

TENDER DOCUMENT

FOR

Distribution Network for Nabinagar Division of Right Main Canal (RMC), Bihar Portion under North Koel Reservoir Project, Jharkhand and Bihar

Estimated Cost (Rs. 47.85 Crores)

TENDER NO: WAP/NK/RMC/DIST/NABINAGAR/2025

TENDER DRAWINGS

Issued to M/s



(भारत सरकार का उपक्रम-जल शक्ति मंत्रालय)

(A Government of India Undertaking-Ministry of Jal Shakti)

NORTH KOEL RESERVOIR PROJECT

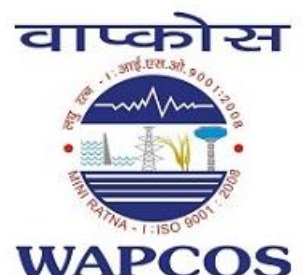
JANUARY 2025

Completion of Balance
Works of North Koel
Reservoir Project

DRAWING REPORT – KUSAH MINOR
(OFFTAKING FROM RIGHT MAIN CANAL AT
39.39 KM)



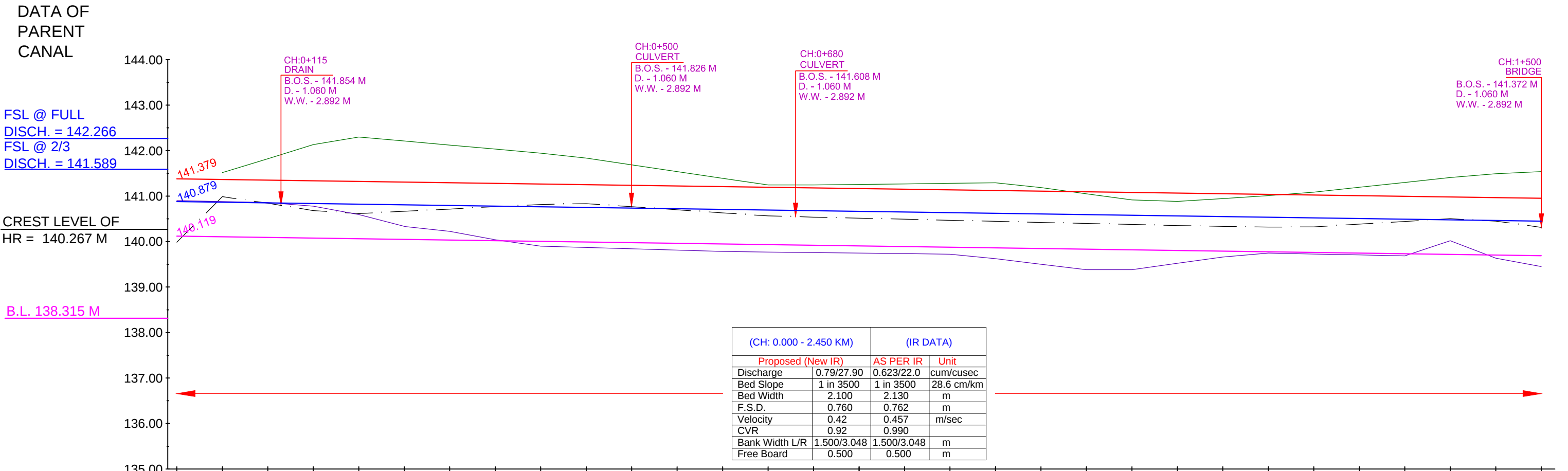
WAPCOS LIMITED
(GOVT. OF INDIA UNDERTAKING)
76- C SECTOR-18 INDUSTRIAL AREA,
GURUGRAM-122015 (HARYANA)



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L-SECTION

L- SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
FROM CH 0+000 TO 1+500



Chainage	DESIGN DATA		EXISTING DATA	
	TOP OF BANK LEVEL		Bed Level	TOP OF BANK LEVEL
	F.S.L.	Proposed Bed Level	NSL	
0+000	141.379	140.119	139.985	142.903
0+050	141.364	140.104	140.986	141.516
0+100	141.350	140.090	140.842	141.820
0+150	141.336	140.076	140.681	142.130
0+200	141.321	140.061	140.615	142.298
0+250	141.307	140.047	140.665	142.209
0+300	141.293	140.033	140.713	142.121
0+350	141.279	140.019	140.768	142.032
0+400	141.264	140.004	140.814	141.944
0+450	141.250	139.990	140.834	141.833
0+500	141.236	139.976	140.766	141.686
0+550	141.221	139.961	140.698	141.538
0+600	141.207	139.947	140.631	141.391
0+650	141.193	139.933	140.564	141.243
0+700	141.179	139.919	140.537	141.243
0+750	141.164	139.904	140.514	141.255
0+800	141.150	139.890	140.491	141.268
0+850	141.136	139.876	140.468	141.280
0+900	141.121	139.861	140.445	141.293
0+950	141.107	139.847	140.420	141.185
1+000	141.093	139.833	140.398	141.051
1+050	141.079	139.819	140.375	140.917
1+100	141.064	139.804	140.351	140.882
1+150	141.050	139.790	140.333	140.945
1+200	141.036	139.776	140.319	141.008
1+250	141.021	139.761	140.323	141.087
1+300	141.007	139.747	140.383	141.193
1+350	140.993	139.733	140.443	141.300
1+400	140.979	139.719	140.502	141.406
1+450	140.964	139.704	140.449	141.491
1+500	140.950	139.690	140.312	141.941

LEGEND

NSL

EXISTING TOP OF BANK

EXISTING FALL

MODIFIED FALL

NEW FALL

EXISTING BED LEVEL

PROPOSED BED LEVEL

PROPOSED FSL

PROPOSED TOP OF BANK LEVEL

IMPLEMENTING AGENCY :-
WAPCOS LTD.

PROJECT TITLE :-
DRAWING TITLE :-
DRAWING NO. :-
Drawn By:-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

L-SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

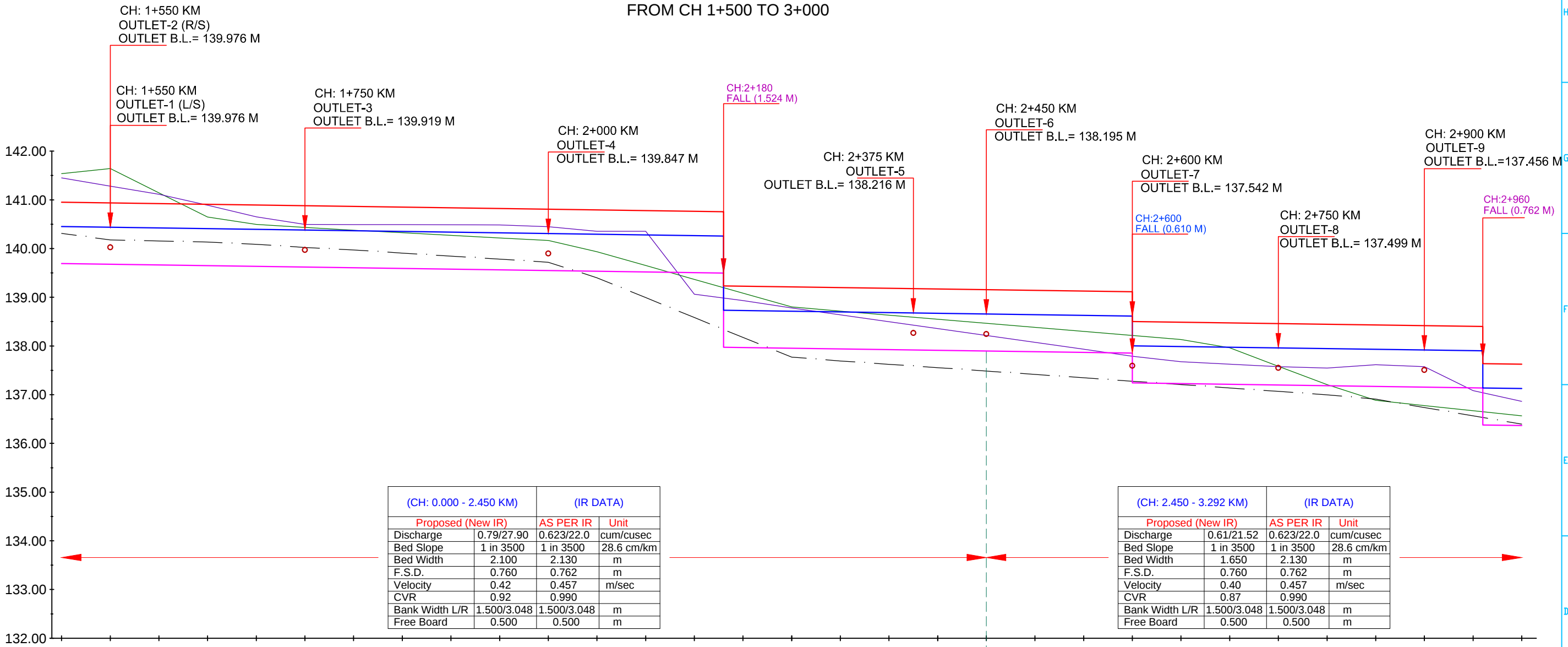
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ LSEC-

Checked By:-

Approved By:-

01 of 05

L- SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
FROM CH 1+500 TO 3+000



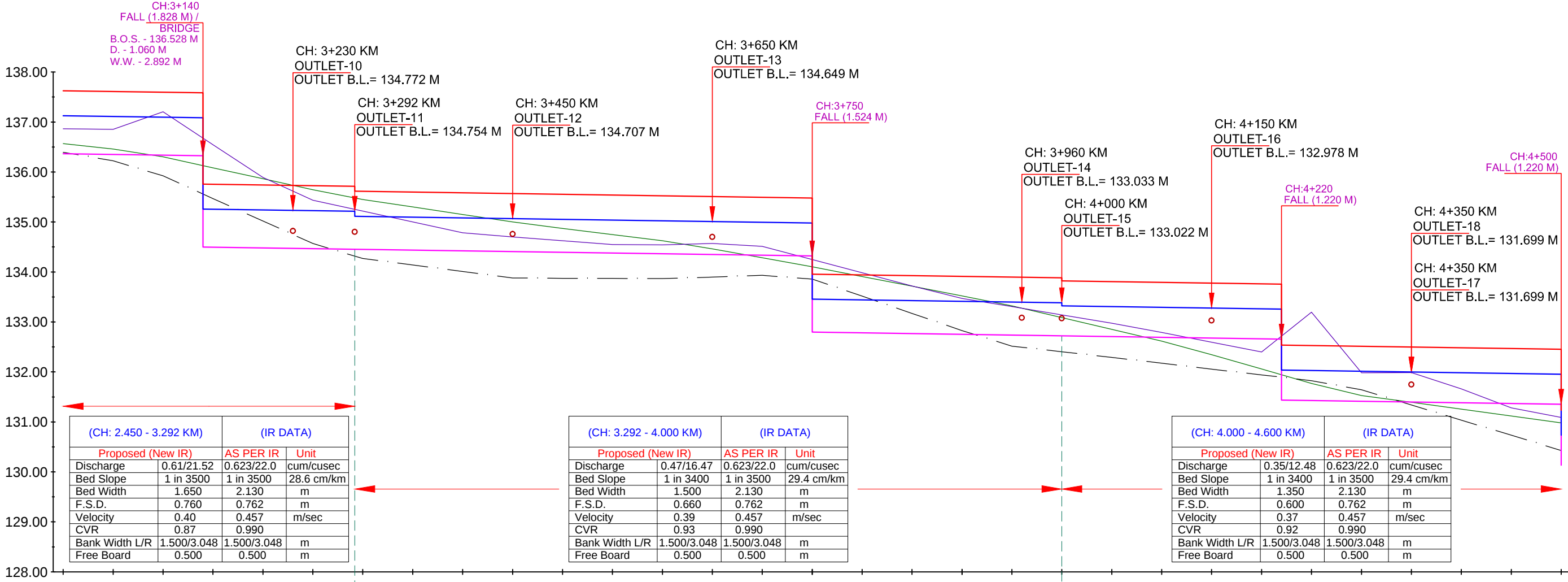
Chainage	DESIGN DATA		EXISTING DATA	
	TOP OF BANK LEVEL		Bed Level	
	F.S.L.		TOP OF BANK LEVEL	
	Proposed Bed Level		NSL	
- 1+500	140.950	140.450	139.690	140.312
- 1+550	140.936	140.436	139.676	140.176
- 1+600	140.921	140.421	139.661	140.155
- 1+650	140.907	140.407	139.647	140.133
- 1+700	140.893	140.393	139.633	140.086
- 1+750	140.879	140.379	139.619	140.023
- 1+800	140.864	140.364	139.604	139.970
- 1+850	140.850	140.350	139.590	139.907
- 1+900	140.836	140.336	139.576	139.845
- 1+950	140.821	140.321	139.561	139.782
- 2+000	140.807	140.307	139.547	139.719
- 2+050	140.793	140.293	139.533	139.400
- 2+100	140.779	140.279	139.519	138.992
- 2+150	140.764	140.264	139.504	138.584
- 2+200	140.756	140.256	139.496	138.175
- 2+250	139.212	138.712	137.952	137.771
- 2+300	139.197	138.697	137.937	137.692
- 2+350	139.183	138.683	137.923	137.624
- 2+400	139.169	138.669	137.909	137.555
- 2+450	139.155	138.655	137.895	137.486
- 2+500	139.140	138.640	137.880	137.415
- 2+550	139.126	138.626	137.866	137.347
- 2+600	139.112	138.612	137.852	137.276
- 2+650	138.487	137.987	137.227	137.208
- 2+700	138.473	137.973	137.213	137.137
- 2+750	138.459	137.959	137.199	137.067
- 2+800	138.445	137.945	137.185	136.998
- 2+850	138.430	137.930	137.170	136.908
- 2+900	138.416	137.916	137.156	136.736
- 2+950	138.402	137.902	137.142	136.566
- 3+000	137.625	137.125	136.365	136.395

LEGEND			
	NSL		EXISTING BED LEVEL
	EXISTING TOP OF BANK		PROPOSED BED LEVEL
	EXISTING FALL		PROPOSED FSL
	MODIFIED FALL		PROPOSED TOP OF BANK LEVEL
	NEW FALL		

IMPLEMENTING AGENCY :-
WAPCOS LTD.

PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
DRAWING TITLE :-	L-SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)		
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ LSEC-		
Drawn By:-	Checked By:-	Approved By:-	

L- SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
FROM CH 3+000 TO 4+500



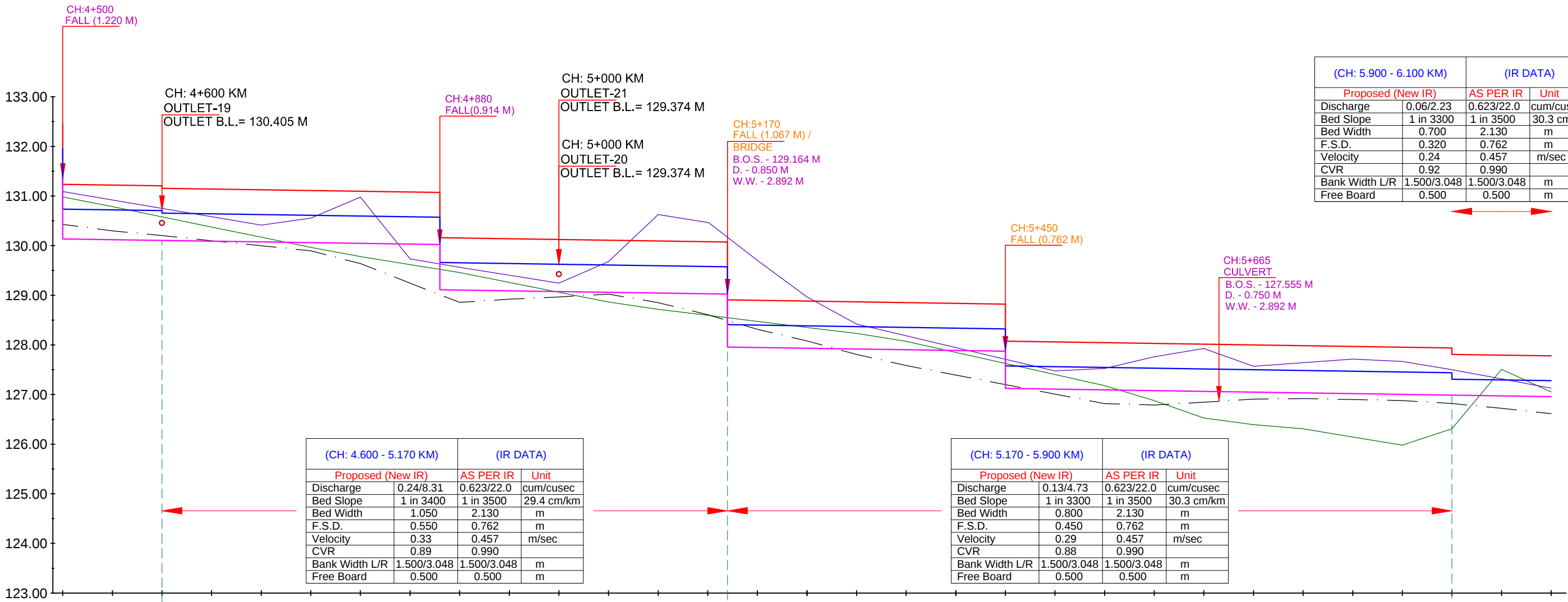
Chainage	EXISTING DATA		DESIGN DATA	
	NSL		Proposed Bed Level	
	TOP OF BANK LEVEL		F.S.L.	
	Bed Level		TOP OF BANK LEVEL	
3+000	136.566	136.863	136.365	137.125
3+050	136.460	136.855	136.351	137.111
3+100	136.303	137.205	136.337	137.097
3+150	136.084	136.548	136.325	137.085
3+200	135.864	135.891	134.480	135.240
3+250	135.644	135.437	134.466	135.226
3+292	135.451	135.219	134.454	135.214
3+300	135.451	135.219	134.454	135.214
3+350	135.301	135.002	134.437	135.097
3+400	135.151	134.785	134.422	135.082
3+450	135.001	134.702	134.407	135.067
3+500	134.872	134.625	134.393	135.053
3+550	134.748	134.548	134.378	135.038
3+600	134.624	134.541	134.363	135.023
3+650	134.461	134.571	134.349	135.009
3+700	134.284	134.513	134.334	134.994
3+750	134.104	134.249	134.319	134.979
3+800	133.909	133.985	132.781	133.441
3+850	133.716	133.721	132.766	133.426
3+900	133.522	133.471	132.751	133.411
3+950	133.321	133.306	132.736	133.396
4+000	133.087	133.141	132.722	133.382
4+050	132.853	132.976	132.707	133.307
4+100	132.618	132.789	132.692	133.292
4+150	132.345	132.594	132.678	133.278
4+200	132.058	132.400	132.663	133.263
4+250	131.770	133.195	132.657	133.257
4+300	131.529	131.982	131.413	132.013
4+350	131.392	131.988	131.399	131.999
4+400	131.256	131.663	131.384	131.984
4+450	131.119	131.282	131.369	131.969
4+500	130.982	131.090	131.355	131.955

LEGEND			
	NSL		EXISTING BED LEVEL
	EXISTING TOP OF BANK		PROPOSED BED LEVEL
	EXISTING FALL		PROPOSED FSL
	MODIFIED FALL		PROPOSED TOP OF BANK LEVEL
	NEW FALL		

IMPLEMENTING AGENCY :-
WAPCOS LTD.

PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
DRAWING TITLE :-	L-SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)		
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ LSEC-		
Drawn By:-	Checked By:-	Approved By:-	

L- SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
FROM CH 4+500 TO 6+000



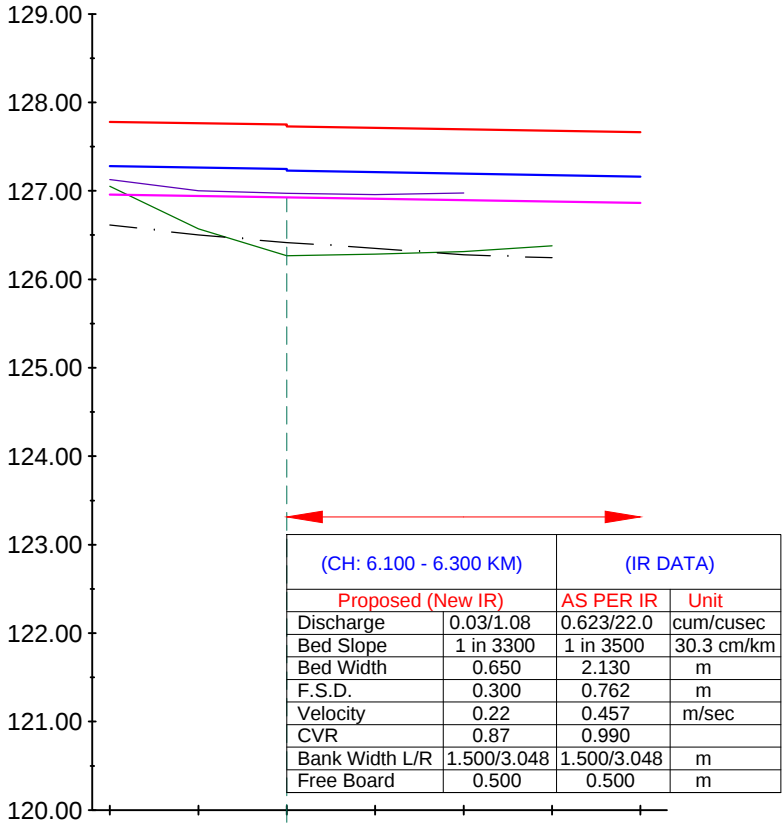
Chainage	DESIGN DATA		EXISTING DATA	
	TOP OF BANK LEVEL	F.S.L.	Bed Level	TOP OF BANK LEVEL
4+500	132.455	131.955	130.428	131.090
4+550	131.220	130.720	130.298	130.921
4+600	131.205	130.705	130.203	130.752
4+650	131.141	130.641	130.098	130.583
4+700	131.126	130.626	129.998	130.414
4+750	131.111	130.611	129.895	130.556
4+800	131.096	130.596	129.638	130.979
4+850	131.082	130.582	129.244	129.735
4+900	131.073	130.573	128.857	129.565
4+950	130.138	129.638	128.921	129.405
5+000	130.124	129.624	128.966	129.245
5+050	130.109	129.609	129.023	129.680
5+100	130.094	129.594	128.851	130.628
5+150	130.079	129.579	128.608	130.444
5+170	130.074	129.574	128.608	130.444
5+200	128.897	128.397	128.314	129.705
5+250	128.882	128.382	128.081	128.965
5+300	128.867	128.367	127.809	128.419
5+350	128.852	128.352	127.585	128.183
5+400	128.837	128.337	127.393	127.948
5+450	128.822	128.322	127.202	127.712
5+500	128.060	127.560	127.009	127.476
5+550	128.045	127.545	126.818	127.527
5+600	128.029	127.529	126.788	127.761
5+650	128.014	127.514	126.845	127.929
5+700	127.999	127.499	126.906	127.569
5+750	127.984	127.484	126.919	127.642
5+800	127.969	127.469	126.899	127.714
5+850	127.954	127.454	126.880	127.668
5+900	127.939	127.439	126.819	127.500
5+950	127.793	127.293	126.721	127.315
6+000	127.778	127.278	126.613	127.127

LEGEND			
	NSL		EXISTING BED LEVEL
	EXISTING TOP OF BANK		PROPOSED BED LEVEL
	EXISTING FALL		PROPOSED FSL
	MODIFIED FALL		PROPOSED TOP OF BANK LEVEL
	NEW FALL		

IMPLEMENTING AGENCY :-
WAPCOS LTD.

PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
DRAWING TITLE :-	L-SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)		
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ LSEC-		
Drawn By:-	Checked By:-	Approved By:-	

L- SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
FROM CH 6+000 TO 6+300



DESIGN DATA	TOP OF BANK LEVEL	127.778	127.763	127.748	127.711	127.695	127.678	127.661
	F.S.L.	127.278	127.263	127.248	127.211	127.195	127.178	127.161
	Proposed Bed Level	126.958	126.943	126.928	126.911	126.895	126.878	126.861
EXISTING DATA	Bed Level	126.613	126.502	126.416	126.351	126.277	126.243	
	TOP OF BANK LEVEL	127.127	127.001	126.973	126.959	126.976		
	NSL	127.053	126.570	126.267	126.285	126.315	126.378	
Chainage		6+000	6+050	6+100	6+150	6+200	6+250	6+300

NSL

EXISTING TOP OF BANK

EXISTING FALL

MODIFIED FALL

NEW FALL

EXISTING BED LEVEL

PROPOSED BED LEVEL

PROPOSED FSL

PROPOSED TOP OF BANK LEVEL

IMPLEMENTING AGENCY :-
WAPCOS LTD.


PROJECT TITLE :-
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

DRAWING TITLE :-
L-SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

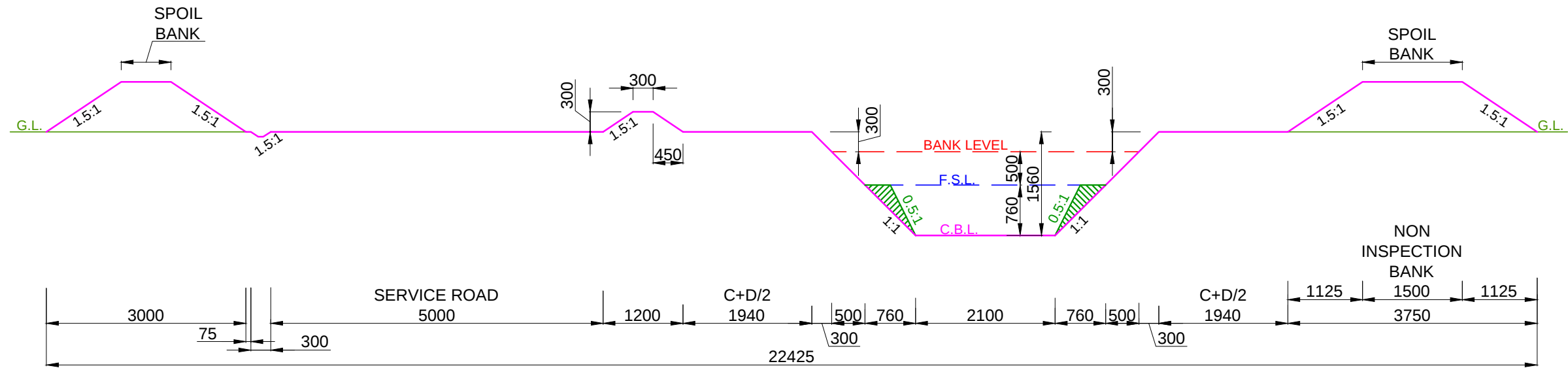
DRAWING NO. :-
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ LSEC-

Drawn By:-
Checked By:-
Approved By:-

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***TYPICAL X-SECTION
OF KUSAH MINOR***

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 0.000 KM TO CH: 2.450 KM

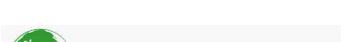
- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
			Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
			Drawing No. :- ⁸	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FC) 1 of 8				

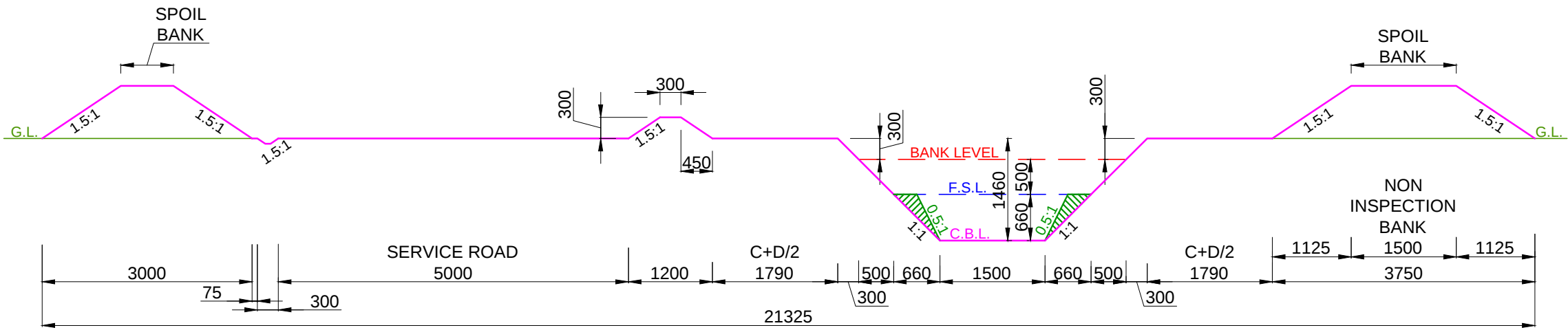
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NOTE:-

1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

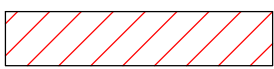
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		CUT AREA		Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)	
		FILL AREA		Drawing No. :- ⁹	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FC) 2 of 8	

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL CUTTING

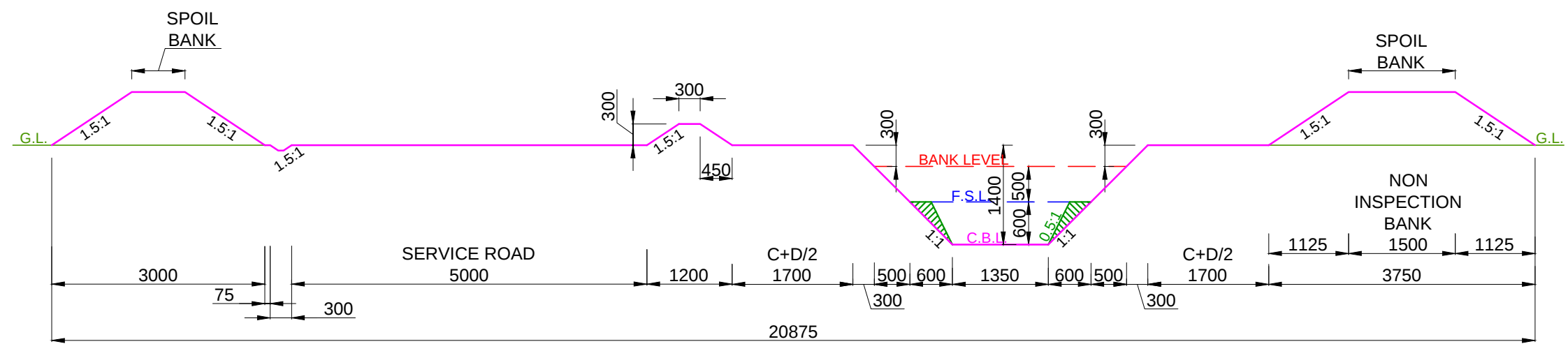


DESIGN SECTION FROM CH: 3.292 KM TO CH: 4.000 KM

- NOTE:-
1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND		Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
	CUT AREA		Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
	FILL AREA		Drawing No. :- ¹⁰	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FC) 3 of 8				

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 4.000 KM TO CH: 4.600 KM

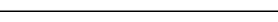
- NOTE:-
1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA	Prepared by :- WAPCOS LTD.	Project Title :- NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	4 of 8
		Drawing Title :- X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)	
		Drawing No. :-¹¹ WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FC)	

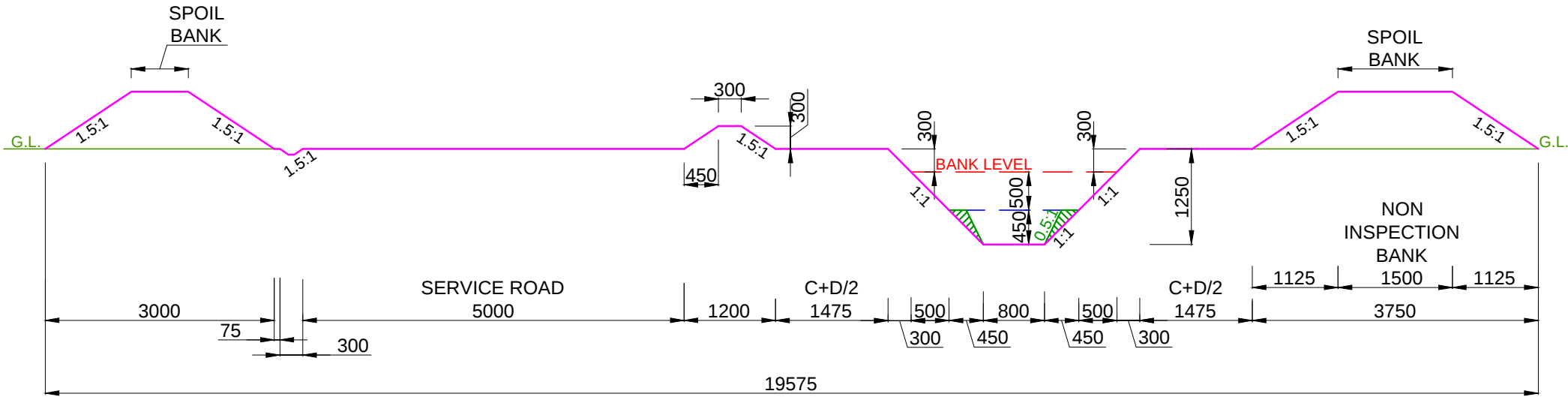
The diagram illustrates a cross-section of a road with a total width of 20325mm. The central section is a 5000mm wide service road. To the left of the service road is a 3000mm wide area, and to the right is a 3750mm wide area. The 3750mm area on the right includes a 1500mm wide inspection bank and 1125mm wide areas on either side. The diagram shows various slopes (1.5:1, 0.5:1, 1:1) and heights (300, 450, 550, 1350). The ground level (G.L.) and bank level are indicated. A total width of 20325mm is shown at the bottom.

