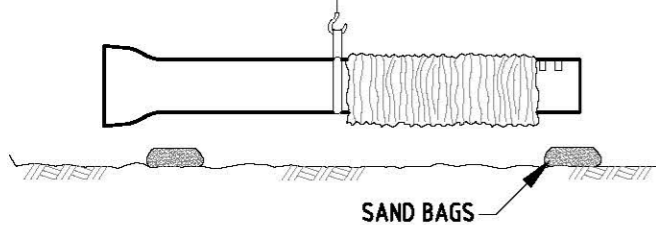


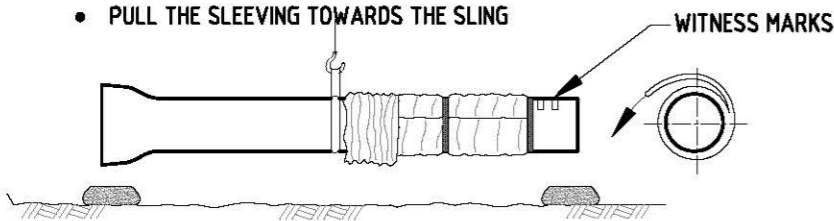
GUIDELINES

- FOR INSTALLATION OF DICL PIPE & FITTINGS THE WORK SHALL BE UNDERTAKEN UNDER THE DIRECTION OF A PERSON WHO HAS COMPLETED THE VIADUX DICL PIPELINE COURSE & HAS PROVIDED THE SA WATER REPRESENTATIVE WITH EVIDENCE OF THE COURSE COMPLETION.
- PRIOR TO COMMENCEMENT, REQUIRED EQUIPMENT TO UNDERTAKE THE WORK SHALL BE ON SITE & INSPECTED.
- POLYETHYLENE SLEEVING SHALL BE INSTALLED:
 - IN ACCORDANCE WITH THE REQUIREMENT SPECIFIED IN AS3681 'GUIDELINES FOR THE APPLICATION OF POLYETHYLENE SLEEVING TO DUCTILE IRON PIPELINE AND FITTINGS.
 - IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
- IN CRAMPED SITUATIONS:
 - STRAP & BUCKLES SHALL BE USED
- IN WET CONDITIONS:
 - STRAPS & BUCKLES ARE PREFERABLE TO ADHESIVE TAPE.
- THE PIPE & FITTINGS SHALL BE CLEANED PRIOR TO JOINTING.

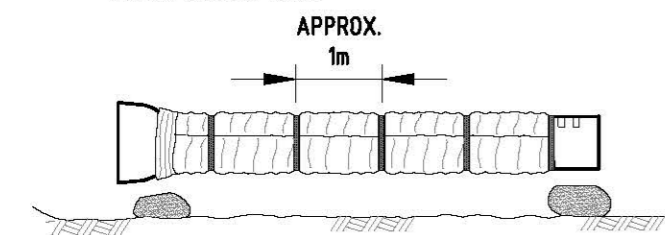


SLEEVING OF DICL PIPE

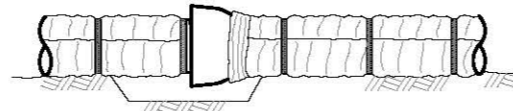
- PULL THE SLEEVING ONTO THE PIPE:
 - CUT SLEEVING LONG ENOUGH TO COVER THE PIPE AND OVERLAP THE SOCKET END APPROX. 300 mm.
 - CENTRALISE THE SLING UNTIL THE PIPE IS BALANCED
 - PULL THE SLEEVING TOWARDS THE SLING



- FIT THE SLEEVING ONTO THE PIPE:
 - FOLD THE SLEEVING AT TOP OF THE PIPE, POOLING TIGHTLY,
 - SLEEVING TO BE CLOSE TO THE WITNESS MARKS BUT ENSURE MARKS ARE EXPOSED.



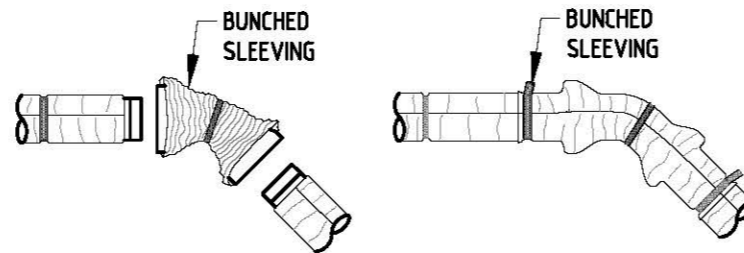
- CONTINUE TO SECURE THE SLEEVING
 - LOWER THE PIPE ONTO SANDBAGS AND REMOVE SLING.
 - PULL THE SLEEVING ALONG THE PIPE
 - TAPE THE SLEEVING AT REGULAR 1m INTERVALS.
 - EXTRA SLEEVING TO BE BUNCHED AT SOCKET END.



- PLACEMENT OF PIPE & COMPLETION OF SLEEVING:
 - ENSURE A SUITABLE DEPRESSION HAS BEEN MADE IN THE BEDDING WHERE THE JOINT WILL BE LOCATED,
 - LIFT THE PIPE FROM THE CENTRE WITH A SLING,
 - KEEP THE FOLD OF THE SLEEVING AT THE TOP OF THE PIPE
 - OVERLAP THE SLEEVING OVER THE JOINT AND SECURE WITH THE STRAP AND BUCKLE

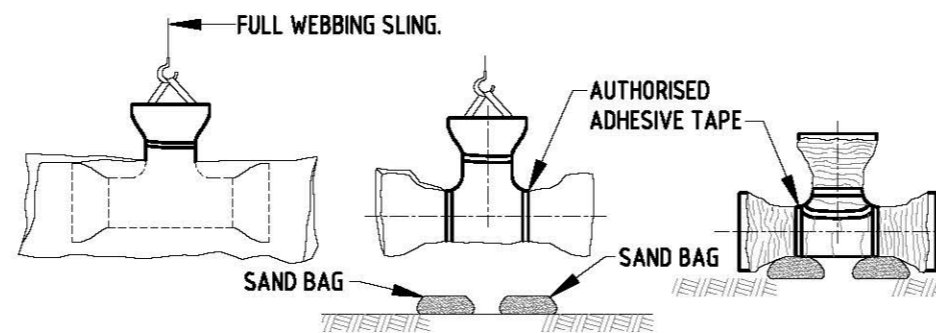
SLEEVING OF DICL FITTINGS

1. BENDS



- PRIOR TO JOINTING :
 - CUT SLEEVING LONG ENOUGH TO COVER THE BEND AND OVERLAP THE ENDS APPROX. 300 mm.
 - PLACE SLEEVING OVER THE BEND AND SECURE WITH TAPE AROUND THE CENTRE OF THE BEND.
 - BUNCH SLEEVING BEHIND THE SOCKETS.
- AFTER JOINTING OF BEND TO PIPES
 - PLACE THE BUNCHED SLEEVING OVER OVER SOCKETS.
 - ENSURE SLEEVING FOLLOWS THE SOCKET SHAPE,
 - SEAL THE OVERLAPS TO THE SLEEVED PIPES WITH STRAPS AND BUCKLES.

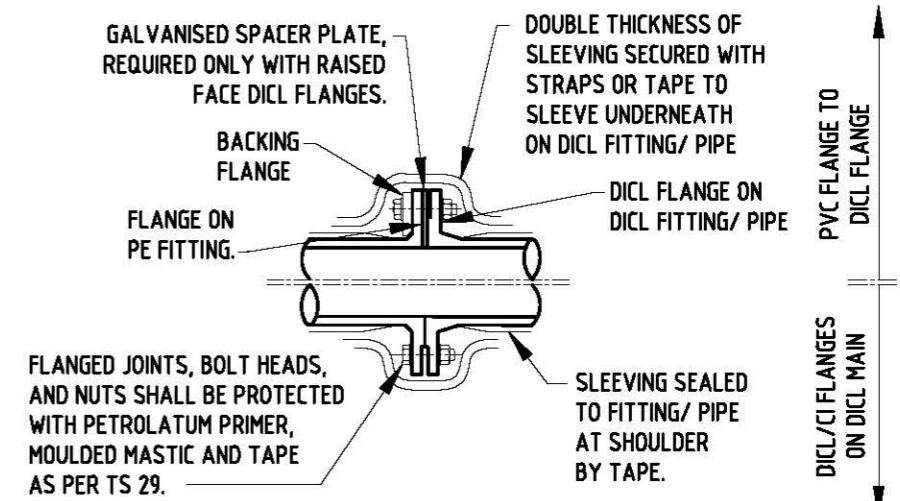
2. TEES



- TWO PIECES OF SLEEVING ARE REQUIRED.
- ALLOW 300 mm OVERLAP.
- CUT THE BODY PIECE $\frac{2}{3}$ OF THE WAY ALONG THE SIDE OF THE SLEEVE.
- LIFT THE TEE WITH THE SLING AT THE TOP OF THE BRANCH.
- SLIDE THE BODY PIECE ON THE FACE. TAPE THE SLEEVE AND SEAL.
- LOWER ONTO SAND BAG & REMOVE THE SLING.
- SLIDE THE BRANCH PIECE OF SLEEVING INTO THE TEE. TAPE THE SLEEVING AND SEAL.

3. FLANGES

(REQUIRE SLEEVING PLUS PETROLATUM PROTECTION)



- ALL FLANGES ON FITTINGS WHICH ARE TO BE BURIED SHALL BE PROTECTED BY PETROLATUM TAPE SYSTEM IN ACCORDANCE WITH TS 29 AND SHALL BE DOUBLE OVER WRAPPED WITH POLYETHYLENE SLEEVING.

4. TAPPING SADDLES

- REMOVE A 150 mm SECTION OF SLEEVING AT THE TAPPING POSITION.
- ASSEMBLE THE TAPPING SADDLE ONTO THE PIPE.
- USING A SEPARATE PIECE OF SLEEVING WRAP IT CIRCUMFERENTIALLY AROUND THE EXPOSED PIPE SECTION AND TAPPING SADDLE. TAPE THE ENDS OF THE SLEEVING.
- INSTALL THE NIPPLE TO THE TAPPING SADDLE AS REQUIRED.
- REPAIR ANY DAMAGED SLEEVING IN THE FOLLOWING MANNER:
 - FOR HOLES SMALLER THAN TAPE WIDTH, USE ADHESIVE TAPE.
 - FOR LARGER HOLES EITHER OVERLAP WITH POLYETHYLENE SHEET WITH STRAP AND BUCKLE OR ADHESIVE TAPE WHICH SHALL BE AROUND FULL CIRCUMFERENCE OF PIPE.

NOTES:

- REFER 4005-30002-01 & 4005-30002-02 FOR GENERAL NOTES.
- PVC MAINS:
 - ALL FITTINGS WHICH ARE TO BE BURIED SHALL BE PROTECTED BY:
 - POLYETHYLENE SLEEVING PROVIDED IF FITTING IS ASSOCIATED WITH AN ANCHOR BLOCK.
 - TAPE EXTRA SLEEVING ON FITTINGS WHERE ANCHOR BLOCK WILL CONTACT FITTING.
 - OR
 - PETROLATUM TAPE SYSTEM IN ACCORDANCE WITH TS 18.
 - PE FITTINGS - ONLY FLANGES NEED CORROSION PROTECTION.
- WHERE THE RESTRAINED JOINTING SYSTEM IS USED THE SPECIALLY MARKED "RESTRAINED JOINT SYSTEM" MARKING TAPE SHALL BE USED.

REVISION PANEL

REV	DATE	DRN	DETAILS	APR	CURRENT REV
1	31/03/16	MS	2016 STANDARDS REVIEW	TG	

DESIGN PANEL

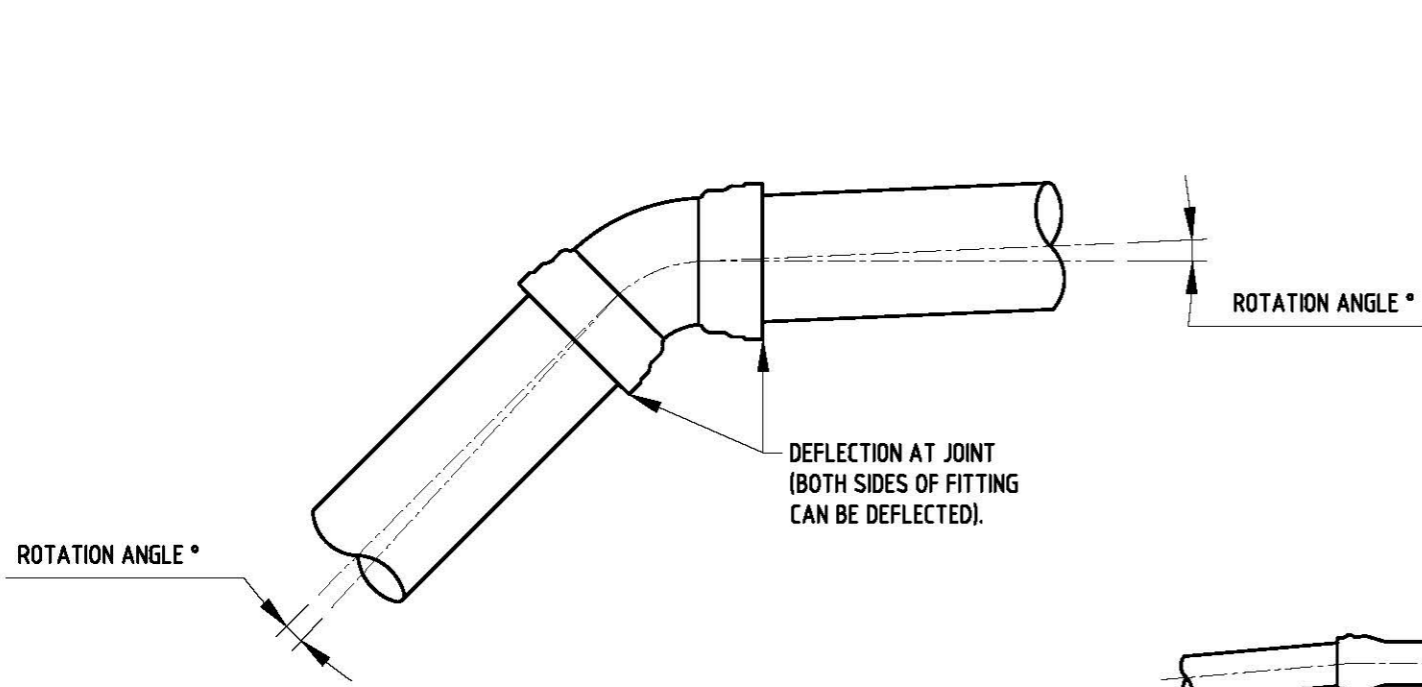
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	RJP		
DRAWN:	16/11/15	SIGNATURE:	
	MS		
REVIEWED:	21/03/16		
	TG		



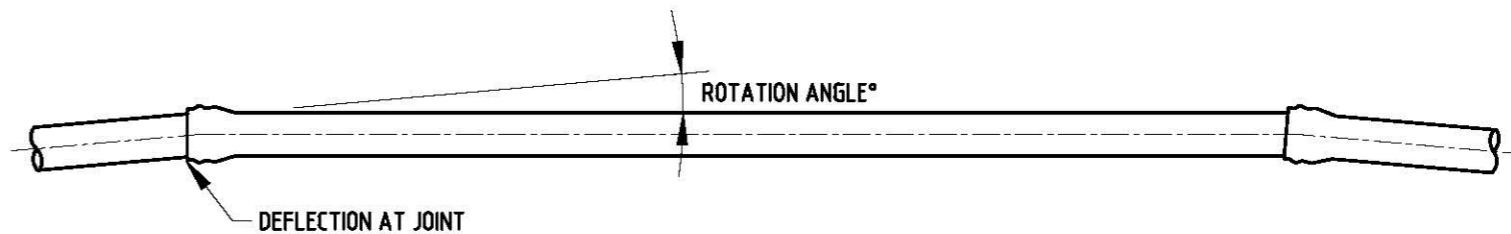
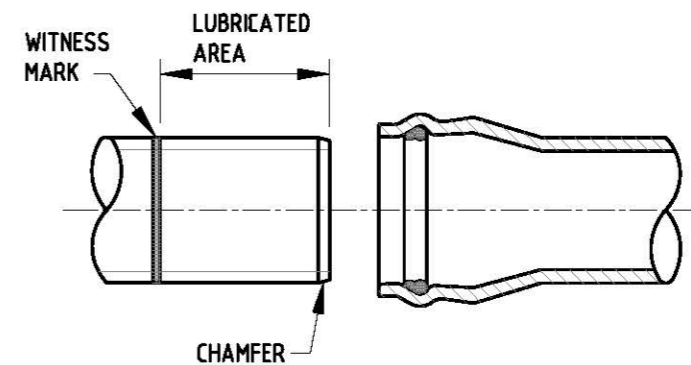
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SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
SLEEVING OF
DICL PIPE FITTINGS

A3	1
SHT SIZE	REVISION
TOTAL SHEETS:	
SUPERSEDES: C1, C2	
DRAWING NUMBER	
4005-30005-01	
PREFIX	NUMBER SHEET



TYPICAL DEFLECTION AT PIPE TO FITTING JOINTS



TYPICAL DEFLECTION AT PIPE TO PIPE JOINTS

NOTE: PIPE IS TO BE DEFLECTED ONLY AFTER JOINT HAS BEEN MADE.

NOTES:

1. REFER 4005-30002-01 & 4005-30002-02 FOR GENERAL NOTES.
2. PERMISSIBLE MAXIMUM ALLOWABLE DEFLECTIONS FOR BOTH THE PIPE SOCKET & THE FITTING SOCKET VARY DEPENDENT UPON PIPE MATERIAL, PIPE SIZE & PIPE MANUFACTURER.
THE CONTRACTOR SHALL CONFIRM THE MAXIMUM ALLOWABLE DEFLECTION WITH THE PIPE MANUFACTURER.
3. **WHERE A DESIGN IS BASED UPON A REQUIREMENT FOR DEFLECTED PIPES, THE DESIGNER SHALL SPECIFY THE REQUIRED DEFLECTION ON THE DESIGN DRAWINGS.**
4. PIPES SHALL BE HANDLED AND INSTALLED IN ACCORDANCE WITH SA WATER'S CONSTRUCTION DOCUMENTATION & THE PIPE MANUFACTURER'S INSTRUCTIONS.
5. WHERE REQUIRED, PIPES CAN BE CUT TO LENGTH ON SITE USING EITHER A HAND SAW OR POWERED CUTTING DISC. REFER MANUFACTURERS INSTRUCTIONS FOR REQUIREMENTS FOR CHAMFERING THE CUT PIPE CHAMFER.
6. REFER MANUFACTURERS INSTRUCTIONS FOR DETAILS ON APPLICATION OF PIPE LUBRICANT, INSERTION OF CUT SPIGOT THRUSTING OF PIPE TO WITNESS MARK.
7. **PRIOR TO CUTTING & USE OF THE SOCKET END OF A DICL PIPE, THE PIPE OD SHALL BE CHECKED. REFER 4005-30005-05.**
8. WHERE INSERTING PIPE INTO DUCTILE IRON FITTINGS ENSURE THE APPROPRIATE WITNESS MARK IS USED TO SUIT THESE PARTICULAR SOCKETS.
9. PIPES SHALL NOT BE CUT WITHIN 1.0 m OF THE SOCKET END OF THE PIPE. **THUS, THE MINIMUM PERMISSIBLE LENGTH OF PIPE SHALL BE 1.0 m.**

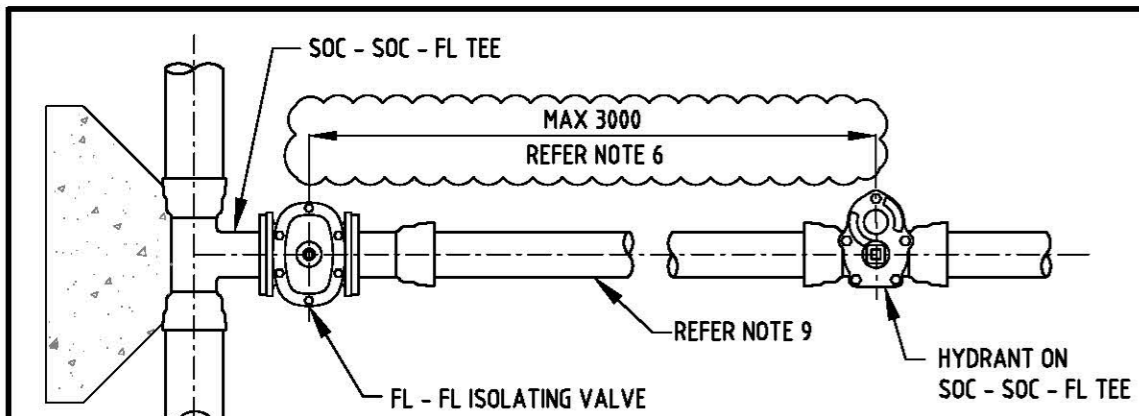
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REV	DATE	DRN	DETAILS	APR	CURRENT REV AUTHORIZED:
1	31/03/16	MS	2016 STANDARDS REVIEW	TG	

DESIGN PANEL			
DESIGNED:	28/09/15	AUTHORISED:	31/03/16
	RJP		T.GALEK
DRAWN:	16/11/15	SIGNATURE:	
	MS		<i>T. Galek</i>
REVIEWED:	21/03/16		
	TG		

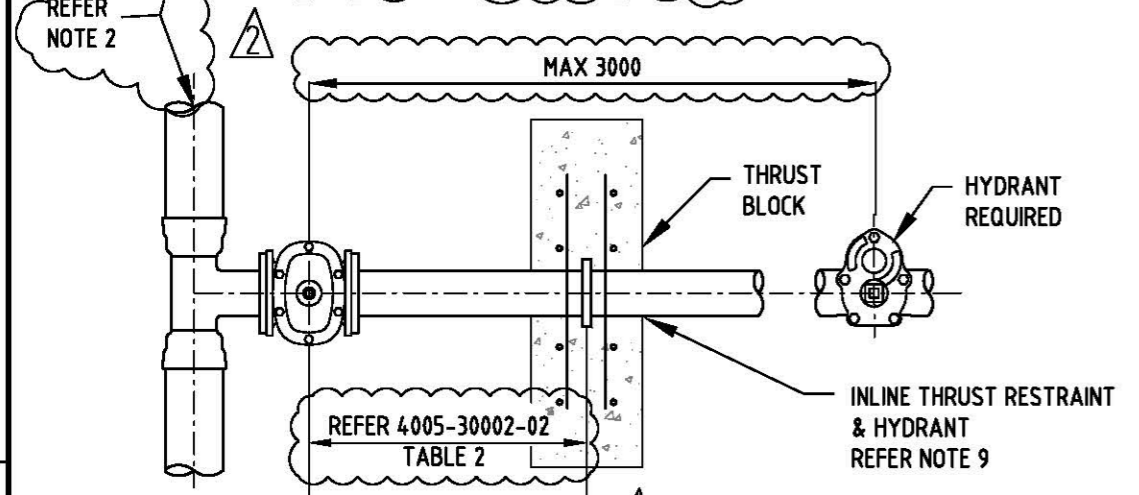
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SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
PIPE JOINTING & DEFLECTION

