

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS ARE IN METER UNLESS MENTIONED OTHERWISE.
- DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE SAFE BEARING CAPACITY ASSUMED IN THE DESIGN IS 10 T/M^2 . THIS SBC SHOULD BE VERIFIED AT SITE BEFORE EXECUTION. ANY VARIATION ON SITE SHOULD BE INFORMED TO THE DESIGN ENGINEER FOR NECESSARY ACTION.
- GRADE OF UNTENSIONED STEEL SHALL BE Fe 500, CONFIRMING TO IS:1786.
- CONCRETE SHALL BE OF DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH AS FOLLOWS:-
 - RCC BOX..... M30
 - RCC CRASH BARRIER..... M40
 - RETAINING WALL..... M30
 - PCC LEVELING COURSE.... M15
- THE RCC BOX SHOULD BE CONSTRUCTED FIRST AND THE SIDE FILLING & COMPACTION SHALL BE DONE AS PER MoRTH SPECIFICATIONS.
- THE BACKFILL MATERIAL BEHIND RCC BOX/RETAINING WALL SHALL HAVE FOLLOWING PROPERTIES $\phi=30^\circ$, $\gamma=2.0\text{ T/Cum}$
- DETAIL OF CAMBER/SUPER ELEVATION MAY BE VERIFIED WITH LATEST PLAN AND PROFILE DRAWING.
- FLOW DIRECTION SHOWN IN THE DRAWING IS INDICATIVE ONLY. BED PROTECTION FOR UPSTREAM AND DOWN STREAM SHALL BE BASED ON THE FLOW DIRECTION IN SITE.
- FLEXIBLE APRON SHALL BE PROVIDED AS PER THE SPECIFICATION/DETAILS MENTIONED IN PLATE-22 OF IRC:SP:13-2004.
- DISCREPANCY IF ANY IS TO BE IMMEDIATELY BROUGHT IN TO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
- 100mm ϕ PVC WEEP HOLES SPACED AT 1000c/c BOTH HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN RETAINING WALL.
- 600mm THK. FILTER MEDIA SHALL BE PROVIDED BEHIND RETAINING WALL.
- ALL LEVELS SHOWN IN THIS DRAWING SHOULD BE VERIFIED AT SITE WITH RESPECT TO PLAN & PROFILE BEFORE EXECUTION OF WORK.

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
GL.	-	GROUND LEVEL
LVL.	-	LEVEL
IL	-	INVERT LEVEL

TABLE-1 SCHEDULE OF BOX CULVERT

S.No	DESIGN CH: SCHEDULE	PROPOSAL	DIRECTION OF FLOW	SKEW ANGLE	PROPOSED DETAILS					
					TYPE	DIMENSION DETAILS OF BOX				
						a	b	c	d	e
1		NEW CONSTRUCTION	R TO L	0°	BOX	2000	2000	300	300	325

TABLE-2 DIMENSION DETAILS OF PCC RETURN WALL

S. No.	DIMENSION DETAILS(mm)					
	R0	R1	R2	RH	RH1	RH2
1	3450	500	2950	4300	600	3700

GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CH.
 0+425, +0+565, +0+825, +4+125, +4+325, +4+580, +4+925, +5+075,
 +5+350, +5+575, +5+950, +8+150, +8+350, +9+375, +9+875, +10+000,

:- CONSULTANTS :-

L.N. MALVIYA INFRA PROJECTS PVT. LTD.

T-10, III FLOOR, CITY CENTER, PRESS COMPLEX, PLOT NO.-1,
M.P. NAGAR, ZONE-I, BHOPAL (M.P.)



Tel./Fax : 0755-4295421,
Mob.: 09826452711, 09977004686
E-mail : lninfra@projects@gmail.com

:- CLIENT :-

**NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED (NHIDCL)**



DRG. NO. :

DESIGNED BY.

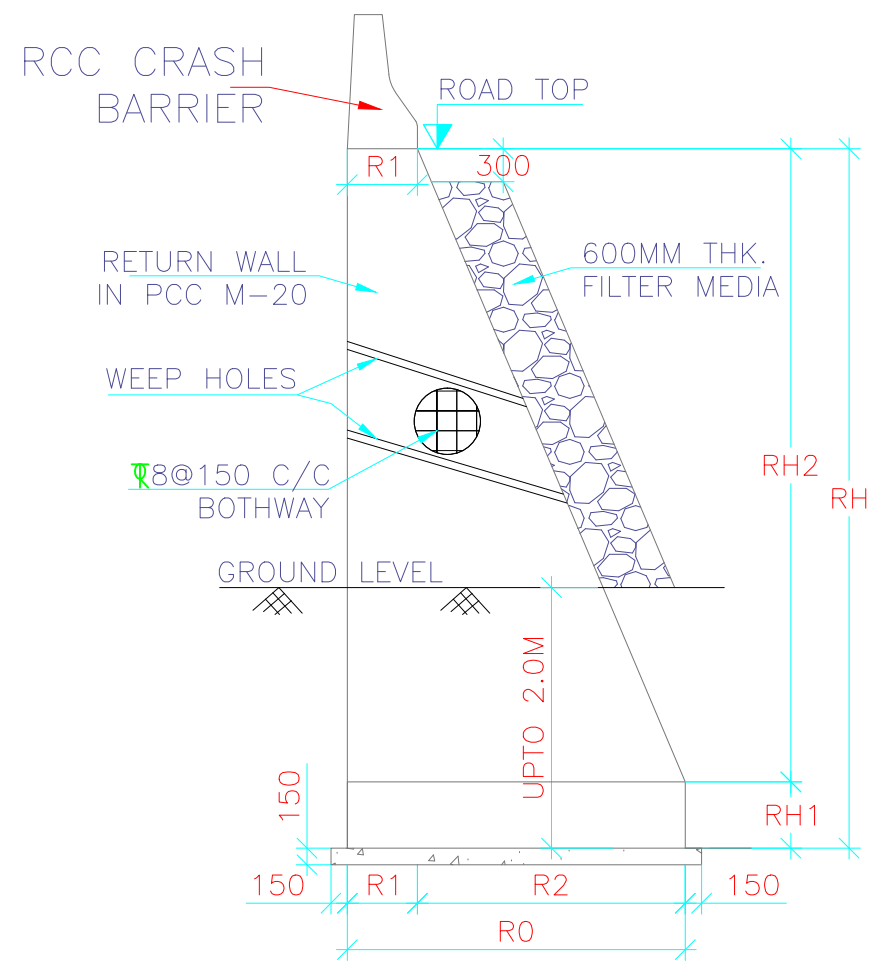
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:- PROJECT TITLE :-

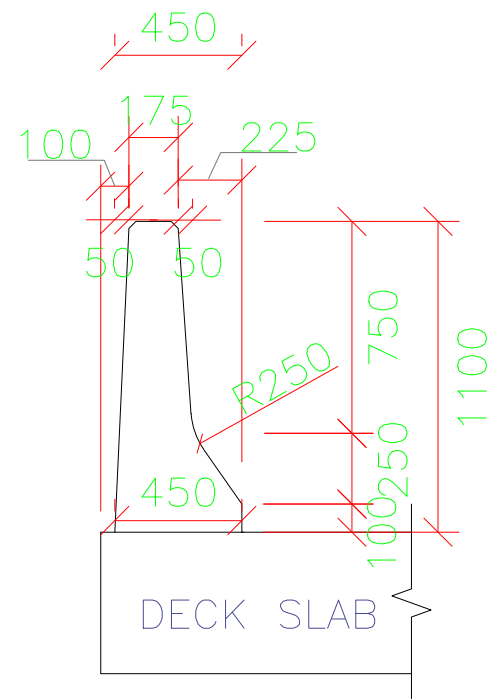
Consultancy Services for Preparation of Feasibility Study
and Detailed Project Report For Two lane With Paved
Shoulders of Tamenglong - Dialong - Old Tamenglong
Road In The State of Manipur on EPC Mode.