NOTE:-

1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND		Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	
	CUT AREA		Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)	
	FILL AREA		Drawing No. :- ¹²	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FC) 5 of 8	

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 5.170 KM TO CH: 5.900 KM

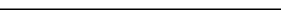
- NOTE:-**
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
			Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
			Drawing No. :- ¹³	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FC) 6 of 8				

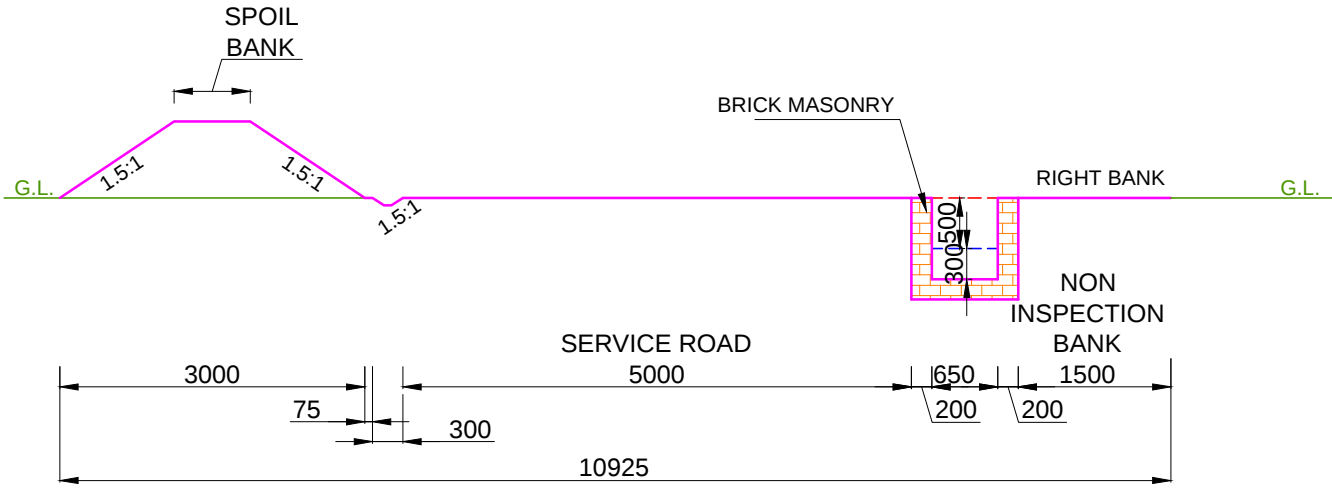
The diagram illustrates a cross-section of a road profile with the following features:

- G.L.**: Ground Level, indicated by a green horizontal line.
- SPOIL BANK**: Located at both ends of the profile, sloping at 1.5:1.
- BANK LEVEL**: Indicated by a red line.
- F.S.L.**: Finished Surface Level, indicated by a blue line.
- C.B.L.**: Centerline Bank Level, indicated by a magenta line.
- NON INSPECTION BANK**: Located on the right side of the profile.
- SERVICE ROAD**: A section of the road with a width of 5000 units.
- Dimensions**: Various vertical and horizontal dimensions are provided, including 3000, 75, 300, 500, 2000, C+D/2, 1280, 500, 700, 500, 300, 1125, 1500, 1125, 3750, and 19625.
- Slopes**: Slopes of 1.5:1 and 1:1 are specified for different sections of the bank.

NOTE:-

- | | | | |
|--|--|------------------------------|--|
| <div> <div>LEGEND</div> <div> <div> CUT AREA</div> <div> FILL AREA</div> </div> </div> | <div> <div>Prepared by :-</div> <div> <div>WAPCOS LTD.</div> <div></div> </div> </div> | Project Title :- | NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND |
| | | Drawing Title :- | X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL) |
| | | Drawing No. :- ¹⁴ | WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FC) 7 of 8 |

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL CUTTING

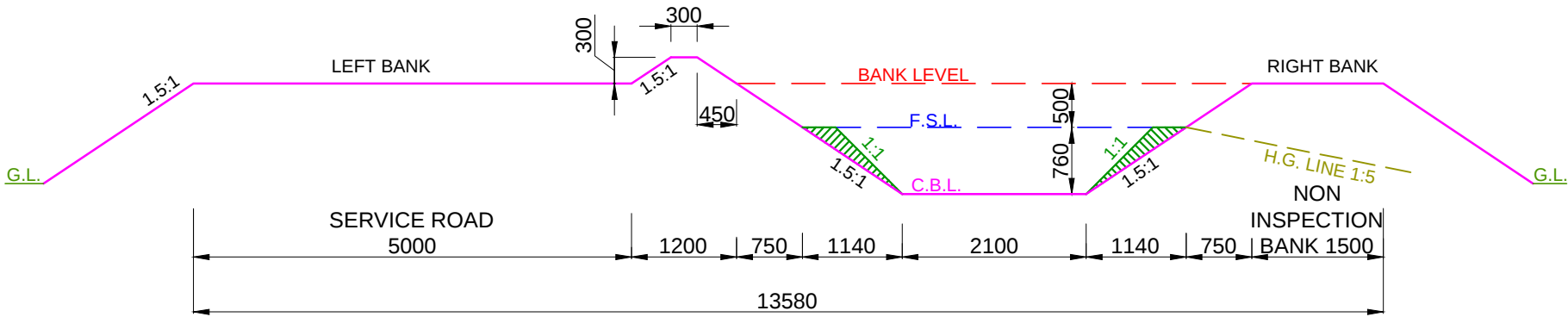


DESIGN SECTION FROM CH: 6.100 KM TO CH: 6.300 KM

- NOTE:-**
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
			Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
			Drawing No. :- ¹⁵	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FC)				

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL FILLING

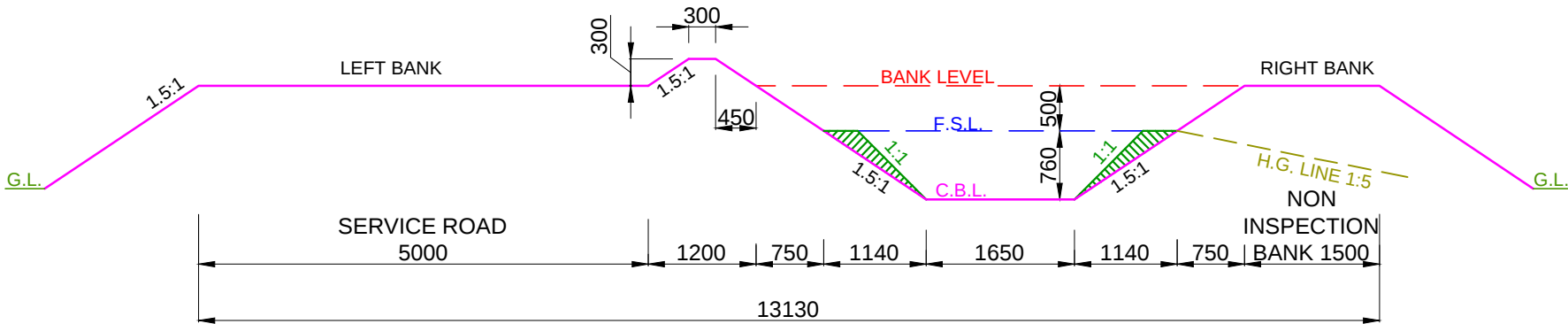


DESIGN SECTION FROM CH: 0.000 KM TO CH: 2.450 KM

- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

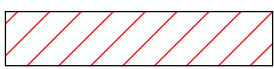
LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
			Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
			Drawing No. :- ¹⁶	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FF) 1 of 8				

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL FILLING

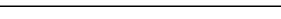


DESIGN SECTION FROM CH: 2.450 KM TO CH: 3.292 KM

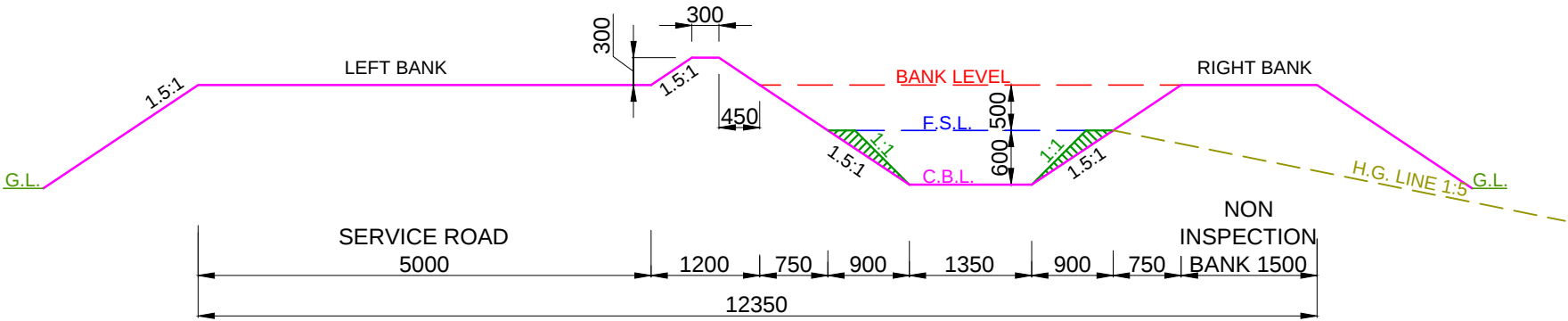
- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND		Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
	CUT AREA		Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
	FILL AREA		Drawing No. :- ¹⁷	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FF) 2 of 8				

NOTE:-

- | | | | |
|---|--|---|--|
| <div>LEGEND</div> <div> <div>  <div>CUT AREA</div> </div> <div>  <div>FILL AREA</div> </div> </div> | | <div>Prepared by :-</div> <div> <div>WAPCOS LTD.</div> <div>  </div> </div> | <div>Project Title :-</div> <div>NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND</div> |
| | | <div>Drawing Title :-</div> <div>X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)</div> | |
| | | <div>Drawing No. :-¹⁸</div> | <div>WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FF)</div> <div>3 of 8</div> |

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL FILLING



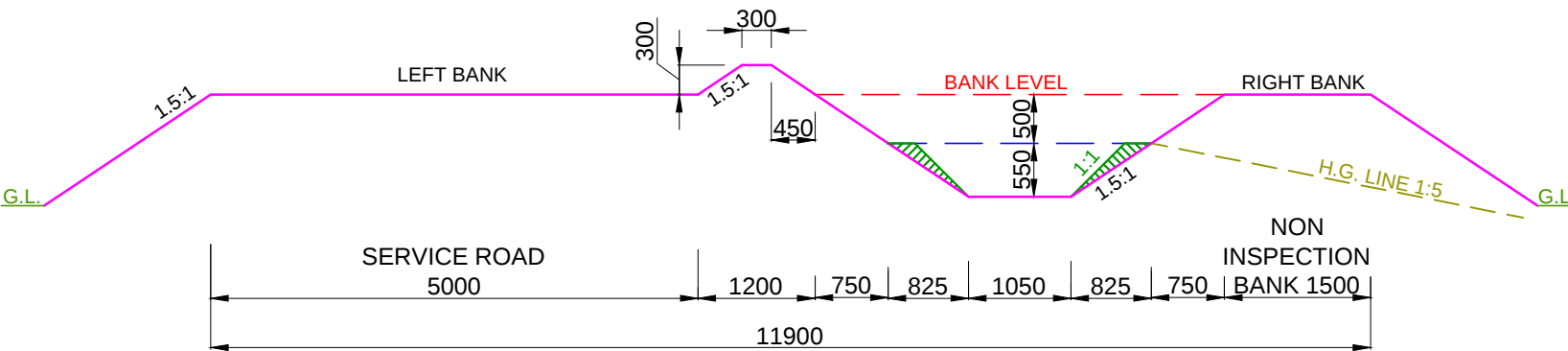
DESIGN SECTION FROM CH: 4.000 KM TO CH: 4.600 KM

- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD.	Project Title :- NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
			Drawing Title :- X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-¹⁹ WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FF)

4 of 8

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 4.600 KM TO CH: 5.170 KM

- NOTE:-**
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

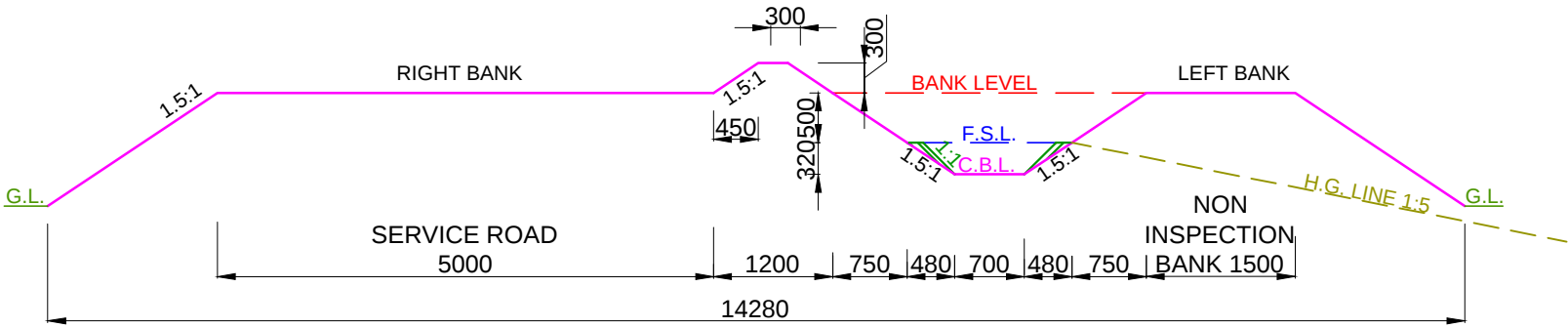
LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
			Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
			Drawing No. :- ²⁰	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FF) 5 of 8				

The diagram illustrates a cross-section of a road layout. At the center is a **SERVICE ROAD** with a width of **5000**. On either side of the service road are **INSPECTION BANKS**, each with a width of **1500**. The total width of the road section is **14801**. The diagram shows various slopes and levels: **RIGHT BANK** and **LEFT BANK** are indicated. Slopes are marked as **1.5:1**. A **BANK LEVEL** is shown with a vertical offset of **450** from the **G.L.** (Ground Level). The **H.G. LINE 1.5** is also indicated. Dimensions for the inspection banks are given as **1200**, **750**, **675**, **800**, **675**, and **750**.

NOTE:-

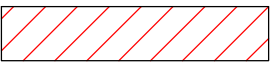
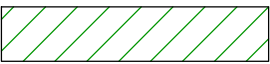
- | | | | | | |
|--|-------------------------|--|------------------------------------|--|--|
| <p>LEGEND</p> | | <p>Prepared by :-</p> <p>WAPCOS LTD.</p>  | <p>Project Title :-</p> | <p>NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND</p> | |
|  | <p>CUT AREA</p> | | <p>Drawing Title :-</p> | <p>X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)</p> | |
|  | <p>FILL AREA</p> | | <p>Drawing No. :-²¹</p> | <p>WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FF) 6 of 8</p> | |

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL FILLING

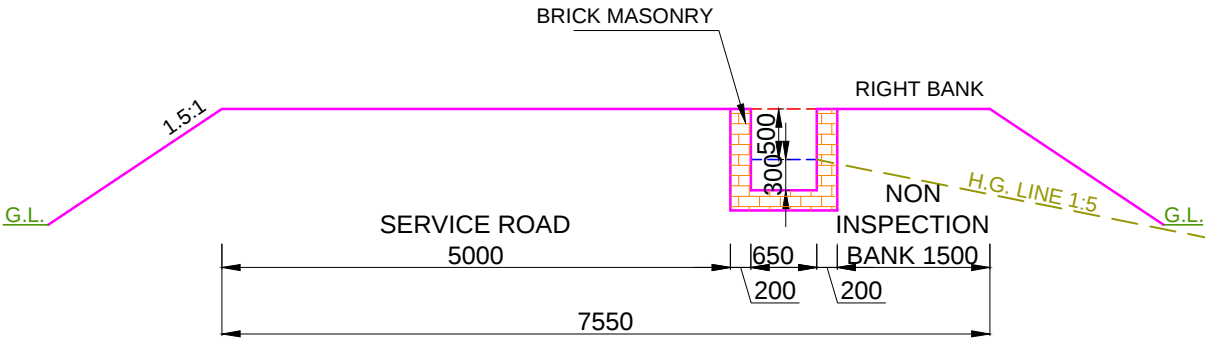


DESIGN SECTION FROM CH: 5.900 KM TO CH: 6.100 KM

- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

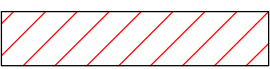
LEGEND		Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
	CUT AREA		Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
	FILL AREA		Drawing No. :- ²²	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FF) 7 of 8				

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR FULL FILLING

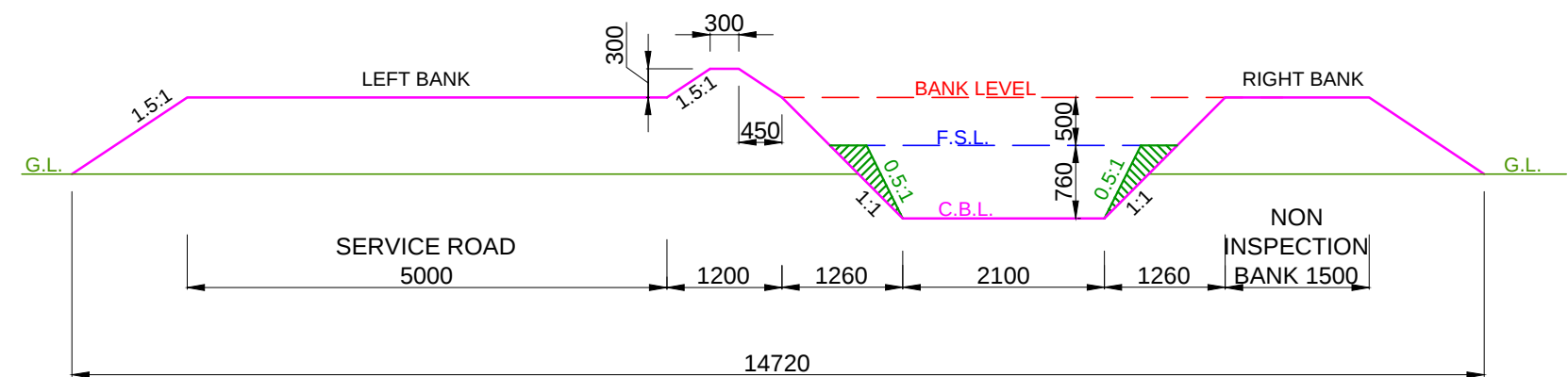


DESIGN SECTION FROM CH: 6.100 KM TO CH: 6.300 KM

- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND		Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
	CUT AREA		Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
	FILL AREA		Drawing No. :- ²³	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(FF) 8 of 8				

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING

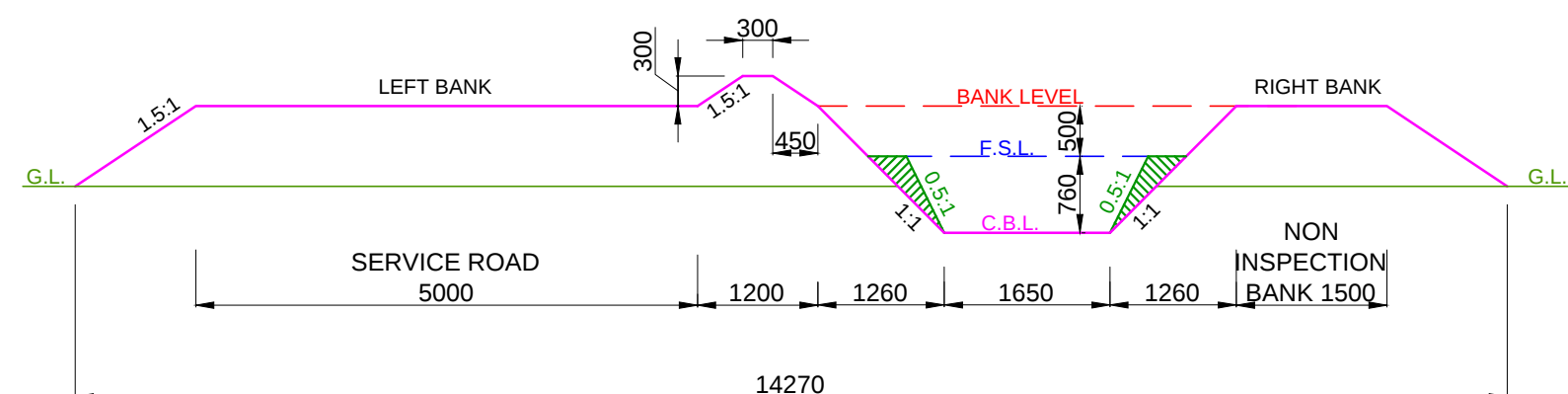


DESIGN SECTION FROM CH: 0.000 KM TO CH: 2.450 KM

- NOTE:-
1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA	Prepared by :- WAPCOS LTD.	Project Title :- NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
		Drawing Title :- X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)		
		Drawing No. :-²⁴ WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(PCF)	1 of 8	

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING

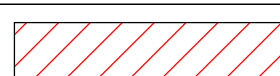


DESIGN SECTION FROM CH: 2.450 KM TO CH: 3.292 KM

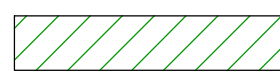
NOTE:-

1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND



CUT AREA



FILL AREA

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

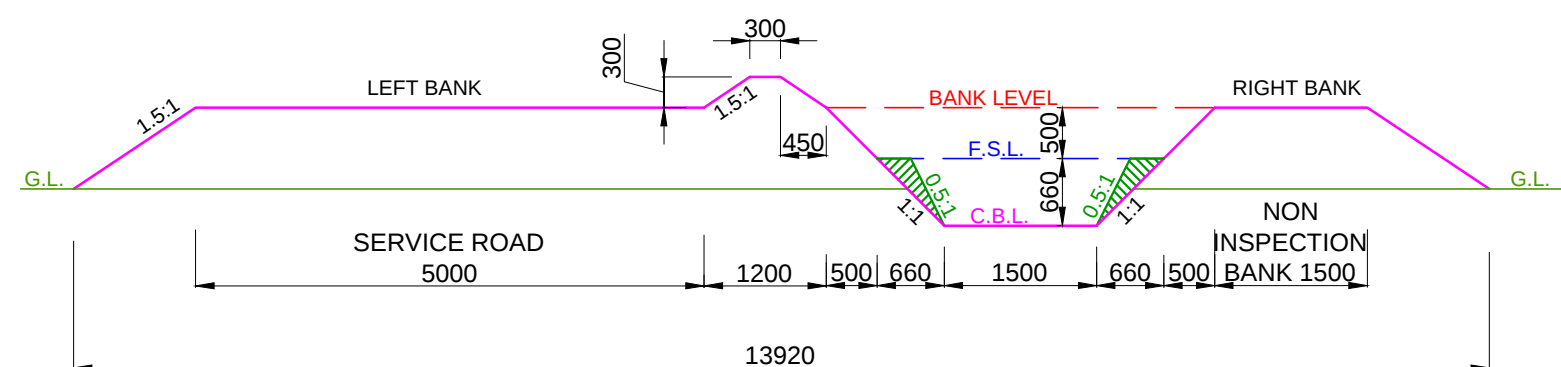
X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L),
NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-²⁵

WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(PCF)

2 of 8

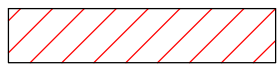
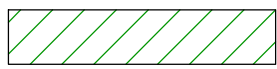
TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



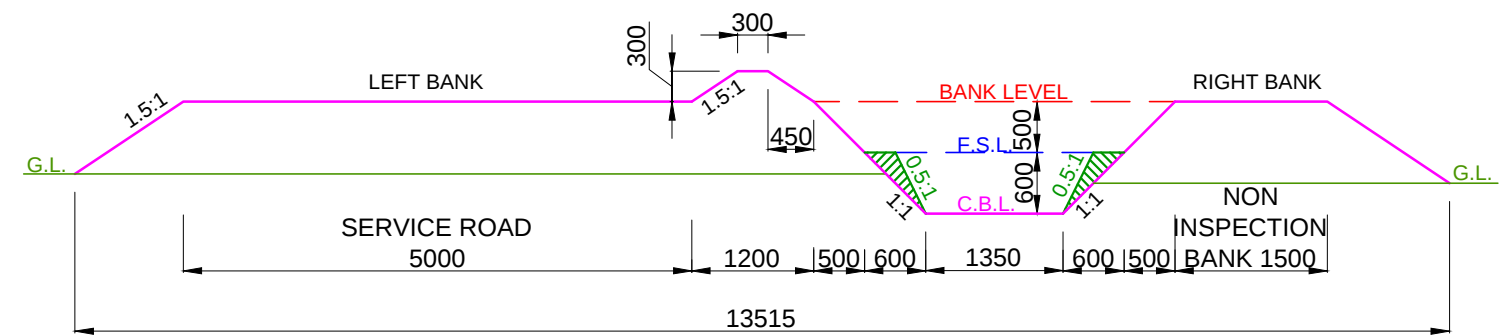
DESIGN SECTION FROM CH: 3.292 KM TO CH: 4.000 KM

NOTE:-

1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND		Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
	CUT AREA		Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
	FILL AREA		Drawing No. :- ²⁶	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(PCF) 3 of 8				

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING

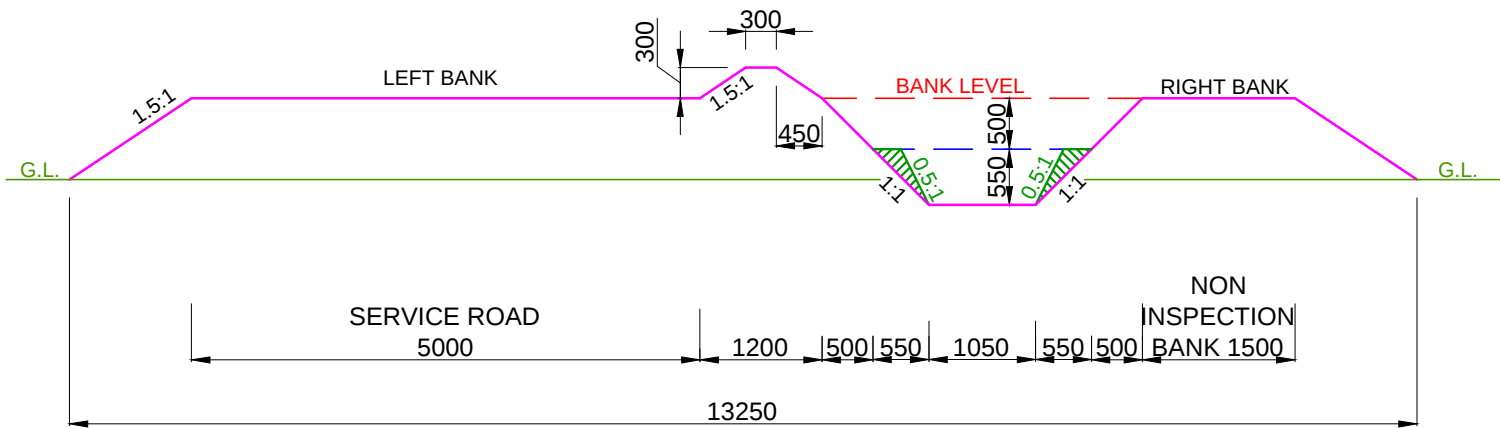


DESIGN SECTION FROM CH: 4.000 KM TO CH: 4.600 KM

- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
			Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
			Drawing No. :- ²⁷	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(PCF) 4 of 8				

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING

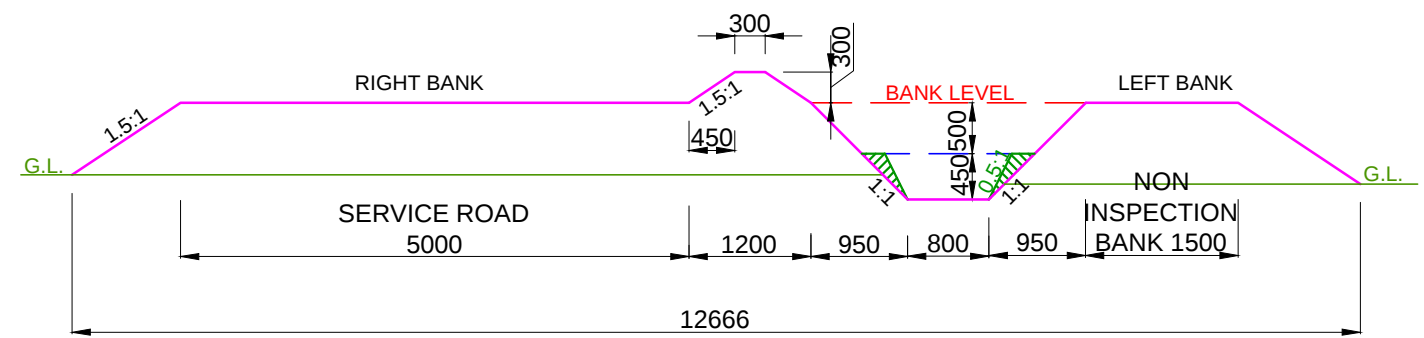


DESIGN SECTION FROM CH: 4.600 KM TO CH: 5.170 KM

- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
			Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
			Drawing No. :- ²⁸	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(PCF) 5 of 8				

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 5.170 KM TO CH: 5.900 KM

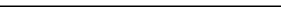
- NOTE:-
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

LEGEND CUT AREA FILL AREA		Prepared by :- WAPCOS LTD. 	Project Title :- NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
			Drawing Title :- X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-²⁹ WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(PCF)

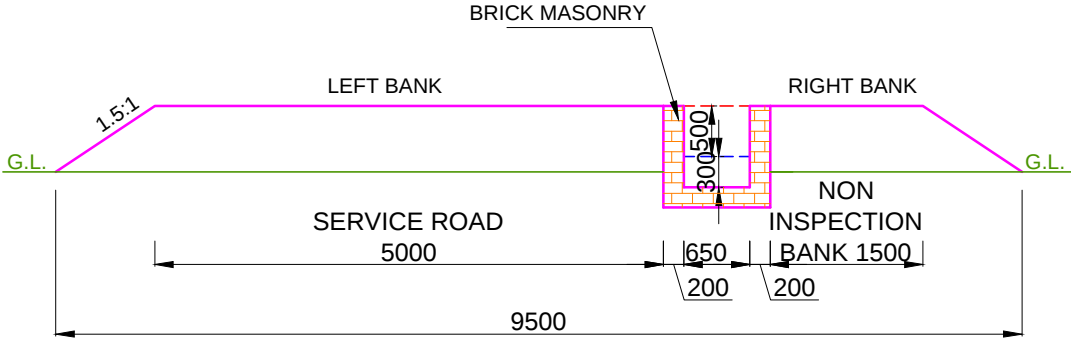
6 of 8

The diagram illustrates a cross-section of a road with a central drainage ditch. The road is divided into a service road and a non-inspection bank. The service road has a width of 5000m. The non-inspection bank has a width of 1500m. The total width of the road is 12170m. The diagram shows the right bank, left bank, and a central ditch. Key dimensions include a 1200m width for the ditch area, a 500m width for the ditch, and a 700m width for the ditch. The diagram also shows the elevation of the ground level (G.L.), the finished surface level (F.S.L.), and the center line level (C.B.L.). The slopes are indicated as 1.5:1 for the right bank and 1:1 for the left bank. The ditch has a depth of 320mm and a width of 320mm. The diagram also shows the distance from the service road to the ditch (1200m) and the distance from the ditch to the non-inspection bank (1500m).