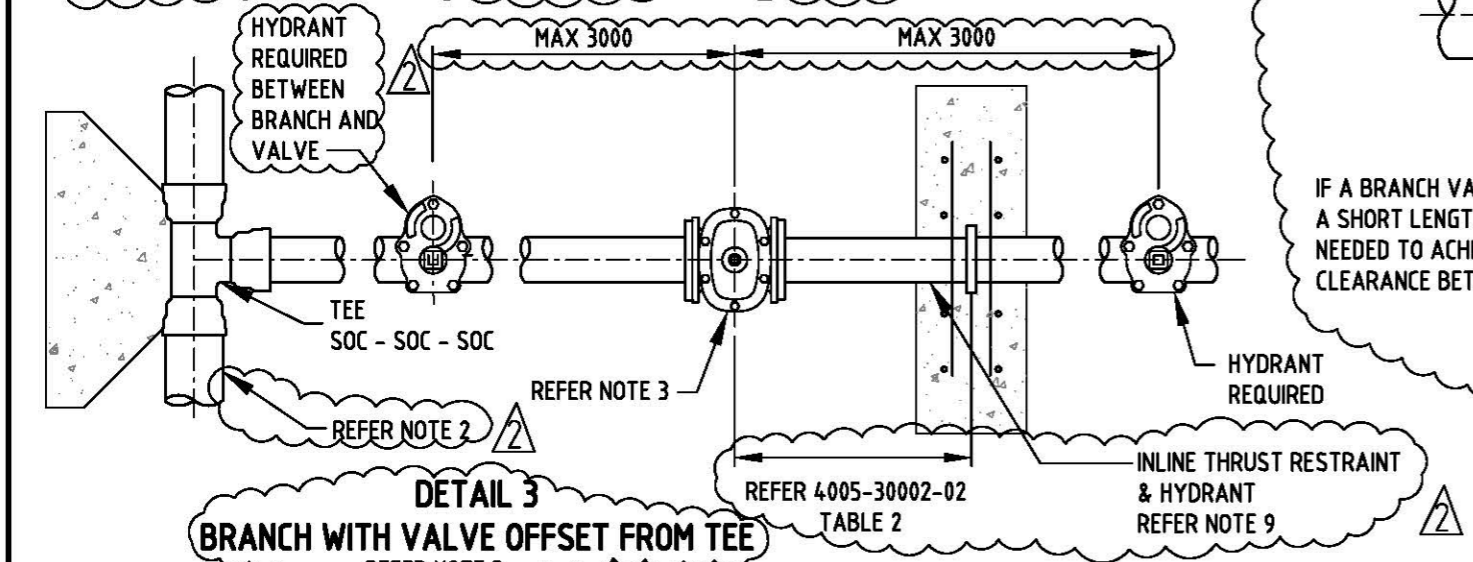
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TOTAL SHEETS:	
SUPERSEDES: C3, C4	
DRAWING NUMBER	
4005-30005-02	
PREFIX	NUMBER SHEET



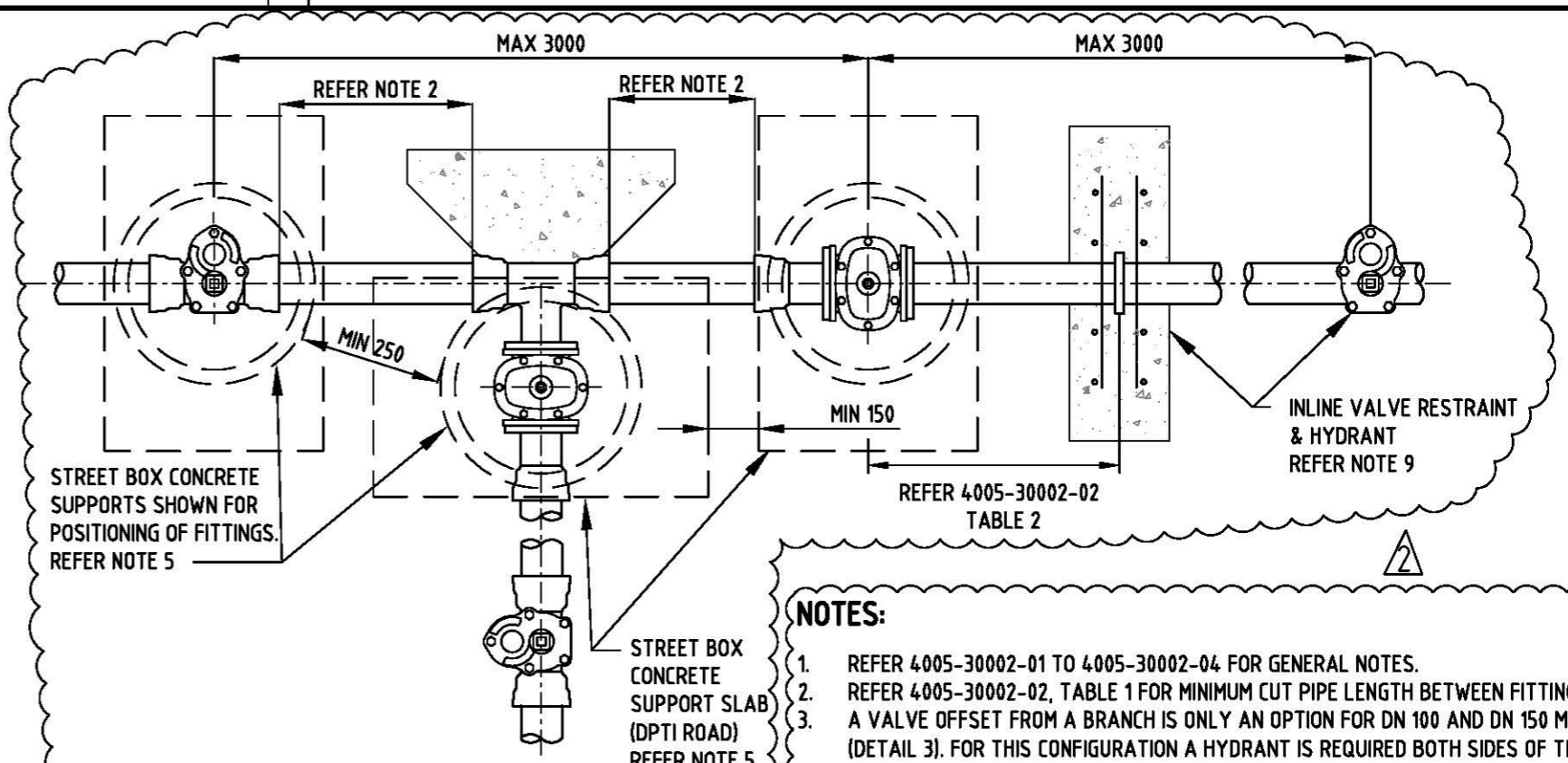
**DETAIL 1
BRANCH - VALVE ADJACENT TEE**



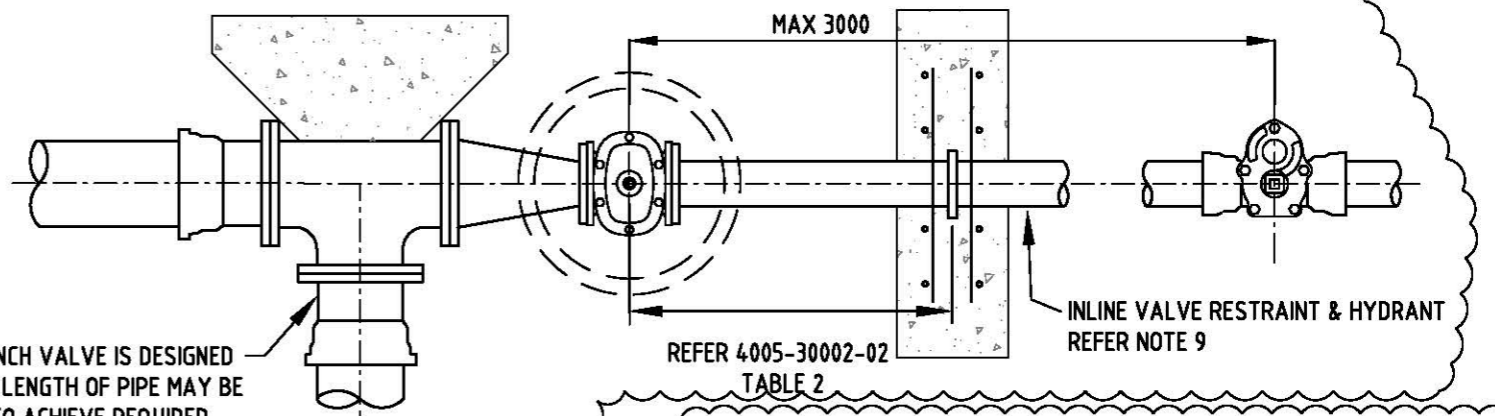
**DETAIL 2
BRANCH - VALVE ADJACENT TEE WITH IN LINE RESTRAINT**



**DETAIL 3
BRANCH WITH VALVE OFFSET FROM TEE**



**DETAIL 4
MULTIPLE BRANCH ARRANGEMENT**




**DETAIL 5
BRANCH WITH REDUCER**

- NOTES:**
1. REFER 4005-30002-01 TO 4005-30002-04 FOR GENERAL NOTES.
 2. REFER 4005-30002-02, TABLE 1 FOR MINIMUM CUT PIPE LENGTH BETWEEN FITTINGS.
 3. A VALVE OFFSET FROM A BRANCH IS ONLY AN OPTION FOR DN 100 AND DN 150 MAINS (DETAIL 3). FOR THIS CONFIGURATION A HYDRANT IS REQUIRED BOTH SIDES OF THE VALVE.
 4. ALL OTHER DIAMETERS (> DN 150) REQUIRE THE VALVE ADJACENT THE TEE.
 5. WHERE MULTIPLE VALVES AND HYDRANTS ARE REQUIRED THE DESIGNER SHOULD CONSIDER COVER POSITION CLEARANCES AS PART OF THE OVERALL DESIGN.

6. MAX. 3000 LIMITATION BETWEEN VALVE AND HYDRANT REQUIRED FOR DISINFECTION PURPOSES.
7. REFER SECTION 3 FOR THRUST/ ANCHOR BLOCKS SIZE DETAILS.
8. FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH 4005-30005-10 & 4005-30005-11.
9. WHERE INLINE THRUST RESTRAINT IS REQUIRED REFER 4005-30005-18 FOR OPTIONS.
10. REFER 4005-30007-01 FOR STREET BOX COVER INSTALLATION.
11. FLANGED FITTINGS MAY BE USED BETWEEN AN ISOLATION VALVE AND A FLANGED HYDRANT TEE IN LIEU OF THE ADDITIONAL THRUST BLOCK.
12. ALL DIMENSIONS IN MILLIMETRES.

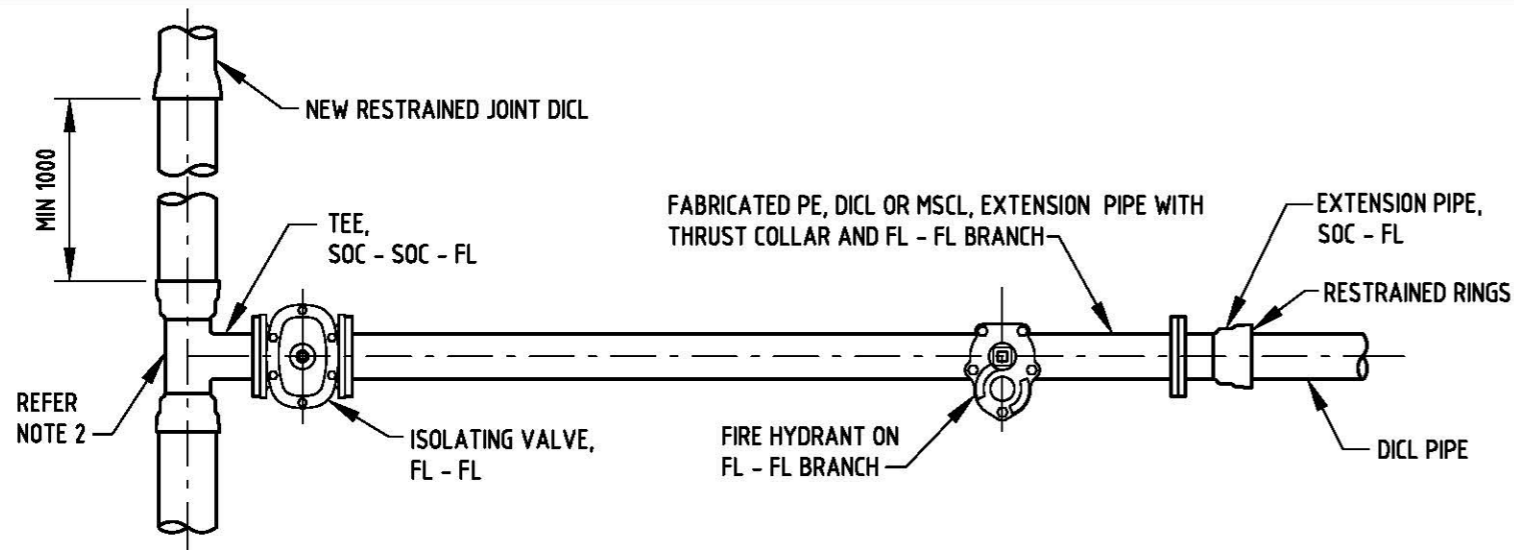
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2	09/05/18	CD	ADDITIONAL BRANCHES SHOWN; NOTES CHANGED	TG
1	31/03/16	MS	2016 STANDARDS REVIEW	TG

DESIGN PANEL			
DESIGNED:	28/09/15	AUTHORISED:	31/03/16
RJP		T.GALEK	
DRAWN:	16/11/16	SIGNATURE:	
MS			
REVIEWED:	31/03/16	ORIGINAL SIGNED	
TG			

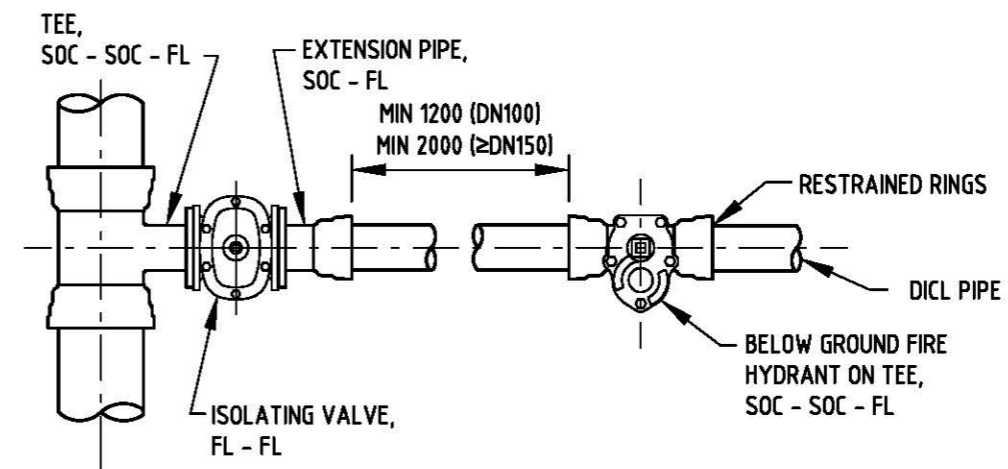

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SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
BRANCH AND VALVE CONFIGURATIONS
FOR NEW UNRESTRAINED WATER MAINS

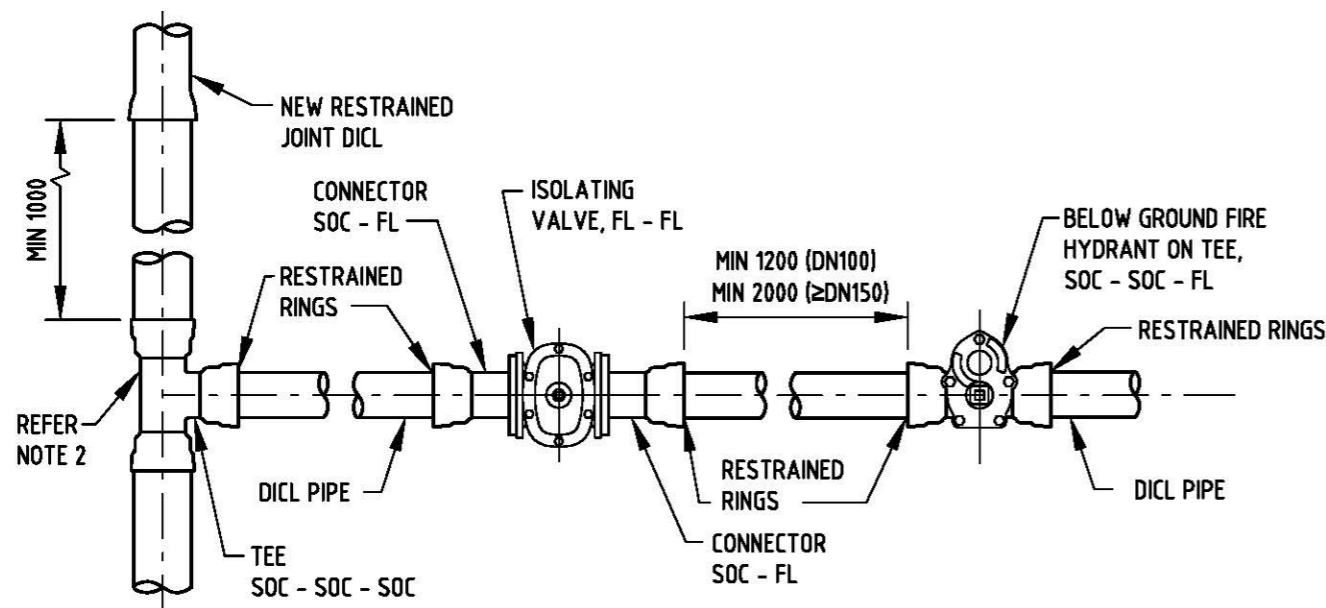
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SHT SIZE	REVISION
TOTAL SHEETS: 19	
SUPERSEDES: 91-0059-01 (C5)	
DRAWING NUMBER	
4005-30005-03	
PREFIX	NUMBER SHEET



**METHOD 1
STOP VALVE ADJACENT TEE
DN100 & DN150 MAINS BRANCH ARRANGEMENT**



**METHOD 2:
RESTRAINED JOINT DICL BRANCHES OFF NEW
DN200 & LARGER MAINS BRANCH ARRANGEMENT**




**METHOD 3:
STOP VALVE SEPARATE FROM TEE**

NOTES:

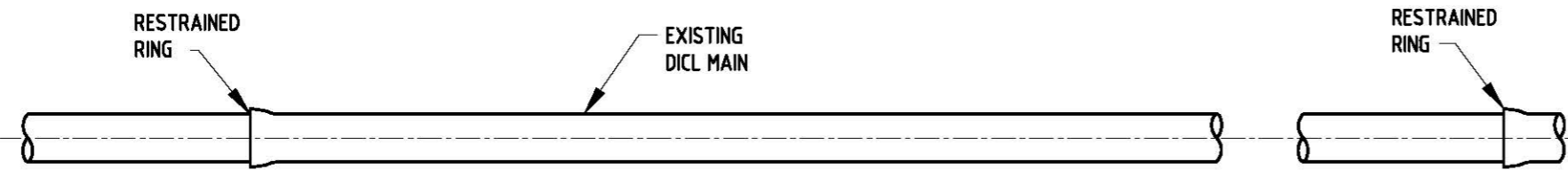
1. REFER 4005-30002-01 & 4005-30002-02 FOR GENERAL NOTES.
2. TEES SHALL NOT BE INSTALLED WITHIN MIN 1000 mm OF THE SOCKET END OF A DN100 PIPE.
3. WORK SHALL ONLY BE UNDERTAKEN UNDER THE DIRECTION OF A PERSON WHO HAS COMPLETED AN APPROVED DUCTILE IRON PIPE INSTALLATION TRAINING COURSE.
4. CUT LENGTHS OF DICL PIPE SHALL BE FROM A SECTION OF PIPE WITHIN 3.5 m OF THE SPIGOT.
5. REFER ~~4005-30003-08~~ **FOR RESTRAINED JOINT REQUIREMENTS IN LIEU OF THRUST/ ANCHOR BLOCKS.**
6. WHERE THE RESTRAINED JOINTING SYSTEM IS USED MARKING TAPE SHOWING 'RESTRAINED JOINT SYSTEM' SHALL BE USED.
7. FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH 4005-30005-10 & 4005-30005-11.
8. ALL DIMENSIONS IN MILLIMETRES.

REVISION PANEL				DESIGN PANEL		SA WATER STANDARD DRAWINGS		A3		2	
REV	DATE	DRN	DETAILS	APR	CURRENT REV 16/12/16	DESIGNED: 28/09/15	AUTHORISED: 31/03/16	SHT SIZE		REVISION	
					AUTHORISED: T. GALEK	RJP	T. GALEK	TOTAL SHEETS: 1		SUPERSEDES: 91-0059-05 (C6)	
					SIGNATURE: <i>T. Galek</i>	DRAWN: 16/11/15	SIGNATURE:	DRAWING NUMBER		4005-30005-04	
2	05/12/16	RP	DRAWING REFERENCE CHANGED			MS	ORIGINAL SIGNED	PREFIX		NUMBER SHEET	
1	31/03/16	MS	2016 STANDARDS REVIEW	TG		TG					

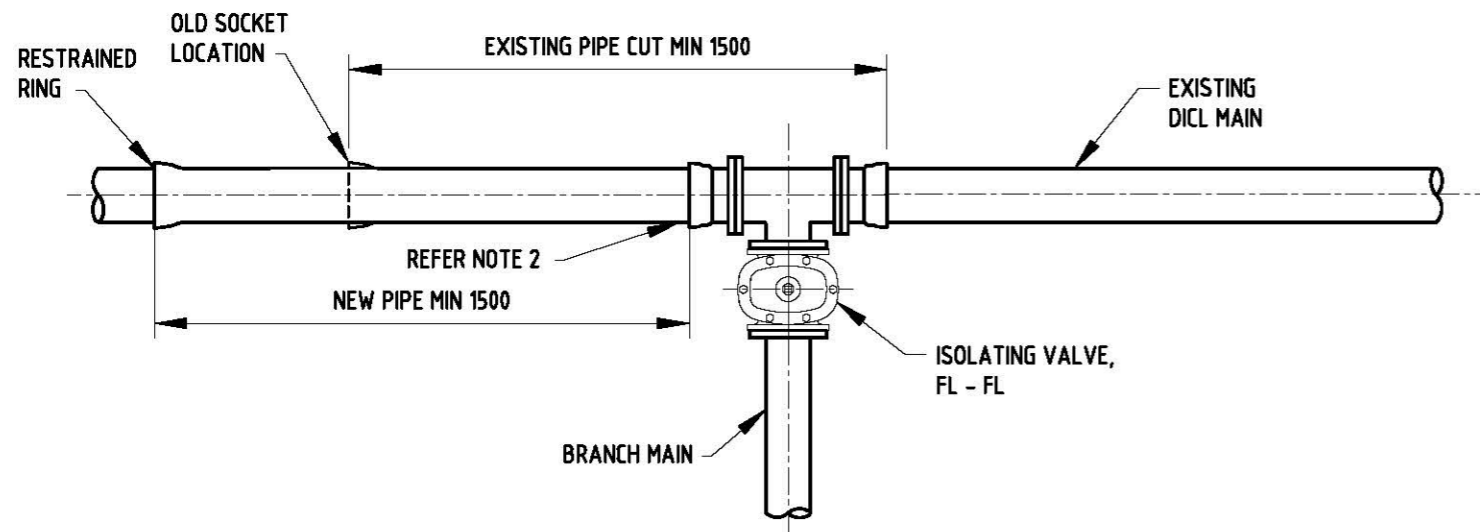


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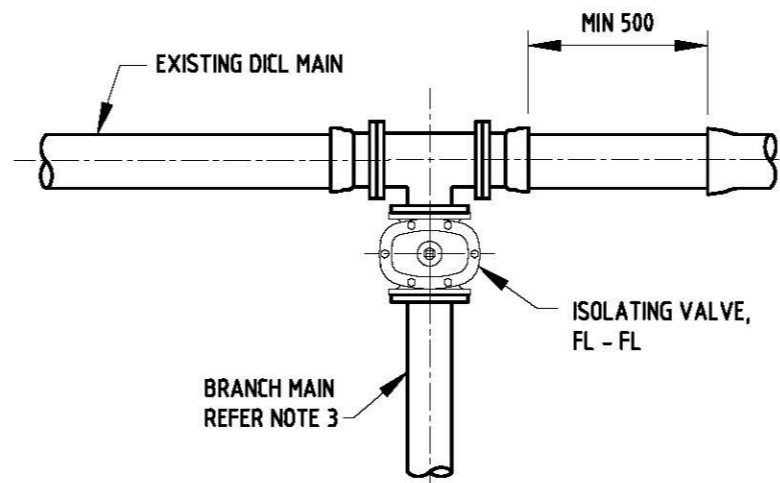
SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
NEW WATER MAIN WITH RESTRAINED JOINT DICL
BRANCH INSTALLATION ARRANGEMENTS



