DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF HIGHWAYS, PORTS & SHIPPING

ROAD DEVELOPMENT AUTHORITY

CHINA DEVELOPMENT BANK FUNDED IMPROVEMENT AND REHABILITATION OF PRIORITY ROAD PROJECT 3 (PRP3)

CIVIL WORK CONTRACT NO: RDA/RNIP/PRP3/PHASE-1/PACKAGE-1

Contract Component No.	Description
RDA/RNIP/PRP3/Phase1/Package-1/C1	Kiriella - Nedurana - Eheliyagoda Road (0.00-14.75 km)
RDA/RNIP/PRP3/Phase1/Package-1/C2	Ratnapura - Palawela - Kårawita Road (0.00-21.28 km)
RDA/RNIP/PRP3/Phase1/Package-1/C3	Ratnapura - Wewalwatta Road (0.00-27.5 km)
RDA/RNIP/PRP3/Phase1/Package-1/C4	Veyangoda - Ruwanwella Road (12.4-32.2 km) - Road Package
	Veyangoda - Ruwanwella Road (12.4-32.2 km) - Bridge Package

CONTRACTOR

CHINA NATIONAL AERO - TECHNOLOGY INTERNATIONAL ENGINEERING CORPORATION (CATIC - ENG)

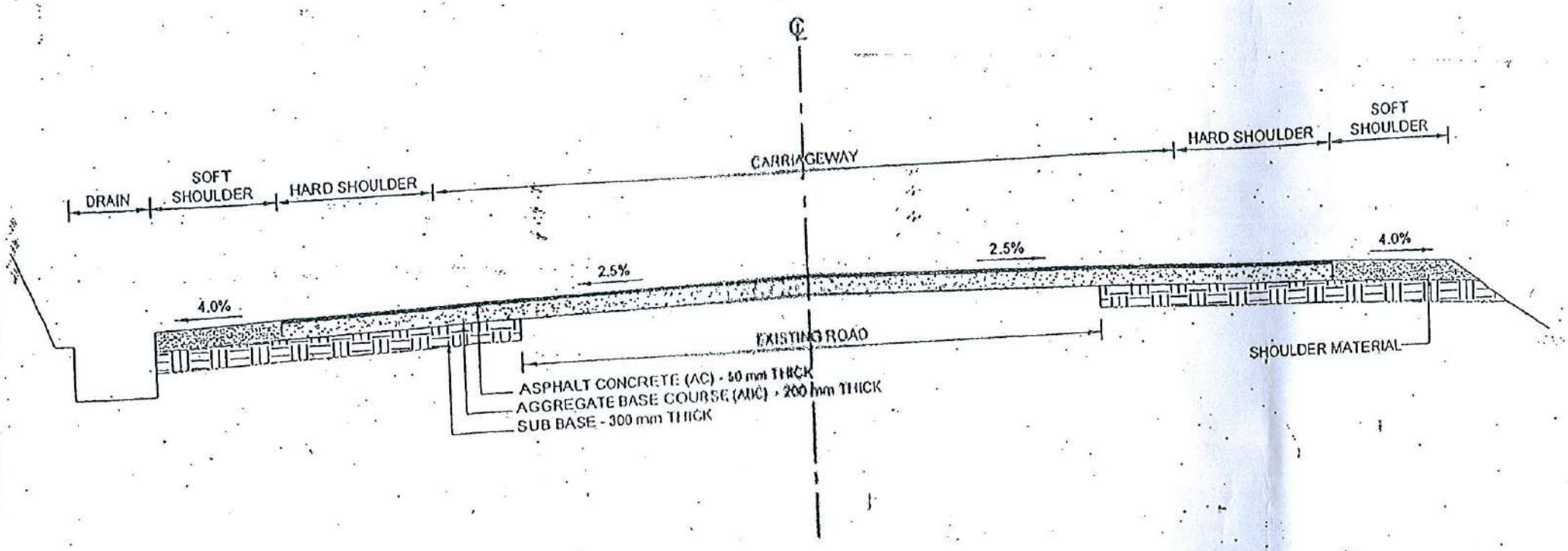
VOLUME 4

The Drawings

DECEMBER 2013

Package 1

	ROAD NAME	CARRIAGWAY WIDTH	APPROXIMATE HARD SHOULDER WIDTH	APPROXIMATE EARTH SHOULDER WIDTH
C1	Kiriella - Nadurana - Eheliyagoda (B222)	3.2 x 2	(0.5 to1.0) x 2	1.0 x 2
C2	Ratnapura - Palawela - Karavita (B390)			
	0.0 - 9.0km	3.1 x 2	1.0 x 2	1.0 x 2
	9.0 - 21.28km	3.1 x 2	(0.5 to1.0) x 2	1.0 x 2
C3	Ratnapura - Wewelwatta (B 391)			
	0.0 - 10.0km	3.1 x 2	1.0 x 2	1.0 x 2
	10.0 - 27.5km	3.1 x 2	(0.5 to1.0) x 2	1.0 x 2
C4	Veyangoda - Ruwanwella (B445)	3.2 x 2	1.0 x 2	1.0 x 2



TYPICAL CROSS SECTION

NOT TO SCALE

Package 1

	ROAD NAME	CARRIAGWAY WIDTH	APPROXIMATE HARD SHOULDER WIDTH	APPROXIMATE EARTH SHOULDER WIDTH
C1	Kiriella - Nadurana - Eheliyagoda (B222)	3.2 x 2	(0.5 to1.0) x 2	1.0 x 2
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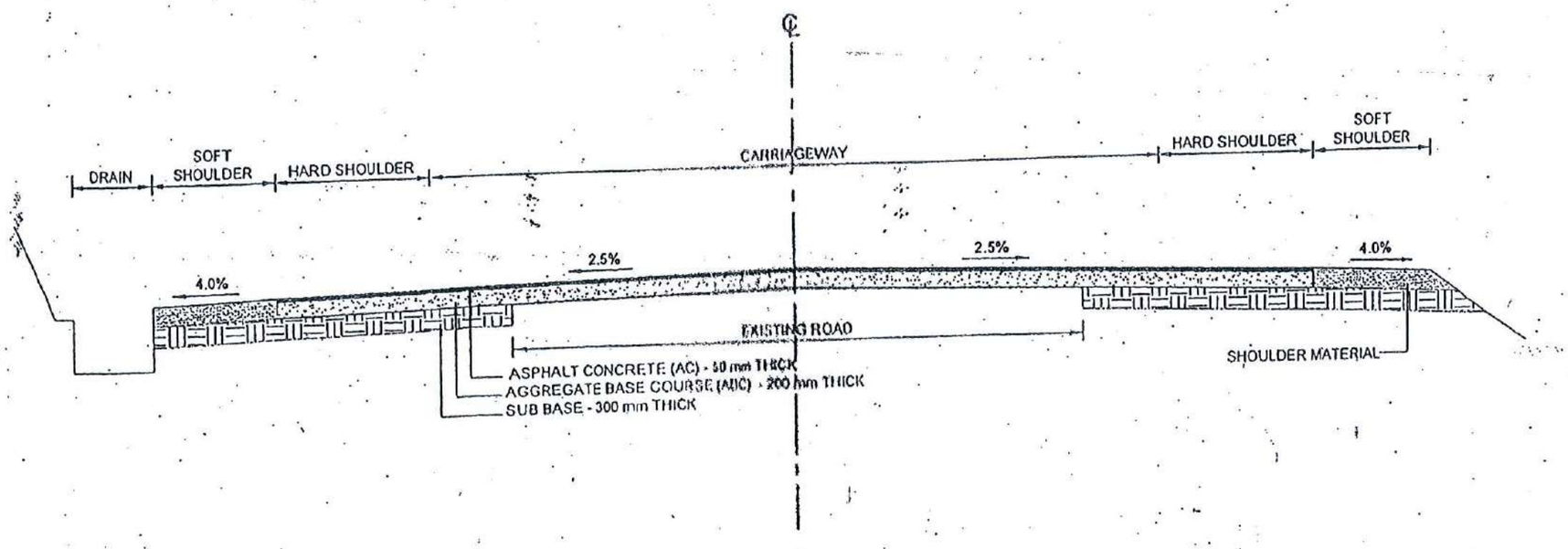
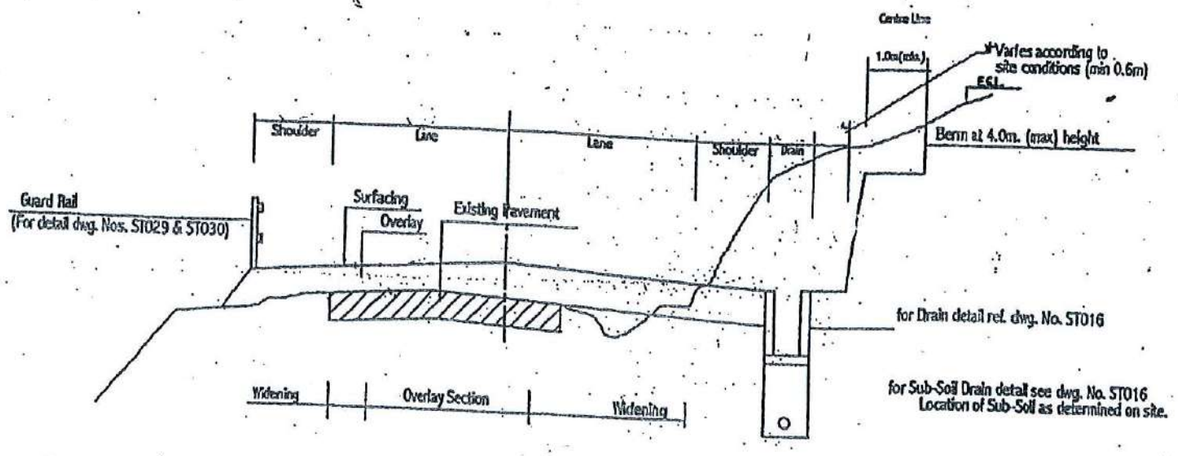
C3	Ratnapura - Wewelwatta (B 391)			
	0.0 - 10.0km	3.1 x 2	1.0 x 2	1.0 x 2
	10.0 - 27.5km	3.1 x 2	(0.5 to1.0) x 2	1.0 x 2
C4	Veyangoda - Ruwanwella (B445)	3.2 x 2	1.0 x 2	1.0 x 2



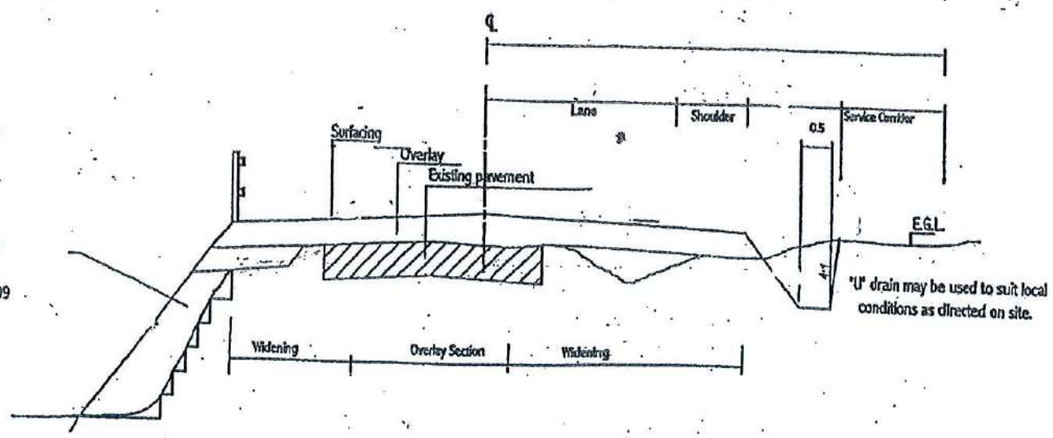
TYPICAL CROSS SECTION

NOT TO SCALE

PRIORITY ROADS PROJECT - 3 (PHASE -1)	**TYPICAL SECTIONS ROAD PAVEMENT STRUCTURE**	DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA MINISTRY OF HIGHWAYS, PORTS & SHIPPING	ROAD DEVELOPMENT AUTHORITY BATTARAMULLA
		01	DATE - NOVEMBER 2013 / DRG.No.- PRP3/SD/01

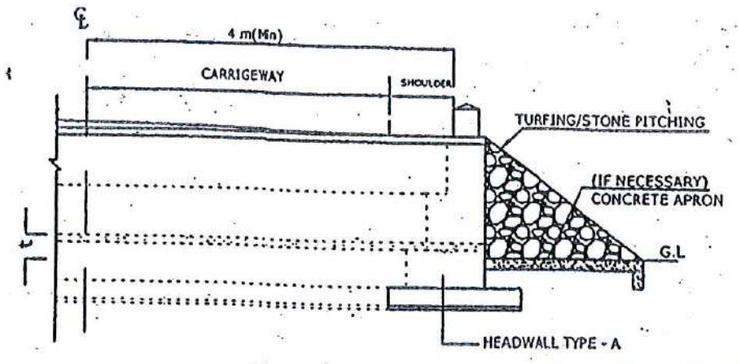


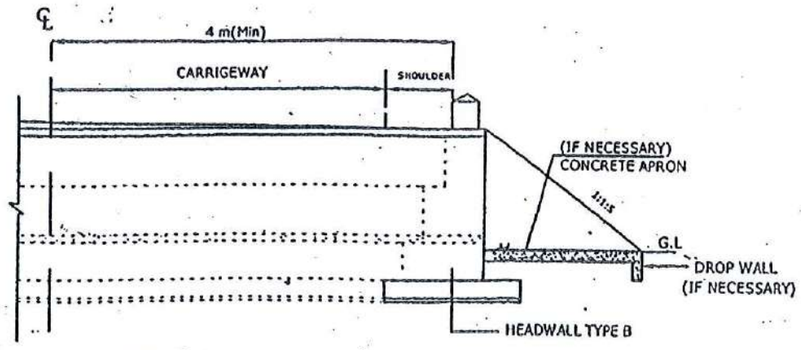
TYPICAL CROSS SECTION



TYPICAL CROSS SECTION TYPE

PRIORITY ROADS PROJECT - 3 (PHASE -1)	**TYPICAL SECTIONS ROAD PAVEMENT STRUCTURE**	DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA 02 MINISTRY OF HIGHWAYS, PORTS & SHIPPING	ROAD DEVELOPMENT AUTHORITY BATTARAMULLA.



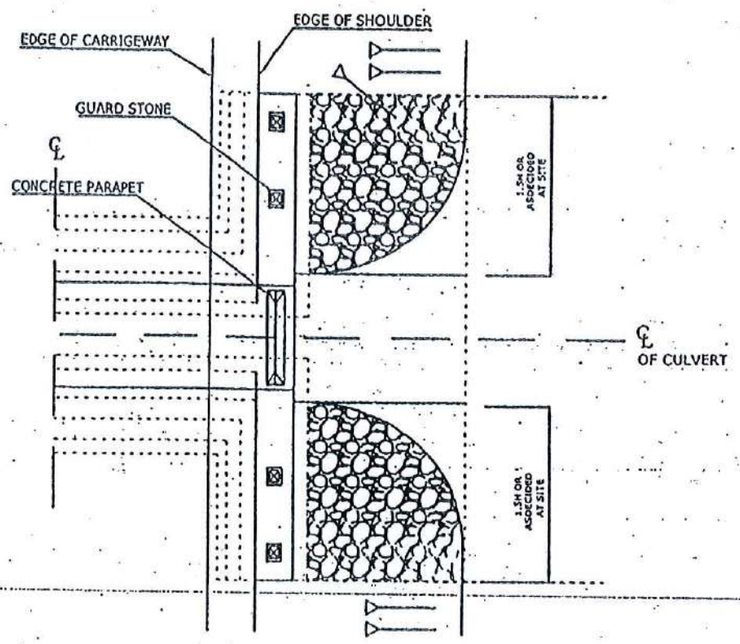


HALF SECTIONAL ELEVATION

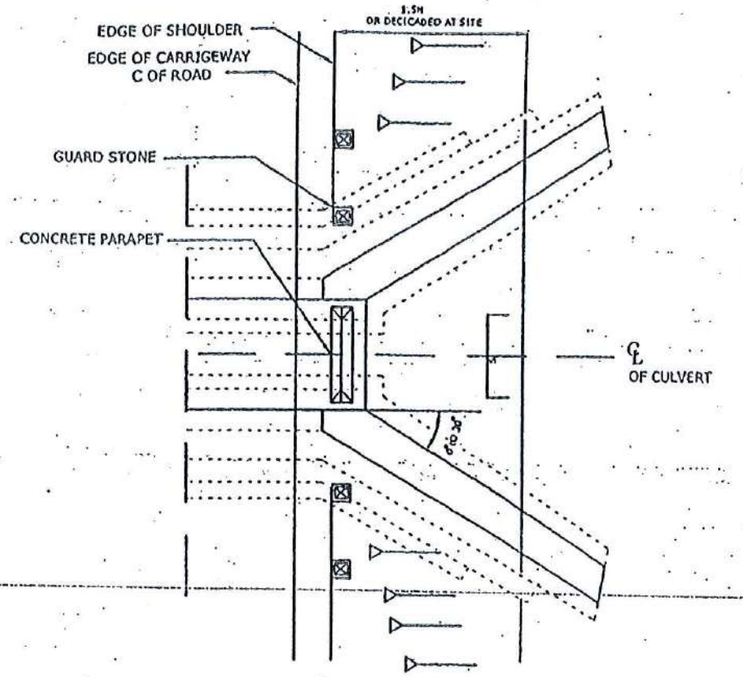
NOTES :-

1. ALL THE DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
2. ABUTMENT BASE AND CONCRETE LINING SHALL BE STEPPED IF NECESSARY AS APPROVED BY THE ENGINEER.