NOTE:-

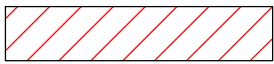
- | | | |
|---|---|--|
| <div> <div>LEGEND</div> <div> <div>  <div>CUT AREA</div> </div> <div>  <div>FILL AREA</div> </div> </div> </div> <td> <div>Prepared by :-</div> <div> <div>WAPCOS LTD.</div> <div>  </div> </div> </td> <td> <div>Project Title :-</div> <div>NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND</div> </td> | <div>Prepared by :-</div> <div> <div>WAPCOS LTD.</div> <div>  </div> </div> | <div>Project Title :-</div> <div>NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND</div> |
| | <div>Drawing Title :-</div> <div>X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)</div> | |
| | <div>Drawing No. :-³⁰</div> <div>WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(PCF) 7 of 8</div> | |

TYPICAL X - SECTION OF KUSHA MINOR
(OFFTAKE FROM RD - 40+316 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



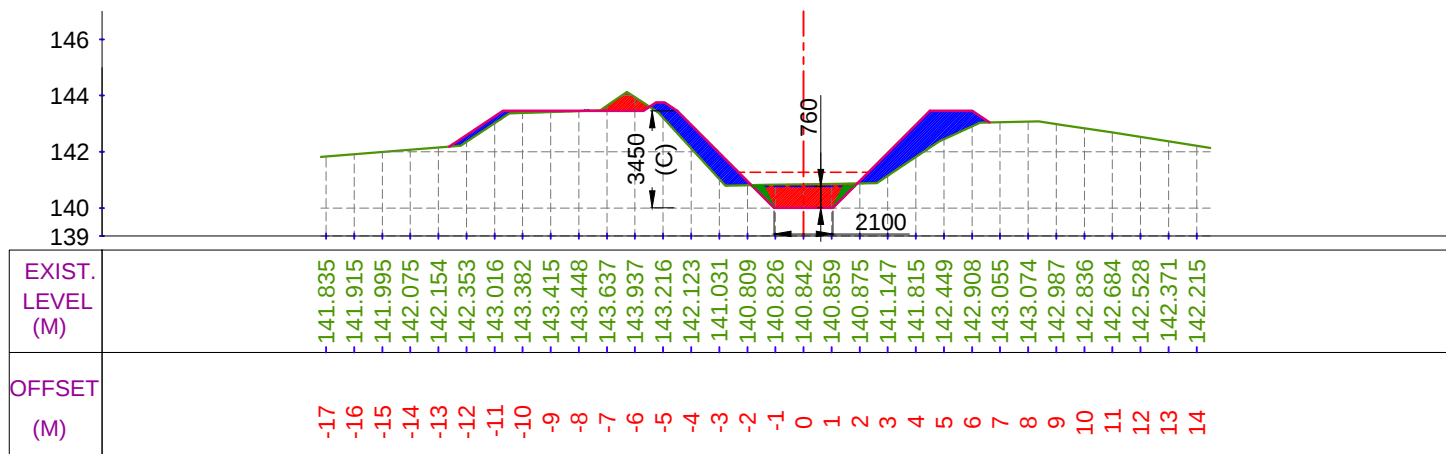
DESIGN SECTION FROM CH: 6.100 KM TO CH: 6.300 KM

- NOTE:-**
- 1. THE BANK WIDTH HAS BEEN ADOPTED AS PER IS 7112 : 2002 (TABLE-1).
 - 2. THE OFFTAKING CHAINAGE AND LENGTH OF THE CANAL HAS BEEN TAKEN AS PER ACTUAL SURVEY.
 - 3. THIS IS A TYPICAL DRAWING , INSPECTION & NON-INSPECTION BANK SHALL BE TAKEN AS PER SITE CONDITIONS.

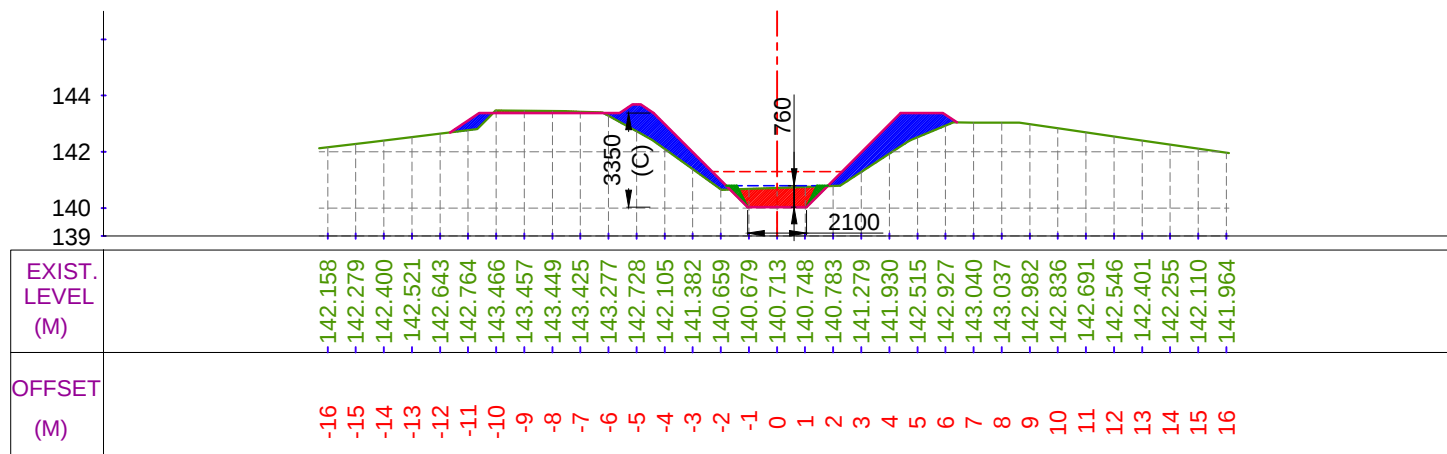
LEGEND		Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND				
	CUT AREA		Drawing Title :-	X SECTION OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)				
	FILL AREA		Drawing No. :- ³¹	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC /TYP-(PCF) 8 of 8				

***CROSS-SECTION
OF KUSAH MINOR***

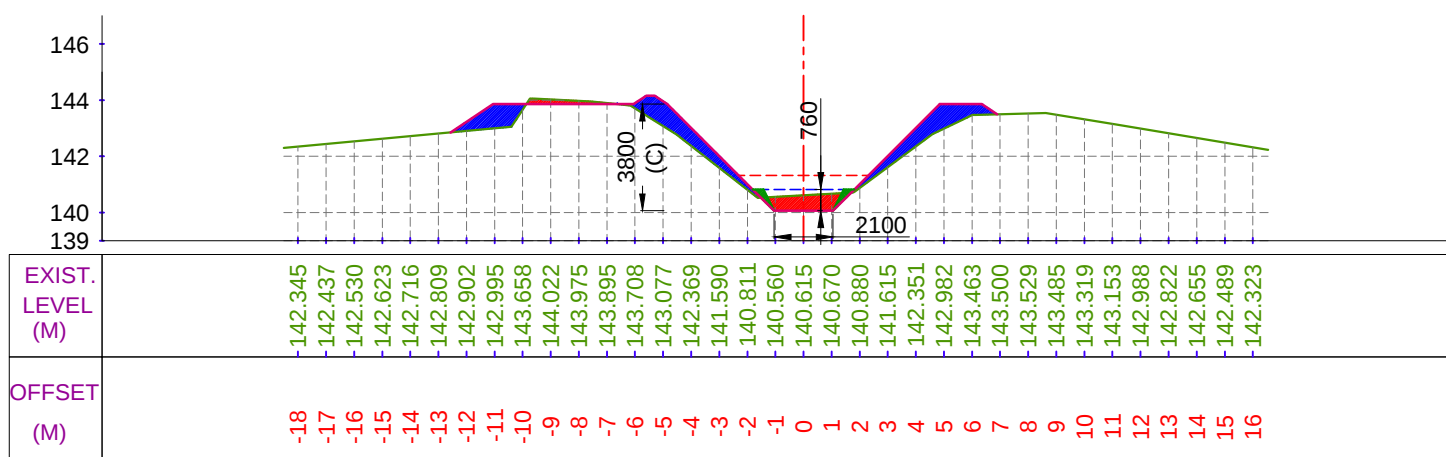
X SECTION OF KUSHA MINOR



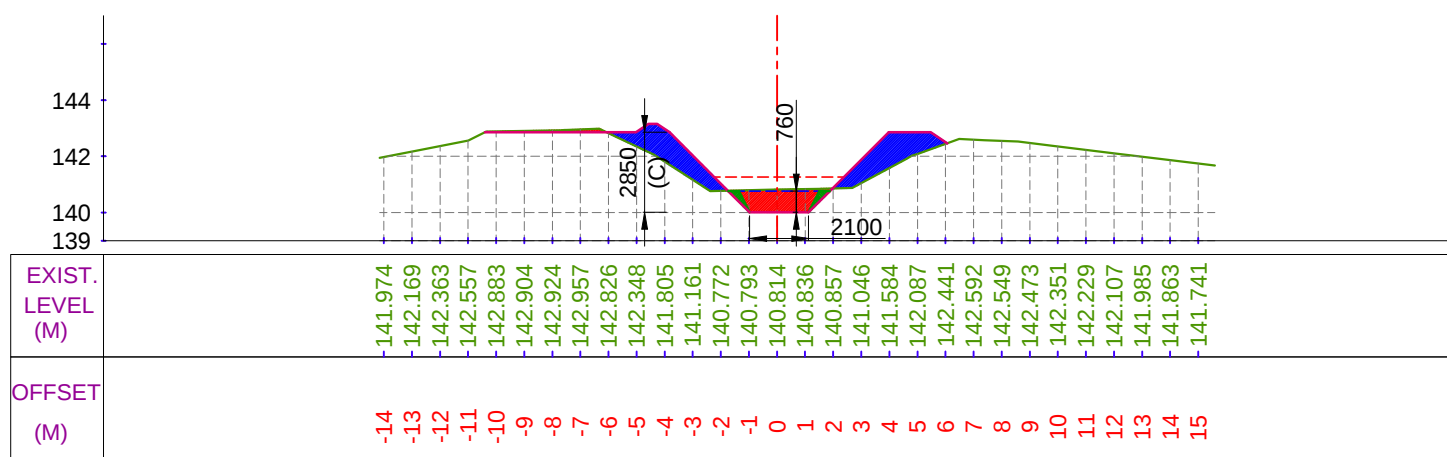
CUTTING AREA (SQ.M) = 2.793 CH. (KM):- 0+100
FILLING AREA (SQ.M) = 6.615 DESIGNED BED LEVEL = 140.090 M



CUTTING AREA (SQ.M) = 1.894 CH. (KM):- 0+300
FILLING AREA (SQ.M) = 6.356 DESIGNED BED LEVEL = 140.033 M



CUTTING AREA (SQ.M) = 1.688 CH. (KM):- 0+200
FILLING AREA (SQ.M) = 6.309 DESIGNED BED LEVEL = 140.061 M



CUTTING AREA (SQ.M) = 2.367 CH. (KM):- 0+400
FILLING AREA (SQ.M) = 6.006 DESIGNED BED LEVEL = 140.004 M

LEGEND

	CUT AREA		EXISTING BED LINE
	FILL AREA		F.S.L.
			DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

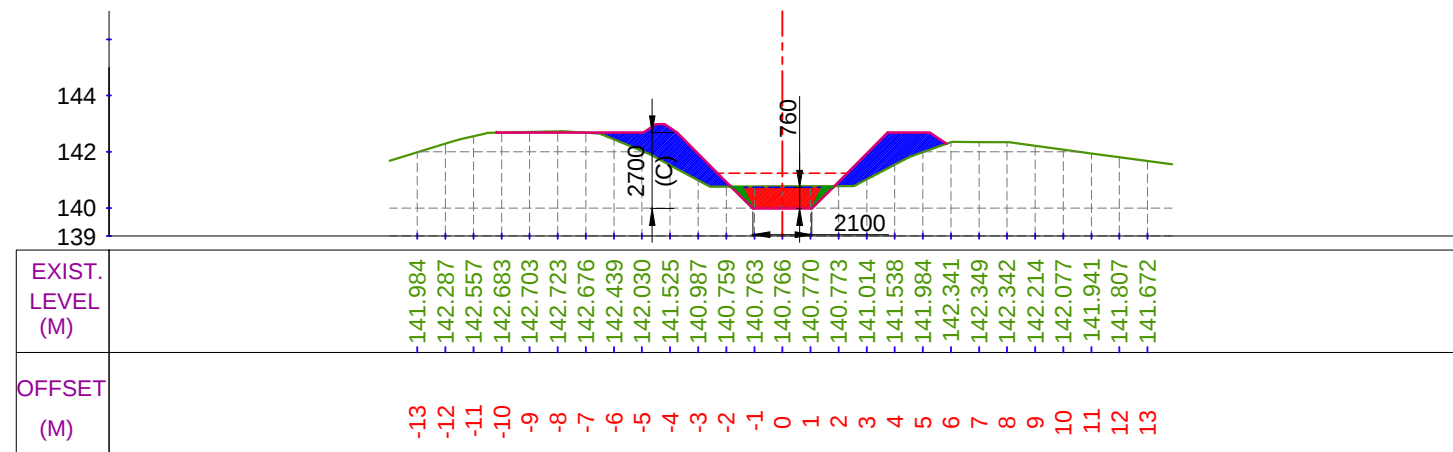
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

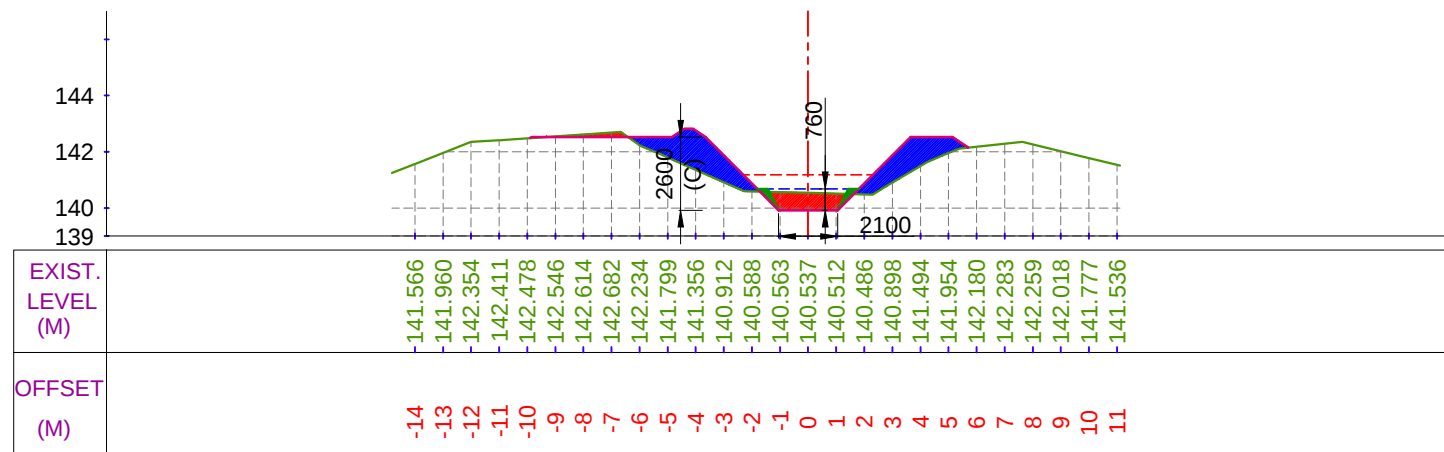
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

1 of 16

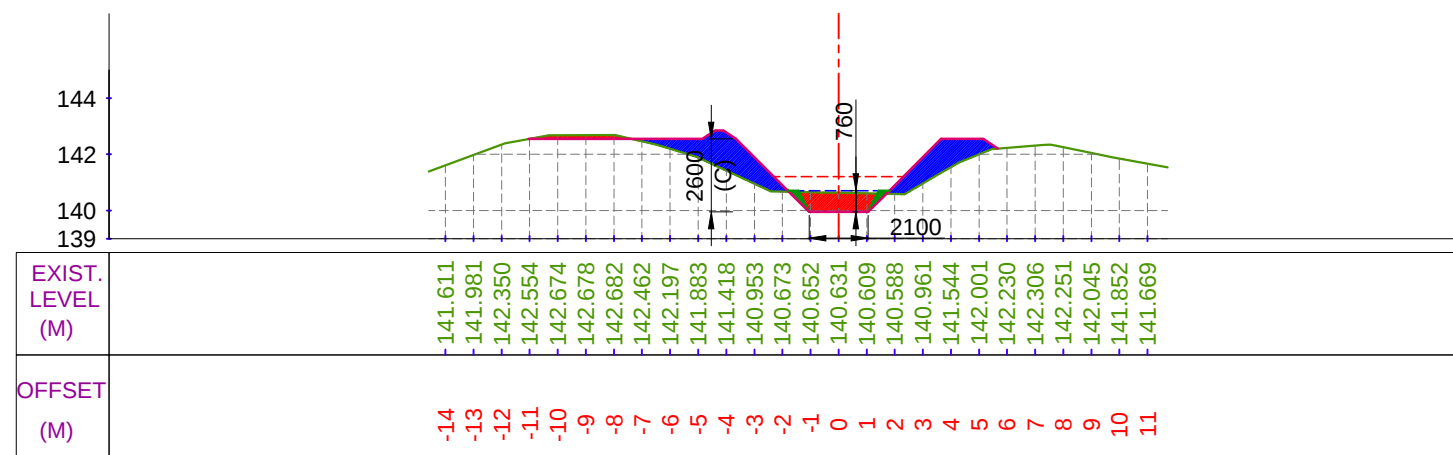
X SECTION OF KUSHA MINOR



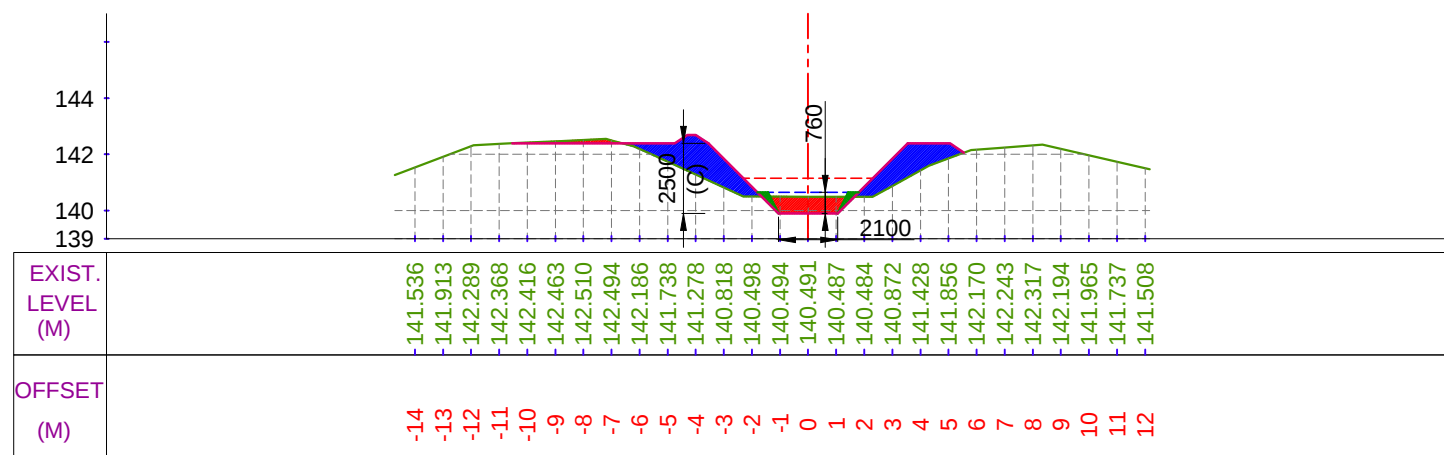
CUTTING AREA (SQ.M) = 2.059 CH. (KM):- 0+500
 FILLING AREA (SQ.M) = 6.387 DESIGNED BED LEVEL = 139.976 M



CUTTING AREA (SQ.M) = 1.768 CH. (KM):- 0+700
 FILLING AREA (SQ.M) = 6.523 DESIGNED BED LEVEL = 139.919 M



CUTTING AREA (SQ.M) = 2.064 CH. (KM):- 0+600
 FILLING AREA (SQ.M) = 6.430 DESIGNED BED LEVEL = 139.947 M



CUTTING AREA (SQ.M) = 1.752 CH. (KM):- 0+800
 FILLING AREA (SQ.M) = 6.322 DESIGNED BED LEVEL = 139.890 M

LEGEND

	CUT AREA		EXISTING BED LINE
	FILL AREA		F.S.L.
			DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

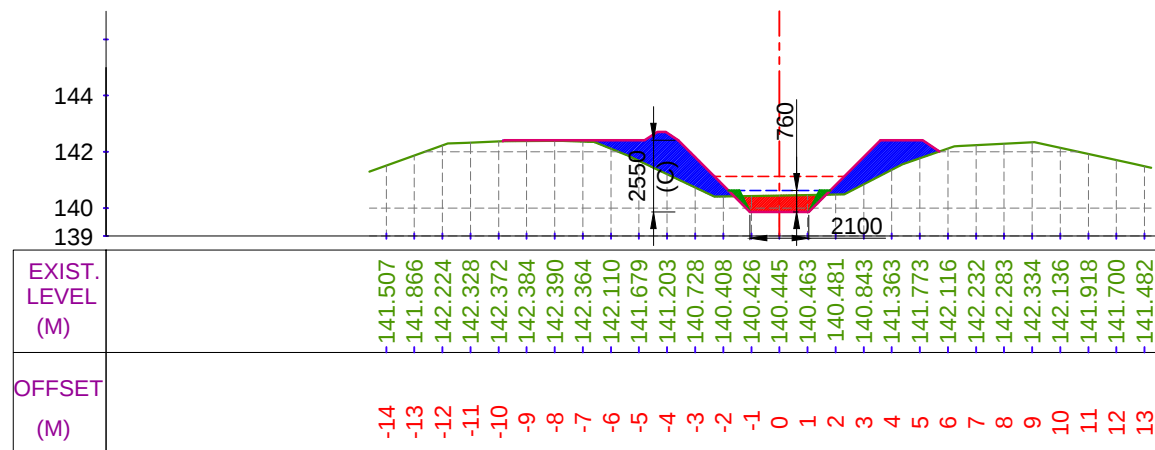
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

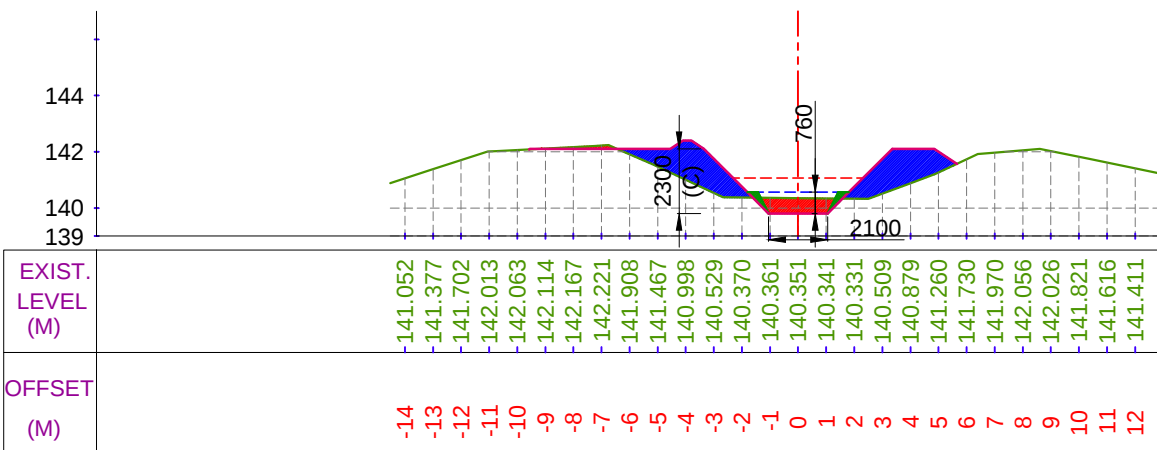
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

2 of 16

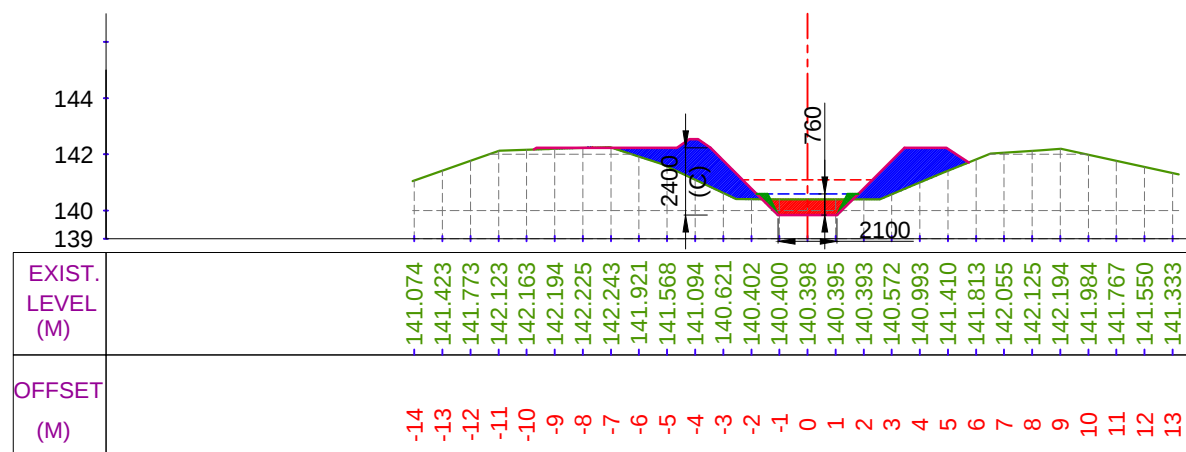
X SECTION OF KUSHA MINOR



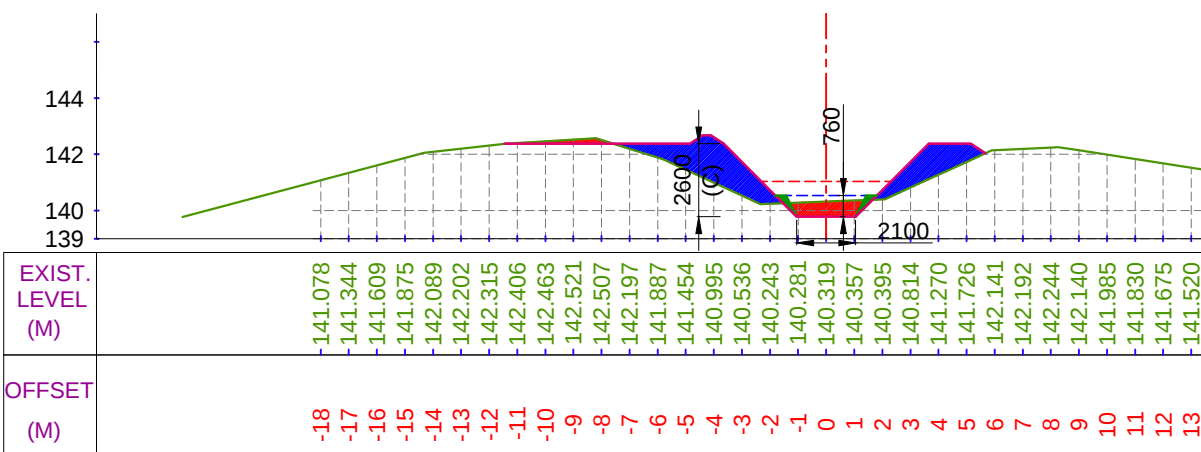
CUTTING AREA (SQ.M) = 1.396 CH. (KM):- 0+900
FILLING AREA (SQ.M) = 7.004 DESIGNED BED LEVEL = 139.861 M



CUTTING AREA (SQ.M) = 1.476 CH. (KM):- 1+100
FILLING AREA (SQ.M) = 7.361 DESIGNED BED LEVEL = 139.804 M

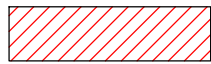


CUTTING AREA (SQ.M) = 1.353 CH. (KM):- 1+000
FILLING AREA (SQ.M) = 7.589 DESIGNED BED LEVEL = 139.833 M

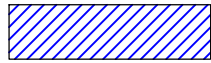


CUTTING AREA (SQ.M) = 1.666 CH. (KM):- 1+200
FILLING AREA (SQ.M) = 7.798 DESIGNED BED LEVEL = 139.776 M

LEGEND



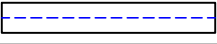
CUT AREA



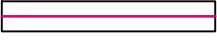
FILL AREA



EXISTING BED LINE



F.S.L.