EXISTING PIPES PRIOR TO NEW BRANCH MAIN



NEW BRANCH CUT INTO EXISTING MAIN AT SOCKET END OF PIPE



NEW BRANCH CUT INTO EXISTING MAIN AT SPIGOT END OF PIPE

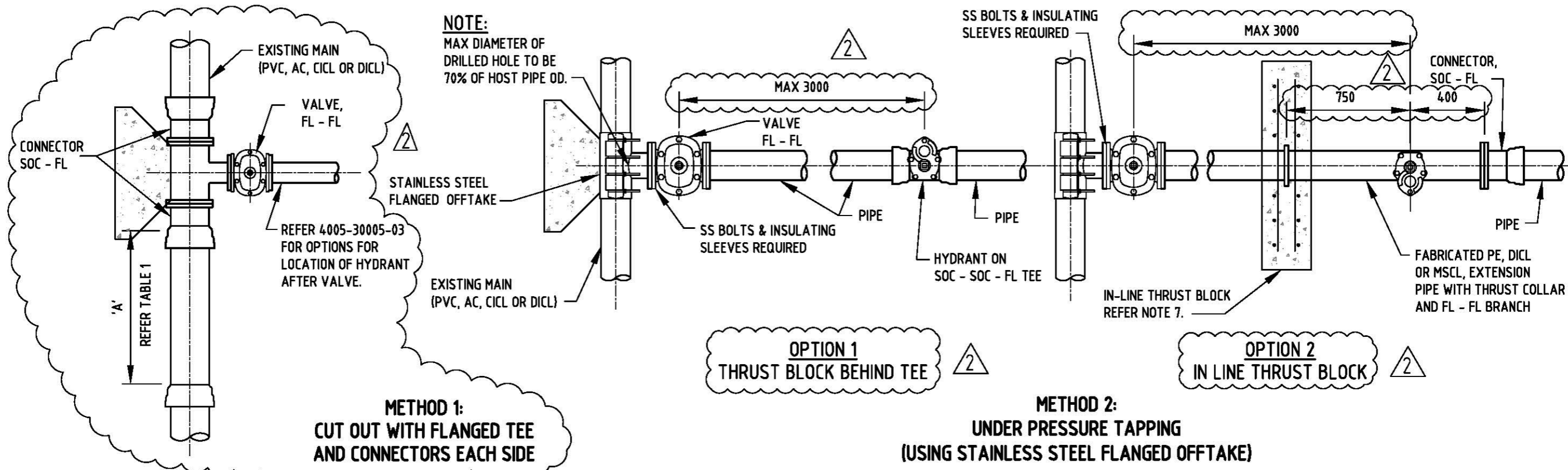
TABLE 1
PIPE OD TOLERANCE

PIPE DN	PIPE OD	TOLERANCE
100	122	+1 mm TO - 2 mm
150	177	+1 mm TO - 2 mm
200	232	+1 mm TO - 2 mm
250	286	+1 mm TO - 2 mm
300	345	+1 mm TO - 2 mm
375	426	+/- 2 mm

NOTES:

- REFER 4005-30002-01 & 4005-30002-02 FOR GENERAL NOTES.
- PRIOR TO THE CUTTING OF NEW SECTION OF PIPE THE NEW PIPE OD SHALL BE CHECKED TO CONFIRM OD IS WITHIN TOLERANCE AND THE PIPE IS SUITABLE FOR INSTALLATION. REFER TABLE 1.
PIPE WITH A LARGER OD MAY BE CHAMFERED TO ACHIEVE REQUIRED OD. PIPE WITH A SMALLER OD SHALL BE REJECTED.
- IF NEW BRANCH MAIN IS RESTRAINED JOINT DICL REFER 4005-30005-04.
IF NEW BRANCH MAIN IS PVC OR NON RESTRAINED JOINT DICL, REFER 4005-30005-03.
- WHERE THE EXISTING MAIN CANNOT BE SHUT DOWN TO ACHIEVE THE CUT IN, AN UNDER PRESSURE TAPPING SHALL BE PERFORMED. REFER 4005-30005-06.
- WORK SHALL ONLY BE UNDERTAKEN UNDER THE DIRECTION OF A PERSON WHO HAS COMPLETED AN APPROVED DUCTILE IRON PIPE INSTALLATION TRAINING COURSE.
- REFER 4005-30003-09 FOR RESTRAINED JOINT REQUIREMENTS IN LIEU OF THRUST/ ANCHOR BLOCKS.
- WHERE THE RESTRAINED JOINTING SYSTEM IS USED MARKING TAPE SHOWING 'RESTRAINED JOINT SYSTEM' SHALL BE USED.
- ALL DIMENSIONS IN MILLIMETRES.

REVISION PANEL					DESIGN PANEL			<p>SA WATER STANDARD DRAWINGS WATER SUPPLY CONSTRUCTION MANUAL EXISTING RESTRAINED JOINT DICL MAIN NEW BRANCH MAIN RESTRAINED OR NON RESTRAINED</p>	A3 SHT SIZE	1 REVISION	
REV	DATE	DRN	DETAILS	APR	CURRENT REV AUTHORIZED:	DESIGNED: 28/09/15	AUTHORIZED: 31/03/16		TOTAL SHEETS:		
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						DRAWN: 16/11/15	SIGNATURE:		DRAWING NUMBER		
1	31/03/16	MS	2016 STANDARDS REVIEW	TG		REVIEWED: 21/03/16			4005-30005-05		
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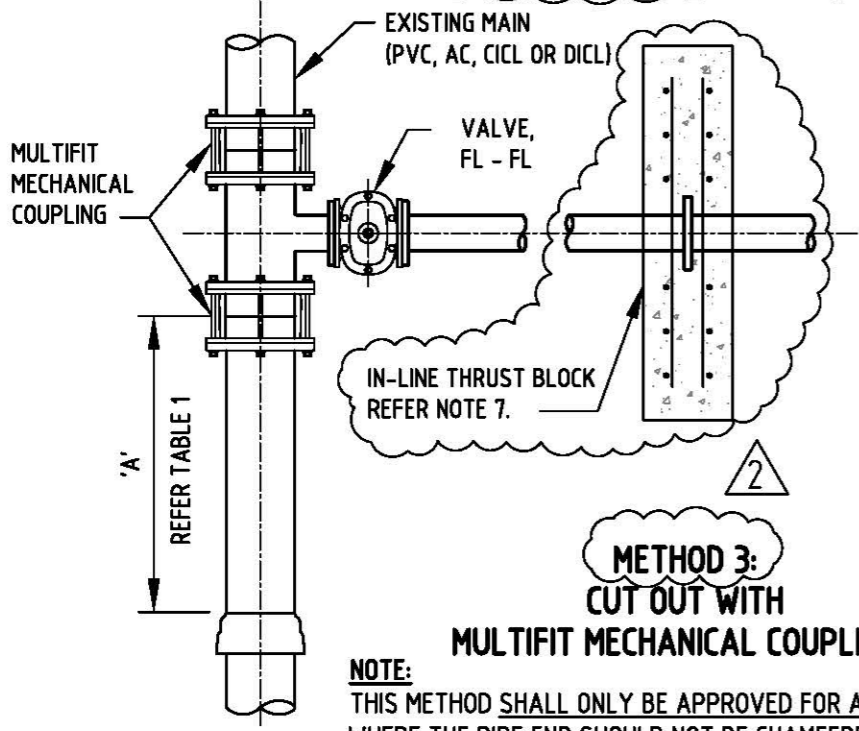


NOTE:
MAX DIAMETER OF DRILLED HOLE TO BE 70% OF HOST PIPE OD.

REFER 4005-30005-03 FOR OPTIONS FOR LOCATION OF HYDRANT AFTER VALVE.

OPTION 1
THRUST BLOCK BEHIND TEE

OPTION 2
IN LINE THRUST BLOCK



NOTE:
THIS METHOD SHALL ONLY BE APPROVED FOR AC PIPE WHERE THE PIPE END SHOULD NOT BE CHAMFERED.

TABLE 1

PIPE	DIMENSION 'A'
PVC, AC OR CICL	1000
DICL	REFER 30002-02, TABLE 1

NOTES:

- REFER 4005-30002-01 TO 4005-30002-04 FOR GENERAL NOTES.
- IF EXISTING MAIN IS RESTRAINED JOINT DICL, THE RESTRAINED SYSTEM SHALL BE CONTINUED FOR 'CUT-IN' INTO RESTRAINED JOINT MAINS. REFER 4005-30005-05.
- FOR METHOD 2 IF THE THE BRANCH OFFTAKE IS TO BE UNDERTAKEN AS A LIVE CONNECTION (UNDER PRESSURE TAPPING), THE WORK SHALL ONLY BE UNDERTAKEN BY AN AUTHORISED CONTRACTOR. REFER TS 0503, 9.3 FOR CONTRACTORS APPROVED TO PERFORM THIS WORK.
- FOR METHOD 2, LOCATION OF THRUST BLOCK SHALL BE EITHER OPTION 1 OR OPTION 2.
- PRIOR TO CONFIRMATION OF THE CONNECTING METHOD, THE CONTRACTOR SHALL CONFIRM:
 - THE EXISTING MAIN PIPE MATERIAL,
 - PROXIMITY OF EXISTING PIPE SOCKET,
 - AVAILABILITY OF FITTINGS AND/ OR COUPLINGS.
- IF BRANCH MAIN IS PVC OR NON RESTRAINED JOINT DICL, AN IN LINE THRUST BLOCK IS REQUIRED.
- REFER 4005-30005-18 FOR IN LINE THRUST PROTECTION OPTIONS AND ASSOCIATED DIMENSIONS.
- IF BRANCH MAIN IS RESTRAINED JOINT DICL, AND THE NEW MAIN IS RESTRAINED JOINT DICL, AN ANCHOR BLOCK MAY NOT BE REQUIRED, SUBJECT TO CONFIRMATION OF THE PROXIMITY OF THE NEAREST SOCKET. IF SOCKET LOCATION CANNOT BE CONFIRMED, A THRUST BLOCK SHALL BE CONSTRUCTED. REFER 4005-30003-09 FOR RESTRAINED JOINT REQUIREMENTS IN LIEU OF THRUST/ ANCHOR BLOCKS.
- REFER SECTION 3 FOR THRUST BLOCK INFORMATION.
- REFER 4005-30005-01 FOR SLEEVING OF DICL PIPE.
- ALL DIMENSIONS IN MILLIMETRES.

REVISION PANEL				
REV	DATE	DRN	DETAILS	APR
3	09/06/18	RP	METHOD 1 ADDED. PREVIOUS METHODS RENUMBERED.	TG
2	22/11/16	RP	SS BOLTS & INSULATION ADDED FOR METHOD 2	TG
1	31/03/16	MS	2016 STANDARDS REVIEW	TG

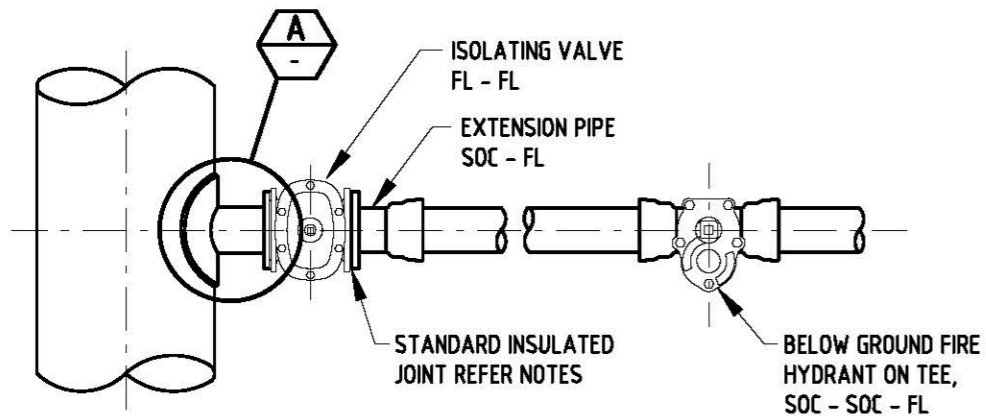
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DESIGNED:	AUTHORISED:	
28/09/15 RJP	31/03/16 T.GALEK	
DRAWN: 16/11/15 MS	SIGNATURE:	
REVIEWED: 21/03/16 TG	ORIGINAL SIGNED	

SA Water

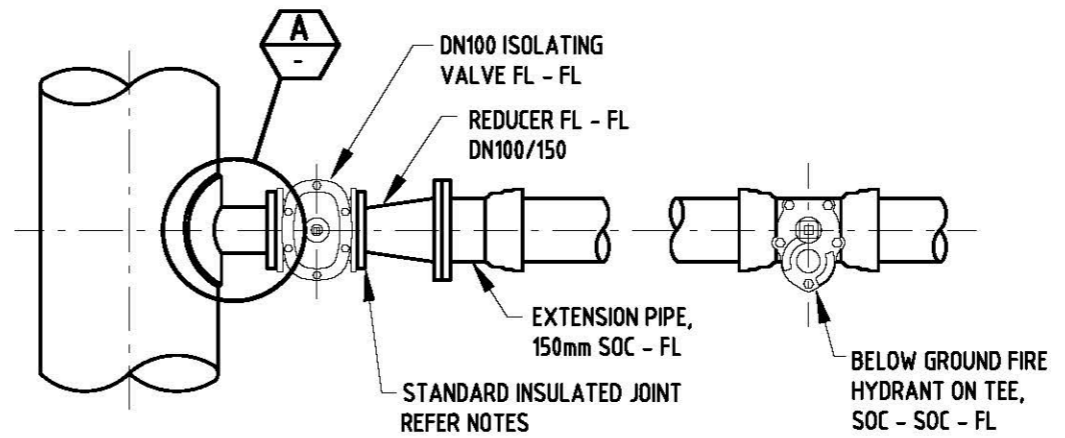
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SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
NEW BRANCH OFF EXISTING MAIN
CUT OUT OPTIONS
OR UNDER PRESSURE TAPPING

A3	3
SHT SIZE	REVISION
TOTAL SHEETS: 19	
SUPERSEDES: 91-0059-02 (C7)	
DRAWING NUMBER	
4005-30005-06	
PREFIX	NUMBER SHEET



① ALL BRANCH SIZES EXCEPT DN150



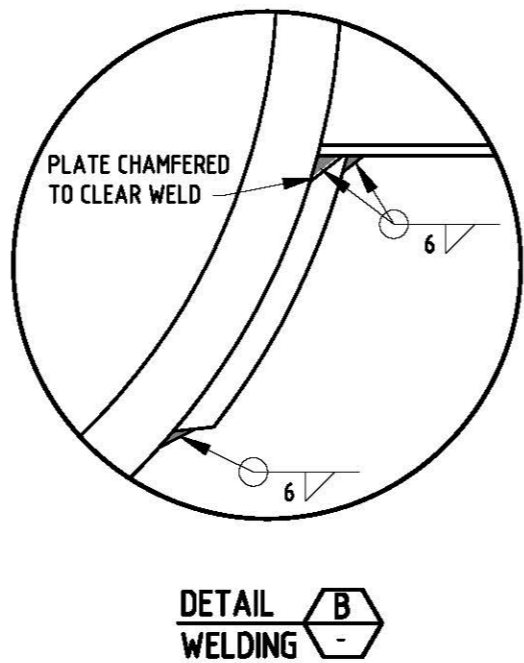
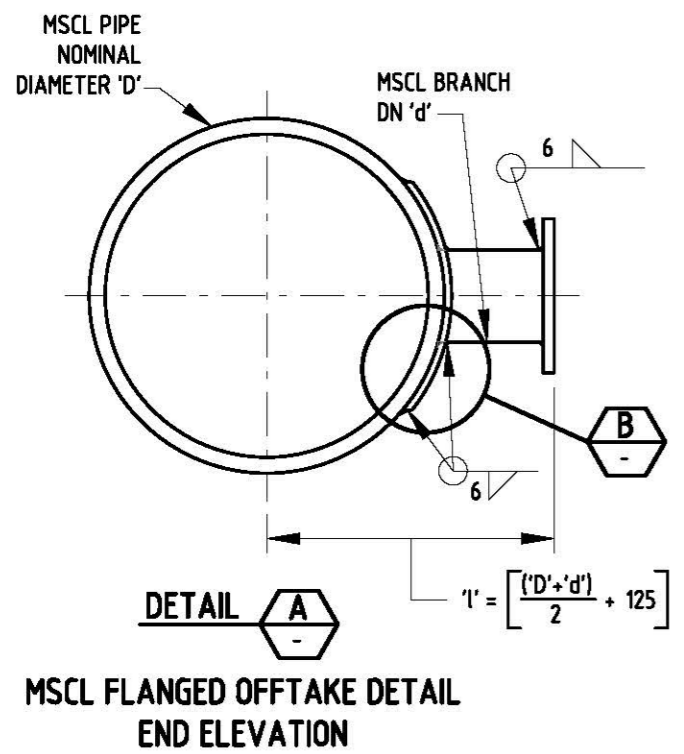
② DN150 BRANCH ONLY

MSCL FABRICATION/ INSTALLATION REQUIREMENTS:

- ALL WELDING SHALL BE IN ACCORDANCE WITH AS 4041, CLASS 2P.
- FLANGES SHALL BE IN ACCORDANCE WITH AS 4087. DIMENSIONS FOR STEEL CLASS 16, FLAT FACED.
- CLEAN EXISTING MAIN PIPE COATING FOR FULL PIPE CIRCUMFERENCE FOR 100 mm SURROUNDING OFFTAKE LOCATION.
- CLEAN ENTIRE LENGTH OF BRANCH OFFTAKE.
- ALL WELDING SLAG SHALL BE REMOVED.
- FOR BURIED APPLICATIONS:
 - OFFTAKE SHALL BE PROTECTED WITH BITUMEN MASTIC TAPE SYSTEM IN ACCORDANCE WITH TS 18.
 - ADDITIONAL BITUMEN MASTIC TAPE SYSTEM SHALL BE EXTENDED AROUND FULL PIPE CIRCUMFERENCE, ADJACENT TO OFFTAKE, AND ONTO THE EXISTING COATING, IN ACCORDANCE WITH TS 18.

NOTES:

- REFER 4005-30002-01 & 4005-30002-02 FOR GENERAL NOTES.
- A BRANCH **SHALL NOT BE INSTALLED WITHIN MIN 1000 mm OF THE SOCKET END OF A DN100 PIPE.** MSCL FLANGED OFFTAKES, DN100 & DN150, SHALL BE AN 'UNDER PRESSURE TAPPING' AND SHALL BE UNDERTAKEN BY AN AUTHORISED CONTRACTOR. **REFER AUTHORISED PRODUCTS FOR WATER SYSTEMS FOR CONTRACTORS APPROVED TO PERFORM THIS WORK.**
- THRUST / ANCHOR BLOCKS ARE NOT REQUIRED.
- THE CONSULTANT SHALL DETERMINE THE REINFORCING PLATE SIZE. CONFIRMATION OF PIPELINE PRESSURES SHALL BE SOUGHT FROM THE SA WATER REPRESENTATIVE TO ASSIST WITH THE CALCULATION.
- ALL BELOW GROUND FLANGES FIRE HYDRANTS, ISOLATING VALVES AND TAPERS SHALL BE PROTECTED WITH PETROLATUM TAPE SYSTEM OR BITUMEN MASTIC TAPE SYSTEM IN ACCORDANCE WITH TS 18.
- STANDARD INSULATED FLANGED JOINT SHALL BE INSTALLED WHERE INDICATED. REFER 04-0408-01 FOR DETAILS.
- REFER SECTION 5 FOR DETAILS ON PIPE CONSTRUCTION FOR THE BRANCH MAIN.
- REFER SECTION 3 FOR THRUST PROTECTION FOR THE BRANCH MAIN.



