

REGRAVELLING OF INTERNAL ROADS AND CONSTRUCTION OF STORMWATER CULVERTS IN UMJINDINI WARD 43 FOR THE CITY OF MBOMBELA

BOOK OF DRAWINGS ISSUED FOR TENDER

Client:

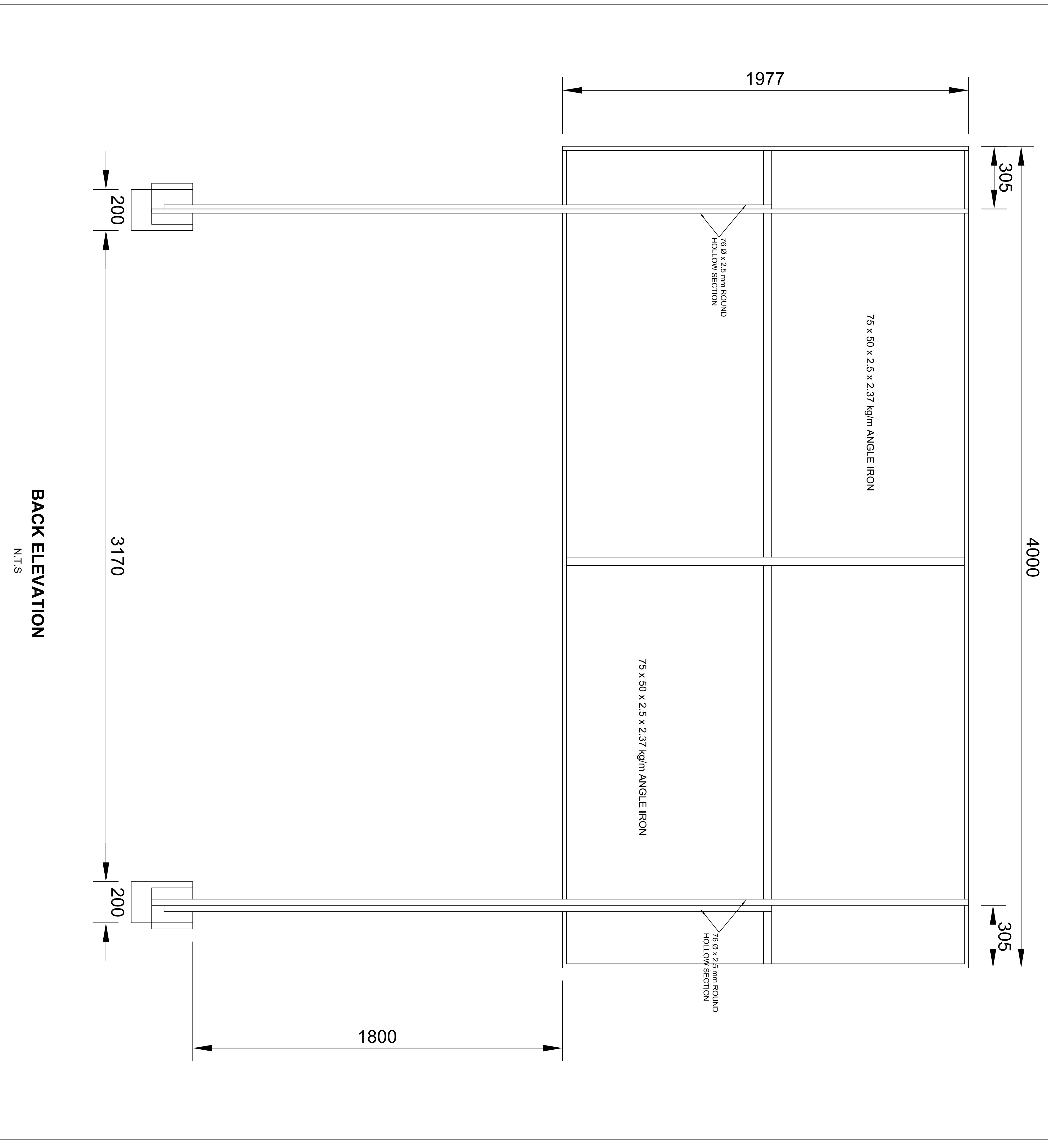
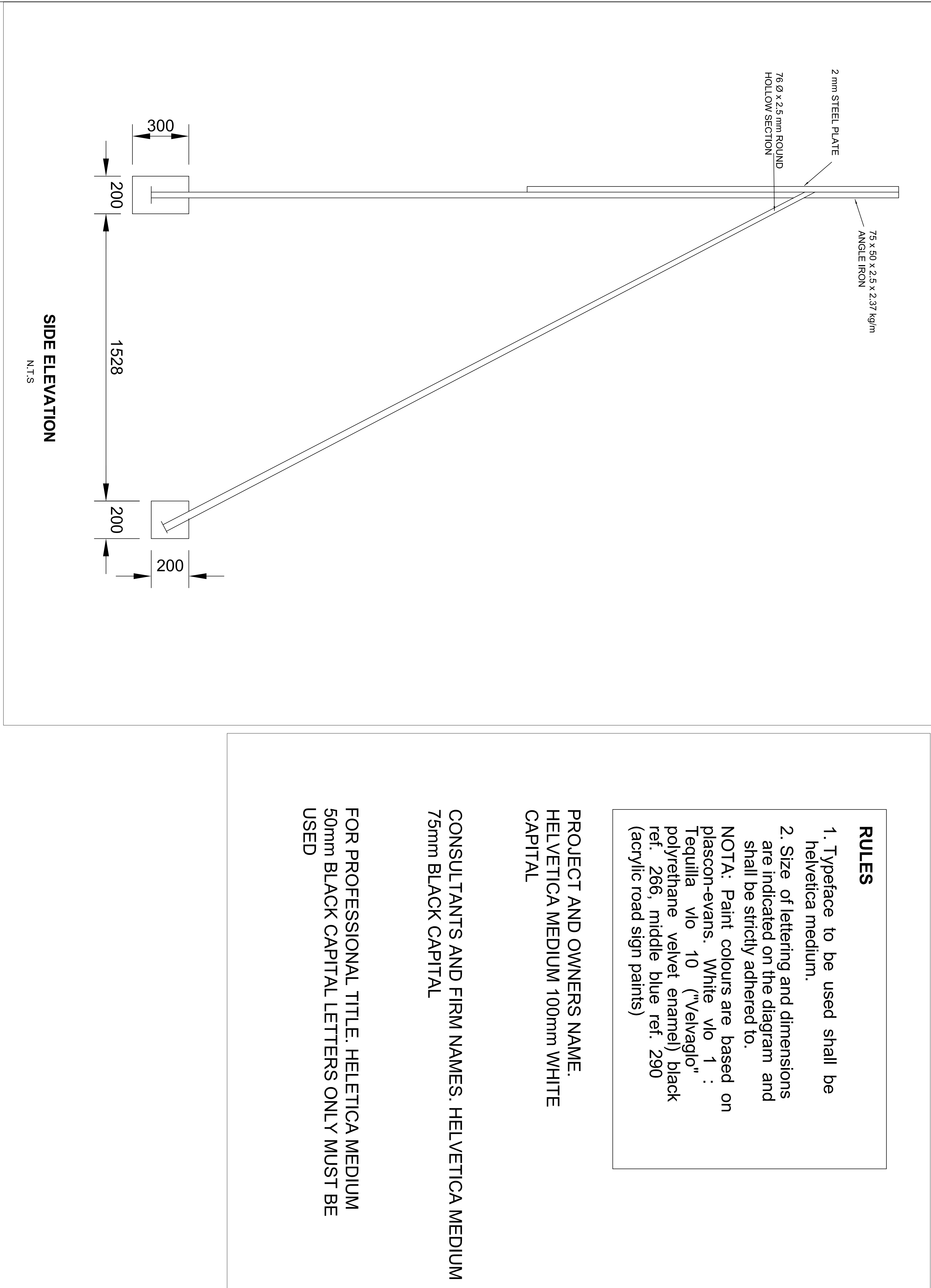
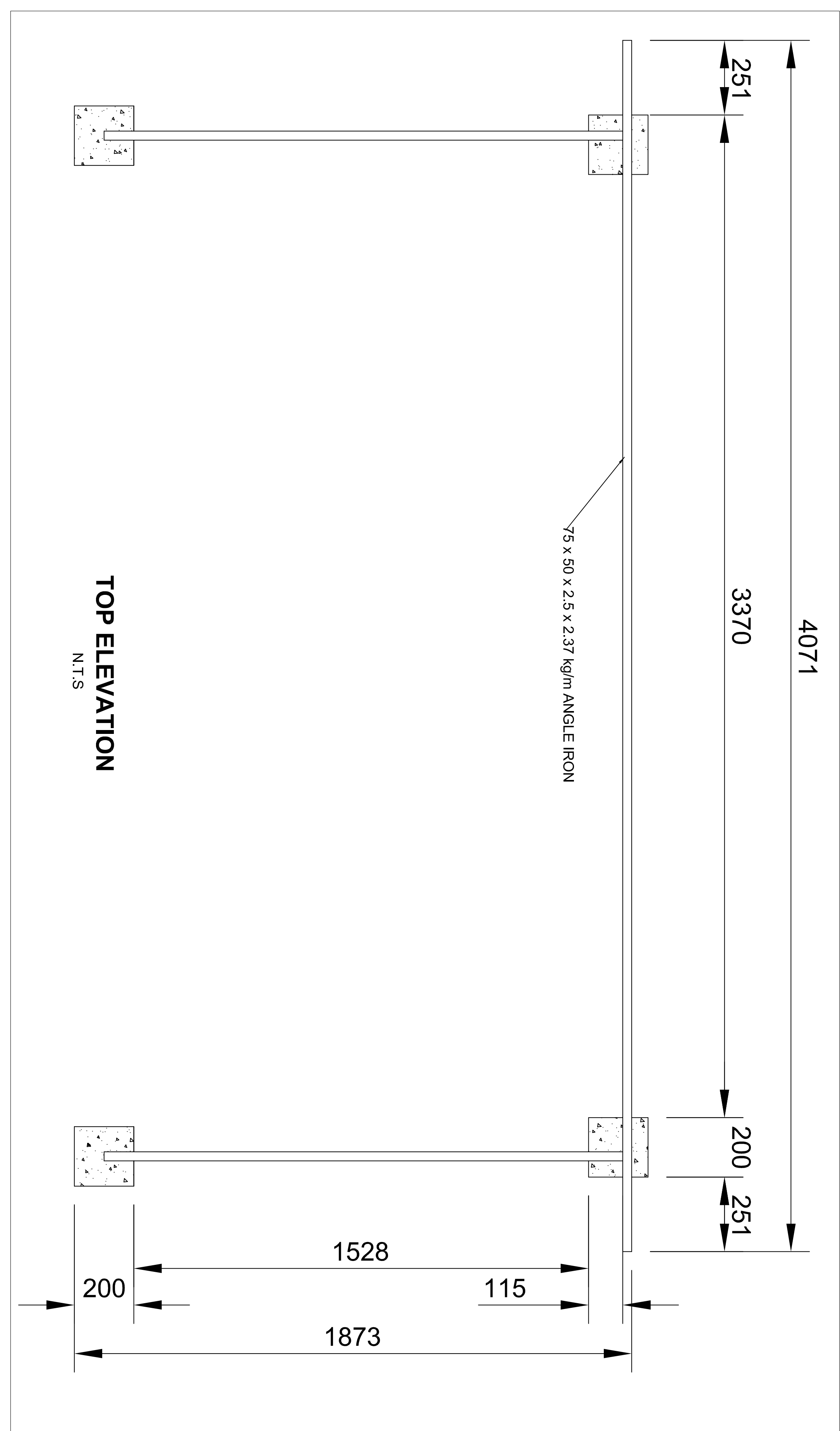
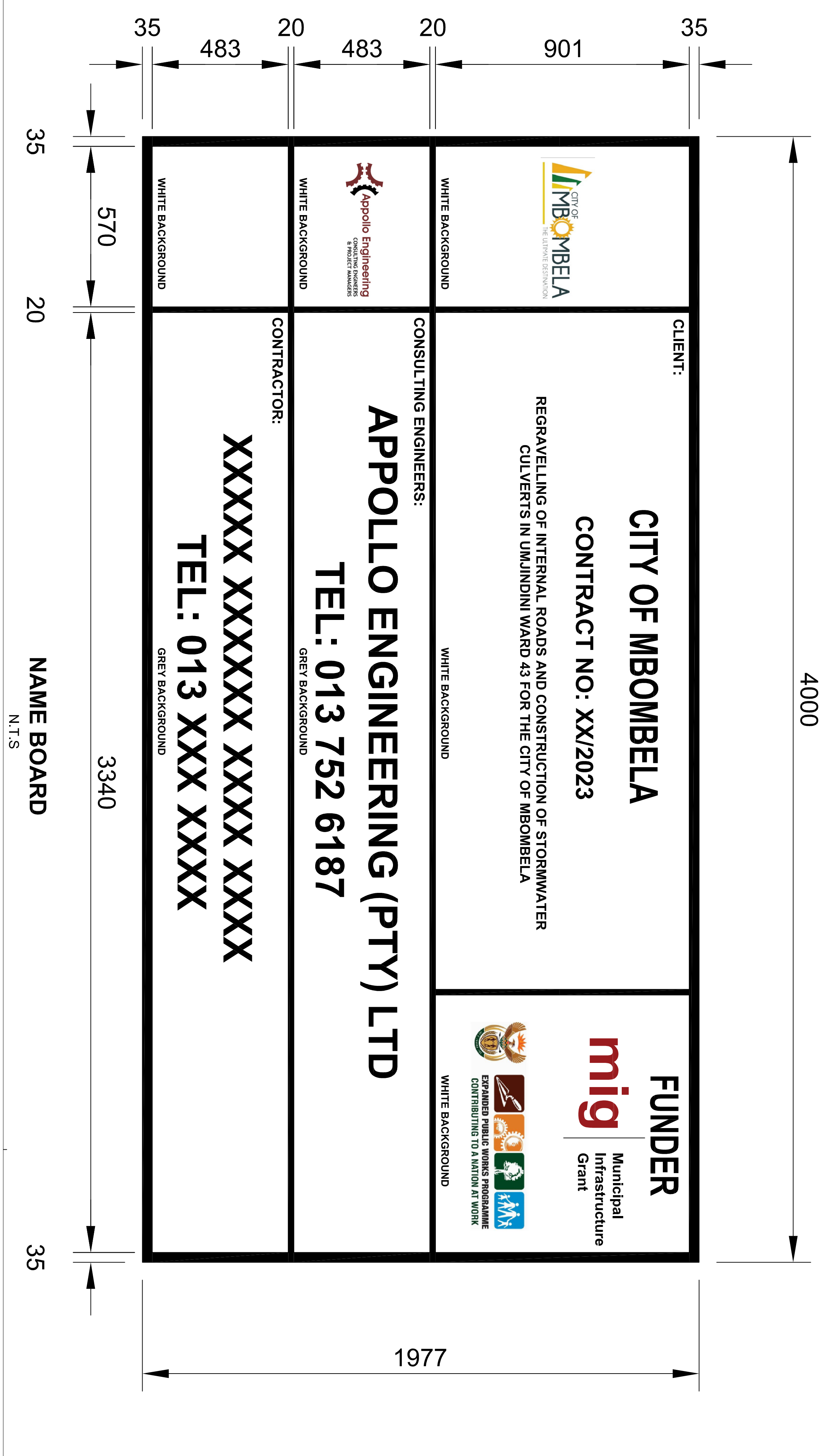


