

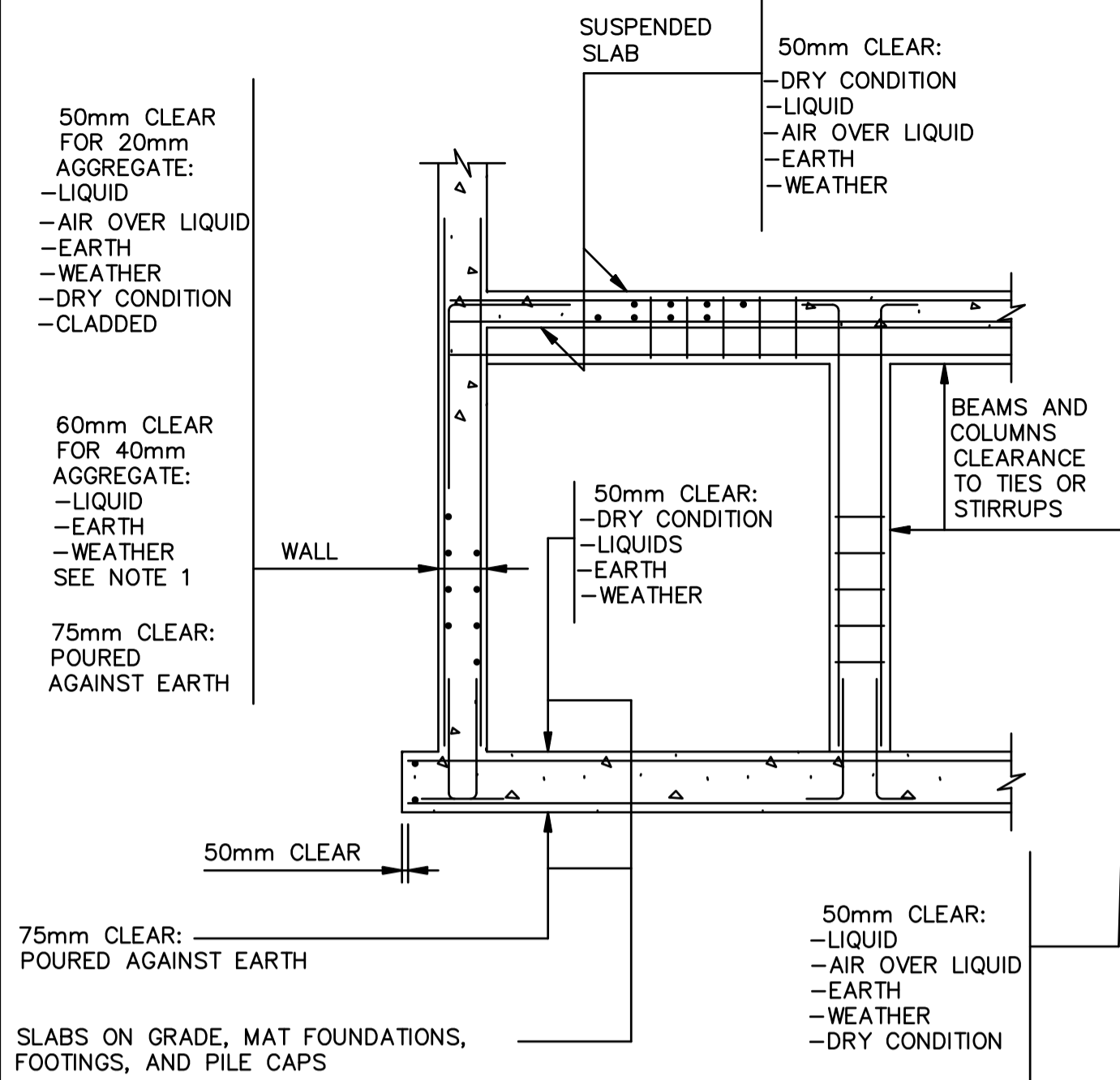
F _y =400MPa REINFORCING BAR	LAP TYPE	BAR SIZE						
		10M	15M	20M	25M	30M	35M	
F _c =20MPa	TOP	CLASS A	450	650	850	1350	1600	2000
		CLASS B	550	850	1100	1750	2050	2600
	OTHER	CLASS A	350	500	650	1050	1250	1550
F _c =25MPa	TOP	CLASS A	450	650	850	1350	1600	2000
		CLASS B	400	600	750	1200	1450	1800
	OTHER	CLASS A	300	450	600	900	1100	1400
F _c =32MPa	TOP	CLASS A	350	550	700	1100	1300	1650
		CLASS B	450	700	900	1400	1700	2100
	OTHER	CLASS A	300	400	550	850	1000	1250
F _c =35MPa	TOP	CLASS A	350	500	650	1000	1200	1500
		CLASS B	450	650	850	1300	1550	1950
	OTHER	CLASS A	300	400	500	800	950	1150
F _c =40MPa	TOP	CLASS A	300	450	600	950	1150	1400
		CLASS B	400	600	800	1250	1450	1850
	OTHER	CLASS A	300	350	500	750	900	1100

