TENDER DOCUMENT

FOR

Distribution Network for Gaya Division (Part 1 of 2) of Right Main Canal (RMC), Bihar Portion under North Koel Reservoir Project, Jharkhand and Bihar

Estimated Cost (Rs. 73.96 Crores)

TENDER NO: WAP/NK/RMC/DIST/GAYA/P1/2025

TENDER DRAWINGS

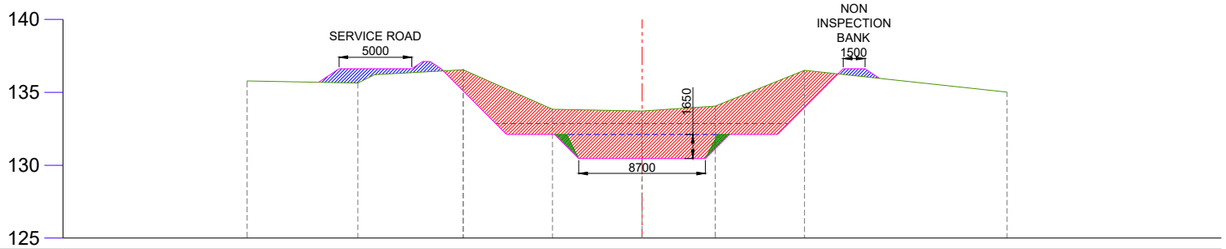
WAPCOS

(भारत सरकार का उपक्रम–जल शक्ति मंत्रालय)

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

CROSS-SECTION

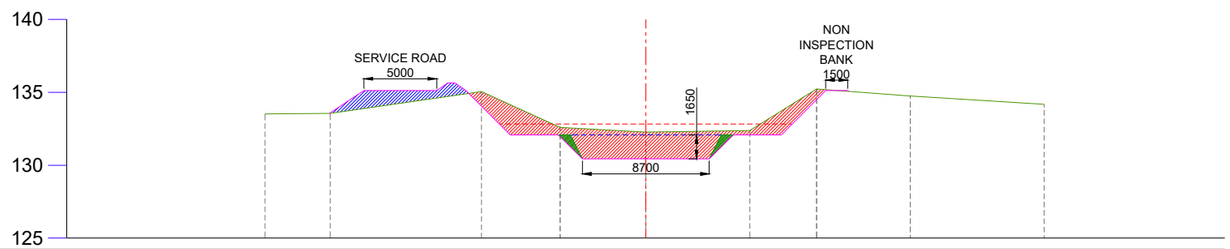
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	135.784	135.631	136.543	133.833	133.723	134.048	136.508	135.012
OFFSET (KM	27.107	19.514	12.275	6.152	0.000	5.019	11.139	25.042

CUTTING AREA (SQ.M) = 72.226
FILLING AREA (SQ.M) = 5.671

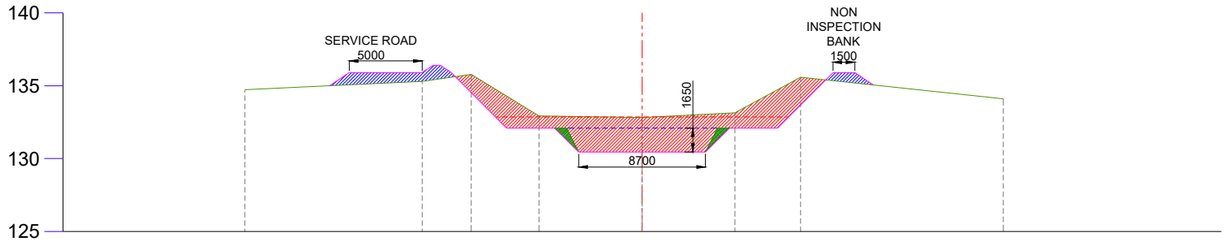
CH. : 0+100 KM
DESIGNED BED LEVEL = 130.464 M



EXIST. LEVEL (KM	133.518	133.557	135.053	132.593	132.268	132.378	135.235	134.755	134.176
OFFSET (KM	26.142	21.661	11.275	5.885	0.000	7.133	11.725	18.155	27.334

CUTTING AREA (SQ.M) = 33.985
FILLING AREA (SQ.M) = 7.303

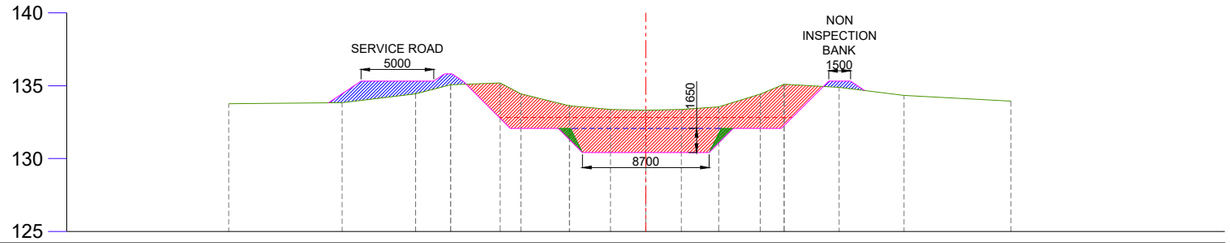
CH. : 0+300 KM
DESIGNED BED LEVEL = 130.431 M



EXIST. LEVEL (KM	134.721	135.300	135.780	132.923	132.813	133.138	135.583	134.102
OFFSET (KM	27.258	15.100	11.726	7.081	0.000	6.380	10.878	24.792

CUTTING AREA (SQ.M) = 46.918
FILLING AREA (SQ.M) = 7.265

CH. : 0+200 KM
DESIGNED BED LEVEL = 130.447 M



EXIST. LEVEL (KM	133.764	133.834	134.432	135.069	135.196	134.449	133.630	133.372	133.319	133.371	133.550	134.431	135.108	134.882	134.331	133.933
OFFSET (KM	28.634	20.851	15.798	13.397	9.997	8.577	5.233	2.429	0.000	2.431	4.996	7.854	9.501	13.272	17.722	25.058

CUTTING AREA (SQ.M) = 57.809
FILLING AREA (SQ.M) = 8.881

CH. : 0+400 KM
DESIGNED BED LEVEL = 130.414 M

LEGEND

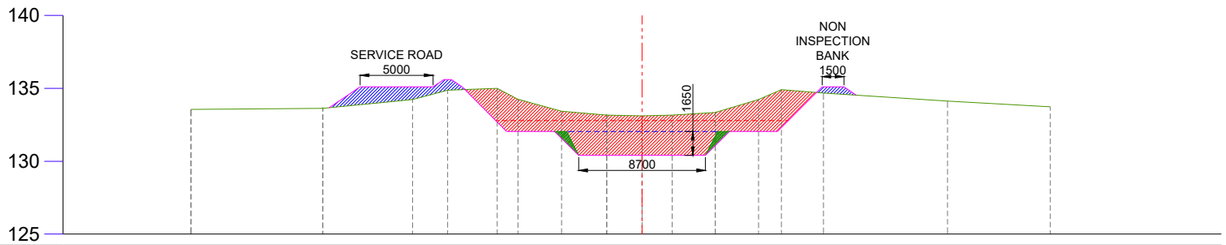
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

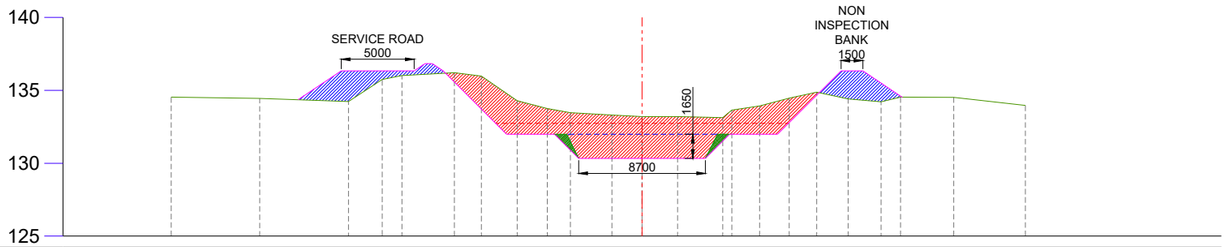
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 1 of 89

X SECTION OF ANGRA BRANCH CANAL



| | | |

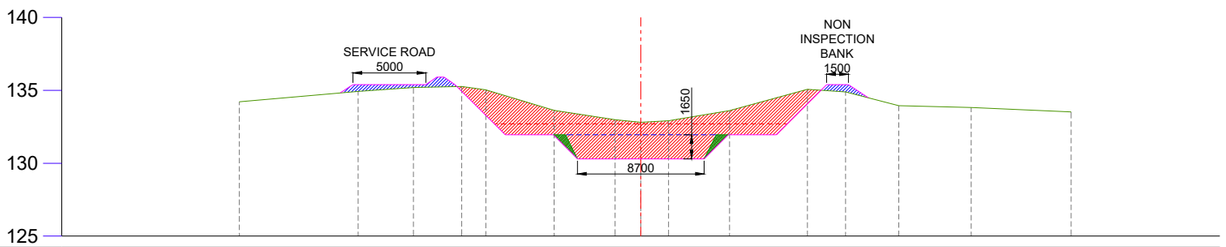
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	134.535	134.447	134.241	136.022	136.215	135.972	134.293	133.462	133.303	133.196	133.201	133.133	133.923	134.457	134.877	134.415	134.526	134.516	133.959
OFFSET (KM	32.316	26.241	20.144	16.477	12.881	11.024	8.564	4.925	2.072	0.000	2.441	5.536	8.071	10.088	11.992	14.131	17.738	21.393	26.299

CUTTING AREA (SQ.M) = 56.573
FILLING AREA (SQ.M) = 16.332

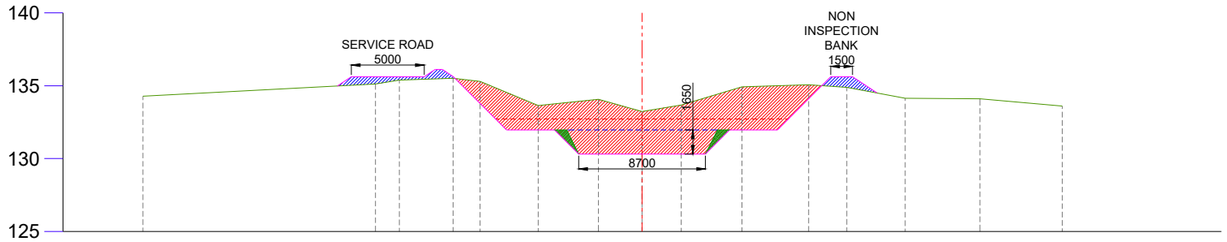
CH. : 0+900 KM
DESIGNED BED LEVEL = 130.331 M



EXIST. LEVEL (KM	134.214	134.935	135.194	135.261	135.025	133.635	132.985	132.815	132.905	133.614	135.078	134.899	133.954	133.814	133.524			
OFFSET (KM	27.554	19.405	15.598	12.300	10.630	5.956	1.763	0.000	1.904	6.088	11.439	14.044	17.702	22.676	29.525			

CUTTING AREA (SQ.M) = 54.712
FILLING AREA (SQ.M) = 3.928

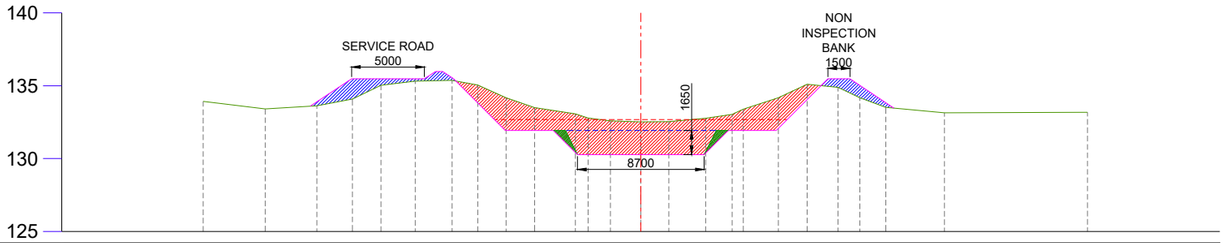
CH. : 1+100 KM
DESIGNED BED LEVEL = 130.297 M



EXIST. LEVEL (KM	134.279	135.111	135.392	135.507	135.291	133.640	134.073	133.234	133.683	134.914	135.064	134.888	134.145	134.102	133.607			
OFFSET (KM	34.266	18.295	16.656	12.974	11.128	7.123	2.999	0.000	2.684	6.855	11.432	14.047	18.058	23.189	28.839			

CUTTING AREA (SQ.M) = 65.330
FILLING AREA (SQ.M) = 4.949

CH. : 1+000 KM
DESIGNED BED LEVEL = 130.314 M



EXIST. LEVEL (KM	133.927	133.415	133.623	134.088	135.033	135.319	135.373	135.048	134.169	133.498	133.074	132.590	132.523	132.540	132.767	133.390	134.175	135.091	134.885	134.166	133.520	133.137	133.175
OFFSET (KM	30.041	25.781	22.224	19.785	17.829	15.474	12.950	11.193	9.251	7.290	4.485	2.091	0.000	1.919	4.456	7.030	9.441	11.408	13.539	15.034	16.815	20.843	30.652

CUTTING AREA (SQ.M) = 46.044
FILLING AREA (SQ.M) = 8.578

CH. : 1+200 KM
DESIGNED BED LEVEL = 130.281 M

LEGEND

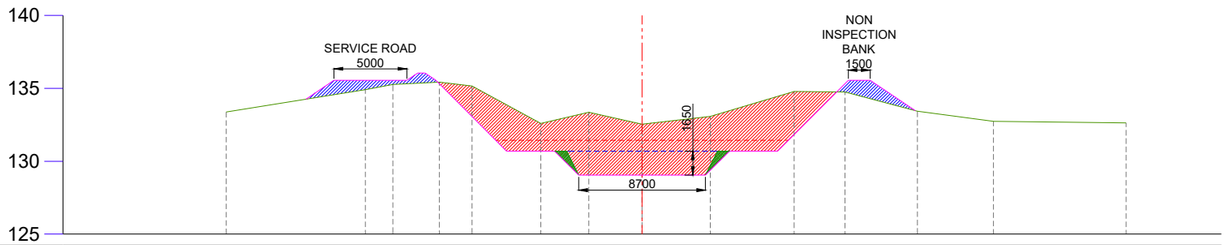
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 3 of 89

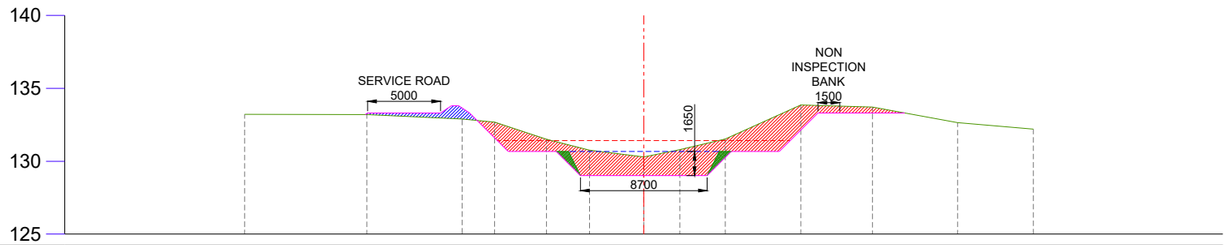
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	133.385	134.911	135.274	135.429	135.163	132.591	133.352	132.548	133.078	134.789	134.749	133.439	132.736	132.622
OFFSET (KM	28.543	18.991	17.102	13.917	11.680	6.945	3.664	0.000	4.684	10.434	13.925	18.889	24.109	33.213

CUTTING AREA (SQ.M) = 79.774
FILLING AREA (SQ.M) = 8.592

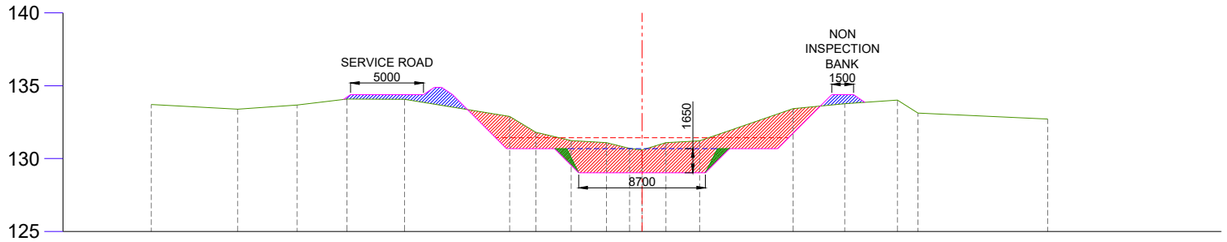
CH. : 1+300 KM
DESIGNED BED LEVEL = 129.044 M



EXIST. LEVEL (KM	133.221	133.204	132.890	132.689	131.514	130.754	130.290	130.801	131.521	133.853	133.714	132.641	132.205	
OFFSET (KM	27.393	19.015	12.465	10.242	6.680	3.719	0.000	2.473	5.588	10.768	15.697	21.542	26.741	

CUTTING AREA (SQ.M) = 37.457
FILLING AREA (SQ.M) = 2.706

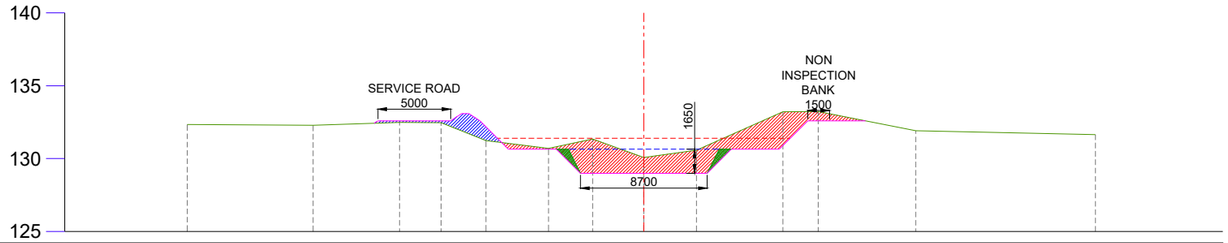
CH. : 1+500 KM
DESIGNED BED LEVEL = 129.011 M



EXIST. LEVEL (KM	133.708	133.398	133.679	134.082	134.070	132.895	131.806	131.232	131.090	130.588	131.090	131.214	133.424	133.767	134.007	133.127	132.705
OFFSET (KM	33.683	27.761	23.680	20.254	16.305	9.086	7.290	4.872	2.448	0.000	1.633	3.950	10.367	13.908	17.517	18.926	27.841

CUTTING AREA (SQ.M) = 39.996
FILLING AREA (SQ.M) = 5.691

CH. : 1+400 KM
DESIGNED BED LEVEL = 129.027 M



EXIST. LEVEL (KM	132.340	132.288	132.484	132.458	131.239	130.695	131.343	130.070	130.583	133.213	133.238	131.908	131.648	
OFFSET (KM	31.343	22.699	16.757	13.922	10.834	6.535	3.504	0.000	3.608	9.546	11.961	18.669	30.999	

CUTTING AREA (SQ.M) = 29.443
FILLING AREA (SQ.M) = 3.915

CH. : 1+600 KM
DESIGNED BED LEVEL = 128.994 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

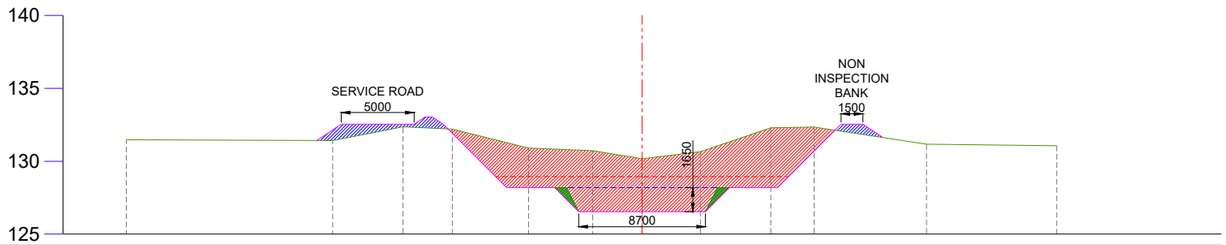
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 4 of 89

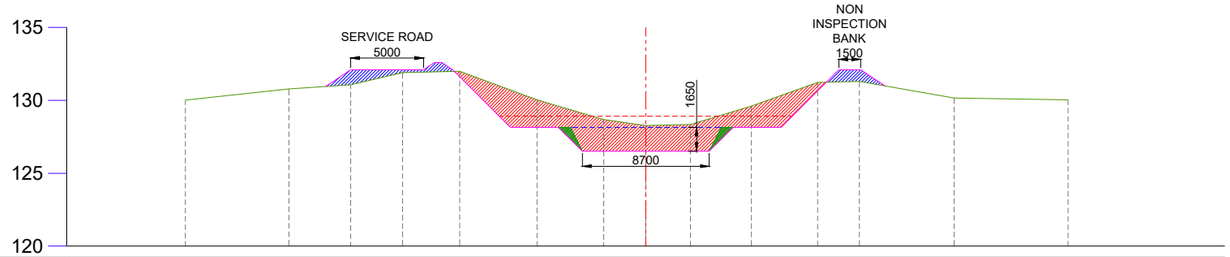
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	131.466	131.421	132.354	132.201	130.905	130.720	130.163	130.655	132.293	132.345	131.167	131.055
OFFSET (KM	35.400	21.229	16.410	13.020	7.795	3.389	0.000	4.002	8.829	11.798	19.524	28.456

CUTTING AREA (SQ.M) = 82.075
FILLING AREA (SQ.M) = 6.241

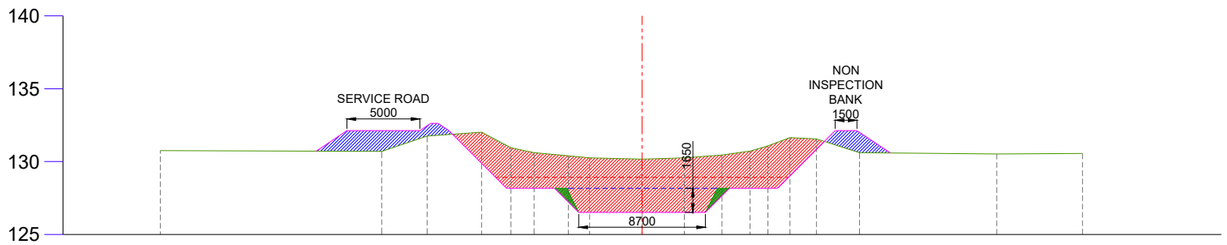
CH. : 1+700 KM
DESIGNED BED LEVEL = 126.539 M



EXIST. LEVEL (KM	130.013	130.778	131.065	131.899	131.986	130.034	128.686	128.270	128.349	129.608	131.230	131.303	130.167	130.025
OFFSET (KM	31.603	24.500	20.249	16.700	12.774	7.472	2.894	0.000	3.057	7.243	11.793	14.662	21.169	28.976

CUTTING AREA (SQ.M) = 44.007
FILLING AREA (SQ.M) = 6.582

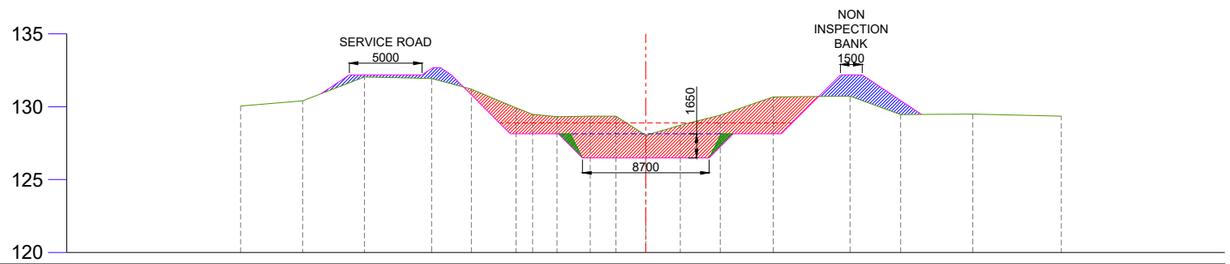
CH. : 1+900 KM
DESIGNED BED LEVEL = 126.506 M



EXIST. LEVEL (KM	130.762	130.700	131.758	132.009	130.958	130.611	130.254	130.160	130.247	130.457	130.716	131.649	131.546	130.618	130.526	130.554
OFFSET (KM	33.062	17.876	14.756	11.019	9.004	7.407	3.601	0.000	2.904	5.478	7.397	10.157	11.966	14.922	24.338	30.222

CUTTING AREA (SQ.M) = 71.142
FILLING AREA (SQ.M) = 12.654

CH. : 1+800 KM
DESIGNED BED LEVEL = 126.523 M



EXIST. LEVEL (KM	130.046	130.404	132.033	131.930	131.204	129.922	129.319	129.346	129.355	128.037	128.722	129.423	130.670	130.720	129.465	129.502	129.358
OFFSET (KM	27.810	23.556	19.309	14.695	11.972	8.914	6.086	3.818	2.052	0.000	2.375	5.104	8.744	14.019	17.484	22.448	28.523

CUTTING AREA (SQ.M) = 45.674
FILLING AREA (SQ.M) = 11.060

CH. : 2+000 KM
DESIGNED BED LEVEL = 126.489 M

LEGEND

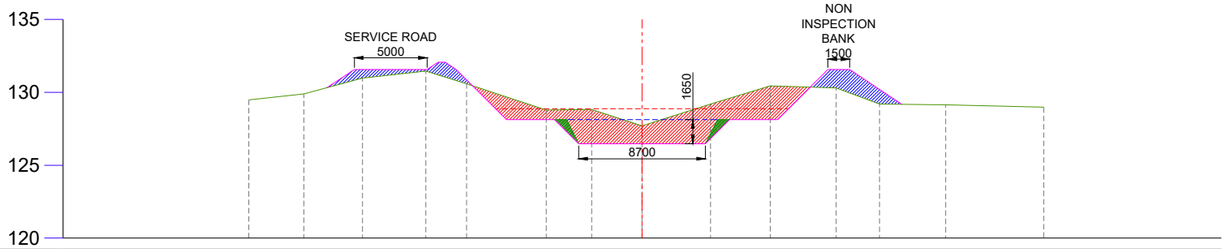
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 5 of 89

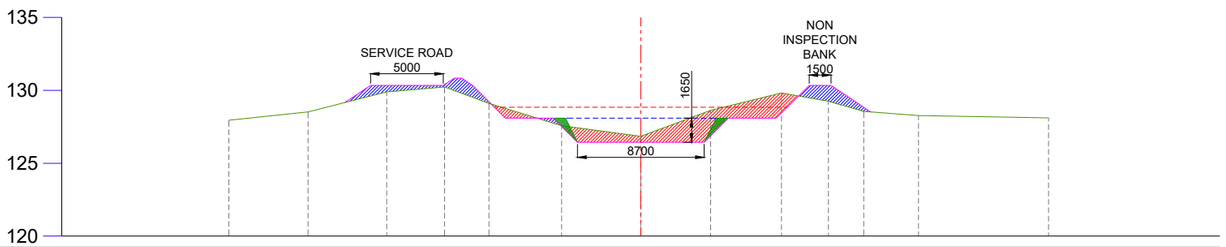
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	129.490	129.885	130.978	131.455	130.583	128.791	128.817	127.706	129.193	130.441	130.301	129.204	129.145	128.990
OFFSET (KM	26.986	23.212	19.188	14.846	12.040	6.583	3.458	0.000	4.707	8.792	13.315	16.300	20.831	27.573

CUTTING AREA (SQ.M) = 36.772
FILLING AREA (SQ.M) = 10.864

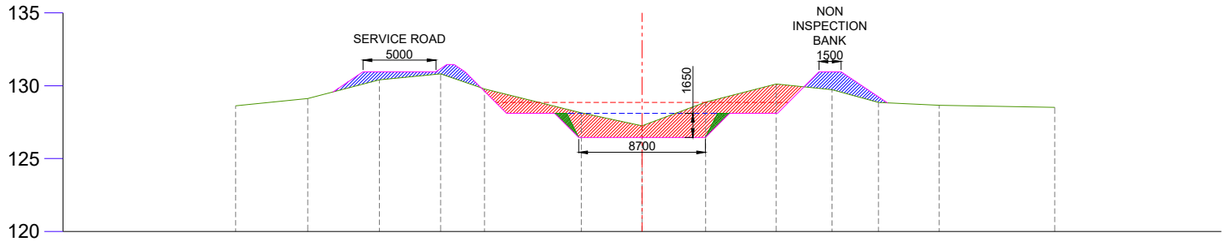
CH. : 2+100 KM
DESIGNED BED LEVEL = 126.473 M



EXIST. LEVEL (KM	127.957	128.524	129.891	130.230	129.105	127.570	126.850	128.619	129.815	129.248	128.548	128.263		128.118
OFFSET (KM	28.273	22.834	17.439	13.464	10.416	5.443	0.000	4.787	9.645	12.873	15.296	19.054		27.979

CUTTING AREA (SQ.M) = 17.750
FILLING AREA (SQ.M) = 8.191

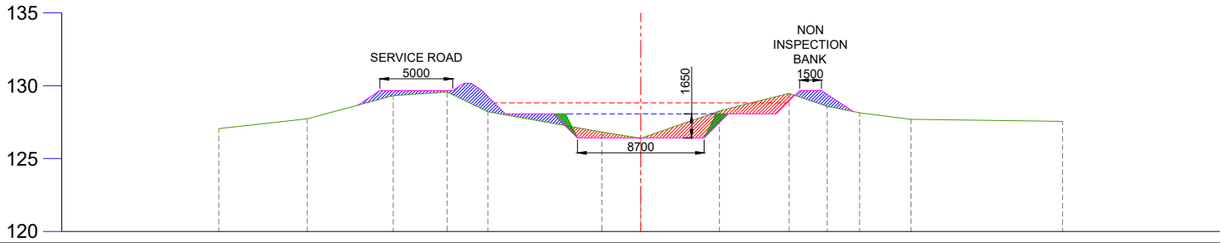
CH. : 2+300 KM
DESIGNED BED LEVEL = 126.439 M



EXIST. LEVEL (KM	128.630	129.127	130.398	130.810	129.773	128.137	127.256	128.878	130.113	129.728	128.847	128.660		128.513
OFFSET (KM	27.906	22.944	18.038	13.828	10.821	4.167	0.000	4.365	9.210	13.029	16.229	20.399		28.326

CUTTING AREA (SQ.M) = 28.484
FILLING AREA (SQ.M) = 9.740

CH. : 2+200 KM
DESIGNED BED LEVEL = 126.456 M



EXIST. LEVEL (KM	127.061	127.724	129.313	129.570	128.207	126.818	126.389	128.264	129.475	128.586	128.134	127.701		127.550
OFFSET (KM	28.974	22.900	17.000	13.287	10.495	2.673	0.000	5.397	10.174	12.783	15.023	18.545		28.950

CUTTING AREA (SQ.M) = 9.760
FILLING AREA (SQ.M) = 8.836

CH. : 2+400 KM
DESIGNED BED LEVEL = 126.423 M

LEGEND

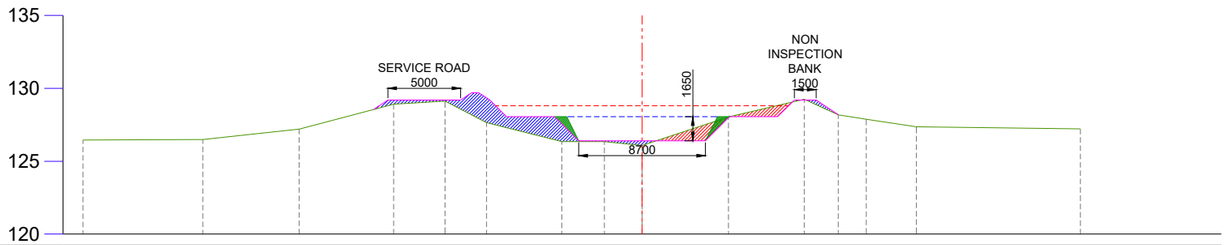
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 6 of 89

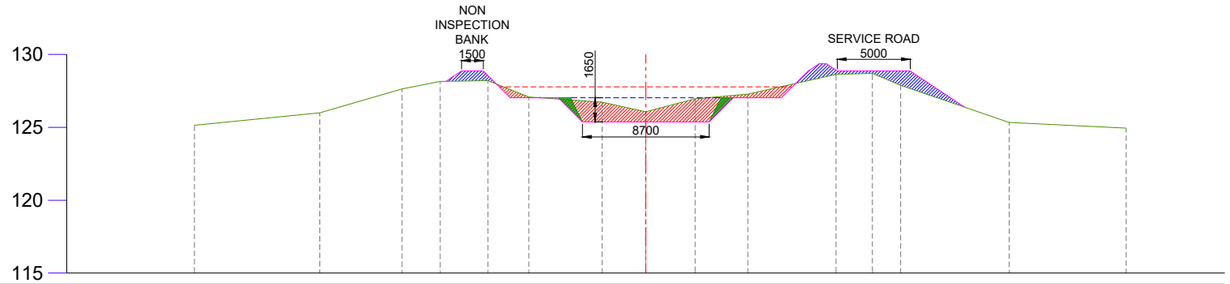
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	126.459	126.483	127.200	128.916	129.118	127.642	126.346	126.340	126.072	128.041	129.245	128.187	127.886	127.365		127.214
OFFSET (KM	38.379	30.138	23.544	17.057	13.519	10.673	5.508	2.596	0.000	5.935	11.137	13.470	15.382	18.828		30.091

CUTTING AREA (SQ.M) = 4.438
FILLING AREA (SQ.M) = 12.165

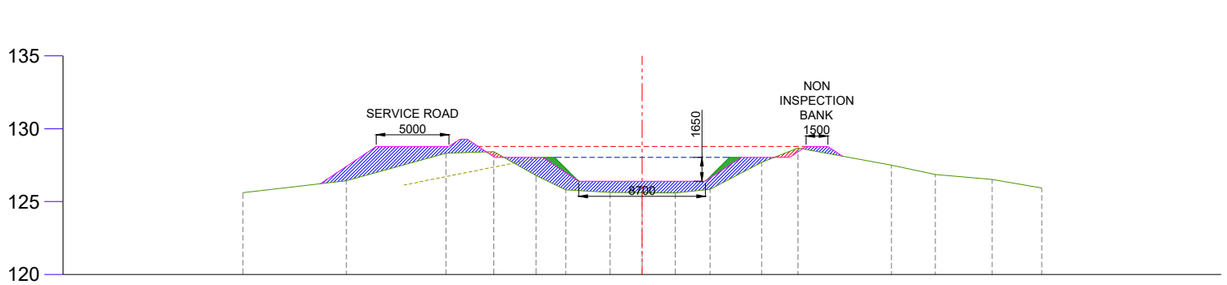
CH. : 2+500 KM
DESIGNED BED LEVEL = 126.406 M



EXIST. LEVEL (KM	125.148	126.001	127.627	128.150	128.204	127.086	126.731	126.070	126.951	127.270	128.640	128.703	127.883	125.342		124.949
OFFSET (KM	30.978	22.367	16.731	14.117	10.825	8.032	2.998	0.000	3.382	6.991	13.058	15.546	17.494	24.940		32.965

CUTTING AREA (SQ.M) = 15.532
FILLING AREA (SQ.M) = 8.069

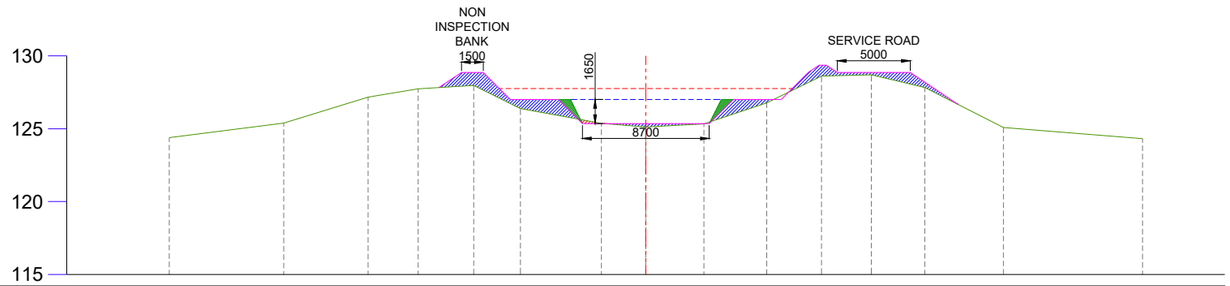
CH. : 2+700 KM
DESIGNED BED LEVEL = 126.373 M



EXIST. LEVEL (KM	125.613	126.431	128.317	128.433	126.782	125.814	125.636	125.610	125.593	125.843	127.693	128.670		127.500	126.861	126.516	125.930
OFFSET (KM	27.404	20.300	13.449	10.178	7.275	5.243	2.186	0.000	2.270	4.671	8.211	10.699		17.112	20.120	24.025	27.422

CUTTING AREA (SQ.M) = 0.664
FILLING AREA (SQ.M) = 26.254

CH. : 2+600 KM
DESIGNED BED LEVEL = 126.389 M



EXIST. LEVEL (KM	124.393	125.381	127.171	127.734	127.973	126.387	125.374	125.123	125.334	126.776	128.615	128.695	127.828	125.087		124.313
OFFSET (KM	32.700	24.853	19.054	15.623	11.814	8.609	3.041	0.000	3.994	8.305	12.061	15.475	19.147	24.544		34.090

CUTTING AREA (SQ.M) = 0.225
FILLING AREA (SQ.M) = 14.296

CH. : 2+800 KM
DESIGNED BED LEVEL = 126.356 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

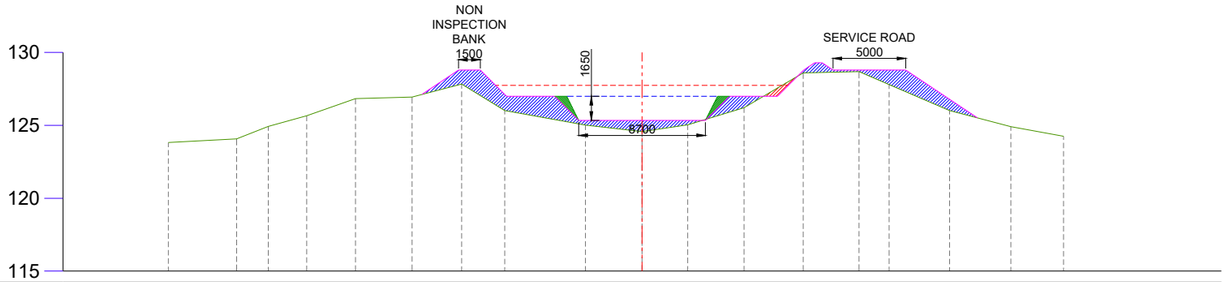
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 7 of 89

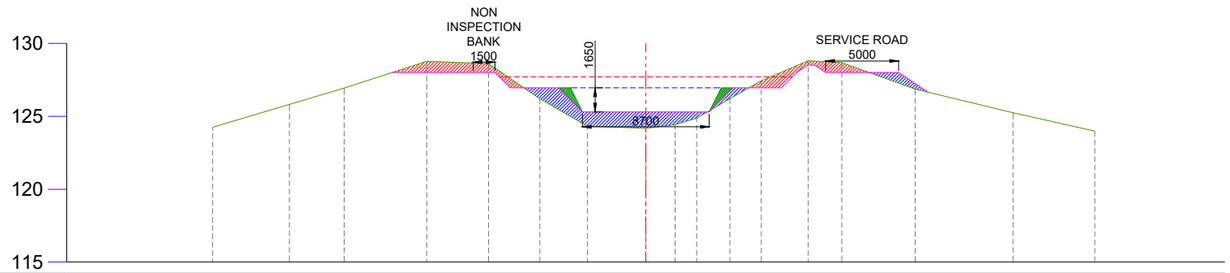
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	123.816	124.075	124.926	125.663	126.839	126.948	127.836	126.021	125.014	124.578	125.038	126.214	128.602	128.690	127.792	126.017	124.913	124.245
OFFSET (KM	32.522	27.834	25.650	23.012	19.670	15.781	12.387	9.433	3.888	0.000	3.137	7.000	11.062	14.886	16.961	21.100	25.306	28.919

CUTTING AREA (SQ.M) = 0.689
FILLING AREA (SQ.M) = 25.658

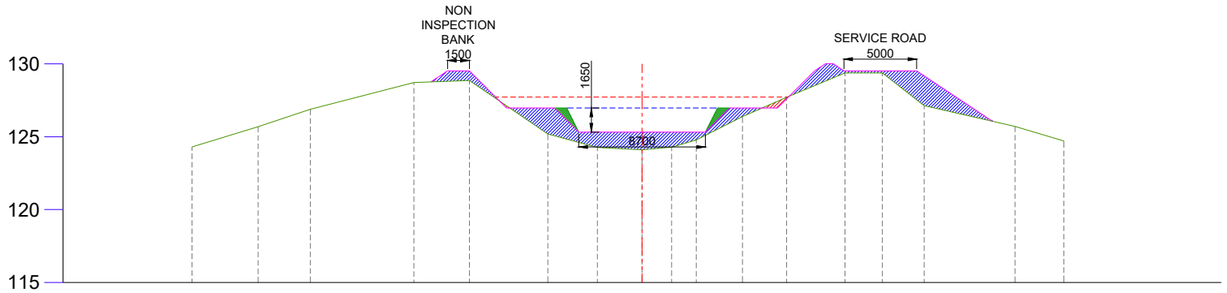
CH. : 2+900 KM
DESIGNED BED LEVEL = 126.339 M



EXIST. LEVEL (KM	124.249	125.817	126.933	128.767	128.613	126.205	124.327	124.173	124.431	124.870	126.211	127.441	128.809	128.694	126.863	125.242	123.981	
OFFSET (KM	29.736	24.460	20.698	15.044	10.791	7.272	4.007	0.000	2.017	3.488	5.764	7.919	11.144	13.445	18.488	25.201	30.823	

CUTTING AREA (SQ.M) = 9.162
FILLING AREA (SQ.M) = 13.659

CH. : 3+100 KM
DESIGNED BED LEVEL = 126.306 M



EXIST. LEVEL (KM	124.307	125.680	126.876	128.723	128.854	125.187	124.269	124.111	124.277	124.775	126.380	127.702	129.382	129.377	127.130	125.707	124.710	
OFFSET (KM	30.893	26.342	22.770	15.663	11.851	6.473	3.077	0.000	2.023	3.718	6.896	9.918	13.931	16.494	19.368	25.596	28.934	

CUTTING AREA (SQ.M) = 0.478
FILLING AREA (SQ.M) = 29.557

CH. : 3+000 KM
DESIGNED BED LEVEL = 126.323 M

EXIST. LEVEL (KM																		
OFFSET (KM																		

CUTTING AREA (SQ.M) = 0000000
FILLING AREA (SQ.M) = 0000000

CH. : 3+200 KM
DESIGNED BED LEVEL = 0.0 M

LEGEND

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

Prepared by :-

WAPCOS LTD.

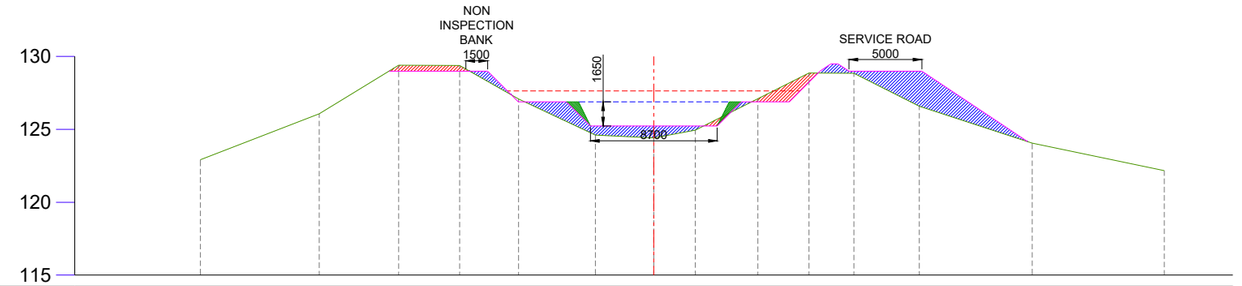
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 8 of 89

X SECTION OF ANGRA BRANCH CANAL

EXIST. LEVEL (KM	
OFFSET (KM	

CUTTING AREA (SQ.M) = 0000000
FILLING AREA (SQ.M) = 0000000

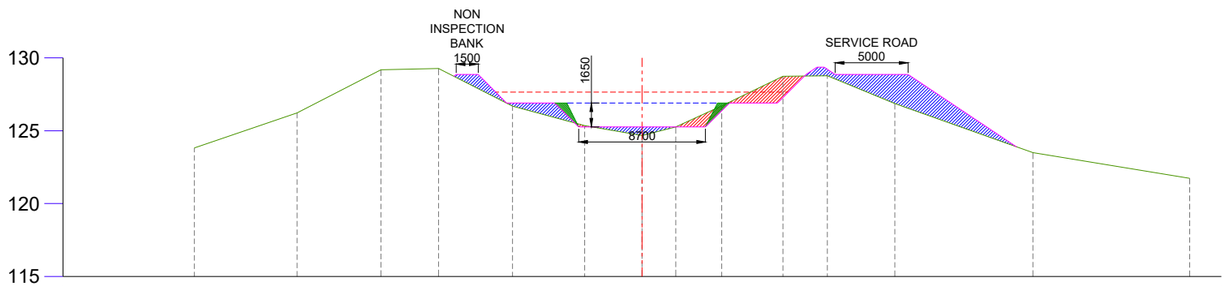
CH. : 3+300 KM
DESIGNED BED LEVEL = 0.0 M



EXIST. LEVEL (KM	122.906	126.073	129.390	129.374	127.074	124.607	124.417	124.947	127.106	128.860	128.852	126.577	124.052	122.158
OFFSET (KM	31.128	22.962	17.508	13.335	9.275	4.005	0.000	2.851	7.142	10.658	13.729	18.214	25.966	35.028

CUTTING AREA (SQ.M) = 5.501
FILLING AREA (SQ.M) = 25.553

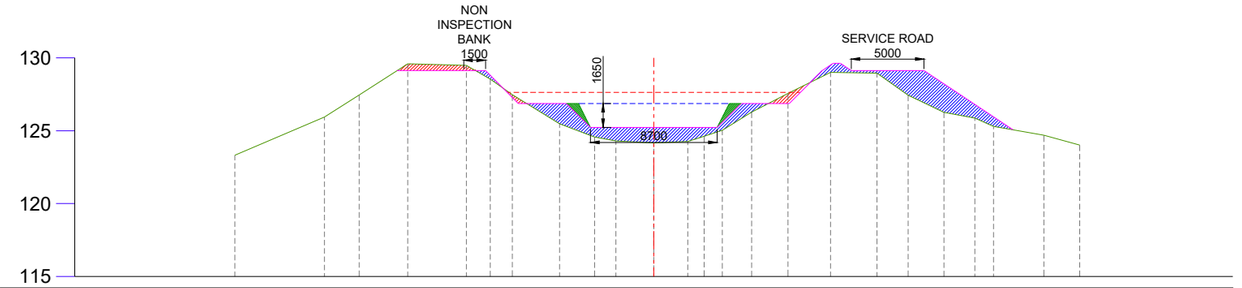
CH. : 3+500 KM
DESIGNED BED LEVEL = 126.239 M



EXIST. LEVEL (KM	123.826	126.227	129.175	129.269	126.686	125.346	124.669	125.252	126.697	128.726	128.764	126.864	123.488	121.728
OFFSET (KM	30.733	23.677	17.929	13.964	8.902	3.933	0.000	2.313	5.457	9.672	12.712	17.344	26.821	37.589

CUTTING AREA (SQ.M) = 6.315
FILLING AREA (SQ.M) = 22.190

CH. : 3+400 KM
DESIGNED BED LEVEL = 126.256 M



EXIST. LEVEL (KM	123.313	125.939	127.445	129.597	129.477	127.477	125.477	124.566	124.294	124.152	124.262	125.031	126.270	127.551	129.009	128.951	127.433	126.256	125.288	124.690	124.017
OFFSET (KM	28.746	22.611	20.214	16.897	12.859	9.708	6.468	4.068	2.602	0.000	2.337	4.707	6.706	9.212	12.131	15.310	17.448	19.922	23.321	26.765	29.230

CUTTING AREA (SQ.M) = 3.284
FILLING AREA (SQ.M) = 26.918

CH. : 3+600 KM
DESIGNED BED LEVEL = 126.223 M

LEGEND

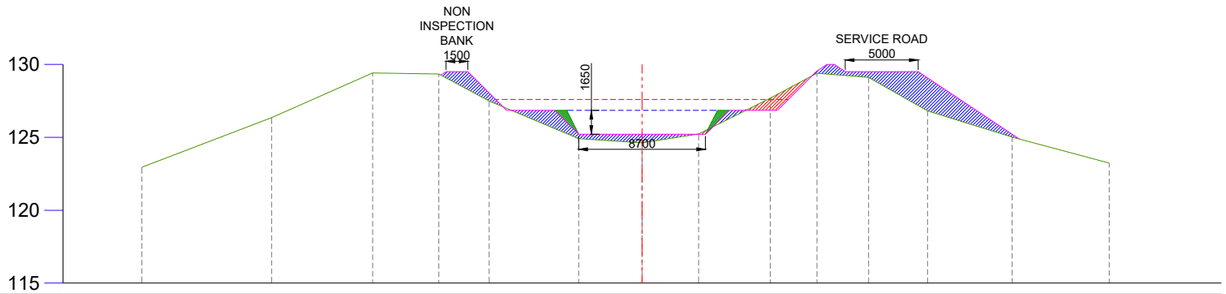
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 9 of 89

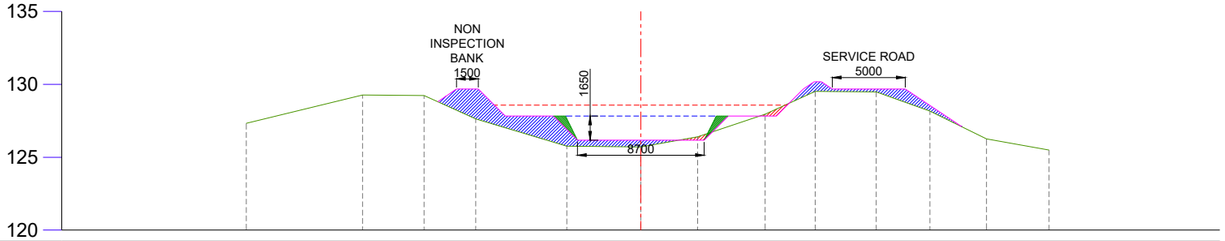
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	122.958	126.345	129.423	129.344	127.495	124.914	124.628	125.228	127.689	129.397	129.105	126.817	125.012	123.239
OFFSET (KM	34.339	25.424	18.493	13.951	10.490	4.353	0.000	3.871	8.791	11.995	15.542	19.581	25.404	32.057

CUTTING AREA (SQ.M) = 2.642
FILLING AREA (SQ.M) = 24.419

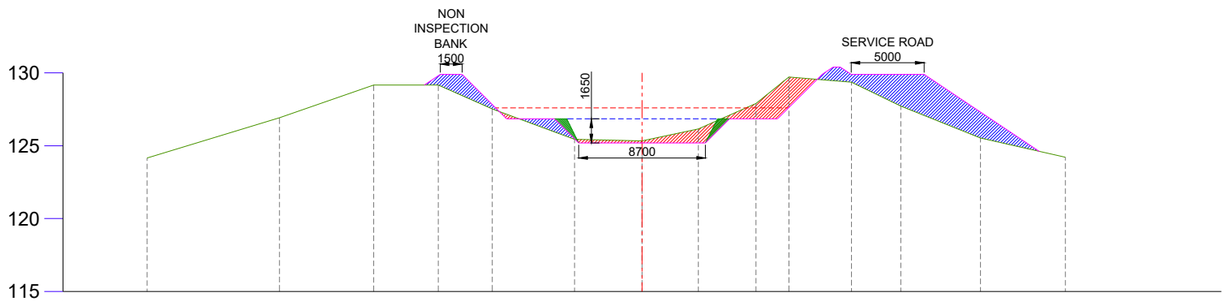
CH. : 3+700 KM
DESIGNED BED LEVEL = 126.206 M



EXIST. LEVEL (KM	127.331	129.260	129.240	127.624	125.754	125.707	126.395	127.954	129.515	129.484	128.161	126.252	125.493	
OFFSET (KM	27.078	19.102	14.876	11.338	5.075	0.000	3.891	8.535	11.970	16.147	19.847	23.720	28.011	

CUTTING AREA (SQ.M) = 0.860
FILLING AREA (SQ.M) = 19.524

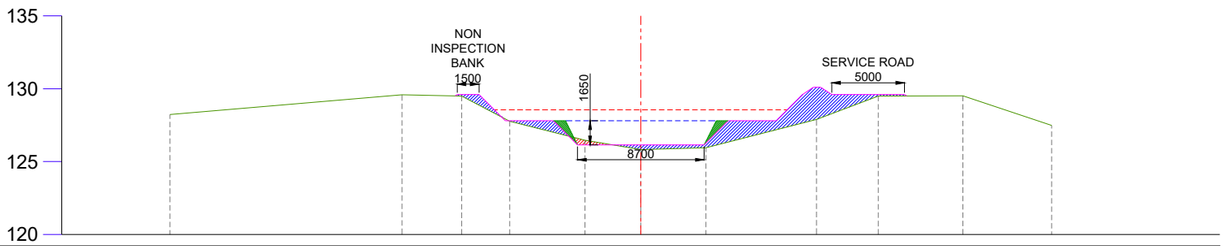
CH. : 3+900 KM
DESIGNED BED LEVEL = 126.173 M



EXIST. LEVEL (KM	124.160	126.924	129.161	129.155	127.520	125.441	125.332	126.148	127.897	129.711	129.351	127.718	125.526	124.203
OFFSET (KM	33.970	24.886	18.426	13.995	10.283	4.644	0.000	3.870	7.818	10.069	14.365	17.760	23.232	29.044

CUTTING AREA (SQ.M) = 12.288
FILLING AREA (SQ.M) = 28.341

CH. : 3+800 KM
DESIGNED BED LEVEL = 126.189 M



EXIST. LEVEL (KM	128.231	129.583	129.500	127.758	126.466	125.821	125.953	127.887	129.502	129.514	127.481			
OFFSET (KM	32.313	16.384	12.289	9.006	3.830	0.000	4.468	12.057	16.300	22.107	28.198			

CUTTING AREA (SQ.M) = 0.616
FILLING AREA (SQ.M) = 17.878

CH. : 4+000 KM
DESIGNED BED LEVEL = 126.156 M

LEGEND

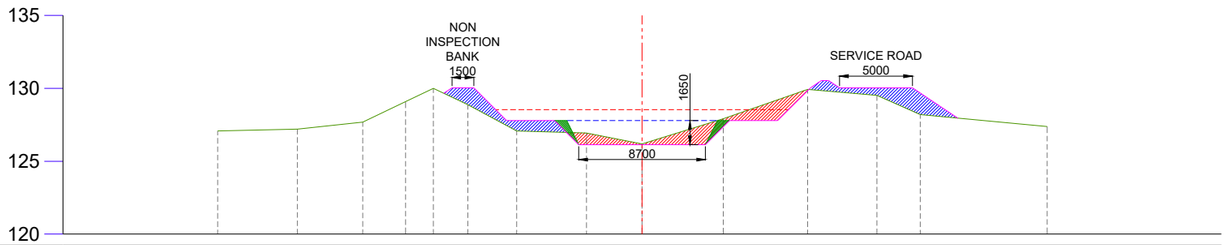
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 10 of 89

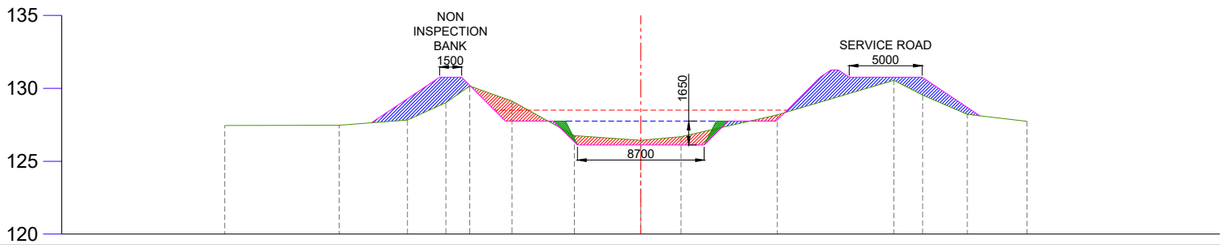
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	127.078	127.195	127.690	129.084	130.006	128.876	127.073	126.941	126.184	127.916	129.932	129.525	128.197	127.388
OFFSET (KM	29.129	23.661	19.165	16.229	14.318	11.952	8.615	3.821	0.000	5.571	11.359	16.125	19.090	27.808

CUTTING AREA (SQ.M) = 11.281
FILLING AREA (SQ.M) = 13.649

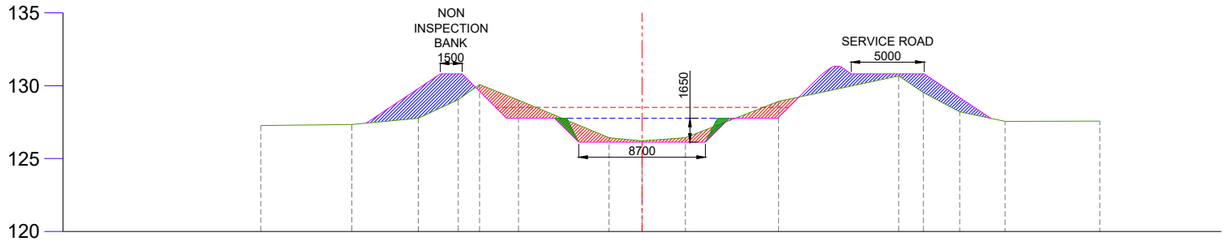
CH. : 4+100 KM
DESIGNED BED LEVEL = 126.139 M



EXIST. LEVEL (KM	127.451	127.477	127.822	129.015	130.153	129.134	126.759	126.440	126.681	128.176	130.557	129.535	128.208	127.728
OFFSET (KM	28.561	20.693	16.020	13.385	11.735	8.834	4.557	0.000	2.765	9.367	17.363	19.340	22.407	26.504

CUTTING AREA (SQ.M) = 10.166
FILLING AREA (SQ.M) = 20.205

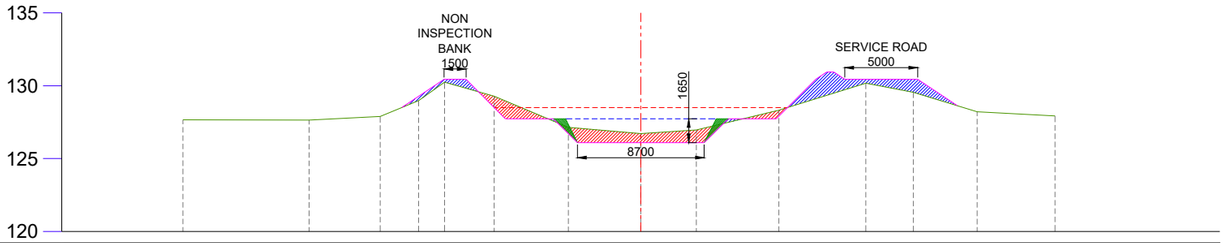
CH. : 4+300 KM
DESIGNED BED LEVEL = 126.106 M



EXIST. LEVEL (KM	127.263	127.339	127.757	129.049	130.087	129.008	126.424	126.220	126.438	128.922	130.677	129.531	128.203	127.546	127.573
OFFSET (KM	26.168	19.919	15.367	12.619	11.155	8.490	2.258	0.000	2.974	9.365	17.609	19.302	21.795	24.911	31.424

CUTTING AREA (SQ.M) = 12.466
FILLING AREA (SQ.M) = 21.278

CH. : 4+200 KM
DESIGNED BED LEVEL = 126.123 M



EXIST. LEVEL (KM	127.659	127.637	127.896	128.977	130.237	129.276	127.141	126.717	126.956	128.321	130.178	129.540	128.214	127.933
OFFSET (KM	31.429	22.763	17.893	15.244	13.476	10.075	4.972	0.000	3.815	9.466	15.444	18.707	23.090	28.432

CUTTING AREA (SQ.M) = 11.886
FILLING AREA (SQ.M) = 9.864

CH. : 4+400 KM
DESIGNED BED LEVEL = 126.089 M

LEGEND

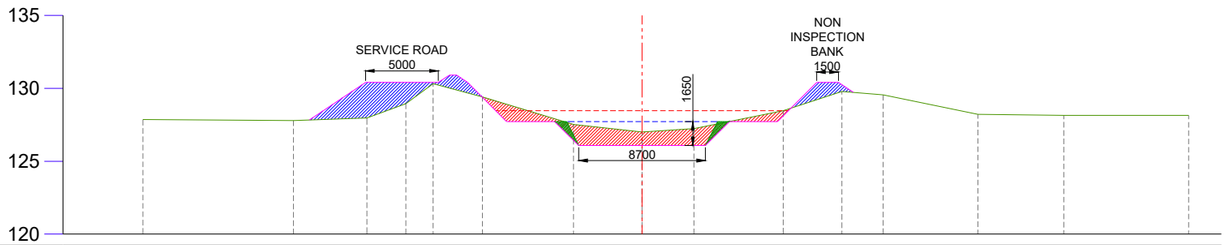
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 11 of 89

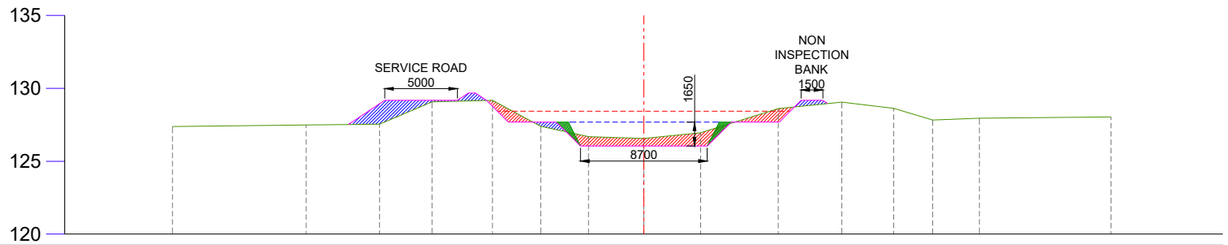
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	127.868	127.789	127.968	128.939	130.318	129.419	127.526	127.002	127.241	128.468	129.791	129.546	128.220	128.153	128.137
OFFSET (KM	34.254	23.932	18.888	16.210	14.340	10.954	4.702	0.000	3.554	9.686	13.710	16.549	23.052	28.947	37.505

CUTTING AREA (SQ.M) = 16.929
FILLING AREA (SQ.M) = 16.266

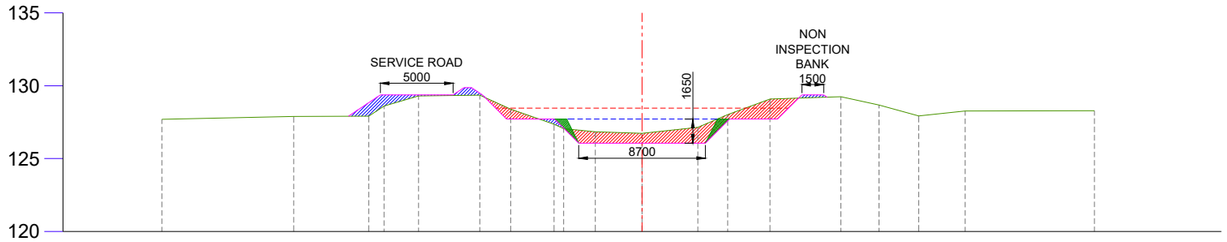
CH. : 4+500 KM
DESIGNED BED LEVEL = 126.073 M



EXIST. LEVEL (KM	127.373	127.490	127.543	129.065	129.177	127.392	126.692	126.558	126.955	128.606	129.057	128.631	127.818	127.943	128.035
OFFSET (KM	32.348	23.171	18.140	14.540	10.389	7.068	3.803	0.000	3.904	9.224	13.586	17.150	19.817	23.028	32.069

CUTTING AREA (SQ.M) = 10.488
FILLING AREA (SQ.M) = 6.796

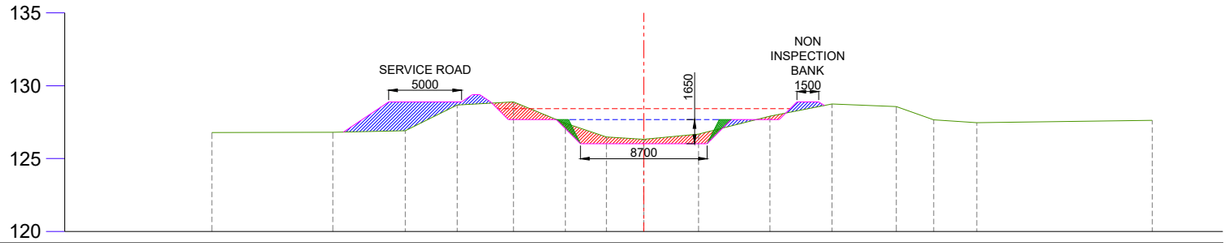
CH. : 4+700 KM
DESIGNED BED LEVEL = 126.039 M



EXIST. LEVEL (KM	127.700	127.895	127.916 128.595	129.301	129.350	128.395	127.363	126.835	126.727	127.148	128.013	129.091	129.245	128.678	127.924	128.257	128.285
OFFSET (KM	32.957	23.911	18.756 17.712	15.335	11.143	9.014	6.035	3.215	0.000	3.828	5.882	8.785	13.643	16.264	18.989	22.171	31.036

CUTTING AREA (SQ.M) = 14.751
FILLING AREA (SQ.M) = 4.080

CH. : 4+600 KM
DESIGNED BED LEVEL = 126.056 M



EXIST. LEVEL (KM	126.789	126.805	126.919	128.678	128.886	127.436	126.486	126.318	126.674	127.907	128.738	128.561	127.659	127.462	127.617
OFFSET (KM	29.639	21.345	16.375	12.807	8.936	5.381	2.574	0.000	3.756	8.661	12.915	17.330	19.890	22.853	34.896

CUTTING AREA (SQ.M) = 9.134
FILLING AREA (SQ.M) = 11.687

CH. : 4+800 KM
DESIGNED BED LEVEL = 126.023 M

LEGEND

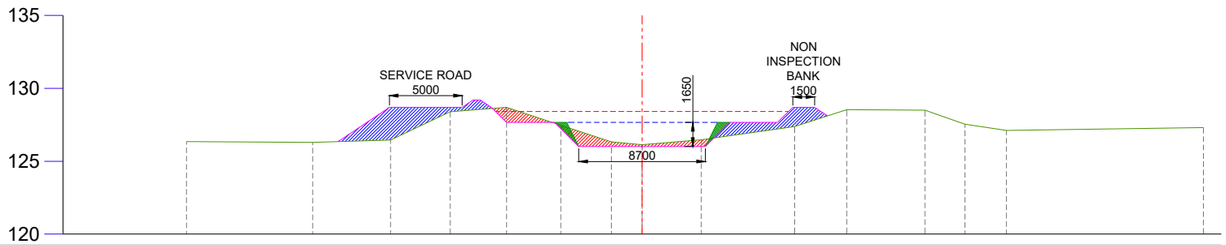
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 12 of 89

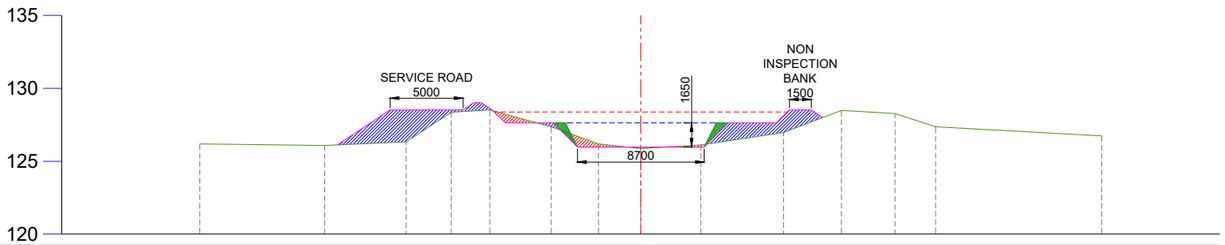
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	126.353	126.299	126.462	128.402	128.701	127.468	126.331	126.132	126.467	127.375	128.536	128.509	127.541	127.104	127.310
OFFSET (KM	31.260	22.612	17.269	13.170	9.304	5.577	2.110	0.000	4.055	10.462	14.054	19.407	22.148	25.012	38.526

CUTTING AREA (SQ.M) = 6.495
FILLING AREA (SQ.M) = 16.224

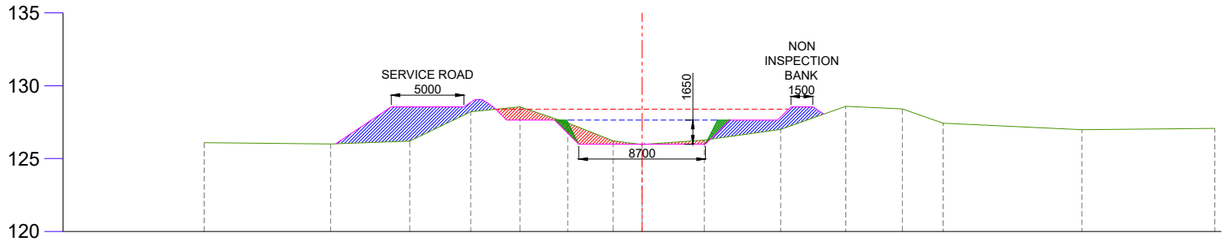
CH. : 4+900 KM
DESIGNED BED LEVEL = 126.006 M



EXIST. LEVEL (KM	126.184	126.074	126.337	128.364	128.527	127.354	126.190	125.858	126.122	126.967	128.492	128.264	127.361	126.734
OFFSET (KM	30.259	21.691	16.113	13.001	10.375	6.156	2.902	0.000	4.114	9.795	13.770	17.457	20.226	31.629

CUTTING AREA (SQ.M) = 2.460
FILLING AREA (SQ.M) = 18.478

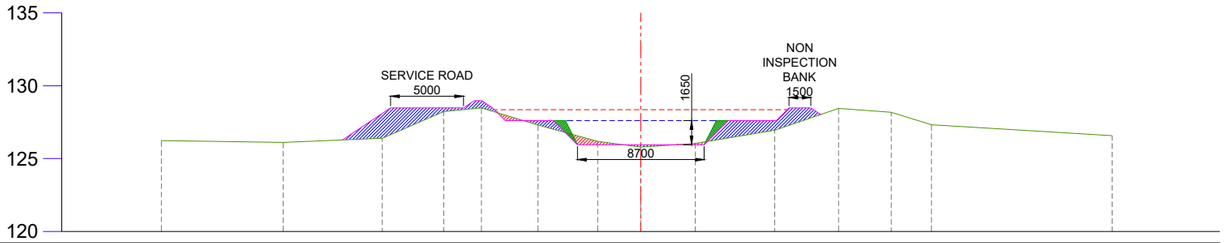
CH. : 5+100 KM
DESIGNED BED LEVEL = 125.973 M



EXIST. LEVEL (KM	126.098	126.003	126.203	128.220	128.556	127.454	126.217	125.968	126.270	127.001	128.583	128.415	127.430	126.989	127.070
OFFSET (KM	30.049	21.386	15.940	11.753	8.378	5.096	1.974	0.000	4.267	9.504	13.986	17.863	20.659	30.187	39.312

CUTTING AREA (SQ.M) = 5.924
FILLING AREA (SQ.M) = 20.747

CH. : 5+000 KM
DESIGNED BED LEVEL = 125.989 M



EXIST. LEVEL (KM	126.226	126.108	126.400	128.227	128.477	127.306	126.175	125.794	126.032	126.948	128.435	128.172	127.319	126.571
OFFSET (KM	32.896	24.546	17.743	13.523	10.938	7.051	2.963	0.000	3.747	9.188	13.567	17.196	19.944	32.352

CUTTING AREA (SQ.M) = 1.487
FILLING AREA (SQ.M) = 15.667

CH. : 5+200 KM
DESIGNED BED LEVEL = 125.956 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

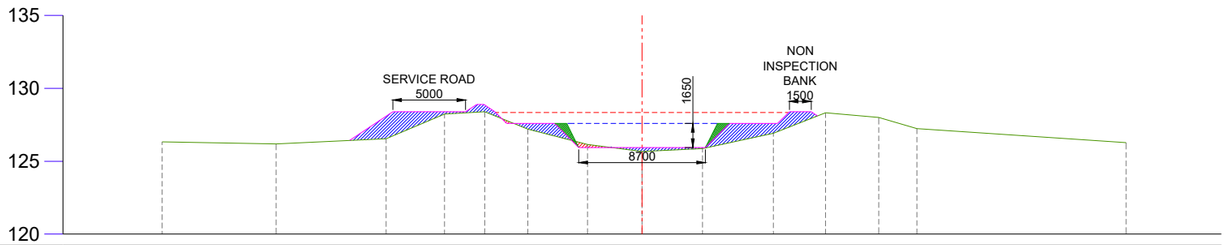
H.G. LINE

Prepared by :-

WAPCOS LTD.

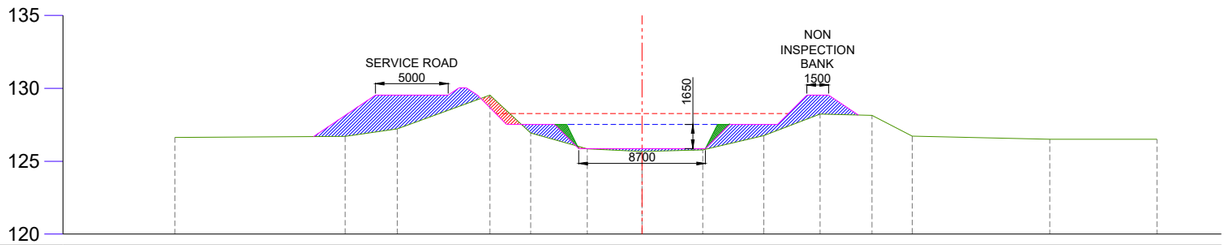
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 13 of 89

X SECTION OF ANGRA BRANCH CANAL



| | | |

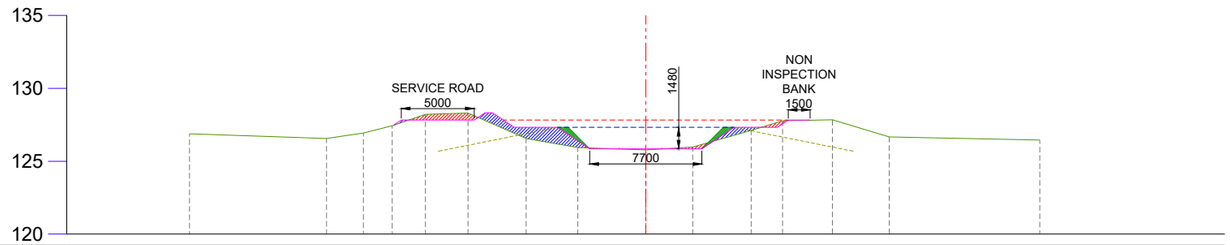
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	126.640	126.703	127.219	129.529	126.937	125.855	125.663	125.773	126.756	128.229	128.143	126.728	126.513	126.507
OFFSET (KM	32.069	20.390	16.803	10.444	7.647	3.763	0.000	4.170	8.346	12.214	15.778	18.532	27.975	35.334

CUTTING AREA (SQ.M) = 1.842
FILLING AREA (SQ.M) = 30.223

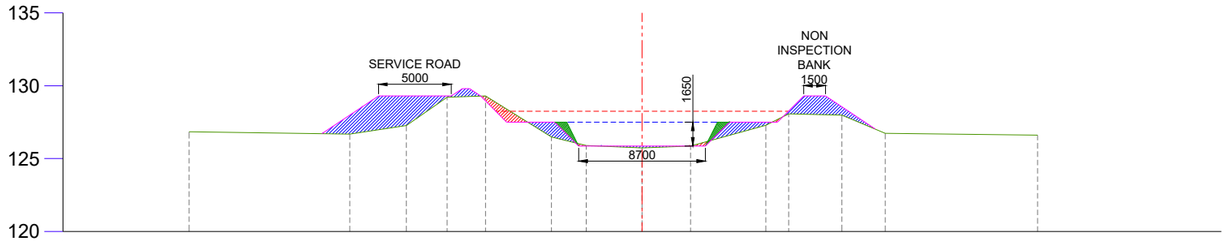
CH. : 5+700 KM
DESIGNED BED LEVEL = 125.873 M



EXIST. LEVEL (KM	126.878	126.562	126.929	127.433	128.209	128.302	126.555	125.942	125.780	125.967	127.116	127.778	127.843	126.663	126.450
OFFSET (KM	31.321	21.904	19.387	17.404	15.121	12.206	8.219	4.676	0.000	3.218	7.231	9.394	12.811	16.713	27.034

CUTTING AREA (SQ.M) = 2.527
FILLING AREA (SQ.M) = 6.171

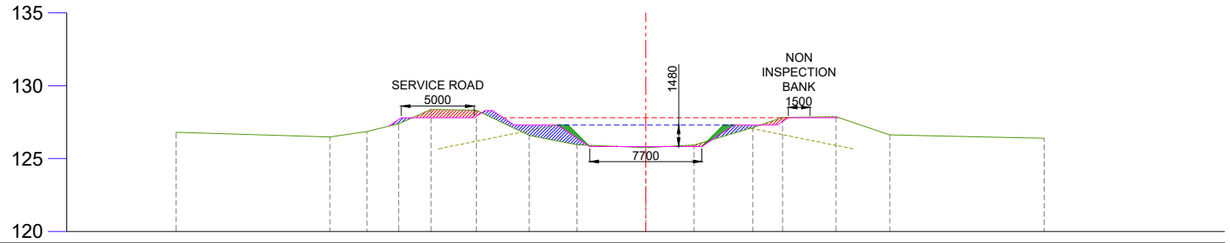
CH. : 5+900 KM
DESIGNED BED LEVEL = 125.839 M



EXIST. LEVEL (KM	126.844	126.687	127.274	129.215	129.295	126.478	125.899	125.731	125.863	127.291	128.068	127.988	126.733	126.610
OFFSET (KM	31.081	20.061	16.180	13.383	10.746	6.215	3.840	0.000	3.327	8.489	10.062	13.715	16.692	27.141

CUTTING AREA (SQ.M) = 1.961
FILLING AREA (SQ.M) = 21.162

CH. : 5+800 KM
DESIGNED BED LEVEL = 125.856 M



EXIST. LEVEL (KM	126.796	126.478	126.863	127.385	128.380	128.321	126.582	125.943	125.751	125.934	127.116	127.822	127.871	126.623	126.397
OFFSET (KM	32.252	21.681	19.138	16.954	14.733	11.627	8.001	4.722	0.000	3.304	7.338	9.386	13.052	16.748	27.349

CUTTING AREA (SQ.M) = 3.114
FILLING AREA (SQ.M) = 5.584

CH. : 6+000 KM
DESIGNED BED LEVEL = 125.823 M

LEGEND

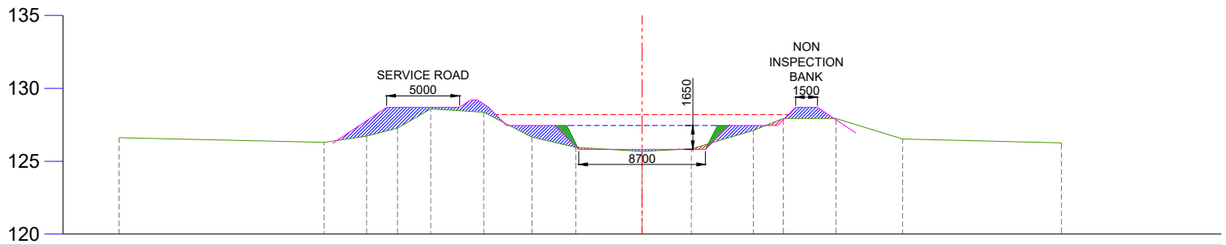
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 15 of 89

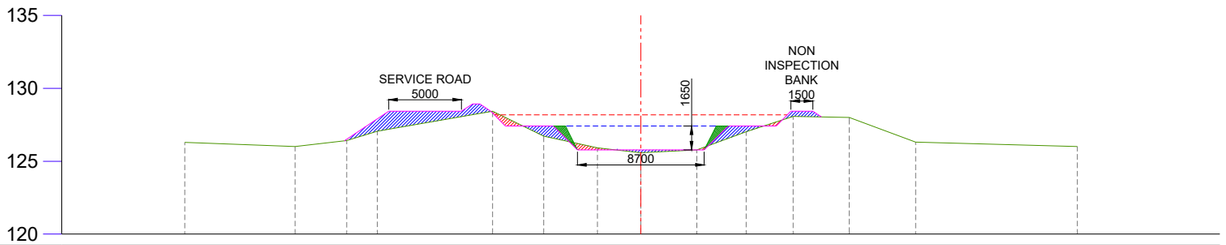
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	126.611	126.292	126.712	127.274	128.591	128.366	126.648	125.946	125.678	125.854	127.116	127.928	127.938	126.527	126.261
OFFSET (KM	35.900	21.822	18.898	16.792	14.504	10.862	7.557	4.542	0.000	3.388	7.635	9.684	13.294	17.873	28.777

CUTTING AREA (SQ.M) = 0.665
FILLING AREA (SQ.M) = 14.356

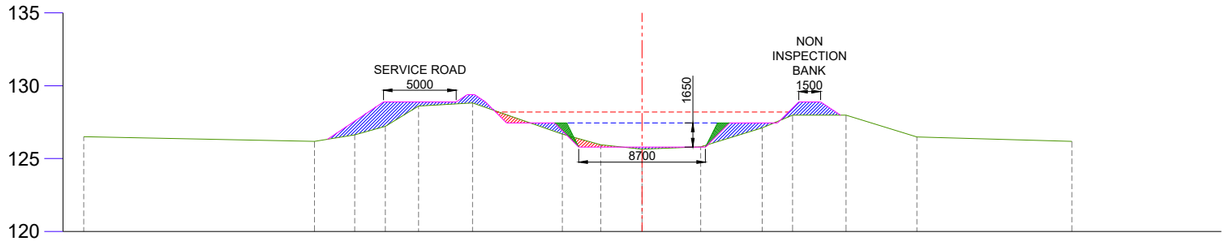
CH. : 6+100 KM
DESIGNED BED LEVEL = 125.806 M



EXIST. LEVEL (KM	126.301	126.015	126.415	127.054	128.426	126.715	125.924	125.582	125.768	127.015	128.069	128.001	126.314	126.015
OFFSET (KM	31.305	23.729	20.186	18.086	10.175	6.661	2.982	0.000	3.845	7.226	10.453	14.297	18.858	29.964

CUTTING AREA (SQ.M) = 1.525
FILLING AREA (SQ.M) = 11.270

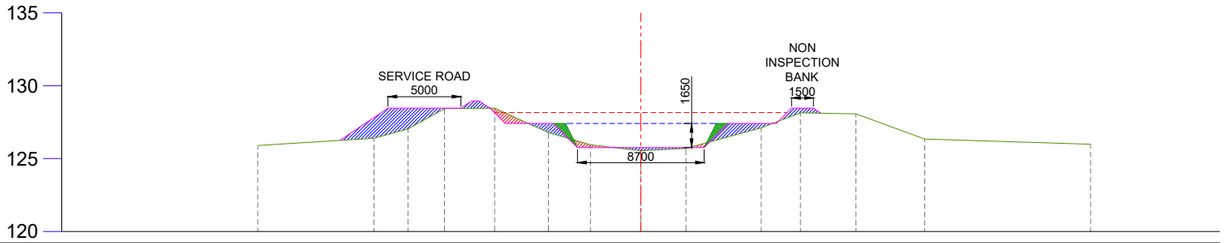
CH. : 6+300 KM
DESIGNED BED LEVEL = 125.773 M



EXIST. LEVEL (KM	126.498	126.185	126.630	127.214	128.600	128.824	126.684	125.947	125.639	125.814	127.115	127.984	127.973	126.477	126.188
OFFSET (KM	38.320	22.480	19.719	17.626	15.334	11.641	5.471	2.832	0.000	4.014	8.250	10.335	13.997	18.868	29.496

CUTTING AREA (SQ.M) = 1.707
FILLING AREA (SQ.M) = 13.477

CH. : 6+200 KM
DESIGNED BED LEVEL = 125.789 M



EXIST. LEVEL (KM	125.898	126.399	127.044	128.423	128.456	126.780	125.951	125.533	125.699	127.115	128.139	128.070	126.337	125.990
OFFSET (KM	26.298	18.313	15.972	13.477	10.026	6.343	3.464	0.000	3.094	8.255	10.952	14.771	19.490	30.874

CUTTING AREA (SQ.M) = 1.817
FILLING AREA (SQ.M) = 12.481

CH. : 6+400 KM
DESIGNED BED LEVEL = 125.756 M

LEGEND

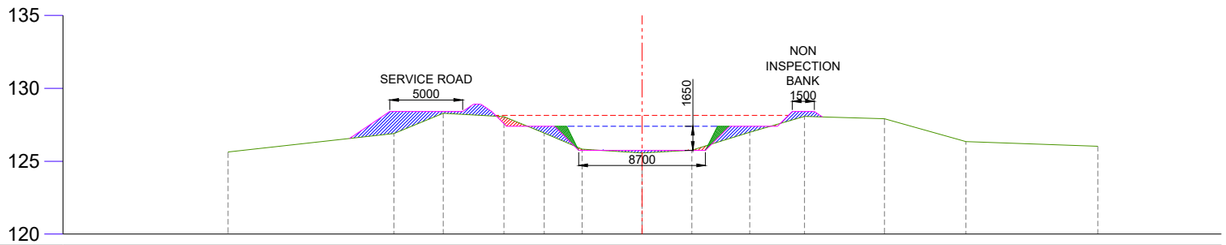
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 16 of 89

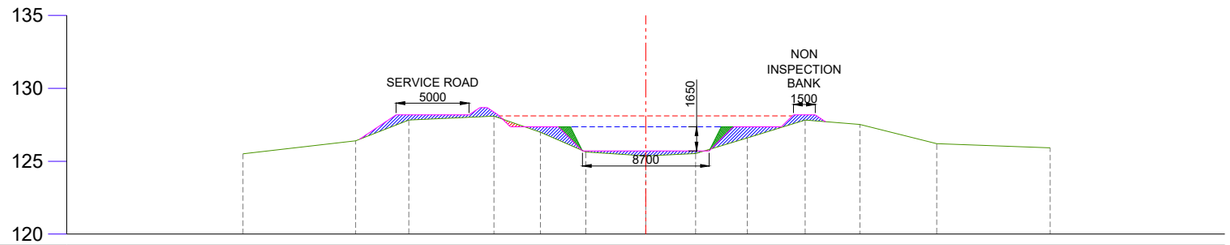
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	125.573	126.901	128.290	128.055	126.930	125.831	125.560	125.754	126.982	128.069	127.915	126.354	126.021
OFFSET (KM	34.995	17.033	13.656	9.482	6.729	4.119	0.000	3.407	7.397	11.152	16.635	22.228	31.276

CUTTING AREA (SQ.M) = 1.049
FILLING AREA (SQ.M) = 10.994

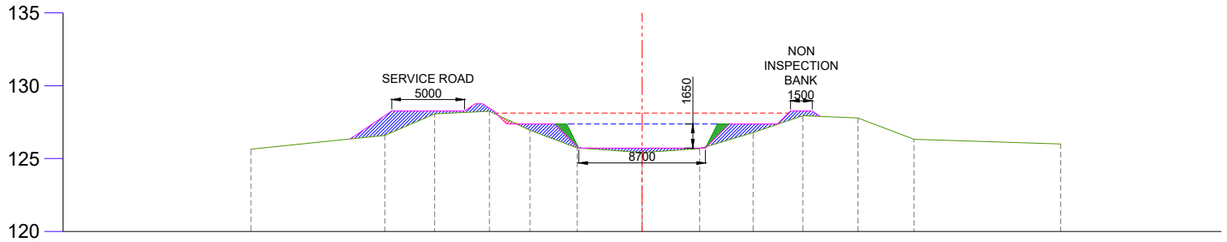
CH. : 6+500 KM
DESIGNED BED LEVEL = 125.739 M



EXIST. LEVEL (KM	125.505	126.401	127.824	128.092	126.986	125.641	125.372	125.521	126.601	127.819	127.521	126.210	125.925
OFFSET (KM	27.650	19.920	16.265	10.422	7.242	4.118	0.000	3.410	6.963	10.938	14.693	19.963	27.743

CUTTING AREA (SQ.M) = 0.290
FILLING AREA (SQ.M) = 10.530

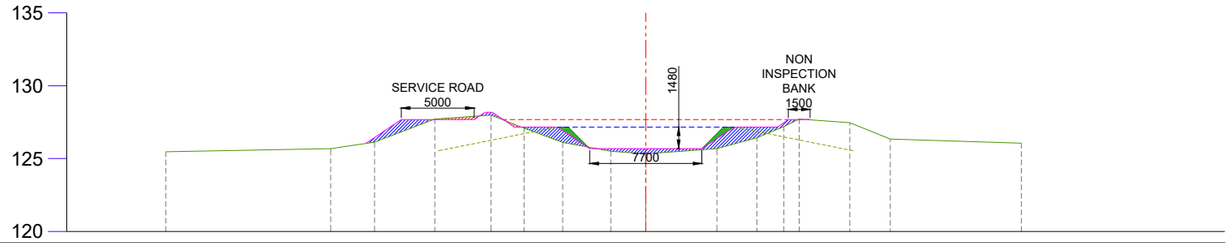
CH. : 6+700 KM
DESIGNED BED LEVEL = 125.706 M



EXIST. LEVEL (KM	125.649	126.594	128.065	128.246	126.938	125.739	125.421	125.676	126.785	127.942	127.788	126.321	125.998
OFFSET (KM	26.846	17.664	14.233	10.480	7.693	4.461	0.000	3.951	7.619	11.045	14.813	18.671	28.720

CUTTING AREA (SQ.M) = 0.218
FILLING AREA (SQ.M) = 13.122

CH. : 6+600 KM
DESIGNED BED LEVEL = 125.723 M



EXIST. LEVEL (KM	125.472	125.676	126.127	127.706	127.972	127.086	126.116	125.500	125.329	125.687	126.431	127.194 127.713	127.466	126.340	126.049
OFFSET (KM	32.936	21.632	18.624	14.484	10.611	8.348	5.708	2.413	0.000	4.886	7.627	9.479 10.527	13.993	16.780	25.782

CUTTING AREA (SQ.M) = 0.538
FILLING AREA (SQ.M) = 9.975

CH. : 6+800 KM
DESIGNED BED LEVEL = 125.689 M

LEGEND

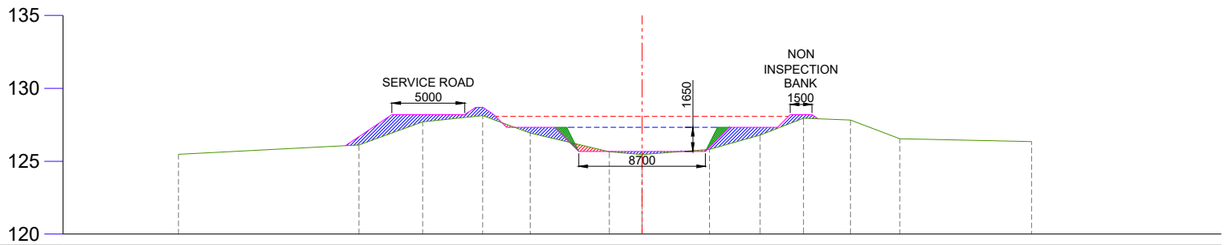
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 17 of 89

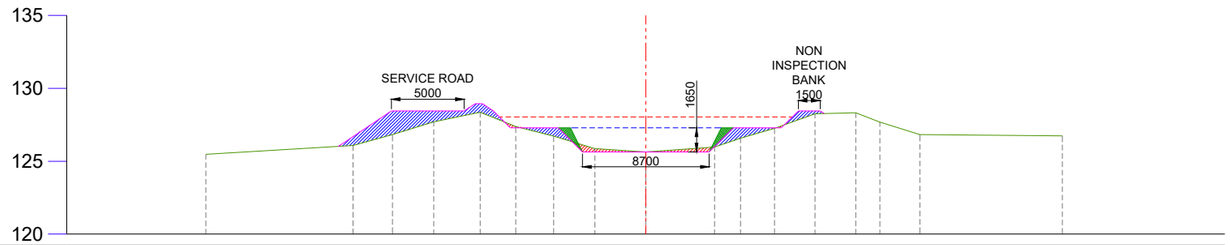
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	125.470	126.106	127.704	128.134	126.929	125.654	125.462	125.810	126.792	127.941	127.827	126.545	126.341
OFFSET (KM	31.821	19.434	15.056	10.935	7.683	2.252	0.000	4.624	8.106	11.079	14.299	17.691	26.739

CUTTING AREA (SQ.M) = 0.812
FILLING AREA (SQ.M) = 12.226

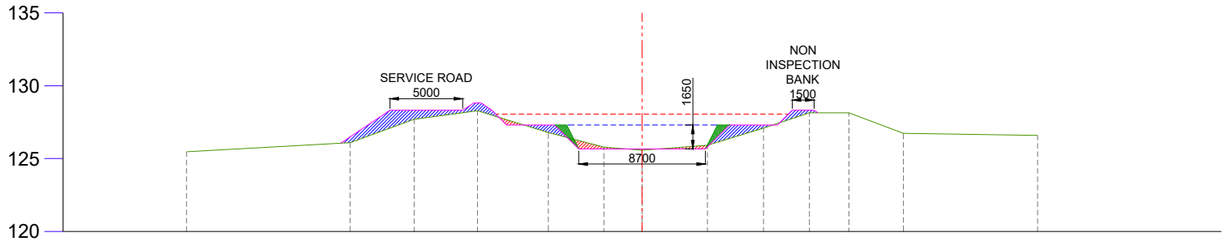
CH. : 6+900 KM
DESIGNED BED LEVEL = 125.673 M



EXIST. LEVEL (KM	125.467	126.078	126.828	127.702	128.356	127.385	126.719	125.864	125.638	125.972	126.571	127.257	128.249	128.326	127.681	126.829	126.730
OFFSET (KM	30.200	20.093	17.381	14.547	11.366	8.918	6.332	3.485	0.000	4.718	6.497	8.830	11.607	14.414	16.059	18.802	28.580

CUTTING AREA (SQ.M) = 1.755
FILLING AREA (SQ.M) = 13.074

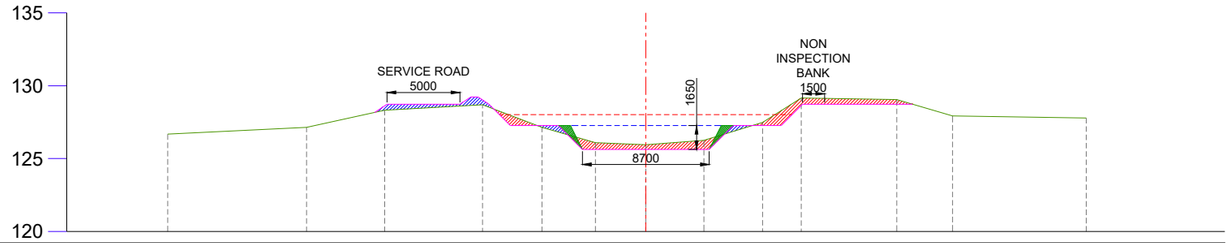
CH. :7+100 KM
DESIGNED BED LEVEL = 125.639 M



EXIST. LEVEL (KM	125.468	126.089	127.703	128.275	126.791	125.792	125.579	125.916	127.095	128.140	128.146	126.727	126.594
OFFSET (KM	31.261	20.047	15.646	11.295	6.442	2.624	0.000	4.485	8.329	11.480	14.197	17.939	27.152

CUTTING AREA (SQ.M) = 1.756
FILLING AREA (SQ.M) = 9.929

CH. : 7+000 KM
DESIGNED BED LEVEL = 125.656 M



EXIST. LEVEL (KM	126.687	127.148	128.313	128.688	127.135	126.092	125.954	126.248	127.477	129.161	129.048	127.927	127.778
OFFSET (KM	32.817	23.283	17.929	11.212	7.125	3.458	0.000	3.997	8.015	10.668	17.226	21.060	30.221

CUTTING AREA (SQ.M) = 10.323
FILLING AREA (SQ.M) = 3.307

CH. :7+200 KM
DESIGNED BED LEVEL = 125.623 M

LEGEND

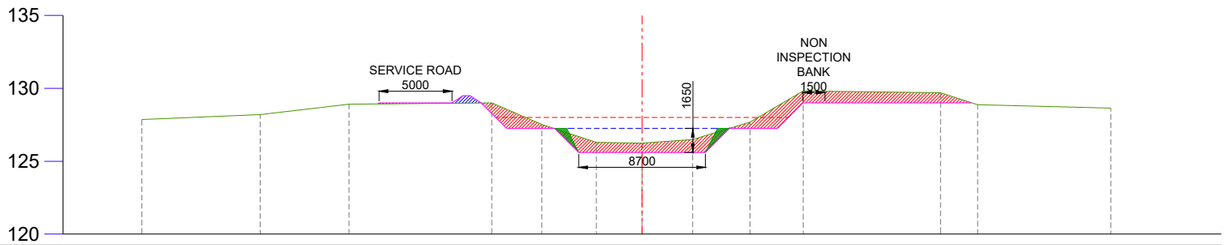
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 18 of 89

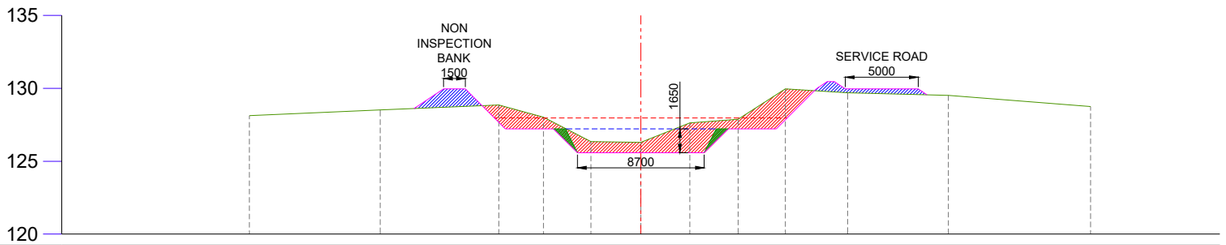
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	127.866	128.192	128.911	129.004	127.520	126.298	126.231	126.495	127.674	129.823	129.693	128.867	128.649
OFFSET (KM	34.332	26.205	20.118	10.317	6.871	3.132	0.000	3.474	7.413	11.051	20.483	23.032	32.175

CUTTING AREA (SQ.M) = 23.851
FILLING AREA (SQ.M) = 0.910

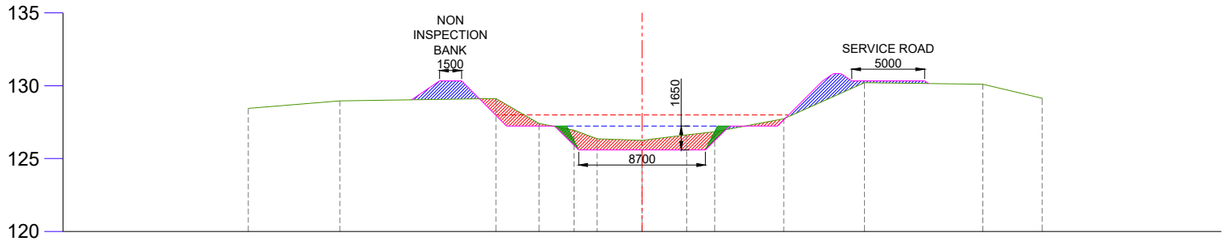
CH. : 7+300 KM
DESIGNED BED LEVEL = 125.606 M



EXIST. LEVEL (KM	128.125	128.512	128.866	128.021	126.351	126.290	127.625	127.875	129.964	129.701	129.523	128.751
OFFSET (KM	26.860	17.884	9.751	6.690	3.422	0.000	3.373	6.680	9.914	14.201	21.104	30.860

CUTTING AREA (SQ.M) = 26.459
FILLING AREA (SQ.M) = 6.561

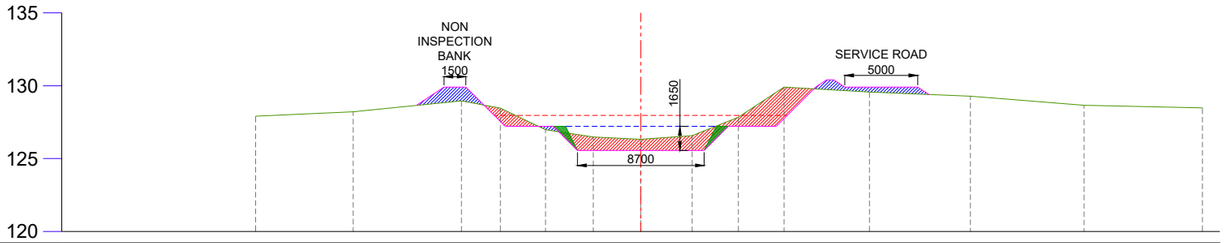
CH. : 7+500 KM
DESIGNED BED LEVEL = 125.573 M



EXIST. LEVEL (KM	128.451	128.965	129.128	127.412	126.952	126.351	126.251	126.618	126.843	127.725	130.211	130.103	129.142
OFFSET (KM	27.027	20.734	10.032	7.071	4.663	3.080	0.000	3.060	4.985	9.724	15.256	23.392	27.457

CUTTING AREA (SQ.M) = 13.397
FILLING AREA (SQ.M) = 9.224

CH. : 7+400 KM
DESIGNED BED LEVEL = 125.589 M



EXIST. LEVEL (KM	127.905	128.217	128.955	128.460	126.981	126.482	126.321	126.576	127.834	129.910	129.563	129.272	128.662	128.487
OFFSET (KM	26.431	19.745	12.313	9.642	6.536	3.265	0.000	3.531	6.702	9.834	15.692	22.625	30.424	38.542

CUTTING AREA (SQ.M) = 19.820
FILLING AREA (SQ.M) = 6.485

CH. : 7+600 KM
DESIGNED BED LEVEL = 125.556 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

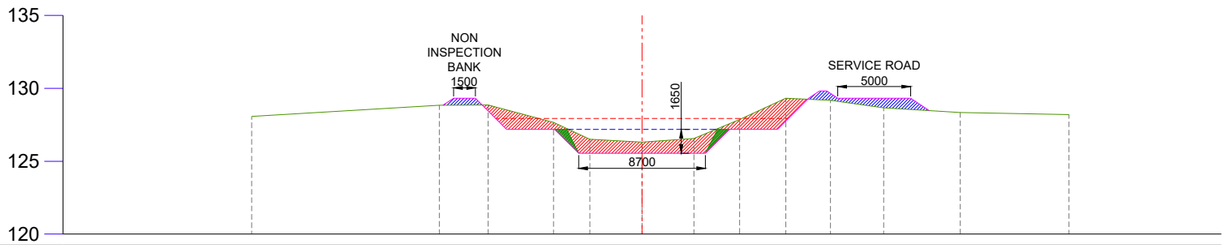
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 19 of 89

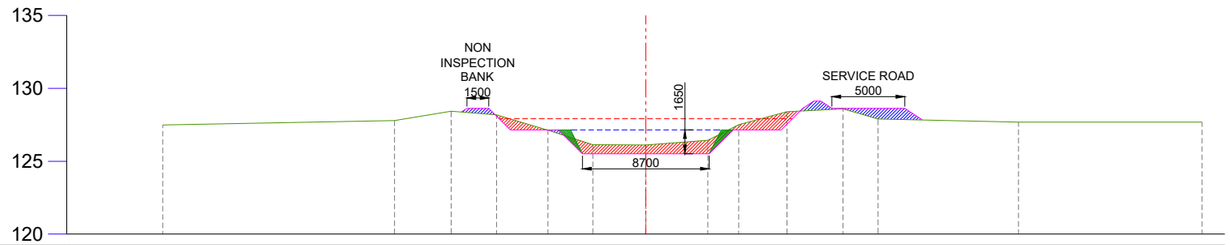
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	128.081	128.835	128.860	127.834	126.510	126.306	126.556	127.864	129.323	129.186	128.666	128.339	128.199	
OFFSET (KM	26.799	13.914	10.569	6.086	3.585	0.000	3.563	6.699	9.865	12.935	16.583	21.827	29.299	

CUTTING AREA (SQ.M) = 20.924
FILLING AREA (SQ.M) = 5.045

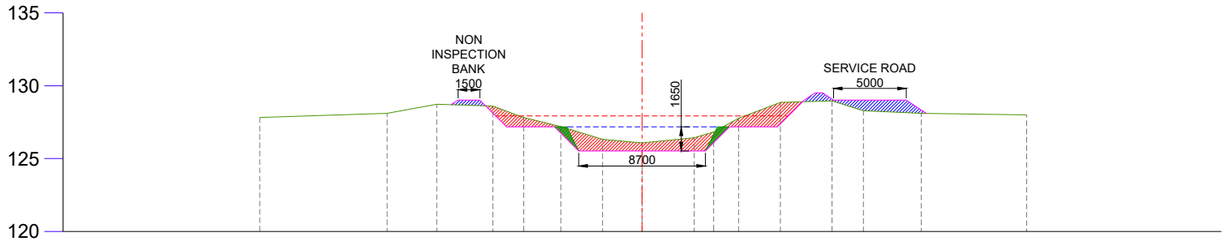
CH. : 7+700 KM
DESIGNED BED LEVEL = 125.539 M



EXIST. LEVEL (KM	127.487	127.798	128.438	128.177	127.138	126.133	126.114	126.441	127.506	128.395	128.588	127.901	127.690	127.677
OFFSET (KM	33.153	17.244	13.362	10.246	6.717	3.628	0.000	4.258	6.382	9.693	13.528	15.945	25.585	38.169

CUTTING AREA (SQ.M) = 11.995
FILLING AREA (SQ.M) = 4.534

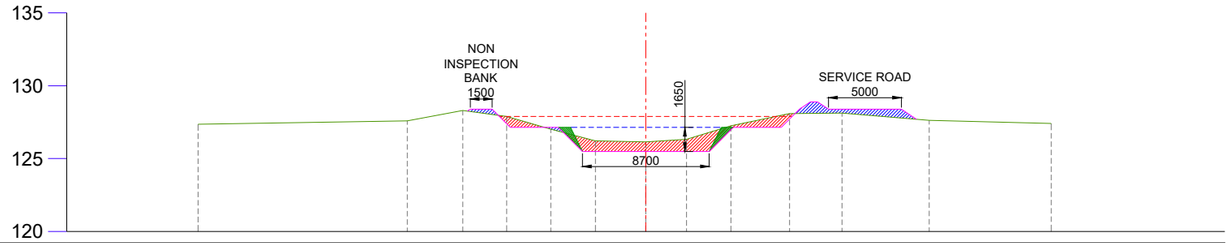
CH. : 7+900 KM
DESIGNED BED LEVEL = 125.506 M



EXIST. LEVEL (KM	127.825	128.102	128.724	128.600	127.824	127.205	126.315	126.072	126.425	127.758	128.861	128.956	128.285	128.105	128.004
OFFSET (KM	26.236	17.504	14.096	10.250	8.132	5.586	2.717	0.000	3.568	6.626	9.486	13.036	15.191	19.164	26.398

CUTTING AREA (SQ.M) = 16.527
FILLING AREA (SQ.M) = 5.224

CH. : 7+800 KM
DESIGNED BED LEVEL = 125.523 M



EXIST. LEVEL (KM	127.354	127.586	128.301	127.897	127.010	126.214	126.142	126.315	127.251	128.086	128.119	127.625	127.410	
OFFSET (KM	30.729	16.378	12.569	9.543	6.518	3.467	0.000	2.793	5.841	9.860	13.471	19.442	27.819	

CUTTING AREA (SQ.M) = 11.809
FILLING AREA (SQ.M) = 4.186

CH. : 8+000 KM
DESIGNED BED LEVEL = 125.489 M

LEGEND

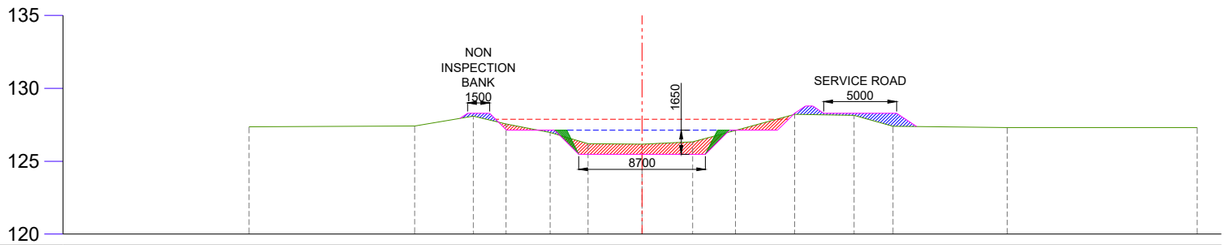
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 20 of 89

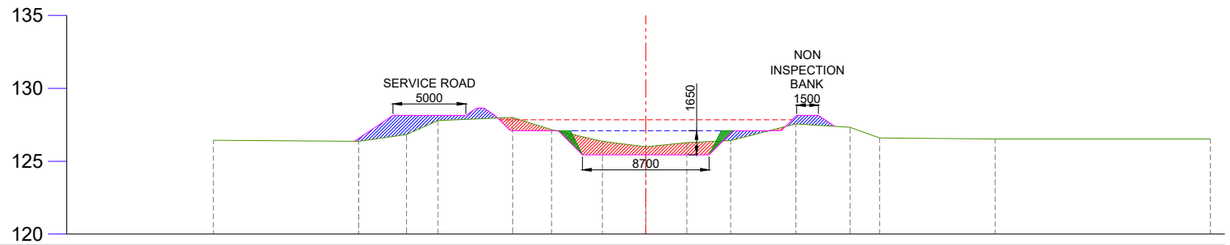
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	127.360	127.421	128.084	127.562	126.970	126.211	126.176	126.333	127.113	128.221	128.145	127.392	127.300	127.302
OFFSET (KM	26.971	15.615	11.582	9.346	6.302	3.716	0.000	3.471	6.413	10.463	14.545	17.226	25.053	38.105

CUTTING AREA (SQ.M) = 10.318
FILLING AREA (SQ.M) = 4.197

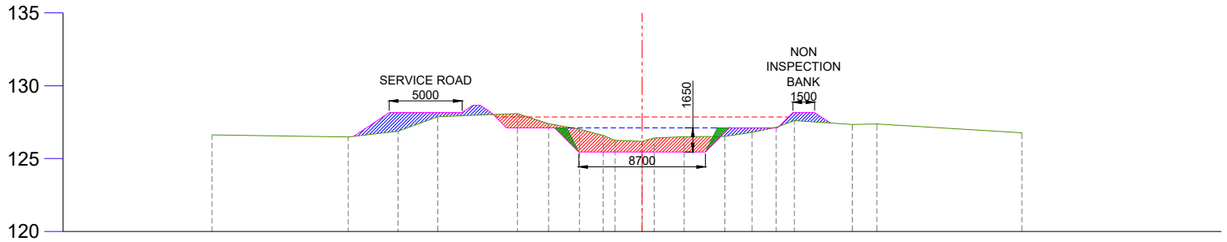
CH. : 8+100 KM
DESIGNED BED LEVEL = 125.473 M



EXIST. LEVEL (KM	126.439	126.365	126.832	127.795	128.001	127.162	126.373	125.986	126.283	126.411	127.566	127.328	126.592	126.526	126.531
OFFSET (KM	29.673	19.700	16.434	14.276	9.137	6.469	2.972	0.000	2.813	5.825	10.290	14.016	16.054	23.982	38.738

CUTTING AREA (SQ.M) = 10.433
FILLING AREA (SQ.M) = 9.218

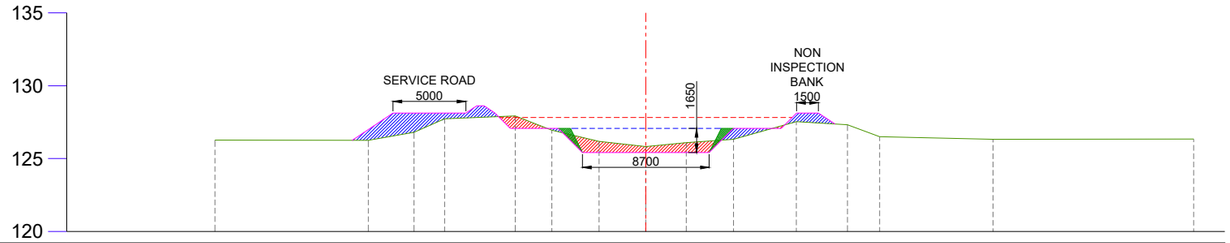
CH. : 8+300 KM
DESIGNED BED LEVEL = 125.439 M



EXIST. LEVEL (KM	126.621	126.482	126.872	127.878	128.092	127.401	127.013	126.592	126.176	126.498	126.517	126.804	127.609	127.342	127.378	126.762
OFFSET (KM	29.515	20.170	16.740	14.024	8.548	6.417	4.304	2.685	0.000	2.881	5.672	7.550	10.450	14.424	16.117	26.074

CUTTING AREA (SQ.M) = 13.437
FILLING AREA (SQ.M) = 8.525

CH. : 8+200 KM
DESIGNED BED LEVEL = 125.456 M



EXIST. LEVEL (KM	126.275	126.259	126.796	127.723	127.924	126.954	126.185	125.823	126.100	126.322	127.530	127.316	126.493	126.331	126.334
OFFSET (KM	29.580	19.052	15.915	13.799	8.967	6.458	3.207	0.000	2.774	6.023	10.338	13.839	16.049	23.827	37.610

CUTTING AREA (SQ.M) = 8.186
FILLING AREA (SQ.M) = 11.103

CH. : 8+400 KM
DESIGNED BED LEVEL = 125.423 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

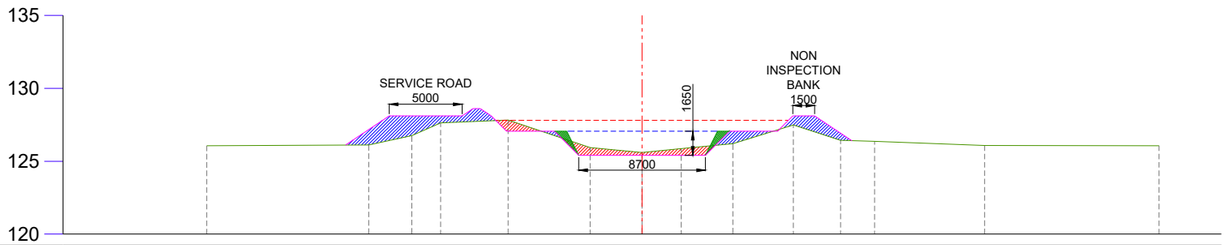
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 21 of 89

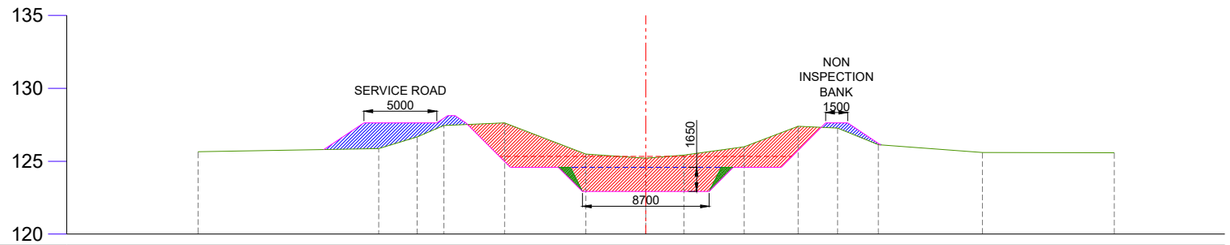
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	126.055	126.119	126.748	127.628	127.818	125.942	125.601	125.862	126.205	127.482	126.427	126.366	126.077	126.067
OFFSET (KM	29.882	18.766	15.812	13.825	9.196	3.567	0.000	2.683	6.238	10.381	13.619	15.962	23.508	35.476

CUTTING AREA (SQ.M) = 5.522
FILLING AREA (SQ.M) = 14.212

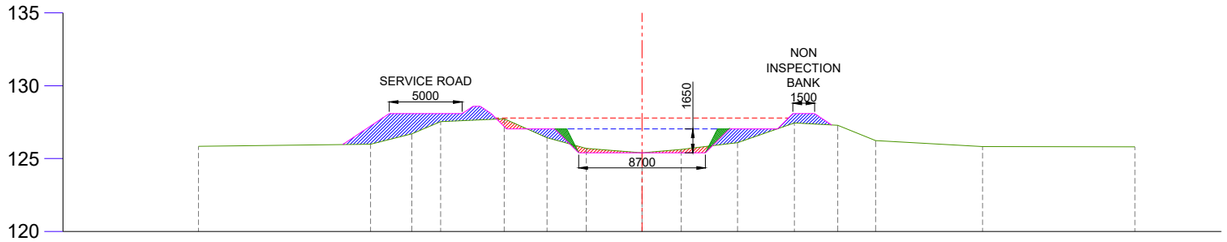
CH. : 8+500 KM
DESIGNED BED LEVEL = 125.406 M



EXIST. LEVEL (KM	125.651	125.861	126.660	127.451	127.631	125.485	125.213	125.416	125.987	127.396	127.271	126.127	125.603	125.577
OFFSET (KM	30.728	18.334	15.687	13.852	9.693	4.111	0.000	2.624	6.750	10.457	13.159	15.950	23.101	32.156

CUTTING AREA (SQ.M) = 49.550
FILLING AREA (SQ.M) = 11.271

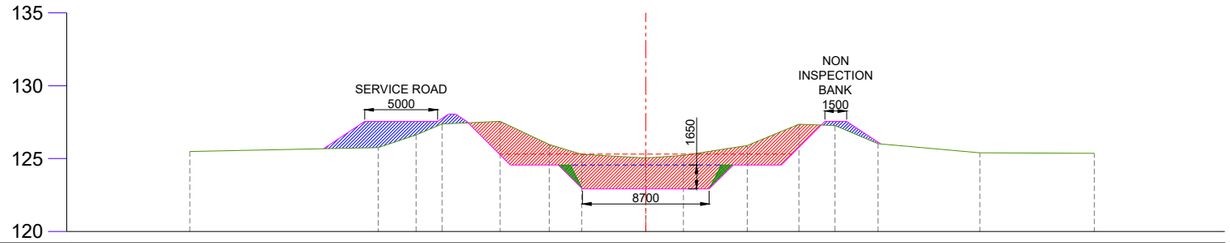
CH. : 8+700 KM
DESIGNED BED LEVEL = 122.933 M



EXIST. LEVEL (KM	125.846	125.984	126.702	127.535	127.722	126.423	125.701	125.403	125.626	126.090	127.438	127.285	126.240	125.826	125.809
OFFSET (KM	30.439	18.634	15.797	13.834	9.464	6.516	3.835	0.000	2.688	6.548	10.461	13.420	16.029	23.367	33.823

CUTTING AREA (SQ.M) = 2.611
FILLING AREA (SQ.M) = 15.295

CH. : 8+600KM.
DESIGNED BED LEVEL = 125.389 M



EXIST. LEVEL (KM	125.482	125.751	126.622	127.376	127.551	125.972	125.290	125.047	125.227	125.895	127.360	127.259	126.026	125.404	125.369
OFFSET (KM	31.304	18.361	15.765	13.981	9.990	6.636	4.405	0.000	2.589	6.957	10.501	12.985	15.940	22.930	30.781

CUTTING AREA (SQ.M) = 45.384
FILLING AREA (SQ.M) = 10.996

CH. : 8+800 KM
DESIGNED BED LEVEL = 122.916 M

LEGEND

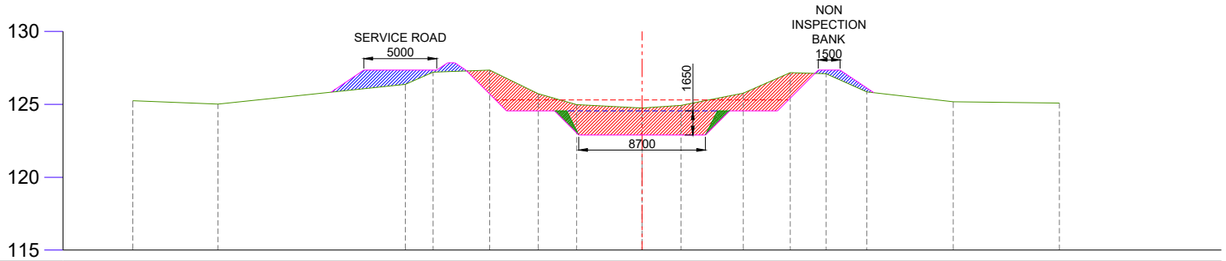
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 22 of 89

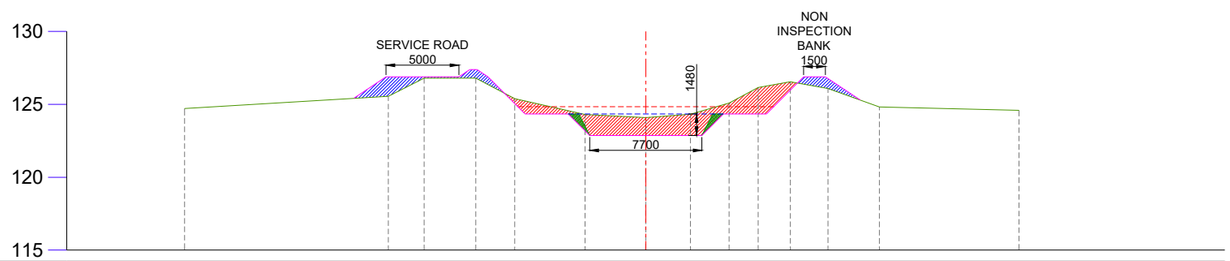
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	125.248	125.021	126.374	127.211	127.342	125.732	124.977	124.746	124.929	125.773	127.171	127.096	125.860	125.169	125.088
OFFSET (KM	34.950	29.119	16.254	14.351	10.467	7.133	4.490	0.000	2.665	6.946	10.161	12.622	15.425	21.362	28.639

CUTTING AREA (SQ.M) = 29.354
FILLING AREA (SQ.M) = 7.999

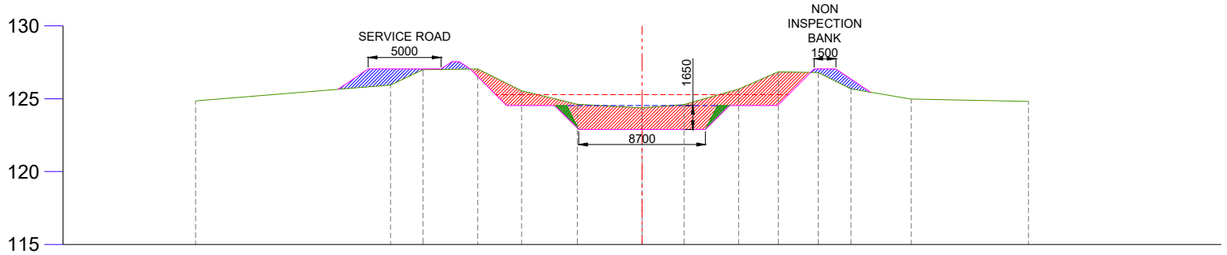
CH. : 8+900 KM
DESIGNED BED LEVEL = 122.899 M



EXIST. LEVEL (KM	124.712	125.559	126.791	126.793	125.390	124.311	124.095	124.319	125.086	126.153	126.554	126.076	124.828	124.588	
OFFSET (KM	31.657	17.676	15.215	11.672	8.998	4.162	0.000	3.058	5.713	7.712	9.919	12.496	16.030	25.612	

CUTTING AREA (SQ.M) = 21.614
FILLING AREA (SQ.M) = 6.861

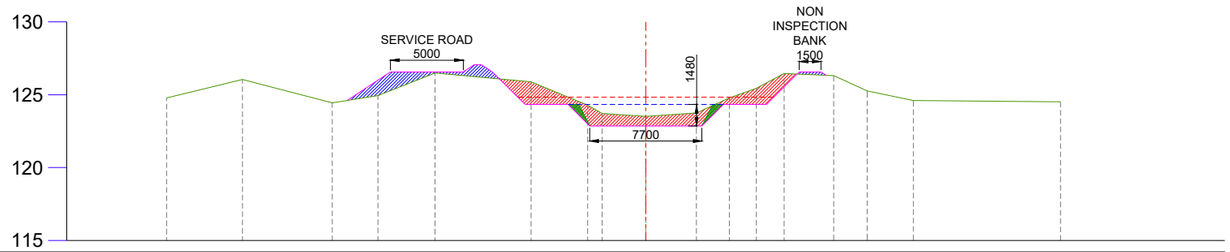
CH. : 9+100 KM
DESIGNED BED LEVEL = 122.866 M



EXIST. LEVEL (KM	124.853	125.935	126.984	127.033	125.547	124.616	124.378	124.596	125.660	126.848	126.789	125.669	124.983	124.818	
OFFSET (KM	30.645	17.272	15.042	11.276	8.275	4.443	0.000	2.884	6.619	9.352	12.085	14.327	18.468	26.515	

CUTTING AREA (SQ.M) = 31.774
FILLING AREA (SQ.M) = 7.048

CH. : 9+000 KM
DESIGNED BED LEVEL = 122.883 M



EXIST. LEVEL (KM	124.783	126.039	124.445	124.941	126.493	125.875	124.285	123.703	123.507	123.747	124.786	125.433	126.459	126.310	125.255	124.593	124.519
OFFSET (KM	32.886	27.683	21.512	18.383	14.464	7.872	3.997	3.003	0.000	3.464	5.728	7.595	9.489	12.898	15.195	18.361	28.465

CUTTING AREA (SQ.M) = 17.674
FILLING AREA (SQ.M) = 6.274

CH. : 9+200 KM
DESIGNED BED LEVEL = 122.849 M

LEGEND

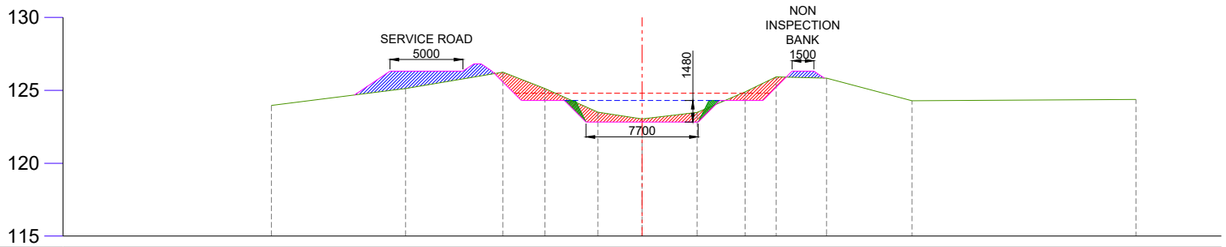
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 23 of 89

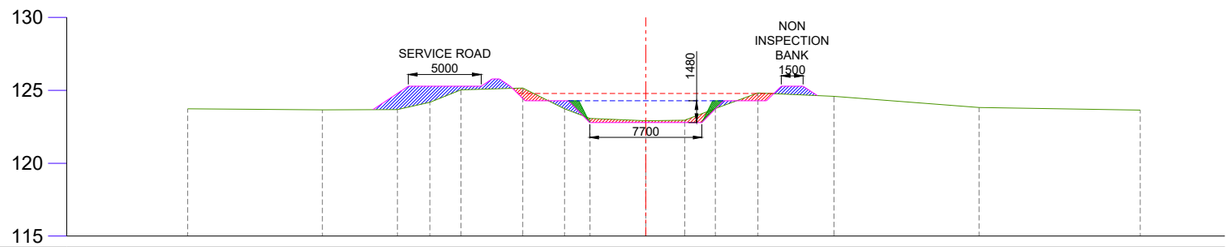
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	123.967	125.124	126.252	125.118	123.498	123.031	123.489	124.889	125.917	125.836	124.280	124.368
OFFSET (KM	25.440	16.231	9.553	6.660	3.026	0.000	3.768	7.071	9.202	12.659	18.517	33.888

CUTTING AREA (SQ.M) = 11.619
FILLING AREA (SQ.M) = 8.674

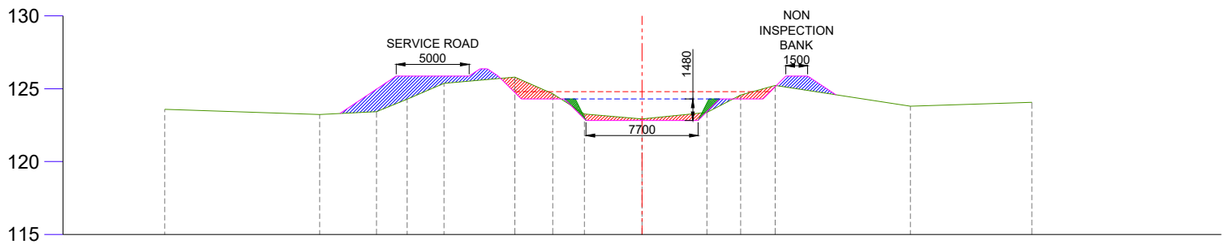
CH. : 9+300 KM
DESIGNED BED LEVEL = 122.831 M



EXIST. LEVEL (KM	123.731	123.665	123.684	124.181	125.025	125.165	123.733	123.072	122.913	122.958	123.755	124.820	124.587	123.818	123.639
OFFSET (KM	31.449	22.194	17.050	14.829	12.689	8.452	5.579	3.836	0.000	2.663	4.777	7.693	12.916	22.866	33.931

CUTTING AREA (SQ.M) = 3.821
FILLING AREA (SQ.M) = 8.830

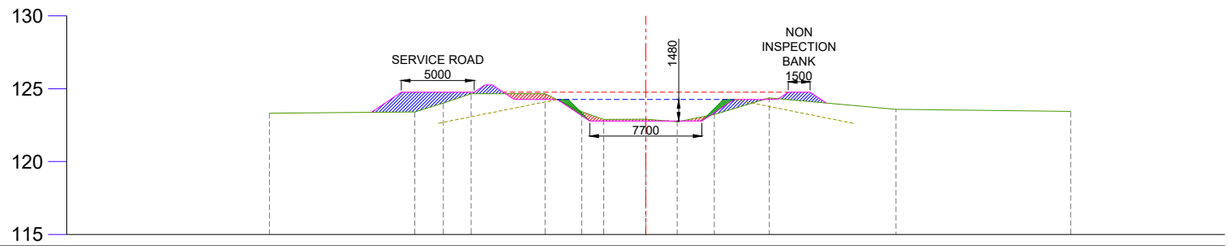
CH. : 9+500 KM
DESIGNED BED LEVEL = 122.797 M



EXIST. LEVEL (KM	123.581	123.225	123.420	124.277	125.370	125.803	124.652	123.266	122.930	123.377	124.574	125.216	123.806	124.068
OFFSET (KM	32.766	22.137	18.221	16.122	13.592	8.724	6.128	3.954	0.000	4.442	6.761	9.129	18.418	26.758

CUTTING AREA (SQ.M) = 6.728
FILLING AREA (SQ.M) = 13.133

CH. : 9+400 KM
DESIGNED BED LEVEL = 122.814 M



EXIST. LEVEL (KM	123.316	123.405	124.020	124.654	124.653	123.421	122.898	122.913	122.735	123.221	124.361	123.594	123.443
OFFSET (KM	25.840	15.856	13.899	11.982	6.908	4.401	2.880	0.000	2.149	4.699	8.477	17.173	29.157

CUTTING AREA (SQ.M) = 2.613
FILLING AREA (SQ.M) = 9.000

CH. : 9+600 KM
DESIGNED BED LEVEL = 122.780 M

LEGEND

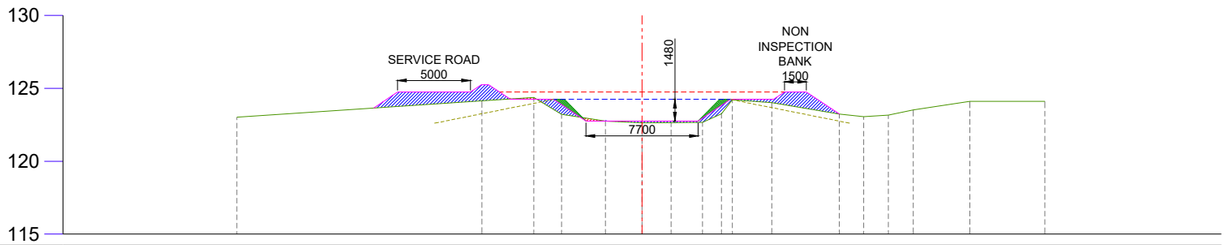
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 24 of 89

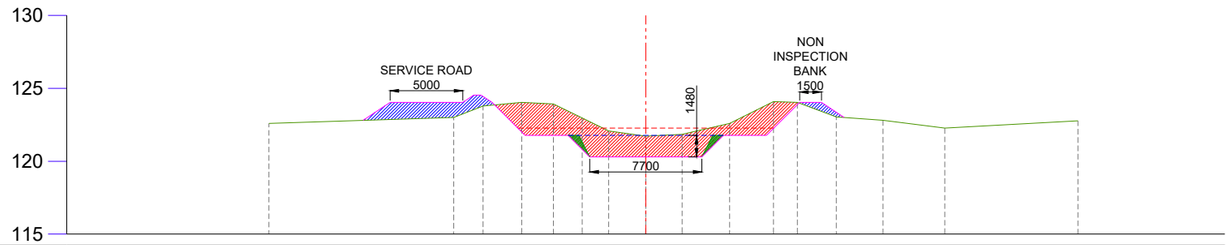
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	123.017	124.142	124.376	123.210	122.750	122.627	122.652	122.660	124.206	124.015	123.232	123.054	123.162	123.514	124.110	124.102
OFFSET (KM	27.803	10.994	7.439	5.520	2.515	0.000	1.994	4.138	6.188	8.910	13.531	15.209	16.907	18.612	22.493	27.641

CUTTING AREA (SQ.M) = 0.302
FILLING AREA (SQ.M) = 13.183

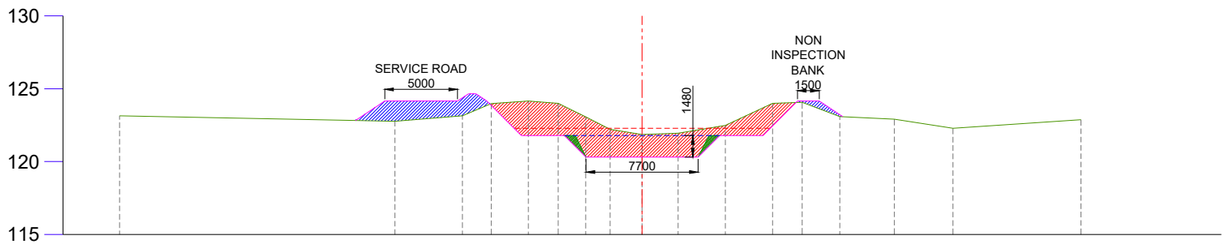
CH. : 9+700 KM
DESIGNED BED LEVEL = 122.762 M



EXIST. LEVEL (KM	122.597	123.003	123.789	124.034	123.928	122.963	122.070	121.717	121.838	122.585	124.095	124.038	123.038	122.805	122.276	122.765
OFFSET (KM	25.866	13.187	11.169	8.522	6.341	4.373	2.551	0.000	2.491	5.754	8.765	10.409	13.068	16.283	20.520	29.654

CUTTING AREA (SQ.M) = 33.010
FILLING AREA (SQ.M) = 9.014

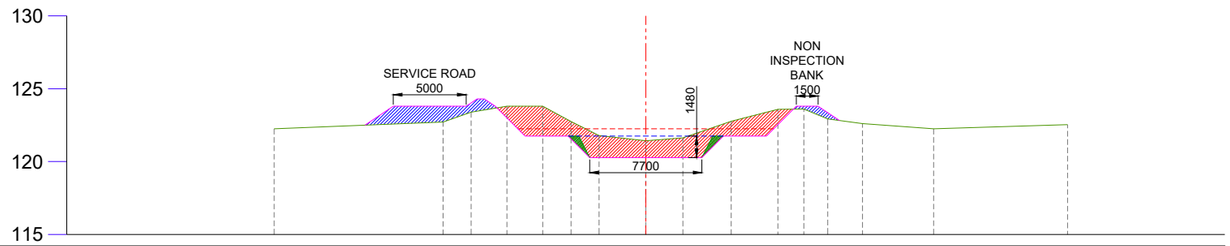
CH. : 9+900 KM
DESIGNED BED LEVEL = 120.288 M



EXIST. LEVEL (KM	123.142	122.770	123.143	123.986	124.157	123.994	123.072	122.219	121.866	121.946	122.487	124.003	124.068	123.093	122.910	122.287	122.880
OFFSET (KM	35.859	16.967	12.323	10.348	7.801	5.762	3.871	2.203	0.000	2.464	5.714	8.960	10.987	13.566	17.303	21.328	30.116

CUTTING AREA (SQ.M) = 34.732
FILLING AREA (SQ.M) = 10.539

CH. : 9+800 KM
DESIGNED BED LEVEL = 120.305 M



EXIST. LEVEL (KM	122.250	122.721	123.397	123.794	123.798	122.755	121.785	121.433	121.634	122.770	123.587	123.606	122.931	122.603	122.255	122.538
OFFSET (KM	25.513	13.915	11.997	9.527	7.071	5.136	3.209	0.000	2.551	5.867	9.063	10.848	12.485	14.873	19.752	28.953

CUTTING AREA (SQ.M) = 27.395
FILLING AREA (SQ.M) = 8.566

CH. : 10+000 KM
DESIGNED BED LEVEL = 120.271 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

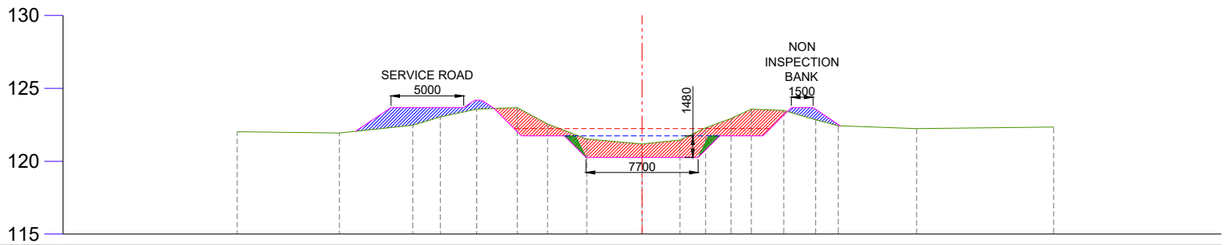
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 25 of 89

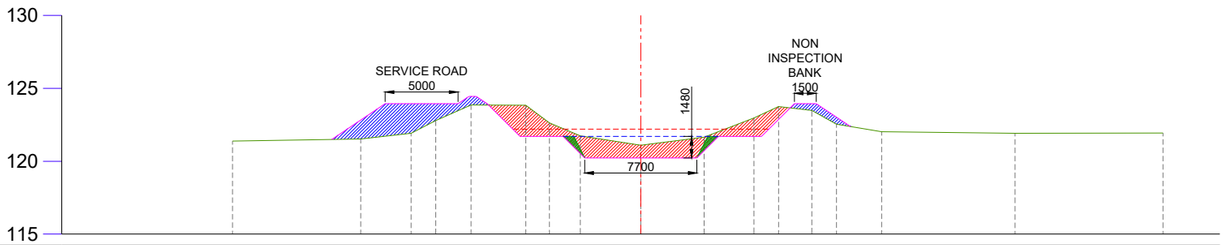
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	122.015	121.937	122.467	123.043	123.576	123.680	122.565	121.529	121.180	121.452	122.282	123.569	123.479	122.841	122.429	122.237	122.347
OFFSET (KM	27.788	20.777	15.725	13.849	11.357	8.572	6.488	3.791	0.000	2.603	4.367	7.503	9.725	11.909	13.458	18.841	28.252

CUTTING AREA (SQ.M) = 22.972
FILLING AREA (SQ.M) = 8.690

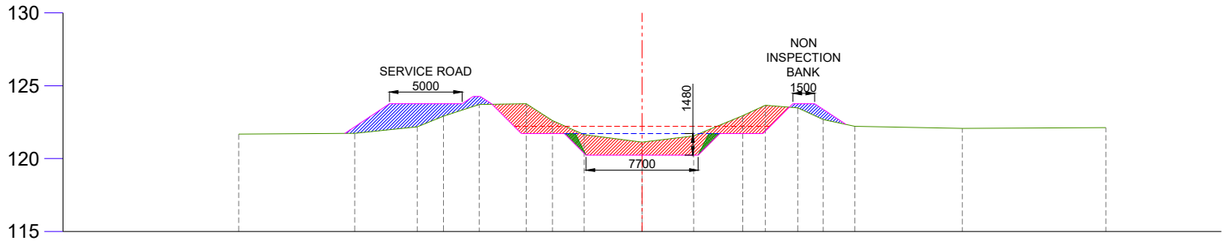
CH. : 10+100 KM
DESIGNED BED LEVEL = 120.253 M



EXIST. LEVEL (KM	121.374	121.530	121.925	122.792	123.851	123.838	122.636	121.745	121.102	121.648	122.962	123.745	123.477	122.536	122.028	121.920	121.930
OFFSET (KM	28.014	19.218	15.765	14.069	11.644	7.892	6.265	4.149	0.000	4.341	7.772	9.462	11.746	13.423	16.528	25.681	35.846

CUTTING AREA (SQ.M) = 22.259
FILLING AREA (SQ.M) = 14.697

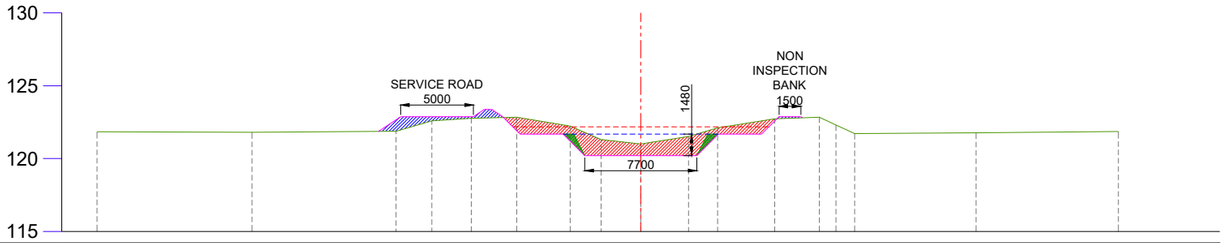
CH. : 10+300 KM
DESIGNED BED LEVEL = 120.219 M



EXIST. LEVEL (KM	121.686	121.727	122.185	122.912	123.719	123.762	122.602	121.642	121.130	121.555	122.948	123.662	123.478	122.679	122.217	122.069	122.125
OFFSET (KM	27.679	19.717	15.424	13.639	11.167	7.951	6.143	3.972	0.000	3.540	6.904	8.450	10.676	12.435	14.596	21.972	31.828

CUTTING AREA (SQ.M) = 22.954
FILLING AREA (SQ.M) = 11.782

CH. : 10+200 KM
DESIGNED BED LEVEL = 120.236 M



EXIST. LEVEL (KM	121.846	121.809	121.873	122.589	122.758	122.841	122.235	121.314	121.010	121.521	122.102	122.733	122.844	121.717	121.773	121.854	
OFFSET (KM	37.321	26.694	16.797	14.338	11.627	8.525	4.856	2.724	0.000	3.281	5.269	9.187	12.258	14.672	23.019	32.766	

CUTTING AREA (SQ.M) = 17.279
FILLING AREA (SQ.M) = 3.579

CH. : 10+400 KM
DESIGNED BED LEVEL = 120.202 M

LEGEND

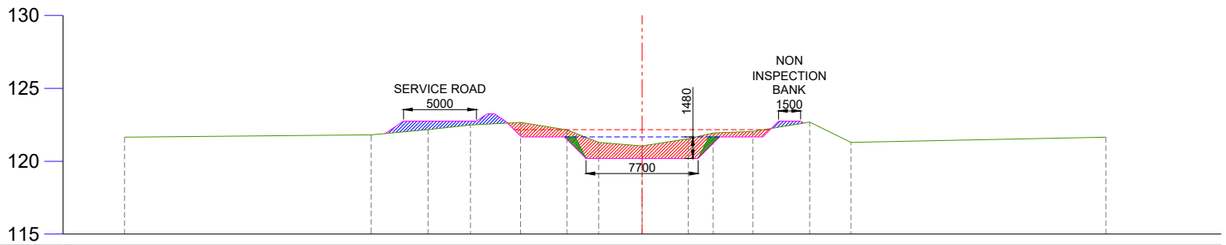
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 26 of 89

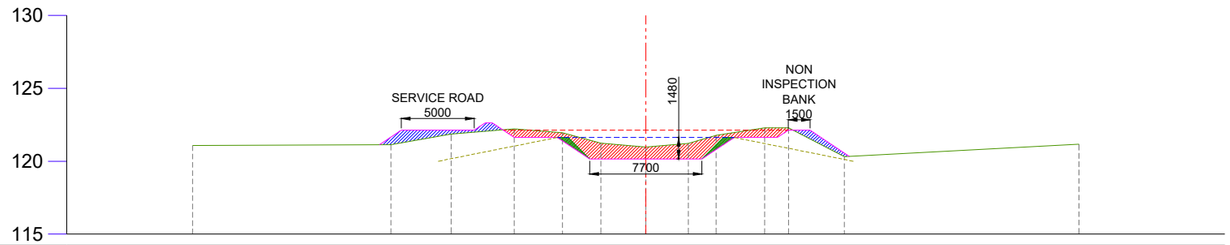
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	121.643		121.818	122.163	122.481	122.656	122.151	121.296	121.037	121.551	121.941	122.036	122.676	121.295	121.645
OFFSET (KM	35.526		18.605	14.685	11.771	8.336	5.149	2.987	0.000	3.171	4.881	7.609	11.497	14.333	31.822

CUTTING AREA (SQ.M) = 15.294
FILLING AREA (SQ.M) = 4.495

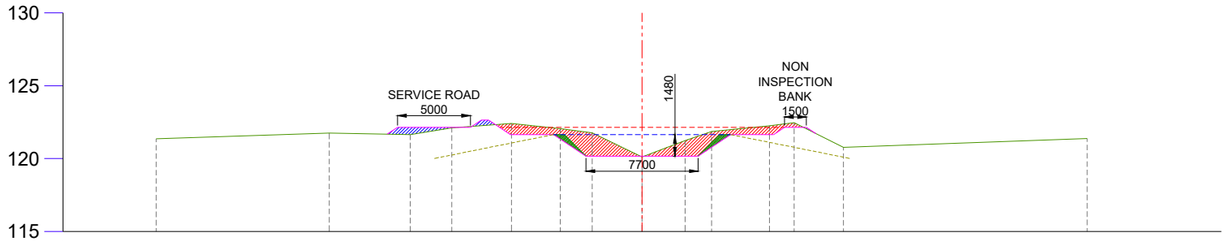
CH. : 10+500 KM
DESIGNED BED LEVEL = 120.184 M



EXIST. LEVEL (KM	121.076		121.135	121.856	122.214	121.951	121.239	120.969	121.214	121.780	122.285	122.285	120.320		121.162
OFFSET (KM	31.098		17.503	13.364	9.030	5.723	3.085	0.000	2.912	4.817	8.149	9.792	13.620		29.720

CUTTING AREA (SQ.M) = 15.116
FILLING AREA (SQ.M) = 5.136

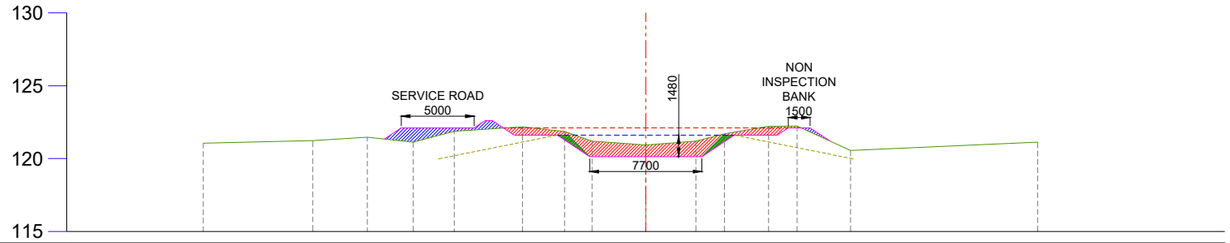
CH. : 10+700 KM
DESIGNED BED LEVEL = 120.150 M



EXIST. LEVEL (KM	121.352		121.750	121.643	122.105	122.405	122.045	121.761	120.119	121.240	121.859	122.247	122.463	120.766	121.384
OFFSET (KM	33.355		21.474	15.907	13.052	8.966	5.620	3.417	0.000	2.957	4.767	8.747	10.439	13.812	30.538

CUTTING AREA (SQ.M) = 14.578
FILLING AREA (SQ.M) = 1.846

CH. : 10+600 KM
DESIGNED BED LEVEL = 120.167 M



EXIST. LEVEL (KM	121.063		121.230	121.457	121.132	121.881	122.172	121.860	121.195	120.930	121.192	121.695	122.220	122.232	120.566	121.119
OFFSET (KM	30.379		22.859	19.115	15.956	13.155	8.462	5.583	3.687	0.000	3.427	5.395	8.427	10.390	14.058	26.888

CUTTING AREA (SQ.M) = 13.691
FILLING AREA (SQ.M) = 4.330

CH. : 10+800 KM
DESIGNED BED LEVEL = 120.133 M

LEGEND

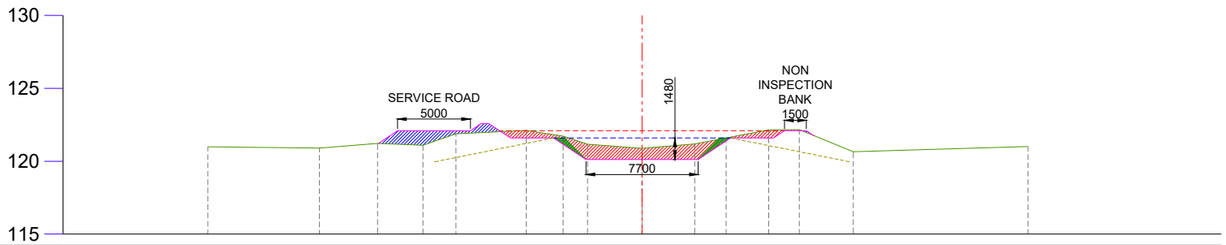
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 27 of 89

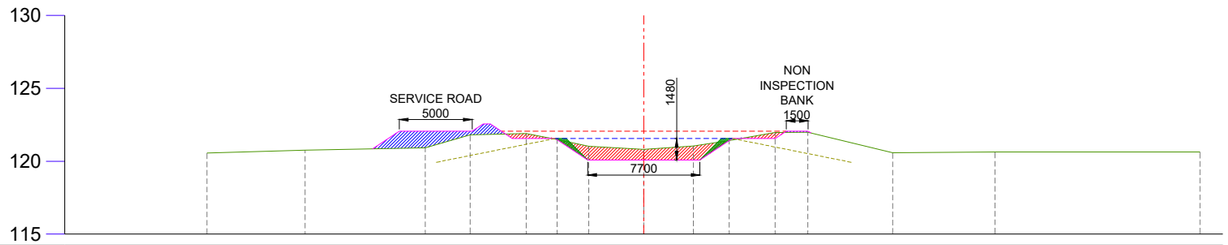
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	120.997	120.896	121.226	121.091	121.881	122.104	121.724	121.161	120.890	121.185	121.601	122.146	122.160	120.650	121.004
OFFSET (KM	29.813	22.141	18.159	15.033	12.772	7.956	5.411	3.740	0.000	3.619	5.758	8.685	10.789	14.496	26.485

CUTTING AREA (SQ.M) = 12.607
FILLING AREA (SQ.M) = 4.801

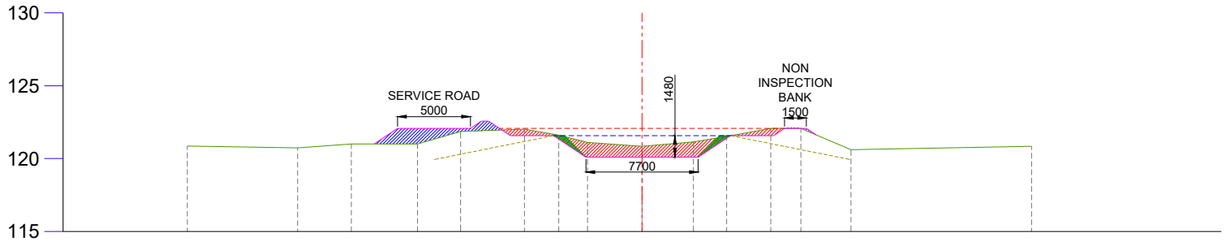
CH. : 10+900 KM
DESIGNED BED LEVEL = 120.116 M



EXIST. LEVEL (KM	120.555	120.750	120.914	121.813	121.905	121.482	121.017	120.810	121.040	121.412	121.977	121.982	120.577	120.639	120.631
OFFSET (KM	29.979	23.253	15.000	11.922	8.064	5.948	3.773	0.000	3.406	5.861	9.003	11.249	17.075	24.091	38.169

CUTTING AREA (SQ.M) = 9.868
FILLING AREA (SQ.M) = 6.624

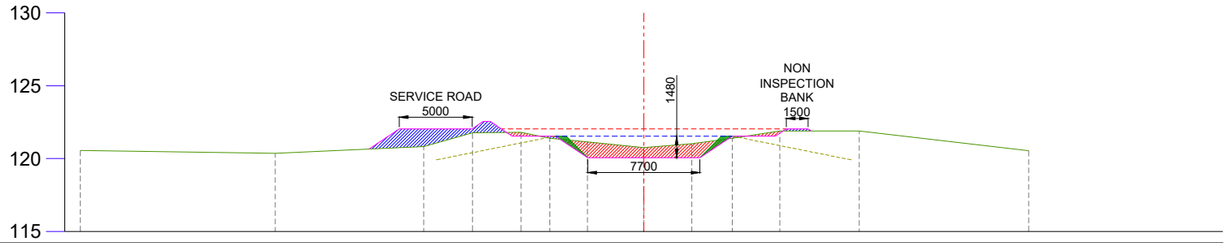
CH. : 11+100 KM
DESIGNED BED LEVEL = 120.081 M



EXIST. LEVEL (KM	120.866	120.739	121.009	121.009	121.849	122.013	121.615	121.102	120.850	121.150	121.513	122.068	122.078	120.617	120.835
OFFSET (KM	31.209	23.637	19.948	15.415	12.452	8.080	5.729	3.753	0.000	3.527	5.809	8.823	10.890	14.343	26.732

CUTTING AREA (SQ.M) = 11.377
FILLING AREA (SQ.M) = 5.446

CH. : 11+000 KM
DESIGNED BED LEVEL = 120.098 M



EXIST. LEVEL (KM	120.556	120.366	120.819	121.776	121.798	121.391	121.154	120.760	121.014	121.390	121.889	121.889	120.538	
OFFSET (KM	38.681	25.292	15.111	11.760	8.433	6.456	3.866	0.000	3.287	6.075	9.339	14.775	26.414	

CUTTING AREA (SQ.M) = 9.442
FILLING AREA (SQ.M) = 7.678

CH. : 11+200 KM
DESIGNED BED LEVEL = 120.064 M

LEGEND

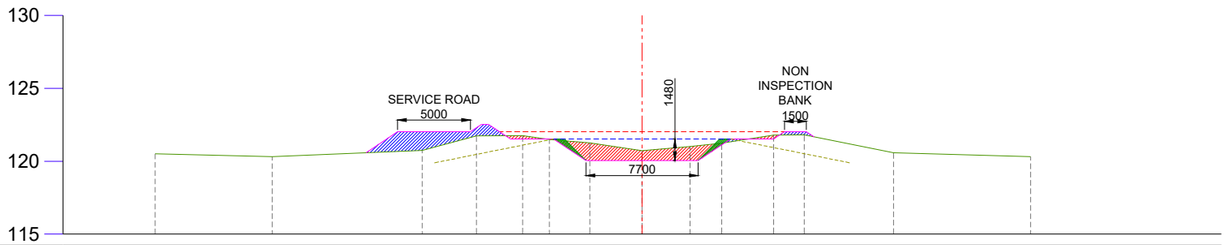
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 28 of 89

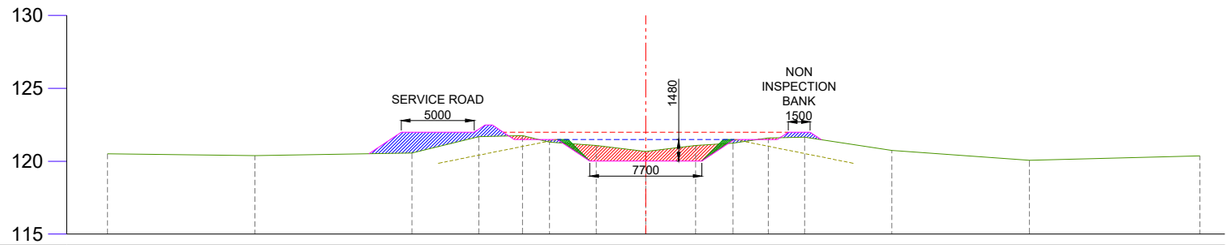
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	120.505	120.322	120.738	121.746	121.760	121.480	121.260	120.730	121.014	121.231	121.798	121.810	120.572	120.312
OFFSET (KM	33.424	25.390	15.086	11.364	8.198	6.360	3.577	0.000	3.283	5.460	9.030	11.126	17.257	26.667

CUTTING AREA (SQ.M) = 9.916
FILLING AREA (SQ.M) = 8.384

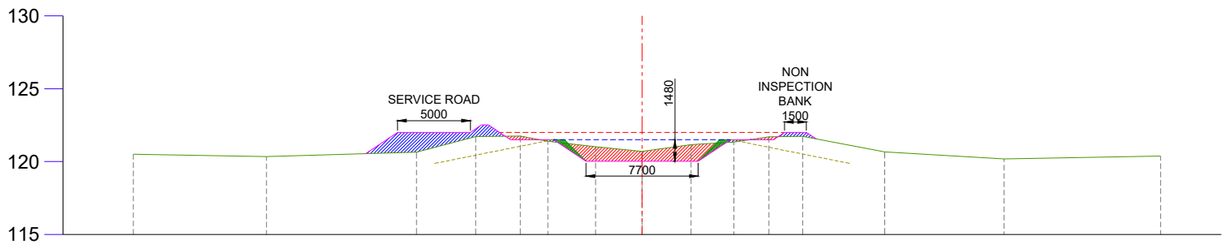
CH. : 11+300 KM
DESIGNED BED LEVEL = 120.047 M



EXIST. LEVEL (KM	120.514	120.376	120.559	121.687	121.755	121.314	121.080	120.670	121.086	121.240	121.588	121.649	120.745	120.062	120.366
OFFSET (KM	36.954	26.823	16.044	11.450	8.464	6.603	3.407	0.000	3.413	5.979	8.404	10.901	16.885	26.328	38.031

CUTTING AREA (SQ.M) = 9.312
FILLING AREA (SQ.M) = 9.078

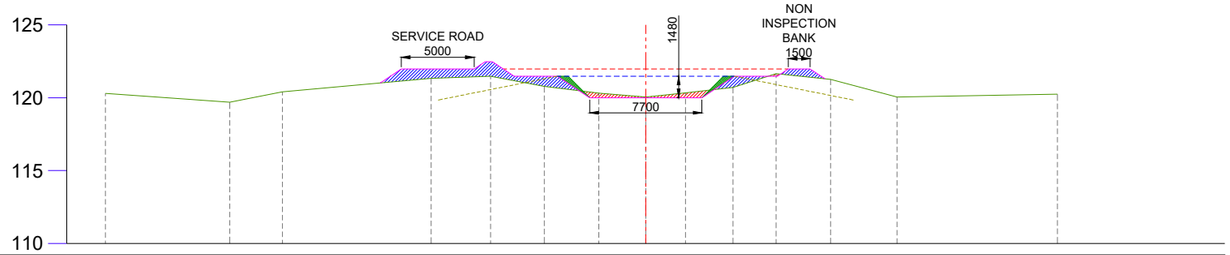
CH. : 11+500 KM
DESIGNED BED LEVEL = 120.012 M



EXIST. LEVEL (KM	120.510	120.350	120.647	121.716	121.757	121.401	121.014	120.702	121.157	121.341	121.689	121.727	120.664	120.176	120.371
OFFSET (KM	34.912	25.787	15.478	11.420	8.355	6.469	3.193	0.000	3.367	6.304	8.710	11.027	16.657	24.839	35.587

CUTTING AREA (SQ.M) = 9.610
FILLING AREA (SQ.M) = 8.730

CH. : 11+400 KM
DESIGNED BED LEVEL = 120.029 M



EXIST. LEVEL (KM	120.295	119.691	120.399	121.327	121.474	120.779	120.314	120.052	120.324	120.701	121.641	121.250	120.042	120.241
OFFSET (KM	37.090	28.565	24.934	14.739	10.661	6.960	3.233	0.000	2.724	5.991	8.932	12.684	17.250	28.246

CUTTING AREA (SQ.M) = 2.208
FILLING AREA (SQ.M) = 10.843

CH. : 11+600 KM
DESIGNED BED LEVEL = 119.995 M

LEGEND

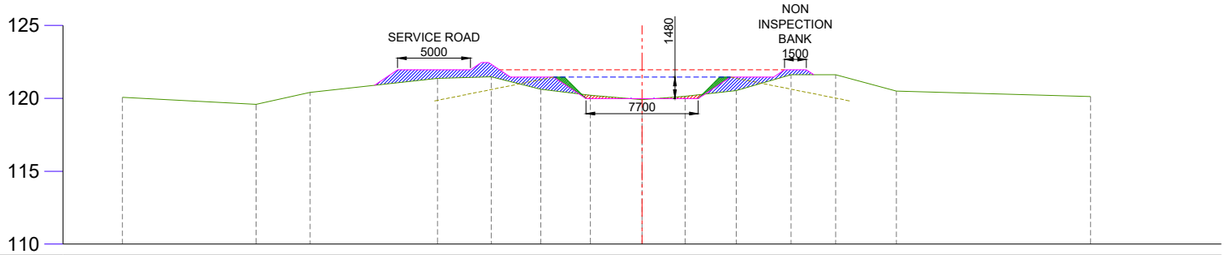
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 29 of 89

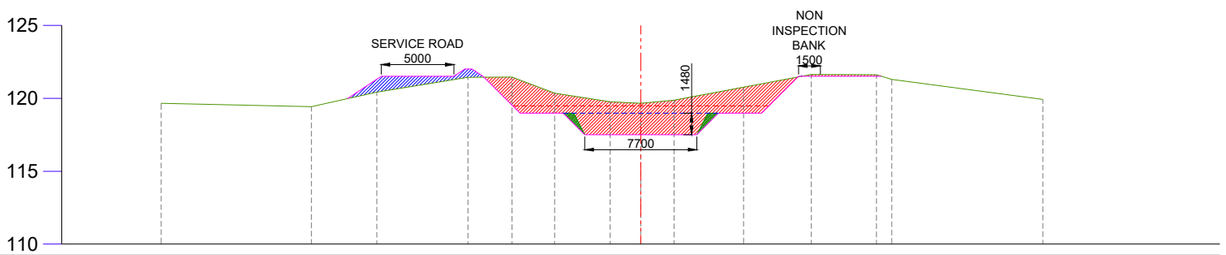
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	120.062	119.597	120.409	121.371	121.470	120.624	120.210	119.911	120.145	120.536	121.625	121.613	120.495	120.130
OFFSET (KM	35.665	26.496	22.784	14.036	10.362	6.948	3.551	0.000	2.956	6.459	10.215	13.282	17.455	30.777

CUTTING AREA (SQ.M) = 0.895
FILLING AREA (SQ.M) = 12.335

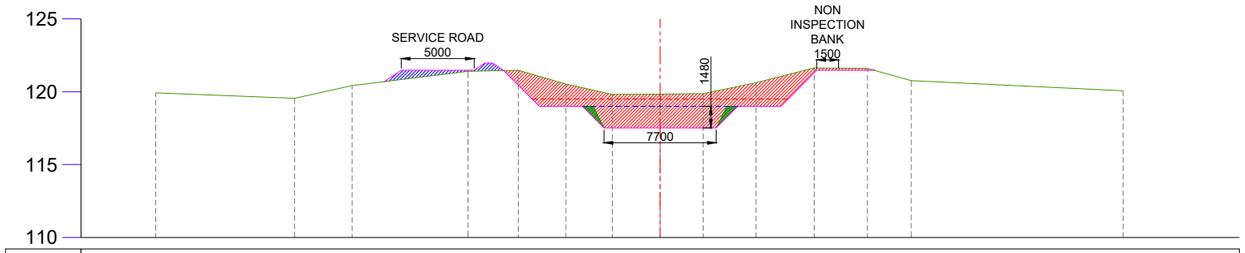
CH. : 11+700 KM
DESIGNED BED LEVEL = 119.978 M



EXIST. LEVEL (KM	119.652	119.432	120.425	121.447	121.464	120.356	119.772	119.662	119.874	120.772	121.630	121.614	121.298	119.931
OFFSET (KM	32.915	22.608	18.123	11.863	8.844	5.918	2.113	0.000	2.277	7.046	11.695	16.164	17.227	27.591

CUTTING AREA (SQ.M) = 40.145
FILLING AREA (SQ.M) = 5.207

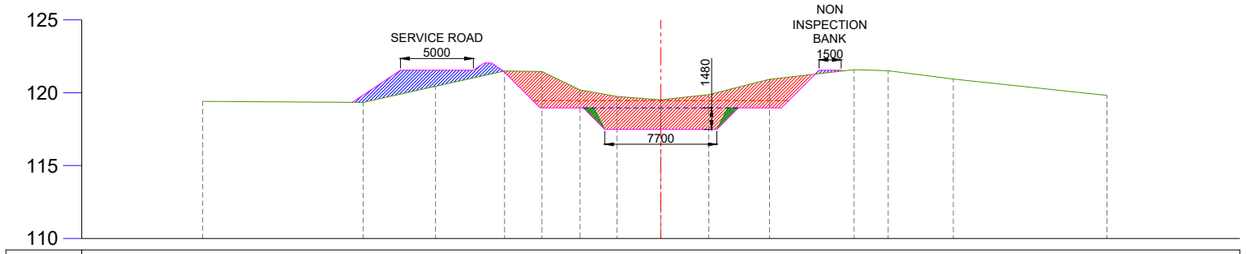
CH. : 11+900 KM
DESIGNED BED LEVEL = 117.503 M



EXIST. LEVEL (KM	119.929	119.544	120.414	121.396	121.468	120.536	119.809	119.830	119.873	120.613	121.627	121.602	120.759	120.063
OFFSET (KM	34.624	25.089	21.129	13.182	9.729	6.478	3.280	0.000	2.950	6.593	10.581	14.229	17.232	31.767

CUTTING AREA (SQ.M) = 39.469
FILLING AREA (SQ.M) = 2.736

CH. : 11+800 KM
DESIGNED BED LEVEL = 117.520 M



EXIST. LEVEL (KM	119.401	119.331	120.436	121.494	121.460	120.191	119.738	119.511	119.870	120.914	121.583	121.503	120.938	119.810
OFFSET (KM	31.438	20.428	15.467	10.723	8.164	5.545	3.005	0.000	3.285	7.463	13.267	15.610	20.071	30.625

CUTTING AREA (SQ.M) = 38.789
FILLING AREA (SQ.M) = 9.914

CH. : 12+000 KM
DESIGNED BED LEVEL = 117.486 M

LEGEND

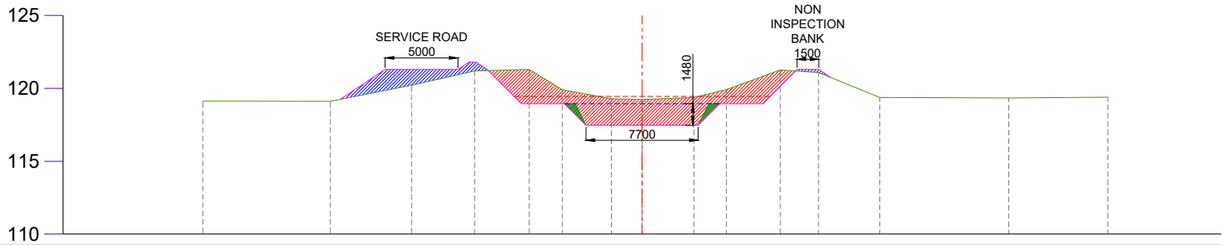
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 30 of 89

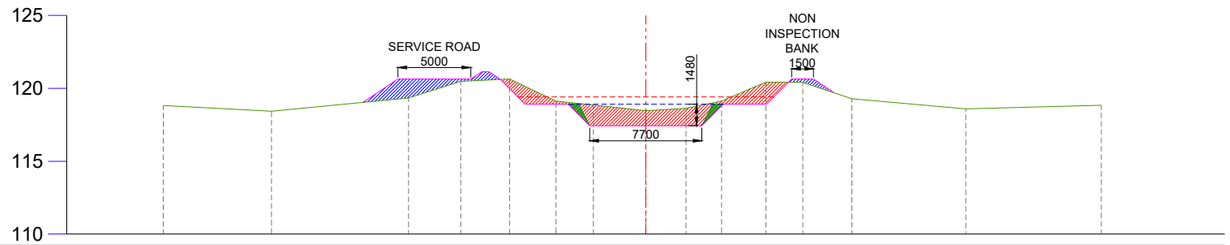
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	119.131	119.112	120.206	121.184	121.292	119.910	119.286	119.237	119.374	119.917	121.268	121.086	119.380	119.341	119.390
OFFSET (KM	30.151	21.401	15.822	11.495	7.755	5.468	2.106	0.000	3.557	5.783	9.492	12.112	16.320	25.167	31.963

CUTTING AREA (SQ.M) = 32.862
FILLING AREA (SQ.M) = 8.115

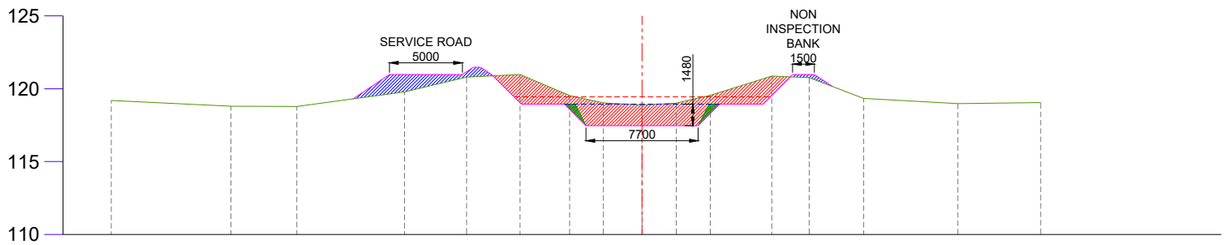
CH. : 12+100 KM
DESIGNED BED LEVEL = 117.469 M



EXIST. LEVEL (KM	118.825	118.434	119.332	120.487	120.634	119.125	118.858	118.475	118.619	119.131	120.422	120.416	119.281	118.590	118.848
OFFSET (KM	33.115	25.681	16.280	12.705	9.355	6.165	3.598	0.000	2.759	5.192	8.250	10.775	14.148	21.967	31.269

CUTTING AREA (SQ.M) = 18.338
FILLING AREA (SQ.M) = 6.844

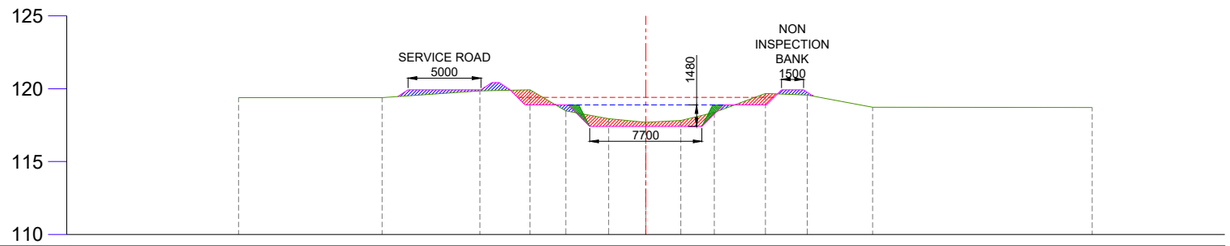
CH. : 12+300 KM
DESIGNED BED LEVEL = 117.434 M



EXIST. LEVEL (KM	119.189	118.794	118.785	119.785	120.792	120.979	119.537	119.024	118.868	119.011	119.540	120.861	120.764	119.332	118.982	119.056
OFFSET (KM	36.429	28.213	23.700	16.302	12.048	8.374	4.971	2.661	0.000	2.348	4.679	8.896	11.471	15.217	21.671	27.363

CUTTING AREA (SQ.M) = 27.496
FILLING AREA (SQ.M) = 7.343

CH. : 12+200 KM
DESIGNED BED LEVEL = 117.457 M



EXIST. LEVEL (KM	119.379	119.379	119.848	119.928	118.472	117.936	117.687	117.817	118.378	119.676	119.568	118.722	118.707
OFFSET (KM	27.945	18.094	11.390	7.944	5.480	2.552	0.000	2.410	4.705	8.217	11.086	15.565	30.632

CUTTING AREA (SQ.M) = 7.132
FILLING AREA (SQ.M) = 3.289

CH. : 12+400 KM
DESIGNED BED LEVEL = 117.417 M

LEGEND

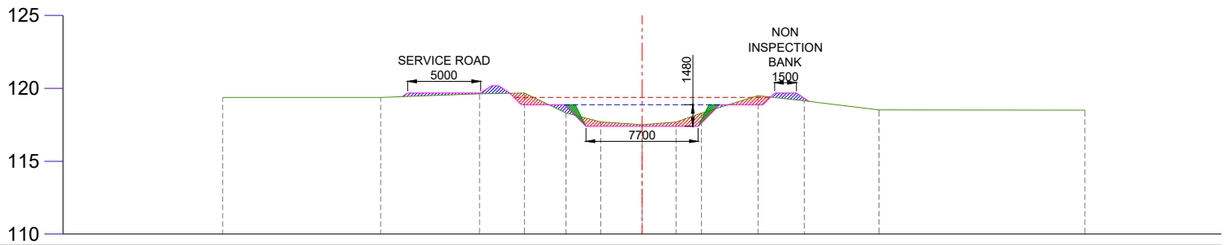
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 31 of 89

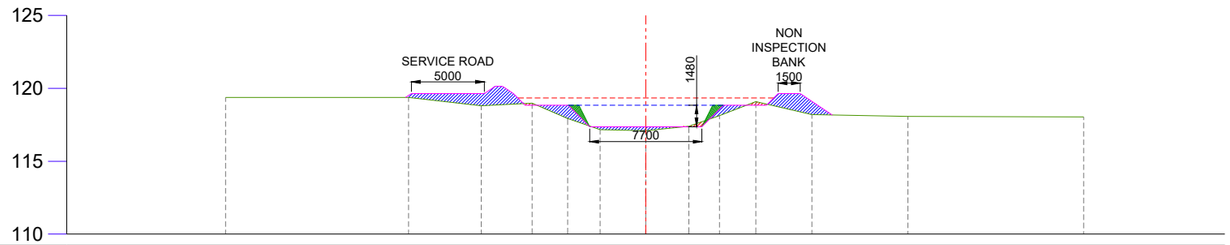
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	119.379	119.379	119.626	119.679	118.306	117.700	117.502	117.691	118.301	119.492	119.150	118.522	118.502
OFFSET (KM	28.789	17.943	11.160	8.074	5.215	2.830	0.000	2.330	4.080	7.955	11.131	16.258	30.386

CUTTING AREA (SQ.M) = 5.121
FILLING AREA (SQ.M) = 2.849

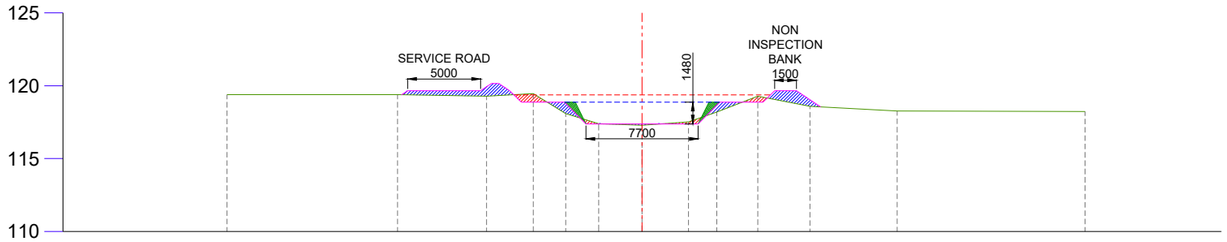
CH. : 12+500 KM
DESIGNED BED LEVEL = 117.400 M



EXIST. LEVEL (KM	119.379	119.379	118.797	118.977	117.923	117.160	117.100	117.406	118.126	119.091	118.199	118.070	118.039
OFFSET (KM	28.836	16.290	11.299	7.796	5.364	3.137	0.000	2.954	5.048	7.547	11.396	17.984	30.041

CUTTING AREA (SQ.M) = 0.562
FILLING AREA (SQ.M) = 12.480

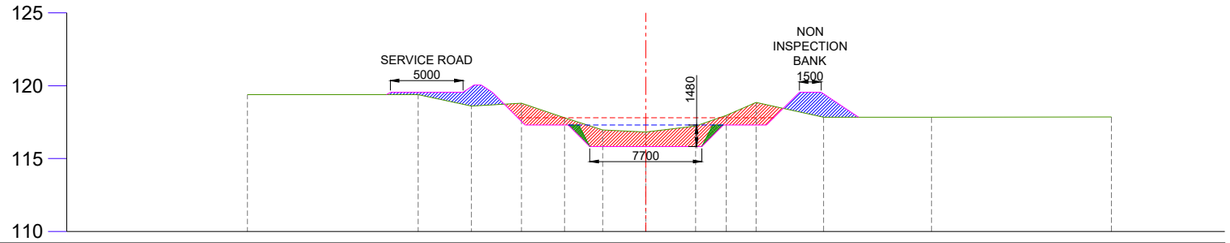
CH. : 12+700 KM
DESIGNED BED LEVEL = 117.365 M



EXIST. LEVEL (KM	119.379	119.379	119.279	119.457	118.082	117.385	117.289	117.525	118.199	119.277	118.590	118.257	118.230
OFFSET (KM	28.484	16.778	10.666	7.468	5.247	2.972	0.000	3.185	5.134	7.946	11.523	17.507	30.403

CUTTING AREA (SQ.M) = 1.897
FILLING AREA (SQ.M) = 6.920

CH. : 12+600 KM
DESIGNED BED LEVEL = 117.382 M



EXIST. LEVEL (KM	119.379	119.379	118.604	118.799	117.797	116.956	116.830	117.226	117.955	118.858	117.834	117.842	117.850
OFFSET (KM	27.339	15.630	11.974	8.528	5.584	2.957	0.000	3.423	5.512	7.561	12.197	19.608	31.949

CUTTING AREA (SQ.M) = 19.987
FILLING AREA (SQ.M) = 9.902

CH. : 12+800 KM
DESIGNED BED LEVEL = 115.824 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

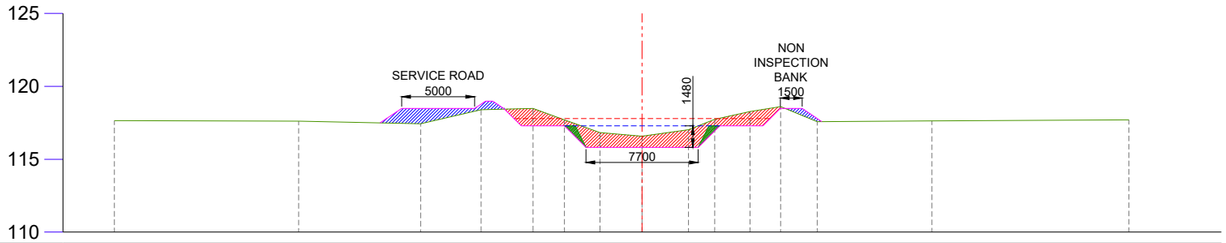
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 32 of 89

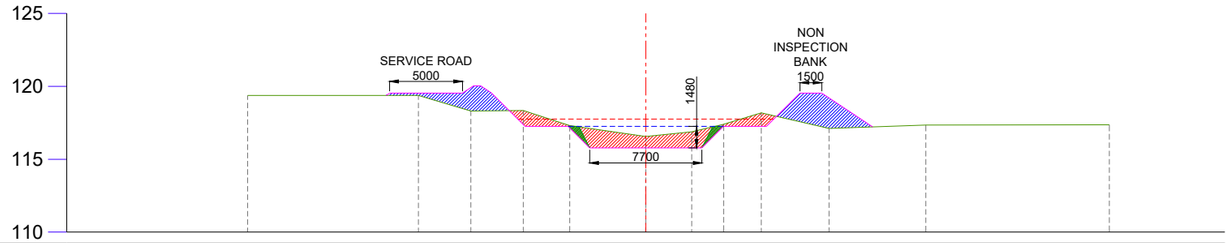
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	117.651	117.604	117.430	118.403	118.488	117.709	116.822	116.584	117.028	117.731	118.279	118.607	117.581	117.637	117.702
OFFSET (KM	36.217	23.571	15.200	11.041	7.486	5.336	2.890	0.000	3.181	4.989	7.405	9.501	12.017	19.895	33.419

CUTTING AREA (SQ.M) = 17.310
FILLING AREA (SQ.M) = 5.923

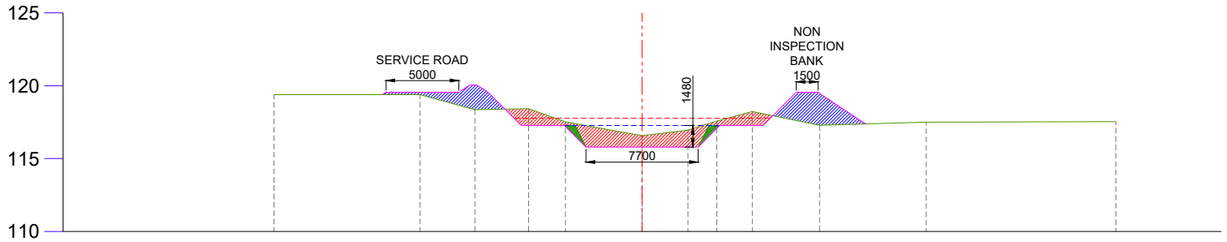
CH. : 12+900 KM
DESIGNED BED LEVEL = 115.807 M



EXIST. LEVEL (KM	119.379	119.379	119.379	118.313	118.349	117.309	116.553	116.872	117.396	118.186	117.115	117.345	117.365		
OFFSET (KM	27.322	15.603	12.017	8.411	5.219	0.000	3.151	5.348	7.918	12.570	19.227	31.815			

CUTTING AREA (SQ.M) = 14.267
FILLING AREA (SQ.M) = 14.953

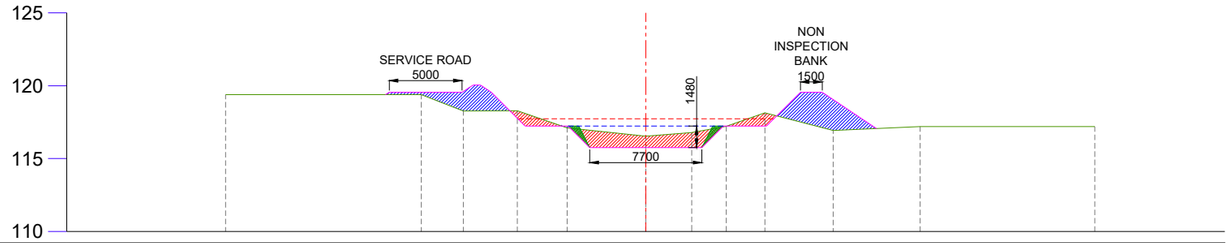
CH. : 13+100 KM
DESIGNED BED LEVEL = 115.772 M



EXIST. LEVEL (KM	119.379	119.379	118.358	118.420	117.510	116.569	116.951	117.566	118.232	117.292	117.493	117.537			
OFFSET (KM	25.257	15.230	11.474	7.797	5.260	0.000	3.143	5.128	7.564	12.186	19.499	32.522			

CUTTING AREA (SQ.M) = 16.188
FILLING AREA (SQ.M) = 13.783

CH. : 13+000 KM
DESIGNED BED LEVEL = 115.789 M



EXIST. LEVEL (KM	119.379	119.379	118.267	118.278	117.100	116.537	116.791	117.222	118.138	116.933	117.192	117.190			
OFFSET (KM	28.834	15.404	12.518	8.820	5.401	0.000	3.148	5.521	8.170	12.866	18.825	30.820			

CUTTING AREA (SQ.M) = 12.183
FILLING AREA (SQ.M) = 16.311

CH. : 13+200 KM
DESIGNED BED LEVEL = 115.755 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

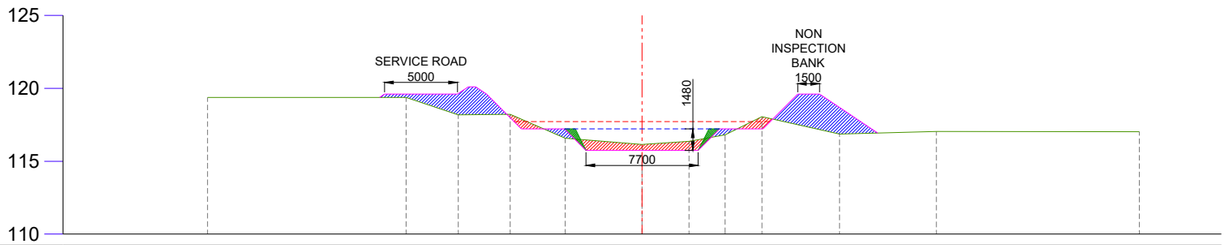
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 33 of 89

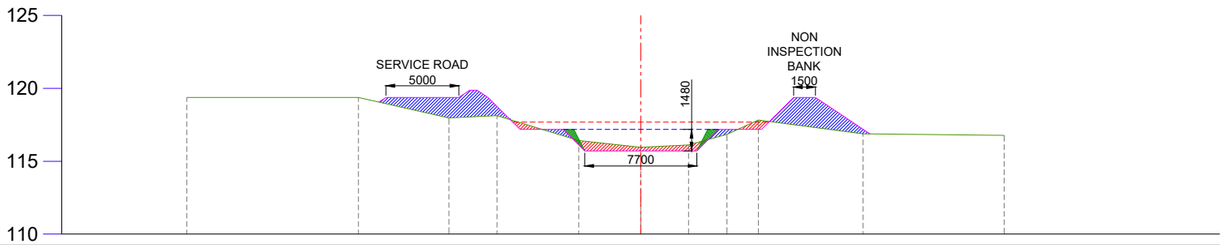
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	119.379	119.379	118.184	118.223	116.584	116.142	116.372	116.816	118.049	116.868	117.048	117.032
OFFSET (KM	29.821	16.199	12.617	9.050	5.280	0.000	3.214	5.691	8.233	13.547	20.202	34.121

CUTTING AREA (SQ.M) = 6.847
FILLING AREA (SQ.M) = 19.260

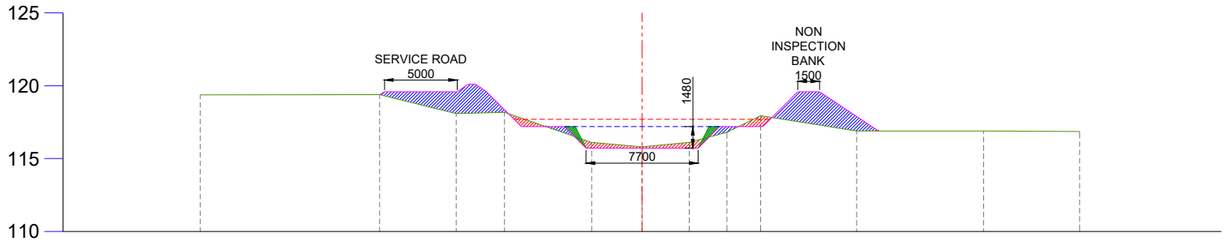
CH. : 13+300 KM
DESIGNED BED LEVEL = 115.738 M



EXIST. LEVEL (KM	119.379	119.379	117.976	118.133	116.421	115.959	116.121	116.845	117.827	116.876	116.773
OFFSET (KM	31.155	19.390	13.174	9.864	4.268	0.000	3.272	5.905	8.062	15.245	24.930

CUTTING AREA (SQ.M) = 4.958
FILLING AREA (SQ.M) = 18.640

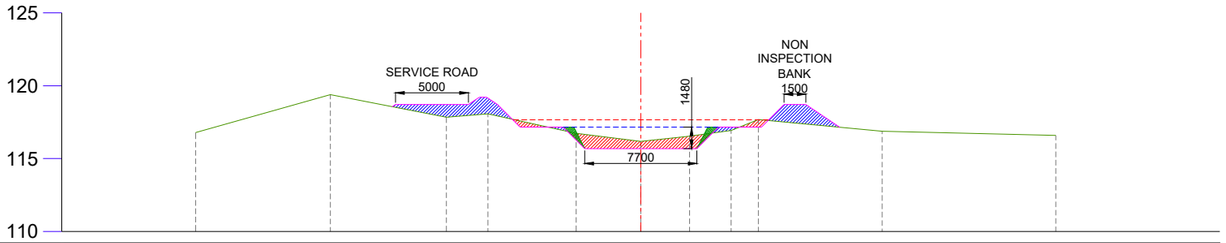
CH. : 13+500 KM
DESIGNED BED LEVEL = 115.703 M



EXIST. LEVEL (KM	119.361	119.395	118.082	118.178	116.105	115.801	116.105	116.796	117.939	116.891	116.901	116.851
OFFSET (KM	30.321	18.016	12.764	9.446	3.452	0.000	3.241	5.826	8.131	14.736	23.434	30.031

CUTTING AREA (SQ.M) = 4.061
FILLING AREA (SQ.M) = 20.247

CH. : 13+400 KM
DESIGNED BED LEVEL = 115.720 M



EXIST. LEVEL (KM	116.781	119.379	117.833	118.070	116.725	116.179	116.541	116.924	117.672	116.881	116.583
OFFSET (KM	30.550	21.311	13.350	10.493	4.440	0.000	3.347	6.190	8.069	16.561	28.485

CUTTING AREA (SQ.M) = 7.588
FILLING AREA (SQ.M) = 10.233

CH. : 13+600 KM
DESIGNED BED LEVEL = 115.686 M

LEGEND

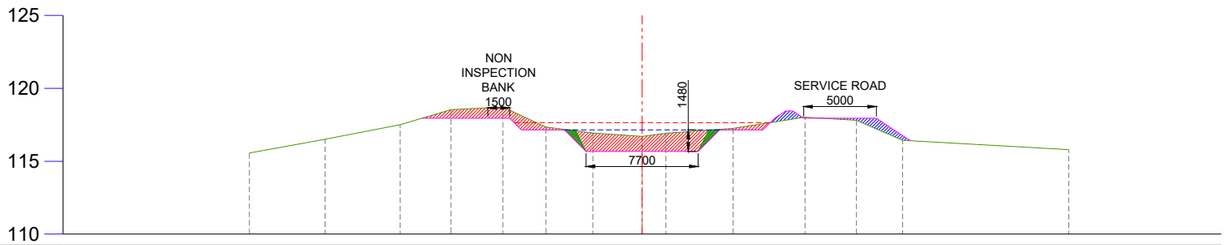
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 34 of 89

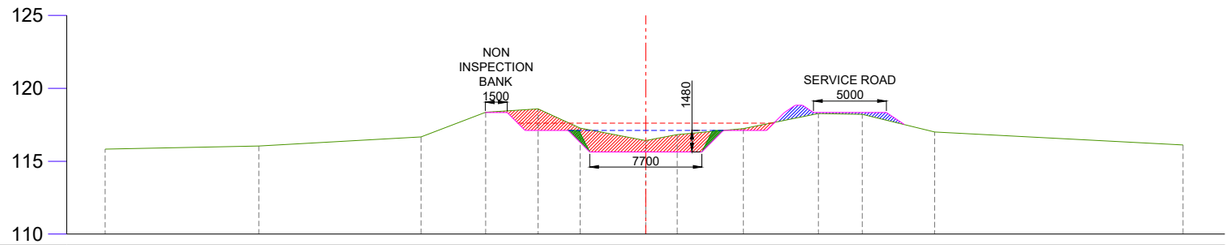
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	115.561	116.509	117.505	118.544	118.712	117.335	116.934	116.705	116.924	117.254	118.017	117.812	116.434	115.793
OFFSET (KM	26.949	21.749	16.604	13.122	9.560	6.596	3.371	0.000	1.629	6.245	11.189	14.714	17.887	29.280

CUTTING AREA (SQ.M) = 17.205
FILLING AREA (SQ.M) = 2.657

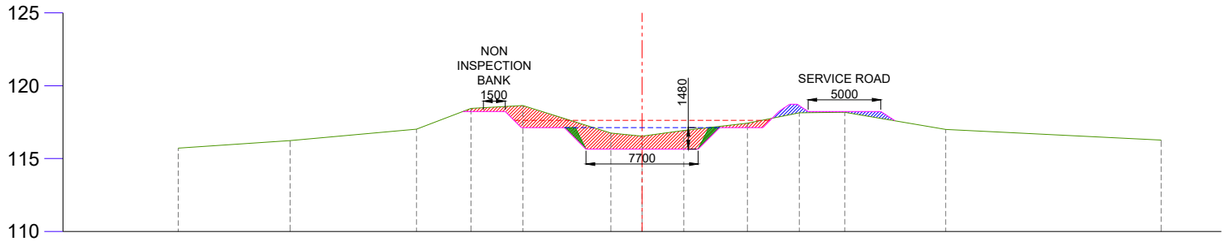
CH. : 13+700 KM
DESIGNED BED LEVEL = 115.669 M



EXIST. LEVEL (KM	115.838	116.035	116.662	118.352	118.596	117.273	116.415	116.820	117.241	118.270	118.217	117.008	116.112
OFFSET (KM	37.110	26.559	15.428	10.990	7.390	4.508	0.000	2.146	6.699	11.837	14.855	19.831	36.872

CUTTING AREA (SQ.M) = 16.211
FILLING AREA (SQ.M) = 2.633

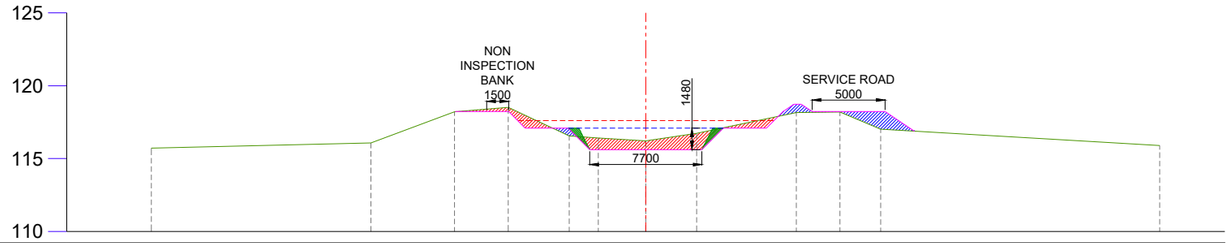
CH. : 13+900 KM
DESIGNED BED LEVEL = 115.634 M



EXIST. LEVEL (KM	115.720	116.243	117.020	118.436	118.646	116.754	116.543	116.924	117.421	118.140	118.184	117.005	116.263
OFFSET (KM	31.840	24.156	15.490	11.747	8.187	2.137	0.000	2.857	7.227	10.792	13.901	20.844	35.620

CUTTING AREA (SQ.M) = 17.482
FILLING AREA (SQ.M) = 2.126

CH. : 13+800 KM
DESIGNED BED LEVEL = 115.652 M



EXIST. LEVEL (KM	115.714	116.082	118.218	118.516	116.553	116.412	116.213	116.726	118.154	118.200	117.014	115.897
OFFSET (KM	33.928	18.867	13.125	9.439	5.255	3.261	0.000	3.489	10.329	13.325	16.118	35.269

CUTTING AREA (SQ.M) = 10.628
FILLING AREA (SQ.M) = 4.691

CH. : 14+000 KM
DESIGNED BED LEVEL = 115.617 M

LEGEND

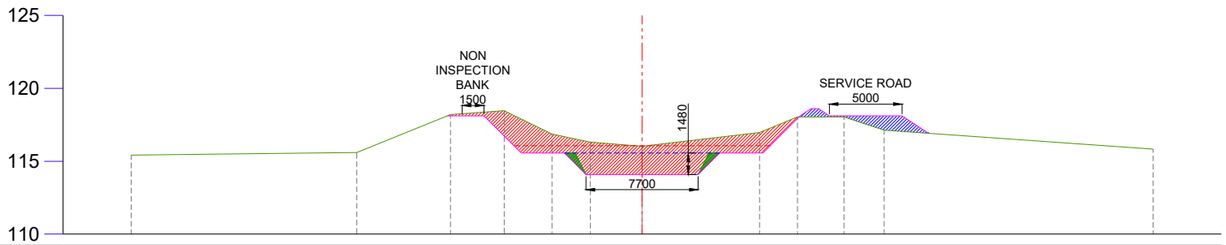
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 35 of 89

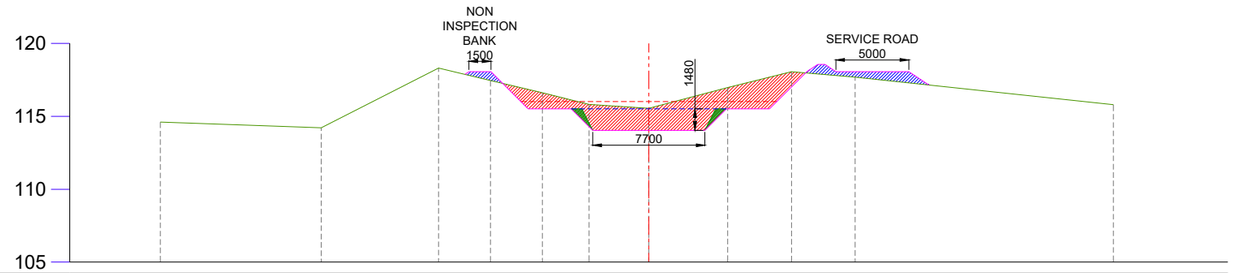
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	115.413	115.594	118.196	118.472	116.860	116.312	116.032	116.969	118.037	118.037	117.126	115.827
OFFSET (KM	35.063	19.590	13.159	9.469	6.185	3.555	0.000	8.072	10.671	13.849	16.616	35.078

CUTTING AREA (SQ.M) = 36.339
FILLING AREA (SQ.M) = 4.595

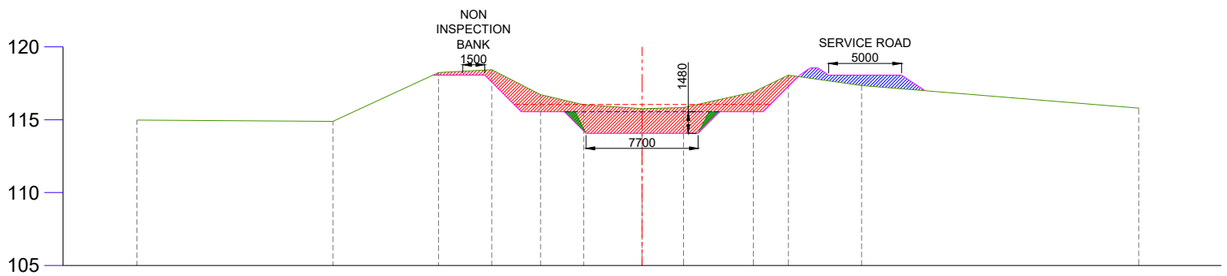
CH. : 14+100 KM
DESIGNED BED LEVEL = 114.076 M



EXIST. LEVEL (KM	114.615	114.222	118.315	117.458	116.615	115.825	115.552	116.967	118.069	117.685	115.805
OFFSET (KM	33.528	22.487	14.438	10.867	7.300	4.105	0.000	5.422	9.791	14.161	31.882

CUTTING AREA (SQ.M) = 30.966
FILLING AREA (SQ.M) = 5.026

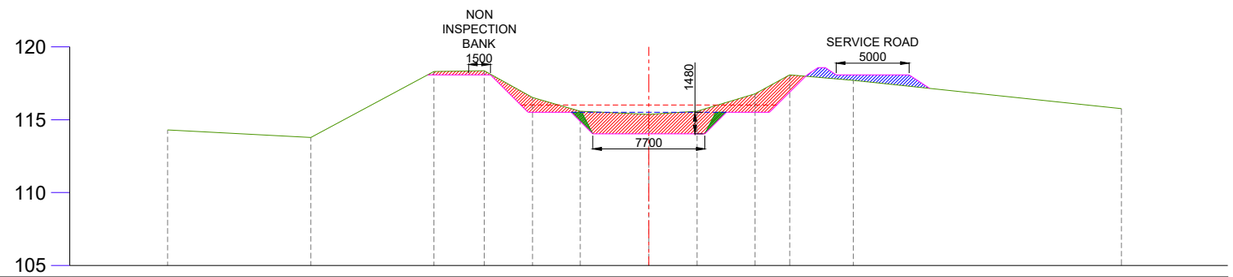
CH. : 14+300 KM
DESIGNED BED LEVEL = 114.041 M



EXIST. LEVEL (KM	114.968	114.879	118.240	118.427	116.726	116.024	115.767	115.839	116.891	118.055	117.351	115.799
OFFSET (KM	34.660	21.213	13.974	10.321	6.972	4.011	0.000	2.842	7.638	10.034	15.066	34.097

CUTTING AREA (SQ.M) = 31.512
FILLING AREA (SQ.M) = 5.330

CH. : 14+200 KM
DESIGNED BED LEVEL = 114.059 M



EXIST. LEVEL (KM	114.304	113.789	118.308	118.358	116.522	115.582	115.362	115.573	116.771	118.082	117.699	115.754
OFFSET (KM	33.022	23.187	14.753	11.287	7.984	4.702	0.000	3.314	7.291	9.665	14.040	32.443

CUTTING AREA (SQ.M) = 24.963
FILLING AREA (SQ.M) = 4.198

CH. : 14+400 KM
DESIGNED BED LEVEL = 114.024 M

LEGEND

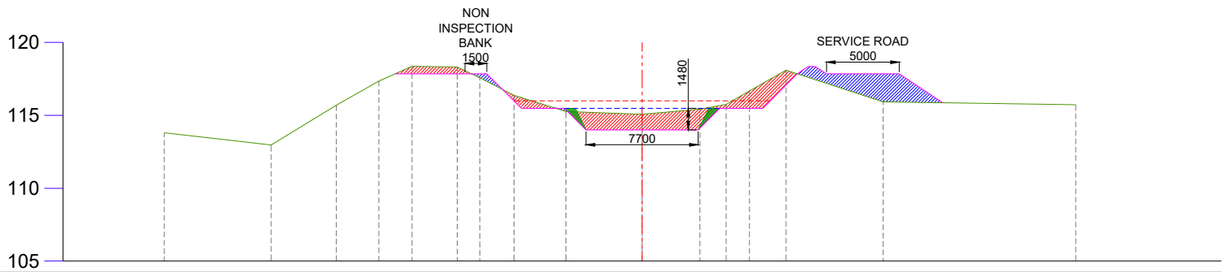
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 36 of 89

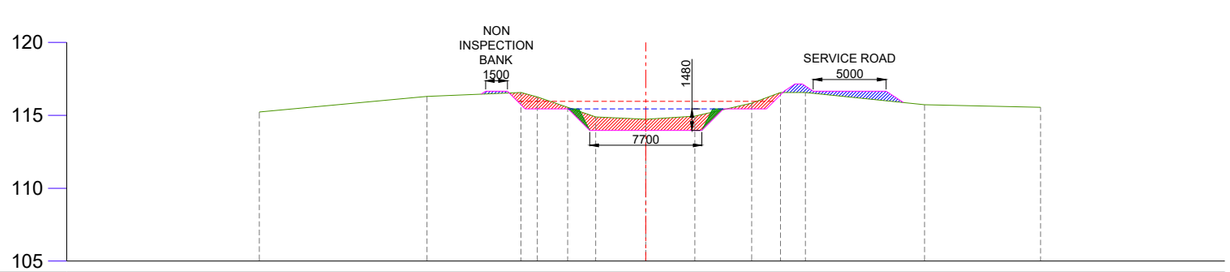
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	113.799	112.970	115.686	117.357	118.359	118.307	117.578	116.372	115.258	115.063	115.422	116.681	118.103	115.928	115.720
OFFSET (KM	32.790	25.464	20.989	18.068	15.793	12.696	11.133	8.788	5.216	0.000	3.966	7.366	9.876	16.549	29.761

CUTTING AREA (SQ.M) = 19.480
FILLING AREA (SQ.M) = 11.938

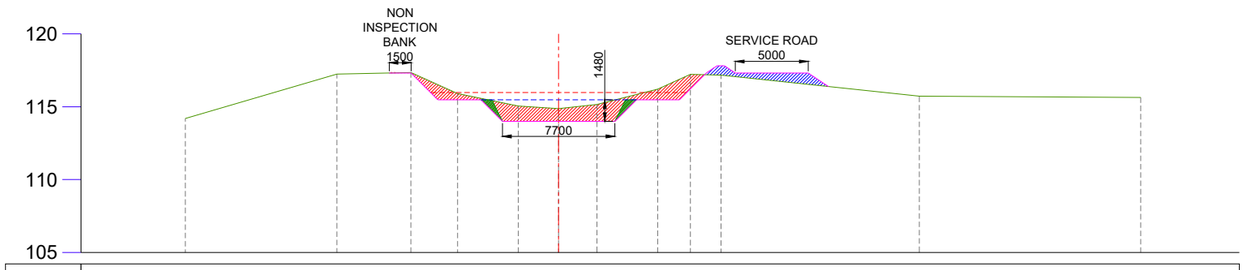
CH. : 14+500 KM
DESIGNED BED LEVEL = 114.007 M



EXIST. LEVEL (KM	115.221	116.301	116.573	115.548	114.887	114.729	114.945	115.835	116.559	116.562	115.732	115.557
OFFSET (KM	26.517	15.015	8.563	5.356	3.447	0.000	3.364	7.265	9.236	10.958	19.136	27.097

CUTTING AREA (SQ.M) = 11.975
FILLING AREA (SQ.M) = 3.524

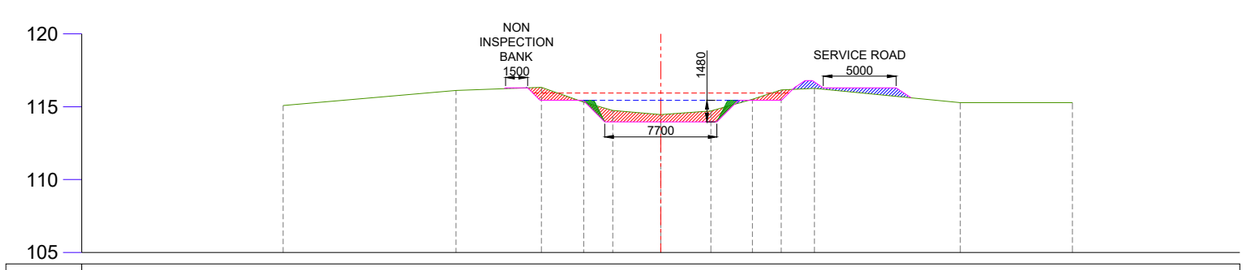
CH. : 14+700 KM
DESIGNED BED LEVEL = 113.972 M



EXIST. LEVEL (KM	114.194	117.236	117.338	115.907	115.050	114.875	115.154	116.205	117.216	117.168	115.727	115.626
OFFSET (KM	25.625	15.222	10.136	6.939	2.773	0.000	2.635	6.804	9.050	11.137	24.760	39.945

CUTTING AREA (SQ.M) = 16.861
FILLING AREA (SQ.M) = 4.045

CH. : 14+600 KM
DESIGNED BED LEVEL = 113.990 M



EXIST. LEVEL (KM	115.076	116.111	116.324	115.316	114.739	114.452	114.708	115.503	116.156	116.265	115.280	115.279
OFFSET (KM	25.911	14.056	8.193	5.296	3.291	0.000	3.431	6.286	8.268	10.540	20.560	28.256

CUTTING AREA (SQ.M) = 8.906
FILLING AREA (SQ.M) = 2.863

CH. : 14+800 KM
DESIGNED BED LEVEL = 113.955 M

LEGEND

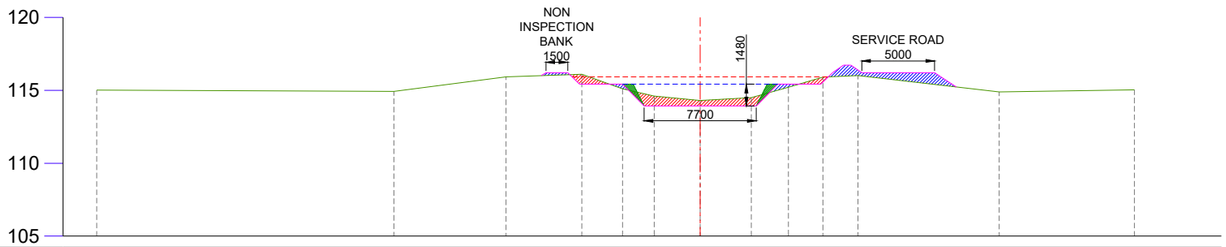
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 37 of 89

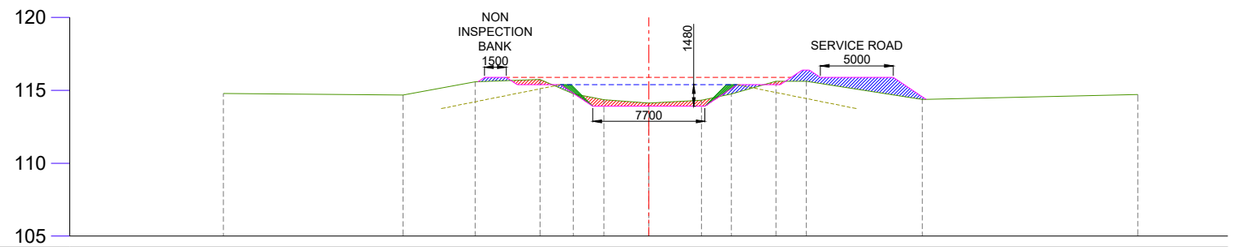
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	115.019	114.929	115.929	116.094	115.107	114.606	114.304	114.496	115.213	115.898	116.010	114.885	115.032
OFFSET (KM	41.416	21.015	13.330	8.127	5.323	3.161	0.000	3.516	6.055	8.419	10.827	20.529	29.793

CUTTING AREA (SQ.M) = 6.150
FILLING AREA (SQ.M) = 5.329

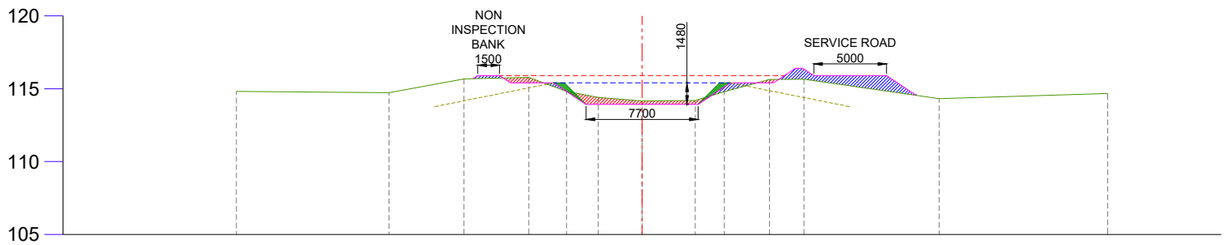
CH. : 14+900 KM
DESIGNED BED LEVEL = 113.938 M



EXIST. LEVEL (KM	114.779	114.669	115.583	115.753	114.770	114.365	114.132	114.322	114.755	115.621	115.628	114.369	114.707
OFFSET (KM	29.193	16.870	11.917	7.459	5.183	3.076	0.000	3.606	5.657	8.732	10.802	18.773	33.559

CUTTING AREA (SQ.M) = 4.366
FILLING AREA (SQ.M) = 8.107

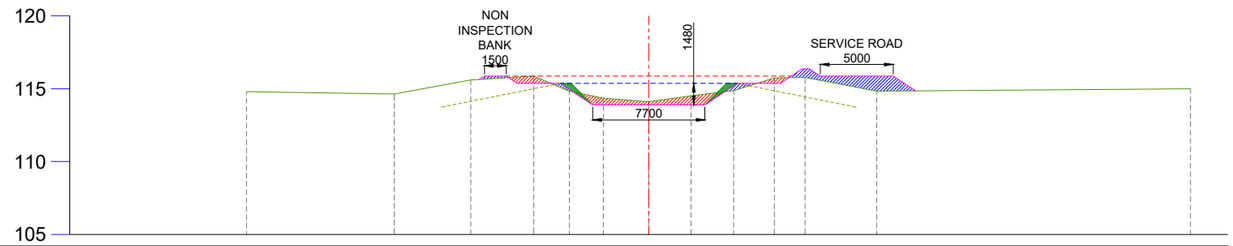
CH. : 15+100 KM
DESIGNED BED LEVEL = 113.903 M



EXIST. LEVEL (KM	114.814	114.725	115.671	115.768	114.806	114.413	114.161	114.191	114.793	115.626	115.648	114.322	114.675
OFFSET (KM	27.844	17.370	12.221	7.765	5.192	3.021	0.000	3.645	5.648	8.745	11.116	20.388	31.961

CUTTING AREA (SQ.M) = 4.051
FILLING AREA (SQ.M) = 7.167

CH. : 15+000 KM
DESIGNED BED LEVEL = 113.921 M



EXIST. LEVEL (KM	114.803	114.636	115.592	115.858	114.826	114.344	114.102	114.510	114.872	115.746	115.769	114.831	114.992
OFFSET (KM	27.613	17.473	12.216	7.891	5.455	3.128	0.000	2.905	5.820	8.628	10.719	15.633	37.168

CUTTING AREA (SQ.M) = 5.639
FILLING AREA (SQ.M) = 6.486

CH. : 15+200 KM
DESIGNED BED LEVEL = 113.886 M

LEGEND

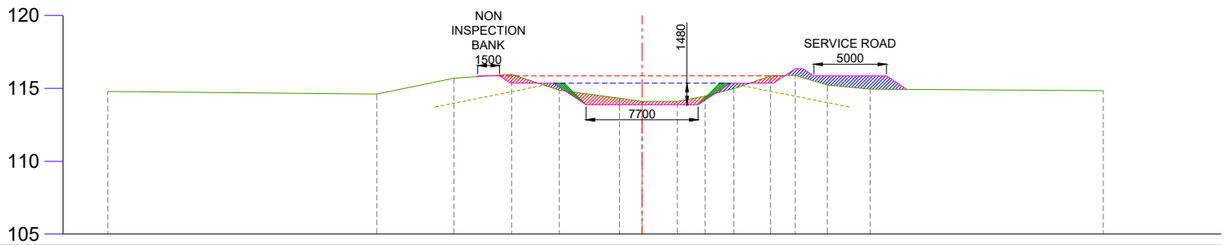
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 38 of 89

