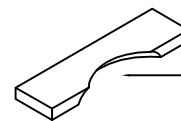


PROCEDURE:

- STEP 1. BUILD A 609 mm X 609 mm LEVEL FLAT BASE OF COMPACTED CLAY USING A FLAT TAMPER UP TO WITHIN 12 mm OF THE TOP OF THE TOP FLANGE.
- STEP 2. CUT OR NOTCH OUT TWO OF THE 50X200X600 CONCRETE BLOCKS THE WIDTH OF VALVE FLANGE AND LAY ON BASE PARALLEL TO PIPE.
- STEP 3. INSTALL TWO 50X200X600 CONCRETE BLOCKS TRANSVERSELY OR AT RIGHT ANGLES TO THE FIRST SET AND NO CLOSER TO THE FLANGE THAN THE CUTOUT SO THAT THEY DO NOT PROTRUDE OVER THE FLANGE.
- STEP 4. ADD ALTERNATE LAYERS OF CONCRETE BLOCKS MAKING SURE EDGES ARE NO CLOSER TO VALVE THAN CUTOUT, CONTINUE UNTIL MINIMUM REQUIRED CLEARANCE (100 mm) FROM TOP OF VALVE BONNET TO VALVE NUT IS OBTAINED.

- STEP 5. TWO PIECES OF CONCRETE BLOCKS ARE NOW CUT OUT TO OUTSIDE CIRCUMFERENCE OF BONNET AND UNDERCUT TO COMODATE BONNET THICKNESS.



CUT TO
CIRCUMFERENCE
OF VALVE
BONNET AND BEVEL

- STEP 6. APPROPRIATE LENGTHS OF BOTTOM AND TOP SECTION OF CASING ARE NOW INSTALLED AND BACKFILLED WITH COMPACTED CLAY TO ABOVE JOINT.



TITLE:

VALVE BOX CONSTRUCTION DETAIL

STANDARD DETAILS

SCALE: N.T.S.

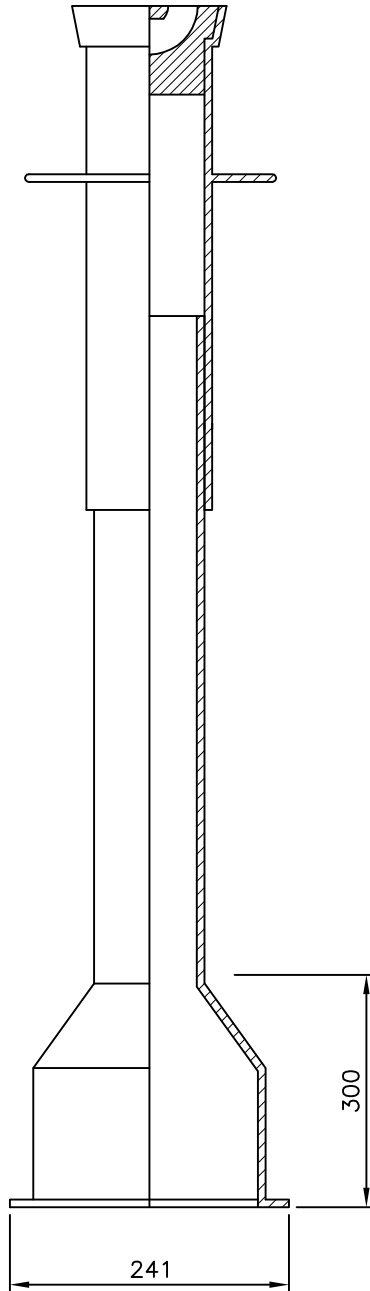
DATE: SEPTEMBER 2010

STD. DWG NO.

4-100



STANDARD VALVE PLUG

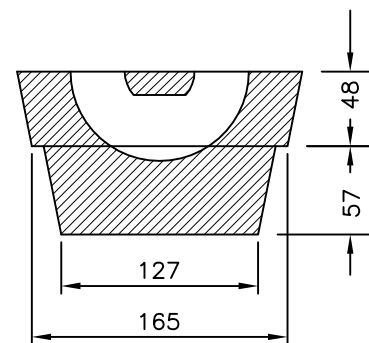
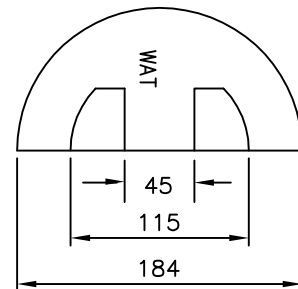


SLIDING TYPE A

NOTES:

1. VALVE BOXES SHALL BE EXTERNALLY AND INTERNALLY COATED WITH ASPHALTIC OR EPOXY COATING.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

PLUG C/W CORED HANDHOLES
AND MARKED 'WATER'



TITLE:

VALVE BOX DETAIL —
SLIDING TYPE A

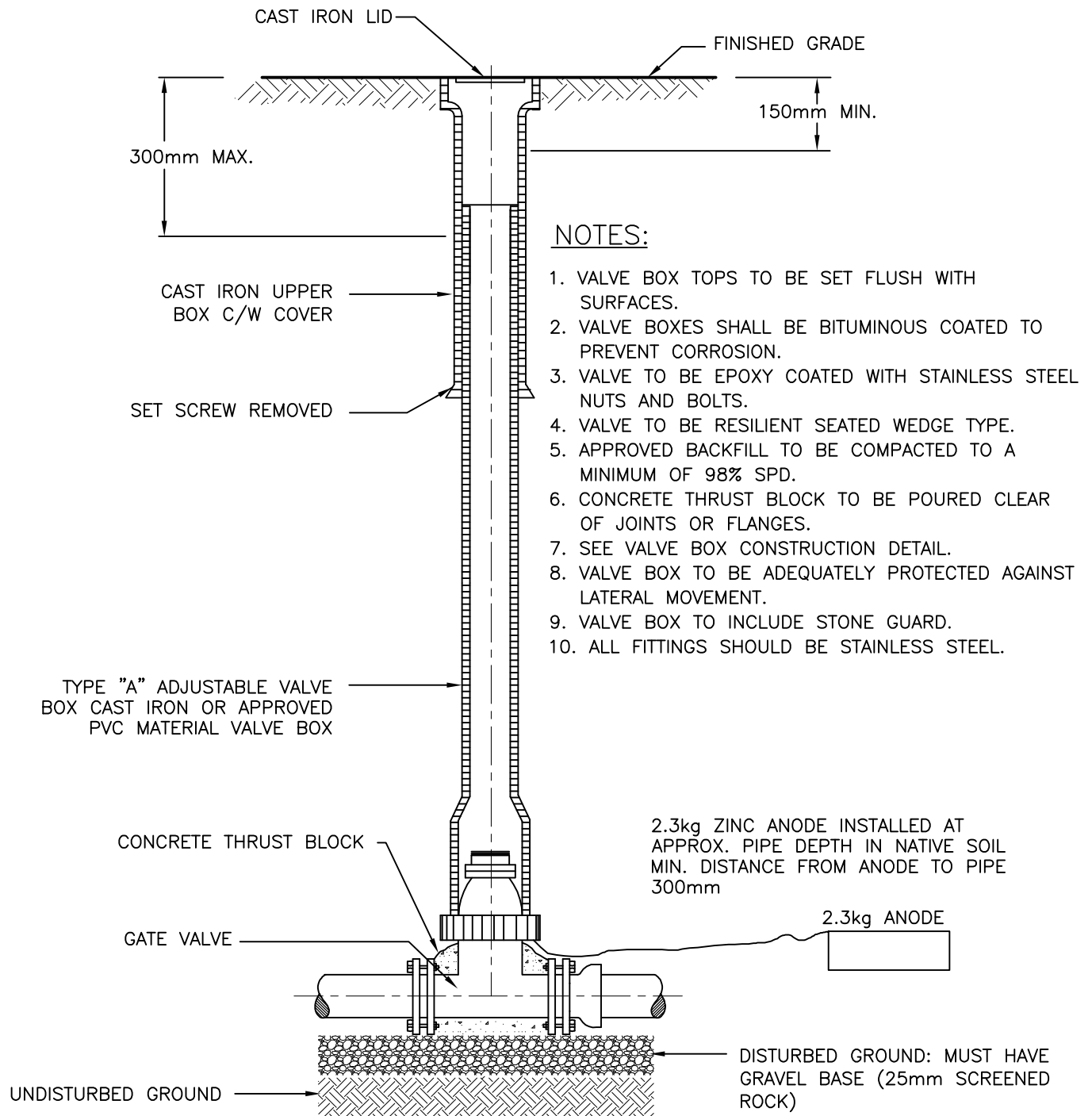
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-101



