANGE, TAPPED TO ACCOMMODATE 1" AIR POT (ITEM #4)
- 6" x 12" LONG S.S.S.P. (W/2" THRED-O-LET ON HORIZ @ Z.B.)
- 2" THRED-O-LET W/CORP
- 2" BALL VALVE
- 2"x90" BEND
- 2" RIGID COPPER PIPE (TYPE L)
- 2" PRV
- 3/4" THRED-O-LET, 3/4" CORP. WITH PLAIN END SAMPLE FAUCET

SEE NOTE 2

- NOTES:**
- ALL ABOVEGROUND PIPING SHALL BE STANDARD STEEL PIPE, LINED & COATED PER SPECIAL SPECIFICATIONS.
 - ITEMS 15 THRU 19 ARE REQUIRED ONLY IF PRV STATION IS LOCATED ON A ZONE BOUNDARY (Z.B.)

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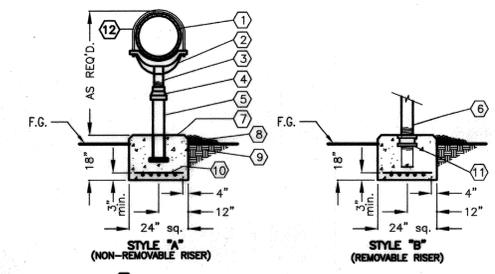
No.	Revision	Description	Engineer	Date
	Designed			
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	Checked			
	Proj. Engr.			



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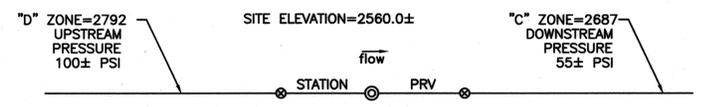
PRV DETAILS
 MAGEE RD.
 LA CAÑADA DR. - ORACLE RD. (SR 77)
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- EQUIPMENT**
- | | |
|--|---|
| 1---STANDARD STEEL PIPE | 8---2" LAYER OF GRAVEL (EXIST./NEW) |
| 2---CAST IRON SADDLE | 9---UNDISTURBED SOIL OR 95% MINIMUM COMPACTION |
| 3---STAKED LOCKNUT NIPPLE | 10---4" X 4"-W2.9/W2.9 WWF OR 4 X 4"-W2.9/W2.9 WWF OR |
| 4---SPECIAL REDUCER | 11---IMBED 3" GALV. COUPLING & 3" x 8" GALV. PIPE (THREAD ON TOP PER NPT) |
| 5---3" RISER PIPE | 12---STEEL YOKE WITH STEEL NUTS |
| 6---3" RISER PIPE (THREAD ON BOTTOM PER NPT) | |
| 7---CLASS "B" CONCRETE | |

- NOTES:**
- "ANVIL" ADJUSTABLE PIPE STANCHION SADDLE, FIG. 259 OR EQUAL
 - VERTICAL ADJUSTMENT IS OBTAINED BY TURNING LOCKNUT NIPPLE.
 - HORIZONTAL CONCRETE SURFACES SHALL BE FORMED WITH 1-1/2" CHAMFER.