NOTES:

- TOP BARS ARE:
 - ALL BARS IN CONCRETE WITH MORE THAN 300mm CONCRETE BELOW.
 - ALL HORIZONTAL BARS IN WALLS.
- PROVIDE CLASS B LAP UNLESS NOTED OTHERWISE.
- LAP SPLICE LENGTHS SHOWN IN THE TABLE ARE BASED ON HEAVIER CONFINED BARS.
- TABLE APPLIES UNLESS SHOWN OTHERWISE.
- DEVELOPMENT LENGTHS ARE EQUAL TO CLASS A LAP SPLICES.

REINFORCING BAR TENSION LAP SPLICE TABLE

1
NTS
S-101

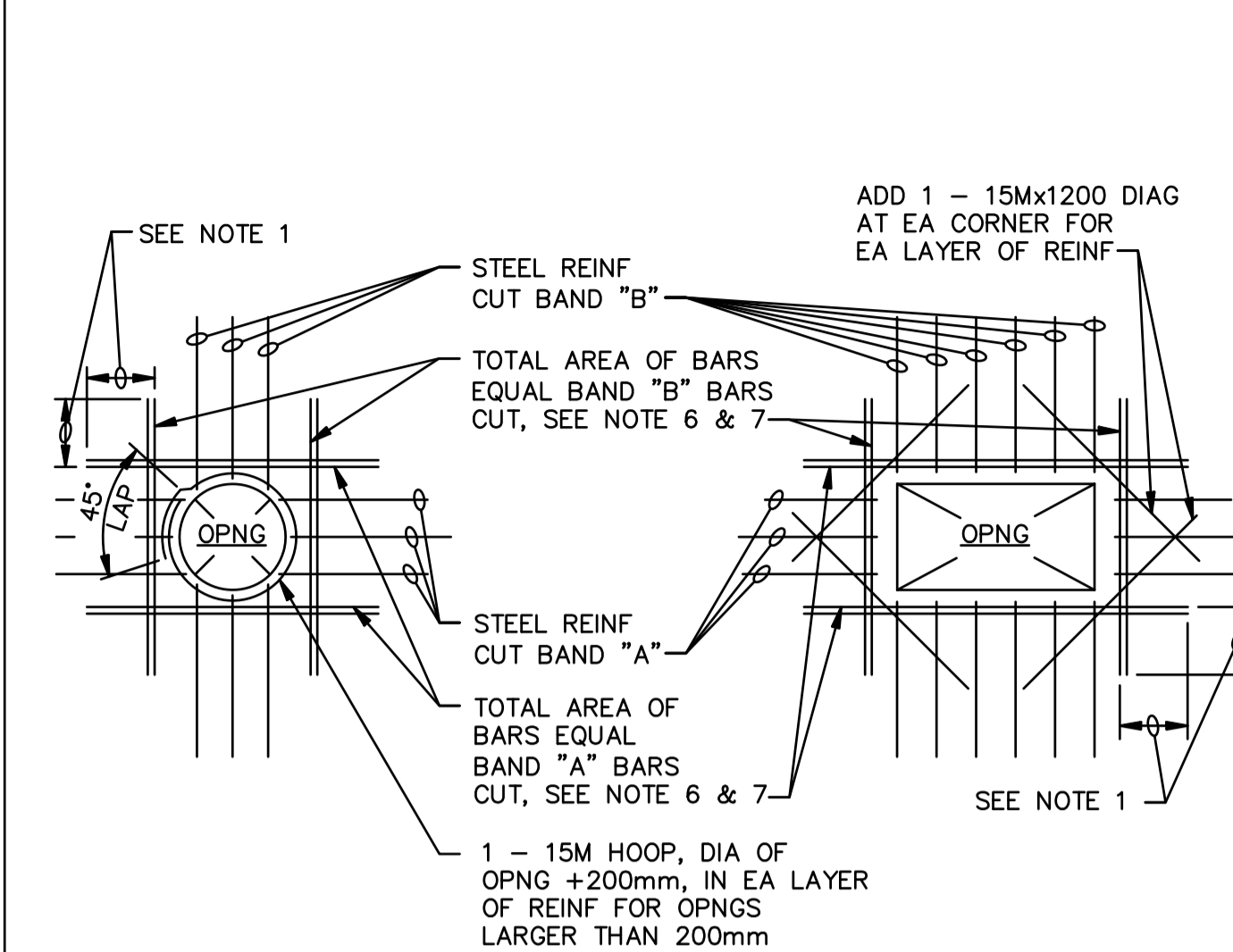


NOTES:

- PROVIDE 50mm CLEARANCE ON FACE EXPOSED TO DRYCONDITION.
- SPECIFIED COVER WILL PROVIDE MINIMUM 2 HOUR FIRE RATING.

