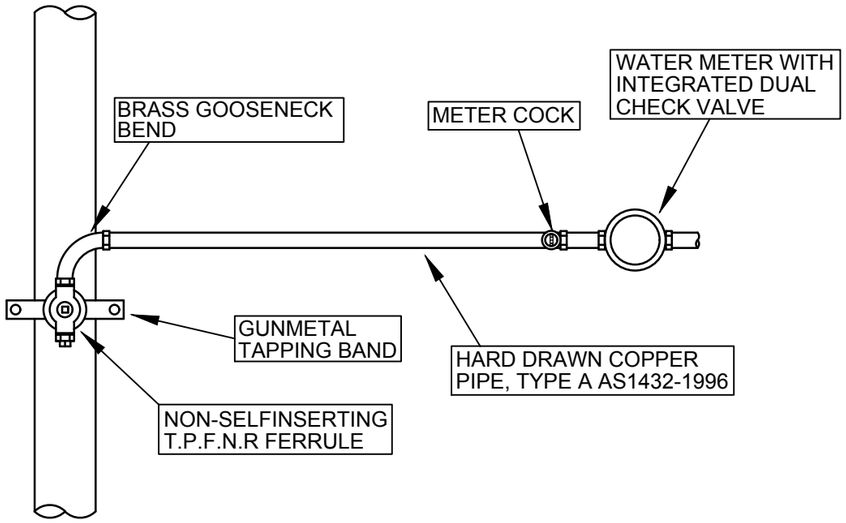
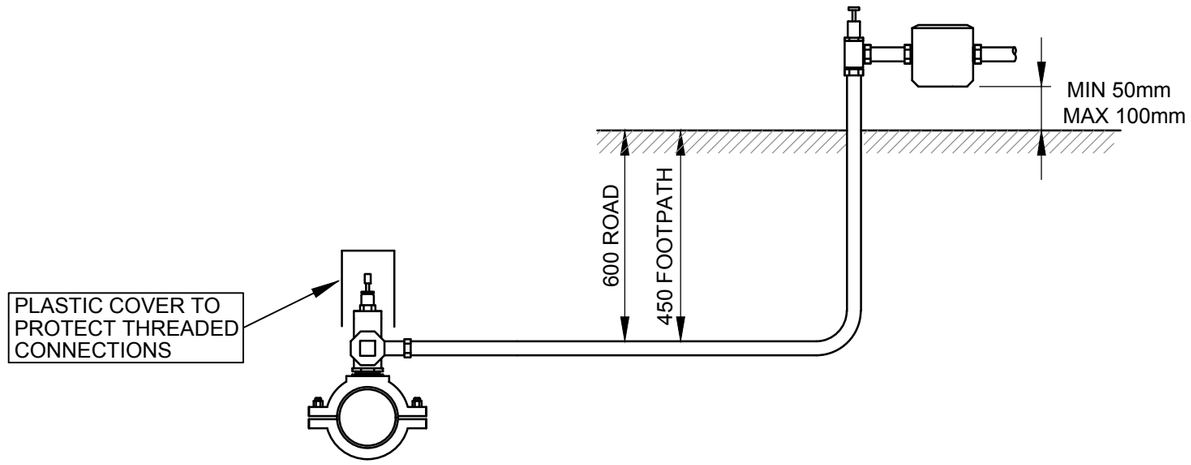
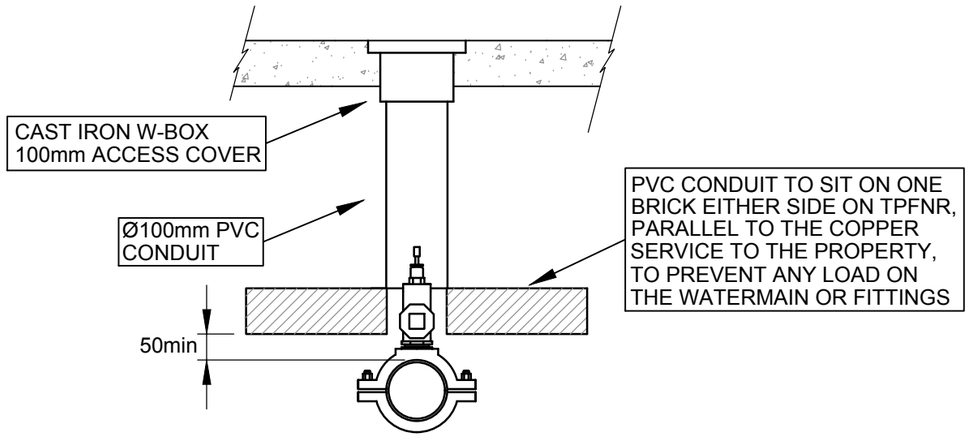


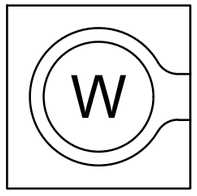
PLAN



ELEVATION



ELEVATION
UNDER FOOTPATH



CAST IRON WATER BOX 100mm
ACCESS COVER

NOTES

1. NEW SERVICE CONNECTIONS FOR RESIDENTIAL PREMISES, MUST HAVE A METER WITH AN
2. INTEGRATED DUAL CHECK VALVE INSTALLED.
3. IF AN OLD SERVICE IS BEING REPLACED BUT NOT THE METER, A SUITABLE BACKFLOW PREVENTION DEVICE IS TO BE INSTALLED ON THE CUSTOMER SIDE OF THE METER.
4. SERVICE CONNECTIONS TO COMMERCIAL / INDUSTRIAL PREMISES MUST HAVE A SUITABLE BACKFLOW PREVENTION DEVICE INSTALLED ON THE CUSTOMER SIDE OF THE METER.
5. IF A RPZ BACKFLOW PREVENTION DEVICE IS TO BE INSTALLED, THE DEVICE AND METER SHOULD BE INSTALLED 300mm ABOVE THE GROUND TO ENABLE MAINTENANCE OF THE DEVICE.
6. WHERE WATERMAINS ARE LAID UNDER CONCRETE FOOTPATHS, A Ø100 RISER PIPE WITH A CAST IRON COVER, CAST INTO THE FOOTPATH IS TO BE INSTALLED, TO ALLOW ACCESS TO THE TPFNR.

20mm & 25mm SERVICE CONNECTION DETAIL
FOR M.S, DI, AC, CI, PVC & PE RETICULATION MAINS

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: M.WILSON — PROGRAM LEADER INVESTIGATION AND DESIGN — 7/08/2017 DATE