1 PIPE SADDLE SUPPORT
N.T.S.



IN-LINE PRV DIAGRAM

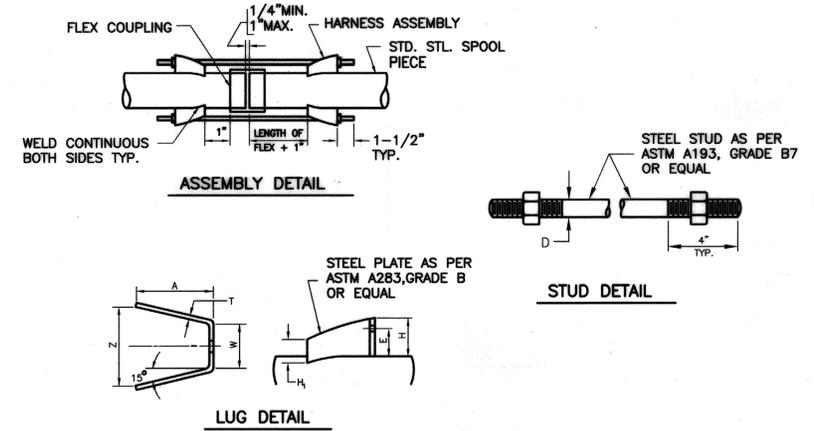
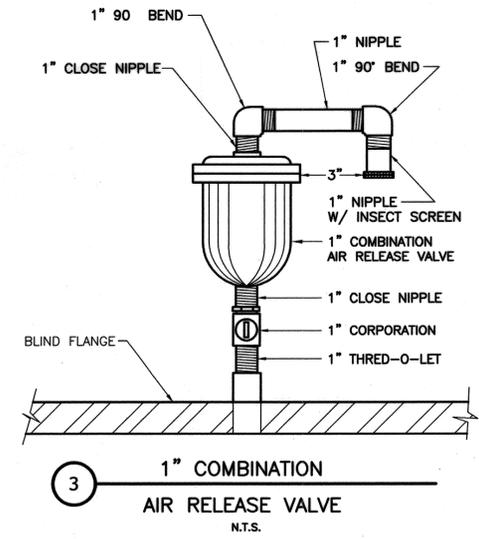


TABLE OF DIMENSIONS

PIPE SIZE	PSI RATED	# OF STUDS/ASSEM.	STUD DIA. (D)	A	W	Z	T	H	E	H	HOLE DIA.
3"-8"	150 200	2	5/8"	3"	1-1/2"	2-7/8"	3/8"	3-7/8"	3"	2"	3/4"
12"	150 200	4	5/8"	3-3/4"	1-11/16"	3-1/2"	3/8"	4-1/8"	3-1/8"	2"	3/4"
16"	150 200	6	5/8"	4-1/2"	1-15/16"	4-3/16"	3/8"	4-1/4"	3-1/8"	2"	3/4"
24"	150 200	8	5/8"	5-1/8"	2-1/8"	4-11/16"	3/8"	4-1/2"	3-1/4"	2"	3/4"
				6-3/4"	2-9/16"	5-11/16"	3/8"	5"	3-3/4"	2-1/2"	3/4"
				8-3/4"	3"	7-1/2"	3/8"	5-1/2"	3-7/8"	2-1/2"	3/4"

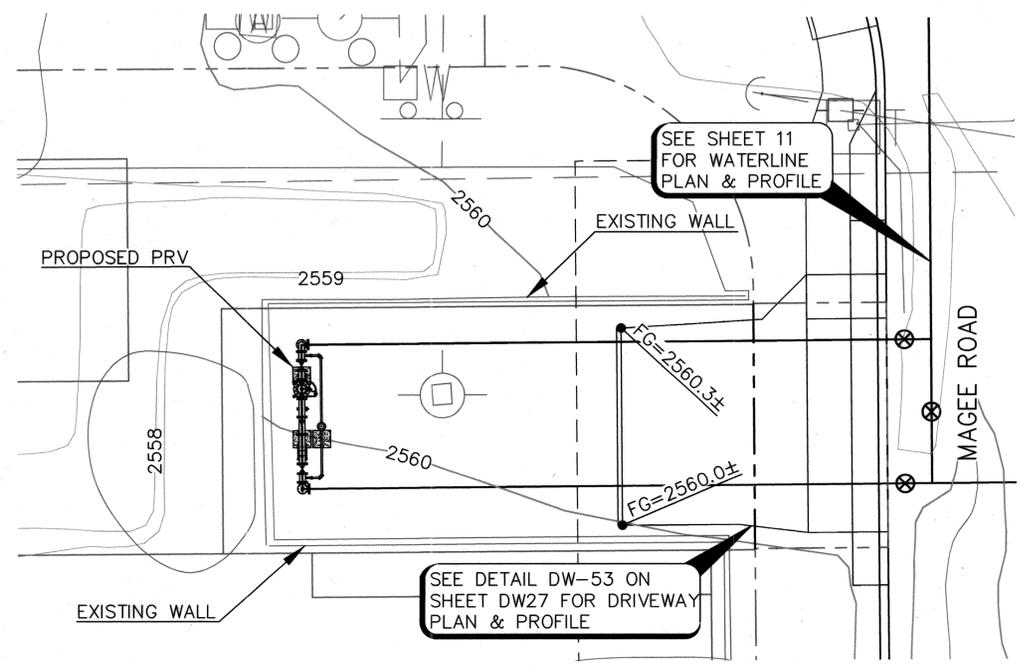
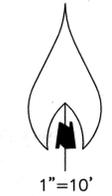
2 FLEXIBLE COUPLING & HARNESS ASSEMBLY DETAIL
N.T.S.