NOTES:

1. VALVE BOX TOPS TO BE SET FLUSH WITH SURFACES.
2. VALVE BOXES SHALL BE BITUMINOUS COATED TO PREVENT CORROSION.
3. VALVE TO BE EPOXY COATED WITH STAINLESS STEEL NUTS AND BOLTS.
4. VALVE TO BE RESILIENT SEATED WEDGE TYPE.
5. APPROVED BACKFILL TO BE COMPACTED TO A MINIMUM OF 98% SPD.
6. CONCRETE THRUST BLOCK TO BE POURED CLEAR OF JOINTS OR FLANGES.
7. SEE VALVE BOX CONSTRUCTION DETAIL.
8. VALVE BOX TO BE ADEQUATELY PROTECTED AGAINST LATERAL MOVEMENT.
9. VALVE BOX TO INCLUDE STONE GUARD.
10. ALL FITTINGS SHOULD BE STAINLESS STEEL.



TITLE:

MAIN VALVE CASING DETAIL

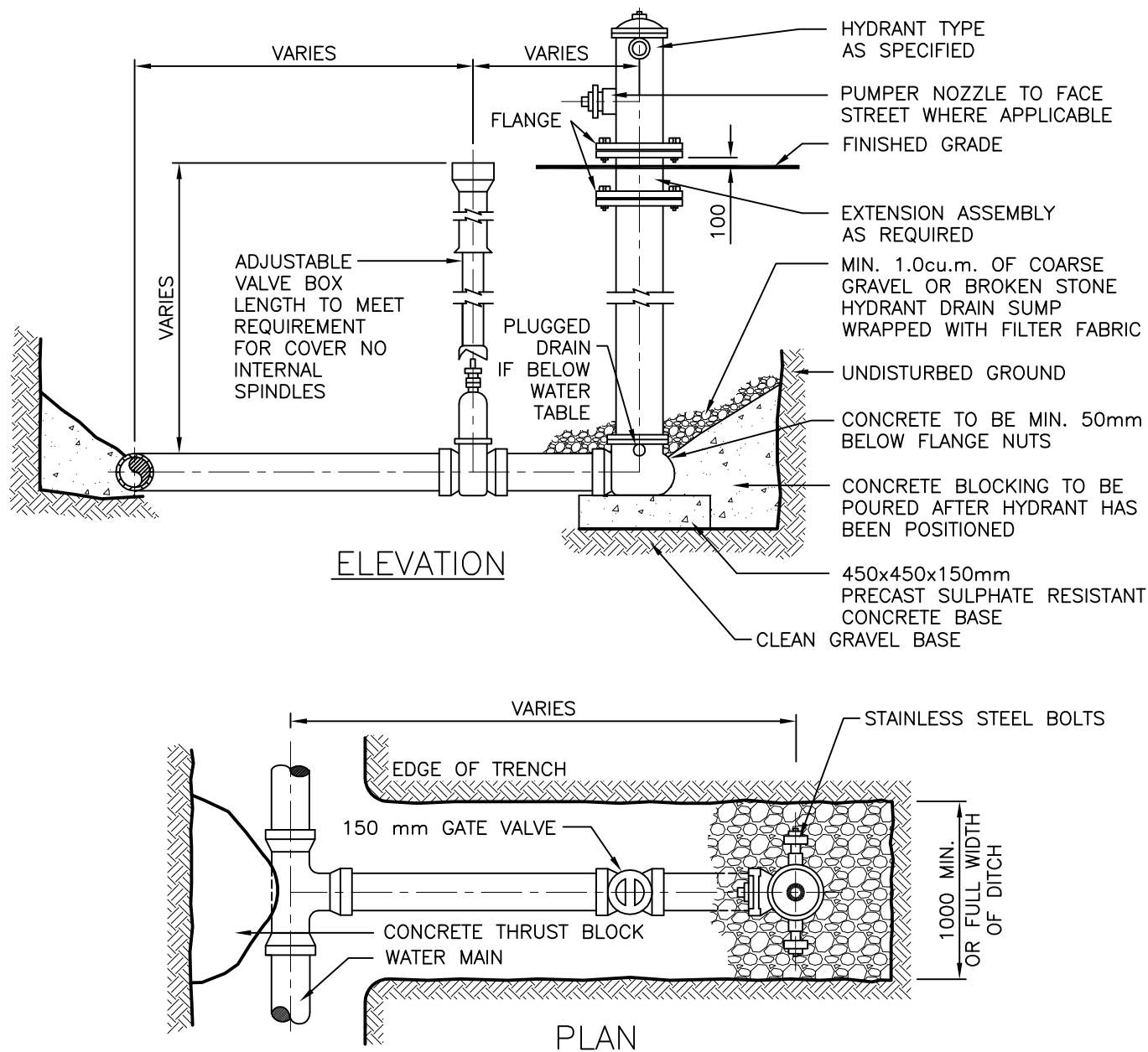
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-102



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. CONCRETE TO BE 25MPa @ 28 DAYS.
3. HYDRANTS SHALL BE COMPRESSION TYPE CONFORMING TO AWWA C502 COMPLETE WITH PLUGGED DRAINS, STAINLESS STEEL BOLTS AND FITTINGS AND ASPHALTIC COATED HYDRANT COMPONENTS.
4. PROVIDE CATHODIC PROTECTION AS SHOWN ON STD. DWG. NO. A-110.
5. THRUST BLOCKS TO BE PLACED AGAINST UNDISTURBED GROUND HAVING A MINIMUM BEARING OF 7300kg/m²
6. CONCRETE TO BE POURED CLEAR OF ALL FLANGES, JOINTS, AND HYDRANT DRAIN.
7. APPROVED BACKFILL TO BE COMPACTED TO A MINIMUM OF 98% SPD.
8. DO NOT ALLOW PONDING OR STANDING WATER AROUND HYDRANT.
9. PLACEMENT OF HYDRANT AND ORIENTATION OF PUMPER NOZZLE TO BE APPROVED.
10. HYDRANT TO BE PLUGGED OR DRAINING AS DICTATED BY SITE CONDITIONS.
11. THREAD SIZES SHOULD CONFORM TO AMERICAN STANDARD THREAD SIZES.