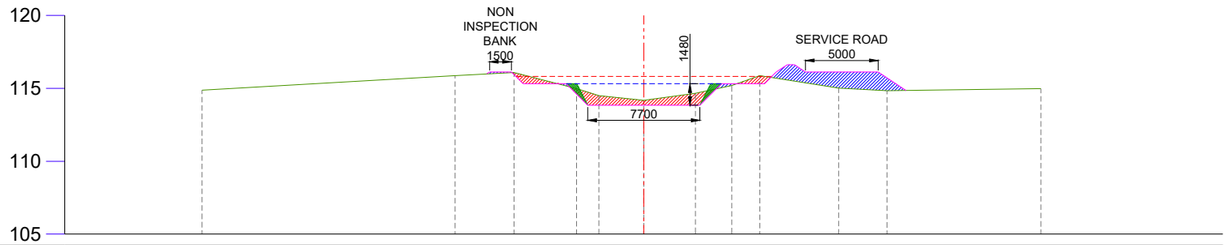
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	114.783	114.608	115.688	115.956	114.876	114.325	114.102	114.100	114.468	114.975	115.856	115.892	115.236	114.944	114.834
OFFSET (KM	36.671	18.216	12.920	8.948	5.682	1.554	0.000	2.417	4.317	6.305	8.808	10.508	12.715	15.656	31.647

CUTTING AREA (SQ.M) = 5.408
FILLING AREA (SQ.M) = 5.988

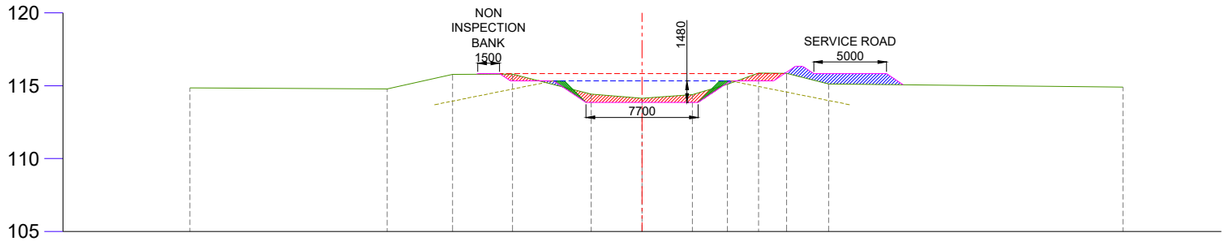
CH. : 15+300 KM
DESIGNED BED LEVEL = 113.869 M



EXIST. LEVEL (KM	114.867	115.877	116.091	114.989	114.502	114.176	114.657	115.201	115.877	115.024	114.835	114.976
OFFSET (KM	30.313	12.945	8.917	4.612	3.089	0.000	3.548	6.030	7.960	13.378	16.684	27.260

CUTTING AREA (SQ.M) = 7.329
FILLING AREA (SQ.M) = 8.665

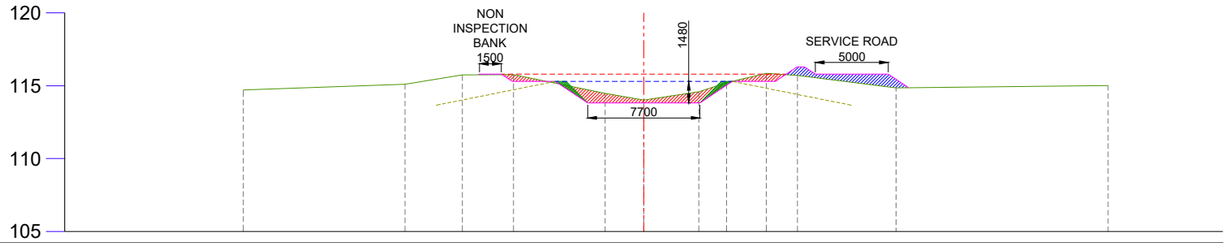
CH. : 15+500 KM
DESIGNED BED LEVEL = 113.834 M



EXIST. LEVEL (KM	114.845	114.779	115.782	115.795	114.416	114.140	114.389	115.094	115.867	115.843	115.124	114.908
OFFSET (KM	31.034	17.489	13.011	8.898	3.500	0.000	3.453	5.863	7.998	9.912	12.809	33.012

CUTTING AREA (SQ.M) = 6.236
FILLING AREA (SQ.M) = 5.315

CH. : 15+400 KM
DESIGNED BED LEVEL = 113.852 M



EXIST. LEVEL (KM	114.704	115.105	115.744	115.765	114.478	114.019	114.592	115.206	115.842	115.698	114.859	115.008
OFFSET (KM	27.488	16.385	12.450	8.947	2.660	0.000	3.767	5.674	8.404	10.543	17.312	31.863

CUTTING AREA (SQ.M) = 7.668
FILLING AREA (SQ.M) = 4.466

CH. : 15+600 KM
DESIGNED BED LEVEL = 113.817 M

LEGEND

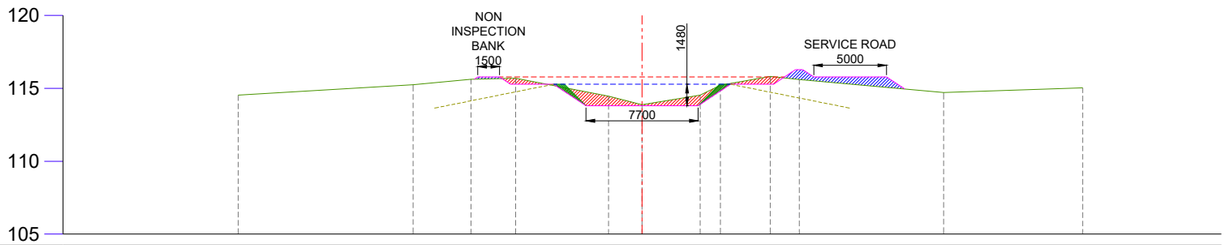
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 39 of 89

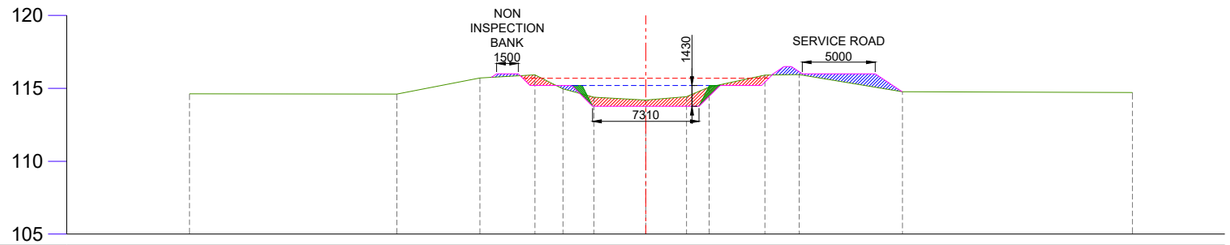
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	114.539	115.244	115.623	115.685	114.457	113.881	114.535	115.811	115.609	114.714	115.033
OFFSET (KM	27.724	15.707	11.751	8.686	2.306	0.000	3.989	8.788	10.792	20.699	30.237

CUTTING AREA (SQ.M) = 7.308
FILLING AREA (SQ.M) = 4.058

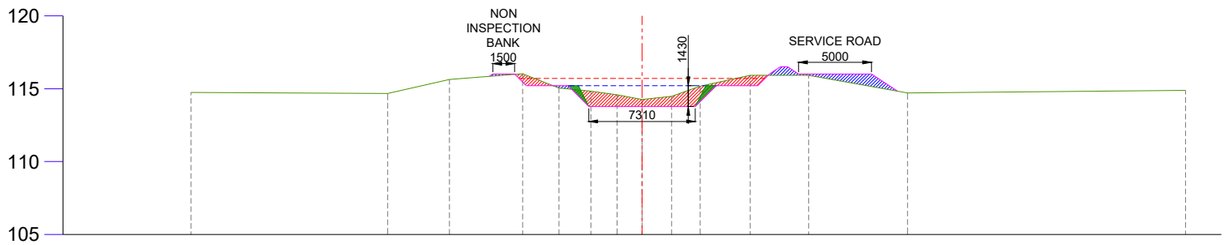
CH. : 15+700 KM
DESIGNED BED LEVEL = 113.800 M



EXIST. LEVEL (KM	114.628	114.605	115.712	115.918	114.961	114.393	114.189	114.422	115.913	115.951	114.759	114.709
OFFSET (KM	31.325	17.089	11.381	7.603	5.679	3.560	0.000	2.792	8.179	10.531	17.615	33.389

CUTTING AREA (SQ.M) = 7.591
FILLING AREA (SQ.M) = 4.766

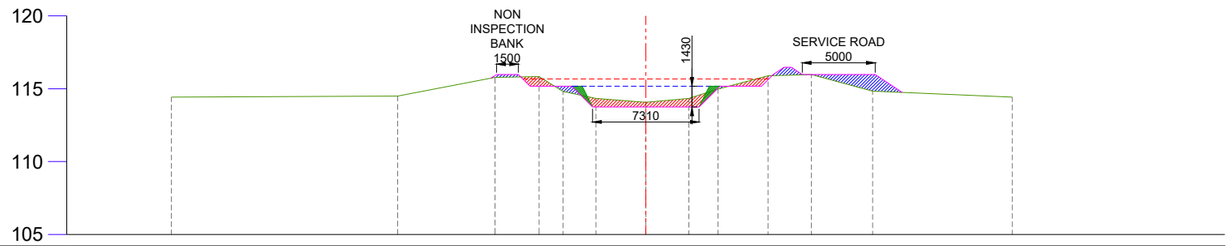
CH. : 15+900 KM
DESIGNED BED LEVEL = 113.765 M



EXIST. LEVEL (KM	114.750	114.668	115.642	116.035	115.049	114.828	114.586	114.258	114.479	115.167	115.925	115.913	114.715	114.885
OFFSET (KM	30.971	17.465	13.226	8.202	5.704	3.515	1.721	0.000	2.024	3.979	7.422	11.424	18.221	37.304

CUTTING AREA (SQ.M) = 10.047
FILLING AREA (SQ.M) = 4.039

CH. : 15+800 KM
DESIGNED BED LEVEL = 113.783 M



EXIST. LEVEL (KM	114.423	114.497	115.781	115.830	114.334	114.070	114.325	114.971	115.892	115.964	114.832	114.414
OFFSET (KM	32.570	17.038	10.353	7.325	3.420	0.000	2.959	4.941	8.396	11.364	15.566	25.151

CUTTING AREA (SQ.M) = 6.076
FILLING AREA (SQ.M) = 5.379

CH. : 16+000 KM
DESIGNED BED LEVEL = 113.748 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

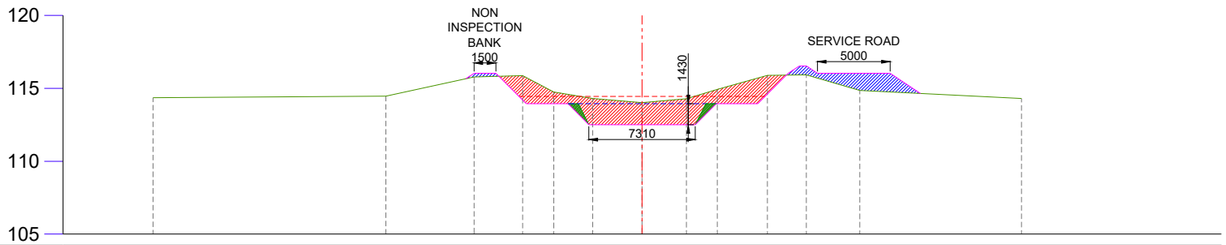
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 40 of 89

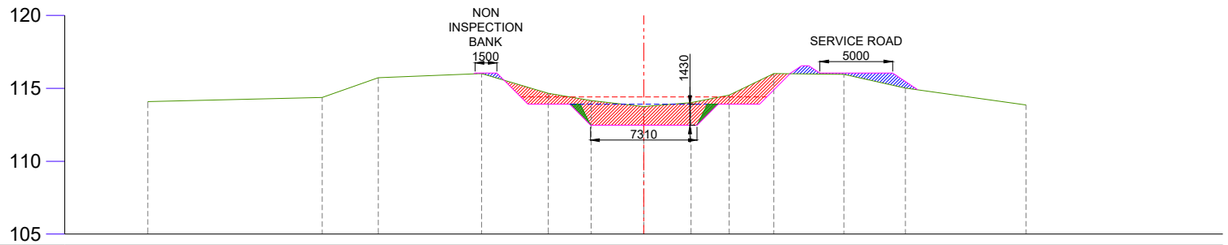
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	114.348	114.458	115.775	115.873	114.753	114.312	114.026	114.290	114.925	115.884	115.929	114.859	114.300
OFFSET (KM	33.566	17.589	11.534	8.195	6.068	3.382	0.000	3.042	5.154	8.602	11.270	14.934	26.045

CUTTING AREA (SQ.M) = 26.859
FILLING AREA (SQ.M) = 7.423

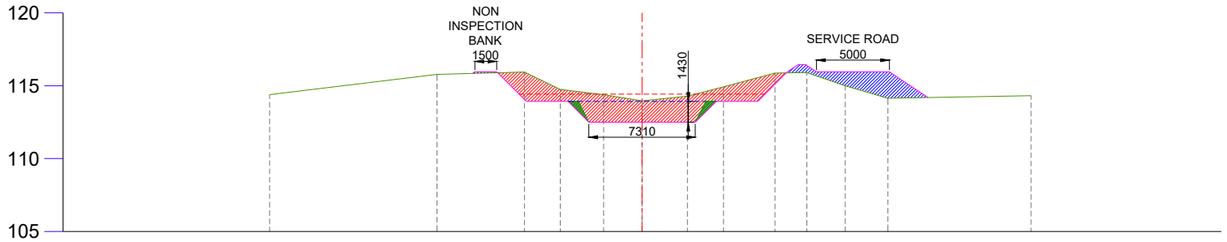
CH. : 16+100 KM
DESIGNED BED LEVEL = 112.511 M



EXIST. LEVEL (KM	114.090	114.376	115.734	116.008	114.654	114.154	113.750	114.021	114.534	116.008	115.964	115.021	113.854
OFFSET (KM	34.038	22.076	18.226	11.138	6.560	3.614	0.000	3.239	5.859	8.925	13.733	17.958	26.230

CUTTING AREA (SQ.M) = 21.638
FILLING AREA (SQ.M) = 3.399

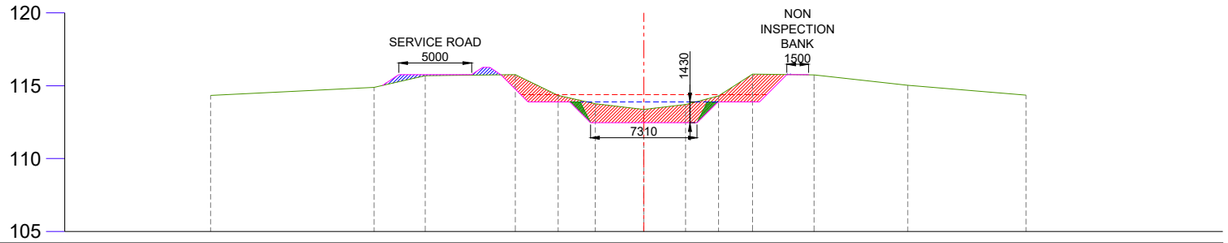
CH. : 16+300 KM
DESIGNED BED LEVEL = 112.476 M



EXIST. LEVEL (KM	114.390	115.768	115.944	114.752	114.380	113.952	114.280	114.920	115.871	115.896	114.996	114.142	114.310
OFFSET (KM	25.565	14.080	8.078	5.615	2.647	0.000	3.115	5.584	9.118	11.306	13.949	16.873	26.702

CUTTING AREA (SQ.M) = 27.354
FILLING AREA (SQ.M) = 8.818

CH. : 16+200 KM
DESIGNED BED LEVEL = 122.494 M



EXIST. LEVEL (KM	114.327	114.887	115.682	115.761	114.337	113.771	113.380	113.707	114.300	115.787	115.732	115.021	114.359
OFFSET (KM	29.740	18.509	14.996	8.818	5.872	3.326	0.000	2.864	5.125	7.468	11.684	18.109	26.229

CUTTING AREA (SQ.M) = 20.048
FILLING AREA (SQ.M) = 1.676

CH. : 16+400 KM
DESIGNED BED LEVEL = 112.459 M

LEGEND

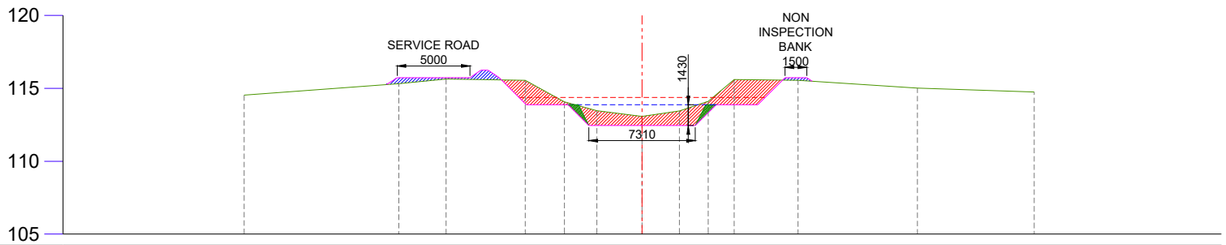
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 41 of 89

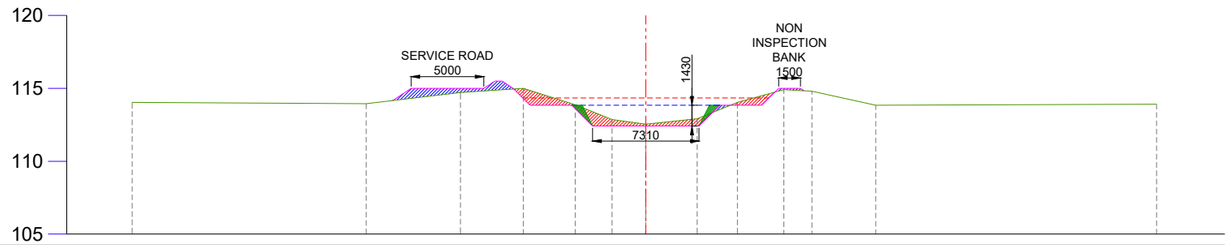
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	114.529	115.320	115.637	115.550	114.077	113.457	113.076	113.450	114.109	115.607	115.548	115.021	114.757
OFFSET (KM	27.304	16.692	13.444	8.024	5.339	3.111	0.000	2.557	4.534	6.316	10.709	18.894	26.918

CUTTING AREA (SQ.M) = 18.480
FILLING AREA (SQ.M) = 2.492

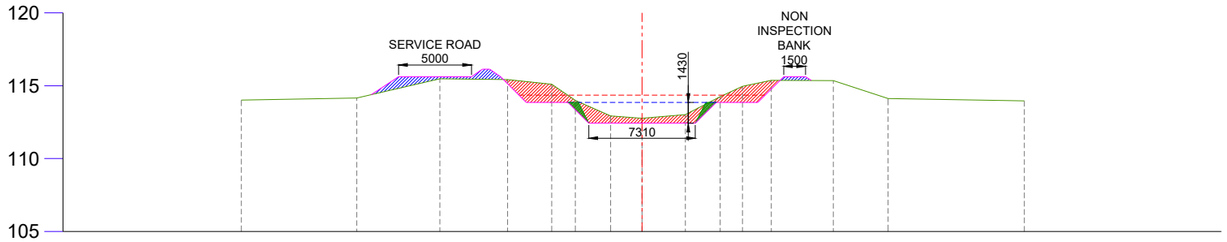
CH. : 16+500 KM
DESIGNED BED LEVEL = 112.442 M



EXIST. LEVEL (KM	114.042	113.954	114.706	115.003	113.878	112.852	112.546	112.920	114.042	114.916	114.801	113.843	113.917
OFFSET (KM	35.246	19.188	12.723	8.404	4.854	2.320	0.000	3.534	6.287	9.475	11.395	15.772	35.060

CUTTING AREA (SQ.M) = 7.219
FILLING AREA (SQ.M) = 3.758

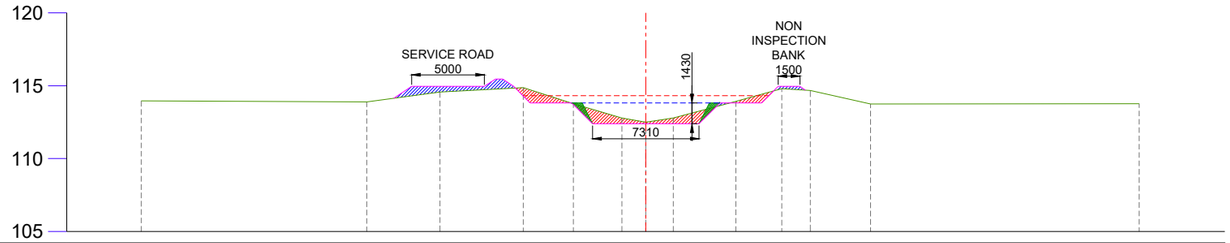
CH. : 16+700 KM
DESIGNED BED LEVEL = 112.408 M



EXIST. LEVEL (KM	114.010	114.151	115.476	115.425	115.103	113.992	112.925	112.759	113.015	114.251	114.957	115.364	115.358	114.125	113.954
OFFSET (KM	27.503	19.572	13.880	9.232	6.200	4.582	2.158	0.000	2.962	5.357	6.887	8.869	13.116	16.878	26.230

CUTTING AREA (SQ.M) = 14.032
FILLING AREA (SQ.M) = 3.951

CH. : 16+600 KM
DESIGNED BED LEVEL = 122.425 M



EXIST. LEVEL (KM	113.952	113.882	114.567	114.868	113.759	112.787	112.503	112.791	113.916	114.789	114.678	113.745	113.771
OFFSET (KM	34.630	19.159	14.122	8.411	4.964	1.645	0.000	1.880	6.174	9.341	11.300	15.431	33.868

CUTTING AREA (SQ.M) = 7.225
FILLING AREA (SQ.M) = 3.758

CH. : 16+800 KM
DESIGNED BED LEVEL = 112.390 M

LEGEND

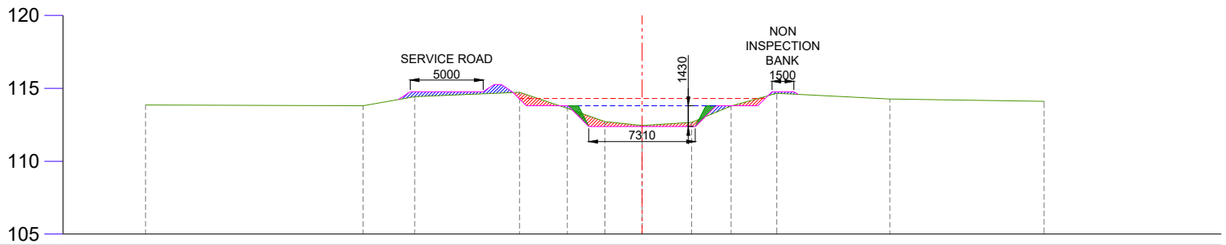
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 42 of 89

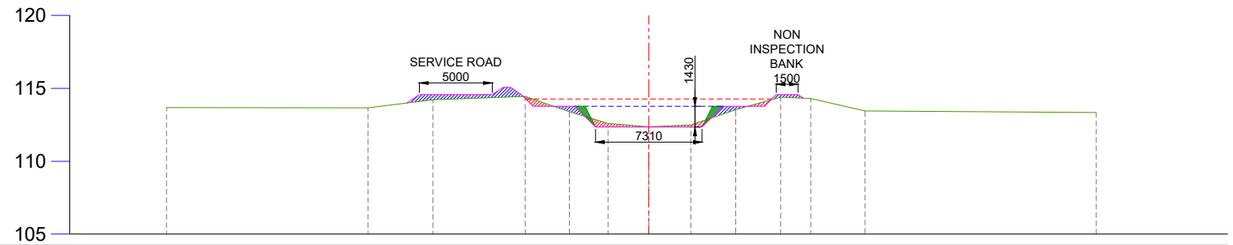
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	113.856	113.805	114.420	114.724	113.632	112.718	112.458	112.656	113.786	114.657	114.268	114.111
OFFSET (KM	34.077	19.148	15.611	8.415	5.129	2.544	0.000	3.399	6.098	9.234	17.007	27.588

CUTTING AREA (SQ.M) = 4.288
FILLING AREA (SQ.M) = 3.076

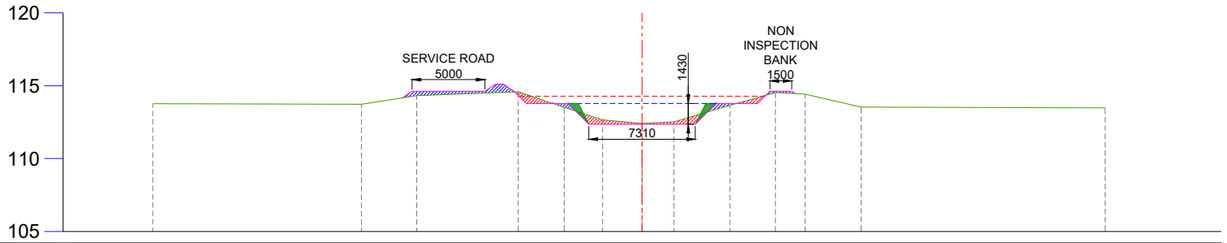
CH. : 16+900 KM
DESIGNED BED LEVEL = 112.373 M



EXIST. LEVEL (KM	113.672	113.656	114.216	114.450	113.391	112.586	112.370	112.495	113.535	114.401	114.303	113.443	113.334
OFFSET (KM	33.094	19.275	14.822	8.478	5.450	2.805	0.000	2.888	5.959	9.042	11.107	14.830	30.711

CUTTING AREA (SQ.M) = 2.304
FILLING AREA (SQ.M) = 4.242

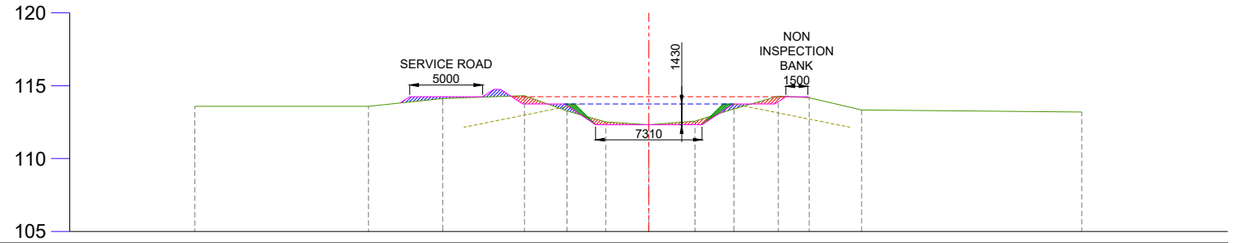
CH. : 17+100 KM
DESIGNED BED LEVEL = 112.339 M



EXIST. LEVEL (KM	113.764	113.730	114.311	114.584	113.509	112.651	112.413	112.522	113.657	114.525	114.423	113.540	113.477
OFFSET (KM	33.578	19.265	15.461	8.493	5.339	2.716	0.000	2.183	6.027	9.149	11.188	15.023	31.771

CUTTING AREA (SQ.M) = 3.453
FILLING AREA (SQ.M) = 2.966

CH. : 17+000 KM
DESIGNED BED LEVEL = 112.356 M



EXIST. LEVEL (KM	113.580	113.583	114.122	114.312	113.270	112.520	112.327	112.564	113.408	114.272	114.179	113.344	113.189
OFFSET (KM	31.153	19.239	14.153	8.531	5.619	2.951	0.000	3.174	5.841	8.882	11.011	14.612	29.714

CUTTING AREA (SQ.M) = 2.781
FILLING AREA (SQ.M) = 2.478

CH. : 17+200 KM
DESIGNED BED LEVEL = 122.321 M

LEGEND

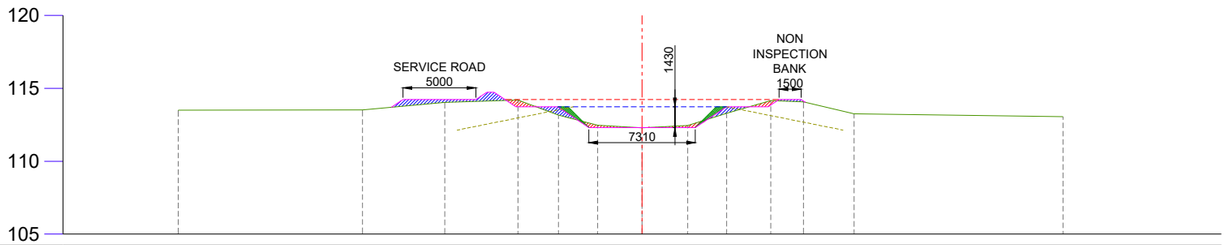
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 43 of 89

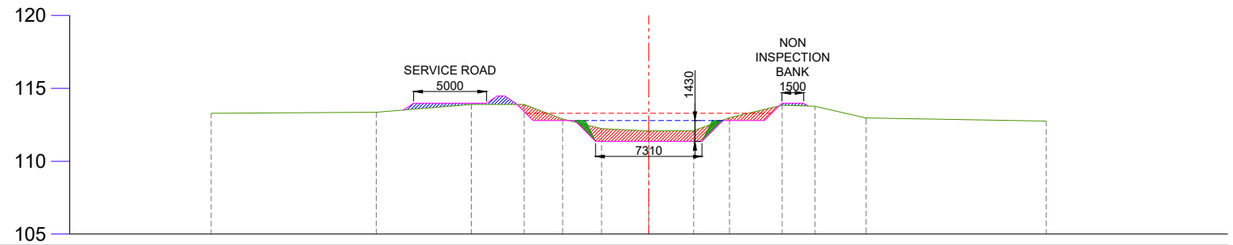
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	113.500	113.517	114.036	114.188	113.160	112.461	112.287	112.447	113.295	114.157	114.067	113.254	113.061
OFFSET (KM	31.844	19.190	13.541	8.517	5.736	3.059	0.000	3.138	5.808	8.828	11.067	14.557	28.896

CUTTING AREA (SQ.M) = 1.780
FILLING AREA (SQ.M) = 3.963

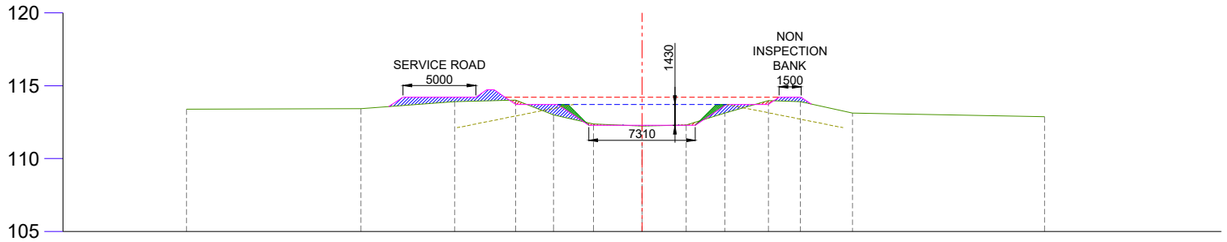
CH. : 17+300 KM
DESIGNED BED LEVEL = 112.304 M



EXIST. LEVEL (KM	113.296	113.352	113.892	113.886	112.888	112.233	112.082	112.101	112.977	113.846	113.773	112.969	112.750
OFFSET (KM	30.038	18.705	12.182	8.546	5.915	3.248	0.000	3.082	5.535	9.161	11.404	14.915	27.268

CUTTING AREA (SQ.M) = 10.207
FILLING AREA (SQ.M) = 2.363

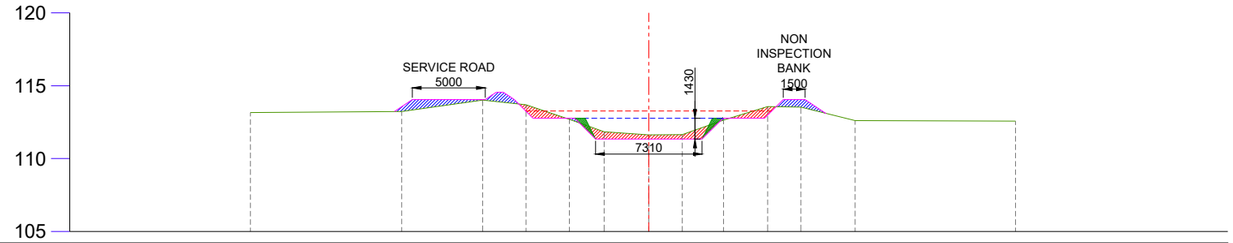
CH. : 17+500 KM
DESIGNED BED LEVEL = 111.356 M



EXIST. LEVEL (KM	113.381	113.421	113.911	114.007	113.000	112.373	112.229	112.295	113.127	113.986	113.902	113.122	112.868
OFFSET (KM	31.260	19.298	12.858	8.688	6.073	3.340	0.000	3.033	5.683	8.665	10.861	14.435	27.620

CUTTING AREA (SQ.M) = 0.617
FILLING AREA (SQ.M) = 6.682

CH. : 17+400 KM
DESIGNED BED LEVEL = 112.287 M



EXIST. LEVEL (KM	113.151	113.233	114.015	113.693	112.691	111.833	111.623	111.642	112.647	113.569	113.528	112.597	112.573
OFFSET (KM	27.338	16.957	11.394	8.435	5.446	3.057	0.000	2.291	5.124	8.155	10.434	14.163	25.176

CUTTING AREA (SQ.M) = 6.313
FILLING AREA (SQ.M) = 4.779

CH. : 17+600 KM
DESIGNED BED LEVEL = 111.338 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

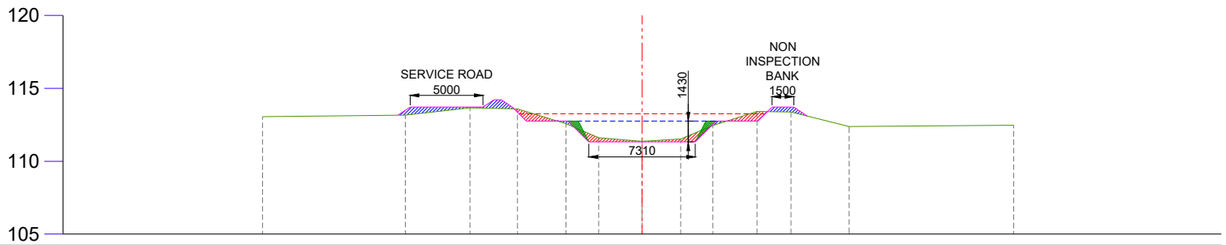
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 44 of 89

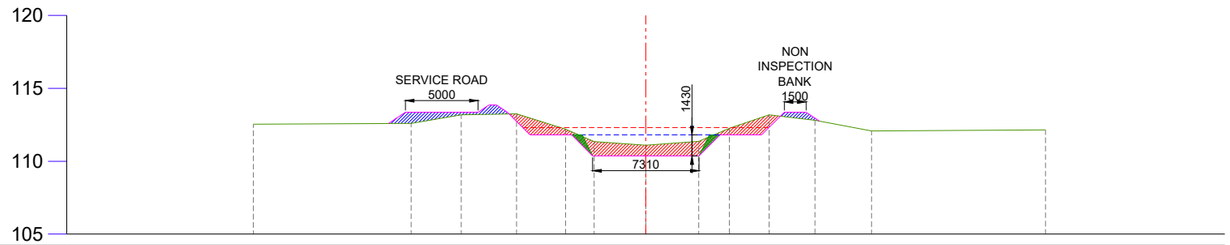
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	113.065	113.165	113.670	113.582	112.580	111.605	111.359	111.520	112.456	113.405	113.384	112.378	112.471
OFFSET (KM	26.054	16.249	11.818	8.553	5.218	2.980	0.000	2.652	4.851	7.893	10.217	14.214	25.512

CUTTING AREA (SQ.M) = 4.051
FILLING AREA (SQ.M) = 3.259

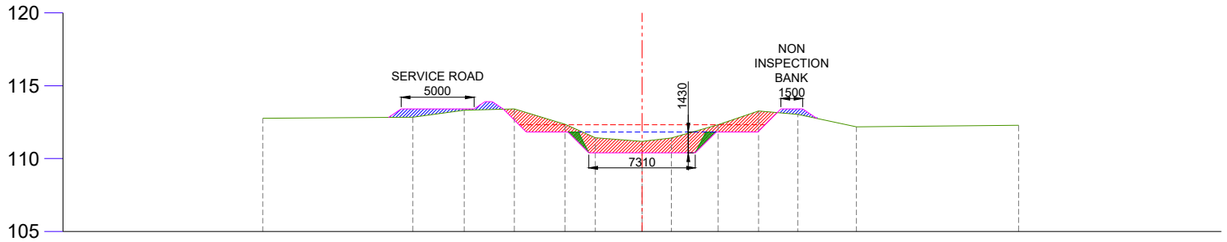
CH. : 17+700 KM
DESIGNED BED LEVEL = 111.321 M



EXIST. LEVEL (KM	112.541	112.602	113.174	113.249	112.205	111.354	111.089	111.358	112.262	113.183	112.807	112.082	112.153
OFFSET (KM	26.933	16.103	12.663	8.870	5.509	3.539	0.000	3.636	5.729	8.458	11.607	15.500	27.439

CUTTING AREA (SQ.M) = 13.827
FILLING AREA (SQ.M) = 4.344

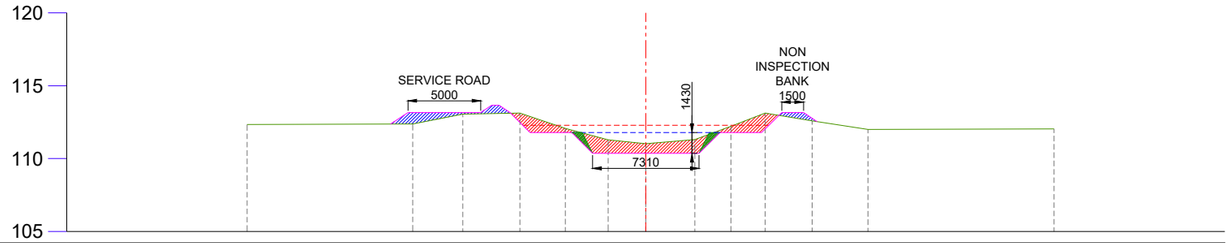
CH. : 17+900 KM
DESIGNED BED LEVEL = 110.373 M



EXIST. LEVEL (KM	112.761	112.839	113.315	113.406	112.353	111.431	111.173	111.412	112.321	113.262	113.039	112.181	112.278
OFFSET (KM	26.038	15.737	12.215	8.771	5.289	3.206	0.000	2.008	5.216	7.991	10.676	14.709	25.843

CUTTING AREA (SQ.M) = 17.302
FILLING AREA (SQ.M) = 3.394

CH. : 17+800 KM
DESIGNED BED LEVEL = 110.390 M



EXIST. LEVEL (KM	112.336	112.381	113.043	113.129	112.068	111.282	111.021	111.307	112.208	113.123	112.596	111.992	112.041
OFFSET (KM	27.369	15.996	12.561	8.649	5.525	2.589	0.000	3.373	5.842	8.191	11.412	15.244	28.013

CUTTING AREA (SQ.M) = 13.418
FILLING AREA (SQ.M) = 3.954

CH. : 18+000 KM
DESIGNED BED LEVEL = 110.355 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

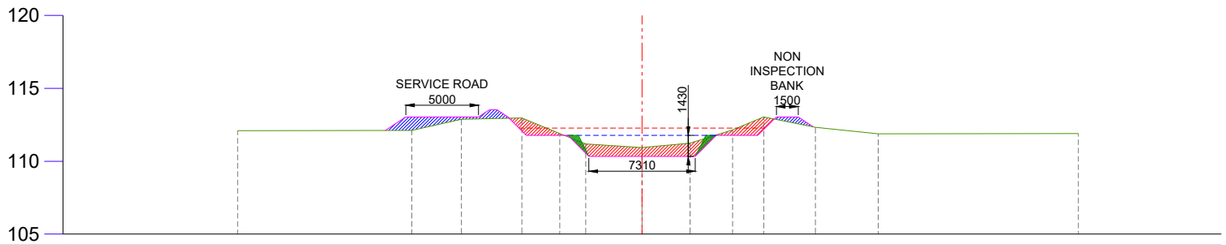
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 45 of 89

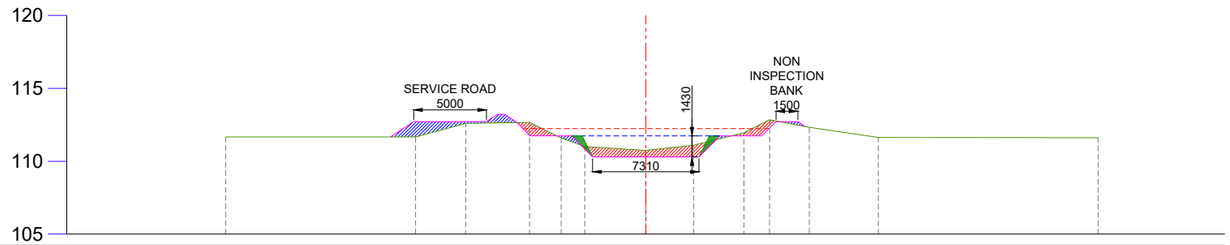
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	112.090	112.112	112.882	112.963	111.900	111.194	110.931	111.245	112.142	113.041	112.333	111.877	111.896
OFFSET (KM	27.765	15.812	12.395	8.254	5.658	3.868	0.000	3.298	6.221	8.356	11.893	16.211	29.941

CUTTING AREA (SQ.M) = 10.975
FILLING AREA (SQ.M) = 4.692

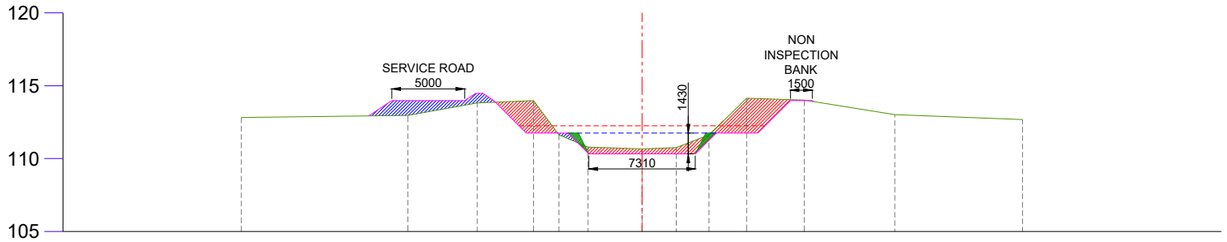
CH. : 18+100 KM
DESIGNED BED LEVEL = 110.338 M



EXIST. LEVEL (KM	111.661	111.662	112.599	112.673	111.596	111.000	110.740	111.090	111.957	112.844	112.330	111.628	111.618
OFFSET (KM	28.836	15.794	12.358	7.983	5.806	4.183	0.000	3.284	6.728	8.488	11.218	15.967	31.040

CUTTING AREA (SQ.M) = 7.635
FILLING AREA (SQ.M) = 4.618

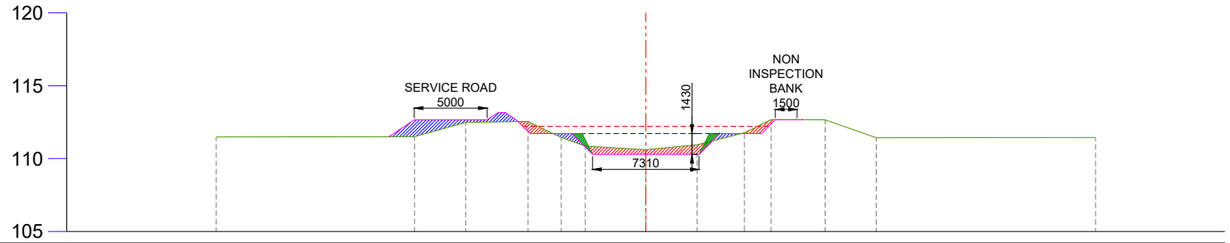
CH. : 18+300 KM
DESIGNED BED LEVEL = 110.304 M



EXIST. LEVEL (KM	112.821	112.954	113.825	113.984	111.625	110.795	110.657	110.754	111.625	114.143	114.015	113.021	112.674
OFFSET (KM	27.509	16.066	11.320	7.449	5.712	3.706	0.000	2.349	4.596	7.168	11.137	17.344	26.116

CUTTING AREA (SQ.M) = 16.995
FILLING AREA (SQ.M) = 5.894

CH. : 18+200 KM
DESIGNED BED LEVEL = 110.321 M



EXIST. LEVEL (KM	111.489	111.504	112.478	112.545	111.452	110.854	110.607	110.953	111.770	112.680	112.651	111.438	111.449
OFFSET (KM	29.477	15.876	12.366	8.084	5.809	4.152	0.000	3.527	6.766	8.601	12.307	15.823	30.864

CUTTING AREA (SQ.M) = 5.608
FILLING AREA (SQ.M) = 5.503

CH. : 18+400 KM
DESIGNED BED LEVEL = 110.286 M

LEGEND

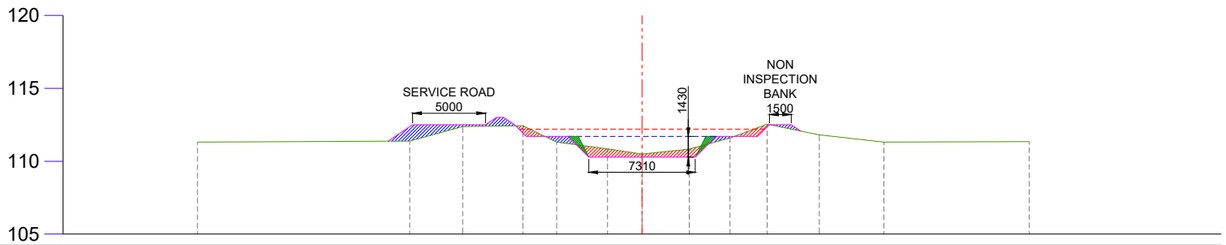
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 46 of 89

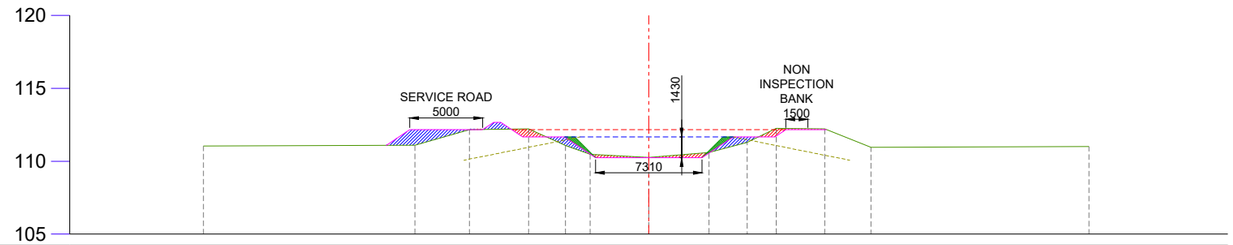
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	111.315	111.375	112.384	112.432	111.314	110.845	110.490	110.831	111.592	112.536	111.807	111.315	111.351
OFFSET (KM	30.512	15.951	12.307	8.184	5.857	2.379	0.000	3.238	6.040	8.579	12.154	16.604	26.574

CUTTING AREA (SQ.M) = 5.363
FILLING AREA (SQ.M) = 5.229

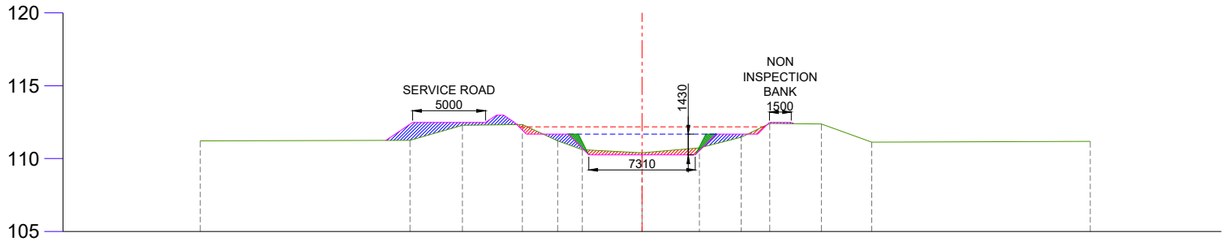
CH. : 18+500 KM
DESIGNED BED LEVEL = 110.269 M



EXIST. LEVEL (KM	111.050	111.092	112.159	112.211	111.077	110.478	110.261	110.596	111.288	112.253	112.215	110.946	111.011
OFFSET (KM	30.572	16.052	12.304	8.256	5.724	4.034	0.000	4.134	6.756	8.744	12.070	15.248	30.216

CUTTING AREA (SQ.M) = 2.723
FILLING AREA (SQ.M) = 5.831

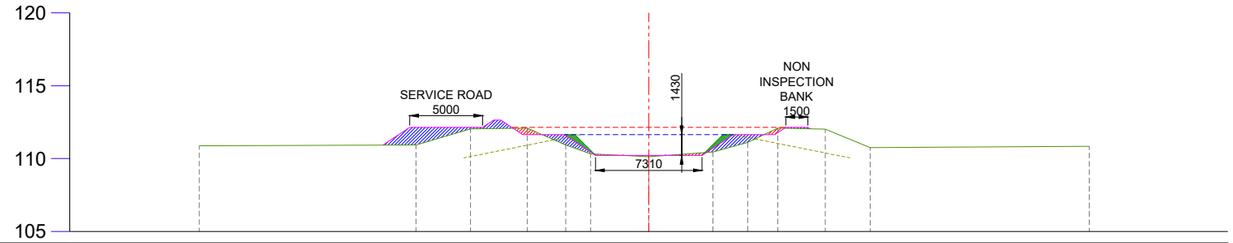
CH. : 18+700 KM
DESIGNED BED LEVEL = 110.235 M



EXIST. LEVEL (KM	111.209	111.245	112.277	112.333	111.215	110.617	110.389	110.728	111.467	112.410	112.375	111.126	111.172
OFFSET (KM	30.322	15.935	12.325	8.223	5.789	4.109	0.000	3.928	6.795	8.759	12.314	15.762	30.750

CUTTING AREA (SQ.M) = 2.846
FILLING AREA (SQ.M) = 7.067

CH. : 18+600 KM
DESIGNED BED LEVEL = 110.252 M



EXIST. LEVEL (KM	110.880	110.936	112.038	112.082	110.934	110.334	110.129	110.459	111.103	112.088	112.015	110.756	110.844
OFFSET (KM	30.849	15.984	12.239	8.344	5.710	3.992	0.000	4.392	6.782	8.859	12.113	15.199	30.235

CUTTING AREA (SQ.M) = 1.118
FILLING AREA (SQ.M) = 8.278

CH. : 18+800 KM
DESIGNED BED LEVEL = 110.217 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

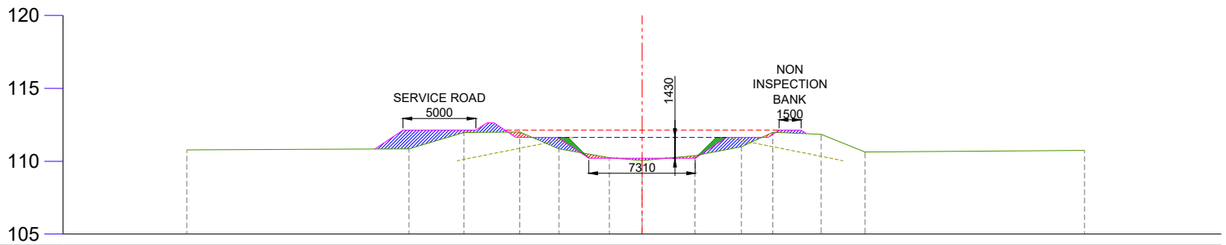
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 47 of 89

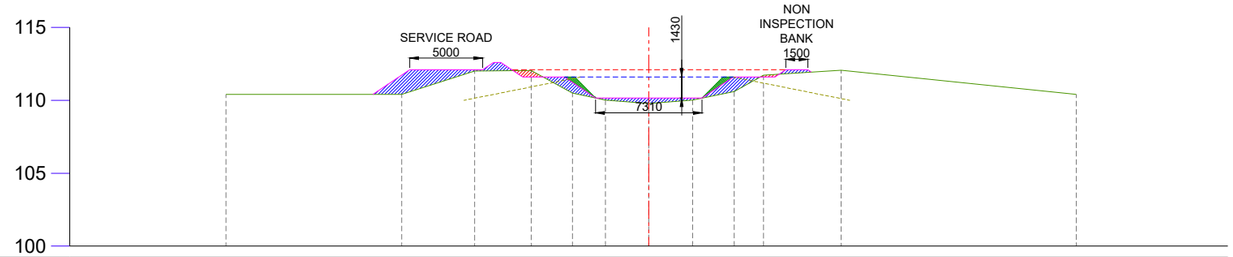
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	110.784	110.843	111.966	112.007	110.849	110.249	110.051	110.378	110.993	111.991	111.851	110.642	110.743
OFFSET (KM	31.244	16.008	12.228	8.402	5.699	2.250	0.000	3.622	6.820	8.975	12.290	15.297	30.363

CUTTING AREA (SQ.M) = 1.049
FILLING AREA (SQ.M) = 9.035

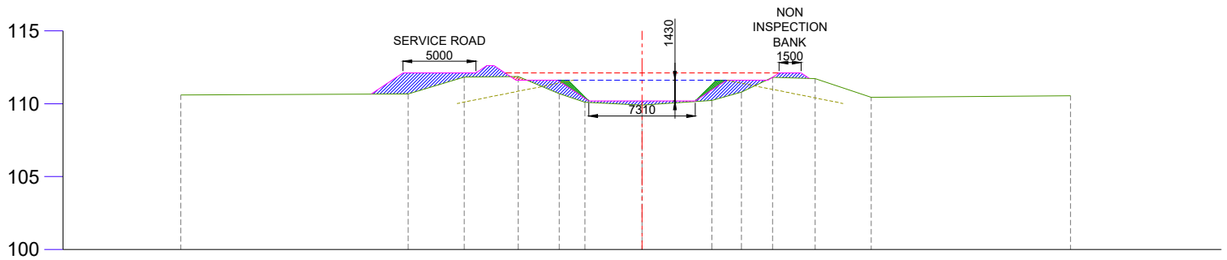
CH. : 18+900 KM
DESIGNED BED LEVEL = 110.200 M



EXIST. LEVEL (KM	110.415	110.415	112.004	112.052	110.504	110.010	109.781	110.021	110.598	111.719	112.063	110.401
OFFSET (KM	29.012	16.965	11.959	8.075	5.239	2.972	0.000	3.003	5.865	7.869	13.193	29.328

CUTTING AREA (SQ.M) = 0.759
FILLING AREA (SQ.M) = 12.200

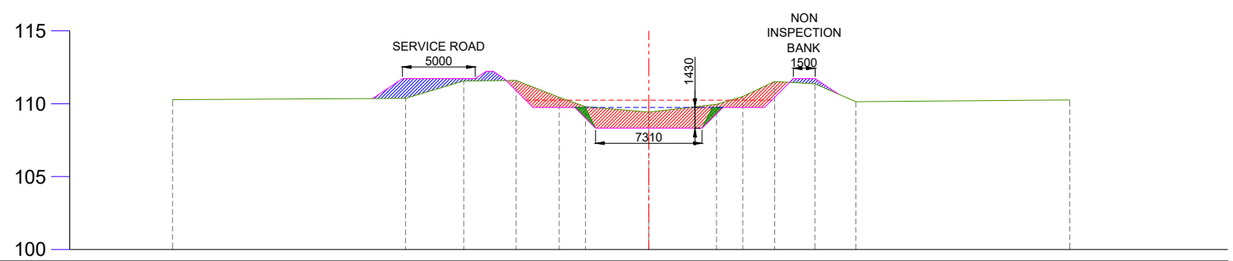
CH. : 19+100 KM
DESIGNED BED LEVEL = 110.166 M



EXIST. LEVEL (KM	110.597	110.675	111.835	111.869	110.694	110.094	109.908	110.231	110.795	111.817	111.724	110.439	110.549
OFFSET (KM	31.654	16.054	12.208	8.499	5.695	3.931	0.000	4.785	6.813	8.960	11.883	15.725	29.403

CUTTING AREA (SQ.M) = 0.181
FILLING AREA (SQ.M) = 13.757

CH. : 19+000 KM
DESIGNED BED LEVEL = 110.183 M



EXIST. LEVEL (KM	110.285	110.367	111.557	111.595	110.433	109.801	109.424	109.959	110.500	111.516	111.364	110.127	110.261
OFFSET (KM	32.691	16.689	12.704	9.098	6.152	4.344	0.000	4.650	6.455	8.633	11.406	14.207	28.896

CUTTING AREA (SQ.M) = 19.508
FILLING AREA (SQ.M) = 6.562

CH. : 19+200 KM
DESIGNED BED LEVEL = 108.320 M

LEGEND

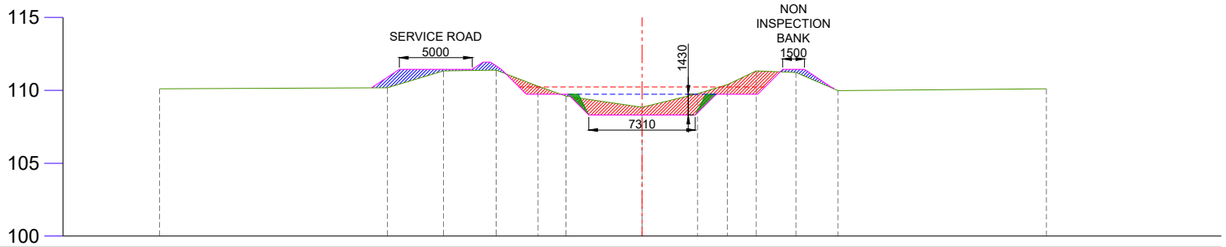
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 48 of 89

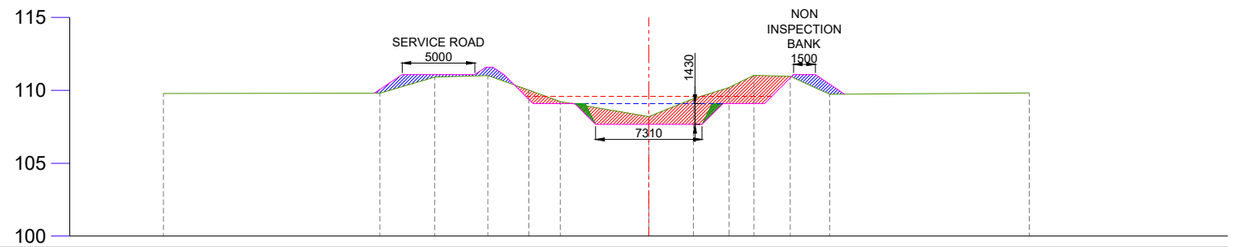
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	110.111	110.172	111.335	111.395	110.288	109.600	108.835	109.775	110.393	111.343	111.222	109.985	110.100
OFFSET (KM	33.126	17.474	13.636	10.021	7.149	5.216	0.000	3.802	5.851	7.839	10.556	13.443	27.758

CUTTING AREA (SQ.M) = 14.195
FILLING AREA (SQ.M) = 4.737

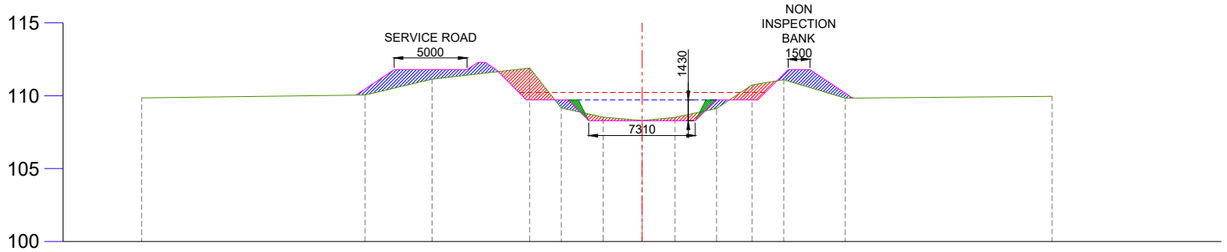
CH. : 19+300 KM
DESIGNED BED LEVEL = 108.303 M



EXIST. LEVEL (KM	109.785	109.804	110.915	111.018	110.020	109.227	108.206	109.437	110.197	111.029	110.963	109.732	109.813
OFFSET (KM	33.305	18.459	14.696	11.038	8.226	6.071	0.000	3.054	5.508	7.209	9.705	12.409	26.115

CUTTING AREA (SQ.M) = 18.457
FILLING AREA (SQ.M) = 5.431

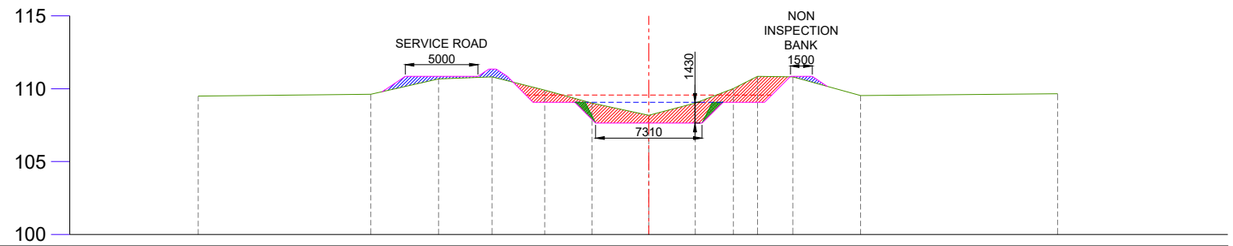
CH. : 19+500 KM
DESIGNED BED LEVEL = 107.659 M



EXIST. LEVEL (KM	109.847	110.054	111.125	111.907	109.150	108.531	108.293	108.521	109.115	110.738	111.093	109.825	109.952
OFFSET (KM	34.352	19.005	14.422	7.711	5.543	2.670	0.000	2.251	5.115	7.546	9.718	13.949	28.142

CUTTING AREA (SQ.M) = 8.199
FILLING AREA (SQ.M) = 11.738

CH. : 19+400 KM
DESIGNED BED LEVEL = 108.286 M



EXIST. LEVEL (KM	109.501	109.610	110.677	110.805	109.901	109.014	108.177	109.014	110.015	110.850	110.816	109.521	109.657
OFFSET (KM	30.929	19.076	14.422	10.755	7.153	3.909	0.000	3.180	5.799	7.461	9.880	14.536	28.045

CUTTING AREA (SQ.M) = 17.635
FILLING AREA (SQ.M) = 3.293

CH. : 19+600 KM
DESIGNED BED LEVEL = 107.642 M

LEGEND

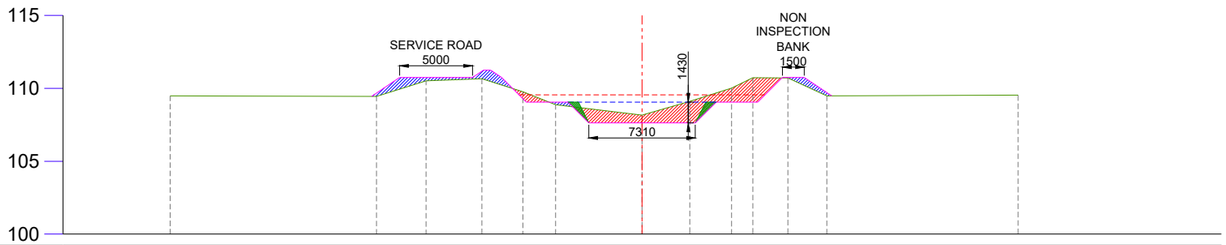
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 49 of 89

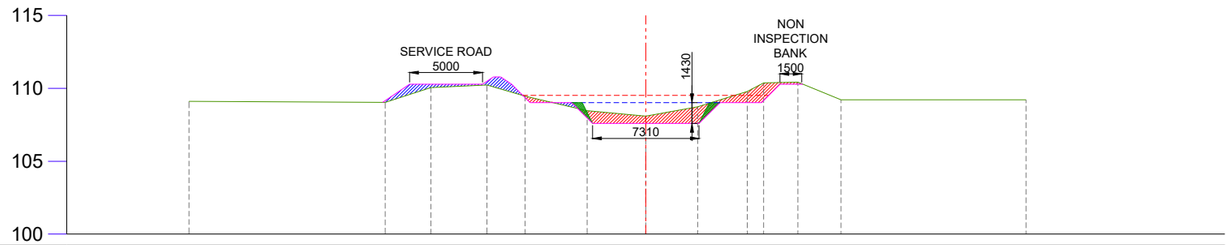
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	109.473	109.454	110.517	110.663	109.766	108.874	108.157	109.116	110.011	110.729	110.716	109.489	109.535
OFFSET (KM	32.390	18.235	14.825	11.003	8.188	5.934	0.000	3.279	6.139	7.610	10.011	12.677	25.803

CUTTING AREA (SQ.M) = 14.294
FILLING AREA (SQ.M) = 4.862

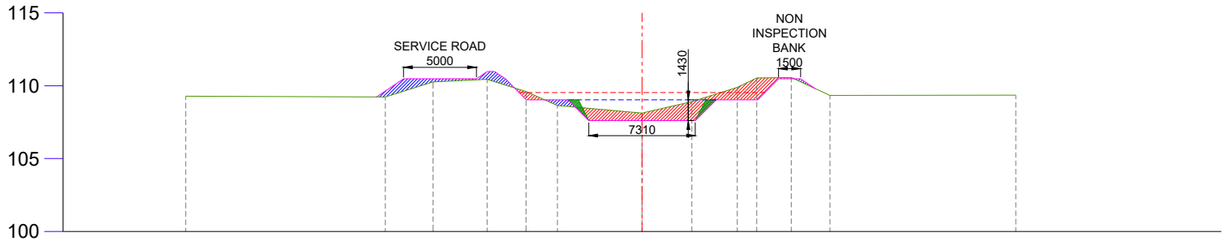
CH. : 19+700 KM
DESIGNED BED LEVEL = 107.624 M



EXIST. LEVEL (KM	109.101	109.039	110.044	110.238	109.464	108.459	108.099	108.741	109.792	110.379	110.427	109.207	109.219
OFFSET (KM	31.352	17.895	14.754	10.901	8.281	4.024	0.000	3.561	6.959	8.077	10.432	13.386	26.087

CUTTING AREA (SQ.M) = 10.318
FILLING AREA (SQ.M) = 3.540

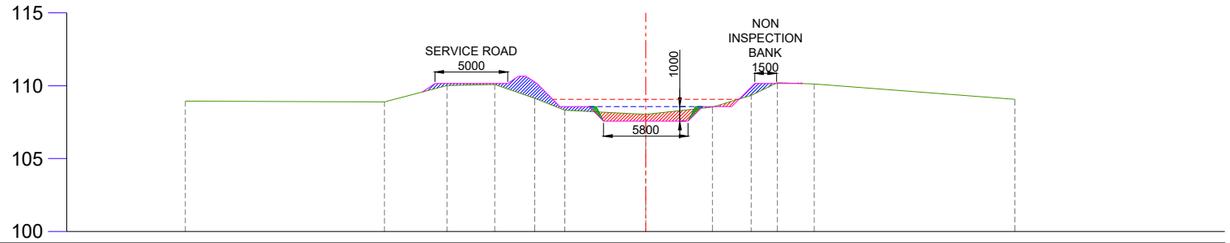
CH. : 19+900 KM
DESIGNED BED LEVEL = 107.590 M



EXIST. LEVEL (KM	109.275	109.230	110.262	110.431	109.601	108.647	108.125	108.909	109.890	110.536	110.555	109.331	109.356
OFFSET (KM	31.313	17.617	14.339	10.635	7.963	5.816	0.000	3.416	6.534	7.862	10.231	12.889	25.638

CUTTING AREA (SQ.M) = 11.961
FILLING AREA (SQ.M) = 4.208

CH. : 19+800 KM
DESIGNED BED LEVEL = 107.607 M



EXIST. LEVEL (KM	108.936	108.891	110.007	110.083	109.136	108.312	108.034	108.535	109.327	110.199	110.124	109.069
OFFSET (KM	31.595	17.933	13.651	10.366	7.633	5.555	0.000	4.569	7.229	9.026	11.553	25.321

CUTTING AREA (SQ.M) = 4.235
FILLING AREA (SQ.M) = 5.482

CH. : 20+000 KM
DESIGNED BED LEVEL = 107.573 M

LEGEND

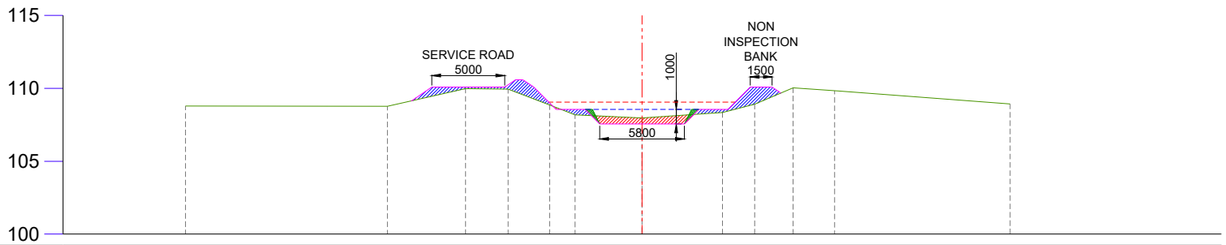
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 50 of 89

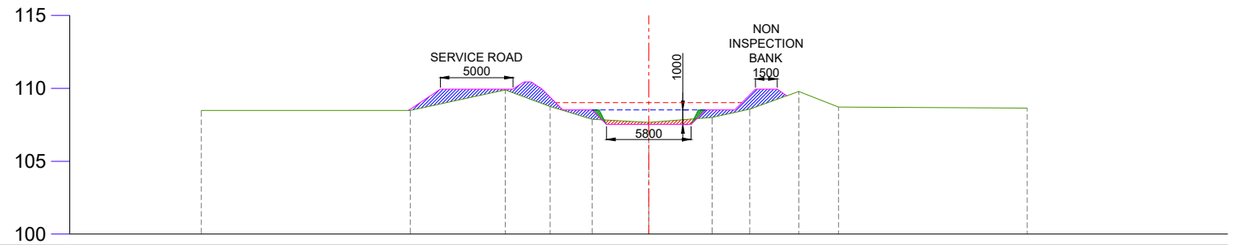
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	108.795	108.764	109.976	109.949	108.852	108.187	107.976	108.349	108.906	110.035	109.846	108.937
OFFSET (KM	31.335	17.470	12.109	9.202	6.345	4.598	0.000	5.525	7.733	10.367	13.216	25.247

CUTTING AREA (SQ.M) = 3.318
FILLING AREA (SQ.M) = 7.408

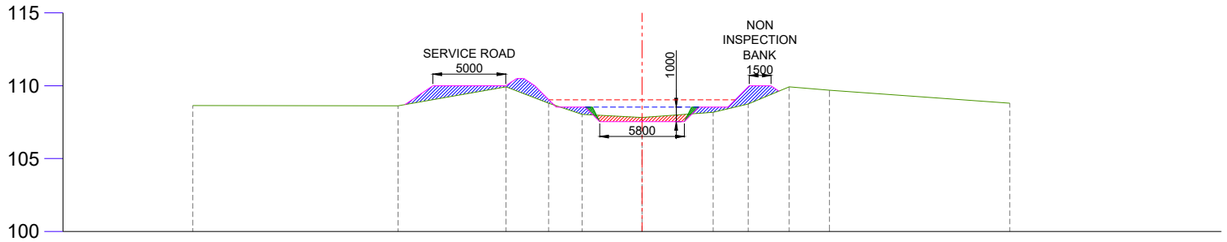
CH. : 20+100 KM
DESIGNED BED LEVEL = 107.555 M



EXIST. LEVEL (KM	108.484	108.483	109.888	108.753	107.887	107.665	107.996	108.565	109.781	108.713	108.651	
OFFSET (KM	30.720	16.372	9.856	6.771	3.886	0.000	4.342	6.921	10.287	13.026	25.964	

CUTTING AREA (SQ.M) = 1.519
FILLING AREA (SQ.M) = 10.671

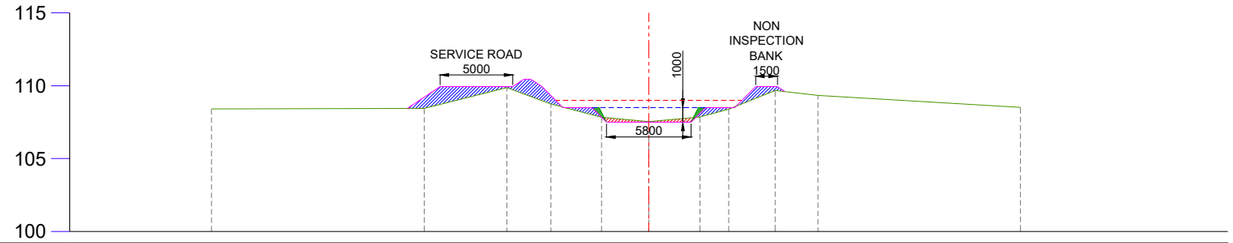
CH. : 20+300 KM
DESIGNED BED LEVEL = 107.521 M



EXIST. LEVEL (KM	108.645	108.628	109.919	108.804	108.041	107.825	108.178	108.741	109.913	109.683	108.799	
OFFSET (KM	30.841	16.743	9.345	6.409	4.123	0.000	4.877	7.284	10.096	12.860	25.228	

CUTTING AREA (SQ.M) = 2.445
FILLING AREA (SQ.M) = 9.393

CH. : 20+200 KM
DESIGNED BED LEVEL = 107.538 M



EXIST. LEVEL (KM	108.405	108.451	109.863	108.751	107.842	107.539	107.862	108.392	109.680	109.331	108.508	
OFFSET (KM	30.018	15.409	9.749	6.712	3.244	0.000	3.507	5.485	8.666	11.610	25.504	

CUTTING AREA (SQ.M) = 1.094
FILLING AREA (SQ.M) = 9.701

CH. : 20+400 KM
DESIGNED BED LEVEL = 107.504 M

LEGEND

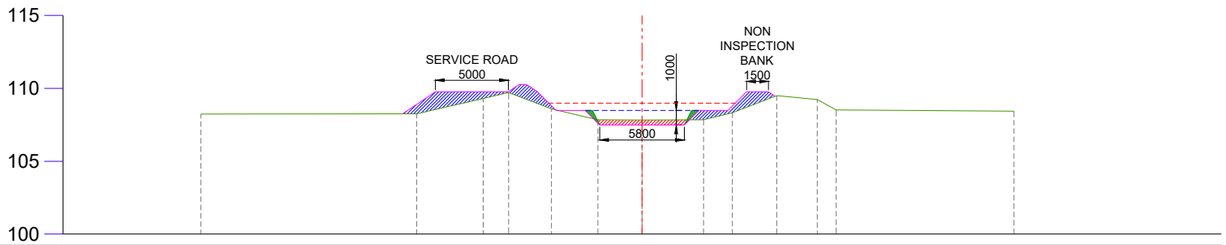
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 51 of 89

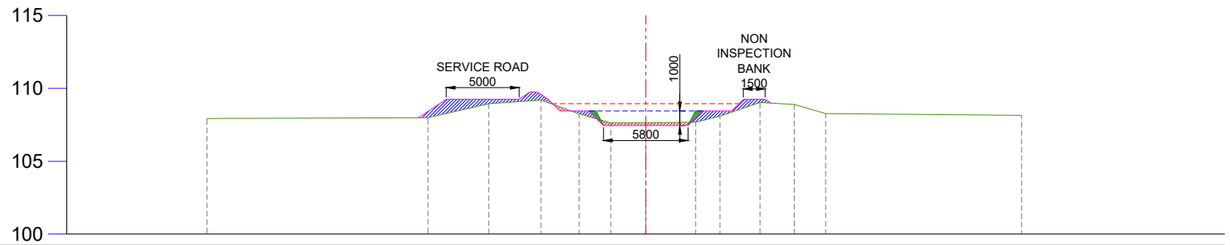
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	108.233	108.258	109.298	109.707	108.598	107.834	107.817	107.850	108.318	109.508	109.231	108.513	108.424
OFFSET (KM	30.287	15.467	10.901	9.168	6.224	3.026	0.000	4.218	6.192	9.238	12.020	13.322	25.517

CUTTING AREA (SQ.M) = 2.111
FILLING AREA (SQ.M) = 9.942

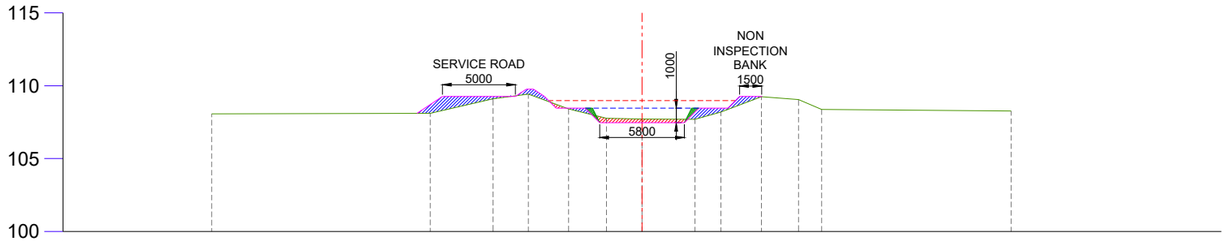
CH. : 20+500 KM
DESIGNED BED LEVEL = 107.486 M



EXIST. LEVEL (KM	107.939	107.991	108.939	109.200	108.246	107.631	107.630	107.674	108.090	109.028	108.901	108.274	108.149
OFFSET (KM	30.129	14.946	10.775	7.190	4.580	2.405	0.000	3.418	5.093	7.835	10.178	12.341	25.788

CUTTING AREA (SQ.M) = 1.382
FILLING AREA (SQ.M) = 6.621

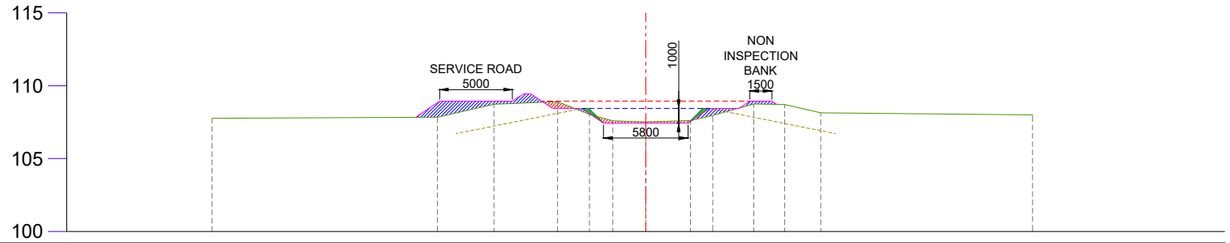
CH. : 20+700 KM
DESIGNED BED LEVEL = 107.452 M



EXIST. LEVEL (KM	108.067	108.107	109.096	109.430	108.399	107.771	107.715	107.694	108.190	109.249	109.046	108.379	108.269
OFFSET (KM	29.530	14.544	10.235	7.811	5.050	2.453	0.000	3.637	5.403	8.185	10.742	12.319	25.334

CUTTING AREA (SQ.M) = 1.794
FILLING AREA (SQ.M) = 5.822

CH. : 20+600 KM
DESIGNED BED LEVEL = 107.469 M



EXIST. LEVEL (KM	107.764	107.834	108.730	108.902	108.042	107.585	107.524	107.597	107.960	108.751	108.710	108.135	107.991
OFFSET (KM	29.776	14.307	10.424	6.057	3.871	2.269	0.000	3.056	4.593	7.413	9.523	11.996	26.548

CUTTING AREA (SQ.M) = 1.582
FILLING AREA (SQ.M) = 5.704

CH. : 20+800 KM
DESIGNED BED LEVEL = 107.435 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

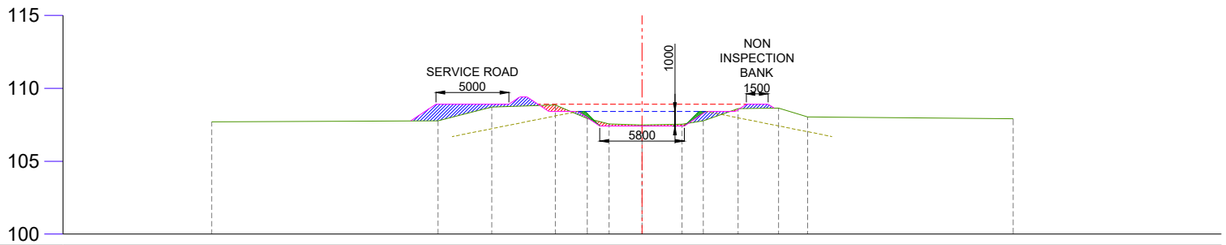
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 52 of 89

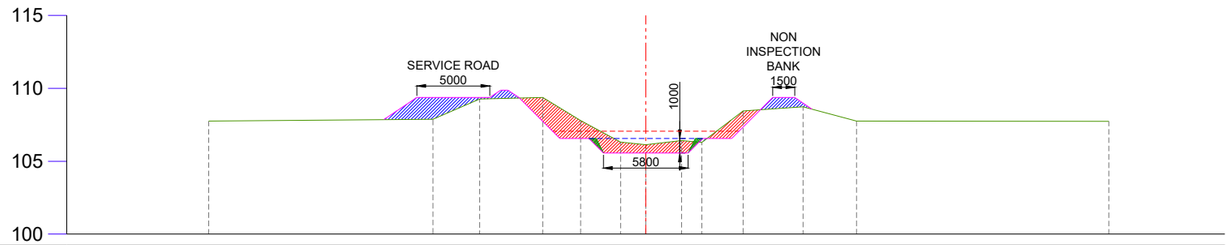
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	107.693	107.779	108.708	108.855	107.933	107.486	107.532	107.764	108.608	108.648	108.041	107.906
OFFSET (KM	29.534	14.005	10.309	5.961	3.754	0.000	2.745	4.198	6.578	9.373	11.364	25.471

CUTTING AREA (SQ.M) = 1.364
FILLING AREA (SQ.M) = 6.320

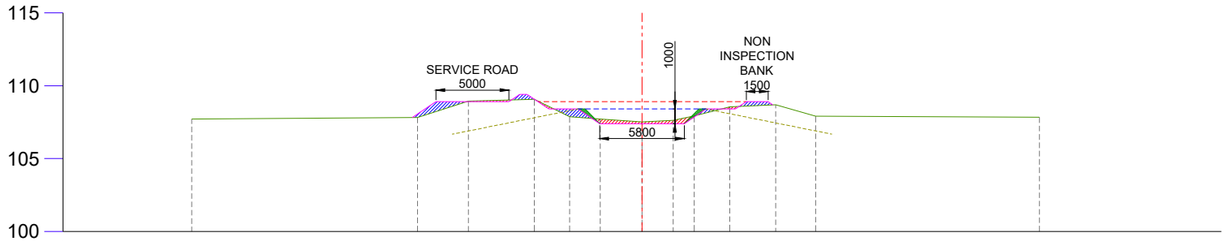
CH. : 20+900 KM
DESIGNED BED LEVEL = 107.417 M



EXIST. LEVEL (KM	107.750	107.887	109.264	109.369	107.795	106.307	106.125	106.410	106.301	108.454	108.738	107.755	107.738
OFFSET (KM	30.000	14.601	11.404	7.067	4.470	1.722	0.000	2.463	3.851	6.684	10.795	14.459	31.775

CUTTING AREA (SQ.M) = 15.253
FILLING AREA (SQ.M) = 8.512

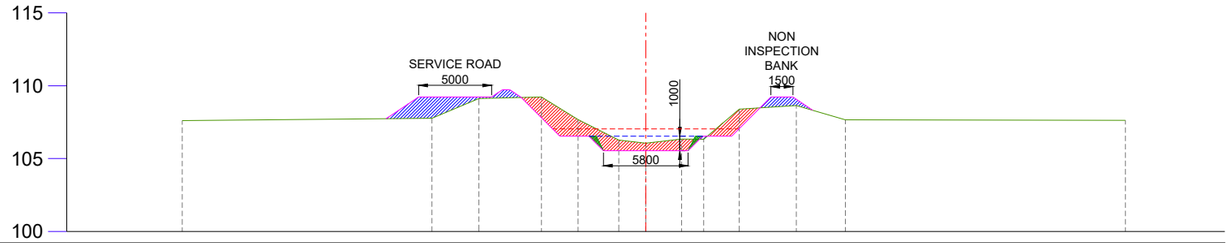
CH. : 21+100 KM
DESIGNED BED LEVEL = 105.555 M



EXIST. LEVEL (KM	107.716	107.824	108.943	109.066	107.873	107.710	107.512	107.615	107.925	108.543	108.688	107.912	107.829
OFFSET (KM	30.918	15.417	11.912	7.395	4.980	2.867	0.000	2.128	3.579	6.012	9.165	11.921	27.260

CUTTING AREA (SQ.M) = 1.911
FILLING AREA (SQ.M) = 3.307

CH. : 21+000 KM
DESIGNED BED LEVEL = 107.400 M



EXIST. LEVEL (KM	107.608	107.758	109.128	109.229	107.672	106.261	106.059	106.330	108.396	108.644	107.666	107.621
OFFSET (KM	31.814	14.682	11.449	7.154	4.647	1.856	0.000	3.970	6.409	10.334	13.691	32.914

CUTTING AREA (SQ.M) = 14.087
FILLING AREA (SQ.M) = 8.016

CH. : 21+200 KM
DESIGNED BED LEVEL = 105.538 M

LEGEND

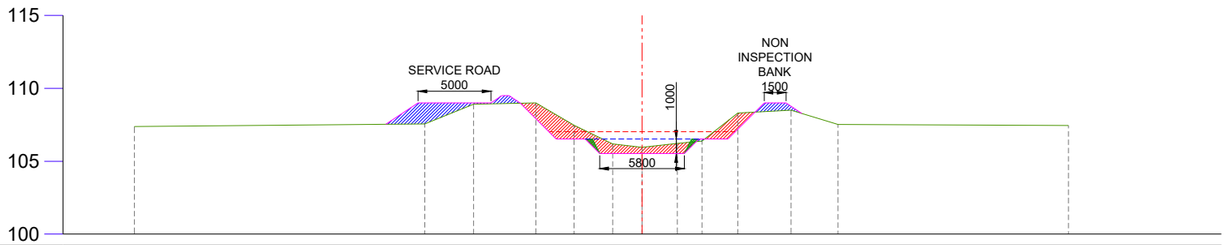
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 53 of 89

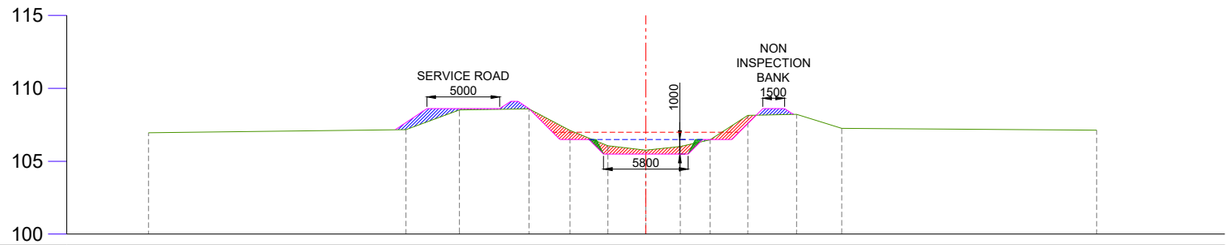
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	107.386	107.556	108.917	108.999	107.477	106.190	105.949	106.229	106.375	108.301	108.500	107.530	107.456
OFFSET (KM	34.850	14.918	11.568	7.281	4.666	2.020	0.000	2.426	4.106	6.565	10.222	13.438	29.264

CUTTING AREA (SQ.M) = 11.950
FILLING AREA (SQ.M) = 6.926

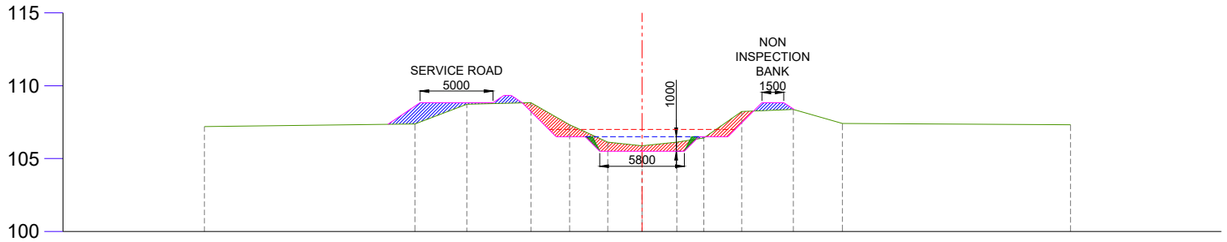
CH. : 21+300 KM
DESIGNED BED LEVEL = 105.520 M



EXIST. LEVEL (KM	106.956	107.168	108.511	108.599	107.108	106.053	105.760	106.016	106.463	108.137	108.221	107.263	107.135
OFFSET (KM	34.134	16.460	12.791	8.027	5.199	2.595	0.000	2.368	4.417	6.996	10.339	13.450	30.940

CUTTING AREA (SQ.M) = 6.938
FILLING AREA (SQ.M) = 4.111

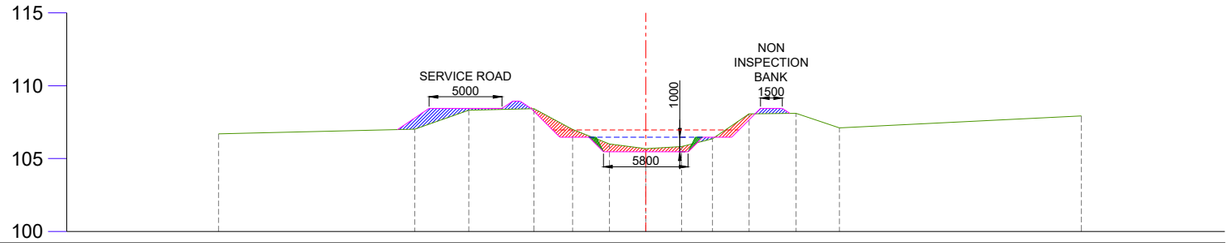
CH. : 21+500 KM
DESIGNED BED LEVEL = 105.486 M



EXIST. LEVEL (KM	107.192	107.383	108.736	108.833	107.316	106.130	105.870	106.136	106.414	108.233	108.377	107.413	107.314
OFFSET (KM	30.035	15.582	12.030	7.635	4.980	2.355	0.000	2.390	4.234	6.838	10.390	13.756	29.397

CUTTING AREA (SQ.M) = 9.497
FILLING AREA (SQ.M) = 5.815

CH. : 21+400 KM
DESIGNED BED LEVEL = 105.503 M



EXIST. LEVEL (KM	106.701	107.014	108.315	108.428	106.994	106.001	105.679	105.825	106.351	108.068	108.105	107.106	107.925
OFFSET (KM	29.331	15.848	12.154	7.686	5.031	2.498	0.000	2.455	4.580	7.080	10.320	13.282	29.882

CUTTING AREA (SQ.M) = 5.892
FILLING AREA (SQ.M) = 4.846

CH. : 21+600 KM
DESIGNED BED LEVEL = 105.469 M

LEGEND

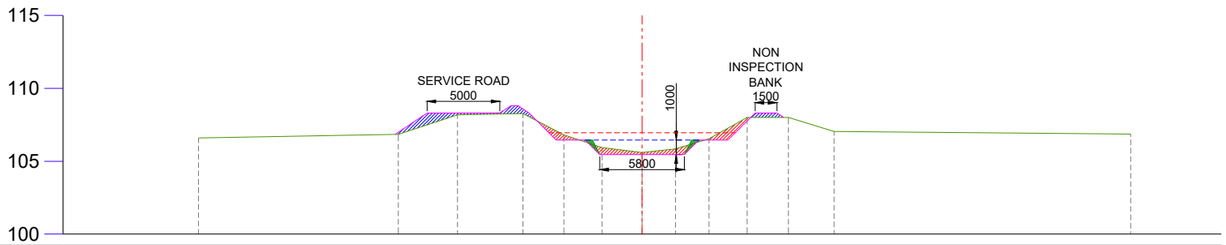
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 54 of 89

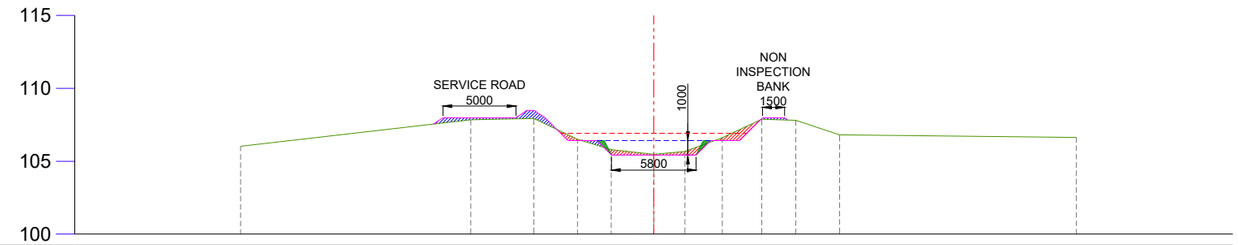
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	106.603	106.848	108.175	108.263	106.803	105.942	105.600	105.845	106.534	108.000	107.997	107.046	106.868
OFFSET (KM	30.442	16.734	12.665	8.186	5.357	2.753	0.000	2.292	4.598	7.218	10.040	13.182	33.538

CUTTING AREA (SQ.M) = 4.502
FILLING AREA (SQ.M) = 3.776

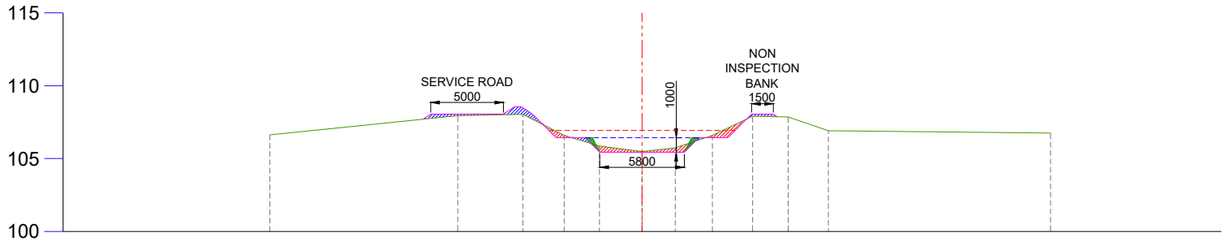
CH. : 21+700 KM
DESIGNED BED LEVEL = 105.451 M



EXIST. LEVEL (KM	106.024	107.837	107.938	106.512	105.790	105.465	105.667	106.609	107.873	107.811	106.815	106.635	
OFFSET (KM	28.362	12.553	8.239	5.236	2.919	0.000	2.133	4.699	7.406	9.735	12.748	29.004	

CUTTING AREA (SQ.M) = 3.038
FILLING AREA (SQ.M) = 2.496

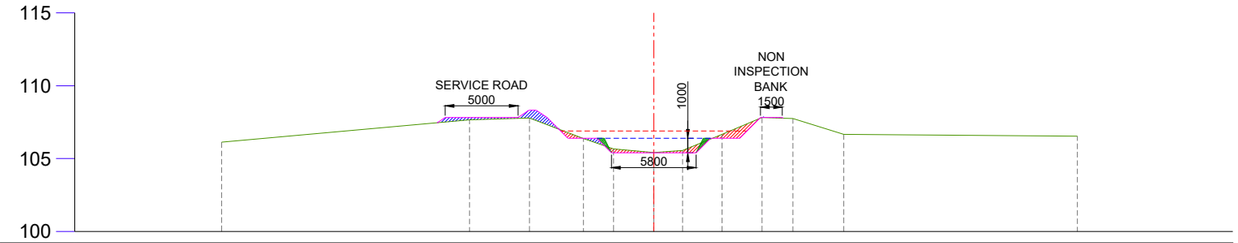
CH. : 21+900 KM
DESIGNED BED LEVEL = 105.417 M



EXIST. LEVEL (KM	106.629	107.949	108.034	106.599	105.866	105.491	105.728	106.582	107.908	107.849	106.905	106.751	
OFFSET (KM	25.555	12.654	8.183	5.345	2.917	0.000	2.285	4.830	7.588	10.029	12.779	28.042	

CUTTING AREA (SQ.M) = 2.947
FILLING AREA (SQ.M) = 2.074

CH. : 21+800 KM
DESIGNED BED LEVEL = 105.434 M



EXIST. LEVEL (KM	106.136	107.652	107.781	106.370	105.666	105.423	105.565	106.653	107.818	107.751	106.670	106.539	
OFFSET (KM	29.664	12.649	8.529	4.837	2.767	0.000	1.972	4.682	7.427	9.542	13.042	29.074	

CUTTING AREA (SQ.M) = 2.781
FILLING AREA (SQ.M) = 2.399

CH. : 22+000 KM
DESIGNED BED LEVEL = 105.400 M

LEGEND

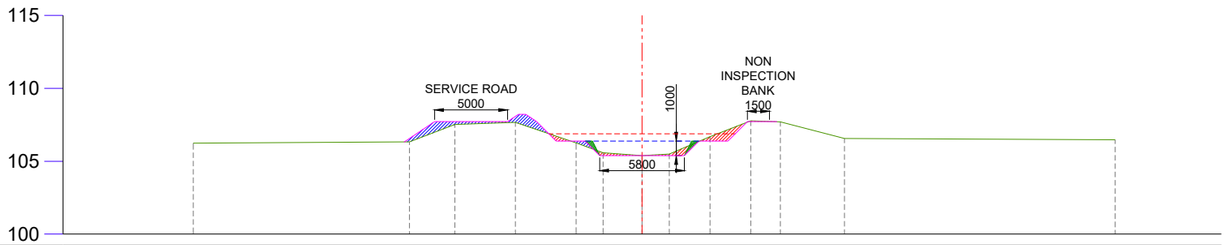
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 55 of 89

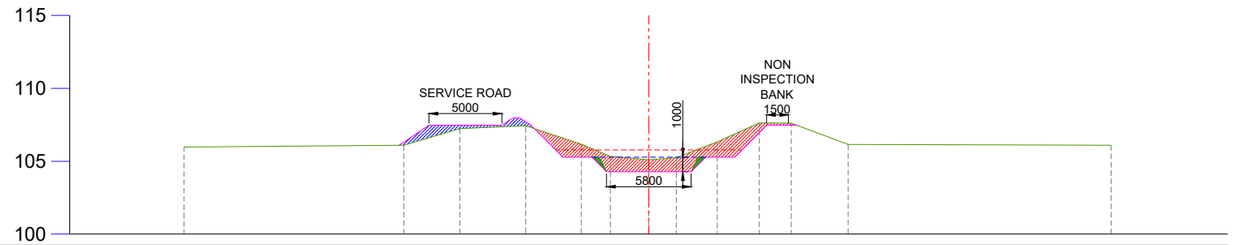
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	106.247	106.320	107.517	107.667	106.265	105.575	105.392	105.492	106.685	107.778	107.708	106.566		106.467
OFFSET (KM	30.795	15.968	12.842	8.691	4.533	2.671	0.000	1.862	4.664	7.465	9.498	13.889		32.462

CUTTING AREA (SQ.M) = 2.718
FILLING AREA (SQ.M) = 3.592

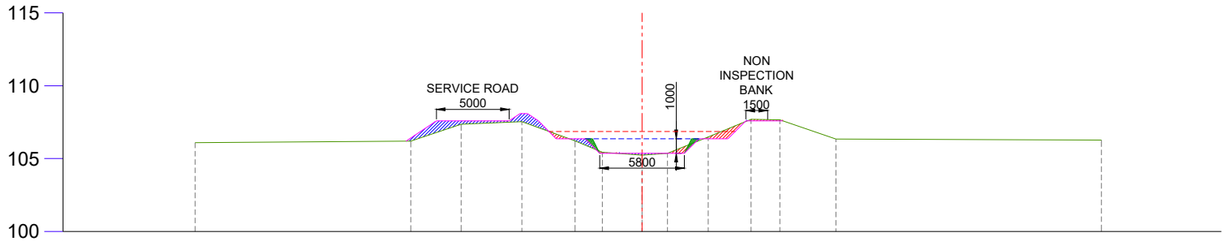
CH. : 22+100 KM
DESIGNED BED LEVEL = 105.382 M



EXIST. LEVEL (KM	105.971	106.103	107.236	107.425	106.170	105.330	105.093	105.242	106.330	107.635	107.611	106.156		106.099
OFFSET (KM	31.904	16.812	12.976	8.450	4.639	2.646	0.000	1.895	4.692	7.591	9.776	13.673		31.718

CUTTING AREA (SQ.M) = 15.377
FILLING AREA (SQ.M) = 3.397

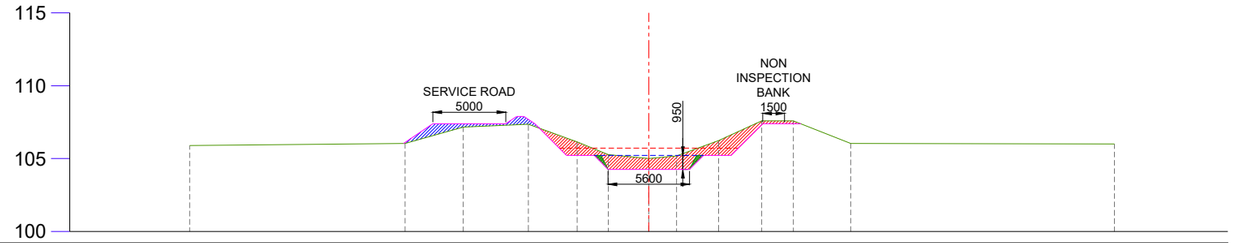
CH. : 22+300 KM
DESIGNED BED LEVEL = 104.282 M



EXIST. LEVEL (KM	106.092	106.200	107.361	107.540	106.213	105.441	105.235	105.355	106.490	107.703	107.655	106.343		106.268
OFFSET (KM	30.685	15.883	12.412	8.248	4.595	2.723	0.000	1.744	4.542	7.472	9.446	13.301		31.520

CUTTING AREA (SQ.M) = 1.925
FILLING AREA (SQ.M) = 4.077

CH. : 22+200 KM
DESIGNED BED LEVEL = 105.365 M



EXIST. LEVEL (KM	105.889	106.042	107.157	107.359	106.144	105.265	105.013	105.175	106.234	107.596	107.585	106.046		105.998
OFFSET (KM	31.508	16.731	12.736	8.265	4.924	2.782	0.000	1.902	4.797	7.742	9.927	13.857		31.950

CUTTING AREA (SQ.M) = 13.450
FILLING AREA (SQ.M) = 3.216

CH. : 22+400 KM
DESIGNED BED LEVEL = 104.265 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

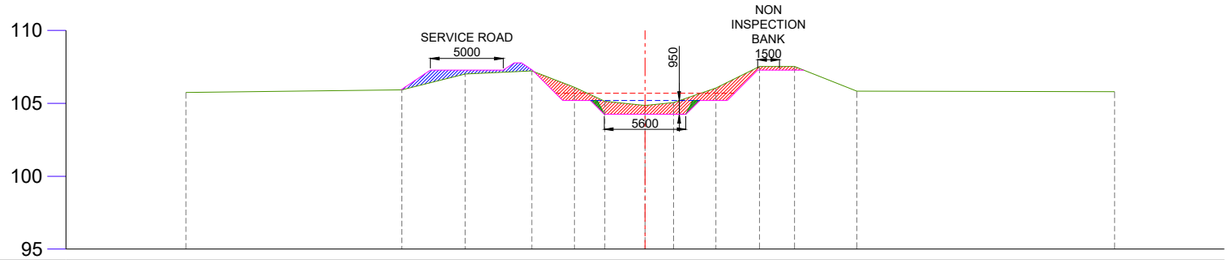
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 56 of 89

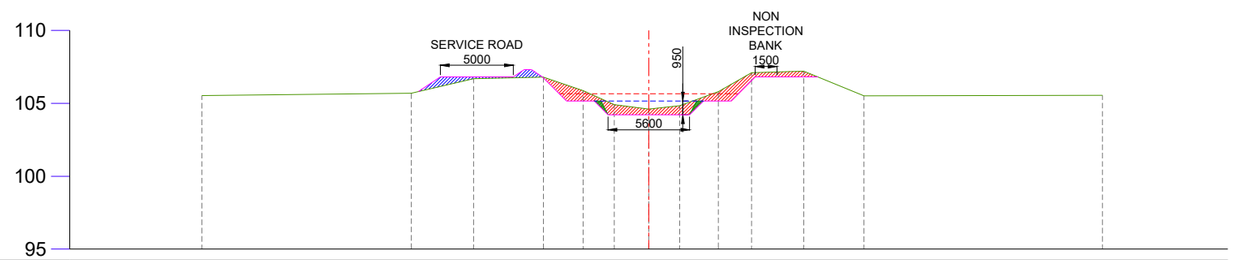
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	105.744	105.928	107.010	107.232	106.094	105.137	104.857	105.043	106.048	107.522	107.535	105.832	105.808
OFFSET (KM	31.512	16.702	12.346	7.778	4.841	2.758	0.000	1.959	4.861	7.852	10.253	14.536	32.223

CUTTING AREA (SQ.M) = 12.121
FILLING AREA (SQ.M) = 3.571

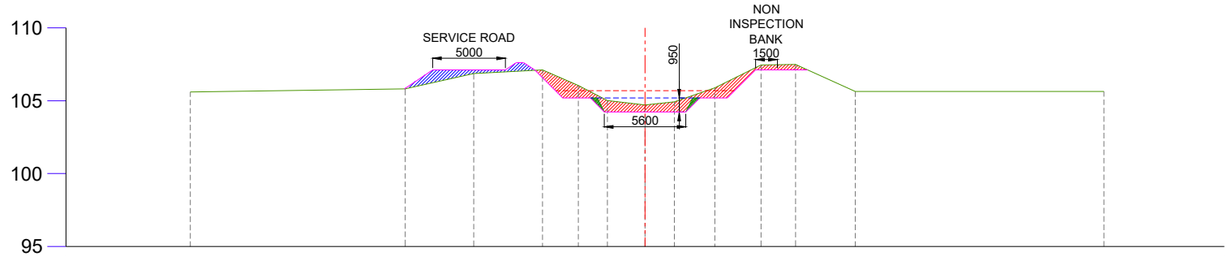
CH. : 22+500 KM
DESIGNED BED LEVEL = 104.248 M



EXIST. LEVEL (KM	105.536	105.692	106.686	106.796	105.879	104.916	104.603	104.831	105.801	107.102	107.210	105.507	105.544
OFFSET (KM	30.670	16.308	12.022	7.230	4.500	2.373	0.000	2.114	4.769	7.052	10.631	14.772	31.142

CUTTING AREA (SQ.M) = 10.596
FILLING AREA (SQ.M) = 2.346

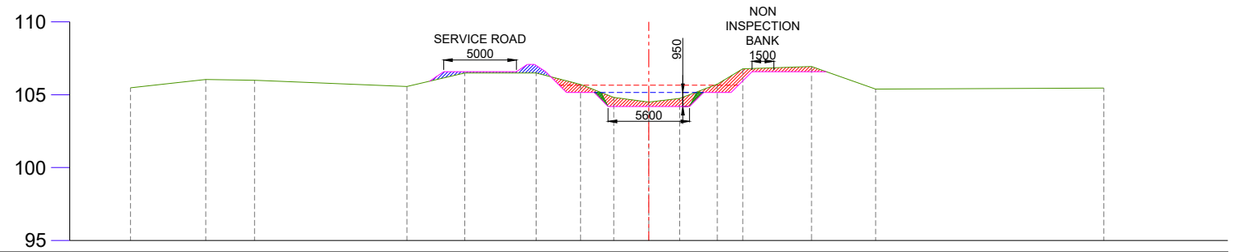
CH. : 22+700 KM
DESIGNED BED LEVEL = 104.213 M



EXIST. LEVEL (KM	105.603	105.821	106.871	107.113	106.048	105.017	104.712	104.923	105.879	107.453	107.489	105.632	105.636
OFFSET (KM	31.214	16.466	11.754	7.036	4.579	2.580	0.000	2.001	4.796	7.961	10.321	14.419	31.482

CUTTING AREA (SQ.M) = 11.734
FILLING AREA (SQ.M) = 3.622

CH. : 22+600 KM
DESIGNED BED LEVEL = 104.230 M



EXIST. LEVEL (KM	105.468	106.045	105.995	105.561	106.497	106.492	105.708	104.814	104.500	104.739	105.724	106.768	106.930	105.381	105.453
OFFSET (KM	35.576	30.408	27.069	16.600	12.639	7.737	4.683	2.414	0.000	2.109	4.706	6.439	11.172	15.569	31.216

CUTTING AREA (SQ.M) = 8.784
FILLING AREA (SQ.M) = 1.751

CH. : 22+800 KM
DESIGNED BED LEVEL = 104.196 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

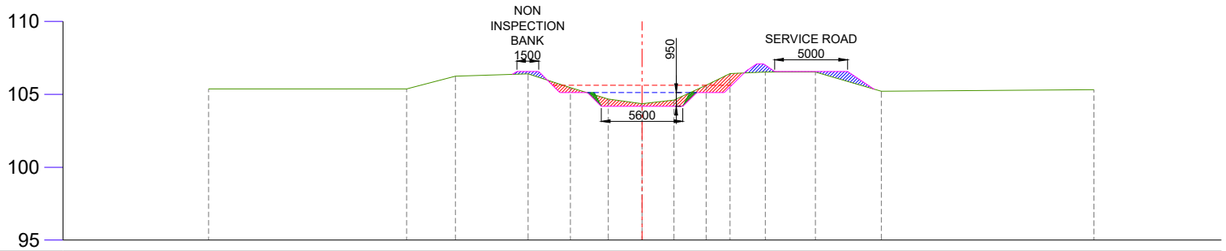
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 57 of 89

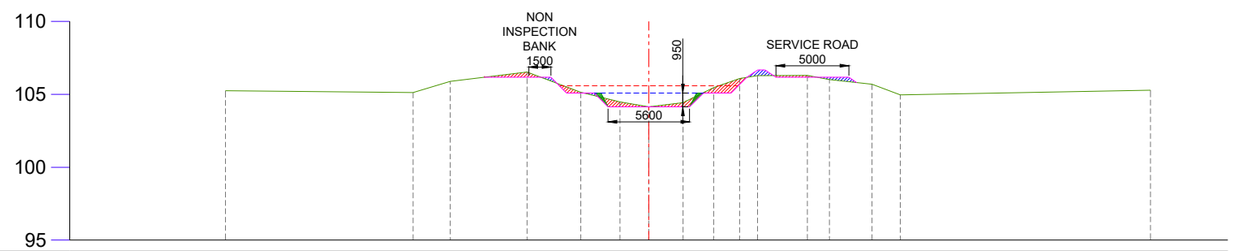
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	105.375	105.381	106.239	106.407	105.469	104.671	104.352	104.611	105.616	106.431	106.530	106.539	105.204	105.327	
OFFSET (KM	29.752	16.165	12.816	7.816	4.920	2.326	0.000	2.190	4.391	6.034	8.452	11.900	16.416	31.004	

CUTTING AREA (SQ.M) = 5.651
FILLING AREA (SQ.M) = 2.777

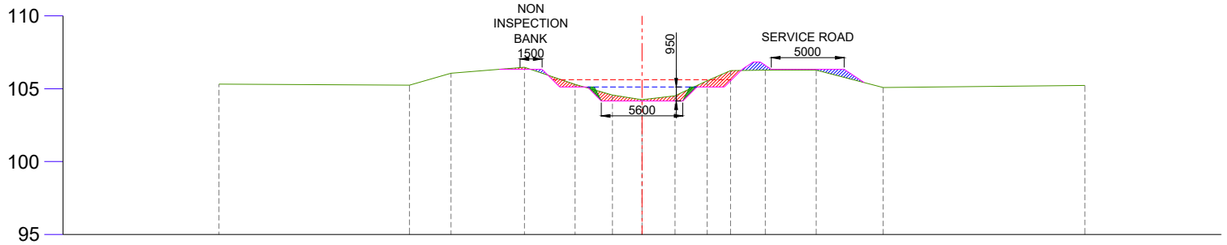
CH. : 22+900 KM
DESIGNED BED LEVEL = 104.179 M



EXIST. LEVEL (KM	105.245	105.131	105.883	106.532	105.144	104.478	104.149	104.436	105.469	106.089	106.281	106.291	106.011	105.693	104.962	105.278
OFFSET (KM	29.047	16.181	13.632	8.356	4.666	1.971	0.000	2.341	4.448	6.229	7.454	10.874	12.400	15.319	17.255	34.439

CUTTING AREA (SQ.M) = 4.377
FILLING AREA (SQ.M) = 1.121

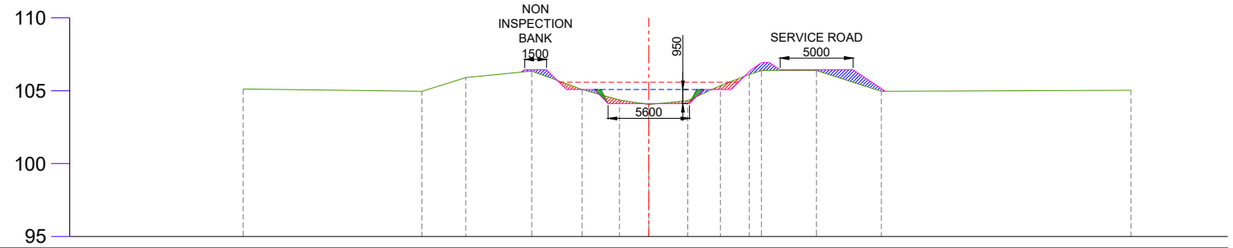
CH. : 23+100 KM
DESIGNED BED LEVEL = 104.144 M



EXIST. LEVEL (KM	105.306	105.251	106.053	106.473	105.302	104.572	104.243	104.520	105.540	106.249	106.272	106.269	105.080	105.233
OFFSET (KM	29.034	15.966	13.111	8.071	4.601	2.037	0.000	2.265	4.466	6.074	8.451	11.942	16.541	30.376

CUTTING AREA (SQ.M) = 4.713
FILLING AREA (SQ.M) = 2.075

CH. : 23+000 KM
DESIGNED BED LEVEL = 104.161 M



EXIST. LEVEL (KM	105.112	104.965	105.906	106.346	105.088	104.364	104.052	104.320	105.355	106.115	106.384	106.391	104.953	105.028	
OFFSET (KM	27.837	15.564	12.555	8.043	4.582	2.014	0.000	2.674	4.921	6.890	7.735	11.498	15.959	33.086	

CUTTING AREA (SQ.M) = 1.861
FILLING AREA (SQ.M) = 4.055

CH. : 23+200 KM
DESIGNED BED LEVEL = 104.127 M

LEGEND

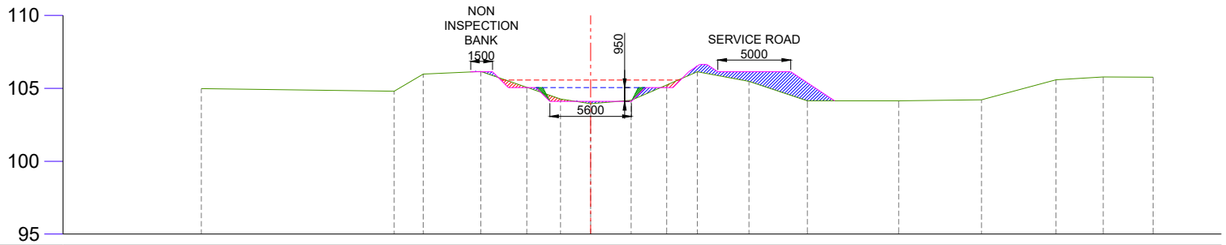
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 58 of 89

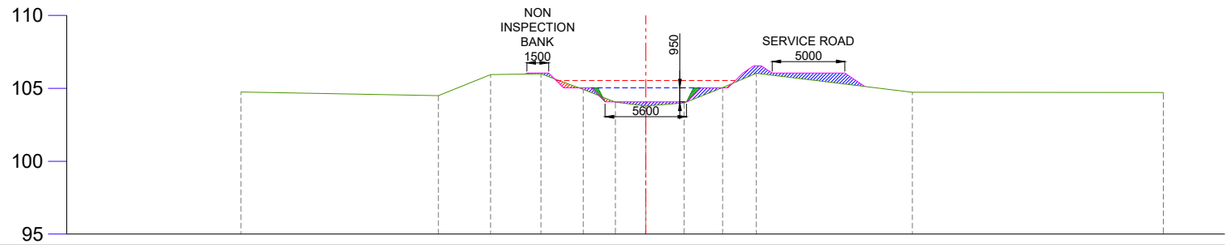
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	104.981	104.805	105.971	106.156	105.064	104.274	103.955	104.181	105.224	106.142	105.471	104.142	104.135	104.218	105.581	105.776	105.758
OFFSET (KM	26.714	13.489	11.482	7.534	4.380	2.057	0.000	2.782	5.228	7.325	10.862	14.886	21.147	26.838	31.936	35.179	38.613

CUTTING AREA (SQ.M) = 1.157
FILLING AREA (SQ.M) = 8.973

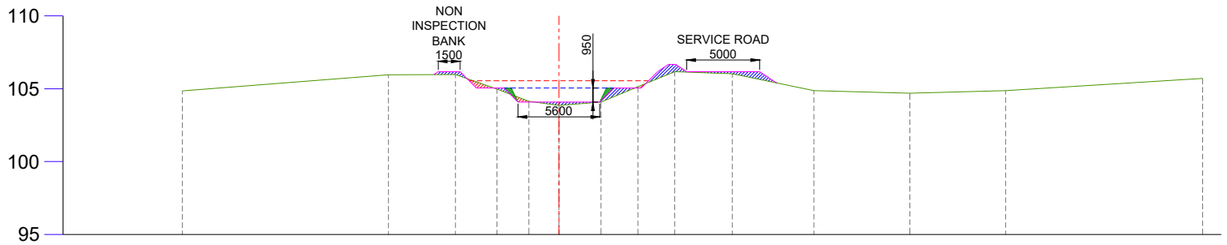
CH. : 23+300 KM
DESIGNED BED LEVEL = 104.110 M



EXIST. LEVEL (KM	104.748	104.500	105.948	105.993	104.932	104.045	103.784	104.005	105.044	106.039	104.730	104.715
OFFSET (KM	27.793	14.232	10.656	7.190	4.301	2.090	0.000	2.640	5.277	7.591	18.296	35.519

CUTTING AREA (SQ.M) = 0.549
FILLING AREA (SQ.M) = 5.643

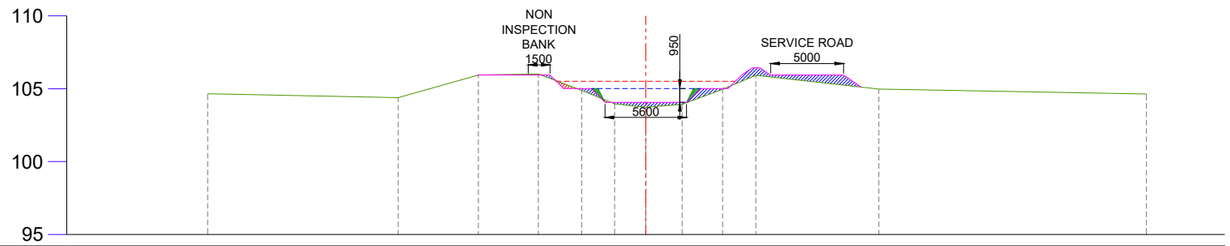
CH. :23+500 KM
DESIGNED BED LEVEL = 104.075 M



EXIST. LEVEL (KM	104.852	105.953	105.970	104.975	104.132	103.859	104.092	105.129	106.168	106.023	104.870	104.698	104.863	105.702
OFFSET (KM	25.832	11.696	7.091	4.244	2.054	0.000	2.886	5.426	7.949	11.904	17.501	24.086	30.672	44.192

CUTTING AREA (SQ.M) = 0.693
FILLING AREA (SQ.M) = 4.174

CH. : 23+400 KM
DESIGNED BED LEVEL = 104.092 M



EXIST. LEVEL (KM	104.659	104.391	105.945	106.012	104.893	103.966	103.720	103.926	104.965	105.927	104.970	104.635
OFFSET (KM	30.066	16.987	11.497	7.383	4.396	2.135	0.000	2.499	5.269	7.545	16.000	34.354

CUTTING AREA (SQ.M) = 0.578
FILLING AREA (SQ.M) = 5.749

CH. : 23+600 KM
DESIGNED BED LEVEL = 104.058 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

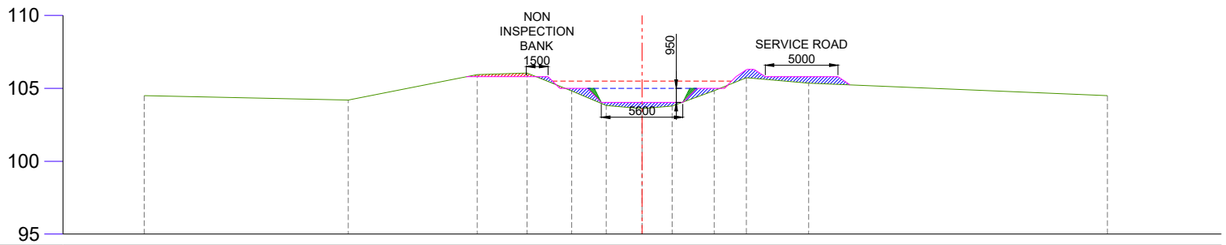
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 59 of 89

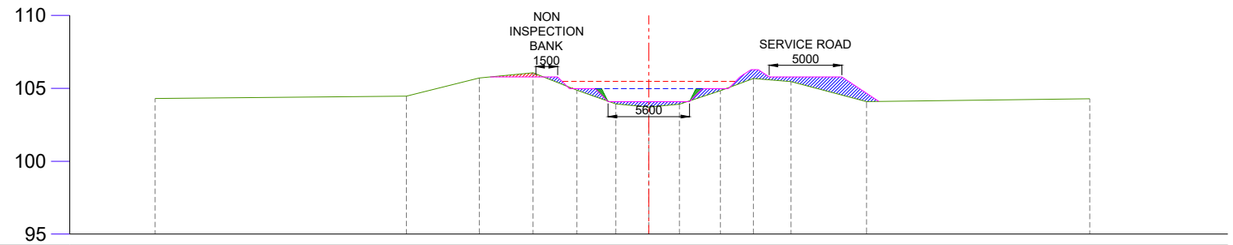
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	104.502	104.188	105.938	106.047	104.827	103.830	103.607	103.792	104.833	105.735	105.362	104.503
OFFSET (KM	34.178	20.162	11.316	7.895	4.835	2.465	0.000	2.062	4.940	7.154	11.431	31.929

CUTTING AREA (SQ.M) = 0.916
FILLING AREA (SQ.M) = 6.444

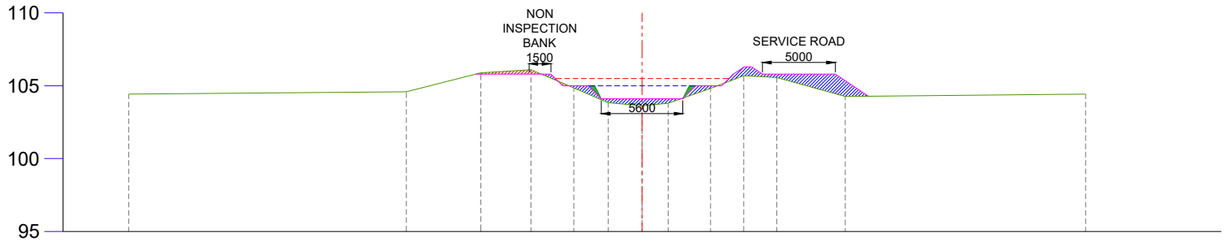
CH. : 23+700 KM
DESIGNED BED LEVEL = 104.041 M



EXIST. LEVEL (KM	104.309	104.458	105.707	106.059	104.875	103.934	103.711	103.904	104.846	105.672	105.470	104.090	104.284
OFFSET (KM	33.877	16.640	11.635	7.947	4.939	2.269	0.000	2.106	4.923	7.169	9.753	14.943	30.269

CUTTING AREA (SQ.M) = 0.551
FILLING AREA (SQ.M) = 8.953

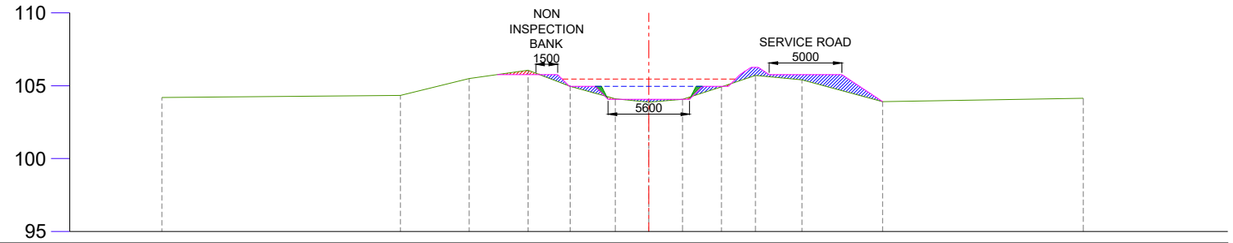
CH. : 23+900 KM
DESIGNED BED LEVEL = 103.092 M



EXIST. LEVEL (KM	104.399	104.547	105.857	106.062	104.817	103.811	103.600	103.775	104.791	105.653	105.525	104.237	104.399
OFFSET (KM	35.245	16.187	11.072	7.624	4.698	2.319	0.000	1.795	4.706	6.979	9.248	13.941	30.431

CUTTING AREA (SQ.M) = 0.882
FILLING AREA (SQ.M) = 9.413

CH. : 23+800 KM
DESIGNED BED LEVEL = 103.109 M



EXIST. LEVEL (KM	104.185	104.340	105.492	106.056	104.951	104.094	103.862	104.070	104.918	105.697	105.402	103.898	104.133
OFFSET (KM	33.415	17.057	12.334	8.287	5.402	2.308	0.000	2.314	4.984	7.311	10.516	16.040	29.823

CUTTING AREA (SQ.M) = 0.569
FILLING AREA (SQ.M) = 7.279

CH. : 24+000 KM
DESIGNED BED LEVEL = 103.075 M

LEGEND

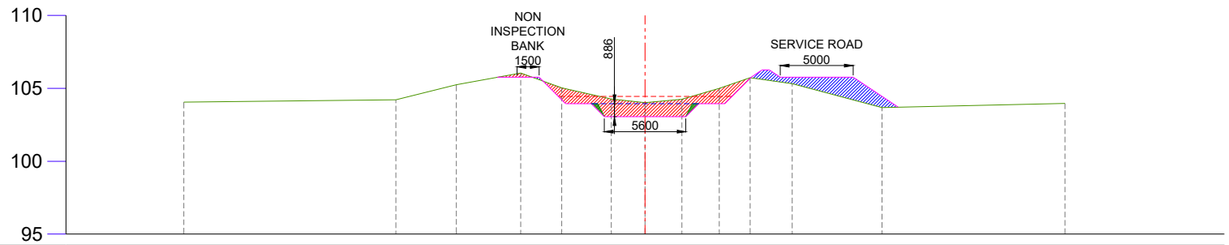
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 60 of 89

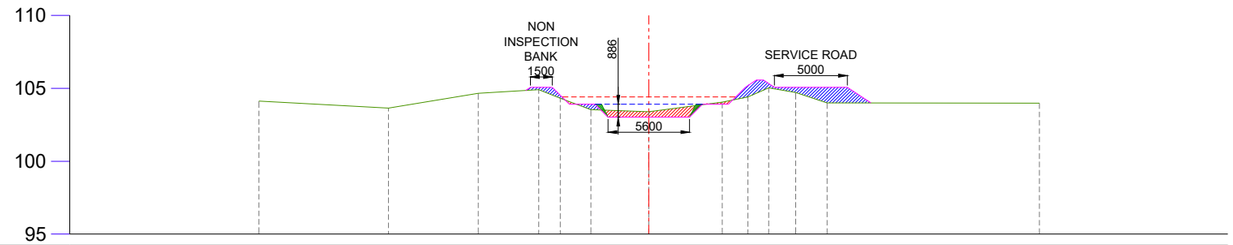
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	104.055	104.218	105.256	106.052	105.033	104.264	104.024	104.249	104.996	105.725	105.326	103.687	103.972
OFFSET (KM	31.658	17.109	12.960	8.531	5.720	2.312	0.000	2.517	5.088	7.209	10.101	16.253	28.822

CUTTING AREA (SQ.M) = 13.158
FILLING AREA (SQ.M) = 8.231

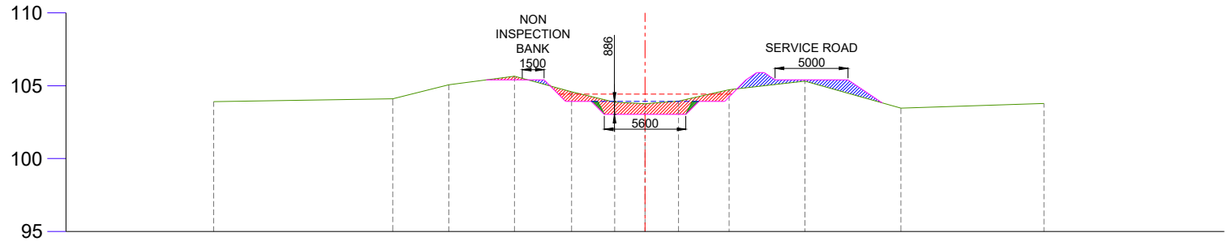
CH. : 24+100 KM
DESIGNED BED LEVEL = 103.058 M



EXIST. LEVEL (KM	104.119	103.639	104.663	104.916	104.322	103.546	103.386	104.057	105.040	104.715	103.993	103.989	
OFFSET (KM	26.753	17.870	11.706	7.557	6.083	3.980	0.000	5.040	8.234	10.078	12.230	26.815	

CUTTING AREA (SQ.M) = 3.408
FILLING AREA (SQ.M) = 6.915

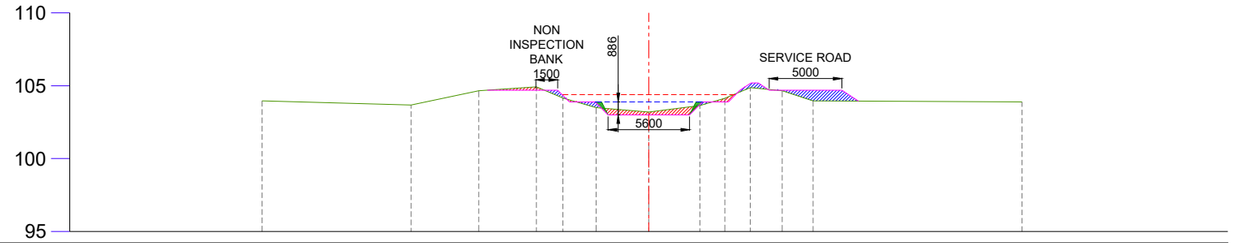
CH. : 24+300 KM
DESIGNED BED LEVEL = 103.023 M



EXIST. LEVEL (KM	103.915	104.095	105.061	105.649	104.577	103.864	103.767	103.936	104.718	105.315	103.465	103.784	
OFFSET (KM	29.602	17.320	13.464	8.964	5.039	2.089	0.000	2.295	5.760	10.969	17.565	27.382	

CUTTING AREA (SQ.M) = 8.758
FILLING AREA (SQ.M) = 4.819

CH. : 24+200 KM
DESIGNED BED LEVEL = 103.040 M



EXIST. LEVEL (KM	103.961	103.676	104.653	104.916	104.161	103.500	103.193	103.632	104.130	104.863	104.659	103.951	103.897
OFFSET (KM	26.536	16.321	11.666	7.716	5.900	3.616	0.000	3.501	5.211	6.956	9.157	11.265	25.613

CUTTING AREA (SQ.M) = 2.907
FILLING AREA (SQ.M) = 3.925

CH. : 24+400 KM
DESIGNED BED LEVEL = 103.006 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

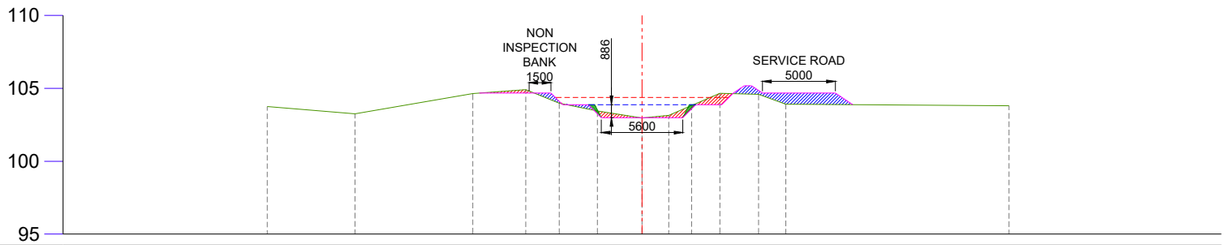
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 61 of 89

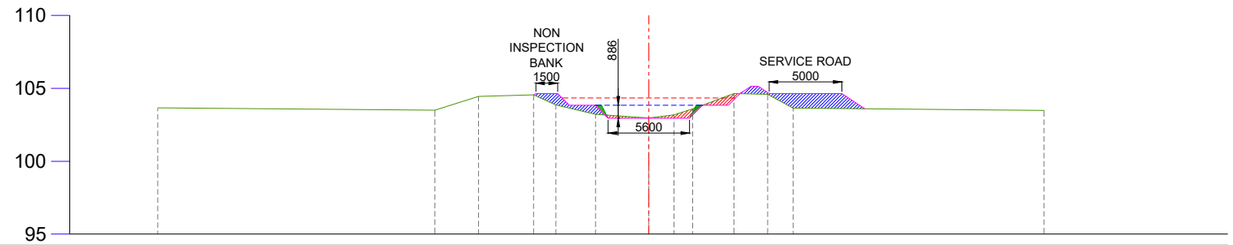
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	103.747	103.257	104.641	104.917	103.974	103.447	102.974	103.818	104.665	104.596	103.904		103.796
OFFSET (KM	25.724	19.704	11.613	7.989	5.680	3.076	0.000	3.404	5.346	7.997	9.871		25.177

CUTTING AREA (SQ.M) = 3.002
FILLING AREA (SQ.M) = 5.384

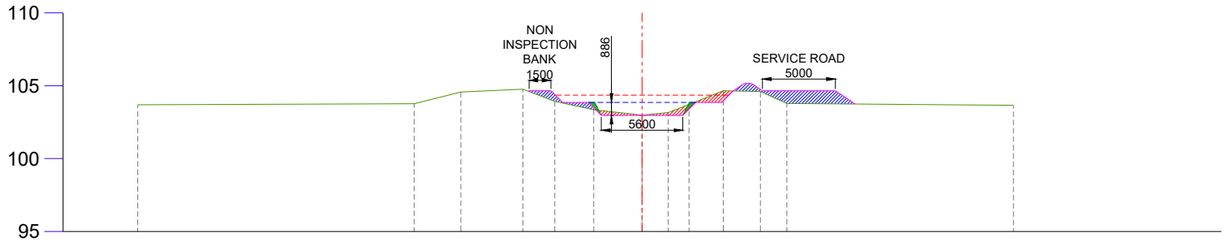
CH. : 24+500 KM
DESIGNED BED LEVEL = 102.989 M



EXIST. LEVEL (KM	103.664		103.506	104.441	104.546	103.866	103.222	102.969	103.592	104.644	104.595	103.636	103.483
OFFSET (KM	33.697		14.675	11.685	7.918	6.376	3.645	0.000	3.000	5.839	8.152	9.900	27.135

CUTTING AREA (SQ.M) = 2.111
FILLING AREA (SQ.M) = 7.887

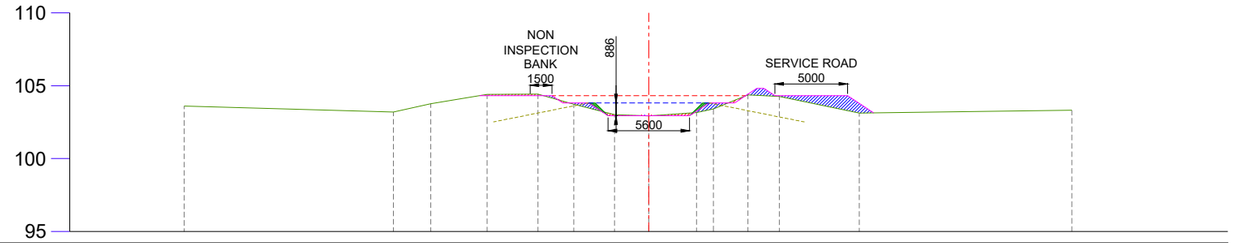
CH. : 24+700 KM
DESIGNED BED LEVEL = 102.954 M



EXIST. LEVEL (KM	103.700		103.760	104.572	104.758	103.926	103.346	102.972	103.717	104.656	104.596	103.785	103.655
OFFSET (KM	34.621		15.649	12.435	8.180	5.992	3.320	0.000	3.229	5.568	8.118	9.940	25.483

CUTTING AREA (SQ.M) = 2.355
FILLING AREA (SQ.M) = 6.444

CH. : 24+600 KM
DESIGNED BED LEVEL = 102.971 M



EXIST. LEVEL (KM	103.603		103.195	103.763	104.410	104.421	103.724	103.011	102.926	103.161	103.405	104.364	104.263	103.123	103.318
OFFSET (KM	31.890		17.534	14.968	11.096	7.612	5.143	2.350	0.000	3.271	4.441	6.801	8.963	14.443	29.034

CUTTING AREA (SQ.M) = 0.961
FILLING AREA (SQ.M) = 5.327

CH. : 24+800 KM
DESIGNED BED LEVEL = 102.937 M

LEGEND

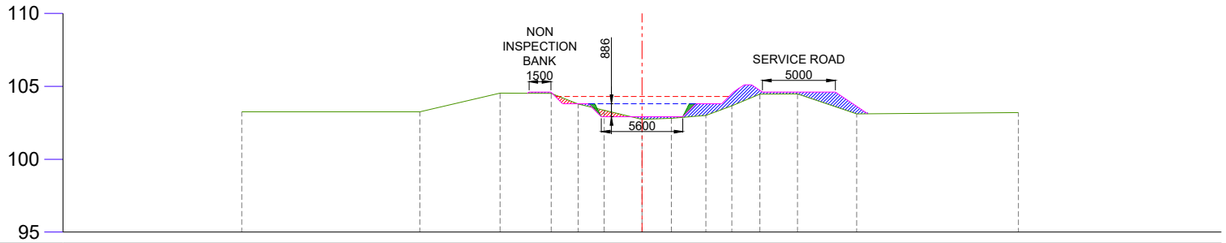
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 62 of 89

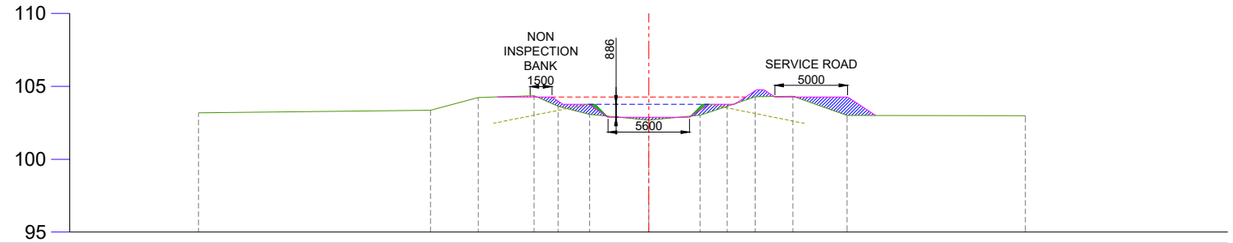
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	103.246	103.247	104.539	104.514	103.784	103.360	102.738	102.813	103.008	103.658	104.468	104.476	103.118	103.194
OFFSET (KM	27.481	15.246	9.741	6.247	4.384	2.598	0.000	2.015	4.380	6.150	8.089	10.667	14.724	25.829

CUTTING AREA (SQ.M) = 0.988
FILLING AREA (SQ.M) = 7.482

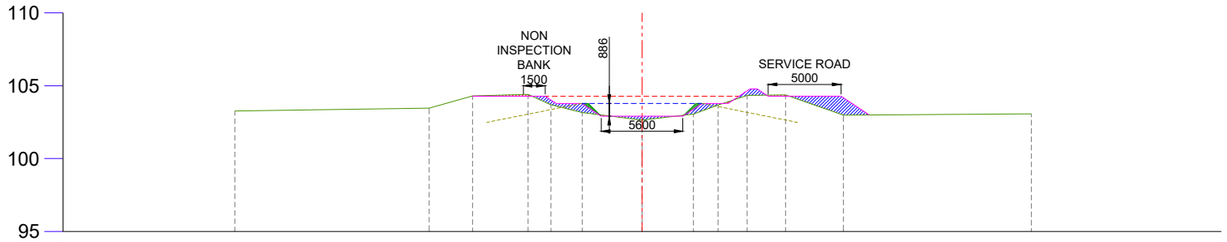
CH. : 24+900 KM
DESIGNED BED LEVEL = 102.920 M



EXIST. LEVEL (KM	103.190	103.360	104.227	104.356	103.628	103.068	102.674	103.017	103.626	104.288	104.314	102.995	102.994	
OFFSET (KM	30.910	14.981	11.713	7.872	6.219	4.062	0.000	3.520	5.375	7.300	9.891	13.604	25.852	

CUTTING AREA (SQ.M) = 0.214
FILLING AREA (SQ.M) = 7.332

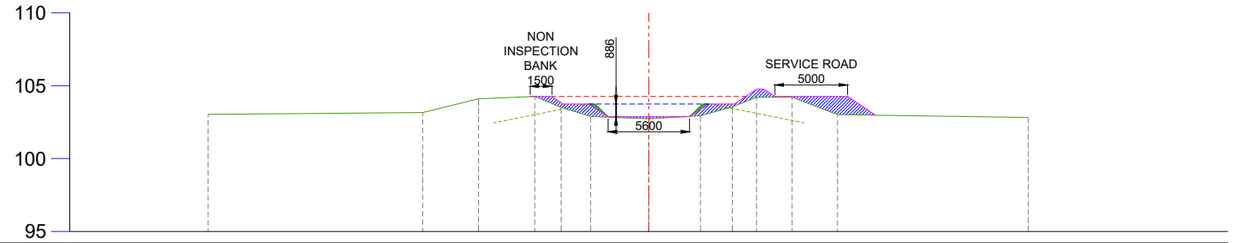
CH. : 25+100 KM
DESIGNED BED LEVEL = 102.885 M



EXIST. LEVEL (KM	103.269	103.469	104.293	104.404	103.691	103.159	102.645	103.057	103.670	104.333	104.366	102.984	103.071	
OFFSET (KM	27.960	14.610	11.637	7.819	6.253	4.104	0.000	3.517	5.218	7.208	9.840	13.814	26.723	

CUTTING AREA (SQ.M) = 0.447
FILLING AREA (SQ.M) = 6.868

CH. : 25+000 KM
DESIGNED BED LEVEL = 102.902 M



EXIST. LEVEL (KM	103.040	103.157	104.102	104.265	103.511	102.897	102.728	102.942	103.544	104.203	104.215	103.017	102.824	
OFFSET (KM	30.245	15.518	11.691	7.828	6.029	3.991	0.000	3.537	5.727	7.387	9.835	12.946	26.045	

CUTTING AREA (SQ.M) = 0.009
FILLING AREA (SQ.M) = 8.798

CH. : 25+200 KM
DESIGNED BED LEVEL = 102.868 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

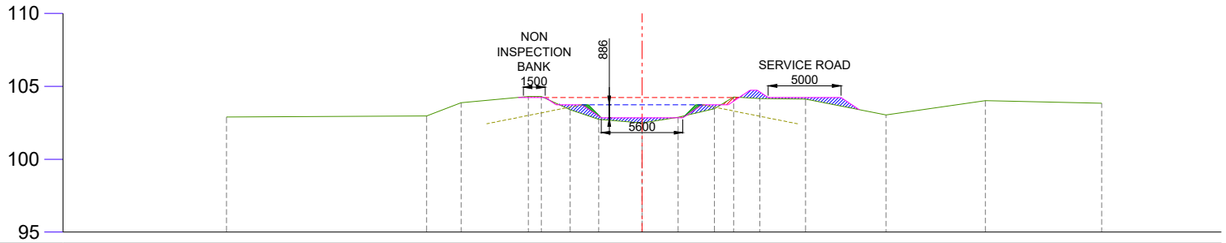
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 63 of 89

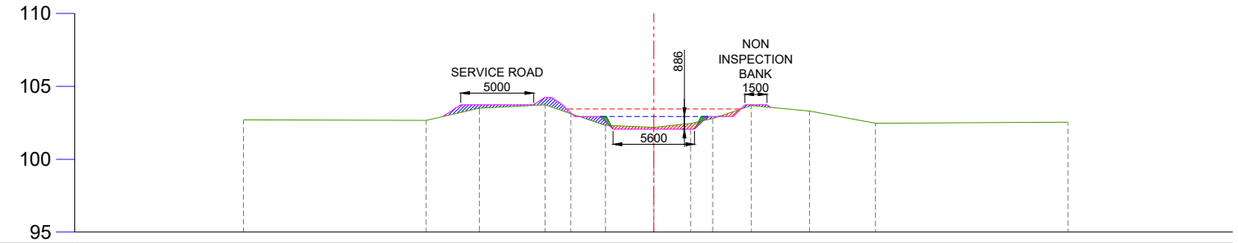
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	102.899	102.963	103.875	104.301	103.400	102.734	102.486	102.873	104.269	104.164	104.127	103.036	104.014	103.832
OFFSET (KM	28.531	14.787	12.425	7.811	4.942	2.984	0.000	2.477	6.282	8.077	11.226	16.741	23.571	31.551

CUTTING AREA (SQ.M) = 0.388
FILLING AREA (SQ.M) = 4.972

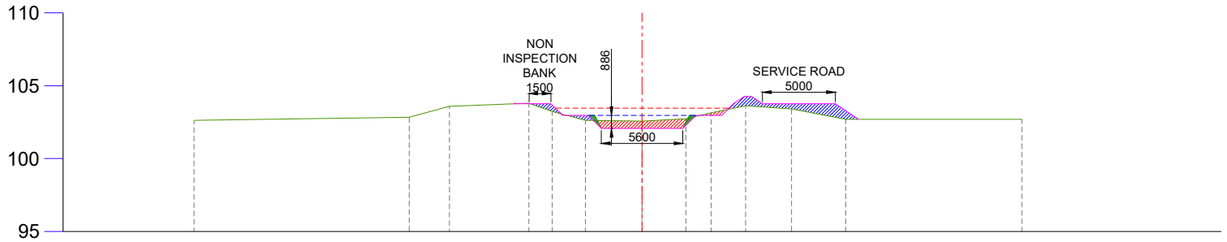
CH. : 25+300 KM
DESIGNED BED LEVEL = 102.851 M



EXIST. LEVEL (KM	102.693	102.671	103.495	103.728	103.124	102.322	102.190	102.445	102.797	103.679	103.302	102.464	102.538	
OFFSET (KM	28.171	15.621	11.980	7.466	5.701	3.317	0.000	2.535	4.035	6.698	10.688	15.208	28.423	

CUTTING AREA (SQ.M) = 1.749
FILLING AREA (SQ.M) = 3.320

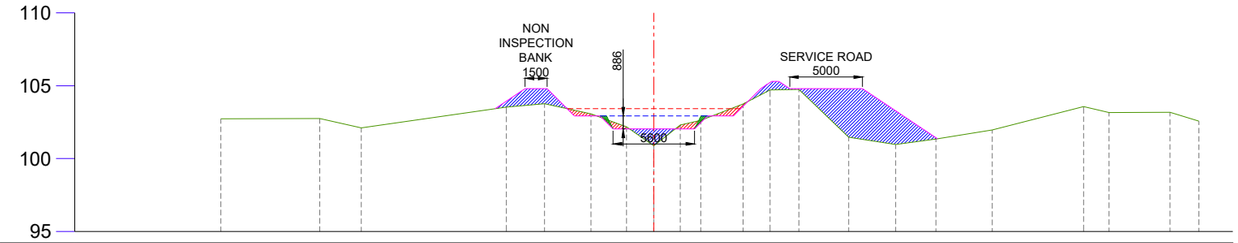
CH. : 25+500 KM
DESIGNED BED LEVEL = 102.054 M



EXIST. LEVEL (KM	102.615	102.842	103.593	103.797	103.230	102.622	102.567	102.730	103.149	103.623	103.412	102.700	102.691	
OFFSET (KM	30.754	15.975	13.229	7.771	6.175	3.887	0.000	3.008	4.739	7.109	10.252	13.987	26.075	

CUTTING AREA (SQ.M) = 3.806
FILLING AREA (SQ.M) = 5.190

CH. : 25+400 KM
DESIGNED BED LEVEL = 102.072 M



EXIST. LEVEL (KM	102.738	102.749	102.113	103.527	103.768	103.072	102.175	100.870	102.308	102.627	103.738	104.700	104.746	101.457	100.965	101.348	101.956	103.560	103.165	103.168	102.563
OFFSET (KM	29.716	22.934	20.071	10.125	7.497	4.316	1.879	0.000	1.818	3.218	6.118	7.976	9.958	13.371	16.606	19.361	23.233	29.489	31.246	35.428	37.399

CUTTING AREA (SQ.M) = 2.182
FILLING AREA (SQ.M) = 25.461

CH. : 25+600 KM
DESIGNED BED LEVEL = 102.037 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

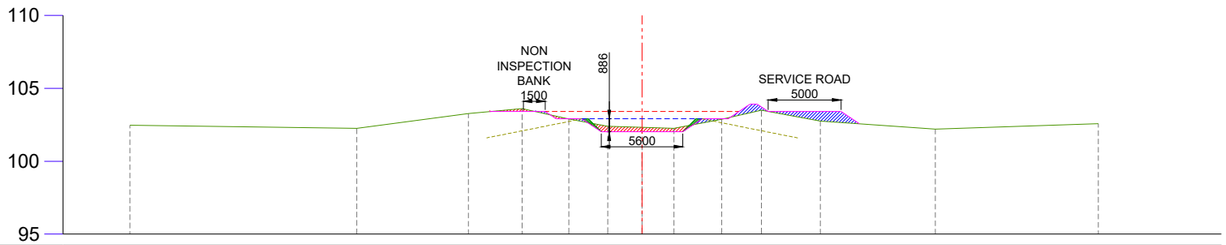
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 64 of 89

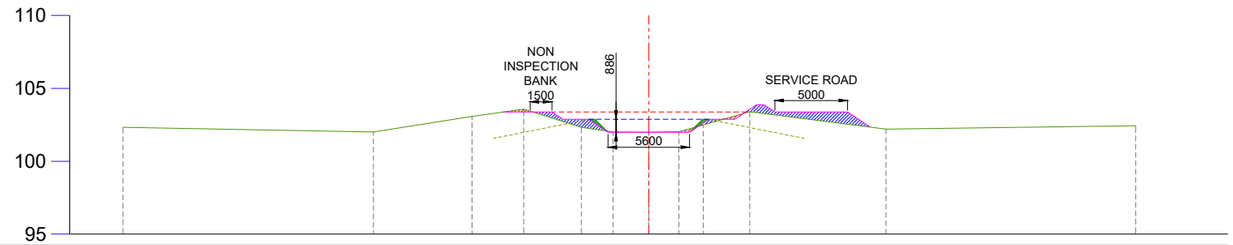
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	102.467	102.250	103.272	103.616	102.895	102.395	102.324	102.260	102.876	103.496	102.755	102.204	102.568
OFFSET (KM	35.151	19.577	11.917	8.238	5.036	2.347	0.000	2.184	5.472	8.196	12.235	20.127	31.310

CUTTING AREA (SQ.M) = 2.577
FILLING AREA (SQ.M) = 3.918

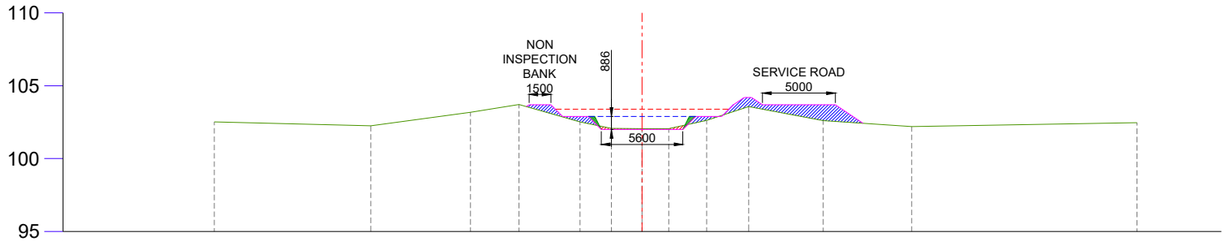
CH. : 25+700 KM
DESIGNED BED LEVEL = 102.020 M



EXIST. LEVEL (KM	102.321	102.003	103.083	103.572	102.332	102.014	101.994	102.021	102.486	103.389	102.205	102.429	
OFFSET (KM	36.091	18.896	12.139	8.588	4.632	2.453	0.000	2.059	3.738	6.932	16.280	33.414	

CUTTING AREA (SQ.M) = 0.664
FILLING AREA (SQ.M) = 5.797

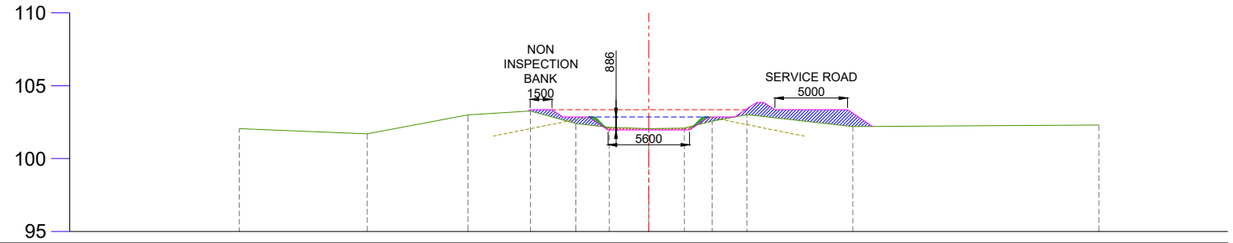
CH. : 25+900 KM
DESIGNED BED LEVEL = 101.985 M



EXIST. LEVEL (KM	102.522	102.252	103.176	103.708	102.519	102.072	102.061	102.051	102.615	103.563	102.599	102.199	102.470
OFFSET (KM	29.361	18.627	11.773	8.453	4.259	2.114	0.000	1.826	4.434	7.323	12.430	18.510	33.961

CUTTING AREA (SQ.M) = 0.557
FILLING AREA (SQ.M) = 8.228

CH. : 25+800 KM
DESIGNED BED LEVEL = 102.003 M



EXIST. LEVEL (KM	102.051	101.705	102.990	103.263	102.415	102.151	102.057	102.095	102.562	103.022	102.195	102.305	
OFFSET (KM	28.110	19.324	12.427	8.122	5.012	2.702	0.000	2.444	4.339	6.733	13.992	30.885	

CUTTING AREA (SQ.M) = 0.801
FILLING AREA (SQ.M) = 8.903

CH. : 26+000 KM
DESIGNED BED LEVEL = 101.968 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

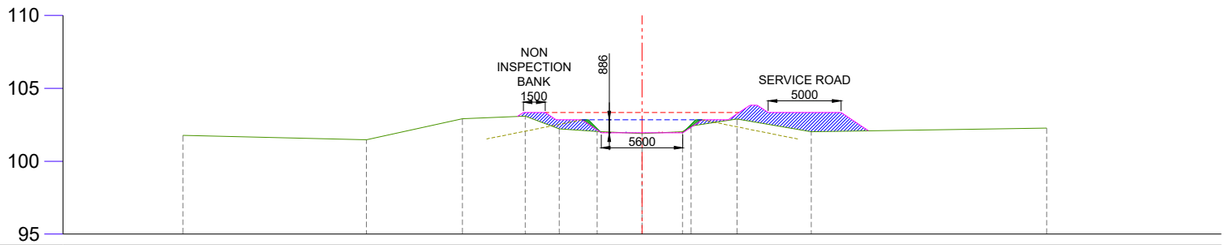
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 65 of 89

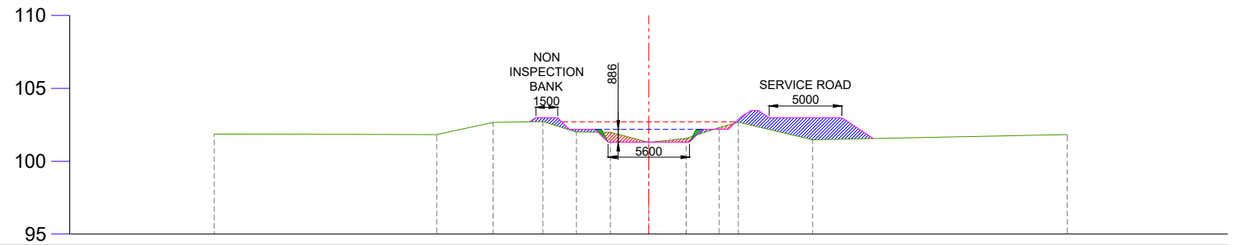
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	101.775	101.466	102.914	103.095	102.224	102.037	101.903	102.407	102.890	102.026	102.275
OFFSET (KM	31.520	18.920	12.338	8.023	5.688	3.093	0.000	3.358	6.508	11.617	27.762

CUTTING AREA (SQ.M) = 0.178
FILLING AREA (SQ.M) = 12.377

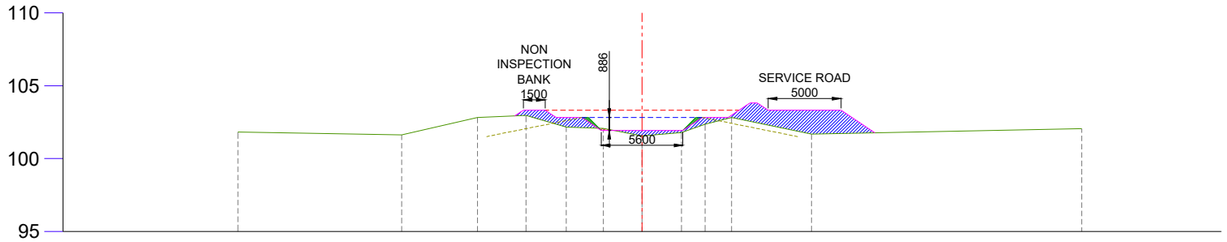
CH. : 26+100 KM
DESIGNED BED LEVEL = 101.951 M



EXIST. LEVEL (KM	101.865	101.821	102.669	102.726	102.006	101.984	101.300	101.562	102.301	102.690	101.476	101.822
OFFSET (KM	29.830	14.553	10.682	7.264	4.977	2.637	0.000	2.555	4.829	6.152	11.245	28.707

CUTTING AREA (SQ.M) = 1.911
FILLING AREA (SQ.M) = 11.218

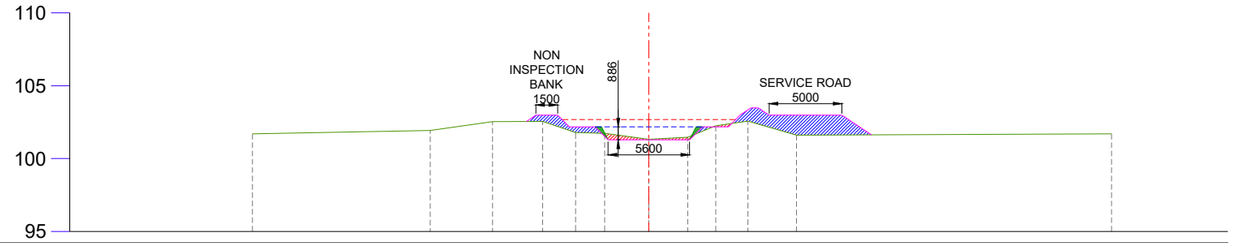
CH. : 26+300 KM
DESIGNED BED LEVEL = 101.306 M



EXIST. LEVEL (KM	101.822	101.635	102.812	102.956	102.161	102.078	101.559	101.791	102.813	101.687	102.053
OFFSET (KM	27.735	16.499	11.297	7.975	5.204	2.655	0.000	2.701	6.141	11.624	30.180

CUTTING AREA (SQ.M) = 0.092
FILLING AREA (SQ.M) = 16.414

CH. : 26+200 KM
DESIGNED BED LEVEL = 101.934 M



EXIST. LEVEL (KM	101.702	101.932	102.538	102.544	101.785	101.725	101.332	101.468	102.255	102.568	101.605	101.695
OFFSET (KM	27.194	14.996	10.733	7.293	5.021	3.038	0.000	2.666	4.590	6.798	10.136	31.757

CUTTING AREA (SQ.M) = 1.244
FILLING AREA (SQ.M) = 11.926

CH. : 26+400 KM
DESIGNED BED LEVEL = 101.289 M

LEGEND

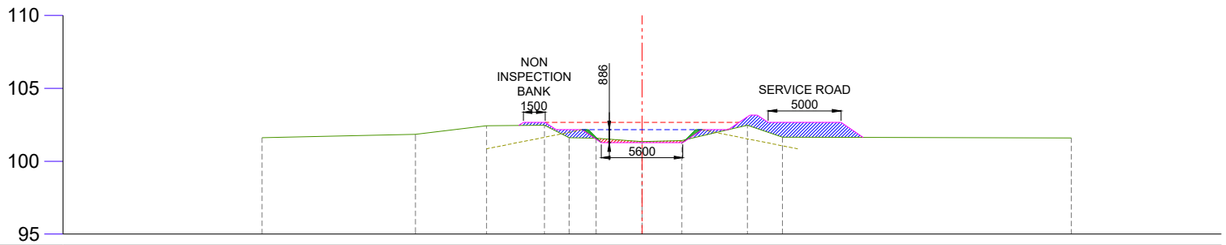
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 66 of 89

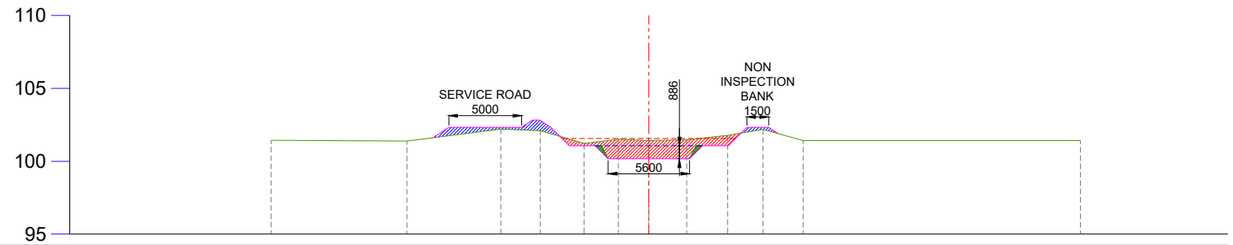
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	101.621	101.850	102.435	102.462	101.622	101.575	101.355	101.421	102.472	101.654	101.601
OFFSET (KM	26.075	15.560	10.681	6.707	5.004	3.153	0.000	2.728	7.224	9.632	29.456

CUTTING AREA (SQ.M) = 0.929
FILLING AREA (SQ.M) = 9.162

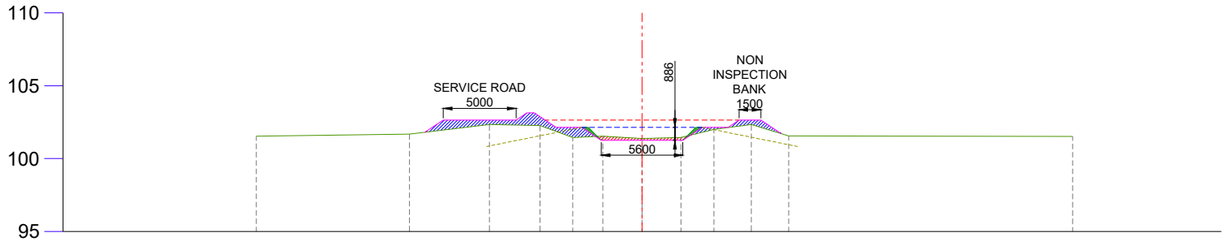
CH. : 26+500 KM
DESIGNED BED LEVEL = 101.272 M



EXIST. LEVEL (KM	101.438	101.375	102.206	102.087	101.227	101.500	101.415	101.465	101.779	102.176	101.419	101.426
OFFSET (KM	25.922	16.608	10.161	7.444	4.430	2.090	0.000	2.596	5.421	7.840	10.588	29.621

CUTTING AREA (SQ.M) = 10.723
FILLING AREA (SQ.M) = 3.530

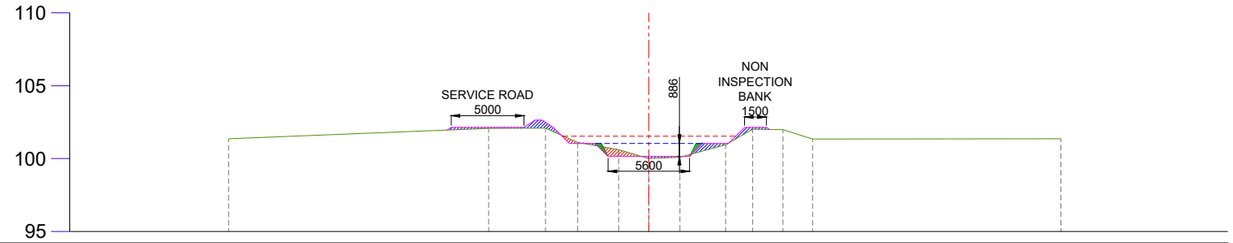
CH. : 26+700 KM
DESIGNED BED LEVEL = 100.170 M



EXIST. LEVEL (KM	101.539	101.677	102.338	102.269	101.450	101.542	101.381	101.440	102.004	102.343	101.552	101.526
OFFSET (KM	26.480	15.956	10.485	7.005	4.761	2.693	0.000	2.677	4.937	7.498	10.056	29.553

CUTTING AREA (SQ.M) = 1.139
FILLING AREA (SQ.M) = 6.995

CH. : 26+600 KM
DESIGNED BED LEVEL = 101.255 M



EXIST. LEVEL (KM	101.350	102.064	102.093	101.102	100.619	100.011	100.096	100.948	102.013	101.981	101.343	101.360
OFFSET (KM	28.839	10.999	7.093	4.885	2.072	0.000	2.140	5.273	7.122	9.204	11.236	28.292

CUTTING AREA (SQ.M) = 1.218
FILLING AREA (SQ.M) = 2.963

CH. : 26+800 KM
DESIGNED BED LEVEL = 100.153 M

LEGEND

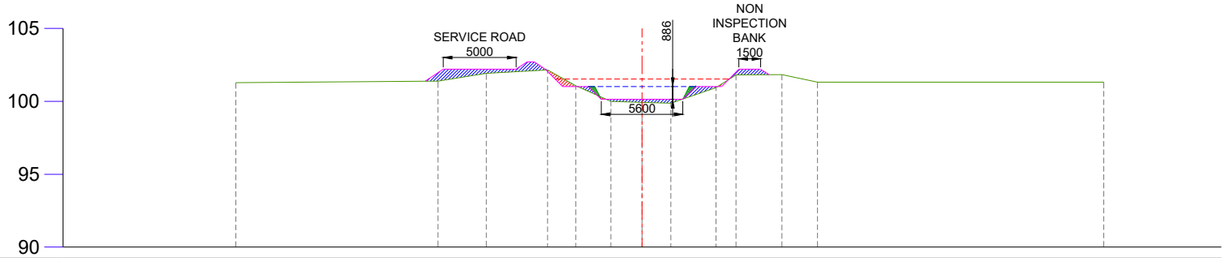
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 67 of 89

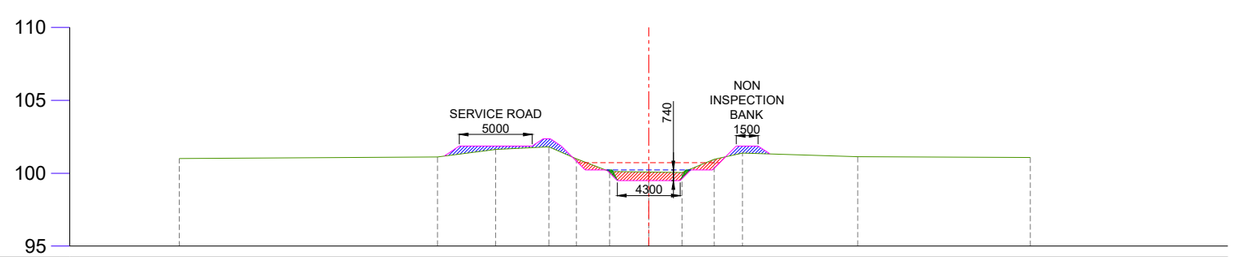
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	101.273	101.387	101.915	102.159	101.069	99.992	99.934	99.880	100.948	101.823	101.829	101.313	101.308
OFFSET (KM	27.884	14.006	10.692	6.491	4.545	2.150	0.000	1.972	5.078	6.443	9.596	12.043	31.680

CUTTING AREA (SQ.M) = 0.735
FILLING AREA (SQ.M) = 6.031

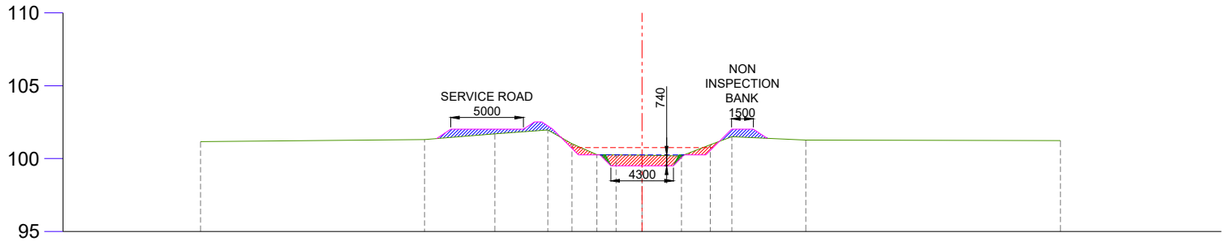
CH. : 26+900 KM
DESIGNED BED LEVEL = 100.136 M



EXIST. LEVEL (KM	101.015	101.117	101.631	101.812	100.993	100.124	100.085	100.052	100.948	101.382	101.132	101.078
OFFSET (KM	32.222	14.507	10.507	6.856	4.979	2.683	0.000	2.277	4.482	6.428	14.335	26.176

CUTTING AREA (SQ.M) = 4.431
FILLING AREA (SQ.M) = 3.932

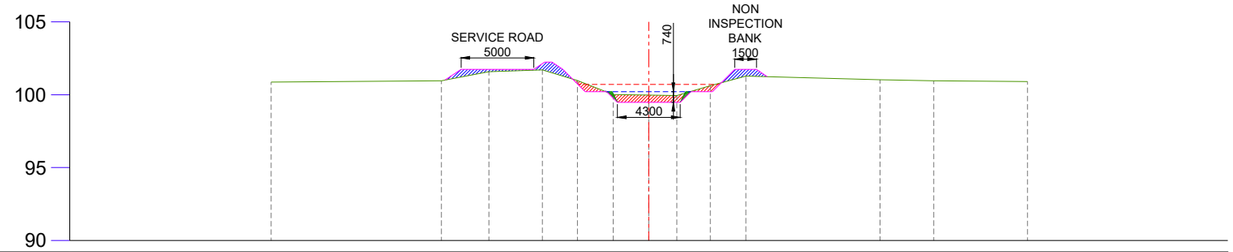
CH. : 27+100 KM
DESIGNED BED LEVEL = 99.491 M



EXIST. LEVEL (KM	101.166	101.307	101.694	101.956	101.028	100.278	100.230	100.188	101.509	101.262	101.235	
OFFSET (KM	30.310	14.939	10.109	6.470	4.811	3.102	0.000	2.706	6.157	11.240	28.713	

CUTTING AREA (SQ.M) = 5.057
FILLING AREA (SQ.M) = 4.358

CH. : 27+000 KM
DESIGNED BED LEVEL = 99.509 M



EXIST. LEVEL (KM	100.874	100.959	101.580	101.696	100.965	100.002	99.971	99.945	100.610	101.282	101.032	100.957	100.901
OFFSET (KM	25.924	14.228	10.974	7.309	4.909	2.440	0.000	1.921	4.216	6.662	15.873	19.556	25.991

CUTTING AREA (SQ.M) = 3.581
FILLING AREA (SQ.M) = 3.667

CH. : 27+200 KM
DESIGNED BED LEVEL = 99.474 M

LEGEND

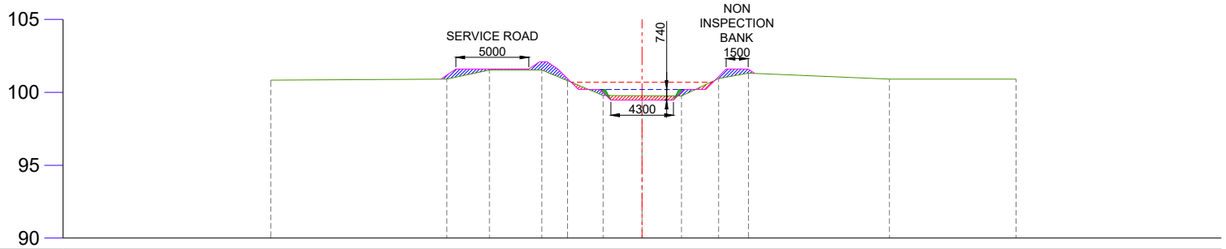
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 68 of 89

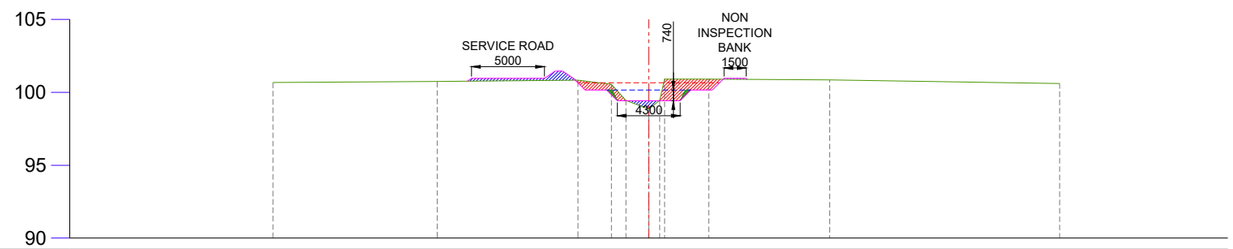
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	100.833	100.911	101.526	101.524	100.791	99.780	99.762	99.742	100.948	101.323	100.910	100.914
OFFSET (KM	25.471	13.399	10.484	6.882	5.123	2.668	0.000	2.698	5.257	7.301	16.973	25.662

CUTTING AREA (SQ.M) = 1.792
FILLING AREA (SQ.M) = 3.863

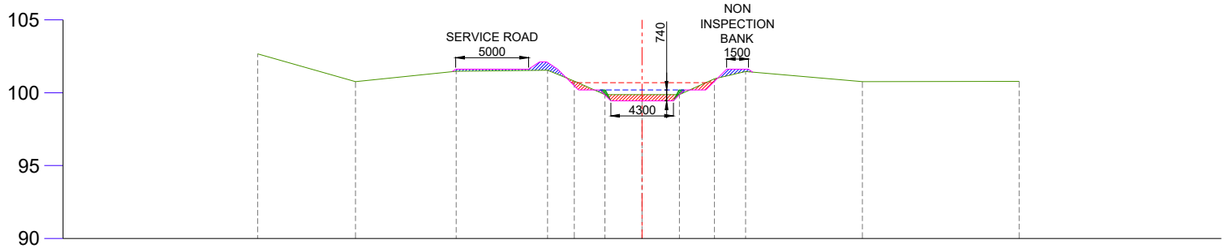
CH. : 27+300 KM
DESIGNED BED LEVEL = 99.457 M



EXIST. LEVEL (KM	100.678	100.754	100.831	100.557	98.859	100.904	100.912	100.862	100.603			
OFFSET (KM	25.792	14.516	4.858	2.568	0.000	1.089	4.120	12.406	28.203			

CUTTING AREA (SQ.M) = 5.703
FILLING AREA (SQ.M) = 2.509

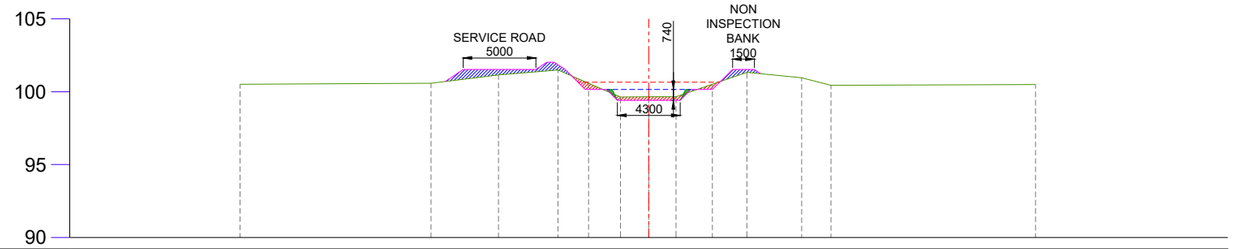
CH. : 27+500 KM
DESIGNED BED LEVEL = 99.422 M



EXIST. LEVEL (KM	102.670	100.767	101.477	101.540	100.803	99.870	99.873	99.871	100.948	101.448	100.762	100.776
OFFSET (KM	26.392	19.664	12.767	6.492	4.661	2.557	0.000	2.554	4.971	7.098	15.111	25.878

CUTTING AREA (SQ.M) = 3.030
FILLING AREA (SQ.M) = 2.221

CH. : 27+400 KM
DESIGNED BED LEVEL = 99.440 M



EXIST. LEVEL (KM	100.517	100.577	101.142	101.487	100.577	99.632	99.646	99.662	100.515	101.336	100.951	100.435	100.491
OFFSET (KM	28.061	14.956	10.316	6.239	4.131	1.937	0.000	1.888	4.355	6.737	10.493	12.499	26.532

CUTTING AREA (SQ.M) = 2.144
FILLING AREA (SQ.M) = 4.063

CH. : 27+600 KM
DESIGNED BED LEVEL = 99.405 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

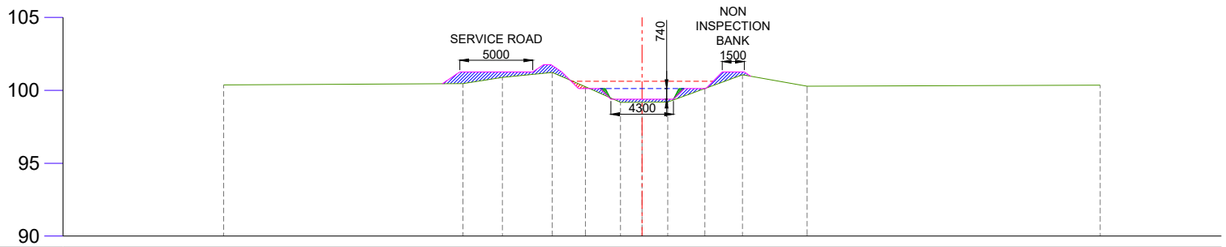
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 69 of 89

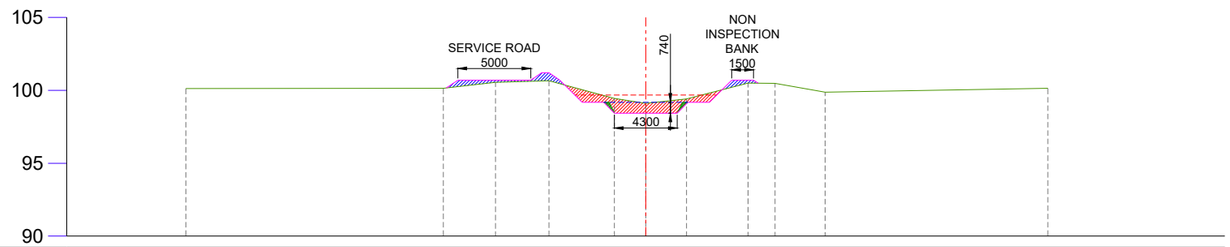
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	100.377	100.458	100.883	101.222	100.239	99.177	99.185	99.195	100.126	101.066	100.281	100.358
OFFSET (KM	28.718	12.294	9.586	6.160	3.880	1.484	0.000	1.763	4.314	6.887	11.329	31.441

CUTTING AREA (SQ.M) = 0.226
FILLING AREA (SQ.M) = 6.470

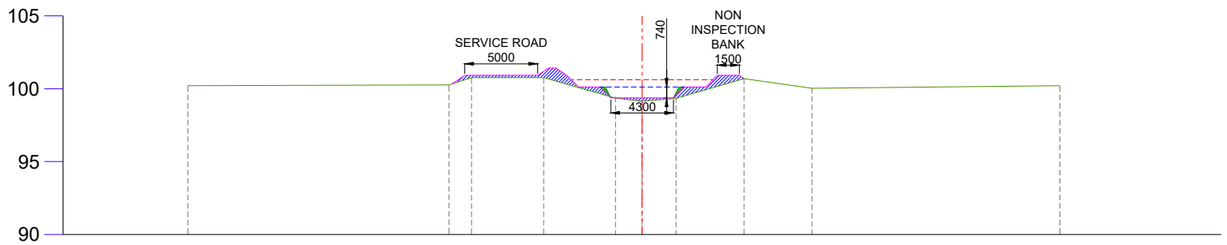
CH. : 27+700 KM
DESIGNED BED LEVEL = 99.388 M



EXIST. LEVEL (KM	100.123	100.140	100.543	100.652	99.448	99.104	99.412	100.494	100.483	99.873	100.132	
OFFSET (KM	31.562	13.901	10.323	6.652	2.165	0.000	2.802	7.024	8.867	12.313	27.597	

CUTTING AREA (SQ.M) = 6.864
FILLING AREA (SQ.M) = 2.797

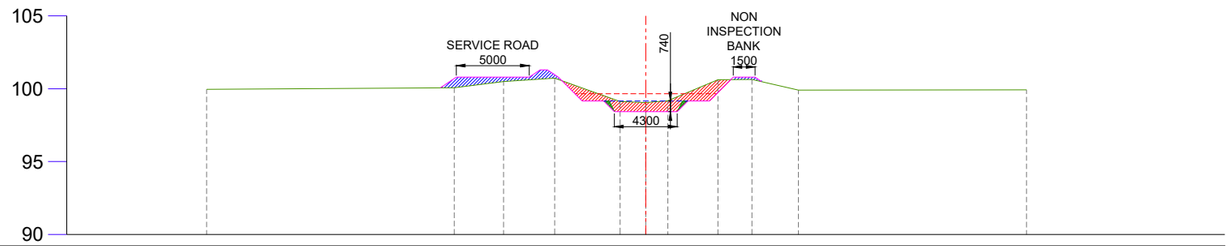
CH. : 27+900 KM
DESIGNED BED LEVEL = 98.439 M



EXIST. LEVEL (KM	100.214	100.253	100.765	100.765	99.353	99.133	99.335	100.696	100.020	100.214		
OFFSET (KM	31.180	13.252	11.712	6.748	1.826	0.000	2.334	6.992	11.664	28.671		

CUTTING AREA (SQ.M) = 0.014
FILLING AREA (SQ.M) = 5.527

CH. : 27+800 KM
DESIGNED BED LEVEL = 99.371 M



EXIST. LEVEL (KM	99.950	100.064	100.494	100.726	99.121	99.046	99.180	100.609	100.643	99.908	99.924	
OFFSET (KM	30.142	13.140	9.767	6.253	1.765	0.000	1.514	4.952	7.292	10.464	26.134	

CUTTING AREA (SQ.M) = 7.971
FILLING AREA (SQ.M) = 3.610

CH. : 28+000 KM
DESIGNED BED LEVEL = 98.422 M

LEGEND

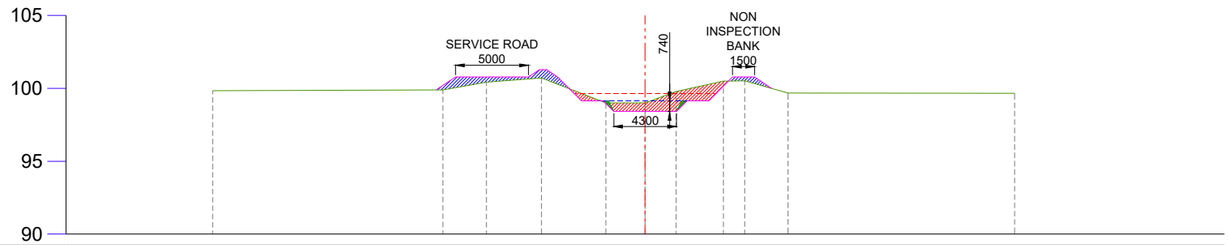
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 70 of 89

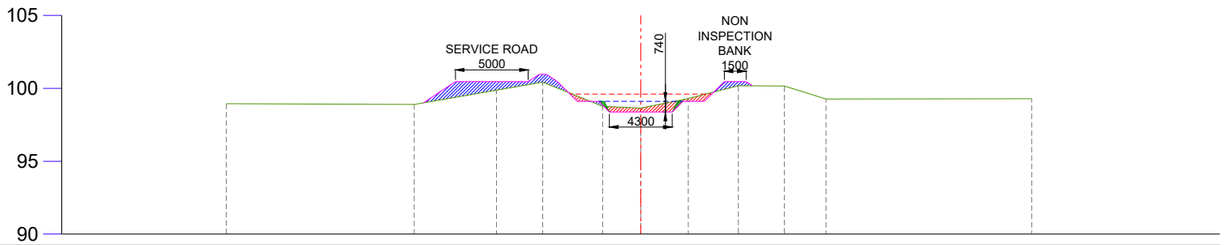
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	99.840	99.885	100.424	100.712	98.995	98.997	99.784	100.492	100.518	99.678	99.659
OFFSET (KM	29.681	13.874	10.882	7.115	2.697	0.000	2.132	5.368	6.845	9.811	25.361

CUTTING AREA (SQ.M) = 7.138
FILLING AREA (SQ.M) = 4.411

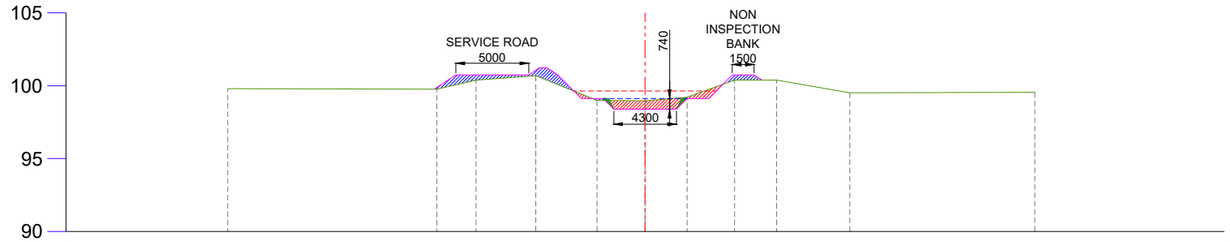
CH. : 28+100 KM
DESIGNED BED LEVEL = 98.405 M



EXIST. LEVEL (KM	98.954	98.886	99.875	100.421	98.774	98.640	99.312	100.181	100.159	99.275	99.285
OFFSET (KM	28.446	15.548	9.903	6.728	2.624	0.000	3.262	6.704	9.841	12.709	26.832

CUTTING AREA (SQ.M) = 3.004
FILLING AREA (SQ.M) = 6.527

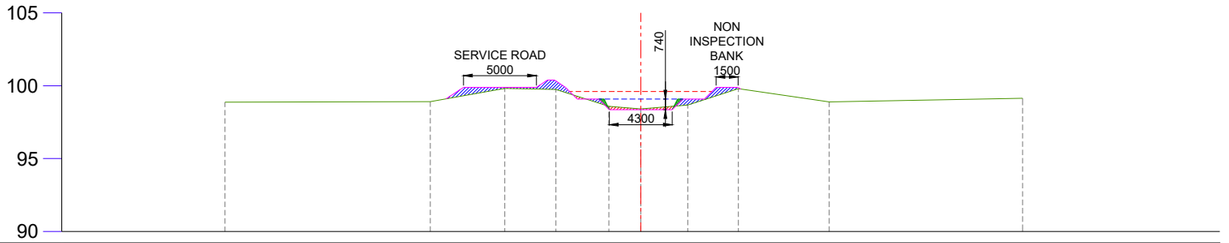
CH. : 28+300 KM
DESIGNED BED LEVEL = 98.371 M



EXIST. LEVEL (KM	99.791	99.760	100.378	100.686	98.990	98.968	99.215	100.387	100.384	99.508	99.542
OFFSET (KM	28.651	14.284	11.609	7.505	3.308	0.000	2.881	6.137	9.030	14.053	26.758

CUTTING AREA (SQ.M) = 4.208
FILLING AREA (SQ.M) = 4.537

CH. : 28+200 KM
DESIGNED BED LEVEL = 98.388 M



EXIST. LEVEL (KM	98.874	98.904	99.813	99.736	98.587	98.407	98.667	99.789	98.890	99.137	
OFFSET (KM	28.534	14.445	9.344	5.829	2.197	0.000	3.225	6.690	12.936	26.203	

CUTTING AREA (SQ.M) = 0.748
FILLING AREA (SQ.M) = 4.125

CH. : 28+400 KM
DESIGNED BED LEVEL = 98.353 M

LEGEND

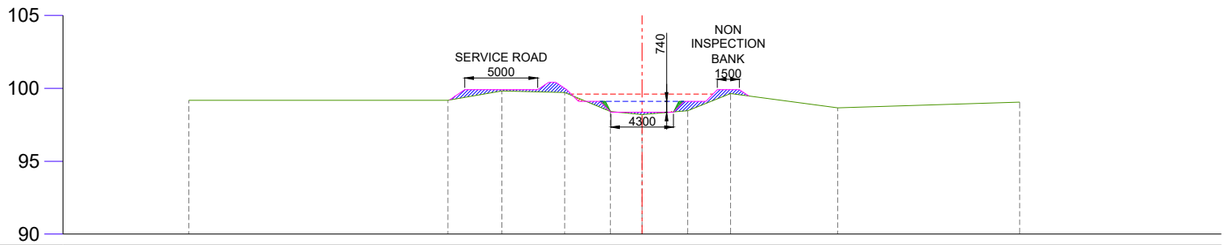
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 71 of 89

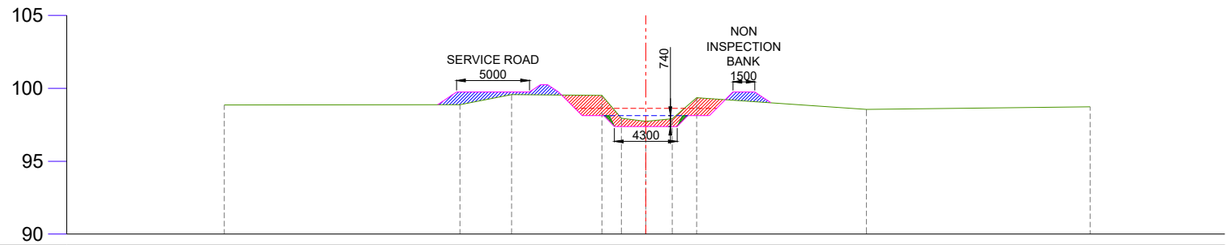
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	99.177	99.186	99.827	99.716	98.410	98.201	98.458	99.644	98.664	99.058
OFFSET (KM	31.100	13.331	9.617	5.313	2.180	0.000	3.138	6.079	13.422	25.922

CUTTING AREA (SQ.M) = 0.108
FILLING AREA (SQ.M) = 4.866

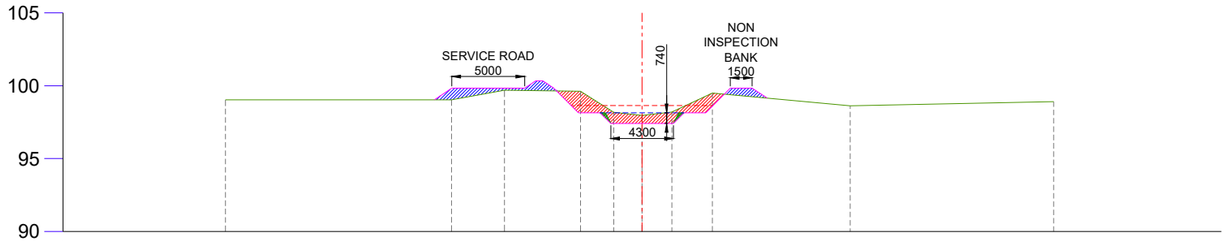
CH. : 28+500 KM
DESIGNED BED LEVEL = 98.336 M



EXIST. LEVEL (KM	98.863	98.880	99.562	99.522	97.941	97.730	97.914	99.356	98.564	98.739
OFFSET (KM	28.927	12.748	9.208	3.019	1.671	0.000	1.817	3.495	15.135	30.496

CUTTING AREA (SQ.M) = 8.916
FILLING AREA (SQ.M) = 5.288

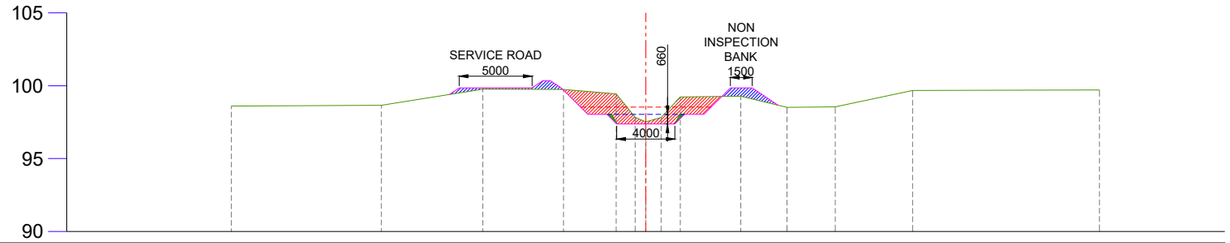
CH. : 28+700 KM
DESIGNED BED LEVEL = 97.388 M



EXIST. LEVEL (KM	99.023	99.038	99.697	99.620	98.180	97.969	98.190	99.502	98.614	98.899
OFFSET (KM	28.590	13.076	9.450	4.228	1.953	0.000	2.050	4.823	14.285	28.256

CUTTING AREA (SQ.M) = 8.707
FILLING AREA (SQ.M) = 4.481

CH. : 28+600 KM
DESIGNED BED LEVEL = 97.405 M



EXIST. LEVEL (KM	98.602	98.655	99.762	99.751	99.433	97.515	99.225	99.275	98.522	98.552	99.668	99.709
OFFSET (KM	28.444	18.148	11.192	5.657	2.032	0.000	2.370	6.515	9.694	13.003	18.315	31.137

CUTTING AREA (SQ.M) = 10.823
FILLING AREA (SQ.M) = 3.447

CH. : 28+800 KM
DESIGNED BED LEVEL = 97.370 M

LEGEND

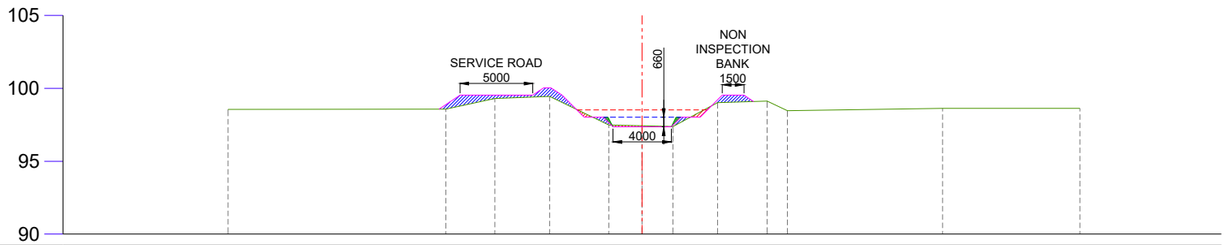
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 72 of 89

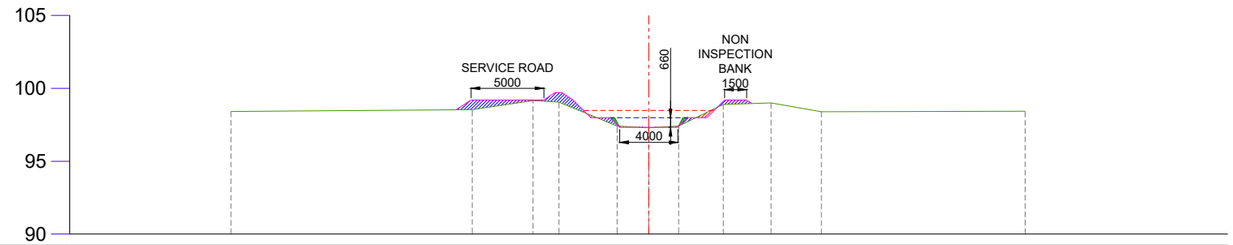
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	98.552	98.580	99.302	99.453	97.482	97.427	97.381	99.013	99.123	98.466	98.624	98.634
OFFSET (KM	28.409	13.476	10.099	6.344	2.280	0.000	2.118	5.182	8.581	9.974	20.616	30.049

CUTTING AREA (SQ.M) = 0.741
FILLING AREA (SQ.M) = 4.916

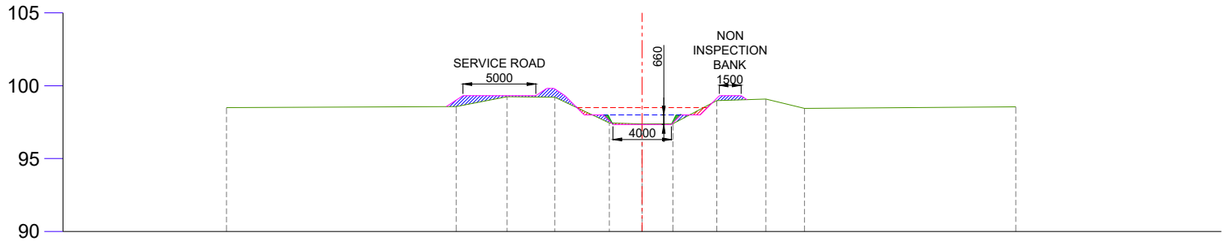
CH. : 28+900 KM
DESIGNED BED LEVEL = 97.353 M



EXIST. LEVEL (KM	98.406	98.532	99.155	99.055	97.407	97.296	97.411	98.899	99.005	98.386	98.428	
OFFSET (KM	28.679	12.112	7.954	6.166	2.178	0.000	2.041	5.103	8.394	11.847	25.830	

CUTTING AREA (SQ.M) = 0.483
FILLING AREA (SQ.M) = 4.275

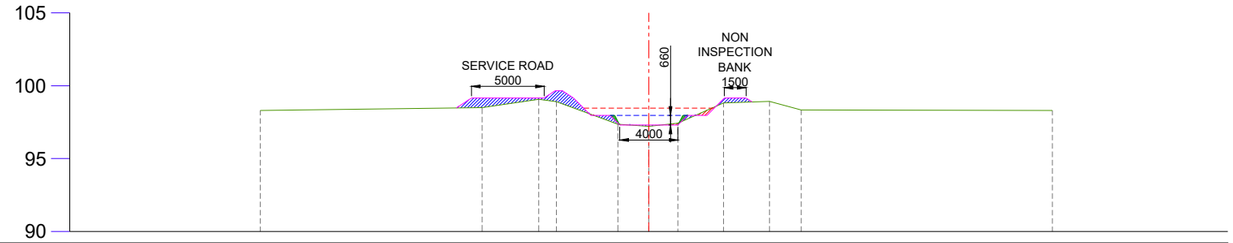
CH. : 29+100 KM
DESIGNED BED LEVEL = 97.319 M



EXIST. LEVEL (KM	98.499	98.562	99.248	99.206	97.454	97.378	97.392	98.971	99.080	98.437	98.553	
OFFSET (KM	28.519	12.753	9.265	5.997	2.243	0.000	2.107	5.124	8.485	11.140	25.649	

CUTTING AREA (SQ.M) = 0.686
FILLING AREA (SQ.M) = 3.820

CH. : 29+000 KM
DESIGNED BED LEVEL = 97.336 M



EXIST. LEVEL (KM	98.303	98.500	99.060	98.899	97.358	97.210	97.431	98.824	98.927	98.331	98.299	
OFFSET (KM	26.662	11.432	7.554	6.342	2.114	0.000	1.984	5.132	8.275	10.457	27.694	

CUTTING AREA (SQ.M) = 0.379
FILLING AREA (SQ.M) = 5.212

CH. : 29+200 KM
DESIGNED BED LEVEL = 97.301 M

LEGEND

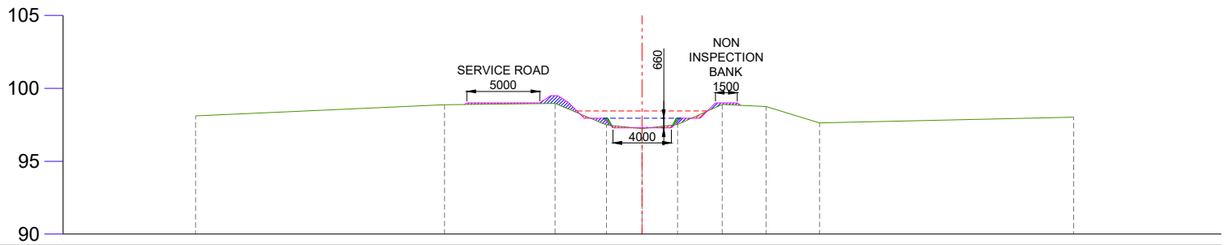
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 73 of 89

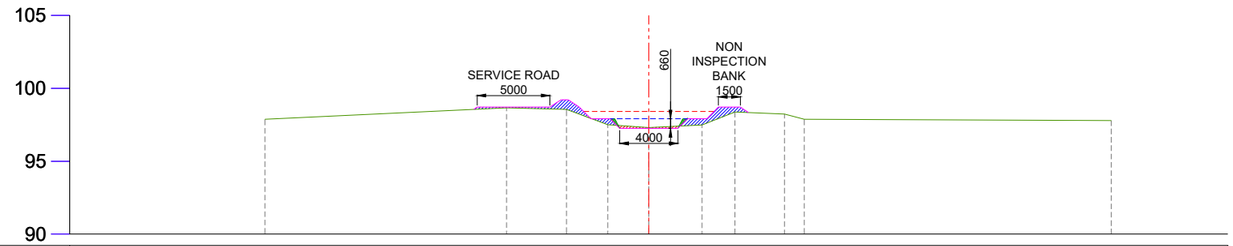
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	98.117	98.876	98.956	97.485	97.245	97.521	98.890	98.755	97.628	98.022
OFFSET (KM	30.637	13.555	5.969	2.453	0.000	2.429	5.501	8.515	12.189	29.611

CUTTING AREA (SQ.M) = 0.527
FILLING AREA (SQ.M) = 2.243

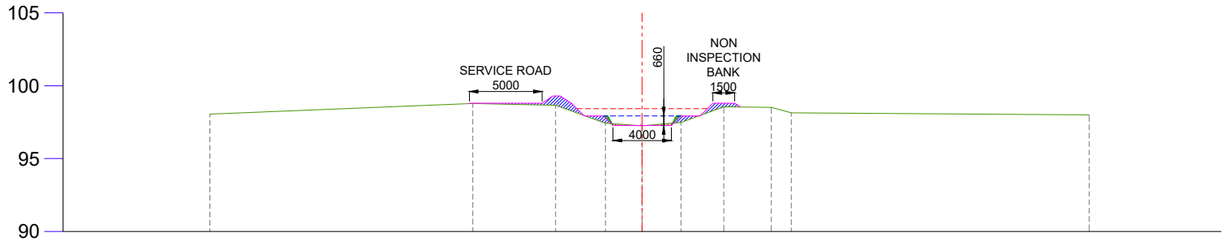
CH. : 29+300 KM
DESIGNED BED LEVEL = 97.284 M



EXIST. LEVEL (KM	97.876	98.666	98.551	97.506	97.311	97.482	98.372	98.239	97.877	97.797
OFFSET (KM	-26.356	-9.764	-5.642	-2.811	0.000	3.657	5.908	9.317	10.671	31.741

CUTTING AREA (SQ.M) = 0.512
FILLING AREA (SQ.M) = 4.055

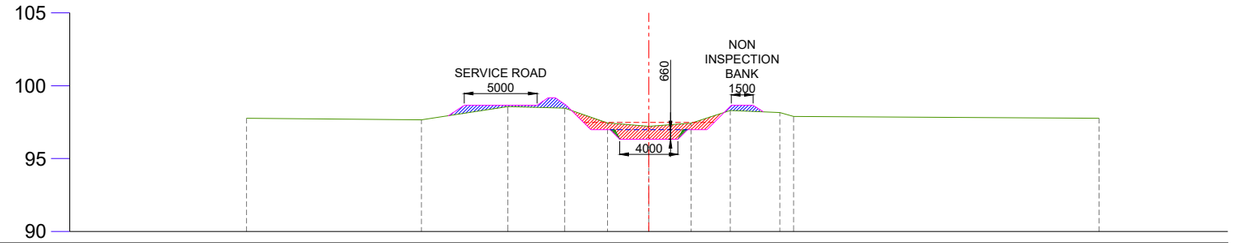
CH. : 29+500 KM
DESIGNED BED LEVEL = 97.250 M



EXIST. LEVEL (KM	98.055	98.776	98.661	97.435	97.253	97.482	98.541	98.515	98.135	97.999
OFFSET (KM	29.668	11.621	5.932	2.510	0.000	2.669	5.606	8.872	10.236	30.681

CUTTING AREA (SQ.M) = 0.291
FILLING AREA (SQ.M) = 3.257

CH. : 29+400 KM
DESIGNED BED LEVEL = 97.267 M



EXIST. LEVEL (KM	97.761	97.652	98.560	98.461	97.441	97.217	97.433	98.300	98.157	97.899	97.766
OFFSET (KM	27.615	15.607	9.683	5.771	2.833	0.000	2.909	5.587	8.991	9.932	30.903

CUTTING AREA (SQ.M) = 7.566
FILLING AREA (SQ.M) = 3.433

CH. : 29+600 KM
DESIGNED BED LEVEL = 96.317 M

LEGEND

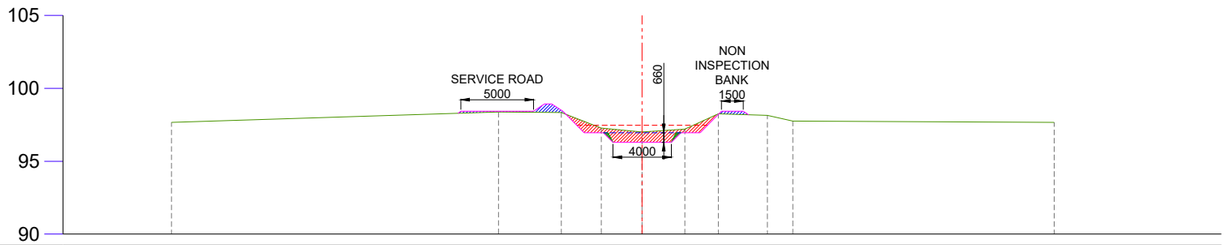
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 74 of 89

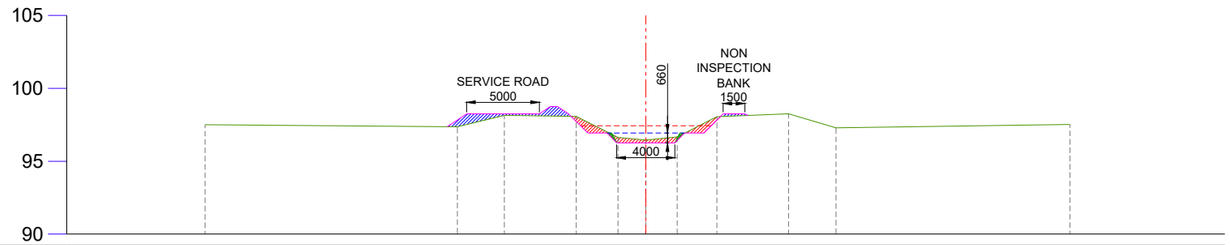
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	97.669	98.385	98.347	97.275	97.014	97.201	98.246	98.143	97.757	97.665
OFFSET (KM	32.306	9.857	5.541	2.797	0.000	2.938	5.228	8.603	10.349	28.292

CUTTING AREA (SQ.M) = 6.137
FILLING AREA (SQ.M) = 1.495

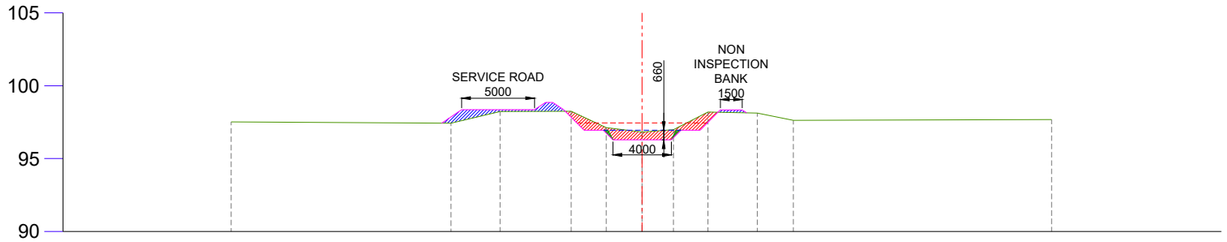
CH. : 29+700 KM
DESIGNED BED LEVEL = 96.300 M



EXIST. LEVEL (KM	97.501	97.356	98.144	98.081	96.638	96.446	96.664	98.050	98.244	97.285	97.519
OFFSET (KM	30.256	12.940	9.708	4.775	1.912	0.000	2.150	4.884	9.802	13.047	29.098

CUTTING AREA (SQ.M) = 3.329
FILLING AREA (SQ.M) = 3.107

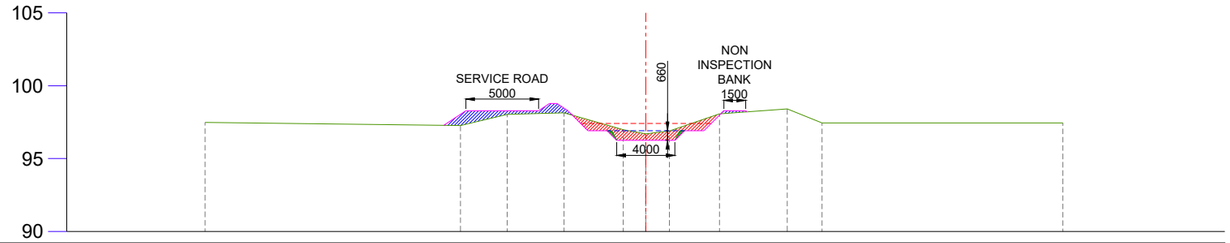
CH. : 29+900 KM
DESIGNED BED LEVEL = 96.266 M



EXIST. LEVEL (KM	97.512	97.432	98.228	98.244	97.119	96.824	96.985	98.195	98.130	97.621	97.672
OFFSET (KM	28.201	13.110	9.743	4.865	2.455	0.000	2.148	4.529	7.901	10.384	28.108

CUTTING AREA (SQ.M) = 6.169
FILLING AREA (SQ.M) = 3.125

CH. : 29+800 KM
DESIGNED BED LEVEL = 96.283 M



EXIST. LEVEL (KM	97.487	97.265	98.040	98.138	96.977	96.693	96.885	98.077	98.407	97.443	97.443
OFFSET (KM	30.247	12.726	9.510	5.622	1.548	0.000	1.615	5.059	9.701	12.095	28.620

CUTTING AREA (SQ.M) = 5.583
FILLING AREA (SQ.M) = 4.065

CH. : 30+000 KM
DESIGNED BED LEVEL = 96.248 M

LEGEND

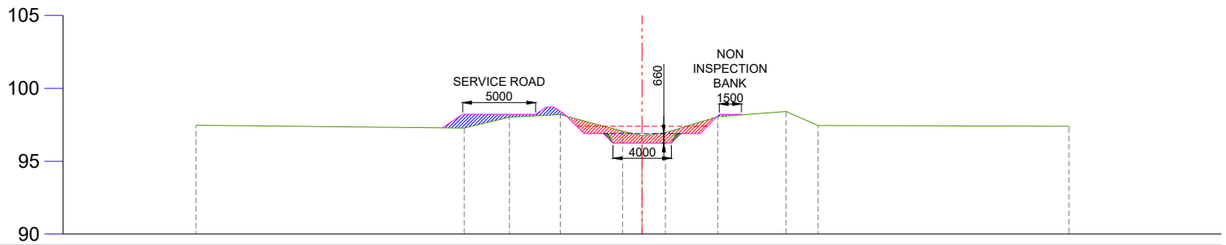
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 75 of 89

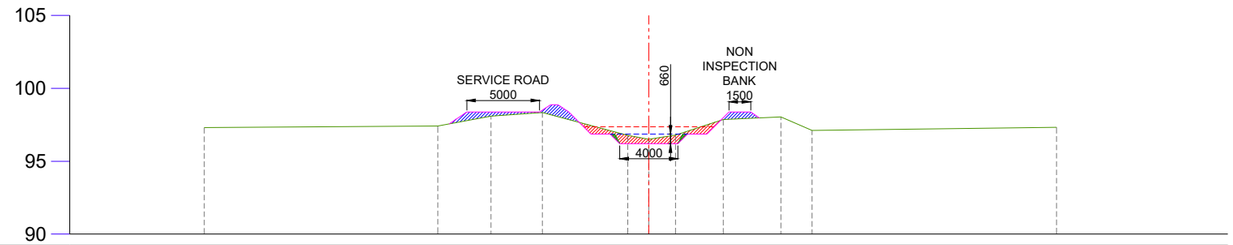
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	97.460	97.274	98.017	98.193	97.066	96.751	96.945	98.059	98.419	97.452	97.404
OFFSET (KM	30.625	12.208	9.107	5.611	1.343	0.000	1.606	5.196	9.882	12.068	29.296

CUTTING AREA (SQ.M) = 6.381
FILLING AREA (SQ.M) = 3.759

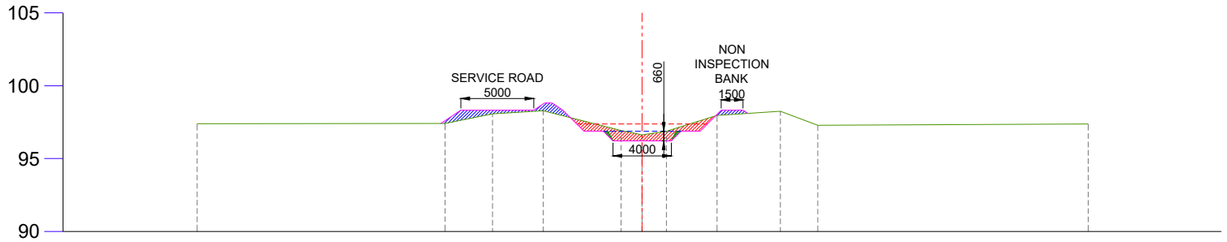
CH. : 30+100 KM
DESIGNED BED LEVEL = 96.231 M



EXIST. LEVEL (KM	97.304	97.418	98.093	98.337	96.773	96.504	96.784	97.869	98.040	97.117	97.327
OFFSET (KM	30.514	14.484	10.833	7.301	1.450	0.000	1.835	5.105	9.074	11.199	27.991