CONCRETE COVER TO REINFORCING

2
NTS
S-101

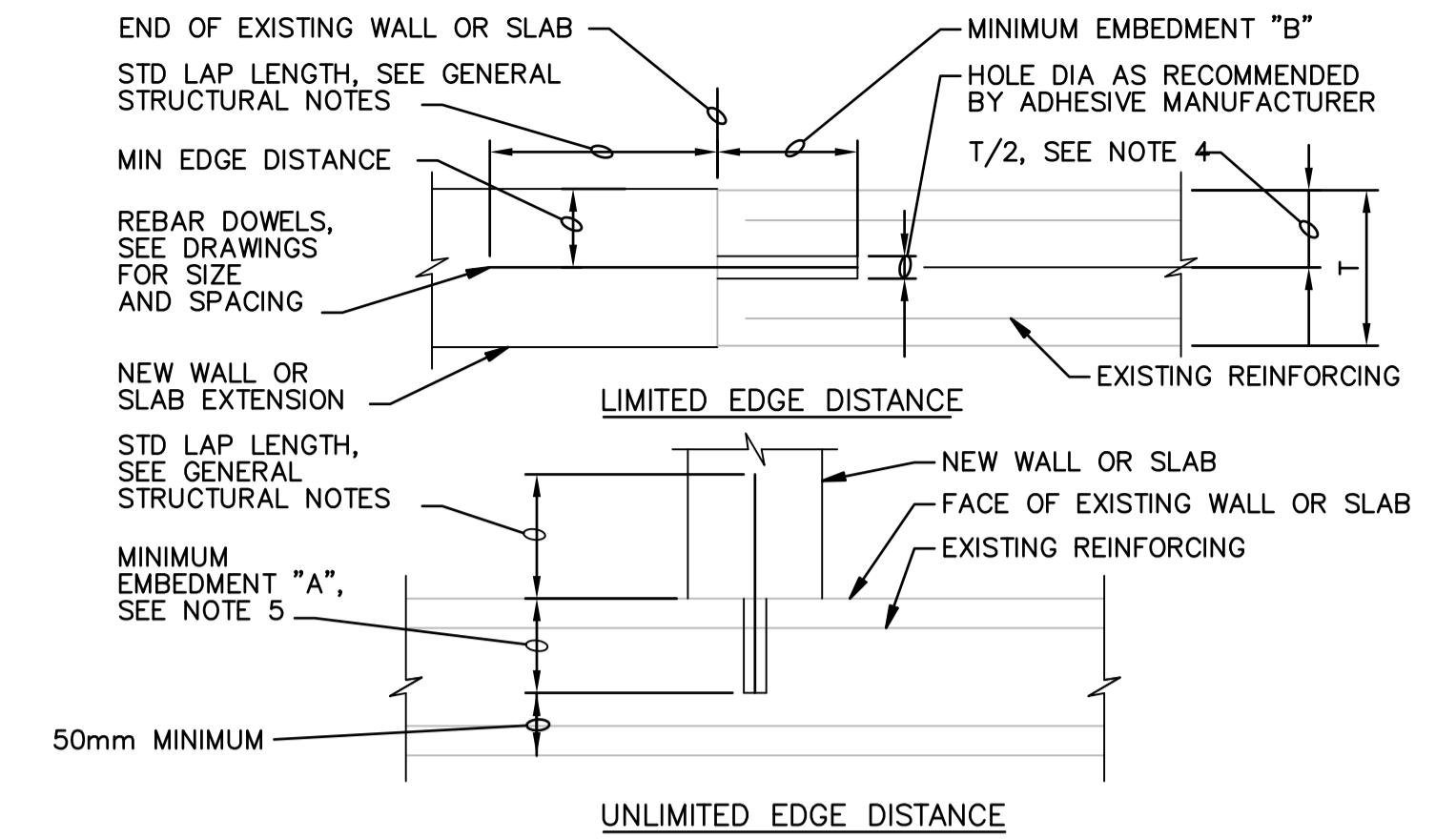


NOTES:

- PROVIDE MINIMUM LAP, SEE GENERAL STRUCTURAL NOTES.
- TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS OF BELOW GRADE AND HYDRAULIC STRUCTURES AND ALL STRUCTURAL CONCRETE SLABS UNLESS INDICATED OTHERWISE ON PLANS.
- DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.
- PROVIDE A MINIMUM OF 2 "A" BARS AND 2 "B" BARS EACH SIDE OF OPENING (1 EACH FACE), INCLUDING DOWELS AND CORNER BARS, TYPICAL.
- FOR OPENINGS LARGER THAN 2400mm, REINFORCE SAME AS FOR 2400mm OPENINGS.