:-General Arrangement Drawing:-

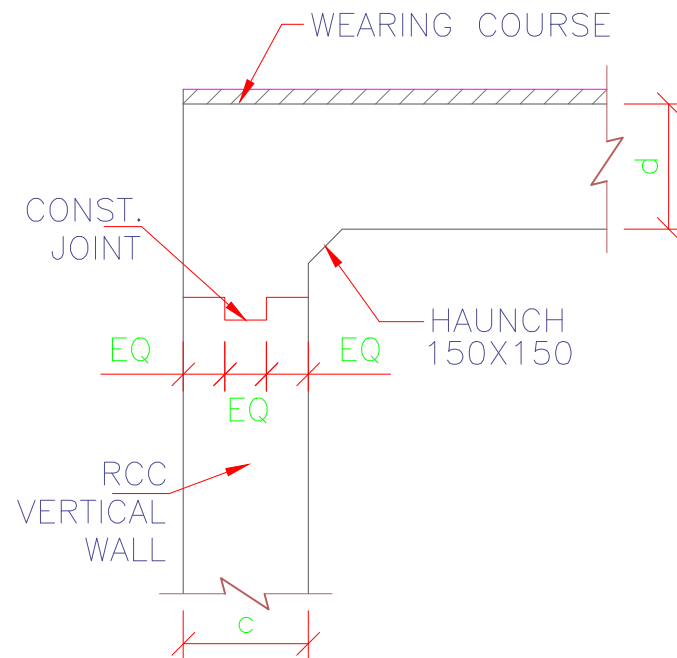
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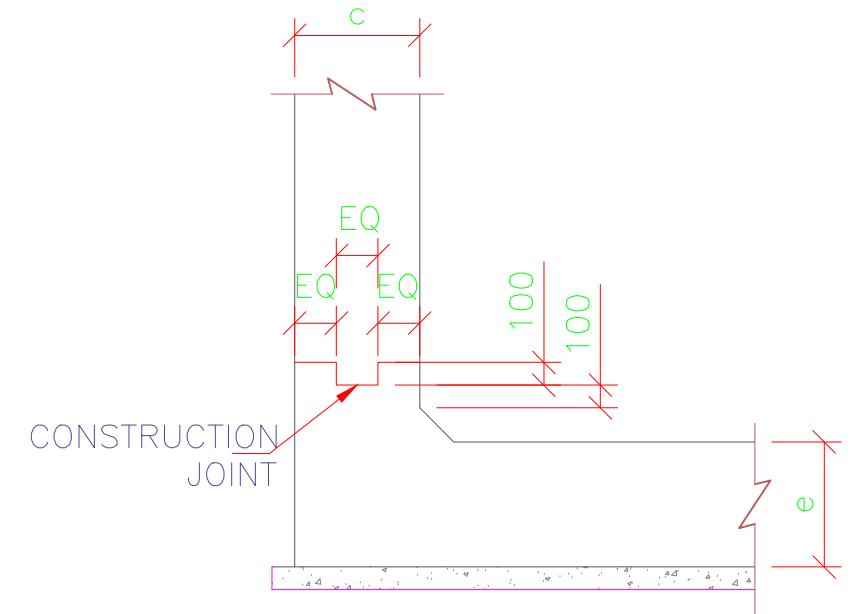
DETAIL OF PCC RETAINING WALL



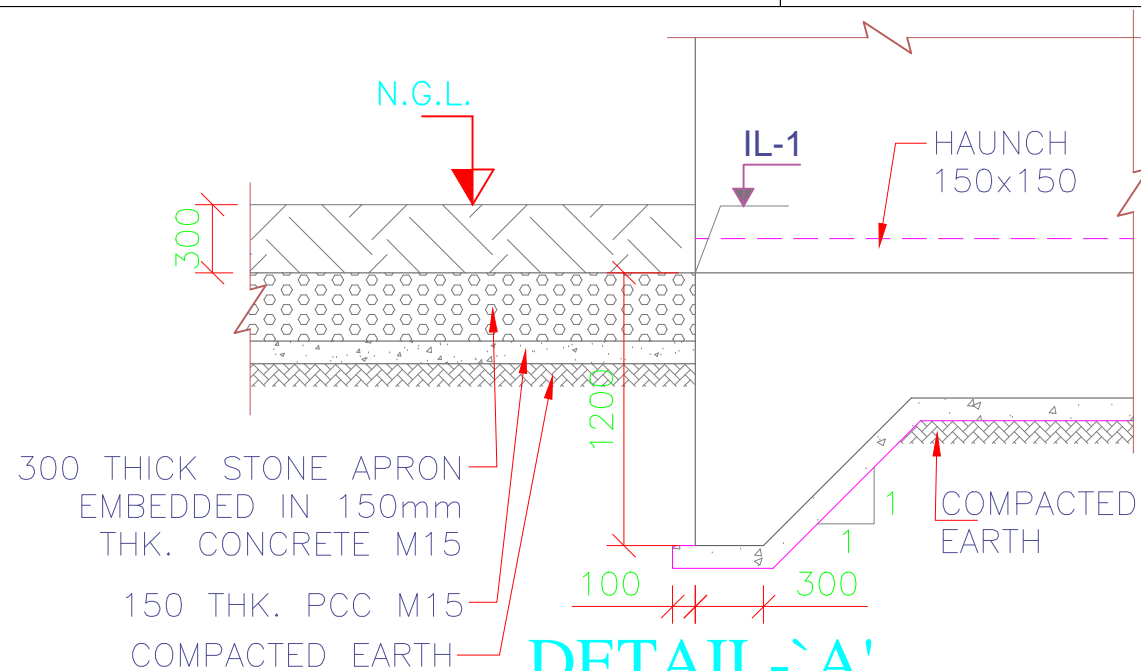
CRASH BARRIER DIMENSIONS



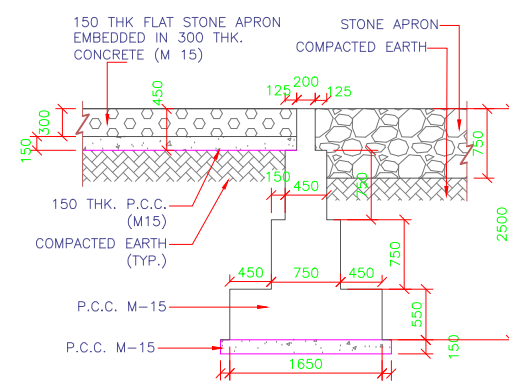
DETAIL-'B'



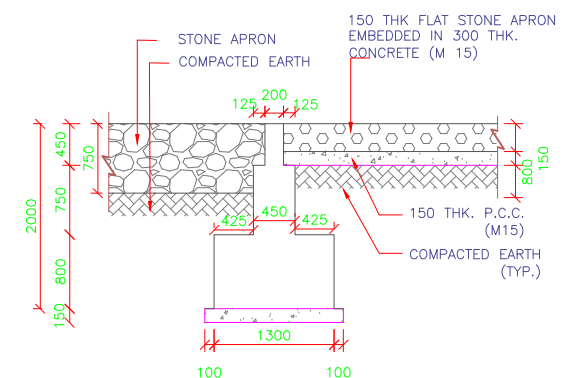
DETAIL-'C'



DETAIL-'A'



