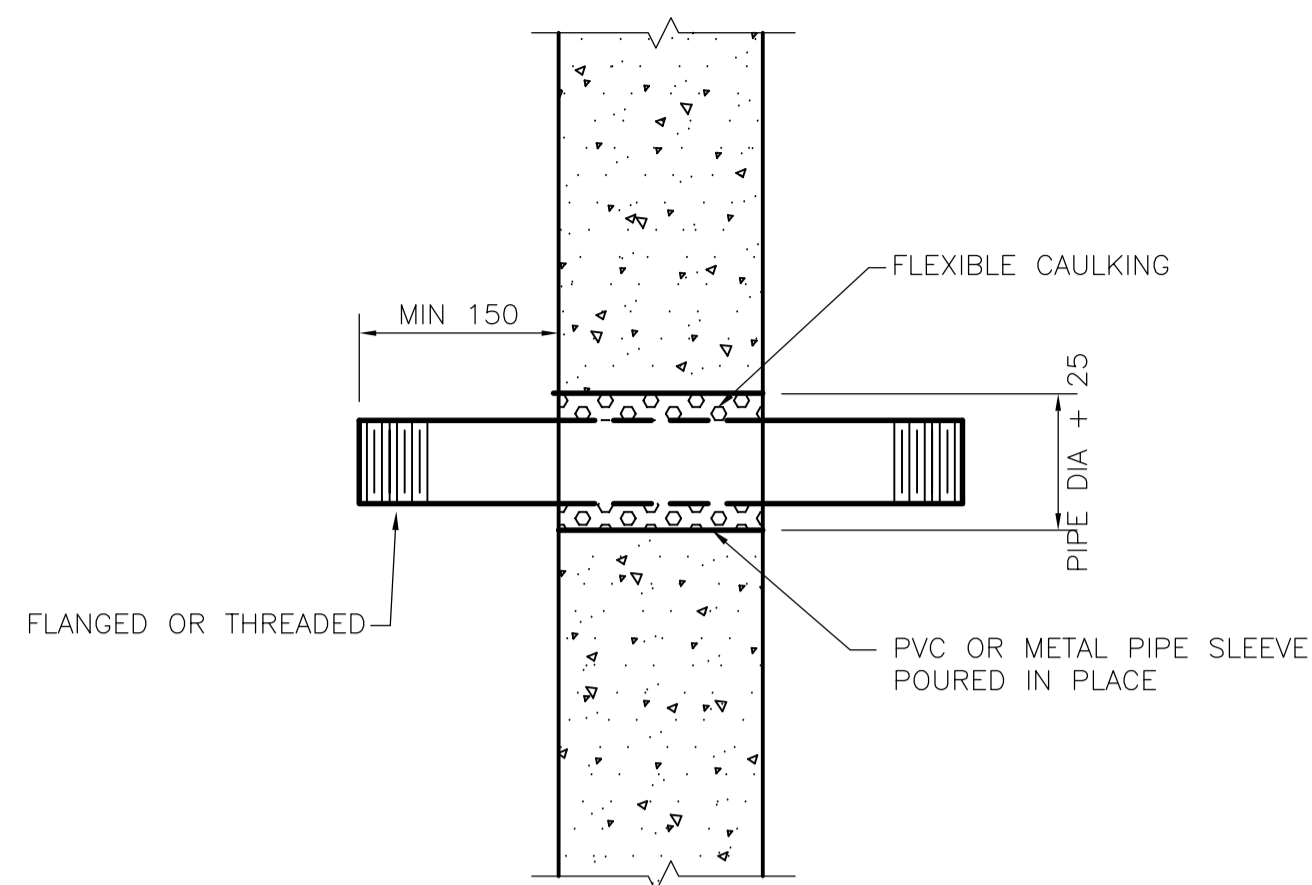


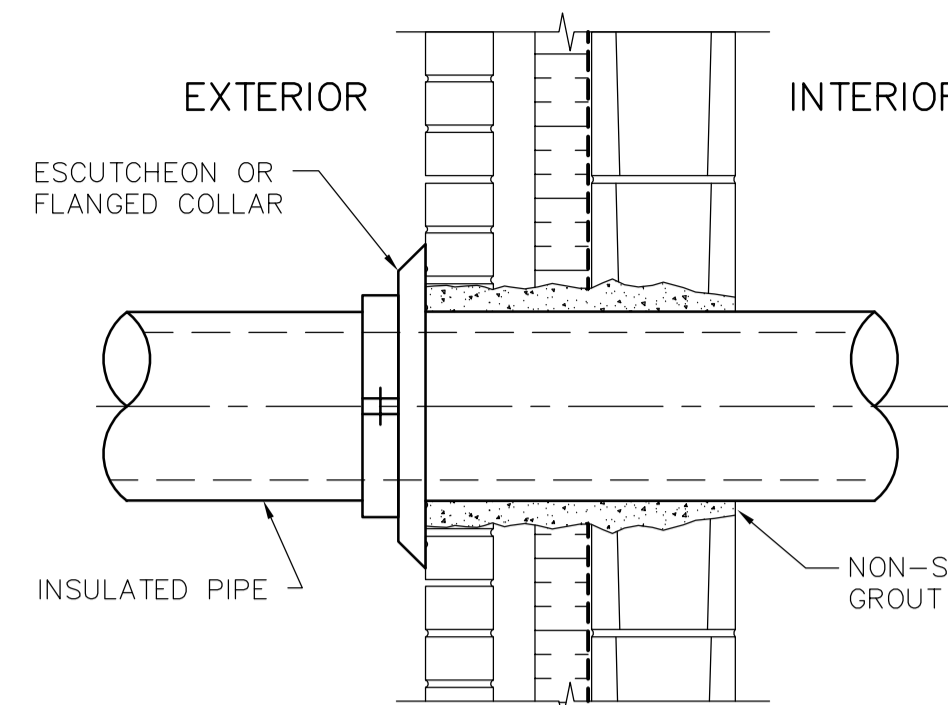
- APPLICATION NOTES**
1. CONCRETE WALL
  2. STEEL OR STAINLESS STEEL PIPE.
  3. CONDITION
    - a) WET TO DRY
    - b) WET TO WET
    - c) INTERIOR TO EXTERIOR
  4. NO TRANSVERSE MOVEMENT ALLOWED
  5. LIQUID SIDE MUST PASS LEAKAGE TEST TO WHICH STRUCTURE IS SUBJECTED.
  6. SAME DETAIL FOR VERTICAL OR HORIZONTAL WALL.
  7. PIPE MAY BE CAST IN PLACE WITH THE FORMWORK, WITH APPROVAL FROM THE ENGINEER.

