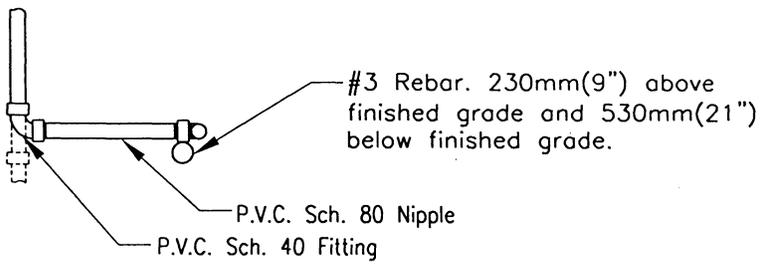
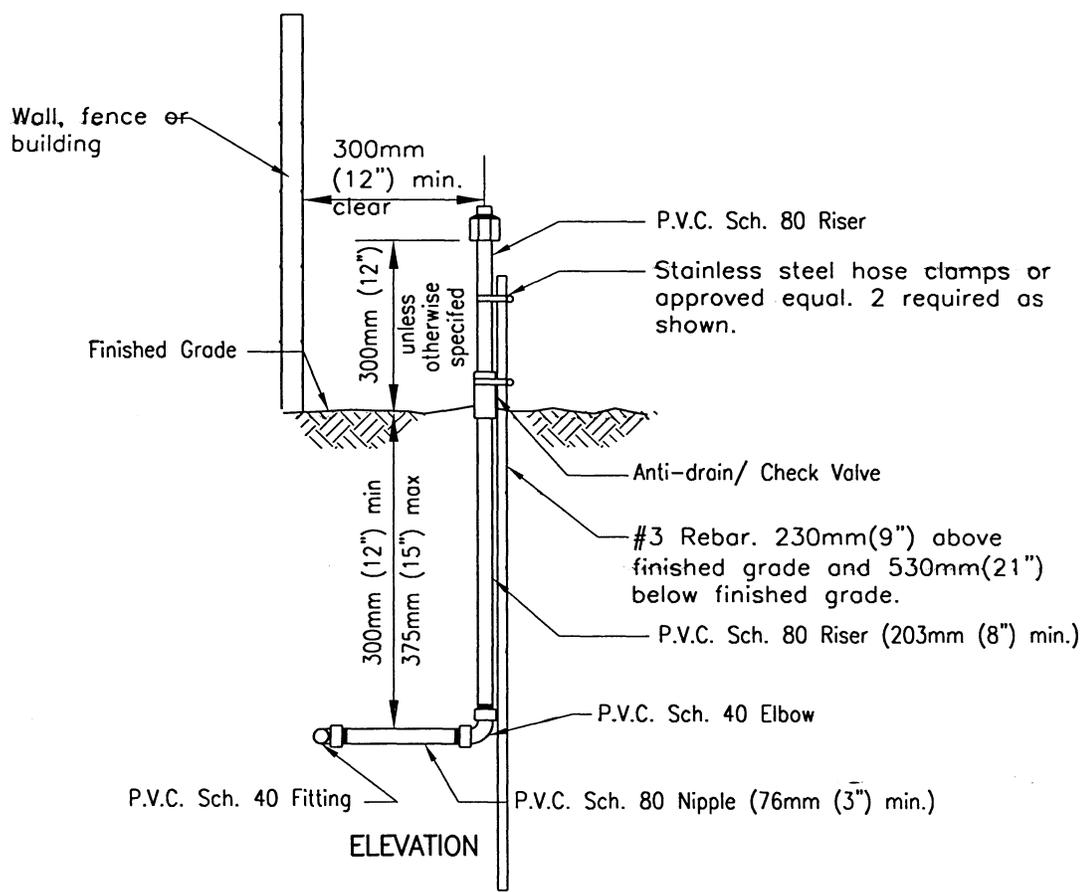


# **SPRINKLER IRRIGATION SYSTEMS**



PLAN VIEW



ELEVATION

NOTES

1. Teflon tape, 19mm (3/4") wide, shall be used on all threaded connections.
2. Close nipples shall not be used.
3. No fixed risers allowed in public right-of-ways or adjacent to vehicular or pedestrian traffic, unless otherwise approved by agency.

LEGEND ON PLANS

Show a number to indicate type head

Or approved agency symbol

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	03/04

**SAN DIEGO REGIONAL STANDARD DRAWING**

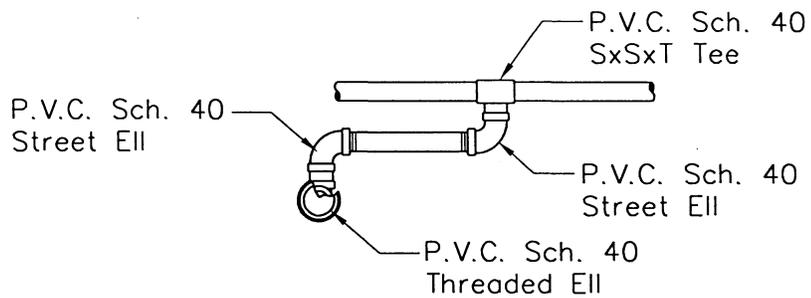
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**SHRUB SPRAY HEAD  
ON FIXED RISER**

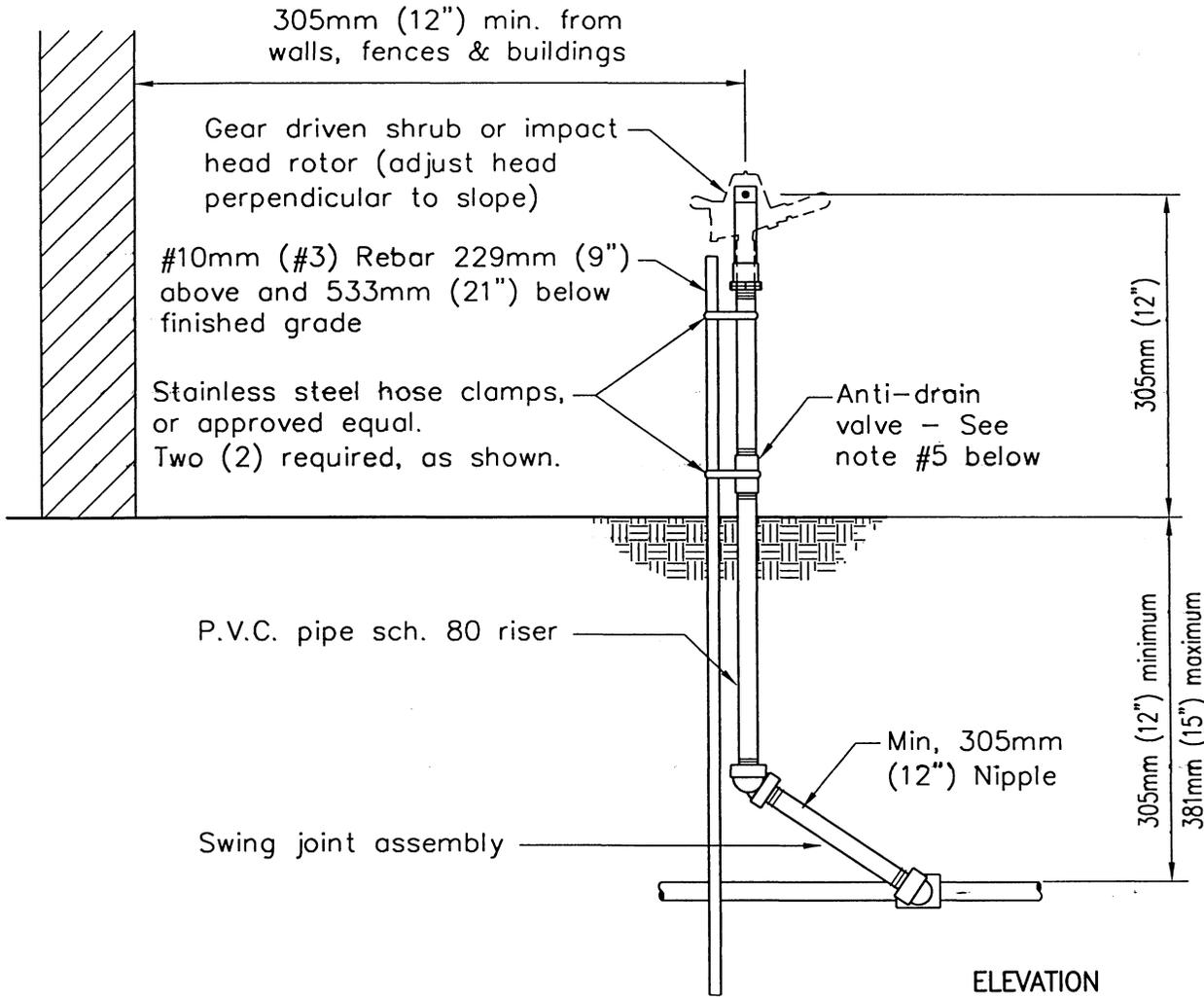
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 03-25-2004  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-1**



PLAN



NOTES

1. All fittings shall be P.V.C. Sch. 40 (except as noted).
2. All nipples shall be P.V.C. Sch. 80 (except as noted).
3. Teflon tape shall be used on all threaded connections.
4. Close nipples shall not be used.
5. Anti-drain valves shall be installed under all heads unless otherwise specified.
6. No fixed risers allowed in right-of-way or adjacent to vehicular or pedestrian traffic unless otherwise approved by agency.

LEGEND ON PLANS

Show a number to  indicate head type Or approved agency symbol.

Revision	By	Approved	Date
ORIGINAL		Parkinson	5/92
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	06/04

SAN DIEGO REGIONAL STANDARD DRAWING

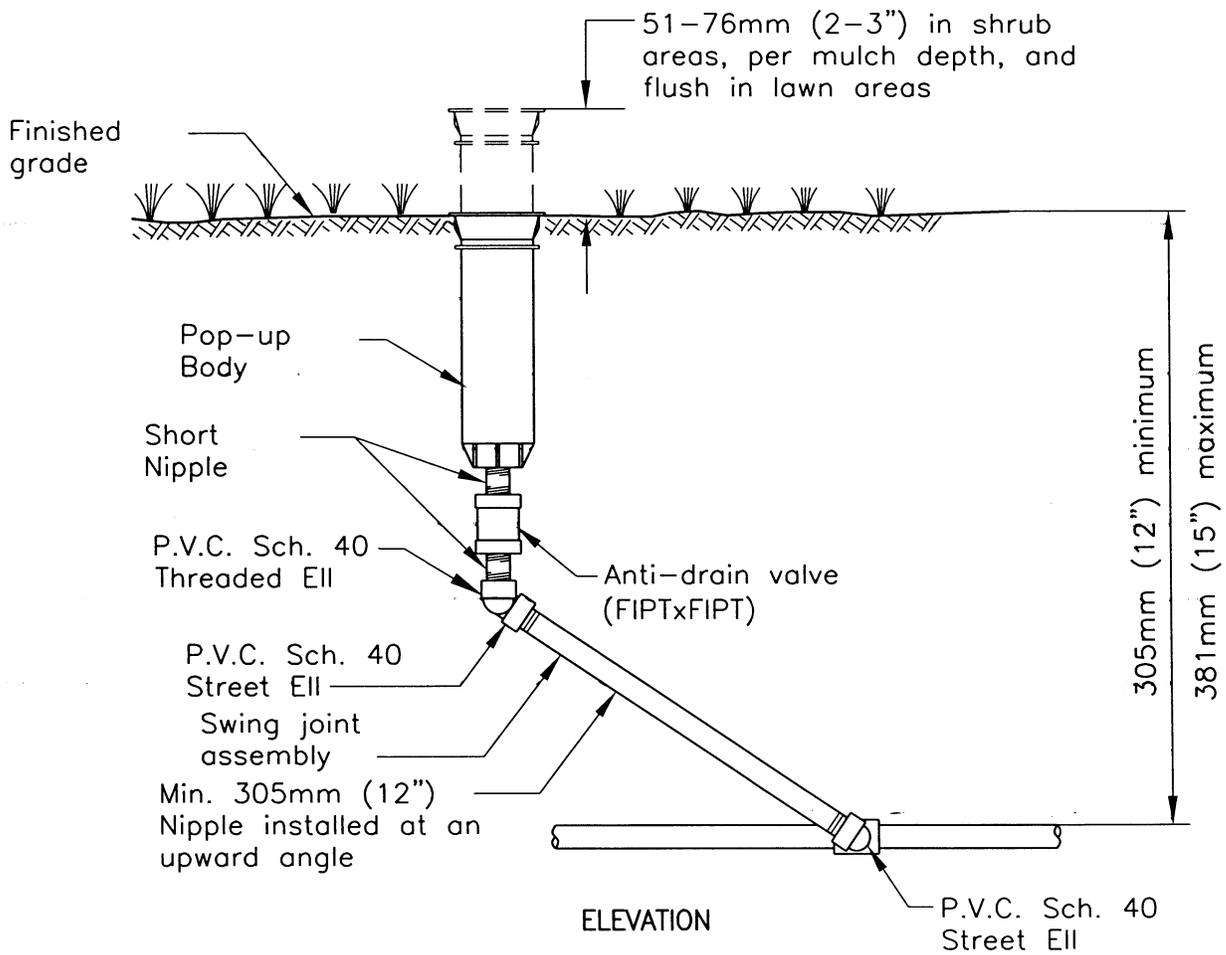
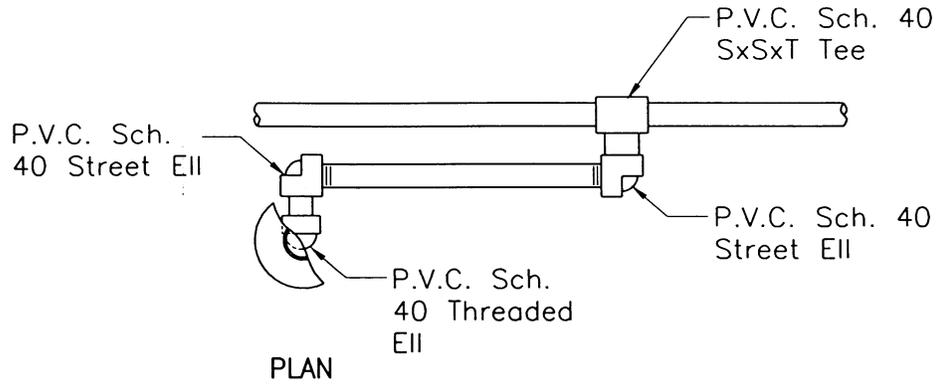
ROTOR OR IMPACT HEAD  
ON FIXED RISER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

