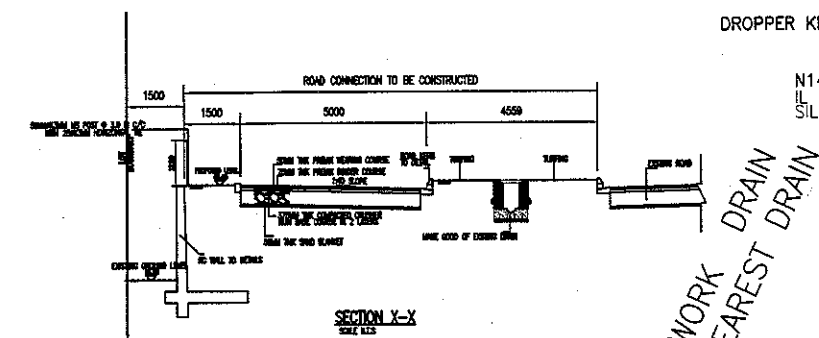
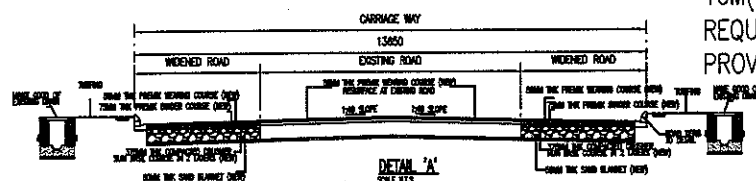


TABLE A: DRAINAGE DETAIL

N1-N2	230mm DIA. H.R. CASCADE GLAZE DRAIN WITH B/W AT 1:1.15 GRADIENT
N3-N4	230mm DIA. H.R. CASCADE GLAZE DRAIN WITH B/W AT 1:20 GRADIENT
N5-N7	230mm DIA. H.R. CASCADE GLAZE DRAIN WITH B/W AT 1:35 GRADIENT
N10-N8	230mm DIA. H.R. CASCADE GLAZE DRAIN WITH B/W AT 1:29 GRADIENT
N11-N10	450mm DIA. CULVERT WITH DROP SUMP WITH B/W AT 1:38 GRADIENT
N16-N17	230mm DIA. H.R. GLAZE DRAIN WITH B/W AT 1:300 GRADIENT
N12-N13	230mm DIA. H.R. CASCADE GLAZE DRAIN WITH B/W AT 1:13 GRADIENT
N13-N14	230mm DIA. H.R. CASCADE GLAZE DRAIN WITH B/W AT 1:17 GRADIENT
OSD B-N23	600mm DIA. CULVERT WITH B/W AT 1:300 GRADIENT
N7-N16	230mm DIA. H.R. GLAZE DRAIN WITH B/W AT 1:200 GRADIENT
N20-N21	230mm DIA. H.R. CASCADE GLAZE DRAIN WITH B/W AT 1:23 GRADIENT
N4-N17	450mm DIA. CULVERT WITH B/W AT 1:135 GRADIENT
NA1-N17	450mm DIA. CULVERT WITH B/W AT 1:135 GRADIENT
N2-N3	450mm DIA. CULVERT WITH DROP SUMP WITH B/W AT 1:120 GRADIENT
N17-N8	900mm DIA. CULVERT WITH B/W AT 1:300 GRADIENT
N22-N23	230mm DIA. H.R. GLAZE DRAIN WITH B/W AT 1:300 GRADIENT
NA2-NA3	230mm DIA. H.R. GLAZE DRAIN WITH B/W AT 1:150 GRADIENT
N23-N6	230mm DIA. H.R. GLAZE DRAIN WITH B/W AT 1:300 GRADIENT