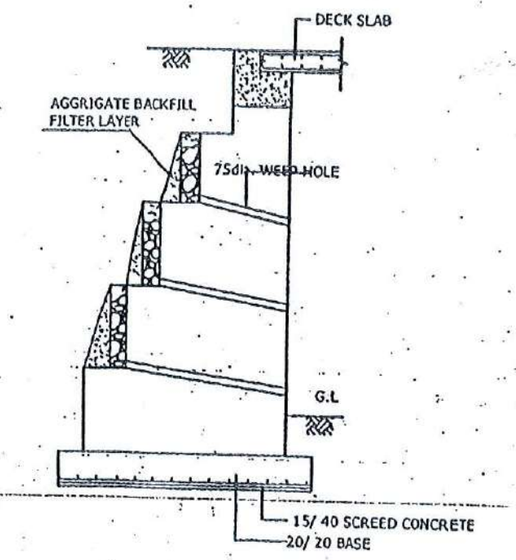
t	
INLET	OUTLET
0	75



ABUTMENT & HEADWALL LAYOUT - TYPE A

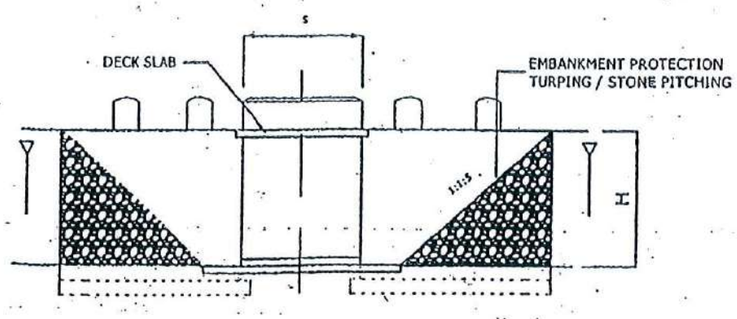


ABUTMENT & HEADWALL LAYOUT - TYPE B

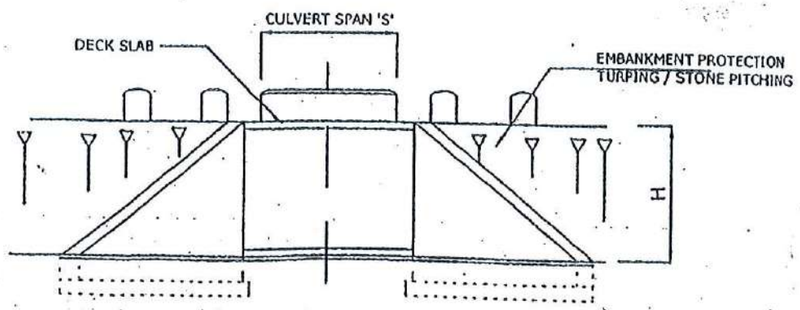


TYPICAL DECK CULVERT ABUTMENT

PLAN



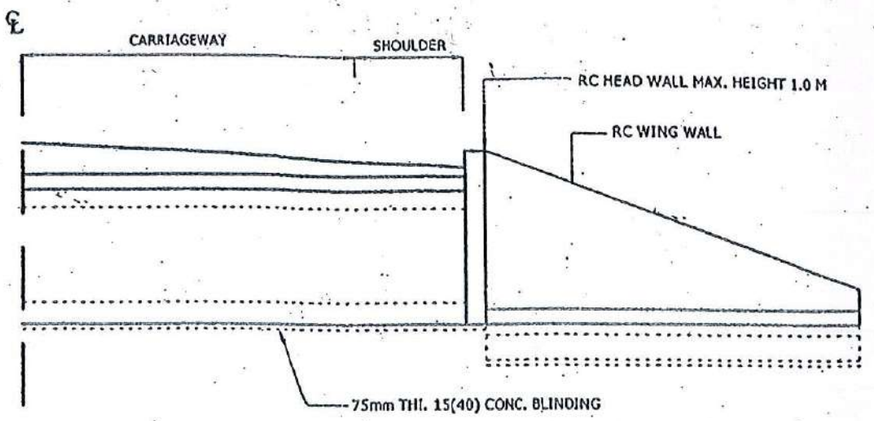
SLAB CULVERT WITH TYPE A HEADWALL



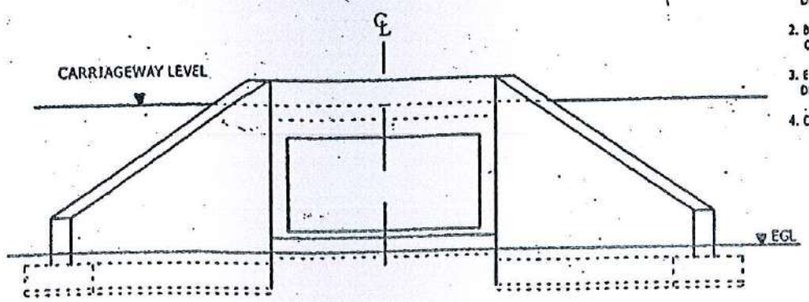
SLAB CULVERT WITH TYPE B HEADWALL

ELEVATION

PRIORITY ROADS PROJECT - 3 (PHASE -1)	**TYPICAL DECK CULVERT**	DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA 03 MINISTRY OF HIGHWAYS, PORTS & SHIPPING	ROAD DEVELOPMENT AUTHORITY BATTARAMULLA.



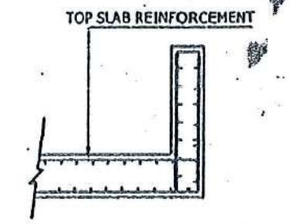
HALF ELEVATION



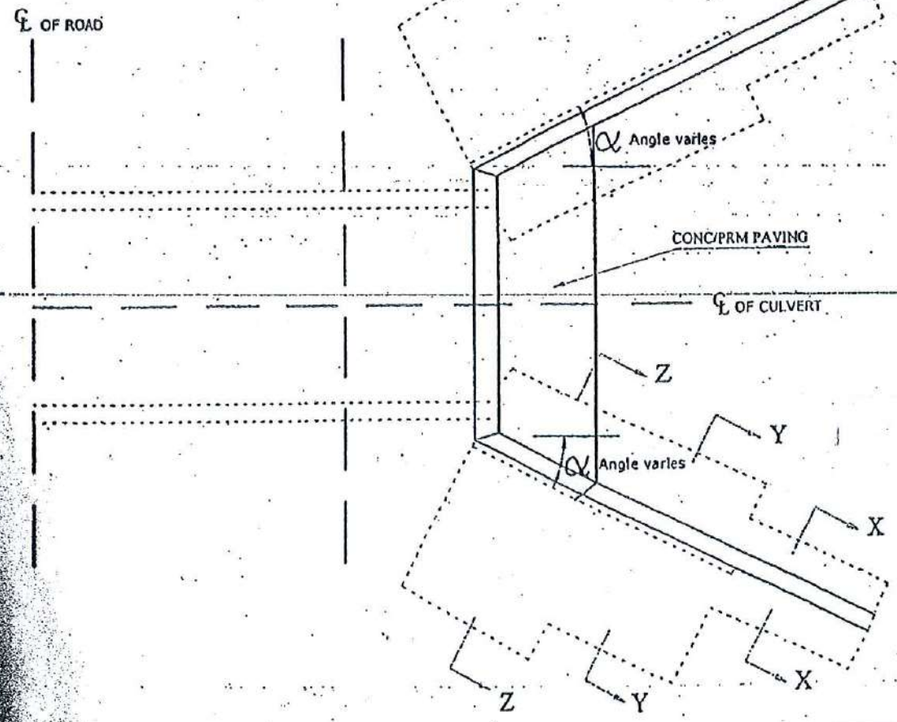
ELEVATION

NOTES :

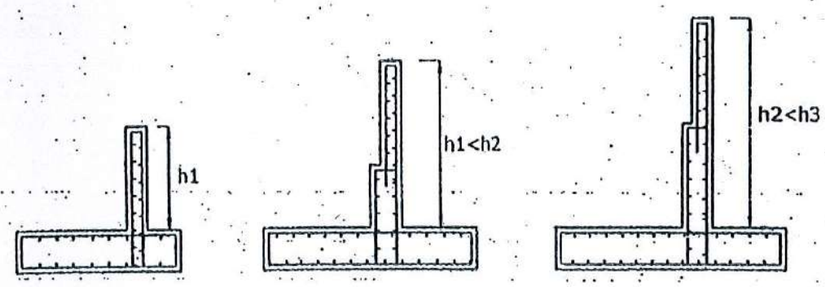
1. THIS DRAWING PROVIDES A GUIDANCE ONLY. EXACT DETAILS TO SUIT SITE CONDITIONS, SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
2. BOX OPENING SIZE (h& w0 MUST BE GREATER THAN OR EQUAL TO THE MINIMUM REQUIRED OPENING SIZE.
3. EXACT WALL THICKNESS (ts,tw,tb and tl) AND R/F MUST BE DECIDED TO SUIT THE SITE CONDITION AND LOADING.
4. CONCRETE GRADE SHALL BE GR. 25(20).



DETAIL OF HEADWALL

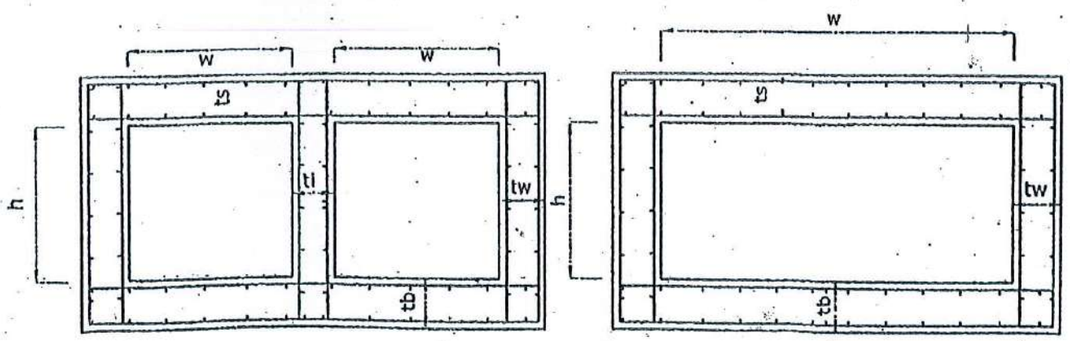


PLAN



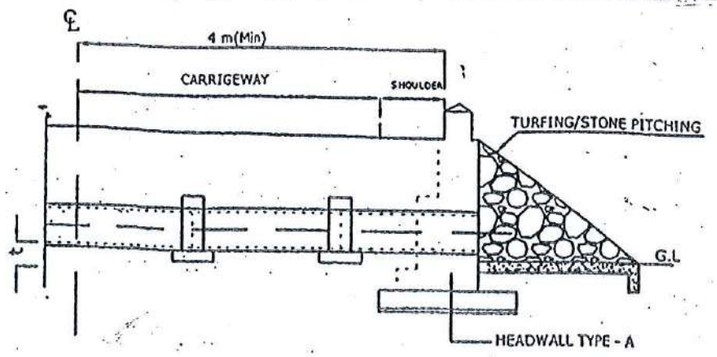
SECTION X- X SECTION Y- Y SECTION Z- Z

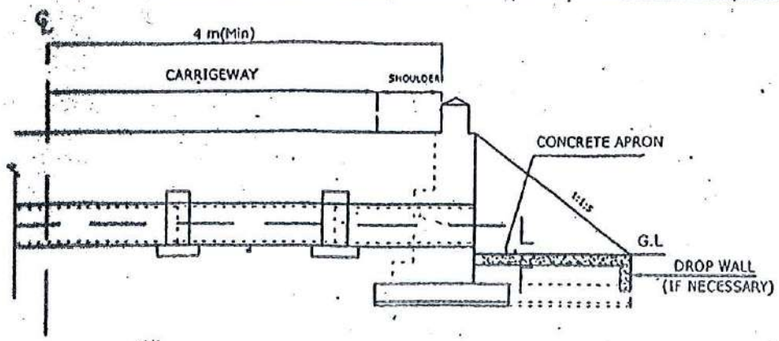
TYPICAL WINGWALL SECTIONS



TWIN BOX TYPE SINGLE BOX TYPE

...HORITY ROADS PROJECT - 3 (PHASE -1)	**TYPICAL RCC BOX CULVERT**	DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA MINISTRY OF HIGHWAYS, PORTS & SHIPPING	ROAD DEVELOPMENT AUTHORITY BATTARAMULLA.
		04	

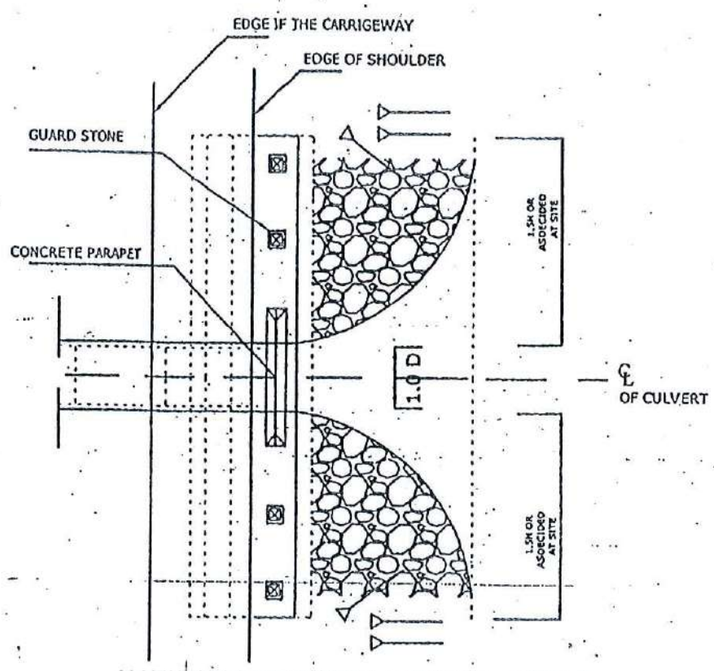




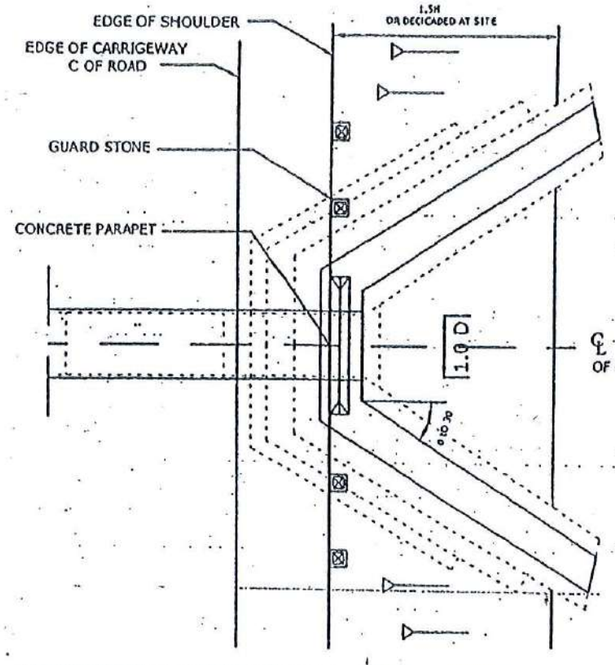
HALF SECTIONAL ELEVATION

NOTES :-

1. ALL THE DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
2. TYPE OF HEAD WALL SHALL BE DECIDED BY THE ENGINEER TO SUIT THE SITE CONDITIONS.
3. PIPES SHALL BE LAID TO AGRADIENT OF 1 IN 200.
4. COLLARS TO BE USED IN CASE OF PIPES WITHOUT TONGUE AND GROVE.
5. SLOPE OF EMBANKMENT FILL TO BE 1:1:5 OR AS AS DIRECTED AT SITE BY THE ENGINEER.
6. PRE CAST CONCRETE GUARD STONES SHALL BE FIXED AT 1500 C/C OR AS DIRECTED BY THE ENGINEER.
7. TYPE OF EMBANKMENT PROTECTION TO BE AS DIRECTED BY THE ENGINEER.