DESIGNED BED LINE



H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

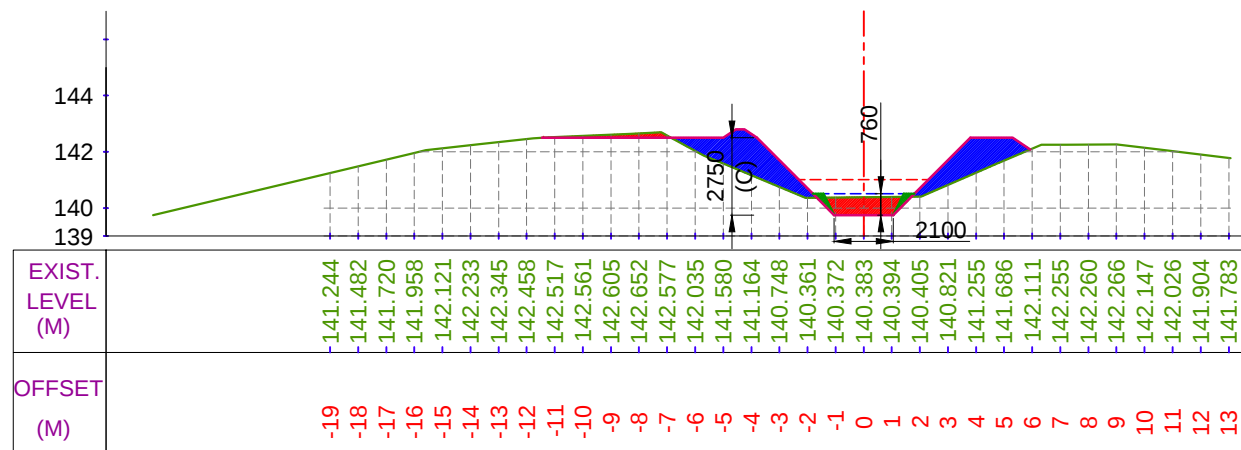
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

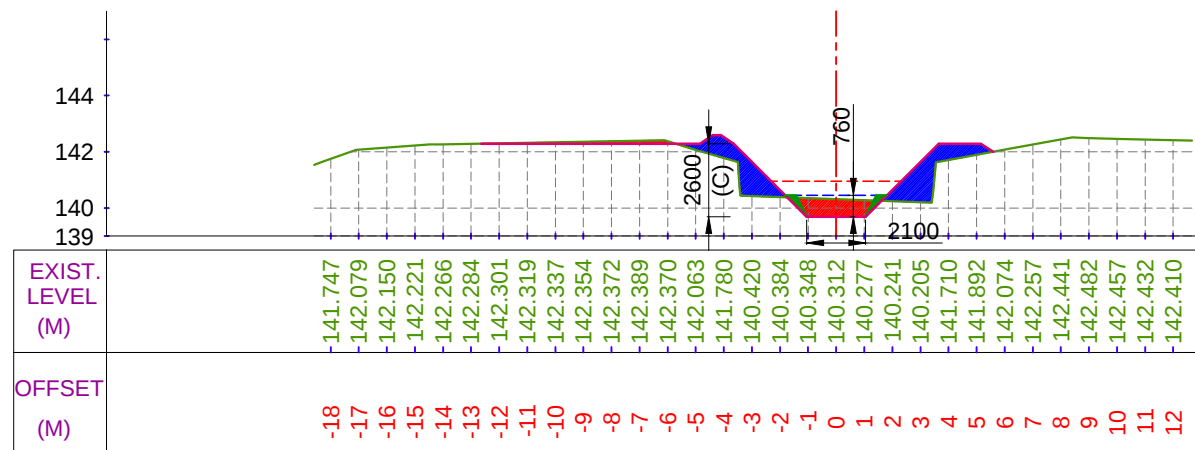
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

3 of 16

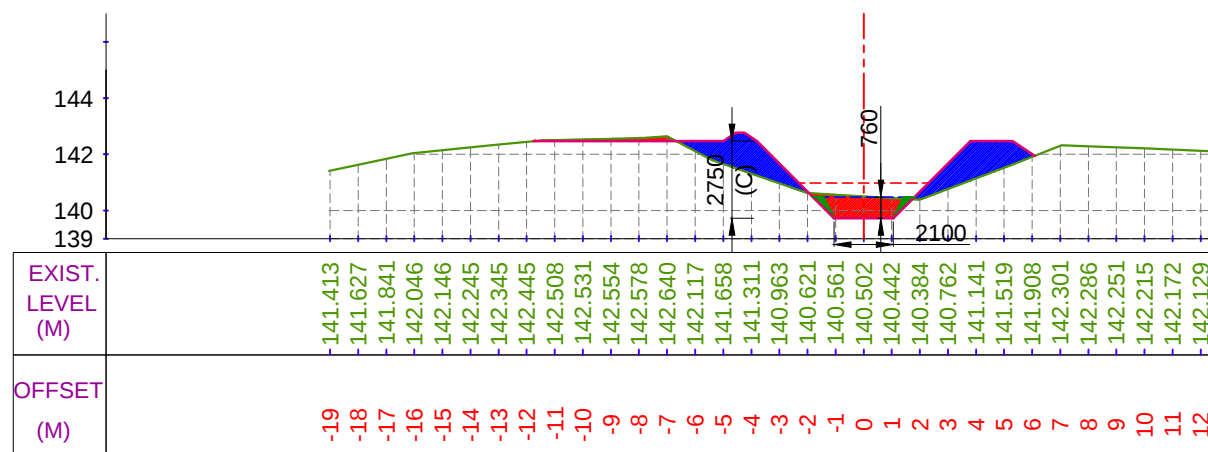
X SECTION OF KUSHA MINOR



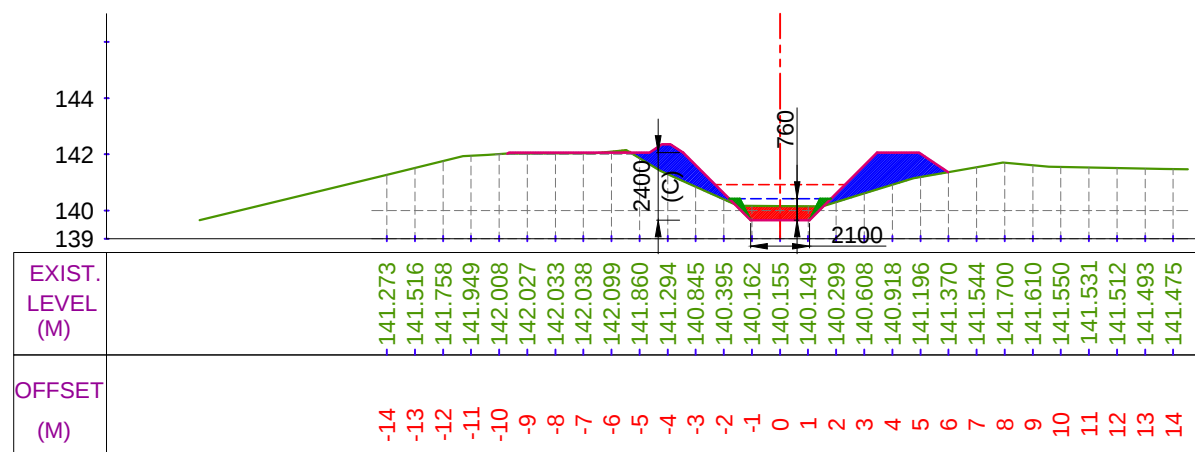
CUTTING AREA (SQ.M) = 1.975 CH. (KM):- 1+300
 FILLING AREA (SQ.M) = 7.421 DESIGNED BED LEVEL = 139.747 M



CUTTING AREA (SQ.M) = 1.899 CH. (KM):- 1+500
 FILLING AREA (SQ.M) = 5.152 DESIGNED BED LEVEL = 139.690 M

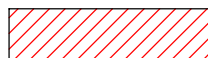


CUTTING AREA (SQ.M) = 2.415 CH. (KM):- 1+400
 FILLING AREA (SQ.M) = 6.892 DESIGNED BED LEVEL = 139.719 M



CUTTING AREA (SQ.M) = 1.206 CH. (KM):- 1+600
 FILLING AREA (SQ.M) = 5.600 DESIGNED BED LEVEL = 139.661 M

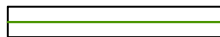
LEGEND



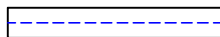
CUT AREA



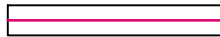
FILL AREA



EXISTING BED LINE



F.S.L.



DESIGNED BED LINE



H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

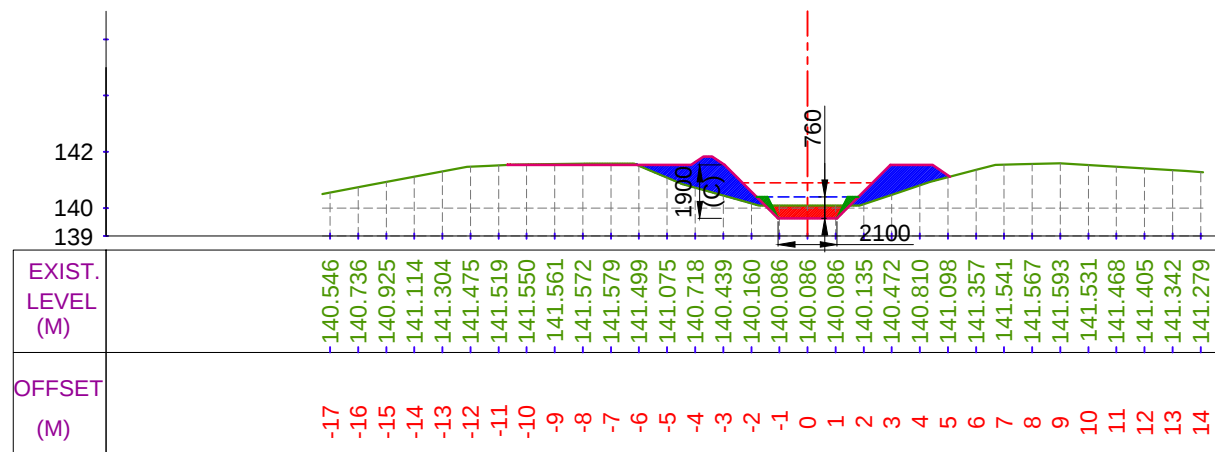
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

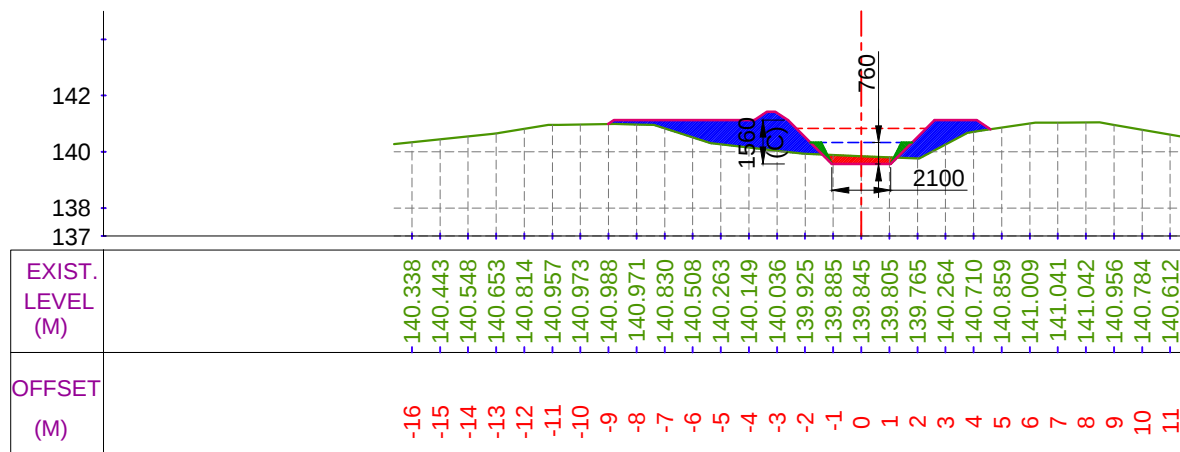
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

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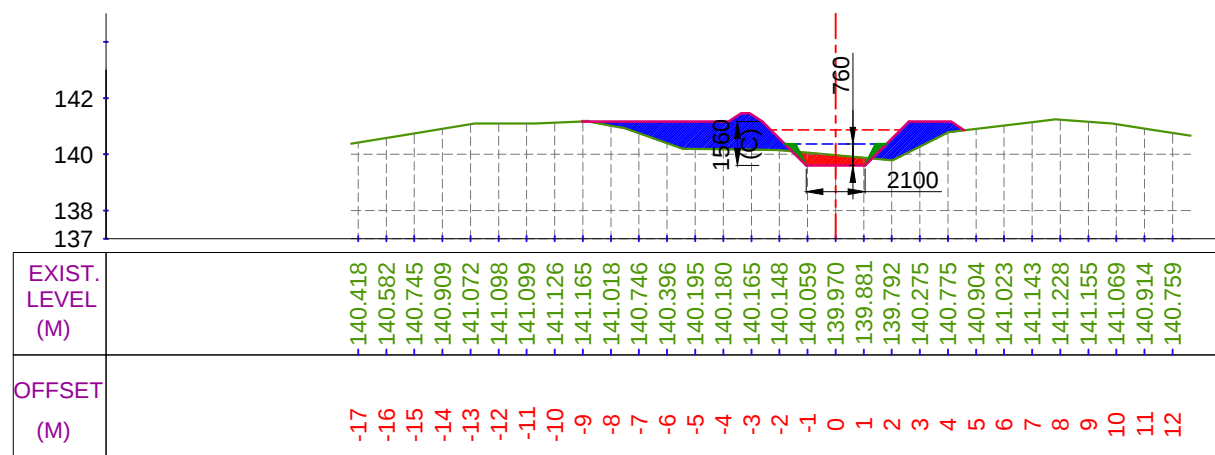
X SECTION OF KUSHA MINOR



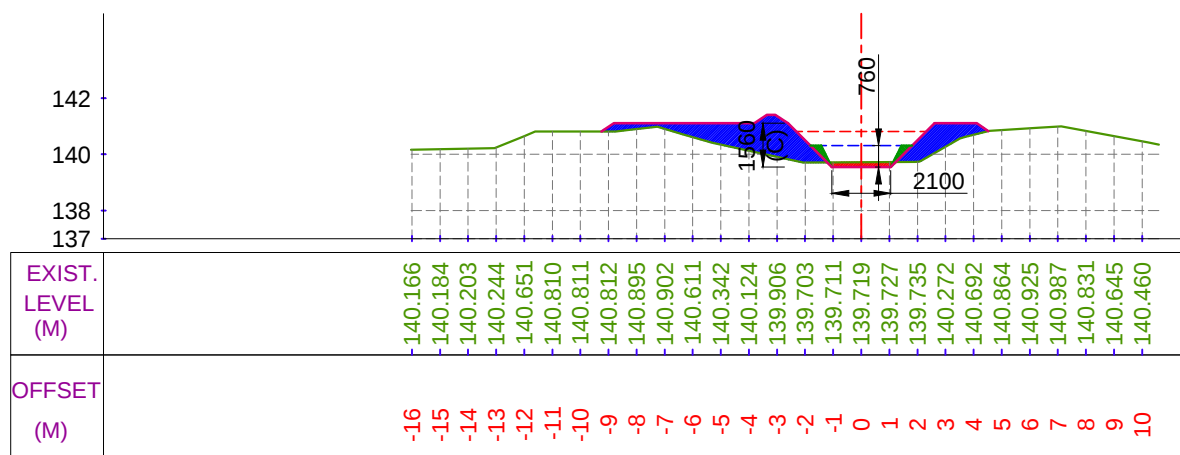
CUTTING AREA (SQ.M) = 1.200 CH. (KM):- 1+700
FILLING AREA (SQ.M) = 5.240 DESIGNED BED LEVEL = 139.633 M



CUTTING AREA (SQ.M) = 0.623 CH. (KM):- 1+900
FILLING AREA (SQ.M) = 6.836 DESIGNED BED LEVEL = 139.576 M



CUTTING AREA (SQ.M) = 0.843 CH. (KM):- 1+800
FILLING AREA (SQ.M) = 6.911 DESIGNED BED LEVEL = 139.604 M



CUTTING AREA (SQ.M) = 0.375 CH. (KM):- 2+000
FILLING AREA (SQ.M) = 7.000 DESIGNED BED LEVEL = 139.547 M

LEGEND

	CUT AREA		EXISTING BED LINE
	FILL AREA		F.S.L.
			DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

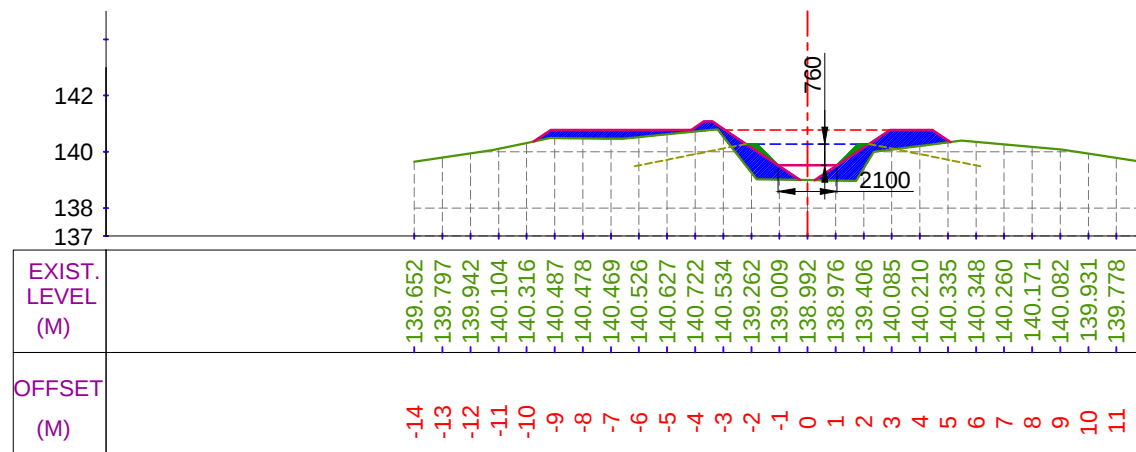
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

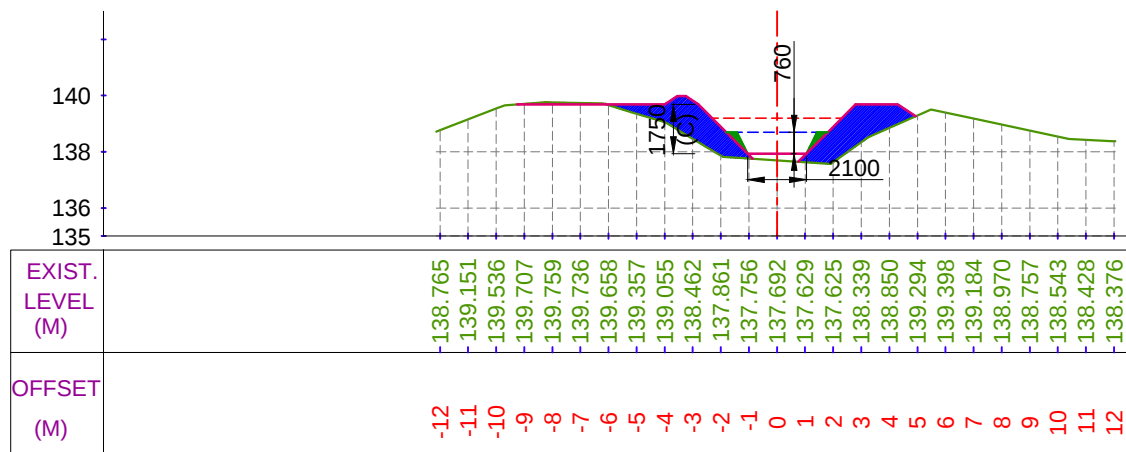
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

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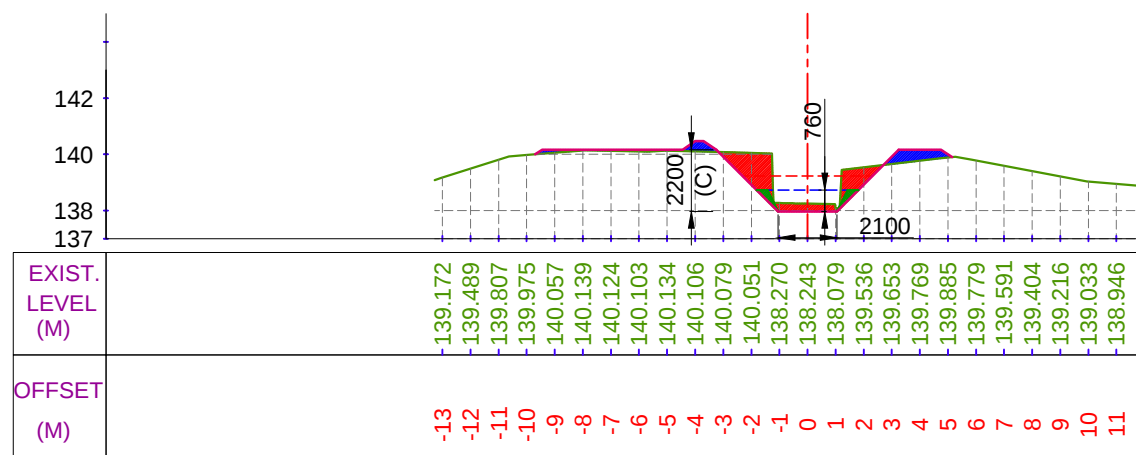
X SECTION OF KUSHA MINOR



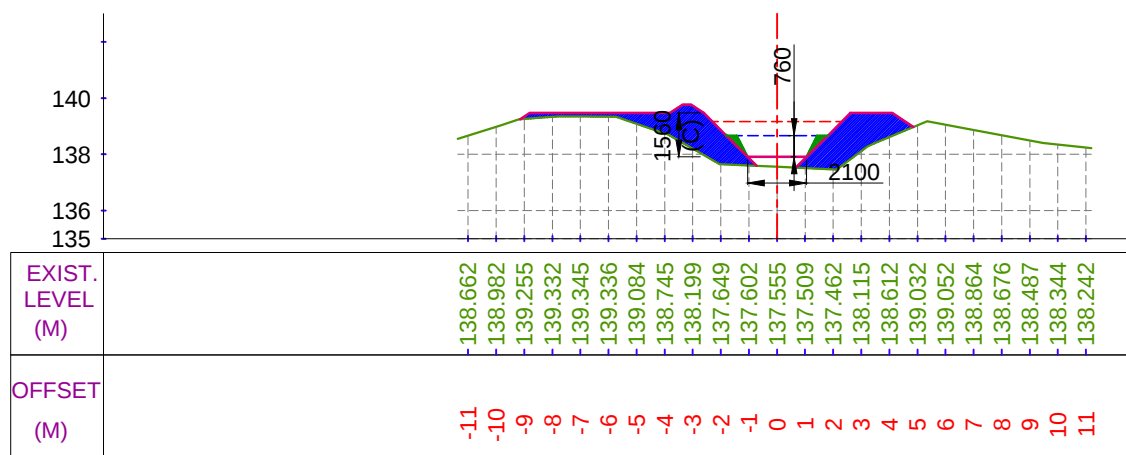
CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 2+100
 FILLING AREA (SQ.M) = 5.718 DESIGNED BED LEVEL = 139.519 M



CUTTING AREA (SQ.M) = 0.152 CH. (KM):- 2+300
 FILLING AREA (SQ.M) = 7.348 DESIGNED BED LEVEL = 137.937 M



CUTTING AREA (SQ.M) = 3.165 CH. (KM):- 2+200
 FILLING AREA (SQ.M) = 1.400 DESIGNED BED LEVEL = 137.966 M



CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 2+400
 FILLING AREA (SQ.M) = 8.491 DESIGNED BED LEVEL = 137.909 M

LEGEND

	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

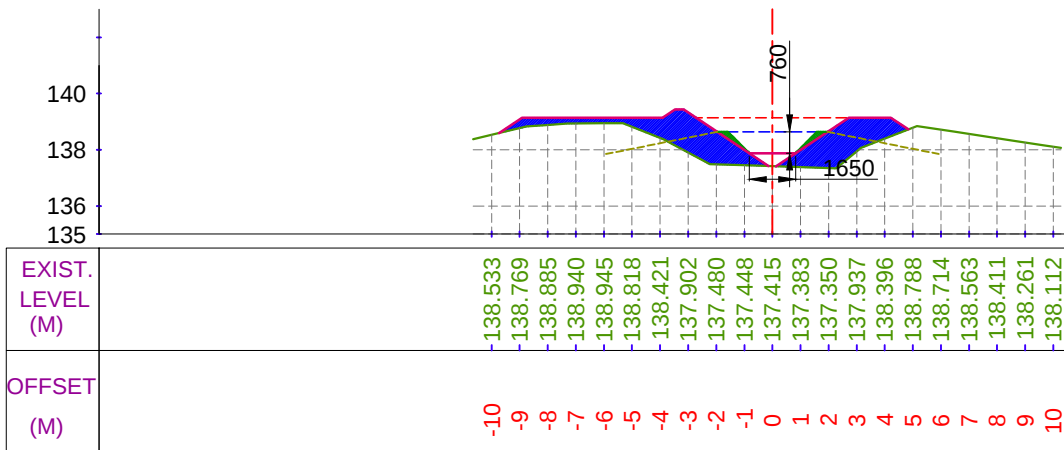
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

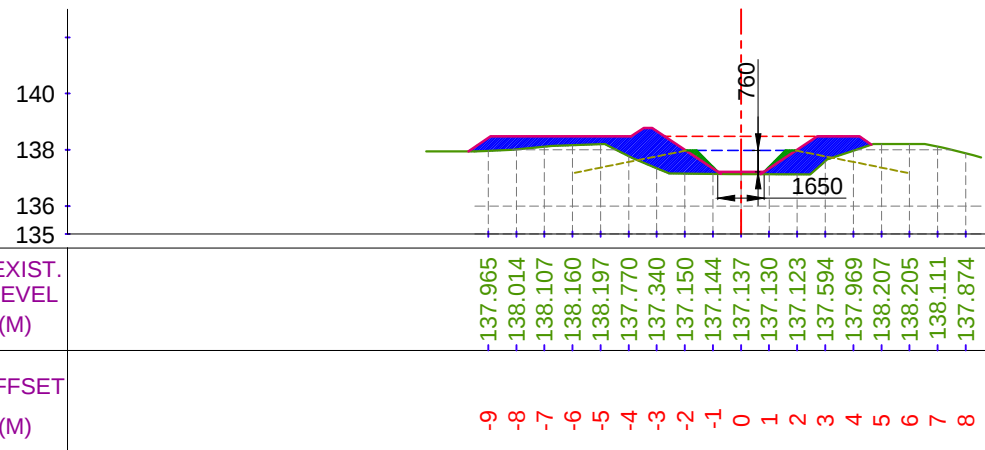
6 of 16

X SECTION OF KUSHA MINOR



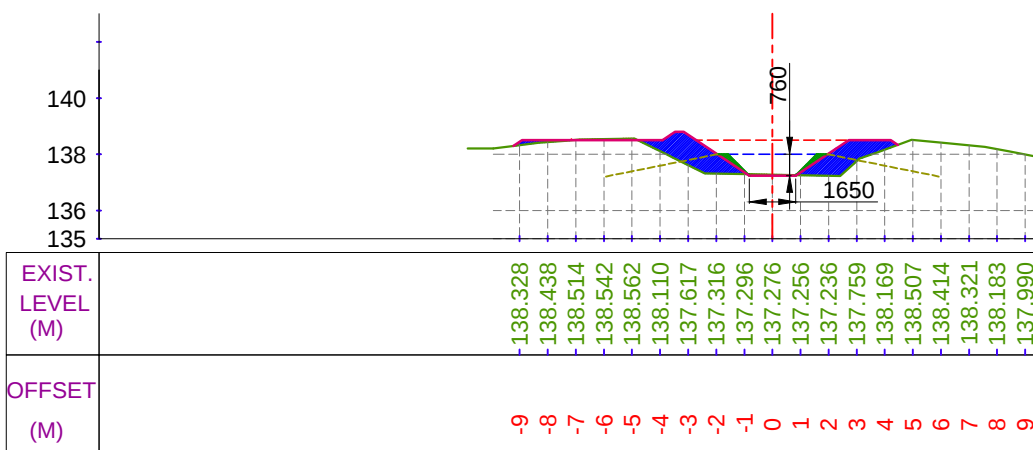
EXIST. LEVEL (M)	138.533	138.769	138.885	138.940	138.945	138.818	138.421	137.902	137.480	137.448	137.415	137.383	137.350	137.937	138.396	138.788	138.714	138.563	138.411	138.261	138.112
OFFSET (M)	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10

CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 2+500
FILLING AREA (SQ.M) = 9.127 DESIGNED BED LEVEL = 137.880 M



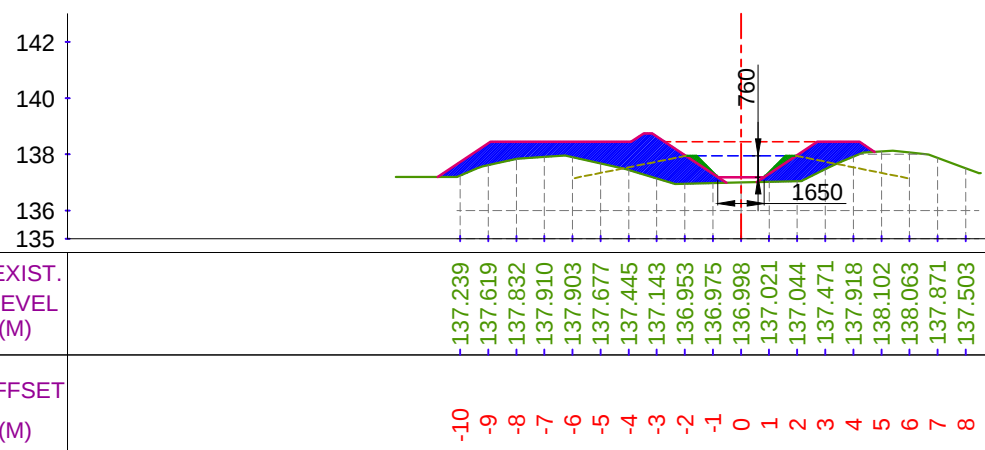
EXIST. LEVEL (M)	137.965	138.014	138.107	138.160	138.197	138.770	137.340	137.150	137.144	137.137	137.130	137.123	137.594	137.969	138.207	138.205	138.111	137.874
OFFSET (M)	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8

CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 2+700
FILLING AREA (SQ.M) = 7.430 DESIGNED BED LEVEL = 137.213 M



EXIST. LEVEL (M)	138.328	138.438	138.514	138.542	138.562	138.110	137.617	137.316	137.296	137.276	137.256	137.236	137.759	138.169	138.507	138.414	138.321	138.183	137.990
OFFSET (M)	9	8	7	6	5	4	3	2	1	0	1	2	3	4	5	6	7	8	9

CUTTING AREA (SQ.M) = 0.147 CH. (KM):- 2+600
FILLING AREA (SQ.M) = 4.491 DESIGNED BED LEVEL = 137.242 M



EXIST. LEVEL (M)	137.239	137.619	137.832	137.910	137.903	137.677	137.445	137.143	136.953	136.975	136.998	137.021	137.044	137.471	137.918	138.102	138.063	137.871	137.503
OFFSET (M)	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8

CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 2+800
FILLING AREA (SQ.M) = 10.200 DESIGNED BED LEVEL = 137.185 M

LEGEND

	CUT AREA		EXISTING BED LINE
	FILL AREA		F.S.L.
			DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

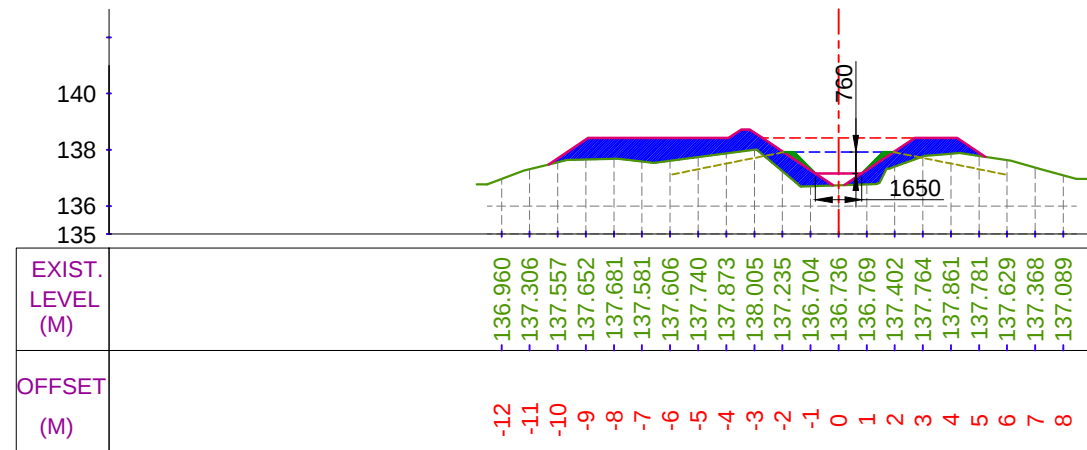
Drawing Title :-

X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

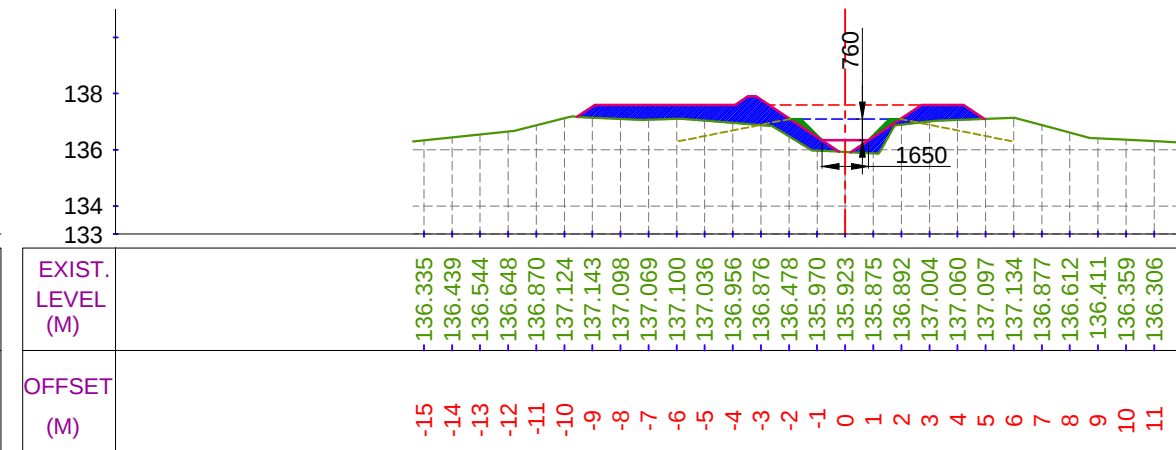
Drawing No. :-

WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

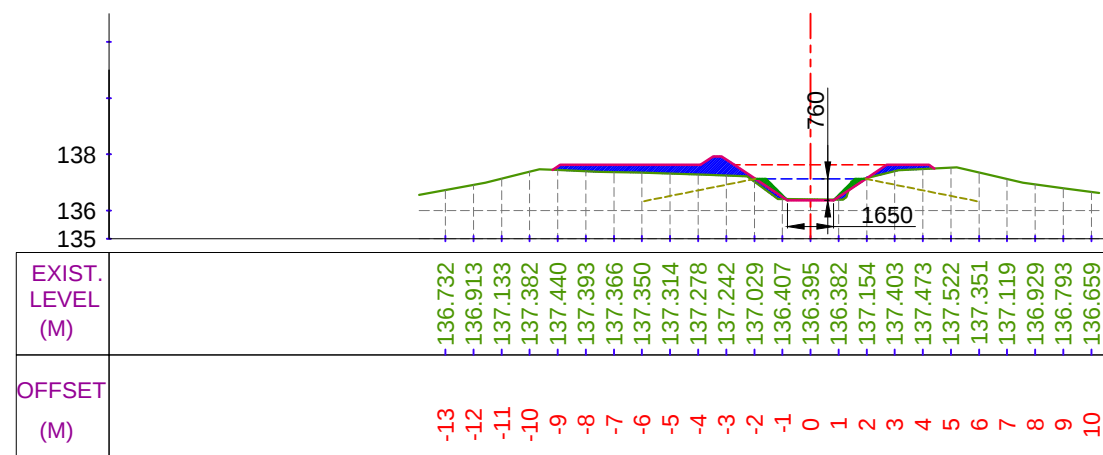
X SECTION OF KUSHA MINOR



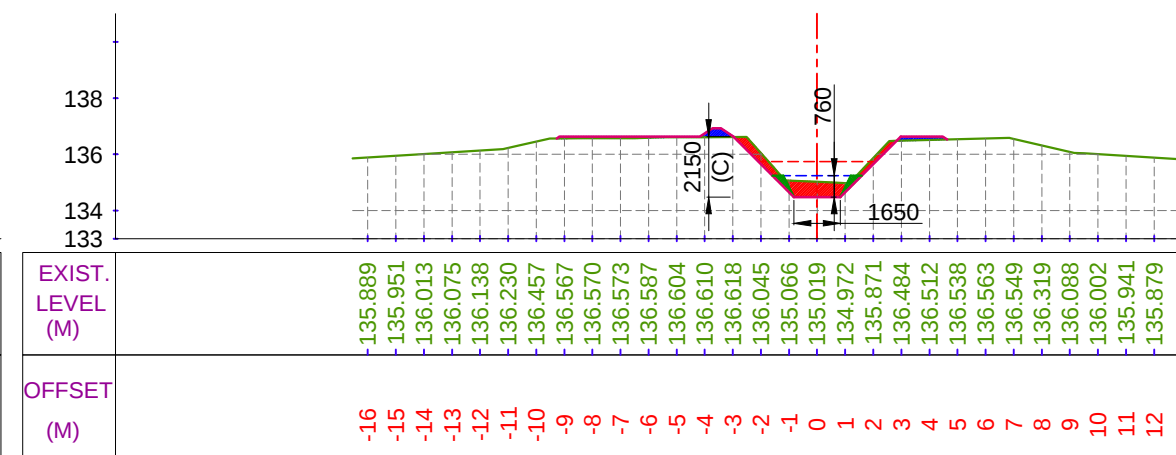
CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 2+900
FILLING AREA (SQ.M) = 8.832 DESIGNED BED LEVEL = 137.156 M



CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 3+100
FILLING AREA (SQ.M) = 7.107 DESIGNED BED LEVEL = 136.337 M



CUTTING AREA (SQ.M) = 0.050
FILLING AREA (SQ.M) = 2.810



CUTTING AREA (SQ.M) = 1.823
FILLING AREA (SQ.M) = 0.690

LEGEND			
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.