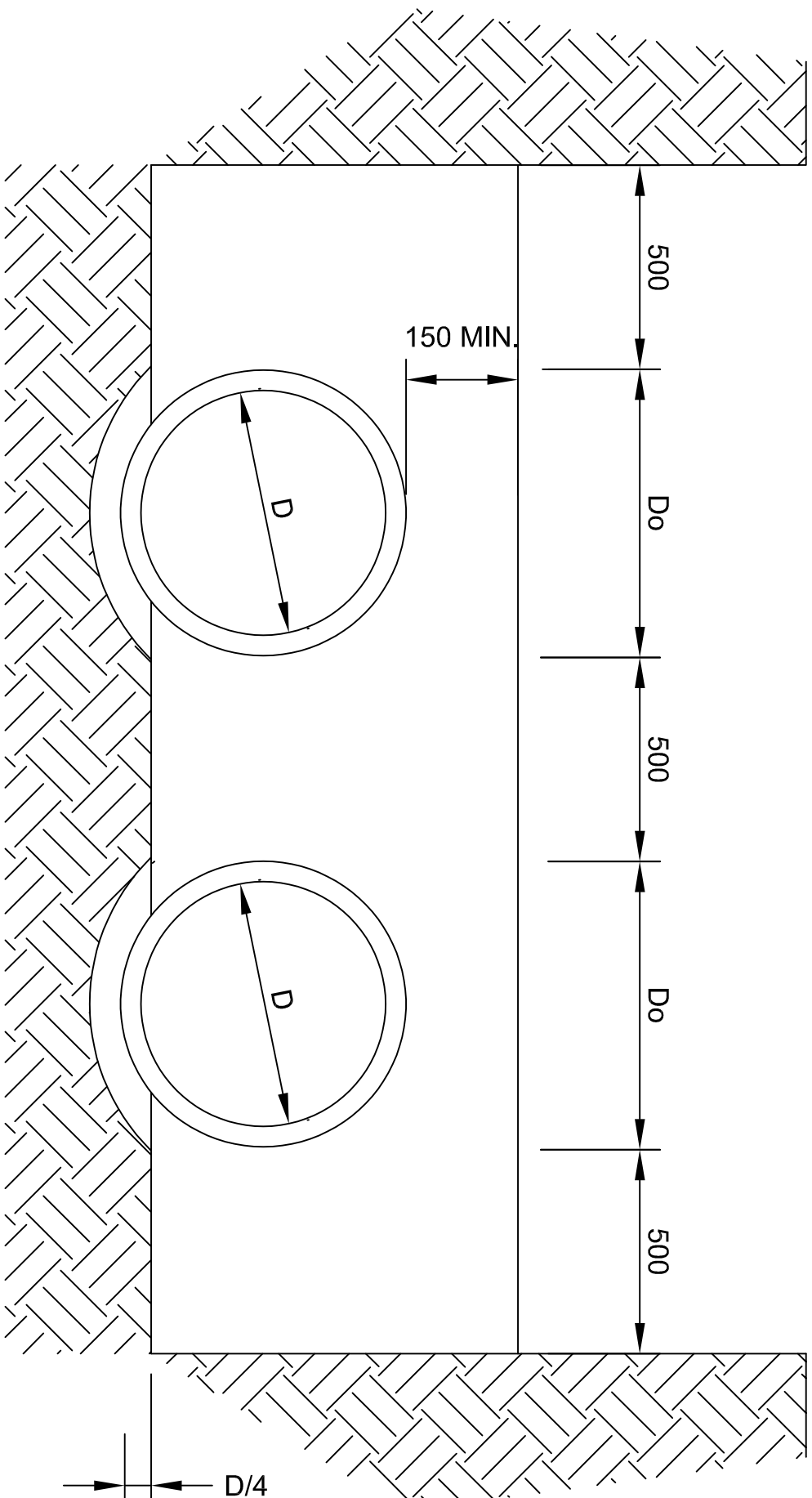
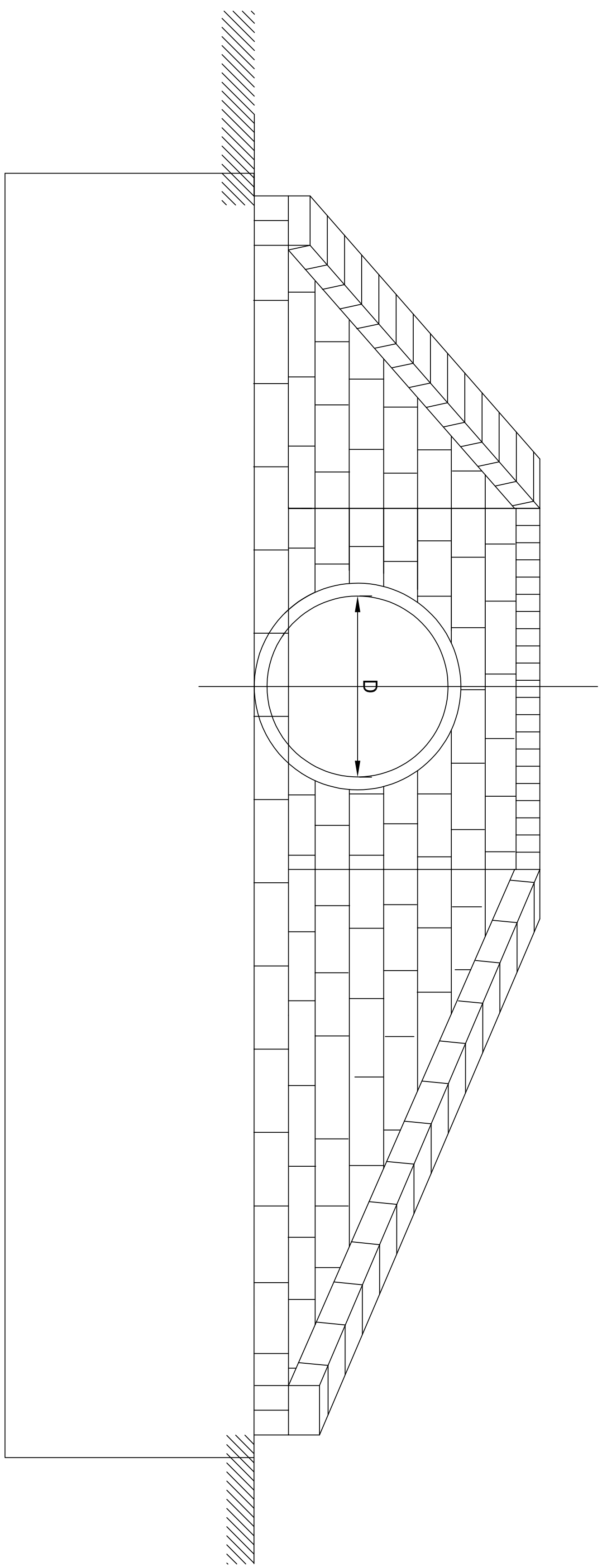
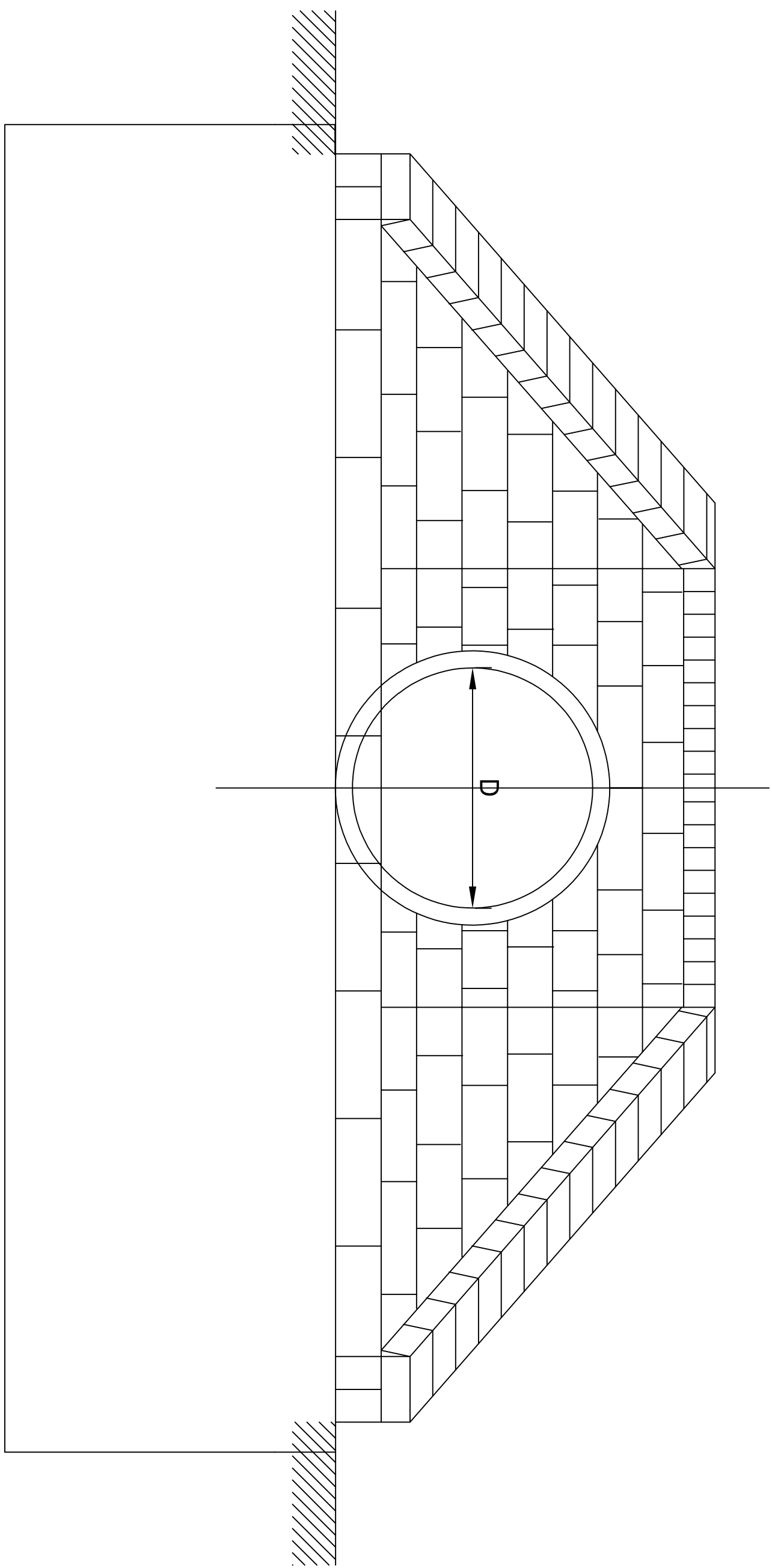