**STD 101** TYPE 1 WALL PENETRATION

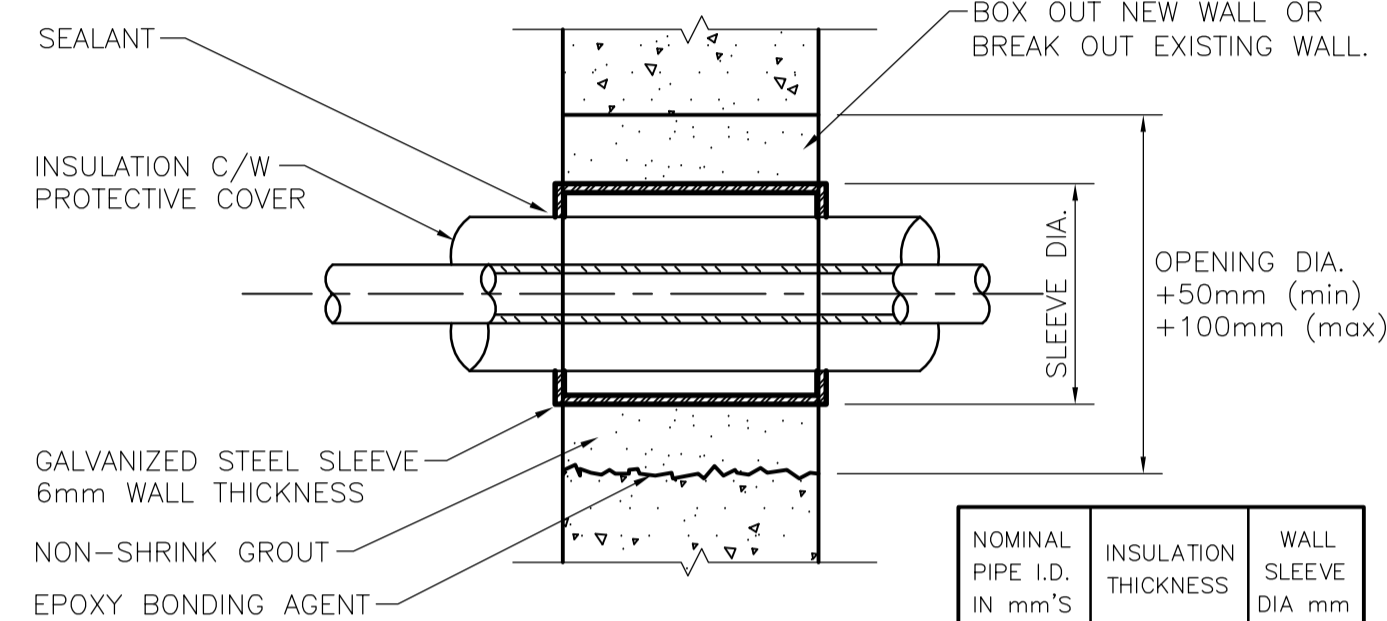


- APPLICATION NOTES**
1. CONCRETE WALL
  2. STEEL, DUCTILE IRON, PVC OR FRP PIPE; LESS THAN 75mm NOMINAL I.D.
  3. CONDITION
    - a) DRY TO DRY
  4. ALLOW TRANSVERSE MOVEMENT