3 1" COMBINATION AIR RELEASE VALVE
N.T.S.

GENERAL NOTES FOR NEW PRV

- EQUIPMENT AND LAYOUT SHALL BE AS PER TUCSON WATER STANDARDS AND SPECIAL WATERWORKS SPECIFICATIONS AND DETAILS EXCEPT WHERE NOTED.
- SECURITY OF SITE SHALL BE MAINTAINED THROUGHOUT PERIODS OF NEW CONSTRUCTION.
- CAUTION MUST BE EXERCISED DURING CONSTRUCTION DUE TO UNDERGROUND UTILITIES. EXISTING LOCATION AND NUMBER SHOWN ON PLANS ARE APPROXIMATE AND FIELD VERIFICATION SHALL BE USED AS NECESSARY. CONTRACTOR SHALL BE RESPONSIBLE FOR, AND AT HIS EXPENSE, SHALL RESTORE ANY DAMAGE (CAUSED BY CONSTRUCTION PROCESS) TO EXISTING UTILITIES, STRUCTURES, EQUIPMENT, OR WATERLINES. REPAIRS SHALL BE MADE TO THE FIELD ENGINEER'S SATISFACTION.
- THE CONTRACTOR SHALL MAKE PROVISIONS FOR VISITING THE SITE AND FAMILIARIZING HIMSELF WITH THE STATUS OF THE EXISTING EQUIPMENT, STRUCTURES, AND WATERLINES PRIOR TO THE START OF CONSTRUCTION. HE SHALL COORDINATE HIS VISIT WITH TUCSON WATER BY CONTACTING THE FIELD ENGINEERING, IVAN MILENSKY AT (520) 791-2665.
- PRIOR TO FABRICATION OF ANY BELOW GROUND PIPE, THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND INVERT ELEVATIONS OF ALL PIPING AND VALVES TO BE CONNECTED TO. LOCATIONS AND ELEVATIONS OF EXISTING PIPE AND VALVES SHOWN ARE APPROXIMATE.
- FOR ANY TECHNICAL QUESTIONS REGARDING NEW PRV, CONTACT DAN DENMAN, TUCSON WATER PLANT DESIGN AT (520) 837-2198.
- ALL MAINS SHALL BE FULLY RESTRAINED AS NOTED ON PRV PLAN SHEETS.
- SEE WATER SPECIAL PROVISIONS FOR PRV SUBMITTAL REQUIREMENTS.
- CONTRACTOR SHALL TAKE PRESSURE READINGS AT BOTH SIDES OF EXISTING PRV PRIOR TO DEACTIVATION. CONTRACTOR SHALL COORDINATE WITH ASSIGNED TUCSON WATER INSPECTOR TO ADJUST SETTINGS ON NEW PRV.

