

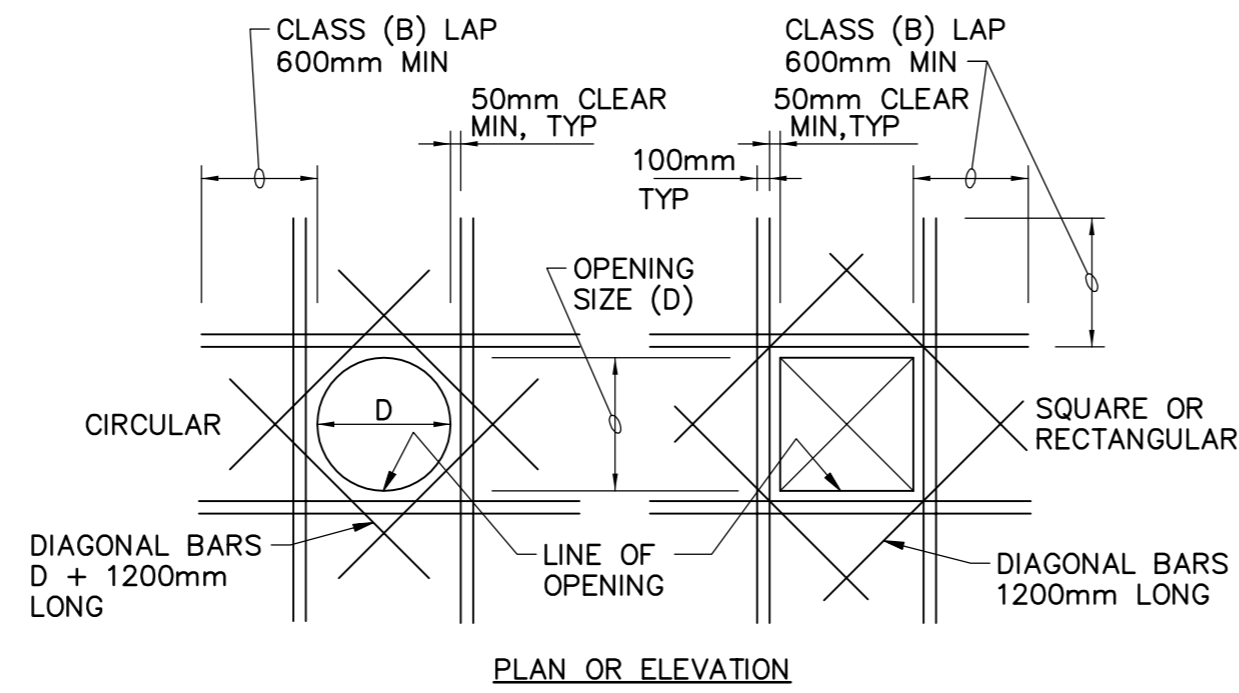
ONLY FOR : 30 MPa CONCRETE , NORMAL WEIGHT  
400 MPa REINFORCING BAR

BAR SIZE	TOP BARS (mm)		OTHER BARS (mm)	
	CLASS A	CLASS B	CLASS A	CLASS B
10M	390	500	300	390
15M	550	710	420	550
20M	670	870	520	670
25M	1080	1400	830	1080
30M	1280	1660	990	1280
35M	1530	1990	1180	1530

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.