**STD 103** TYPE 3 WALL PENETRATION



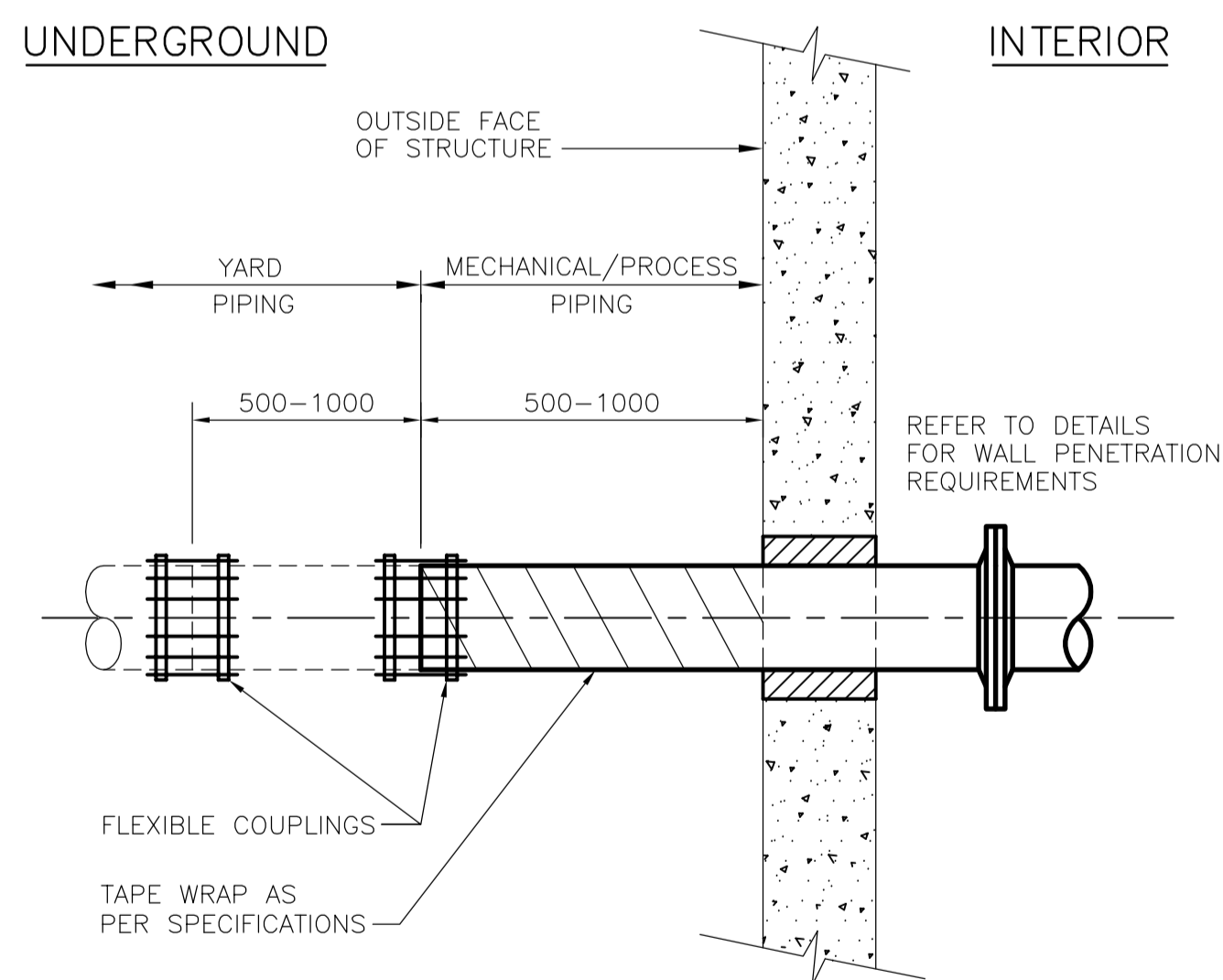
**STD 104A** WALL PENETRATION



- APPLICATION NOTES**
1. CONCRETE OR MASONRY WALLS, NEW OR EXISTING.
  2. INSULATED PIPE
  3. CONDITION
    - a) DRY TO DRY

**STD 104** TYPE 4 WALL PENETRATION

NOMINAL PIPE I.D. IN mm'S	INSULATION THICKNESS	WALL SLEEVE DIA mm
32	25	100
38	25	125
50	25	125
65	25	150
75	25	150
100	25	200
150	25	250
200	25	300



