# 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-3

| Contract Component No. | Description |
|---|---|
| RDA/RNIP/PRP3/Phase-1/Package-3/C9 | Rambukkana - Katupitiya Road (0.00-9.81 km) |
| | Katupitiya - Dambokka Road (0.00-8.75 km) |

## CONTRACTOR

## XI'AN DAGANG ROAD MACHINERY CO. LTD. (DAGANG)

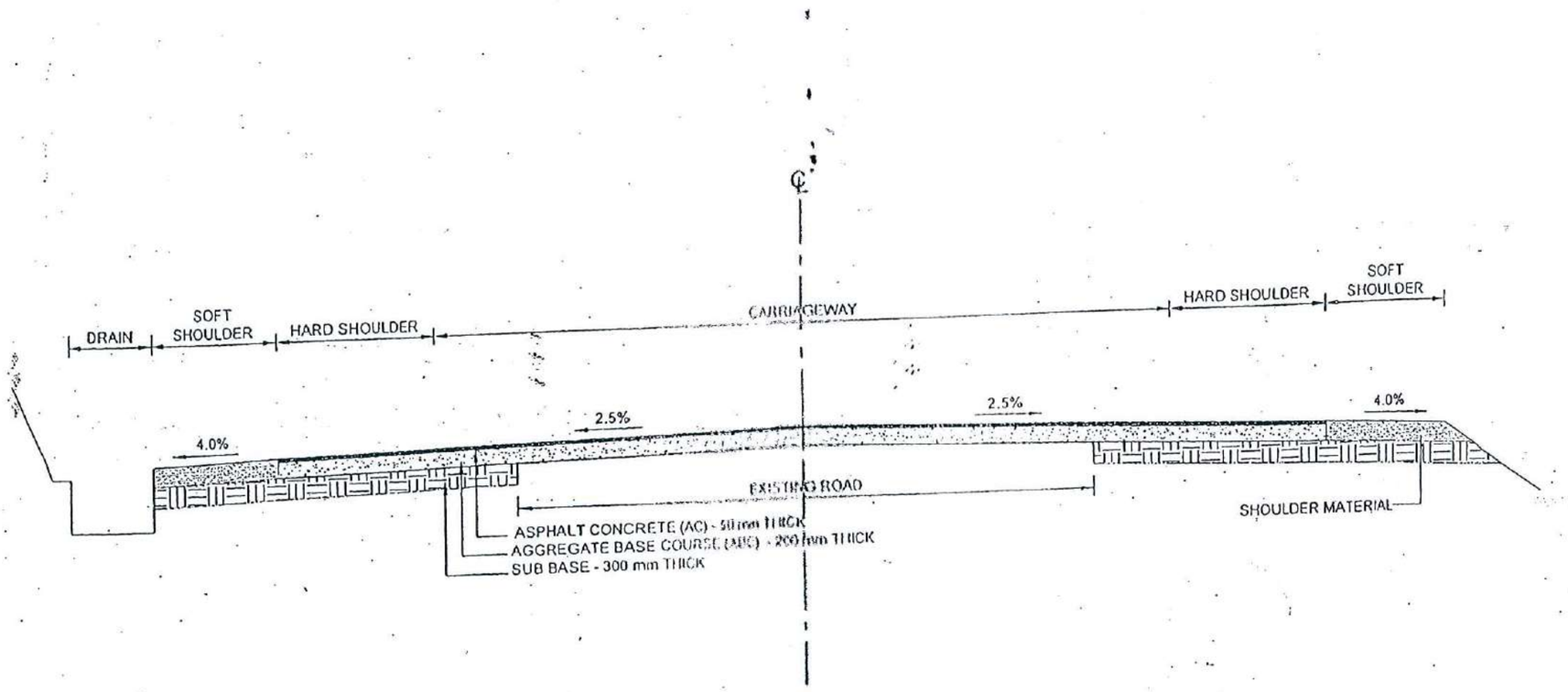
**VOLUME 4**

**The Drawings**

**DECEMBER 2013**

Package 4

| | ROAD NAME | CARRIAGWAY WIDTH | APPROXIMATE HARD SHOULDER WIDTH | APPROXIMATE EARTH SHOULDER WIDTH |
|---|---|---|---|---|
| C9 | Rambukkana - Katupitiya Road (B384)<br>Katupitiya - Dambokka Road (B087) | 3.5 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**

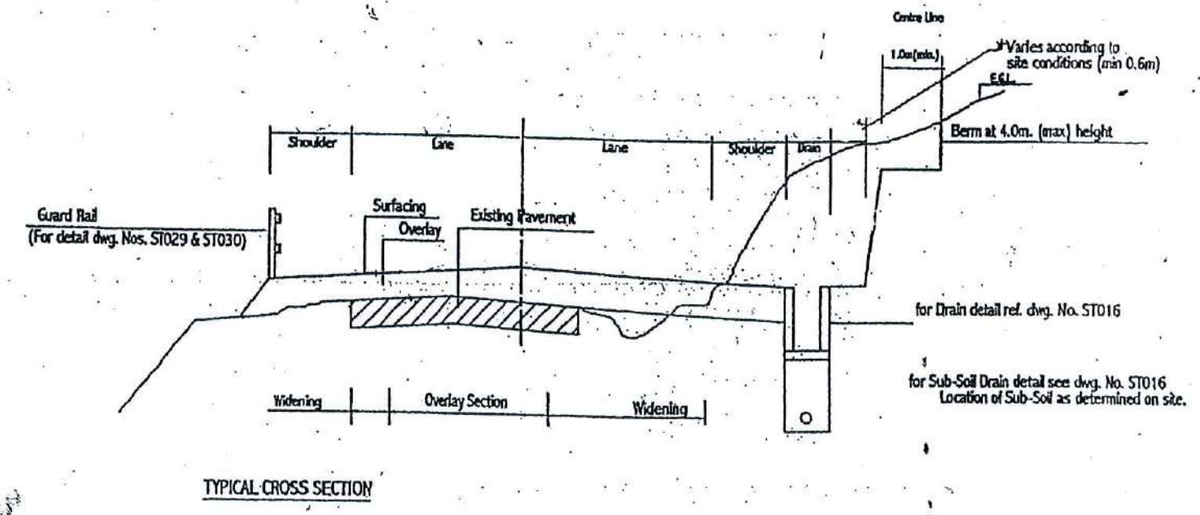
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF HIGHWAYS, PORTS & SHIPPING

01

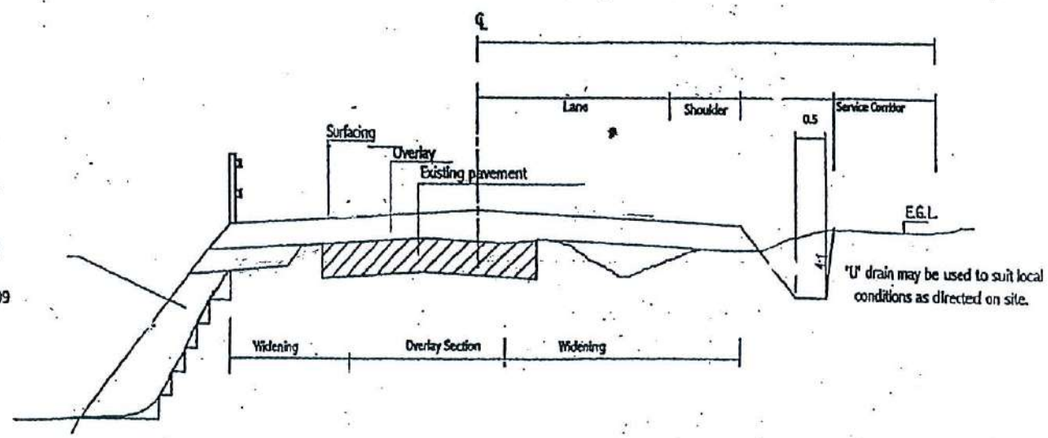
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

DATE - NOVEMBER 2013

DRG.No.- PRP3/SD/01




TYPICAL CROSS SECTION



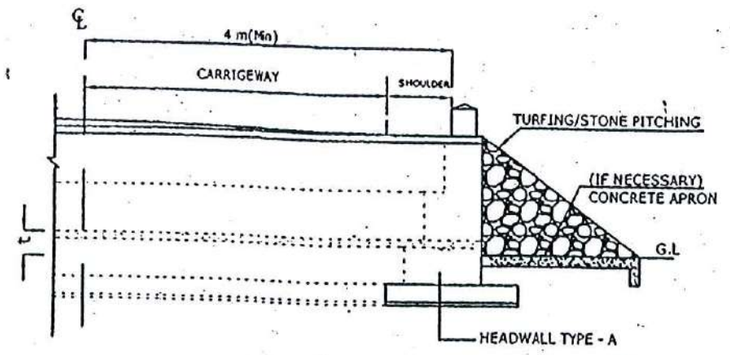

FOR DETAILS OF BENCHING AND FILL OVER MARSHY AREAS SEE DRAWING NO. ST009

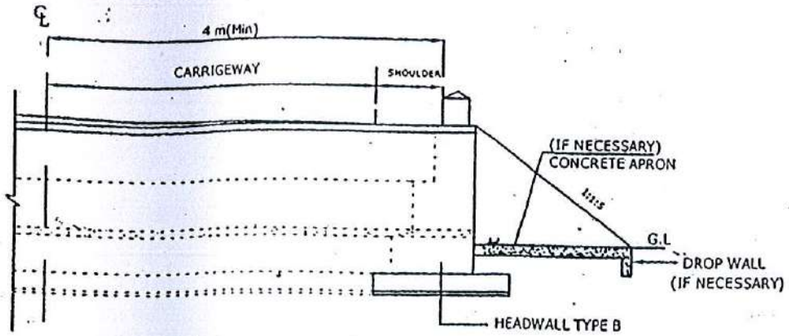
'U' drain may be used to suit local conditions as directed on site.

TYPICAL CROSS SECTION TYPE

321

| | | | |
|---|---|---|---|
| **PRIORITY ROADS PROJECT - 3 (PHASE -1)** | **TYPICAL SECTIONS ROAD PAVEMENT STRUCTURE** | DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA<br>02 MINISTRY OF HIGHWAYS, PORTS & SHIPPING | ROAD DEVELOPMENT AUTHORITY BATTARAMULLA<br>DATE - NOVEMBER 2013 |



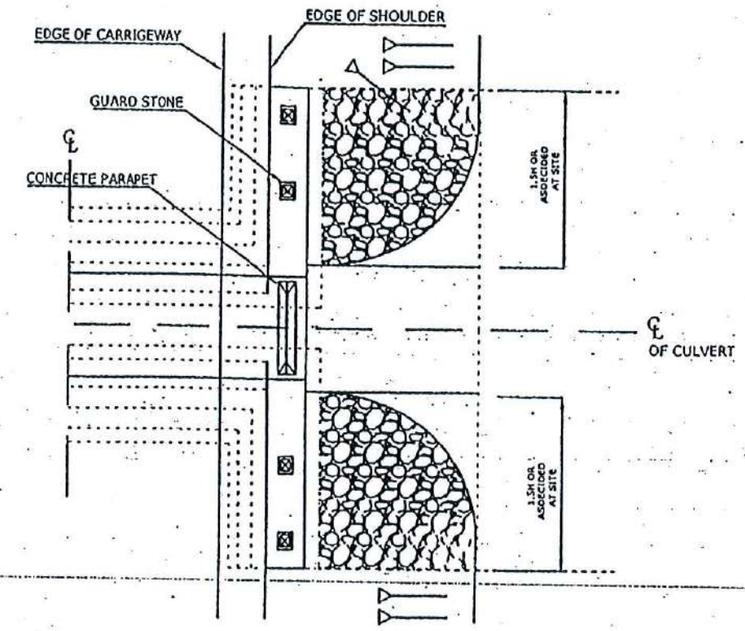




## NOTES :-

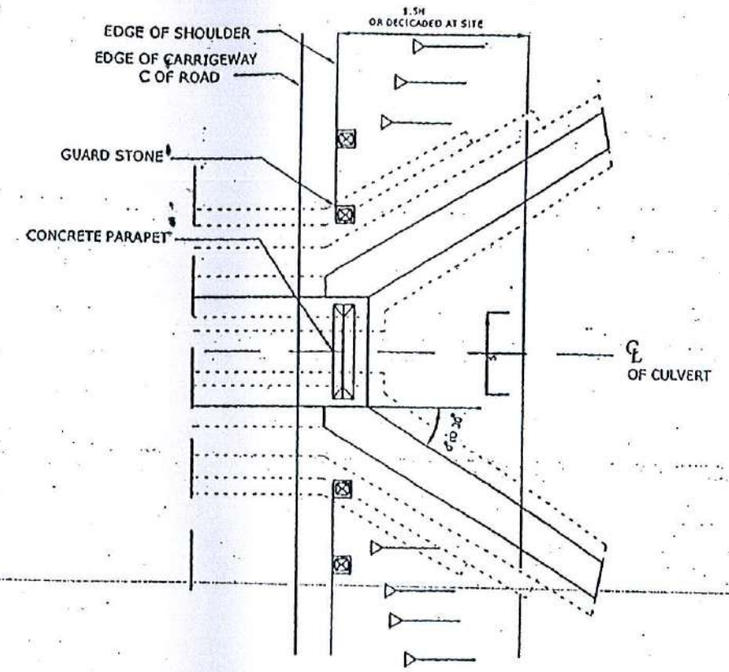
1. ALL THE DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
2. ABUTMENT BASE AND CONCRETE LINING SHALL BE STEPPED IF NECESSARY AS APPROVED BY THE ENGINEER.

