WBBROC WATER SUPPLY STANDARD DRAWINGS
DRAWING INDEX - SHEET 1 OF 2

DRAWING NO	DRAWING TITLE		REV NO	DATE ADOPTED
WBB-WAT-INDEX	WATER SUPPLY	DRAWING INDEX SHEET 1 OF 2	A	07/08/2018
WBB-WAT-INDEX	WATER SUPPLY	DRAWING INDEX SHEET 2 OF 2	A	07/08/2018
WBB-WAT-1100-1	TYPICAL WATER RETICULATION	LOCALITY PLAN SHEET 1	A	07/08/2018
WBB-WAT-1101-2	TYPICAL WATER RETICULATION	DESIGN PLAN AND DETAILS SHEET 2	A	07/08/2018
WBB-WAT-1101-3	TYPICAL WATER RETICULATION	DESIGN PLAN NOTES SHEET 3	A	07/08/2018
WBB-WAT-1102-1	TYPICAL MAINS CONSTRUCTION	RETICULATION MAIN ARRANGEMENTS	A	07/08/2018
WBB-WAT-1103-1	TYPICAL MAINS CONSTRUCTION	DISTRIBUTION AND TRANSFER MAIN ARRANGEMENTS	A	07/08/2018
WBB-WAT-1104-1	TYPICAL	CUL-DE-SAC ARRANGEMENT	A	07/08/2018
WBB-WAT-1105-1	TYPICAL	PE WATER MAIN DETAILS	A	07/08/2018
WBB-WAT-1105-2	TYPICAL	CONNECTION TO EXISTING MAINS	A	07/08/2018
WBB-WAT-1108-1	PROPERTY SERVICES	POTABLE SERVICE CONNECTION CONDUIT DETAILS	A	07/08/2018
WBB-WAT-1108-2	PROPERTY SERVICES	POTABLE SERVICE CONNECTION TYPICAL MAIN TO METER	A	07/08/2018
WBB-WAT-1108-3	PROPERTY SERVICES	POTABLE SERVICE CONNECTION 20mm DOMESTIC SERVICE METER BOX DETAILS	A	07/08/2018
WBB-WAT-1109-2	PROPERTY SERVICES	SUPPLY AND INSTALLATION OF SERVICE	A	07/08/2018
WBB-WAT-1200-1	TYPICAL SOIL CLASSIFICATION GUIDELINES	AND ALLOWABLE BEARING PRESSURES CONNECTIONS AND WATER METERS	A	07/08/2018
WBB-WAT-1200-2	EMBEDMENT & TRENCHFILL	TYPICAL ARRANGEMENT	A	07/08/2018
WBB-WAT-1201-1	STANDARD EMBEDMENT	TYPICAL FLEXIBLE & RIGID PIPES	A	07/08/2018
WBB-WAT-1202-1	TYPICAL SPECIAL EMBEDMENT	INADEQUATE FOUNDATIONS REQUIRING OVER EXCAVATION & REPLACEMENT	A	07/08/2018
WBB-WAT-1203-1	TYPICAL SPECIAL EMBEDMENT	CONCRETE & STABILISED EMBEDMENT AND FLEXIBLE JOINT DETAILS	A	07/08/2018
WBB-WAT-1204-1	TYPICAL TRENCH AND BEDDING DETAILS	WITHIN EXISTING ROADS TYPE K TO N	A	07/08/2018
WBB-WAT-1205-1	TYPICAL THRUST BLOCK DETAILS	MASS CONCRETE	A	07/08/2018
WBB-WAT-1206-1	TYPICAL THRUST AND ANCHOR BLOCKS	FOR VALVES	A	07/08/2018
WBB-WAT-1207-1	TYPICAL THRUST AND ANCHOR BLOCKS	FOR VERTICAL BENDS	A	07/08/2018
WBB-WAT-1208-1	TYPICAL RESTRAINED JOINT SYSTEM	DN100 TO DN375 DI MAINS	A	07/08/2018
WBB-WAT-1209-1	TYPICAL TRENCH DRAINAGE	BULKHEADS AND TRENCHSTOP	A	07/08/2018
WBB-WAT-1210-1	TYPICAL TRENCH DRAINAGE	TRENCH SYSTEMS	A	07/08/2018
WBB-WAT-1211-1	TYPICAL BURIED CROSSINGS	UNDER OBSTRUCTIONS	A	07/08/2018
WBB-WAT-1212-1	TYPICAL BURIED CROSSINGS	MAJOR ROADWAYS	A	07/08/2018
WBB-WAT-1213-1	TYPICAL BURIED CROSSINGS	RAILWAYS	A	07/08/2018
WBB-WAT-1214-1	TYPICAL BURIED CROSSINGS	BORED AND JACKED ENCASING PIPE DETAILS	A	07/08/2018
WBB-WAT-1300-1	TYPICAL VALVE AND HYDRANT	ROAD AND PAVEMENT MARKERS	A	07/08/2018
WBB-WAT-1300-2	TYPICAL VALVE AND HYDRANT	IDENTIFICATION MARKER POSTS	A	07/08/2018
WBB-WAT-1301-1	TYPICAL VALVE AND HYDRANT INSTALLATION	VALVE ARRANGEMENT	A	07/08/2018
WBB-WAT-1302-1	TYPICAL HYDRANT INSTALLATION		A	07/08/2018
WBB-WAT-1303-1	TYPICAL VALVE AND HYDRANT INSTALLATION	FUTURE EXTENSION INSTALLATION	A	07/08/2018
WBB-WAT-1304-1	TYPICAL AIR VALVE INSTALLATION	FOR TRUNK MAIN	A	07/08/2018

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-INDEX VERSION B DATED 31/03/2015	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

WATER SUPPLY
DRAWING INDEX
SHEET 1 OF 2

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

WBB-WAT-INDEX

VERSION

A

NOT TO SCALE

ORG DATE:
07/08/2018

WBBROC WATER SUPPLY STANDARD DRAWINGS
DRAWING INDEX - SHEET 2 OF 2

DRAWING NO	DRAWING TITLE		REV NO	DATE ADOPTED
WBB-WAT-1305-1	TYPICAL SURFACE FITTING INSTALLATION	VALVE AND HYDRANT SURFACE BOXES TRAFFICABLE AND NON TRAFFICABLE	A	07/08/2018
WBB-WAT-1306-1	TYPICAL SURFACE FITTING INSTALLATION	VALVE AND HYDRANT SURFACE BOXES SUPPORT AND SURROUND DETAILS	A	07/08/2018
WBB-WAT-1307-3	TYPICAL APPURTENANCE INSTALLATION	SCOUR ARRANGEMENTS	A	07/08/2018
WBB-WAT-1308-1	TYPICAL APPURTENANCE INSTALLATION	LARGE VALVE CHAMBERS	A	07/08/2018
WBB-WAT-1309-1	TYPICAL APPURTENANCE INSTALLATION	PASSIVE PRESSURE REDUCING VALVES (PRV)	A	07/08/2018
WBB-WAT-1309-2	TYPICAL APPURTENANCE INSTALLATION	ACTIVE PRESSURE REDUCING VALVES (PRV) DN100 TO DN300	A	07/08/2018
WBB-WAT-1309-3	TYPICAL APPURTENANCE INSTALLATION	ACTIVE PRESSURE REDUCING VALVES (PRV) DN100 TO DN150	A	07/08/2018
WBB-WAT-1309-4	TYPICAL APPURTENANCE INSTALLATION	ACTIVE PRESSURE REDUCING VALVES (PRV) DN200 TO DN300	A	07/08/2018
WBB-WAT-1310-4	TYPICAL APPURTENANCE INSTALLATION	FLOWMETER DETAILS BELOW GROUND INSTALLATION	A	07/08/2018
WBB-WAT-1311-1	AERIAL CROSSINGS	TYPICAL AQUEDUCT	A	07/08/2018
WBB-WAT-1311-2	TYPICAL AERIAL CROSSINGS	AQUEDUCT PROTECTION GRILLE	A	07/08/2018
WBB-WAT-1312-1	AERIAL CROSSINGS	TYPICAL BRIDGE CROSSING CONCEPTS	A	07/08/2018
WBB-WAT-1313-1	FLANGED JOINTS	TYPICAL BOLTING DETAILS	A	07/08/2018
WBB-WAT-1400-1	TYPICAL STEEL PIPE JOINTING	BUTT WELDING OF JOINTS	A	07/08/2018
WBB-WAT-1401-1	TYPICAL STEEL PIPE JOINTING	RUBBER RING JOINT SPIGOT BAND SPECIALS	A	07/08/2018
WBB-WAT-1402-1	TYPICAL STEEL PIPE JOINTING	WELDED PIPE COLLARS	A	07/08/2018
WBB-WAT-1403-1	TYPICAL STEEL PIPE JOINTING	BENDS	A	07/08/2018
WBB-WAT-1404-1	TYPICAL STEEL FABRICATION	ACCESS OPENING FOR PIPES ≧ DN750	A	07/08/2018
WBB-WAT-1405-1	TYPICAL STEEL FABRICATION	DISMANTLING AND FLEXIBLE JOINTS	A	07/08/2018
WBB-WAT-1406-1	TYPICAL STEEL FABRICATION	VALVE CONNECTION AND BYPASS	A	07/08/2018
WBB-WAT-1407-1	DI INSTALLATION	VALVE BYPASS ARRANGEMENT TYPICAL DI PIPE FITTINGS	A	07/08/2018
WBB-WAT-1408-1	TYPICAL JOINT CORROSION PROTECTION	CEMENT MORTAR LINED STEEL PIPE > DN750 TO DN1200	A	07/08/2018
WBB-WAT-1409-1	HYDRANT INSTALLATION FITTINGS	TYPICAL PE ASSEMBLIES NOMENCLATURE	A	07/08/2018

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-INDEX VERSION B DATED 31/03/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

WATER SUPPLY
DRAWING INDEX
SHEET 2 OF 2

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

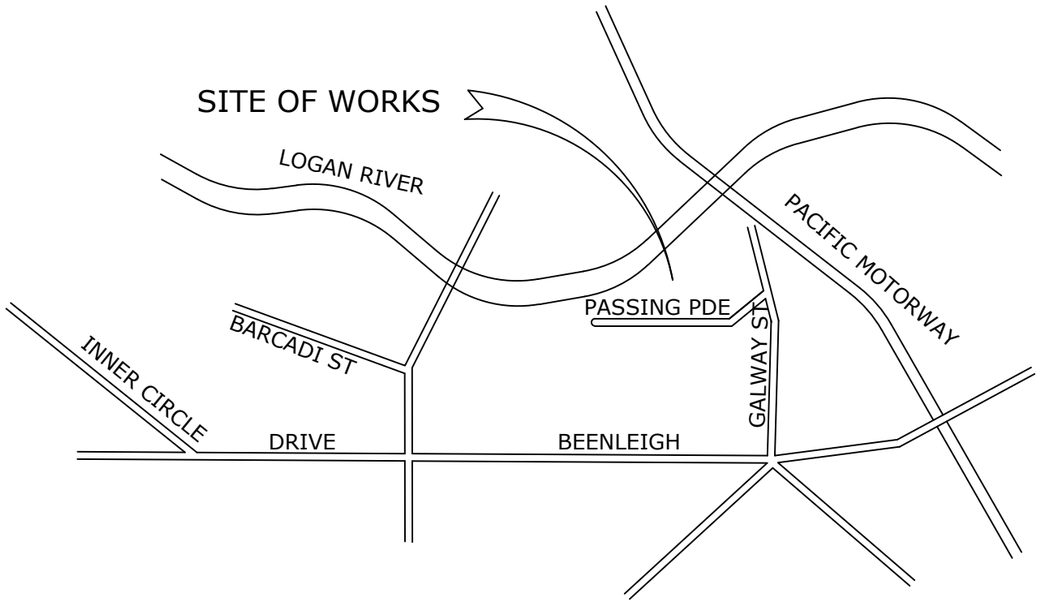
WBB-WAT-INDEX

VERSION

A

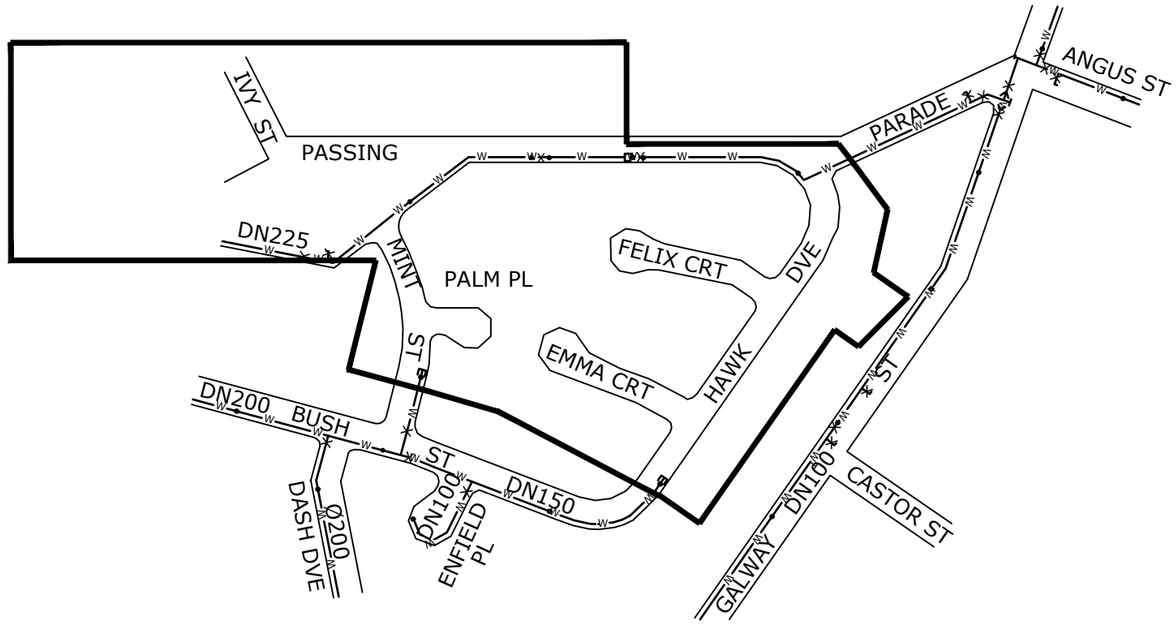
NOT TO SCALE

ORG DATE: 07/08/2018



REGIONAL PLAN

NTS



LOCALITY PLAN

SCALE 1 : 2500
UBD MAP REFERENCE NO

DEVELOPMENT STAGE/AREA

MOST OF THE DEVIATIONS FROM SEQ DRAWINGS ARE HIGHLIGHTED. HOWEVER IT IS THE RESPONSIBILITY OF THE PERSON USING THESE DRAWINGS TO IDENTIFY ALL THE CHANGES.

NOTE:
FOR EACH DRAWING, A CROSS ON A SERVICE PROVIDER'S NAME IN THE TITLE BLOCK BELOW MEANS THAT THE DRAWING IS **NOT** APPLICABLE TO THAT SERVICE PROVIDER

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1100-1 VERSION B DATED 01/09/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL WATER RETICULATION
LOCALITY PLAN
SHEET 1

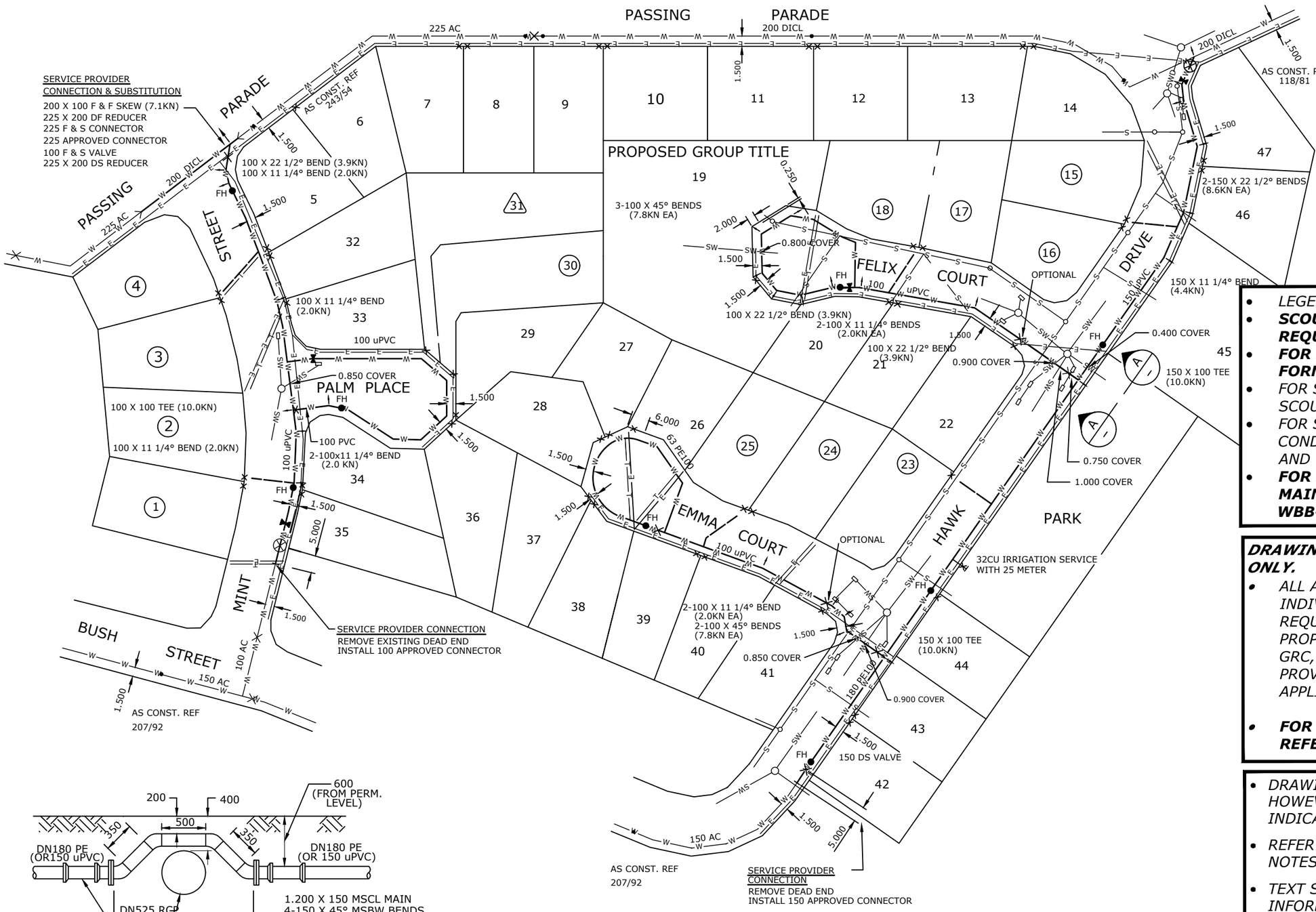
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-WAT-1100-1

VERSION
A

NOT TO SCALE

ORG DATE:
07/08/2018



SP CONNECTION
225 X 150 F & F SKEW (15.8KN)
2-225 F & S CONNECTORS
150 F & S VALVE
225 APPROVED CONNECTOR

150 X 22 1/2° BEND (8.6KN)
150 X 11 1/4° BEND (4.4KN)

- *LEGEND REFER WBB-GEN-1100-1*
- ***SCOURS TO BE PROVIDED ONLY WHERE REQUIRED BY SP.***
- ***FOR SPECIFIC CUL-DE-SAC END FORMATS REFER WBB-WAT-1104-1***
- *FOR SPECIFIC MAIN LINE FORMATS FOR SCOURING REFER WBB-WAT-1307-3*
- *FOR SPECIFIC WATER SERVICE AND CONDUIT FORMATS REFER WBB-WAT 1108 AND 1109 SET.*
- ***FOR SPECIFIC WBBROC-SP BRANCH MAIN ARRANGEMENT REFER WBB-WAT-1303-1.***

DRAWING INDICATIVE FOR RESIDENTIAL ONLY.

- *ALL ALIGNMENTS TO BE AS PER INDIVIDUAL COUNCIL/ROAD AUTHORITY REQUIREMENTS. SERVICE CONDUITS AND PROPERTY SERVICES FOR BRC, FCRC, GRC, NBRC AND SBRC AREAS TO BE PROVIDED AS SHOWN IN THE APPLICABLE STD. DRGS.*
- ***FOR APPROVED PIPE MATERIAL REFER TO APAM LIST.***

- *DRAWING PRODUCED NOT TO SCALE. HOWEVER, SCALES SHOWN ARE INDICATIVE OF THOSE REQUIRED.*
- *REFER WBB-WAT-1101-3 FOR NOTES AND CONDITIONS.*
- *TEXT SHOWN IN ITALICS IS FOR INFORMATION ONLY.*

DELETED

EXAMPLE SECTION A
SCALE 1:25

1.200 X 150 MSCL MAIN
4-150 X 45° MSBW BENDS
2-150 MS LOOSE FLANGES (A.S.2129 TYPE C)
2-150 F & S CONNECTORS
MILD STEEL PIPE TO BE SINTAKOTED.
ALL FLANGED AND WELDED JOINTS TO BE PROTECTED WITH DENSO WRAPPING TAPE.
(FORMAT AND MATERIALS SHOWN SUBJECT TO SP APPROVAL).

SITE PLAN
SCALE 1:500

MAIN TO BE DISUSED

STREET	DIA	TYPE	LENGTH	FOLIO/YEAR	F.H.
PASSING PARADE	225	AC	30.000	193/1954	

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1101-2 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL WATER RETICULATION DESIGN PLAN AND DETAILS SHEET 2

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1101-2

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018

TYPICAL NOTES TO BE INCLUDED WITH DRAWING SET

ENVIRONMENTAL CONDITIONS

PLACE ON YOUR DRAWING NOTES AS RECEIVED IN YOUR APPROVAL LETTER FROM THE ENVIRONMENTAL REGULATOR OR MANAGER. IF NOTES RELEVANT TO THIS ESTATE ARE NOT SPECIFIED IN YOUR APPROVAL LETTER, TYPICAL NOTES AS FOLLOWS SHALL BE PLACED ON ALL DRAWINGS.

VEGETATION PROTECTION

A. TREES LOCATED ALONG THE FOOTPATH SHALL BE, TRANSPLANTED PRIOR TO CONSTRUCTION, OR REPLACED IF DESTROYED.
B. WHEN WORKING WITHIN 4m OF TREES, RUBBER OR HARDWOOD GIRDLES SHALL BE CONSTRUCTED WITH 1.8 m BATTENS CLOSELY SPACED AND ARRANGED VERTICALLY FROM GROUND LEVEL. GIRDLES SHALL BE STRAPPED TO TREES PRIOR TO CONSTRUCTION AND REMAIN UNTIL COMPLETION.
C. TREE ROOTS SHALL BE TUNNELLED UNDER, RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHALL BE TREATED WITH A SUITABLE FUNGICIDE. CONTACT RELEVANT COUNCIL ARBORIST FOR FURTHER ADVICE.
D. ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY AN APPROVED ARBORIST.

SOIL

A. TOPSOIL AND SUBSOIL SHALL BE STOCKPILED SEPARATELY.
B. CARE SHALL BE TAKEN TO PREVENT SEDIMENT FROM ENTERING THE STORMWATER SYSTEM. THIS MAY INVOLVE PLACING APPROPRIATE SEDIMENT CONTROLS AROUND STOCKPILES.
C. ACID SULPHATE SOILS EXIST IN THE WORKS AREA. THE OUTPUTS FROM THE RISK ASSESSMENT BASED ON THE QUEENSLAND ACID SULPHATE SOIL TECHNICAL MANUAL REQUIRES THAT ACID SULPHATE SOILS BE MANAGED AS FOLLOWS:

CREEK CROSSINGS

A. SILTATION CONTROL MEASURES SHALL BE PLACED DOWNSTREAM OF ANY EXCAVATION WORK.
B. APPROPRIATE SEDIMENT CONTROLS SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING THE CREEK.
C. NO SOIL SHALL BE STOCKPILED WITHIN 5 m OF THE CREEK.

REHABILITATION

A. PREDISTURBANCE SOIL PROFILES AND COMPACTION LEVELS SHALL BE REINSTATED.
B. PREDISTURBANCE VEGETATION PATTERNS SHALL BE RESTORED.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT WBBROC-SP WATER SUPPLY CODE SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. ADOPT LIP OF KERB OR SHOULDER OF ROAD AS PERMANENT LEVEL.
4. COVER ON MAINS FROM PERMANENT LEVEL TO BE AS SHOWN IN WBB-WAT-1200-2.
5. CONDUITS TO BE INSTALLED IN ACCORDANCE WITH THE STANDARD DRAWINGS.
6. **DELETED.**
7. ALL MATERIALS USED IN THE WORKS SHALL COMPLY WITH THE WBBROC-SP's ACCEPTED PRODUCTS AND MATERIALS LIST OR BE APPROPRIATELY SHOWN, LISTED AND DEFINED IN THE ENGINEERING SUBMISSION SO THAT THE ALTERNATIVE PRODUCT OR MATERIAL CAN BE ASSESSED AND IF APPROPRIATE, APPROVED BY WBBROC-SP.
8. ALL CONCRETE FOOTPATHS TO BE CLEAR OF WATER MAINS.
9. **DELETED.**
10. THE CONSTRUCTION OF THE WATER RETICULATION WORK SHOWN ON THIS DRAWING MUST BE SUPERVISED BY AN ENGINEER WHO HAS RPEQ REGISTRATION. WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT TO THE RETICULATION SYSTEM.
11. **REFER TO DRAWING WBB-WAT-1109-2 FOR THE REQUIREMENTS OF THE SUPPLY AND INSTALLATION OF SERVICE CONNECTIONS AND WATER METERS**.

ALL ENVIRONMENT PROTECTION MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING,COMMENCING.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1101-3 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL WATER RETICULATION DESIGN PLAN NOTES SHEET 3

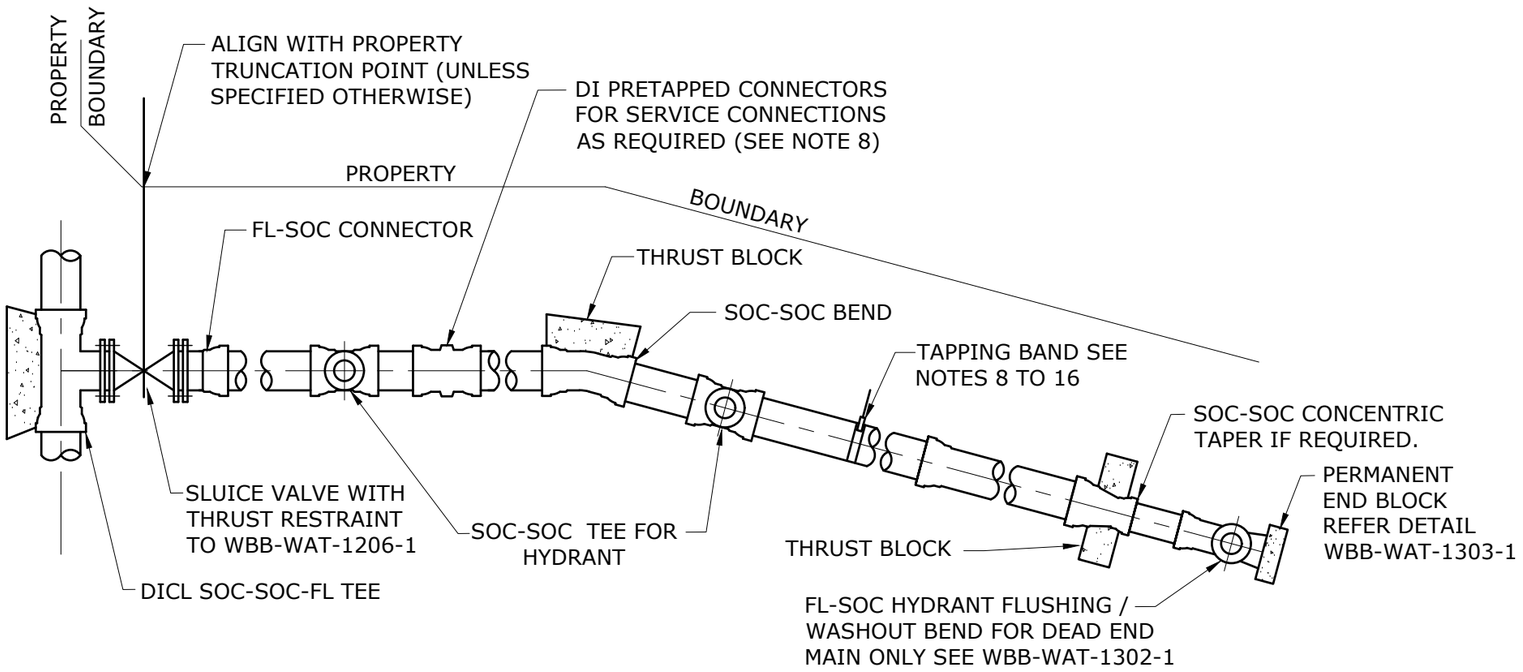
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1101-3

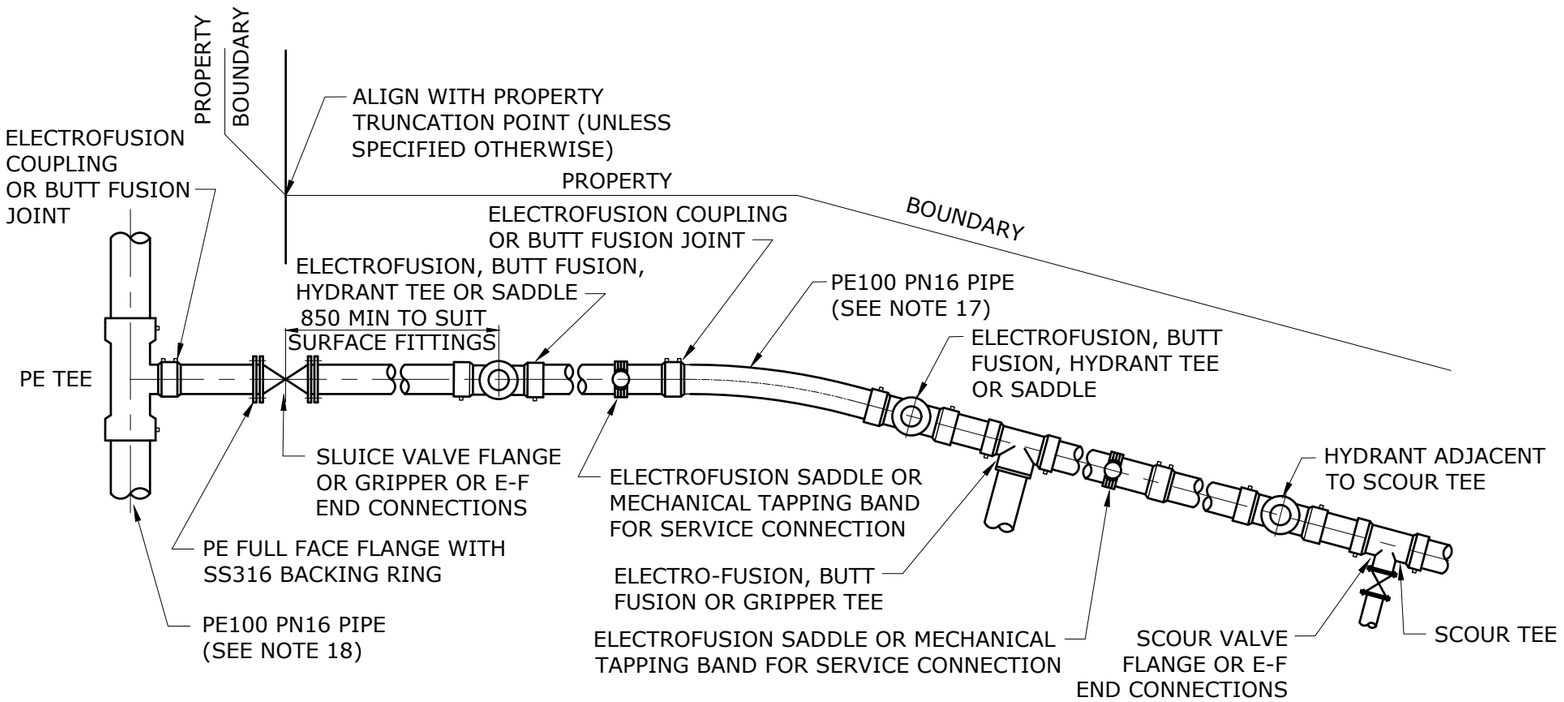
VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018



TYPICAL INSTALLATION OF PVC & DI PIPES & FITTINGS



TYPICAL INSTALLATION OF PE PIPES & FITTINGS

(FOR CUT-IN DETAILS SEE WBB-WAT-1105-1)

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. INSTALL PIPEWORK PARALLEL TO PROPERTY BOUNDARIES.
3. **DELETED.**
4. WRAP FLANGES AND BOLTS, WITH A PETROLATUM TAPE SYSTEM IN ACCORDANCE WITH WBB-WAT-1313.

5A. DEFLECTION DETAILS I.E. PIPE LENGTH AND OFFSET SHALL BE DETAILED ON DESIGN DRAWING.

5B. USE FL-FL FITTINGS FOR TEE, VALVE AND HYRDRANT WHEN IN CLOSE PROXIMITY (SEE DRAWING WBB-WAT-1105-2)

5C. REFER TO WBB-WAT-1109-2 FOR THE REQUIREMENTS OF THE SUPPLY AND INSTALLATION OF SERVICE CONNECTIONS AND WATER METERS.

DI & PVC PIPE

6. DUCTILE IRON FITTINGS MAY BE USED WITH DI & PVC PIPE. FITTINGS SHALL BE FBE COATED AND LINED. CEMENT LINED WITH A BITUMINOUS EXTERNAL COATING MAY BE USED WITH APPROVAL. DO NOT USE PVC FITTINGS.
7. PE SLEEVING, COLOURED FOR THE PRODUCT IS REQUIRED ON ALL DI PIPE AND FITTINGS APPLIED IN ACCORDANCE WITH AS 3681. TWO THICKNESS REQUIRED BETWEEN FITTINGS AND THRUST BLOCK. REINSTATE ANY DAMAGED SLEEVING AS PER MANUFACTURER'S SPECIFICATIONS.
8. USE PRE-TAPPED CONNECTORS ON DN 100 TO **DN 200** NEW MAIN INSTALLATIONS.
9. USE TAPPING BANDS FOR CONNECTIONS TO EXISTING MAINS.

PVC PIPE

10. USE PRE-TAPPED CONNECTORS, REFER NOTE 8.
11. PVC PIPE SHALL NOT BE IN CONTACT WITH THRUST BLOCK CONCRETE.
12. MAXIMUM SIZE OF DRILLED HOLES FOR SERVICE CONNECTIONS IN PVC PIPE TO BE 30% OF DN OR 50 (LOWER VALUE TO BE USED).
13. DI SPIGOTS SHALL NOT BE FITTED INTO PVC SOCKETS.
14. PVC PIPE SHALL NOT BE BENT OR CURVED.

DI PIPE

15. DIRECT TAPPING OF DICL PIPE IS PROHIBITED.

16A. ELECTRICALLY ISOLATE COPPER SERVICES FROM DI PIPE.

16B. WHERE TAPPING BANDS ARE INSTALLED ON DICL PIPE, THE SECTION OF THE MAIN AT THE PROPOSED TAPPING POINT SHALL BE FIRST CLEANED AND WRAPPED WITH MINIMUM OF TWO LAYERS OF SELF-ADHESIVE POLYVINYL CHLORIDE WRAPPING. POLYETHYLENE SLEEVING SHALL BE REPLACED AROUND PIPE AND TAPPING BAND.

PE PIPE

17. PE PIPE MAY BE COLD BENT TO MAXIMUM RADIUS AS PER POP 202, STAKES OR OTHER SOURCES OF POINT LOADS SHALL NOT BE USED TO ASSIST IN BENDING THE PIPE.
18. MAKE ALLOWANCE DURING CONSTRUCTION FOR EXPANSION AND CONTRACTION OF PE PIPE DUE TO TEMPERATURE CHANGES.
19. ELECTROFUSION AND BUTT WELDING TO BE IN ACCORDANCE WITH WSA-01 (POLYETHYLENE CODE), BUTT WELDING IN TRENCHES IS NOT PERMITTED.
20. ALL MECHANICAL COUPLINGS TO BE SELF-RESTRAINING.
21. REFER WBB-WAT-1409-1 FOR TYPICAL PE ARRANGEMENTS.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1102-1 VERSION B DATED 16/09/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL MAINS CONSTRUCTION RETICULATION MAIN ARRANGEMENTS

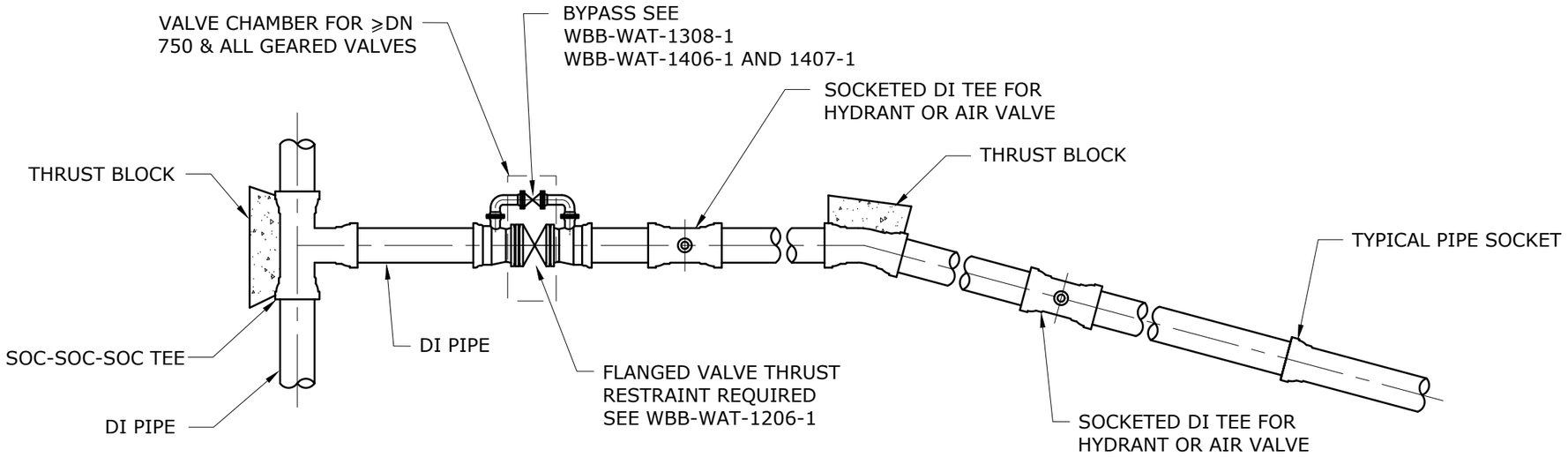
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1102-1

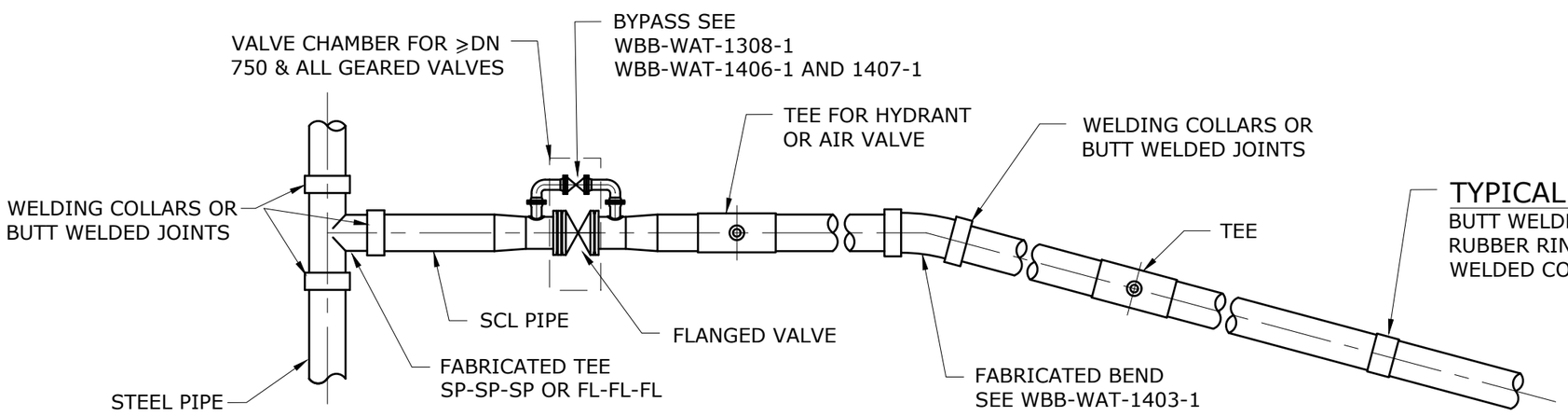
VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018



TYPICAL INSTALLATION OF DI MAINS



TYPICAL PIPE JOINT

BUTT WELDED - SEE WBB-WAT-1400-1
RUBBER RING - TO MANUFACTURER'S REQUIREMENTS
WELDED COLLARS - SEE WBB-WAT-1402-1

TYPICAL INSTALLATION OF STEEL MAINS

(THRUST BLOCKS REQUIRED WHERE NON-RESTRAINING RUBBER RING JOINTS USED)

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. PROVIDE CORROSION PROTECTION FOR ALL MAINS AND FITTINGS IN ACCORDANCE WITH CODE.
3. SERVICE CONNECTIONS NOT PERMITTED ON **DN225** AND LARGER MAINS. (REFER WBBROC-SP CONNECTIONS POLICY).
4. CONTACT WBBROC-SP FOR PREFERRED TRUNK MAIN AND VALVE LAYOUT AND DESIGN.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1103-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL MAINS CONSTRUCTION
DISTRIBUTION AND TRANSFER MAIN
ARRANGEMENTS

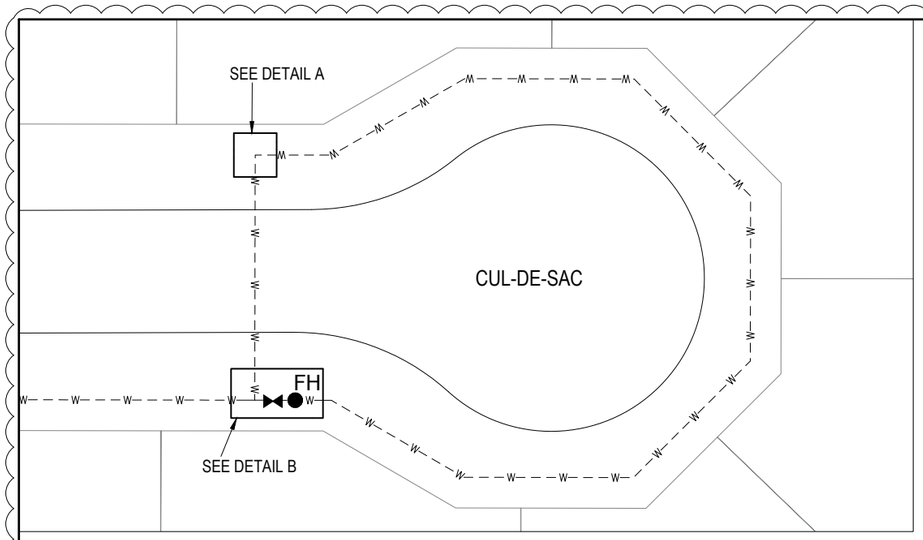
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-WAT-1103-1

VERSION
A

NOT TO SCALE

ORG DATE:
07/08/2018

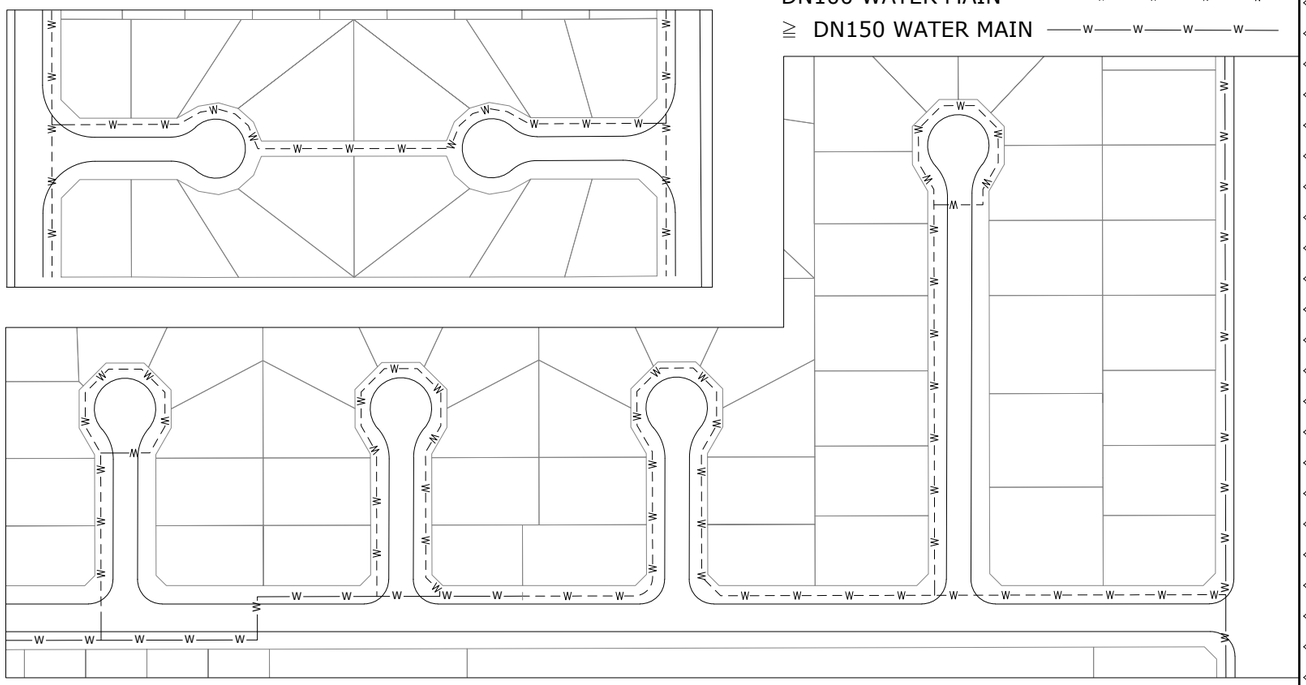


TYPICAL CUL-DE-SAC

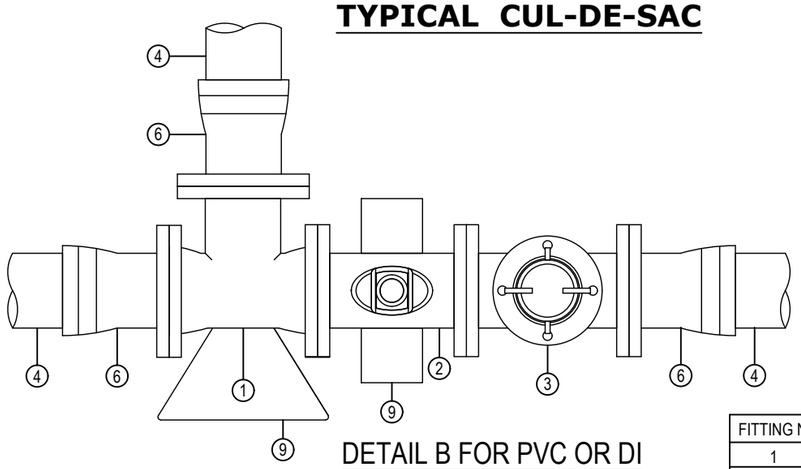
LEGEND

DN100 WATER MAIN

≧ DN150 WATER MAIN

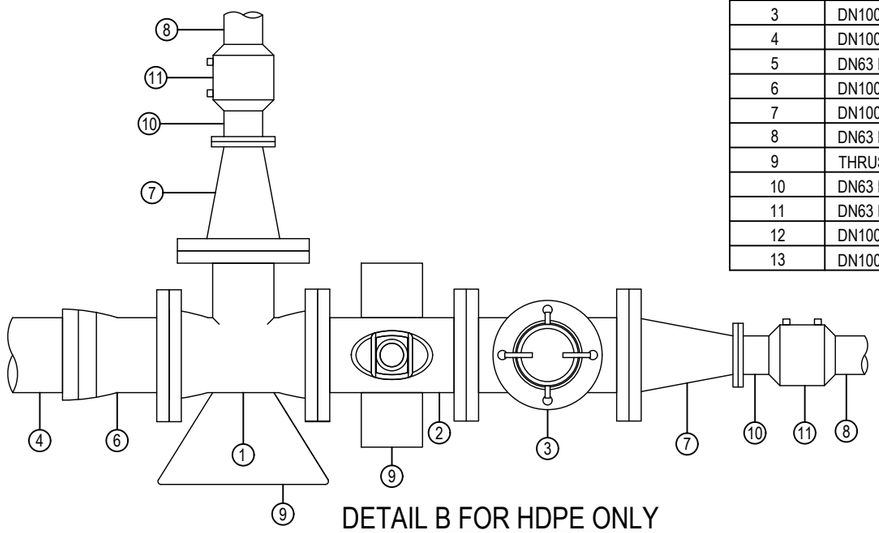


TYPICAL WATER MAIN LAYOUT

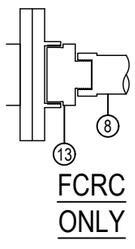


DETAIL B FOR PVC OR DI

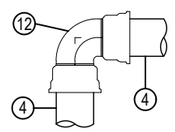
FITTING NO.	DESCRIPTION
1	DN100 FL-FL-FL DI TEE
2	DN100 FL DI RSV
3	DN100 x DN80 FL-FL-FL DI HYDRANT ASSEMBLY
4	DN100 PIPE SO-SP DI OR PVC
5	DN63 PE PLASSON ELBOW
6	DN100 DI SO-FL CONNECTOR
7	DN100 x DN50 DI FL-FL REDUCER
8	DN63 HDPE PIPE
9	THRUST BLOCK TO SUIT
10	DN63 PE STUB FLANGE WITH SS BACKING FLANGE
11	DN63 PE EF COUPLING
12	DN100 x 90° DI BEND
13	DN100 xDN63 PE FLANGE REDUCER



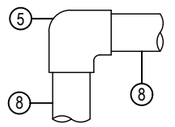
DETAIL B FOR HDPE ONLY



FCRC ONLY



DETAIL A FOR PVC OR DI



DETAIL A FOR HDPE ONLY

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. PIPE MATERIAL TO BE IN ACCORDANCE WITH ACCEPTED PRODUCTS AND MATERIALS LIST.
3. PE ELECTROFUSION (EF) FITTINGS TO BE CLASS PN16.
4. WHERE POSSIBLE USE A SINGLE LENGTH OF PE PIPE.
5. DO NOT CURVE PE PIPES TO A RADIUS OF LESS THAN **15 TIMES PIPE DN**.
6. BACKING FLANGES, NUTS, BOLTS AND WASHERS TO BE MANUFACTURED FROM GRADE 316 STAINLESS STEEL.
7. THRUST BLOCKS TO BE IN ACCORDANCE WITH WBB-WAT-1205-1.
8. PVC PIPE MAY BE USED AS SHROUD PIPE, CUT AS REQUIRED TO CLEAR HYDRANT FLANGE.
9. FOR HYDRANT COVERS AND SURROUNDS DETAILS SEE WBB-WAT-1302.
10. **DELETED.**
11. FOR CONNECTION TO EXISTING MAINS SEE ALSO WBB-WAT-1105-1.
12. TYPICAL HYDRANT PIPEWORK ASSEMBLIES ARE DETAILED IN WBB-WAT-1302-1.
13. **LOCATION OF SV AND FH MUST TAKE INTO CONSIDERATIONS LOT BOUNDARIES.**
14. **BRC USE DN100 IN CUL-DE-SAC HEAD AND ALL OTHER WBBROC-SPs USE DN63 HDPE IN CUL-DE-SAC HEAD.**
15. **REFER TO WBB-WAT-1303-1 FOR LOCATION OF VALVE AND HYDRANT AT LATERAL MAINS.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	REPLACE SEQ-WAT-1104-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL CUL-DE-SAC ARRANGEMENT

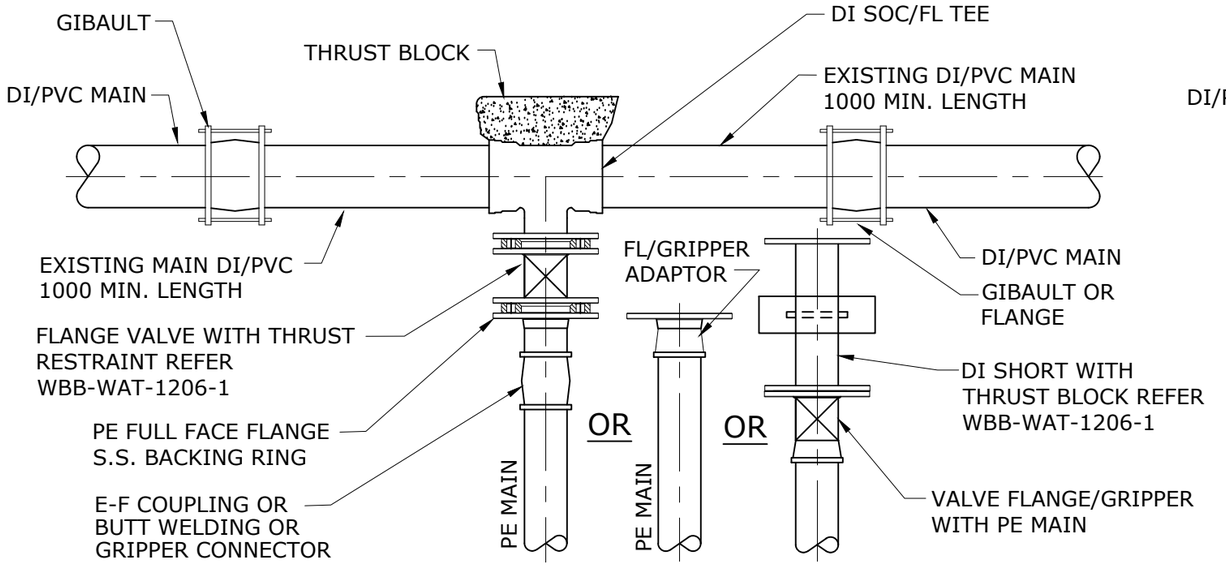
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1104-1

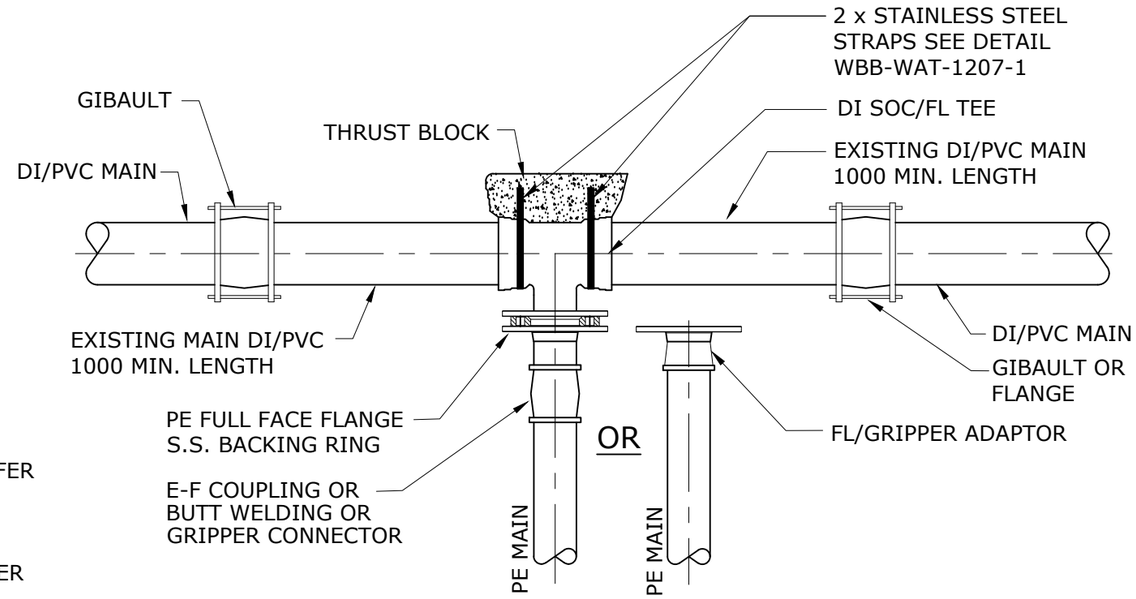
VERSION A

NOT TO SCALE

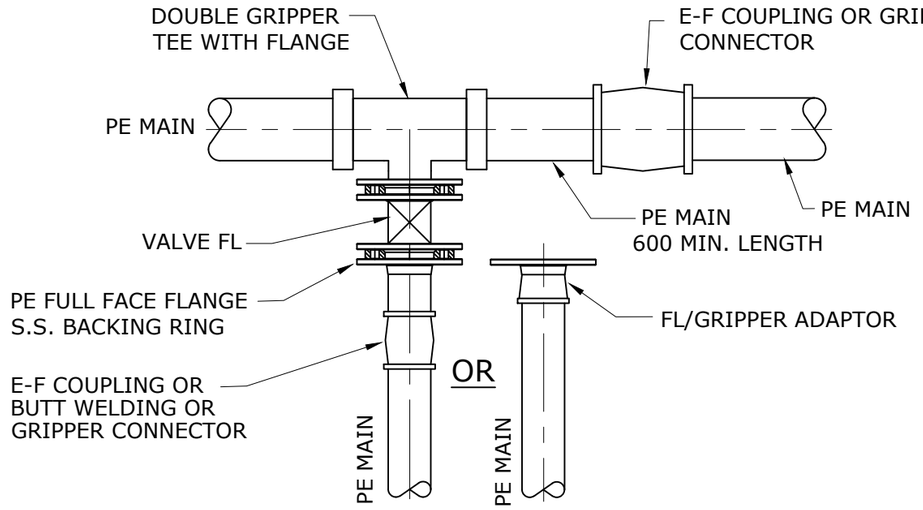
ORG DATE: 07/08/2018



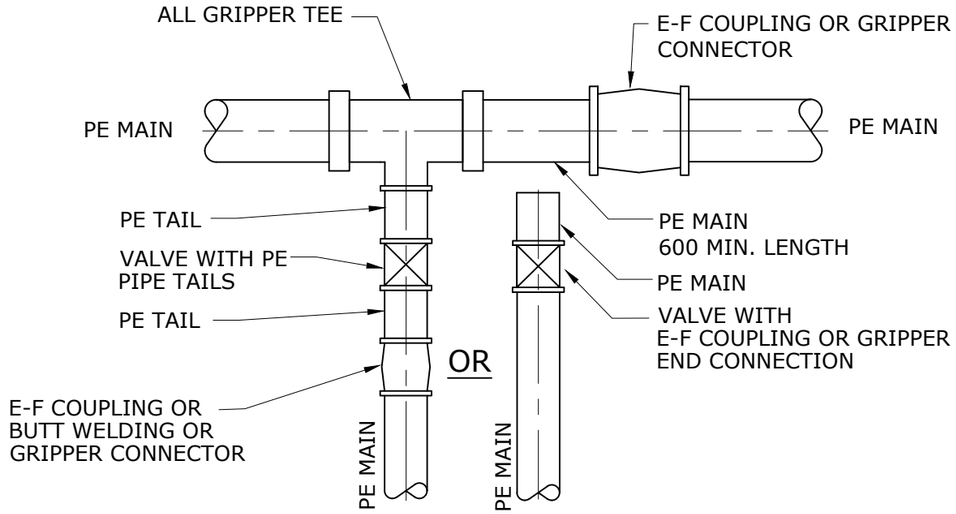
CUT-IN WITH VALVE INTO DI / PVC MAIN



CUT-IN TO EXISTING PVC/DI MAIN



CUT-IN TO PE MAIN
WITH FLANGE VALVE



CUT-IN TO PE MAIN WITH VALVE
WITH E-F OR GRIPPER CONNECTION

NOTES

1. REFER TO DRG. NO. WBB-WAT-1102-1 FOR NOTES.
2. HYDRANT CONNECTIONS AND DI TO PE FLANGE CONNECTIONS SHALL COMPROMISE PE FULL FACE FLANGE WITH 316 S.S BACKING RING.
3. APPROVED GRIPPER CONNECTIONS ARE **LISTED IN APAM**.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1105-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL
PE WATER MAIN DETAILS