1 REBAR LAP TABLE  
N.T.S.

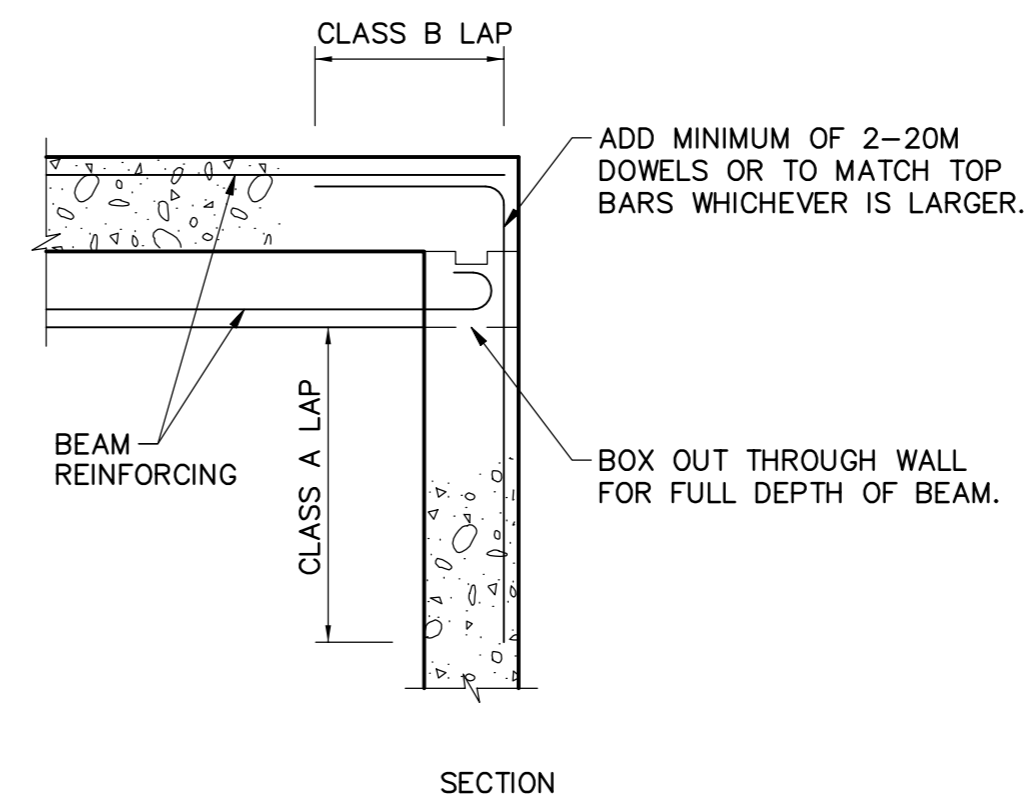


NOTES:

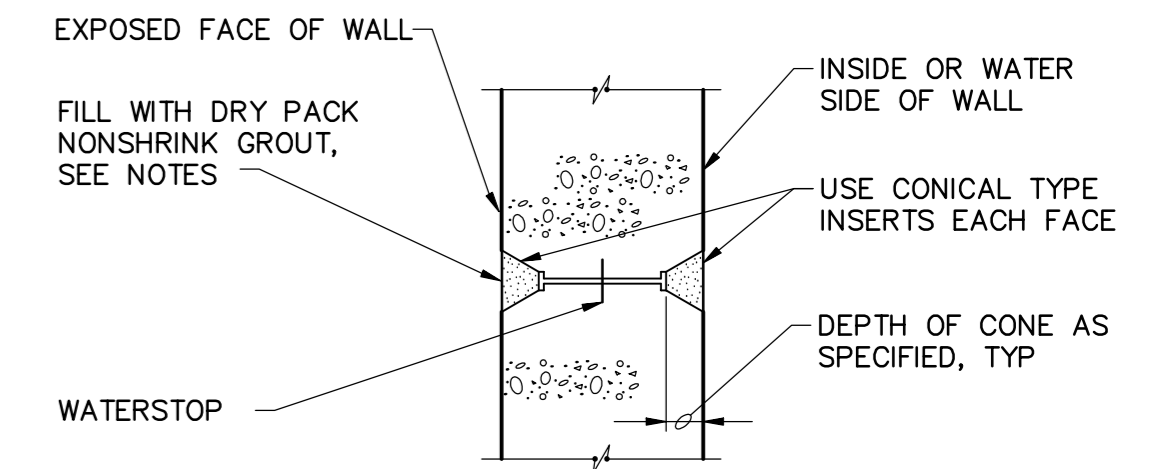
- FOR OPENINGS D=400mm OR LARGER: ADD EXTRA BARS ON EACH SIDE OF THE OPENING, EQUIVALENT TO HALF THE TOTAL AREA OF REINFORCING CUT IN EACH DIRECTION, EACH FACE, UNLESS NOTED OTHERWISE.
- FOR OPENINGS LESS THAN 400mm: NO EXTRA BARS ARE REQUIRED ADJUST REGULAR REINFORCING AROUND OPENINGS.

WALL OR SLAB THICKNESS t (mm)	DIAGONAL REINFORCING		
	t < 200	t < 250	t ≥ 250
LAYERS OF REINFORCING	1	1	2
REINFORCING FOR OPENINGS D ≥ 600mm	1-15M IN EACH CORNER IN CENTRE OF WALL OR SLAB (4 TOTAL)	1-15M IN CENTER OF WALL OR SLAB (4 TOTAL)	2-15M IN EACH CORNER IN EACH LAYER WALL OR SLAB (8 TOTAL)