| t | |
|---|---|
| INLET | OUTLET |
| 0 | 75 |

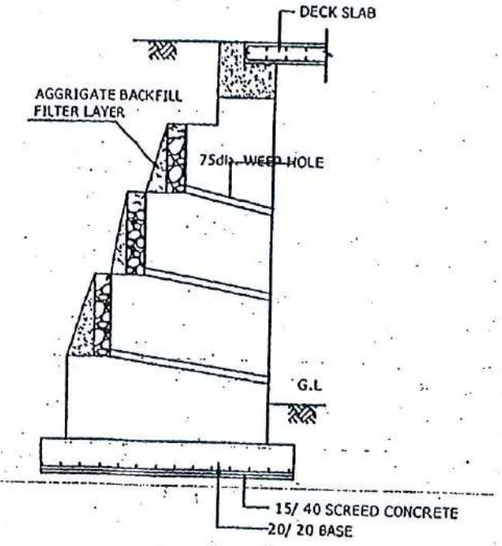
# HALF SECTIONAL ELEVATION




ABUTMENT & HEADWALL LAYOUT - TYPE A

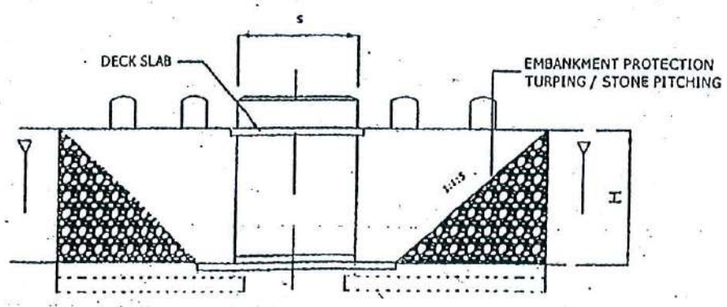



ABUTMENT & HEADWALL LAYOUT - TYPE B

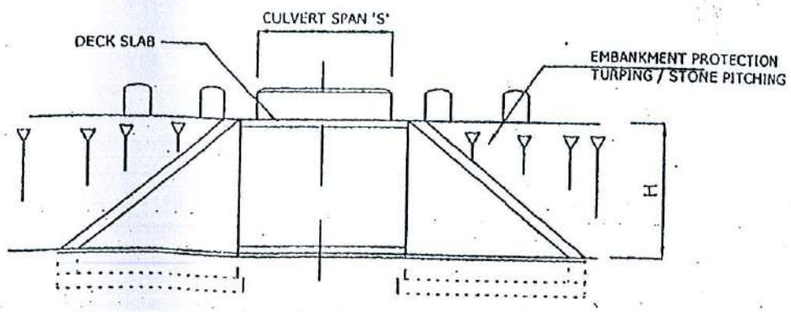



TYPICAL DECK CULVERT ABUTMENT

## PLAN



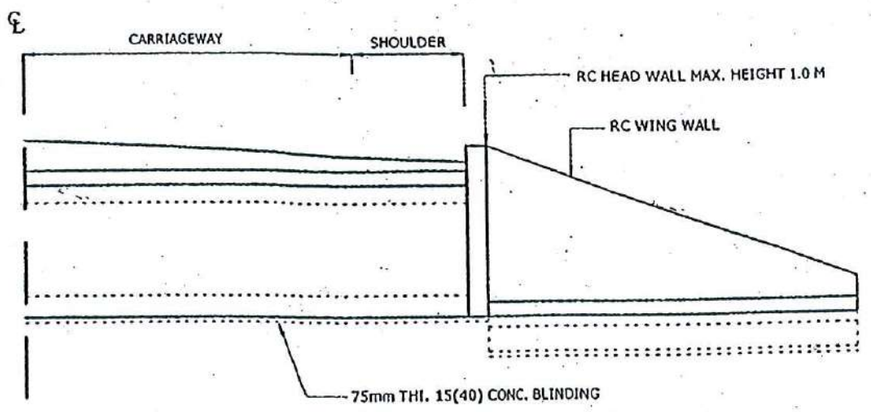

SLAB CULVERT WITH TYPE A HEADWALL



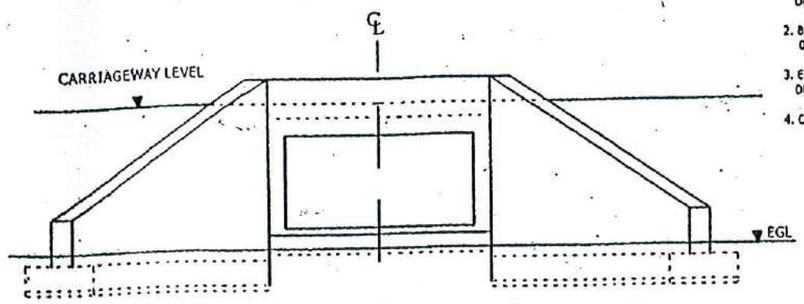

SLAB CULVERT WITH TYPE B HEADWALL

## ELEVATION

| | | | |
|---|---|---|---|
| **PRIORITY ROADS PROJECT - 3 (PHASE -1)** | **TYPICAL DECK CULVERT** | DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA<br>03 MINISTRY OF HIGHWAYS, PORTS & SHIPPING | ROAD DEVELOPMENT AUTHORITY<br>BATTARAMULLA<br>DATE - NOVEMBER 2013 |



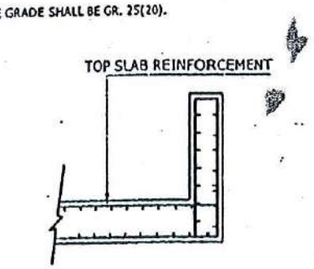

HALF ELEVATION



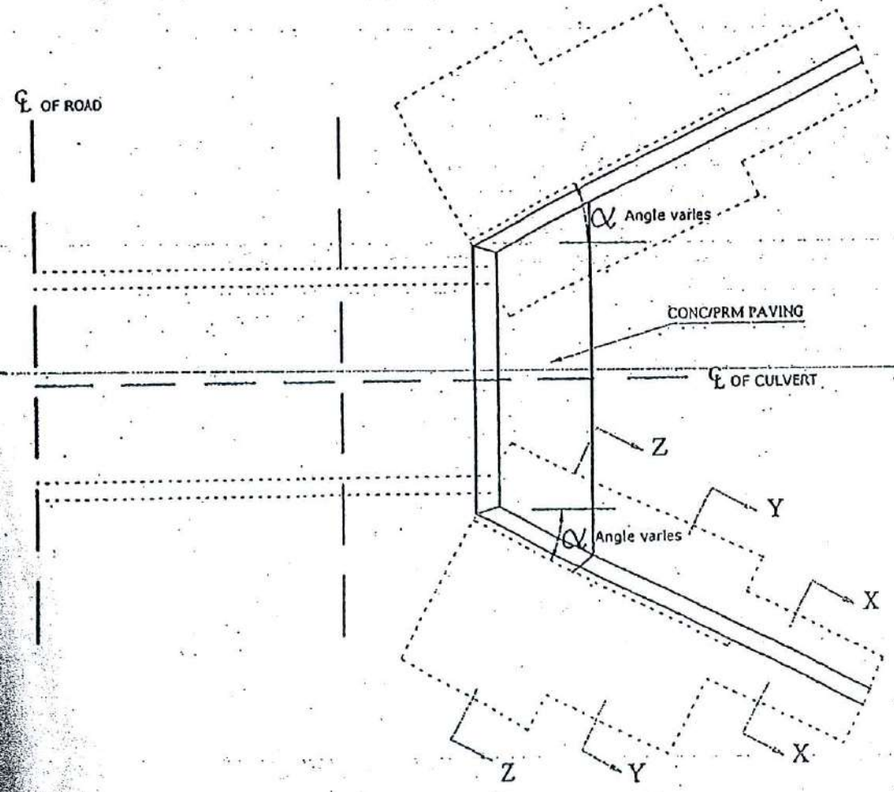

ELEVATION

NOTES :

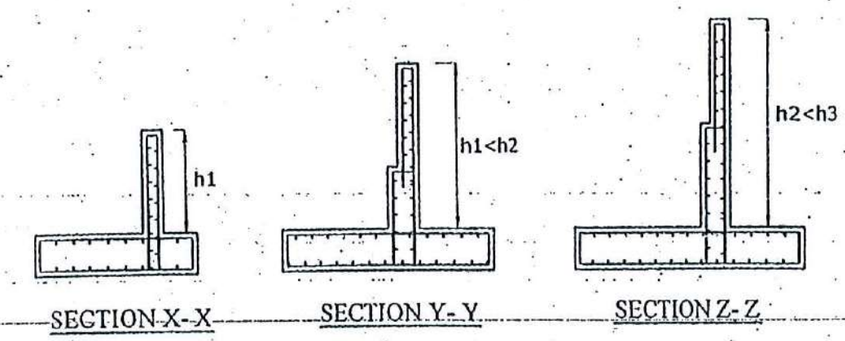
1. THIS DRAWING PROVIDES A GUIDANCE ONLY. EXACT DETAILS TO SUIT SITE CONDITIONS, SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
2. BOX OPENING SIZE (h& w0 MUST BE GREATER THAN OR EQUAL TO THE MINIMUM REQUIRED OPENING SIZE.
3. EXACT WALL THICKNESS (ts,tw,tb and tl) AND R/F MUST BE DECIDED TO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




DETAIL OF HEADWALL

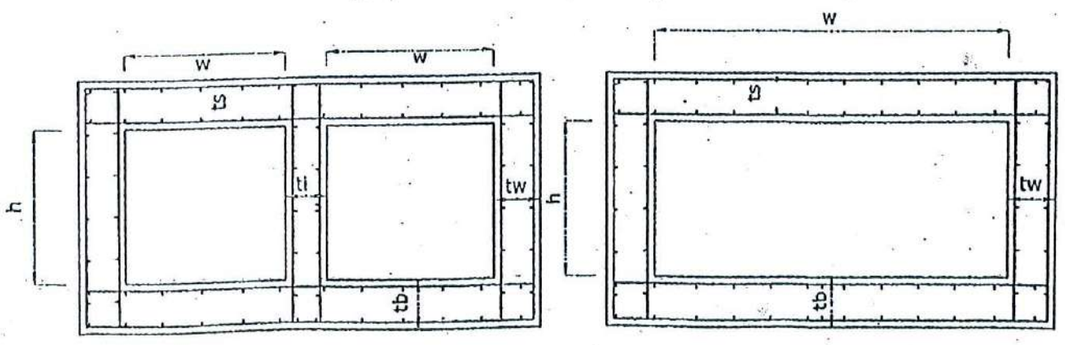



PLAN




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

TYPICAL WINGWALL SECTIONS




TWIN BOX TYPE SINGLE BOX TYPE

PRIORITY ROADS PROJECT - 3 (PHASE -1)

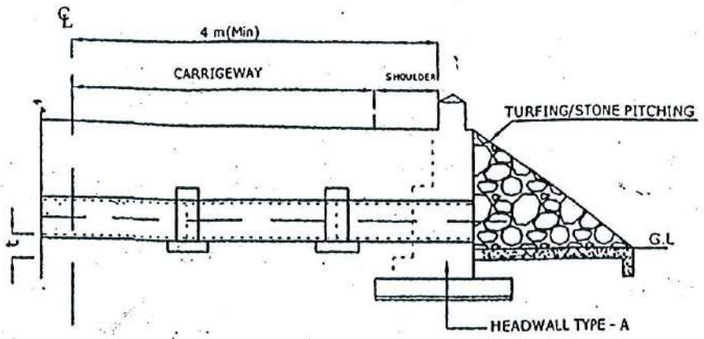
TYPICAL RCC BOX CULVERT

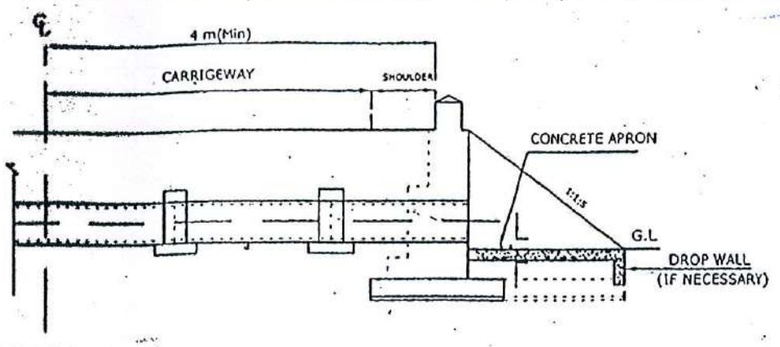
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF HIGHWAYS, PORTS & SHIPPING

ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

DATE - NOVEMBER 2013

DRG.No.- PRP3/SD/03

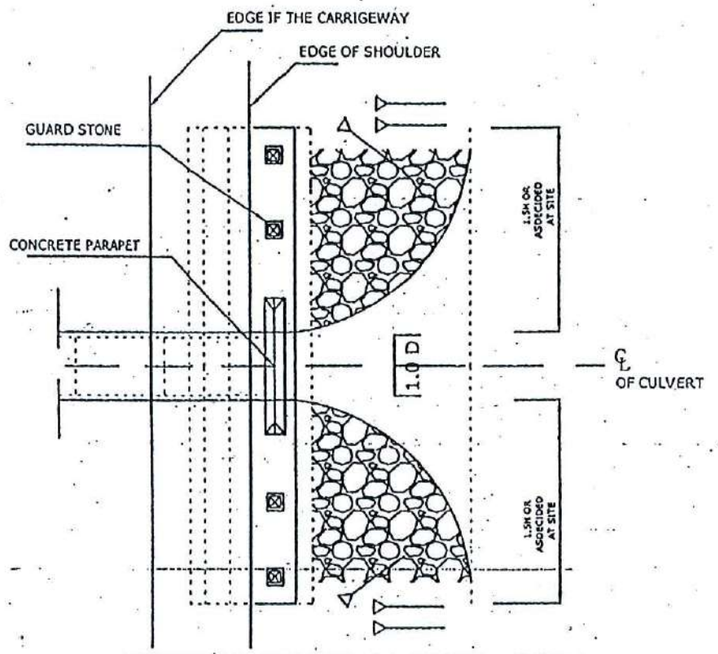


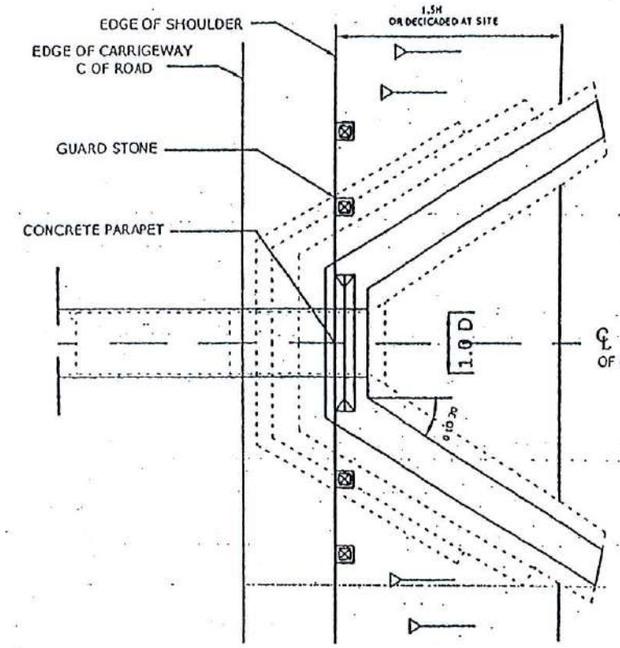

## HALF SECTIONAL ELEVATION

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.