**STD 108** UNDERGROUND PIPE CONNECTION TO STRUCTURE

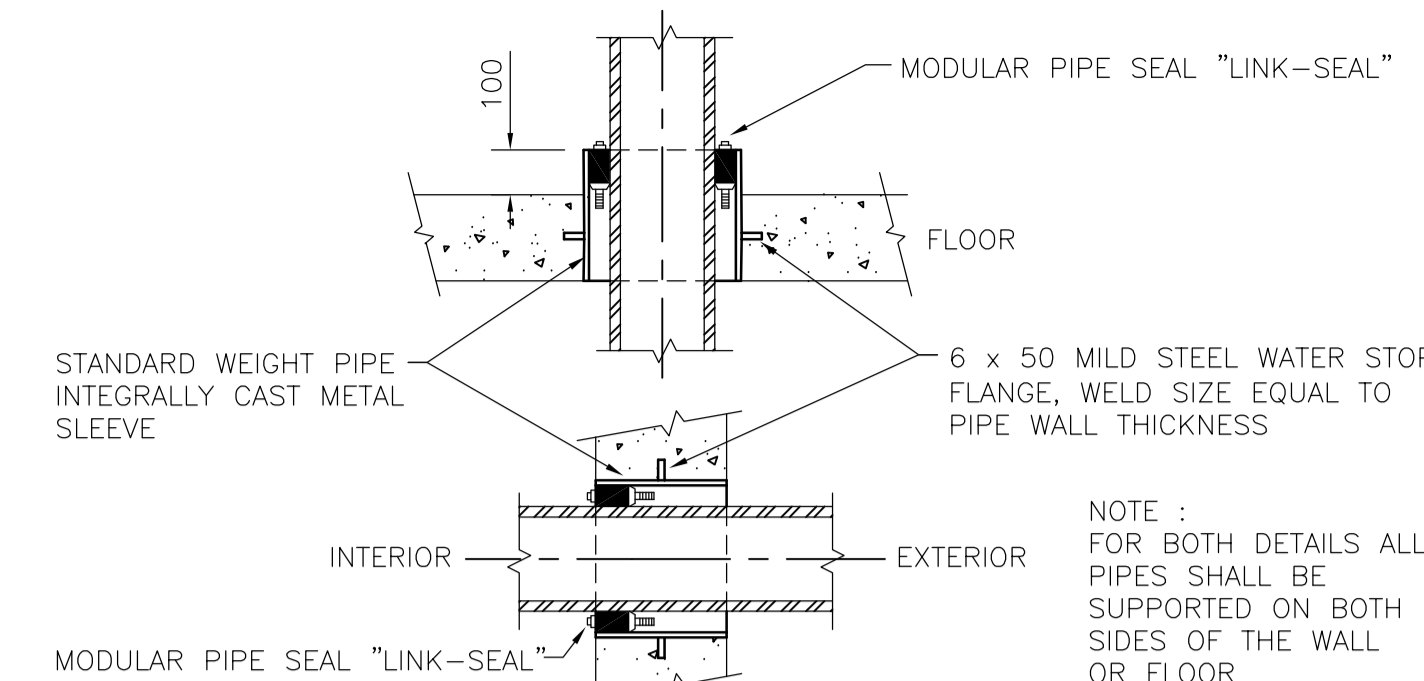
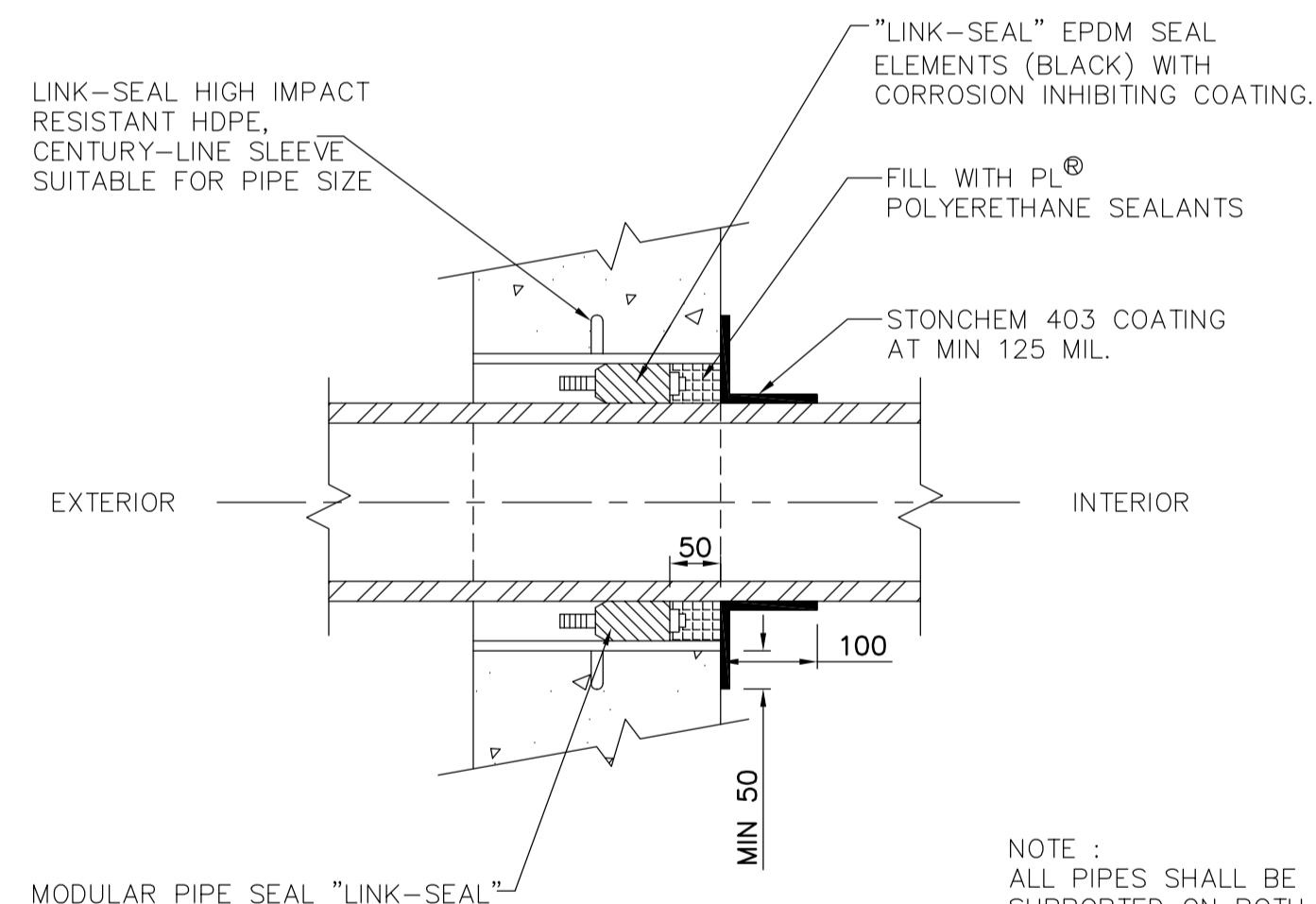