REVISION PANEL				
REV	DATE	DRN	DETAILS	APR
1	31/03/16	MS	2016 STANDARDS REVIEW	TG

DESIGN PANEL	
DESIGNED: 28/09/15 RJP	AUTHORISED: 31/03/16 T.GALEK
DRAWN: 16/11/15 MS	SIGNATURE: <i>T. Galek</i>
REVIEWED: 21/03/16 TG	

SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
LAYING DETAILS FOR BRANCHES OFF
EXISTING MSCL MAIN

A3	1
SHT SIZE	REVISION
TOTAL SHEETS:	
SUPERSEDES: 91-0059-03 (C8)	
DRAWING NUMBER	
4005-30005-07	
PREFIX	NUMBER SHEET

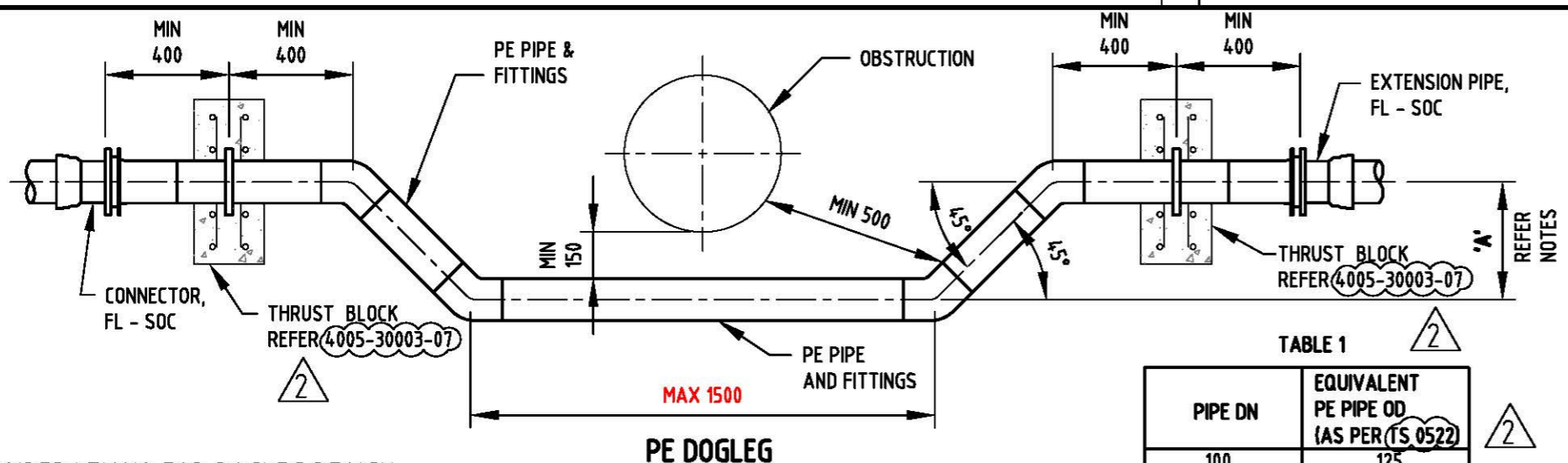
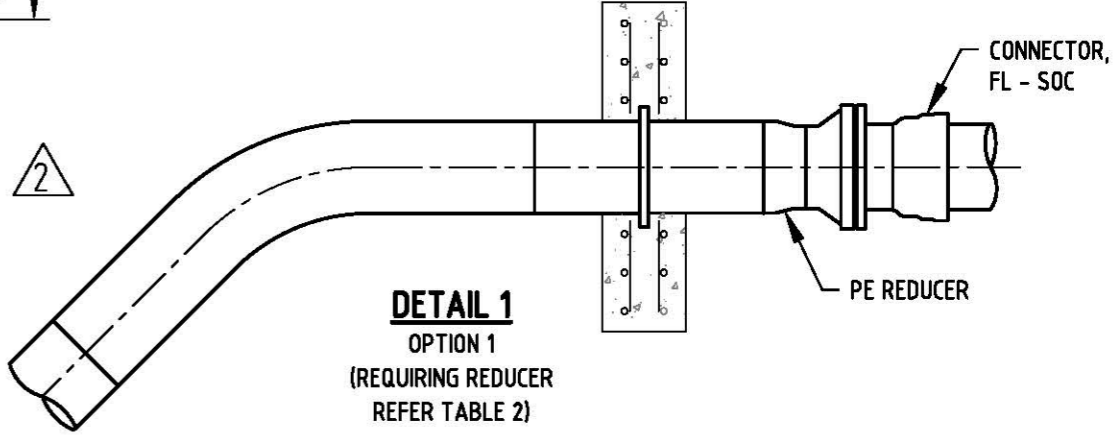


TABLE 2

PIPE DN	EQUIVALENT PE PIPE OD (AS PER TG105)	OPTION 1 > 6m LENGTH (FROM FLANGE - FLANGE) REDUCER REQUIRED	OPTION 2 UP TO MAX 6m LENGTH (FROM FLANGE - FLANGE) SMALLER OD APPROVED
200	250	250-225	225
250	315	315-280	280

TABLE 1

PIPE DN	EQUIVALENT PE PIPE OD (AS PER TS 0522)
100	125
150	180
200	250
250	315



CONSIDERATIONS FOR DOGLEG DESIGN:

- LENGTH AND DEPTH: THE PRIMARY CONSIDERATION FOR ANY DOGLEG SHALL BE THE MINIMISATION OF LENGTH & DEPTH.
- POSITIONING OF BRANCH MAINS & FITTINGS: THE LOWER SECTION OF THE DOGLEG SHALL BE A CONTINUOUS ITEM. THE POSITIONING OF BRANCHES, VALVES AND PROPERTY CONNECTIONS IS NOT PERMITTED. APPROVAL SHALL BE OBTAINED FROM THE SA WATER REPRESENTATIVE FOR DEVIATION FROM THIS REQUIREMENT.
- VERTICAL CLEARANCE TO OBSTRUCTION: REFER WSA03 2011 TABLE 5.5 FOR MINIMUM CLEARANCE REQUIREMENTS.
- THE USE OF A SMALL DOGLEG (RATHER THAN VERTICAL DEFLECTION OF PIPES) IS NOT A GIVEN. SA WATER HAS THE AUTHORITY TO NOT APPROVE THE USE OF A DOGLEG IN SUCH INSTANCES. FOR MINOR VERTICAL CHANGES CONFIRMATION OF REQUIREMENTS SHALL BE SOUGHT FROM THE SA WATER REPRESENTATIVE.

STANDARD / NON STANDARD DOGLEG:

- A DOGLEG IS CONSIDERED STANDARD IF IT IS IN ACCORDANCE WITH THIS DRAWING. REQUIREMENTS ARE:
 - THE LOWER LENGTH BEING A MAXIMUM 1500,
 - THE VERTICAL CHANGE BEING EITHER 500 OR 1000. THE PREFERRED VERTICAL CHANGE (DIMENSION 'A') IS 500. THE 1000 OPTION MAY BE UTILISED WHERE THE OBSTRUCTION SIZE OR TYPE JUSTIFIES ITS USE, AND,
 - THERE IS ONLY ONE OBSTRUCTION.
- A DOGLEG IS CONSIDERED NON STANDARD IF IT:
 - INVOLVES MULTIPLE OBSTRUCTIONS,
 - IS UNUSUALLY DEEP, OR, IS EXCESSIVELY LONG.
 - IS OVER THE TOP OF AN OBSTRUCTION. THIS REQUIRES APPROVAL BY THE SA WATER REPRESENTATIVE.
 FOR THIS OPTION, AN AUTHORISED AIR RELEASE MECHANISM SHALL BE INSTALLED. THE VALVE FLANGE & BOLTS SHALL BE WRAPPED IN ACCORDANCE WITH TS 18.

DESIGN DRAWINGS:

- 'NON STANDARD' DOGLEGS SHALL BE DETAILED ON THE DESIGN DRAWINGS. SUFFICIENT DETAIL SHALL BE PROVIDED TO ALLOW PROPER ASSESSMENT. THIS REQUIRES THE INCLUSION OF A SECTION AND/ OR ENLARGEMENT ON THE DESIGN DRAWING. ALL OBSTRUCTIONS SHALL BE LABELLED, EG 375 SWD, TOGETHER WITH THE WATER MAIN CHAINAGE, THE DESIGNED CLEARANCE BETWEEN THE WATER MAIN AND THE OBSTRUCTION. INDICATIVE DIMENSIONS ARE UNACCEPTABLE.
- WHERE A DOGLEG IS IN ACCORDANCE WITH THIS DRAWING (WITH STANDARD CLEARANCES), A NOTE PLACED ON THE DESIGN DRAWING IS SUFFICIENT. THE NOTE SHALL IDENTIFY THE CHAINAGE FOR THE DOGLEG TOGETHER WITH THE TYPE OF CONFLICTING SERVICE, AND THE DESIGNED CLEARANCE.

PE DOGLEGS:

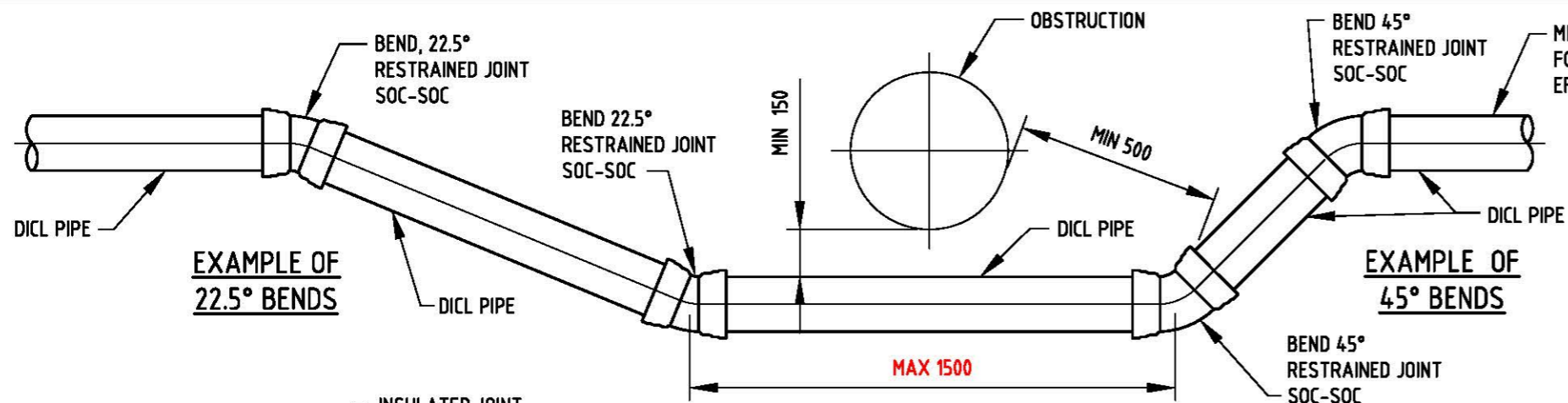
- PE PIPE FOR USE AS A DOGLEG SHALL BE PERMITTED FOR DIAMETERS UP TO AND INCLUDING DN250. LARGER DIAMETER DOGLEGS SHALL BE CONSTRUCTED USING OTHER APPROVED PIPE MATERIAL.
- FOR DN200 & DN250 DIAMETERS, THE PE OD EQUIVALENT MAY REQUIRE A REDUCER TO MATCH THE FLANGE OF THE ADJOINING PVC OR DICL PIPE. DETERMINATION IS DEPENDENT UPON THE LENGTH OF THE DOGLEG (6 METRES). REFER TABLE 2 ABOVE.
 - FOR LENGTHS GREATER THAN 6 METRES A REDUCER WILL BE REQUIRED.
 - FOR LENGTHS UP TO 6 METRES, AN ALTERNATIVE SMALLER OD IS APPROVED.

FABRICATION OF PE SPECIALS & DELIVERABLES:

- APPROVED FABRICATION METHODS:
 - BUTT WELD (FACTORY MANUFACTURE)
 - OR
 - ELECTROFUSION COUPLINGS.
- FABRICATION SHALL ONLY BE UNDERTAKEN BY QUALIFIED PE WELDERS. BUTT WELDING OF PE SPECIALS MAY ONLY BE UNDERTAKEN BY AN AUTHORISED MANUFACTURER LISTED IN THE AUTHORISED PRODUCTS FOR WATER SYSTEMS.
- THE FABRICATION COMPANY SHALL PROVIDE A FORM:
 - IDENTIFYING EVERY WELD, WITH THE DATE OF THE WELD AND NAME AND ID OF THE EMPLOYEE WHO UNDERTOOK THE WELD.
 - DETAILING THE MATERIALS USED, IE ITEM MANUFACTURER & DESCRIPTION.
 - THE TECHNICIAN WHO UNDERTOOK THE WELD. EACH WELD SHALL BE STAMPED WITH THE WELDER ID.
- AN AUTHORISED OFFICER OF THE FABRICATION COMPANY SHALL SIGN THE FORM.
- A COPY OF THE FABRICATION COMPANY'S FORM SHALL BE PROVIDED TO THE CONSTRUCTION CONTRACTOR WHO SHALL INITIAL THE FORM AND PROVIDE A COPY TO THE SA WATER REPRESENTATIVE.

1. FOR GENERAL NOTES REFER 4005-30002-01 & 4005-30002-02.
2. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.

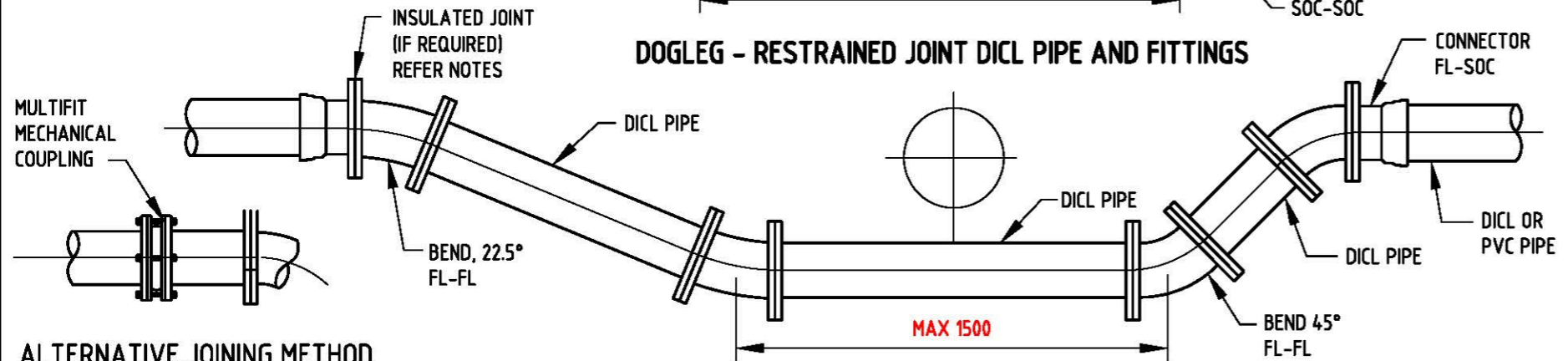
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REV	DATE	DRN	DETAILS	APR	CURRENT REV 08/08/18	DESIGNED: 28/09/15	AUTHORISED: 31/03/16	 This drawing is the property of the SOUTH AUSTRALIAN WATER CORPORATION and shall not be copied or modified in part or in whole without authorization.				SHT SIZE	REVISION
					AUTHORISED:	RJP	T.GALEK					TOTAL SHEETS: 19	
					T. GALEK	DRAWN: 16/11/15	SIGNATURE:	WATER SUPPLY CONSTRUCTION MANUAL				SUPERSEDES: 91-0060-02 (C13)	
					SIGNATURE:	MS	ORIGINAL SIGNED	DOGLEG CONSIDERATIONS				DRAWING NUMBER	
2	24/07/18	RP	CHANGES AS INDICATED	TG		REVIEWED: 21/03/16		& STANDARD PE DOGLEG				4005-30005-08	
1	31/03/16	MS	2016 STANDARDS REVIEW	TG				PREFIX	NUMBER	SHEET			



EXAMPLE OF 22.5° BENDS

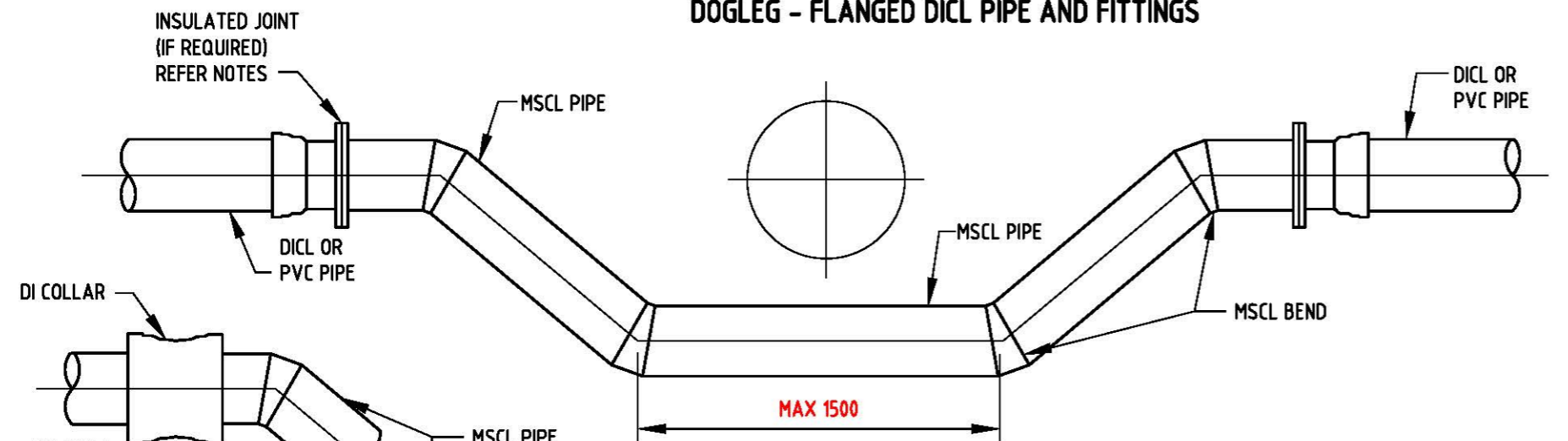
EXAMPLE OF 45° BENDS

DOGLEG - RESTRAINED JOINT DCL PIPE AND FITTINGS



ALTERNATIVE JOINING METHOD

DOGLEG - FLANGED DCL PIPE AND FITTINGS



ALTERNATIVE JOINING METHODS

DOGLEG - MSCL PIPE, WELDED BENDS

NOTES:

- REFER 4005-30002-01 & 4005-30002-02 FOR GENERAL NOTES.
- REFER 4005-30005-08 FOR:
 - DOGLEG CONSIDERATIONS,
 - DESIGN REQUIREMENTS,
 - DESIGN DRAWING REQUIREMENTS,
 - THE PE PIPE ALTERNATIVE.
- CUT LENGTHS OF DCL PIPE FOR USE WITH THE RESTRAINED JOINT METHOD SHALL BE FROM A SECTION OF PIPE WITHIN 3.5 m OF THE SPIGOT.
- DCL DOGLEGS SHALL BE PROTECTED BY EITHER:
 - LINEAR LOW DENSITY POLYETHYLENE SLEEVING. (REFER 4005-30005-01).
 - OR
 - WRAPPING WITH PETROLATUM TAPE SYSTEM IN ACCORDANCE WITH TS 29.
- MSCL DOG LEGS:
 - ALL WELDING SHALL BE IN ACCORDANCE WITH AS 4041, CLASS 2.
 - SINTAKOTED PIPES: **WHERE SINTAKOTE HAS BEEN DAMAGED OR REMOVED**, PIPE SHALL BE WRAPPED WITH BITUMEN MASTIC TAPE SYSTEM, IN ACCORDANCE WITH TS 18.
 - NON-SINTAKOTED PIPES: PIPE SHALL BE WRAPPED WITH BITUMEN MASTIC TAPE SYSTEM, IN ACCORDANCE WITH TS 18.
- STANDARD INSULATED FLANGED JOINT
 - SHALL BE INSTALLED WHERE INDICATED IF ADJOINING MAIN IS DCL OR CCL. NOT REQUIRED IF ADJOINING MAIN IS PVC OR AC.
 - REFER 04-0408-01 FOR DETAILS.
- THRUST BLOCKS MAY NOT BE REQUIRED WHEN DOGLEG IS FABRICATED ENTIRELY FROM:
 - RESTRAINED JOINT DCL PIPE AND FITTINGS,
 - FLANGED DCL PIPE AND FITTINGS,
 - WELDED MSCL PIPE.
 REFER 4005-30003-08 FOR RESTRAINED JOINT REQUIREMENTS IN LIEU OF THRUST BLOCKS.
- DN200 AND LARGER, MSCL & DCL DOG LEGS SHALL BE CATHODICALLY PROTECTED. REFER 4005-30009-03.
- SHOULD STAINLESS STEEL BE UTILISED IN LIEU OF MSCL THE PIPE SHALL BE AS 1449, GRADE 316.

REVISION PANEL				
REV	DATE	DRN	DETAILS	APR
2	19/07/16	PC	SUPERSEDES CHANGED	
1	31/03/16	MS	2016 STANDARDS REVIEW	TG

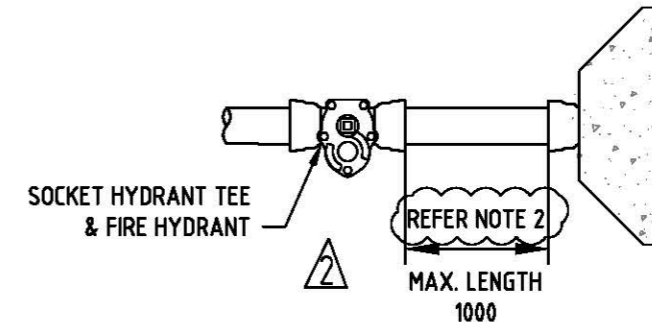
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DESIGNED:	28/09/15	AUTHORISED:	31/03/16
RJP		T.GALEK	
DRAWN:	16/11/15	SIGNATURE:	
MS			
REVIEWED:	21/03/16	ORIGINAL SIGNED	
TG			

SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
DCL & MSCL DOGLEGS

A3	2
SHT SIZE	REVISION
TOTAL SHEETS:	
SUPERSEDES: C12 & C13	
DRAWING NUMBER	
4005-30005-09	
PREFIX	NUMBER SHEET

TABLE 1. STAGING CONFIGURATION AND OPTIONS FOR DESIGN OF HYDRANT AND VALVE

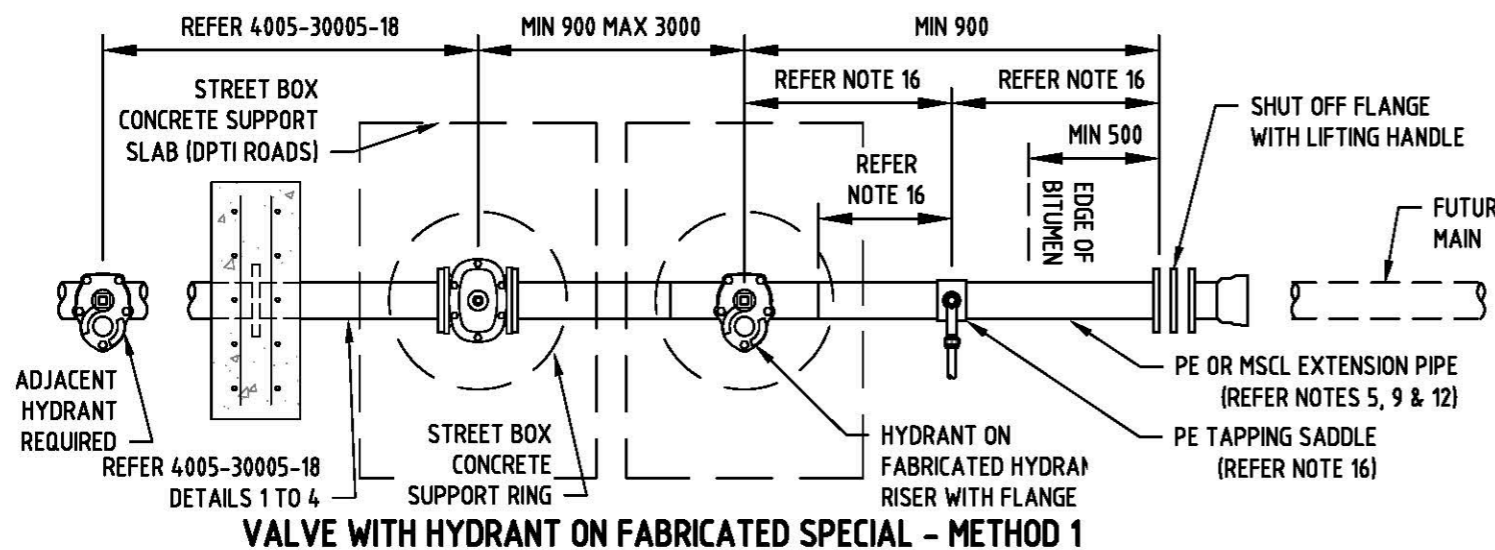
SELECTION CRITERIA FOR APPROPRIATE METHOD	METHOD/S
> 15 PROPERTY CONNECTIONS, OR, > 100 METRE MAIN LENGTH,	1 OR 2
< 15 PROPERTY CONNECTIONS & < 100 METRE MAIN LENGTH. NOT A LOCATION FOR FUTURE CHLORINATION.	3
SHORT LENGTH OF MAIN WITH NO CONNECTIONS. VALVE & HYDRANT INSTALLED AT BRANCH.	4