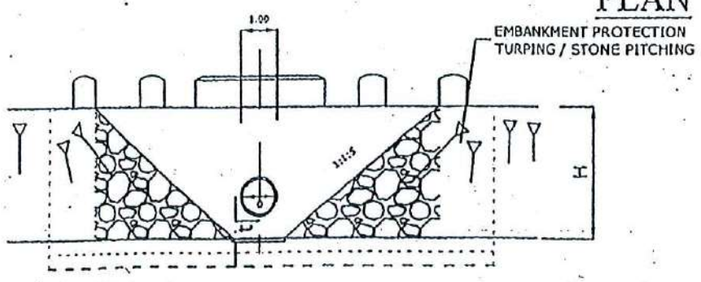

ABUTMENT & HEADWALL LAYOUT - TYPE A



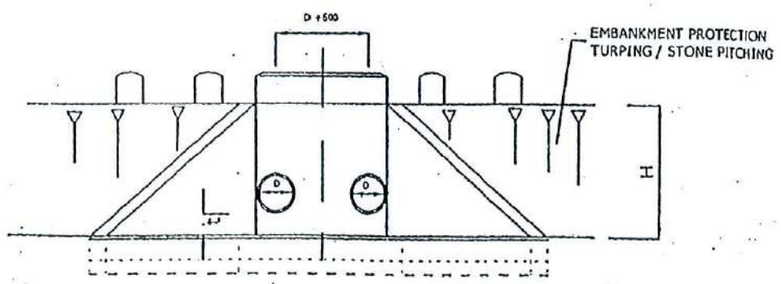

ABUTMENT & HEADWALL LAYOUT - TYPE B

| 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**

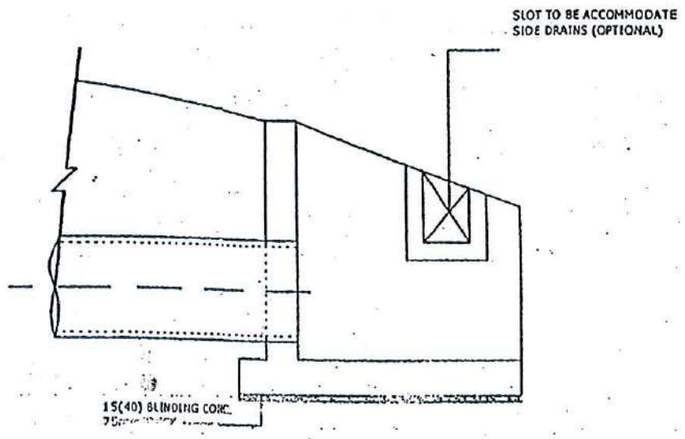
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
05 MINISTRY OF HIGHWAYS, PORTS & SHIPPING

ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

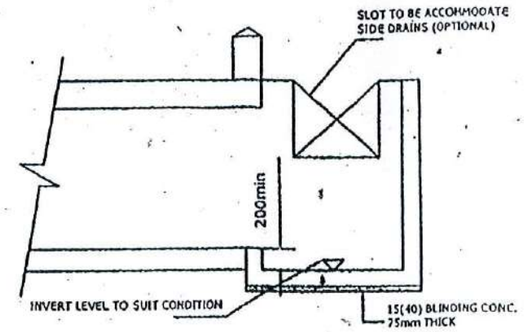
DATE - NOVEMBER 2013

DRG.No.- PRP3/SD/04

PLATE NO.



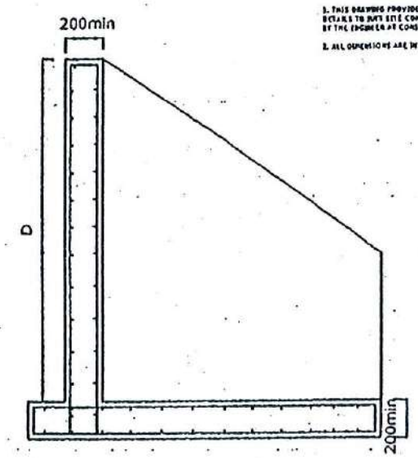

SECTION



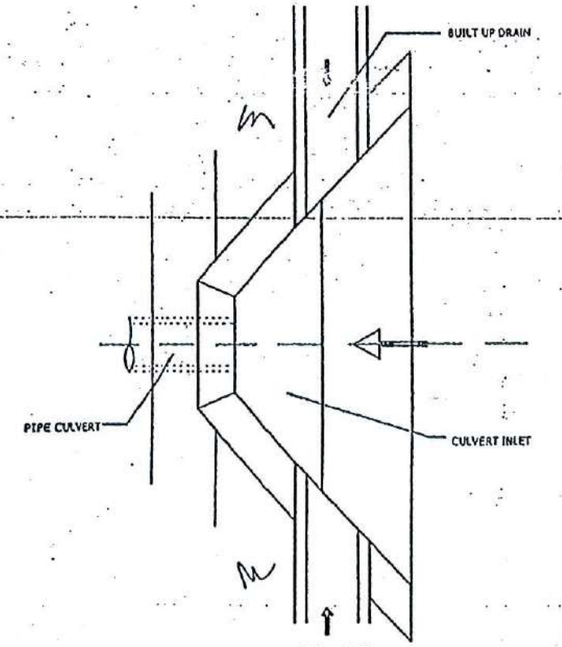

SECTION

NOTES :

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

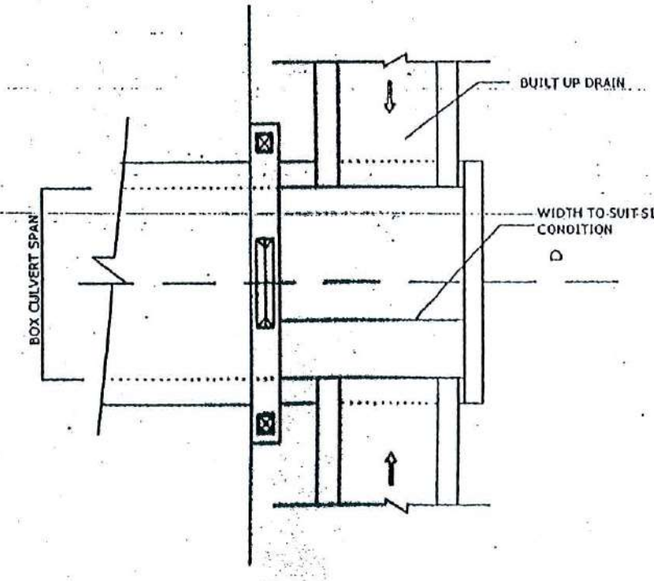



FOR TYPE -2



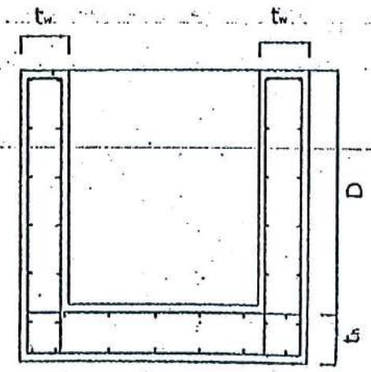

PLAN

TYPE 1- PIPE CULVERT




PLAN

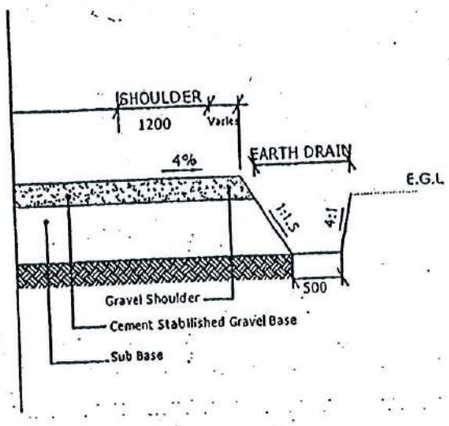
TYPE 2- **BOX CULVERT**



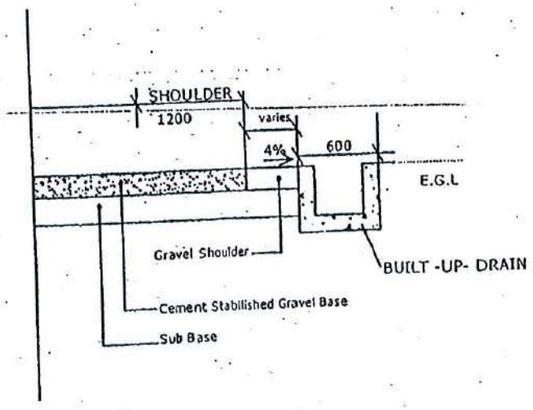

FOR TYPE -1

TYPICAL R/F ARRANGMENT
FOR CULVERT INLETS

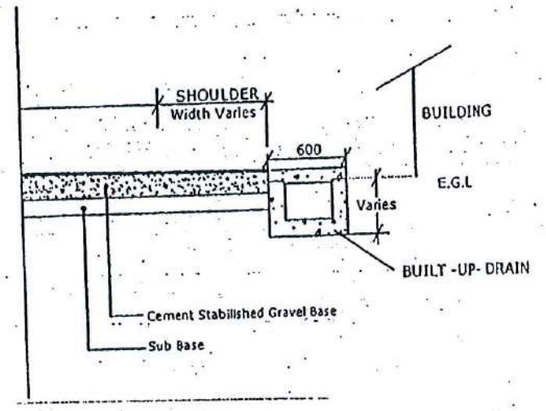
| | | | |
|---|---|---|---|
| **PRIORITY ROADS PROJECT - 3 (PHASE -1)** | **TYPICAL CULVERT INLET CONNECTING BUILT UP DRAINS** | 06 DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA<br>MINISTRY OF HIGHWAYS, PORTS & SHIPPING | ROAD DEVELOPMENT AUTHORITY<br>BATTARAMULLA. |
| | | DATE - NOVEMBER 2013 | DRG No. PRP3/SD/05 |




**EARTHDRAIN**

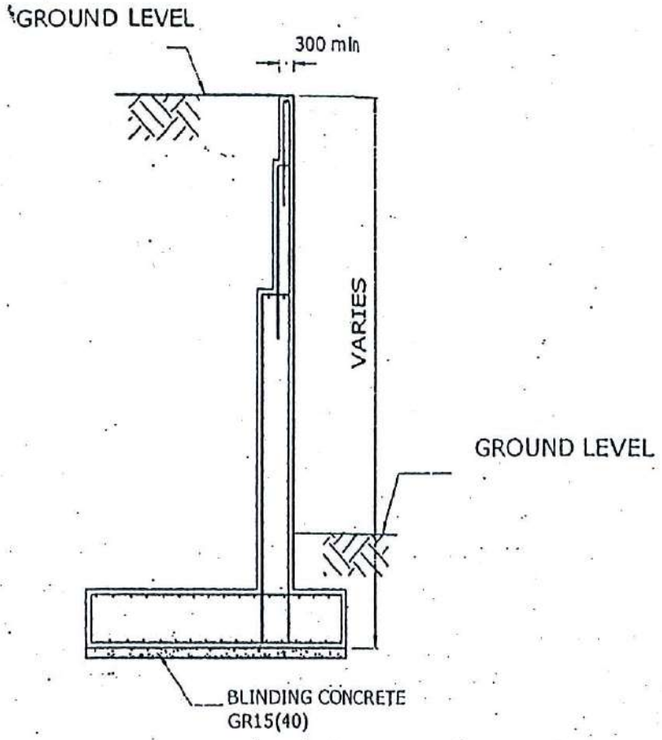



**BUILT UP DRAIN**

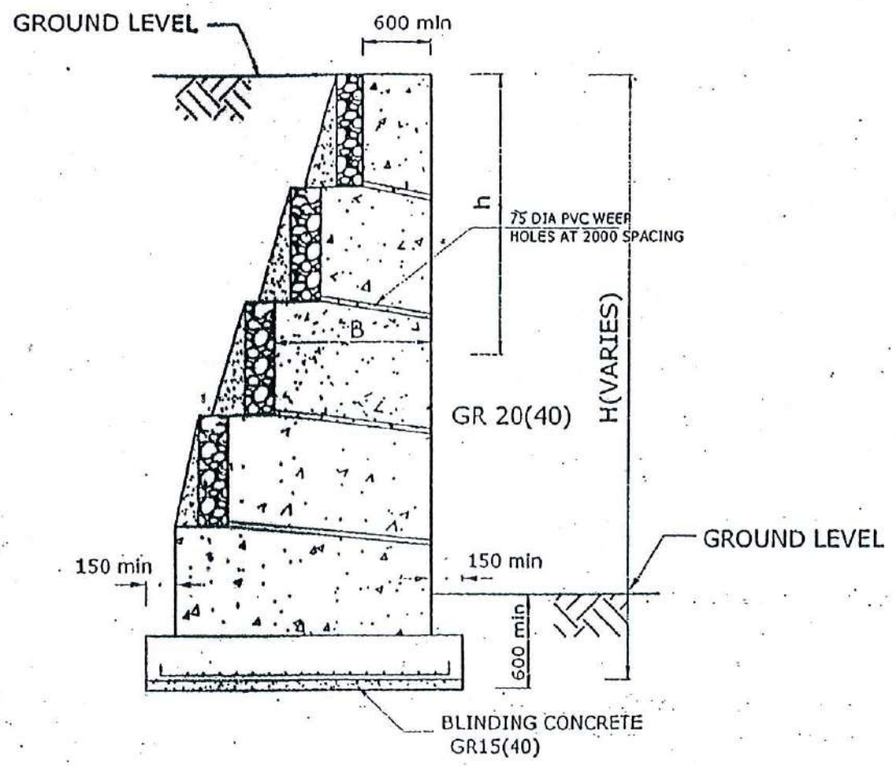



**BUILT UP DRAIN WITH COVER**

| | | | |
|---|---|---|---|
| **PRIORITY ROADS PROJECT - 3 (PHASE -1)** | **TYPICAL SIDE DRAINS** | DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA<br>07 MINISTRY OF HIGHWAYS, PORTS & SHIPPING | ROAD DEVELOPMENT AUTHORITY<br>BATTARAMULLA.<br>DATE - NOVEMBER 2013 \| DRG.No.- PRP3/SD/08 |



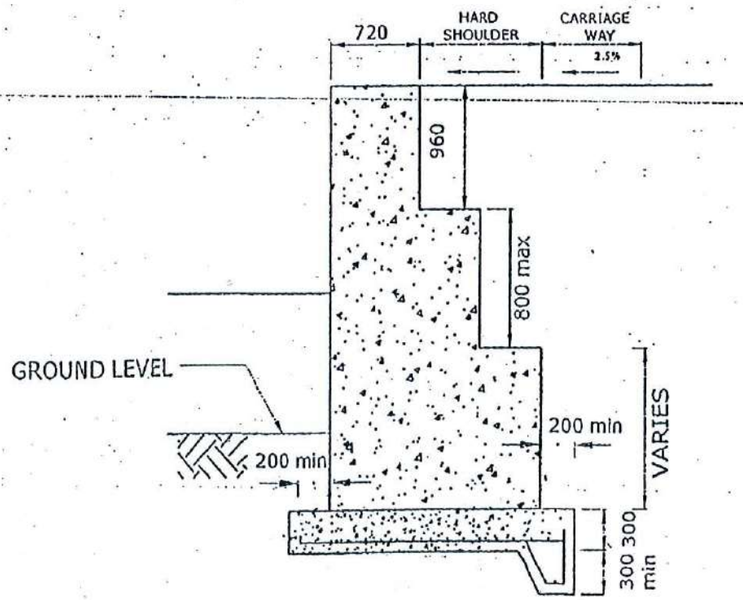

TYPICAL R/F RETAINING WALL



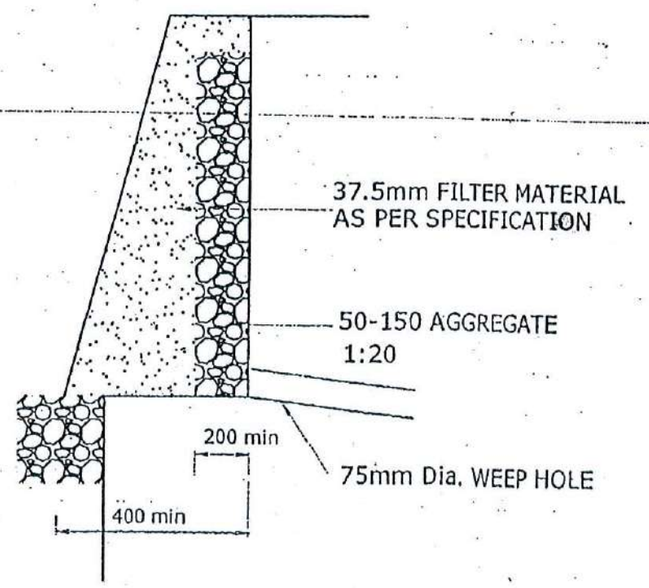

TYPICAL GRAVITY RETAINING WALL - TYPE 1

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 WALE TYPE -2 SHALL USE FOR WIDENING OF CAUSEWAYS, A CROSSING LAGOONS OR SEA.