- SPACE AT 3 BAR DIAMETERS (OR 75mm MINIMUM) ON CENTER. LOCATE HALF OF TOTAL AREA ON EACH SIDE OF OPENING.
- AT OPENINGS WITHIN 300mm OF AN INTERSECTING WALL OR SLAB, PROVIDE ONLY THE EXTRA REINFORCEMENT WHICH WILL FIT, AT THE BAR SPACING IN NOTE 6.

OPENING REINFORCING

3
NTS
S-101



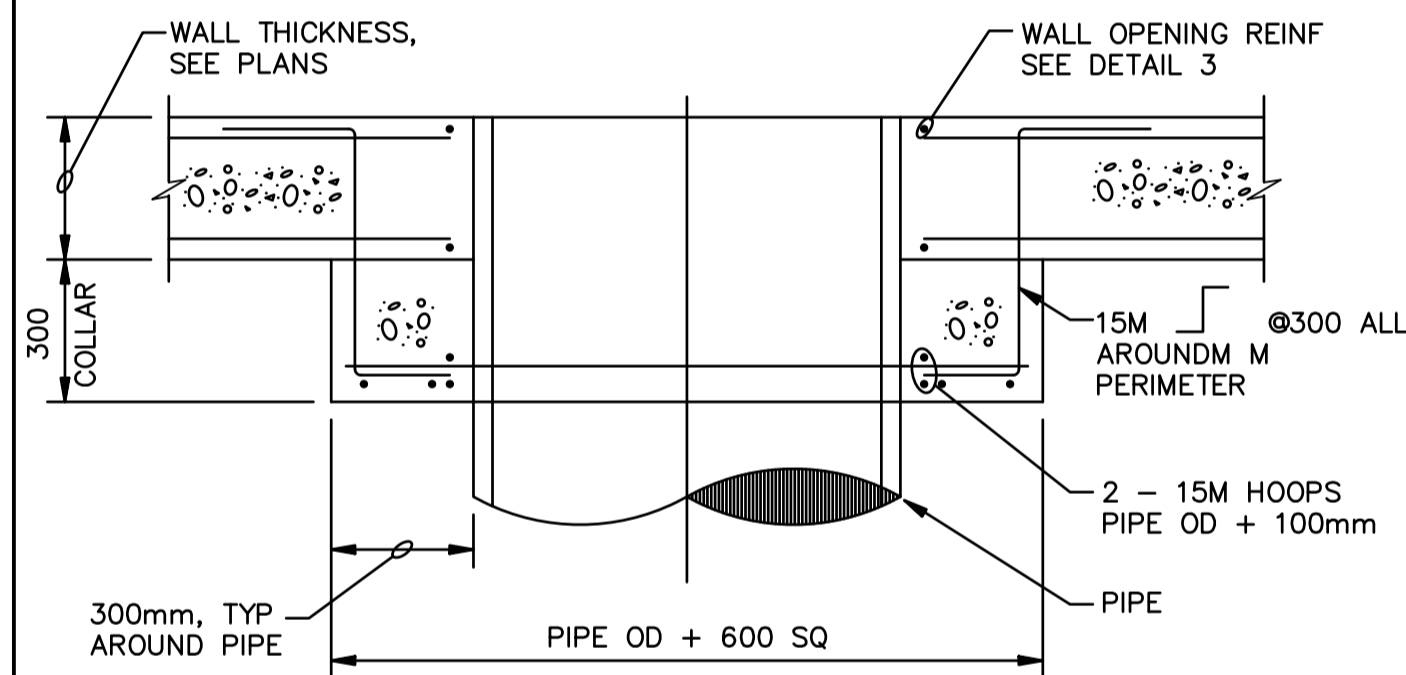
DOWEL SIZE	MINIMUM EDGE DISTANCE	MINIMUM EMBEDMENT "A"	MINIMUM EMBEDMENT "B"
10M	65mm	125mm	200mm
15M	100mm	200mm	330mm
20M	125mm	265mm	400mm
25M	175mm	355mm	560mm
30M	190mm	380mm	600mm