 06/24/2004

Chairperson R.C.E. 19246 Date

DRAWING NUMBER I-2



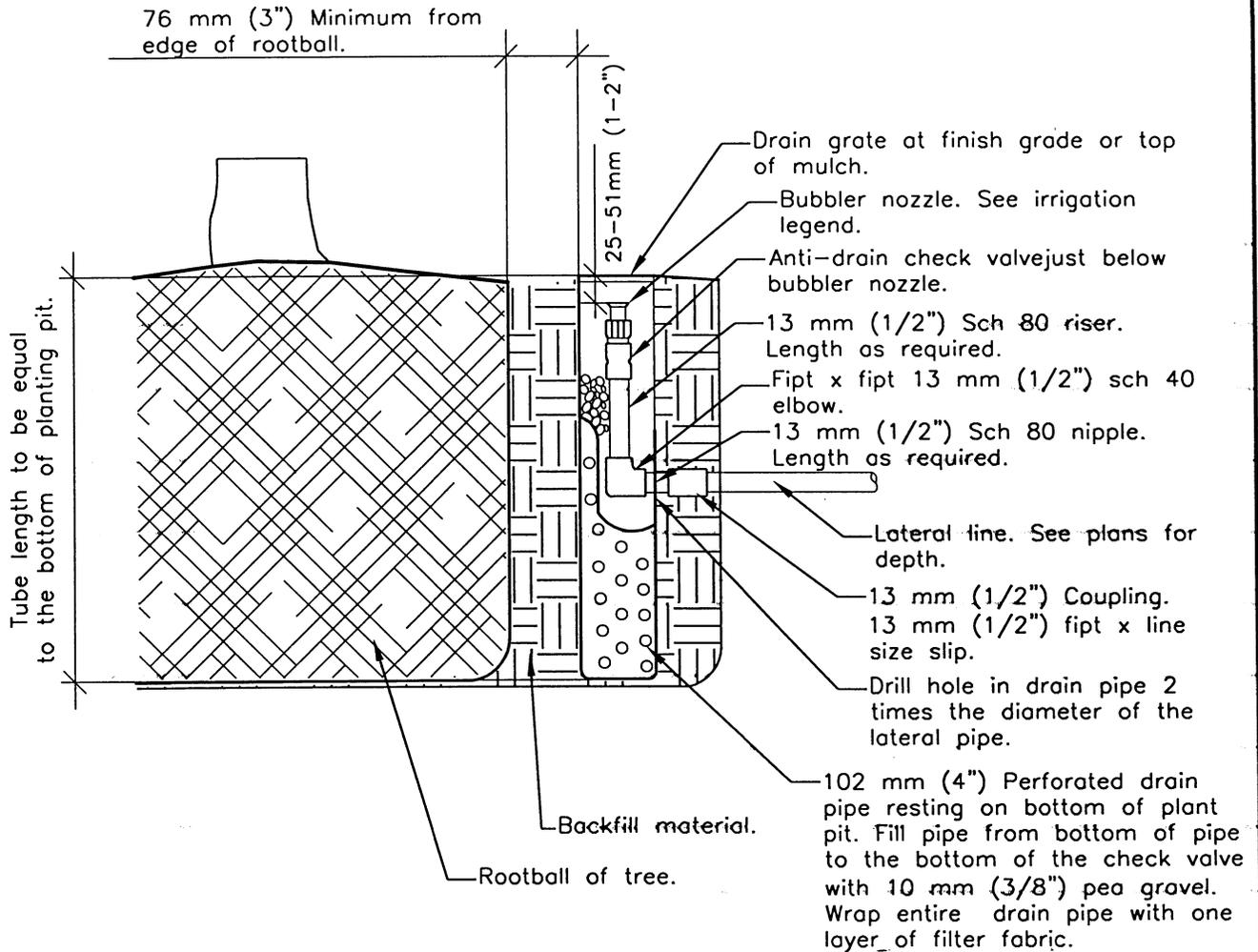
**NOTES**

1. All fittings shall be P.V.C. Schedule 40.
2. All nipples shall be P.V.C. Schedule 80.
3. Teflon tape shall be used on all threaded connections.
4. Close nipples shall not be used.
5. Lateral depth shall be 457mm (18") when 305mm (12") pop-up bodies are used.

**LEGEND ON PLANS**

Show a number to indicate type head or approved agency symbol

Revision	By	Approved	Date	<b>SAN DIEGO REGIONAL STANDARD DRAWING</b>	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<b>ROTOR OR SPRAY POP-UP HEAD</b>
Add Metric		T. Stanton	03/03	Chairperson R.C.E. 19246 Date	
UPDATE		M. Caro	06/04	DRAWING NUMBER <b>I-3</b>	



**NOTES**

1. Refer to the planting plans and appropriate details for plant material and installation procedures.

Revision	By	Approved	Date
ORIGINAL		M. Caro	02/05

**SAN DIEGO REGIONAL STANDARD DRAWING**

**DEEP ROOT TREE BUBBLER**

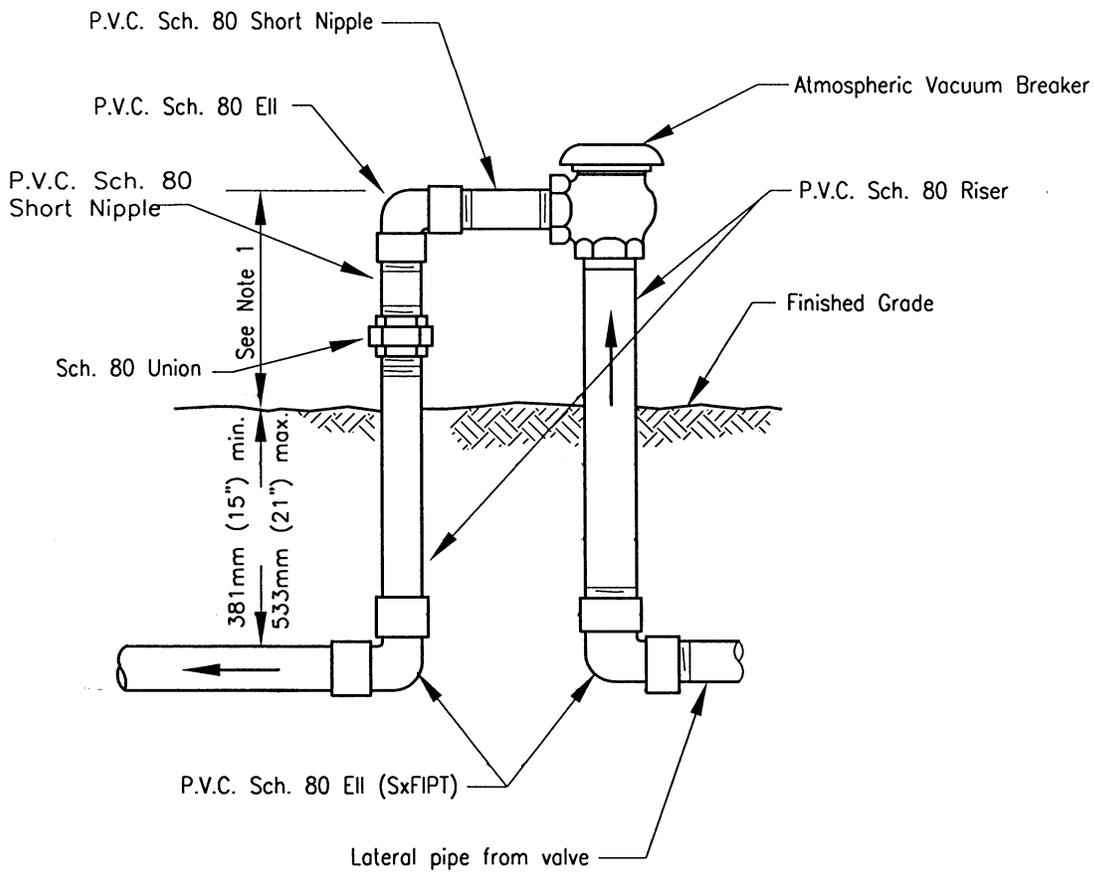
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 02/24/2005

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **1-4**





**NOTES**

1. Atmospheric vacuum breakers shall be installed a minimum of 305mm (12") above the highest sprinkler head so that at no time will it be subjected to
2. back pressure or drainage.
3. Close nipples shall not be used.
4. Teflon tape shall be used on all threaded connections.  
For use on lines 51mm (2") inches and smaller.

**LEGEND ON PLANS**



Or approved agency symbol

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	02/05

**SAN DIEGO REGIONAL STANDARD DRAWING**

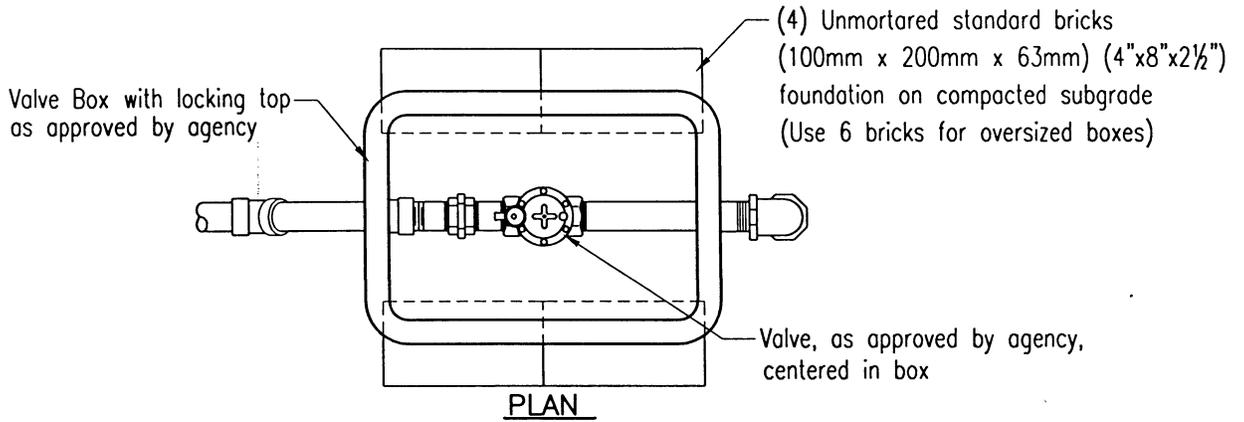
**ATMOSPHERIC VACUUM BREAKER  
(50mm (2") & SMALLER)**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