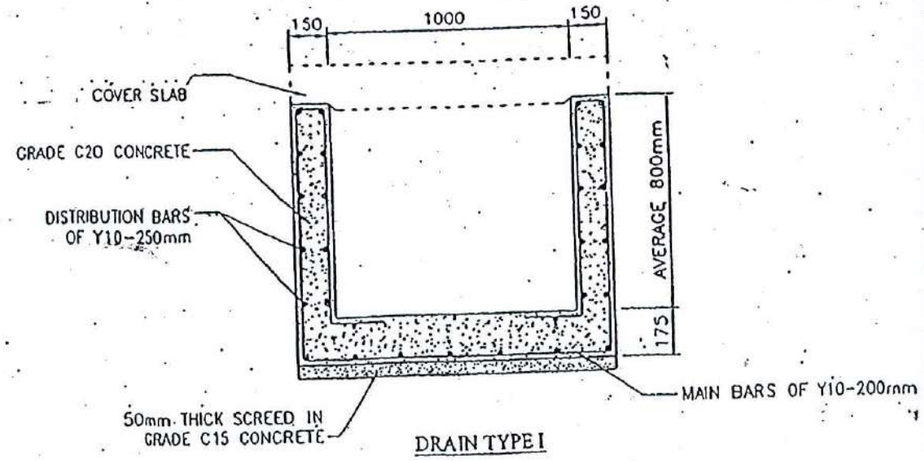



GRAVITY RETAINING WALL - TYPE 2

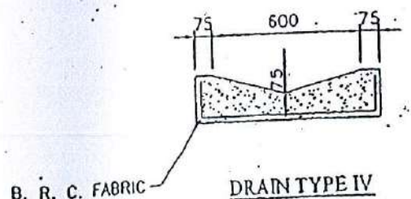



TYPICAL FILTER

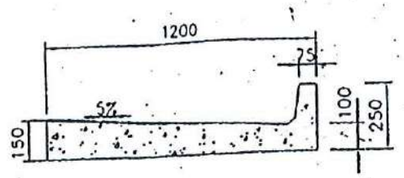
| | | | |
|---|---|---|---|
| **PRIORITY ROADS PROJECT - 3 (PHASE -1)** | **TYPICAL SECTIONS FOR RETAINING WALL** | DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA<br>08 MINISTRY OF HIGHWAYS, PORTS & SHIPPING | ROAD DEVELOPMENT AUTHORITY BATTARAMULLA.<br>DATE - NOVEMBER 2013 \| DRG.No.- PRP3/SD/07 |



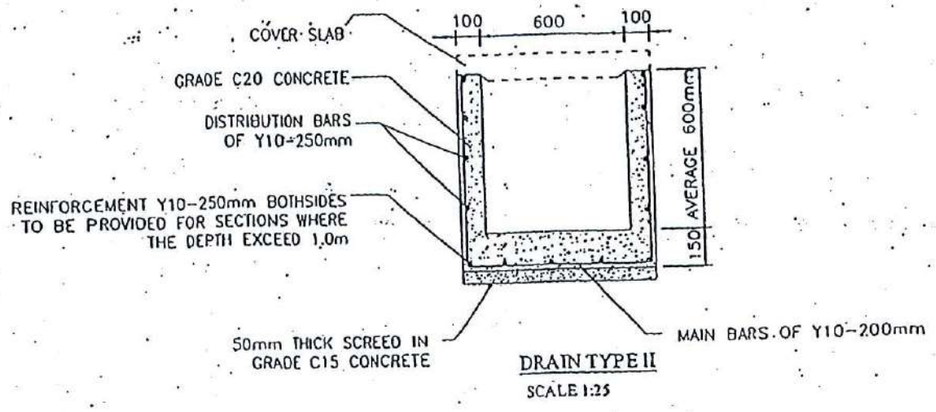

DRAIN TYPE I
SCALE 1:25



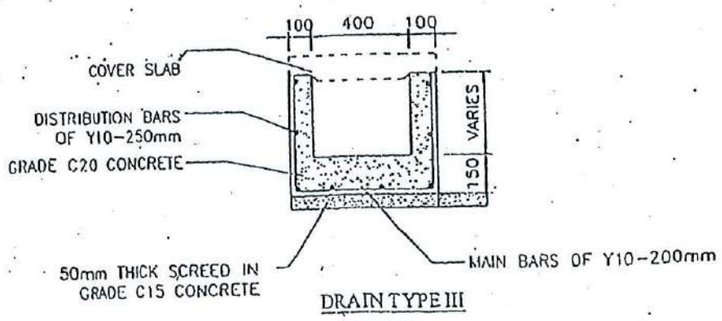

DRAIN TYPE IV
SCALE 1:25



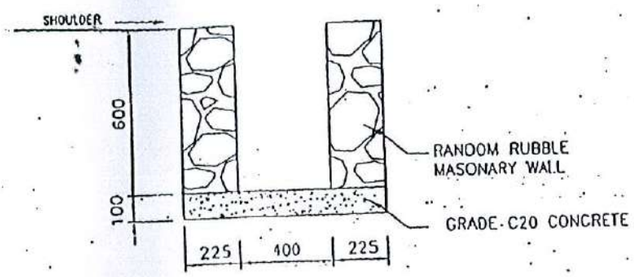

DRAIN TYPE V
SCALE 1:25



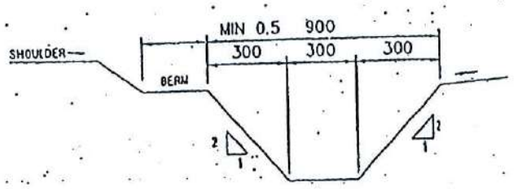

DRAIN TYPE II
SCALE 1:25



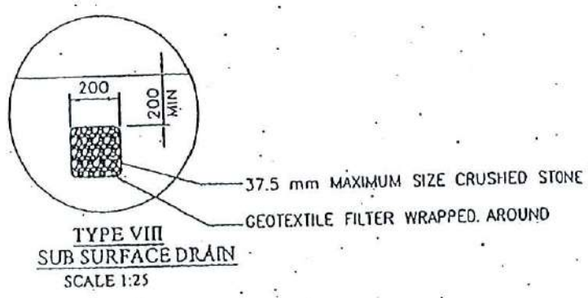

DRAIN TYPE III
SCALE 1:25




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 SECTION IS 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)**

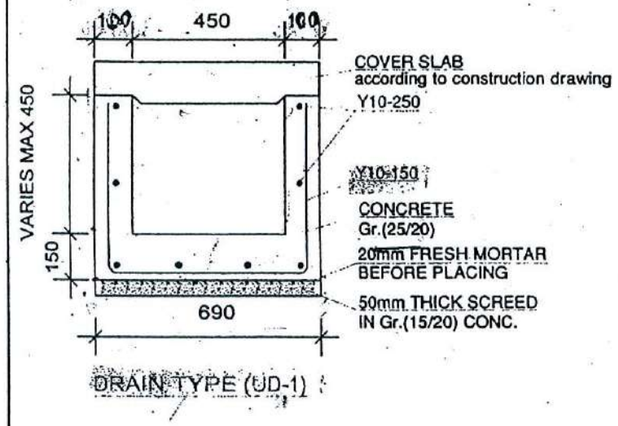
**SMALL DRAINAGE STRUCTURES DRAIN SECTIONS**

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

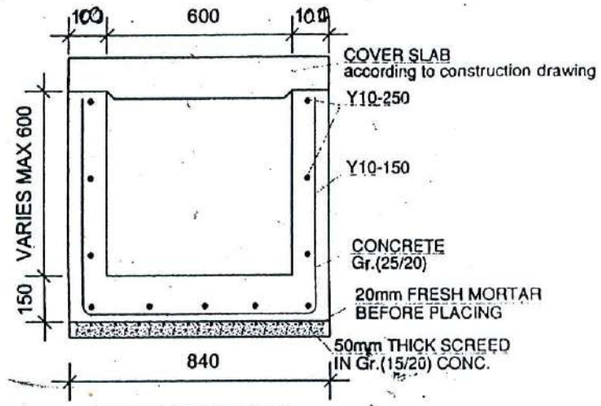
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA

DATE - NOVEMBER 2013

DRG.No.- PRP3/SD/08




DRAIN TYPE (UD-1)

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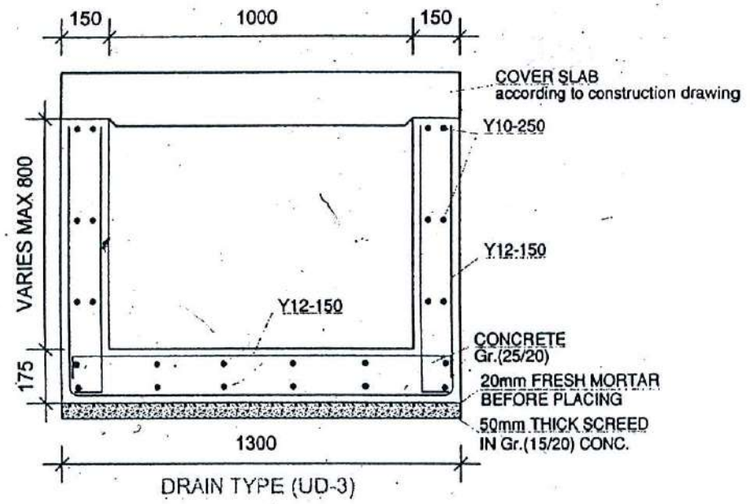
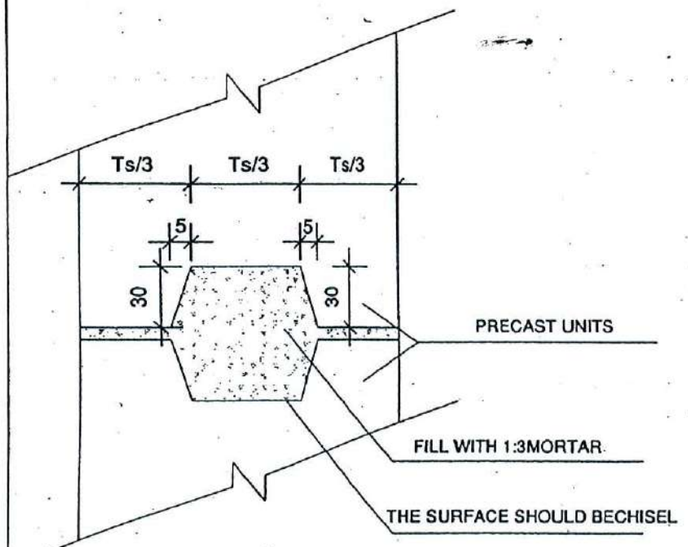
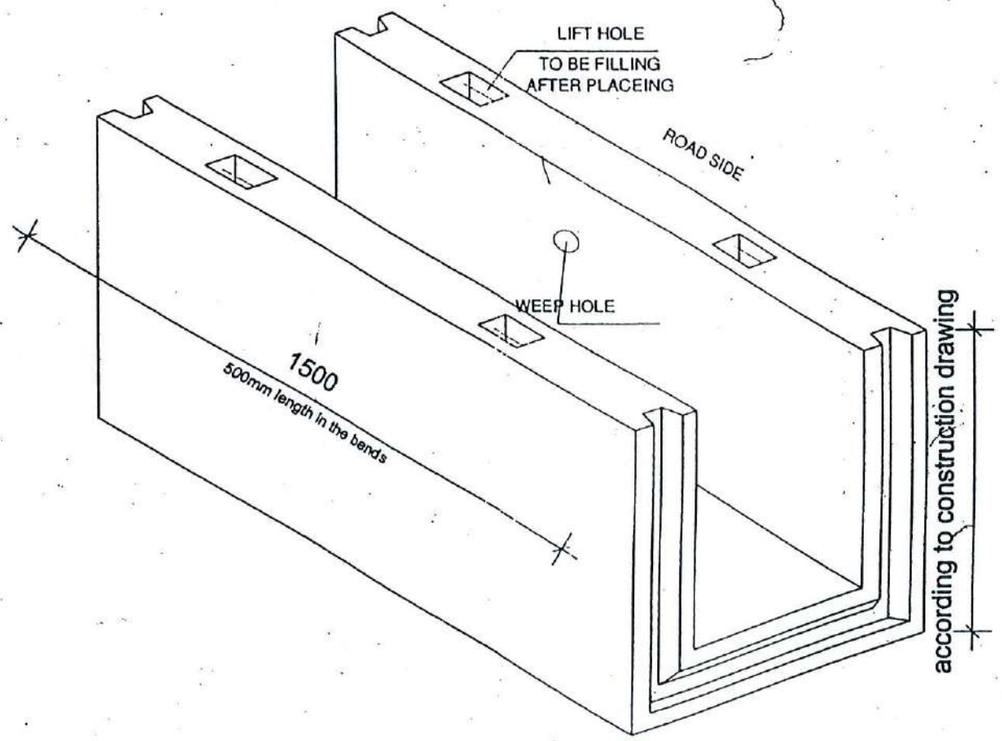



DRAIN TYPE (UD-3)




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 65mm DIA PVC PIPES
2. WEEP HOLES SHALL BE PLACE 45 DEGREES HORIZONTAL ANGLE TO MATCH WATER FLOW DIRECTION OF CONCRETE "U" DRAIN.