NOTES:

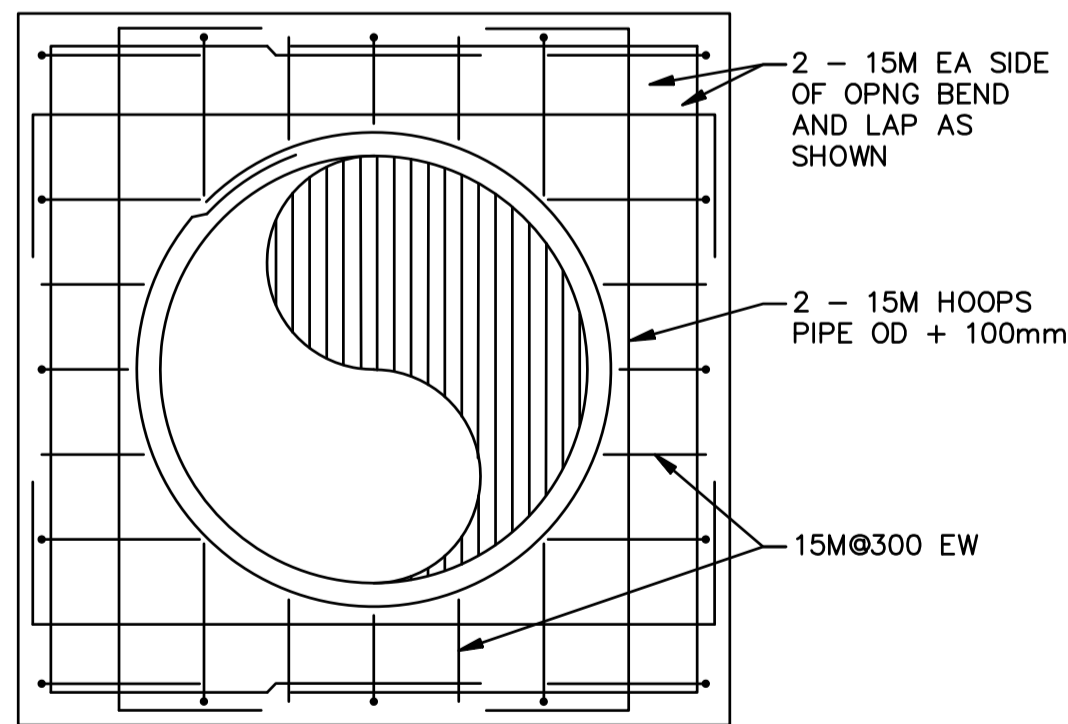
- CONFORM TO REQUIREMENTS OF SPECIFICATION SECTION 03 63 00, CONCRETE DOWELING.
- FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
- USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
- LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.
- PROVIDE MINIMUM EMBEDMENT "A" SHOWN IN TABLE UNLESS SHORTER EMBEDMENT DEPTH IS CALLED OUT ON DRAWINGS.