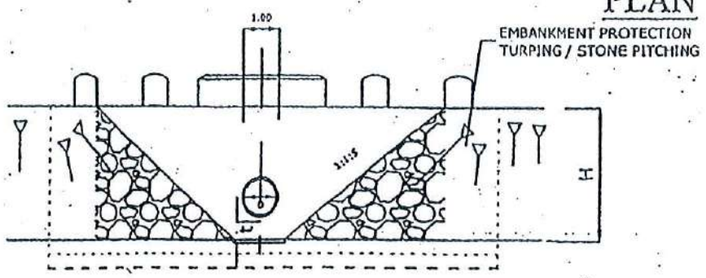
ABUTMENT & HEADWALL LAYOUT - TYPE A



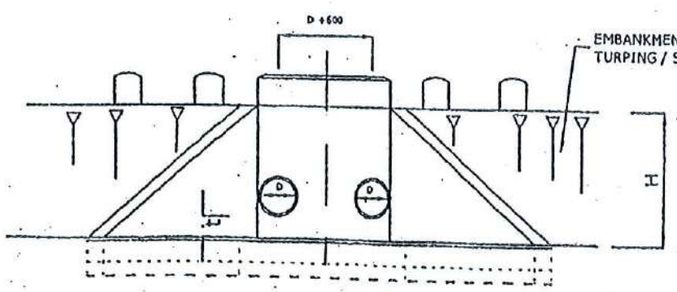
ABUTMENT & HEADWALL LAYOUT - TYPE B

t	
INLET	OUTLET
0	75

PLAN



SINGLE PIPE CULVERT WITH TYPE A HEADWALL

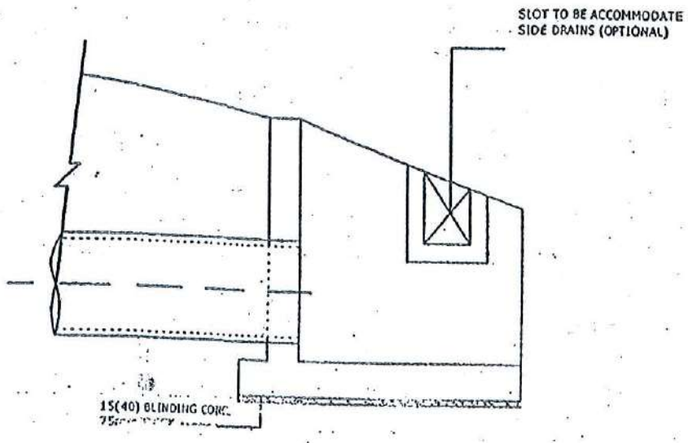


TWIN PIPE CULVERT WITH TYPE B HEADWALL

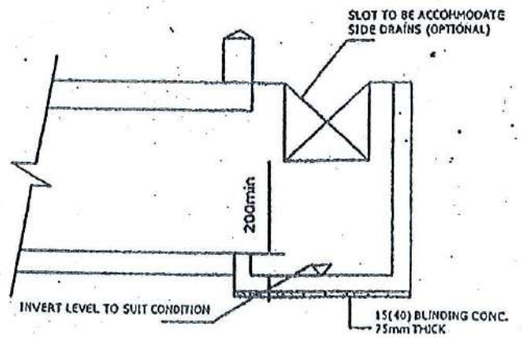
ELEVATION

PRIORITY ROADS PROJECT - 3 (PHASE -1)	**TYPICAL PIPE CULVERT**	DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA 05 MINISTRY OF HIGHWAYS, PORTS & SHIPPING	ROAD DEVELOPMENT AUTHORITY BATTARAMULLA.

PLATE NO.



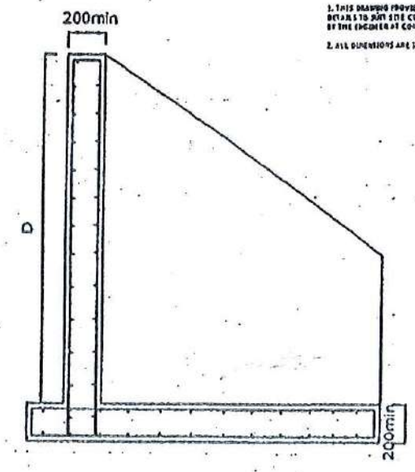
SECTION



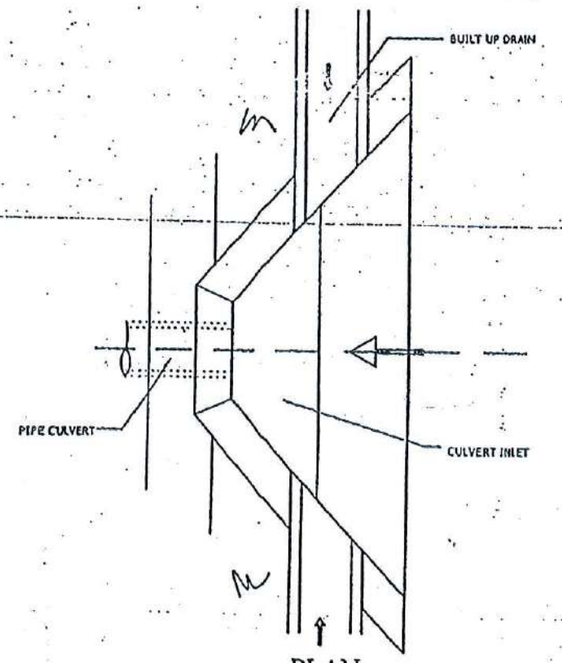
SECTION

NOTES :

1. THIS DRAWING PROVIDES A GUIDANCE ON LAYOUT DETAILS TO SUIT SITE CONDITIONS, SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
2. ALL DIMENSIONS ARE IN mm.

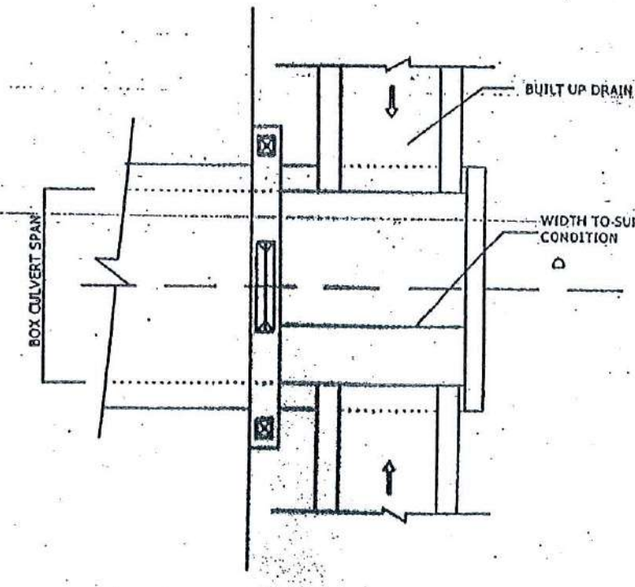


FOR TYPE -2



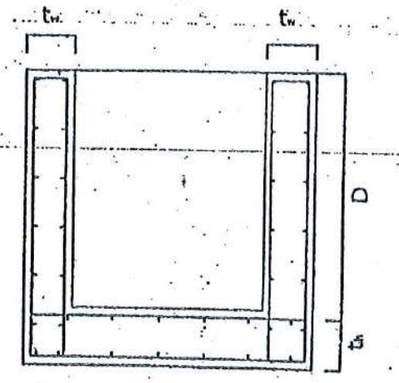
PLAN

TYPE 1- PIPE CULVERT



PLAN

TYPE 2- BOX CULVERT



FOR TYPE -1

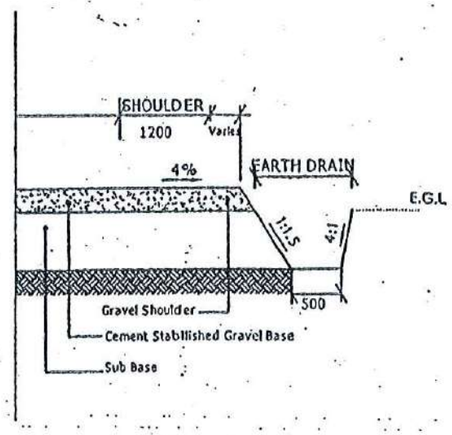
TYPICAL R/F ARRANGMENT
FOR CULVERT INLETS

PRIORITY ROADS PROJECT - 3 (PHASE -1)

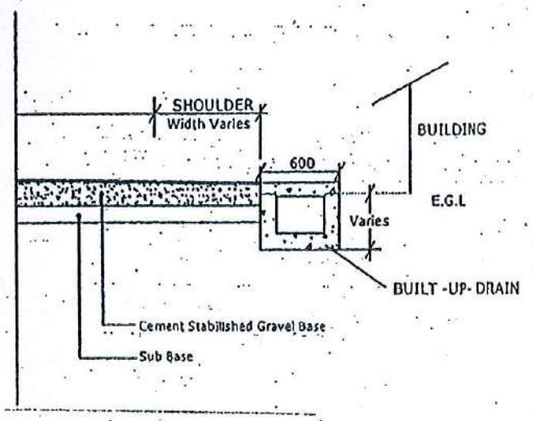
TYPICAL CULVERT INLET CONNECTING BUILT UP DRAINS

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
06 MINISTRY OF HIGHWAYS, PORTS & SHIPPING

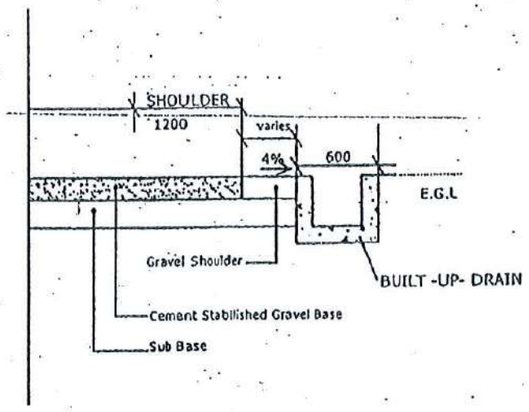
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA



EARTHDRAIN



BUILT UP DRAIN WITH COVER



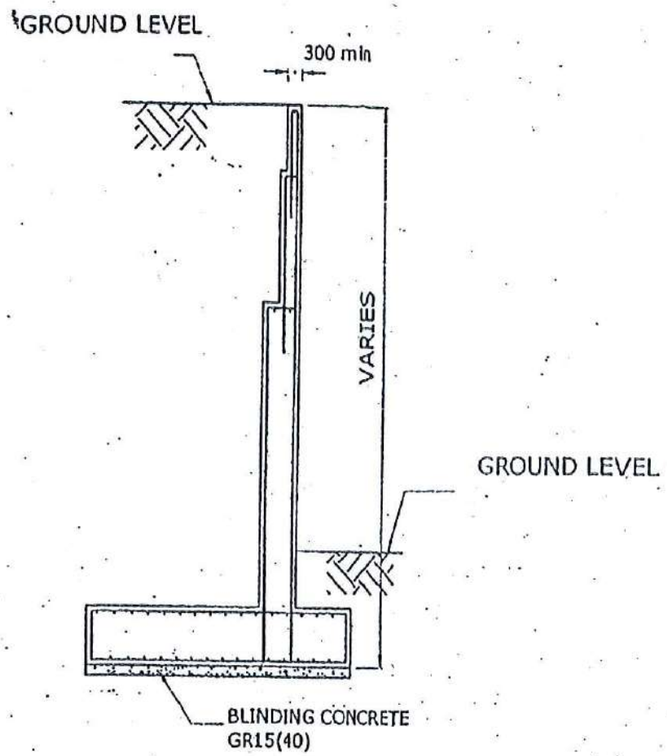
BUILT UP DRAIN

PRIORITY ROADS PROJECT - 3 (PHASE -1)

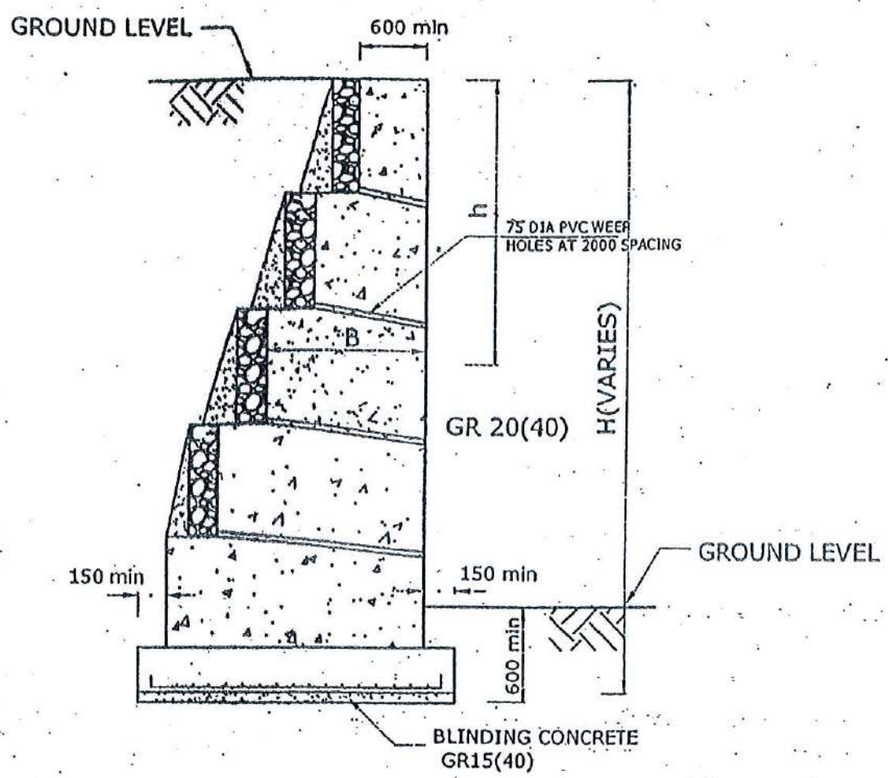
TYPICAL SIDE DRAINS

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.



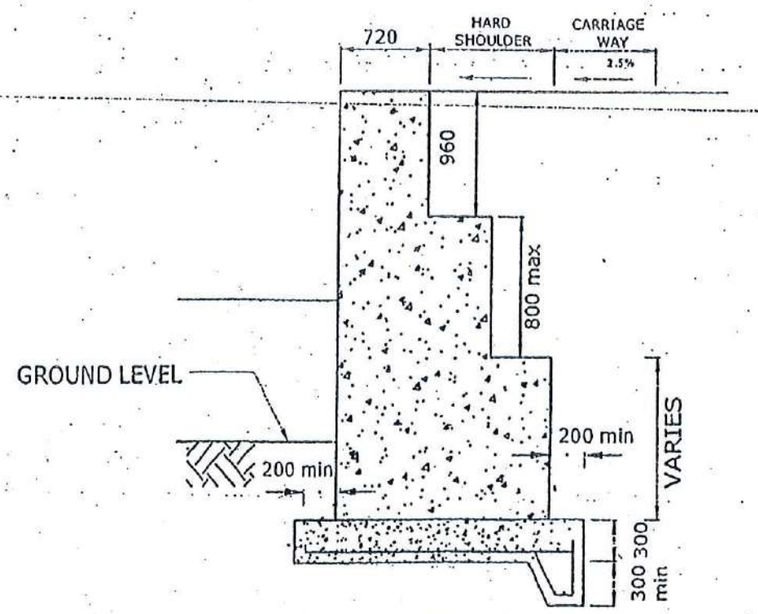
TYPICAL R/F RETAINING WALL



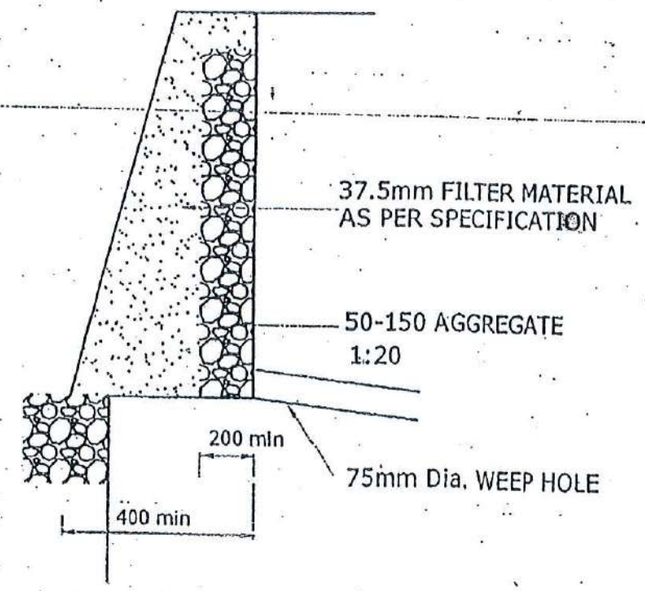
TYPICAL GRAVITY RETAINING WALL - TYPE 1

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. POROUS BACK FILL TO BE PROVIDED ALONG THE ENTIRE LENGTH OF THE WALL.
3. PROVIDE WEEP HOLES OF 75 MM. DIA. PVC PIPES OR OTHER APPROVED BY THE ENGINEER.
4. FOUNDTION DEPTH BELOW INVERT LEVEL SHALL BE DECIDED TO SUIT SITE CONDITIONS.
5. NO OF STEPPINGS FOR GRAVITY RETAINING WALL WILL VERY WITH THE -H.
6. GRAVITY RETAINING WALL TYPE -2 SHALL USE FOR WIDENING OF CAUSEWAYS, A CROSSING LAGOONS OR SEA.



GRAVITY RETAINING WALL - TYPE 2



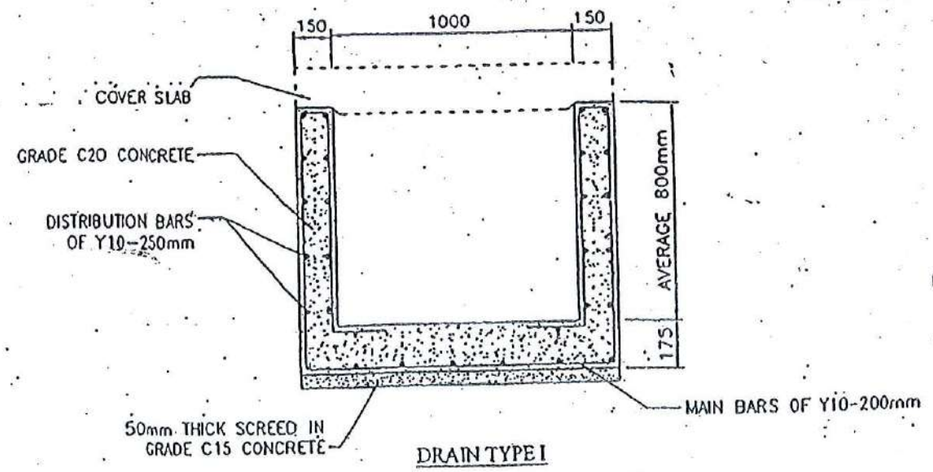
TYPICAL FILTER

PRIORITY ROADS PROJECT - 3 (PHASE -1)

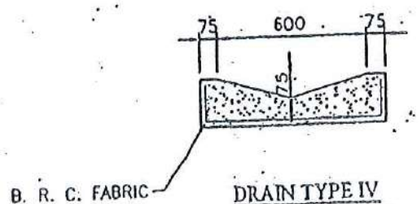
TYPICAL SECTIONS FOR RETAINING WALL

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
O.R. MINISTRY OF HIGHWAYS, PORTS AND SHIPPING

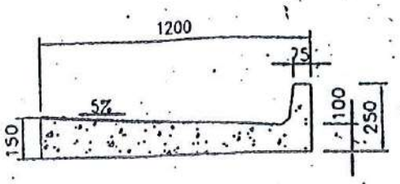
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.