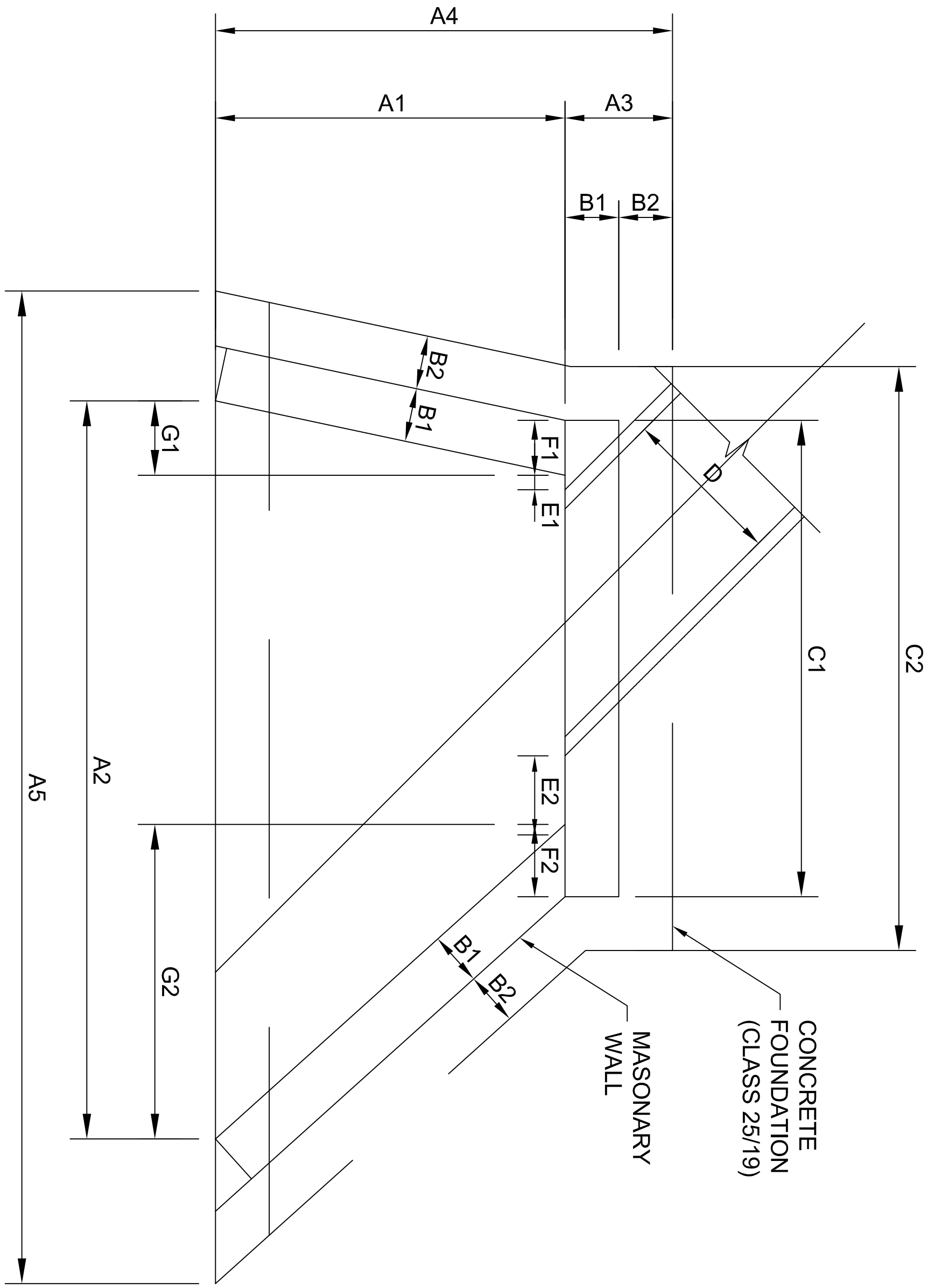
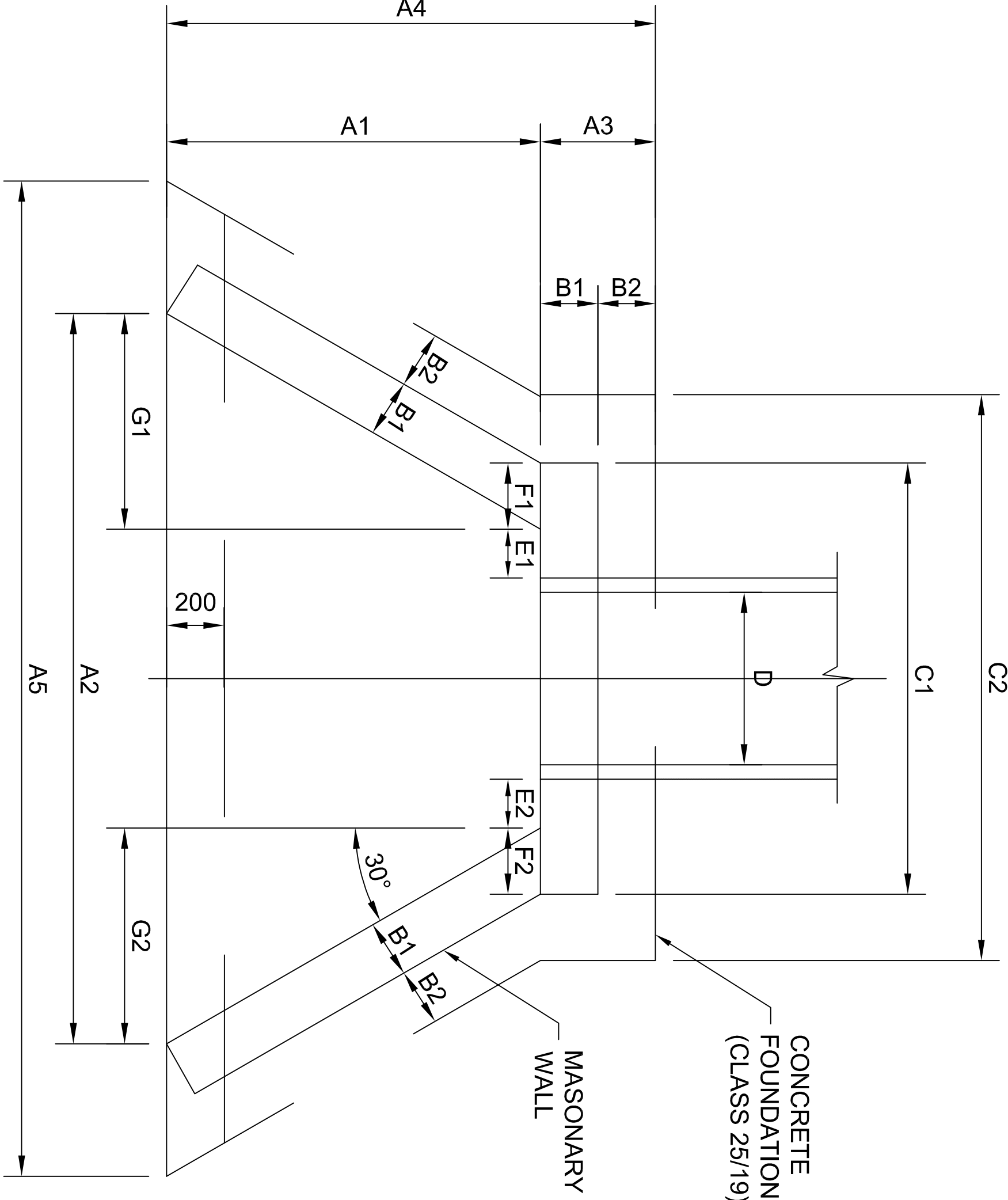
1 Nel Street
Mbombela
1200