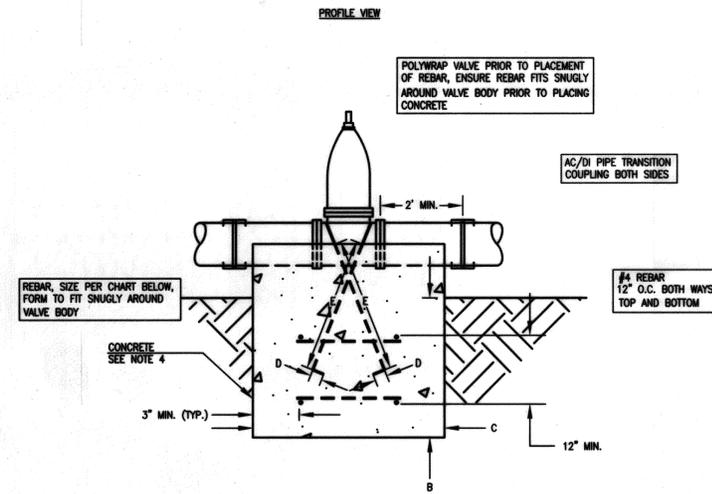


PRV SITE LAYOUT

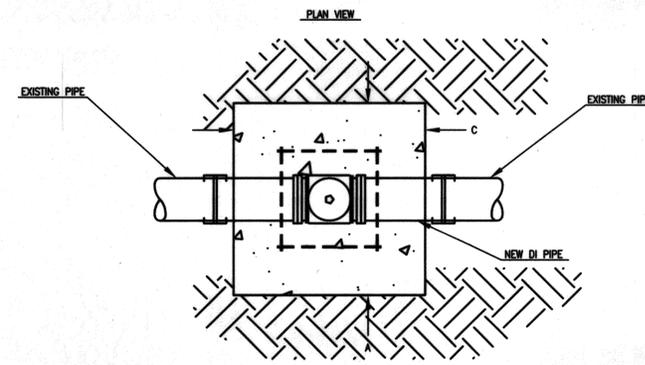
MAGEE RD. IMPROVEMENTS - LA CAÑADA DR. TO ORACLE RD. (SR 77) - PROJECT NO. 4MRLCO

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	STP-PPM-0(209)A	273a	273	

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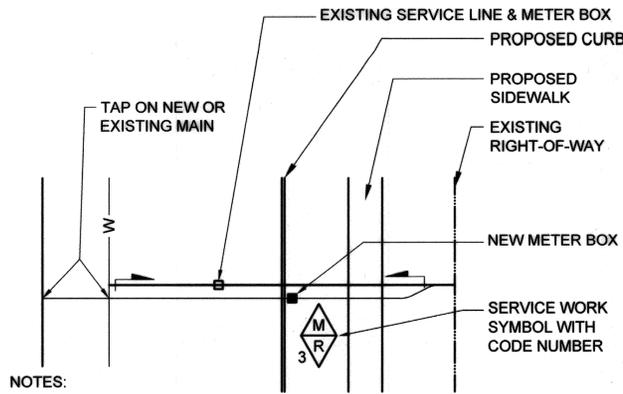


- NOTES:
- 1) DIMENSION "B" IS MEASURE FROM BOTTOM OF TRENCH.
 - 2) PLACE CONCRETE UP TO SPRINGLINE OF PIPE.
 - 3) PLACE CONCRETE IN ALL DIMENSIONS AGAINST UNDISTURBED SOIL.
 - 4) USE HIGH EARLY STRENGTH CONCRETE RATED AT 2500 PSI IN 24 HR (MIN.).