* ANY DRAIN WITH DEPTH > 1.0M IS TO BE BUILT WITH RC WALL TO DETAIL

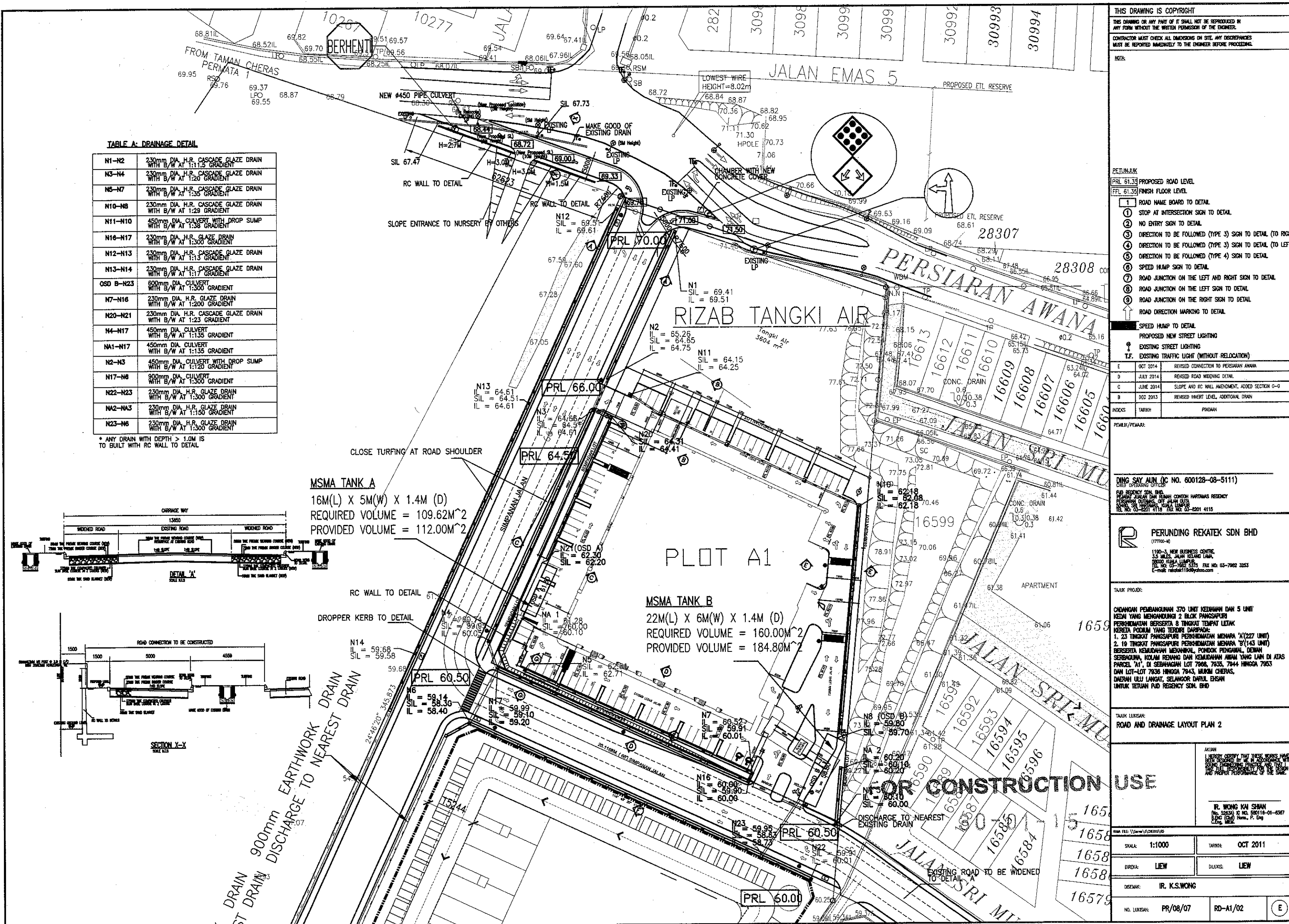


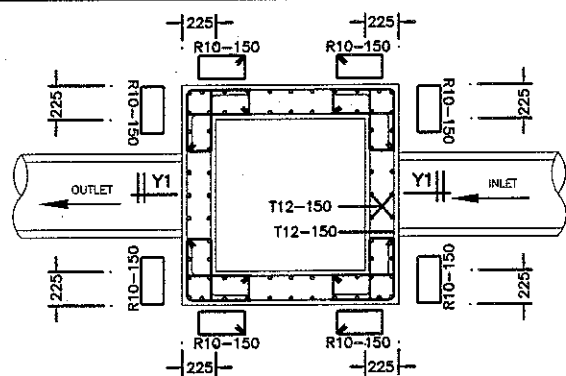
MSMA TANK A

16M(L) X 5M(W) X 1.4M (D)
REQUIRED VOLUME = 109.62M²
PROVIDED VOLUME = 112.00M²

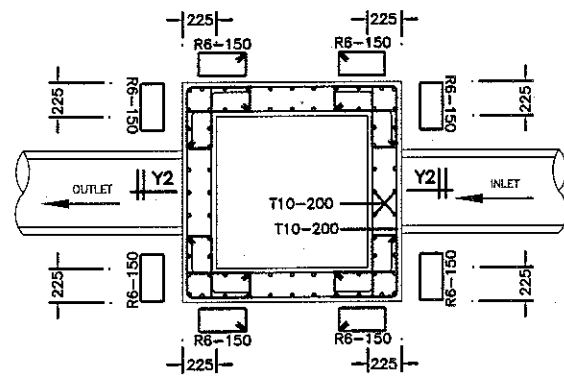
MSMA TANK B