SHEET 1 OF 1

SURV

DRWN GW

DES

CHKD MW

AS SHEET SIZE: A3

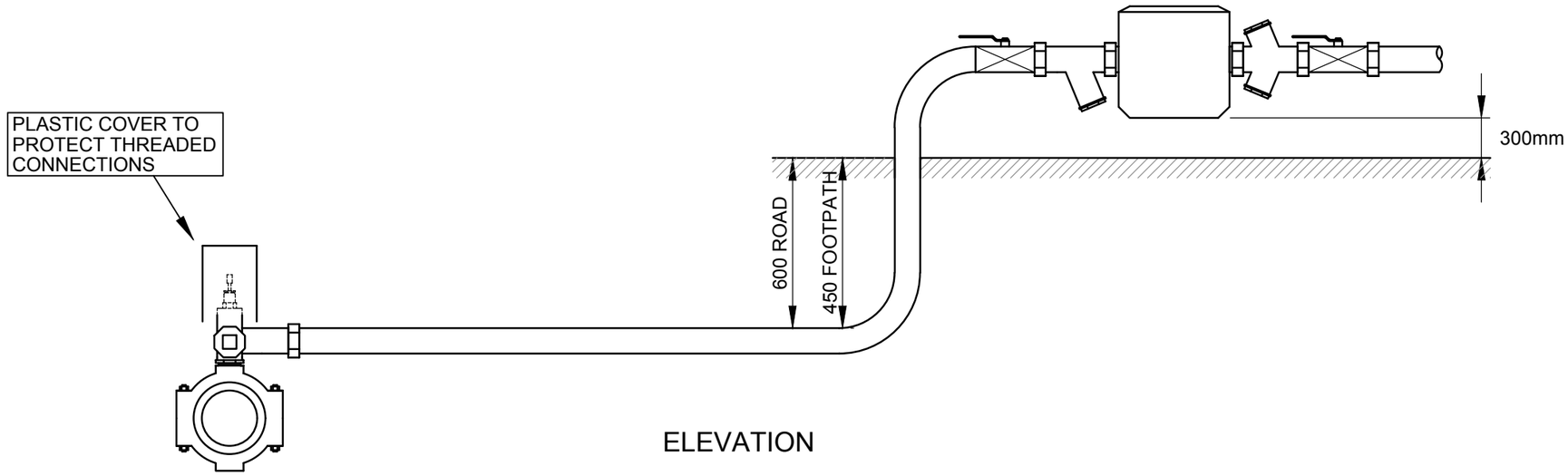
DRAWING No: 020-038

AMDT No: A

CADFILE 020-038.dwg

DATE 7/08/2016

20mm & 25mm STANDARD WATER SERVICE CONNECTION DETAIL



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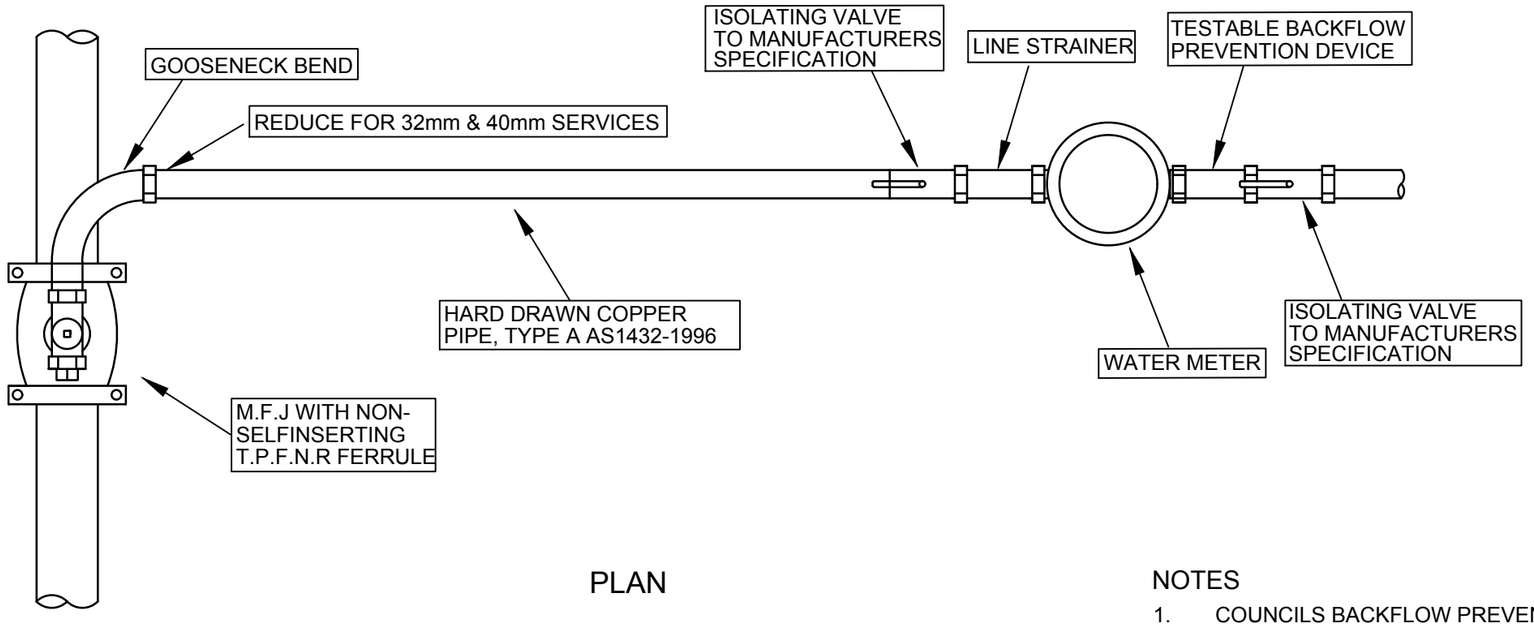


PLAN

32mm,40mm & 50mm SERVICE CONNECTION DETAIL

FOR AC, M.S, CI, DI, PVC & PE RETICULATION MAINS

NOTES

1. COUNCILS BACKFLOW PREVENTION OFFICER MUST BE CONSULTED PRIOR TO THE INSTALLATION OF BACKFLOW PREVENTION DEVICES AT COMMERCIAL AND INDUSTRIAL PREMISES.
2. ALTERNATE STAINLESS STEEL TAPPING SADDLES MAY BE CONSIDERED WITH APPROVAL.
3. ALL 50mm SERVICES TO HAVE ACCESS COVERS INSTALLED AS PER 50mm ROAD CROSSINGS.

Armidale Regional Council — Dept of Public Infrastructure

32mm,40mm & 50mm WATER SERVICE CONNECTION DETAIL

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

SURV

DRWN GW

DES

CHKD MW

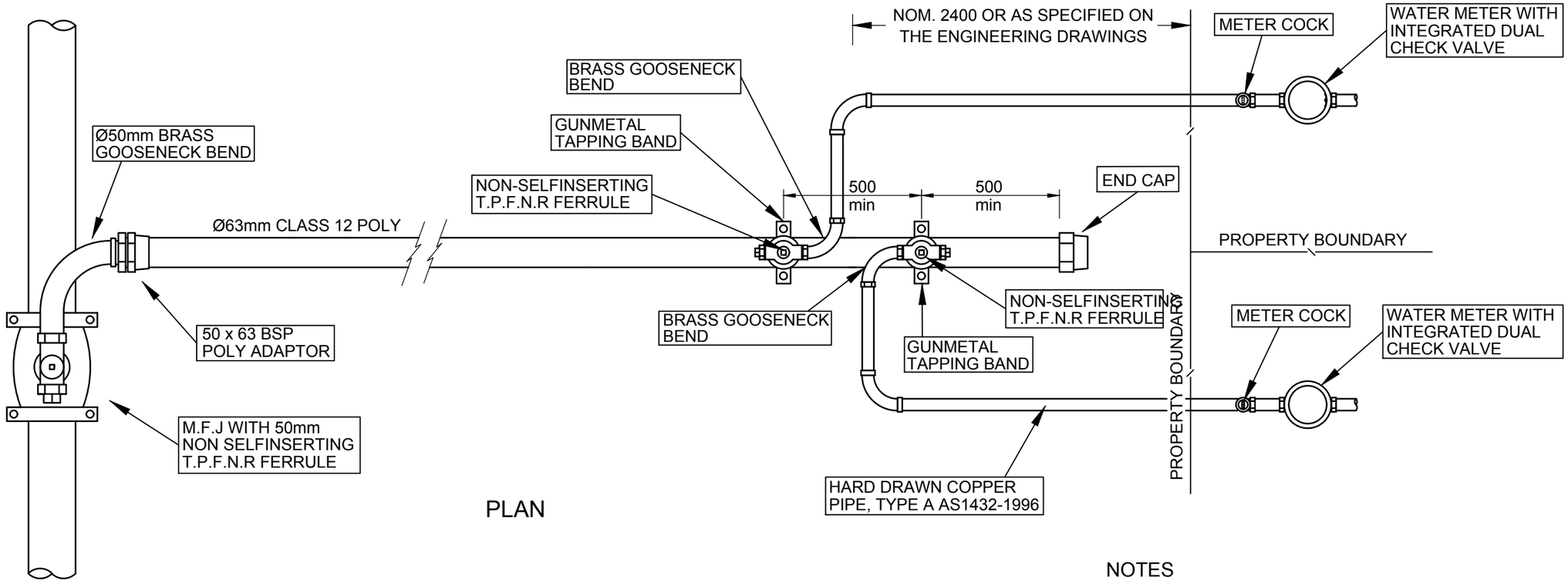
AS SHEET SIZE: A3

DRAWING No: 020-039

AMDT No

CADFILE 020-039.dwg

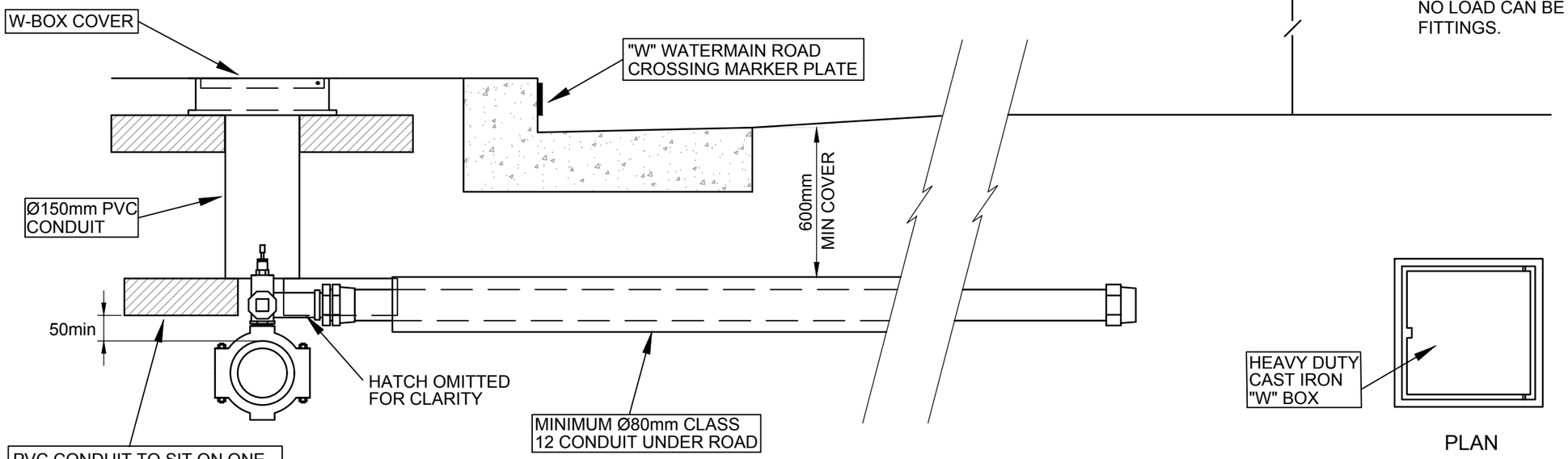
DATE 31/08/2016



PLAN

NOTES

1. PROPERTY SERVICES OFF Ø63mm POLY TO BE INSTALLED AS PER ARC STD. DWG 020-028 & 020-029.
2. BRICK FOUNDATION FOR ACCESS PIPE TO ENSURE NO LOAD CAN BE IMPOSED ON THE WATERMAIN OR FITTINGS.