CUTTING AREA (SQ.M) = 4.162
FILLING AREA (SQ.M) = 3.851

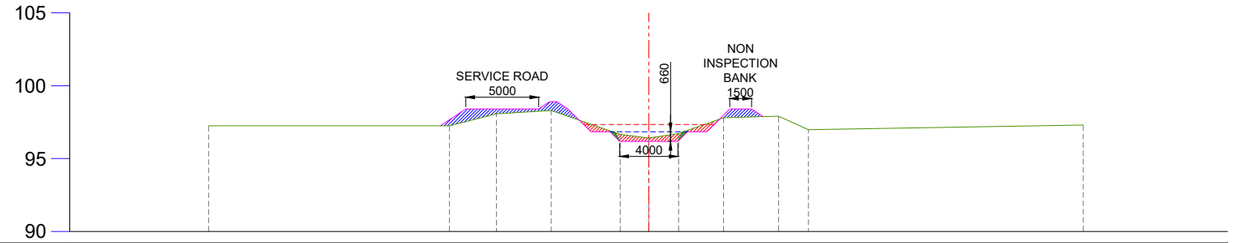
CH. : 30+300 KM
DESIGNED BED LEVEL = 96.197 M



EXIST. LEVEL (KM	97.385	97.407	98.069	98.290	96.927	96.634	96.868	97.969	98.241	97.293	97.367
OFFSET (KM	30.539	13.520	10.258	6.787	1.447	0.000	1.672	5.138	9.495	12.064	30.614

CUTTING AREA (SQ.M) = 5.237
FILLING AREA (SQ.M) = 3.587

CH. : 30+200 KM
DESIGNED BED LEVEL = 96.214 M



EXIST. LEVEL (KM	97.244	97.245	98.074	98.307	96.656	96.419	96.720	97.803	97.910	96.986	97.296
OFFSET (KM	30.204	13.679	10.450	6.709	1.966	0.000	2.049	5.120	8.898	10.951	29.817

CUTTING AREA (SQ.M) = 3.145
FILLING AREA (SQ.M) = 5.401

CH. : 30+400 KM
DESIGNED BED LEVEL = 96.179 M

LEGEND

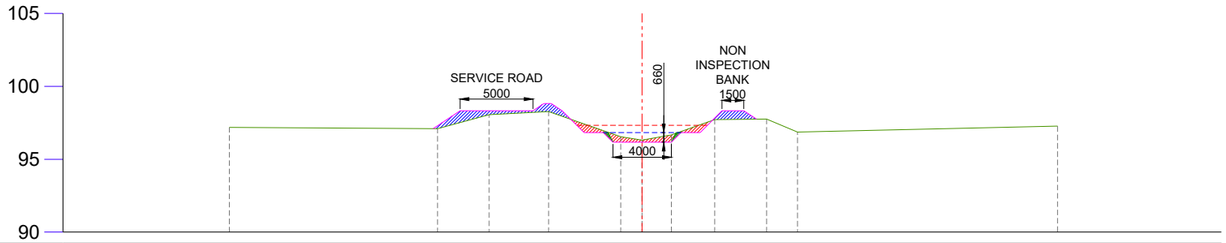
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 76 of 89

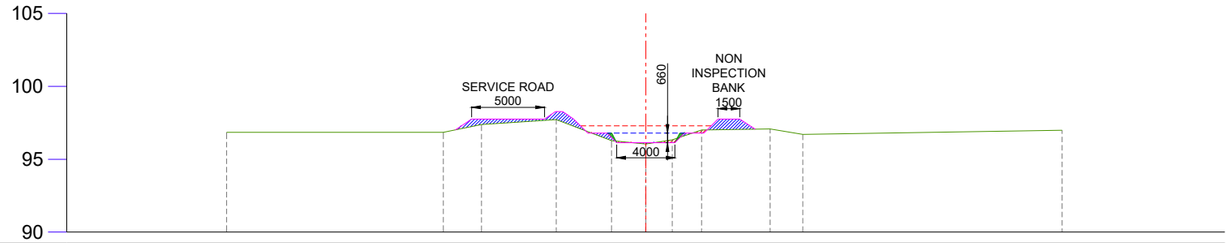
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	97.189	97.088	98.052	98.272	96.548	96.315	96.660	97.725	97.753	96.865	97.269
OFFSET (KM	28.330	14.037	10.502	6.425	1.473	0.000	2.016	4.989	8.540	10.666	28.513

CUTTING AREA (SQ.M) = 3.110
FILLING AREA (SQ.M) = 4.844

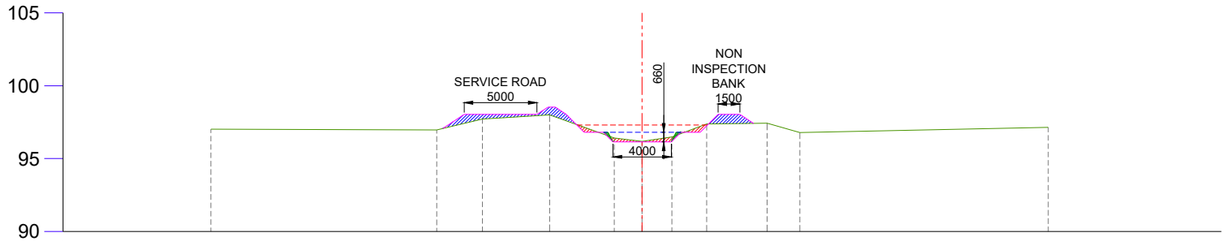
CH. : 30+500 KM
DESIGNED BED LEVEL = 96.162 M



EXIST. LEVEL (KM	96.851	96.844	97.381	97.713	96.271	96.044	96.321	96.999	97.069	96.708	96.995
OFFSET (KM	28.778	13.904	11.282	6.156	2.359	0.000	1.812	3.829	8.524	10.775	28.564

CUTTING AREA (SQ.M) = 0.423
FILLING AREA (SQ.M) = 5.099

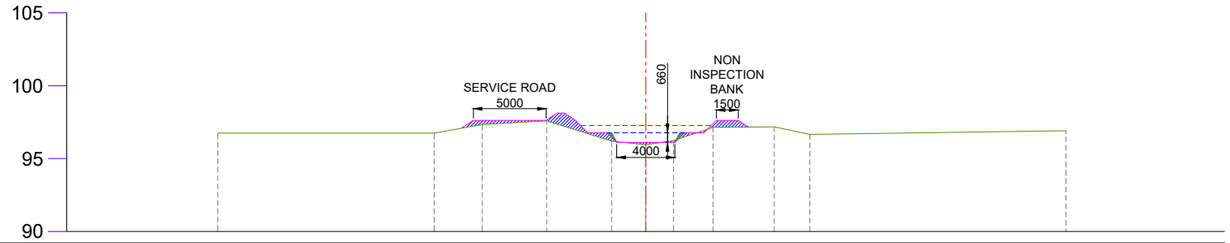
CH. : 30+700 KM
DESIGNED BED LEVEL = 96.128 M



EXIST. LEVEL (KM	97.018	96.965	97.720	97.994	96.410	96.180	96.492	97.367	97.419	96.788	97.135
OFFSET (KM	29.589	14.091	10.959	6.347	1.913	0.000	2.053	4.434	8.589	10.831	27.879

CUTTING AREA (SQ.M) = 1.428
FILLING AREA (SQ.M) = 4.431

CH. : 30+600 KM
DESIGNED BED LEVEL = 96.145 M



EXIST. LEVEL (KM	96.758	96.751	97.333	97.595	96.204	95.941	96.235	97.141	97.176	96.667	96.909
OFFSET (KM	29.373	14.528	11.217	6.808	2.348	0.000	1.903	4.613	8.812	11.255	28.844

CUTTING AREA (SQ.M) = 0.155
FILLING AREA (SQ.M) = 4.590

CH. : 30+800 KM
DESIGNED BED LEVEL = 96.110 M

LEGEND

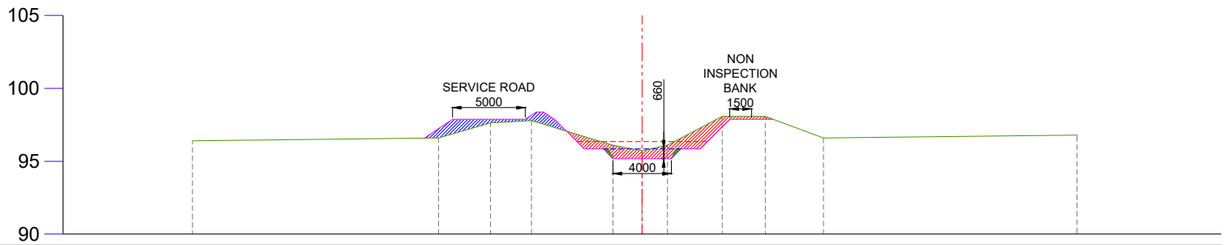
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 77 of 89

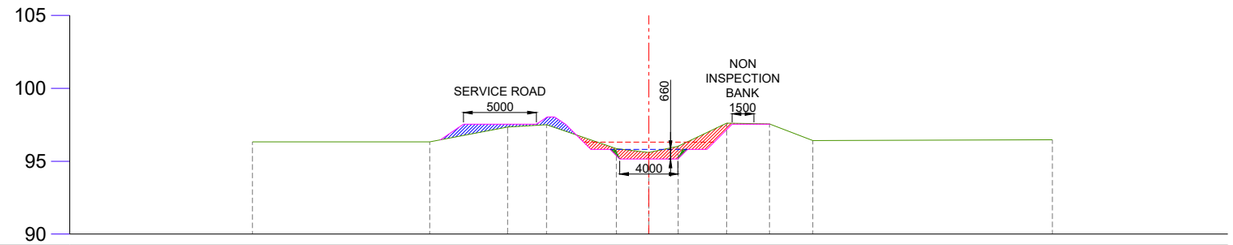
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	96.402	96.595	97.622	97.785	96.097	95.726	96.102	98.082	98.072	96.591	96.783
OFFSET (KM	30.864	13.972	10.407	7.586	2.006	0.000	1.735	5.492	8.451	12.439	29.847

CUTTING AREA (SQ.M) = 9.326
FILLING AREA (SQ.M) = 4.594

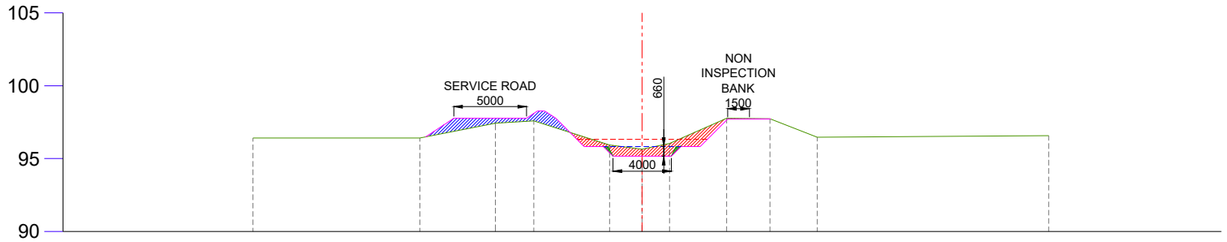
CH. : 30+900 KM
DESIGNED BED LEVEL = 95.179 M



EXIST. LEVEL (KM	96.337	96.330	97.336	97.503	95.868	95.606	96.021	97.614	97.560	96.411	96.474
OFFSET (KM	27.202	15.027	9.686	7.017	2.229	0.000	2.005	5.348	8.286	11.256	27.691

CUTTING AREA (SQ.M) = 6.567
FILLING AREA (SQ.M) = 3.550

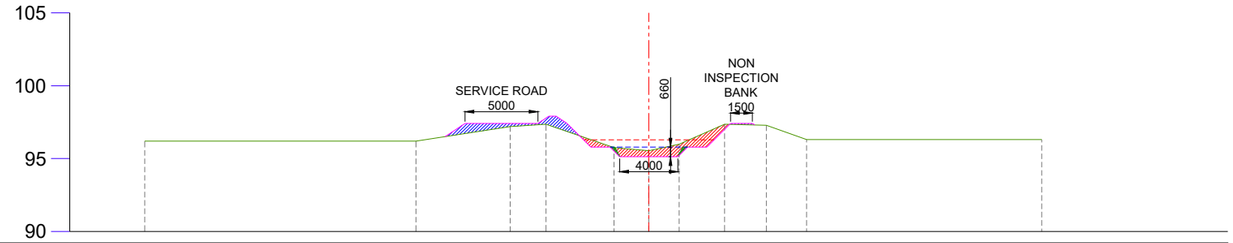
CH. : 31+100 KM
DESIGNED BED LEVEL = 95.145 M



EXIST. LEVEL (KM	96.411	96.406	97.421	97.588	95.938	95.643	96.046	97.764	97.729	96.470	96.580
OFFSET (KM	26.713	15.253	10.076	7.439	2.239	0.000	1.881	5.806	8.785	12.028	27.902

CUTTING AREA (SQ.M) = 6.753
FILLING AREA (SQ.M) = 4.936

CH. : 31+000 KM
DESIGNED BED LEVEL = 95.162 M



EXIST. LEVEL (KM	96.205	96.196	97.190	97.360	95.747	95.542	95.977	97.365	97.293	96.314	96.312
OFFSET (KM	34.594	15.981	9.518	7.060	2.391	0.000	2.086	5.204	8.069	10.830	26.968

CUTTING AREA (SQ.M) = 5.305
FILLING AREA (SQ.M) = 3.709

CH. : 31+200 KM
DESIGNED BED LEVEL = 95.128 M

LEGEND

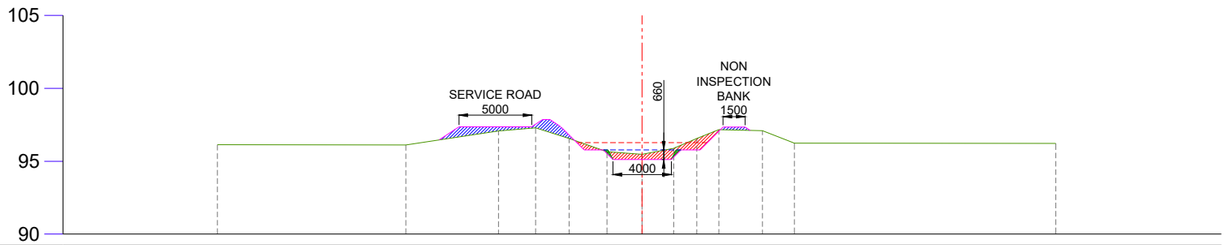
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 78 of 89

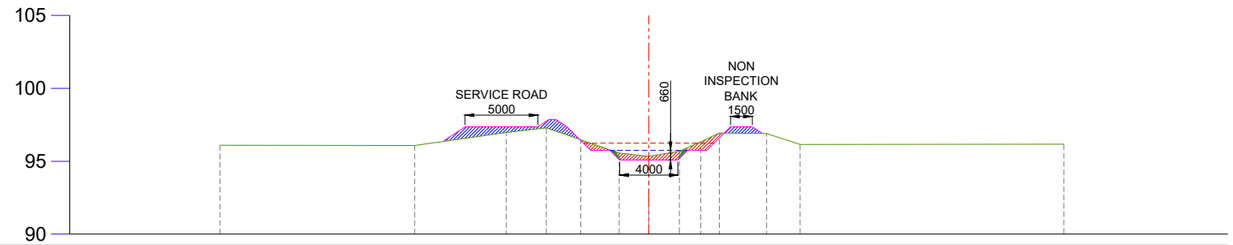
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	96.131	96.116	97.077	97.286	96.565	95.654	95.465	95.888	97.160	97.093	96.239	96.217
OFFSET (KM	29.147	16.211	9.855	7.308	5.009	2.403	0.000	2.165	5.260	8.262	10.451	28.399

CUTTING AREA (SQ.M) = 4.308
FILLING AREA (SQ.M) = 4.146

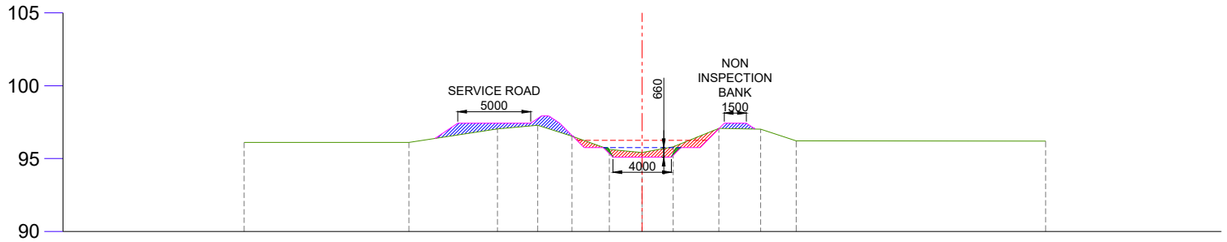
CH. :31+300 KM
DESIGNED BED LEVEL = 95.110 M



EXIST. LEVEL (KM	96.095	96.084	96.964	97.285	96.477	95.565	95.336	95.691	96.933	96.907	96.158	96.176
OFFSET (KM	29.423	16.073	9.781	7.043	4.662	2.034	0.000	2.108	4.852	8.088	10.379	28.484

CUTTING AREA (SQ.M) = 3.772
FILLING AREA (SQ.M) = 5.172

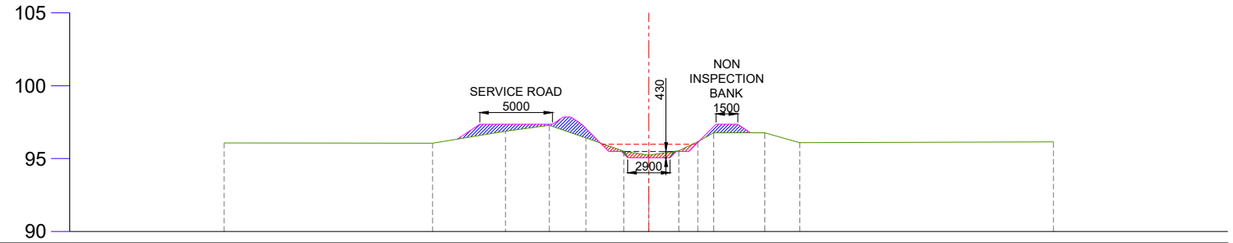
CH. : 31+500 KM
DESIGNED BED LEVEL = 95.076 M



EXIST. LEVEL (KM	96.117	96.103	97.034	97.285	96.532	95.620	95.416	95.813	97.074	97.022	96.208	96.201
OFFSET (KM	27.314	16.005	9.929	7.171	4.820	2.249	0.000	2.126	5.265	8.138	10.573	27.701

CUTTING AREA (SQ.M) = 4.076
FILLING AREA (SQ.M) = 5.188

CH. : 31+400 KM
DESIGNED BED LEVEL = 95.093 M



EXIST. LEVEL (KM	96.069	96.061	96.881	97.284	96.412	95.500	95.240	95.544	96.764	96.772	96.099	96.146
OFFSET (KM	29.149	14.839	9.837	6.829	4.315	1.711	0.000	2.067	4.454	7.954	10.364	27.769

CUTTING AREA (SQ.M) = 1.609
FILLING AREA (SQ.M) = 6.101

CH. : 31+600 KM
DESIGNED BED LEVEL = 95.059 M

LEGEND

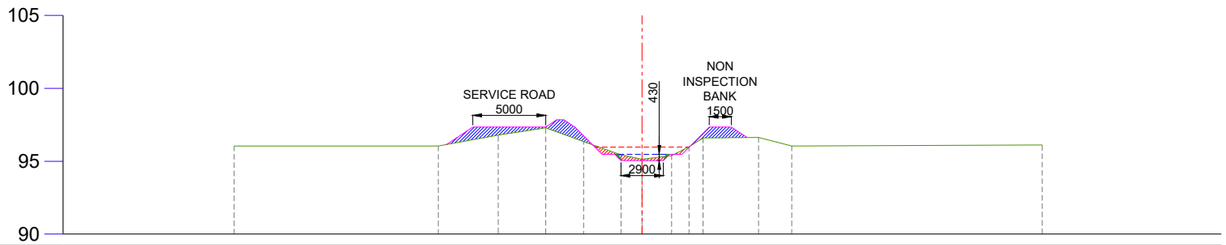
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 79 of 89

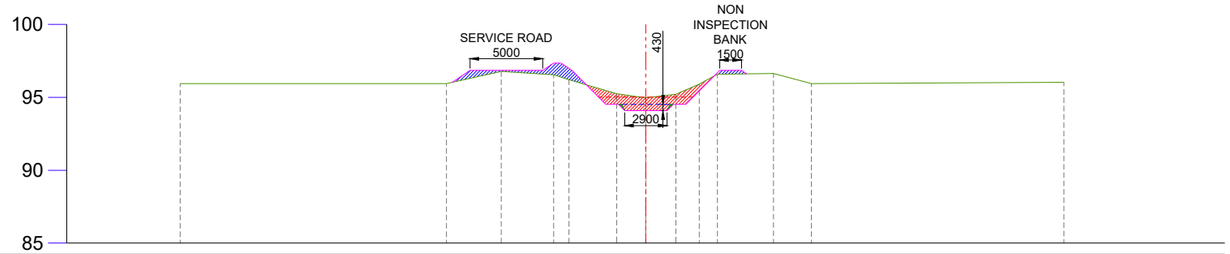
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	96.042	96.037	96.796	97.283	96.344	95.432	95.141	95.393	96.589	96.632	96.037	96.115
OFFSET (KM	28.008	13.990	9.875	6.607	4.007	1.451	0.000	2.033	4.179	7.989	10.271	27.456

CUTTING AREA (SQ.M) = 1.306
FILLING AREA (SQ.M) = 6.909

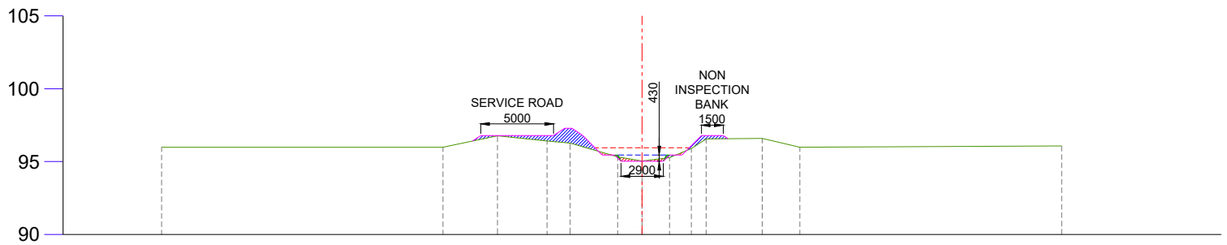
CH. : 31+700 KM
DESIGNED BED LEVEL = 95.041 M



EXIST. LEVEL (KM	95.942	95.941	96.775	96.544	96.217	95.239	94.963	95.213	96.589	96.629	95.950	96.035
OFFSET (KM	31.959	13.675	9.918	6.330	5.280	1.995	0.000	2.056	4.913	8.764	11.356	28.701

CUTTING AREA (SQ.M) = 6.459
FILLING AREA (SQ.M) = 3.780

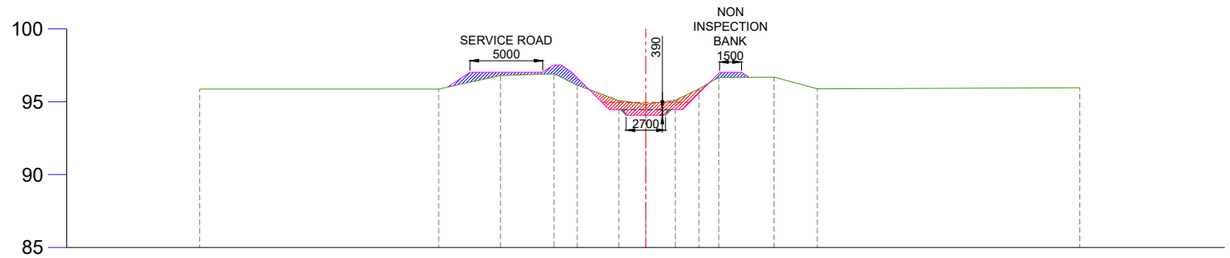
CH. : 31+900 KM
DESIGNED BED LEVEL = 94.092 M



EXIST. LEVEL (KM	95.986	95.984	96.765	96.420	96.266	95.324	95.033	95.270	96.546	96.596	95.981	96.072
OFFSET (KM	32.975	13.666	9.932	6.533	4.935	1.686	0.000	1.885	4.396	8.251	10.834	28.798

CUTTING AREA (SQ.M) = 0.542
FILLING AREA (SQ.M) = 3.934

CH. : 31+800 KM
DESIGNED BED LEVEL = 95.024 M



EXIST. LEVEL (KM	95.866	95.862	96.794	96.921	96.125	95.080	94.834	95.105	96.674	96.694	95.888	95.963
OFFSET (KM	30.626	14.221	9.973	6.306	4.709	1.859	0.000	2.027	4.997	8.793	11.770	29.773

CUTTING AREA (SQ.M) = 5.351
FILLING AREA (SQ.M) = 4.308

CH. : 32+000 KM
DESIGNED BED LEVEL = 94.075 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

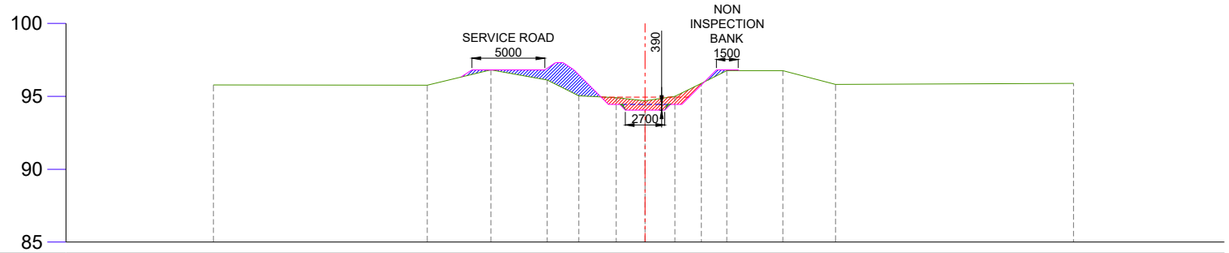
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 80 of 89

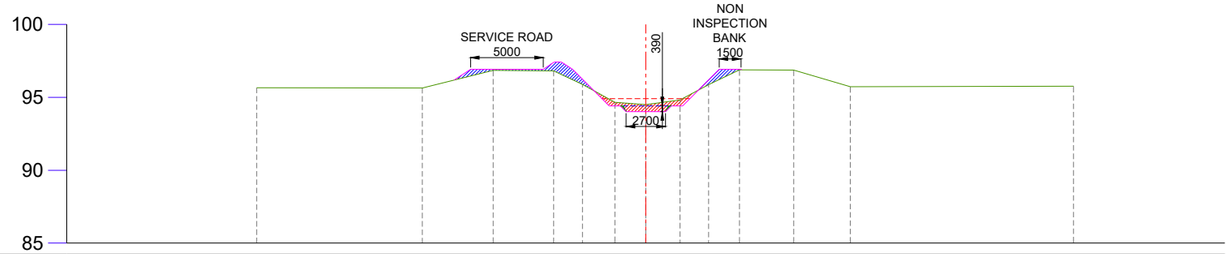
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	95.774	95.772	96.816	96.126	95.025	94.908	94.695	94.991	95.884	96.761	96.761	95.825	95.891
OFFSET (KM	29.621	14.944	10.584	6.719	4.554	1.974	0.000	2.038	3.860	5.614	9.463	13.069	29.412

CUTTING AREA (SQ.M) = 4.003
FILLING AREA (SQ.M) = 6.409

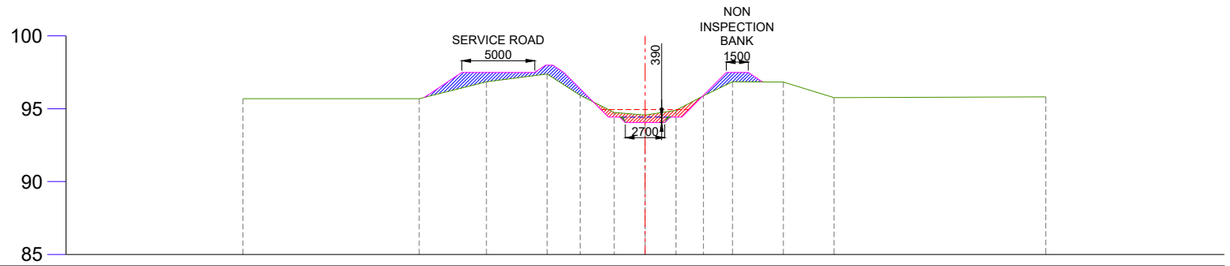
CH. : 32+100 KM
DESIGNED BED LEVEL = 94.058 M



EXIST. LEVEL (KM	95.649	95.642	96.846	96.824	95.881	94.662	94.492	94.821	95.873	96.894	96.863	95.729	95.772
OFFSET (KM	26.695	15.339	10.481	6.323	4.341	2.124	0.000	2.341	4.316	6.429	10.155	14.034	29.346

CUTTING AREA (SQ.M) = 2.860
FILLING AREA (SQ.M) = 3.740

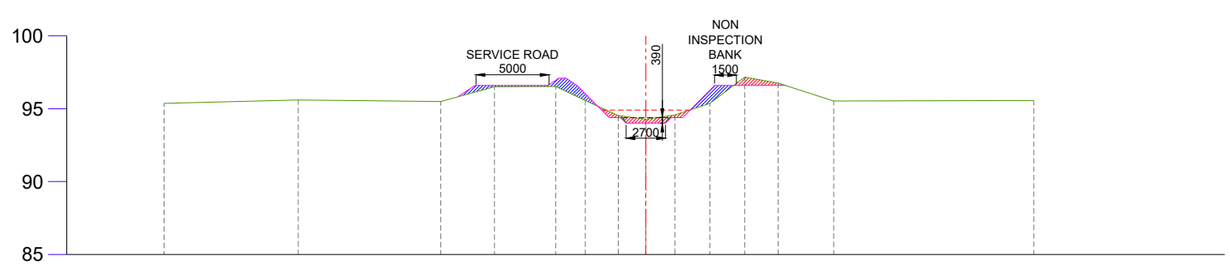
CH. : 32+300 KM
DESIGNED BED LEVEL = 94.023 M



EXIST. LEVEL (KM	95.686	95.683	96.837	97.379	95.928	94.743	94.559	94.878	95.877	96.851	96.832	95.758	95.808
OFFSET (KM	27.589	15.502	10.880	6.716	4.466	2.130	0.000	2.107	4.007	6.006	9.489	12.958	27.503

CUTTING AREA (SQ.M) = 3.399
FILLING AREA (SQ.M) = 8.567

CH. : 32+200 KM
DESIGNED BED LEVEL = 94.041 M



EXIST. LEVEL (KM	95.369	95.603	95.500	96.513	96.521	95.569	94.529	94.278	94.569	95.375	97.171	96.759	95.526	95.560
OFFSET (KM	33.060	23.846	14.070	10.381	6.177	4.146	1.893	0.000	1.984	4.401	6.784	9.083	12.895	26.630

CUTTING AREA (SQ.M) = 2.951
FILLING AREA (SQ.M) = 4.270

CH. : 32+400 KM
DESIGNED BED LEVEL = 94.006 M

LEGEND

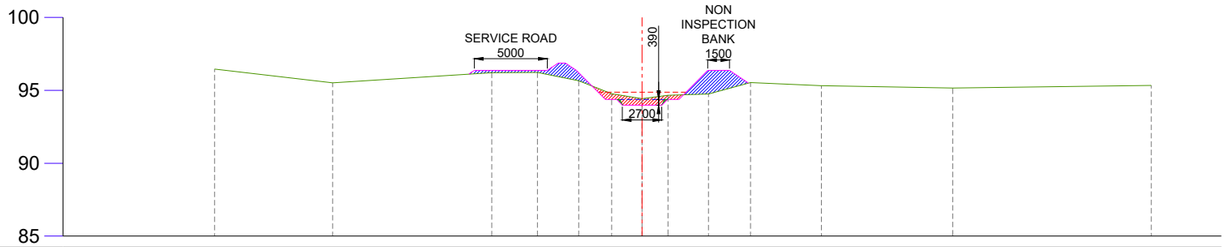
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 81 of 89

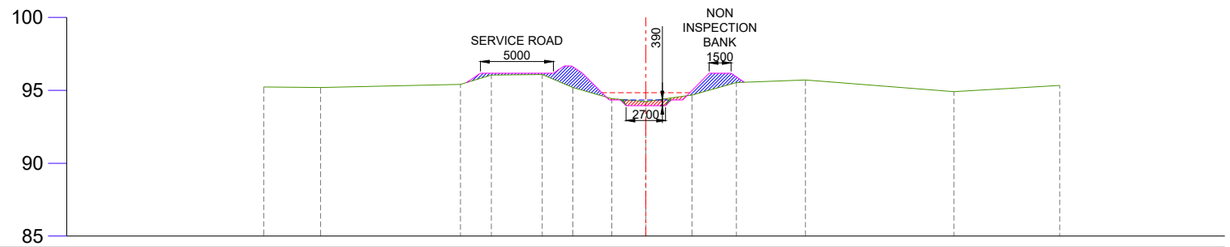
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	96.451	95.521	96.211	96.231	95.649	94.767	94.424	94.661	94.741	95.536	95.313	95.164	95.340
OFFSET (KM	29.351	21.238	10.325	7.188	4.342	2.081	0.000	1.769	4.550	7.440	12.302	21.311	34.942

CUTTING AREA (SQ.M) = 2.676
FILLING AREA (SQ.M) = 7.107

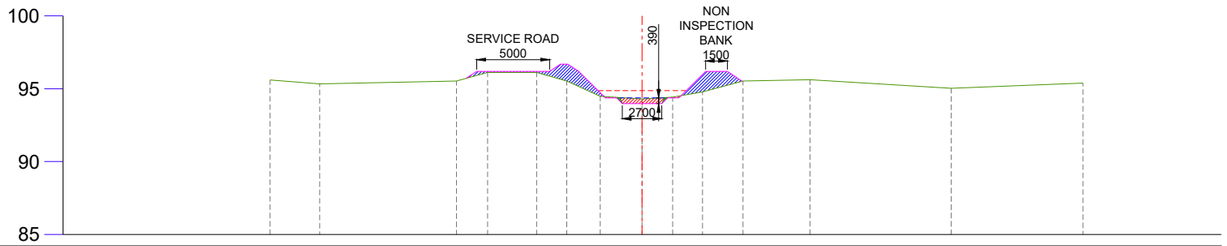
CH. : 32+500 KM
DESIGNED BED LEVEL = 93.989 M



EXIST. LEVEL (KM	95.228	95.197	95.404	96.047	96.091	95.190	94.437	94.241	94.674	95.536	95.713	94.916	95.333
OFFSET (KM	26.227	22.314	12.713	10.601	7.105	5.008	2.341	0.000	3.172	6.217	10.950	21.136	28.409

CUTTING AREA (SQ.M) = 1.436
FILLING AREA (SQ.M) = 6.811

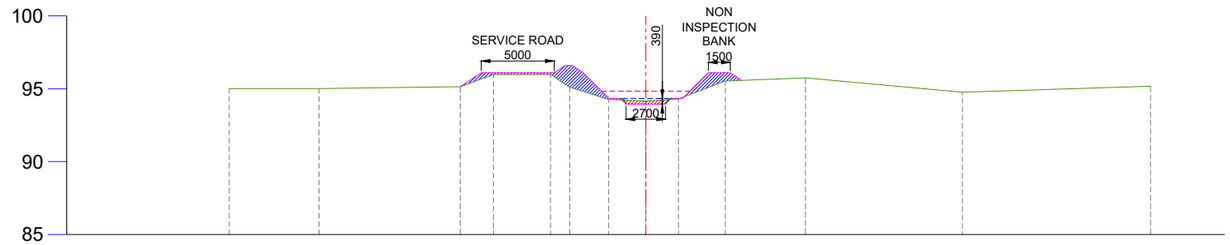
CH. : 32+700 KM
DESIGNED BED LEVEL = 93.954 M



EXIST. LEVEL (KM	95.606	95.338	95.530	96.113	96.115	95.528	94.485	94.301	94.424	94.776	95.536	95.618	95.026	95.390
OFFSET (KM	25.527	22.123	12.746	10.612	7.235	5.168	2.866	0.000	2.103	4.139	6.934	11.525	21.214	30.253

CUTTING AREA (SQ.M) = 1.313
FILLING AREA (SQ.M) = 6.923

CH. : 32+600 KM
DESIGNED BED LEVEL = 93.972 M



EXIST. LEVEL (KM	95.014	95.002	95.140	95.964	95.971	95.100	94.270	94.148	94.295	95.536	95.738	94.770	95.172
OFFSET (KM	28.587	22.429	12.732	10.460	6.539	5.218	2.543	0.000	2.251	5.446	10.946	21.734	34.640

CUTTING AREA (SQ.M) = 0.772
FILLING AREA (SQ.M) = 6.958

CH. : 32+800 KM
DESIGNED BED LEVEL = 93.937 M

LEGEND

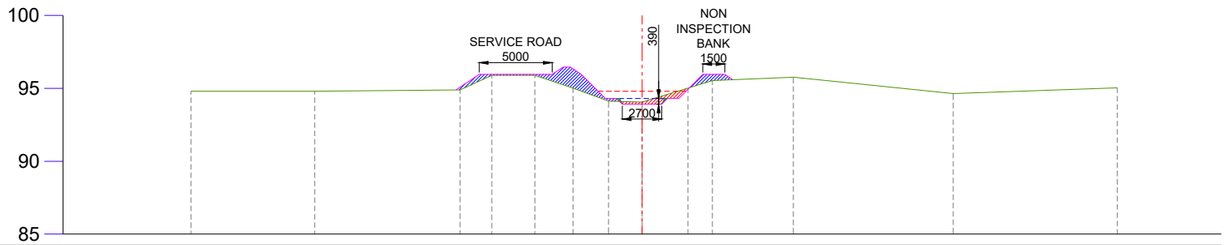
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 82 of 89

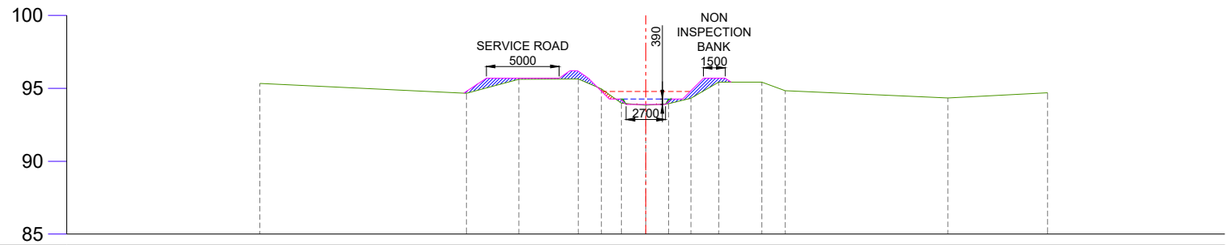
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	94.795	94.807	94.891	95.883	95.892	95.015	94.117	94.062	95.015	95.536	95.760	94.639	95.025
OFFSET (KM	30.967	22.470	12.499	10.312	7.365	4.747	2.303	0.000	3.146	4.831	10.387	21.352	32.616

CUTTING AREA (SQ.M) = 1.359
FILLING AREA (SQ.M) = 5.767

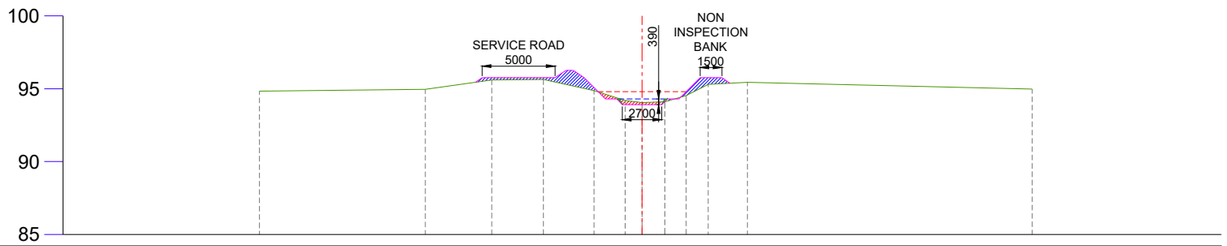
CH. : 32+900 KM
DESIGNED BED LEVEL = 93.920 M



EXIST. LEVEL (KM	95.345	94.667	95.630	95.635	94.955	93.979	93.837	93.952	94.314	95.431	95.426	94.832	94.339	94.688
OFFSET (KM	26.488	12.302	8.716	4.638	3.052	1.669	0.000	1.565	3.098	5.004	7.968	9.561	20.726	27.582

CUTTING AREA (SQ.M) = 0.250
FILLING AREA (SQ.M) = 4.445

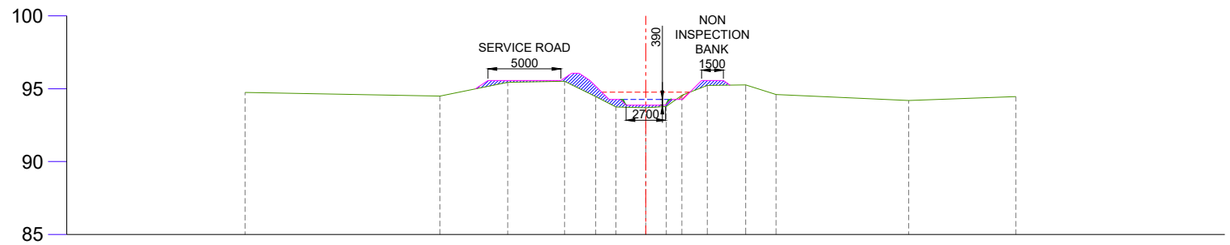
CH. : 33+100 KM
DESIGNED BED LEVEL = 93.886 M



EXIST. LEVEL (KM	94.825	94.952	95.596	95.628	94.877	94.192	94.057	94.097	94.522	95.298	95.437	94.980
OFFSET (KM	26.260	14.871	10.327	6.780	3.296	1.161	0.000	1.565	3.025	4.540	7.223	26.777

CUTTING AREA (SQ.M) = 0.913
FILLING AREA (SQ.M) = 4.275

CH. : 33+000 KM
DESIGNED BED LEVEL = 93.903 M



EXIST. LEVEL (KM	94.749	94.501	95.430	95.508	94.451	93.752	93.686	94.541	95.226	95.266	94.604	94.185	94.467
OFFSET (KM	27.505	14.131	9.477	5.585	3.448	2.044	0.000	2.469	4.218	6.847	8.937	18.038	25.400

CUTTING AREA (SQ.M) = 0.146
FILLING AREA (SQ.M) = 4.943

CH. : 33+200 KM
DESIGNED BED LEVEL = 93.868 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

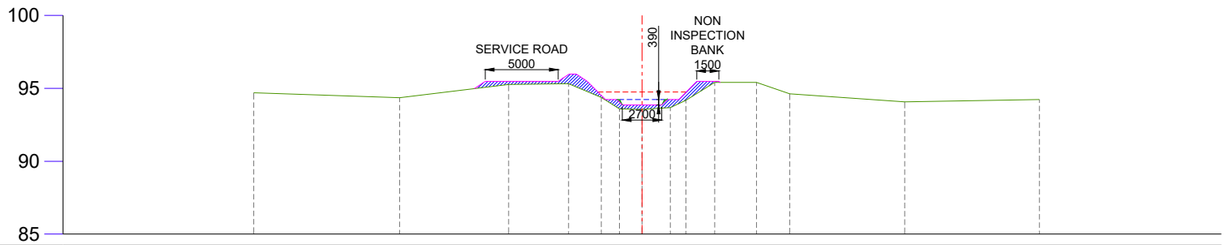
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 83 of 89

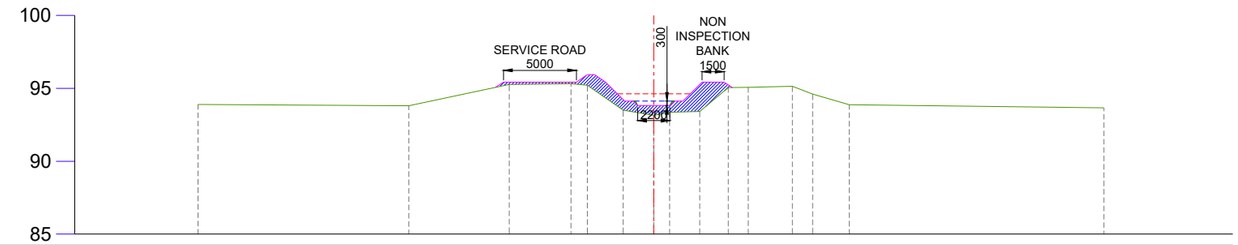
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	94.695	94.348	95.269	95.315	94.369	93.549	93.676	94.184	95.412	95.407	94.619	94.074	94.234
OFFSET (KM	26.660	16.644	9.156	5.039	2.794	1.553	0.000	1.941	3.001	4.992	7.857	10.133	18.024	27.264

CUTTING AREA (SQ.M) = 00000
FILLING AREA (SQ.M) = 6.000

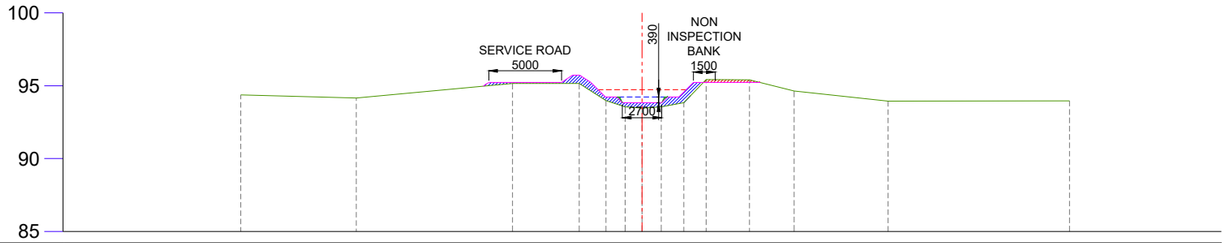
CH. : 33+300 KM
DESIGNED BED LEVEL = 93.851 M



EXIST. LEVEL (KM	93.889	93.807	95.269	95.321	95.218	93.506	93.139	93.352	93.416	95.046	95.073	95.148	94.614	93.871	93.668
OFFSET (KM	31.291	16.810	9.924	5.678	4.562	2.100	0.000	1.079	3.145	5.112	6.475	9.513	10.894	13.405	30.884

CUTTING AREA (SQ.M) = 00000
FILLING AREA (SQ.M) = 9.831

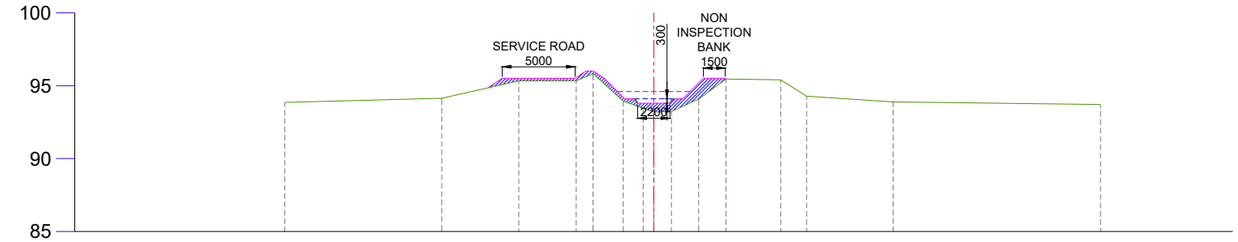
CH. : 33+500 KM
DESIGNED BED LEVEL = 93.817 M



EXIST. LEVEL (KM	94.373	94.162	95.153	95.161	93.971	93.551	93.460	93.542	93.828	95.421	95.407	94.638	93.941	93.963
OFFSET (KM	27.550	19.624	8.896	4.318	2.478	1.162	0.000	1.318	2.868	4.398	7.370	10.442	16.882	29.334

CUTTING AREA (SQ.M) = 0.643
FILLING AREA (SQ.M) = 4.707

CH. : 33+400 KM
DESIGNED BED LEVEL = 93.834 M



EXIST. LEVEL (KM	93.859	94.134	95.324	95.331	95.824	93.947	93.201	93.233	94.092	95.450	95.407	94.286	93.883	93.710
OFFSET (KM	25.337	14.550	9.262	5.332	4.165	2.105	0.000	1.206	3.075	4.942	8.717	10.492	16.426	30.649

CUTTING AREA (SQ.M) = 00000
FILLING AREA (SQ.M) = 6.355

CH. : 33+600 KM
DESIGNED BED LEVEL = 93.799 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

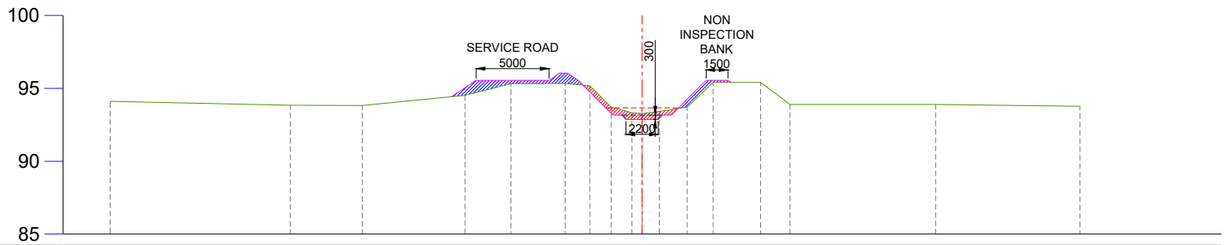
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 84 of 89

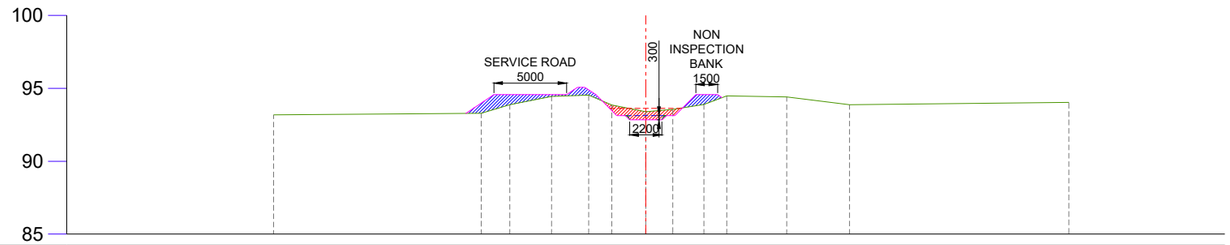
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	94.100		93.833	93.825	94.515	95.321	95.331	93.717	93.274	93.412	93.714	95.412	95.407	93.899	93.898	93.761
OFFSET (KM	36.512		24.149	19.208	12.159	8.995	5.281	2.125	0.000	1.189	3.093	4.875	8.135	10.147	20.145	30.054

CUTTING AREA (SQ.M) = 2.575
FILLING AREA (SQ.M) = 5.106

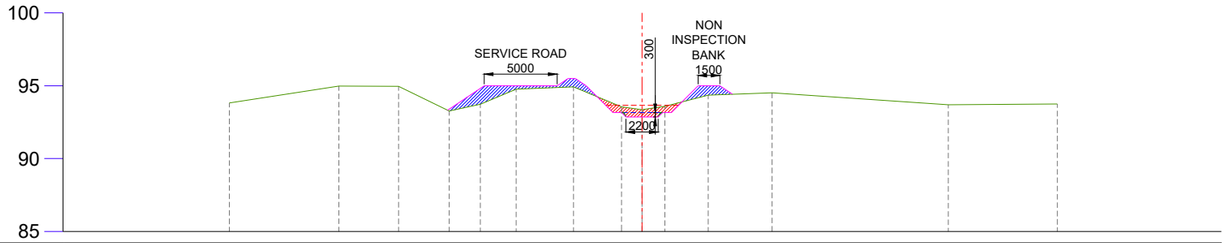
CH. : 33+700 KM
DESIGNED BED LEVEL = 92.868 M



EXIST. LEVEL (KM	93.174		93.287	93.867	94.441	94.532	93.855	93.401	93.561	93.891	94.477	94.408	93.880	94.036		
OFFSET (KM	25.548		11.287	9.333	6.463	3.922	2.330	0.000	1.859	3.988	5.554	9.671	13.981	29.031		

CUTTING AREA (SQ.M) = 2.806
FILLING AREA (SQ.M) = 5.449

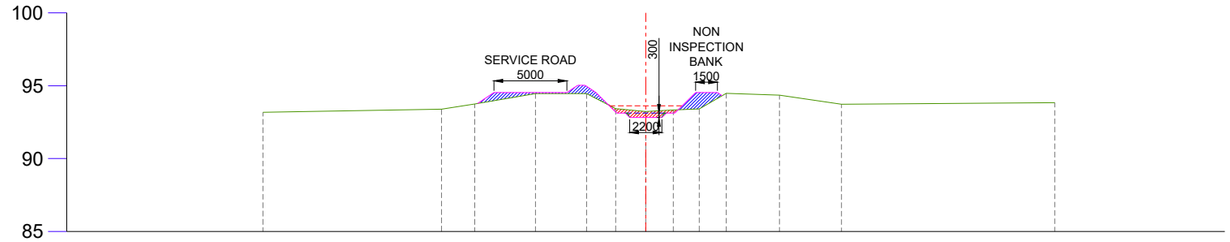
CH. : 33+900 KM
DESIGNED BED LEVEL = 92.834 M



EXIST. LEVEL (KM	93.824		94.977	94.959	93.261	93.729	94.767	94.914	93.542	93.352	93.591	94.353	94.518	93.695	93.750	
OFFSET (KM	28.336		20.816	16.718	13.241	11.109	8.637	4.698	1.414	0.000	1.570	4.532	8.914	21.020	28.495	

CUTTING AREA (SQ.M) = 2.737
FILLING AREA (SQ.M) = 6.396

CH. : 33+800 KM
DESIGNED BED LEVEL = 92.851 M



EXIST. LEVEL (KM	93.176		93.390	93.745	94.457	94.451	93.426	93.226	93.337	93.403	94.477	94.350	93.734	93.832		
OFFSET (KM	26.273		14.022	11.744	7.579	4.055	2.071	0.000	1.889	3.662	5.516	9.171	13.436	28.063		

CUTTING AREA (SQ.M) = 1.605
FILLING AREA (SQ.M) = 4.434

CH. : 34+000 KM
DESIGNED BED LEVEL = 92.816 M

LEGEND

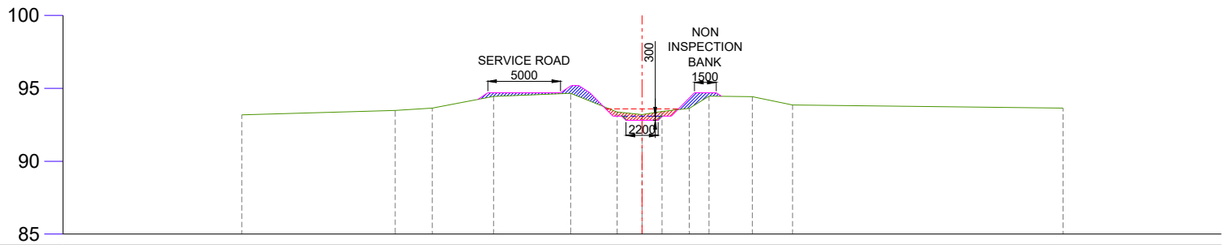
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 85 of 89

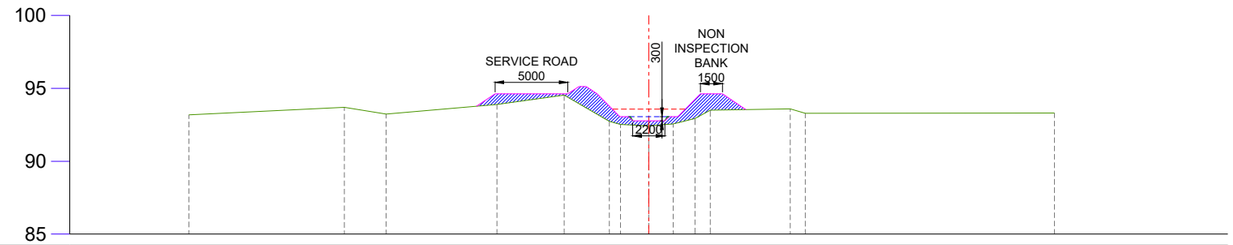
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	93.178	93.482	93.637	94.443	94.651	93.381	93.190	93.418	93.634	94.470	94.430	93.851	93.646
OFFSET (KM	27.478	16.951	14.392	10.193	4.895	1.722	0.000	1.360	3.233	4.593	7.562	10.325	28.892

CUTTING AREA (SQ.M) = 1.889
FILLING AREA (SQ.M) = 3.498

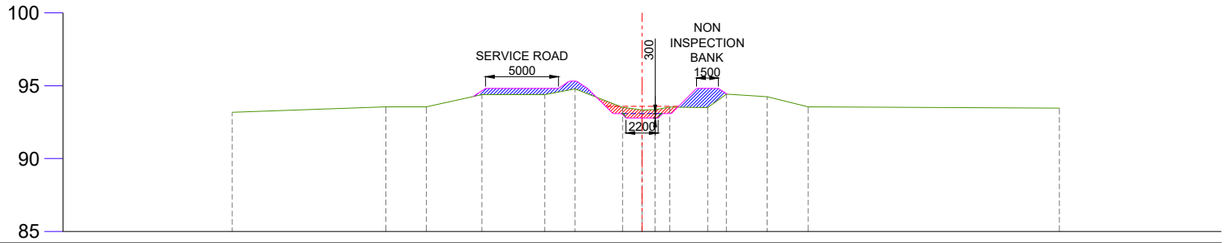
CH. : 34+100 KM
DESIGNED BED LEVEL = 92.799 M



EXIST. LEVEL (KM	93.181	93.689	93.235	93.888	94.532	92.728	92.436	92.552	93.507	93.589	93.290	93.314	
OFFSET (KM	31.568	20.894	18.034	10.428	5.808	2.716	0.000	1.681	4.225	9.704	10.740	27.837	

CUTTING AREA (SQ.M) = 00000
FILLING AREA (SQ.M) = 12.087

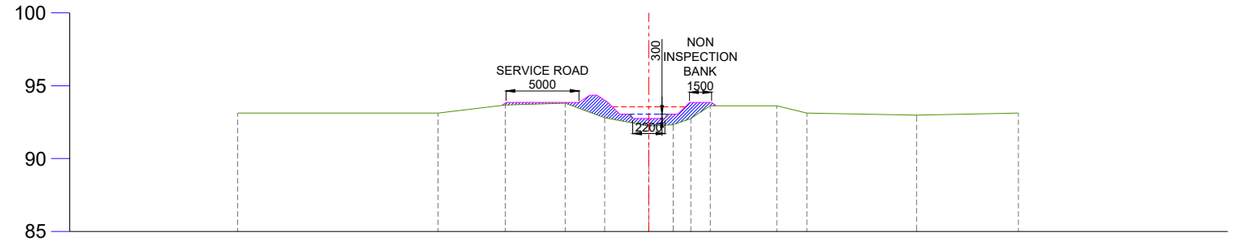
CH. : 34+300 KM
DESIGNED BED LEVEL = 92.765 M



EXIST. LEVEL (KM	93.179	93.557	93.548	94.392	94.395	94.777	93.521	93.328	93.524	93.504	94.428	94.253	93.552	93.458
OFFSET (KM	28.130	17.593	14.803	10.992	6.686	4.599	1.342	0.000	1.903	4.508	5.779	8.588	11.405	28.643

CUTTING AREA (SQ.M) = 2.703
FILLING AREA (SQ.M) = 6.156

CH. : 34+200 KM
DESIGNED BED LEVEL = 92.782 M



EXIST. LEVEL (KM	93.115	93.114	93.675	93.796	92.795	92.226	92.743	93.624	93.620	93.126	92.986	93.123	
OFFSET (KM	28.227	14.471	9.850	5.744	3.035	0.000	2.890	4.212	8.786	10.852	18.373	25.368	

CUTTING AREA (SQ.M) = 00000
FILLING AREA (SQ.M) = 7.237

CH. : 34+400 KM
DESIGNED BED LEVEL = 92.747 M

LEGEND

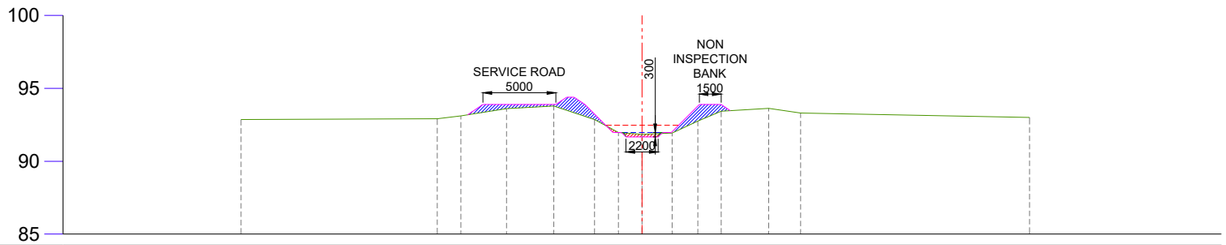
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 86 of 89

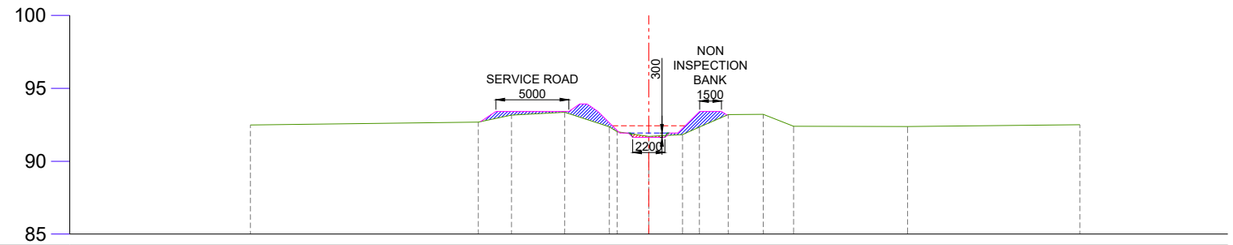
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	92.869	92.909	93.115	93.605	93.785	92.856	91.837	91.940	92.762	93.431	93.620	93.305	92.995
OFFSET (KM	27.521	14.059	12.432	9.296	6.065	3.273	0.000	2.057	3.830	5.434	8.689	10.883	26.593

CUTTING AREA (SQ.M) = 0.616
FILLING AREA (SQ.M) = 6.169

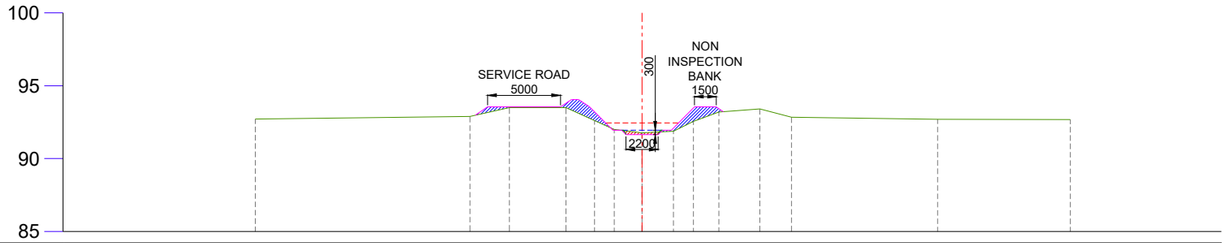
CH. : 34+500 KM
DESIGNED BED LEVEL = 91.664 M



EXIST. LEVEL (KM	92.488	92.683	93.159	93.365	92.353	92.019	91.697	91.824	93.195	93.214	92.394	92.387	92.513
OFFSET (KM	27.339	11.706	9.418	5.768	2.708	2.169	0.000	2.322	5.453	7.859	9.930	17.759	29.592

CUTTING AREA (SQ.M) = 0.326
FILLING AREA (SQ.M) = 5.656

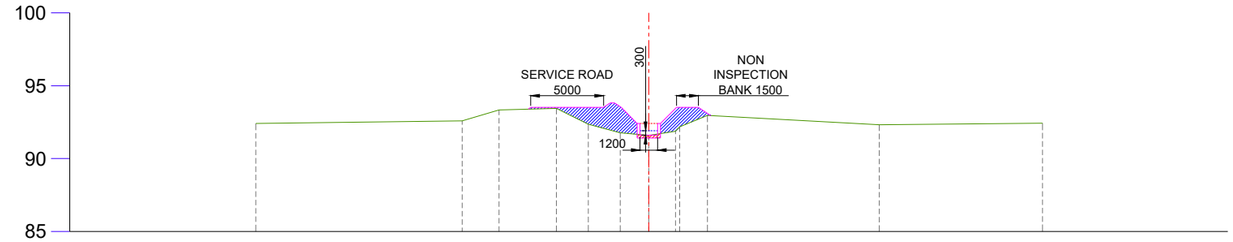
CH. : 34+700 KM
DESIGNED BED LEVEL = 91.630 M



EXIST. LEVEL (KM	92.716	92.898	93.503	93.498	91.996	91.767	91.882	93.195	93.413	92.840	92.687	92.679	
OFFSET (KM	26.542	11.812	9.102	5.223	1.914	0.000	2.149	5.277	8.081	10.257	20.293	29.394	

CUTTING AREA (SQ.M) = 0.445
FILLING AREA (SQ.M) = 4.545

CH. : 34+600 KM
DESIGNED BED LEVEL = 91.647 M



EXIST. LEVEL (KM	92.409	92.581	93.334	93.452	92.357	91.770	91.588	91.878	92.957	92.324	92.429		
OFFSET (KM	26.970	12.805	10.276	6.337	4.158	1.957	0.000	1.836	4.025	15.816	27.028		

CUTTING AREA (SQ.M) = 0.364
FILLING AREA (SQ.M) = 9.636

CH. : 34+800 KM
DESIGNED BED LEVEL = 91.611 M

LEGEND

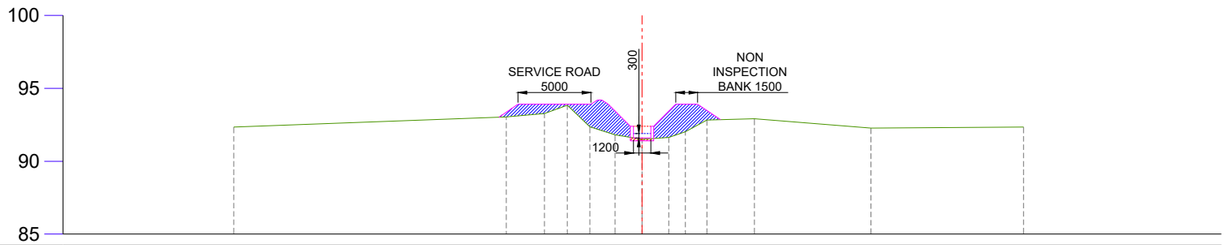
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 87 of 89

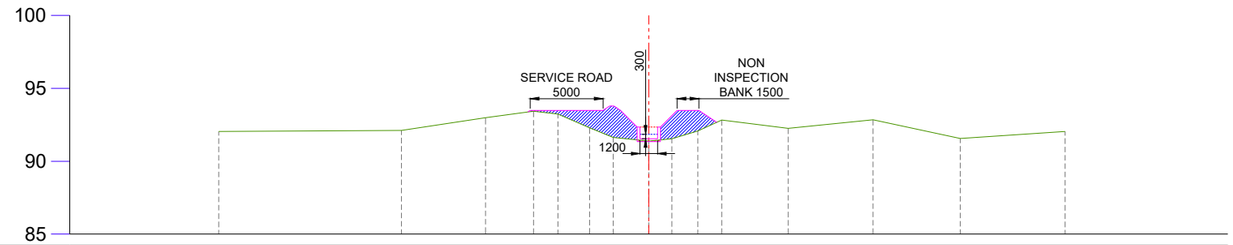
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	92.345	93.046	93.272	93.848	91.809	91.504	91.626	92.829	92.906	92.265	92.349		
OFFSET (KM	28.023	9.323	6.698	5.133	1.856	0.000	1.839	4.458	7.713	15.715	26.185		

CUTTING AREA (SQ.M) = 0.255
FILLING AREA (SQ.M) = 14.079

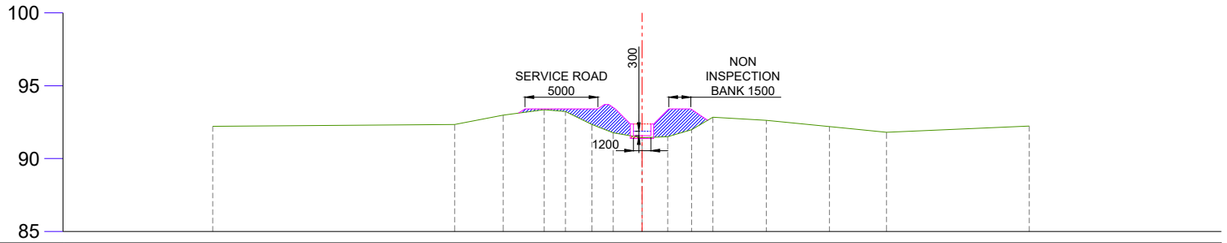
CH. : 34+900 KM
DESIGNED BED LEVEL = 91.591 M



EXIST. LEVEL (KM	92.045	92.121	92.991	93.428	93.230	92.295	91.628	91.389	92.075	92.832	92.259	92.837	91.557	92.042
OFFSET (KM	29.524	16.976	11.201	7.907	6.244	4.060	2.436	0.000	3.369	5.008	9.561	15.384	21.375	28.566

CUTTING AREA (SQ.M) = 0.122
FILLING AREA (SQ.M) = 11.973

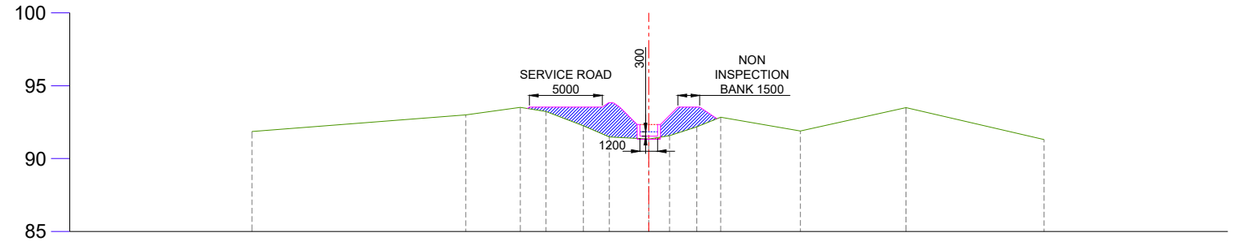
CH. : 35+100 KM
DESIGNED BED LEVEL = 91.551 M



EXIST. LEVEL (KM	92.217	92.343	92.979	93.348	93.230	91.767	91.436	91.504	92.832	92.623	92.195	91.804	92.228	
OFFSET (KM	29.465	12.861	9.540	6.711	5.259	1.975	0.000	1.766	4.857	8.529	12.861	16.773	26.580	

CUTTING AREA (SQ.M) = 0.170
FILLING AREA (SQ.M) = 10.095

CH. : 35+000 KM
DESIGNED BED LEVEL = 91.571 M



EXIST. LEVEL (KM	91.856	93.003	93.508	93.230	92.249	91.490	91.342	92.173	92.832	91.894	93.494	91.309		
OFFSET (KM	27.241	12.554	8.819	7.050	4.485	2.703	0.000	3.289	4.941	10.394	17.647	27.130		

CUTTING AREA (SQ.M) = 0.087
FILLING AREA (SQ.M) = 13.353

CH. : 35+200 KM
DESIGNED BED LEVEL = 91.531 M

LEGEND

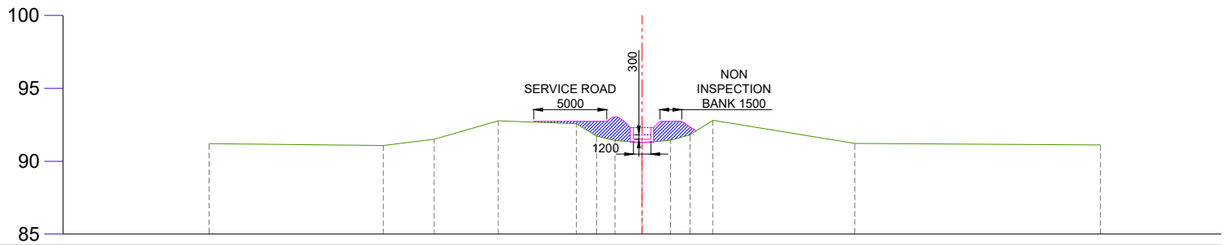
CUT AREA	EXISTING BED LINE	F.S.L.	
FILL AREA	DESIGNED BED LINE	H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 88 of 89

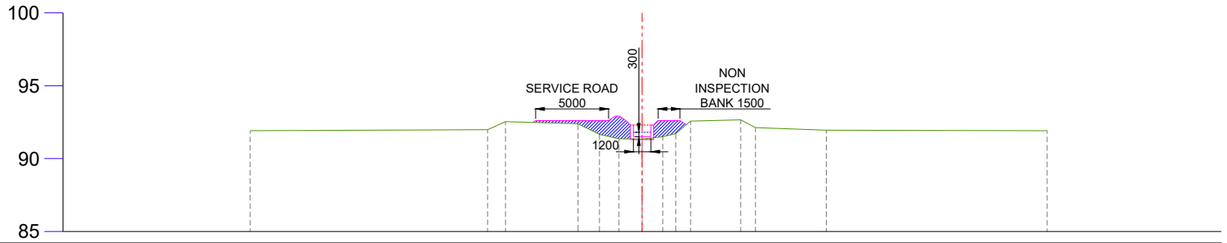
X SECTION OF ANGRA BRANCH CANAL



EXIST. LEVEL (KM	91.201	91.084	91.514	92.766	92.575	91.415	91.267	91.437	92.801	91.214	91.107
OFFSET (KM	29.709	17.773	14.274	9.865	4.507	1.861	0.000	1.960	4.852	14.609	31.450

CUTTING AREA (SQ.M) = 0.002
FILLING AREA (SQ.M) = 7.145

CH. : 35+300 KM
DESIGNED BED LEVEL = 91.511 M



EXIST. LEVEL (KM	91.911	91.981	92.534	92.401	91.658	91.357	91.347	91.510	92.574	92.662	92.125	91.944	91.905
OFFSET (KM	26.904	10.611	9.381	4.396	2.934	1.598	0.000	1.414	3.330	6.772	7.788	12.636	27.799

CUTTING AREA (SQ.M) = 0.109
FILLING AREA (SQ.M) = 5.857

CH. : 35+341 KM
DESIGNED BED LEVEL = 91.503 M

LEGEND

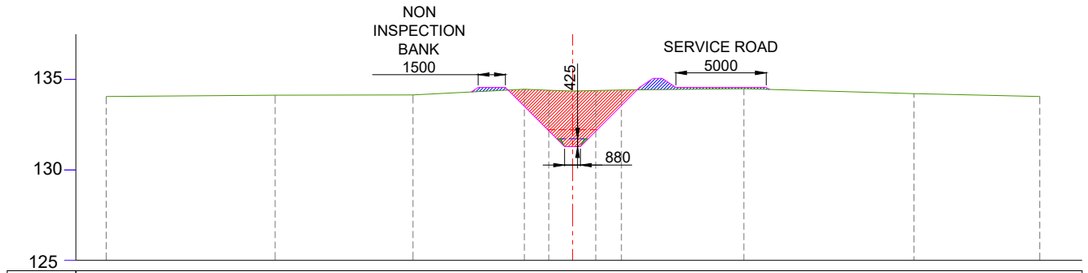
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ANGRA BRANCH CANAL (OFFTAKE FROM 103+660 KM (L), NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ XSEC- 89 of 89

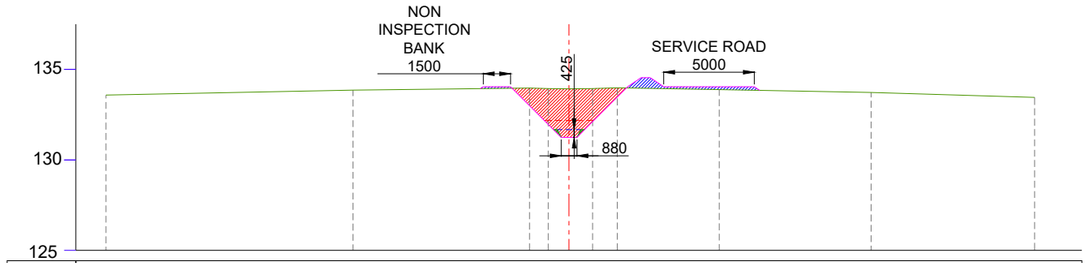
X SECTION OF PALUA MINOR



EXIST. LEVEL (M)	134.054	134.123	134.139	134.452	134.357	134.410	134.481	134.221	134.051
OFFSET (M)	25.788	16.445	8.813	2.665	0.000	2.710	9.485	18.881	25.847

CUTTING AREA (SQ.M) = 12.416
FILLING AREA (SQ.M) = 1.761

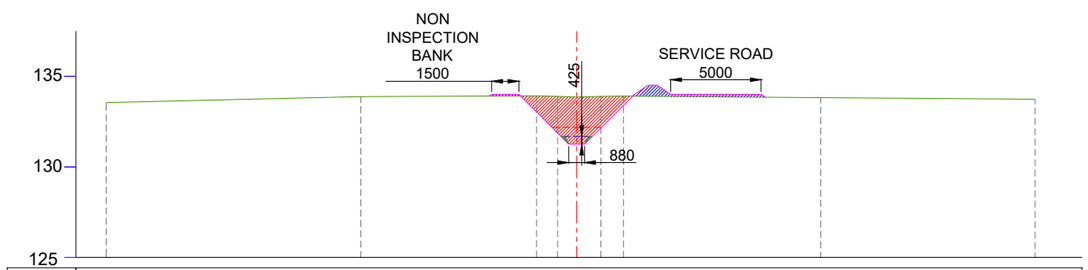
CH. (KM):- 0+100
DESIGNED BED LEVEL = 131.288 M



EXIST. LEVEL (M)	133.588	133.862	133.974	133.928	133.981	133.888	133.721	133.457
OFFSET (M)	25.603	11.939	2.185	0.000	2.661	8.309	16.697	25.741

CUTTING AREA (SQ.M) = 9.691
FILLING AREA (SQ.M) = 1.763

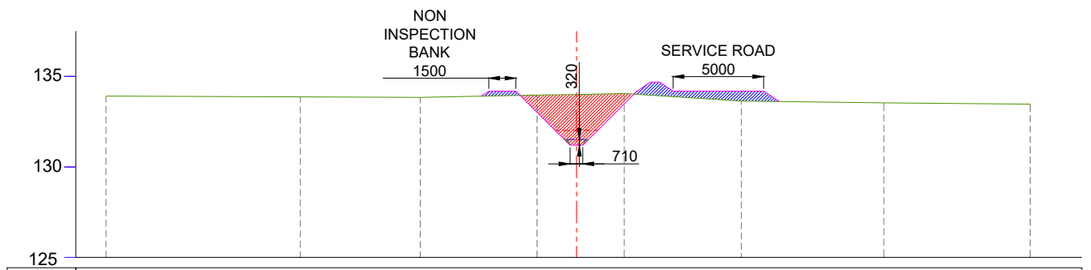
CH. (KM):- 0+300
DESIGNED BED LEVEL = 131.228 M



EXIST. LEVEL (M)	133.558	133.886	133.930	133.857	133.910	133.820	133.735
OFFSET (M)	26.021	11.941	2.219	0.000	2.592	13.499	25.343

CUTTING AREA (SQ.M) = 9.287
FILLING AREA (SQ.M) = 1.796

CH. (KM):- 0+200
DESIGNED BED LEVEL = 131.258 M



EXIST. LEVEL (M)	133.912	133.871	133.835	133.966	134.003	134.056	133.641	133.533	133.462
OFFSET (M)	26.013	15.271	8.641	2.184	0.000	2.649	9.116	16.994	25.091

CUTTING AREA (SQ.M) = 9.870
FILLING AREA (SQ.M) = 4.163

CH. (KM):- 0+400
DESIGNED BED LEVEL = 131.197 M

LEGEND

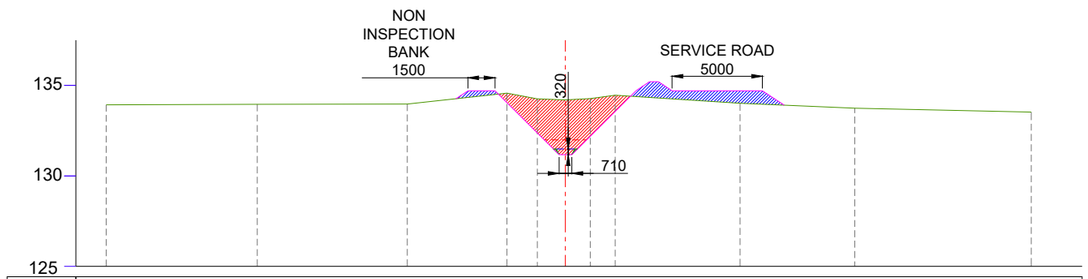
- EXISTING BED LINE
- F.S.L.
- DESIGNED BED LINE
- H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 1 of 6

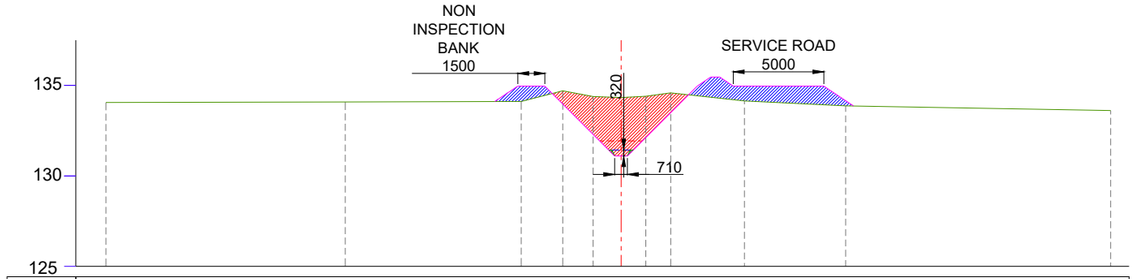
X SECTION OF PALUA MINOR



EXIST. LEVEL (M)	133.929	133.956	133.976	134.567	134.196	134.460	134.011	133.741	133.532
OFFSET (M)	25.399	17.039	8.740	3.229	0.000	2.749	9.657	15.995	25.752

CUTTING AREA (SQ.M) = 12.314
FILLING AREA (SQ.M) = 5.521

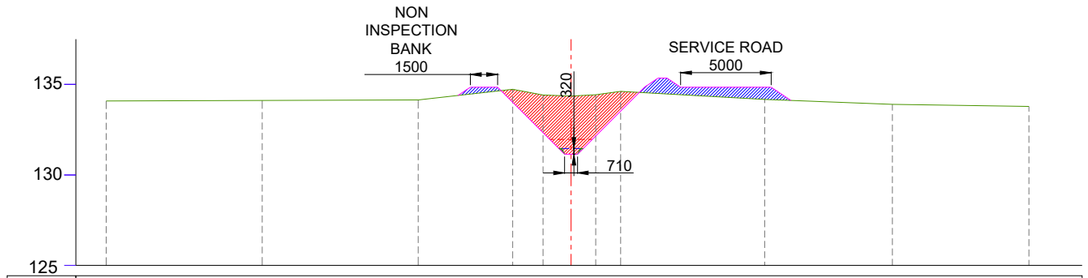
CH. (KM):- 0+500
DESIGNED BED LEVEL = 131.167 M



EXIST. LEVEL (M)	134.064	134.092	134.111	134.702	134.331	134.595	134.146	133.876	133.609
OFFSET (M)	28.480	15.245	5.520	3.229	0.000	2.749	6.823	12.419	27.074

CUTTING AREA (SQ.M) = 13.720
FILLING AREA (SQ.M) = 9.082

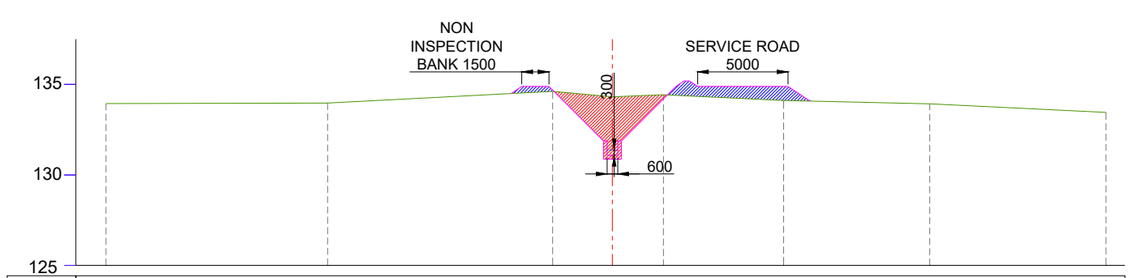
CH. (KM):- 0+700
DESIGNED BED LEVEL = 131.107 M



EXIST. LEVEL (M)	134.088	134.115	134.135	134.726	134.355	134.619	134.170	133.900	133.788
OFFSET (M)	25.708	17.083	8.455	3.229	0.000	2.749	10.711	17.765	25.313

CUTTING AREA (SQ.M) = 13.729
FILLING AREA (SQ.M) = 5.116

CH. (KM):- 0+600
DESIGNED BED LEVEL = 131.137 M



EXIST. LEVEL (M)	133.941	133.971	134.620	134.309	134.426	134.112	133.928	133.450
OFFSET (M)	28.005	15.758	3.304	0.000	2.815	9.472	17.552	27.285

CUTTING AREA (SQ.M) = 9.993
FILLING AREA (SQ.M) = 5.380

CH. (KM):- 0+800
DESIGNED BED LEVEL = 131.075 M

LEGEND

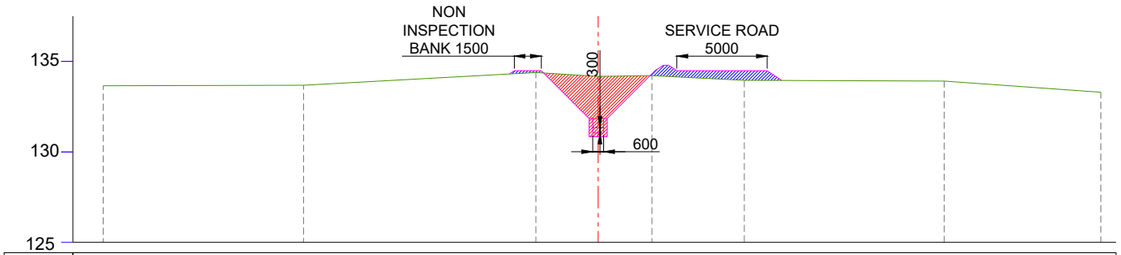
- EXISTING BED LINE
- F.S.L.
- DESIGNED BED LINE
- H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 2 of 6

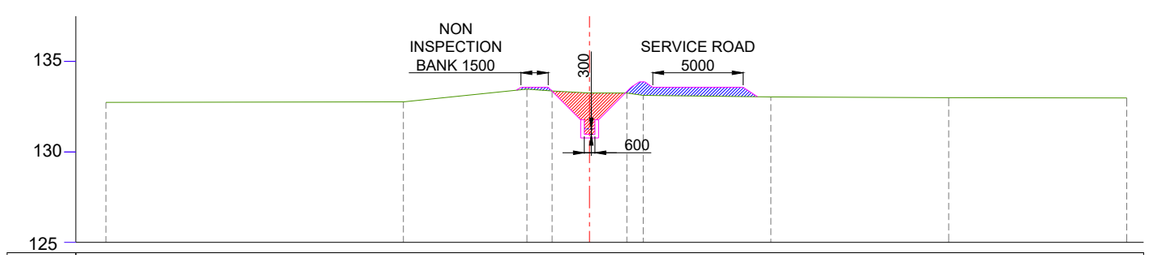
X SECTION OF PALUA MINOR



EXIST. LEVEL (M)	133.652	133.684	134.390	134.177	134.212	133.960	133.914	133.292
OFFSET (M)	27.376	16.299	3.448	0.000	2.968	8.073	19.124	27.805

CUTTING AREA (SQ.M) = 9.101
FILLING AREA (SQ.M) = 3.370

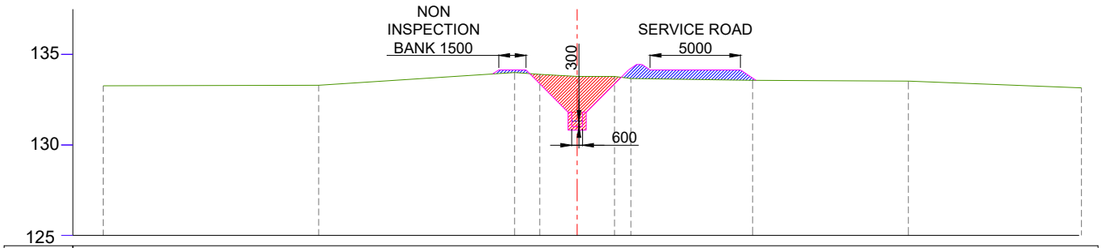
CH. (KM):- 0+900
DESIGNED BED LEVEL = 131.042 M



EXIST. LEVEL (M)	132.730	132.760	133.467	133.254	133.130	133.036	132.990	132.979
OFFSET (M)	26.741	10.300	3.459	0.000	2.965	10.030	19.859	29.699

CUTTING AREA (SQ.M) = 4.253
FILLING AREA (SQ.M) = 3.623

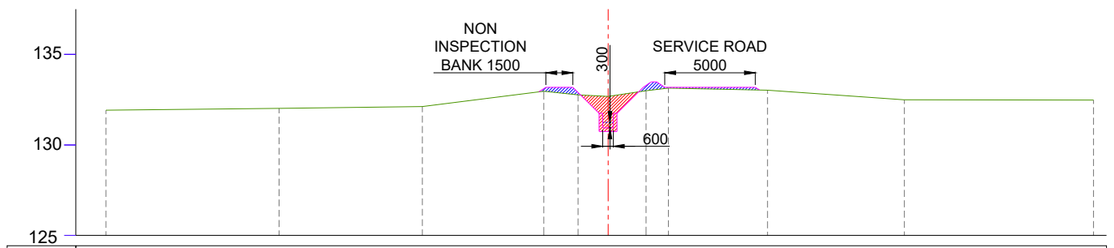
CH. (KM):- 1+100
DESIGNED BED LEVEL = 130.975 M



EXIST. LEVEL (M)	133.262	133.293	134.000	133.787	133.662	133.569	133.523	133.154
OFFSET (M)	26.213	14.303	3.459	0.000	2.965	9.706	18.314	27.889

CUTTING AREA (SQ.M) = 7.056
FILLING AREA (SQ.M) = 4.089

CH. (KM):- 1+000
DESIGNED BED LEVEL = 131.008 M



EXIST. LEVEL (M)	131.922	132.010	132.123	132.965	132.682	133.140	133.019	132.487	132.476
OFFSET (M)	27.762	18.196	10.270	3.547	0.000	3.332	8.826	16.379	26.842

CUTTING AREA (SQ.M) = 3.052
FILLING AREA (SQ.M) = 1.509

CH. (KM):- 1+200
DESIGNED BED LEVEL = 130.942 M

LEGEND

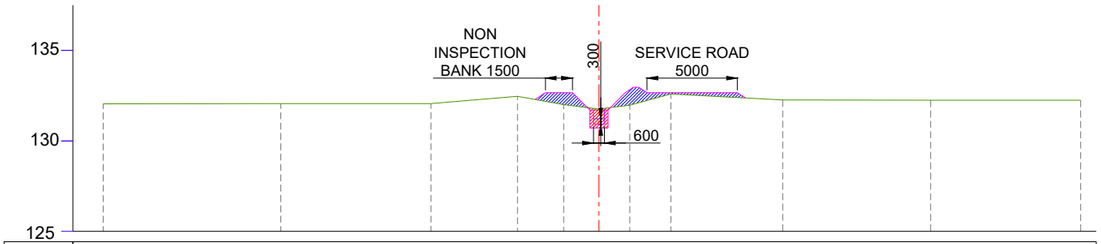
- EXISTING BED LINE
- F.S.L.
- DESIGNED BED LINE
- H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 3 of 6

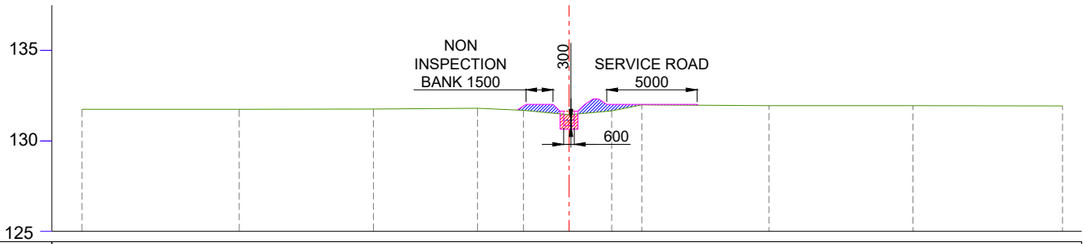
X SECTION OF PALUA MINOR



EXIST. LEVEL (M)	132.050	132.061	132.069	132.459	132.002	131.757	131.976	132.589	132.262	132.251	132.242
OFFSET (M)	27.414	17.599	9.291	4.505	1.954	0.000	1.708	3.984	10.163	18.349	26.636

CUTTING AREA (SQ.M) = 1.095
FILLING AREA (SQ.M) = 3.645

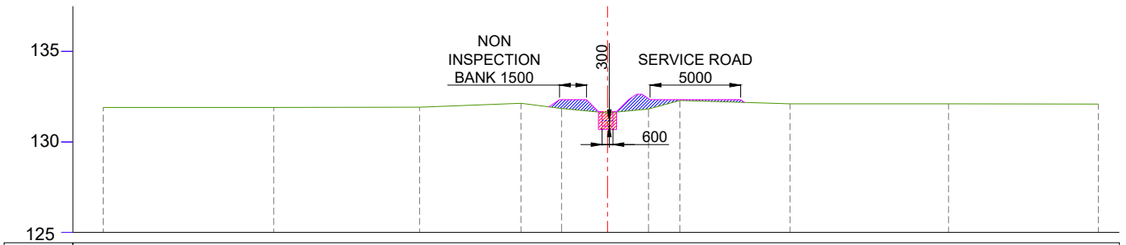
CH. (KM):- 1+300
DESIGNED BED LEVEL = 130.908 M



EXIST. LEVEL (M)	131.740	131.751	131.759	131.807	131.692	131.447	131.666	131.985	131.952	131.942	131.932
OFFSET (M)	26.930	18.238	10.820	5.060	2.524	0.000	2.363	4.031	11.051	19.028	27.293

CUTTING AREA (SQ.M) = 0.829
FILLING AREA (SQ.M) = 2.292

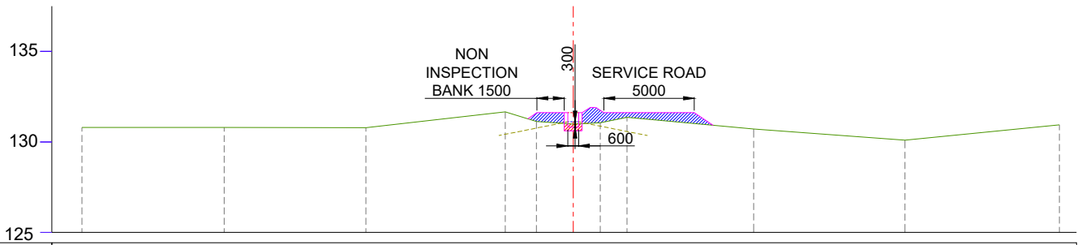
CH. (KM):- 1+500
DESIGNED BED LEVEL = 130.842 M



EXIST. LEVEL (M)	131.896	131.907	131.915	132.134	131.848	131.602	131.822	132.288	132.107	132.097	132.087
OFFSET (M)	27.891	18.462	10.394	4.783	2.543	0.000	2.262	4.000	10.091	18.852	27.141

CUTTING AREA (SQ.M) = 0.952
FILLING AREA (SQ.M) = 3.038

CH. (KM):- 1+400
DESIGNED BED LEVEL = 130.875 M



EXIST. LEVEL (M)	130.796	130.791	130.787	131.664	131.121	130.979	131.055	131.359	130.707	130.098	130.938
OFFSET (M)	27.160	19.301	11.456	3.750	2.027	0.000	1.497	2.978	9.975	18.341	26.884

CUTTING AREA (SQ.M) = 0.386
FILLING AREA (SQ.M) = 4.214

CH. (KM):- 1+600
DESIGNED BED LEVEL = 130.808 M

LEGEND

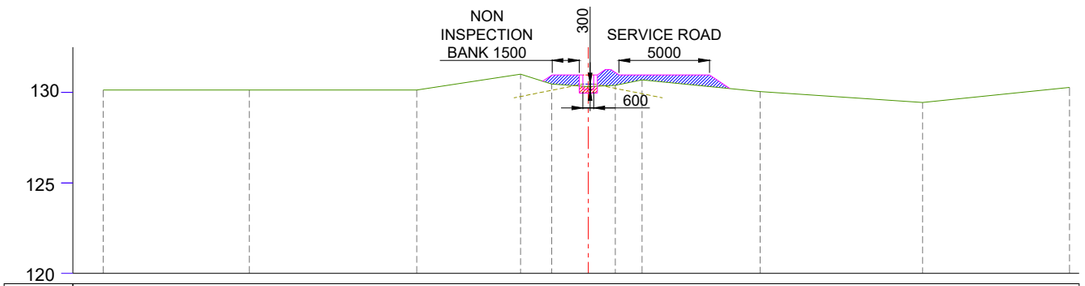
- EXISTING BED LINE
- F.S.L.
- DESIGNED BED LINE
- H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 4 of 6

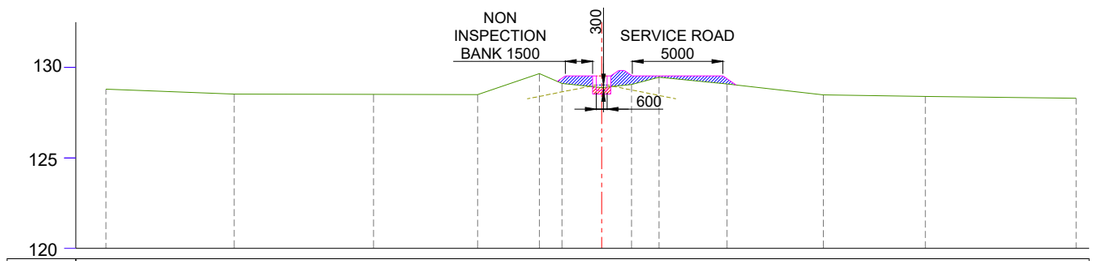
X SECTION OF PALUA MINOR



EXIST. LEVEL (M)	130.136	130.131	130.127	131.004	130.461	130.319	130.699	130.047	129.438	130.278
OFFSET (M)	26.828	18.737	9.489	3.749	2.027	0.000	2.978	9.498	18.491	26.611

CUTTING AREA (SQ.M) = 0.369
FILLING AREA (SQ.M) = 4.451

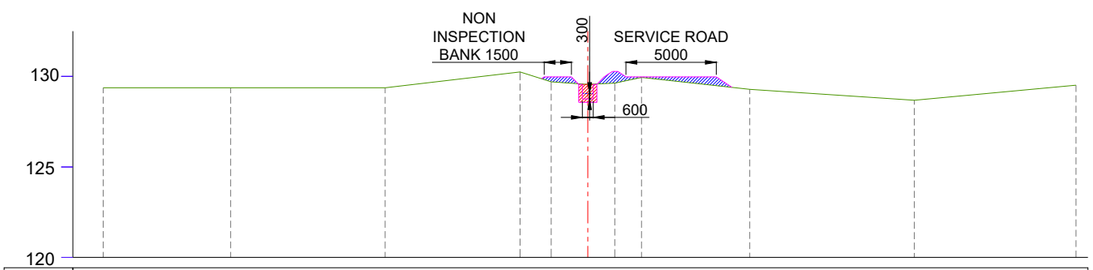
CH. (KM):- 1+700
DESIGNED BED LEVEL = 130.165 M



EXIST. LEVEL (M)	128.801	128.524	128.511	128.501	129.656	129.110	128.881	129.458	129.088	128.484	128.397	128.292
OFFSET (M)	27.406	20.318	12.611	6.857	3.435	2.190	0.000	3.175	6.933	12.254	17.895	26.239

CUTTING AREA (SQ.M) = 0.382
FILLING AREA (SQ.M) = 3.121

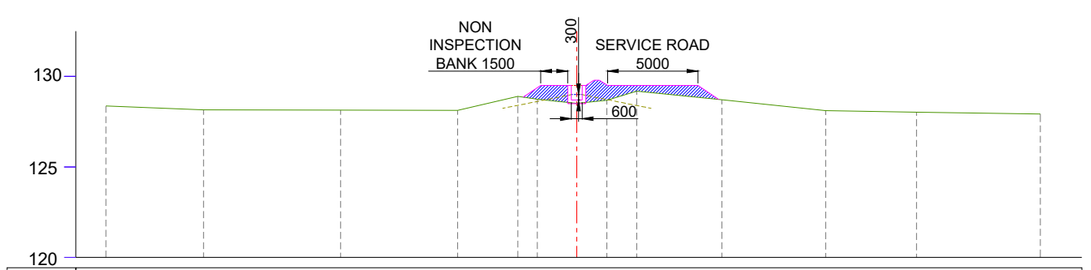
CH. (KM):- 1+900
DESIGNED BED LEVEL = 128.726 M



EXIST. LEVEL (M)	129.376	129.371	129.367	130.244	129.559	129.939	129.287	128.678	129.518
OFFSET (M)	26.800	19.752	11.203	3.750	0.000	2.977	8.951	18.062	26.991

CUTTING AREA (SQ.M) = 1.015
FILLING AREA (SQ.M) = 2.522

CH. (KM):- 1+800
DESIGNED BED LEVEL = 128.760 M



EXIST. LEVEL (M)	128.359	128.148	128.135	128.125	128.894	128.505	129.191	128.712	128.108	128.021	127.916
OFFSET (M)	26.033	20.639	13.060	6.584	3.264	0.000	3.318	8.028	13.768	18.781	25.633

CUTTING AREA (SQ.M) = 0.039
FILLING AREA (SQ.M) = 5.789

CH. (KM):- 2+000
DESIGNED BED LEVEL = 128.693 M

LEGEND

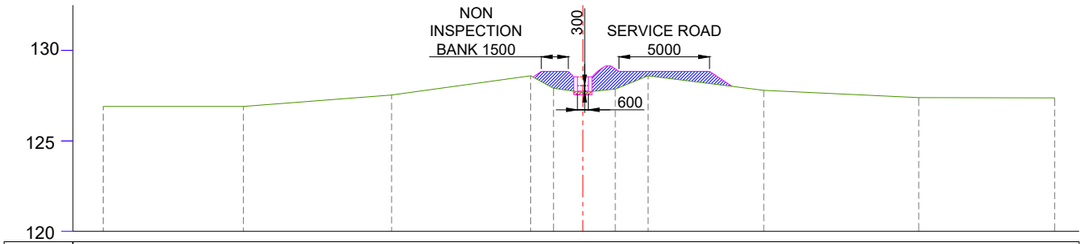
- EXISTING BED LINE
- F.S.L.
- DESIGNED BED LINE
- H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 5 of 6

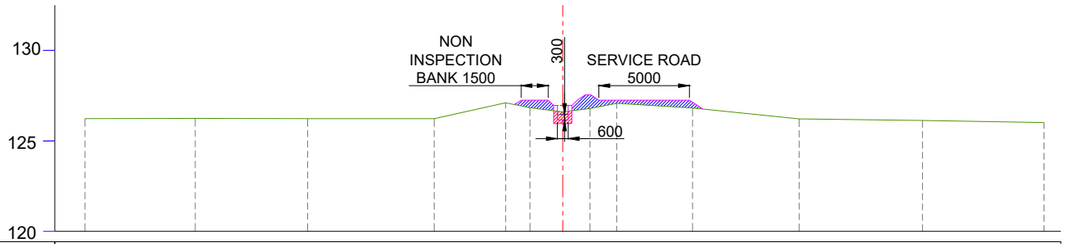
X SECTION OF PALUA MINOR



EXIST. LEVEL (M)	126.897	126.901	127.537	128.597	127.686	128.601	127.798	127.394	127.381
OFFSET (M)	26.528	18.772	10.578	2.891	0.000	3.606	10.001	18.569	26.092

CUTTING AREA (SQ.M) = 0.170
FILLING AREA (SQ.M) = 6.354

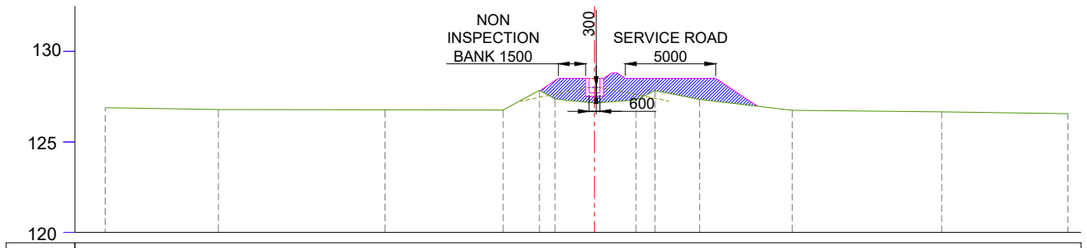
CH. (KM):- 2+100
DESIGNED BED LEVEL = 127.746 M



EXIST. LEVEL (M)	126.228	126.249	126.236	126.226	127.104	126.606	127.083	126.813	126.209	126.122	126.017
OFFSET (M)	26.418	20.324	14.111	7.108	3.150	0.000	2.983	7.172	13.073	19.895	26.608

CUTTING AREA (SQ.M) = 0.682
FILLING AREA (SQ.M) = 3.409

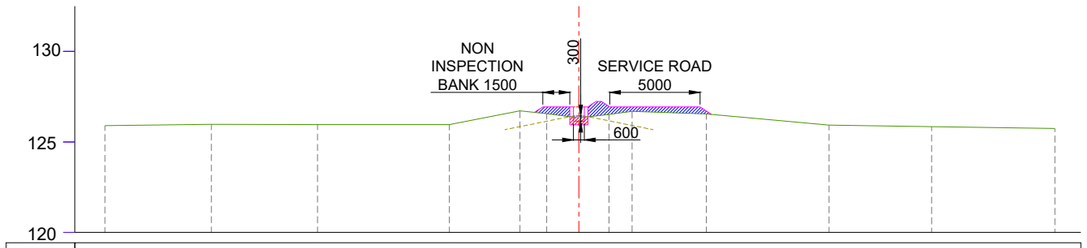
CH. (KM):- 2+300
DESIGNED BED LEVEL = 126.155 M



EXIST. LEVEL (M)	126.883	126.783	126.769	126.760	127.856	127.140	127.838	127.347	126.743	126.656	126.551
OFFSET (M)	27.063	20.808	11.581	5.061	3.045	0.000	3.346	5.812	10.935	19.196	26.178

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 11.120

CH. (KM):- 2+200
DESIGNED BED LEVEL = 127.712 M



EXIST. LEVEL (M)	125.895	125.972	125.959	125.949	126.715	126.329	126.687	126.536	125.932	125.845	125.740
OFFSET (M)	26.206	20.324	14.450	7.157	3.258	0.000	2.937	7.042	13.836	19.500	26.316

CUTTING AREA (SQ.M) = 0.424
FILLING AREA (SQ.M) = 3.282

CH. (KM):- 2+359
DESIGNED BED LEVEL = 126.135 M

LEGEND

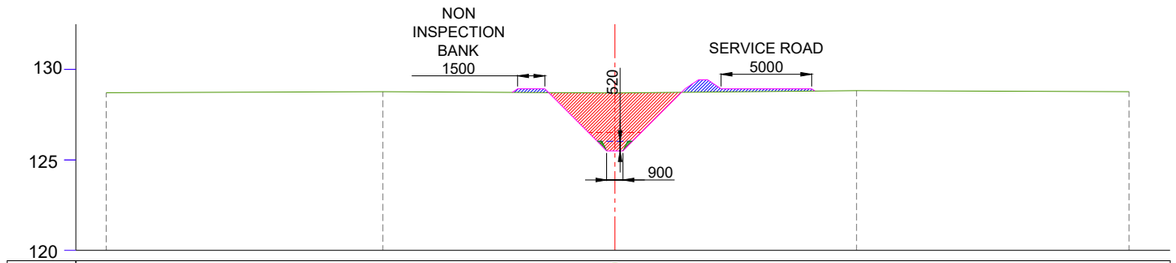
- EXISTING BED LINE
- F.S.L.
- DESIGNED BED LINE
- H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 6 of 6

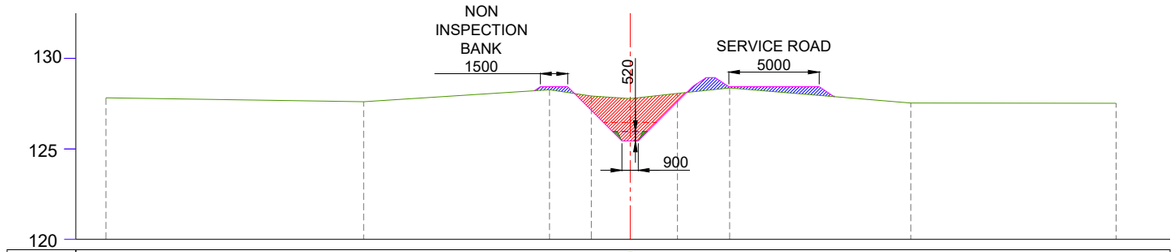
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	128.708	128.771	128.6970	128.831	128.774
OFFSET (M)	28.132	12.828	0.000	13.370	28.428

CUTTING AREA (SQ.M) = 13.182
FILLING AREA (SQ.M) = 2.132

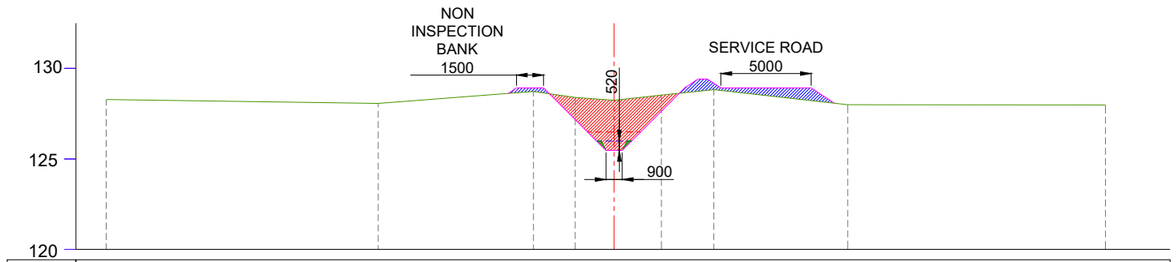
CH. (KM):- 0+100
DESIGNED BED LEVEL = 125.503 M



EXIST. LEVEL (M)	127.817	127.608	128.265	127.930	127.7730	128.068	128.367	127.531	127.515
OFFSET (M)	28.981	14.735	4.456	2.150	0.000	2.613	5.507	15.526	26.875

CUTTING AREA (SQ.M) = 8.392
FILLING AREA (SQ.M) = 3.082

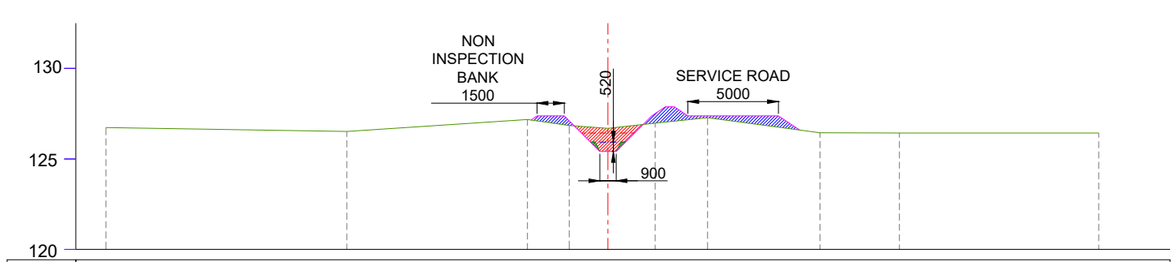
CH. (KM):- 0+300
DESIGNED BED LEVEL = 125.436 M



EXIST. LEVEL (M)	128.276	128.067	128.724	128.389	128.2320	128.527	128.826	127.990	127.974
OFFSET (M)	28.090	13.043	4.456	2.150	0.000	2.613	5.507	12.924	27.174

CUTTING AREA (SQ.M) = 11.247
FILLING AREA (SQ.M) = 3.995

CH. (KM):- 0+200
DESIGNED BED LEVEL = 125.469 M



EXIST. LEVEL (M)	126.728	126.519	127.176	126.841	126.6840	126.979	127.278	126.442	126.435	126.426
OFFSET (M)	27.758	14.436	4.456	2.150	0.000	2.613	5.507	11.728	16.111	27.137

CUTTING AREA (SQ.M) = 3.103
FILLING AREA (SQ.M) = 4.016

CH. (KM):- 0+400
DESIGNED BED LEVEL = 125.403 M

LEGEND

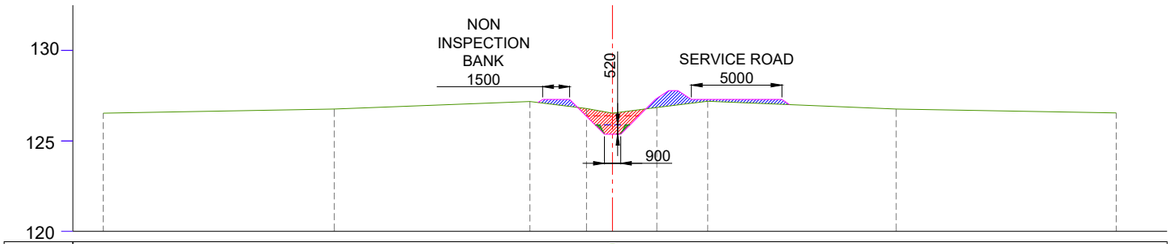
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 1 of 12

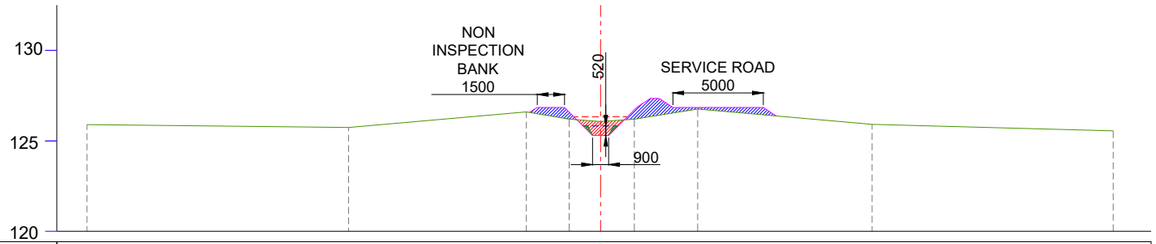
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	126.534	126.759	127.173	126.5350	126.848	127.197	126.762	126.544
OFFSET (M)	28.166	15.384	4.568	0.000	2.453	5.259	15.678	27.860

CUTTING AREA (SQ.M) = 2.880
FILLING AREA (SQ.M) = 2.821

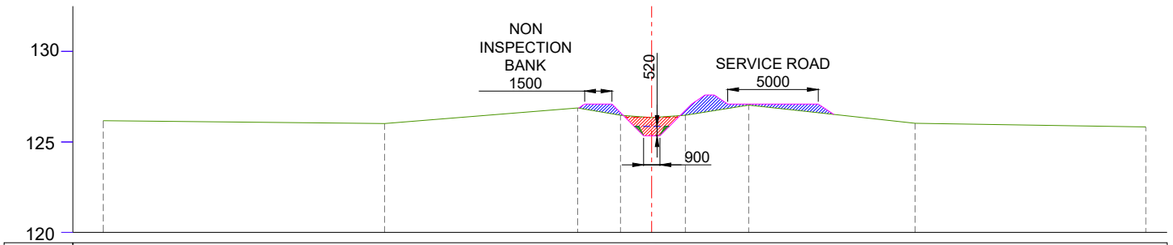
CH. (KM):- 0+500
DESIGNED BED LEVEL = 125.369 M



EXIST. LEVEL (M)	125.898	125.735	126.597	126.0670	126.195	126.758	125.913	125.548
OFFSET (M)	28.400	13.934	4.101	0.000	1.859	5.367	15.010	28.351

CUTTING AREA (SQ.M) = 1.384
FILLING AREA (SQ.M) = 4.164

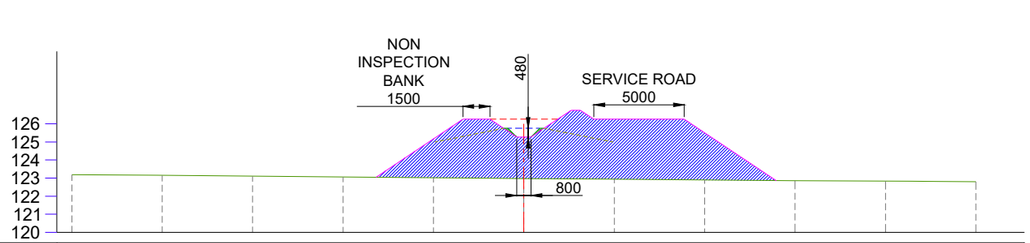
CH. (KM):- 0+700
DESIGNED BED LEVEL = 125.303 M



EXIST. LEVEL (M)	126.169	126.006	126.868	126.3380	126.466	127.029	126.020	125.819
OFFSET (M)	30.336	14.772	4.101	0.000	1.859	5.367	14.566	27.329

CUTTING AREA (SQ.M) = 2.067
FILLING AREA (SQ.M) = 3.925

CH. (KM):- 0+600
DESIGNED BED LEVEL = 125.336 M



EXIST. LEVEL (M)	123.19	123.15	123.10	123.06	123.02	122.98	122.93	122.89	122.85	122.83	122.80
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 55.067

CH. (KM):- 0+800
DESIGNED BED LEVEL = 125.269 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

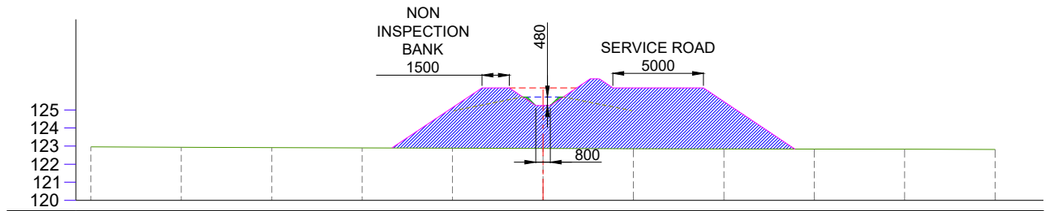
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 2 of 12

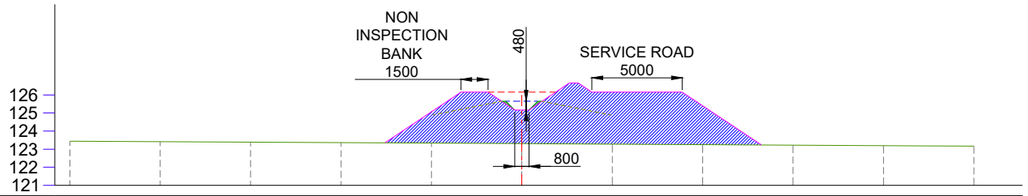
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	122.96	122.94	122.92	122.90	122.88	122.86	122.85	122.84	122.83	122.82	122.81
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 56.394

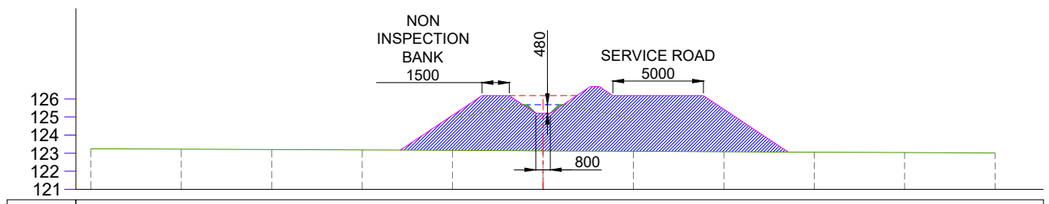
CH. (KM):- 0+900
DESIGNED BED LEVEL = 125.236 M



EXIST. LEVEL (M)	123.45	123.42	123.39	123.36	123.34	123.31	123.28	123.25	123.22	123.20	123.17
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 45.606

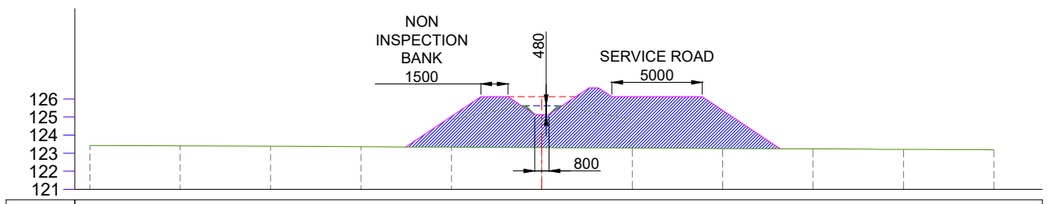
CH. (KM):- 1+100
DESIGNED BED LEVEL = 125.169 M



EXIST. LEVEL (M)	123.24	123.21	123.19	123.17	123.15	123.13	123.10	123.08	123.06	123.04	123.01
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 50.086

CH. (KM):- 1+000
DESIGNED BED LEVEL = 125.203 M



EXIST. LEVEL (M)	123.43	123.40	123.38	123.35	123.33	123.30	123.28	123.26	123.23	123.21	123.18
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 44.942

CH. (KM):- 1+200
DESIGNED BED LEVEL = 125.136 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

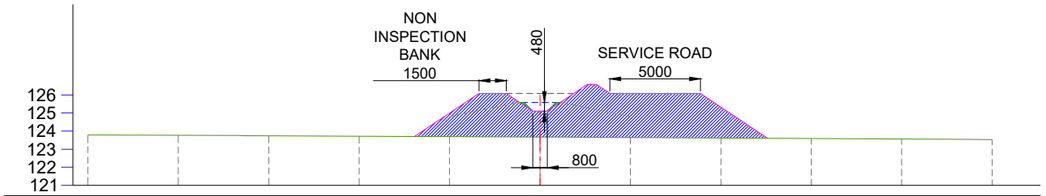
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 3 of 12

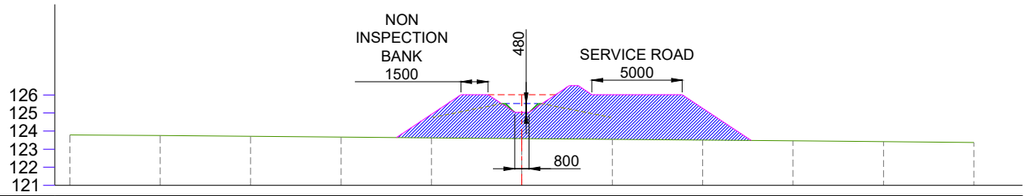
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	123.79	123.77	123.74	123.72	123.69	123.67	123.65	123.62	123.59	123.56	123.53
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 36.943

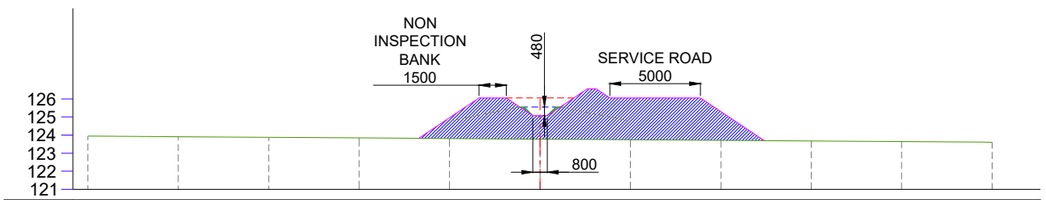
CH. (KM):- 1+300
DESIGNED BED LEVEL = 125.103 M



EXIST. LEVEL (M)	123.79	123.75	123.71	123.67	123.62	123.58	123.54	123.50	123.46	123.42	123.37
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 37.526

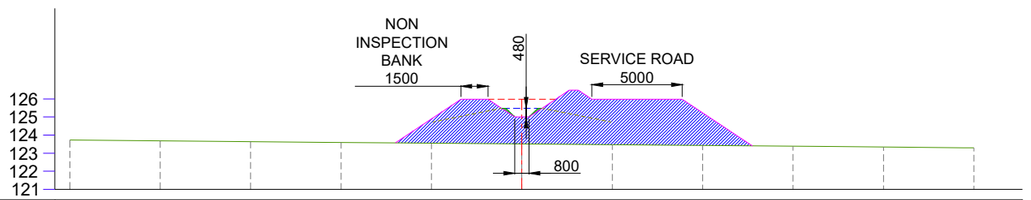
CH. (KM):- 1+500
DESIGNED BED LEVEL = 125.036 M



EXIST. LEVEL (M)	123.94	123.91	123.87	123.84	123.80	123.77	123.74	123.70	123.67	123.64	123.60
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 34.424

CH. (KM):- 1+400
DESIGNED BED LEVEL = 125.069 M



EXIST. LEVEL (M)	123.72	123.68	123.63	123.59	123.55	123.51	123.46	123.42	123.38	123.34	123.29
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 38.393

CH. (KM):- 1+600
DESIGNED BED LEVEL = 125.003 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

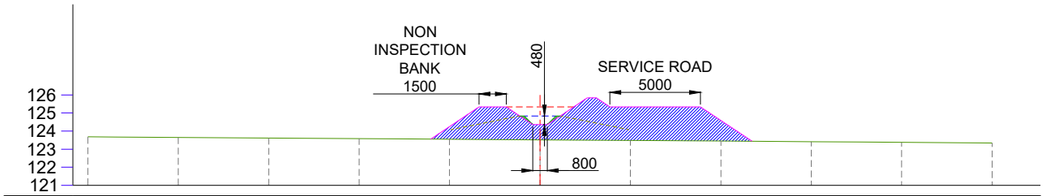
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 4 of 12

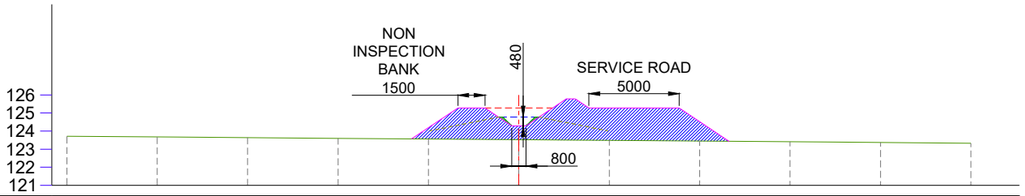
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	123.68	123.65	123.62	123.58	123.55	123.52	123.48	123.45	123.41	123.37	123.33
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 26.050

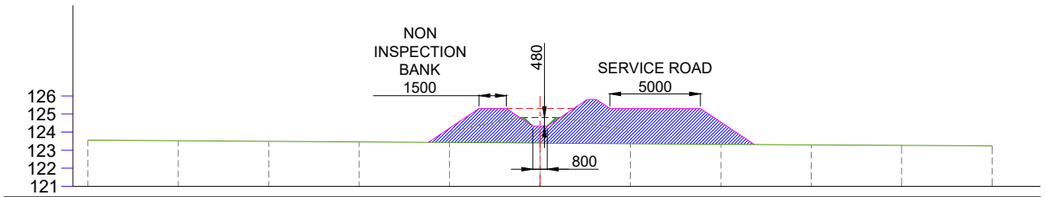
CH. (KM):- 1+700
DESIGNED BED LEVEL = 124.359 M



EXIST. LEVEL (M)	123.71	123.67	123.63	123.60	123.56	123.52	123.48	123.44	123.41	123.37	123.33
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 24.829

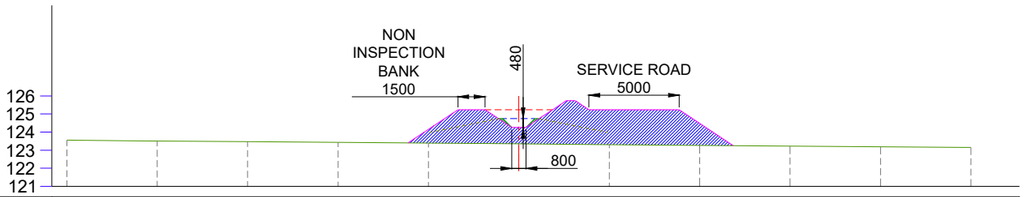
CH. (KM):- 1+900
DESIGNED BED LEVEL = 124.293 M



EXIST. LEVEL (M)	123.55	123.52	123.48	123.45	123.42	123.39	123.36	123.33	123.29	123.26	123.23
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 27.696

CH. (KM):- 1+800
DESIGNED BED LEVEL = 124.326 M



EXIST. LEVEL (M)	123.55	123.51	123.47	123.43	123.39	123.35	123.31	123.27	123.23	123.19	123.15
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 27.340

CH. (KM):- 2+000
DESIGNED BED LEVEL = 124.259 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

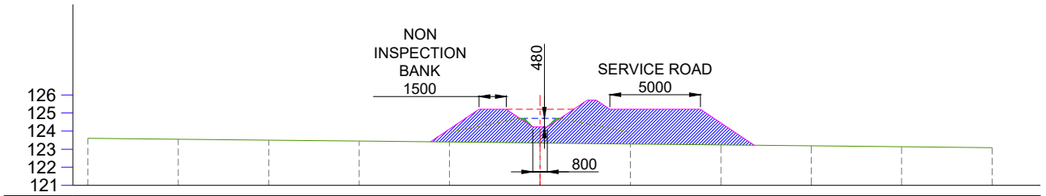
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 5 of 12

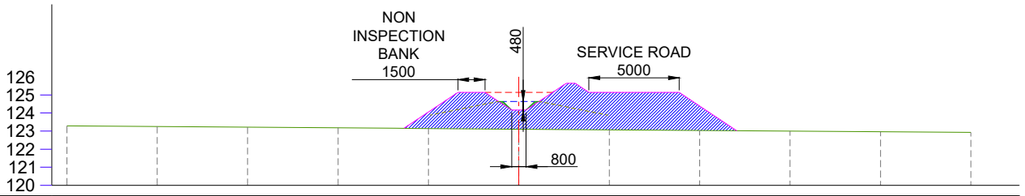
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	123.60	123.55	123.50	123.44	123.39	123.34	123.29	123.24	123.18	123.13	123.08
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 26.987

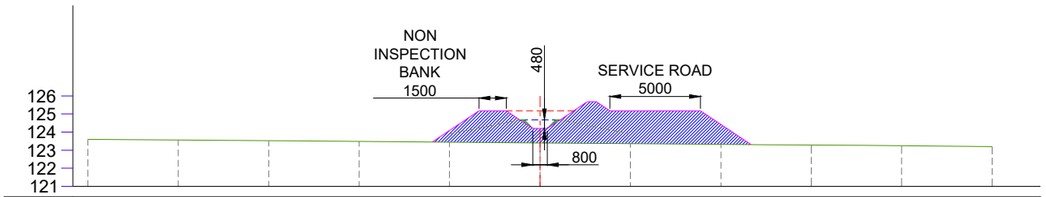
CH. (KM):- 2+100
DESIGNED BED LEVEL = 124.226 M



EXIST. LEVEL (M)	123.29	123.25	123.22	123.18	123.14	123.11	123.07	123.03	123.00	122.96	122.93
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 29.832

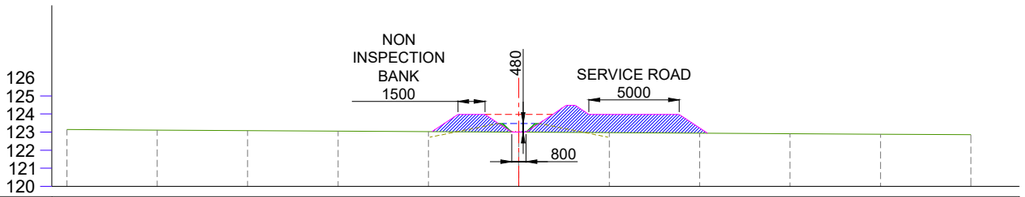
CH. (KM):- 2+300
DESIGNED BED LEVEL = 124.159 M



EXIST. LEVEL (M)	123.59	123.56	123.52	123.48	123.44	123.40	123.36	123.32	123.28	123.24	123.20
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 25.216

CH. (KM):- 2+200
DESIGNED BED LEVEL = 124.193 M



EXIST. LEVEL (M)	123.14	123.11	123.08	123.05	123.03	123.00	122.97	122.94	122.91	122.88	122.85
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 12.077

CH. (KM):- 2+400
DESIGNED BED LEVEL = 124.126 M

LEGEND

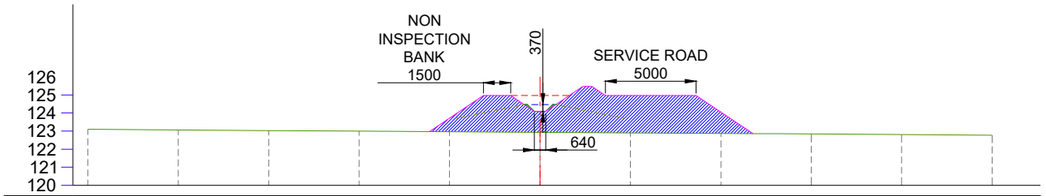
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 6 of 12

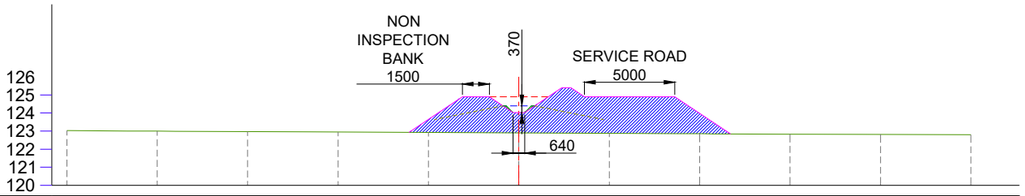
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	123.09	123.06	123.03	123.00	122.97	122.93	122.90	122.87	122.84	122.81	122.77
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 29.273

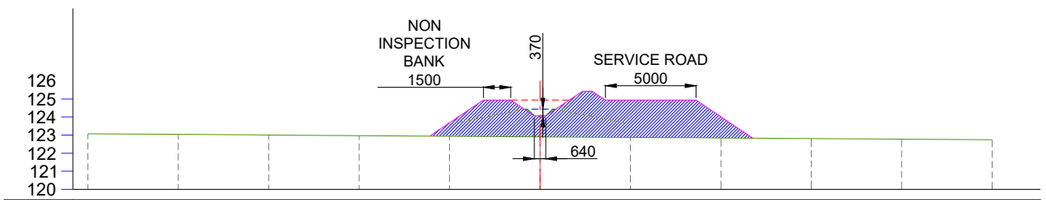
CH. (KM):- 2+500
DESIGNED BED LEVEL = 124.093 M



EXIST. LEVEL (M)	123.02	122.99	122.97	122.95	122.92	122.90	122.87	122.85	122.83	122.81	122.79
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 28.636

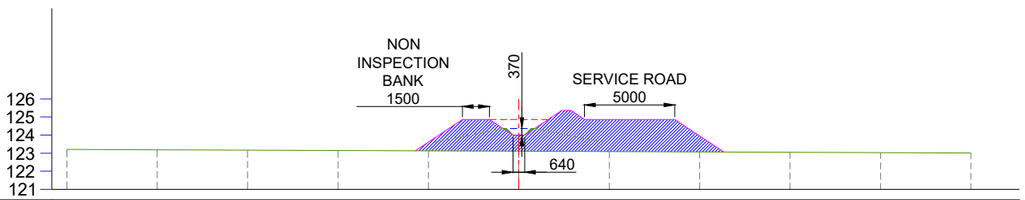
CH. (KM):- 2+700
DESIGNED BED LEVEL = 124.026 M



EXIST. LEVEL (M)	123.07	123.03	123.00	122.97	122.94	122.90	122.87	122.84	122.81	122.77	122.74
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 29.207

CH. (KM):- 2+600
DESIGNED BED LEVEL = 124.059 M



EXIST. LEVEL (M)	123.20	123.18	123.16	123.14	123.12	123.10	123.08	123.06	123.04	123.02	123.00
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 24.428

CH. (KM):- 2+800
DESIGNED BED LEVEL = 123.993 M

LEGEND

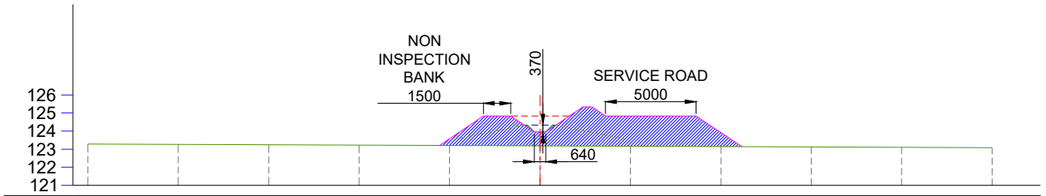
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 7 of 12

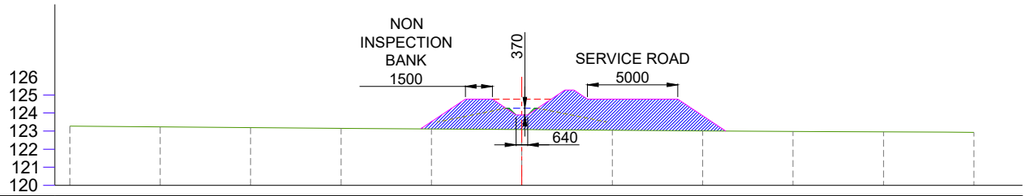
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	123.28	123.26	123.24	123.22	123.20	123.18	123.16	123.14	123.12	123.10	123.08
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 22.560

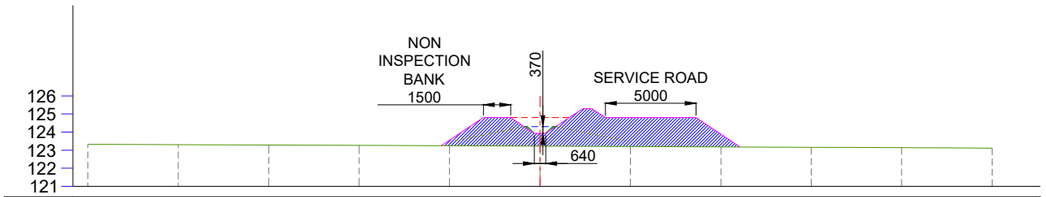
CH. (KM):- 2+900
DESIGNED BED LEVEL = 123.959 M



EXIST. LEVEL (M)	123.27	123.23	123.19	123.16	123.12	123.08	123.05	123.01	122.98	122.96	122.93
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 23.243

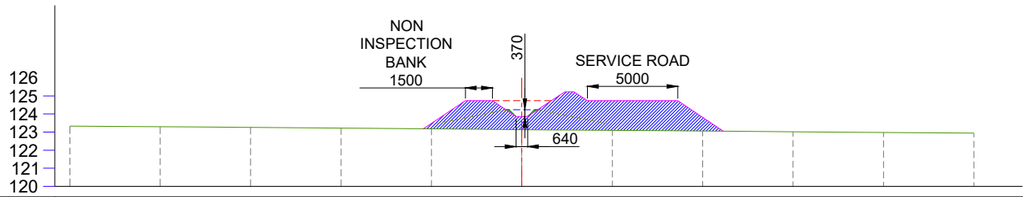
CH. (KM):- 3+100
DESIGNED BED LEVEL = 123.893 M



EXIST. LEVEL (M)	123.33	123.31	123.29	123.26	123.24	123.22	123.20	123.18	123.16	123.14	123.11
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 21.343

CH. (KM):- 3+000
DESIGNED BED LEVEL = 123.926 M



EXIST. LEVEL (M)	123.33	123.29	123.25	123.21	123.17	123.13	123.09	123.05	123.01	122.98	122.94
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 21.882

CH. (KM):- 3+200
DESIGNED BED LEVEL = 123.859 M

LEGEND

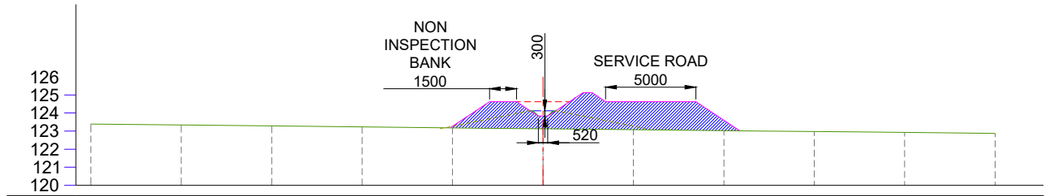
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 8 of 12

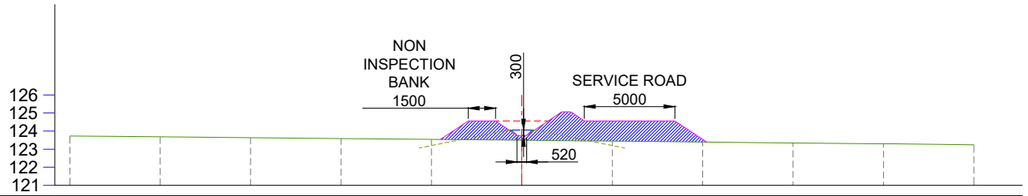
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	123.39	123.34	123.28	123.23	123.18	123.13	123.08	123.02	122.97	122.93	122.88
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 20.208

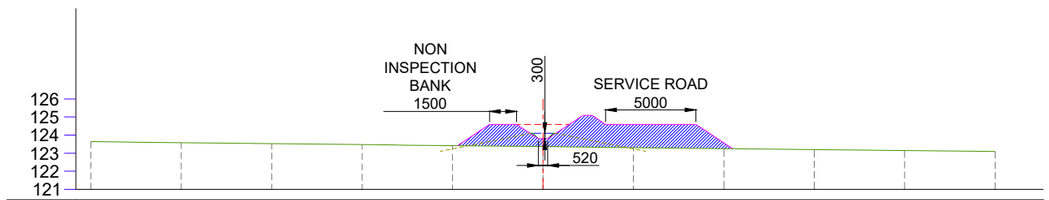
CH. (KM):- 3+300
DESIGNED BED LEVEL = 123.826 M



EXIST. LEVEL (M)	123.73	123.68	123.63	123.59	123.54	123.49	123.44	123.40	123.35	123.30	123.25
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 13.546

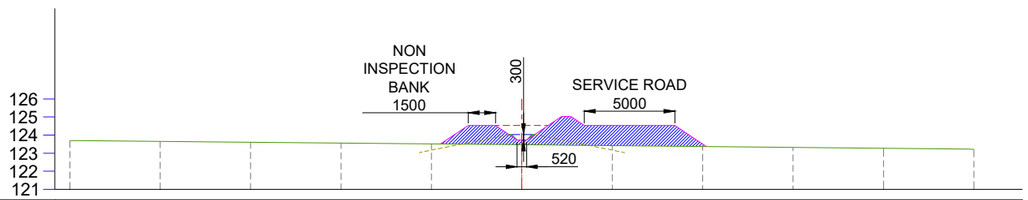
CH. (KM):- 3+500
DESIGNED BED LEVEL = 123.759 M



EXIST. LEVEL (M)	123.63	123.58	123.52	123.47	123.41	123.36	123.31	123.25	123.20	123.14	123.09
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 16.075

CH. (KM):- 3+400
DESIGNED BED LEVEL = 123.793 M



EXIST. LEVEL (M)	123.70	123.65	123.60	123.56	123.51	123.46	123.42	123.37	123.32	123.27	123.21
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 13.462

CH. (KM):- 3+600
DESIGNED BED LEVEL = 123.726 M

LEGEND

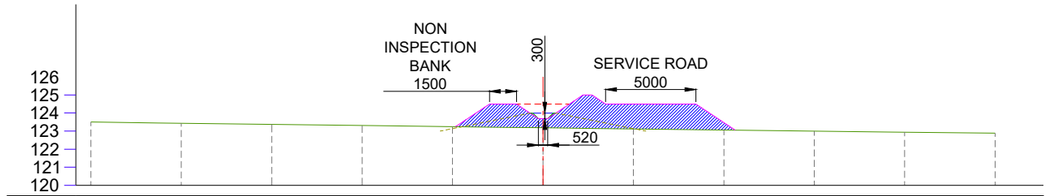
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 9 of 12

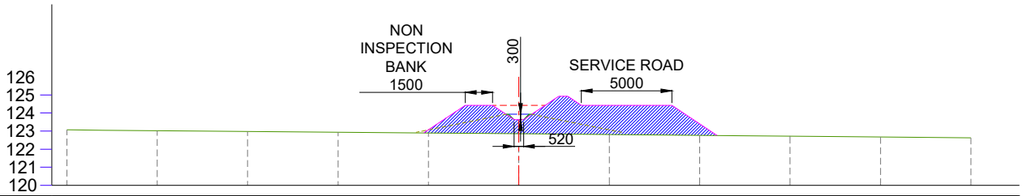
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	123.50	123.43	123.37	123.31	123.25	123.18	123.12	123.06	123.00	122.94	122.89
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 17.320

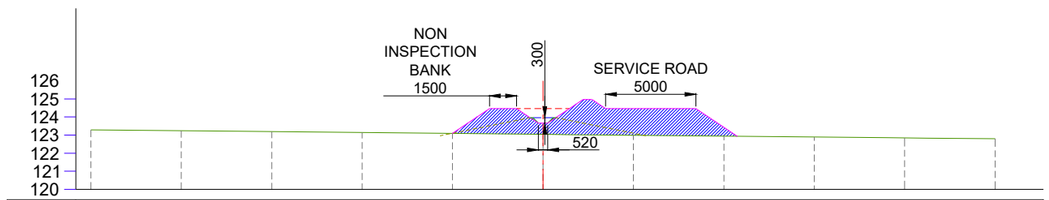
CH. (KM):- 3+700
DESIGNED BED LEVEL = 123.693 M



EXIST. LEVEL (M)	123.06	123.02	122.98	122.94	122.89	122.85	122.81	122.77	122.72	122.68	122.63
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 21.363

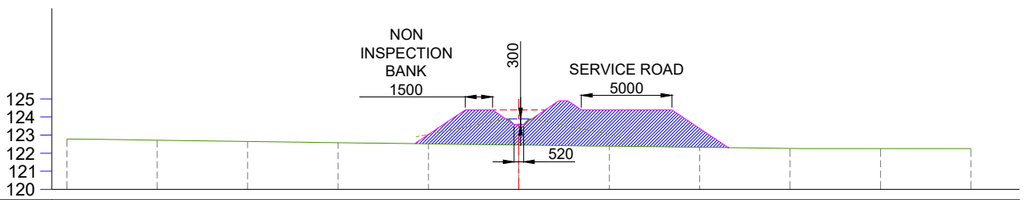
CH. (KM):- 3+900
DESIGNED BED LEVEL = 123.626 M



EXIST. LEVEL (M)	123.29	123.24	123.19	123.14	123.09	123.04	122.99	122.94	122.89	122.84	122.79
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 18.958

CH. (KM):- 3+800
DESIGNED BED LEVEL = 123.659 M



EXIST. LEVEL (M)	122.79	122.72	122.65	122.58	122.51	122.45	122.38	122.32	122.26	122.25	122.24
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 27.763

CH. (KM):- 4+000
DESIGNED BED LEVEL = 123.593 M

LEGEND

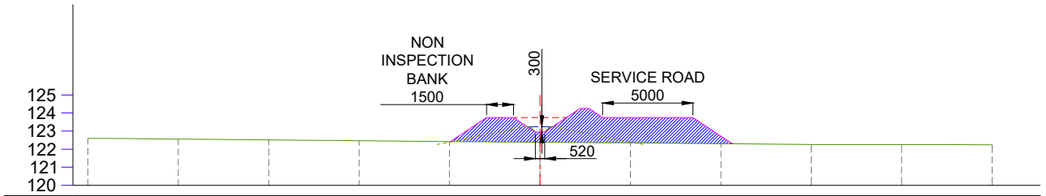
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 10 of 12

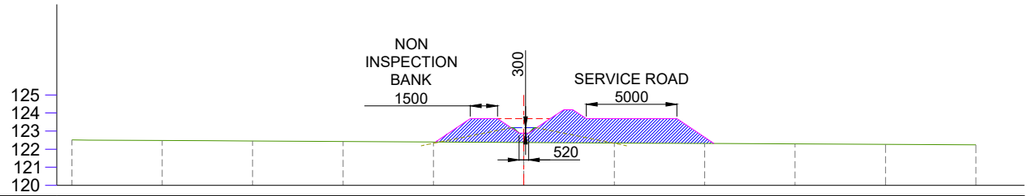
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	122.60	122.56	122.51	122.47	122.42	122.39	122.34	122.30	122.25	122.25	122.25
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 17.993

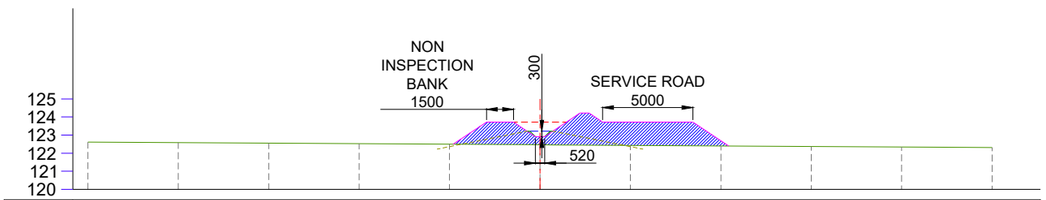
CH. (KM):- 4+100
DESIGNED BED LEVEL = 122.949 M



EXIST. LEVEL (M)	122.51	122.48	122.46	122.43	122.40	122.37	122.34	122.31	122.29	122.26	122.23
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 17.090

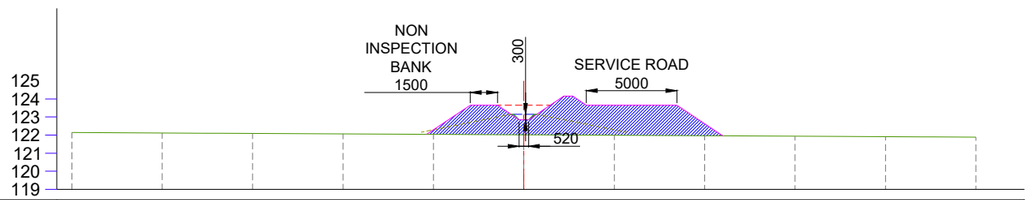
CH. (KM):- 4+300
DESIGNED BED LEVEL = 122.883 M



EXIST. LEVEL (M)	122.61	122.58	122.55	122.52	122.49	122.46	122.43	122.40	122.37	122.34	122.31
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 16.216

CH. (KM):- 4+200
DESIGNED BED LEVEL = 122.916 M



EXIST. LEVEL (M)	122.14	122.12	122.09	122.06	122.04	122.01	121.98	121.96	121.93	121.90	121.88
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 22.222

CH. (KM):- 4+400
DESIGNED BED LEVEL = 122.849 M

LEGEND

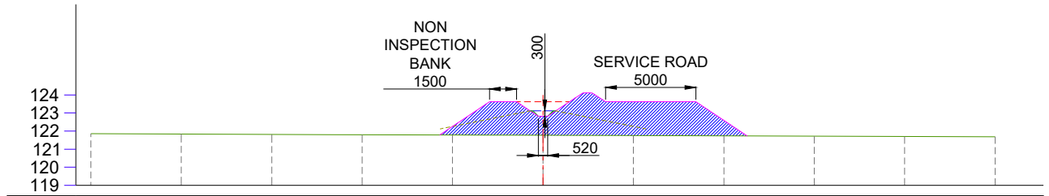
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 11 of 12

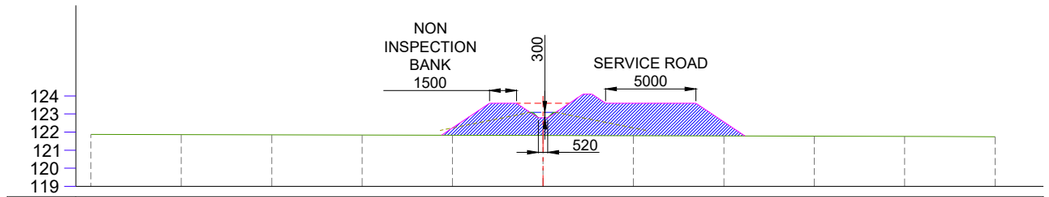
X SECTION OF ASHNI MINOR



EXIST. LEVEL (M)	121.86	121.84	121.82	121.80	121.78	121.76	121.75	121.73	121.72	121.70	121.68
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 25.703

CH. (KM):- 4+500
DESIGNED BED LEVEL = 122.816 M



EXIST. LEVEL (M)	121.87	121.86	121.84	121.83	121.82	121.81	121.80	121.79	121.77	121.76	121.74
OFFSET (M)	-25.00	-20.00	-15.00	-10.00	-5.00	0	5.00	10.00	15.00	20.00	25.00

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 24.385

CH. (KM):- 4+587.12
DESIGNED BED LEVEL = 122.787 M

LEGEND

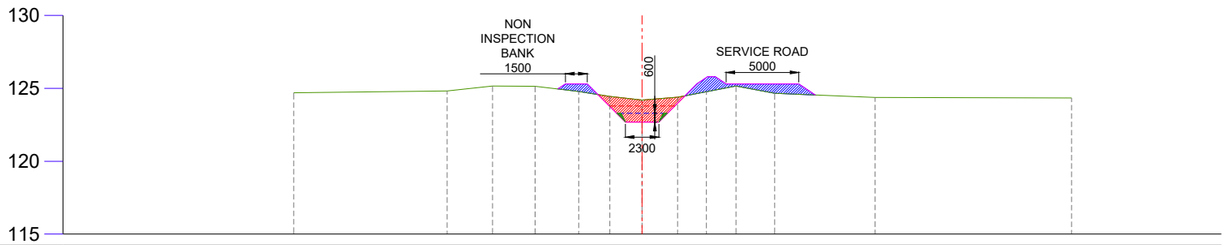
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ XSEC- 12 of 12

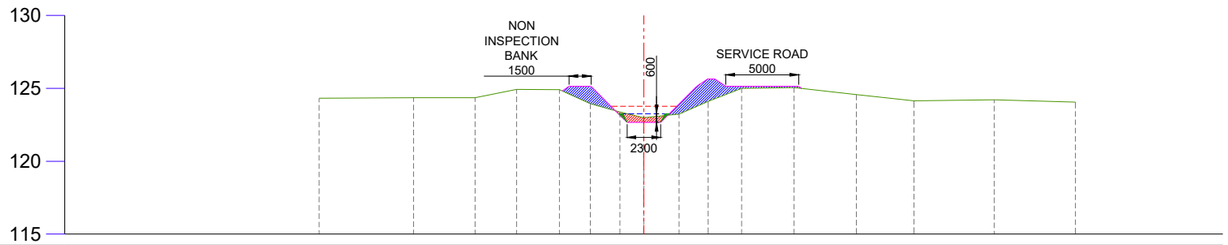
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	124.700	124.817	125.155	125.142	124.785	124.443	124.204	124.395	124.759	125.166	124.653	124.368	124.340
OFFSET (KM	23.915	13.390	10.268	7.345	4.353	2.219	0.000	2.442	4.417	6.452	9.102	15.988	29.470

CUTTING AREA (SQ.M) = 6.562
FILLING AREA (SQ.M) = 5.573

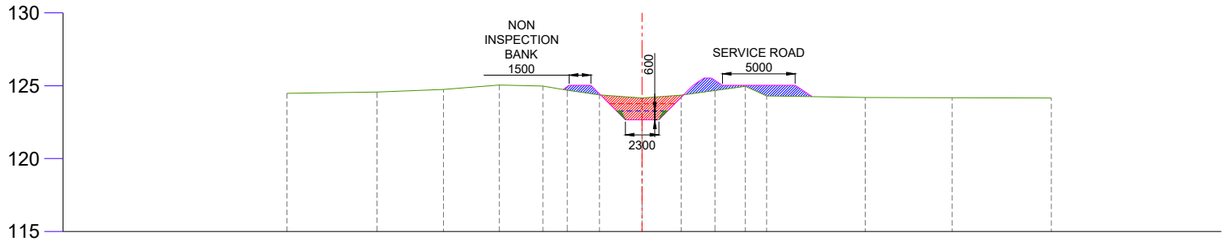
CH. : 0+100 KM
DESIGNED BED LEVEL = 122.685 M



EXIST. LEVEL (KM	124.320	124.364	124.365	124.931	124.913	123.954	123.375	122.980	123.232	124.109	125.007	125.054	124.578	124.135	124.213	124.057
OFFSET (KM	22.285	15.804	11.587	8.731	5.796	3.670	1.649	0.000	2.414	4.411	6.719	10.307	14.595	18.540	24.043	29.613

CUTTING AREA (SQ.M) = 1.303
FILLING AREA (SQ.M) = 7.257

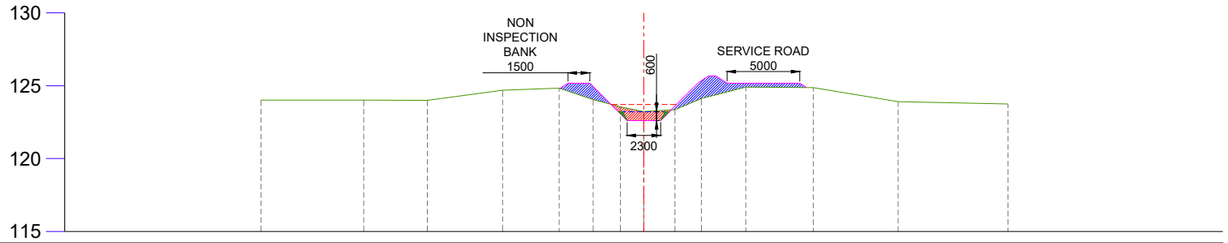
CH. : 0+300 KM
DESIGNED BED LEVEL = 122.637 M



EXIST. LEVEL (KM	124.480	124.559	124.735	125.040	124.981	124.695	124.371	124.163	124.352	124.669	124.953	124.303	124.196	124.181	124.160
OFFSET (KM	24.376	18.200	13.639	9.806	6.805	5.131	2.922	0.000	2.693	5.006	7.078	8.550	15.319	21.277	28.091

CUTTING AREA (SQ.M) = 6.246
FILLING AREA (SQ.M) = 5.296

CH. : 0+200 KM
DESIGNED BED LEVEL = 122.661 M



EXIST. LEVEL (KM	124.018	124.018	123.998	124.685	124.826	124.046	123.221	123.350	124.120	124.896	124.860	123.903	123.740
OFFSET (KM	26.271	19.215	14.864	9.700	5.817	3.472	0.000	2.139	3.950	6.999	11.633	17.452	24.986

CUTTING AREA (SQ.M) = 2.283
FILLING AREA (SQ.M) = 7.302

CH. : 0+400 KM
DESIGNED BED LEVEL = 122.613 M

LEGEND

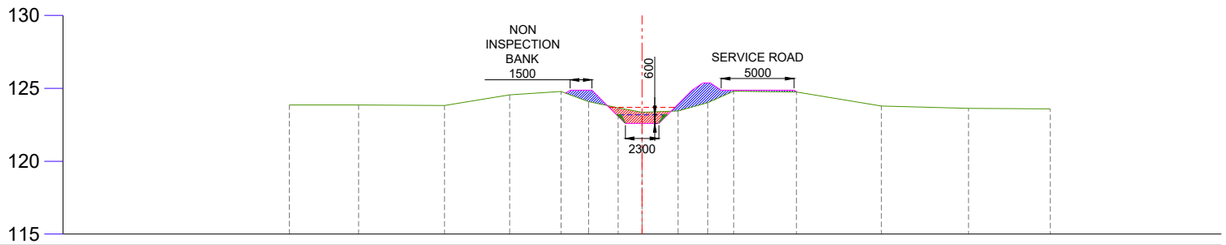
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 1 of 19

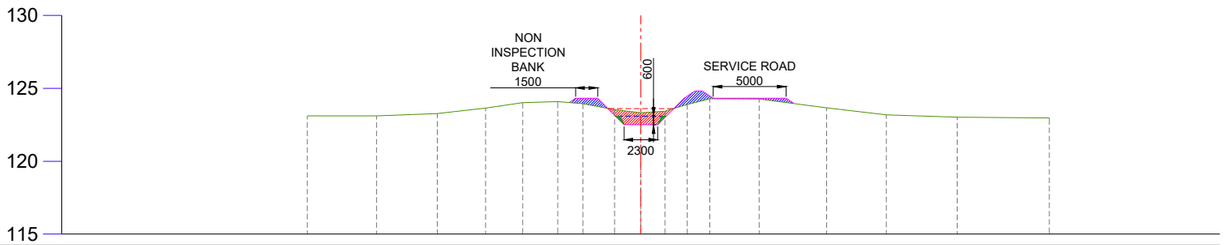
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	123.860	123.851	123.824	124.546	124.777	124.098	123.655	123.352	123.452	124.010	124.810	124.748	123.785	123.628	123.590
OFFSET (KM	24.221	19.460	13.565	9.088	5.570	3.669	1.643	0.000	2.481	4.502	6.280	10.598	16.418	22.410	28.022

CUTTING AREA (SQ.M) = 2.837
FILLING AREA (SQ.M) = 5.204

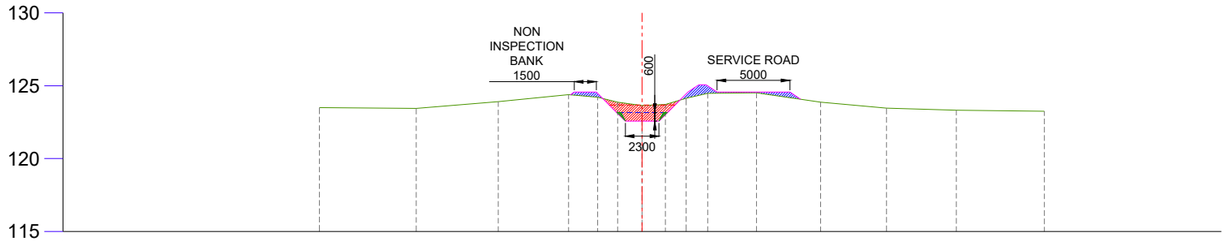
CH. : 0+500 KM
DESIGNED BED LEVEL = 122.589 M



EXIST. LEVEL (KM	123.113	123.102	123.263	123.652	124.024	124.086	123.940	123.534	123.332	123.896	124.278	124.264	123.671	123.182	123.026	122.960
OFFSET (KM	22.900	18.141	13.964	10.655	8.101	5.700	3.980	1.797	0.000	3.178	4.740	8.130	12.756	16.842	21.718	28.043

CUTTING AREA (SQ.M) = 3.014
FILLING AREA (SQ.M) = 2.720

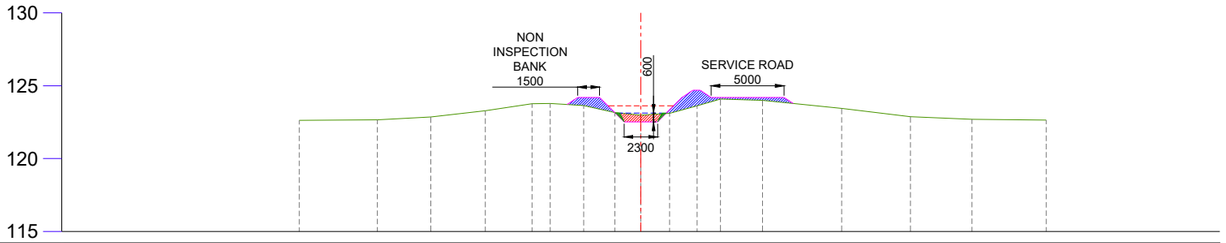
CH. : 0+700 KM
DESIGNED BED LEVEL = 122.542 M



EXIST. LEVEL (KM	123.492	123.450	123.912	124.384	124.210	123.636	124.140	124.480	124.511	123.875	123.454	123.318	123.250	
OFFSET (KM	22.154	15.509	9.865	5.048	3.047	0.000	3.020	4.501	7.859	12.253	16.777	21.564	27.605	

CUTTING AREA (SQ.M) = 4.265
FILLING AREA (SQ.M) = 2.428

CH. : 0+600 KM
DESIGNED BED LEVEL = 122.566 M



EXIST. LEVEL (KM	122.628	122.657	122.852	123.279	123.757	123.783	123.633	123.162	122.988	123.112	123.622	124.086	123.997	123.444	122.874	122.696	122.650
OFFSET (KM	23.437	18.078	14.407	10.673	7.470	6.220	3.925	1.775	0.000	1.967	3.861	5.467	8.359	13.784	18.502	22.732	27.820

CUTTING AREA (SQ.M) = 1.533
FILLING AREA (SQ.M) = 4.951

CH. : 0+800 KM
DESIGNED BED LEVEL = 122.518 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

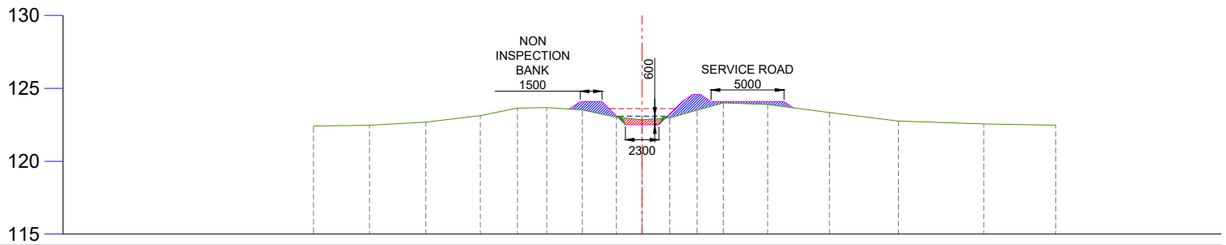
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 2 of 19

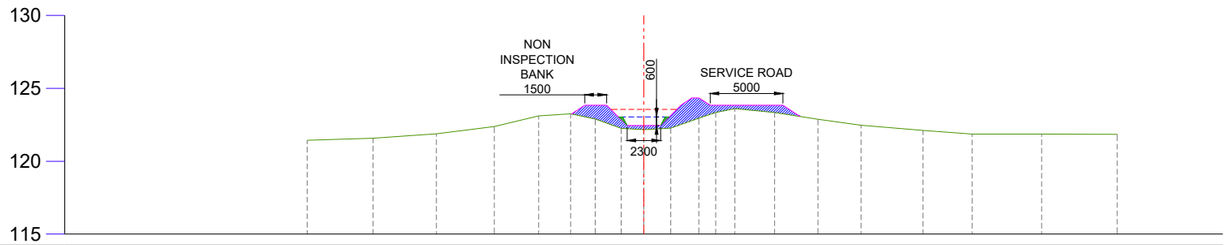
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	122.407	122.464	122.685	123.122	123.645	123.674	123.511	123.012	122.851	122.974	123.510	124.004	123.885	123.348	122.748	122.556	122.460
OFFSET (KM	22.556	18.711	14.850	11.108	8.553	6.540	4.104	1.771	0.000	1.899	3.771	5.565	8.610	12.853	17.596	23.459	28.390

CUTTING AREA (SQ.M) = 1.121
FILLING AREA (SQ.M) = 5.139

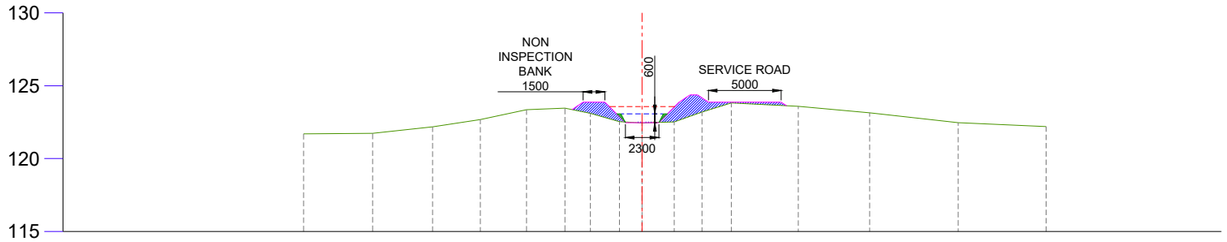
CH. : 0+900 KM
DESIGNED BED LEVEL = 122.494 M



EXIST. LEVEL (KM	121.440	121.584	121.889	122.385	123.118	123.246	122.891	122.165	122.269	122.952	123.601	123.337	122.883	122.463	122.116	121.858	121.869	121.850
OFFSET (KM	23.098	18.584	14.233	10.258	7.214	5.021	3.342	0.000	1.847	3.771	6.253	8.974	11.947	14.906	19.159	22.523	27.313	32.492

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 9.649

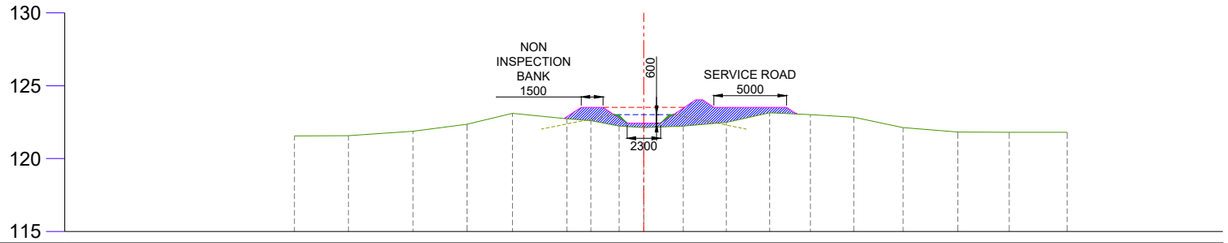
CH. : 1+100 KM
DESIGNED BED LEVEL = 122.447 M



EXIST. LEVEL (KM	121.700	121.740	122.180	122.670	123.360	123.460	123.100	122.450	122.510	123.190	123.820	123.580	123.140	122.460	122.200		
OFFSET (KM	23.234	18.489	14.382	11.098	7.924	5.294	3.552	0.000	2.197	4.113	6.124	10.716	15.624	21.688	27.726		

CUTTING AREA (SQ.M) = 0.022
FILLING AREA (SQ.M) = 6.580

CH. : 1+000 KM
DESIGNED BED LEVEL = 122.470 M



EXIST. LEVEL (KM	121.560	121.576	121.878	122.352	123.096	122.729	122.600	122.226	122.124	122.228	122.489	123.149	123.020	122.839	122.121	121.829	121.807	121.800
OFFSET (KM	23.978	20.266	15.835	12.124	9.012	5.272	3.628	1.701	0.000	2.707	5.660	8.639	11.433	14.406	17.797	21.554	25.072	29.052

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 11.617

CH. : 1+200 KM
DESIGNED BED LEVEL = 122.423 M

LEGEND

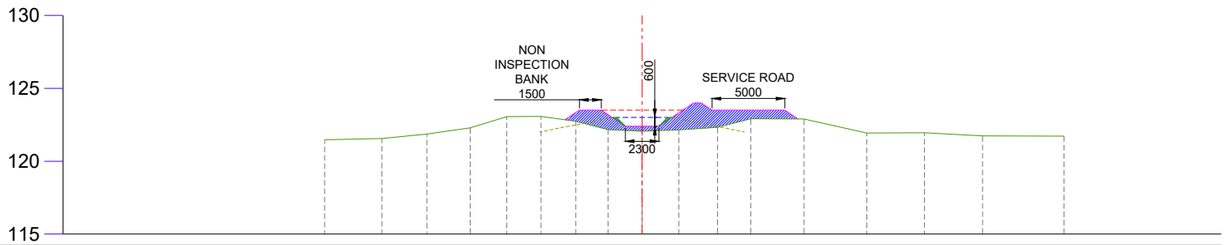
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 3 of 19

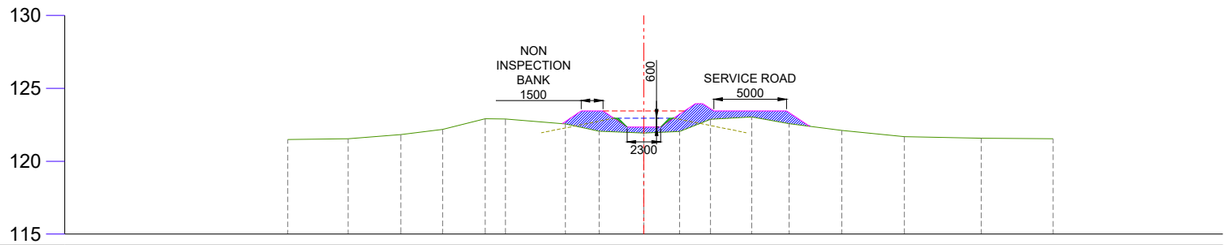
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	121.463	121.562	121.859	122.293	123.056	123.070	122.734	122.165	122.051	122.154	122.324	122.918	122.899	121.931	121.957	121.743	121.715
OFFSET (KM	21.783	17.855	14.773	11.789	9.292	6.930	4.549	2.338	0.000	2.519	5.174	7.465	11.107	15.418	19.383	23.364	28.966

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 12.566

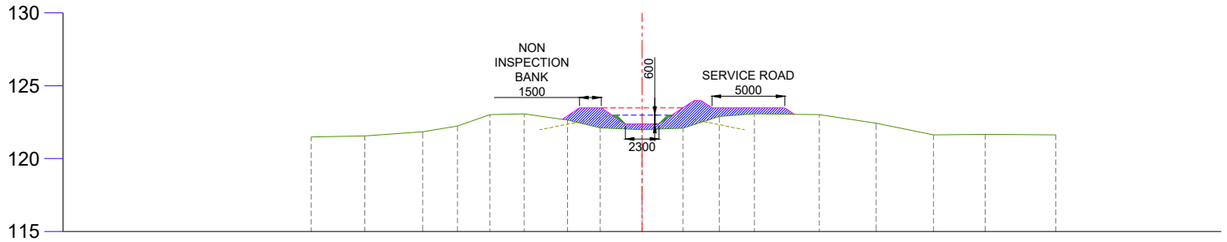
CH. : 1+300 KM
DESIGNED BED LEVEL = 122.399 M



EXIST. LEVEL (KM	121.490	121.535	121.825	122.190	122.909	122.893	122.566	122.066	121.932	122.034	122.871	123.041	122.574	122.111	121.685	121.577	121.548
OFFSET (KM	24.448	20.284	16.676	13.802	10.888	9.491	5.374	3.063	0.000	2.459	4.574	7.406	9.982	13.583	17.881	23.164	28.082

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 12.287

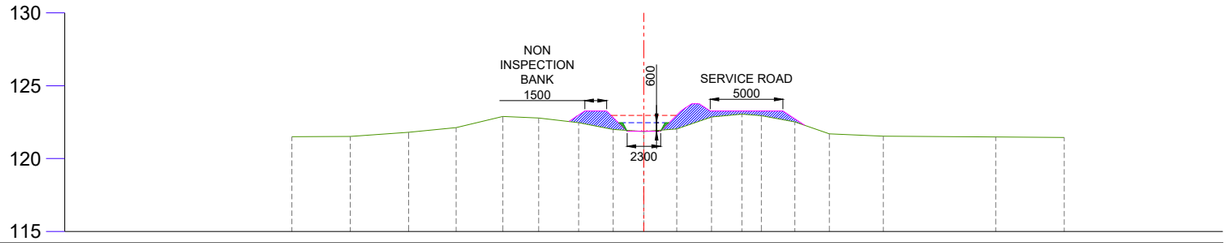
CH. : 1+500 KM
DESIGNED BED LEVEL = 122.351 M



EXIST. LEVEL (KM	121.479	121.546	121.839	122.233	123.016	123.061	122.637	122.107	121.981	122.085	122.888	123.071	123.010	122.423	121.631	121.668	121.629
OFFSET (KM	22.710	19.023	15.062	12.668	10.444	8.097	5.112	2.872	0.000	2.813	5.295	7.702	12.167	16.055	20.003	23.541	28.388

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 11.419

CH. : 1+400 KM
DESIGNED BED LEVEL = 122.375 M



EXIST. LEVEL (KM	121.505	121.521	121.806	122.133	122.896	122.784	122.469	122.008	121.864	122.034	122.847	123.045	122.946	122.514	121.697	121.538	121.491	121.450
OFFSET (KM	24.154	20.147	16.148	12.887	9.682	7.211	4.470	2.111	0.000	2.258	4.653	6.739	8.075	10.357	12.737	16.439	24.149	28.848

CUTTING AREA (SQ.M) = 0.086
FILLING AREA (SQ.M) = 8.012

CH. : 1+600 KM
DESIGNED BED LEVEL = 121.871 M

LEGEND

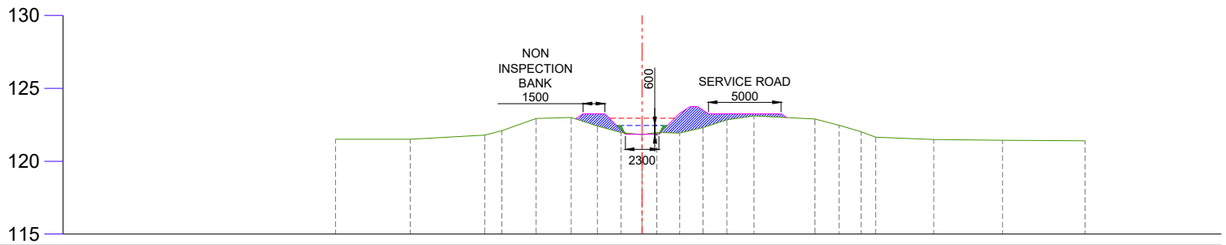
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 4 of 19

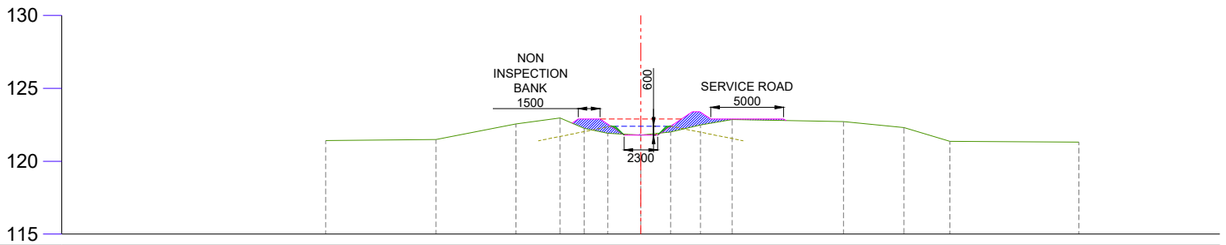
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	121.510	121.513	121.796	122.927	122.995	122.419	121.826	121.928	122.834	123.101	122.896	122.467	121.643	121.494	121.442	121.400
OFFSET (KM	21.046	15.907	10.803	7.266	4.860	3.073	0.000	2.585	5.822	7.671	11.861	13.521	16.033	20.025	24.732	30.410

CUTTING AREA (SQ.M) = 0.132
FILLING AREA (SQ.M) = 7.252

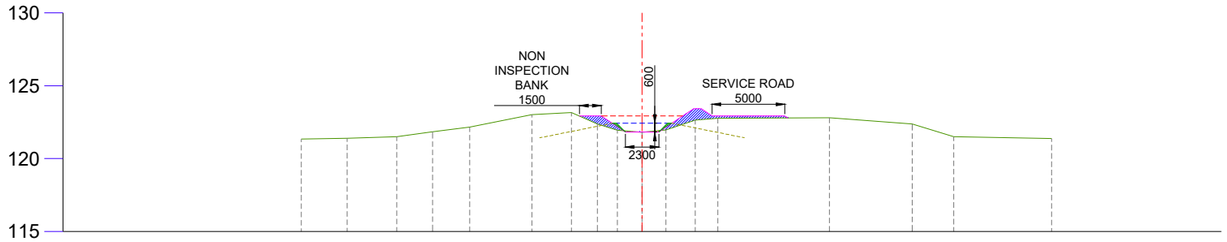
CH. : 1+700 KM
DESIGNED BED LEVEL = 121.847 M



EXIST. LEVEL (KM	121.422	121.484	122.552	122.960	121.924	121.791	122.005	122.485	122.853	122.716	122.309	121.370	121.304
OFFSET (KM	21.631	14.057	8.578	5.544	2.263	0.000	2.039	4.092	6.265	13.915	18.061	21.220	30.070

CUTTING AREA (SQ.M) = 0.105
FILLING AREA (SQ.M) = 4.549

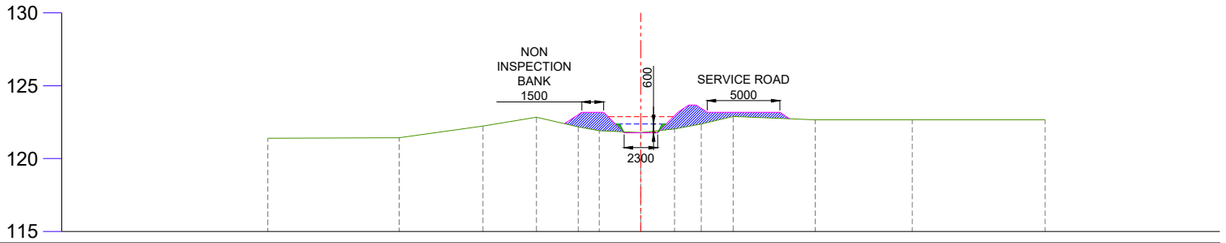
CH. : 1+900 KM
DESIGNED BED LEVEL = 121.799 M



EXIST. LEVEL (KM	121.340	121.402	121.504	121.839	122.169	123.021	123.156	122.378	121.807	121.970	122.645	122.770	122.797	122.381	121.494	121.369
OFFSET (KM	23.394	20.243	16.841	14.386	11.827	7.565	4.858	3.061	0.000	1.626	3.649	5.196	12.852	18.546	21.387	28.108

CUTTING AREA (SQ.M) = 0.102
FILLING AREA (SQ.M) = 3.474

CH. : 1+800 KM
DESIGNED BED LEVEL = 121.823 M



EXIST. LEVEL (KM	121.389	121.429	122.240	122.829	122.174	121.908	121.780	122.027	122.383	122.898	122.663	122.663	122.663
OFFSET (KM	25.605	16.590	10.836	7.163	4.294	2.846	0.000	2.322	4.150	6.344	11.975	18.631	27.744

CUTTING AREA (SQ.M) = 0.122
FILLING AREA (SQ.M) = 8.506

CH. : 2+000 KM
DESIGNED BED LEVEL = 121.775 M

LEGEND

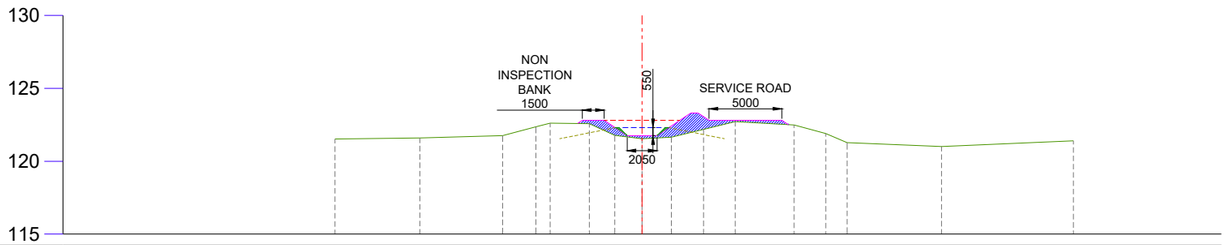
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 5 of 19

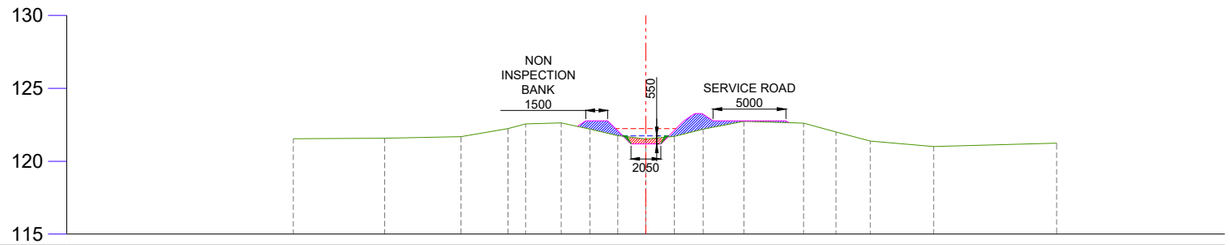
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	121.520	121.588	121.754	122.614	122.572	121.538	121.653	122.183	122.723	122.482	121.891	121.269	121.009	121.401
OFFSET (KM	21.076	15.256	9.575	6.305	3.621	0.000	2.013	4.215	6.399	10.434	12.614	14.064	20.559	29.608

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 5.956

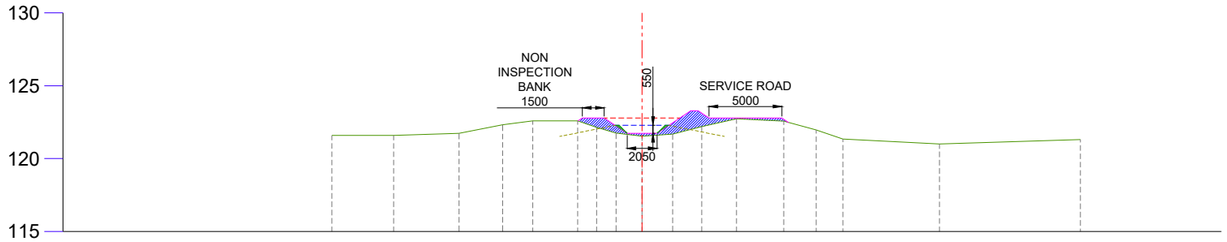
CH. : 2+100 KM
DESIGNED BED LEVEL = 121.751 M



EXIST. LEVEL (KM	121.550	121.580	121.690	122.240	122.620	122.210	121.751	121.526	121.695	122.209	122.727	122.615	122.000	121.383	121.012	121.247
OFFSET (KM	24.187	17.916	12.689	9.452	5.808	3.827	1.926	0.000	1.952	3.929	6.724	10.822	13.053	15.407	19.746	28.205

CUTTING AREA (SQ.M) = 1.020
FILLING AREA (SQ.M) = 4.839

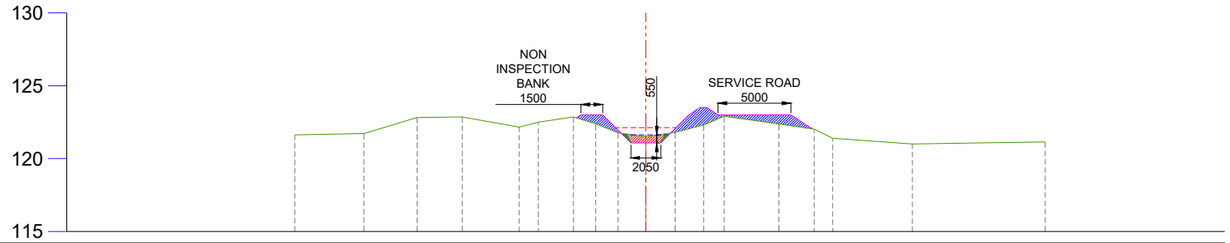
CH. : 2+300 KM
DESIGNED BED LEVEL = 121.094 M



EXIST. LEVEL (KM	121.599	121.599	121.740	122.314	122.593	122.589	121.759	121.530	121.679	122.199	122.726	122.563	121.957	121.338	121.011	121.312
OFFSET (KM	21.283	17.052	12.560	9.568	7.511	4.423	1.790	0.000	2.103	4.098	6.482	9.727	11.940	13.783	20.414	30.087

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 5.801

CH. : 2+200 KM
DESIGNED BED LEVEL = 121.728 M



EXIST. LEVEL (KM	121.620	121.712	122.820	122.851	122.160	122.500	122.850	121.760	121.500	121.800	122.900	122.370	122.020	121.400	121.000	121.140
OFFSET (KM	24.087	19.341	15.693	12.594	8.697	7.377	4.979	1.901	0.000	2.017	5.383	9.128	11.566	12.832	18.295	27.413

CUTTING AREA (SQ.M) = 1.419
FILLING AREA (SQ.M) = 6.526

CH. : 2+400 KM
DESIGNED BED LEVEL = 121.070 M

LEGEND

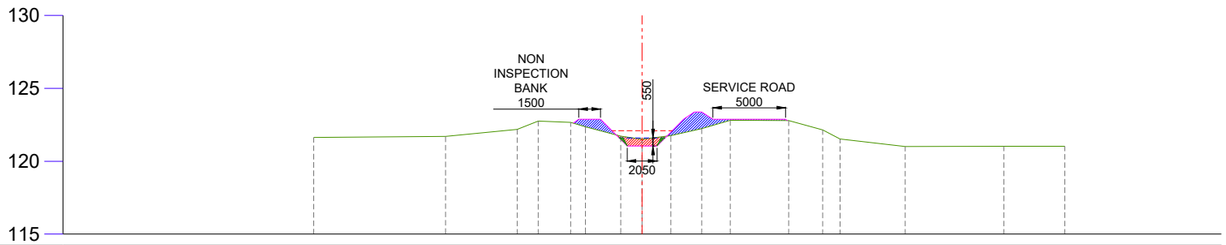
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 6 of 19

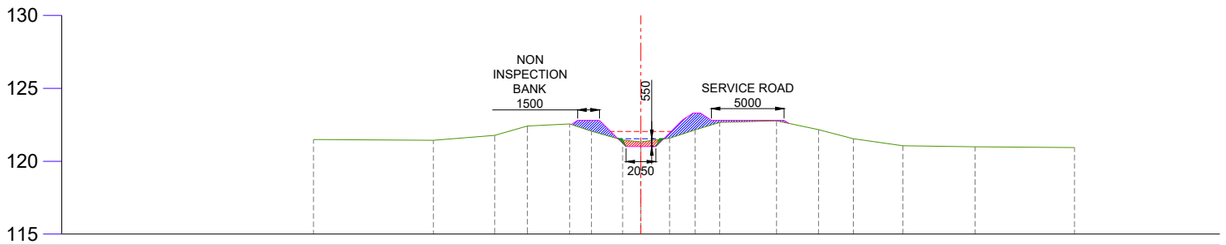
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	121.631	121.703	122.175	122.752	122.669	121.722	121.510	121.749	122.241	122.812	122.787	122.141	121.533	121.016	121.033	121.033
OFFSET (KM	22.543	13.492	8.569	7.129	4.899	1.458	0.000	1.974	4.099	6.047	10.067	12.395	13.592	18.055	24.823	29.019

CUTTING AREA (SQ.M) = 1.513
FILLING AREA (SQ.M) = 4.444

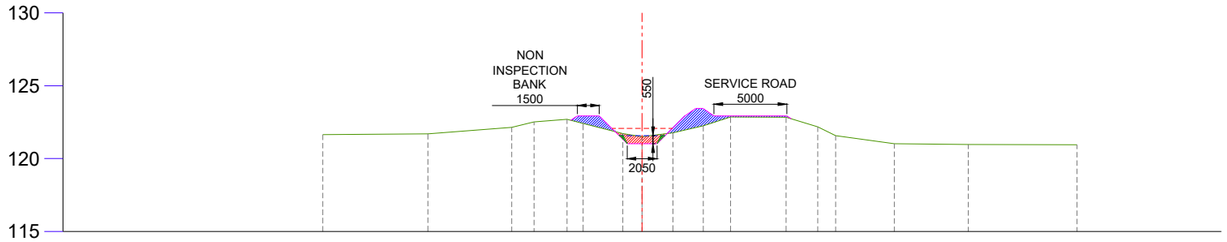
CH. : 2+500 KM
DESIGNED BED LEVEL = 121.046 M



EXIST. LEVEL (KM	121.489	121.428	121.780	122.408	122.552	122.066	121.325	121.574	122.669	122.763	122.170	121.535	121.067	120.990	120.940	
OFFSET (KM	22.463	14.226	10.031	7.782	4.880	3.392	0.000	1.973	5.418	9.309	12.191	14.591	17.990	22.936	29.762	

CUTTING AREA (SQ.M) = 1.017
FILLING AREA (SQ.M) = 4.838

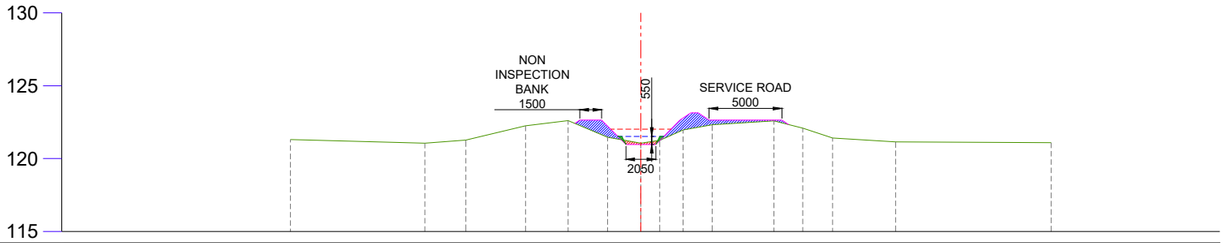
CH. : 2+700 KM
DESIGNED BED LEVEL = 120.999 M



EXIST. LEVEL (KM	121.638	121.695	122.144	122.522	122.693	121.714	121.506	121.764	122.250	122.847	122.837	121.577	121.017	120.972	120.950	
OFFSET (KM	21.906	14.700	8.940	7.408	5.157	1.330	0.000	2.118	4.206	6.075	9.889	13.288	17.305	22.387	29.851	

CUTTING AREA (SQ.M) = 1.608
FILLING AREA (SQ.M) = 4.847

CH. : 2+600 KM
DESIGNED BED LEVEL = 121.022 M



EXIST. LEVEL (KM	121.301	121.048	121.277	122.257	122.609	121.459	121.049	121.956	122.325	122.590	122.096	121.406	121.151	121.100		
OFFSET (KM	24.057	14.831	12.006	7.912	4.982	2.281	0.000	2.904	4.888	9.131	11.107	13.161	17.498	28.163		

CUTTING AREA (SQ.M) = 0.398
FILLING AREA (SQ.M) = 4.995

CH. : 2+800 KM
DESIGNED BED LEVEL = 120.975 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

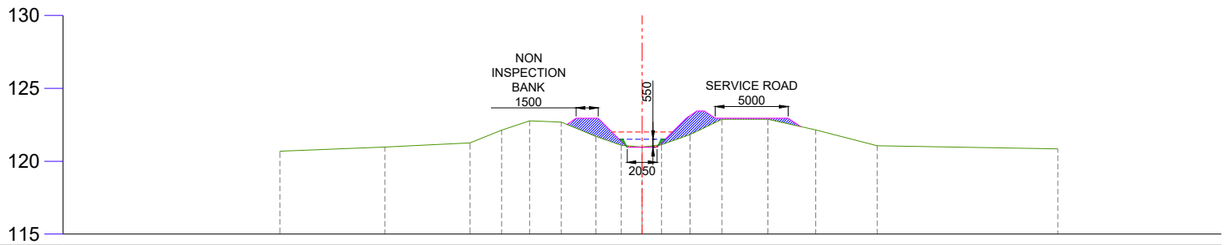
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 7 of 19

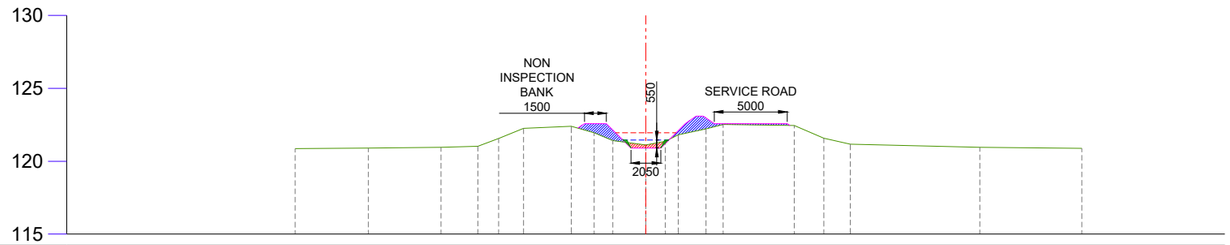
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	120.680	120.971	121.253	122.124	122.767	122.689	121.705	120.974	121.129	121.821	122.878	122.871	122.147	121.065	120.840		
OFFSET (KM	24.850	17.648	11.815	9.648	7.713	5.551	3.178	0.000	1.326	3.286	5.487	8.637	11.912	16.136	28.530		

CUTTING AREA (SQ.M) = 0.170
FILLING AREA (SQ.M) = 7.090

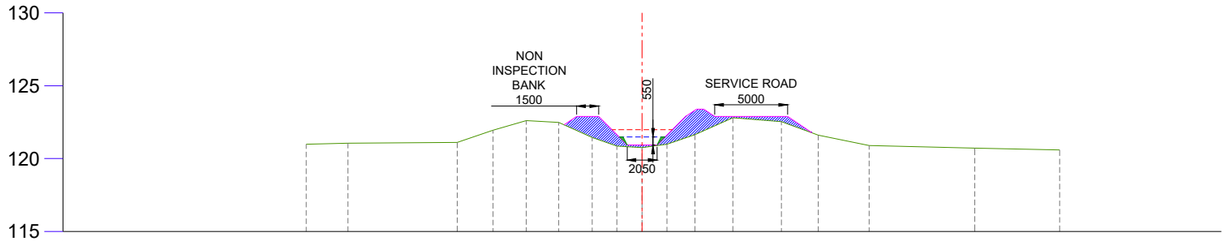
CH. : 2+900 KM
DESIGNED BED LEVEL = 120.951 M



EXIST. LEVEL (KM	120.870	120.900	120.952	121.019	122.253	122.401	121.411	121.112	121.805	122.520	122.454	121.571	121.171	120.956	120.890		
OFFSET (KM	24.071	19.035	14.055	11.534	8.385	5.115	2.258	0.000	2.228	5.305	10.181	12.222	14.035	22.932	29.925		

CUTTING AREA (SQ.M) = 0.782
FILLING AREA (SQ.M) = 4.171

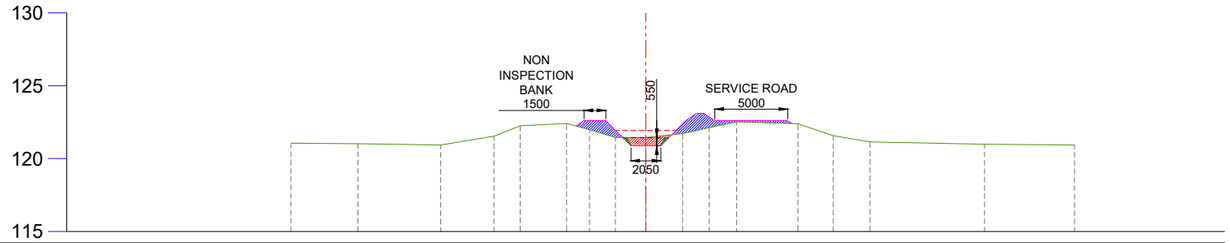
CH. : 3+100 KM
DESIGNED BED LEVEL = 120.903 M



EXIST. LEVEL (KM	120.980	121.049	121.111	121.951	122.603	122.481	121.449	120.858	120.752	120.980	121.645	122.806	122.526	121.616	120.903	120.710	120.588
OFFSET (KM	23.058	20.178	12.694	10.226	7.945	5.729	3.424	1.732	0.000	1.713	3.626	6.228	9.567	12.088	15.581	22.828	28.664

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 10.565

CH. : 3+000 KM
DESIGNED BED LEVEL = 120.927 M



EXIST. LEVEL (KM	121.050	121.028	120.931	121.545	122.251	122.414	121.983	121.456	121.456	121.709	122.119	122.524	122.401	121.579	121.140	120.985	120.940
OFFSET (KM	24.354	19.761	14.078	10.421	8.625	5.440	3.861	2.094	0.000	2.520	4.344	6.224	10.432	12.868	15.381	23.245	29.428

CUTTING AREA (SQ.M) = 1.656
FILLING AREA (SQ.M) = 4.911

CH. : 3+200 KM
DESIGNED BED LEVEL = 120.880 M

LEGEND

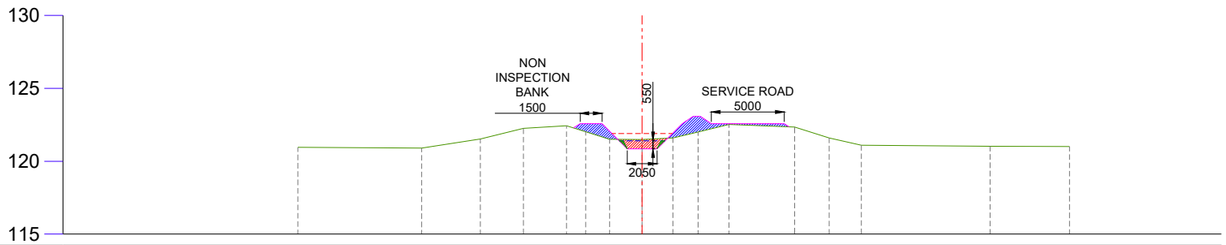
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 8 of 19

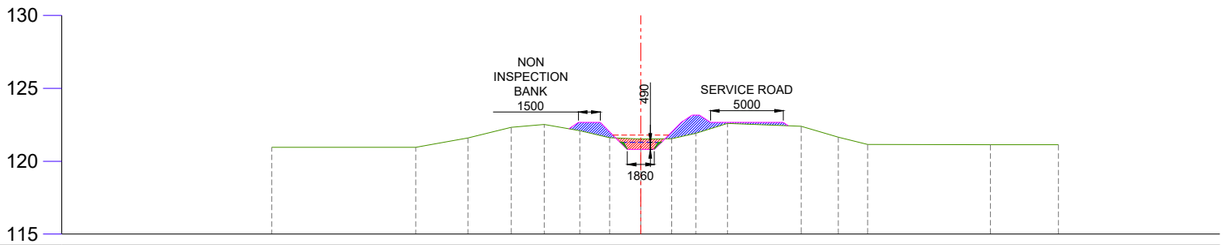
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	120.950	120.900	121.530	122.250	122.430	121.500	121.484	121.600	122.010	122.530	122.350	121.590	121.100	121.020	121.000
OFFSET (KM	23.628	15.134	11.098	8.150	5.185	2.239	0.000	2.120	3.843	5.963	10.468	12.840	15.043	23.879	29.341

CUTTING AREA (SQ.M) = 1.771
FILLING AREA (SQ.M) = 4.649

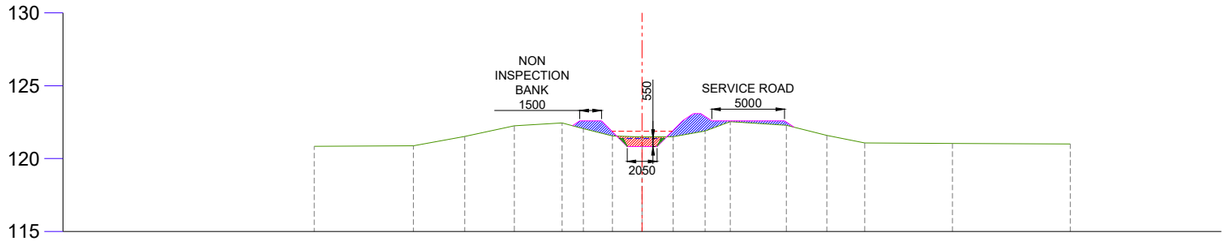
CH. : 3+300 KM
DESIGNED BED LEVEL = 120.856 M



EXIST. LEVEL (KM	120.959	120.952	121.590	122.318	122.516	122.101	121.609	121.519	121.539	121.917	122.602	122.404	121.655	121.151	121.141	121.141
OFFSET (KM	25.337	15.448	11.867	8.896	6.635	4.190	2.145	0.000	2.116	3.779	5.950	11.001	13.558	15.573	23.996	28.666

CUTTING AREA (SQ.M) = 1.900
FILLING AREA (SQ.M) = 5.238

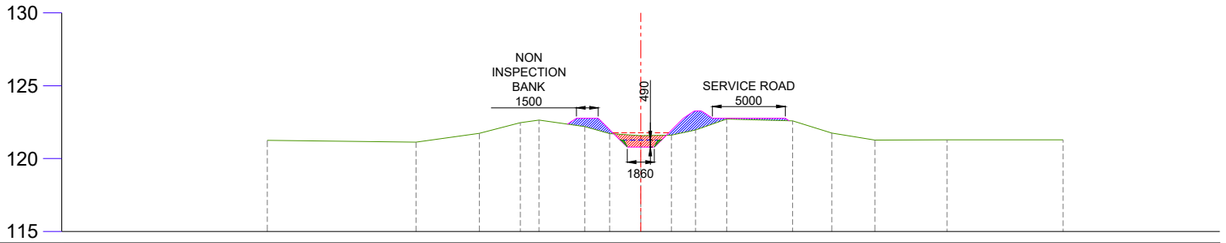
CH. : 3+500 KM
DESIGNED BED LEVEL = 120.808 M



EXIST. LEVEL (KM	120.844	120.877	121.519	122.246	122.444	122.054	121.555	121.476	121.503	121.892	122.532	122.294	121.594	121.076	121.041	121.010
OFFSET (KM	22.510	15.703	12.171	8.774	5.493	4.034	2.039	0.000	2.137	4.331	6.050	9.895	12.683	15.284	21.305	29.391

CUTTING AREA (SQ.M) = 1.809
FILLING AREA (SQ.M) = 5.409

CH. : 3+400 KM
DESIGNED BED LEVEL = 120.832 M



EXIST. LEVEL (KM	121.254	121.121	121.731	122.460	122.650	122.188	121.709	121.578	121.604	121.962	122.719	122.585	121.754	121.272	121.289	121.289
OFFSET (KM	25.638	15.429	11.088	8.262	6.992	3.843	2.134	0.000	2.104	3.757	5.898	10.423	13.112	16.067	21.011	28.980

CUTTING AREA (SQ.M) = 2.223
FILLING AREA (SQ.M) = 5.009

CH. : 3+600 KM
DESIGNED BED LEVEL = 120.784 M

LEGEND

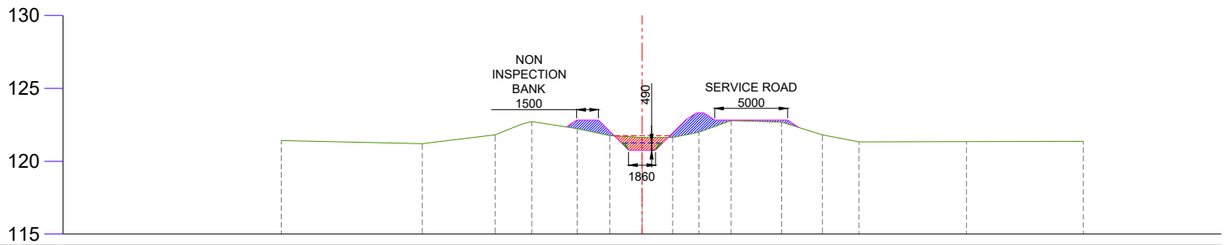
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 9 of 19

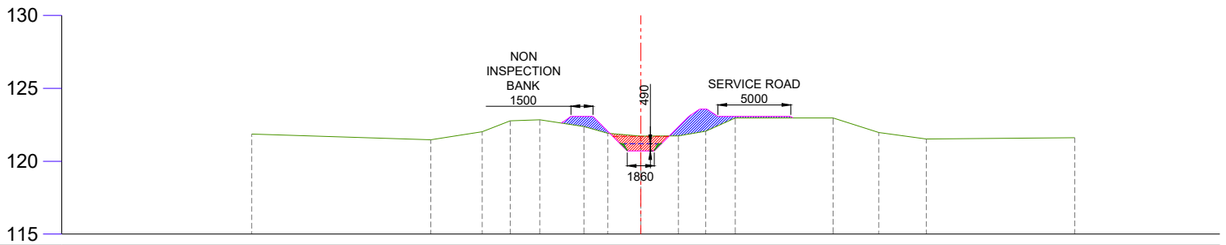
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	121.413	121.210	121.804	122.722	122.235	121.763	121.628	121.639	121.986	122.782	122.684	121.808	121.337	121.350	121.372
OFFSET (KM	24.760	15.089	10.094	7.572	4.456	2.217	0.000	2.101	3.889	6.101	9.576	12.367	14.883	22.267	30.275

CUTTING AREA (SQ.M) = 2.478
FILLING AREA (SQ.M) = 5.369

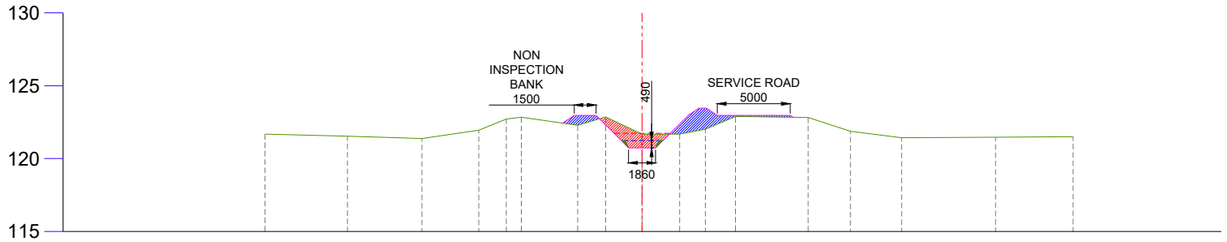
CH. : 3+700 KM
DESIGNED BED LEVEL = 120.761 M



EXIST. LEVEL (KM	121.870	121.475	122.030	122.766	122.848	122.374	121.925	121.729	121.744	122.058	122.972	122.973	121.966	121.530	121.608
OFFSET (KM	26.695	14.409	10.887	8.956	6.924	3.904	2.259	0.000	2.580	4.448	6.480	13.192	16.329	19.595	29.783

CUTTING AREA (SQ.M) = 3.113
FILLING AREA (SQ.M) = 5.983

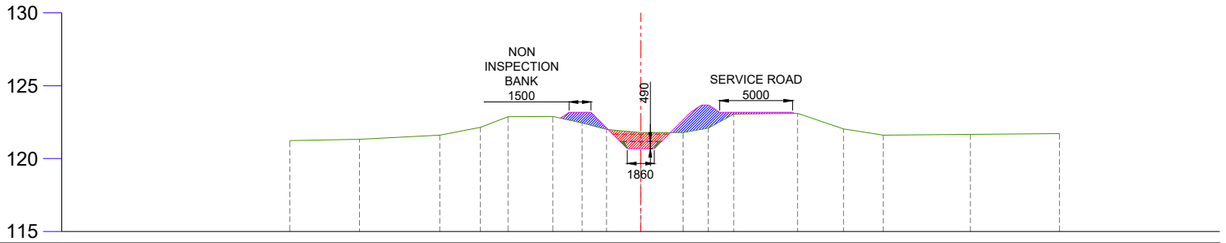
CH. : 3+900 KM
DESIGNED BED LEVEL = 120.713 M



EXIST. LEVEL (KM	121.680	121.530	121.380	121.950	122.830	122.290	122.860	121.680	121.680	122.010	122.890	122.820	121.870	121.430	121.460	121.500
OFFSET (KM	25.889	20.214	15.107	11.210	8.288	4.416	2.496	0.000	2.574	4.350	6.402	11.390	14.305	17.807	24.260	29.579

CUTTING AREA (SQ.M) = 4.042
FILLING AREA (SQ.M) = 5.212

CH. : 3+800 KM
DESIGNED BED LEVEL = 120.737 M



EXIST. LEVEL (KM	121.240	121.320	121.600	122.134	122.870	122.886	122.437	121.998	121.782	121.791	122.090	123.057	123.103	122.037	121.614	121.660	121.713
OFFSET (KM	24.086	19.313	13.783	11.008	9.097	6.035	4.032	2.355	0.000	2.901	4.627	6.376	10.749	13.906	16.641	22.625	28.737

CUTTING AREA (SQ.M) = 3.441
FILLING AREA (SQ.M) = 6.218

CH. : 4+000 KM
DESIGNED BED LEVEL = 120.689 M

LEGEND

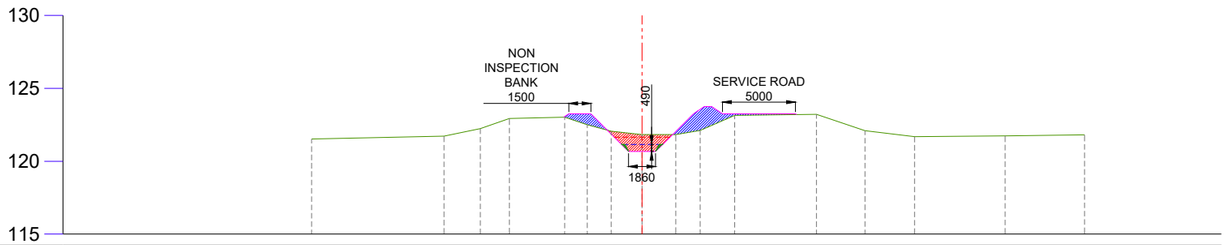
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 10 of 19

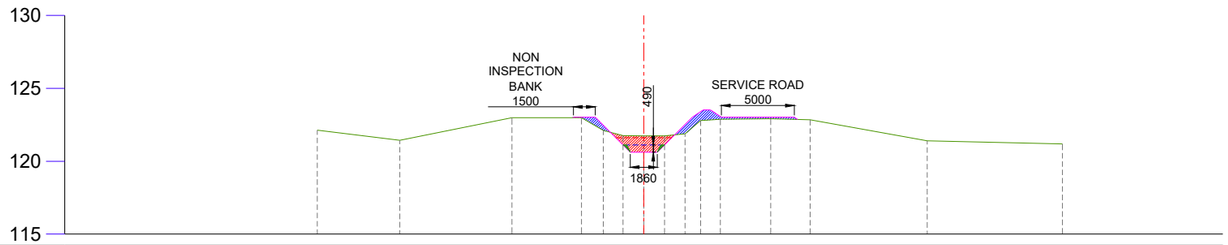
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	121.520	121.719	122.235	122.927	123.021	122.066	121.823	121.835	122.120	123.137	123.223	122.101	121.693	121.730	121.808
OFFSET (KM	22.687	13.595	11.110	9.108	5.317	2.121	0.000	2.319	3.989	6.348	11.973	15.289	18.696	24.925	30.364

CUTTING AREA (SQ.M) = 3.793
FILLING AREA (SQ.M) = 5.314

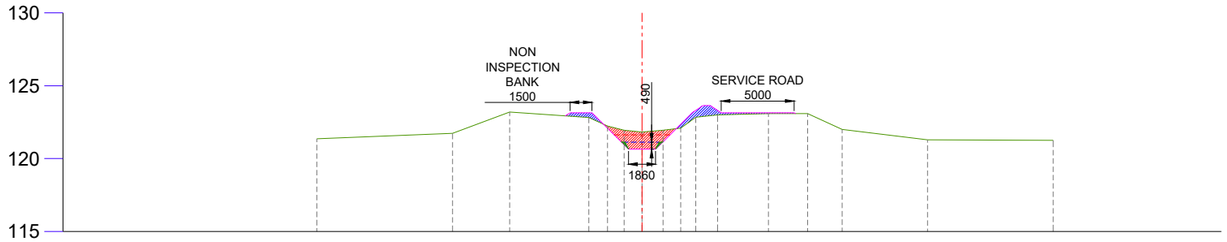
CH. : 4+100 KM
DESIGNED BED LEVEL = 120.665 M



EXIST. LEVEL (KM	122.136	121.436	122.977	122.989	122.105	121.731	121.872	122.878	122.911	122.847	121.393	121.180			
OFFSET (KM	22.418	16.742	9.042	4.281	2.780	0.000	2.830	5.258	8.710	11.416	19.445	28.723			