DETAIL OF CURTAIN WALL TYPE-I



DETAIL OF CURTAIN WALL TYPE-II

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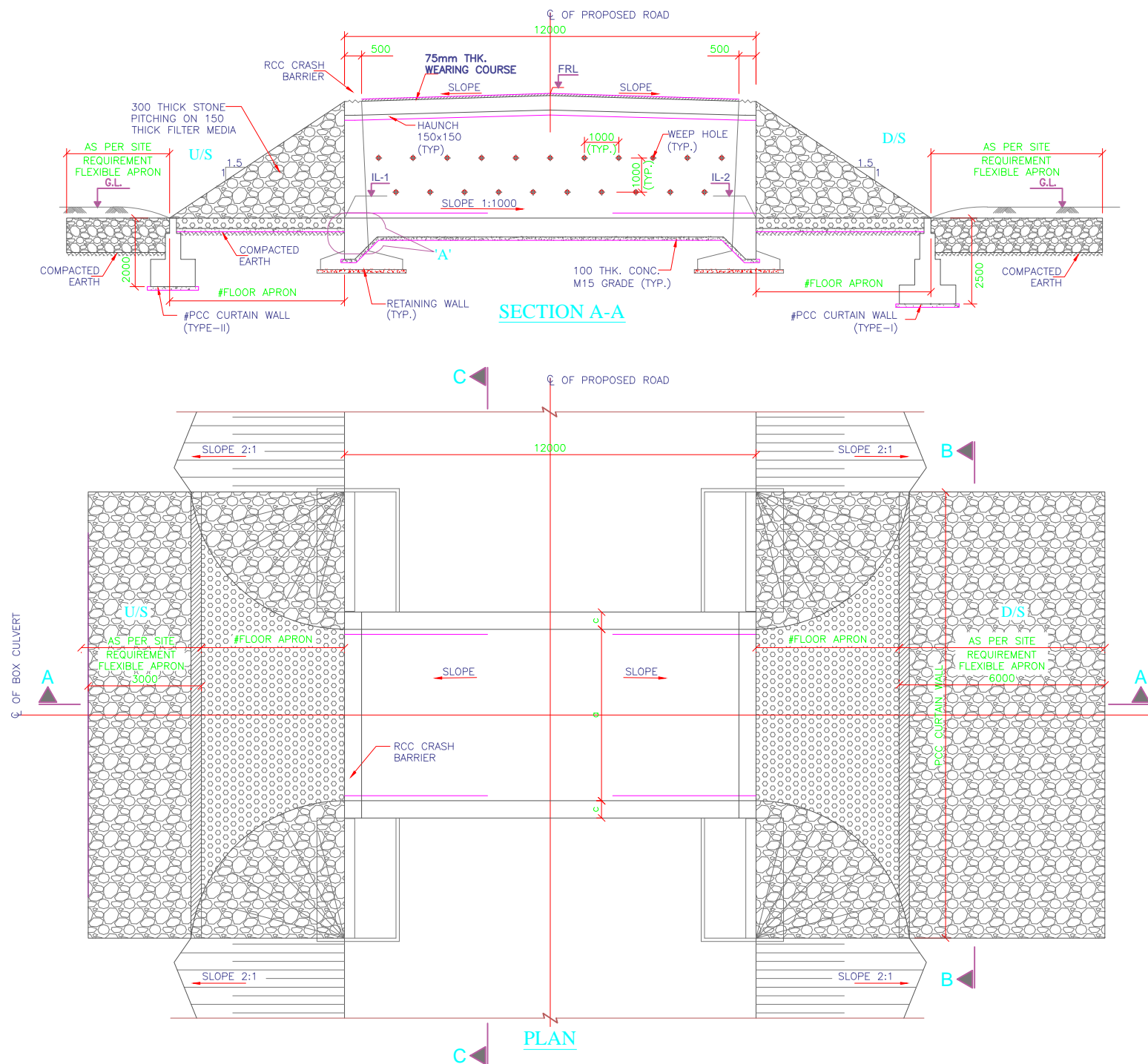
:- PROJECT TITLE :-

Consultancy Services for Preparation of Feasibility Study
and Detailed Project Report For Two lane With Paved
Shoulders of Tamenglong - Dialong - Old Tamenglong
Road In The State of Manipur on EPC Mode.

:-General Arrangement Drawing:-

BOX CULVERT

Span-1No. 2X2



NOTES:-

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 - RCC CRASH BARRIER..... M40
 - RETAINING WALL..... M30
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- 600mm THK. FILTER MEDIA SHALL BE PROVIDED BEHIND RETAINING WALL.
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LEGEND:-

FRL	-	FINISHED ROAD LEVEL
GL.	-	GROUND LEVEL
LVL.	-	LEVEL
IL	-	INVERT LEVEL

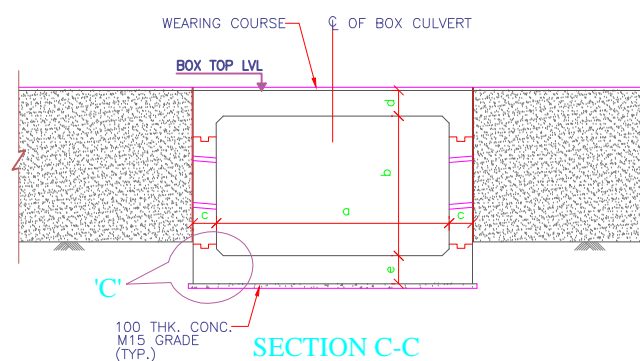
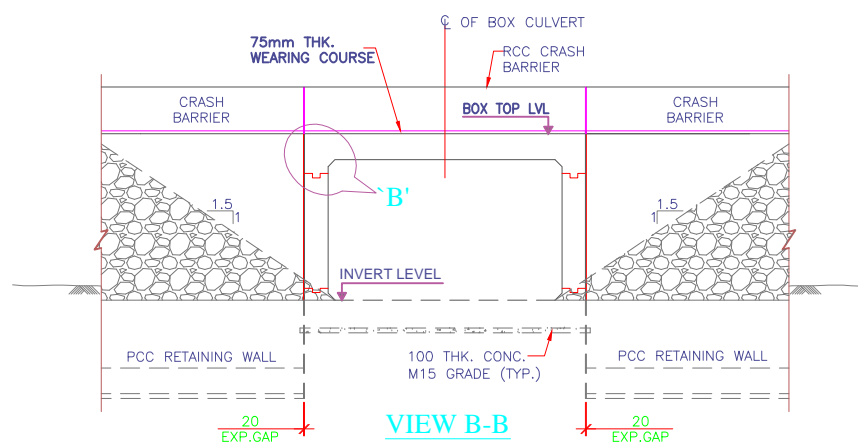


TABLE-1 SCHEDULE OF BOX CULVERT

S. No.	DESIGN CH: SCHEDULE	PROPOSAL	DIRECTION OF FLOW	SKEW ANGLE	TYPE	PROPOSED DETAILS				
						DIMENSION DETAILS OF BOX				
1		NEW CONSTRUCTION	R TO L	0°	BOX	3000	3000	420	420	420

TABLE-2 DIMENSION DETAILS OF PCC RETURN WALL

S. No.	DIMENSION DETAILS(mm)					
	R0	R1	R2	RH	RH1	RH2
1	4450	500	3950	5170	600	4570

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Tel/Fax : 0755-4295421,
Mob.: 09826452711, 09977004686
E-mail : lninfra@lninfra.com

:- CLIENT :-

**NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED (NHIDCL)**



DRG. NO. :

DESIGNED BY.

APPROVED BY.