TITLE:

TYPICAL HYDRANT & VALVE DETAIL

STANDARD DETAILS

SCALE: N.T.S.

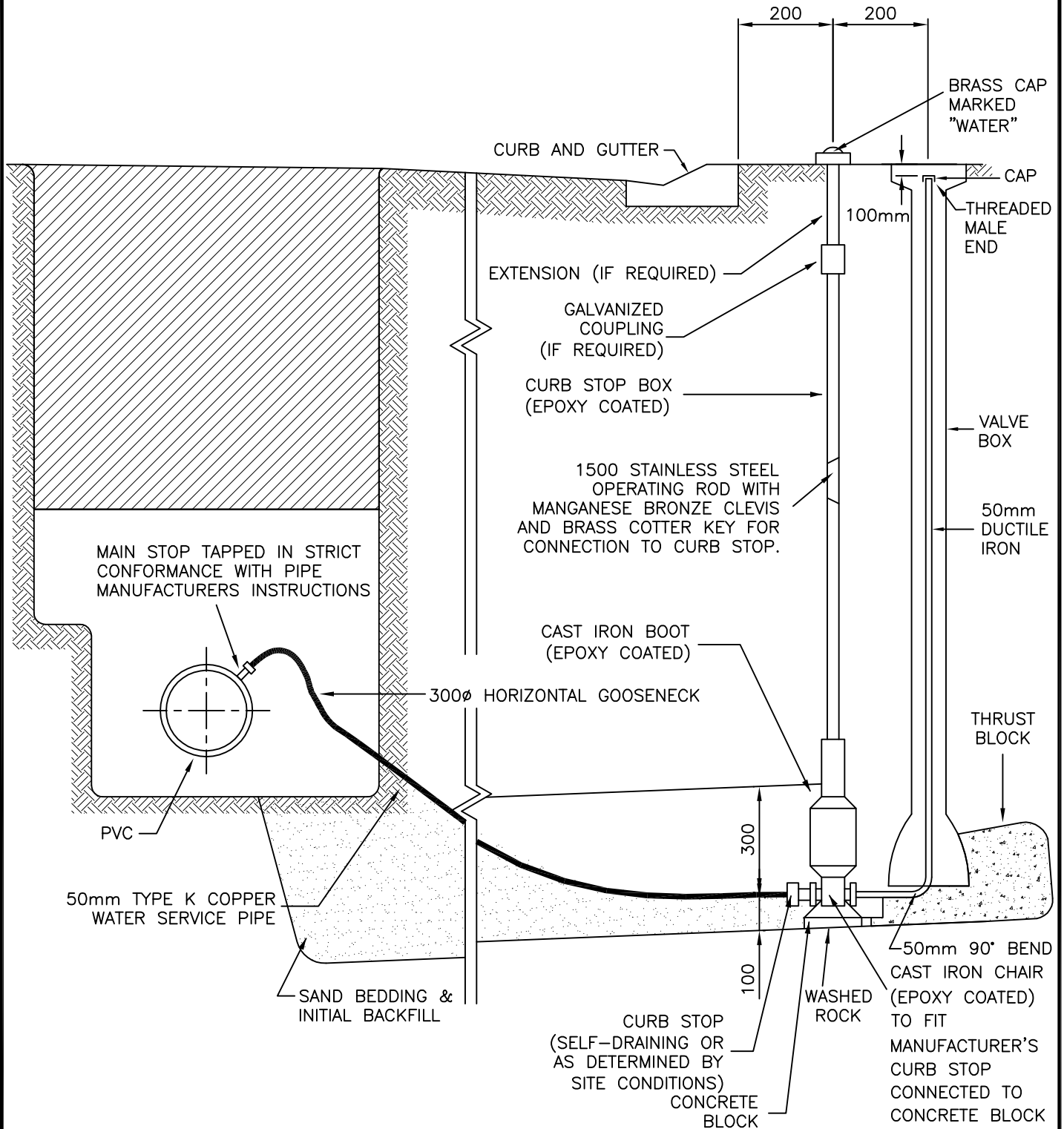
DATE: SEPTEMBER 2010

STD. DWG NO.

4-200

NOTES:

1. COPPER LINE SHALL BE ONE CONTINUOUS PIECE, UNLESS LENGTH EXCEEDS 30m MIN. AND ONLY THEN WILL A DOUBLE UNION BE ALLOWED.
2. INVERT ELEVATION SHALL BE 2.4m BELOW ESTABLISHED FINISHED GRADE UNLESS APPROVED BY THE COUNTY
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.



TITLE:

FLUSHING VALVE

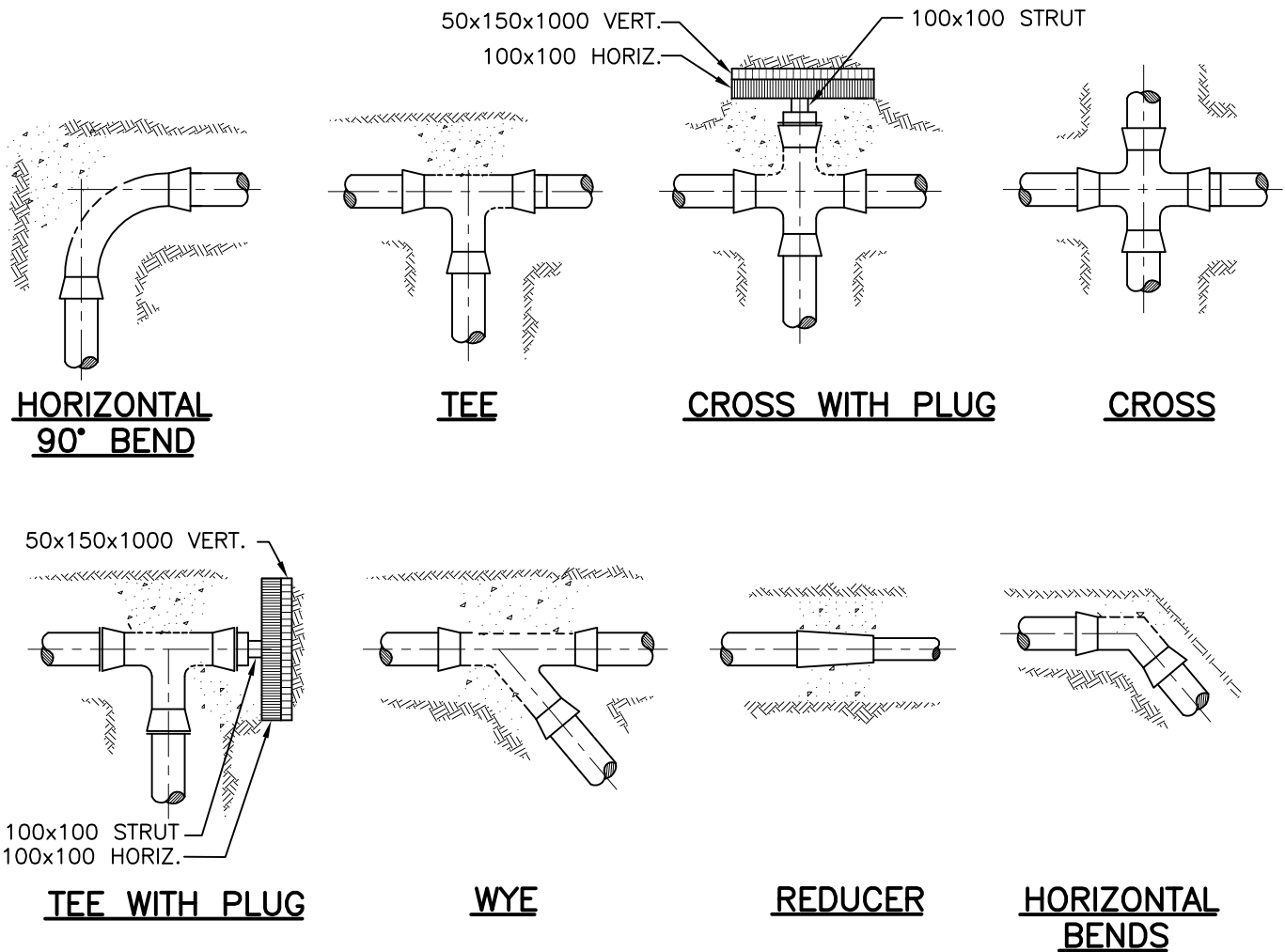
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-201



NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL FITTINGS TO BE WRAPPED IN 6MIL POLYETHYLENE PRIOR TO POURING CONCRETE.
3. ALL CONCRETE TO BE MIN. 28MPa @ 28 DAYS.
4. THE REQUIRED BEARING AREA SHALL BE DETERMINED BY THE CONTRACTOR TO SUIT SOIL CONDITIONS AND AS APPROVED BY THE COUNTY.

HORIZONTAL THRUST BLOCK BEARING AREA						
MINIMUM CONCRETE AREA IN CONTACT WITH UNDISTURBED SOIL (sq. m)						
FITTING	SIZE OF MAIN (mm)					
	150	200	250	300	400	500
DEAD END MAIN & TEE	0.35	0.62	0.97	1.40	2.49	3.90
11 1/4 DEGREE BEND	0.07	0.12	0.20	0.28	0.50	0.78
22 1/2 DEGREE BEND	0.14	0.24	0.38	0.55	0.97	1.52
45 DEGREE BEND	0.27	0.48	0.75	1.07	1.91	2.98
90 DEGREE BEND	0.50	0.88	1.38	1.98	3.53	5.51
VALVE & REDUCER	0.35	0.62	0.97	1.40	2.49	3.90

NOTE:

- BEARING AREA CALCULATED USING THE FOLLOWING:
 - (a) HYDRAULIC PRESSURE 1380kPa.
 - (b) SOIL BEARING CAPACITY 72kPa.
- CONCRETE STRENGTH TO BE 20MPa.
- CONCRETE TO BE CLEAR OF BELLS & PIPE.
- PLACE 6MIL POLYETHYLENE BETWEEN CONCRETE AND PIPE.
- SEE DWG. 6-500 FOR "CLASS B BEDDING DETAILS" FOR "d" DEPTH.



TITLE:

THRUST BLOCK DETAILS

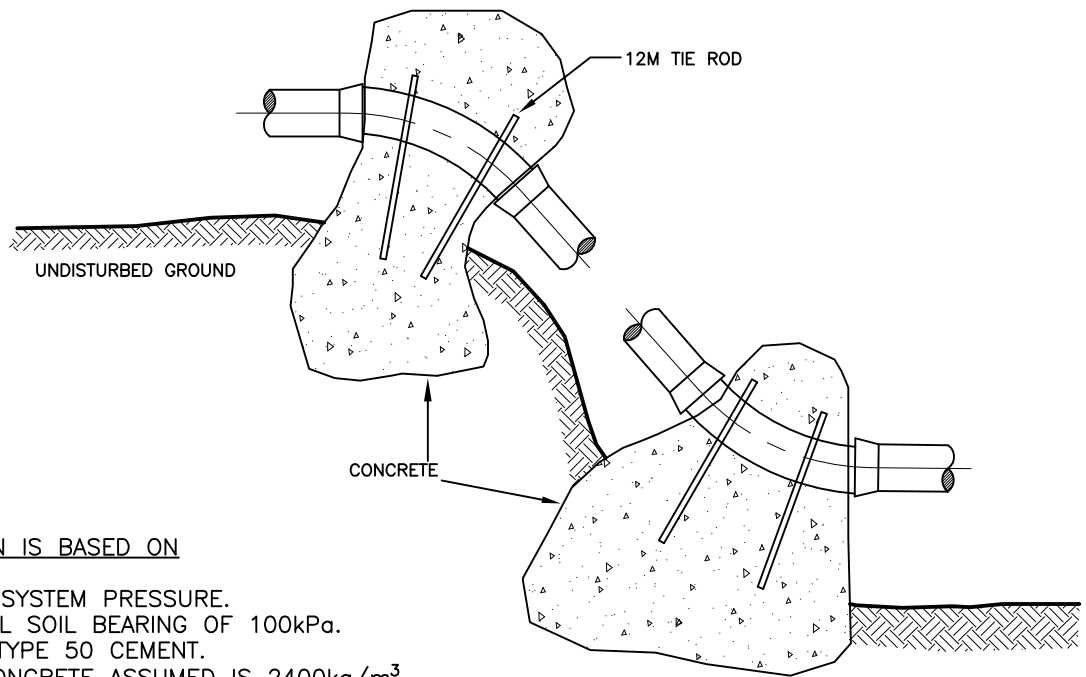
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-300



THRUST BLOCK DESIGN IS BASED ON

1. 1035kPa MAXIMUM SYSTEM PRESSURE.
2. A MINIMUM VERTICAL SOIL BEARING OF 100kPa.
3. CONCRETE 20MPa TYPE 50 CEMENT.
4. UNIT WEIGHT OF CONCRETE ASSUMED IS 2400kg/m³

UPWARD THRUST (GRAVITY) TABLE

FOR CALCULATION OF BASIC THRUST BEARING AREA (m²)