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Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

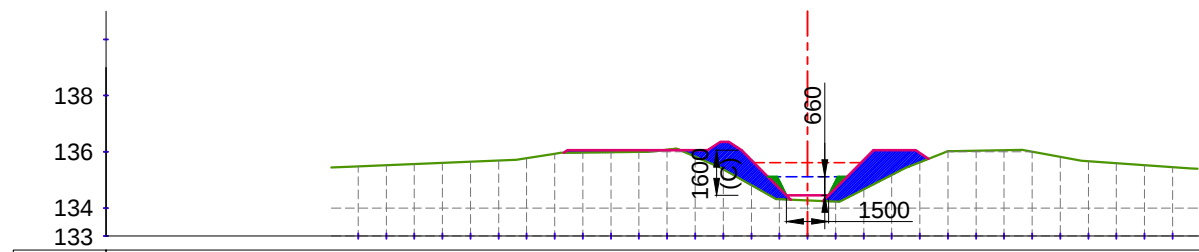
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

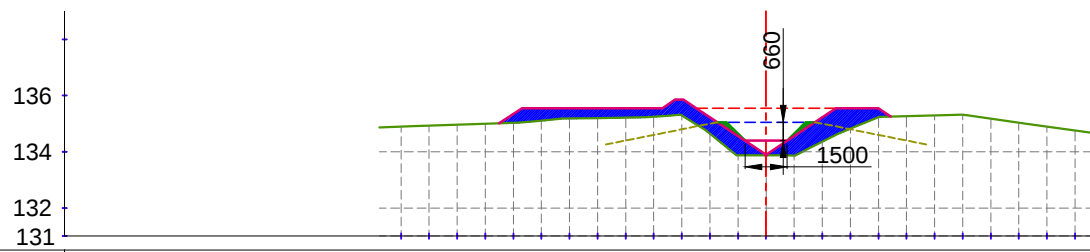
8 of 16

X SECTION OF KUSHA MINOR



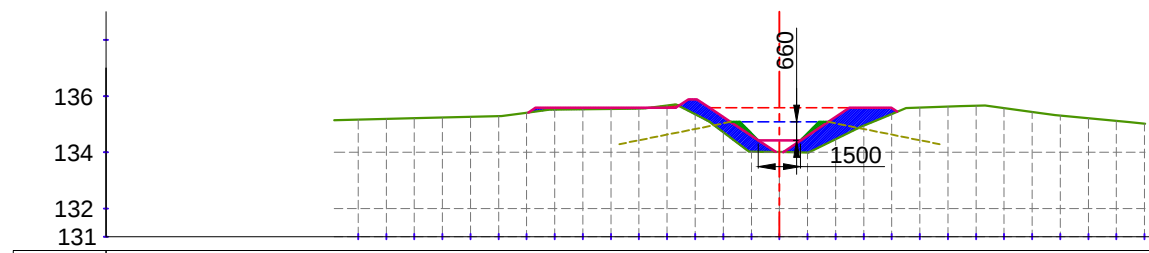
EXIST. LEVEL (M)	-135.485	-135.526	-135.567	-135.609	-135.650	-135.691	-135.775	-135.929	-135.971	-135.981	-135.991	-136.078	-135.831	-135.381	-134.815	-134.308	-134.269	-134.231	-134.663	-135.174	-135.625	-136.019	-136.038	-136.057	-136.004	-135.822	-135.667	-135.597	-135.526	-135.456
OFFSET (M)	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13

CUTTING AREA (SQ.M) = 0.023 CH. (KM):- 3+300
FILLING AREA (SQ.M) = 5.235 DESIGNED BED LEVEL = 134.452 M



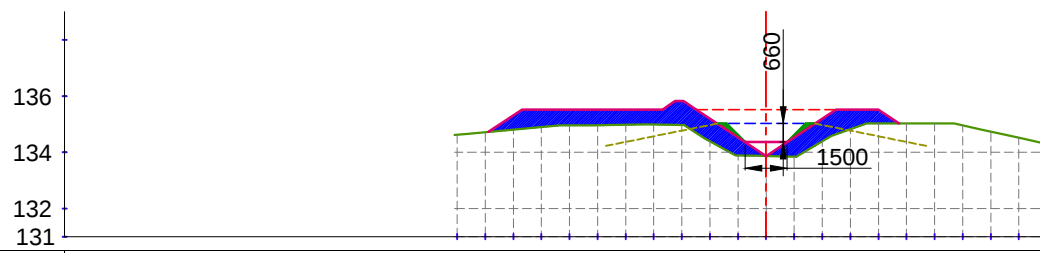
EXIST. LEVEL (M)	-134.893	-134.926	-134.960	-134.994	-135.027	-135.111	-135.186	-135.201	-135.216	-135.247	-135.291	-134.646	-133.878	-133.873	-133.869	-134.362	-134.824	-135.235	-135.271	-135.297	-135.318	-135.177	-135.036	-134.896	-134.755
OFFSET (M)	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11

CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 3+500
FILLING AREA (SQ.M) = 6.551 DESIGNED BED LEVEL = 134.393 M



EXIST. LEVEL (M)	-135.165	-135.189	-135.213	-135.238	-135.262	-135.286	-135.410	-135.522	-135.535	-135.547	-135.560	-135.661	-135.353	-134.714	-134.022	-134.010	-133.997	-134.466	-134.948	-135.365	-135.594	-135.627	-135.660	-135.578	-135.440	-135.309	-135.212	-135.114	-135.017
OFFSET (M)	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13

CUTTING AREA (SQ.M) = 0.063 CH. (KM):- 3+400
FILLING AREA (SQ.M) = 3.933 DESIGNED BED LEVEL = 134.422 M



EXIST. LEVEL (M)	-134.627	-134.719	-134.810	-134.902	-134.961	-134.962	-134.982	-134.991	-134.972	-134.393	-133.887	-133.868	-133.850	-134.394	-134.827	-135.032	-135.029	-135.026	-134.958	-134.737	-134.516
OFFSET (M)	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9

CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 3+600
FILLING AREA (SQ.M) = 8.293 DESIGNED BED LEVEL = 134.363 M

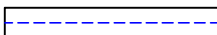
LEGEND



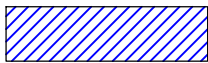
CUT AREA



EXISTING BED LINE



F.S.L.



FILL AREA



DESIGNED BED LINE



H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

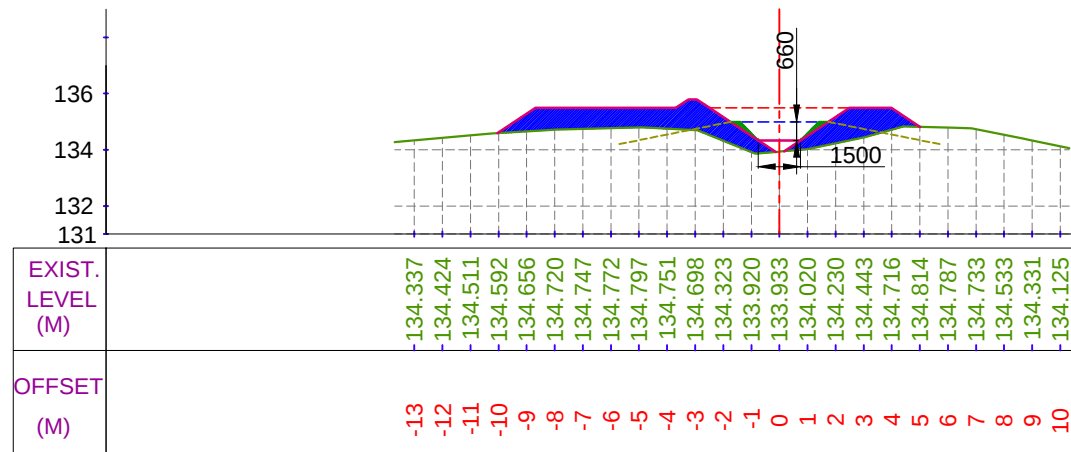
Drawing Title :-

X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

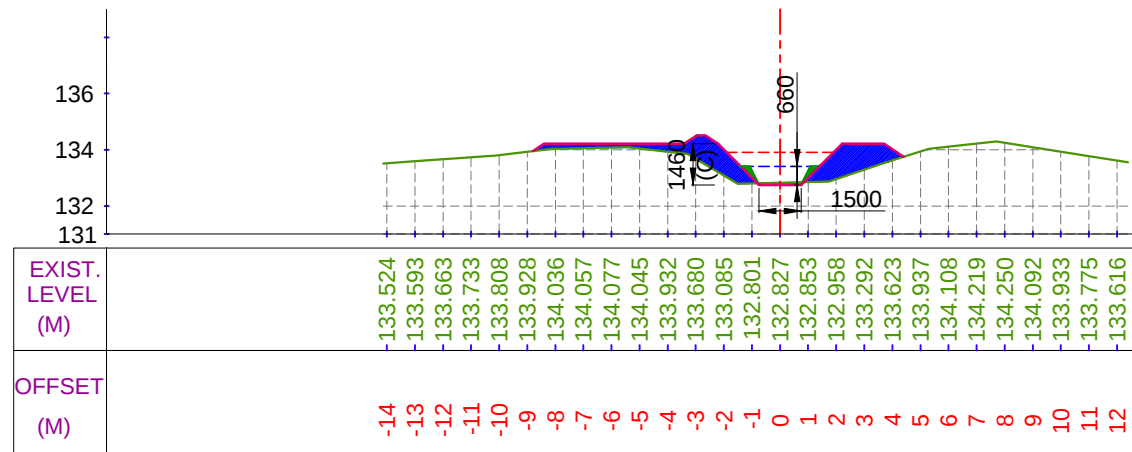
Drawing No. :-

WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

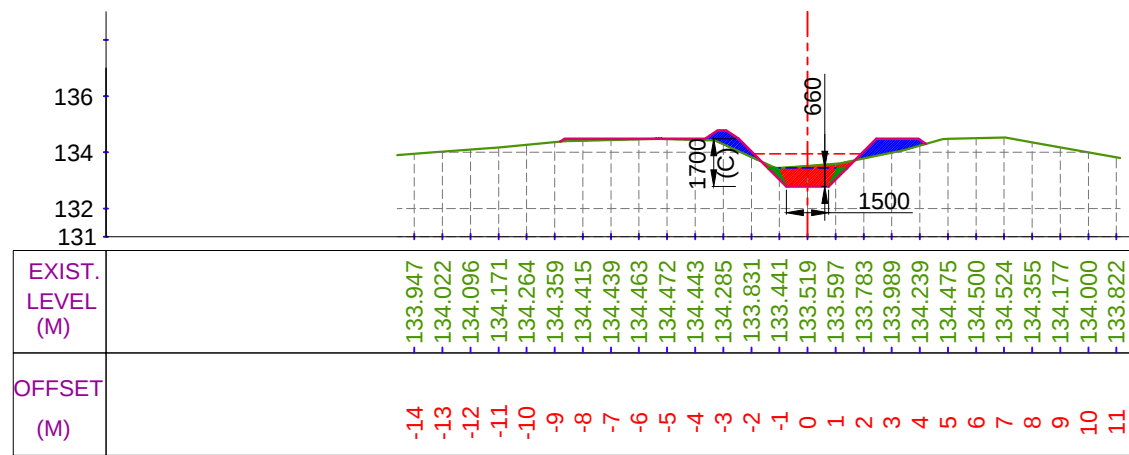
X SECTION OF KUSHA MINOR



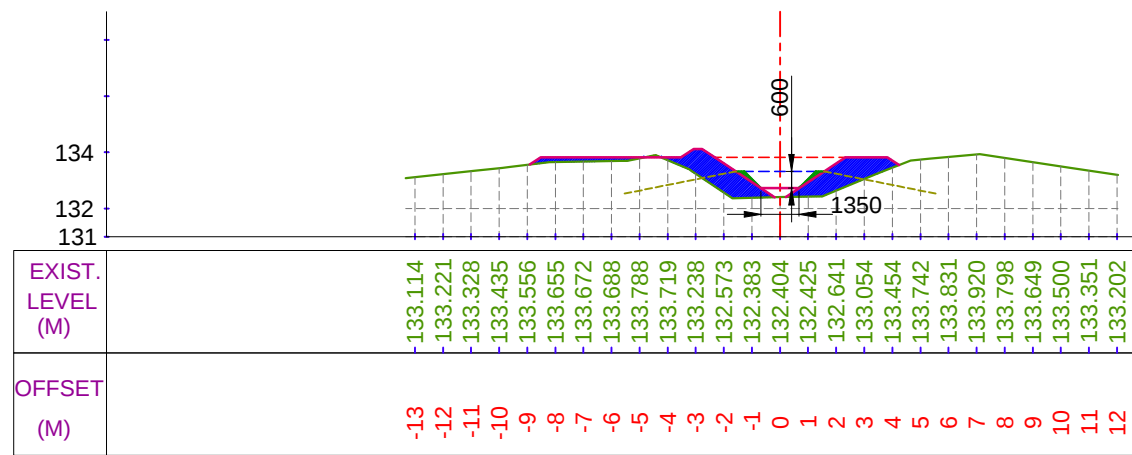
CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 3+700
FILLING AREA (SQ.M) = 10.152 DESIGNED BED LEVEL = 134.334 M



CUTTING AREA (SQ.M) = 0.117 CH. (KM):- 3+900
FILLING AREA (SQ.M) = 5.330 DESIGNED BED LEVEL = 132.751 M

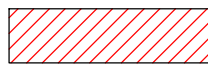


CUTTING AREA (SQ.M) = 1.499 CH. (KM):- 3+800
FILLING AREA (SQ.M) = 1.757 DESIGNED BED LEVEL = 132.781 M

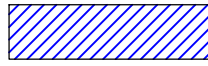


CUTTING AREA (SQ.M) = 0.024 CH. (KM):- 4+000
FILLING AREA (SQ.M) = 5.595 DESIGNED BED LEVEL = 132.722 M

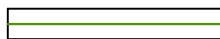
LEGEND



CUT AREA



FILL AREA



EXISTING BED LINE



F.S.L.



DESIGNED BED LINE



H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

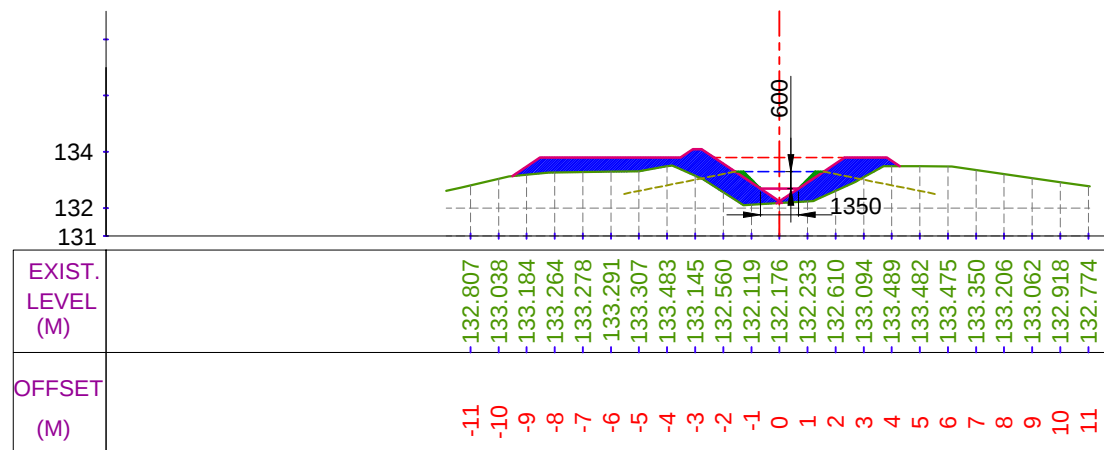
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

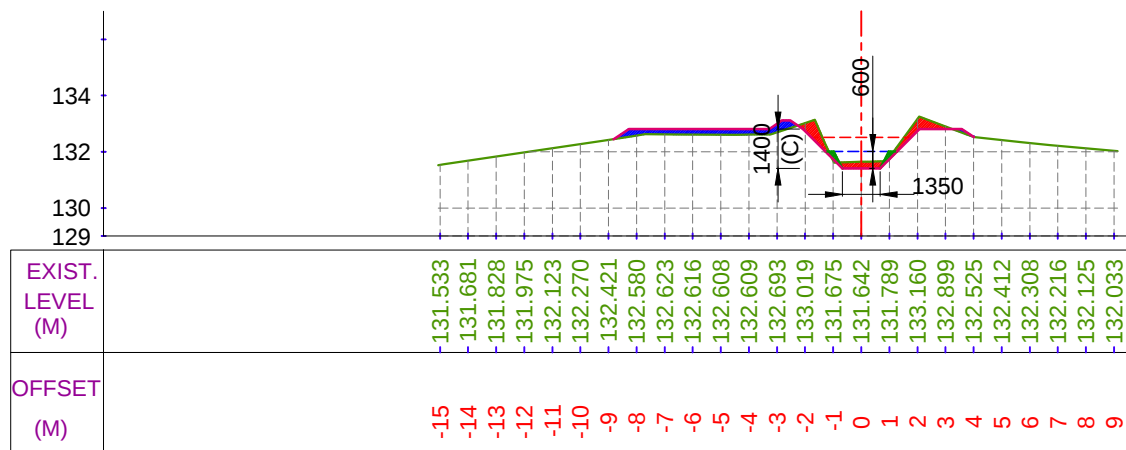
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

10 of 16

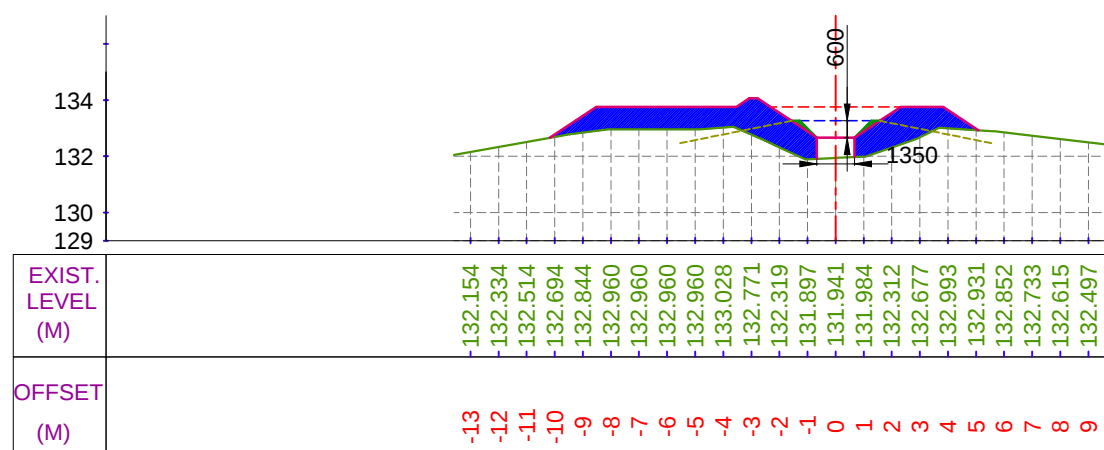
X SECTION OF KUSHA MINOR



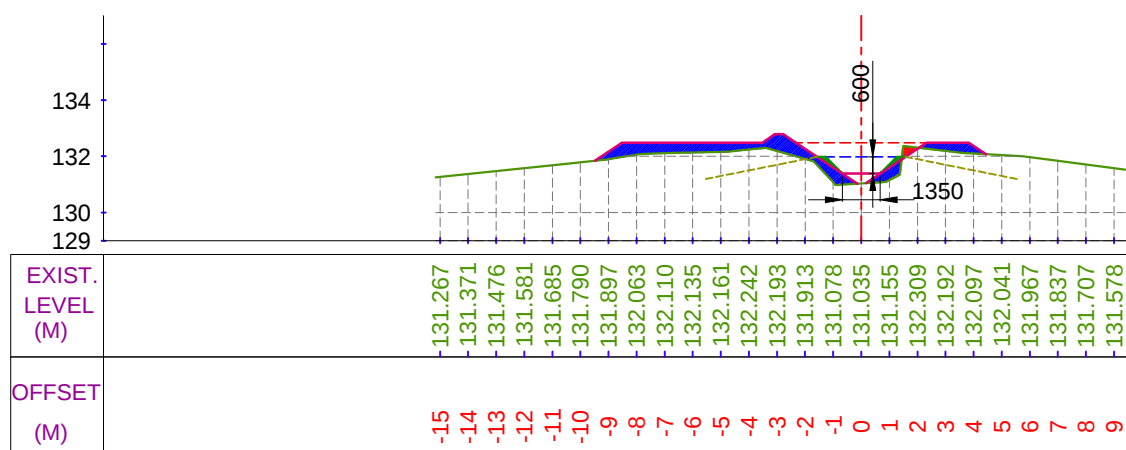
CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 4+100
 FILLING AREA (SQ.M) = 8.014 DESIGNED BED LEVEL = 132.692 M



CUTTING AREA (SQ.M) = 1.258 CH. (KM):- 4+300
 FILLING AREA (SQ.M) = 1.397 DESIGNED BED LEVEL = 131.413 M



CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 4+200
 FILLING AREA (SQ.M) = 11.706 DESIGNED BED LEVEL = 132.663 M



CUTTING AREA (SQ.M) = 0.129 CH. (KM):- 4+400
 FILLING AREA (SQ.M) = 4.325 DESIGNED BED LEVEL = 131.384 M

LEGEND

	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

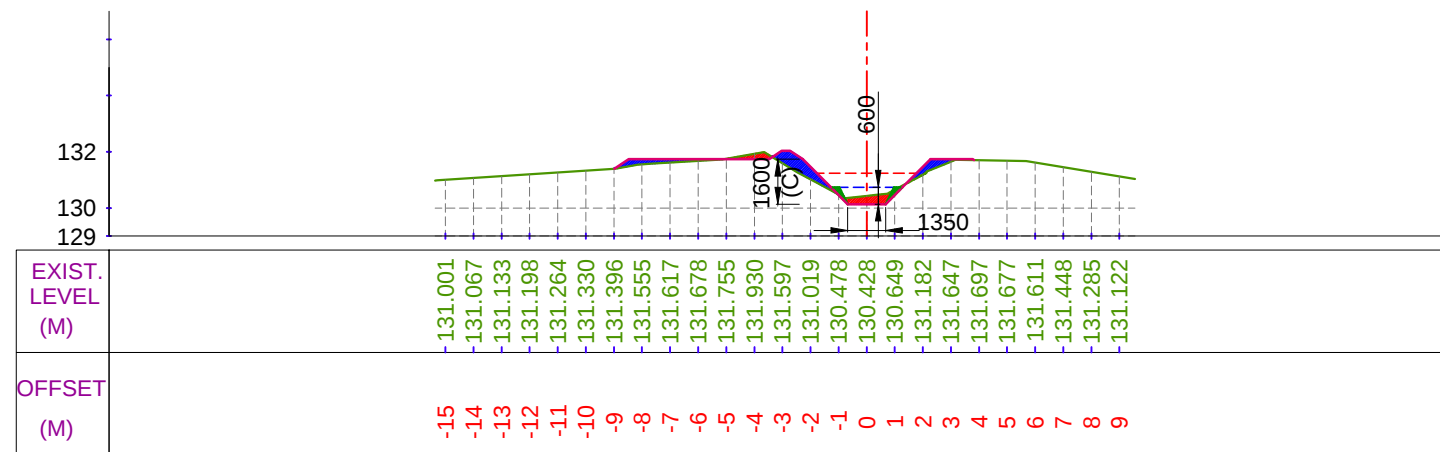
Drawing Title :-

X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

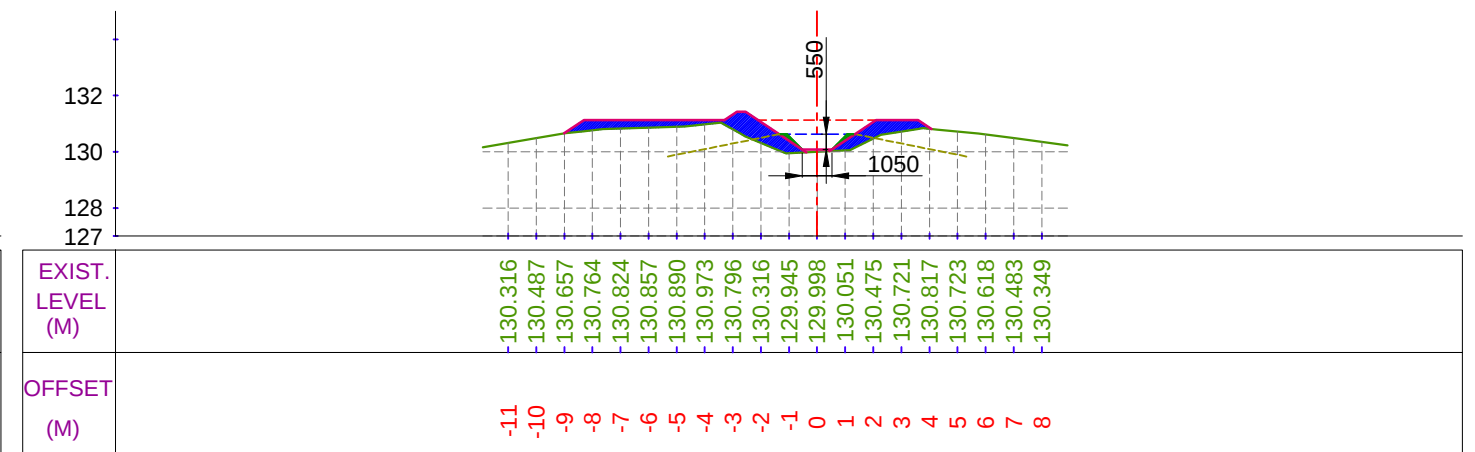
Drawing No. :-

WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

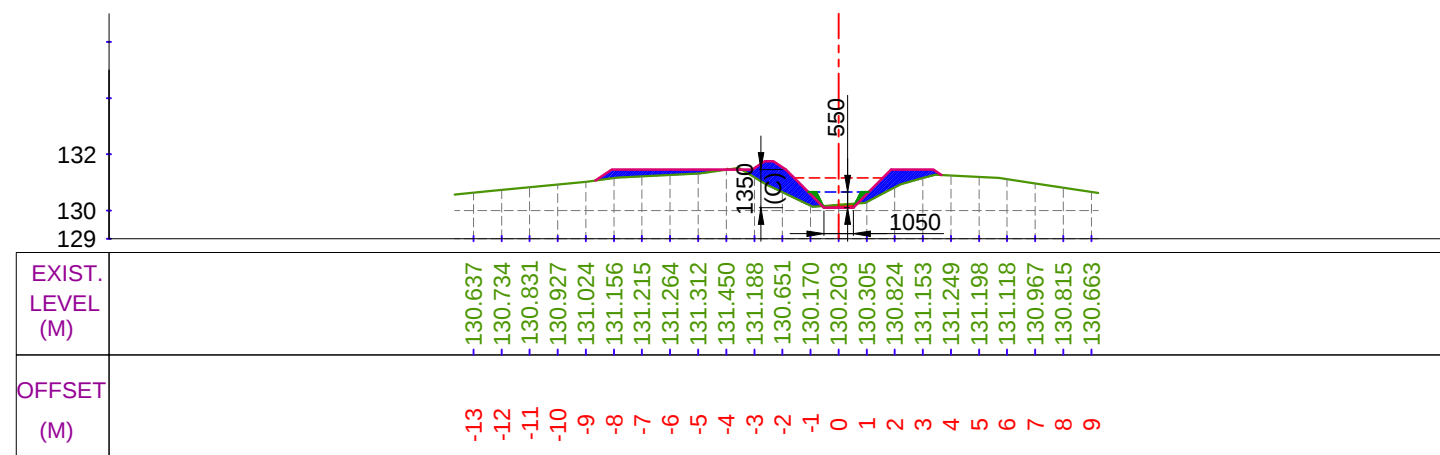
X SECTION OF KUSHA MINOR



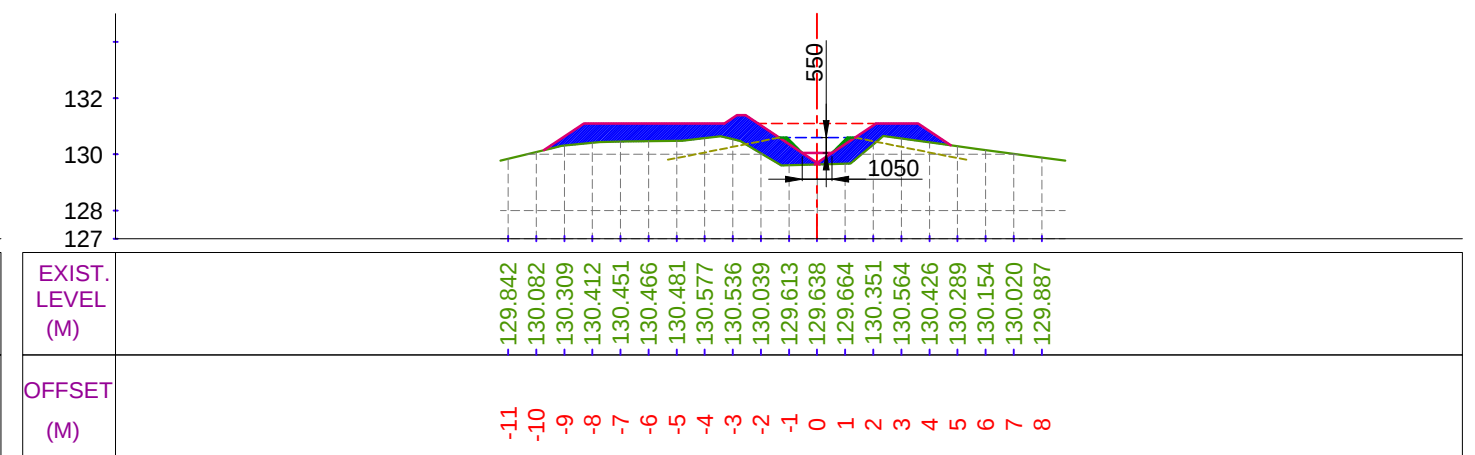
CUTTING AREA (SQ.M) = 0.679 CH. (KM):- 4+500
FILLING AREA (SQ.M) = 1.639 DESIGNED BED LEVEL = 130.135 M