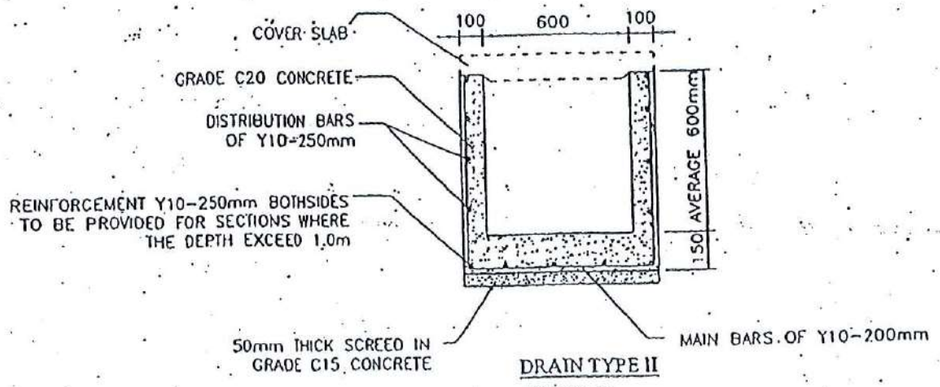
DRAIN TYPE I
SCALE 1:25



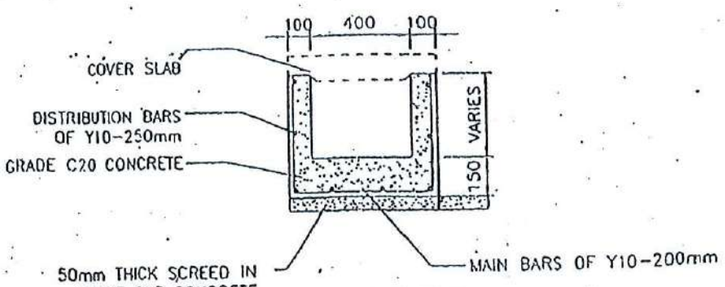
DRAIN TYPE IV
SCALE 1:25



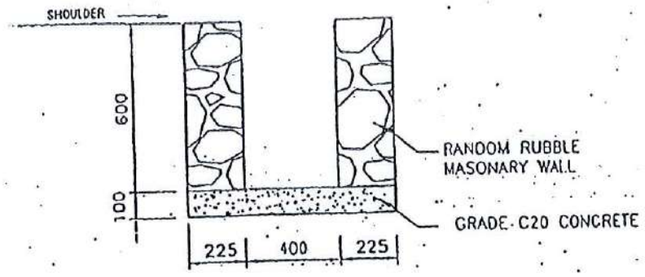
DRAIN TYPE V
SCALE 1:25



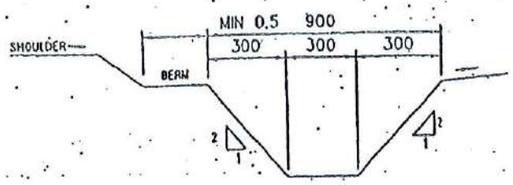
DRAIN TYPE II
SCALE 1:25



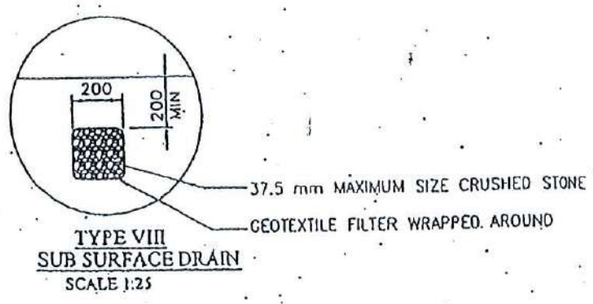
DRAIN TYPE III
SCALE 1:25



DRAIN TYPE VI
(LINED DRAIN)
SCALE 1:25



TYPE VII
(UNLINED DRAIN IN SOIL)
SCALE 1:25



TYPE VIII
SUB SURFACE DRAIN
SCALE 1:25

NOTE:

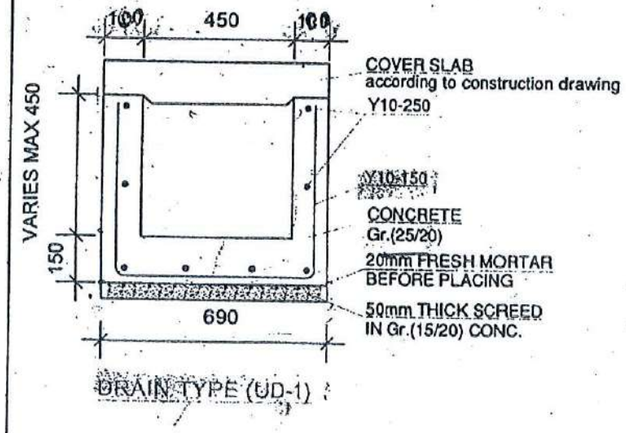
(i) THE DEPTHS OF DRAINS OF ALL TYPES ARE AS DETAILED AND TO SUIT SITE CONDITIONS.
(ii) TOP LEVEL OF DRAIN SECTIONS TO BE DETERMINED WITH RESPECT TO ROAD FINISHED LEVEL.
(iii) DRAIN TYPE (VI) IS TO BE ADOPTED IN REPAIRS OF EXISTING SECTIONS OF RANDOM RUBBLE MASONRY DRAINS. HOWEVER, IT COULD BE USED IN NEW SECTIONS SPECIALLY WHERE EXISTING RR MASONRY DRAINS HAVE TO BE EXTENDED.
(iv) SUBSOIL DRAIN TYPE VIII IS TO BE LAID ACROSS THE SHOULDERS. THESE DRAINS SHOULD NOT BE LAID UNDER CARRIAGEWAY.

PRIORITY ROADS PROJECT - 3 (PHASE -1)

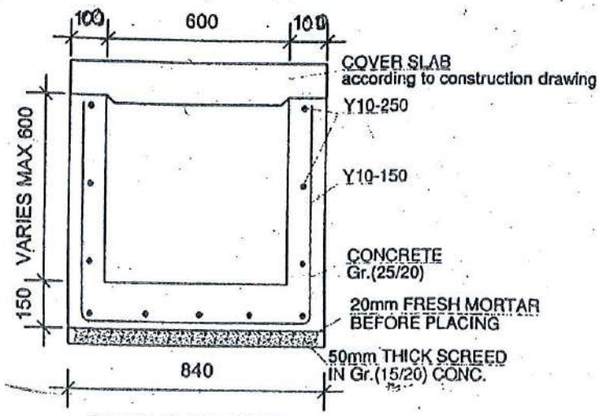
SMALL DRAINAGE STRUCTURES
DRAIN SECTIONS

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
09 MINISTRY OF HIGHWAYS, PORTS & SHIPPING

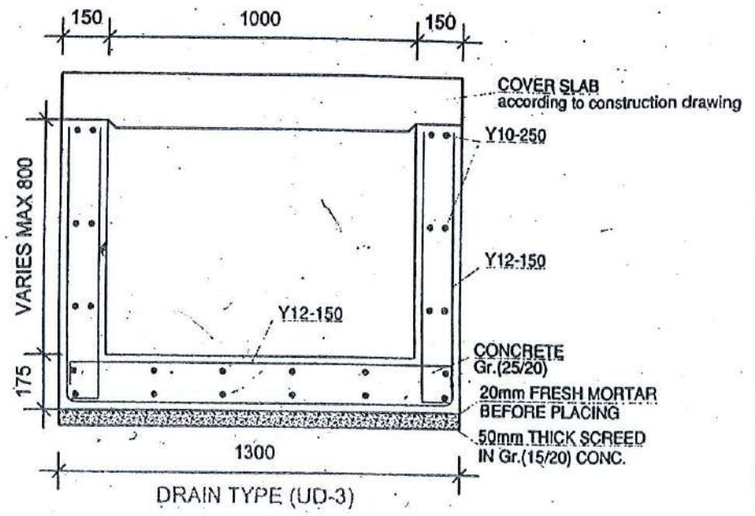
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.



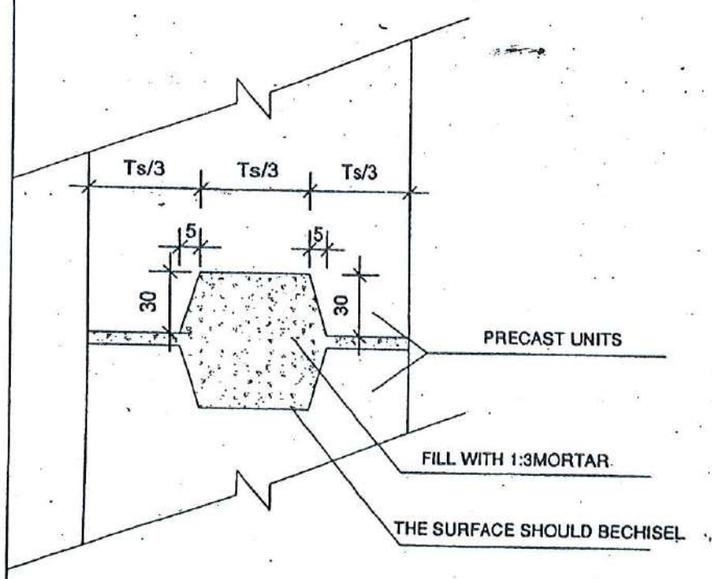
DRAIN TYPE (UD-1)



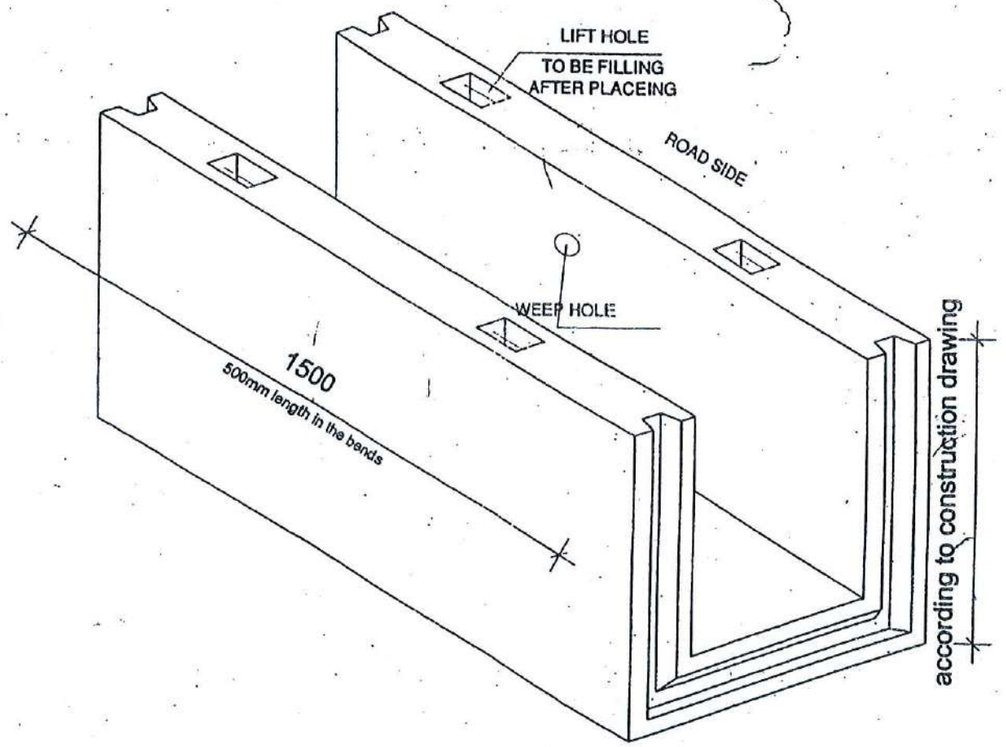
DRAIN TYPE (UD-2)



DRAIN TYPE (UD-3)



DETAIL JOINT
1:10



PRECAST UNIT

GENERAL NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH OF THE SPECIFICATION
3. A 20MM GAP TO BE PROVIDED IN THE BASE GROOVE TO FACILITATE MORTAR FILLING.

CONCRETE:

1. CONCRETE GRADE SHALL BE USED AS FOLLOWS
   (a) PRECAST RCC: GRADE 25/20
   (b) DRAIN BASE: GRADE 15/20

REINFORCEMENT:

1. ALL BARS MARKED "R" SHALL BE HOT ROLLED MILD STEEL PLAIN BARS OF YIELD STRENGTH NOT LESS THAN 250 N/mm
2. ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS OF YIELD STRENGTH NOT LESS THAN 460 N/mm
3. REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS
4. MINIUM CLEAR CONCRETE COVER 30 mm

WEEP HOLE:

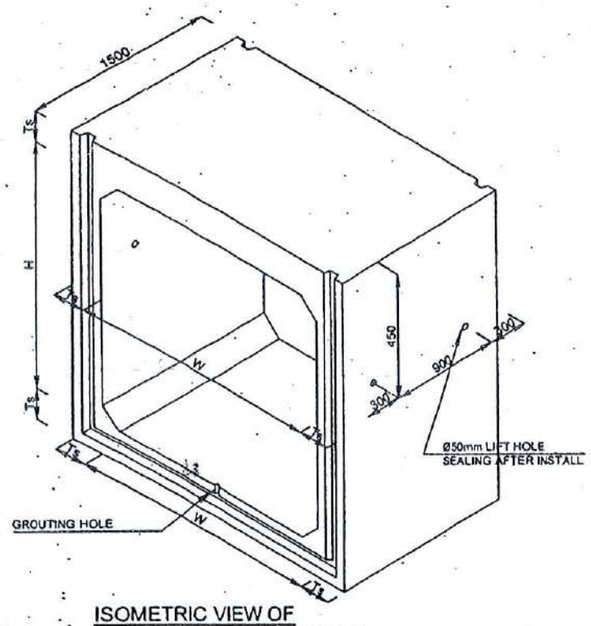
1. WEEP HOLE TO BE PROVIDED AT 1500mm C/C STAGGERED USING 60mm DIA PVC PIPES
2. WEEP HOLES SHALL BE PLACE 45 DEGREES HORIZONTAL ANGLE TO MATCH WATER FLOW DIRECTION OF CONCRETE "U" DRAIN.

PRIORITY ROADS PROJECT - 3 (PHASE -1)

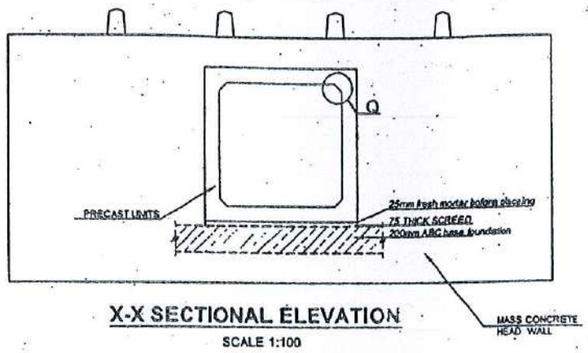
PRECAST LINE DRAINS

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF HIGHWAYS, PORTS & SHIPPING

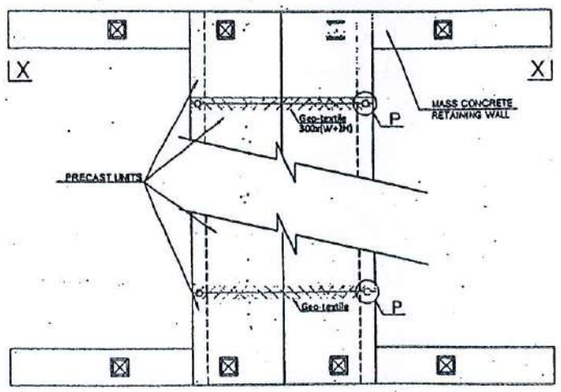
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.