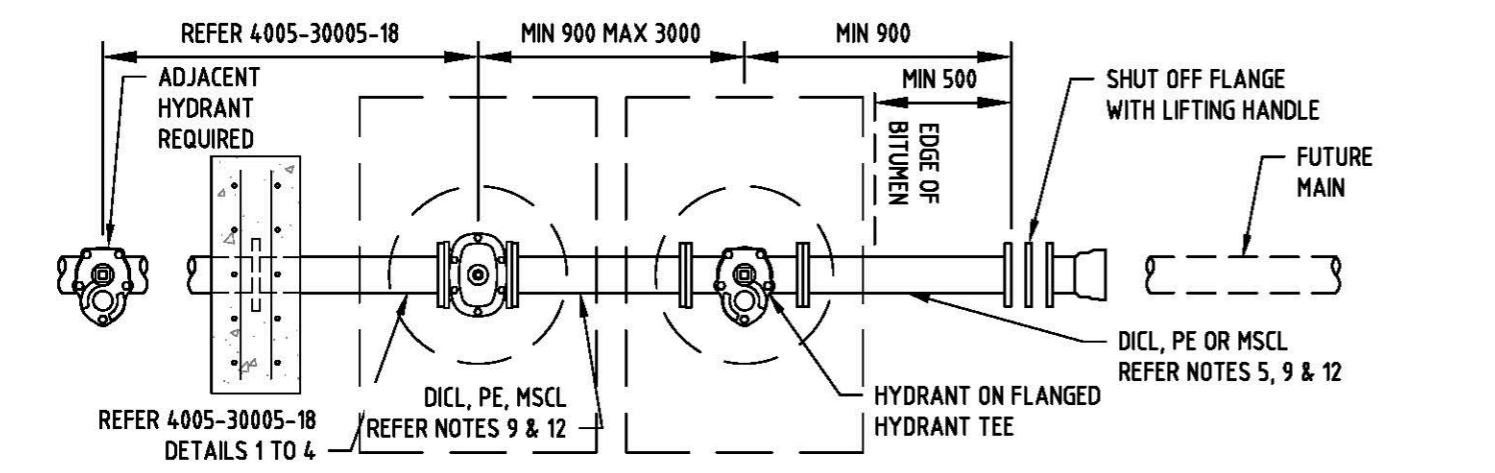
HYDRANT WITH PIPE & END CAP - METHOD 4

NOTES

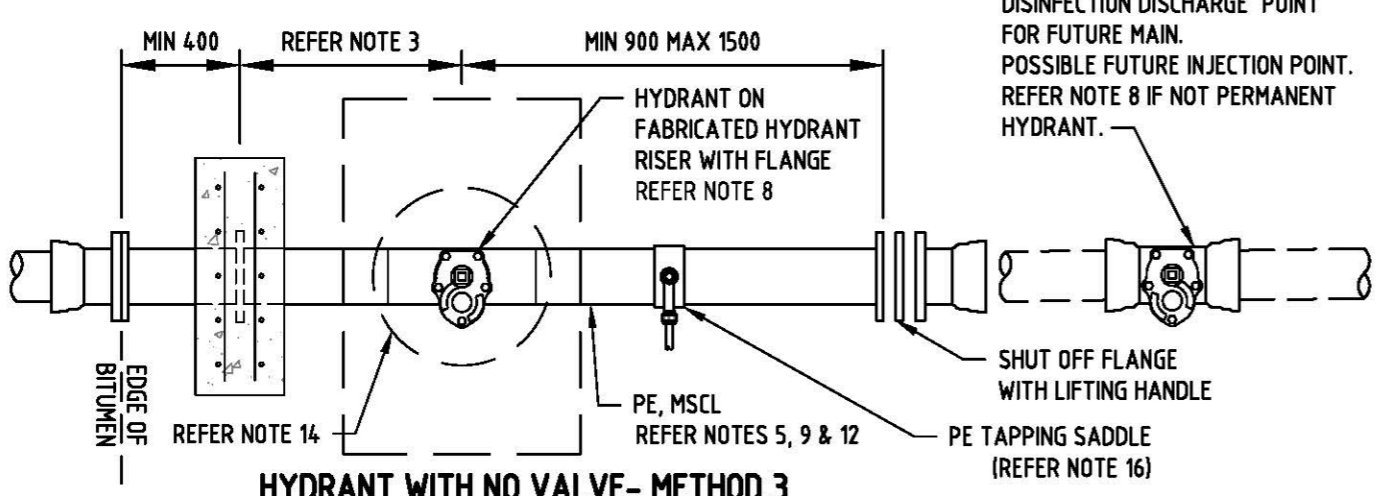
- REFER 4005-30002-01 TO 4005-30002-04 FOR GENERAL NOTES.
- REFER 4005-30002-02, TABLE 1 FOR MINIMUM CUT LENGTH OF PIPE BETWEEN FITTINGS.
- REFER 4005-30002-02, TABLE 2 FOR DISTANCE REQUIRED BETWEEN AN IN LINE THRUST BLOCK AND VALVE TO PREVENT BUCKLING OF PE PIPE.
- REFER 4005-30002-02, TABLE 3 FOR PE OD PIPE DIAMETERS WHERE A REDUCER IS REQUIRED TO MATCH END FLANGE SIZE.
- THE DESIGN DRAWING SHALL SHOW THE REQUIRED ARRANGEMENT AT THE STAGE BOUNDARY IN ACCORDANCE WITH METHOD 1, 2, 3, OR 4. THE CHAINAGE FOR EACH FITTING TOGETHER WITH THE CHAINAGE FOR THE FLANGED OR CAPPED END SHALL BE SHOWN ON THE DRAWING.
- FOR METHODS 1 AND 2, THE DESIGNER SHOULD ALSO CONSIDER IF A 5 VALVE SHUT OFF IS INVOLVED OR THE ALLOTMENTS WITHIN THE STAGE MAY RESULT IN > 50 ALLOTMENTS FOR THE VALVE SHUT OFF.
- FOR METHOD 3 THERE MAY BE THE OPPORTUNITY TO REMOVE THE HYDRANT FOLLOWING DISINFECTION. THIS WILL BE DEPENDENT UPON THE PROXIMITY OF OTHER HYDRANTS AND THE FUTURE STAGE DESIGN.
- WHERE ANY HYDRANT IS REQUIRED ONLY TO ASSIST STAGING AND DISINFECTION REQUIREMENTS, FOLLOWING COMPLETION OF DISINFECTION IT SHALL BE REMOVED BY THE CONTRACTOR. A BLANK FLANGE SHALL BE BOLTED TO EACH HYDRANT TEE AND WRAPPED IN ACCORDANCE WITH TS 18.
- PE EXTENSION PIECES SHALL BE PERMITTED FOR PIPE DIAMETERS UP TO AND INCLUDING DN 250. FOR LARGER DIAMETERS AN ALTERNATIVE APPROVED PIPE MATERIAL SHALL BE USED.
- WHERE MAX. 3000 SHOWN, THIS LENGTH SHALL NOT BE EXCEEDED. THIS LIMITATION IS REQUIRED FOR DISINFECTION PURPOSES.
- FOR HYDRANT ORIENTATION, REFER 4005-30005-11, NOTE 2.
- REFER TS 0503 FOR AUTHORISED FABRICATION OF PE & MSCL PIPE SPECIALS.
- REFER 4005-30003-07 FOR THRUST BLOCK SIZE DETAILS.
- THE CAST IRON STREET BOX SHALL BE REMOVED IF THE HYDRANT IS REMOVED.
- REFER WSCM SECTION 7 FOR STREET BOX INSTALLATION, HYDRANT PROTECTION SYSTEMS, REFLECTORS AND/ OR MARKER DETAILS.
- ELECTROFUSION TAPPING SADDLES ARE ALLOWED ON DN125 TO DN315 OD PE PIPE FOR DN25 TO DN63 OD CONNECTIONS. CONNECTIONS ARE NOT ALLOWED ON ANY CONTINUOUS LENGTH OF PE PIPE WITH A PUDDLE FLANGE AND IN LINE THRUST BLOCK. ELECTROFUSION TAPPING SADDLES SHALL BE A MINIMUM:
 - 700 FROM ANY FITTING OR FLANGE
 - 300 FROM ANY WELD
- ALL DIMENSIONS IN MILLIMETRES.



VALVE WITH HYDRANT ON FABRICATED SPECIAL - METHOD 1



VALVE & HYDRANT WITH FLANGED FITTINGS - METHOD 2



HYDRANT WITH NO VALVE- METHOD 3

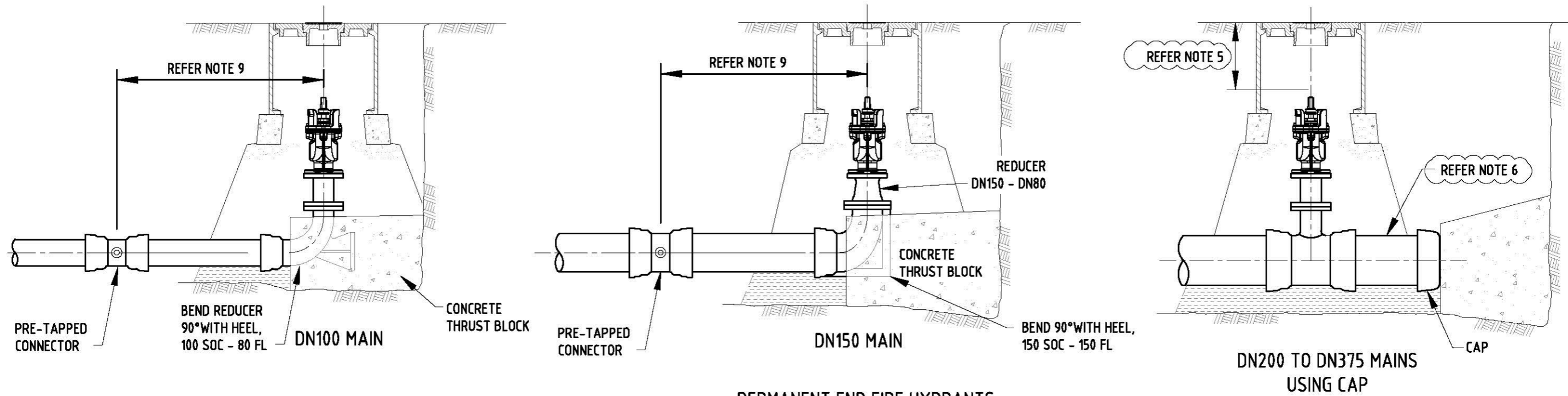
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REV	DATE	DRN	DETAILS
2	26/06/18	RP	CONCEPTS AND DRAWING TOTALLY REVISED
1	31/03/16	MS	2016 STANDARDS REVIEW

DESIGN PANEL			
DESIGNED:	28/09/15	AUTHORISED:	31/03/16
RJP		T.GALEK	
DRAWN:	16/11/16	SIGNATURE:	
MS			
REVIEWED:	21/03/16	ORIGINAL SIGNED	
TG			

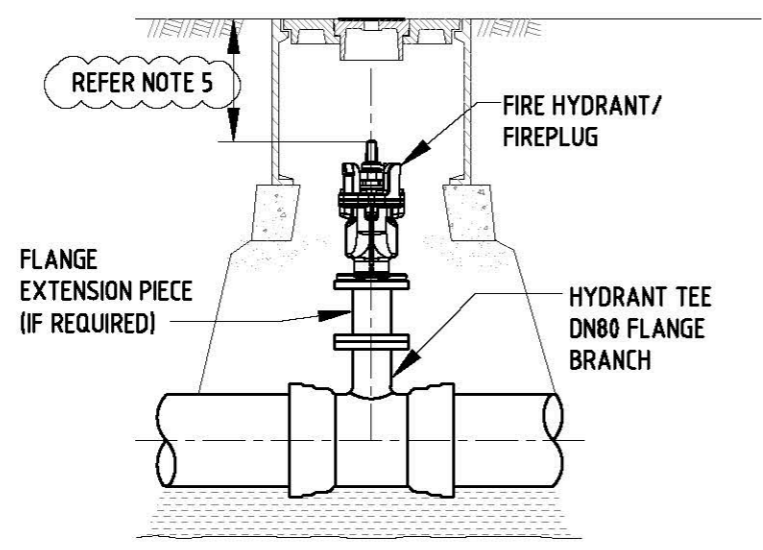
SA Water logo and text: 'This drawing is the property of the SOUTH AUSTRALIAN WATER CORPORATION and shall not be copied or modified in part or in whole without authorization.'

SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
TEMPORARY ENDS
FOR STAGED DEVELOPMENT

A3	2
SHT SIZE	REVISION
TOTAL SHEETS: 19	
SUPERSEDES: 91-0068-04 (F4)	
DRAWING NUMBER	
4005-30005-10	
PREFIX	NUMBER SHEET



PERMANENT END FIRE HYDRANTS
USED WHERE NO FUTURE EXTENSION IS REQUIRED
(DEAD END STREETS ETC.).



INTERMEDIATE FIRE HYDRANT
DN100 TO DN375 MAINS

NOTES:

1. REFER 4005-30002-01 TO 4005-30002-04 FOR GENERAL NOTES.
2. HYDRANTS SHALL BE INSTALLED WITH THE SPINDLE ON THE KERB SIDE AND THE CUP FACING THE ROAD CENTRE. THIS ARRANGEMENT PROVIDES BETTER SAFETY FOR OPERATORS WHILST TURNING THE SPINDLE.
3. BELOW GROUND FIRE HYDRANT SHALL BE PROTECTED WITH PETROLATUM TAPE SYSTEM OR BITUMEN MASTIC TAPE SYSTEM IN ACCORDANCE WITH TS 18.
4. REFER 4005-30003-06 FOR THRUST BLOCK DETAILS.
5. REFER 4005-30007-01 FOR CAST IRON STREET BOX INSTALLATION & FINISHED HEIGHT OF HYDRANT.
6. REFER 4005-20002-02, TABLE 1 FOR MINIMUM PIPE LENGTH, MAX 1000.
7. REFER 4005-30007-03 FOR PLACEMENT OF RRPMS
8. REFER 4005-30007-04 FOR MARKER POST DETAILS.
9. PERMANENT END FIRE HYDRANTS SHALL BE NO GREATER THAN 1000 FROM THE LAST WATER CONNECTION TO MINIMISE DEAD END WATER.
10. ALL DIMENSIONS IN MILLIMETRES.

REVISION PANEL			
REV	DATE	DRN	DETAILS
3	09/05/18	CD	HYDRANT SET MOVED TO 4005-30005-10
2	08/11/16	RJP	FP IMAGE CHANGED. LID CHANGED TO TWO PIECE.
1	31/03/16	MS	2016 STANDARDS REVIEW

DESIGN PANEL			
CURRENT REV	14/08/18	DESIGNED:	28/09/15
AUTHORISED:		AUTHORISED:	31/03/16
	M.AKSOY		T.GALEK
SIGNATURE:	<i>M. Aksoy</i>	SIGNATURE:	<i>T. Galek</i>
		DRAWN:	16/11/15
		REVIEWED:	21/03/16
			TG

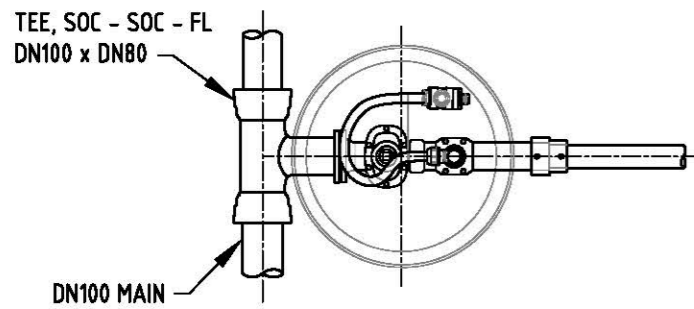
SA Water

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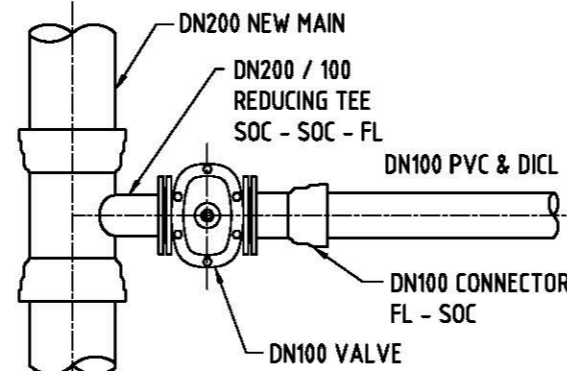
SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL

**HYDRANTS,
PERMANENT END
AND INTERMEDIATE ASSEMBLIES**

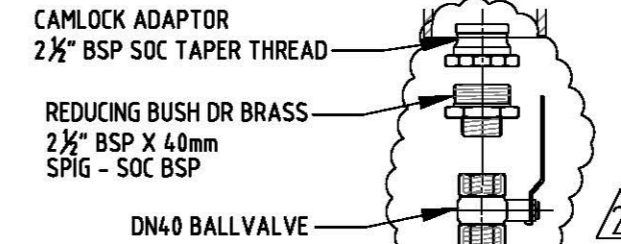
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TOTAL SHEETS: 19	
SUPERSEDES: F5, B17	
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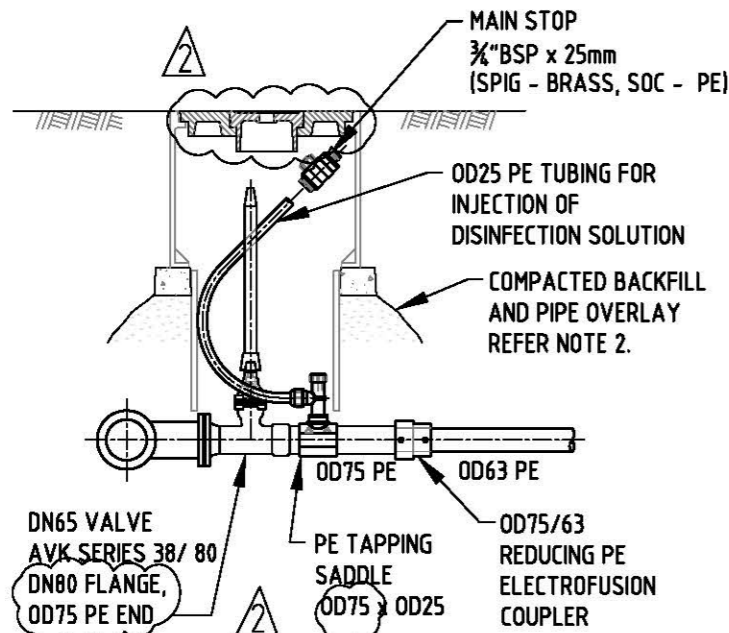
PLAN