NOMINAL PIPE SIZE	BAR SIZE	DIMENSIONS				
		A	B	C	D	E
4"	#4	2.5"	1.5"	1.5"	0.5"	1.0"
6"	#5	3.5"	2.0"	2.0"	0.7"	1.5"
8"	#6	3.5"	2.5"	2.5"	0.8"	2.0"
12"	#7	5.5"	3.5"	3.5"	1.0"	3.0"

VALVE THRUST BLOCK DETAIL



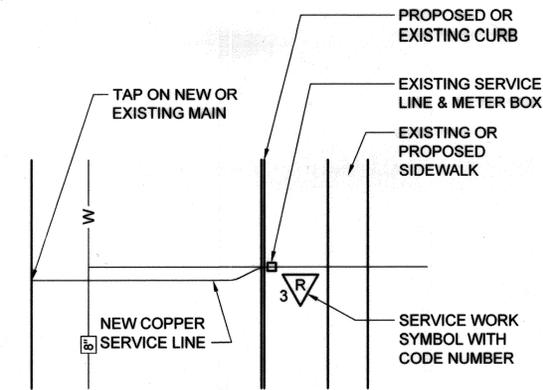
NOTES:

- AN EXISTING METER IS RELOCATED AND THE SERVICE LINE IS RENEWED WHEN THERE IS A CONFLICT BETWEEN THE EXISTING METER LOCATION AND THE PROPOSED CONSTRUCTION.
- THE WORK INCLUDES A TAP ON THE NEW OR EXISTING WATER MAIN, INSTALLATION OF NEW COPPER PIPE FROM THE TAP TO THE NEW WATER METER LOCATION, INSTALLATION OF A NEW METER BOX AND RELOCATED METER PER W-310 OR W-311, AND INSTALLATION OF NEW COPPER PIPE TO WITHIN ONE FOOT OF THE PROPERTY LINE.
- METER RELOCATIONS, SERVICE LINE RENEWALS ARE BID EACH, WITH A SEPARATE BID ITEM FOR THE REQUIRED COPPER PIPE.

SERVICE SPECIFICATION	
SIZE	NUMBER
1"	5108114
1½"	5108116
2"	5108118



METER RELOCATION, DA25 • SERVICE LINE RENEWAL (MR)



NOTES:

- AN EXISTING SERVICE LINE IS RENEWED (REPLACED) WHEN IT IS A MATERIAL OTHER THAN COPPER, I.E. IRON OR LEAD, OR WHEN ROADWAY GRADE CHANGES DICTATE.
- THE WORK INCLUDES A TAP ON THE NEW OR EXISTING WATER MAIN, INSTALLATION OF NEW COPPER PIPE TO THE EXISTING WATER METER, AND CONNECTION TO THE EXISTING WATER METER.
- SERVICE RENEWALS ARE BID EACH, WITH A SEPARATE BID ITEM FOR THE REQUIRED COPPER PIPE.

SERVICE SPECIFICATION	
SIZE	NUMBER
¾"	5108133
1"	5108134
1½"	5108136
2"	5108138



DA27 • SERVICE LINE RENEWAL (R)

Priscilla S. Cornello, P.E., Director

Date	SW	Checked/	Prof. Engr.
1/1/2	SW	AUH	AUH
1/1/2	SW	AUH	AUH
1/1/2	SW	AUH	AUH

No.	Revision Description	Engineer	Date

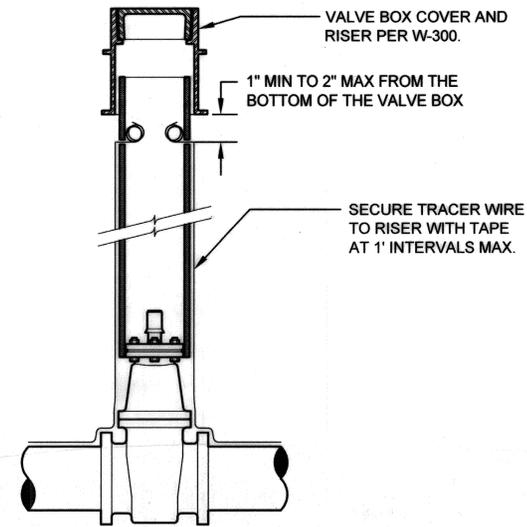
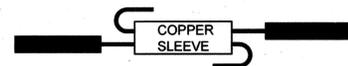


