No. RW/NH-24036/27/2010-PPP
Government of India
Ministry of Road Transport & Highways
(EAP) Zone
Transport Bhawan, 1, Parliament Street, New Delhi-110001

Dated: 25.04.2018

To

1. The Chairman, National Highways Authority of India (NHAI), G-5&6, Sector-10, Dwarka, New Delhi-110 075.
2. The Managing Director, National Highway Infrastructure Development Corporation Ltd., 3rd floor, PTI Building, Parliament Street, New Delhi-110 001
3. The Principal Secretaries/Secretaries of all States/UTs Public Works Department dealing with National Highways, other Centrally Sponsored Schemes & State Schemes.
4. Director General (Border Roads), Seema Sadak Bhawan, Ring Road, New Delhi-110010
5. The Engineers-in-Chief and Chief Engineers of all States/UTs Public Works Department dealing with National Highways, other Centrally Sponsored Schemes & State Schemes.

Subject: Revision of Normative Cost Norms for the National Highways - Reg.
Reference: (i) Circular No. RW/NH-24036/27/2010-PPP dated 10.08.2016.

Sir,

The issue of cost-estimates of National Highways has been coming up at various fora. Historically, a reference is made is made to the costing norms as considered by the B.K. Chaturvedi Committee in the then Planning Commission. It has been observed that the said costing norms, as adopted by the BKC Committee, were actually based on the data provided by the NHAI at that time. The same have been updated by Ministry of Road Transport & Highways from time to time.

2. The existing Normative Costs are for three categories of roads i.e. (a) 2-lane with paved shoulders, (b) 4-lane, and (c) 6-lane irrespective of the terrain i.e. plain terrain/ hilly terrain where the project road is to be developed/ constructed. The concerned project executing agencies have been presenting their proposals with justifications of road components like number of structures, additional earthwork/ cutting in hilly terrain, stabilisation of slopes, prevailing schedule of rates etc. However, the existing norms do not cover the entire gamut of activities. As a result, there is no proper format to justify the project costs.

3. Keeping in view the above factors and the need to bring some uniformity for the entire country for justification of project costs, this Ministry constituted a Committee

comprising of all stakeholders viz. NHAI, NHIDCL and the concerned project zones of the Ministry dealing with the construction of National Highways projects to prepare the Normative Cost Norms for various road components. Based on the Committee's report and various representations during discussions in the Senior Officer's Meeting chaired by Secretary (RT&H), the Normative Cost Norms have been reviewed and revised. Accordingly, the cost norms have been finalised as contained in this circular in supersession to **Circular No. RW/NH-24036/27/2010-PPP dated 10.08.2016 through which the cost norms were updated up to the Financial Year 2016-17.**

4. Assumptions:

Various assumptions have been taken in order to calculate the Normative costs for the road projects which are as follows:

4.1	**Road Portions:** The road works have been classified into 16 categories as detailed in Table-1 of this circular.	
(i)	Average Embankment height (excl. pavement crust)	1.0 m.
(a)	Designed Traffic for 2 lane with paved shoulders	40 MSA
(b)	Designed Traffic for 4 lane	80 MSA
(c)	Designed Traffic for 6 lane	100 MSA
(d)	Designed Traffic for 8 lane	100 MSA
(ii)	CBR	8%
(iii)	**Crust Composition with Flexible Pavement**	
A.	***Bituminous Concrete:***	
(a)	Up to 2-lane +Paved shoulder	40 mm
(b)	4- lane/ 6-lane/ 8-Lane	50 mm
B.	***Dense Bituminous Concrete (DBM)***	
(a)	Up to 2-lane +Paved shoulder	90 mm
(b)	4- lane/ 6-lane/ 8-Lane	115 mm
C.	*Wet Mix Macadam*	250 mm
D.	*Granular Sub-base*	200 mm
E.	*Sub-grade*	500 mm
(iv)	**Crust Composition with Rigid Pavement**	
(a)	Pavement Quality Concrete (PQC)	300 mm
(b)	Dry Lean Concrete (DLC)	150 mm
(c)	Granular Sub-Base	150 mm
(d)	Sub-grade	500 mm
4.2	**Bridge Portions**	
(i)	Type of Foundation	Pile Foundation with Steel Liner (Depth-15 m.)
(ii)	Super Structure	Pre- Stressed Girder type
(iii)	Width of carriageway	As per relevant IRC Manual
4.3	**Pipe Culverts**	
(i)	Minimum Earth cushion	600 mm
(ii)	No. of Rows	One row
(iii)	Internal Diameter of Pipe	1200 mm
(iv)	Type of Hume Pipe	NP 4
(v)	Width of carriageway	As per relevant IRC Manual
4.4	**Box Culverts**	