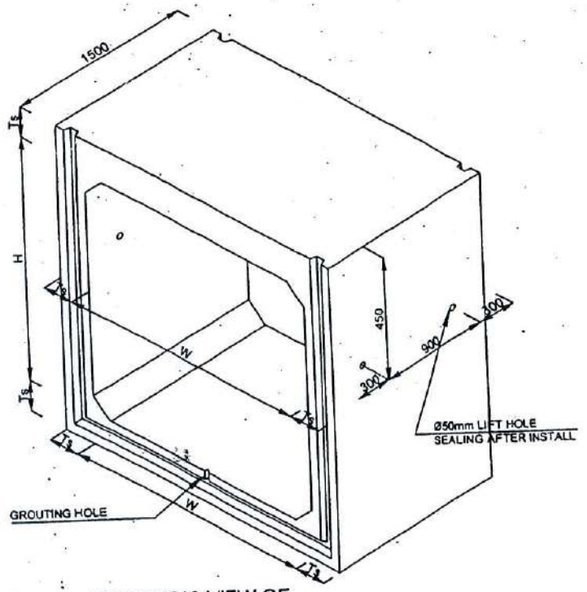
**PRIORITY ROADS PROJECT - 3 (PHASE -1)**

**PRECAST LINE DRAINS**

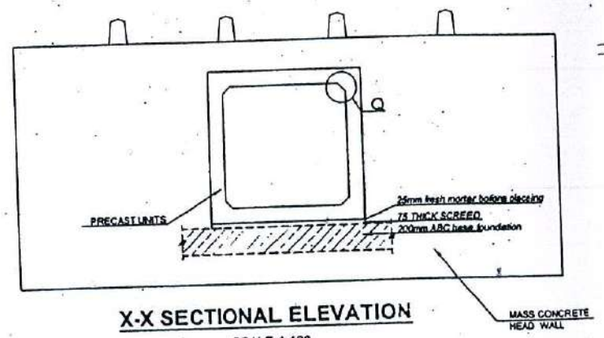
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF HIGHWAYS, PORTS & SHIPPING

ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

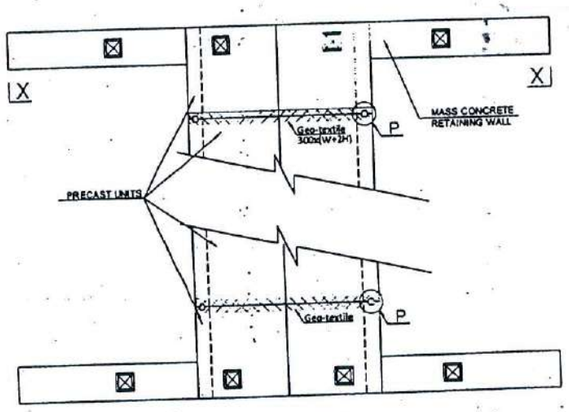
1.0



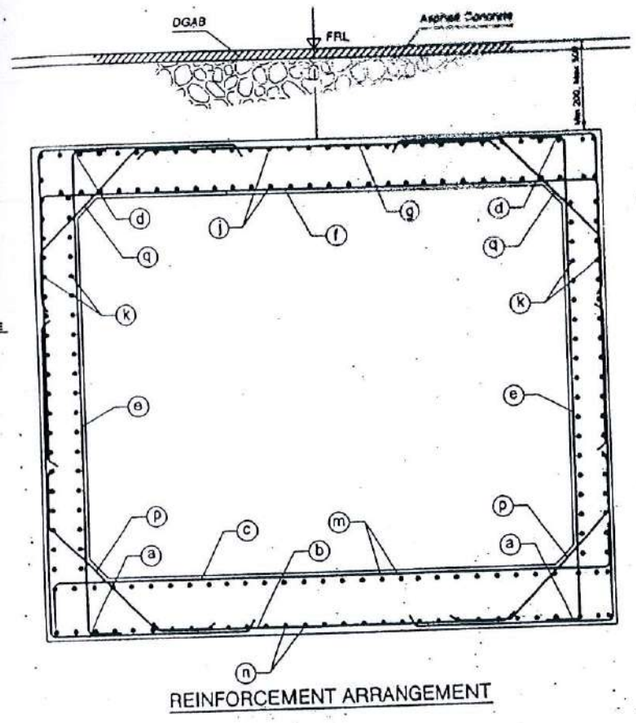

ISOMETRIC VIEW OF
1500 LONG PRECAST UNITS



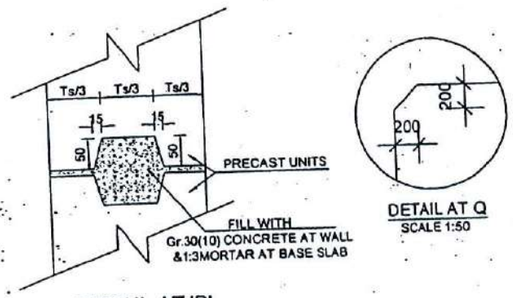

X-X SECTIONAL ELEVATION
SCALE 1:100




PLAN VIEW
SCALE 1:100




REINFORCEMENT ARRANGEMENT




DETAIL AT 'P'
1:10




DETAIL AT Q
SCALE 1:50

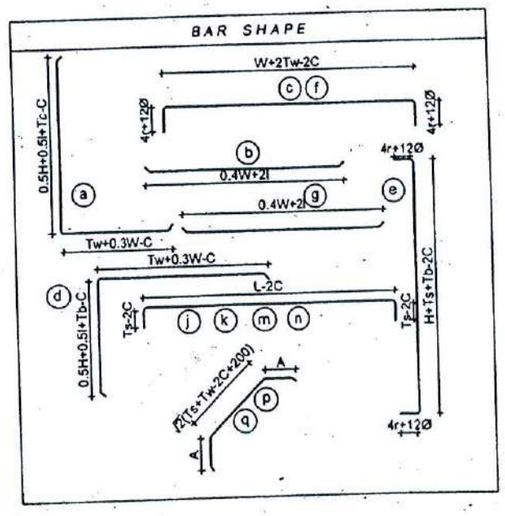
## GENERAL NOTES

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 | j-n | 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 - 6 | 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 | T20-150 | 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 CULVETS | DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA<br>MINISTRY OF HIGHWAYS, PORTS & SHIPPING |
| | | ROAD DEVELOPMENT AUTHORITY<br>BATTARAMULLA. |
| | | DATE - NOVEMBER 2013 |
| | | DRG.No.- PRP3/SD/10 C-1 |

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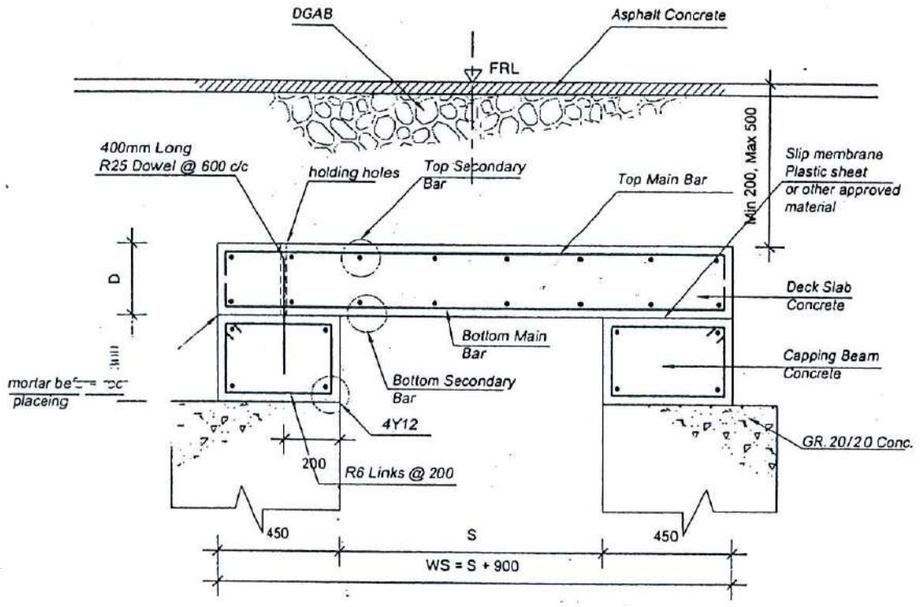
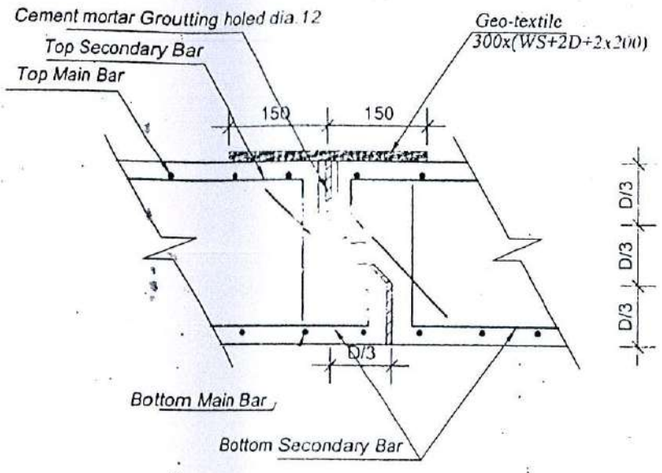


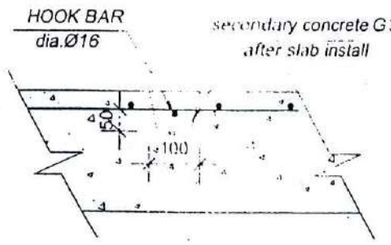

CULVERT ROOF SLAB REINFORCEMENT DETAILS

SCALE 1:20



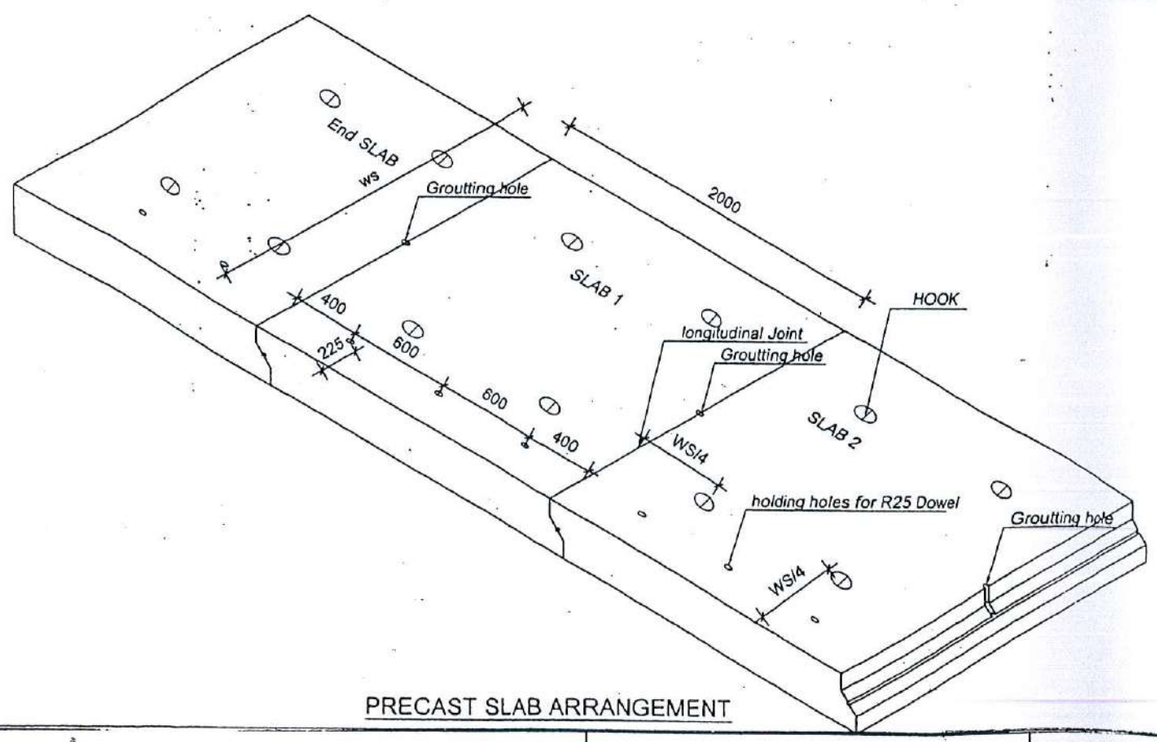

LONGITUDINAL JOINT DETAILS

SCALE 1:10




HOOK DETAILS

SCALE 1:10




PRECAST SLAB ARRANGEMENT

**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.

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 |

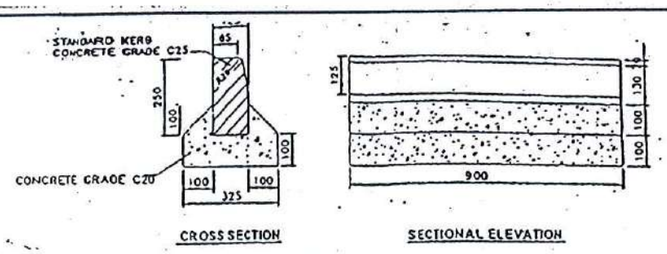
REINFORCEMENT SCHEDULE

**PRIORITY ROADS PROJECT - 3 (PHASE -1)**

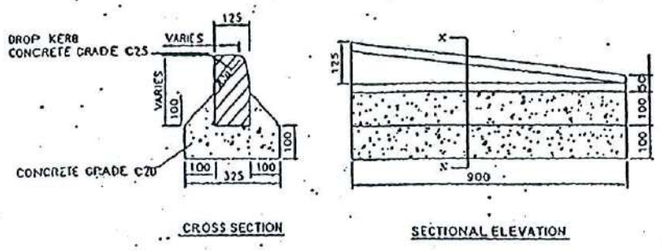
DETAILS OF PRECAST BOX CULVETS

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

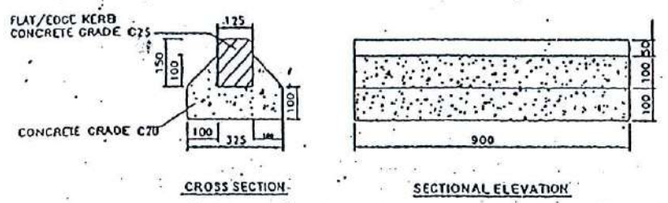
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.