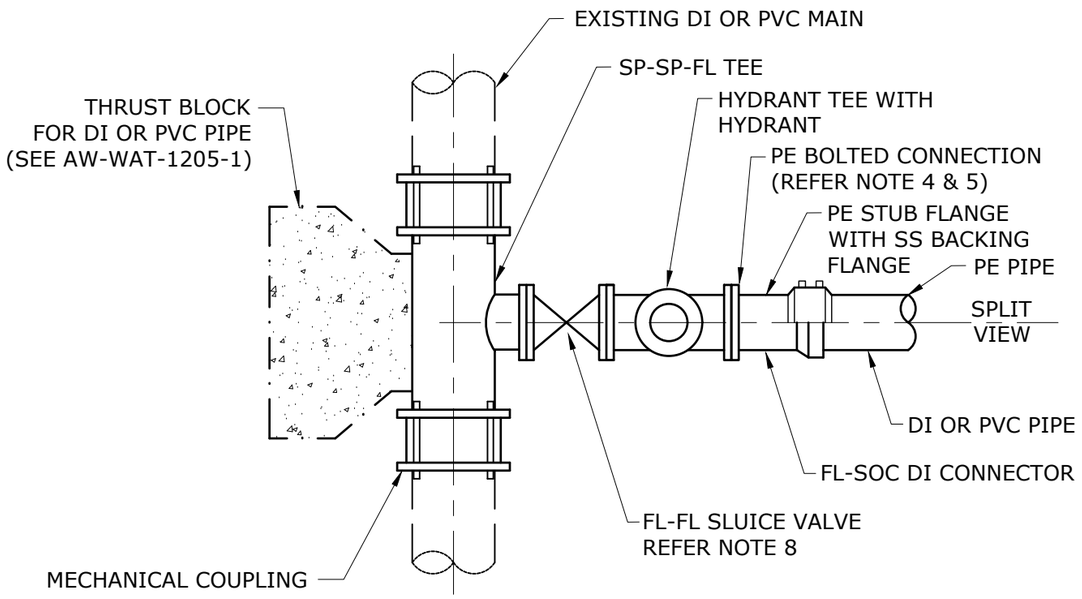
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-WAT-1105-1

VERSION
A

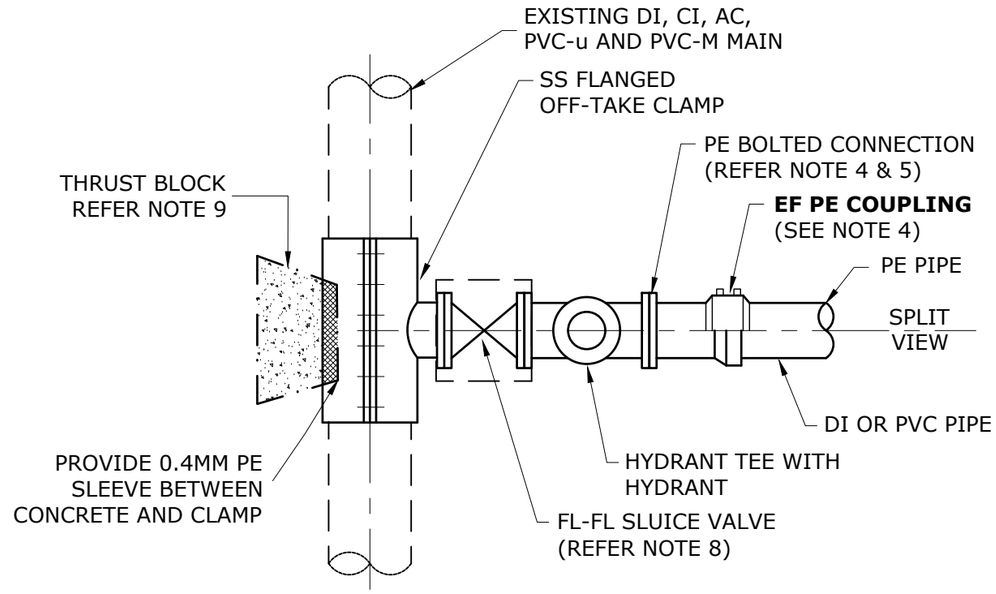
NOT TO SCALE

ORG DATE:
07/08/2018



CUT-IN CONNECTION METHOD

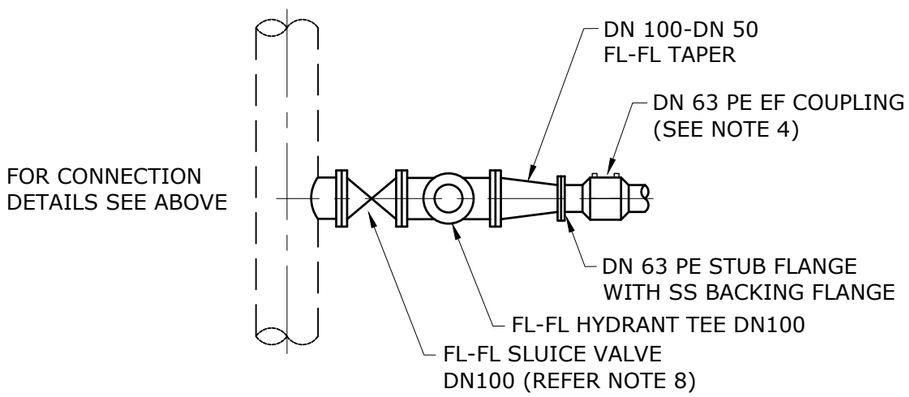
(USING MECHANICAL COUPLINGS)



UNDER PRESSURE CONNECTION METHOD

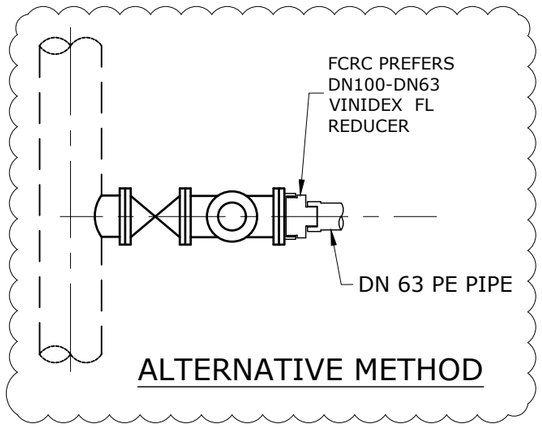
(USING SS FULL WRAP FLANGED OFFTAKE)
(NOT PERMITTED FOR PVC-O AND PE MAINS)

CONNECTION METHODS FOR OFFTAKE ≥ DN 100 DI, PVC AND PE PIPE



CONNECTION METHOD FOR DN 63 PE PIPE

(WHERE VALVE & HYDRANT REQUIRED)



NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. S.S. OFF-TAKE CLAMP TO BE GRADE 316 S.S. AND OF FULL WRAP CONFIGURATION.
3. ALL DICL PIPE AND FITTINGS TO BE SLEEVED OR RE-SLEEVED WITH POLYETHYLENE SLEEVING OR PETROLATUM TAPE SYSTEM.
4. PE ELECTROFUSION (EF) FITTINGS TO BE CLASS PN 16 ALTERNATIVE PE CONNECTIONS SHOWN IN WBB-WAT-1313-1.
5. BACKING FLANGES FOR PE FLANGES TO BE MANUFACTURED FROM 316 S.S. ALL BOLTS, NUTS & WASHERS TO BE 316 GRADE S.S.
6. USE GASKETS IN ACCORDANCE WITH CODE FOR ALL FLANGED CONNECTIONS.
7. DO NOT USE 'UNDER PRESSURE CONNECTIONS' ON GRP PIPE.
8. ALL VALVES SHALL BE THRUST RESTRAINED BY EITHER FORMAT SHOWN IN WBB-WAT-1206-1.
9. THRUST BLOCKS ARE NOT REQUIRED FOR PARENT MAINS DN300 AND SMALLER. THRUST BLOCKS ARE REQUIRED FOR DN300 AND LARGER BRANCHES WHERE THE THRUST BLOCK CAN BE REDUCED BY 50%. REFER MRWA-W-106 FOR ADDITIONAL DETAILS.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1105-2 VERSION B DATED 22/07/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL
CONNECTION TO EXISTING MAINS

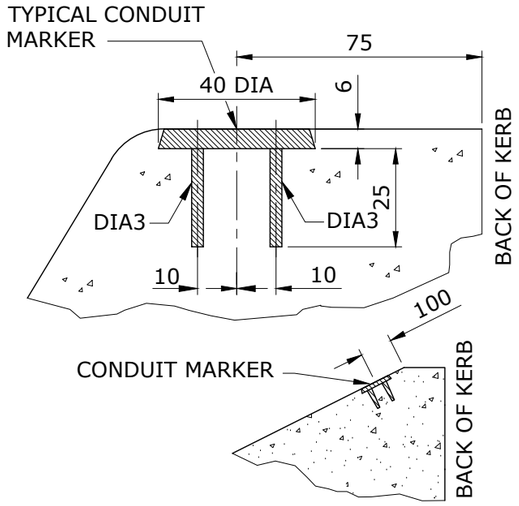
BRC	FCRC	GRC	NBRC	SBRC

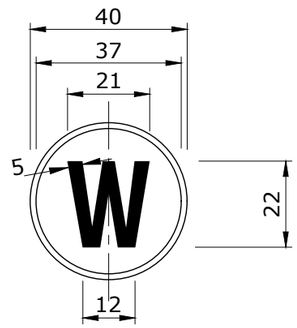
DRAWING No. WBB-WAT-1105-2

VERSION A

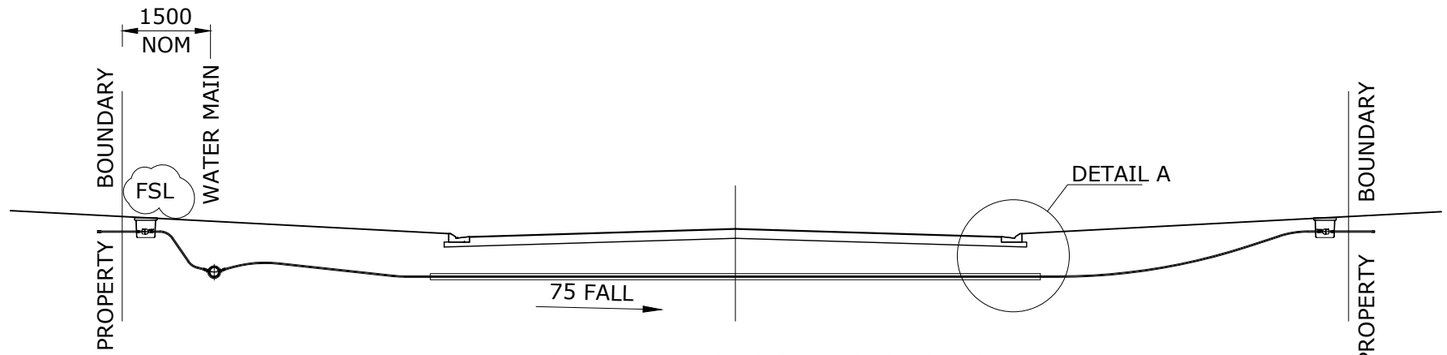
NOT TO SCALE

ORG DATE: 07/08/2018

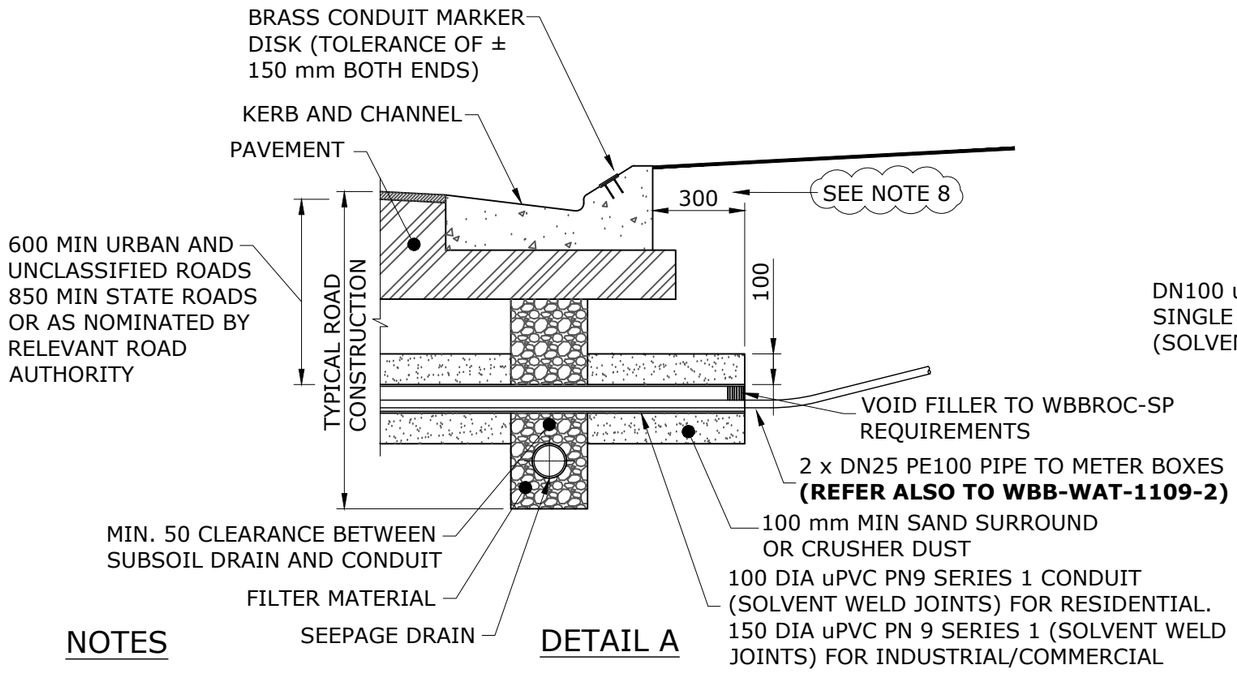




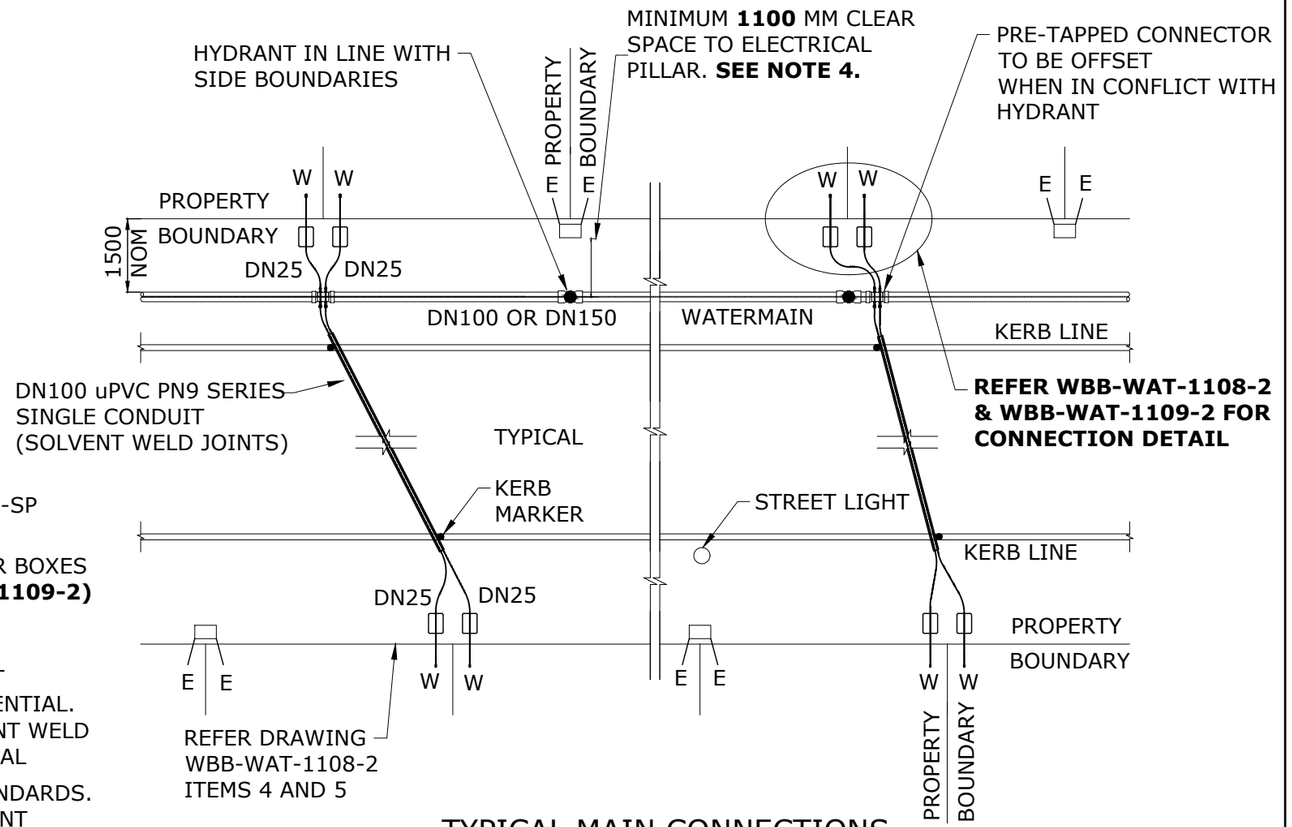
BRASS SERVICE CONDUIT MARKER



TYPICAL ROAD CROSSING SECTION



DETAIL A



TYPICAL MAIN CONNECTIONS

LEGEND

E - ELECTRICITY CONNECTION POINT
W - WATER CONNECTION & METER POINT

NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH QUEENSLAND CODES, SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARD.
3. BACKFILLING IN ROADWAYS SHALL COMPLY WITH RELEVANT ROAD AUTHORITY REQUIREMENTS.
4. WATER CONNECTION AND CONDUIT LAYOUT TO BE DESIGNED SO THAT WATER METERS ARE NOT ADJACENT TO ELECTRICITY CONNECTION POINT.
5. ALL DIMENSIONS ARE IN MILLIMETRES.
6. SERVICE CONDUITS TO BE ANGLED ACROSS ROADWAY WITH KERB MARKERS PERPENDICULAR TO COMMON PROPERTY BOUNDARY.
7. HYDRANTS MUST BE 10 M CLEAR OF PAD MOUNT TRANSFORMERS AND RMU'S.
8. **WHERE CONCRETE FOOTPATHS/CYCLE-PATHS EXIST OR ARE PLANNED, THE SERVICE CONDUIT IS TO EXTEND PAST THE FAR SIDE OF THE PATH BY 300.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1108-1 VERSION B DATED 25/08/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

PROPERTY SERVICES
POTABLE SERVICE CONNECTION
CONDUIT DETAILS

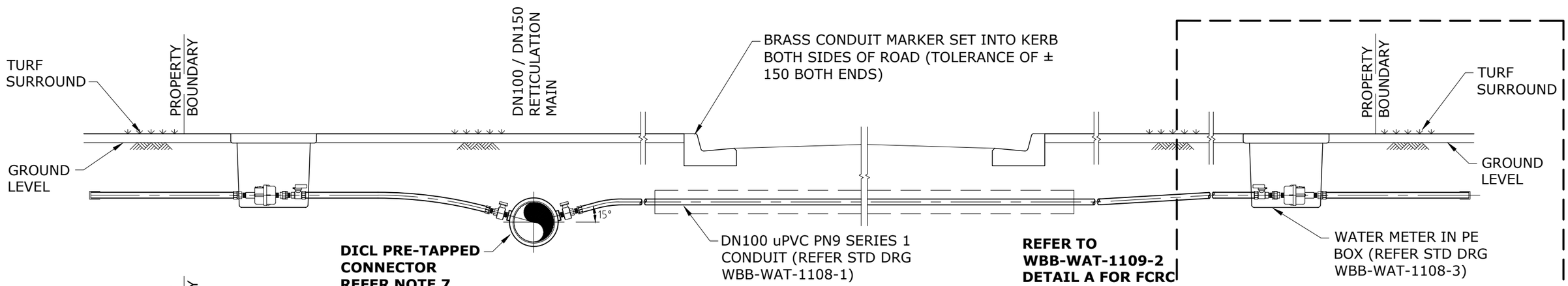
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1108-1

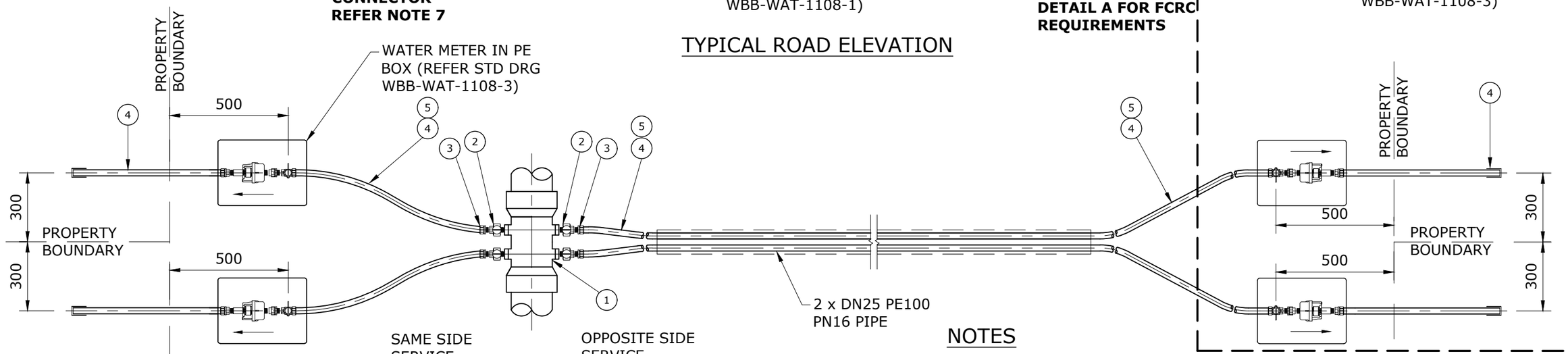
VERSION A

NOT TO SCALE

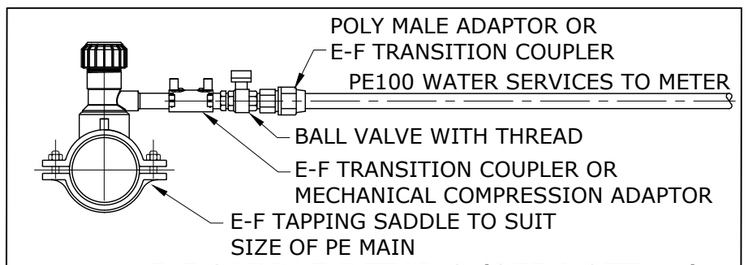
ORG DATE: 07/08/2018



TYPICAL ROAD ELEVATION

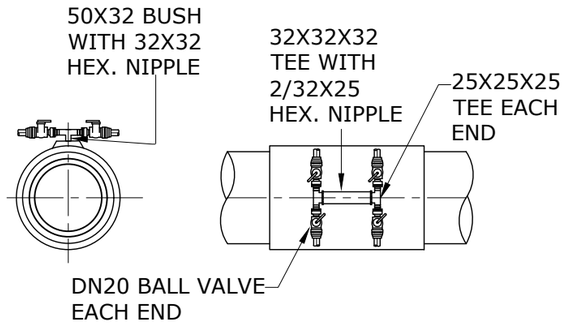


PLAN



E-F SADDLE DETAILS (SEE NOTE 11)

PIPEWORK FITTINGS **FOR DN25 PE100 SERVICE**	
ITEM	DESCRIPTION
1	DN100 or DN150 DICL PRE-TAPPED CONNECTOR
2	20 mm BRASS BALL VALVE M/F
3	DN25 PE TO DN20 BSP MALE BRASS OR PLASTIC MECHANICAL CONNECTORS.
4	DN25 PE100 PN16 PIPE WITH BLUE STRIPE FOR SERVICE ≤ 20 m LONG
5	DN32 PE100 PN16 PIPE WITH BLUE STRIPE FOR SERVICE > 20 m LONG



PRETAPPED TWIN CONNECTOR (DI)

FOR DN200+ PIPES SINGLE PORT

NOTES

1. MINIMUM BENDING RADIUS FOR DN25 PE PIPE = 400 mm.
2. ANY PIPEWORK SHOWING SIGNS OF KINKING OR STRAIN FROM OVER BENDING WILL BE REJECTED.
3. SERVICE PIPEWORK SHALL BE PN16 PE100 BLACK POLYETHYLENE PIPE WITH BLUE STRIPE IN ACCORDANCE WITH AS/NZS 4130.
4. ALL CONNECTIONS TO POLYETHYLENE PIPE TO BE APPROVED BRASS OR PLASTIC MECHANICAL FITTINGS.
5. PE PIPE SHALL BE LAID WITH 100 mm MINIMUM SURROUND OF SAND OR APPROVED GRANULAR MATERIAL.
6. PE PIPE SHALL BE CONTINUOUS WITHOUT JOINTS.
7. PRE-TAPPED WATER SERVICE FITTING SHALL BE DICL MIN PN16 POLYMERIC COATED AND CONFORM WITH A.S. 2280.
8. PE SERVICES SHALL HAVE APPROVED DETECTABLE MARKER TAPE LAID ON TOP OF THE BEDDING, EXTENDING FROM THE WATER MAIN TO THE METER. WHERE CONDUITS ARE USED THE MARKER TAPE SHALL BE ATTACHED TO THE WATER SERVICES AND PASS THROUGH THE CONDUIT.
9. BALL VALVES AT THE MAIN ARE TO BE LEFT IN THE OPEN POSITION AFTER CONSTRUCTION.
10. VALVES AT THE METER ARE TO BE LEFT IN THE CLOSED POSITION AFTER CONSTRUCTION.
11. E-F TAPPING SADDLES SHALL BE USED FOR ALL NEW PE MAINS. MECHANICAL TAPPINGS MAY BE USED FOR EXISTING/RENEWAL INSTALLATIONS.
12. DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1108-2 VERSION B DATED 24/05/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

PROPERTY SERVICES
POTABLE SERVICE CONNECTION
TYPICAL MAIN TO METER

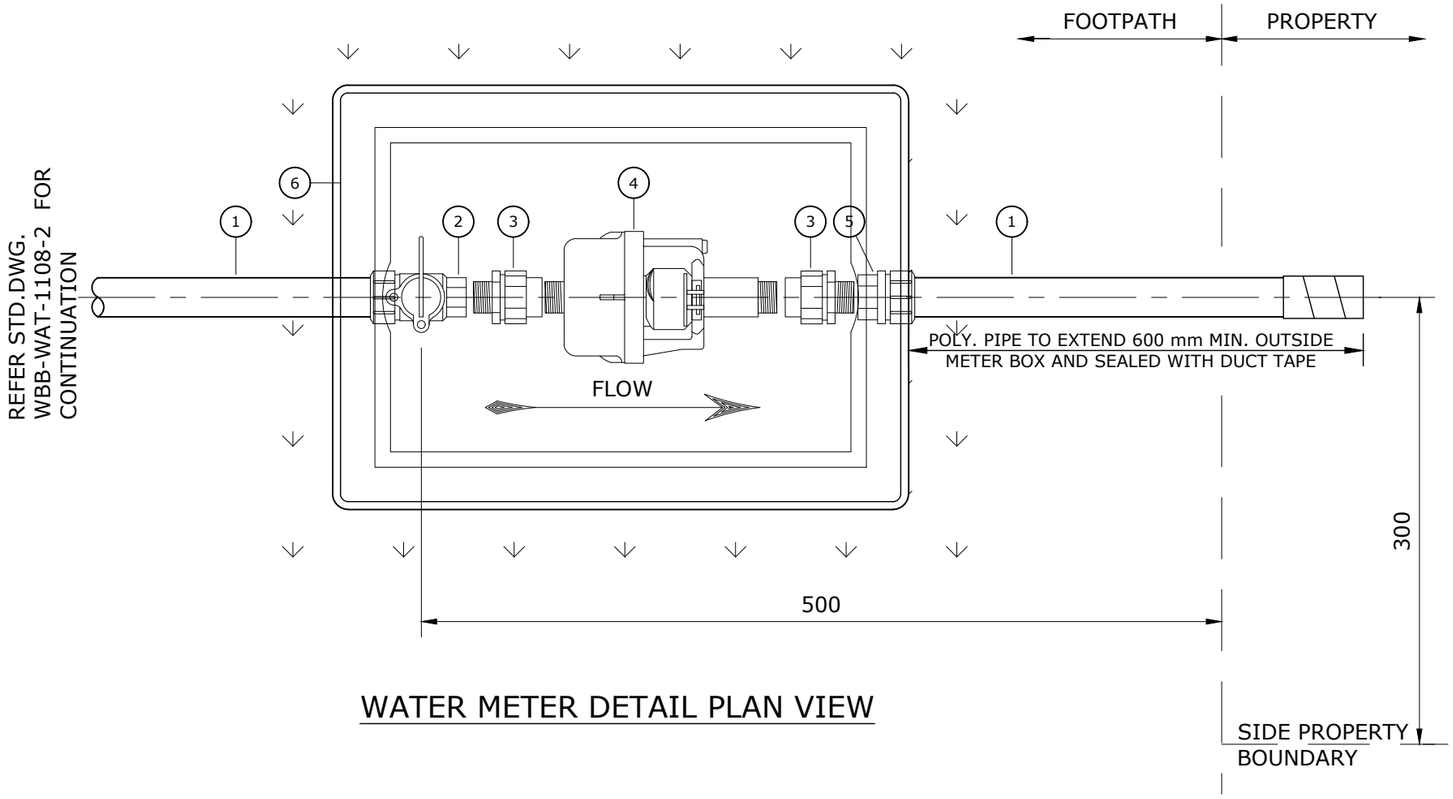
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1108-2

VERSION A

NOT TO SCALE

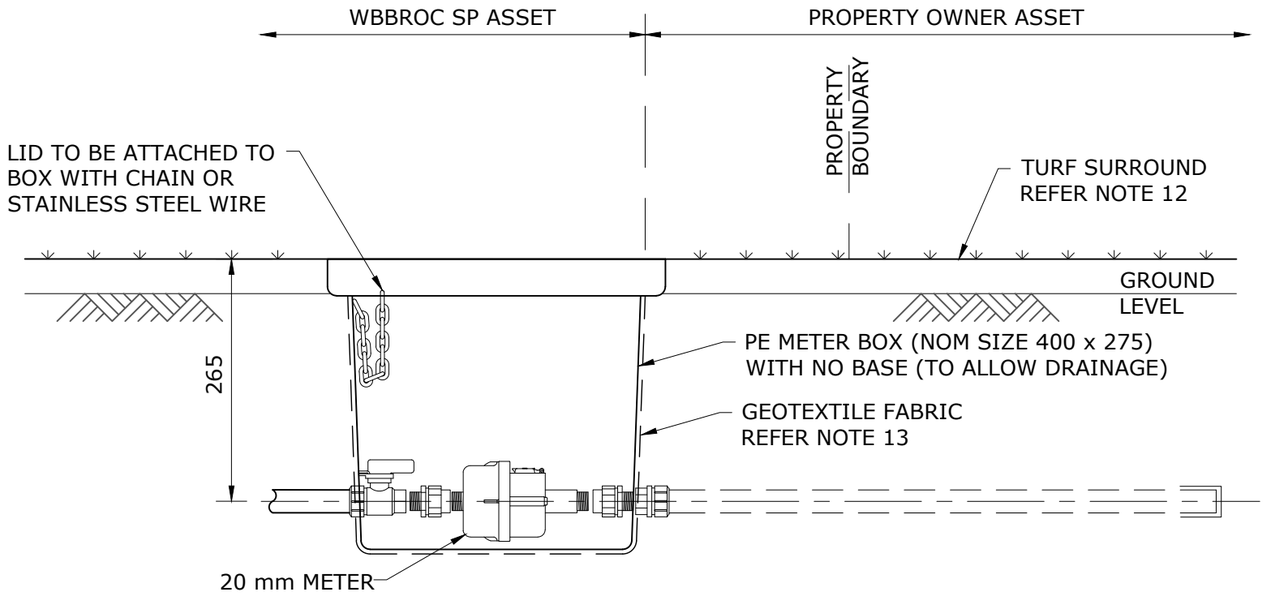
ORG DATE: 07/08/2018



WATER METER DETAIL PLAN VIEW

NOTES

1. **DELETED.**
2. SERVICE PIPEWORK SHALL BE DN25 PE100 PN16 BLACK POLYETHYLENE PIPE WITH BLUE STRIPE IN ACCORDANCE WITH AS/NZS 4130.
3. ALL CONNECTIONS TO POLYETHYLENE PIPE TO BE APPROVED BRASS OR PLASTIC MECHANICAL FITTINGS.
4. ALL WATER INSTALLATIONS TO BE CARRIED OUT BY A LICENSED PLUMBER AND TO BE IN ACCORDANCE WITH RELEVANT BY-LAWS OF PLUMBING AND DRAINAGE ACT.
5. ALL PLUMBING FITTINGS TO BE GUNMETAL OR BRASS - DEZINCIFIED RESISTANT "DR" AND APPROVED TO AS 3855.
6. ALL BRASS FITTINGS SHALL HAVE MAKERS NAME OR MARK AND WATERMARK IMPRINTED ON SURFACE OF FITTING TO PROVE COMPLIANCE WITH AS 3855.
7. VALVES AT THE METER ARE TO BE LEFT IN THE CLOSED POSITION AFTER CONSTRUCTION.
8. WATER SERVICES ARE TO BE INSPECTED BY WBBROC-SP INSPECTOR PRIOR TO BACKFILL.
9. BALL VALVE, WATER METER AND METER BOX TO BE APPROVED.
10. METER BOX LID SHALL HAVE NON SLIP PATTERN, LETTERING CAST INTO LID INDICATING "WATER METER" AND BE BLACK IN COLOUR.
11. METER BOX LID TO BE LEFT SO THAT IT SITS FLUSH WITH TURF SURROUND.
12. TURF SURROUND TO EXTEND A MINIMUM OF 600 mm ON ALL SIDES OF METER BOX.
13. GEOTEXTILE FABRIC TO BE LAID UNDERNEATH METER BOX TAPED EACH SIDE AND AROUND PIPE TO PREVENT INGRESS OF SAND AND SOIL.
14. **REFER TO WBB-WAT-1109-2 FOR THE REQUIREMENTS OF THE SUPPLY AND INSTALLATION OF SERVICE CONNECTIONS AND WATER METERS.**



WATER METER DETAIL SECTIONAL VIEW

FITTINGS SCHEDULE

ITEM	DESCRIPTION	No OFF
1	DN25 PE100 PN16 PIPE WITH BLUE STRIPE	AS REQ.
2	20 mm x 25 mm FEMALE/PE BRASS LOCKABLE BALL VALVE WITH HANDLE (REFER NOTE 9)	1
3	CONNECTION KIT (COMPRISES OF 2xDN20 BSP M/F BRASS UNIONS)	1
4	DN20 METER WITH DUAL CHECK VALVES (REFER NOTE 1)	1
5	DN25 PE TO DN20 MALE BRASS OR PLASTIC MECHANICAL CONNECTOR	1
6	PE METER BOX WITH LID (REFER NOTE 9)	

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1108-3 VERSION B DATED 21/07/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

PROPERTY SERVICES
POTABLE SERVICE CONNECTION
20mm DOMESTIC SERVICE
METER BOX DETAILS

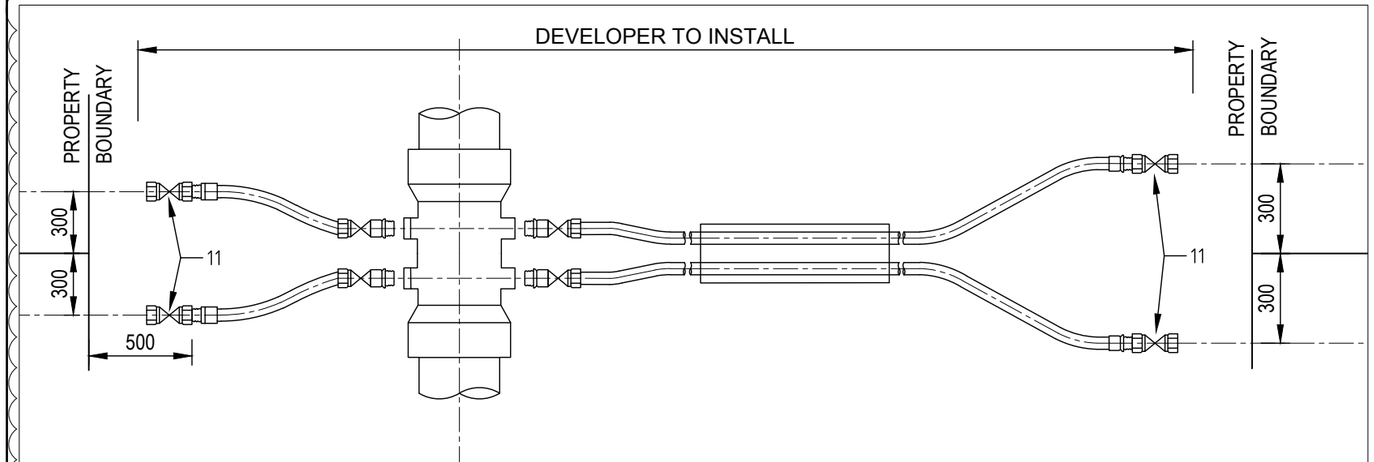
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1108-3

VERSION A

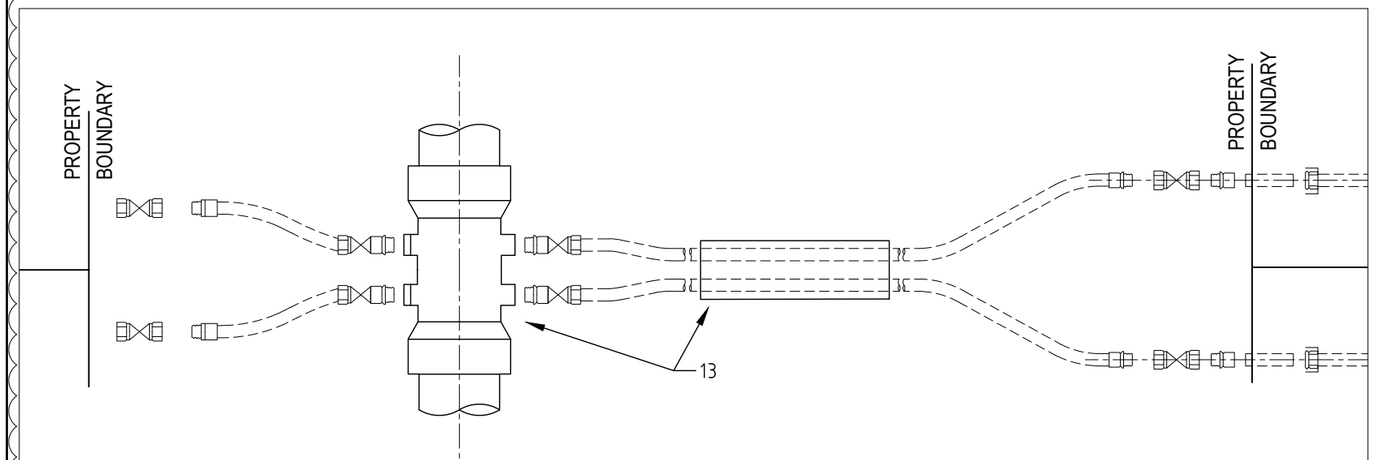
NOT TO SCALE

ORG DATE: 07/08/2018



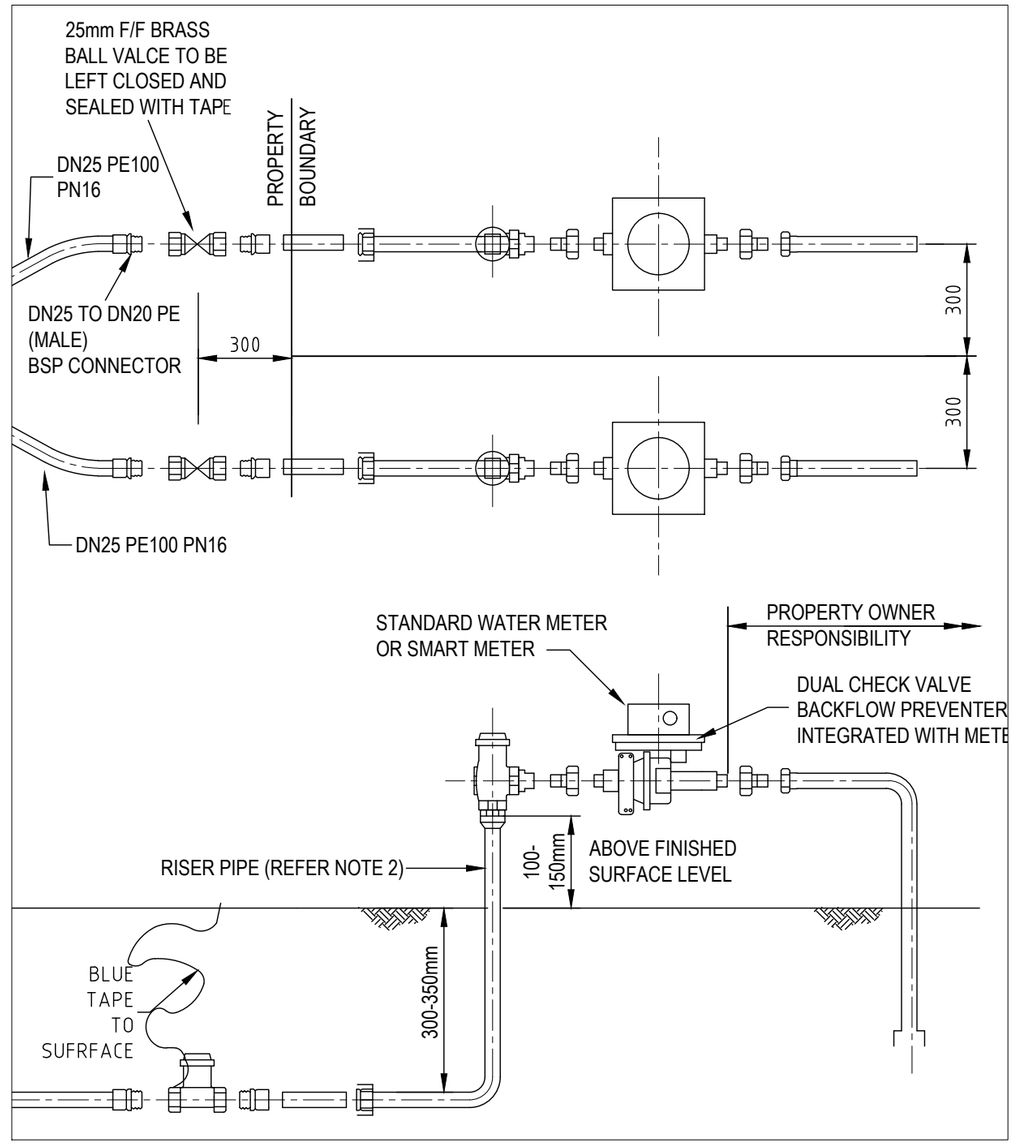
11. 20mm x 25mm FEMALE / PE BRASS LOCKABLE BALL VALVE WITH HANDLE SEALED WITH DUCT TAPE
12. BRC, SBRC, NBRC & GRC WILL SUPPLY AND INSTALL METER AND METER BOX UPON APPLICATION AND PAYMENT BY PROPERTY OWNER

DEVELOPER RESPONSIBILITY IN BRC, GRC, NBRC & SBRC



13. DEVELOPER TO INSTALL PRE-TAPPED CONNECTOR AND ENVELOPER
14. FCRC WILL INSTALL WATER SERVICE PIPE AND METER UPON APPLICATION AND PAYMENT BY PROPERTY OWNER

DEVELOPER RESPONSIBILITY IN FCRC



DETAIL A - FCRC METER INSTALLATION

NOTES FOR FCRC INSTALLATION:

1. ALL DIMENSIONS IN MILLIMETERS
2. MATERIAL FOR COPPER STANDPIPE TO BE TYPE A COPPER PIPE TO AS1432 (COPPER ALLOY FITTINGS TO AS3688)
3. ORIENTATE METER PARALLEL TO OR AT RIGHT ANGLES TO THE FRONT BOUNDARY
4. BACKFLOW PREVENTION AS PER AS3500
5. CLEARANCE FROM GROUND TO RPZ TO BE 300mm
6. PRE-TAPPED CONNECTIONS ONLY TO BE USED IN RESIDENTIAL SUBDIVISIONS (TAPPING BAND REQUIRE SP APPROVAL)
7. PE100 PN16 BLACK POLYETHYLENE PIPE WITH BLUE STRIPE IN ACCORDANCE WITH AS/NZ 4130
8. DEVELOPER CONSTRUCTED WORK TO BE CERTIFIED BY LICENSED PLUMBER
9. MINIMUM BENDING RADIUS FOR PE100 PIPE IS 15 x DN
10. ANY PIPEWORK SHOWING SIGNS OF KINKING OR STRAIN FROM OVER BENDING WILL BE REJECTED

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1104-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

PROPERTY SERVICES
SUPPLY AND INSTALLATION OF SERVICE CONNECTIONS AND WATER METERS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1109-2

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018

PREPARING THE TEST AREA:

CONDUCT ALL NATIVE SOIL IDENTIFICATION TESTS ON A FRESHLY EXPOSED, DAMP, HAND TRIMMED AREA OF THE TRENCH WALL IN THE PIPE ZONE. TAKE CARE THAT THE SOIL IN THE EXPOSED TEST AREA IS NOT COMPACTED OR LOOSENED DURING TRENCH EXCAVATION. IF THE SOIL IN THE TRENCH FLOOR AND WALL IS VERY DRY AT THE TIME THE TRENCH IS OPENED THEN FLOOD THE TEST AREA AND ALLOW TIME FOR THE WATER TO BE ABSORBED BY THE SOIL BEFORE IT IS TRIMMED AND TESTED.

IDENTIFYING CLAY SOILS:

A LUMP OF CLAY SOIL WILL BE DIFFICULT TO BREAK WHEN DRY. IT WILL BE STICKY AND NEED SOME EFFORT TO MOULD WITH THE FINGERS WHEN WET. CLAY WILL NOT WASH OFF EASILY. INDIVIDUAL CLAY PARTICLES ARE HARD TO SEE.

TESTING CLAY SOILS:

CLAY SOILS ARE BEST TESTED IN THE WALL OF THE TRENCH. THE FIST, THE THUMB OR THE THUMBNAIL ARE USED TO DETERMINE THE CONSISTENCY (STRENGTH) OF THE CLAY (SEE TABLE.)

IDENTIFYING CLEAN SAND SOILS:

THE INDIVIDUAL GRAINS OF SAND WILL BE VISIBLE TO THE EYE. A LUMP OF CLEAN SAND, IF IT CAN BE PICKED UP AT ALL, WILL CRUMBLE WITH VERY LITTLE EFFORT. CLEAN SAND WASHES OFF EASILY.

TESTING CLEAN SAND SOILS:

CLEAN SAND SOILS ARE BEST TESTED IN THE FLOOR OF THE TRENCH BY PUSHING WITH THE WHOLE BODY WEIGHT ON ONE FOOT. THE DEPTH OF THE DEPRESSION LEFT BY THE BOOT IS RELATED TO THE DENSITY OF THE SAND (SEE TABLE). TAKE CARE TO ENSURE THAT THE SAND IN THE TRENCH FLOOR WAS NOT COMPACTED OR LOOSENED DURING THE EXCAVATION OF THE TRENCH OR THE TRIMMING OF THE TEST AREA.

TESTING ROCK:

THE RECOMMENDED FIELD IDENTIFICATION TESTS FOR ROCK RELY ON OBSERVING THE EASE WITH WHICH THE ROCK CAN BE DUG WITH A PICK, AND ESTIMATING THE SPACING OF THE JOINTS IN THE ROCK. (JOINTS ARE COMMONLY CALLED CRACKS OR BREAKS). THE SPACING BETWEEN JOINTS IS IMPORTANT BECAUSE THE ALLOWABLE BEARING PRESSURE ON ROCK IS USUALLY CONTROLLED BY THE JOINTS IN IT, RATHER THAN THE INHERENT STRENGTH OF THE BLOCK OF ROCK. JOINTS MAY BE TIGHTLY CLOSED (LIKE HAIRLINE CRACKS), BUT CAN ALSO BE OPEN (FILLED WITH AIR) OR FILLED WITH SOFT CLAY OR OTHER SOIL.

SOIL CLASSIFICATION		FIELD IDENTIFICATION TEST	▲ AHBP kPa
CLAY SOILS	VERY SOFT	EASILY PENETRATED 40 mm WITH FIST.	< 50 ✳
	SOFT	EASILY PENETRATED 40 mm WITH THUMB.	< 50 ✳
	FIRM	MODERATE EFFORT NEEDED TO PENETRATE 30 mm WITH THUMB.	< 50 ✳
	STIFF	READILY INDENTED WITH THUMB BUT PENETRATED ONLY WITH GREAT EFFORT.	50
	VERY STIFF	READILY INDENTED WITH THUMBNAIL.	100
	HARD	INDENTED WITH DIFFICULTY BY THUMBNAIL.	200
SAND & GRAVEL	LOOSE CLEAN SAND	TAKES FOOTPRINT MORE THAN 10 mm DEEP.	< 50 ✳
	MEDIUM-DENSE CLEAN SAND	TAKES FOOTPRINT 3 mm TO 10 mm DEEP.	50
	DENSE CLEAN SAND OR GRAVEL	TAKES FOOTPRINT LESS THAN 3 mm DEEP.	100
ROCK	BROKEN OR DECOMPOSED ROCK	DIGGABLE. HAMMER BLOW "THUDS". JOINTS (BREAKS IN ROCK) SPACED AT LESS THAN 300 mm APART.	100
	SOUND ROCK	DIGGABLE. HAMMER BLOW "THUDS". JOINTS (BREAK IN ROCK) SPACED AT MORE THAN 300 mm APART.	200
	UNCOMPACTED FILL DOMESTIC REFUSE	OBSERVATION AND KNOWLEDGE OF THE SITE HISTORY.	< 50 ✳

LEGEND

▲ AHBP ALLOWABLE HORIZONTAL BEARING PRESSURE FOR:

- 10 mm MOVEMENT.
- CENTRE OF THRUST 800 mm BELOW THE NATURAL SURFACE LEVEL. (EXCLUDES ENGINEERED FILL AND DISTURBED GROUND)
- EXCLUDES HIGH WATER TABLE.

✳ SPECIAL GEOTECHNICAL ASSESSMENT REQUIRED

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1200-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL SOIL CLASSIFICATION GUIDELINES AND ALLOWABLE BEARING PRESSURES FOR ANCHORS & THRUST BLOCKS

BRC	FCRC	GRC	NBRC	SBRC

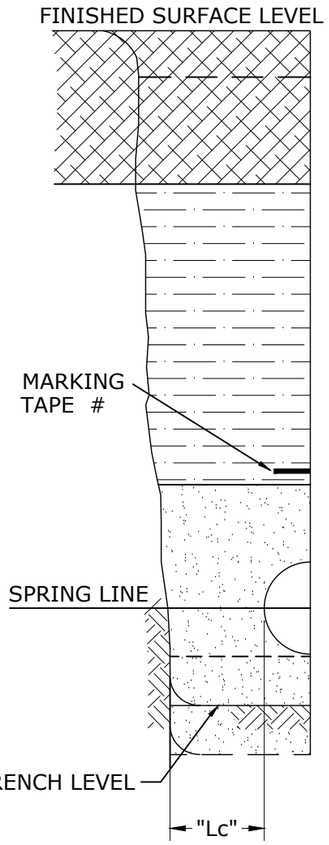
DRAWING No. WBB-WAT-1200-1

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018

MATERIAL		ZONE		
ROAD SURFACE	VERGE & TRACK			
ROAD SURFACE LAYER	TO MATCH EXISTING	SURFACE COURSE		
TO MATCH EXISTING ROAD BASE OR TO ROAD OWNER'S REQUIREMENTS		ROAD BASE		
TO ROAD OWNER'S REQUIREMENTS (SEE NOTE 5) OR INORGANIC FILL WITH 75 MAXIMUM STONE SIZE	TO ROAD OWNER'S REQUIREMENTS OR INORGANIC FILL WITH MAXIMUM 75 STONE SIZE	TRENCH FILL		
EMBEDMENT MATERIAL IN ACCORDANCE WITH DESIGN DRAWINGS AND WBBROC-SP REQUIREMENTS. WHERE APPROVED BY WBBROC-SP, BEDDING MAY BE OMITTED IF TRENCH BASE IS GRANULAR SAND		OVERLAY	EMBEDMENT	
		SIDE SUPPORT		
		BEDDING		
		OVER-EXCAVATION		



VEHICULAR LOADING

DIAMETER

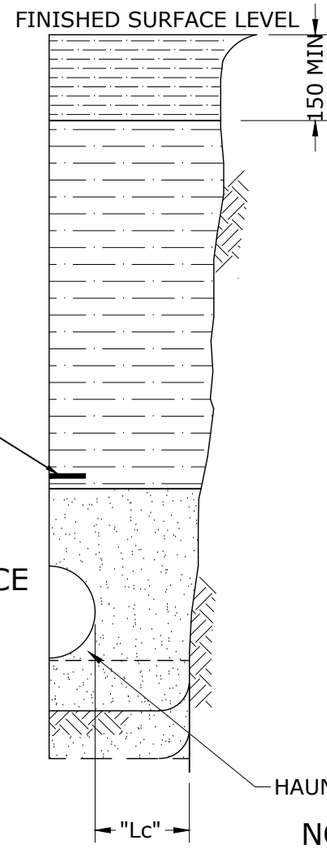
MINIMUM PIPE COVER

LOCATION	NOMINAL DIAMETER	
	⩽150	⩾200
NON ROADWAYS	600	1000
SEALED ROADS	600	1000
MAJOR ROADWAYS/ EMBANKMENTS/ COMMERCIAL/ INDUSTRIAL AREAS	750	1000
FREEWAYS	1200	1200

SPRING LINE TRENCH CLEARANCE

NOMINAL DIAMETER (DN)	MINIMUM CLEARANCE "Lc" TO AS/NZS 2566.1
⩽300	150
>300-⩽450	200
>450-⩽900	300
>900-⩽1500	350

TRENCH WIDTH TO BE SUFFICIENT TO SAFELY LAY THE PIPE AND COMPACT THE SIDE SUPPORT ZONE.