ELEVATION

PLAN ELEVATION

COVER DETAIL

Armidale Regional Council — Dept of Public Infrastructure

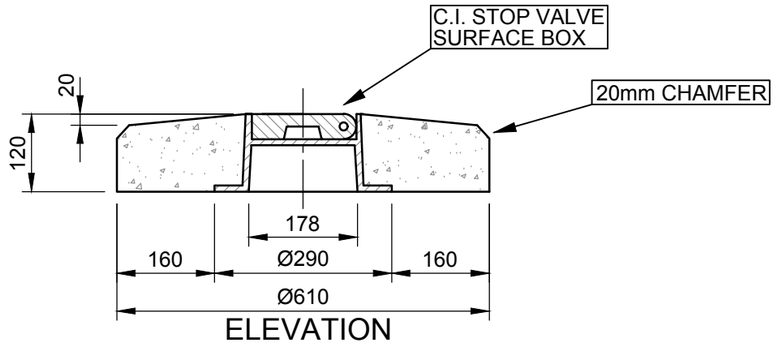
SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

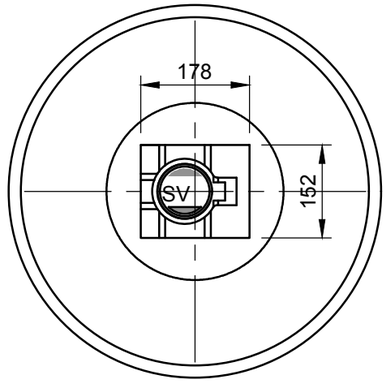
SHEET 1 OF 1

WATER SERVICE ROAD CROSSING STANDARD DETAIL

SURV		AS SHEET SIZE	DRAWING No	AMDT No
DRWN	GW	A3	020-040	
DES				
CHKD	MW	CADFILE 020-040.dwg	DATE 31/08/2016	

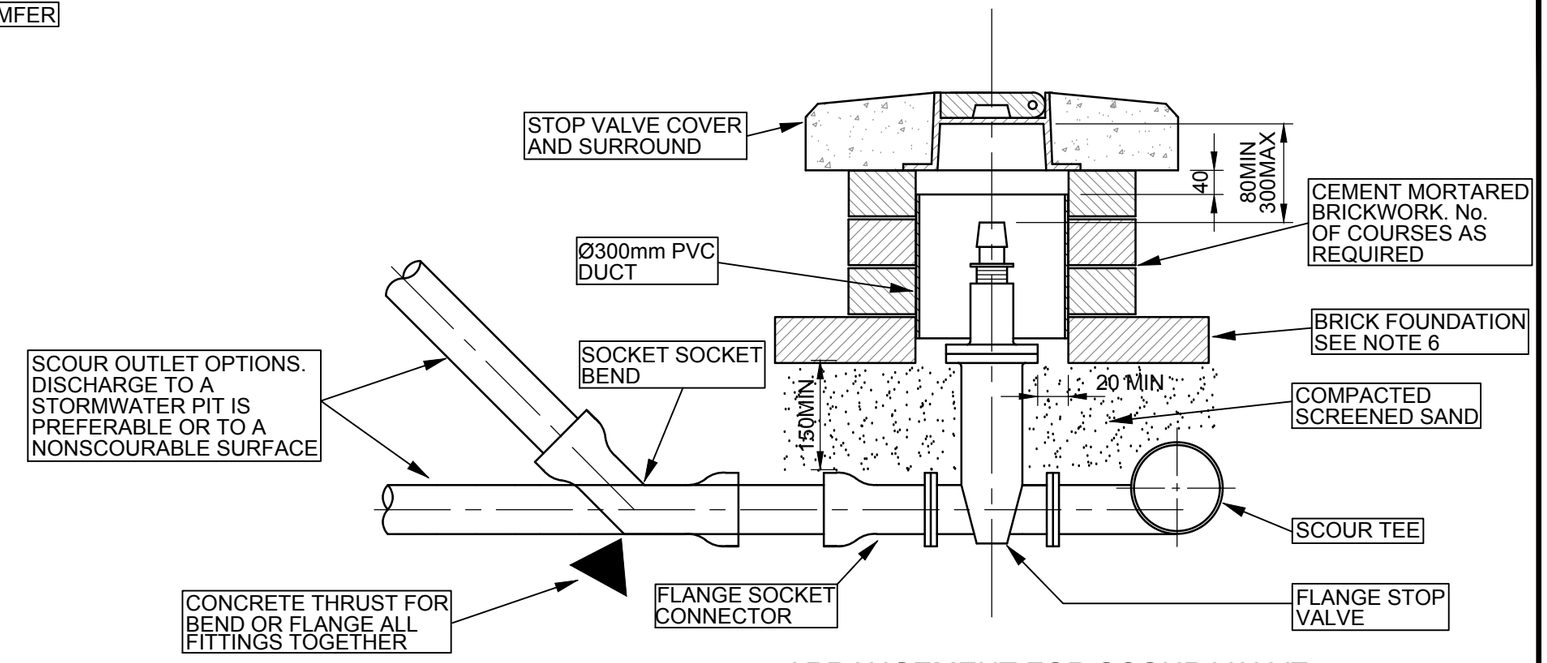


ELEVATION

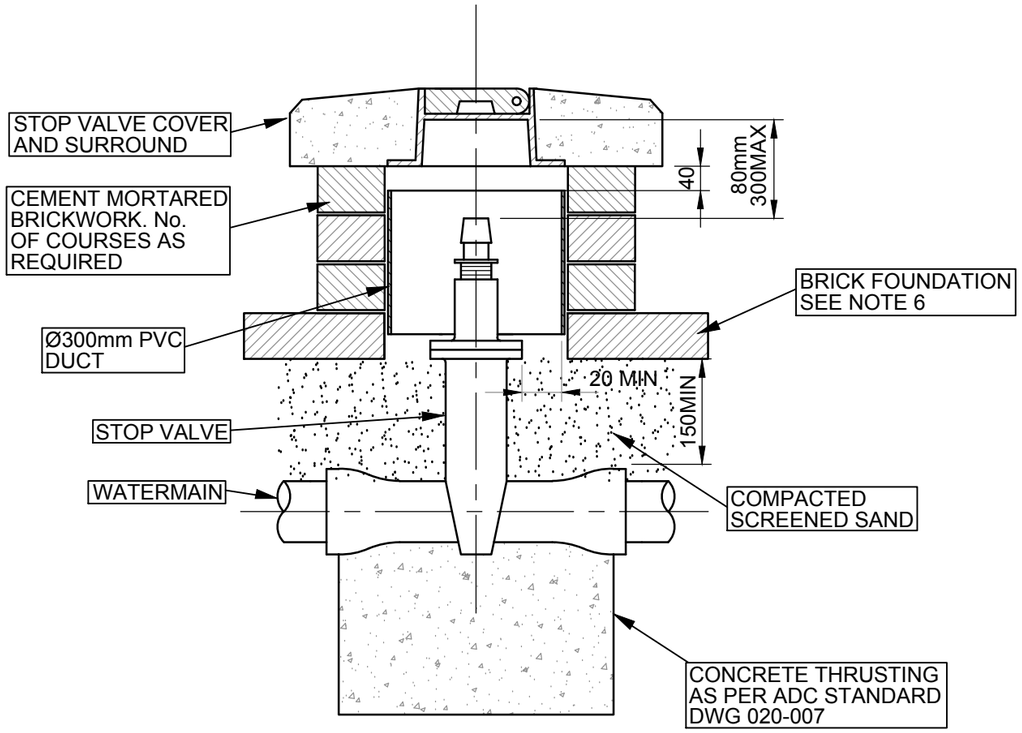


PLAN

STOP VALVE COVER



ARRANGEMENT FOR SCOUR VALVE



ARRANGEMENT FOR STOP VALVE

NOTES

1. ALL STOP VALVES TO BE CLOCKWISE CLOSING AND CONCRETE THRUSTED IN ACCORDANCE WITH ARC STANDARD DRAWING 020-036.
2. STOP AND SCOUR VALVES TO BE CONSTRUCTED IN ACCORDANCE WITH PWD GUIDELINES, 15MPa CONCRETE SURROUNDS WITH CAST IRON COVERS. ALTERNATIVELY APPROVED HIGH DENSITY POLYETHYLENE SURROUNDS WITH ALUMINUM OR CAST IRON COVERS.
3. STANDARD STOP AND SCOUR VALVE COVERS AND SURROUNDS ARE TO BE PAINTED MAILBOX RED COLORED. ZONE STOP VALVES TO BE PAINTED BRIGHT WHITE (OR BRIGHT WHITE PLASTIC COVERS).
4. ALL LIDS TO OPEN PARALLEL WITH THE WATERMAIN.
5. VALVES ARE TO HAVE MARKING PLATES INSTALLED REFER STANDARD DRAWING 020-037.
   a) A RED 75mm x 100mm PAINT STRIPE ON THE KERB AND GUTTER, A MARKER PLATE ON AN ADJACENT FENCE OR ON A POWER POLE.
   b) THE MARKER PLATE SHALL BE 250mm x 75mm WITH REFLECTIVE RED LETTERS ON A WHITE BACKGROUND. SV SHALL DENOTE A STOP VALVE AND SCV A SCOUR VALVE.
   c) THE DISTANCE TO THE VALVE IN METERS AND THE SIZE OF THE WATERMAIN IN MILLIMETERS, SHALL BE STAMPED ON THE MARKER PLATE. NUMBERS TO BE 12mm HIGH.
6. THE BRICK FOUNDATION IS TO BE CONSTRUCTED TO ENSURE NO LOAD CAN BE IMPOSED ON THE WATERMAIN OR FITTINGS.
7. WHERE THE WATERMAIN IS AT A DEPTH REQUIRING A SPINDLE EXTENSION, EXTEND THE PVC DUCT SLEEVE DOWN TO THE FLANGE AND BRICK UP TO THE FOUR COURSES OF BRICKWORK AT THE SURFACE AS SHOWN.