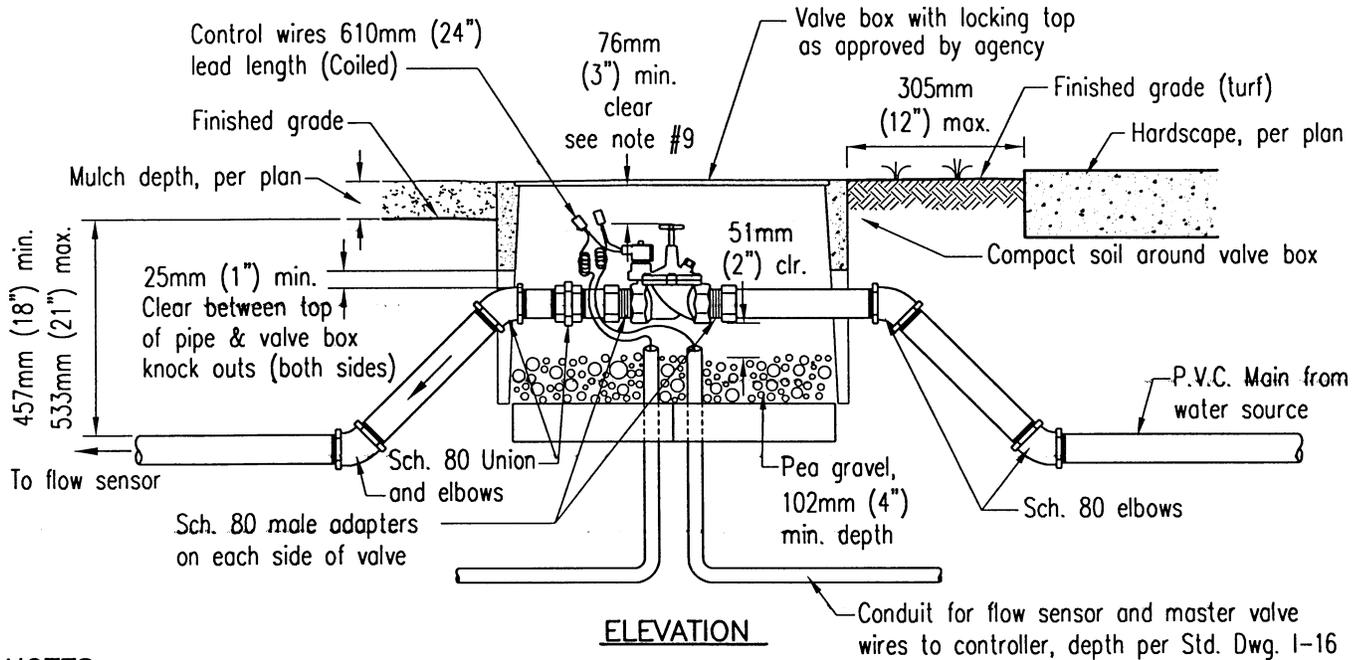
*T. Stanton* 02/24/2005

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **1-7**



**PLAN**



**ELEVATION**

**NOTES:**

1. Splicing shall be made in valve boxes and pull boxes only. See Standard Drawing I-15 for splice/soldering notes.
2. All splices shall be made with a properly set mechanical splice connector entirely enclosed in self-curing resin and shall be completely water-proof.
3. Duct seal conduit openings per agency requirements.
4. All PVC pipe used in master valve assembly shall be of the same class as specified for the mainline.
5. Conduit shall be 25mm (1") min. or as approved by agency.
6. Valve/controller identification shall be labeled on the valve box and tagged on the valve per agency requirements.
7. Knock outs shall not be enlarged unless approved by agency.
8. Install only one valve per box.
9. 76mm (3") min. clear from bottom of box lid to highest point of valve assembly.
10. Valve boxes shall be set perpendicular to hardscape, a max. 305mm (12") from edge of hardscape, 51-76mm (2-3") above finished grade in shrub/groundcover areas, per mulch depth. If necessary to be set in turf, valve boxes shall be set flush with finished grade.
11. Close nipples shall not be used.

**LEGEND ON PLANS**

▼ M.V.

Or approved agency symbol.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	04/05

**SAN DIEGO REGIONAL STANDARD DRAWING**

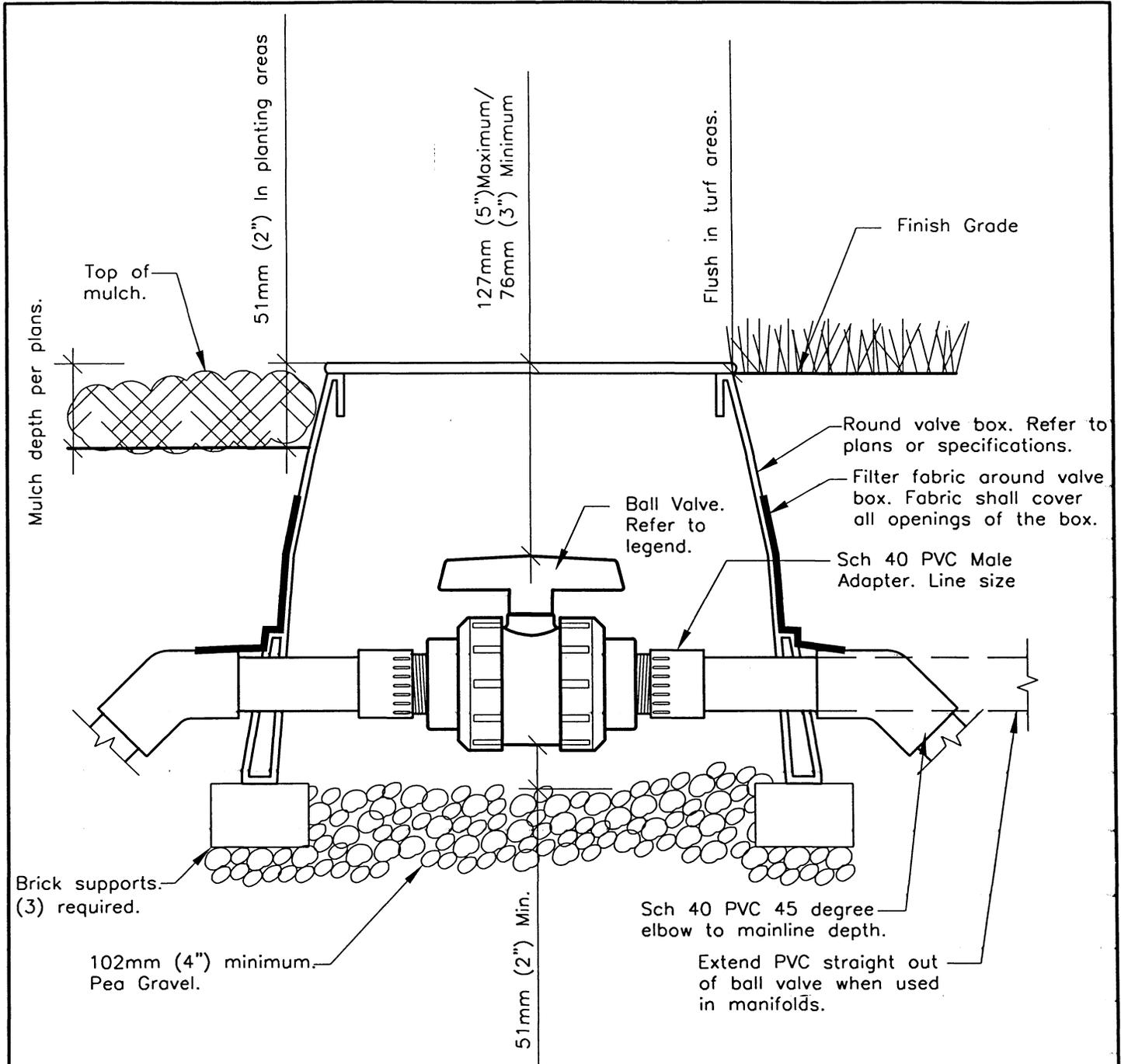
**IRRIGATION MASTER VALVE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 04/28/2005

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-10**



**NOTES**

1. Teflon tape, 19mm (3/4") wide, shall be used on all threaded connections.
2. Close nipples shall not be used.
3. All PVC Pipe used in manifold assemblies shall of the same class as specified for the mainline.
4. All plastic valve boxes shall be heat branded with the appropriate identification. Refer to plans and specifications.
5. Do not cut additional holes in valves boxes.
6. Add single unions on each side of valve when True Union ball valves are not used.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Coro	02/05

**SAN DIEGO REGIONAL STANDARD DRAWING**

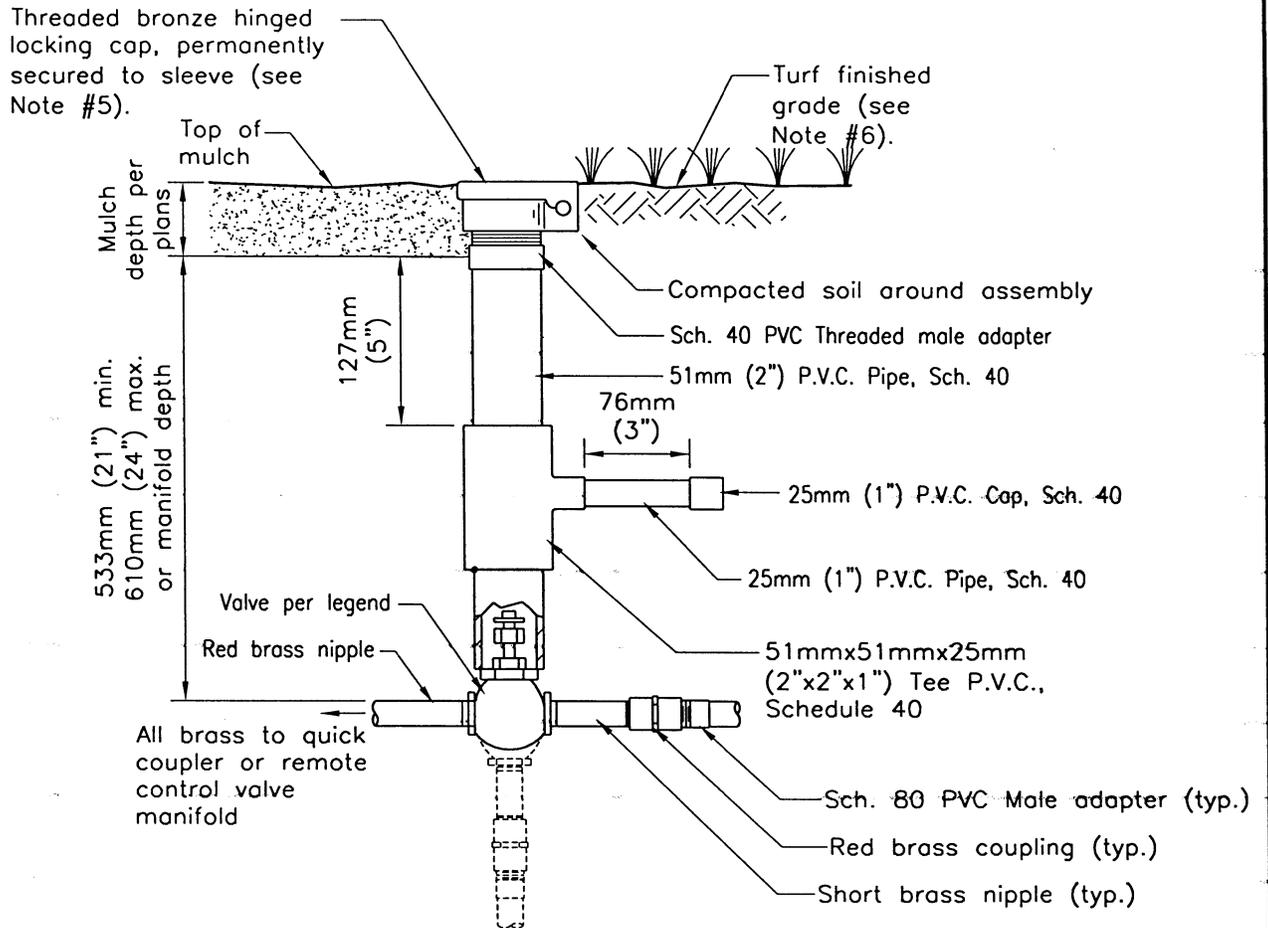
**ISOLATION BALL VALVE  
50mm (2") AND SMALLER**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 02/24/2005

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-11**



**NOTES**

1. All Globe Valves shall be furnished with a standard manual control valve bronze cross handle, centered in pipe sleeve.
2. All valves shall be installed within 305mm (12") of hardscape, unless otherwise shown on the plans.
3. All Globe Valves shall be furnished with a removable bonnet and packing gland nut.
4. Close Nipples shall not be used.
5. Locking cap shall be mounted flush with finish grade in turf areas and 51-76mm (2-3") above finish grade in shrub areas, per depth of mulch. Locate outside of turf when possible.