ZONE		MATERIAL
TOPSOIL OR FOOTWAY SURFACE		ORIGINAL MATERIAL OR IMPORTED MATERIAL OF EQUAL QUALITY
TRENCH FILL		INORGANIC FILL WITH 75 MAXIMUM STONE SIZE
EMBEDMENT	OVERLAY	EMBEDMENT MATERIAL IN ACCORDANCE WITH DESIGN DRAWINGS AND WBBROC-SP REQUIREMENTS. WHERE APPROVED BY WBBROC-SP, BEDDING MAY BE OMITTED IF TRENCH BASE IS GRANULAR SAND
	SIDE SUPPORT	
	BEDDING	
OVER-EXCAVATION		

NO VEHICULAR LOADING

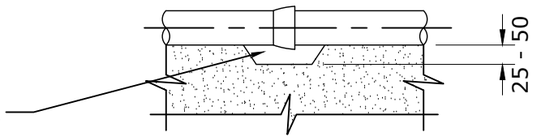
(INCLUDES LOCATIONS WHERE OCCASIONAL VEHICLES LOADINGS OCCUR EG. PARKLANDS, FOOTWAYS)

LEGEND

\# SPECIFIED BY THE DESIGNER IN DESIGN DRAWINGS

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. BEDDING - SPECIAL BEDDING SHALL BE SPECIFIED TO SUIT THE CONDITIONS IF THE TRENCH FLOOR HAS:
   - IRREGULAR OUTCROPS OF ROCK.
   - AHBP OF < 50 kPa (SEE WBB-WAT-1200-1), OR
   - UNCONTROLLED GROUND WATER HAS DISTURBED THE FLOOR OF THE TRENCH.
3. EMBEDMENT, TRENCH FILL AND COMPACTION TO MEET THE 3. REQUIREMENTS OF WSA-03 PART 3 AND WBBROC-SP **OR AS APPROVED BY RPEQ**.
4. SIDES OF EXCAVATION TO BE KEPT VERTICAL TO AT LEAST 150 ABOVE THE PIPE.
5. DESIGNER TO CHECK ON RELEVANT ROAD AUTHORITIES REQUIREMENTS.
6. ADDITIONAL INFORMATION PROVIDED IN WBB-WAT-1200 SERIES COMMENTARY



PROVIDE POCKETS IN BEDDING, AT JOINTS PRIOR TO LAYING PIPES. FILL VOID DURING PLACEMENT OF EMBEDMENT.

PIPE JOINT BEDDING POCKETS

FOR JOINT PROJECTIONS (SOCKETS, FLANGES ETC)

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A	07/08/2018	BASED ON SEQ-WAT-1200-2 VERSION B DATED 20/08/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

EMBEDMENT & TRENCHFILL TYPICAL ARRANGEMENT

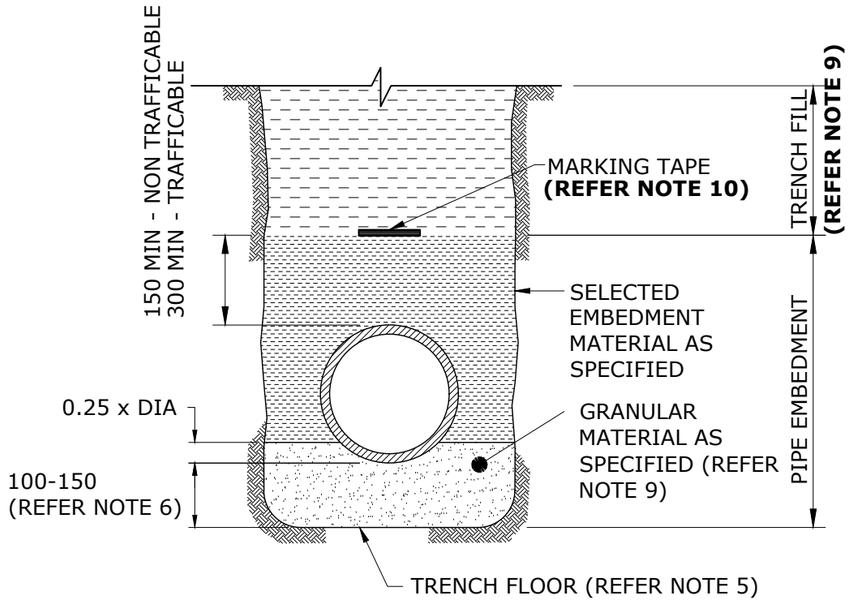
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1200-2

VERSION A

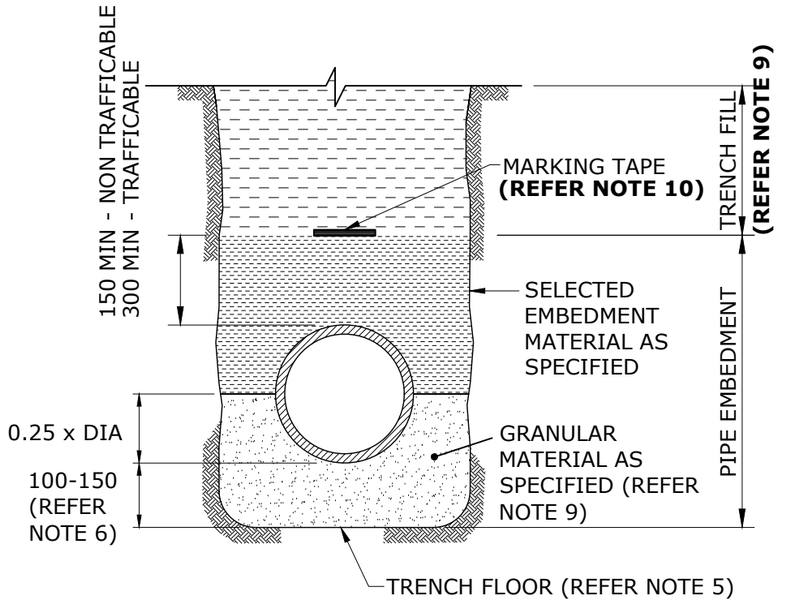
NOT TO SCALE

ORG DATE: 07/08/2018



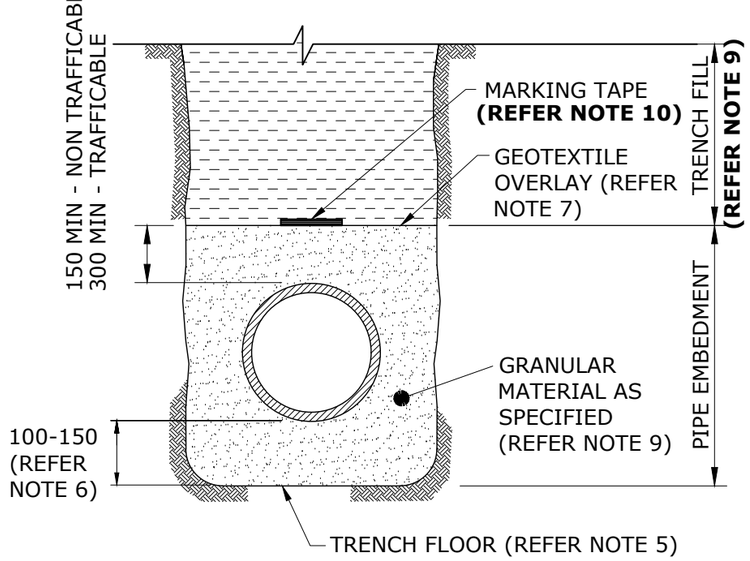
TYPE A SUPPORT

FOR RIGID PIPES ONLY (REFER NOTE 3)



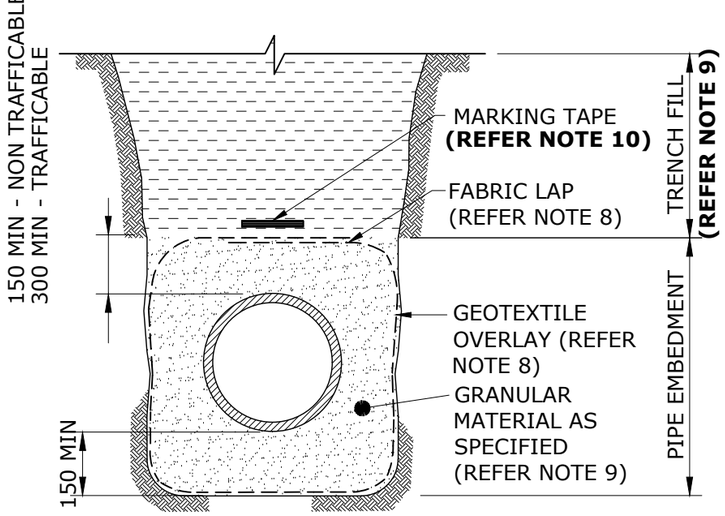
TYPE B SUPPORT

FOR RIGID PIPES ONLY (REFER NOTE 3)



TYPE C SUPPORT

FOR FLEXIBLE & RIGID PIPES (REFER NOTE 3)



TYPE D SUPPORT - WITH GEOTEXTILE

FOR FLEXIBLE & RIGID PIPES (REFER NOTE 3)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH WBB-WAT-1200.
3. PIPE CLASSIFICATION
   (a) RIGID PIPES: VC AND RC
   (b) FLEXIBLE PIPES: PVC, GRP, STEEL, DI AND PE.
4. PLACEMENT OF EMBEDMENT, TRENCHFILL & COMPACTION TO MEET THE REQUIREMENTS OF THE CODE.
5. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MINIMISE PIPELINE SETTLEMENT. WHEN EXCAVATED, REPLACE WITH GRANULAR MATERIAL AS SPECIFIED FOR BEDDING OR ADOPT TYPE E,F,G OR H SUPPORT AS REQUIRED.
6. ENSURE BEDDING IS DEEP ENOUGH THAT PIPE JOINT PROJECTIONS (SOCKETS, FLANGES) DO NOT TOUCH TRENCH FLOOR.

7A. GEOTEXTILE TO BE USED WHERE TRENCH FILL IS A SAND OR FINE CLAY MATERIAL.

7B. TYPE D SUPPORT TO BE USED WHERE MIGRATORY NATIVE SOILS. (SANDS & CLAYS) ARE ENCOUNTERED ADJACENT TO THE EMBEDMENT ZONE AND SINGLE SIZE AGGREGATE IS USED.

8. LAY GEOTEXTILE FILTER FABRIC AGAINST TRENCH FLOOR AND WALLS SUCH THAT IT FULLY ENCASES THE EMBEDMENT.
   - PRESS FABRIC INTO THE VOIDS BEFORE INSTALLING EMBEDMENT TO PREVENT FABRIC TEARING.
   - PROVIDE A MINIMUM OF 250 OVERLAP AT ALL FABRIC JOINTS.
9. PURCHASE SPECIFICATIONS FOR TRENCH FILL AND EMBEDMENT MATERIAL ARE DETAILED IN THE CODE.
10. **DETECTABLE MARKER TAPE SHALL BE PROVIDED EITHER ABOVE THE EMBEDMENT ZONE OR 1000 BELOW THE F.S.L, WHICHEVER IS CLOSEST TO F.S.L.**
11. **EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS.**
12. **TYPE C PREFERRED, FOR OTHER SUPPORT TYPES OBTAIN SP PRE-APPROVAL.**

DELETED

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1201-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

STANDARD EMBEDMENT
TYPICAL FLEXIBLE & RIGID PIPES

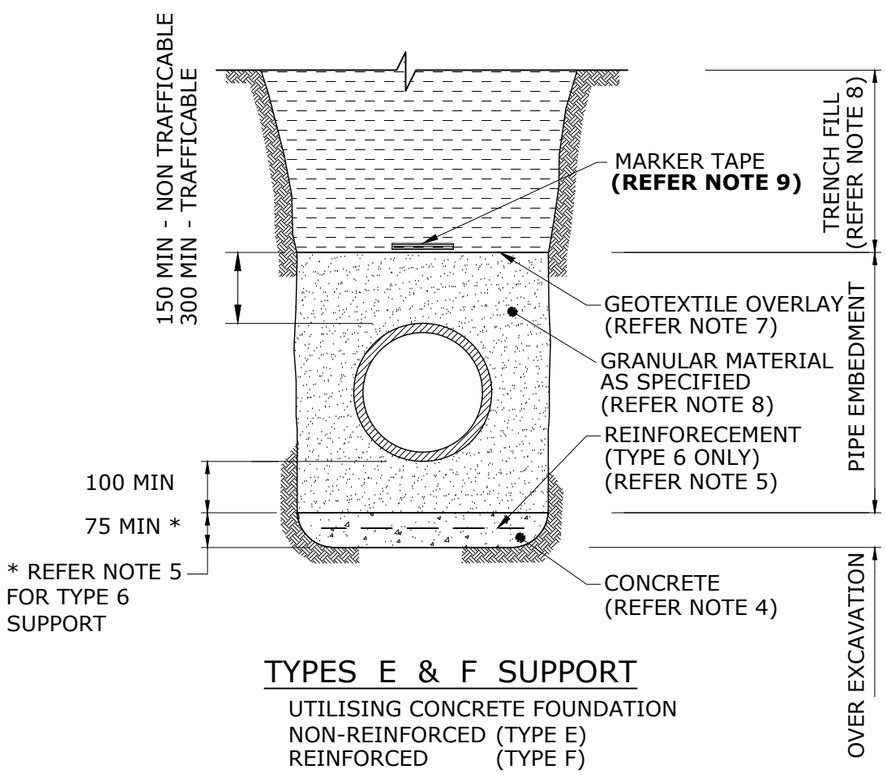
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1201-1

VERSION A

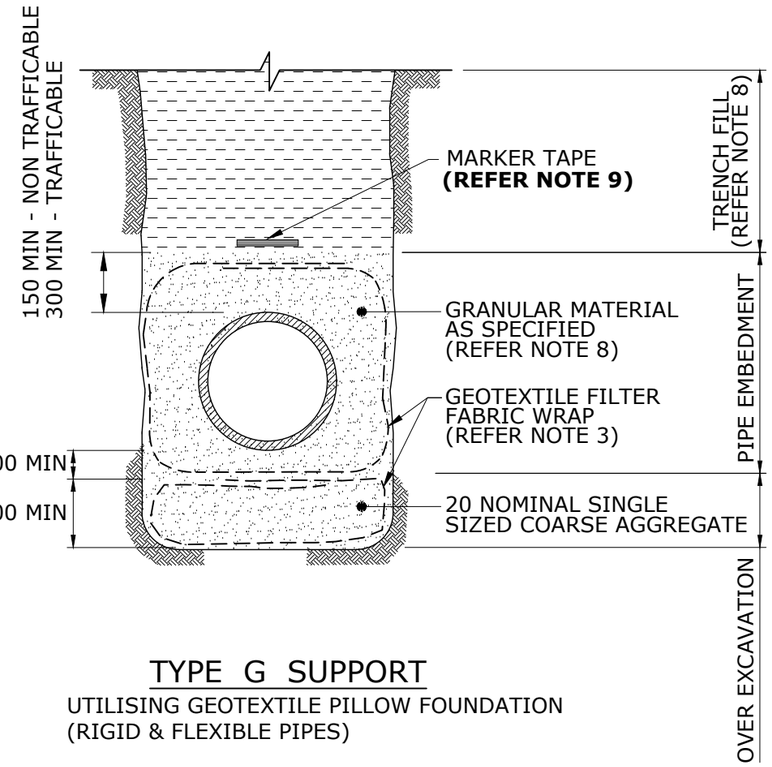
NOT TO SCALE

ORG DATE: 07/08/2018



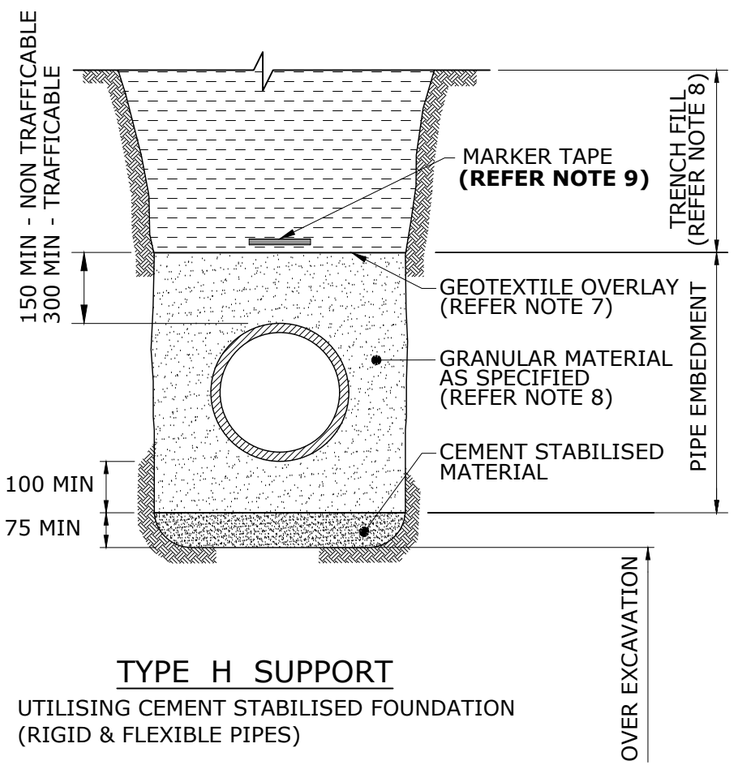
TYPES E & F SUPPORT

UTILISING CONCRETE FOUNDATION
NON-REINFORCED (TYPE E)
REINFORCED (TYPE F)
(RIGID & FLEXIBLE PIPES)
USE LIMITED TO 1 000 SPANS OF LOW BEARING CAPACITY GROUND. (SOFT CLAYS AND LOOSE SAND) LONGER LENGTHS SUBJECT TO INDIVIDUAL ASSESSMENT.



TYPE G SUPPORT

UTILISING GEOTEXTILE PILLOW FOUNDATION
(RIGID & FLEXIBLE PIPES)



TYPE H SUPPORT

UTILISING CEMENT STABILISED FOUNDATION
(RIGID & FLEXIBLE PIPES)

EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. USE THESE SUPPORT TYPES ONLY WHERE SPECIFIED BY THE DESIGNER. DETAILS TO BE PROVIDED IN DESIGN DRAWINGS.
3. LAY GEOTEXTILE FILTER FABRIC AGAINST THE TRENCH FLOOR AND WALL SUCH THAT IT FULLY ENCASES THE FOUNDATION MATERIAL IN THE OVER EXCAVATION. EMBEDMENT (IF REQUIRED) ENCASE SEPARATELY. PROVIDE A MINIMUM OF 250 LAP AT ALL FILTER FABRIC JOINTS. REFER WBB-SEW-1201-1 FOR GEOTEXTILE SYSTEM DETAILS.
4. UNREINFORCED CONCRETE TO BE CLASS N20, AND REINFORCED CONCRETE N25. FOR AGGRESSIVE CONDITIONS USE SPECIAL CLASS CONCRETE.
5. MINIMUM STEEL REINFORCEMENT OF 0.4%%% OF CONCRETE CROSS SECTION PLACED CENTRALLY AND WITH 65 MINIMUM COVER TO EXTERNAL FACE. REINFORCEMENT DETAILS FOR THE APPLICABLE LOADING TO BE INCLUDED IN THE DESIGN DRAWINGS.
6. BEDDING TO BE DEEP ENOUGH TO ENSURE PIPE JOINT PROJECTIONS (SOCKETS, FLANGES) DO NOT TOUCH FOUNDATION.
7. GEOTEXTILE OVERLAY IS REQUIRED FOR AGGREGATE EMBEDMENT. (IE SINGLE SIZED GRANULAR FILL $\geq$ 5 mm).
8. PURCHASE SPECIFICATIONS FOR TRENCH FILL & EMBEDMENT MATERIAL ARE DETAILED IN THE CODES ACCEPTED PRODUCTS AND MATERIALS LIST.
9. **DETECTABLE MARKER TAPE, REFER NOTE 10 ON WBB-WAT-1201-01.**

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REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1201-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL SPECIAL EMBEDMENT
INADEQUATE FOUNDATIONS REQUIRING
OVER EXCAVATION & REPLACEMENT

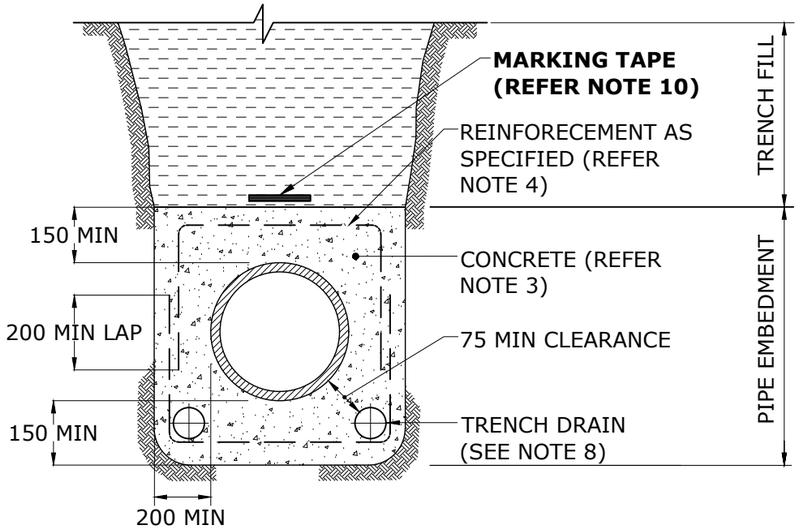
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1202-1

VERSION A

NOT TO SCALE

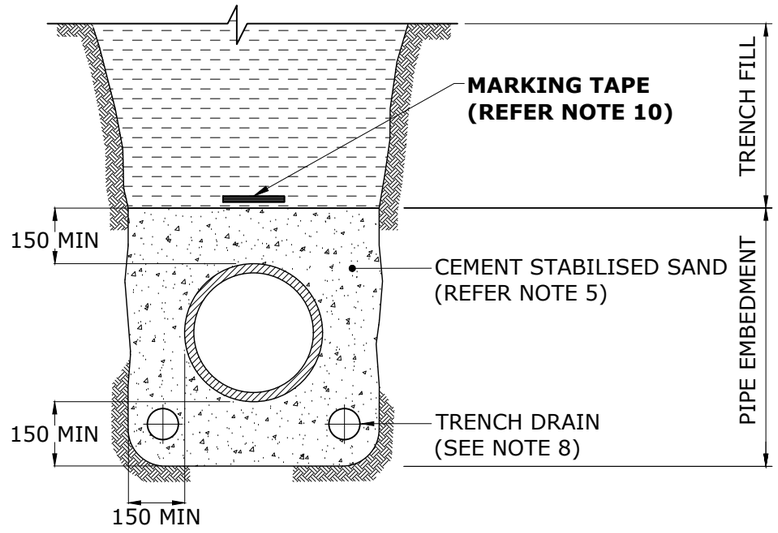
ORG DATE: 07/08/2018



TYPE I SUPPORT
UTILISING CONCRETE EMBEDMENT

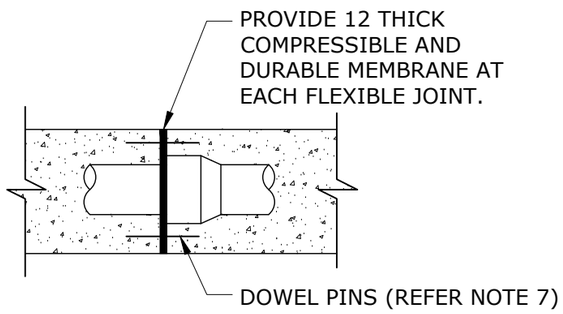
(RIGID & FLEXIBLE PIPES)

NOT PREFERRED

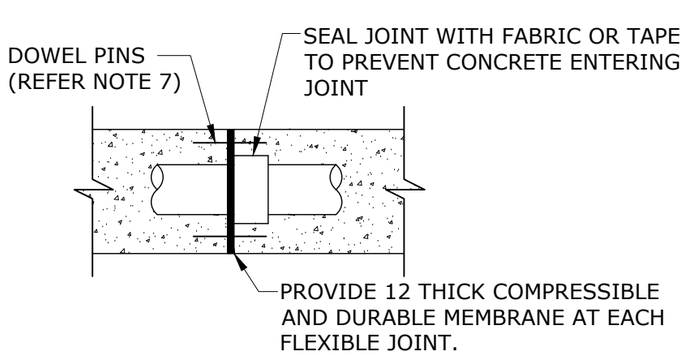


TYPE J SUPPORT
UTILISING CEMENT STABILISED EMBEDMENT

(RIGID & FLEXIBLE PIPES)



SPIGOT/SOCKET JOINT



SLEEVED COUPLING

CONCRETE ENCASEMENT JOINT DETAILS

NOT PREFERRED

EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS

DELETED

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. USE THESE SUPPORT SYSTEMS WHERE SPECIFIED BY DESIGNER. DETAILS TO BE PROVIDED IN DESIGN DRAWINGS. REFER NOTE 9.
3. USE UNREINFORCED CONCRETE CLASS N20 MIN, AND REINFORCED CONCRETE N25 MIN. FOR AGGRESSIVE CONDITIONS USE SPECIAL CLASS CONCRETE. PLASTIC PIPES SHALL BE MARKED FOR THERMAL REVERSION.
4. WHERE SPECIFIED MINIMUM STEEL REINFORCEMENT OF 0.4 CONCRETE CROSS SECTION PLACED CENTRALLY AND WITH 65 MINIMUM COVER TO EXTERNAL FACE. SPECIFY REINFORCEMENT FOR THE APPLICABLE LOADING IN DESIGN DRAWINGS.
5. CEMENT STABILISED SAND OR WELL GRADED CRUSHED ROCK TO BE 25:1 SAND:CEMENT (PLACED DRY).
6. DURING THE ENCASEMENT PROCESS PIPES WILL REQUIRE A RESTRAINT SYSTEM TO PREVENT PIPE MOVEMENT AND/OR FLOTATION AND/OR THERMAL REVERSION.
7. PROVIDE GALVANISED DOWEL PINS, AS DETAILED IN DESIGN DRAWINGS AT EACH CONCRETE ENCASEMENT JOINT TO PREVENT PIPE DAMAGE.
8. SEE WBB-WAT-1210-1 FOR TRENCH DRAINAGE DETAILS.
9. THE USE OF TYPE I & J TO BE APPROVED BY WBBROC-SP.
10. **DETECTABLE MARKER TAPE, REFER NOTE 10 ON WBB-WAT-1201-1.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1203-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL SPECIAL EMBEDMENT CONCRETE & STABILISED EMBEDMENT AND FLEXIBLE JOINT DETAILS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1203-1

VERSION A

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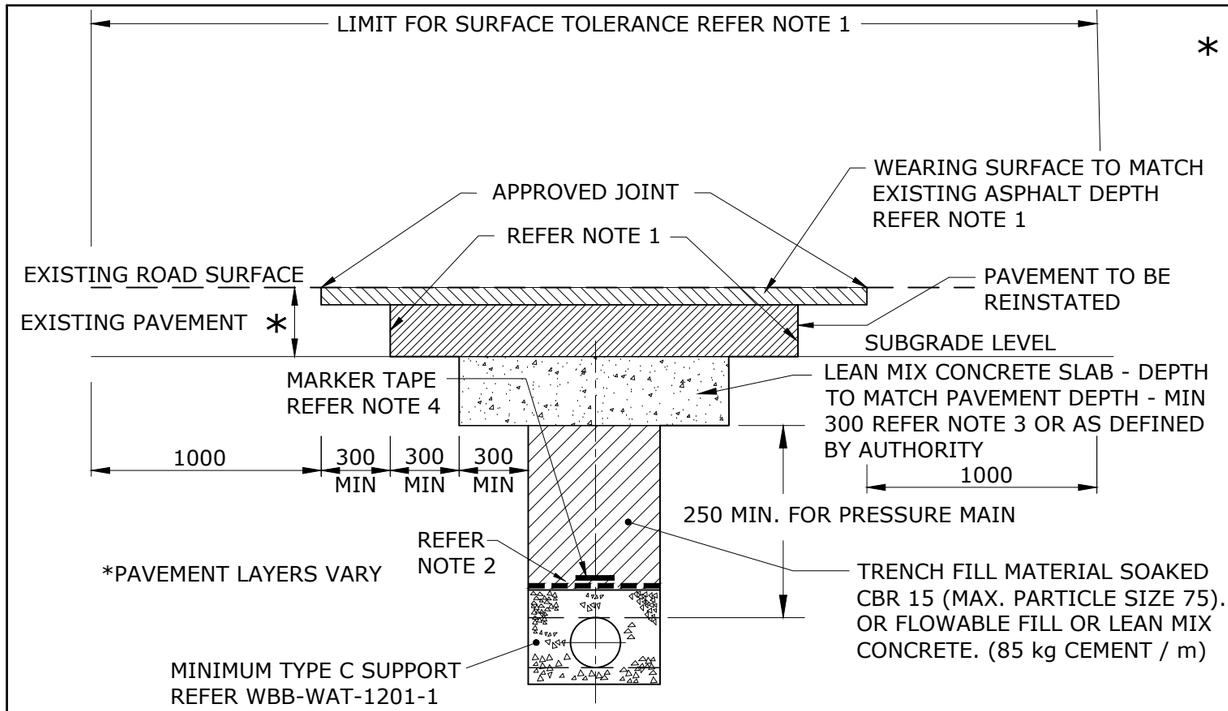
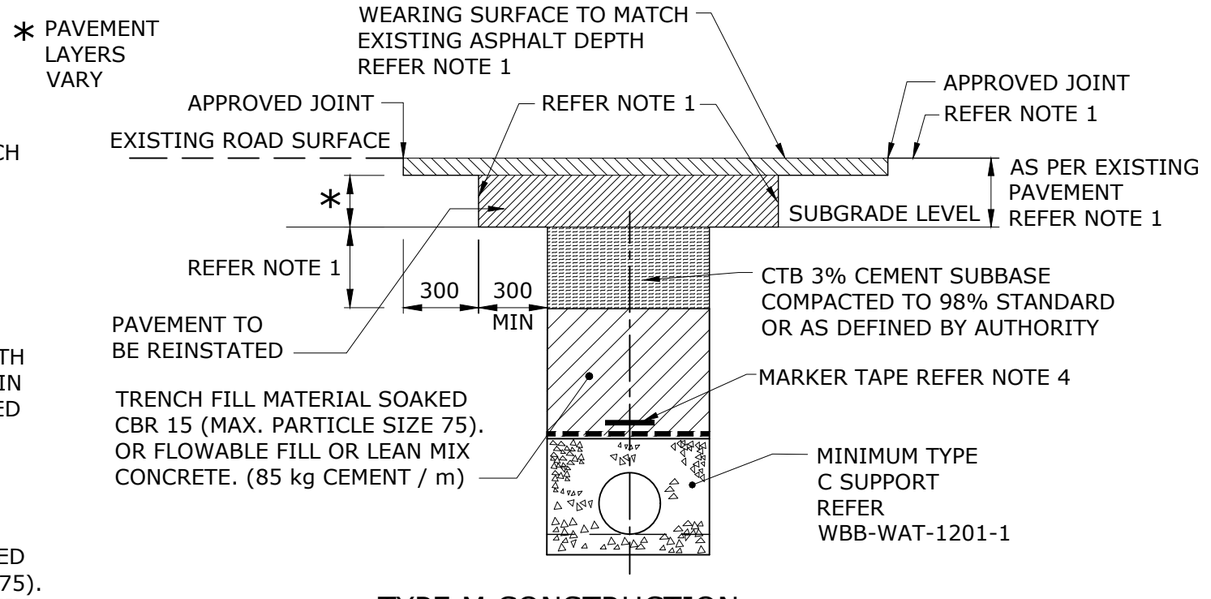
ORG DATE: 07/08/2018



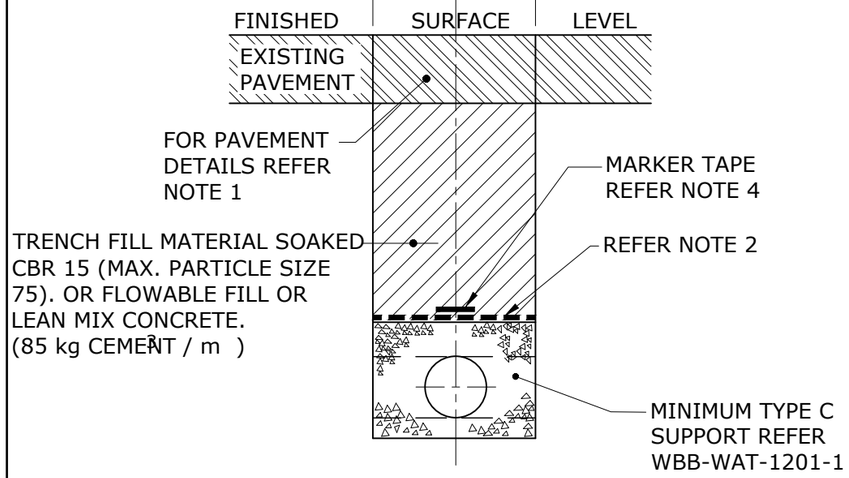
TYPE L CONSTRUCTION CROSSING SEALED ROADS



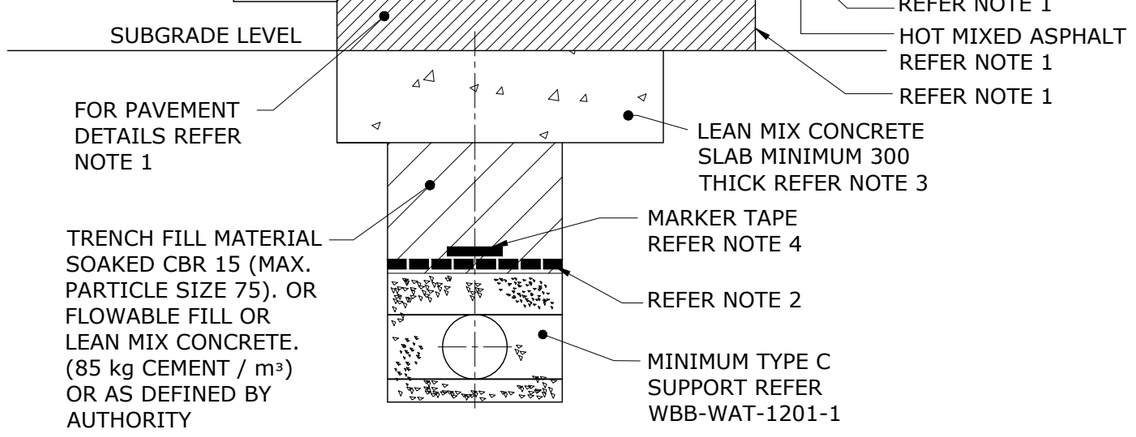
TYPE M CONSTRUCTION ALONG SEALED ROAD

NOTES

1. FOR EXCAVATION, BEDDING AND BACKFILL REQUIREMENTS REFER CODES. FOR PAVEMENT AND WEARING SURFACE AND SUB-BASE OR SUBGRADE DETAILS REFER AUTHORITIES SPECIFICATION.
2. A GEOTEXTILE BARRIER SHALL BE PROVIDED AT THE INTERFACE OF EMBEDMENT ZONE AND THE TRENCH FILL ZONE.
3. THE SLAB USED IN TYPE L CONSTRUCTION SHALL BE GRADE N15 CONCRETE WITH ZERO SLUMP AND PLACED AND COMPACTED IN 100 THICK LAYERS.
4. THE ALIGNMENT OF ALL PIPES SHALL BE DEFINED BY A MARKER TAPE PLACED AS SHOWN AT TOP OF EMBEDMENT. THE TAPE SHALL CONTAIN A CONTINUOUS METAL STRIP AND BE COLOURED AND PROVIDED WITH A DESCRIPTION OF THE WATER PRODUCT WITHIN.
5. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.



TYPE K CONSTRUCTION ALONG UNSEALED ROAD SHOULDERS



TRENCH TYPE N CONSTRUCTION ALONG SEALED ROAD ADJACENT TO KERB

(REINSTATMENT TO AVOID EXISTING SUB-SOIL DRAINAGE SYSTEM)

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1204-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL TRENCH AND BEDDING DETAILS WITHIN EXISTING ROADS TYPE K TO N

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1204-1

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018

THRUST BLOCK LENGTH

PIPE DN.	FITTING	MAX. THRUST IN KN	THRUST BLOCK HEIGHT	STIFF CLAY 50 KPa.	VERY STIFF CLAY SANDY LOAM 100KPa.	SAND & GRAVEL HARDCLAY 150KPa.	SAND & GRAVEL CEMENTED WITH CLAY 200KPa.	ROCK 240kPa
100	90° BEND	19.8	400	1000	●	●	●	●
	60° BEND	14.0		700	●	●	●	●
	45° BEND	10.7		●	●	●	●	●
	22.5° BEND	5.5		●	●	●	●	●
	11.25° BEND	2.7		●	●	●	●	●
	TEE OR CLOSED END	14.0		700	●	●	●	●
150	90° BEND	41.7	450	1860	930	●	●	●
	60° BEND	29.5		1320	660	●	●	●
	45° BEND	22.6		1000	●	●	●	●
	22.5° BEND	11.5		●	●	●	●	●
	11.25° BEND	5.8		●	●	●	●	●
	TEE OR CLOSED END	29.5		1300	660	●	●	●
200	90° BEND	71.7	550	*	1300	870	650	●
	60° BEND	50.7		1850	920	●	●	●
	45° BEND	38.8		1410	700	●	●	●
	22.5° BEND	19.8		720	●	●	●	●
	11.25° BEND	9.9		●	●	●	●	●
	TEE OR CLOSED END	50.7		1850	920	●	●	●
225	90° BEND	89.4	600	*	1500	1000	750	●
	60° BEND	63.2		2110	1060	700	●	●
	45° BEND	48.4		1620	810	●	●	●
	22.5° BEND	24.6		830	●	●	●	●
	11.25° BEND	12.4		●	●	●	●	●
	TEE OR CLOSED END	63.2		210	1060	700	●	●
250	90° BEND	109.0	650	*	1700	1120	840	700
	60° BEND	77.1		2400	1200	800	●	●
	45° BEND	59.0		1820	910	●	●	●
	22.5° BEND	30.1		930	●	●	●	●
	11.25° BEND	15.1		●	●	●	●	●
	TEE OR CLOSED END	77.1		2400	1200	800	●	●
300	90° BEND	158.6	700	*	2270	1510	1140	950
	60° BEND	112.2		*	1600	1070	800	670
	45° BEND	85.9		2453	1230	820	●	●
	22.5° BEND	43.8		1250	630	●	●	●
	11.25° BEND	22.0		630	●	●	●	●
	TEE OR CLOSED END	112.2		*	1600	1070	800	750

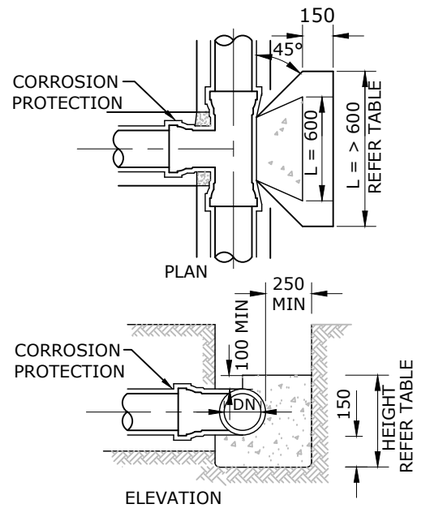
THRUST BLOCK LENGTH

PIPE DN.	FITTING	MAX. THRUST IN KN	THRUST BLOCK HEIGHT	STIFF CLAY 50 KPa.	VERY STIFF CLAY SANDY LOAM 100KPa.	SAND & GRAVEL HARDCLAY 150KPa.	SAND & GRAVEL CEMENTED WITH CLAY 200KPa.	ROCK 240kPa
375	90° BEND	241.9	800	*	*	2220	1510	1260
	60° BEND	171.0		*	2140	1430	1070	890
	45° BEND	130.9		*	1640	1090	820	680
	22.5° BEND	66.7		1670	840	●	●	●
	11.25° BEND	33.5		840	●	●	●	●
	TEE OR CLOSED END	171.0		*	2140	1430	1070	890
450	90° BEND	342.6	900	*	*	2540	1900	1590
	60° BEND	242.3		*	2690	1800	1350	1120
	45° BEND	185.4		*	2060	1375	1030	860
	22.5° BEND	94.5		2100	1050	700	●	●
	11.25° BEND	47.5		1060	●	●	●	●
	TEE OR CLOSED END	242.3		*	2690	1800	1350	1120
500	90° BEND	418	1000	*	*	2790	2090	1740
	60° BEND	295.6		*	*	1970	1480	1230
	45° BEND	226.2		*	2260	1510	1130	940
	22.5° BEND	115.3		2310	1150	770	●	●
	11.25° BEND	58.0		1160	●	●	●	●
	TEE OR CLOSED END	295.5		*	*	1970	1480	1230
600	90° BEND	593	1100	*	*	*	2700	2250
	60° BEND	419		*	*	2540	1910	1590
	45° BEND	320		*	2920	1950	1460	1220
	22.5° BEND	164		2980	1490	990	750	620
	11.25° BEND	82.2		1500	750	●	●	●
	TEE OR CLOSED END	419		*	*	2540	1910	1590
750	90° BEND	909	1300	*	*	*	*	2920
	60° BEND	643		*	*	*	2480	2060
	45° BEND	492		*	*	2530	1890	1580
	22.5° BEND	251		*	1930	1290	970	810
	11.25° BEND	126.1		1940	970	650	●	●
	TEE OR CLOSED END	643		*	*	*	2480	2060
900 (DN960 MSCL)	90° BEND	1.228	1500	*	*	*	*	3420
	60° BEND	868		*	*	*	2900	2420
	45° BEND	664		*	*	2960	2220	1850
	22.5° BEND	339		*	2260	1510	1130	940
	11.25° BEND	170		2270	1140	760	●	●
	TEE OR CLOSED END	868		*	*	*	3300	2650

THRUST BLOCK DIMENSIONS - 1200kPa

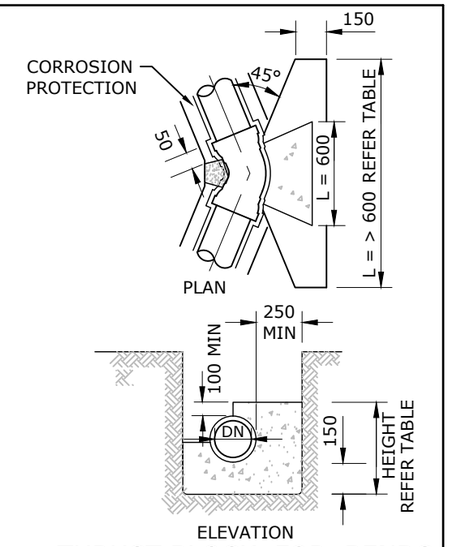
● INDICATES BLOCK LENGTH OF 600

* = SPECIAL DESIGN



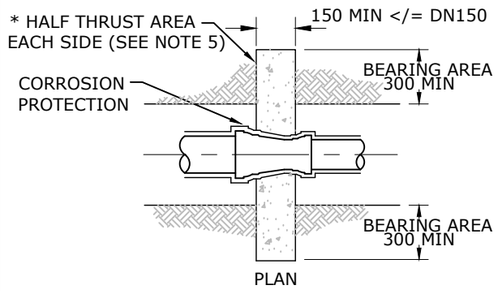
THRUST BLOCK FOR TEES

(FOR HORIZONTAL THRUST)



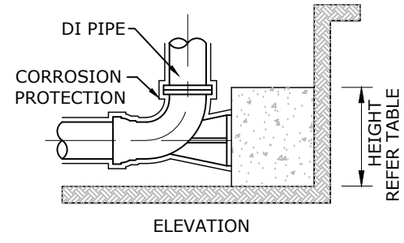
THRUST BLOCK FOR BENDS

(FOR HORIZONTAL THRUST)



TAPER THRUST BLOCK

(FOR HORIZONTAL THRUST)



FLUSHING/WASHOUT BEND THRUST BLOCK

(FOR HORIZONTAL THRUST) (MINIMUM REQUIRED THRUST AREA AS PER TEE OR CLOSED END)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. CAST THE THRUST AREA OF ALL THRUST BLOCKS AGAINST A CLEAN FACE OF UNDISTURBED NATURAL SOIL. SOIL CLASSIFICATIONS USED ON THIS DRAWING ARE EXPLAINED IN WBB-WAT-1200-1. DO NOT USE STANDARD THRUST BLOCKS AS SPECIFIED IN THIS DRAWING IN SOILS WITH < 50 kPa BEARING CAPACITY EG;
   - VERY SOFT, SOFT OR FIRM CLAY.
   - LOOSE CLEAN SAND.
   - UNCOMPACTED FILL OR REFUSE.

   A GEOTECHNICAL ASSESSMENT AND INDIVIDUAL DESIGN IS REQUIRED FOR THESE SOILS.
3. THRUST BLOCKS NOT TO INTERFERE WITH OTHER SERVICES OR BE LOCATED OUTSIDE THE WATER MAIN ALLOCATION WITHOUT WATER AGENCY APPROVAL.
4. ALL CONCRETE GRADE N20. TABLE OF DIMENSIONS BASED ON REQUIRED TEST PRESSURE OF 1200 kPa AND ACTUAL DICL PIPE DIAMETERS.
5. THE MINIMUM THRUST AREA FOR TAPER THRUST BLOCKS TO BE EQUAL TO THE DIFFERENCE BETWEEN THE THRUST AREAS FOR TEES OR CLOSED ENDS OF EQUIVALENT DIAMETER TO THOSE EACH SIDE OF TAPER. THE DETAIL SHOWN IS FOR < OR = DN150 MAINS. FOR LARGER MAINS, THE TAPER THRUST BLOCK SHALL BE REINFORCED AND OF A SIZE AS SHOWN IN WBB-WAT-1206-1.
6. FOR DOWNWARD VERTICAL THRUST, THE ALLOWABLE BEARING PRESSURES FOR VARIOUS SOILS MAY BE TAKEN AS TWICE THAT FOR HORIZONTAL THRUST SHOWN.
7. WHEN POURING CONCRETE AGAINST FITTINGS PLACE A MEMBRANE OF POLYETHYLENE, PVC OR FELT BETWEEN THE FITTING AND CONCRETE TO PREVENT DAMAGE TO THE FITTING. PIPE JOINTS TO BE CLEAR OF CONCRETE.
8. CONCRETE THRUST BLOCK ANCHORS FOR VALVES TO BE AS DETAILED ON WBB-WAT-1206-1.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1205-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL THRUST BLOCK DETAILS
MASS CONCRETE

BRC	FCRC	GRC	NBRC	SBRC

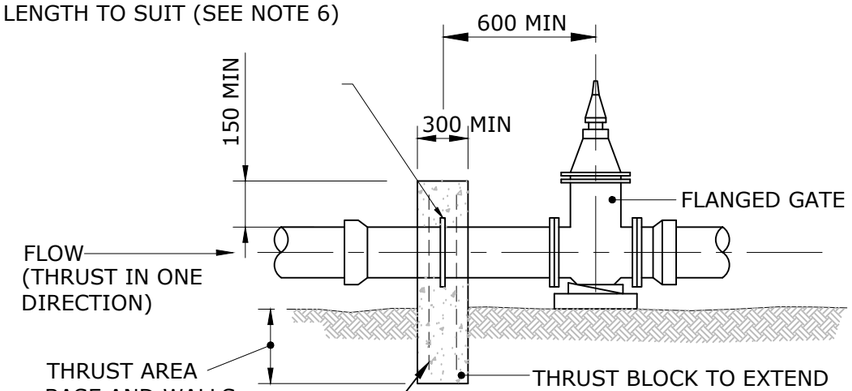
DRAWING No. WBB-WAT-1205-1

VERSION A

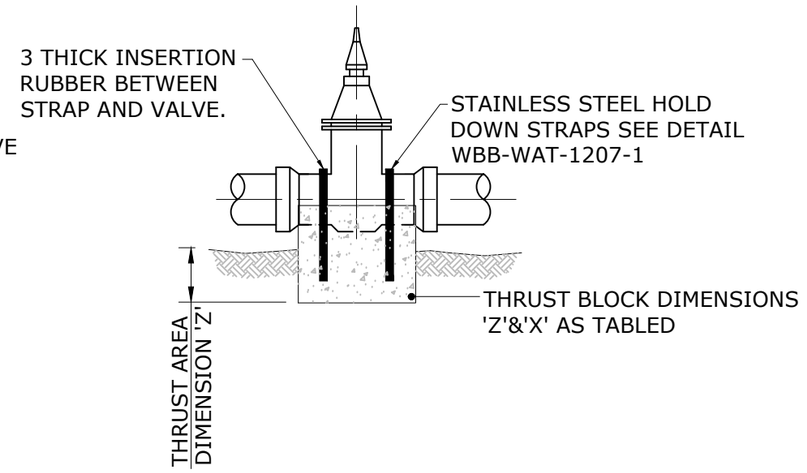
NOT TO SCALE

ORG DATE: 07/08/2018

THRUST IN BOTH DIRECTIONS
USE PUDDLE FLANGE PIPE
LENGTH TO SUIT (SEE NOTE 6)

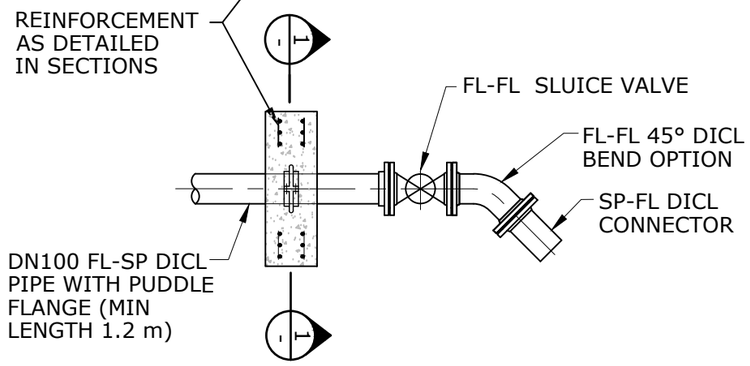


FLANGED VALVES ALL SIZES



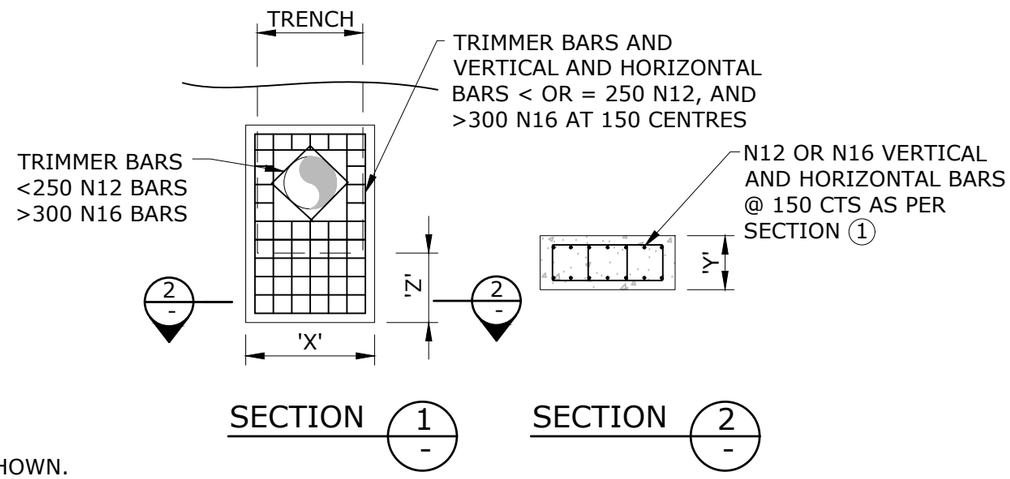
SOCKETED VALVES </=DN375

(ALTERNATIVE TYCO ANCHOR
LEGS x 2 ACCEPTED FOR USE)



FLANGED VALVE AND BEND

FOR ALL PIPE SIZES



SECTION 1 -

SECTION 2 -

MINIMUM BLOCK DIMENSIONS FOR THE ANCHORAGE OF THE IN-LINE THRUST			
IN LINE BLOCK FOR TEST PRESSURE OF 1200 kPa SOIL ALLOWABLE HORIZONTAL BEARING PRESSURE IN kPa OF 50, 100 OR 150 LISTED (SEE NOTES)			
PIPE DN	BEARING AREA M²		
	SOFT CLAY 50kPa	MEDIUM CLAY SANDY LOAM 100kPa	SAND & GRAVEL HARD CLAY 150kPa
100	15.8 KN THRUST		
X	450	450	450
Y	300	300	300
Z	700	500	500
150	33.3 KN THRUST		
X	800	500	450
Y	300	300	300
Z	850	700	500
200	57.1 KN THRUST		
X	800	700	600
Y	300	300	300
Z	1400	800	650
225	71.2 KN THRUST		
X	900	800	700
Y	400	400	400
Z	1600	900	700
250	86.7 KN THRUST		
X	1000	850	700
Y	400	400	400
Z	1750	1000	800
300	124.0 KN THRUST		
X	1400	900	800
Y	500	500	500
Z	1800	1400	1000
375	189.0 KN THRUST		
X	1600	1100	900
Y	600	600	600
Z	2350	1750	1400

- LARGER THAN DN375 INDIVIDUAL DETAILED DESIGN IS REQUIRED. DESIGNER TO NOMINATE X, Y, Z DIMENSIONS TO SUIT LOCATION.
- BLOCK WIDTHS 'X' SHOULD BE WITHIN THE ALLOCATION, GENERALLY 800 mm WIDE. WIDER BLOCKS WILL REQUIRE REDESIGN OF ADJOINING SERVICES.
- BEARING AREA TO BE PREDOMINANTLY BELOW BEDDING ZONE

NOTES

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. ANCHOR BLOCKS IN THE TABLE ARE DESIGNED FOR A TEST PRESSURE OF 1200 kPa (122 m HEAD).
3. WHERE DI PIPES AND FITTINGS WITH RESTRAINED JOINTS ARE USED THRUST BLOCKS MAY NOT BE REQUIRED. SEE WBB-WAT-1208.
4. THRUST BLOCK REINFORCEMENT AS SPECIFIED ABOVE OR AS IN DESIGN DRAWINGS.
5. PROVIDE CONCRETE THRUST BLOCKS FOR VALVES. THRUST AREA TO BE AS SHOWN WITH NUTS AND BOLTS TO BE ACCESSIBLE ON FLANGES.
6. INSTALL PUDDLE FLANGES ON FLANGE CLASS DICL PIPE BY A MACHINED GROOVE.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1206-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL THRUST AND ANCHOR BLOCKS FOR VALVES

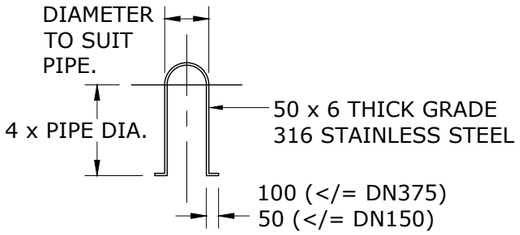
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1206-1

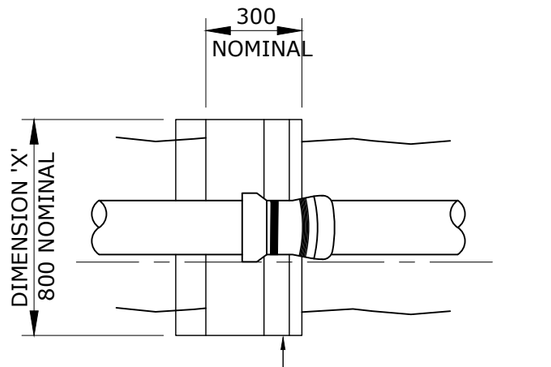
VERSION A

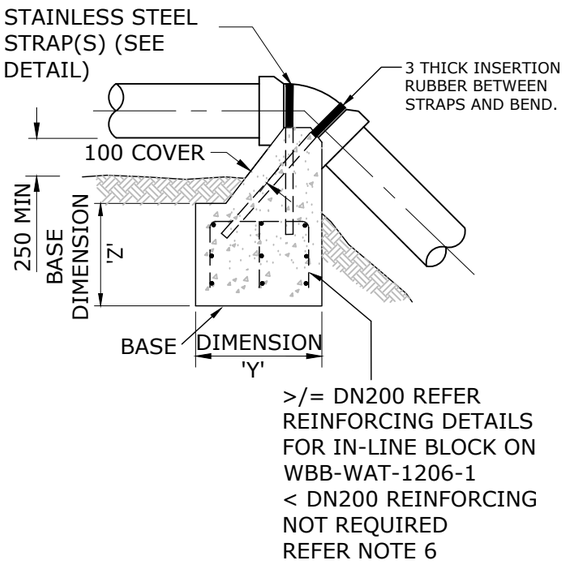
NOT TO SCALE

ORG DATE: 07/08/2018



TYPICAL SS STRAP





ELEVATION
VERTICAL BENDS

MINIMUM BLOCK VOLUME FOR ANCHORAGE OF VERTICAL COMPONENT OF THRUST

VERTICAL BENDS
FOR TEST PRESSURE OF 1200 kPa
AND MINIMUM SOIL ALLOWABLE HORIZONTAL
BEARING PRESSURE OF 50kPa (SEE NOTES)

PIPE DN	TYPICAL PIPE OD	CONCRETE MASS/VOLUME M^3 11.25° BEND	22.5° BEND	45° BEND
100	122	**0.13**	**0.26**	**0.47**
DIMENSIONS	X,	800	800	800
	Y,	400	400	600
	Z,	450	800	1000
150	177	**0.28**	**0.54**	**1.00**
	X	800	800	800
	Y	400	800	1000
	Z	800	850	1250
200	232	**0.47**	**0.93**	**1.72**
	X			
	Y			
	Z			
225	259	**0.59**	**1.16**	**2.14**
	X			
	Y			
	Z			
250	286	**0.72**	**1.41**	**2.61**
	X			
	Y			
	Z			
300	345	**1.05**	**2.05**	**3.79**
	X			
	Y			
	Z			
375	426	**1.60**	**3.13**	**5.78**
	X			
	Y			
	Z			

- LARGER THAN DN375, INDIVIDUAL DETAILED DESIGN IS REQUIRED.
- LARGER THAN DN150, DESIGNER TO NOMINATE X, Y, Z DIMENSIONS TO SUIT LOCATION

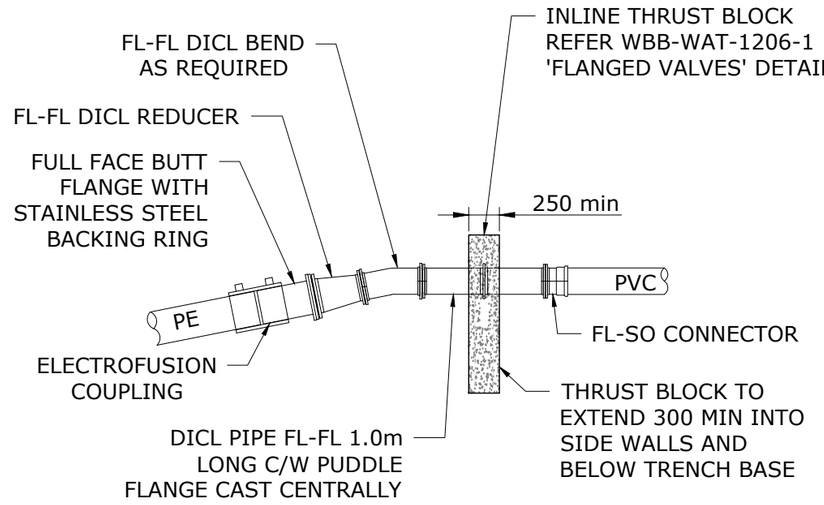
CALCULATION FOR BLOCK MASS IS :-

M^3 = (Sf x P x A x Sinθ x 1000) ÷ (Wm x 9.8)

Sf = SAFETY FACTOR OF 1.0
P = TEST PRESSURE 1200kPa
A = AREA OF PIPE ACTUAL OD (m^2)
θ = BEND ANGLE
Wm = DENSITY OF CONCRETE (2400kg ÷ m^3)

IN CALCULATING THE CONCRETE MASS, NO CONTRIBUTION FROM THE PIPELINE SELF WEIGHT OR BACKFILL OR EMBEDMENT HAS BEEN INCLUDED.