2 EXTRA REINFORCING AT OPENINGS IN WALLS AND SLABS  
N.T.S.



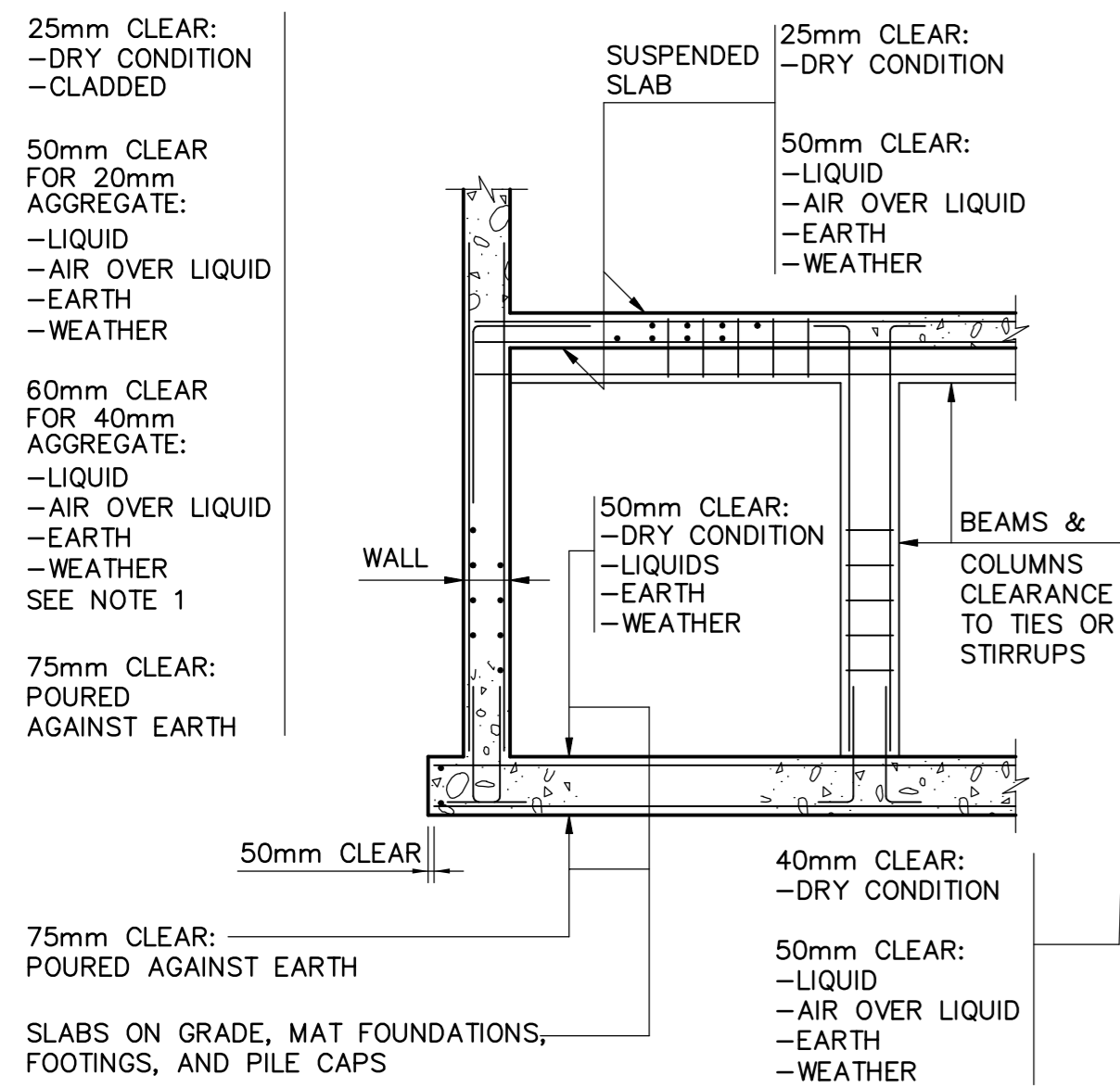
3 CONCRETE BEAM END DETAIL  
N.T.S.



NOTES:

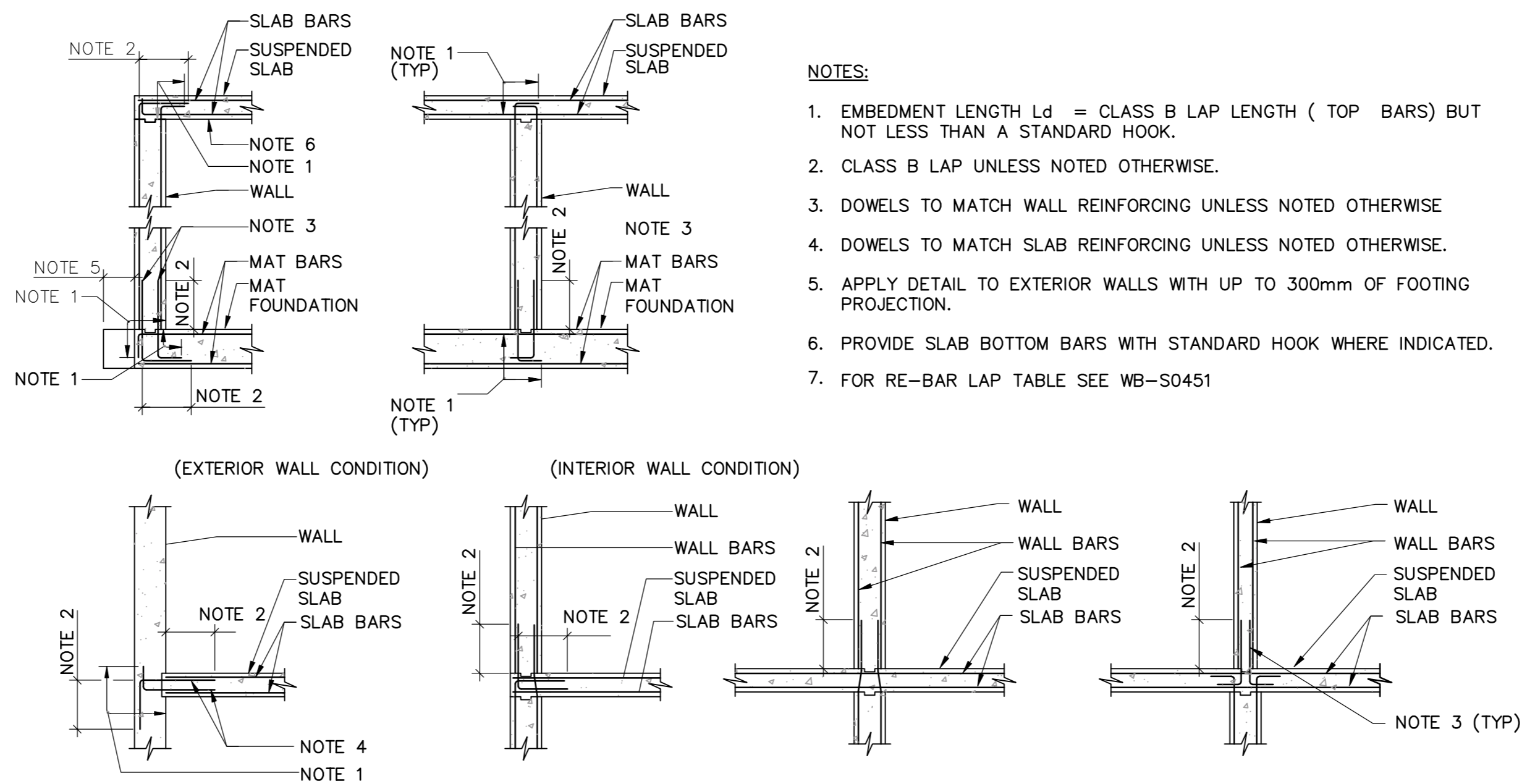
- THE SPACING OF FORM TIES ON EXPOSED PORTIONS OF WALLS SHALL BE APPROXIMATELY EQUAL HORIZONTALLY AND VERTICALLY AND SHALL BE UNIFORM IN EACH DIRECTION.
- DRY PACK METHOD SHALL BE AS SPECIFIED USING STEEL TOOLS.
- SEE SPECIFICATION FOR TYPE OF FORM TIE TO BE USED BASED ON APPLICATION.

4 FORM TIE HOLE  
N.T.S.



- NOTE:
- PROVIDE 50mm CLEAR COVER ON FACE EXPOSED TO DRY CONDITION.