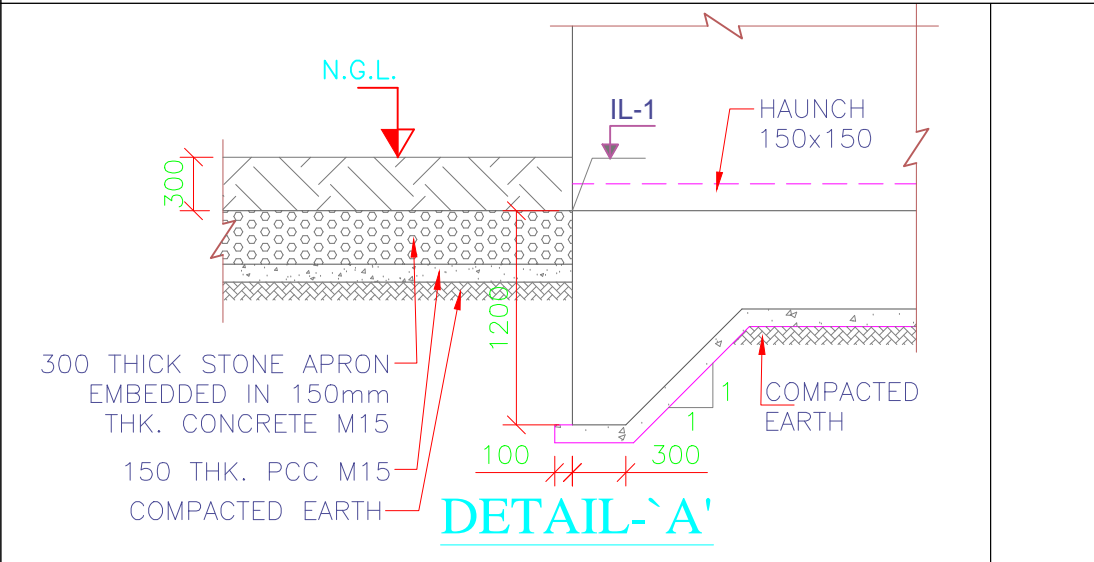
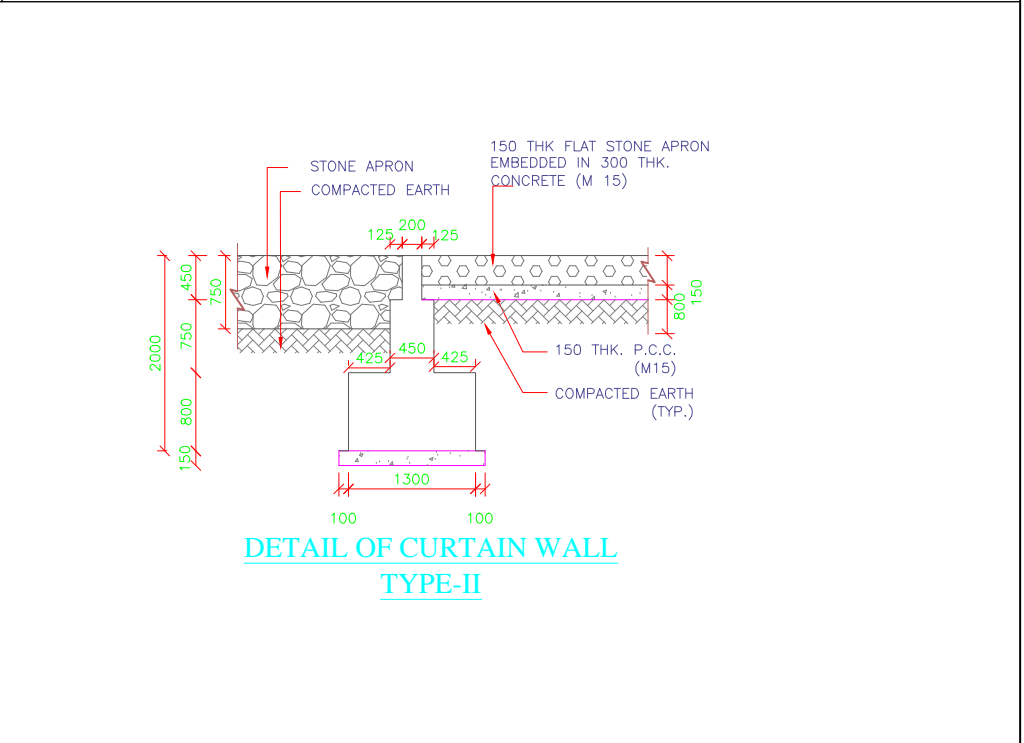
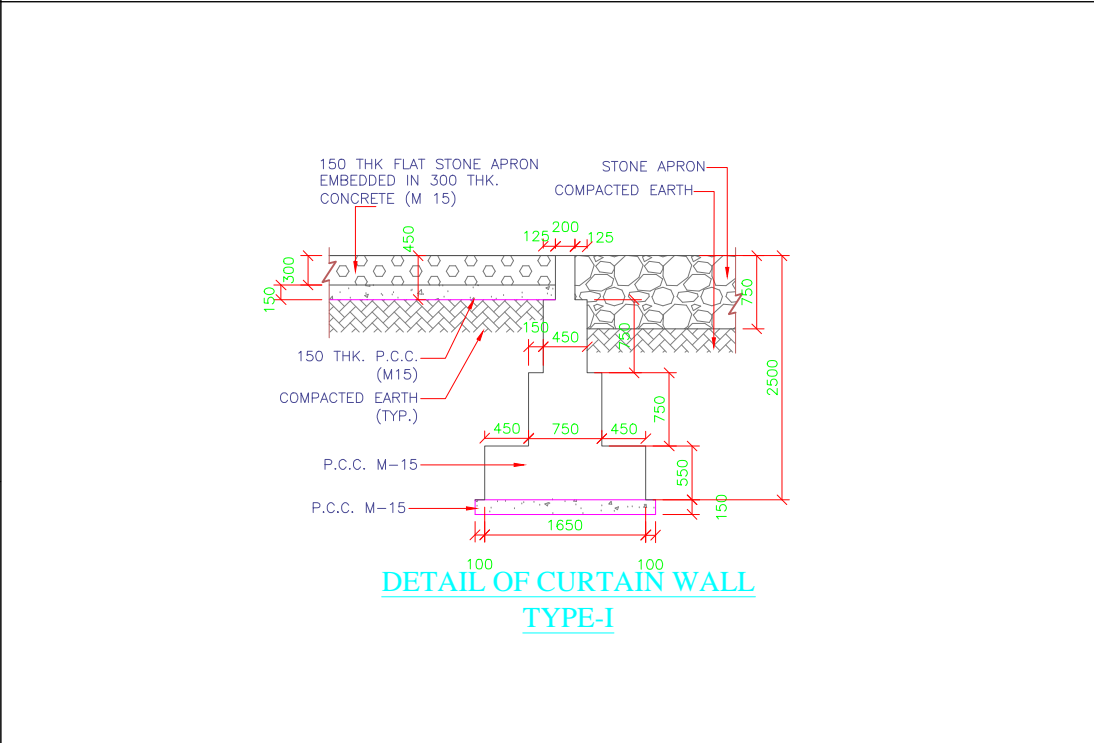
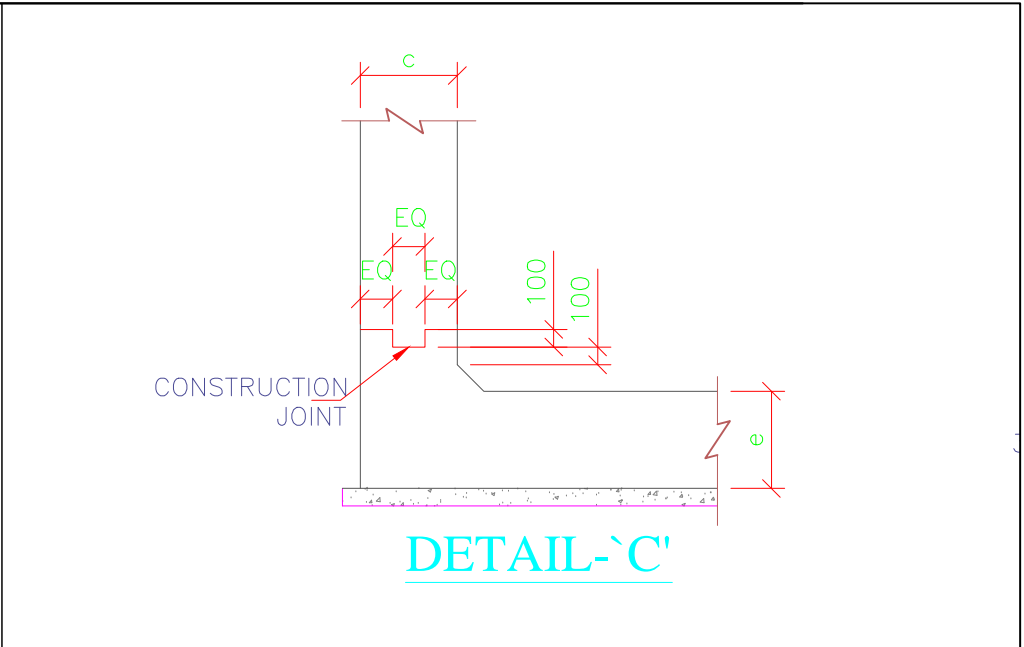