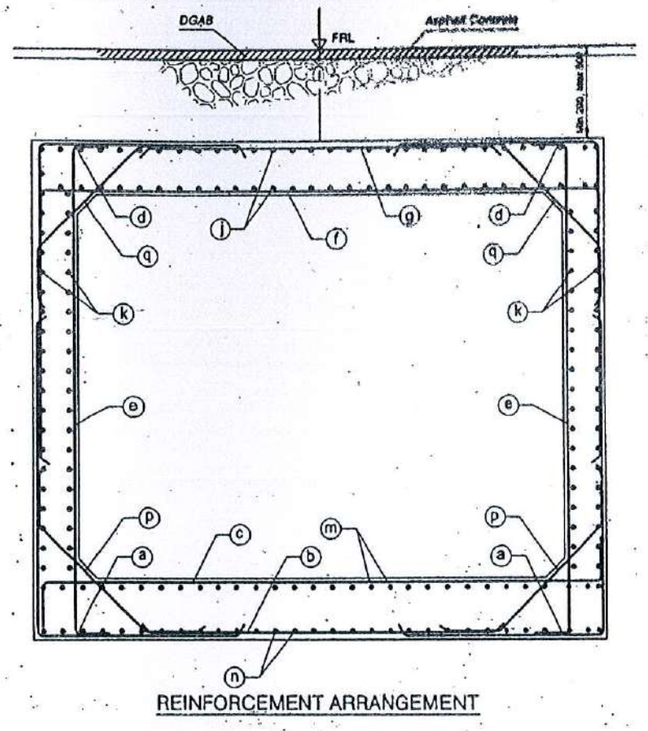
ISOMETRIC VIEW OF
1500 LONG PRECAST UNITS



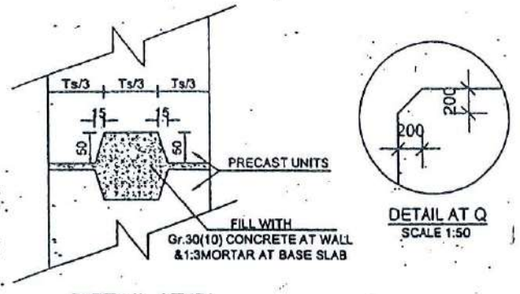
X-X SECTIONAL ELEVATION
SCALE 1:100



PLAN VIEW
SCALE 1:100



REINFORCEMENT ARRANGEMENT



DETAIL AT 'P'
1:10

DETAIL AT Q
SCALE 1:50

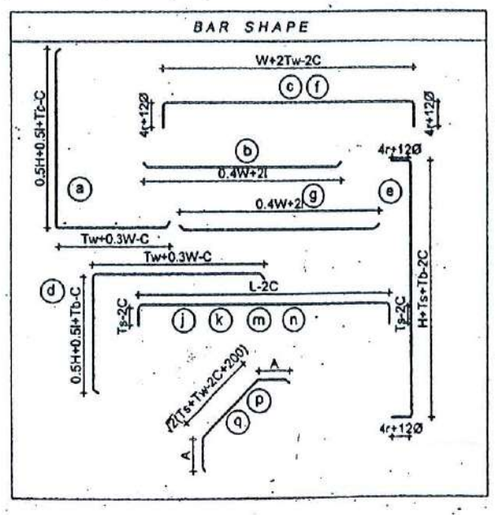
GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED,
2. THIS DRAWINGS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. CONCRETE GRADE SHALL BE GR. 30
4. REINFORCEMENT SHALL BE HOT ROLLED HIGH YIELD STEEL TO BS 4469WITH MIN fy = 460 N/SQMM
5. CLEAR COVER TO REINFORCEMENT SHALL BE 50 .
6. MINIMUM RADIUS FOR SCHEDULING 3Ø
7. LAP LENGTH 50Ø
8. ANCHORAGE LENGTH 50Ø
9. TWO NOS OF BOTTOM CHAMFER BARS (p) CAN BE COMBINED TOGETHER WHERE EVER NEEDED,THE SAME CAN BE ADAPTED FOR TOP CHAMFER BARS(k)
10. BOTTOM BAR NOS (a) AND (b) CAN BE REPLACED WITH A NEW BAR HAVING THE DIAMETER OF BAR NO (a) ALSO THE SAME CAN BE ADOPTED FOR TOP BARS (d) AND(g)
11. MAXIMUM SOIL COVER TO BE 500mm

SPECIAL NOTES

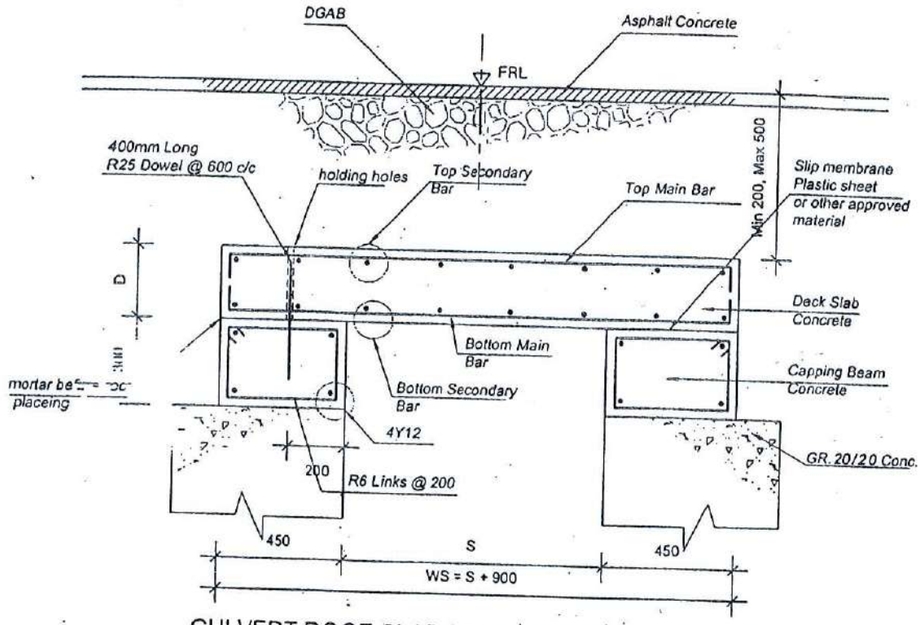
1. W - WIDTH OF OPENING
2. H - HEIGHT OF OPENING
3. Ts - TOP SLAB THICKNESS
4. Tb - BOTTOM SLAB THICKNESS
5. Tw - SIDE WALL THICKNESS
6. A - LAP LENGTH

INTERNAL DIMENSION		CULVERT I.D NO	SLAB THICKNESS (TS)	BASE THICKNESS (TB)	WALL THICKNESS EXT(TW)	REINFORCEMENT DETAILS										
W(m)	H(m)					a	b	c	d	e	f	g	h	p	q	s
1.0	1.0	SC - 1	200	200	200	T12-200	T12-200	T16-200	T16-200	T12-200	T16-200	T12-200	T12-250	T12-200	T12-200	T16-200
1.5	1.0	SC - 2	200	200	200	T12-150	T12-150	T16-150	T16-150	T12-150	T16-150	T12-150	T12-250	T12-150	T12-150	T16-150
1.5	1.5	SC - 5	200	200	200	T12-150	T12-150	T16-150	T16-150	T12-150	T16-150	T12-150	T12-250	T12-150	T12-150	T16-150
2.0	1.5	SC - 8	225	225	225	T16-150	T12-150	T20-150	T16-150	T12-150	T20-150	T12-150	T12-250	T12-150	T12-150	T16-150
2.5	1.5	SC - 7	225	225	225	T16-150	T12-150	T20-150	T16-150	T16-150	T20-150	T12-150	T12-250	T12-150	T12-150	T16-150
2.0	2.0	SC - 10	225	225	225	T16-150	T12-150	T20-150	T16-150	T12-150	T20-150	T12-150	T12-250	T12-150	T12-150	T16-150
2.5	2.0	SC - 11	225	225	225	T16-150	T12-150	T20-150	T16-150	T16-150	T20-150	T12-150	T12-250	T12-150	T12-150	T16-150
1.5	2.5	SC - 13	200	200	200	T12-150	T12-150	T16-150	T16-150	T12-150	T16-150	T12-150	T12-250	T12-150	T12-150	T16-150
2.0	2.5	SC - 14	225	225	225	T16-150	T12-150	T20-150	T16-150	T12-150	T20-150	T12-150	T12-250	T12-150	T12-150	T16-150
2.5	2.5	SC - 15	225	225	225	T16-150	T12-150	T20-150	T16-150	T16-150	T20-150	T12-150	T12-250	T12-150	T12-150	T16-150



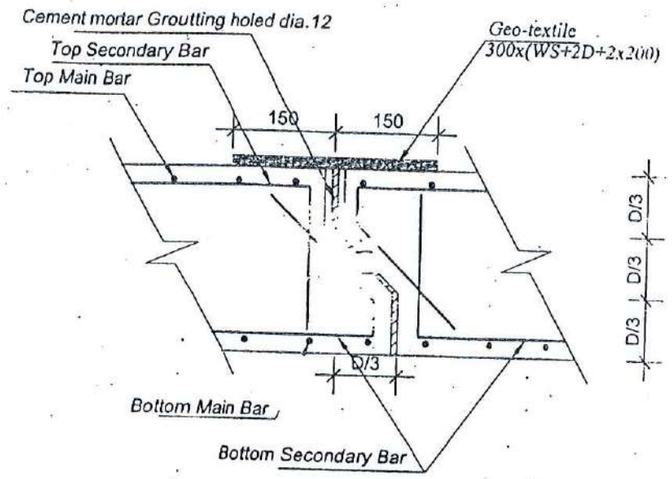
PRIORITY ROADS PROJECT - 3 (PHASE -1)

DETAILS OF PRECAST BOX



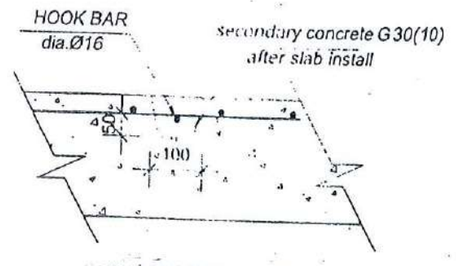
CULVERT ROOF SLAB REINFORCEMENT DETAILS

SCALE 1:20



LONGITUDINAL JOINT DETAILS

SCALE 1:10



HOOK DETAILS

SCALE 1:10

GENERAL NOTES

(1) ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED

(2) ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS (TYPE 1) OF YIELD STRENGTH NOT LESS THAN 460 N/mm² AND "R" SHALL BE HOT ROLLED MILD STEEL OF YIELD STRENGTH NOT LESS THAN 250 N/mm²

(3) REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS

(4) THE PREFABRICATION WIDTH OF ROOF SLAB SHALL SUIT WITH THE APPROVED DRAWINGS

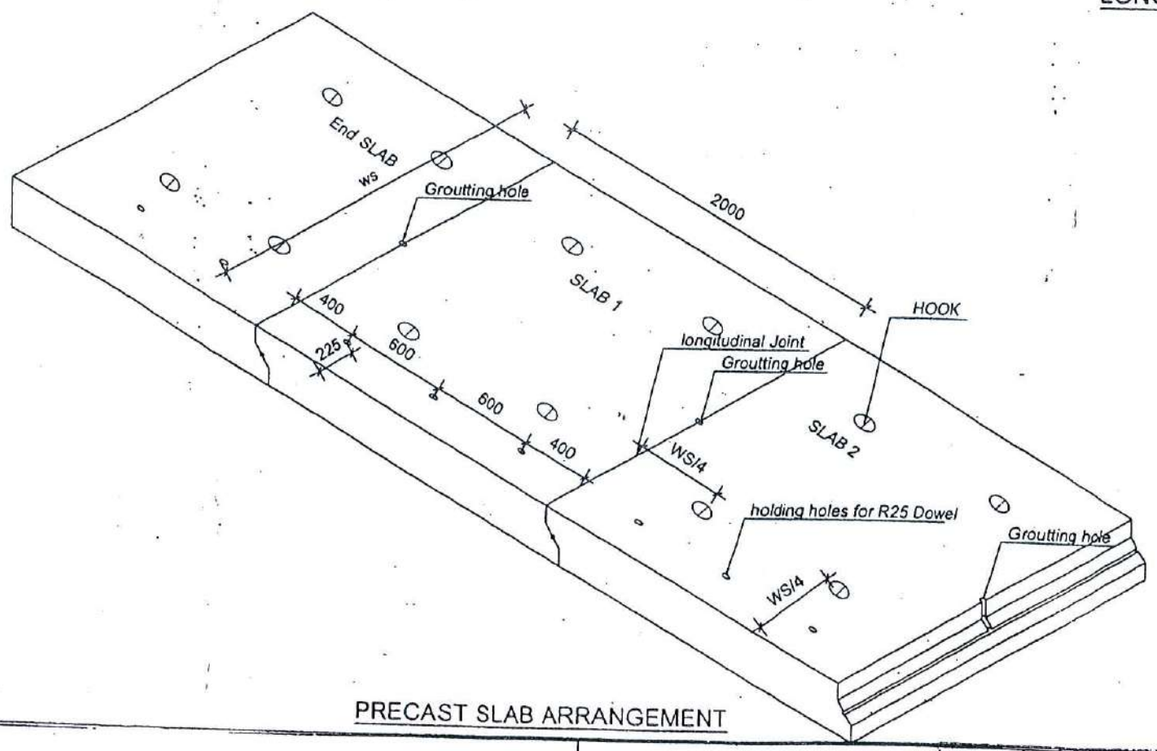
(5) CONCRETE COVER TO REINFORCEMENT- 30mm

CONCRETE GRADE

ROOF SLAB & CAPPING BEAM = GRADE 30/20

(6) DURING SITE CERTAIN END SLAB SHALL BE CONSIDERED TO MATCH WITH THE TOTAL LENGTH OF CULVERT

(7) CHAMFER AT EACH OUTER EAGE 10*10mm.



PRECAST SLAB ARRANGEMENT

REINFORCEMENT SCHEDULE FOR CULVERT ROOF SLAB

TYPE	SPAN WIDTH (m)	THICKNESS OF SLAB (mm)	BOTTOM		TOP	
SERIAL NO.	S	D	MAIN BAR	SECONDARY BAR	MAIN BAR	SECONDARY BAR
PS-1000	1.0	300	Y16 @ 150	Y12 @ 150	Y12 @ 150	Y12 @ 150
PS-1500	1.5	300	Y16 @ 150	Y12 @ 150	Y12 @ 150	Y12 @ 150
PS-2000	2	300	Y16 @ 150	Y12 @ 150	Y12 @ 150	Y12 @ 150
PS-2500	2.5	400	Y16 @ 125	Y12 @ 150	Y12 @ 150	Y12 @ 150
PS-3000	3	400	Y16 @ 125	Y12 @ 150	Y12 @ 150	Y12 @ 150

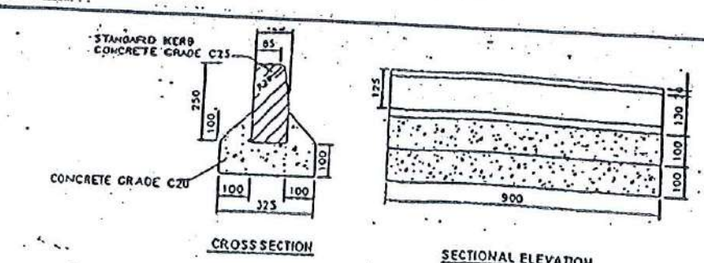
REINFORCEMENT SCHEDULE

PRIORITY ROADS PROJECT - 3 (PHASE -1)

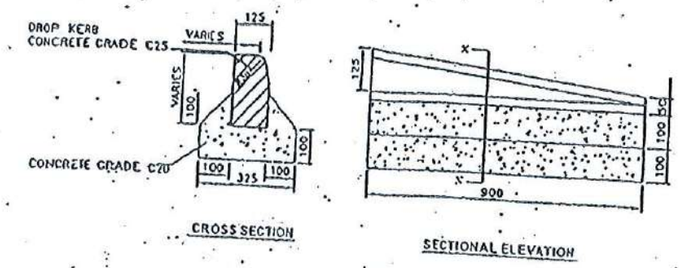
DETAILS OF PRECAST BOX CULVERS

DEMOCRATIC SOCIALIST REPUBLIC

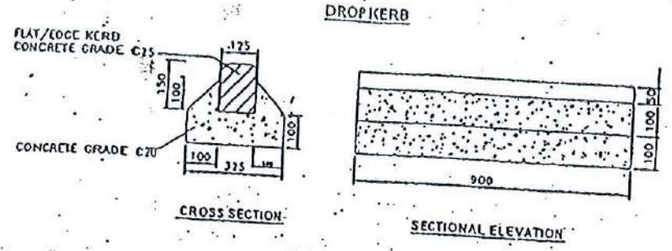
ROAD DEVELOPMENT AUTHORITY



STANDARD KERB



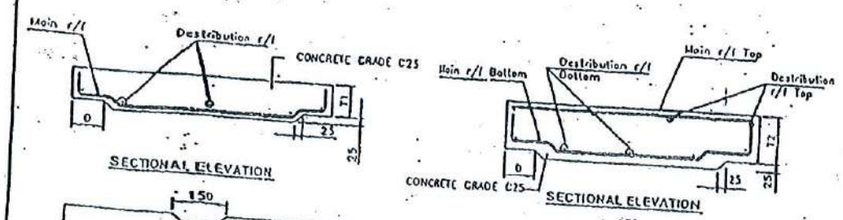
DROP KERB

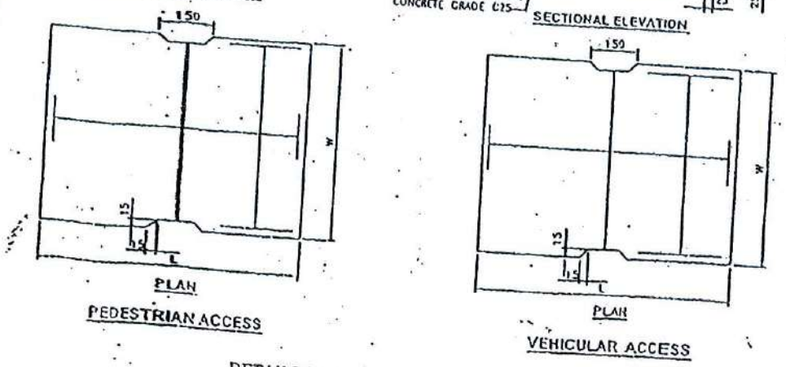


FLAT/EDGE KERB

DETAILS OF 0.9m LONG PRE CAST CONCRETE KERB SECTIONS

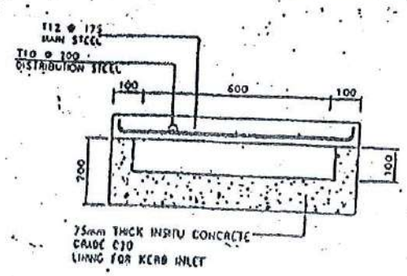
SCALE 1:20





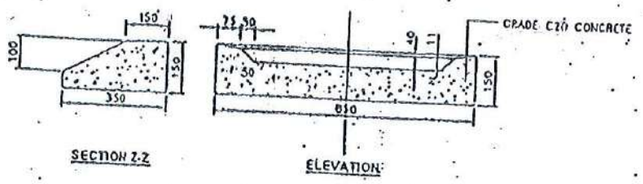
DETAILS OF COVER SLABS (SEE TABLE 2)