22M(L) X 6M(W) X 1.4M (D)
REQUIRED VOLUME = 160.00M³
PROVIDED VOLUME = 184.80M³

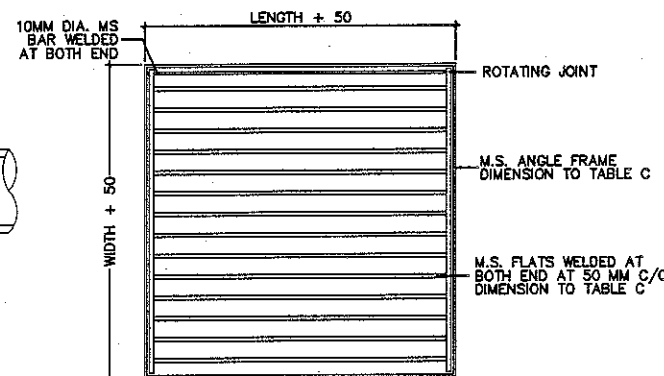




SECTIONAL PLAN X1-X1
TYPICAL R.C SUMP AT ROAD
(SCALE 1:25)

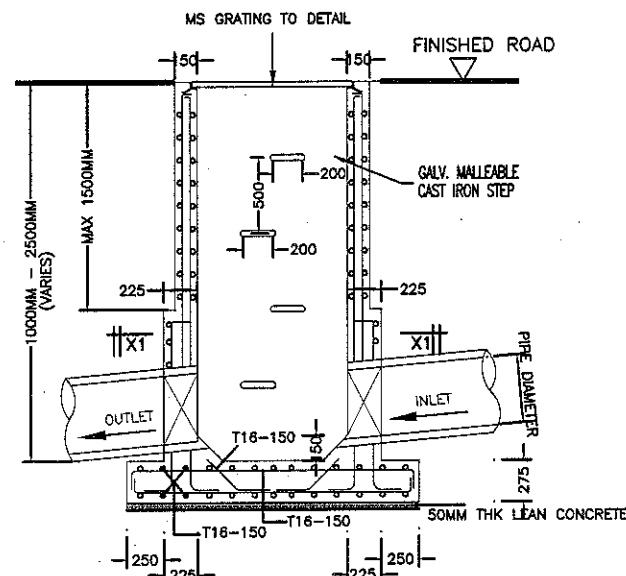


SECTIONAL PLAN X2-X2
TYPICAL R.C SUMP
(1.5M < DEPTH < 2.5M)
(SCALE 1:25)