PLAN



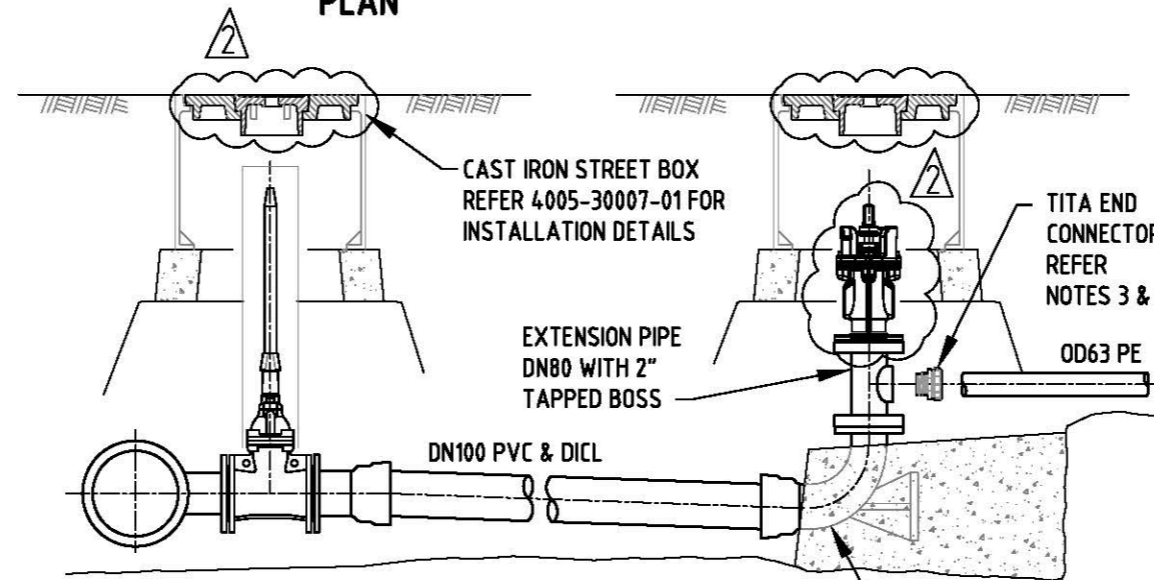
DETAIL 1



ELEVATION

**DN80 BRANCH OFFTAKE
(REDUCING TO OD63 PE MAIN)**

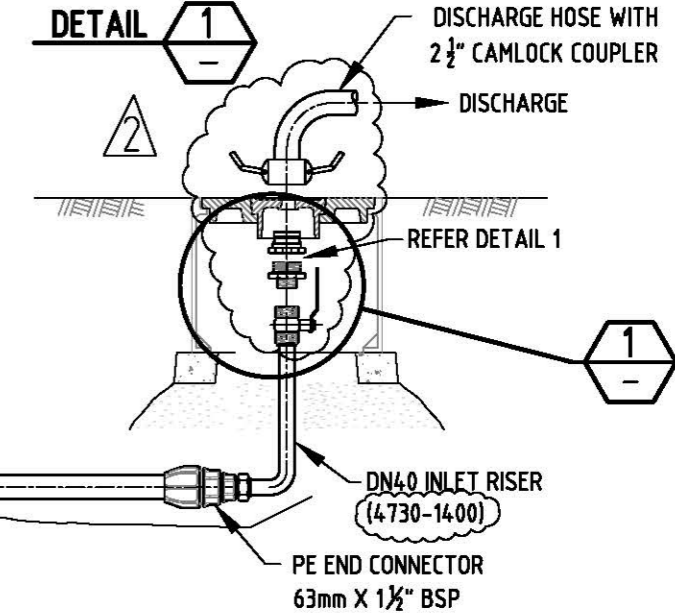
NOTE: REQUIRES AN ADJACENT FIRE HYDRANT



ELEVATION

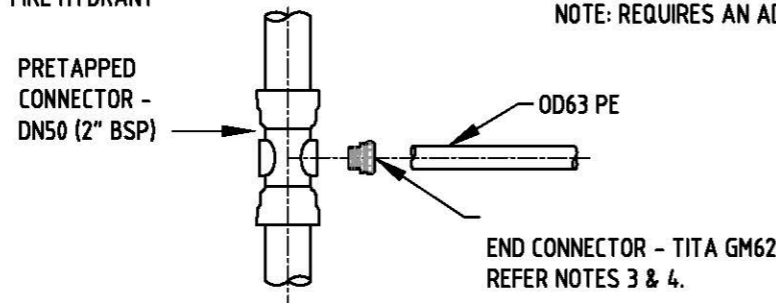
**DN100 BRANCH OFFTAKE
FROM DN200 & LARGER MAINS.
(REDUCING TO OD63 PE MAIN)**

NOTE: REQUIRES AN ADJACENT FIRE HYDRANT



END OF LINE AIR BLEED / FLUSHING PIT

PIPEWORK TO BE PLACED CENTRALLY IN
STREET BOX CHAMBER



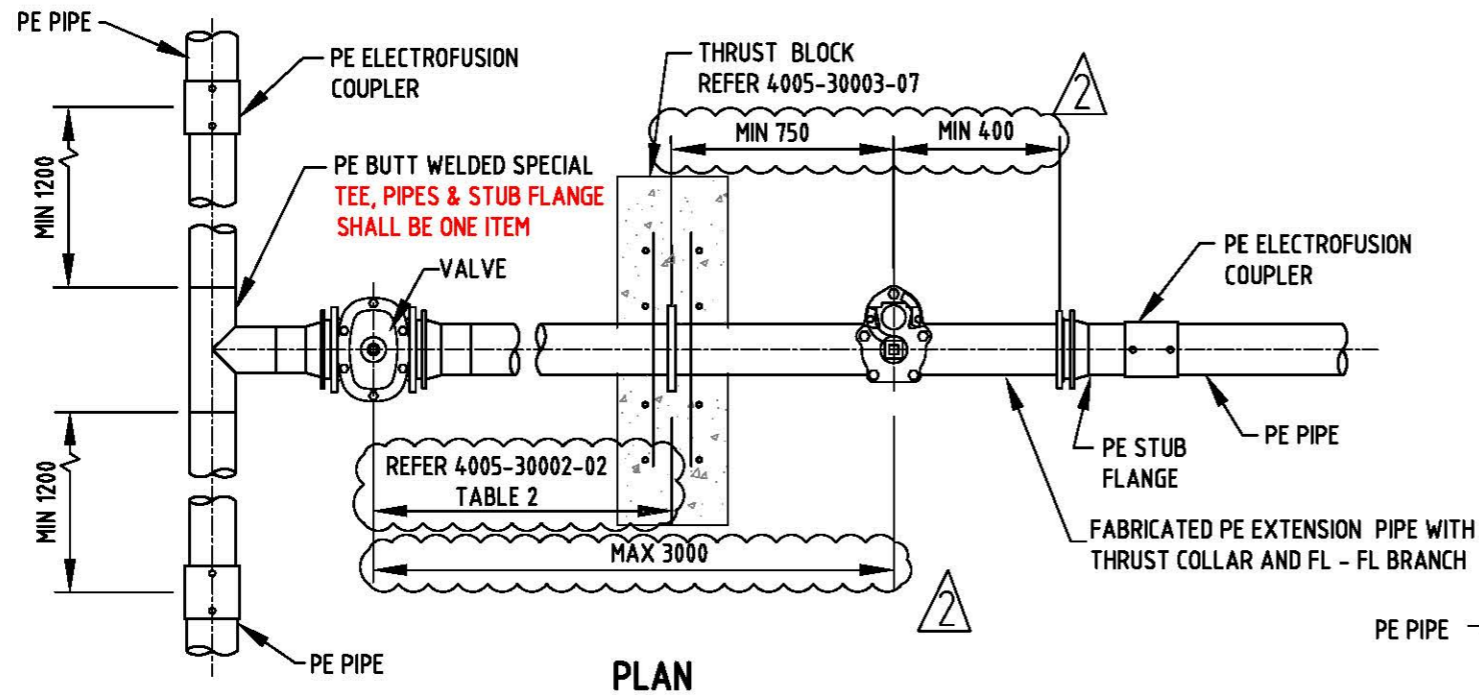
**DN100 OR DN150 BRANCH OFFTAKE
UTILISING PRETAPPED CONNECTOR**

NOTE: REQUIRES AN ADJACENT FIRE HYDRANT

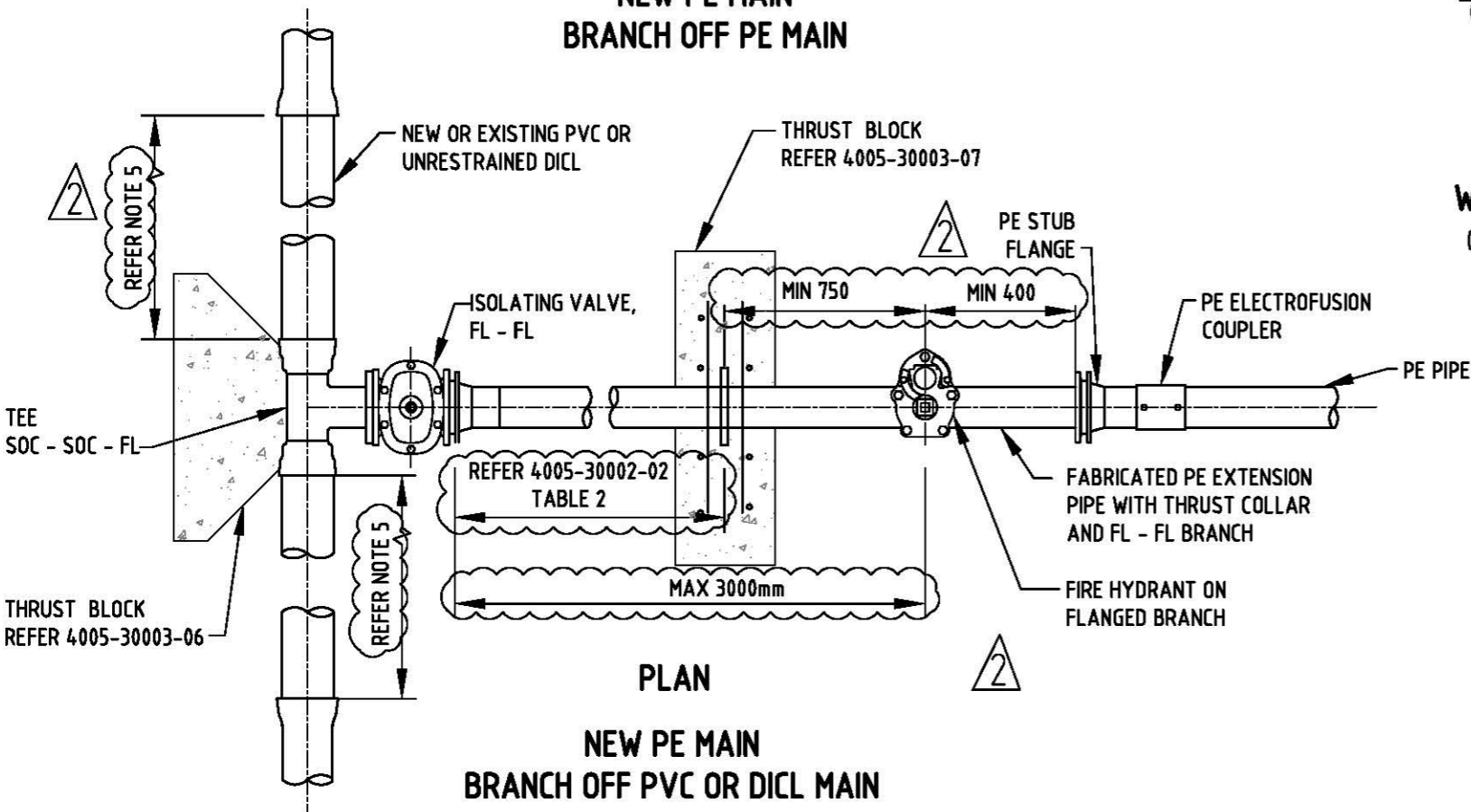
NOTES:

- REFER 4005-30002-01 AND 4005-30002-02 FOR GENERAL NOTES.
- REFER 4005-30005-11 FOR OD63 WATER MAIN & WATER CONNECTIONS DETAIL.
- THE TITA BRASS END CONNECTOR SHALL BE BRASS FITTED WITH BLUE THIMBLE AND BLUE SEALING RING - PE100 PN16
- INSTALLATION OF THE TITA BRASS END CONNECTOR
 - CUT PE PIPE AND PLACE NUT AND BLUE SEALING RING ON PIPE
 - INSERT CORRECT THIMBLE INTO PIPE
 - FULLY HOME THIMBLE USING A PIECE OF WOOD OR A SOFT FACED Mallet
 - START NUT ON THREAD AND TIGHTEN WITH C-SPANNER OR SIMILAR. (DO NOT APPLY UNDUE FORCE AS PIPE WILL DISTORT).
 - AFTER 5 MINUTES RE-TIGHTEN NUT.
(SEALING RING MAY EXTRUDE OUT BETWEEN PIPE & NUT. THIS IS ACCEPTABLE).
- MAXIMUM DISTANCE BETWEEN ANY ALLOTMENT AND NEAREST FIRE HYDRANT SHALL BE 80 m.
- MAXIMUM NUMBER OF WATER CONNECTIONS FROM A OD63 MAIN IS 10.

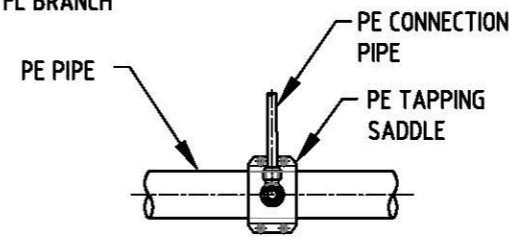
REVISION PANEL				DESIGN PANEL		<p>SA Water</p> <p>This drawing is the property of the SOUTH AUSTRALIAN WATER CORPORATION and shall not be copied or modified in part or in whole without authorization.</p>	SA WATER STANDARD DRAWINGS		A3	2
REV	DATE	DRN	DETAILS	APR	CURRENT REV 16/12/16		DESIGNED: 28/09/15	AUTHORISED: 31/03/16	SHT SIZE	REVISION
2	20/11/16	PC	AIR BLEED VALVE; DN50 VALVE; LID CHANGED		AUTHORISED: T. GALEK	RJP	T. GALEK	TOTAL SHEETS:		
1	31/03/16	MS	2016 STANDARDS REVIEW	TG	SIGNATURE: T. GALEK	MS	ORIGINAL SIGNED	SUPERSEDES: 96-0085-02 (C15)		
								DRAWING NUMBER		
								4005-30005-12		
								PREFIX	NUMBER	
									SHEET	



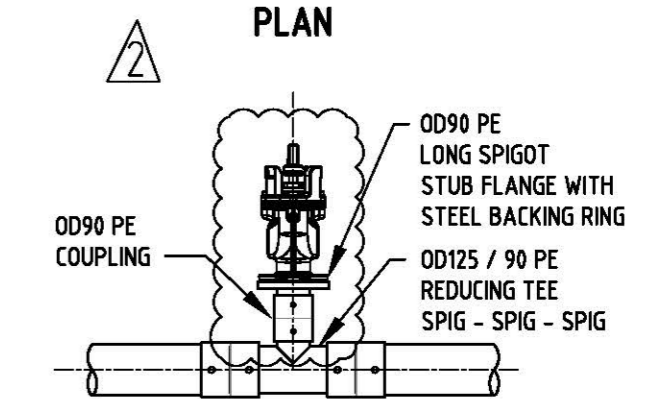
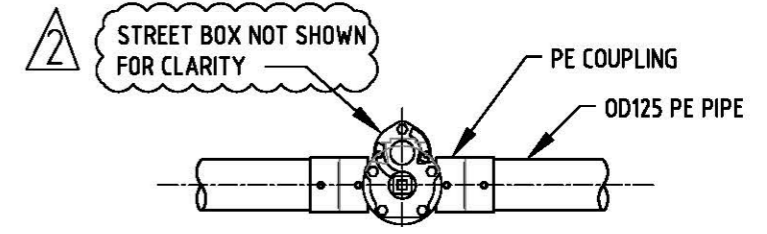
PLAN
NEW PE MAIN
BRANCH OFF PE MAIN



PLAN
NEW PE MAIN
BRANCH OFF PVC OR DICL MAIN



PLAN
WATER CONNECTION
(PE TAPPING SADDLE & PIPE
REFER 4005-30006-03)




ELEVATION
INTERMEDIATE FIRE HYDRANT
WHERE NOT PART OF A
PE SPECIAL (BUTT WELD)
(REFER 4005-30005-11)

NOTES:

1. REFER 4005-30002-01 TO 4005-30002-04 FOR GENERAL NOTES.
2. FOR APPROVED EQUIVALENT PE PIPE SIZING REFER 4005-30002-02 TABLE 3.
3. PE SPECIALS AND WELDING SHALL BE IN ACCORDANCE WITH 4005-30002-02 NOTE 16.
4. REFER 4005-30005-18 FOR INLINE THRUST PROTECTION OPTIONS AND ASSOCIATED DIMENSIONS.
5. REFER 4005-30002-02 TABLE 1 FOR MINIMUM CUT PIPE LENGTH BETWEEN FITTINGS.
6. ALL DIMENSIONS IN MILLIMETRES.

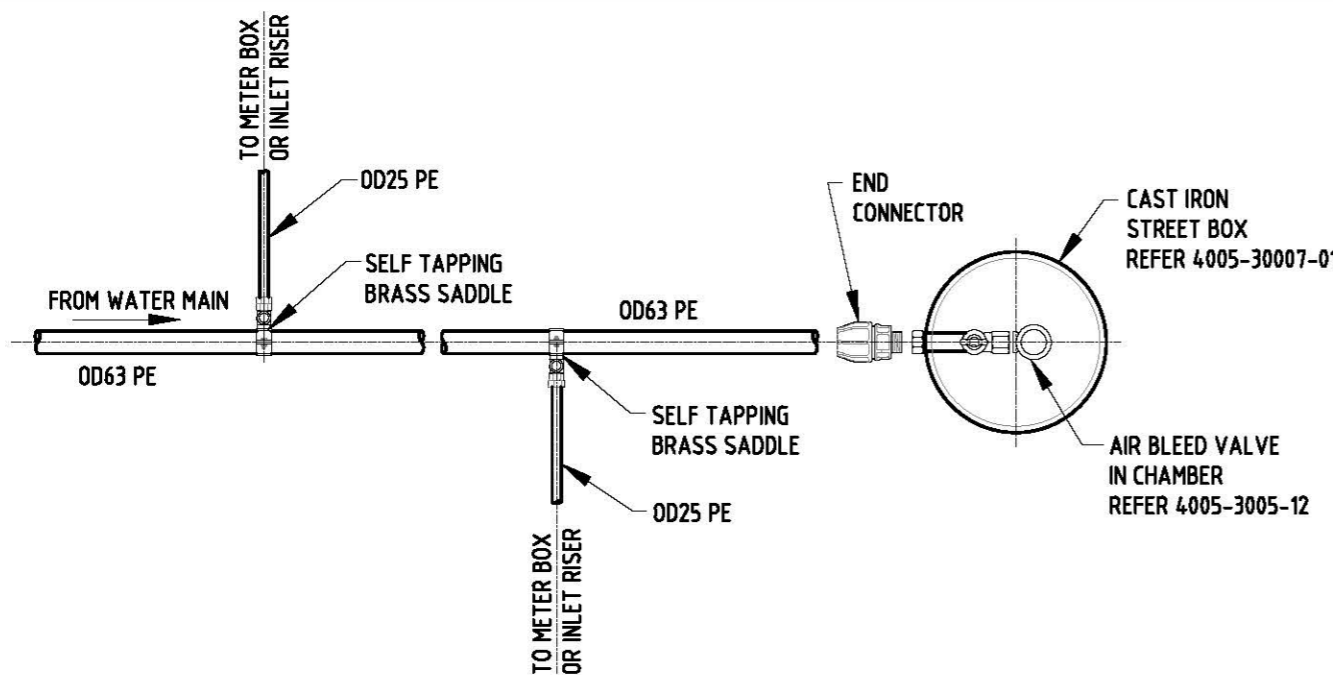
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REV	DATE	DRN	DETAILS	APR
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1	31/03/16	MS	2016 STANDARDS REVIEW	TG

DESIGN PANEL			
DESIGNED:	28/09/15	AUTHORISED:	31/03/16
RJP		T.GALEK	
DRAWN:	16/11/15	SIGNATURE:	
MS			
REVIEWED:	21/03/16	ORIGINAL SIGNED	
TG			

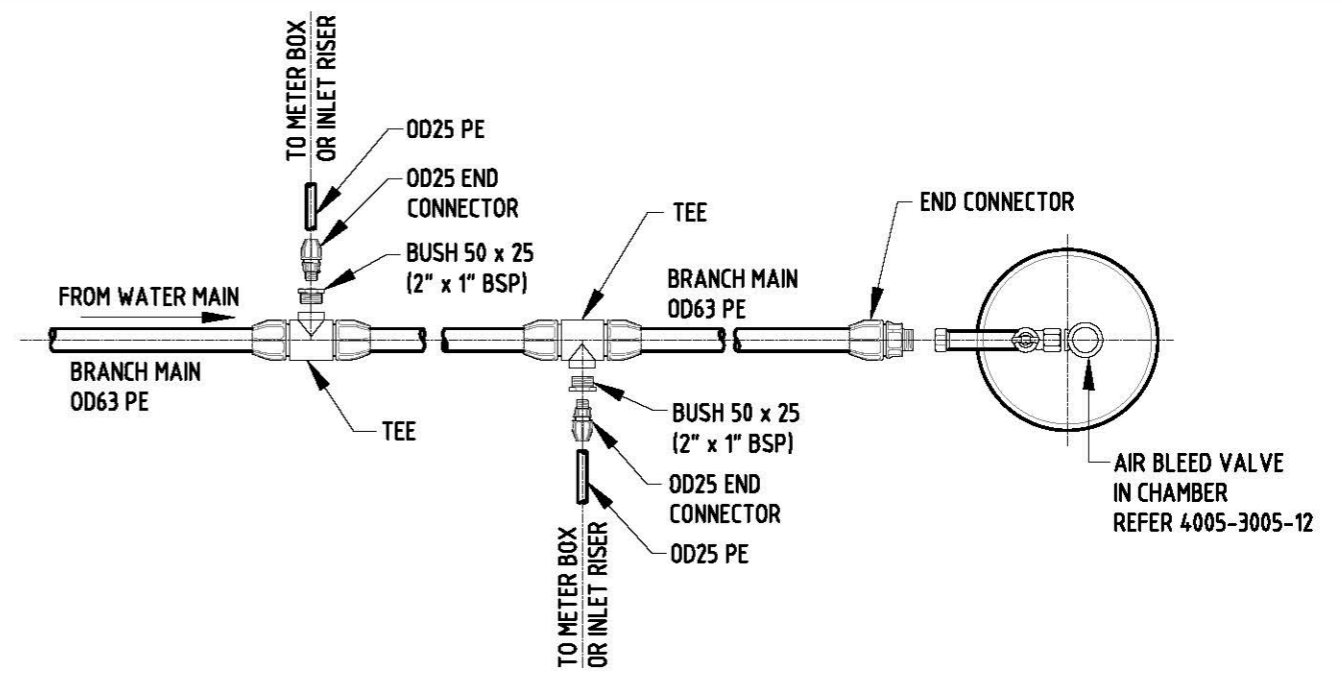

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SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
NEW POLYETHYLENE (PE) WATER MAIN
OPTIONS FOR INSTALLATION
OD125 OR LARGER

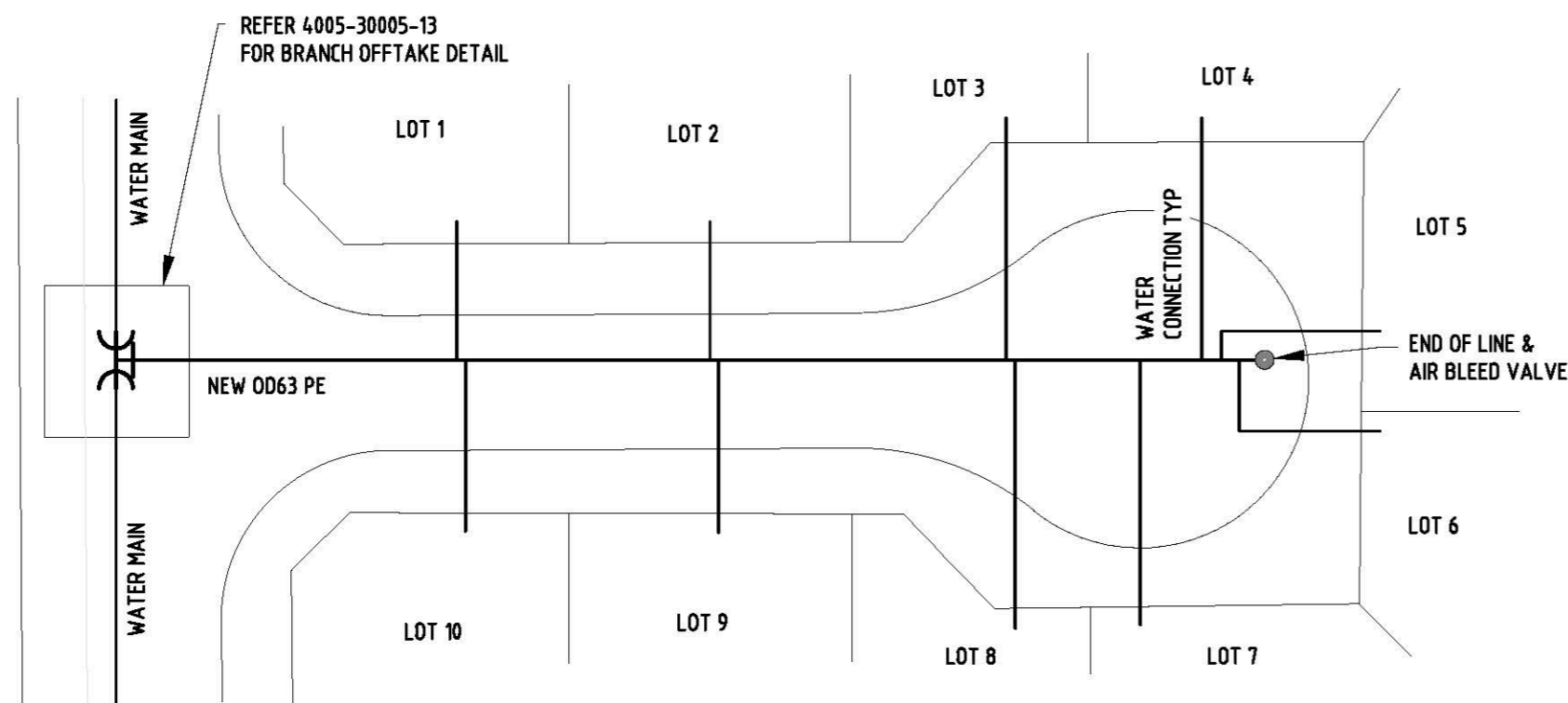
A3	2
SHT SIZE	REVISION
TOTAL SHEETS: 19	
SUPERSEDES:	
DRAWING NUMBER	
4005-30005-13	
PREFIX	NUMBER SHEET



**WATER CONNECTION
SELF TAPPING SADDLE OPTION**



**WATER CONNECTION
MECHANICAL COUPLING OPTION**



**OD63 PE MAIN
TYPICAL LAYOUT**

NOTES:

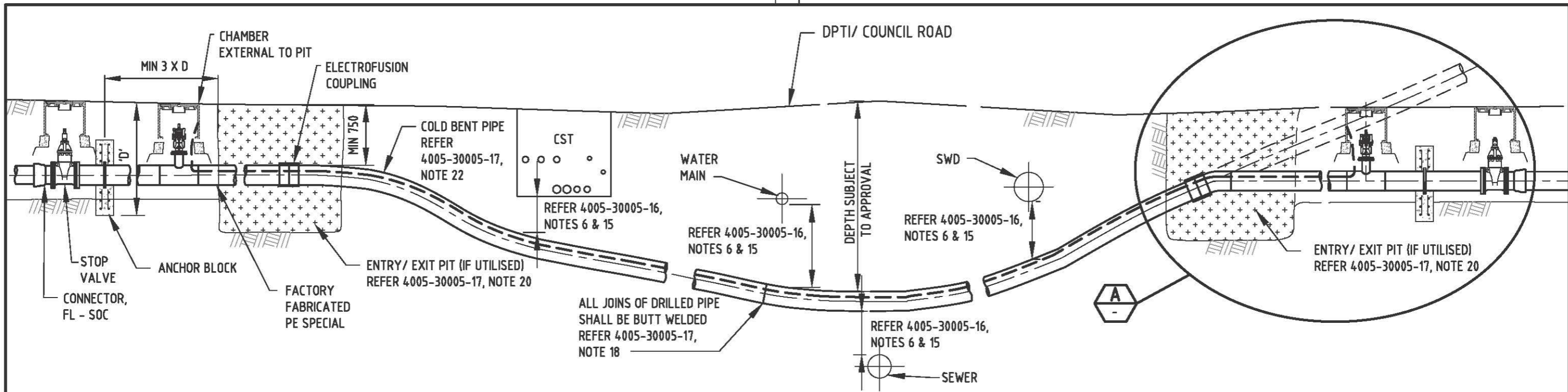
1. REFER 4005-30002-01 AND 4005-30002-02 FOR GENERAL NOTES.
2. MAXIMUM DISTANCE BETWEEN ANY ALLOTMENT AND NEAREST FIRE HYDRANT SHALL BE 80 METRES.
3. MAXIMUM LENGTH OF OD25 TUBING IS 25 METRES.
4. MAXIMUM NUMBER OF WATER CONNECTIONS FROM A OD63 PE MAIN IS 10.
5. REFER SECTION 3 FOR COMPACTED PIPE BEDDING AND BACKFILL.
6. REFER 4005-30006-01 FOR WATER CONNECTIONS TYPICAL LAYOUT.
7. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.