BLOCK WIDTHS " X " SHOULD BE WITHIN THE ALLOCATION, GENERALLY 800mm WIDE



TYPICAL PVC TO PE CONNECTION

ELEVATION DETAIL - NOT TO SCALE

NOTES:

THRUST BLOCKS MUST MEET MINIMUM DIMESIONAL REQUIREMENTS AS SPECIFIED IN CONNECTION DETAIL AS WELL AS MINIMUM VOLUME REQUIREMENTS SPECIFIED IN WSA 02-2002 DRAWING NO. WSA1207

COMPONENT SIZES WITH SIMILAR INTERNAL DIAMETERS

PVC-O PN16	HDPE100 PN16			HDPE100 PN20		
NOMINAL DIAMETER	NOMINAL DIAMETER	SS BACKING RING	DICL TAPER	NOMINAL DIAMETER	SS BACKING RING	DICL TAPER
DN100	DN140	140x125	100x125	DN160	160x150	150x100
DN150	DN200	200x200	200x150	DN225	225x200	200x150
DN200	DN280	280x250	250x200	DN280	280x250	250x200
DN250	DN355	355x300	300x250	DN355	355x300	300x250
DN300	DN400	400x375	375x300	DN450	450x450	450x300
DN375	DN500	500x500	500x375	DN500	500x500	500x375

VERTICAL BEND ANCHOR BLOCK CONSTRUCTION NOTES

1. LOCATE ANCHOR BLOCK CENTRALLY AROUND BEND AND KEY ANCHOR BLOCK INTO BASE OF TRENCH A MINIMUM DEPTH OF 250 mm (DIMENSION Z).
2. POUR BASE CONCRETE AGAINST A SOLID EXCAVATION FACE.
3. USE GRADE N20 CONCRETE.
4. KEEP CONCRETE CLEAR OF ALL BOLTS, NUTS AND PIPE JOINTS.
5. DESIGN OF ANCHOR BLOCKS AT VERTICAL BENDS INCLUDE ALLOWANCE FOR THE HORIZONTAL COMPONENT OF THRUST
6. DESIGN PLANS TO DETAIL REINFORCING STEEL.
7. ANCHOR BLOCKS IN THE TABLE ARE DESIGNED FOR A TEST PRESSURE OF 1200 kPa (122 m HEAD).
8. FOR DOWNWARD VERTICAL THRUST, THE ALLOWABLE BEARING PRESSURE FOR VARIOUS SOILS MAY BE TAKEN AS TWICE THAT FOR HORIZONTAL THRUST AS SHOWN IN WBB-WAT-1205-1

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1207-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL THRUST AND ANCHOR BLOCKS FOR VERTICAL BENDS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1207-1

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018

BENDS (SEE NOTE 3)

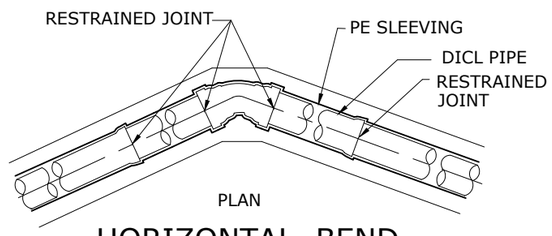
DN	HORIZONTAL				VERTICAL						DEAD ENDS
					UPWARD THRUST			DOWNWARD THRUST			
	11 1/4° (m)	22 1/2° (m)	45° (m)	90° (m)	11 1/4° (m)	22 1/2° (m)	45° (m)	11 1/4° (m)	22 1/2° (m)	45° (m)	(m)
100	0.8	1.6	3.4	8.1	2.4	4.9	10.2	0.8	1.6	3.4	24.7
150	1.1	2.2	4.6	11.2	3.4	6.9	14.4	1.1	2.2	4.6	34.7
200	1.4	2.8	5.9	14.2	4.4	8.8	18.4	1.4	2.8	5.9	44.4
250	1.6	3.1	6.5	15.8	4.9	9.8	20.5	1.6	3.1	6.5	49.4
300	1.8	3.7	7.7	18.5	5.8	11.7	24.4	1.8	3.7	7.7	58.9

TEES (SEE NOTE 5)

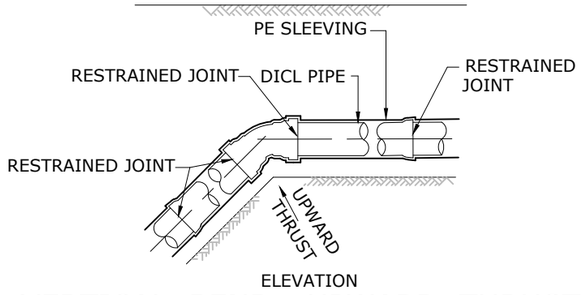
MAIN PIPE DN	BRANCH PIPE DN	MIN. DISTANCE BETWEEN JOINTS'A' 2 m RESTRAINED LENGTH 'B' (m)	5.5 m RESTRAINED LENGTH 'B' (m)	11 m RESTRAINED LENGTH 'B' (m)
100	100	20.6	13.4	2.2
150	100	17.4	7.0	0.2
	150	30.5	23.2	11.6
200	100	14.8	1.1	0.2
	150	28.0	18.4	3.3
	200	40.2	32.8	21.1
250	100	10.6	0.2	0.2
	150	23.1	11.3	0.2
	200	34.5	25.3	10.9
	250	45.1	37.6	25.8
300	100	8.0	0.2	0.2
	150	20.9	6.6	0.2
	200	32.2	21.2	3.8
	250	42.8	33.7	19.5
	300	54.6	46.9	34.9
375	100	REFER TO MANUFACTURER		
	150			
	200			
	250			
	300			

TAPERS (SEE NOTE 6)

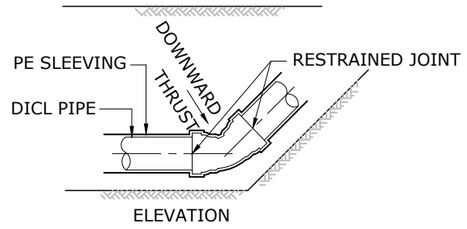
LARGE PIPE DN	SMALL PIPE DN	MIN. LENGTH OF SMALL PIPE FOR ONE RESTRAINT (m)	MIN. LENGTH OF LARGE PIPE FOR FULL RESTRAINT (m)
150	100	25.8	18.2
200	100	59.1	32.2
200	150	24.0	18.6
250	100	91.0	40.4
250	150	48.2	30.5
250	200	20.6	16.9
300	100	137.6	51.6
300	150	81.3	43.4
300	200	46.7	32.3
300	250	21.8	18.4
375	100	REFER TO MANUFACTURER	
375	150		
375	200		
375	250		
375	300		



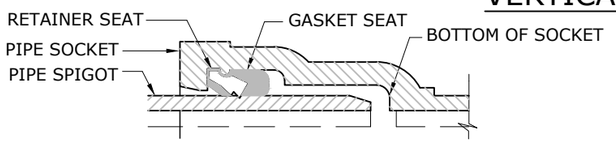
HORIZONTAL BEND



VERTICAL BEND - UPWARD THRUST



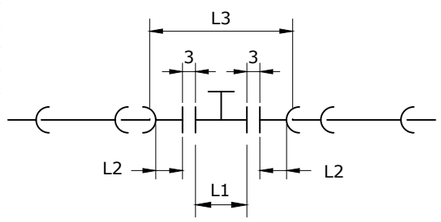
VERTICAL BEND - DOWNWARD THRUST



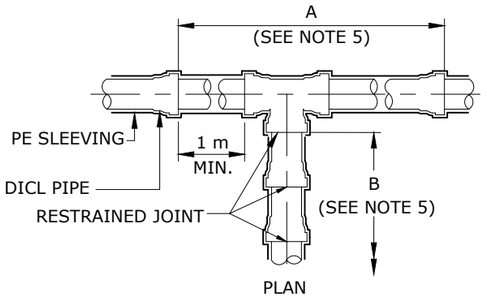
RESTRAINED JOINT SYSTEM

RESTRAINED CUT-IN

DN	INSERT L1	CONNECTOR L2	OVERALL L3
100	356	110	582
150	406	135	682
200	484	135	760
250	534	155	850
300	610	170	956
375	REFER MANUFACTURER		



RESTRAINED CUT-IN



HORIZONTAL TEE

FOR "TYTON-LOK" RESTRAINED JOINT SYSTEM, REFER TO PRODUCT LIMITATIONS.

NOTES

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. ALL RESTRAINED LENGTHS ARE APPLICABLE FOR BURIED PIPELINES ONLY. THE MINIMUM OF PIPELINE REQUIRED TO BE RESTRAINED IS CALCULATED FROM THE PIPE DIAMETER, FITTING TYPE, STANDARD TRENCH CONDITIONS AND A PIPELINE PRESSURE OF 122 m. WHERE RESTRAINED JOINTS ARE USED, REDUCE TEST PRESSURE TO 1196kPa.
3. THE LENGTH OF RESTRAINT REQUIRED IS THE AMOUNT OF PIPELINE THAT MUST BE RESTRAINED EITHER SIDE OF THE FITTING, INCLUDING THE FITTING JOINTS.
4. SPECIAL CONSIDERATION IS REQUIRED IF THE DESIGNATED RESTRAINED LENGTH FOR A FITTING ENCROACHES, OR OVERLAPS THE DESIGNATED RESTRAINED LENGTH FOR ANOTHER FITTING. SEEK MANUFACTURER'S OR DESIGNER'S GUIDANCE.
5. THE LENGTH OF RESTRAINT REQUIRED FOR TEES APPLIES TO 'B' (BRANCH) ONLY. THE `MINIMUM DISTANCE 'A' BETWEEN JOINTS IS THE MINIMUM DISTANCE BETWEEN THE NEAREST UNRESTRAINED JOINT EITHER SIDE OF THE TEE, NOT INCLUDING THE TEE. RESTRAINT IS NOT REQUIRED IN THE MAIN LINE SOCKETS OR MECHANICAL COUPLINGS, UNLESS ENCROACHING (SEE NOTE 4). HYDRANT TEES AND OTHER NON-THRUST BEARING FITTINGS DO NOT REQUIRE RESTRAINT.
6. FOR TAPERS, IF THE MINIMUM LENGTH OF THE ADJACENT SMALL PIPE SIZE OCCURS, WITHOUT ENCROACHING ANOTHER FITTING'S RESTRAINT, THEN ONLY ONE RESTRAINED JOINT IS REQUIRED IN THE LARGE SOCKET OF THE TAPER. IF THE MINIMUM LENGTH OF SMALL PIPE DOES NOT OCCUR THEN, FULL RESTRAINT IS REQUIRED.
7. TREAT FLUSHING BENDS AS A DEAD END.
8. SPECIAL DESIGN REQUIRED FOR 90 DEGREE VERTICAL BENDS.
9. PLACE MARKING TAPE FOR IDENTIFICATION OF RESTRAINED SECTIONS OF THE PIPELINE ALONG THE TOP OF THE RESTRAINED PIPE LENGTHS AND FASTEN TO THE PIPE AT NOT LESS THAN 3 m CENTRES. MARKING TAPE TO BE PINK COLOURED POLYETHYLENE TAPE APPROXIMATELY 100 WIDE, WITH THE INSCRIPTION: `WARNING - RESTRAINED PIPELINE - USE RESTRAINED FITTINGS ONLY'.
10. WHEN MAINTAINING OR CUTTING RESTRAINED SECTIONS OF PIPELINE IT IS ADVISABLE THAT EFFECTIVE LENGTHS OF FITTINGS BE MEASURED ON SITE TO CONFIRM THEIR COMPLIANCE WITH THIS DRAWING.
11. RESTRAINED JOINTS MAY BE ASSUMED TO ACT THE SAME AS A FLANGED JOINT.
12. ONLY USE PIPE AND FITTINGS APPROVED FOR USE WITH RESTRAINT GASKET.

ASSEMBLY

A. JOINTING TO BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
B. RESTRAINT VIA LOCKING GASKETS IS ONLY TO BE USED WITH DI PIPES AND FITTINGS FEATURING THE AUTHORISED SOCKET PROFILE. DO NOT USE WITH OTHER DI SOCKET PROFILES OR OTHER PIPE MATERIALS.
C. IF MAXIMUM JOINT DEFLECTION IS DESIRED, PUSH THE SPIGOT TO THE FIRST WITNESS MARK ONLY AND THEN DEFLECT THE JOINT. THE JOINT WILL NOT DEFLECT AFTER INSERTING THE SPIGOT ALL THE WAY HOME.

DISASSEMBLY

A. JOINTS TO BE DISASSEMBLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
B. DO NOT REUSE RESTRAINED JOINT GASKETS.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1208-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL RESTRAINED JOINT SYSTEM
DN 100 TO DN 375 DI MAINS

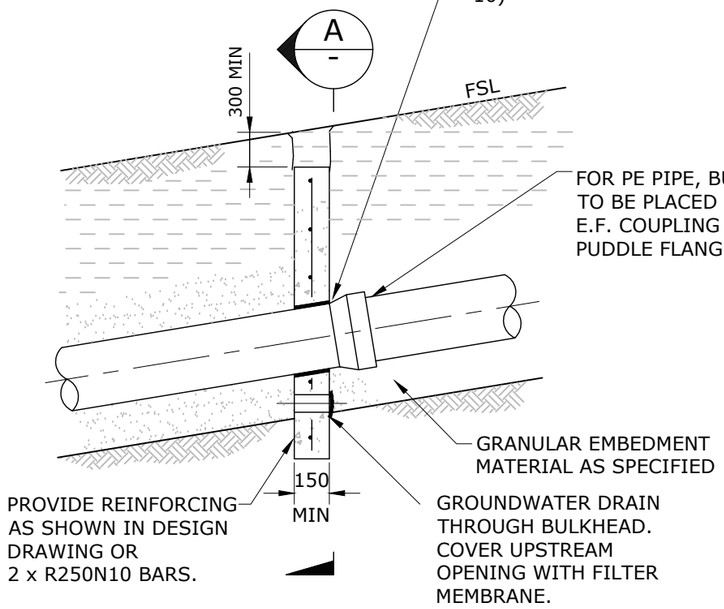
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1208-1

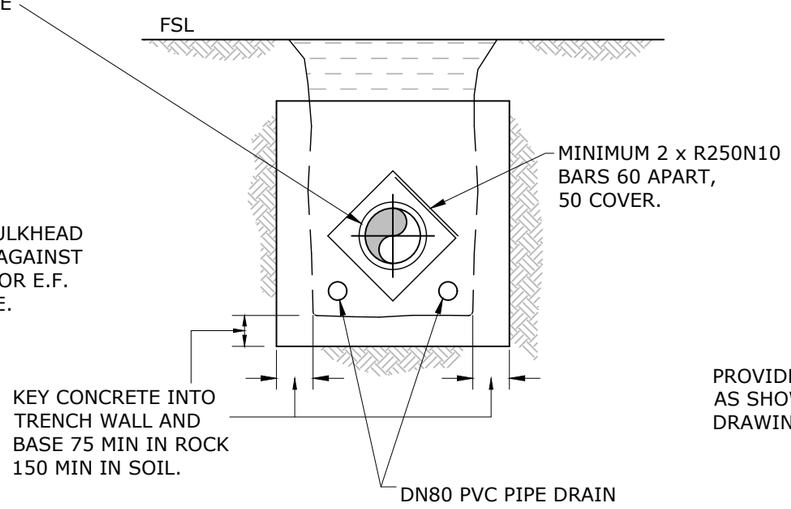
VERSION A

NOT TO SCALE

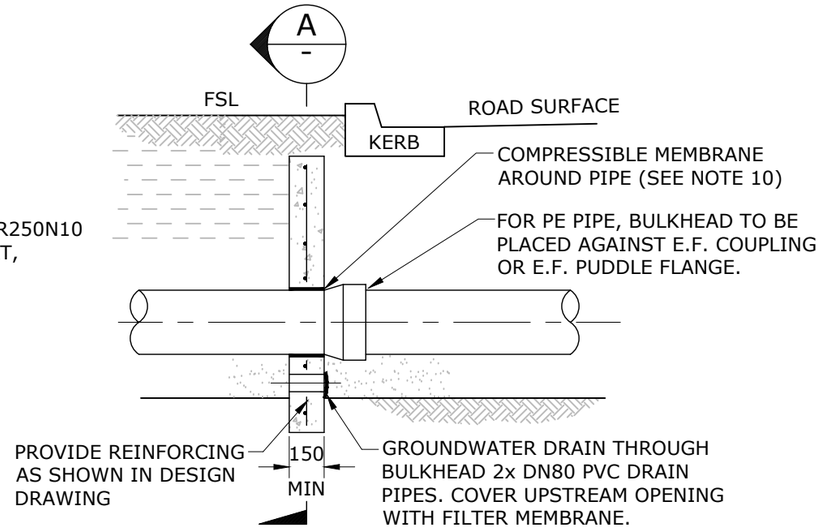
ORG DATE: 07/08/2018



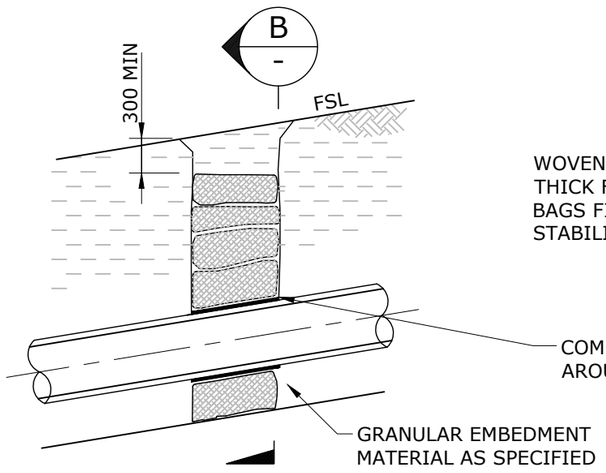
CONCRETE BULKHEAD DETAIL



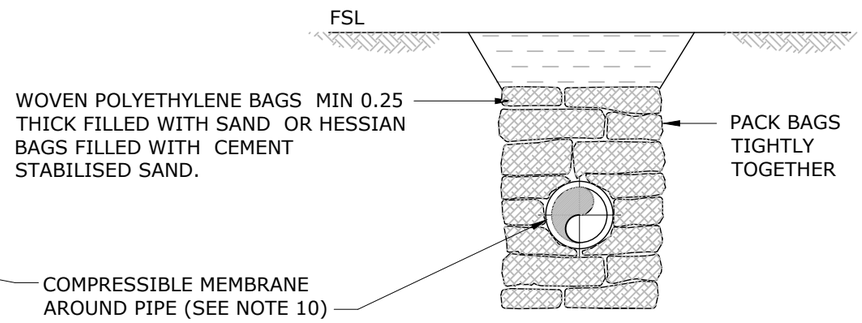
SECTION A - A



TYPICAL ROAD CROSSING BULKHEAD



TRENCH STOP DETAIL



SECTION B - B

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. CONSTRUCT CONCRETE BULKHEADS AND TRENCH STOPS AT LOCATIONS SPECIFIED IN DESIGN DRAWINGS AND BASED ON THE SPACINGS IN THE TABLE 7.5 OF THE WBBROC-SP WATER SUPPLY CODE.
3. CONSTRUCT BULKHEAD ADJACENT TO KERB AND GUTTER SHOULDER OF SEALED ROADS.
4. LOCATE BULKHEAD AT A DEVELOPMENTS RETAINING WALL UNDER THE WALL.
5. KEY CONCRETE BULKHEADS INTO SIDES AND BOTTOM OF TRENCH AGAINST A BEARING SURFACE OF UNDISTURBED SOIL.
6. CONCRETE TO BE CLASS N25.
7. DO NOT DEFORM PIPES DURING PLACEMENT OF CONCRETE.
8. SEAL BAGS TO PREVENT LEAKAGE OF CONTAINED MATERIAL.
9. PROVIDE CONTINUOUS DRAINAGE PATH
   - THROUGH BULKHEADS AND TRENCHSTOPS
   - AROUND MAINTENANCE HOLES
   - IN TRENCH EXCAVATIONS ACROSS ROADWAYS.

   TRENCH DRAINAGE TO BE IN ACCORDANCE WITH WBB-WAT-1210-1.
10. COMPRESSIBLE MEMBRANE AROUND PIPE TO BE 10 THICK POLYSTYRENE FOR BULKHEADS ADJACENT TO KERBS AND 3 MIN THICK EPDM RUBBER FOR BULKHEADS AND TRENCHSTOPS ON SLOPES.
11. TRENCH STOPS AND BULKHEADS ARE TO BE USED TO PREVENT OR IMPEDE THE MOVEMENT OF SURFACE AND GROUND WATER THAT WILL DAMAGE THE PIPE TRENCH OR THE PIPE EMBEDMENT.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1209-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL TRENCH DRAINAGE BULKHEADS AND TRENCHSTOP

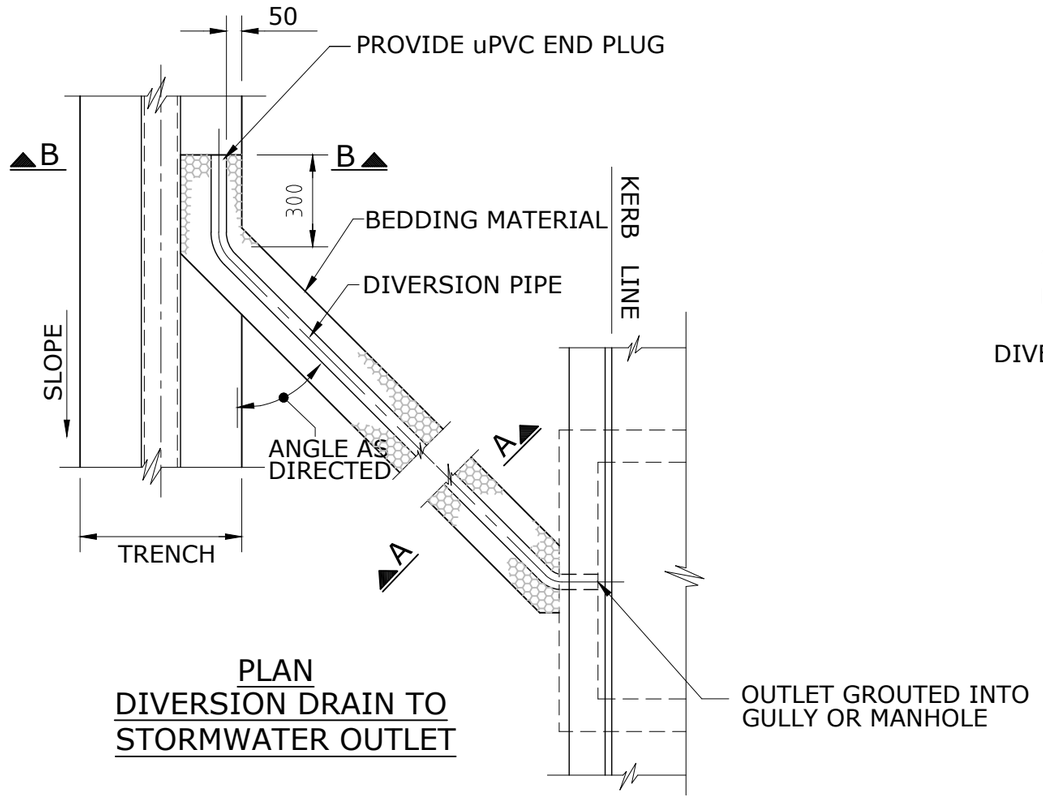
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1209-1

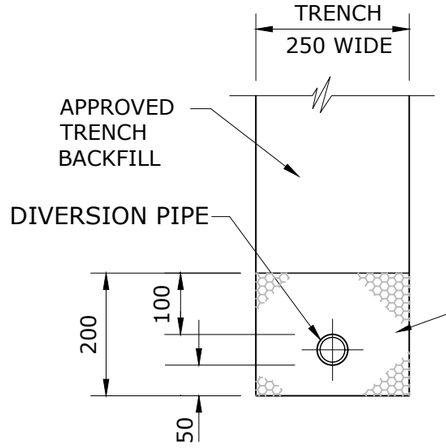
VERSION A

NOT TO SCALE

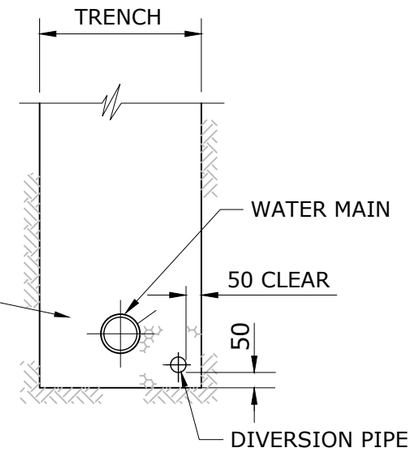
ORG DATE: 07/08/2018



PLAN
DIVERSION DRAIN TO STORMWATER OUTLET

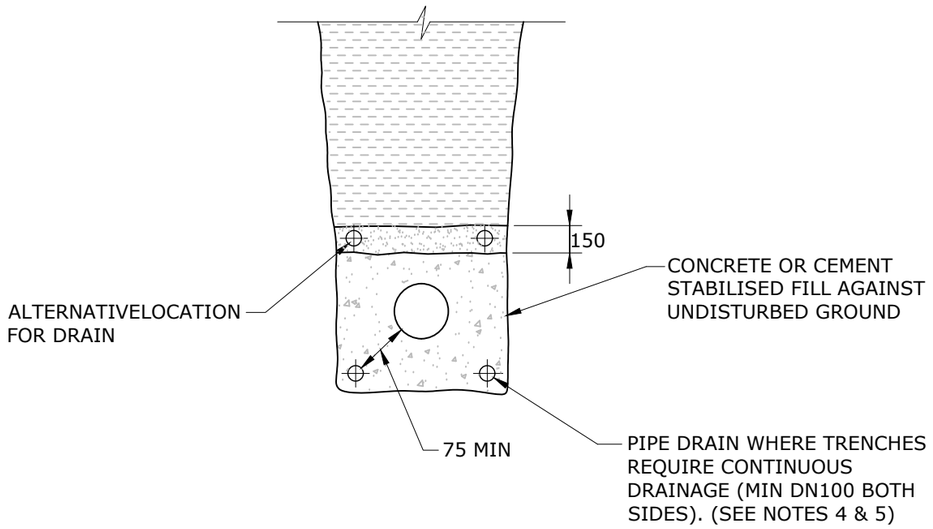


SECTION A-A
DIVERSION DRAIN TRENCH



SECTION B-B

TYPICAL DISCHARGE SYSTEMS FOR PIPE TRENCHES



TRENCH DRAINAGE FOR CONCRETE ENCASEMENT/STABILISATION

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. DRAINAGE PIPES TO DISCHARGE INTO AUTHORISED STORMWATER DISCHARGE AREAS (AS SHOWN IN DESIGN DRAWINGS).
3. LAY GEOTEXTILE FILTER FABRIC IN TRENCH SUCH THAT IT FULLY ENCAPSULATES THE DRAINAGE MATERIAL (5/7 AGGREGATE). PROVIDE MINIMUM OF 250 LAP AT ALL FILTER FABRIC JOINTS.
4. PROVIDE CONTINUOUS DRAINAGE PATH:
   - THROUGH BULKHEADS.
   - IN TRENCH EXCAVATIONS ACROSS ROADWAY.
5. WHERE REINFORCING IS USED LOCATE DRAIN INSIDE THE REINFORCING.
6. DEPTH MAY NEED TO BE INCREASED TO COMPENSATE. DIVERSION PIPE AND FITTINGS TO BE DN50 SLOTTED POLYETHYLENE 6. CLASS 400 TO AS 2439.1..
7. DIVERSION PIPES ARE TO BE FITTED WITH A FILTER SOCK/SLEEVE.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1210-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL TRENCH DRAINAGE
TRENCH SYSTEMS

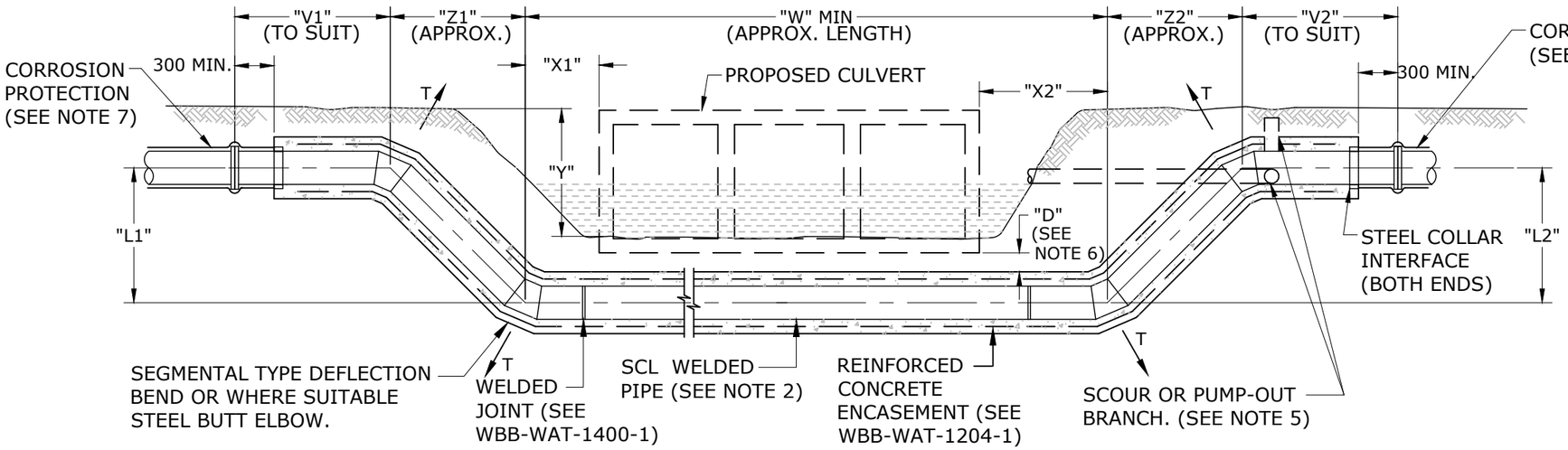
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1210-1

VERSION A

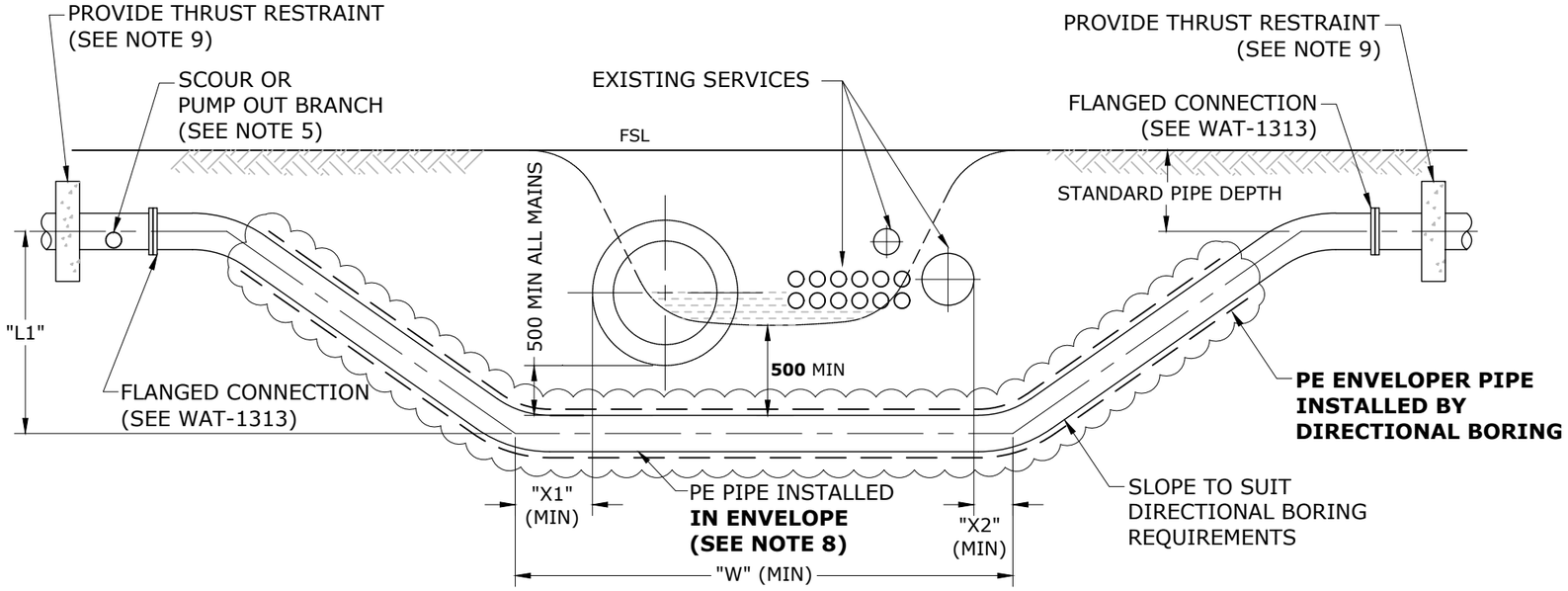
NOT TO SCALE

ORG DATE: 07/08/2018



CREEK/CULVERT CROSSING > DN 450 STEEL PIPE SHOWN

USING CONCRETE ENCASEMENT
(REQUIRES SP APPROVAL)
(REFER NOTE 12 AND 13)



CREEK STORMWATER AND BURIED SERVICES CROSSING ≤ DN 450 (ID 366) PE SHOWN

USING TRENCHLESS TECHNOLOGY **(REQUIRES SP APPROVAL)**

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. STEEL PIPE JOINTS TO BE EITHER PLAIN ENDS WITH WELDED COLLAR, BUTT WELDED OR SLIP-IN TYPE WELDED JOINT.
3. DIMENSIONS D, L1, L2, V1, V2, W, X1, X2, Y, Z1, Z2, THRUST "T" 3. AND REINFORCEMENT DETAILS TO BE AS SHOWN IN DESIGN DRAWINGS. "W" SHALL BE ULTIMATE CREEK, CULVERT OR SERVICES WIDTH.
4. POUR UNDERSIDE OF CONCRETE ENCASEMENT AGAINST UNDISTURBED GROUND.
5. WHERE REQUIRED PROVIDE SCOUR OR PUMP-OUT BRANCH AS DETAILED IN DESIGN DRAWINGS. (WBB-WAT-1307 SET.)
6. 500 MIN COVER (DIMENSION "D") TO APPLY EXCEPT FOR MAJOR STREAM CROSSINGS OR WHERE CONDITIONS SUCH AS DREDGING OR NAVIGATION REQUIREMENTS MIGHT APPLY. FOR SUCH APPLICATIONS INCREASED DEPTH OF COVER TO BE DECIDED AFTER CONSULTATION WITH AUTHORITY RESPONSIBLE FOR WATERWAY.
7. FULLY WRAP PE COATED SCL PIPE USING BITUMASTIC WRAPPING TAPE SYSTEM EXTENDING FROM 300 mm INSIDE FACE OF CONCRETE ENCASEMENT TO FIRST POINT OF FULL PIPE PROTECTION.
8. NO JOINS PERMITTED IN THE PIPE SECTION UNDER THE OBSTRUCTION.
9. PROVIDE THRUST RESTRAINTS WHERE PE PIPEWORK IS CONNECTED TO RRJ PIPEWORK (SEE WBB-WAT-1207-1), TRANSITION MAY BE ON SLOPED PIPE LENGTHS.
10. AIR RELIEF AND ISOLATION VALVES TO BE INSTALLED WHERE SHOWN IN DESIGN DRAWINGS.
11. STANDARD PE100 DIAMETERS ARE DEFINED IN THE PREFERRED MATERIALS LIST.
12. DN450 AND SMALLER USE CONCRETE ENCASED DICL SOC-SP PIPE CLASS PN35. WITH JOINTS MANAGED AS PER WBB-WAT-1203-1 AND THRUST MANAGED AS PER WBB-WAT-1205-1.
13. **CONCRETE ENCASEMENT NOT PREFERRED.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1211-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL BURIED CROSSINGS UNDER OBSTRUCTIONS

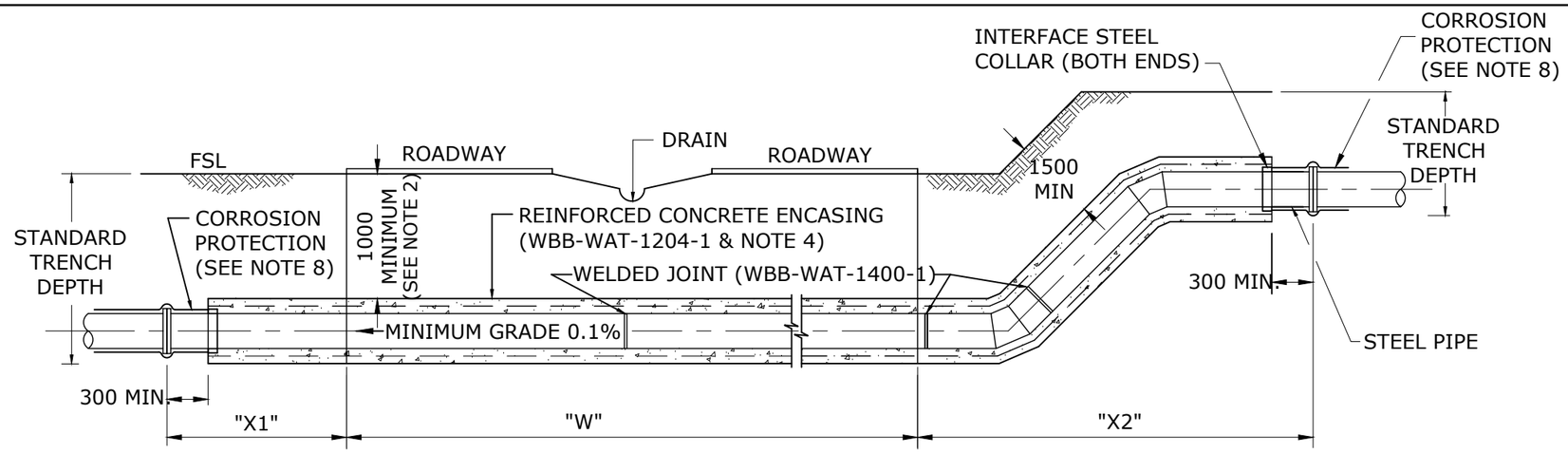
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1211-1

VERSION A

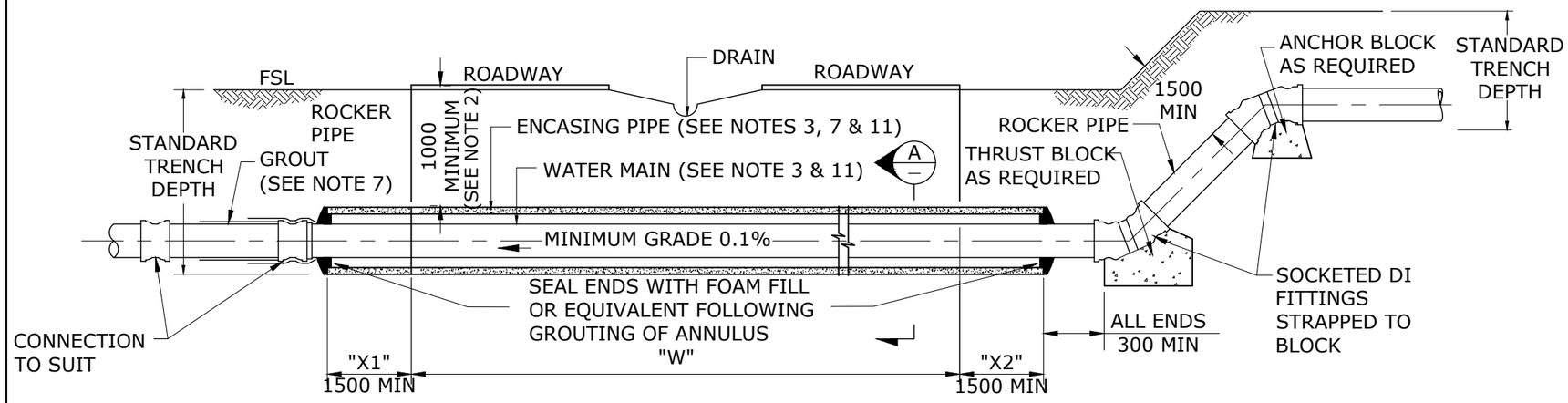
NOT TO SCALE

ORG DATE: 07/08/2018



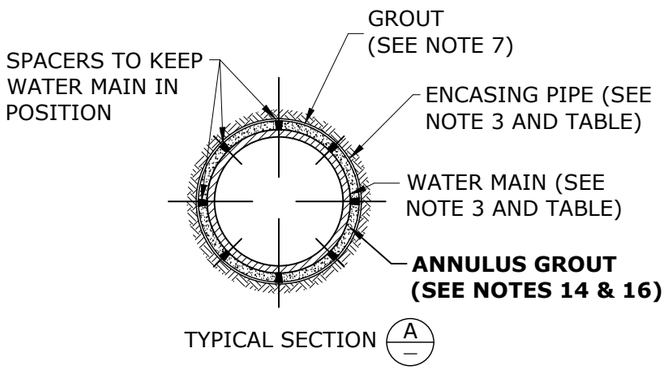
CONCRETE ENCASED METHOD ≥ DN 610 STEEL PIPE SHOWN

FOR INSTALLATIONS PRIOR TO ROAD CONSTRUCTION - REFER NOTE 13 **AND 15**



BORED AND JACKED ENCASING PIPE METHOD

FOR INSTALLATIONS PRIOR TO AND AFTER ROAD CONSTRUCTION (SEE WBB-WAT-1214-1)



TYPICAL SECTION A

ENCASING PIPE & WATER MAIN

(PREFERRED INSTALLATION OPTION)

WATER MAIN PIPE (DN)	100	150	200	250	300	400	500	550	650	800
STEEL ENCASING PIPE (DN) MIN	300	375	375	450	525	600	700	750	825	1000

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. DETAILS SHOWN ARE TYPICAL. THE DESIGNER SHALL PROVIDE A SPECIFIC DESIGN FOR THE INSTALLATION AND OBTAIN APPROVAL FROM THE RELEVANT AUTHORITY FOR THE DESIGN. PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST OBTAIN APPROVAL FROM THE RELEVANT AUTHORITY TO ACCESS THE SITE.
3. BORED AND JACKED ENCASING PIPE METHOD.
   ENCASING PIPE
   - REINFORCING CONCRETE CLASS 4 BUTT JOINED WITH STEEL LOCATING BANDS, OR WELDED MILD STEEL JACKING PIPE.

   WATER MAIN
   - STEEL CEMENT LINED WITH FUSION BONDED PE COATING.
   - DICL FLANGE CLASS
   - PE (SEE NOTE 14)
4. CONCRETE ENCASED METHOD.
   - PIPE MATERIAL TO BE SCL OR DICL SOC-SP PIPE (REFER NOTE 15)
   - EXTERNAL COATING REQUIRED ON SCL PIPE.
   - SCL JOINTS TO BE FULLY WELDED.
   - NO SERVICE CONNECTIONS TO BE MADE TO ENCASED SECTION OF PIPELINE.
5. STEEL PIPE JOINTS TO BE EITHER PLAIN ENDS WITH WELDED COLLAR, BUTT WELDED OR SLIP-IN TYPE WELDED JOINTS.
6. DIMENSIONS "W", "X1" & "X2" AND LOCATION OF BULKHEADS & REINFORCING TO BE SHOWN IN DESIGN DRAWINGS. "W" SHALL BE ULTIMATE ROAD WIDTH.
7. FILL VOIDS OUTSIDE ENCASING PIPE WITH GROUT DURING THE INSTALLATION, REFER WBB-WAT-1214-1 FOR NOTE 4.
8. FULLY WRAP PE COATED SCL PIPE USING BITUMASTIC WRAPPING TAPE SYSTEM EXTENDING FROM 300 mm INSIDE FACE OF CONCRETE ENCASEMENT TO FIRST POINT OF FULL PIPE PROTECTION.
9. INSTALL AIR RELIEF AND ISOLATION VALVES WHERE SHOWN IN DESIGN DRAWINGS.
10. CONSTRUCTION TO BE IN ACCORDANCE WITH DESIGN DRAWINGS.
11. SEE WBB-WAT-1214-1 FOR DETAILS OF ENCASING AND WATER MAIN INSTALLATION AND GROUTING DETAILS.
12. DIRECTIONAL BORING TO INSTALL PE **ENVELOPER AND** PIPE IS ALSO ACCEPTABLE.
13. SMALLER DIAMETER MAINS SHALL BE DICL SOC-SP PIPE WITH TYPE 9 TRENCH AND THRUST MANAGEMENT TO WBB-WAT-1207-1.
14. PLASTIC PIPE MATERIALS WHERE APPROVED SHALL BE MANAGED FOR FLOATATION AND THERMAL REVERSION DURING THE GROUTING PROCESS, REFER NOTE 4 ON WBB-WAT-1214-1 FOR GROUT.
15. **CONCRETE ENCASEMENT NOT PREFERRED.**
16. **GROUTING OF ENCASING TO WATER PIPE ANNULUS IS NOT ALLOWED**.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1212-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL BURIED CROSSINGS
MAJOR ROADWAYS

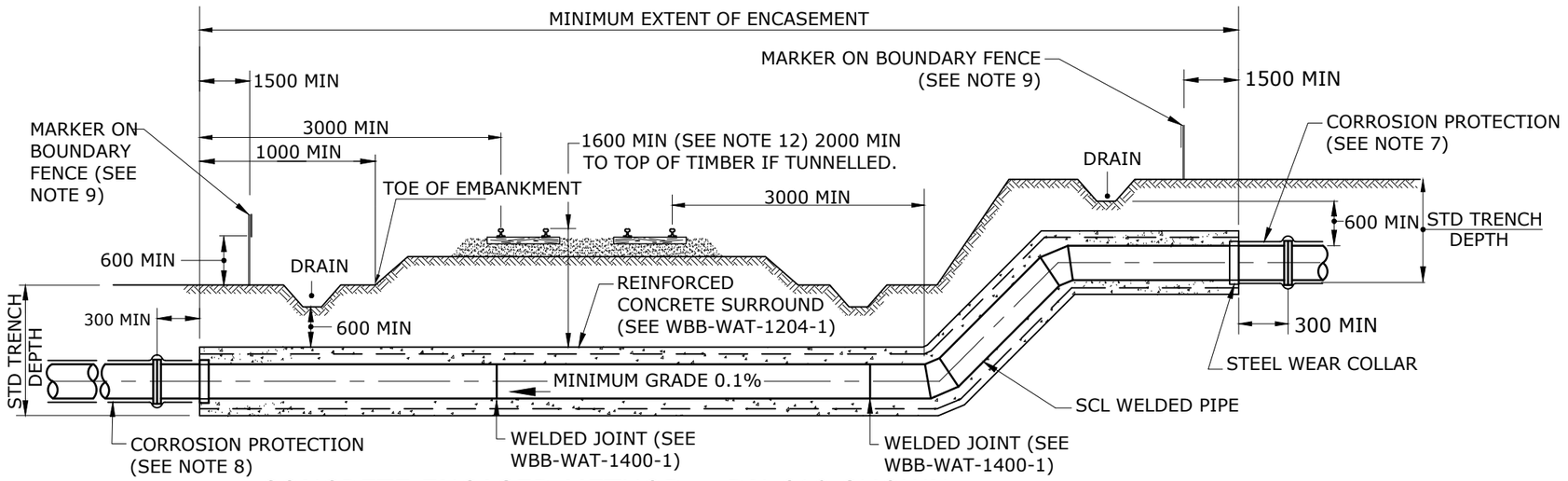
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1212-1

VERSION A

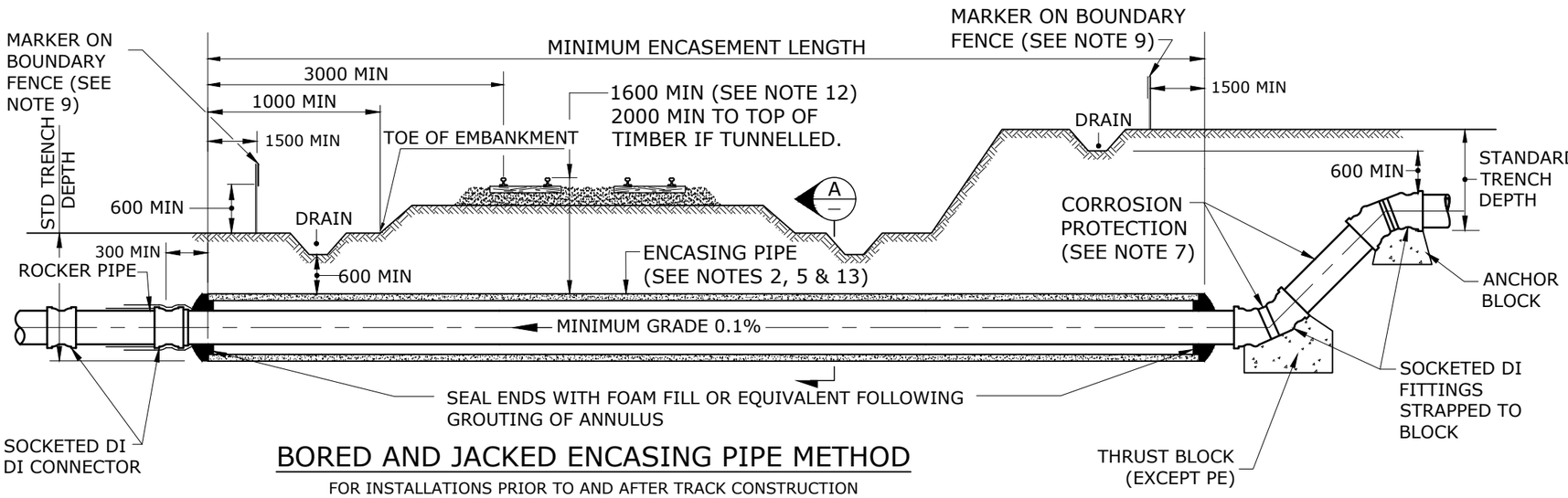
NOT TO SCALE

ORG DATE: 07/08/2018



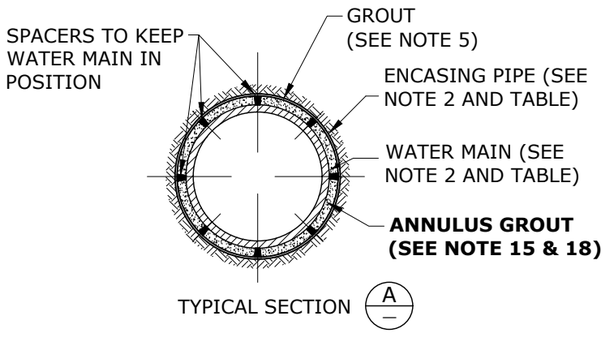
CONCRETE ENCASED METHOD ≥ DN 610 SHOWN

FOR INSTALLATIONS PRIOR TO TRACK CONSTRUCTION - REFER NOTE 14 **AND 17**



BORED AND JACKED ENCASING PIPE METHOD

FOR INSTALLATIONS PRIOR TO AND AFTER TRACK CONSTRUCTION
(SEE WBB-WAT-1214-1)



ENCASING PIPE & WATER MAIN

(PREFERRED INSTALLATION OPTION)

WATER MAIN PIPE (DN)	100	150	200	250	300	400	500	550	650	800
STEEL ENCASING PIPE (DN) MIN	300	375	375	450	525	600	700	750	825	1000

DETAILS SHOWN ARE TYPICAL. THE DESIGNER MUST OBTAIN PRE APPROVAL FROM THE SP FOR DIRECTIONAL DRILLING AND SUBMIT A SPECIFIC DESIGN FOR SP APPROVAL.