CUTTING AREA (SQ.M) = 3.458
FILLING AREA (SQ.M) = 3.037

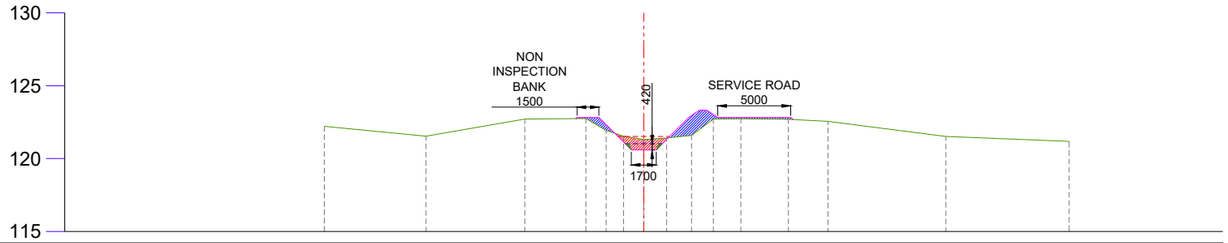
CH. : 4+300 KM
DESIGNED BED LEVEL = 120.618 M



EXIST. LEVEL (KM	121.357	121.737	123.186	122.813	121.815	122.089	122.997	123.078	123.079	121.999	121.293	121.250			
OFFSET (KM	22.325	13.001	9.090	3.661	0.000	2.646	5.176	8.670	11.365	13.722	19.597	28.216			

CUTTING AREA (SQ.M) = 4.168
FILLING AREA (SQ.M) = 2.588

CH. : 4+200 KM
DESIGNED BED LEVEL = 120.641 M



EXIST. LEVEL (KM	122.211	121.545	122.704	122.746	121.933	121.307	121.414	121.598	122.725	122.701	122.557	121.519	121.180		
OFFSET (KM	21.935	14.939	8.167	3.970	2.579	0.000	1.572	3.275	6.655	9.927	12.640	20.736	29.190		

CUTTING AREA (SQ.M) = 2.069
FILLING AREA (SQ.M) = 3.999

CH. : 4+400 KM
DESIGNED BED LEVEL = 120.594 M

LEGEND

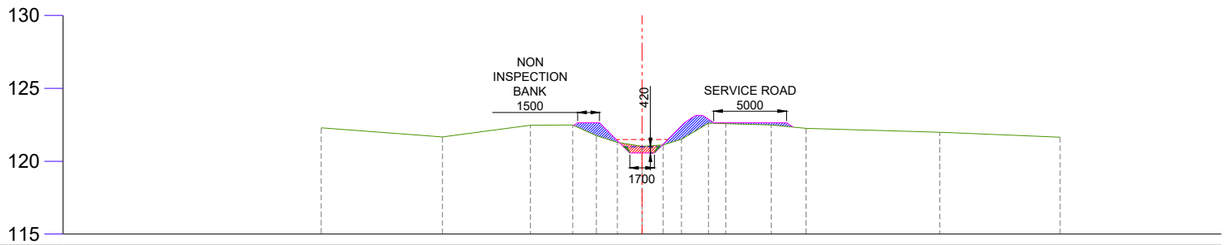
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 11 of 19

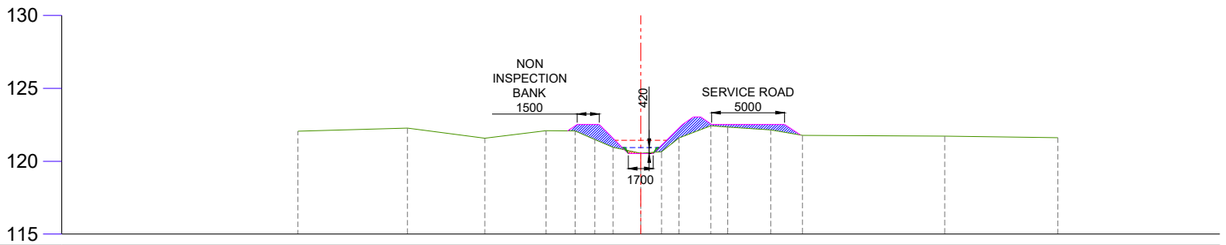
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	122.293	121.660	122.469	122.494	121.300	121.022	121.512	122.611	122.571	122.486	122.260	121.980	121.646
OFFSET (KM	22.017	13.708	7.657	4.769	1.700	0.000	2.701	4.559	5.741	8.866	11.249	20.428	28.699

CUTTING AREA (SQ.M) = 1.198
FILLING AREA (SQ.M) = 4.597

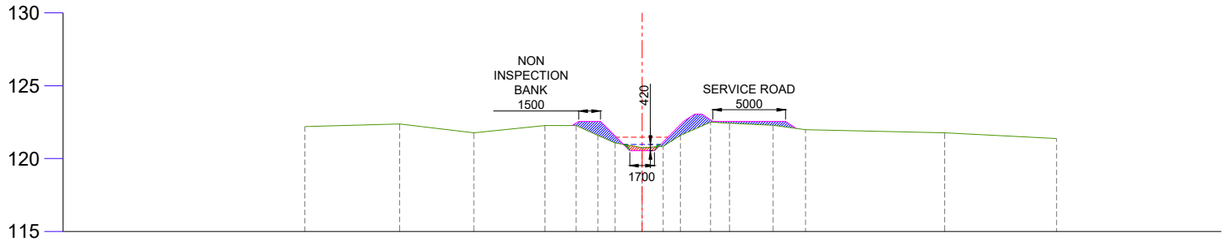
CH. : 4+500 KM
DESIGNED BED LEVEL = 120.570 M



EXIST. LEVEL (KM	122.060	122.270	121.580	122.100	122.080	120.950	120.550	121.590	122.440	122.340	122.150	121.780	121.720	121.610
OFFSET (KM	23.529	16.010	10.703	6.511	4.506	1.912	0.000	2.612	4.808	5.965	8.922	11.090	20.851	28.616

CUTTING AREA (SQ.M) = 0.183
FILLING AREA (SQ.M) = 6.776

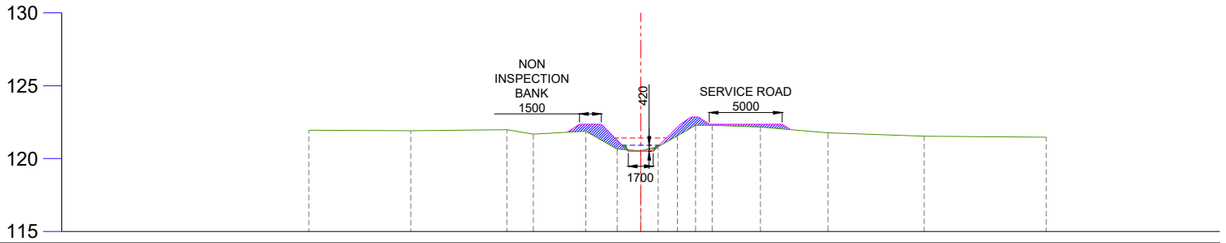
CH. : 4+700 KM
DESIGNED BED LEVEL = 120.522 M



EXIST. LEVEL (KM	122.200	122.368	121.766	122.270	122.259	121.080	120.752	121.589	122.506	122.424	122.282	121.981	121.768	121.380
OFFSET (KM	23.139	16.634	11.546	6.672	4.536	1.848	0.000	2.639	4.703	5.994	8.995	11.217	20.760	28.438

CUTTING AREA (SQ.M) = 0.547
FILLING AREA (SQ.M) = 5.444

CH. : 4+600 KM
DESIGNED BED LEVEL = 120.546 M



EXIST. LEVEL (KM	121.941	121.920	121.979	121.684	121.870	120.652	120.544	121.546	122.293	122.166	121.777	121.530	121.460
OFFSET (KM	22.793	15.786	9.185	7.368	3.776	1.629	0.000	2.501	4.894	8.208	12.841	19.445	27.826

CUTTING AREA (SQ.M) = 0.231
FILLING AREA (SQ.M) = 4.935

CH. : 4+800 KM
DESIGNED BED LEVEL = 120.499 M

LEGEND

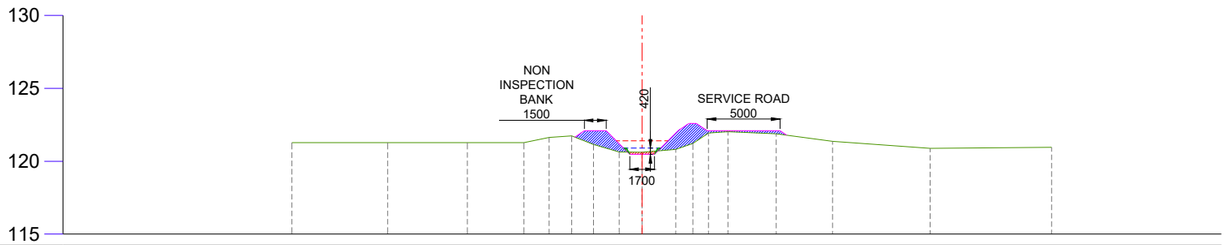
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 12 of 19

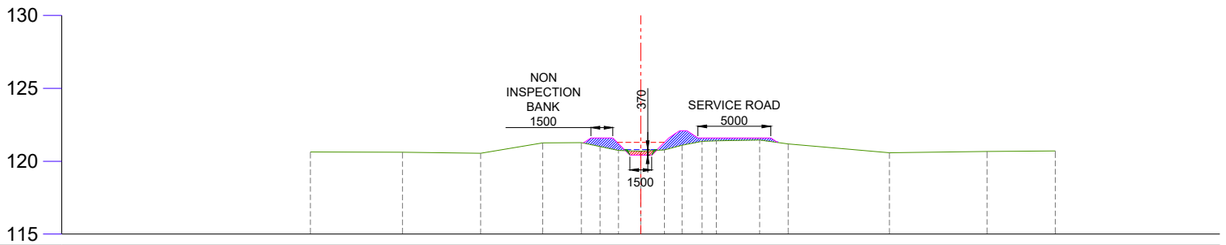
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	121.272	121.272	121.280	121.279	121.634	121.731	121.149	120.633	120.620	120.813	121.936	122.019	121.884	121.357	120.890	120.960
OFFSET (KM	24.026	17.458	11.989	8.104	6.378	4.824	3.338	1.574	0.000	2.304	4.551	5.883	9.206	13.067	19.762	28.101

CUTTING AREA (SQ.M) = 0.317
FILLING AREA (SQ.M) = 6.462

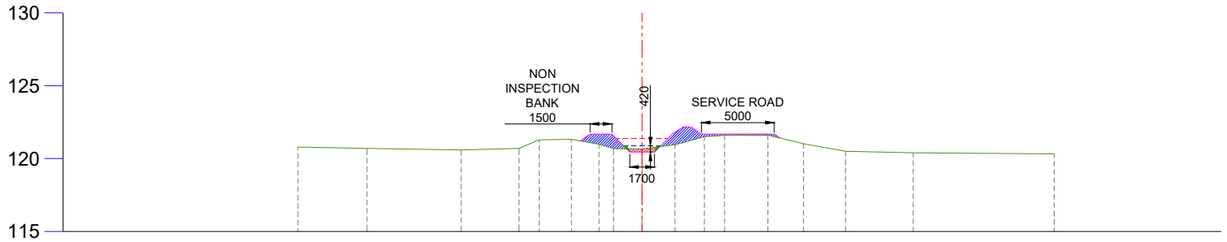
CH. : 4+900 KM
DESIGNED BED LEVEL = 120.475 M



EXIST. LEVEL (KM	120.630	120.610	120.536	121.250	121.282	120.734	120.687	120.775	121.091	121.399	121.449	121.186	120.575	120.665	120.700
OFFSET (KM	22.671	16.351	10.989	6.730	4.082	1.542	0.000	1.627	2.823	5.177	8.156	10.123	17.062	23.758	28.439

CUTTING AREA (SQ.M) = 0.503
FILLING AREA (SQ.M) = 4.383

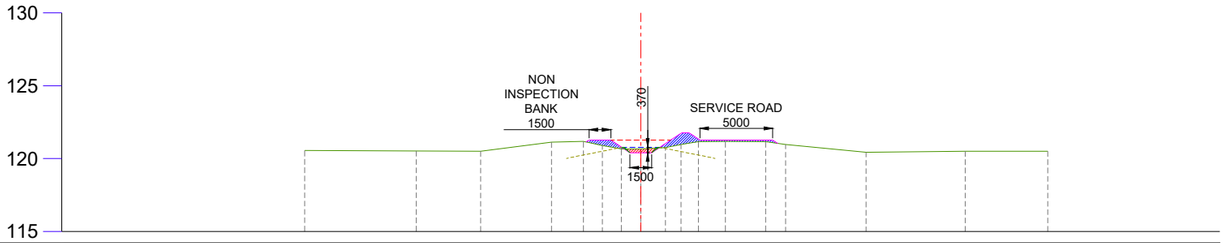
CH. : 5+100 KM
DESIGNED BED LEVEL = 120.427 M



EXIST. LEVEL (KM	120.780	120.696	120.590	120.708	121.289	121.326	120.681	120.659	120.946	121.598	121.609	121.015	120.506	120.396	120.320
OFFSET (KM	23.631	18.882	12.418	8.456	7.063	4.855	1.963	0.000	2.262	5.652	8.630	11.067	13.968	18.618	28.283

CUTTING AREA (SQ.M) = 0.485
FILLING AREA (SQ.M) = 4.252

CH. : 5+000 KM
DESIGNED BED LEVEL = 120.451 M



EXIST. LEVEL (KM	120.550	120.530	120.497	121.124	121.178	120.666	120.669	120.974	121.172	121.168	120.962	120.424	120.508	120.508
OFFSET (KM	23.070	15.415	10.995	6.134	3.937	1.333	0.000	2.764	5.801	8.559	9.941	15.458	22.267	27.933

CUTTING AREA (SQ.M) = 0.542
FILLING AREA (SQ.M) = 2.659

CH. : 5+200 KM
DESIGNED BED LEVEL = 120.403 M

LEGEND

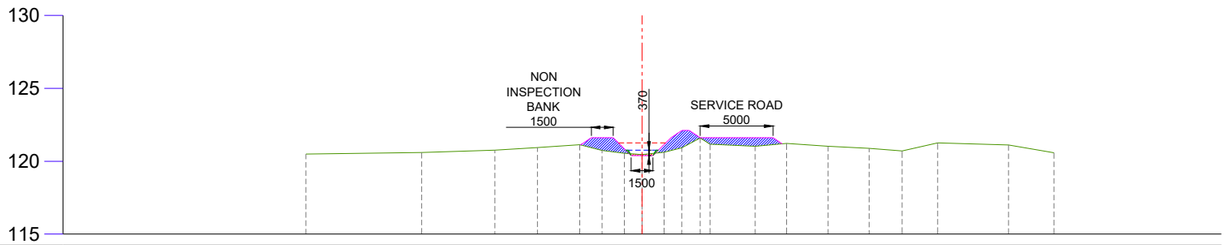
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 13 of 19

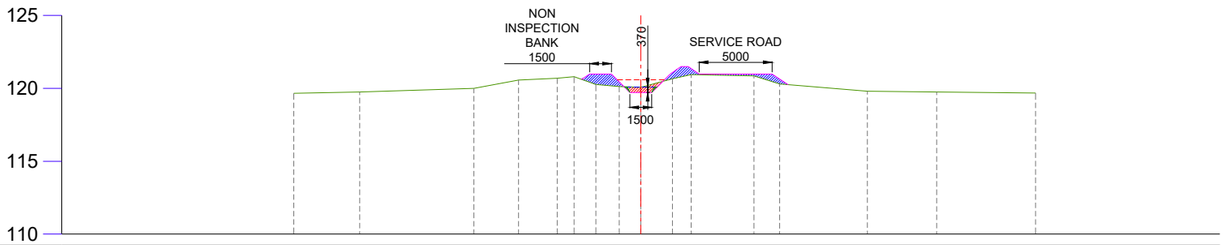
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	120.500	120.600	120.750	120.936	121.134	120.742	120.452	120.615	121.168	121.031	121.220	121.020	120.890	120.700	121.254	121.117	120.580
OFFSET (KM	23.067	15.120	10.102	7.192	4.277	2.754	0.000	1.507	4.664	7.763	9.909	12.770	15.582	17.841	20.276	25.143	28.272

CUTTING AREA (SQ.M) = 0.183
FILLING AREA (SQ.M) = 6.751

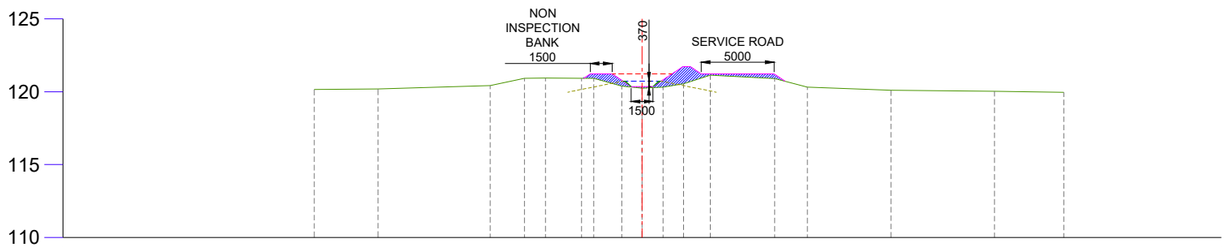
CH. : 5+300 KM
DESIGNED BED LEVEL = 120.380 M



EXIST. LEVEL (KM	119.660	119.750	119.999	120.571	120.686	120.264	120.130	120.075	120.650	120.947	120.859	120.297	119.806	119.740	119.670		
OFFSET (KM	23.818	19.289	11.464	8.388	5.736	3.080	1.480	0.000	2.179	3.452	7.773	9.533	15.556	20.299	27.096		

CUTTING AREA (SQ.M) = 0.896
FILLING AREA (SQ.M) = 3.724

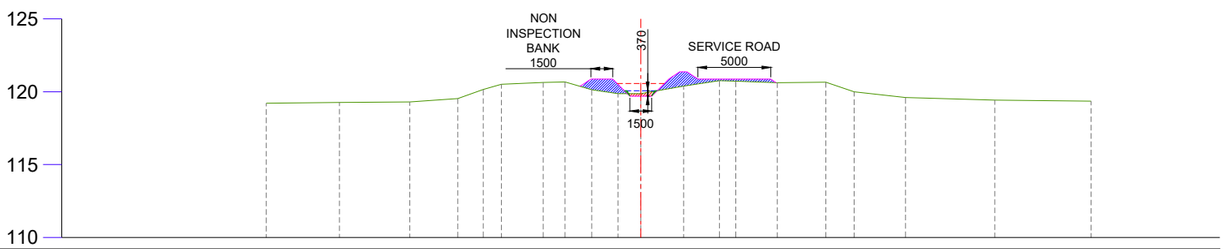
CH. : 5+500 KM
DESIGNED BED LEVEL = 119.722 M



EXIST. LEVEL (KM	120.160	120.195	120.422	120.916	120.930	120.918	120.384	120.237	120.306	120.552	121.135	120.904	120.321	120.093	120.020	119.950	
OFFSET (KM	23.937	19.557	11.869	9.517	8.081	5.595	2.833	0.000	1.443	1.408	3.230	7.661	9.901	15.631	22.747	27.494	

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 4.931

CH. : 5+400 KM
DESIGNED BED LEVEL = 120.356 M



EXIST. LEVEL (KM	119.210	119.254	119.305	119.534	120.509	120.642	120.133	119.862	120.382	120.754	120.728	120.622	120.644	119.994	119.597	119.429	119.360
OFFSET (KM	25.714	20.691	15.855	12.562	9.561	6.707	3.363	0.000	2.933	5.404	6.520	9.360	12.701	14.648	18.169	24.288	30.909

CUTTING AREA (SQ.M) = 0.366
FILLING AREA (SQ.M) = 4.858

CH. : 5+600 KM
DESIGNED BED LEVEL = 119.698 M

LEGEND

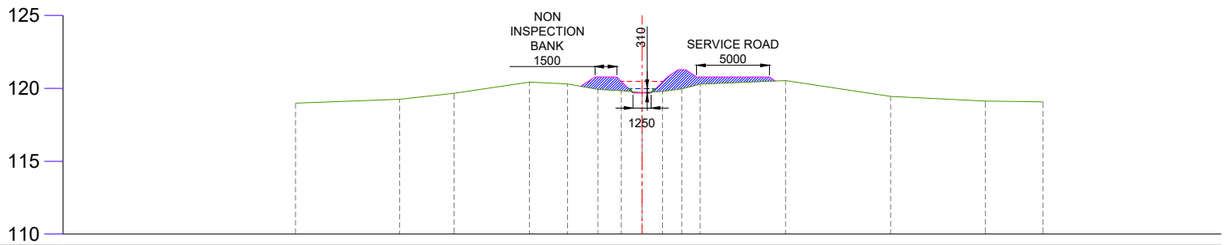
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 14 of 19

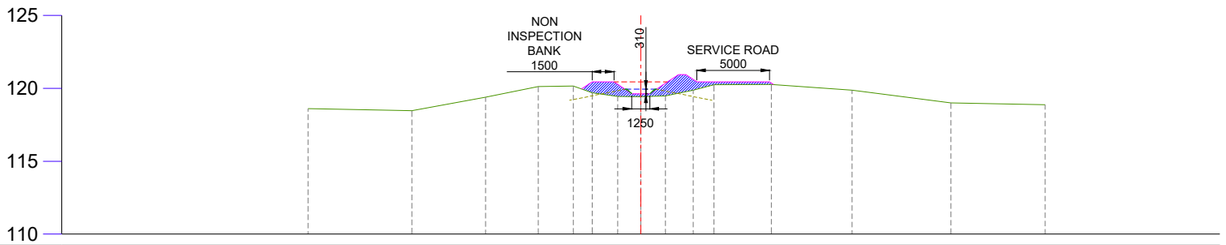
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	118.980	119.250	119.660	120.417	120.301	119.920	119.720	120.290	120.530	119.440	119.120	119.080
OFFSET (KM	23.777	16.648	12.894	7.729	5.121	3.035	0.000	3.991	9.842	17.055	23.570	27.522

CUTTING AREA (SQ.M) = 0.090
FILLING AREA (SQ.M) = 6.993

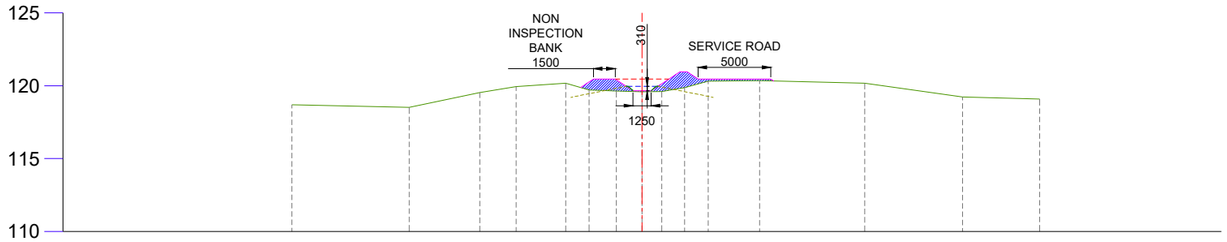
CH. : 5+700 KM
DESIGNED BED LEVEL = 119.674 M



EXIST. LEVEL (KM	118.607	118.468	119.395	120.130	120.160	119.440	119.428	119.488	120.247	120.270	119.876	118.997	118.878
OFFSET (KM	22.836	15.714	10.654	7.041	4.638	1.589	0.000	1.681	5.022	8.958	14.505	21.291	27.753

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 6.339

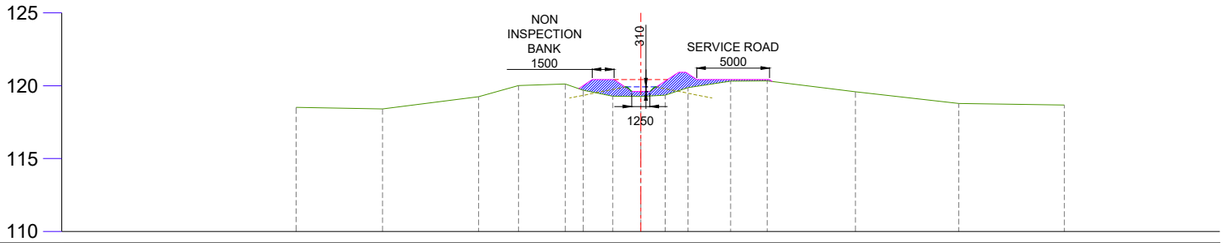
CH. : 5+900 KM
DESIGNED BED LEVEL = 119.627 M



EXIST. LEVEL (KM	118.695	118.515	119.535	119.938	120.168	119.706	119.636	119.584	119.875	120.308	120.342	120.170	119.226	119.083
OFFSET (KM	24.041	15.977	11.145	8.643	5.240	3.635	1.776	0.000	2.915	4.533	8.071	15.282	21.989	27.292

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 5.228

CH. : 5+800 KM
DESIGNED BED LEVEL = 119.651 M



EXIST. LEVEL (KM	118.512	118.416	119.243	120.014	120.113	119.288	119.261	119.360	119.877	120.309	120.329	119.585	118.783	118.677
OFFSET (KM	23.658	17.718	11.133	8.394	5.178	1.932	0.000	1.664	3.249	6.164	8.682	14.723	21.824	29.069

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 6.908

CH. : 6+000 KM
DESIGNED BED LEVEL = 119.603 M

LEGEND

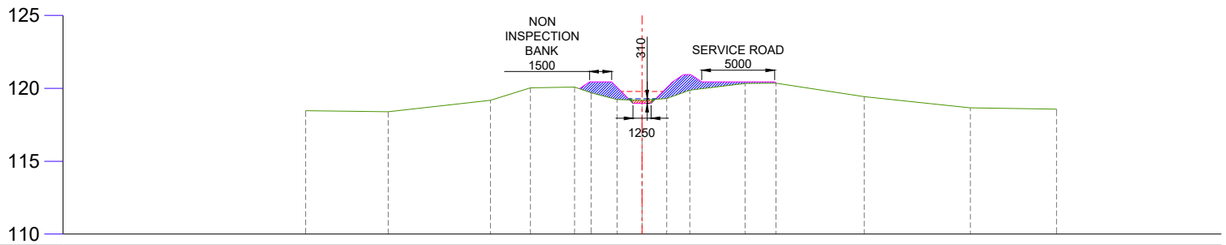
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 15 of 19

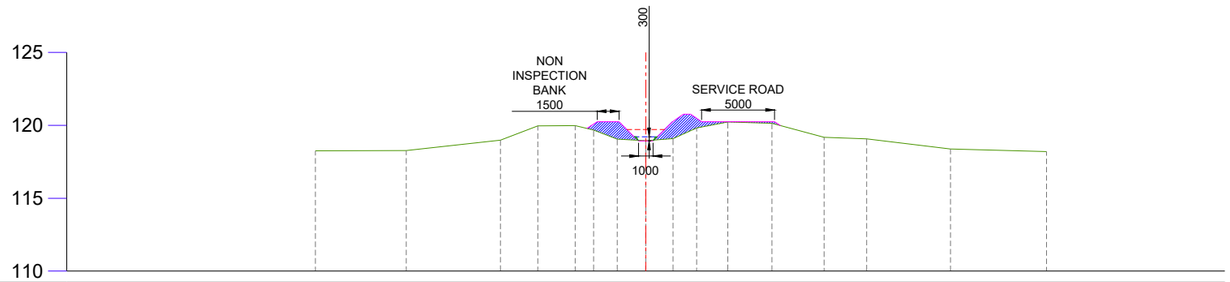
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	118.469	118.394	119.176	120.032	120.092	119.229	119.183	119.300	119.878	120.330	120.359	119.436	118.669	118.571
OFFSET (KM	23.094	17.429	10.415	7.669	4.633	1.716	0.000	1.688	3.270	7.075	9.182	15.240	22.521	28.446

CUTTING AREA (SQ.M) = 0.349
FILLING AREA (SQ.M) = 6.014

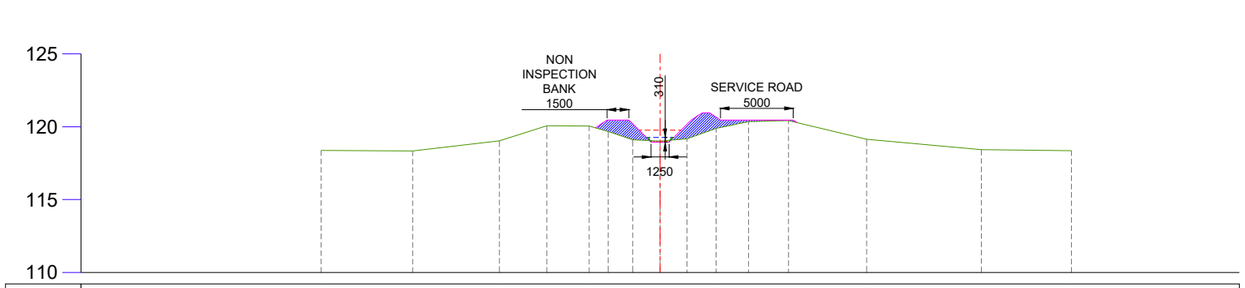
CH. : 6+100 KM
DESIGNED BED LEVEL = 118.969 M



EXIST. LEVEL (KM	118.251	118.270	118.991	119.963	119.982	119.054	118.953	119.095	119.813	120.224	120.140	119.184	119.063	118.374	118.199
OFFSET (KM	22.685	16.439	9.970	7.417	4.848	1.953	0.000	1.867	3.488	5.630	8.663	12.238	15.160	20.916	27.504

CUTTING AREA (SQ.M) = 0.052
FILLING AREA (SQ.M) = 5.924

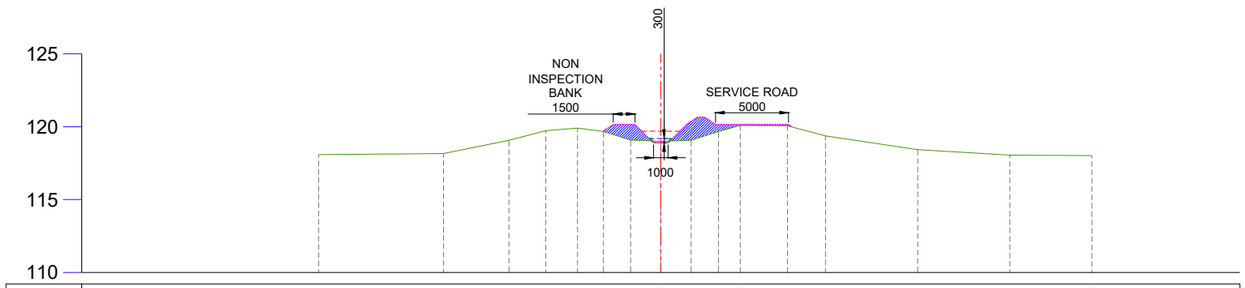
CH. : 6+300 KM
DESIGNED BED LEVEL = 118.921 M



EXIST. LEVEL (KM	118.376	118.345	119.028	120.071	120.046	119.101	119.015	119.171	119.879	120.341	120.422	119.130	118.432	118.359
OFFSET (KM	23.270	16.977	11.022	7.765	4.866	1.869	0.000	1.846	3.852	6.071	8.812	14.176	22.057	28.235

CUTTING AREA (SQ.M) = 0.126
FILLING AREA (SQ.M) = 6.799

CH. : 6+200 KM
DESIGNED BED LEVEL = 118.945 M



EXIST. LEVEL (KM	118.084	118.164	119.065	119.721	119.904	119.677	119.081	118.989	119.064	119.677	120.089	120.073	119.378	118.434	118.056	118.010
OFFSET (KM	23.479	14.910	10.425	7.885	5.715	3.936	2.065	0.000	2.089	3.959	5.443	8.688	11.301	17.627	23.951	29.580

CUTTING AREA (SQ.M) = 0.116
FILLING AREA (SQ.M) = 6.052

CH. : 6+400 KM
DESIGNED BED LEVEL = 118.896 M

LEGEND

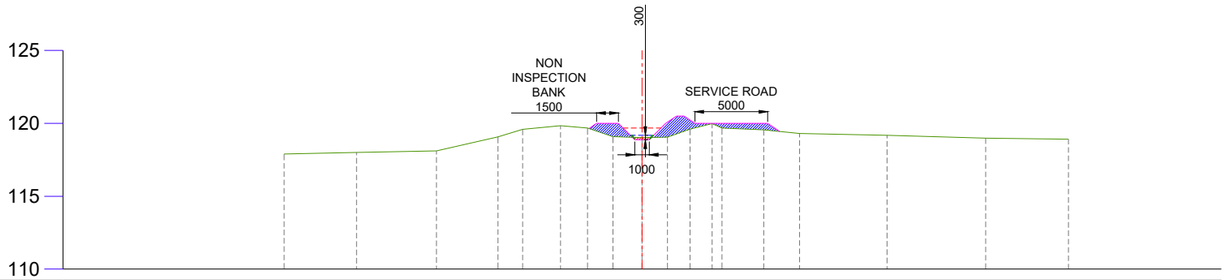
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 16 of 19

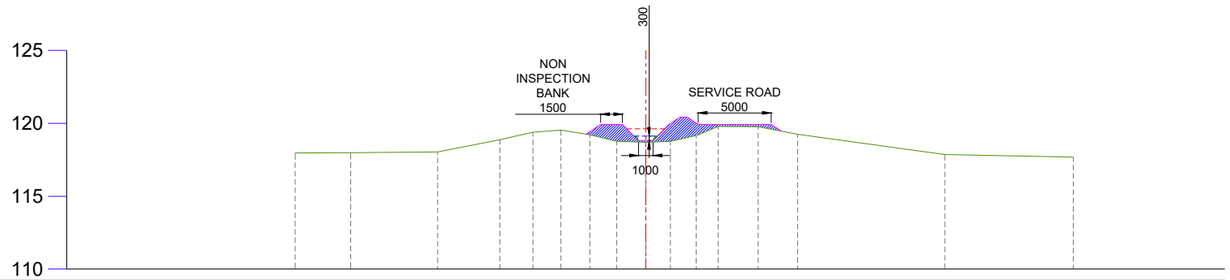
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	117.890	118.006	118.110	119.076	119.592	119.846	119.677	119.098	119.010	119.046	119.598	119.677	119.560	119.305	119.180	118.990	118.920
OFFSET (KM	24.561	19.592	14.109	9.886	8.199	5.605	3.745	1.999	0.000	1.742	3.299	5.491	8.346	10.812	16.805	23.572	29.265

CUTTING AREA (SQ.M) = 0.172
FILLING AREA (SQ.M) = 5.757

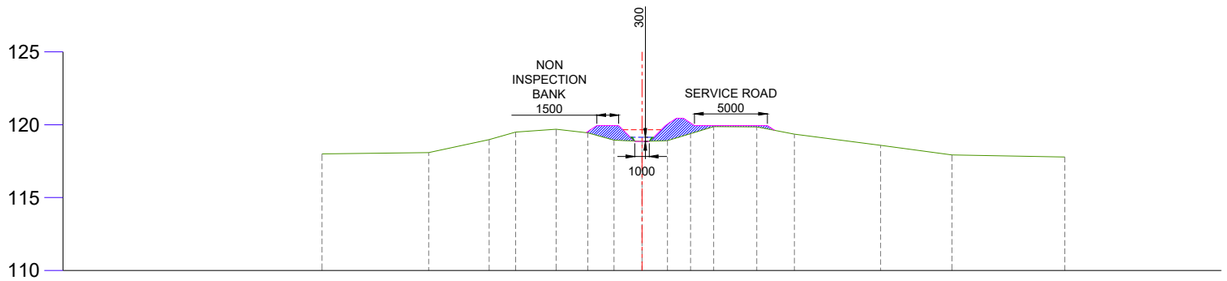
CH. : 6+500 KM
DESIGNED BED LEVEL = 118.871 M



EXIST. LEVEL (KM	117.960	117.979	118.046	118.875	119.401	119.534	119.214	118.775	118.703	118.763	119.793	119.772	119.255	117.853	117.680
OFFSET (KM	24.065	20.255	14.296	10.016	7.748	5.828	3.840	2.003	0.000	1.682	4.964	7.714	10.413	20.524	29.328

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 7.295

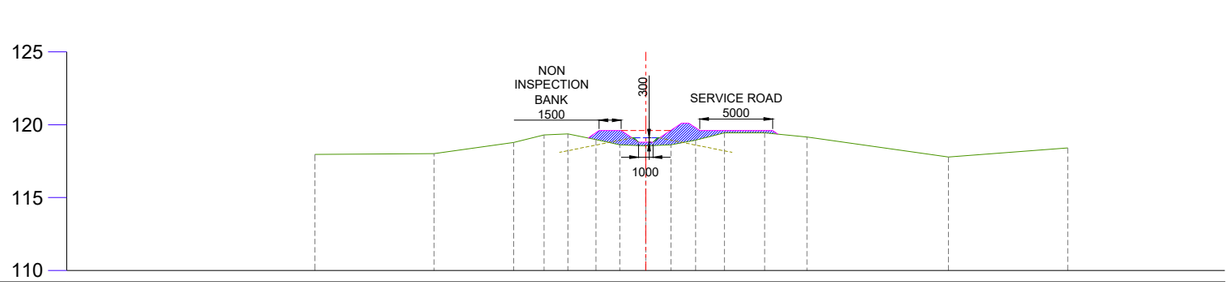
CH. : 6+700 KM
DESIGNED BED LEVEL = 118.821 M



EXIST. LEVEL (KM	117.993	118.079	118.977	119.498	119.693	119.447	118.939	118.859	118.907	119.381	119.869	119.856	119.356	118.580	117.925	117.780
OFFSET (KM	21.976	14.650	10.488	8.672	5.901	3.736	1.935	0.000	1.744	3.334	4.917	7.861	10.448	16.366	21.261	29.022

CUTTING AREA (SQ.M) = 0.023
FILLING AREA (SQ.M) = 5.648

CH. : 6+600 KM
DESIGNED BED LEVEL = 118.846 M



EXIST. LEVEL (KM	117.965	118.014	118.774	119.306	119.378	118.981	118.615	118.549	118.622	118.937	119.440	119.445	119.155	117.784	118.400
OFFSET (KM	22.711	14.539	9.067	6.985	5.344	3.414	1.790	0.000	1.727	3.422	5.397	8.155	11.064	20.766	28.968

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 6.581

CH. : 6+800 KM
DESIGNED BED LEVEL = 118.796 M

LEGEND

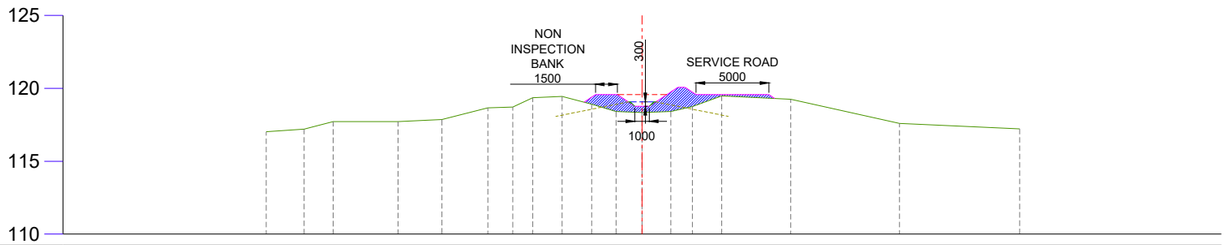
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 17 of 19

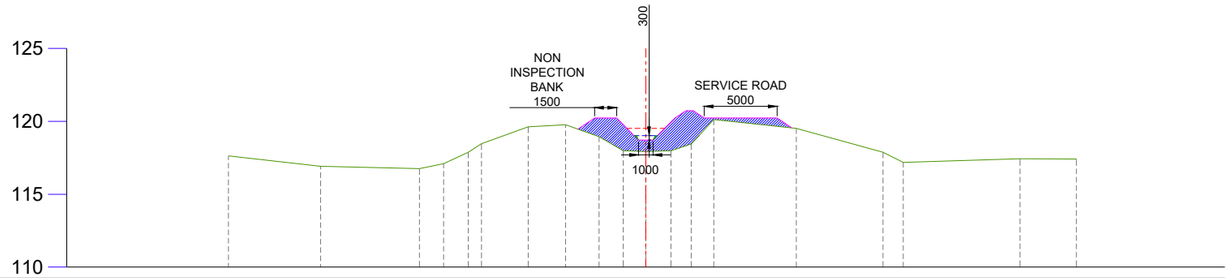
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	117.030	117.210	117.721	117.710	117.865	118.668	119.360	119.438	118.912	118.404	118.342	118.414	118.747	119.487	119.244	117.592	117.220
OFFSET (KM	25.793	23.199	21.201	16.758	13.734	10.579	7.503	5.487	3.455	1.794	0.000	1.978	3.458	5.459	10.202	17.666	25.914

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 7.966

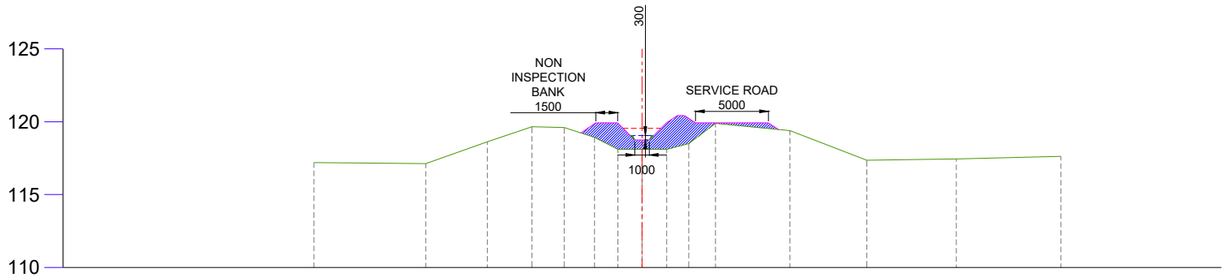
CH. : 6+900 KM
DESIGNED BED LEVEL = 118.771 M



EXIST. LEVEL (KM	117.629	116.913	116.764	117.086	118.469	119.621	119.766	118.950	117.989	117.927	118.441	120.127	119.521	117.878	117.192	117.428	117.422
OFFSET (KM	28.640	22.324	15.530	13.881	11.275	8.068	5.508	3.214	1.560	0.000	3.123	4.672	10.336	16.278	17.663	25.683	29.542

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 14.240

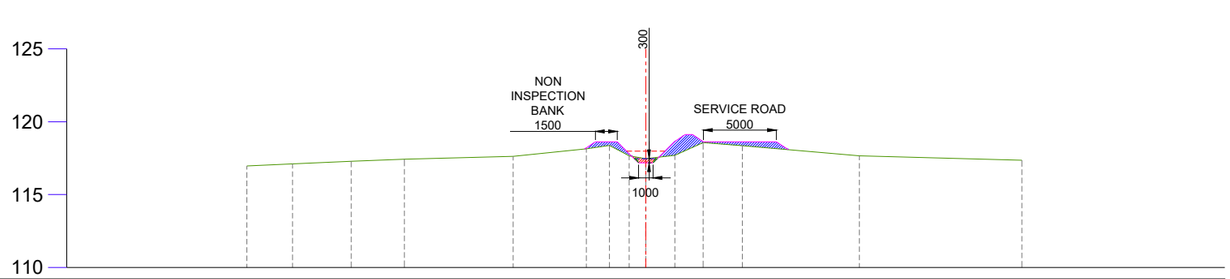
CH. : 7+100 KM
DESIGNED BED LEVEL = 118.721 M



EXIST. LEVEL (KM	117.200	117.120	118.620	119.660	119.600	118.920	118.100	118.110	118.100	118.490	119.880	119.380	117.360	117.450	117.620		
OFFSET (KM	22.516	14.843	10.628	7.550	5.344	3.267	1.654	0.000	1.693	3.208	5.039	10.144	15.420	21.571	28.740		

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 11.560

CH. : 7+000 KM
DESIGNED BED LEVEL = 118.746 M



EXIST. LEVEL (KM	116.970	117.100	117.280	117.420	117.630	118.140	118.380	117.460	117.692	118.560	118.350	117.660	117.360				
OFFSET (KM	27.381	24.251	20.229	16.562	9.105	4.084	2.488	0.000	2.000	3.941	6.623	14.650	25.812				

CUTTING AREA (SQ.M) = 0.475
FILLING AREA (SQ.M) = 4.618

CH. : 7+200 KM
DESIGNED BED LEVEL = 117.172 M

LEGEND

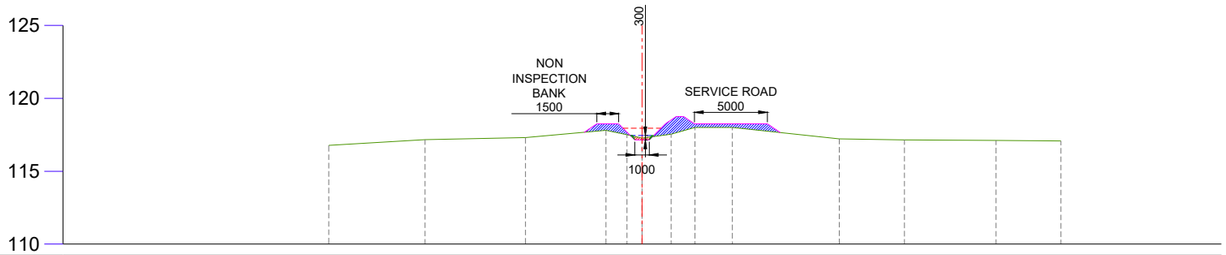
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 18 of 19

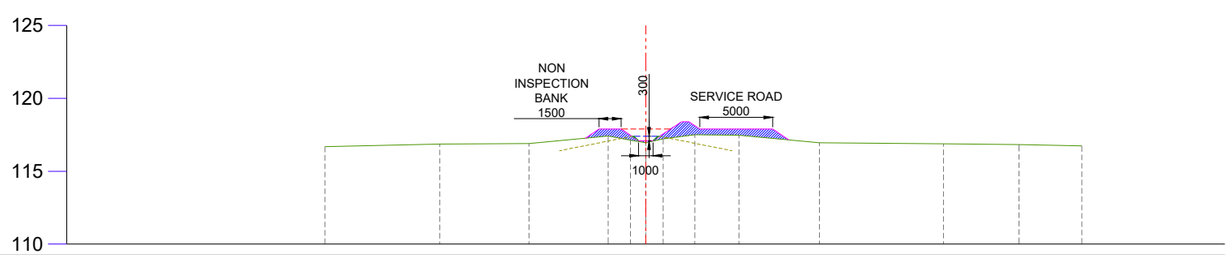
X SECTION OF KAILASHPUR SUB DISTY



EXIST. LEVEL (KM	116.773	117.158	117.312	117.800	117.268	117.540	118.004	118.002	117.227	117.150	117.121	117.080
OFFSET (KM	21.510	14.892	8.000	2.480	0.000	1.996	3.627	6.197	13.542	18.009	24.296	28.741

CUTTING AREA (SQ.M) = 0.222
FILLING AREA (SQ.M) = 5.004

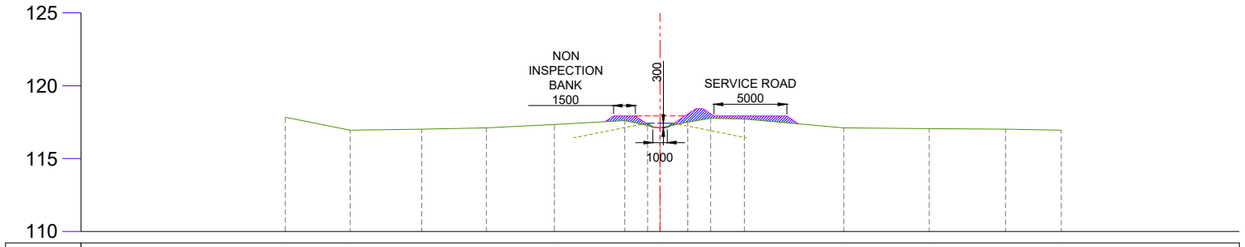
CH. : 7+300 KM
DESIGNED BED LEVEL = 117.147 M



EXIST. LEVEL (KM	116.690	116.859	116.892	117.413	116.953	117.214	117.501	117.474	116.958	116.875	116.820	116.740
OFFSET (KM	22.020	14.144	8.015	2.588	0.000	1.198	3.356	6.388	11.906	20.422	25.621	29.930

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 6.259

CH. : 7+500 KM
DESIGNED BED LEVEL = 117.097 M



EXIST. LEVEL (KM	117.840	116.950	117.012	117.108	117.340	117.606	117.109	117.500	117.761	117.720	117.100	117.060	117.011	116.950
OFFSET (KM	25.727	21.280	16.353	11.921	7.261	2.431	0.000	1.906	3.464	5.783	12.599	18.474	23.710	27.528

CUTTING AREA (SQ.M) = 0.050
FILLING AREA (SQ.M) = 3.899

CH. : 7+400 KM
DESIGNED BED LEVEL = 117.122 M

LEGEND

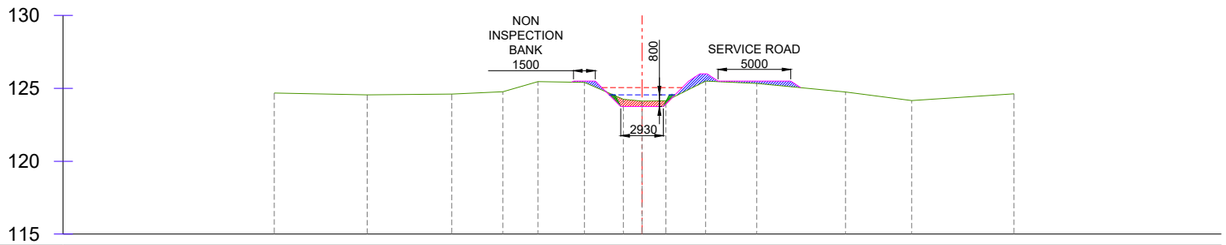
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KAILASHPUR SUB DY. (OFFTAKE FROM 9+050 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ XSEC- 19 of 19

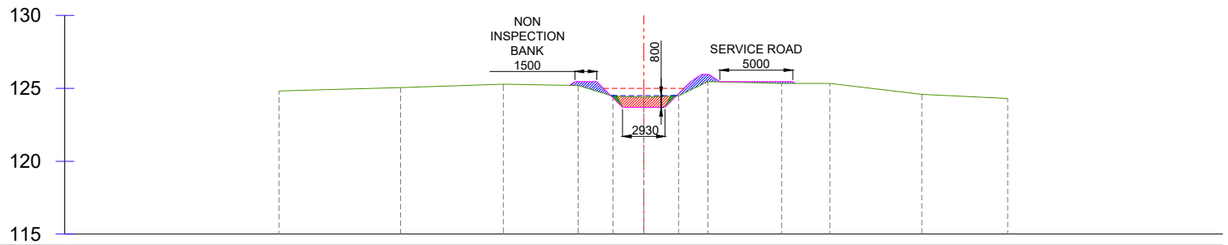
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	124.670	124.550	124.611	124.771	125.462	125.401	124.251	124.116	124.143	125.494	125.341	124.751	124.160	124.630
OFFSET (KM	25.244	18.867	13.067	9.552	7.152	3.955	1.294	0.000	1.637	4.356	7.866	13.963	18.504	25.529

CUTTING AREA (SQ.M) = 1.609
FILLING AREA (SQ.M) = 2.699

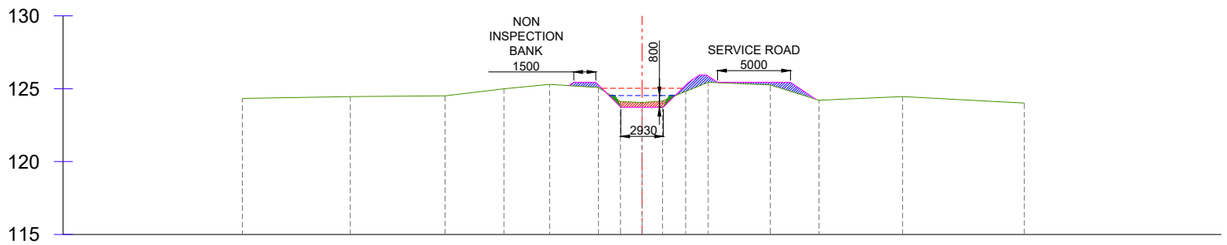
CH. : 0+100 KM
DESIGNED BED LEVEL = 123.748 M



EXIST. LEVEL (KM	124.820	125.050	125.284	125.188	124.460	124.392	124.490	125.456	125.336	125.330	124.583	124.301		
OFFSET (KM	25.026	16.695	9.641	4.510	2.121	0.000	2.386	4.400	9.459	12.765	19.080	24.976		

CUTTING AREA (SQ.M) = 2.685
FILLING AREA (SQ.M) = 2.686

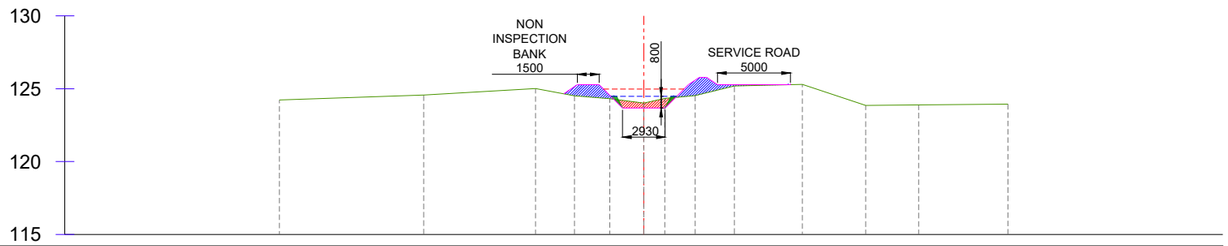
CH. : 0+300 KM
DESIGNED BED LEVEL = 123.700 M



EXIST. LEVEL (KM	124.341	124.461	124.512	124.989	125.288	125.079	124.054	124.815	125.442	125.256	124.217	124.462	124.020	
OFFSET (KM	27.428	20.027	13.520	9.474	6.339	2.988	0.000	2.996	4.538	8.793	12.143	17.876	26.227	

CUTTING AREA (SQ.M) = 1.474
FILLING AREA (SQ.M) = 3.335

CH. : 0+200 KM
DESIGNED BED LEVEL = 123.724 M



EXIST. LEVEL (KM	124.230	124.563	125.011	124.520	124.309	124.021	124.521	125.182	125.293	123.859	123.882	123.947		
OFFSET (KM	25.011	15.110	7.434	4.758	2.343	0.000	3.527	6.223	10.874	15.227	18.866	24.997		

CUTTING AREA (SQ.M) = 1.758
FILLING AREA (SQ.M) = 4.749

CH. : 0+400 KM
DESIGNED BED LEVEL = 123.677 M

LEGEND

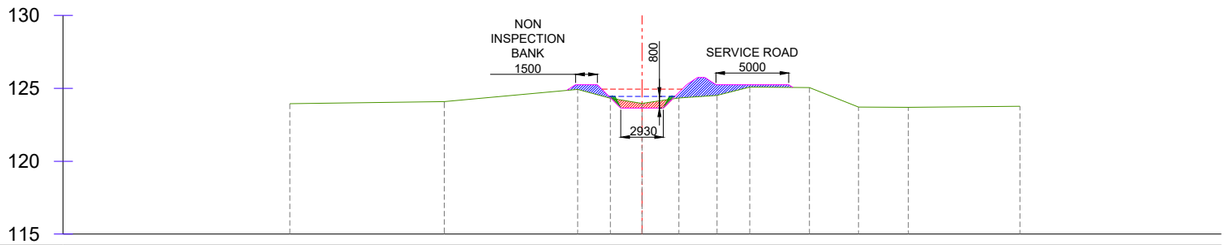
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 1 of 32

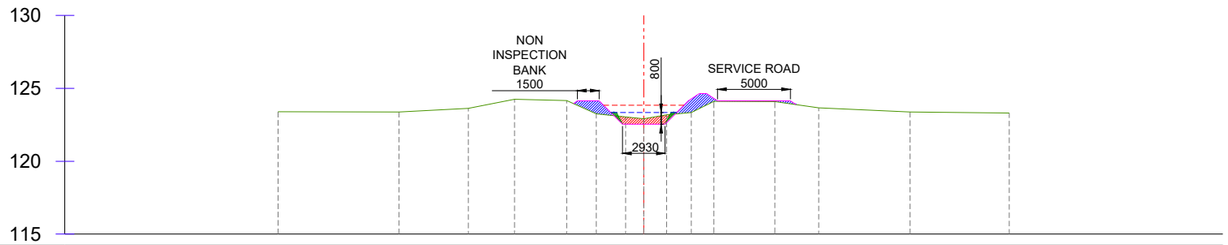
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	123.950	124.090	124.933	124.329	123.958	124.337	124.512	125.090	125.052	123.710	123.690	123.770
OFFSET (KM	24.173	13.586	4.417	2.172	0.000	2.517	5.150	7.392	11.488	14.857	18.277	25.927

CUTTING AREA (SQ.M) = 1.586
FILLING AREA (SQ.M) = 5.389

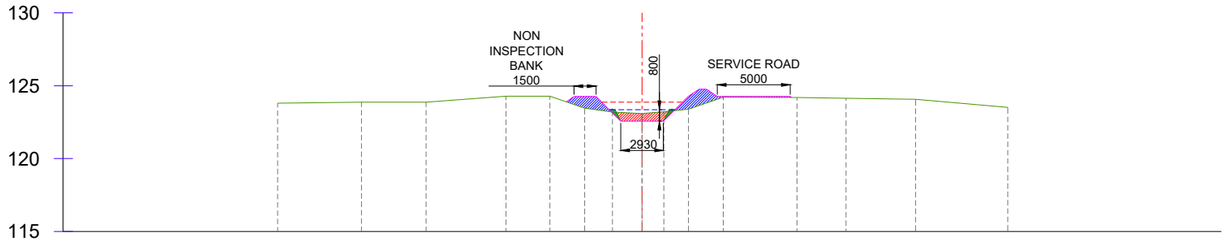
CH. : 0+500 KM
DESIGNED BED LEVEL = 123.653 M



EXIST. LEVEL (KM	123.395	123.378	123.620	124.256	124.162	123.250	122.908	123.341	124.111	124.098	123.659	123.369	123.301
OFFSET (KM	25.100	16.801	12.036	8.877	5.298	3.263	0.000	3.249	4.808	8.997	11.997	18.276	25.077

CUTTING AREA (SQ.M) = 1.771
FILLING AREA (SQ.M) = 3.539

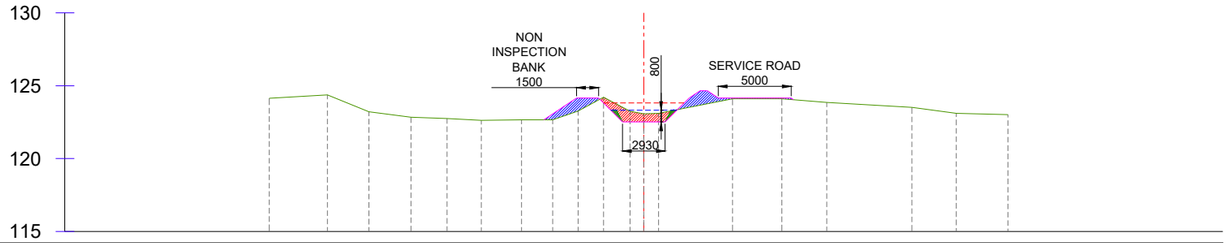
CH. : 0+700 KM
DESIGNED BED LEVEL = 122.538 M



EXIST. LEVEL (KM	123.802	123.878	123.876	124.275	124.282	123.456	123.195	123.086	123.393	124.211	124.192	124.146	124.060	123.520
OFFSET (KM	25.022	19.253	14.829	9.332	6.334	3.936	2.027	0.000	3.183	5.576	10.636	13.990	18.777	25.092

CUTTING AREA (SQ.M) = 2.116
FILLING AREA (SQ.M) = 4.236

CH. : 0+600 KM
DESIGNED BED LEVEL = 122.562 M



EXIST. LEVEL (KM	124.142	124.376	123.210	122.830	122.750	122.627	122.652	122.660	124.214	123.074	124.107	124.103	123.860	123.520	123.099	123.012
OFFSET (KM	25.714	21.719	18.872	15.978	13.508	11.156	8.384	6.258	2.757	0.000	6.082	9.468	12.559	18.404	21.448	24.992

CUTTING AREA (SQ.M) = 3.202
FILLING AREA (SQ.M) = 4.174

CH. : 0+800 KM
DESIGNED BED LEVEL = 122.514 M

LEGEND

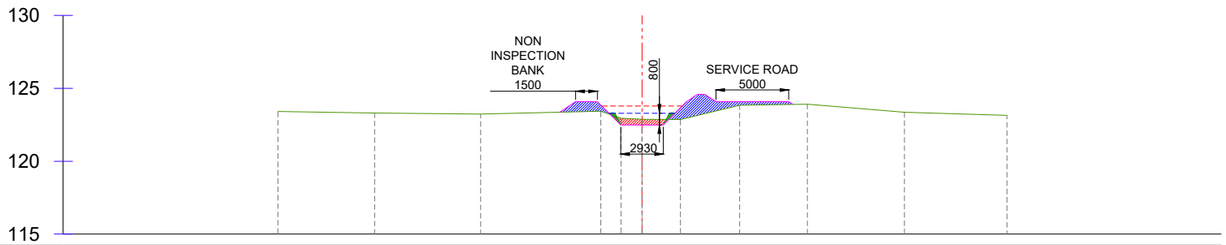
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 2 of 32

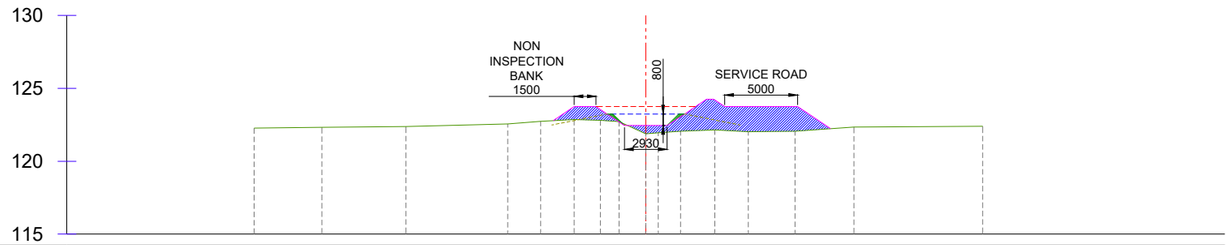
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	123.421	123.310	123.240	123.430	122.880	122.863	123.841	123.920	123.361	123.142
OFFSET (KM	25.001	18.360	11.084	2.828	0.000	2.632	6.689	11.338	18.007	25.038

CUTTING AREA (SQ.M) = 1.428
FILLING AREA (SQ.M) = 6.278

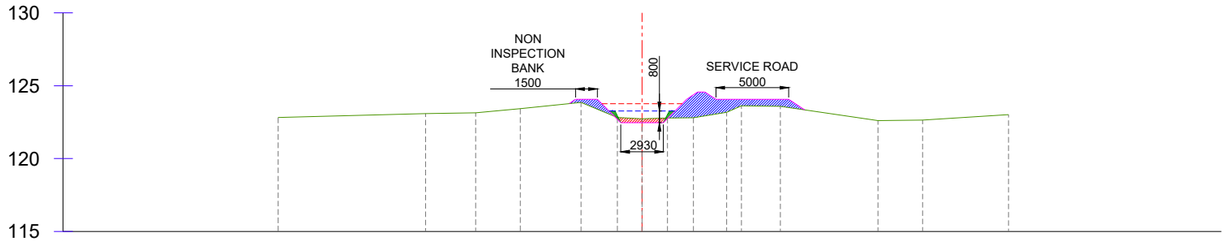
CH. : 0+900 KM
DESIGNED BED LEVEL = 122.490 M



EXIST. LEVEL (KM	122.280	122.320	122.380	122.560	122.740	122.860	122.720	121.880	122.050	122.150	122.020	122.050	122.350	122.390
OFFSET (KM	26.888	22.228	16.458	9.477	7.213	4.913	1.840	0.000	2.381	4.743	7.041	10.233	14.285	23.113

CUTTING AREA (SQ.M) = 0.038
FILLING AREA (SQ.M) = 20.069

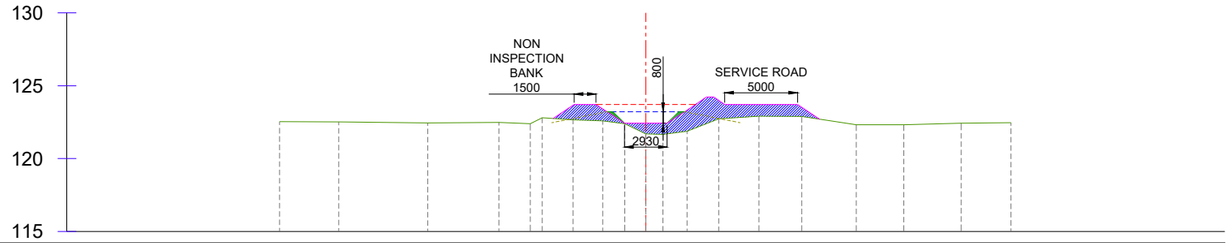
CH. : 1+100 KM
DESIGNED BED LEVEL = 122.443 M



EXIST. LEVEL (KM	122.820	123.080	123.140	123.430	123.860	122.815	122.730	122.810	123.630	123.580	122.610	122.650	123.010	
OFFSET (KM	24.987	14.867	11.429	8.362	4.197	1.704	0.000	3.526	6.821	9.492	16.181	19.257	25.151	

CUTTING AREA (SQ.M) = 0.969
FILLING AREA (SQ.M) = 8.023

CH. : 1+000 KM
DESIGNED BED LEVEL = 122.467 M



EXIST. LEVEL (KM	122.540	122.508	122.450	122.490	122.802	122.666	122.594	121.706	121.875	122.733	122.902	122.888	122.325	122.325	122.420	122.460
OFFSET (KM	25.138	21.068	14.961	10.079	7.105	4.981	2.957	0.000	2.839	5.003	7.773	10.708	14.437	17.707	21.647	25.069

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 15.245

CH. : 1+200 KM
DESIGNED BED LEVEL = 122.419 M

LEGEND

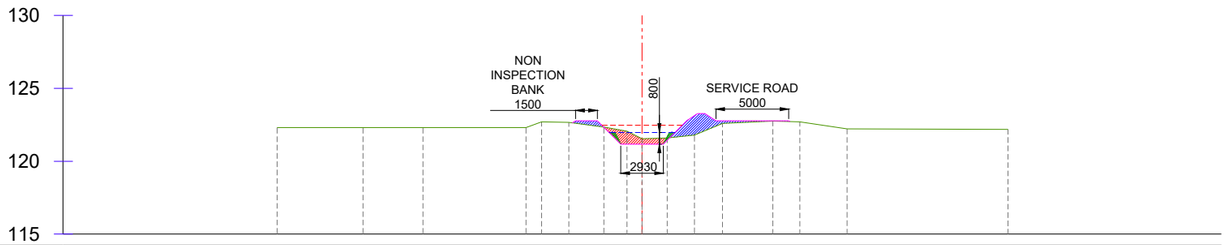
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 3 of 32

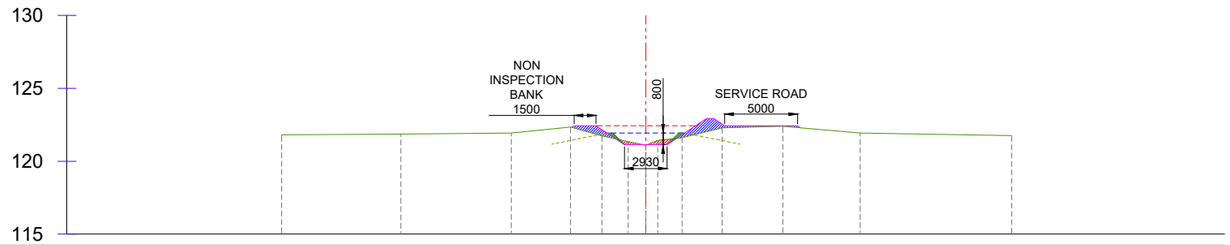
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	122.305	122.305	122.313	122.313	122.660	122.335	121.546	121.792	122.595	122.751	122.706	122.214		122.188
OFFSET (KM	25.058	19.146	15.034	7.964	5.034	2.628	0.000	3.602	5.517	8.976	10.833	14.072		25.106

CUTTING AREA (SQ.M) = 2.265
FILLING AREA (SQ.M) = 3.818

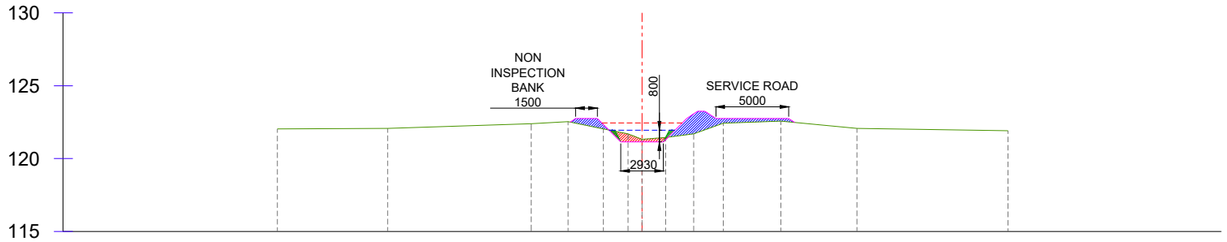
CH. : 1+300 KM
DESIGNED BED LEVEL = 121.176 M



EXIST. LEVEL (KM	121.801	121.861	121.939	122.339	121.747	121.105	121.609	122.286	122.400	121.933		121.763		
OFFSET (KM	24.997	16.820	9.227	5.166	3.016	0.000	2.493	5.244	9.397	14.716		25.117		

CUTTING AREA (SQ.M) = 0.725
FILLING AREA (SQ.M) = 3.104

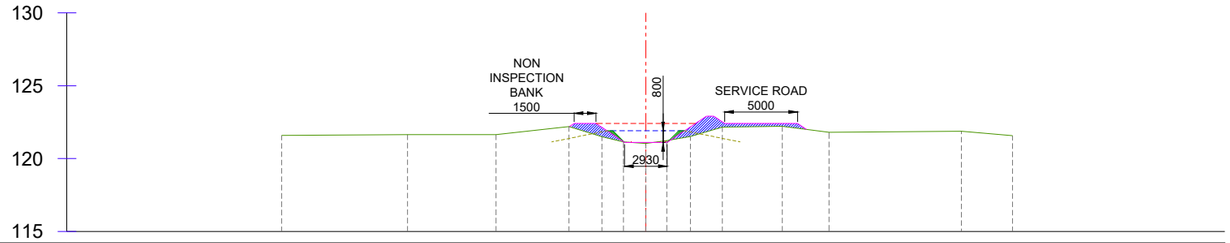
CH. : 1+500 KM
DESIGNED BED LEVEL = 121.129 M



EXIST. LEVEL (KM	122.043	122.072	122.386	122.538	122.035	121.331	121.692	122.432	122.569	122.071		121.916		
OFFSET (KM	25.033	17.457	7.609	5.077	2.656	0.000	3.544	5.576	9.528	14.749		25.111		

CUTTING AREA (SQ.M) = 1.303
FILLING AREA (SQ.M) = 5.441

CH. : 1+400 KM
DESIGNED BED LEVEL = 121.152 M



EXIST. LEVEL (KM	121.596	121.645	121.641	122.203	121.508	121.033	121.518	122.164	122.218	121.796		121.874	121.577	
OFFSET (KM	24.988	16.362	10.276	5.266	3.004	0.000	3.066	5.255	9.362	12.569		21.656	25.165	

CUTTING AREA (SQ.M) = 0.091
FILLING AREA (SQ.M) = 5.108

CH. : 1+600 KM
DESIGNED BED LEVEL = 121.105 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

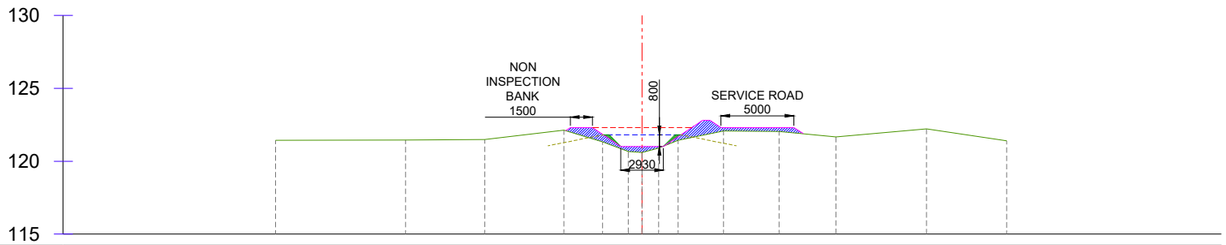
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 4 of 32

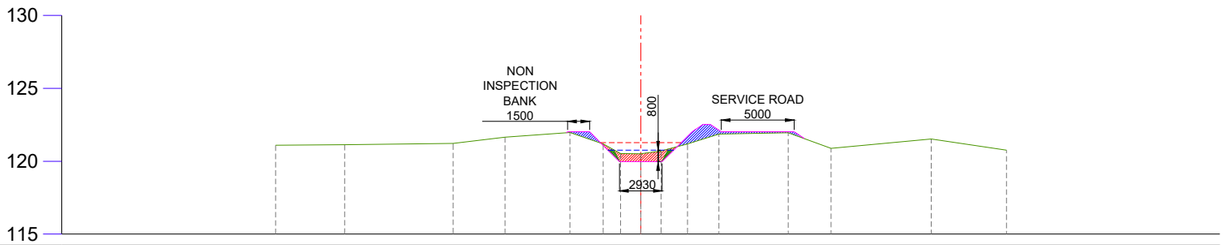
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	121.444	121.448	121.490	122.131	121.333	120.600	121.433	122.077	122.048	121.675	122.214	121.396
OFFSET (KM	25.162	16.224	10.793	5.368	2.708	0.000	2.465	5.590	9.409	13.297	19.526	25.015

CUTTING AREA (SQ.M) = 0.001
FILLING AREA (SQ.M) = 6.128

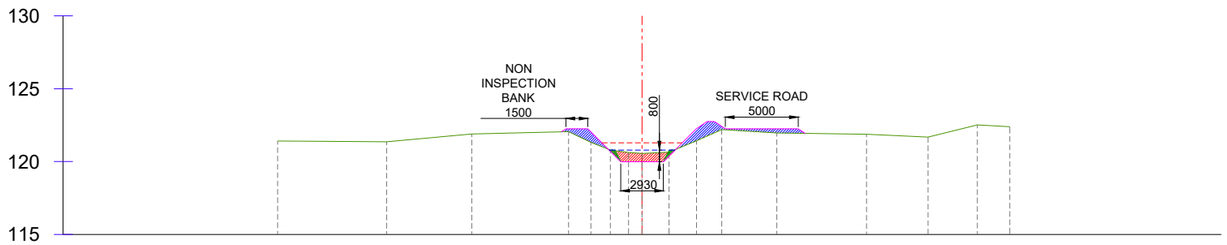
CH. : 1+700 KM
DESIGNED BED LEVEL = 120.015 M



EXIST. LEVEL (KM	121.090	121.140	121.213	121.652	121.976	121.185	120.507	121.193	121.868	121.960	120.877	121.527	120.755
OFFSET (KM	25.071	20.321	12.884	9.315	4.857	2.582	0.000	3.198	5.362	10.113	13.063	19.933	25.102

CUTTING AREA (SQ.M) = 2.551
FILLING AREA (SQ.M) = 3.032

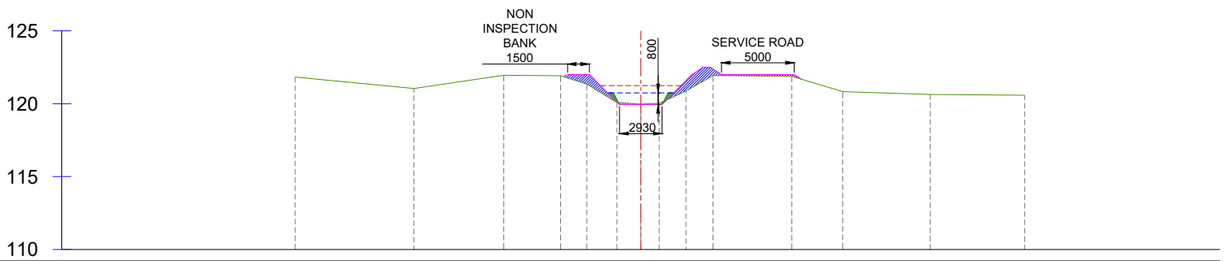
CH. : 1+900 KM
DESIGNED BED LEVEL = 119.967 M



EXIST. LEVEL (KM	121.420	121.350	121.890	122.050	120.790	120.550	120.640	122.200	121.960	121.870	121.687	122.517	122.389
OFFSET (KM	25.020	17.534	11.682	5.039	2.180	0.000	1.848	5.469	9.239	15.405	19.626	23.008	25.237

CUTTING AREA (SQ.M) = 2.298
FILLING AREA (SQ.M) = 4.456

CH. : 1+800 KM
DESIGNED BED LEVEL = 119.991 M



EXIST. LEVEL (KM	121.820	121.048	121.949	121.920	121.343	119.969	120.862	121.926	121.886	120.836	120.636	120.573
OFFSET (KM	23.731	15.574	9.411	5.507	3.701	0.000	3.095	4.949	10.357	13.861	19.862	26.337

CUTTING AREA (SQ.M) = 0.234
FILLING AREA (SQ.M) = 4.249

CH. : 2+000 KM
DESIGNED BED LEVEL = 119.944 M

LEGEND

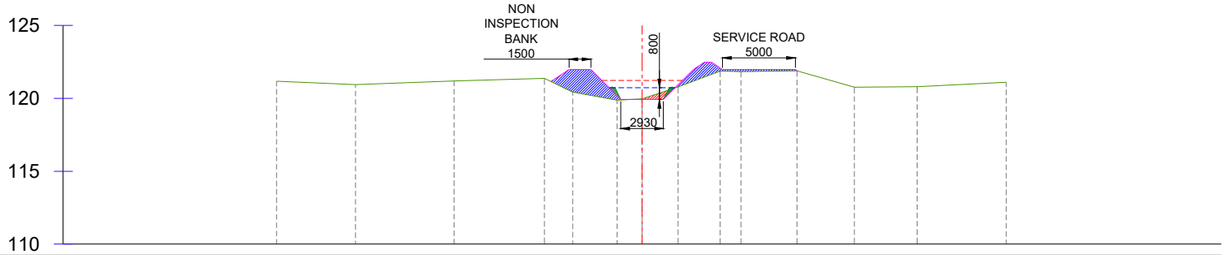
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 5 of 32

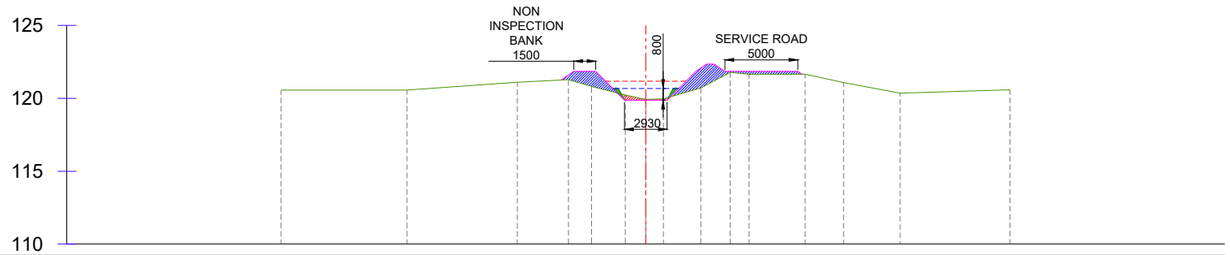
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	121.171	120.935	121.200	121.366	120.431	119.878	119.959	120.785	121.860	121.828	121.889	120.769	120.799	121.101
OFFSET (KM	25.092	19.677	12.901	6.693	4.758	1.717	0.000	2.466	5.351	6.783	10.631	14.573	18.880	24.987

CUTTING AREA (SQ.M) = 0.644
FILLING AREA (SQ.M) = 7.790

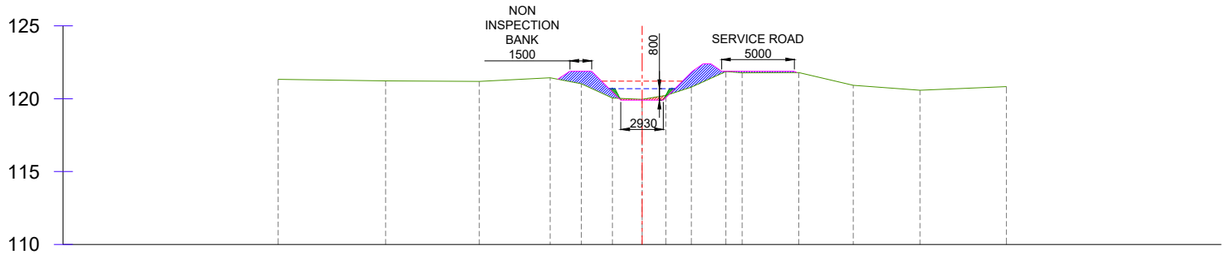
CH. : 2+100 KM
DESIGNED BED LEVEL = 119.920 M



EXIST. LEVEL (KM	120.569	120.574	121.102	121.281	120.823	119.919	120.717	121.663	121.647	121.083	120.350	120.579
OFFSET (KM	25.029	16.381	8.828	5.312	3.732	0.000	3.774	7.090	10.942	13.570	17.454	24.998

CUTTING AREA (SQ.M) = 0.528
FILLING AREA (SQ.M) = 6.492

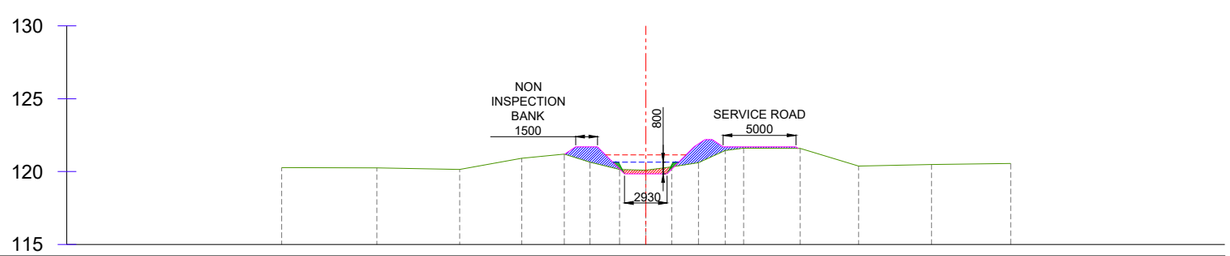
CH. : 2+300 KM
DESIGNED BED LEVEL = 119.872 M



EXIST. LEVEL (KM	121.330	121.230	121.186	121.439	121.028	120.046	119.963	120.787	121.773	121.791	120.924	120.576	120.826	
OFFSET (KM	24.981	17.610	11.167	6.314	4.177	2.033	0.000	3.377	6.879	10.759	14.487	19.073	25.013	

CUTTING AREA (SQ.M) = 0.477
FILLING AREA (SQ.M) = 6.099

CH. : 2+200 KM
DESIGNED BED LEVEL = 119.896 M



EXIST. LEVEL (KM	120.280	120.250	120.150	120.910	121.205	120.640	120.100	120.612	121.615	121.589	120.380	120.490	120.550	
OFFSET (KM	24.994	18.448	12.768	8.520	5.593	3.828	0.000	3.608	6.716	10.596	14.598	19.607	25.049	

CUTTING AREA (SQ.M) = 1.043
FILLING AREA (SQ.M) = 6.104

CH. : 2+400 KM
DESIGNED BED LEVEL = 119.848 M

LEGEND

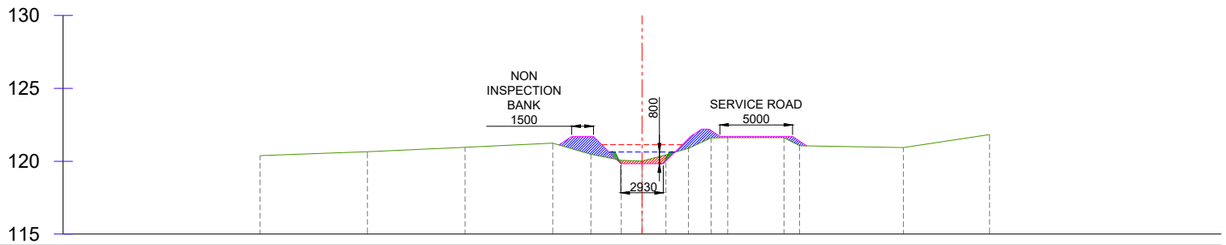
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 6 of 32

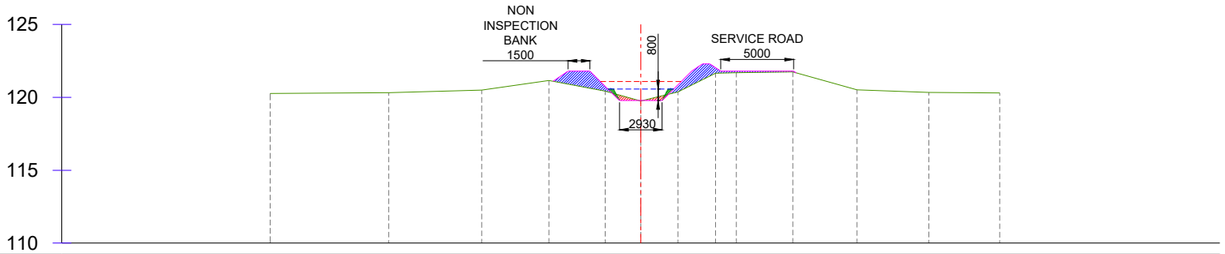
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	120.380	120.660	120.951	121.242	120.471	120.014	120.882	121.620	121.060	120.930	121.820
OFFSET (KM	26.219	18.852	12.161	6.139	3.514	0.000	3.182	5.869	10.815	17.935	23.852

CUTTING AREA (SQ.M) = 1.131
FILLING AREA (SQ.M) = 5.354

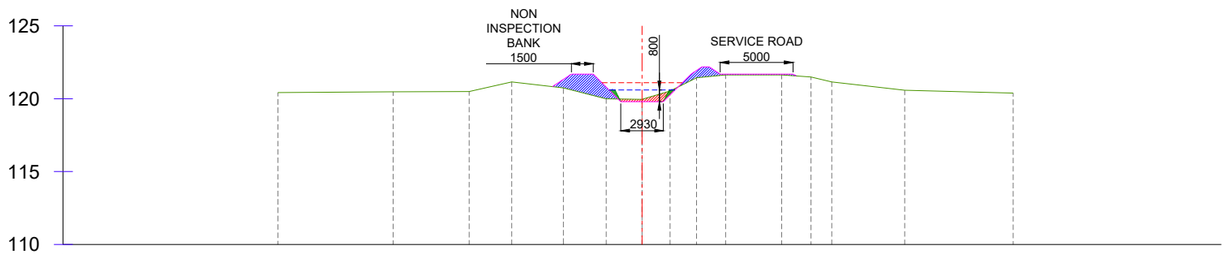
CH. : 2+500 KM
DESIGNED BED LEVEL = 119.825 M



EXIST. LEVEL (KM	120.260	120.320	120.500	121.160	120.420	119.750	120.370	121.690	121.740	120.520	120.330	120.300
OFFSET (KM	25.438	17.303	10.930	6.314	2.446	0.000	2.546	6.557	10.435	14.842	19.776	24.625

CUTTING AREA (SQ.M) = 0.647
FILLING AREA (SQ.M) = 5.769

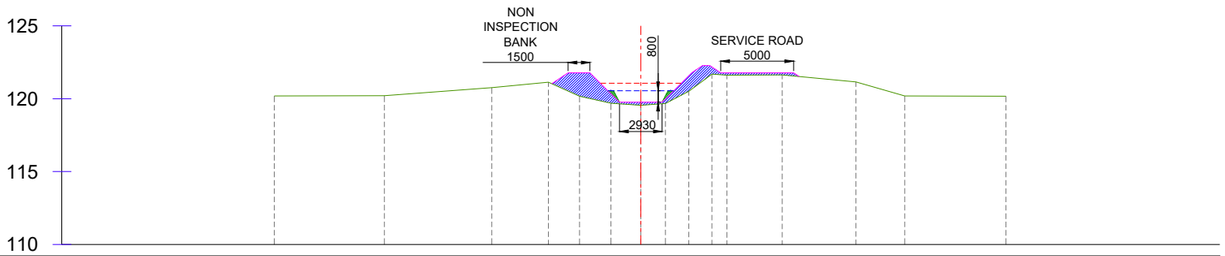
CH. : 2+700 KM
DESIGNED BED LEVEL = 119.777 M



EXIST. LEVEL (KM	120.415	120.469	120.497	121.157	120.744	119.986	119.959	120.536	121.627	121.626	121.150	120.582	120.376
OFFSET (KM	25.002	17.093	11.871	8.948	5.409	2.467	0.000	1.920	5.740	9.571	13.023	18.024	25.462

CUTTING AREA (SQ.M) = 1.090
FILLING AREA (SQ.M) = 5.557

CH. : 2+600 KM
DESIGNED BED LEVEL = 119.801 M



EXIST. LEVEL (KM	120.183	120.199	120.754	121.131	120.168	119.684	119.545	120.517	121.606	121.624	121.154	120.197	120.174
OFFSET (KM	25.147	17.607	10.223	6.344	4.213	2.048	0.000	3.302	5.905	9.715	14.760	18.106	25.062

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 9.189

CH. : 2+800 KM
DESIGNED BED LEVEL = 119.753 M

LEGEND

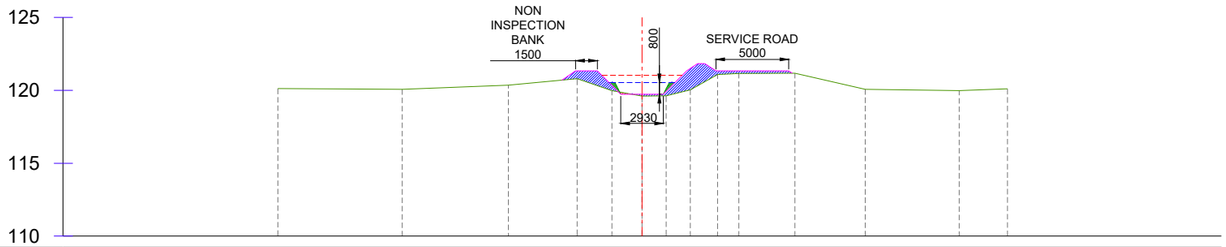
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 7 of 32

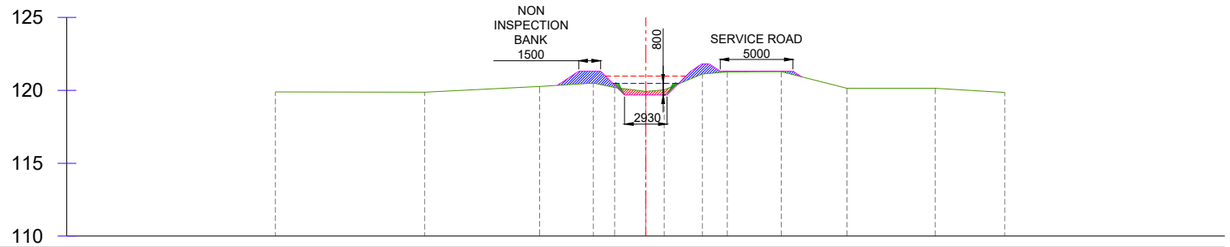
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	120.121	120.062	120.350	120.802	119.974	119.605	120.030	121.156	121.172	120.068	119.988	120.100
OFFSET (KM	24.994	16.461	9.181	4.450	2.076	0.000	3.309	6.633	10.490	15.307	21.768	25.071

CUTTING AREA (SQ.M) = 0.064
FILLING AREA (SQ.M) = 6.843

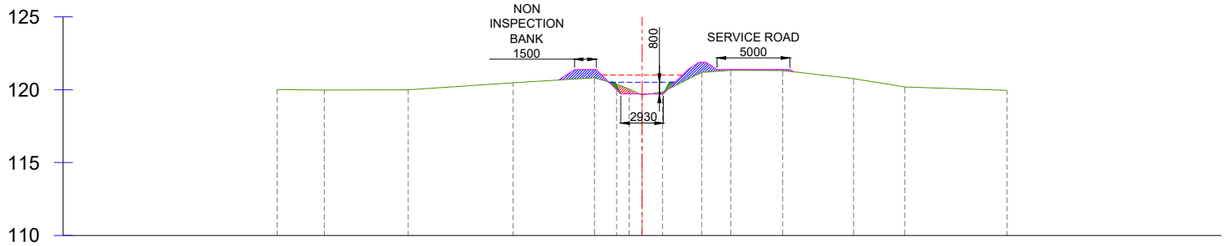
CH. : 2+900 KM
DESIGNED BED LEVEL = 119.729 M



EXIST. LEVEL (KM	119.894	119.867	120.260	120.492	119.918	121.118	121.262	121.286	120.132	120.132	119.849
OFFSET (KM	25.422	15.181	7.291	3.598	0.000	3.876	5.593	9.296	13.806	19.863	24.641

CUTTING AREA (SQ.M) = 1.188
FILLING AREA (SQ.M) = 4.219

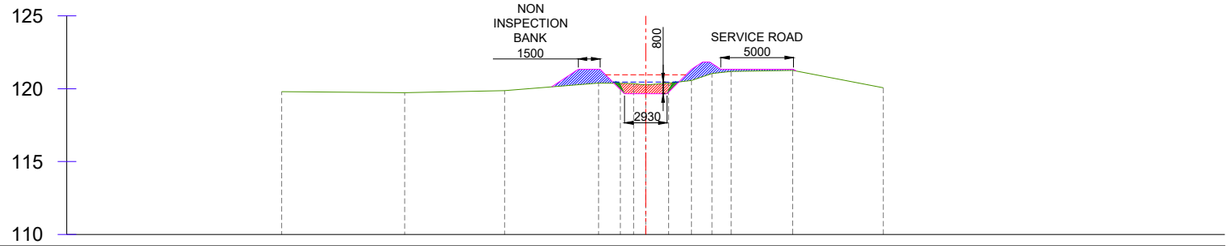
CH. : 3+100 KM
DESIGNED BED LEVEL = 119.682 M



EXIST. LEVEL (KM	120.008	119.973	119.984	120.471	120.820	119.630	119.846	121.185	121.329	121.304	120.753	120.195	119.962
OFFSET (KM	25.056	21.811	16.059	8.860	3.272	0.000	1.399	4.102	6.084	9.647	14.511	18.023	25.037

CUTTING AREA (SQ.M) = 0.724
FILLING AREA (SQ.M) = 3.591

CH. : 3+000 KM
DESIGNED BED LEVEL = 119.705 M



EXIST. LEVEL (KM	119.799	119.725	119.870	120.383	120.258	120.570	121.182	121.265	120.059
OFFSET (KM	24.996	16.548	9.697	3.252	0.000	3.132	5.864	10.089	16.301

CUTTING AREA (SQ.M) = 2.478
FILLING AREA (SQ.M) = 5.386

CH. : 3+200 KM
DESIGNED BED LEVEL = 119.658 M

LEGEND

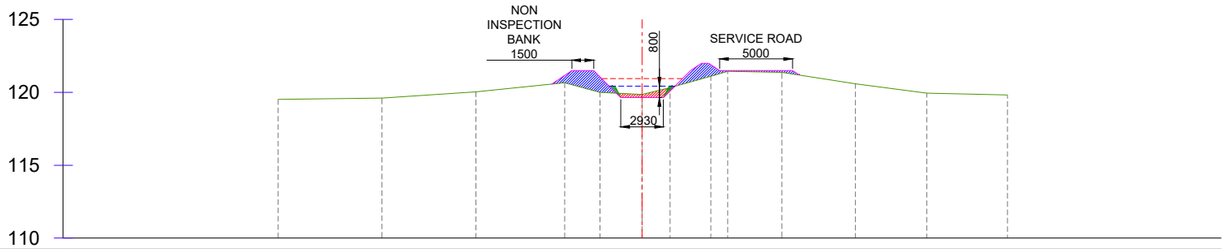
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 8 of 32

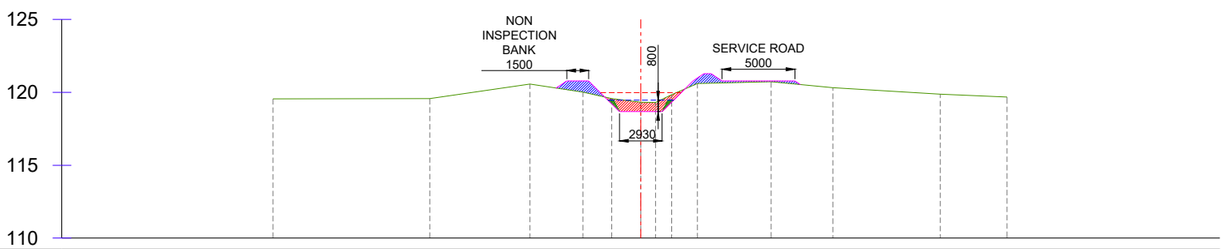
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	119.520	119.600	120.030	120.650	119.990	119.850	120.320	121.440	121.370	120.580	119.950	119.820
OFFSET (KM	24.975	17.846	11.413	5.316	2.882	0.000	1.916	5.877	9.591	14.644	19.537	25.069

CUTTING AREA (SQ.M) = 1.212
FILLING AREA (SQ.M) = 6.123

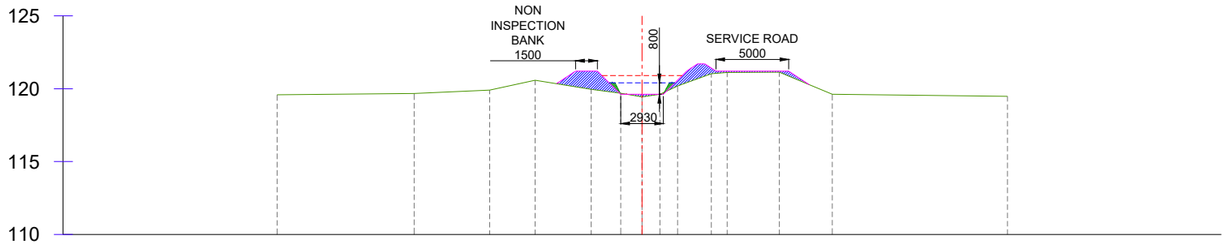
CH. : 3+300 KM
DESIGNED BED LEVEL = 119.634 M



EXIST. LEVEL (KM	119.545	119.568	120.560	120.011	119.563	119.323	119.832	120.612	120.723	120.320	119.880	119.670
OFFSET (KM	25.238	14.489	7.613	3.974	1.990	0.000	2.124	3.889	8.941	13.175	20.557	25.136

CUTTING AREA (SQ.M) = 3.133
FILLING AREA (SQ.M) = 3.439

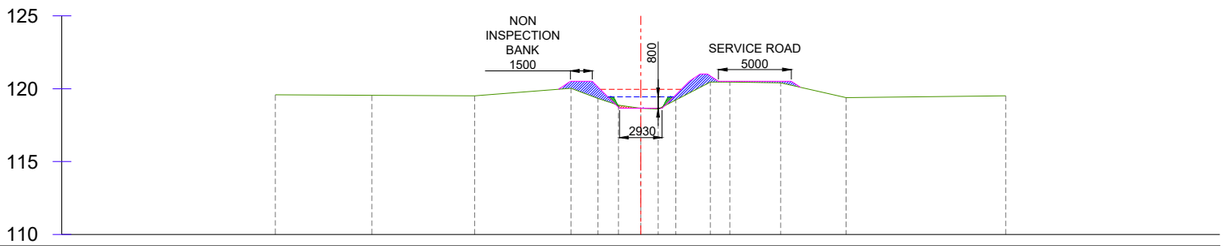
CH. : 3+500 KM
DESIGNED BED LEVEL = 118.672 M



EXIST. LEVEL (KM	119.580	119.674	119.908	120.584	119.956	119.440	120.185	121.114	121.137	119.611	119.479
OFFSET (KM	25.056	15.642	10.466	7.343	3.492	0.000	2.430	5.838	9.414	13.052	25.074

CUTTING AREA (SQ.M) = 0.047
FILLING AREA (SQ.M) = 6.470

CH. : 3+400 KM
DESIGNED BED LEVEL = 119.610 M



EXIST. LEVEL (KM	119.578	119.540	119.510	120.031	119.329	118.654	119.235	120.463	120.409	119.385	119.505
OFFSET (KM	25.074	18.460	11.394	4.801	2.947	0.000	2.408	6.111	9.603	14.081	25.051

CUTTING AREA (SQ.M) = 0.204
FILLING AREA (SQ.M) = 4.669

CH. : 3+600 KM
DESIGNED BED LEVEL = 118.649 M

LEGEND

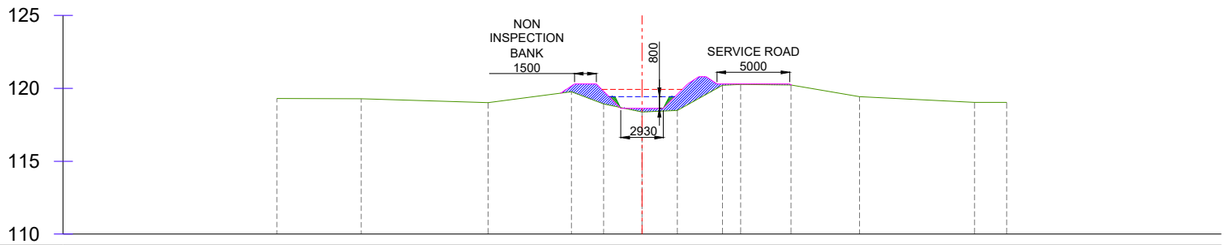
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 9 of 32

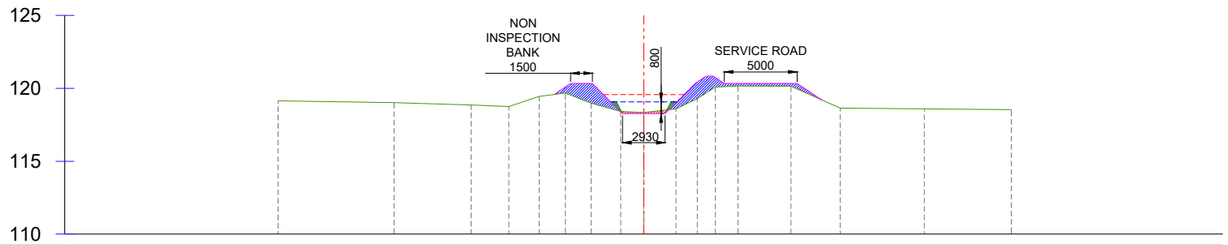
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	119.300	119.280	119.018	119.760	118.928	118.369	118.488	120.262	120.221	119.430	119.038	119.039
OFFSET (KM	25.075	19.280	10.560	4.852	2.648	0.000	2.421	6.771	10.223	14.925	22.816	25.016

CUTTING AREA (SQ.M) = 0.009
FILLING AREA (SQ.M) = 7.300

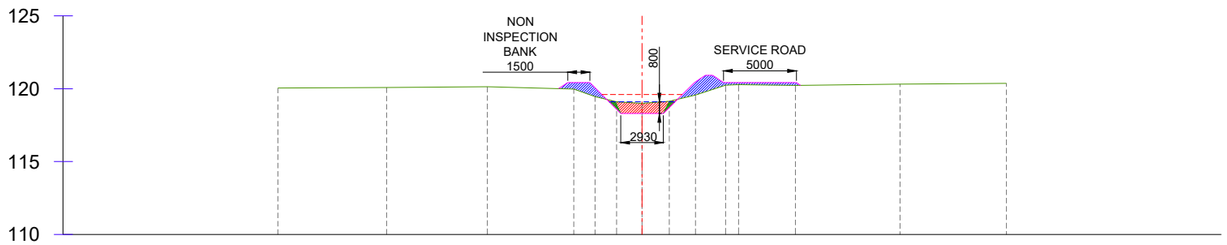
CH. : 3+700 KM
DESIGNED BED LEVEL = 118.625 M



EXIST. LEVEL (KM	119.148	119.020	118.860	118.758	119.443	118.989	118.350	119.292	120.166	120.136	118.649	118.586	118.540
OFFSET (KM	25.097	17.136	11.855	9.269	7.189	3.610	0.000	3.662	6.460	10.101	13.480	19.258	25.226

CUTTING AREA (SQ.M) = 0.436
FILLING AREA (SQ.M) = 7.366

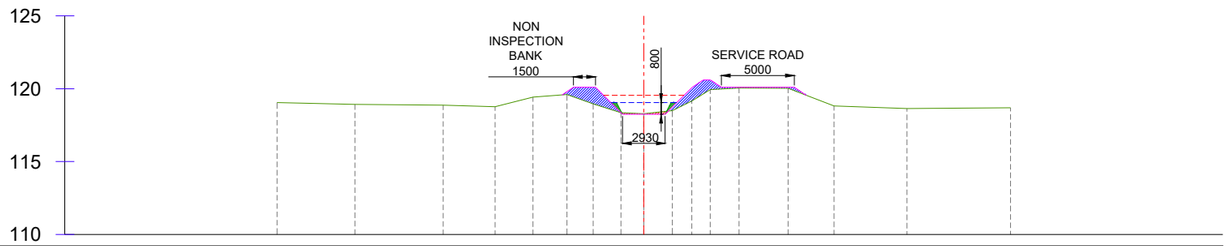
CH. : 3+900 KM
DESIGNED BED LEVEL = 118.272 M



EXIST. LEVEL (KM	120.040	120.080	120.140	119.979	119.450	119.002	119.140	119.570	120.280	120.224	120.320	120.360
OFFSET (KM	24.998	17.536	10.626	4.681	3.222	0.000	1.866	3.663	6.625	10.515	17.700	24.999

CUTTING AREA (SQ.M) = 2.965
FILLING AREA (SQ.M) = 4.625

CH. : 3+800 KM
DESIGNED BED LEVEL = 118.296 M



EXIST. LEVEL (KM	119.046	118.920	118.870	118.761	119.425	119.599	118.951	118.281	118.500	119.935	120.040	120.037	118.816	118.642	118.700
OFFSET (KM	25.175	19.833	13.779	10.203	7.613	5.279	3.472	0.000	1.966	4.555	6.543	9.907	13.052	18.062	25.167

CUTTING AREA (SQ.M) = 0.298
FILLING AREA (SQ.M) = 5.455

CH. : 4+000 KM
DESIGNED BED LEVEL = 118.248 M

LEGEND

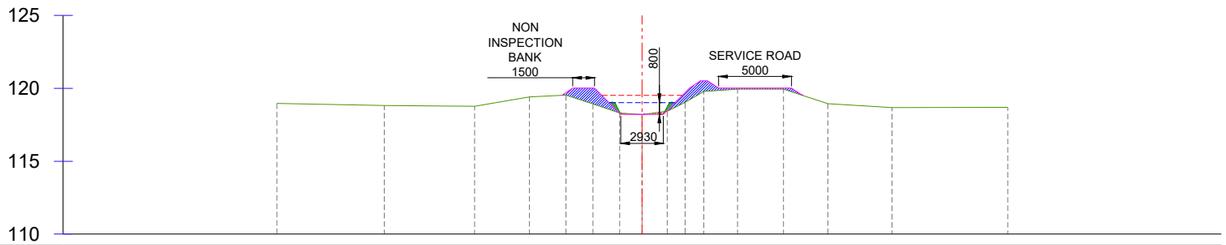
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 10 of 32

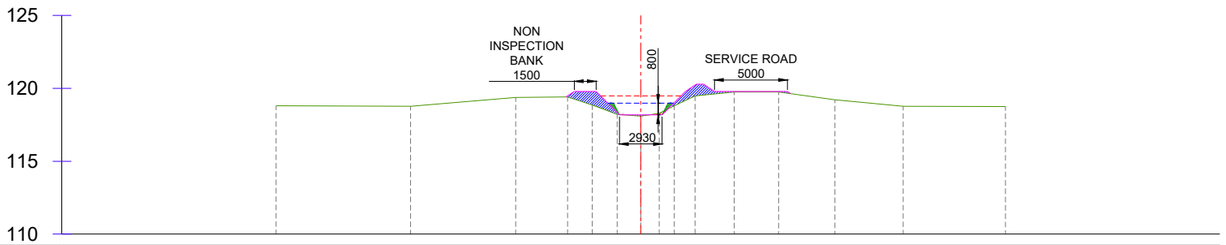
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	118.967	118.820	118.764	119.410	119.535	118.922	118.201	118.427	119.791	119.942	119.947	118.947	118.685	118.700
OFFSET (KM	25.073	17.701	11.497	7.743	5.225	3.367	0.000	1.729	4.229	6.543	9.699	12.756	17.151	25.093

CUTTING AREA (SQ.M) = 0.173
FILLING AREA (SQ.M) = 5.066

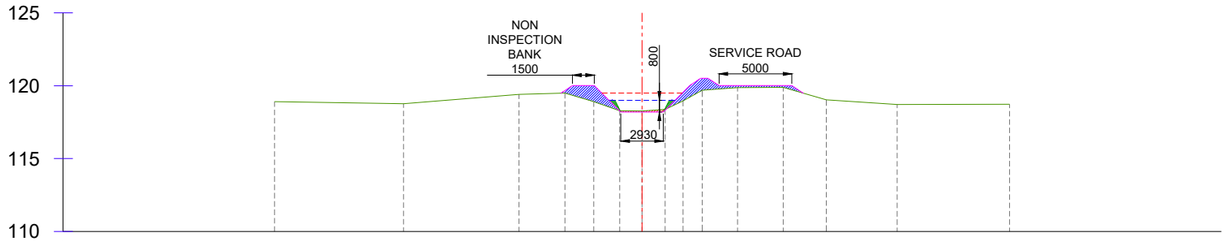
CH. : 4+100 KM
DESIGNED BED LEVEL = 118.225 M



EXIST. LEVEL (KM	118.812	118.769	119.380	119.405	118.093	119.479	119.745	119.749	119.211	118.772	118.749
OFFSET (KM	25.022	15.798	8.582	5.022	0.000	3.713	6.413	9.451	13.324	18.004	25.021

CUTTING AREA (SQ.M) = 0.117
FILLING AREA (SQ.M) = 4.025

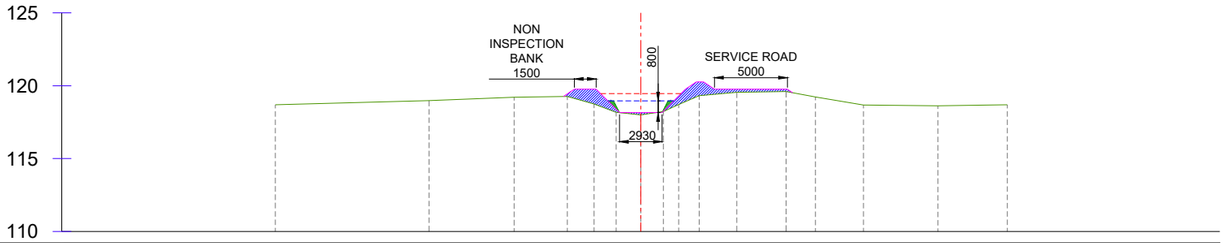
CH. : 4+300 KM
DESIGNED BED LEVEL = 118.177 M



EXIST. LEVEL (KM	118.915	118.765	119.400	119.492	118.902	118.271	118.379	119.687	119.876	119.881	119.036	118.714	118.727
OFFSET (KM	25.222	16.379	8.454	5.287	3.321	0.000	1.581	4.126	6.553	9.681	12.642	17.498	25.213

CUTTING AREA (SQ.M) = 0.306
FILLING AREA (SQ.M) = 5.555

CH. : 4+200 KM
DESIGNED BED LEVEL = 118.201 M



EXIST. LEVEL (KM	118.701	118.970	119.208	119.264	118.745	118.000	119.311	119.553	119.602	119.227	118.683	118.620	118.689
OFFSET (KM	25.087	14.534	8.702	5.052	3.207	0.000	4.001	6.585	9.965	11.978	15.282	20.402	25.146

CUTTING AREA (SQ.M) = 0.013
FILLING AREA (SQ.M) = 5.905

CH. : 4+400 KM
DESIGNED BED LEVEL = 118.153 M

LEGEND

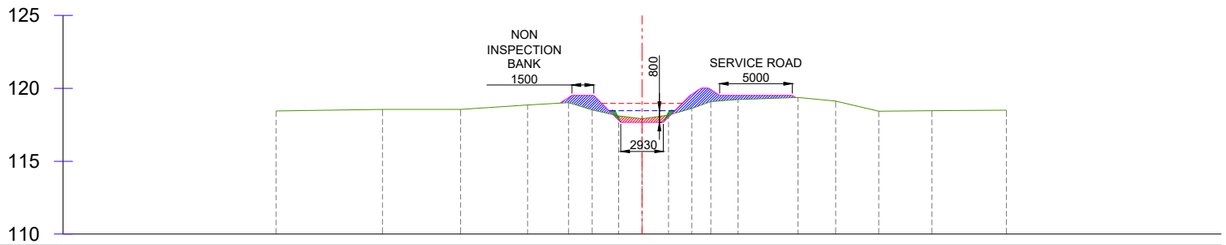
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 11 of 32

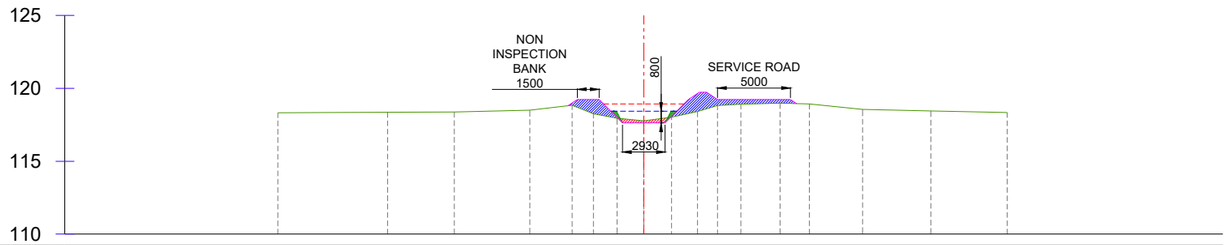
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	118.452	118.548	118.561	118.860	119.027	118.526	117.922	118.165	119.093	119.227	119.376	119.133	118.436	118.470	118.500
OFFSET (KM	25.113	17.826	12.452	7.852	5.040	3.422	0.000	1.806	4.723	6.591	10.695	13.286	16.247	19.886	25.002

CUTTING AREA (SQ.M) = 1.222
FILLING AREA (SQ.M) = 5.812

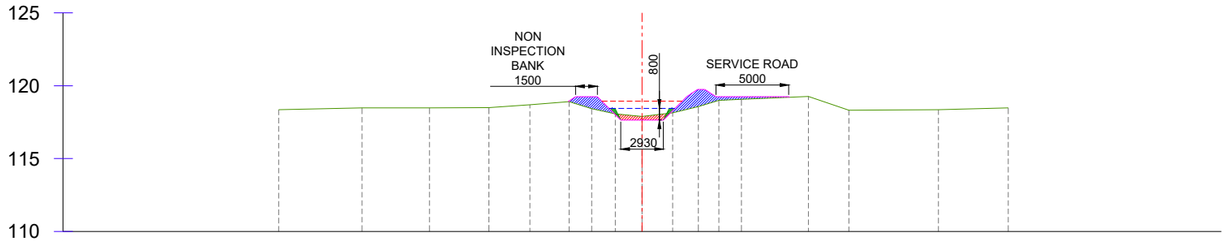
CH. : 4+500 KM
DESIGNED BED LEVEL = 117.672 M



EXIST. LEVEL (KM	118.330	118.352	118.371	118.502	118.833	117.956	117.769	118.015	118.421	118.905	118.976	118.922	118.560	118.440	118.344
OFFSET (KM	25.116	17.580	13.004	7.829	4.921	1.837	0.000	1.898	3.690	6.652	9.344	11.365	15.007	19.701	24.930

CUTTING AREA (SQ.M) = 0.782
FILLING AREA (SQ.M) = 6.194

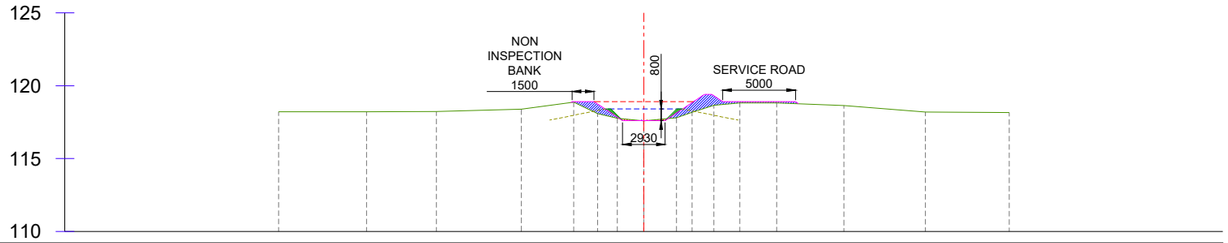
CH. : 4+700 KM
DESIGNED BED LEVEL = 117.625 M



EXIST. LEVEL (KM	118.350	118.473	118.480	118.492	118.687	118.909	118.418	117.883	118.136	118.568	119.066	119.263	118.313	118.360	118.472
OFFSET (KM	24.939	19.234	14.592	10.521	7.701	5.016	3.454	0.000	2.101	3.861	6.820	11.415	14.187	20.344	25.122

CUTTING AREA (SQ.M) = 1.107
FILLING AREA (SQ.M) = 4.838

CH. : 4+600 KM
DESIGNED BED LEVEL = 117.648 M



EXIST. LEVEL (KM	118.220	118.220	118.229	118.390	118.866	117.759	117.585	117.799	118.648	118.826	118.824	118.644	118.188	118.160	
OFFSET (KM	25.072	19.032	14.238	8.406	4.805	1.813	0.000	2.240	4.800	6.586	9.123	13.728	19.329	25.084	

CUTTING AREA (SQ.M) = 0.188
FILLING AREA (SQ.M) = 3.764

CH. : 4+800 KM
DESIGNED BED LEVEL = 117.601 M

LEGEND

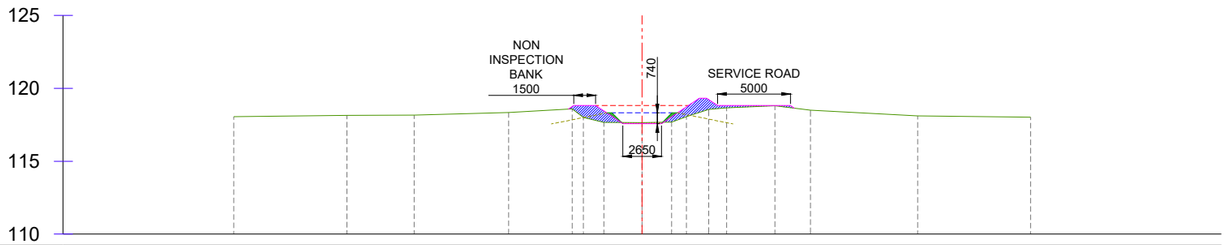
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 12 of 32

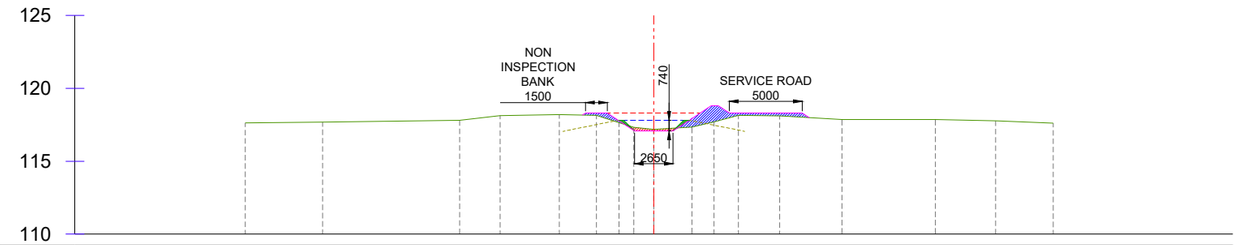
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	118.050	118.152	118.158	118.335	118.583	117.661	117.641	118.065	118.663	118.796	118.503	118.111	118.020
OFFSET (KM	28.032	20.261	15.643	9.156	4.805	2.618	0.000	3.039	5.809	9.115	11.559	18.921	26.670

CUTTING AREA (SQ.M) = 0.209
FILLING AREA (SQ.M) = 4.823

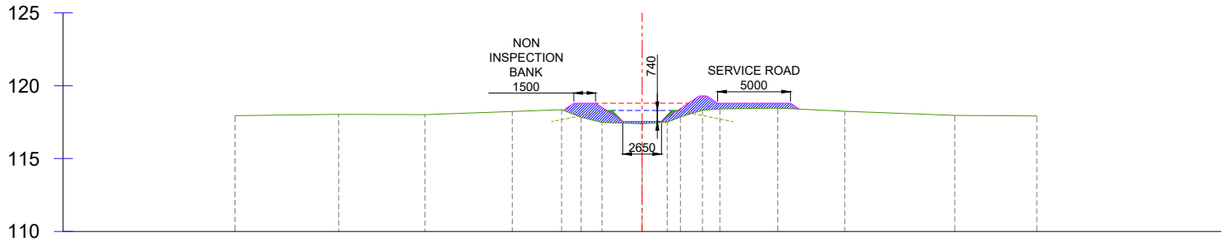
CH. : 4+900 KM
DESIGNED BED LEVEL = 117.577 M



EXIST. LEVEL (KM	117.630	117.684	117.815	118.134	118.200	118.141	117.188	117.338	118.148	118.107	117.864	117.863	117.780	117.610
OFFSET (KM	28.040	22.731	13.335	10.552	6.487	3.947	0.000	2.624	5.798	8.635	12.907	19.318	23.455	27.421

CUTTING AREA (SQ.M) = 0.562
FILLING AREA (SQ.M) = 4.235

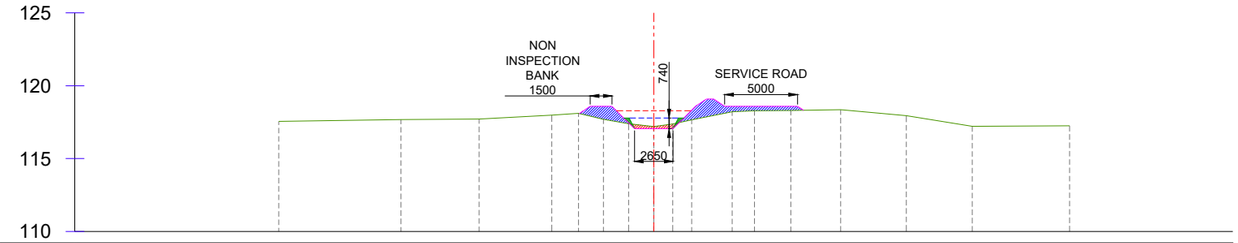
CH. : 5+100 KM
DESIGNED BED LEVEL = 117.072 M



EXIST. LEVEL (KM	117.950	118.031	118.023	118.231	118.359	117.476	117.385	117.847	118.400	118.463	118.249	117.970	117.920
OFFSET (KM	27.936	20.822	14.891	8.908	5.529	2.747	0.000	2.639	5.335	9.304	13.905	21.465	27.095

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 7.902

CH. : 5+000 KM
DESIGNED BED LEVEL = 117.553 M



EXIST. LEVEL (KM	117.550	117.670	117.720	117.980	117.700	117.200	117.660	118.220	118.280	118.300	118.360	117.950	117.210	117.250
OFFSET (KM	25.749	17.360	11.997	6.999	3.465	0.000	2.593	5.378	6.911	9.405	12.822	17.330	21.849	28.536

CUTTING AREA (SQ.M) = 0.741
FILLING AREA (SQ.M) = 6.237

CH. : 5+200 KM
DESIGNED BED LEVEL = 117.048 M

LEGEND

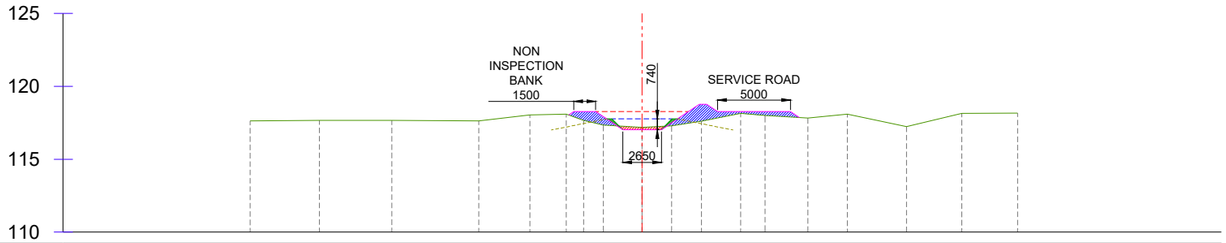
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 13 of 32

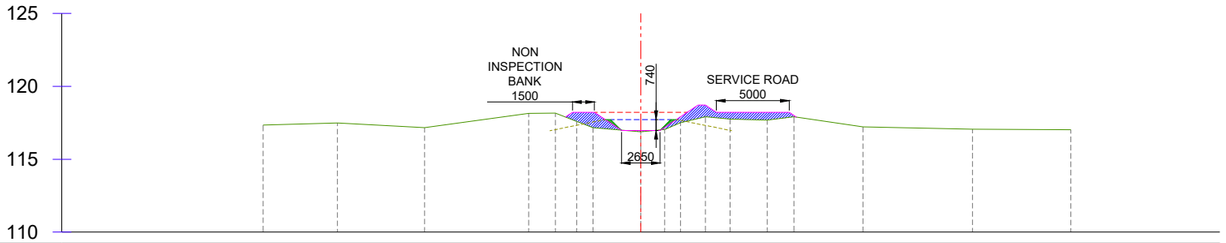
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	117.620	117.670	117.656	117.625	118.034	118.100	117.339	117.175	117.288	117.610	117.996	117.831	118.084	117.234	118.148	118.161
OFFSET (KM	26.904	22.144	17.174	11.215	7.696	5.202	2.651	0.000	2.033	4.076	8.436	11.370	14.094	18.141	21.933	25.774

CUTTING AREA (SQ.M) = 0.586
FILLING AREA (SQ.M) = 5.521

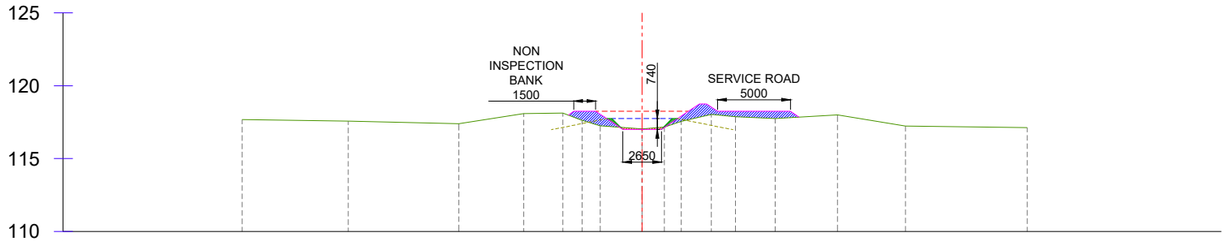
CH. : 5+300 KM
DESIGNED BED LEVEL = 117.025 M



EXIST. LEVEL (KM	117.350	117.486	117.170	118.151	118.160	117.157	116.886	117.506	117.749	117.690	117.906	117.218	117.053	117.020		
OFFSET (KM	25.917	20.817	14.836	7.703	5.856	3.275	0.000	2.723	6.120	8.669	10.505	15.255	22.761	29.511		

CUTTING AREA (SQ.M) = 0.010
FILLING AREA (SQ.M) = 6.785

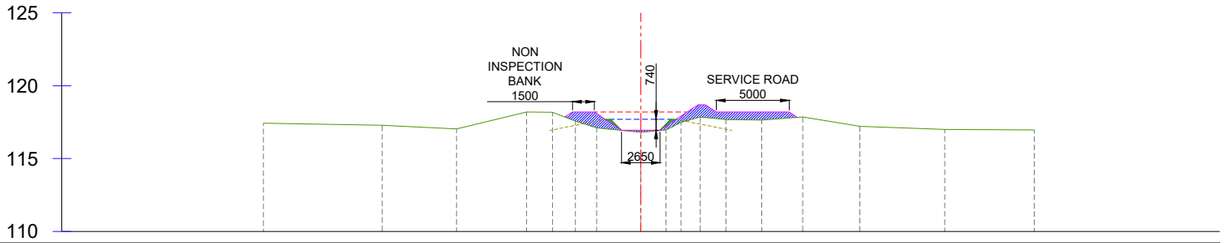
CH. : 5+500 KM
DESIGNED BED LEVEL = 116.977 M



EXIST. LEVEL (KM	117.681	117.572	117.396	118.093	118.130	117.246	117.028	117.557	118.029	117.866	117.756	117.991	117.226	117.133		
OFFSET (KM	27.446	20.164	12.575	8.127	5.431	2.879	0.000	2.688	4.754	6.403	9.139	13.403	18.079	26.439		

CUTTING AREA (SQ.M) = 0.248
FILLING AREA (SQ.M) = 5.780

CH. : 5+400 KM
DESIGNED BED LEVEL = 117.001 M



EXIST. LEVEL (KM	117.432	117.280	117.031	118.186	118.179	117.101	116.797	117.852	117.675	117.647	117.852	117.213	117.003	116.960		
OFFSET (KM	25.897	17.739	12.646	7.844	6.058	3.035	0.000	4.070	5.841	8.292	11.117	15.031	20.851	26.995		

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 7.357

CH. : 5+600 KM
DESIGNED BED LEVEL = 116.953 M

LEGEND

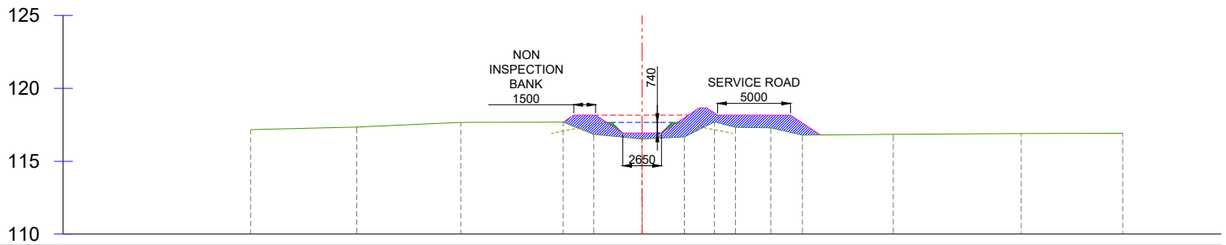
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 14 of 32

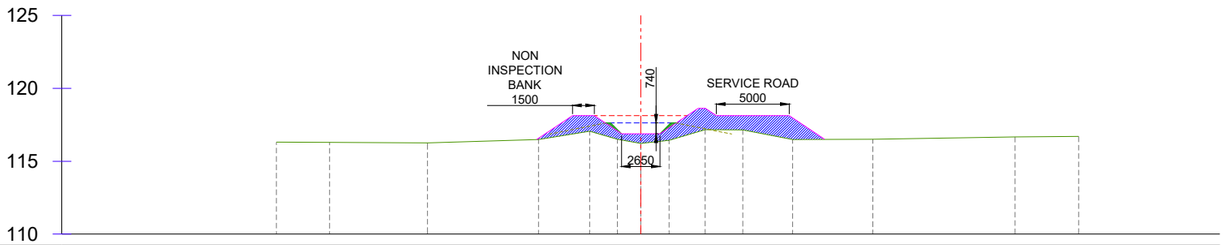
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	117.165	117.351	117.662	117.686	116.847	116.531	116.664	117.320	117.286	116.800	116.838	116.891	116.910
OFFSET (KM	26.866	19.581	12.433	5.419	3.311	0.000	2.903	6.400	8.830	11.002	17.237	26.028	32.992

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 14.043

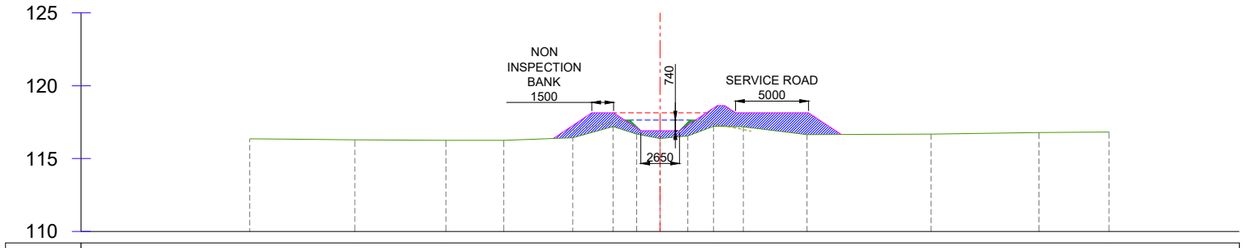
CH. : 5+700 KM
DESIGNED BED LEVEL = 116.929 M



EXIST. LEVEL (KM	116.310	116.290	116.265	116.484	117.052	116.219	116.428	117.172	117.154	116.496	116.511	116.664	116.710
OFFSET (KM	25.011	21.360	14.650	7.016	3.517	0.000	1.943	4.416	6.992	10.425	15.926	25.681	30.057

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 18.627

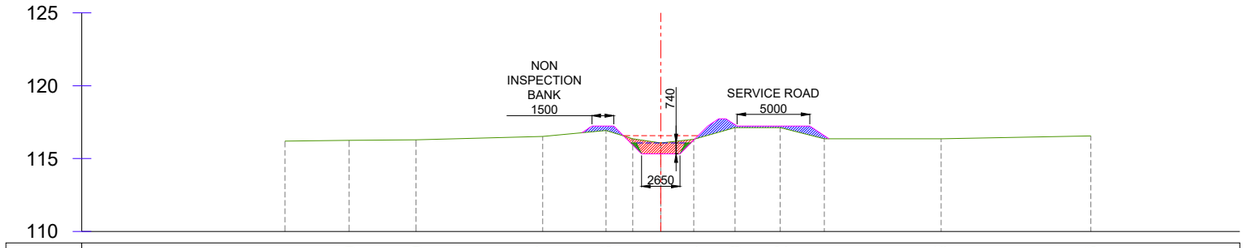
CH. : 5+900 KM
DESIGNED BED LEVEL = 116.882 M



EXIST. LEVEL (KM	116.351	116.280	116.259	116.248	116.435	117.194	116.376	117.220	117.184	116.648	116.675	116.779	116.820
OFFSET (KM	28.165	20.946	14.692	10.729	5.992	3.225	0.000	3.658	5.712	10.081	18.586	25.994	30.819

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 17.831

CH. : 5+800 KM
DESIGNED BED LEVEL = 116.906 M



EXIST. LEVEL (KM	116.201	116.260	116.280	116.527	116.928	116.081	116.324	117.129	117.122	116.361	116.365	116.563	
OFFSET (KM	25.787	21.387	16.795	8.110	3.763	0.000	2.264	5.095	8.196	11.216	19.240	29.520	

CUTTING AREA (SQ.M) = 3.180
FILLING AREA (SQ.M) = 3.997

CH. : 6+000 KM
DESIGNED BED LEVEL = 115.334 M

LEGEND

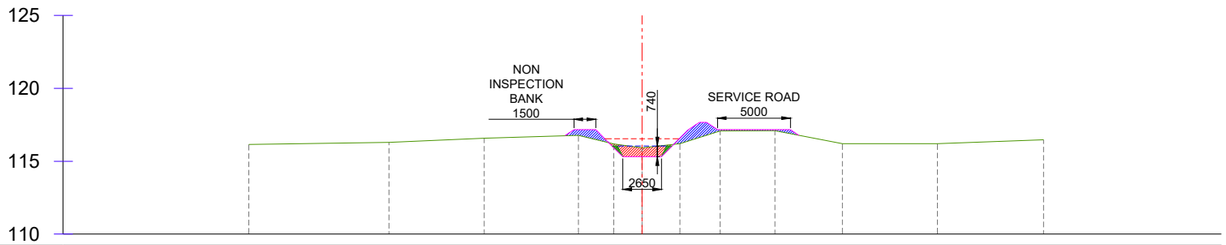
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 15 of 32

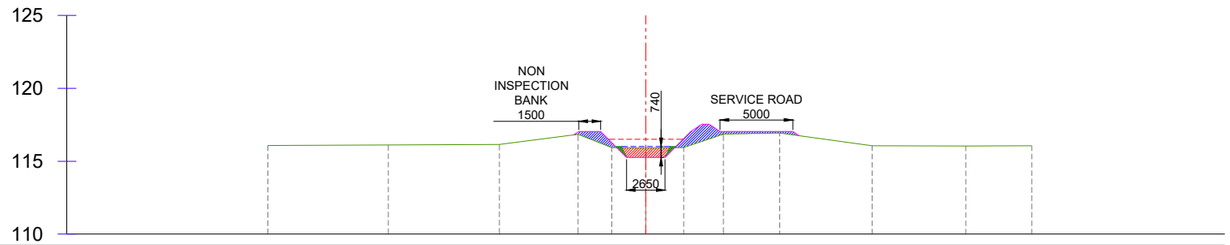
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	116.153	116.295	116.571	116.780	116.182	115.920	116.204	117.080	117.088	116.212	116.212	116.466
OFFSET (KM	26.984	17.375	10.828	4.373	1.954	0.000	2.588	5.350	9.117	13.753	20.262	27.559

CUTTING AREA (SQ.M) = 2.514
FILLING AREA (SQ.M) = 3.690

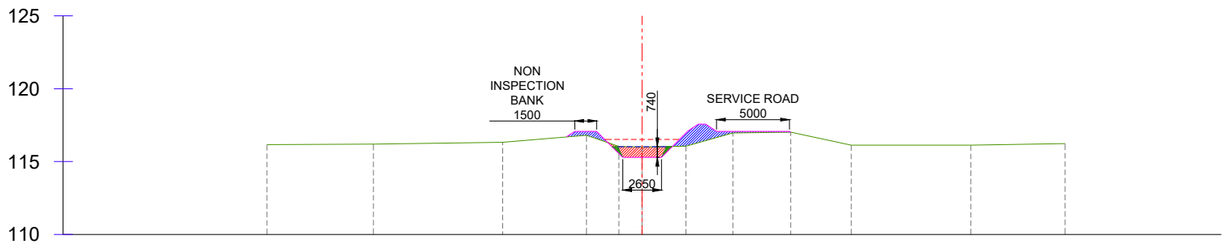
CH. : 6+100 KM
DESIGNED BED LEVEL = 115.310 M



EXIST. LEVEL (KM	116.080	116.110	116.146	116.842	115.932	115.901	115.945	116.856	116.937	116.070	116.052	116.068
OFFSET (KM	25.934	17.677	10.047	4.644	2.342	0.000	2.599	5.325	9.182	15.538	21.956	26.491

CUTTING AREA (SQ.M) = 2.157
FILLING AREA (SQ.M) = 4.412

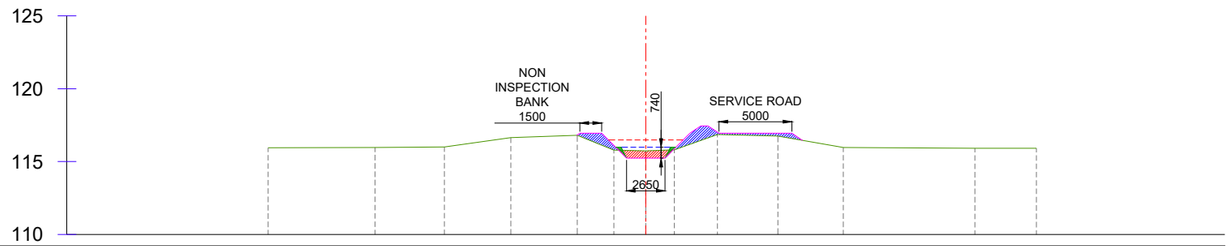
CH. : 6+300 KM
DESIGNED BED LEVEL = 115.263 M



EXIST. LEVEL (KM	116.167	116.193	116.332	116.813	116.010	116.064	116.959	117.010	116.134	116.124	116.239	
OFFSET (KM	25.736	18.439	9.576	3.820	0.000	3.001	6.228	10.208	14.345	22.558	29.033	

CUTTING AREA (SQ.M) = 2.592
FILLING AREA (SQ.M) = 4.025

CH. : 6+200 KM
DESIGNED BED LEVEL = 115.286 M



EXIST. LEVEL (KM	115.957	115.975	116.009	116.641	116.801	115.795	115.740	115.801	116.861	116.756	115.963	115.914	115.920
OFFSET (KM	25.925	18.576	13.834	9.268	4.710	2.199	0.000	1.955	4.923	9.058	13.546	22.576	26.803

CUTTING AREA (SQ.M) = 1.675
FILLING AREA (SQ.M) = 4.123

CH. : 6+400 KM
DESIGNED BED LEVEL = 115.239 M

LEGEND

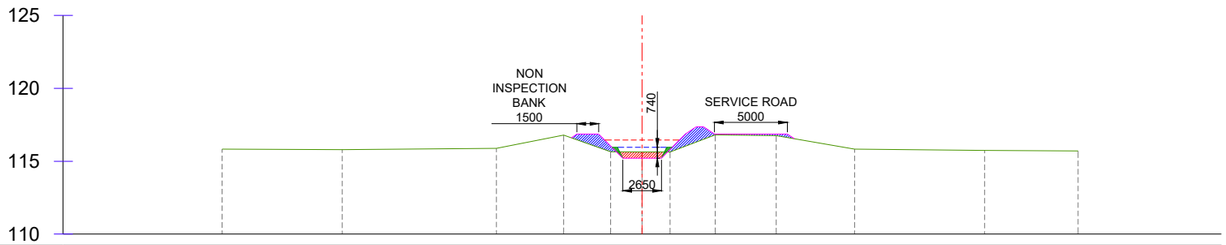
CUT AREA	EXISTING BED LINE	F.S.L.	
FILL AREA	DESIGNED BED LINE	H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 16 of 32

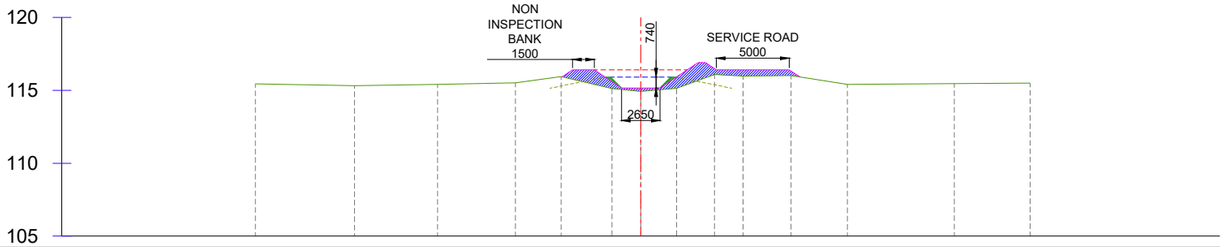
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	115.832	115.790	115.890	116.788	115.643	115.628	115.633	116.810	116.761	115.832	115.738	115.700
OFFSET (KM	28.822	20.585	10.004	5.391	2.155	0.000	1.914	5.026	9.201	14.578	23.507	29.919

CUTTING AREA (SQ.M) = 1.280
FILLING AREA (SQ.M) = 4.270

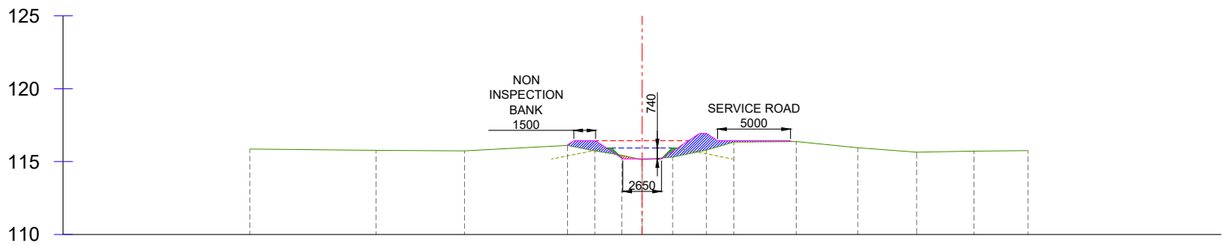
CH. : 6+500 KM
DESIGNED BED LEVEL = 115.215 M



EXIST. LEVEL (KM	115.451	115.320	115.412	115.509	115.951	115.127	114.929	115.141	116.083	115.985	116.012	115.400	115.462	115.505
OFFSET (KM	26.447	19.656	13.948	8.613	5.472	1.976	0.000	2.456	5.053	7.010	10.318	14.184	21.512	26.719

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 8.190

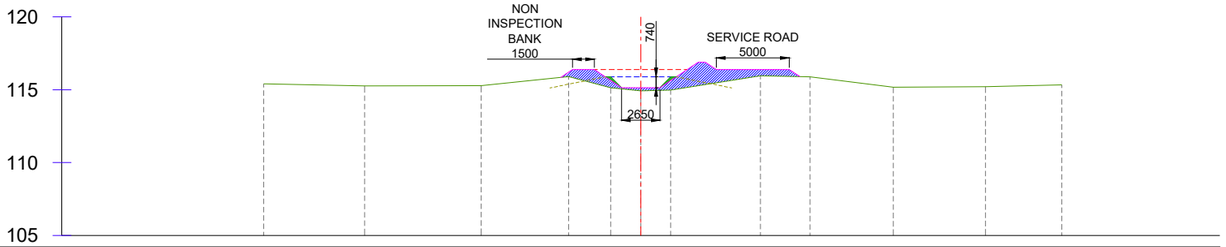
CH. : 6+700 KM
DESIGNED BED LEVEL = 115.167 M



EXIST. LEVEL (KM	115.853	115.763	115.728	116.105	115.740	115.133	115.304	115.790	116.340	116.371	115.950	115.650	115.720	115.760
OFFSET (KM	26.928	18.267	12.182	5.118	3.248	0.000	2.090	4.415	6.301	10.581	14.792	18.850	22.785	26.492

CUTTING AREA (SQ.M) = 0.186
FILLING AREA (SQ.M) = 4.863

CH. : 6+600 KM
DESIGNED BED LEVEL = 115.191 M



EXIST. LEVEL (KM	115.405	115.260	115.286	115.894	115.130	114.917	114.979	115.950	115.883	115.178	115.210	115.323
OFFSET (KM	25.889	18.952	10.954	4.947	2.077	0.000	2.045	8.216	11.608	17.334	23.661	28.883

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 10.103

CH. : 6+800 KM
DESIGNED BED LEVEL = 115.144 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

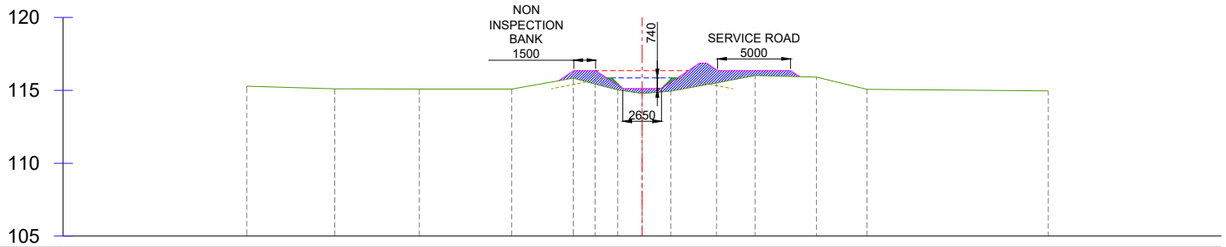
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 17 of 32

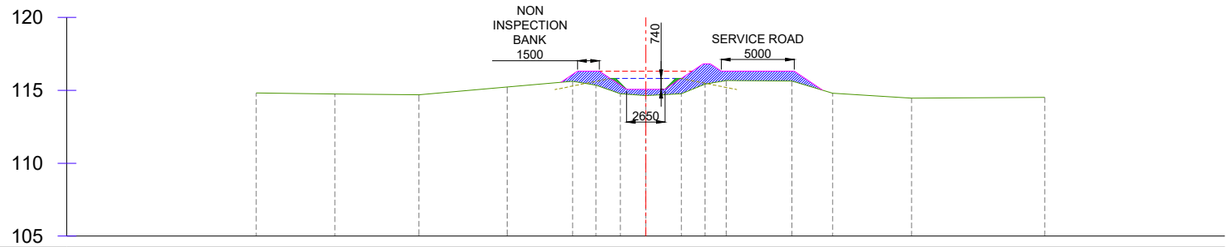
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	115.279	115.102	115.090	115.091	115.844	115.421	114.780	114.941	115.512	116.010	115.909	115.076		114.961
OFFSET (KM	27.125	21.102	15.281	8.945	4.726	3.225	0.000	1.977	5.112	7.763	11.974	15.433		27.867

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 9.710

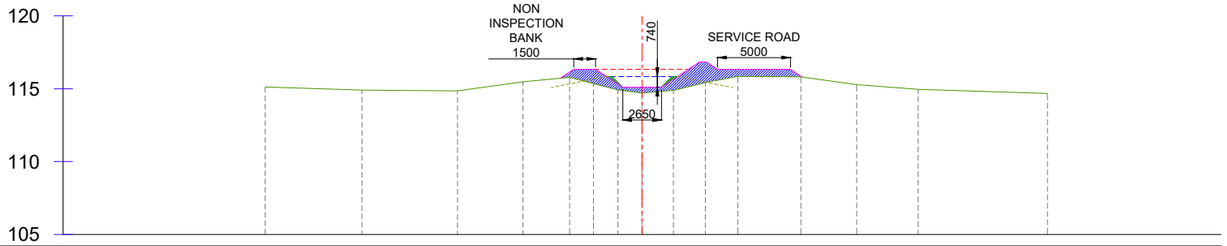
CH. : 6+900 KM
DESIGNED BED LEVEL = 115.120 M



EXIST. LEVEL (KM	114.820	114.750	114.690	115.223	115.620	115.360	114.635	114.760	115.671		115.635	114.810	114.470	114.520
OFFSET (KM	26.733	21.345	15.575	9.520	5.030	3.429	0.000	2.431	5.512		10.022	12.824	18.244	27.379

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 12.223

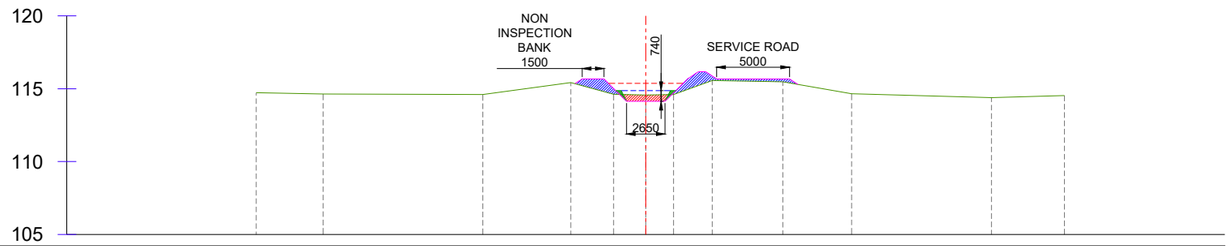
CH. : 7+100 KM
DESIGNED BED LEVEL = 115.072 M



EXIST. LEVEL (KM	115.121	114.911	114.856	115.472	115.783	115.352	114.699	114.893	115.412	115.852	115.813	115.274	114.957	114.671
OFFSET (KM	25.867	19.233	12.678	8.175	4.982	3.335	0.000	2.159	4.345	6.567	10.905	14.735	18.946	27.825

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 10.418

CH. : 7+000 KM
DESIGNED BED LEVEL = 115.096 M



EXIST. LEVEL (KM	114.721	114.645	114.598	115.424	114.611	114.571	114.604	115.569	115.470	114.662	114.391	114.530		
OFFSET (KM	26.733	22.139	11.191	5.157	2.212	0.000	1.905	4.558	9.406	14.121	23.723	28.728		

CUTTING AREA (SQ.M) = 1.405
FILLING AREA (SQ.M) = 4.308

CH. : 7+200 KM
DESIGNED BED LEVEL = 114.134 M

LEGEND

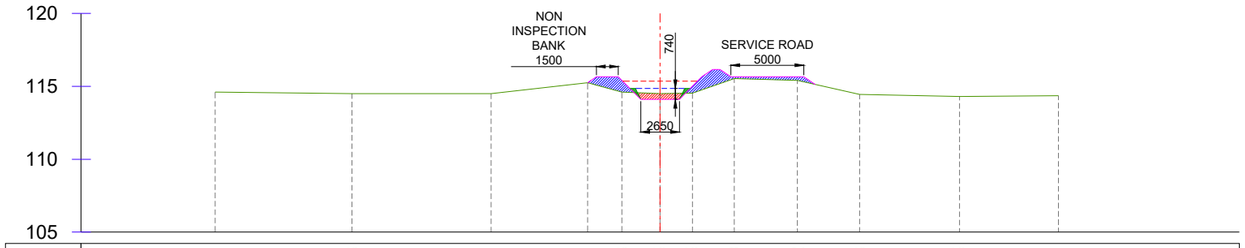
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 18 of 32

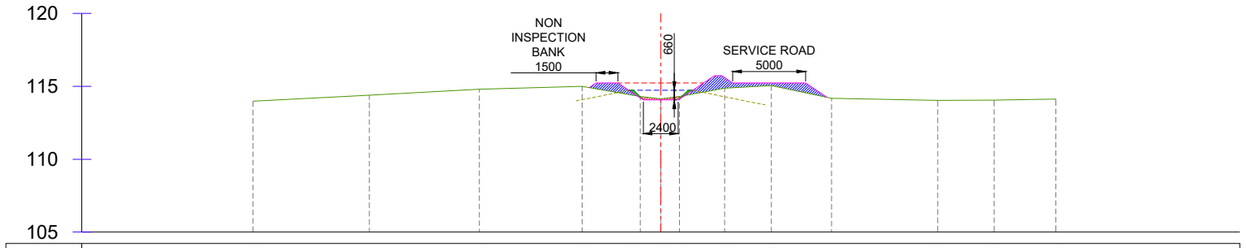
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	114.601	114.508	114.491	115.241	114.608	114.505	114.535	115.539	115.402	114.448	114.305	114.361
OFFSET (KM	30.532	21.157	11.601	4.968	2.627	0.000	2.222	5.089	9.427	13.694	20.545	27.341

CUTTING AREA (SQ.M) = 1.283
FILLING AREA (SQ.M) = 5.217

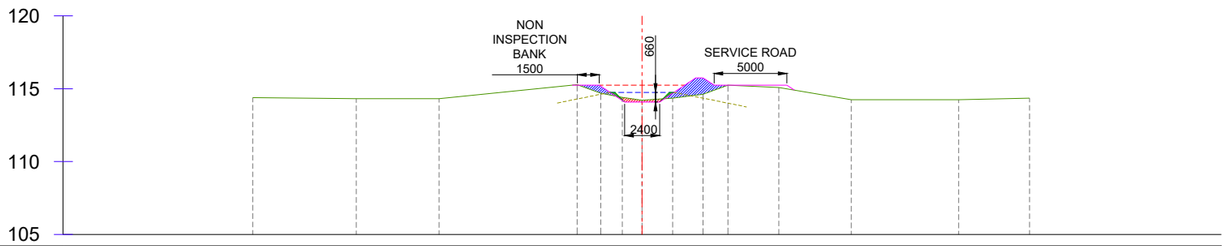
CH. : 7+300 KM
DESIGNED BED LEVEL = 114.110 M



EXIST. LEVEL (KM	113.975	114.391	114.803	114.992	114.295	114.142	114.307	114.878	115.060	114.177	114.042	114.049	114.123
OFFSET (KM	27.983	20.002	12.452	5.405	1.401	0.000	1.280	4.373	7.586	11.725	19.001	22.871	27.102

CUTTING AREA (SQ.M) = 0.456
FILLING AREA (SQ.M) = 5.304

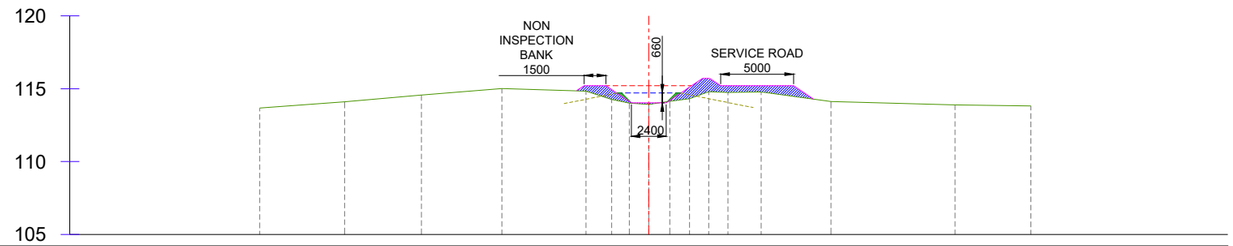
CH. : 7+500 KM
DESIGNED BED LEVEL = 114.063 M



EXIST. LEVEL (KM	114.381	114.314	114.322	115.282	114.692	114.208	114.355	114.623	115.242	115.085	114.247	114.246	114.358
OFFSET (KM	26.720	19.621	13.941	4.450	2.842	0.000	2.094	4.187	5.900	9.390	14.352	21.732	26.584

CUTTING AREA (SQ.M) = 0.578
FILLING AREA (SQ.M) = 3.271

CH. : 7+400 KM
DESIGNED BED LEVEL = 114.087 M



EXIST. LEVEL (KM	113.682	114.110	114.570	115.007	114.841	114.268	113.916	114.320	114.750	114.788	114.120	113.881	113.822
OFFSET (KM	26.696	20.888	15.603	10.077	4.309	2.543	0.000	2.791	5.438	7.717	12.501	21.013	26.221

CUTTING AREA (SQ.M) = 0.014
FILLING AREA (SQ.M) = 7.199

CH. : 7+600 KM
DESIGNED BED LEVEL = 114.039 M

LEGEND

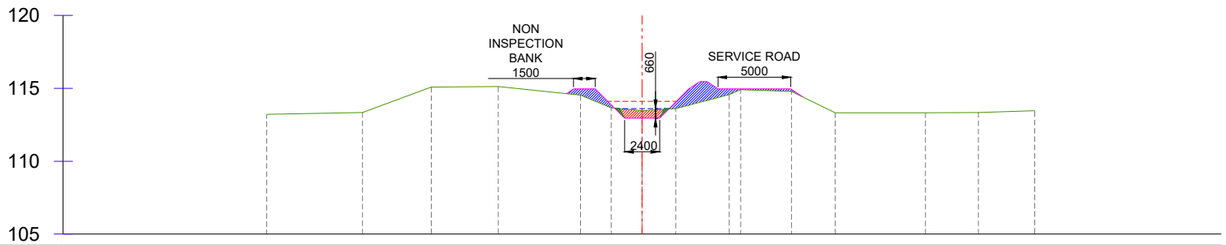
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 19 of 32

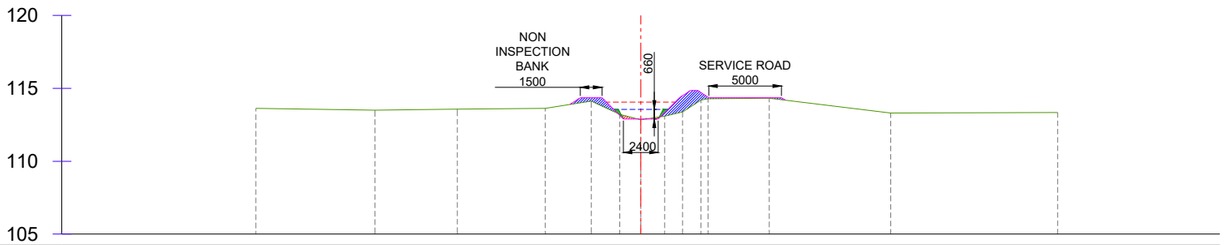
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	113.220	113.345	115.079	115.125	114.527	113.654	113.459	113.603	114.572	114.789	113.332	113.332	113.344	113.461
OFFSET (KM	25.766	19.195	14.468	9.874	4.218	2.123	0.000	2.307	5.984	10.260	13.247	19.440	23.077	26.953

CUTTING AREA (SQ.M) = 1.729
FILLING AREA (SQ.M) = 5.696

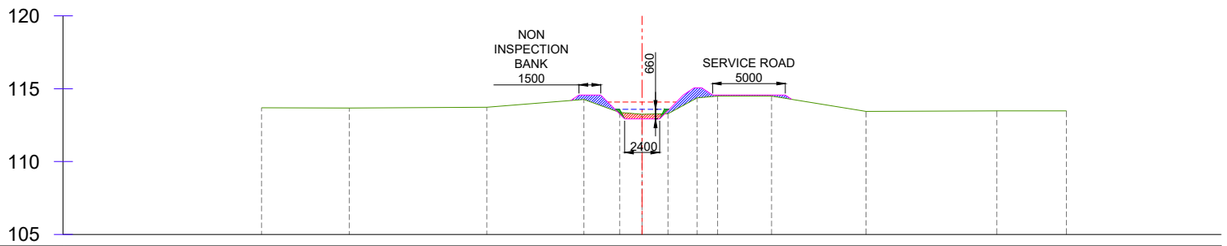
CH. : 7+700 KM
DESIGNED BED LEVEL = 112.949 M



EXIST. LEVEL (KM	113.618	113.510	113.570	113.631	114.118	112.841	113.381	114.284	114.327	113.314	113.350			
OFFSET (KM	26.424	18.240	12.588	6.558	3.402	0.000	2.872	4.609	8.815	17.153	28.602			

CUTTING AREA (SQ.M) = 0.216
FILLING AREA (SQ.M) = 3.645

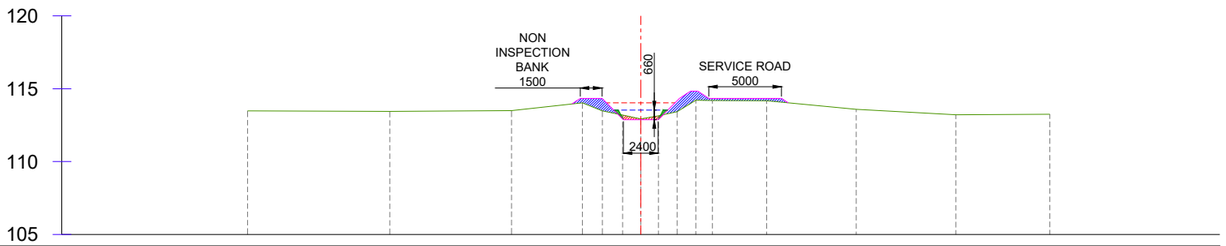
CH. : 7+900 KM
DESIGNED BED LEVEL = 112.902 M



EXIST. LEVEL (KM	113.700	113.671	113.732	114.266	113.256	113.280	114.491	114.496	113.448	113.478	113.486			
OFFSET (KM	26.115	20.102	10.649	3.994	0.000	1.779	5.186	8.879	15.375	24.339	29.115			

CUTTING AREA (SQ.M) = 1.025
FILLING AREA (SQ.M) = 3.344

CH. : 7+800 KM
DESIGNED BED LEVEL = 112.925 M



EXIST. LEVEL (KM	113.474	113.447	113.496	114.037	112.935	113.418	114.185	114.171	113.591	113.214	113.248			
OFFSET (KM	26.992	17.223	8.866	4.016	0.000	2.484	4.907	8.643	14.790	21.628	28.066			

CUTTING AREA (SQ.M) = 0.512
FILLING AREA (SQ.M) = 4.047

CH. : 8+000 KM
DESIGNED BED LEVEL = 112.878 M

LEGEND

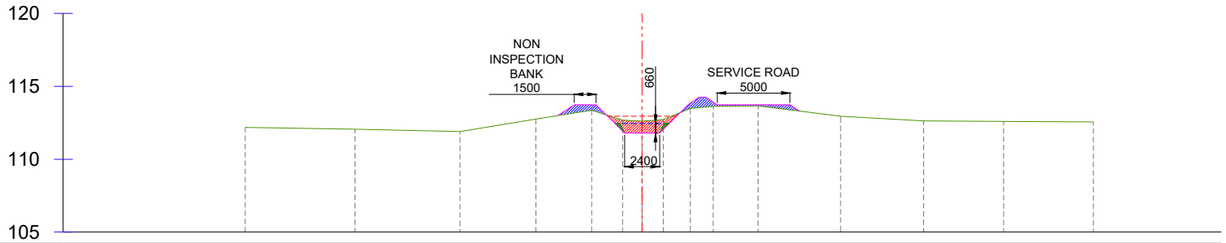
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 20 of 32

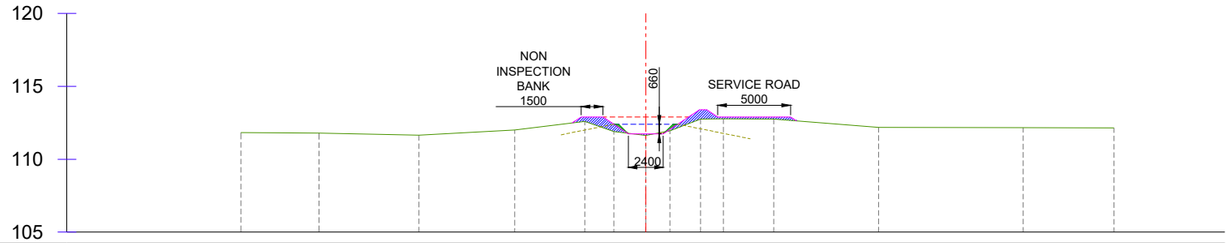
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	112.182	112.058	111.906	112.752	113.368	112.616	112.720	113.632	113.655	112.942	112.626	112.598	112.555
OFFSET (KM	27.247	19.701	12.484	7.291	3.462	0.000	1.464	4.876	7.955	13.624	19.316	24.816	30.965

CUTTING AREA (SQ.M) = 3.193
FILLING AREA (SQ.M) = 3.151

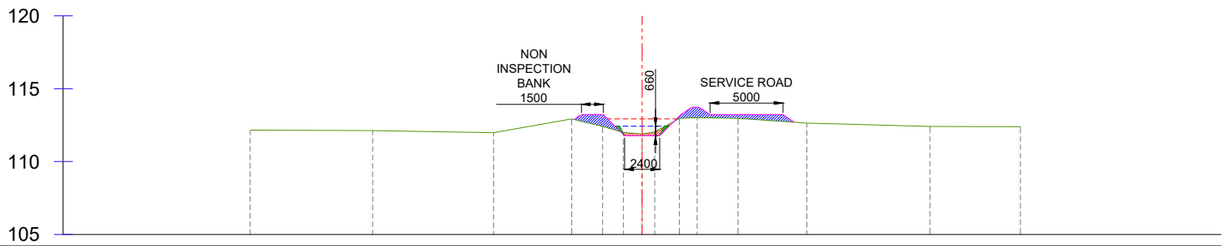
CH. : 8+100 KM
DESIGNED BED LEVEL = 111.788 M



EXIST. LEVEL (KM	111.822	111.793	111.641	112.010	112.592	111.905	111.633	111.953	112.757	112.777	112.747	112.191	112.163	112.140
OFFSET (KM	27.790	22.428	15.573	8.995	4.197	2.185	0.000	1.662	3.753	5.333	8.781	15.971	25.899	32.126

CUTTING AREA (SQ.M) = 0.065
FILLING AREA (SQ.M) = 3.797

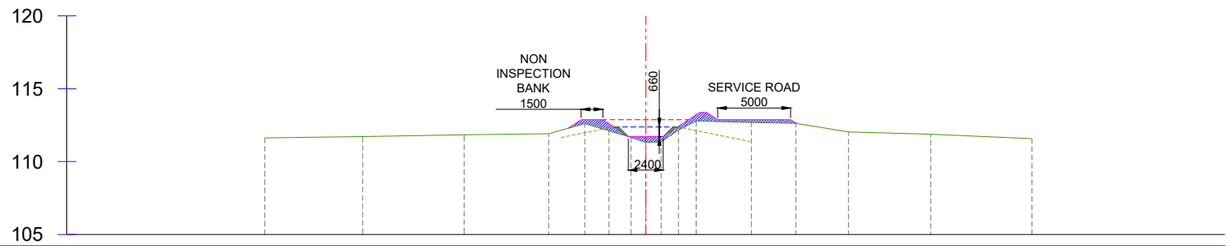
CH. : 8+300 KM
DESIGNED BED LEVEL = 111.740 M



EXIST. LEVEL (KM	112.156	112.127	111.975	112.925	112.410	111.902	113.014	112.970	112.640	112.414	112.386
OFFSET (KM	26.903	18.490	10.190	4.829	2.718	0.000	3.776	6.594	11.304	19.743	25.969

CUTTING AREA (SQ.M) = 0.791
FILLING AREA (SQ.M) = 4.442

CH. : 8+200 KM
DESIGNED BED LEVEL = 111.764 M



EXIST. LEVEL (KM	111.620	111.720	111.840	111.920	112.598	112.110	111.305	112.154	112.788	112.678	112.626	112.030	111.880	111.570
OFFSET (KM	26.157	19.437	12.480	6.656	4.192	2.526	0.000	2.243	3.451	7.242	10.286	13.906	19.552	26.496

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 4.495

CH. : 8+400 KM
DESIGNED BED LEVEL = 111.717 M

LEGEND

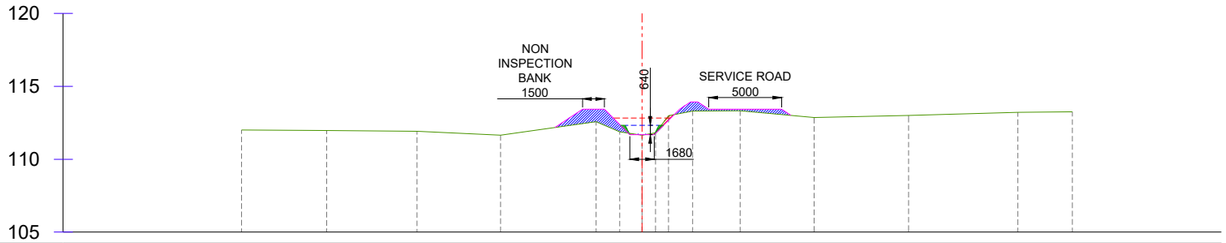
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 21 of 32

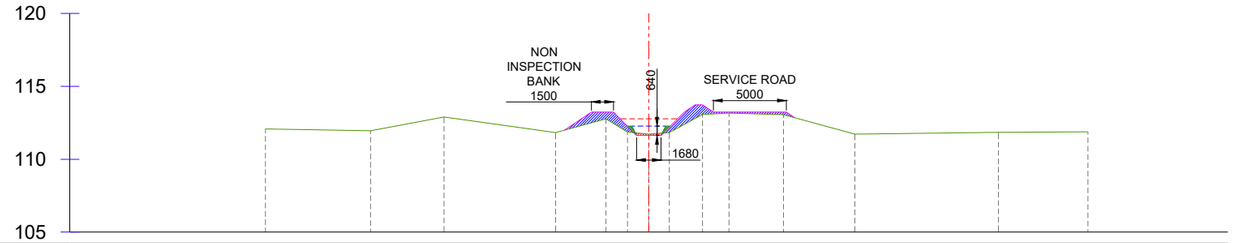
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	112.001	111.972	111.910	111.652	112.568	111.646	113.301	113.331	112.866	112.998	113.220	113.250
OFFSET (KM	27.496	21.654	15.441	9.713	3.148	0.000	3.472	6.734	11.812	18.298	25.798	29.525

CUTTING AREA (SQ.M) = 0.289
FILLING AREA (SQ.M) = 5.378

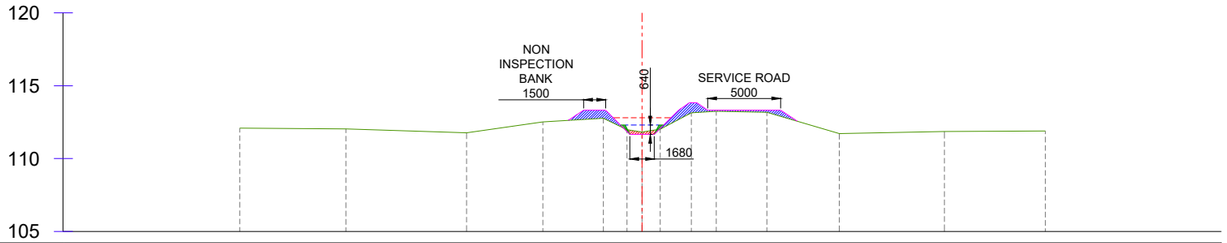
CH. : 8+500 KM
DESIGNED BED LEVEL = 111.690 M



EXIST. LEVEL (KM	112.080	111.950	112.890	111.822	112.766	111.723	113.076	113.168	113.061	111.717	111.849	111.880
OFFSET (KM	26.307	19.102	14.059	6.402	2.948	0.000	3.692	5.497	9.240	14.146	23.984	30.145

CUTTING AREA (SQ.M) = 0.240
FILLING AREA (SQ.M) = 4.875

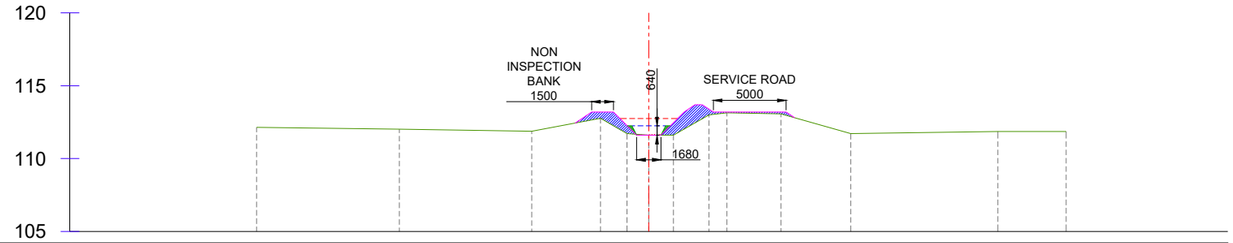
CH. : 8+700 KM
DESIGNED BED LEVEL = 111.634 M



EXIST. LEVEL (KM	112.093	112.031	111.773	112.511	112.770	111.815	113.134	113.254	113.180	111.717	111.849	111.890
OFFSET (KM	27.612	20.326	12.039	6.803	2.654	0.000	3.386	5.087	8.570	13.529	20.740	27.671

CUTTING AREA (SQ.M) = 0.481
FILLING AREA (SQ.M) = 4.169

CH. : 8+600 KM
DESIGNED BED LEVEL = 111.662 M



EXIST. LEVEL (KM	112.139	112.020	111.881	112.762	111.609	111.606	113.145	113.068	111.717	111.849	111.849	
OFFSET (KM	26.916	17.125	8.028	3.309	0.000	1.685	5.364	9.058	13.851	23.964	28.648	

CUTTING AREA (SQ.M) = 0.031
FILLING AREA (SQ.M) = 5.543

CH. : 8+800 KM
DESIGNED BED LEVEL = 111.606 M

LEGEND

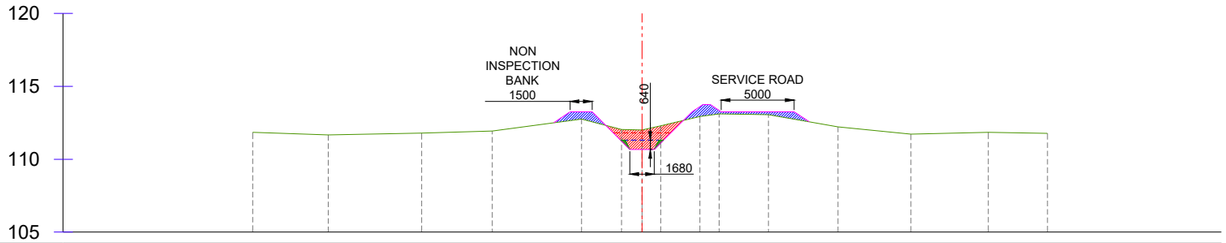
CUT AREA	EXISTING BED LINE	F.S.L.
FILL AREA	DESIGNED BED LINE	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 22 of 32

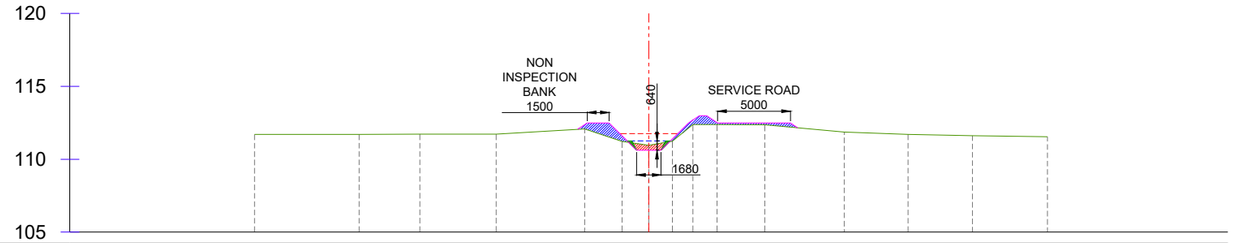
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	111.852	111.660	111.790	111.938	112.757	112.033	112.006	112.936	113.113	113.054	112.222	111.717	111.849	111.780
OFFSET (KM	26.731	21.549	15.124	10.281	4.156	1.416	0.000	3.966	5.280	8.670	13.439	18.459	23.763	27.812

CUTTING AREA (SQ.M) = 4.896
FILLING AREA (SQ.M) = 4.257

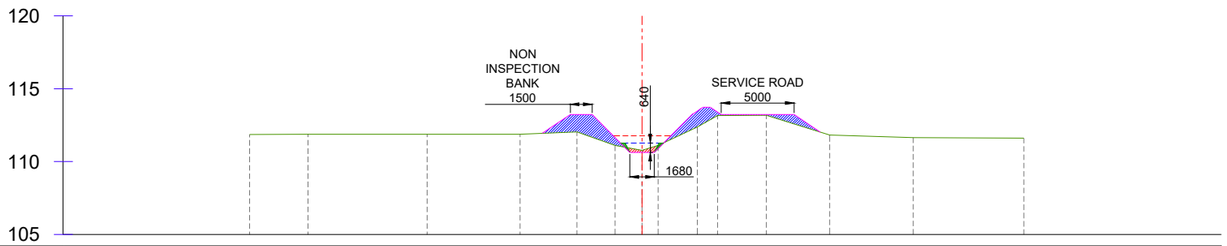
CH. : 8+900 KM
DESIGNED BED LEVEL = 110.665 M



EXIST. LEVEL (KM	111.703	111.710	111.714	111.717	112.081	111.228	110.960	112.371	112.375	112.362	111.870	111.710	111.610	111.540
OFFSET (KM	27.059	19.875	15.710	10.480	4.410	1.830	0.000	3.027	4.684	7.953	13.406	17.796	22.202	27.365

CUTTING AREA (SQ.M) = 0.978
FILLING AREA (SQ.M) = 3.953

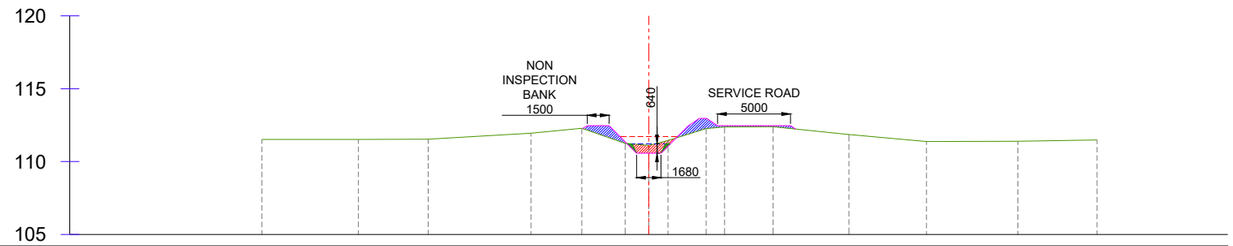
CH. : 9+100 KM
DESIGNED BED LEVEL = 110.609 M



EXIST. LEVEL (KM	111.862	111.869	111.873	111.876	112.038	111.110	110.779	113.150	113.180	111.820	111.650	111.600		
OFFSET (KM	26.931	22.925	14.749	8.376	4.474	1.863	0.000	5.181	8.521	12.874	18.618	26.206		

CUTTING AREA (SQ.M) = 0.582
FILLING AREA (SQ.M) = 8.972

CH. : 9+000 KM
DESIGNED BED LEVEL = 110.637 M



EXIST. LEVEL (KM	111.515	111.527	111.544	111.955	112.288	111.116	112.379	112.386	111.855	111.369	111.386	111.484		
OFFSET (KM	26.556	19.929	15.141	8.092	4.592	0.000	5.192	8.530	13.728	19.051	25.334	30.757		

CUTTING AREA (SQ.M) = 1.594
FILLING AREA (SQ.M) = 3.438

CH. : 9+200 KM
DESIGNED BED LEVEL = 110.581 M

LEGEND

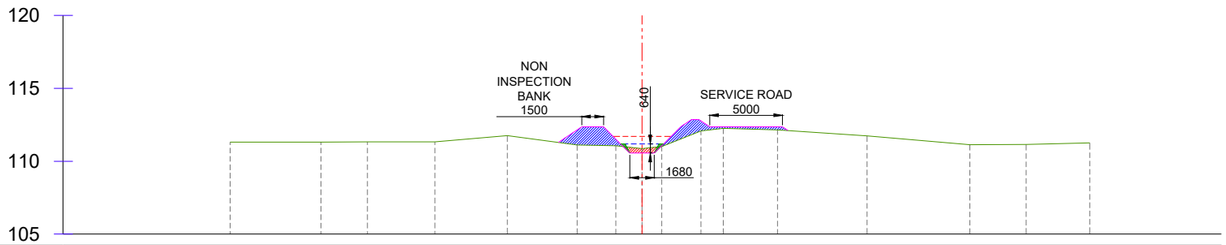
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 23 of 32

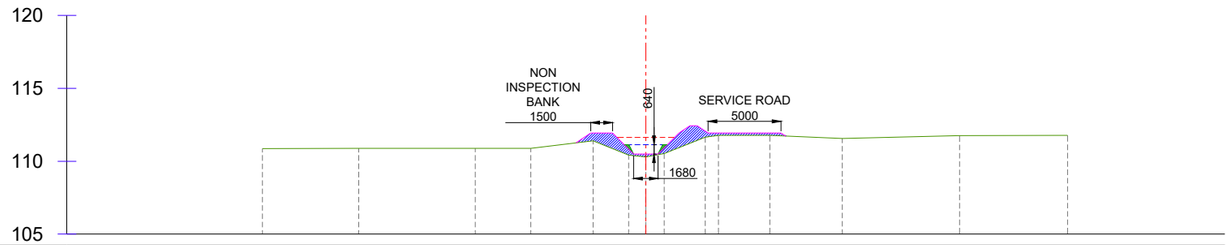
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	111.312	111.319	111.323	111.326	111.763	111.116	110.857	112.078	112.263	112.155	111.741	111.137	111.154	111.252
OFFSET (KM	28.267	22.038	18.857	14.227	9.242	4.456	0.000	4.033	5.570	9.289	15.431	22.488	26.352	30.724

CUTTING AREA (SQ.M) = 0.772
FILLING AREA (SQ.M) = 6.658

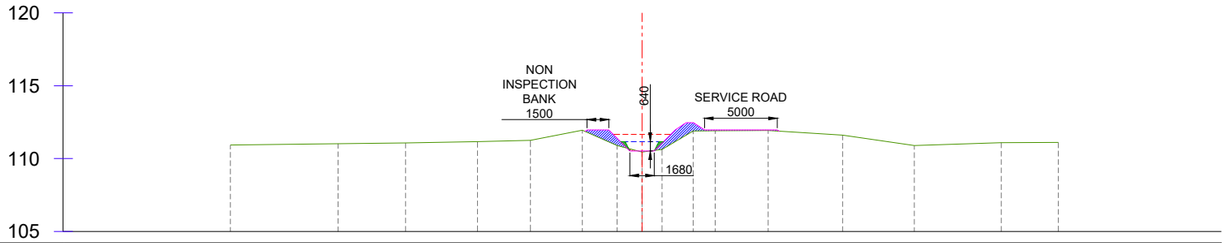
CH. : 9+300 KM
DESIGNED BED LEVEL = 110.554 M



EXIST. LEVEL (KM	110.872	110.879	110.883	110.886	111.408	110.288	111.779	111.770	111.559	111.753	111.770			
OFFSET (KM	26.316	19.712	11.713	7.887	3.620	0.000	4.992	8.505	13.475	21.535	28.941			

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 6.151

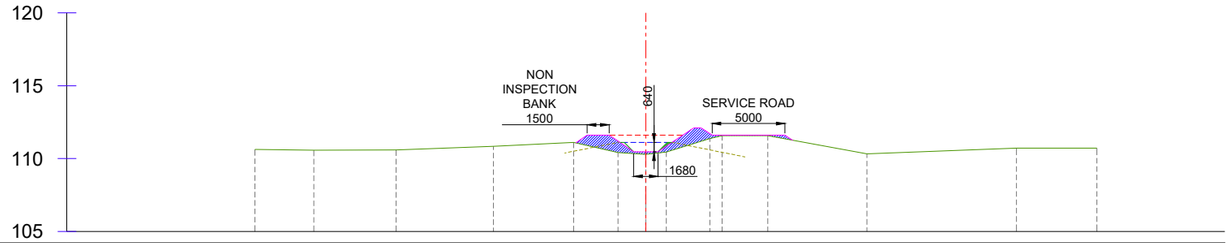
CH. : 9+500 KM
DESIGNED BED LEVEL = 110.498 M



EXIST. LEVEL (KM	110.940	111.020	111.080	111.160	111.260	111.940	110.451	111.887	111.906	111.922	111.611	110.900	111.094	111.111
OFFSET (KM	28.252	20.855	16.233	11.304	7.660	4.102	0.000	3.499	5.014	8.646	13.757	18.689	24.651	28.568

CUTTING AREA (SQ.M) = 0.055
FILLING AREA (SQ.M) = 3.519

CH. : 9+400 KM
DESIGNED BED LEVEL = 110.526 M



EXIST. LEVEL (KM	110.628	110.582	110.587	110.851	111.116	110.415	110.286	110.454	111.568	111.570	110.321	110.715	110.714	
OFFSET (KM	26.823	22.793	17.146	10.458	4.961	1.908	0.000	1.400	5.226	8.376	15.175	25.443	30.957	

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 5.792

CH. : 9+600 KM
DESIGNED BED LEVEL = 110.470 M

LEGEND

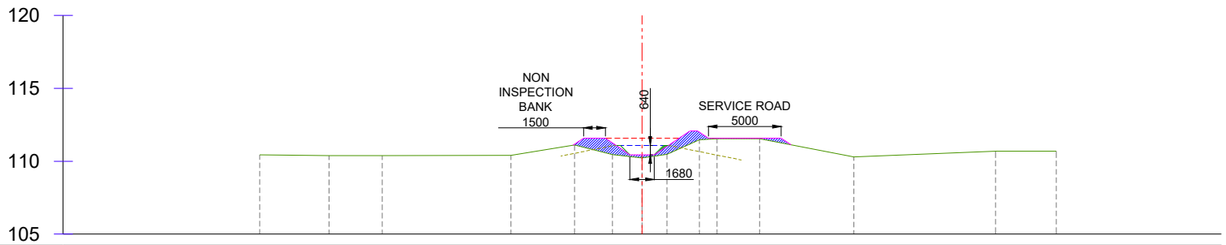
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 24 of 32

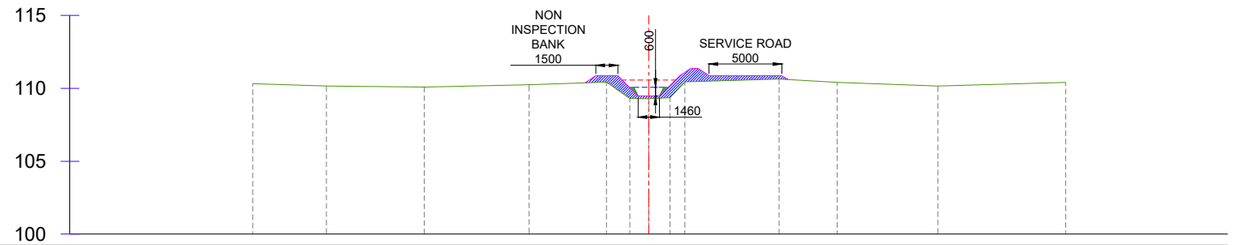
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	110.433	110.389	110.391	110.394	111.116	110.461	110.228	110.466	111.546	111.548	110.300	110.694	110.693
OFFSET (KM	26.241	21.478	17.828	8.995	4.635	2.026	0.000	1.712	5.140	8.066	14.524	24.262	28.429

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 5.278

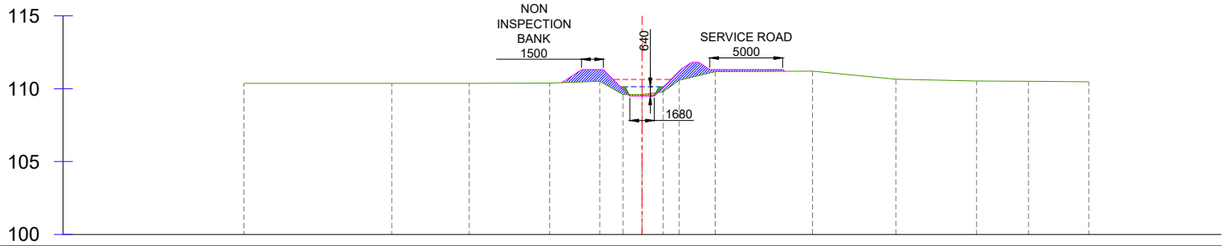
CH. : 9+700 KM
DESIGNED BED LEVEL = 110.442 M



EXIST. LEVEL (KM	110.321	110.156	110.096	110.241	110.427	109.291	110.440	110.635	110.407	110.164	110.401		
OFFSET (KM	27.185	22.134	15.414	8.211	2.899	0.000	2.475	8.934	12.936	19.841	28.614		

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 6.325

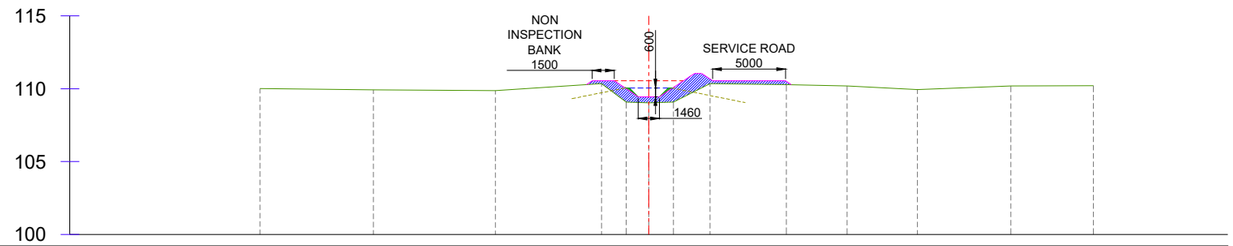
CH. : 9+900 KM
DESIGNED BED LEVEL = 109.473 M



EXIST. LEVEL (KM	110.360	110.374	110.374	110.379	110.514	109.595	110.578	111.169	111.213	110.647	110.533	110.510	110.480
OFFSET (KM	27.328	17.179	11.869	6.346	2.903	0.000	2.543	5.014	11.702	17.414	22.956	26.516	30.658

CUTTING AREA (SQ.M) = 0.230
FILLING AREA (SQ.M) = 5.660

CH. : 9+800 KM
DESIGNED BED LEVEL = 109.501 M



EXIST. LEVEL (KM	110.010	109.925	109.865	110.354	109.039	110.355	110.284	110.187	109.944	110.181	110.200		
OFFSET (KM	26.688	18.900	10.529	3.251	0.000	4.194	9.443	13.608	18.433	24.848	30.508		

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 6.883

CH. : 10+000 KM
DESIGNED BED LEVEL = 109.445 M

LEGEND

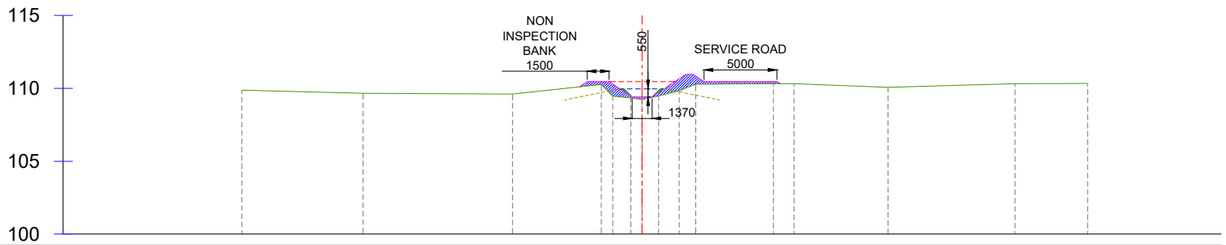
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 25 of 32

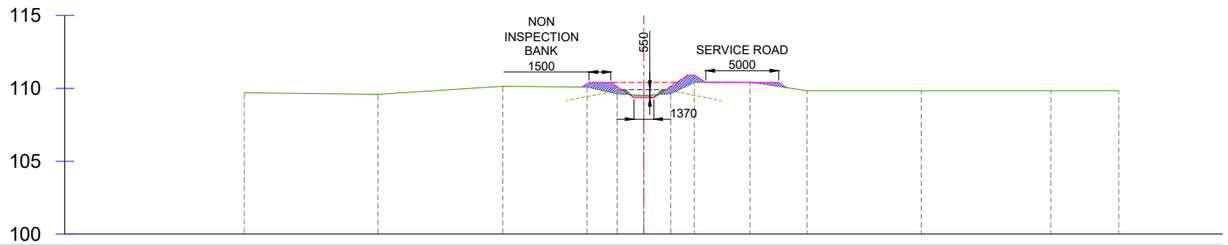
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	109.877	109.662	109.602	110.260	109.226	109.478	109.836	110.281	110.318	110.075	110.312	110.330
OFFSET (KM	27.467	19.160	8.887	2.797	0.000	1.132	2.543	3.677	10.440	16.882	25.601	30.584

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 4.387

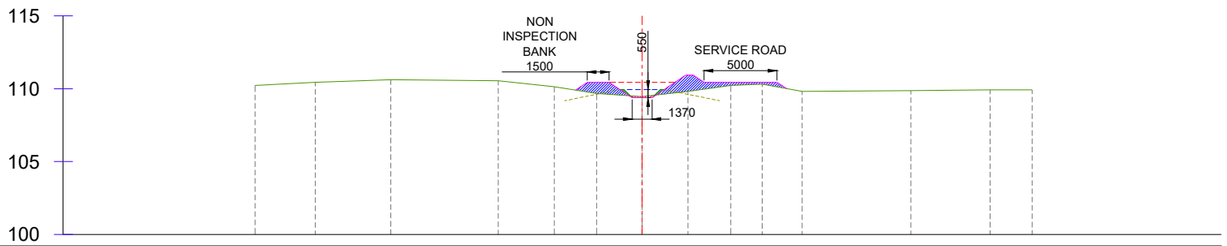
CH. : 10+100 KM
DESIGNED BED LEVEL = 109.417 M



EXIST. LEVEL (KM	109.702	109.594	110.132	110.088	109.620	109.511	109.619	110.401	110.419	109.834	109.834	109.831	109.829
OFFSET (KM	27.413	18.244	9.683	3.898	1.831	0.000	1.852	3.477	7.292	11.195	19.041	27.923	32.602

CUTTING AREA (SQ.M) = 0.296
FILLING AREA (SQ.M) = 3.152

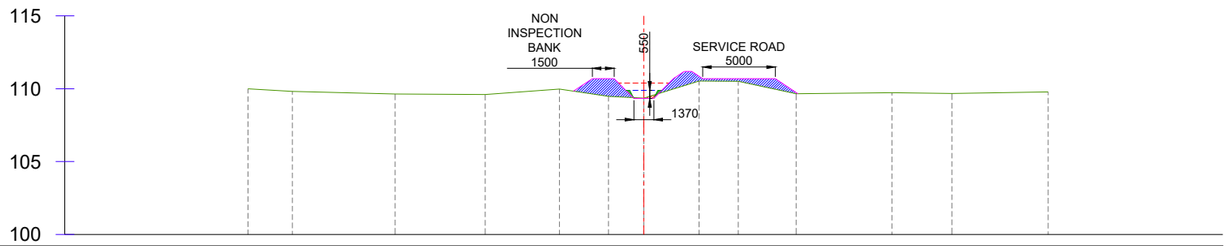
CH. : 10+300 KM
DESIGNED BED LEVEL = 109.362 M



EXIST. LEVEL (KM	110.221	110.433	110.610	110.551	110.144	109.673	109.461	109.811	110.218	110.316	109.806	109.873	109.920	109.930
OFFSET (KM	26.555	22.436	17.247	9.871	6.024	3.121	0.000	3.151	6.091	8.243	10.980	18.457	23.880	26.772

CUTTING AREA (SQ.M) = 0.170
FILLING AREA (SQ.M) = 5.632

CH. : 10+200 KM
DESIGNED BED LEVEL = 109.390 M



EXIST. LEVEL (KM	109.999	109.820	109.645	109.608	109.971	109.468	109.352	110.530	110.502	109.649	109.722	109.675	109.776
OFFSET (KM	27.170	24.118	17.074	10.886	5.792	2.429	0.000	3.786	6.479	10.456	17.027	21.135	27.756

CUTTING AREA (SQ.M) = 0.149
FILLING AREA (SQ.M) = 7.144

CH. : 10+400 KM
DESIGNED BED LEVEL = 109.334 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

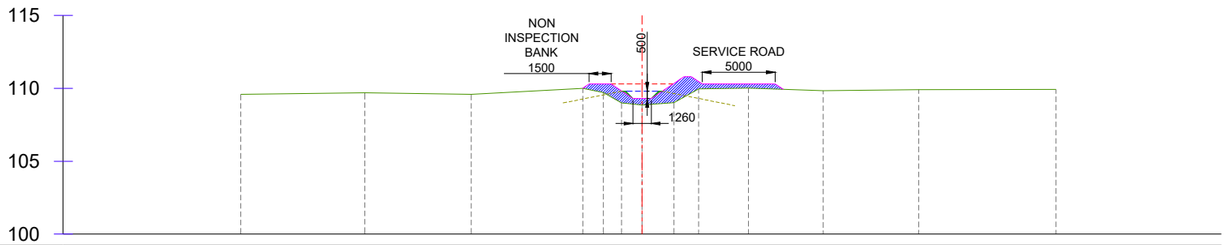
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 26 of 32

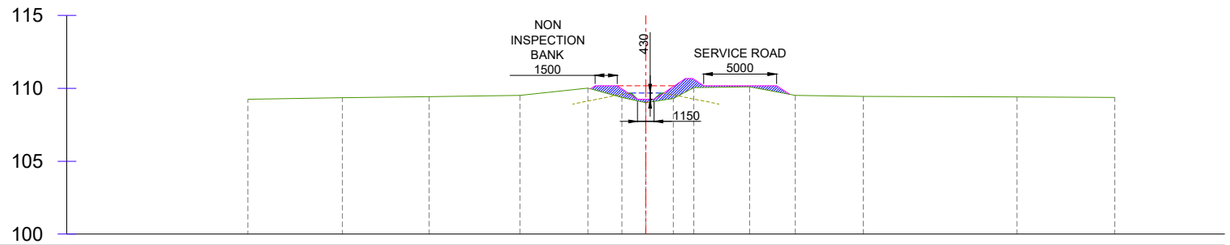
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	109.595	109.697	109.591	110.004	108.850	109.024	109.962	110.013	109.831	109.904	109.924
OFFSET (KM	27.536	19.027	11.716	4.061	0.000	2.180	3.886	7.299	12.428	18.991	28.407

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 7.716

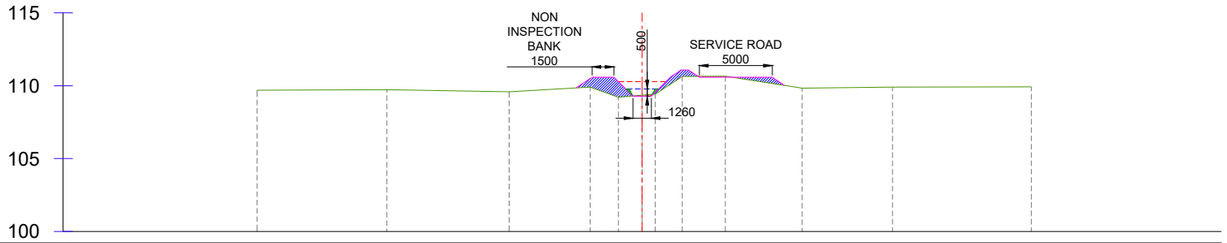
CH. : 10+500 KM
DESIGNED BED LEVEL = 109.306 M



EXIST. LEVEL (KM	109.243	109.350	109.430	109.510	110.020	109.020	110.060	110.106	109.520	109.440	109.410	109.370
OFFSET (KM	27.304	20.823	14.881	8.642	3.976	0.000	3.299	7.121	10.261	14.923	25.469	32.194

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 4.570

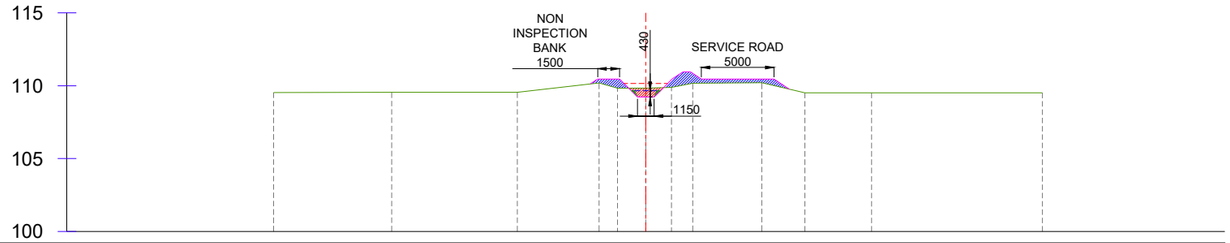
CH. : 10+700 KM
DESIGNED BED LEVEL = 109.251 M



EXIST. LEVEL (KM	109.688	109.731	109.588	109.906	109.353	110.633	110.654	109.826	109.899	109.919
OFFSET (KM	26.429	17.516	9.118	3.558	0.000	2.760	5.721	10.983	17.184	26.714

CUTTING AREA (SQ.M) = 0.247
FILLING AREA (SQ.M) = 4.557

CH. : 10+600 KM
DESIGNED BED LEVEL = 109.278 M



EXIST. LEVEL (KM	109.535	109.544	109.553	110.195	109.831	110.164	110.200	109.509	109.510	109.513
OFFSET (KM	25.550	17.449	8.816	3.209	0.000	3.231	7.965	10.921	15.496	27.218

CUTTING AREA (SQ.M) = 1.091
FILLING AREA (SQ.M) = 4.137

CH. : 10+800 KM
DESIGNED BED LEVEL = 109.223 M

LEGEND

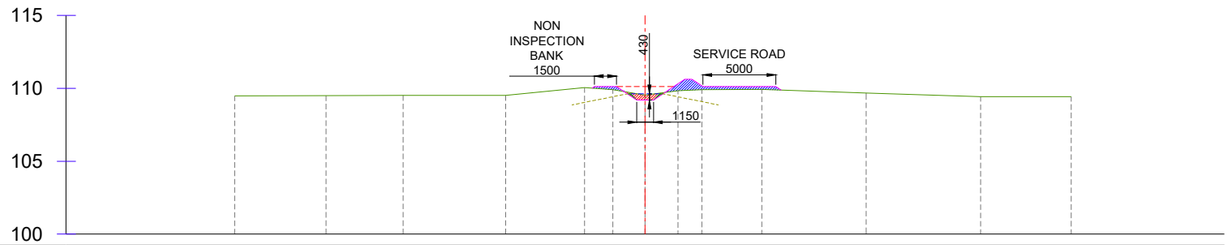
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 27 of 32

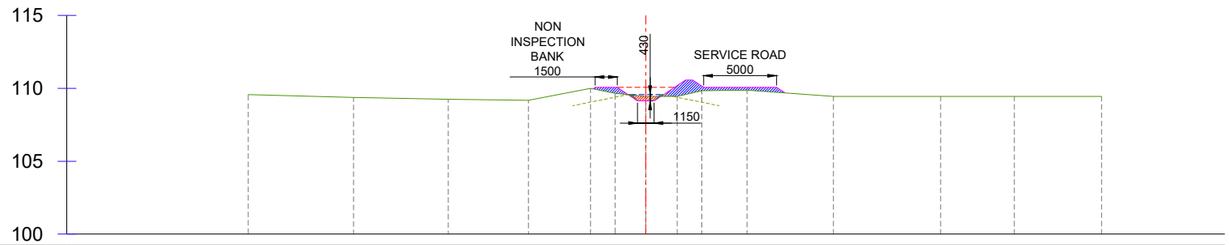
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	109.484	109.504	109.513	109.522	110.055	109.901	109.530	109.902	109.918	109.671	109.421	109.431
OFFSET (KM	28.161	21.889	16.604	9.575	4.160	2.213	0.000	3.892	8.004	15.181	23.024	29.250

CUTTING AREA (SQ.M) = 0.780
FILLING AREA (SQ.M) = 2.747

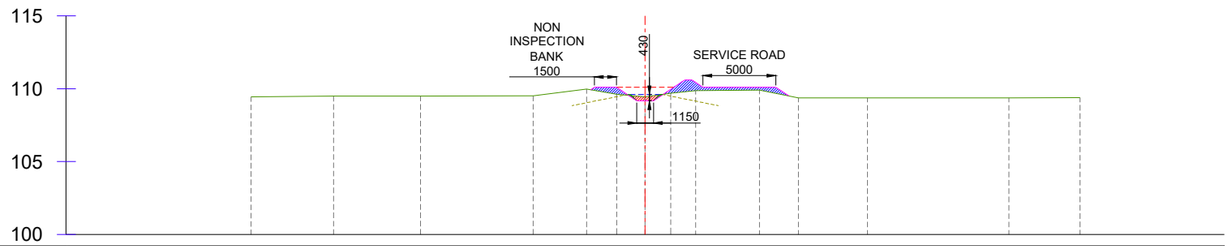
CH. : 10+900 KM
DESIGNED BED LEVEL = 109.195 M



EXIST. LEVEL (KM	109.565	109.373	109.250	109.181	110.004	109.651	109.444	109.447	109.841	109.876	109.445	109.441	109.438	109.446
OFFSET (KM	27.297	20.061	13.560	8.052	3.803	2.102	0.000	2.151	3.847	6.942	12.873	20.227	25.295	31.286

CUTTING AREA (SQ.M) = 0.550
FILLING AREA (SQ.M) = 3.658

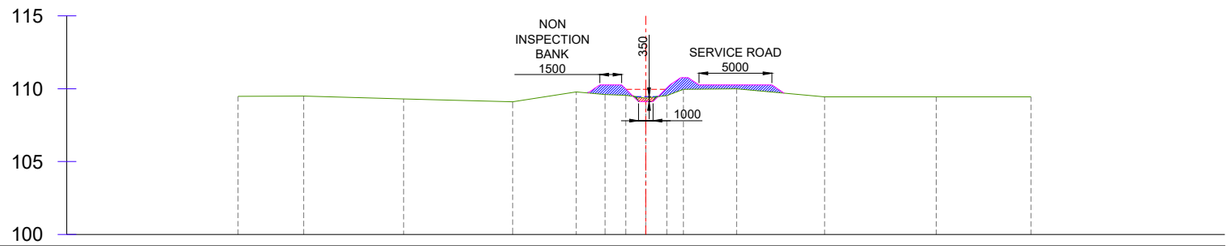
CH. : 11+100 KM
DESIGNED BED LEVEL = 109.140 M



EXIST. LEVEL (KM	109.441	109.487	109.496	109.505	109.967	109.625	109.434	109.862	109.907	109.372	109.374	109.376	109.386
OFFSET (KM	27.040	21.374	15.405	7.676	4.016	1.939	0.000	3.475	7.848	10.515	15.254	24.970	29.859

CUTTING AREA (SQ.M) = 0.554
FILLING AREA (SQ.M) = 3.430

CH. : 11+000 KM
DESIGNED BED LEVEL = 109.167 M



EXIST. LEVEL (KM	109.482	109.495	109.303	109.111	109.788	109.600	109.346	109.956	109.986	109.448	109.444	109.441
OFFSET (KM	27.983	23.487	16.616	9.144	4.767	2.795	0.000	2.584	6.234	12.267	19.925	26.434

CUTTING AREA (SQ.M) = 0.372
FILLING AREA (SQ.M) = 5.103

CH. : 11+200 KM
DESIGNED BED LEVEL = 109.112 M

LEGEND

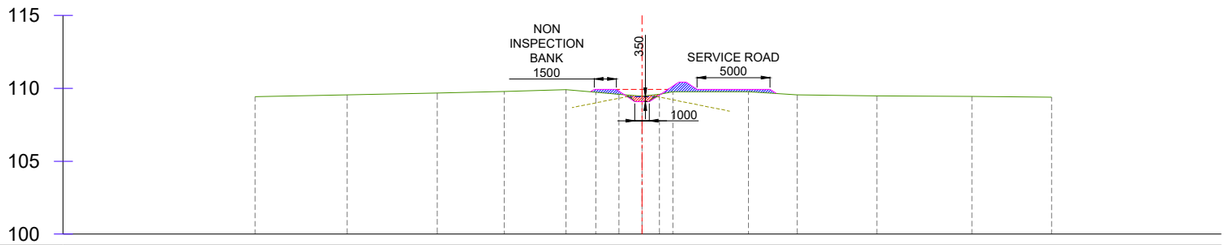
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 28 of 32

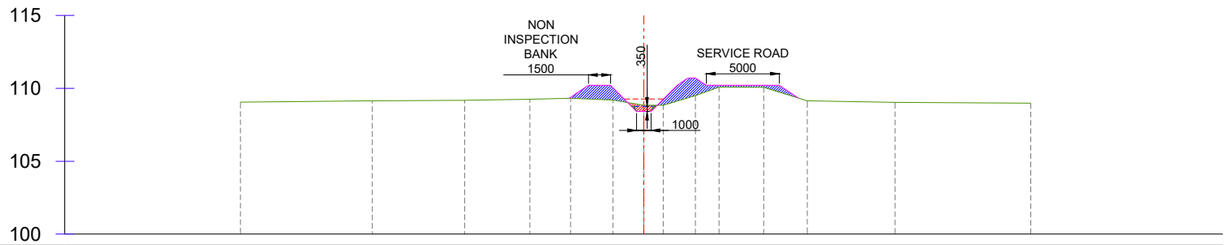
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	109.422	109.550	109.680	109.790	109.903	109.729	109.458	109.771	109.775	109.560	109.490	109.440	109.400
OFFSET (KM	26.560	20.239	14.057	9.460	5.231	3.175	0.000	2.121	7.304	10.657	16.110	22.645	28.109

CUTTING AREA (SQ.M) = 0.712
FILLING AREA (SQ.M) = 2.459

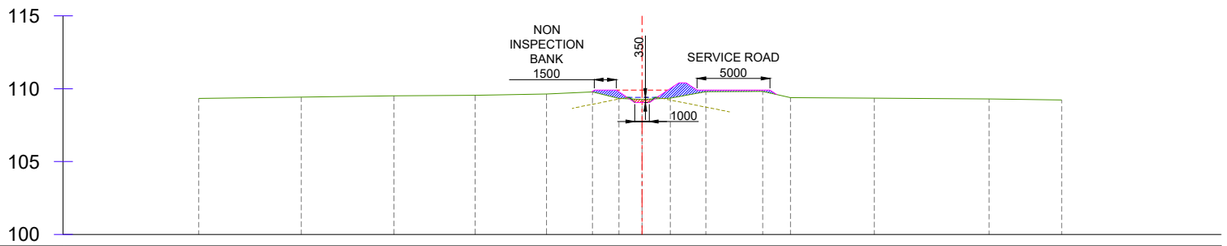
CH. : 11+300 KM
DESIGNED BED LEVEL = 109.084 M



EXIST. LEVEL (KM	109.053	109.150	109.180	109.250	109.328	109.194	108.832	109.505	110.080	110.071	109.140	109.030	108.990
OFFSET (KM	27.680	18.642	12.301	7.820	5.031	2.121	0.000	3.537	5.163	8.228	11.227	17.240	26.560

CUTTING AREA (SQ.M) = 0.675
FILLING AREA (SQ.M) = 6.888

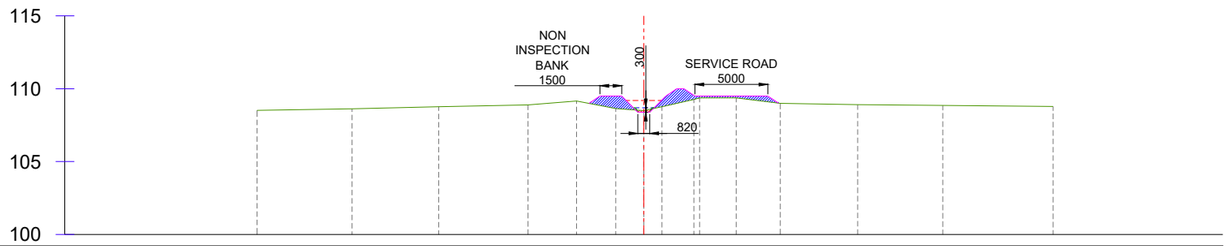
CH. : 11+500 KM
DESIGNED BED LEVEL = 108.418 M



EXIST. LEVEL (KM	109.331	109.422	109.520	109.540	109.630	109.784	109.269	109.356	109.792	109.809	109.390	109.350	109.290	109.220
OFFSET (KM	30.423	23.395	17.042	11.465	6.553	3.411	0.000	1.935	4.374	8.271	10.179	15.931	23.804	28.805

CUTTING AREA (SQ.M) = 0.312
FILLING AREA (SQ.M) = 3.083

CH. : 11+400 KM
DESIGNED BED LEVEL = 109.056 M



EXIST. LEVEL (KM	108.510	108.620	108.770	108.890	109.160	108.640	108.490	109.369	109.375	108.990	108.910	108.850	108.780
OFFSET (KM	26.549	20.024	14.067	7.950	4.608	1.928	0.000	3.832	6.337	9.361	14.682	20.521	28.092

CUTTING AREA (SQ.M) = 0.139
FILLING AREA (SQ.M) = 4.664

CH. : 11+600 KM
DESIGNED BED LEVEL = 108.391 M

LEGEND

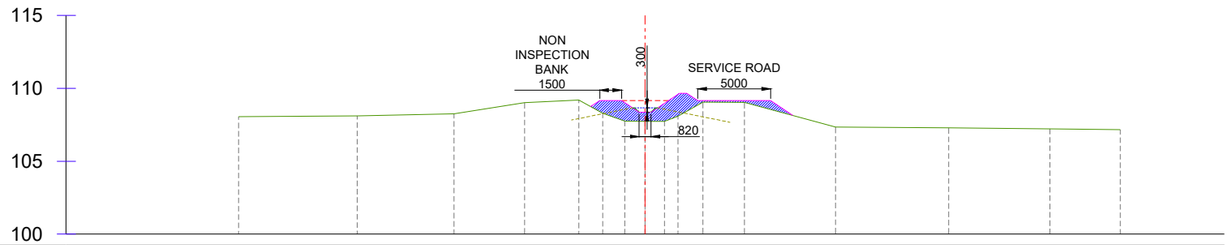
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 29 of 32