TABLE OF "LINK-SEAL" SERIES FOR STEEL PIPE - FOR OTHER SIZES SEE SUPPLIER'S TABLES

STEEL PIPE SIZE	WALL SLEEVE ACTUAL O.D.mm	LINK-SEAL LINKS/SEAL	STEEL PIPE SIZE	WALL SLEEVE ACTUAL O.D.mm	LINK-SEAL LINKS/SEAL
13	21.3	52.5	250	273.1	336.6
20	26.7	62.7	300	323.9	387.4
25	33.4	62.7	350	355.6	438.2
32	42.2	77.9	400	406.4	489.0
38	48.3	90.1	450	457.2	590.6
50	60.3	102.3	500	508.0	590.6
75	89.0	128.2	600	609.6	743
100	114.3	154.1	750	762.0	895
125	141.3	202.7	900	914.4	1048
150	168.3	254.5	1050	1066.8	1200
200	219.1	304.8	1200	1219.2	1353

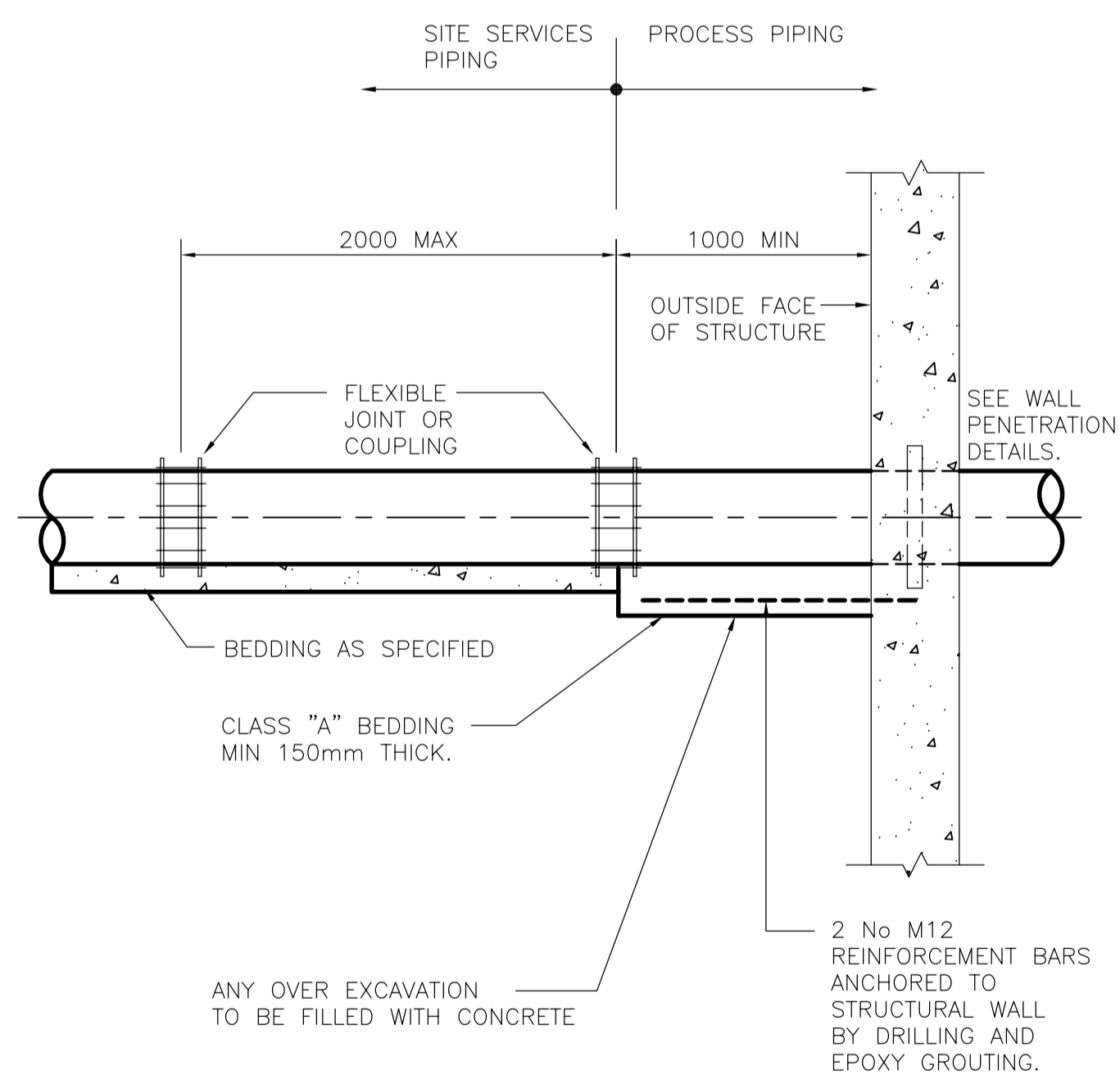
- APPLICATION NOTES**
1. CONCRETE WALL.
  2. STEEL, STAINLESS STEEL, DUCTILE IRON, PVC OR FRP PIPE; NON-INSULATED.
  3. CONDITION
    - a) DRY TO DRY
    - b) INTERIOR TO UNDERGROUND
  4. FOR SBR ROOF PENETRATION PROVIDE ESCUTCHEON PLATE ON EXTERIOR SIDE. CAULK AND SEAL ESCUTCHEON PLATE.