Armidale Regional Council — Dept of Public Infrastructure

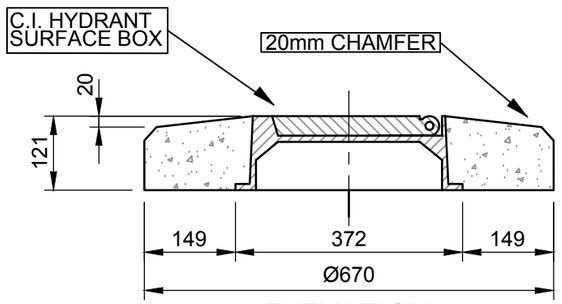
SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

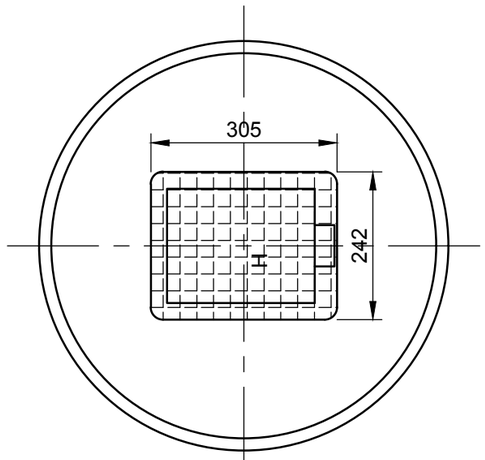
SHEET 1 OF 1

STANDARD STOP AND SCOUR VALVE INSTALLATION DETAIL

SURV		AS SHEET SIZE	DRAWING No	AMDT No
DRWN	GW	A3	020-041	
DES				
CHKD	MW	CADFILE 020-041.dwg	DATE 31/08/2016	



ELEVATION



PLAN

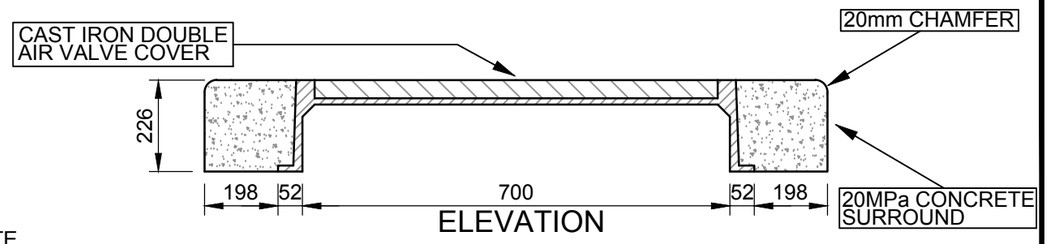
HYDRANT COVER

HYDRANT NOTES

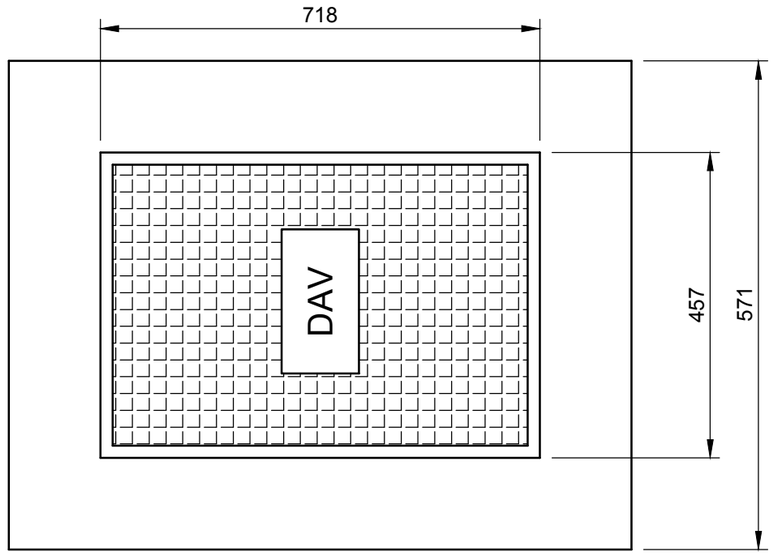
1. HYDRANTS SHALL BE NSW STANDARD BALL VALVE TYPE.
2. HYDRANTS SHALL BE INSTALLED WITH THE LUGS RUNNING PARALLEL TO THE WATERMAIN.
3. HYDRANT COVERS ARE TO OPEN PARALLEL TO THE WATERMAIN.
4. HYDRANT COVERS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH PWD GUIDELINES, 15MPa CONCRETE SURROUNDS WITH CAST IRON COVERS. ALTERNATIVELY APPROVED HIGH DENSITY POLYETHYLENE SURROUNDS WITH ALUMINUM OR CAST IRON COVERS.
5. HYDRANT SURROUNDS AND COVERS ARE TO BE PAINTED BRIGHT YELLOW, (OR BRIGHT YELLOW PLASTIC COVERS).
6. HYDRANTS ARE TO BE LOCATED BY
   a) A YELLOW 75mm X 100mm PAINT STRIPE ON THE KERB AND GUTTER.
   b) A BLUE REFLECTIVE HYDRANT MARKER THAT COMPLIES WITH AS 1906.3 WITH INDICATOR ARROW FACING TOWARDS THE HYDRANT.
   c) A MARKER PLATE ON AN ADJACENT FENCE, MARKER POST OR POWER POLE. REFER STD DWG 020-037. A HYDRANT ON THE ROAD IS TO BE DENOTED BY THE LETTERS HR AND ON THE FOOTPATH BY HP. THE DISTANCE TO THE HYDRANT IN METRES AND THE SIZE OF THE WATERMAIN INBMILLIMETERS IS TO BE STAMPED ON THE MARKER PLATE.
7. THE BRICK FOUNDATION IS TO BE CONSTRUCTED TO ENSURE NO LOAD CAN BE IMPOSED ON THE WATERMAIN OR FITTINGS.

<u>DOUBLE AIR VALVE NOTES</u>

1. DOUBLE AIR VALVE COVERS ARE TO BE PAINTED BRIGHT WHITE. REFER STD DWG 020-037.
2. A MARKER PLATE SHALL BE PLACED ON AN ADJACENT FENCE, MARKER POST OR POWER POLE. REFER STD DWG 020-037.

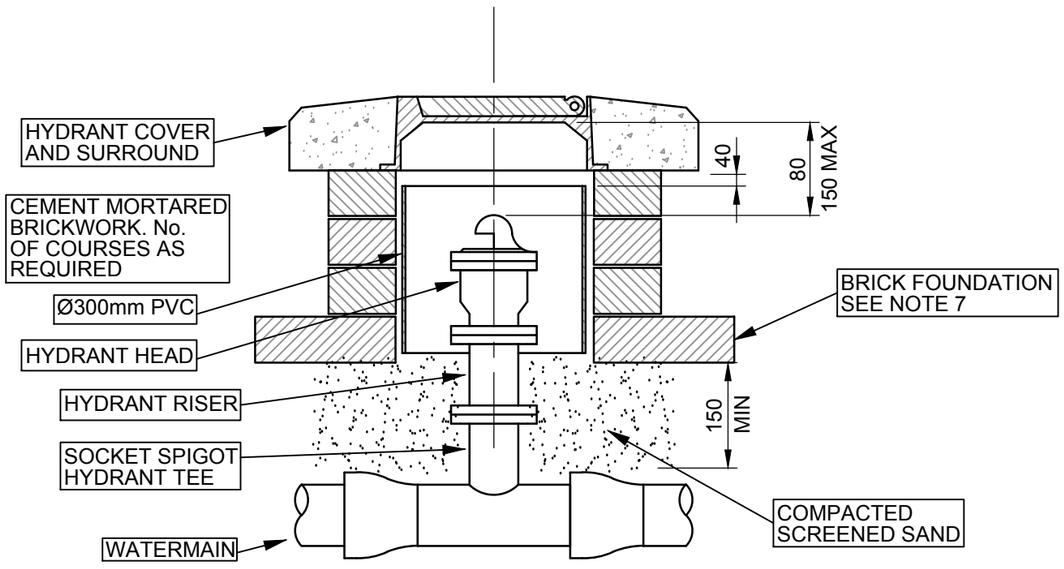


ELEVATION

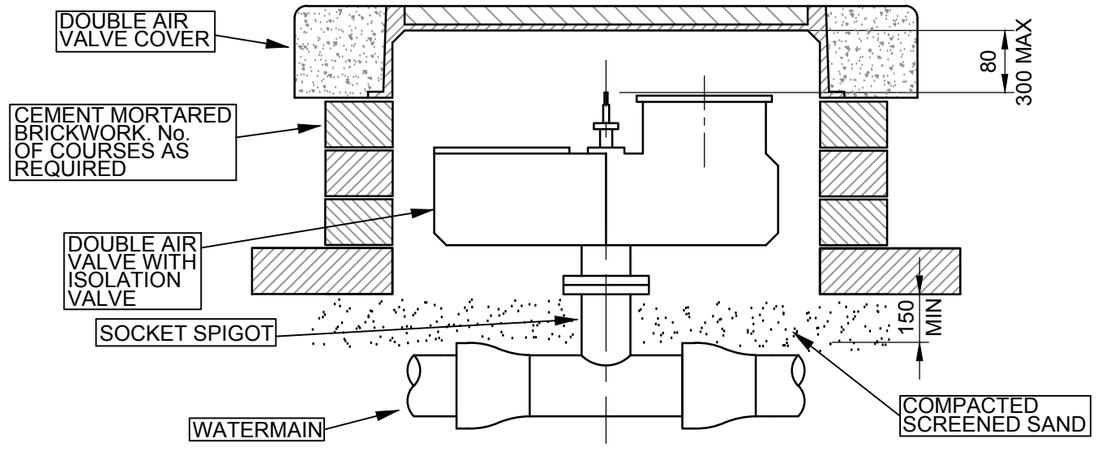


PLAN

DOUBLE AIR VALVE COVER



ARRANGEMENT FOR HYDRANT



ARRANGEMENT FOR AIR VALVE

Armidale Regional Council — Dept of Public Infrastructure

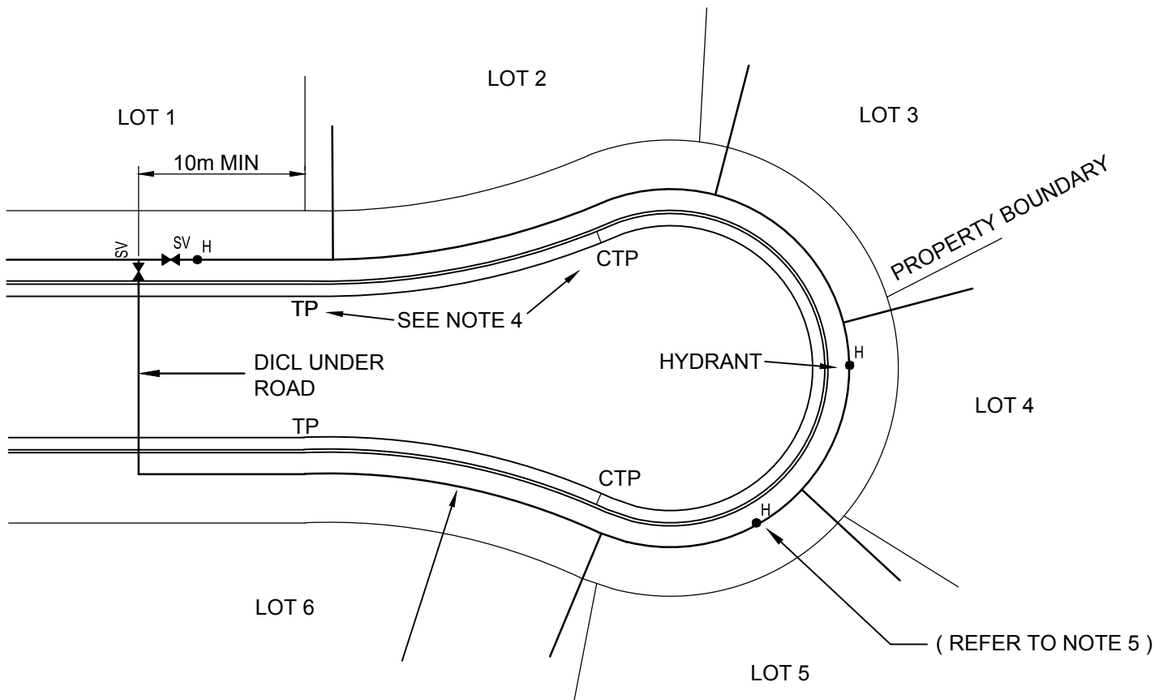
SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