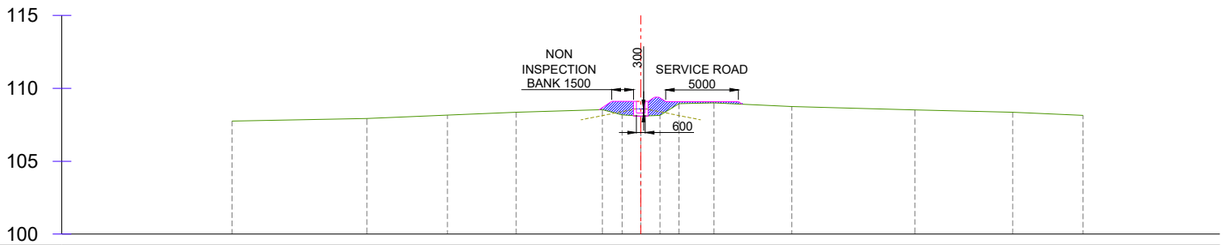
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	108.050	108.102	108.259	109.023	109.190	108.282	107.741	108.093	109.060	109.038	107.351	107.290	107.220	107.170
OFFSET (KM	27.906	19.757	13.119	8.269	4.555	2.904	0.000	2.264	3.963	6.827	13.079	20.839	27.786	32.606

CUTTING AREA (SQ.M) = 000.000
FILLING AREA (SQ.M) = 8.630

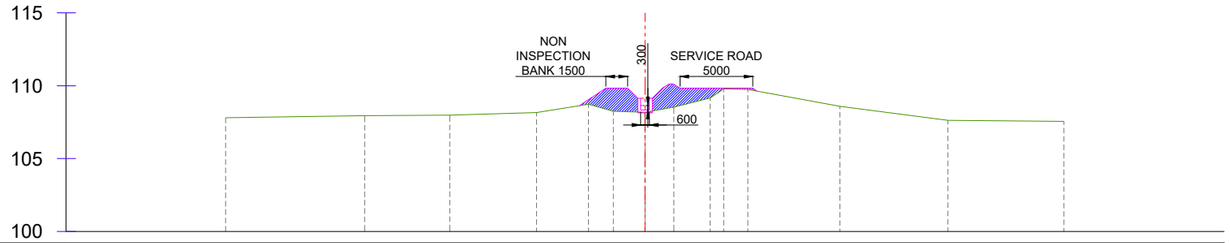
CH. : 11+700 KM
DESIGNED BED LEVEL = 108.363 M



EXIST. LEVEL (KM	107.750	107.940	108.160	108.360	108.529	108.092	108.955	108.998	108.750	108.520	108.360	108.150		
OFFSET (KM	28.057	18.787	13.278	8.552	2.632	0.000	2.624	5.027	10.364	18.810	25.519	30.344		

CUTTING AREA (SQ.M) = 0.008
FILLING AREA (SQ.M) = 3.842

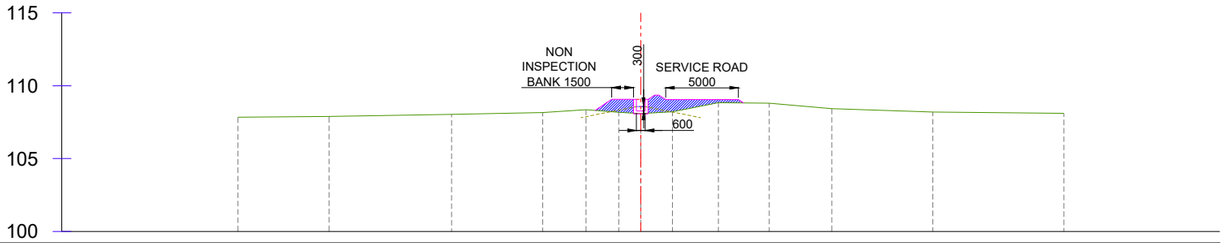
CH. : 11+900 KM
DESIGNED BED LEVEL = 108.299 M



EXIST. LEVEL (KM	107.810	107.950	107.980	108.150	108.729	108.253	108.180	108.529	109.156	109.751	108.590	107.623	107.546	
OFFSET (KM	28.786	19.251	13.402	7.444	3.891	2.183	0.000	1.977	4.464	7.052	13.368	20.785	28.754	

CUTTING AREA (SQ.M) = 0.074
FILLING AREA (SQ.M) = 9.390

CH. : 11+800 KM
DESIGNED BED LEVEL = 108.332 M



EXIST. LEVEL (KM	107.830	107.883	108.040	108.163	108.354	108.173	108.090	108.209	108.836	108.802	108.432	108.202	108.101	
OFFSET (KM	27.643	21.388	12.981	6.735	3.763	1.520	0.000	2.171	5.327	8.812	13.101	20.045	29.026	

CUTTING AREA (SQ.M) = 0.038
FILLING AREA (SQ.M) = 5.595

CH. : 12+000 KM
DESIGNED BED LEVEL = 108.266 M

LEGEND

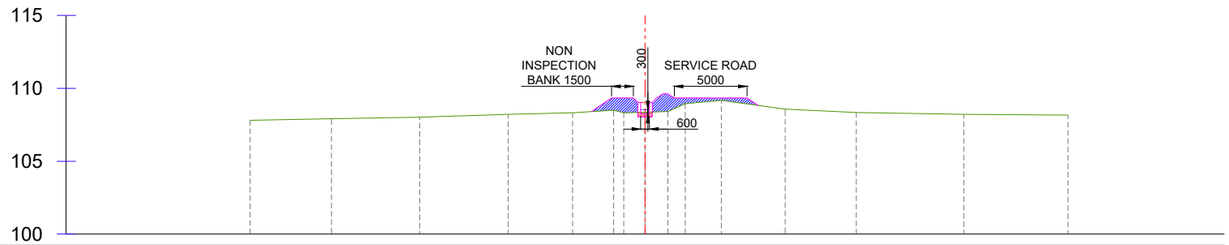
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 30 of 32

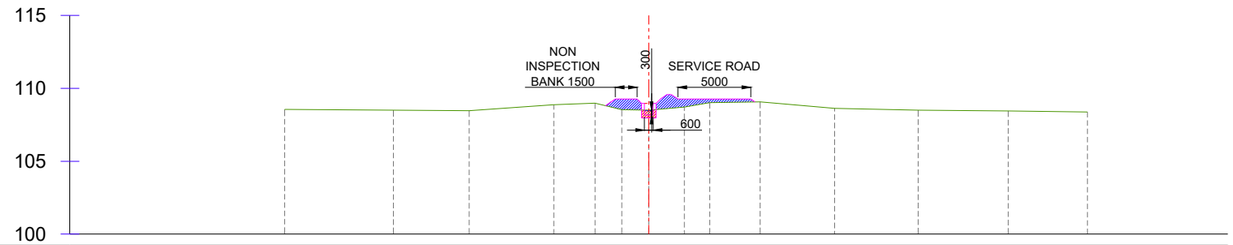
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	107.812	107.920	108.020	108.220	108.320	108.495	108.355	108.951	109.171	108.570	108.340	108.220	108.170
OFFSET (KM	27.124	21.515	15.458	9.391	4.981	2.160	0.000	2.758	5.239	9.617	14.503	21.868	29.032

CUTTING AREA (SQ.M) = 0.325
FILLING AREA (SQ.M) = 5.546

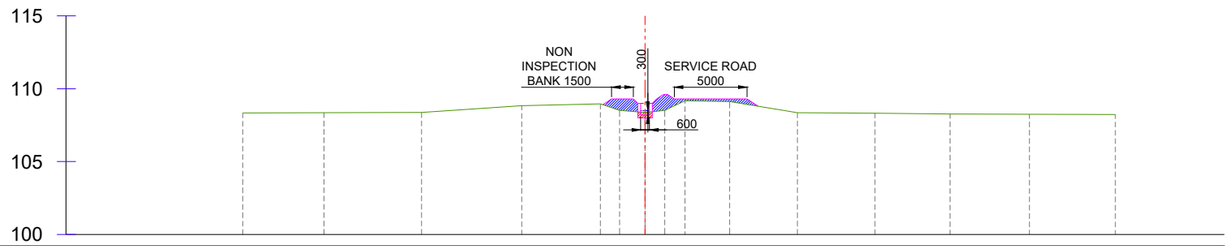
CH. : 12+100 KM
DESIGNED BED LEVEL = 108.232 M



EXIST. LEVEL (KM	108.556	108.505	108.463	108.881	108.985	108.530	108.509	108.720	109.023	109.077	108.620	108.500	108.440	108.380
OFFSET (KM	24.996	17.527	12.323	6.522	3.686	1.848	0.000	2.443	4.192	7.646	12.747	18.490	24.664	30.110

CUTTING AREA (SQ.M) = 0.555
FILLING AREA (SQ.M) = 4.222

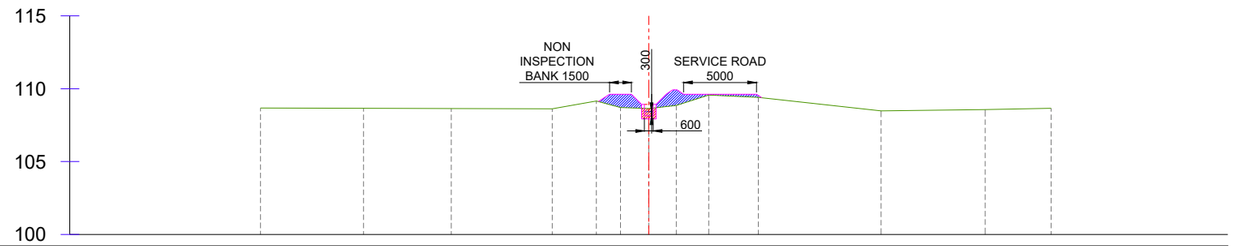
CH. : 12+300 KM
DESIGNED BED LEVEL = 108.166 M



EXIST. LEVEL (KM	108.344	108.360	108.380	108.837	108.966	108.371	109.178	109.114	108.355	108.320	108.260	108.250	108.238
OFFSET (KM	27.610	22.045	15.343	8.464	3.069	0.000	2.730	5.799	10.459	15.770	20.923	26.384	32.273

CUTTING AREA (SQ.M) = 0.395
FILLING AREA (SQ.M) = 4.027

CH. : 12+200 KM
DESIGNED BED LEVEL = 108.199 M



EXIST. LEVEL (KM	108.677	108.650	108.640	108.617	109.149	108.635	108.848	109.560	109.406	108.487	108.560	108.652
OFFSET (KM	26.646	19.576	13.561	6.624	3.595	0.000	1.885	4.112	7.514	15.932	23.089	27.610

CUTTING AREA (SQ.M) = 0.722
FILLING AREA (SQ.M) = 4.566

CH. : 12+400 KM
DESIGNED BED LEVEL = 108.132 M

LEGEND

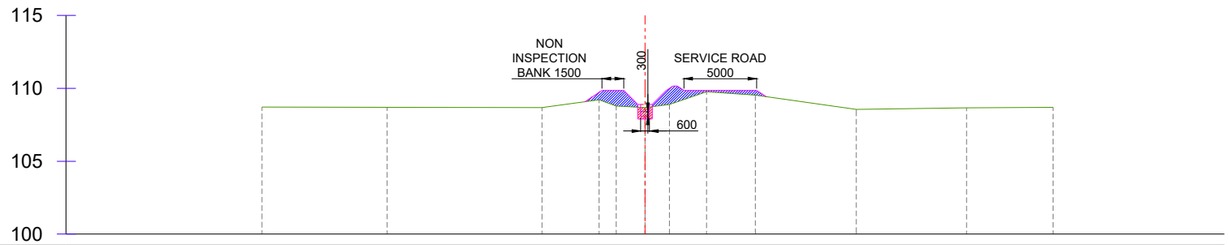
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 31 of 32

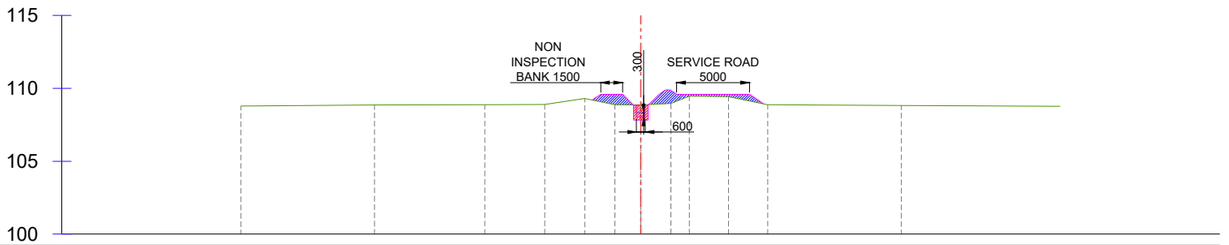
X SECTION OF BUDHAUL SUB DISTY



EXIST. LEVEL (KM	108.721	108.700	108.676	109.210	108.684	108.898	109.766	109.531	108.557	108.660	108.697
OFFSET (KM	26.288	17.712	7.083	3.157	0.000	1.677	4.212	7.568	14.493	22.072	28.004

CUTTING AREA (SQ.M) = 0.807
FILLING AREA (SQ.M) = 5.642

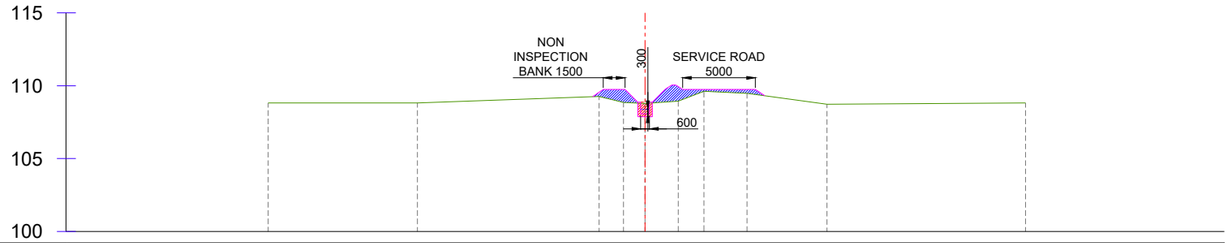
CH. : 12+500 KM
DESIGNED BED LEVEL = 108.099 M



EXIST. LEVEL (KM	108.790	108.860	108.880	108.900	109.300	108.880	108.850	109.470	109.434	108.880	108.820
OFFSET (KM	27.459	18.273	10.701	6.589	3.847	1.779	0.000	3.327	6.013	8.701	17.878

CUTTING AREA (SQ.M) = 1.028
FILLING AREA (SQ.M) = 3.842

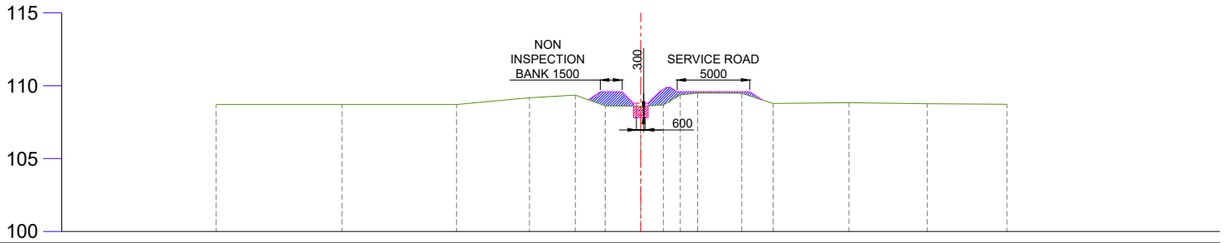
CH. : 12+700 KM
DESIGNED BED LEVEL = 108.032 M



EXIST. LEVEL (KM	108.818	108.811	109.263	108.790	108.948	109.615	109.477	108.724	108.811		
OFFSET (KM	25.870	15.633	3.164	0.000	2.272	4.037	7.005	12.488	26.112		

CUTTING AREA (SQ.M) = 0.937
FILLING AREA (SQ.M) = 4.713

CH. : 12+600 KM
DESIGNED BED LEVEL = 108.066 M



EXIST. LEVEL (KM	108.707	108.711	108.711	109.181	109.349	108.628	108.579	109.365	109.478	108.780	108.831	108.760	108.723
OFFSET (KM	29.142	20.512	12.643	7.643	4.483	2.446	0.000	2.709	6.934	9.083	14.292	19.665	25.139

CUTTING AREA (SQ.M) = 0.790
FILLING AREA (SQ.M) = 4.511

CH. : 12+750 KM
DESIGNED BED LEVEL = 107.999 M

LEGEND

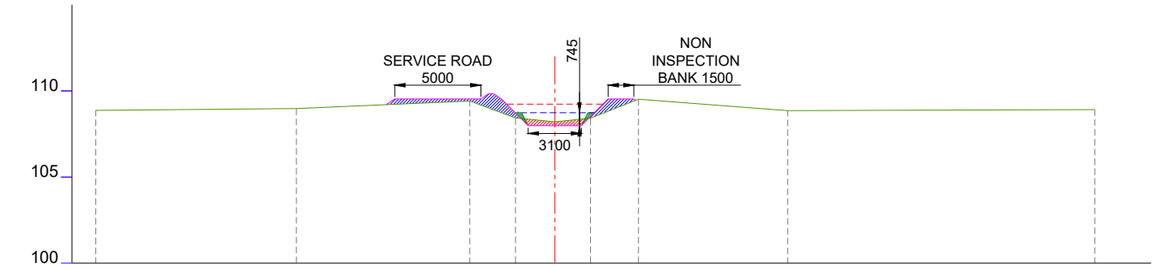
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF BUDHAUL SUB DY. (OFFTAKE FROM 9+600 KM, ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ XSEC- 32 of 32

X SECTION OF DHARAMPUR SUB DY. MINOR

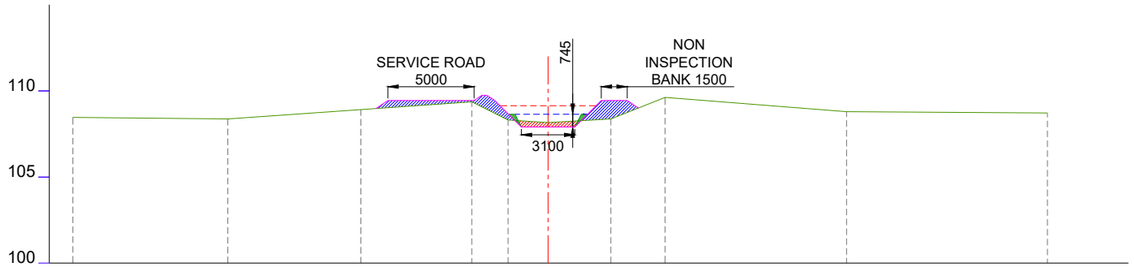


EXIST. LEVEL (M)	108.861	108.969	109.413	108.425	108.208	108.422	109.519	108.852	108.906
OFFSET (M)	26.659	15.004	4.943	2.282	0.000	2.064	4.860	13.527	31.348

CUTTING AREA (SQ.M) = 1.106
FILLING AREA (SQ.M) = 3.549

CH : 0+100 KM

DESIGNED BED LEVEL = 107.940 M

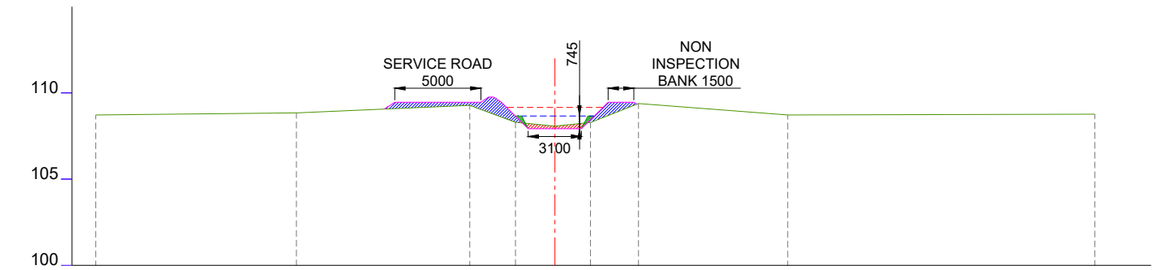


EXIST. LEVEL (M)	108.455	108.374	108.919	109.358	108.310	108.154	108.374	109.619	108.792	108.724
OFFSET (M)	27.592	18.604	10.874	4.438	2.326	0.000	3.639	6.795	17.325	28.996

CUTTING AREA (SQ.M) = 1.082
FILLING AREA (SQ.M) = 4.952

CH : 0+300 KM

DESIGNED BED LEVEL = 107.898 M

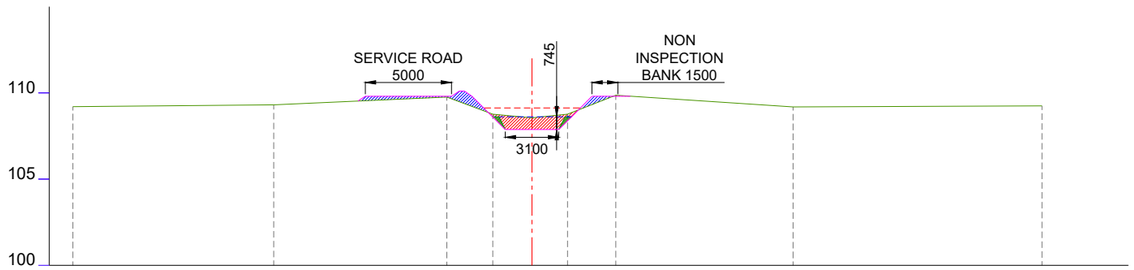


EXIST. LEVEL (M)	108.728	108.836	109.280	108.292	108.075	108.289	109.386	108.719	108.773
OFFSET (M)	26.659	15.004	4.943	2.282	0.000	2.064	4.860	13.527	31.347

CUTTING AREA (SQ.M) = 0.829
FILLING AREA (SQ.M) = 4.315

CH : 0+200 KM

DESIGNED BED LEVEL = 107.919 M



EXIST. LEVEL (M)	109.203	109.311	109.755	108.767	108.550	108.764	109.861	109.194	109.248
OFFSET (M)	26.659	15.004	4.943	2.281	0.000	2.064	4.861	15.156	29.615

CUTTING AREA (SQ.M) = 3.150
FILLING AREA (SQ.M) = 2.266

CH : 0+400 KM

DESIGNED BED LEVEL = 107.878 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

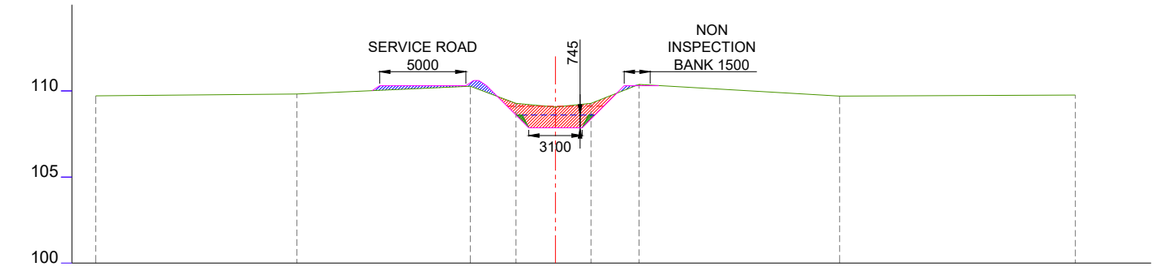
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 1 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

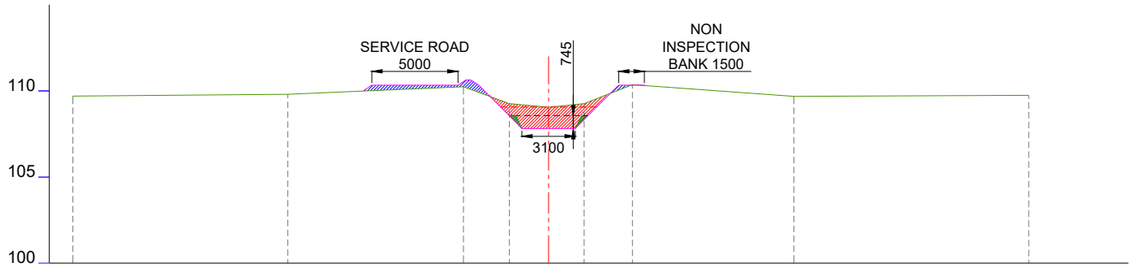


EXIST. LEVEL (M)	109.711	109.819	110.263	109.275	109.058	109.272	110.369	109.702	109.756
OFFSET (M)	26.694	15.004	4.943	2.282	0.000	2.065	4.860	16.509	30.192

CUTTING AREA (SQ.M) = 6.372
FILLING AREA (SQ.M) = 1.591

CH : 0+500 KM

DESIGNED BED LEVEL = 107.857 M

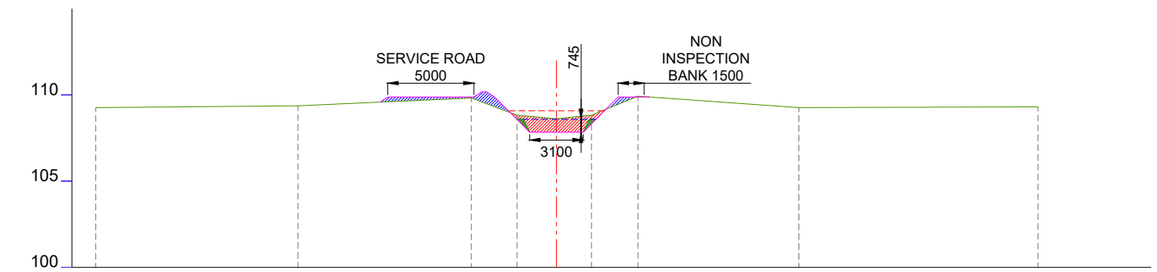


EXIST. LEVEL (M)	109.694	109.802	110.246	109.258	109.041	109.255	110.352	109.685	109.739
OFFSET (M)	27.623	15.146	4.943	2.281	0.000	2.064	4.861	14.242	27.875

CUTTING AREA (SQ.M) = 6.509
FILLING AREA (SQ.M) = 1.883

CH : 0+700 KM

DESIGNED BED LEVEL = 107.815 M

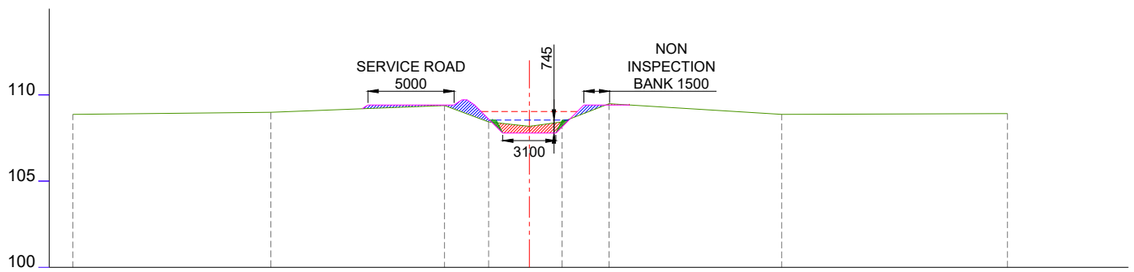


EXIST. LEVEL (M)	109.268	109.376	109.820	108.832	108.615	108.829	109.926	109.259	109.313
OFFSET (M)	26.753	15.004	4.943	2.282	0.000	2.033	4.735	14.083	27.957

CUTTING AREA (SQ.M) = 3.733
FILLING AREA (SQ.M) = 2.132

CH : 0+600 KM

DESIGNED BED LEVEL = 107.836 M



EXIST. LEVEL (M)	108.877	108.985	109.387	108.438	108.181	108.433	109.487	108.869	108.922
OFFSET (M)	26.499	14.998	4.928	2.356	0.000	1.908	4.626	14.660	27.769

CUTTING AREA (SQ.M) = 1.935
FILLING AREA (SQ.M) = 2.248

CH : 0+800 KM

DESIGNED BED LEVEL = 107.794 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

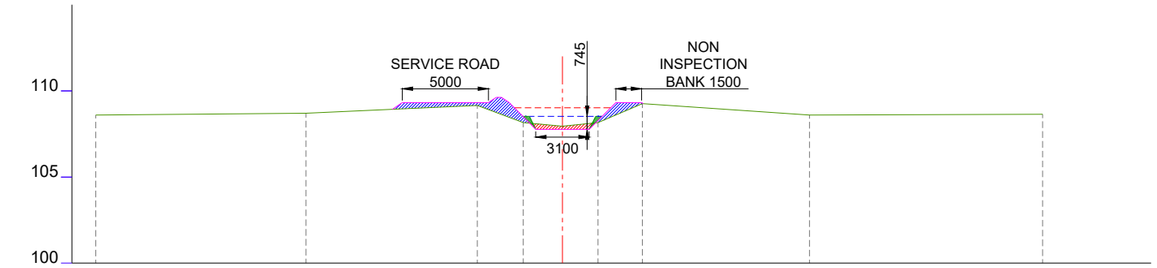
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 2 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

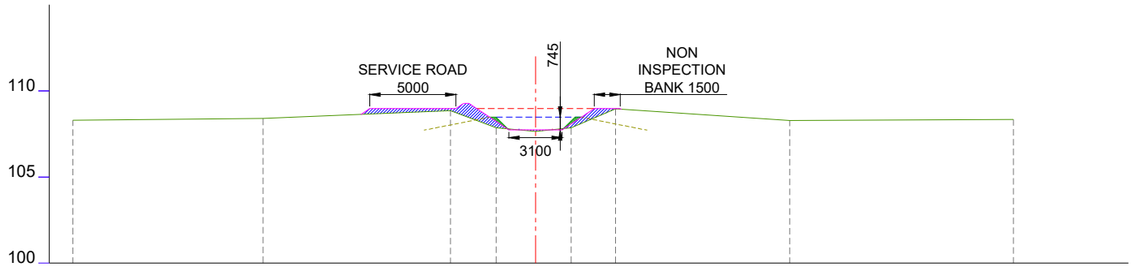


EXIST. LEVEL (M)	108.600	108.708	109.152	108.164	107.947	108.161	109.258	108.591	108.645
OFFSET (M)	27.106	14.899	4.943	2.282	0.000	2.064	4.635	14.339	27.874

CUTTING AREA (SQ.M) = 0.898
FILLING AREA (SQ.M) = 4.006

CH : 0+900 KM

DESIGNED BED LEVEL = 107.773 M

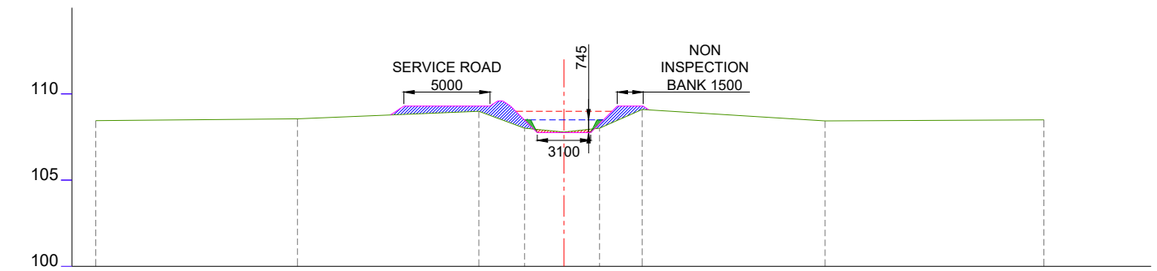


EXIST. LEVEL (M)	108.293	108.401	108.845	107.857	107.640	107.854	108.951	108.284	108.338
OFFSET (M)	26.860	15.814	4.943	2.282	0.000	2.064	4.655	14.758	27.753

CUTTING AREA (SQ.M) = 0.046
FILLING AREA (SQ.M) = 3.740

CH : 1+100 KM

DESIGNED BED LEVEL = 107.732 M

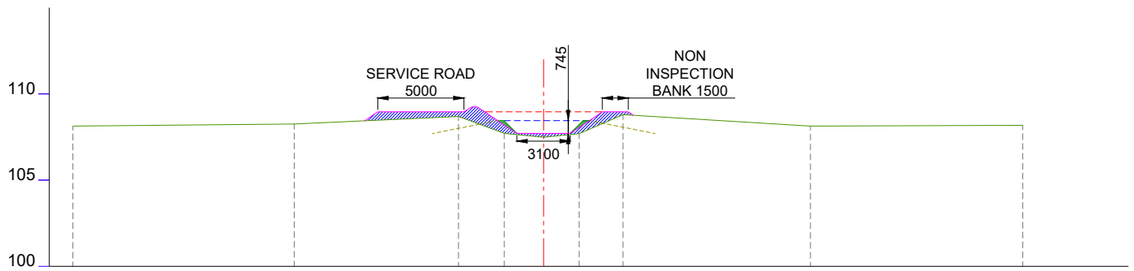


EXIST. LEVEL (M)	108.447	108.555	108.999	108.011	107.794	108.008	109.105	108.438	108.492
OFFSET (M)	27.189	15.466	4.943	2.281	0.000	2.064	4.541	15.168	27.869

CUTTING AREA (SQ.M) = 0.408
FILLING AREA (SQ.M) = 5.401

CH : 1+000 KM

DESIGNED BED LEVEL = 107.753 M



EXIST. LEVEL (M)	108.140	108.248	108.692	107.704	107.487	107.701	108.798	108.131	108.185
OFFSET (M)	27.328	14.474	4.943	2.281	0.000	2.064	4.611	15.504	27.822

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 5.779

CH : 1+200 KM

DESIGNED BED LEVEL = 107.711 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

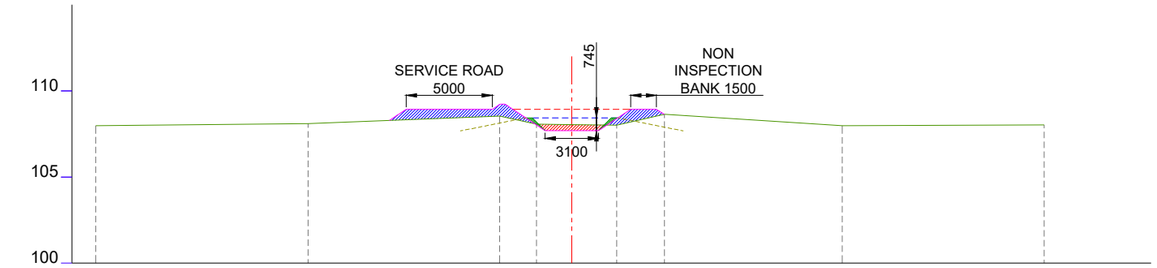
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 3 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

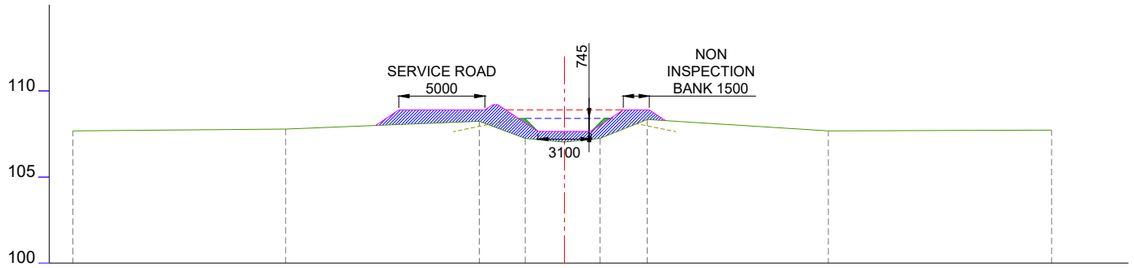


EXIST. LEVEL (M)	107.985	108.093	108.539	108.062	108.040	108.014	108.644	107.976	108.030
OFFSET (M)	27.647	15.316	4.188	2.051	0.000	2.599	5.374	15.698	27.419

CUTTING AREA (SQ.M) = 1.272
FILLING AREA (SQ.M) = 5.496

CH : 1+300 KM

DESIGNED BED LEVEL = 107.690 M

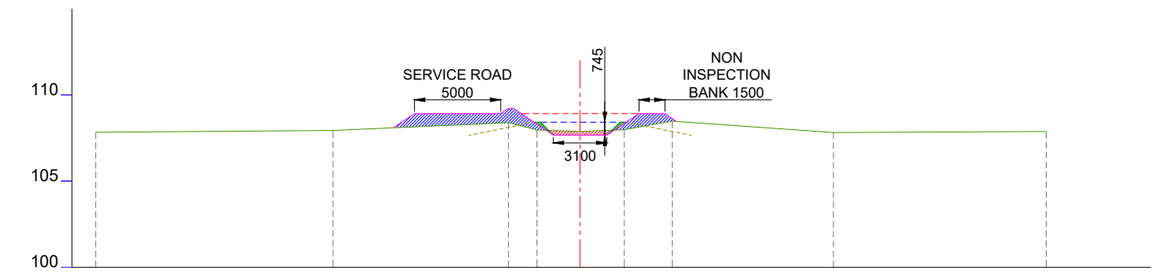


EXIST. LEVEL (M)	107.681	107.789	108.233	107.245	107.028	107.242	108.339	107.672	107.726
OFFSET (M)	28.546	16.195	4.943	2.282	0.000	2.064	4.804	15.317	28.283

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 12.168

CH : 1+500 KM

DESIGNED BED LEVEL = 107.648 M

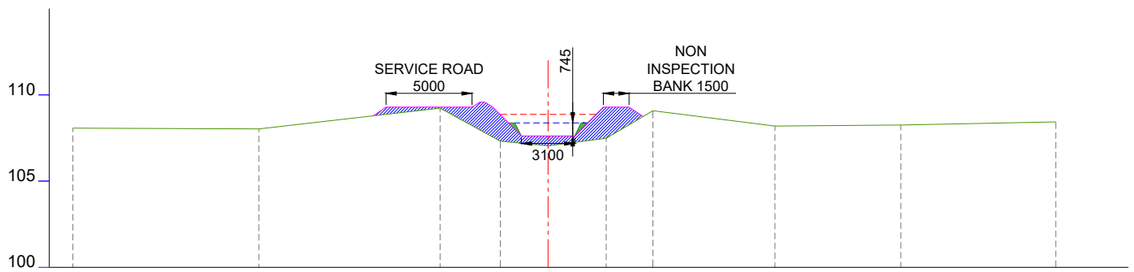


EXIST. LEVEL (M)	107.833	107.941	108.382	107.974	107.882	107.983	108.486	107.824	107.878
OFFSET (M)	28.131	14.346	4.161	2.506	0.000	2.557	5.347	14.698	27.064

CUTTING AREA (SQ.M) = 0.870
FILLING AREA (SQ.M) = 6.980

CH : 1+400 KM

DESIGNED BED LEVEL = 107.669 M



EXIST. LEVEL (M)	108.075	108.035	109.226	107.313	107.041	107.489	109.089	108.192	108.256	108.439
OFFSET (M)	27.589	16.790	6.265	2.779	0.000	3.384	6.084	13.178	20.489	29.475

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 11.763

CH : 1+600 KM

DESIGNED BED LEVEL = 107.628 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

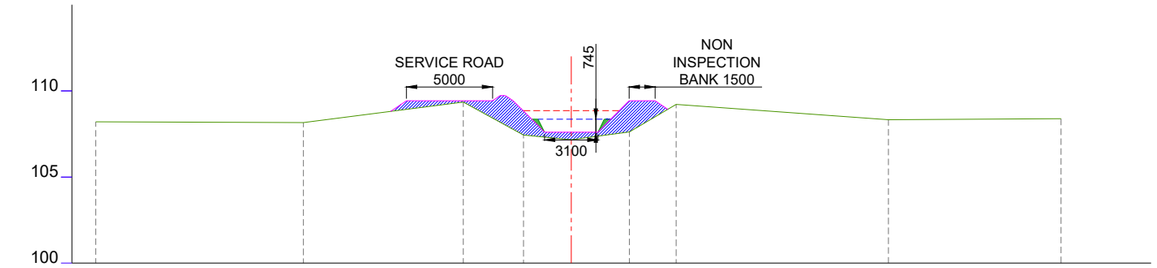
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 4 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

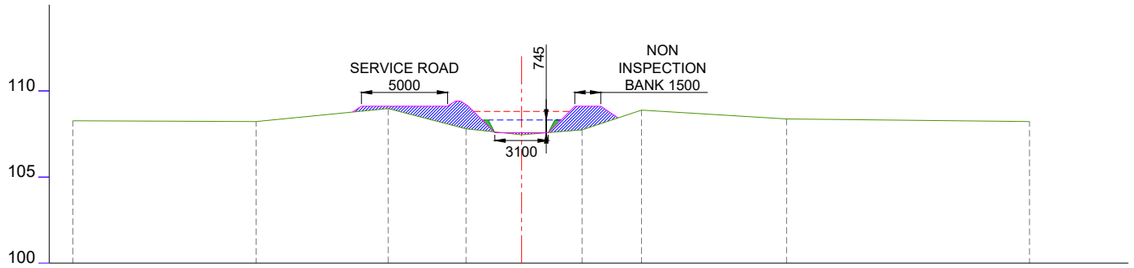


EXIST. LEVEL (M)	108.205	108.165	109.356	107.443	107.171	107.619	109.219	108.322	108.386
OFFSET (M)	27.613	15.553	6.265	2.778	0.000	3.385	6.086	18.425	28.443

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 11.152

CH : 1+700 KM

DESIGNED BED LEVEL = 107.607 M

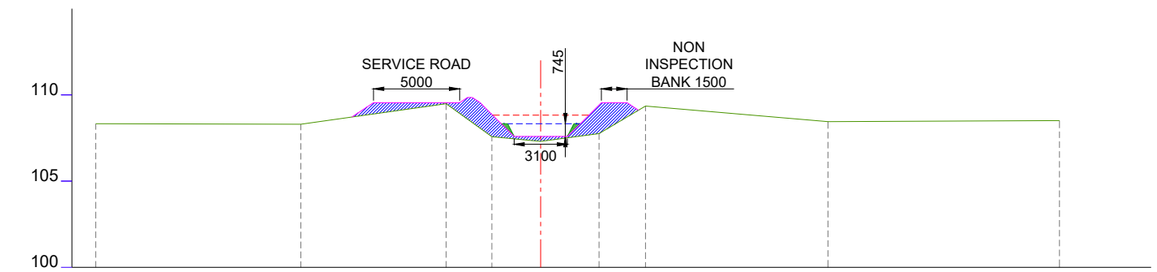


EXIST. LEVEL (M)	108.259	108.224	108.970	107.796	107.458	107.732	108.884	108.365	108.216
OFFSET (M)	26.052	15.420	7.746	3.223	0.000	3.506	6.962	15.388	29.500

CUTTING AREA (SQ.M) = 0.018
FILLING AREA (SQ.M) = 8.672

CH : 1+900 KM

DESIGNED BED LEVEL = 107.565 M

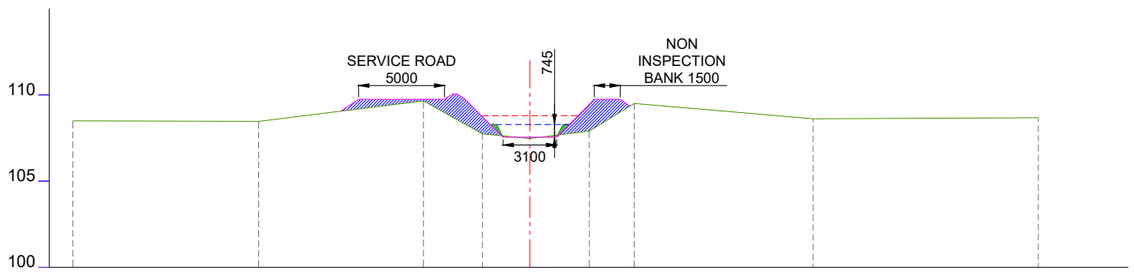


EXIST. LEVEL (M)	108.336	108.296	109.487	107.574	107.302	107.750	109.350	108.453	108.517
OFFSET (M)	25.844	13.926	5.498	2.834	0.000	3.385	6.084	16.680	30.117

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 10.197

CH : 1+800 KM

DESIGNED BED LEVEL = 107.586 M



EXIST. LEVEL (M)	108.498	108.458	109.649	107.736	107.464	107.912	109.512	108.615	108.679
OFFSET (M)	26.530	15.740	6.173	2.760	0.000	3.459	6.070	16.453	29.526

CUTTING AREA (SQ.M) = 0.094
FILLING AREA (SQ.M) = 9.287

CH : 2+000 KM

DESIGNED BED LEVEL = 107.544 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

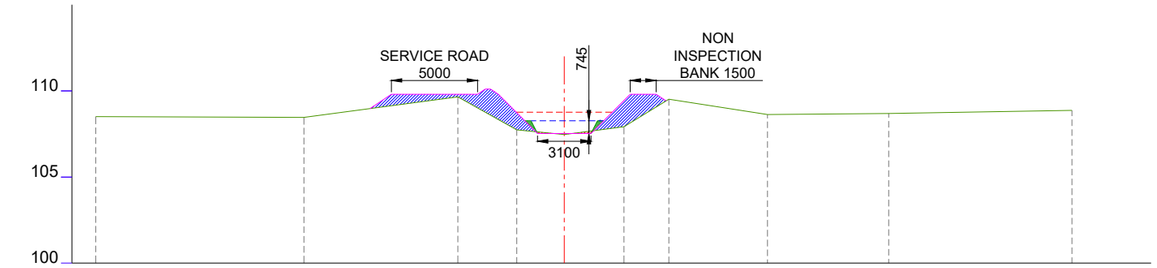
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 5 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

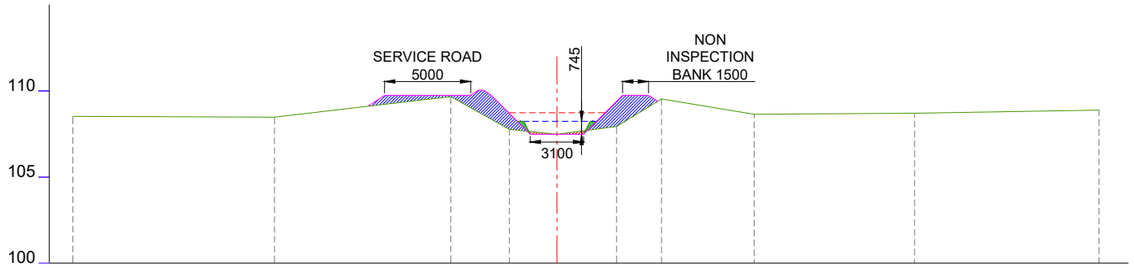


EXIST. LEVEL (M)	108.506	108.466	109.657	107.744	107.472	107.920	109.520	108.623	108.687	108.870
OFFSET (M)	27.208	15.113	6.173	2.760	0.000	3.459	6.070	11.794	18.836	29.484

CUTTING AREA (SQ.M) = 0.158
FILLING AREA (SQ.M) = 9.861

CH : 2+100 KM

DESIGNED BED LEVEL = 107.523 M

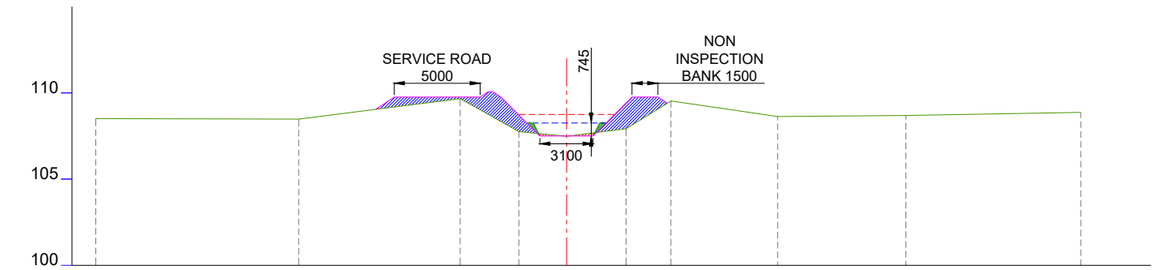


EXIST. LEVEL (M)	108.522	108.482	109.673	107.760	107.488	107.936	109.536	108.639	108.703	108.886
OFFSET (M)	28.106	16.403	6.173	2.760	0.000	3.459	6.070	11.446	20.763	31.478

CUTTING AREA (SQ.M) = 0.331
FILLING AREA (SQ.M) = 8.651

CH : 2+300 KM

DESIGNED BED LEVEL = 107.482 M

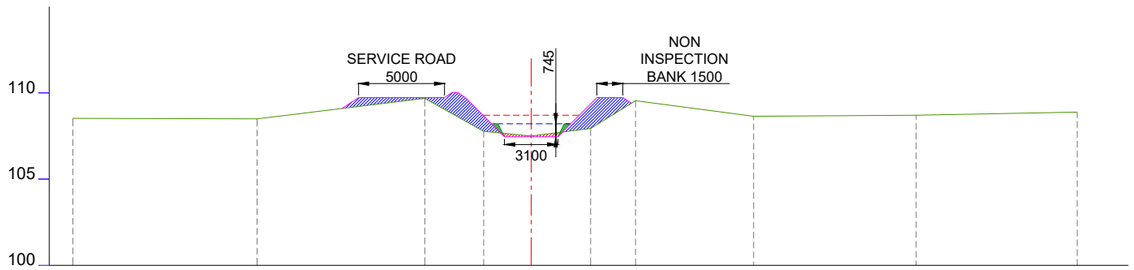


EXIST. LEVEL (M)	108.514	108.474	109.665	107.752	107.480	107.928	109.528	108.631	108.695	108.878
OFFSET (M)	27.336	15.544	6.173	2.760	0.000	3.459	6.070	12.264	19.698	29.867

CUTTING AREA (SQ.M) = 0.235
FILLING AREA (SQ.M) = 9.122

CH : 2+200 KM

DESIGNED BED LEVEL = 107.503 M



EXIST. LEVEL (M)	108.530	108.490	109.681	107.768	107.496	107.944	109.544	108.647	108.711	108.894
OFFSET (M)	26.606	15.909	6.173	2.760	0.000	3.459	6.070	12.918	22.356	31.712

CUTTING AREA (SQ.M) = 0.434
FILLING AREA (SQ.M) = 8.463

CH : 2+400 KM

DESIGNED BED LEVEL = 107.461 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

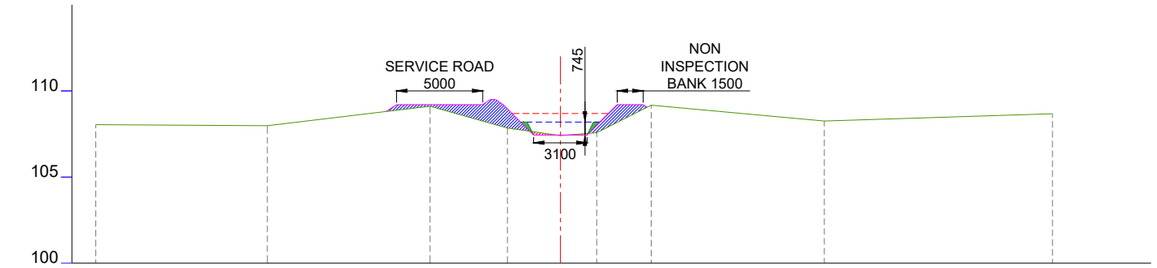
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 6 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

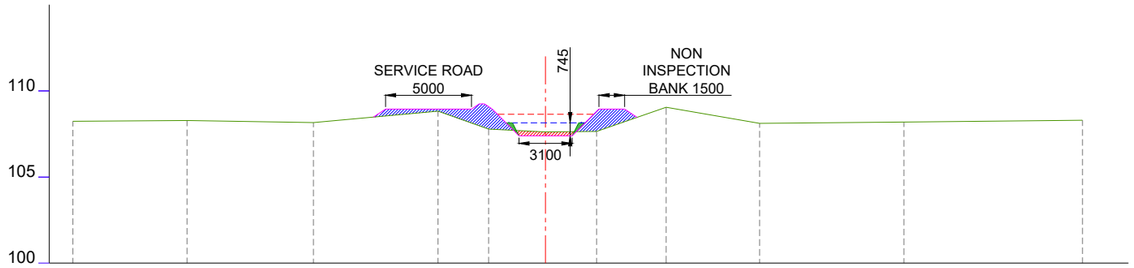


EXIST. LEVEL (M)	108.046	107.977	109.107	107.841	107.405	107.569	109.175	108.249	108.677
OFFSET (M)	26.978	17.007	7.561	3.076	0.000	2.107	5.273	15.334	28.582

CUTTING AREA (SQ.M) = 0.193
FILLING AREA (SQ.M) = 6.660

CH : 2+500 KM

DESIGNED BED LEVEL = 107.440 M

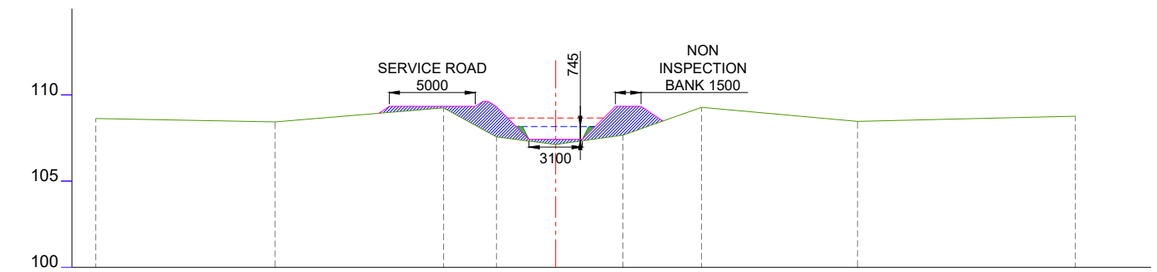


EXIST. LEVEL (M)	108.241	108.275	108.154	108.819	107.778	107.618	107.649	109.042	108.108	108.194	108.296
OFFSET (M)	27.445	20.812	13.474	6.249	3.306	0.000	2.970	6.995	12.424	20.811	31.171

CUTTING AREA (SQ.M) = 0.827
FILLING AREA (SQ.M) = 6.634

CH : 2+700 KM

DESIGNED BED LEVEL = 107.398 M

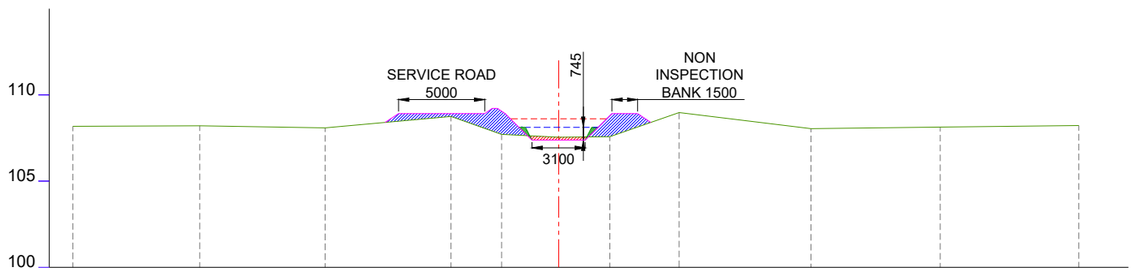


EXIST. LEVEL (M)	108.624	108.439	109.247	107.566	107.125	107.660	109.277	108.458	108.766
OFFSET (M)	26.708	16.294	6.510	3.429	0.000	3.907	8.477	17.527	30.168

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 11.054

CH : 2+600 KM

DESIGNED BED LEVEL = 107.419 M



EXIST. LEVEL (M)	108.175	108.209	108.088	108.753	107.712	107.552	107.583	108.976	108.042	108.129	108.230
OFFSET (M)	28.201	20.829	13.562	6.249	3.305	0.000	2.972	6.995	14.661	22.155	30.210

CUTTING AREA (SQ.M) = 0.661
FILLING AREA (SQ.M) = 7.168

CH : 2+800 KM

DESIGNED BED LEVEL = 107.378 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

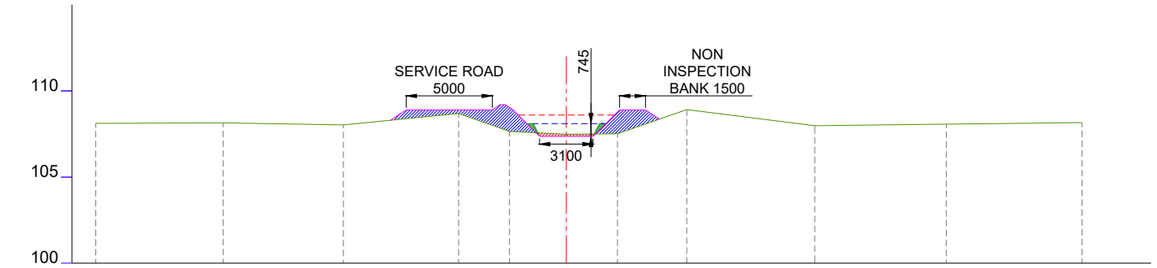
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 7 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

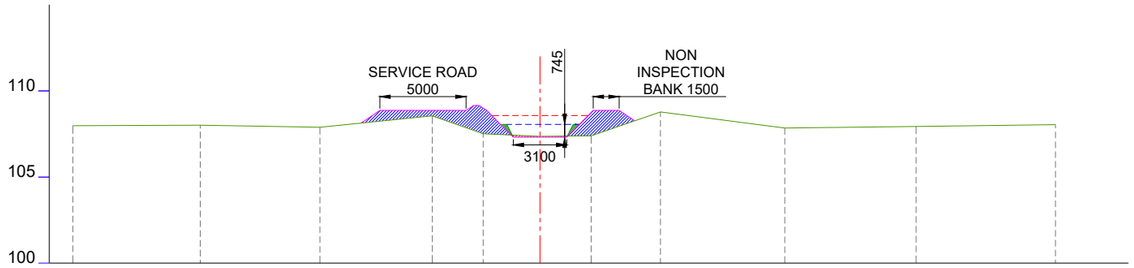


EXIST. LEVEL (M)	108.110	108.144	108.023	108.688	108.647	108.487	107.518	108.911	107.977	108.063	108.165
OFFSET (M)	27.330	19.918	12.954	6.248	3.305	0.000	2.971	6.995	14.426	22.067	29.940

CUTTING AREA (SQ.M) = 0.507
FILLING AREA (SQ.M) = 7.758

CH : 2+900 KM

DESIGNED BED LEVEL = 107.357 M

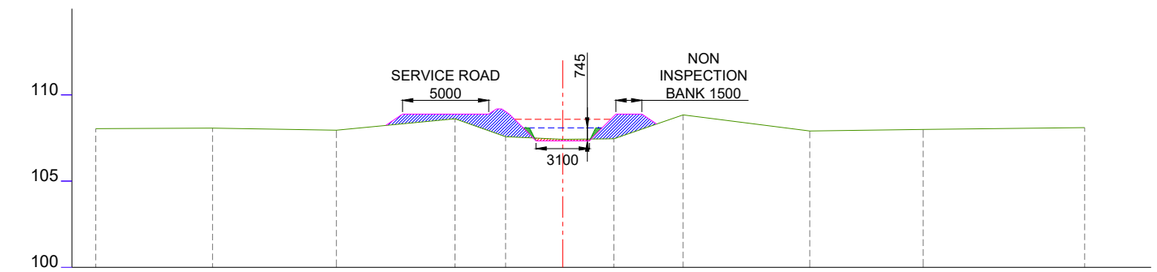


EXIST. LEVEL (M)	107.978	108.012	107.891	108.556	107.515	107.355	107.386	108.779	107.845	107.931	108.033
OFFSET (M)	27.123	19.728	12.778	6.249	3.305	0.000	2.971	6.996	14.208	21.835	29.923

CUTTING AREA (SQ.M) = 0.203
FILLING AREA (SQ.M) = 8.894

CH : 3+100 KM

DESIGNED BED LEVEL = 107.315 M

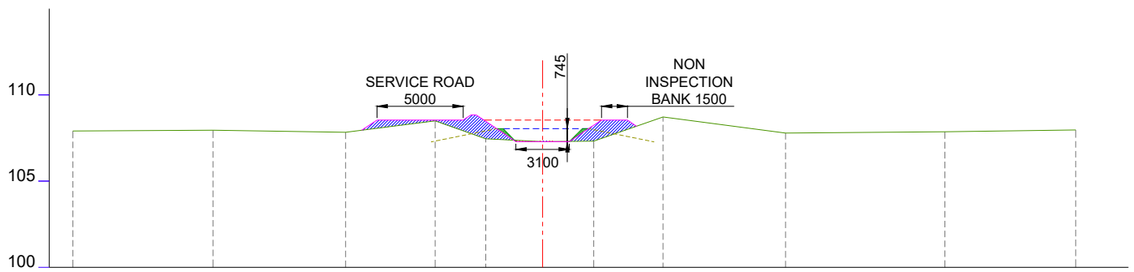


EXIST. LEVEL (M)	108.044	108.078	107.957	108.622	107.581	107.421	107.452	108.845	107.911	107.997	108.099
OFFSET (M)	27.115	20.325	13.144	6.250	3.306	0.000	2.970	6.995	14.342	20.939	30.302

CUTTING AREA (SQ.M) = 0.353
FILLING AREA (SQ.M) = 8.288

CH : 3+000 KM

DESIGNED BED LEVEL = 107.336 M



EXIST. LEVEL (M)	107.913	107.947	107.826	108.491	107.450	107.290	107.321	108.714	107.780	107.866	107.968
OFFSET (M)	27.278	19.150	11.437	6.249	3.306	0.000	2.971	6.995	14.104	23.349	30.953

CUTTING AREA (SQ.M) = 0.063
FILLING AREA (SQ.M) = 6.270

CH : 3+200 KM

DESIGNED BED LEVEL = 107.294 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

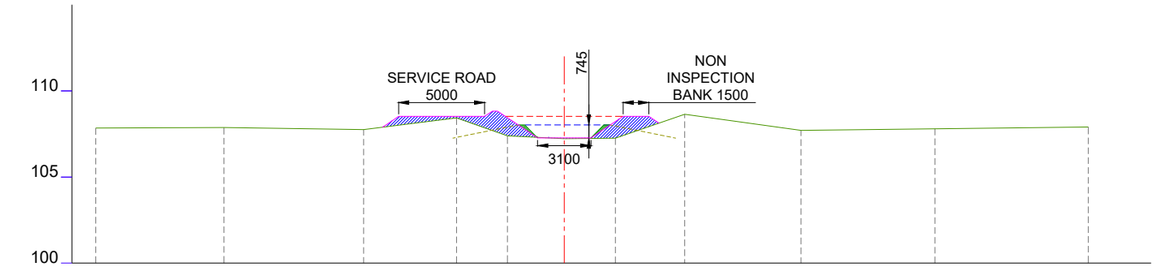
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 8 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

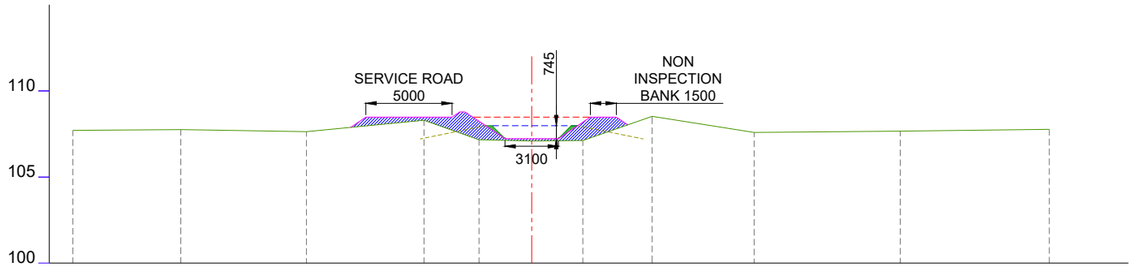


EXIST. LEVEL (M)	107.846	107.880	107.759	108.424	107.383	107.223	107.254	108.647	107.713	107.800	107.901
OFFSET (M)	27.205	19.758	11.648	6.249	3.305	0.000	2.971	6.995	13.749	21.519	30.432

CUTTING AREA (SQ.M) = 0.007
FILLING AREA (SQ.M) = 6.904

CH : 3+300 KM

DESIGNED BED LEVEL = 107.273 M

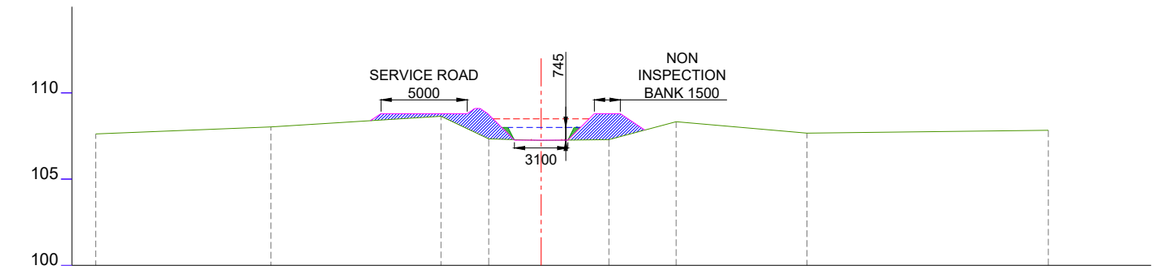


EXIST. LEVEL (M)	107.714	107.748	107.627	108.292	107.165	107.091	107.122	108.515	107.581	107.667	107.769
OFFSET (M)	26.636	20.371	13.076	6.249	3.057	0.000	2.971	6.996	12.921	21.403	30.058

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 8.243

CH : 3+500 KM

DESIGNED BED LEVEL = 107.232 M

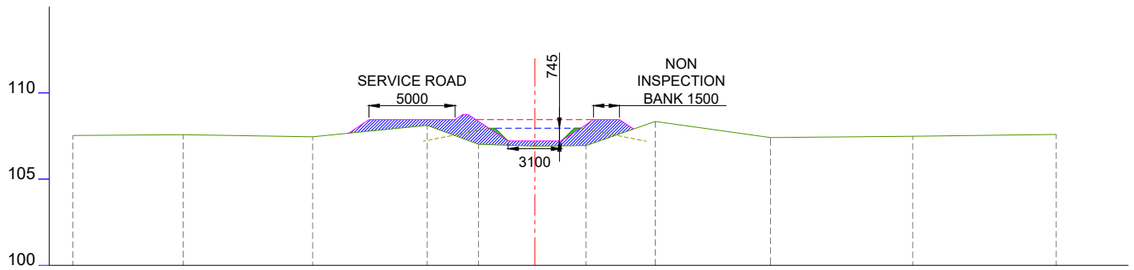


EXIST. LEVEL (M)	107.626	108.023	108.649	107.328	107.237	107.293	108.329	107.668	107.831	
OFFSET (M)	25.864	15.691	5.820	3.042	0.000	3.943	7.837	15.428	29.457	

CUTTING AREA (SQ.M) = 0.017
FILLING AREA (SQ.M) = 8.858

CH : 3+400 KM

DESIGNED BED LEVEL = 107.253 M



EXIST. LEVEL (M)	107.536	107.570	107.449	108.114	107.020	106.913	106.944	108.337	107.403	107.489	107.591
OFFSET (M)	26.816	20.408	12.891	6.249	3.265	0.000	2.970	6.994	13.683	21.943	30.283

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 10.855

CH : 3+600 KM

DESIGNED BED LEVEL = 107.211 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

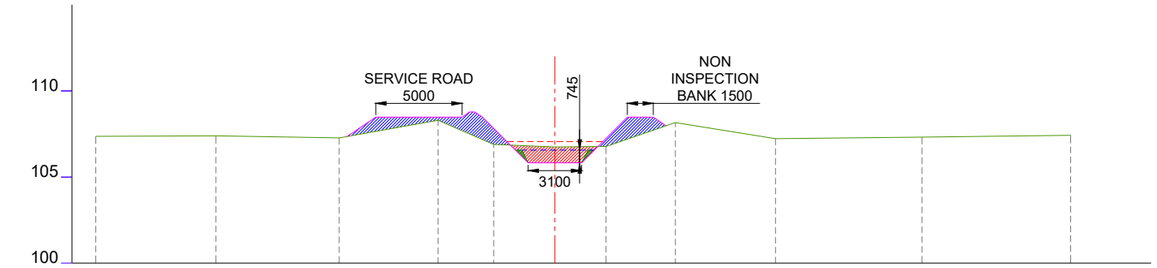
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 9 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

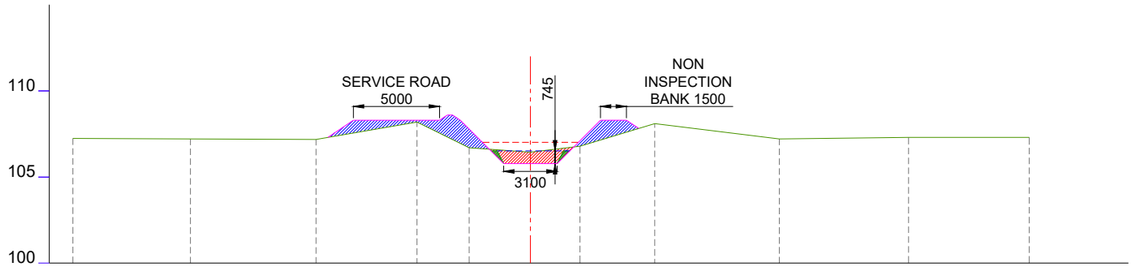


EXIST. LEVEL (M)	107.360	107.394	107.273	108.297	106.893	106.737	106.768	108.161	107.227	107.314	107.415
OFFSET (M)	26.668	19.681	12.525	6.782	3.558	0.000	2.970	6.995	12.807	21.307	29.947

CUTTING AREA (SQ.M) = 3.865
FILLING AREA (SQ.M) = 8.776

CH : 3+700 KM

DESIGNED BED LEVEL = 105.818 M

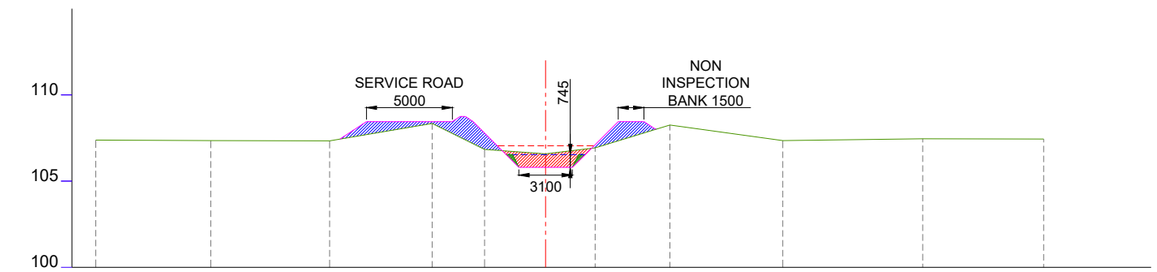


EXIST. LEVEL (M)	107.239	107.208	107.186	108.196	106.695	106.441	106.783	108.105	107.205	107.307	107.293
OFFSET (M)	26.563	19.733	12.451	6.584	3.548	0.000	2.877	7.214	14.450	21.953	28.961

CUTTING AREA (SQ.M) = 3.024
FILLING AREA (SQ.M) = 7.954

CH : 3+900 KM

DESIGNED BED LEVEL = 105.776 M

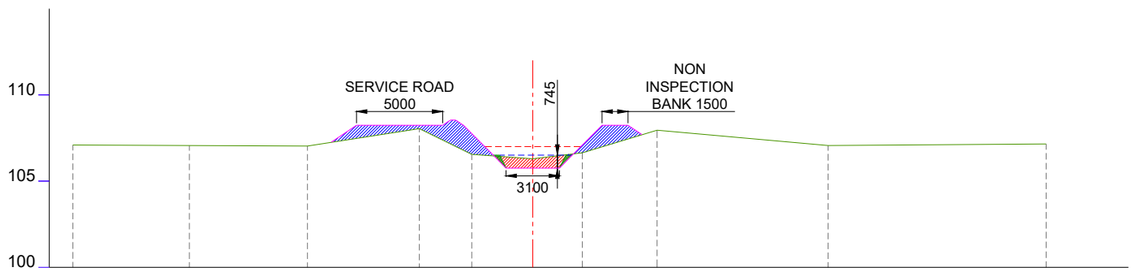


EXIST. LEVEL (M)	107.385	107.354	107.332	108.342	106.841	106.587	106.929	108.251	107.351	107.453	107.439
OFFSET (M)	26.127	19.442	12.544	6.584	3.548	0.000	2.877	7.214	13.767	21.899	28.912

CUTTING AREA (SQ.M) = 3.654
FILLING AREA (SQ.M) = 7.855

CH : 3+800 KM

DESIGNED BED LEVEL = 105.797 M



EXIST. LEVEL (M)	107.091	107.060	107.038	108.048	106.547	106.293	106.635	107.957	107.057	107.159	
OFFSET (M)	26.702	19.939	13.088	6.584	3.548	0.000	2.877	7.214	17.143	29.811	

CUTTING AREA (SQ.M) = 2.415
FILLING AREA (SQ.M) = 8.945

CH : 4+000 KM

DESIGNED BED LEVEL = 105.756 M

LEGEND

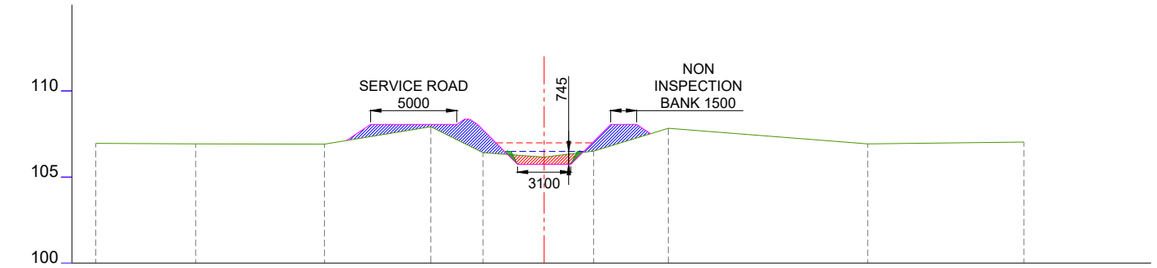
CUT AREA	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 10 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

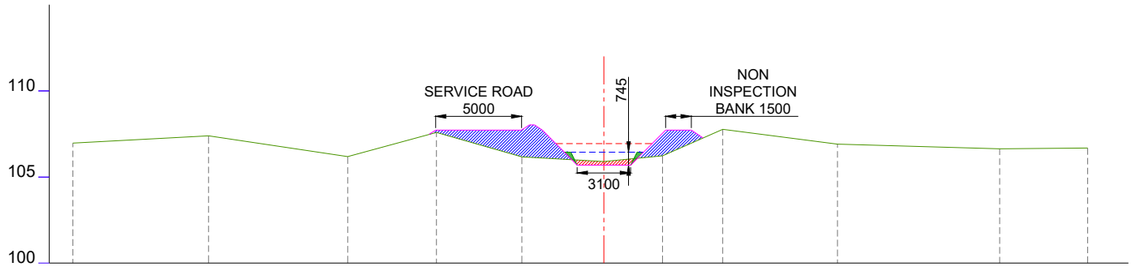


EXIST. LEVEL (M)	106.960	106.929	106.907	107.917	106.416	106.162	106.504	107.826	106.926	107.028
OFFSET (M)	26.039	20.224	12.757	6.584	3.548	0.000	2.877	7.214	18.787	27.859

CUTTING AREA (SQ.M) = 1.920
FILLING AREA (SQ.M) = 8.694

CH : 4+100 KM

DESIGNED BED LEVEL = 105.735 M

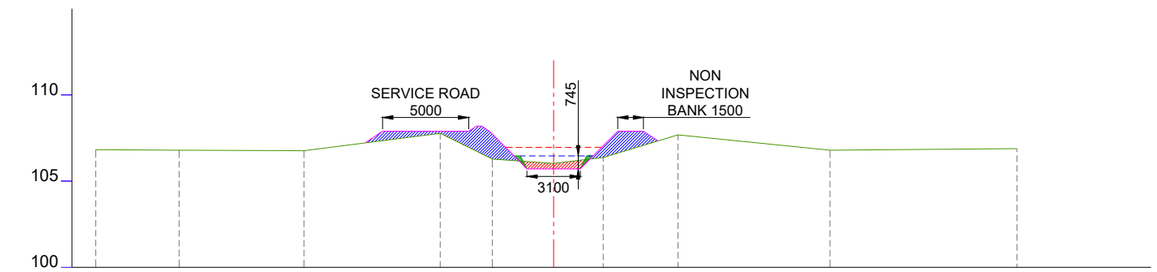


EXIST. LEVEL (M)	106.969	107.394	106.178	107.587	106.175	105.895	106.231	107.765	106.905	106.635	106.688
OFFSET (M)	30.834	22.952	14.884	9.729	4.765	0.000	3.396	6.893	13.560	22.979	28.085

CUTTING AREA (SQ.M) = 0.931
FILLING AREA (SQ.M) = 10.739

CH : 4+300 KM

DESIGNED BED LEVEL = 105.693 M

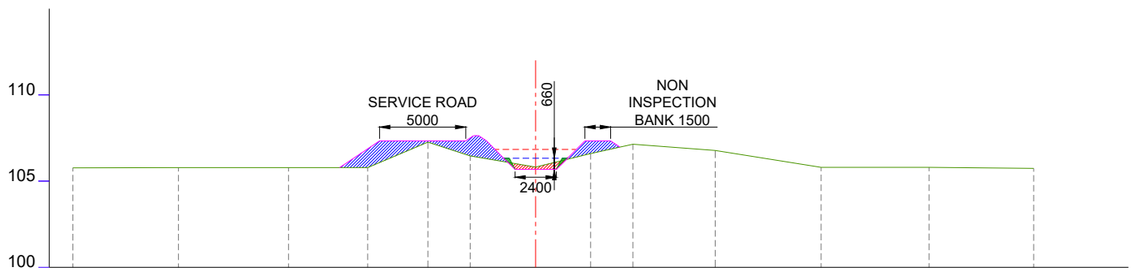


EXIST. LEVEL (M)	106.819	106.788	106.766	107.776	106.275	106.021	106.363	107.685	106.785	106.887
OFFSET (M)	26.588	21.748	14.492	6.584	3.548	0.000	2.877	7.214	16.052	26.907

CUTTING AREA (SQ.M) = 1.412
FILLING AREA (SQ.M) = 8.260

CH : 4+200 KM

DESIGNED BED LEVEL = 105.714 M



EXIST. LEVEL (M)	105.772	105.775	105.778	105.780	107.253	106.456	105.819	106.598	107.138	106.775	105.801	105.802	105.742
OFFSET (M)	26.870	20.741	14.344	9.747	6.258	3.796	0.000	3.194	5.654	10.419	16.568	22.849	28.916

CUTTING AREA (SQ.M) = 0.850
FILLING AREA (SQ.M) = 8.012

CH : 4+400 KM

DESIGNED BED LEVEL = 105.672 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

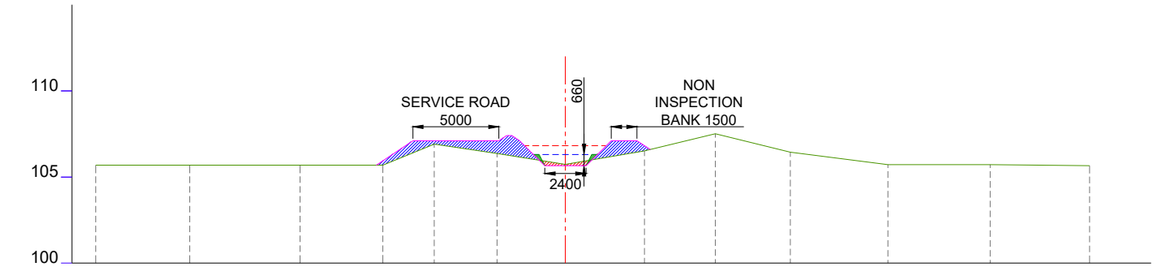
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 11 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

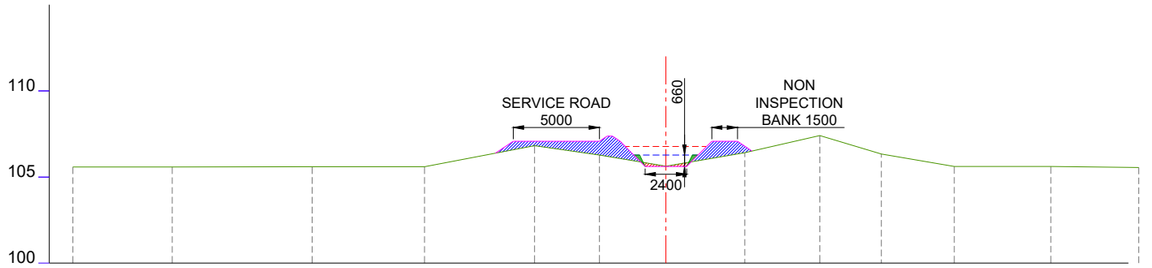


EXIST. LEVEL (M)	105.687	105.690	105.693	105.695	106.912	106.370	105.734	106.512	107.511	106.435	105.716	105.717	105.657
OFFSET (M)	27.275	21.815	15.411	10.605	7.620	3.973	0.000	4.583	8.711	13.053	18.726	24.658	30.440

CUTTING AREA (SQ.M) = 0.531
FILLING AREA (SQ.M) = 7.009

CH : 4+500 KM

DESIGNED BED LEVEL = 105.651 M

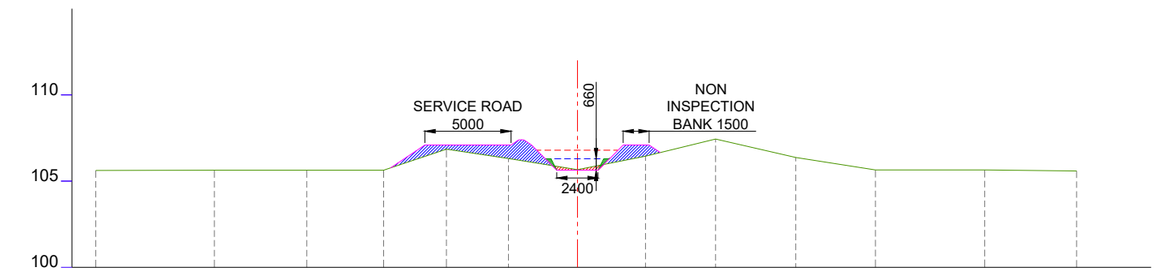


EXIST. LEVEL (M)	105.586	105.589	105.592	105.594	106.812	106.270	105.633	106.412	107.411	106.334	105.615	105.616	105.557
OFFSET (M)	34.433	28.666	20.536	14.019	7.630	3.860	0.000	4.583	8.929	12.513	16.741	22.348	27.455

CUTTING AREA (SQ.M) = 0.357
FILLING AREA (SQ.M) = 6.794

CH : 4+700 KM

DESIGNED BED LEVEL = 105.610 M

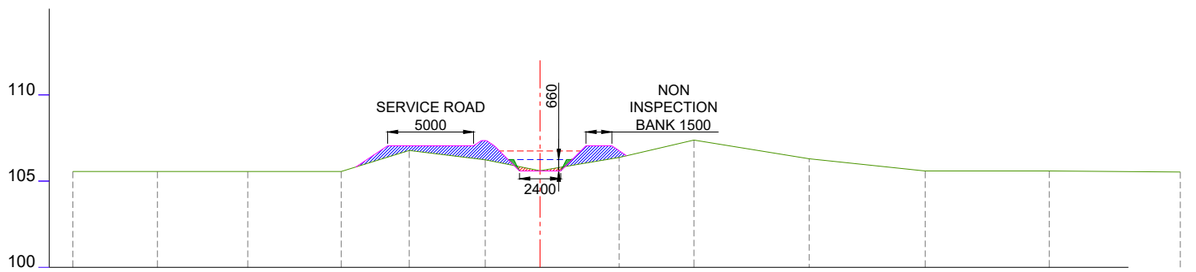


EXIST. LEVEL (M)	105.623	105.625	105.628	105.630	106.848	106.306	105.669	106.448	107.447	106.370	105.651	105.652	105.593
OFFSET (M)	27.973	21.081	15.709	11.256	7.607	4.007	0.000	3.951	8.025	12.674	17.299	23.645	28.981

CUTTING AREA (SQ.M) = 0.426
FILLING AREA (SQ.M) = 6.911

CH : 4+600 KM

DESIGNED BED LEVEL = 105.631 M



EXIST. LEVEL (M)	105.552	105.555	105.558	105.560	106.777	106.235	105.599	106.377	107.376	106.300	105.581	105.582	105.522
OFFSET (M)	27.130	22.214	16.974	11.544	7.605	3.192	0.000	4.583	8.928	15.628	22.364	29.563	37.174

CUTTING AREA (SQ.M) = 0.356
FILLING AREA (SQ.M) = 7.035

CH : 4+800 KM

DESIGNED BED LEVEL = 105.589 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

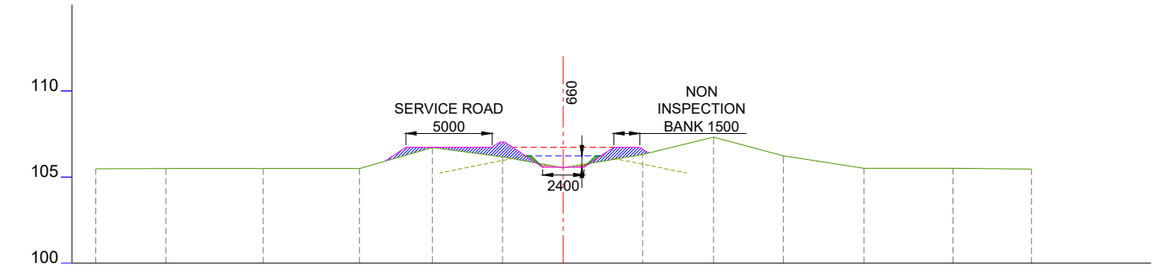
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 12 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

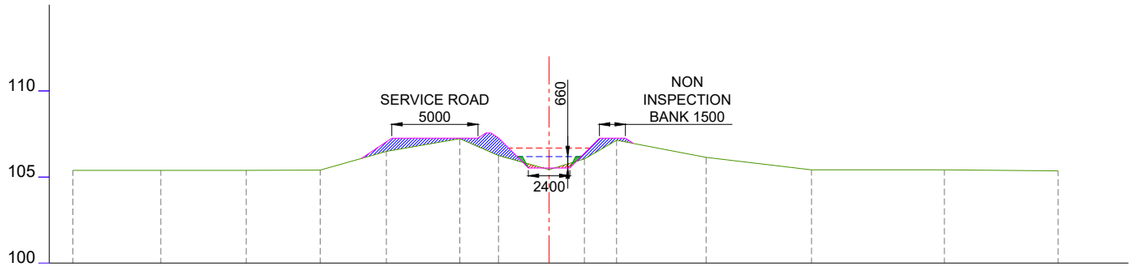


EXIST. LEVEL (M)	105.484	105.487	105.490	105.492	106.719	106.168	105.540	106.310	107.319	106.232	105.513	105.514	105.454
OFFSET (M)	27.151	23.081	17.422	11.836	7.597	3.532	0.000	4.603	8.724	12.776	17.466	22.636	27.180

CUTTING AREA (SQ.M) = 0.252
FILLING AREA (SQ.M) = 4.290

CH : 4+900 KM

DESIGNED BED LEVEL = 105.568 M

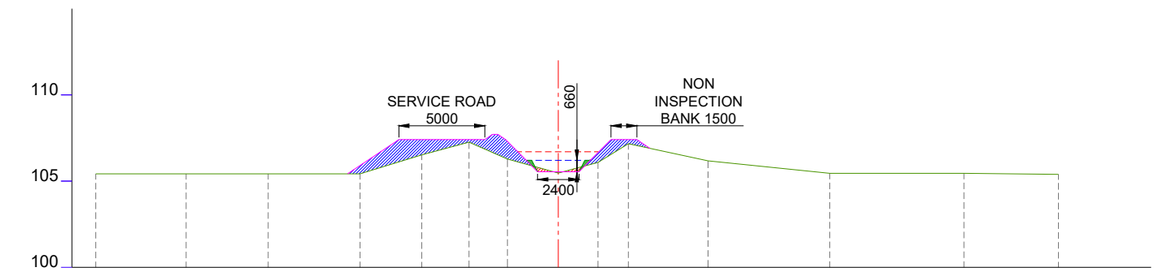


EXIST. LEVEL (M)	105.386	105.389	105.392	105.394	106.491	107.220	106.248	105.433	106.051	107.137	106.134	105.415	105.416	105.357
OFFSET (M)	27.650	22.548	17.586	13.290	9.450	5.184	2.946	0.000	2.049	3.923	9.113	15.241	22.950	29.550

CUTTING AREA (SQ.M) = 0.314
FILLING AREA (SQ.M) = 5.270

CH : 5+100 KM

DESIGNED BED LEVEL = 105.526 M

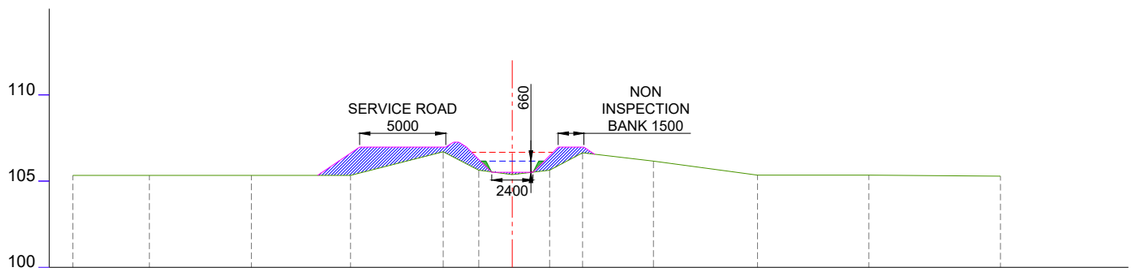


EXIST. LEVEL (M)	105.419	105.422	105.425	105.427	106.524	107.253	106.281	105.466	106.084	107.170	106.167	105.448	105.449	105.390
OFFSET (M)	26.861	21.615	16.854	11.506	7.925	5.184	2.946	0.000	2.304	4.068	8.701	15.766	23.552	29.043

CUTTING AREA (SQ.M) = 0.305
FILLING AREA (SQ.M) = 9.013

CH : 5+000 KM

DESIGNED BED LEVEL = 105.547 M



EXIST. LEVEL (M)	105.327	105.329	105.331	105.333	106.699	105.632	105.370	105.633	106.634	106.159	105.350	105.350	105.289
OFFSET (M)	25.515	21.072	15.147	9.397	4.021	1.943	0.000	2.172	4.073	8.186	14.237	20.707	28.339

CUTTING AREA (SQ.M) = 0.003
FILLING AREA (SQ.M) = 10.235

CH : 5+200 KM

DESIGNED BED LEVEL = 105.506 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

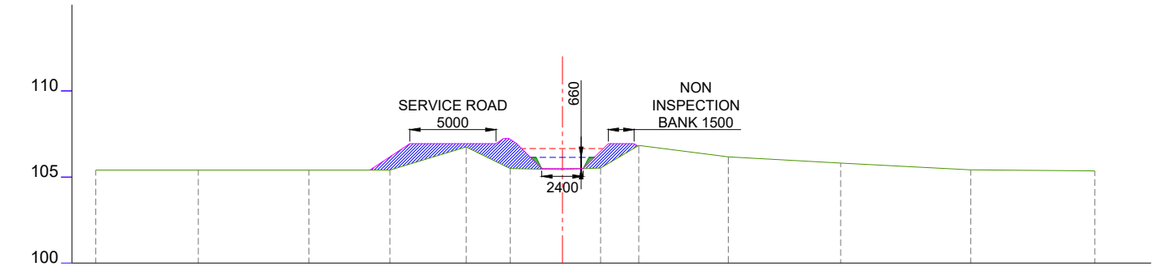
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 13 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

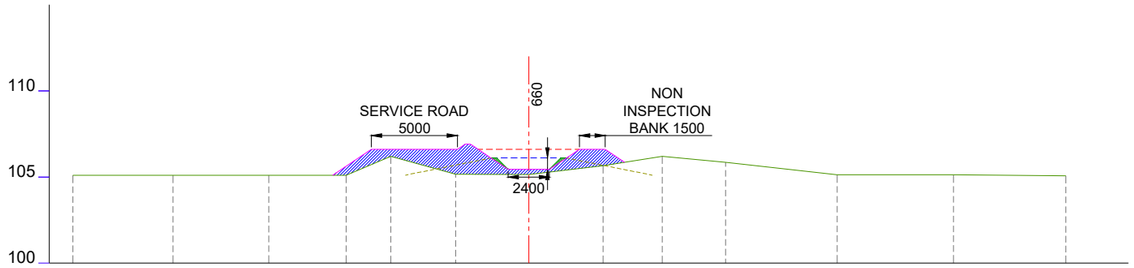


EXIST. LEVEL (M)	105.395	105.397	105.399	105.401	106.749	105.488	105.438	105.515	106.836	106.173	105.810	105.415	105.354
OFFSET (M)	27.104	21.151	14.718	10.024	5.596	3.036	0.000	2.209	4.425	9.635	16.147	23.697	30.904

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 9.976

CH : 5+300 KM

DESIGNED BED LEVEL = 105.485 M

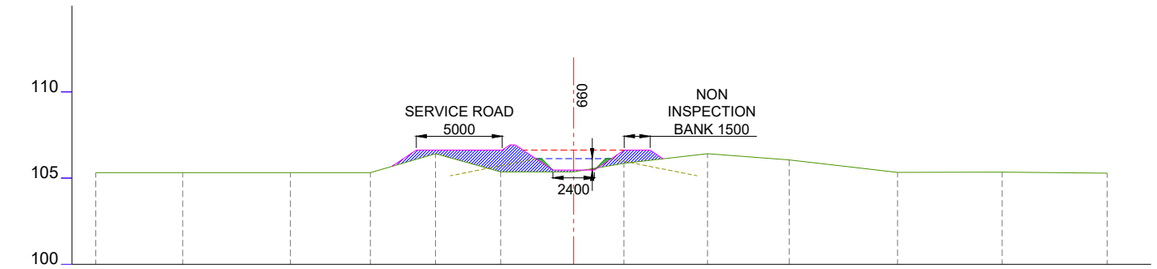


EXIST. LEVEL (M)	105.099	105.101	105.104	105.106	106.198	105.155	105.145	105.650	106.198	105.846	105.127	105.128	105.069
OFFSET (M)	26.472	20.663	15.093	10.609	8.012	4.242	0.000	4.313	7.749	11.425	17.901	24.659	31.179

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 12.876

CH : 5+500 KM

DESIGNED BED LEVEL = 105.443 M

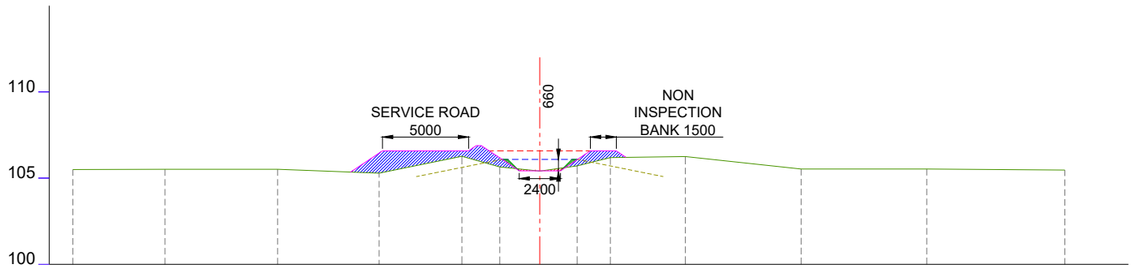


EXIST. LEVEL (M)	105.309	105.311	105.314	105.316	106.408	105.365	105.355	105.860	106.408	106.056	105.337	105.338	105.279
OFFSET (M)	27.751	22.696	16.442	11.804	8.012	4.242	0.000	2.927	7.769	12.529	18.806	24.878	30.982

CUTTING AREA (SQ.M) = 0.038
FILLING AREA (SQ.M) = 8.643

CH : 5+400 KM

DESIGNED BED LEVEL = 105.464 M



EXIST. LEVEL (M)	105.501	105.504	105.507	105.280	106.270	105.654	105.399	105.702	106.192	106.249	105.530	105.531	105.471
OFFSET (M)	27.111	21.772	15.226	9.333	4.517	2.327	0.000	2.174	4.093	8.454	15.168	22.469	30.491

CUTTING AREA (SQ.M) = 0.159
FILLING AREA (SQ.M) = 7.949

CH : 5+600 KM

DESIGNED BED LEVEL = 105.422 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

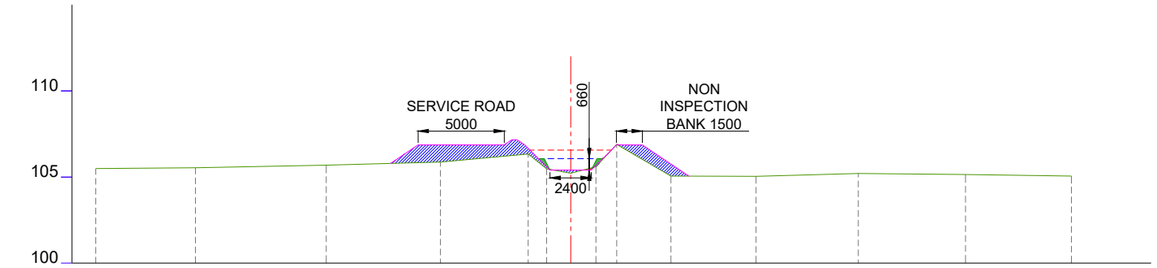
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 14 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

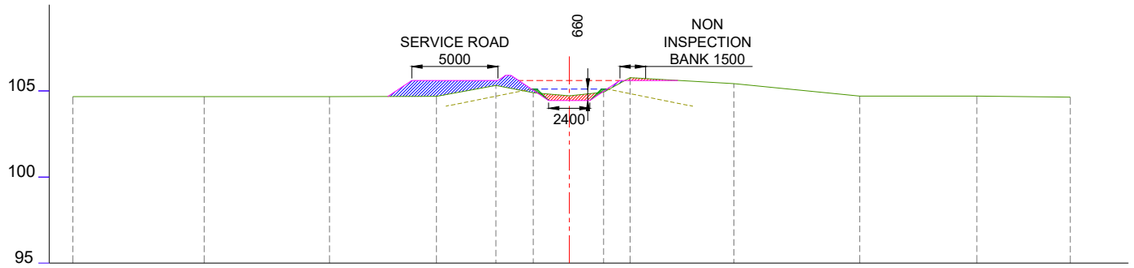


EXIST. LEVEL (M)	105.491	105.543	105.685	105.862	106.338	105.224	106.890	105.062	105.032	105.199	105.143	105.052
OFFSET (M)	27.580	21.790	14.188	7.564	2.465	0.000	2.680	5.821	10.758	16.707	22.929	29.071

CUTTING AREA (SQ.M) = 0.048
FILLING AREA (SQ.M) = 8.902

CH : 5+700 KM

DESIGNED BED LEVEL = 105.401 M

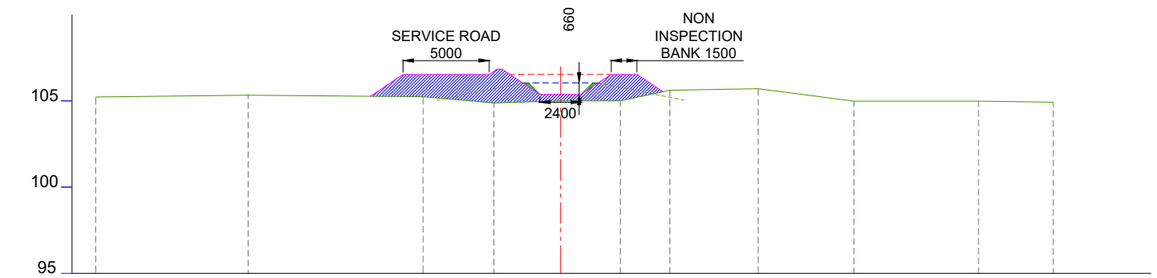


EXIST. LEVEL (M)	104.666	104.669	104.672	104.674	105.321	104.899	104.713	104.924	105.770	105.414	104.695	104.696	104.636
OFFSET (M)	28.821	21.206	13.913	7.715	4.266	2.093	0.000	1.996	3.530	9.557	16.864	23.662	29.090

CUTTING AREA (SQ.M) = 1.293
FILLING AREA (SQ.M) = 5.288

CH : 5+900 KM

DESIGNED BED LEVEL = 104.446 M

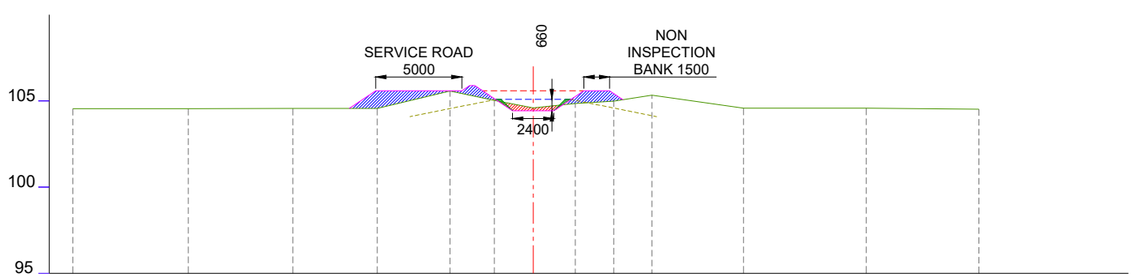


EXIST. LEVEL (M)	105.222	105.332	105.237	104.876	105.004	105.005	105.617	105.705	104.986	104.987	104.928
OFFSET (M)	26.993	18.137	7.980	3.873	0.000	3.471	6.344	11.469	17.028	24.272	28.605

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 18.190

CH : 5+800 KM

DESIGNED BED LEVEL = 105.381 M



EXIST. LEVEL (M)	104.554	104.557	104.560	104.562	105.571	105.025	104.601	104.856	104.984	105.335	104.583	104.584	104.524
OFFSET (M)	26.728	20.021	13.958	9.061	4.832	2.255	0.000	2.443	4.673	6.897	12.217	19.339	25.876

CUTTING AREA (SQ.M) = 0.882
FILLING AREA (SQ.M) = 5.522

CH : 6+000 KM

DESIGNED BED LEVEL = 104.425 M

LEGEND

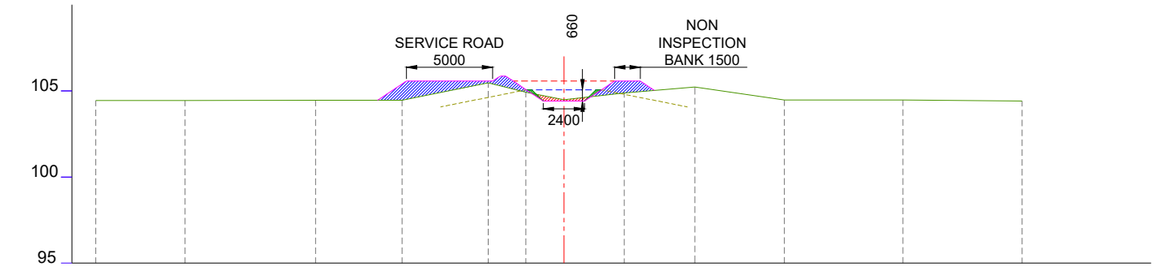
CUT AREA	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 15 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

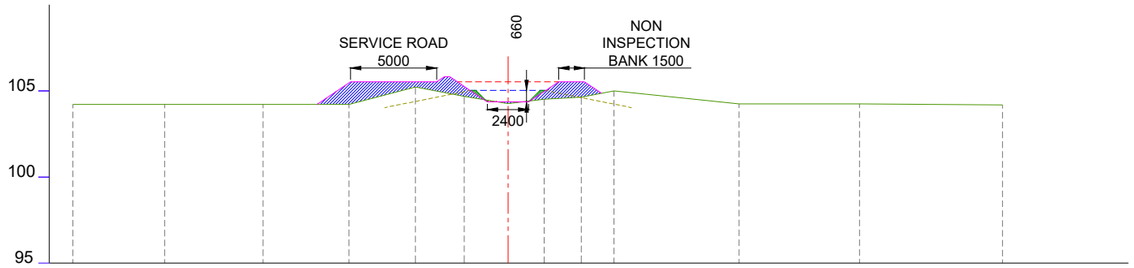


EXIST. LEVEL (M)	104.444	104.447	104.450	104.452	105.461	104.915	104.491	104.874	105.225	104.473	104.474	104.414
OFFSET (M)	27.188	22.000	14.423	9.398	4.392	2.214	0.000	3.508	7.600	12.802	19.684	26.602

CUTTING AREA (SQ.M) = 0.573
FILLING AREA (SQ.M) = 6.349

CH : 6+100 KM

DESIGNED BED LEVEL = 104.404 M

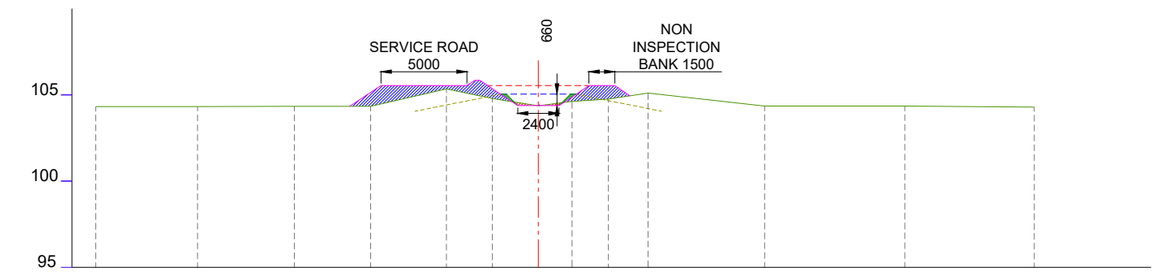


EXIST. LEVEL (M)	104.213	104.216	104.219	104.221	105.230	104.684	104.260	104.515	104.643	104.994	104.242	104.243	104.183
OFFSET (M)	25.265	19.934	14.221	9.226	5.379	2.537	0.000	2.104	4.254	6.153	13.420	20.409	28.709

CUTTING AREA (SQ.M) = 0.048
FILLING AREA (SQ.M) = 8.956

CH : 6+300 KM

DESIGNED BED LEVEL = 104.362 M

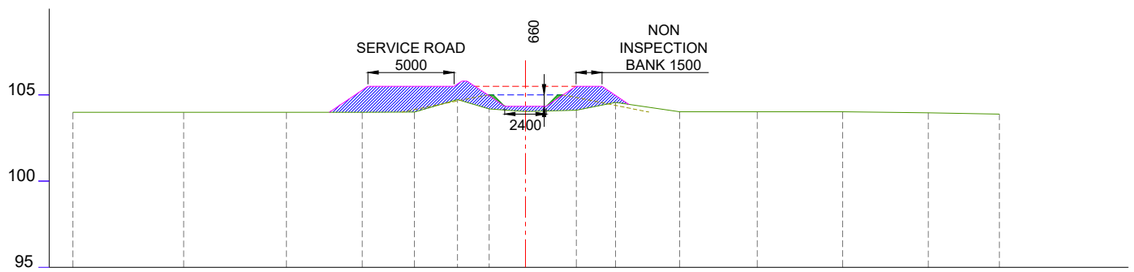


EXIST. LEVEL (M)	104.327	104.330	104.333	104.335	105.344	104.798	104.374	104.629	104.757	105.108	104.356	104.357	104.297
OFFSET (M)	25.704	19.798	14.173	9.740	5.342	2.663	0.000	1.956	4.073	6.378	13.145	21.277	28.795

CUTTING AREA (SQ.M) = 0.240
FILLING AREA (SQ.M) = 7.380

CH : 6+200 KM

DESIGNED BED LEVEL = 104.383 M



EXIST. LEVEL (M)	103.991	103.993	103.996	103.999	104.001	104.724	104.192	104.040	104.118	104.565	104.021	104.022	104.023	103.964	103.890
OFFSET (M)	26.277	19.850	13.881	9.482	6.446	3.947	2.113	0.000	2.950	5.230	8.948	13.459	18.418	23.395	27.514

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 15.652

CH : 6+400 KM

DESIGNED BED LEVEL = 104.342 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

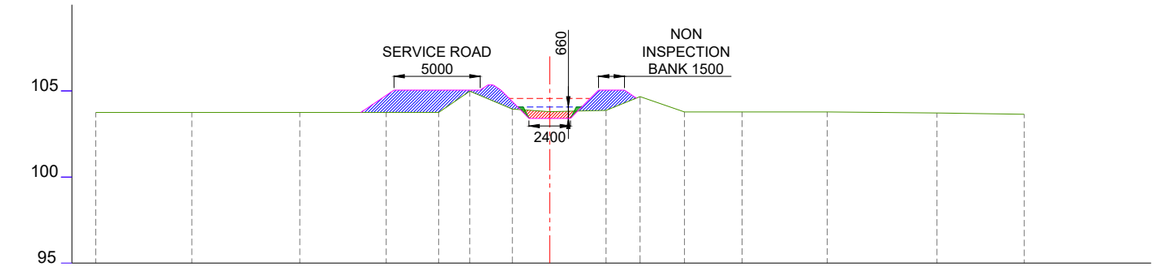
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 16 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

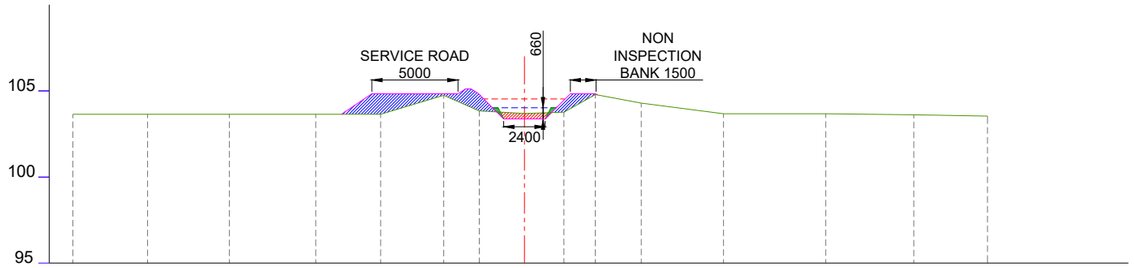


EXIST. LEVEL (M)	103.741	103.743	103.746	103.749	103.751	104.985	103.942	103.790	103.868	104.664	103.771	103.772	103.773	103.713	103.640
OFFSET (M)	26.365	20.784	14.511	9.490	6.455	4.645	2.175	0.000	3.274	5.240	7.821	11.173	16.111	22.482	27.548

CUTTING AREA (SQ.M) = 1.191
FILLING AREA (SQ.M) = 9.875

CH : 6+500 KM

DESIGNED BED LEVEL = 103.407 M

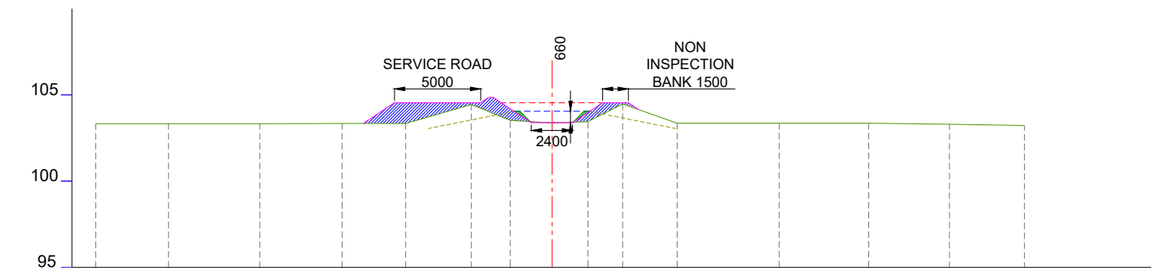


EXIST. LEVEL (M)	103.638	103.640	103.643	103.646	103.648	104.748	103.839	103.687	103.765	104.786	104.294	103.669	103.670	103.610	103.537
OFFSET (M)	26.219	21.886	17.140	12.115	8.346	4.689	2.620	0.000	2.295	4.119	6.778	11.553	17.496	22.598	26.888

CUTTING AREA (SQ.M) = 0.989
FILLING AREA (SQ.M) = 6.927

CH : 6+700 KM

DESIGNED BED LEVEL = 103.365 M

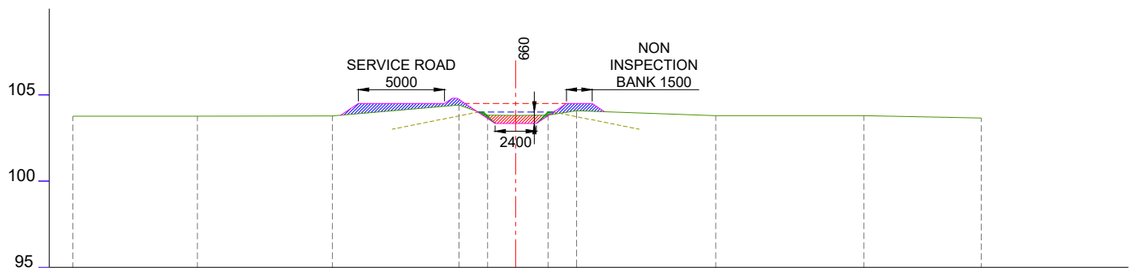


EXIST. LEVEL (M)	103.329	103.331	103.334	103.337	103.339	104.439	103.530	103.378	103.456	104.477	103.359	103.360	103.361	103.301	103.228
OFFSET (M)	26.493	22.272	16.961	12.180	8.501	4.679	2.414	0.000	2.082	4.106	7.265	13.193	18.397	23.076	27.439

CUTTING AREA (SQ.M) = 0.059
FILLING AREA (SQ.M) = 7.389

CH : 6+600 KM

DESIGNED BED LEVEL = 103.386 M



EXIST. LEVEL (M)	103.765	103.770	103.775	104.410	103.814	104.077	103.795	103.797	103.664						
OFFSET (M)	25.713	18.489	10.647	3.287	0.000	3.528	11.608	20.217	27.028						

CUTTING AREA (SQ.M) = 1.507
FILLING AREA (SQ.M) = 3.801

CH : 6+800 KM

DESIGNED BED LEVEL = 103.344 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

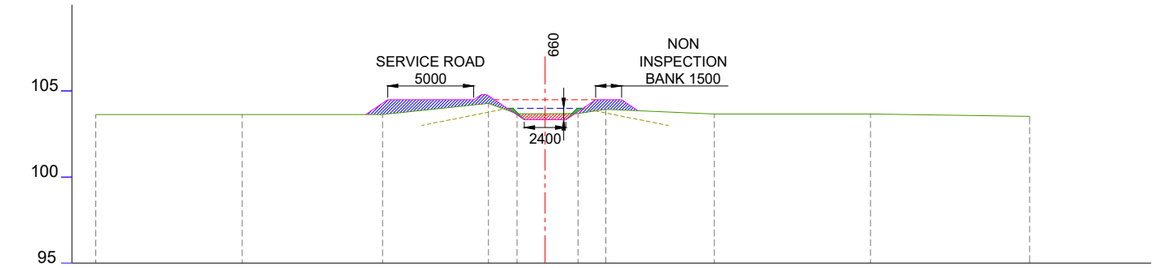
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 17 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

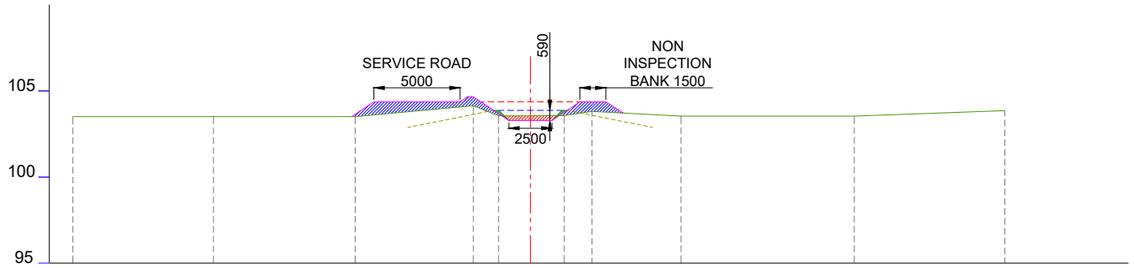


EXIST. LEVEL (M)	103.623	103.628	103.633	104.268	103.672	103.935	103.653	103.655	103.522
OFFSET (M)	26.093	17.589	9.431	3.281	0.000	3.528	9.830	18.904	28.134

CUTTING AREA (SQ.M) = 1.039
FILLING AREA (SQ.M) = 5.616

CH : 6+900 KM

DESIGNED BED LEVEL = 103.323 M

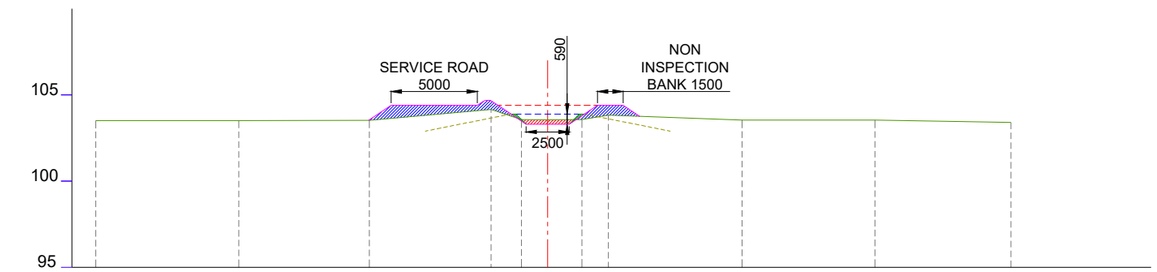


EXIST. LEVEL (M)	103.499	103.504	103.509	104.144	103.548	103.811	103.529	103.531	103.848
OFFSET (M)	26.564	18.399	10.173	3.314	0.000	3.569	8.748	18.801	27.545

CUTTING AREA (SQ.M) = 0.783
FILLING AREA (SQ.M) = 5.635

CH : 7+100 KM

DESIGNED BED LEVEL = 103.282 M

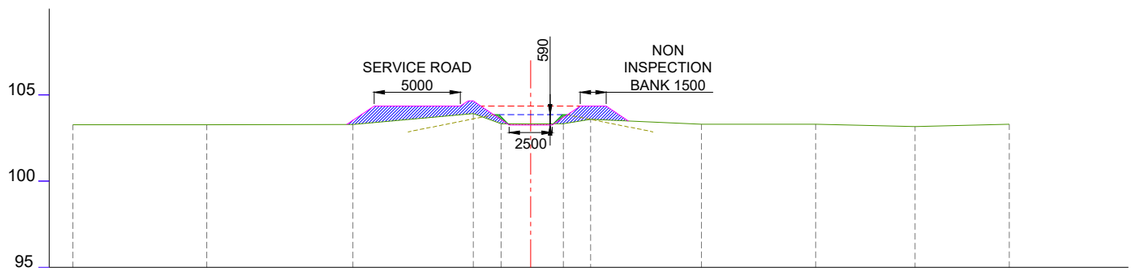


EXIST. LEVEL (M)	103.508	103.513	103.518	104.153	103.557	103.820	103.538	103.540	103.407
OFFSET (M)	26.247	17.936	10.364	3.283	0.000	3.528	11.283	19.000	26.898

CUTTING AREA (SQ.M) = 0.749
FILLING AREA (SQ.M) = 5.601

CH : 7+000 KM

DESIGNED BED LEVEL = 103.303 M



EXIST. LEVEL (M)	103.271	103.276	103.281	103.916	103.320	103.583	103.301	103.303	103.167	103.305
OFFSET (M)	26.579	18.811	10.316	3.324	0.000	3.484	9.913	16.542	22.314	27.792

CUTTING AREA (SQ.M) = 0.161
FILLING AREA (SQ.M) = 8.216

CH : 7+200 KM

DESIGNED BED LEVEL = 103.261 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

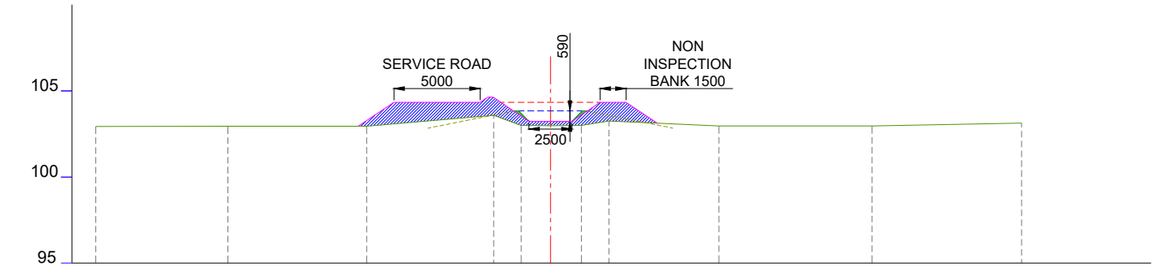
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 18 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

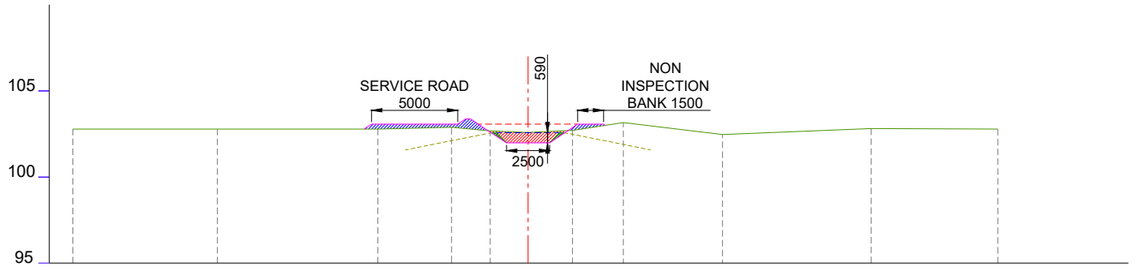


EXIST. LEVEL (M)	102.936	102.941	102.946	103.581	102.985	103.248	102.966	102.968	103.124
OFFSET (M)	26.409	18.726	10.676	3.300	0.000	3.386	9.788	18.675	27.348

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 13.218

CH : 7+300 KM

DESIGNED BED LEVEL = 103.240 M

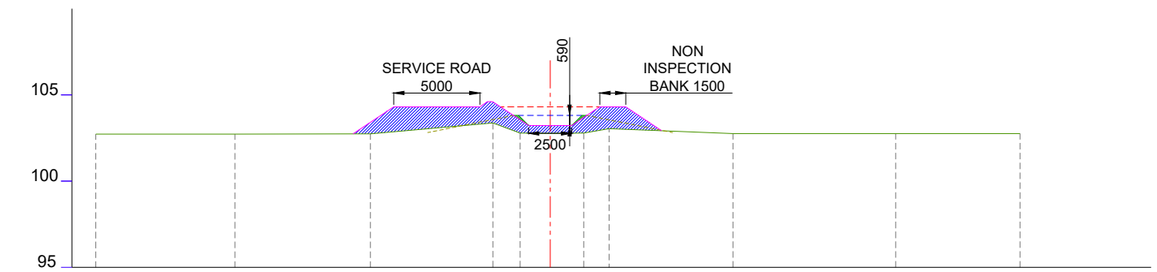


EXIST. LEVEL (M)	102.779	102.784	102.789	102.890	102.677	102.581	102.706	103.154	102.463	102.811	102.775
OFFSET (M)	26.427	18.033	8.720	4.450	2.200	0.000	2.585	5.532	11.286	19.930	27.274

CUTTING AREA (SQ.M) = 2.283
FILLING AREA (SQ.M) = 2.250

CH : 7+500 KM

DESIGNED BED LEVEL = 101.978 M

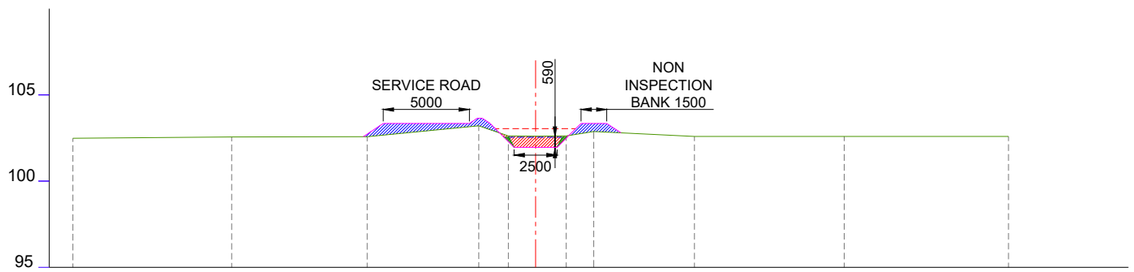


EXIST. LEVEL (M)	102.728	102.733	102.738	103.373	102.783	102.777	102.788	103.040	102.758	102.760	102.762
OFFSET (M)	26.388	18.309	10.440	3.321	1.735	0.000	1.944	3.432	10.615	20.072	27.285

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 16.600

CH : 7+400 KM

DESIGNED BED LEVEL = 103.219 M



EXIST. LEVEL (M)	102.486	102.566	102.571	103.206	102.610	102.873	102.591	102.593	102.595
OFFSET (M)	26.862	17.641	9.782	3.298	0.000	3.378	9.227	17.927	27.466

CUTTING AREA (SQ.M) = 2.102
FILLING AREA (SQ.M) = 4.386

CH : 7+600 KM

DESIGNED BED LEVEL = 101.958 M

LEGEND

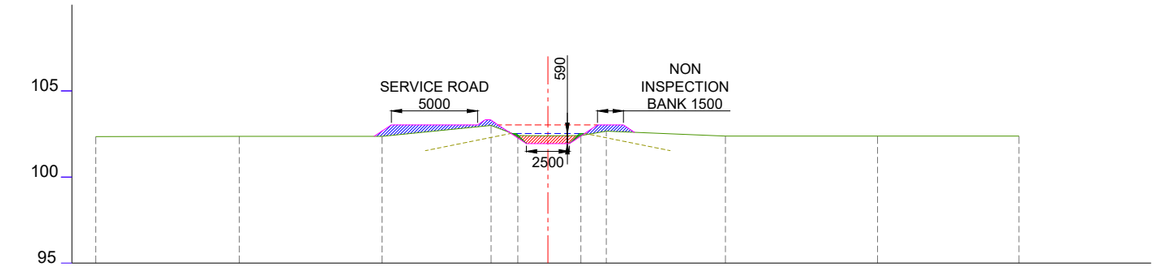
	CUT AREA		
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 19 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

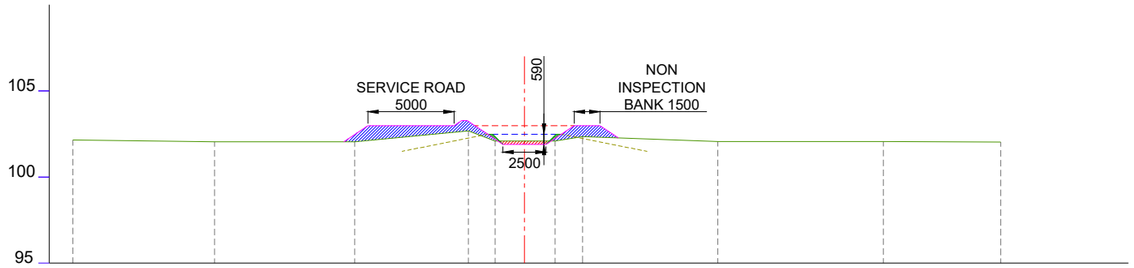


EXIST. LEVEL (M)	102.348	102.353	102.358	102.993	102.403	102.397	102.408	102.660	102.378	102.380	102.382
OFFSET (M)	26.256	17.911	9.627	3.305	1.749	0.000	1.911	3.390	10.315	19.143	27.348

CUTTING AREA (SQ.M) = 1.503
FILLING AREA (SQ.M) = 3.465

CH : 7+700 KM

DESIGNED BED LEVEL = 101.937 M

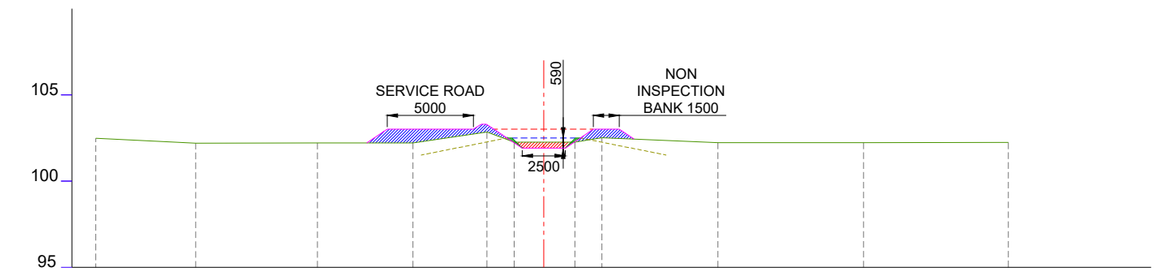


EXIST. LEVEL (M)	102.155	102.039	102.044	102.679	102.083	102.346	102.064	102.066	102.026		
OFFSET (M)	26.222	18.002	9.866	3.253	0.000	3.373	11.222	20.832	27.648		

CUTTING AREA (SQ.M) = 0.535
FILLING AREA (SQ.M) = 6.608

CH : 7+900 KM

DESIGNED BED LEVEL = 101.895 M

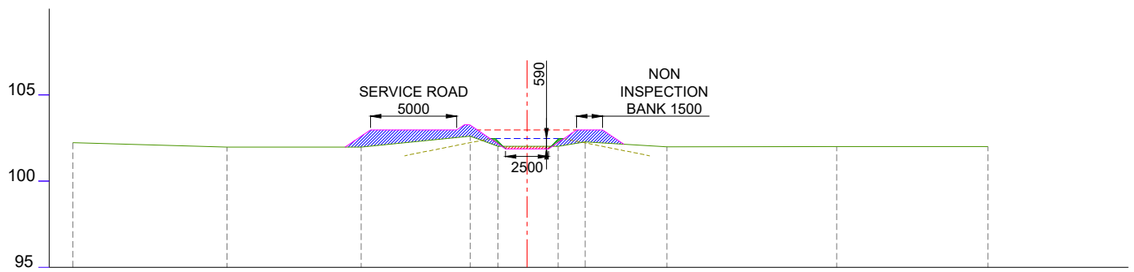


EXIST. LEVEL (M)	102.483	102.203	102.208	102.213	102.848	102.258	102.252	102.263	102.515	102.233	102.235	102.237
OFFSET (M)	26.016	20.215	13.135	7.593	3.298	1.719	0.000	1.803	3.375	10.121	18.569	26.972

CUTTING AREA (SQ.M) = 1.025
FILLING AREA (SQ.M) = 5.513

CH : 7+800 KM

DESIGNED BED LEVEL = 101.916 M



EXIST. LEVEL (M)	102.225	101.970	101.975	102.610	102.014	102.277	101.995	101.997	101.999		
OFFSET (M)	26.370	17.425	9.638	3.296	0.000	3.381	8.128	17.982	26.759		

CUTTING AREA (SQ.M) = 0.390
FILLING AREA (SQ.M) = 7.361

CH : 8+000 KM

DESIGNED BED LEVEL = 101.874 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

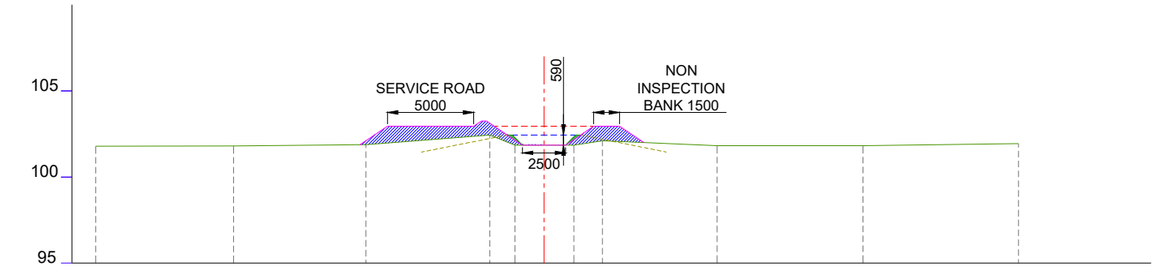
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 20 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

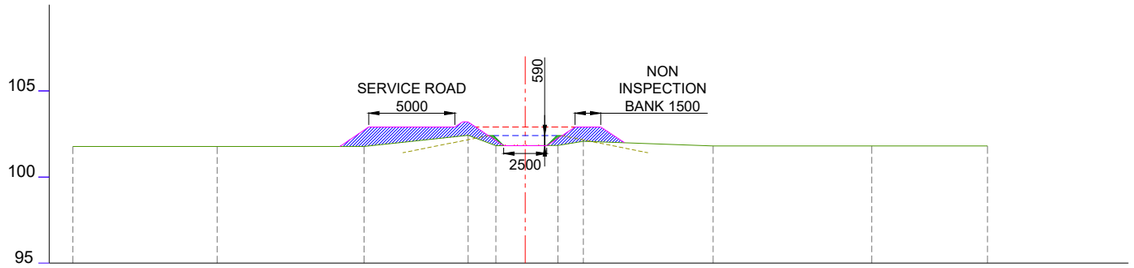


EXIST. LEVEL (M)	101.792	101.797	101.873	102.437	101.853	102.099	101.822	101.824	101.945
OFFSET (M)	26.031	18.028	10.342	3.153	0.000	3.385	10.049	18.530	27.544

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 8.895

CH : 8+100 KM

DESIGNED BED LEVEL = 101.853 M

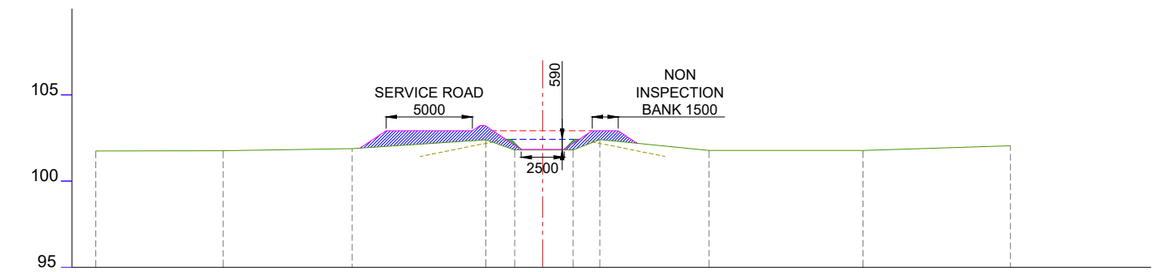


EXIST. LEVEL (M)	101.769	101.774	101.779	102.414	101.824	101.818	101.829	102.081	101.799	101.801	101.803
OFFSET (M)	26.268	17.894	9.367	3.313	1.715	0.000	1.896	3.377	10.900	20.112	26.837

CUTTING AREA (SQ.M) = 0.022
FILLING AREA (SQ.M) = 9.232

CH : 8+300 KM

DESIGNED BED LEVEL = 101.812 M

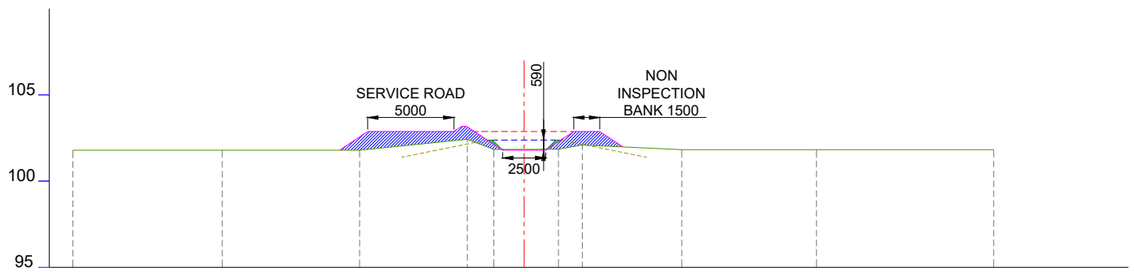


EXIST. LEVEL (M)	101.751	101.756	101.881	102.396	101.800	102.407	101.781	101.783	102.053
OFFSET (M)	25.954	18.544	11.063	3.299	0.000	3.320	9.668	18.598	27.165

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 7.950

CH : 8+200 KM

DESIGNED BED LEVEL = 101.833 M



EXIST. LEVEL (M)	101.786	101.791	101.796	102.431	101.835	102.098	101.816	101.818	101.820
OFFSET (M)	26.200	17.527	9.552	3.300	0.000	3.375	9.145	16.974	27.268

CUTTING AREA (SQ.M) = 0.121
FILLING AREA (SQ.M) = 8.703

CH : 8+400 KM

DESIGNED BED LEVEL = 101.791 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

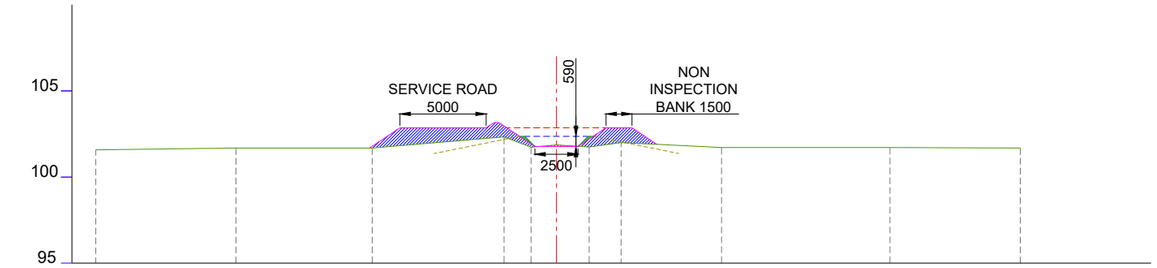
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 21 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

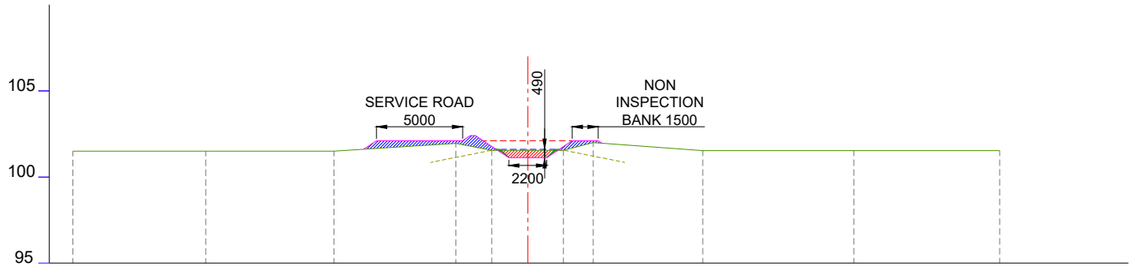


EXIST. LEVEL (M)	101.576	101.683	101.688	102.323	101.868	101.740	101.992	101.709	101.713	101.682
OFFSET (M)	26.754	18.603	10.705	3.038	0.000	1.900	3.758	9.590	19.366	26.927

CUTTING AREA (SQ.M) = 0.122
FILLING AREA (SQ.M) = 9.446

CH : 8+500 KM

DESIGNED BED LEVEL = 101.770 M

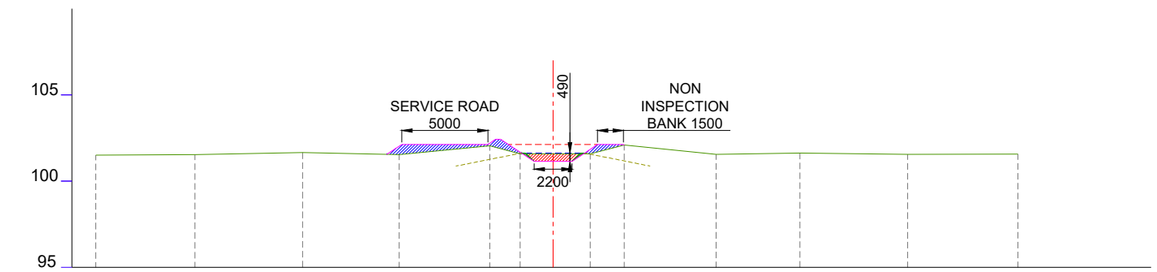


EXIST. LEVEL (M)	101.494	101.499	101.504	101.947	101.549	101.543	101.554	101.997	101.524	101.526	101.528
OFFSET (M)	26.410	18.701	11.253	4.171	2.087	0.000	2.075	3.803	10.168	18.926	27.401

CUTTING AREA (SQ.M) = 1.218
FILLING AREA (SQ.M) = 3.079

CH : 8+700 KM

DESIGNED BED LEVEL = 101.118 M

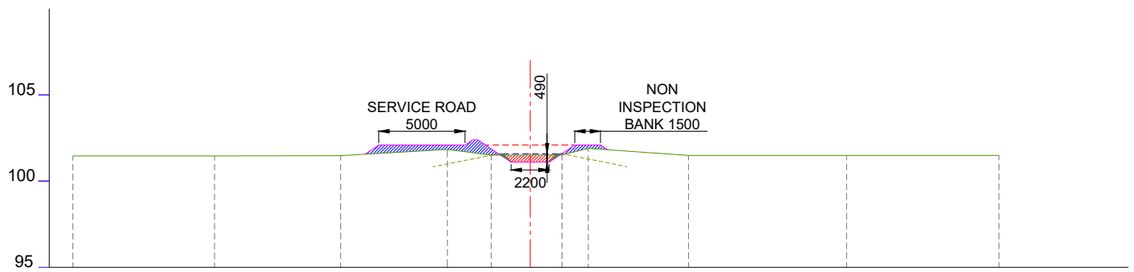


EXIST. LEVEL (M)	101.499	101.531	101.654	101.536	102.044	101.581	101.575	101.586	102.091	101.556	101.619	101.558	101.560
OFFSET (M)	26.556	20.799	14.542	8.935	3.676	1.912	0.000	2.152	4.134	9.466	14.337	20.594	26.993

CUTTING AREA (SQ.M) = 1.257
FILLING AREA (SQ.M) = 3.153

CH : 8+600 KM

DESIGNED BED LEVEL = 101.139 M



EXIST. LEVEL (M)	101.458	101.463	101.468	101.841	101.513	101.507	101.518	101.893	101.488	101.490	101.492
OFFSET (M)	26.553	18.325	11.000	4.805	2.263	0.000	1.855	3.376	9.186	18.371	27.220

CUTTING AREA (SQ.M) = 1.163
FILLING AREA (SQ.M) = 3.603

CH : 8+800 KM

DESIGNED BED LEVEL = 101.098 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

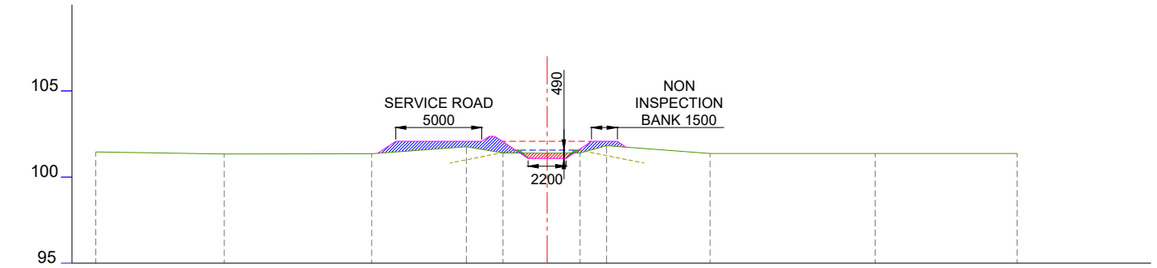
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 22 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

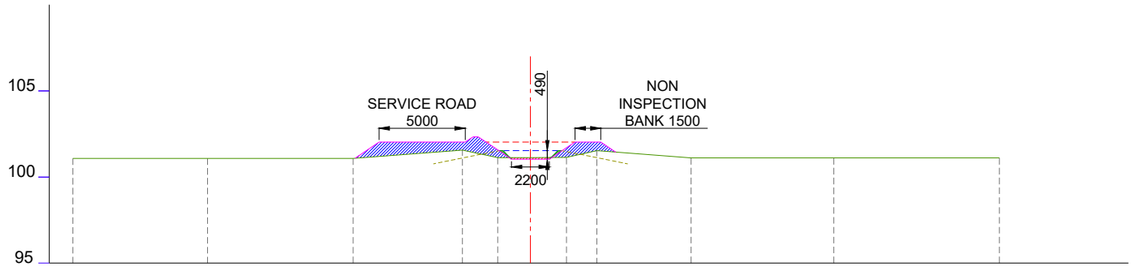


EXIST. LEVEL (M)	101.451	101.343	101.348	101.761	101.393	101.387	101.398	101.818	101.368	101.370	101.372
OFFSET (M)	26.207	18.743	10.176	4.675	2.562	0.000	1.923	3.463	9.474	19.050	27.305

CUTTING AREA (SQ.M) = 0.836
FILLING AREA (SQ.M) = 4.641

CH : 8+900 KM

DESIGNED BED LEVEL = 101.077 M

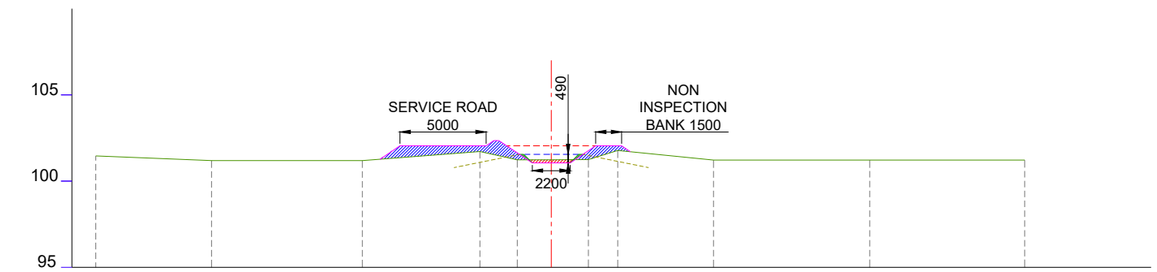


EXIST. LEVEL (M)	101.076	101.081	101.086	101.567	101.131	101.125	101.136	101.530	101.106	101.108	101.110
OFFSET (M)	26.569	18.749	10.298	3.950	1.900	0.000	2.094	3.856	9.319	17.618	27.229

CUTTING AREA (SQ.M) = 0.217
FILLING AREA (SQ.M) = 6.990

CH : 9+100 KM

DESIGNED BED LEVEL = 101.035 M

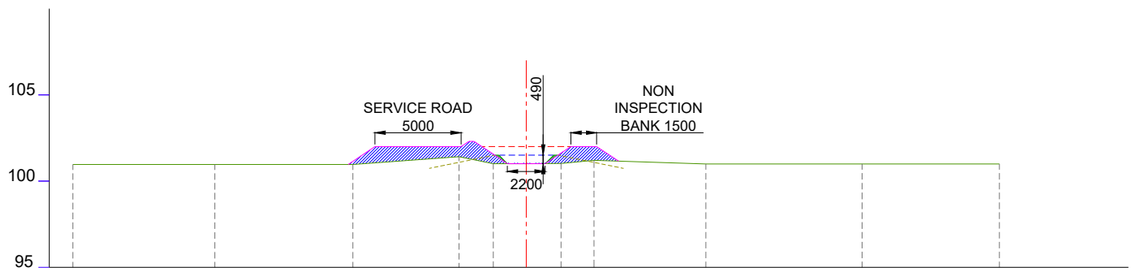


EXIST. LEVEL (M)	101.465	101.188	101.193	101.715	101.238	101.232	101.243	101.776	101.213	101.215	101.217
OFFSET (M)	26.452	19.721	10.971	4.147	1.976	0.000	2.160	3.861	9.428	18.498	27.486

CUTTING AREA (SQ.M) = 0.441
FILLING AREA (SQ.M) = 5.411

CH : 9+000 KM

DESIGNED BED LEVEL = 101.056 M



EXIST. LEVEL (M)	100.958	100.963	100.968	101.414	101.013	101.007	101.018	101.206	100.988	100.990	100.992
OFFSET (M)	26.328	18.086	10.070	3.904	1.918	0.000	2.019	3.923	10.420	19.500	27.473

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 8.880

CH : 9+200 KM

DESIGNED BED LEVEL = 101.014 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

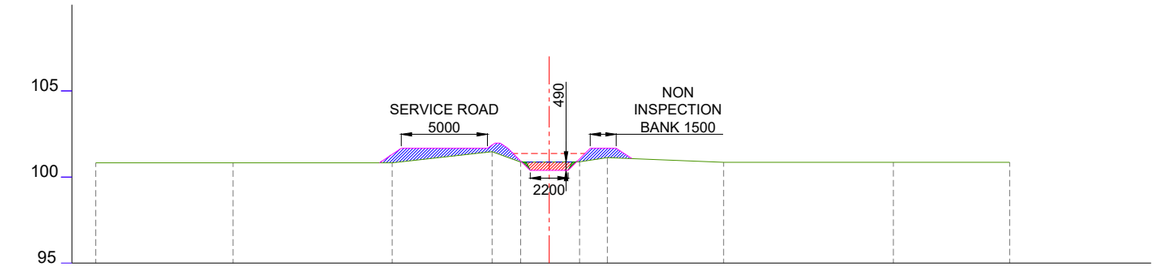
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 23 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

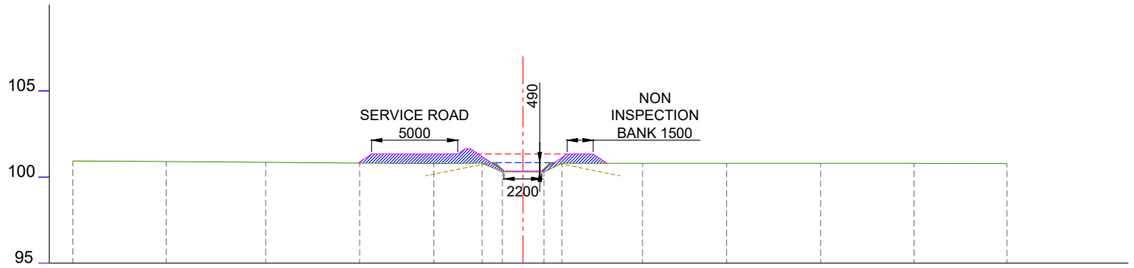


EXIST. LEVEL (M)	100.820	100.825	100.830	101.465	100.869	101.132	100.850	100.852	100.854
OFFSET (M)	26.331	18.356	9.112	3.310	0.000	3.376	10.137	19.986	26.740

CUTTING AREA (SQ.M) = 1.318
FILLING AREA (SQ.M) = 5.361

CH : 9+300 KM

DESIGNED BED LEVEL = 100.383 M

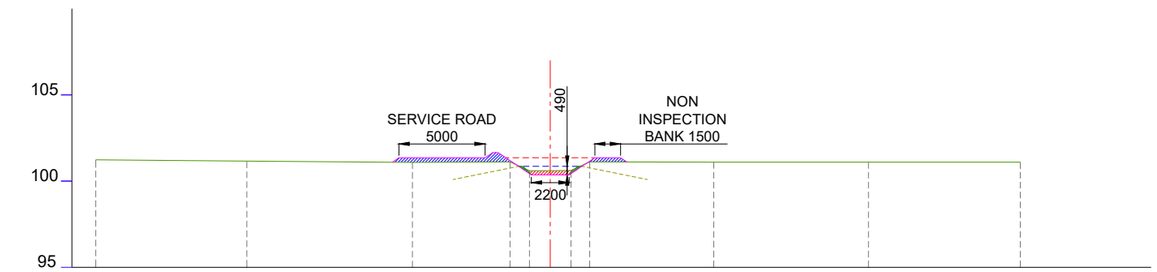


EXIST. LEVEL (M)	100.926	100.894	100.853	100.814	100.780	100.805	100.289	100.800	100.790	100.789	100.787	100.786	100.784
OFFSET (M)	26.124	20.698	14.938	9.472	5.171	2.369	0.000	2.270	6.954	11.833	17.294	22.708	28.116

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 5.668

CH : 9+500 KM

DESIGNED BED LEVEL = 100.342 M

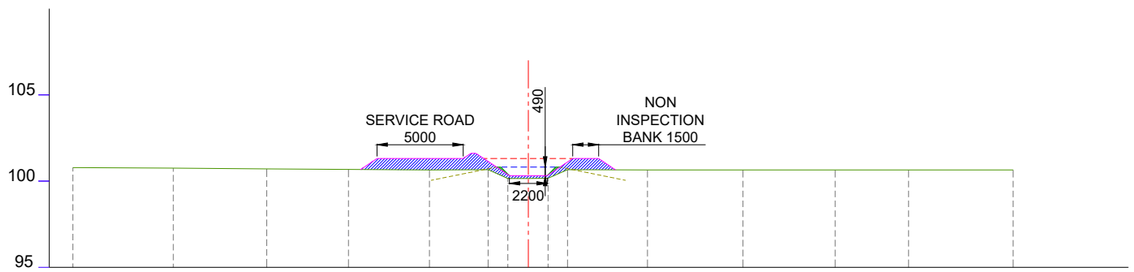


EXIST. LEVEL (M)	101.235	101.162	101.089	101.114	100.598	101.109	101.099	101.096	101.093
OFFSET (M)	26.396	17.614	7.998	2.345	0.000	2.297	9.493	18.481	27.289

CUTTING AREA (SQ.M) = 0.707
FILLING AREA (SQ.M) = 2.360

CH : 9+400 KM

DESIGNED BED LEVEL = 100.363 M



EXIST. LEVEL (M)	100.786	100.753	100.713	100.674	100.640	100.665	100.149	100.660	100.650	100.648	100.647	100.645	100.644
OFFSET (M)	26.442	20.608	15.188	10.439	5.735	2.330	0.000	2.279	6.925	12.468	17.820	22.076	28.154

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 7.397

CH : 9+600 KM

DESIGNED BED LEVEL = 100.321 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

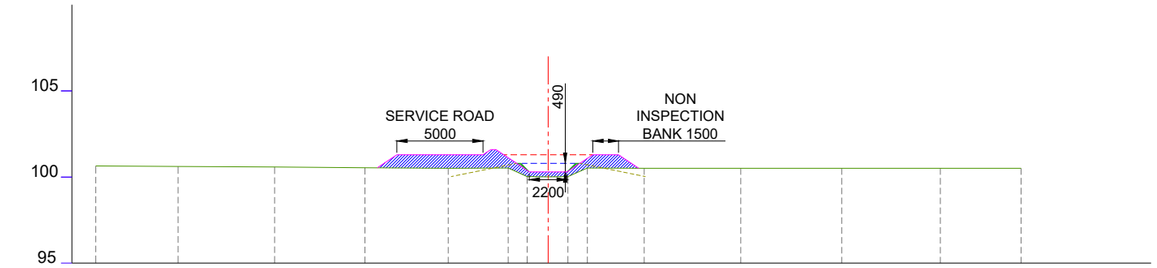
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 24 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

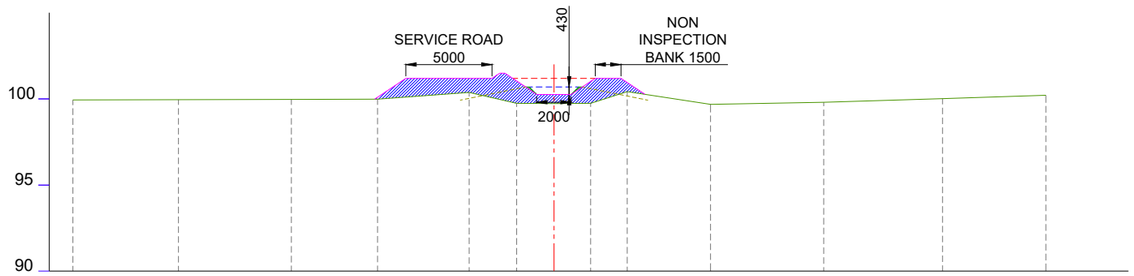


EXIST. LEVEL (M)	100.648	100.616	100.575	100.537	100.502	100.527	100.011	100.522	100.512	100.511	100.509	100.508	100.506
OFFSET (M)	26.279	21.488	15.893	10.645	5.803	2.329	0.000	2.273	5.574	11.182	17.041	22.762	27.451

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 9.164

CH : 9+700 KM

DESIGNED BED LEVEL = 100.300 M

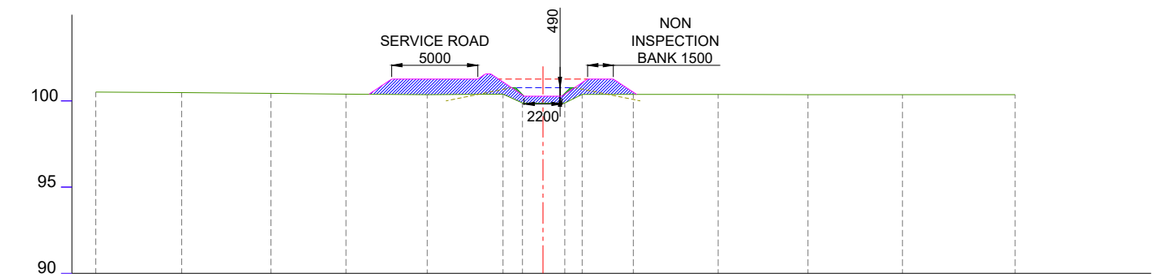


EXIST. LEVEL (M)	99.942	99.953	99.968	99.979	100.371	99.735	99.729	99.740	100.422	99.678	99.803	100.013	100.215
OFFSET (M)	27.932	21.798	15.249	10.248	4.916	2.167	0.000	2.134	4.256	9.089	15.668	22.562	28.560

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 13.519

CH : 9+900 KM

DESIGNED BED LEVEL = 100.258 M

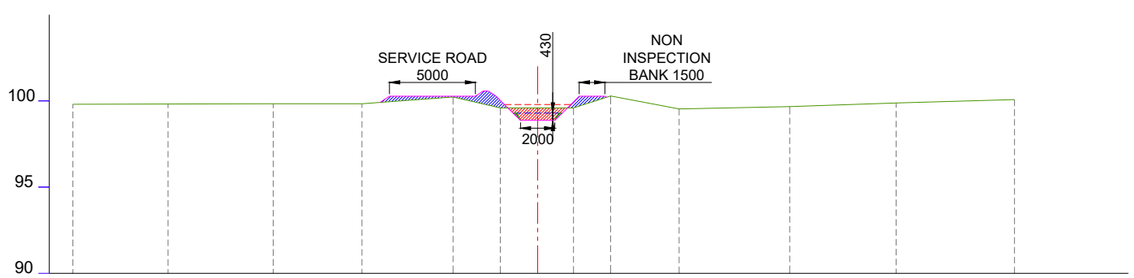


EXIST. LEVEL (M)	100.509	100.477	100.436	100.397	100.363	100.388	99.872	100.383	100.373	100.372	100.370	100.369	100.367
OFFSET (M)	25.978	20.981	15.807	11.441	6.725	2.329	0.000	2.269	5.235	10.172	15.387	20.859	27.412

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 11.013

CH : 9+800 KM

DESIGNED BED LEVEL = 100.279 M



EXIST. LEVEL (M)	99.805	99.815	99.830	99.842	100.234	99.597	99.591	99.602	100.285	99.541	99.665	99.875	100.078
OFFSET (M)	26.986	21.465	15.361	10.196	4.916	2.167	0.000	2.078	4.241	8.212	14.635	20.819	27.691

CUTTING AREA (SQ.M) = 1.988
FILLING AREA (SQ.M) = 2.724

CH : 10+000 KM

DESIGNED BED LEVEL = 98.866 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

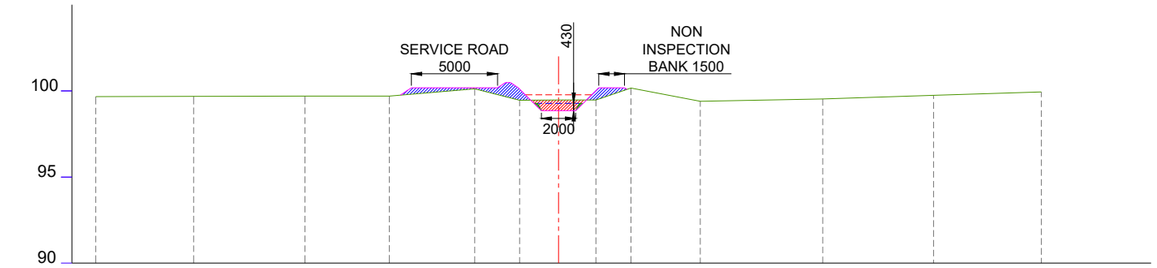
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 25 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

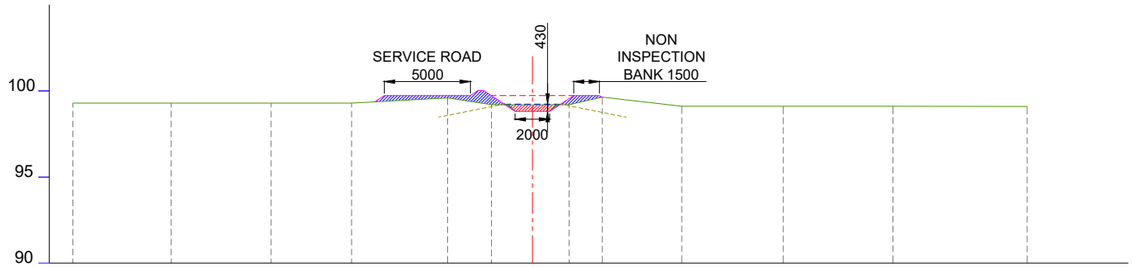


EXIST. LEVEL (M)	99.665	99.676	99.691	99.702	100.116	99.458	99.473	99.463	100.165	99.401	99.526	99.736	99.939
OFFSET (M)	26.875	21.190	14.724	9.831	4.868	2.253	0.000	2.173	4.200	8.228	15.345	21.779	28.035

CUTTING AREA (SQ.M) = 1.636
FILLING AREA (SQ.M) = 3.246

CH : 10+100 KM

DESIGNED BED LEVEL = 98.845 M

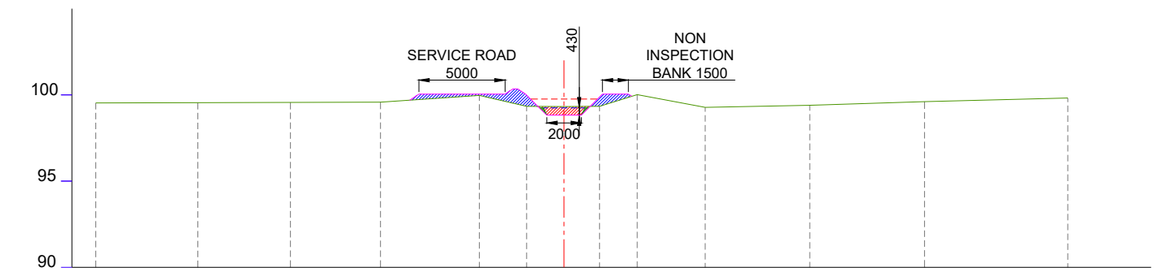


EXIST. LEVEL (M)	99.290	99.290	99.290	99.290	99.595	99.192	99.188	99.200	99.631	99.112	99.104	99.106	99.090
OFFSET (M)	26.682	20.971	15.171	10.497	4.931	2.385	0.000	2.129	4.065	8.674	14.555	20.942	28.724

CUTTING AREA (SQ.M) = 1.003
FILLING AREA (SQ.M) = 2.948

CH : 10+300 KM

DESIGNED BED LEVEL = 98.803 M

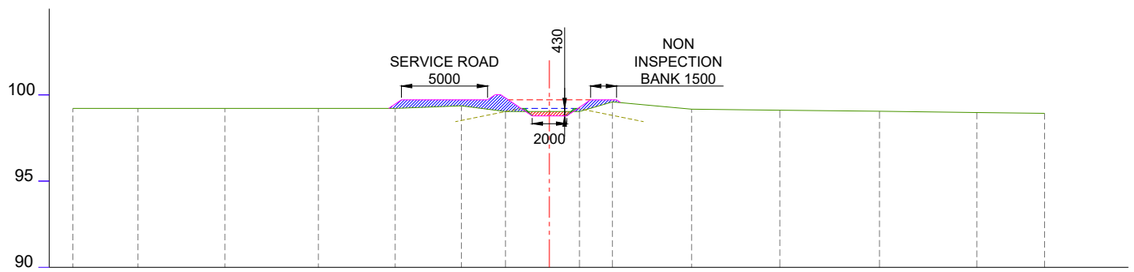


EXIST. LEVEL (M)	99.540	99.551	99.566	99.577	99.969	99.333	99.327	99.338	100.020	99.276	99.401	99.611	99.814
OFFSET (M)	27.197	21.274	15.892	10.661	4.916	2.167	0.000	2.055	4.250	8.192	14.272	20.929	29.249

CUTTING AREA (SQ.M) = 1.268
FILLING AREA (SQ.M) = 3.271

CH : 10+200 KM

DESIGNED BED LEVEL = 98.824 M



EXIST. LEVEL (M)	99.218	99.218	99.218	99.218	99.219	99.370	99.032	99.032	99.043	99.601	99.174	99.115	99.048	98.983	98.938
OFFSET (M)	27.672	23.898	18.846	13.426	8.957	5.109	2.553	0.000	1.744	3.658	8.259	13.383	19.158	24.816	28.747

CUTTING AREA (SQ.M) = 0.600
FILLING AREA (SQ.M) = 4.287

CH : 10+400 KM

DESIGNED BED LEVEL = 98.782 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

H.G. LINE

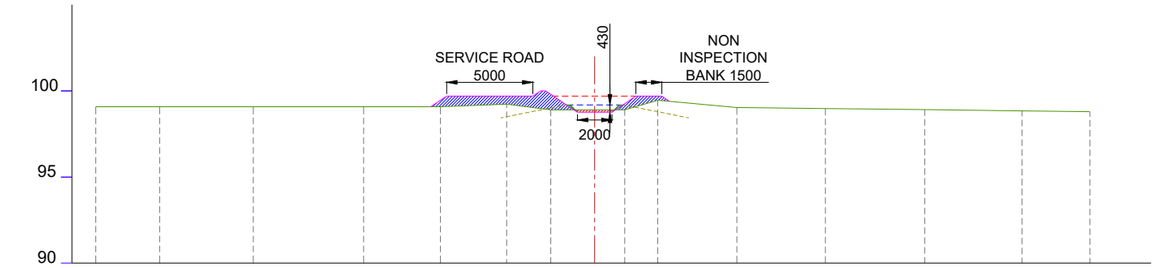
Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 26 of 30

430

X SECTION OF DHARAMPUR SUB DY. MINOR

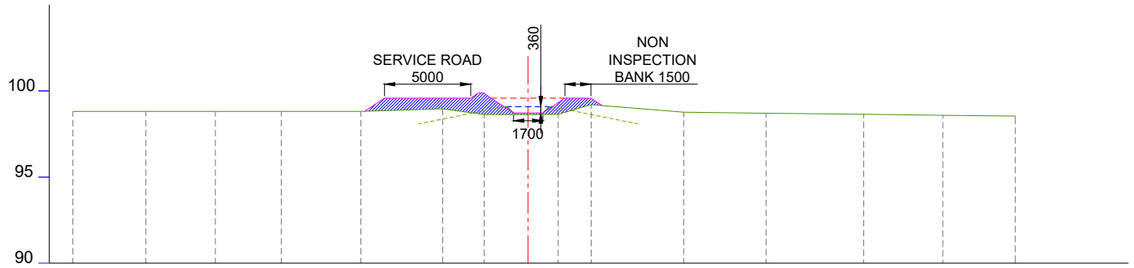


EXIST. LEVEL (M)	99.078	99.078	99.078	99.078	99.078	99.229	98.892	98.892	98.903	99.460	99.033	98.974	98.908	98.843	98.797
OFFSET (M)	28.978	25.271	19.824	13.426	8.957	5.109	2.553	0.000	1.744	3.658	8.259	13.383	19.158	24.816	28.747

CUTTING AREA (SQ.M) = 0.292
FILLING AREA (SQ.M) = 5.612

CH : 10+500 KM

DESIGNED BED LEVEL = 98.761 M

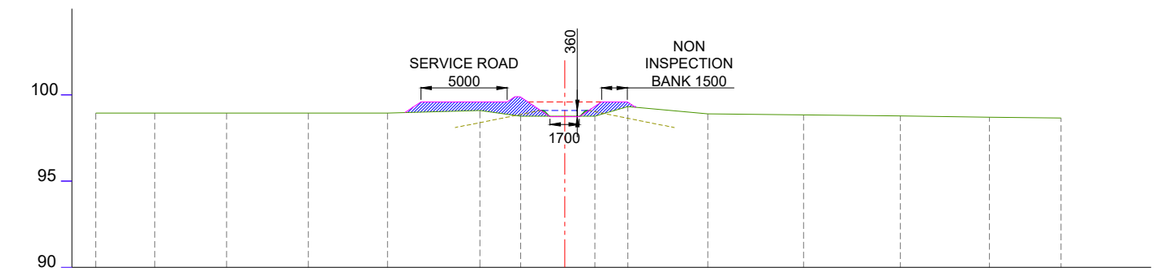


EXIST. LEVEL (M)	98.810	98.810	98.810	98.810	98.810	98.961	98.624	98.624	98.635	99.192	98.765	98.706	98.640	98.575	98.529
OFFSET (M)	26.435	22.202	18.158	14.335	9.714	4.965	2.553	0.000	1.744	3.658	9.039	13.819	19.474	24.072	28.285

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 7.733

CH : 10+700 KM

DESIGNED BED LEVEL = 98.720 M

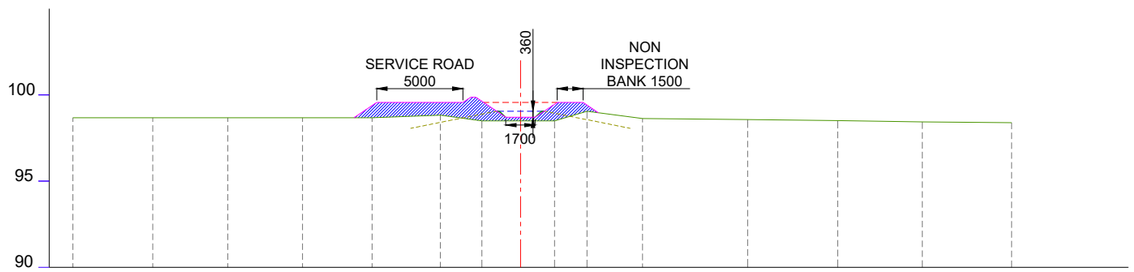


EXIST. LEVEL (M)	98.945	98.945	98.945	98.945	98.945	99.096	98.759	98.759	98.770	99.327	98.900	98.841	98.775	98.710	98.664
OFFSET (M)	27.235	23.804	19.640	14.886	10.295	4.931	2.553	0.000	1.744	3.658	8.304	13.864	19.493	24.660	28.816

CUTTING AREA (SQ.M) = 0.034
FILLING AREA (SQ.M) = 6.182

CH : 10+600 KM

DESIGNED BED LEVEL = 98.741 M



EXIST. LEVEL (M)	98.673	98.673	98.674	98.674	98.674	98.825	98.488	98.488	98.499	99.056	98.629	98.570	98.503	98.438	98.393
OFFSET (M)	25.985	21.351	16.994	12.658	8.619	4.651	2.233	0.000	1.981	3.865	7.097	13.187	18.421	23.338	28.522

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 9.463

CH : 10+800 KM

DESIGNED BED LEVEL = 98.699 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

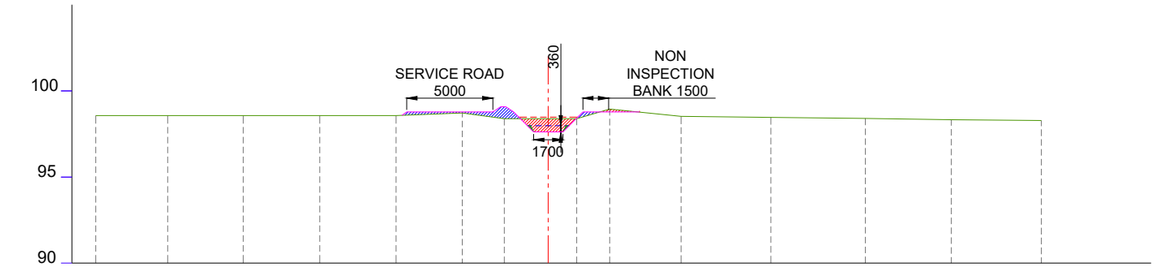
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 27 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

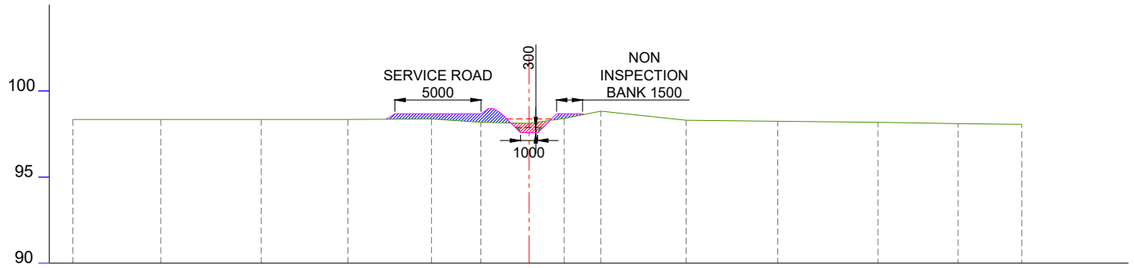


EXIST. LEVEL (M)	98.568	98.567	98.567	98.567	98.568	98.717	98.381	98.379	98.393	98.949	98.523	98.464	98.398	98.332	98.287
OFFSET (M)	26.277	22.102	17.718	13.263	8.831	4.996	2.557	0.000	1.656	3.565	7.714	12.932	18.417	23.394	28.625

CUTTING AREA (SQ.M) = 2.118
FILLING AREA (SQ.M) = 1.637

CH : 10+900 KM

DESIGNED BED LEVEL = 97.611 M

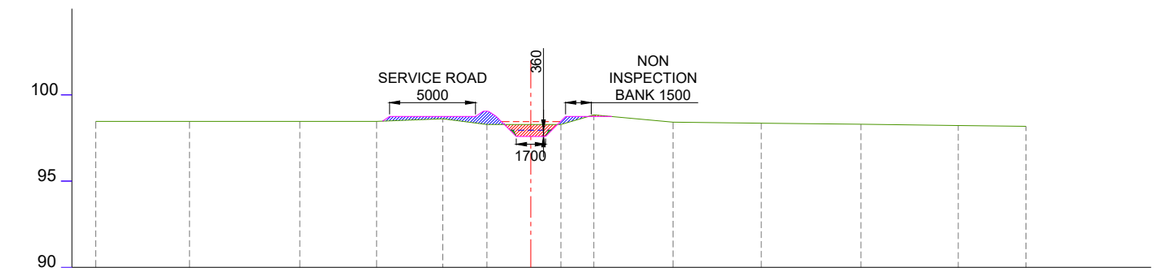


EXIST. LEVEL (M)	98.339	98.339	98.339	98.339	98.370	98.181	98.119	98.393	98.824	98.294	98.235	98.169	98.103	98.058
OFFSET (M)	26.494	21.389	15.562	10.521	5.667	2.805	0.000	2.033	4.150	9.113	14.438	20.250	24.907	28.604

CUTTING AREA (SQ.M) = 0.951
FILLING AREA (SQ.M) = 3.194

CH : 11+100 KM

DESIGNED BED LEVEL = 97.569 M

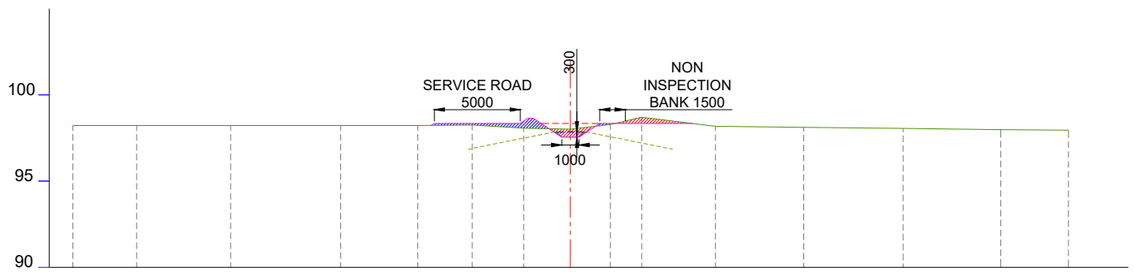


EXIST. LEVEL (M)	98.465	98.465	98.465	98.465	98.616	98.279	98.279	98.290	98.847	98.420	98.361	98.295	98.229	98.184
OFFSET (M)	25.270	19.824	13.426	8.957	5.109	2.553	0.000	1.744	3.658	8.259	13.383	19.158	24.816	28.746

CUTTING AREA (SQ.M) = 1.720
FILLING AREA (SQ.M) = 2.368

CH : 11+000 KM

DESIGNED BED LEVEL = 97.590 M



EXIST. LEVEL (M)	98.225	98.226	98.226	98.226	98.226	98.257	98.068	98.006	98.280	98.711	98.181	98.122	98.055	97.990	97.945
OFFSET (M)	28.884	25.177	19.731	13.333	8.864	5.701	2.715	0.000	2.328	4.152	8.427	13.551	19.326	24.984	28.914

CUTTING AREA (SQ.M) = 1.729
FILLING AREA (SQ.M) = 1.444

CH : 11+200 KM

DESIGNED BED LEVEL = 97.544 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

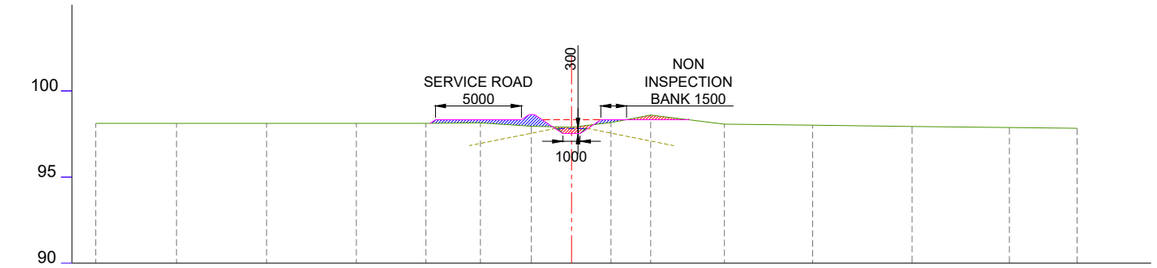
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 28 of 30

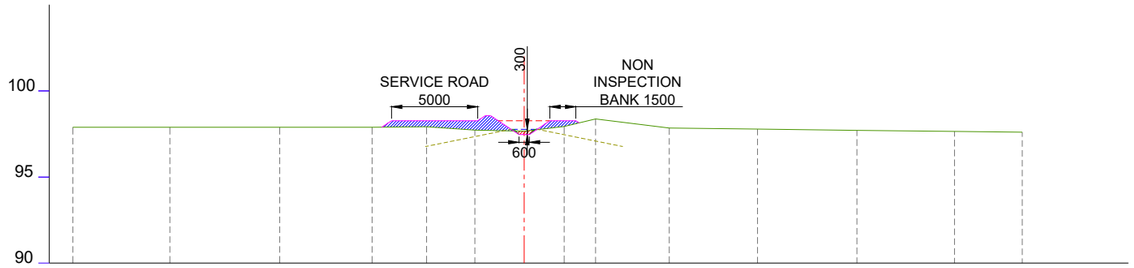
X SECTION OF DHARAMPUR SUB DY. MINOR



EXIST. LEVEL (M)	98.110	98.110	98.110	98.111	98.111	98.142	97.953	97.891	98.165	98.596	98.066	98.007	97.940	97.875	97.830
OFFSET (M)	27.627	22.932	17.709	12.490	8.445	5.282	2.328	0.000	2.294	4.600	8.875	13.999	19.774	25.432	29.362

CUTTING AREA (SQ.M) = 1.191
FILLING AREA (SQ.M) = 2.129

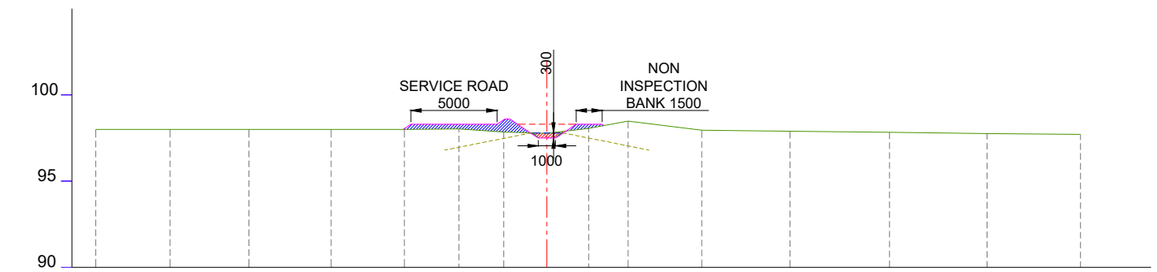
CH : 11+300 KM
DESIGNED BED LEVEL = 97.519 M



EXIST. LEVEL (M)	97.883	97.883	97.883	97.884	97.914	97.725	97.663	97.937	98.368	97.839	97.780	97.713	97.648	97.603	
OFFSET (M)	26.201	20.563	14.189	8.827	5.664	2.868	0.000	2.328	4.152	8.427	13.551	19.326	24.984	28.915	

CUTTING AREA (SQ.M) = 0.202
FILLING AREA (SQ.M) = 4.022

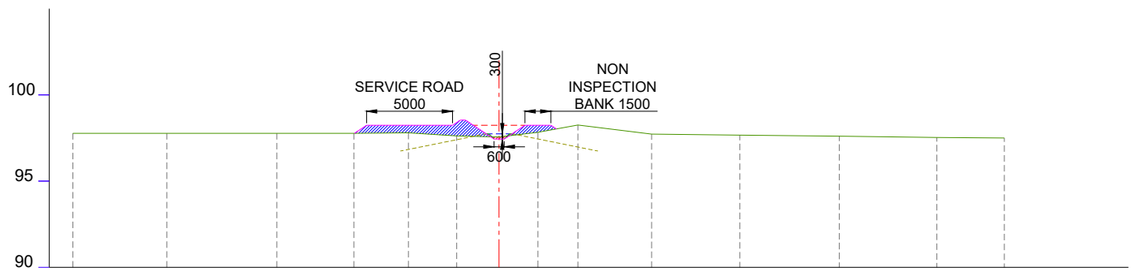
CH : 11+500 KM
DESIGNED BED LEVEL = 97.469 M



EXIST. LEVEL (M)	97.998	97.998	97.998	97.999	97.999	98.030	97.841	97.779	98.053	98.484	97.954	97.895	97.828	97.763	97.718
OFFSET (M)	26.202	21.883	17.305	12.528	8.270	5.107	2.500	0.000	2.427	4.719	8.994	14.118	19.892	25.551	30.984

CUTTING AREA (SQ.M) = 0.496
FILLING AREA (SQ.M) = 2.981

CH : 11+400 KM
DESIGNED BED LEVEL = 97.494 M



EXIST. LEVEL (M)	97.773	97.773	97.774	97.774	97.805	97.616	97.554	97.828	98.259	97.729	97.670	97.603	97.538	97.493	
OFFSET (M)	24.749	19.303	12.905	8.436	5.272	2.464	0.000	2.246	4.579	8.854	13.978	19.753	25.411	29.342	

CUTTING AREA (SQ.M) = 0.104
FILLING AREA (SQ.M) = 4.808

CH : 11+600 KM
DESIGNED BED LEVEL = 97.443 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

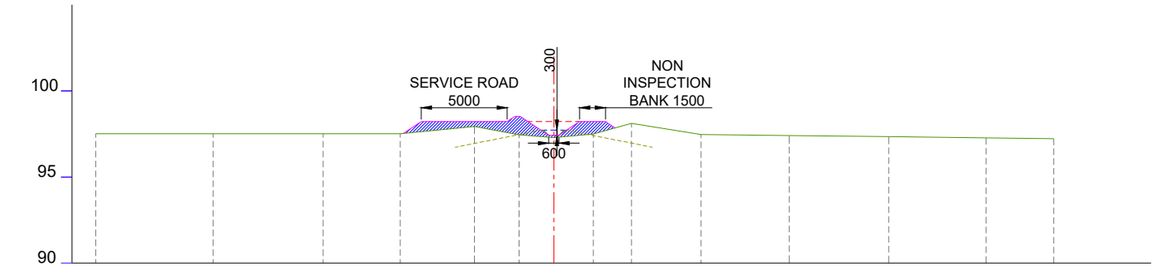
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 29 of 30

X SECTION OF DHARAMPUR SUB DY. MINOR

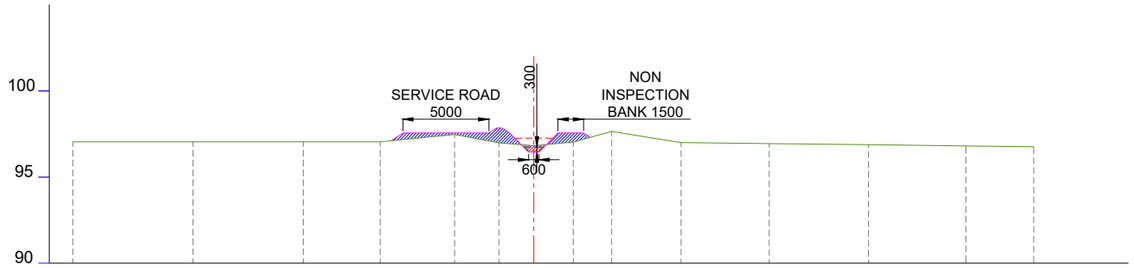


EXIST. LEVEL (M)	97.508	97.508	97.508	97.509	97.929	97.449	97.289	97.497	98.114	97.464	97.405	97.338	97.273	97.228
OFFSET (M)	26.600	19.784	13.386	8.917	4.600	2.016	0.000	2.297	4.516	8.543	13.667	19.441	25.099	29.030

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 6.003

CH : 11+700 KM

DESIGNED BED LEVEL = 97.417 M

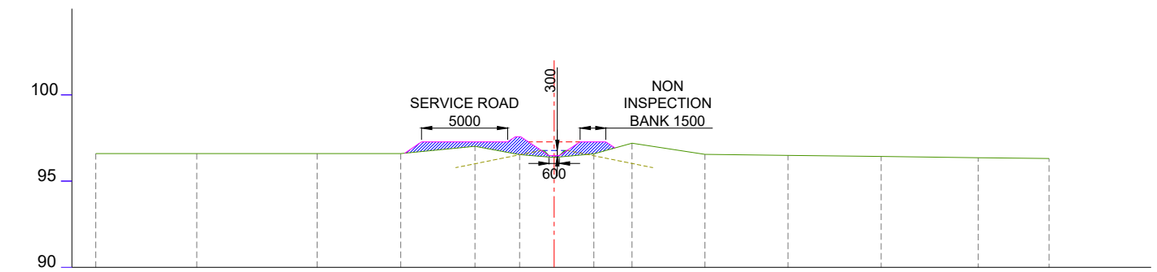


EXIST. LEVEL (M)	97.043	97.043	97.043	97.043	97.463	96.983	96.823	97.031	97.648	96.998	96.939	96.873	96.808	96.762
OFFSET (M)	26.759	19.784	13.386	8.917	4.600	2.016	0.000	2.297	4.516	8.543	13.667	19.441	25.099	29.030

CUTTING AREA (SQ.M) = 0.406
FILLING AREA (SQ.M) = 3.483

CH : 11+900 KM

DESIGNED BED LEVEL = 96.449 M

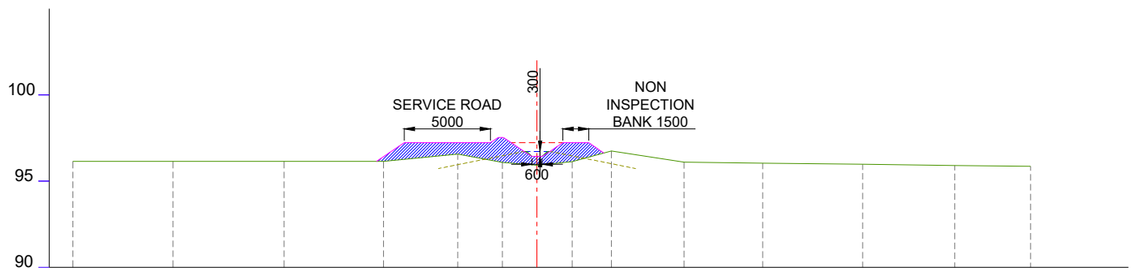


EXIST. LEVEL (M)	96.594	96.594	96.594	96.594	97.014	96.534	96.374	96.582	97.199	96.549	96.490	96.424	96.358	96.313
OFFSET (M)	26.625	20.752	13.758	8.917	4.599	2.016	0.000	2.297	4.516	8.744	13.570	18.988	24.616	28.738

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 5.684

CH : 11+800 KM

DESIGNED BED LEVEL = 96.476 M



EXIST. LEVEL (M)	96.144	96.144	96.144	96.145	96.565	96.085	95.925	96.133	96.750	96.100	96.041	95.974	95.909	95.864
OFFSET (M)	26.949	21.135	14.691	8.917	4.599	2.016	0.000	2.046	4.321	8.533	13.101	18.900	24.258	28.655

CUTTING AREA (SQ.M) = 0
FILLING AREA (SQ.M) = 10.598

CH : 12+000 KM

DESIGNED BED LEVEL = 96.423 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

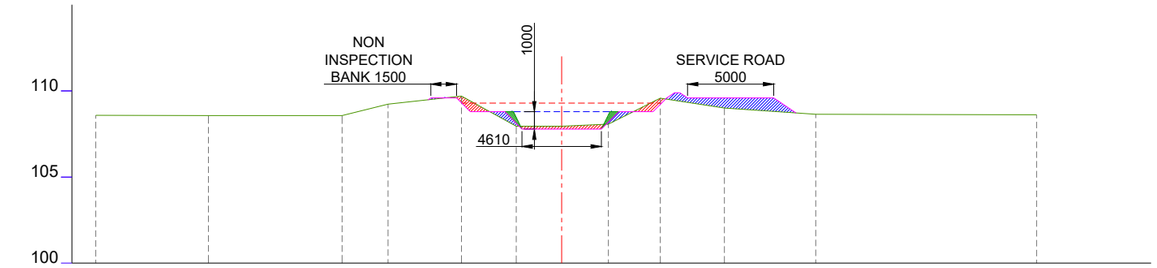
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM.,26+970 KM.,ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ XSEC- 30 of 30

X SECTION OF PATOI DY.

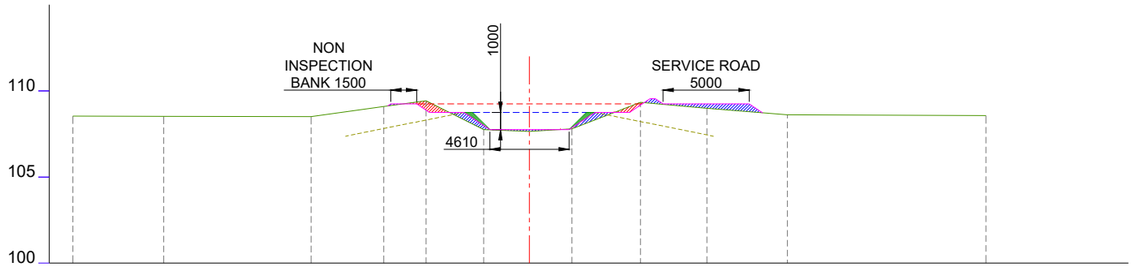


EXIST. LEVEL (M)	108.584	108.571	108.561	109.223	109.691	107.943	107.9430	108.064	109.577	109.008	108.639	108.606
OFFSET (M)	27.062	20.514	12.755	10.085	5.824	2.640	0.000	2.716	5.716	9.445	14.756	27.577

CUTTING AREA (SQ.M) = 2.189
FILLING AREA (SQ.M) = 4.588

CH : 0+100 KM

DESIGNED BED LEVEL = 107.786 M

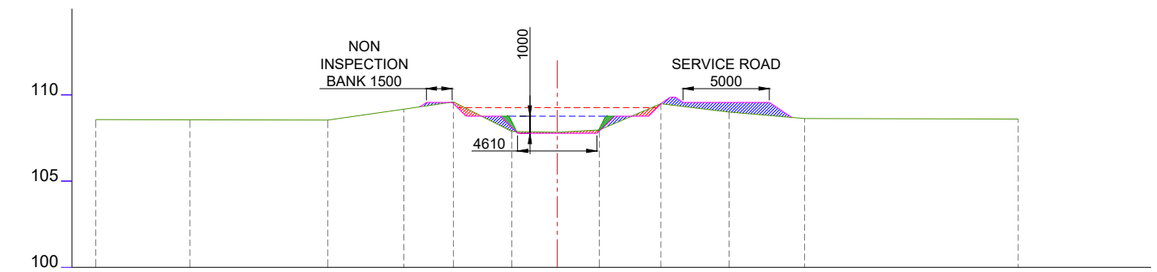


EXIST. LEVEL (M)	108.543	108.519	108.501	109.092	109.427	107.749	107.6430	107.797	109.338	108.990	108.606	108.569
OFFSET (M)	26.512	21.244	12.674	8.455	6.011	2.659	0.000	2.458	6.449	10.303	14.977	26.503

CUTTING AREA (SQ.M) = 1.015
FILLING AREA (SQ.M) = 3.032

CH : 0+300 KM

DESIGNED BED LEVEL = 107.746 M

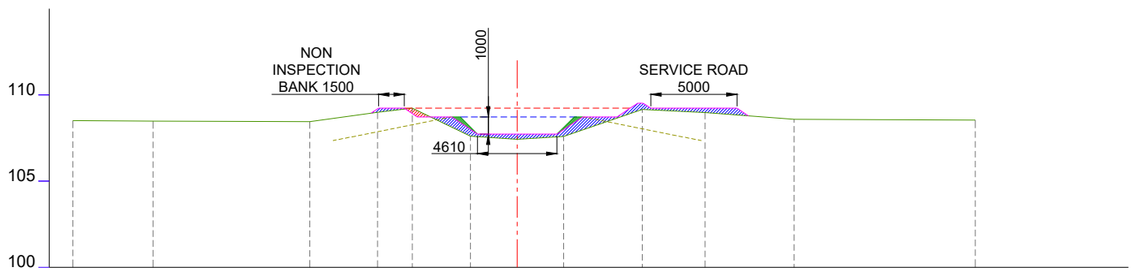


EXIST. LEVEL (M)	108.569	108.553	108.539	109.177	109.599	107.874	107.8370	107.970	109.493	109.002	108.628	108.594
OFFSET (M)	26.805	21.321	13.324	8.912	6.028	2.648	0.000	2.432	6.005	9.967	14.355	26.765

CUTTING AREA (SQ.M) = 1.338
FILLING AREA (SQ.M) = 4.665

CH : 0+200 KM

DESIGNED BED LEVEL = 107.766 M



EXIST. LEVEL (M)	108.514	108.479	108.456	108.995	109.231	107.606	107.4200	107.597	109.158	108.976	108.580	108.541
OFFSET (M)	25.800	21.153	12.046	8.116	6.098	2.712	0.000	2.698	7.253	10.913	16.073	26.588

CUTTING AREA (SQ.M) = 0.298
FILLING AREA (SQ.M) = 5.675

CH : 0+400 KM

DESIGNED BED LEVEL = 107.726 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

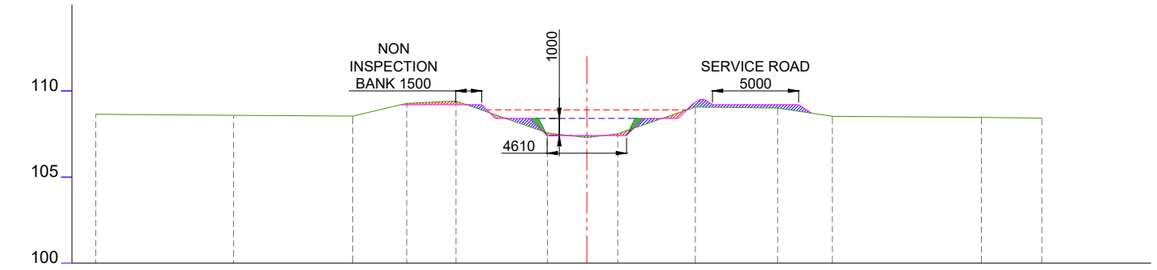
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 1 of 39

X SECTION OF PATOI DY.

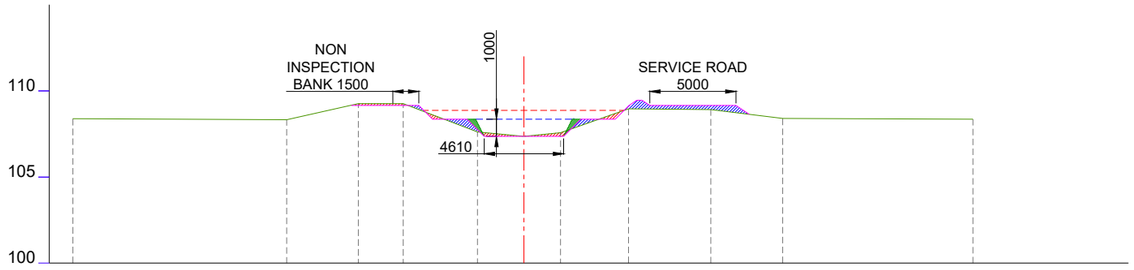


EXIST. LEVEL (M)	108.643	108.577	108.530	109.280	109.404	107.561	107.2860	107.506	109.063	109.004	108.520	108.462	108.410
OFFSET (M)	28.515	20.504	13.596	10.455	7.590	2.291	0.000	1.792	6.306	11.076	14.262	22.908	26.417

CUTTING AREA (SQ.M) = 1.128
FILLING AREA (SQ.M) = 2.748

CH : 0+500 KM

DESIGNED BED LEVEL = 107.401 M

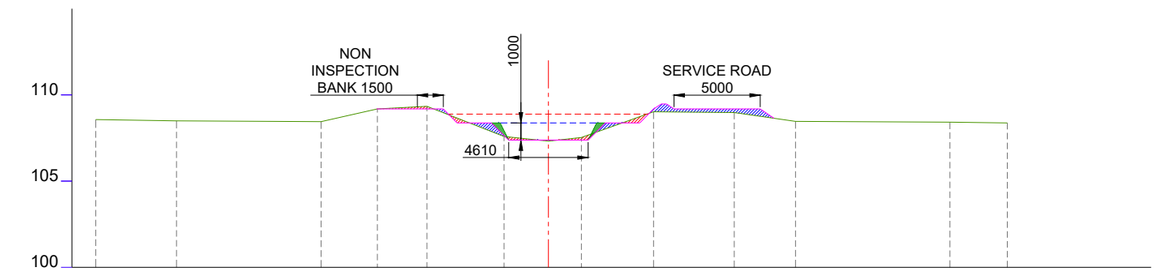


EXIST. LEVEL (M)	108.379	108.331	109.252	109.252	107.617	107.357	107.577	108.965	108.919	108.400	108.356		
OFFSET (M)	26.189	13.770	9.612	7.008	2.700	0.000	2.119	6.076	10.842	15.026	26.074		

CUTTING AREA (SQ.M) = 1.243
FILLING AREA (SQ.M) = 2.931

CH : 0+700 KM

DESIGNED BED LEVEL = 107.361 M

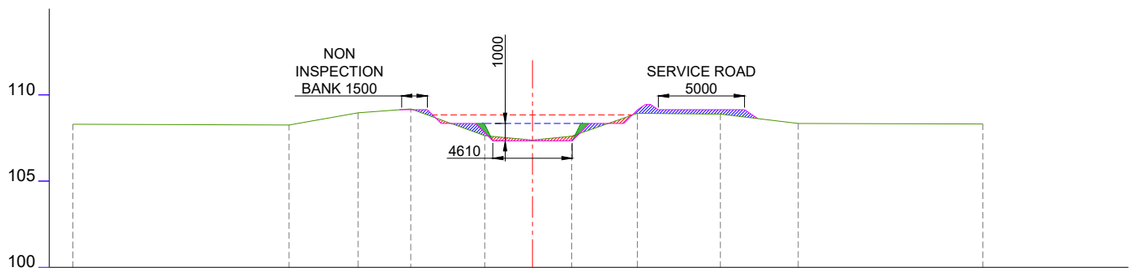


EXIST. LEVEL (M)	108.565	108.496	108.449	109.190	109.342	107.584	107.314	107.534	109.024	108.970	108.472	108.420	108.372
OFFSET (M)	26.285	21.597	13.194	9.932	7.045	2.580	0.000	1.918	6.101	10.797	14.351	23.315	26.651

CUTTING AREA (SQ.M) = 1.135
FILLING AREA (SQ.M) = 2.705

CH : 0+600 KM

DESIGNED BED LEVEL = 107.381 M



EXIST. LEVEL (M)	108.297	108.248	108.969	109.189	107.641	107.3870	107.607	108.925	108.883	108.350	108.313		
OFFSET (M)	26.689	14.141	10.125	7.072	2.773	0.000	2.266	6.088	10.901	15.430	26.147		

CUTTING AREA (SQ.M) = 1.144
FILLING AREA (SQ.M) = 3.099

CH : 0+800 KM

DESIGNED BED LEVEL = 107.341 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

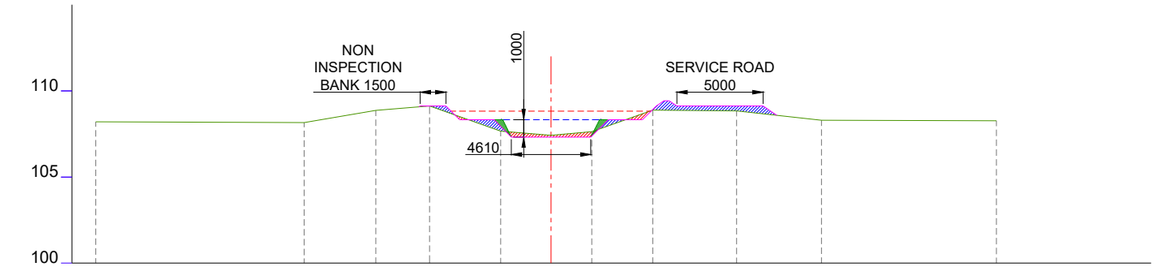
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 2 of 39

X SECTION OF PATOI DY.

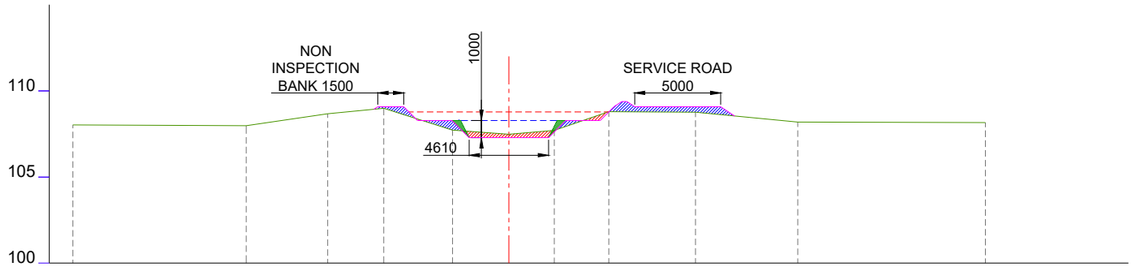


EXIST. LEVEL (M)	108.210	108.159	108.872	109.121	107.666	107.4189	107.639	108.880	108.844	108.296	108.264
OFFSET (M)	26.446	14.339	10.178	7.061	2.926	0.000	2.356	5.902	10.767	15.691	25.856

CUTTING AREA (SQ.M) = 1.382
FILLING AREA (SQ.M) = 3.313

CH : 0+900 KM

DESIGNED BED LEVEL = 107.321 M

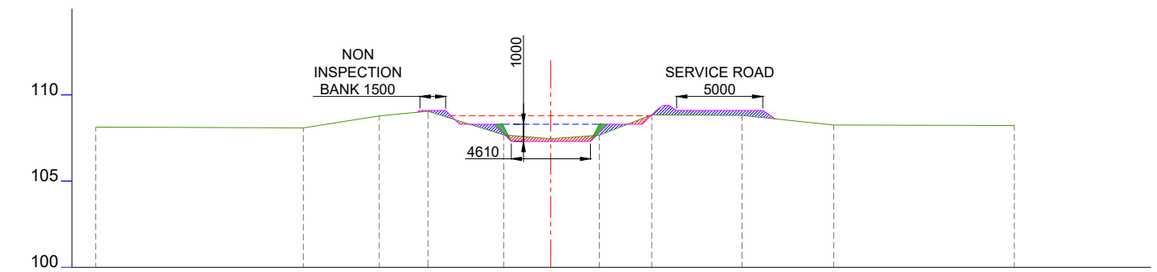


EXIST. LEVEL (M)	108.029	107.977	108.672	108.983	107.718	107.4840	107.704	108.789	108.765	108.184	108.165
OFFSET (M)	25.312	15.247	10.522	7.255	3.270	0.000	2.646	5.810	10.842	16.777	27.664

CUTTING AREA (SQ.M) = 1.771
FILLING AREA (SQ.M) = 3.920

CH : 1+100 KM

DESIGNED BED LEVEL = 107.281 M

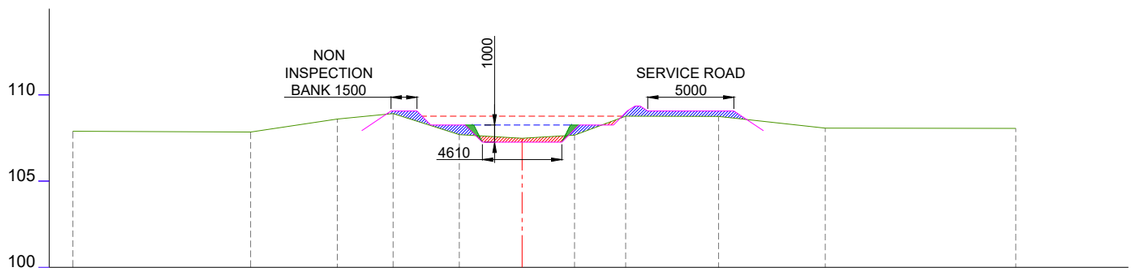


EXIST. LEVEL (M)	108.133	108.081	108.786	109.052	107.688	107.4513	107.667	108.835	108.810	108.248	108.221
OFFSET (M)	26.432	14.371	9.969	7.131	2.739	0.000	2.813	5.850	11.097	16.418	26.911

CUTTING AREA (SQ.M) = 1.553
FILLING AREA (SQ.M) = 3.448

CH : 1+000 KM

DESIGNED BED LEVEL = 107.301 M



EXIST. LEVEL (M)	107.895	107.845	108.601	108.916	107.699	107.4810	107.666	108.769	108.753	108.070	108.059
OFFSET (M)	26.078	15.758	10.730	7.479	3.644	0.000	3.052	6.012	11.418	17.602	28.674

CUTTING AREA (SQ.M) = 1.599
FILLING AREA (SQ.M) = 4.500

CH : 1+200 KM

DESIGNED BED LEVEL = 107.261 M

LEGEND

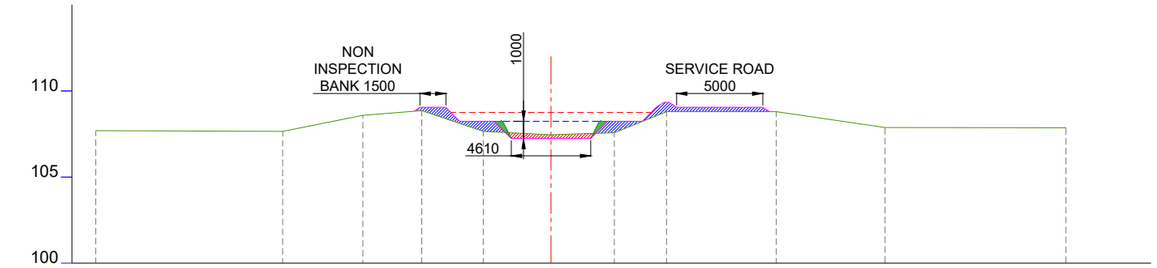
CUT AREA	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 3 of 39

X SECTION OF PATOI DY.

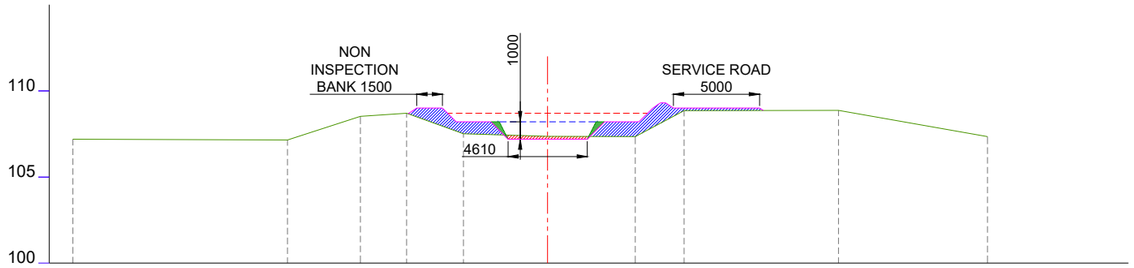


EXIST. LEVEL (M)	107.697	107.646	108.578	108.858	107.645	107.4500	107.574	108.791	108.787	107.872	107.856
OFFSET (M)	26.436	15.573	10.928	7.501	3.929	0.000	3.680	6.709	13.089	19.400	29.896

CUTTING AREA (SQ.M) = 1.282
FILLING AREA (SQ.M) = 5.192

CH : 1+300 KM

DESIGNED BED LEVEL = 107.241 M

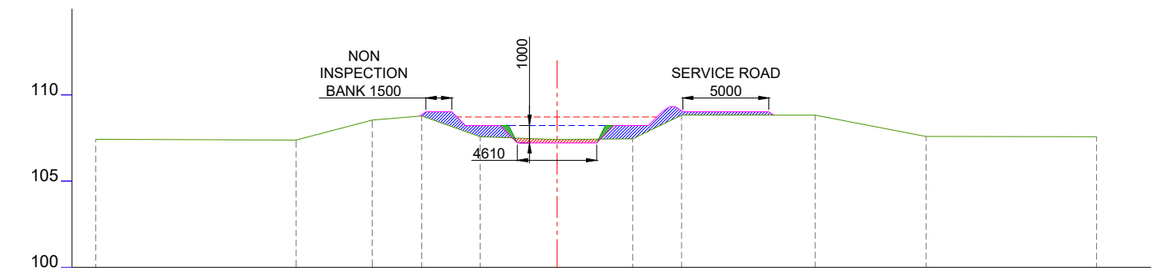


EXIST. LEVEL (M)	107.202	107.149	108.520	108.708	107.508	107.3670	107.338	108.849	108.874	107.352	
OFFSET (M)	27.567	15.100	10.879	8.188	4.882	0.000	5.089	7.914	16.879	25.544	

CUTTING AREA (SQ.M) = 0.866
FILLING AREA (SQ.M) = 8.437

CH : 1+500 KM

DESIGNED BED LEVEL = 107.201 M

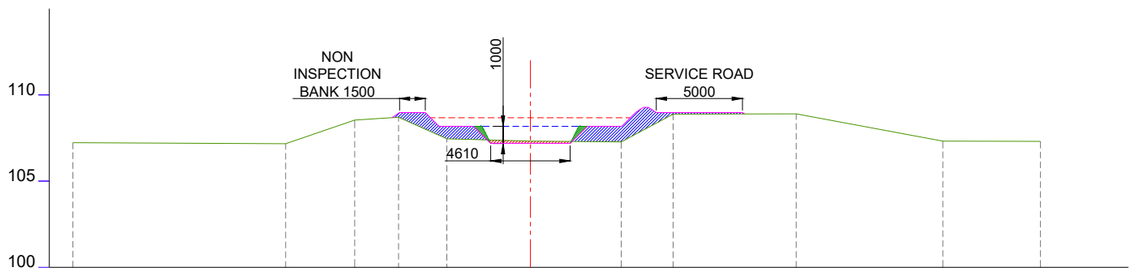


EXIST. LEVEL (M)	107.430	107.381	108.547	108.777	107.572	107.4050	107.448	108.822	108.834	107.593	107.573
OFFSET (M)	26.783	15.144	10.727	7.850	4.455	0.000	4.406	7.234	14.994	21.432	31.327

CUTTING AREA (SQ.M) = 1.033
FILLING AREA (SQ.M) = 6.754

CH : 1+400 KM

DESIGNED BED LEVEL = 107.221 M



EXIST. LEVEL (M)	107.234	107.170	108.541	108.705	107.454	107.3260	107.275	108.889	108.907	107.326	107.304
OFFSET (M)	26.569	14.220	10.202	7.666	4.853	0.000	5.276	8.280	15.430	23.950	29.613

CUTTING AREA (SQ.M) = 0.742
FILLING AREA (SQ.M) = 8.452

CH : 1+600 KM

DESIGNED BED LEVEL = 107.181 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

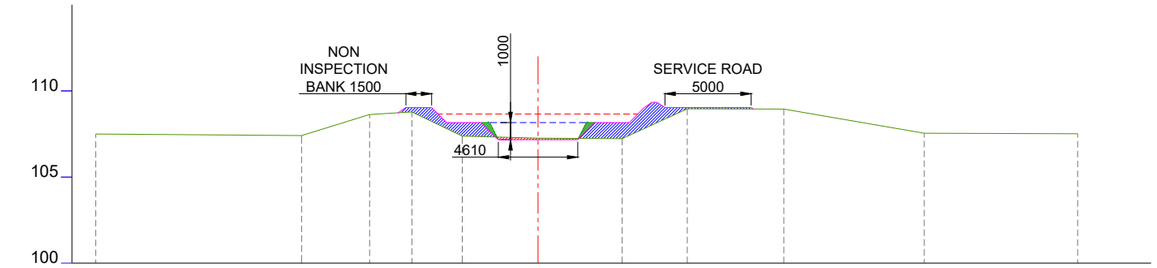
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 4 of 39

X SECTION OF PATOI DY.