PIPE SIZE BEND	150	200	250	300	350	400	450
11.25°	0.16	0.28	0.45	0.64	0.87	1.14	1.44
22.50°	0.32	0.57	0.88	1.27	1.73	2.26	2.82
30°	0.42	0.75	1.17	1.69	2.3	3.00	3.80
45°	0.62	1.11	1.73	2.50	3.40	4.44	5.62

DOWNWARD THRUST TABLE

FOR CALCULATION OF BASIC THRUST BEARING AREA (m²)

PIPE SIZE BEND	150	200	250	300	350	400	450
11.25°	0.04	0.07	0.11	0.15	0.21	0.27	0.34
22.50°	0.08	0.13	0.21	0.30	0.41	0.53	0.67
30°	0.10	0.18	0.28	0.40	0.54	0.71	0.89
45°	0.15	0.26	0.41	0.59	0.80	1.05	1.32



TITLE:

VERTICAL BEND
THRUST BLOCK DETAIL

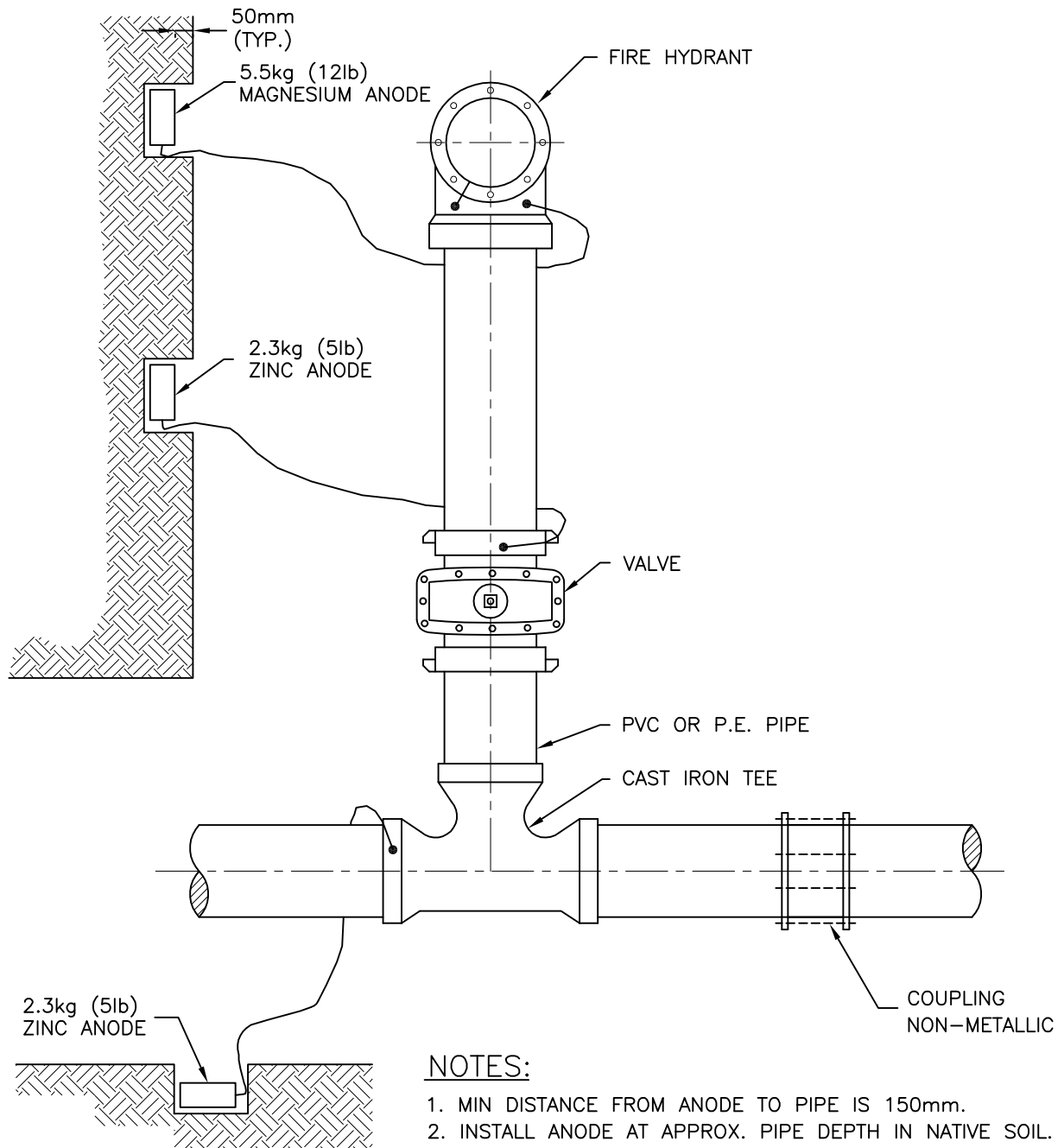
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-301



NOTES:

1. MIN DISTANCE FROM ANODE TO PIPE IS 150mm.
2. INSTALL ANODE AT APPROX. PIPE DEPTH IN NATIVE SOIL.
3. ALL ZINC ANODES ON FITTINGS AND VALVES ARE 2.3kg (5lb).
4. ALL ZINC ANODES ON HYDRANTS ARE 5.5kg (12lb).
5. ZINC ANODES TO BE EMBEDDED INTO TRENCH WALL TO PROVIDE FOR A MINIMUM OF 50mm OF NATIVE CLAY COMPLETELY SURROUNDING THE ANODE.
6. ANODES TO BE AT LEAST 300mm CLEAR OF THRUST BLOCK.
7. REPLACE CLAY OVER ANODES AND COMPACT.



TITLE:

TYPICAL ANODE INSTALLATION AT VALVES IRON FITTINGS & HYDRANTS

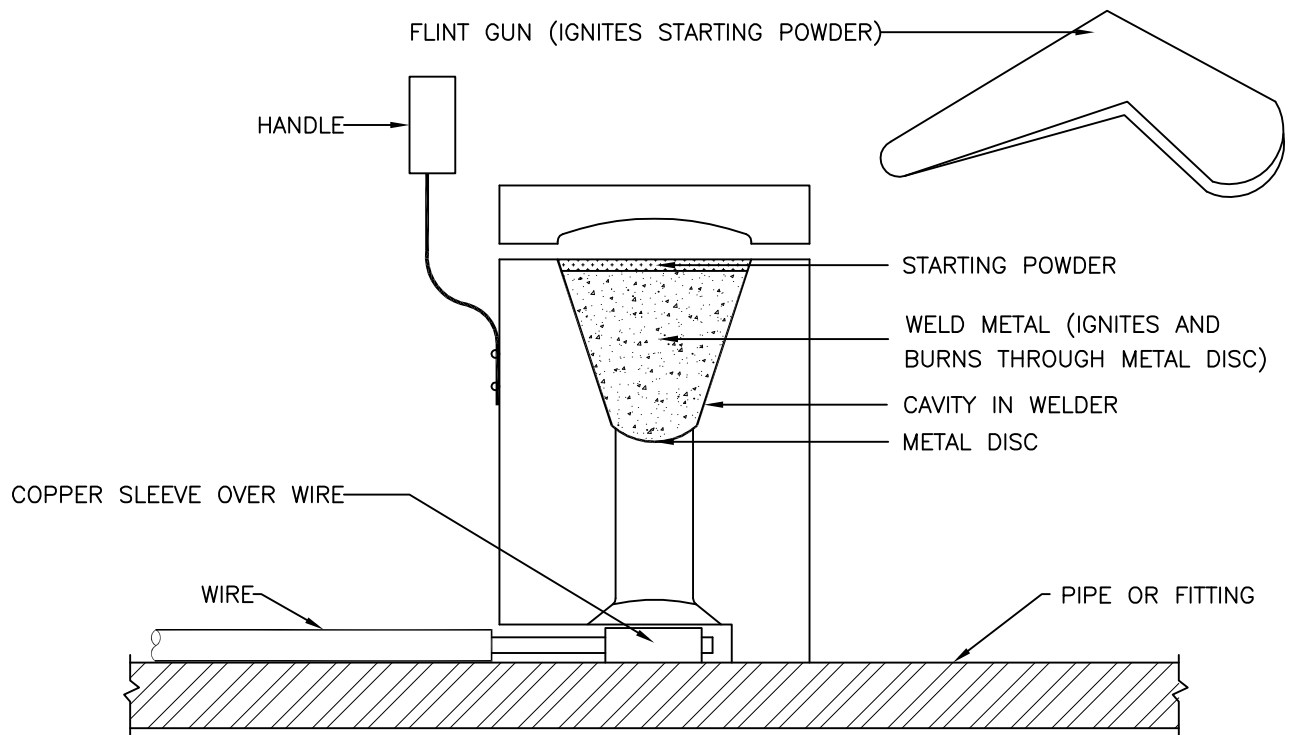
STANDARD DETAILS

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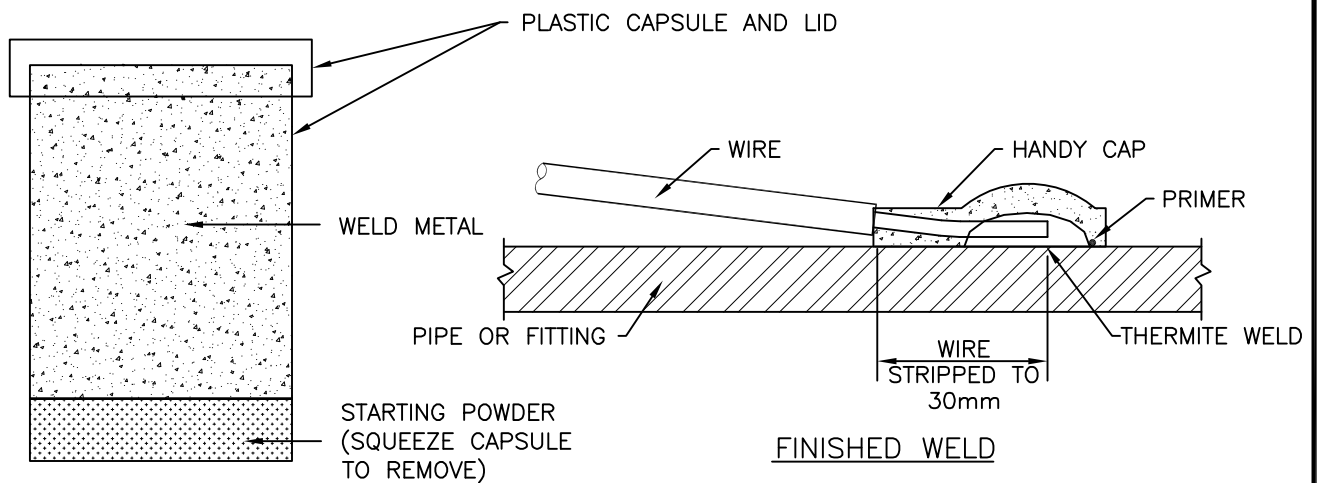
DATE: SEPTEMBER 2010

STD. DWG NO.

4-400



CADWELD



WELD METAL CAPSULE

NOTE:

CADWELD TO BE PERFORMED AS PER MANUFACTURERS SPECIFICATIONS



TITLE:

ANODE INSTALLATION CADWELD

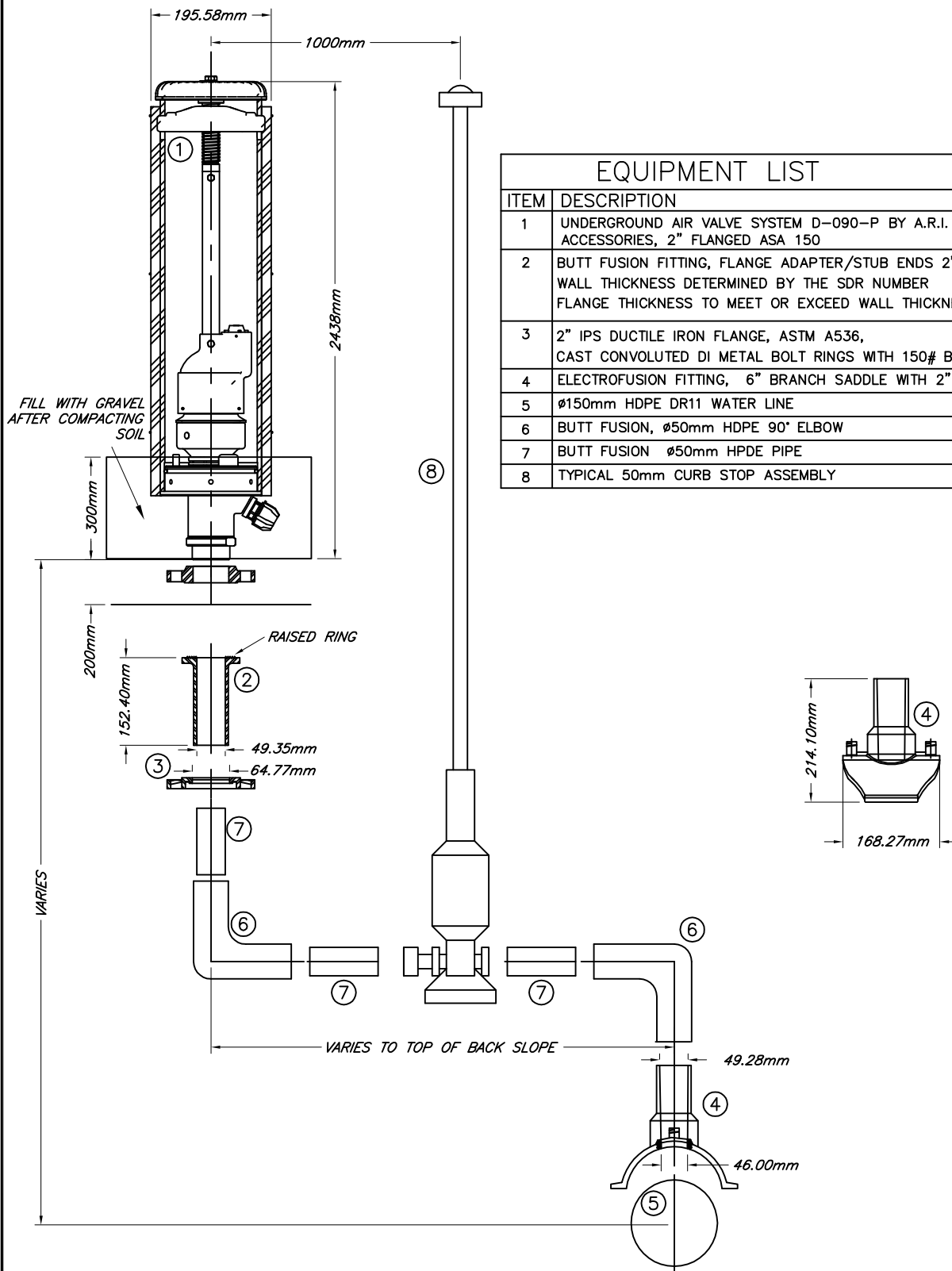
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-401