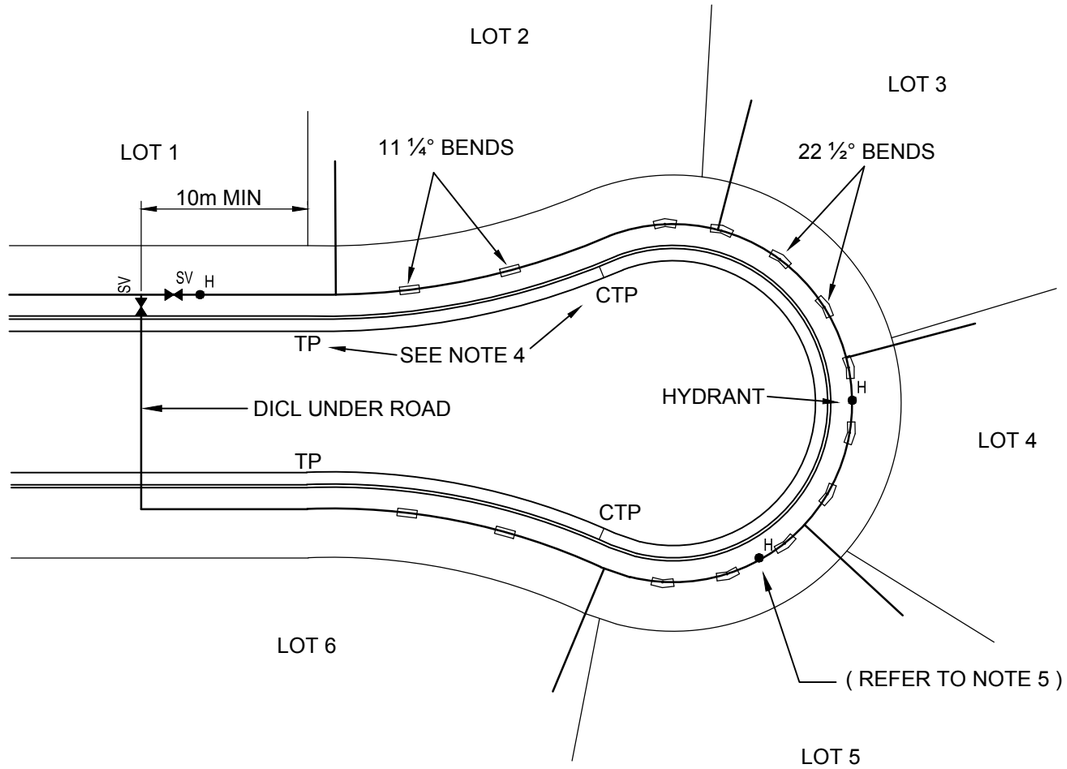
SHEET 1 OF 1

STANDARD HYDRANT AND DOUBLE AIR VALVE INSTALLATION DETAIL

SURV		AS SHEET SIZE	DRAWING No	AMDT No
DRWN	GW	A3	020-042	
DES				
CHKD	MW	CADFILE 020-042.dwg	DATE 31/08/2016	



USING MANUFACTURED CURVED OPVC OR PE PIPES



USING STRAIGHTS AND BENDS

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

2. PIPES AROUND A CUL-DE-SAC END, BENDS IN THE ROAD AND AROUND BULBS AT BENDS IN ROADS ARE TO BE LAYED GENERALLY WITHOUT BENDING THE PIPE OR USING DEFLECTION AT JOINTS. TO THIS END, EITHER MANUFACTURED CURVED PIPE LENGTHS ARE TO BE USED OR STRAIGHT PIPE SECTIONS WITH DUCTILE IRON OR PE BENDS WILL BE REQUIRED.

3. WHERE CURVED OPVC SERIES 2 PIPE IS TO BE USED, BACKFILLING IS TO BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS WITH REGARD TO THRUST RESISTANCE

4. WHERE STRAIGHT PIPES ARE USED, PIPE LENGTHS ARE TO BE SET SO AS TO HAVE NO DEFLECTION AT THE DUCTILE IRON BENDS. For PIPES CENTERLINE RADII UP TO 15 METERS USE 22.5° BENDS, FROM15M TO 30M USE 11.25° BENDS. NORMALLY A DEFLECTION OF UP TO 6° CAN BE EXPECTED AT BOTH THE INITIAL TP AND THE COMMON TP. INTHESE LOCATIONS, DEFLECT THE PIPE OVER JOINTS (PIPE LENGHTS = GREATER OF HALF LENGHT OR 2.0M). PIPE SECTION LENGHTS AND THE NUMBER OF FITTINGS REQUIRED ARE TO BE SHOWN IN A SCHEDULE ON THE CONSTRUCTION PLANS. NOTE THAT SOME ODD PIPE LENGHTS COULD BE REQUIRED AT THE TP AND THE CTP.

5. WHERE PE PIPE IS USED INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS WITH REGARD TO THRUST RESTRAINT. IT IS CRITICAL TO ENSURE APPROPRIATE RESTRAINT IS PROVIDED AT THE POINT OF CHANGE OF MATERIAL. NOTE THAT MECANICAL COUPLINGS OR WELD FLANGE CONNECTIONS ARE PERMITTED.

6. IN SPECIAL CIRCUMSTANCES WHERE APPROVAL IS GIVEN TO TERMINATE THE WATER MAIN IN A DEAD END, A HYDRANT FLUSHING POINT IS TO BE PROVIDED.

FOR STANDARD RESIDENTIAL CUL-DE-SAC LAYOUT WITH 10.5m KERB RADIUS ON THE BULB AND 30.0m KERB RADIUS ON THE LEAD IN SECTIONS, THE FOLLOWING ARE USED

RADIUS AT KERB	AVERAGE RADIUS AT PIPE	BEND DEFLECTION DEGREES	FITTINGS TO FITTINGS LENGHT (M)	FITTING LEG LENGHT (M)	CUT LENGHT OF PIPE (M)
10.5m	11.6m	22 ½°	4.27	0.15	3.6
30.0m	29.0m	11 ¼°	5.70	0.15	5.4

FOR OTHER RADII, THE CUT PIPE LENGHT MAY BE CALCULATED FROM THE FOLLOWING : -

FOR 11.25° DEFLECTIONS : - CUT LENGHT = 0.1965 x R - 2 x F

FOR 22.50° DEFLECTIONS : - CUT LENGHT = 0.3940 x R - 2 x F

WHERE : -

R = THE AVERAGE RADIUS OF THE PIPE LINE
F = THE LEG LENGHT OF THE DEFLECTION BEND FITTING

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

WATERMAIN CONSTRUCTION AT CUL-DE-SAC HEAD TYPICAL TREATMENT

SURV
DRWN PD
DES
CHKD MW

AS SHEET SIZE: A3

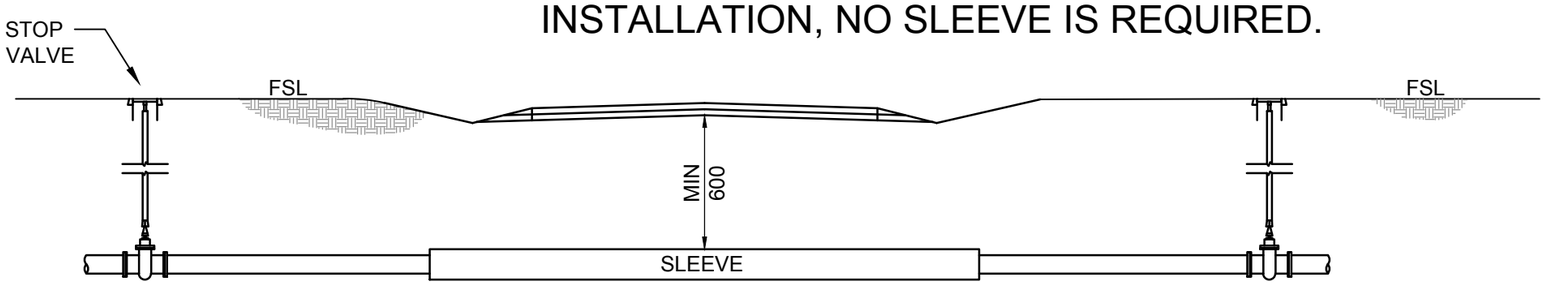
DRAWING No: 020-043

AMDT No:

CADFILE 020-043.dwg

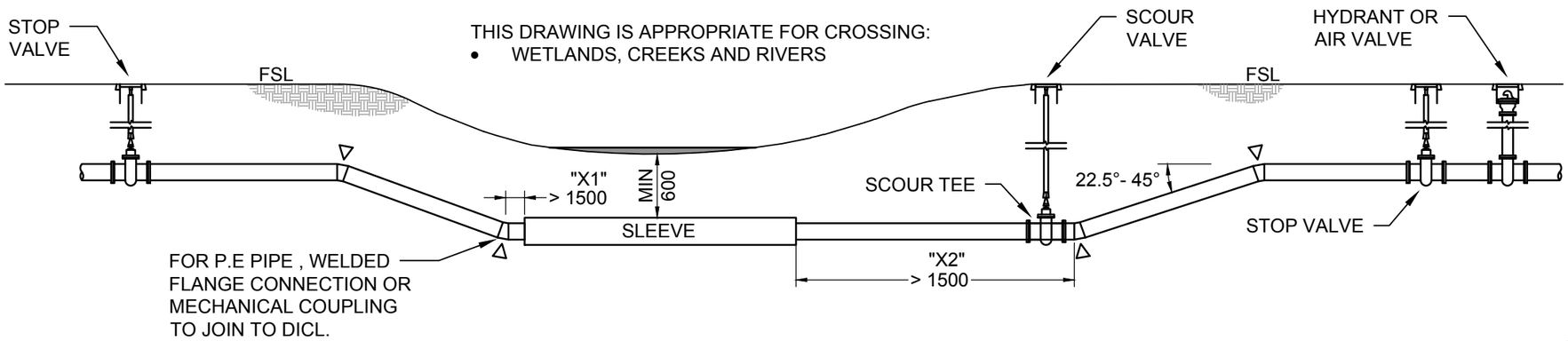
DATE 31/08/2016

NOTE: FOR TYPICAL ARMIDALE REGIONAL COUNCIL INSTALLATION, NO SLEEVE IS REQUIRED.