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. BORED AND JACKED ENCASING PIPE METHOD.
   ENCASING PIPE
   - REINFORCING CONCRETE CLASS 4 BUTT JOINED WITH STEEL LOCATING BANDS, OR WELDED MILD STEEL OR GRP JACKING PIPE.
   WATER MAIN
   - STEEL CEMENT LINES WITH FUSION BONDED PE COATING
   - DICL FLANGE CLASS
   - PE (SEE NOTE 15)
3. CONCRETE ENCASED
   - THE PIPE MATERIAL TO BE SCL OR DICL SC-SP PIPE (REFER NOTE 17).
   - EXTERNAL COATING REQUIRED ON SCL PIPE.
   - SCL JOINTS TO BE FULLY WELDED.
   - NO SERVICE CONNECTIONS TO BE MADE TO ENCASED SECTION OF PIPELINE
4. STEEL PIPE JOINTS TO BE EITHER PLAIN OR PLAIN ENDS WITH WELDED COLLAR OR BUTT WELDED OR SLIP-IN TYPE WELDED JOINT. EXTERNAL COATING REQUIRED (SEE WBB-WAT-1400-1).
5. FILL VOIDS OUTSIDE OF ENCASING PIPE WITH PRESSURE GROUT DURING INSTALLATION, REFER WBB-WAT-1214-1 FOR NOTE 4.
6. LOCATE VALVE ACCESS CHAMBERS (IF REQUIRED) AT LEAST 6000 FROM TOE OF EMBANKMENT OR TOP OF CUT.
7. FOR DICL MAINS, PROTECT ALL PIPES AND FITTINGS WITH PE SLEEVING.
8. FULLY WRAP PE COATED SCL PIPE USING BITUMASTIC WRAPPING TAPE SYSTEM EXTENDING FROM 300 mm INSIDE FACE OF CONCRETE ENCASEMENT TO FIRST POINT OF FULL PIPE PROTECTION.
9. PLACE MARKERS ABOVE BURIED PIPELINE AT THE POINTS WHERE IT ENTERS AND LEAVES THE PROPERTY.
10. PROVIDE ADDITIONAL STRAY CURRENT PROTECTION AS DIRECTED BY RAILWAY AUTHORITY. ELECTRICAL CONTINUITY AND INSULATION TO BE AS SPECIFIED IN DESIGN DRAWINGS.
11. DESIGN TO BE IN ACCORDANCE WITH AS 4799.
12. MINIMUM COVER FOR ALL PIPELINES BELOW RAILWAY LINES
    - NOT LESS THAN 1600 BELOW RAIL LEVEL;
    - NOT LESS THAN 600 BELOW FORMATION LEVEL, i.e. THE GROUND LEVEL IMMEDIATELY BELOW THE RAILWAY BALLAST.
    - NOT LESS THAN 2000 BELOW RAIL LEVEL TO TOP OF TIMBER FOR TUNNELS.
13. SEE WBB-WAT-1214-1 FOR DETAILS OF ENCASING AND WATER MAIN INSTALLATION AND GROUTING DETAILS.
14. SMALLER DIAMETER MAINS SHALL BE DICL SOC-SP PIPE WITH TYPE 9 TRENCH AND THRUST MANAGEMENT TO WBB-WAT-1205-1.
15. PLASTIC PIPE MATERIALS WHERE APPROVED SHALL BE MANAGED FOR FLOATATION AND THERMAL REVERSION DURING THE GROUTING PROCESS, REFER NOTE 4 ON WBB-WAT-1214-1 FOR GROUT.
16. DETAILS SHOWN ARE TYPICAL. THE DESIGNER SHALL PROVIDE A SPECIFIC DESIGN FOR THE INSTALLATION AND OBTAIN APPROVAL FROM THE RELEVANT AUTHORITY FOR THE DESIGN. PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST OBTAIN APPROVAL FROM THE RELEVANT AUTHORITY TO ACCESS THE SITE.
17. **CONCRETE ENCASEMENT NOT ALLOWED**
18. **GROUTING OF ENCASING TO WATER PIPE ANNULUS IS NOT ALLOWED**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1213-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL BURIED CROSSINGS
RAILWAYS

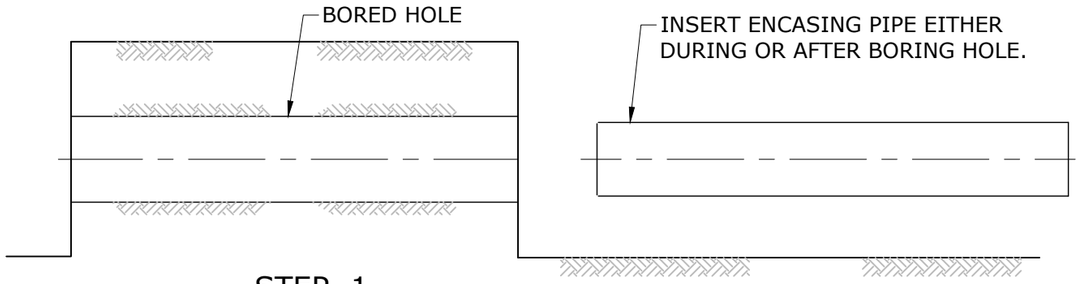
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1213-1

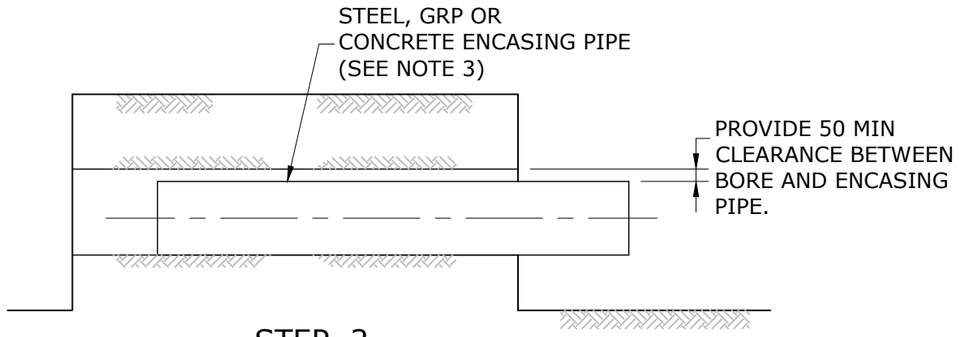
VERSION A

NOT TO SCALE

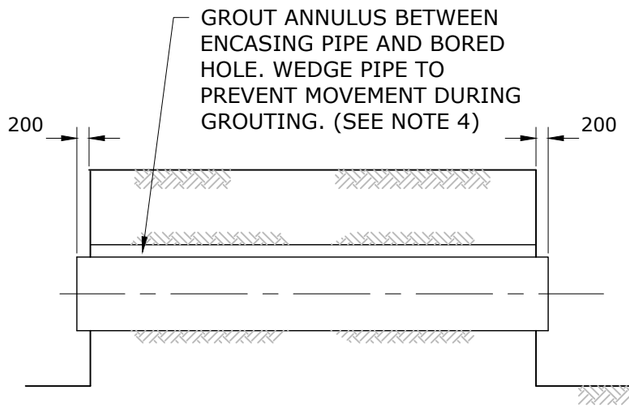
ORG DATE: 07/08/2018



STEP 1

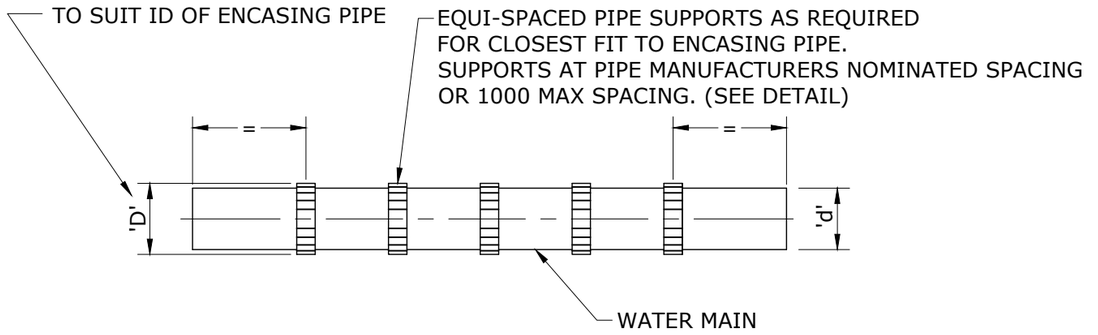


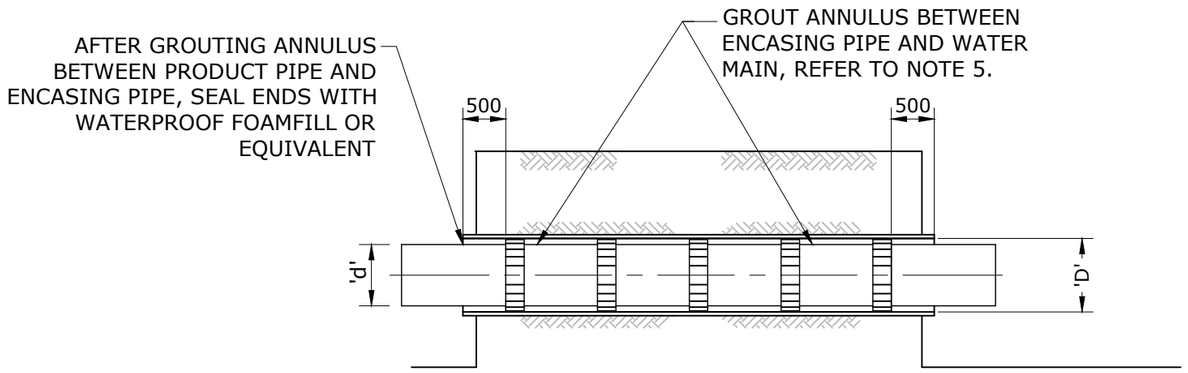
STEP 2



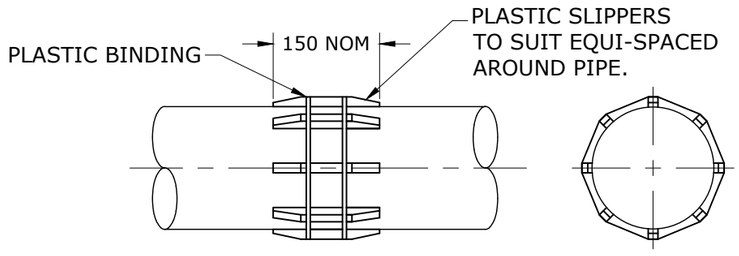
STEP 3

INSTALLATION OF BORED ENCASING PIPE





TYPICAL FINISHED INSTALLATION



WATER MAIN SUPPORTS DETAIL

BORED ENCASING PIPE SYSTEM

STEPS 1, 2 & 3 AS SHOWN.

JACKED ENCASING PIPE SYSTEM

INSTALLATION OF JACKED ENCASING PIPE TO BE CARRIED OUT BY SPECIALIST PIPE JACKING COMPANY AUTHORISED BY THE WATER AGENCY.

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. PIPE MATERIALS AND 'D' & 'd' TO BE AS SPECIFIED IN DESIGN DRAWING.
3. FULL BUTT WELDED STEEL ENCASING PIPES PREFERRED.
4. BORED HOLE TO ENCASING PIPE GROUT MIX BY WEIGHT IS 0.67 WATER : 1.0 CEMENT : 1.0 SAND WITH THE SAND TO BE WELL ROUNDED SAND AND WBBROC-SP APPROVED PLASTICISERS MAY BE USED.
5. **ENCASING PIPE TO WATER PIPE GROUTING IS NOT ALLOWED**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1214-1 VERSION B DATED 14/07/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL BURIED CROSSINGS BORED AND JACKED ENCASING PIPE DETAILS

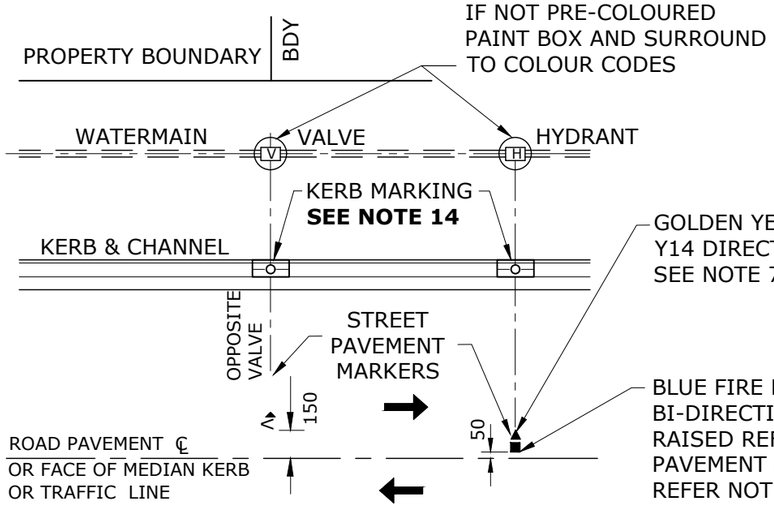
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1214-1

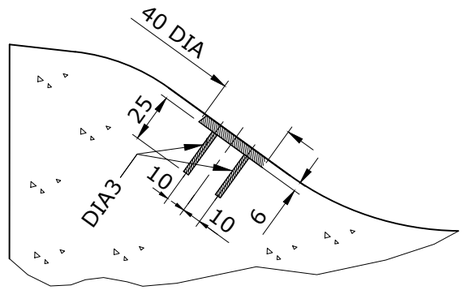
VERSION A

NOT TO SCALE

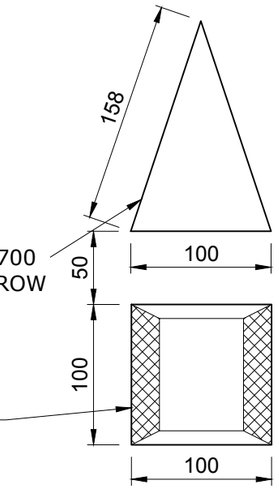
ORG DATE: 07/08/2018



KERBED STREETS/ROADS
TYPICAL PAVEMENT MARKING PLAN
(SEE NOTE 13)

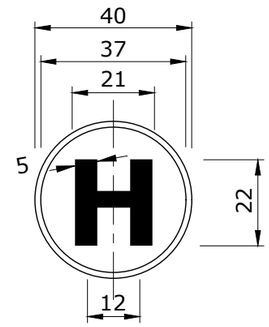


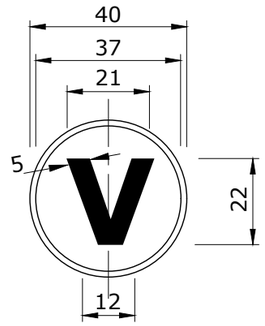
BRASS HYDRANT/VALVE MARKERS



DIRECTION OF TRAFFIC FLOW

PAVEMENT MARKING FOR HYDRANTS



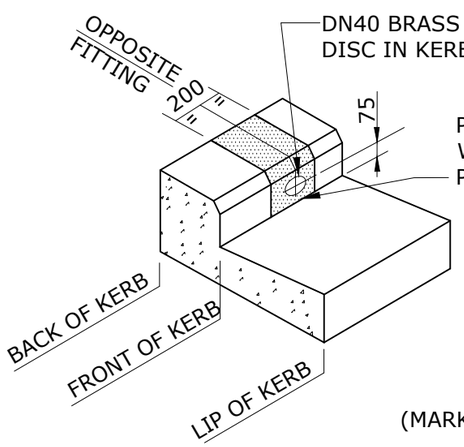


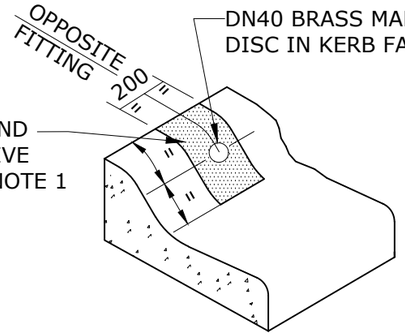
LID/MARKER PLATE/DISC CODES			
LID/KERB	FACILITY	LID/KERB	FACILITY
H	HYDRANT	V	VALVE
F	FLUSHING POINT	SC	SWABBING CHAMBER
AV	AIR VALVE	HL	HIGH LEVEL MAIN
SV	SCOUR VALVE	ML	MID LEVEL MAIN
SH	SWABBING HYDRANT	LL	LOW LEVEL MAIN
VB	VALVE BOX/PIT		

COLOUR CODES	
WHITE	VALVES, SCOUR VALVES SWABBING CHAMBERS, AIR VALVES
GOLDEN YELLOW AS2700 Y14	HYDRANTS, FLUSHING POINTS
RED	CLOSED ZONE / BOUNDARY VALVES
BLUE	DIALYSIS VALVES

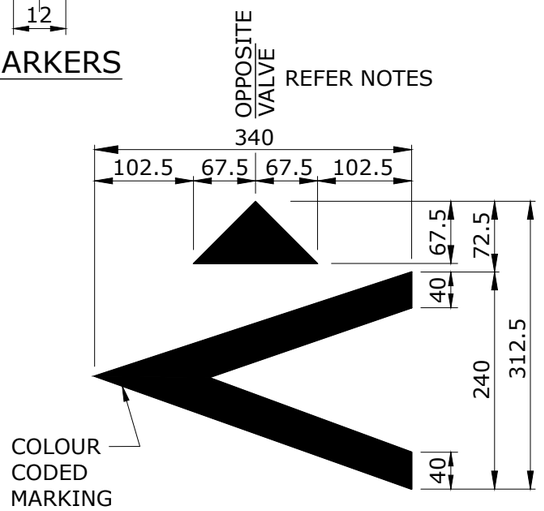
NOTES

1. PAVEMENT MARKING PAINT SHALL BE OF AN APPROVED REFLECTIVE PAINT, INCORPORATING APPLIED GLASS BEADS, MANUFACTURED TO THE REQUIREMENTS OF MAIN ROADS. THE PAINT COLOUR SHALL BE AS DETAILED.
2. PAVEMENT MARKINGS SHALL BE LOCATED CLEAR OF THE PARKING LANE SO THAT TYRE WEAR IS MINIMISED. THE EXACT LOCATION SHALL BE DETERMINED BY THE SUPERINTENDENT FOLLOWING SITE INSPECTIONS.
3. FOR COUNCIL CONTROLLED ROADS, BLUE RAISED REFLECTIVE FIRE HYDRANT MARKERS SHALL BE IN ACCORDANCE WITH AS1906.3. THE BLUE REFLECTOR SHALL FACE THE DIRECTION OF APPROACHING TRAFFIC.
4. FOR STATE CONTROLLED ROADS, BLUE RAISED REFLECTIVE FIRE HYDRANT MARKERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
5. ALL KERB AND PAVEMENT MARKINGS AND SURFACE FITTINGS SHALL BE COLOUR CODED AS PER COLOUR CODED TABLE.
6. INSTALL THE SECOND BLUE REFLECTIVE FIRE HYDRANT MARKER AND THE YELLOW REFLECTIVE DIRECTIONAL ARROW ON OTHER SIDE OF ROAD WHERE CENTRE MEDIAN OBSCURES VIEW OF EITHER OF THEM FROM OTHER SIDE.
7. SURFACE OF ROAD PAVEMENT SHALL BE THOROUGHLY CLEANED OF DUST, DIRT & EXTRANEOUS MATTER WITH A WIRE BRUSH.
8. BLUE FIRE HYDRANT REFLECTIVE MARKERS SHALL BE INSTALLED IN ACCORDANCE WITH THEIR MANUFACTURER'S RECOMMENDATIONS OR WHERE THERE ARE NO SPECIFIC MANUFACTURER'S INSTRUCTIONS BY HEATING WITH A GAS FLAME FOLLOWED BY PRESSING INTO THE ROAD SURFACE WITH SUFFICIENT FORCE TO ENSURE ADHESION ACROSS THE ENTIRE BASE PLATE OR THE APPLICATION OF THE RECOMMENDED PROPRIETARY ADHESIVE ACROSS THE ENTIRE BASE PLATE.
9. MARKER SHALL BE ALIGNED SQUARE TO THE ROAD CENTRELINE IN THE DIRECTION.
10. RAISED BLUE FIRE HYDRANT MARKERS, BRASS KERB MARKER, KERB PAINT AND MARKER POST ARE TO BE INSTALLED IN LINE WITH THE HYDRANT AND EACH OTHER.
11. VALVE AND HYDRANT BOXES AND LIDS SHALL BE PAINTED OR COLOURED, REFER NOTES 1 & 5.
12. KERB AND PAVEMENT MARKERS ARE BOTH REQUIRED WHERE IT IS POSSIBLE TO INSTALL THEM. WHERE IT IS NOT POSSIBLE TO MARK THE POSITION OF A VALVE OR HYDRANT WITH BOTH A KERB MARKER (BECAUSE THERE IS NO KERB) AND A PAVEMENT MARKER (BECAUSE THERE IS NO PAVEMENT OR ONLY A SPRAY SEAL) A MARKER POST MUST BE INSTALLED IN ACCORDANCE WITH DRAWING WBB-WAT-1300-2.
13. PLACEMENT OF ALL STREET FURNITURE SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
14. **BRC DOES NOT REQUIRE HYDRANT AND VALVE KERB MARKINGS.**





KERB MARKING
(MARKER DISC CODES AS TABLED)



PAVEMENT MARKING FOR VALVES (TYP.)
REFER NOTE 1 AND 2

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1300-1 VERSION B DATED 31/03/2015	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL VALVE AND HYDRANT
ROAD AND PAVEMENT MARKERS

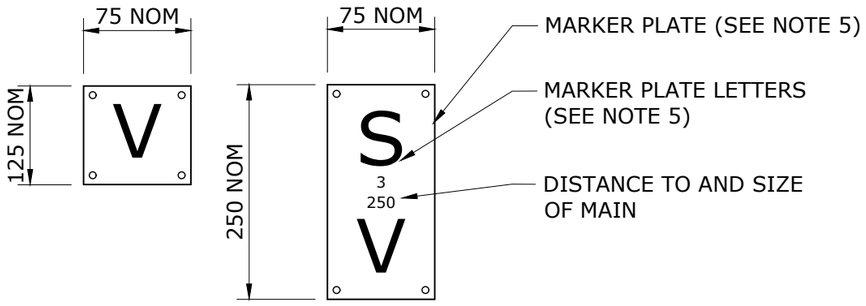
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-WAT-1300-1

VERSION
A

NOT TO SCALE

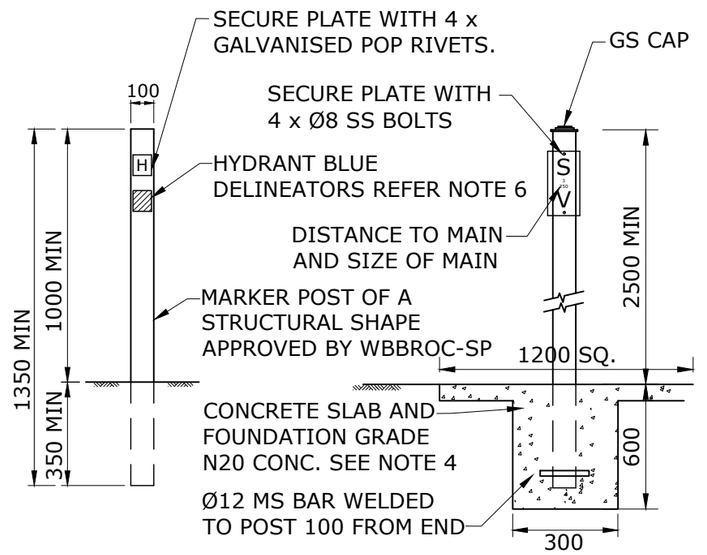
ORG DATE:
07/08/2018



TYPICAL PLATE ARRANGEMENT

FIXED TO POST

APPROVED MARKER POST
PARK INTERNATIONAL UTILITY MARKER SYSTEM POLYMER 1350 LONG X 100 WIDE X 4 THICK OR EQUAL



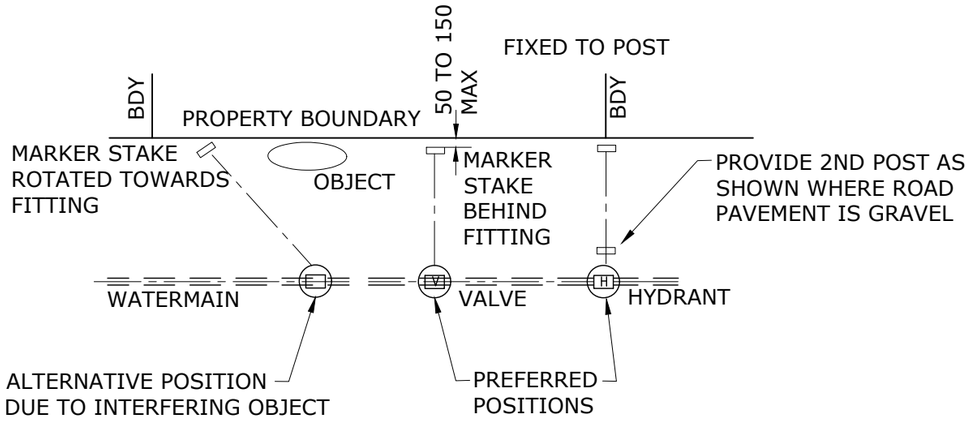
MARKER POST

REMOTE AREA POST

GALVANISED 50NB MILD STEEL TUBE C350LO
(60.3 OD x2.3 WALL THICKNESS)

MARKER PLATE CODES			
KERB	FACILITY	KERB	FACILITY
H	HYDRANT	V	VALVE
F	FLUSHING POINT	SC	SWABBING CHAMBER
AV	AIR VALVE	HL	HIGH LEVEL MAIN
SV	SCOUR VALVE	ML	MID LEVEL MAIN
SH	SWABBING HYDRANT	LL	LOW LEVEL MAIN
VB	VALVE BOX		

COLOUR CODES	
WHITE	VALVES, SCOUR VALVES SWABBING CHAMBERS, AIR VALVES
YELLOW	HYDRANTS, FLUSHING POINTS
RED	CLOSED ZONE / BOUNDARY VALVES
BLUE	DIALYSIS VALVES



STREET POST POSITION AND ORIENTATION

(PAVEMENT MARKINGS, REFER WBB-WAT 1300-1)

NOTES

1. VALVE AND HYDRANT BOXES SHALL BE PAINTED OR COLOURED, REFER NOTES 1 AND 5 ON WBB-WAT-1300-1.
2. MARKER POSTS ARE REQUIRED WHERE DIFFERENT PRESSURE ZONE WATER RETICULATION EXISTS WITH THE MARKER PLATE DESIGNATING THE DIFFERENT PRESSURE ZONES.
3. MARKER POSTS ARE USED WHERE NO KERB AND CHANNEL EXISTS AND/OR WHERE A 2 COAT SPRAY SEAL EXISTS FOR THE WEARING SURFACE. THE MARKER POSTS SHALL BE POSITIONED AT THE FRONT OF THE PROPERTY BOUNDARY AND OPPOSITE THE FITTING.
4. REMOTE AREA POSTS SHALL BE USED WHERE NO STREET EXISTS AND SHALL BE PROVIDED WITH A 1200 X 1200 X 100 THICK CONCRETE SLAB AROUND THE FACILITY BOX.
5. NOTICE PLATES SHALL BE REFLECTORISED ALUMINIUM WITH BLACK LETTERING ON A WHITE BACKGROUND NOMINALLY 80 X 80.
6. IN ADDITION TO THE NOTICE PLATE MARKER, A BLUE DELINEATOR MARKER COMPLYING WITH MAIN ROADS SPECIFICATION ES126 SHALL BE INSTALLED AS DETAILED.
7. PLACEMENT OF ALL STREET FURNITURE SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1300-2 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL VALVE AND HYDRANT IDENTIFICATION MARKER POSTS

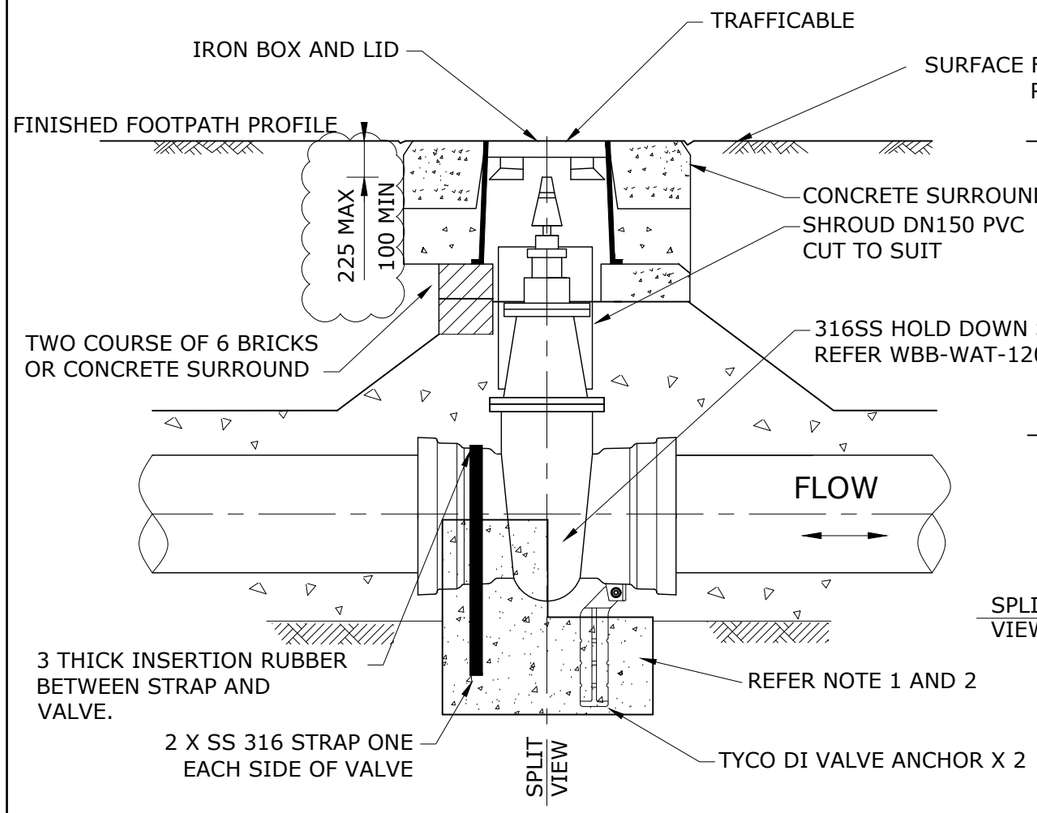
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1300-2

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018



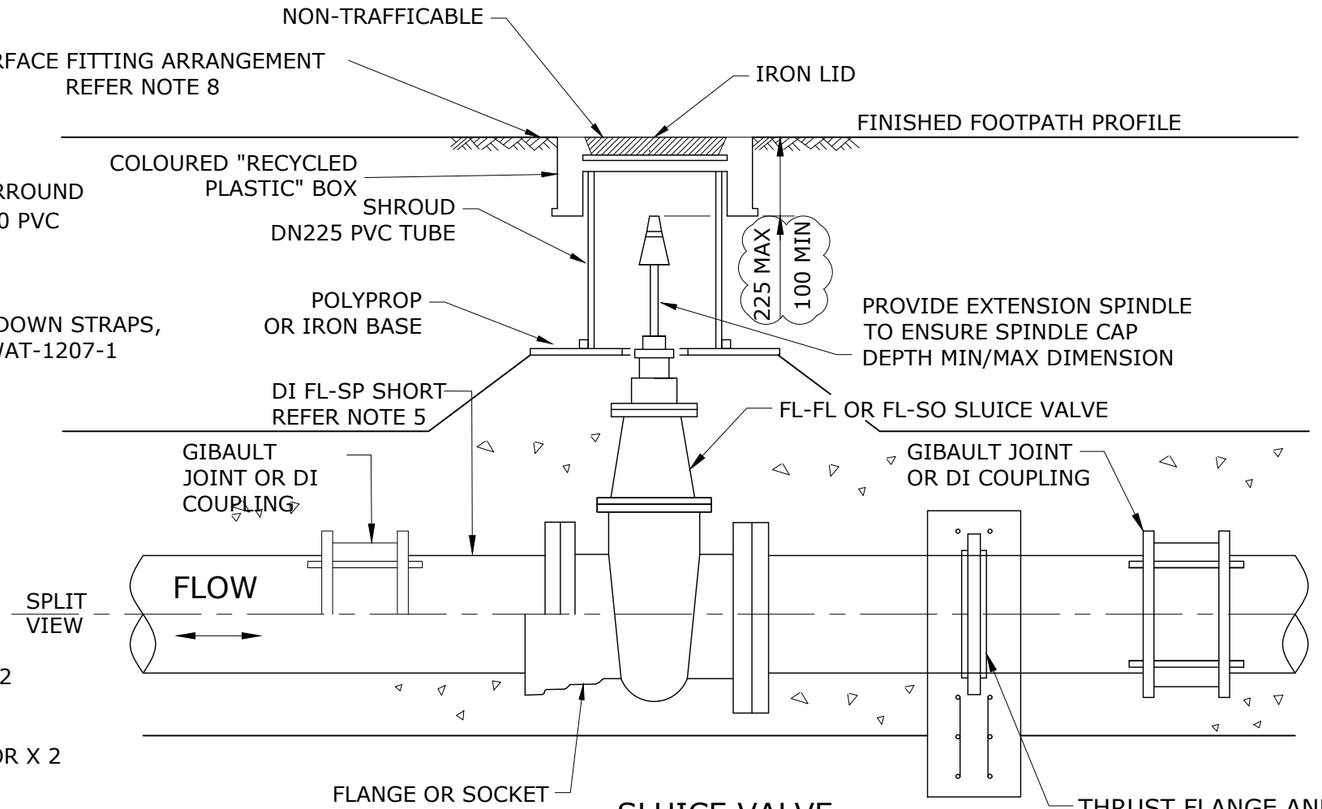
SOCKETED SLUICE VALVES

≤DN300

(TRAFFICABLE VALVE BOX)

VALVE SPINDLE EXTENSION

REFER NOTE 10



SLUICE VALVE

≤ DN375

(NON TRAFFICABLE VALVE BOX)

NOTES

1. THRUST BLOCK DETAILS REFER WBB-WAT-1206-1.
2. THRUST BLOCK REINFORCEMENT AS SPECIFIED IN WBB-WAT-1206-1 OR WITHIN DESIGN DRAWINGS.
3. INSTALL PUDDLE FLANGES ON FLANGE CLASS DICL PIPE.
4. SOC-SOC VALVES THRUST AREA TO BE AS SHOWN IN WBB-WAT-1206-1.
5. FLANGED SHORTS MAY BE SPIGOTED OR SOCKETED.
6. WHERE DI PIPES AND FITTINGS WITH RESTRAINED JOINTS AND PIPE SYSTEM IS USED, THRUST BLOCKS MAY NOT BE REQUIRED, SEE WBB-WAT-1208-1.
7. VALVE ANCHOR BLOCKS TO BE SIZED FOR A TEST PRESSURE OF 1200 kPa
8. FOR SURFACE BOX DETAILS REFER WBB-WAT-1305-1 AND WBB-WAT-1306-1.
9. SOLID CAST DUCTILE IRON ACCEPTABLE. WELDED EXTENSION SPINDLES NOT ACCEPTABLE.
10. EXTENSION SPINDLES WITHIN CONCRETE VALVE PITS SHALL BE SUPPORTED AT THE SPINDLE CAP AND EVERY 1800.
11. VALVES LARGER THAN DN 375 MAY BE DIRECTLY BURIED WITH INSTALLATION ASSEMBLY AND THRUST RESTRAINT SHOWN IN DESIGN DRAWINGS, REFER WBB-WAT-1206-1 FOR THRUST RESTRAINT GUIDANCE.
12. DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.
13. VALVE BOX DETAIL FOR TRAFFICABLE INSTALLATIONS TO BE APPROVED BY WBBROC-SP.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1301-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL VALVE AND HYDRANT INSTALLATION VALVE ARRANGEMENT

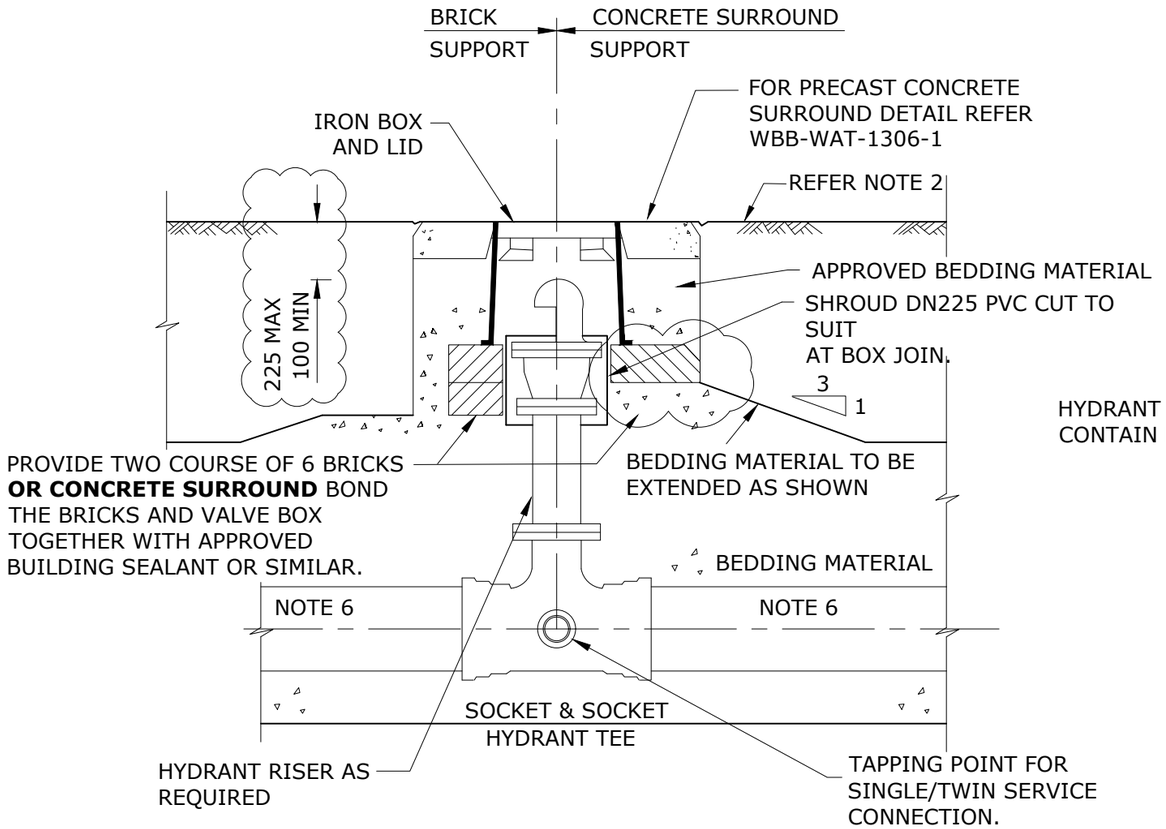
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1301-1

VERSION A

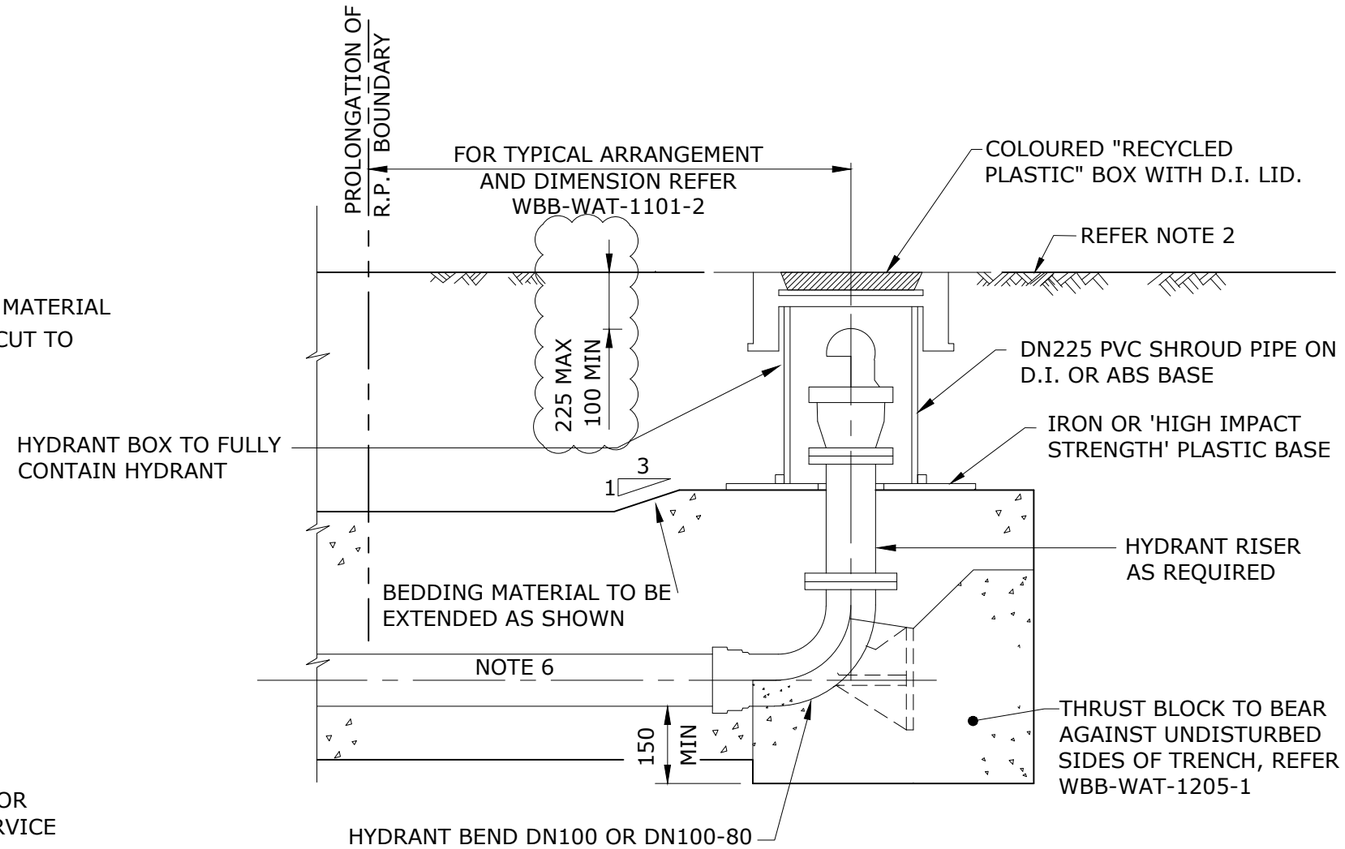
NOT TO SCALE

ORG DATE: 07/08/2018



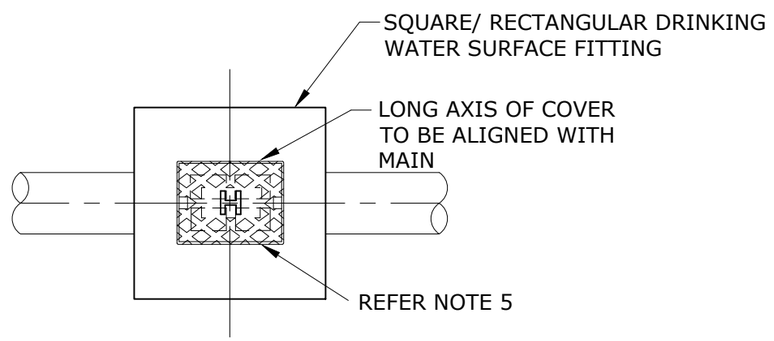
STANDARD HYDRANT ON LINE

(TRAFFICABLE USE WHERE APPROVED BY WBBROC-SP)



HYDRANT AT END OF LINE

(NON-TRAFFICABLE HYDRANT BOX SHOWN. **SEE NOTE 11**)



HYDRANT BOX ALIGNMENT

NOTES

1. EITHER PRECAST CONCRETE SURROUNDS/SUPPORTS AND/OR BRICK SUPPORT OR RECYCLED PLASTIC BOX ARE ACCEPTABLE.
2. ALL CONCRETE SURROUNDS AND PLASTIC BOXES SHALL BE LAID TO THE FINISHED PROFILE OF THE FOOTPATH VERGE.
3. FOR PRECAST CONCRETE SURROUND/SUPPORT AND BRICK SUPPORT DETAILS REFER WBB-WAT-1305-1 AND 1306-1.
4. FOR TYPICAL HYDRANT MARKING ARRANGEMENT REFER WBB-WAT-1300 SET.
5. BOX COVERS FOR HYDRANTS SHALL HAVE "H" MARKED ON TOP.
6. FOR WBBROC AREAS PROVIDE HYDRANT ADJACENT TO SCOUR AS SHOWN IN WBB-WAT-1307-2.
7. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
8. **DELETED.**
9. **DELETED.**
10. HYDRANT TO BE PLACED ON RISER OR FITTING SO THAT THE LUGS/CLAWS ARE ON EITHER SIDE OF THE MAIN.
11. **HYDRANT BOX DETAIL APPLICABLE FOR ALL NON-TRAFFICABLE AREAS.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1302-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL HYDRANT INSTALLATION

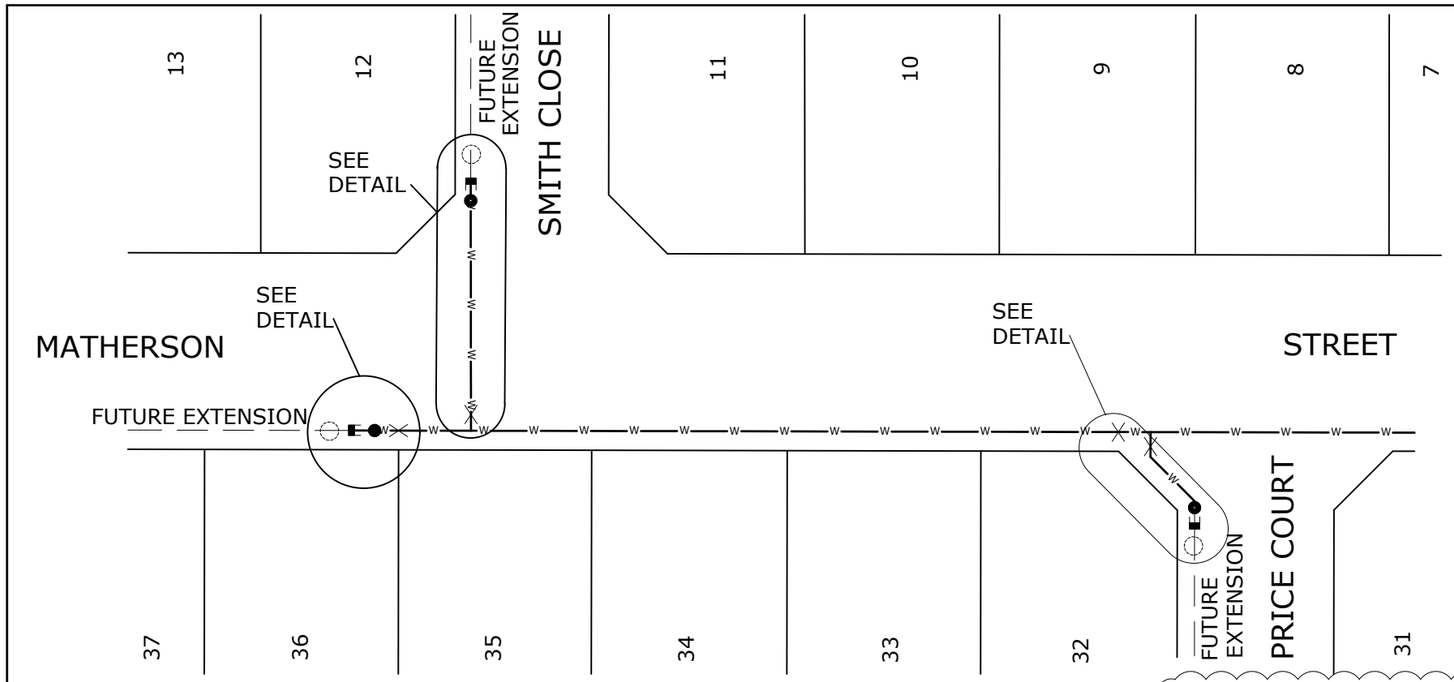
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1302-1

VERSION A

NOT TO SCALE

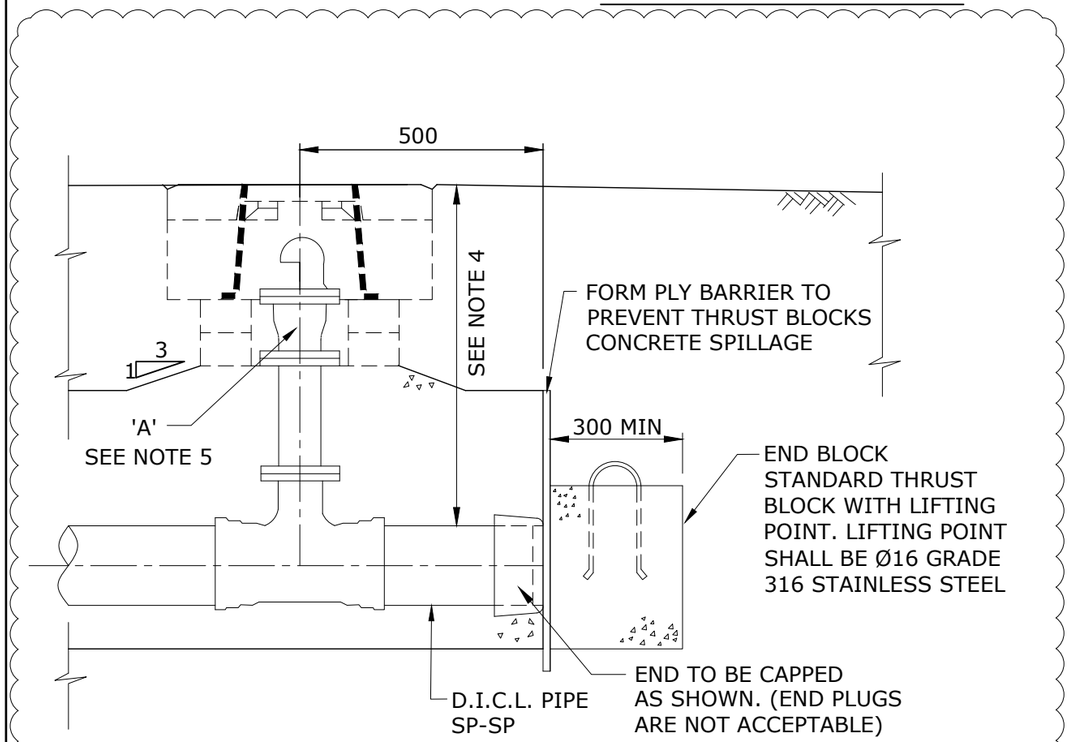
ORG DATE: 07/08/2018



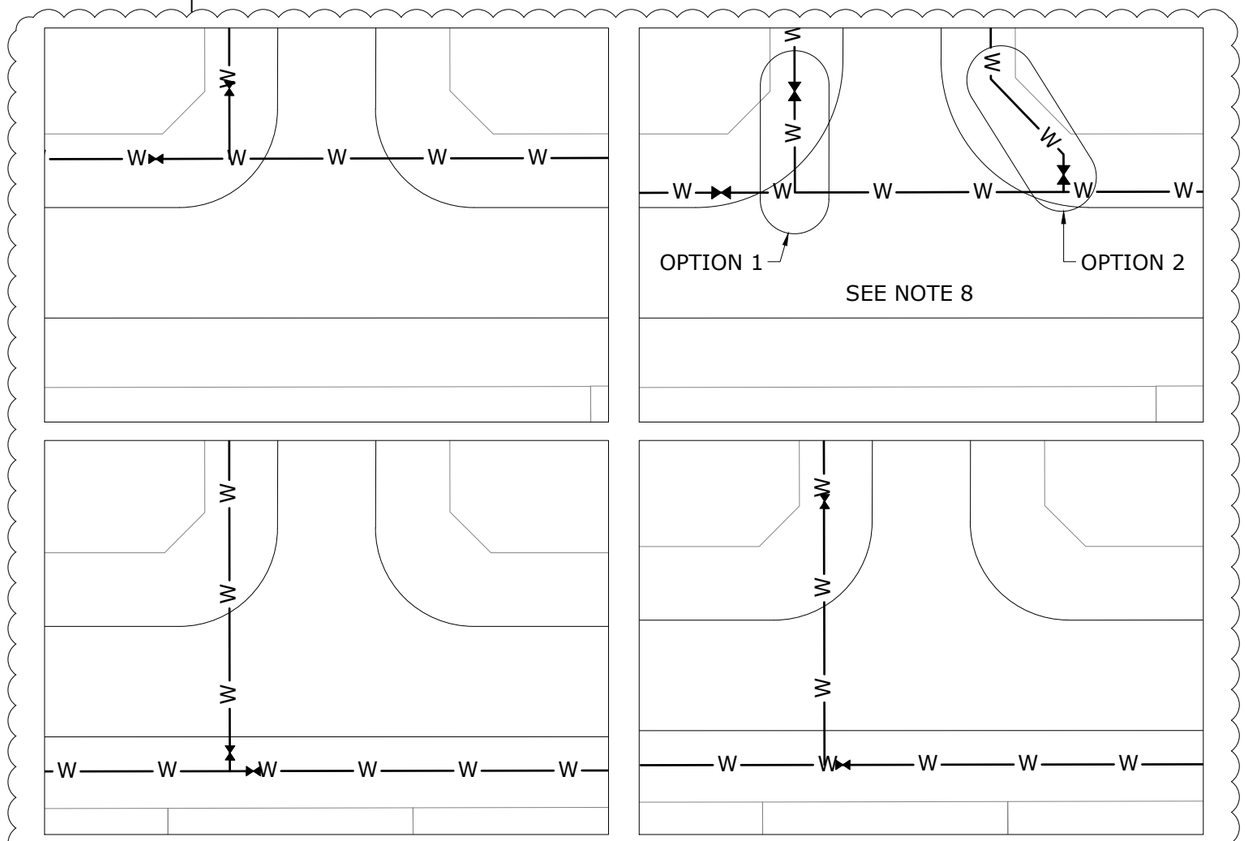
NOTES

1. FUTURE EXTENSIONS THAT CROSS A ROADWAY SHALL PROVIDE THE FL-FL VALVE TO THE FL MAIN TEE AND SHALL THRUST RESTRAIN THE VALVE AS SHOWN FOR A SOC-SOC VALVE IN WBB-WAT-1206-1.
2. FOR PE PIPES REFER TO WBB-WAT-1102-1 AND 1105-1.
3. HYDRANT DETAILS REFER TO WBB-WAT-1302-1.
4. INSTALLATION TOLERANCE FOR FUTURE EXTENSION MAIN IS 200 HORIZONTAL AND 150 VERTICAL.
5. HYDRANT SPACING SHALL COMMENCE FROM HYDRANT 'A'.
6. FOR TRUNK MAINS WITHOUT PERMANENT HYDRANTS, THE DESIGN SHALL NOMINATE THE FITTING ASSEMBLIES REQUIRED FOR COMMISSIONING OF THE FUTURE EXTENSION AND THEIR STATUS FOLLOWING LIVE CONNECTION.
7. **DELETED.**
8. **USE OPTION 1 FOR BRC AND OPTION 2 FOR ALL OTHER WBBROC SERVICE PROVIDERS.**

TYPICAL ARRANGEMENT



STANDARD ARRANGEMENT DETAIL FOR ALL FUTURE EXTENSIONS



TYPICAL VALVE LOCATIONS

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1303-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL VALVE AND HYDRANT INSTALLATION FUTURE EXTENSION INSTALLATION

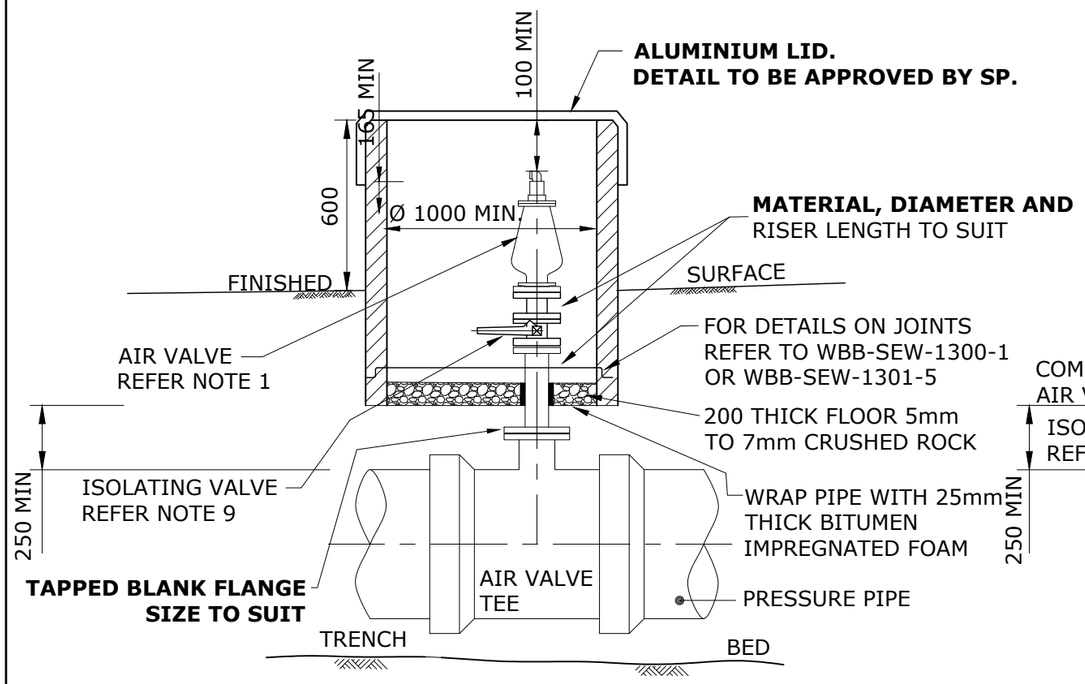
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1303-1

VERSION A

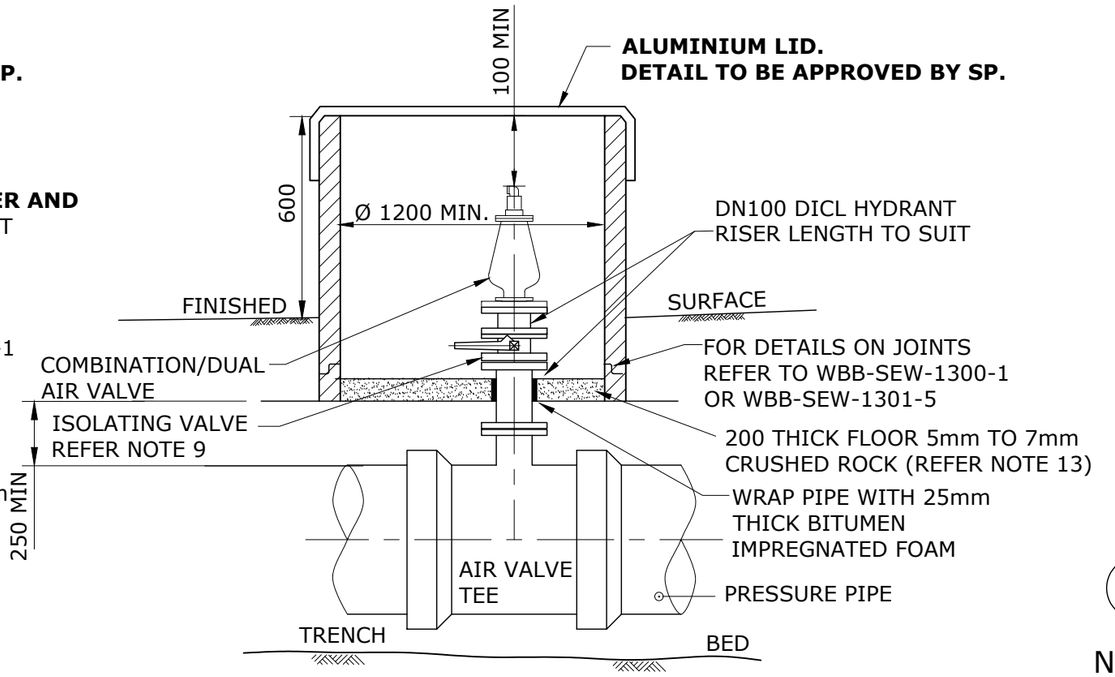
NOT TO SCALE

ORG DATE: 07/08/2018

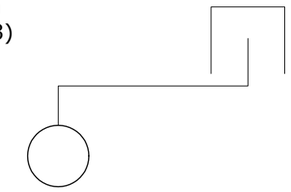


REFER NOTE 14

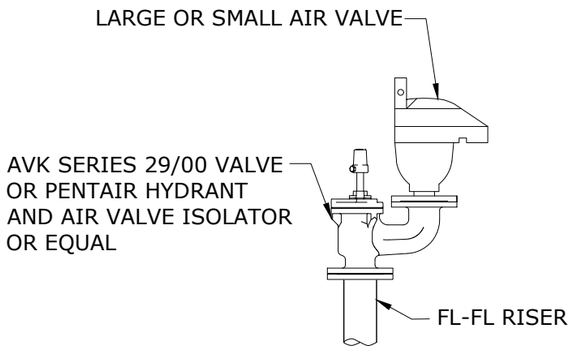
Ø25 TO Ø40 AIR VALVE INSTALLATION



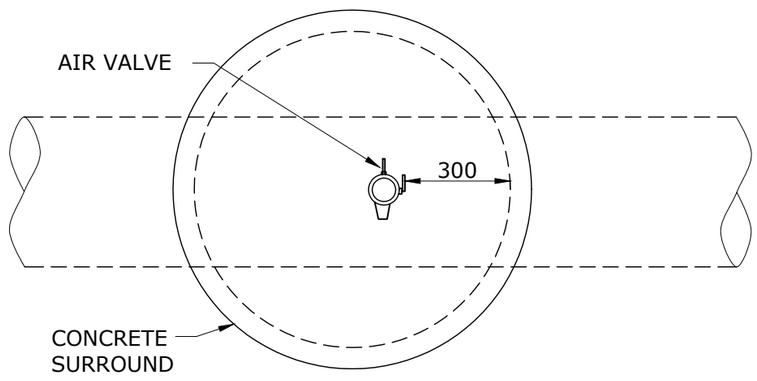
Ø50 AND LARGER AIR VALVE INSTALLATION



NOTE 12



PREFERRED OPTION FOR Ø50 AND LARGER AIR VALVE



AIR VALVE PRESENTATION

NOTES

1. AIR VALVES SHALL COMPLY WITH THE CODES SPECIFICATION.
2. THE FULL LENGTH OF THE DICL RISER PIPE INCLUDING FLANGES SHALL BE EPOXY COATED APPLIED IN ACCORDANCE WITH THE CODE.
3. ALL CONCRETE SHALL BE CLASS N25 IN ACCORDANCE WITH AS 3600.
4. PROVIDE A FINE NON-SLIP SURFACE WITH A WOOD FLOAT TO THE TOP SURFACE OF ALL CONCRETE.
5. COMPACTED BEDDING MATERIAL SHALL BE BROUGHT UP TO THE UNDERSIDE OF THE AIR VALVE PIT.
6. AIR VALVES SHALL BE PLACED ON THE HIGH POINT OF ALL TRUNK MAINS.
7. VENT PIPE LOCATION SHALL BE IN ACCORDANCE WITH THE DESIGN PLACEMENT OR DETERMINED ON SITE BY THE SUPERINTENDENT.
8. ALL FLANGES SHALL BE IN ACCORDANCE WITH AS 4087 - FIG B5, UNLESS NOTED OTHERWISE ON THE JOB DRAWINGS.
9. BUTTERFLY VALVES SHALL BE LUGGED AND THREADED SIMILAR TO KEYSTONE FIG F22 TYPE OR EQUAL ALTERNATIVE ISOLATION VALVES AS SHOWN ARE ACCEPTABLE.
10. INSTALLATIONS SHOWN ARE FOR NON-TRAFFICABLE LOCATIONS. WHERE AGREED BY WBBROC-SP, ALUMINIUM WATER PUMP STATION PIT LIDS MAY BE USED FOR VERGE OR ON-LOT LOCATIONS.
11. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
12. **OFFSET AIR VALVE IF NOT POSSIBLE TO INSTALL PIT ABOVE PRESSURE PIPE.**
13. **USE CONCRETE BASE IN AREA WITH HIGH WATER TABLE.**
14. **IF APPROVED BY THE SP, A TAPPING BAND CAN BE USED FOR SMALLER DIAMETER MAINS.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1304-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL AIR VALVE INSTALLATION FOR TRUNK MAIN