REVISION PANEL					
REV	DATE	DRN	DETAILS	APR	CURRENT REV AUTHORIZED:
1	31/03/16	MS	2016 STANDARDS REVIEW	TG	

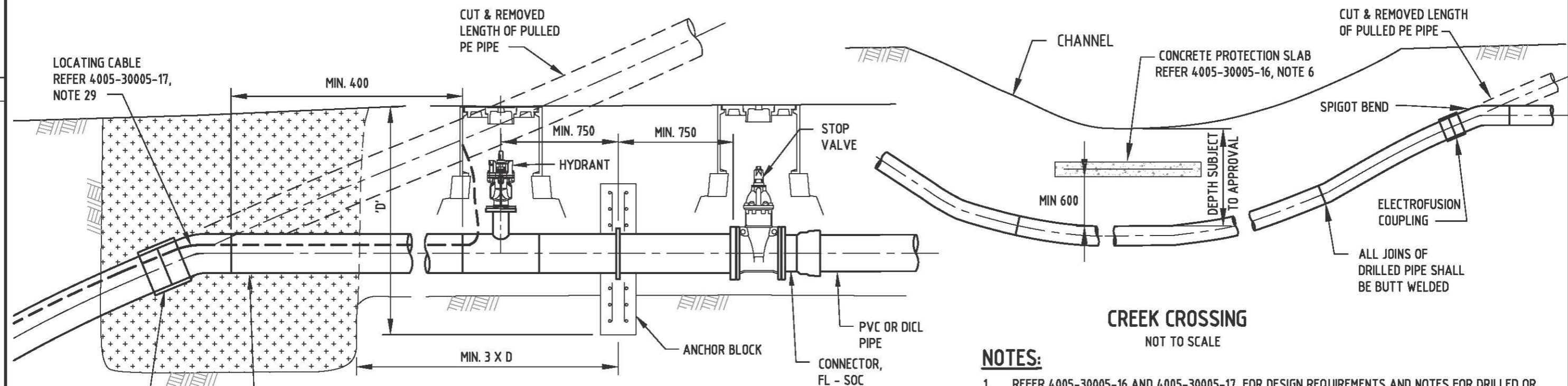
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DESIGNED:	28/09/15	AUTHORISED:	31/03/16
	RJP		T.GALEK
DRAWN:	16/11/16	SIGNATURE:	
	MS		<i>T. Galek</i>
REVIEWED:	21/03/16		
	TG		

**SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
OD63 POLYETHYLENE (PE) MAIN BRANCH
CONNECTION DETAILS**

A3	1
SHT SIZE	REVISION
TOTAL SHEETS:	
SUPERSEDES: C14, C16	
DRAWING NUMBER	
4005-30005-14	
PREFIX	NUMBER SHEET



ROAD CROSSING
NOT TO SCALE



CREEK CROSSING
NOT TO SCALE


DETAIL A
NOT TO SCALE

NOTES:

1. REFER 4005-30005-16 AND 4005-30005-17, FOR DESIGN REQUIREMENTS AND NOTES FOR DRILLED OR BORED INSTALLATIONS.
2. REFER 4005-30002-01 TO 4005-30002-04 FOR GENERAL NOTES.
3. HYDRANTS NOT SHOWN ALONG DRILL. SHOULD THE DRILL BE SUFFICIENTLY LONG TO REQUIRE THE INSERTION OF HYDRANTS THEY SHALL BE SPACED IN ACCORDANCE WITH 4005-30002-03, TABLE 1.

REVISION PANEL				
REV	DATE	DRN	DETAILS	APR
1	06/10/17	RP	NEW DRAWING	TG

DESIGN PANEL	
DESIGNED: 06/10/17 RP	AUTHORISED: 13/08/18 M.KASOY
DRAWN: 06/10/17 RP	SIGNATURE:
REVIEWED: 08/02/18 TG	


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SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
ROAD OR CHANNEL CROSSING
HORIZONTAL DIRECTIONAL DRILLING METHOD
TYPICAL DETAILS ≤ DN 250

A3	1
SHT SIZE	REVISION
TOTAL SHEETS: 19	
SUPERSEDES:	
DRAWING NUMBER	
4005-30005-15	
PREFIX NUMBER SHEET	

GENERAL NOTES:

1. TWO METHODOLOGIES ARE APPROVED FOR DRILLING CONSTRUCTION OF PE PRESSURE PIPE BENEATH ROADS OR WATERCOURSES:
 - a. HORIZONTAL DIRECTIONAL DRILLING (HDD)
 - b. MICROTUNNELING/ PIPE JACKING.
 THE USE OF AN ALTERNATIVE METHOD OR WHERE THE STANDARD METHODOLOGY IS PROPOSED TO BE MODIFIED SHALL BE CONFIRMED IN WRITING WITH THE SA WATER REPRESENTATIVE.
2. THE REQUIREMENT FOR A DESIGN DRAWING IS DEFINED HEREIN. FOR SIMPLE PROJECTS THIS MAY BE PLAN VIEW ONLY WITH COORDINATES FOR START/ FINISH/ CHANGE OF ALIGNMENT LOCATIONS. THE REQUIREMENT FOR DETAILED DESIGN DRAWINGS SPECIFIC TO THE DRILL/ BORE SHALL BE:
 - a. LENGTH < 25 METRES - GENERALLY NOT REQUIRED. FOR CRITICAL LOCATIONS A DETAIL SHALL BE INCLUDED.
 - b. LENGTH 25 TO 100 METRES - REQUIREMENTS TO BE CONFIRMED WITH THE SA WATER REPRESENTATIVE. A DESIGN SHALL BE REQUIRED WHERE MULTIPLE HORIZONTAL ALIGNMENT CHANGES ARE PROPOSED.
 - c. LENGTH > 100 METRES - DETAILED DESIGN DRAWINGS REQUIRED.
 - d. DETAILED DESIGN DRAWINGS SHALL BE IN ACCORDANCE WITH NOTE 6.
3. CONSTRUCTION MANAGEMENT SHALL BE:
 - a. IN ACCORDANCE WITH PLANS AND RISK IDENTIFICATION PROVIDED TO SA WATER UNDER THE CMS.
 - b. IN ACCORDANCE WITH ANY THIRD PARTY (E.G. AUTHORITY) REQUIREMENTS. REFER NOTE 9.
 - c. INCLUSIVE OF ANY IDENTIFIED RISKS ASSOCIATED WITH THE PROJECT.
4. A GEOTECHNICAL REPORT SHALL BE PROVIDED FOR:
 - a. CONSTRUCTION WITHIN GROUNDWATER
 - b. CROSSING OF SIGNIFICANT WATERWAYS/ RIVER CROSSINGS.
 - c. DIFFICULT SOILS OR CRITICAL LOCATIONS WHERE REQUESTED BY THE SA WATER REPRESENTATIVE.
 - d. WHERE COMPLEX SITE CONDITIONS ARE ASSESSED BY THE DESIGNER AS BEING A SIGNIFICANT RISK.
5. PE IS APPROVED UP TO DN250. SHOULD A PROJECT REQUIRE LARGER DIAMETER PE:
 - a. SPECIFIC APPROVAL FROM THE SA WATER REPRESENTATIVE WILL BE REQUIRED TO PROCEED.
 - b. THE DESIGNER SHALL BE RESPONSIBLE FOR THRUST BLOCK DESIGN, CONFIRMATION OF SOIL CLASSIFICATION AND GEOTECHNICAL INVESTIGATIONS, TOGETHER WITH ANY SITE SPECIFIC REQUIREMENTS,
 - c. THE PIPE & FITTINGS SHALL BE OBTAINED FROM AN APPROVED PIPE MANUFACTURER, (REFER TS 0503).


DESIGN:

6. THE CONSULTANT DETAILED DESIGN DRAWINGS SHALL INCLUDE:
 - THE PIPE HORIZONTAL AND VERTICAL ALIGNMENTS. REFER NOTES 2 & 8. THE VERTICAL ALIGNMENT SHALL BE DISPLAYED ON A LONGITUDINAL SECTION/ ELEVATION.
 - THE POSITION OF ALL START AND FINISH LOCATIONS TOGETHER WITH ENTRY PITS.
 - THE PIPE CONNECTIONS AT EACH END OF THE DRILLED PIPE DETAILING:
 - THE FACTORY FABRICATED PE SPECIAL (WITH THRUST CONNECTOR AND HYDRANT BRANCH),
 - THE METHOD OF JOINING THE PE SPECIAL TO THE SEVERED DRILLED PIPE,
 - THE LOCATION OF VALVES, HYDRANTS AND ANCHOR BLOCKS. REFER NOTE 11.
 - ALL SERVICES. REFER NOTE 7.
 - THE REQUIREMENT FOR A CONCRETE PROTECTION SLAB FOR A CREEK OR CHANNEL CROSSING. WHERE REQUIRED, THE SLAB DESIGN SHALL BE PROVIDED TO THE SA WATER REPRESENTATIVE.
 - DETAILS OF ANY THIRD PARTY APPROVALS OBTAINED. REFER NOTE 8., E.G. AUTHORITY REQUIREMENTS, ETC.
 - THE REQUIREMENT FOR A LOCATING WIRE SHALL BE CONFIRMED. REFER 4005-30005-17, NOTE 29.
 - OTHER RELEVANT DETAIL SPECIFIC TO THE SITE.
7. ALL SERVICES TOGETHER WITH PROPOSED CLEARANCES SHALL BE:
 - SHOWN ON THE DESIGN DRAWINGS. DRILLING CONTRACTORS TEND TO UTILISE LARGE CLEARANCE OFFSETS. THE DESIGNER SHALL SEEK ADVICE FROM A CONTRACTOR PRIOR TO FINALISING THE DRAWINGS.
 - SUBSEQUENTLY CONFIRMED BY THE DRILLING CONTRACTOR. **REFER NOTE 15.**

8. THE PIPE ALIGNMENT:
 - FOR A ROAD/ RAIL/ CREEK CROSSING, THE **HORIZONTAL ALIGNMENT FOR THE DRILLED SECTION SHALL NOT DEVIATE UNLESS APPROVED BY SA WATER OR THE RELEVANT AUTHORITY.**
 - EL VALUES ALONG THE PIPELINE FOR THE NS AND ALL VERTICAL CHANGES SHALL BE CAPTURED.
 - THE DRILLED CROSSING SHALL EXTEND BEYOND THE FULL WIDTH OF THE ROAD OR CHANNEL. THAT IS, THERE SHALL BE NO PART DRILL OR CHANGE OF PIPE MATERIAL WITHIN THE ROAD LIMITS (ROAD MEDIAN INCLUDED).
9. AS PART OF THE DESIGN PROCESS THE DESIGNER SHALL CONFIRM WITH THE ROAD/ RAIL/ WATERCOURSE AUTHORITY:
 - APPROVAL FOR THE PROPOSED ALIGNMENT AND PIPE DEPTH.
 - ENDORSEMENT FOR THE PROPOSED CONSTRUCTION METHODOLOGY.
 - AGREEMENT FOR THE IMPACT THE PROJECT WILL IMPOSE FOR THE ANTICIPATED PROJECT DURATION.
 - THE REQUIREMENT FOR A SLEEVE PIPE.
 - WHERE THE PIPE CROSSES A CHANNEL OR CREEK, THE CONSULTANT SHALL CONTACT THE NATURAL RESOURCES MANAGEMENT BOARD FOR CONFIRMATION OF A PROTECTION SLAB AND ANY OTHER REQUIREMENTS.
 IN ADDITION, DETAILS OF THE AUTHORITY APPROVALS SHALL BE PRESENTED TO SA WATER BY MEANS OF:
 - INCLUDED ON THE DRAWINGS SHALL BE THE AUTHORITY CONTACT (AND PARTICULARS) WHO PROVIDED THE APPROVAL.
 - A COPY OF THE THIRD PARTY AUTHORITY PERMIT/ APPROVAL (TOGETHER WITH ANY CONDITIONS).
10. ANCHOR BLOCKS SHALL BE INSTALLED ON EACH SIDE OF THE BORE AND SHALL BE LOCATED **IN UNDISTURBED SOIL. IT IS MANDATORY THAT THEY SHALL BE POSITIONED SUFFICIENTLY CLEAR OF ANY EXCAVATED AREA FOR AN ENTRY PIT OR THE DRILL HOLE.** REFER 4005-30005-15 FOR REQUIRED SEPARATION.
11. A VALVE AND HYDRANT AND ANCHOR BLOCK SHALL BE POSITIONED EACH SIDE OF THE BORE.
12. FOR HDD PIPELINES WHERE THE DRILL LENGTH EXCEEDS 350 METRES, THE DESIGNER SHALL REVIEW THE PIPE SDR. THE DRILL LENGTH SHALL NOT PLACE UNDUE LOAD OR STRESS ON THE PIPE AND WELDS AND SHALL BE CAPABLE OF WITHSTANDING THE ESTIMATED JACKING FORCE. WHERE A HIGHER SDR VALUE (THAN SDR 11) IS REQUIRED, THE PIPE SDR RATING SHALL BE SHOWN ON THE DRAWINGS AND INCLUDED IN THE SPECIFICATION. THE LOCATION OF INTERMEDIATE HYDRANTS SHALL ALSO BE CONSIDERED AND SHOWN ON THE DRAWINGS. THIS SHALL INCLUDE THE FITTING AND METHOD TO BE USED TO INSERT THE TEE FOR THE HYDRANT. REFER 4005-30005-17. NOTE 29 FOR THE REQUIREMENT FOR A LOCATING CABLE.

CONSTRUCTION:

13. ONLY A SA WATER APPROVED CONTRACTOR CAN UNDERTAKE THE DRILL/ BORE. THE NAME OF THE CONTRACTOR SHALL BE SUBMITTED TO THE SA WATER REPRESENTATIVE FOR APPROVAL PRIOR TO COMMENCEMENT. SA WATER RESERVES THE RIGHT TO REJECT THE NOMINATED CONTRACTOR.
14. PRIOR TO COMMENCEMENT OF WORK:
 - INTERFACE RESPONSIBILITIES BETWEEN THE CIVIL CONTRACTOR AND THE DRILLING CONTRACTOR **SHALL BE CONFIRMED IN WRITING TO THE SA WATER REPRESENTATIVE.**
 - THE DRILLING CONTRACTOR SHALL UNDERTAKE SITE INVESTIGATIONS/ TESTING TO **CONFIRM THE APPROVED DESIGN.** ANY CONDITIONS ASSOCIATED WITH AUTHORITY APPROVALS SHALL BE COMPLIED WITH. REFER NOTE 9.
15. THE DRILLING CONTRACTOR'S INVESTIGATIONS/ TESTING SHALL CONFIRM:
 - ALL ENTRY/ EXIT LOCATIONS TOGETHER WITH SIZE AND DEPTH, (I.E. THE REQUIRED WORK AREA),
 - THE PIPE HORIZONTAL AND VERTICAL ALIGNMENTS,
 - DEPTH AND CHAINAGE OF SERVICES TO BE NEGOTIATED ALONG THE PIPE ALIGNMENT,
 - THE EXPECTED CLEARANCES FROM THESE SERVICES.
 - A RISK ASSESSMENT WITH CONSIDERATION OF OVERALL SITE SAFETY.
 - ANY DEVIATION FROM THE APPROVED DESIGN.
16. COLD BENDING OF THE PIPE SHALL NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS.

REVISION PANEL					DESIGN PANEL			 SA WATER STANDARD DRAWINGS WATER SUPPLY CONSTRUCTION MANUAL ROAD OR CHANNEL CROSSING HORIZONTAL DIRECTIONAL DRILLING METHOD NOTES	A3	1
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					RP	M. AKSOY				
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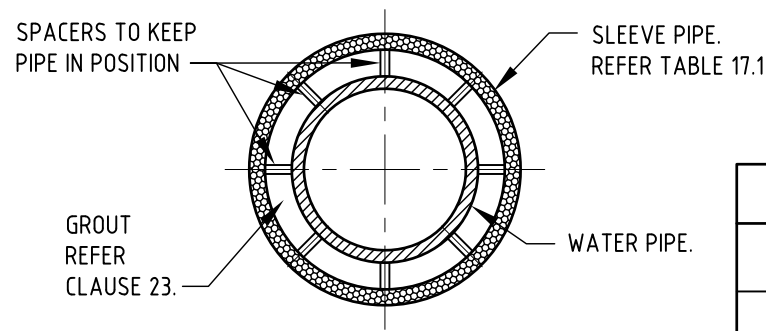
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A3	1
SHT SIZE	
TOTAL SHEETS: 19	
SUPERSEDES:	
DRAWING NUMBER	
4005-30005-16	
PREFIX	NUMBER
	SHEET

NOTES:

CONSTRUCTION: (CONT'D)

17. SHOULD IT BE DECIDED TO VARY THE APPROVED DESIGN, THE DRILLING CONTRACTOR SHALL PROVIDE DETAILS TO THE DESIGNER. **THE DESIGNER SHALL PREPARE AMENDED DESIGN DRAWINGS TO BE SUBMITTED TO THE SA WATER REPRESENTATIVE FOR APPROVAL PRIOR TO CONSTRUCTION PROCEEDING.**
18. THE JOINTING SYSTEM FOR THE DRILLED OR BORED PE PIPE SHALL BE BUTT WELD. FIELD BUTT WELDING SHALL ONLY BE PERFORMED BY A SA WATER AUTHORISED CONTRACTOR. REFER TS 0503, 9.1.2.
19. PE SPECIALS (FOR END CONNECTIONS) SHALL ONLY BE OBTAINED FROM A SA WATER AUTHORISED CONTRACTOR. REFER TS 0503, 9.1.1.
20. ENTRY/ EXIT PITS SHALL BE DECOMMISSIONED BY REMOVING ALL CONSTRUCTION EQUIPMENT AND FILLING THE PITS TO THE FSL WITH:
 - SA-C SAND COMPACTED TO 95% MMDD.
21. THE HDD BORE PATH SHALL FOLLOW THE APPROVED DESIGNED ALIGNMENT AND CONFORM TO THE PERMISSIBLE TOLERANCES UNLESS OTHERWISE AGREED BY THE SA WATER REPRESENTATIVE. THE PERMISSIBLE TOLERANCES SHALL BE:
 - HORIZONTAL, +/- 500 mm,
 - VERTICAL, +/- 500 mm.
22. THE COMPLETION OF EACH END OF THE DRILL SHALL BE A HOLD POINT. JOINING OF THE FACTORY FABRICATED PE SPECIAL SHALL NOT OCCUR FOR A MINIMUM OF 12 HOUR DURATION TO ENABLE COOLING/ SETTLEMENT OF THE PIPE. REFER 4005-30002-02, NOTE 11.
23. SHOULD A SLEEVE PIPE BE REQUIRED:
 - DETAILS SHALL BE SHOWN ON THE DESIGN DRAWINGS TOGETHER WITH THE SLEEVE DN AND MATERIAL.
 - THE PIPE SHALL BE GRP, BUTT WELDED PE OR STEEL OF A PN RATING APPROPRIATE TO THE GROUND CONDITIONS,
 - PIPE SPACERS SHALL BE UTILISED WITHIN THE SLEEVE PIPE,
 - WHERE THE HOLE ANNULUS > 50, THE SLEEVE VOID SHALL BE GROUTED WITH A FLOWABLE GROUT, (EG. LIQUAFILL OR BENTONITE),
 - THE CONTRACTOR SHALL ENSURE GROUTING PRESSURES DOES NOT EXCEED THE BUCKLING CAPACITY OF THE PIPE WHEN EMPTY.
24. A STEEL SLEEVE OR FABRICATED STEEL PIPEWORK SHALL BE PROTECTED IN ACCORDANCE WITH SA WATER REQUIREMENTS. REFER DETAIL 1.



TYPICAL CROSS SECTION

DETAIL 1 - PIPE PLACEMENT WITHIN SLEEVE

TABLE 17.1

BORED WATER/ SLEEVE PIPE SIZES				
WATER PIPE (DN)	100	150	200	250
SLEEVE PIPE MIN (DN)	300	375	425	500

25. FOR MICROTUNNELING OR PIPE JACKING FULLY WELDED MSCL PIPE MAY BE PERMITTED PROVIDED THERE IS A MAXIMUM OF ONE PIPE JOINT BELOW THE STRUCTURE BEING CROSSED.

26. THE INSTALLED PIPE SHALL BE SUBJECT TO NORMAL ACCEPTANCE TESTING, E.G. PRESSURE TESTING. REFER DEVELOPER AGREEMENT OR THE SPECIFICATION FOR REQUIREMENTS.
27. THE AS CONSTRUCTED DRAWINGS SHALL CLEARLY INDICATE AND LABEL THE DRILLED/ BORED SECTION OF THE MAIN. THE PIPE MATERIAL AND RATING SHALL BE MARKED.
28. A BORE LOG FOR EACH BORE SHALL BE INCLUDED WITH THE AS CONSTRUCTED DRAWINGS. THE LOG SHALL BE NEAT AND LEGIBLE, PRESENTED IN TABULAR FORM. INFORMATION PROVIDED SHALL INCLUDE, AS A MINIMUM:
 - PROJECT NAME AND LOCATION,
 - DRILLING COMPANY NAME TOGETHER WITH THE NAME OF THE COMPANY REPRESENTATIVE,
 - DATE,
 - BORE NO.,
 - SIZE AND NO OF CONDUITS INSTALLED,
 - DEPTH BELOW FINISHED SURFACE LEVEL TO THE TOP OF THE BORE AT APPROXIMATELY 5 METRE INTERVALS AND WHERE THERE IS A CHANGE OF HORIZONTAL ALIGNMENT OR VERTICAL GRADE,
 - ALIGNMENT DETAILS PROVIDED WITH COORDINATES.
29. LOCATING CABLE.

THE REQUIREMENT FOR A LOCATING CABLE SHALL BE CONFIRMED BY THE DESIGNER DURING THE DETAILED DESIGN. GUIDING PARAMETERS ARE:

 - SHORT LENGTH WITH STRAIGHT OR MINOR CHANGE OF HORIZONTAL ALIGNMENT - GENERALLY NOT REQUIRED PROVIDING SUFFICIENT VALVE/ HYDRANTS IN STREET BOXES ARE INCLUDED IN THE DESIGN (FOR ESTABLISHMENT OF THE ALIGNMENT).
 - SIGNIFICANT OR MULTIPLE CHANGES OF HORIZONTAL ALIGNMENT OR CURVED ALIGNMENT - REQUIRED.
 - LENGTH > 150 METRES - REQUIRED.

CABLE INSTALLATION SHALL BE,

 - AS PART OF THE HDD INSTALLATION, ADJACENT THE PIPE.
 - A SINGLE CONTINUOUS CABLE. WHERE THERE MAY BE A PIPELINE INTERSECTION OR JUNCTION, ONLY APPROVED CONNECTORS SHALL BE UTILISED. LOOPING OR COILING OF CABLE SHALL NOT BE PERMITTED.
 - ANY DAMAGE OR BREAK OF THE TRACE CABLE DURING INSTALLATION SHALL BE IMMEDIATELY REPAIRED BY:
 - REMOVING THE DAMAGED CABLE,
 - INSTALLING A NEW SECTION OF CABLE WITH APPROVED CONNECTORS.
 - NO BARE TRACER CABLE SHALL BE EXPOSED EITHER BELOW OR ABOVE GROUND. EXPOSED ENDS SUCH AS AT VALVES OR HYDRANTS ARE NOT PERMITTED AND SHALL BE PROTECTED BY APPROVED CONNECTORS.
 - WHERE THE PE PIPE MAY BE CUT TO ENABLE THE FITTING OF TEES FOR VALVES OR HYDRANTS, IF THIS WORK IMPACTS THE TRACER CABLE, THE INTEGRITY OF THE LINE SHALL BE MAINTAINED. APPROVED JOINERS TOGETHER WITH A SHORT LENGTH OF CABLE SHALL BE USED.
 - TRACER CABLE SHALL NOT BE TAPED TO OR WRAPPED AROUND PIPE.
 - TRACER CABLE MUST BE PROPERLY EARTHED AS PER THE MANUFACTURERS RECOMMENDATIONS.