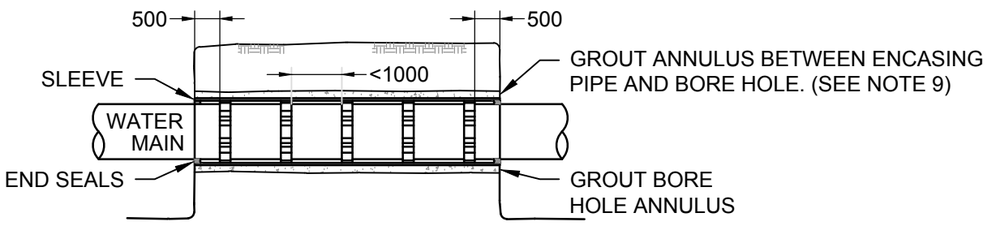


EXTEND SLEEVE PAST KERB OR TABLE DRAIN ON BOTH SIDES

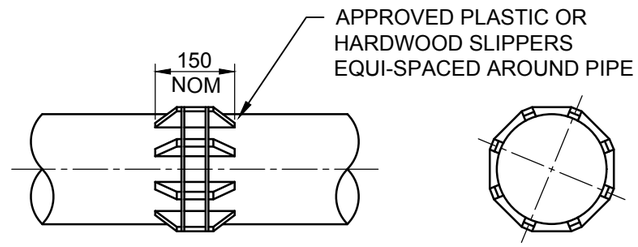
DETAIL A: SECTION VIEW ROAD CROSSING



DETAIL B: SECTION VIEW, WATERWAY CROSSING



DETAIL C: TYPICAL SLEEVE INSTALLATION



DETAIL D: WATERMAIN SUPPORTS DETAIL

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. METHODS OF INSTALLATION TO BE AS SHOWN IN DESIGN DRAWINGS OR AS DIRECTED BY THE WATER AGENCY OR ROAD OWNER. DIFFICULT CONDITIONS MAY REQUIRE SPECIAL ARRANGEMENTS

3. HORIZONTAL BORING
   ENCASING PIPE
   - RC CLASS 4 OR
   - STEEL (BARE) PIPE. WALL THICKNESS TO BE AS SPECIFIED IN THE DESIGN DRAWINGS OR GRP.

   SEWER PIPE
   - DI WITH POLYMERIC LINING CLASS K9
   - PVC CLASS SN 8
   - PE CLASS PN 12.5
   - GRP CLASS SN 5000 MIN.

4. JACKING
   ENCASING PIPE
   REINFORCING CONCRETE CLASS 4 BUTT JOINED WITH STEEL LOCATING BANDS, STEEL OR GRP JACKING PIPE.
   SEWER PIPE
   - DI WITH POLYMERIC LINING CLASS K9
   - PVC CLASS SN 8
   - PE CLASS PN 12.5
   - GRP CLASS SN 5000 MIN.

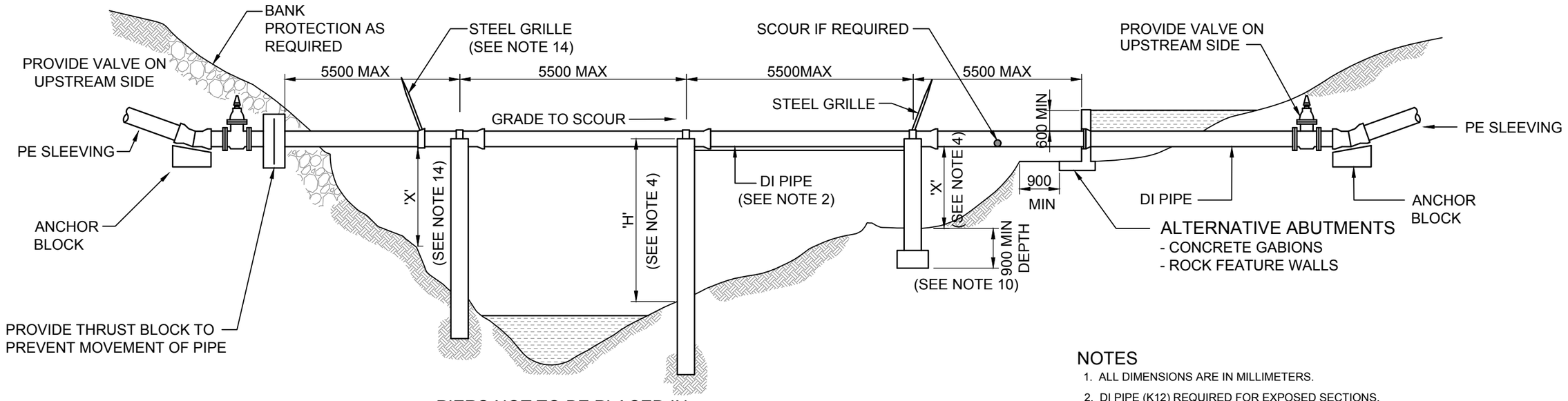
5. CONCRETE ENCASED
   - PIPE MATERIAL TO BE:
     - STEEL WITH FBPE INTERNAL COATING
     - PE CLASS PN 12.5
     - PVC (SWJ) CLASS SN 8
     - GRP CLASS SN 5000 MIN.
   - NO SERVICE CONNECTIONS TO BE MADE TO ENCASED SECTION OF PIPELINE.
   - ENCASING AS SHOWN IN SEW-1205
   - NO EXTERNAL COATING REQUIRED ON CONCRETE ENCASED WELDED STEEL PIPELINE.
6. DIMENSIONS "X1" & "X2" AND LOCATION OF BULKHEADS & REINFORCING TO BE SHOWN IN DESIGN DRAWINGS.
7. FILL VOID BETWEEN BORED HOLE AND CASING PIPE WITH GROUT AS SHOWN ON SEW-1403.
8. CONSTRUCTION TO BE IN ACCORDANCE WITH DESIGN DRAWINGS.
9. GROUTING MIX TO BE 1:1 (SAND:CEMENT) WITH A WATER:CEMENT RATIO 1:0.67 BY WEIGHT USING FINE WELL ROUNDED SAND. PLASTICISERS MAY BE USED.
10. REFER TO ADC STD DWG 020-027/1 FOR SCOUR DETAILS.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

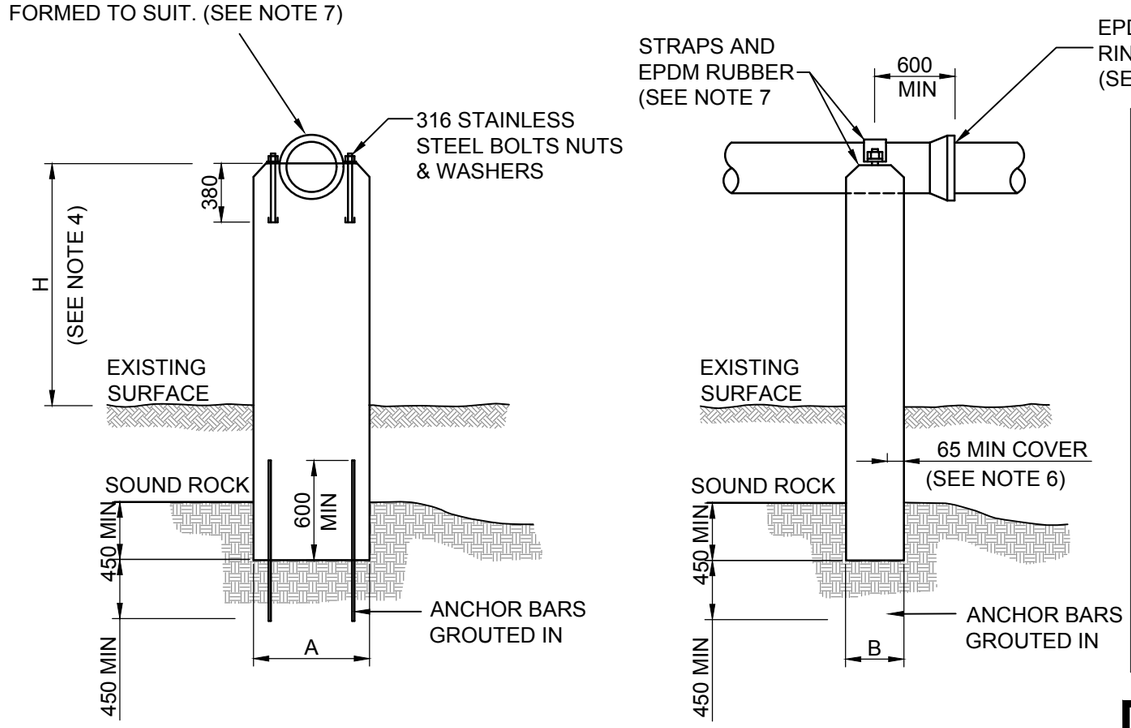
BORED WATERMAIN ROAD AND CREEK CROSSING DETAILS