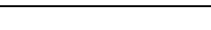
CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 4+700
FILLING AREA (SQ.M) = 4.404 DESIGNED BED LEVEL = 130.076 M



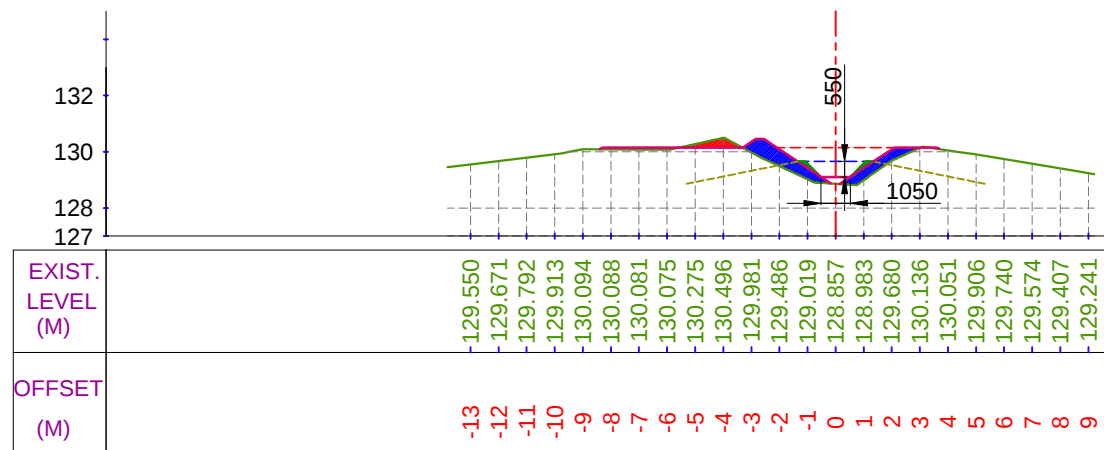
CUTTING AREA (SQ.M) = 0.125
FILLING AREA (SQ.M) = 3.548



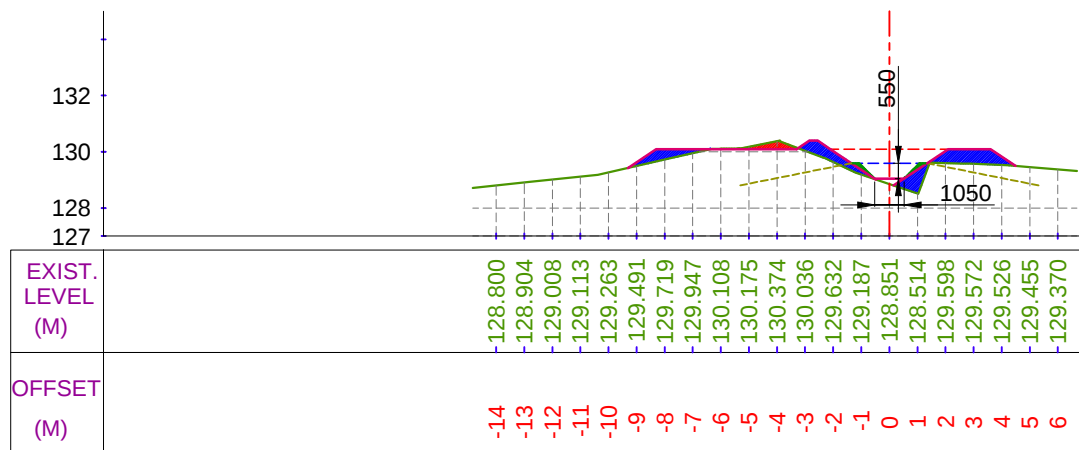
CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 4+800
FILLING AREA (SQ.M) = 8.349 DESIGNED BED LEVEL = 130.046 M

LEGEND			Prepared by :- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	
	CUT AREA	 EXISTING BED LINE		Drawing Title :-	X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)	
		 F.S.L.				
	FILL AREA	 DESIGNED BED LINE		Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC- 12 of 16	
		 H.G. LINE				

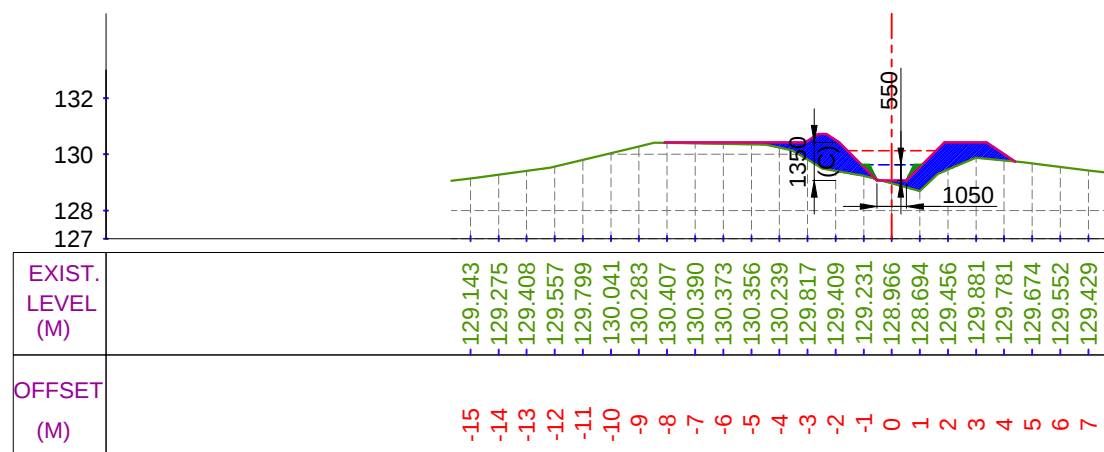
X SECTION OF KUSHA MINOR



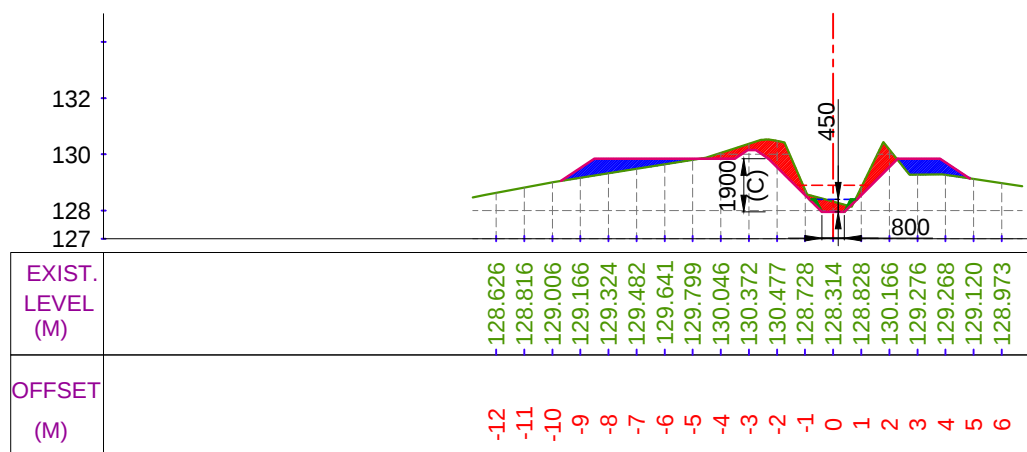
CUTTING AREA (SQ.M) = 0.394 CH. (KM):- 4+900
FILLING AREA (SQ.M) = 2.472 DESIGNED BED LEVEL = 129.103 M



CUTTING AREA (SQ.M) = 0.344 CH. (KM):- 5+100
FILLING AREA (SQ.M) = 3.239 DESIGNED BED LEVEL = 129.044 M

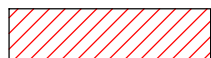


CUTTING AREA (SQ.M) = 0.002 CH. (KM):- 5+000
FILLING AREA (SQ.M) = 5.006 DESIGNED BED LEVEL = 129.074 M



CUTTING AREA (SQ.M) = 2.902 CH. (KM):- 5+200
FILLING AREA (SQ.M) = 2.540 DESIGNED BED LEVEL = 127.947 M

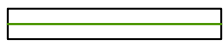
LEGEND



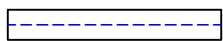
CUT AREA



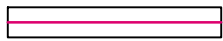
FILL AREA



EXISTING BED LINE



F.S.L.



DESIGNED BED LINE



H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

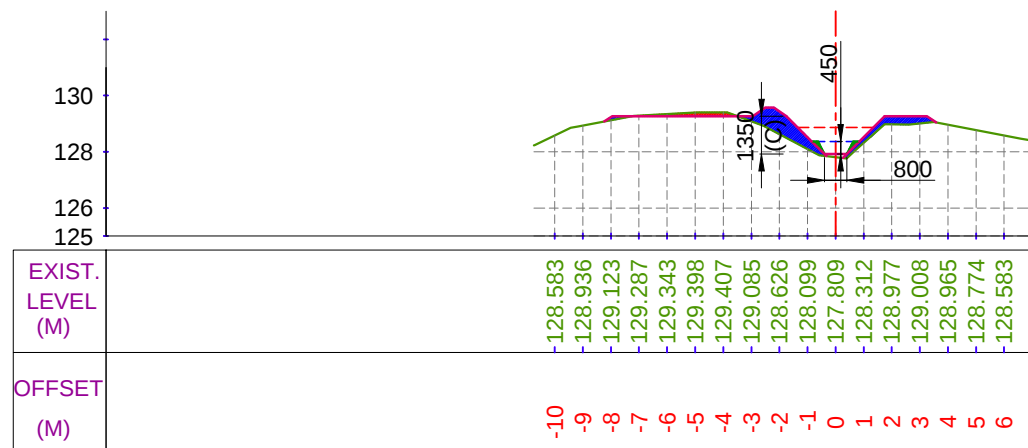
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

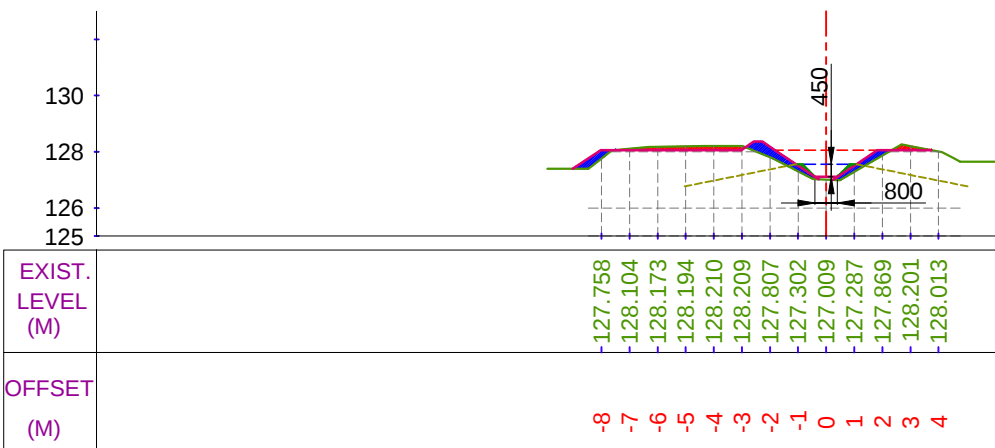
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

13 of 16

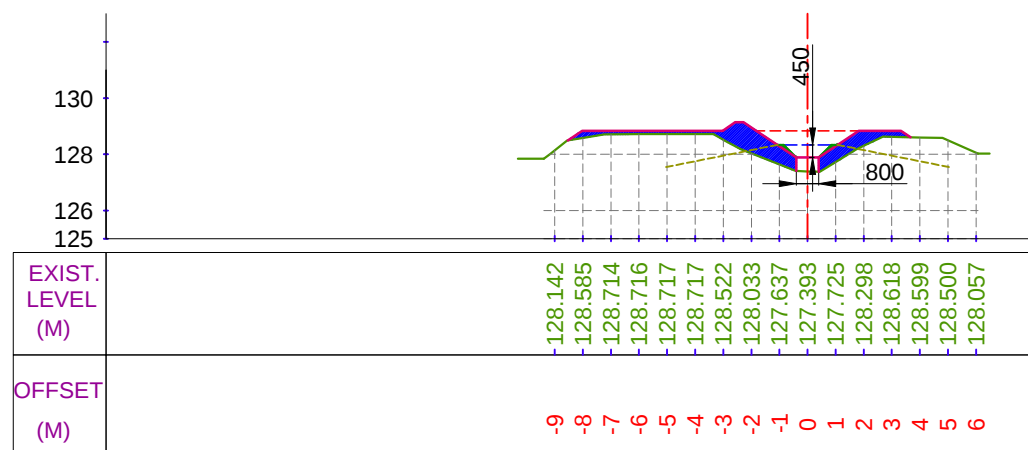
X SECTION OF KUSHA MINOR



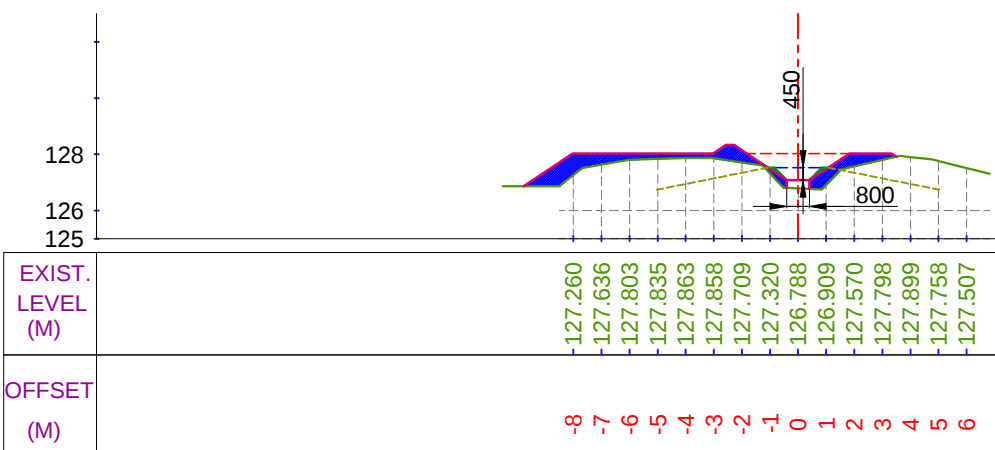
CUTTING AREA (SQ.M) = 0.338
FILLING AREA (SQ.M) = 2.269
CH. (KM):- 5+300
DESIGNED BED LEVEL = 127.917 M



CUTTING AREA (SQ.M) = 0.665
FILLING AREA (SQ.M) = 1.393
CH. (KM):- 5+500
DESIGNED BED LEVEL = 127.110 M

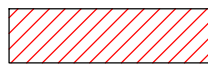


CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 4.030
CH. (KM):- 5+400
DESIGNED BED LEVEL = 127.887 M

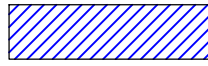


CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 4.333
CH. (KM):- 5+600
DESIGNED BED LEVEL = 127.079 M

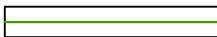
LEGEND



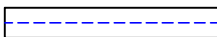
CUT AREA



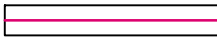
FILL AREA



EXISTING BED LINE



F.S.L.



DESIGNED BED LINE



H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

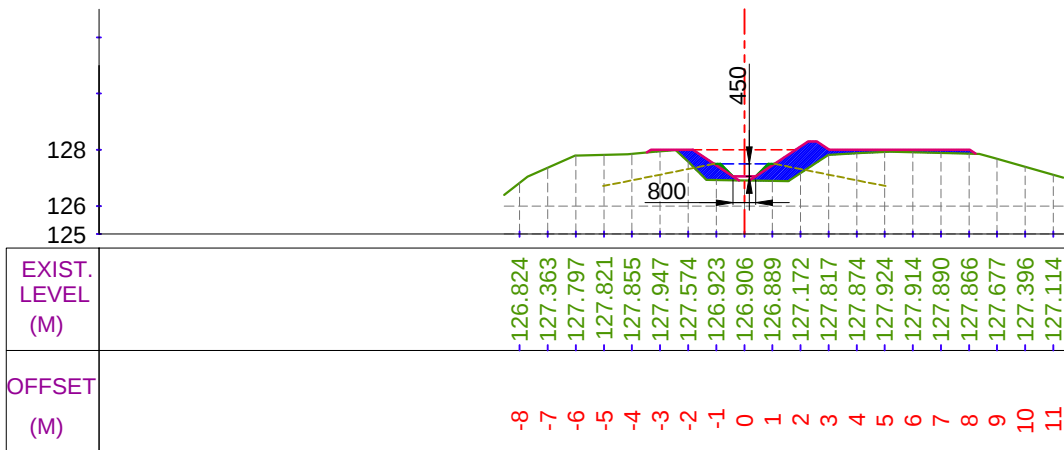
X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

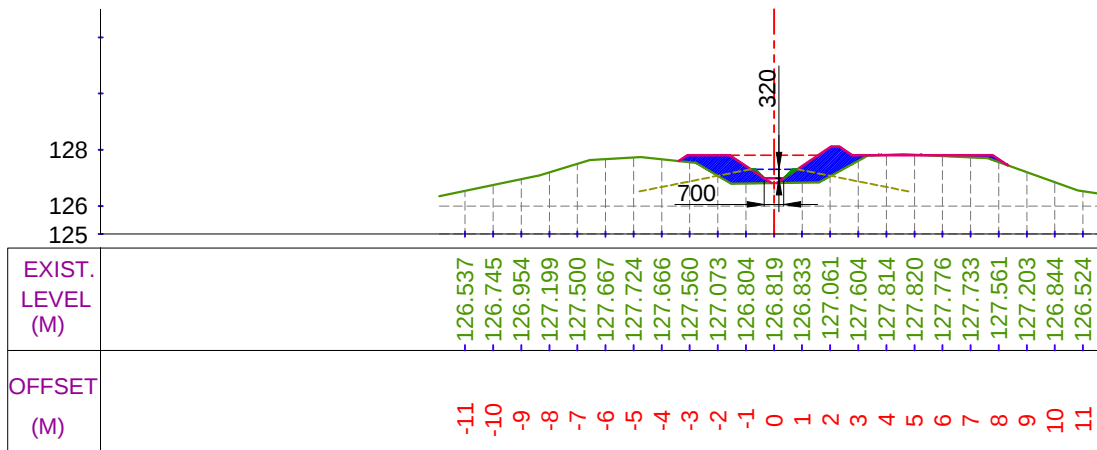
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

14 of 16

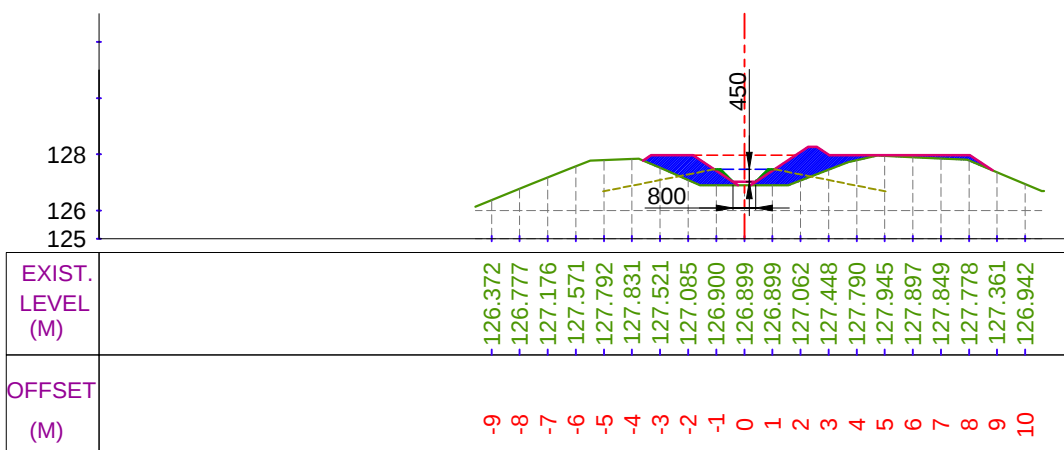
X SECTION OF KUSHA MINOR



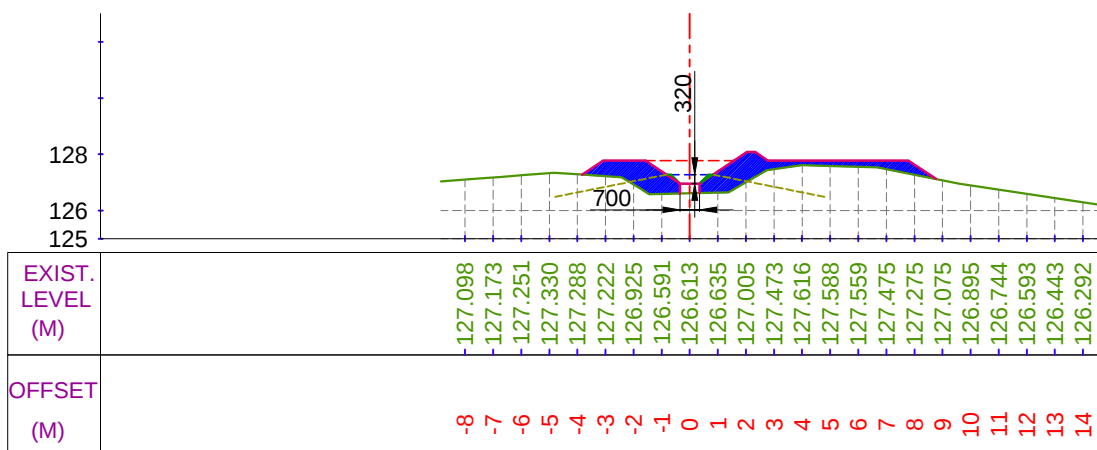
CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 5+700
FILLING AREA (SQ.M) = 3.329 DESIGNED BED LEVEL = 127.049 M



CUTTING AREA (SQ.M) = 0.019 CH. (KM):- 5+900
FILLING AREA (SQ.M) = 3.643 DESIGNED BED LEVEL = 126.989 M

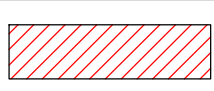
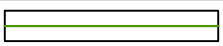
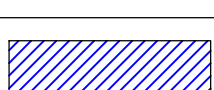
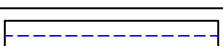
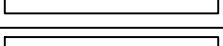


CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 5+800
FILLING AREA (SQ.M) = 4.572 DESIGNED BED LEVEL = 127.019 M



CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 6+000
FILLING AREA (SQ.M) = 5.619 DESIGNED BED LEVEL = 126.958 M

LEGEND

	CUT AREA		EXISTING BED LINE
	FILL AREA		F.S.L.
			DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

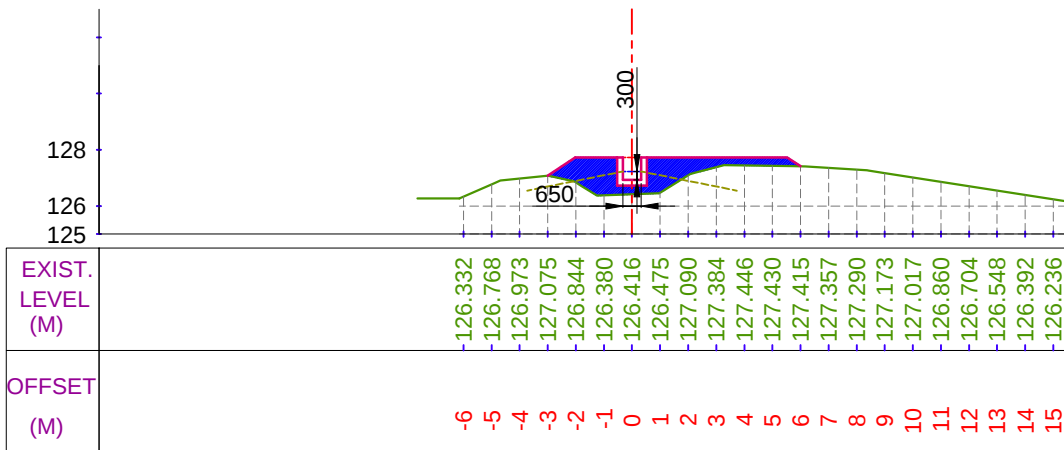
Drawing Title :-

X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

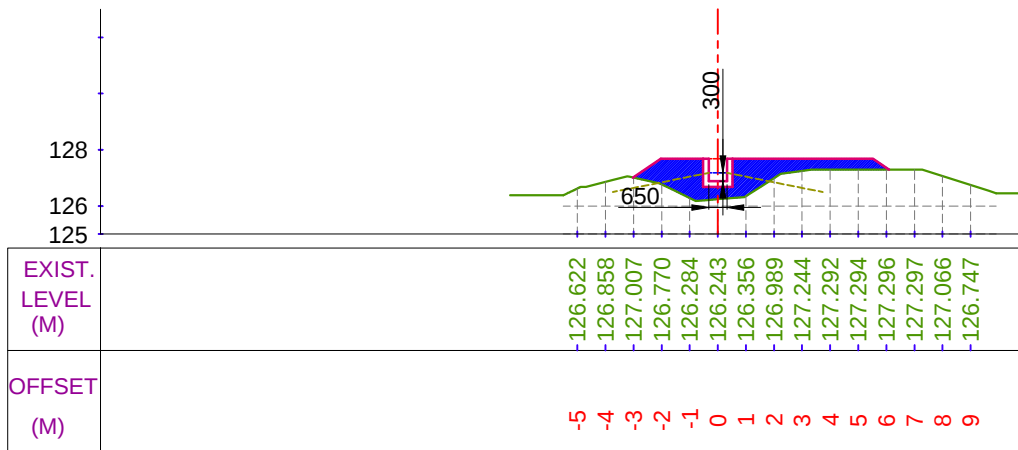
Drawing No. :-

WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-

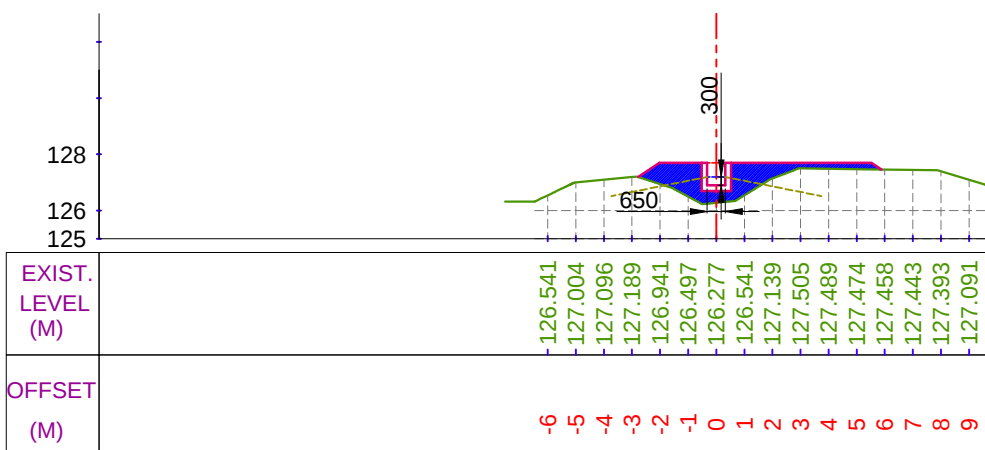
X SECTION OF KUSHA MINOR



CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 6+100
FILLING AREA (SQ.M) = 5.427 DESIGNED BED LEVEL = 126.928 M



CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 6+250
FILLING AREA (SQ.M) = 6.034 DESIGNED BED LEVEL = 126.878 M



CUTTING AREA (SQ.M) = 0.000 CH. (KM):- 6+200
FILLING AREA (SQ.M) = 4.710 DESIGNED BED LEVEL = 126.895 M

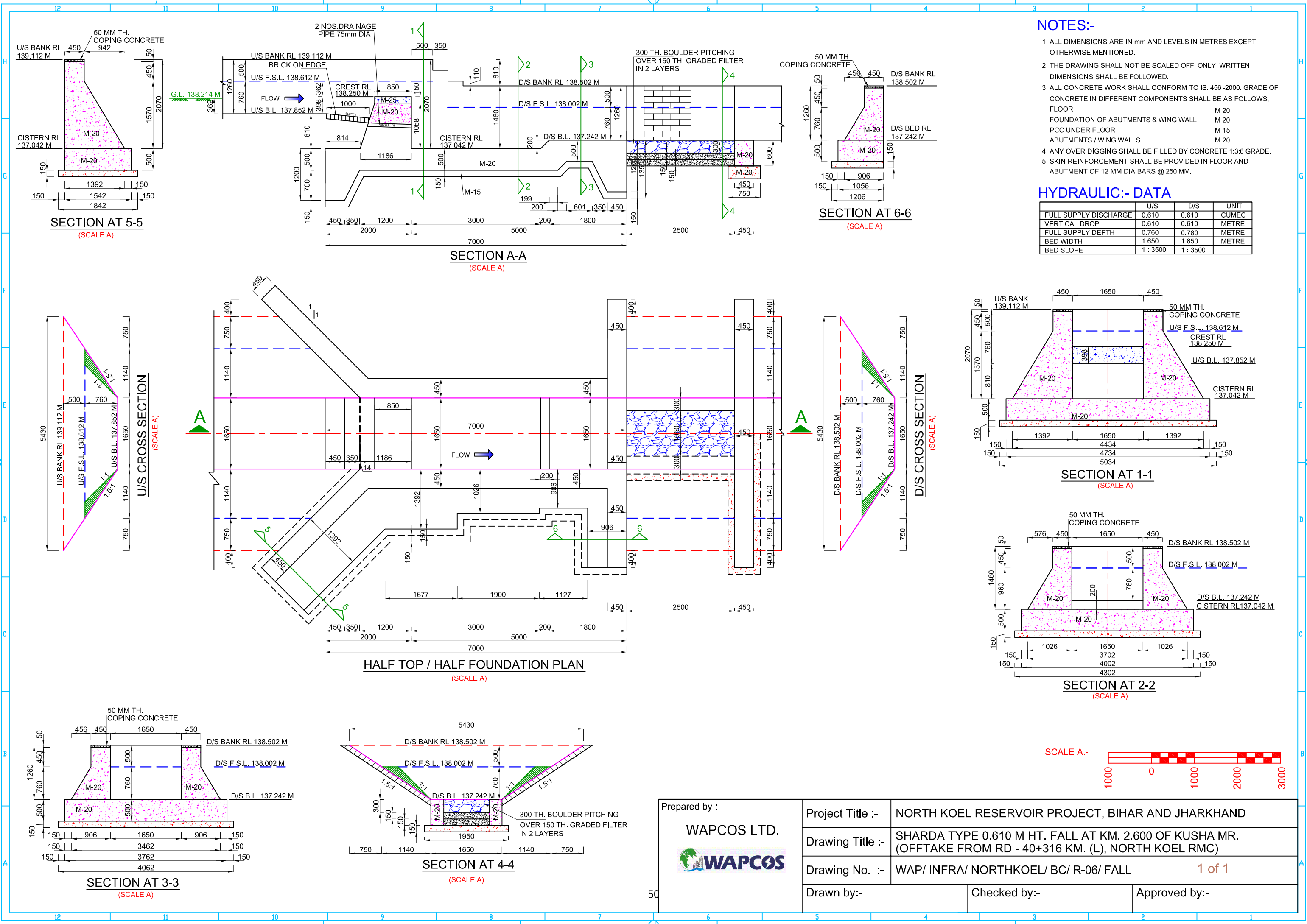
LEGEND

	CUT AREA		EXISTING BED LINE
	FILL AREA		F.S.L.
			DESIGNED BED LINE
			H.G. LINE

Prepared by :-
WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KUSHA MINOR (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ XSEC-16 of 16

***STRUCTURES
DRAWING OF
KUSAH MINOR***



NOTES:-

- 1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
- 2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- 3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456-2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,
FLOOR M 20
FOUNDATION OF ABUTMENTS & WING WALL M 20
PCC UNDER FLOOR M 15
ABUTMENTS / WING WALLS M 20
- 4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
- 5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.610	0.610	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.760	0.760	METRE
BED WIDTH	1.650	1.650	METRE
BED SLOPE	1 : 3500	1 : 3500	

SECTION AT 5-5
(SCALE A)

SECTION AT 6-6
(SCALE A)

SECTION A-A
(SCALE A)

U/S CROSS SECTION
(SCALE A)

D/S CROSS SECTION
(SCALE A)

SECTION AT 1-1
(SCALE A)

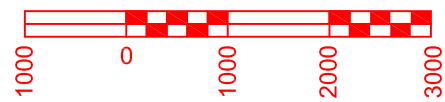
SECTION AT 2-2
(SCALE A)

SECTION AT 3-3
(SCALE A)

SECTION AT 4-4
(SCALE A)

HALF TOP / HALF FOUNDATION PLAN
(SCALE A)

SCALE A:-



Prepared by :-
WAPCOS LTD.