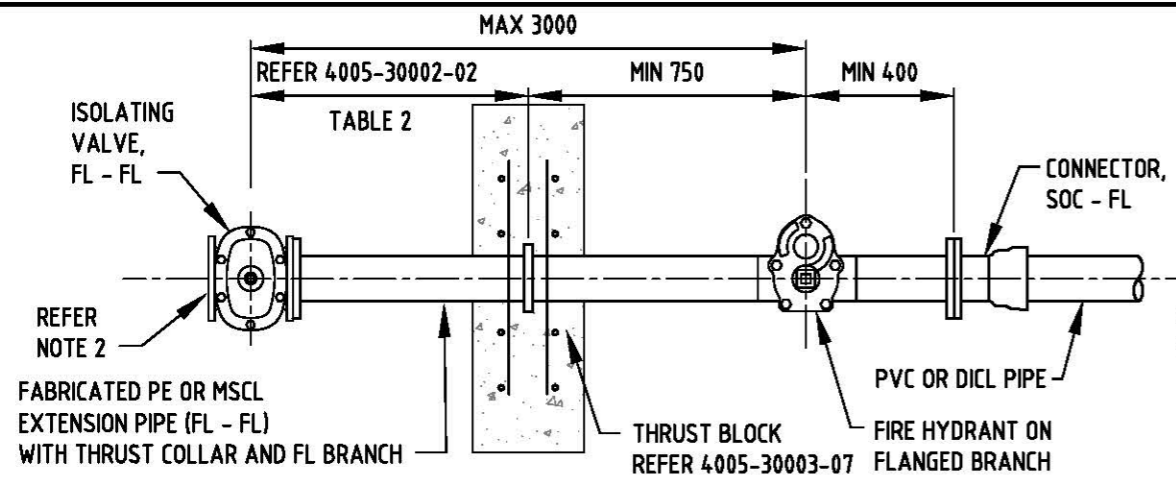
MINIMUM CABLE SPECIFICATION SHALL BE,

 - ALL TRACE CABLE SHALL BE COPPER CLAD STEEL (CCS), COLOR COATED HDPE INSULATION INTENDED FOR DIRECT BURY.
 - ALL TRACE CABLE SHALL BE A COPPERHEAD PRODUCT OR AN APPROVED EQUIVALENT.
 - CABLE STRENGTH SHALL BE #12 AWG CCS, EXTRA HIGH STRENGTH WITH MINIMUM 521 KG. BREAK LOAD. MINIMUM HDPE INSULATION THICKNESS SHALL BE 30 MIL.

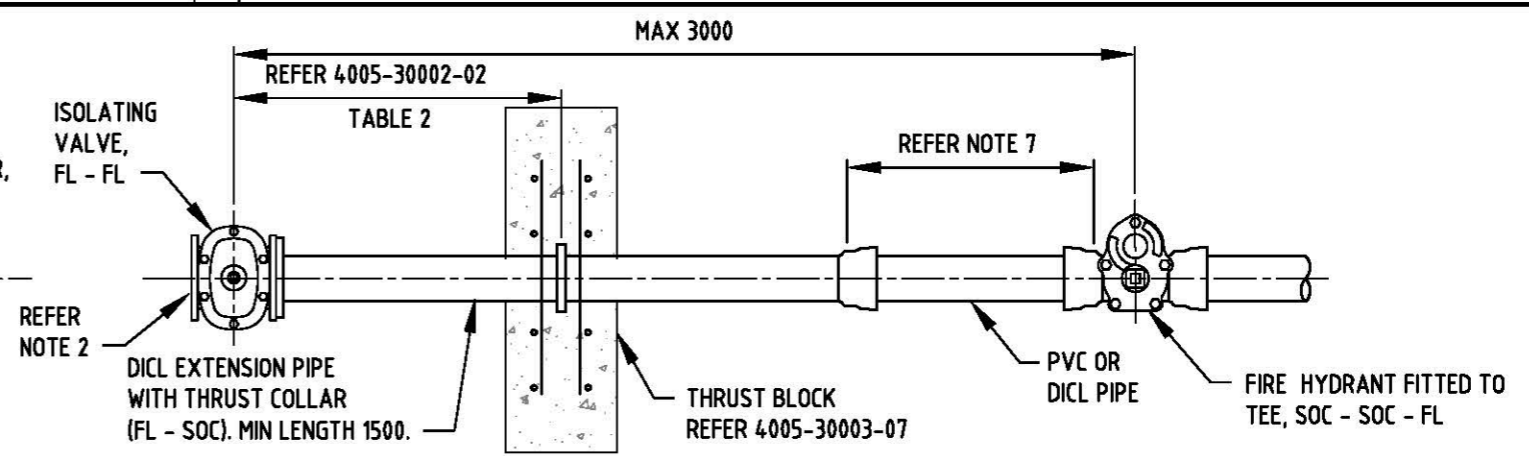
MINIMUM CONNECTOR SPECIFICATION SHALL BE,

 - CONNECTORS SHALL BE GEL FILLED AND RATED FOR DIRECT BURIAL. THEY SHALL BE EITHER
 - THE COPPERHEAD 3-WAY SNAKEBITE LOCKING CONNECTOR, OR,
 - THE DRYCONN 3-WAY DIRECT BURY LUG, OR AN APPROVED EQUIVALENT.
 - CABLE TERMINATIONS SHALL BE PROTECTED BY MEANS OF A DRYCONN SINGLE LUG GEL FILLED CONNECTOR, OR AN APPROPRIATE EQUIVALENT

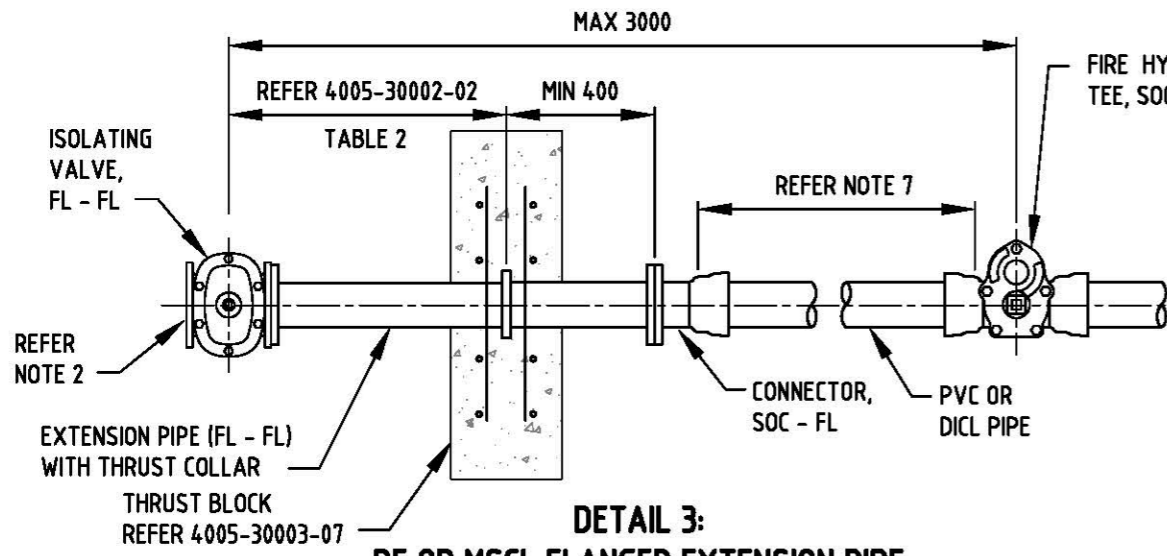
REVISION PANEL					DESIGN PANEL		 SA WATER STANDARD DRAWINGS WATER SUPPLY CONSTRUCTION MANUAL ROAD OR CHANNEL CROSSING HORIZONTAL DIRECTIONAL DRILLING METHOD NOTES AND TYPICAL SLEEVE DETAIL	A3	1
REV	DATE	DRN	DETAILS	APR	CURRENT REV AUTHORISED:	AUTHORISED: 13/08/18		SHT SIZE	REVISION
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							SUPERSEDES:		
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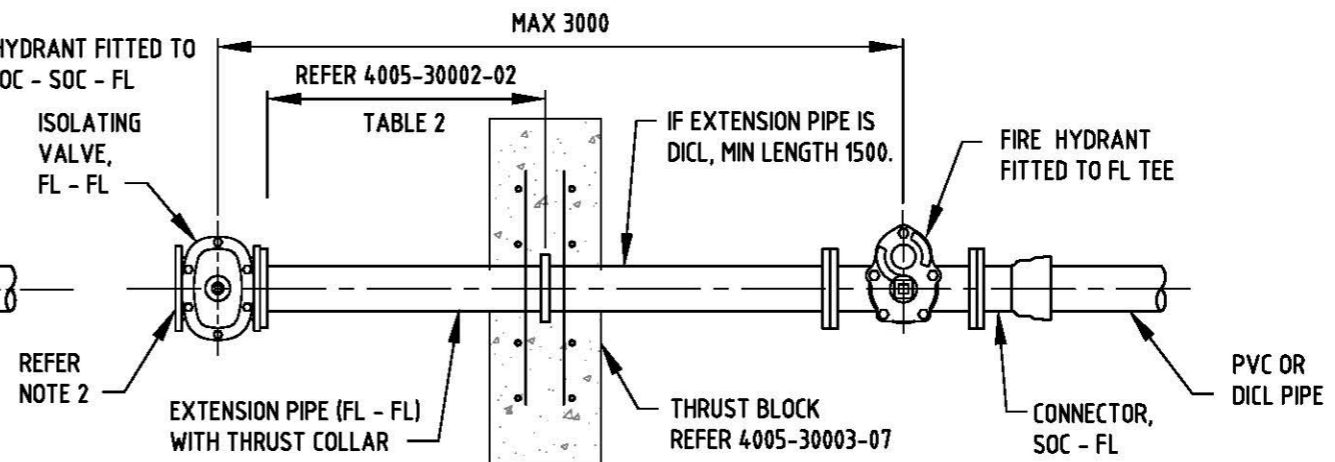
DETAIL 1:
PE OR MSCL FLANGED EXTENSION PIPE INCLUDING HYDRANT TEE



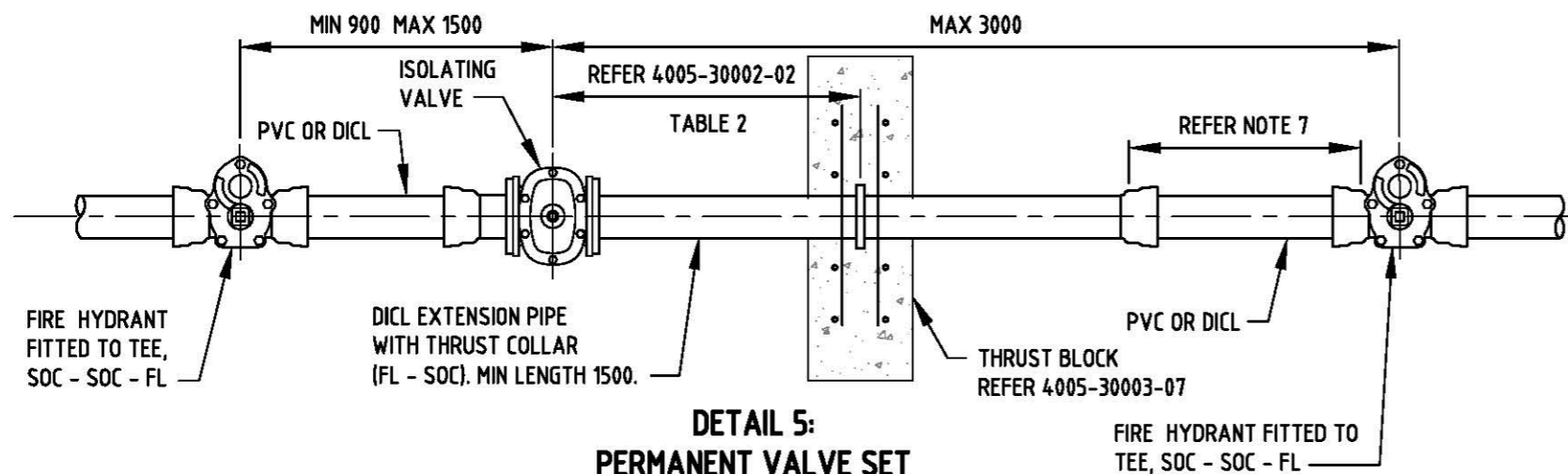
DETAIL 2:
DICL FLANGE SOCKET EXTENSION PIPE



DETAIL 3:
PE OR MSCL FLANGED EXTENSION PIPE



DETAIL 4:
DICL, PE OR MSCL FLANGED EXTENSION PIPE. FLANGED HYDRANT TEE ADJACENT




DETAIL 5:
PERMANENT VALVE SET
DICL FLANGE SOCKET EXTENSION PIPE. HYDRANT EACH SIDE

NOTES:

1. REFER 4005-30002-01 TO 4005-30002-04 FOR GENERAL NOTES.
2. REFER 4005-30005-03 FOR BRANCH CONFIGURATIONS PRECEDING THE VALVE.
3. REFER SECTION 5 FOR GENERAL MAIN LAYING ARRANGEMENTS.
4. DICL EXTENSION PIECES LENGTH SHALL BE MINIMUM 1500.
5. PE EXTENSION PIPES SHALL ONLY BE ASSEMBLED BY AUTHORISED FABRICATORS. REFER TS 0503, 9.1.1.
6. PE EXTENSION PIECES SHALL BE PERMITTED FOR PIPE DIAMETERS UP TO AND INCLUDING DN 250 (OD 315). AN ALTERNATIVE APPROVED PIPE MATERIAL SHALL BE USED FOR LARGER DIAMETERS.
7. REFER 4005-30002-02, TABLE 1 FOR MINIMUM PIPE LENGTH.
8. WHERE MAX. 3000 SHOWN, THIS LENGTH SHALL NOT BE EXCEEDED. THIS LIMITATION IS REQUIRED FOR DISINFECTION PURPOSES.
9. IF IT IS PROPOSED TO POSITION A WATER CONNECTION OFF A PE EXTENSION PIPE, REFER 4005-30005-10 FOR POSITION RELATIVE TO OTHER FITTINGS. THIS MAY REQUIRE LENGTHENING OF THE EXTENSION PIECE. NOTE 8 SHALL BE ADHERED TO.
10. REFER 4005-30007-01 AND 4005-30007-02 FOR COVER ASSEMBLIES.
11. ALL DIMENSIONS IN MILLIMETRES.

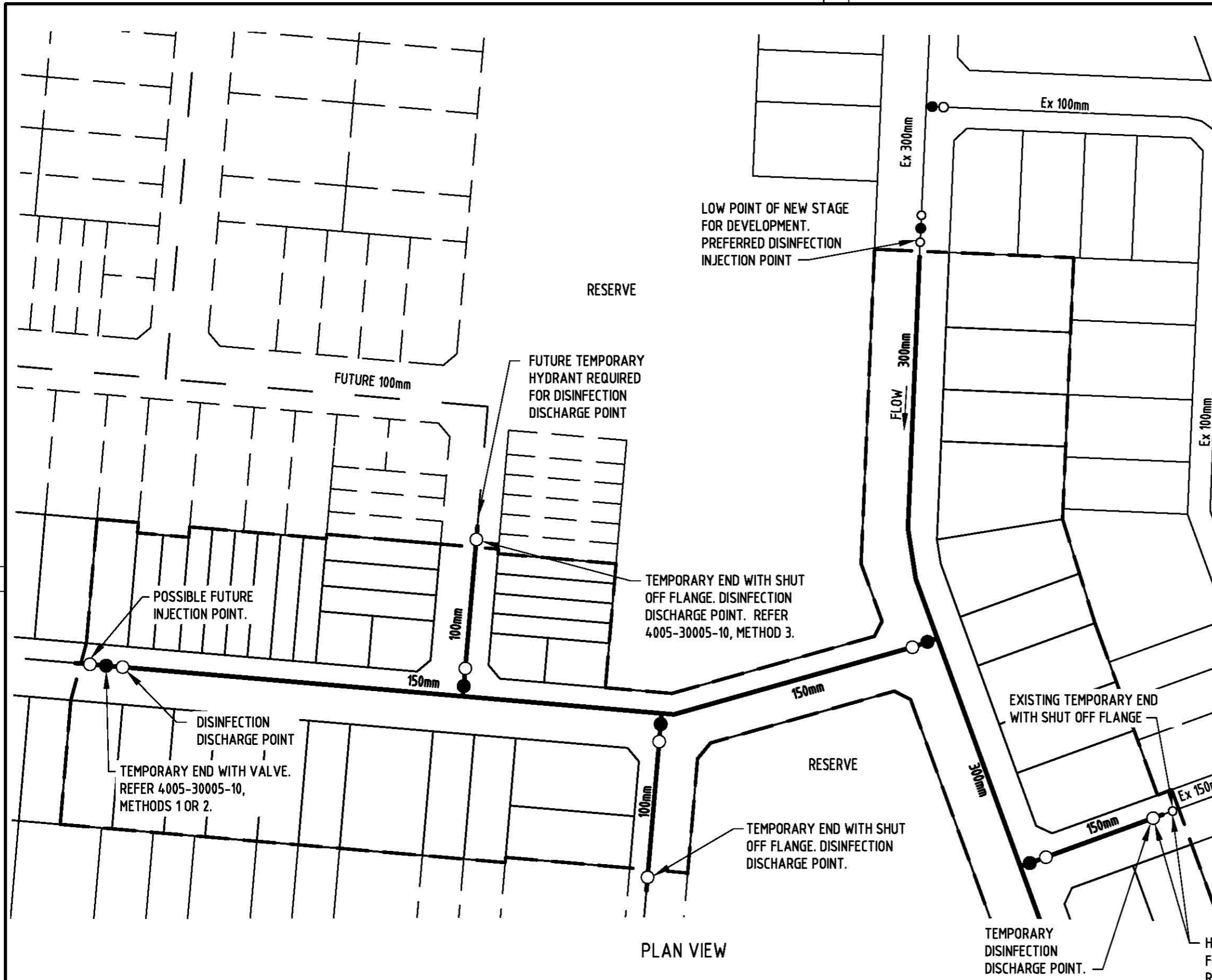
REVISION PANEL				
REV	DATE	DRN	DETAILS	APR
1	09/06/18	RP	NEW DRAWING	TG

DESIGN PANEL	
DESIGNED: 16/02/18 RJP	AUTHORISED: 08/08/18 T. GALEK
DRAWN: 16/02/18 RP	SIGNATURE: <i>T. Galek</i>
REVIEWED: TG	


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SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
ISOLATION VALVES
WITH IN LINE RESTRAINT

A3	1
SHT SIZE	REVISION
TOTAL SHEETS: 19	
SUPERSEDES:	
DRAWING NUMBER	
4005-30005-18	
PREFIX	NUMBER SHEET



PLAN VIEW

NOTES

DESIGN

1. FOR EACH STAGE OF A DEVELOPMENT, THE DESIGNER SHALL CONSIDER DISINFESTATION REQUIREMENTS, INCLUDING INJECTION AND DISCHARGE LOCATIONS, FOR THE POSITIONING OF HYDRANTS AND VALVES. THIS IS PARTICULARLY RELEVANT ADJACENT THE STAGE BOUNDARY.
2. A HYDRANT IS REQUIRED AT THE END OF EACH SECTION OF MAIN TO BE DISINFESTED (FOR DISCHARGING THE SOLUTION).
3. REFER 4005-30005-10 FOR TEMPORARY END OPTIONS SHOWING THE REQUIRED FITTINGS.
4. PREFERENCE IS TO USUALLY UNDERTAKE DISINFESTATION FROM A LOW POINT WITHIN THE DEVELOPMENT AND TO DISCHARGE AT A HIGH POINT. (THIS MAY NOT ALWAYS BE POSSIBLE).
5. REFER 4005-30002-01 TO 4005-30002-04 FOR GENERAL NOTES.

CONSTRUCTION

6. FOR MAIN LENGTHS > 5.5 METRES, DISINFESTATION SHALL BE UNDERTAKEN BY EITHER SA WATER OR ITS REPRESENTATIVE.
7. THE CONTRACTOR SHALL PROVIDE SA WATER OR ITS REPRESENTATIVE WITH THE REQUIRED NOTIFICATIONS AND COMPLY WITH THE STATED NOTIFICATION PERIOD.
8. DISINFESTATION SHALL OCCUR FOLLOWING THE MAINS LINK UPS AND PRESSURE TESTING AT A TIME AGREED FOLLOWING PROCESSING OF THE NOTIFICATIONS.
9. PRIOR TO THE LINK UPS AND DISINFESTATION, THE CONTRACTOR SHALL INTERNALLY CLEAN ALL NEW PIPES AND FITTINGS. ALL CONSTRUCTION DEBRIS, SAND AND SEDIMENT, TOGETHER WITH OTHER CONTAMINANTS SHALL BE REMOVED.
10. DISINFESTATION OF WATER MAINS IS USUALLY ACHIEVED BY INJECTING A SOLUTION CONTAINING FREE CHLORINE INTO THE WATER MAINS WHILE CHARGING THE MAIN WITH POTABLE WATER FROM AN EXISTING CONNECTING MAIN.
11. THE INJECTION POINT IS LOCATED UPSTREAM OF A VALVE USED TO CONTROL THE FLOW OF WATER.
12. WHEN THE INJECTION POINT IS ADJACENT THE NEW MAIN IT IS TO BE WITHIN 3 METRES OF THE VALVE.
13. WHERE THERE ARE MULTIPLE LINK INS TO THE EXISTING RETICULATION SYSTEM A HYDRANT SHALL BE POSITIONED ADJACENT EACH LINK IN LOCATION.
14. FOR INDIVIDUAL FITTINGS OR A LENGTH < 5.5 METRES, TOPICAL (SPRAY) DISINFESTATION SHALL BE APPLIED. ALL ITEMS SHALL BE CLEANED PRIOR TO THE SPRAY BEING APPLIED. ALL SPRAY DISINFESTATION SHALL BE WITNESSED BY THE SA WATER REPRESENTATIVE.
15. FOR A LINK IN TO AN EXISTING WATER MAIN INVOLVING A CUT OUT OF THE MAIN, ANY PIPE, VALVE OR FITTINGS REQUIRED FOR THE NEW BRANCH AND REINSTATEMENT OF THE EXISTING MAIN SHALL BE DISINFESTED USING THE TOPICAL SPRAY METHOD.

REVISION PANEL				
REV	DATE	DRN	DETAILS	APR
1	24/05/18	RP	NEW DRAWING	TG

DESIGN PANEL	
DESIGNED: 24/05/18 RP	AUTHORISED: 08/08/18 T. GALEK
DRAWN: 24/05/18 RP	SIGNATURE: <i>T. Galek</i>
REVIEWED: 08/08/18 TG	

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SA WATER STANDARD DRAWINGS
WATER SUPPLY CONSTRUCTION MANUAL
MAINS DISINFESTION
DESIGN GUIDELINES
AND CONSTRUCTION REQUIREMENTS

A3	1
SHT SIZE	REVISION
TOTAL SHEETS: 19	
SUPERSEDES:	
DRAWING NUMBER	
4005-30005-19	
PREFIX	NUMBER SHEET