APPROVED	D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT	31/08/2016 DATE	SHEET 1 OF 1
SURV		AS SHEET SIZE A3	DRAWING No 020-044
DRWN	JB		AMDT No
DES			
CHKD	MW	CADFILE 020-044.dwg	DATE 31/08/2016



PIERS NOT TO BE PLACED IN DRY WEATHER FLOW CHANNEL

TYPICAL (DI) AQUEDUCT



DETAIL OF CONCRETE PIER (SEE NOTE 9)

DINENSIONS FOR PIERS (SEE NOTES 4&9)			
NOMINAL SIZE DN	PIER A	PIER B	HIEGHT 'H' MAX
150	450	300	1700
200	600	300	2100
250	600	300	2100
300	750	300	1800
375	750	450	1800
450	915	450	1800
500	915	450	1800
600	1070	450	1800
750	1200	450	1800

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DI PIPE (K12) REQUIRED FOR EXPOSED SECTIONS.
   SCL PIPE WITH RRJ MAY BE USED AS AN ALTERNATIVE.
3. MINIMUM SIZE OF PIPE AS AQUEDUCT SHALL BE DN 150.
4. MAXIMUM HEIGHT "H" OF CONCRETE PIERS:
   - IN FLOOD CONDITIONS, SEE TABLE FOR MAXIMUM HEIGHT.
   - IN NO FLOOD CONDITIONS 5000 MAX.
   - WHERE AQUEDUCT NEEDS TO BE HIGHER, SPECIFIC DESIGN CALCULATIONS NEED TO BE CARRIED OUT.
5. CONCRETE TO BE 25mpa.
6. REINFORCEMENT DETAILS TO BE SPECIFIED IN DESIGN DRAWINGS. COVER TO BE 65MIN.
7. STRAPS TO BE GRADE 316 STAINLESS STEEL. PLACE 3 THICK x 100 WIDE EPDM RUBBER INSERTION AROUND PIPE TO PROTECT PIPE FROM DAMAGE BY CONCRETE OR STRAPS.
8. UNLESS OTHERWISE SPECIFIED IN DESIGN DRAWINGS NO ADDITIONAL PROTECTION /COATING TO BE PROVIDED EXCEPT TO MAKE AQUEDUCT PIPES MORE ENVIRONMENTALLY ACCEPTABLE.
9. CYLINDRICAL PIERS (Ø600 MIN) OR EQUIVALENT ARE AN ACCEPTABLE ALTERNATIVE.
10. DEPTH OF PIERS IN SOIL TO BE SPECIFIED IN THE DESIGN DRAWINGS. BUT NOT LESS THAN 900.
11. TYPE AND SIZE OF PIERS TO BE SPECIFIED ON DESIGN DRAWINGS.
12. PIERS WITHOUT FOOTINGS TO BE CONSTRUCTED IN ACCORDANCE WITH METHODS SPECIFIED IN DESIGN DRAWINGS.
13. ASSEMBLE JOINTS WITH SPIGOT END WITHDRAWN 5 TO 10 FROM BACK OF SOCKET TO ACCOMMODATE EXPANSION AND CONTRACTION RESULTING FROM TEMPERATURE FLUCTUATIONS
14. PROVIDE STEEL GRILLES WHERE THE VERTICAL DISTANCE 'X' EXCEEDS 1800. GRILLE CLAMPED ON TIGHTLY TO PREVENT MOVEMENT. REFER WSA DRAWING SEW 1405.

Armidale Regional Council — Dept of Public Infrastructure

AERIAL CROSSINGS AQUEDUCT

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

SURV

DRWN GW

DES

CHKD MW

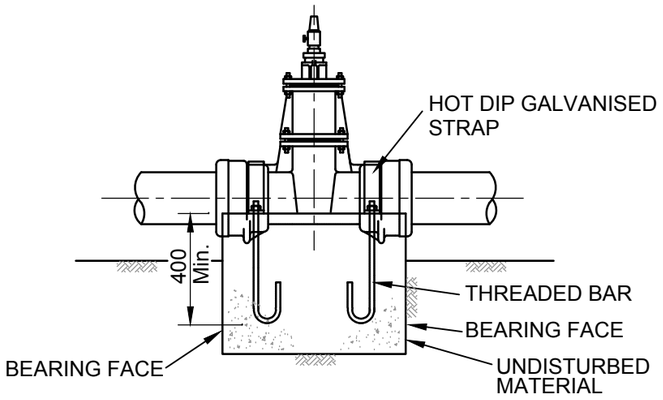
AS SHEET SIZE: A3

DRAWING No: 020-045

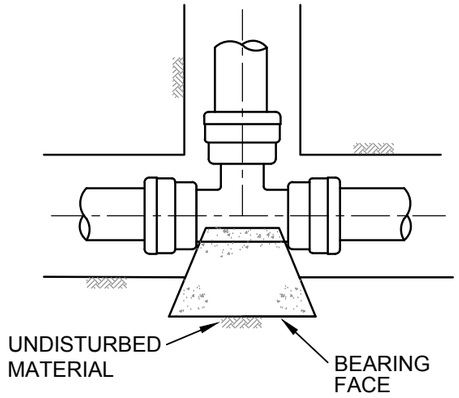
AMDT No

CADFILE 020-0.45.dwg

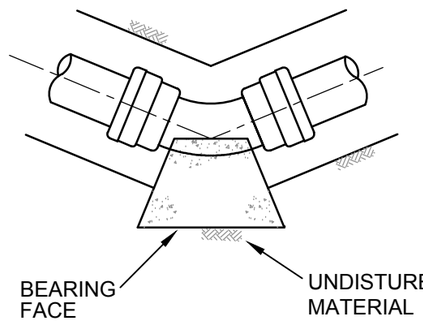
DATE 31/08/2016



ELEVATION OF STOP VALVE THRUST BLOCK DETAIL REFER TO STOP VALVE THRUST BLOCK TABLE FOR DIMENSIONS



PLAN OF TEE FITTING THRUST BLOCK DETAIL REFER TO TEE FITTING THRUST BLOCK TABLE FOR DIMENSIONS



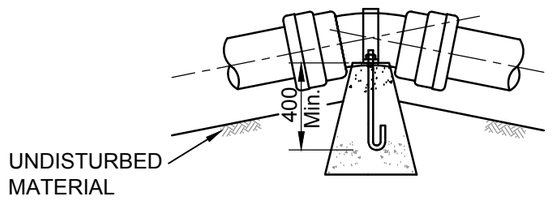
PLAN OF HORIZONTAL AND ELEVATION OF CONCAVE VERTICAL THRUST BLOCK DETAIL REFER TO BEND THRUST BLOCK TABLE FOR DIMENSIONS

STOP VALVE, DEAD END & TEE THRUST BLOCK TABLE

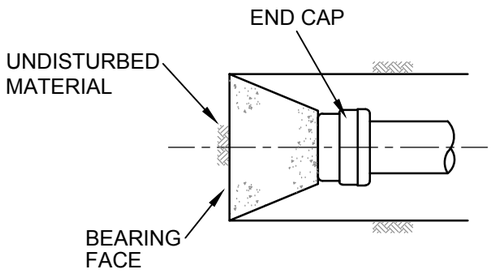
FITTING NOM. SIZE	THRUST (kN)	BEARING FACE AREA (m2)
100	13.75	0.275
150	29.05	0.581
200	49.86	0.997
225	62.03	1.241
250	75.58	1.512
300	110.23	2.203

BEND THRUST BLOCK TABLE

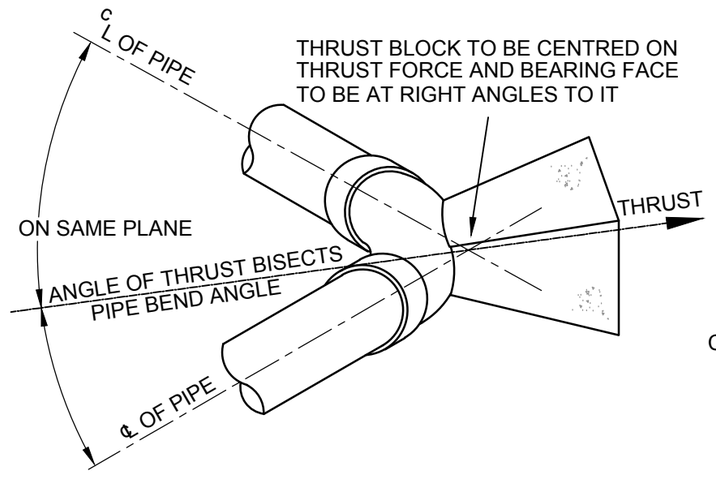
HORIZ. DEFL.	BEND NOM. DIA.	THRUST (kN)	BEARING FACE AREA (m2)
UP TO 11 1/4°	100	2.70	0.054
	150	5.69	0.114
	200	9.77	0.195
	225	12.16	0.243
	250	14.83	0.297
	300	21.62	0.432
UP TO 22 1/2°	100	5.37	0.107
	150	11.34	0.227
	200	19.45	0.389
	225	24.22	0.484
	250	29.51	0.590
	300	43.04	0.861
UP TO 45°	100	10.52	0.210
	150	22.25	0.445
	200	38.16	0.763
	225	47.51	0.950
	250	57.88	1.158
	300	84.42	1.688
UP TO 90°	100	19.43	0.389
	150	41.10	0.822
	200	70.50	1.410
	225	87.78	1.756
	250	106.96	2.139
	300	156.00	3.120



ELEVATION OF CONVEX VERTICAL BEND ANCHOR BLOCK DETAIL REFER TO CONVEX VERTICAL ANCHOR BLOCK TABLE FOR DIMENSIONS



PLAN OF DEAD END THRUST BLOCK DETAIL REFER TO DEAD END THRUST BLOCK TABLE FOR DIMENSIONS



DETAIL SHOWING TYPICAL THRUST FORCE AND THRUST BLOCK

CONVEX VERTICAL BEND ANCHOR BLOCK TABLE

HORIZ. DEFL.	BEND NOM. DIA.	THRUST (kN)	BLOCK VOLUME (m3)
UP TO 11 1/4°	100	2.70	0.115
	150	5.69	0.242
	200	9.77	0.415
	225	12.16	0.517
	250	14.83	0.630
	300	21.62	0.918
UP TO 22 1/2°	100	5.37	0.228
	150	11.34	0.482
	200	19.45	0.826
	225	24.22	1.029
	250	29.51	1.254
	300	43.04	1.828
UP TO 45°	100	10.52	0.448
	150	22.25	0.945
	200	38.16	1.621
	225	47.51	2.018
	250	57.88	2.459
	300	84.42	3.586

NOTES

SAND BEDDING AND SAND SURROUND NOT SHOWN ON VIEWS FOR SAKE OF CLARITY.
BEARING FACE OF THRUST BLOCKS TO BE CAST AGAINST UNDISTURBED MATERIAL. BEARING FACE OF UNDISTURBED MATERIAL TO BE TRIMMED SQUARE TO THE DIRECTION OF THRUST AND ALL LOOSE MATERIAL REMOVED.