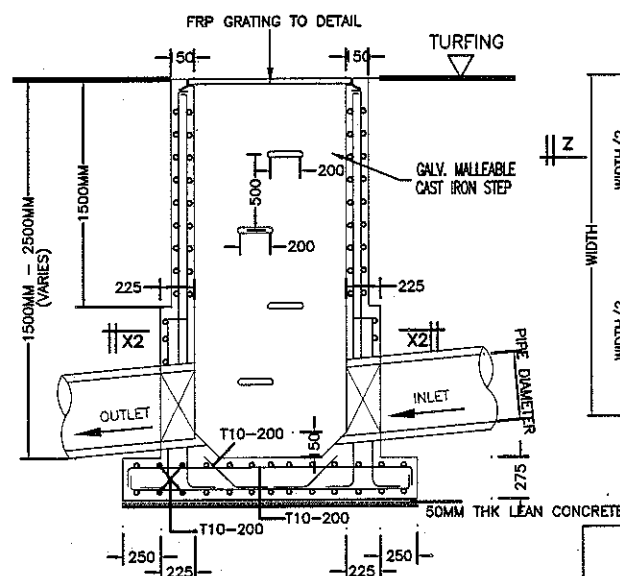


TYPICAL DETAIL OF MS GRATING
FOR TYPE 1 DRAIN SUMP
(SCALE N.T.S.)

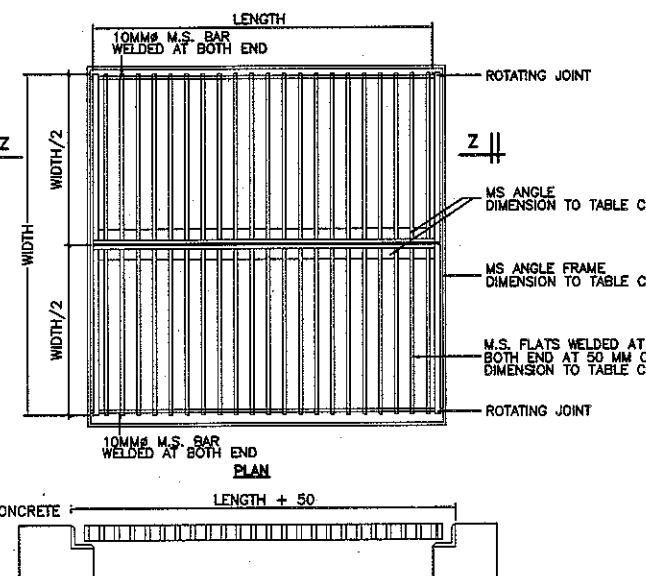
- NOTE:-
1. CONCRETE MIX GRADE 30 MINIMUM CUBE STRENGTH AT 28 DAYS TO BE 30 N/mm².
 2. COVER TO REINFORCEMENT TO BE 50mm UNLESS OTHERWISE STATED.
 3. LAPS TO DISTRIBUTION BAR TO BE 60mm
 4. THE BEARING CAPACITY OF THE SOIL BELOW THE CULVERTS SHALL BE NOT LESS THAN 120 KN/M² AND ALL MATERIALS BELOW THIS BEARING CAPACITY SHALL BE EXCAVATED AND REPLACED WITH COMPACTED GRANULAR MATERIALS.



SECTION Y1-Y1
TYPICAL R.C SUMP AT ROAD (HEAVY DUTY)
(SCALE 1:25)



SECTION Y2-Y2
TYPICAL R.C SUMP
(1.5M < DEPTH < 2.5M)
(SCALE 1:25)



MS GRATING DETAILS FOR TYPE 2 DRAIN SUMP
(SCALE N.T.S.)