STANDARD KERB



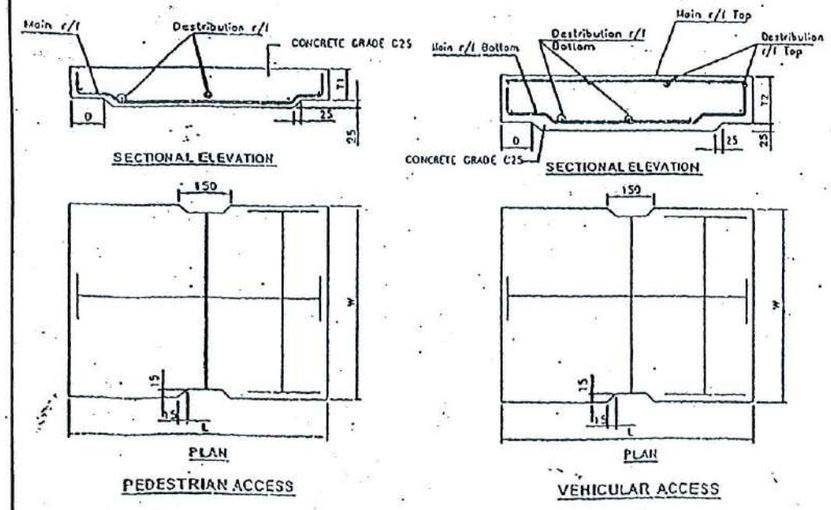

DROP KERB




FLAT/EDGE KERB

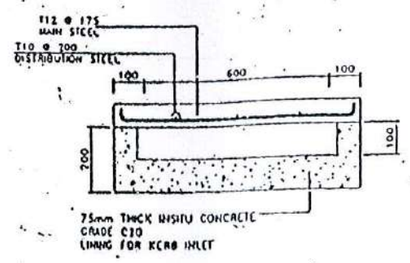
DETAILS OF 0.9m LONG PRE CAST CONCRETE KERB SECTIONS

SCALE 1:20



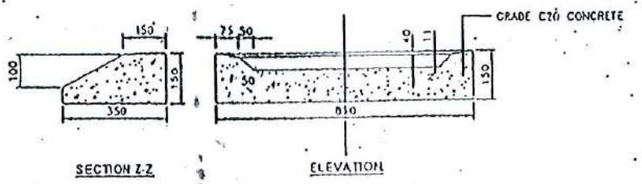

DETAILS OF COVER SLABS (SEE TABLE 2)

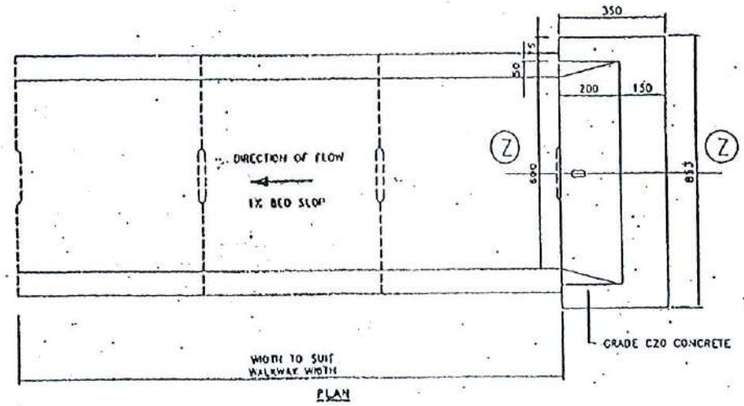
SCALE 1:10




SECTIONAL ELEVATION OF KERB INLET

SCALE 1:10



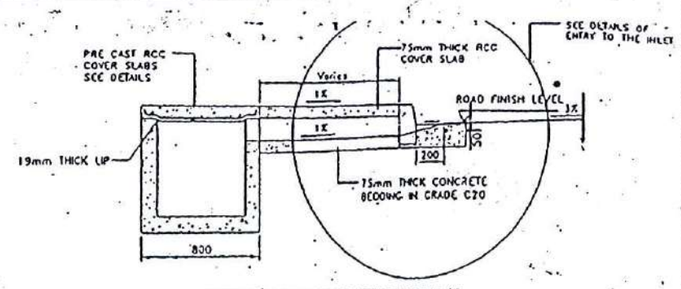

DETAILS OF KERB INLET

SCALE 1:20

| DRAIN TYPE | Slab | | Pedestrian Access | | | | Vehicular Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | T1 | D | R/F (T10) | | T2 | D | R/F Bottom(T12) | | R/F Top(T10) | |
| | Length L | Width W | | | Main | Distribution | | | 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. |

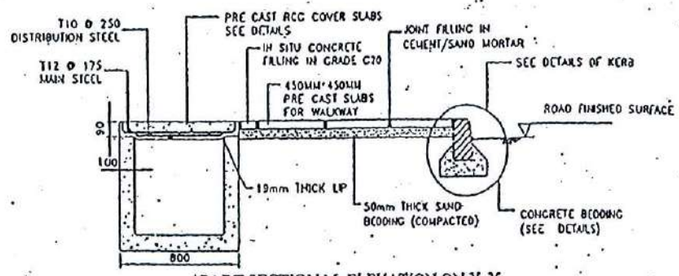
* R/F= Reinforcement

TABLE 2:DETAILS OF COVER SLABS



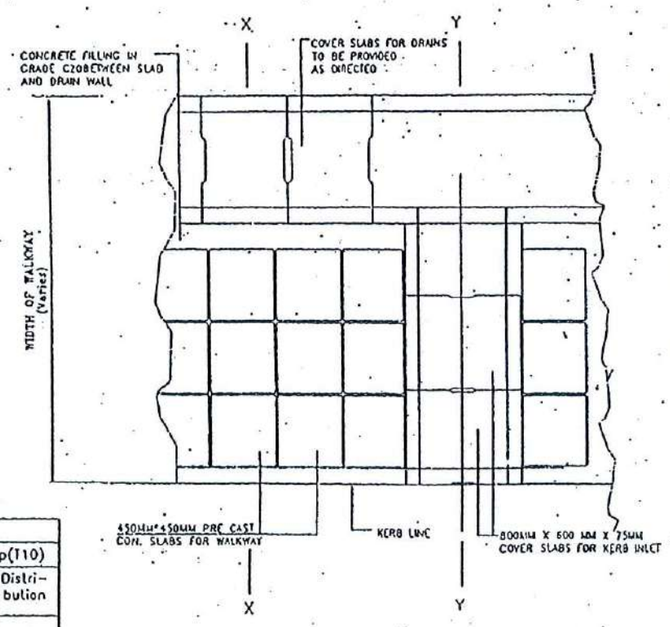

SECTIONAL ELEVATION ON Y-Y

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 - 3 (PHASE -1)**

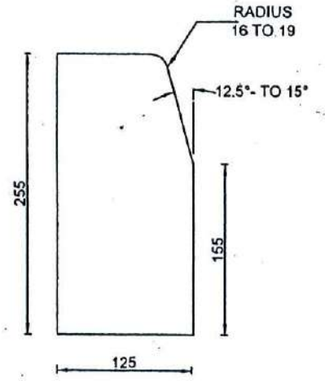
DETAILS OF KERBS AND WALKWAYS

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

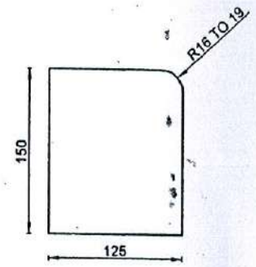
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

DATE - NOVEMBER 2013

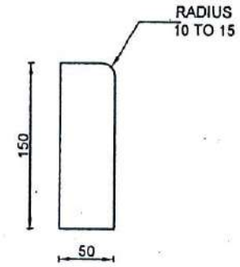
DRG.No.- PRP3/SD/11



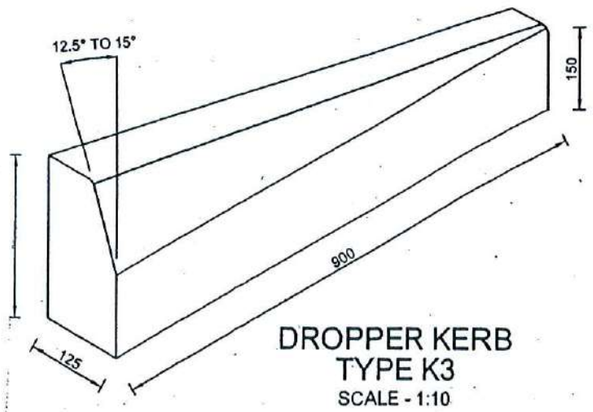

BARRIER KERB
TYPE K1
SCALE - 1:5



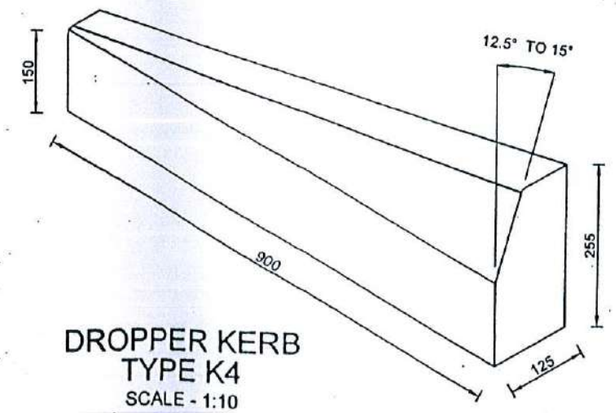

DROPPED KERB
TYPE K2
SCALE - 1:5




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 - 3 (PHASE -1)**

**TYPICAL SECTIONS OF KERBS**

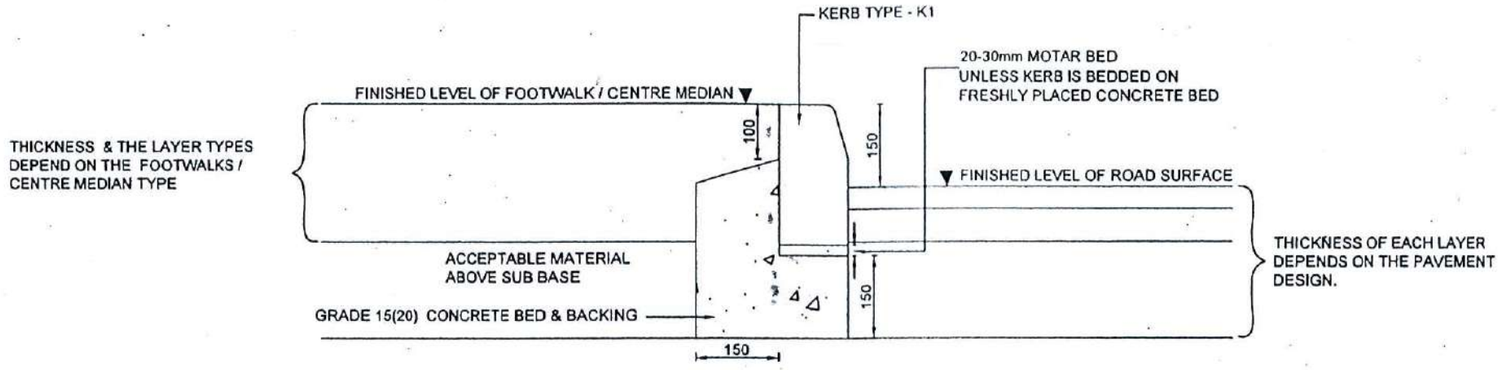
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF HIGHWAYS, PORTS & SHIPPING

14

ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

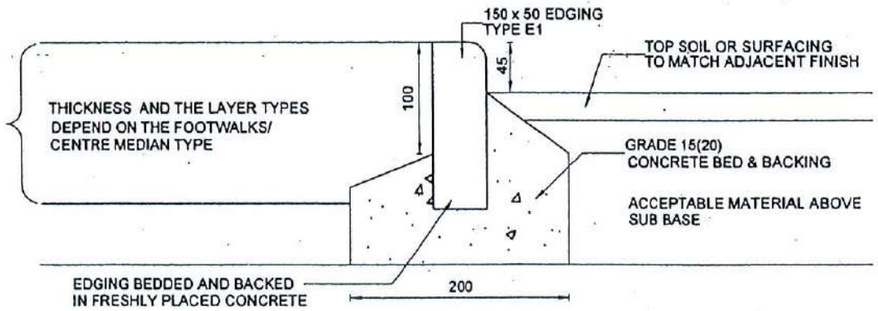
DATE - NOVEMBER 2013

DRG.No.- PRP3/SD/12



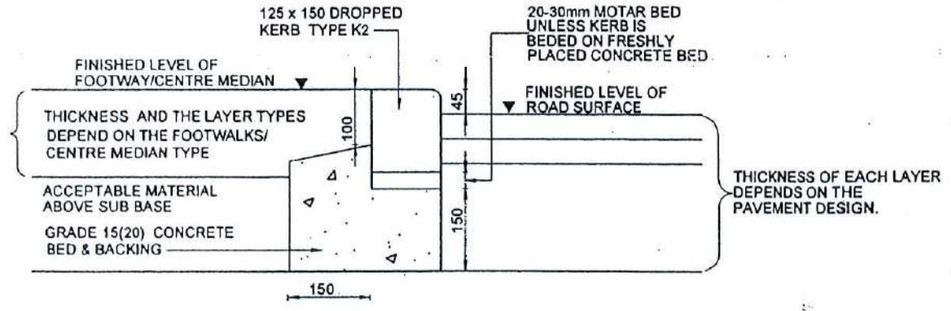

## STANDARD FOOTWALK / MEDIAN EDGE USING KERB TYPE K1

SCALE - 1:10




## STANDARD PRECAST EDGE USING KERB TYPE E1

SCALE - 1:5



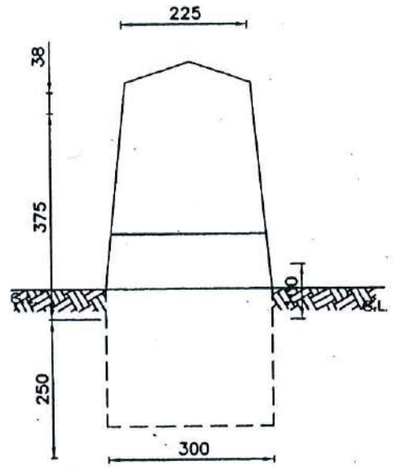

## STANDARD FOOTWALK/MEDIAN EDGE USING KERB TYPE K2

SCALE - 1:10

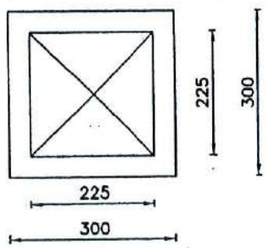
NOTE -

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

| | | | |
|---|---|---|---|
| **PRIORITY ROADS PROJECT - 3 (PHASE -1)** | **FOOT WALK EDGE AND MEDIAN EDGE TREATMENT** | DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA<br>MINISTRY OF HIGHWAYS, PORTS & SHIPPING | ROAD DEVELOPMENT AUTHORITY<br>BATTARAMULLA. |
| | | | DATE - NOVEMBER 2013 |
| | | | DRG.No.- PRP3/SD/13 |