Project Title :-
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-
SHARDA TYPE 0.610 M HT. FALL AT KM. 2.600 OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RMC)

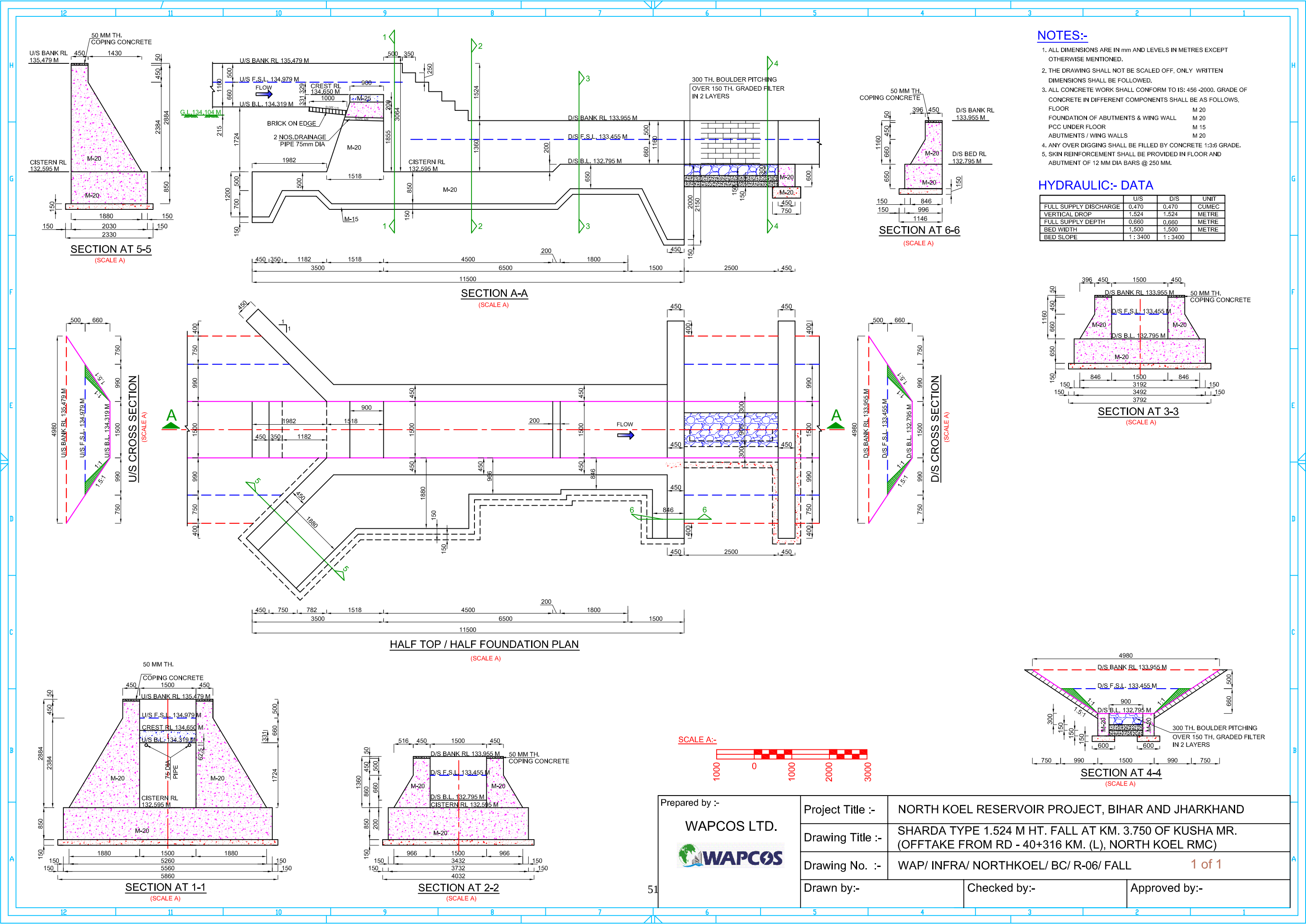
Drawing No. :-
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ FALL

Drawn by:-

Checked by:-

Approved by:-

1 of 1

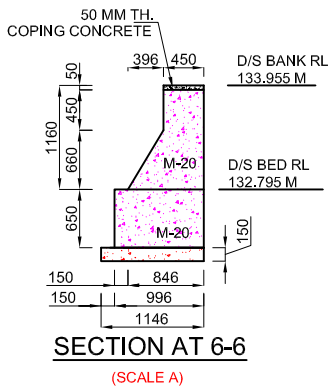
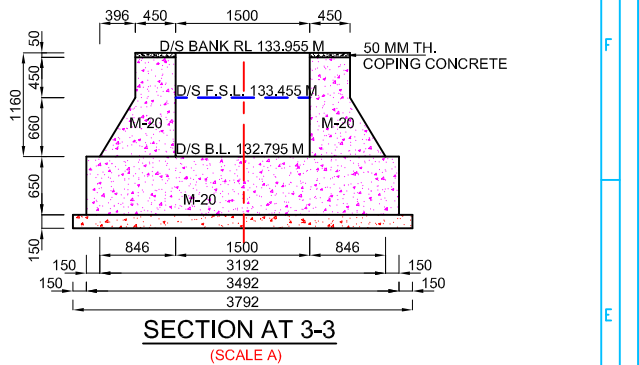


NOTES:-

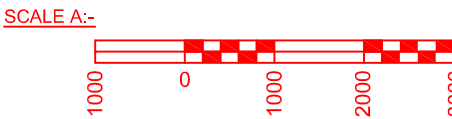
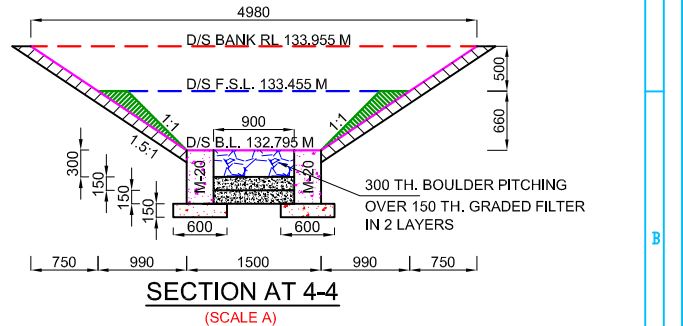
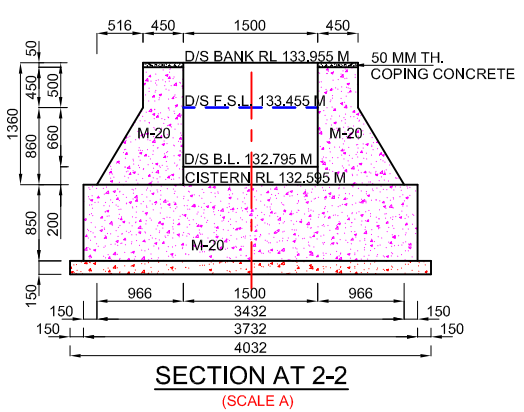
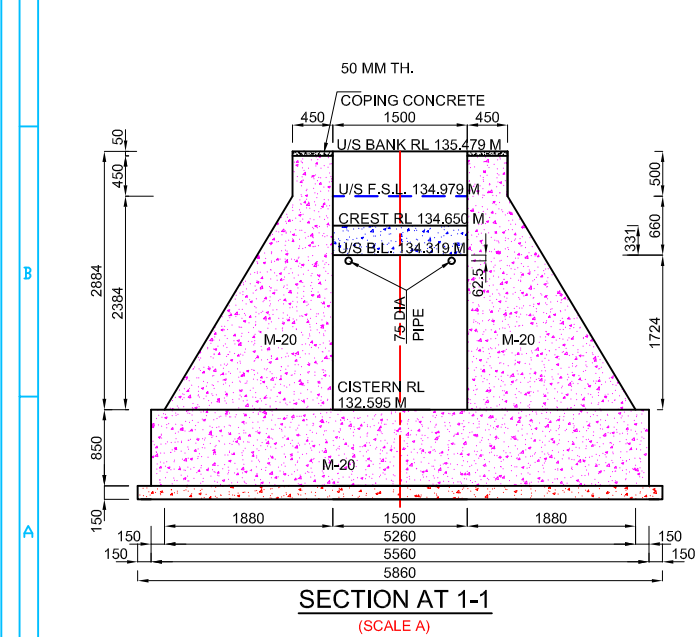
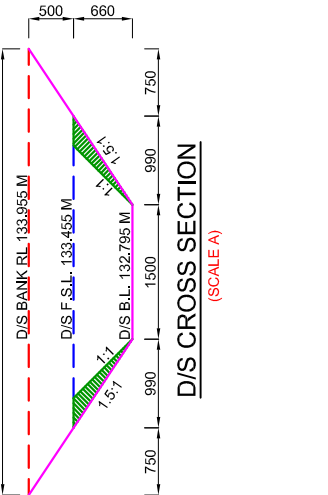
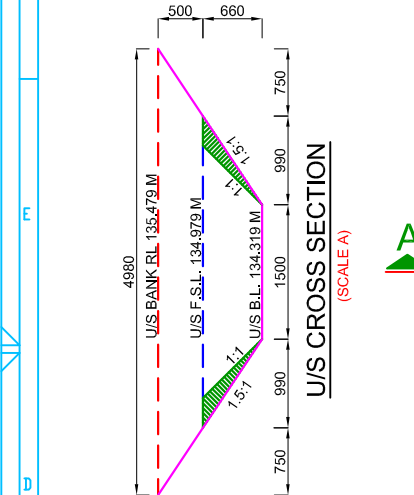
- 1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
- 2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- 3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,
FLOOR M 20
FOUNDATION OF ABUTMENTS & WING WALL M 20
PCC UNDER FLOOR M 15
ABUTMENTS / WING WALLS M 20
- 4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
- 5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

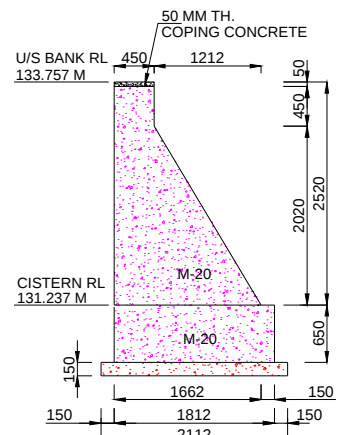
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.470	0.470	CUMEC
VERTICAL DROP	1.524	1.524	METRE
FULL SUPPLY DEPTH	0.660	0.660	METRE
BED WIDTH	1.500	1.500	METRE
BED SLOPE	1 : 3400	1 : 3400	



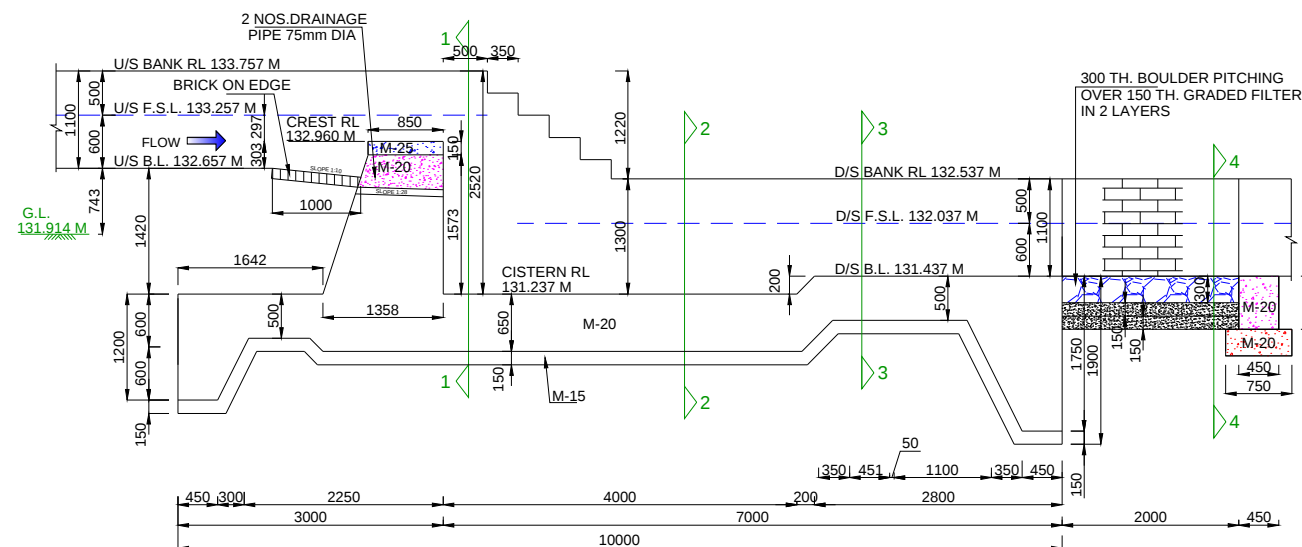
SECTION AT 5-5 (SCALE A)



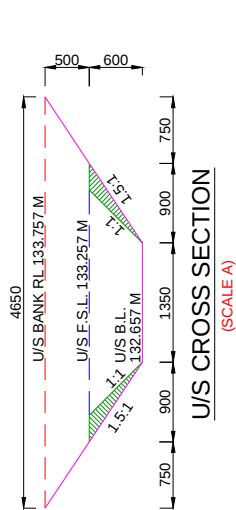
Prepared by :- WAPCOS LTD. 	Project Title :- NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :- SHARDA TYPE 1.524 M HT. FALL AT KM. 3.750 OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RMC)
	Drawing No. :- WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ FALL 1 of 1
Drawn by:-	Checked by:-
	Approved by:-



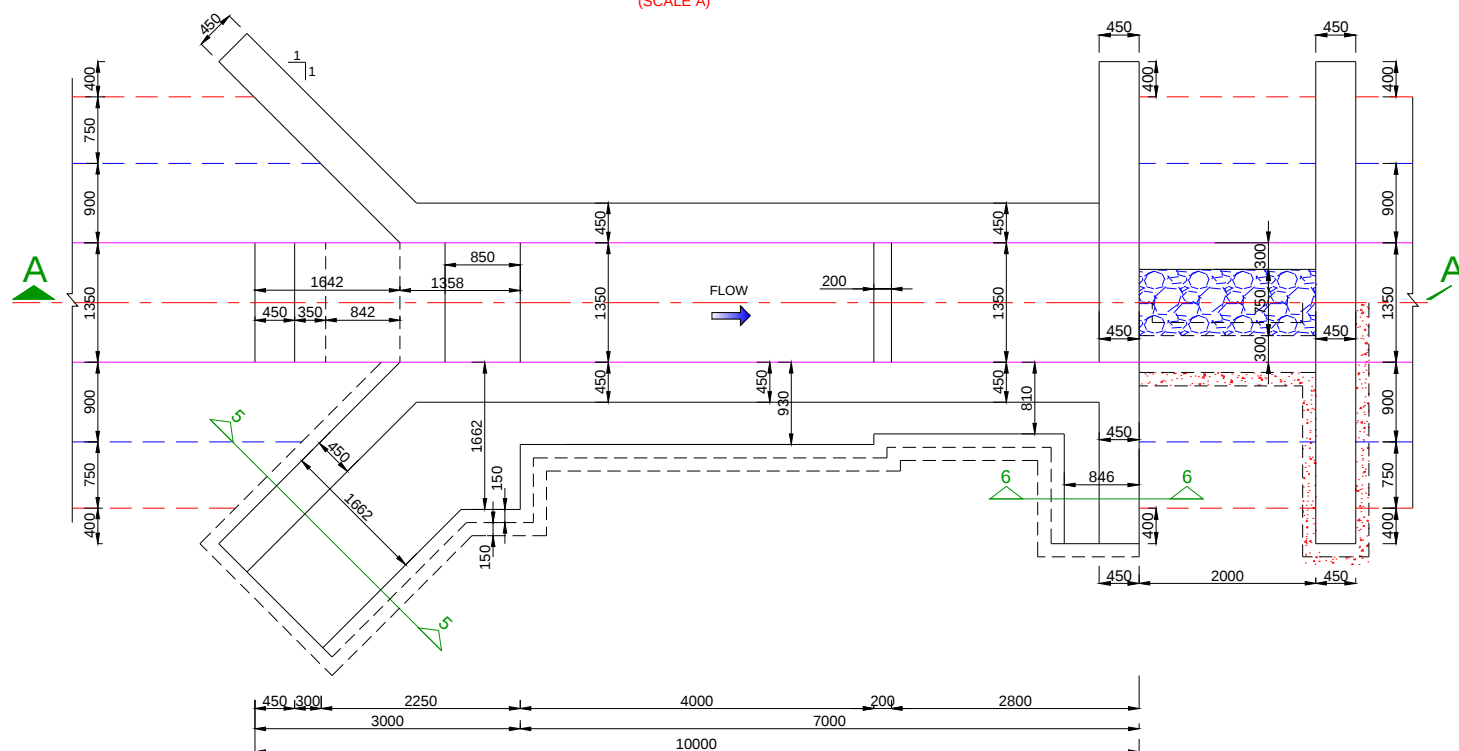
SECTION AT 5-5
(SCALE A)



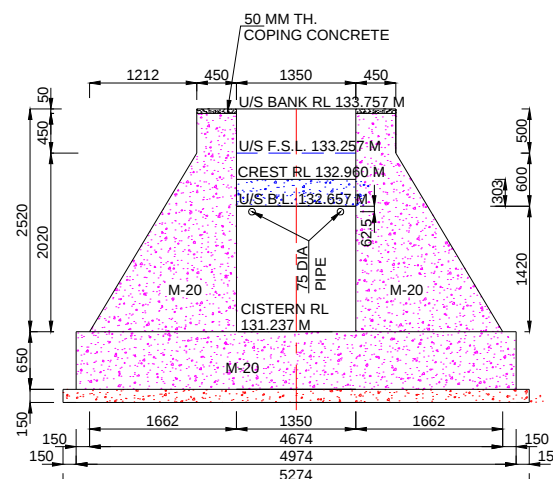
SECTION A-A
(SCALE A)



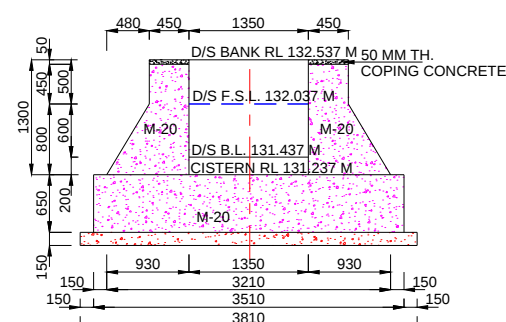
U/S CROSS SECTION
(SCALE A)



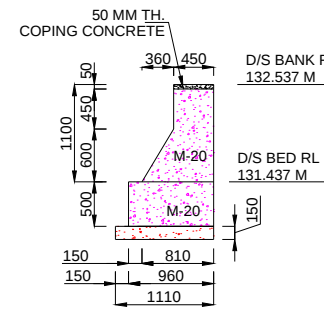
HALF TOP / HALF FOUNDATION PLAN
(SCALE A)



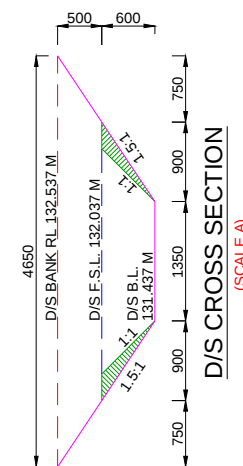
SECTION AT 1-1
(SCALE A)



SECTION AT 2-2
(SCALE A)



SECTION AT 6-6
(SCALE A)



D/S CROSS SECTION
(SCALE A)

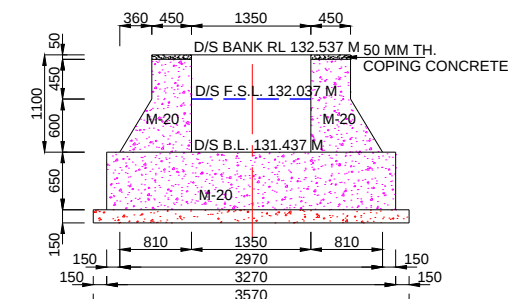
NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

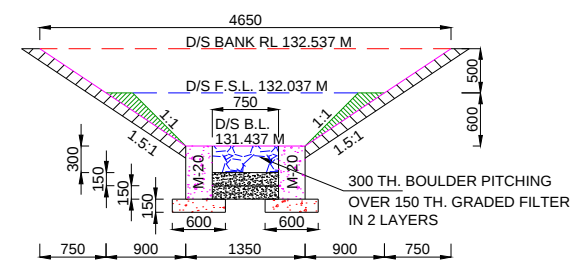
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.350	0.350	CUMEC
VERTICAL DROP	1.220	1.220	METRE
FULL SUPPLY DEPTH	0.600	0.600	METRE
BED WIDTH	1.350	1.350	METRE
BED SLOPE	1 : 3400	1 : 3400	

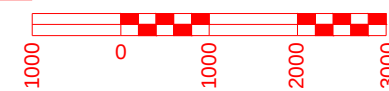


SECTION AT 3-3
(SCALE A)



SECTION AT 4-4
(SCALE A)

SCALE A:-



Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

SHARDA TYPE 1.220 M HT. FALL AT KM. 4.220 OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RMC)

Drawing No. :-

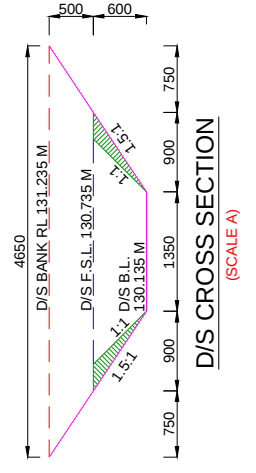
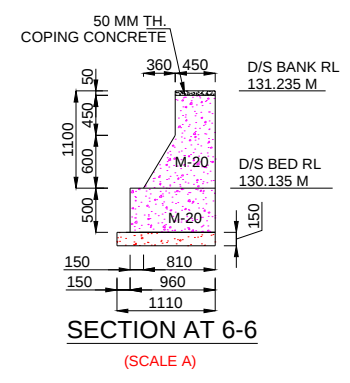
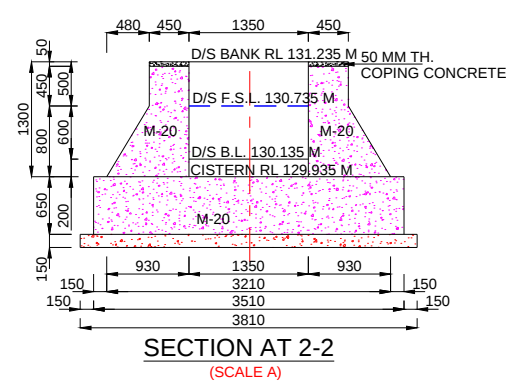
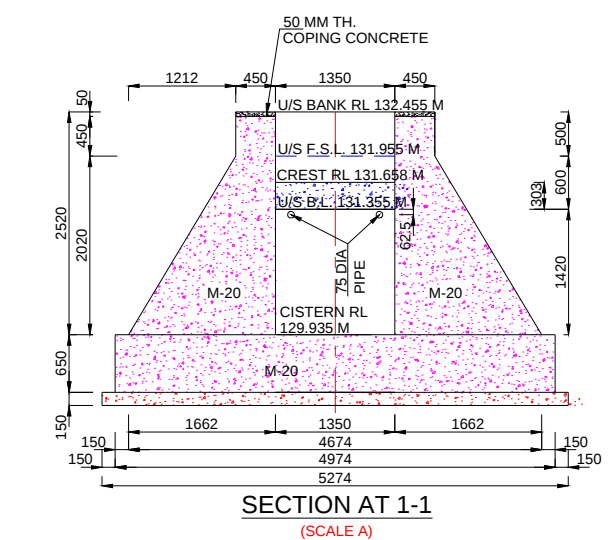
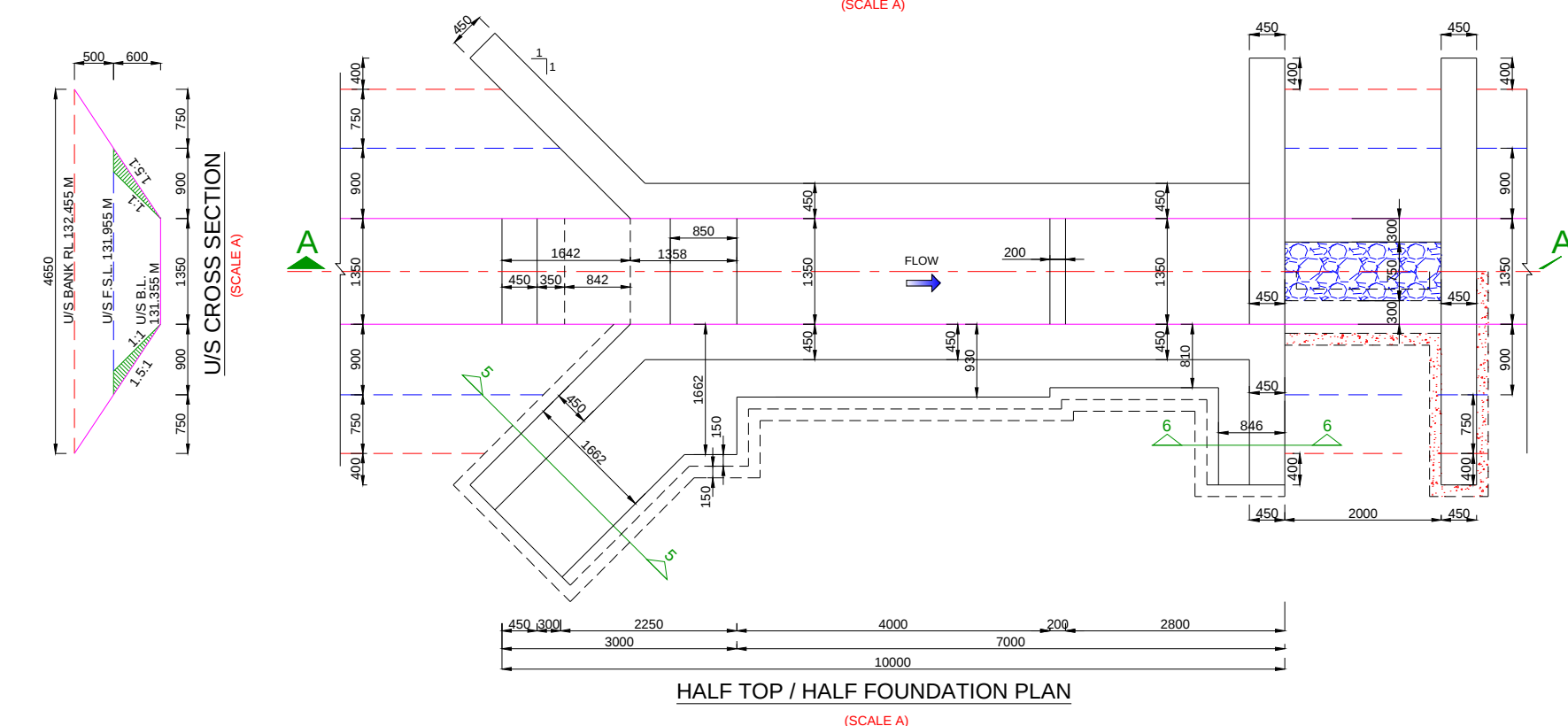
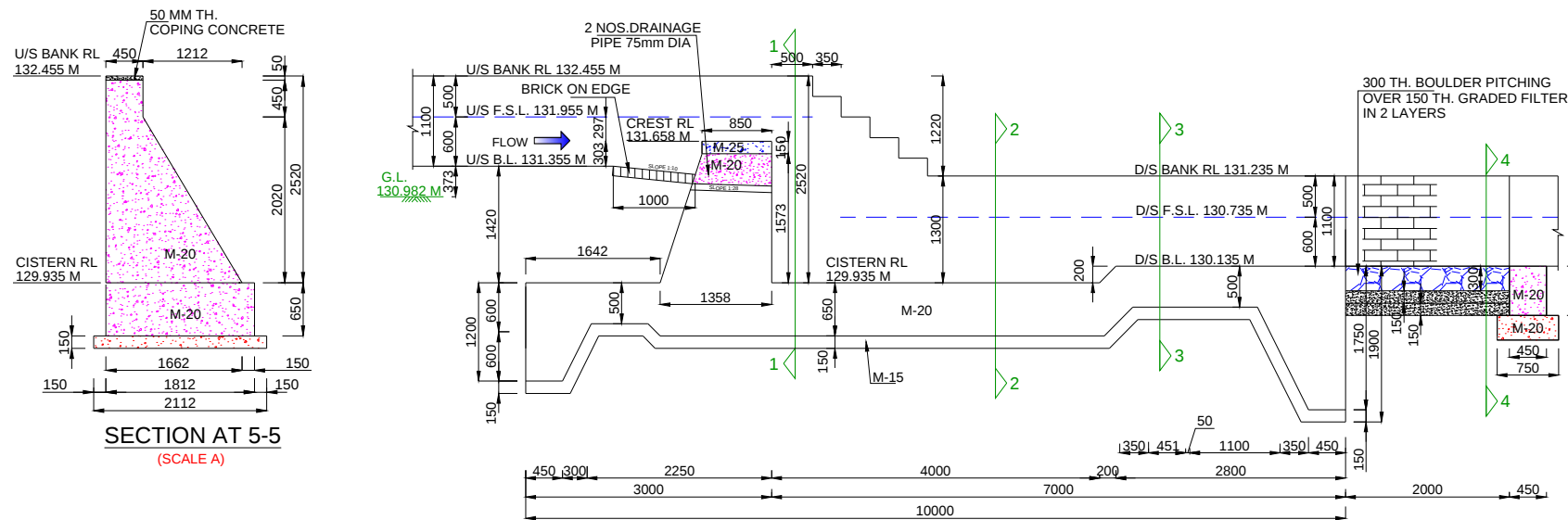
WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ FALL