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Pima County Department of Transportation
 CITY OF TUCSON WATER DETAILS
 MAGEE RD.
 LA CAÑADA DR. - ORACLE RD. (SR 77)
 PROJECT NO. 4MRLCO

NOTES

- ALL NEW WATER MAINS REQUIRE DETECTABLE LOCATOR TAP PER W-115. IN ADDITION, A TRACER WIRE SHALL ALSO BE INSTALLED. THE TRACER WIRE SHALL BE UF, THWN, THW, OR RHW/RHH SOLID 12 GAUGE WIRE. THE TRACER WIRE SHALL BE LAID DIRECTLY ON TOP OF THE PIPE IN CONTINUOUS LENGTHS BETWEEN VALVES, AIR RELEASE VALVES (ARV), DRAIN VALVE ASSEMBLIES (DVA) AND LATERAL CONNECTIONS TO EXISTING WATER MAINS.
- THE TRACER WIRE SHALL BE SECURED TO THE PIPE WITH ADHESIVE TAPE AT INTERVALS NOT GREATER THAN 10'. THE INTENT IS TO KEEP THE TRACER WIRE IN PLACE DURING BACK FILL, NOT TO PERMANENTLY FIX THE TAPE TO THE PIPE.
- THE TRACER WIRE SHALL BE SECURED TO VERTICAL COMPONENTS, I.E. VALVE RISES, AIR RELEASE LINES ETC., BY WRAPPING THE PIPE CIRCUMFERENCE WITH 10 MIL PVC PIPE TAPE OR ZIP TIES WITH A TENSILE STRENGTH OF NOT LESS THAN 50 LBS. AT INTERVALS NOT GREATER THAN 1'.
- FOR DIP WATER MAINS, TRACER WIRE SHALL BE ATTACHED TO THE OUTSIDE OF THE POLYETHYLENE ENCASEMENT.
- THE TRACER WIRE SHALL BE CERTIFIED BY A LICENSED ELECTRICAL CONTRACTOR FOR CONTINUITY. FINAL ACCEPTANCE BY THE CITY OF TUCSON WATER DEPARTMENT WILL NOT BE GRANTED UNTIL WRITTEN CERTIFICATION IS RECEIVED BY THE WATER DEPARTMENT.
- THE INSULATION ON TRACER WIRE INSTALLED ON POTABLE WATER MAINS SHALL BE COLORED BLUE. THE INSULATION ON TRACER WIRE INSTALLED ON RECLAIMED WATER LINES SHALL BE COLORED PURPLE.
- SPLICES IN THE TRACER WIRE SHALL BE PERFORMED AS FOLLOWS (SEE ILLUSTRATION BELOW):
 - THE INSULATION SHALL BE STRIPPED FROM THE WIRE EXPOSING ENOUGH BARE WIRE TO EXTEND APPROXIMATELY 1/2" BEYOND THE END OF THE COPPER SLEEVE.
 - THE COPPER SLEEVE SHALL BE OF THE APPROPRIATE SIZE FOR 12 GAUGE WIRE AND INTENDED FOR THIS PURPOSE.
 - CRIMP THE SLEEVE ON THE WIRE WITH A CRIMPING TOOL A MINIMUM OF 4 TIMES.
 - AFTER CRIMPING THE COPPER SLEEVE, BEND THE WIRE BACK OVER THE SLEEVE.
 - CLEAN AND DRY THE EXPOSED SECTION OF THE WIRE. WRAP THE CONNECTION WITH TWO HALF-LAPPED LAYERS OF POLYETHYLENE OR POLYVINYL CHLORIDE TAPE (ELECTRICIANS TAPE).