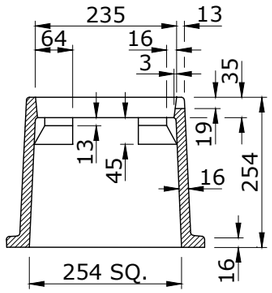
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1304-1

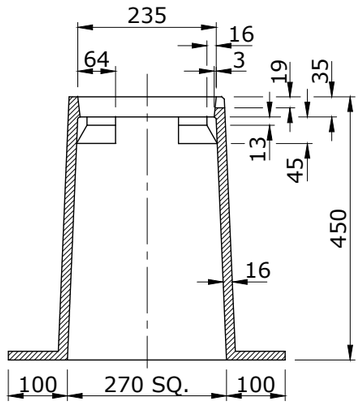
VERSION A

NOT TO SCALE

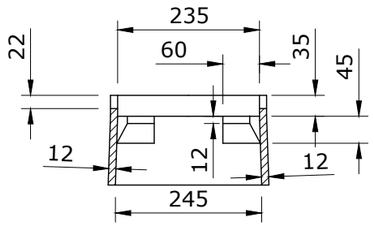
ORG DATE: 07/08/2018



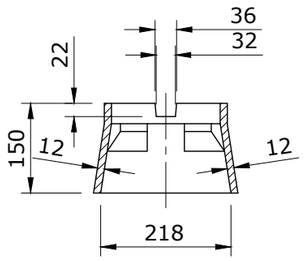
SECTIONAL ELEVATION



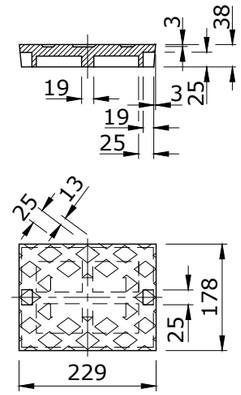
SECTIONAL ELEVATION



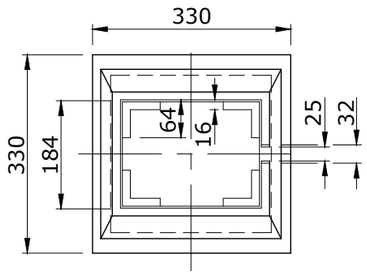
SECTION B



SECTION C



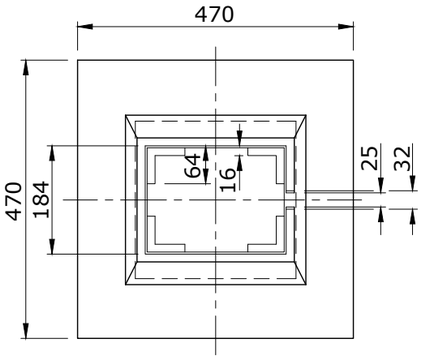
COVERS



PLAN

TYPE 'B'

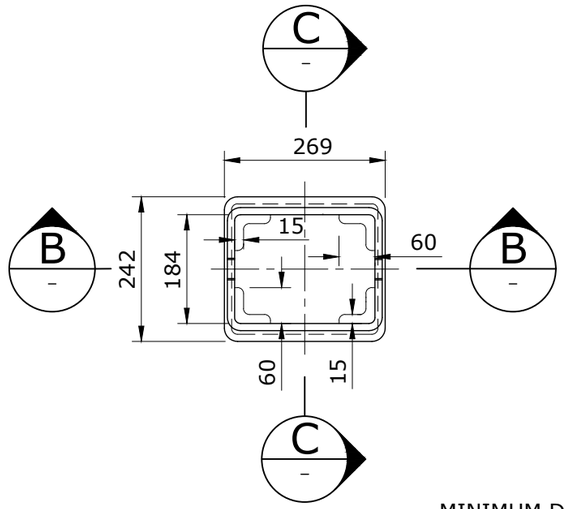
(TRAFFICABLE)



PLAN

TYPE 'C'

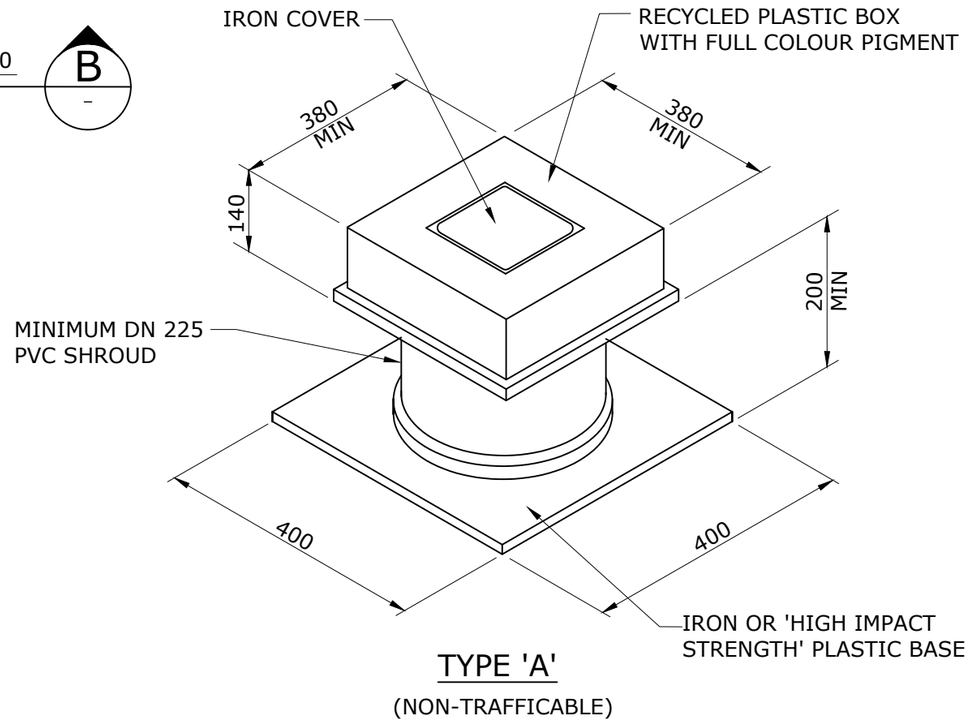
(TRAFFICABLE)



PLAN

TYPE 'D'

(NON-TRAFFICABLE)



TYPE 'A'

(NON-TRAFFICABLE)

VALVE/HYDRANT BOX NOTES

1. ALL CAST IRON COMPONENTS SHALL COMPLY WITH AS.1830 AND SHALL BE GRADE T220.
2. ALL DUCTILE IRON COMPONENTS SHALL COMPLY WITH AS.1831 GRADE 400/12.
3. BOXES SHALL BE MANUFACTURED WITH A TOTAL MAXIMUM WEIGHT OF 50kg.
4. TYPE 'A' BOXES SHALL BE PROVIDED AT FIRE HYDRANTS AND VALVE INSTALLATIONS UNLESS DIRECTED OTHERWISE BY THE DRAWINGS.
5. A BITUMASTIC BASE MATERIAL SHALL BE APPLIED TO ALL IRON BOXES AND COVERS WHEN THEY ARE IN CLEAN, DRY AND RUST FREE CONDITION.
6. WHEN INSTALLED THE LID AND SURROUND OF THE BOX SHALL BE PAINTED TO THE DETAILS SHOWN IN THE WBB-WAT-1300 SET.
7. COVER, FRAME, SHROUD & SHROUD SUPPORT TO BE INSTALLED SO THAT NO LOADING IS TRANSMITTED TO THE VALVE OR PIPE, REFER WBB-WAT-1301-1 AND WBB-WAT-1302-1.
8. FOR NON TRAFFICABLE APPLICATIONS ELEVATE COVER UP TO 50 ABOVE FINISHED SURFACE LEVEL AND GRADE SOIL AWAY TO PREVENT WATER ENTRY.
9. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1305-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL SURFACE FITTING INSTALLATION
VALVE AND HYDRANT SURFACE BOXES
TRAFFICABLE AND NON-TRAFFICABLE

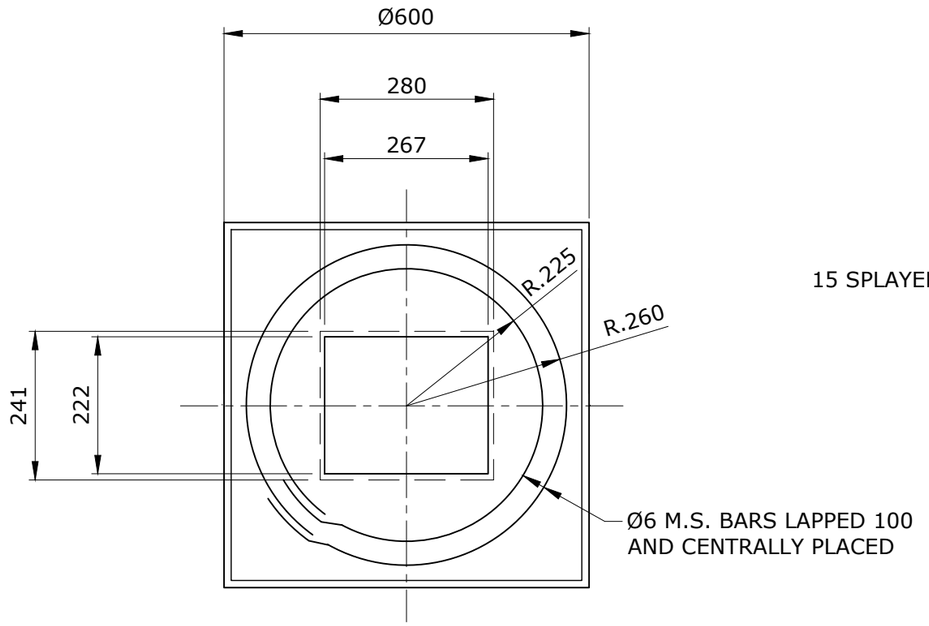
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1305-1

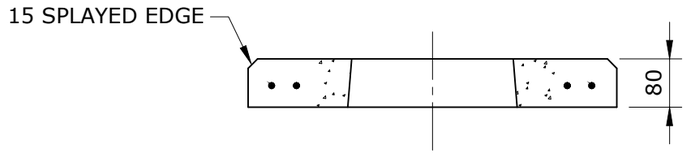
VERSION A

NOT TO SCALE

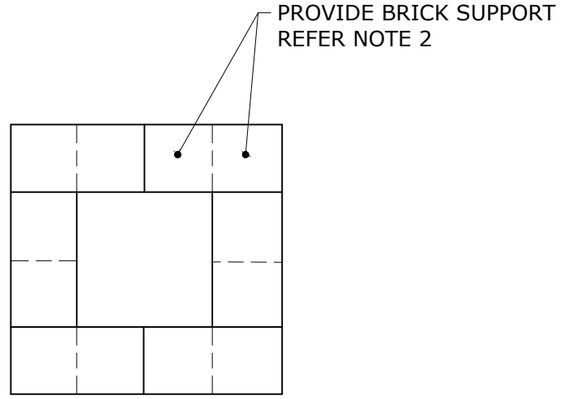
ORG DATE: 07/08/2018



PLAN
(SEE TABLE)

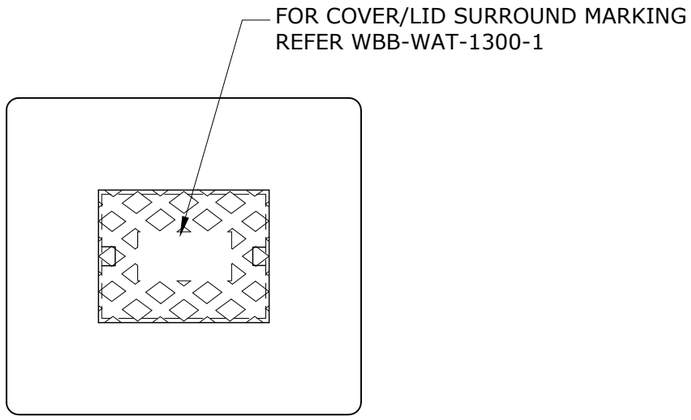


SECTION



BRICK SUPPORT LAYOUT
(NOT PREFERRED)

PRECAST CONCRETE SURROUND AND SUPPORT DETAILS



SURFACE FITTING ARRANGEMENT

NOTES

1. BOTH PRECAST CONCRETE SURROUND AND BRICK SUPPORT DETAILS SHOWN ARE ACCEPTABLE.
2. BRICK SUPPORTS SHALL BE A MINIMUM TWO COURSES AND LAID DRY OVER THE BEDDING MATERIAL. APPLY BUILDING SEALANT OR SIMILAR TO BOND BRICKS TOGETHER AND TO THE VALVE/HYDRANT BOX.
3. FOR HYDRANTS AND FLUSHING POINTS THE CONCRETE SURROUND AND LID SHALL BE PAINTED IN ACCORDANCE WITH THE COLOUR CODE SHOWN ON WBB-WAT-1300-1.
4. FOR VALVES AND OTHER FITTINGS THE CONCRETE SURROUND AND LID SHALL BE PAINTED WITH APPROVED REFLECTIVE PAINT IN ACCORDANCE WITH THE COLOUR CODE SHOWN ON WBB-WAT-1300-1.
5. CONCRETE TO BE GRADE N25.
6. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1306-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL SURFACE FITTING INSTALLATION
VALVE AND HYDRANT SURFACE BOXES
SUPPORT AND SURROUND DETAILS

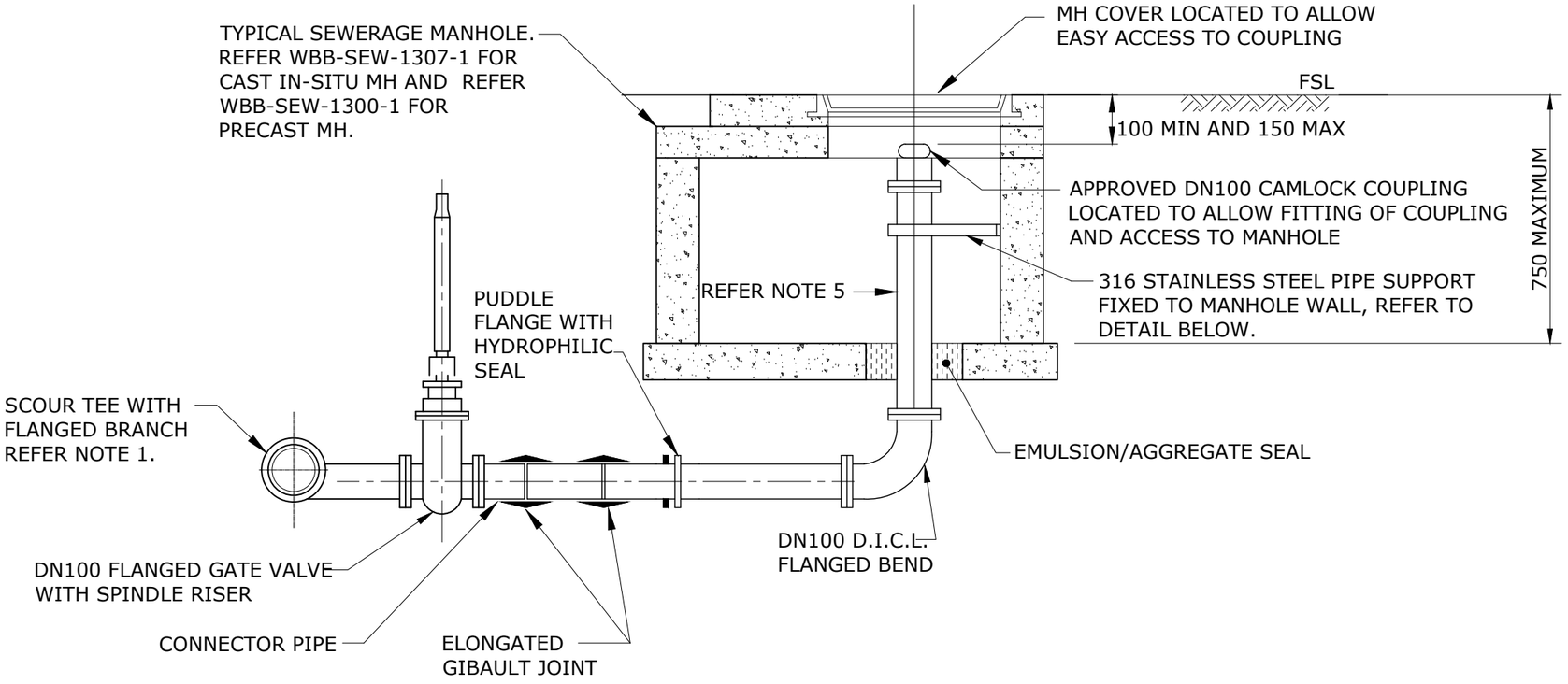
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1306-1

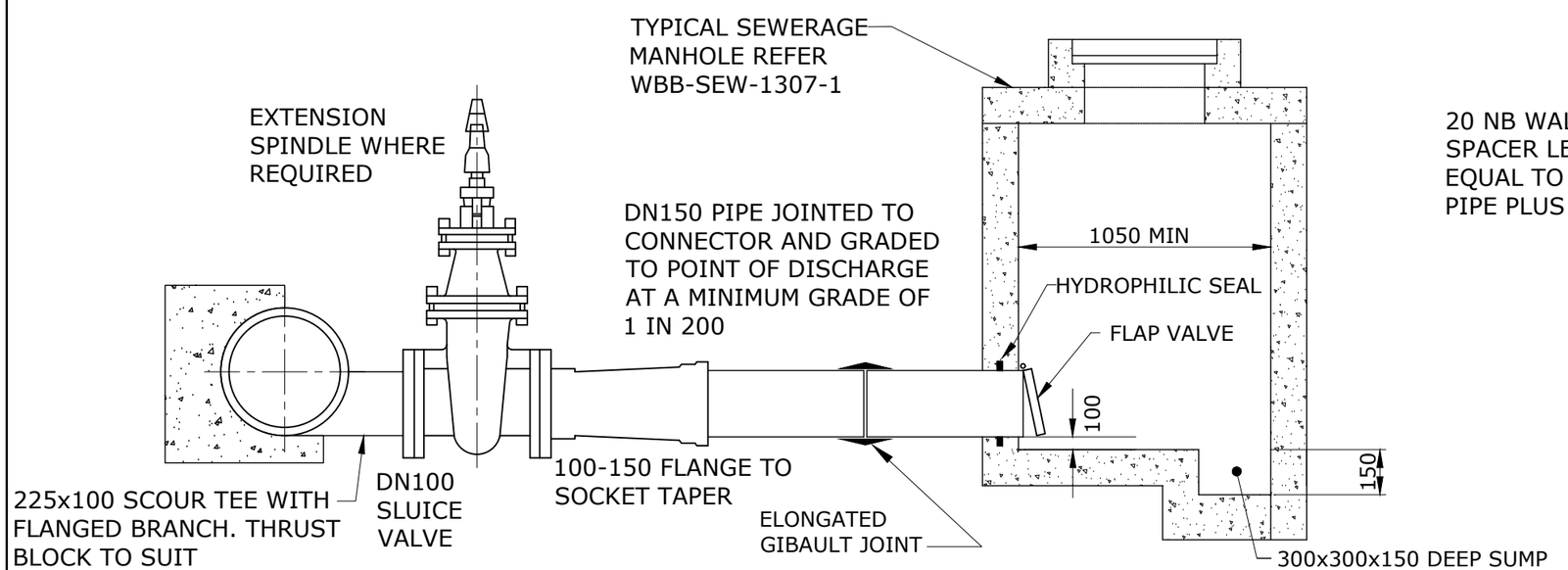
VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018



SCOUR VALVE WITH TANKER CONNECTION TYPE A



SCOUR VALVE WITH OUTLET TO STORAGE MANHOLE TYPE B

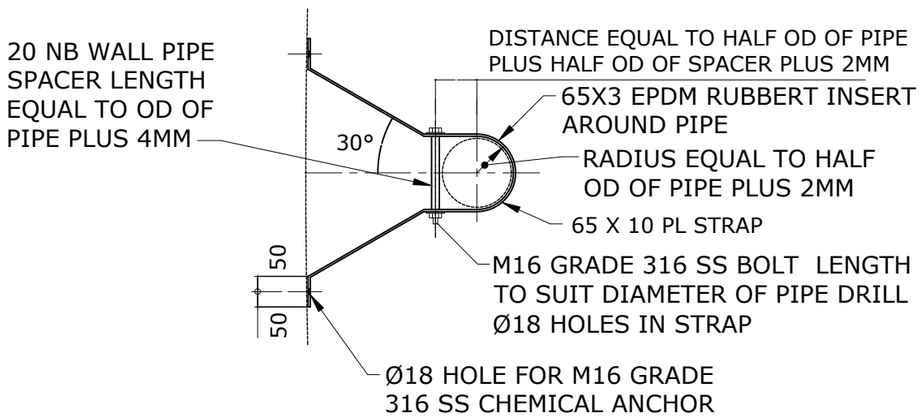
(ONLY USE WHERE DIRECTED BY WBBROC-SP)

NOTES

1. THE WATERMAIN DETAILS ON THIS DRAWING ARE OF A DN225. FOR OTHER MAIN SIZES REFER TO THE SCOUR TABLE.
2. FOR SURFACE FITTING DETAILS REFER TO WBB-WAT-1301-1.
3. TYPE B STORAGE MANHOLE DISCHARGES SHALL BE USED WHERE SPECIFIED BY S.P.
4. GRADED DISCHARGE PIPE TO HAVE AT LEAST TWO RUBBER RING JOINTS, FOR DIFFERENTIAL SETTLEMENT.
5. WHERE DIRECTED BY WBBROC-SP, LOCATE CAMLOCK COUPLING AT TOP OF 90 DEGREE BEND FLANGE.
6. FLAP VALVES TO BE MARINE GRADE ALUMINIUM OR GRP.
7. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

SCOUR TABLE

MAIN	SCOUR	OUTLET
225	100	150
300	100	150
375	150	225
450	150	225
525	150	225
600	150	225
>OR=750	225	300



PIPE SUPPORT BRACKET

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1307-3 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL APPURTENANCE INSTALLATION
SCOUR ARRANGEMENTS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

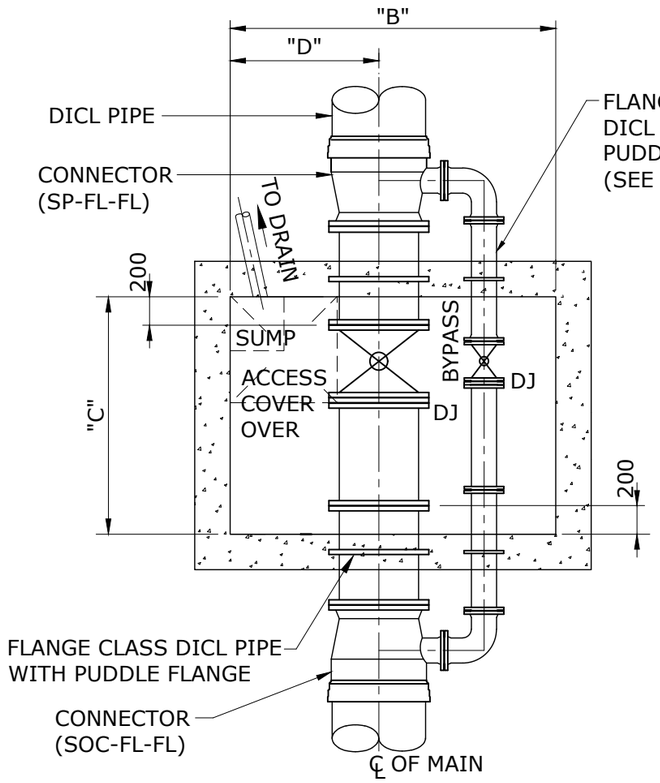
WBB-WAT-1307-3

VERSION

A

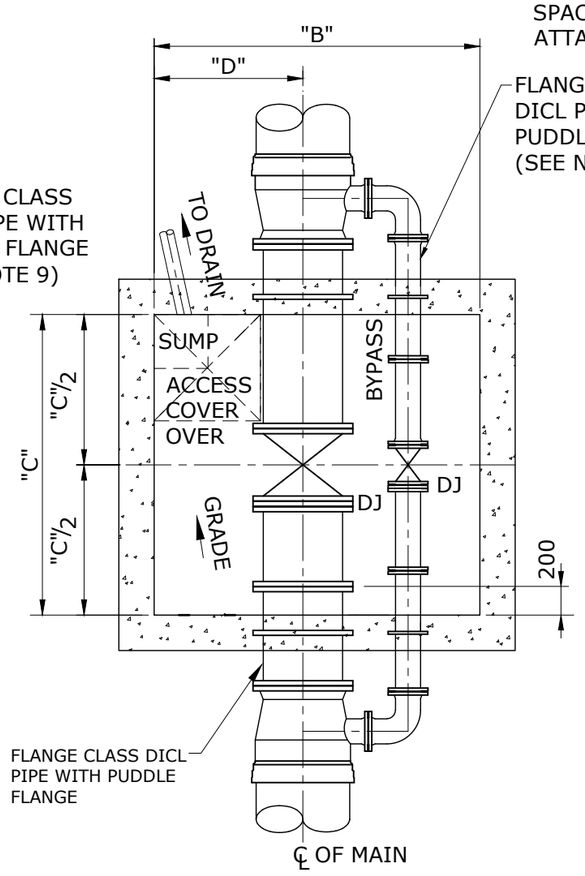
NOT TO SCALE

ORG DATE: 07/08/2018



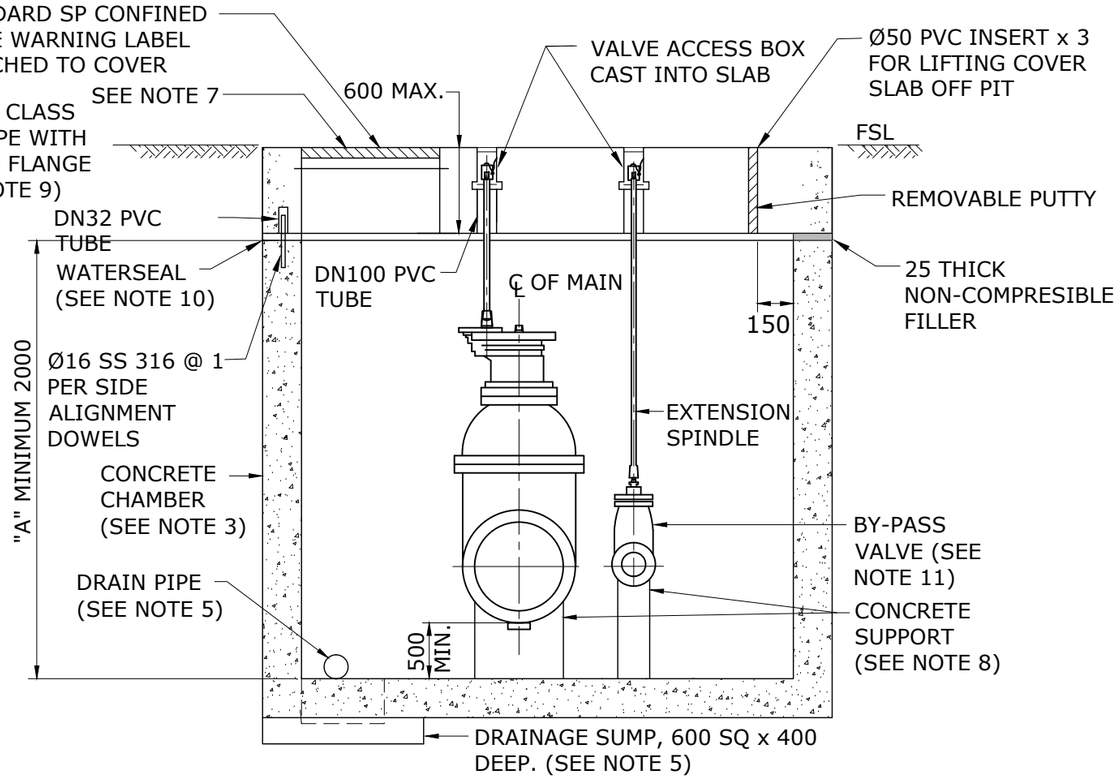
PLAN FOR DN 600 MAINS

(SEE TABLE FOR DIMENSIONS)



PLAN FOR DN 750 MAIN

(SEE TABLE FOR DIMENSIONS)



TYPICAL CROSS SECTION DN 750 MAIN

INSTALLATION (SEE NOTE 7)					
NOMINAL SIZE DN	MAIN	-	600	750	750
	VALVE ON MAIN (MIN SIZE)	-	500	500	600
BYPASS VALVE		-	100	150	150
A		DEPTH TO SUIT			
B		2 500		2 850	
C		1 700		2 150	
D		1 300		1 600	

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. INSTALLATION OF SIZE OF VALVE CHAMBER TO BE SPECIFIED IN DESIGN DRAWINGS.
3. WALL & FLOOR THICKNESS AND REINFORCEMENT DETAILS FOR VALVE CHAMBER AS SHOWN IN DESIGN DRAWINGS. DESIGN TO ENSURE THRUST AT 1200 kPa TEST PRESSURE FOR A CLOSED END IS RESTRAINED AT PUDDLE FLANGES WITH COVER SLAB REMOVED. THE REMOVABLE COVER SLAB SHALL BE DESIGNED TO AS3600 AND THE TRAFFIC LOADS APPLICABLE AT A MAXIMUM INDIVIDUAL SLAB WEIGHT AS DIRECTED BY WATER AGENCY.
4. CONCRETE TO BE CLASS N32.
5. DRAIN PIPE TO BE DN 100 MIN PVC DWV PIPE CLASS SN 8 TO AS/NZS 1260. USE GRAVITY DRAIN WHERE FEASIBLE, OTHERWISE A 600 SQ x 400 SUMP AND SUMP PUMP SHALL BE PROVIDED. VALVE CHAMBER FLOOR TO BE GRADED TOWARDS SUMP OR DRAIN PIPE. DIRECTION, GRADE AND CONNECTION LOCATION AND FORM OF DRAIN PIPE TO SW MANHOLE TO BE AS SHOWN IN DESIGN DRAWINGS.
6. MAIN VALVE OPERATING GEARBOX TO SUIT TYPE OF OPERATION AND PRESSURE HEAD AS SPECIFIED IN DESIGN DRAWINGS.
7. DETAIL AND DIMENSIONS OF REMOVABLE COVER AND THE CAST-IN ACCESS COVER SHALL BE SPECIFIED IN THE DESIGN PLANS. 600 x 900 HINGED DUCTILE IRON ACCESS COVERS AND FRAMES SHALL CONFORM TO AS 3996: - CLASS "B" FOR NON TRAFFICABLE AREAS. - CLASS "D" FOR TRAFFICABLE AREAS.
8. CONSTRUCT CONCRETE SUPPORT SO AS NOT TO HINDER BOLT ACCESS AND OPERATION.
9. FOR DETAILS OF FABRICATION SYSTEM SEE WBB-WAT-1405-1, WBB-WAT-1406-1 & WBB-WAT-1407-1.
10. PROVIDE URETHANE WATERSEAL TO JOINT IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION.
11. RESILIENT SEATED VALVES WITH INTEGRAL BYPASS VALVES SUCH AS THE TYCO FIGURE 500 OR THE AVK SERIES 55 OR SERIES 54 VALVES ARE ACCEPTABLE OPTIONS.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1308-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL APPURTENANCE INSTALLATION
LARGE VALVE CHAMBERS

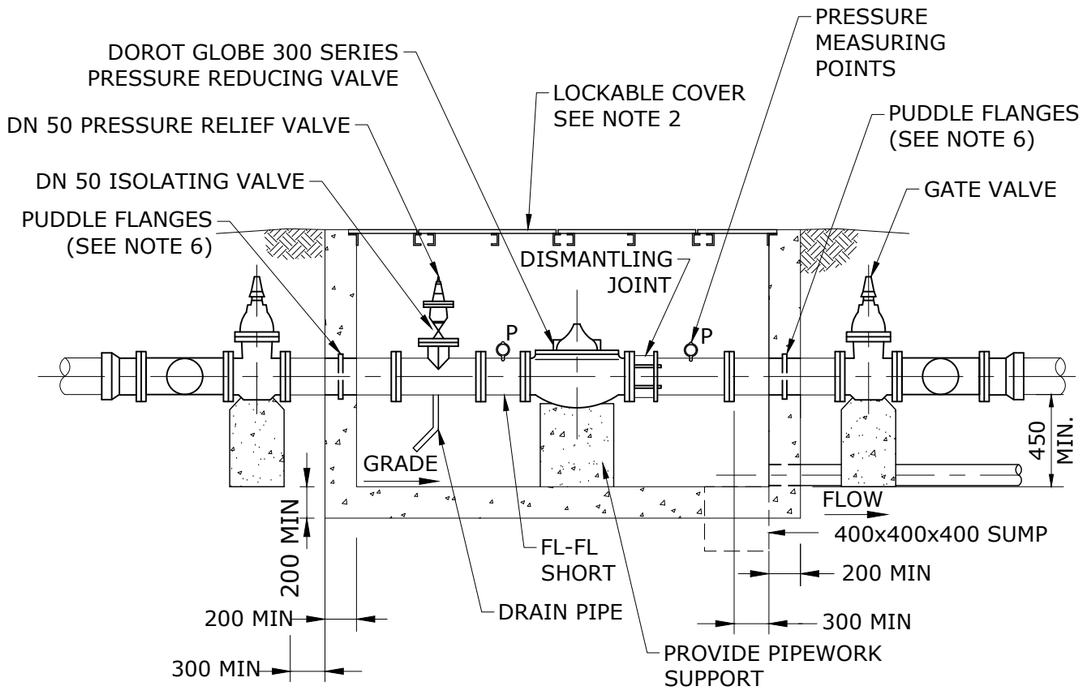
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1308-1

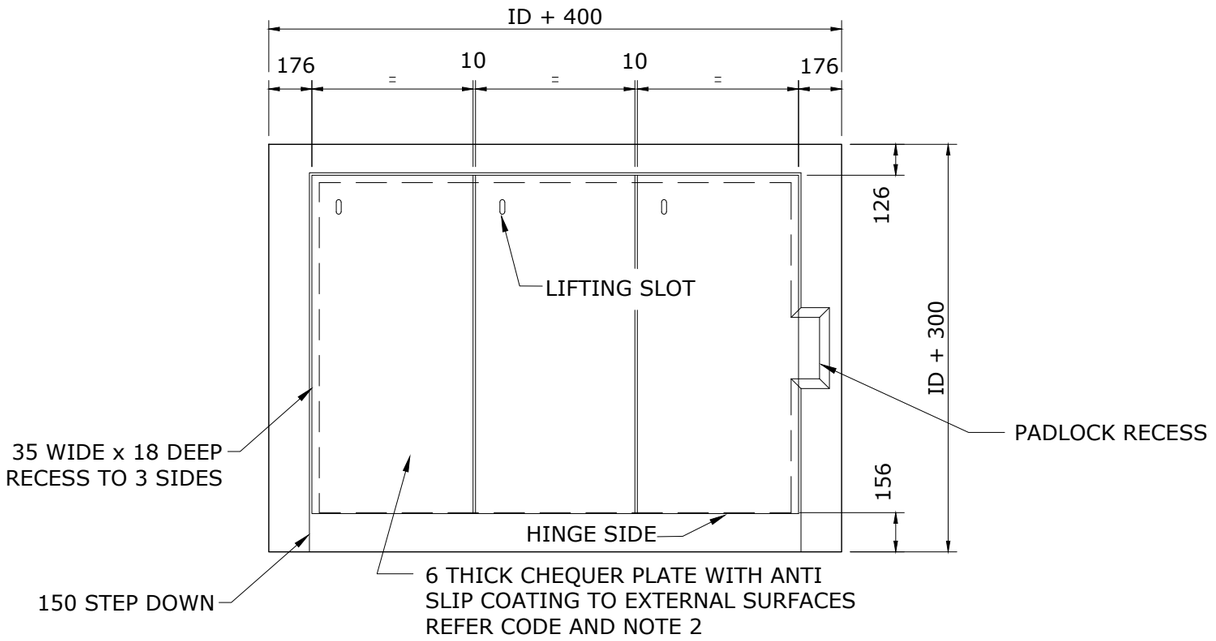
VERSION A

NOT TO SCALE

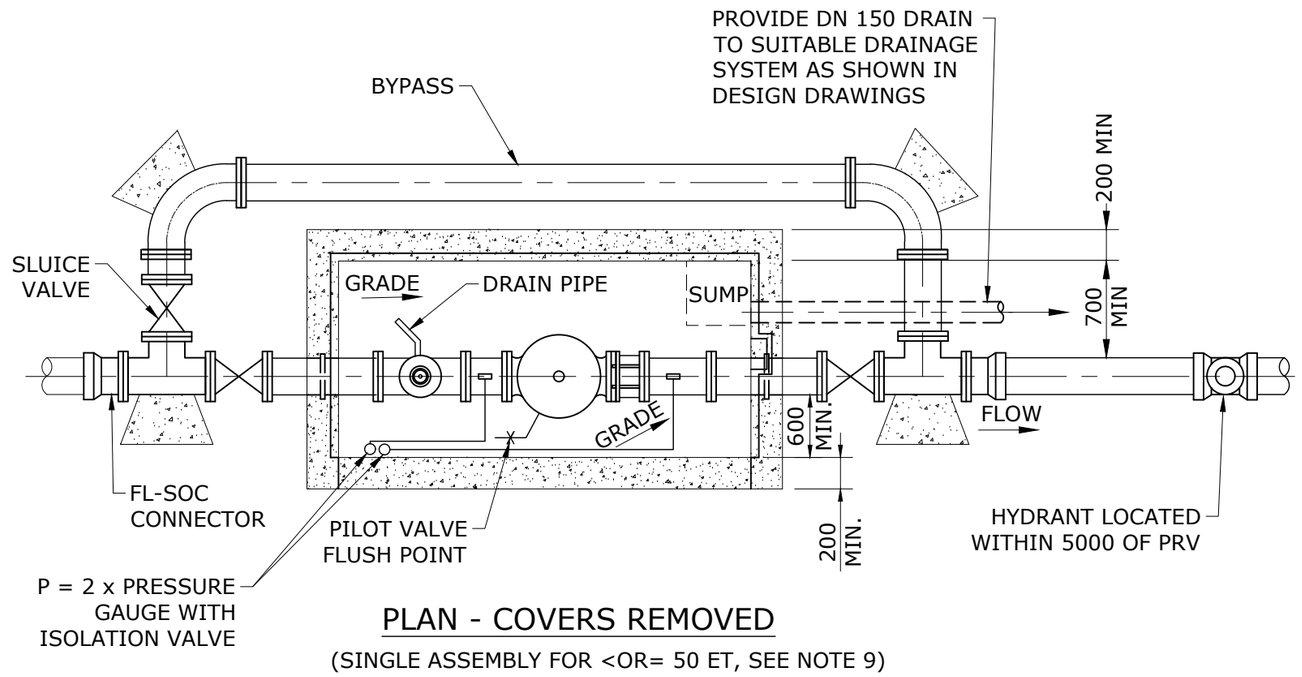
ORG DATE: 07/08/2018



SECTIONAL ELEVATION



PLAN - COVERS IN PLACE



PLAN - COVERS REMOVED

(SINGLE ASSEMBLY FOR <OR= 50 ET, SEE NOTE 9)

NOTES

1. DETAILS SHOWN ARE FOR DN100 ASSEMBLY. UPSIZE PRESSURE RELIEF VALVE FOR DN 150 INSTALLATIONS.
2. COVERS SHOWN ARE FOR FOOTWAY VERGE INSTALLATIONS WHERE KERB AND CHANNEL EXISTS.
3. ALL COMPONENTS SHALL BE FBE COATED AND JOINED WITH 316 STAINLESS STEEL BOLTS NUTS AND WASHERS. FBE FL-SP FITTINGS SHALL NOT BE FIELD CUT. SUPPORT CONCRETE TO BE N20.
4. REINFORCED CONCRETE CHAMBER & VALVE RESTRAINT TO BE N25 MIN.
5. GRADE CHAMBER FLOOR AT 1 IN 20 TOWARDS DRAIN OR SUMP. DRAIN PREFERRED.
6. ATTACH PUDDLE FLANGES TO FLANGE CLASS DI PIPES. CONCRETE WALLS TO BE DESIGNED TO ENSURE THRUST IS RESTRAINED AT PUDDLE FLANGES.
7. PROVIDE SUFFICIENT ACCESS FOR OPERATION & MAINTENANCE OF VALVES.
8. WALL AND FLOOR THICKNESS AND REINFORCEMENT DETAILS AND ALL DIMENSIONS FOR CHAMBERS TO BE AS SHOWN IN DESIGN DRAWINGS
9. FOR POPULATIONS GREATER THAN 50 ET, A DUTY/STANDBY PRV INSTALLATION SHALL BE PROVIDED, DESIGN REQUIRED.
10. WHERE APPROVED BY THE WATER AGENCY, PRV ASSEMBLIES MAY BE REDUCED TO DN80 SIZED COMPONENTS VIA AN EXTERNAL TAPER ONLY WHERE DESIGN CRITERIA FOR FLOW AND PRESSURE ARE MET.
11. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
12. **GAUGES TO BE INSIDE WALLS FOR EASILY ACCESSIBLE READING.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1309-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL APPURTENANCE INSTALLATION
PASSIVE PRESSURE REDUCING VALVES (PRV)

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1309-1

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018

GENERAL NOTES

G1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.

G2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS, AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.

G3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.

G4. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

G5. NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE WRITTEN APPROVAL OF THE SUPERINTENDENT.

G6. THE POSITIONS OF SERVICES BELIEVED TO EXIST ON THE SITE ARE INDICATED.
NO GUARANTEE IS GIVEN OR IMPLIED TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION.
THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.

G7. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND ELECTRICITY ACT AND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.

G8. WORKS TO BE EXECUTED IN ACCORDANCE WITH THE LOCAL AUTHORITIES EARTHWORKS SPECIFICATION AND THE WBBROC WATER SUPPLY CODE.

G9. CONNECTION OF THE WORKS TO THE LIVE SYSTEM SHALL BE DONE ONLY BY WBBROC-SP.

G10. CONTRACTOR TO TAKE APPROPRIATE ACTION AS NECESSARY TO PROTECT AND MAINTAIN EXISTING SERVICES.

G11. RESTORE ALL SURFACES TO MATCH EXISTING SURFACES.

G12. TUNNEL BORE OR DIRECTIONAL DRILL UNDER EXISTING REINFORCED CONCRETE DRIVEWAYS WHERE THE EXISTING SURFACE CANNOT BE MATCHED.

G13. WORKS CONSTRUCTED BY PRIVATE CONTRACTORS MUST BE INSPECTED BY WORK SUPERINTENDENT

G14. WATER SERVICES:
(A) TO BE BYPASSED WHERE NECESSARY.
(B) TO BE RECONNECTED TO NEW MAIN UPON CLEARANCE WBBROC-SP
(C) ALL 15 mm DIA. SERVICES TO BE RELAID IN 20 mm.
(D) TO BE INDICATED ON 'AS CONSTRUCTED' DRAWINGS.

G15. WBBROC-SP PERSONNEL ONLY TO OPERATE THE EXISTING WATER OR SEWERAGE SYSTEM.

G16. ALL ABANDONED PIPELINES TO BE REMOVED IF DIRECTED BY SP.

G17. FIRE HYDRANT/WASHOUT BEND TO BE INSTALLED IN ACCORDANCE WITH DRAWINGS.

G18. WHERE A METALLIC WATER MAIN IS TO BE REPLACED WITH A PLASTIC MAIN A LICENSED ELECTRICIAN SHALL MAKE AN ASSESSMENT OF POTENTIALLY AFFECTED PROPERTY EARTHING SYSTEMS. WORK SHALL NOT COMMENCE UNTIL THE ELECTRICIAN DECLARES IN WRITING THAT IT IS SAFE TO PROCEED.

G19. **DELETED.**

G20. ALL DIMENSIONS GIVEN ARE NOMINAL ONLY. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL DIMENSIONS PRIOR TO FABRICATION.

DESIGN NOTES

1. PRECAST CONCRETE PITS DESIGNED AND CERTIFIED (RPEQ) BY MANUFACTURER. END WALLS TO BE CAST ON SITE. DESIGN AND CONSTRUCTION DETAILS OF END WALLS TO BE PROVIDED BY PRECAST CONCRETE PIT DESIGNER.
2. THE DESIGN SHALL ALLOW FOR THRUST LOADS, BOTH DURING OPERATING CONDITIONS AND DURING MAINTENANCE PERIODS.
3. BACK FILLING AROUND STRUCTURES TO BE CARRIED OUT TO SOUND ENGINEERING STANDARDS.
4. ANY AREAS OF SOFT OR UNSUITABLE MATERIAL ARE TO BE REMOVED DOWN TO AN ACCEPTABLE FOUNDING MATERIAL AND REPLACED WITH FILL.
5. SELECT FILL TO BE AN APPROVED GRANULAR SAND OR GRAVEL MATERIAL HAVING A PLASTICITY INDEX NOT EXCEEDING 15 AND TO BE FREE OF ALL ORGANIC AND DELETERIOUS MATTER. 100% SHALL PASS No. 37.5 mm SIEVE.

NOTES

1. ALL FLOW METER INSTALLATIONS MUST HAVE MIN 10 x DIAMETER STRAIGHT PIPE UPSTREAM OF FLOWMETER AND 5 x DIAMETER DOWNSTREAM. THE DESIGN SHOULD AVOID THE USE OF COMPOUND BENDS (REFER TO NOTE 4). WHERE COMPOUND BENDS ARE USED, A MINIMUM OF 15 DIAMETER SHALL BE REQUIRED UPSTREAM OF THE FLOWMETER.
2. ALL PIPE FLANGES SHALL CONFORM TO AS 4087 PN16.
3. ELECTRICAL CONDUIT AND PRESSURE PIPE PENETRATIONS SHALL BE CAST INTO THE CONCRETE END WALLS.
4. LEVEL ADJUSTMENT FROM BRANCH CONNECTIONS TO EXISTING MAINS SHALL UTILISE A 45° BEND AND A STRAIGHT PIPE LENGTH TO A 45° BEND AT THE REQUIRED DEPTH.
5. LEVEL MULTI TRODE TO BE INSTALLED FOR SUMP PUMP CONTROL.

100Ø PRV PIT ARRANGEMENT

ITEM	DESCRIPTION	LENGTH (mm)
A1	DN100 SPRING FIRE HYDRANT WITH TEE, FLANGED RISER, STANDARD HYDRANT CHAMBER AND COVER -REFER TO STANDARD DRAWING WBB-WAT-1302-1	REFER PRODUCT DATA
A2	FLANGE TO FLANGE PIPE	900 MIN.
A3	PRV	381
A4	DISMANTLING JOINT THRUST TYPE	412
A5	FLANGE TO FLANGE PIPE	757
A6	FLOW METER COMPLETE WITH EARTH RING	250
A7	FLANGE TO FLANGE PIPE	1000 MIN.

150Ø PRV PIT ARRANGEMENT

ITEM	DESCRIPTION	LENGTH (mm)
A1	DN100 SPRING FIRE HYDRANT WITH TEE, FLANGED RISER, STANDARD HYDRANT CHAMBER AND COVER -REFER TO STANDARD DRAWING WBB-WAT-1302-1	REFER PRODUCT DATA
A2	FLANGE TO FLANGE PIPE	900 MIN.
A3	PRV	508
A4	DISMANTLING JOINT THRUST TYPE	412
A5	FLANGE TO FLANGE PIPE	580
A6	FLOW METER COMPLETE WITH EARTH RING	300
A7	FLANGE TO FLANGE PIPE	1500 MIN.

200Ø PRV PIT ARRANGEMENT

ITEM	DESCRIPTION	LENGTH (mm)
B1	DN100 SPRING FIRE HYDRANT WITH TEE, FLANGED RISER, STANDARD HYDRANT CHAMBER AND COVER -REFER TO STANDARD DRAWING WBB-WAT-1302-1	REFER PRODUCT DATA
B2	FLANGE TO FLANGE PIPE	1200 MIN.
B3	PRV	645
B4	DISMANTLING JOINT THRUST TYPE	412
B5	FLANGE TO FLANGE PIPE	1970
B6	FLOW METER COMPLETE WITH EARTH RING	350
B7	FLANGE TO FLANGE PIPE	2000 MIN.

250Ø PRV PIT ARRANGEMENT

ITEM	DESCRIPTION	LENGTH (mm)
B1	DN100 SPRING FIRE HYDRANT WITH TEE, FLANGED RISER, STANDARD HYDRANT CHAMBER AND COVER -REFER TO STANDARD DRAWING WBB-WAT-1302-1	REFER PRODUCT DATA
B2	FLANGE TO FLANGE PIPE	1200 MIN.
B3	PRV	756
B4	DISMANTLING JOINT THRUST TYPE	412
B5	FLANGE TO FLANGE PIPE	1760
B6	FLOW METER COMPLETE WITH EARTH RING	450
B7	FLANGE TO FLANGE PIPE	2500 MIN.

300Ø PRV PIT ARRANGEMENT

ITEM	DESCRIPTION	LENGTH (mm)
B1	DN100 SPRING FIRE HYDRANT WITH TEE, FLANGED RISER, STANDARD HYDRANT CHAMBER AND COVER -REFER TO STANDARD DRAWING WBB-WAT-1302-1	REFER PRODUCT DATA
B2	FLANGE TO FLANGE PIPE	1200 MIN.
B3	PRV	864
B4	DISMANTLING JOINT THRUST TYPE	412
B5	FLANGE TO FLANGE PIPE	1600
B6	FLOW METER COMPLETE WITH EARTH RING	500
B7	FLANGE TO FLANGE PIPE	3000 MIN.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1309-2 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL APPURTENANCE INSTALLATION
ACTIVE PRESSURE REDUCING VALVES (PRV)
DN100 TO DN300

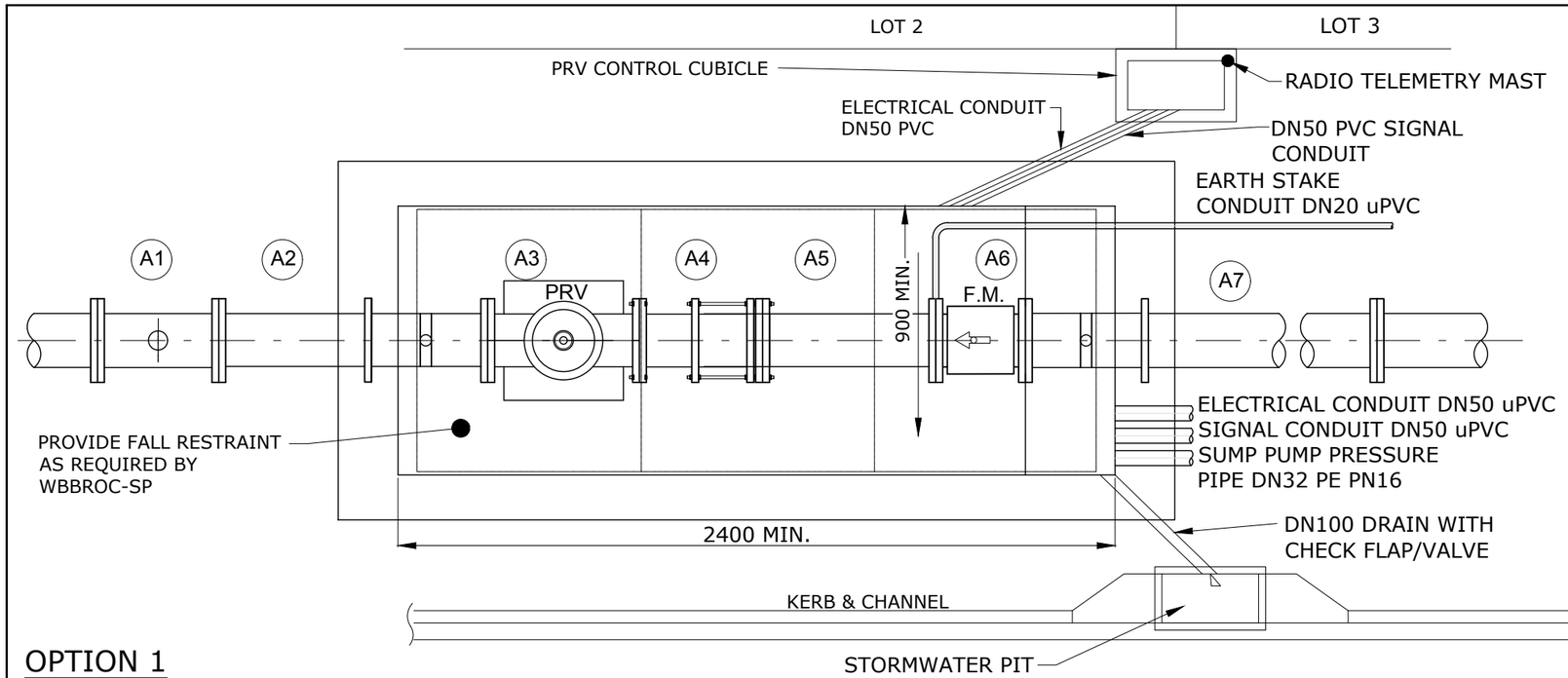
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1309-2

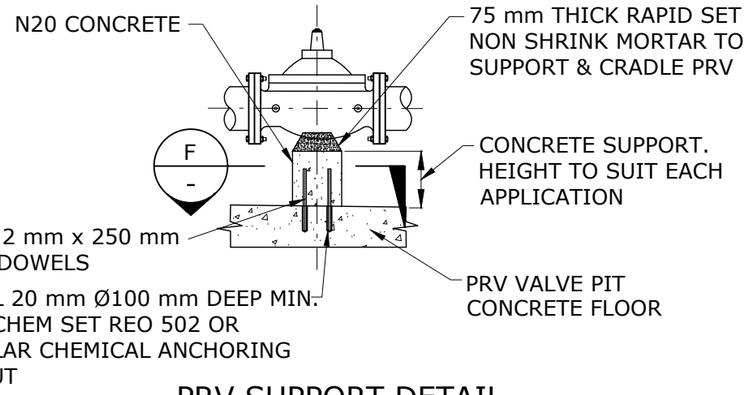
VERSION A

NOT TO SCALE

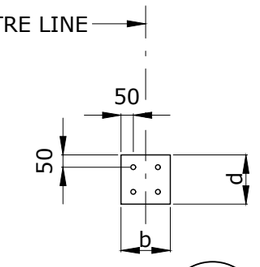
ORG DATE: 07/08/2018



PLAN



PRV SUPPORT DETAIL



PRV DN	b	d
100	200	200
150	200	250

SECTION F -

OPTION 1

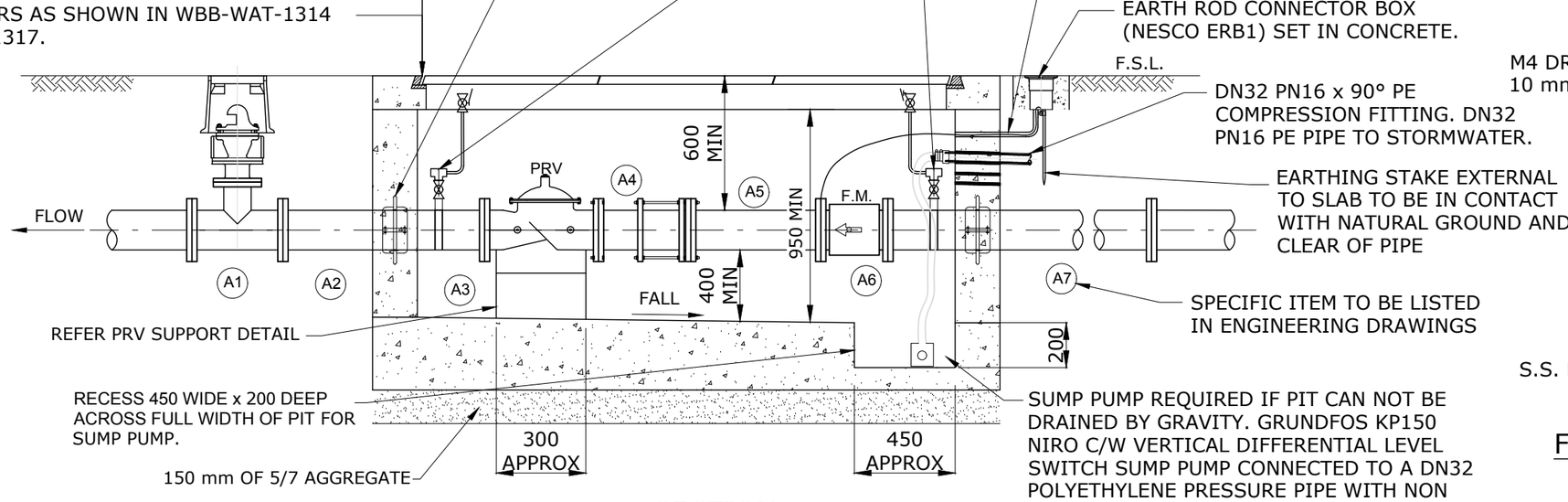
PRECAST TOP SLAB WITH 914x2275 OPENING AND CAST IRON / CONCRETE FILL LIDS. THE LID SHALL CONFORM TO AS3996-2006 LOAD CLASS B OR D, DEPENDING ON SITE ACCESS CONDITIONS.