1 of 1

Drawn by:-

Checked by:-

Approved by:-



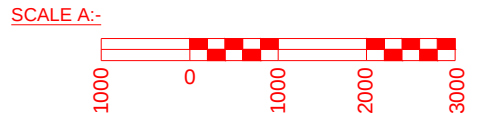
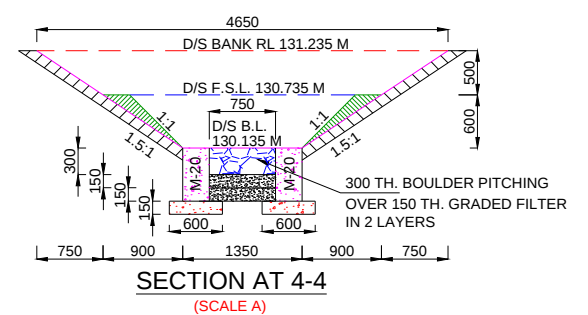
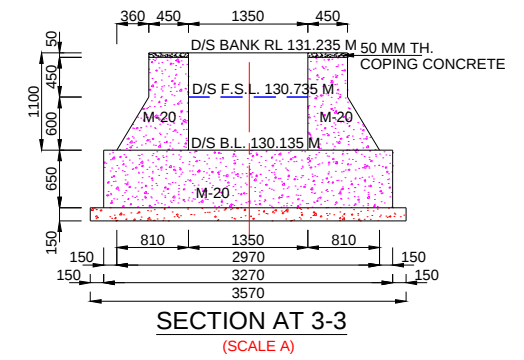
NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

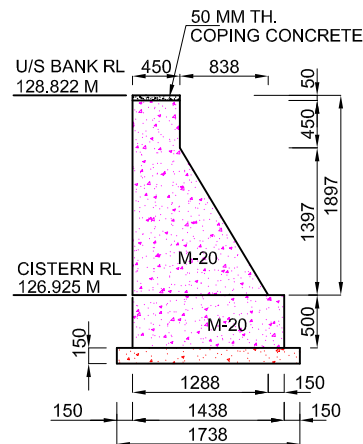
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.350	0.350	CUMEC
VERTICAL DROP	1.220	1.220	METRE
FULL SUPPLY DEPTH	0.600	0.600	METRE
BED WIDTH	1.350	1.350	METRE
BED SLOPE	1 : 3400	1 : 3400	

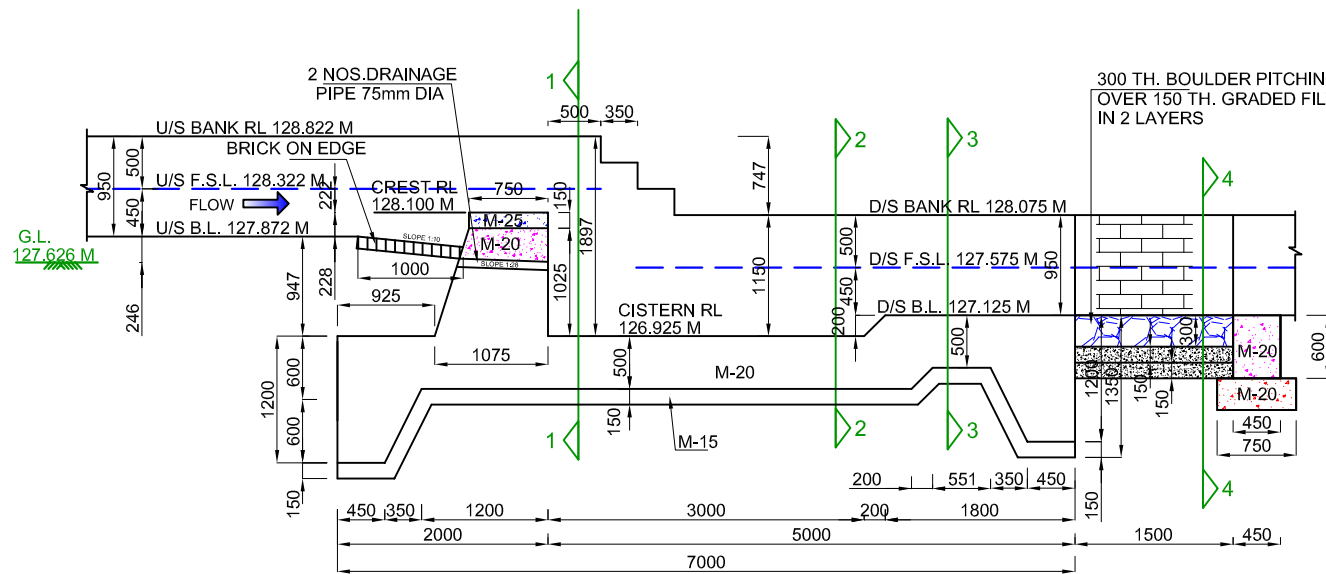


Prepared by :- WAPCOS LTD. 	Project Title :- NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :- SHARDA TYPE 1.220 M HT. FALL AT KM. 4.500 OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RMC)	
Drawing No. :- WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ FALL	1 of 1
Drawn by:-	Checked by:-
	Approved by:-

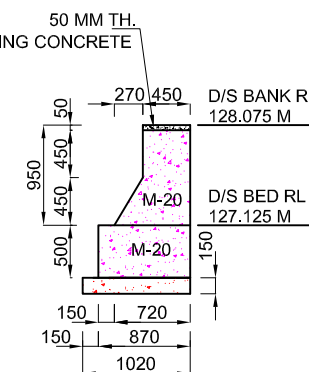
12 11 10 9 8 7 6 5 4 3 2 1



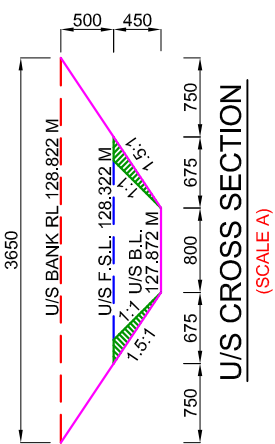
SECTION AT 5-5
(SCALE A)



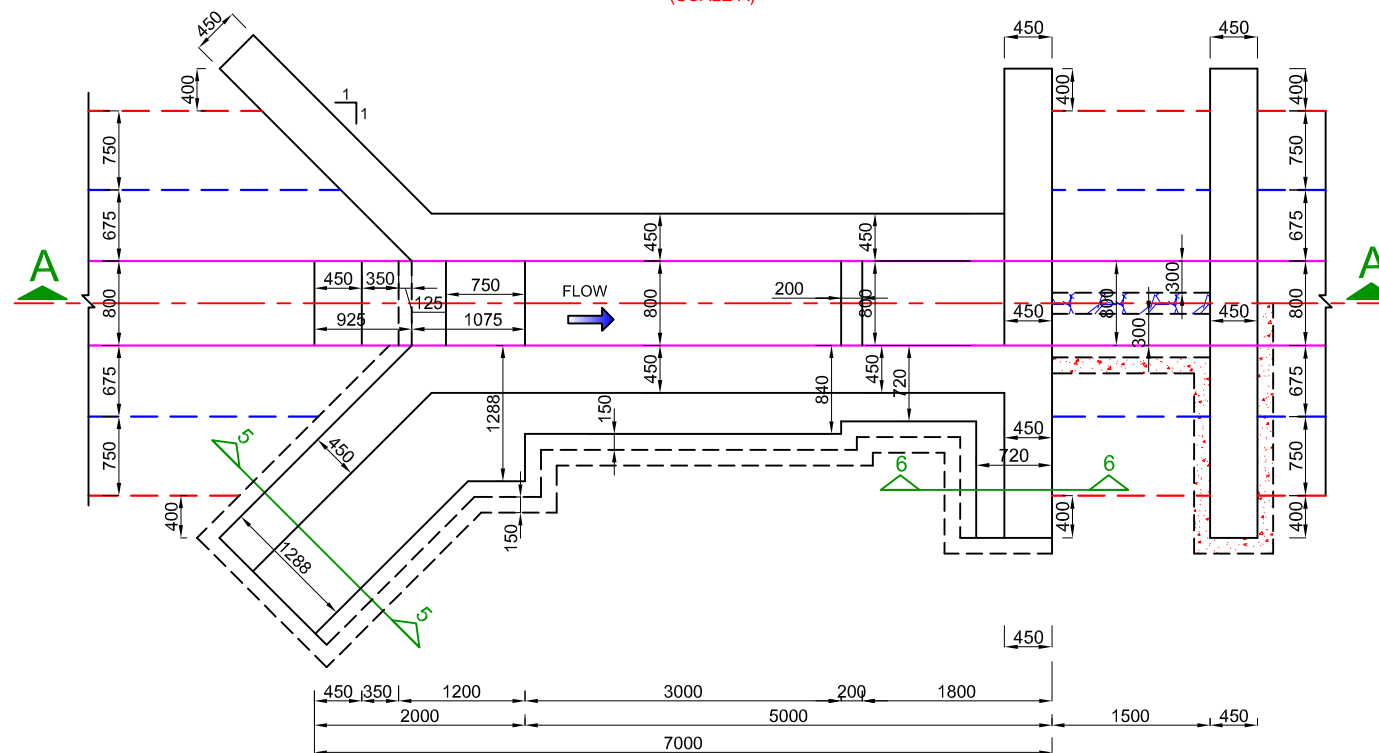
SECTION A-A
(SCALE A)



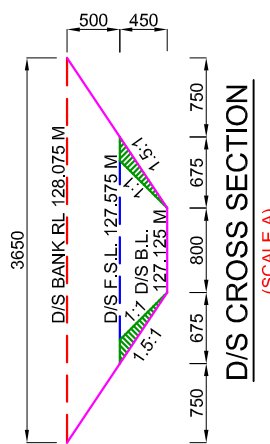
SECTION AT 6-6
(SCALE A)



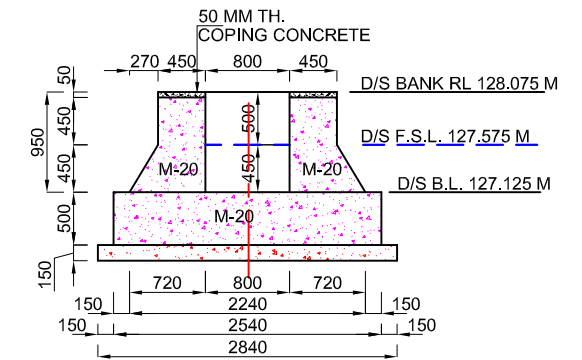
U/S CROSS SECTION
(SCALE A)



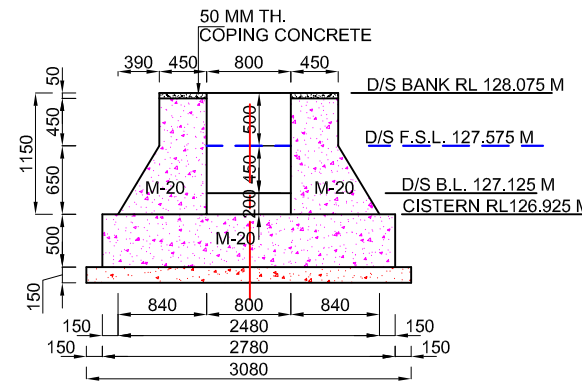
HALF TOP / HALF FOUNDATION PLAN
(SCALE A)



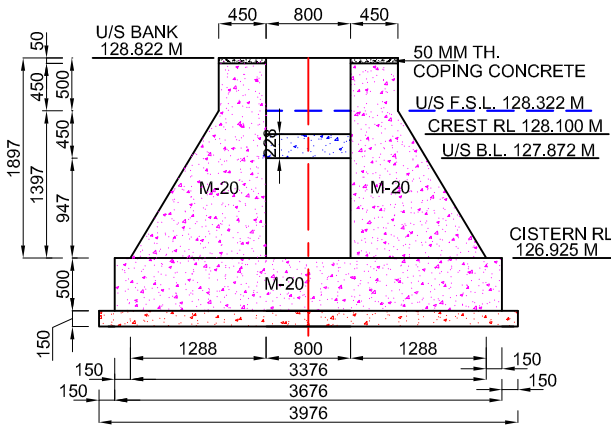
D/S CROSS SECTION
(SCALE A)



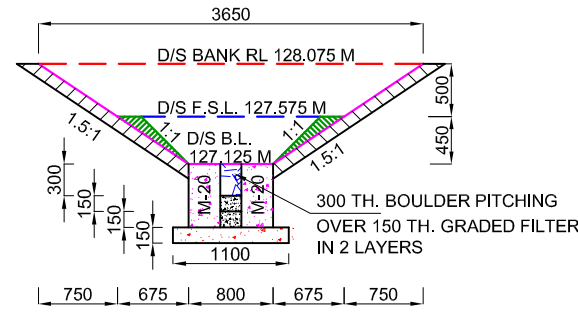
SECTION AT 3-3
(SCALE A)



SECTION AT 2-2
(SCALE A)



SECTION AT 1-1
(SCALE A)



SECTION AT 4-4
(SCALE A)

NOTES:-

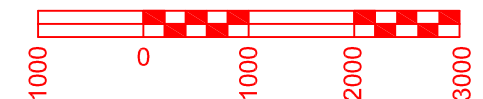
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456-2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.130	0.130	CUMEC
VERTICAL DROP	0.747	0.747	METRE
FULL SUPPLY DEPTH	0.450	0.450	METRE
BED WIDTH	0.800	0.800	METRE
BED SLOPE	1 : 3400	1 : 3400	

SCALE A:-



Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

SHARDA TYPE 0.747 M HT. FALL AT KM. 5.450 OF KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RMC)

Drawing No. :-

WAP/ INFRA/ NORTHKOEL/ BC/ R-06/ FALL

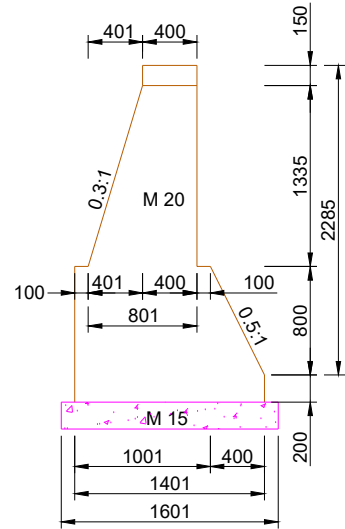
1 of 1

Drawn by:-

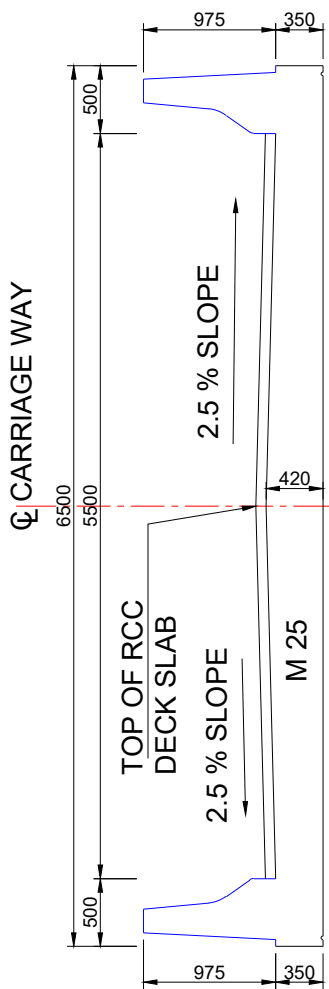
Checked by:-

Approved by:-

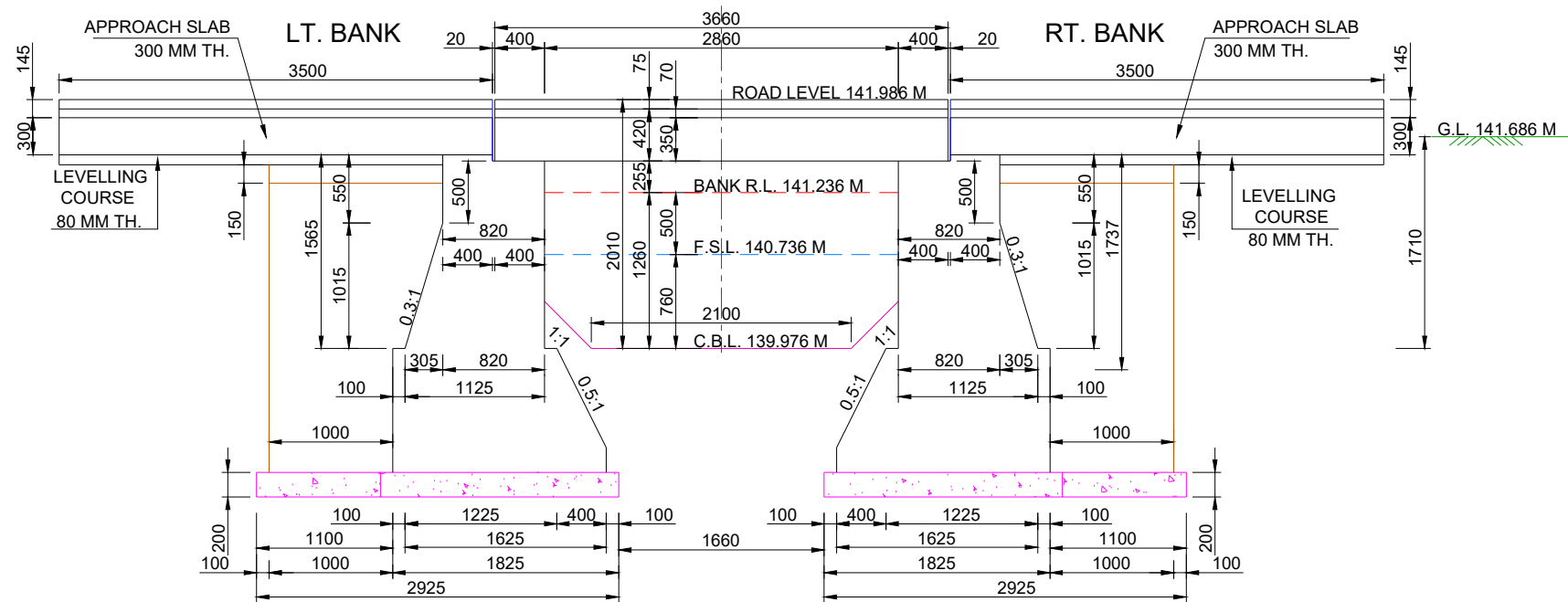
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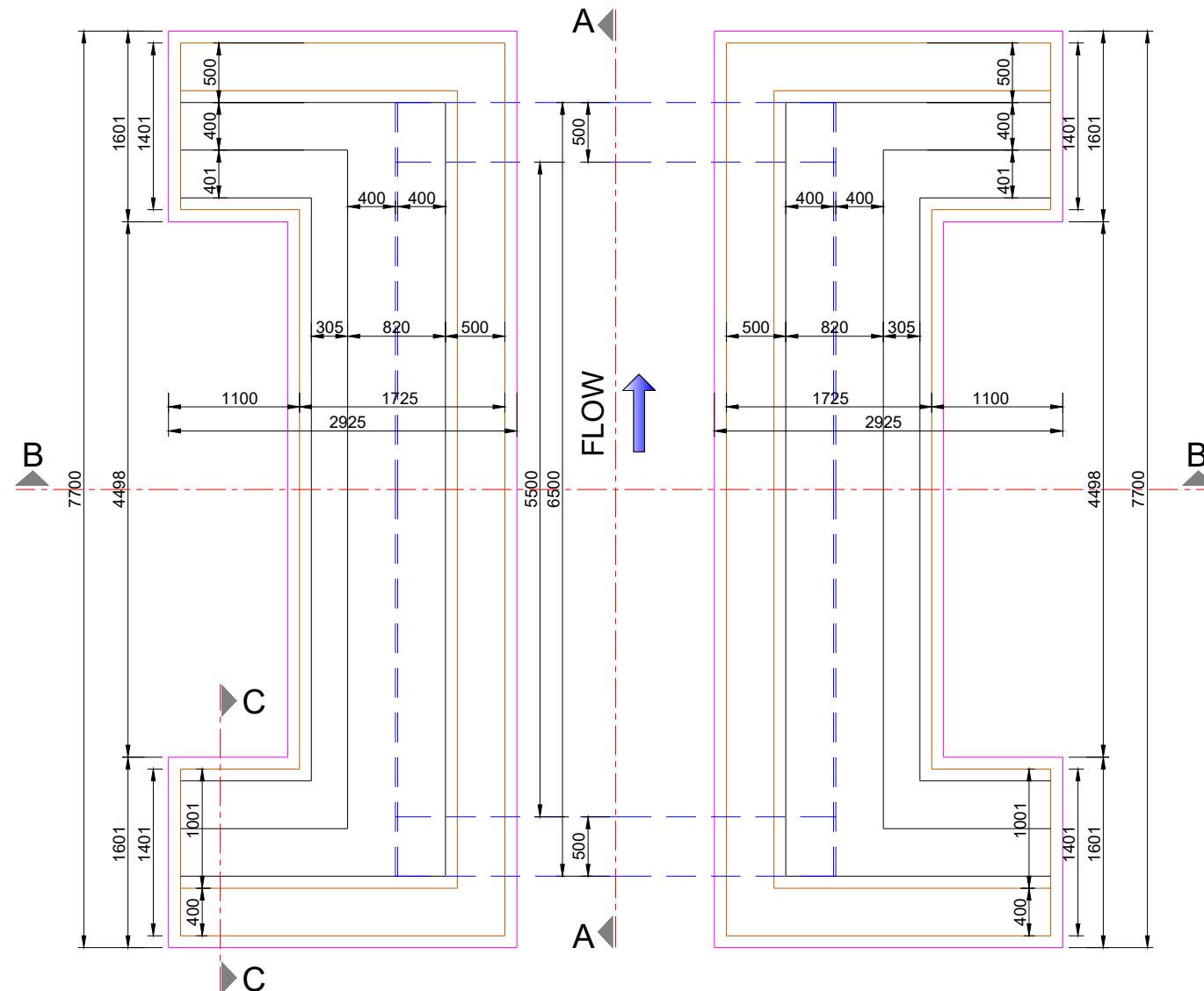
SECTION C-C



SECTION A-A



SECTION B-B



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.790 CUMecs
BED WIDTH	2.100 M
WATER DEPTH	0.760 M
FREE BOARD	0.500 M
BED LEVEL	139.976 M
F.S.L.	140.736 M
BANK R.L.	141.236 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	141.986 M
GROUND LEVEL	141.686 M

NOTES:-

- ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
- THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- ALL CONCRETE WORK SHALL CONFORM TO IS: 456, GRADE OF CONCRETE IN DIFFERENT COMPONENT SHALL BE
BRIDGE M 20 (1:1.5:3)
WING WALL M 20 (1:1.5:3)
PARAPETS M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE M 15 (1:2:4)
SLAB M 25 (1:1:2)
APPROACH SLAB M 25 (1:1:2)
- MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHER WISE.
- BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
- THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
a) $C = 0$ KG/SQCM.
b) $\phi = 30^\circ$
c) ASSUMED BEARING CAPACITY 20 T/SQM
- ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
- THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
- TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
- 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
- APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
- TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
- 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-



Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

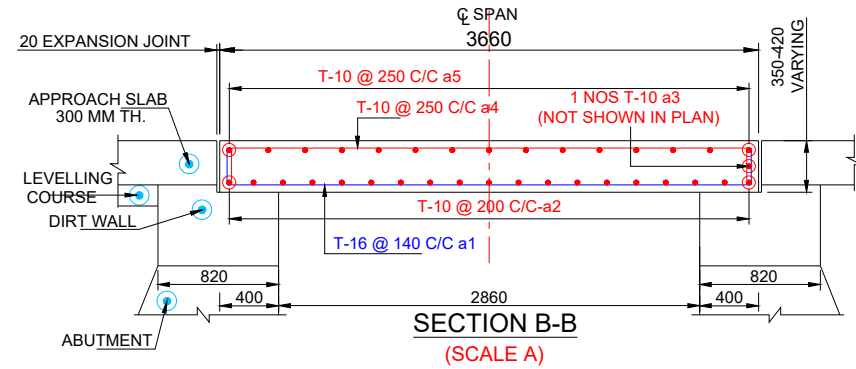
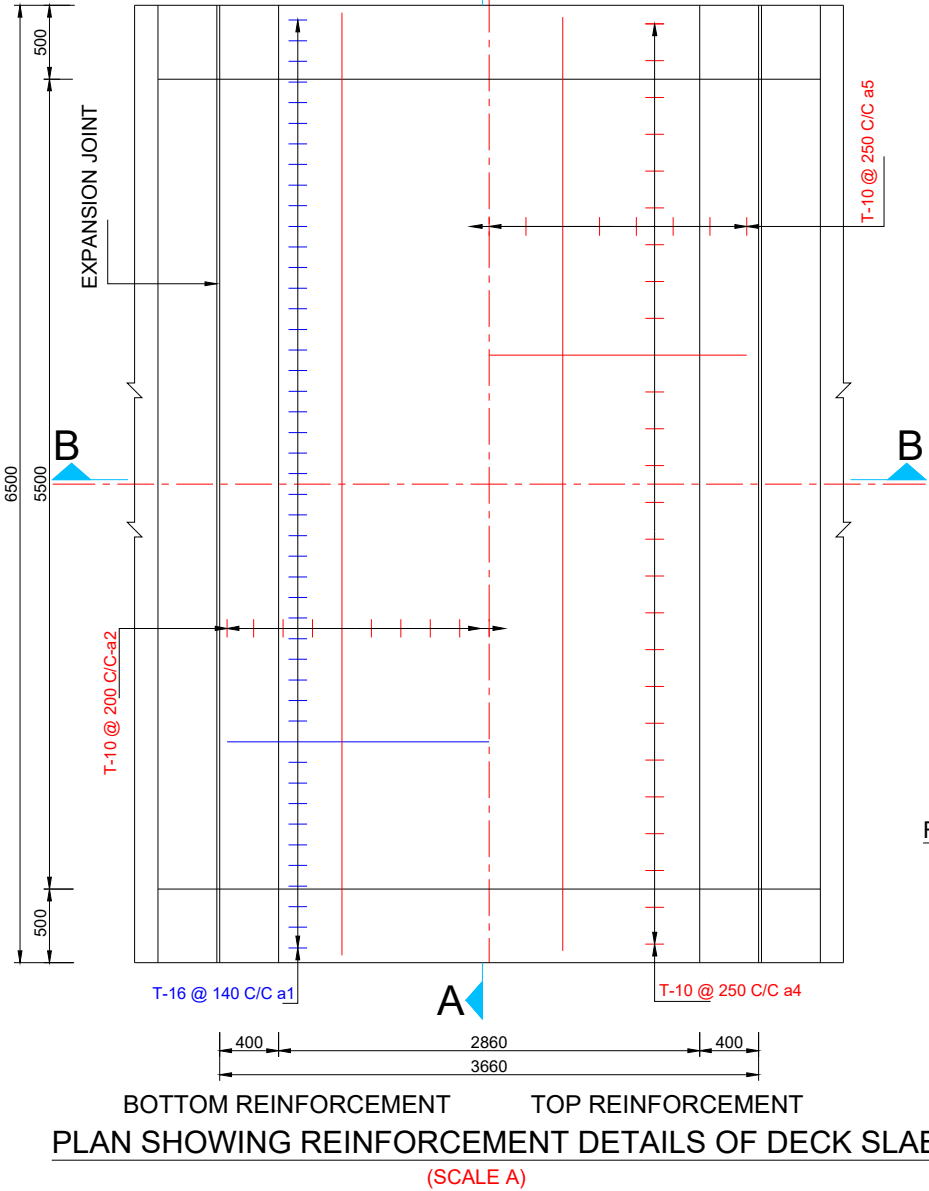
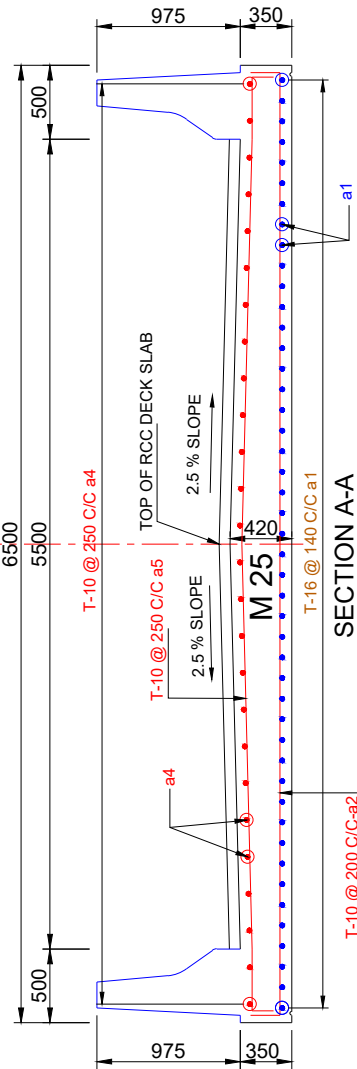
G.A.D. OF BRIDGE AT KM. 0.500 ON KUSHA MR. (OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

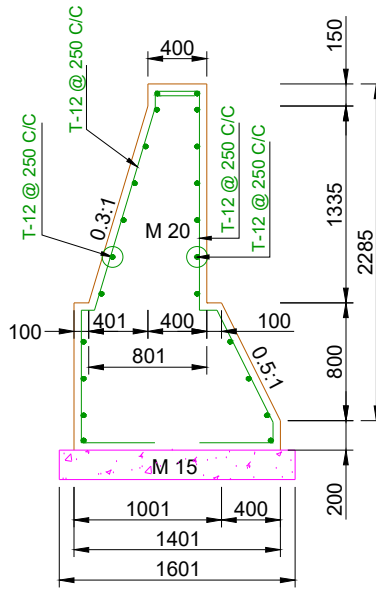
WAP/INFRA/NORTH KOEL/DY./R-06/SLR/BRG.

1 of 2

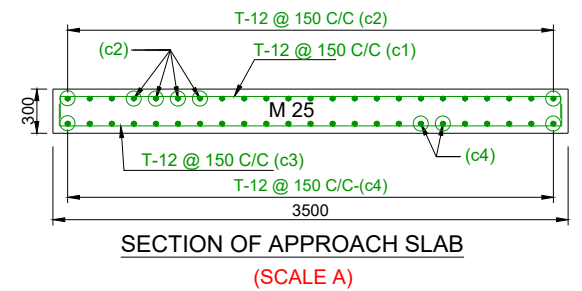
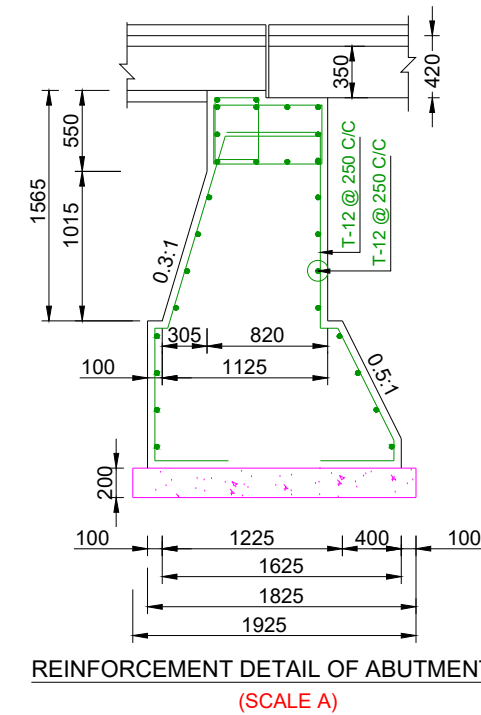
CL CARRIAGE WAY



REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB (SCALE B)

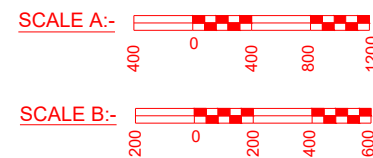


REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB (SCALE B)



BAR BENDING SCHEDULE

S. No.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1		16	140	46
2	a2		10	200	19
3	a3		10	-	2
4	a4		10	250	26
5	a5		10	250	15
APPROACH SLAB					
1	c1		12	150	43X2
2	c2		12	150	23X2
3	c3		12	150	43X2
4	c4		12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1		12	120	30X2
2	x2		16	120	30X2
3	x3		10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1		12	120	29X2X2
2	y2		16	120	29X2X2
3	y3		10	-	12X2X2



Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

REINFORCEMENT DETAILS OF SLAB AT 0.500 ON KUSHA MR.
(OFFTAKE FROM RD - 40+316 KM. (L), NORTH KOEL RIGHT MAIN CANAL)

Drawing No. :-

WAP/INFRA/NORTH KOEL/DY./R-06/SLAB BRG.

2 of 2