**LEGEND ON PLANS**



GV

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	02/05

**SAN DIEGO REGIONAL STANDARD DRAWING**

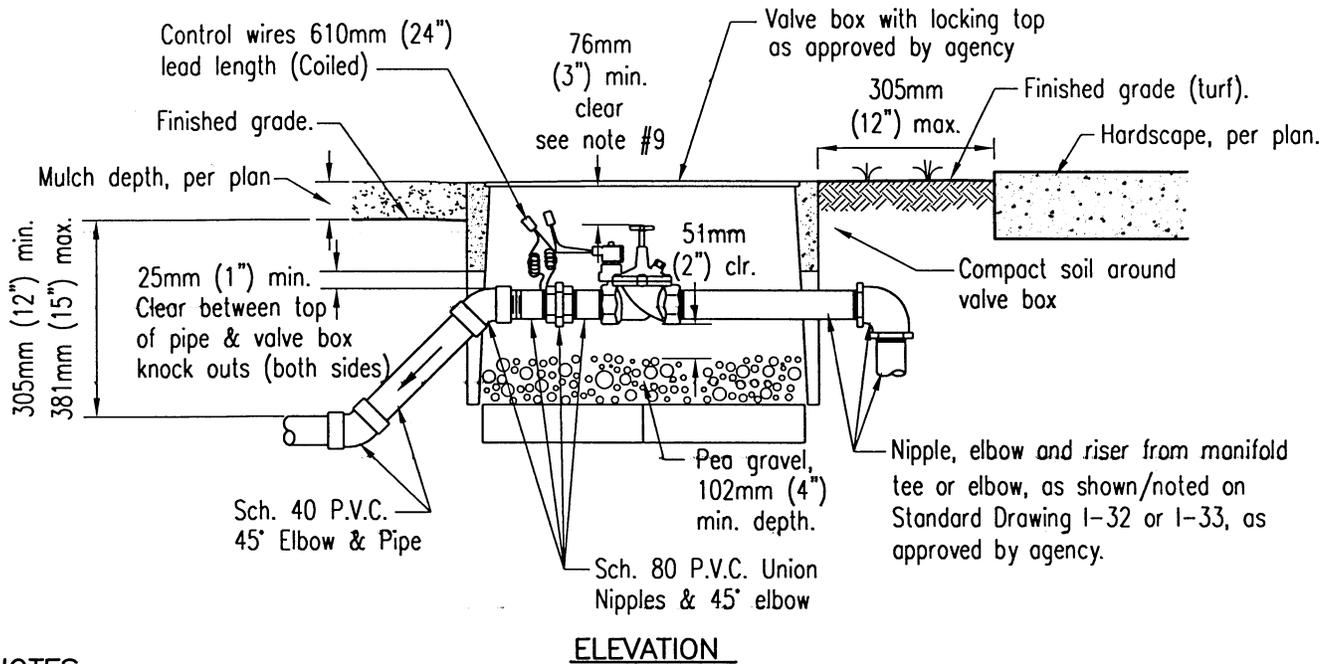
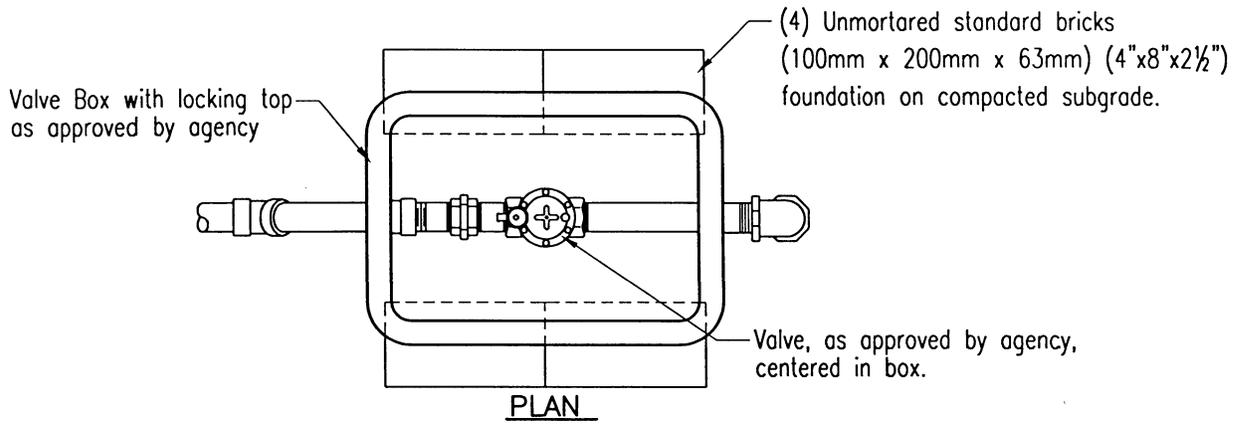
**ISOLATION GLOBE VALVE  
50mm (2") AND SMALLER**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 02/24/2005

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-13**



**NOTES:**

1. Splicing shall be made in valve boxes and pull boxes only. See Standard Drawing I-15 for splice/soldering notes.
2. All splices shall be made with a properly set mechanical splice connector entirely enclosed in self-curing resin and shall be completely water-proof.
3. Spare wires terminating in valve boxes shall have their ends insulated, the same as for a splice.
4. When two or more valves are installed in the same location, see Standard Drawing I-32 or I-33, per agency standards.
5. All valves shall be installed with a union on the downstream side of the valve. The union shall be Sch. 80 P.V.C.
6. Valve/controller identification shall be labeled on the valve box and tagged on the valve per agency requirements.
7. Knock outs shall not be enlarged unless approved by agency.
8. Install only one valve per box.
9. 76mm (3") min. clear from bottom of box lid to highest point of valve assembly.
10. Valve boxes shall be set perpendicular to hardscape, a max. 305mm (12") from edge of hardscape, 51-76mm (2-3") above finished grade in shrub/groundcover areas, per mulch depth. If necessary to be set in turf, valve boxes shall be set flush with finished grade.
11. Close nipples shall not be used.

**LEGEND ON PLANS**

▼ R.C.V

Or approved agency symbol.

Revision	By	Approved	Date
ORIGINAL		R. Munoz	3/97
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	04/05

**SAN DIEGO REGIONAL STANDARD DRAWING**

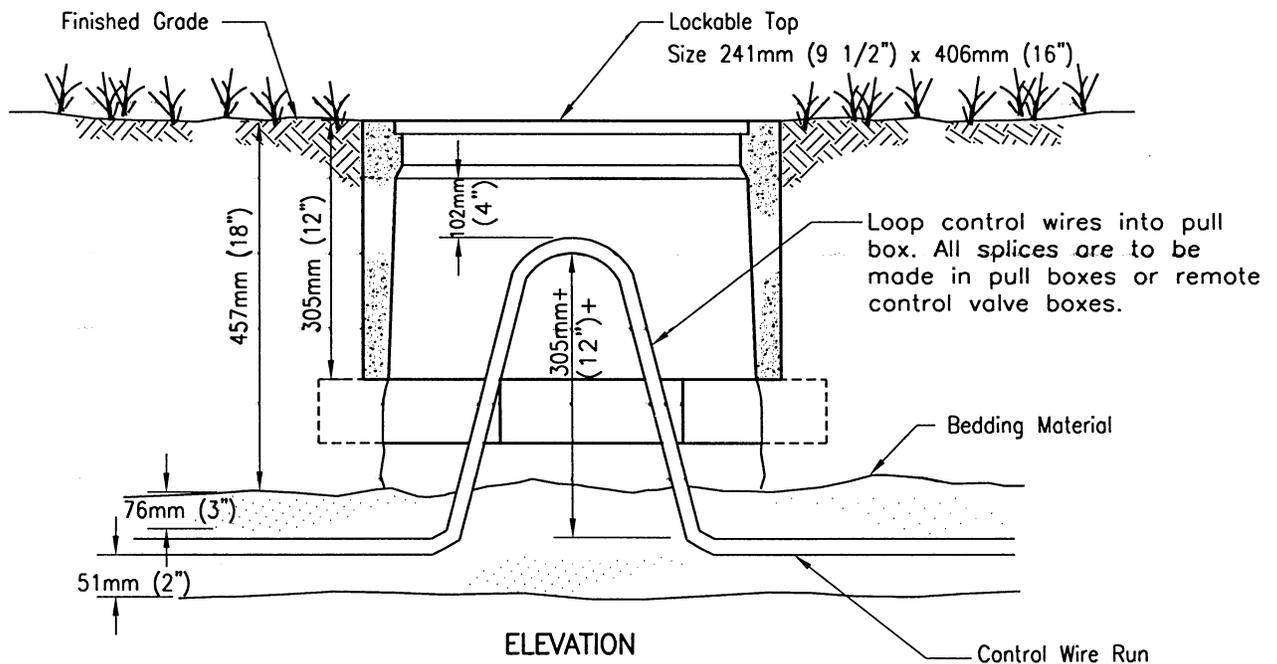
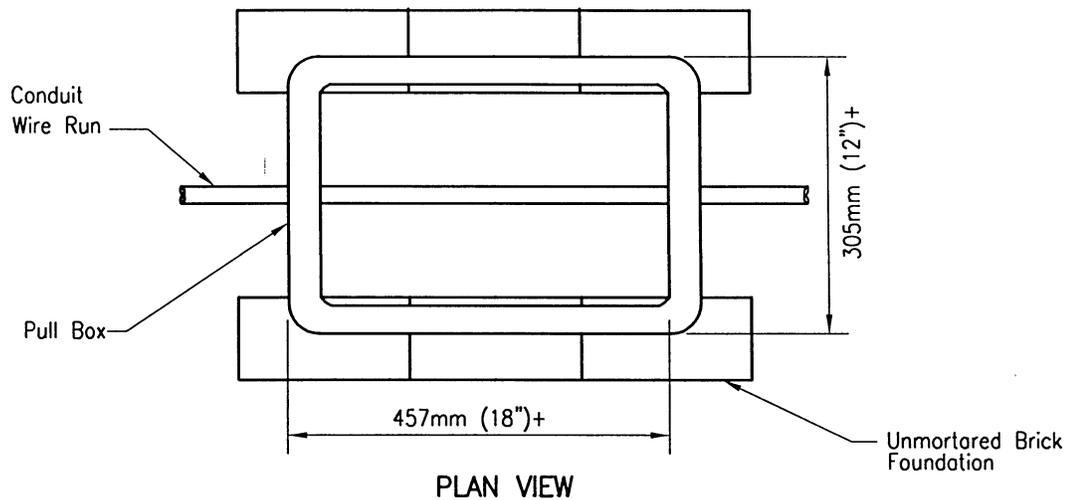
**REMOTE CONTROL VALVE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*J. Stanton* 04/28/2005

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-14**

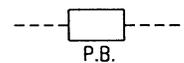


**NOTES**

1. Install pull boxes as shown on plans.
2. At junctions where runs combine, splice common ground in pull box.
3. Pull box cover shall be permanently marked "ELECTRIC".
4. Conductors for each controller clock shall be harnessed separately and at sufficient intervals to maintain a definite bundle.
5. All splices shall be made with a properly set mechanical splice connector entirely enclosed in self-curing resin and shall be completely water-proof.
6. All spare wire ends shall be insulated in the same manner as wire splices.
7. If specified, all splices shall be soldered with metallic alloy solder prior to
8. installing connectors.

Wire bundles inside pull boxes shall be at least 102mm (4") from the under side of the box cover. Minimum size pull box shall be as shown above. Larger boxes may be necessary to meet 102mm (4") clearance required.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		A. Kercheval	12/75
Add Metric		T. Stanton	03/03

**SAN DIEGO REGIONAL STANDARD DRAWING**

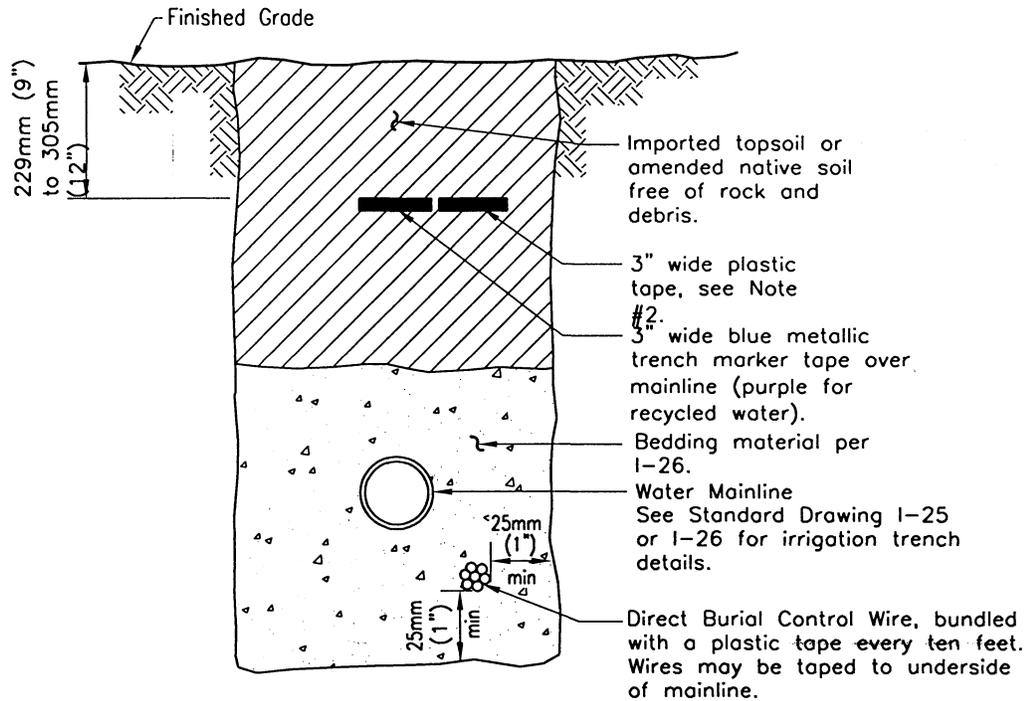
**ELECTRICAL PULL BOX  
FOR DIRECT BURIAL CONTROL WIRES  
AND SPLICE DETAILS**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