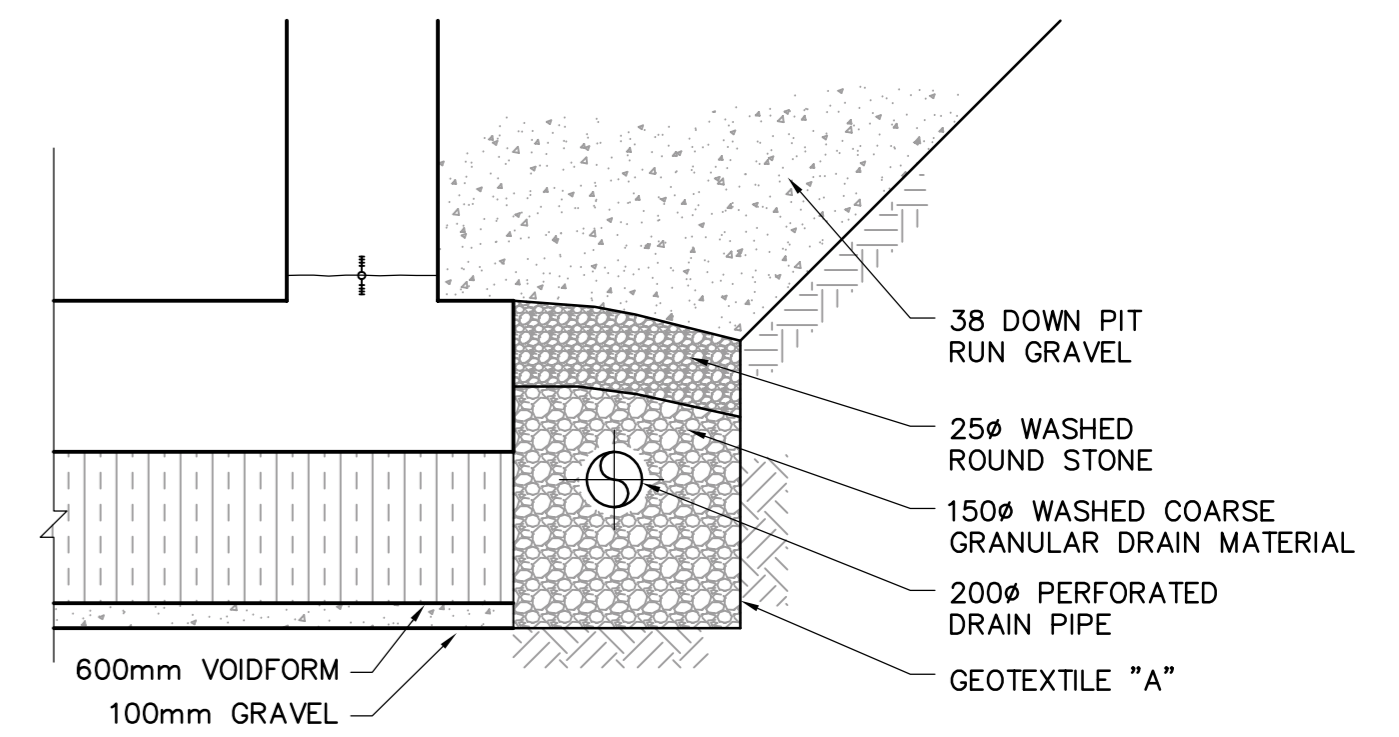
5 CONCRETE COVER TO REINFORCING  
N.T.S.



NOTES:

- EMBEDMENT LENGTH  $L_d$  = CLASS B LAP LENGTH ( TOP BARS) BUT NOT LESS THAN A STANDARD HOOK.
- CLASS B LAP UNLESS NOTED OTHERWISE.
- DOWELS TO MATCH WALL REINFORCING UNLESS NOTED OTHERWISE
- DOWELS TO MATCH SLAB REINFORCING UNLESS NOTED OTHERWISE.
- APPLY DETAIL TO EXTERIOR WALLS WITH UP TO 300mm OF FOOTING PROJECTION.
- PROVIDE SLAB BOTTOM BARS WITH STANDARD HOOK WHERE INDICATED.
- FOR RE-BAR LAP TABLE SEE WB-S0451

6 REINFORCING AT WALL AND SLAB INTERSECTIONS  
N.T.S.



7 PERIMETER DRAINAGE  
N.T.S.

**APEGM**  
Certificate of Authorization  
CH2M Hill Canada Limited (ON)  
No. 1441 Expiry: April 30, 2006

NO.	REVISIONS	DATE	BY
00	ISSUED FOR TENDER	05/10/28	DK

DATE	DESIGNED BY	CHECKED BY	APPROVED BY	RELEASED FOR CONSTRUCTION BY:
2005/10/24	DK	AP	DJT	R. SOROKOWSKI

ENGINEER'S SEAL  
ORIGINAL SIGNED BY  
D. KRUGER  
2005/10/28  
CONSULTANT DRAWING NO.  
WB-S0441

**THE CITY OF WINNIPEG**  
WATER AND WASTE DEPARTMENT  
ENGINEERING DIVISION  
WATER TREATMENT PLANT  
FOUNDATIONS AND CONCRETE STRUCTURES 1  
STRUCTURAL  
STANDARD DETAILS

CITY FILE NUMBER  
SHEET OF  
CITY DRAWING NUMBER  
1-060B-D-80441-001-00D