ELEVATION



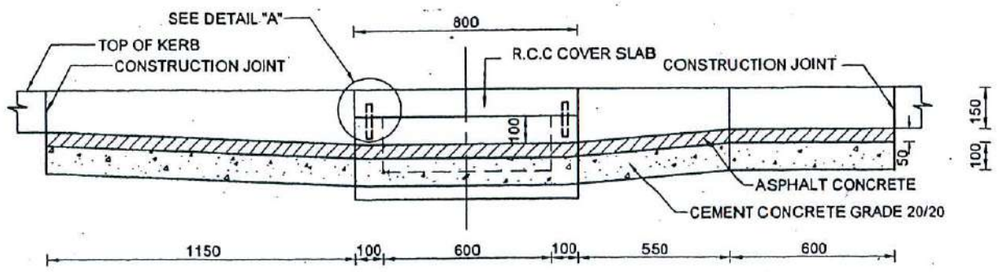

PLAN

SCALE - 1:10

NOTE

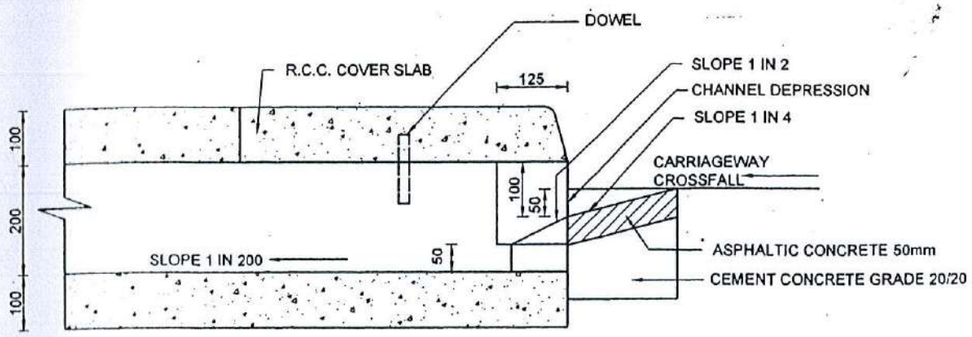
1. GRADE 15 (20) CONCRETE TO BE USED IN CASTING THE GUARD STONE .
2. GUARD STONE TO BE PLANTED ON FIRM GROUND AS DIRECTED BY THE ENGINEER.
3. BOTTOM 100mm OF THE GUARD STONE TO BE PAINTED IN BLACK AND REMAINING TOP SECTION IN WHITE.
4. ALL DIMENSIONS ARE IN MILLIMETRES.

| | | | |
|---|---|---|---|
| **PRIORITY ROADS PROJECT - 3 (PHASE -1)** | **TYPICAL SECTION OF GUARD STONE** | DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA<br>MINISTRY OF HIGHWAYS, PORTS & SHIPPING | ROAD DEVELOPMENT AUTHORITY<br>BATTARAMULLA. |
| | | | DATE - NOVEMBER 2013 / DRG.No.- PRP3/SD/14 |



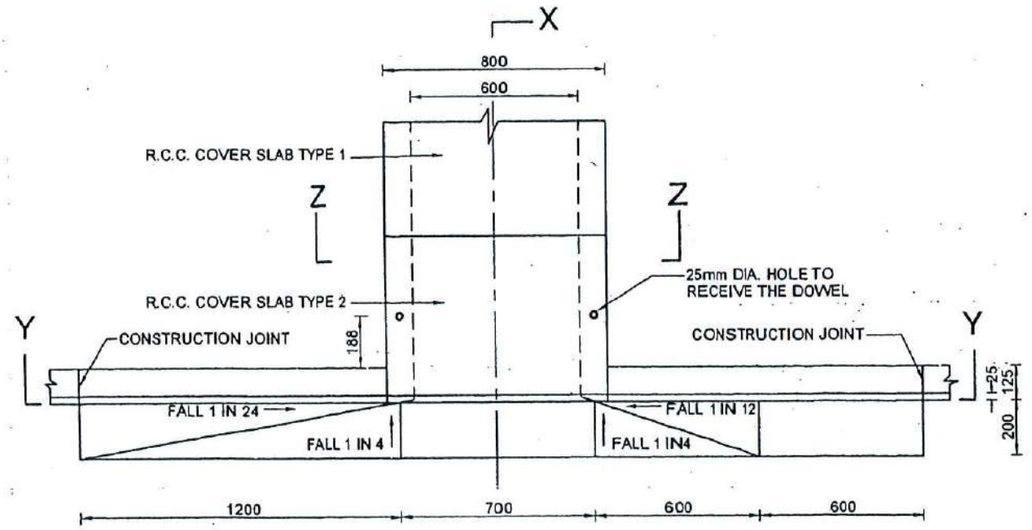

## SECTION Y-Y

SCALE-1:20



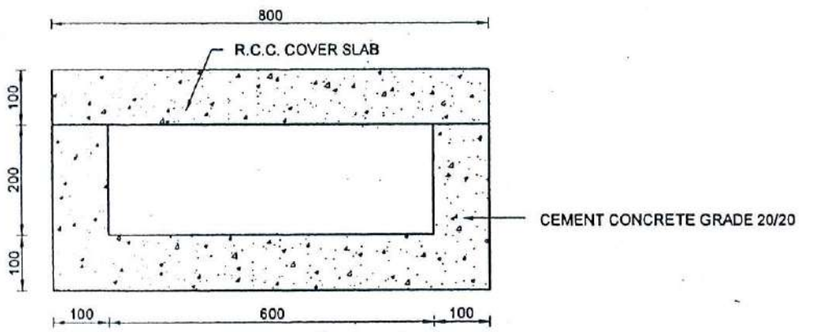

## SECTION X-X

SCALE-1:10



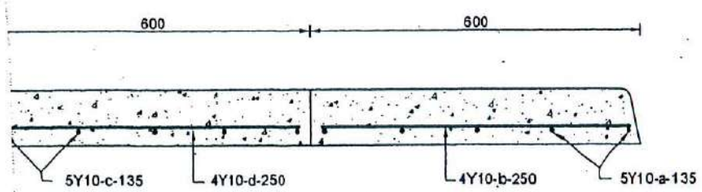

## PLAN

SCALE 1:20



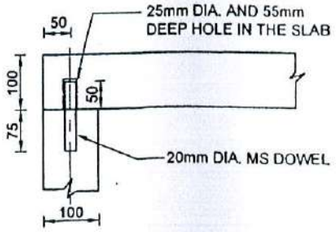

## SECTION Z-Z

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.

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**PRIORITY ROADS PROJECT - 3 (PHASE -1)**

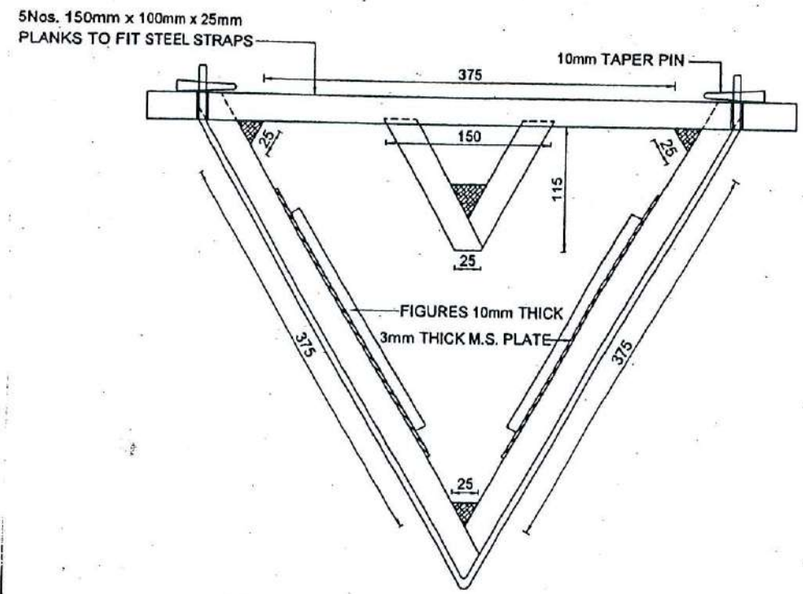
**TYPICAL SECTION OF KERB INLET TYPE K1/T1**

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

ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

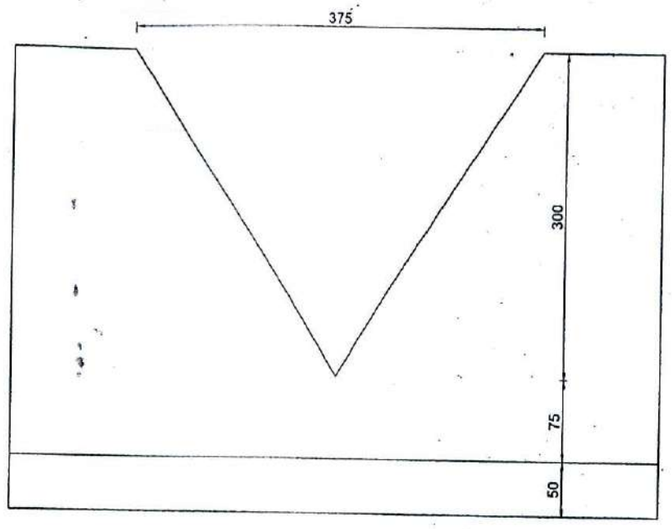
DATE - NOVEMBER 2013

DRG.No.- PRP3/SD/15



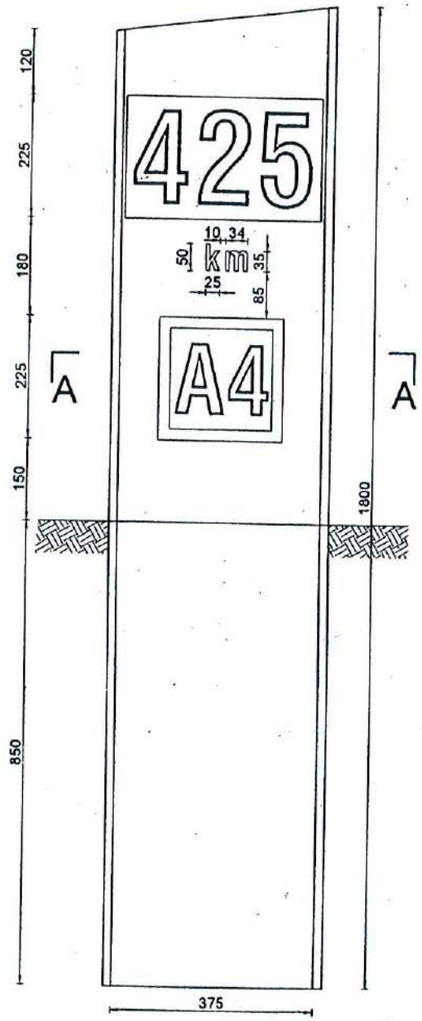

## SECTION THROUGH MOULD

SCALE - 1:5



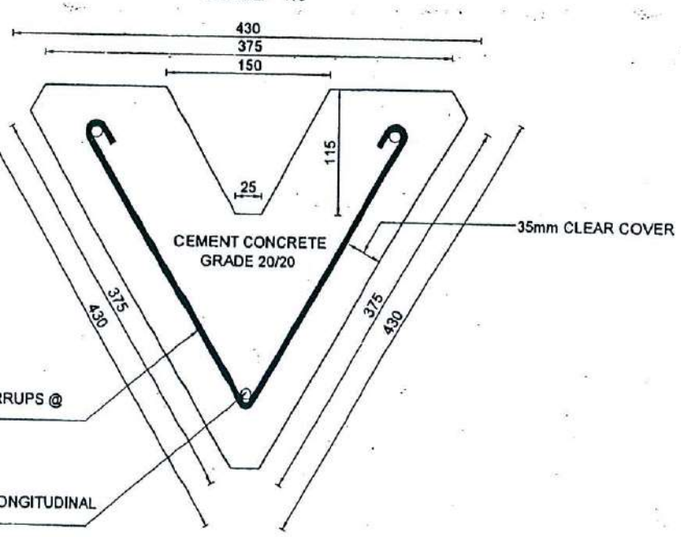

## ELEVATION

SCALE - 1:5



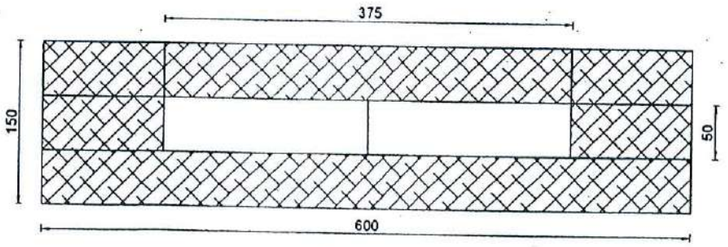

## FRONT ELEVATION

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 & SHIPPING

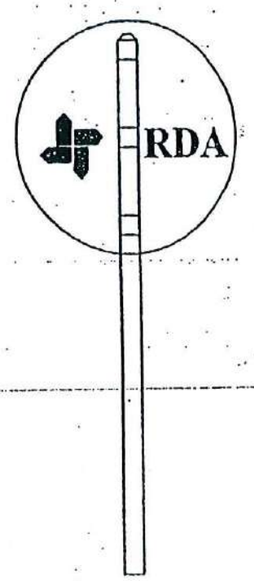
ROAD DEVELOPMENT AUTHORITY
BATTARAMULLA.