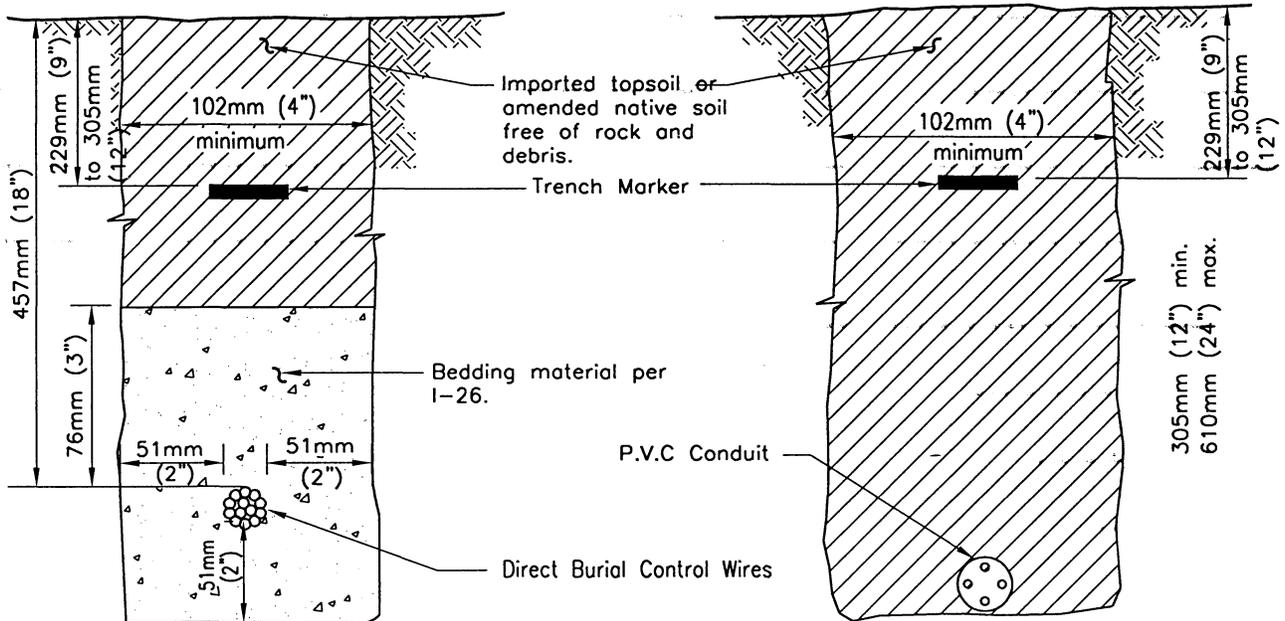
*T. Stanton* 3/10/2003

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-15**



NORMAL LOCATIONS OF CONTROL WIRES



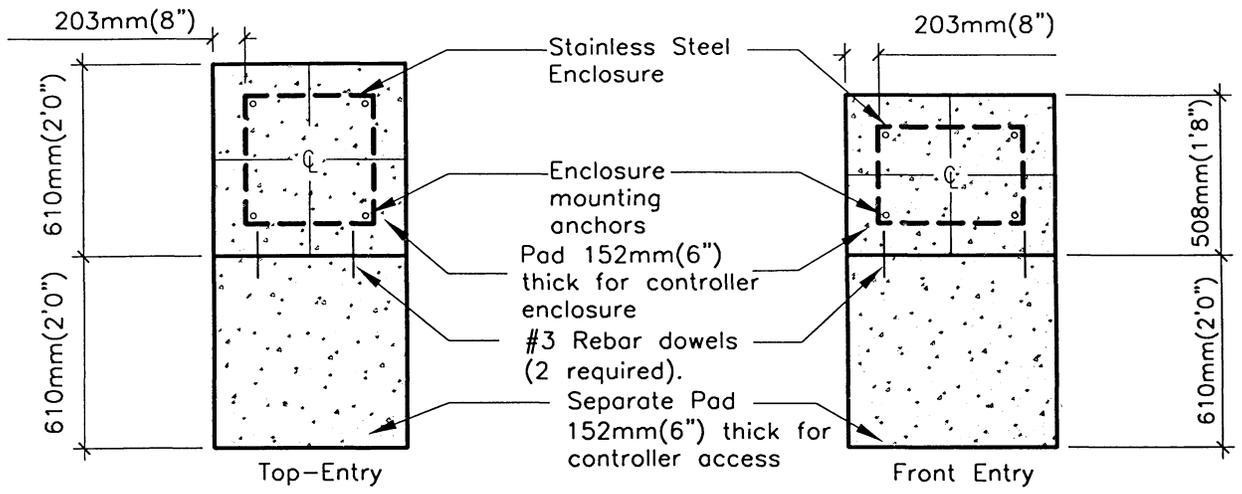
ALTERNATE LOCATION OF CONTROL WIRES

COMMUNICATION CABLE

NOTES

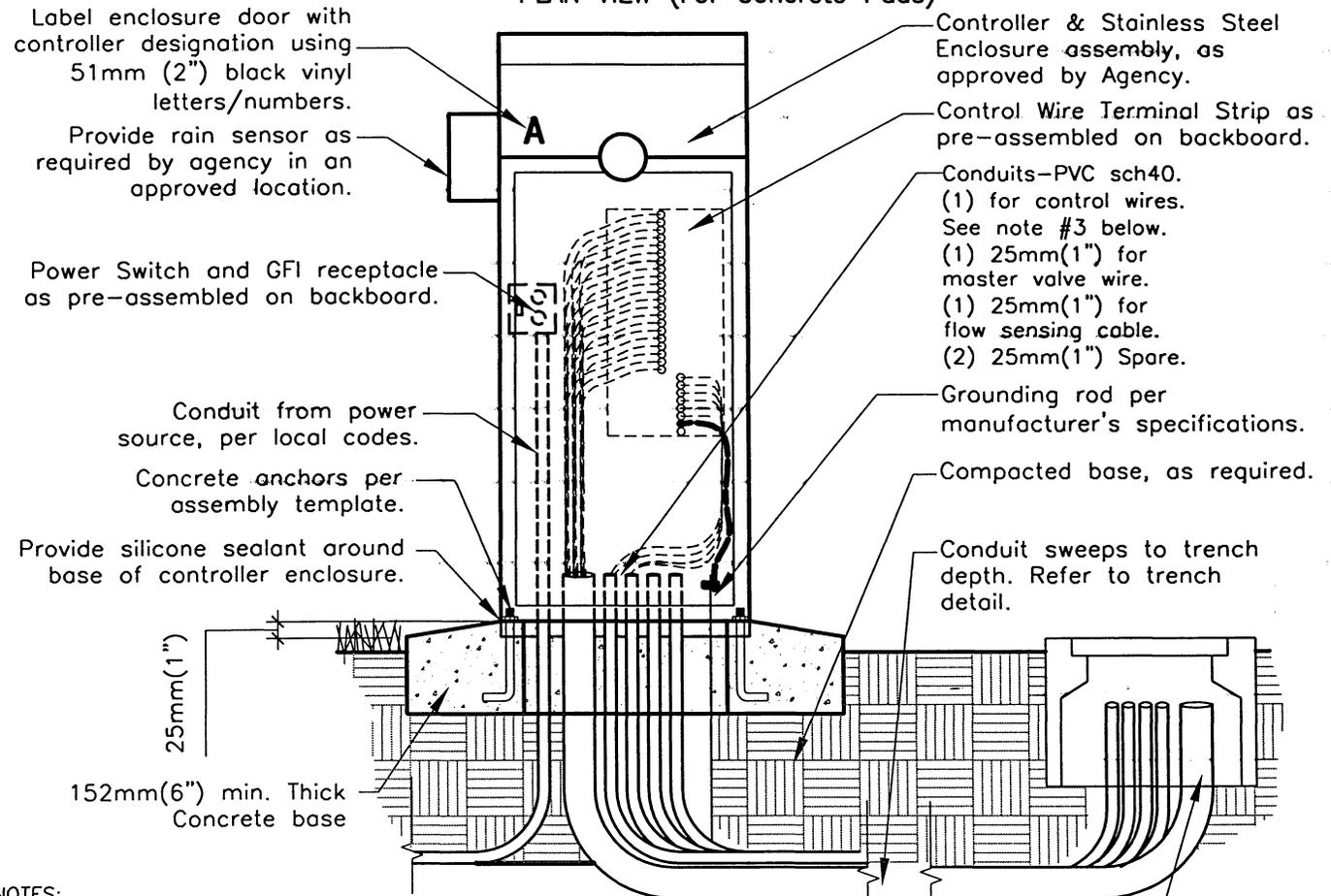
1. Bedding material shall be sand as approved by the agency and trench shall be
  2. free of rocks.
- Place a 76mm (3") wide red continuous plastic tape trench marker, 229mm (9") to 305mm (12") below finish grade, directly above the direct burial control wires.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<b>CONTROL WIRE / CABLE INSTALLATION</b>
Add Metric		T. Stanton	03/03	Chairperson R.C.E. 19246	
UPDATE		M. Coro	02/05	Date	
				DRAWING NUMBER <b>I-16</b>	



Note: All pads to slope away from controller.

**PLAN VIEW (For Concrete Pads)**



**FRONT VIEW**  
 Pull box installed within 1.5m (5') of controller enclosure, **LEGEND ON PLANS** as required by agency.

- NOTES:**
1. All controller assemblies and options shall be completely pre-assembled in a stainless steel enclosure.
  2. Pre-assembly shall include 25mm (1") rubber grommets where controller is attached to backboard.
  3. Control wire conduit shall be twice the diameter of the wire bundle, 51mm (2") minimum.
  4. Provide separate circuit breaker for controller(s) at electrical control panel and label.

Or approved agency symbol

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Coro	05/04

**SAN DIEGO REGIONAL STANDARD DRAWING**

**AUTOMATIC CONTROLLER  
 PEDESTAL MOUNTED**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 05-27-2004

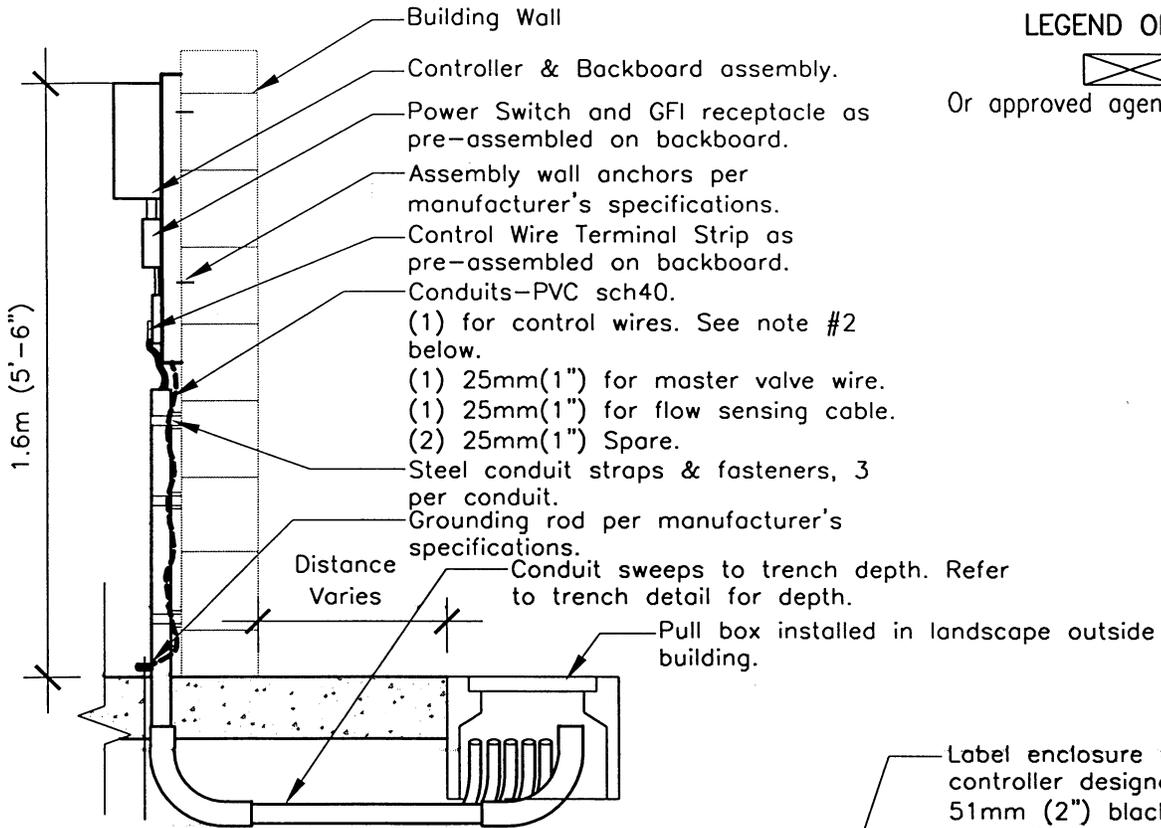
Chairperson R.C.E. 19246 Date

**DRAWING NUMBER 1-17**

LEGEND ON PLANS



Or approved agency symbol



SIDE VIEW

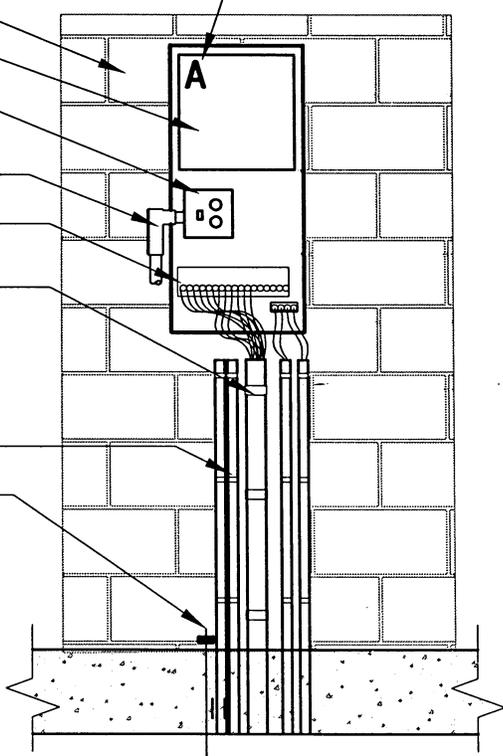
Building Wall

Label enclosure door with controller designation using 51mm (2") black vinyl letters/numbers.

- Controller & Backboard assembly.
- Power Switch and GFI receptacle as pre-assembled on backboard.
- Power source conduit per local codes.
- Control Wire Terminal Strip as pre-assembled on backboard.
- Conduits-PVC sch40.
  - (1) for control wires. See note #2 below.
  - (1) 25mm(1") for master valve wire.
  - (1) 25mm(1") for flow sensing cable.
  - (2) 25mm(1") Spare.
- Steel conduit straps & fasteners, 3 per conduit.
- Grounding rod per manufacturer's specifications.