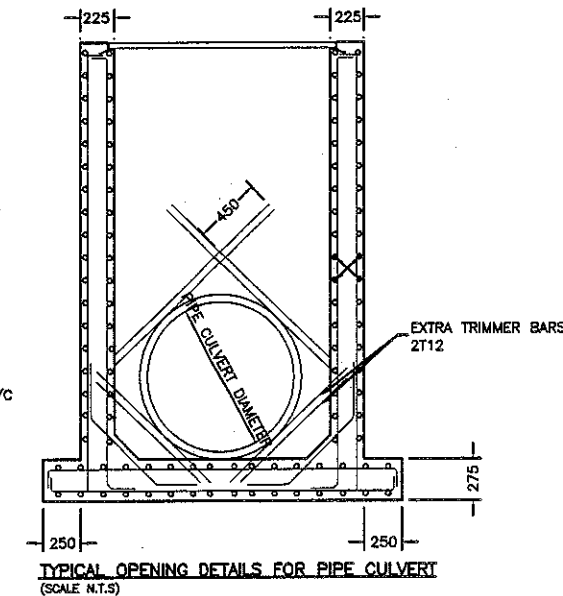
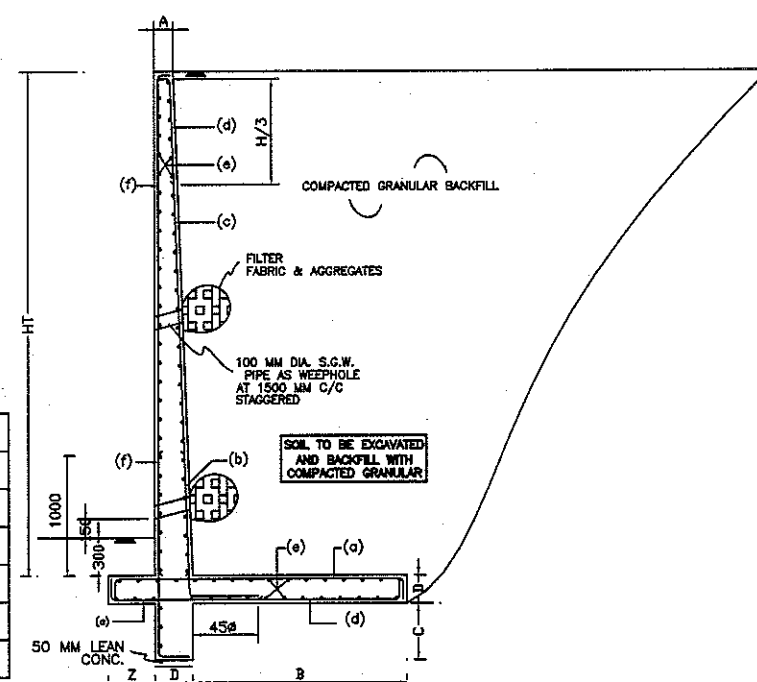


TABLE C: DRAIN SUMP AND M.S. GRATING DIMENSION

	FOR DEPTH < 1.0M DRAIN SUMP		FOR DEPTH > 1.0M DRAIN SUMP	
	FOR W<600MM DRAIN ONLY (TYPE 1 DRAIN SUMP)	FOR 600MM<W<900MM DRAIN ONLY (TYPE 2 DRAIN SUMP)	FOR W<600MM DRAIN ONLY (TYPE 2 DRAIN SUMP)	FOR 600MM<W<900MM DRAIN ONLY (TYPE 2 DRAIN SUMP)
LENGTH	750MM	900MM	900MM	900MM
WIDTH	750MM	900MM	900MM	900MM
M.S. ANGLE	40X40X5MM	40X40X5MM	40X40X5MM	40X40X5MM
M.S. FLATS	50X12MM	50X12MM	50X12MM	50X12MM
	FOR W<450MM DRAIN/PIPE CULVERT DRAIN/PIPE CULVERT (TYPE 1 DRAIN SUMP)		FOR 600MM<W<900MM DRAIN/PIPE CULVERT DRAIN/PIPE CULVERT (TYPE 2 DRAIN SUMP)	
	FOR W<450MM DRAIN/PIPE CULVERT DRAIN/PIPE CULVERT (TYPE 1 DRAIN SUMP)	FOR 600MM<W<900MM DRAIN/PIPE CULVERT DRAIN/PIPE CULVERT (TYPE 2 DRAIN SUMP)	FOR W<450MM DRAIN/PIPE CULVERT DRAIN/PIPE CULVERT (TYPE 2 DRAIN SUMP)	FOR 600MM<W<900MM DRAIN/PIPE CULVERT DRAIN/PIPE CULVERT (TYPE 2 DRAIN SUMP)
LENGTH	750MM	1200MM	900MM	1200MM
WIDTH	750MM	1200MM	900MM	1200MM
M.S. ANGLE	40X40X5MM	50X50X5MM	40X40X5MM	50X50X5MM
M.S. FLATS	50X12MM	65X12MM	50X12MM	65X12MM