(i)	Earth Cushion	300 mm
(ii)	Size of Box	One Cell of 2.0 m x 2.0 m
(iii)	Width of carriageway	As per relevant IRC Manual
4.5	**Elevated Structures like Flyovers/ VUPs/ PUPs**	
4.5.1	***Flyover/ VUP (Standard)***	
(i)	Type of Foundation	Pile Foundation with Steel Liner (Depth-15 m.)
(ii)	Type of Abutment/Pier	Circular (Single Pier Type)
(iii)	Vertical Clearance	5.50 m
(iv)	Span Arrangement	10m + 20 m+10 m (40 m.)
(v)	Super Structure	Pre- Stressed Girder type
(vi)	Width of carriageway	As per relevant IRC Manual
4.5.2	**VUP (Low Height) known as VUP-L**	
(i)	Type of Foundation	Pile Foundation with Steel Liner (Depth-15 m.)
(ii)	Type of Abutment/ Pier	Circular (Single Pier Type)
(iii)	Vertical Clearance	4.00 m
(iv)	Span Arrangement (with 2.5 m wide raised Pedestrian path on one side with partition railing and 0.5 mt protection on the other side)	12 m
(v)	Super Structure	Pre- Stressed Girder type
(vi)	Width of carriageway	As per relevant IRC Manual
4.5.3	**Pedestrian Underpass**	
(i)	Type of Foundation	Open Foundation (Box type)
(ii)	Box Size	6 x 2.5 mtrs.
(iii)	Vertical Clearance (Note: It has to be ensured that the finished floor level of the PUP is 6" above the adjoining ground level)	2.5 m
(iv)	Span Arrangement	6.0 m
(v)	Width of carriageway	As per relevant IRC Manual
4.5.4	**Slope Protection Works**	
(i)	***For Plain Terrain***	
(ii)	Type of Slope Protection (retaining wall)	With PCC: M-15
(iii)	Height	3.0 mtr.
(iv)	***For Hilly Terrain***	
(v)	Type of Slope Protection (retaining and/ or breast wall)	With PCC: M-15
(vi)	Height	3.0 mtr.
4.5.5	**Service/ Slip Road**	
A.	***With Flexible Pavement***	
(i)	Width of carriageway	5.5 m/ 7.5m./ 10 m.
(ii)	Designed Traffic	40 MSA
(iii)	Embankment height	1.0 m.
(iv)	CBR of soil	8%
(v)	Crust Composition	
(vi)	Bituminous Concrete	40 mm
(vii)	Dense Bituminous Macadam	90 mm
(viii)	Wet Mix Macadam	250 mm
(ix)	Granular sub-base	200 mm
(x)	Sub-grade	500 mm
B.	***With Rigid Pavement***	

(i)	Width of carriageway	5.5 m/ 7.5m./ 10 m.
(ii)	Embankment height	1.0 m.
(iii)	CBR of soil	8%
(iv)	**Crust Composition**	
(v)	PQC	300 mm
(vi)	DLC	150 mm
(vii)	Granular Sub-base	150 mm
(viii)	Sub-grade	500 mm
4.5.6	**Hill Cutting**	
(i)	15 m height of 200 m for 2 lane and full length for new construction/ 4 lane alignment	
4.5.7	**Boundary Wall**	
(i)	Boundary wall along the ROW, except at ingress and egress points, shall be constructed as per enclosed Typical cross section	

5. The proposed Normative Cost Norms are excluding the provisions of various miscellaneous items such as Toll Plaza, Road and Traffic signage, Wayside amenities, ambulance, crane and other project facilities. Cost of these items may be worked out as per site requirements in each case or lump-sum provision @ 5% of Total Project Cost (excluding the cost of these items and Land Acquisition) may be added to arrive at the normative costs.