Consultant:



15 Russel Street
Nelspruit
1200

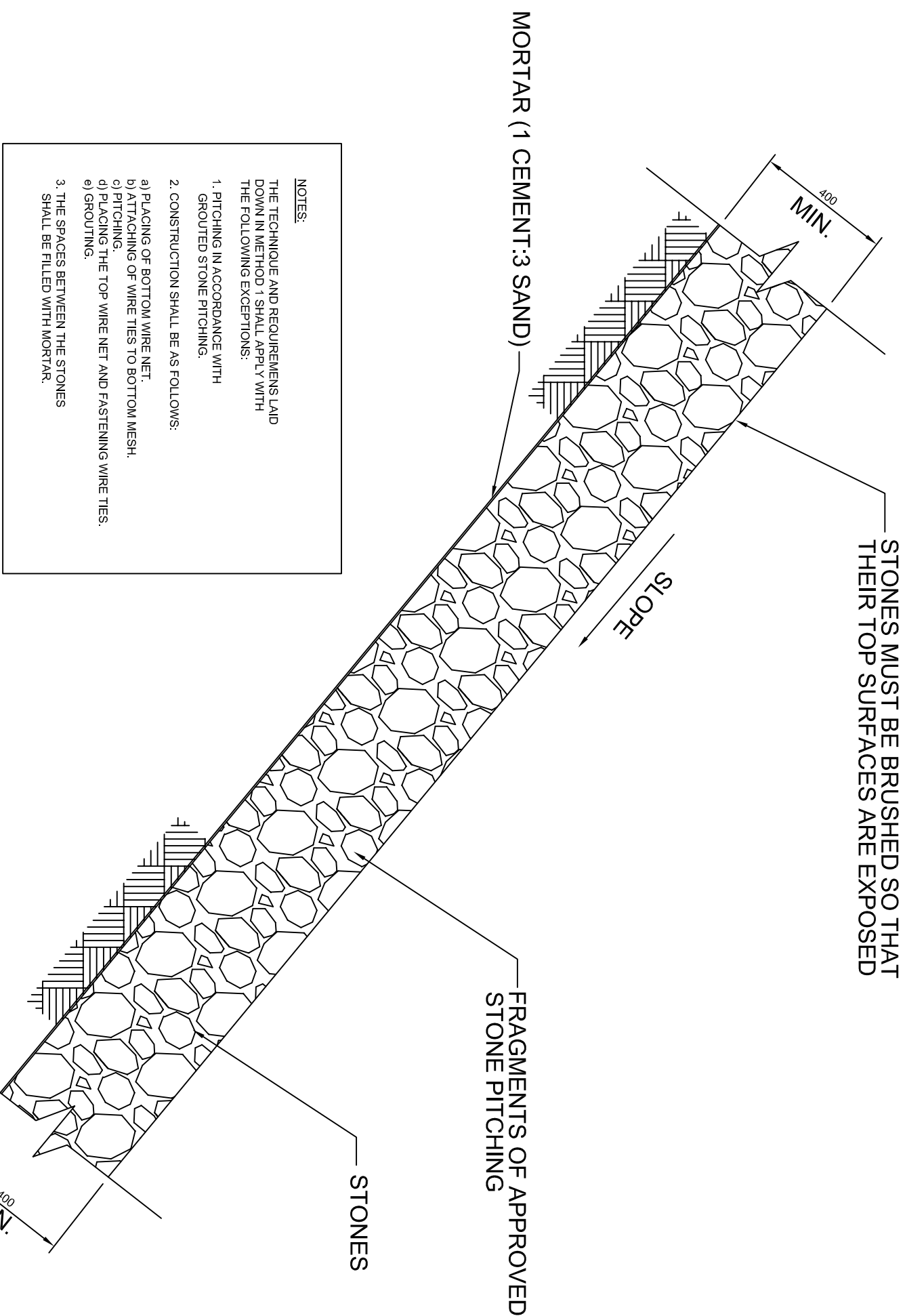
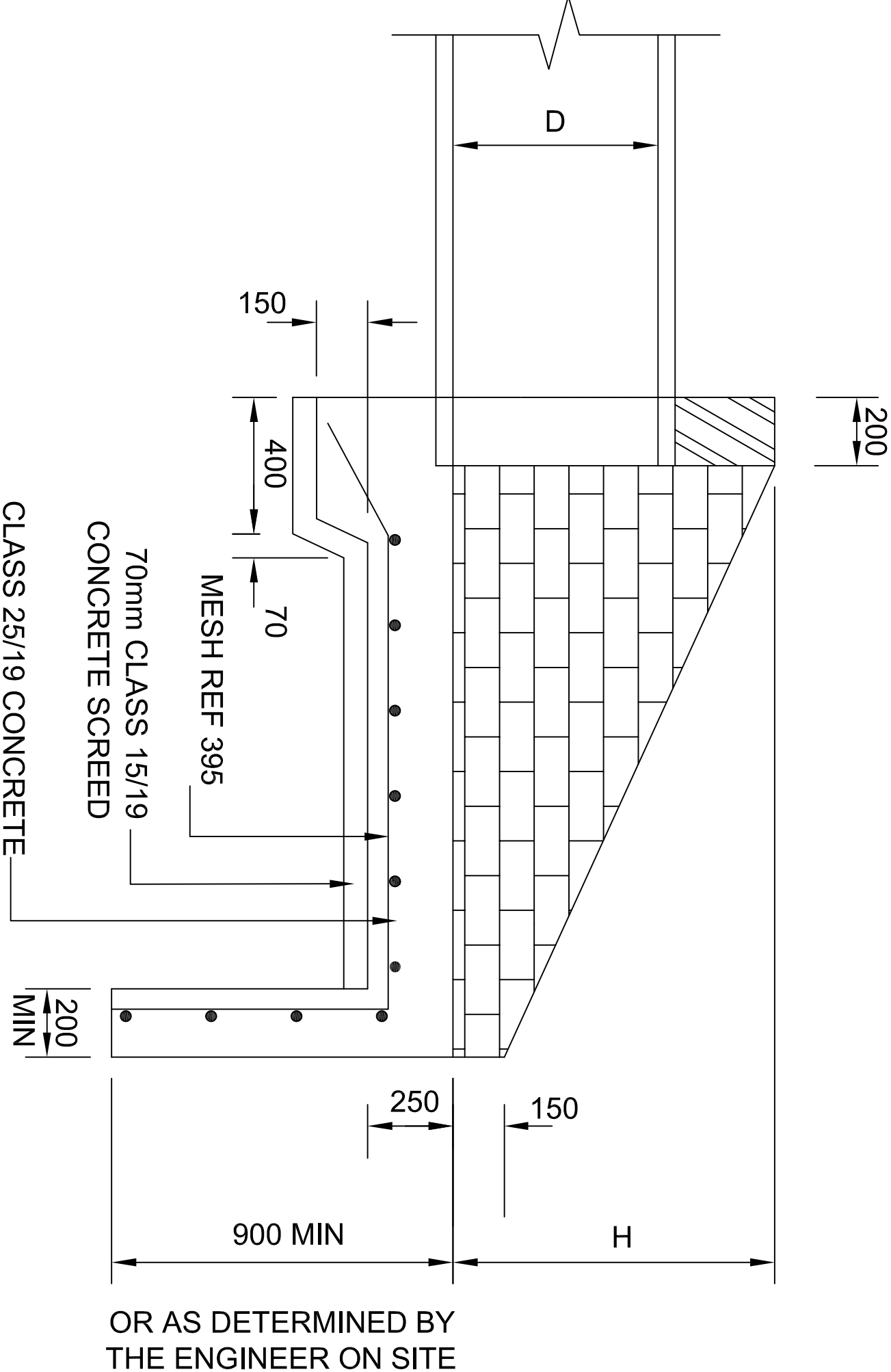
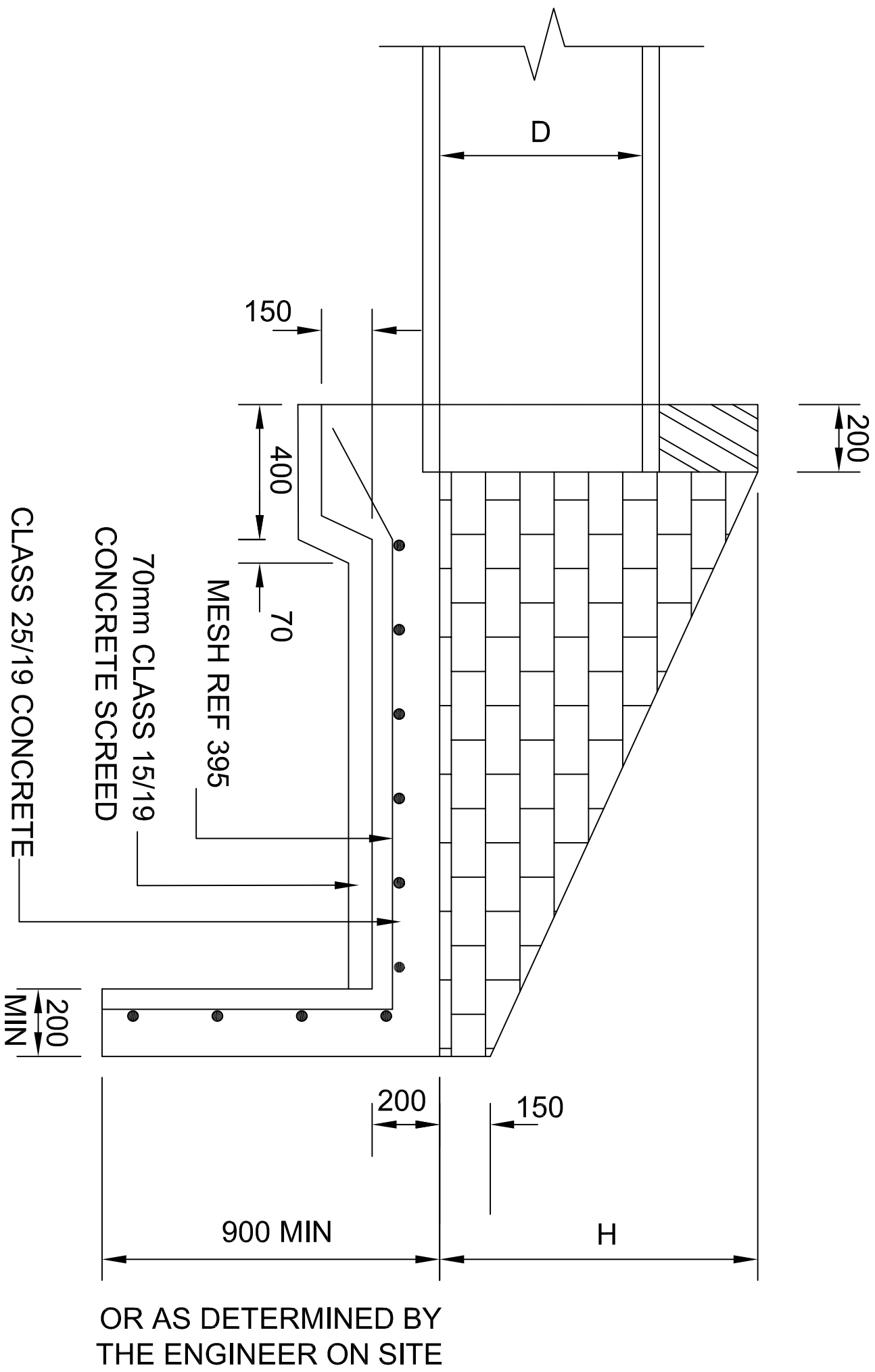