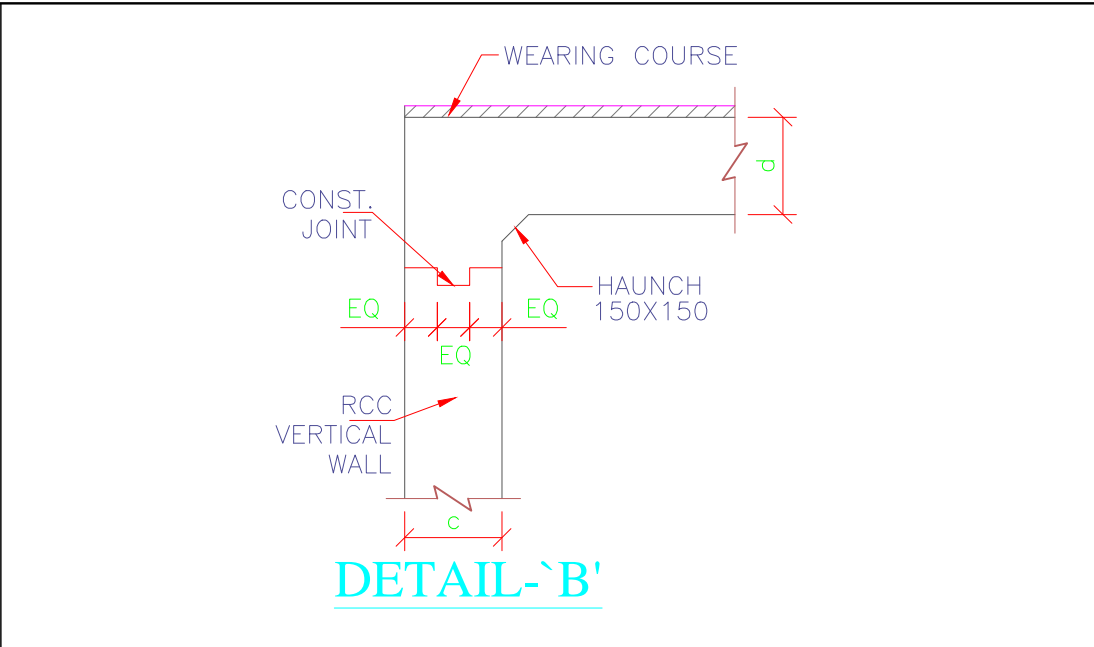
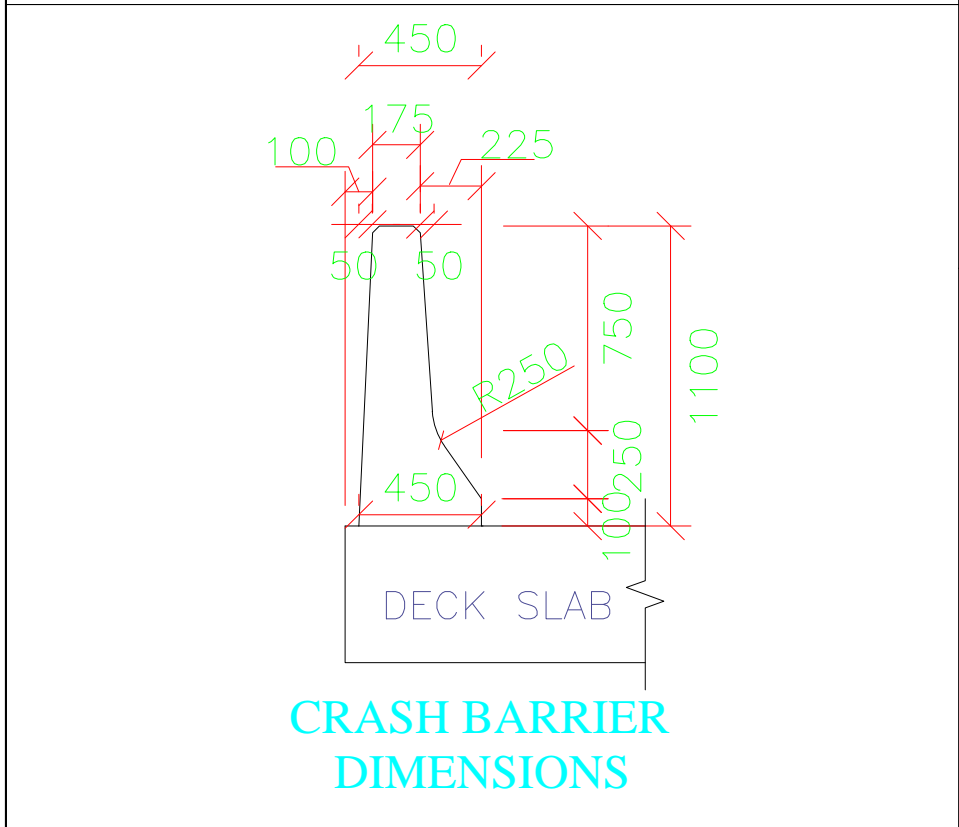
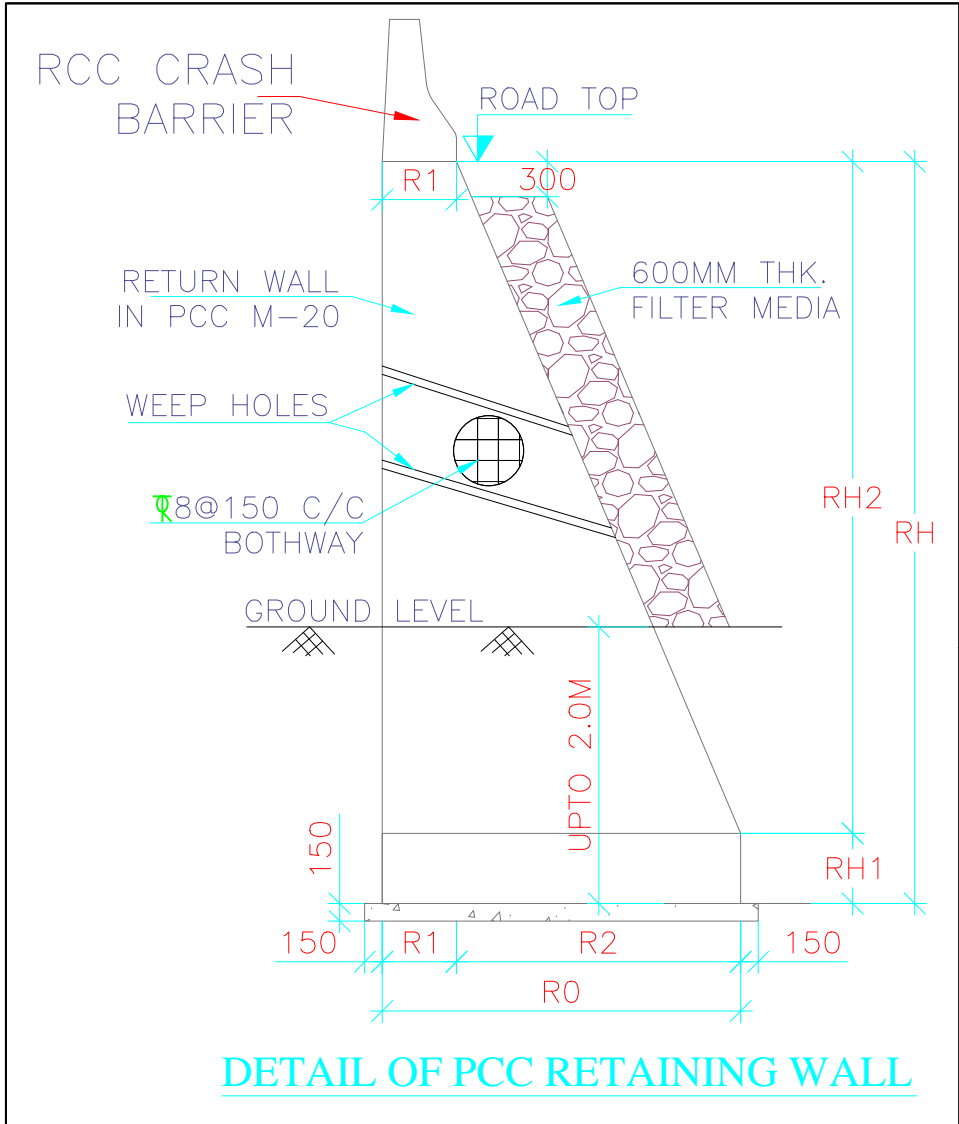
:- PROJECT TITLE :-

Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Tamenglong - Dialong - Old Tamenglong Road In The State of Manipur on EPC Mode.

:-General Arrangement Drawing:-

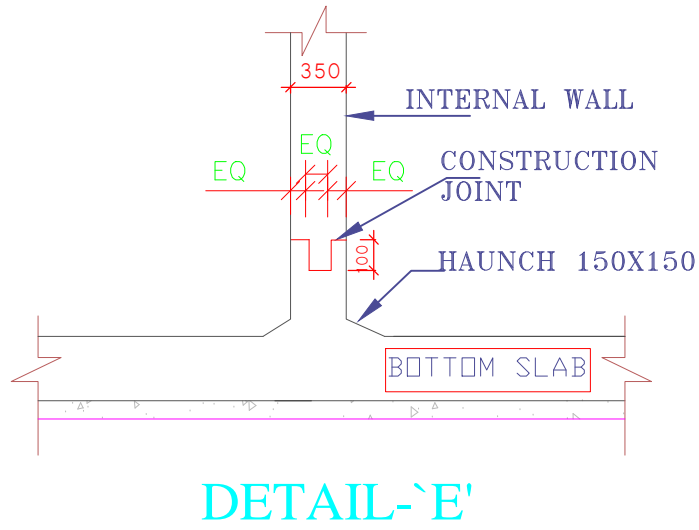
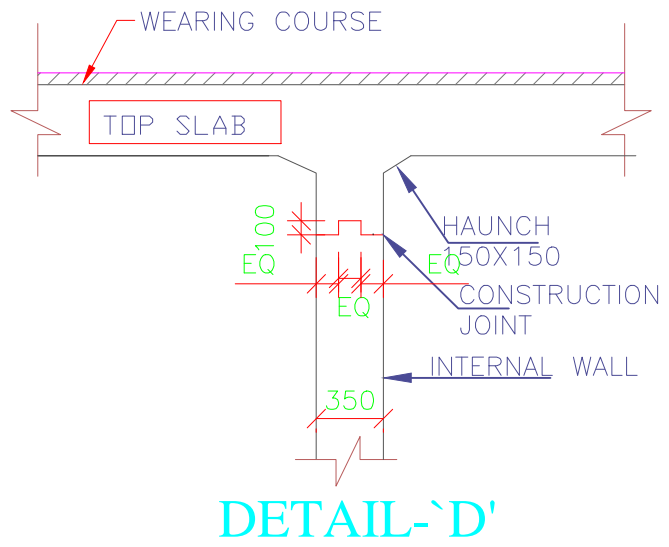
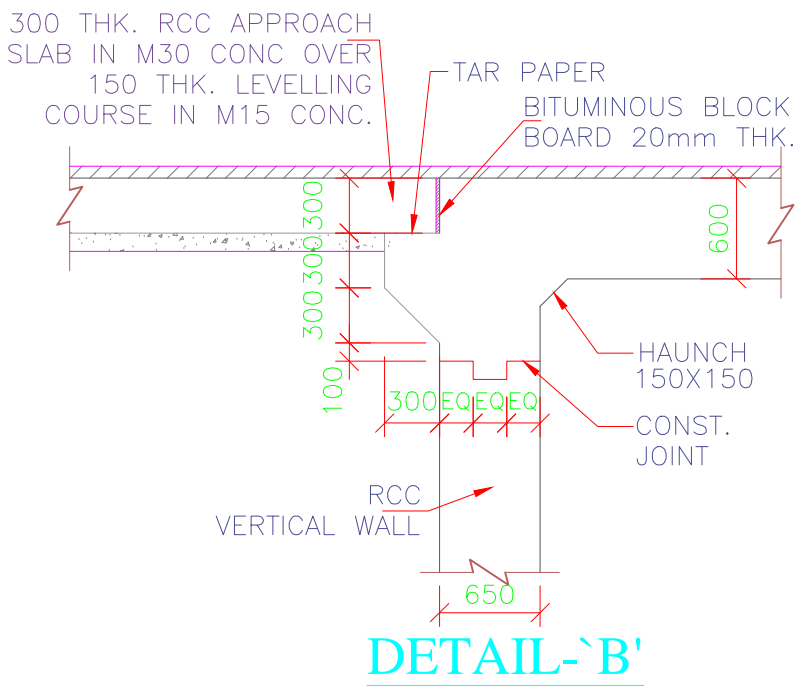
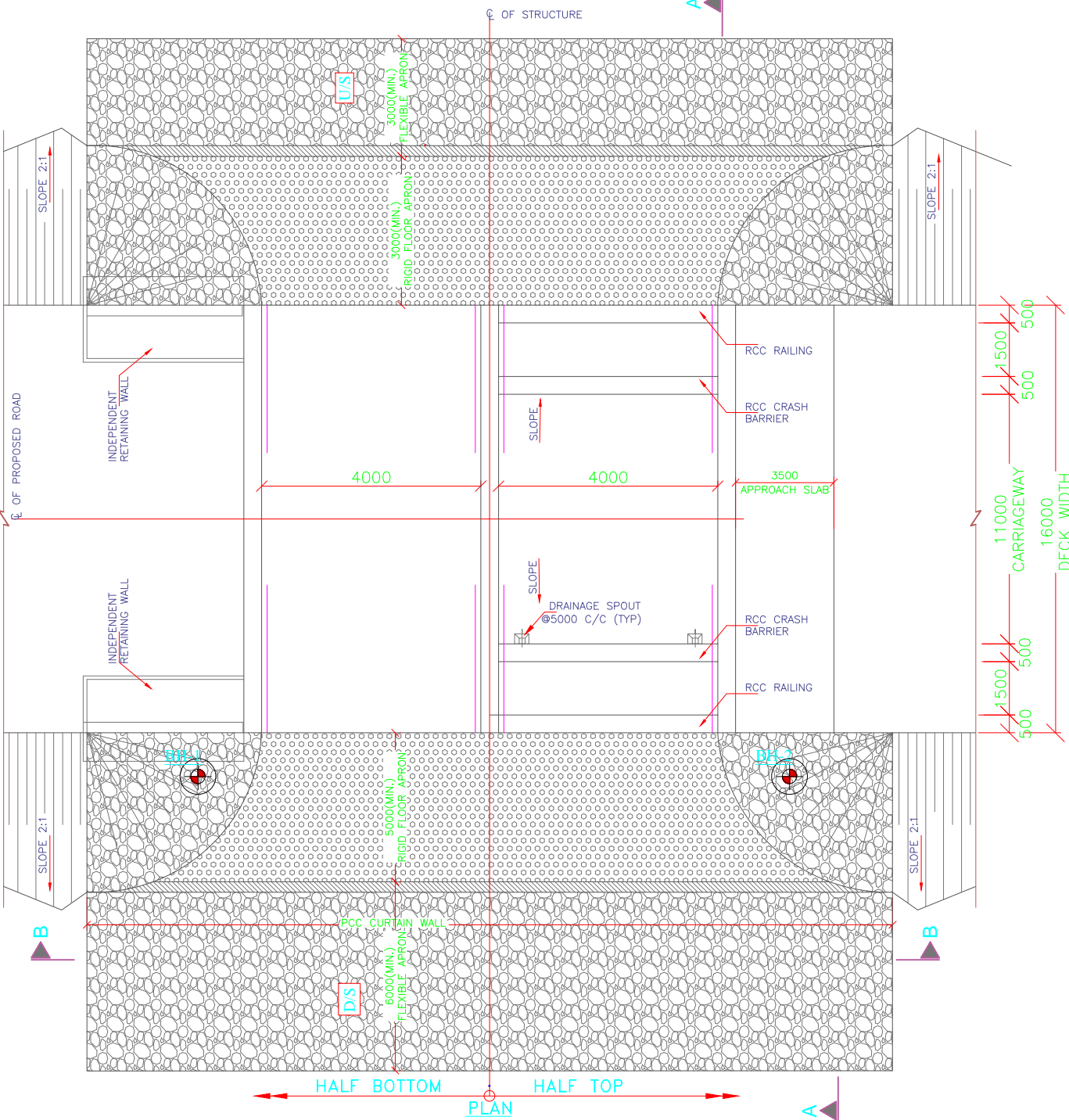
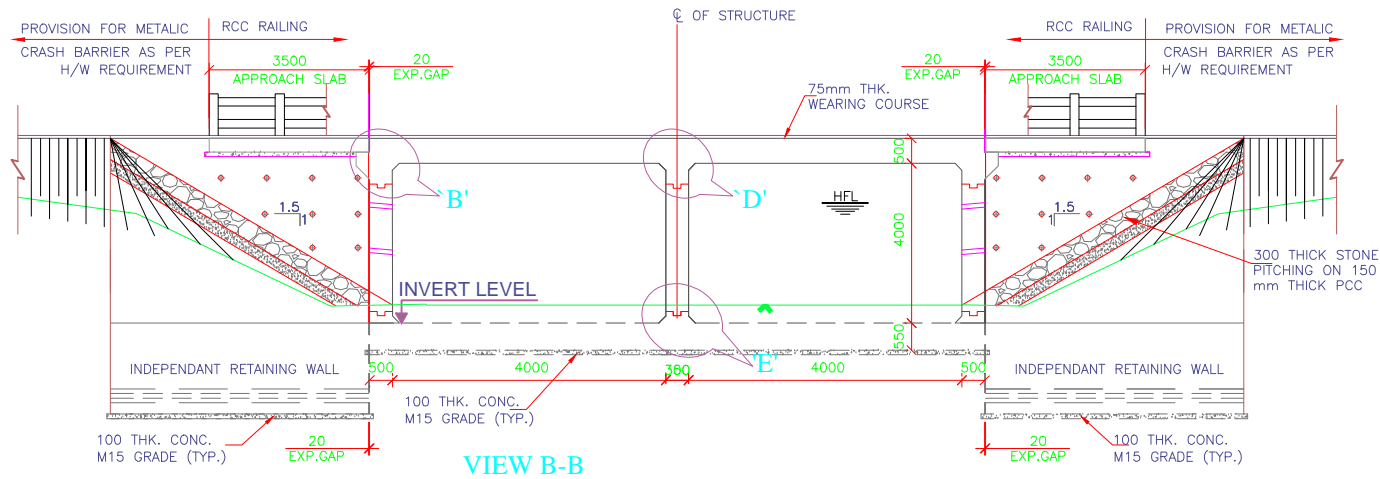
BOX CULVERT