NOTES:

- 1) All controller assemblies and options shall be completely pre-assembled on a stainless steel backboard.
- 2) Control wire conduit shall be twice the diameter of the wire bundle, 50mm(2") minimum.
- 3) Provide separate circuit breaker for controller(s) at electrical control panel and label.
- 4) Provide rain sensor as required by agency in an approved location.



FRONT VIEW

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	05/04

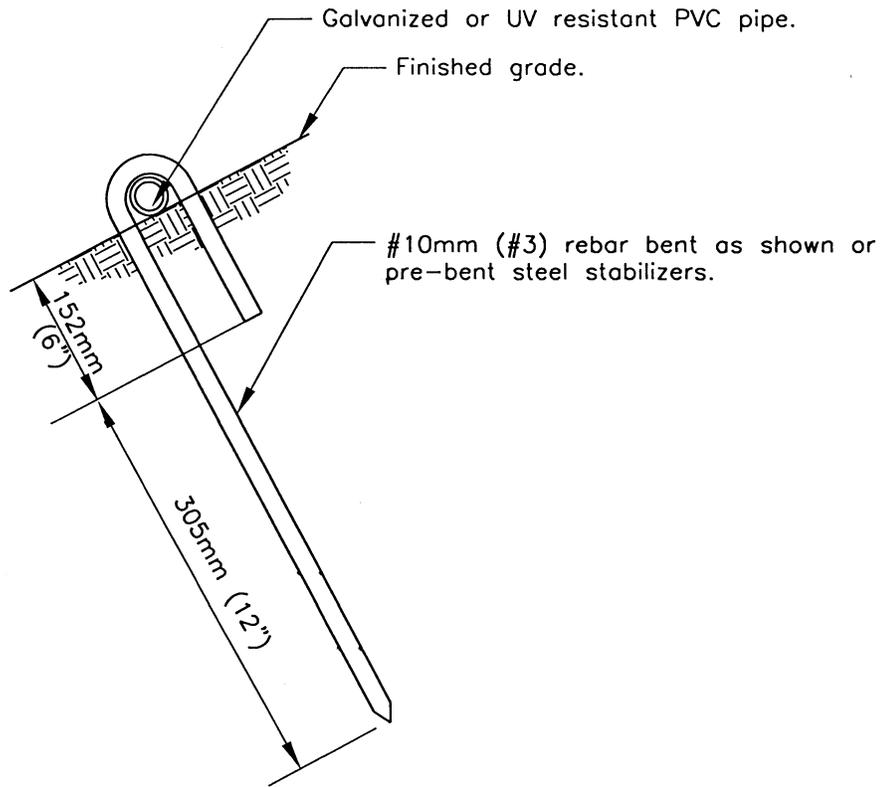
SAN DIEGO REGIONAL STANDARD DRAWING

**AUTOMATIC CONTROLLER  
INDOOR WALL MOUNT**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 05-27-2004  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-18**

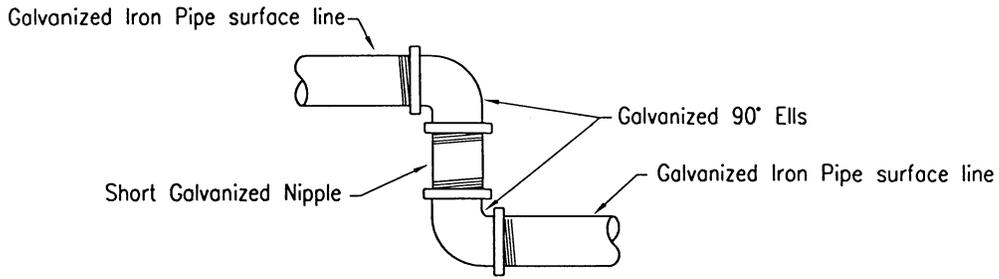


SIDE VIEW

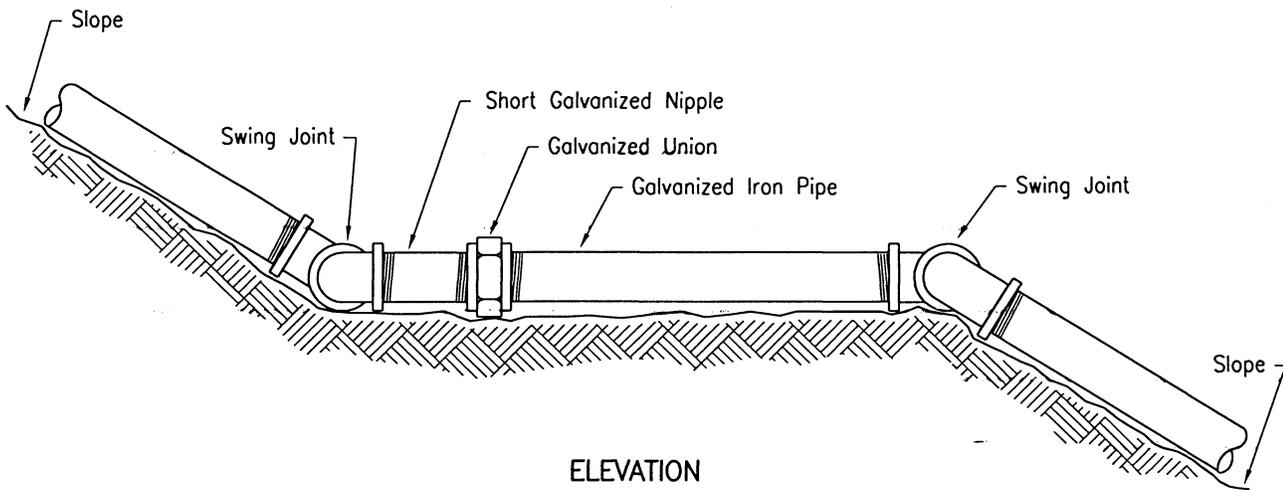
**NOTE**

Stabilizers shall be placed no greater than 4.50 m (15') apart, at each riser and at all fittings.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75		ON-GRADE PIPE STABILIZATION	<i>T. Stanton</i> 05-27-2004
Add Metric		T. Stanton	03/03	Chairperson R.C.E. 19246		Date
UPDATE		M. Caro	05/04	DRAWING NUMBER		<b>I-20</b>



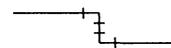
SWING JOINT DETAIL  
PLAN

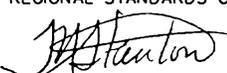


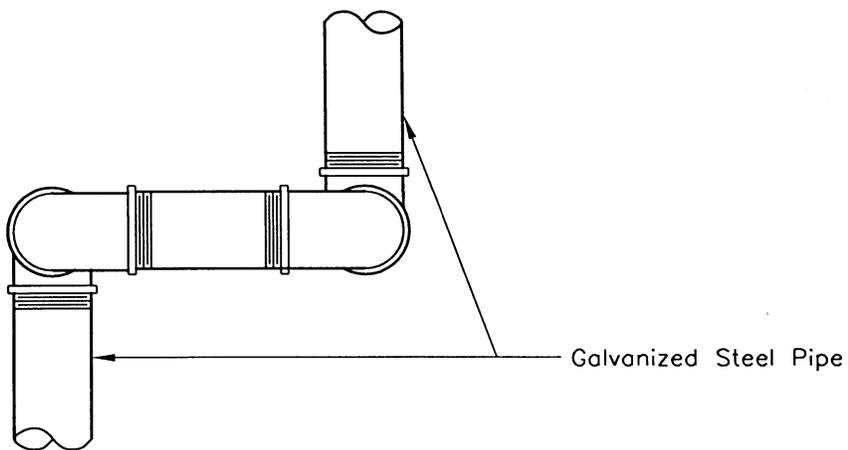
ELEVATION

**NOTE**  
Swing Joints shall be used at each change of grade.

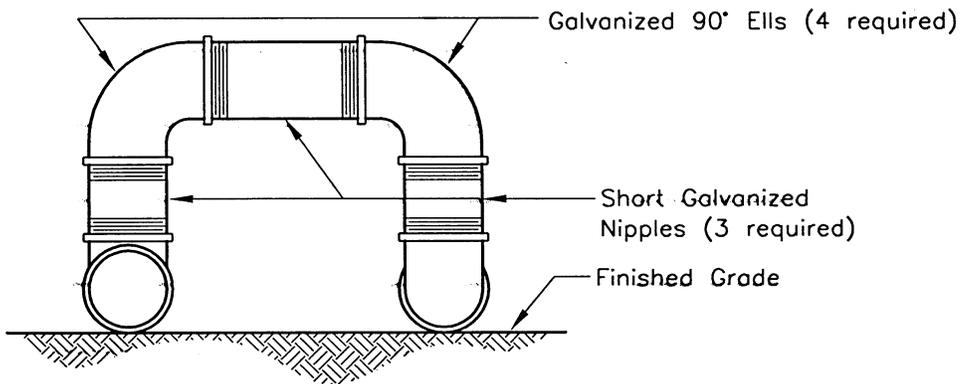
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75		<b>SWING JOINT AND PIPE INSTALLATION ON SLOPES ABOVE GROUND PIPE INSTALLATIONS</b>	 3/01/2003 Chairperson R.C.E. 19246 Date
Add Metric		T. Stanton	03/03	DRAWING NUMBER		1-23
Reviewed		T. Stanton	04/06			



PLAN

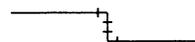


ELEVATION

NOTES

1. Double swing joint shall be used where changes of grade and alignment occur simultaneously.
2. Double swing joint shall be used for expansion joint on long runs of galvanized pipe. (91.44m (300') maximum runs)

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Reviewed		T. Stanton	04/06

SAN DIEGO REGIONAL STANDARD DRAWING

**DOUBLE SWING JOINT  
ABOVE GROUND PIPE INSTALLATIONS**

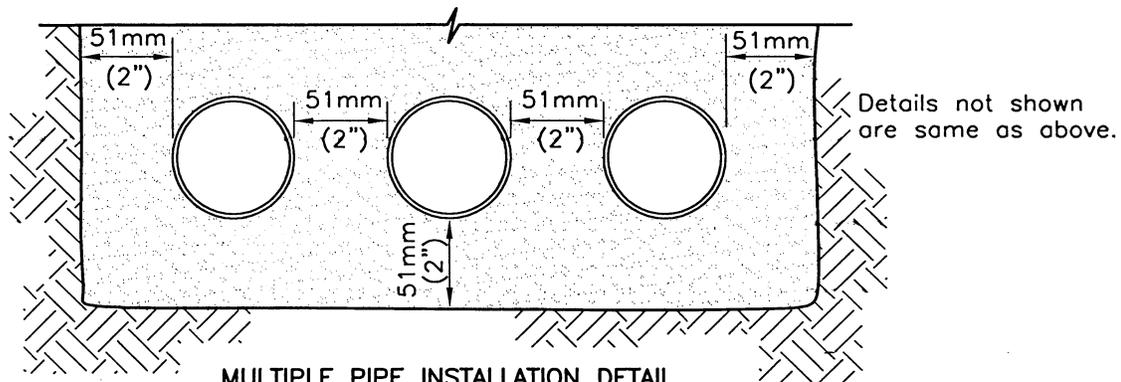
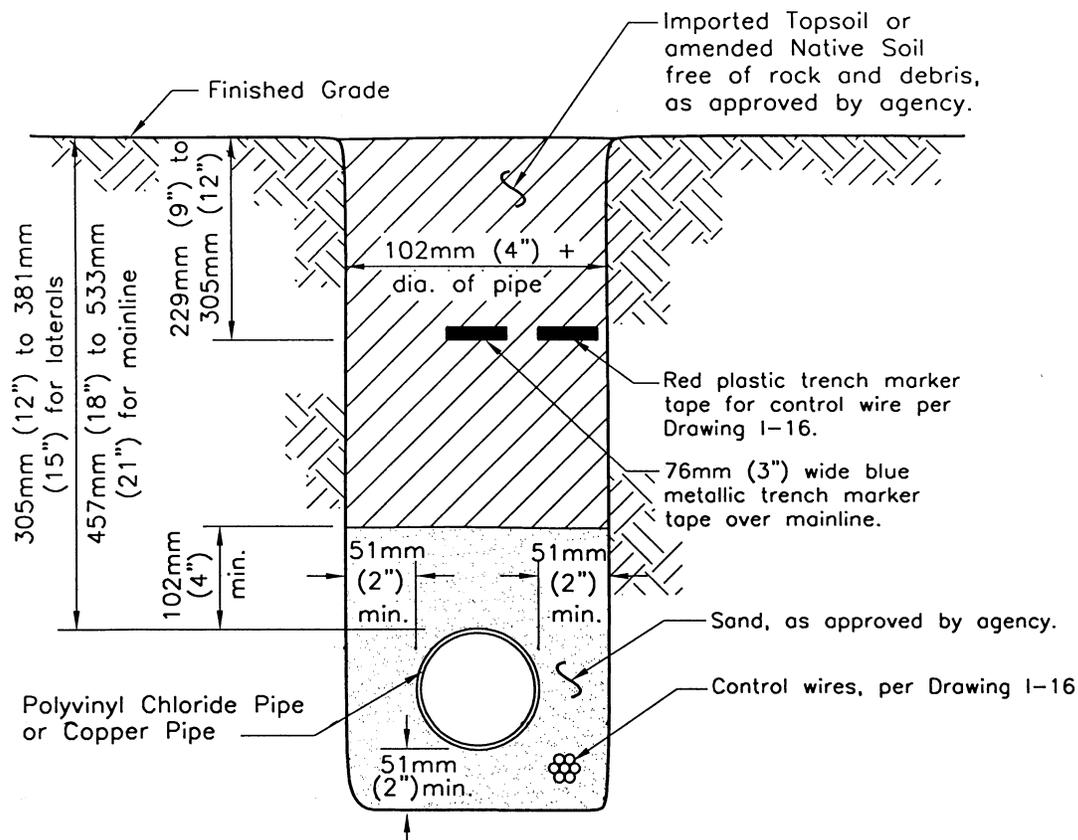
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 3/01/2003

Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER

**1-24**

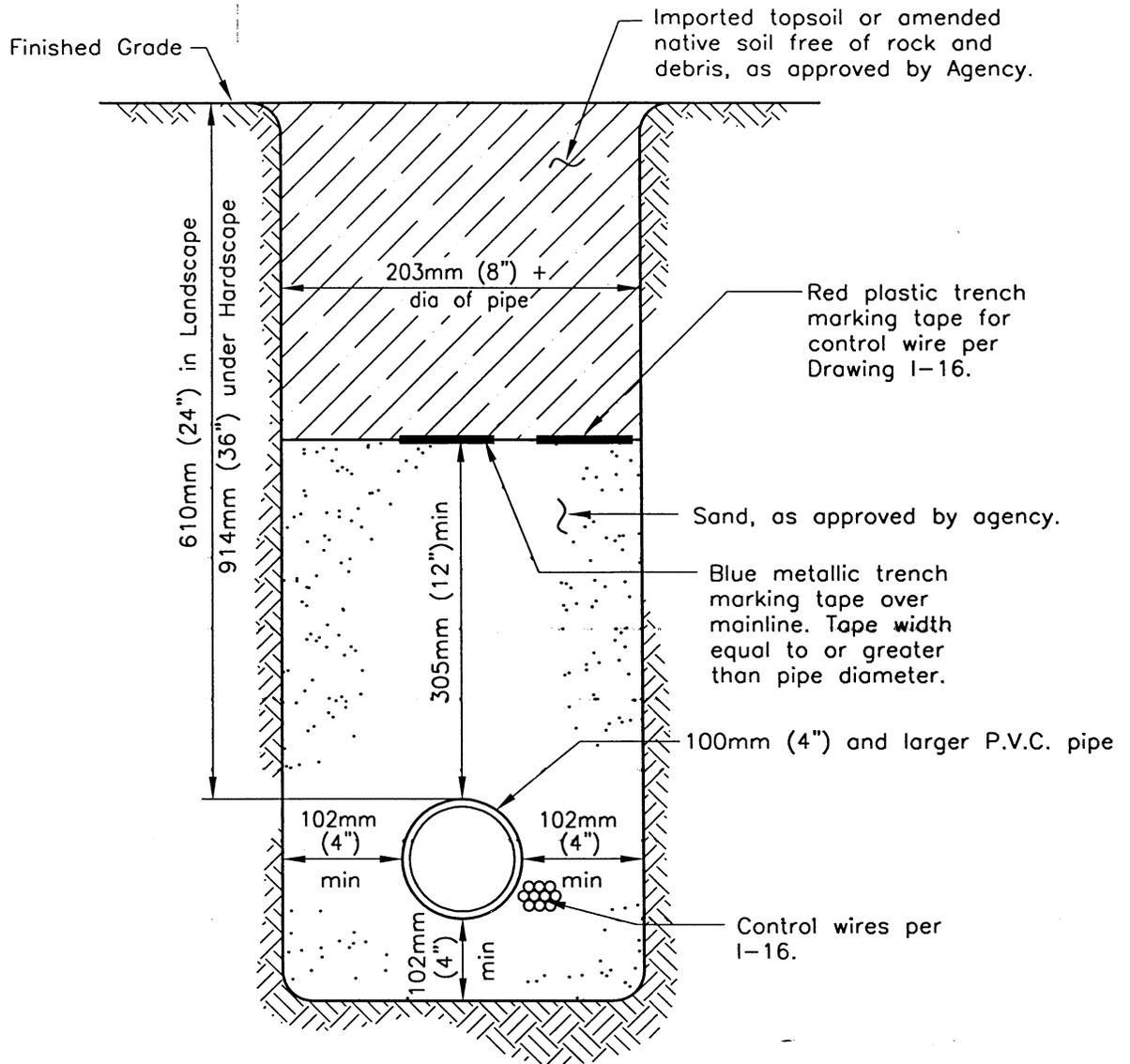


**MULTIPLE PIPE INSTALLATION DETAIL**  
(Non-pressure pipe only, see Note 6 for pressure pipe)

**NOTES**

1. Backfill material shall be compacted to a relative compaction of 90% or more.
2. All P.V.C. pipe shall lay free in the trench with no induced strain and with sufficient allowance for expansion and contraction as recommended by the manufacturer.
3. Teflon tape, 19mm (3/4") wide shall be used on all threaded connections.
4. The letter W shall be stamped or chiseled on the improvement (curb-sidewalk) directly above the pressure pipeline.
5. All plastic pipe under pavement shall be installed in a Sch. 40 P.V.C. sleeve twice the diameter of the pipe.
6. Minimum horizontal clearance between pressure pipes shall be 152mm (6")

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Parkinson	02/95		<b>IRRIGATION TRENCH P.V.C. AND/OR COPPER PIPE (76mm (3") AND SMALLER)</b>
Add Metric		T. Stanton	03/03		
UPDATE		M. Caro	06/04	DRAWING NUMBER	
				<b>I-25</b>	



**NOTES**

1. Backfill material shall be compacted to a relative compaction of 90% or more.
2. All pipeline fittings shall be epoxy coated ductile iron. All fittings shall have thrust blocks per W-17 or joint restraints.
3. The letter 'W', for pressure pipeline and 'E', for control wires shall be stamped or chiseled on the improvement (curb-sidewalk) directly above the pressure pipeline and wires respectively.
4. No P.V.C. pressure pipeline shall be installed within 914mm (3') of any utility, unless otherwise specified.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	05/04

**SAN DIEGO REGIONAL STANDARD DRAWING**

**IRRIGATION TRENCH DETAIL  
100mm (4") AND LARGER P.V.C. MAINLINE**

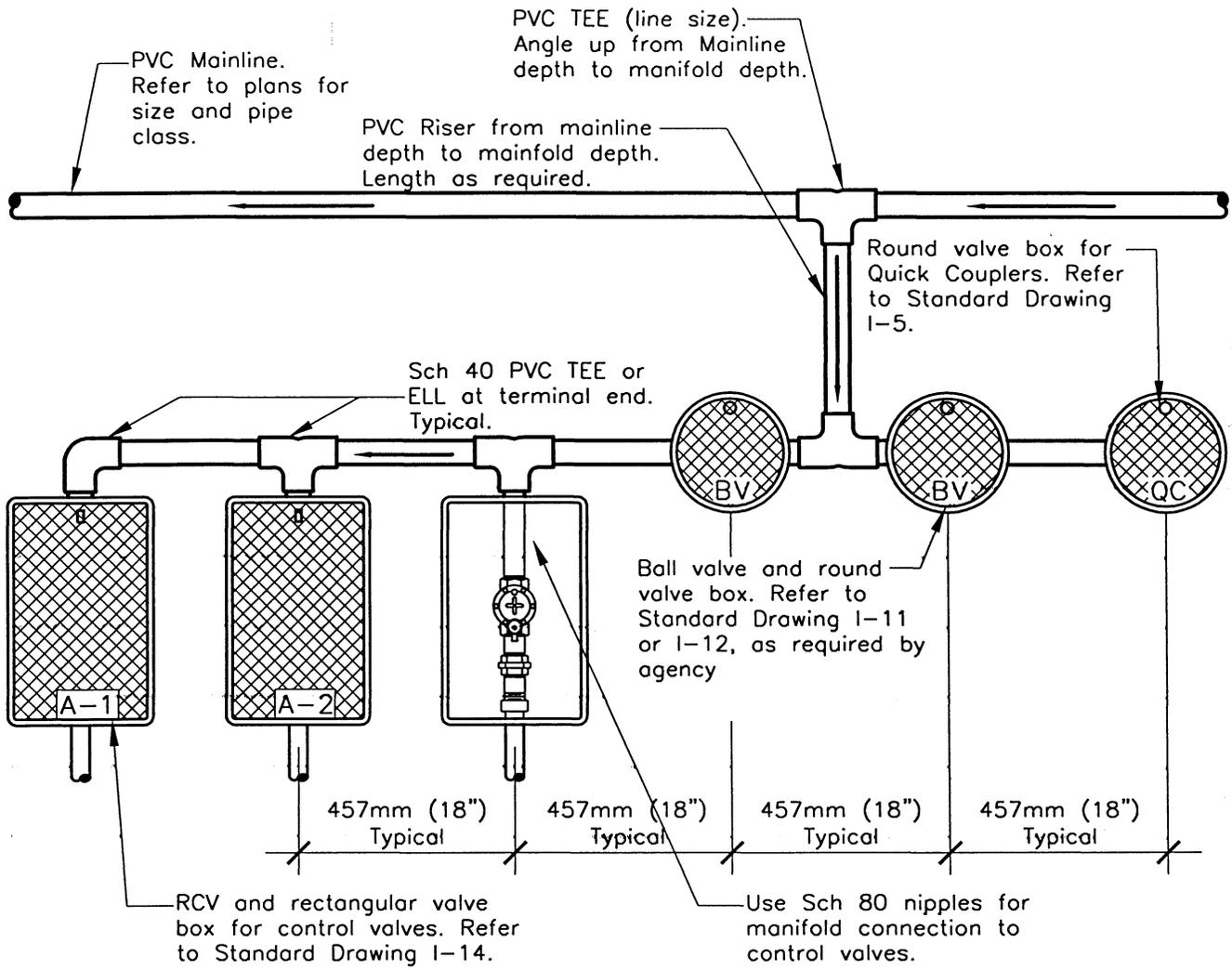
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 05-27-2004

Chairperson R.C.E. 19246 Date

DRAWING NUMBER

**I-26**



**NOTES**

1. All PVC Pipe used in manifold assemblies shall of the same class as specified for the mainline, unless otherwise specified.
2. All valve boxes shall be heat branded with the appropriate identification. Refer to plans and specifications.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	04/05

**SAN DIEGO REGIONAL STANDARD DRAWING**

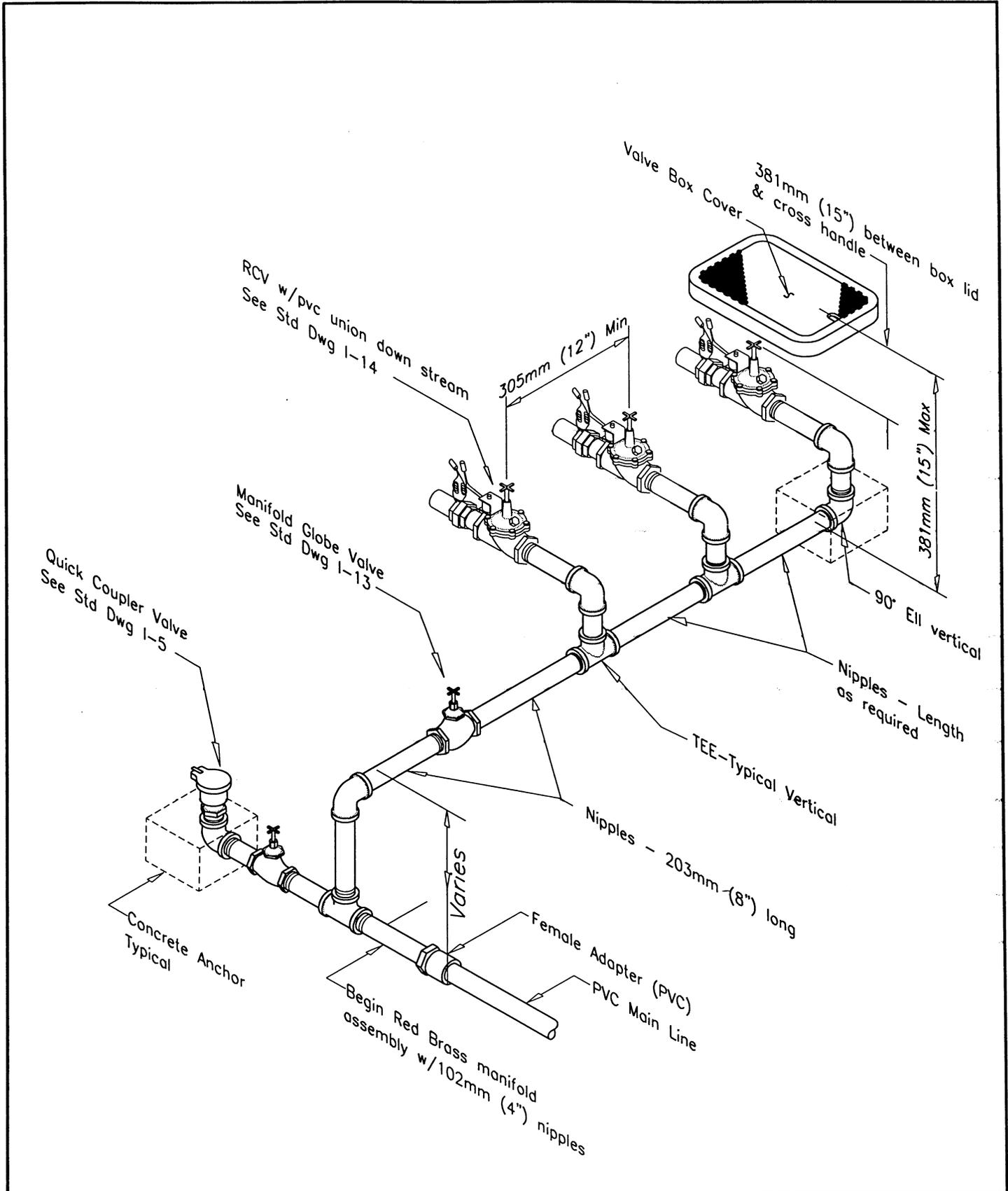
**REMOTE CONTROL VALVE MANIFOLD ASSEMBLY WITH P.V.C. PIPE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 04/28/2005