Table- 1

Normative Cost Norms

(Amount – Rs. in Crore)

Sr. No.	Description of Works	Unit	For Embankment in Plain Terrain			For Embankment in Hilly Terrian		
			1 m.	1.50 m	2.0 m	1 m.	1.50 m	2.0 m
A.	**Flexible Pavements**							
1.	Widening to 2 Lane + Paved Shoulder	km	3.19	3.38	3.59	6.29	6.5	6.73
2.	Widening the Existing 2 Lane to 4 Lane	km	5.58	6.92	7.29	14.42	14.72	15.04
3.	Widening the Existing 4 Lane to 6 Lane	km	4.89	5.08	5.28	N.A.	N.A.	N.A.
4.	Widening the existing 4 lane to 8 lane	km.	6.59	6.84	7.11	N.A.	N.A.	N.A.
5.	Widening the existing 6 lane to 8 lane	km.	5.7	5.88	6.08	N.A.	N.A.	N.A.
6.	Greenfield Alignment -2 Lane	km	3.24	3.46	3.71	9.6	9.84	10.11
7.	Greenfield Alignment-4 Lane	km	5.84	6.18	6.55	19	20	20
8.	Greenfield Alignment- 6 Lane	km	7.75	8.17	8.61	N.A.	N.A.	N.A.
9.	Greenfield Alignment- 8 lane	km.	9.2	9.67	10.17	N.A.	N.A.	N.A.
B.	**Rigid Pavements**							
1.	Widening the Existing 4 Lane to 6 Lane	km	3.52	3.76	4.03	N.A.	N.A.	N.A.
2.	Widening the existing 4 lane to 8 lane	km.	5.29	5.6	5.92	N.A.	N.A.	N.A.

Table- 1								
Normative Cost Norms								
								Amount – Rs. in Crore)
Sr. No.	Description of Works	Unit	For Embankment in Plain Terrain			For Embankment in Hilly Terrian		
			1 m.	1.50 m	2.0 m	1 m.	1.50 m	2.0 m
3.	Widening the existing 6 lane to 8 lane	km.	3.13	3.37	3.62	N.A.	N.A.	N.A.
4.	Greenfield Alignment- 2 Lane + Paved Shoulder	km	4.03	4.26	4.5	N.A.	N.A.	N.A.
5.	Greenfield Alignment- 4 Lane	km	6.58	6.92	7.29	N.A.	N.A.	N.A.
6.	Greenfield Alignment- 6 Lane	km	8.87	9.26	9.65	N.A.	N.A.	N.A.
7.	Greenfield Alignment-8 Lane	km.	10.48	10.87	11.26	N.A.	N.A.	N.A.

Table: 2		
Normative cost norms per running km for Roads for Hilly terrain (Rs. in Cr.)		
A	With Flexible pavement	
1	Widening to 2 Lane + Paved Shoulder (Flexible Pavement)	6.29
2	Widening the Existing 2 Lane to 4 Lane (Flexible Pavement)	14.42
3	Greenfield Alignment 2 Lane + Paved Shoulder (Flexible Pavement)	9.60
4	Greenfield Alignment 4 Lane (Flexible Pavement)	18.93

Table: 3		
A.	Normative cost norms per running km for Service Roads for Plain terrain (Rs. in Cr.)	
1	With flexible pavement (5.50 mtrs carriageway)	Rs. 1.80 cr
2	With flexible pavement (7.00 mtrs carriageway)	Rs. 2.26 cr
3	With flexible pavement (10.00 mtrs carriageway)	Rs. 2.96 cr
4	With rigid pavement (5.50 mtrs carriageway)	Rs. 2.51 cr
5	With rigid pavement (7.00 mtrs carriageway)	Rs. 3.17 cr
6	With rigid pavement (10 mtrs carriageway)	Rs. 4.03 cr
B.	Normative cost norms per running km for Service Roads for Hilly terrain (Rs. in Cr.)	
1.	With flexible pavement (5.50 mtrs carriageway)	Rs. 2.49 cr
2.	With rigid pavement (5.50 mtrs carriageway)	Rs. 6.08 cr