OPTION 2

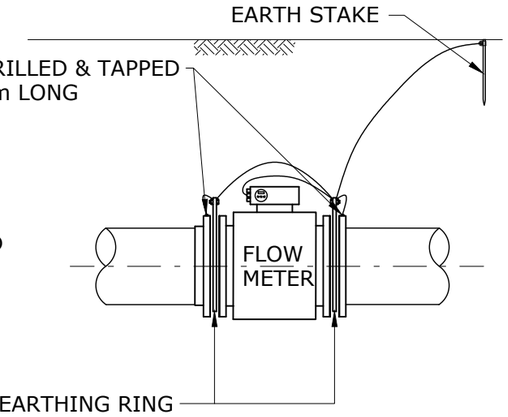
REMOVABLE PRECAST TOP SLAB WITH 2 DN750 CAST-IN DI MH COVERS.

OPTION 3

PROVIDE COVERS AS SHOWN IN WBB-WAT-1314 TO WBB-WAT-1317.



SECTION DN100-150 MAINS



FLOW METER EARTHING DETAIL

NOTE

1. ALL DIMENSIONS IN MILLIMETRES

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1309-3 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL APPURTENANCE INSTALLATION
ACTIVE PRESSURE REDUCING VALVES (PRV)
DN100 AND DN150

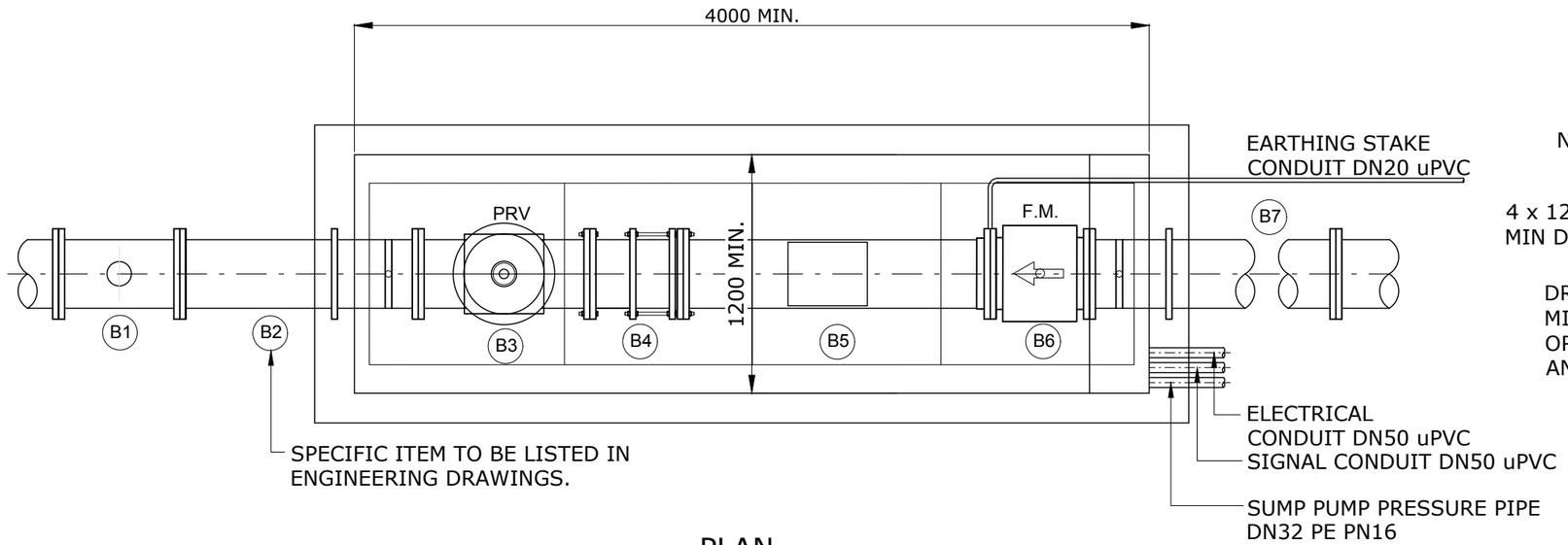
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1309-3

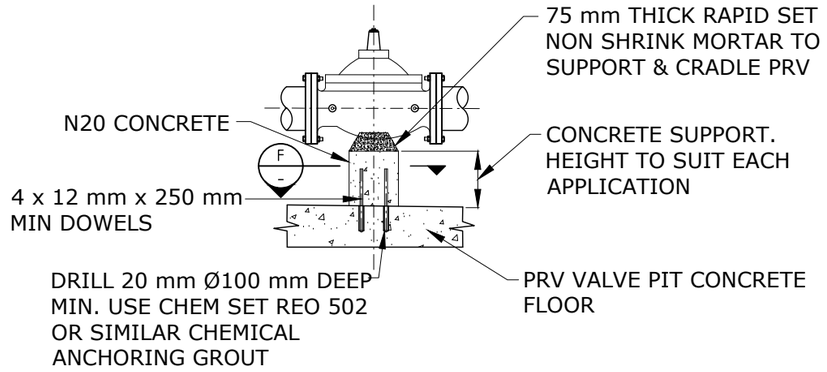
VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018

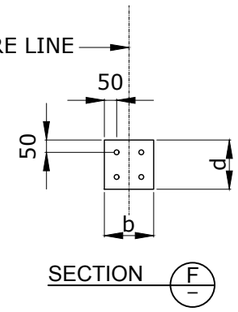


PLAN

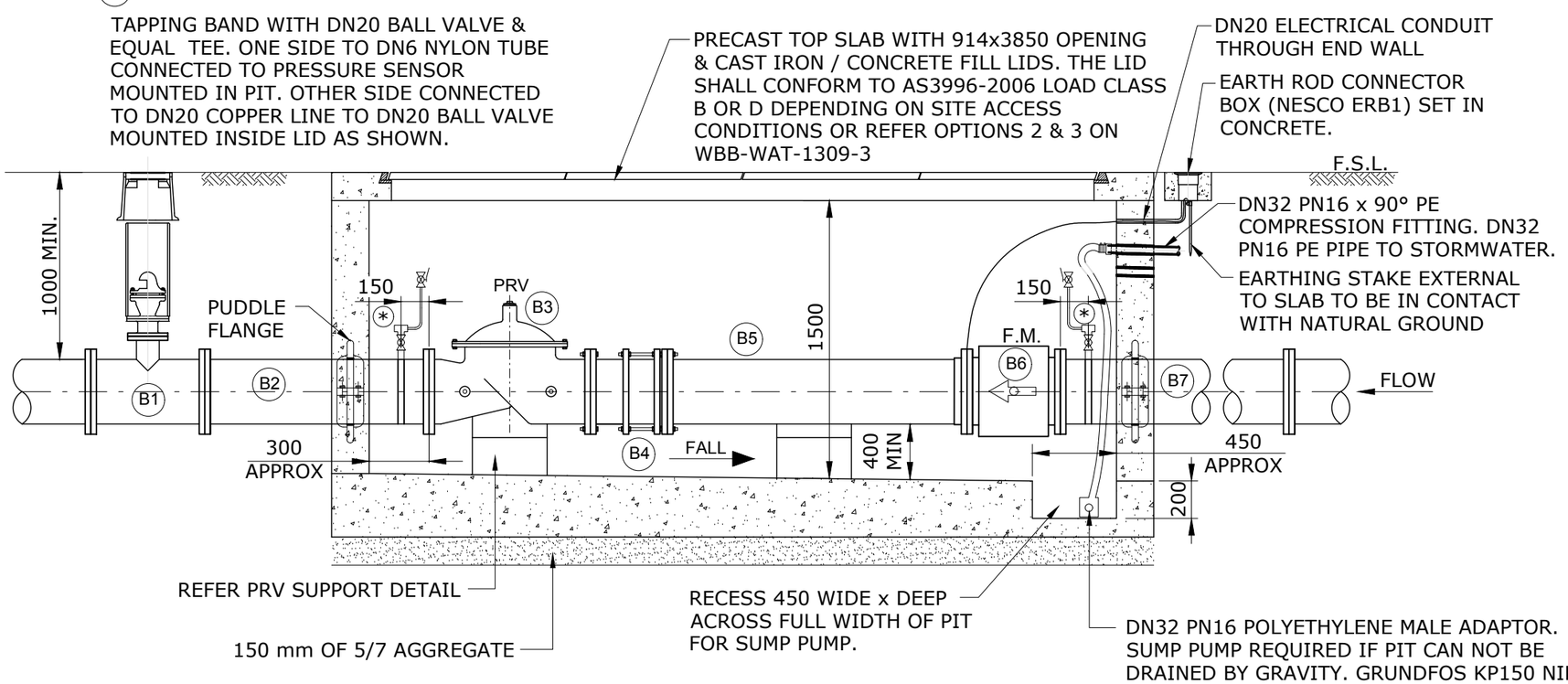


PRV SUPPORT DETAIL

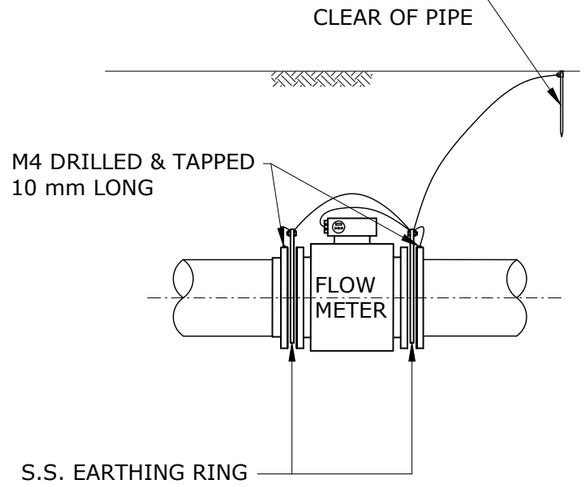
PRV DN	b	d
200	250	300
250	300	300
300	300	350



(*) TAPPING BAND WITH DN20 BALL VALVE & EQUAL TEE. ONE SIDE TO DN6 NYLON TUBE CONNECTED TO PRESSURE SENSOR MOUNTED IN PIT. OTHER SIDE CONNECTED TO DN20 COPPER LINE TO DN20 BALL VALVE MOUNTED INSIDE LID AS SHOWN.



SECTION
DN200-300 MAINS



FLOW METER EARTHING DETAIL

NOTE

1. ALL DIMENSIONS IN MILLIMETRES

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1309-4 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL APPURTENANCE INSTALLATION
ACTIVE PRESSURE REDUCING VALVES (PRV)
DN200 TO DN300

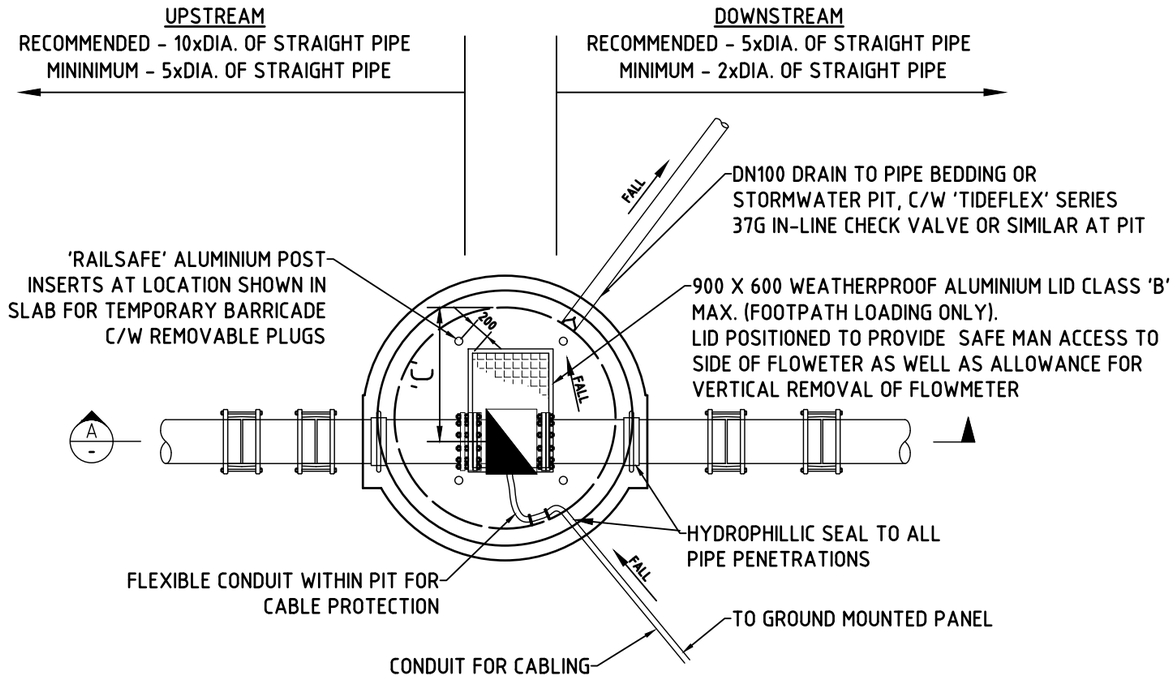
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1309-4

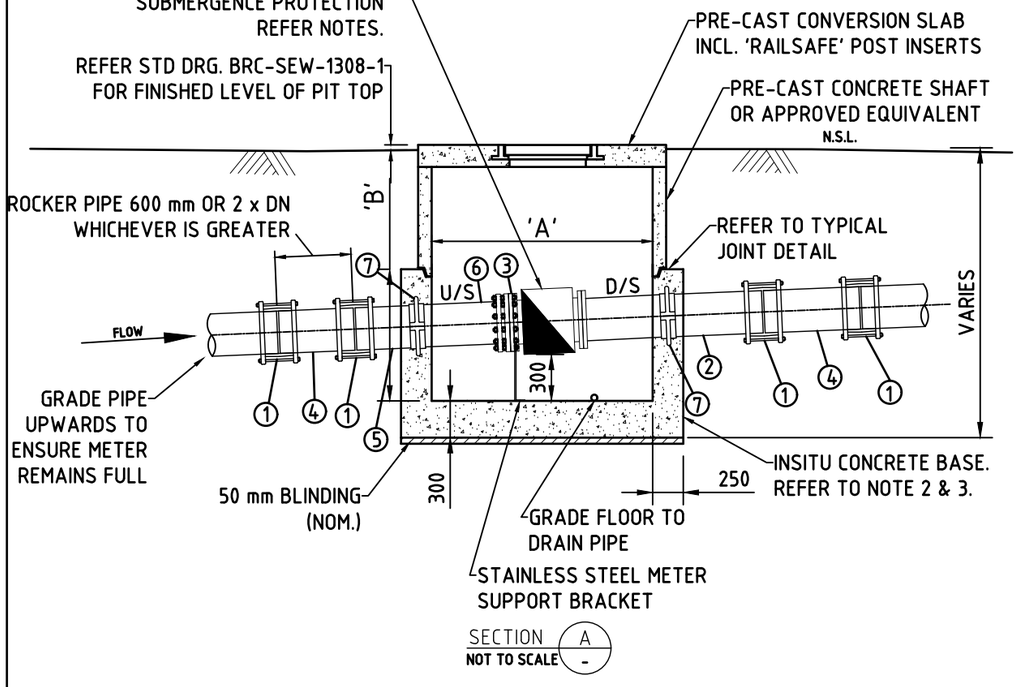
VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018



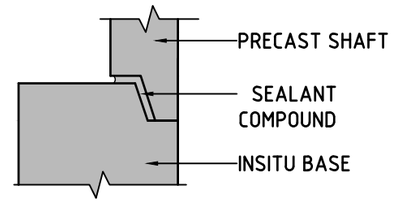
GENERAL ARRANGEMENT PLAN
NOT TO SCALE



SECTION A-A
NOT TO SCALE

NOTES:

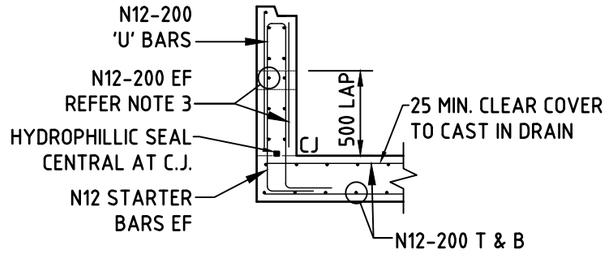
1. FLOWMETER PIT LOCATION TO BE MAX. FOOTPATH LOADING (CLASS 'B'). DRIVEABLE LOCATIONS (CLASS 'D') NOT APPROVED
2. CONCRETE FOR BASE SHALL BE N32 GRADE.
3. ALL STEEL REINFORCING TO COMPLY WITH REQUIREMENTS OF AS 4671.
4. REINFORCEMENT TO BE CUT OR SPACED TO CLEAR PIPEWORK WHERE NECESSARY.WHERE REINFORCEMENT IS CUT, ADDITIONAL TRIMMER BARS SHALL BE PLACED EITHER SIDE OF THE CUT BAR. THESE TRIMMER BARS SHALL BE DEVELOPED A MINIMUM OF 300 mm EITHER SIDE OF THE PENETRATION.
5. 40 MIN. COVER TO REINFORCEMENT TYPICAL, 60 MIN. COVER CAST AGAINST GROUND.
6. INTERNAL DIAMETERS OF FLOWMETER AND ADJOINING PIPEWORK TO MATCH.
7. FLOWMETER LOGGER/CABLE & CONDUIT LOCATION TO BE ADVISED BY SEQ-SP, PRIOR TO CONSTRUCTION.
8. EARTHING RINGS SHALL BE PROVIDED AS PER MANUFACTURERS INSTRUCTIONS.
9. ALL FLOWMETER INSTALLATIONS TO BE COMPLETED BY PERSONNEL ACCREDITED WITH FLOWMETER INSTALLERS CERTIFICATE.
10. TO PROVIDE SUBMERGENCE PROTECTION, FLOWMETER TO BE PACKED WITH 'DENSO MASTIC' AND WRAPPED WITH 'DENSO TAPE' OR SIMILAR ENSURING FLOWMETER BODY, FLANGES AND BOLTS ARE COMPLETELY COVERED, INACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
11. ALL JUNCTION BOXES TO BE S/STEEL 316 IP68 CERTIFIED
12. FLOWMETER CABLE LENGTH TO BE SPECIFIED
13. REFER TO FLOWMETER MANUFACTURER FOR GASKET TYPE



TYPICAL JOINT DETAIL
NOT TO SCALE
(APPLY SEALANT TO SLOPING EDGE ONCE JOINT SURFACES ARE CLEANED)

SHAFT/PIT/PIPE SETOUT

PIPE DN (mm)	'A' (mm)	'B' (mm)	'C' (mm)
100	1200	900	800
150	1200	900	800
200	1500	1000	1000
250	1500	1200	1000
300	1800	1300	1200

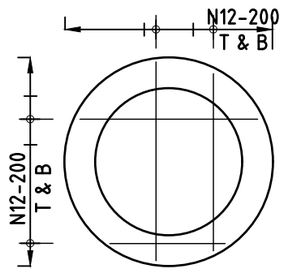


BASE TO WALL REINFORCEMENT DETAIL
NOT TO SCALE

SCHEDULE OF FITTINGS

ITEM	QTY	DESCRITION	MATERIAL	STANDARD	PN RATING (MIN.)
1	4	DN?? ELONGATED GIBAULT JOINT	DI FBE	AS4998	PN16
2	1	DN?? PIPE (FL-SP) SPOOL PIECE (LENGTH 2xDN MIN. DOWNSTREAM)	DI FBE	AS2280	PN16
3	1	DN?? SEQ SP APPROVED FLOWMETER (FL-FL) IP68 C/W 316 S/STEEL JUNCTION BOX			PN16
4	2	DN?? PIPE (SP-SP) ROCKER PIPE			PN16
5	1	DN?? PIPE (SP-SP) SPOOL PIECE (LENGTH 5xDN MIN. UPSTREAM)	DI FBE	AS2280	PN16
6	1	DN?? NON-THRUST DISMANTLING JOINT	DI FBE	AS2998	PN16
7	2	DN?? THRUST FLANGE	DI FBE	AS4998	PN16

FBE: FUSION BONDED EPOXY COATING



CONCRETE BASE REINFORCEMENT PLAN
NOT TO SCALE

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON WBB-WAT-1310-4 VERSION A DATED 27/02/2014	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL APPURTENANCE INSTALLATION
FLOWMETER DETAILS
BELOW GROUND INSTALLATION

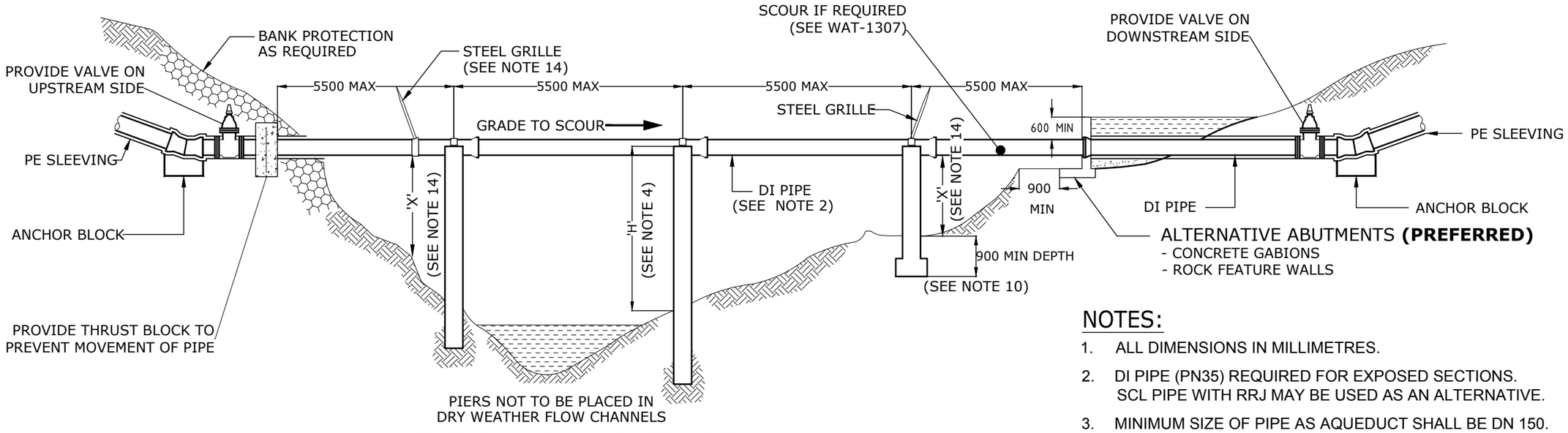
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-WAT-1310-4

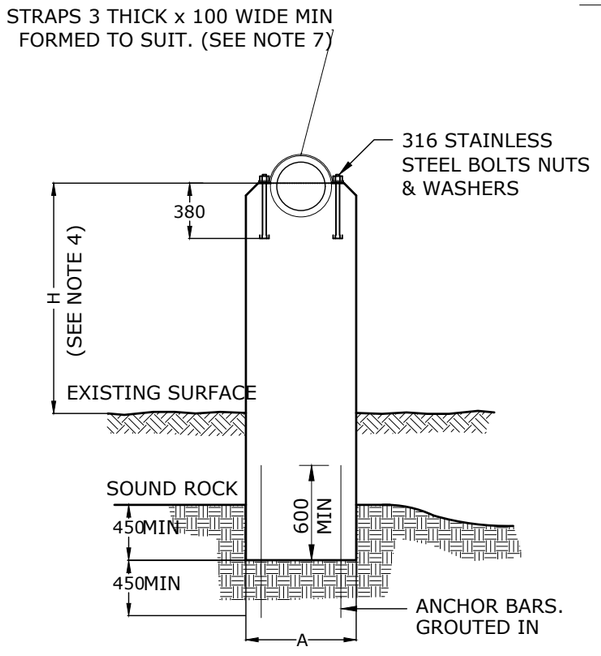
VERSION
A

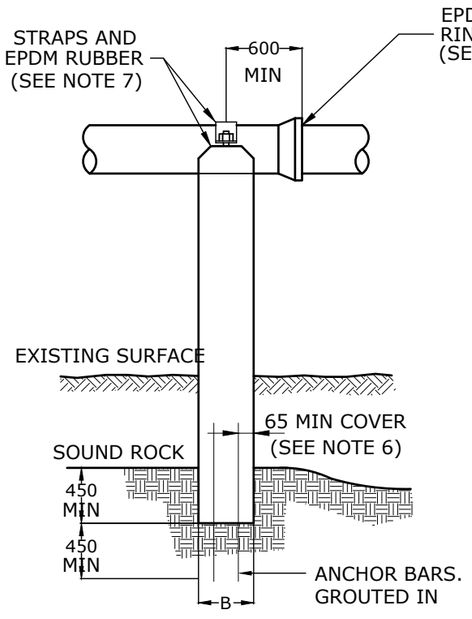
NOT TO SCALE

ORG DATE:
07/08/2018



TYPICAL (DI) AQUEDUCT





DETAIL OF CONCRETE PIER

(SEE NOTE 9)

TABLE DELETED

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. DI PIPE (PN35) 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. **DELETED.**
5. **DELETED.**
6. REINFORCEMENT DETAILS TO BE AS SPECIFIED IN DESIGN DRAWINGS. COVER TO REINFORCEMENT 65 MIN.
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 STRAP. USE NEOPRENE PADS AND NYLON WASHERS ON ALL DISSIMILAR METAL CONTACTS.
8. AS SPECIFIED IN DESIGN DRAWINGS, ADDITIONAL PROTECTION/COATING TO BE PROVIDED TO MAKE AQUEDUCT PIPES MORE ENVIRONMENTALLY ACCEPTABLE, REFER NOTE 8A ON WBB-WAT-1312-1.
9. CYLINDRICAL PIERS (Ø 600 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 PIER TO BE SPECIFIED IN 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
14. PROVIDE STEEL GRILLES WHERE THE VERTICAL DISTANCE 'X' EXCEEDS 1800. GRILLE TO BE CLAMPED ON TIGHTLY TO PREVENT MOVEMENT. SEE WBB-WAT-1311-2.
15. **ALL AQUEDUCT CROSSINGS MUST BE DESIGNED BY RPEQ.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1311-1 VERSION A DATED 31/03/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

AERIAL CROSSINGS
TYPICAL AQUEDUCT

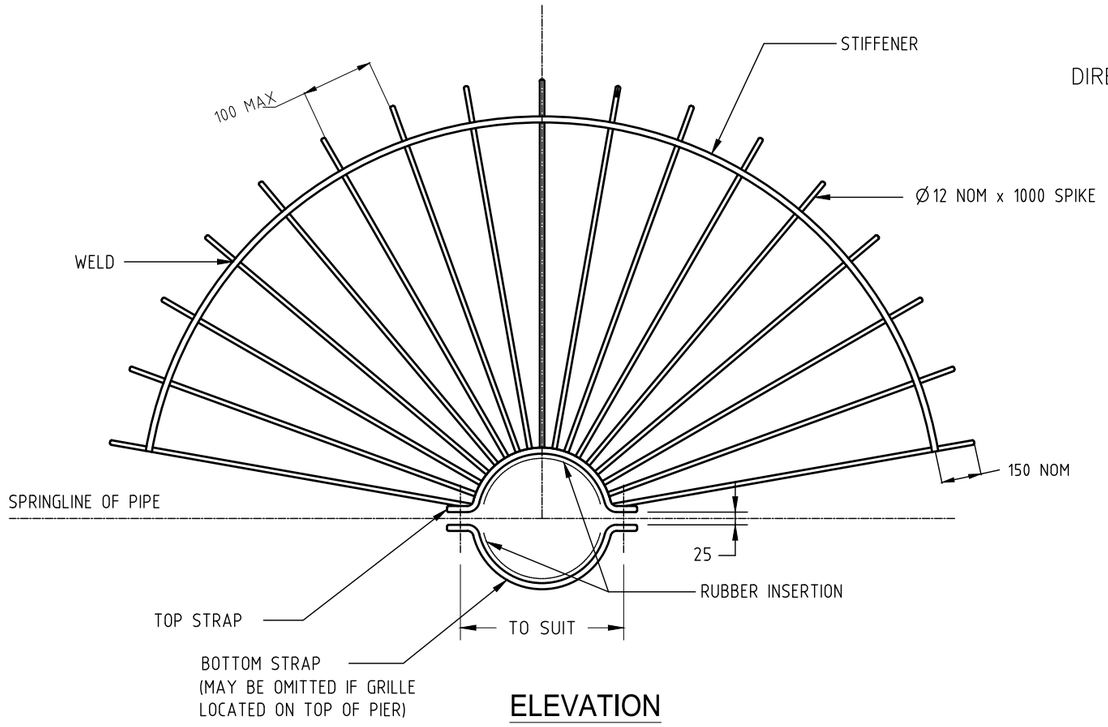
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1311-1

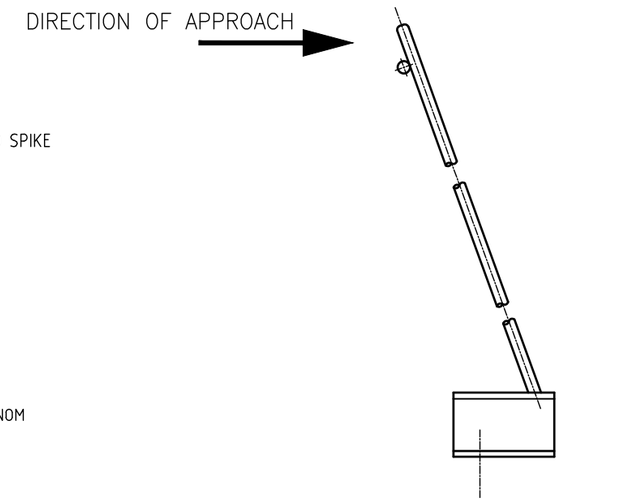
VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018

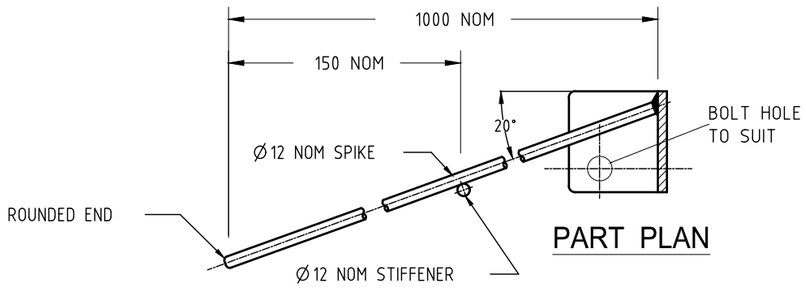


ELEVATION

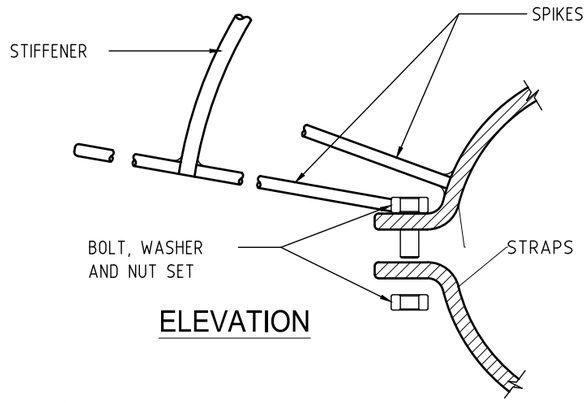


END ELEVATION

STEEL PROTECTION GRILLE



PART PLAN



ELEVATION

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL ITEMS TO BE STEEL AND HOT DIP GALVANISED AFTER FABRICATION.
3. PLACE 3 THICK RUBBER INSERTION BETWEEN CLAMPS AND PIPELINE.
4. INCLUDE SIGN "DANGER KEEP OFF" WHERE SPECIFIED BY WATER AGENCY.
5. STEEL TO BE GRADE 250 TO AS 3679.1.

COMPONENT & FABRICATION DETAILS

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1311-2 VERSION A DATED 31/03/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL AERIAL CROSSINGS
AQUEDUCT PROTECTION GRILLE

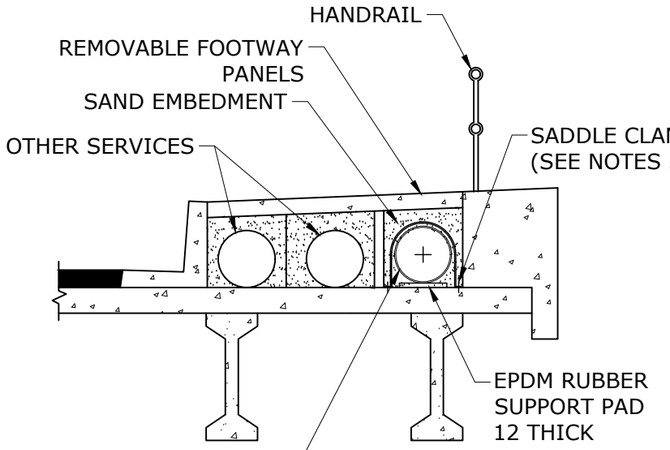
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1311-2

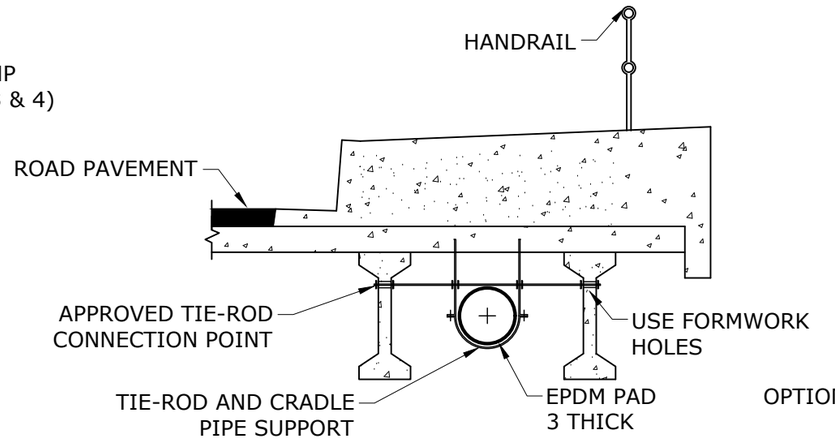
VERSION A

NOT TO SCALE

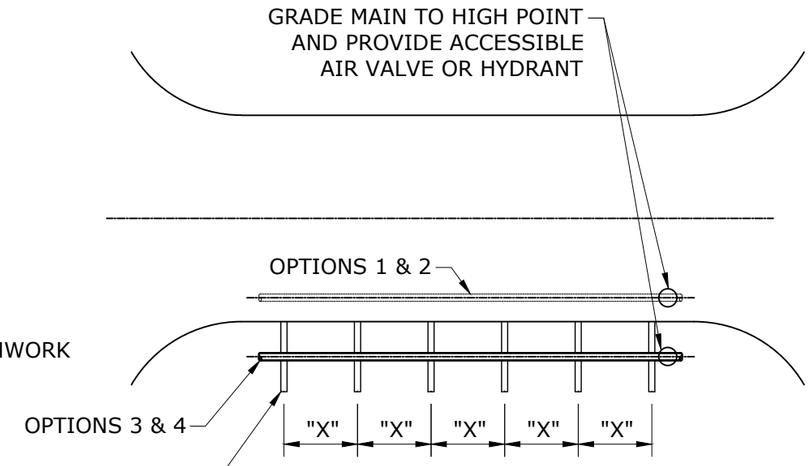
ORG DATE: 07/08/2018



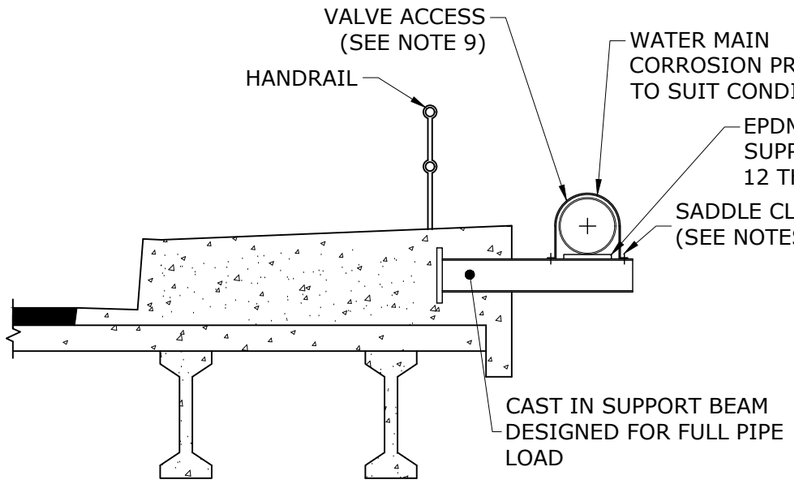
OPTION 1
NEW BRIDGE
(PREFERRED)



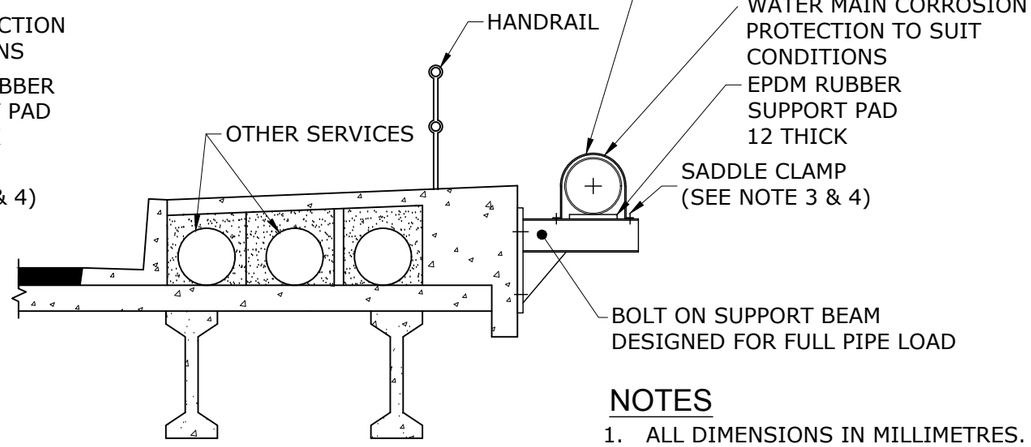
OPTION 2
NEW & EXISTING BRIDGES
NO SERVICE DUCT AVAILABLE
(SEE NOTE 7)



BRIDGE CROSSING PLAN
SEE DESIGN DRAWINGS FOR DIMENSION 'X'



OPTION 3
NEW BRIDGE
NO SERVICE DUCT AVAILABLE
(SEE NOTE 6)



OPTION 4
NEW & EXISTING BRIDGES
NO SERVICE DUCT AVAILABLE
(SEE NOTE 6)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. OPTION 1 IS THE PREFERRED OPTION. OPTION 2IS FOR DRY CREEKS.
3. FOR GENERAL SERVICE, STEEL SUPPORTS TO AS 3679.1 GRADE 250 AND HOT DIPPED GALVANISED, EXCLUDED FOR OPTION 2.

4A. USE STAINLESS STEEL MIN GRADE 316 FOR SUPPORT BEAMS, TIE RODS, CRADLE SUPPORTS, CLAMPS, BOLTS, NUTS AND WASHERS.

4B. PROVIDE NEOPRENE PADS AND NYLON WASHER ON ALL DISSIMILAR METAL CONTACTS.

5. PROVIDE PIPE EXPANSION JOINTS AT EACH END OF BRIDGE.
6. SCL PIPE ONLY FOR OPTION 1, JUSTIFY FOR OPTIONS 3 & 4.
7. DI TO BE USED FOR OPTION 2. MATERIAL TYPE DEPENDS ON ENVIRONMENTAL CONDITIONS.

8A. ALL DI PIPES SHALL BE PROVIDED WITH A COLOURED EPOXY COATING AT 500 MICRONS THICK. PIPE COLOUR TO SUIT LOCAL ENVIRONMENT WITH PRODUCT MARKERS AT EACH SOCKET.

8B. ALL FLANGE JOINTS SHALL BE PROTECTED AS PER WBB-WAT-1313-1.

9. ALL APPURTENANCES SHALL BE ACCESSIBLE VIA PLATFORMS AND HANDRAILS TO AS 1657.

10. ALL SUPPORTS SHALL MANAGE ALL TEST AND OPERATIONAL THRUSTS AT FULL LOADS.

THIS IS NOT A DETAIL DRAWING

CONCEPT ONLY

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1312-1 VERSION B DATED 31/03/2015	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

AERIAL CROSSINGS
TYPICAL BRIDGE CROSSING CONCEPTS

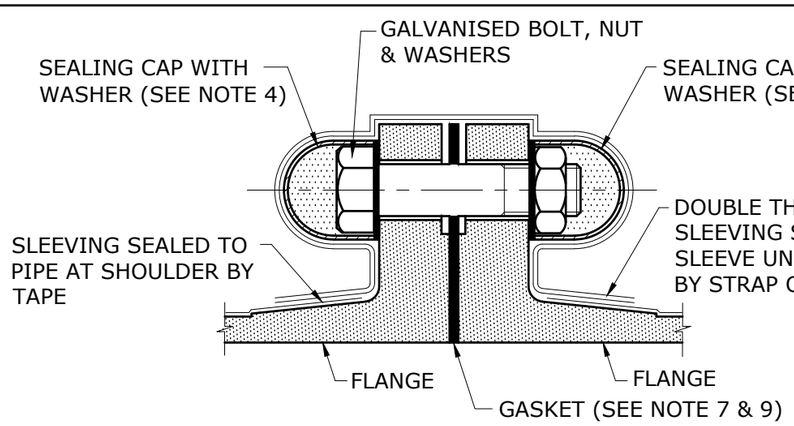
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-WAT-1312-1

VERSION
A

NOT TO SCALE

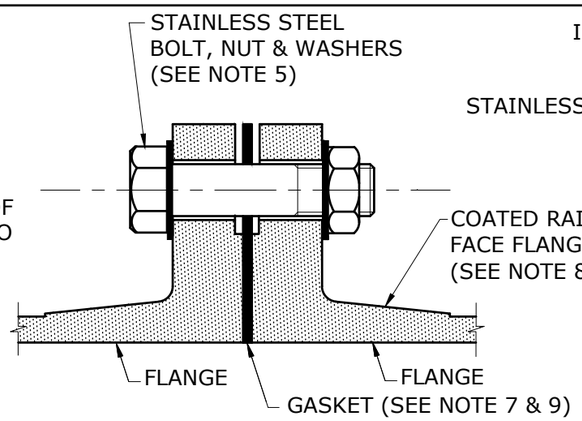
ORG DATE:
07/08/2018



(RAISED FACE FLANGES SHOWN)

CORROSION PROTECTION PROCEDURE FOR BURIED DUCTILE IRON FLANGES WITH GALVANISED BOLTS DETAIL A

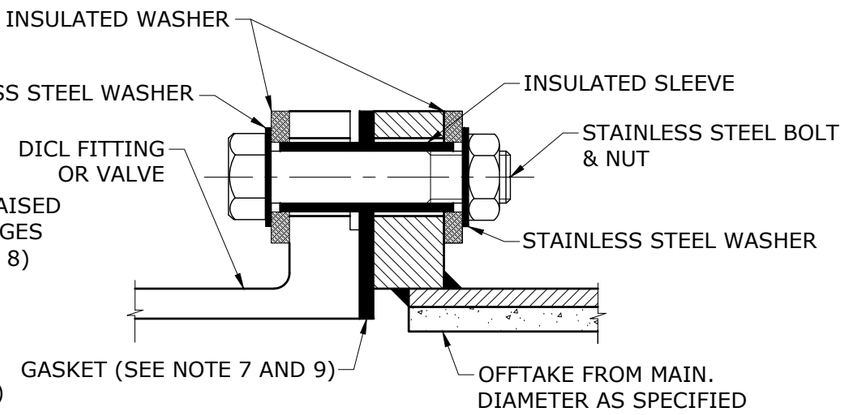
(SEE NOTE 2 AND 11)



(RAISED FACE FLANGES SHOWN)

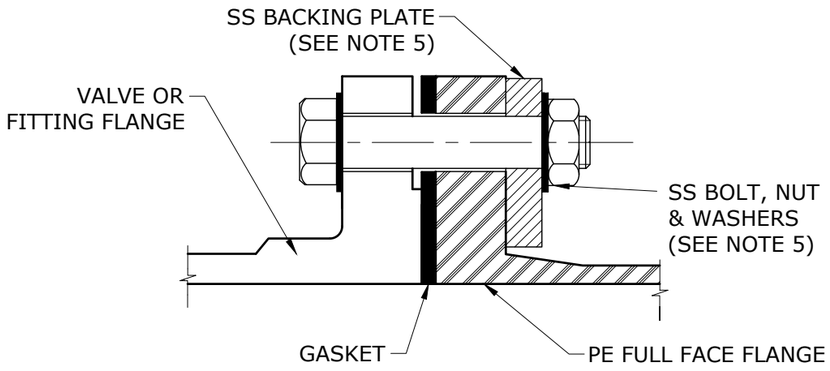
CORROSION PROTECTION PROCEDURE FOR FUSION BONDED COATED DUCTILE IRON FLANGES WITH STAINLESS STEEL BOLTS DETAIL B

(SEE NOTE 3)

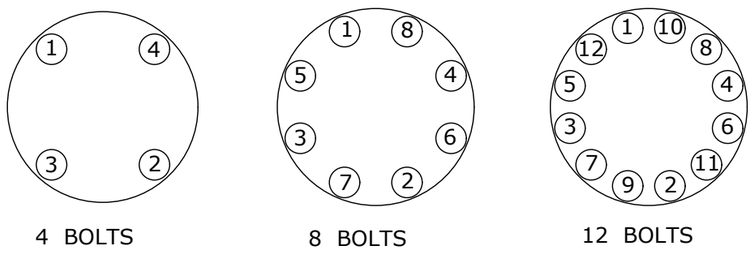


INSULATED FLANGED JOINT FOR STEEL MAINS DETAIL C

(SEE NOTE 6)



PE BOLTED CONNECTION DETAIL DETAIL D



TIGHTENING SEQUENCE

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. SLEEVE UNCOATED DUCTILE IRON FLANGES. USE GALVANISED BOLTS (SEE NOTE 4). APPLY TWO LAYERS OF SLEEVING OVER ALL BURIED BITUMEN COATED DUCTILE IRON FLANGES.
3. WHERE FLANGES ARE COATED WITH FUSION BONDED EPOXY OR NYLON THEY DO NOT REQUIRE SLEEVING, USE ONLY STAINLESS STEEL BOLTS (SEE NOTE 5).
   TAKE CARE TO PREVENT DAMAGE TO THE FLANGE'S PROTECTIVE COATING. **BRC REQUIRES SLEEVING FOR FUSION BONDED EPOXY FLANGES.**
4. GALVANISED BOLT SYSTEM.
   (i) ALL BOLTS, NUTS AND WASHERS TO BE HOT DIPPED GALVANISED. AFTER GALVANISING, AND PRIOR TO ASSEMBLY, LIBERALLY COAT ALL NUTS, BOLTS & WASHERS WITH A CORROSION PREVENTION PRIMING PASTE.
   (ii) AFTER ASSEMBLY, COVER ALL BOLT HEADS AND NUTS WITH SEALING CAPS FILLED WITH CORROSION PREVENTION PRIMING PASTE.
   (iii) WRAP THE ASSEMBLY WITH PETROLATUM TAPE OR WITH PE SLEEVING AND TAPED. TAKE SPECIAL CARE WHEN BACKFILLING, TO ENSURE THAT CAPS ARE NOT DISLODGED.
   (iv) DELETED.
5. STAINLESS STEEL BOLT SYSTEM.
   ALL STAINLESS STEEL BOLTS, NUTS, WASHERS AND BACKING PLATES TO BE MANUFACTURED FROM 316 GRADE MATERIAL.
   COAT THE THREADED SECTIONS OF ALL STAINLESS STEEL BOLTS WITH AN ANTI-SIEZE LUBRICANT RECOMMENDED BY THE BOLT MANUFACTURER.
6. VERIFY THE INTEGRITY OF EACH INSULATED FLANGED JOINT AFTER ASSEMBLY.
7. USE SPECIAL HIGH RESISTIVITY (LOW CONDUCTIVITY) GASKET MATERIAL. NOT ALL ELASTOMERS ARE NON CONDUCTIVE
8. ROUGHEN COATED RAISED FACE FLANGE SURFACES BEFORE ASSEMBLY. PERFORATION OF THE COATING DOES NOT MATTER ON THE CONTACT FLANGE FACES.
9. GASKET MATERIALS TO COMPLY WITH WSA 109.
10. TIGHTENING SEQUENCE SHOWN FOR AS 4087 FLANGES <DN450, LARGER SIZES TO FOLLOW SIMILAR PRINCIPLE.
11. USE OF DETAIL A SUBJECT TO THE APPROVAL OF WBBROC-SPs.
12. **DELETED.**

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON WBB-WAT-1313-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

FLANGED JOINTS
TYPICAL BOLTING DETAILS

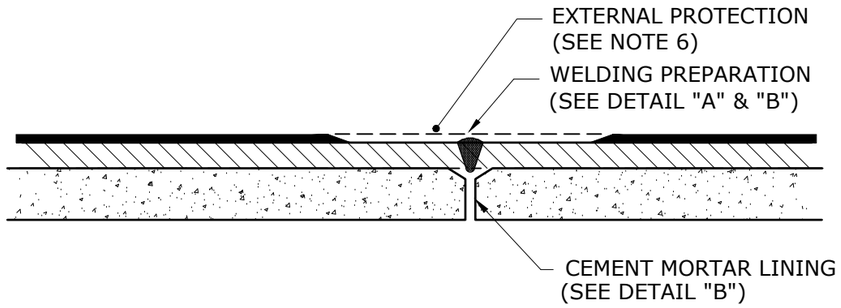
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1313-1

VERSION A

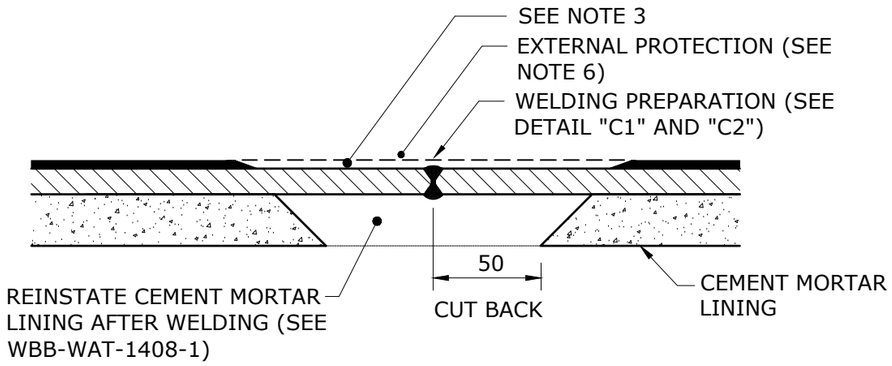
NOT TO SCALE

ORG DATE: 07/08/2018



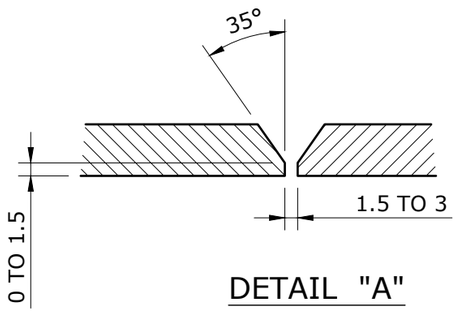
BUTT WELD FOR PIPES < DN750

(WELDED FROM OUTSIDE ONLY)



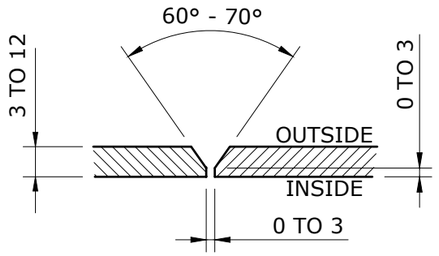
BUTT WELD FOR PIPES >OR= DN750 TO DN1200

(WELDED FROM BOTH SIDES)



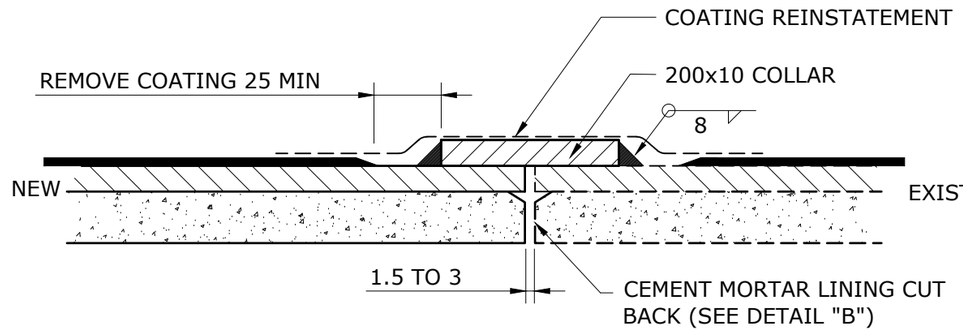
DETAIL "A"

WELD PREPARATION FOR PIPES < DN750

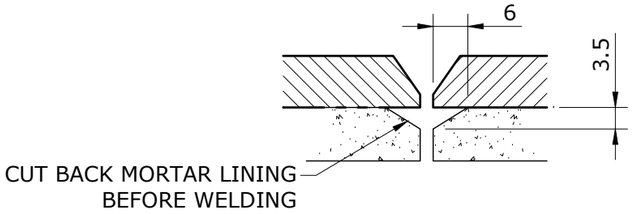


(FOR BARREL THICKNESS <OR= 12)
(SEE NOTES 4 & 5)

DETAIL "C1"

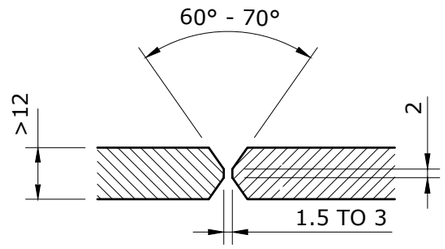


CLOSING JOINT FOR EXISTING MAINS



DETAIL "B"

MORTAR PREPARATION CEMENT LINED PIPES < DN750



(FOR BARREL THICKNESS > 12)
(SEE NOTE 4)

DETAIL "C2"

WELD PREPARATION FOR PIPES >OR= DN750 TO DN1200

CAUTION

AXIAL DEFLECTION OF PIPES TO BE JOINED IS NOT PERMITTED

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. NO JOINT DEFLECTION ALLOWED WHERE BUTT WELDING IS CARRIED OUT.
3. CUT BACK COATINGS AT LEAST 100 FROM NEAREST ASSEMBLY WELD.
4. ALL WELDING TO BE FULL PENETRATION BUTT WELDS CARRIED OUT AND TESTED IN ACCORDANCE WITH AS/NZS 1554.1 CATEGORY SP.
5. IN DETAIL "C1", FOR THICKNESS <OR= 12, WELD OUTSIDE FIRST, THEN BACK GOUGE TO SOUND METAL BEFORE WELDING INSIDE.
6. REINSTATE EXTERNAL PROTECTION IN ACCORDANCE WITH THE CODE AND THEN MANUFACTURERS SPECIFICATIONS.
7. CONFINED SPACES TRAINING AND SAFETY MANAGEMENT PLAN ESSENTIAL BEFORE ENTERING PIPE.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1400-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL STEEL PIPE JOINTING
BUTT WELDING OF JOINTS

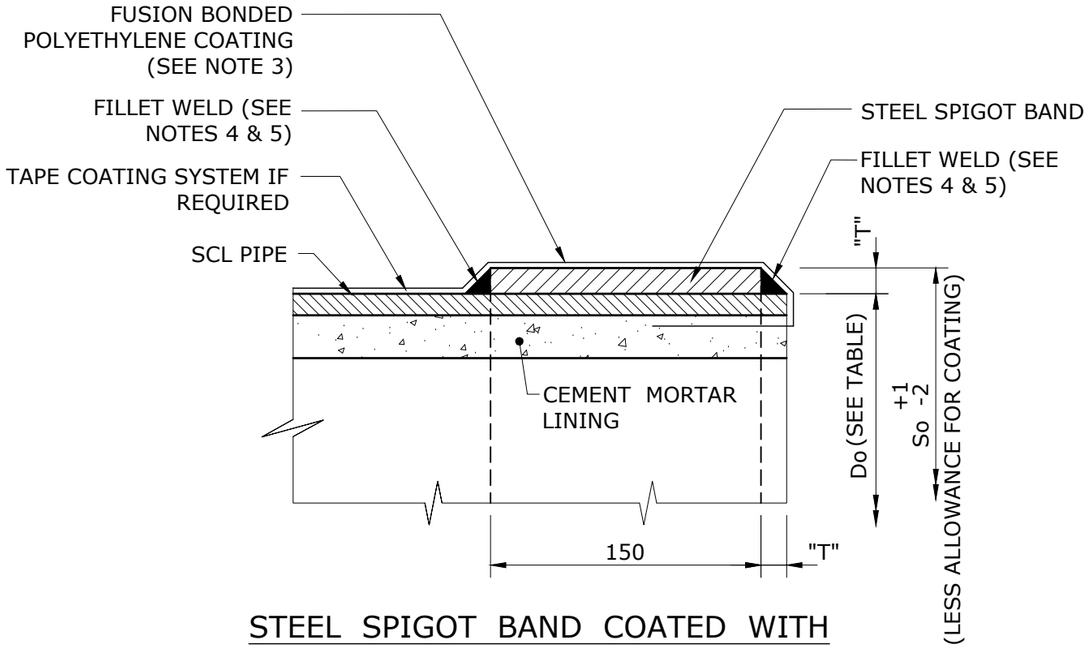
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1400-1

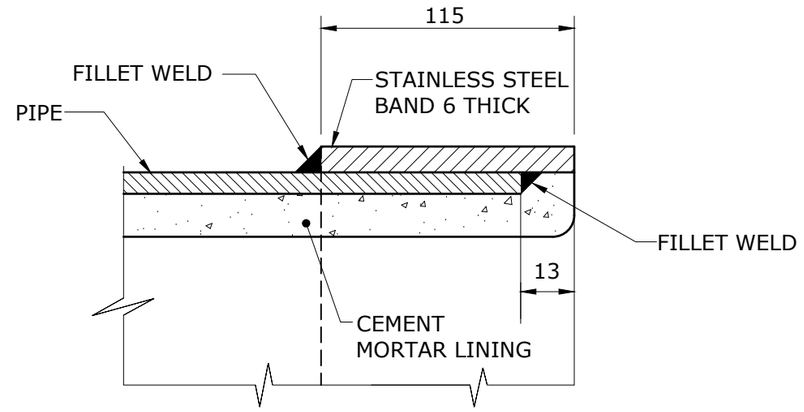
VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018



STEEL SPIGOT BAND COATED WITH FUSION BONDED POLYETHYLENE



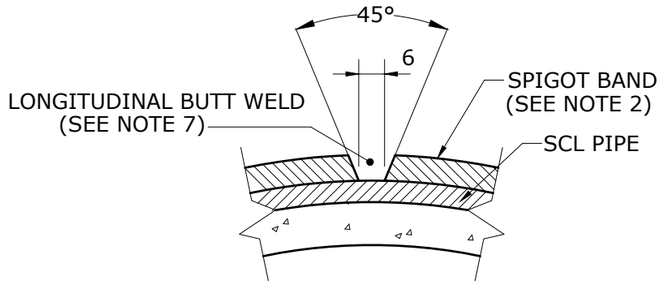
STAINLESS STEEL SPIGOT BAND FOR DISMANTLING JOINT

(SEE NOTES 2, 4 & 5.)