**STD 105** TYPE 5 - SINGLE LINK-SEAL WALL PENETRATION



- APPLICATION NOTES**
1. CONCRETE WALL
  2. STEEL, STAINLESS STEEL, DUCTILE IRON, PVC OR FRP PIPE; NON-INSULATED.
  3. CONDITION
    - a) INTERIOR TO UNDERGROUND

**STD 105A** CHEMICAL RESISTANT PENETRATION



**STD 107** SUPPORTED UNDERGROUND PIPE CONNECTION TO STRUCTURE

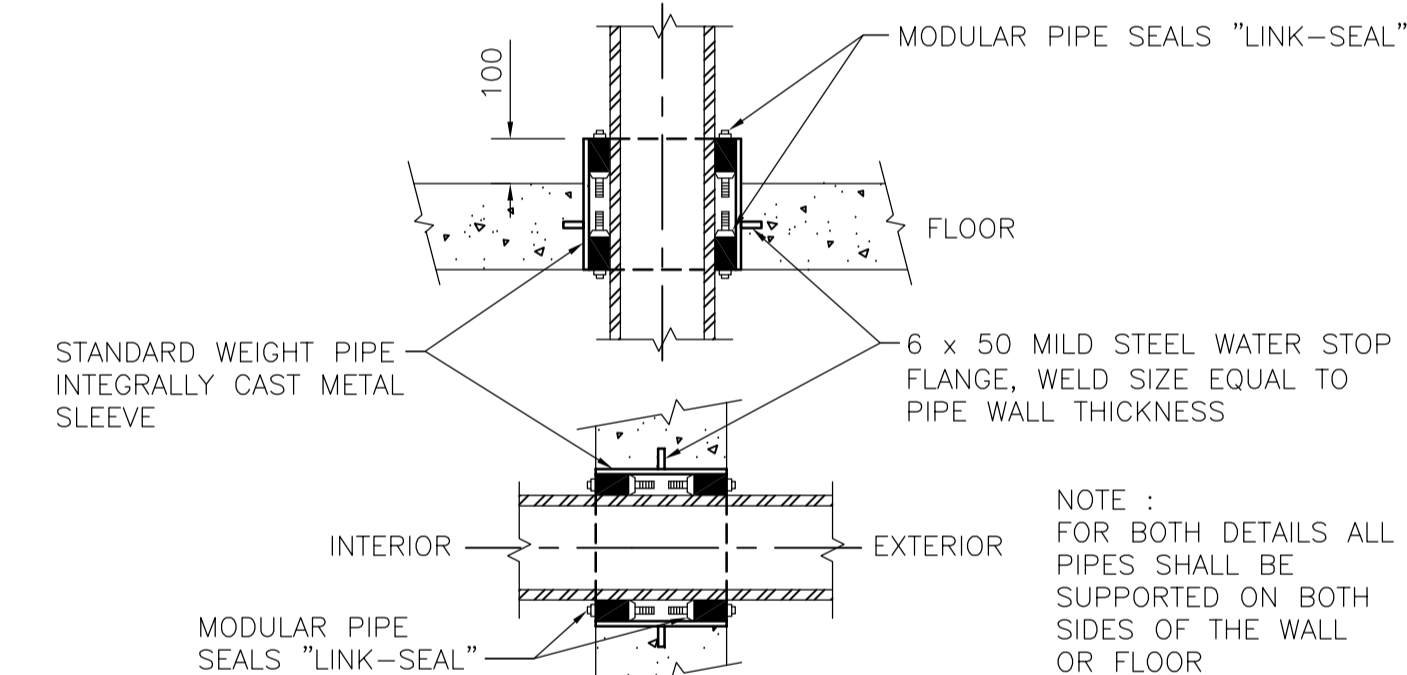


TABLE OF "LINK-SEAL" SERIES FOR STEEL PIPE - FOR OTHER SIZES SEE SUPPLIER'S TABLES

STEEL PIPE SIZE	WALL SLEEVE ACTUAL O.D.mm	LINK-SEAL LINKS/SEAL	STEEL PIPE SIZE	WALL SLEEVE ACTUAL O.D.mm	LINK-SEAL LINKS/SEAL
13	21.3	52.5	250	273.1	336.6
20	26.7	62.7	300	323.9	387.4
25	33.4	62.7	350	355.6	438.2
32	42.2	77.9	400	406.4	489.0
38	48.3	90.1	450	457.2	590.6
50	60.3	102.3	500	508.0	590.6
75	89.0	128.2	600	609.6	743
100	114.3	154.1	750	762.0	895
125	141.3	202.7	900	914.4	1048
150	168.3	254.5	1050	1066.8	1200
200	219.1	304.8	1200	1219.2	1353

- APPLICATION NOTES**
1. CONCRETE WALL
  2. STEEL, STAINLESS STEEL, DUCTILE IRON, PVC OR FRP PIPE; NON-INSULATED.
  3. CONDITION
    - a) DRY TO DRY
    - b) INTERIOR TO UNDERGROUND

**STD 109** TYPE 7 - DOUBLE LINK-SEAL WALL PENETRATION

<p>Certificate of Authorization Earth Tech Canada Inc. No. 730 Expiry: April 30, 2007</p>	B.M. ELEV.	<p>A Tyco International Ltd. Company</p>	ENGINEER'S SEAL	<p>THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT ENGINEERING DIVISION</p>		
			DESIGNED BY: LW		CHECKED BY: SB	ORIGINAL SIGNED BY: J.E. HUTCHISON
			DRAWN BY: SY		APPROVED BY: JEH	2006/05/15
			SCALE: NONE		RELEASED FOR CONSTRUCTION BY: K. MARTENS	CONSULTANT DRAWING NO. P19.01
	NO. REVISIONS	DATE	2006/01/16	DATE	2006/05/15	<p>NEWPCC CENTRATE NUTRIENT TREATMENT NITROGEN REMOVAL FACILITY</p> <p>CITY FILE NUMBER</p> <p>SHEET OF</p> <p>CITY DRAWING NUMBER</p>
	00	ISSUED FOR TENDER	06/05/15	SRP		<p>PROCESS STANDARD DETAILS SHEET 1</p>