Table: 4									
Normative Costs for Structures (Flyovers/ VUPs/ PUPs)									(Rs. in Cr.)
Sr. No.	Description of Work	Plain Terrain				Hilly Terrain			
		Bridge Proper Cost (per sqm.)	Bridge proper Total cost	Approach (in Rs.)	Total cost (Bridge+ Approach)	Bridge Proper Cost (per sqm.)	Bridge proper Total cost	Approach (in Rs.)	Total cost (Bridge+ Approach)
1.	**Flyover/ VUP(S), Span arrangement - 10+20+10 m ; Vertical Approach - 5.50 m**								
1.1	For 2-lane+ Paved shoulders	0.003	1.70	8.48	10.18	0.004	2.37	10.14	12.51
1.2	For 4-lane carriageway	0.003	2.98	12.15	15.13	0.004	4.16	15.53	19.68
1.3	For 6-lane carriageway	0.003	3.59	13.60	17.19	0.004		N.A.	
1.4	For 8-lane carriageway	0.003	4.62	16.06	20.68	0.004		N.A.	
2.	**VUP(L), Span Arrangement – 1x12 m., Vertical Clearance - 4.0 m.**								
2.1	For 2-lane+ Paved shoulders	0.003	0.45	6.22	6.67	0.004	0.61	7.92	8.53
2.2	For 4-lane carriageway	0.003	0.79	8.55	9.33	0.004	1.07	11.41	12.48
2.3	For 6-lane carriageway	0.003	0.95	9.57	10.51	0.004		N.A.	
2.4	For 8-lane carriageway	0.003	1.22	11.30	12.52	0.004		N.A.	
3.	**Pedestrian Underpass (PUP), Span Arrangement - 2.5x6 m.**								
3.1	For 2-lane+ Paved shoulders	0.004	0.31	4.23	4.53	0.004	0.37	5.52	5.89
3.2	For 4-lane carriageway	0.004	0.53	5.72	6.25	0.004	0.65	7.84	8.49
3.3	For 6-lane carriageway	0.004	0.64	6.37	7.02	0.004		N.A.	
3.4	For 8-lane carriageway	0.004	0.83	7.48	8.31	0.004		N.A.	
	(*Costs for VUP/PUP are as per attached drawings)								

Table: 5				
Normative Cost norms for / Bridges/ Protection Works				Amount in Rs. Cr.
Sr. No.	Description of Works	Unit	Average cost for plain terrain	Average cost for hilly terrain
1.	Bridge Proper	Per sq. m.	0.0032	0.0082
2.	Slope Protection works			
	(a) Breast Wall			
	(i) PCC type	Per mtr.	0.0037	0.0037
	(b) Retaining wall			
	(i) PCC type	Per mtr.	0.0024	0.0024
3.	Boundary wall (PCC-1:2:4)*		0.00018	0.00018
	*Typical cross section of Boundary wall is enclosed			

6. The centages involved depending on the mode of execution of the work i.e. EPC, BOT and Hybrid Annuity, are notified by the Ministry of Road Transport & Highways from time to time and the costs of these centages may be added to the normative civil costs to arrive the total project cost based on Normative cost norms.

7. The normative costs derived on the basis of this Circular should only be used for comparison during Appraisal and Approval of the projects and should not be used for preparation of estimates. These Normative Costs shall be applicable from April 01, 2018 and until further updation as deemed necessary.

8. The Finished Road Level (FRL) of the crossing road under the VUP/ PUP/ Flyover shall be atleast 150 mm above the FRL of the slip road/ crossing road.

9. This issues with concurrence of Finance Wing vide their U.O. No. 2344 TF-II dated 03.01.2018 and approval of Minister (RT&H).