SPIGOT BAND DIMENSIONS FOR CONNECTION TO DICL SOCKET

(SEE NOTES 3 & 6)

DICL PIPE SIZE DN	STEEL PIPE OUTSIDE DIAMETER Do	SPIGOT BAND OUTSIDE DIAMETER So (SEE NOTE 5)
200	219	232
250	273	286
300	324 337	345
375	406 419	426
450	508	508
500	559	560
600	648 660	667
750	807 813	826



TYPICAL WELD PREPARATION

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. STEEL SPIGOT BANDS TO BE MANUFACTURED FROM MATERIALS AS FOLLOWS - STEEL IN ACCORDANCE WITH AS/NZS 3678 - STAINLESS STEEL TO BE TYPE 316L.
3. EXTERNAL PROTECTIVE COATING TO BE FACTORY APPLIED IN ACCORDANCE WITH AS 4321. ALLOWANCE TO BE MADE FOR 2 mm/SIDE THICKNESS OF COATING. FACTORY APPLIED METALISING MAYBE USED AS AN ALTERNATIVE COATING.
4. BANDS TO BE WELDED TO PIPE WITH CONTINUOUS FILLET WELDS. MINIMUM LEG LENGTH 5.
5. GRIND ALL WELDS FLUSH WITH EXTERNAL SURFACE. REMOVE ANY SHARP CORNERS TO PREVENT DAMAGE TO RUBBER RING.
6. TABLE APPLIES ONLY TO STEEL SPIGOT BANDS FOR JOINING TO DICL SOCKETS TO AS/NZS 2280 DIMENSIONS. FOR OTHER MATERIALS REFER TO MANUFACTURER FOR SPIGOT SIZES.
7. WELDING TO BE IN ACCORDANCE WITH AS/NZS 1554.1 CATEGORY SP AND AS/NZS 1554.6 FOR WELDING OF STAINLESS STEEL TO STEEL.
8. THE PREFERENCE IS FOR FLANGE TO FLANGE JOINTING BETWEEN STEEL AND DICL MAINS.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1401-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL STEEL PIPE JOINTING
RUBBER RING JOINT SPIGOT
BAND SPECIALS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

WBB-WAT-1401-1

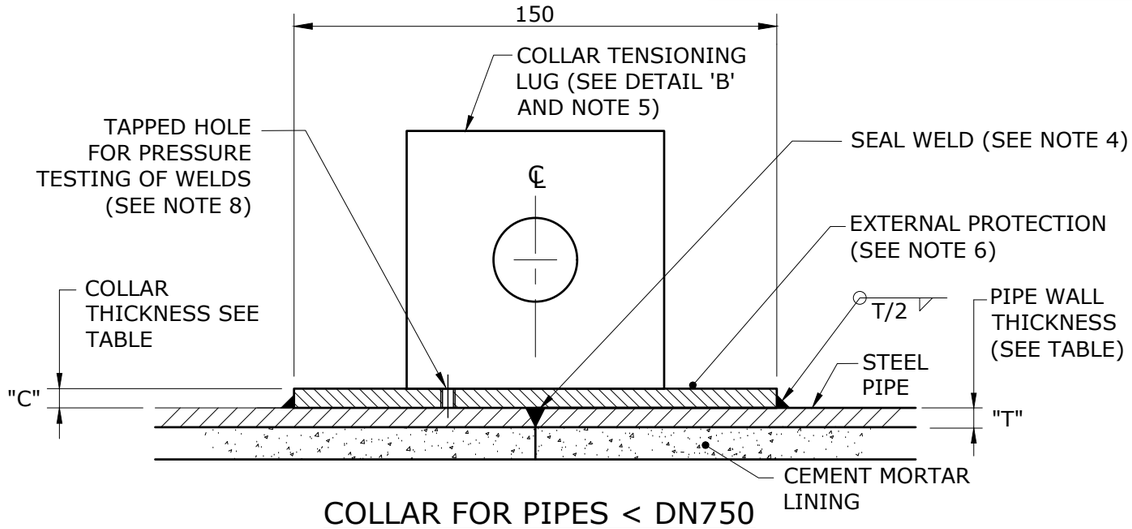
VERSION

A

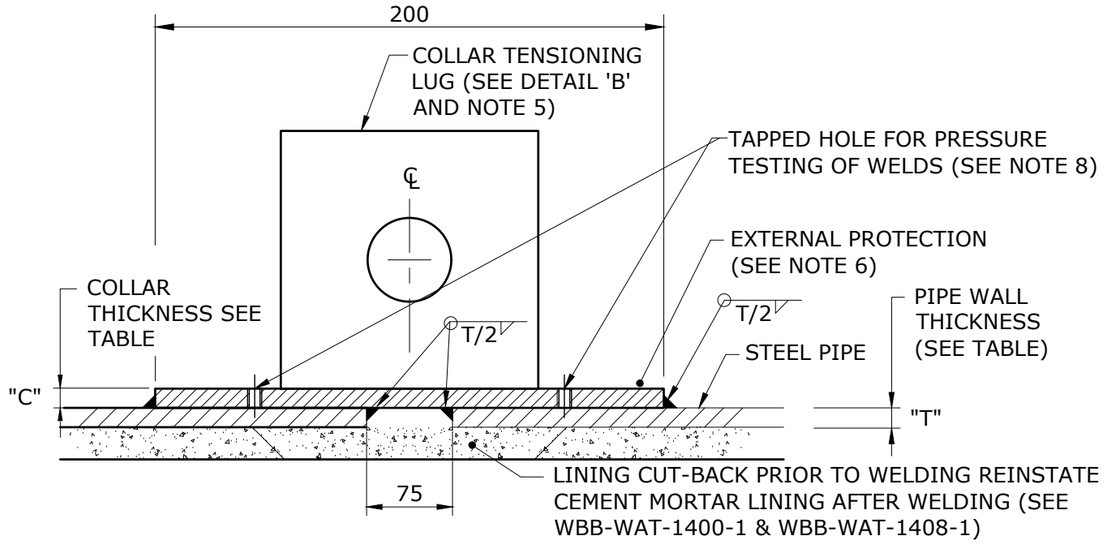
NOT TO SCALE

ORG DATE: 07/08/2018

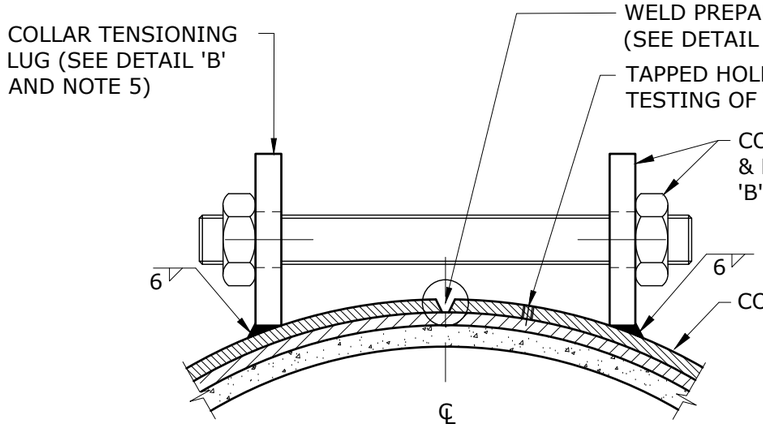
CAUTION AXIAL DEFLECTION OF PIPES TO BE JOINED IS NOT PERMITTED.



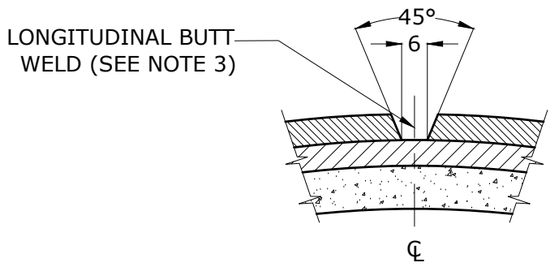
COLLAR FOR PIPES < DN750



COLLAR FOR PIPES >OR= DN750 TO 1200

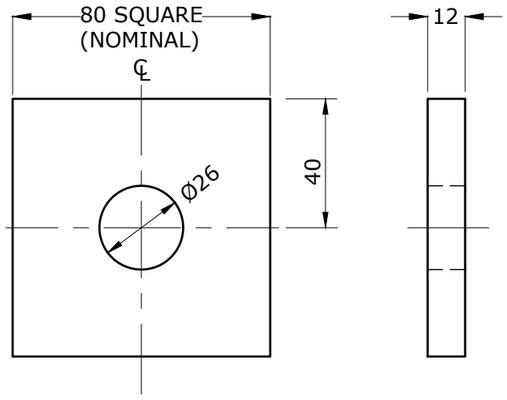


VIEW OF COLLAR IN WELDING POSITION



DETAIL "A"

TYPICAL WELD PREPARATION



DETAIL "B"

COLLAR TENSIONING LUG

COLLAR DETAILS		
PIPE SIZE DN	PIPE WALL THICKNESS <OR= "T"	COLLAR THICKNESS "C"
100 TO 225	5	6
250 TO 350	5 6	6 8
400 TO 750	5 8 10	6 10 12
800 & OVER	6 8 10 12 16 20 25	8 10 12 16 20 25 32

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. STEEL USED FOR COLLARS TO BE IN ACCORDANCE WITH AS/NZS 3678.
3. WELDING TO BE IN ACCORDANCE WITH AS/NZS 1554.1 CATEGORY SP.
4. SEAL WELD TO CONSIST OF A SINGLE CONTINUOUS WELD BEAD AROUND PIPE AND TO BE GROUND FLUSH WITH PIPE OD PRIOR TO FITTING COLLAR.
5. REMOVE BOLTS & WELDING LUGS AFTER COLLAR HAS BEEN WELDED. GRIND FINISHED SURFACES FLUSH.
6. WRAP EXTERNAL SURFACE USING A BITUMEN IMPREGNATED TAPE WRAP SYSTEM.
7. WRAP AROUND CHAIN TENSIONING MAY BE USED AS AN ALTERNATIVE TO COLLAR TENSIONING LUGS.
8. PROVIDE A TAPPED HOLE TO ALLOW THE GAP UNDER THE COLLAR TO BE PRESSURISED TO CONFIRM COMPLETE WELDING INTEGRITY. HOLE TO BE PLUGGED ON COMPLETION OF TEST.
9. WHERE SAFETY REASONS PREVENT ENTRY TO PIPE, ONE SIDED WELDING MAY BE AUTHORISED FOR PIPE >DN750 PROVIDED WELD SIZE IS INCREASED TO "T" AND DETAIL "B" FROM WBB-WAT-1400-1 IS USED.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1402-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL STEEL PIPE JOINTING
WELDED PIPE COLLARS

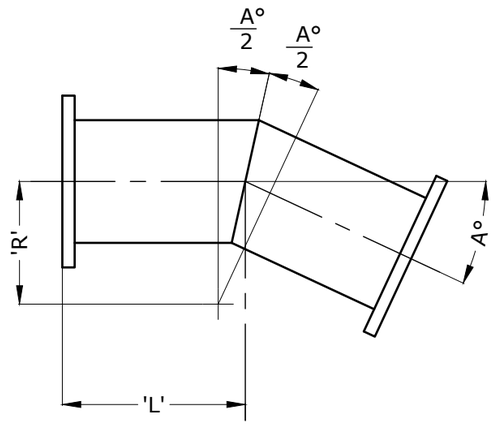
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1402-1

VERSION A

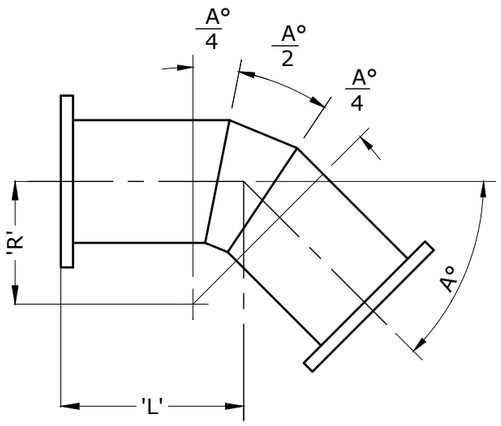
NOT TO SCALE

ORG DATE: 07/08/2018



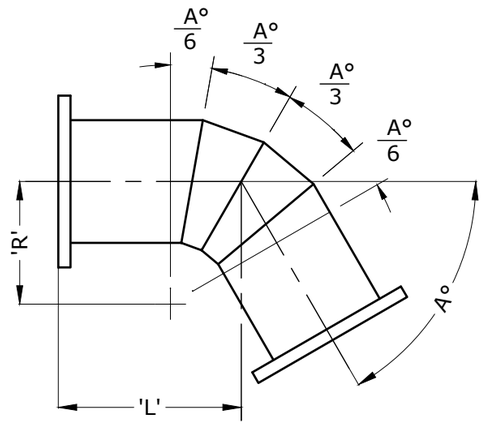
1 - CUT BEND

A° = 0° TO 22.5°



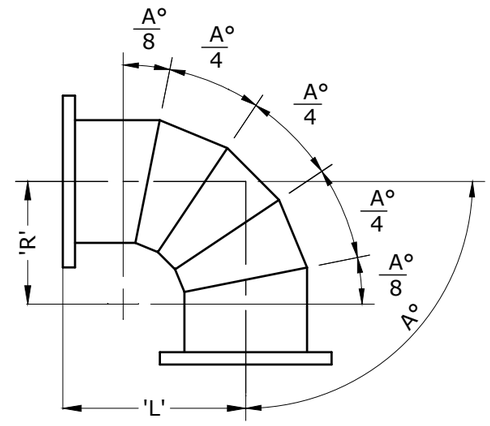
2 - CUT BEND

A° = >22.5° TO 45°



3 - CUT BEND

A° = >45° TO 67.5°



4 - CUT BEND

A° = >67.5° TO 90°

PIPE SIZE DN	BEND RADIUS 'R'	'L'	
		PLAIN	FLANGE
150	150	350	250
200	200	400	300
250	250	450	350
300	300	500	400
350	350	550	450
400	400	600	500
450	450	650	550
500	500	700	600
550	550	750	650
600	600	800	700
650	650	850	750
700	650	900	800
750	700	950	850
800	750	1000	900
850	800	1000	900
900	850	1050	950
950	850	1050	950
1000	850	1050	950
1050	900	1100	1000
1100	950	1150	1050
1200	1000	1200	1100
1300	1050	1250	1150
1400	1100	1300	1200
1500	1150	1350	1250
1600	1200	1400	1300
1700	1250	1450	1350
1800	1300	1500	1400
2000	1350	1600	1450
2200	1450	1650	1550
2400	1500	1750	1600

DESIGN GUIDE

1. ANGLE OF BEND TO BE ROUNDED OFF TO THE NEAREST 15 MINUTES AND BENDS MANUFACTURED TO ±1 DEGREE.
2. BOTH DIMENSIONS FOR 'L' ARE PRACTICAL, BUT ARE CONSIDERED TO BE MINIMUM LENGTHS AND MAY BE INCREASED AS REQUIRED.

DIMENSIONS SHOWN ARE CONSIDERED TO BE THE MINIMUM ACCEPTABLE FOR NORMAL APPLICATIONS

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. SEE AS 1579 FOR ALTERNATIVE BEND DETAILS AND FABRICATION REQUIREMENTS.
3. ALL WELDING TO BE IN ACCORDANCE WITH AS/NZS 1544.1 CATEGORY SP.
4. FLANGE DRILLING TO COMPLY WITH AS 4087.
5. PIPES >OR= DN600 GENERALLY 'O' RING GROOVED.
6. GASKETS AND 'O' RING TO COMPLY WITH CODE.
7. PIPE TO BE IN ACCORDANCE WITH AS 1579 AND CEMENT LINING IN ACCORDANCE WITH AS 1281 TO SUIT DESIGN PRESSURES.
8. FITTINGS TO BE LINED AND COATED WITH MEDIUM DENSITY PE TO AS 4321.
9. FOR FLANGE BOLTING DETAILS SEE WBB-WAT-1313-1.
10. REINFORCING COLLARS MAY BE REQUIRED FOR HIGH PRESSURE APPLICATIONS.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1403-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL STEEL PIPE JOINTING
BENDS

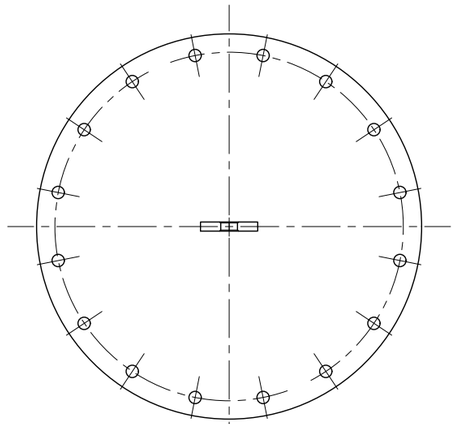
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1403-1

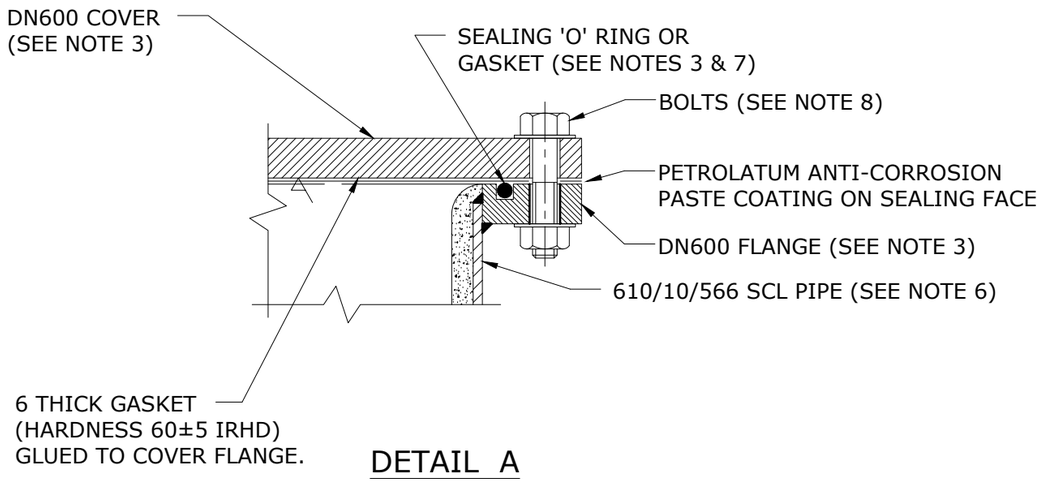
VERSION A

NOT TO SCALE

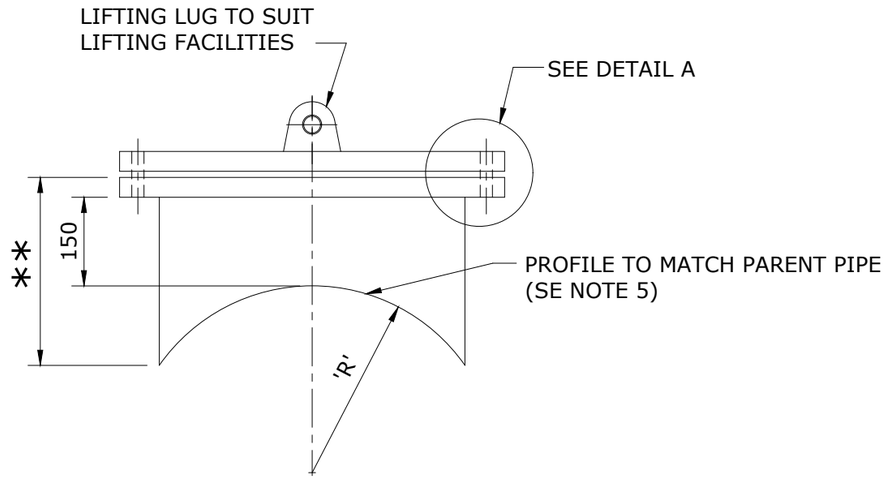
ORG DATE: 07/08/2018



PLAN



DETAIL A



ELEVATION

** VARIES ACCORDING TO PIPE DIAMETER

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. WELDING TO BE IN ACCORDANCE WITH AS/NZS 1544.1 CATEGORY SP.
3. FLANGES AND DRILLING TO IN ACCORDANCE WITH AS 4087 FIGURES B7, B8, B9.
4. CEMENT LINED STEEL PIPES TO AS 1579 & AS 1281 TO SUIT DESIGN PRESSURE.
5. REINFORCING COLLARS MAY BE REQUIRED. TO BE INSTALLED AS SHOWN IN DETAIL DRAWING.
6. CEMENT MORTAR LINING TO BE IN ACCORDANCE WITH AS 1281.
7. GASKETS AND 'O' RINGS TO COMPLY WITH WSA 109.
8. BOLTING DETAILS TO BE AS SHOWN ON WBB-WAT-1313-1.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1404-1 VERSION A DATED 1/2/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL STEEL FABRICATION
ACCESS OPENING FOR PIPES≥ DN750

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

WBB-WAT-1404-1

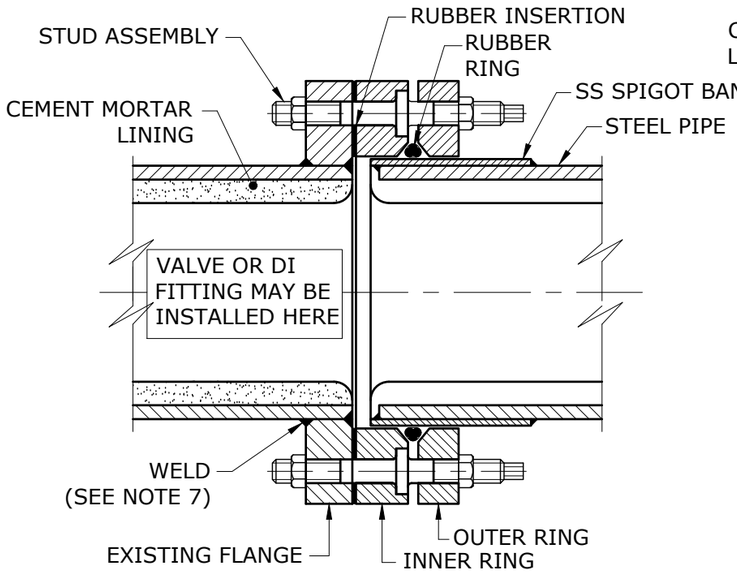
VERSION

A

NOT TO SCALE

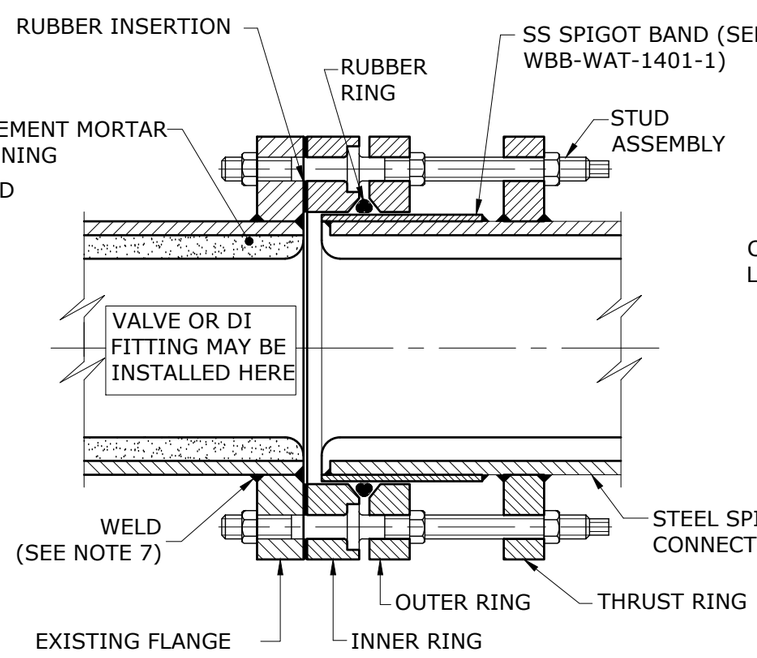
ORG DATE:
07/08/2018

SUITABLE CORROSION PROTECTION TO BE APPLIED



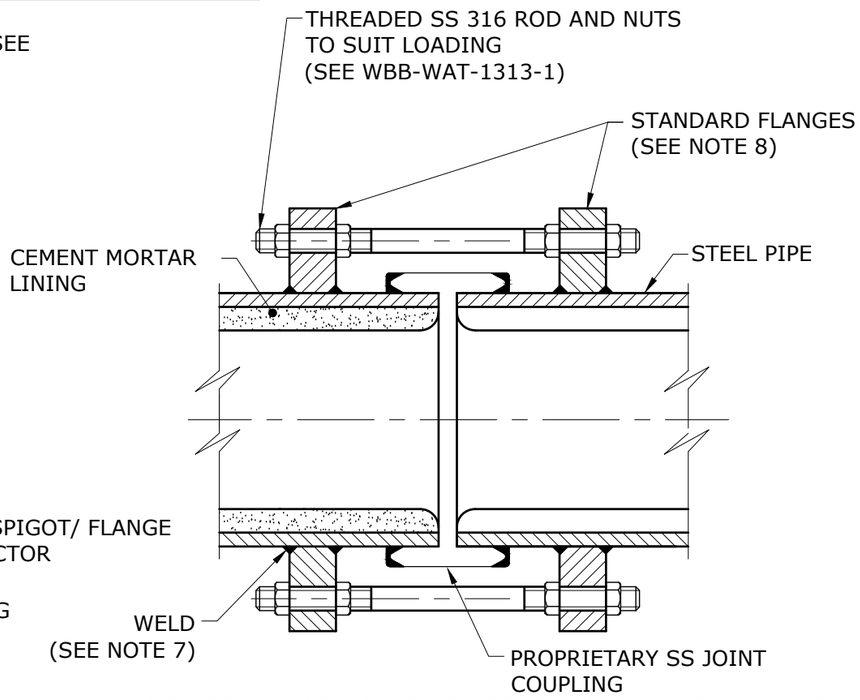
SECTION OF ASSEMBLED DISMANTLING JOINT/NON-THRUST TYPE

(SEE NOTE 2)



SECTION OF ASSEMBLED DISMANTLING JOINT/THRUST TYPE

(SEE NOTE 3)



SECTION OF ASSEMBLED RESTRAINED JOINT IN-LINE RESTRAINED JOINT

(SEE NOTE 4)

PIPE SIZE DN	SAFE HEAD (m)	FLANGE PCD	NUMBER OF STUDS	STUD DIAMETER	STUD LENGTH	
					NON THRUST	THRUST
375	122	495	12	M24	194	329
	215	521	16	M27	213	365
450	122	584	12	M24	206	349
	215	610	20	M30	235	407
500	122	641	16	M24	219	377
	215	673	24	M30	245	424
600	122	756	16	M27	232	394
	215	781	24	M33	263	454
750	122	927	20	M30	248	424
	215	940	28	M33	254	434
900	122	1092	24	M33	257	442
	215	1105	32	M36	276	470
1050	122	1250	28	M33	263	457
	215	1270	36	M36	289	497
1200	122	1410	32	M33	270	468
	215	1441	40	M39	323	557

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. NON-THRUST DISMANTLING JOINT TO CONSIST OF:
   - ONE INNER RING
   - ONE OUTER RING
   - ONE RUBBER INSERTION, SPECIAL
   - ONE RUBBER RING
   - THE REQUIRED NUMBER OF STUDS AND NUTS
   - ONE SPIGOT/FLANGE CONNECTOR (OPTIONAL).
3. THRUST TYPE DISMANTLING JOINT TO CONSIST OF:
   - ONE INNER RING
   - ONE OUTER RING
   - ONE THRUST RING
   - ONE RUBBER INSERTION, SPECIAL
   - ONE RUBBER RING
   - THE REQUIRED NUMBER OF LONG STUDS AND NUTS
   - ONE SPIGOT/FLANGE CONNECTOR.
4. IN-LINE LINE RESTRAINED JOINT CAN BE ADJUSTED IN-SITU TO ALLOW FOR MINOR ANGULAR DEFLECTION.
5. ALL STEEL USED IN FABRICATION TO BE IN ACCORDANCE WITH AS/NZS 3678. ALL STAINLESS STEEL TO BE GRADE 316 MINIMUM.
6. SUITABLE CORROSION PROTECTION TO BE APPLIED TO ALL EXPOSED STEEL SURFACES. SEE WBB-WAT-1402-1 OR AS SPECIFIED IN DESIGN DRAWINGS.
7. WELDING OF FLANGES TO BE IN ACCORDANCE WITH AS/NZS 1544.1 CATEGORY SP.
8. STANDARD FLANGES TO BE IN ACCORDANCE WITH AS 4087, FIGURES B7, B8 & B9 TO SUIT PRESSURE APPLICATION.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1405-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL STEEL FABRICATION DISMANTLING AND FLEXIBLE JOINTS

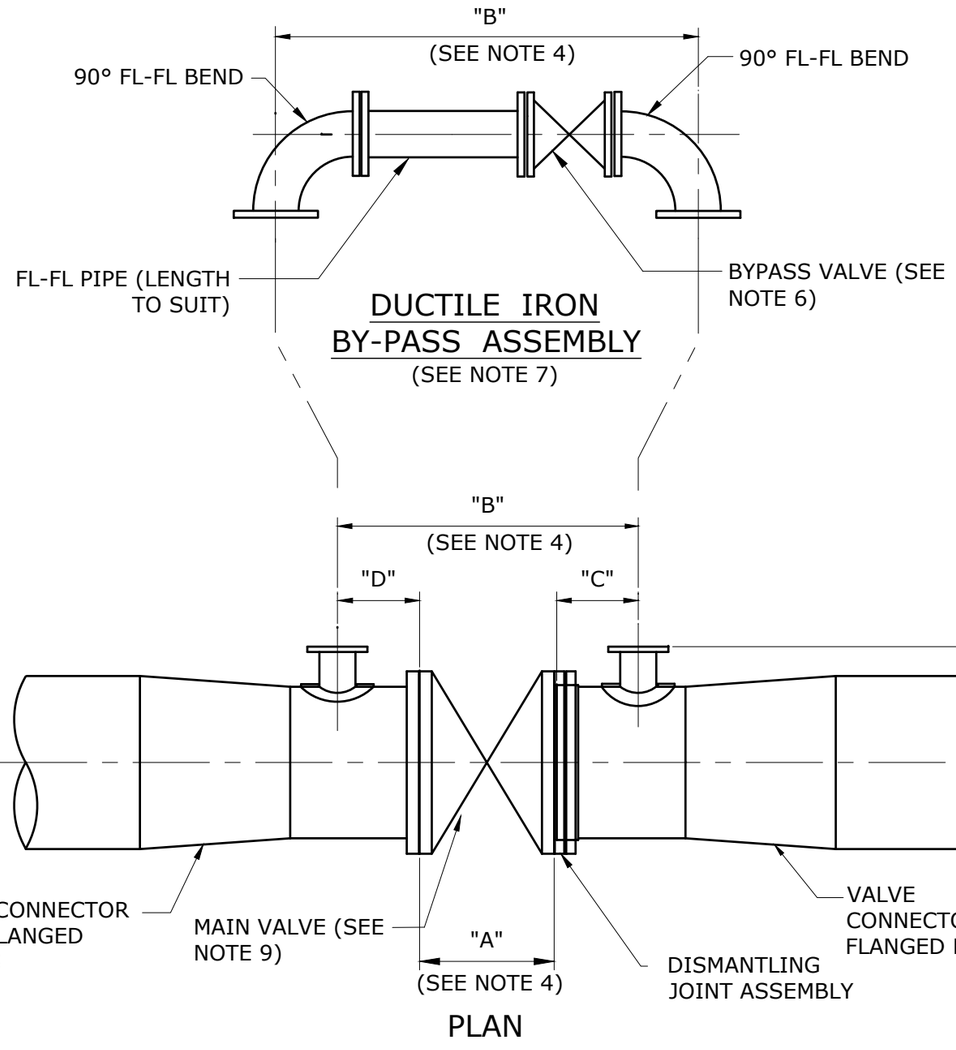
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1405-1

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018



TYPICAL VALVE CONNECTION ASSEMBLY

PROVIDE VALVE ANCHORAGE USING REINFORCED CONCRETE THRUST BLOCKS OR ANCHORAGE IN CHAMBER WALL AS REQUIRED (SEE NOTE 8)

MAIN SIZE (DN)	600-700	750-800	900-1000	1050	1200
MAIN VALVE (DN) MINIMUM SIZE	500	600	750	900	1050
BYPASS VALVE (DN)	150	150	150	150	200
A	510	570	1210 *	725 *	815 *
B	1360	1420	2110 *	1620*	1710*
C	450	450	500	500	500
D	380	380	380	380	380
E (MIN)	460	540	600	680	750

* SEE NOTE 4

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL BY-PASS FITTINGS TO BE IN ACCORDANCE WITH AS/NZS 2280.
3. EACH MAIN VALVE CONNECTION ASSEMBLY TO CONSIST OF:
   - 1 x CONNECTOR PL-SP WITH FL BYPASS
   - 1 x CONNECTOR PL-FL WITH FL BYPASS
   - 1 x MAIN VALVE (GATE OR BUTTERFLY)
   - 1 x DISMANTLING JOINT ASSEMBLY
   - 2 x RUBBER INSERTIONS.

   EACH BYPASS ASSEMBLY TO CONSIST OF:
   - 2 x 90° BENDS FL-FL - STANDARD SIZE
   - 1 x FL-FL PIPE (LENGTH TO SUIT)
   - 5 x RUBBER INSERTIONS
   - 1 x GATE VALVE.
4. DUE TO VARYING DIMENSIONS OF LARGE DIAMETER VALVES (DN750 TO DN1050) DIMENSIONS OF FACE TO FACE DISTANCES (A) AND LENGTH OF BY-PASS (B) ARE INDICATIVE ONLY.
5. DIMENSIONS DO NOT INCLUDE GASKETS.
6. BYPASS VALVE TO BE A GATE VALVE IN ACCORDANCE WITH AS 2638.2 AND TO BE THE SAME NOMINAL DIAMETER AS THE BYPASS PIPE.
7. BYPASS PIPEWORK MAY ALSO BE FABRICATED USING SCL. ORIENTATION TO BE AS SHOWN IN DESIGN DRAWINGS.
8. ADDITIONAL FLANGED FITTINGS, OR RESTRAINTS WELDED TO PIPEWORK, ARE REQUIRED TO BE USED IN PROVIDING VALVE ANCHORAGE.
9. ARRANGEMENT SHOWN HAS A MAXIMUM PRESSURE RATING OF 1.6 MPa (160 m HEAD).
10. MAIN VALVES WITH INBUILT BYPASS ARE COMMERCIALLY AVAILABLE AND ARE PREFERRED. BYPASS VALVE ASSEMBLIES SHALL COMPLY WITH THE CODE.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1406-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL STEEL FABRICATION
VALVE CONNECTION AND BYPASS

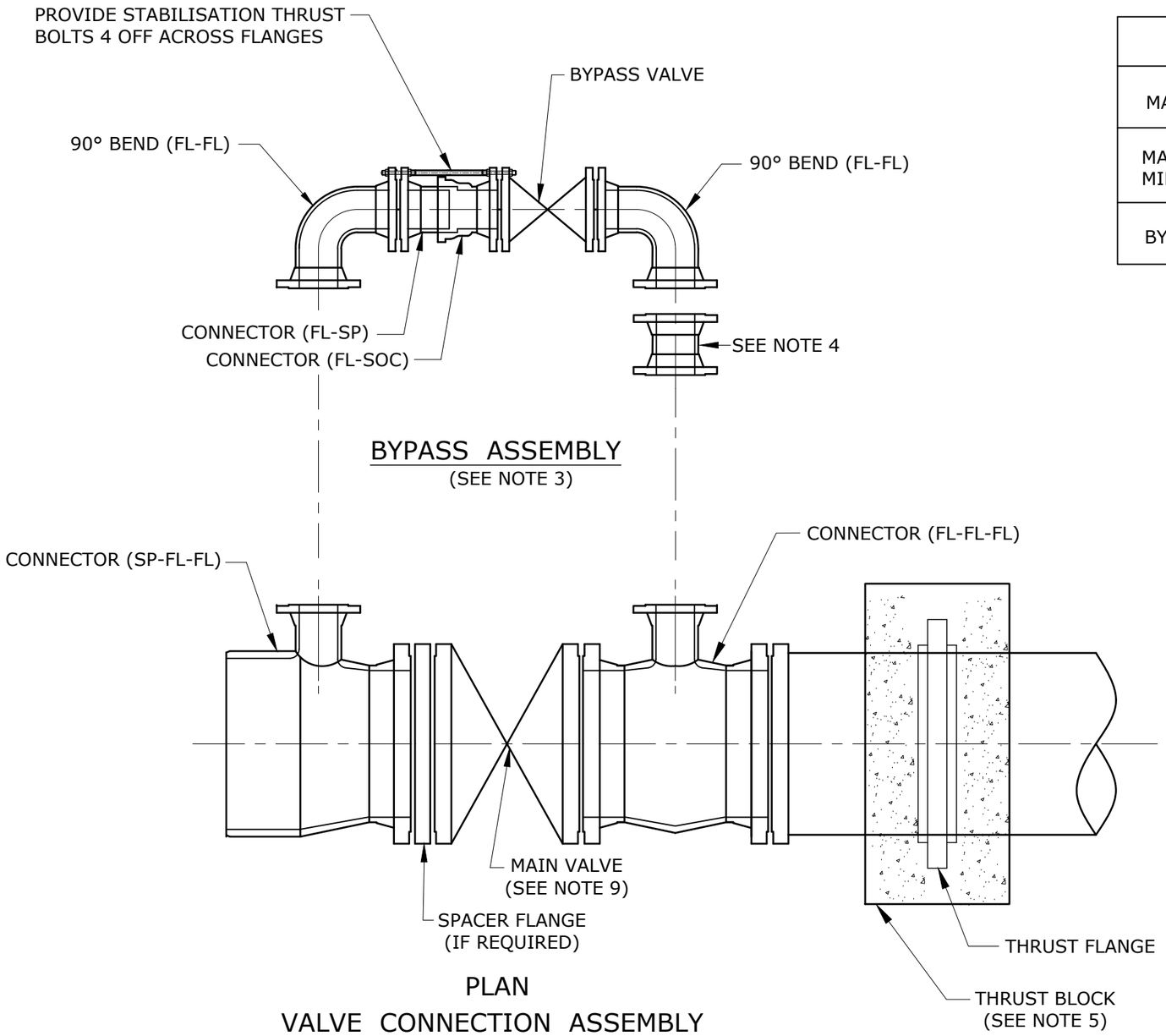
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1406-1

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018



BYPASS ASSEMBLY
(SEE NOTE 3)

PLAN
VALVE CONNECTION ASSEMBLY
(SEE TABLE)

POSSIBLE ARRANGEMENT WHERE VALVE CHAMBER IS NOT REQUIRED

VALVE SIZES						
MAIN SIZE (DN)	450	500	500	600	750	750
MAIN VALVE (DN) MINIMUM SIZE	375	375	450	500	500	600
BYPASS VALVE (DN)	100	100	100	150	150	150

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL BY-PASS FITTINGS TO BE IN ACCORDANCE WITH AS/NZS 2280.
3. EACH VALVE CONNECTION ASSEMBLY TO CONSIST OF:
   1 x CONNECTOR (SP-FL-FL) - STOP VALVE WITH BYPASS
   1 x CONNECTOR (FL-FL-FL) - STOP VALVE WITH BYPASS
   1 x MAIN VALVE (GATE OR BUTTERFLY)
   1 x SPACER FLANGE
   3 x RUBBER INSERTIONS.
   EACH BYPASS ASSEMBLY TO CONSIST OF:
   2 x 90° BENDS FL-FL - STANDARD SIZE
   1 x CONNECTOR FL-SP - BYPASS (LENGTH TO SUIT)
   1 x CONNECTOR FL-SOC - BYPASS
   5 x RUBBER INSERTIONS
   1 x GATE VALVE.
   FOR SIZES OF THE ABOVE FITTINGS, SEE TABLE.
4. EXTENSION FITTINGS (FL-FL) MAY BE REQUIRED TO SUIT VALVE/BYPASS/CHAMBER ARRANGEMENTS.
5. ADDITIONAL FLANGED FITTINGS REQUIRED TO BE USED IN PROVIDING VALVE ANCHORAGE, REFER WBB-WAT-1206-1 FOR GUIDANCE ON THRUST MANAGEMENT.
6. BYPASS VALVE TO BE A GATE VALVE IN ACCORDANCE WITH AS 2638.2 AND TO BE THE SAME NOMINAL DIAMETER AS THE BYPASS PIPE.
7. WATER AGENCY TO DETERMINE BYPASS ORIENTATION.
8. ARRANGEMENT AS SHOWN HAS MAXIMUM PRESSURE RATING OF 1.6 MPa (160 m HEAD).
9. MAIN VALVES WITH INBUILT BYPASS ARE COMMERCIALLY AVAILABLE AND ARE PREFERRED. BYPASS VALVE ASSEMBLIES SHALL COMPLY WITH THE CODE.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1407-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

DI INSTALLATION
VALVE BYPASS ARRANGEMENT
TYPICAL DI PIPE FITTINGS

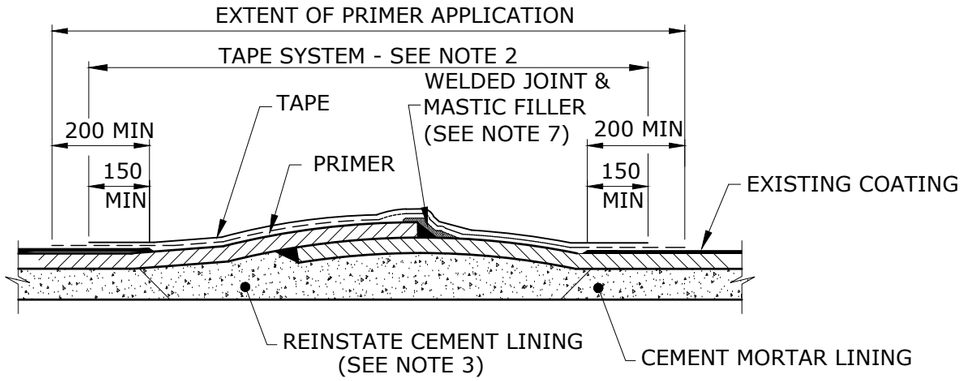
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-WAT-1407-1

VERSION
A

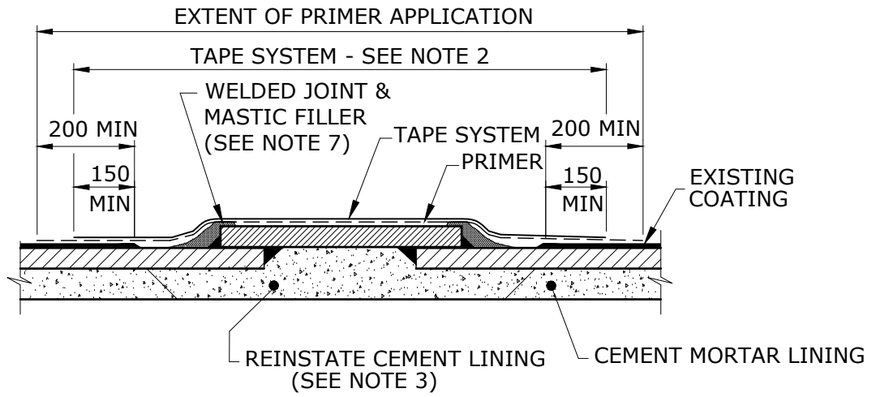
NOT TO SCALE

ORG DATE:
07/08/2018



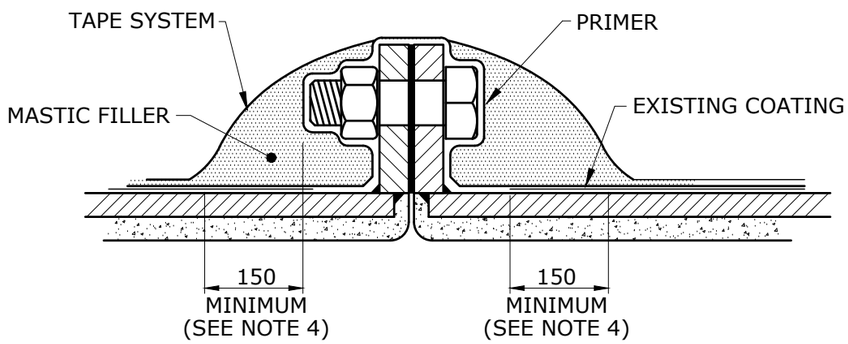
BALL & SOCKET JOINT

(FOR PIPEWORK >DN750)

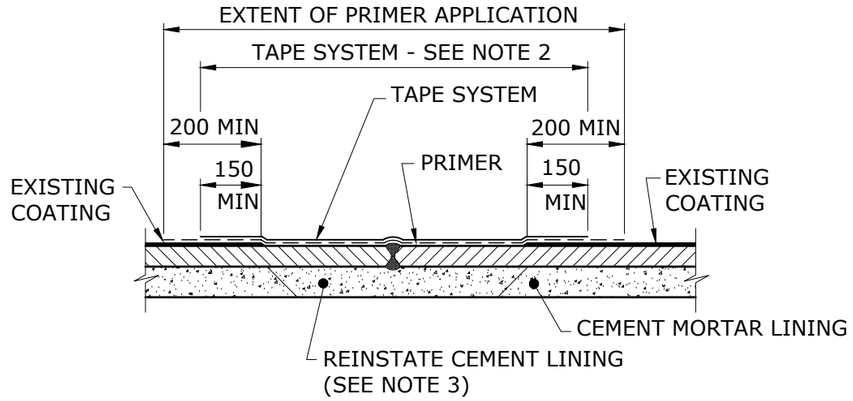


PLAIN END WELDED COLLAR JOINT

(FOR PIPEWORK >DN750)



FLANGED JOINT



PLAIN END BUTT WELDED JOINT

(FOR PIPEWORK >DN750)

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. EXTERNAL CORROSION PROTECTION AT JOINTS - TAPE SYSTEMS
   (i) SURFACE PREPARATION:
   - REMOVE ALL WELD SPLATTER
   - GRIND SMOOTH ANY RAISED AREAS
   - SMOOTH ANY ROUGH CUT EDGES OF EXISTING COATING
   - WIRE BRUSH ALL SURFACES TO BE WRAPPED REMOVING LOOSE DIRT AND RUST
   - ENSURE NO FREE MOISTURE IS PRESENT.

   (ii) PRIMER:
   - APPLY A THIN EVEN COAT OF PRIMER IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTION.
     NOTE: ONLY USE THE PRIMER SUPPLIED BY THE TAPE MANUFACTURER.

   (iii) MASTIC FILLER:
   - WHERE NECESSARY CONTOUR ANY IRREGULAR PROFILES WITH FILLER TO ENSURE TAPE WILL NOT BRIDGE IN SERVICE.

   NOTE: ONLY USE FILLER MATERIAL SUPPLIED BY THE TAPE MANUFACTURER.

   (iv) TAPE APPLICATION:
   - SPIRALLY APPLY TAPE ENSURING A 55% OVERLAP BETWEEN SUCCESSIVE LAYERS IS ACHIEVED
   - ENSURE TAPE IS FREE OF WRINKLES AND VOIDS.
3. REINSTATE/COMPLETE CEMENT LINING USING AN APPROVED PRIMER AND A MORTAR MIX CONSISTING OF 2:1 (CLEAN SHARP SAND/CEMENT)
4. PRIMER AND MASTIC TO OVERLAP EXISTING COATING BY 150 MIN.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1408-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

TYPICAL JOINT CORROSION PROTECTION
CEMENT MORTAR LINED STEEL PIPE
> DN750 TO DN1200

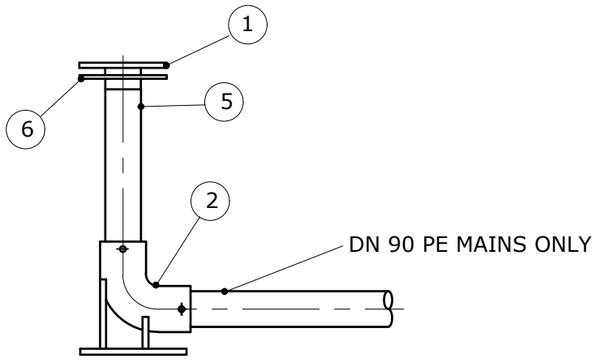
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1408-1

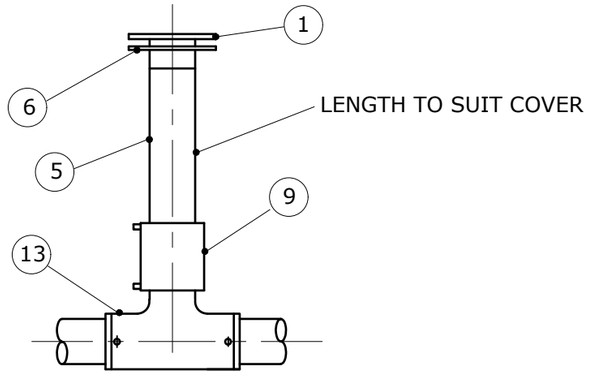
VERSION A

NOT TO SCALE

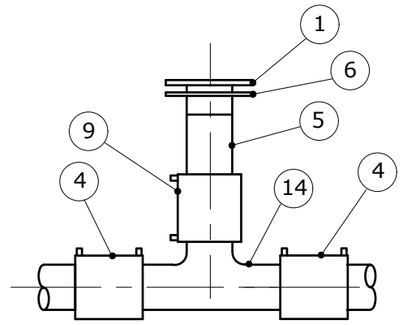
ORG DATE: 07/08/2018



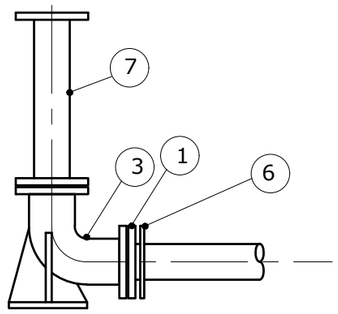
ELECTROFUSED OR BUTT WELDED



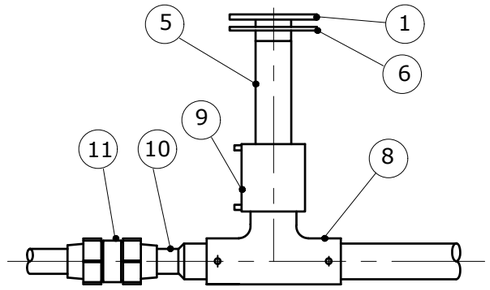
ELECTROFUSION SOCKETED TEE
(SUITS 600 + COVER)



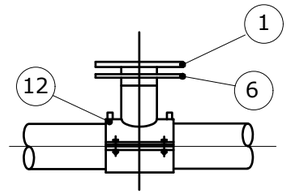
ELECTROFUSED SPIGOT TEE



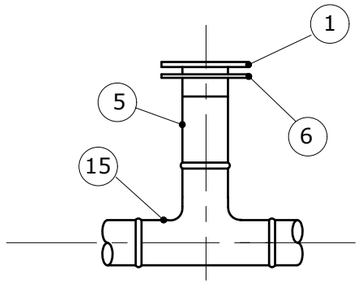
?(ELECTROFUSED WITH SUB MAIN BRANCH)?



ELECTROFUSED WITH STRAIGHT THROUGH SUBMAIN CONNECTION



ELECTROFUSION SADDLE TEE
(SUITS 500 COVER)



BUTT WELDED SPIGOT TEE

LEGEND

1. FULL FACE FLANGE ADAPTOR DRILL TO DN100
2. 90 EF DUCK FOOT BEND
3. DN100 DI DUCK FOOT BEND
4. EF COUPLER
5. EXTENDED FULL FACE FLANGE ADAPTOR
6. BACKING RING DRILL TO DN100
7. DN100 DI HYDRANT RISER
8. 90 EF TEE
9. 90 OR 125 EF COUPLER
10. REDUCER, ELONGATED SPIGOT
11. 63 COMPRESSION OR EF COUPLING
12. EF SADDLE TEE
13. EF TEE
14. TEE, ELONGATED SPIGOT
15. TEE, BUTT WELDED

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. REFER TO WBBROC-SP PRODUCTS AND MATERIALS LIST OR PE CODE SECTION 2 FOR DETAILS OF SIZE, COMPOUND, PRESSURE CLASS AND COLOUR.
3. FOR SURFACE FITTING INSTALLATIONS REFER TO WBBROC STANDARD DRAWINGS.
4. FOR JOINTING DETAILS REFER TO PE CODE WSA-01 SECTION 2.11.3.
5. ALL BACKING PLATES, NUTS, BOLTS AND WASHERS TO BE MINIMUM GRADE 316 STAINLESS STEEL.
6. GASKETS COMPLYING WITH AS 4087 TO BE USED FOR ALL FLANGED CONNECTIONS.
7. DETAILS SHOW 125 OD MAIN AT PE100 = ID OF 101mm.
8. HYDRANT RISER SHALL BE DN125 PE. DN90 RISER MAY BE USED WITH PLASSON SLOTTED ADAPTOR OR APPROVED EQUAL.

REV. No.	DATE	DESCRIPTION	AUTH.
A	07/08/2018	BASED ON SEQ-WAT-1409-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

WATER SUPPLY STANDARD DRAWING

HYDRANT INSTALLATION FITTINGS
TYPICAL PE ASSEMBLIES NOMENCLATURE

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-WAT-1409-1

VERSION A

NOT TO SCALE

ORG DATE: 07/08/2018