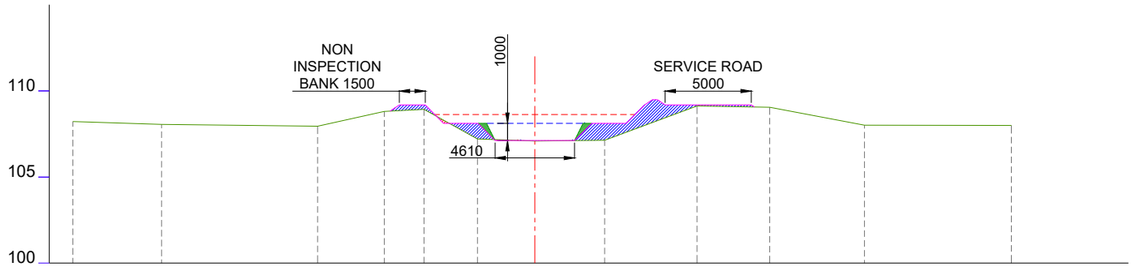


EXIST. LEVEL (M)	107.492	107.413	108.623	108.773	107.376	107.2530	107.231	108.963	108.950	107.536	107.518
OFFSET (M)	25.680	13.724	9.781	7.314	4.390	0.000	4.882	8.667	14.277	22.435	31.332

CUTTING AREA (SQ.M) = 0.503
FILLING AREA (SQ.M) = 8.137

CH : 1+700 KM

DESIGNED BED LEVEL = 107.161 M

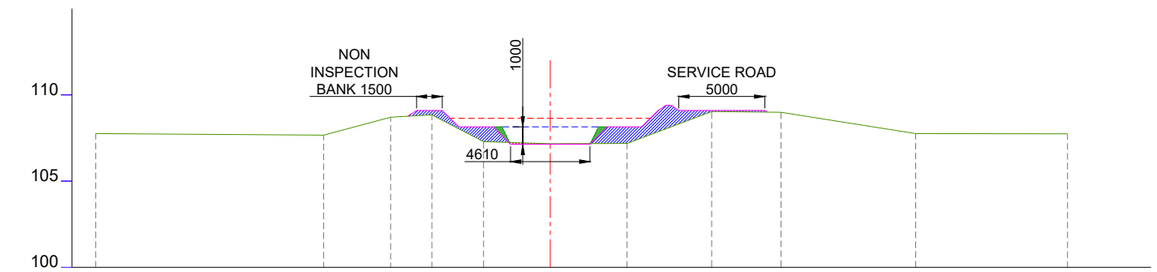


EXIST. LEVEL (M)	108.226	108.049	107.950	108.802	108.923	107.205	107.0910	107.132	109.127	109.046	108.008	107.995
OFFSET (M)	26.824	21.678	12.612	8.750	6.435	3.340	0.000	4.057	9.413	13.636	19.132	27.666

CUTTING AREA (SQ.M) = 0.098
FILLING AREA (SQ.M) = 7.445

CH : 1+900 KM

DESIGNED BED LEVEL = 107.121 M

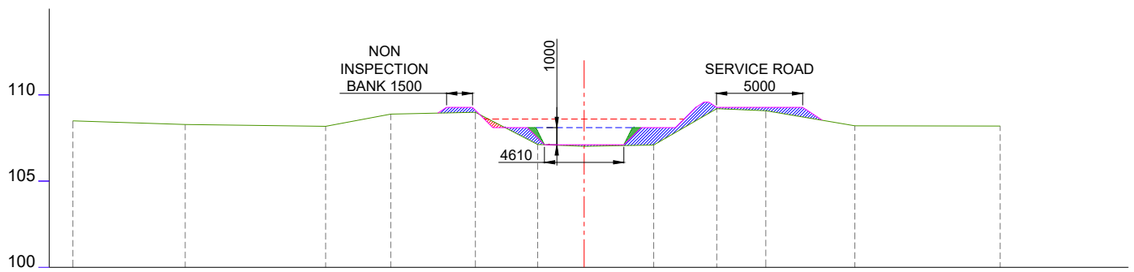


EXIST. LEVEL (M)	107.760	107.672	108.710	108.846	107.294	107.1750	107.183	109.040	108.995	107.760	107.742
OFFSET (M)	26.394	13.151	9.265	6.874	3.868	0.000	4.468	9.378	13.392	21.218	30.032

CUTTING AREA (SQ.M) = 0.250
FILLING AREA (SQ.M) = 8.109

CH : 1+800 KM

DESIGNED BED LEVEL = 107.141 M



EXIST. LEVEL (M)	108.492	108.288	108.180	108.880	108.990	107.130	107.0200	107.090	109.198	109.087	108.212	108.198
OFFSET (M)	29.688	23.159	15.007	11.234	6.317	2.704	0.000	4.033	7.691	10.545	15.721	24.150

CUTTING AREA (SQ.M) = 0.273
FILLING AREA (SQ.M) = 6.651

CH : 2+000 KM

DESIGNED BED LEVEL = 107.101 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

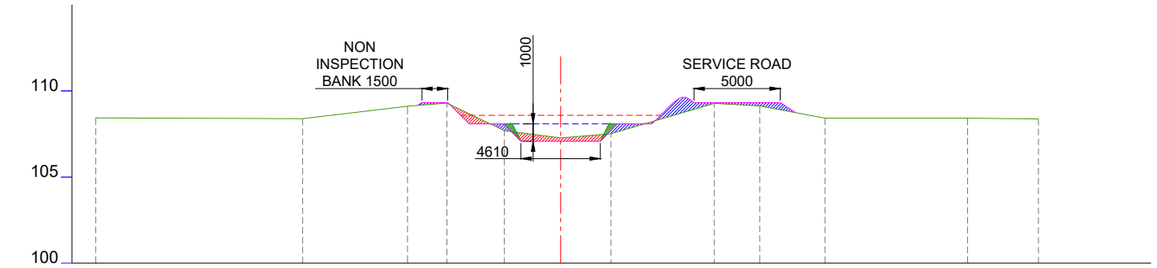
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 5 of 39

X SECTION OF PATOI DY.

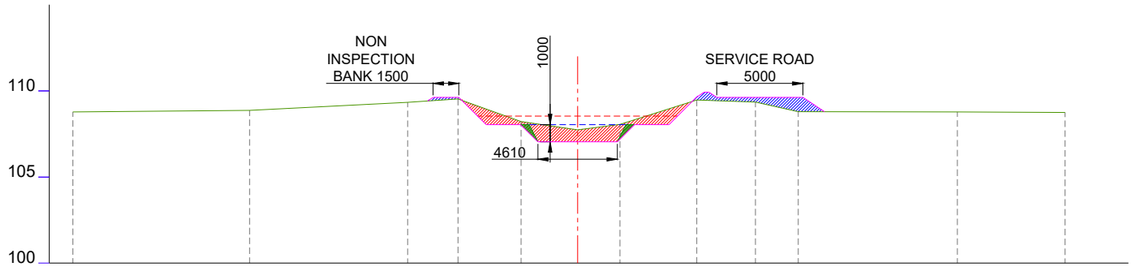


EXIST. LEVEL (M)	108.425	108.379	109.102	109.295	107.690	107.2640	107.518	109.269	109.129	108.417	108.409	108.367
OFFSET (M)	26.993	14.970	8.882	6.602	3.260	0.000	2.929	8.931	11.567	15.358	23.632	27.756

CUTTING AREA (SQ.M) = 2.377
FILLING AREA (SQ.M) = 3.356

CH : 2+100 KM

DESIGNED BED LEVEL = 107.081 M

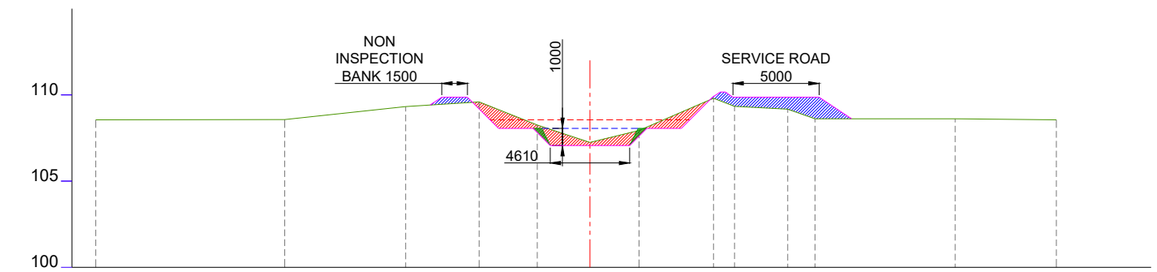


EXIST. LEVEL (M)	108.782	108.866	109.330	109.534	108.225	107.7410	108.048	109.466	109.346	108.790	108.783	108.753
OFFSET (M)	29.301	19.045	9.869	6.945	3.281	0.000	2.465	6.922	10.336	12.823	22.060	28.308

CUTTING AREA (SQ.M) = 8.714
FILLING AREA (SQ.M) = 3.384

CH : 2+300 KM

DESIGNED BED LEVEL = 107.041 M

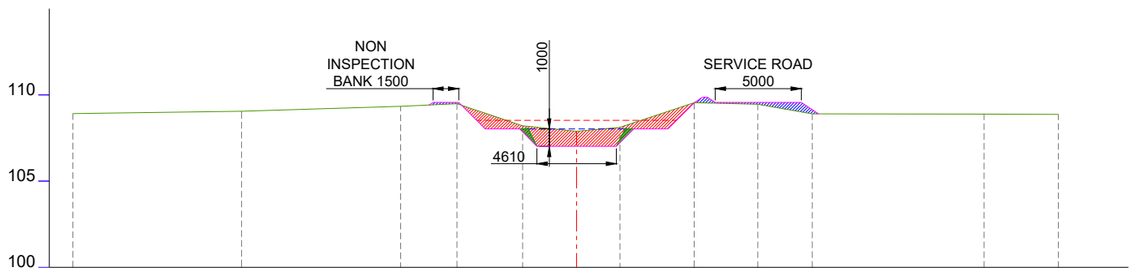


EXIST. LEVEL (M)	108.555	108.570	109.320	109.600	108.250	107.2500	107.930	109.810	109.340	109.170	108.620	108.610	108.561
OFFSET (M)	28.700	17.725	10.703	6.435	3.054	0.000	2.841	7.172	8.391	11.490	13.069	21.200	27.076

CUTTING AREA (SQ.M) = 7.457
FILLING AREA (SQ.M) = 6.210

CH : 2+200 KM

DESIGNED BED LEVEL = 107.061 M



EXIST. LEVEL (M)	108.923	109.049	109.336	109.492	108.210	107.8930	108.123	109.545	109.456	108.895	108.891	108.876
OFFSET (M)	29.254	19.463	10.231	6.961	3.140	0.000	2.511	6.826	10.508	13.680	23.650	27.971

CUTTING AREA (SQ.M) = 9.851
FILLING AREA (SQ.M) = 1.758

CH : 2+400 KM

DESIGNED BED LEVEL = 107.021 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

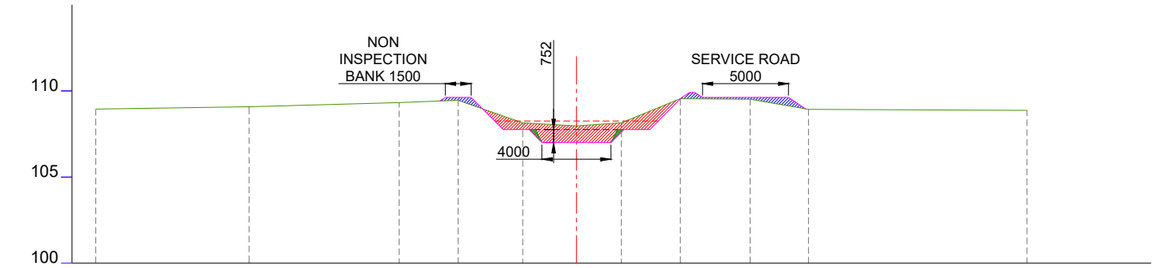
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 6 of 39

X SECTION OF PATOI DY.

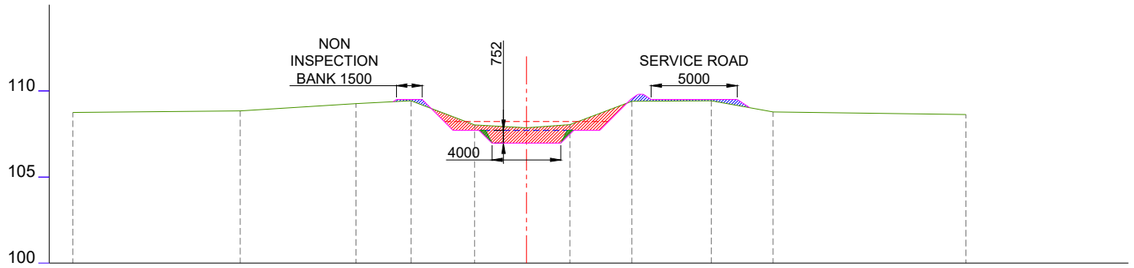


EXIST. LEVEL (M)	108.946	109.082	109.317	109.449	108.143	107.9670	108.139	109.550	109.517	108.921	108.873
OFFSET (M)	27.919	19.011	10.299	6.882	3.123	0.000	2.602	6.033	10.077	13.466	26.161

CUTTING AREA (SQ.M) = 8.598
FILLING AREA (SQ.M) = 1.978

CH : 2+500 KM

DESIGNED BED LEVEL = 107.001 M

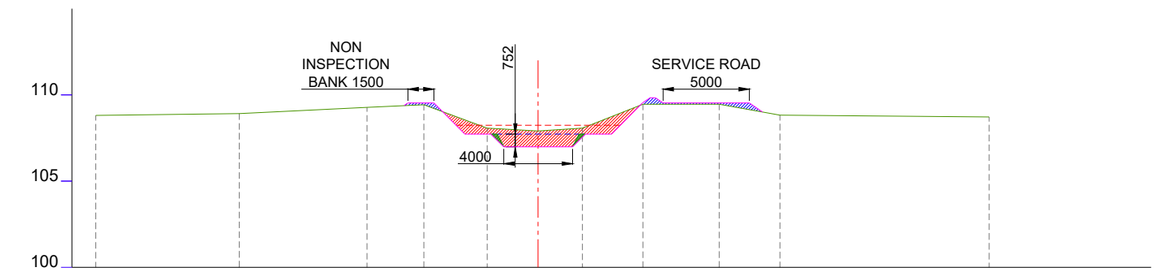


EXIST. LEVEL (M)	108.743	108.830	109.264	109.423	108.019	107.8590	108.040	109.400	109.431	108.780	108.623
OFFSET (M)	26.332	16.615	9.896	6.702	3.011	0.000	2.526	6.119	10.735	14.330	25.519

CUTTING AREA (SQ.M) = 7.925
FILLING AREA (SQ.M) = 1.393

CH : 2+700 KM

DESIGNED BED LEVEL = 106.961 M

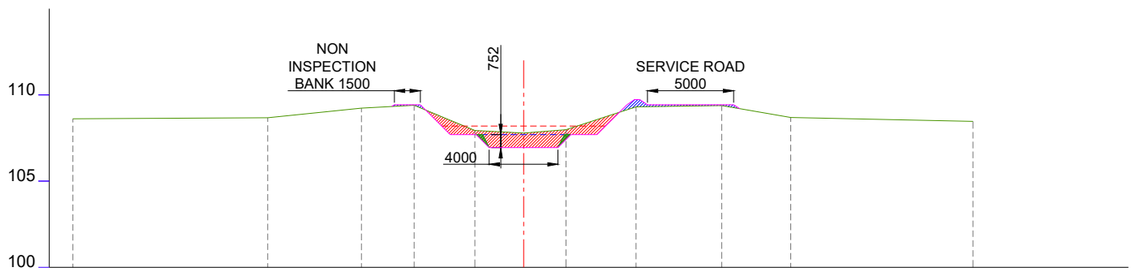


EXIST. LEVEL (M)	108.816	108.923	109.283	109.433	108.066	107.9000	108.077	109.456	109.464	108.833	108.718
OFFSET (M)	25.693	17.346	9.938	6.634	2.954	0.000	2.568	6.089	10.512	14.034	26.181

CUTTING AREA (SQ.M) = 8.216
FILLING AREA (SQ.M) = 1.402

CH : 2+600 KM

DESIGNED BED LEVEL = 106.981 M



EXIST. LEVEL (M)	108.616	108.671	109.230	109.406	107.942	107.7920	107.977	109.308	109.378	108.692	108.468
OFFSET (M)	26.170	14.854	9.419	6.361	2.835	0.000	2.464	6.524	11.500	15.508	26.086

CUTTING AREA (SQ.M) = 7.514
FILLING AREA (SQ.M) = 1.096

CH : 2+800 KM

DESIGNED BED LEVEL = 106.941 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

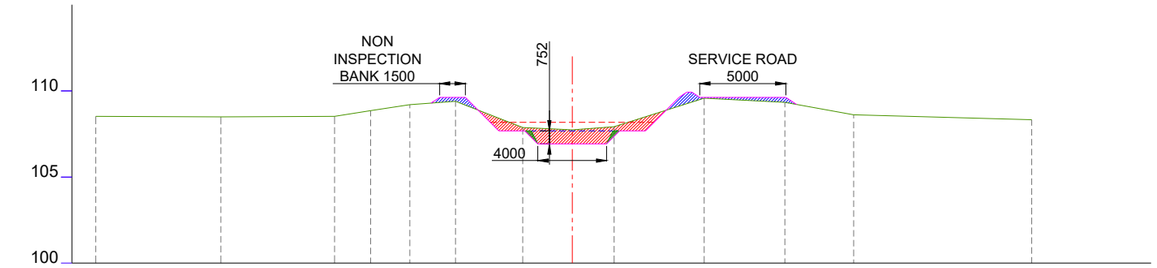
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 7 of 39

X SECTION OF PATOI DY.

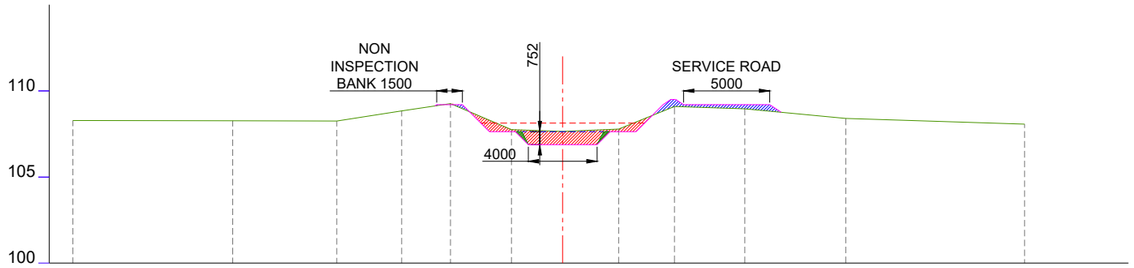


EXIST. LEVEL (M)	108.515	108.495	108.523	108.850	109.200	109.400	107.870	107.7300	107.920	109.580	109.330	108.613	108.325
OFFSET (M)	27.671	20.406	13.801	11.698	9.427	6.774	2.873	0.000	2.433	7.658	12.342	16.335	26.676

CUTTING AREA (SQ.M) = 6.884
FILLING AREA (SQ.M) = 2.356

CH : 2+900 KM

DESIGNED BED LEVEL = 106.921 M

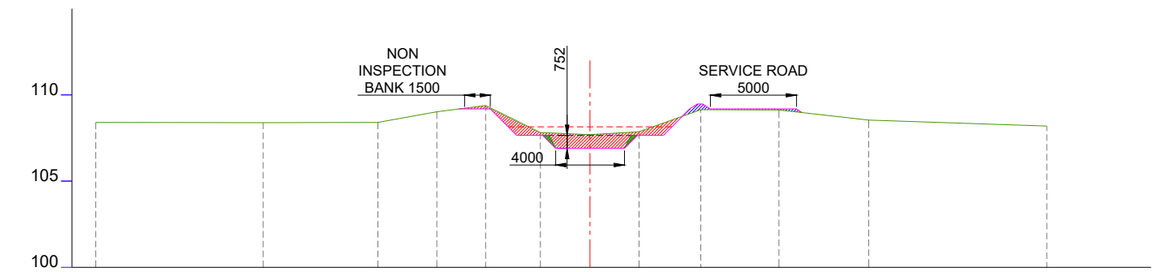


EXIST. LEVEL (M)	108.284	108.259	108.245	108.843	109.259	107.757	107.6420	107.785	109.091	108.957	108.400	108.071	
OFFSET (M)	28.441	19.159	13.113	9.356	6.517	2.978	0.000	3.253	6.484	10.571	16.432	26.818	

CUTTING AREA (SQ.M) = 5.559
FILLING AREA (SQ.M) = 1.911

CH : 3+100 KM

DESIGNED BED LEVEL = 106.881 M

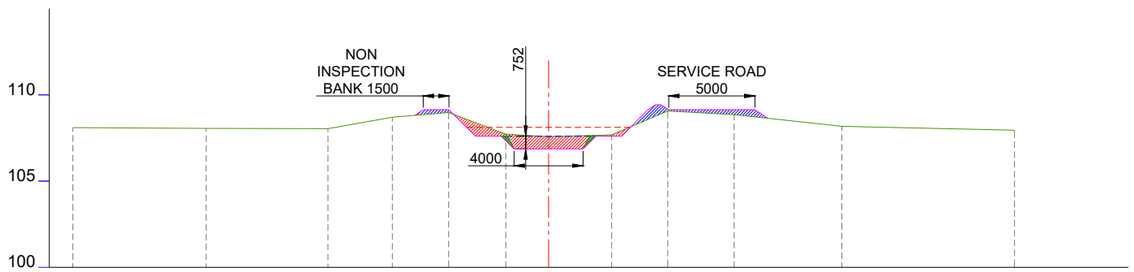


EXIST. LEVEL (M)	108.412	108.392	108.400	109.017	109.378	107.810	107.6940	107.865	109.147	109.135	108.541	108.198	
OFFSET (M)	28.704	18.980	12.316	8.901	6.069	2.887	0.000	2.850	6.433	10.966	16.176	26.521	

CUTTING AREA (SQ.M) = 6.812
FILLING AREA (SQ.M) = 0.692

CH : 3+000 KM

DESIGNED BED LEVEL = 106.901 M



EXIST. LEVEL (M)	108.099	108.062	108.047	108.704	108.982	107.725	107.5780	107.685	109.072	108.863	108.184	107.947	
OFFSET (M)	27.619	19.874	12.813	9.065	5.798	2.485	0.000	3.656	6.926	10.777	17.033	27.046	

CUTTING AREA (SQ.M) = 5.237
FILLING AREA (SQ.M) = 2.461

CH : 3+200 KM

DESIGNED BED LEVEL = 106.861 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

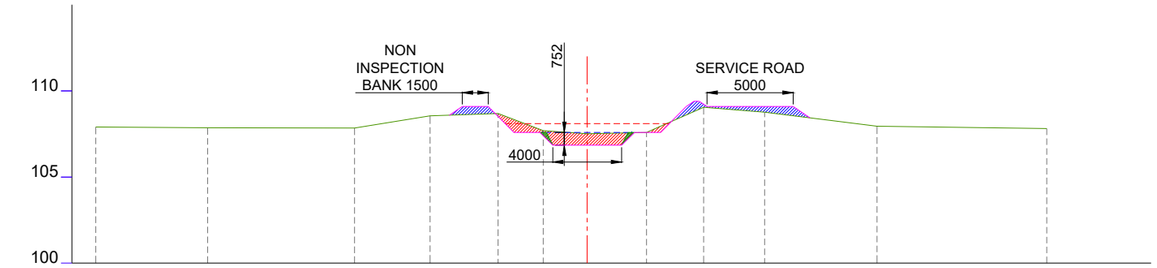
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 8 of 39

X SECTION OF PATOI DY.

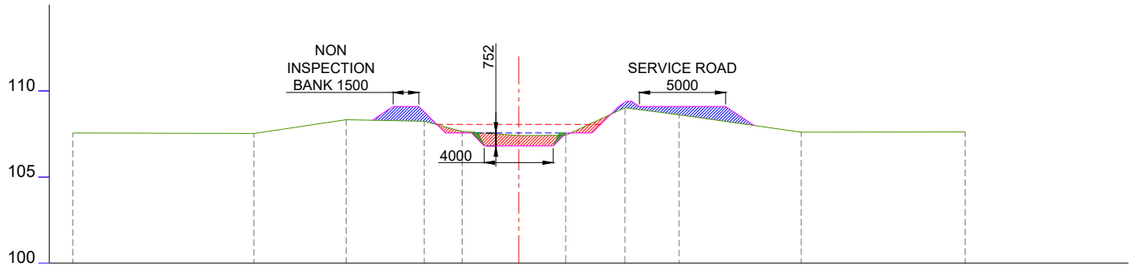


EXIST. LEVEL (M)	107.899	107.854	107.837	108.551	108.683	107.691	107.5100	107.579	109.051	108.762	107.950	107.818
OFFSET (M)	28.540	22.034	13.504	9.117	5.177	2.558	0.000	3.439	6.756	10.307	16.821	26.689

CUTTING AREA (SQ.M) = 4.832
FILLING AREA (SQ.M) = 3.299

CH : 3+300 KM

DESIGNED BED LEVEL = 106.841 M

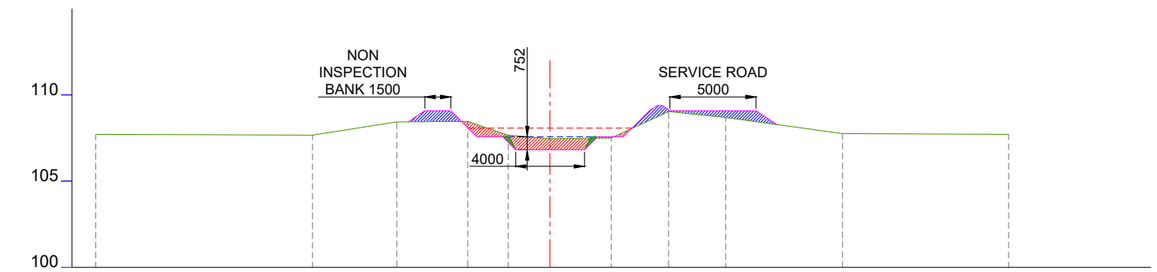


EXIST. LEVEL (M)	107.560	107.530	108.330	108.240	107.640	107.4080	107.420	109.020	108.610	107.600	107.623
OFFSET (M)	25.889	15.371	10.026	5.485	3.286	0.000	2.722	6.154	9.313	16.398	25.914

CUTTING AREA (SQ.M) = 4.083
FILLING AREA (SQ.M) = 6.007

CH : 3+500 KM

DESIGNED BED LEVEL = 106.801 M

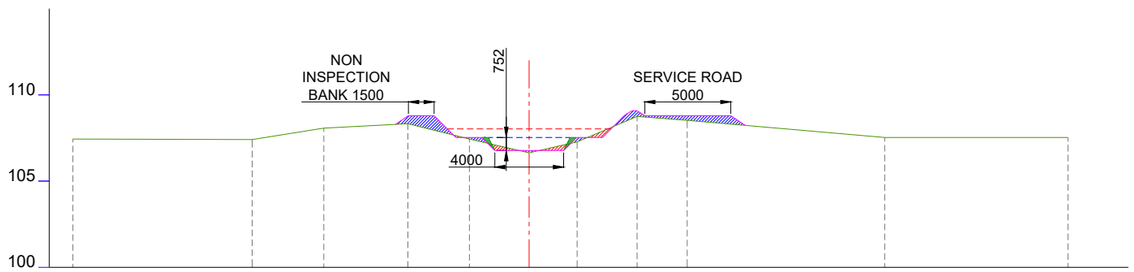


EXIST. LEVEL (M)	107.714	107.671	108.431	108.459	107.663	107.4587	107.494	109.035	108.686	107.761	107.713
OFFSET (M)	26.385	13.796	8.899	4.789	2.432	0.000	3.547	6.888	10.196	16.972	26.617

CUTTING AREA (SQ.M) = 4.464
FILLING AREA (SQ.M) = 4.403

CH : 3+400 KM

DESIGNED BED LEVEL = 106.821 M



EXIST. LEVEL (M)	107.443	107.416	108.067	108.328	107.446	106.6400	107.278	108.749	108.530	107.533	107.537
OFFSET (M)	26.493	16.086	11.919	7.045	3.475	0.000	2.777	6.259	9.174	20.636	31.289

CUTTING AREA (SQ.M) = 0.889
FILLING AREA (SQ.M) = 4.074

CH : 3+600 KM

DESIGNED BED LEVEL = 106.781 M

LEGEND

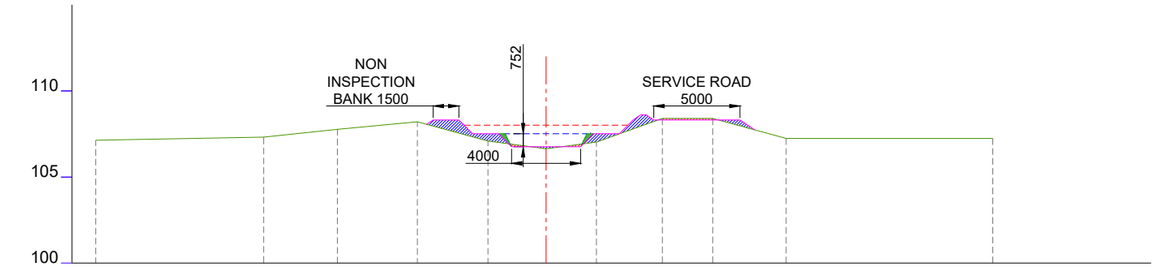
	CUT AREA		F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 9 of 39

X SECTION OF PATOI DY.

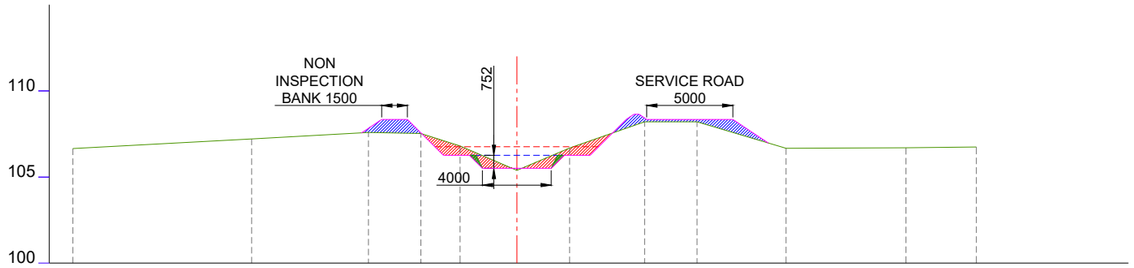


EXIST. LEVEL (M)	107.139	107.309	107.769	108.200	107.091	106.6400	107.026	108.405	108.406	107.235	107.241
OFFSET (M)	26.150	16.390	12.108	7.473	3.375	0.000	2.929	6.757	9.676	13.945	25.943

CUTTING AREA (SQ.M) = 0.479
FILLING AREA (SQ.M) = 3.849

CH : 3+700 KM

DESIGNED BED LEVEL = 106.761 M

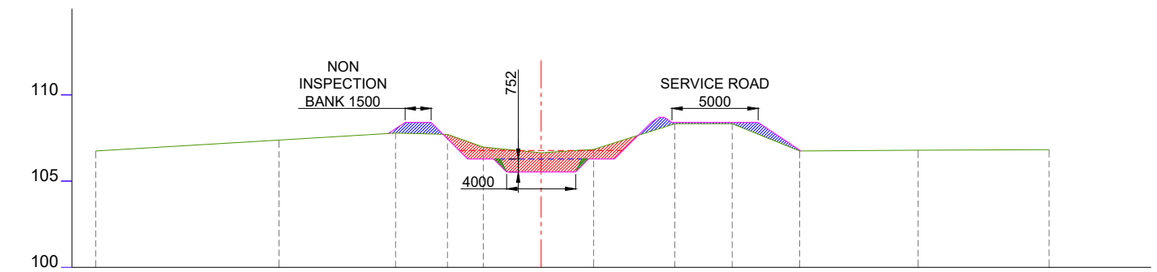


EXIST. LEVEL (M)	106.646	107.213	107.581	107.528	106.800	105.3900	106.685	108.209	108.200	106.669	106.702	106.738
OFFSET (M)	25.776	15.392	8.622	5.563	3.288	0.000	3.061	7.421	10.459	15.632	22.601	26.683

CUTTING AREA (SQ.M) = 4.964
FILLING AREA (SQ.M) = 4.911

CH : 3+900 KM

DESIGNED BED LEVEL = 105.501 M

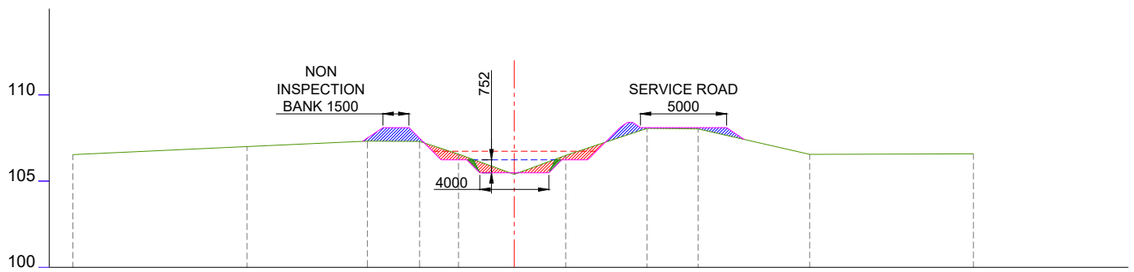


EXIST. LEVEL (M)	106.740	107.377	107.790	107.710	106.980	106.6400	106.830	108.330	108.330	106.750	106.787	106.824
OFFSET (M)	25.864	15.222	8.450	5.437	3.356	0.000	3.041	7.764	11.090	15.017	21.878	29.494

CUTTING AREA (SQ.M) = 9.911
FILLING AREA (SQ.M) = 4.089

CH : 3+800 KM

DESIGNED BED LEVEL = 105.521 M



EXIST. LEVEL (M)	106.530	107.010	107.318	107.297	106.573	105.3900	106.492	108.052	108.026	106.555	106.584
OFFSET (M)	25.632	15.523	8.531	5.501	3.240	0.000	2.985	7.702	10.671	17.146	26.651

CUTTING AREA (SQ.M) = 3.687
FILLING AREA (SQ.M) = 3.831

CH : 4+000 KM

DESIGNED BED LEVEL = 105.481 M

LEGEND

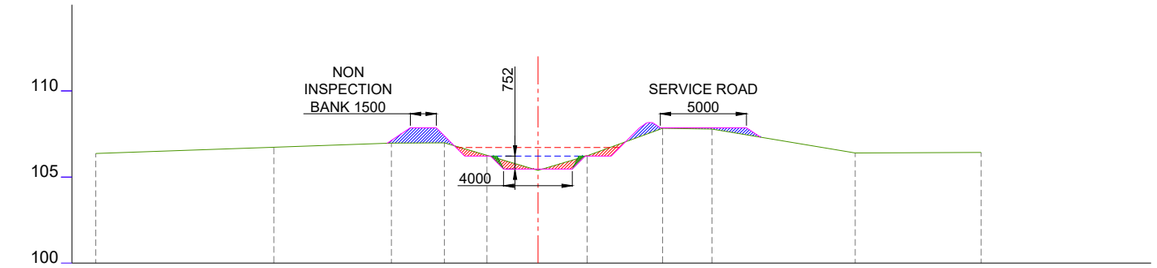
CUT AREA	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 10 of 39

X SECTION OF PATOI DY.

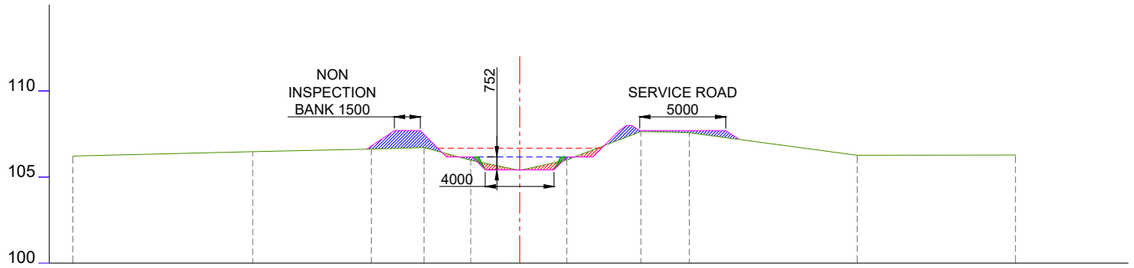


EXIST. LEVEL (M)	106.368	106.728	106.963	106.987	106.267	105.3900	106.232	107.835	107.788	106.401	106.424
OFFSET (M)	25.679	15.342	8.502	5.435	2.962	0.000	2.848	7.241	10.108	18.421	25.724

CUTTING AREA (SQ.M) = 2.364
FILLING AREA (SQ.M) = 3.962

CH : 4+100 KM

DESIGNED BED LEVEL = 105.461 M

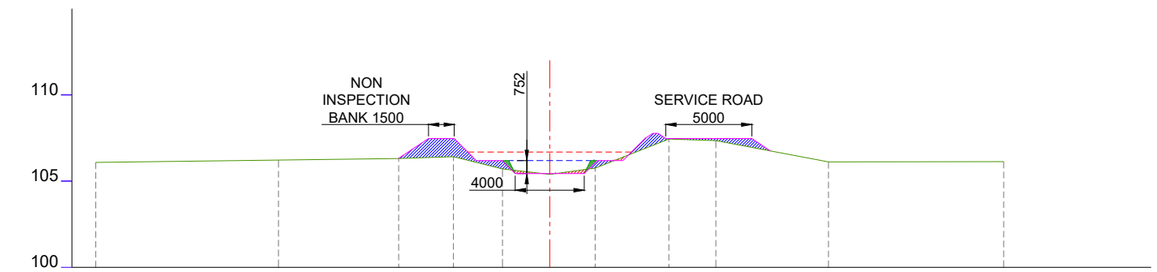


EXIST. LEVEL (M)	106.220	106.466	106.626	106.711	105.977	105.3810	105.986	107.644	107.577	106.258	106.273
OFFSET (M)	25.943	15.499	8.621	5.563	2.837	0.000	2.736	7.049	9.838	19.589	28.794

CUTTING AREA (SQ.M) = 1.325
FILLING AREA (SQ.M) = 4.835

CH : 4+300 KM

DESIGNED BED LEVEL = 105.421 M

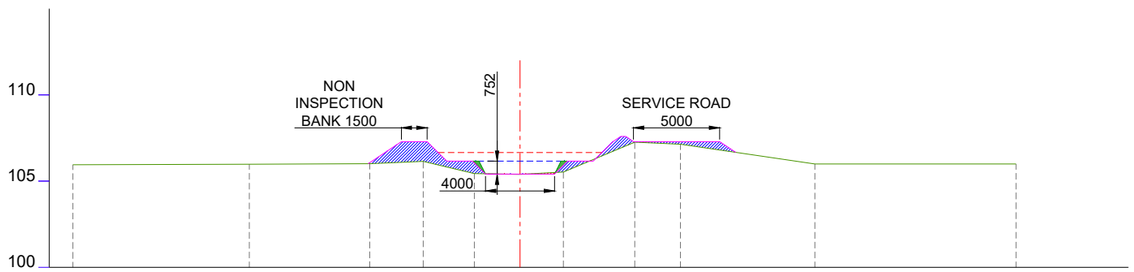


EXIST. LEVEL (M)	106.084	106.224	106.314	106.420	105.706	105.3900	105.755	107.439	107.352	106.120	106.129
OFFSET (M)	26.363	15.754	8.763	5.596	2.745	0.000	2.636	6.915	9.639	16.183	26.363

CUTTING AREA (SQ.M) = 0.455
FILLING AREA (SQ.M) = 6.315

CH : 4+200 KM

DESIGNED BED LEVEL = 105.441 M



EXIST. LEVEL (M)	105.948	105.984	106.008	106.150	105.440	105.3900	105.531	107.252	107.146	105.986	105.991
OFFSET (M)	25.962	15.717	8.721	5.627	2.656	0.000	2.524	6.659	9.318	17.120	28.793

CUTTING AREA (SQ.M) = 0.135
FILLING AREA (SQ.M) = 7.389

CH : 4+400 KM

DESIGNED BED LEVEL = 105.401 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

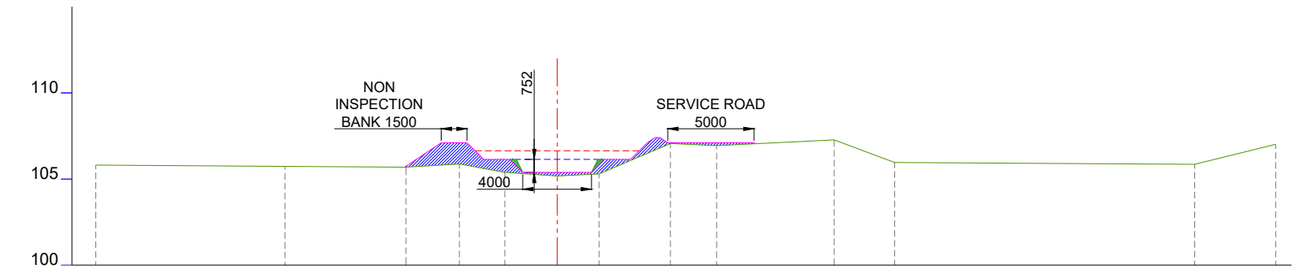
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 11 of 39

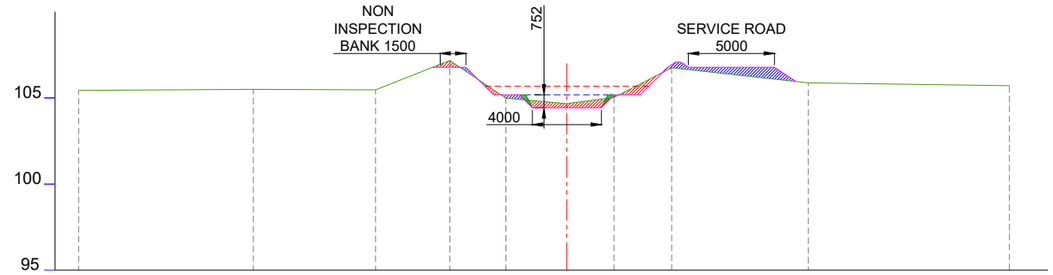
X SECTION OF PATOI DY.



EXIST. LEVEL (M)	105.803	105.735	105.693	105.874	105.390	105.1690	105.302	107.062	106.935	107.271	105.954	105.854	107.012
OFFSET (M)	26.794	15.803	8.784	5.679	3.039	0.000	2.427	6.584	9.263	16.080	19.603	37.014	41.722

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 8.511

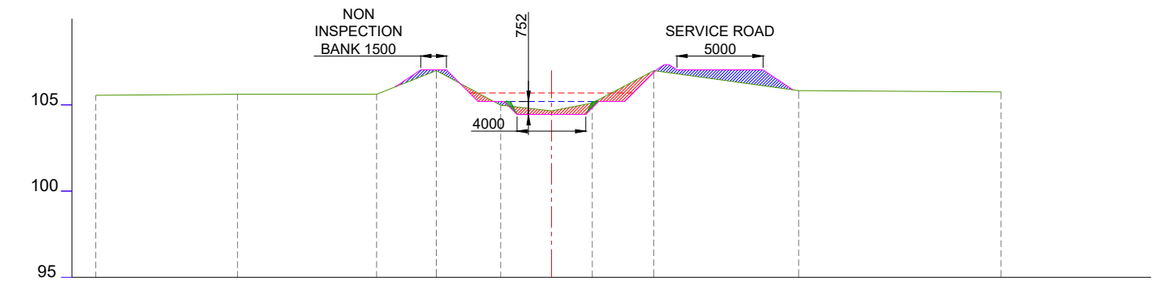
CH : 4+500 KM
DESIGNED BED LEVEL = 105.381 M



EXIST. LEVEL (M)	105.436	105.488	105.467	107.172	104.986	104.6600	105.022	106.741	105.868	105.703
OFFSET (M)	28.340	18.211	11.103	6.788	3.537	0.000	2.746	6.085	14.013	25.693

CUTTING AREA (SQ.M) = 2.947
FILLING AREA (SQ.M) = 3.274

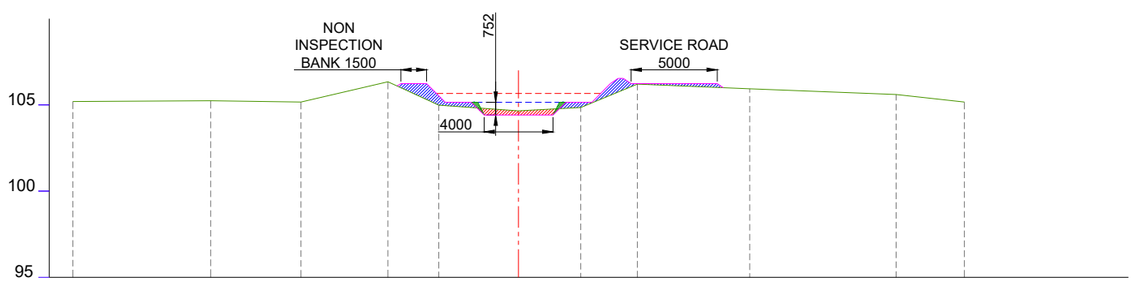
CH : 4+700 KM
DESIGNED BED LEVEL = 104.421 M



EXIST. LEVEL (M)	105.567	105.614	105.623	106.997	104.989	104.6600	105.106	106.985	105.833	105.750
OFFSET (M)	26.463	18.236	10.153	6.687	2.945	0.000	2.367	5.950	14.353	26.112

CUTTING AREA (SQ.M) = 3.887
FILLING AREA (SQ.M) = 4.938

CH : 4+600 KM
DESIGNED BED LEVEL = 104.447 M



EXIST. LEVEL (M)	105.198	105.250	105.170	106.350	104.980	104.6600	104.850	106.210	105.940	105.599	105.164
OFFSET (M)	25.878	17.875	12.629	7.582	4.631	0.000	3.608	6.891	13.416	21.929	25.885

CUTTING AREA (SQ.M) = 1.405
FILLING AREA (SQ.M) = 4.241

CH : 4+800 KM
DESIGNED BED LEVEL = 104.407 M

LEGEND

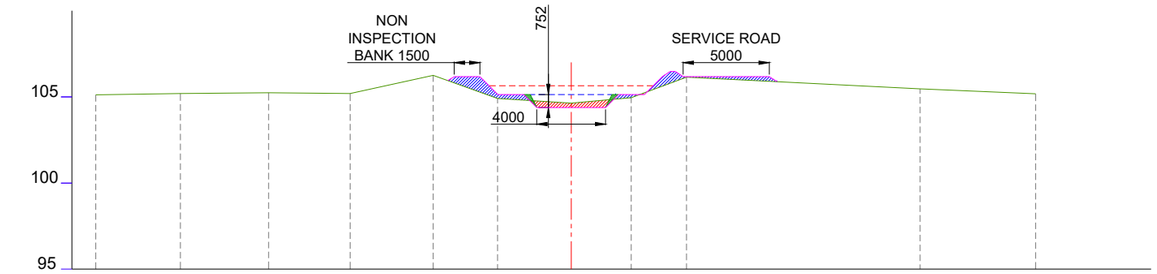
	CUT AREA		F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 12 of 39

X SECTION OF PATOI DY.

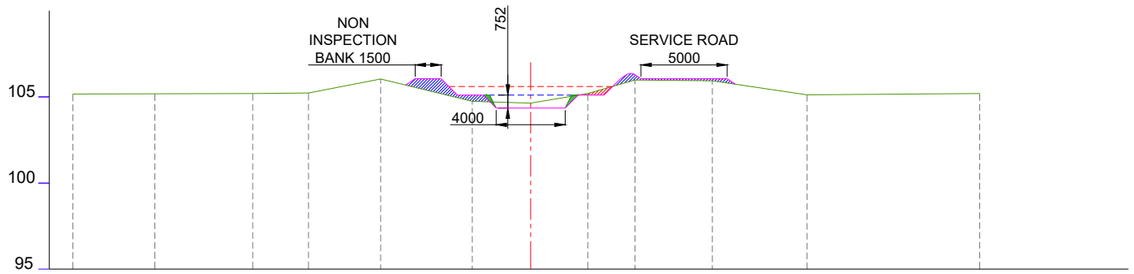


EXIST. LEVEL (M)	105.122	105.194	105.234	105.188	106.254	104.910	104.6300	104.952	106.145	105.462	105.174
OFFSET (M)	27.612	22.687	17.575	12.835	8.015	4.278	0.000	3.490	6.697	20.254	26.958

CUTTING AREA (SQ.M) = 1.483
FILLING AREA (SQ.M) = 4.029

CH : 4+900 KM

DESIGNED BED LEVEL = 104.387 M

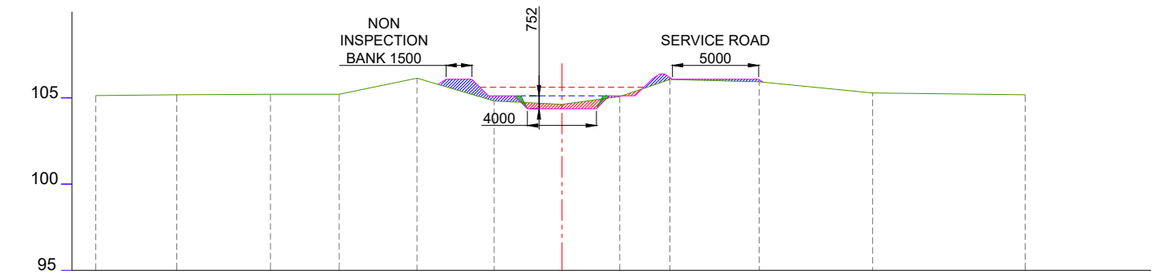


EXIST. LEVEL (M)	105.158	105.183	105.197	105.231	106.031	104.745	104.6300	105.197	105.984	105.932	105.113	105.198
OFFSET (M)	26.582	21.830	16.142	12.903	8.710	3.396	0.000	3.313	6.062	10.547	16.044	26.075

CUTTING AREA (SQ.M) = 0.342
FILLING AREA (SQ.M) = 3.265

CH : 5+100 KM

DESIGNED BED LEVEL = 104.347 M

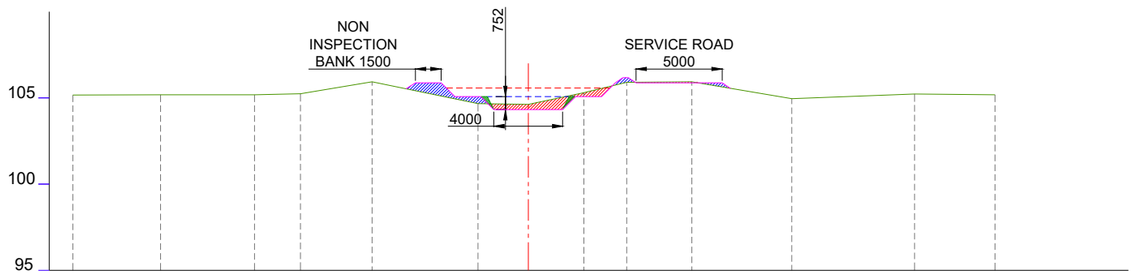


EXIST. LEVEL (M)	105.140	105.188	105.216	105.209	106.144	104.828	104.6300	105.074	106.065	105.935	105.288	105.186
OFFSET (M)	27.070	22.358	16.925	12.921	8.412	3.931	0.000	3.367	6.276	11.459	18.047	26.898

CUTTING AREA (SQ.M) = 1.794
FILLING AREA (SQ.M) = 3.218

CH : 5+000 KM

DESIGNED BED LEVEL = 104.367 M



EXIST. LEVEL (M)	105.174	105.178	105.180	105.250	105.930	104.670	104.6300	105.310	105.910	105.930	104.950	105.230	105.185
OFFSET (M)	26.440	21.345	15.890	13.230	9.063	2.921	0.000	3.231	5.709	9.499	15.300	22.423	27.102

CUTTING AREA (SQ.M) = 2.785
FILLING AREA (SQ.M) = 2.419

CH : 5+200 KM

DESIGNED BED LEVEL = 104.327 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

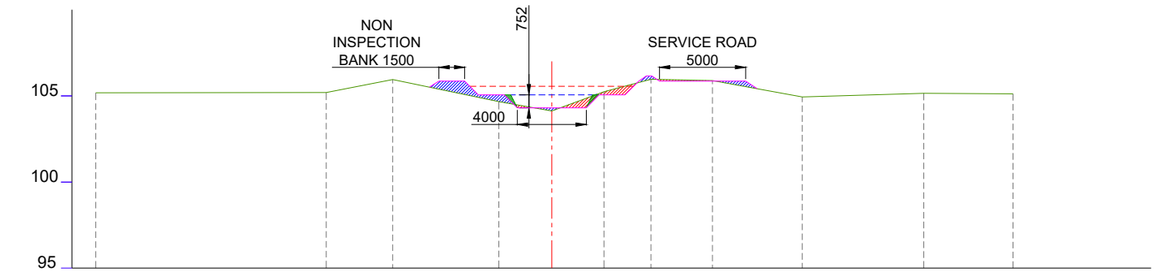
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 13 of 39

X SECTION OF PATOI DY.

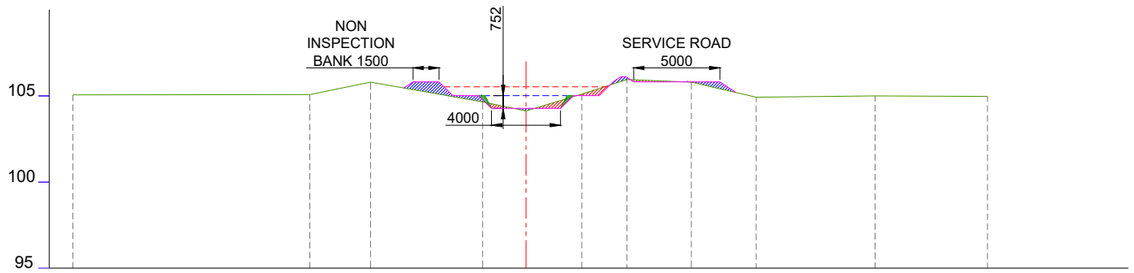


EXIST. LEVEL (M)	105.173	105.192	105.954	104.664	104.1200	105.244	105.968	105.887	104.940	105.155	105.115
OFFSET (M)	26.482	13.093	9.238	3.071	0.000	3.039	5.757	9.336	14.550	21.604	26.776

CUTTING AREA (SQ.M) = 1.587
FILLING AREA (SQ.M) = 2.720

CH : 5+300 KM

DESIGNED BED LEVEL = 104.307 M

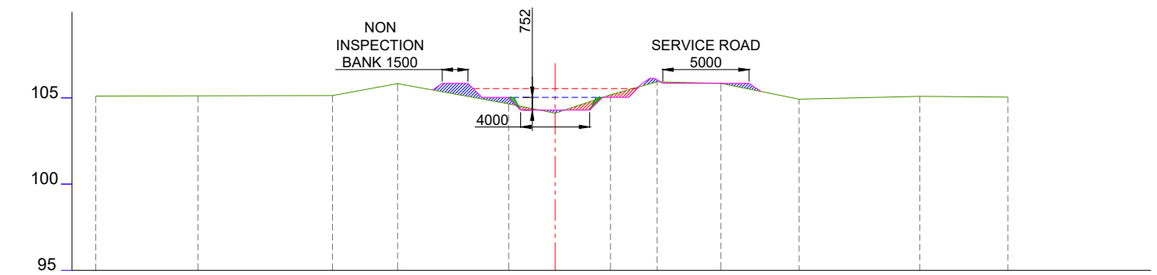


EXIST. LEVEL (M)	105.054	105.077	105.789	104.650	104.1200	105.110	105.954	105.801	104.918	105.002	104.966
OFFSET (M)	26.310	12.547	9.030	2.512	0.000	3.247	5.867	9.599	13.373	20.272	26.799

CUTTING AREA (SQ.M) = 1.314
FILLING AREA (SQ.M) = 2.527

CH : 5+500 KM

DESIGNED BED LEVEL = 104.267 M

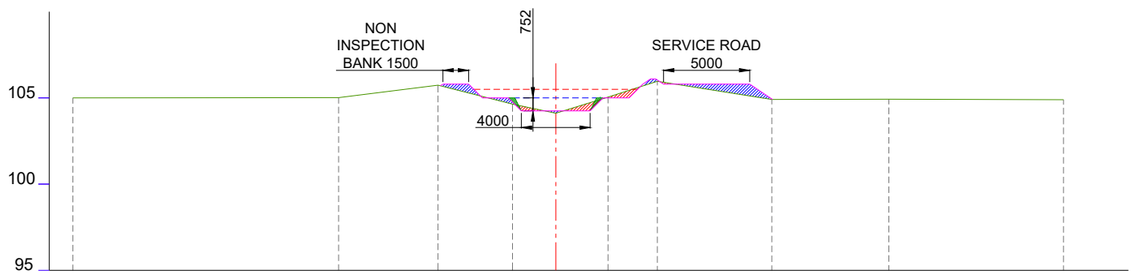


EXIST. LEVEL (M)	105.106	105.125	105.139	105.838	104.658	104.1200	105.184	105.938	105.849	104.930	105.087	105.048
OFFSET (M)	26.680	20.734	12.928	9.148	2.692	0.000	3.214	5.915	9.612	14.164	21.167	26.282

CUTTING AREA (SQ.M) = 1.364
FILLING AREA (SQ.M) = 2.534

CH : 5+400 KM

DESIGNED BED LEVEL = 104.287 M



EXIST. LEVEL (M)	104.997	105.018	105.737	104.644	104.1200	105.043	105.970	104.907	104.925	104.891
OFFSET (M)	28.038	12.609	6.833	2.518	0.000	3.036	5.895	12.537	19.345	29.483

CUTTING AREA (SQ.M) = 1.314
FILLING AREA (SQ.M) = 3.073

CH : 5+600 KM

DESIGNED BED LEVEL = 104.247 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

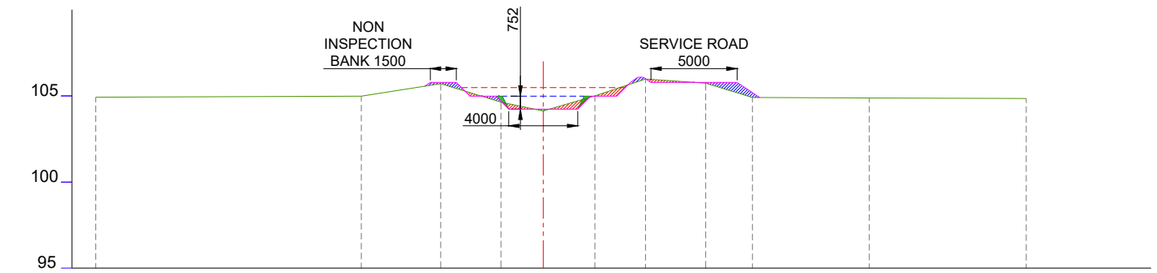
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 14 of 39

X SECTION OF PATOI DY.

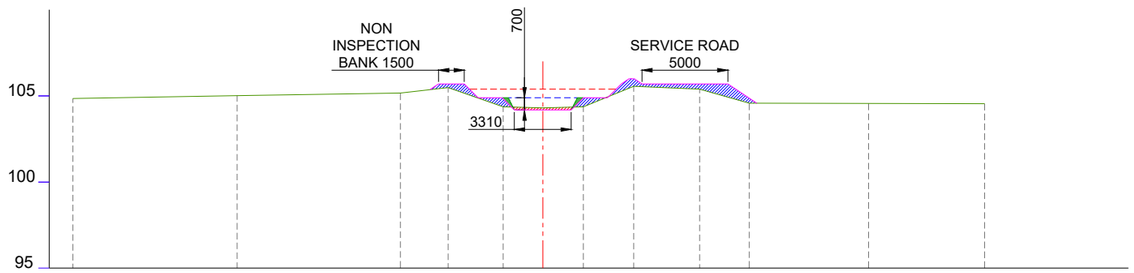


EXIST. LEVEL (M)	104.920	104.984	105.708	104.640	104.1200	105.000	105.980	105.730	104.900	104.877	104.847
OFFSET (M)	25.989	10.570	5.948	2.465	0.000	3.002	5.931	9.435	12.146	18.929	28.046

CUTTING AREA (SQ.M) = 1.640
FILLING AREA (SQ.M) = 1.793

CH : 5+700 KM

DESIGNED BED LEVEL = 104.227 M

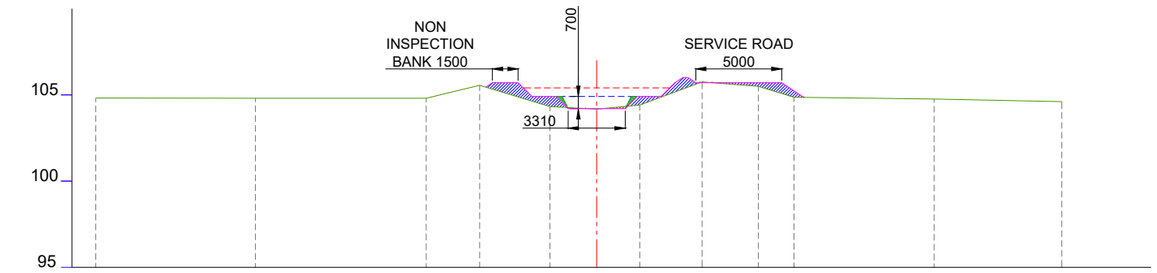


EXIST. LEVEL (M)	104.849	105.008	105.166	105.476	104.362	104.3040	104.369	105.560	105.383	104.575	104.562	104.552
OFFSET (M)	27.283	17.746	8.272	5.495	2.296	0.000	2.360	5.284	9.102	11.980	18.919	25.648

CUTTING AREA (SQ.M) = 0.491
FILLING AREA (SQ.M) = 4.755

CH : 5+900 KM

DESIGNED BED LEVEL = 104.187 M

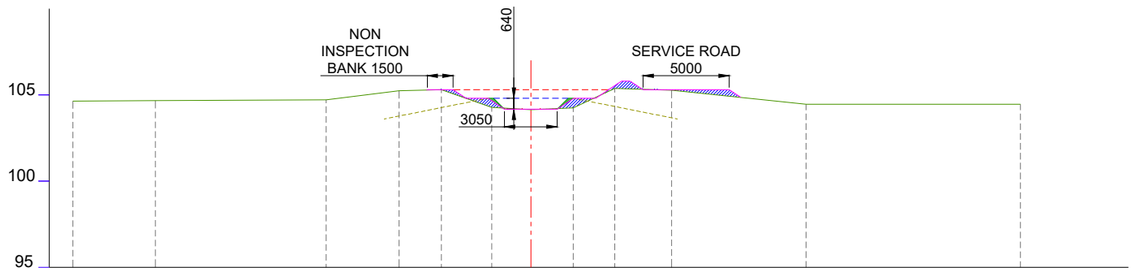


EXIST. LEVEL (M)	104.822	104.811	104.800	105.560	104.330	104.1700	104.420	105.760	105.500	104.860	104.765	104.608
OFFSET (M)	29.088	19.814	9.890	6.791	2.709	0.000	2.499	6.130	9.390	11.454	19.590	27.004

CUTTING AREA (SQ.M) = 0.146
FILLING AREA (SQ.M) = 4.910

CH : 5+800 KM

DESIGNED BED LEVEL = 104.207 M



EXIST. LEVEL (M)	104.636	104.675	104.717	105.244	105.299	104.278	104.1420	104.254	105.373	105.277	104.465	104.461
OFFSET (M)	26.590	21.805	11.888	7.654	5.195	2.267	0.000	2.457	4.874	8.173	15.977	28.432

CUTTING AREA (SQ.M) = 0.079
FILLING AREA (SQ.M) = 2.685

CH : 6+000 KM

DESIGNED BED LEVEL = 104.167 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

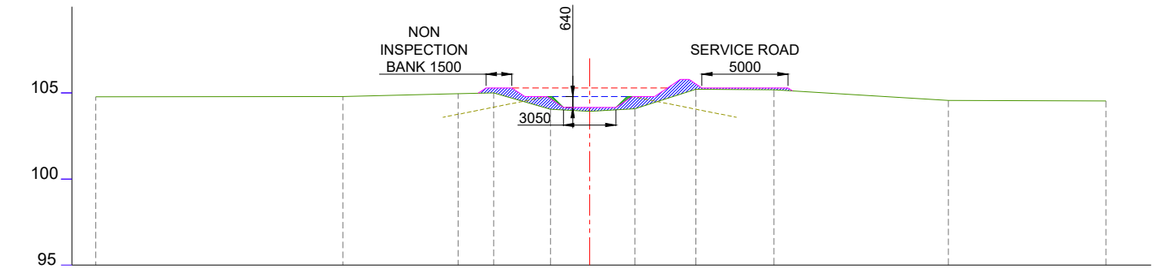
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 15 of 39

X SECTION OF PATOI DY.

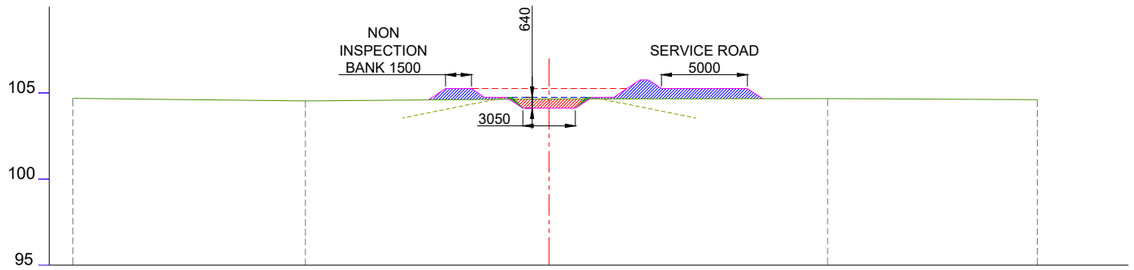


EXIST. LEVEL (M)	104.766	104.780	104.955	105.000	104.046	103.9254	104.072	105.216	105.186	104.561	104.537
OFFSET (M)	28.685	14.325	7.646	5.579	2.276	0.000	2.625	6.165	10.702	20.832	29.976

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 5.768

CH : 6+100 KM

DESIGNED BED LEVEL = 104.147 M

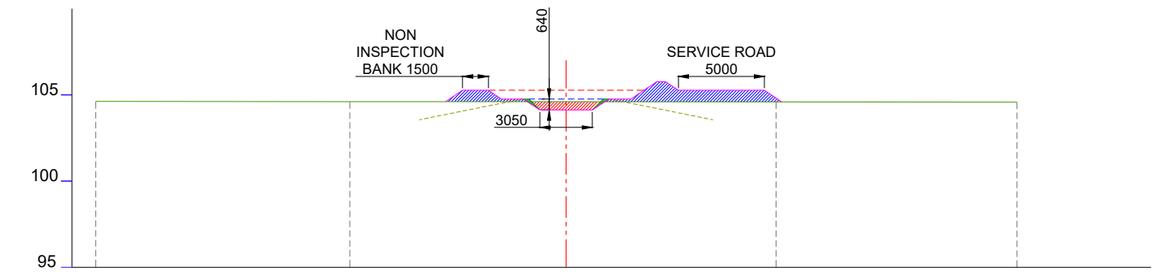


EXIST. LEVEL (M)	104.678	104.527	104.6500	104.665	104.610
OFFSET (M)	27.654	14.159	0.000	16.161	28.343

CUTTING AREA (SQ.M) = 2.078
FILLING AREA (SQ.M) = 7.135

CH : 6+300 KM

DESIGNED BED LEVEL = 104.107 M

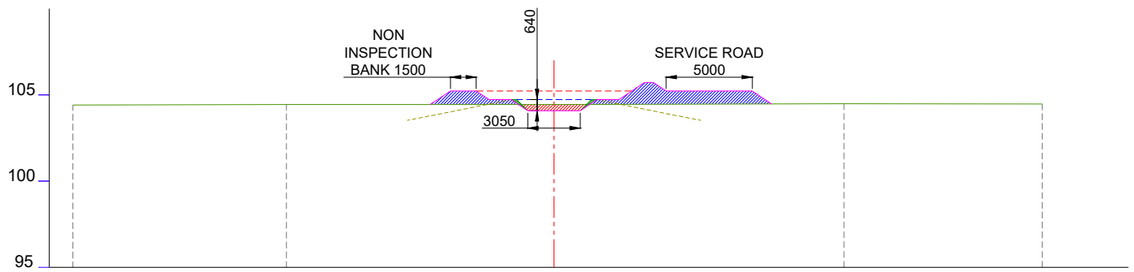


EXIST. LEVEL (M)	104.632	104.615	104.6030	104.601	104.578
OFFSET (M)	27.317	12.562	0.000	12.193	26.167

CUTTING AREA (SQ.M) = 1.794
FILLING AREA (SQ.M) = 8.003

CH : 6+200 KM

DESIGNED BED LEVEL = 104.127 M



EXIST. LEVEL (M)	104.410	104.441	104.4500	104.490	104.475
OFFSET (M)	27.937	15.537	0.000	16.830	28.343

CUTTING AREA (SQ.M) = 1.309
FILLING AREA (SQ.M) = 9.578

CH : 6+400 KM

DESIGNED BED LEVEL = 104.087 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

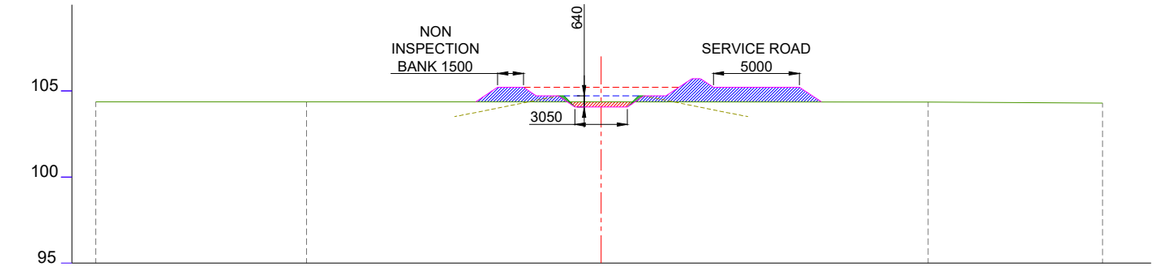
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 16 of 39

X SECTION OF PATOI DY.

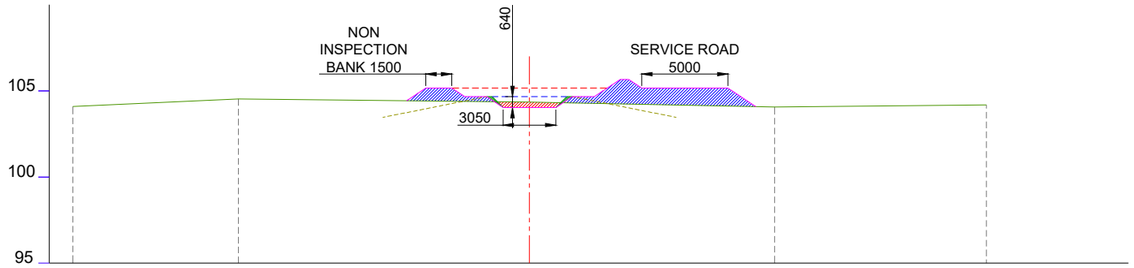


EXIST. LEVEL (M)	104.360	104.359	104.3580	104.357	104.295
OFFSET (M)	29.351	17.109	0.000	18.982	29.111

CUTTING AREA (SQ.M) = 1.015
FILLING AREA (SQ.M) = 10.900

CH : 6+500 KM

DESIGNED BED LEVEL = 104.067 M

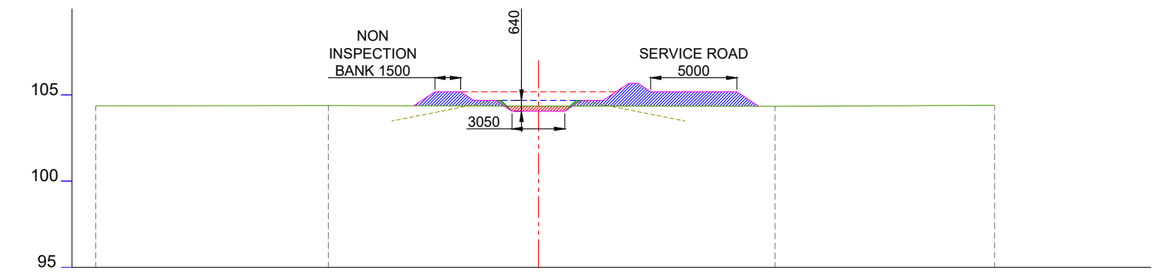


EXIST. LEVEL (M)	104.094	104.524	104.3430	104.059	104.185
OFFSET (M)	26.512	16.896	0.000	14.240	26.531

CUTTING AREA (SQ.M) = 1.097
FILLING AREA (SQ.M) = 11.872

CH : 6+700 KM

DESIGNED BED LEVEL = 104.027 M

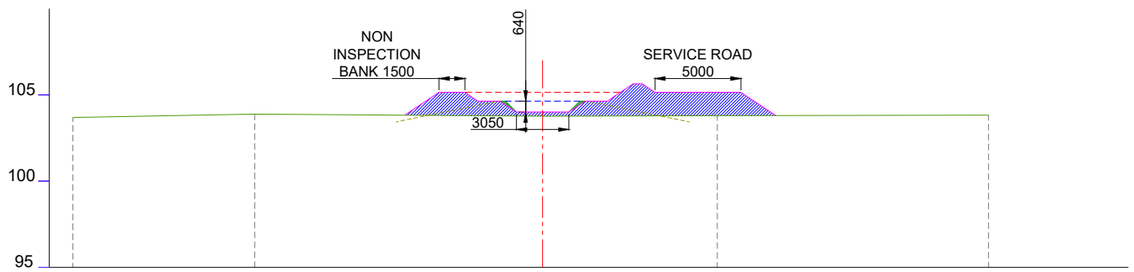


EXIST. LEVEL (M)	104.371	104.384	104.3560	104.342	104.398
OFFSET (M)	25.711	12.200	0.000	13.729	26.477

CUTTING AREA (SQ.M) = 1.088
FILLING AREA (SQ.M) = 10.633

CH : 6+600 KM

DESIGNED BED LEVEL = 104.047 M



EXIST. LEVEL (M)	103.690	103.883	103.7650	103.790	103.820
OFFSET (M)	27.277	16.717	0.000	10.134	25.892

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 20.559

CH : 6+800 KM

DESIGNED BED LEVEL = 104.007 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

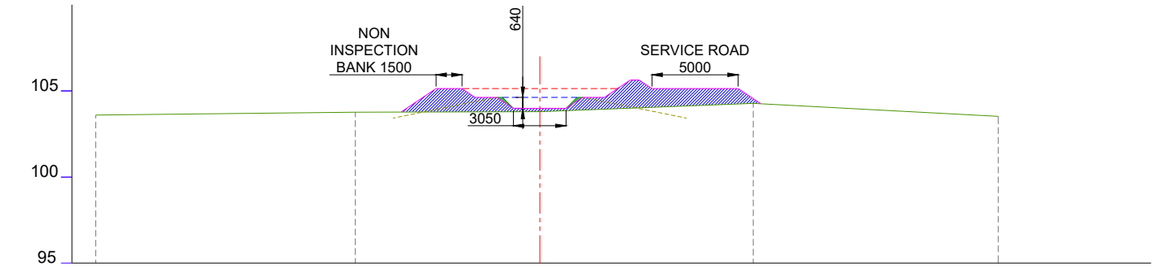
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 17 of 39

X SECTION OF PATOI DY.

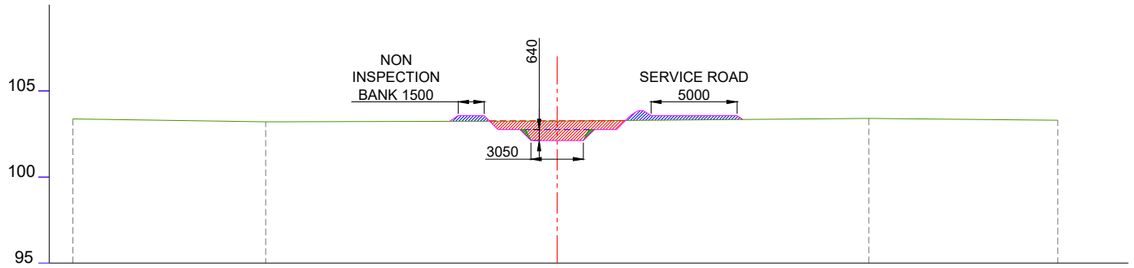


EXIST. LEVEL (M)	103.598	103.767	103.7880	104.278	103.525
OFFSET (M)	25.786	10.711	0.000	12.386	26.620

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 16.737

CH : 6+900 KM

DESIGNED BED LEVEL = 103.987 M

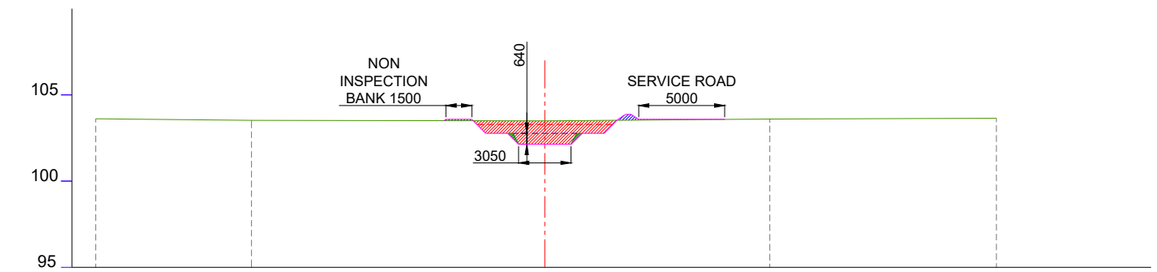


EXIST. LEVEL (M)	103.371	103.198	103.2500	103.399	103.292
OFFSET (M)	28.121	16.930	0.000	18.088	29.061

CUTTING AREA (SQ.M) = 6.026
FILLING AREA (SQ.M) = 2.459

CH : 7+100 KM

DESIGNED BED LEVEL = 102.119 M

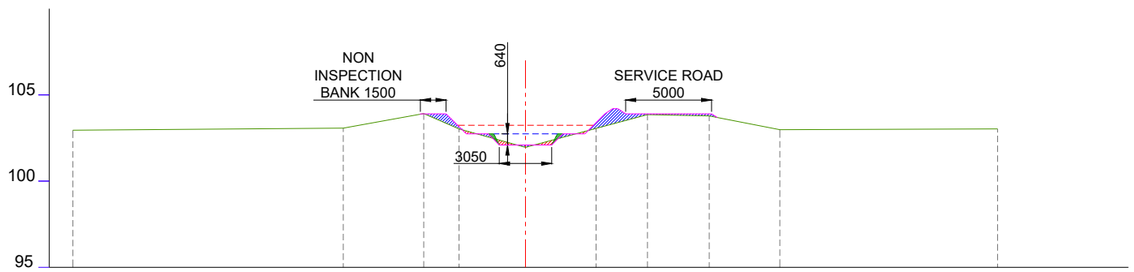


EXIST. LEVEL (M)	103.613	103.525	103.4900	103.599	103.653
OFFSET (M)	26.082	17.032	0.000	13.063	26.219

CUTTING AREA (SQ.M) = 7.856
FILLING AREA (SQ.M) = 0.524

CH : 7+000 KM

DESIGNED BED LEVEL = 102.139 M



EXIST. LEVEL (M)	102.950	103.080	103.920	103.030	101.9600	103.052	103.860	103.780	102.980	103.028
OFFSET (M)	26.283	10.586	5.911	3.855	0.000	4.088	7.086	10.665	14.765	27.412

CUTTING AREA (SQ.M) = 0.516
FILLING AREA (SQ.M) = 2.698

CH : 7+200 KM

DESIGNED BED LEVEL = 102.099 M

LEGEND

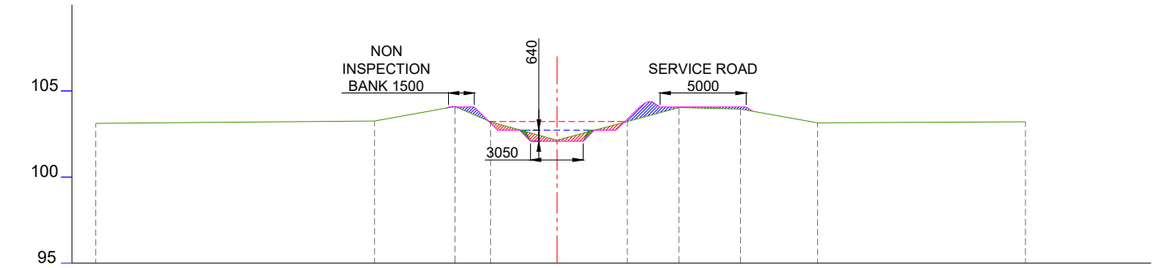
CUT AREA	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 18 of 39

X SECTION OF PATOI DY.

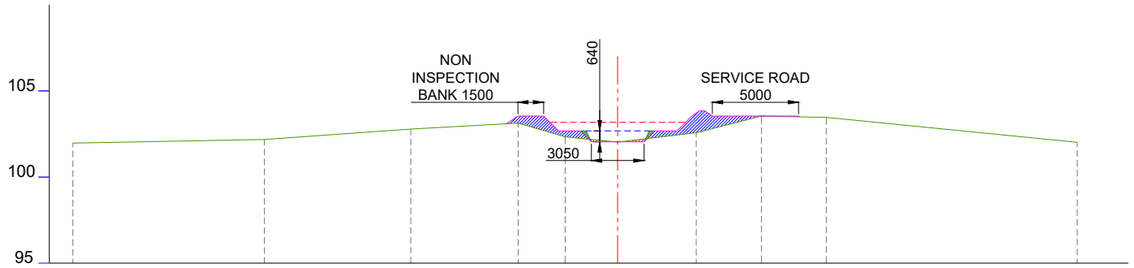


EXIST. LEVEL (M)	103.118	103.248	104.088	103.198	102.1280	103.220	104.028	103.948	103.148	103.197
OFFSET (M)	26.779	10.586	5.911	3.855	0.000	4.088	7.086	10.665	15.133	27.211

CUTTING AREA (SQ.M) = 1.691
FILLING AREA (SQ.M) = 2.143

CH : 7+300 KM

DESIGNED BED LEVEL = 102.079 M

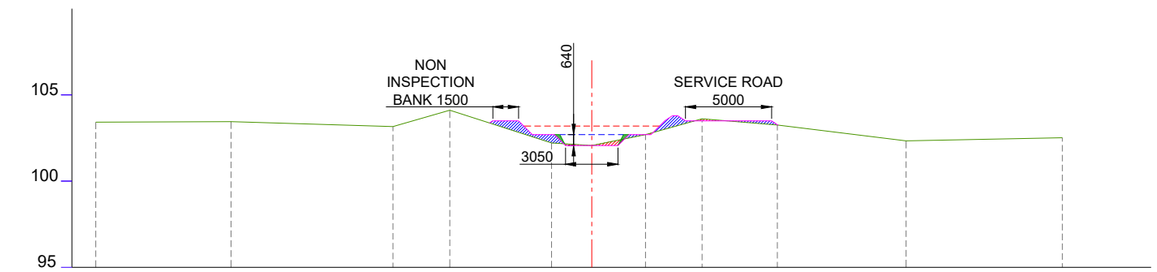


EXIST. LEVEL (M)	101.975	102.185	102.785	103.125	102.335	102.0250	102.565	103.535	103.455	102.015
OFFSET (M)	31.636	20.523	12.014	5.776	3.050	0.000	4.559	8.344	12.115	26.676

CUTTING AREA (SQ.M) = 0.242
FILLING AREA (SQ.M) = 5.482

CH : 7+500 KM

DESIGNED BED LEVEL = 102.039 M

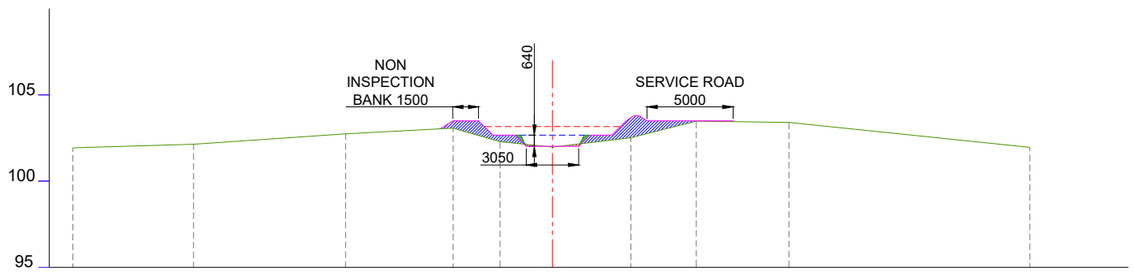


EXIST. LEVEL (M)	103.420	103.447	103.160	104.120	102.210	102.0700	102.700	103.610	103.250	102.330	102.520
OFFSET (M)	28.803	20.942	11.538	8.234	2.338	0.000	3.115	6.411	10.780	18.256	27.327

CUTTING AREA (SQ.M) = 0.526
FILLING AREA (SQ.M) = 2.812

CH : 7+400 KM

DESIGNED BED LEVEL = 102.059 M



EXIST. LEVEL (M)	101.925	102.135	102.735	103.075	102.285	101.9750	102.515	103.485	103.405	101.965
OFFSET (M)	27.844	20.842	12.014	5.776	3.050	0.000	4.559	8.344	13.724	27.716

CUTTING AREA (SQ.M) = 0.157
FILLING AREA (SQ.M) = 5.788

CH : 7+600 KM

DESIGNED BED LEVEL = 102.019 M

LEGEND

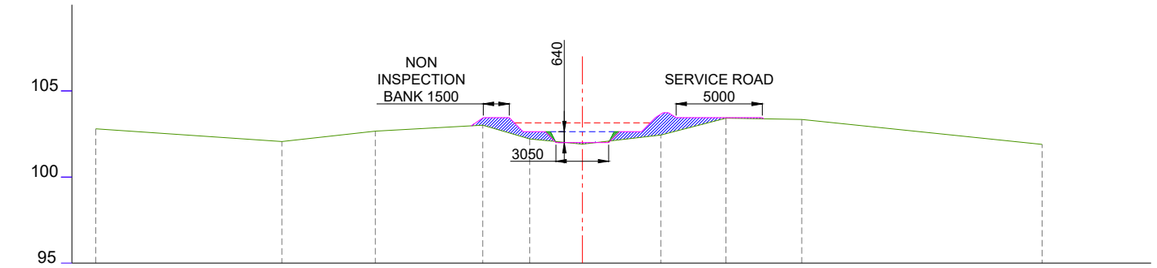
	CUT AREA		F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 19 of 39

X SECTION OF PATOI DY.

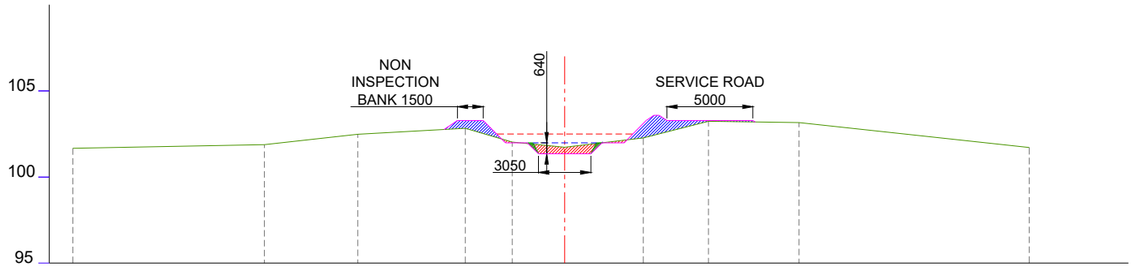


EXIST. LEVEL (M)	102.790	102.063	102.663	103.003	102.213	101.9030	102.443	103.413	103.333	101.893
OFFSET (M)	28.258	17.441	12.014	5.776	3.050	0.000	4.559	8.344	12.737	26.702

CUTTING AREA (SQ.M) = 0.053
FILLING AREA (SQ.M) = 6.186

CH : 7+700 KM

DESIGNED BED LEVEL = 101.999 M

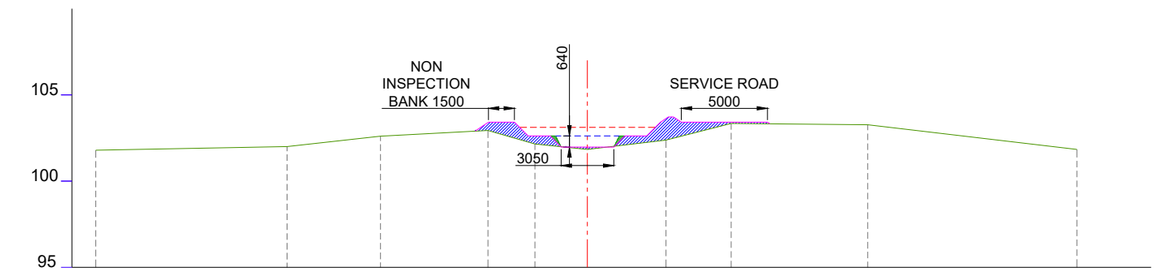


EXIST. LEVEL (M)	101.673	101.883	102.483	102.823	102.033	101.723	102.263	103.233	103.153	101.713
OFFSET (M)	28.556	17.441	12.014	5.776	3.050	0.000	4.559	8.344	13.606	26.969

CUTTING AREA (SQ.M) = 1.884
FILLING AREA (SQ.M) = 4.222

CH : 7+900 KM

DESIGNED BED LEVEL = 101.350 M

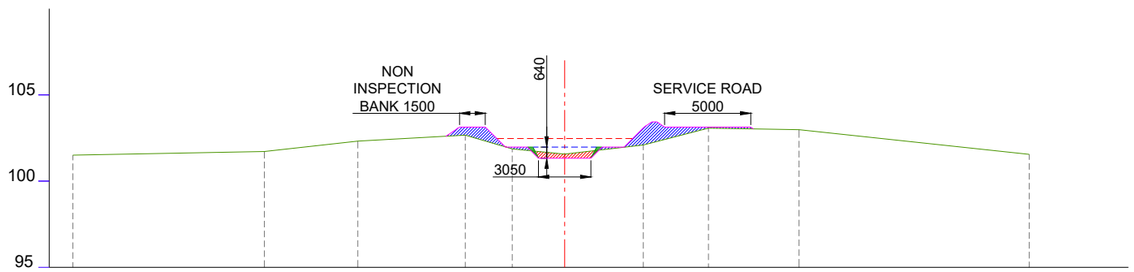


EXIST. LEVEL (M)	101.791	102.001	102.601	102.941	102.151	101.8410	102.381	103.351	103.271	101.831
OFFSET (M)	28.556	17.441	12.014	5.776	3.050	0.000	4.559	8.344	16.266	28.410

CUTTING AREA (SQ.M) = 0.010
FILLING AREA (SQ.M) = 6.840

CH : 7+800 KM

DESIGNED BED LEVEL = 101.979 M



EXIST. LEVEL (M)	101.509	101.719	102.319	102.659	101.869	101.5590	102.099	103.069	102.989	101.549
OFFSET (M)	28.556	17.441	12.014	5.776	3.050	0.000	4.559	8.344	13.606	26.969

CUTTING AREA (SQ.M) = 1.132
FILLING AREA (SQ.M) = 4.902

CH : 8+000 KM

DESIGNED BED LEVEL = 101.330 M

LEGEND

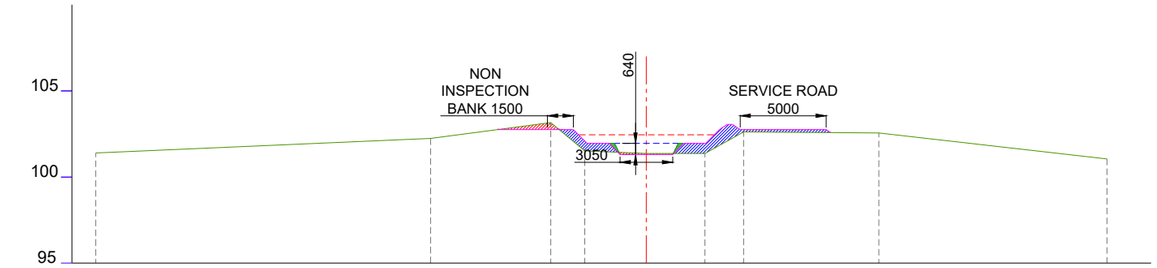
CUT AREA	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 20 of 39

X SECTION OF PATOI DY.

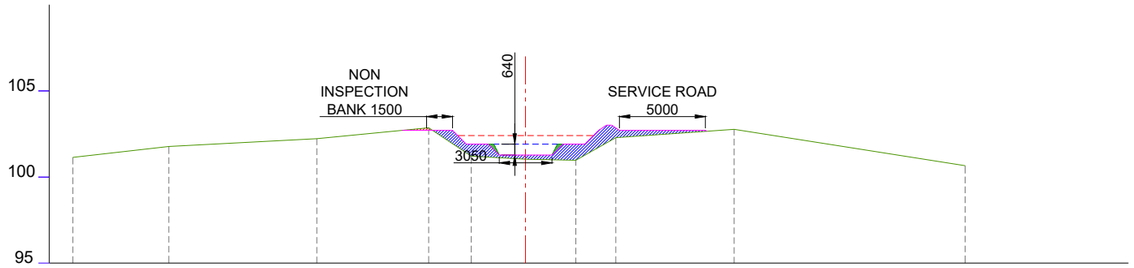


EXIST. LEVEL (M)	101.391	102.236	103.155	101.519	101.3634	101.369	102.623	102.551	101.045
OFFSET (M)	31.975	12.527	5.557	3.582	0.000	3.403	5.641	13.495	26.742

CUTTING AREA (SQ.M) = 0.945
FILLING AREA (SQ.M) = 4.670

CH : 8+100 KM

DESIGNED BED LEVEL = 101.310 M

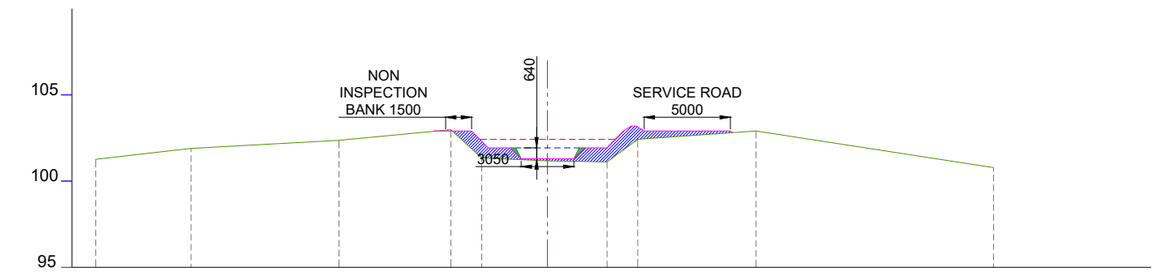


EXIST. LEVEL (M)	101.139	101.768	102.229	102.859	101.209	101.0390	100.979	102.286	102.769	100.654
OFFSET (M)	26.285	20.709	12.120	5.627	3.152	0.000	2.914	5.242	12.113	25.522

CUTTING AREA (SQ.M) = 0.131
FILLING AREA (SQ.M) = 7.122

CH : 8+300 KM

DESIGNED BED LEVEL = 101.270 M

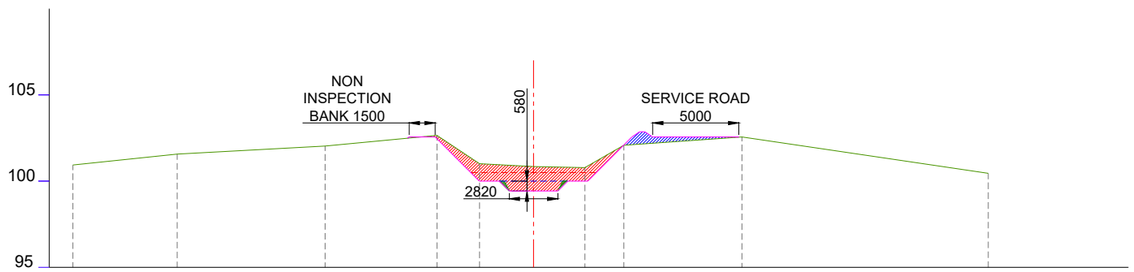


EXIST. LEVEL (M)	101.270	101.899	102.360	102.990	101.340	101.1700	101.110	102.418	102.900	100.785
OFFSET (M)	26.236	20.696	12.107	5.613	3.815	0.000	3.455	5.243	12.114	25.892

CUTTING AREA (SQ.M) = 0.046
FILLING AREA (SQ.M) = 7.538

CH : 8+200 KM

DESIGNED BED LEVEL = 101.290 M



EXIST. LEVEL (M)	100.936	101.565	102.026	102.656	101.006	100.8360	100.776	102.084	102.566	100.451
OFFSET (M)	26.748	20.695	12.106	5.613	3.137	0.000	2.979	5.235	12.104	26.399

CUTTING AREA (SQ.M) = 9.840
FILLING AREA (SQ.M) = 1.790

CH : 8+400 KM

DESIGNED BED LEVEL = 99.422 M

LEGEND

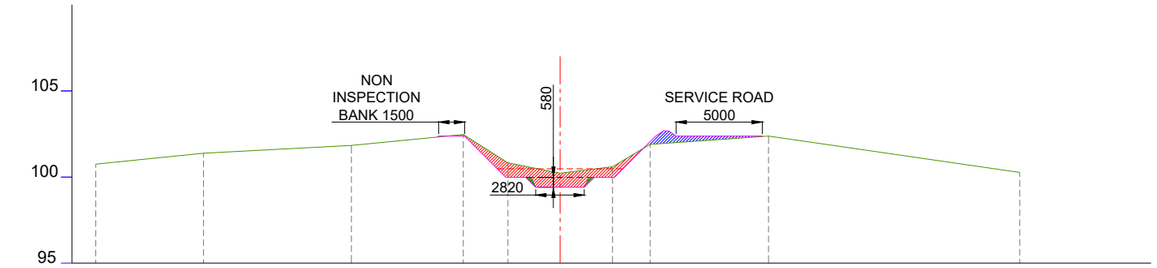
	CUT AREA		F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 21 of 39

X SECTION OF PATOI DY.

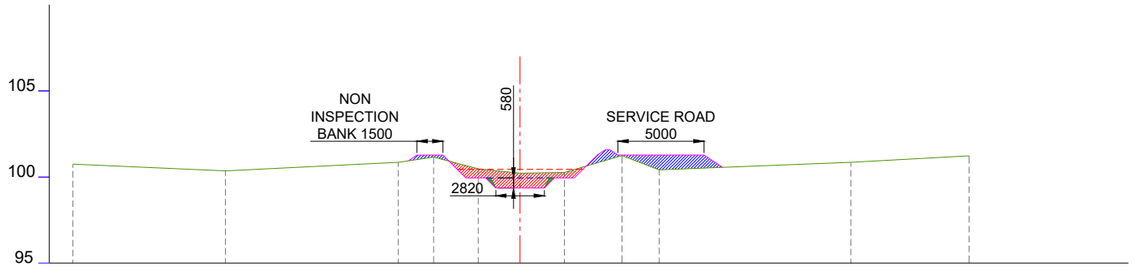


EXIST. LEVEL (M)	100.750	101.379	101.840	102.470	100.820	100.2140	100.590	101.898	102.380	100.265
OFFSET (M)	26.962	20.695	12.106	5.613	3.022	0.000	3.042	5.235	12.105	26.700

CUTTING AREA (SQ.M) = 6.815
FILLING AREA (SQ.M) = 1.878

CH : 8+500 KM

DESIGNED BED LEVEL = 99.402 M

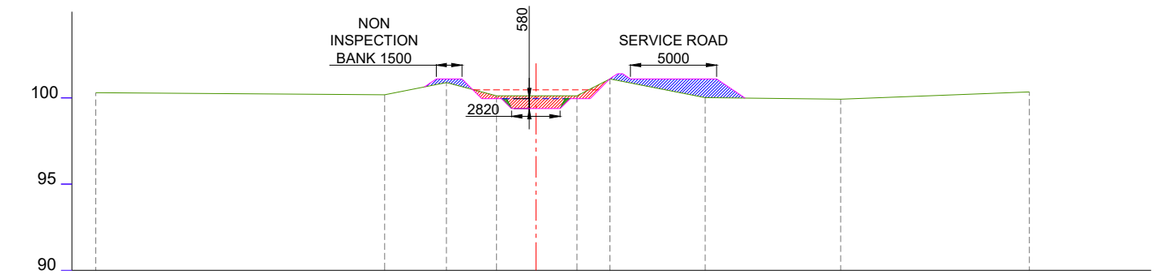


EXIST. LEVEL (M)	100.746	100.360	100.860	101.160	100.480	100.2200	100.260	101.250	100.420	100.856	101.234
OFFSET (M)	25.965	17.104	7.072	5.025	2.426	0.000	2.570	5.916	8.073	19.218	26.065

CUTTING AREA (SQ.M) = 4.948
FILLING AREA (SQ.M) = 4.537

CH : 8+700 KM

DESIGNED BED LEVEL = 99.362 M

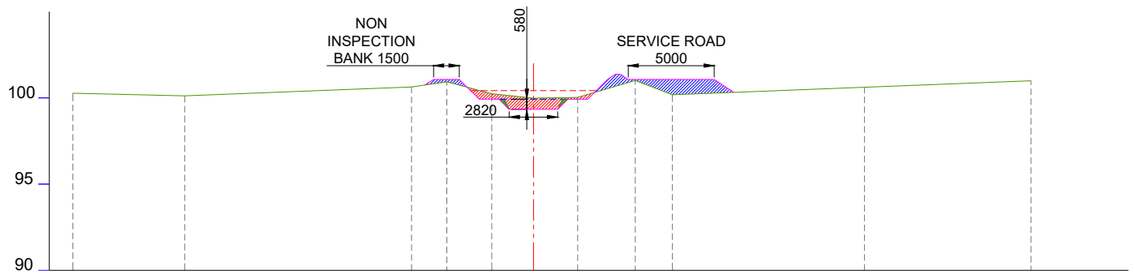


EXIST. LEVEL (M)	100.300	100.189	100.890	100.130	100.1200	100.125	101.100	100.018	99.930	100.350
OFFSET (M)	25.561	8.785	5.187	2.283	0.000	2.382	4.304	9.825	17.690	28.648

CUTTING AREA (SQ.M) = 3.661
FILLING AREA (SQ.M) = 5.581

CH : 8+600 KM

DESIGNED BED LEVEL = 99.382 M



EXIST. LEVEL (M)	100.274	100.129	100.629	100.929	100.249	99.9890	100.029	101.019	100.189	100.625	101.003
OFFSET (M)	26.739	20.250	7.072	5.025	2.426	0.000	2.570	5.916	8.072	19.217	28.891

CUTTING AREA (SQ.M) = 3.326
FILLING AREA (SQ.M) = 4.867

CH : 8+800 KM

DESIGNED BED LEVEL = 99.342 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

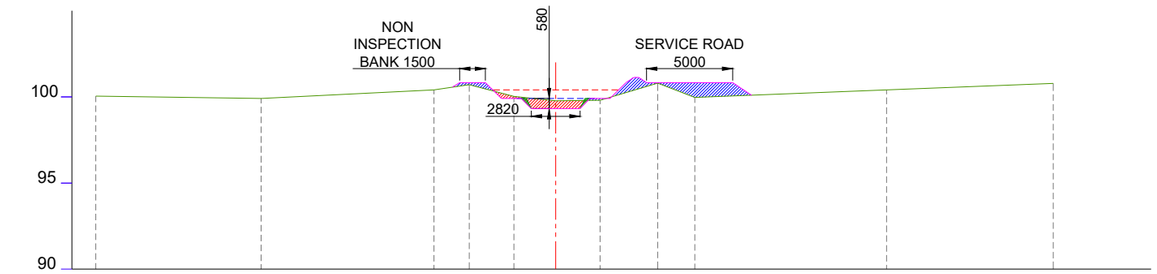
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 22 of 39

X SECTION OF PATOI DY.

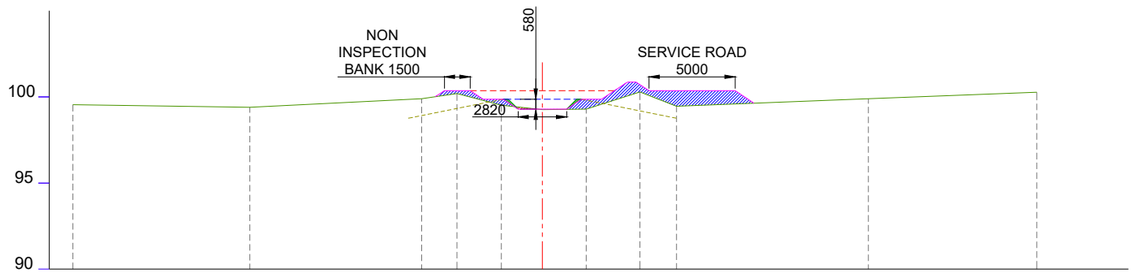


EXIST. LEVEL (M)	100.050	99.905	100.405	100.705	100.025	99.7650	99.805	100.795	99.965	100.401	100.779
OFFSET (M)	26.711	17.104	7.072	5.025	2.426	0.000	2.570	5.916	8.073	19.217	28.892

CUTTING AREA (SQ.M) = 1.956
FILLING AREA (SQ.M) = 4.791

CH : 8+900 KM

DESIGNED BED LEVEL = 99.322 M

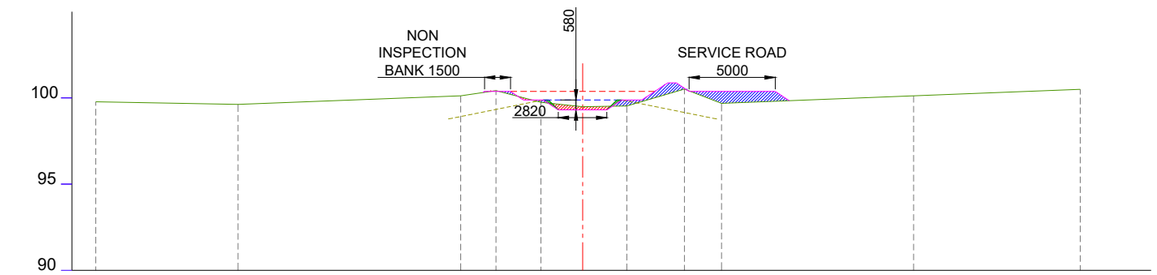


EXIST. LEVEL (M)	99.539	99.393	99.895	100.195	99.515	99.2563	99.297	100.285	99.455	99.892	100.269
OFFSET (M)	27.259	16.987	7.008	4.962	2.380	0.000	2.545	5.662	7.785	18.922	28.711

CUTTING AREA (SQ.M) = 0.090
FILLING AREA (SQ.M) = 7.494

CH : 9+100 KM

DESIGNED BED LEVEL = 99.282 M

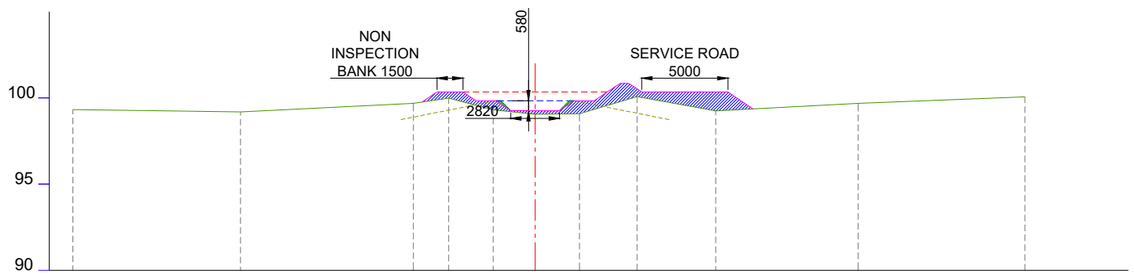


EXIST. LEVEL (M)	99.772	99.628	100.128	100.428	99.748	99.4880	99.528	100.518	99.688	100.123	100.502
OFFSET (M)	28.274	20.005	7.072	5.025	2.426	0.000	2.570	5.916	8.073	19.218	28.891

CUTTING AREA (SQ.M) = 0.850
FILLING AREA (SQ.M) = 4.396

CH : 9+000 KM

DESIGNED BED LEVEL = 99.302 M



EXIST. LEVEL (M)	99.331	99.187	99.687	99.987	99.307	99.0470	99.087	100.077	99.247	99.683	100.061
OFFSET (M)	26.837	17.104	7.072	5.025	2.426	0.000	2.570	5.916	10.492	18.763	28.437

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 10.229

CH : 9+200 KM

DESIGNED BED LEVEL = 99.262 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

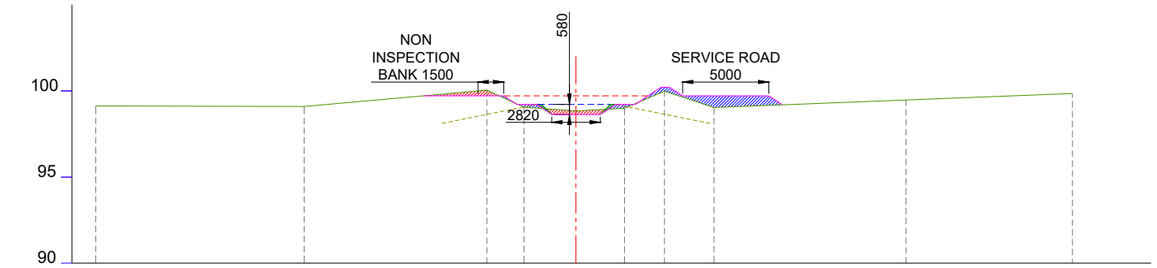
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 23 of 39

X SECTION OF PATOI DY.

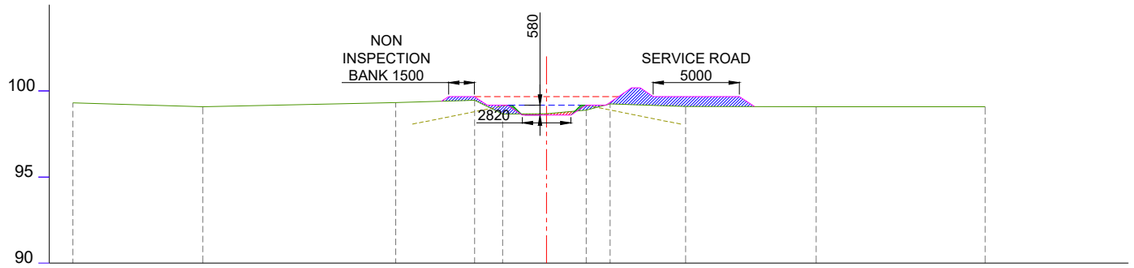


EXIST. LEVEL (M)	99.117	99.092	100.042	99.051	98.8360	98.992	99.981	99.037	99.474	99.852
OFFSET (M)	27.890	15.786	5.169	3.017	0.000	2.815	5.136	8.018	19.160	28.830

CUTTING AREA (SQ.M) = 1.583
FILLING AREA (SQ.M) = 3.830

CH : 9+300 KM

DESIGNED BED LEVEL = 98.632 M

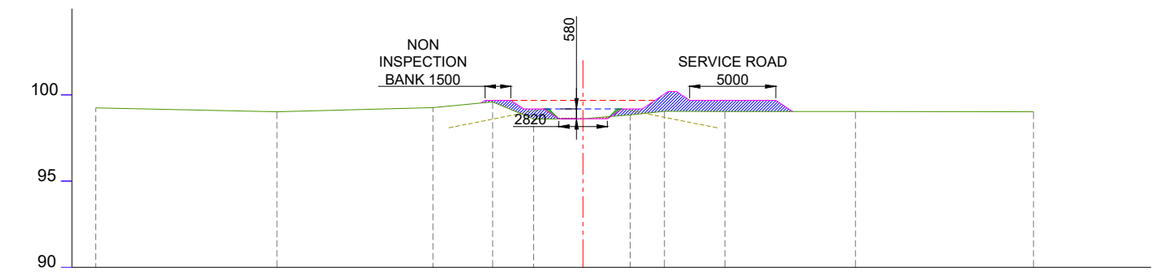


EXIST. LEVEL (M)	99.302	99.078	99.318	99.448	98.659	98.6710	99.239	99.094	99.085	99.076
OFFSET (M)	27.505	19.965	8.755	4.181	2.554	0.000	3.687	8.074	15.659	25.461

CUTTING AREA (SQ.M) = 0.355
FILLING AREA (SQ.M) = 6.205

CH : 9+500 KM

DESIGNED BED LEVEL = 98.592 M

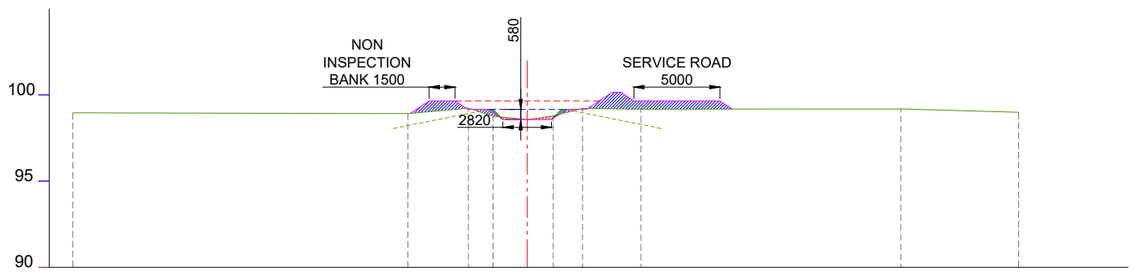


EXIST. LEVEL (M)	99.248	99.024	99.264	99.601	98.605	98.6170	98.835	99.052	99.031	99.022
OFFSET (M)	28.300	17.768	8.710	5.253	2.871	0.000	2.738	4.718	15.815	26.155

CUTTING AREA (SQ.M) = 0.101
FILLING AREA (SQ.M) = 7.996

CH : 9+400 KM

DESIGNED BED LEVEL = 98.612 M



EXIST. LEVEL (M)	98.962	98.915	99.239	98.5740	99.215	99.166	99.184	98.996		
OFFSET (M)	26.383	6.930	3.426	0.000	3.206	6.607	21.684	28.536		

CUTTING AREA (SQ.M) = 0.342
FILLING AREA (SQ.M) = 5.938

CH : 9+600 KM

DESIGNED BED LEVEL = 98.572 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

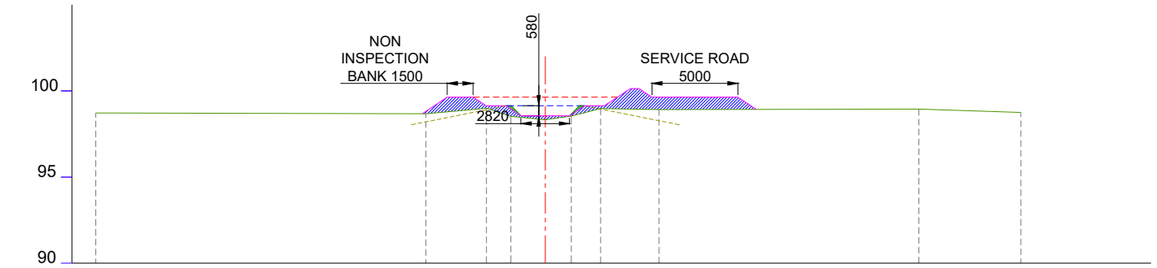
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 24 of 39

X SECTION OF PATOI DY.

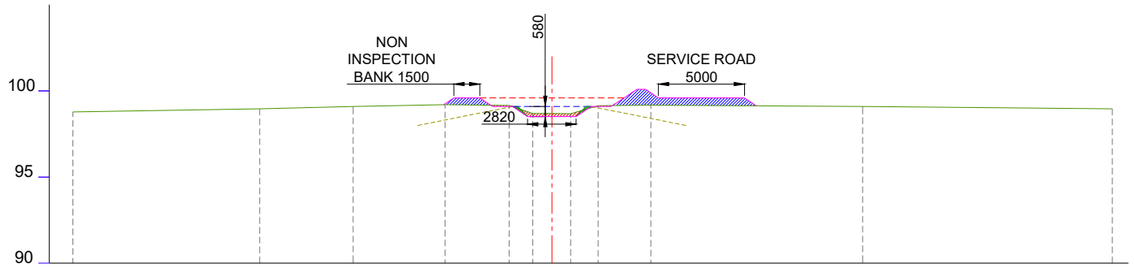


EXIST. LEVEL (M)	98.714	98.668	98.991	98.3260	98.967	98.918	98.937	98.748
OFFSET (M)	26.106	6.929	3.426	0.000	3.206	6.607	21.685	27.604

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 9.935

CH : 9+700 KM

DESIGNED BED LEVEL = 98.552 M

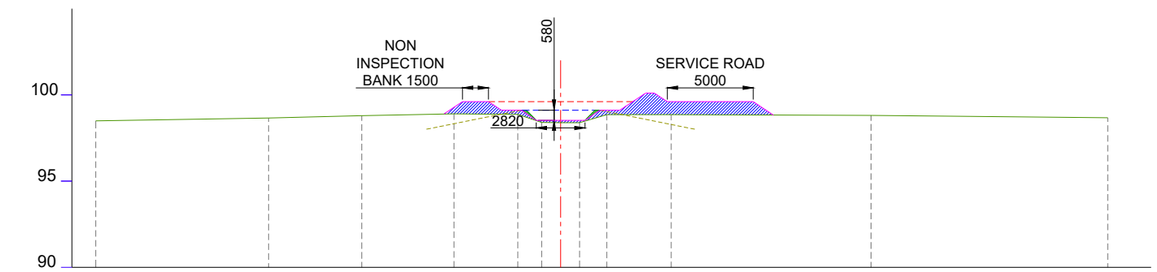


EXIST. LEVEL (M)	98.781	98.957	99.093	99.197	99.156	98.6870	99.145	99.164	99.096	98.963
OFFSET (M)	27.810	16.959	11.544	6.200	2.484	0.000	2.682	5.744	18.051	32.550

CUTTING AREA (SQ.M) = 0.855
FILLING AREA (SQ.M) = 4.892

CH : 9+900 KM

DESIGNED BED LEVEL = 98.512 M

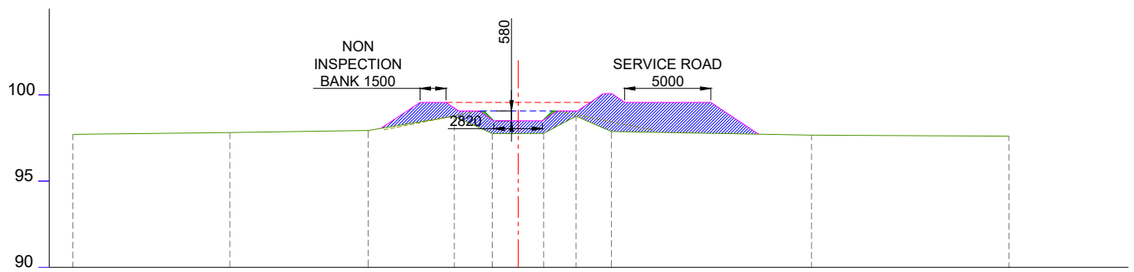


EXIST. LEVEL (M)	98.490	98.666	98.802	98.906	98.865	98.3960	98.854	98.854	98.805	98.672
OFFSET (M)	26.997	16.959	11.545	6.200	2.484	0.000	2.682	6.427	18.029	31.766

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 9.944

CH : 9+800 KM

DESIGNED BED LEVEL = 98.532 M



EXIST. LEVEL (M)	97.707	97.824	97.942	98.759	97.7590	98.762	97.876	97.667	97.613
OFFSET (M)	25.852	16.736	8.712	3.709	0.000	3.368	5.420	17.041	28.498

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 23.828

CH : 10+000 KM

DESIGNED BED LEVEL = 98.492 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

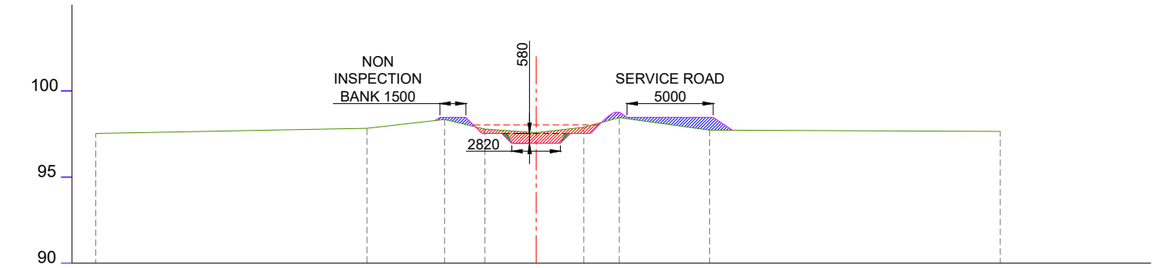
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 25 of 39

X SECTION OF PATOI DY.

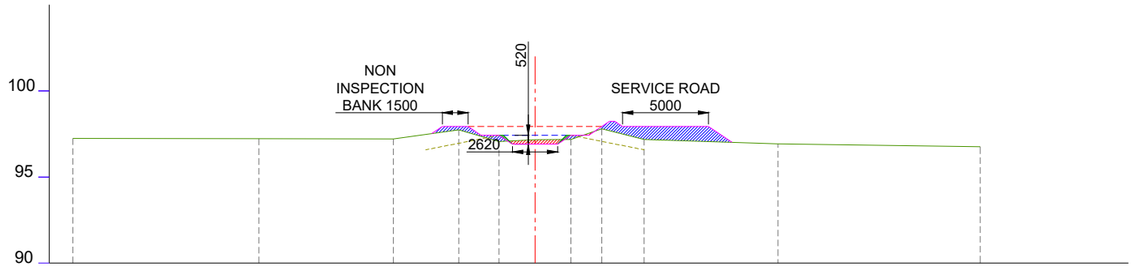


EXIST. LEVEL (M)	97.524	97.834	98.335	97.784	97.5730	97.883	98.451	97.715	97.650
OFFSET (M)	25.577	9.821	5.317	2.979	0.000	2.766	4.827	10.076	26.955

CUTTING AREA (SQ.M) = 3.382
FILLING AREA (SQ.M) = 3.421

CH : 10+100 KM

DESIGNED BED LEVEL = 96.948 M

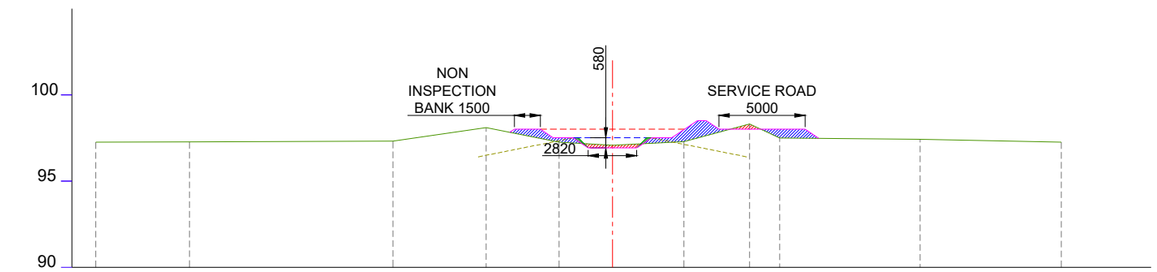


EXIST. LEVEL (M)	97.247	97.228	97.209	97.740	97.064	97.1610	97.180	97.804	97.180	96.929	96.761
OFFSET (M)	26.831	16.033	8.216	4.424	2.092	0.000	2.090	3.885	6.332	14.111	25.857

CUTTING AREA (SQ.M) = 0.749
FILLING AREA (SQ.M) = 6.034

CH : 10+300 KM

DESIGNED BED LEVEL = 96.908 M

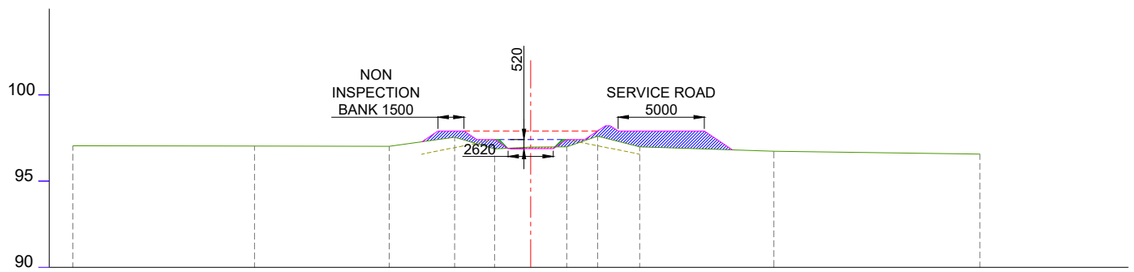


EXIST. LEVEL (M)	97.256	97.279	97.327	98.097	97.261	97.0720	97.286	98.307	97.502	97.432	97.264
OFFSET (M)	30.006	24.563	12.747	7.335	3.096	0.000	4.154	7.963	9.707	17.864	26.065

CUTTING AREA (SQ.M) = 0.863
FILLING AREA (SQ.M) = 4.839

CH : 10+200 KM

DESIGNED BED LEVEL = 96.928 M



EXIST. LEVEL (M)	97.054	97.034	97.015	97.546	96.870	96.9670	96.986	97.610	96.986	96.735	96.567
OFFSET (M)	26.584	16.033	8.216	4.424	2.092	0.000	2.089	3.885	6.332	14.110	26.085

CUTTING AREA (SQ.M) = 0.182
FILLING AREA (SQ.M) = 8.553

CH : 10+400 KM

DESIGNED BED LEVEL = 96.888 M

LEGEND

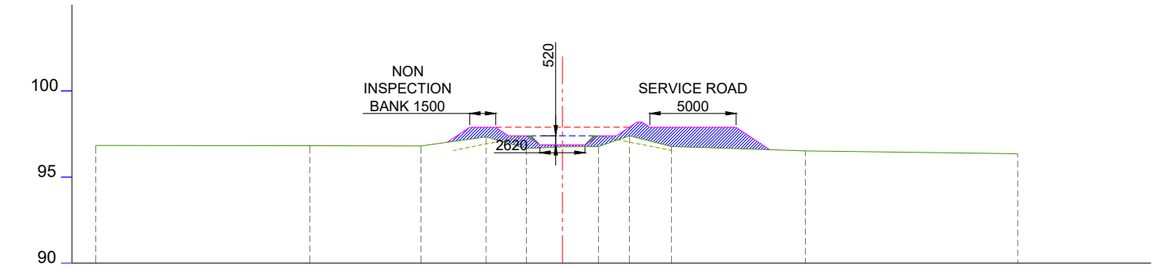
	CUT AREA		F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 26 of 39

X SECTION OF PATOI DY.

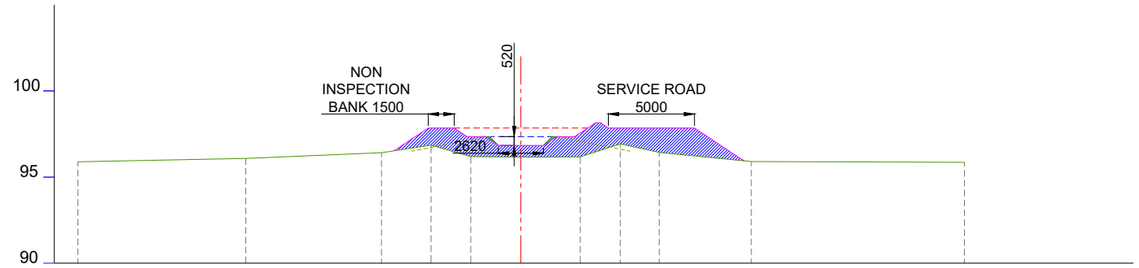


EXIST. LEVEL (M)	96.840	96.821	96.802	97.333	96.657	96.7540	97.397	96.773	96.522	96.354
OFFSET (M)	27.103	14.668	8.216	4.424	2.092	0.000	3.885	6.332	14.111	26.427

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 11.919

CH : 10+500 KM

DESIGNED BED LEVEL = 96.868 M

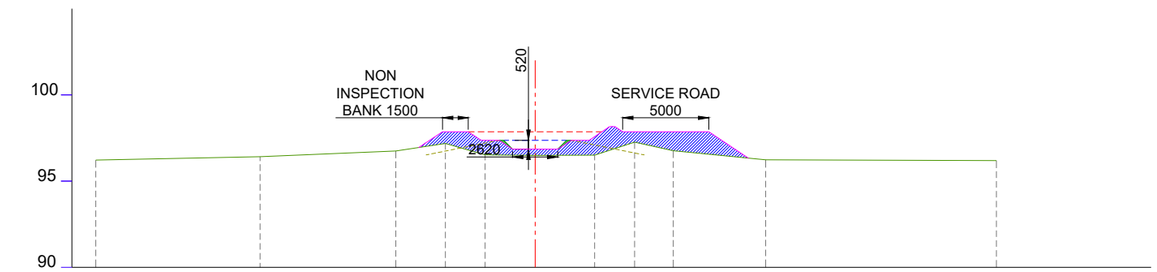


EXIST. LEVEL (M)	95.890	96.085	96.415	96.845	96.181	96.1620	96.177	96.919	96.432	95.893	95.847
OFFSET (M)	25.724	15.976	8.092	5.211	2.904	0.000	3.449	5.767	8.024	13.380	25.752

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 20.994

CH : 10+700 KM

DESIGNED BED LEVEL = 96.828 M

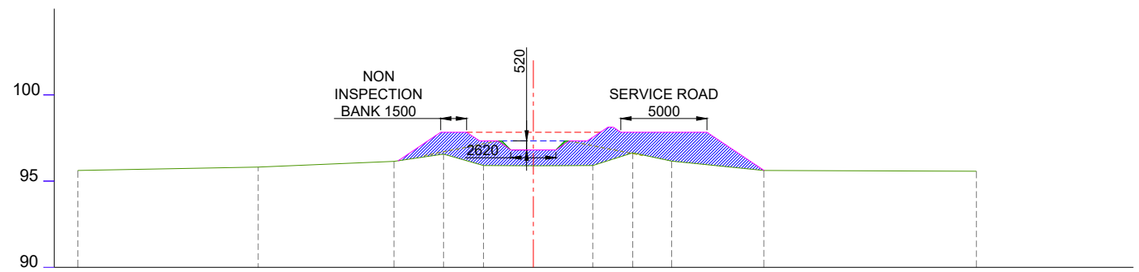


EXIST. LEVEL (M)	96.225	96.420	96.750	97.180	96.516	96.4970	96.512	97.254	96.767	96.228	96.182
OFFSET (M)	25.519	15.976	8.091	5.211	2.904	0.000	3.449	5.767	8.024	13.381	26.774

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 14.778

CH : 10+600 KM

DESIGNED BED LEVEL = 96.848 M



EXIST. LEVEL (M)	95.613	95.809	96.139	96.569	95.905	95.8860	95.901	96.643	96.156	95.617	95.571
OFFSET (M)	26.449	15.977	8.092	5.211	2.904	0.000	3.449	5.767	8.023	13.380	25.717

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 26.316

CH : 10+800 KM

DESIGNED BED LEVEL = 96.808 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

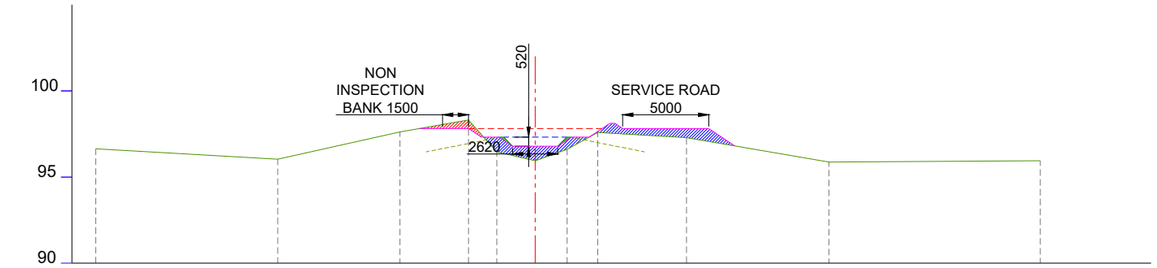
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 27 of 39

X SECTION OF PATOI DY.

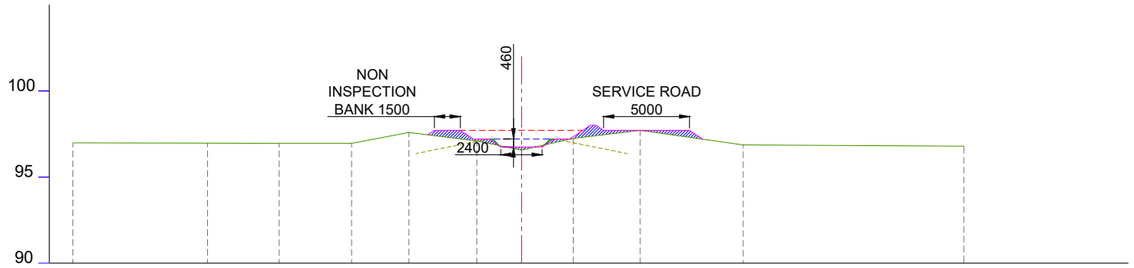


EXIST. LEVEL (M)	96.640	96.040	97.615	98.313	95.9402	97.590	97.283	95.874	95.951
OFFSET (M)	25.526	14.954	7.855	3.883	0.000	3.631	8.781	17.056	29.316

CUTTING AREA (SQ.M) = 0.983
FILLING AREA (SQ.M) = 6.898

CH : 10+900 KM

DESIGNED BED LEVEL = 96.788 M

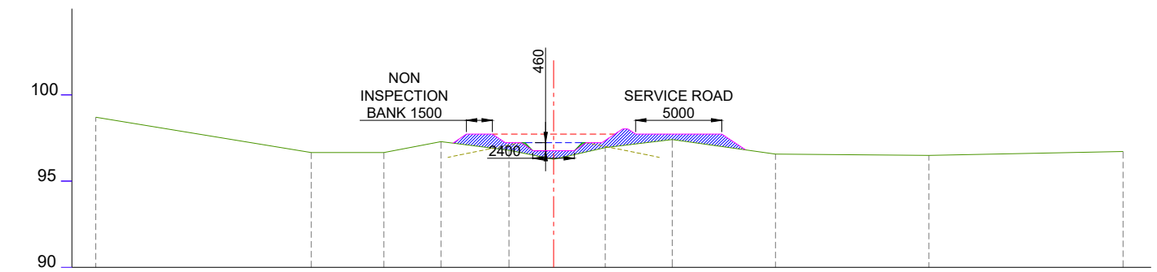


EXIST. LEVEL (M)	96.979	96.967	96.958	96.948	97.592	97.090	96.5680	97.236	97.714	96.865	96.783
OFFSET (M)	26.050	18.231	14.078	9.861	6.544	2.596	0.000	2.994	6.890	12.878	25.688

CUTTING AREA (SQ.M) = 0.040
FILLING AREA (SQ.M) = 3.176

CH : 11+100 KM

DESIGNED BED LEVEL = 96.748 M

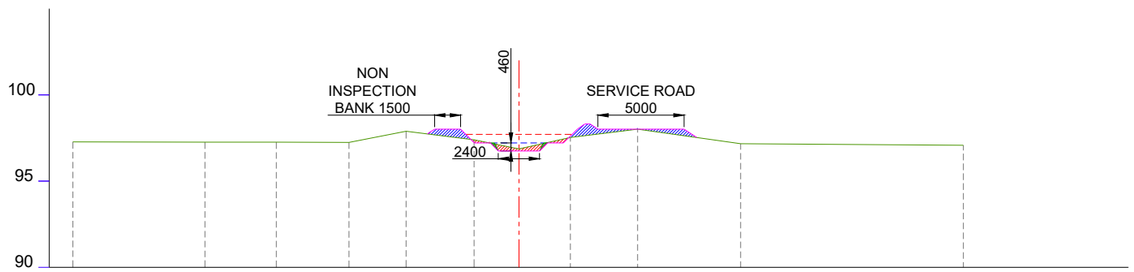


EXIST. LEVEL (M)	98.705	96.660	96.650	97.294	96.792	96.2700	96.938	97.416	96.567	96.485	96.710
OFFSET (M)	26.590	14.078	9.861	6.544	2.596	0.000	2.995	6.891	12.878	21.799	33.072

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 8.375

CH : 11+000 KM

DESIGNED BED LEVEL = 96.768 M



EXIST. LEVEL (M)	97.277	97.266	97.256	97.247	97.891	97.389	96.8670	97.535	98.013	97.164	97.082
OFFSET (M)	25.897	18.231	14.079	9.861	6.544	2.596	0.000	2.995	6.891	12.878	25.800

CUTTING AREA (SQ.M) = 1.021
FILLING AREA (SQ.M) = 2.651

CH : 11+200 KM

DESIGNED BED LEVEL = 95.814 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

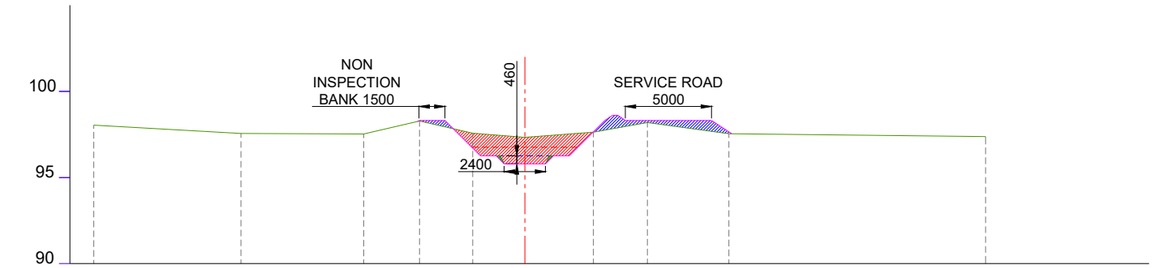
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 28 of 39

X SECTION OF PATOI DY.

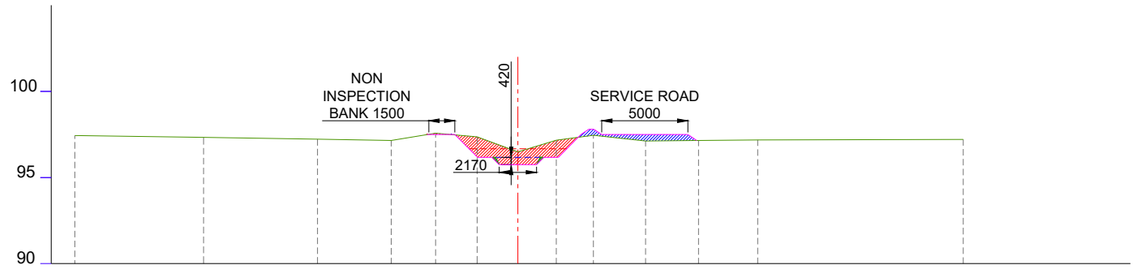


EXIST. LEVEL (M)	98.045	97.550	97.533	98.283	97.574	97.3377	97.627	98.197	97.538	97.379
OFFSET (M)	25.034	16.476	9.347	6.107	3.021	0.000	3.976	7.124	11.855	26.752

CUTTING AREA (SQ.M) = 9.259
FILLING AREA (SQ.M) = 3.450

CH : 11+300 KM

DESIGNED BED LEVEL = 95.794 M

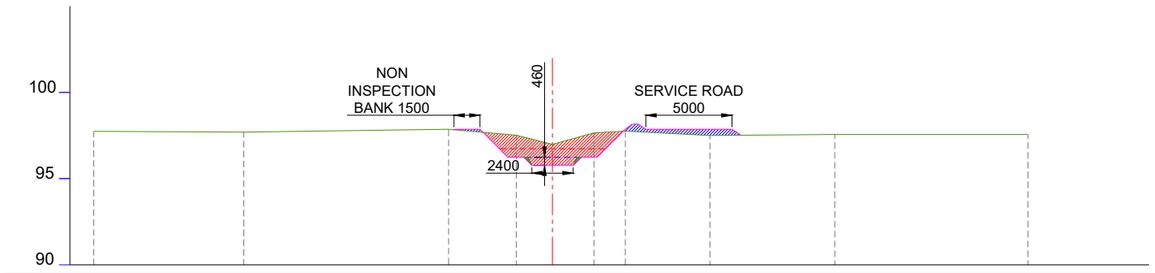


EXIST. LEVEL (M)	97.441	97.327	97.229	97.144	97.578	97.357	96.4925	97.161	97.449	97.126	97.148	97.183	97.212
OFFSET (M)	25.723	18.250	11.631	7.354	4.782	2.374	0.000	2.229	4.388	7.415	10.492	13.927	25.864

CUTTING AREA (SQ.M) = 5.811
FILLING AREA (SQ.M) = 1.898

CH : 11+500 KM

DESIGNED BED LEVEL = 95.754 M

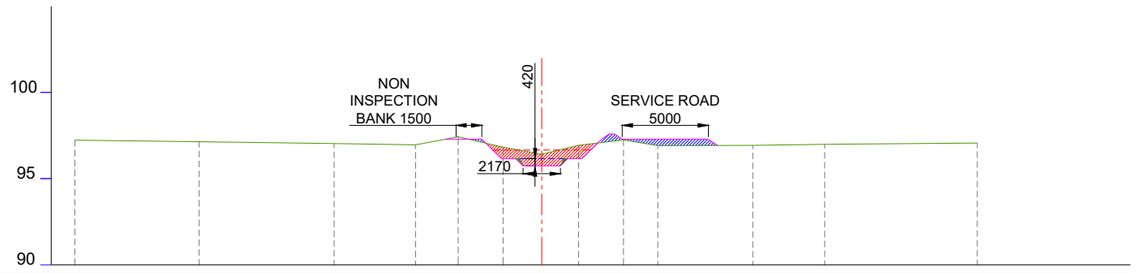


EXIST. LEVEL (M)	97.747	97.703	97.859	97.512	96.9900	97.753	97.501	97.556	97.565
OFFSET (M)	26.642	17.930	6.035	2.097	0.000	4.224	9.137	16.388	27.605

CUTTING AREA (SQ.M) = 8.985
FILLING AREA (SQ.M) = 2.166

CH : 11+400 KM

DESIGNED BED LEVEL = 95.774 M



EXIST. LEVEL (M)	97.238	97.137	97.041	96.965	97.424	96.817	96.4104	96.935	97.248	96.910	96.927	96.989	97.062
OFFSET (M)	27.105	19.897	12.054	7.318	4.849	2.239	0.000	2.145	4.748	6.736	12.256	16.428	25.295

CUTTING AREA (SQ.M) = 4.137
FILLING AREA (SQ.M) = 2.084

CH : 11+600 KM

DESIGNED BED LEVEL = 95.734 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

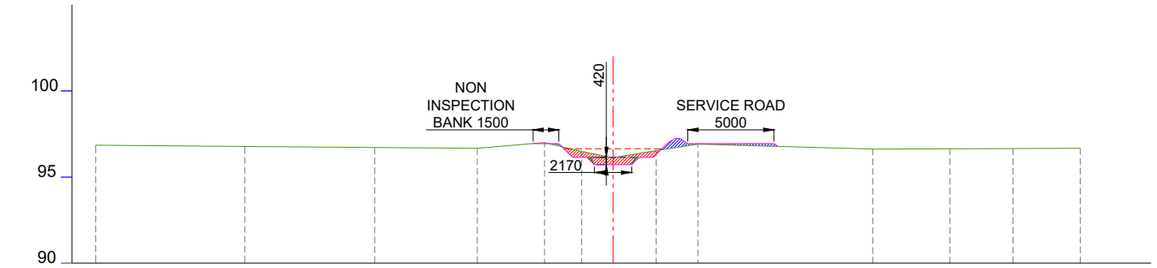
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 29 of 39

X SECTION OF PATOI DY.

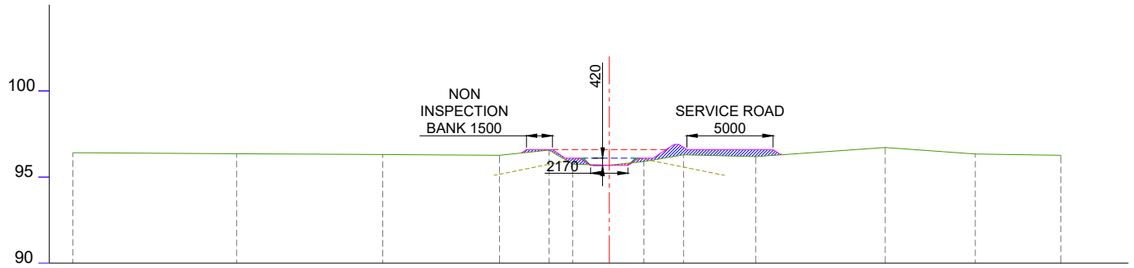


EXIST. LEVEL (M)	96.842	96.772	96.711	96.663	96.992	96.1310	96.524	96.902	96.627	96.643	96.657	96.671
OFFSET (M)	30.038	21.382	13.837	7.877	3.974	0.000	2.497	4.937	15.087	19.560	23.228	27.130

CUTTING AREA (SQ.M) = 2.303
FILLING AREA (SQ.M) = 1.062

CH : 11+700 KM

DESIGNED BED LEVEL = 95.714 M

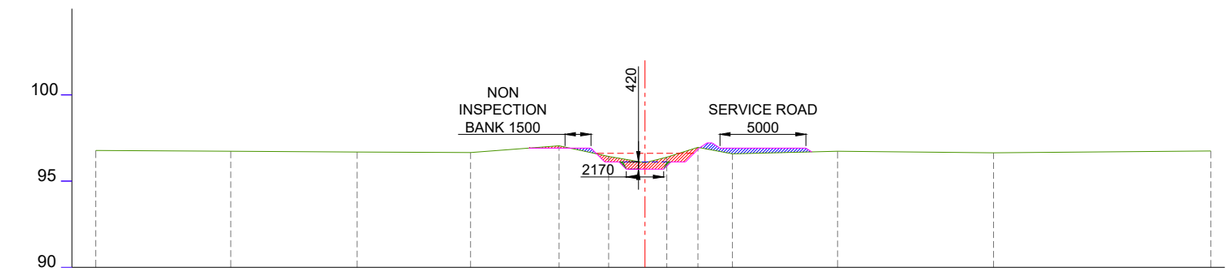


EXIST. LEVEL (M)	96.411	96.354	96.302	96.265	96.557	95.6826	95.901	96.294	96.188	96.719	96.341	96.255
OFFSET (M)	31.146	21.646	13.150	6.375	3.492	0.000	2.005	4.305	8.495	16.017	21.247	26.217

CUTTING AREA (SQ.M) = 0.117
FILLING AREA (SQ.M) = 3.544

CH : 11+900 KM

DESIGNED BED LEVEL = 95.674 M

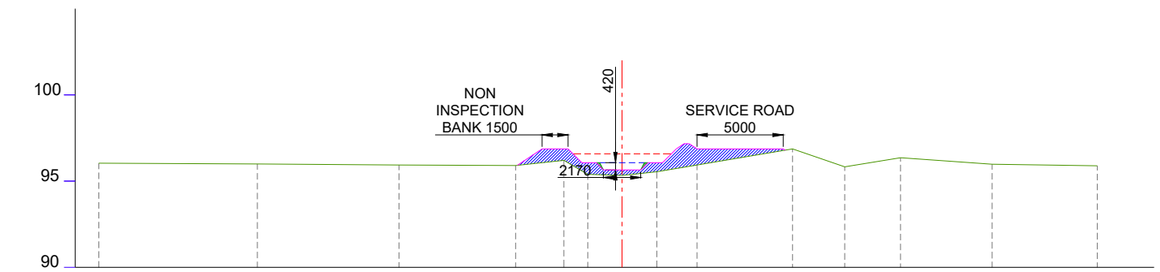


EXIST. LEVEL (M)	96.784	96.733	96.686	96.649	97.052	96.427	96.0710	96.953	96.577	96.725	96.639	96.742
OFFSET (M)	31.899	24.061	16.716	10.125	4.994	2.112	0.000	3.077	5.080	11.181	20.236	32.847

CUTTING AREA (SQ.M) = 2.590
FILLING AREA (SQ.M) = 1.986

CH : 11+800 KM

DESIGNED BED LEVEL = 95.694 M



EXIST. LEVEL (M)	96.038	95.987	95.940	95.903	96.198	95.3250	95.543	95.934	96.866	95.831	96.357	95.979	95.893
OFFSET (M)	30.391	21.178	12.958	6.184	3.385	0.000	2.013	4.355	9.901	12.917	16.165	21.481	27.584

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 8.954

CH : 12+000 KM

DESIGNED BED LEVEL = 95.654 M

LEGEND

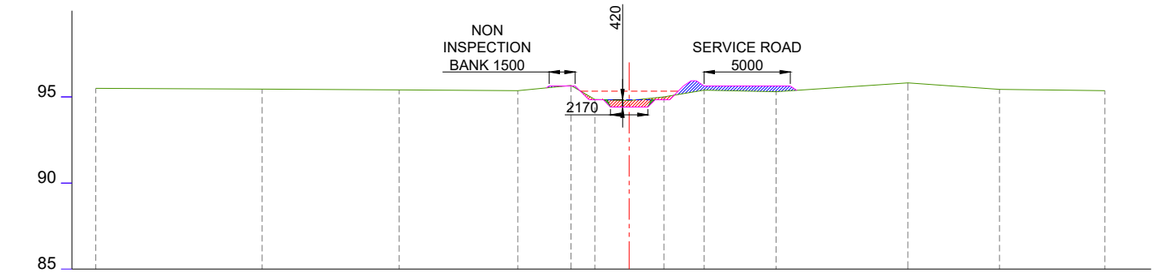
CUT AREA	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 30 of 39

X SECTION OF PATOI DY.

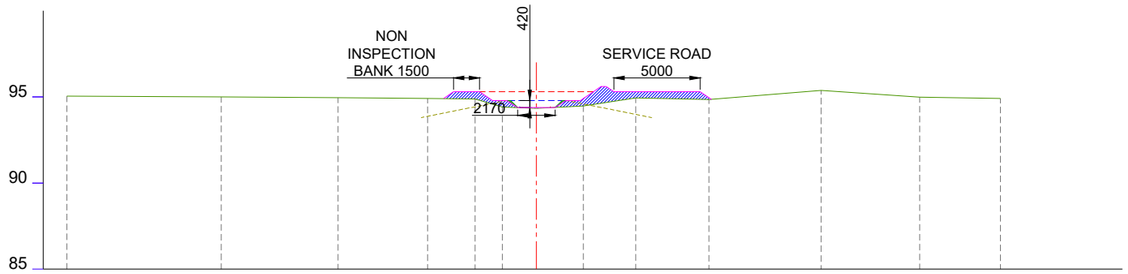


EXIST. LEVEL (M)	95.499	95.448	95.401	95.364	95.659	94.7860	95.004	95.395	95.292	95.818	95.440	95.354
OFFSET (M)	30.982	21.323	13.357	6.472	3.385	0.000	2.013	4.355	8.521	16.183	21.499	27.618

CUTTING AREA (SQ.M) = 1.378
FILLING AREA (SQ.M) = 2.360

CH : 12+100 KM

DESIGNED BED LEVEL = 94.414 M

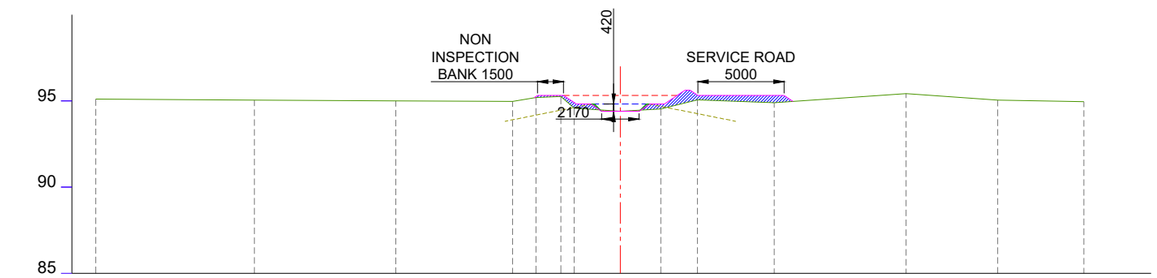


EXIST. LEVEL (M)	95.049	94.998	94.951	94.914	94.881	94.3360	94.470	94.942	94.842	95.368	94.990	94.904
OFFSET (M)	27.263	18.301	11.525	6.321	3.561	0.000	2.718	5.769	10.021	16.532	22.256	26.942

CUTTING AREA (SQ.M) = 0.003
FILLING AREA (SQ.M) = 5.432

CH : 12+300 KM

DESIGNED BED LEVEL = 94.374 M

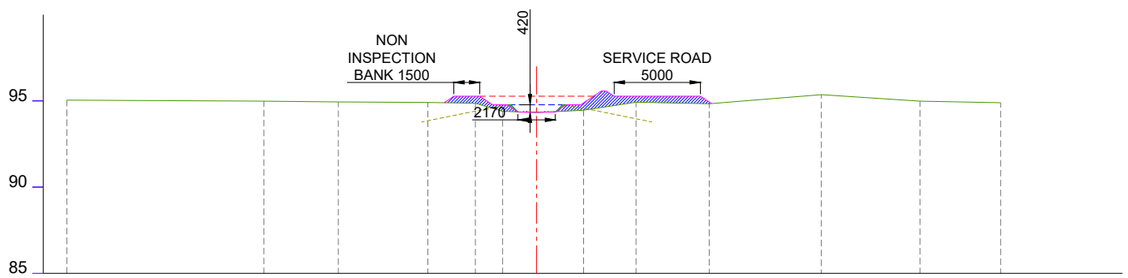


EXIST. LEVEL (M)	95.105	95.054	95.007	94.970	95.265	94.3920	94.536	95.065	94.898	95.424	95.046	94.960
OFFSET (M)	30.465	21.250	13.031	6.257	3.446	0.000	2.348	4.475	8.937	16.598	21.915	26.920

CUTTING AREA (SQ.M) = 0.081
FILLING AREA (SQ.M) = 3.733

CH : 12+200 KM

DESIGNED BED LEVEL = 94.394 M



EXIST. LEVEL (M)	95.041	94.990	94.943	94.906	94.873	94.3280	94.462	94.934	94.834	95.360	94.982	94.896
OFFSET (M)	27.278	15.840	11.525	6.321	3.561	0.000	2.718	5.769	10.021	16.532	22.256	26.941

CUTTING AREA (SQ.M) = 0.012
FILLING AREA (SQ.M) = 5.254

CH : 12+400 KM

DESIGNED BED LEVEL = 94.354 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

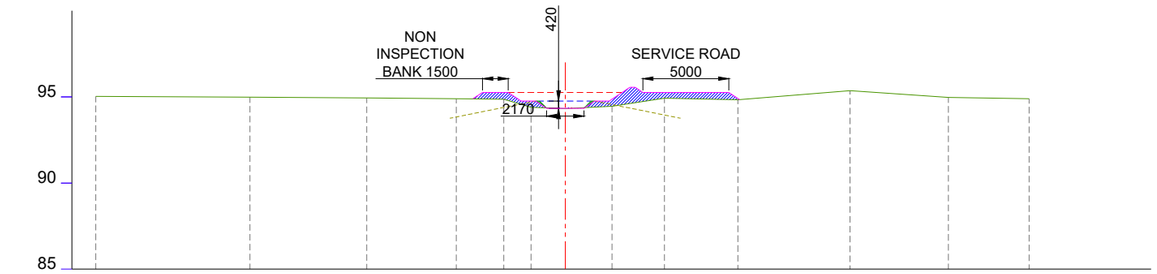
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 31 of 39

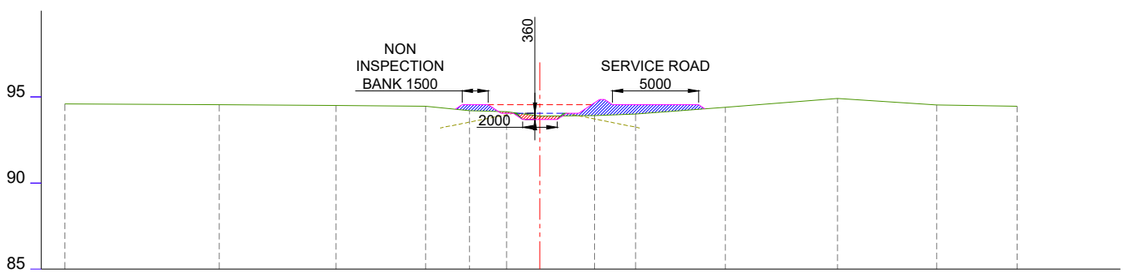
X SECTION OF PATOI DY.



EXIST. LEVEL (M)	95.033	94.982	94.935	94.898	94.865	94.3200	94.454	94.926	94.826	95.352	94.974	94.888
OFFSET (M)	27.263	18.301	11.525	6.321	3.561	0.000	2.718	5.769	10.021	16.532	22.256	26.942

CUTTING AREA (SQ.M) = 0.028
FILLING AREA (SQ.M) = 5.084

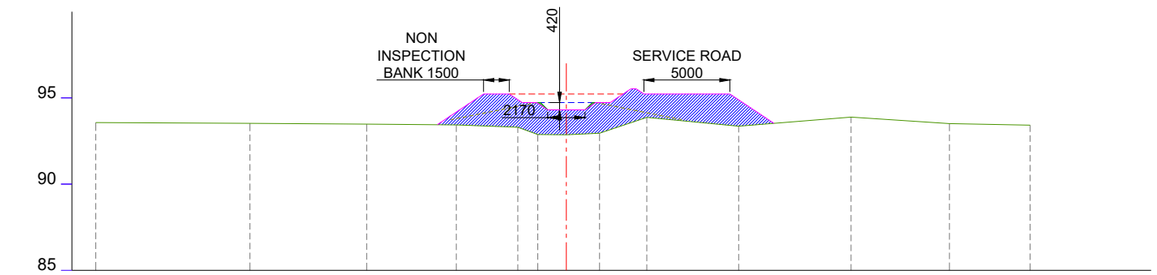
CH : 12+500 KM
DESIGNED BED LEVEL = 94.334 M



EXIST. LEVEL (M)	94.595	94.544	94.497	94.460	94.198	94.132	93.8820	93.916	94.009	94.388	94.914	94.536	94.450
OFFSET (M)	27.582	18.620	11.844	6.640	4.085	1.934	0.000	3.170	5.559	10.763	17.274	23.028	27.713

CUTTING AREA (SQ.M) = 0.660
FILLING AREA (SQ.M) = 4.337

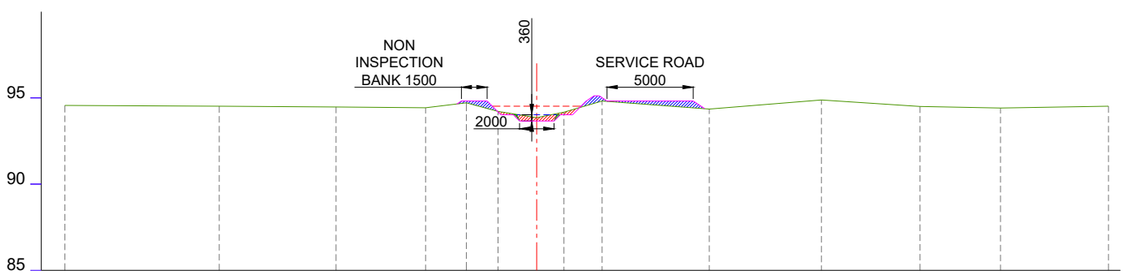
CH : 12+700 KM
DESIGNED BED LEVEL = 93.684 M



EXIST. LEVEL (M)	93.571	93.520	93.473	93.436	93.301	92.8580	92.957	93.867	93.364	93.890	93.512	93.426
OFFSET (M)	27.323	18.361	11.585	6.381	2.809	0.000	1.930	4.675	10.019	16.531	22.255	26.939

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 28.370

CH : 12+600 KM
DESIGNED BED LEVEL = 94.314 M



EXIST. LEVEL (M)	94.566	94.515	94.468	94.431	94.711	94.219	93.8530	94.820	94.359	94.885	94.507	94.421	94.524
OFFSET (M)	27.399	18.437	11.661	6.457	4.093	2.258	0.000	3.788	10.013	16.524	22.248	26.933	33.189

CUTTING AREA (SQ.M) = 1.019
FILLING AREA (SQ.M) = 2.114

CH : 12+800 KM
DESIGNED BED LEVEL = 93.664 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

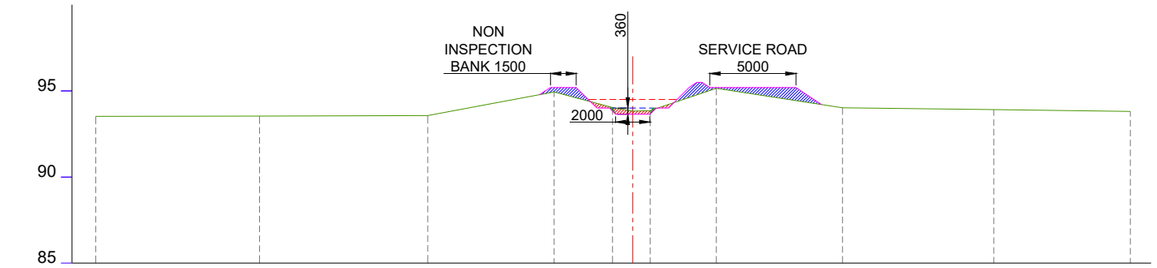
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 32 of 39

X SECTION OF PATOI DY.

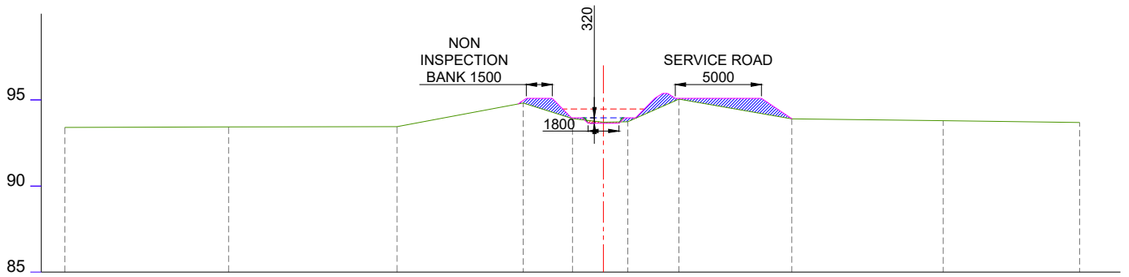


EXIST. LEVEL (M)	93.516	93.541	93.567	94.931	93.8220	95.154	94.017	93.913	93.810
OFFSET (M)	31.184	21.672	11.903	4.565	0.000	4.848	12.181	20.958	28.886

CUTTING AREA (SQ.M) = 0.851
FILLING AREA (SQ.M) = 4.392

CH : 12+900 KM

DESIGNED BED LEVEL = 93.644 M

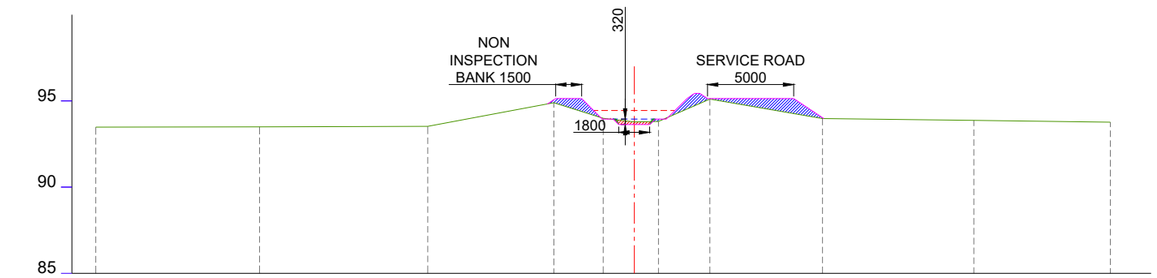


EXIST. LEVEL (M)	93.398	93.423	93.449	94.813	93.917	93.7040	95.036	93.899	93.795	93.692
OFFSET (M)	31.271	21.758	11.988	4.660	1.799	0.000	4.388	10.938	19.717	27.643

CUTTING AREA (SQ.M) = 0.185
FILLING AREA (SQ.M) = 5.654

CH : 13+100 KM

DESIGNED BED LEVEL = 93.604 M

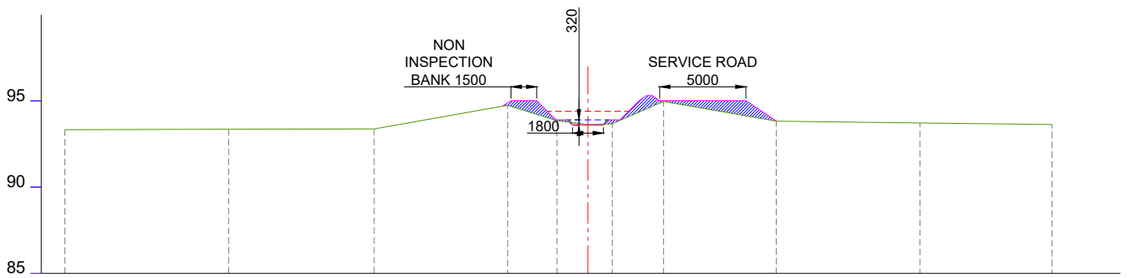


EXIST. LEVEL (M)	93.476	93.502	93.527	94.892	93.7830	95.115	93.977	93.874	93.770
OFFSET (M)	31.270	21.757	11.987	4.660	0.000	4.388	10.939	19.716	27.642

CUTTING AREA (SQ.M) = 0.429
FILLING AREA (SQ.M) = 5.241

CH : 13+000 KM

DESIGNED BED LEVEL = 93.624 M



EXIST. LEVEL (M)	93.330	93.356	93.381	94.746	93.850	93.6370	94.969	93.831	93.728	93.624
OFFSET (M)	30.370	20.858	12.408	4.660	1.798	0.000	4.389	10.939	19.285	26.934

CUTTING AREA (SQ.M) = 0.170
FILLING AREA (SQ.M) = 5.671

CH : 13+200 KM

DESIGNED BED LEVEL = 93.584 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

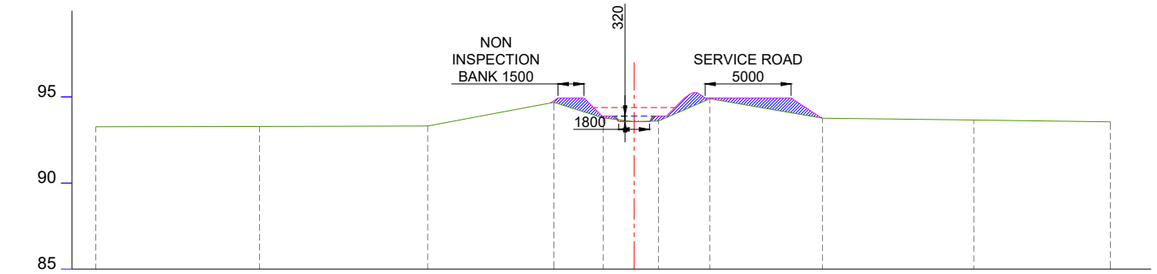
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 33 of 39

X SECTION OF PATOI DY.

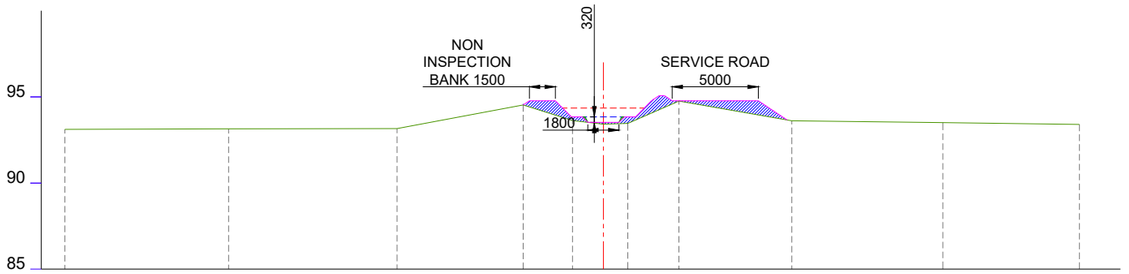


EXIST. LEVEL (M)	93.259	93.285	93.310	94.675	93.779	93.5660	94.898	93.760	93.657	93.553
OFFSET (M)	31.269	21.756	11.987	4.660	1.798	0.000	4.389	10.939	19.717	27.643

CUTTING AREA (SQ.M) = 0.068
FILLING AREA (SQ.M) = 5.763

CH : 13+300 KM

DESIGNED BED LEVEL = 93.564 M

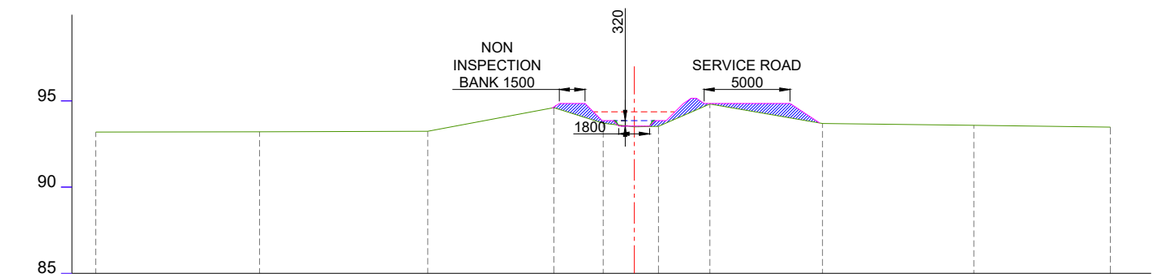


EXIST. LEVEL (M)	93.113	93.138	93.164	94.528	93.632	93.4190	94.751	93.614	93.510	93.407
OFFSET (M)	31.268	21.756	11.987	4.660	1.798	0.000	4.389	10.939	19.717	27.643

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 5.945

CH : 13+500 KM

DESIGNED BED LEVEL = 93.524 M

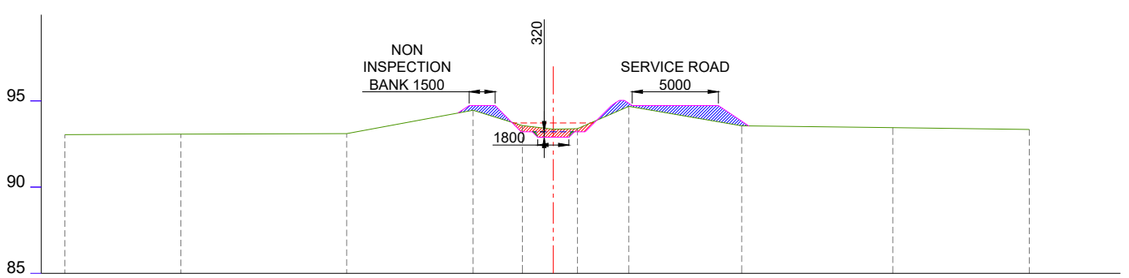


EXIST. LEVEL (M)	93.188	93.213	93.239	94.603	93.707	93.4940	94.826	93.689	93.585	93.482
OFFSET (M)	31.270	21.757	11.987	4.660	1.798	0.000	4.390	10.939	19.718	27.644

CUTTING AREA (SQ.M) = 0.015
FILLING AREA (SQ.M) = 5.802

CH : 13+400 KM

DESIGNED BED LEVEL = 93.544 M



EXIST. LEVEL (M)	93.049	93.075	93.100	94.464	93.568	93.3550	94.687	93.550	93.447	93.343
OFFSET (M)	28.357	21.626	11.987	4.660	1.798	0.000	4.389	10.939	19.718	27.644

CUTTING AREA (SQ.M) = 1.715
FILLING AREA (SQ.M) = 5.261

CH : 13+600 KM

DESIGNED BED LEVEL = 92.894 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

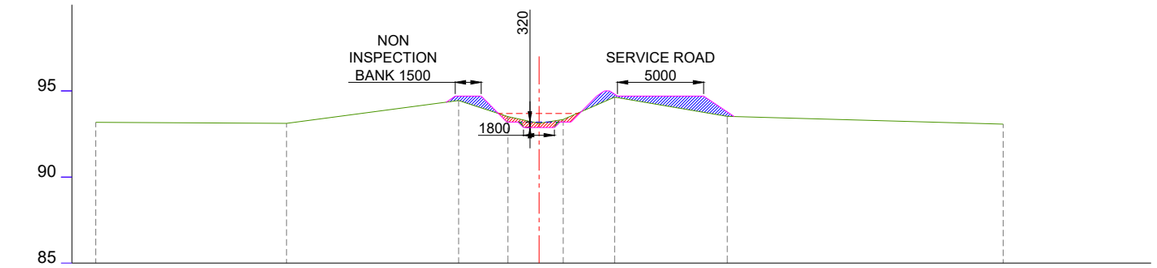
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 34 of 39

X SECTION OF PATOI DY.

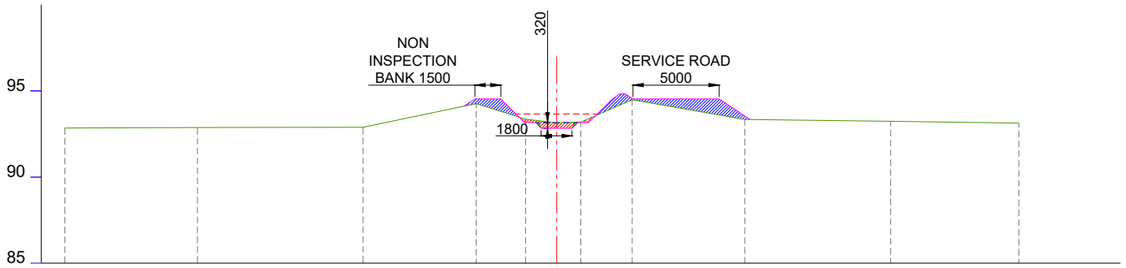


EXIST. LEVEL (M)	93.169	93.116	94.433	93.505	93.1200	94.643	93.519	93.069	
OFFSET (M)	25.739	14.650	4.660	1.798	0.000	4.389	10.939	26.953	

CUTTING AREA (SQ.M) = 1.246
FILLING AREA (SQ.M) = 5.240

CH : 13+700 KM

DESIGNED BED LEVEL = 92.874 M

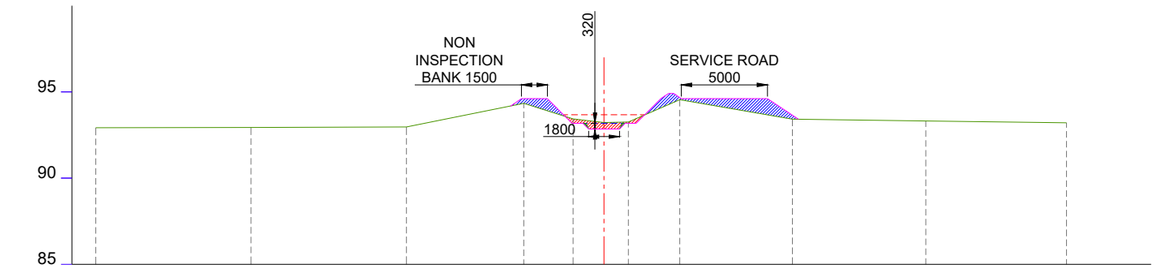


EXIST. LEVEL (M)	92.842	92.868	92.893	94.258	93.1490	94.481	93.343	93.240	93.136
OFFSET (M)	28.549	20.852	11.235	4.660	0.000	4.389	10.938	19.397	26.847

CUTTING AREA (SQ.M) = 1.031
FILLING AREA (SQ.M) = 5.379

CH : 13+900 KM

DESIGNED BED LEVEL = 92.834 M

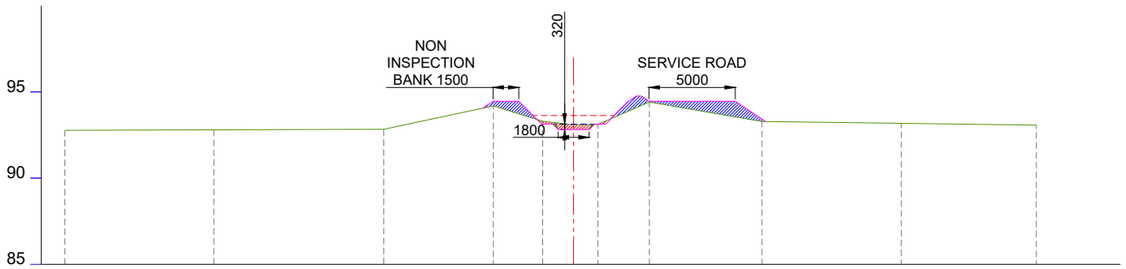


EXIST. LEVEL (M)	92.916	92.942	92.967	94.332	93.436	93.2230	94.555	93.417	93.314	93.210
OFFSET (M)	29.519	20.499	11.477	4.660	1.799	0.000	4.389	10.938	18.677	26.852

CUTTING AREA (SQ.M) = 1.276
FILLING AREA (SQ.M) = 5.347

CH : 13+800 KM

DESIGNED BED LEVEL = 92.854 M



EXIST. LEVEL (M)	92.777	92.803	92.828	94.193	93.0840	94.416	93.278	93.175	93.071
OFFSET (M)	29.541	20.893	11.022	4.660	0.000	4.389	10.938	19.021	26.859

CUTTING AREA (SQ.M) = 0.838
FILLING AREA (SQ.M) = 5.293

CH : 14+000 KM

DESIGNED BED LEVEL = 92.814 M

LEGEND

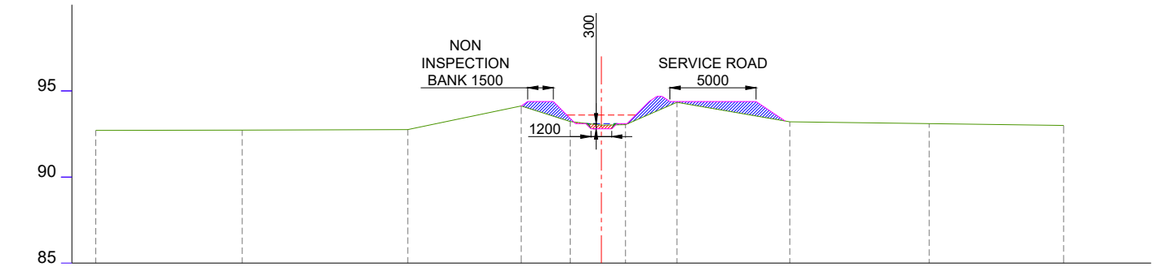
	CUT AREA		F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 35 of 39

X SECTION OF PATOI DY.

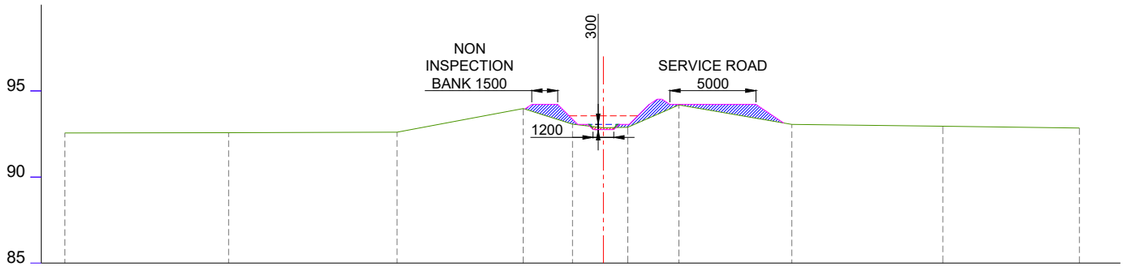


EXIST. LEVEL (M)	92.702	92.727	92.753	94.117	93.221	93.0080	94.340	93.203	93.099	92.996
OFFSET (M)	29.361	20.860	11.236	4.660	1.799	0.000	4.389	10.938	19.032	26.841

CUTTING AREA (SQ.M) = 0.393
FILLING AREA (SQ.M) = 5.565

CH : 14+100 KM

DESIGNED BED LEVEL = 92.794 M

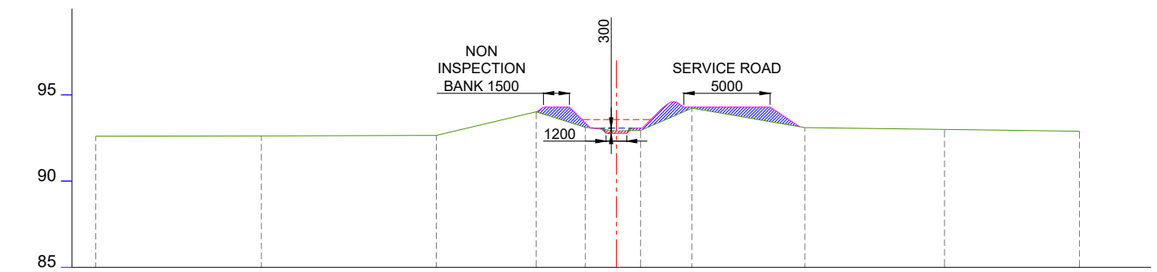


EXIST. LEVEL (M)	92.551	92.576	92.602	93.966	93.070	92.8570	94.189	93.052	92.948	92.845
OFFSET (M)	31.269	21.757	11.987	4.660	1.798	0.000	4.389	10.939	19.717	27.644

CUTTING AREA (SQ.M) = 0.181
FILLING AREA (SQ.M) = 5.623

CH : 14+300 KM

DESIGNED BED LEVEL = 92.749 M

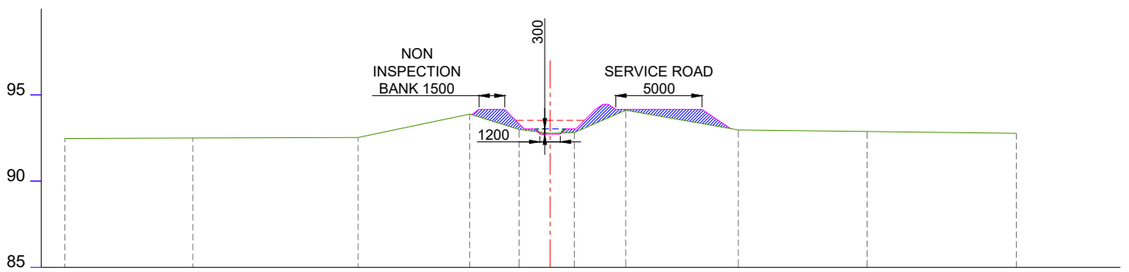


EXIST. LEVEL (M)	92.601	92.627	92.652	94.017	93.121	92.9080	94.240	93.102	92.999	92.895
OFFSET (M)	30.234	20.615	10.460	4.660	1.799	0.000	4.389	10.938	19.053	26.882

CUTTING AREA (SQ.M) = 0.227
FILLING AREA (SQ.M) = 5.941

CH : 14+200 KM

DESIGNED BED LEVEL = 92.771 M



EXIST. LEVEL (M)	92.473	92.498	92.524	93.888	92.992	92.7790	94.111	92.974	92.870	92.767
OFFSET (M)	28.172	20.740	11.139	4.660	1.799	0.000	4.390	10.939	18.414	27.077

CUTTING AREA (SQ.M) = 0.099
FILLING AREA (SQ.M) = 5.990

CH : 14+400 KM

DESIGNED BED LEVEL = 92.727 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

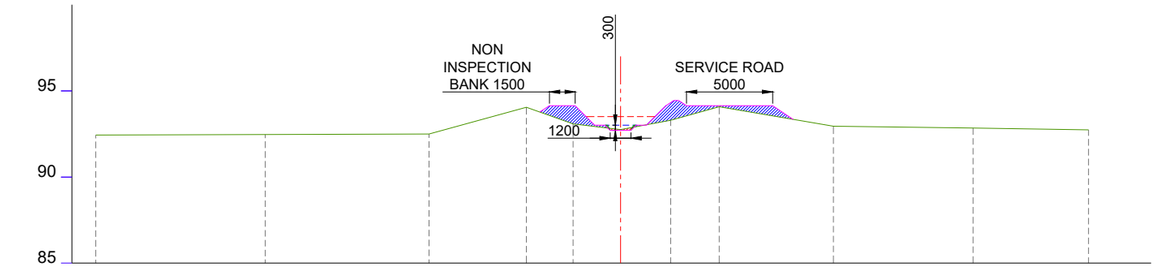
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 36 of 39

X SECTION OF PATOI DY.

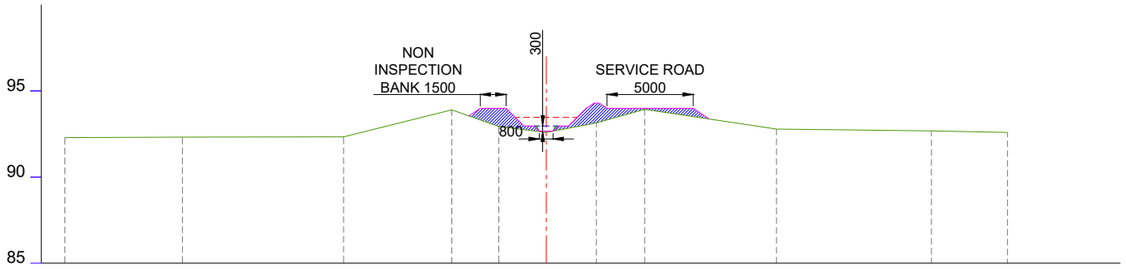


EXIST. LEVEL (M)	92.443	92.469	92.494	94.055	93.086	92.7500	93.296	94.085	92.944	92.841	92.737
OFFSET (M)	30.478	20.625	11.116	5.478	2.756	0.000	2.916	5.721	12.355	20.472	27.173

CUTTING AREA (SQ.M) = 0.135
FILLING AREA (SQ.M) = 5.701

CH : 14+500 KM

DESIGNED BED LEVEL = 92.705 M

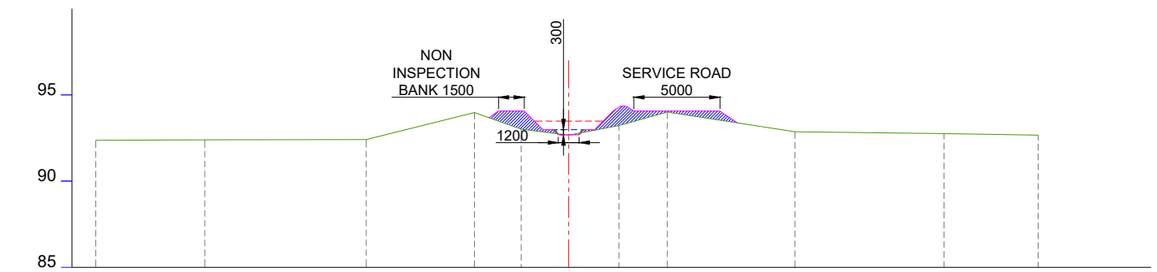


EXIST. LEVEL (M)	92.286	92.312	92.337	93.898	92.929	92.5930	93.139	93.928	92.787	92.684	92.580
OFFSET (M)	27.949	21.131	11.764	5.478	2.756	0.000	2.916	5.721	13.371	22.366	26.787

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 6.239

CH : 14+700 KM

DESIGNED BED LEVEL = 92.659 M

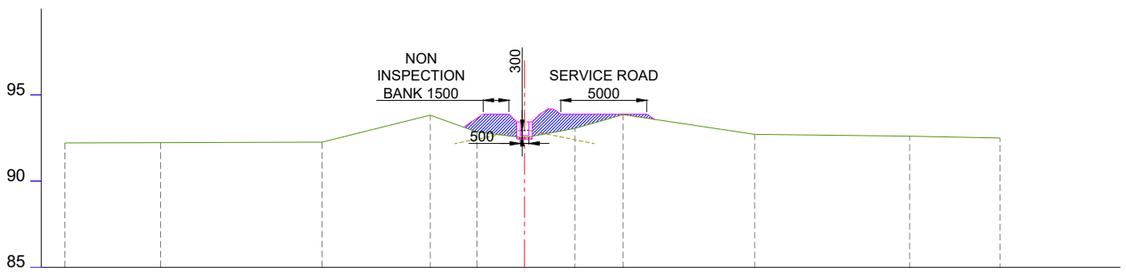


EXIST. LEVEL (M)	92.365	92.391	92.416	93.977	93.008	92.6720	93.218	94.007	92.866	92.763	92.659
OFFSET (M)	27.467	21.131	11.765	5.478	2.756	0.000	2.916	5.721	13.143	21.789	27.263

CUTTING AREA (SQ.M) = 0.053
FILLING AREA (SQ.M) = 5.702

CH : 14+600 KM

DESIGNED BED LEVEL = 92.682 M



EXIST. LEVEL (M)	92.210	92.236	92.261	93.822	92.853	92.5170	93.063	93.852	92.711	92.608	92.504
OFFSET (M)	26.689	21.131	11.765	5.478	2.756	0.000	2.916	5.721	13.371	22.366	27.609

CUTTING AREA (SQ.M) = 0.106
FILLING AREA (SQ.M) = 7.034

CH : 14+800 KM

DESIGNED BED LEVEL = 92.634 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

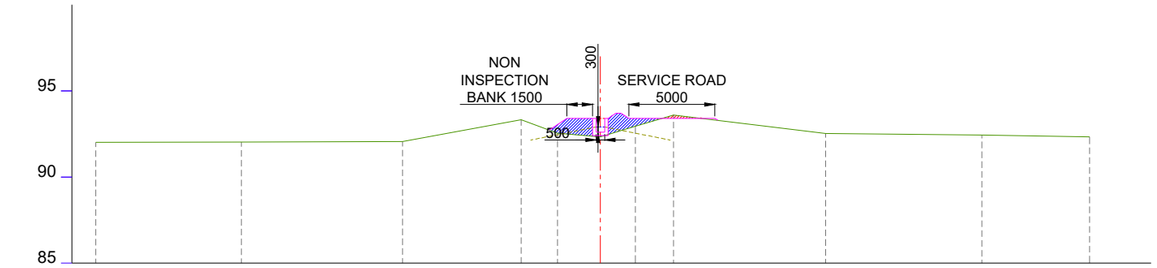
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 37 of 39

X SECTION OF PATOI DY.

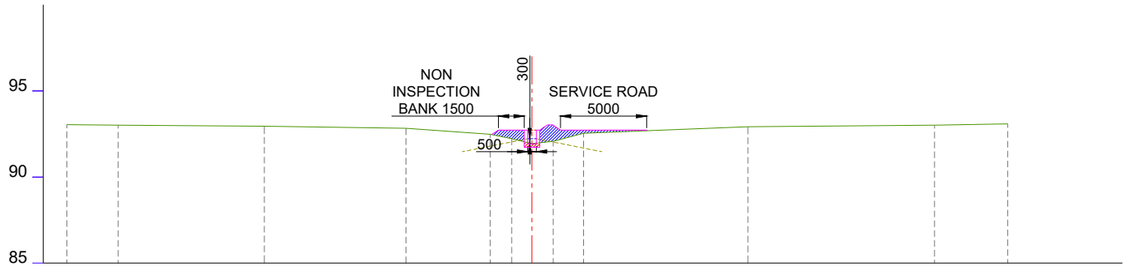


EXIST. LEVEL (M)	92.010	92.033	92.059	93.330	92.535	92.3248	92.952	93.600	92.533	92.439	92.337
OFFSET (M)	29.305	20.850	11.484	4.597	2.489	0.000	2.029	4.252	13.076	22.144	28.406

CUTTING AREA (SQ.M) = 0.229
FILLING AREA (SQ.M) = 3.687

CH : 14+900 KM

DESIGNED BED LEVEL = 92.604 M

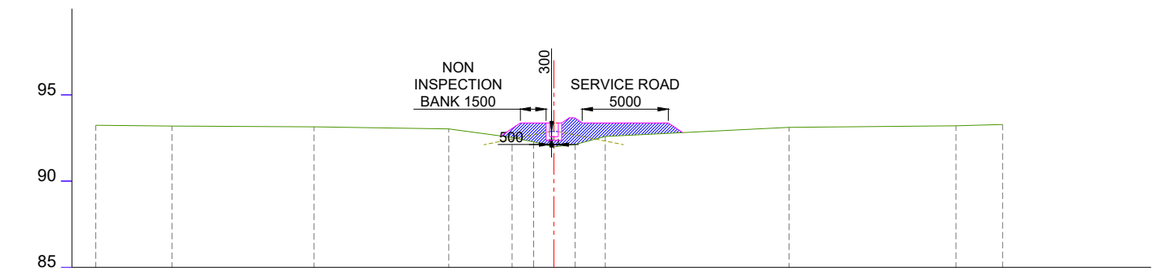


EXIST. LEVEL (M)	93.042	93.004	92.955	92.828	92.481	91.9350	92.540	92.925	93.012	93.090	
OFFSET (M)	27.006	24.030	15.535	7.312	2.424	0.000	2.987	12.536	23.374	27.626	

CUTTING AREA (SQ.M) = 0.222
FILLING AREA (SQ.M) = 2.763

CH : 15+100 KM

DESIGNED BED LEVEL = 91.928 M

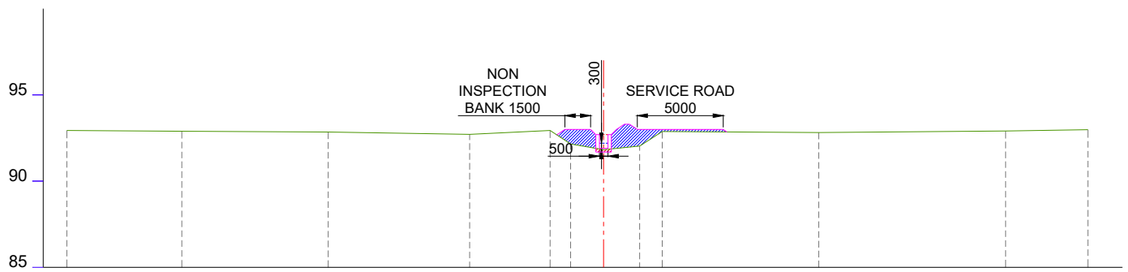


EXIST. LEVEL (M)	93.237	93.199	93.150	93.023	92.538	91.9920	92.597	93.120	93.207	93.285	
OFFSET (M)	26.604	22.175	13.929	6.095	2.424	0.000	2.987	13.652	23.344	26.053	

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 8.210

CH : 15+000 KM

DESIGNED BED LEVEL = 92.571 M



EXIST. LEVEL (M)	92.930	92.892	92.843	92.716	92.938	91.8230	92.883	92.813	92.900	92.978	
OFFSET (M)	31.165	24.492	15.996	7.773	3.103	0.000	3.409	12.495	23.333	28.111	

CUTTING AREA (SQ.M) = 0.144
FILLING AREA (SQ.M) = 4.812

CH : 15+200 KM

DESIGNED BED LEVEL = 91.894 M

LEGEND

CUT AREA

FILL AREA

F.S.L.

DESIGNED BED LINE

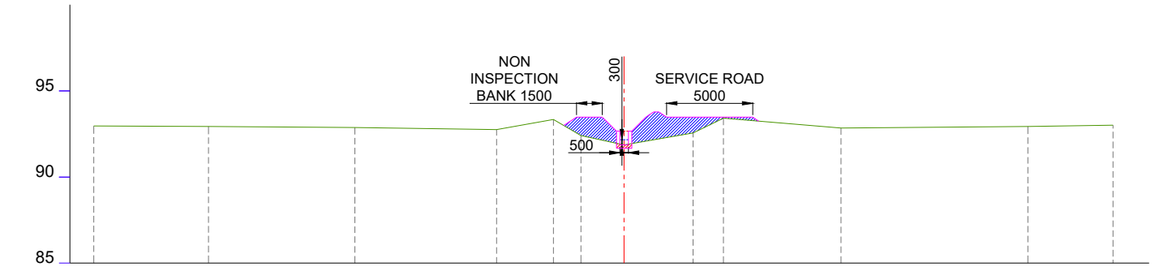
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 38 of 39

X SECTION OF PATOI DY.

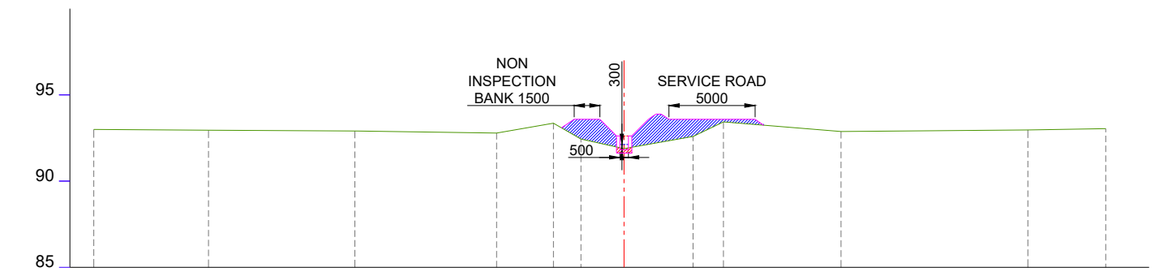


EXIST. LEVEL (M)	92.966	92.927	92.879	92.752	93.337	91.8580	93.409	92.849	92.936	93.014
OFFSET (M)	30.801	24.128	15.633	7.409	4.102	0.000	5.772	12.598	23.437	28.392

CUTTING AREA (SQ.M) = 0.217
FILLING AREA (SQ.M) = 8.319

CH : 15+300 KM

DESIGNED BED LEVEL = 91.861 M



EXIST. LEVEL (M)	92.994	92.956	92.907	92.780	93.366	91.8870	92.587	93.438	92.877	92.964	93.042
OFFSET (M)	30.801	24.127	15.632	7.409	4.102	0.000	4.003	5.772	12.598	23.436	27.971

CUTTING AREA (SQ.M) = 0.273
FILLING AREA (SQ.M) = 8.985

CH : 15+400 KM

DESIGNED BED LEVEL = 91.828 M

LEGEND

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

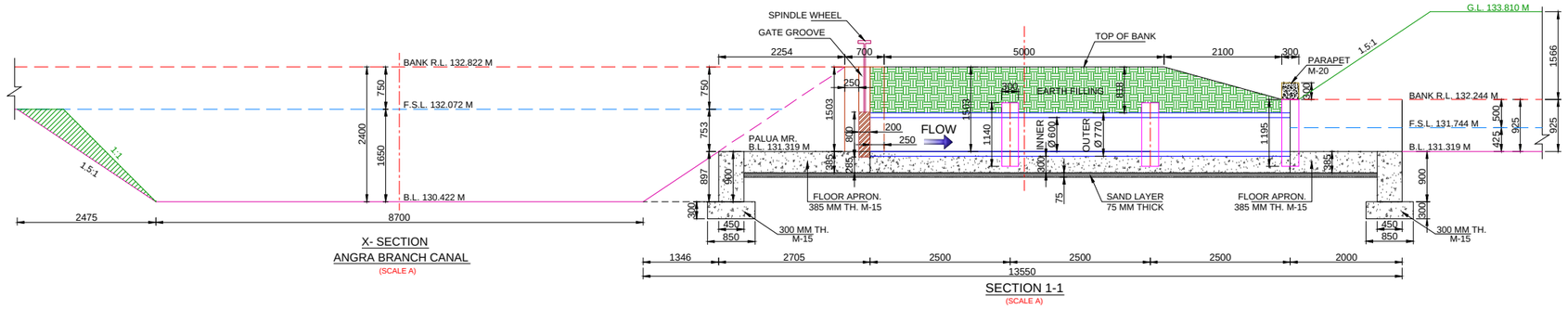
Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X - SECTION OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM.,PATOI DY.)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ XSEC- 39 of 39

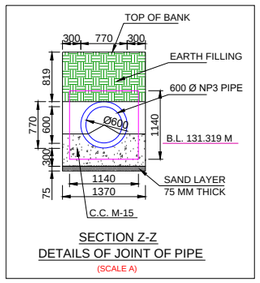
DRAWING OF STRUCTURES

DRAWING OF HEAD REGULATOR



X- SECTION
ANGRA BRANCH CANAL
(SCALE A)

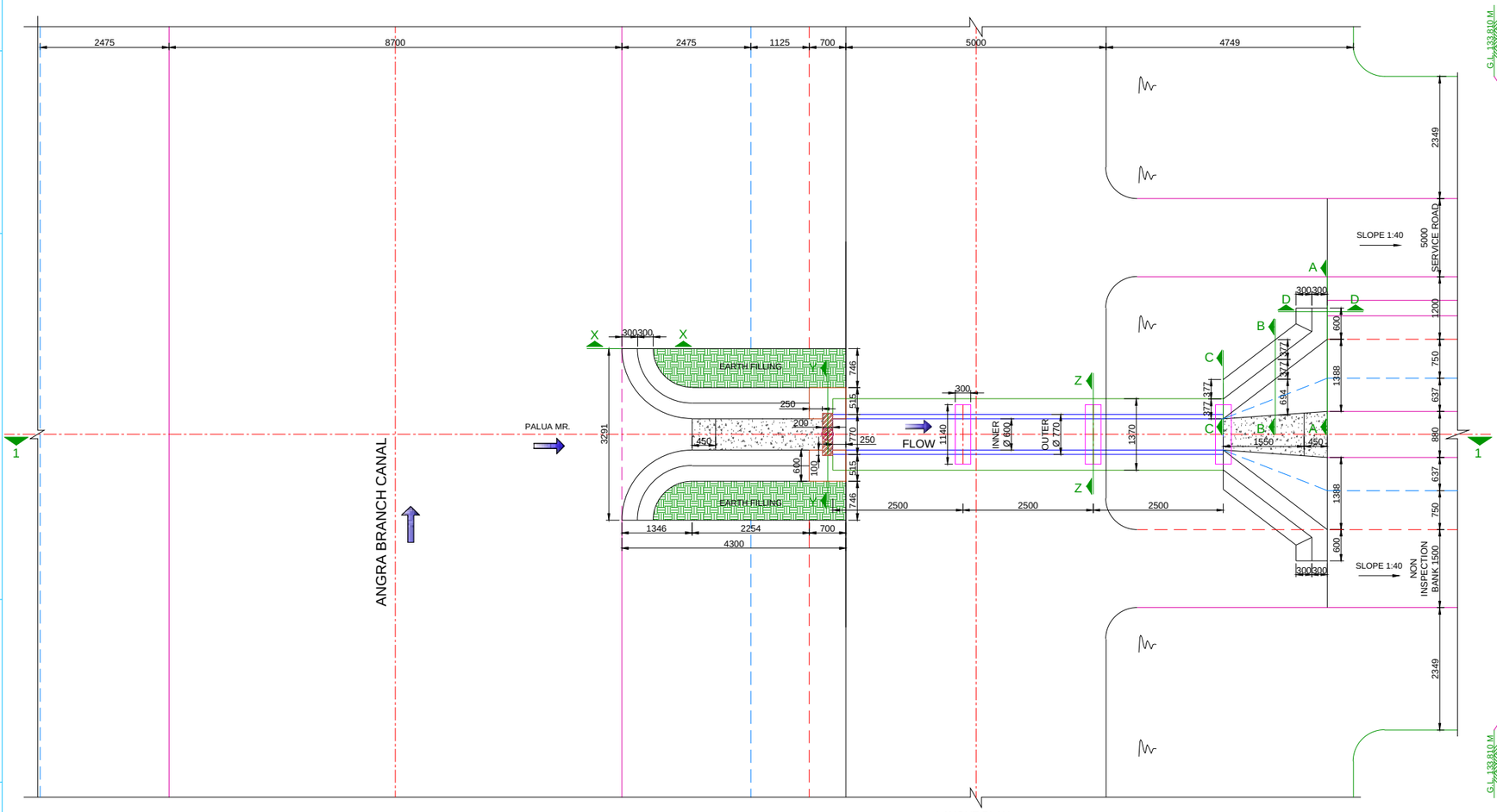
SECTION 1-1
(SCALE A)



SECTION Z-Z
DETAILS OF JOINT OF PIPE
(SCALE A)

DESIGN DATA :-

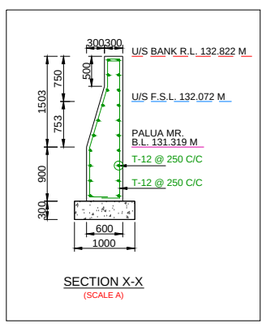
ANGRA BRANCH CANAL	
DISCHARGE OF FEEDER	10.34 CUMEC
BED WIDTH	8.700 M
WATER DEPTH	1.650 M
FREE BOARD	0.750 M
BED LEVEL	130.422 M
F.S.L.	132.072 M
GROUND LEVEL	133.810 M
PALUA MR.	
CHAINAGE	0.350 KM
DISCHARGE	0.13 CUMEC/ 4.55 CUSEC
BED WIDTH	0.880 M
WATER DEPTH	0.425 M
SIDE SLOPE	1.5:1
FREE BOARD	0.500 M
BED LEVEL	131.319 M
F.S.L.	131.744 M
BED SLOPE	30.3 CM/KM
INTERNAL DIA OF PIPE	0.600 M



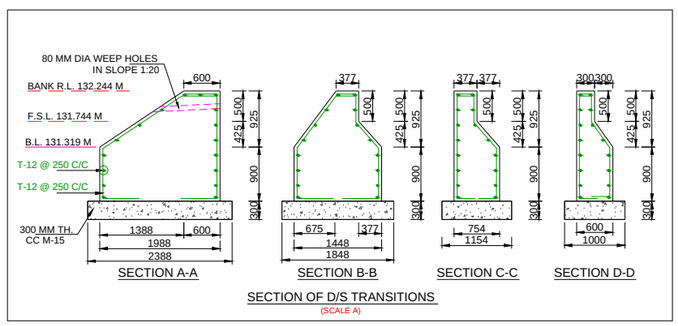
LAYOUT PLAN
(SCALE A)

NOTES:-

1. AS PER UPID DESIGN CRITERIA, PIPE HEAD REGULATOR SHOULD BE CONSTRUCTED FOR DISTRIBUTARIES & MONIRS HAVING DISCHARGE LESS THAN 0.40 CUMEC.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-2015
     - b. IS: 6531-1994
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1994, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VI. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. FLOOR, ABUTMENT AND TRANSITIONS M-20
   - B. TOE WALLS M-15
   - C. P.C.C. M-15
   - D. PIPE NP-3
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.

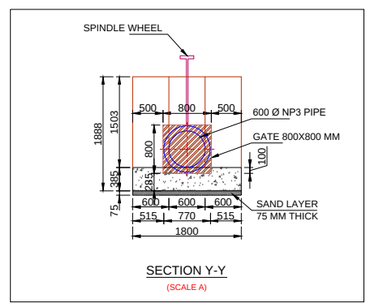


SECTION X-X
(SCALE A)



SECTION A-A | SECTION B-B | SECTION C-C | SECTION D-D

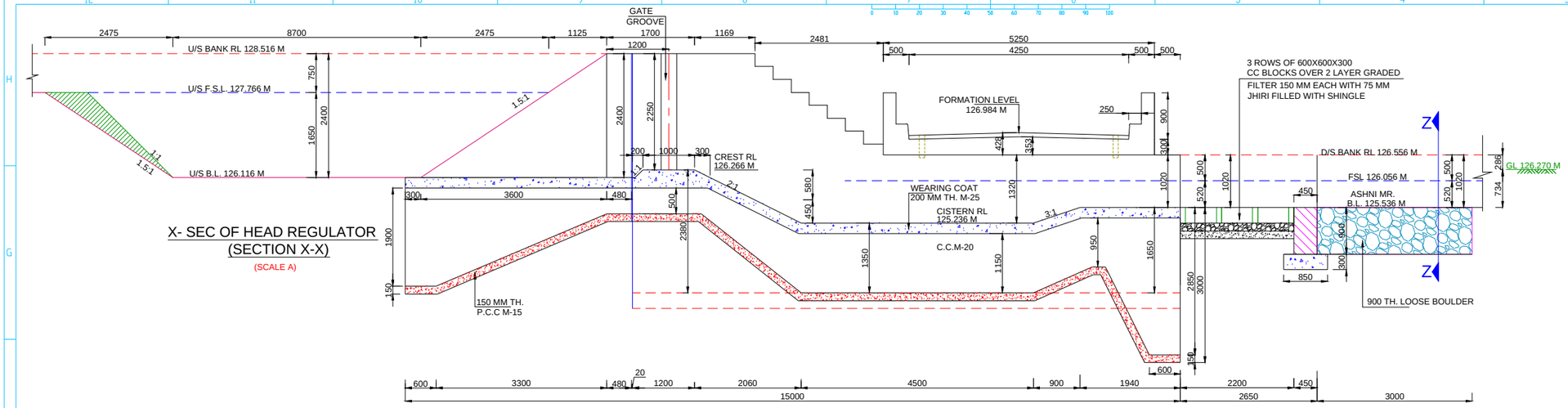
SECTION OF D/S TRANSITIONS
(SCALE A)



SECTION Y-Y
(SCALE A)

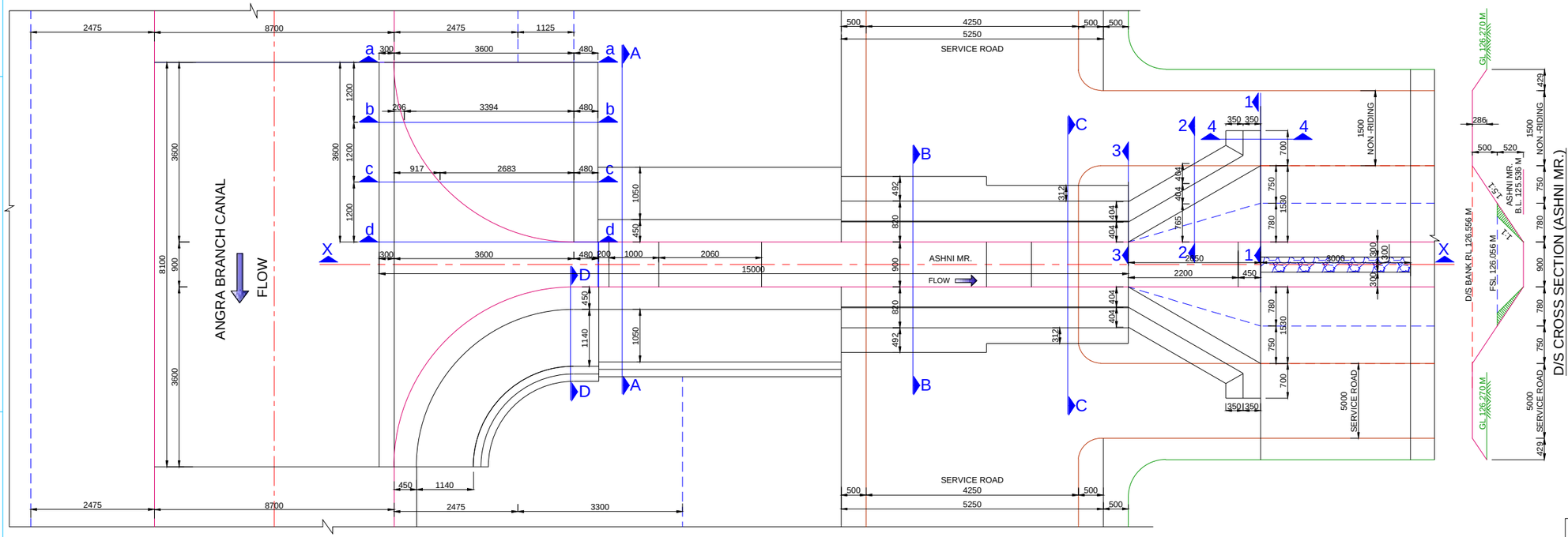
SCALE A:-
500 0 500 1000 1500

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D OF HEAD REGULATOR OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/HR 1 of 1



X- SEC OF HEAD REGULATOR (SECTION X-X)

(SCALE A)



D/S CROSS SECTION (ASHNI MR.)

(SCALE A)

DESIGN DATA :-

ANGRA BRANCH CANAL

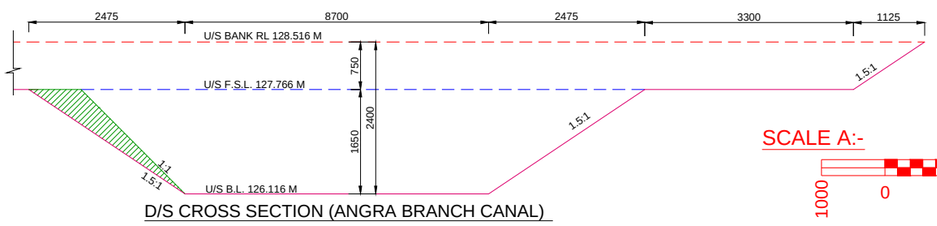
	U/S
DISCHARGE OF FEEDER	10.34 CUMECS
BED WIDTH	8.700 M
WATER DEPTH	1.650 M
FREE BOARD	0.750 M
BED LEVEL	126.116 M
F.S.L.	127.766 M
GROUND LEVEL	126.270 M

ASHNI MR.

	U/S
CHAINAGE	4.240 M
DISCHARGE	0.189 CUMEC
BED WIDTH	0.900 M
WATER DEPTH	0.520 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	125.536 M
F.S.L.	126.056 M
CREST LEVEL	126.116 M
BED SLOPE	33.3 CM/ KM

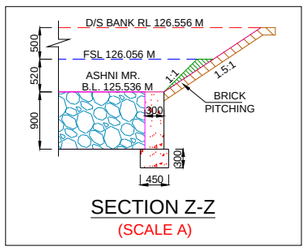
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.



D/S CROSS SECTION (ANGRA BRANCH CANAL)

(SCALE A)



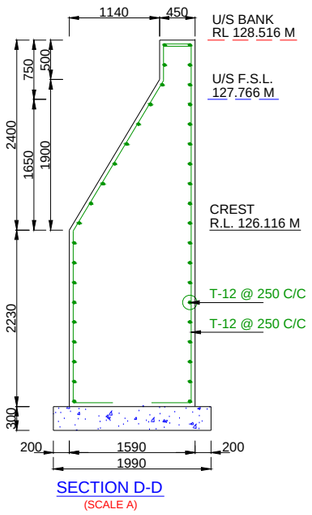
SECTION Z-Z

(SCALE A)

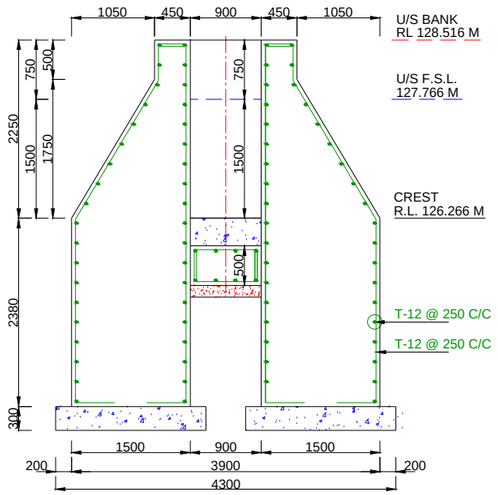
SCALE A:-

1000 0 1000 2000 3000

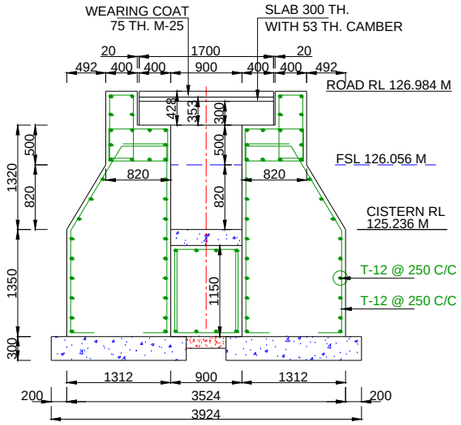
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ HR — 1 of 3



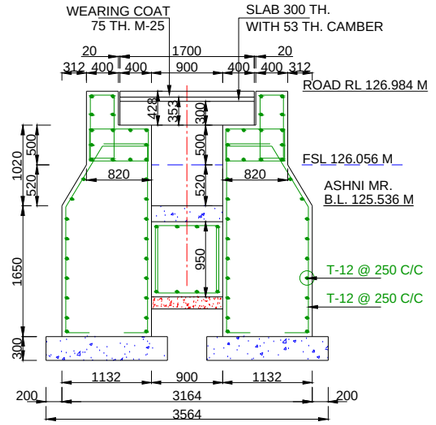
SECTION D-D
(SCALE A)



SECTION A-A
(AT CREST)
(SCALE A)



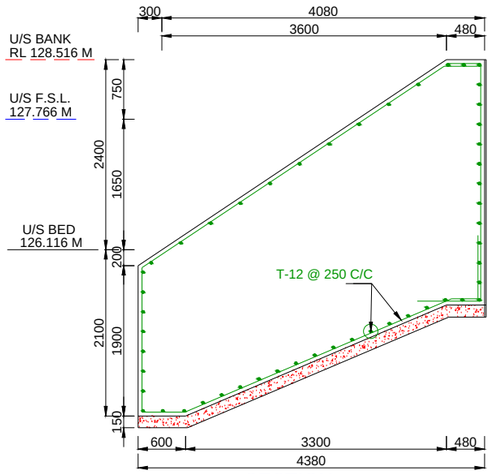
SECTION B-B
(AT CISTERN)
(SCALE A)



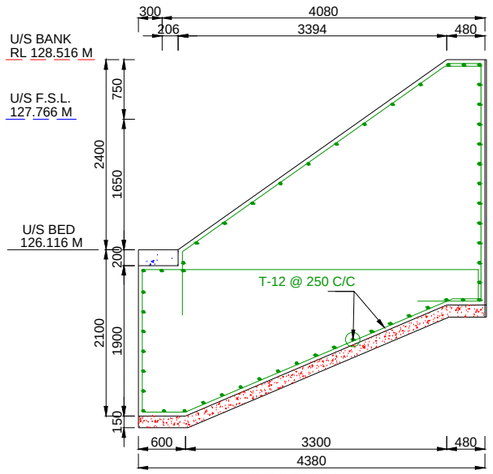
SECTION C-C
(AT D/S FLOOR)
(SCALE A)

NOTES:-

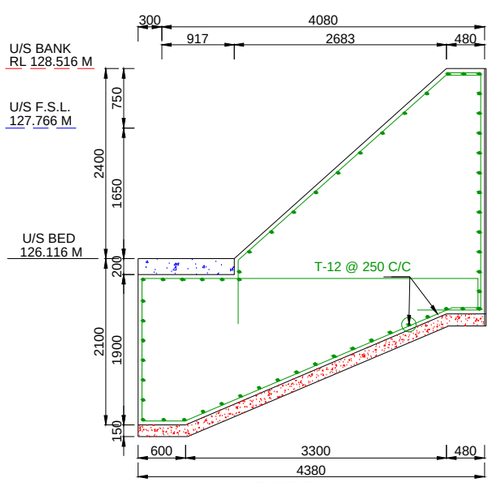
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.