TYPICAL SECTION OF RC RETAINING WALL ALONG MAIN ROAD (PERSIARAN AWANA)
SCALE : N.T.S.

1. REINFORCED CONCRETE RETAINING WALL											
DIMENSIONS FOR RC RETAINING WALL						REINFORCEMENT					
HEIGHT HT (MM)	A (MM)	B (MM)	C (MM)	D (MM)	Z (MM)	'a'	'b'	'c'	'd'	'e'	'f'
1500	150	625	300	150	300	T12-150	T12-150	T12-150	T12-300	T10-150	T12-150
2000	150	825	300	150	300	T12-150	T12-150	T12-150	T12-300	T10-150	T12-150
2500	200	1175	375	225	300	T16-150	T16-150	T16-150	T16-300	T10-150	T12-150
3000	200	1400	375	300	375	T16-150	T16-150	T16-150	T16-300	T10-150	T12-150

FOR CONSTRUCTION USE

30-01-15

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CONTRACTOR MUST CHECK ALL DIMENSIONS ON SITE. ANY DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ENGINEER BEFORE PROCEEDING.

NOTE:

B	DEC 2014	ADDED RETAINING WALL TO PERSIARAN AWANA
A	DEC 2013	REVISED TYPICAL SUMP DETAILING
WORKS	TARKH	PINDAR

PEMILIK/PEMAJU:

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TAJUK PROJEK:

CADANGAN PEMBANGUNAN 370 UNIT KEDAHAN DAN 5 UNIT KEDAI YANG MENGANDUNGI 2 BLOK PANGSAPURI PERKHIDMATAN BERSERTA 8 TINGKAT TEMPAT LETAK KERETA. PUSAT YANG TERDAPAT DAPERAHA: 1. 23 TINGKAT PANGSAPURI PERKHIDMATAN MEMARA 'A'(227 UNIT) 2. 19 TINGKAT PANGSAPURI PERKHIDMATAN MEMARA 'A'(143 UNIT) BERSERTA KEMUDAHAN MEKANIKAL, PONDOK PENGALAM, DEWAH SERBAGUNA, KOLAM RENJANG DAN KEMUDAHAN AWAM YANG LAIN DI ATAS PARCEL 'A1', DI SEBAGHIAN LOT 7946, 7935, 7944 HINGGA 7953 DAN LOT-LOT 7936 HINGGA 7943, MUKIM CHERAS, DAERAH ULU LANGAT, SELANGOR DARUL EHSAN UNTUK TERUTAM PAD REGENCY SDN. BHD

TAJUK LUKSAR:

DRAIN SUMP DETAIL

AKUAN
I HEREBY CERTIFY THAT THESE WORKS HAVE BEEN DESIGNED BY ME IN ACCORDANCE WITH THE ENGINEERING PRACTICE ACT 1967 AND I AM A REGISTERED ENGINEER AND I AM A MEMBER OF THE INSTITUTION OF ENGINEERS AND ARCHITECTS OF MALAYSIA.

IR. WONG KAI SHAN
(No. 5863) IC NO. 90116-01-4367
BAND (C) Home, P. Eng
CENG, MISC

www.rle.com.my/10000000

SKALA:	1:100	TARIKH:	DEC 2013
DREKA:	LEW	OLAKIS:	LEW
DSEKAK:	IR. K.S.WONG		
NO. LUKSAR:	PR/08/07	RD-A1/09	B