Span-1No. 3X3



GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CH.
 0+115,+0+650,+1+335,+1+425,+1+725,+2+060,+2+450,+2+980,+3+425,
 +6+075,+6+250,+6+375,+6+565,+6+780,+6+845,+7+125,+7+425,+7+550,
 +7+665,+7+775,+7+900,+8+010,

<p>:- CONSULTANTS :-</p> <p>L.N. MALVIYA INFRA PROJECTS PVT. LTD.</p> <p>T-10, III FLOOR, CITY CENTER, PRESS COMPLEX, PLOT NO.-1, M.P. NAGAR, ZONE-I, BHOPAL (M.P.)</p> <p>Tel./Fax : 0755-4295421, Mob.: 09826452711, 09977004686 E-mail : lninfra@projects@gmail.com</p>	<p>:- CLIENT :-</p> <p>NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)</p>	<p>DRG. NO. :</p>	<p>DESIGNED BY.</p>	<p>APPROVED BY.</p>	<p>:- PROJECT TITLE :-</p> <p>Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Tamenglong - Dialong - Old Tamenglong Road In The State of Manipur on EPC Mode.</p>	<p>:-General Arrangement Drawing:-</p> <p>BOX CULVERT</p> <p>Span-1No. 3X3</p>
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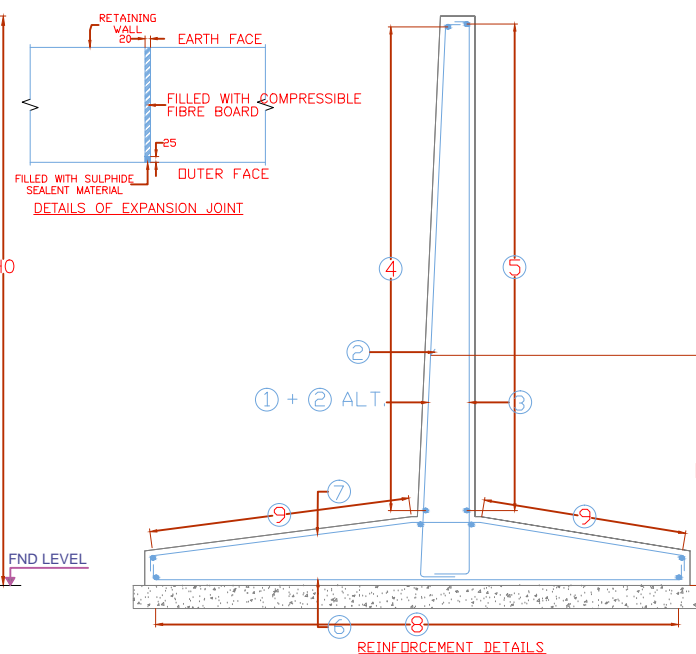
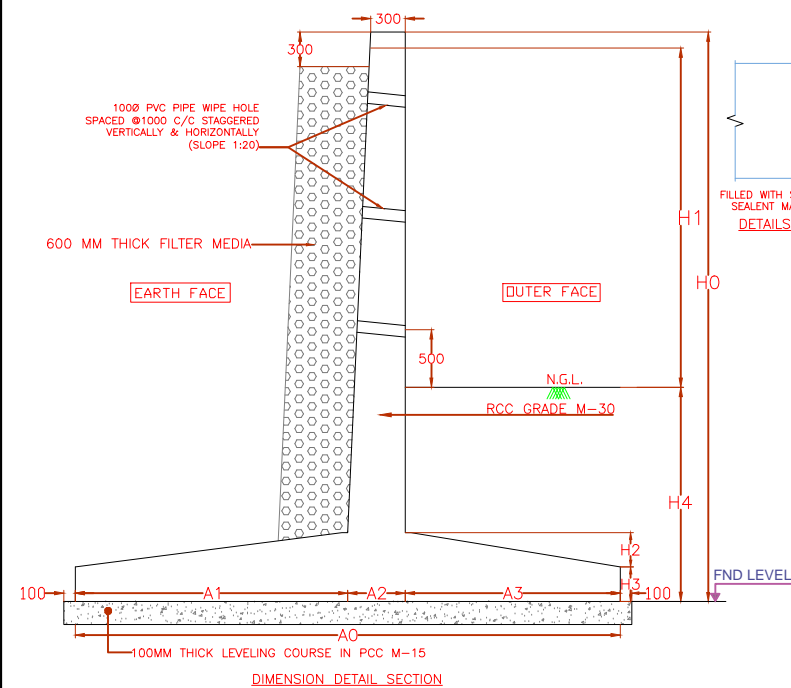


- NOTES:-**
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 - CONCRETE SHALL BE OF DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH AS FOLLOWS:-
 - RCC BOXM30
 - RCC CRASH BARRIER/RAILING.....M40
 - RCC RETAINING WALL.....M30
 - PCC LEVELING COURSE.....M15
 - THE RCC BOX SHOULD BE CONSTRUCTED FIRST AND THE SIDE FILLING & COMPACTION SHALL BE DONE AS PER MoRTH SPECIFICATIONS.
 - THE BACKFILL MATERIAL BEHIND RCC BOX/RETAINING WALL SHALL HAVE FOLLOWING PROPERTIES $\phi=30^\circ$, $\gamma=2.0$ T/Cum
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 - 600mm THK. FILTER MEDIA SHALL BE PROVIDED BEHIND RETAINING WALL.
 - ALL LEVELS SHOWN IN THIS DRAWING SHOULD BE VERIFIED AT SITE RESPECT TO PLAN & PROFILE BEFORE EXECUTION OF WORK.
 - DIMENSIONS OF STRUCTURE ARE TENTATIVE AND SUBJECTED TO CHANGE ON DETAIL DESIGN.
 - SHEAR KEY & CURTAIN WALL ARE NOT REQUIRED IF HARD ROCK IS FOUND AT GROUND LEVEL.

LEGEND:-

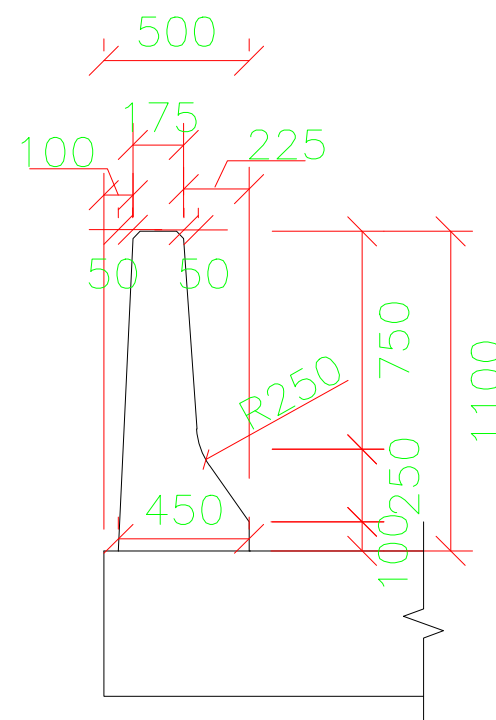
FRL	-	FINISHED ROAD LEVEL
GL.	-	GROUND LEVEL
LVL.	-	LEVEL
IL	-	INVERT LEVEL
FL	-	FOUNDING LEVEL
MSL	-	MAXIMUM SCOUR LEVEL
BH	-	BORE HOLE
*	-	AS PER HIGHWAY PROFILE
	-	BORE HOLE LOCATION

:- CONSULTANTS :-		:- CLIENT :-		DRG. NO. :	DESIGNED BY.	APPROVED BY.	:- PROJECT TITLE :-		:-General Arrangement Drawing:-	
L.N. MALVIYA INFRA PROJECTS PVT. LTD.		NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)					Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Tamenglong - Dialong - Old Tamenglong Road In The State of Manipur on EPC Mode.		BOX CULVERT	
T-10, III FLOOR, CITY CENTER, PRESS COMPLEX, PLOT NO.-I, M.P. NAGAR, ZONE-I, BHOPAL (M.P.)									Span-2No. X4X4	
Tel/Fax : 0755-4295421, Mob.: 09826452711, 09977004686 E-mail : lninfra@projects@gmail.com										