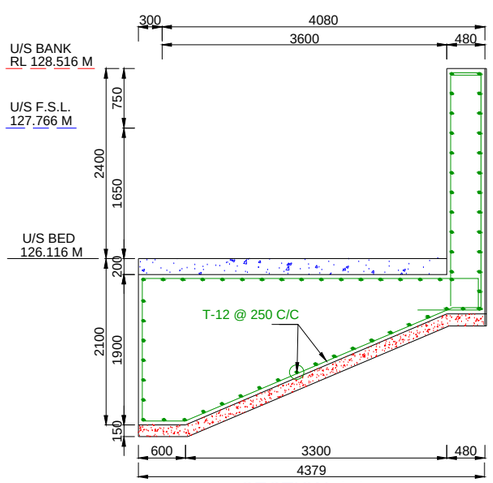
SECTION a-a



SECTION b-b

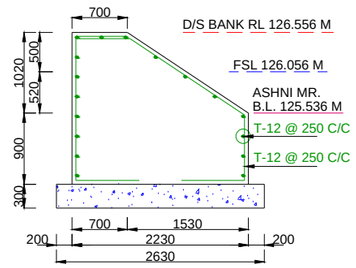


SECTION c-c

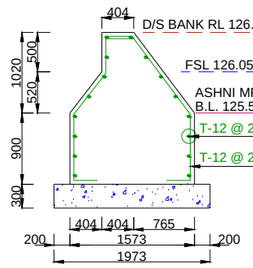


SECTION d-d

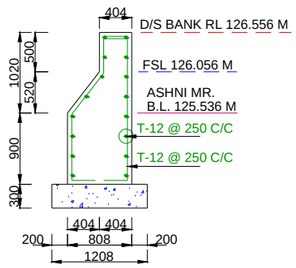
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



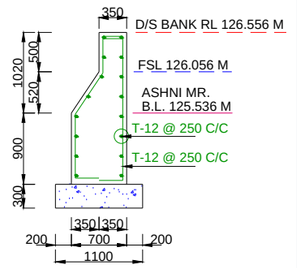
SECTION 1-1



SECTION 2-2

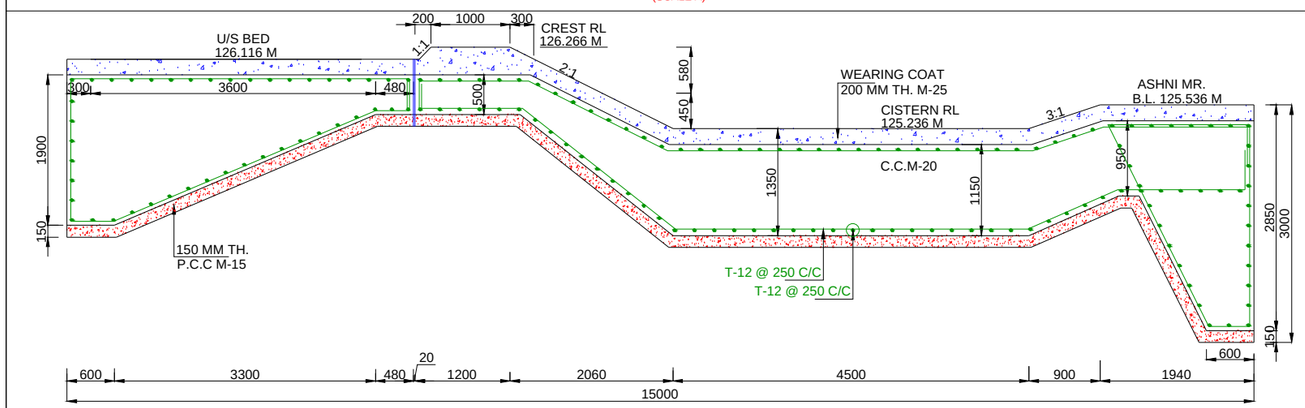


SECTION 3-3



SECTION 4-4

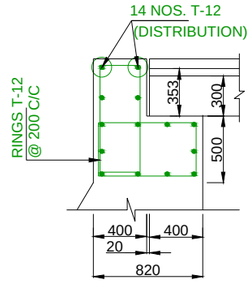
SECTION OF D/S TRANSITIONS
(SCALE A)



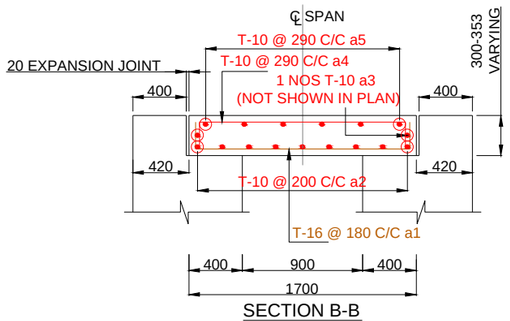
SECTION OF FLOOR (REINF.)
(SCALE A)

SCALE A:-

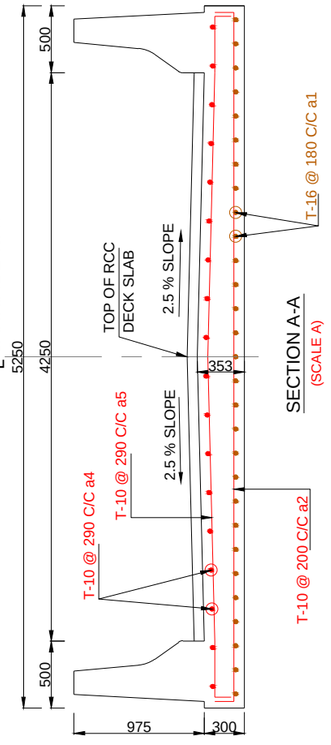
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ HR 2 of 3



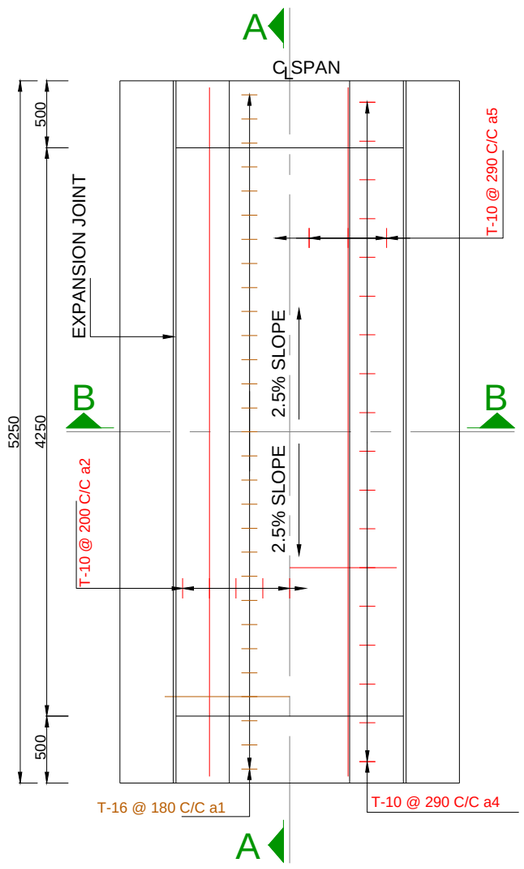
DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)



SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

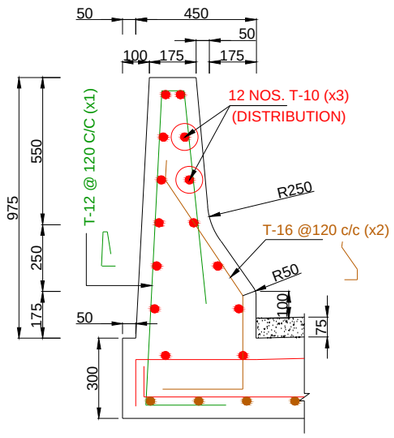
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

SCALE A:- 0 400 400 800 1200

SCALE B:- 0 200 200 400 600

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	R=60, 200, 1600, 200	16	180	29
2	a2	R=40, 200, 5150, 200	10	200	9
3	a3	5150	10	-	2
4	a4	1600, R=40, 200, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	6
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	14X2
2	x2	75, 540, 350, 300	16	120	14X2
3	x3	1600	10	-	12X2



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

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,
   BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

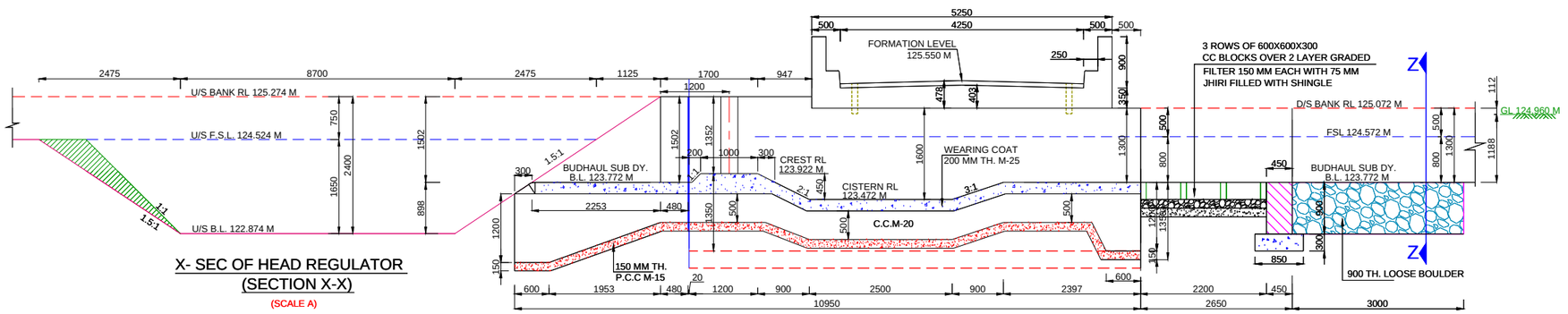
DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

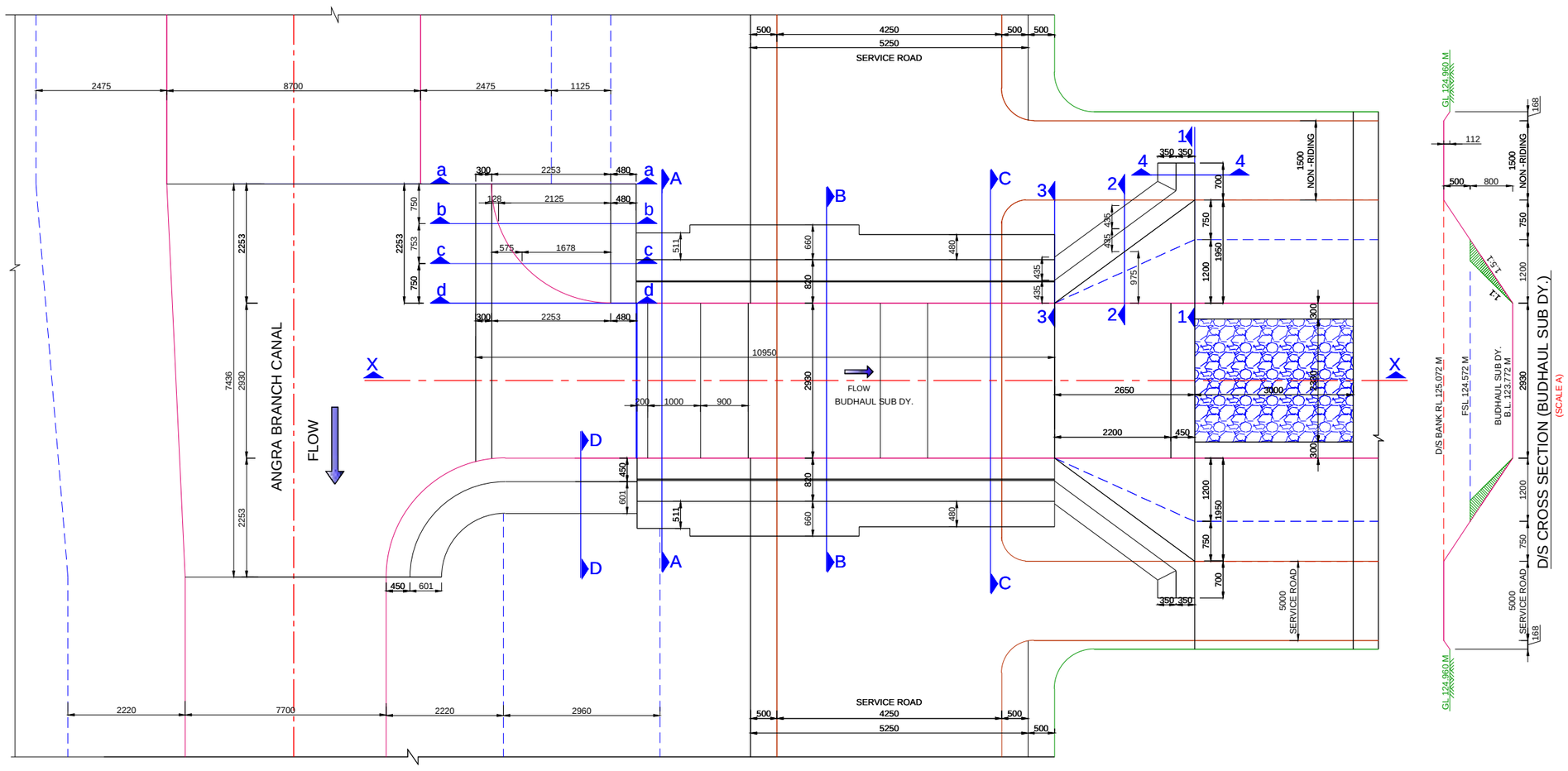
16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
    LAP LENGTH = $\alpha 1$. lbnet
    WHERE, $\alpha 1$ = 1.0 for p%≤25%
    $\alpha 1$ = 1.15 for 25%≤p%≤33%
    $\alpha 1$ = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ HR 3 of 3



X- SEC OF HEAD REGULATOR (SECTION X-X)

(SCALE A)



DESIGN DATA :-

ANGRA BRANCH CANAL

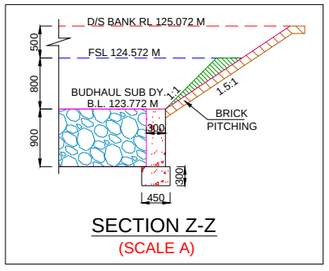
	U/S	D/S
DISCHARGE OF FEEDER	10.34 CUMECS	7.76 CUMECS
BED WIDTH	8.700 M	7.700 M
WATER DEPTH	1.650 M	1.480 M
FREE BOARD	0.750 M	0.750 M
BED LEVEL	122.874 M	122.874 M
F.S.L.	124.524 M	124.354 M
GROUND LEVEL	124.960 M	

BUDHAUL SUB DY.

CHAINAGE	9.050 M
DISCHARGE	1.120 CUMEC
BED WIDTH	2.930 M
WATER DEPTH	0.800 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	123.772 M
F.S.L.	124.572 M
CREST LEVEL	123.772 M
BED SLOPE	23.81 CM/ KM

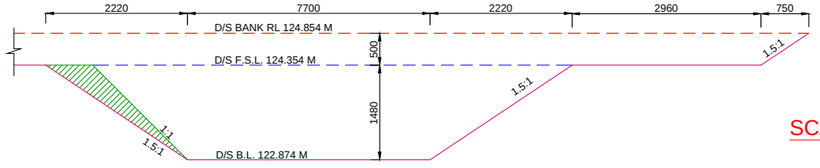
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS M-20
   - C. C.C.BLOCKS AND TOE WALLS M-15
   - D. P.C.C. M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.



SECTION Z-Z

(SCALE A)



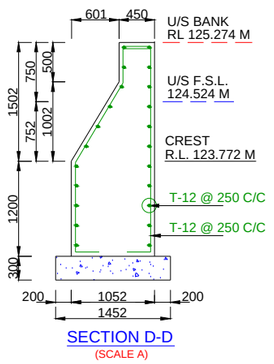
D/S CROSS SECTION (ANGRA BRANCH CANAL)

(SCALE A)

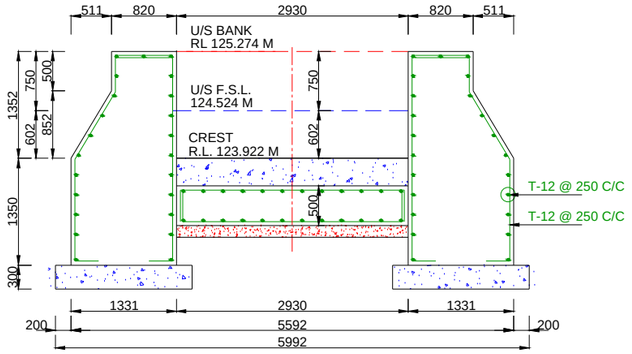
SCALE A:-

1000 0 1000 2000 3000

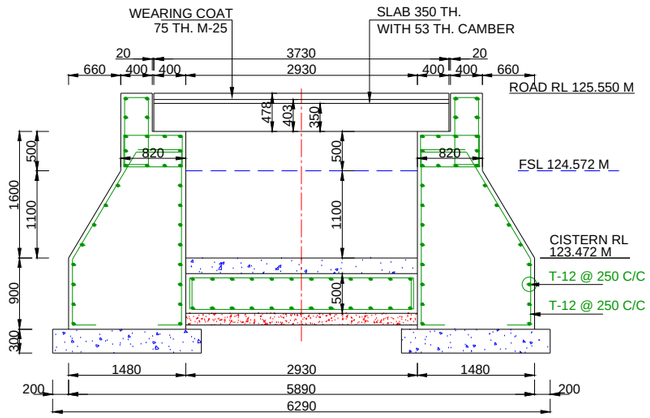
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ HR



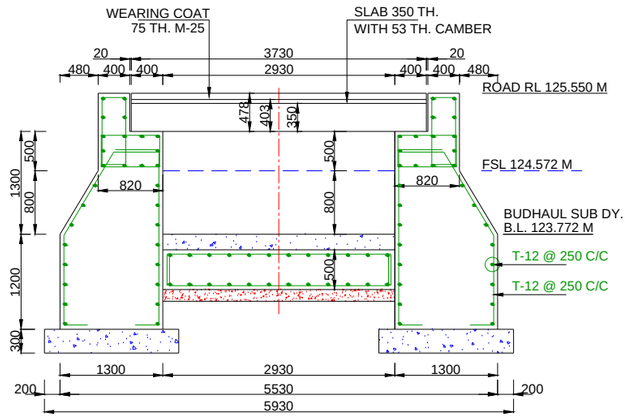
SECTION D-D
(SCALE A)



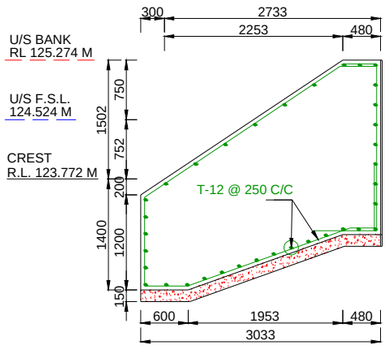
SECTION A-A
(AT CREST)
(SCALE A)



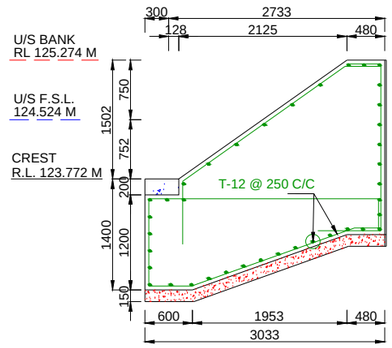
SECTION B-B
(AT CISTERN)
(SCALE A)



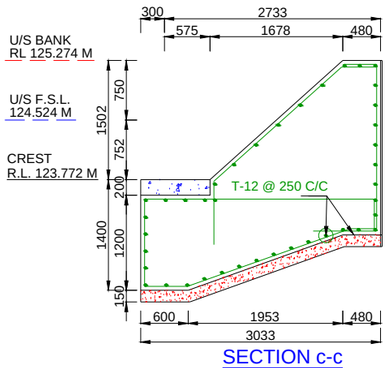
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



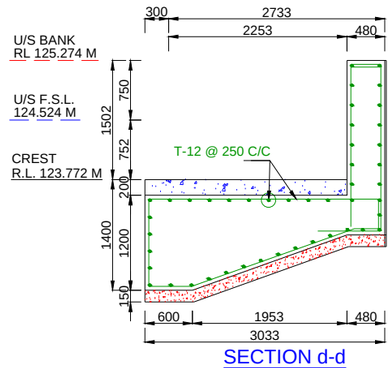
SECTION a-a



SECTION b-b

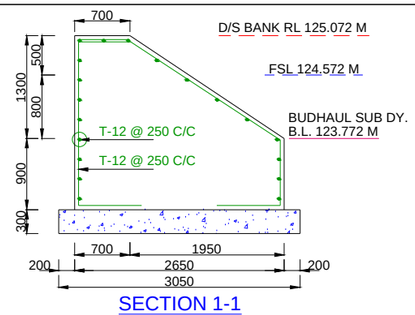


SECTION c-c

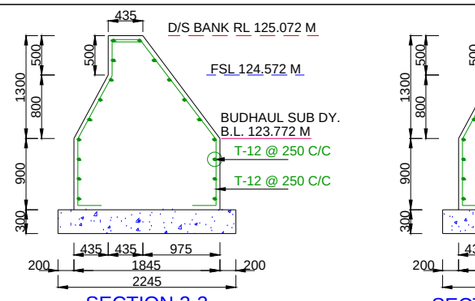


SECTION d-d

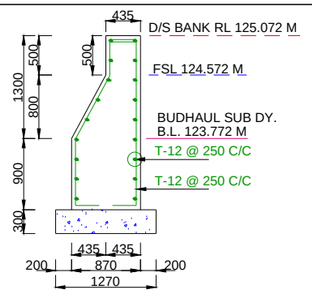
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



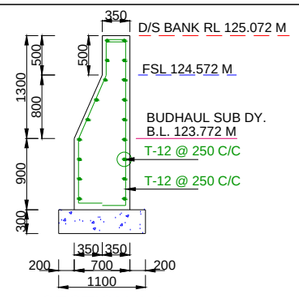
SECTION 1-1



SECTION 2-2

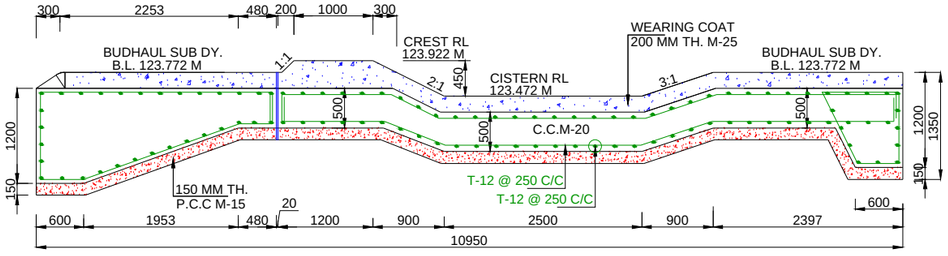


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)



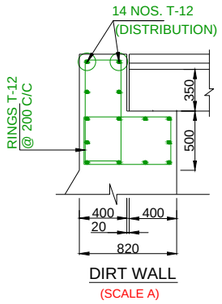
SECTION OF FLOOR (REINF.)
(SCALE A)

NOTES:-

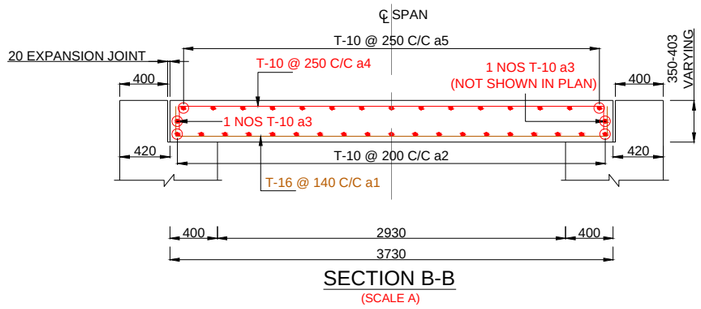
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

SCALE A:-
400 0 400 800 1200

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ HR 2 of 3



DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)

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	200, R=60, 3630, 200	16	140	37
2	a2	200, R=40, 5150, 200	10	200	19
3	a3	5150	10	-	2
4	a4	3630, 200, R=40, 200	10	250	21
5	a5	200, 450, 2125, 2125, 450, 200	10	250	15
DIRT WALL					
1	d1	850, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1227, 950, 300	12	120	31X2
2	x2	75, 540, 400, 300	16	120	31X2
3	x3	3630	10	-	12X2

NOTES:-

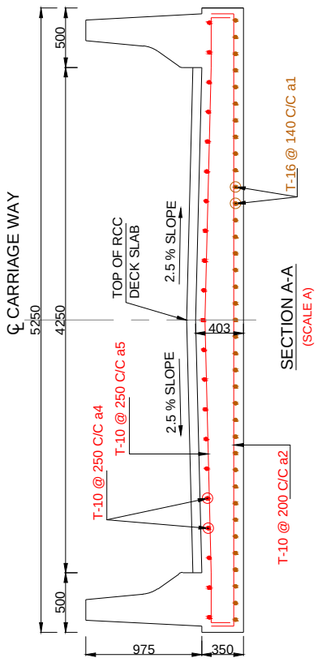
1 ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2 THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3 ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm² (IS 456 CLAUSE 26.2.1)

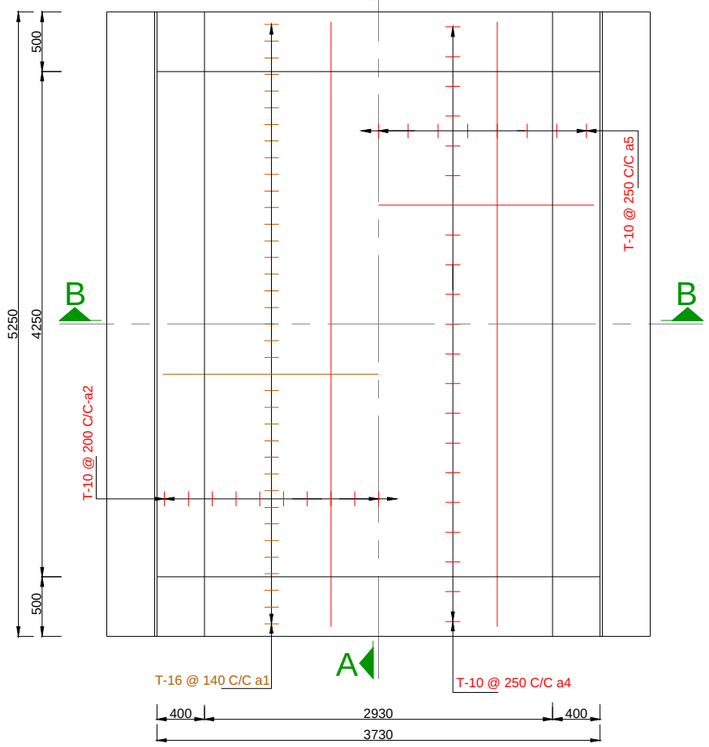
TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

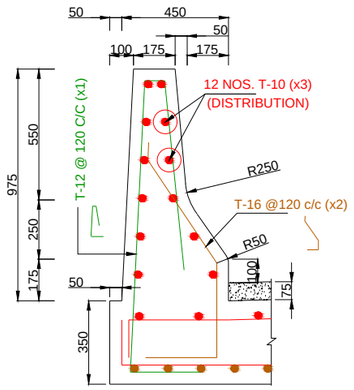


SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT — TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

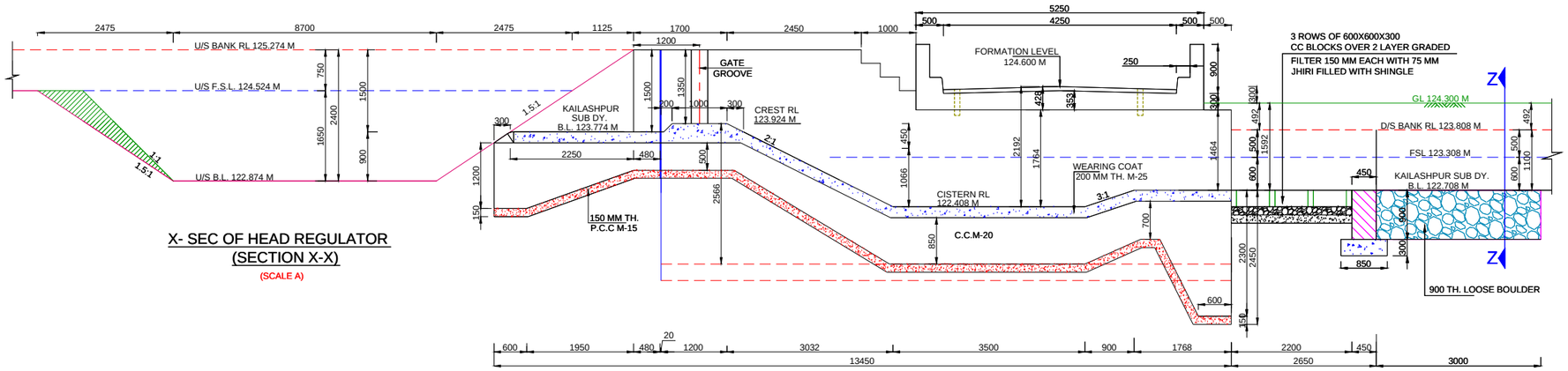


REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)

SCALE A:- 400 0 400 800 1200

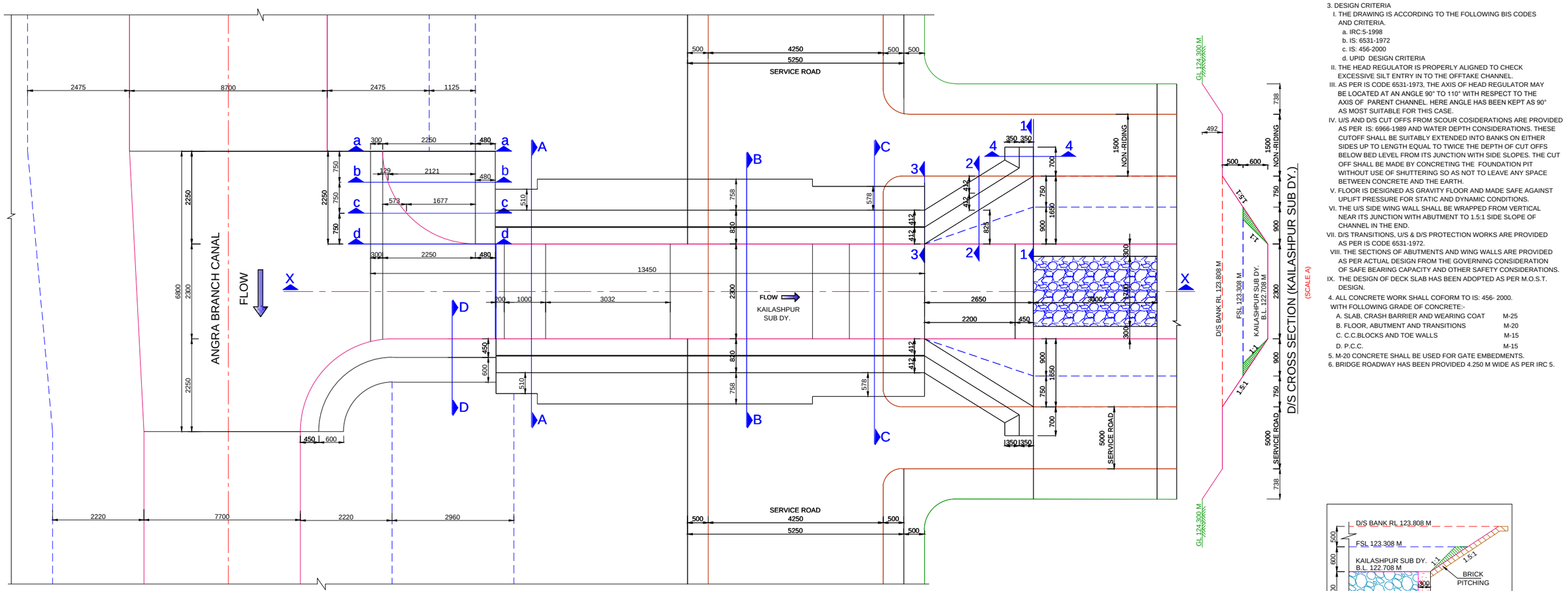
SCALE B:- 200 0 200 400 600

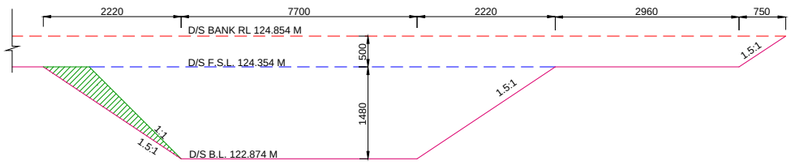
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ HR 3 of 3



X- SEC OF HEAD REGULATOR (SECTION X-X)

(SCALE A)



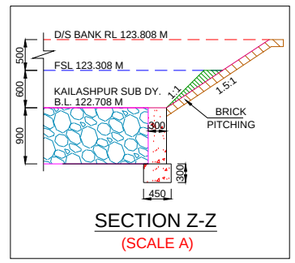


D/S CROSS SECTION (ANGRA BRANCH CANAL)

(SCALE A)

SCALE A:-

1000 0 1000 2000 3000



SECTION Z-Z

(SCALE A)

DESIGN DATA :-

ANGRA BRANCH CANAL

	U/S	D/S
DISCHARGE OF FEEDER	10.34 CUMECS	7.76 CUMECS
BED WIDTH	8.700 M	7.700 M
WATER DEPTH	1.650 M	1.480 M
FREE BOARD	0.750 M	0.750 M
BED LEVEL	122.874 M	122.874 M
F.S.L.	124.524 M	124.354 M
GROUND LEVEL	124.300 M	

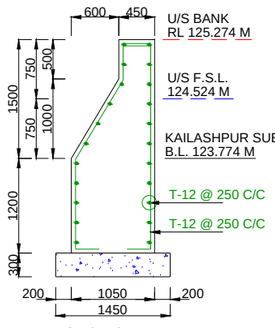
KAILASHPUR SUB DY.

CHAINAGE	9.050 M	
DISCHARGE	0.540 CUMEC	
BED WIDTH	2.300 M	
WATER DEPTH	0.600 M	
SIDE SLOPE	0.5:1	
FREE BOARD	0.500 M	
BED LEVEL	123.774 M	122.708 M
F.S.L.	124.374 M	123.308 M
CREST LEVEL	123.774 M	
BED SLOPE	23.81 CM/ KM	

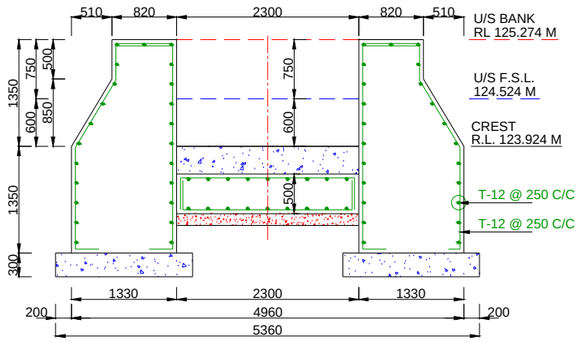
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS M-20
   - C. C.C.BLOCKS AND TOE WALLS M-15
   - D. P.C.C. M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

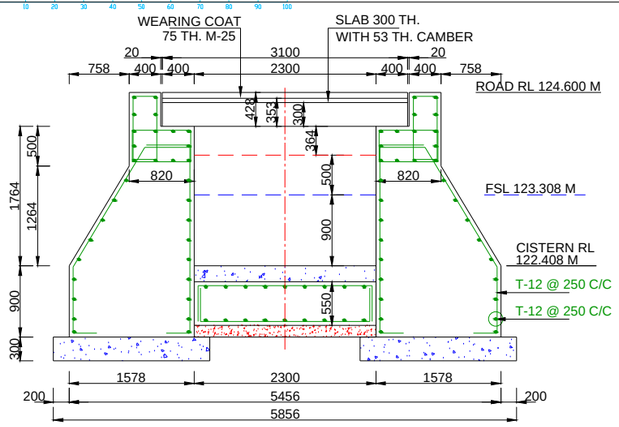
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ HR 1 of 3



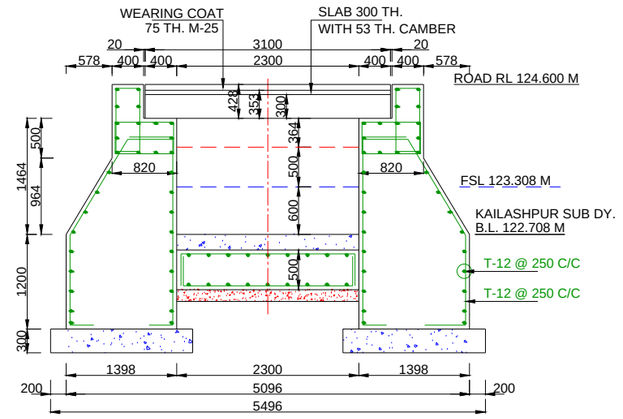
SECTION D-D
(SCALE A)



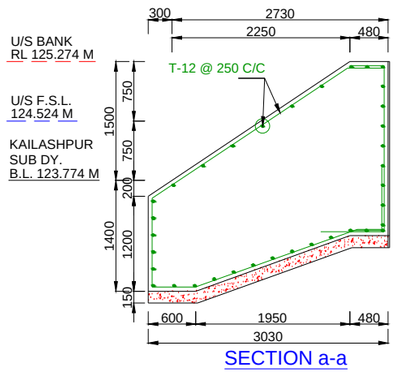
SECTION A-A
(AT CREST)
(SCALE A)



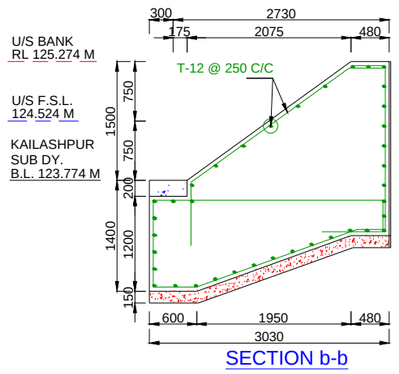
SECTION B-B
(AT CISTERN)
(SCALE A)



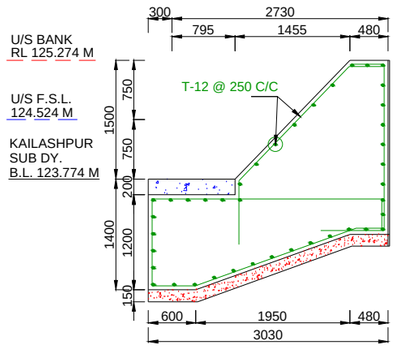
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



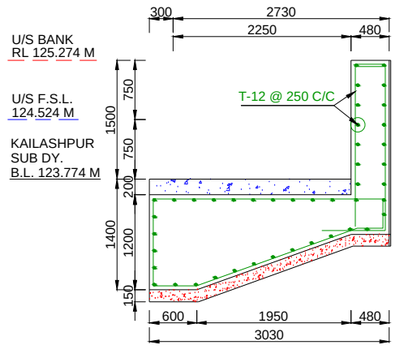
SECTION a-a



SECTION b-b

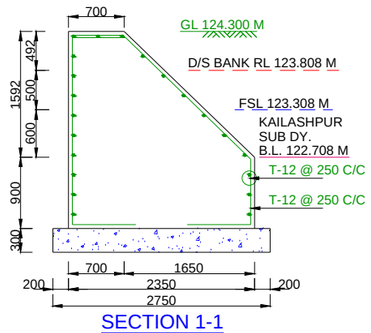


SECTION c-c

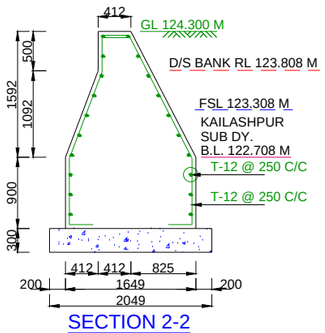


SECTION d-d

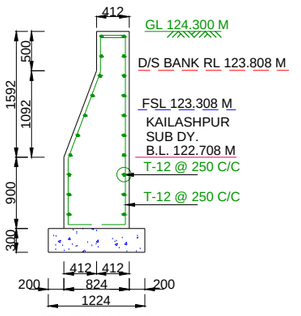
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



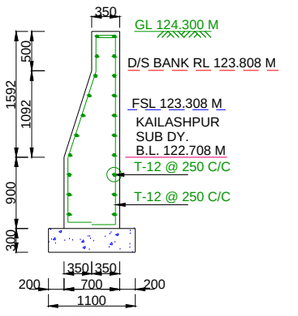
SECTION 1-1



SECTION 2-2

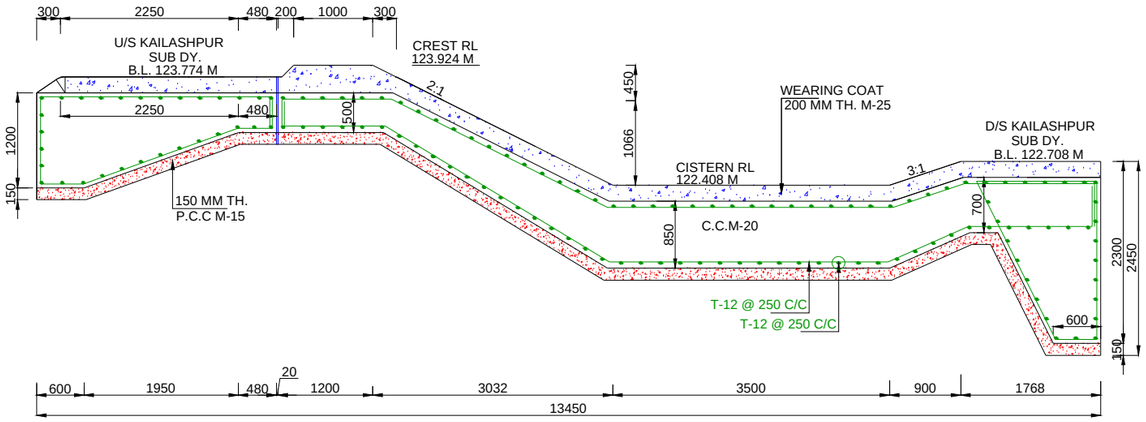


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS



SECTION OF FLOOR (REINF.)
(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.
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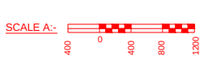
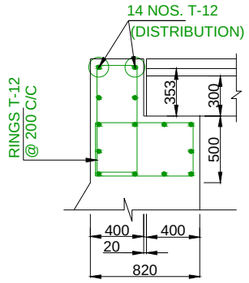
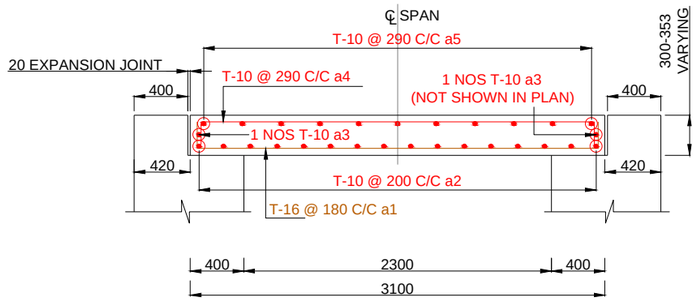
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

SCALE A:-


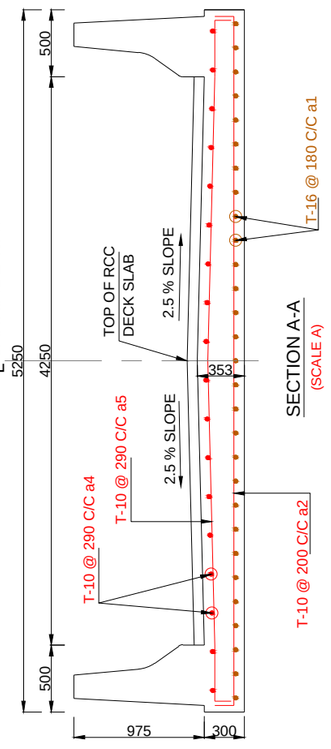
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ HR 2 of 3



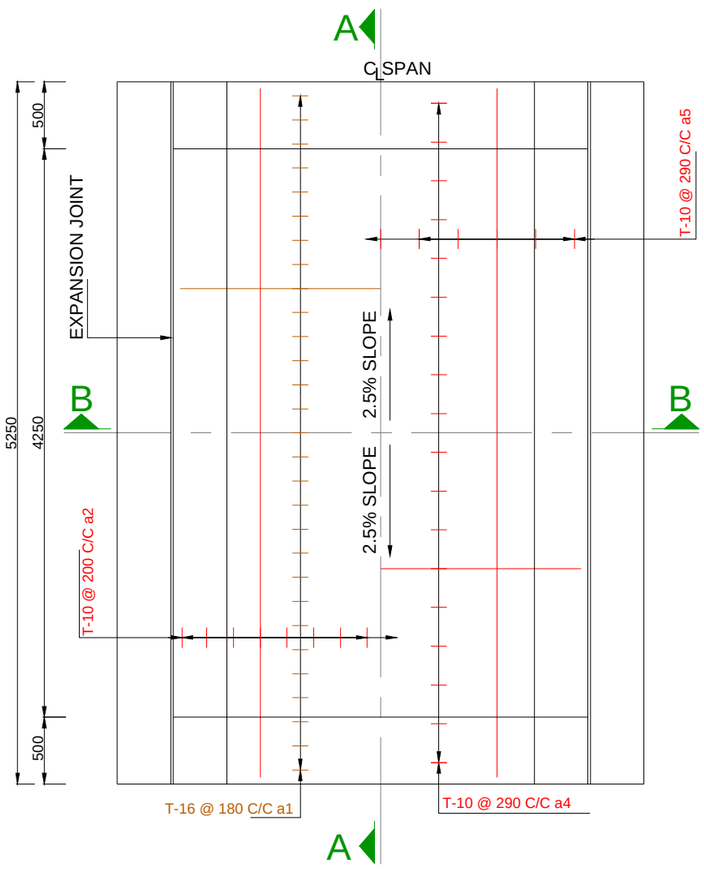
DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)



SECTION A-A
(SCALE A)



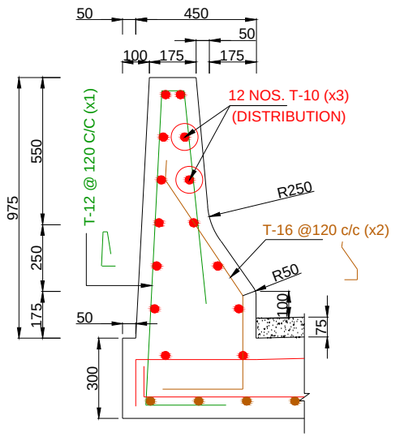
BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	R=60, 200, 3000, 200	16	180	29
2	a2	R=40, 200, 5150, 200	10	200	16
3	a3	5150	10	-	2
4	a4	3000, R=40, 200, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	11
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	26X2
2	x2	75, 540, 350, 300	16	120	26X2
3	x3	3000	10	-	12X2



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

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,
   BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

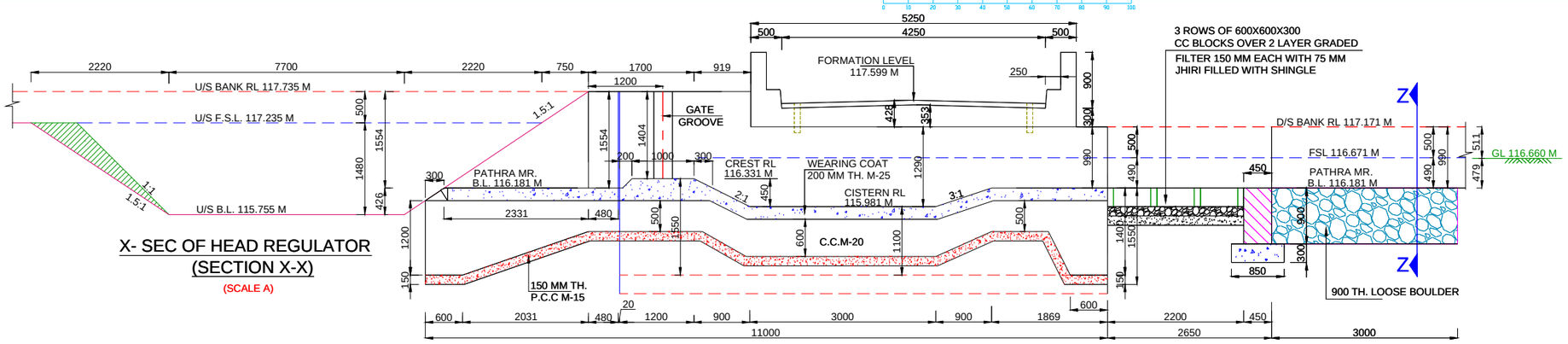
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
    LAP LENGTH = $\alpha 1$. lbnet
    WHERE, $\alpha 1$ = 1.0 for p%≤25%
    $\alpha 1$ = 1.15 for 25%≤p%≤33%
    $\alpha 1$ = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 0 400 400 800 1200

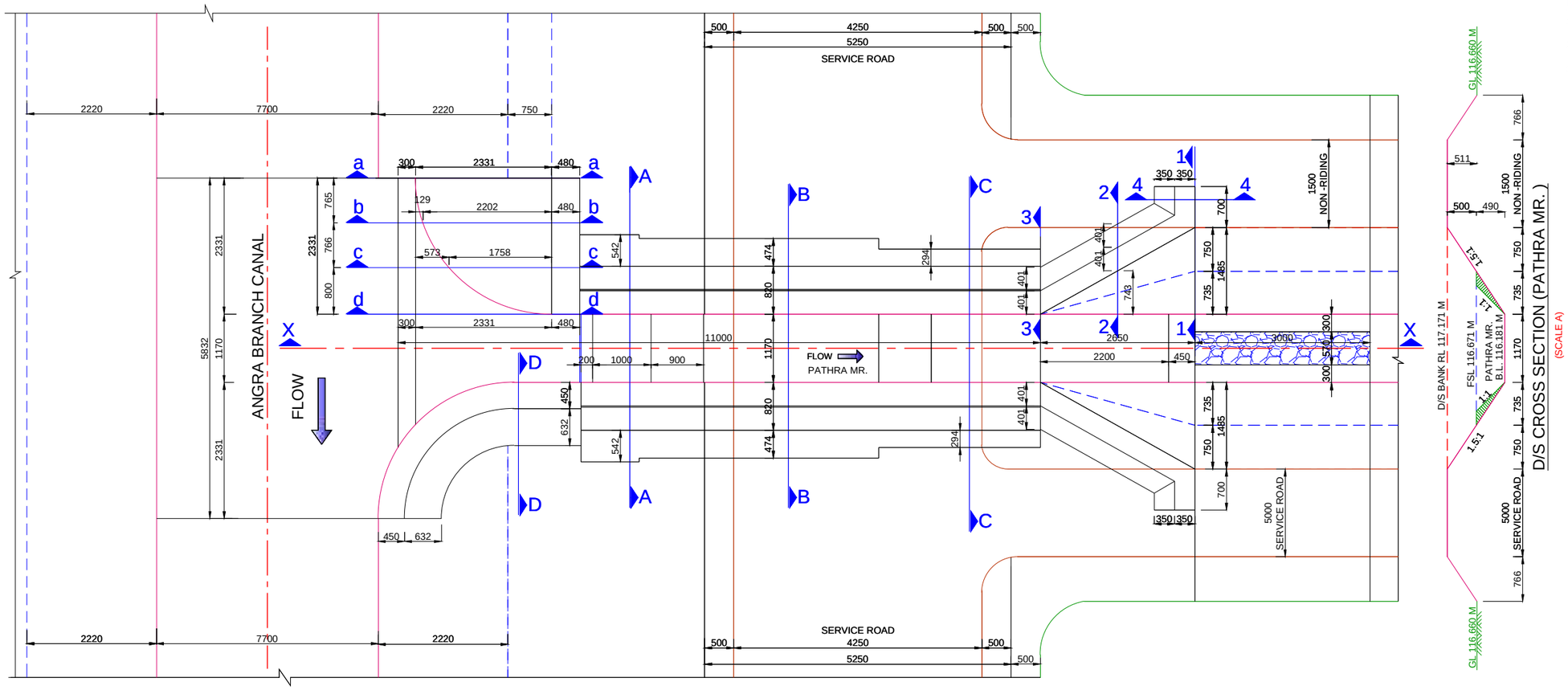
SCALE B:- 0 200 200 400 600

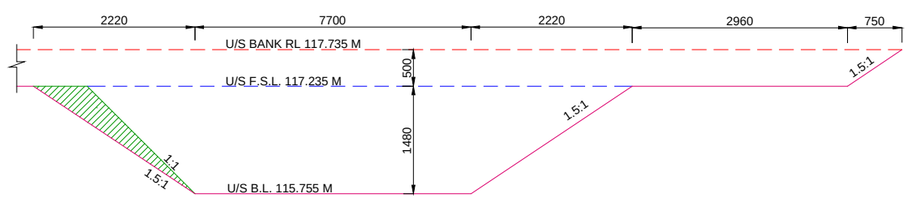
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ HR 3 of 3



X- SEC OF HEAD REGULATOR (SECTION X-X)

(SCALE A)





D/S CROSS SECTION (ANGRA BRANCH CANAL)

(SCALE A)

D/S CROSS SECTION (PATHRA MR.)

(SCALE A)

DESIGN DATA :-

ANGRA BRANCH CANAL

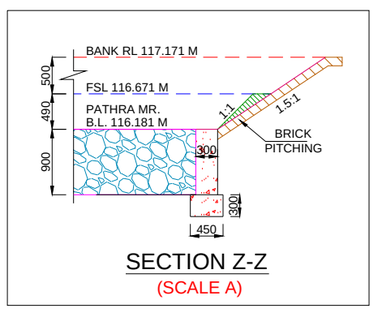
	U/S
DISCHARGE OF FEEDER	7.760 CUMECS
BED WIDTH	7.700 M
WATER DEPTH	1.480 M
FREE BOARD	0.500 M
BED LEVEL	115.755 M
F.S.L.	117.235 M
GROUND LEVEL	116.660 M

PATHRA MR.

CHAINAGE	13.200 M
DISCHARGE	0.212 CUMEC
BED WIDTH	1.170 M
WATER DEPTH	0.490 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	116.181 M
F.S.L.	116.671 M
CREST LEVEL	116.181 M
BED SLOPE	17.2 CM/ KM

NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.



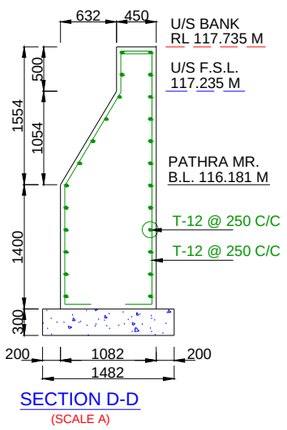
SECTION Z-Z

(SCALE A)

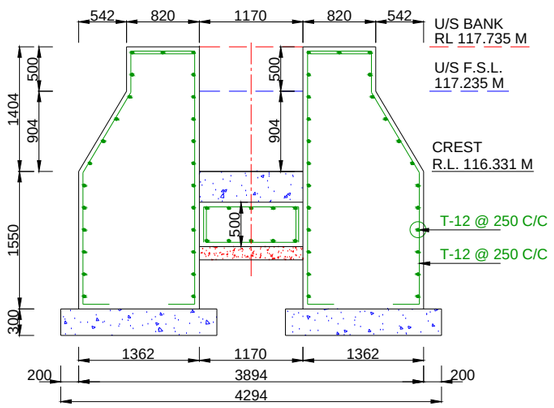
SCALE A:-

1000 0 1000 2000 3000

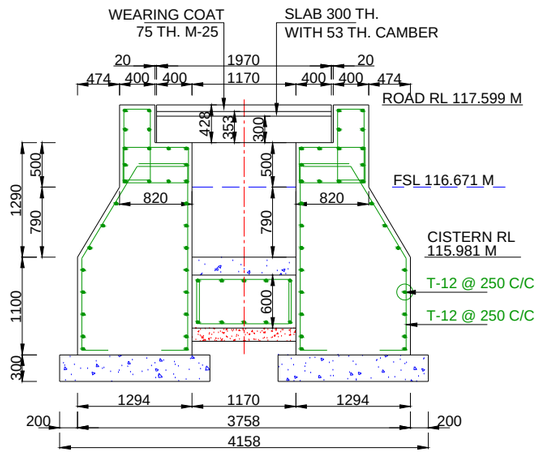
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR PATHRA MR. (OFFTAKE FROM RD -13+200 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-05/ HR — 1 of 3



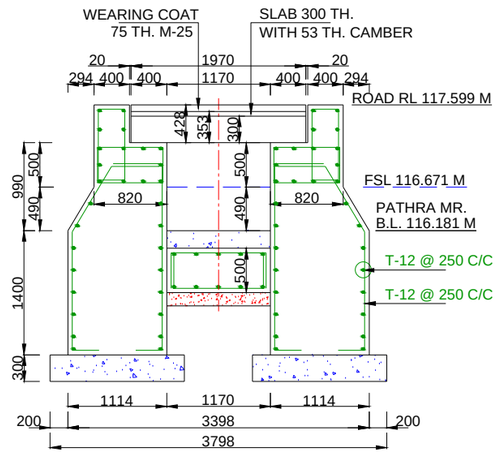
SECTION D-D
(SCALE A)



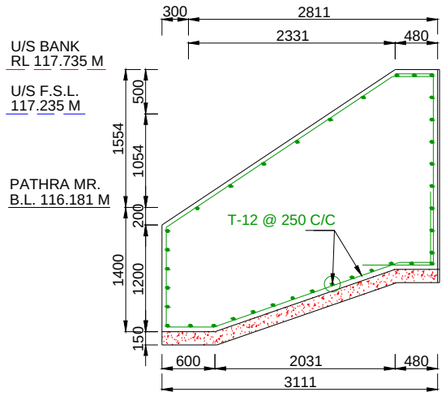
SECTION A-A
(AT CREST)
(SCALE A)



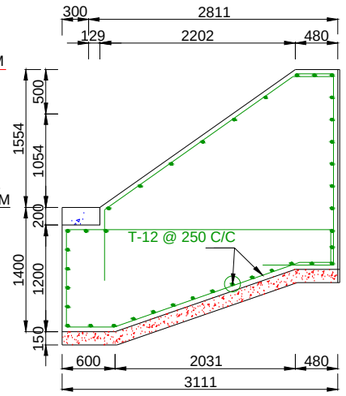
SECTION B-B
(AT CISTERN)
(SCALE A)



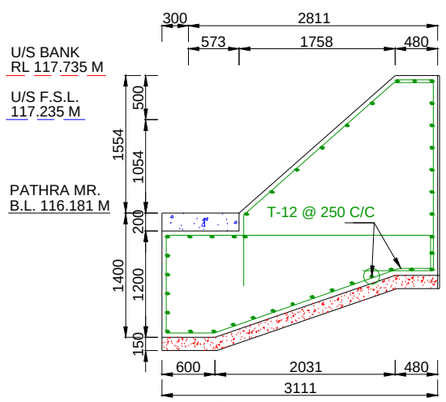
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



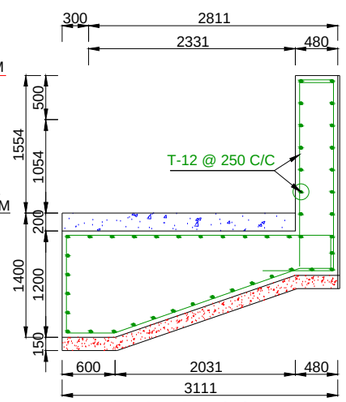
SECTION a-a



SECTION b-b

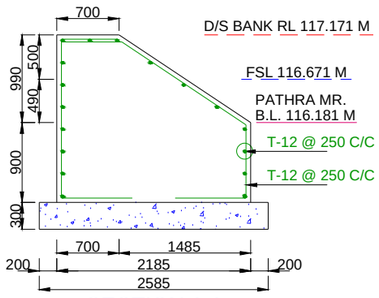


SECTION c-c

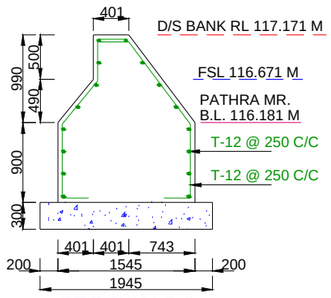


SECTION d-d

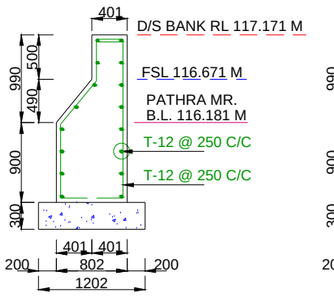
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



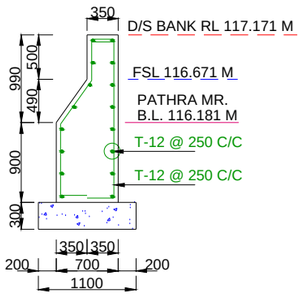
SECTION 1-1



SECTION 2-2

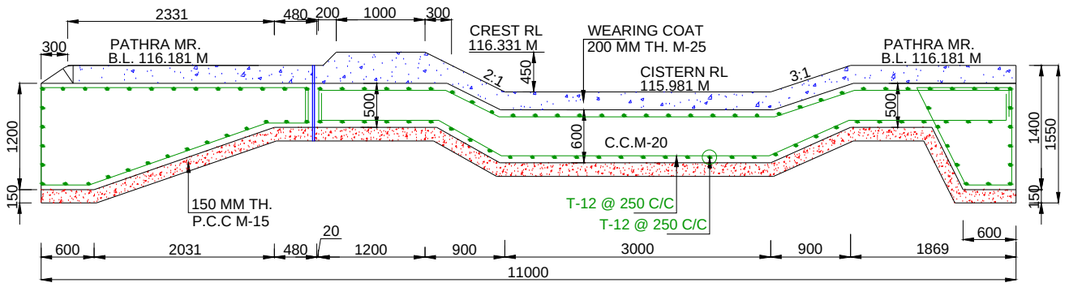


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)



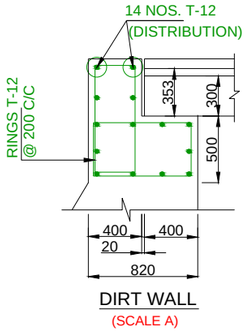
SECTION OF FLOOR (REINF.)
(SCALE A)

SCALE A:-

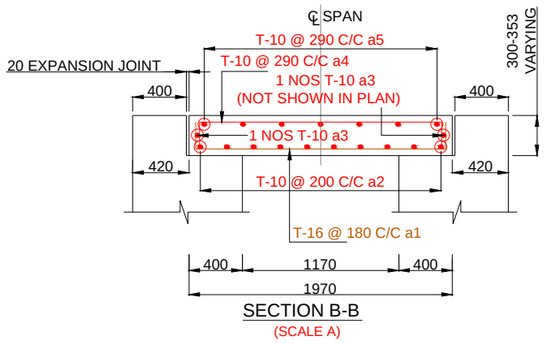
NOTES:-

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

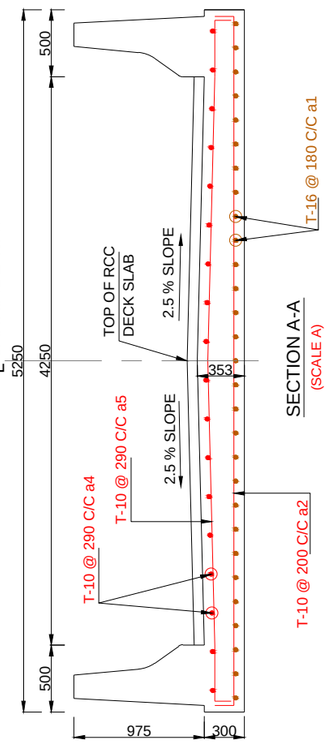
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR PATHRA MR. (OFFTAKE FROM RD -13+200 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-05/ HR 2 of 3



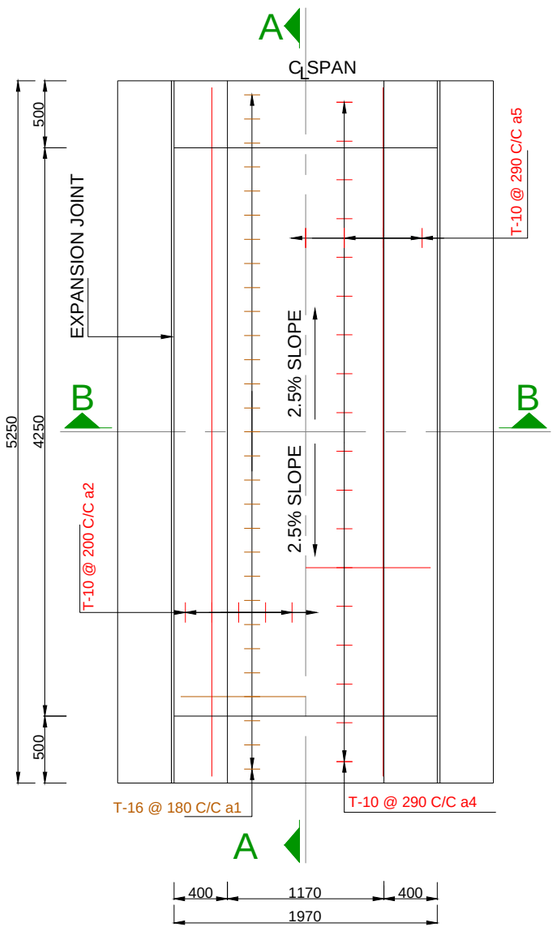
DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)



SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT — TOP REINFORCEMENT

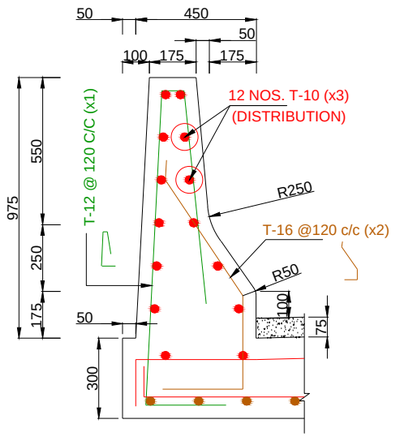
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

SCALE A:- 0 400 400 800 1200

SCALE B:- 0 200 200 400 600

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	R=60, 200, 1870, 200	16	180	29
2	a2	R=40, 200, 5150, 200	10	200	10
3	a3	5150	10	-	2
4	a4	1870, R=40, 200, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	7
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	16X2
2	x2	75, 540, 350, 300	16	120	16X2
3	x3	1870	10	-	12X2



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

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,
   BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

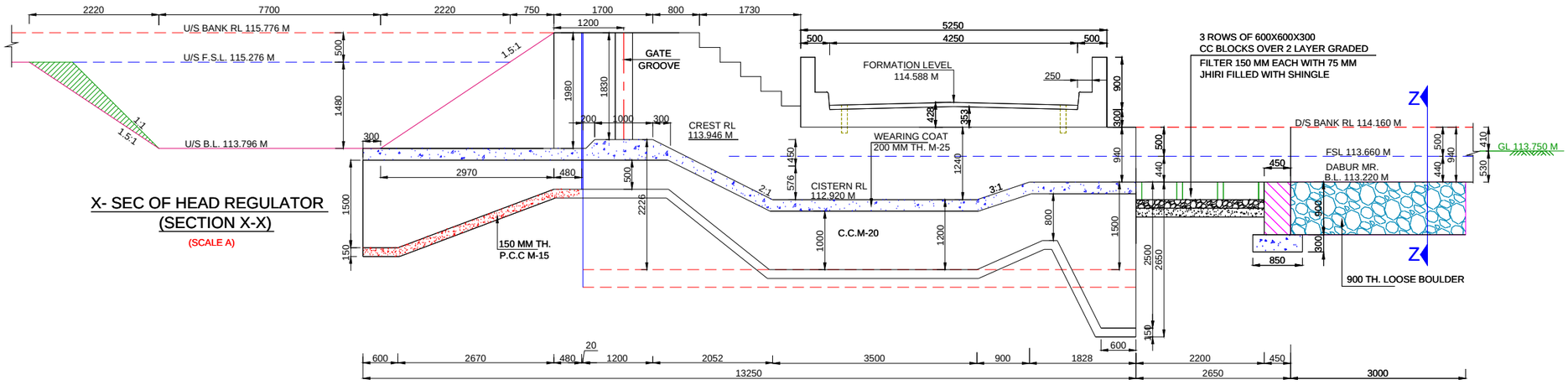
DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (f_y=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

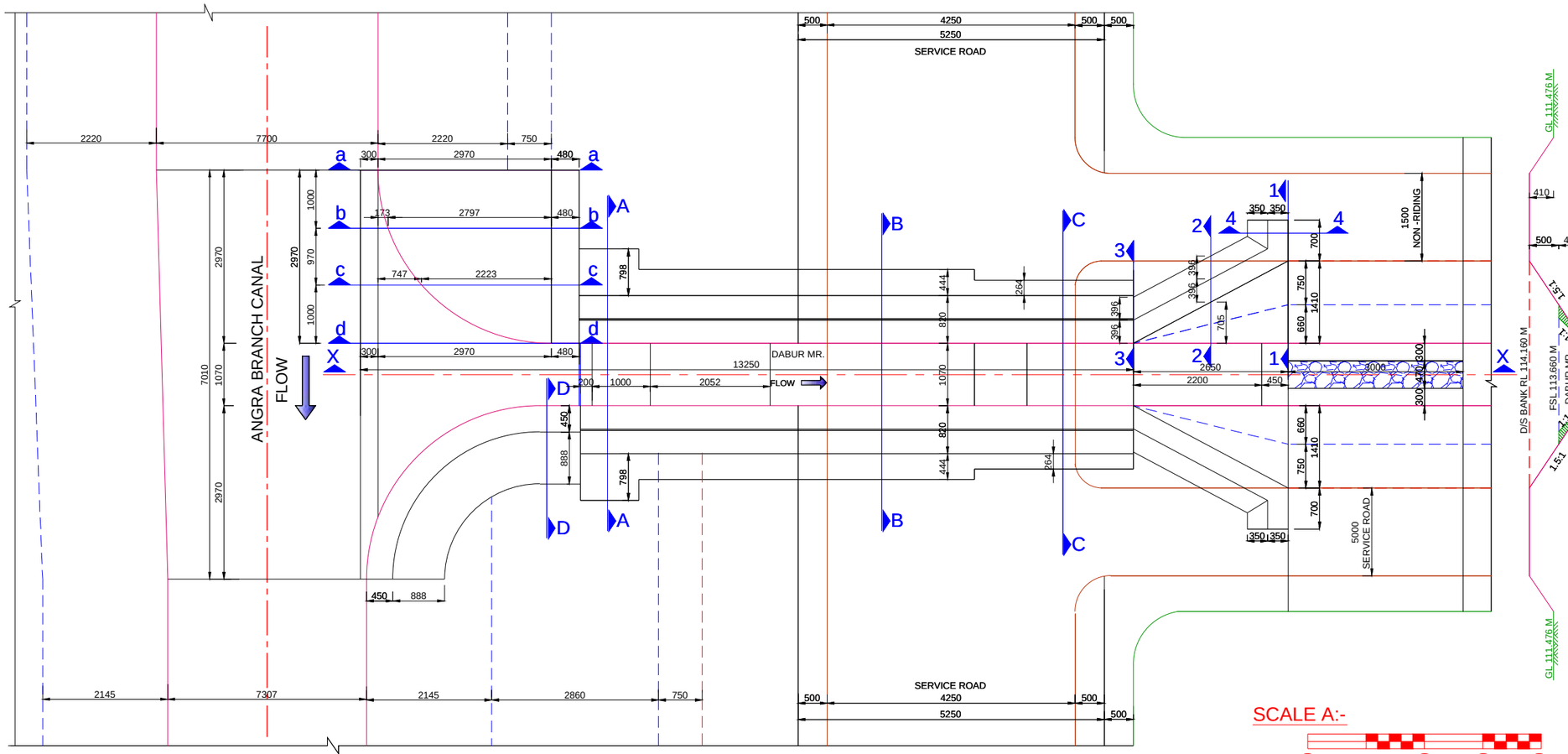
16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
    LAP LENGTH = α1. lbnet
    WHERE, α1 = 1.0 for p%≤25%
    α1 = 1.15 for 25%≤p%≤33%
    α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR PATHRA MR. (OFFTAKE FROM RD -13+200 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-05/ HR 3 of 3



X- SEC OF HEAD REGULATOR (SECTION X-X)

(SCALE A)



SCALE A:-

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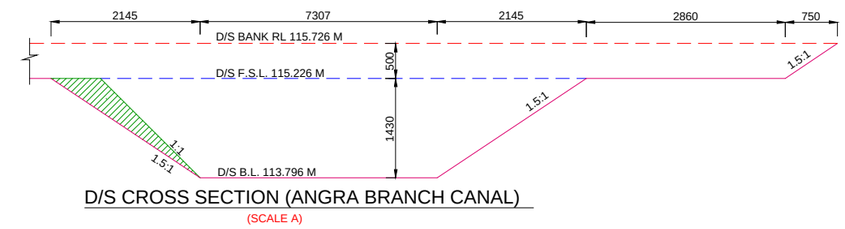
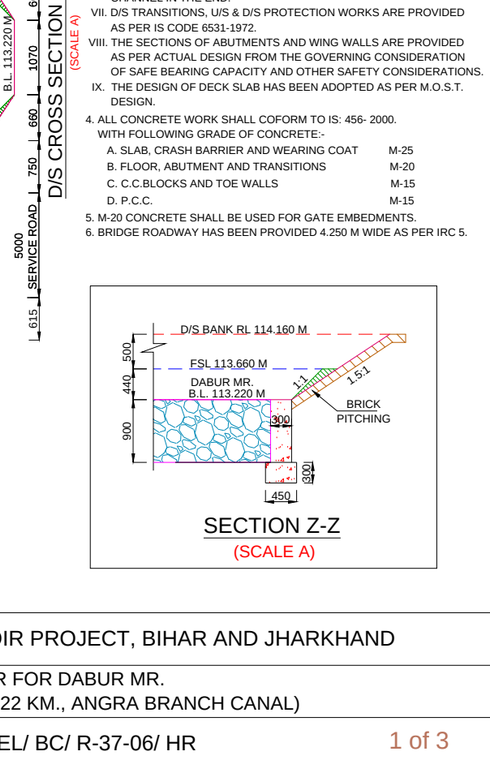


D/S CROSS SECTION (ANGRA BRANCH CANAL)

(SCALE A)



D/S CROSS SECTION (DABUR MR.)

(SCALE A)

SECTION Z-Z

(SCALE A)

DESIGN DATA :-

ANGRA BRANCH CANAL

	U/S	D/S
DISCHARGE OF FEEDER	7.760 CUMECS	6.940 CUMECS
BED WIDTH	7.700 M	7.307 M
WATER DEPTH	1.480 M	1.430 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	113.796 M	113.796 M
F.S.L.	115.276 M	115.226 M
GROUND LEVEL	113.750 M	

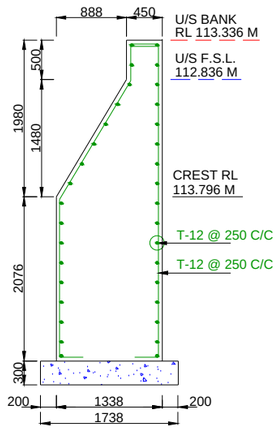
DABUR MR.

CHAINAGE	15.722 M
DISCHARGE	0.126 CUMEC
BED WIDTH	1.070 M
WATER DEPTH	0.440 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	113.220 M
F.S.L.	113.660 M
CREST LEVEL	113.220 M
BED SLOPE	28.6 CM/ KM

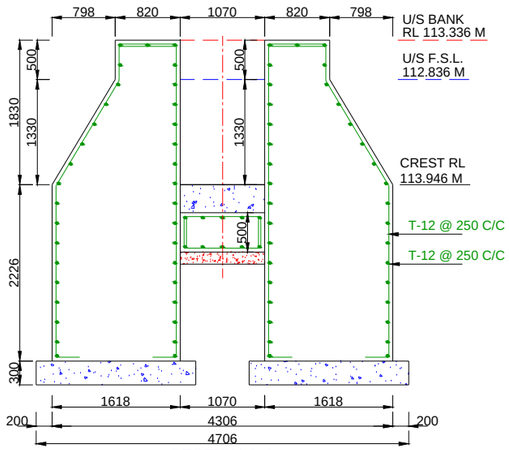
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

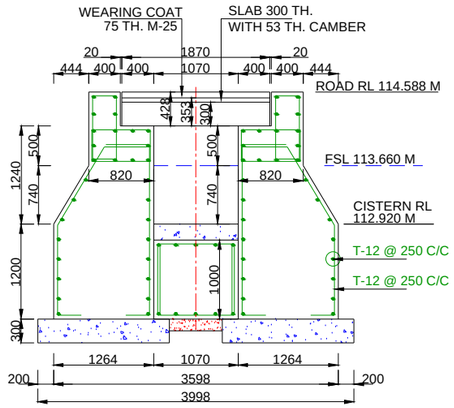
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR DABUR MR. (OFFTAKE FROM RD -15+722 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-06/ HR — 1 of 3



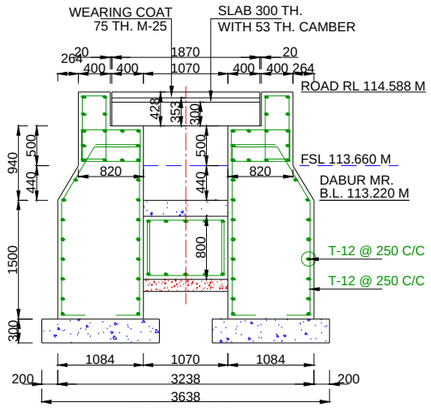
SECTION D-D
(SCALE A)



SECTION A-A
(AT CREST)
(SCALE A)



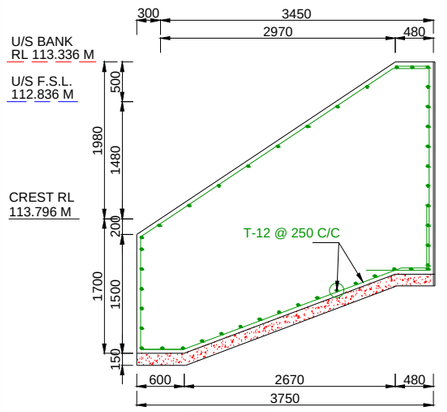
SECTION B-B
(AT CISTERN)
(SCALE A)



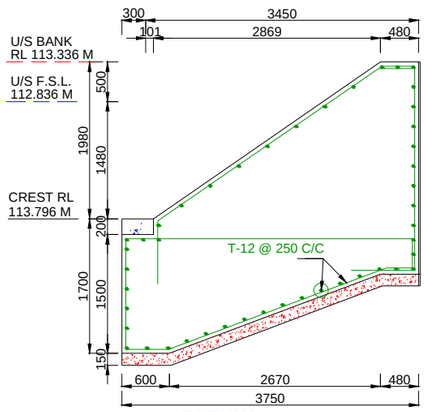
SECTION C-C
(AT D/S FLOOR)
(SCALE A)

NOTES:-

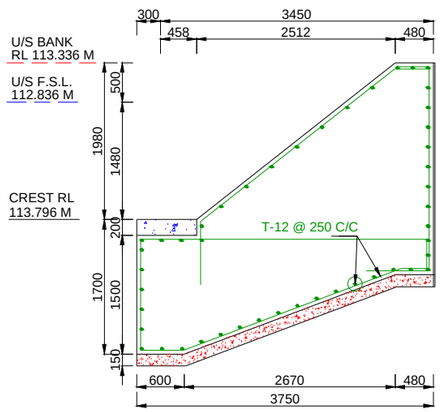
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.



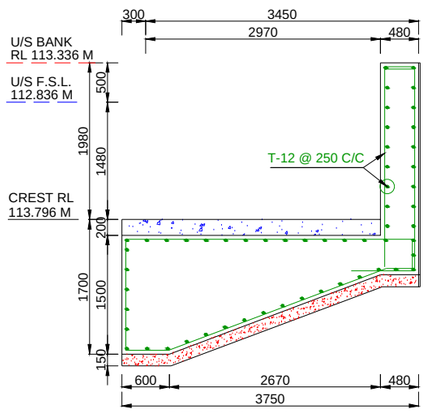
SECTION a-a



SECTION b-b

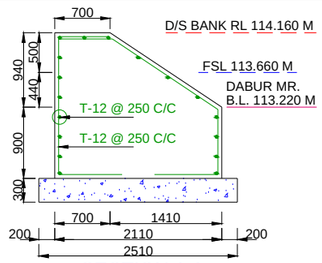


SECTION c-c

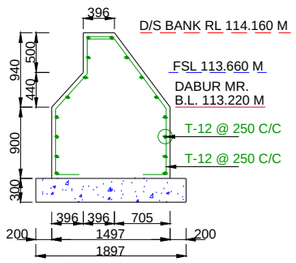


SECTION d-d

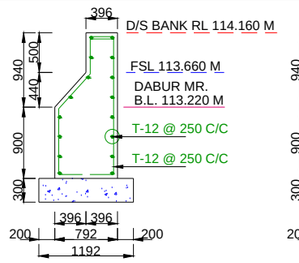
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



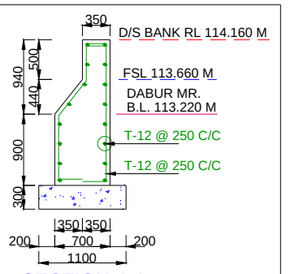
SECTION 1-1



SECTION 2-2

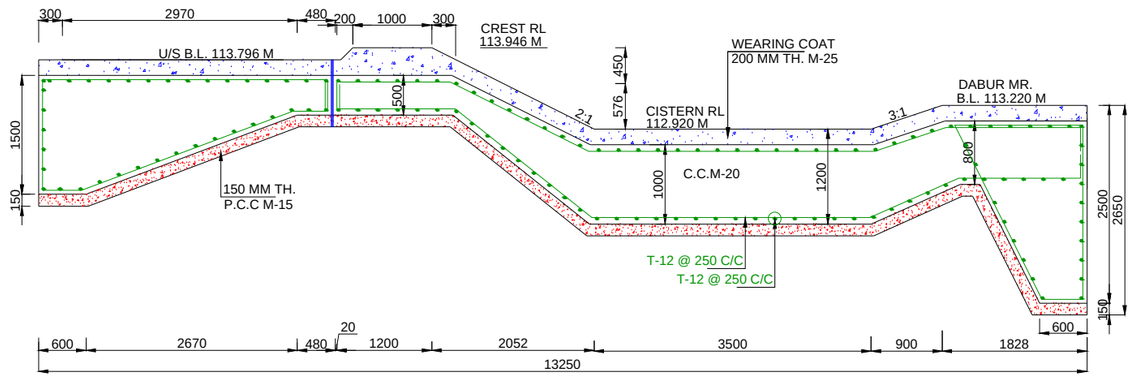


SECTION 3-3



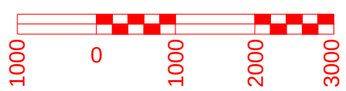
SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

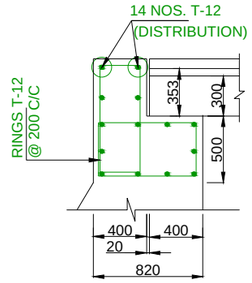


SECTION OF FLOOR (REINF.)
(SCALE A)

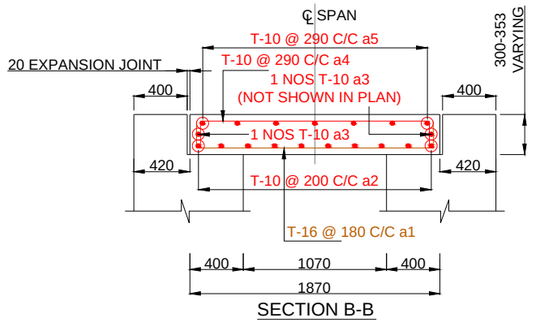
SCALE A:-



Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR DABUR MR. (OFFTAKE FROM RD -15+722 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-06/ HR 2 of 3



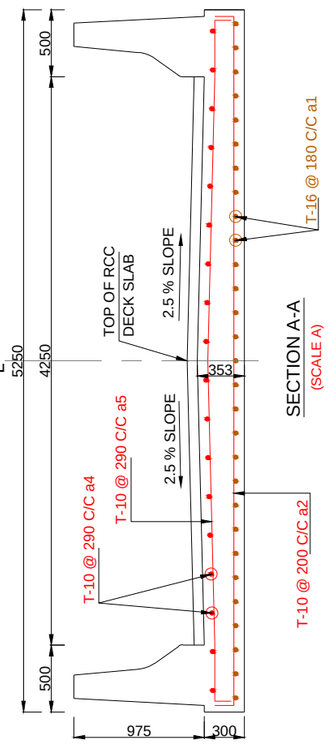
DIRT WALL
(SCALE A)



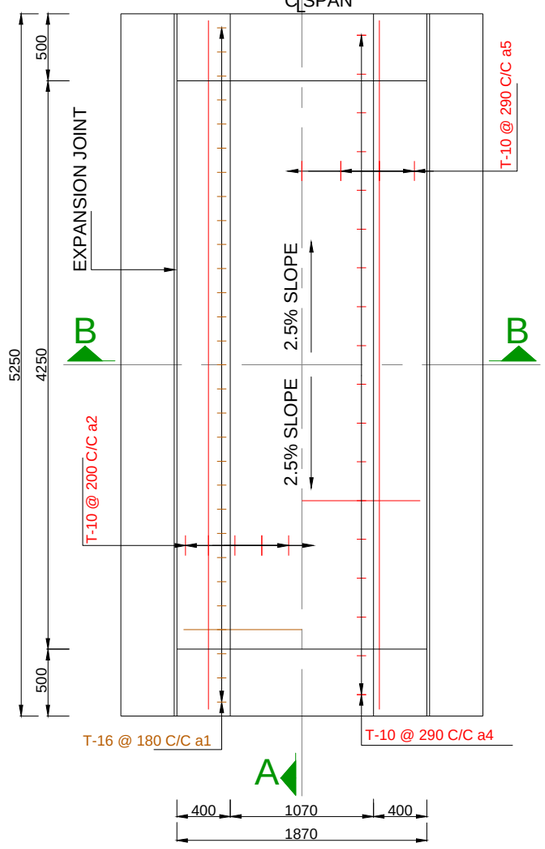
SECTION B-B
(SCALE A)

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	200, R=60, 1770, 200	16	180	29
2	a2	200, R=40, 5150, 200	10	200	10
3	a3	5150	10	-	2
4	a4	1770, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	7
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	15X2
2	x2	75, 540, 350, 300	16	120	15X2
3	x3	1770	10	-	12X2

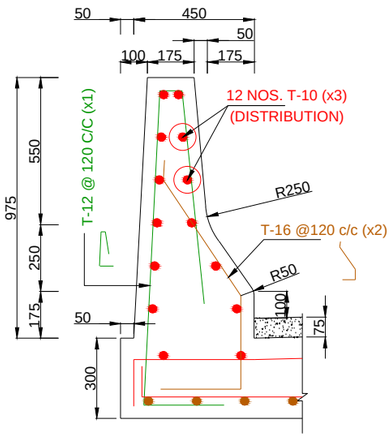


SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT — TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



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

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,
   BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (f_y=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

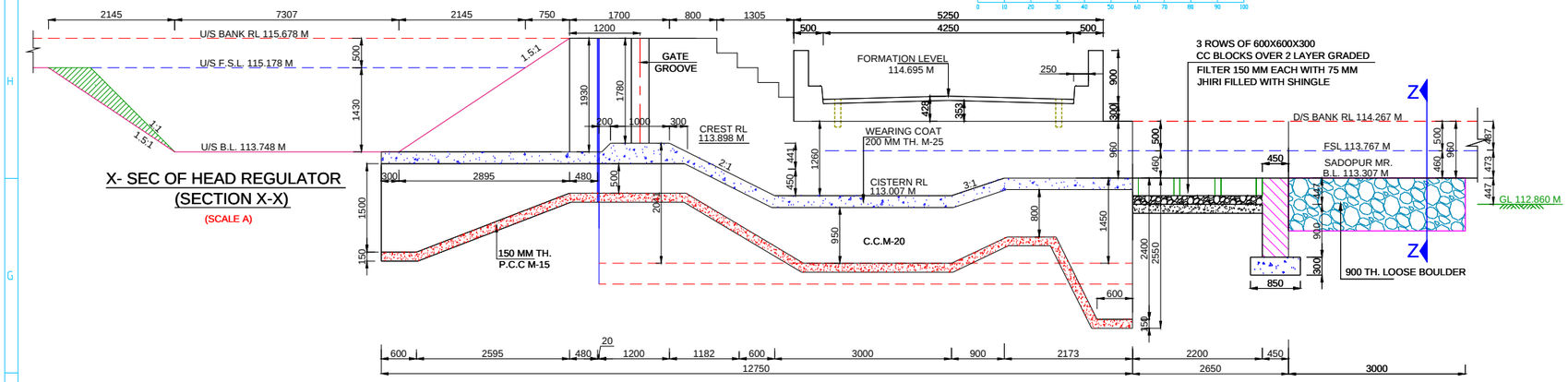
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
    LAP LENGTH = α1. lbnet
    WHERE, α1 = 1.0 for p%≤25%
    α1 = 1.15 for 25%≤p%≤33%
    α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 0, 400, 800, 1200

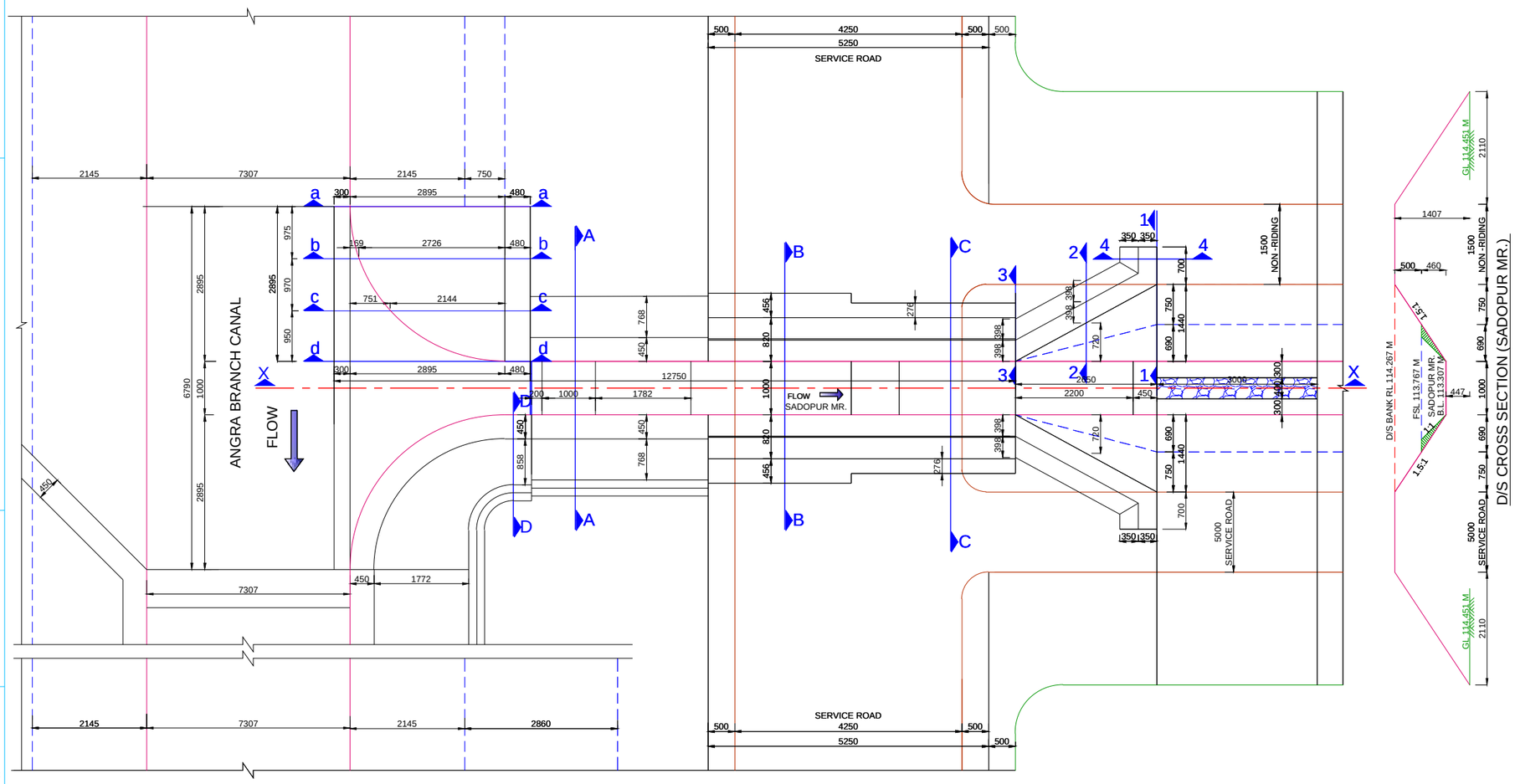
SCALE B:- 0, 200, 400, 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR DABUR MR. (OFFTAKE FROM RD -15+722 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-06/ HR 3 of 3



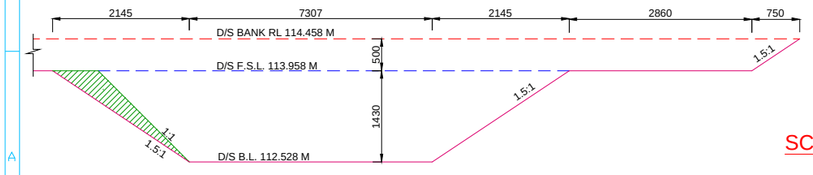
X- SEC OF HEAD REGULATOR (SECTION X-X)

(SCALE A)



D/S CROSS SECTION (SADOPUR MR.)

(SCALE A)



D/S CROSS SECTION (ANGRA BRANCH CANAL)

(SCALE A)

SCALE A:-

1000 0 1000 2000 3000

DESIGN DATA :-

ANGRA BRANCH CANAL

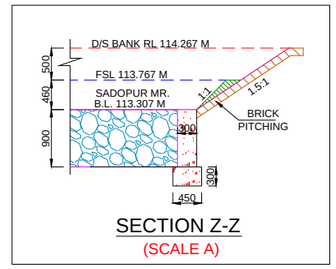
	U/S	D/S
DISCHARGE OF FEEDER	6.94 CUMECS	
BED WIDTH	7.307 M	
WATER DEPTH	1.430 M	
FREE BOARD	0.500 M	
BED LEVEL	113.748 M	112.528 M
F.S.L.	115.178 M	113.958 M
GROUND LEVEL	112.860 M	

SADOPUR MR.

CHAINAGE	16.000 M
DISCHARGE	0.16 CUMEC
BED WIDTH	1.000 M
WATER DEPTH	0.460 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	113.307 M
F.S.L.	113.767 M
CREST LEVEL	113.748 M
BED SLOPE	17.2 CM/ KM

NOTES:-

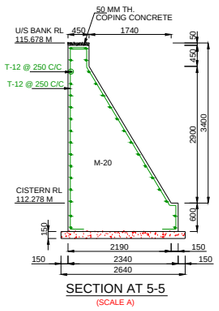
1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS M-20
   - C. C.C.BLOCKS AND TOE WALLS M-15
   - D. P.C.C. M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.



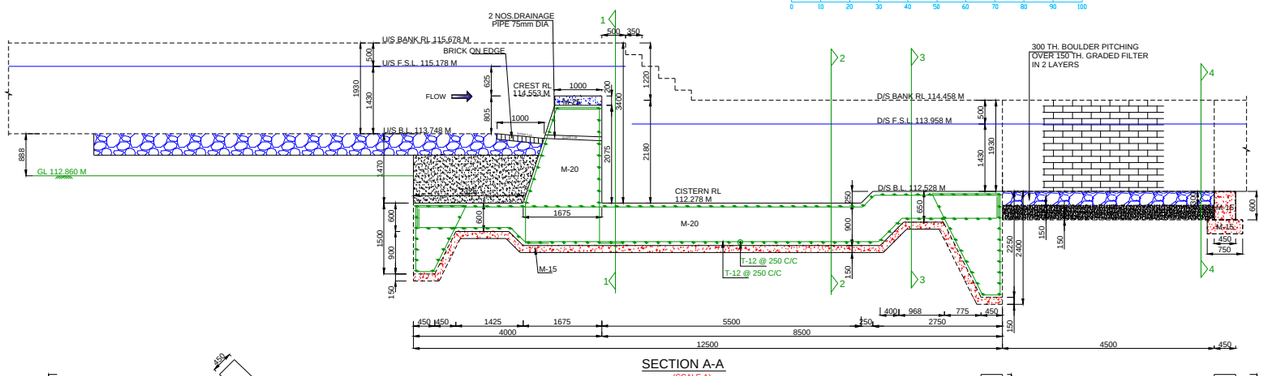
SECTION Z-Z

(SCALE A)

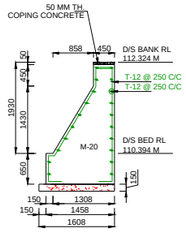
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR SADOPUR MR. (OFFTAKE FROM RD -16+000 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-07/ HR CUM FALL 1 of 4



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)

NOTES:-

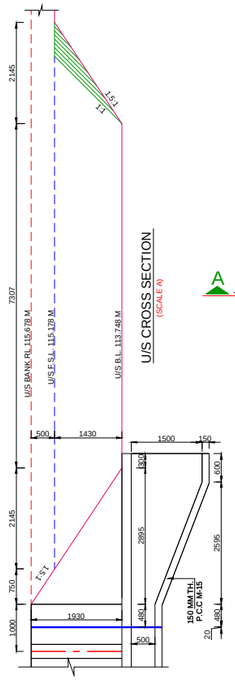
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

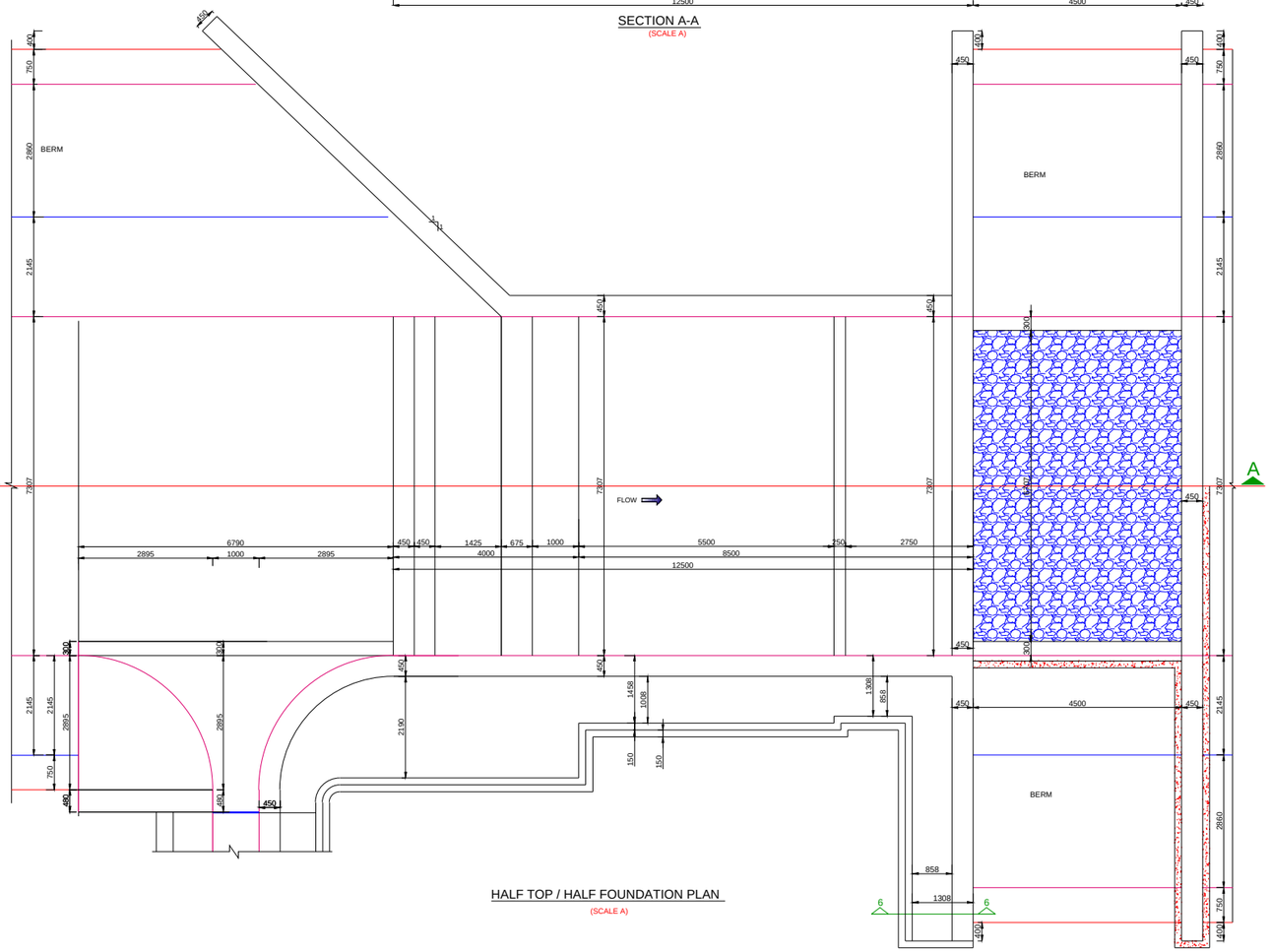
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

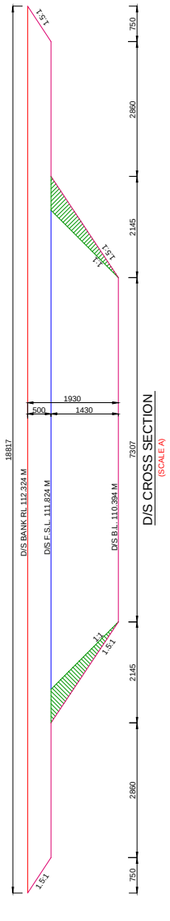
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

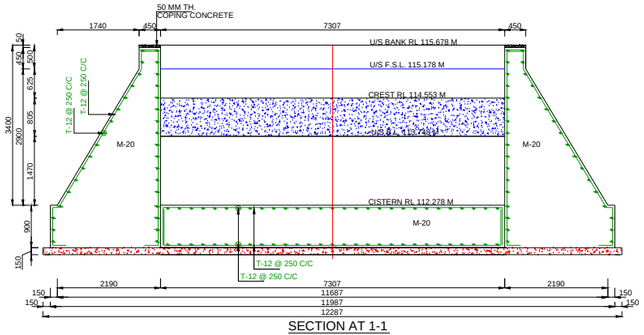
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	6.940	6.940	CUMEC
VERTICAL DROP	1.220	1.220	METRE
FULL SUPPLY DEPTH	1.430	1.430	METRE
BED WIDTH	7.307	7.307	METRE
BED SLOPE	1 : 5800	1 : 5800	

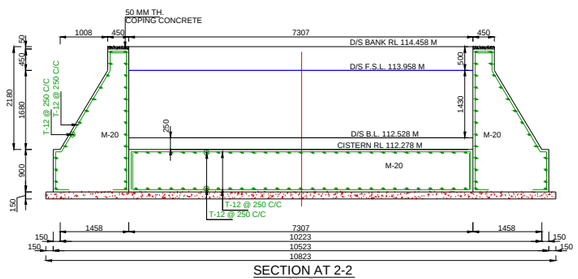




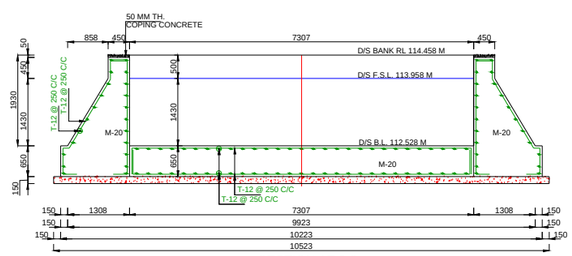




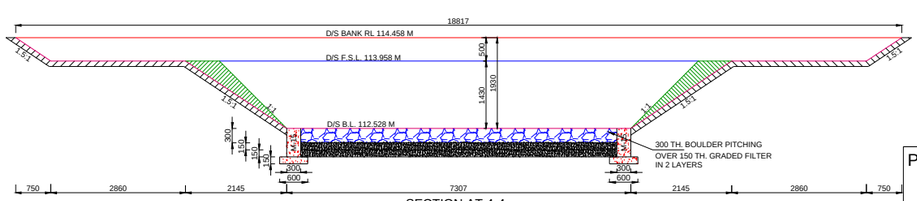
SECTION AT 1-1
(SCALE A)



SECTION AT 2-2
(SCALE A)



SECTION AT 3-3
(SCALE A)

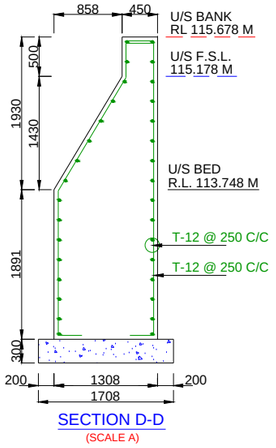


SECTION AT 4-4
(SCALE A)

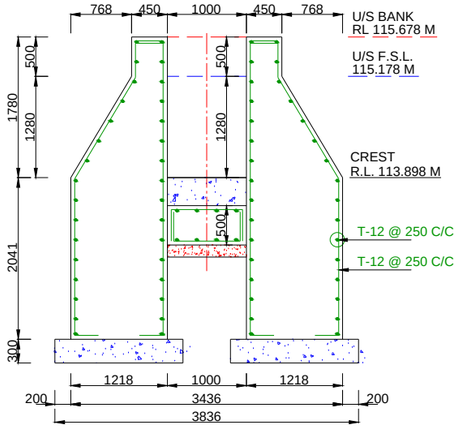
SCALE A:-

1000 0 1000 2000 3000

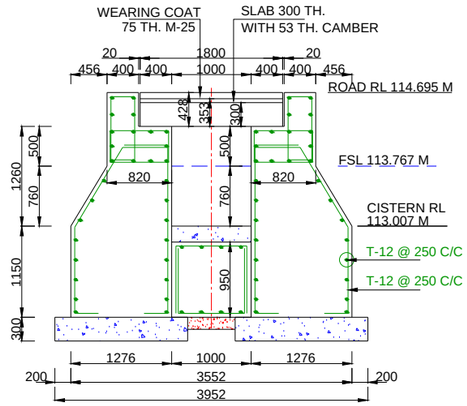
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.220 M HT. FALL AT KM. 16.000 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-07/ HR CUM FALL 2 of 4



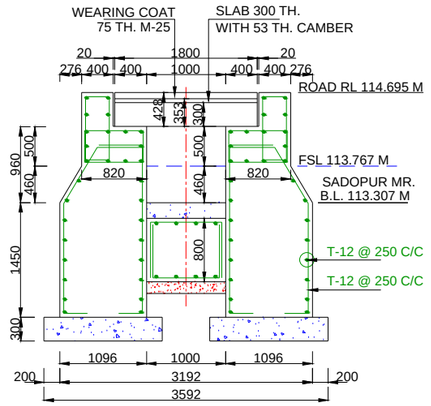
SECTION D-D
(SCALE A)



SECTION A-A
(AT CREST)
(SCALE A)



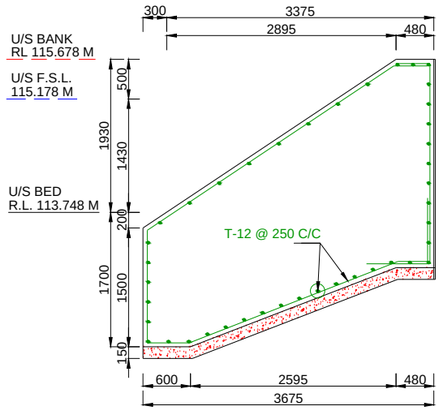
SECTION B-B
(AT CISTERN)
(SCALE A)



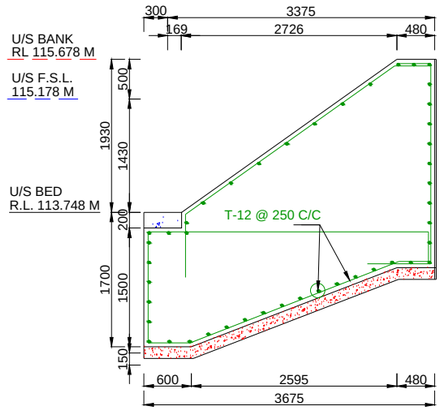
SECTION C-C
(AT D/S FLOOR)
(SCALE A)

NOTES:-

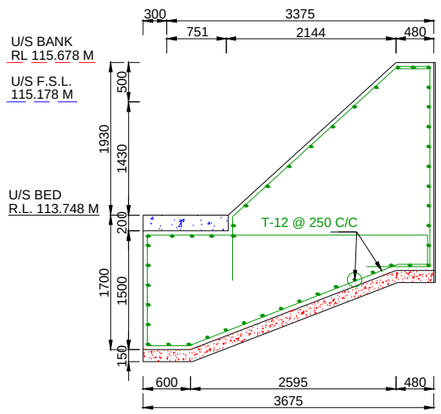
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.



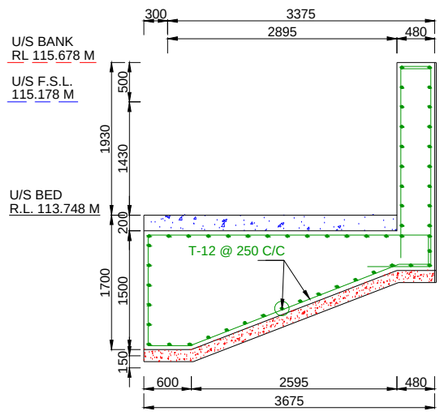
SECTION a-a



SECTION b-b

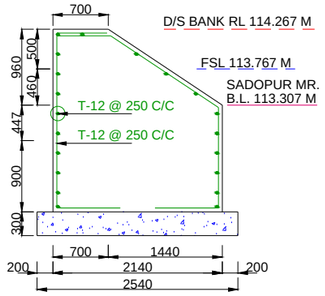


SECTION c-c

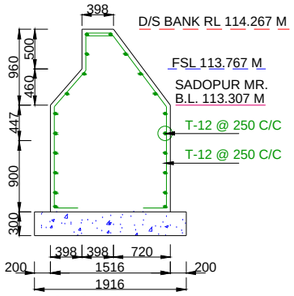


SECTION d-d

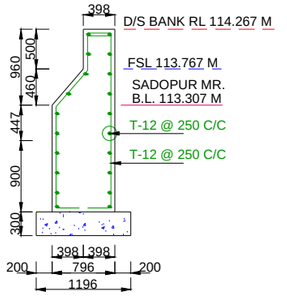
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



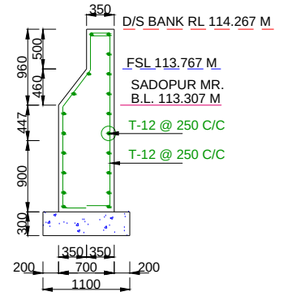
SECTION 1-1



SECTION 2-2

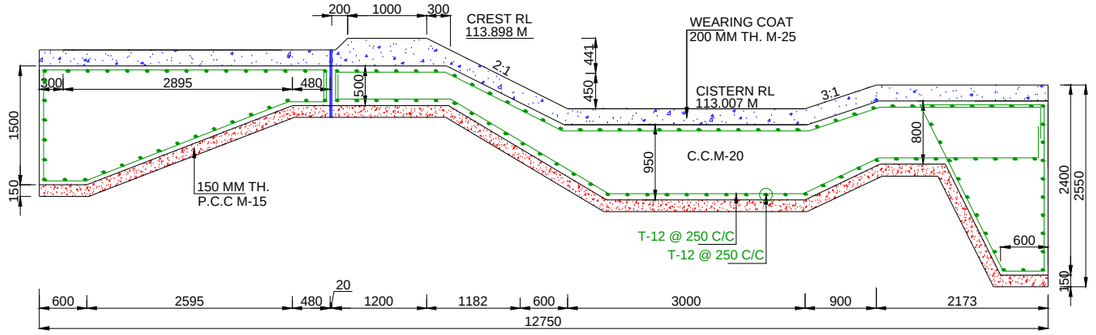


SECTION 3-3



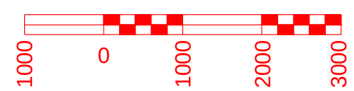
SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

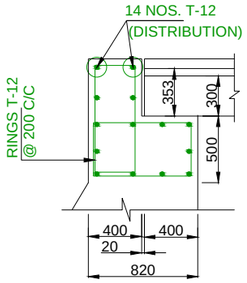


SECTION OF FLOOR (REINF.)
(SCALE A)

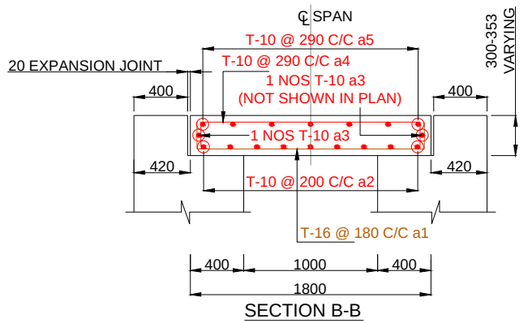
SCALE A:-



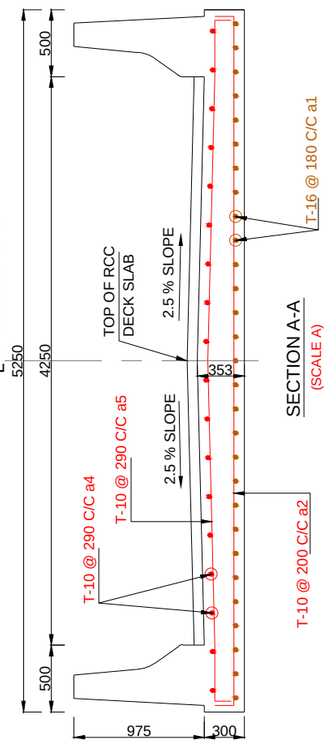
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR SADOPUR MR. (OFFTAKE FROM RD -16+000 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-07/ HR CUM FALL 3 of 4



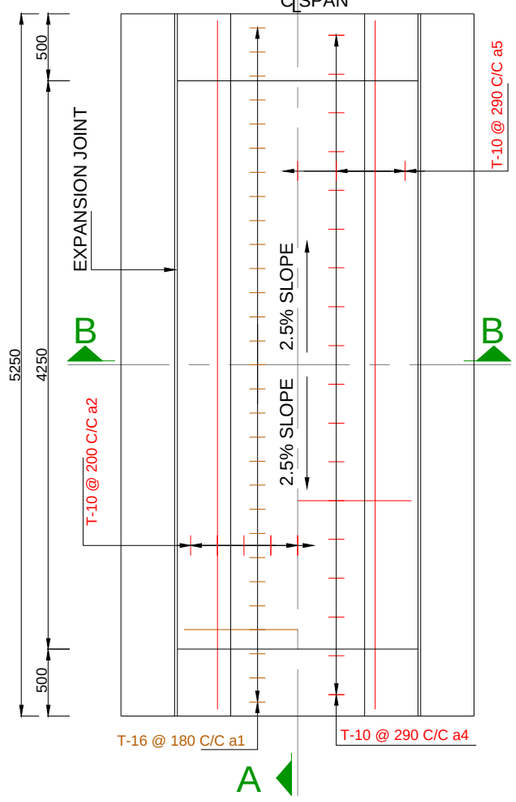
DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)



SECTION A-A
(SCALE A)



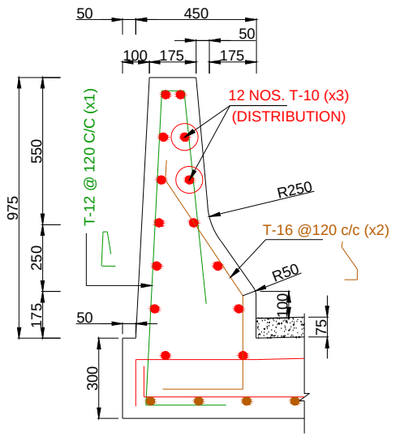
BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	R=60, 200, 1700, 200	16	180	29
2	a2	R=40, 200, 5150, 200	10	200	9
3	a3	5150	10	-	2
4	a4	1700, R=40, 200, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	7
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	15X2
2	x2	75, 540, 300, 350	16	120	15X2
3	x3	1700	10	-	12X2



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

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

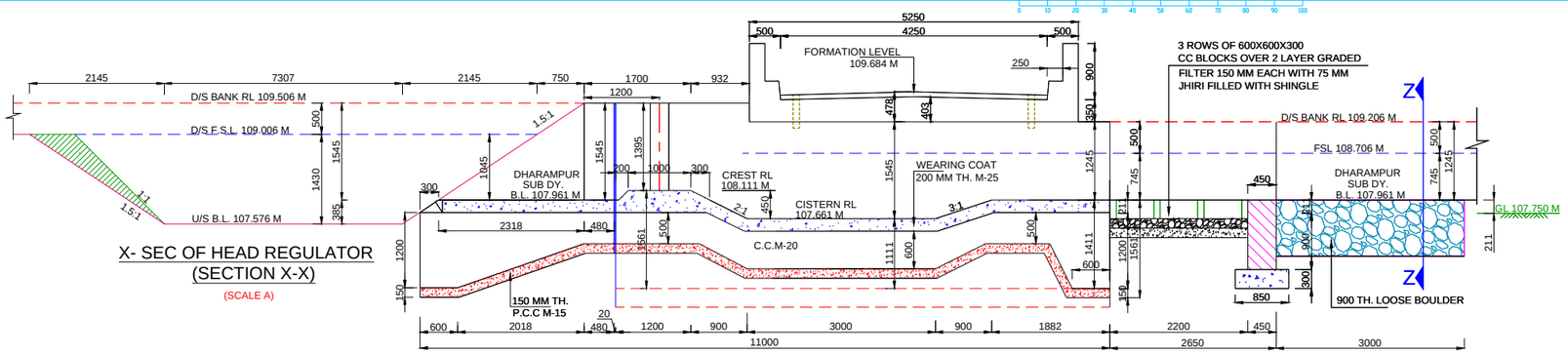
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = $\alpha 1$. lbnet
WHERE, $\alpha 1$ = 1.0 for p%≤25%
$\alpha 1$ = 1.15 for 25%≤p%≤33%
$\alpha 1$ = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

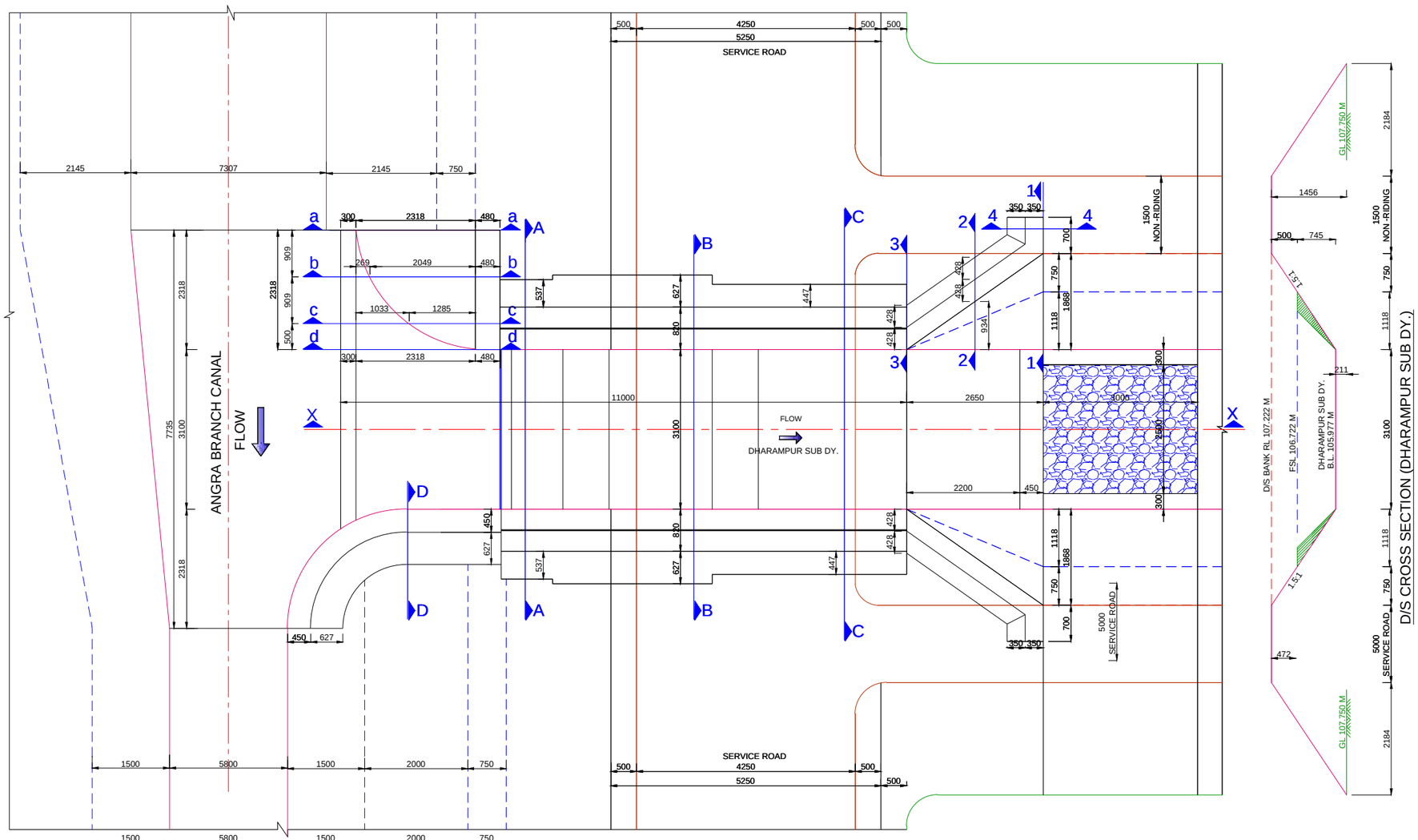
SCALE B:- 200 0 200 400 600

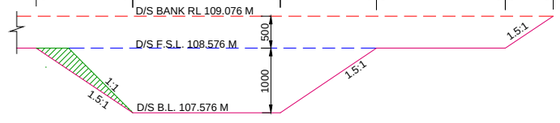
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR SADOPUR MR. (OFFTAKE FROM RD -16+000 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-07/ HR 4 of 4



X- SEC OF HEAD REGULATOR (SECTION X-X)

(SCALE A)





D/S CROSS SECTION (ANGRA BRANCH CANAL)

(SCALE A)

SCALE A:-

1000 0 1000 2000 3000

DESIGN DATA :-

ANGRA BRANCH CANAL

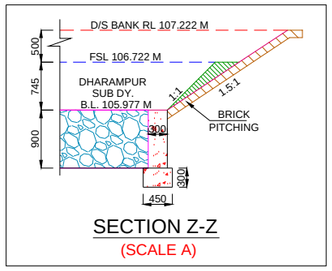
	U/S	D/S
DISCHARGE OF FEEDER	6.940 CUMECS	3.040 CUMECS
BED WIDTH	7.307 M	5.800 M
WATER DEPTH	1.430 M	1.000 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	107.576 M	107.576 M
F.S.L.	109.006 M	108.576 M
GROUND LEVEL	107.750 M	

DHARAMPUR SUB DY.

CHAINAGE	19.980 M
DISCHARGE	1.002 CUMEC
BED WIDTH	3.100 M
WATER DEPTH	0.745 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	107.961 M
F.S.L.	108.706 M
CREST LEVEL	107.961 M
BED SLOPE	20.8 CM/ KM

NOTES:-

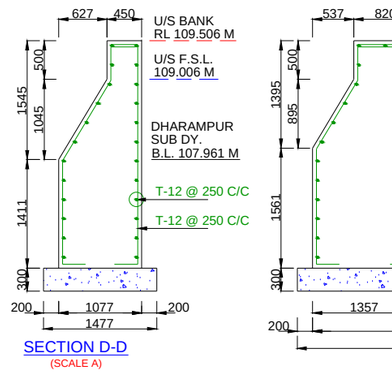
1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.



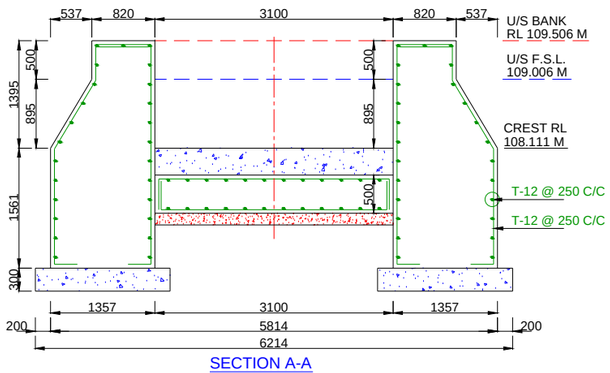
SECTION Z-Z

(SCALE A)

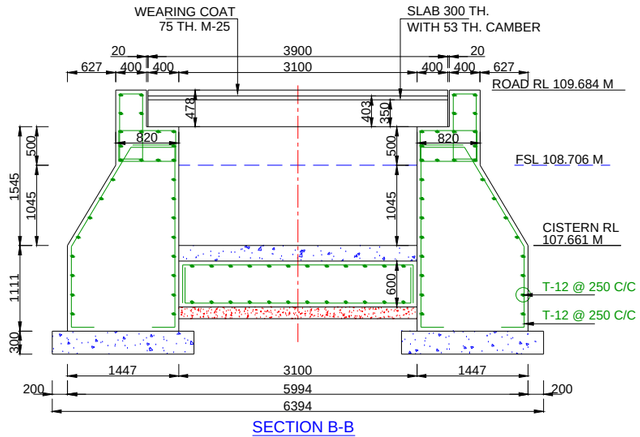
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ HR — 1 of 3



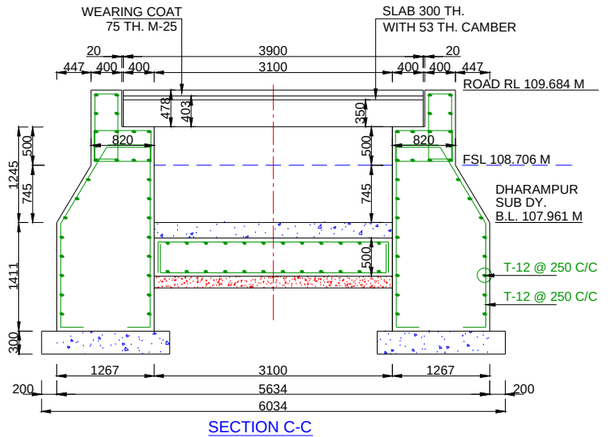
SECTION D-D
(SCALE A)



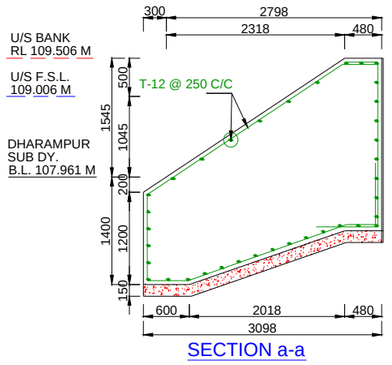
SECTION A-A
(AT CREST)
(SCALE A)



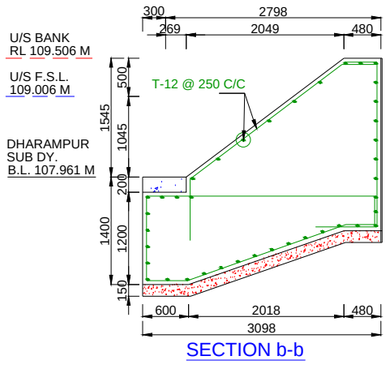
SECTION B-B
(AT CISTERN)
(SCALE A)



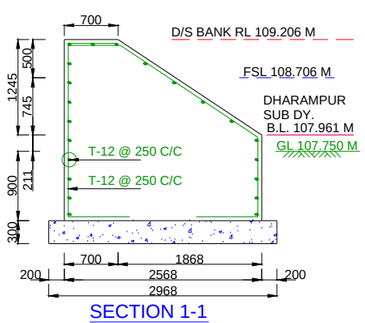
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



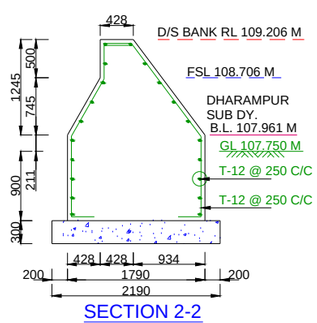
SECTION a-a



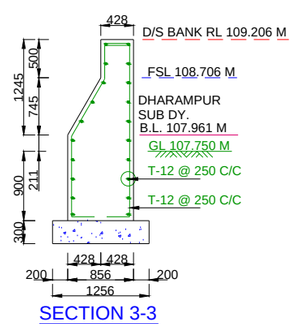
SECTION b-b



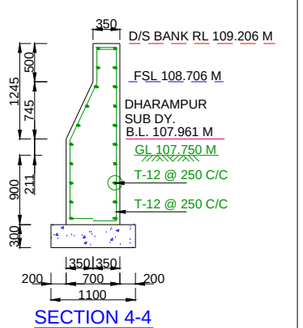
SECTION 1-1



SECTION 2-2

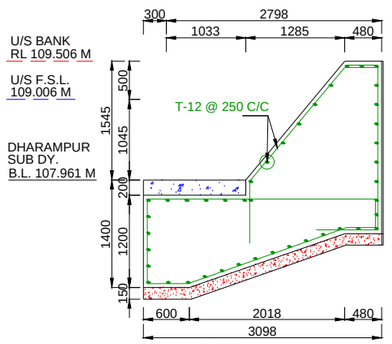


SECTION 3-3

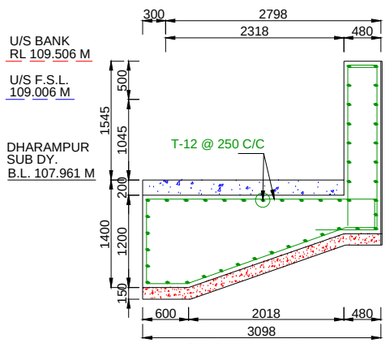


SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

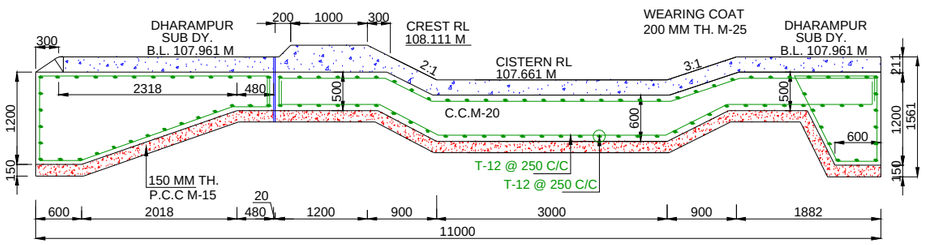


SECTION c-c



SECTION d-d

SECTION OF UP STREAM TRANSITIONS
(SCALE A)



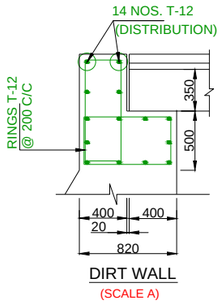
SECTION OF FLOOR (REINF.)
(SCALE A)

NOTES:-

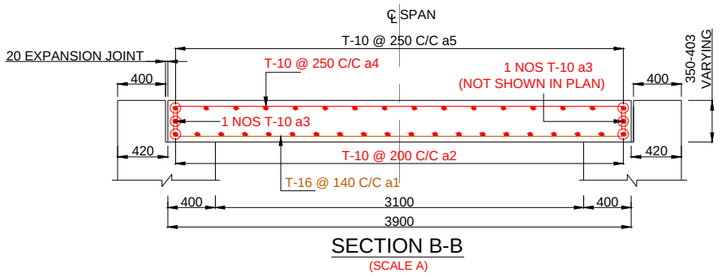
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

SCALE A:-

Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-08/ HR 2 of 3



DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)

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	200, R=60, 3800, 200	16	140	37
2	a2	200, R=40, 5150, 200	10	200	20
3	a3	5150	10	-	2
4	a4	3800, 200, R=40, 200	10	250	21
5	a5	200, 450, 2125, 2125, 450, 200	10	250	16
DIRT WALL					
1	d1	850, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1227, 950, 300	12	120	32X2
2	x2	75, 540, 400, 300	16	120	32X2
3	x3	3800	10	-	12X2

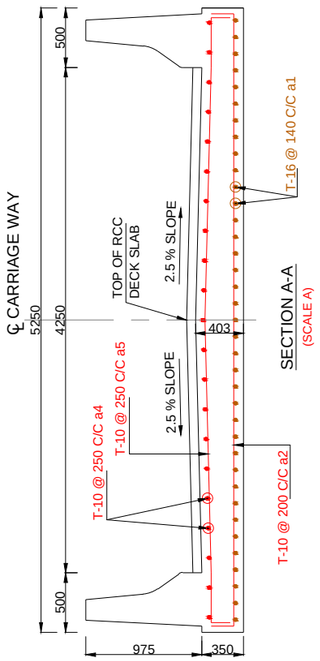
NOTES:-

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

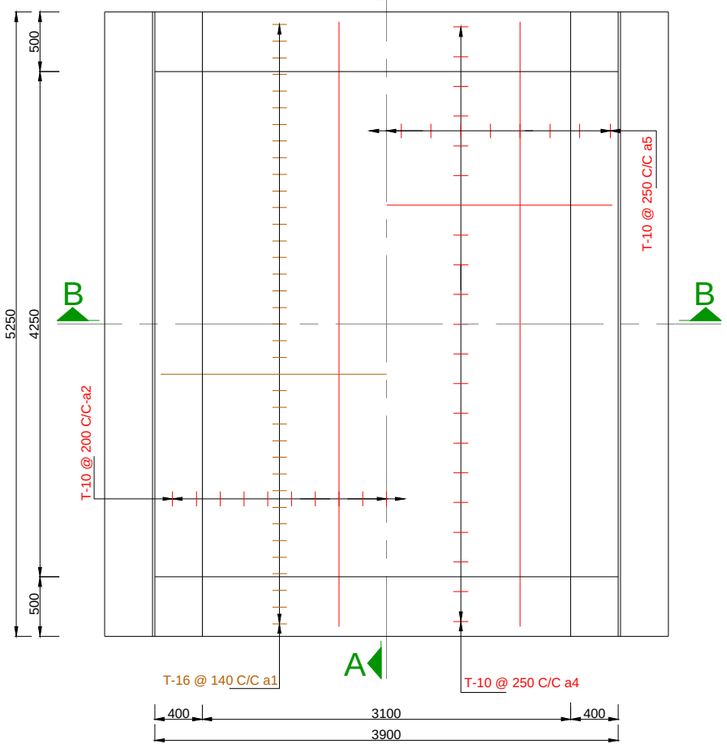
DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)							
TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

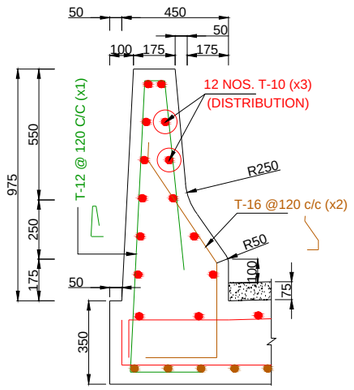


SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT — TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

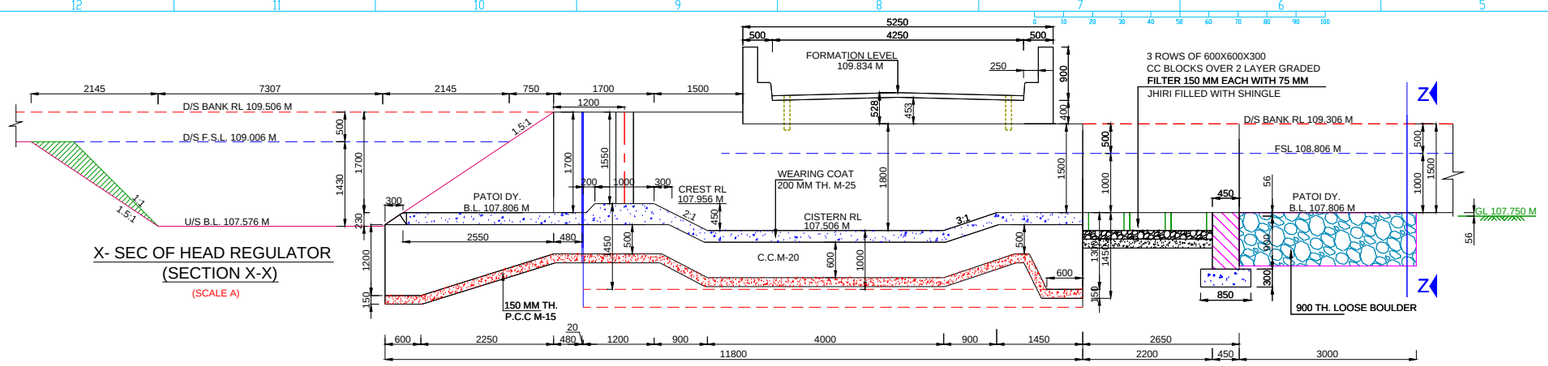


REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)

SCALE A:- 400 0 400 800 1200

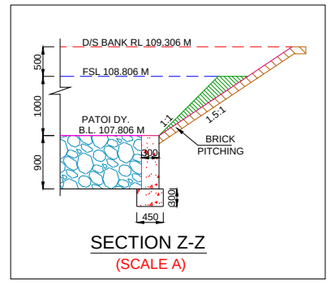
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF H.R. FOR DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/R-37-08/ HR 3 of 3



X- SEC OF HEAD REGULATOR
(SECTION X-X)

(SCALE A)



SECTION Z-Z

(SCALE A)

DESIGN DATA :-

ANGRA BRANCH CANAL

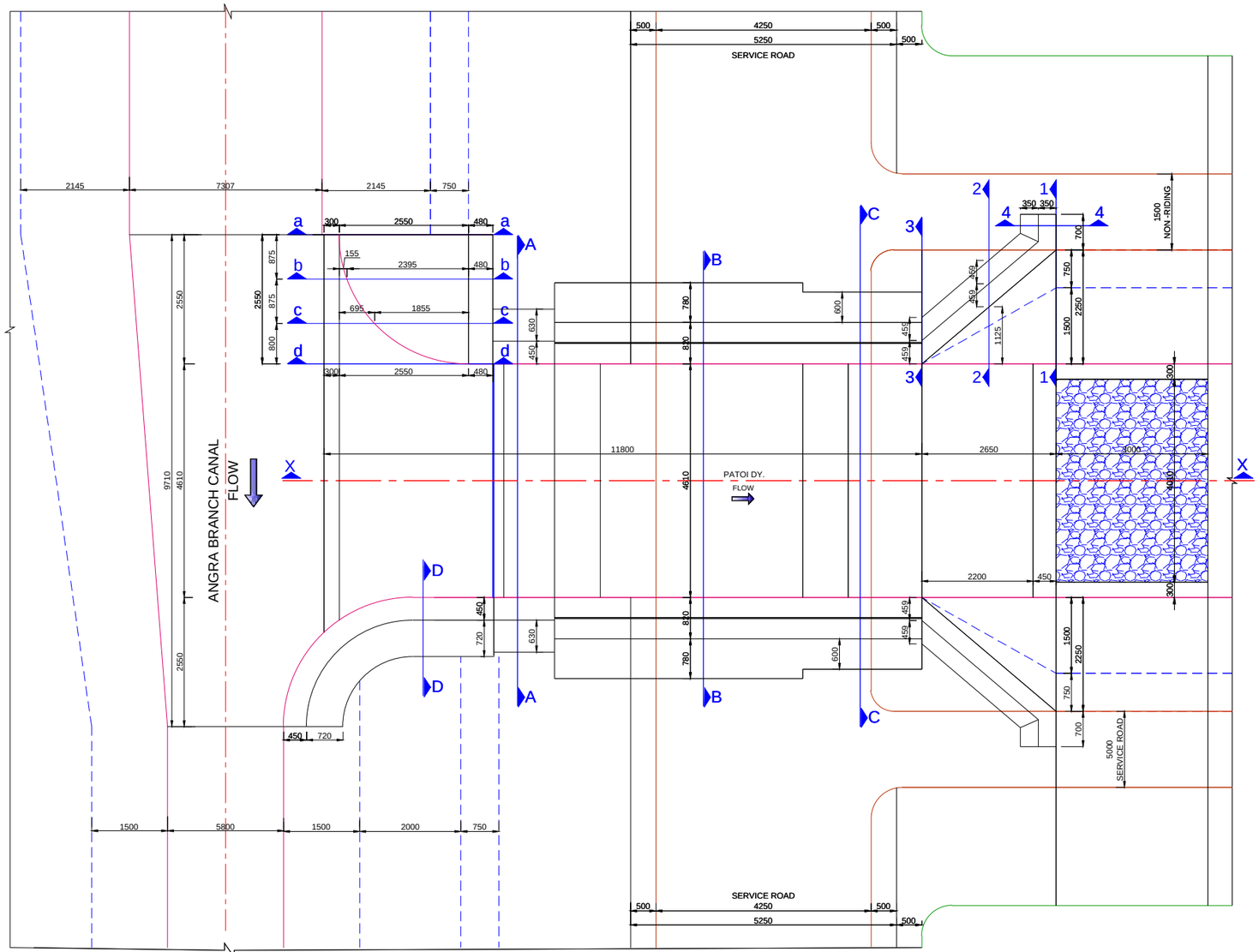
	U/S	D/S
DISCHARGE OF FEEDER	6.940 CUMECS	3.040 CUMECS
BED WIDTH	7.307 M	5.800 M
WATER DEPTH	1.430 M	1.000 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	107.576 M	107.576 M
F.S.L.	109.006 M	108.576 M
GROUND LEVEL	107.750 M	

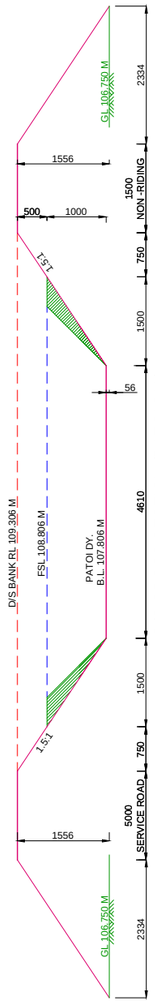
PATOI DY.

CHAINAGE	19.980 M
DISCHARGE	2.474 CUMEC
BED WIDTH	4.610 M
WATER DEPTH	1.000 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	107.806 M
F.S.L.	108.806 M
CREST LEVEL	107.806 M
BED SLOPE	20.8 CM/ KM

NOTES:-

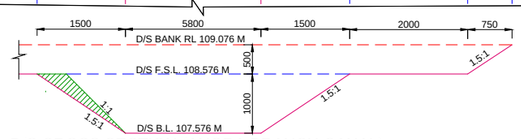
1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.





D/S CROSS SECTION (PATOI DY.)

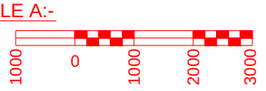
(SCALE A)



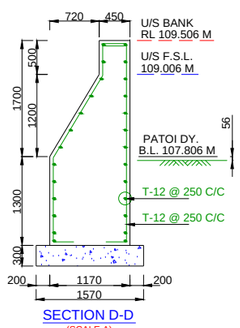
D/S CROSS SECTION (ANGRA BRANCH CANAL)

(SCALE A)

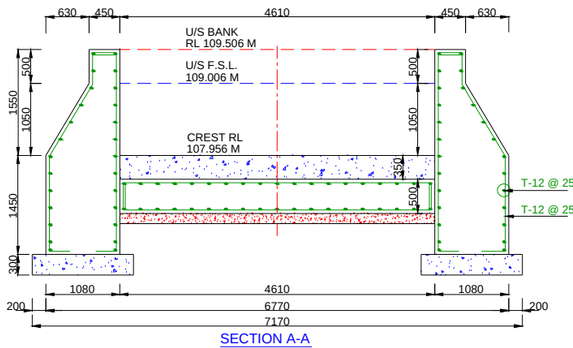
SCALE A:-



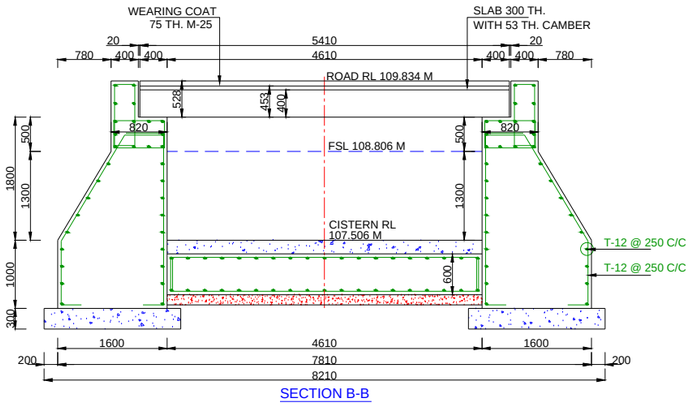
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ HR — 1 of 3



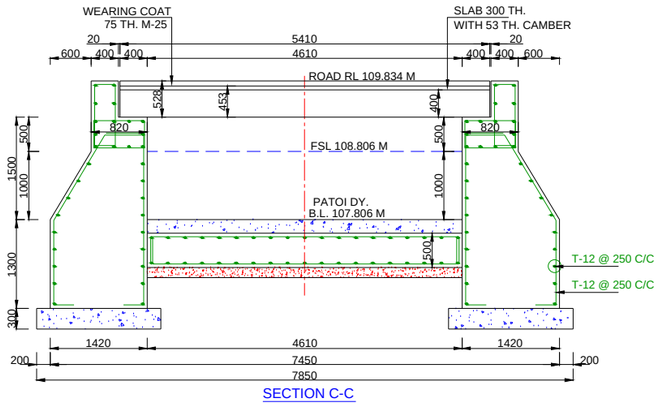
SECTION D-D
(SCALE A)



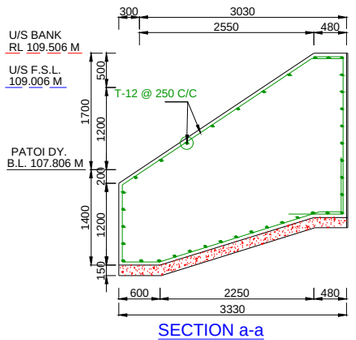
SECTION A-A
(AT CREST)
(SCALE A)



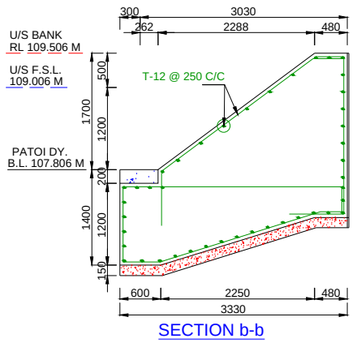
SECTION B-B
(AT CISTERN)
(SCALE A)



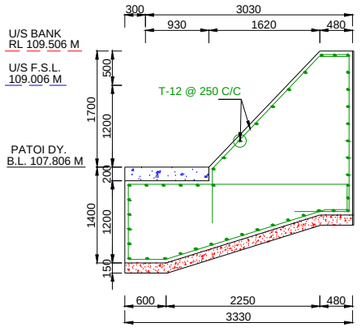
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



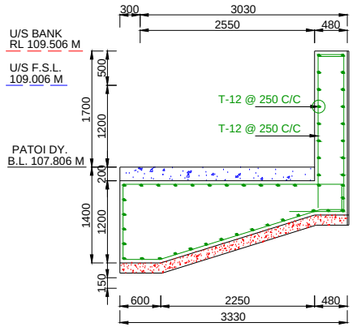
SECTION a-a



SECTION b-b

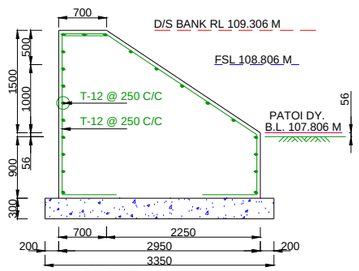


SECTION c-c

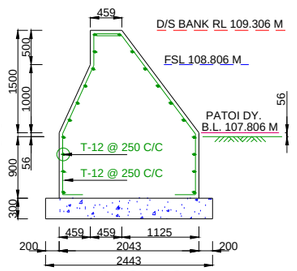


SECTION d-d

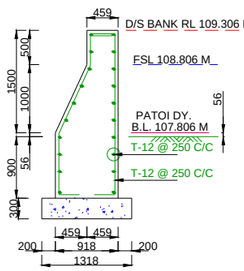
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



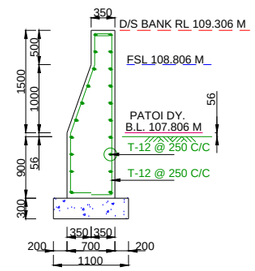
SECTION 1-1



SECTION 2-2

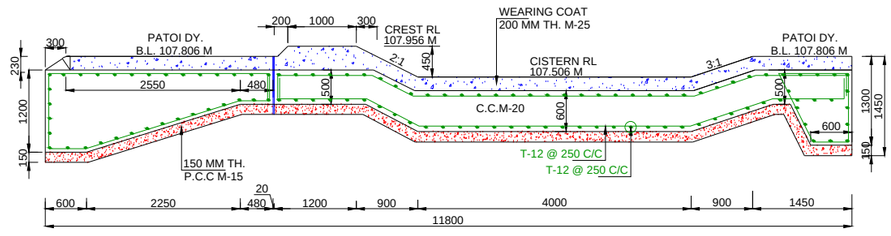


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)



SECTION OF FLOOR (REINF.)
(SCALE A)

NOTES:-

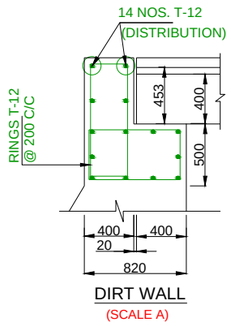
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

SCALE A:-

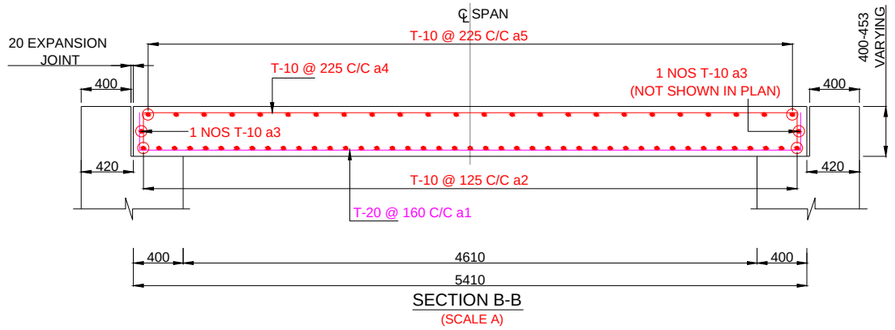
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ HR

2 of 3

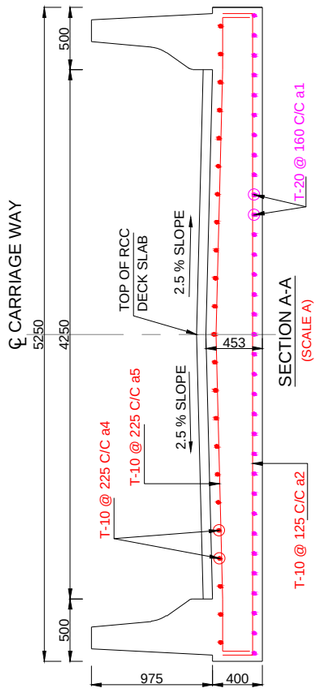
500



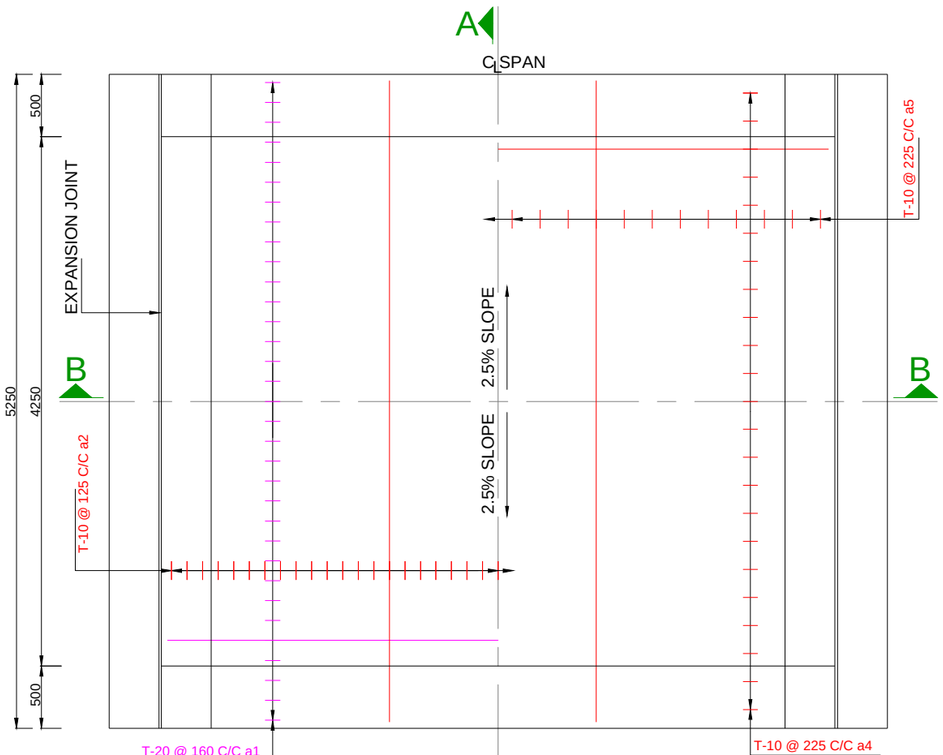
DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)



SECTION A-A
(SCALE A)



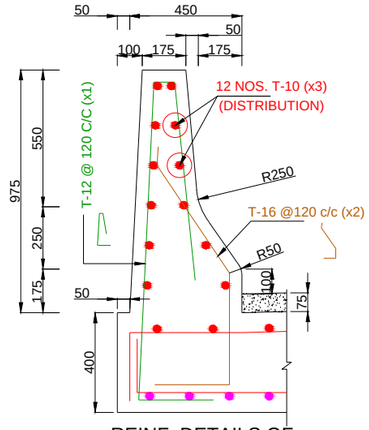
BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	300, R=60, 5310, 300	20	160	33
2	a2	250, R=40, 5150, 250	10	125	43
3	a3	5150	10	-	2
4	a4	5310, 300, R=40, 300	10	225	23
5	a5	200, 450, 2125, 2125, 450, 200	10	225	24
DIRT WALL					
1	d1	900, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1277, 950, 300	12	120	45X2
2	x2	75, 540, 450, 300	16	120	45X2
3	x3	5310	10	-	12X2



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

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)

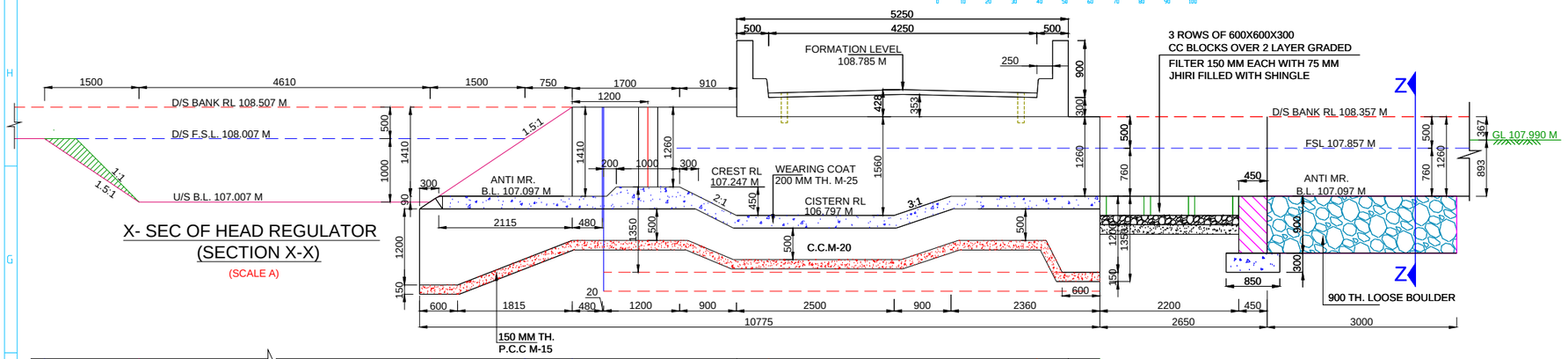
LAP LENGTH = $\alpha 1$. lbnet
WHERE, $\alpha 1$ = 1.0 for p%≤25%
$\alpha 1$ = 1.15 for 25%≤p%≤33%
$\alpha 1$ = 1.4 for 33%≤p%≤50%

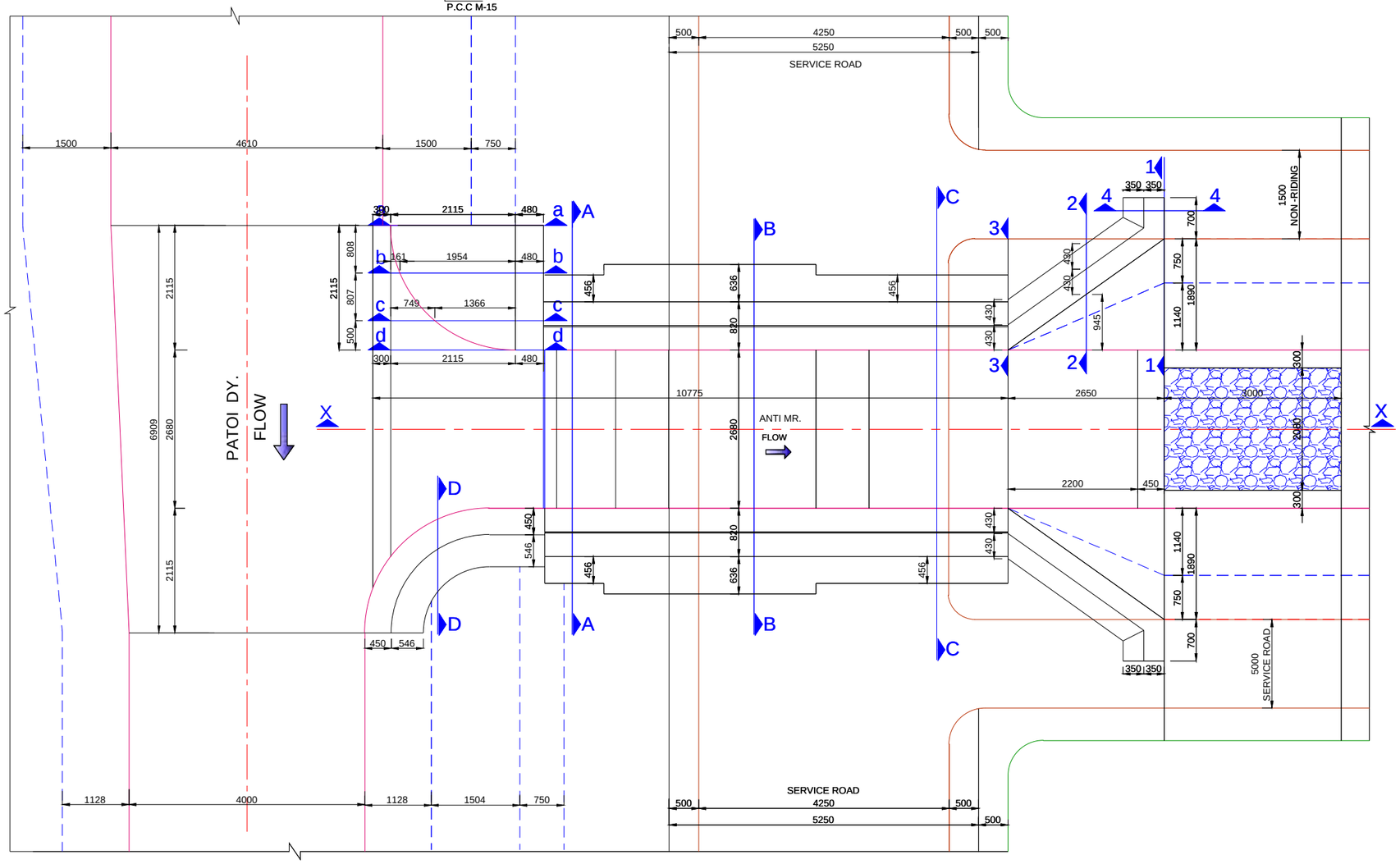
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

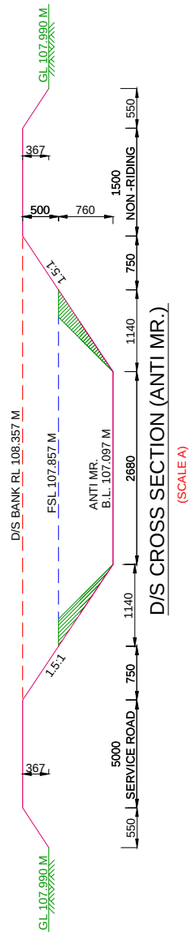
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR PATOI DY. (OFFTAKE FROM RD -19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ HR 3 of 3







DESIGN DATA :-
PATOI DY.

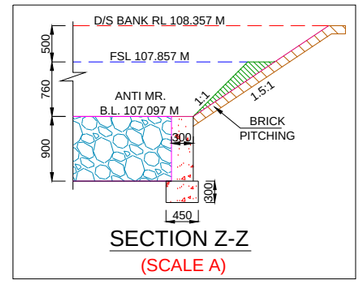
	U/S	D/S
DISCHARGE OF FEEDER	2.470 CUMECS	1.350 CUMECS
BED WIDTH	4.610 M	4.000 M
WATER DEPTH	1.000 M	0.752 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	107.007 M	107.007 M
F.S.L.	108.007 M	107.759 M
GROUND LEVEL	107.990 M	

ANTI MR.

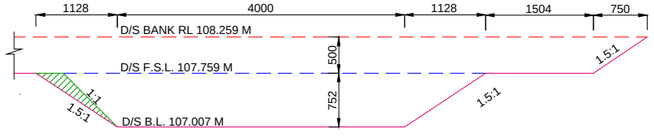
CHAINAGE	2.470 M
DISCHARGE	0.962 CUMEC
BED WIDTH	2.680 M
WATER DEPTH	0.760 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	107.097 M
F.S.L.	107.857 M
CREST LEVEL	107.097 M
BED SLOPE	25.0 CM/ KM

NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.



SECTION Z-Z
(SCALE A)

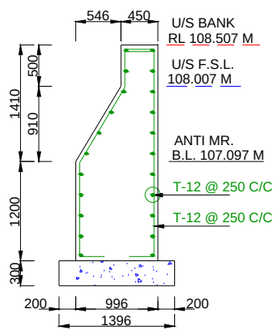


D/S CROSS SECTION (PATOI DY.)
(SCALE A)

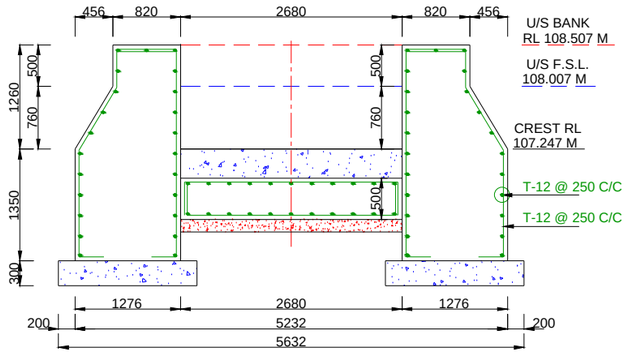
SCALE A:-

1000 0 1000 2000 3000

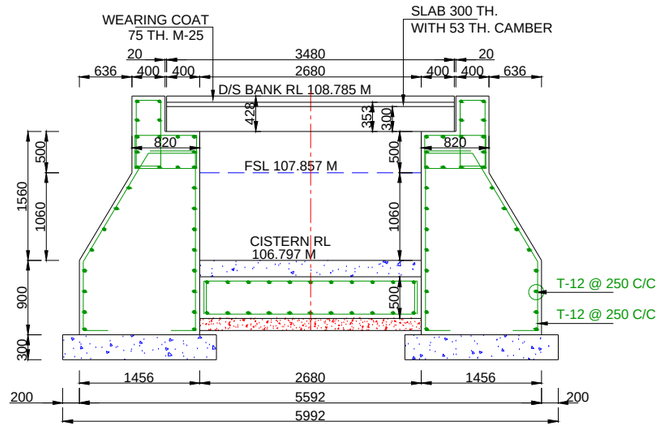
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR ANTI MR. (OFFTAKE FROM RD -2+470 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-01/ HR — 1 of 3



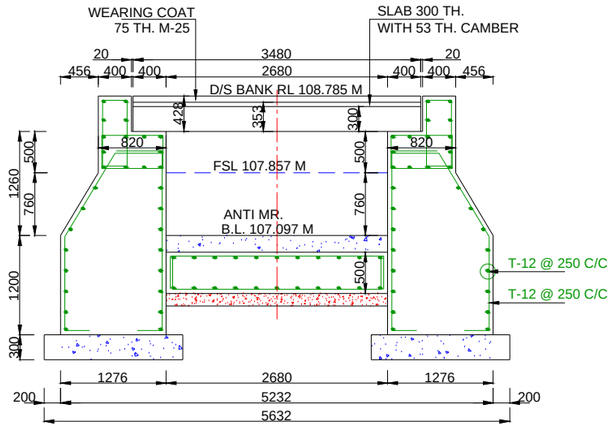
SECTION D-D
(SCALE A)



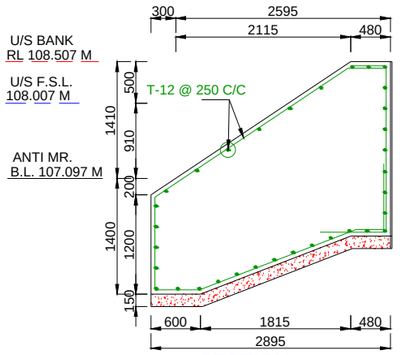
SECTION A-A
(AT CREST)
(SCALE A)



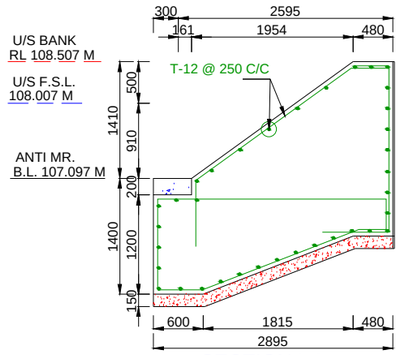
SECTION B-B
(AT CISTERN)
(SCALE A)



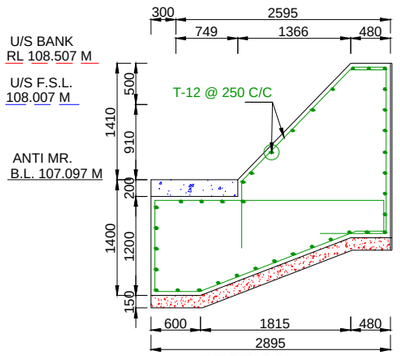
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



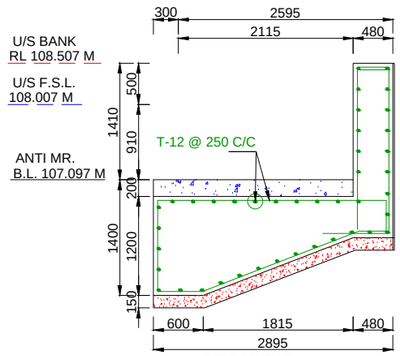
SECTION a-a



SECTION b-b

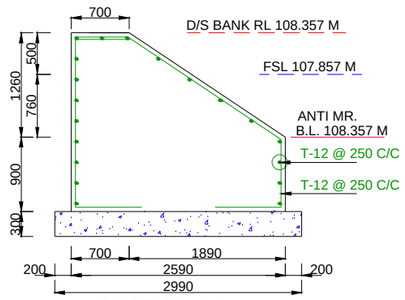


SECTION c-c

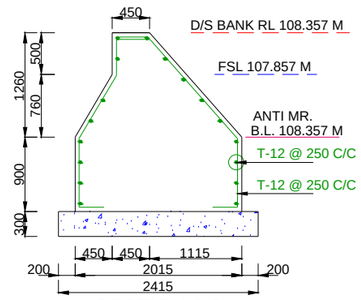


SECTION d-d

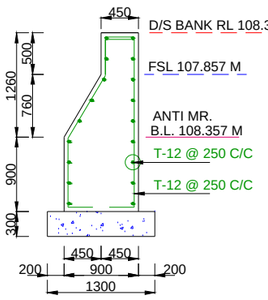
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



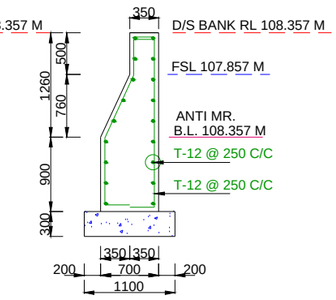
SECTION 1-1



SECTION 2-2

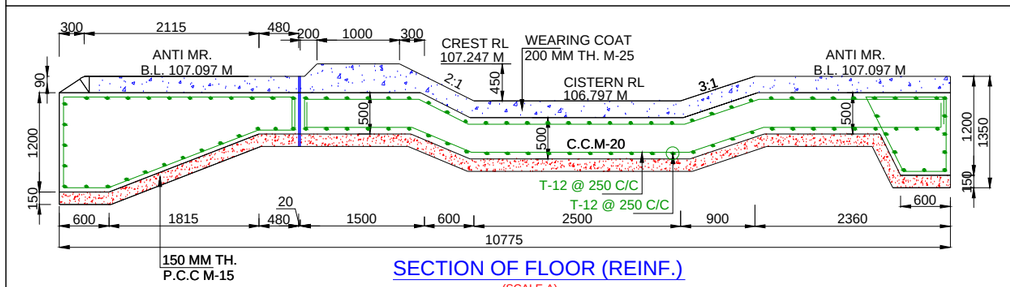


SECTION 3-3



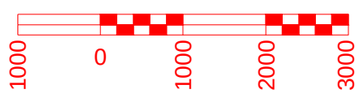
SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)



SECTION OF FLOOR (REINF.)
(SCALE A)

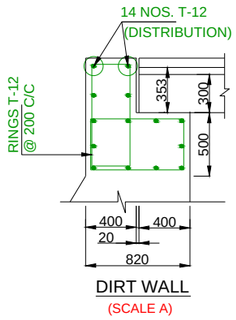
SCALE A:-



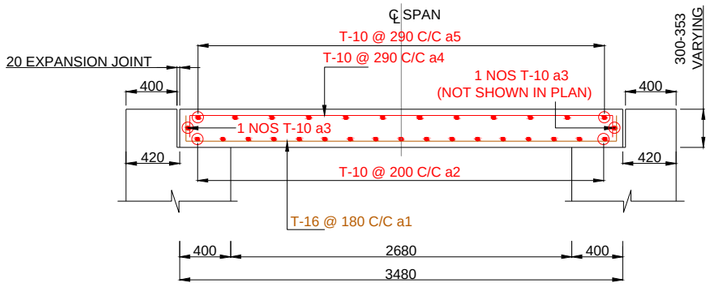
NOTES:-

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

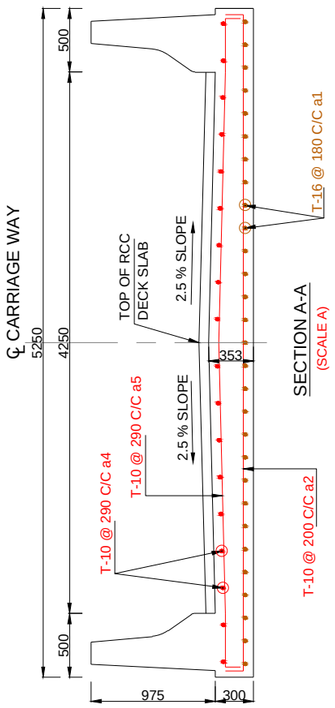
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR ANTI MR. (OFFTAKE FROM RD -2+470 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-01/ HR 2 of 3



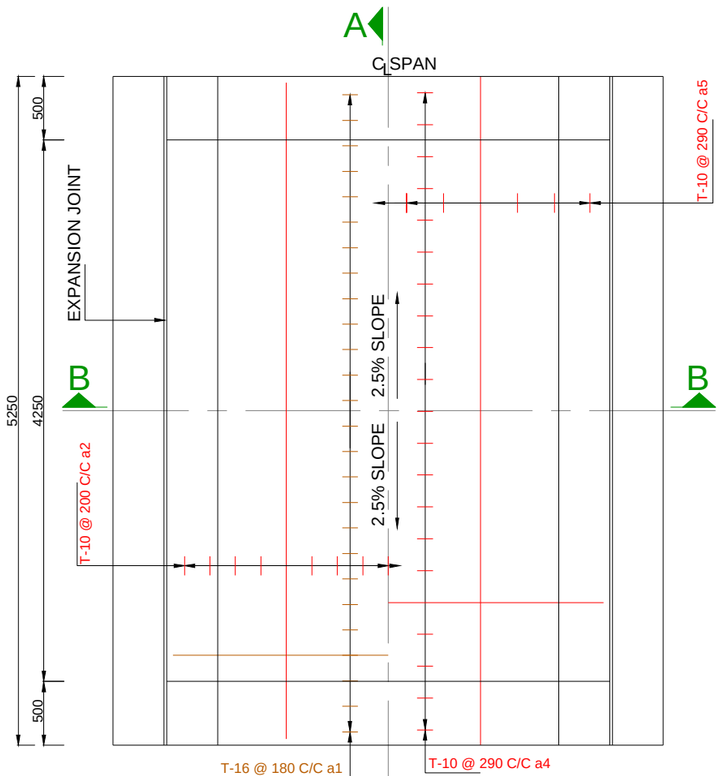
DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)



SECTION A-A
(SCALE A)



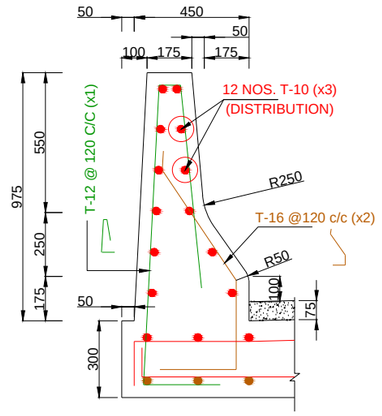
BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	R=60, 200, 3380, 200	16	180	29
2	a2	R=40, 200, 5150, 200	10	200	17
3	a3	5150	10	-	2
4	a4	3380, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	12
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	29X2
2	x2	75, 540, 300, 350	16	120	29X2
3	x3	3380	10	-	12X2



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

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

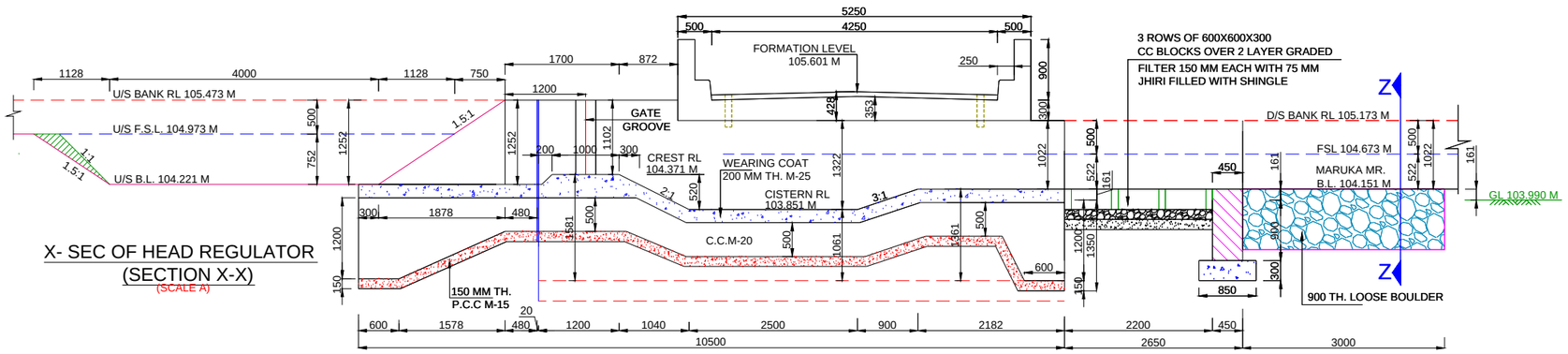
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

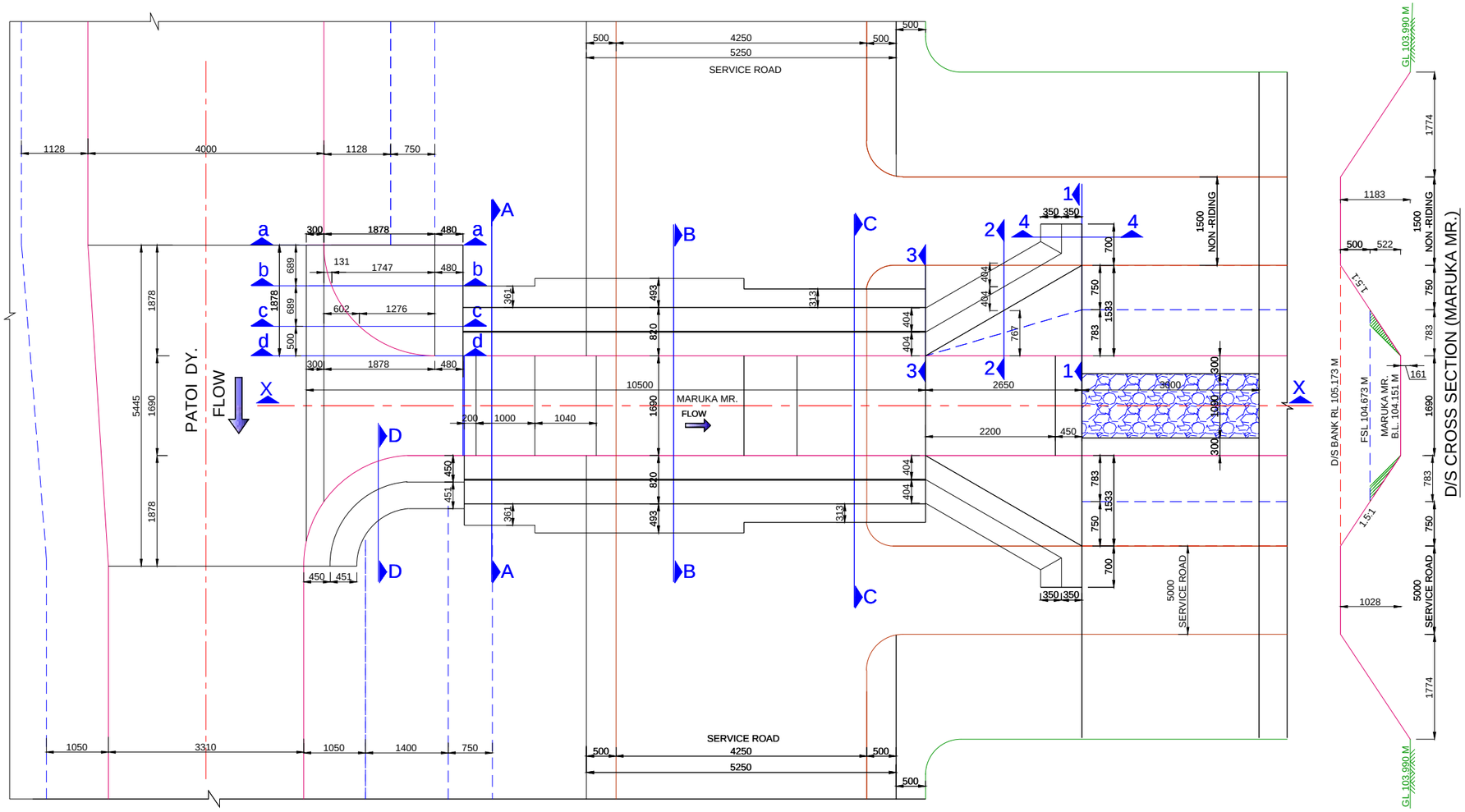
SCALE A:- 400 0 400 800 1200

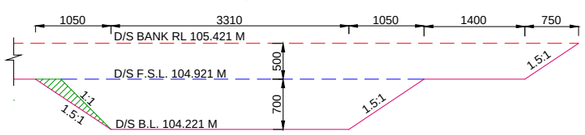
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR ANTI MR. (OFFTAKE FROM RD - 2+470 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-01/ HR 3 of 3

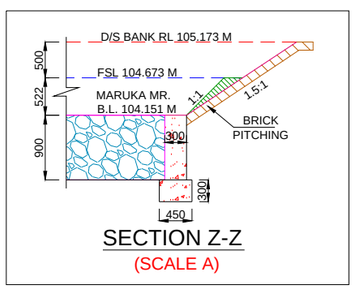


X- SEC OF HEAD REGULATOR
(SECTION X-X)
(SCALE A)





D/S CROSS SECTION (PATOI DY.)
(SCALE A)



SECTION Z-Z
(SCALE A)

DESIGN DATA :-
PATOI DY.

	U/S	D/S
DISCHARGE OF FEEDER	1.350 CUMECS	0.980 CUMECS
BED WIDTH	4.000 M	3.310 M
WATER DEPTH	0.752 M	0.700 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	104.221 M	104.221 M
F.S.L.	104.973 M	104.921 M
GROUND LEVEL	103.990 M	

MARUKA MR.

CHAINAGE	5.730 M
DISCHARGE	0.294 CUMEC
BED WIDTH	1.690 M
WATER DEPTH	0.522 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	104.151 M
F.S.L.	104.673 M
CREST LEVEL	104.221 M
BED SLOPE	25.0 CM/ KM

NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-

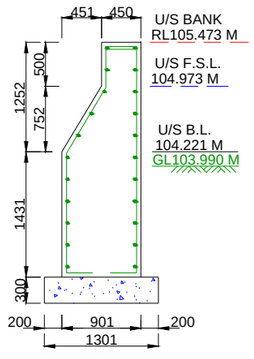
A. SLAB, CRASH BARRIER AND WEARING COAT	M-25
B. FLOOR, ABUTMENT AND TRANSITIONS	M-20
C. C.C.BLOCKS AND TOE WALLS	M-15
D. P.C.C.	M-15

5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

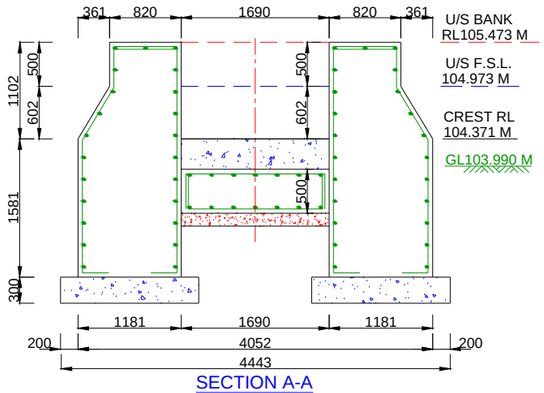
SCALE A:-

1000 0 1000 2000 3000

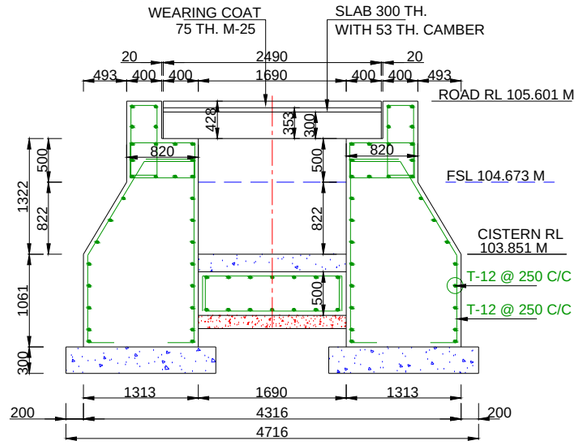
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR MARUKA MR. (OFFTAKE FROM RD -5+730 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-02/ HR 1 of 3



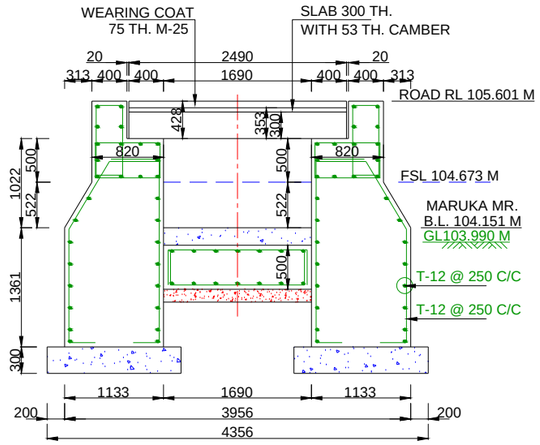
SECTION D-D
(SCALE A)



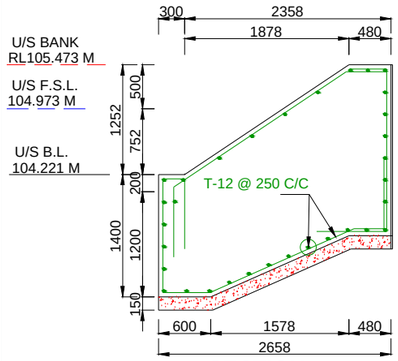
SECTION A-A
(AT CREST)
(SCALE A)



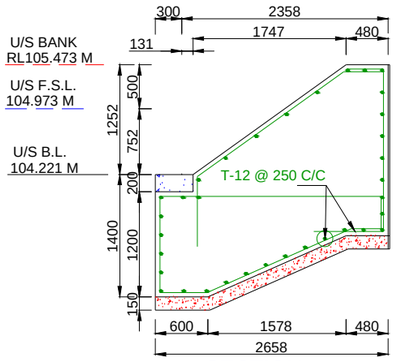
SECTION B-B
(AT CISTERN)
(SCALE A)



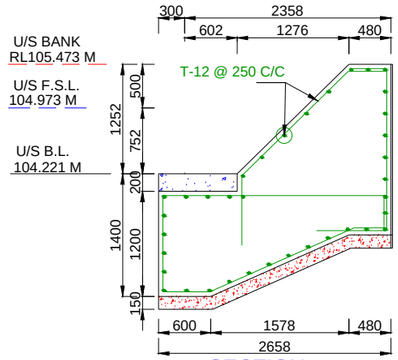
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



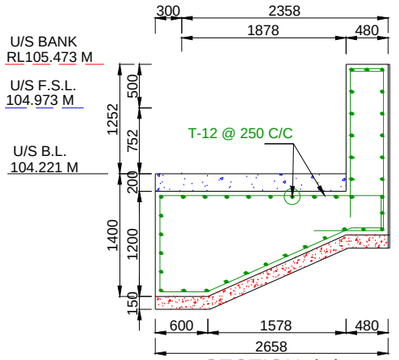
SECTION a-a



SECTION b-b

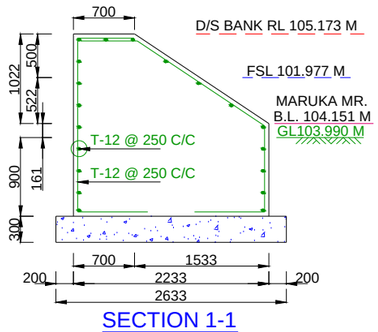


SECTION c-c

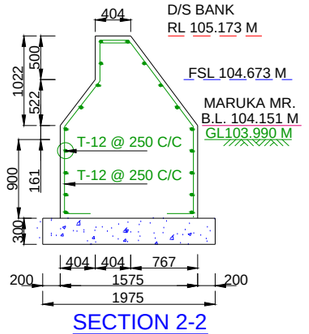


SECTION d-d

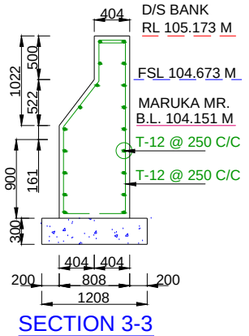
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



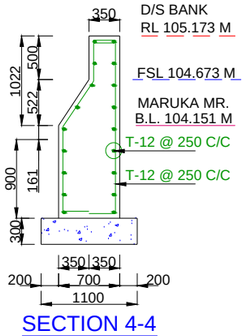
SECTION 1-1



SECTION 2-2

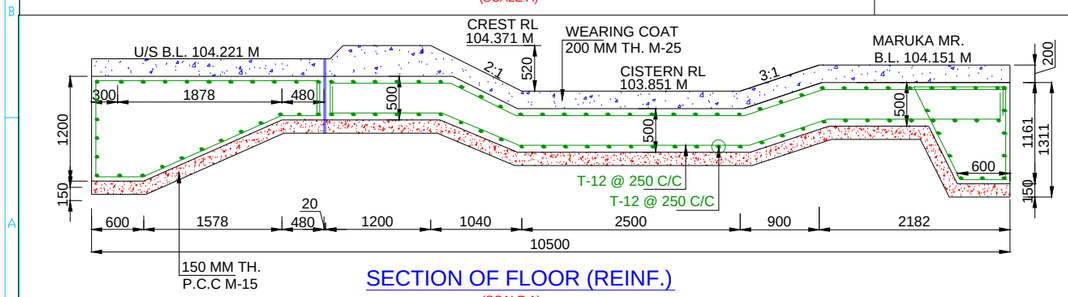


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

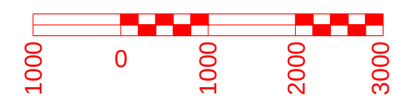


SECTION OF FLOOR (REINF.)
(SCALE A)

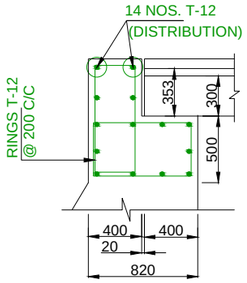
NOTES:-

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

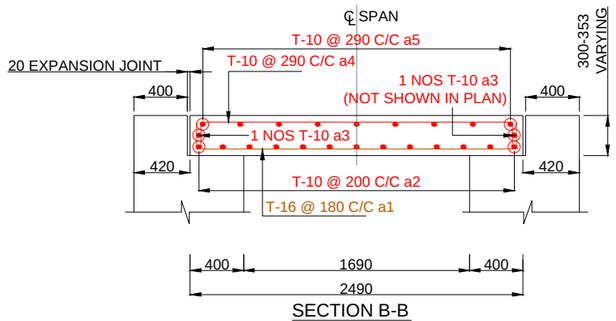
SCALE A:-



Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR MARUKA MR. (OFFTAKE FROM RD -5+730 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-02/ HR 2 of 3



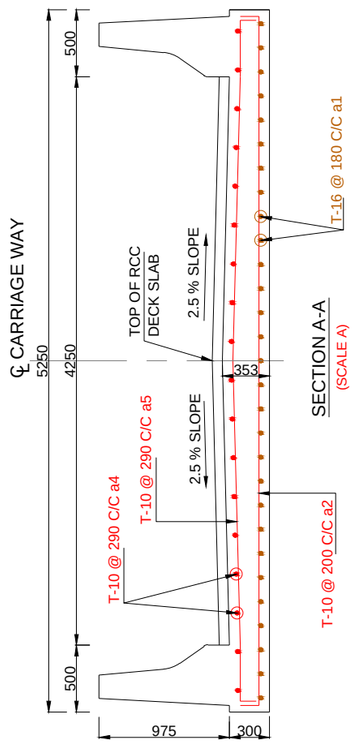
DIRT WALL
(SCALE A)



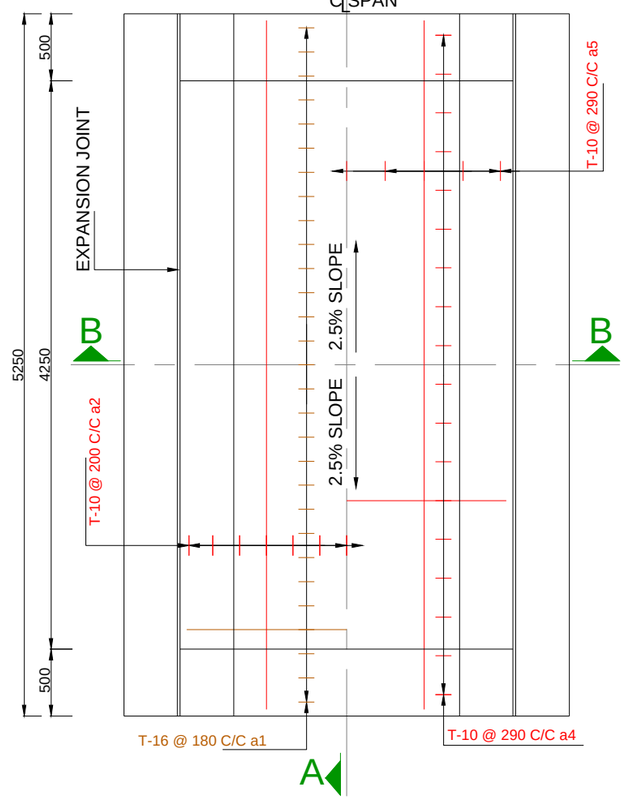
SECTION B-B
(SCALE A)

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	R=60, 200, 2390, 200	16	180	29
2	a2	R=40, 200, 5150, 200	10	200	13
3	a3	5150	10	-	2
4	a4	2390, R=40, 200, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	9
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	20X2
2	x2	75, 540, 350, 300	16	120	20X2
3	x3	2390	10	-	12X2



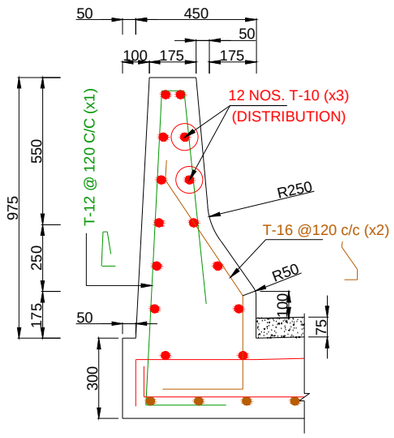
SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



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

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,
   BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (f_y=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

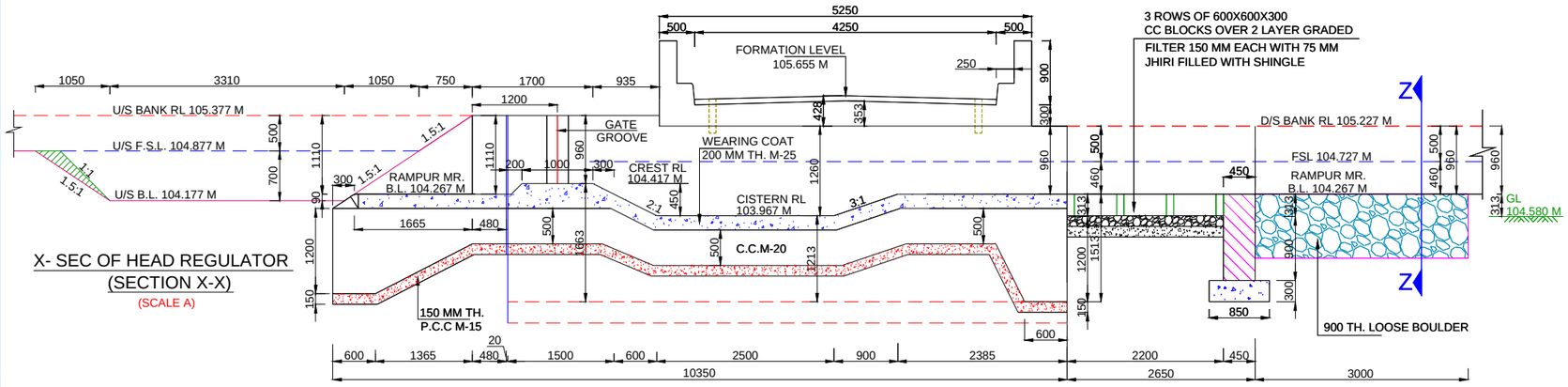
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
    LAP LENGTH = α1. lbnet
    WHERE, α1 = 1.0 for p%≤25%
    α1 = 1.15 for 25%≤p%≤33%
    α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

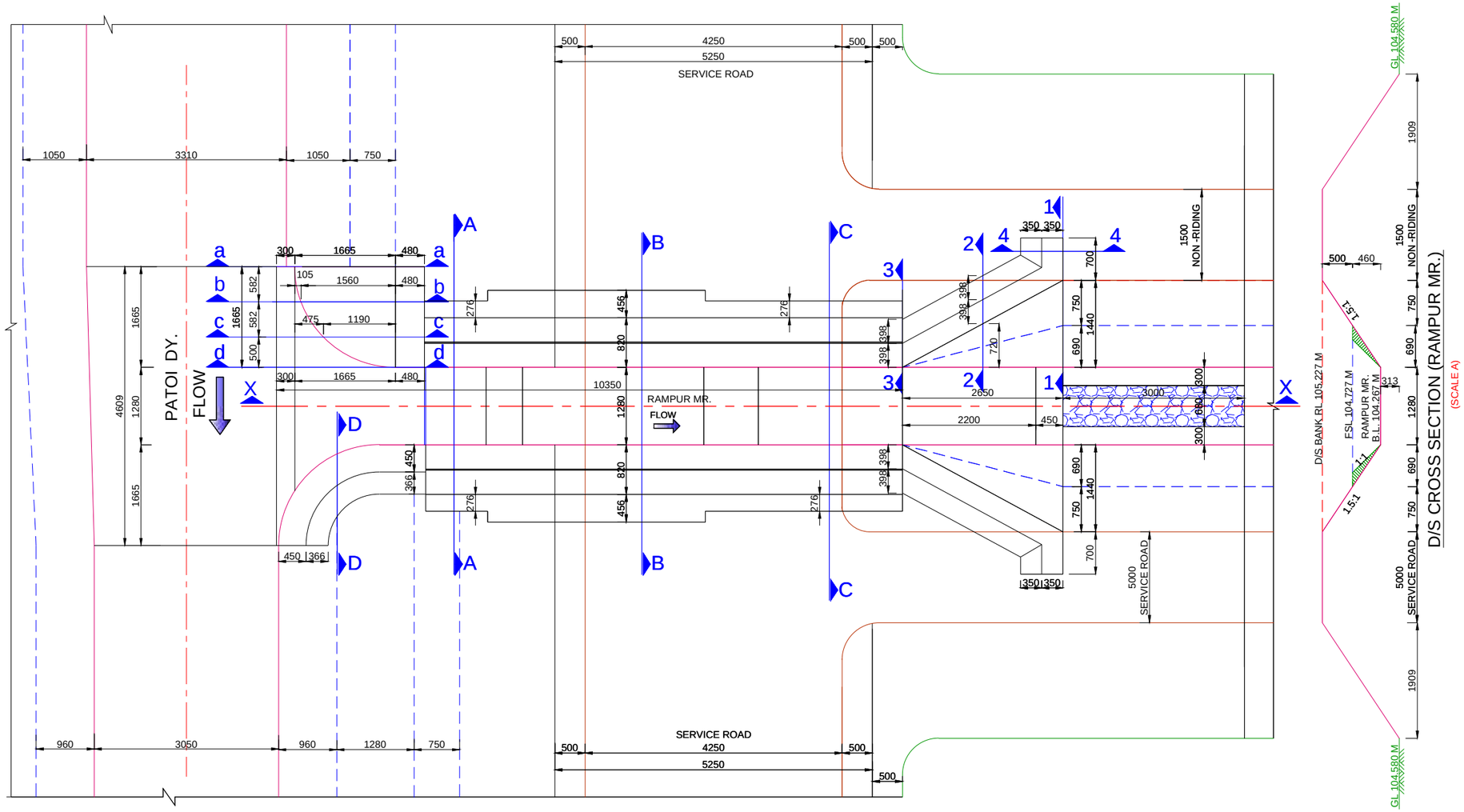
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

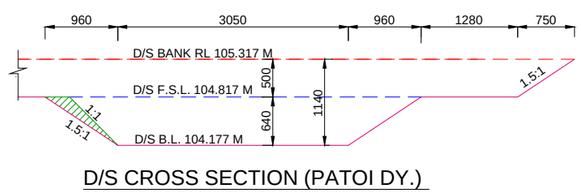
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR MARUKA MR. (OFFTAKE FROM RD -5+730 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-02/ HR 3 of 3



X- SEC OF HEAD REGULATOR
(SECTION X-X)
(SCALE A)



D/S CROSS SECTION (RAMPUR MR.)
(SCALE A)



D/S CROSS SECTION (PATOI DY.)
(SCALE A)

SCALE A:-

1000 0 1000 2000 3000

DESIGN DATA :-

PATOI DY.

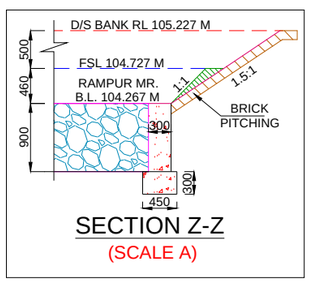
	U/S	D/S
DISCHARGE OF FEEDER	0.980 CUMECS	0.780 CUMECS
BED WIDTH	3.310 M	3.050 M
WATER DEPTH	0.700 M	0.640 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	104.177 M	104.177 M
F.S.L.	104.877 M	104.817 M
GROUND LEVEL	104.580 M	

RAMPUR MR.

CHAINAGE	5.950 M
DISCHARGE	0.205 CUMEC
BED WIDTH	1.280 M
WATER DEPTH	0.460 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	104.267 M
F.S.L.	104.727 M
CREST LEVEL	104.267 M
BED SLOPE	25.0 CM/ KM

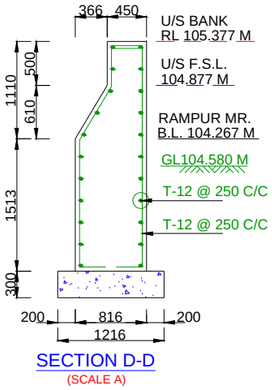
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS M-20
   - C. C.C.BLOCKS AND TOE WALLS M-15
   - D. P.C.C. M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

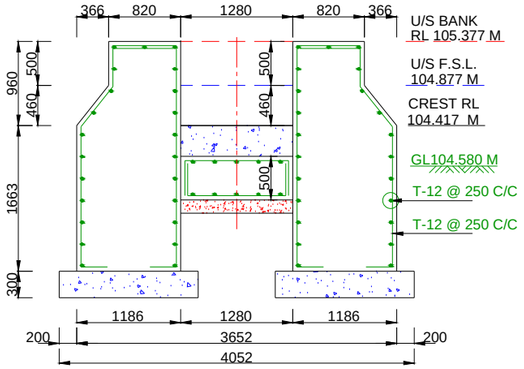


SECTION Z-Z
(SCALE A)

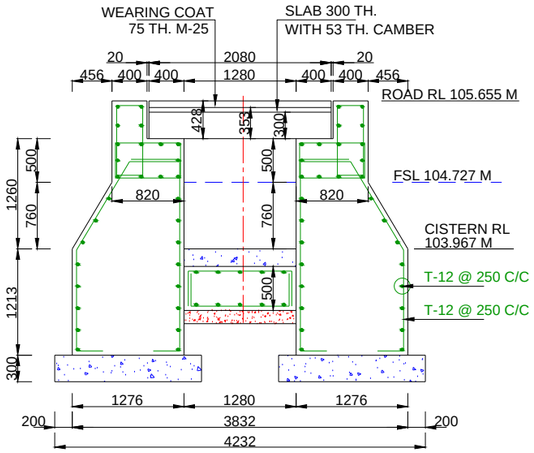
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR RAMPUR MR. (OFFTAKE FROM RD -5+950 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-03/ HR



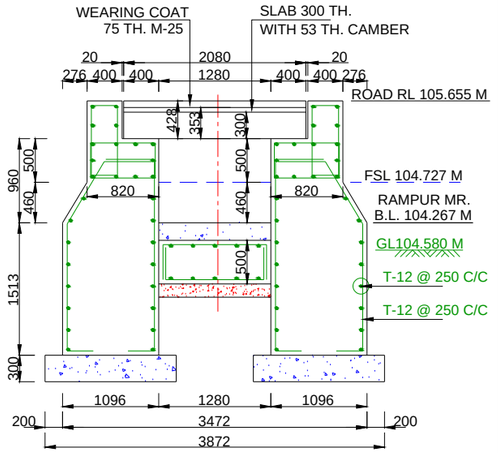
SECTION D-D
(SCALE A)



SECTION A-A
(AT CREST)
(SCALE A)



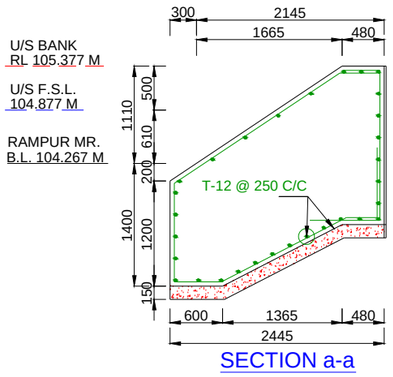
SECTION B-B
(AT CISTERN)
(SCALE A)



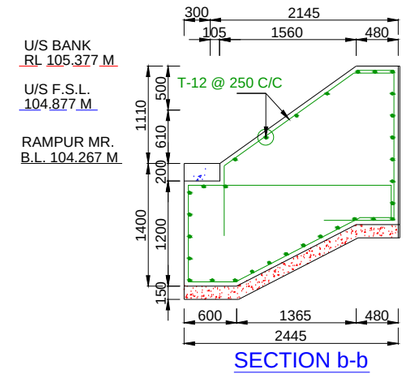
SECTION C-C
(AT D/S FLOOR)
(SCALE A)

NOTES:-

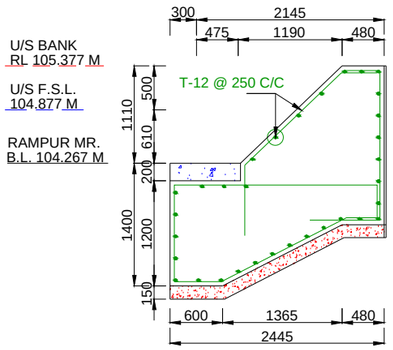
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.



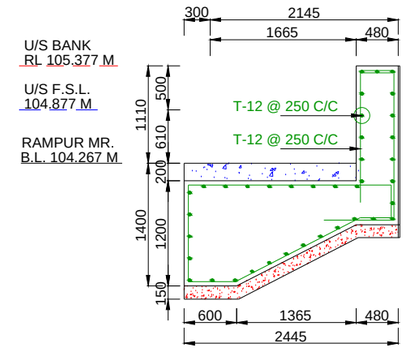
SECTION a-a



SECTION b-b

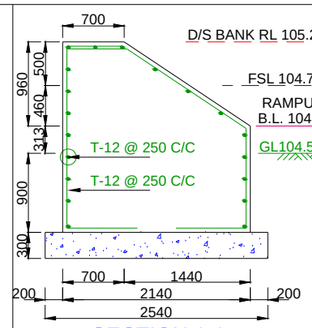


SECTION c-c

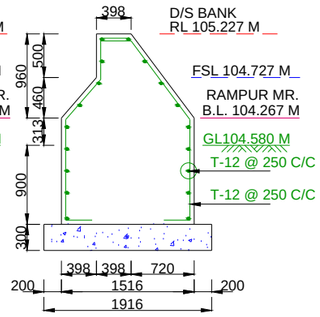


SECTION d-d

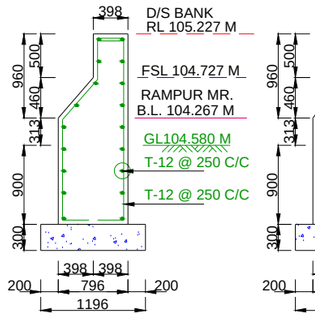
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



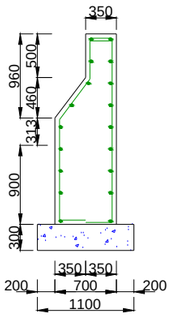
SECTION 1-1



SECTION 2-2

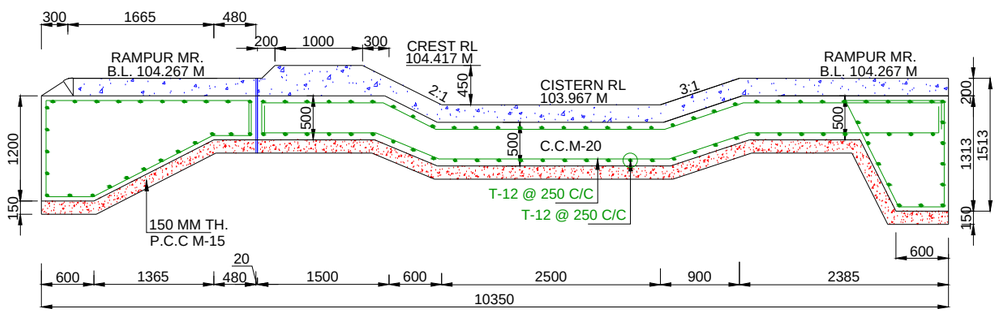


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

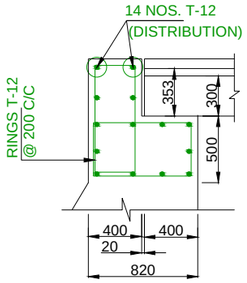


SECTION OF FLOOR (REINF.)
(SCALE A)

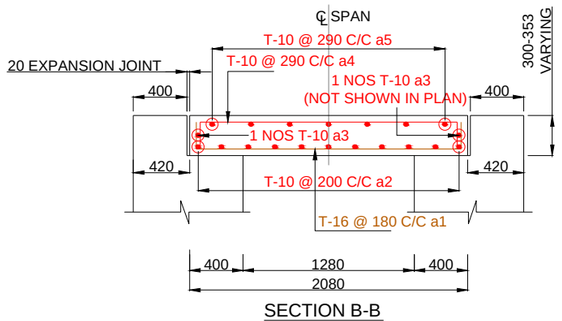
SCALE A:-

1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR RAMPUR MR. (OFFTAKE FROM RD -5+950 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-03/ HR 2 of 3



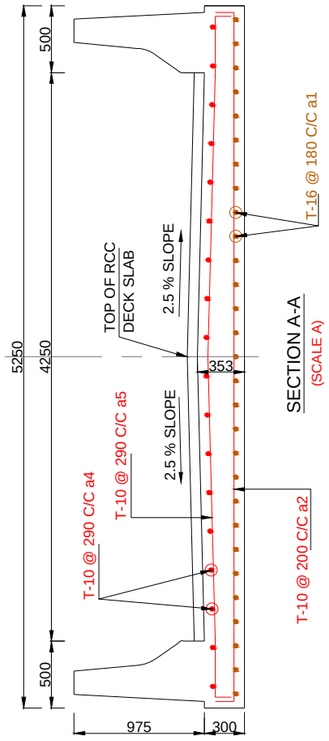
DIRT WALL
(SCALE A)



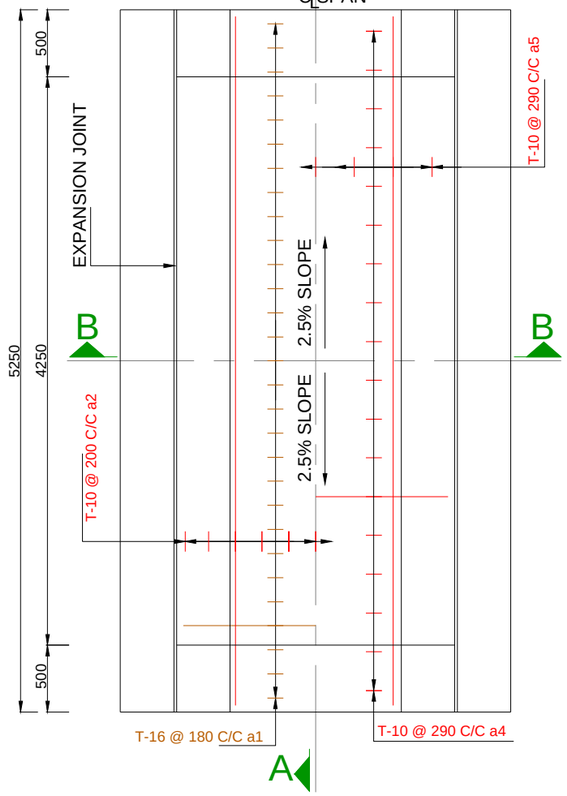
SECTION B-B
(SCALE A)

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	200, R=60, 1980, 200	16	180	29
2	a2	200, R=40, 5150, 200	10	200	11
3	a3	5150	10	-	2
4	a4	1980, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	7
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	17X2
2	x2	75, 540, 350, 300	16	120	17X2
3	x3	1980	10	-	12X2



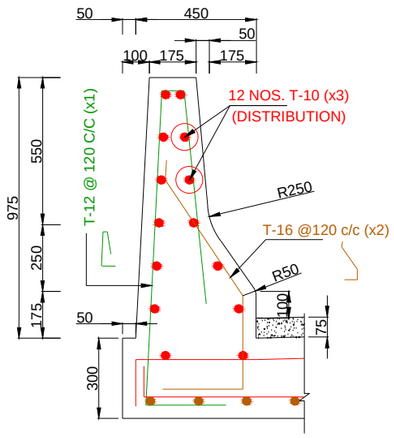
SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



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

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,
   BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

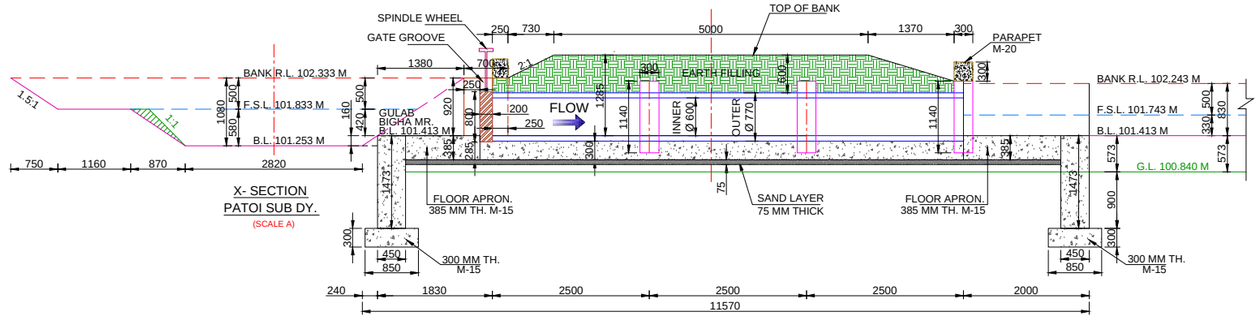
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

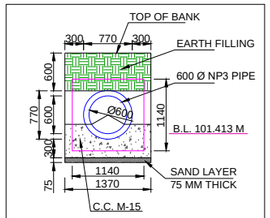
16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
    LAP LENGTH = $\alpha 1$. lbnet
    WHERE, $\alpha 1$ = 1.0 for p%≤25%
    $\alpha 1$ = 1.15 for 25%≤p%≤33%
    $\alpha 1$ = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:-

SCALE B:-

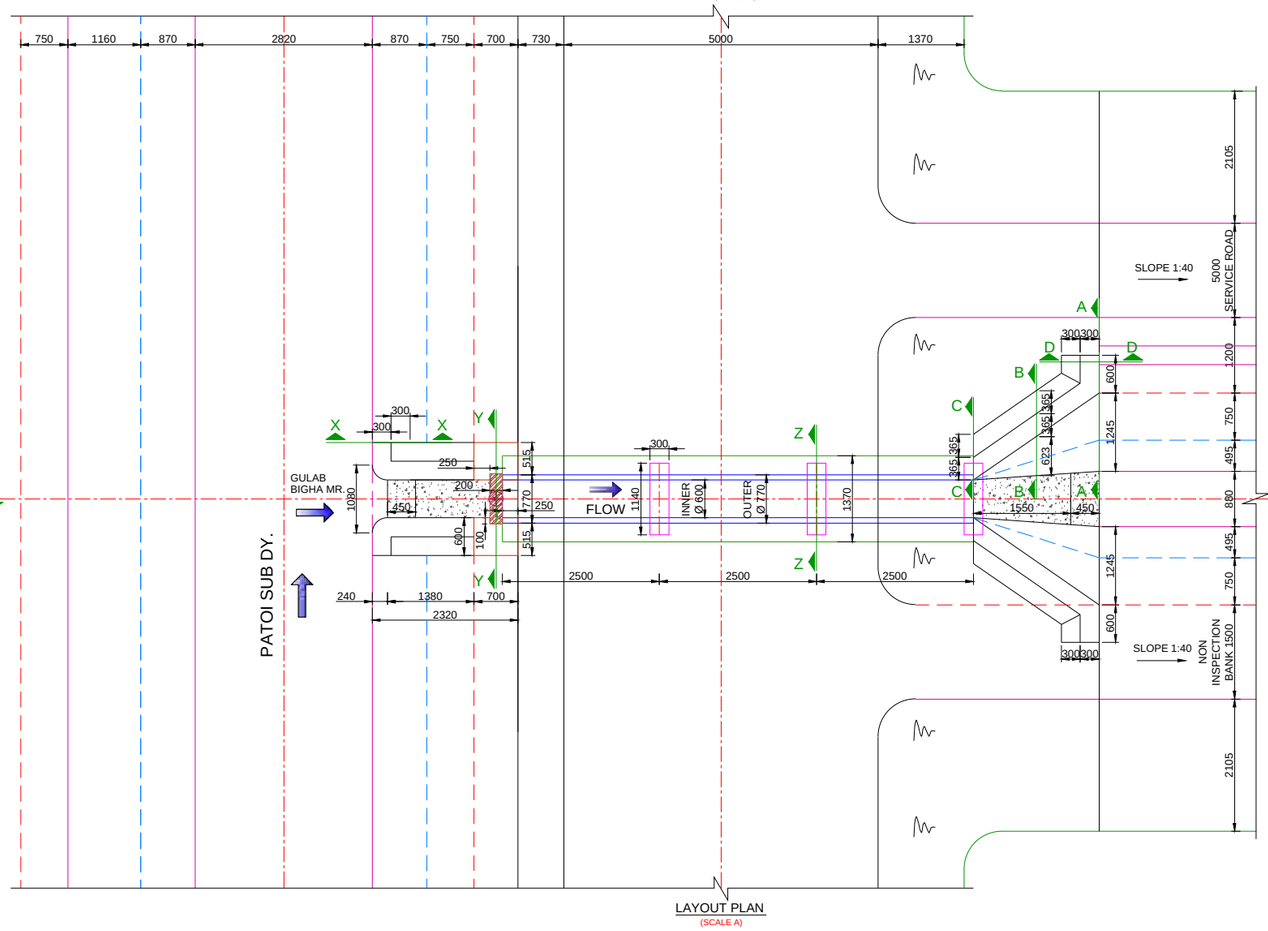
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR RAMPUR MR. (OFFTAKE FROM RD -5+950 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-03/ HR 3 of 3

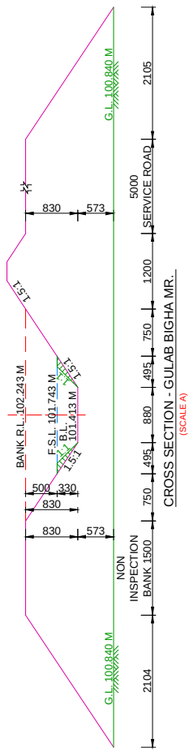




DESIGN DATA :-

PATOI SUB DY.	
DISCHARGE OF FEEDER	0.61 CUMEC
BED WIDTH	2.820 M
WATER DEPTH	0.580 M
FREE BOARD	0.500 M
BED LEVEL	101.253 M
F.S.L.	101.833 M
GROUND LEVEL	100.840 M
GULAB BIGHA MR.	
CHAINAGE	8.400 KM
DISCHARGE	0.08 CUMEC/ 2.90 CUSEC
BED WIDTH	0.880 M
WATER DEPTH	0.330 M
SIDE SLOPE	1.5:1
FREE BOARD	0.500 M
BED LEVEL	101.413 M
F.S.L.	101.743 M
BED SLOPE	25.6 CM/KM
INTERNAL DIA OF PIPE	0.600 M



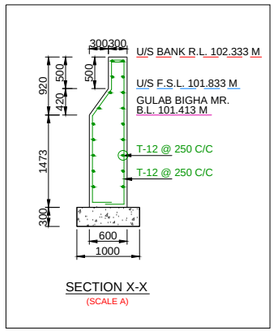


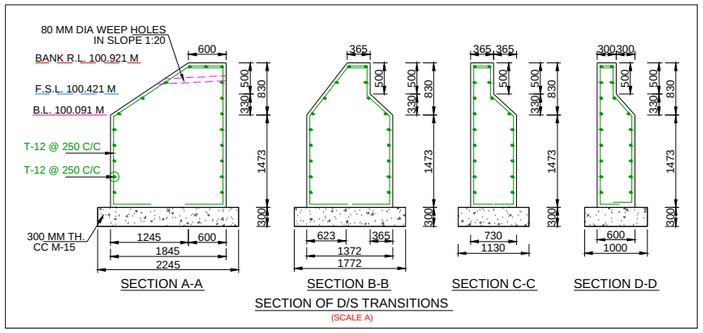
NOTES:-

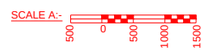
1. AS PER UPID DESIGN CRITERIA, PIPE HEAD REGULATOR SHOULD BE CONSTRUCTED FOR DISTRIBUTARIES & MONIRS HAVING DISCHARGE LESS THAN 0.40 CUMEC.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-2015
     - b. IS: 6531-1994
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1994, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VI. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-

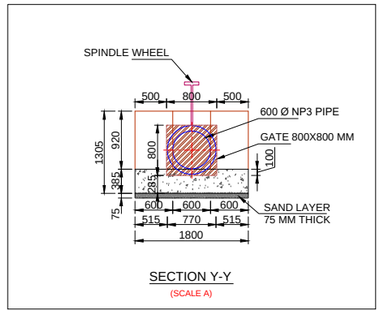
A. FLOOR, ABUTMENT AND TRANSITIONS	M-20
B. TOE WALLS	M-15
C. P.C.C.	M-15
D. PIPE	NP-3

5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.