10. Contents of this circular may be brought to the notice of all the concerned for immediate compliance.

Yours faithfully,

(Khushal Chand)
Superintending Engineer (EAP)

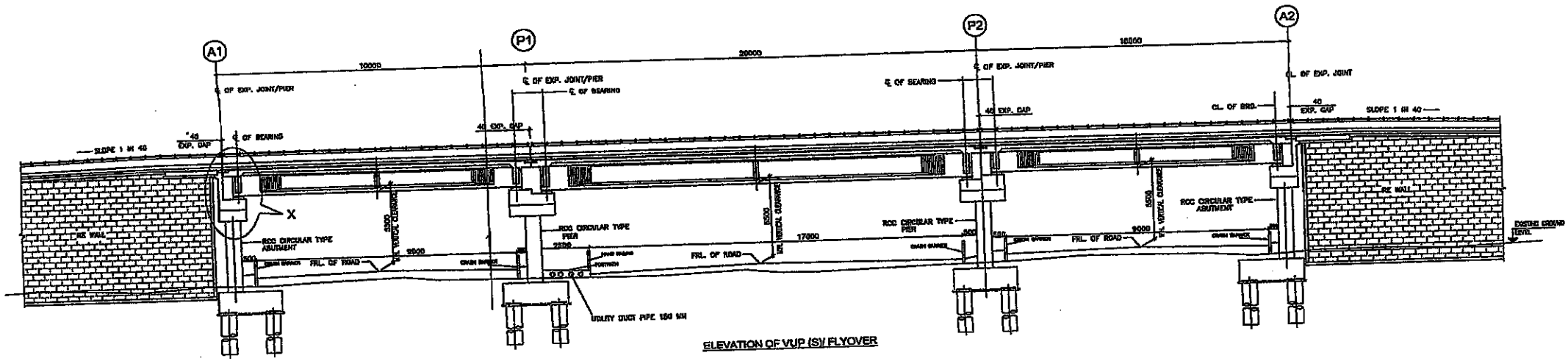
Copy to:

1. All Technical Officers at the Headquarters
2. Secretary General, Indian Roads Congress
3. Director, IAHE, NOIDA
4. All ROs and ELOs of MoRT&H.
5. PPS to Secretary (RT&H), PPS to DG(RD) & SS, PS to AS&FA, PS to ADG –I/ II/ III/ IV/ V.
6. NIC- with the request to upload on the Ministry's portal.

Copy for information to:

1. CEO, NITI Aayog, NITI Bhawan, Sansad Marg, New Delhi.
2. Secretary, Department of Expenditure, Ministry of Finance, North Block, New Delhi.
3. Secretary, Department of Economic Affairs, Ministry of Finance, North Block, New Delhi.
4. Secretary, Ministry of Environment and Forests, Paryavaran Bhawan, New Delhi.
5. Secretary, Ministry of Development of North Eastern Region, Vigyan Bhawan Annexe, Maulana Azad Road, New Delhi.