EQUIPMENT LIST	
ITEM	DESCRIPTION
1	UNDERGROUND AIR VALVE SYSTEM D-090-P BY A.R.I. FLOW CONTROL ACCESSORIES, 2" FLANGED ASA 150
2	BUTT FUSION FITTING, FLANGE ADAPTER/STUB ENDS 2" IPS, WALL THICKNESS DETERMINED BY THE SDR NUMBER FLANGE THICKNESS TO MEET OR EXCEED WALL THICKNESS
3	2" IPS DUCTILE IRON FLANGE, ASTM A536, CAST CONVOLUTED DI METAL BOLT RINGS WITH 150# BOLT HOLE PATTERN
4	ELECTROFUSION FITTING, 6" BRANCH SADDLE WITH 2" IPS BUTT OUTLET
5	Ø150mm HDPE DR11 WATER LINE
6	BUTT FUSION, Ø50mm HDPE 90° ELBOW
7	BUTT FUSION Ø50mm HDPE PIPE
8	TYPICAL 50mm CURB STOP ASSEMBLY



TITLE:

AIR RELIEF VALVE

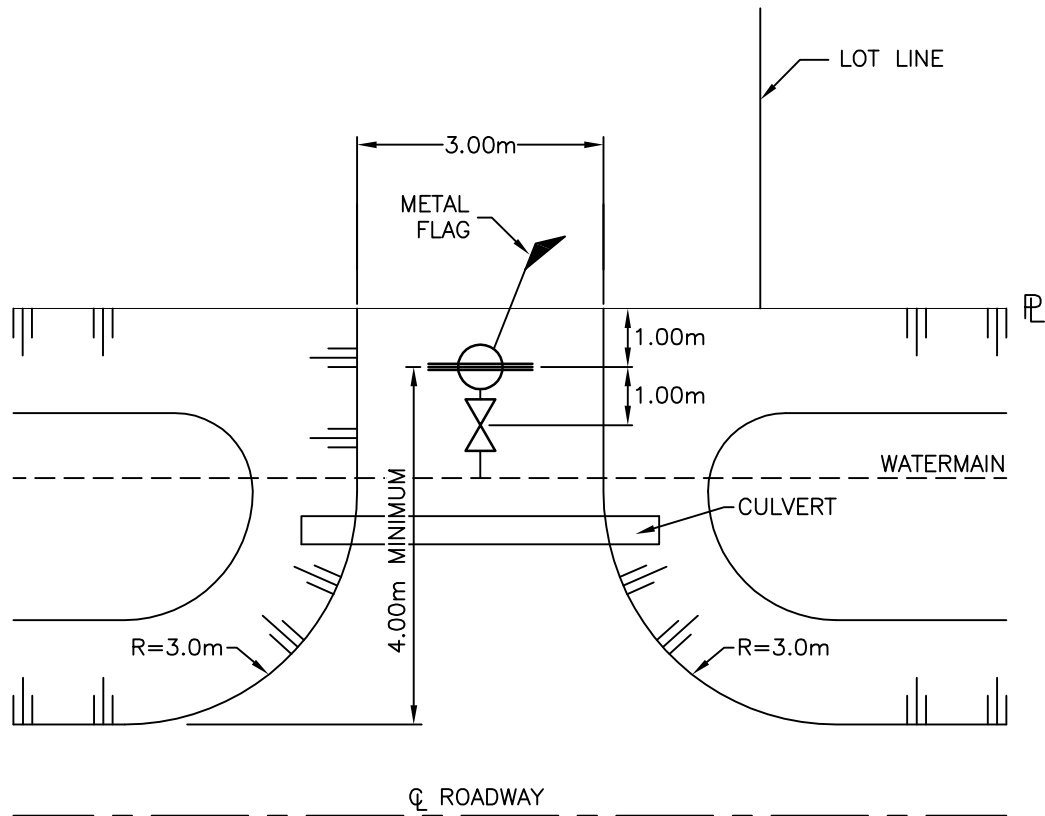
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-500



NOTES:

1. WHEN CULVERTS ARE REQUIRED THEY MUST BE C.S.P. CULVERTS AND BE THE FOLLOWING MIN. DIAMETER OF 0.400mm.
2. CULVERTS MUST BE SET BACK A MINIMUM OF 4m FROM SHOULDER OF ROAD.
3. MINIMUM OF 4.0m FROM SHOULDER.
4. INCLUDES DRY HYDRANTS



TITLE:

HYDRANT LOCATION AND APPROACH DETAIL

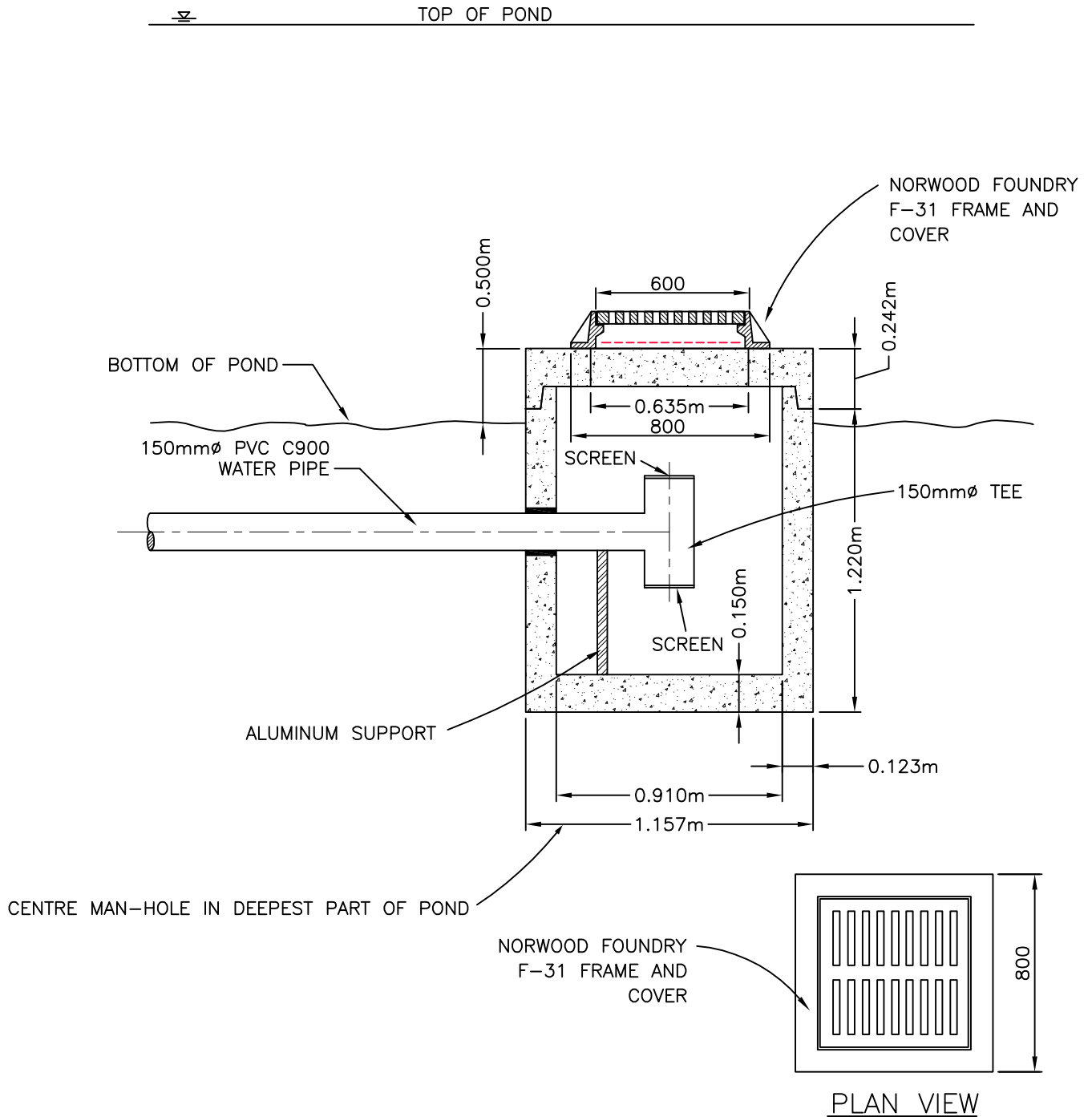
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-600



NOTE:

PLACE PVC SLOTTED DRAIN COVERS IN 150mmØ TEE OR MANUFACTURE A SCREEN ASSEMBLY TO REDUCE PARTICLE SIZE ENTERING DRY HYDRANT.



TITLE:

CATCH BASIN BARREL— DRY HYDRANT

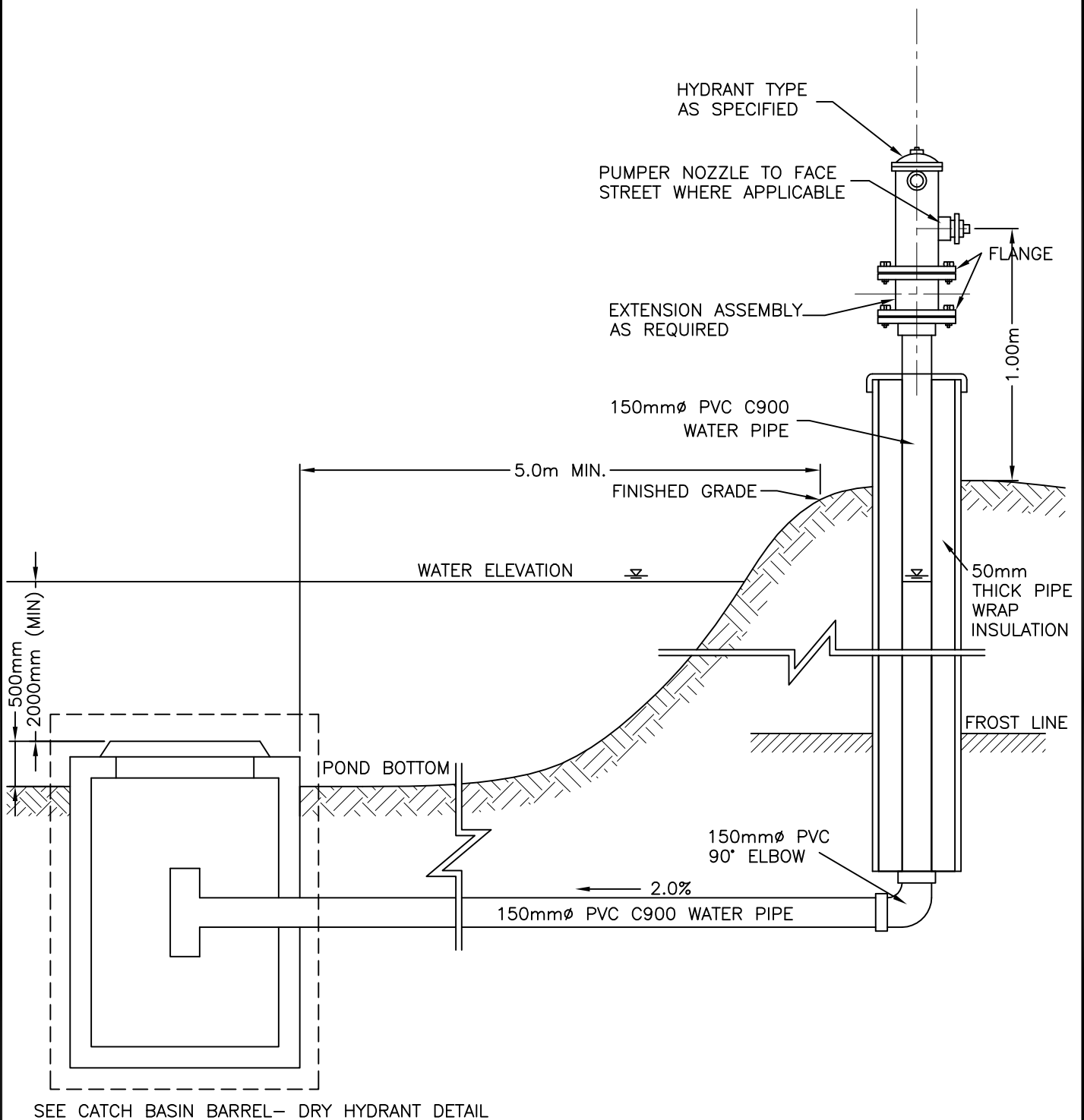
STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-700



TITLE:

TYPICAL DRY HYDRANT

STANDARD DETAILS

SCALE: N.T.S.

DATE: SEPTEMBER 2010

STD. DWG NO.

4-701