DATE - NOVEMBER 2013

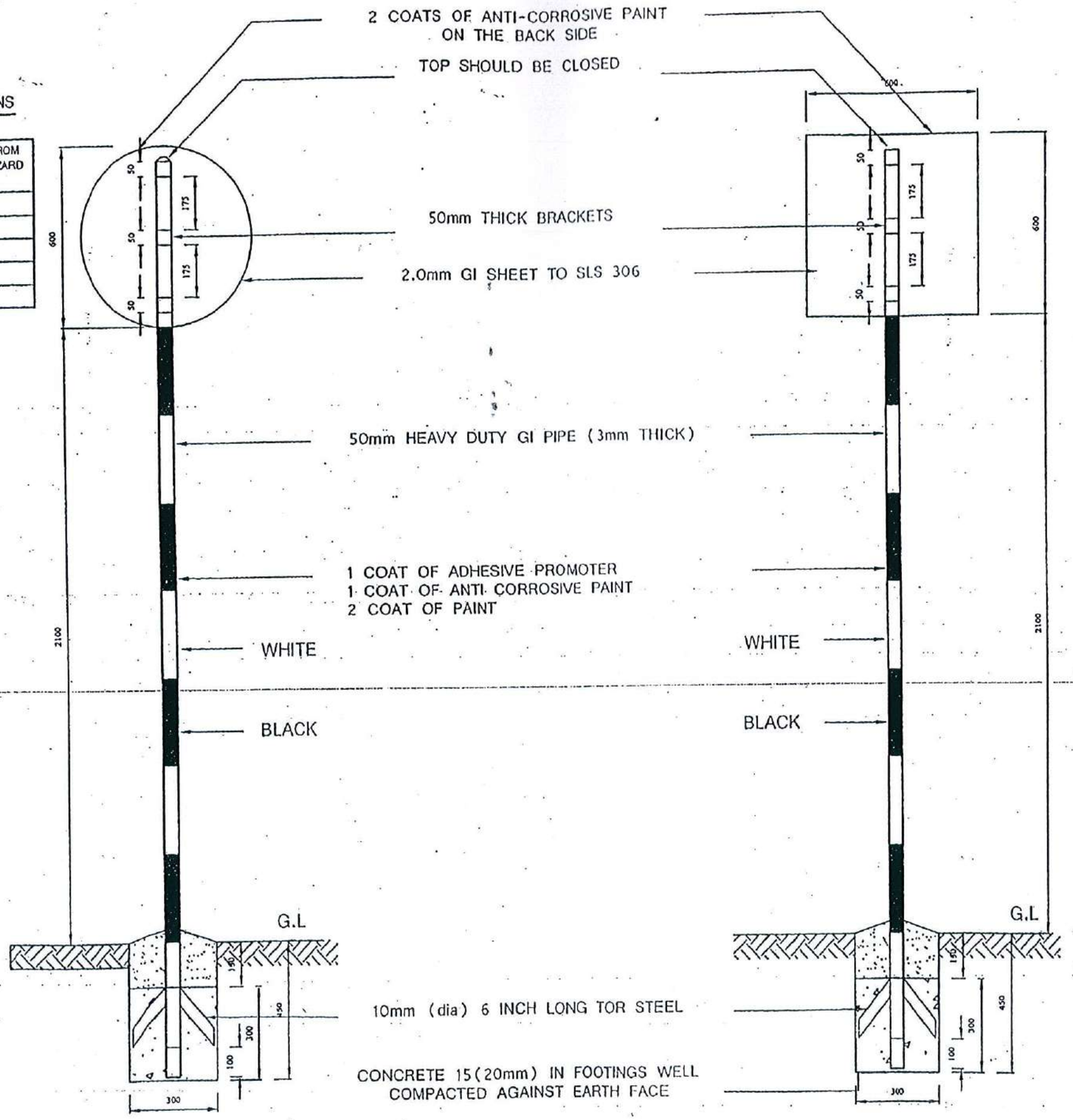
DRG.No.- PRP3/SD/16

## 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 |

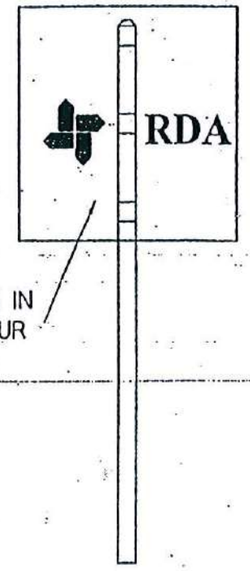



REAR SIDE



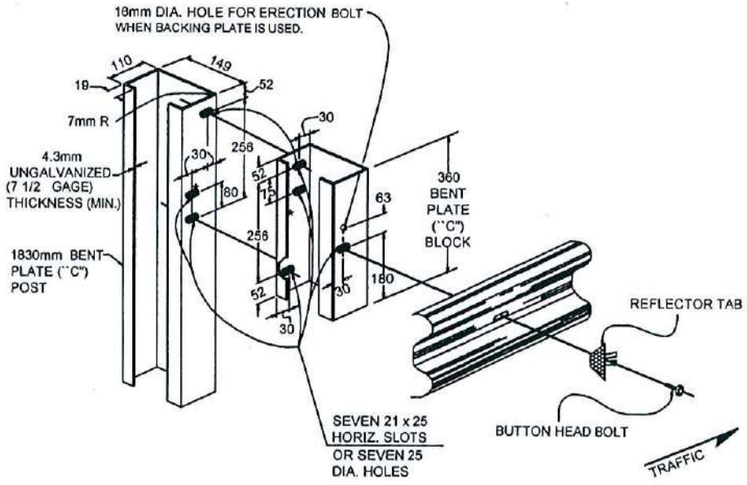

NOTES:-

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<br>MINISTRY OF HIGHWAYS, PORTS & SHIPPING | ROAD DEVELOPMENT AUTHORITY BATTARAMULLA.<br>DATE - NOVEMBER 2013 \| DRG.No.- PRP3/SD/17 |

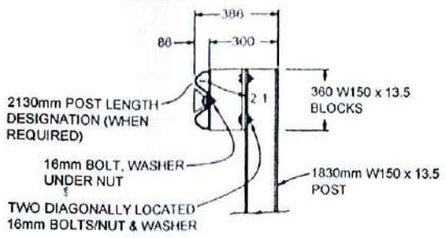



P-52-76

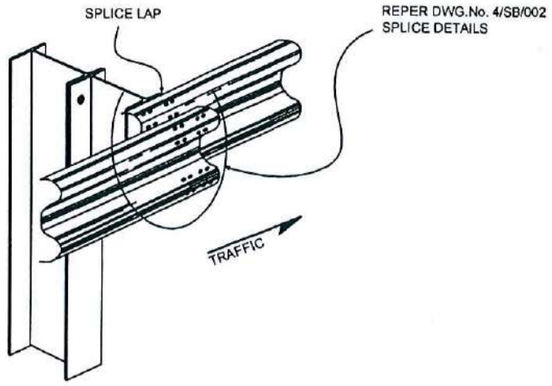
ALTERNATIVE STEEL ``C'' POST & BLOCK

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

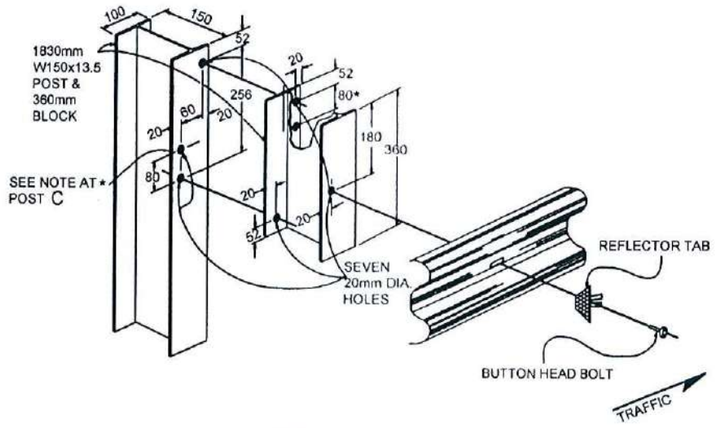
STANDARD SPACING - 1.83m C-C
A POST SHALL BE AT EACH
BEAM JOINT AND MID-SPAN




TYPICAL GUARDRAIL ASSEMBLY




W-BEAM SPLICE




(PWE01 & PWB01)
P-10-79

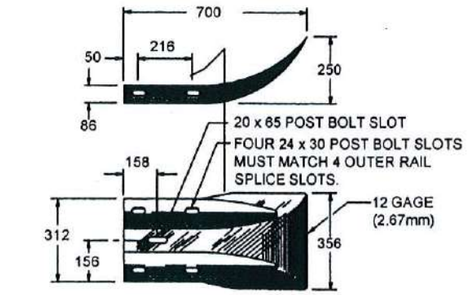
STEEL POST & BLOCK

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

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 (RWM8a ) SPECIFY HARDWARE DETAILS FROM A DRAFT VERSION OF THE UPDATED GUIDE, WHICH GIVES DIMENSIONS IN SI (METRIC) UNITS. THESE REFERENCES ARE SHOWN IN PARENTHESES.

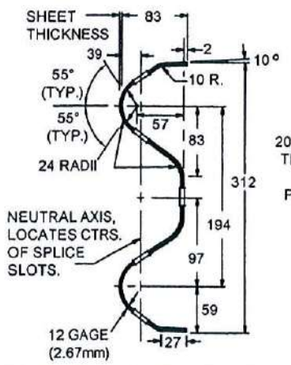
NOT TO SCALE

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



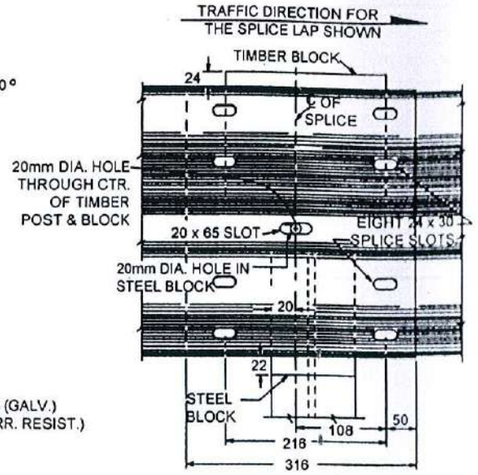

(RWE01a) RE-5 (CLASS A, TYPE 1 OR 2) -76 (GALV.)
(RWE01a) RE-5 (CLASS A, TYPE 4) -76 (CORR. RESIST.)

TERMINAL SECTION (FLARED)

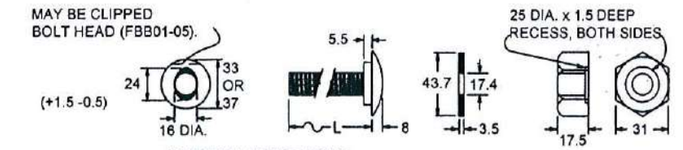



(RWM-2a) RE-3 (CLASS A, TYPE 1 OR 2)-73 (GALV.)
(RWM-2a) RE-3 (CLASS A, TYPE 4)-73 (CORR. RESIST.)

W-BEAM RAIL SECTION

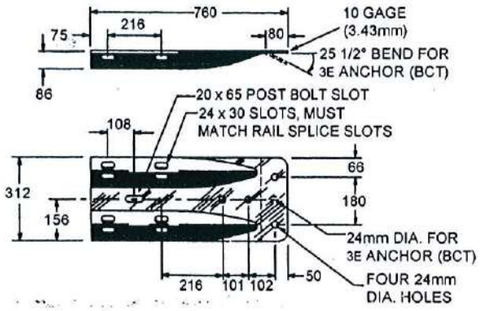



RAIL SPLICE



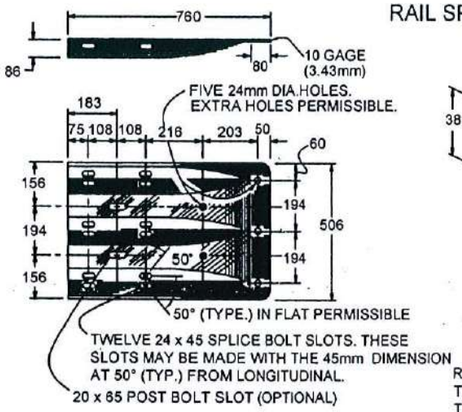

BUTTON HEAD BOLT WITH OVAL SHOULDER — WASHER — HEX NUT

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



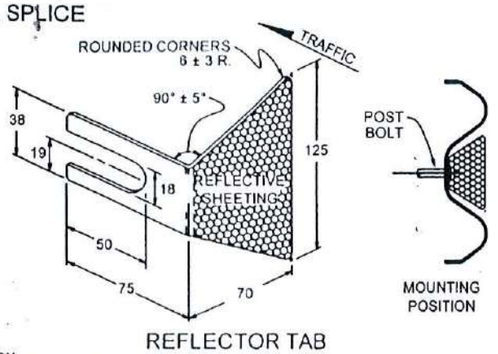

(RWE02b) RE-8 (CLASS B, TYPE 1 OR 2) - 79 (GALV.)
(RWE02b) RE-8 (CLASS B, TYPE 4) - 79 (CORR. RESIST.)

TERMINAL SECTION (CONNECTOR)




(RTE01b) RE-63 (CLASS B, TYPE 1 OR 2) - 76 (GALV.)
(RTE01b) RE-63 (CLASS B, TYPE 4) - 76 (CORR. RESIST.)

THREE BEAM TERMINAL SECTION (CONNECTOR)



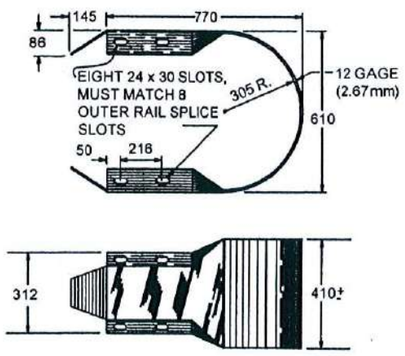

REFLECTOR TAB

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 | |
| HIGH STRENGTH BOLTS & NUTS | ASTM A 325 | OR | |
| HIGH STRENGTH STUDS & NUTS | ASTM A 449 | ASTM B 695 CLASS 50 | |
| ROUND STEEL WASHERS | ASTM F 436M | | |
| RECTANGULAR WASHERS | AASHTO M 180 | | |
| OTHER FITTINGS | ASTM A 36M | AASHTO M 111M | |

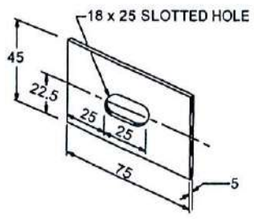
THE TABULATION OF GUARD RAIL WILL SPECIFY THE TYPE OF CORROSION PROTECTION: GALVANISED OR CORROSION-RESISTANT STEEL.

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.



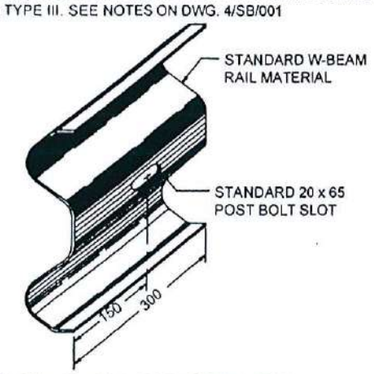

(RWE06a) RE-7 (CLASS A, TYPE 1 OR 2) - 79 (GALV.)
(RWE06a) RE-7 (CLASS A, TYPE 4) - 79 (CORR. RESIST.)

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

21

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