AN ALLOWABLE SOIL BEARING CAPACITY OF 50kPa HAS BEEN ASSUMED FOR THRUST BLOCK DIMENSIONING. THIS CAPACITY IS TYPICAL FOR SOFT CLAY. TO VARY BEARING AREA FOR DIFFERENT MATERIAL, CONSULT THE DESIGN ENGINEER.

ALL CONCRETE TO BE 20MPa.

VALVE OR FITTING TO HAVE ONE LAYER OF PETROLATUM COMPOUND OR BITUMEN IMPREGNATED TAPE PLACED BETWEEN STRAP AND VALVE OR FITTING.

VALVE OR FITTING TO HAVE A BOND BREAKING LAYER PLACED BETWEEN THE VALVE OR FITTING AND THE CONCRETE BLOCK.

BOLTS ARE TO BE GRADE 230R HOT DIP GALVANISED ROUND BAR, THREADED AT ONE END FOR SUFFICIENT LENGTH TO ALLOW GALVANISED WASHER AND NUT TO BE ATTACHED.

BOLTS TO BE BENT WITH A STANDARD COG OR HOOK FOR THAT DIAMETER BAR.

BOLTS MUST NOT BE FULLY TIGHTENED UNTIL CONCRETE HAS AT LEAST ONE DAYS CURING STRENGTH AND BOLTS MUST NOT BE OVER TIGHTENED.

ANCHOR DETAILS

BEND OR FITTING NOM. DIA.	BOLT, NUT & WASHER SIZE	No. BOLTS REQUIRED	STRAP SIZE	No. STRAPS
100	M20	2	50x8	1
150	M20	2	50x8	1
200	M20	4	50x8	2
225	M20	4	50x8	2
250	M20	4	50x8	2
300	M24	4	50x10	2

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — 31/08/2016 DATE

SHEET 1 OF 1

WATERMAIN THRUST BLOCK DETAILS

SURV
DRWN JB
DES CIM/PJN
CHKD MW

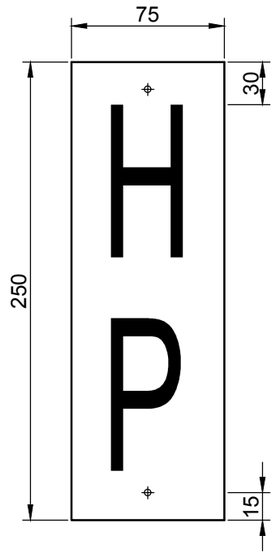
AS SHEET SIZE: A3

DRAWING No: 020-046

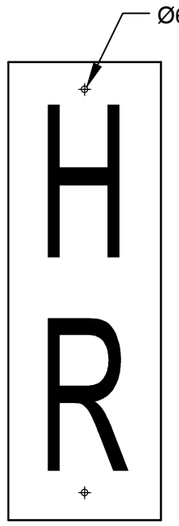
AMDT No:

CADFILE 020-046.dwg

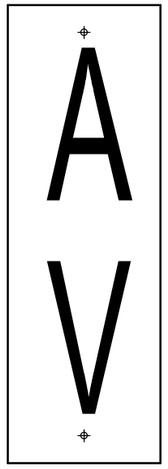
DATE 31/08/2016



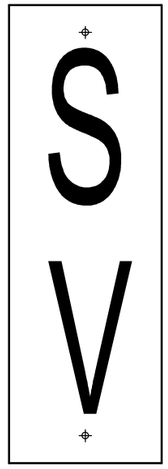
FIRE HYDRANT PATH



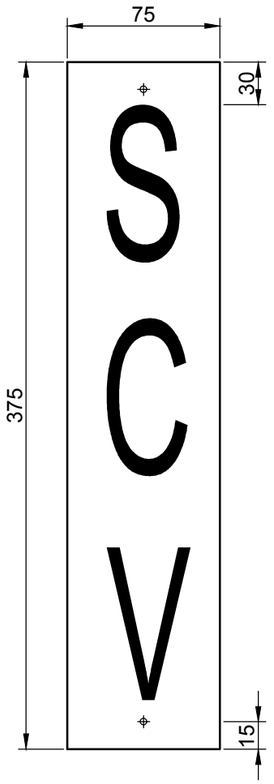
FIRE HYDRANT ROAD



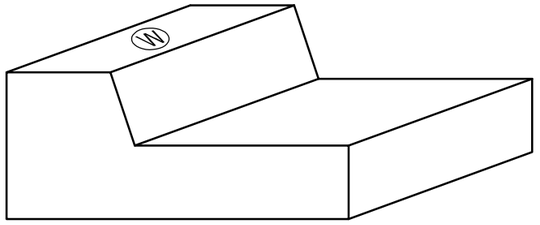
AIR VALVE



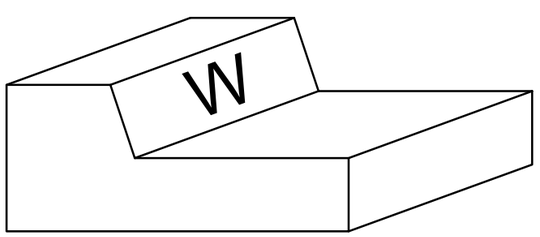
STOP VALVE



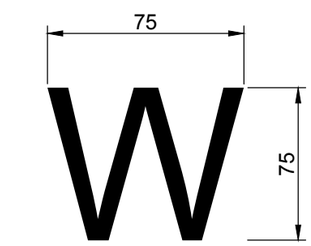
SCOUR VALVE
CHARACTERS 12mm
THICK x 80mm HIGH



ALTERNATIVE MARKER (PREFERRED)
STAINLESS STEEL MARKERS STAMPED WITH "W"
INSTALL AS PER MANUFACTURERS SPECIFICATION
WITH MUSHROOM HEAD STAINLESS STEEL SPIKE.
THE "W" ALIGNED 90° TO THE CROSSING



ALTERNATIVE MARKER
SAWCUT IN EXISTING KERB OR STAMPED IN
NEW KERB. (USE FOR SERVICES, WHERE NOT
AT RIGHT ANGLE TO KERB)



MARKER POST PLATE

NOTES

1. ALL DIMENSIONS IN MILLIMETERS.

2. ALL HYDRANTS, STOP VALVES, SCOUR VALVES, AIR VALVES SHALL BE MARKED WITH MARKER PLATES. MARKER POSTS SHALL BE USED IN THE ABSENCE OF A SUITABLE KERB FIXING POSITION OR AS PER DIRECTED BY THE WATER AUTHORITY. THE KERB SHALL ALSO BE MARKED WITH PERMANENT PAINT 150mm WIDE FACE AND TOP OF KERB AS PER COVER COLOURS.

3. STANDARD COVER COLOURS.

VALVES	- RED
ZONE VALVES	- WHITE
HYDRANTS	- YELLOW
AIR VALVES	- WHITE

4. MARKER PLATES SHALL BE CONSTRUCTED FROM 1.60mm ALUMINIUM SHEET.

5. LETTERS FOR ALL MARKERS SHALL BE PAINTED IN RED ENAMEL WITH THE BACKGROUND TO BE PAINTED WITH WHITE ENAMEL PAINT.

6. ALL WATERMAIN ROAD CROSSINGS SHALL BE MARKED BY A STAINLESS STEEL MARKER ON TOP OF KERB OR BY A "W" ON THE FACE OF KERB AS PER DETAIL.

7. WATER MAIN (WM) MARKER POSTS WHERE REQUIRED SHALL BE LOCATED AT ALL LINE DEVIATIONS AND AT 200 METERS MAX CENTERS.

8. VALVE AND HYDRANT MARKER POSTS WHERE REQUIRED SHALL BE LOCATED 200 CLEAR OF ROAD / PROPERTY BOUNDARY WITH THE MARKER PLATE FACING THE MAIN.

9. NOTWITHSTANDING THE REQUIREMENTS OF NOTE 7, VALVE AND HYDRANT MARKER POSTS SHALL NOT BE LOCATED GREATER THAN 5.0 METRES CLEAR OF THE WATER MAIN ALIGNMENT.

10. THE DISTANCE IN METERS TO AND SIZE OF THE WATERMAIN IN MILLIMETERS IS TO BE STAMPED ON THE MARKER PLATE IN NUMBERS 12mm HIGH.

11. ON SEALED ROADS A BLUE REFLECTOR MARKER IS TO BE LOCATED ON THE ROADS CENTRE LINE ADJACENT TO HYDRANT LOCATION WITH INDICATOR ARROW FACING TOWARD THE HYDRANT. REFLECTOR IS TO BE SECURED WITH BITUMEN ADHESIVE PAD.

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SCALES: NTS

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SHEET 1 OF 1

WATER MAIN MARKER PLATES

SURV

DRWN GW

DES

CHKD MW

AS SHEET SIZE: A3

DRAWING No: 020-047

AMDT No:

CADFILE 020-047.dwg

DATE 31/08/2016