VUP(S) / Flyover



ELEVATION OF VUP (S)/ FLYOVER

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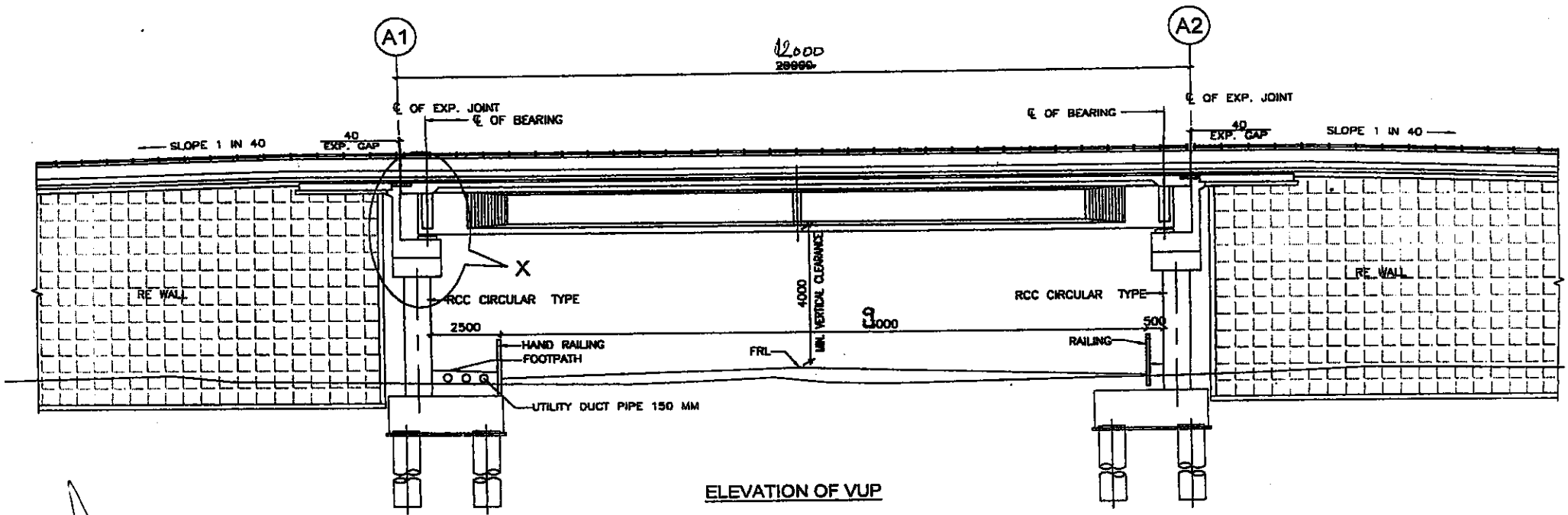
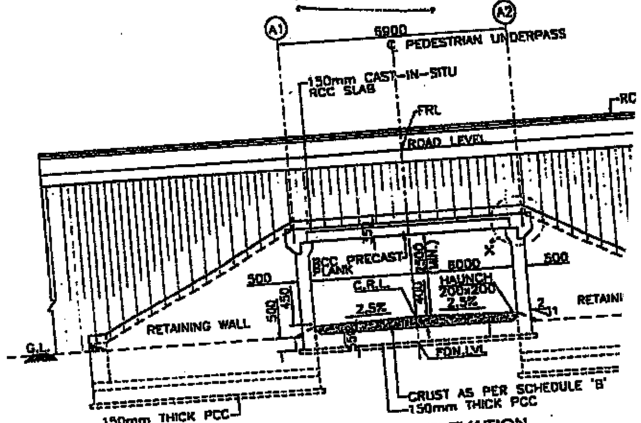
VUP(L)



ELEVATION OF VUP

PUP



SECTIONAL ELEVATION
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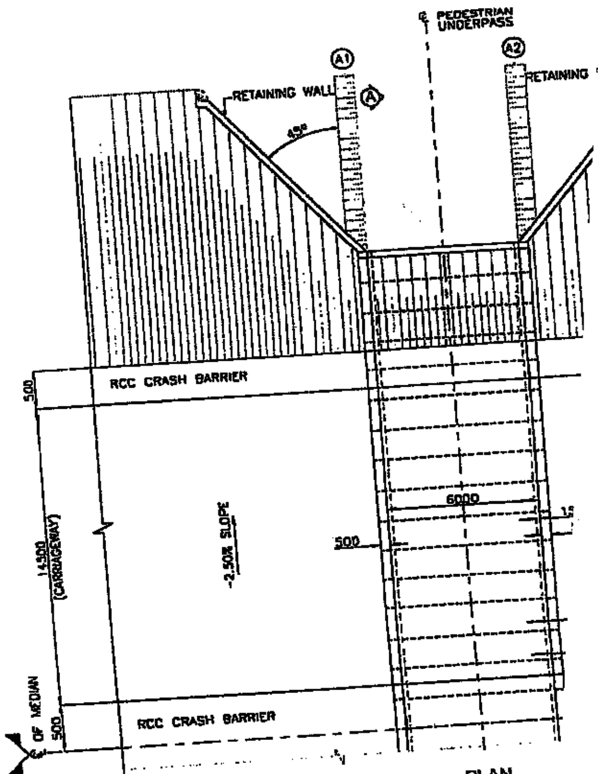