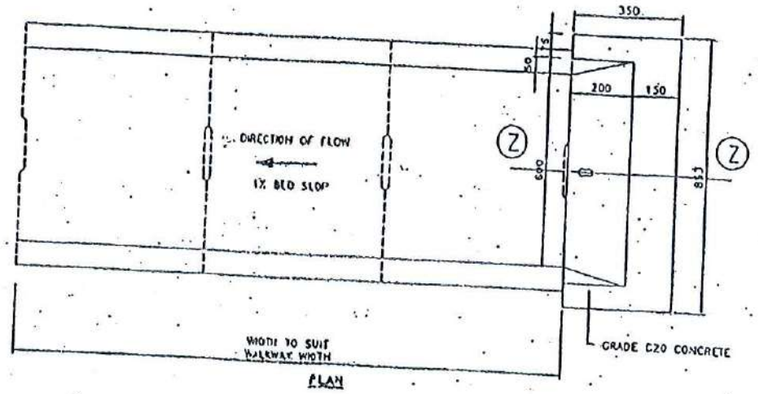
SCALE 1:10



SECTIONAL ELEVATION OF KERB INLET

SCALE 1:10





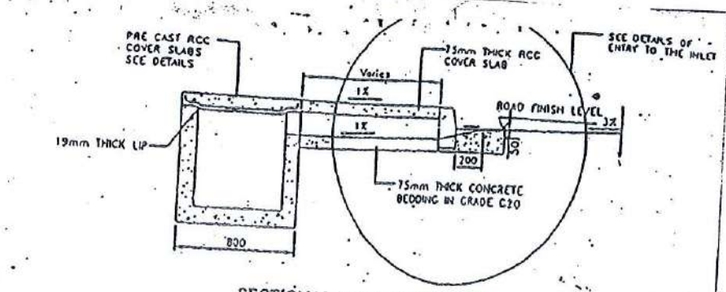
DETAILS OF KERB INLET

SCALE 1:20

DRAIN TYPE	Slab		Pedestrian Access				Vehicular Access					
					R/F (T10)				R/F Bottom(T12)		R/F Top(T10)	
	Length L	Width W	T1	D	Main	Distribution	T2	D	Main	Distribution	Main	Distribution
I	1300	600	125	150	5 Nos.	8 Nos.	150	150	5 Nos.	10 Nos.	5 Nos.	10 Nos.
II	800	600	75	100	5 Nos.	6 Nos.	125	100	5 Nos.	7 Nos.	5 Nos.	7 Nos.
III	600	500	75	100	5 Nos.	5 Nos.	100	100	5 Nos.	5 Nos.	5 Nos.	5 Nos.

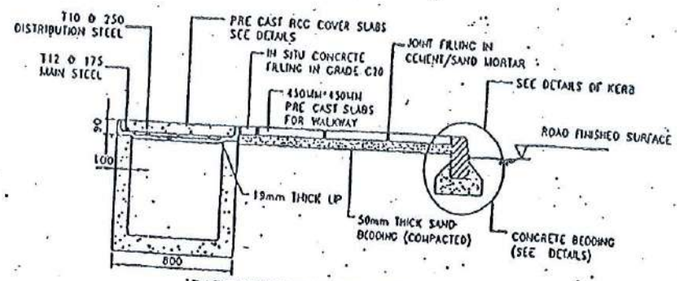
* R/F= Reinforcement

TABLE 2:DETAILS OF COVER SLABS



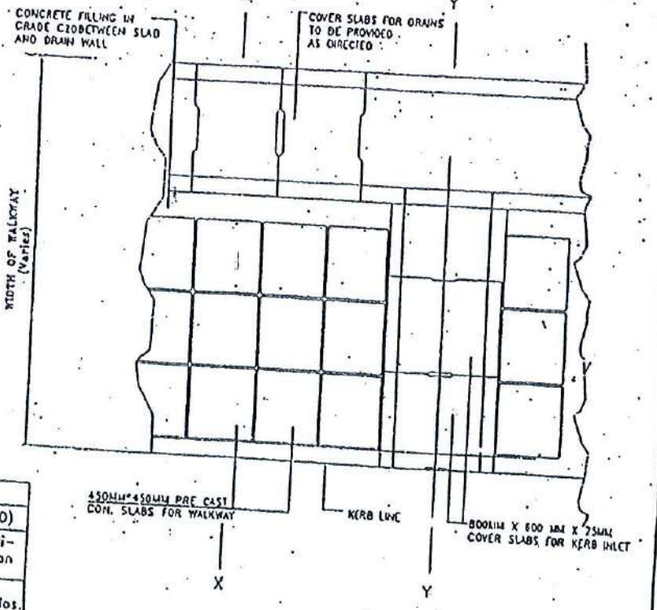
SECTIONAL ELEVATION ON Y-Y

SCALE 1:40



PART SECTIONAL ELEVATION ON X-X

SCALE 1:40



PLAN OF THE WALKWAY & THE KERB INLET

SCALE 1:40

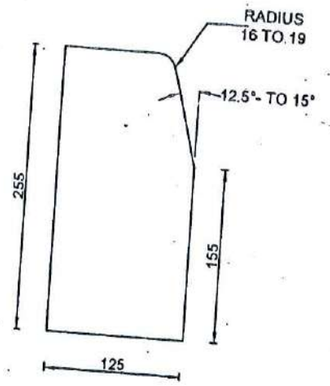
NOTE:-

(i) PLACEMENT OF RESPECTIVE COVER SLABS FOR PEDESTRIAN & VEHICULAR ACCESS TO BE DECIDED AT SITE.

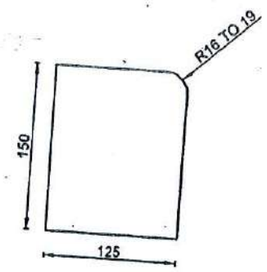
(ii) KERB INLETS SHOULD BE SPACED AT 12M INTERVALS

(iii) ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

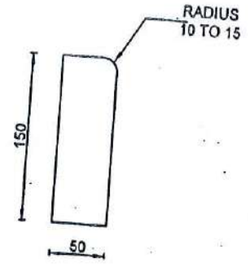
PRIORITY ROADS PROJECT - 2 (PHASE



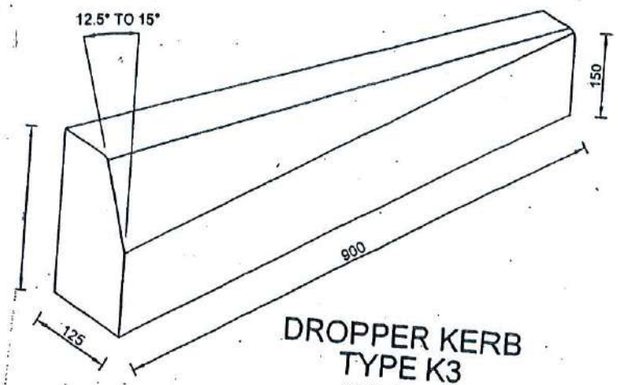
BARRIER KERB
TYPE K1
SCALE - 1:5



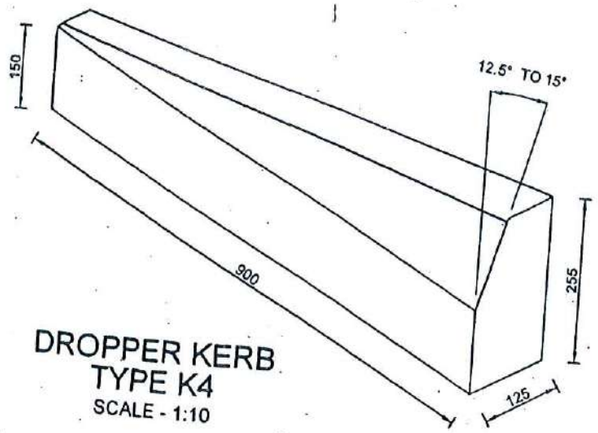
DROPPED KERB
TYPE K2
SCALE - 1:5



CONCRETE EDGING
TYPE E1
SCALE - 1:5



DROPPER KERB
TYPE K3
SCALE - 1:10

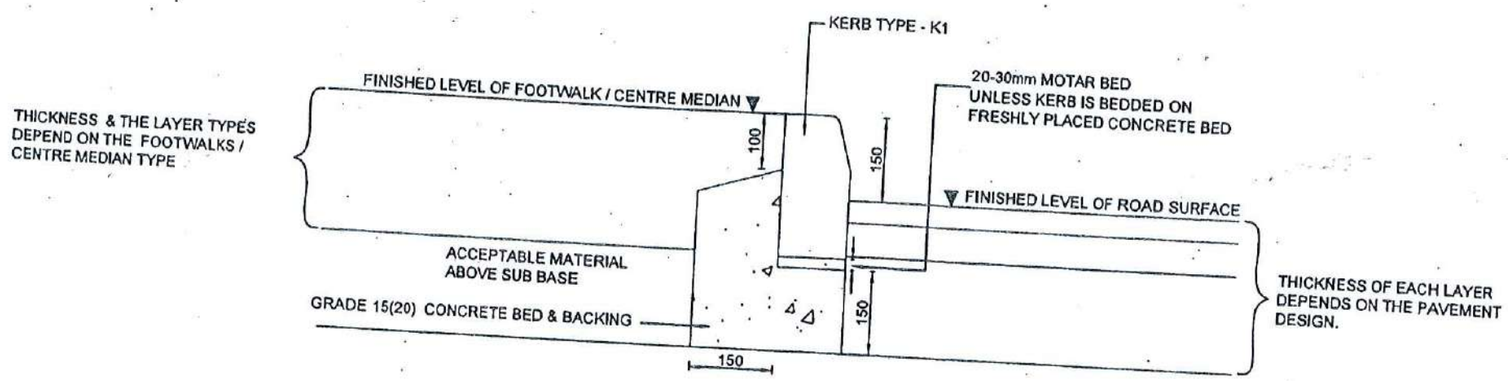


DROPPER KERB
TYPE K4
SCALE - 1:10

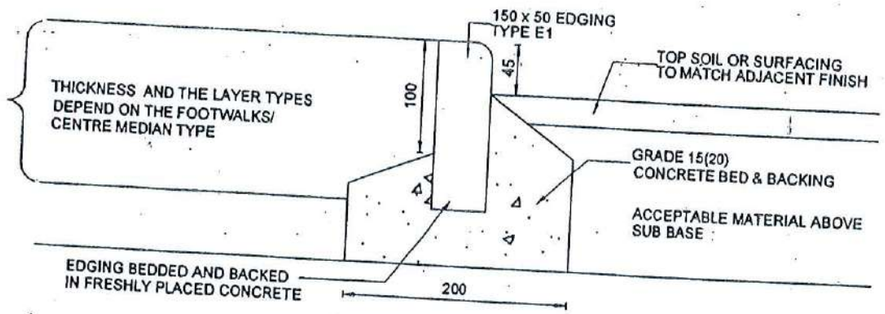
NOTE -

1. GRADE 20(20) CONCRETE TO BE USED IN CASTING KERBS.
2. MAXIMUM CASTING LENGTH 900mm.
3. ALL DIMENSIONS ARE IN MILLIMETERS.

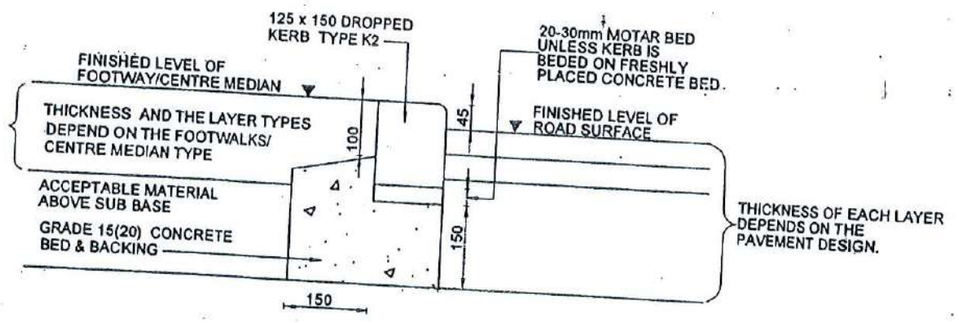
PRIORITY ROADS PROJECT - 2 (PHASE



STANDARD FOOTWALK / MEDIAN EDGE USING KERB TYPE K1
SCALE - 1:10



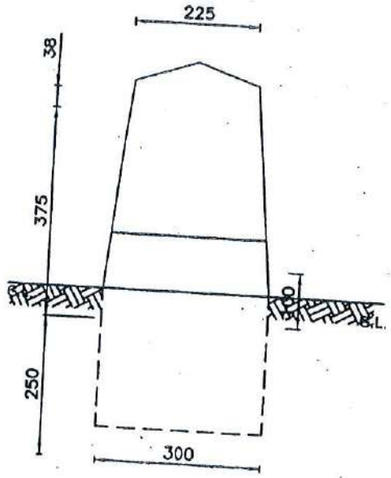
STANDARD PRECAST EDGE USING KERB TYPE E1
SCALE - 1:5



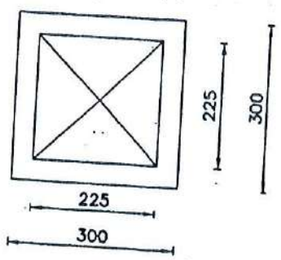
STANDARD FOOTWALK/MEDIAN EDGE USING KERB TYPE K2
SCALE - 1:10

NOTE -

1. KERBS TO BE PAINTED IN BLACK & WHITE ALTERNATIVELY, PREFERABLY STARTING WITH WHITE & ENDING WITH WHITE.
2. ALL DIMENSIONS ARE IN MILLIMETERS.



ELEVATION



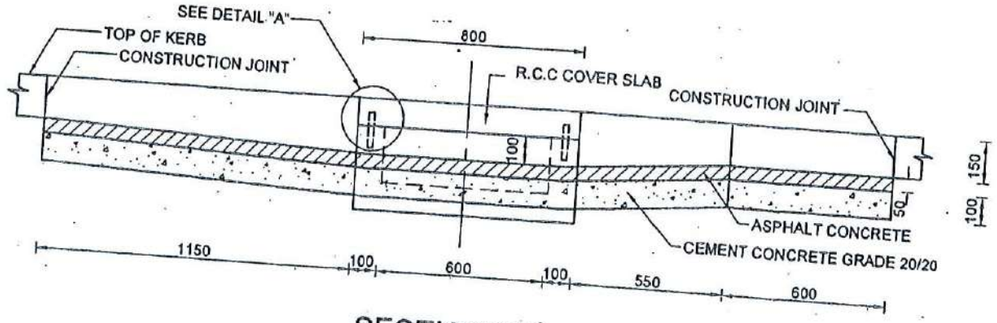
PLAN

SCALE - 1:10

NOTE

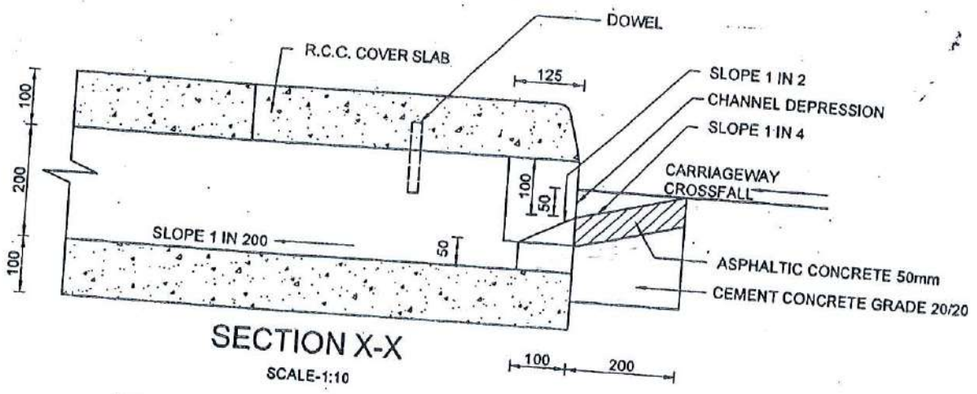
1. GRADE 15 (20) CONCRETE TO BE USED IN CASTING THE GUARD STONE .
2. GUARD STONE TO BE PLANTED ON FIRM GROUND AS DIRECTED BY THE ENGINEER.
3. BOTTOM 100mm OF THE GUARD STONE TO BE PAINTED IN BLACK AND REMAINING TOP SECTION IN WHITE.
4. ALL DIMENSIONS ARE IN MILLIMETRES.