TYPICAL ELEVATION OF
INLET/OUTLET WINGWALLS : 90°
N.T.S

TYPICAL ELEVATION OF
INLET/OUTLET WINGWALLS : MAX 30°
N.T.S

HORIZONTAL SPACING
OF MULTIPLE PIPES
SCALE 1:10



CULVERT REFERENCE NUMBER		ROAD -1	
ROAD KILOMETER DISTANCE & ROUTE	CH 0+350		
TYPE	P		
BARRELS / TOTAL UNITS	1		
EXISTING CULVERT SIZE	N/A		
NEW SPAN / DIAMETER	600		
NEW HEIGHT	N/A		
CULVERT CLASS	100D		
BEDDING CLASS	B		
INLET'S STRUCTURE	Field Inlet		
CONSTRUCTION ACTION	NEW		
SKEW ANGLE	90		
CATCHMENT AREA	1.94		
TIME OF CONCENTRATION	15.44		
RAINFALL INTENSITY	127.72		
CATCHMENT DISCHARGE AT INLET	0.145		
A1	mm	1020	
A2	mm	2290	
A3	mm	350	
A4	mm	1370	
A5	mm	3100	
B1	mm	230	
B2	mm	120	
C1	mm	1640	
C2	mm	1880	
D	mm	600	
E1	mm	200	
E2	mm	200	
F1	mm	266	
F2	mm	266	
G1	mm	560	
G2	mm	560	
H	mm	560	