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-32**



Revision	By	Approved	Date
ORIGINAL		Parkinson	05/92
Add Metric		T.Stanton	03/03
Updated		M.Caro	04/05

**SAN DIEGO REGIONAL STANDARD DRAWING**

**REMOTE CONTROL VALVE  
MANIFOLD ASSEMBLY WITH BRASS PIPE**

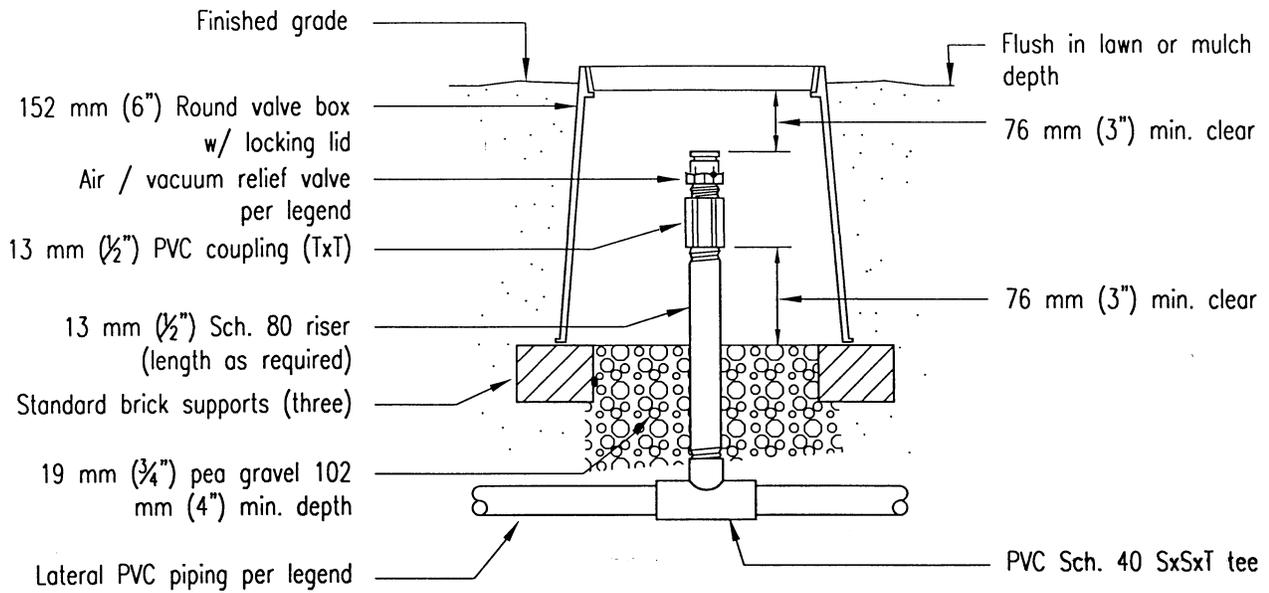
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 04/28/2005

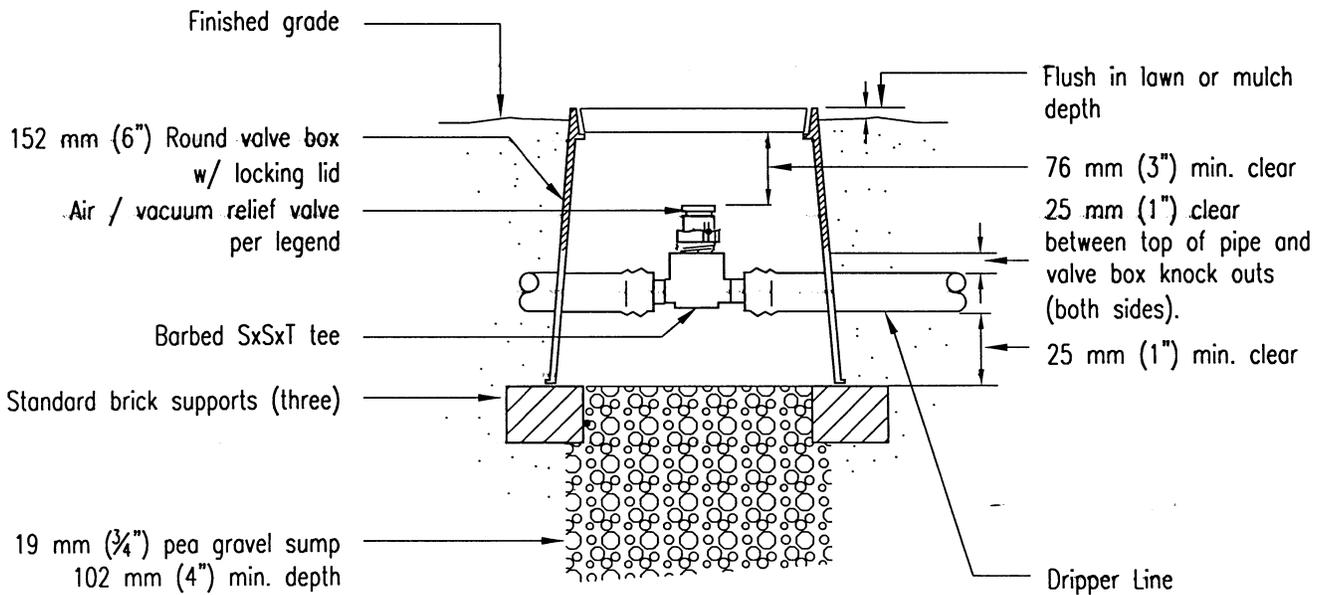
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-33**





**PLUMBED TO PVC**



**PLUMBED TO DRIPPER LINE**

**NOTES:**

1. Install air/vacuum relief valve at high point(s) in valve circuit.
2. Heat-brand valve box lid "AR" or as per agency requirement.
3. Valve shall be centered in box.

**LEGEND ON PLANS**

(A)

Or approved agency symbol

Revision	By	Approved	Date
ORIGINAL		M. Caro	1/06

**SAN DIEGO REGIONAL STANDARD DRAWING**

**AIR/VACUUM RELIEF VALVE**

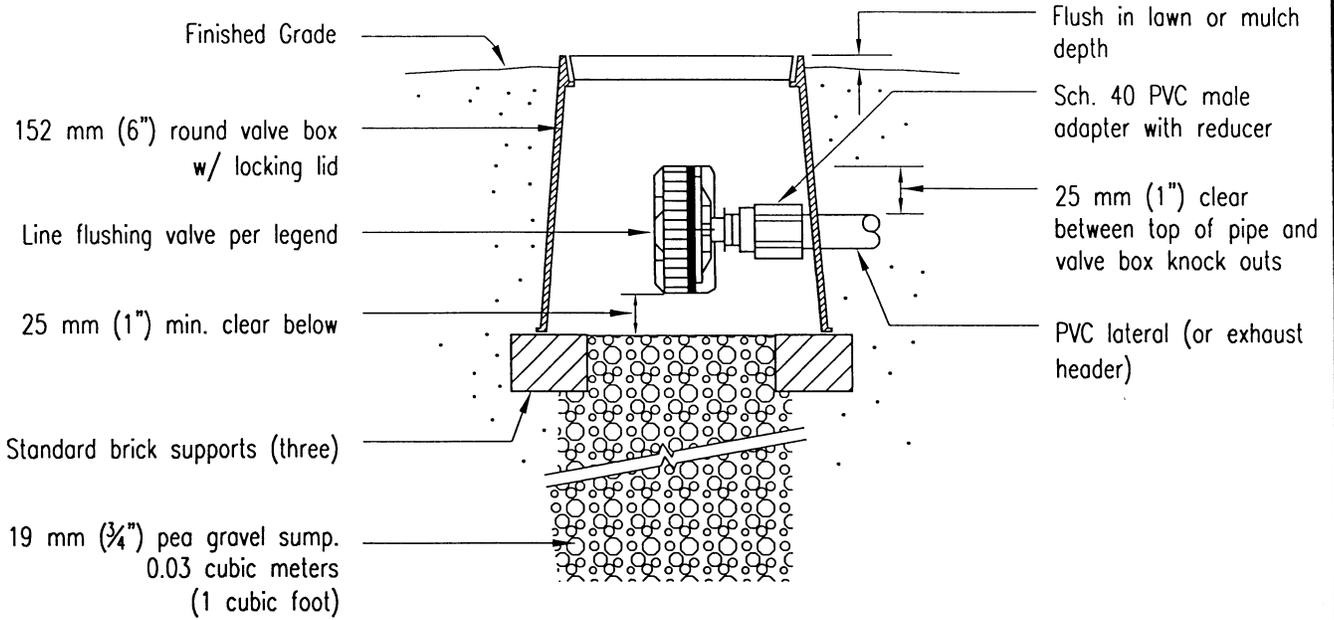
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 01/26/2006

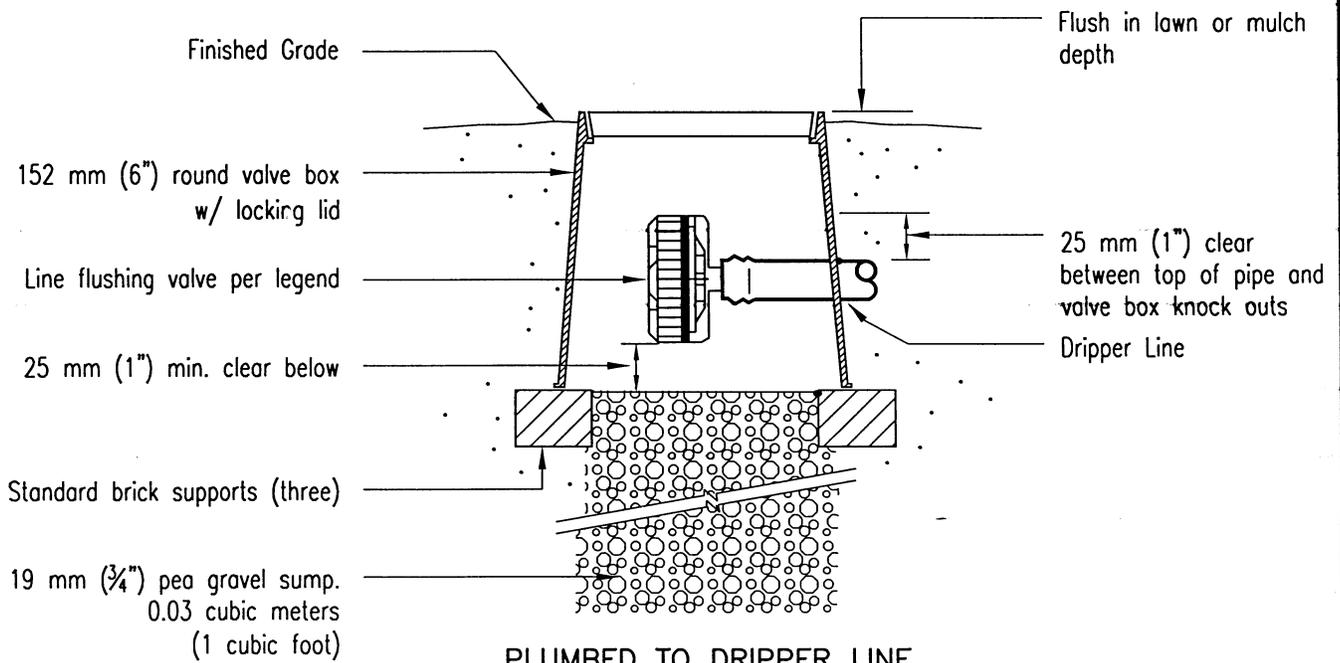
Chairperson R.C.E. 19246 Date

DRAWING NUMBER

**I-36**



PLUMBED TO PVC



PLUMBED TO DRIPPER LINE

**NOTES:**

1. Install flush valve(s) at furthest point(s) in system from the control valve and at low points as needed per plans.
2. Heat brand valve box lids "FV" or as per agency requirement.
3. Valve shall be centered in box.

**LEGEND ON PLANS**



Or approved agency symbol

Revision	By	Approved	Date
ORIGINAL		M. Caro	1/06

**SAN DIEGO REGIONAL STANDARD DRAWING**

**DRIP IRRIGATION  
FLUSH VALVE (AUTOMATIC)**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*J. Stanton* 01/26/2006

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-37**