DIMENSION DETAIL:-

SERIAL NO.	OVERALL HEIGHT H0 (mm)	HEIGHT ABOVE OF GL H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	A0 (mm)	A1 (mm)	A2 (mm)	A3 (mm)
1	6000	4000	500	300	1500	4450	1400	450	2600



RCC CRASH BARRIER

NOTES:-

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- NO DIMENSIONS SHALL BE SCALED FROM THE DRAWING .ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
- LAYING COMPACTION AND EXTENT OF BACKFILL BEHIND RETAINING WALL SHALL CONFIRM TO APPENDIX - 6 IRC-78-2014
- WEEP HOLES OF DIAMETER 100mm. SHALL BE PROVIDED AT SUITABLE STAGGERED SPACING NOT EXCEEDING 1M IN BOTH DIRECTION FOR RETAINING WALL.
- GRADE FOR CONCRETE FOR RETAINING WALL IS M-30.
- BACKFILL GRANULAR SOIL MATERIAL BEHIND WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC: 78-2014. THE PROPERTIES ARE $C = 0$, $\phi = 30^\circ$, $\gamma = 20\text{KN/CU.M}$
- GRADE OF STEEL Fe 500 AS PER IS 1786.
- CLEAR COVER TO REINFORCEMENT SHALL BE AS FOLLOWS.
 - FOR STEM : OUTER FACE = 50mm AND EARTH FACE = 75mm
 - FOR BASE SLAB 75mm
- EARTH FILL ON BOTH SIDES OF RETAINING WALL SHALL BE DONE SIMULTANEOUSLY.
- SAND FILLING OF MIN. 300mm WILL BE DONE BELOW FOUNDATION WHEREVER CLAYEY SOIL IS PRESENT.
- DRAWING IS VALID FOR HORIZONTAL EARTH FACE ONLY.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE .IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOWS WITH MAXIMUM ALLOWABLE LAPPING

(p) OF 50% ONLY

(IRC : 112:2011), (CLAUSE: 15.2.5.12)

LAP LENGTH $l_s = a_1 \cdot l_{bnet}$

$a_1 = 1.0$ FOR $p\% \leq 25\%$

$a_1 = 1.5$ FOR $25\% \leq p\% \leq 33\%$

$a_1 = 1.4$ FOR $33\% \leq p\% \leq 50\%$

(IRC: 112=2011) (CLAUSE: 15.2.3.3)

DEVELOPMENT LENGTH (l_{bnet})

$l_{bNET} = a \cdot l_b$ ($a = 1.0$)

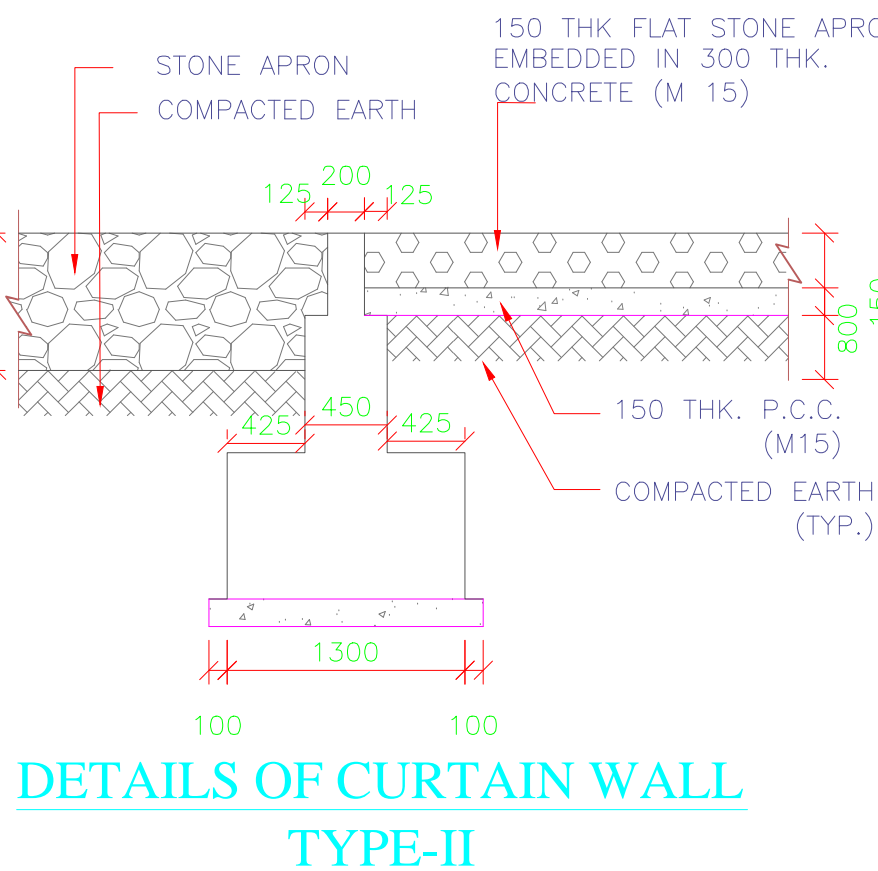
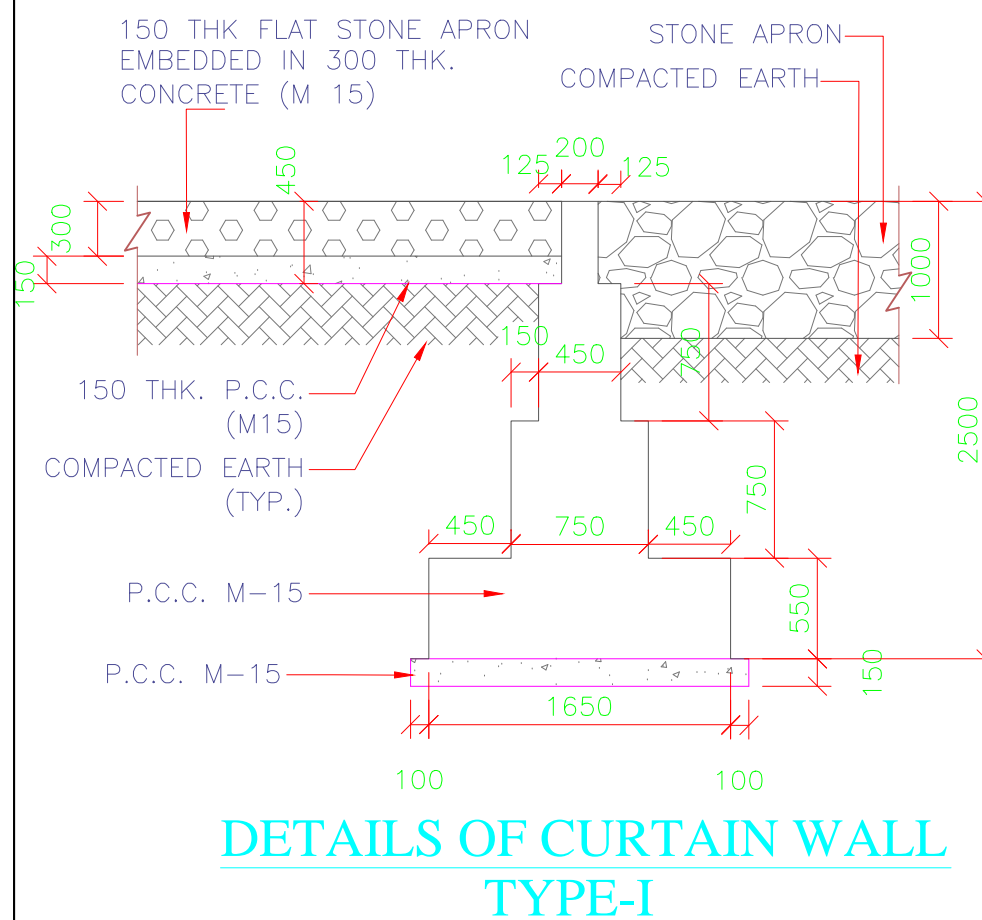
$l_b = k\phi$

$k = 40$ FOR M30(Fe500)

$k = 36$ FOR M35(Fe500)

$k = 34$ FOR M40(Fe500)

FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43 FOR $\phi > 32\text{mm}$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR $(100/132-\phi)$.



DETAILS OF CURTAIN WALL TYPE-I

DETAILS OF CURTAIN WALL TYPE-II

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General Arrangement Drawing:-

BOX CULVERT

Span-2No. X4X4