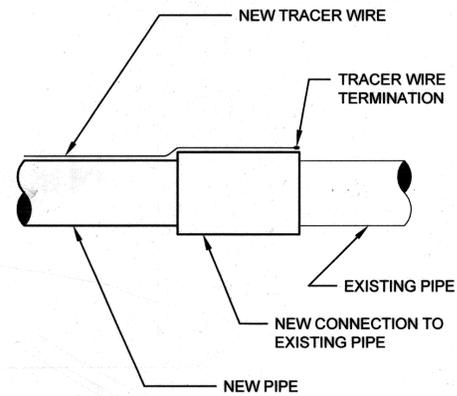


NOTE:

- THREAD TRACER WIRES THROUGH 1/4" HOLES DRILLED IN THE RISER PIPE 2" TO 4" BELOW THE VALVE BOX. A KNOT SHALL BE TIED IN THE TRACER WIRE INSIDE THE RISER PIPE AND A 3' COIL OF WIRE LEFT NEATLY INSIDE THE RISER. THE TRACER WIRE SHALL ENTER THE RISER PIPE ON THE SAME SIDE AS THE WATER PIPE TO BE TRACED.

CONNECTION TO IN-LINE VALVES

NOT TO SCALE

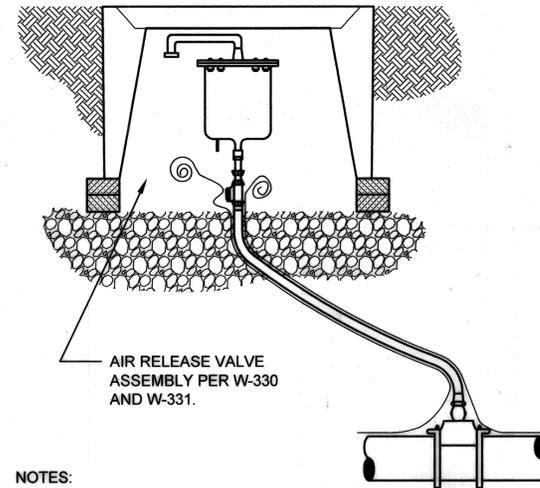


NOTE:

- AT CONNECTIONS TO EXISTING PIPE WITH NO TRACER WIRE, THE NEW TRACER WIRE SHALL BE TERMINATED AT THE END OF THE CONNECTION DEVICE.
- THE END OF THE NEW TRACER WIRE SHALL BE TAPED WITH TWO HALF LAPPED LAYERS OF POLYETHYLENE OR POLYVINYL CHLORIDE TAPE (ELECTRICIANS TAPE)

CONNECTION TO EXISTING WATER MAIN

NOT TO SCALE

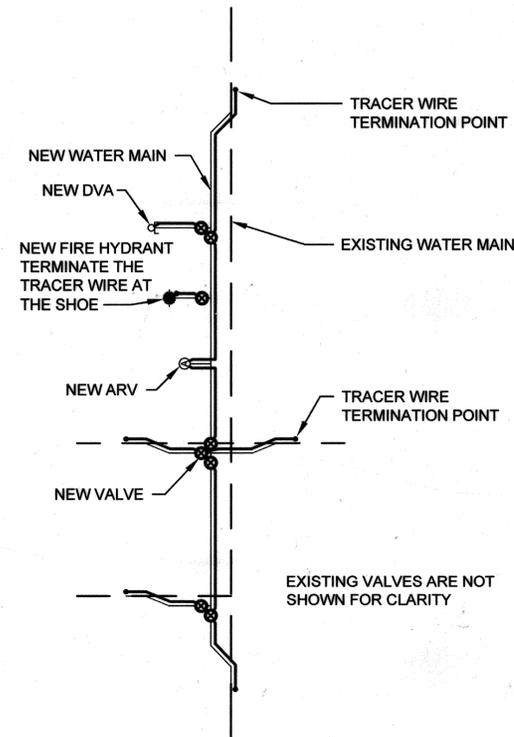


NOTES:

- THE TRACER WIRE SHALL BE ATTACHED TO THE AIR RELEASE LINE WITH TAPE OR ZIP TIES AT A MAXIMUM OF 1' INTERVALS. A 3' COIL OF WIRE SHALL BE LEFT IN THE METER BOX FOR EACH TRACER WIRE INSTALLED.
- TRACER WIRE SHALL BE LOCATED ON THE SAME SIDE OF THE METER BOX AS THE PIPE IT IS ATTACHED TO. THE COILED TRACER WIRE SHALL BE PERMANENTLY LABELED WITH A METALLIC TAG STATING THE DIRECTION (I.E. NORTH, EAST, ETC.) OF THE PIPE IT IS ATTACHED TO.
- THIS DETAIL APPLIES TO AIR RELEASE VALVES IN W-330 AND W-331.

AIR RELEASE VALVES

NOT TO SCALE

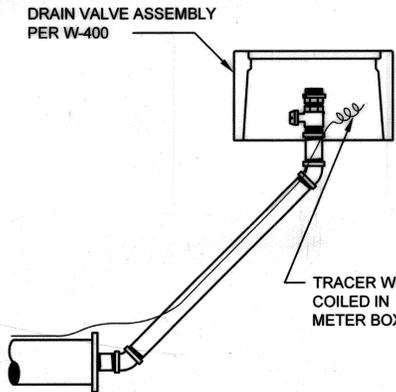


DETECTION WIRE SCENARIOS

NOT TO SCALE

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	STP-PPM-0(209)A	273b	273	

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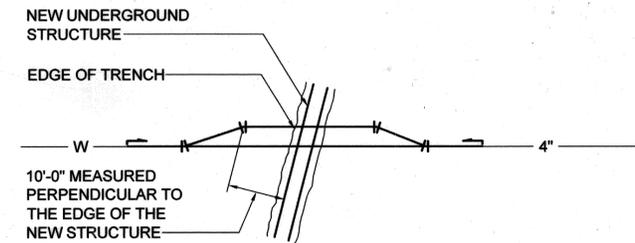


NOTES

- THE TRACER WIRE SHALL BE ATTACHED TO THE AIR RELEASE LINE WITH TAPE OR ZIP TIES AT 1' INTERVALS. A 3' COIL OF WIRE SHALL BE PLACED NEATLY IN THE METER BOX.

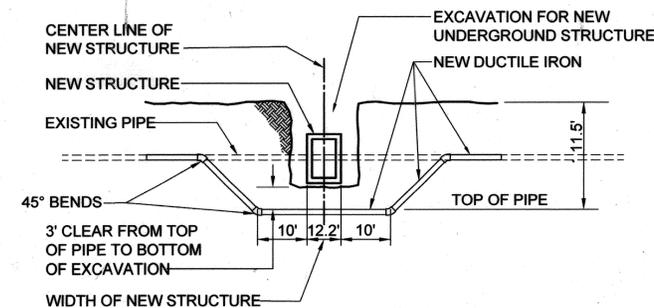
DRAIN VALVE ASSEMBLY

NOT TO SCALE



TYPICAL PLAN

NOT TO SCALE



ELEVATION/SECTION

NOT TO SCALE

DA05 • WATER MAIN UNDER STRUCTURES

CONSTRUCTED IN PLACE UNDERGROUND STRUCTURES

Scale: N/A	Horiz. Vert.	Sheet W18 of W18	Page 273b of 273
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Priscilla S. Cornello, P.E., Director

No.	Revision Description	Engineer	Date
	Designed		11/12
	Drawn		11/12
	Checked		11/12
	Proj. Engr.		11/12

Ceps group, Inc.
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8718 North Thornydale Road, Suite 140
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Pima County Department of Transportation
CITY OF TUCSON WATER DETAILS
MAGEE RD. - ORACLE RD. (SR 77)
PROJECT NO. 4MRLCO

MAGEE RD. IMPROVEMENTS - LA CAÑADA DR. TO ORACLE RD. (SR 77) - PROJECT NO. 4MRLCO