GRAUTED STONE PITCHING

N.T.S

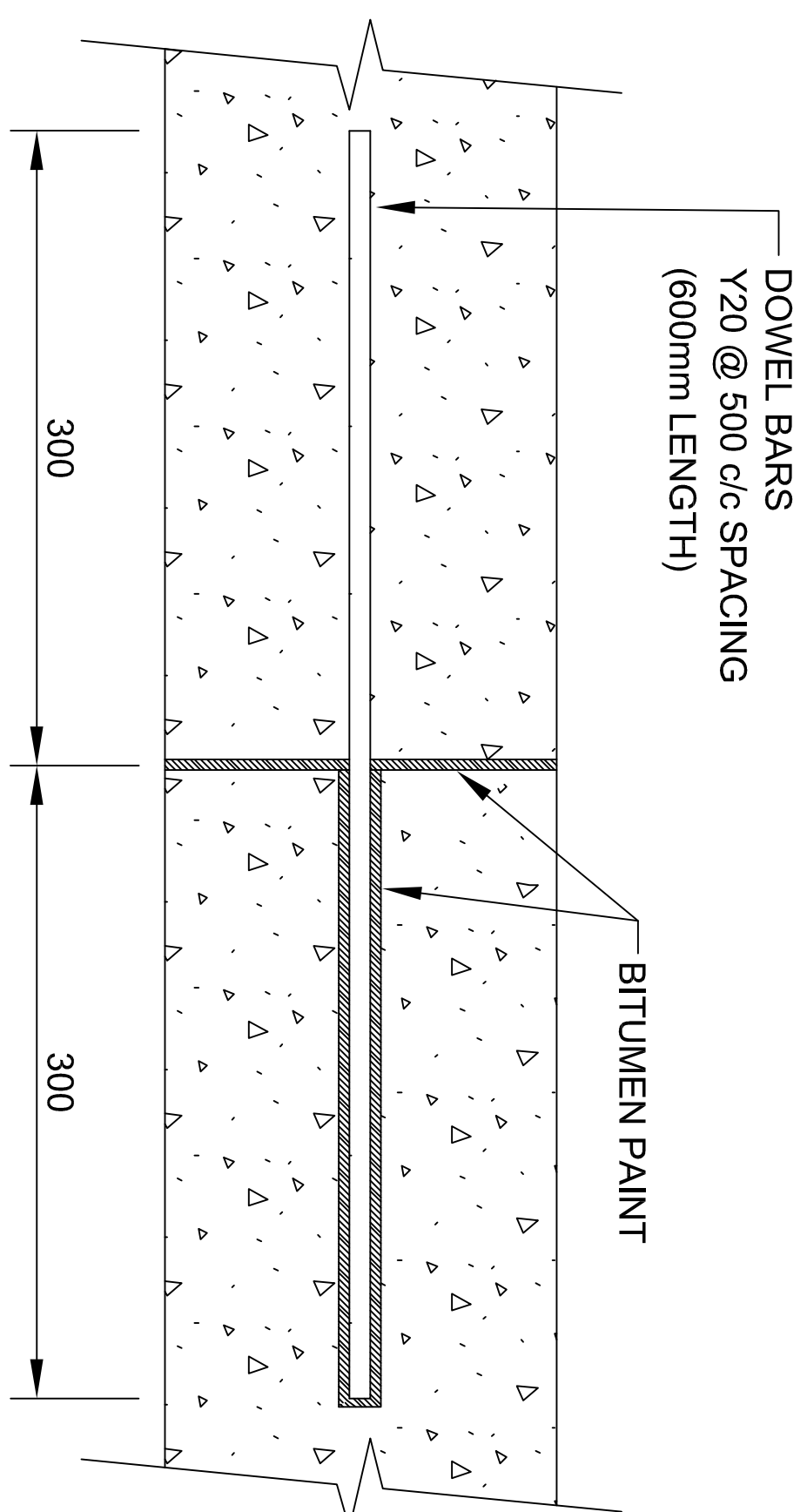
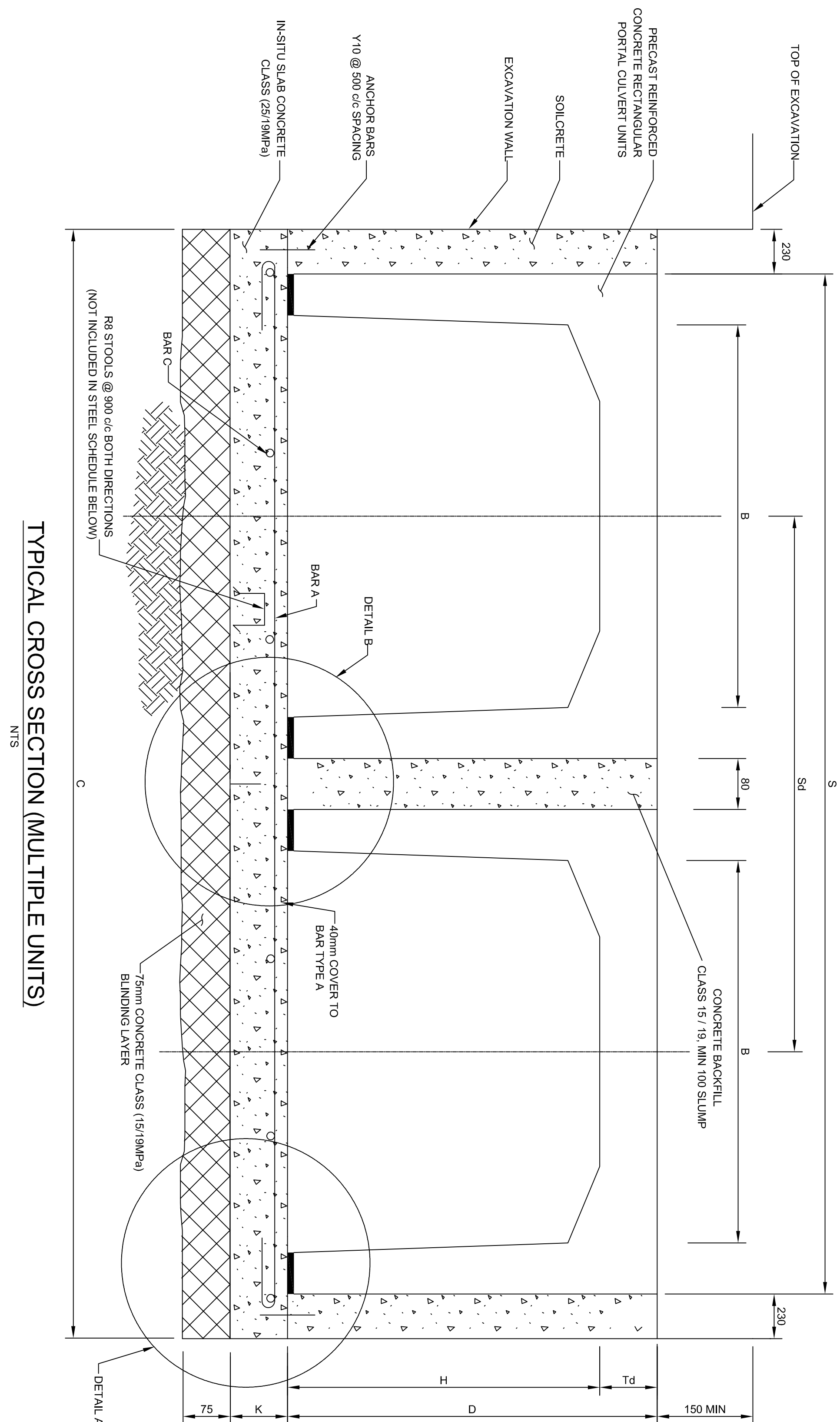
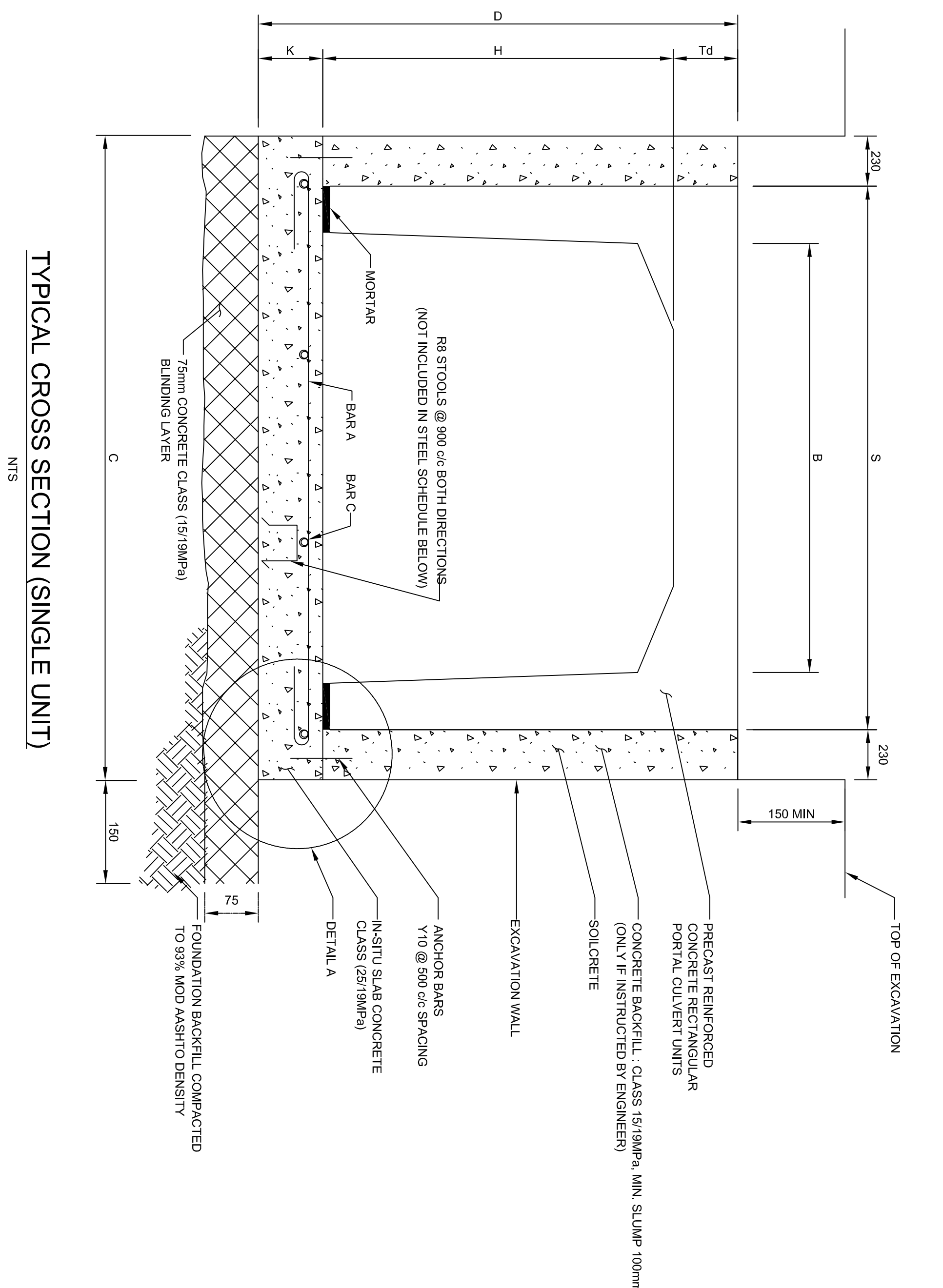
PIPE CULVERT DETAILS