ADHESIVE DOWEL

4
NTS
S-101



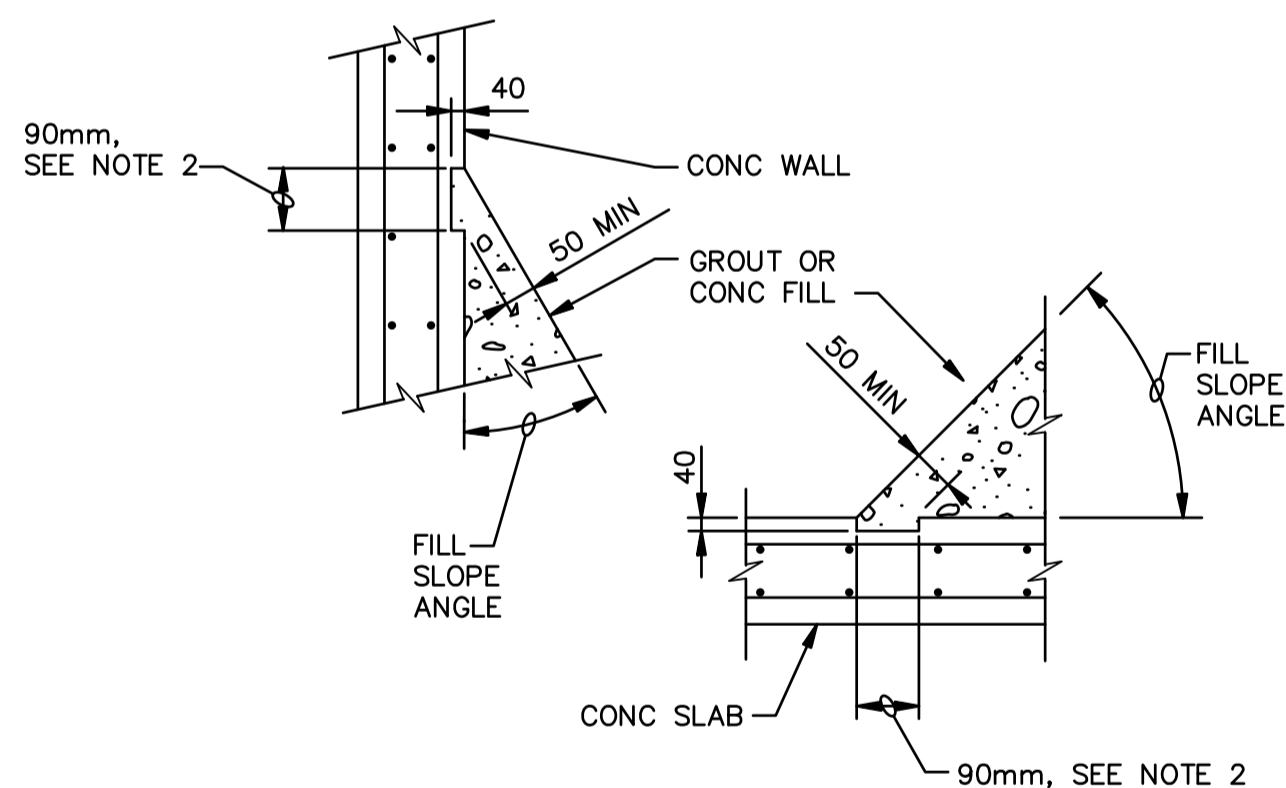
PLAN/SECTION



ELEVATION

PIPE COLLAR

5
NTS
S-101

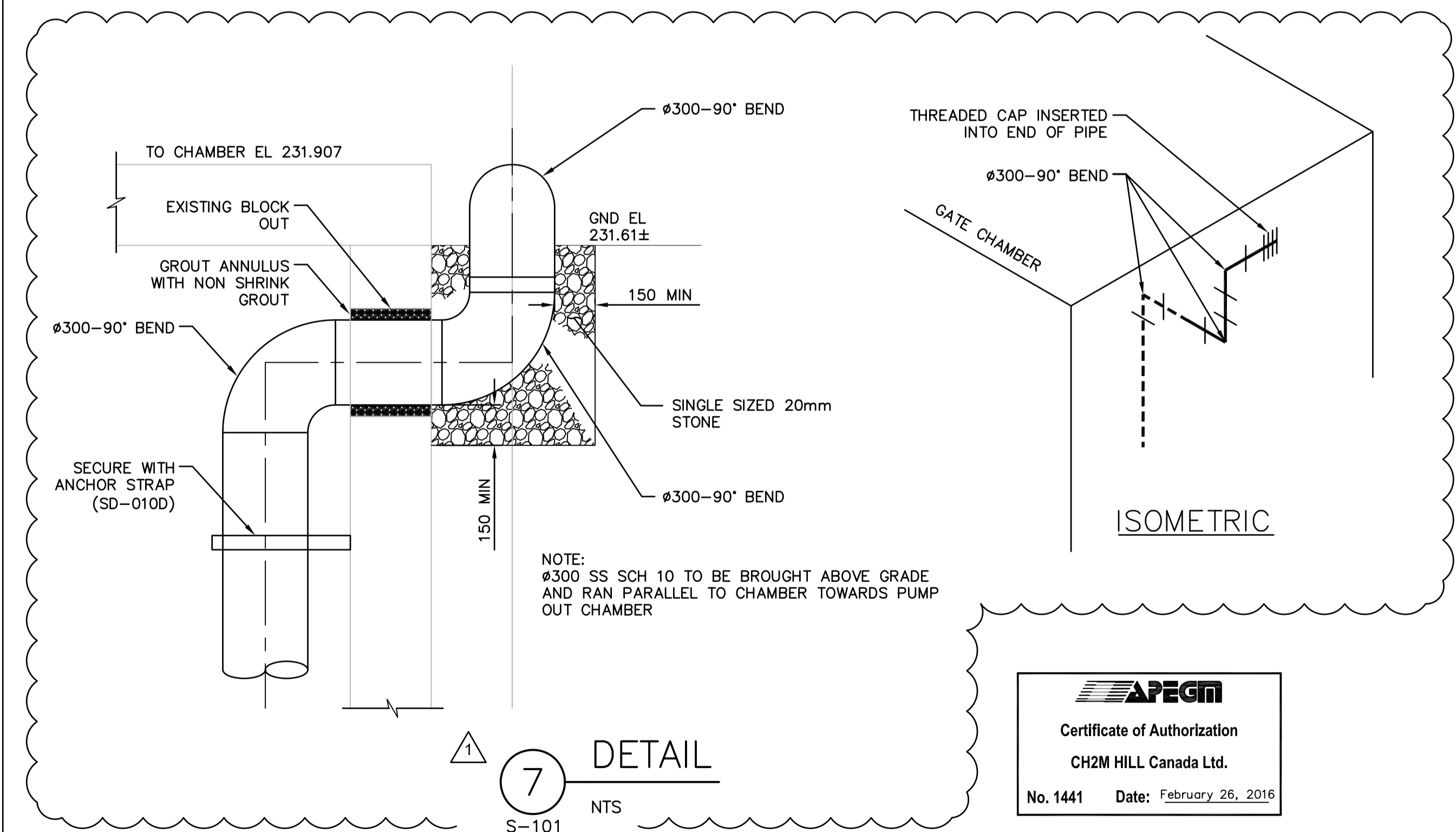


NOTES:

- PROVIDE KEY FOR ALL FILL WHERE FILL SLOPE ANGLE TO WALL OR SLAB IS LESS THAN 45 DEGREES.
- LENGTHEN 90mm BLOCKOUT AS REQUIRED TO MAINTAIN 50mm MINIMUM THICKNESS OF GROUT OR CONCRETE FILL.

CONCRETE OR GROUT FILL KEY

6
NTS
S-101



DETAIL

7
NTS
S-101

APEGN
Certificate of Authorization
CH2M HILL Canada Ltd.
No. 1441 Date: February 26, 2016

B.M. ELEV.	ch2m		ENGINEER'S SEAL	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT ENGINEERING DIVISION SHEET 25 OF 25 CITY DRAWING NUMBER LD-7823
CONSTRUCTION COMPLETION DATE: YYYY MM DD	DESIGNED BY: EL	CHECKED BY: MD	ORIGINAL SIGNED BY: S.L.E. LUI 26/02/2016	
	DRAWN BY: DB	APPROVED BY: ES	CONSULTANT DRAWING NUMBER: S-501	
1 ISSUED FOR ADDENDUM NO. 2 03/2016 JBC	SCALE: HORIZONTAL NTS	RELEASED FOR CONSTRUCTION		
0 ISSUED FOR TENDER 02/2016	VERTICAL	DATE		
NO. REVISIONS DATE BY	DATE			
PLOT DATE: 2016 03 15		BID OPPORTUNITY: 62-2016		
		FILE PATH: C:\pwworkdir\ch2mhill_wbg\jcartez1\40204820\ S-501.dwg		