PRIORITY ROADS PROJECT



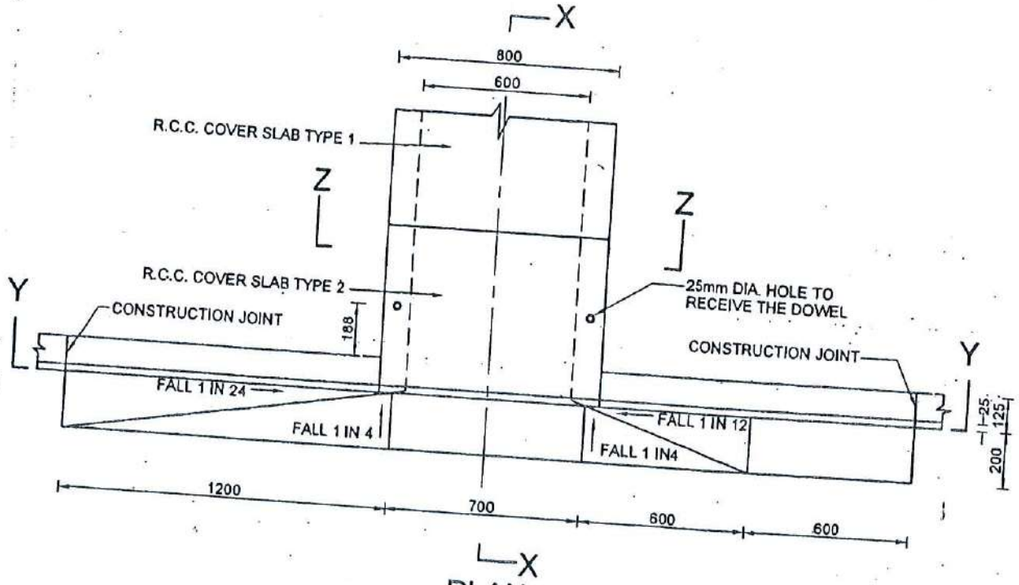
SECTION Y-Y

SCALE-1:20



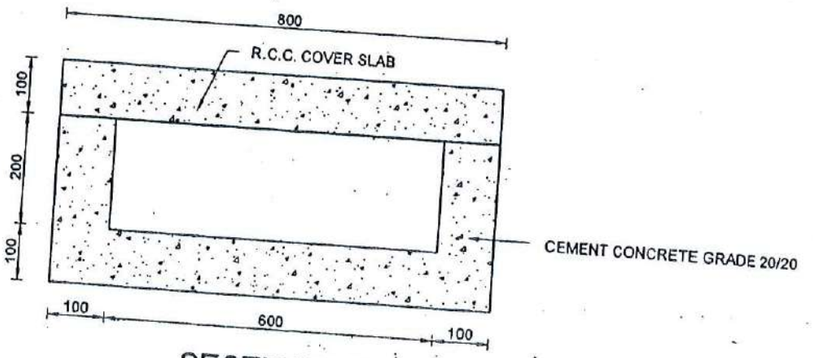
SECTION X-X

SCALE-1:10



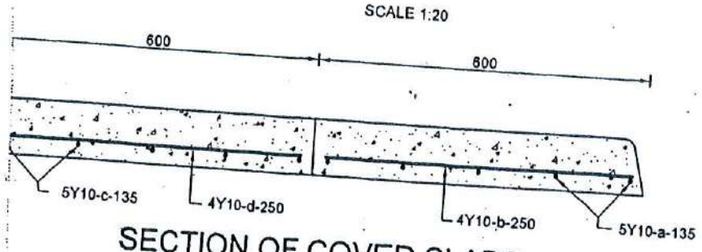
PLAN

SCALE 1:20



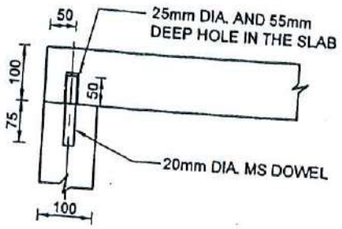
SECTION Z-Z

SCALE-1:10



SECTION OF COVER SLABS

SCALE-1:10



DETAIL AT "A"

SCALE - 1:10

SCHEDULE OF REINFORCEMENT

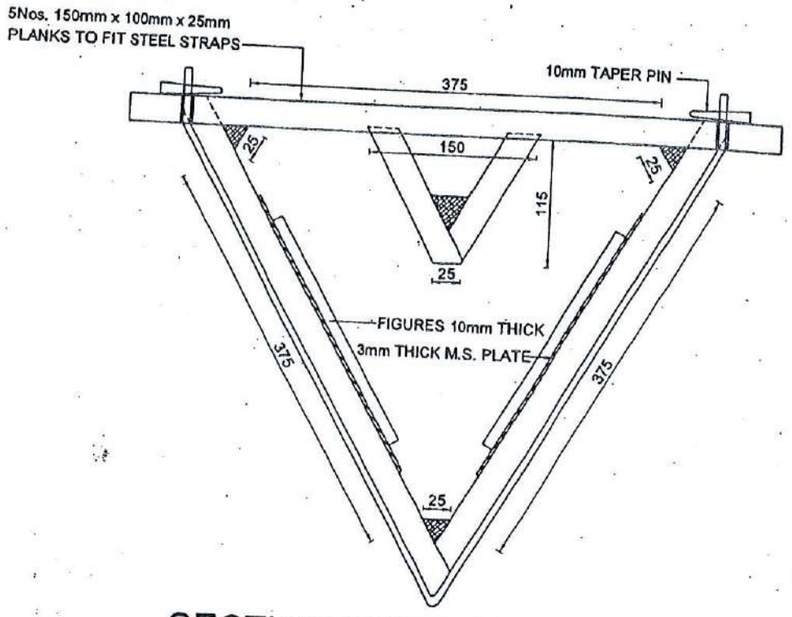
LOCATION	MARK	DIA (mm)	No.OFF	TYPE OF STEEL	CUT LENGTH (mm)	WEIGHT (kg)	BENDING	REMARKS
COVER SLAB TYPE 1	a	10	5	y	860	2.65	50 760 50	
	b	10	4	y	560	1.38	560	
COVER SLAB TYPE 2	c	10	5	y	860	2.65	50 760 50	
	d	10	4	y	560	1.38	560	

NOTE

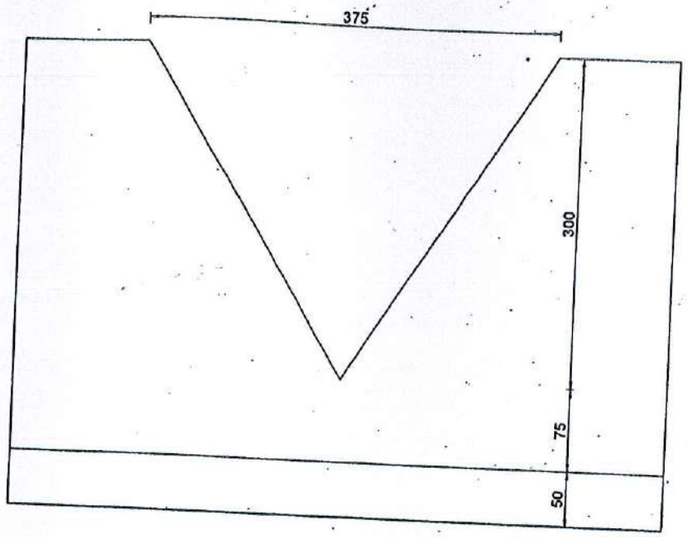
1. ALL CEMENT CONCRETE TO BE OF GRADE 20/20.
2. CLEAR COVER TO REINFORCEMENT TO BE 20mm.
3. TWO COATS OF ANTICORROSIVE PAINT TO BE APPLIED TO THE EXPOSED AREA OF THE DOWEL.
4. ALL DIMENSIONS ARE IN MILLIMETERS.

PRIORITY ROADS PROJECT - 3 (PHASE -1)

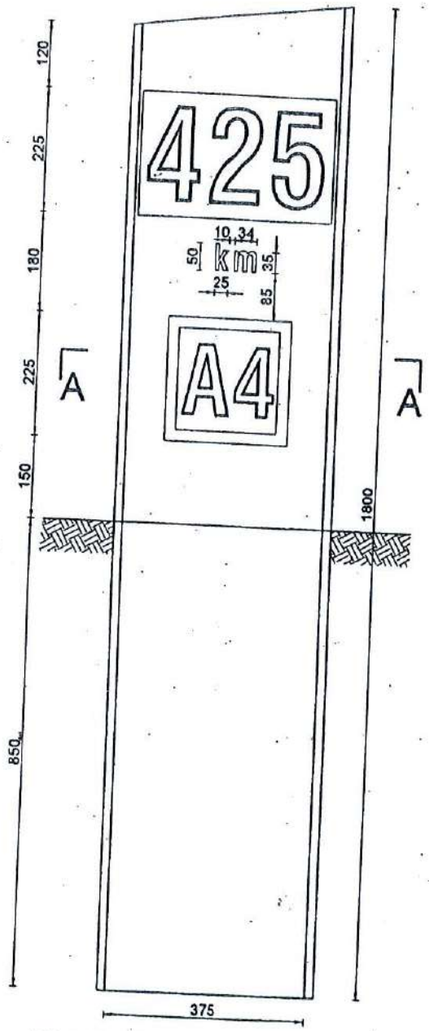
TYPICAL SECTION OF



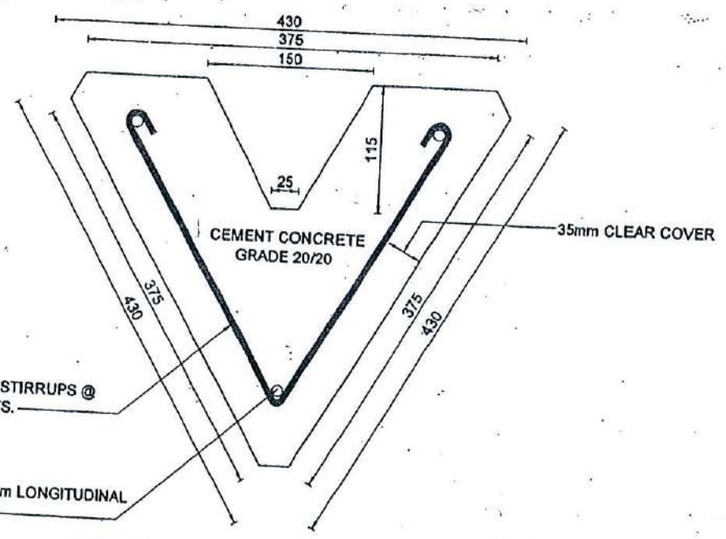
SECTION THROUGH MOULD
SCALE - 1:5



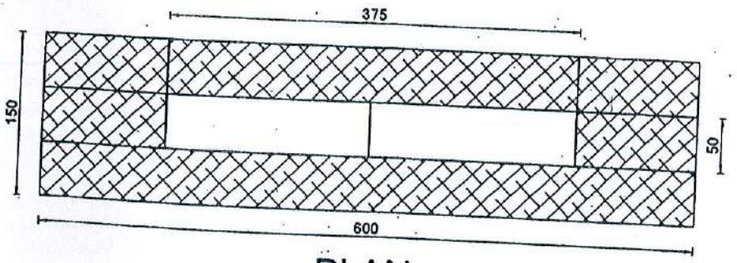
ELEVATION
SCALE - 1:5



FRONT ELEVATION
SCALE - 1:10



CROSS SECTION A-A
SCALE - 1:5



PLAN
SCALE - 1:5

NOTE -

1. FIGURES 2,3,4,5,6 & 7 TO BE LATTERALLY REVERSED AND RIVETED TO PLATE SO THAT THE CASTS GIVE THEIR IMPRESSION.
2. FIGURES TO BE PAINTED BLACK ON KILOMETRE STONE.
3. FIGURES ON ROUTE NUMBERS SHOULD BE 2/3 FULL SIZE AND SHAPE OF FIGURES SHOWN ABOVE.
4. 225mm x 225mm x 21mm RECESS TO BE LEFT FOR ROUTE NUMBERS ON FACE OF STONE.
5. ALL DIMENSIONS ARE IN MILLIMETERS.

PRIORITY ROADS PROJECT - 3 (PHASE -1)

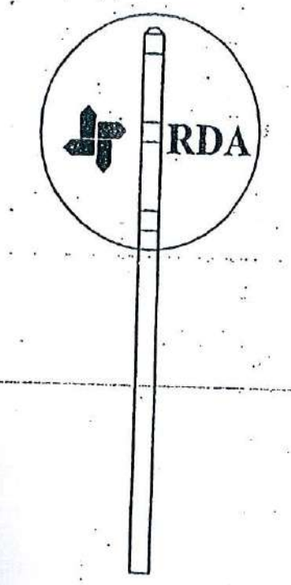
KILOMETRE POST FOR CLASS A & B ROADS

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF HIGHWAYS, PORTS

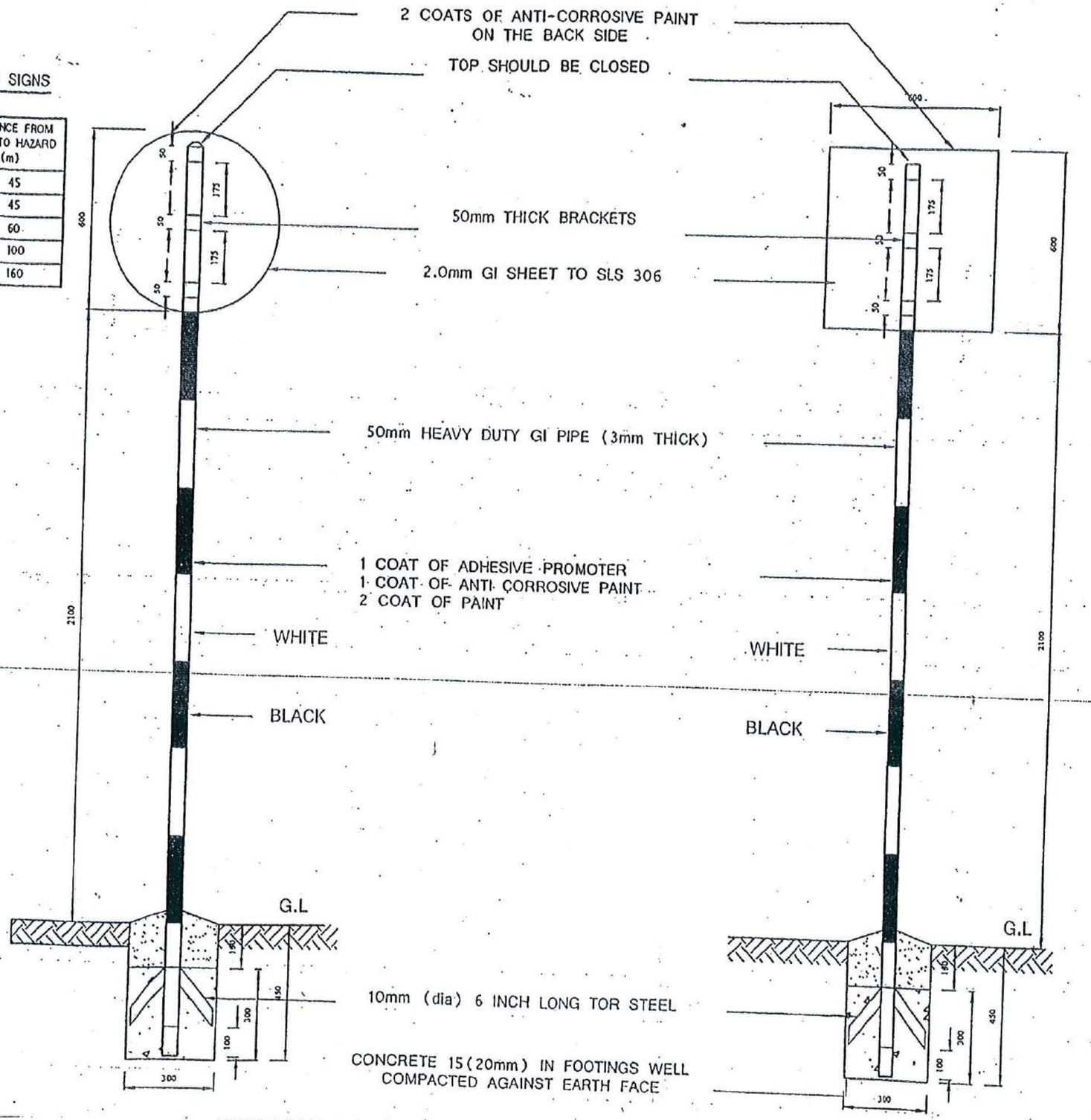
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

SITING DETAILS OF WARNING SIGNS

TRAVEL SPEED km/h	CLEAR VISIBILITY DISTANCE (m)	DISTANCE FROM SIGN TO HAZARD (m)
30	60	45
40	60	45
50	60	60
60	60	100
80	75	160

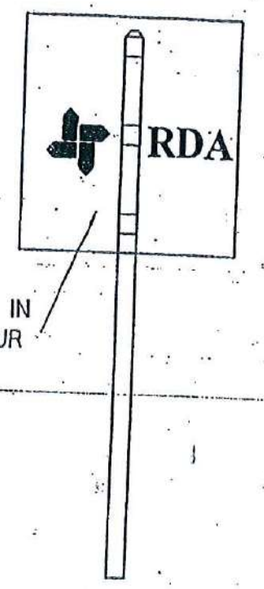


REAR SIDE



NOTES:-

1. THE RETRO - REFLECTIVE SIGN SHALL BE DIAMOND TYPE.
2. ALL DIMENSION ARE IN mm. UNLESS OTHERWICE STATED.



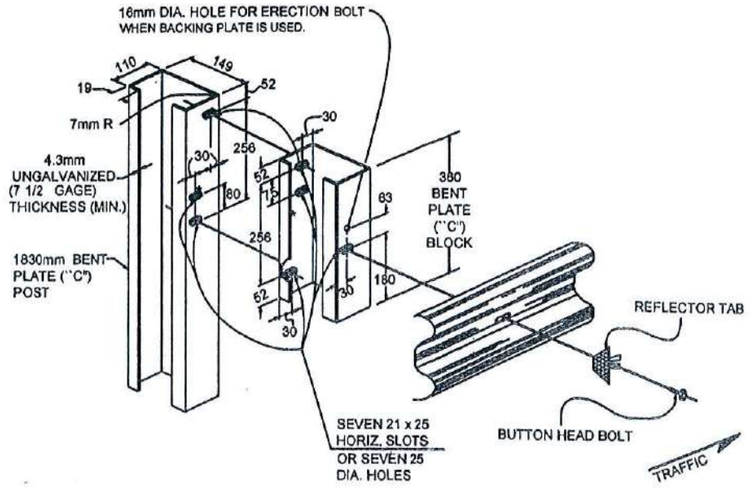
REAR SIDE

PRIORITY ROADS PROJECT - 3 (PHASE -1)

INSTALLATION OF TRAFFIC SIGNS

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

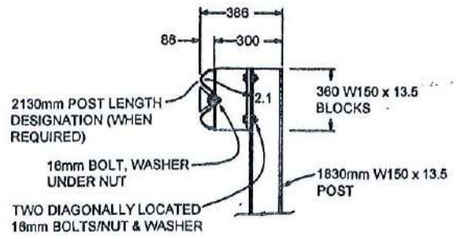


P-52-78

ALTERNATIVE STEEL "C" POST & BLOCK

* NOTE: ADDITIONAL HOLES SHALL BE PROVIDED IN POSTS (AND STEEL BLOCKS) TO FACILITATE FUTURE RAISING OF THE RAIL FOR OVERLAYS, ETC..