CIVIL ENGINEERING

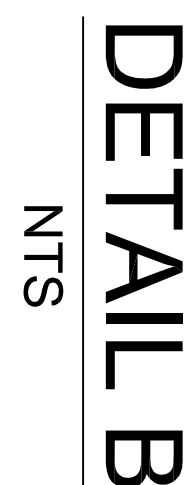
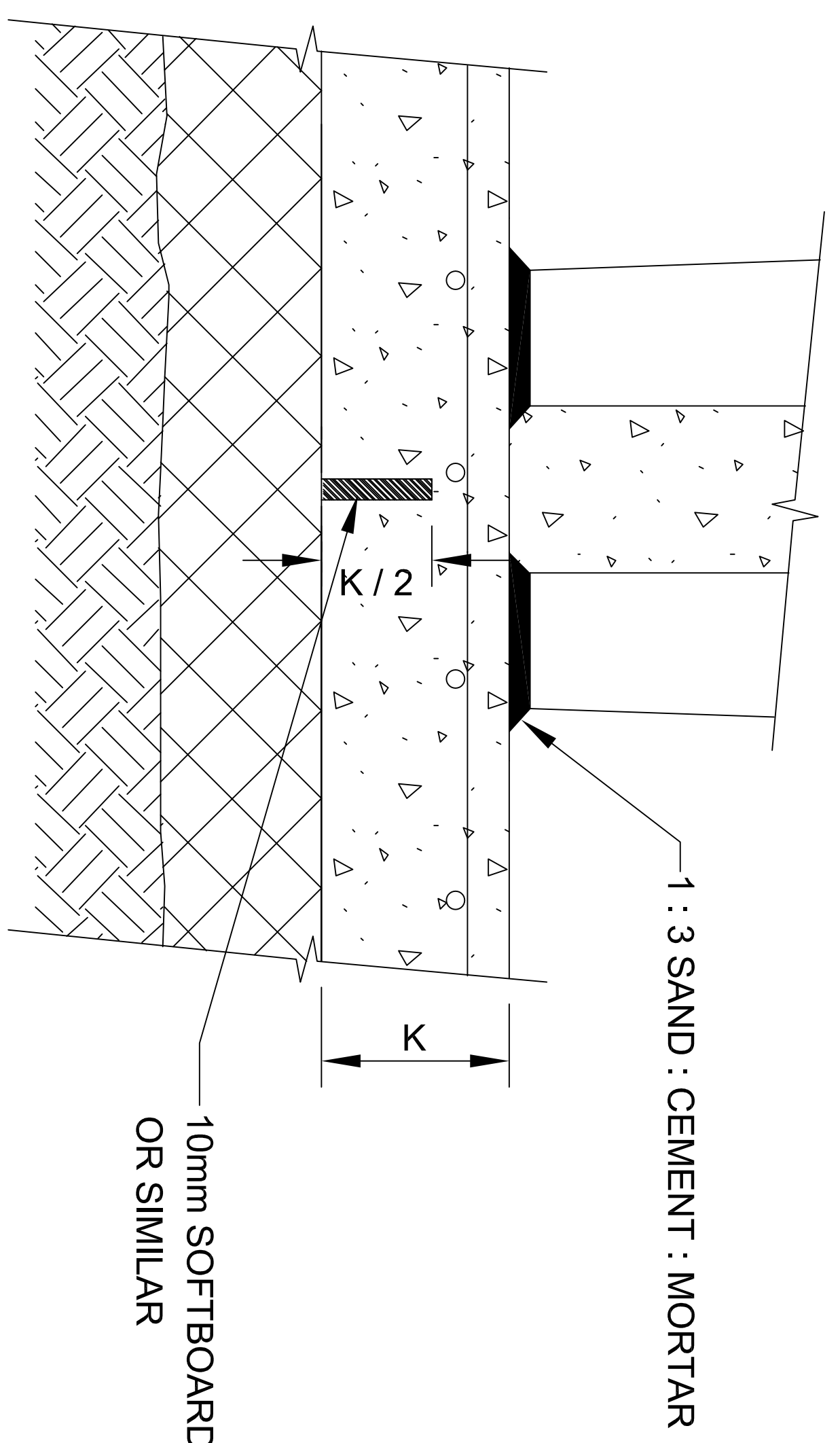
APOLLO Engineering

CITY OF MBOMBELA

0 10 20 30 40 50 60 70 80 90 100mm NATURAL SCALE



DIMENSIONS											REINFORCING FOR FLOOR SLAB				
BARREL AMOUNT	B (WIDTH)	S (CULVERT WIDTH)	C (HEADWALL WIDTH)	H (HEIGHT)	V (HEADWALL HEIGHT)	D (CONCRETE BACKFILL)	P (IN OR OUTLET FLOOR LENGTH)	R (IN OR OUTLET FLOOR WIDTH)	K (CULVERT FLOOR THICKNESS)	BAR A	SHAPE CODE	BENDING	BAR C	SHAPE CODE	BENDING
	1	1200	1440	1900	600	1020	720	1545	3885	175	Y12 - 160	32	Y10 - 200	37	90 LENGTH VARIES WITH CULVERT LENGTH
	1	1200	1440	1900	900	1320	1020	2145	4378	175	Y12 - 160	32	Y10 - 200	37	
	2	1200	2960	3420	900	1320	1020	2145	6357	175	Y12 - 160	32	Y10 - 200	37	
	2	1200	2960	3420	1200	1620	1320	2745	6590	175	Y12 - 160	32	Y10 - 200	37	
	1	1500	1750	2210	900	1325	1025	2150	4690	175	Y12 - 160	32	Y10 - 200	37	
	2	1500	3580	4040	1200	1625	1325	2750	7676	175	Y12 - 160	32	Y10 - 200	37	
	4	1500	7240	7700	1200	1625	1325	2750	1136	175	Y12 - 130	32	Y10 - 200	37	
	6	1500	10900	11360	1200	1625	1325	2750	14986	175	Y12 - 130	32	Y10 - 200	37	
	7	1500	12730	13190	1200	1625	1325	2750	16830	175	Y12 - 130	32	Y10 - 200	37	

[illegible]

NOTES :

1. DIMENSION AND REINFORCING DETAIL FOR INSITU FLOOR SLABS ARE ONLY VALID :
 - a) IF THE HEIGHT OF FILL ABOVE THE CULVERT IS LESS THAN THE FOLLOWING :

DIMENSIONS		HEIGHT OF FILL	
600mm	6.0m	6.0m	1.0m
900mm	9.0m	9.0m	1.5m
1200mm	12.0m	12.0m	2.0m
1500mm	15.0m	15.0m	2.5m
1800mm	18.0m	18.0m	2.0m
2400mm	24.0m	24.0m	1.5m
3000mm	30.0m	30.0m	0.9m
 - b) WHERE THE TYPE OF MATERIAL BELOW THE FLOOR IS NOT ROCK
2. IF ACCEPTABLE TO THE ENGINEER, REPLACE THE HIGH TENSION STEEL WITH MILD STEEL REINFORCING AS FOLLOWS :
 - y10 WITH R12 - SPACING UNCHANGED
 - y12 WITH R16 - SPACING UNCHANGED
 - y16 WITH R20 - SPACING 0.93 x EXISTING
3. WHERE THREE OR MORE CULVERTS NEXT TO EACH OTHER ARE SPECIFIED, THE INSITU FLOOR SLABS MUST BE MADE UP OF SINGLE AND DOUBLE UNITS AS SPECIFIED IN THE TABLE
4. ALL PRECAST REINFORCED CULVERTS SHALL COMPLY WITH THE REQUIREMENTS SABS 998 AS WELL AS ADDITIONAL TEST LOADING AS SPECIFIED.
5. NINE CONCRETE COVER OVER REINFORCEMENT : 40mm
6. THE CLASS OF CULVERT TO BE USED IS SPECIFIED ON THE DRAINAGE SCHEDULE
7. FLOOR SLAB TO BE ALTERNATIVE SECTIONS OF EQUAL LENGTH, MAX LENGTH = 65m
8. SURFACE FINISH IS CLASS F1 AND U2, WHERE APPLICABLE
9. ALL JOINTS OR HOLES IN PRECAST UNITS TO BE COVERED WITH KAYMAUT U24 OR S. BEFORE BACKFILL
10. PAYMENT FOR EXCAVATION AND BACKFILL WILL BE AS PER THE DIMENSIONS ON THIS DRAWING