PLAN

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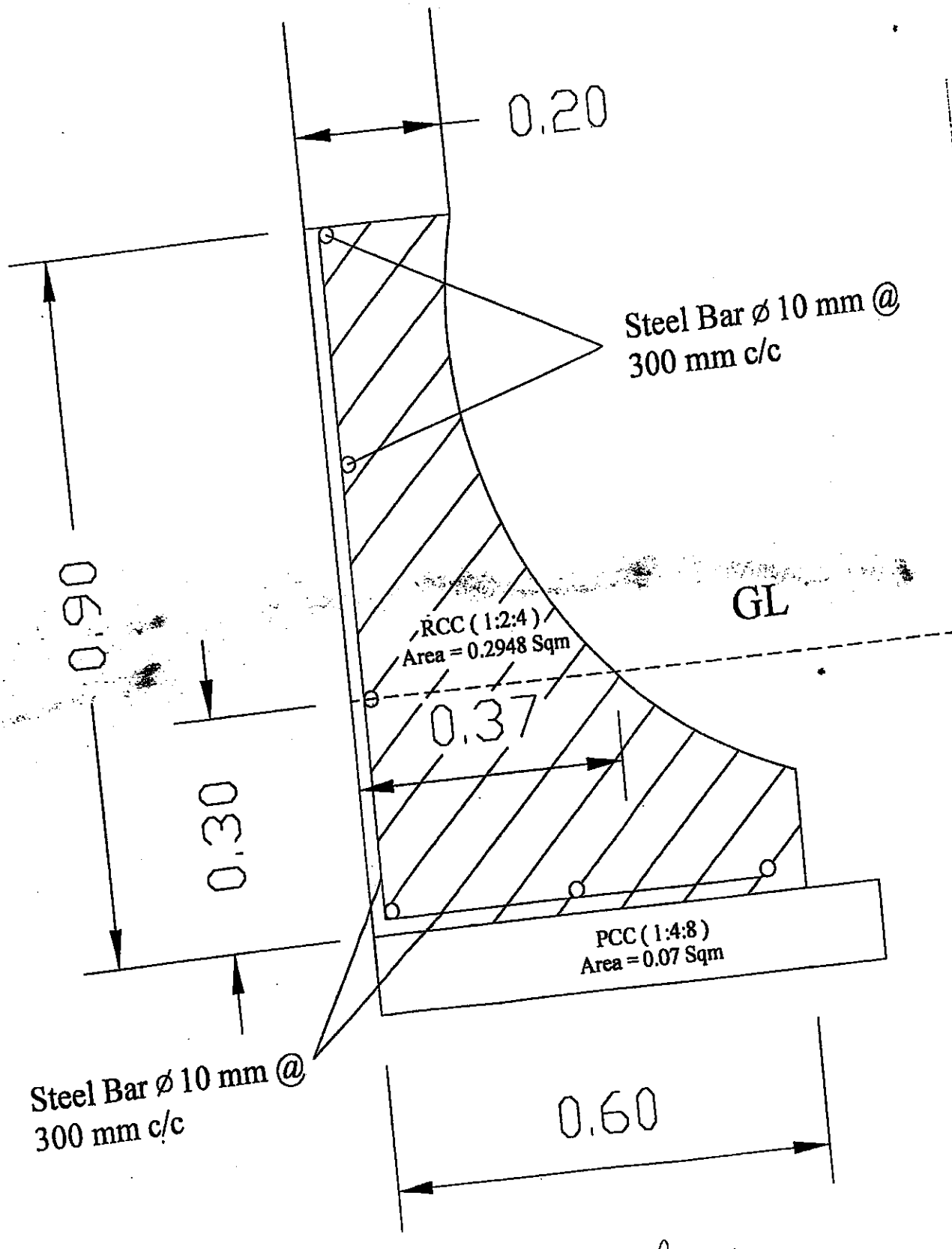
0.20
Steel Bar ø 10 mm @
300 mm c/c
0.60
GL
RCC (1:2:4)
Area = 0.2948 Sqm
0.37
0.30
PCC (1:4:8)
Area = 0.07 Sqm
Steel Bar ø 10 mm @
300 mm c/c
0.60