STANDARD SPACING - 1.83m C-C
A POST SHALL BE AT EACH
BEAM JOINT AND MID-SPAN



TYPICAL GUARDRAIL ASSEMBLY

1. ALL W-BEAM SPLICES, AND SPLICES OF TERMINAL CONNECTORS TO W-BEAM SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC UNLESS OTHERWISE NOTED. REFER DWG. No. 4/SB/002 FOR SPLICE DETAILS

2. MATERIAL TYPE AND SHAPE OF POSTS AND BLOCKS SHALL BE THE SAME THROUGHOUT THE PROJECT EXCEPT WHEN SPECIFIC POSTS AND BLOCKS ARE SPECIFIED SUCH AS AT END ANCHORAGE AND BOX CULVERTS.

3. CONCRETE MAY BE READY-MADE OR FIELD-MIXED AND SHALL CONSIST OF A MINIMUM OF 1 PART CEMENT TO 6 PARTS AGGREGATE BY VOLUME.

4. ACCEPTABLE ALTERNATIVES TO W150x13.5 POSTS AND BLOCKS ARE W150x12.6 ROLLED OR WELDED BEAM, OR THE BENT PLATE ("C"). THE WELDED BEAM SHALL BE IN ACCORDANCE WITH ASTM A 769 WITH THE SAME SHAPE AND WEIGHT PER FOOT AS A W150x12.6 OR W150x13.5.

5. OPEN SIDES OF "C" POSTS AND BLOCKS SHALL FACE AWAY FROM APPROACHING TRAFFIC IN ROADSIDE INSTALLATIONS. IN DOUBLE-CLICKED MEDIAN INSTALLATIONS THE OPEN SIDES SHALL ALL FACE IN THE SAME DIRECTION.

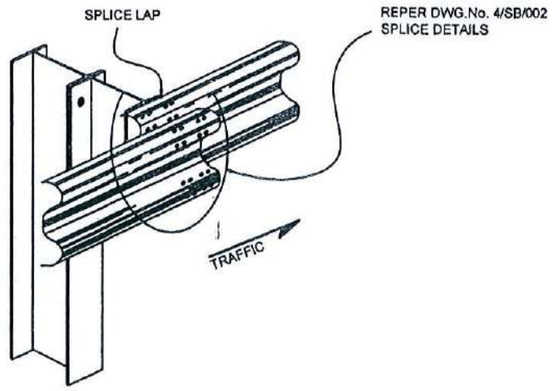
6. 2130mm POSTS, WHEN SPECIFIED IN THE CONTRACT SHALL BE INSTALLED INSTEAD OF THE STANDARD 1830mm POSTS. 2130mm POSTS SHALL BE MARKED WITH THE NUMBER 2.1 TO ENSURE PERMANENT IDENTIFICATION. THE NUMBER 2.1 SHALL BE A MINIMUM 50mm HEIGHT AND LOCATED AS SHOWN IN THE ELEVATION VIEWS.

7. STANDARD GALVANISED ROUND STEEL WASHERS SHALL BE USED UNDER ALL NUTS IN CONTACT WITH POSTS.

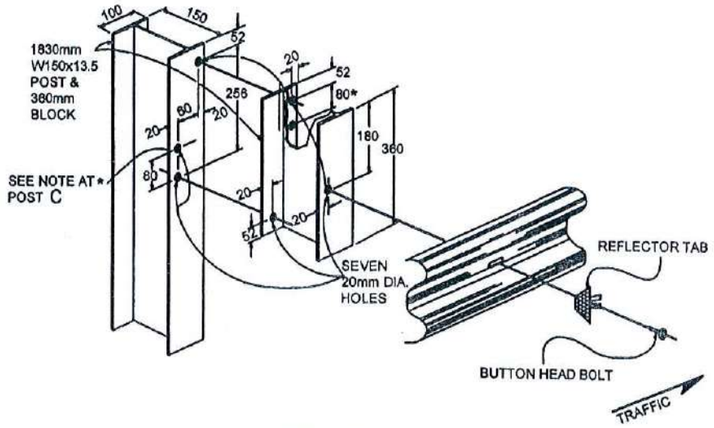
8. REFLECTOR TABS SHALL BE INSTALLED AT 7620mm INTERVALS (EXCEPTION BELOW). REFLECTOR TABS WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE GUARD RAIL THE TABS SHALL BE MOUNTED SO THAT THE BOLT SLOT FACES AWAY FROM TRAFFIC AND THE REFLECTOR SURFACE FACES THE APPROACHING TRAFFIC FOR ONE-WAY ROADS. FOR TWO-WAY ROADS, BOTH SIDES OF THE TABS SHALL BE REFLECTOR SO THAT DELINEATION IS PROVIDED FOR BOTH DIRECTIONS OF TRAVEL. REFLECTOR COLOUR SHALL MATCH THE COLOR OF THE ADJACENT TRAVELLED WAY EDGE LINE. SEE TAB DETAIL ON DWG. No.4/SB/002

9. <u>REFLECTOR TABS SHALL NOT BE INSTALLED AT THE FOLLOWING LOCATIONS:</u>
   -THE END 7 POSTS IN THE TYPE 3E END ANCHORAGE.
   -GUARD RAIL IN AREAS OF CONTINUOS HIGHWAY LIGHTING.

10. REFERENCES SUCH AS "P-10-79", "F-3(2")-76", AND "RE-3-73" IN THIS STANDARD SPECIFY HARDWARE DETAILS FROM "A GUIDE TO STANDARDISED HIGHWAY BARRIER RAIL HARDWARE" PREPARED BY THE AASHTO-AGC-ARTBA JOINT CO-OPERATIVE COMMITTEE. RFERENCES SUCH AS (PWE1-3), (FBB06) AND (RWM6a) SPECIFY HARDWARE DETAILS FROM A DRAFT VERSION OF THE UPDATED GUIDE, WHICH GIVES DIMENSIONS IN SI (METRIC) UNITS. THESE REFERENCES ARE SHOWN IN PARENTHESES.



W-BEAM SPLICE



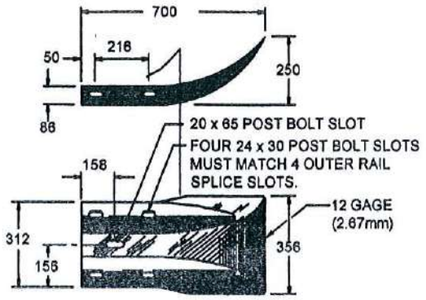
(PWE01 & PWB01)
P-10-79

STEEL POST & BLOCK

STANDARD SPACING - 1.83m C-C
A POST SHALL BE AT EACH
BEAM JOINT AND MID-SPAN

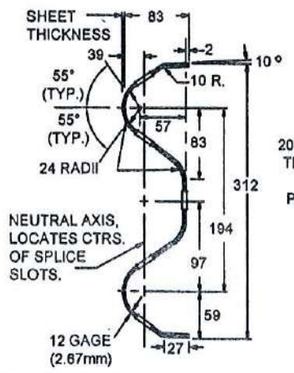
NOT TO SCALE

PRIORITY ROADS PROJECT - 3 (PHASE - 1)	**W BEAM BARRIERS/GUARD RAIL** 20	DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA MINISTRY OF HIGHWAYS PORTS & SHIPPING	ROAD DEVELOPMENT AUTHORITY BATTARAMULLA DATE : NOVEMBER 2013 DRG.No. : PRP3/SD/18



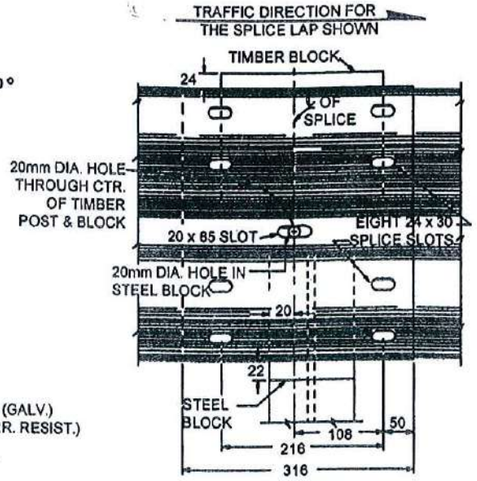
(RWE01a) RE-5 (CLASS A, TYPE 1 OR 2) -76 (GALV.)
(RWE01a) RE-5 (CLASS A, TYPE 4) -76 (CORR. RESIST.)

TERMINAL SECTION (FLARED)

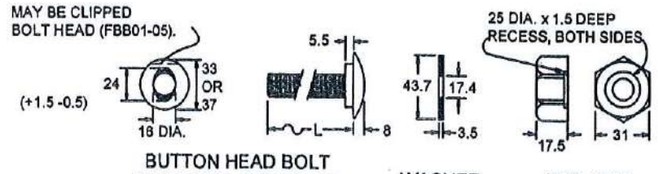


(RWM-2a) RE-3 (CLASS A, TYPE 1 OR 2)-73 (GALV.)
(RWM-2a) RE-3 (CLASS A, TYPE 4)-73 (CORR. RESIST.)

W-BEAM RAIL SECTION.

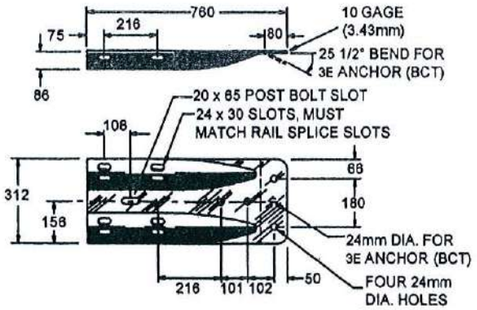


RAIL SPLICE



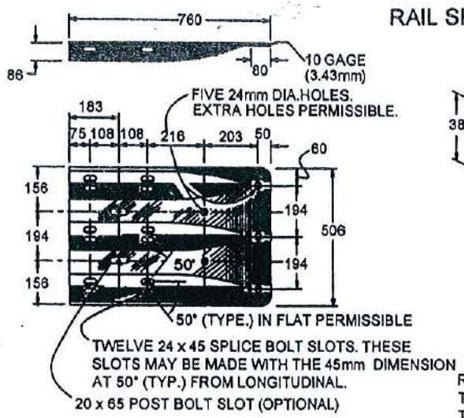
BUTTON HEAD BOLT WITH OVAL SHOULDER | WASHER | HEX NUT

DIAMETER & TYPE	LENGTH L	THREAD LENGTH	INTENDED USE	AASHTO-AGC-ARTBA STANDARD NUMBER	NO.BOLTS,NUTS & WASHERS
16mm BUTTON HEAD, OVAL SHLDR.	35 50	FULL (30) MIN. 45	ALL RAIL SPLICES FASTEN RAIL TO STEEL BLOCK	F-3 (1 ¼")-76)(FBB01) F-3 (2")-76)(FBB02)	8 PER SPLICE 1 PER POST
16mm HEX HEAD	50	FULL	FASTEN STEEL BLOCK TO POST	F-8-76 (FBX16a)	2 PER BLOCK



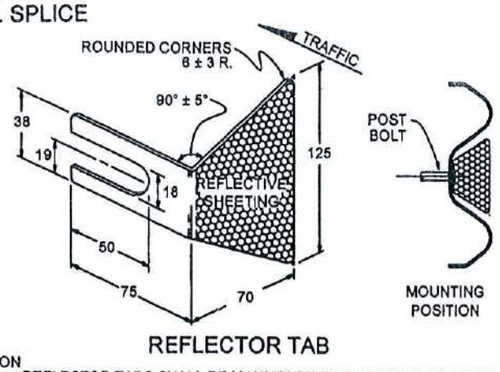
(RWE02b) RE-8 (CLASS B, TYPE 1 OR 2) - 79 (GALV.)
(RWE02b) RE-8 (CLASS B, TYPE 4) - 79 (CORR. RESIST.)

TERMINAL SECTION (CONNECTOR)



(RTE01b) RE-83 (CLASS B, TYPE 1 OR 2) - 76 (GALV.)
(RTE01b) RE-83 (CLASS B, TYPE 4) - 76 (CORR. RESIST.)

THREE BEAM TERMINAL SECTION (CONNECTOR)



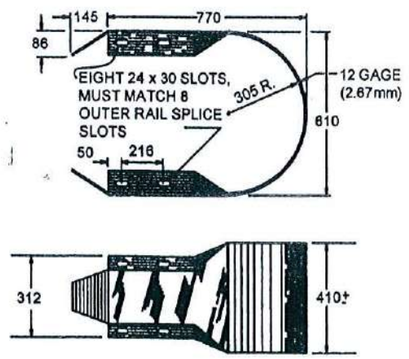
REFLECTOR TAB

REFLECTOR TABS SHALL BE MANUFACTURED FROM 12 GAGE (2.7mm) TO 14 GAGE (1.9mm) STEEL. REFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956 TYPE III. SEE NOTES ON DWG. 4/SB/001

PART	MATERIAL SPEC.	GALVANISING SPEC.	CORROSION-RESISTANT SPEC.
W-BEAM RAIL BACK-UP PLATE & TERMINAL SECTIONS	AASHTO M 180, CLASS A OR B	AASHTO M 180, TYPE 1 OR 2	AASHTO M 180, TYPE 4
WELDED BEAM OR STRUCTURAL SHAPE STEEL POST BLOCK & BASE PLATE	ASTM A 36M	AASHTO M 111M	AASHTO M 222M (ASTM A 588M)
BENT PLATE ("C") POST & BLOCK	ASTM A 570M, GRADE 36 ASTM A 36M	AASHTO M 111M	AASHTO M 222M (ASTM A 588M)
NUTS, BOLTS & STUDS FOR GENERAL USE	ASTM A 307	AASHTO M 232, CLASS C OR ASTM B 695 CLASS 50	
HIGH STRENGTH BOLTS & NUTS	ASTM A 325		
HIGH STRENGTH STUDS & NUTS	ASTM A 449		
ROUND STEEL WASHERS	ASTM F 436M		
RECTANGULAR WASHERS	AASHTO M 180		
OTHER FITTINGS	ASTM A 36M	AASHTO M 111M	

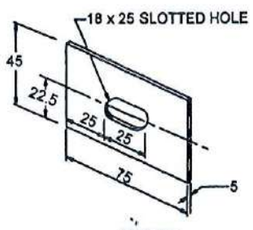
THE TABULATION OF GUARD RAIL WILL SPECIFY THE TYPE OF CORROSION PROTECTION: GALVANISED OR CORROSION-RESISTANT STEEL.

STEEL POSTS AND BLOCKS SHALL HAVE THE SAME CORROSION PROTECTION AS SPECIFIED FOR THE METAL BEAM RAIL. PUNCHING, DRILLING, OR CUTTING WILL NOT BE PERMITTED AFTER GALVANISING.



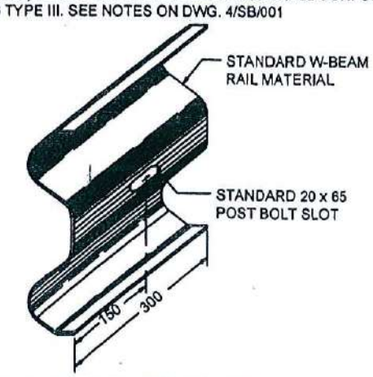
(RWE06a) RE-7 (CLASS A, TYPE 1 OR 2) - 79 (GALV.)
(RWE06a) RE-7 (CLASS A, TYPE 4) - 79 (CORR. RESIST.)

TERMINAL SECTION (BUFFER)



(FWR03)
F-12-73

RECTANGULAR WASHER
(TO BE USED ONLY WHERE SPECIFIED.)



(RWB01a-b) RE-4 (CLASS A, TYPE 1 OR 2)-76 (GALV.)
(RWB01a-b) RE-4 (CLASS A, TYPE 4)-76 (CORR. RESIST.)

BACKUP PLATE
(REQUIRED BEHIND RAIL AT EACH NON-SPLICE STEEL POST & BLOCK SYSTEM)

HARDWARE DETAILS AND SPECIFICATIONS

NOT TO SCALE

PRIORITY ROADS PROJECT - 3 (PHASE - 1)	W BEAM BARRIERS/GUARD RAIL 21	DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA MINISTRY OF HIGHWAYS PORTS & SHIPPING	ROAD DEVELOPMENT AUTHORITY BATTARAMULLA DATE : NOVEMBER 2013 DRG.No. : PRP3/SD/19

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