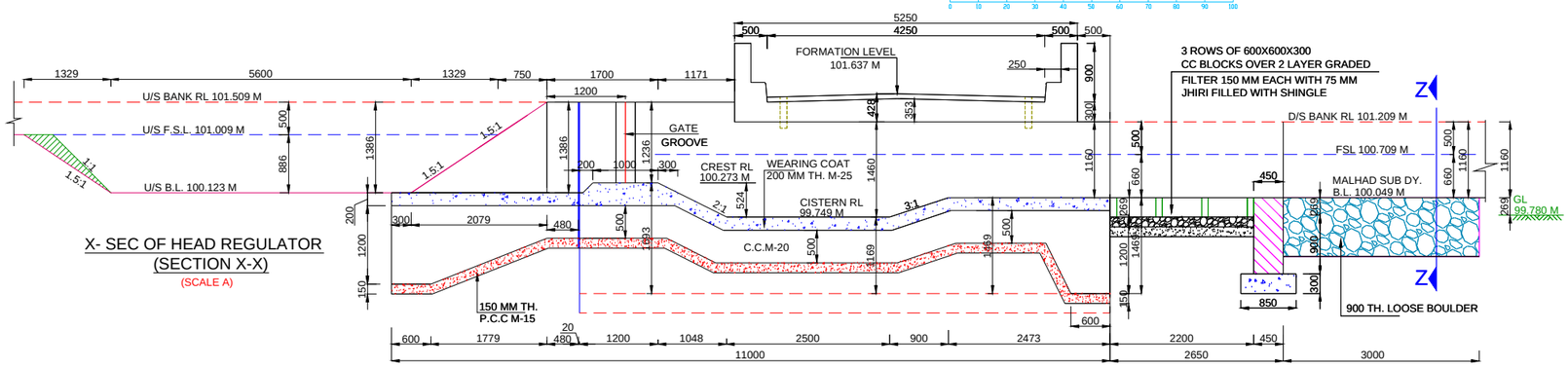




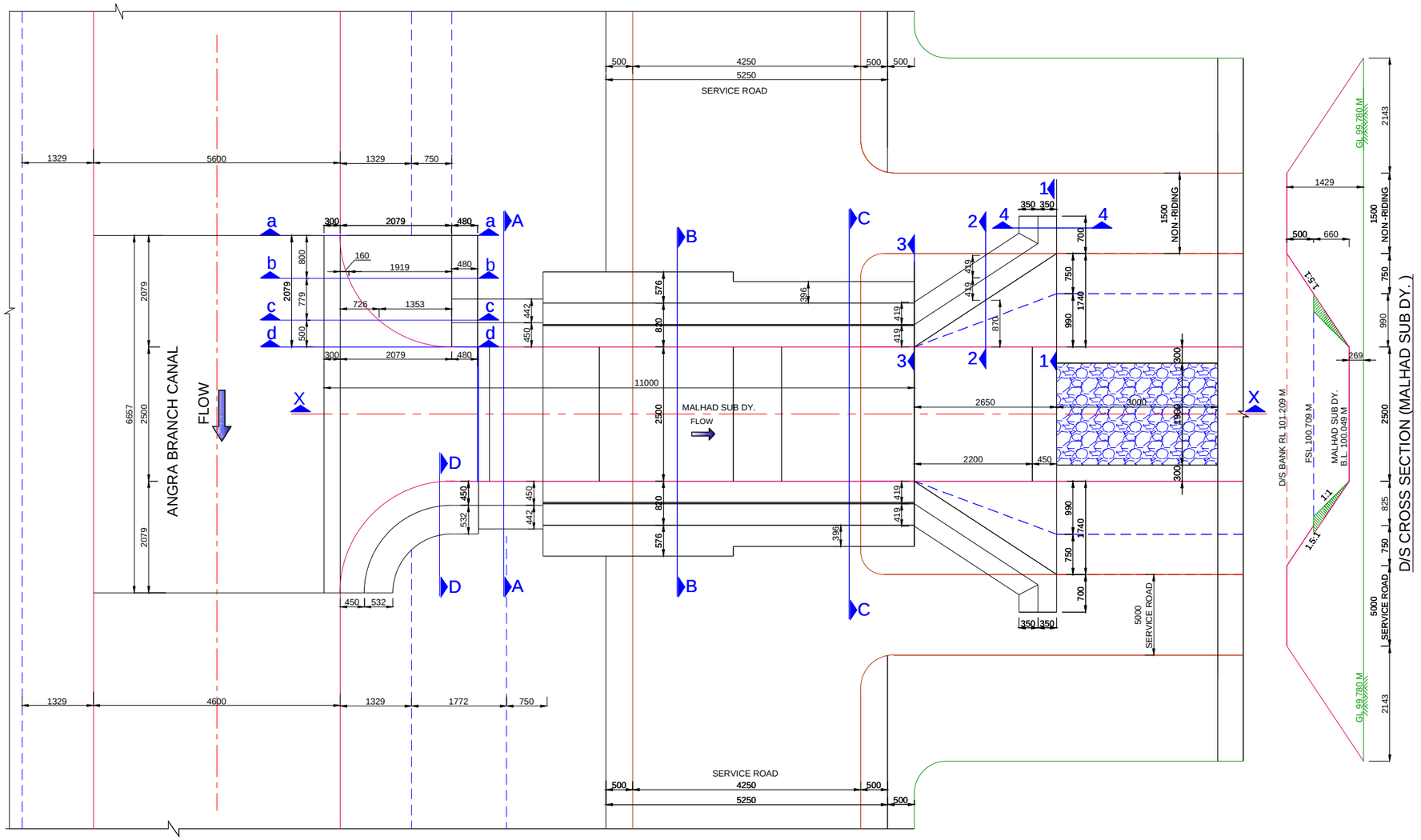




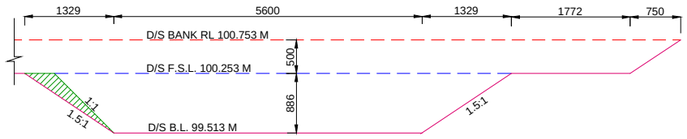
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF HEAD REGULATOR OF GULAB BIGHA MR. (OFFTAKE FROM RD -8+400 KM., PATOI DY.)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09-04/HR 1 of 1



X- SEC OF HEAD REGULATOR
(SECTION X-X)
(SCALE A)



D/S CROSS SECTION (MALHAD SUB DY.)
(SCALE A)



D/S CROSS SECTION (ANGRA BRANCH CANAL)
(SCALE A)

DESIGN DATA :-

ANGRA BRANCH CANAL

	U/S	D/S
DISCHARGE OF FEEDER	2.420 CUMECS	
BED WIDTH	5.600 M	
WATER DEPTH	0.886 M	
FREE BOARD	0.500 M	
BED LEVEL	100.123 M	99.513 M
F.S.L.	101.009 M	100.399 M
GROUND LEVEL	99.780 M	

MALHAD SUB DY.

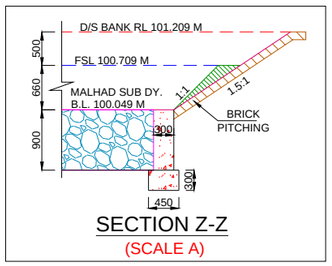
CHAINAGE	26.970 M
DISCHARGE	0.692 CUMEC
BED WIDTH	2.500 M
WATER DEPTH	0.660 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	100.049 M
F.S.L.	100.709 M
CREST LEVEL	100.273 M
BED SLOPE	21.74 CM/ KM

NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-

A. SLAB, CRASH BARRIER AND WEARING COAT	M-25
B. FLOOR, ABUTMENT AND TRANSITIONS	M-20
C. C.C.BLOCKS AND TOE WALLS	M-15
D. P.C.C.	M-15

5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

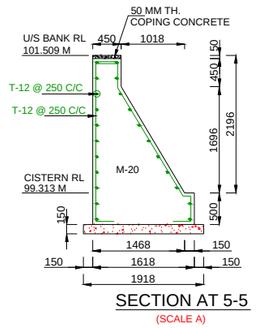


SECTION Z-Z
(SCALE A)

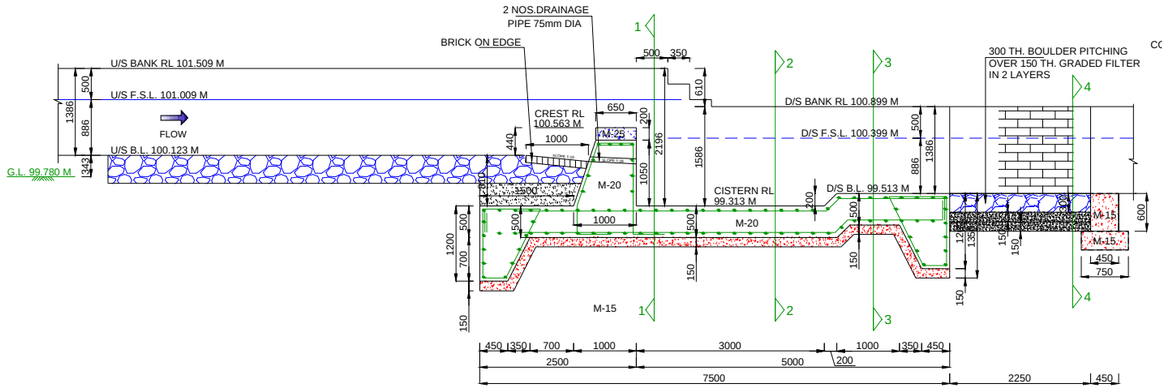
SCALE A:-

1000 0 1000 2000 3000

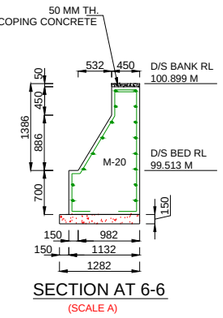
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR MALHAD SUB DY. (OFFTAKE FROM RD - 26+970 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-10/ HR CUM FALL 1 of 4



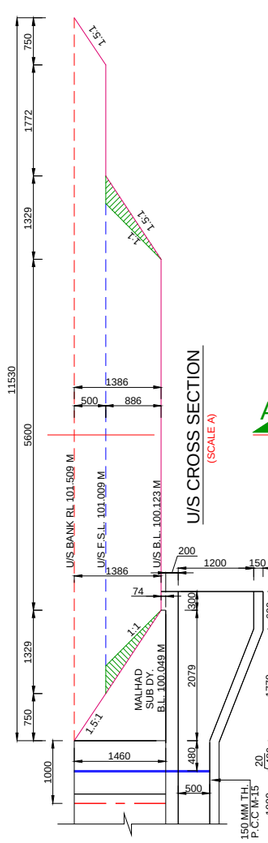
SECTION AT 5-5
(SCALE A)

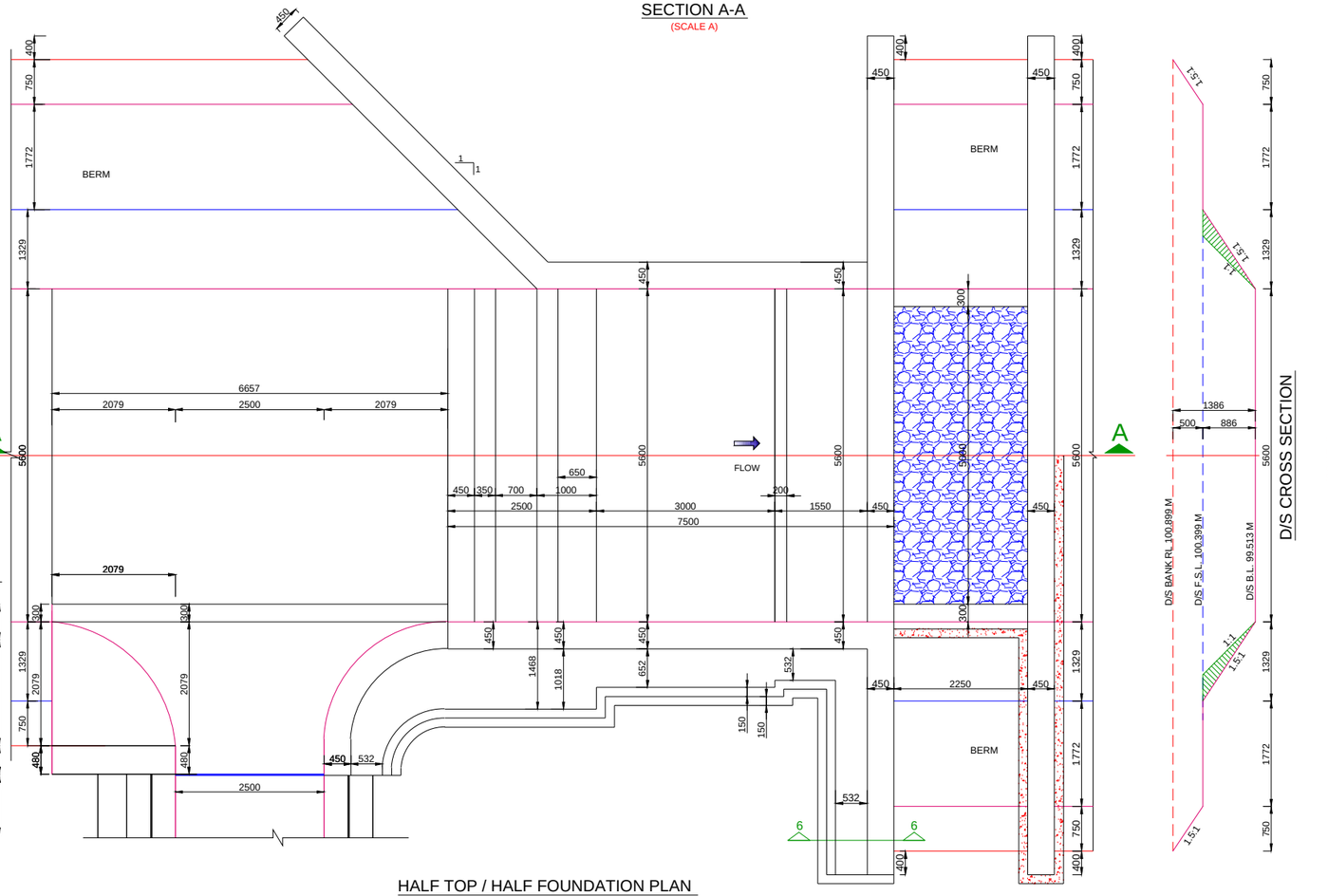


SECTION A-A
(SCALE A)

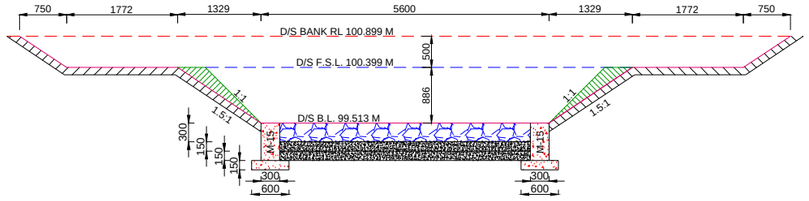


SECTION AT 6-6
(SCALE A)





HALF TOP / HALF FOUNDATION PLAN
(SCALE A)



SECTION AT 4-4
(SCALE A)

SCALE A:-
1000 0 1000 2000 3000

NOTES:-

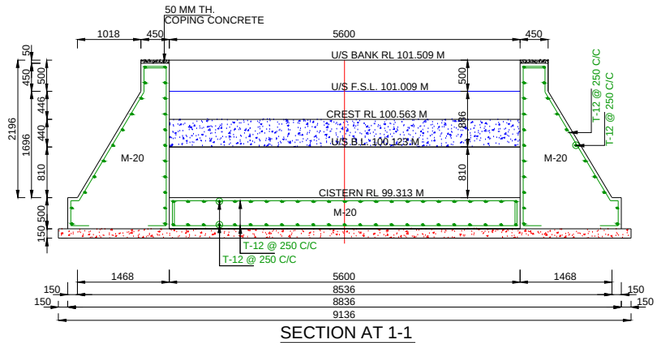
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

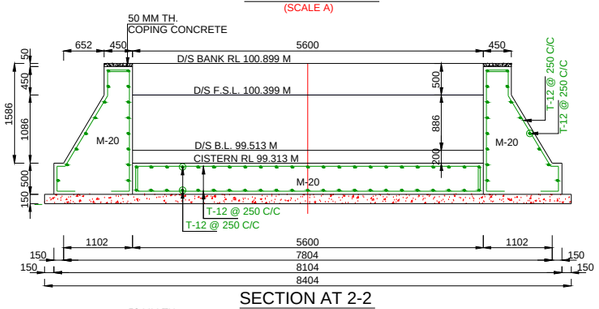
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

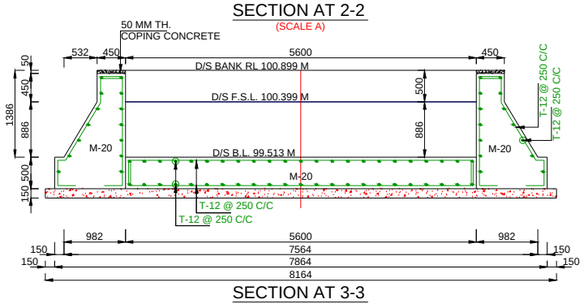
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	2.420	2.420	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.886	0.886	METRE
BED WIDTH	5.600	5.600	METRE
BED SLOPE	1 : 4600	1 : 4600	



SECTION AT 1-1
(SCALE A)

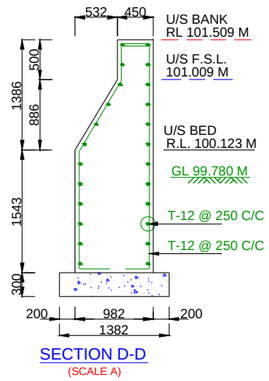


SECTION AT 2-2
(SCALE A)

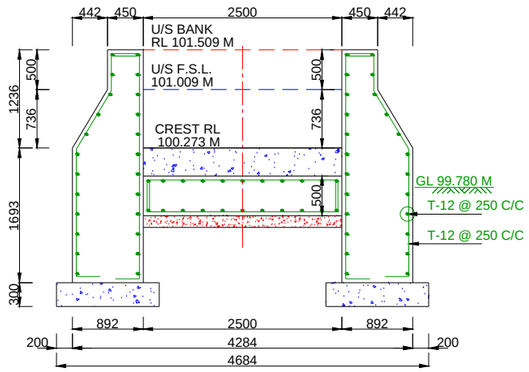


SECTION AT 3-3
(SCALE A)

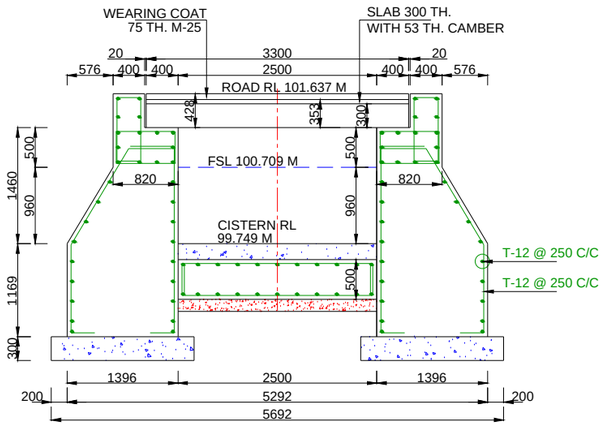
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 26.970 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-10/ HR CUM FALL 2 of 4



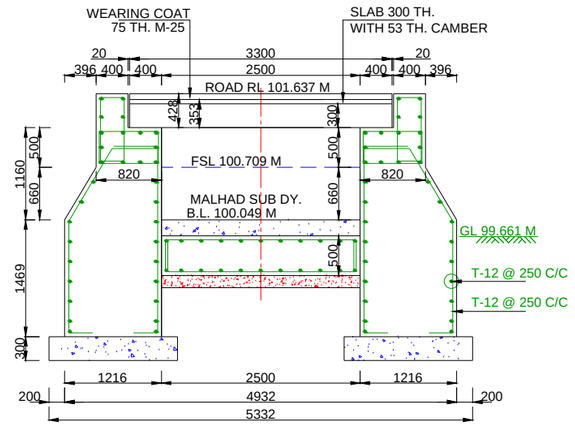
SECTION D-D
(SCALE A)



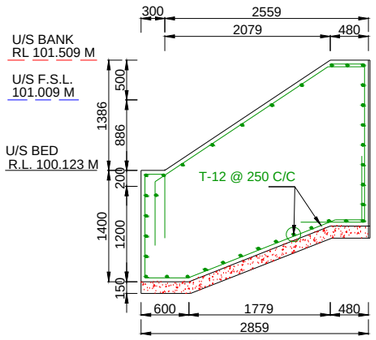
SECTION A-A
(AT CREST)
(SCALE A)



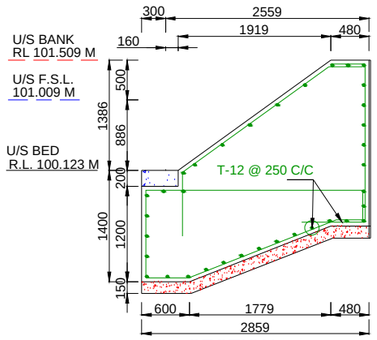
SECTION B-B
(AT CISTERN)
(SCALE A)



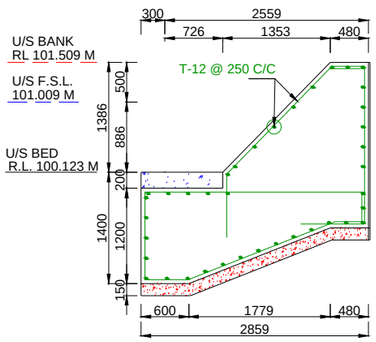
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



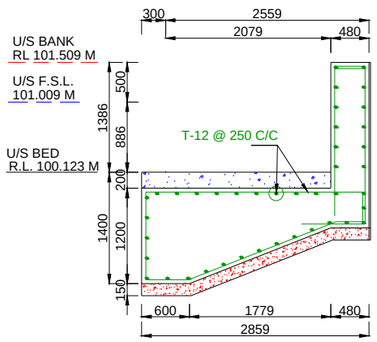
SECTION a-a



SECTION b-b

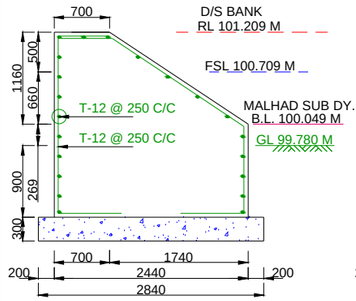


SECTION c-c

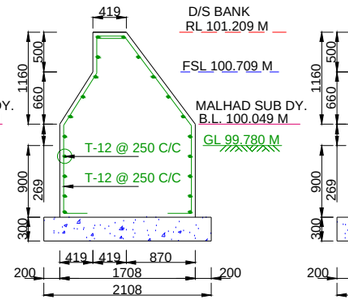


SECTION d-d

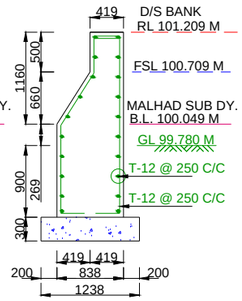
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



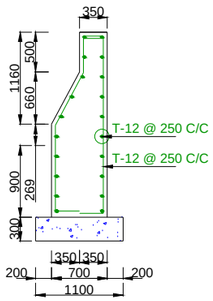
SECTION 1-1



SECTION 2-2

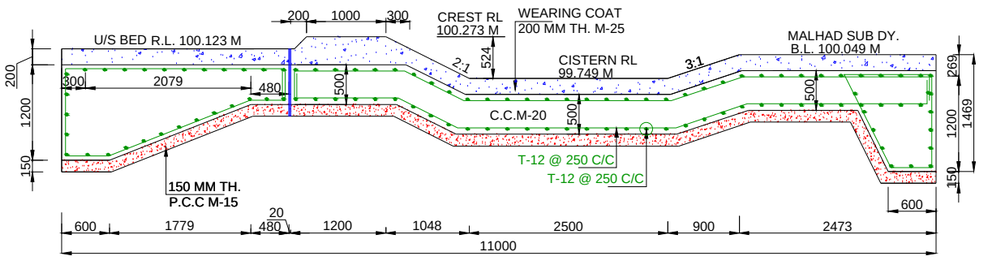


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

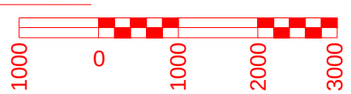


SECTION OF FLOOR (REINF.)
(SCALE A)

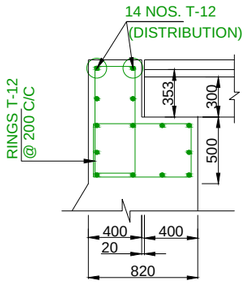
NOTES:-

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

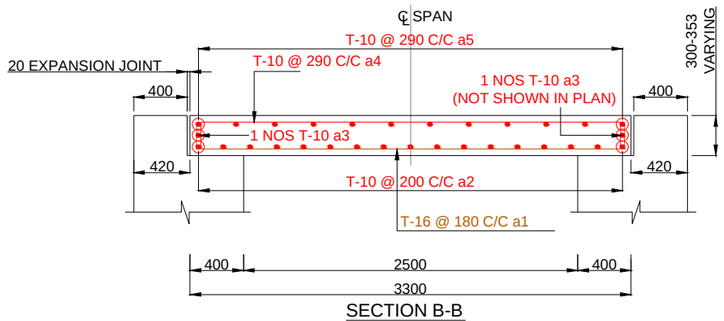
SCALE A:-



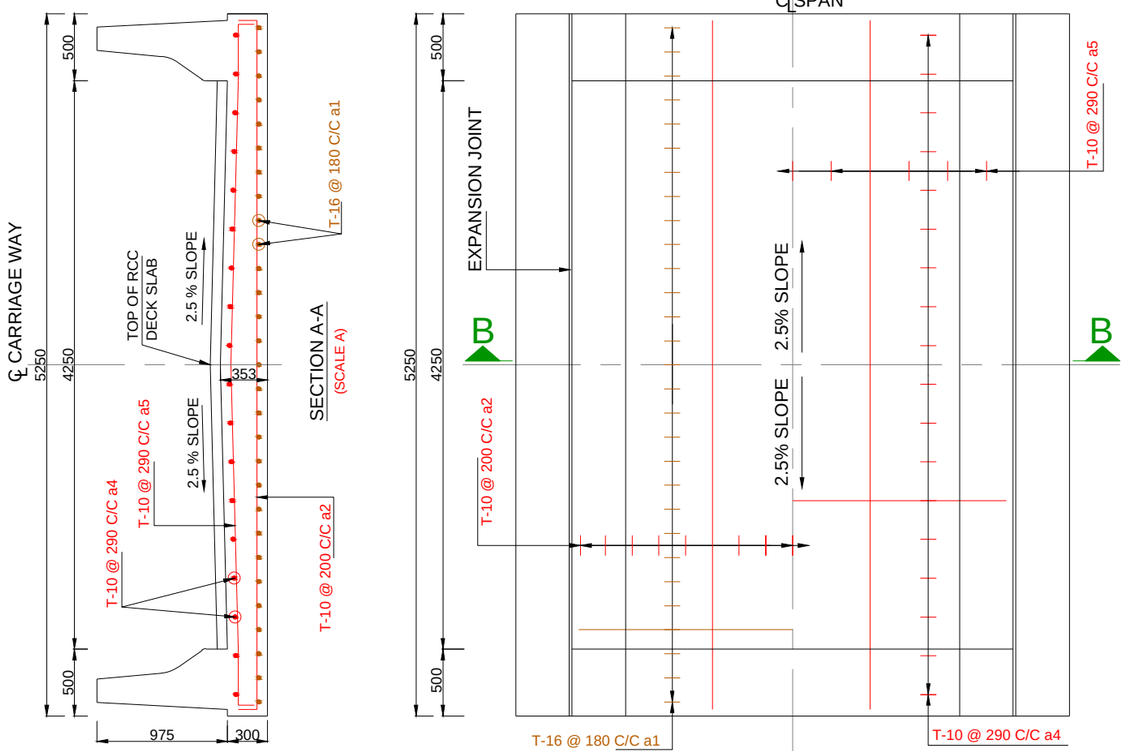
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR MALHAD SUB DY. (OFFTAKE FROM RD - 26+970 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-10/ HR CUM FALL 3 of 4



DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

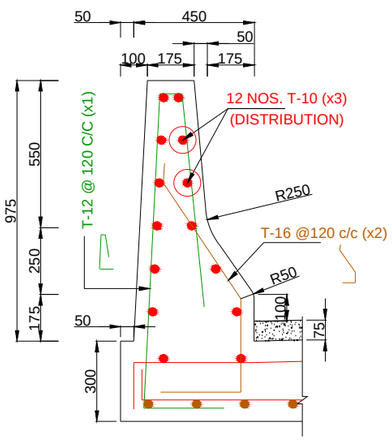
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

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	200, R=60, 3200, 200	16	180	29
2	a2	200, R=40, 5150, 200	10	200	17
3	a3	5150	10	-	2
4	a4	3200, 200, R=40, 200	10	290	18
5	a5	450, 2125, 2125, 450, 200, 200	10	290	12
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	27X2
2	x2	75, 540, 350, 300	16	120	27X2
3	x3	3200	10	-	12X2



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

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

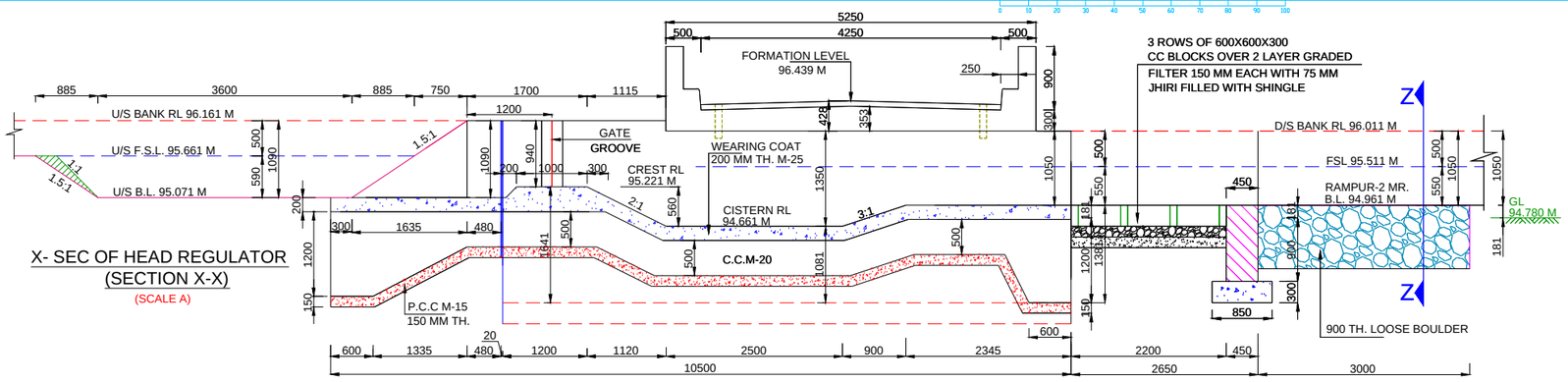
DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

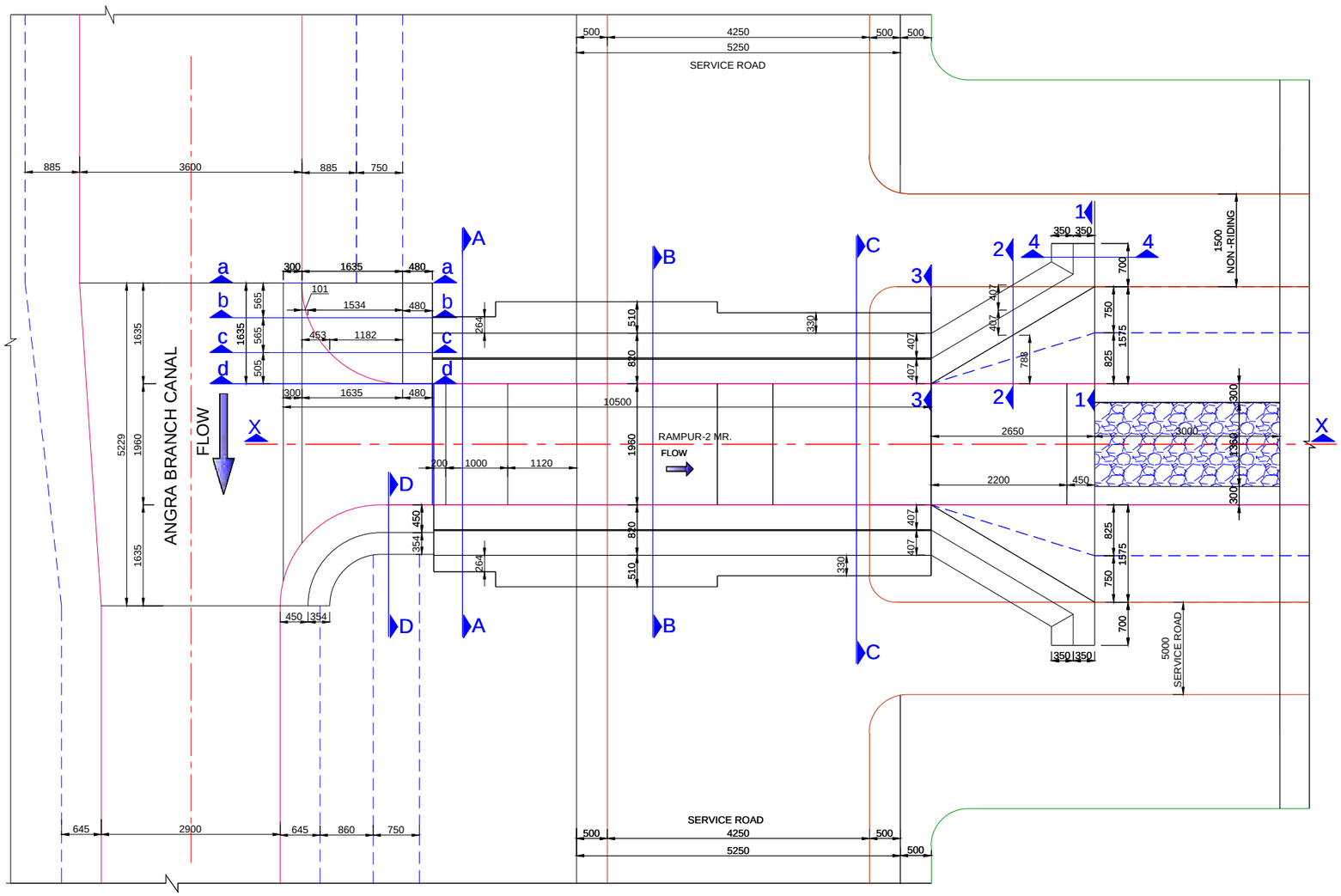
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

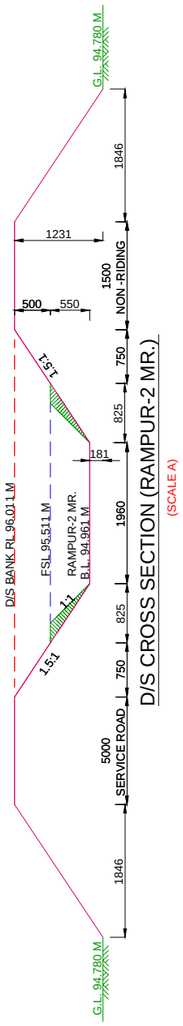
16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR MALHAD SUB DY. (OFFTAKE FROM RD -26+970 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-10/ HR 4 of 4

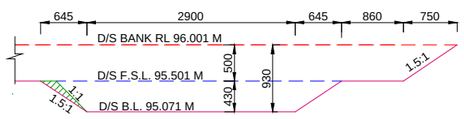


X- SEC OF HEAD REGULATOR
(SECTION X-X)
(SCALE A)





D/S CROSS SECTION (RAMPUR-2 MR.)
(SCALE A)



D/S CROSS SECTION (ANGRA BRANCH CANAL)
(SCALE A)

SCALE A:-

DESIGN DATA :-
ANGRA BRANCH CANAL

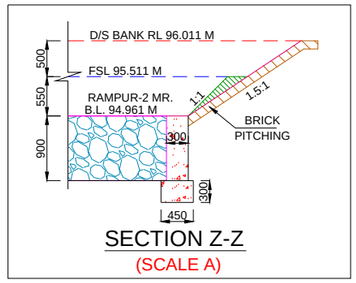
	U/S	D/S
DISCHARGE OF FEEDER	0.780 CUMECS	0.380 CUMECS
BED WIDTH	3.600 M	2.900 M
WATER DEPTH	0.590 M	0.430 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	95.071 M	95.071 M
F.S.L.	95.661 M	95.501 M
GROUND LEVEL	96.439 M	

RAMPUR MR-II

CHAINAGE	31.530 M
DISCHARGE	0.410 CUMEC
BED WIDTH	1.960 M
WATER DEPTH	0.550 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	94.961 M
F.S.L.	95.511 M
CREST LEVEL	95.071 M
BED SLOPE	25.40 CM/ KM

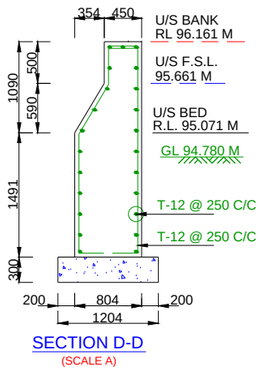
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

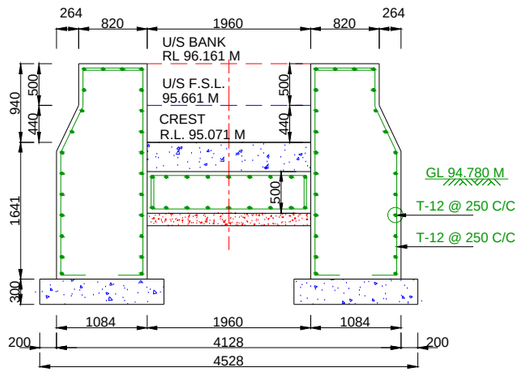


SECTION Z-Z
(SCALE A)

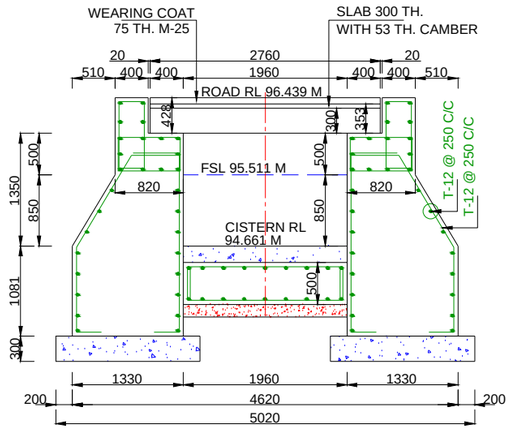
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR RAMPUR MR-II (OFFTAKE FROM RD -31+530 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-11/ HR — 1 of 3



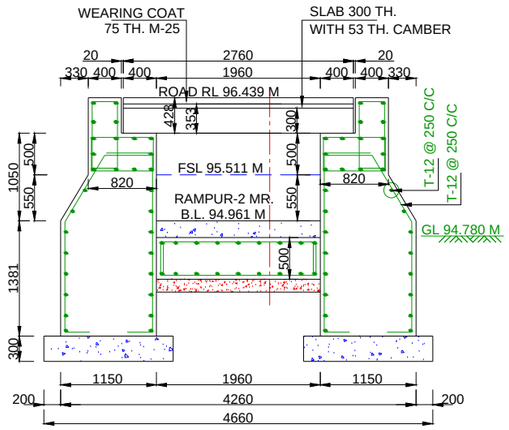
SECTION D-D
(SCALE A)



SECTION A-A
(AT CREST)
(SCALE A)



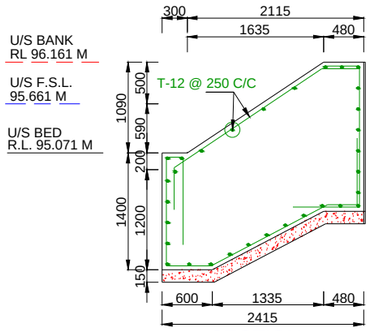
SECTION B-B
(AT CISTERN)
(SCALE A)



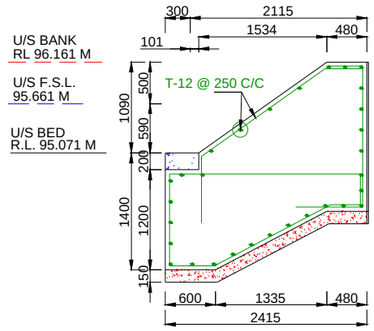
SECTION C-C
(AT D/S FLOOR)
(SCALE A)

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.



SECTION a-a

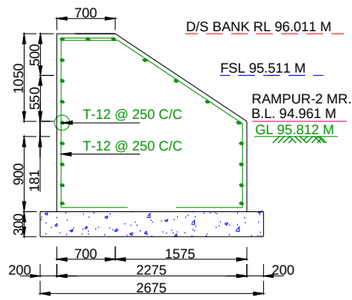


SECTION b-b

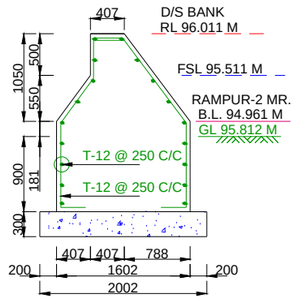
SECTION c-c

SECTION d-d

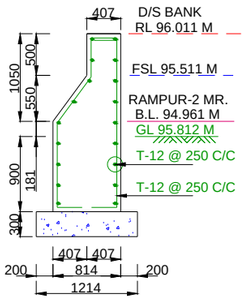
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



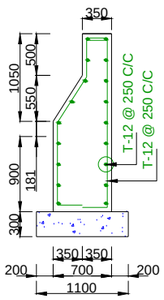
SECTION 1-1



SECTION 2-2

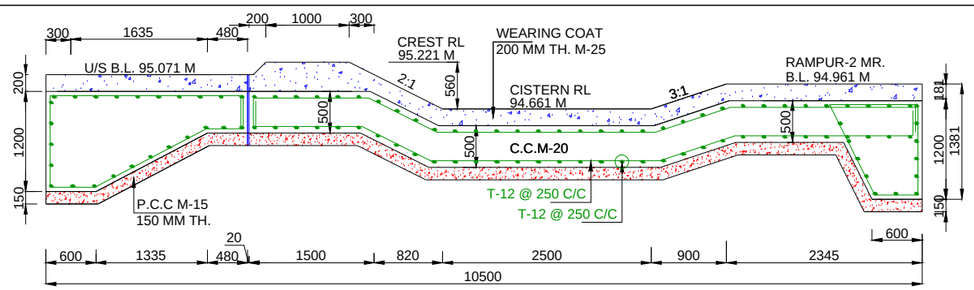


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

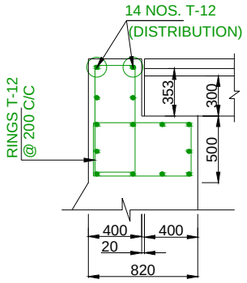


SECTION OF FLOOR (REINF.)
(SCALE A)

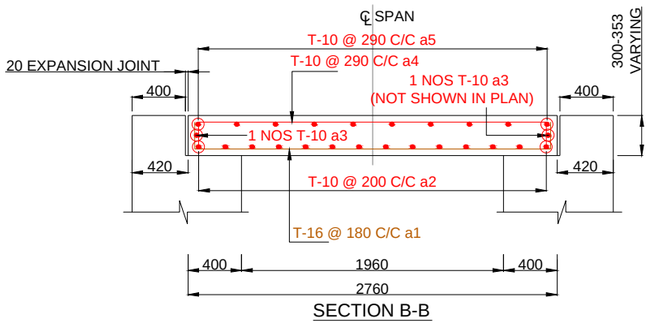
SCALE A:-

1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR RAMPUR MR-II (OFFTAKE FROM RD -31+530 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-11/ HR 2 of 3



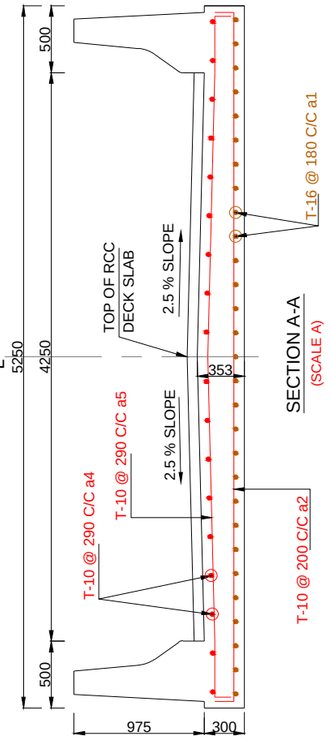
DIRT WALL
(SCALE A)



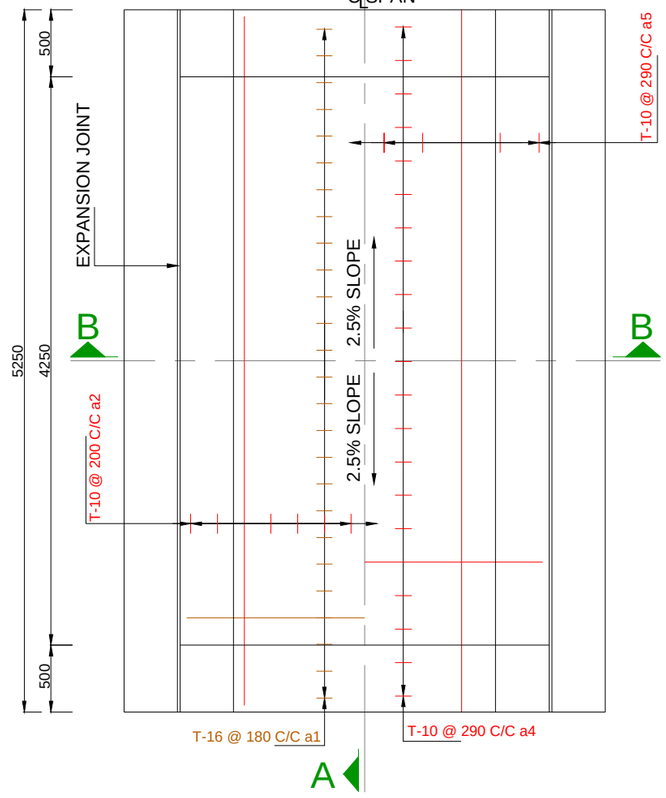
SECTION B-B
(SCALE A)

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	R=60, 200, 2660, 200	16	180	29
2	a2	R=40, 200, 5150, 200	10	200	14
3	a3	5150	10	-	2
4	a4	2660, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	10
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	23X2
2	x2	75, 540, 350, 300	16	120	23X2
3	x3	2660	10	-	12X2

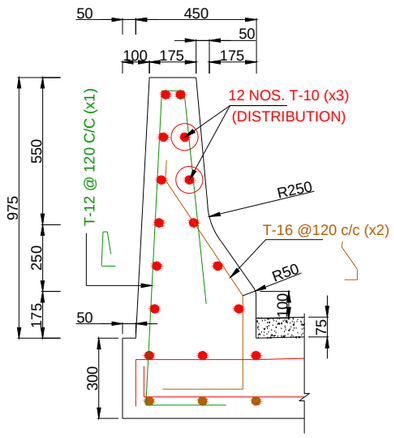


SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT — TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



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

SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

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,
   BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)

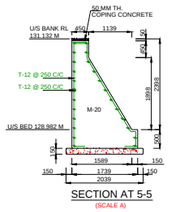
TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

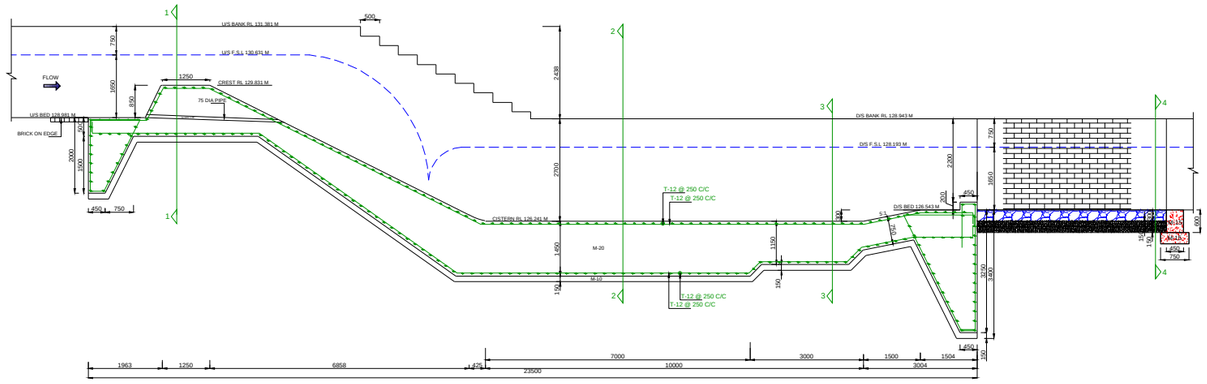
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

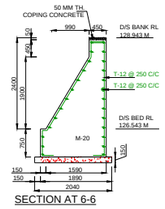
16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
    LAP LENGTH = $\alpha 1$. lbnet
    WHERE, $\alpha 1$ = 1.0 for p%≤25%
    $\alpha 1$ = 1.15 for 25%≤p%≤33%
    $\alpha 1$ = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR RAMPUR MR-II (OFFTAKE FROM RD - 31+530 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-11/ HR 3 of 3

DRAWING OF FALL







NOTES:-

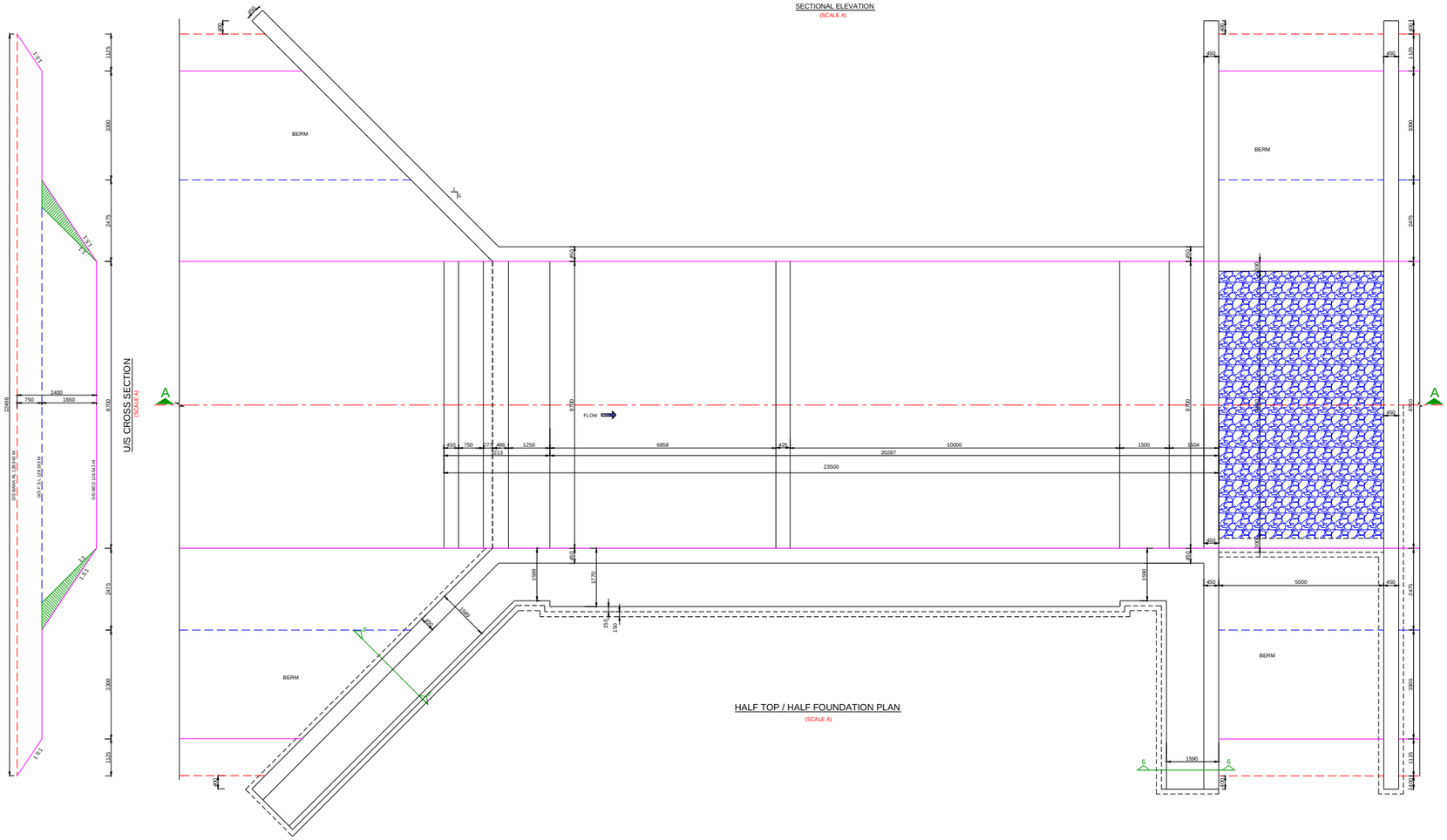
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

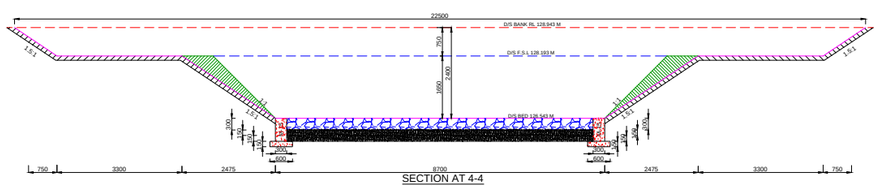
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

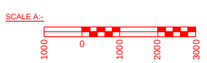
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

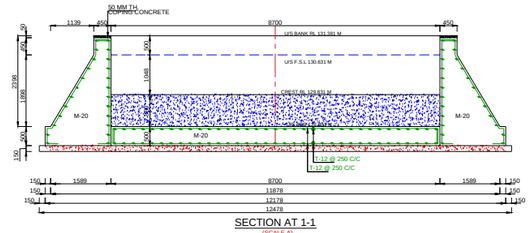
HYDRAULIC:- DATA

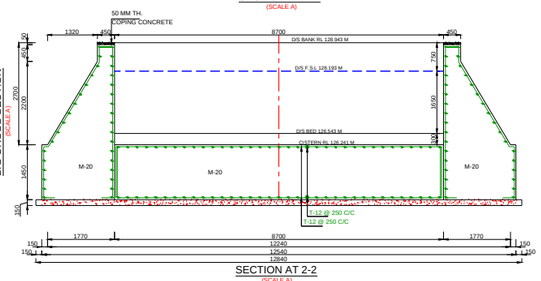
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	10.340	10.340	CUMEC
VERTICAL DROP	2.438	2.438	METRE
FULL SUPPLY DEPTH	1.650	1.650	METRE
BED WIDTH	8.700	8.700	METRE
BED SLOPE	1 : 6000	1 : 6000	

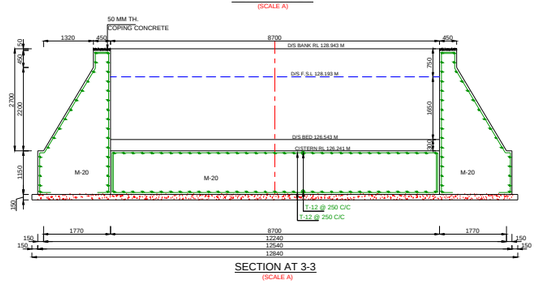




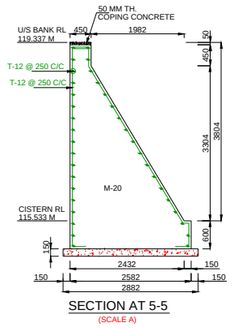




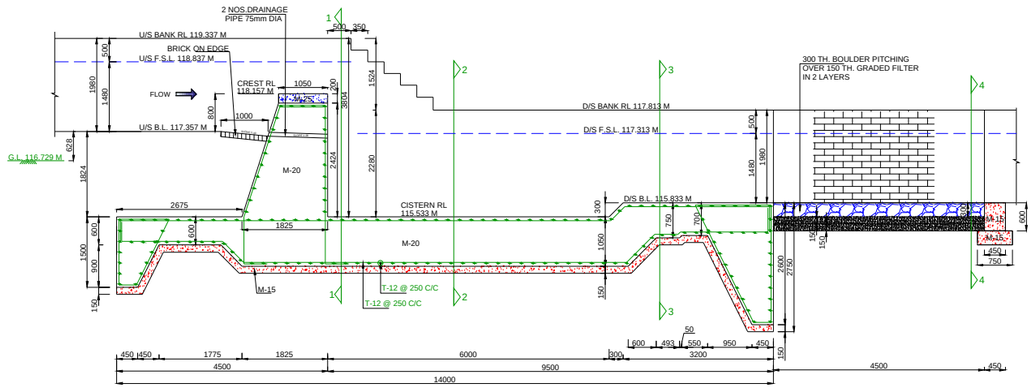




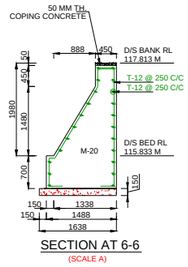
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 2.440 M HT. FALL AT KM. 1.676 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)

NOTES:-

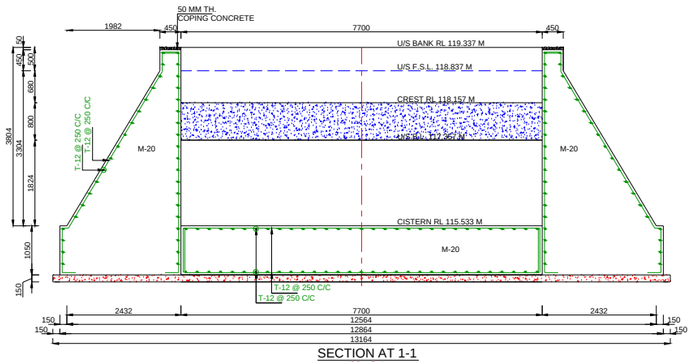
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

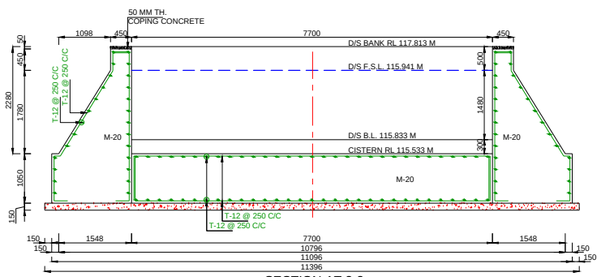
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

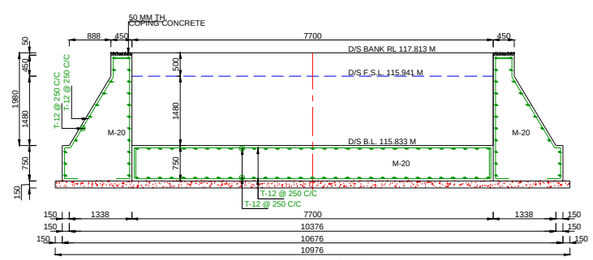
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	7.760	7.760	CUMEC
VERTICAL DROP	1.524	1.524	METRE
FULL SUPPLY DEPTH	1.480	1.480	METRE
BED WIDTH	7.700	7.700	METRE
BED SLOPE	1 : 5800	1 : 5800	



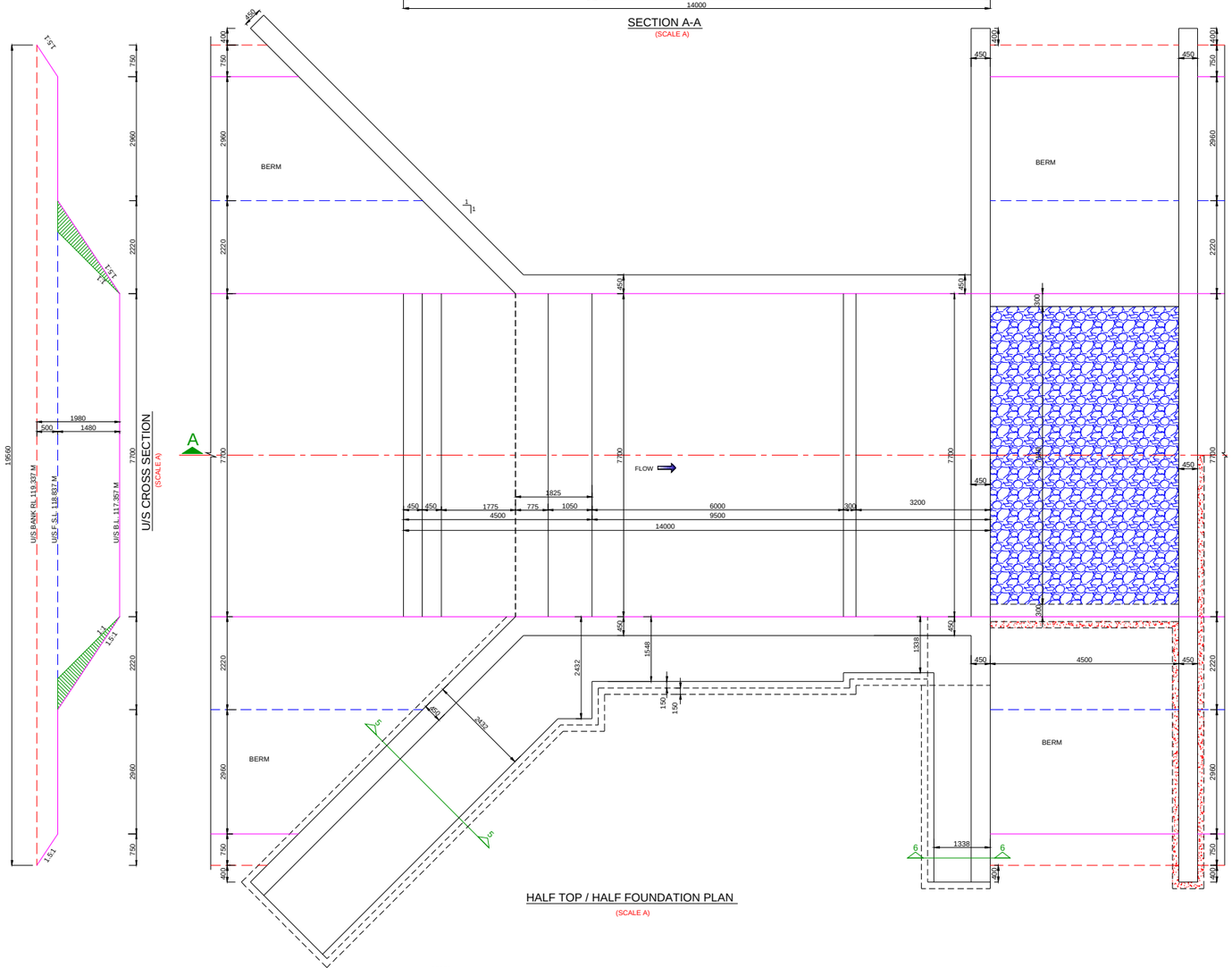
SECTION AT 1-1
(SCALE A)

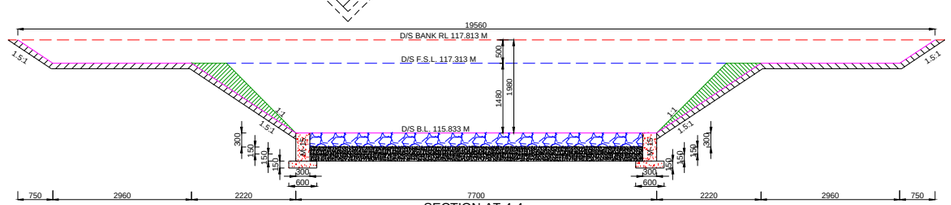


SECTION AT 2-2
(SCALE A)



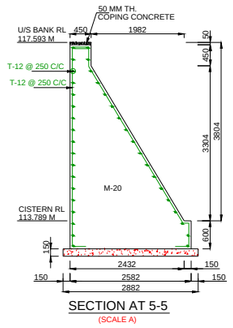
SECTION AT 3-3
(SCALE A)



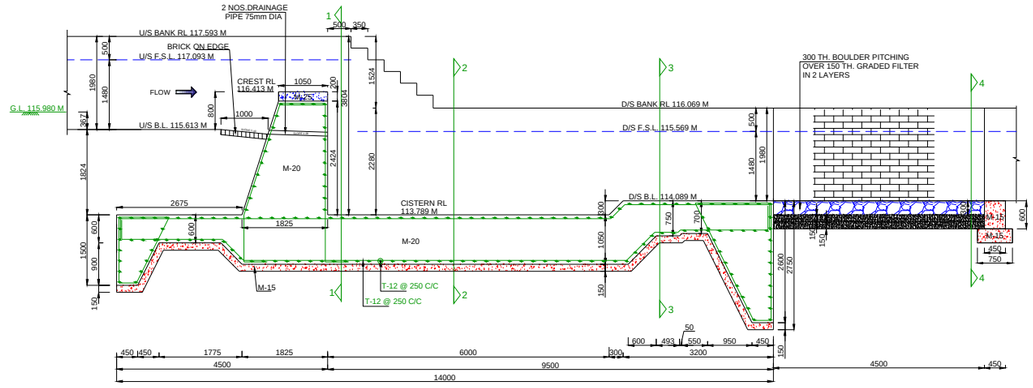


SECTION AT 4-4
(SCALE A)

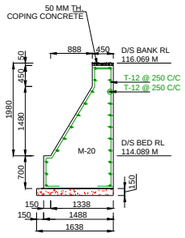
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.524 M HT. FALL AT KM. 12.750 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)

NOTES:-

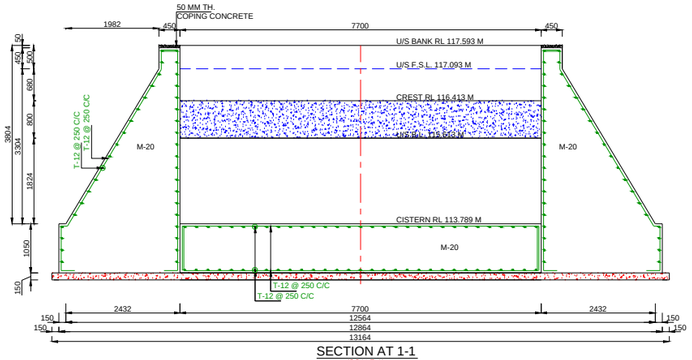
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

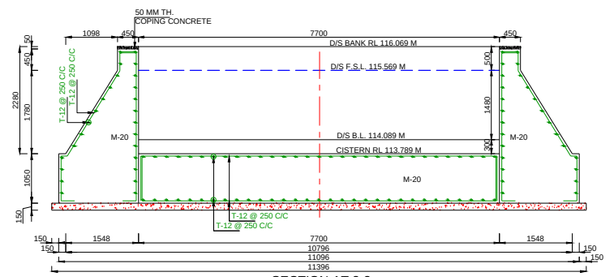
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

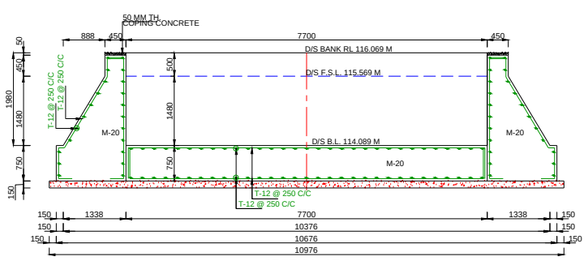
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	7.760	7.760	CUMEC
VERTICAL DROP	1.524	1.524	METRE
FULL SUPPLY DEPTH	1.480	1.480	METRE
BED WIDTH	7.700	7.700	METRE
BED SLOPE	1 : 5800	1 : 5800	



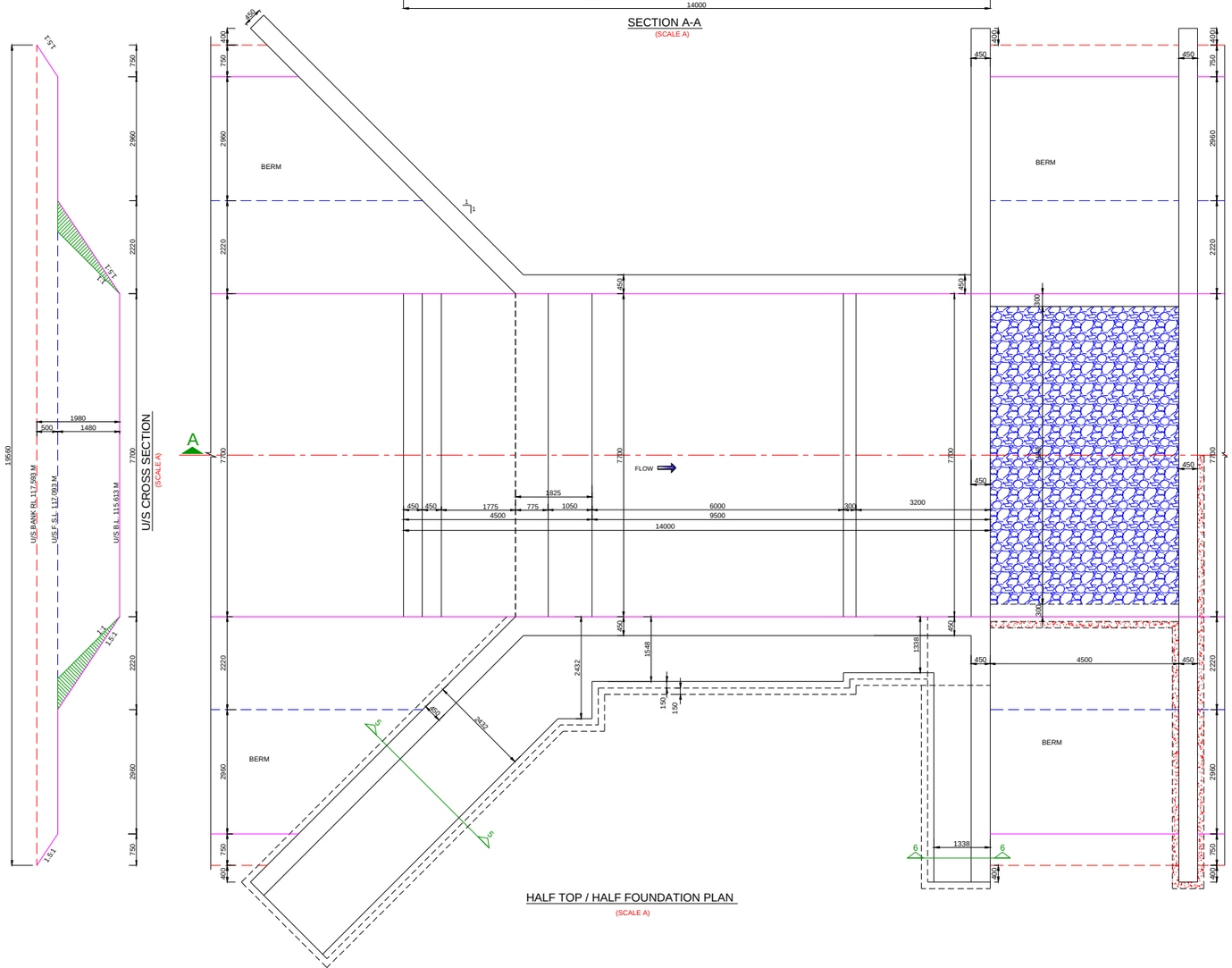
SECTION AT 1-1
(SCALE A)

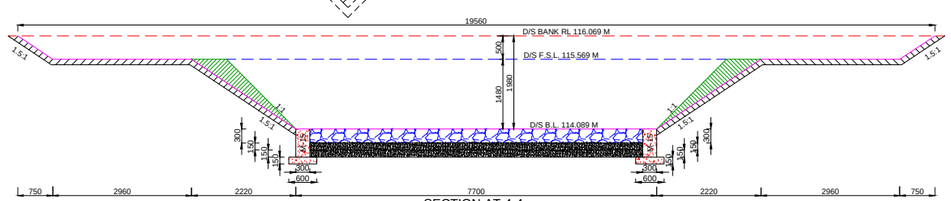


SECTION AT 2-2
(SCALE A)



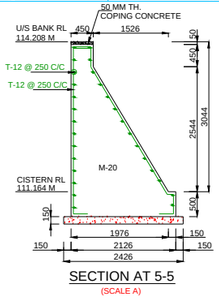
SECTION AT 3-3
(SCALE A)





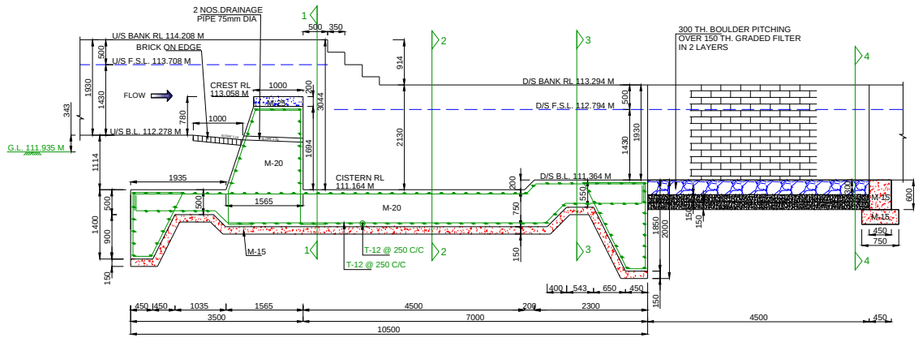
SECTION AT 4-4
(SCALE A)

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.524 M HT. FALL AT KM. 14.021 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



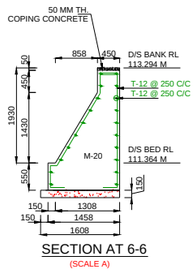
SECTION AT 5-5

(SCALE A)



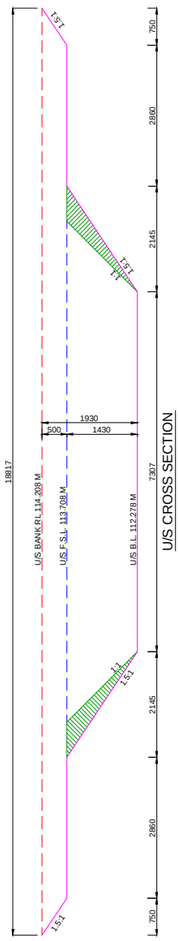
SECTION A-A

(SCALE A)

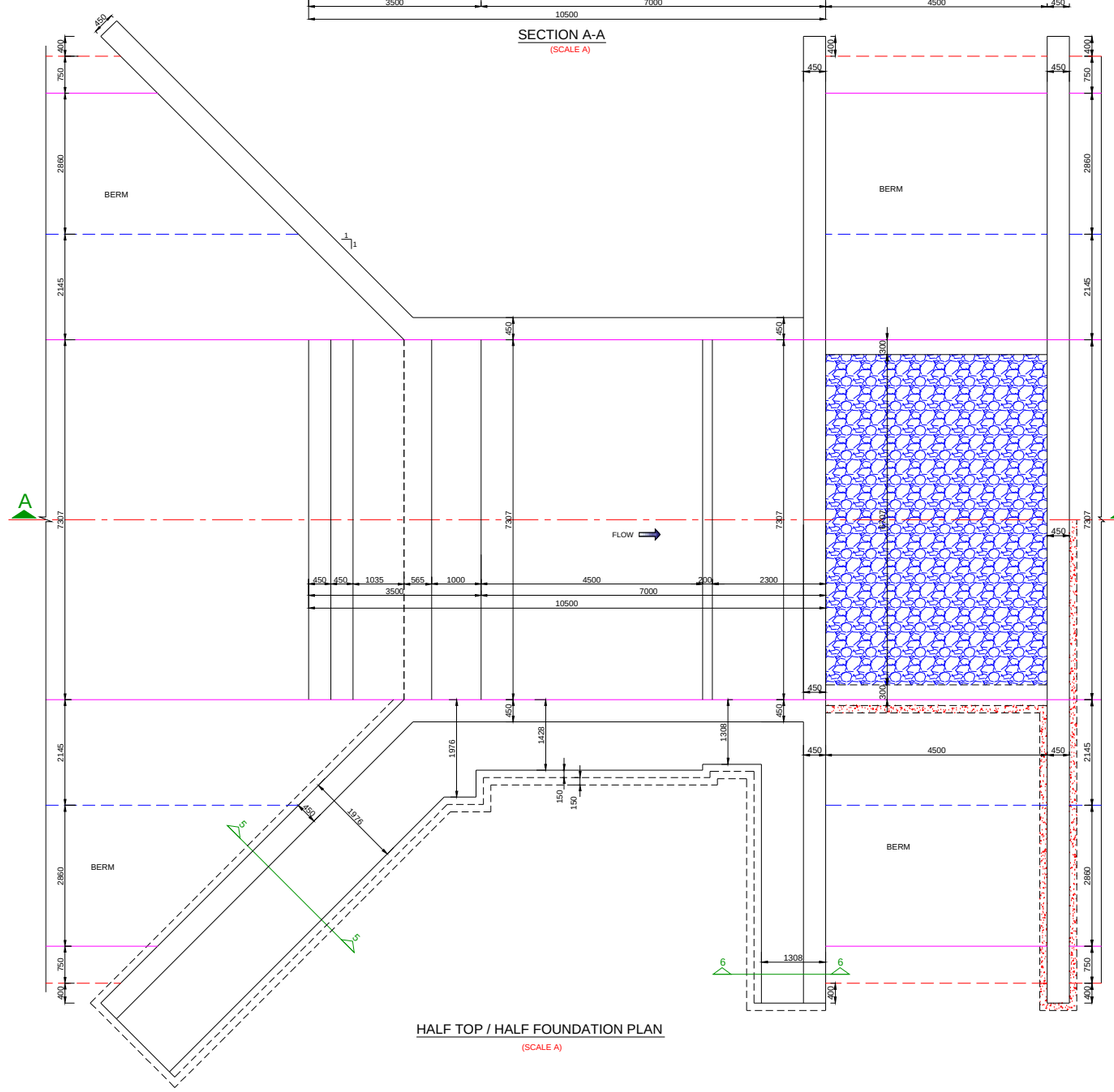


SECTION AT 6-6

(SCALE A)

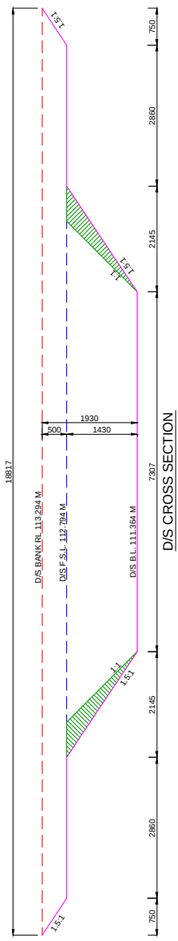


(SCALE A)

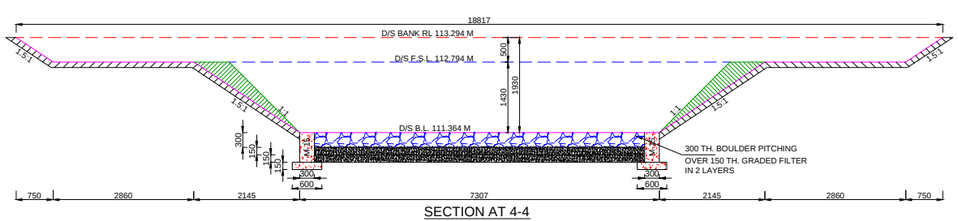


HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



(SCALE A)



SECTION AT 4-4

(SCALE A)

NOTES:-

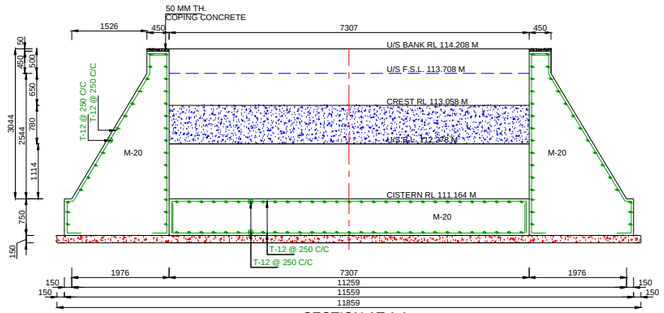
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

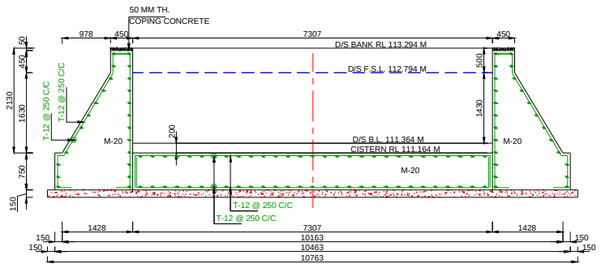
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	6.940	6.940	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	1.430	1.430	METRE
BED WIDTH	7.307	7.307	METRE
BED SLOPE	1 : 5800	1 : 5800	



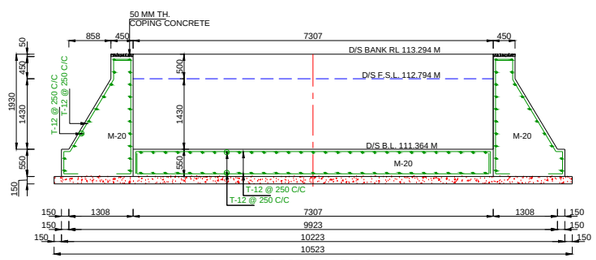
SECTION AT 1-1

(SCALE A)



SECTION AT 2-2

(SCALE A)



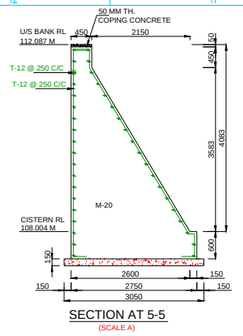
SECTION AT 3-3

(SCALE A)

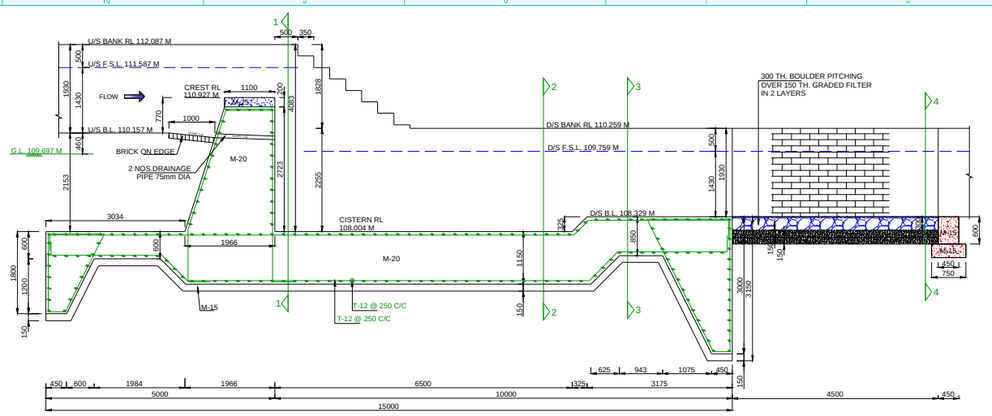
SCALE A:-

1000 0 1000 2000 3000

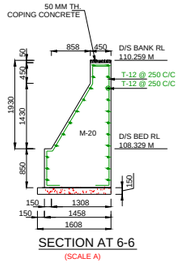
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 17.450 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)

NOTES:-

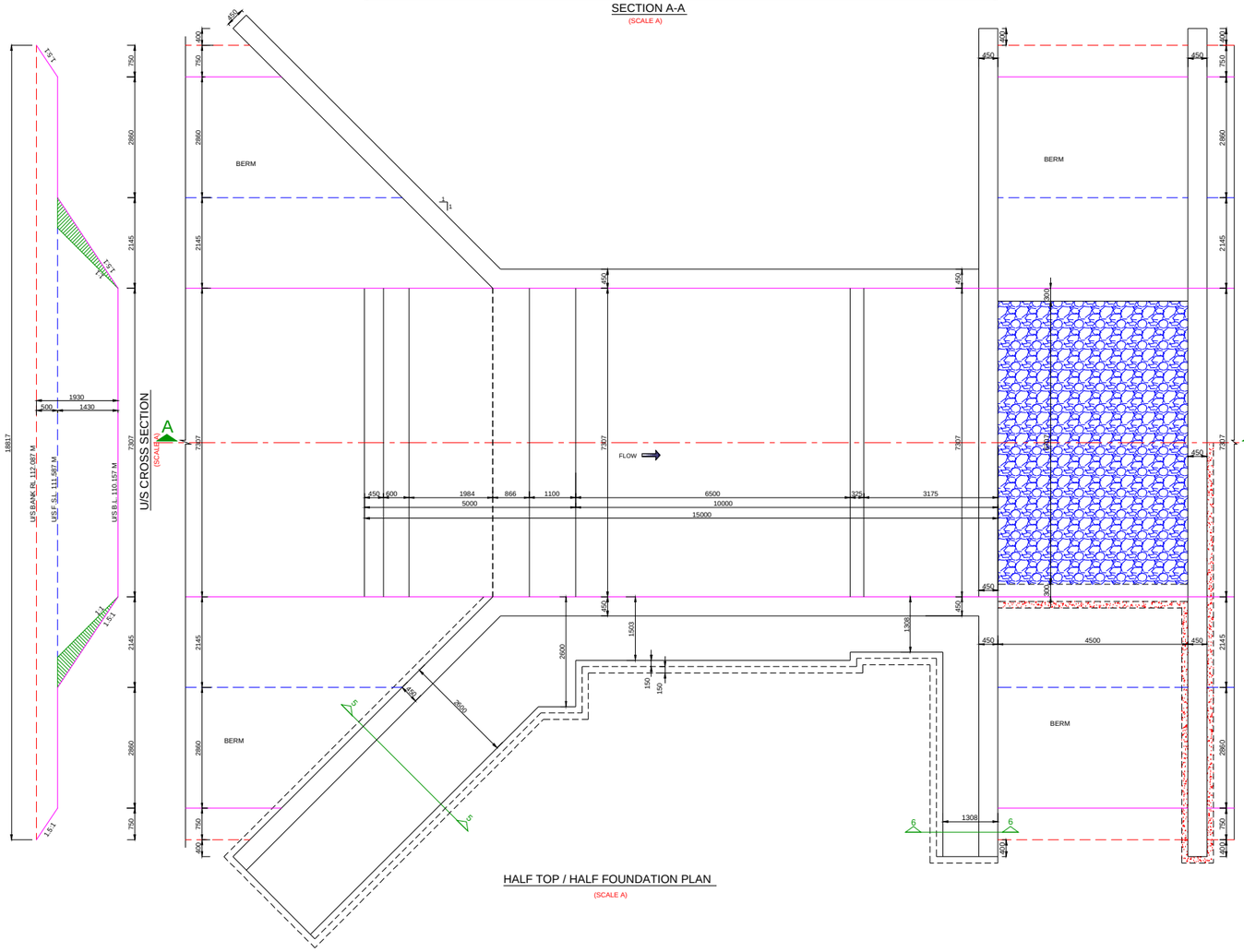
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

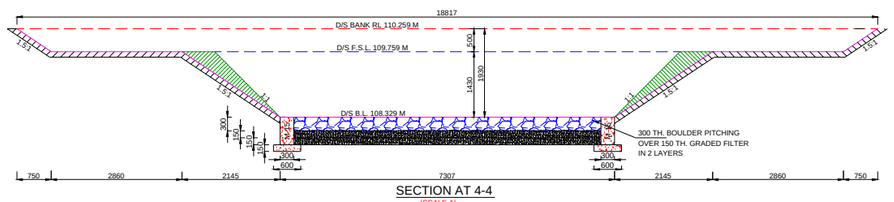
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	6.940	6.940	CUMEC
VERTICAL DROP	1.828	1.828	METRE
FULL SUPPLY DEPTH	1.430	1.430	METRE
BED WIDTH	7.307	7.307	METRE
BED SLOPE	1 : 5800	1 : 5800	

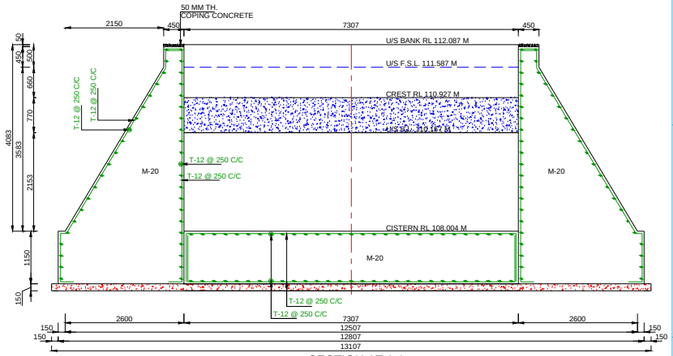


HALF TOP / HALF FOUNDATION PLAN
(SCALE A)

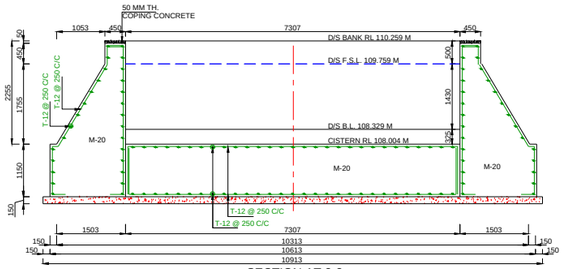


SECTION AT 4-4
(SCALE A)

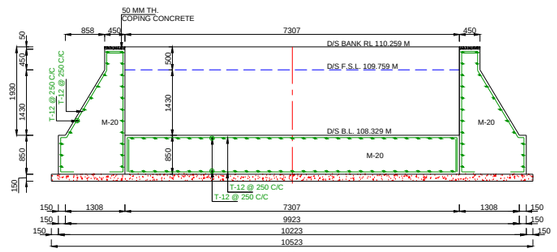
SCALE A:-
1000 0 1000 2000 3000



SECTION AT 1-1
(SCALE A)

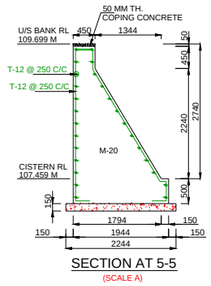


SECTION AT 2-2
(SCALE A)

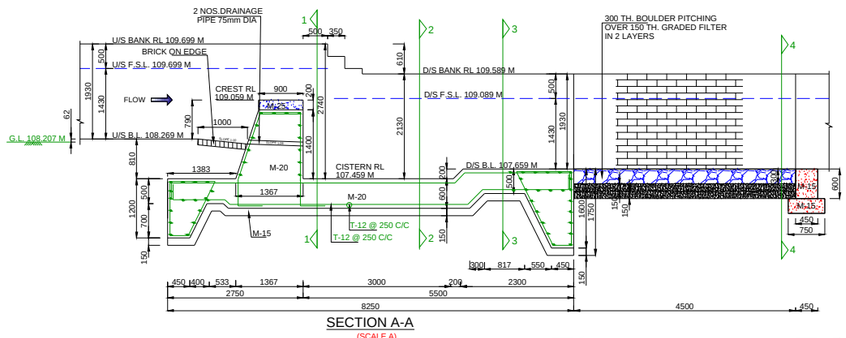


SECTION AT 3-3
(SCALE A)

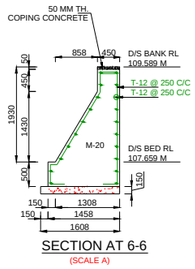
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.828 M HT. FALL AT KM. 19.150 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL — 1 of 1



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)

NOTES:-

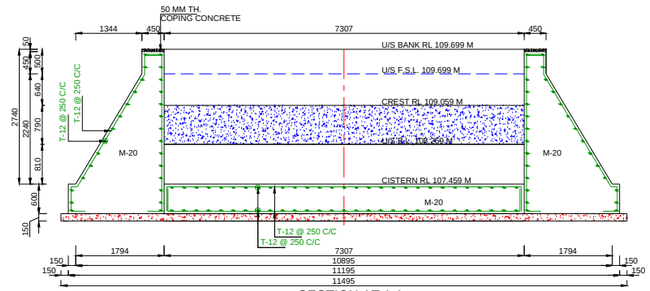
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

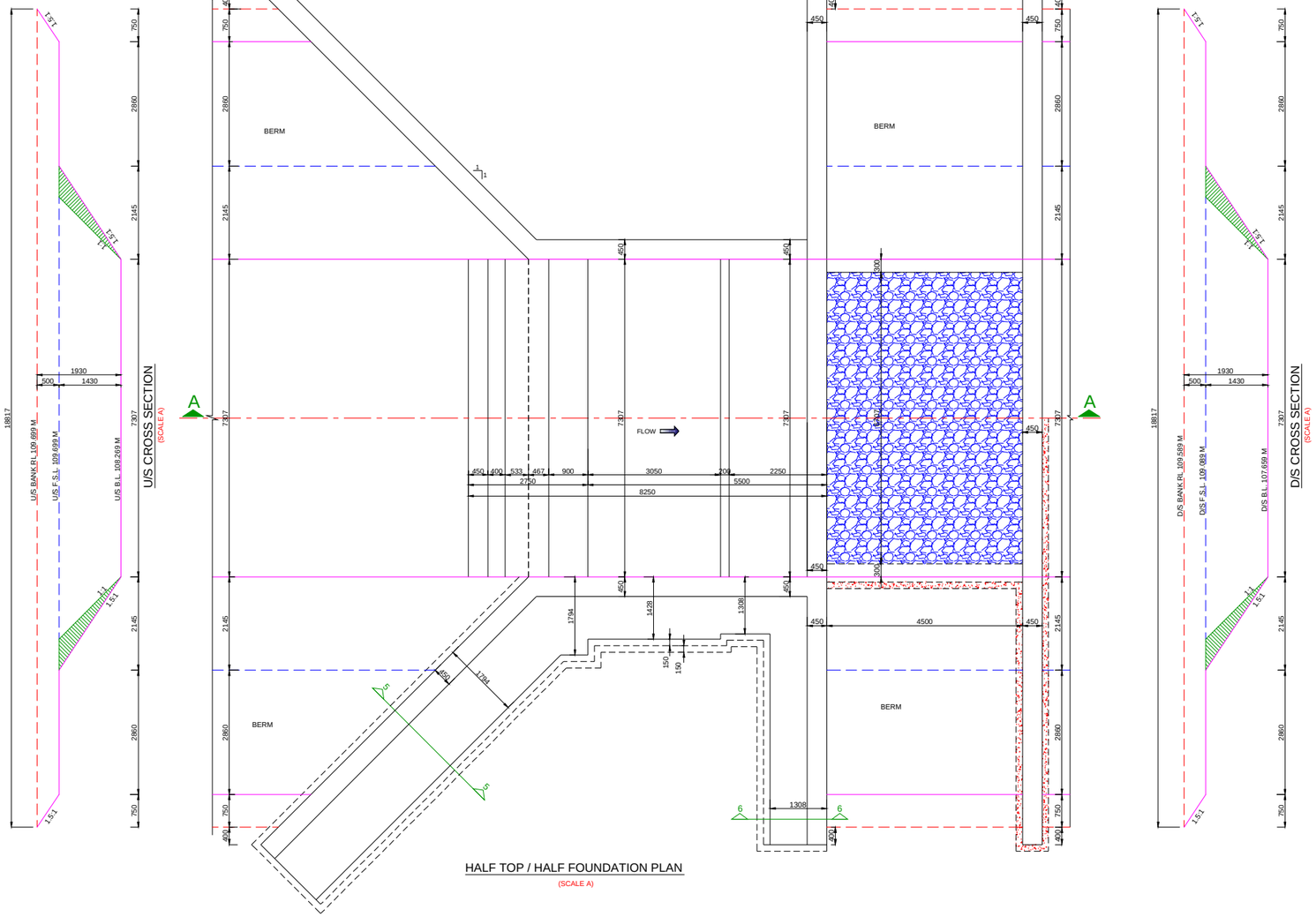
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

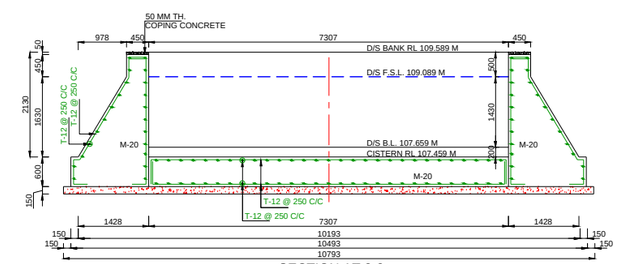
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	6.940	6.940	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	1.430	1.430	METRE
BED WIDTH	7.307	7.307	METRE
BED SLOPE	1 : 5800	1 : 5800	

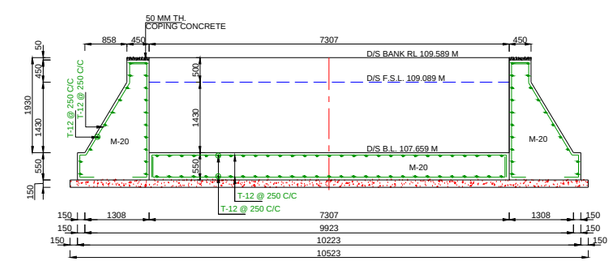


SECTION AT 1-1
(SCALE A)

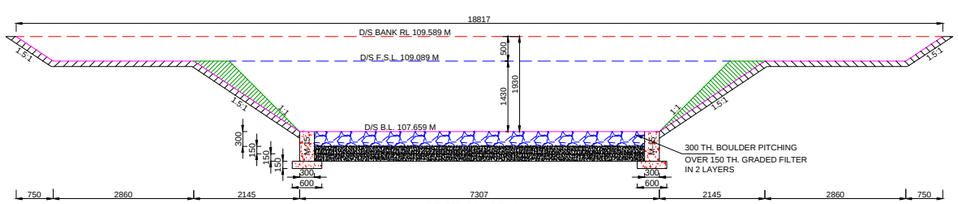




SECTION AT 2-2
(SCALE A)



SECTION AT 3-3
(SCALE A)

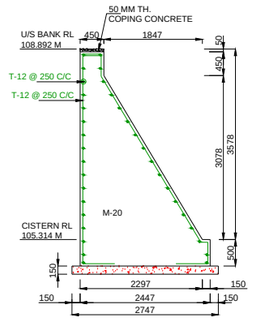


SECTION AT 4-4
(SCALE A)

SCALE A:-

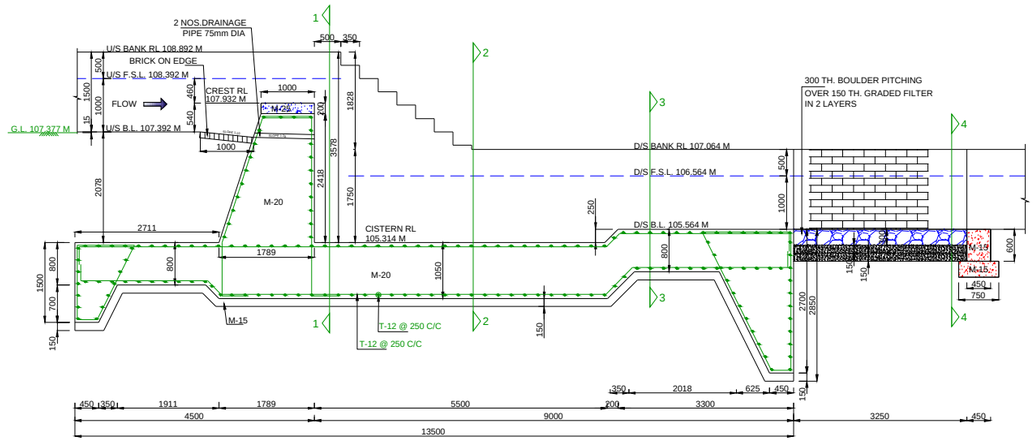
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 19.500 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



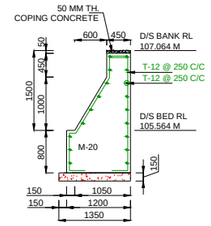
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

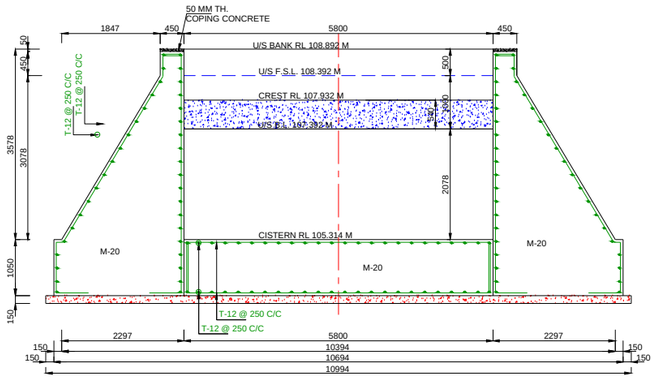
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

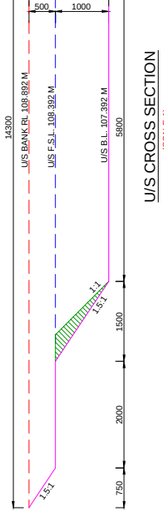
HYDRAULIC:- DATA

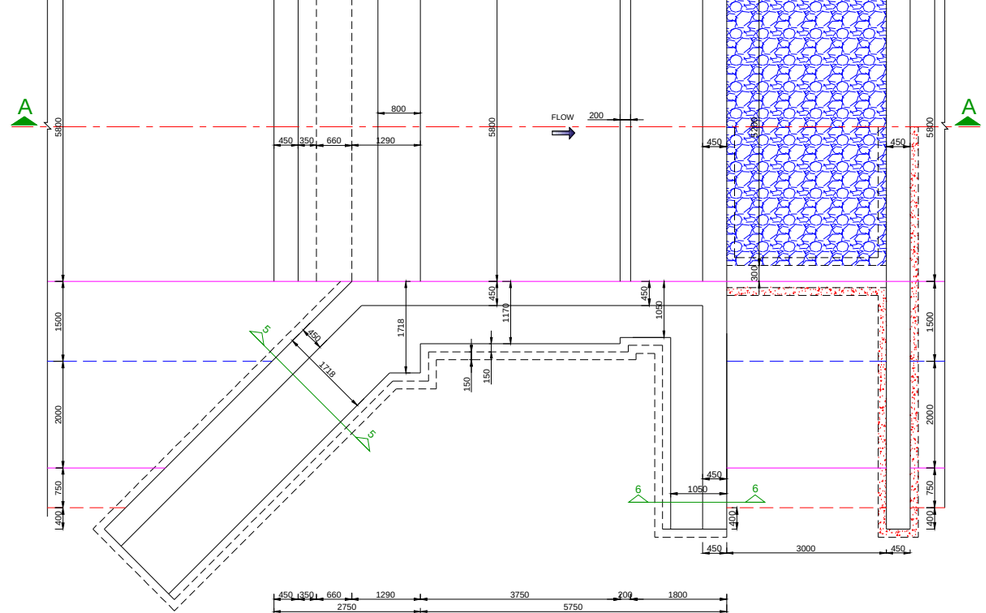
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	3.040	3.040	CUMEC
VERTICAL DROP	1.828	1.828	METRE
FULL SUPPLY DEPTH	1.000	1.000	METRE
BED WIDTH	5.800	5.800	METRE
BED SLOPE	1 : 5800	1 : 5800	



SECTION AT 1-1

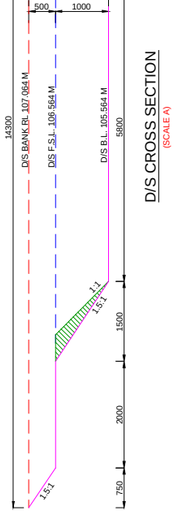
(SCALE A)

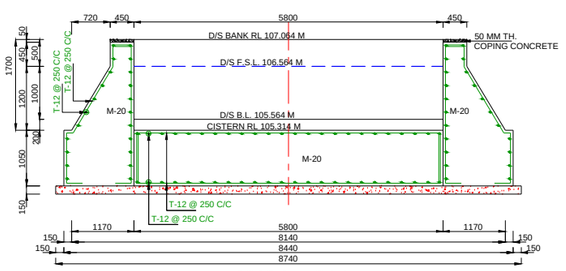




HALF TOP / HALF FOUNDATION PLAN

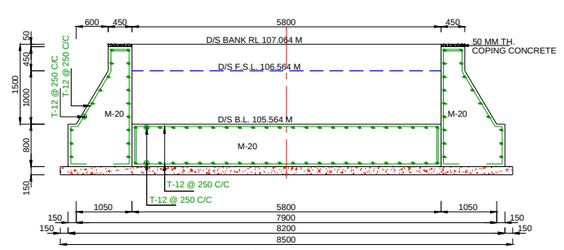
(SCALE A)





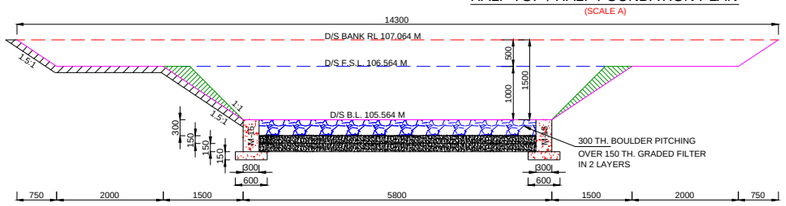
SECTION AT 2-2

(SCALE A)



SECTION AT 3-3

(SCALE A)



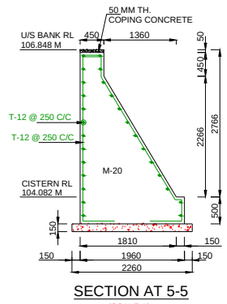
SECTION AT 4-4

(SCALE A)

SCALE A:-

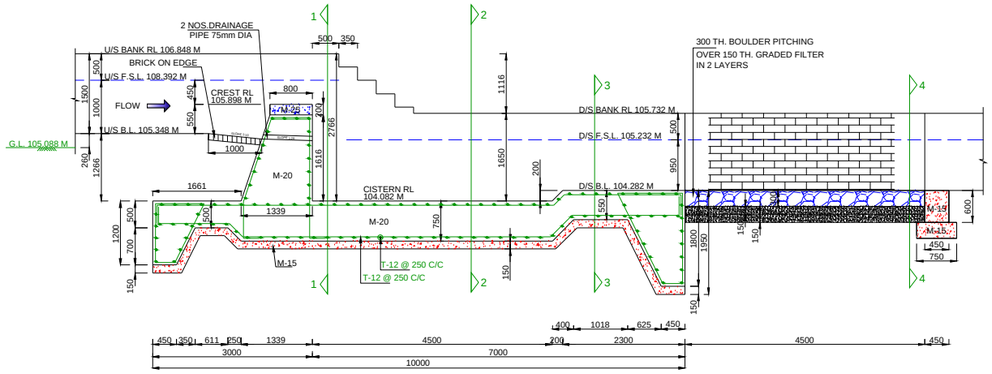
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.828 M HT. FALL AT KM. 21.050 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



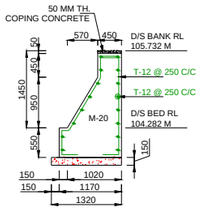
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

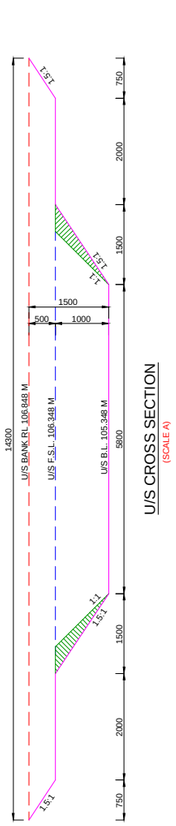
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

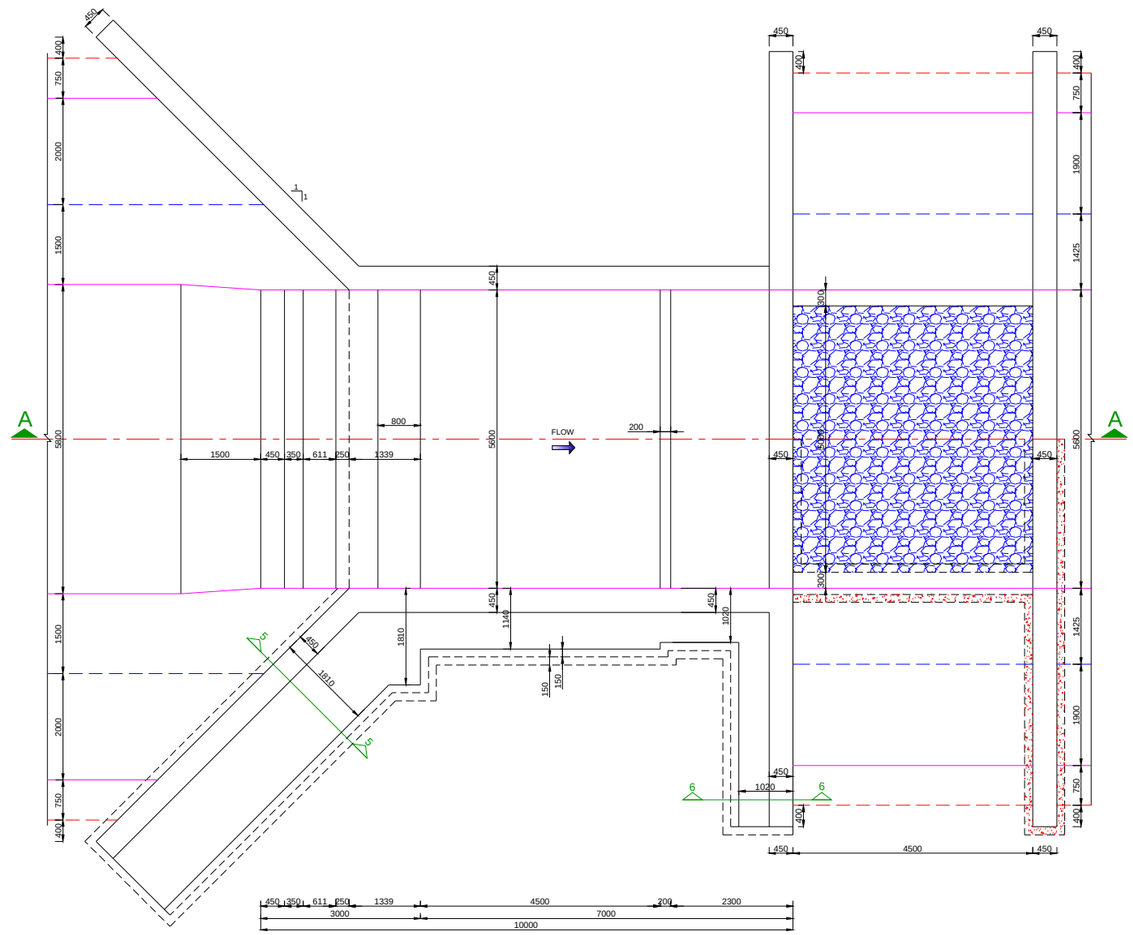
HYDRAULIC:- DATA

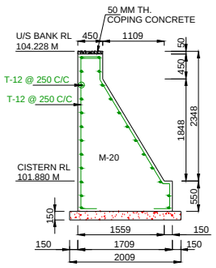
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	3.040	3.040	CUMEC
VERTICAL DROP	1.066	1.066	METRE
FULL SUPPLY DEPTH	1.000	0.950	METRE
BED WIDTH	5.800	5.600	METRE
BED SLOPE	1 : 5800	1 : 5800	



U/S CROSS SECTION

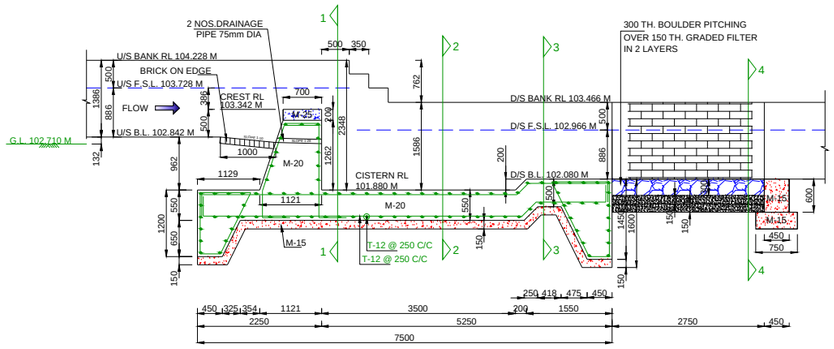
(SCALE A)


450
400
750
2000
1500
2000
750
1:1
1:1
1:1



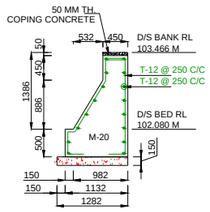
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

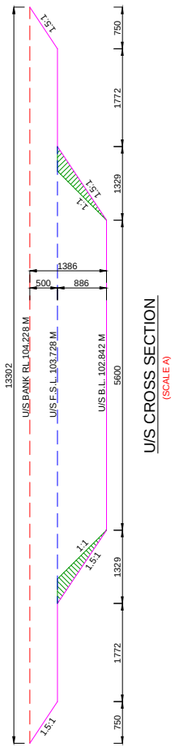
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

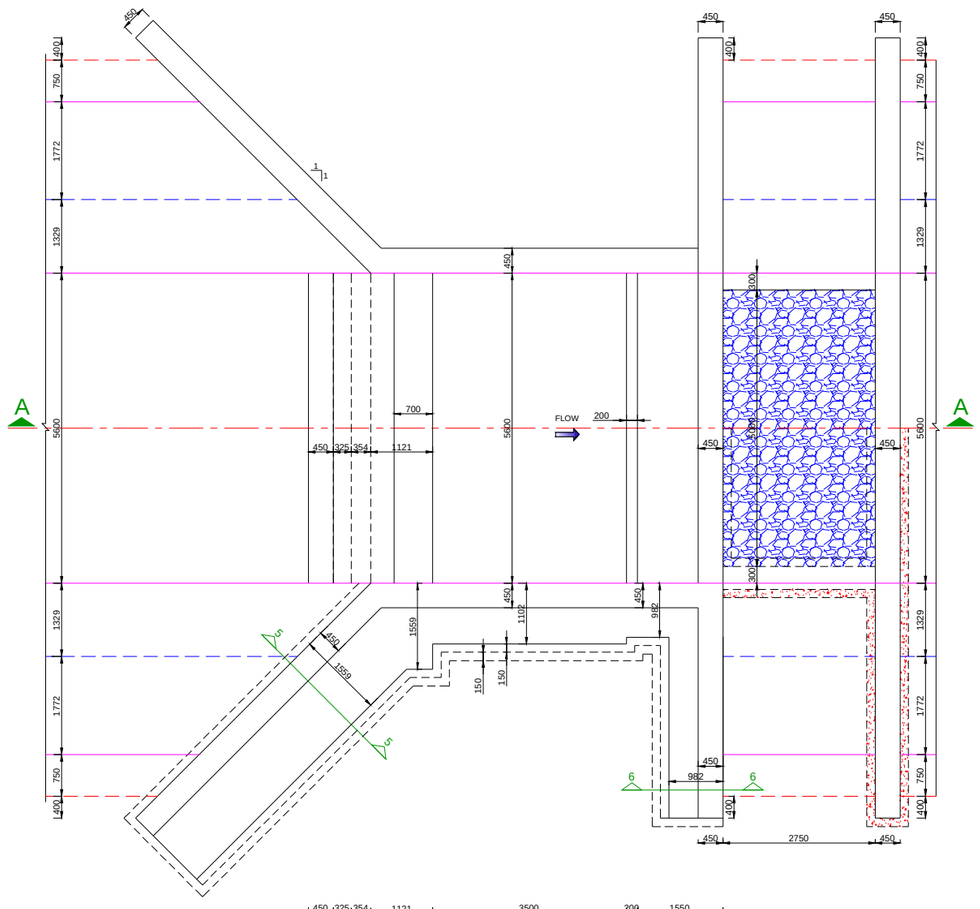
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	2.420	2.420	CUMEC
VERTICAL DROP	0.762	0.762	METRE
FULL SUPPLY DEPTH	0.886	0.886	METRE
BED WIDTH	5.600	5.600	METRE
BED SLOPE	1 : 5800	1 : 5800	



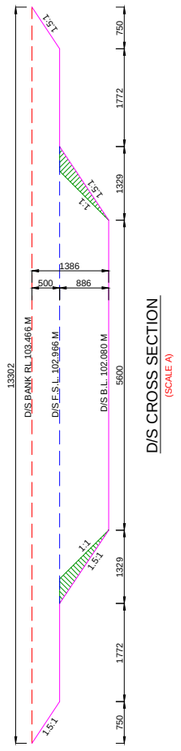
U/S CROSS SECTION

(SCALE A)



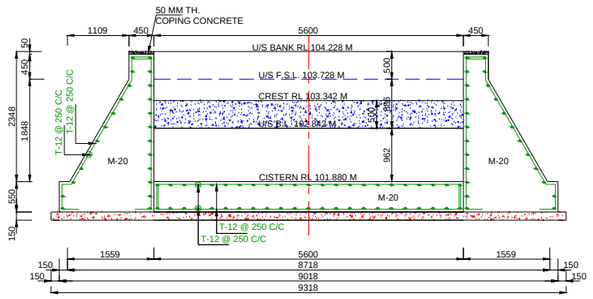
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



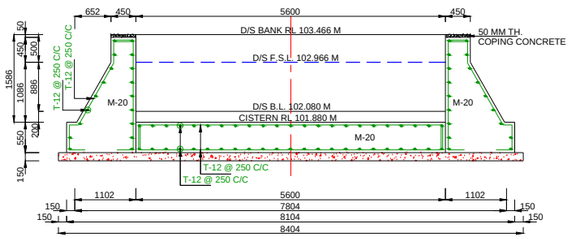
D/S CROSS SECTION

(SCALE A)



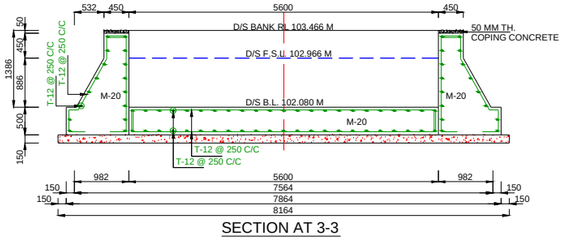
SECTION AT 1-1

(SCALE A)



SECTION AT 2-2

(SCALE A)

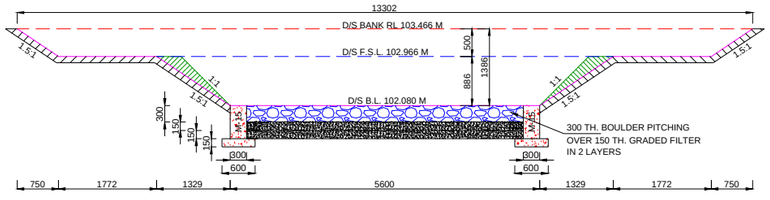


SECTION AT 3-3

(SCALE A)

SCALE A:-

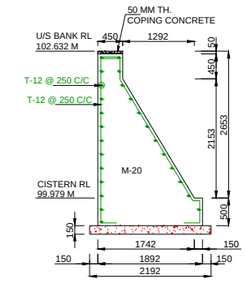
1000 0 1000 2000 3000



SECTION AT 4-4

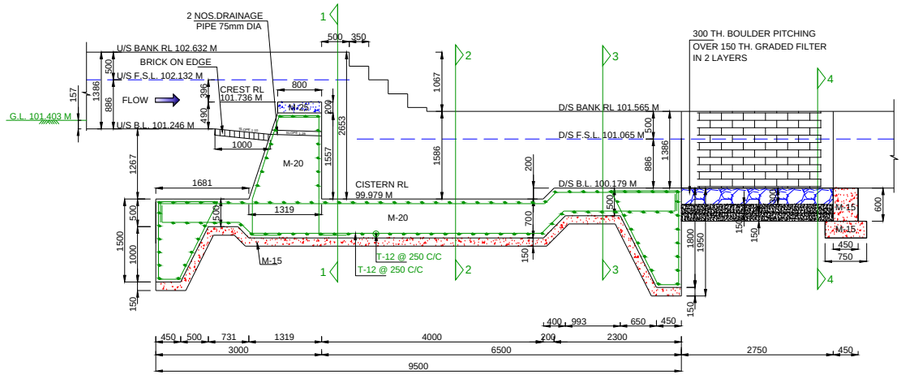
(SCALE A)

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.762 M HT. FALL AT KM. 25.350 OF ANGRA BR. CANAL (OFFTAKE RD - 103+660 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



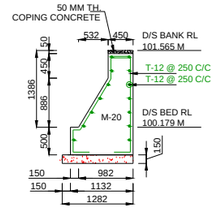
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

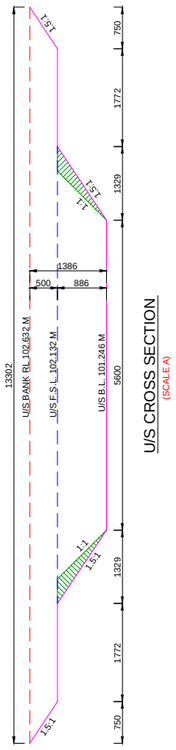
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

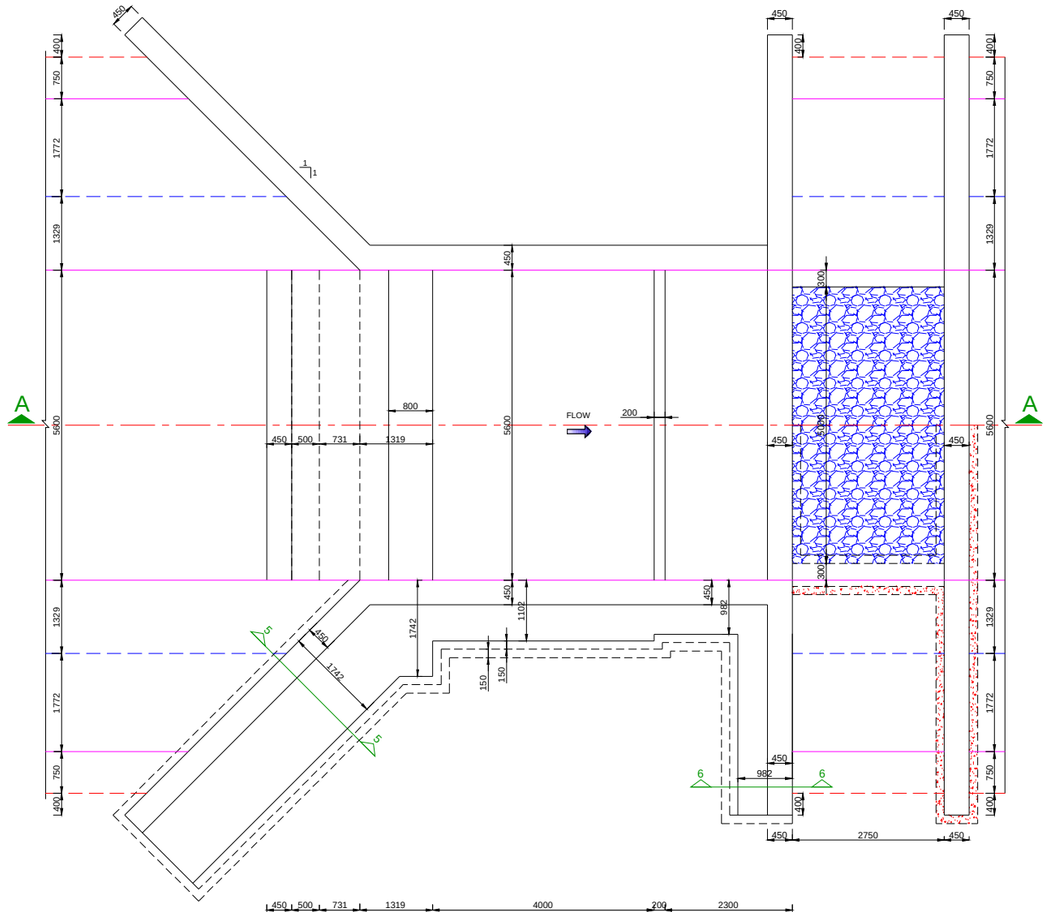
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	2.420	2.420	CUMEC
VERTICAL DROP	1.067	1.067	METRE
FULL SUPPLY DEPTH	0.886	0.886	METRE
BED WIDTH	5.600	5.600	METRE
BED SLOPE	1 : 5800	1 : 5800	



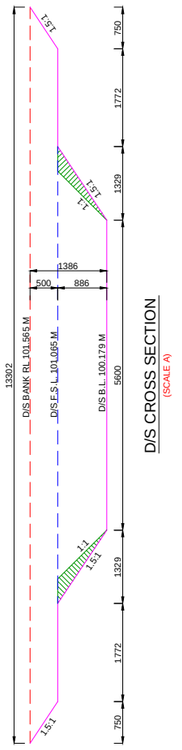
U/S CROSS SECTION

(SCALE A)



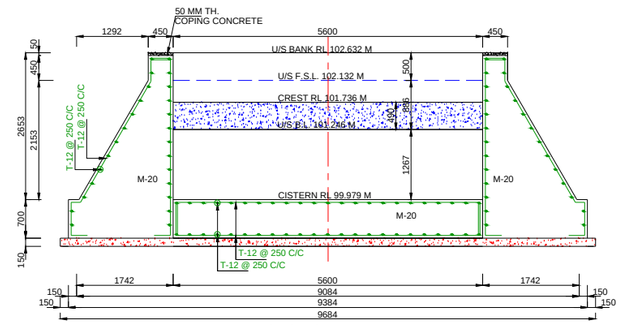
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



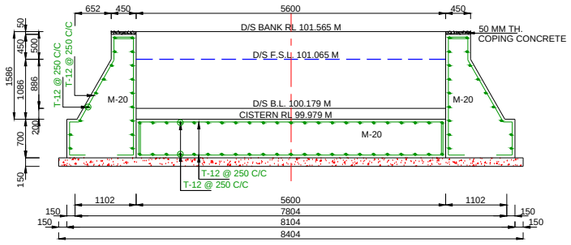
D/S CROSS SECTION

(SCALE A)



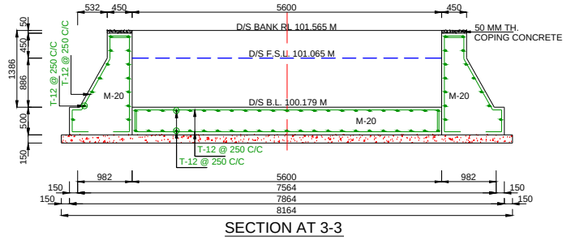
SECTION AT 1-1

(SCALE A)



SECTION AT 2-2

(SCALE A)

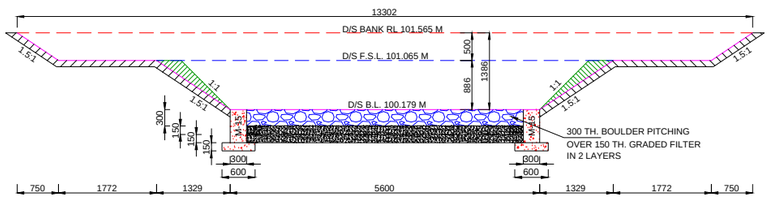


SECTION AT 3-3

(SCALE A)

SCALE A:-

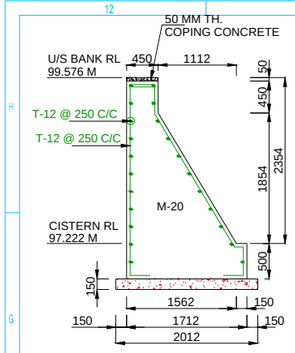
1000 0 1000 2000 3000



SECTION AT 4-4

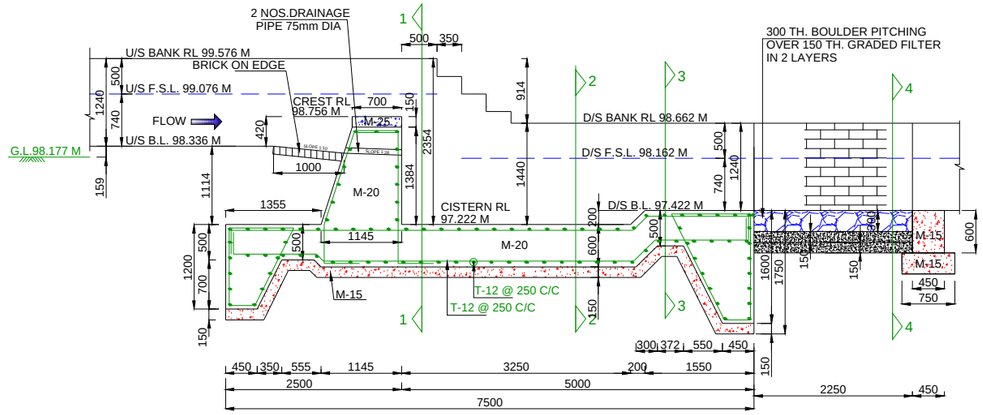
(SCALE A)

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.067 M HT. FALL AT KM. 26.650 OF ANGRA BR. CANAL (OFFTAKE RD - 103+660 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



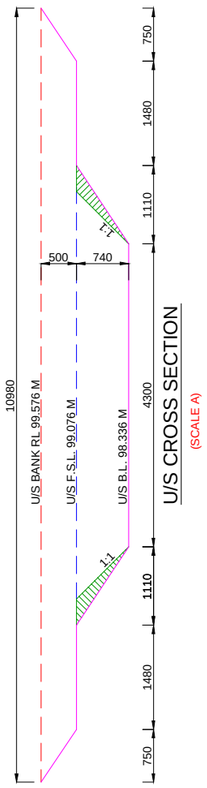
SECTION AT 5-5

(SCALE A)



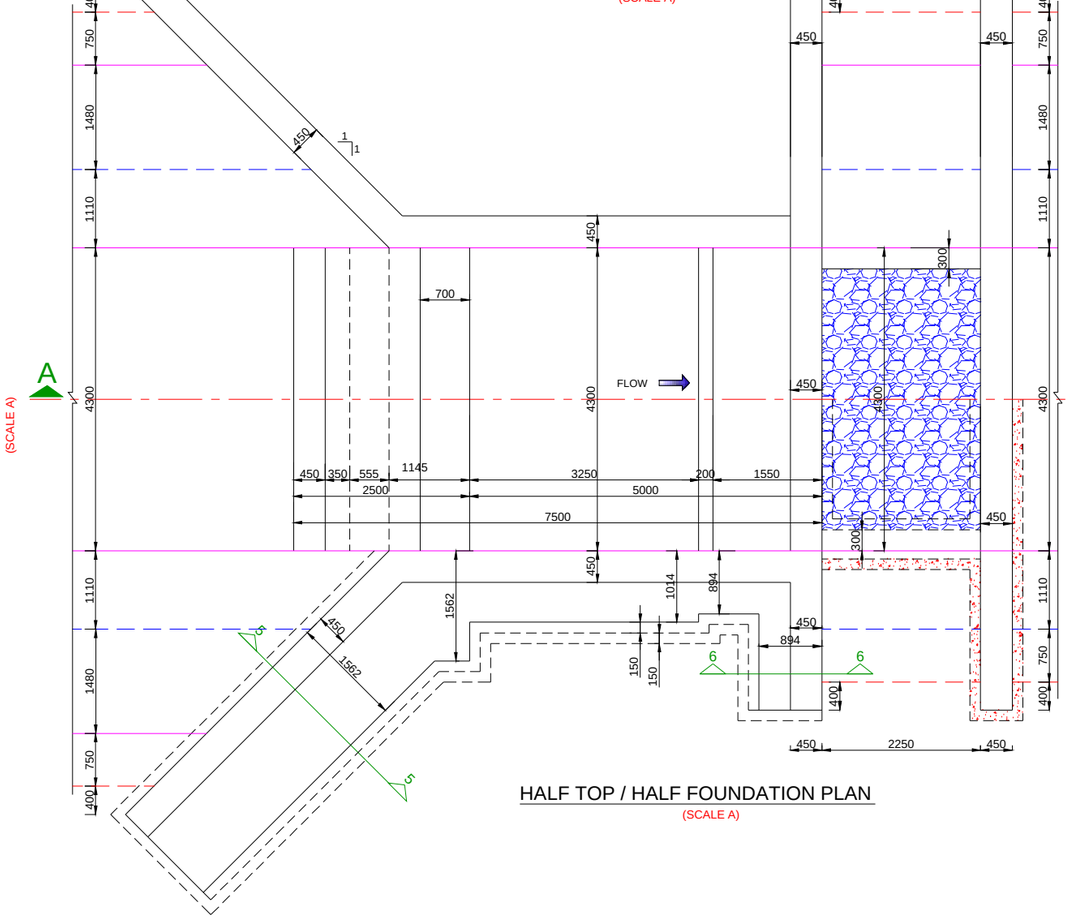
SECTION A-A

(SCALE A)



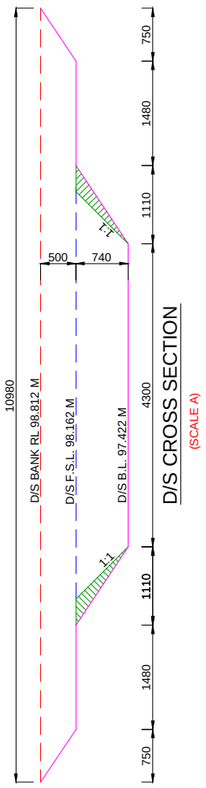
U/S CROSS SECTION

(SCALE A)



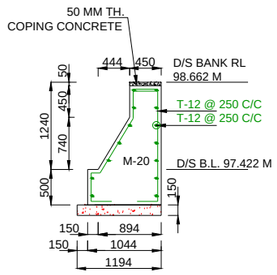
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



D/S CROSS SECTION

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

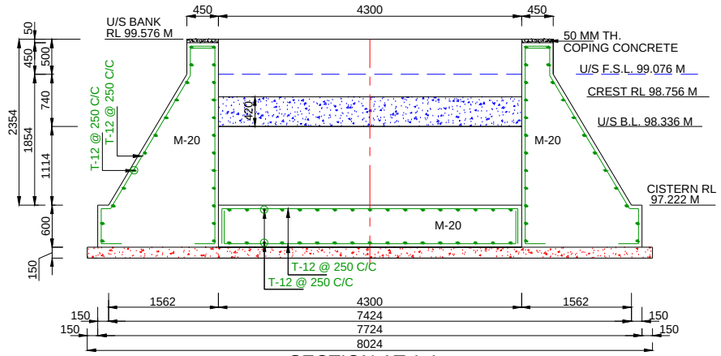
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

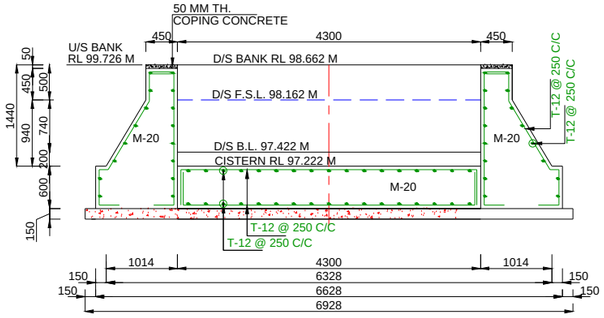
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.370	1.370	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.740	0.740	METRE
BED WIDTH	4.300	4.300	METRE
BED SLOPE	1 : 5800	1 : 5800	



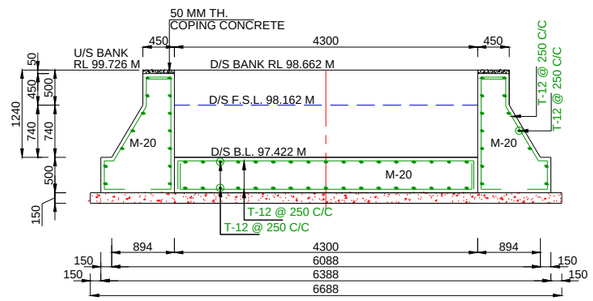
SECTION AT 1-1

(SCALE A)



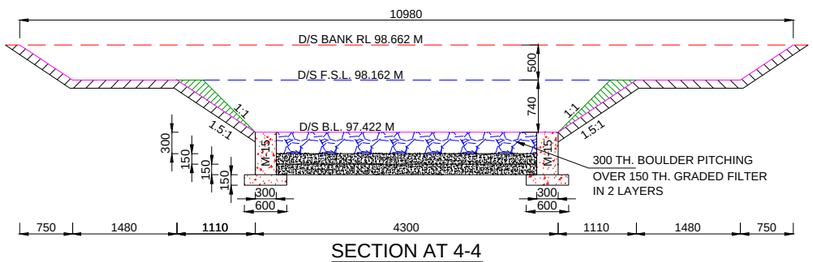
SECTION AT 2-2

(SCALE A)



SECTION AT 3-3

(SCALE A)



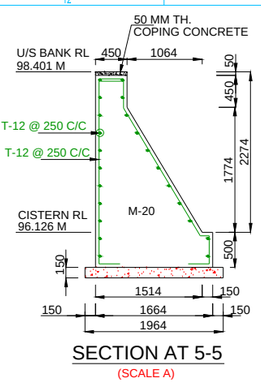
SECTION AT 4-4

(SCALE A)

SCALE A:-

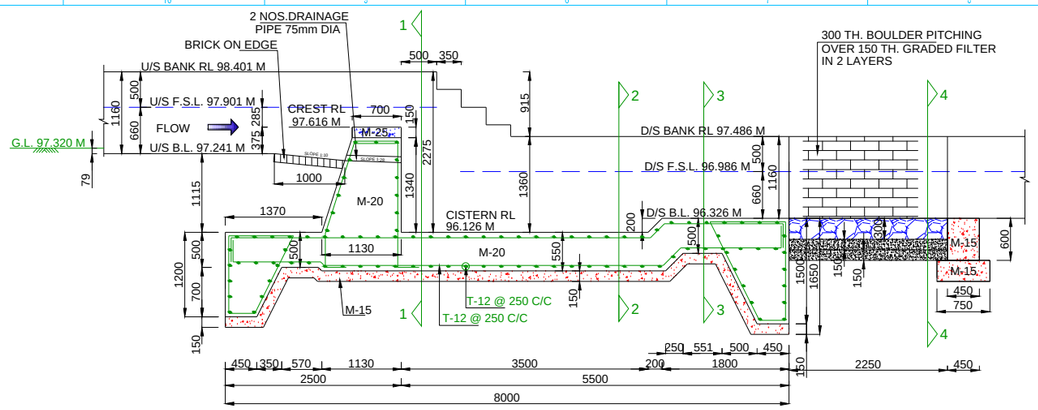
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 28.500 OF ANGRA BR. CANAL (OFFTAKE RD - 103+660 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



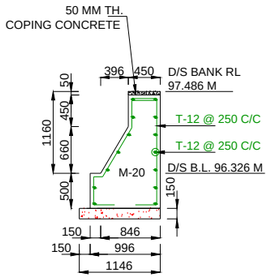
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

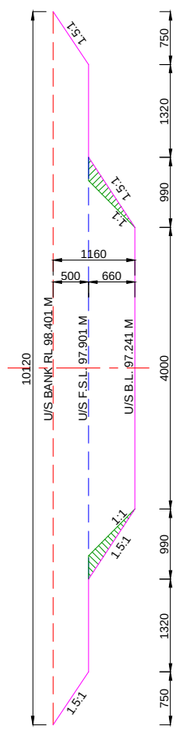
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

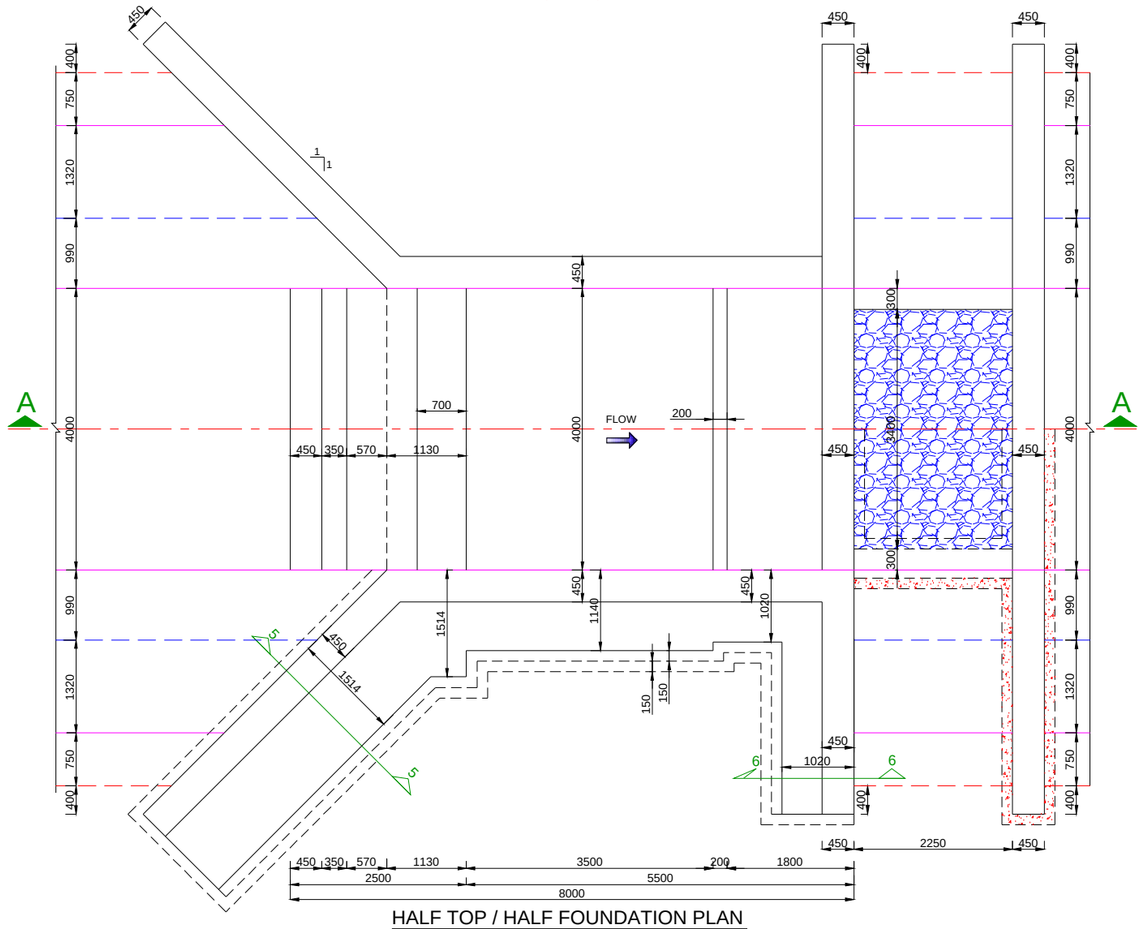
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.050	1.050	CUMEC
VERTICAL DROP	0.915	0.915	METRE
FULL SUPPLY DEPTH	0.660	0.660	METRE
BED WIDTH	4.000	4.000	METRE
BED SLOPE	1 : 5800	1 : 5800	



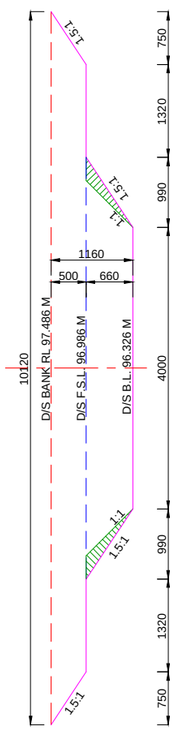
U/S CROSS SECTION

(SCALE A)



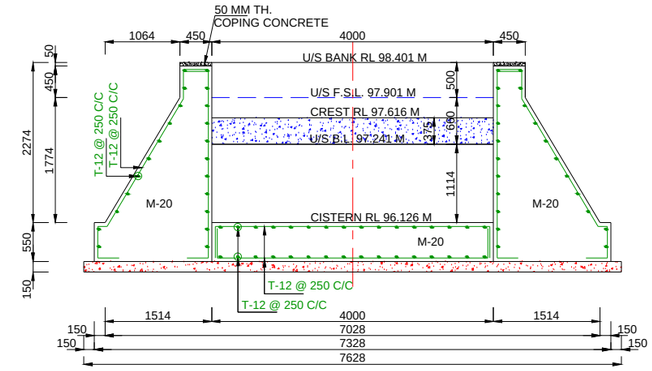
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



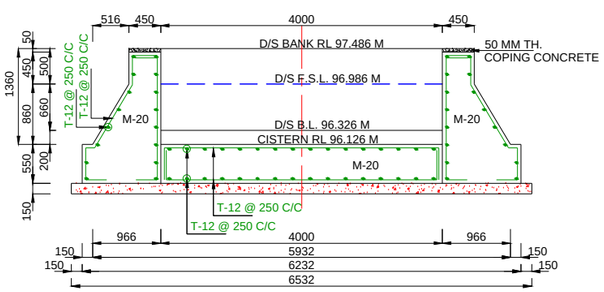
D/S CROSS SECTION

(SCALE A)



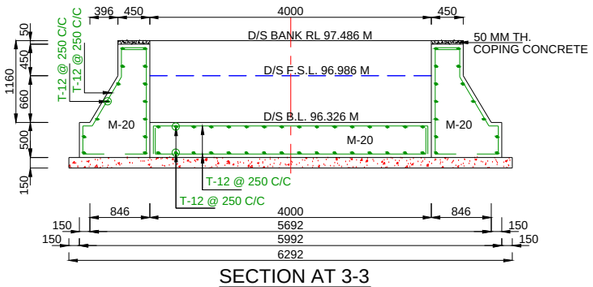
SECTION AT 1-1

(SCALE A)



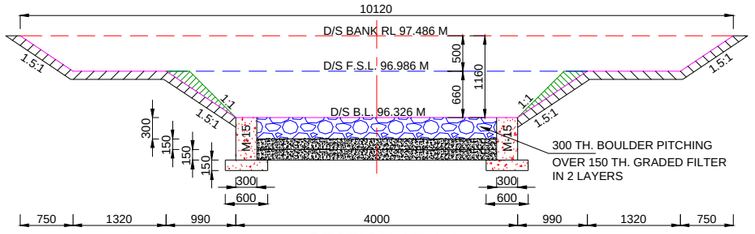
SECTION AT 2-2

(SCALE A)



SECTION AT 3-3

(SCALE A)



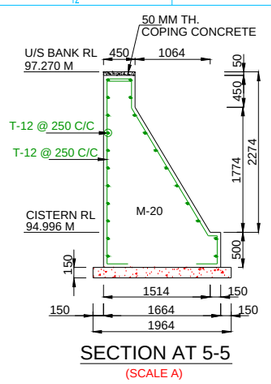
SECTION AT 4-4

(SCALE A)

SCALE A:-

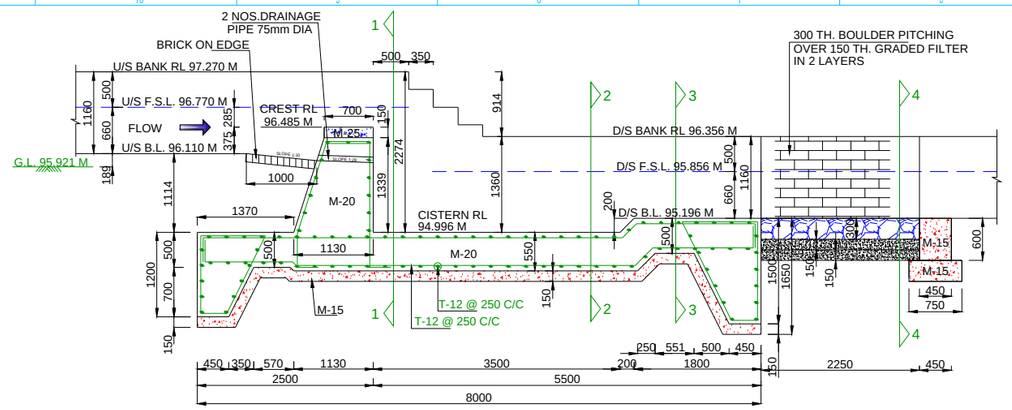
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.915 M HT. FALL AT KM. 34.500 OF ANGRA BR. CANAL (OFFTAKE RD - 103+660 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



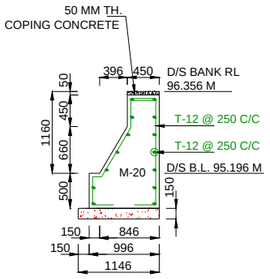
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

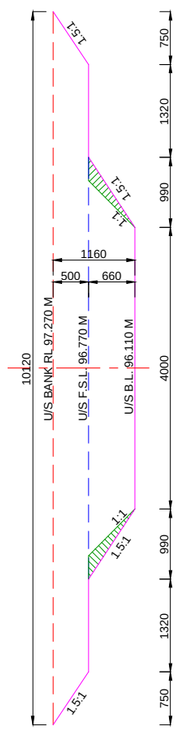
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

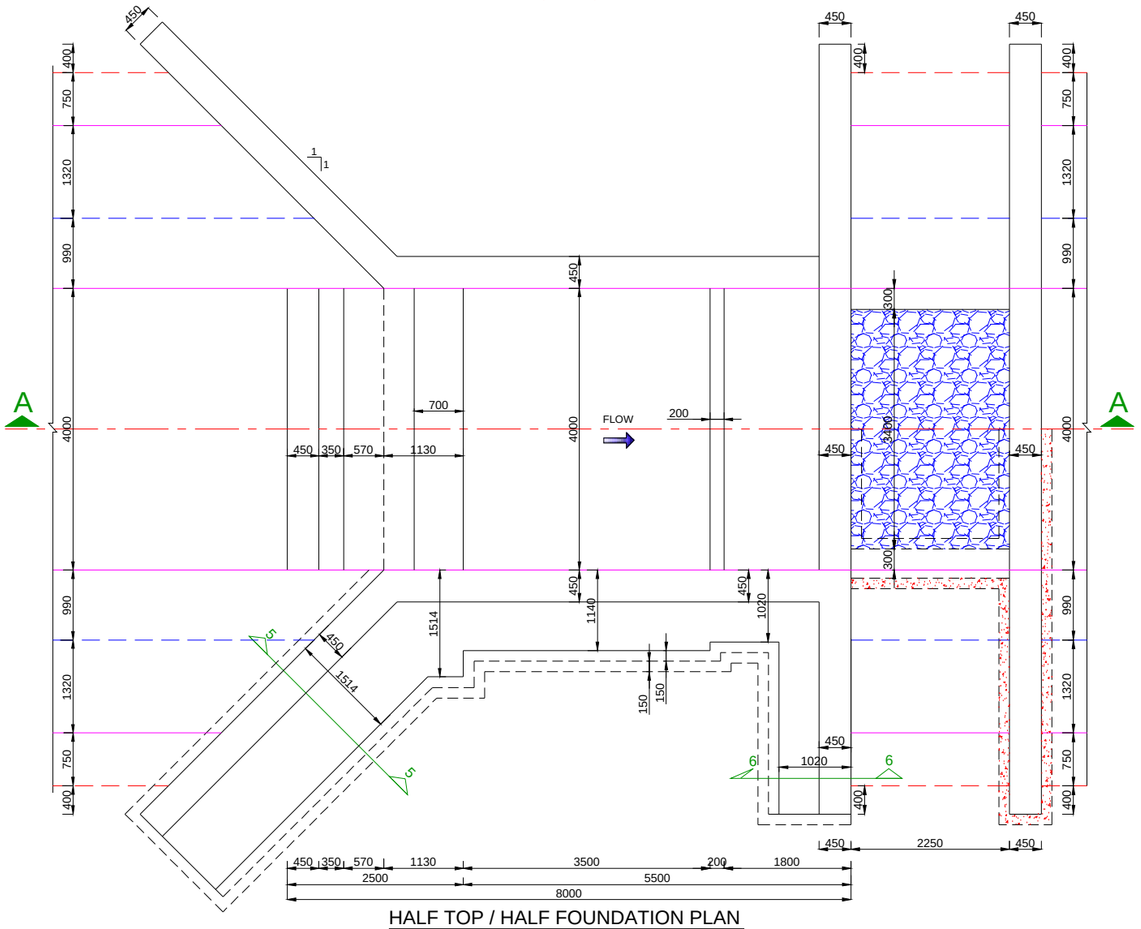
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.050	1.050	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.660	0.660	METRE
BED WIDTH	4.000	4.000	METRE
BED SLOPE	1 : 5800	1 : 5800	



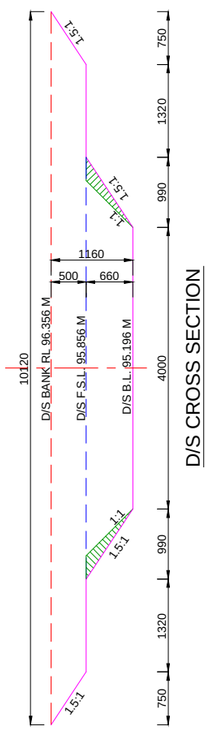
U/S CROSS SECTION

(SCALE A)



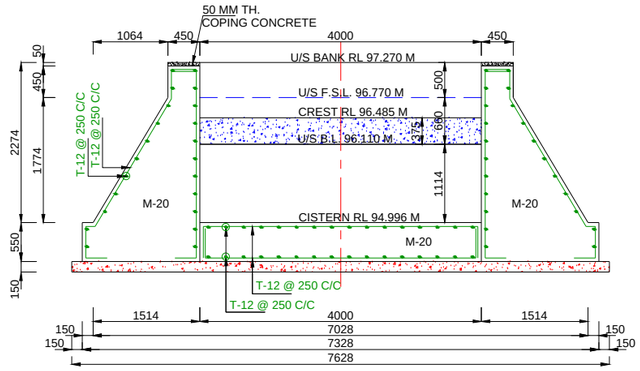
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



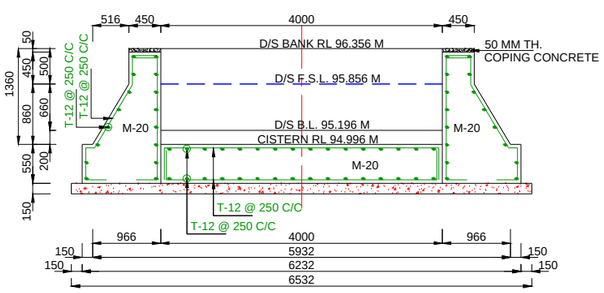
D/S CROSS SECTION

(SCALE A)



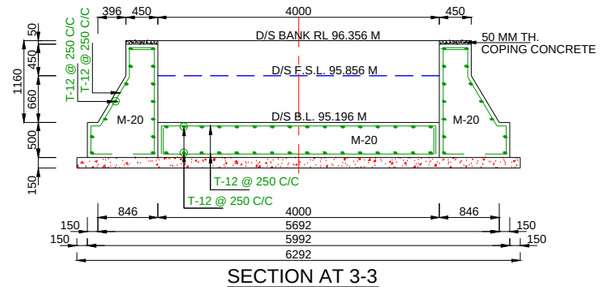
SECTION AT 1-1

(SCALE A)



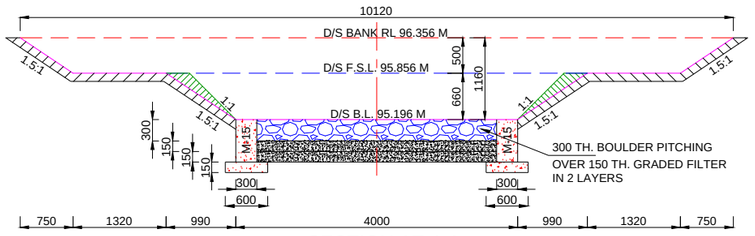
SECTION AT 2-2

(SCALE A)



SECTION AT 3-3

(SCALE A)



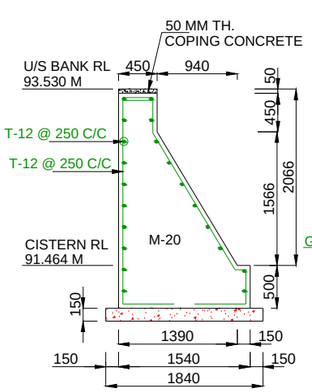
SECTION AT 4-4

(SCALE A)

SCALE A:-

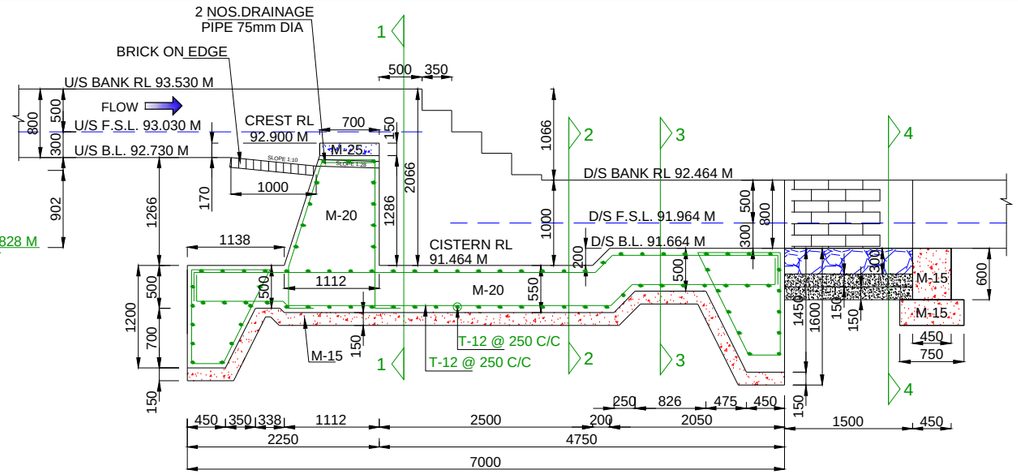
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 30.800 OF ANGRA BR. CANAL (OFFTAKE RD - 103+660 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



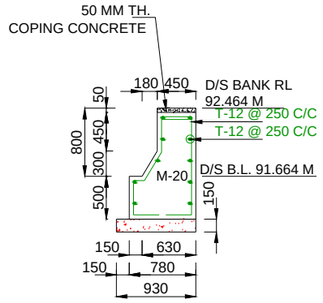
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

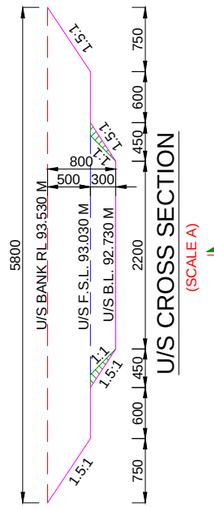
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

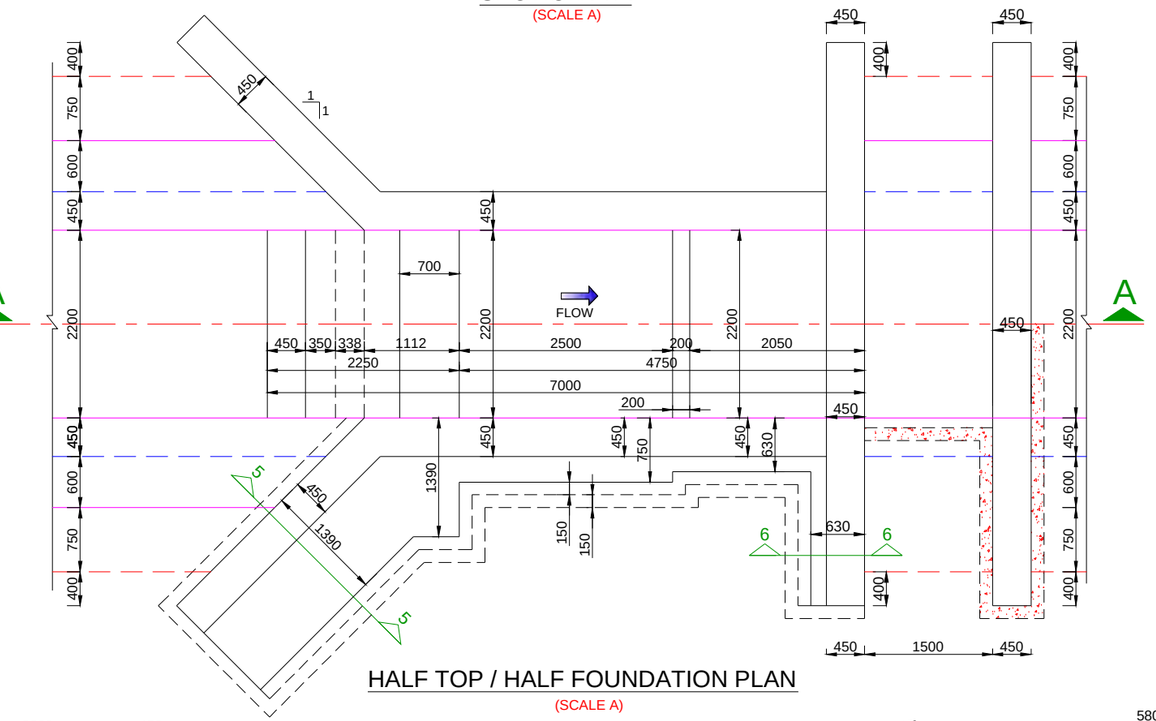
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.150	0.150	CUMEC
VERTICAL DROP	1.066	1.066	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	2.200	2.200	METRE
BED SLOPE	1 : 5800	1 : 5800	



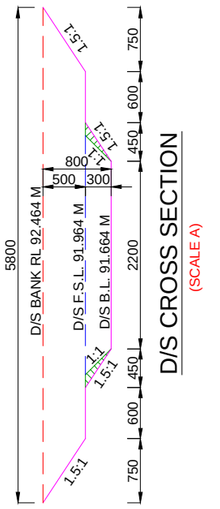
U/S CROSS SECTION

(SCALE A)



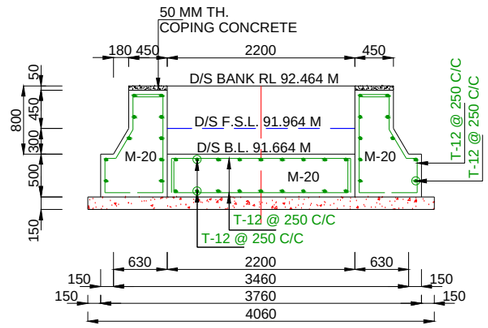
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



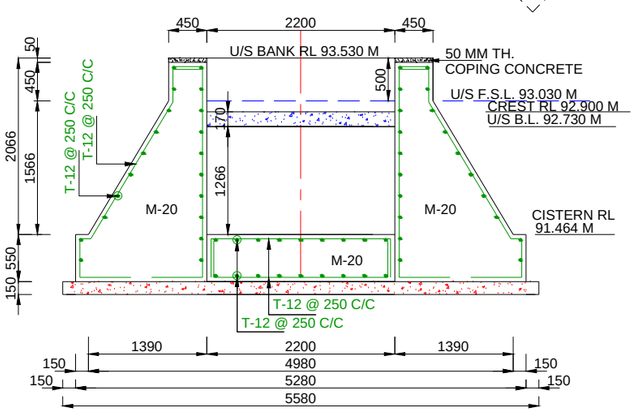
D/S CROSS SECTION

(SCALE A)



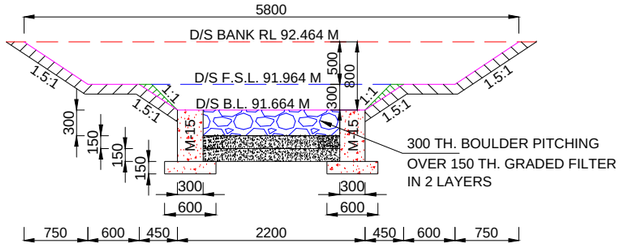
SECTION AT 3-3

(SCALE A)



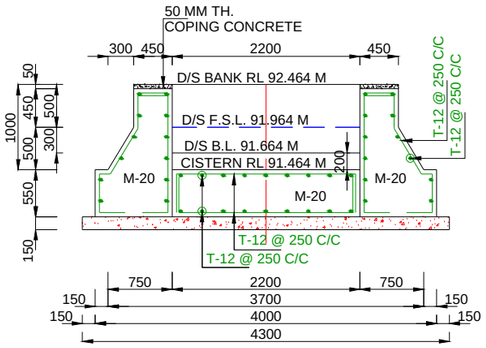
SECTION AT 1-1

(SCALE A)



SECTION AT 4-4

(SCALE A)



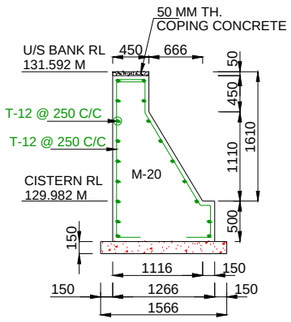
SECTION AT 2-2

(SCALE A)

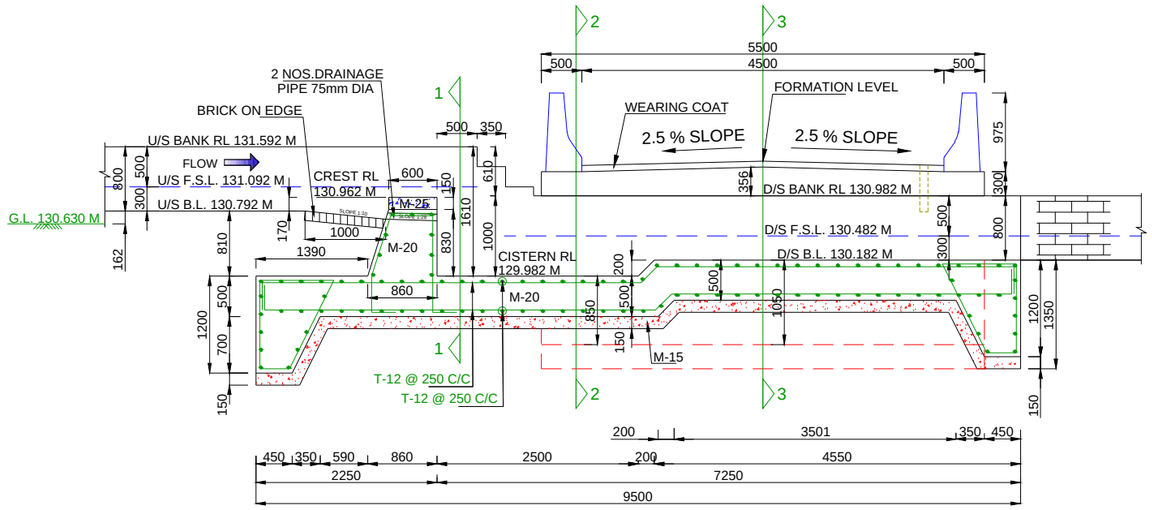
SCALE A:-

1000 0 1000 2000 3000

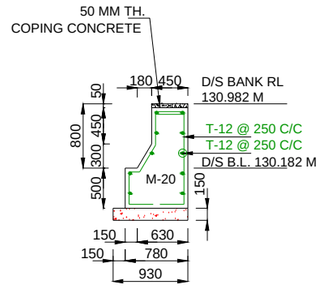
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.066 M HT. FALL AT KM. 34.500 OF ANGRA BR. CANAL (OFFTAKE RD - 103+660 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ FALL 1 of 1



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)

NOTES:-

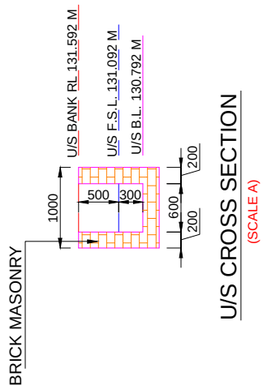
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

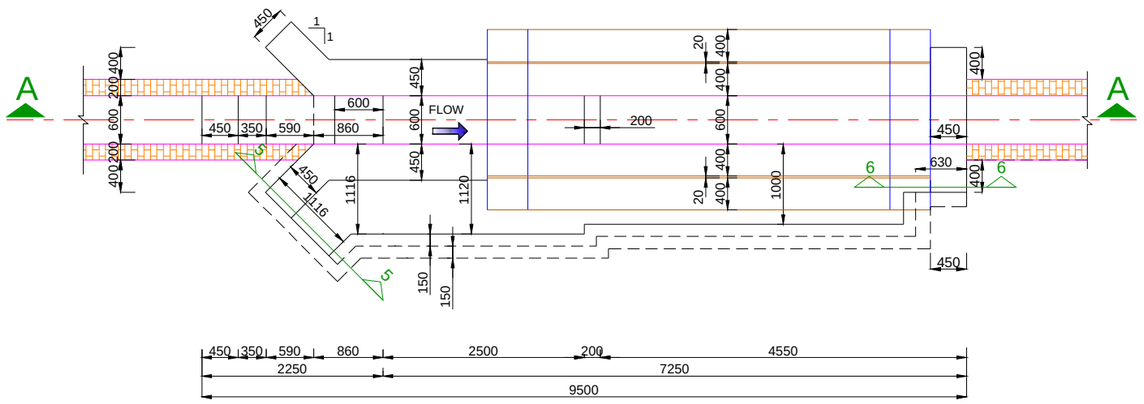
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

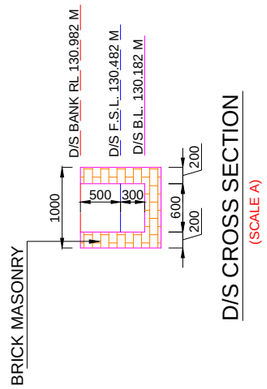
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.040	0.040	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	0.600	0.600	METRE
BED SLOPE	1 : 3000	1 : 3000	



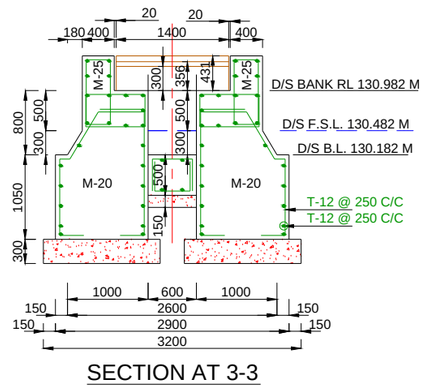
U/S CROSS SECTION
(SCALE A)



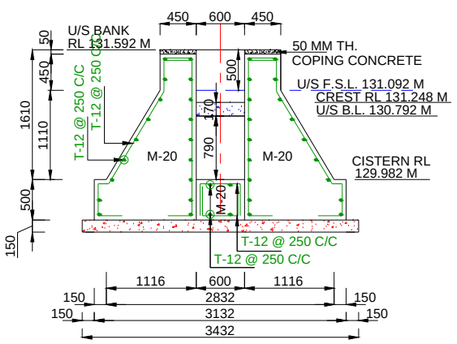
HALF TOP / HALF FOUNDATION PLAN
(SCALE A)



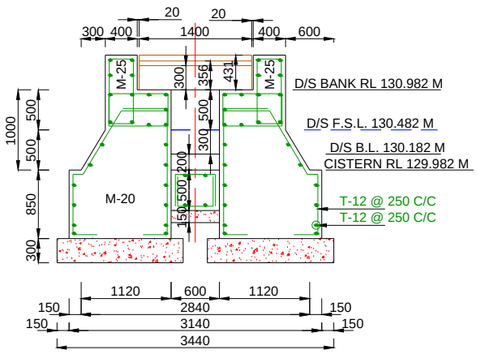
D/S CROSS SECTION
(SCALE A)



SECTION AT 3-3
(SCALE A)

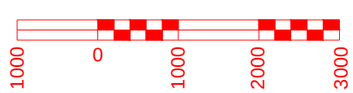


SECTION AT 1-1
(SCALE A)

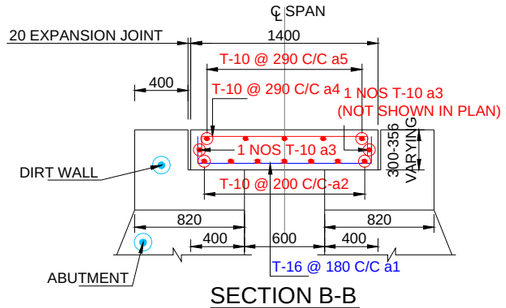


SECTION AT 2-2
(SCALE A)

SCALE A:-

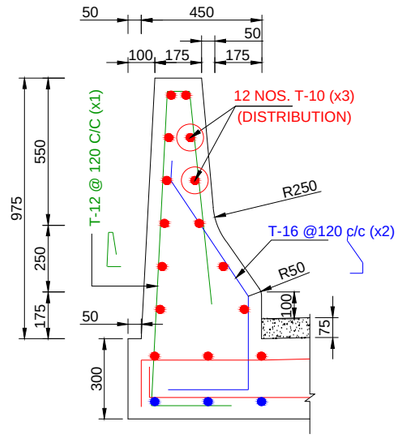


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 1.650 OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ FALL 1 of 1



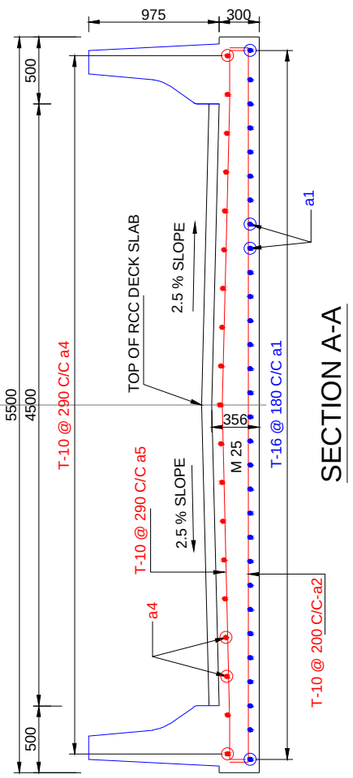
SECTION B-B

(SCALE A)

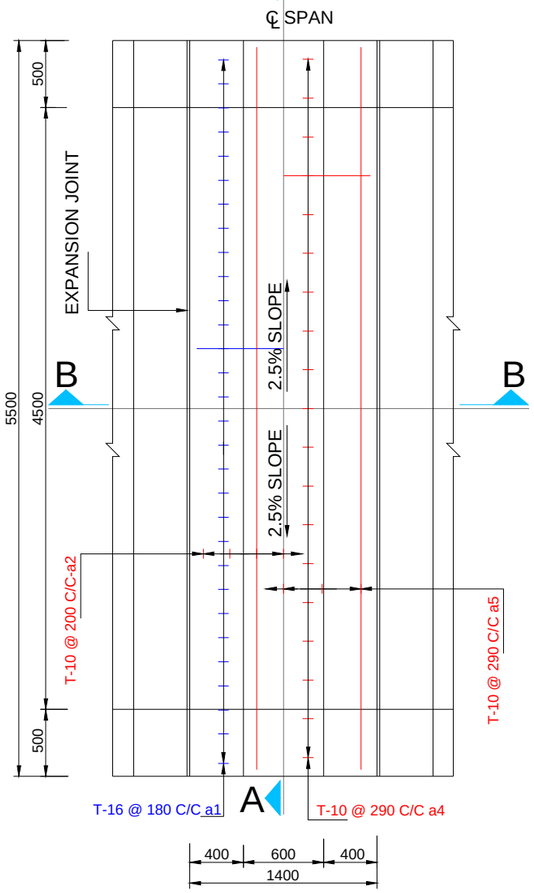


REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)

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	200, R=80, 1300, 200	16	180	31
2	a2	200, R=50, 5400, 200	10	200	7
3	a3	5400	10	-	2
4	a4	1300, 200, R=40, 200	10	290	19
5	a5	200, 450, 2250, 2250, 450, 200	10	290	6
CRASH BARRIER					
1	x1	75, 1176, 950, 300	12	120	12X2
2	x2	75, 540, 350, 300	16	120	12X2
3	x3	1300	10	-	12X2

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,

BRIDGE SLAB & PARAPET M-25

4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS ($fy=500N/mm^2$) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)

LAP LENGTH = $\alpha 1$. lbnet

WHERE, $\alpha 1$ = 1.0 for p%≤25%

$\alpha 1$ = 1.15 for 25%≤p%≤33%

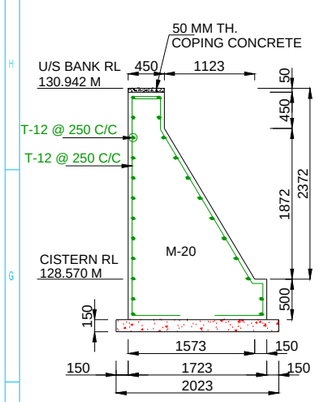
$\alpha 1$ = 1.4 for 33%≤p%≤50%

17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

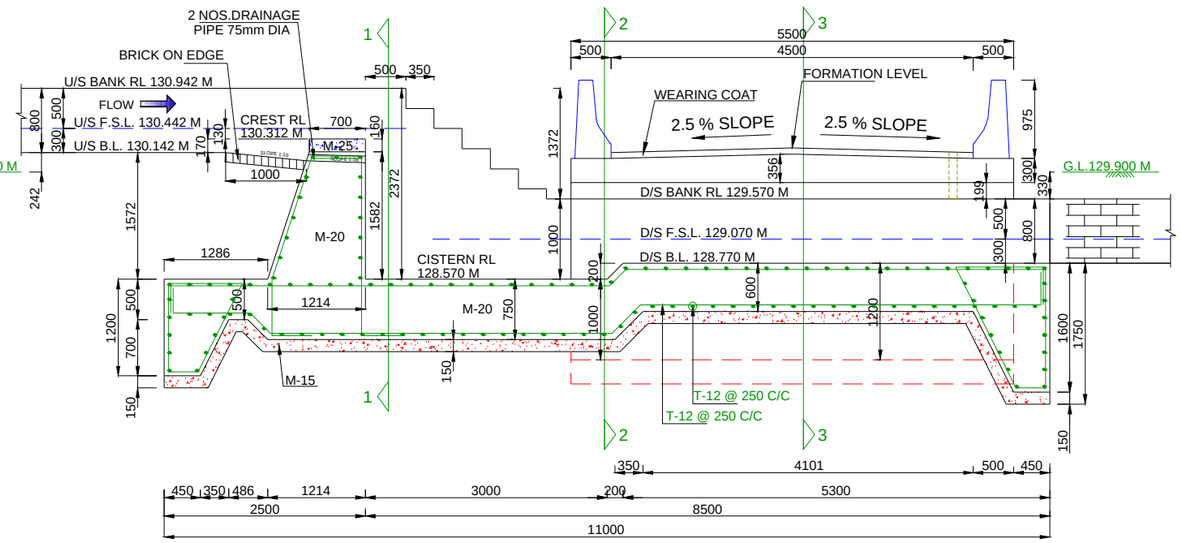
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 1.650 OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ FALL 2 of 2



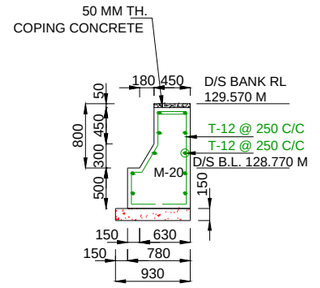
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(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.

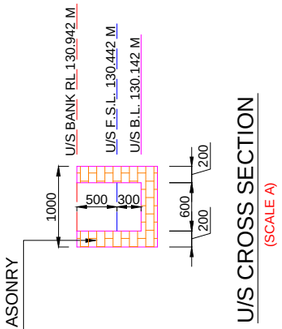
CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

PCC UNDER FLOOR	M 15
FOUNDATION OF ABUTMENTS & WING WALL	M 20
FLOOR	M 20
ABUTMENTS / WING WALLS	M 20
SLAB & DIRT WALL	M 25

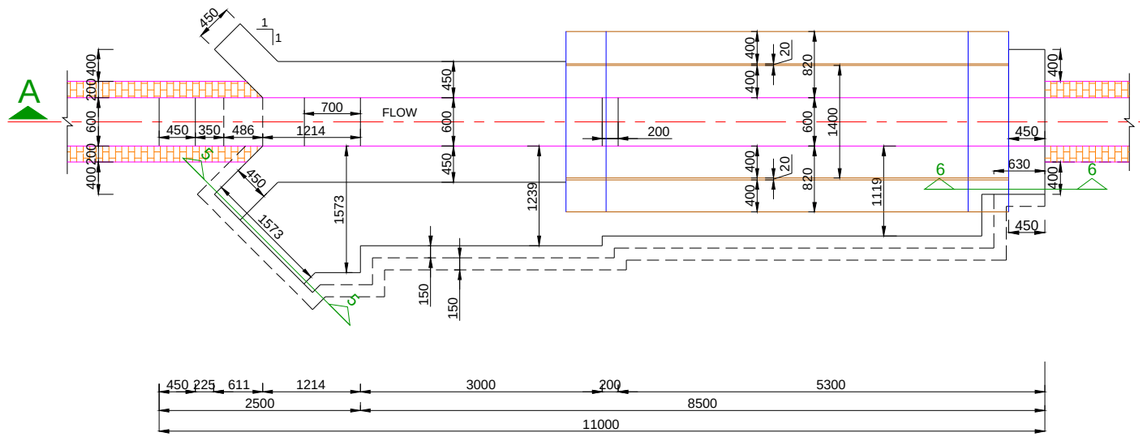
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.040	0.040	CUMEC
VERTICAL DROP	1.372	1.372	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	0.600	0.600	METRE
BED SLOPE	1 : 3000	1 : 3000	

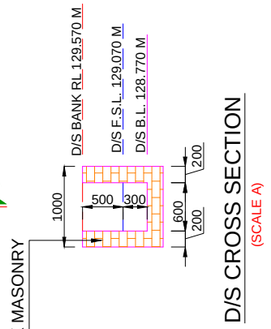


(SCALE A)

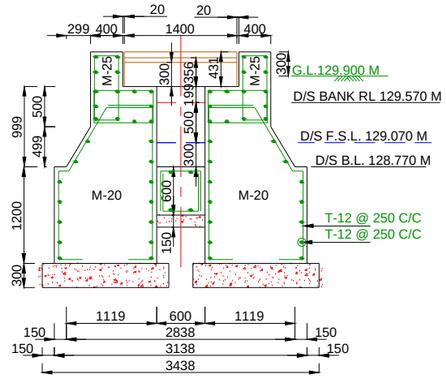


HALF TOP / HALF FOUNDATION PLAN

(SCALE A)

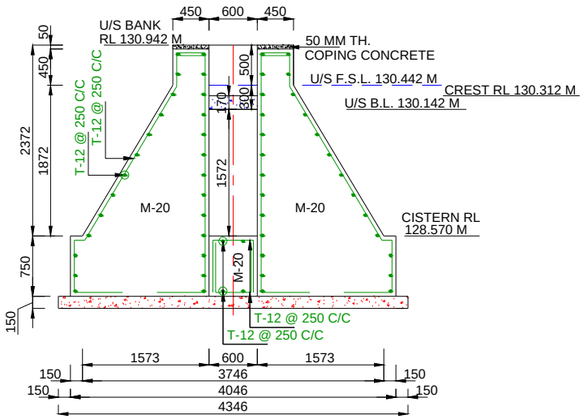


(SCALE A)



SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

(SCALE A)

SCALE A:-

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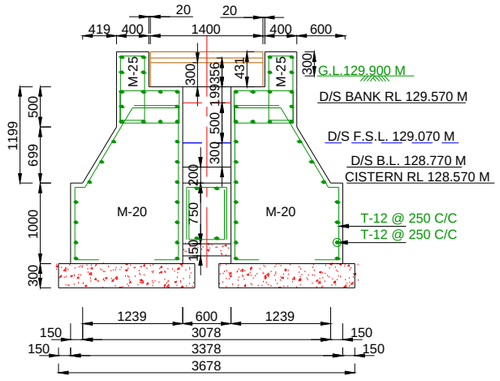
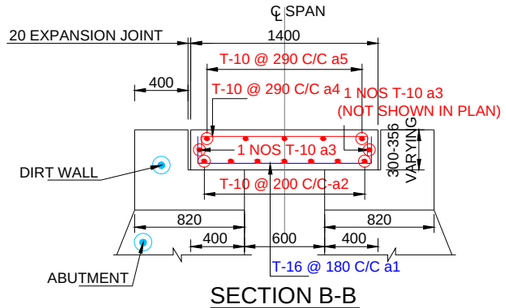


SECTION AT 2-2

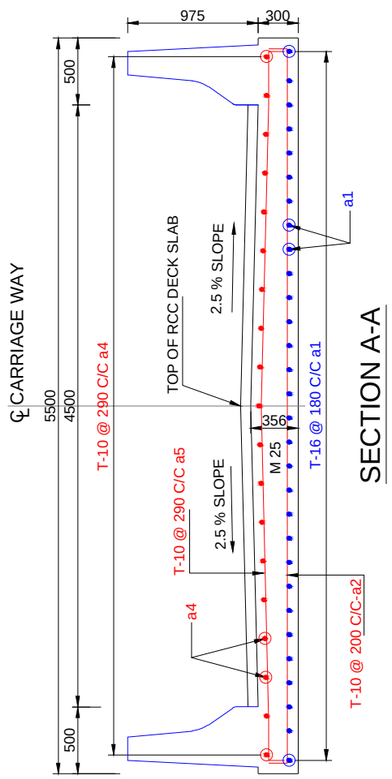
(SCALE A)

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.372 M HT. FALL AT KM. 1.768 OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ FALL 1 of 1

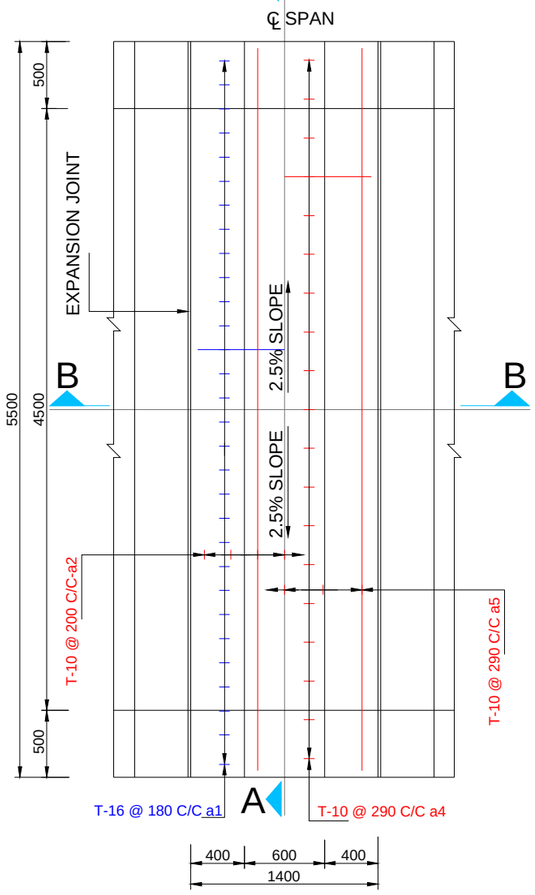


SECTION B-B

(SCALE A)



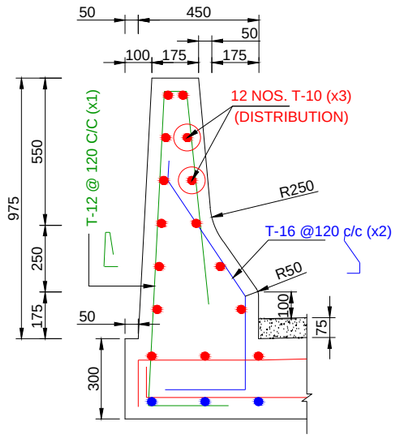
SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINF. DETAILS OF CRASH BARRIER IN MAIN 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	R=80, 200, 1300, 200	16	180	31
2	a2	R=50, 200, 5400, 200	10	200	7
3	a3	5400	10	-	2
4	a4	1300, R=40, 200, 200	10	290	19
5	a5	450, 2250, 2250, 450, 200, 200	10	290	6
CRASH BARRIER					
1	x1	75, 1176, 950, 300	12	120	12X2
2	x2	75, 540, 350, 300	16	120	12X2
3	x3	1300	10	-	12X2

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,

BRIDGE SLAB & PARAPET M-25

4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm^2) (IS 456 CLAUSE 26.2.1)							
TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)

LAP LENGTH = α1. lbnet

WHERE, α1 = 1.0 for p%≤25%

α1 = 1.15 for 25%≤p%≤33%

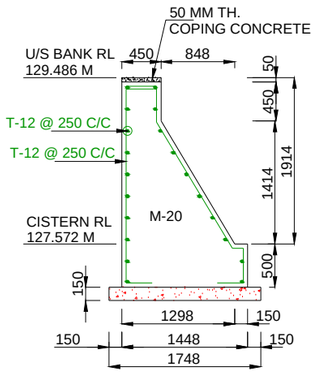
α1 = 1.4 for 33%≤p%≤50%

17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

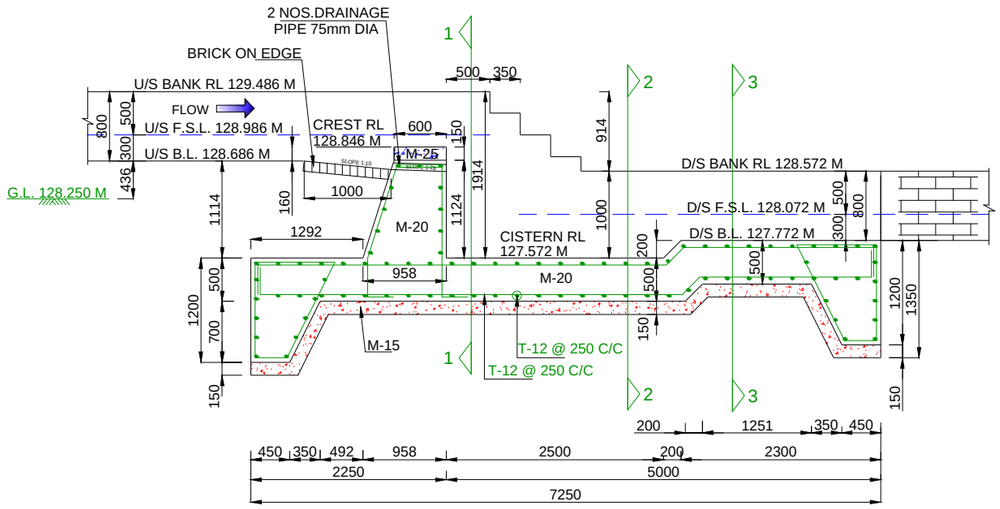
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 1.768 OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ FALL 2 of 2



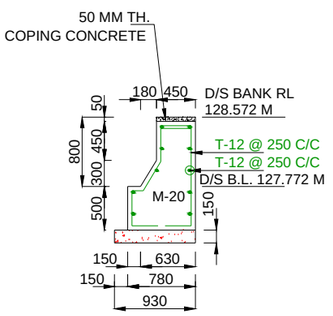
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

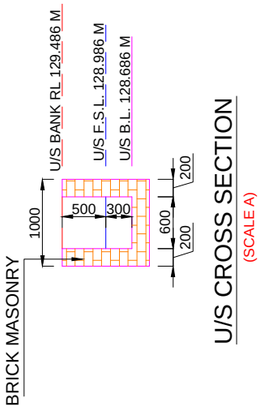
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

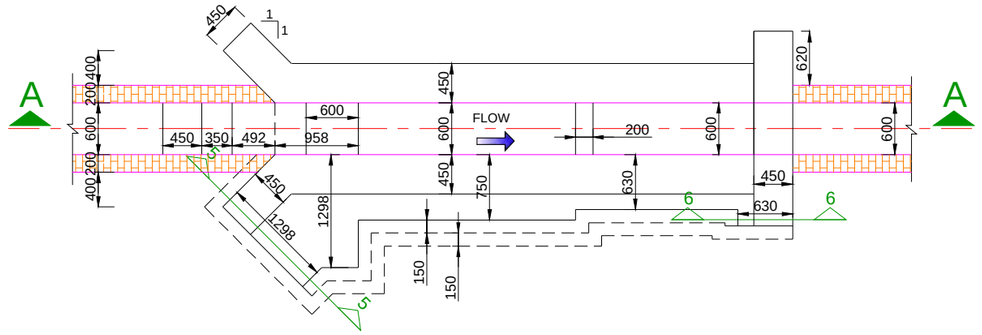
HYDRAULIC:- DATA

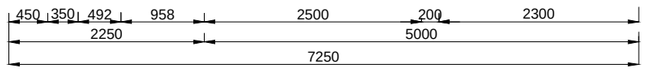
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.040	0.040	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	0.600	0.600	METRE
BED SLOPE	1 : 3000	1 : 3000	



U/S CROSS SECTION

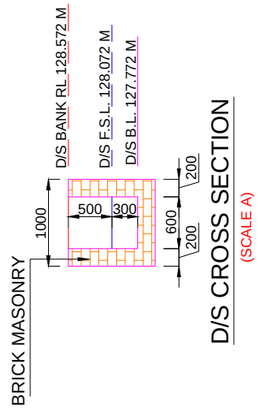
(SCALE A)





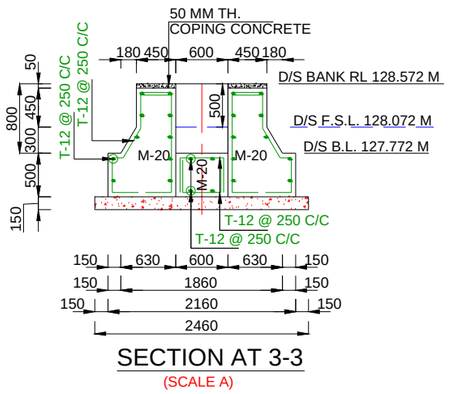
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



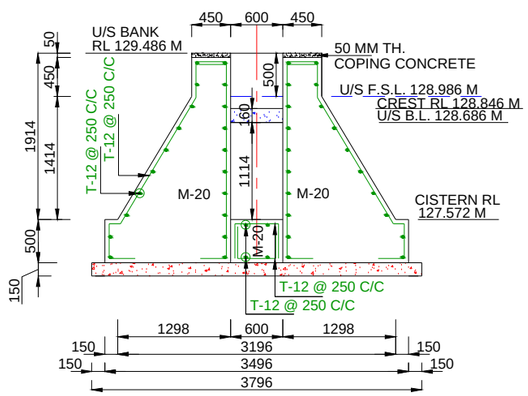
D/S CROSS SECTION

(SCALE A)



SECTION AT 3-3

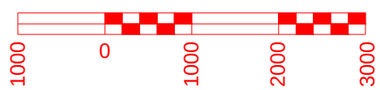
(SCALE A)

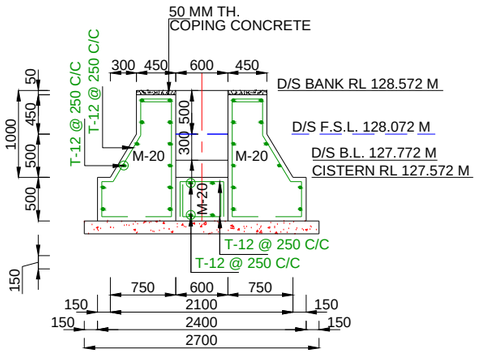


SECTION AT 1-1

(SCALE A)

SCALE A:-

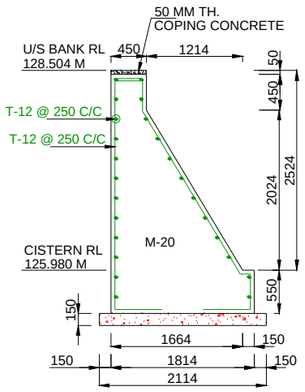




SECTION AT 2-2

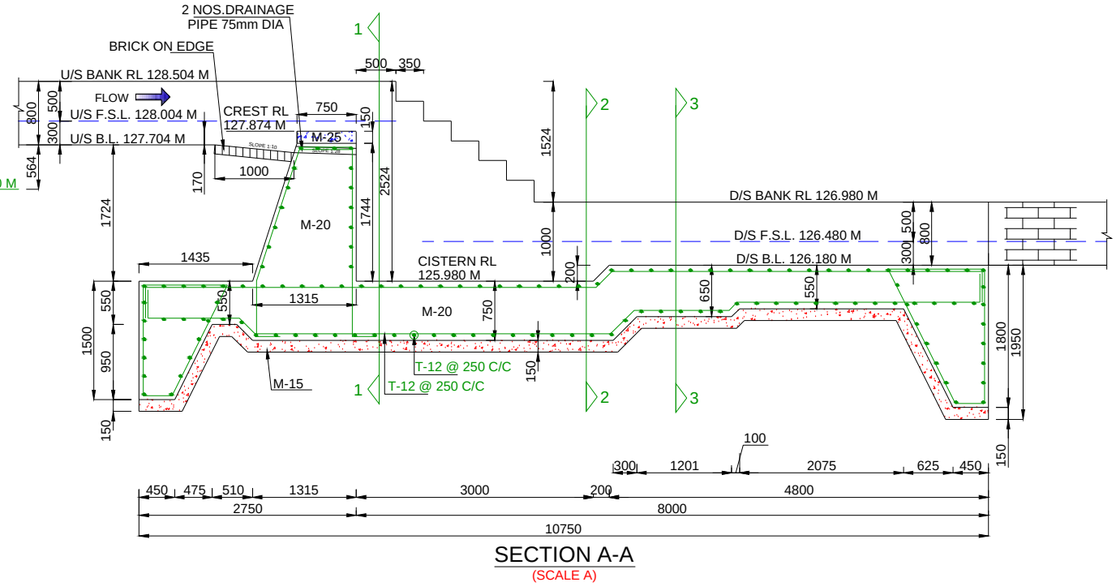
(SCALE A)

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 2.022 OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ FALL 1 of 2



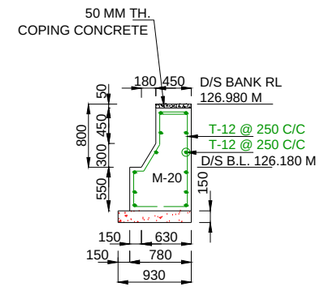
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

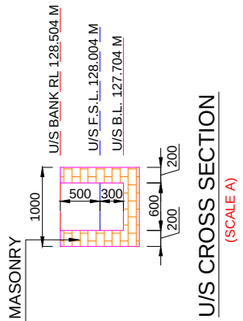
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

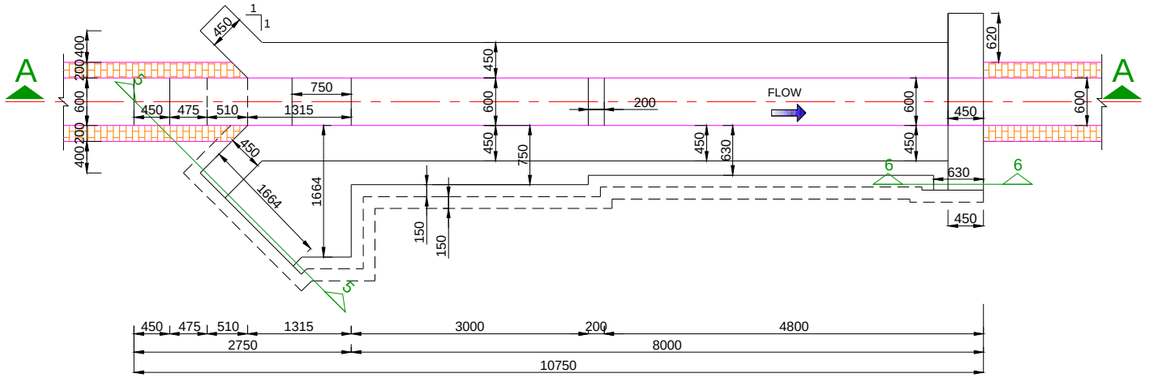
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.040	0.040	CUMEC
VERTICAL DROP	1.524	1.524	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	0.600	0.600	METRE
BED SLOPE	1 : 3000	1 : 3000	

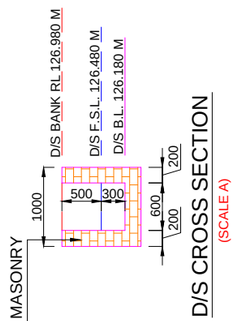


U/S CROSS SECTION (SCALE A)

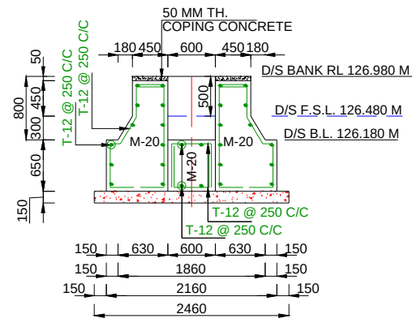


HALF TOP / HALF FOUNDATION PLAN

(SCALE A)

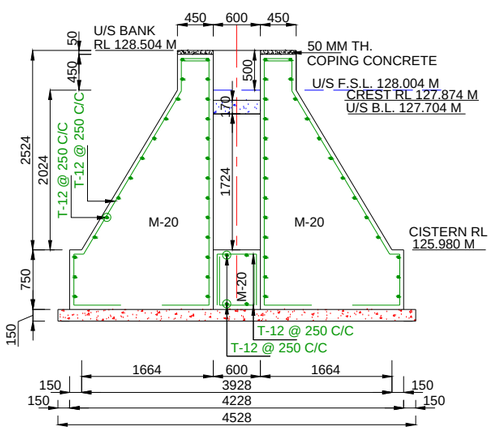


D/S CROSS SECTION (SCALE A)



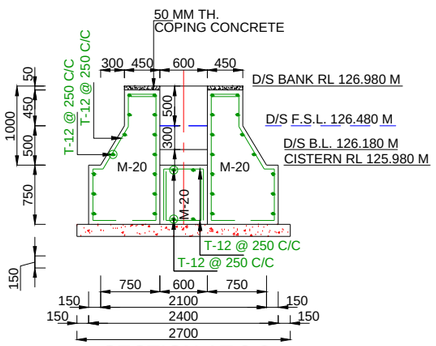
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

(SCALE A)



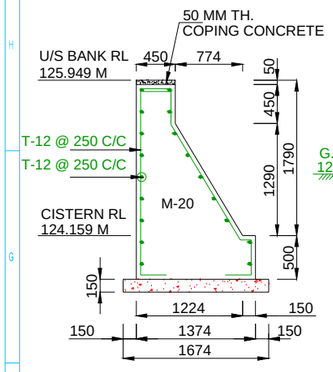
SECTION AT 2-2

(SCALE A)

SCALE A:-

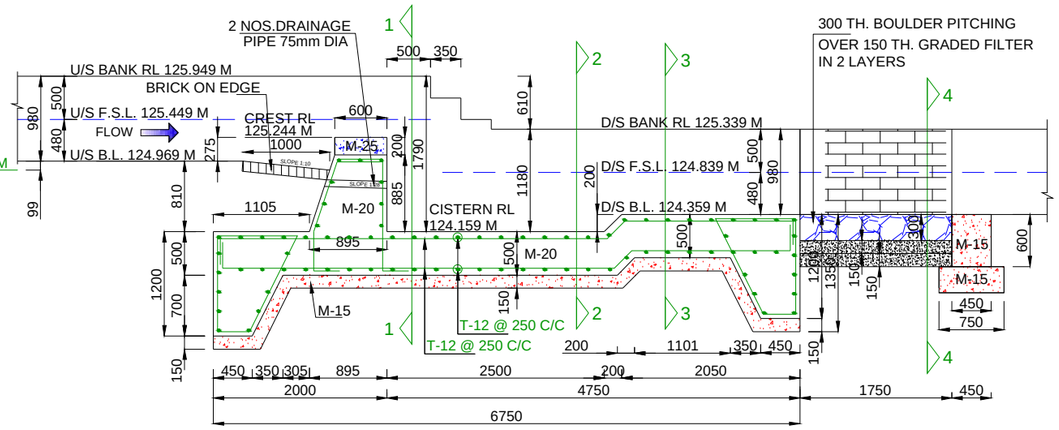
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.524 M HT. FALL AT KM. 2.225 OF PALUA MR. (OFFTAKE FROM RD -0+350 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-01/ FALL 1 of 2



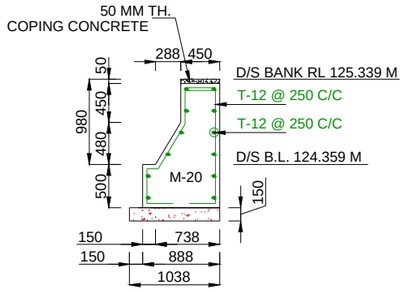
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

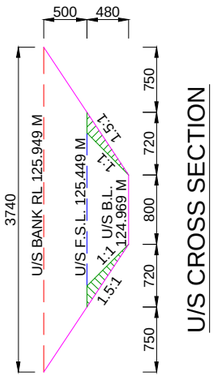
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

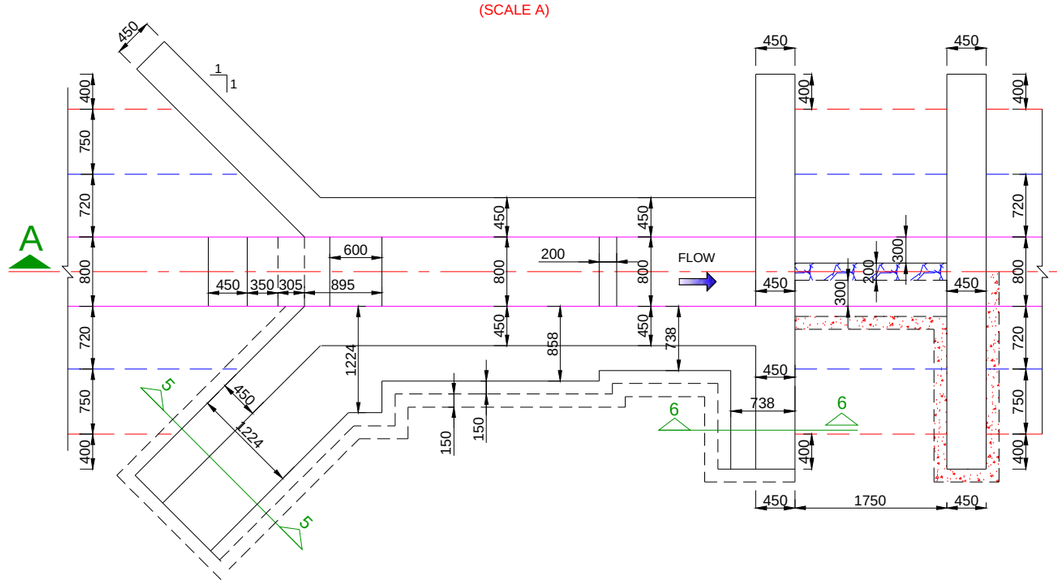
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.150	0.150	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.480	0.480	METRE
BED WIDTH	0.800	0.800	METRE
BED SLOPE	1 : 3000	1 : 3000	



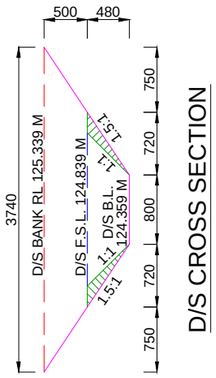
U/S CROSS SECTION

(SCALE A)



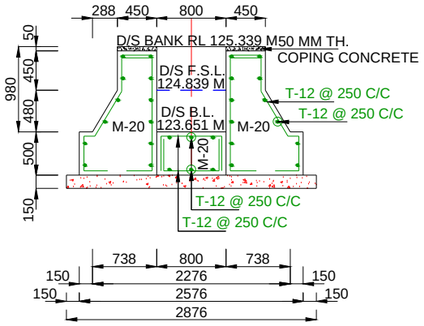
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



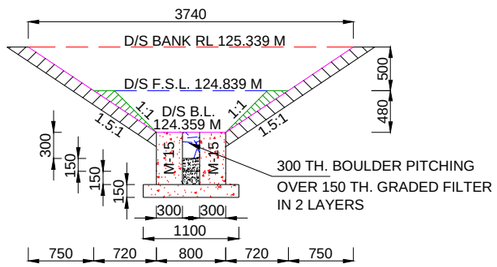
D/S CROSS SECTION

(SCALE A)



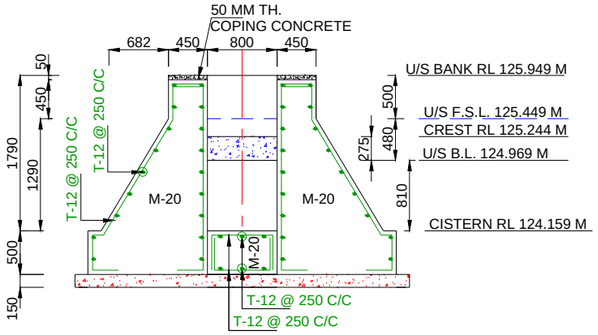
SECTION AT 3-3

(SCALE A)



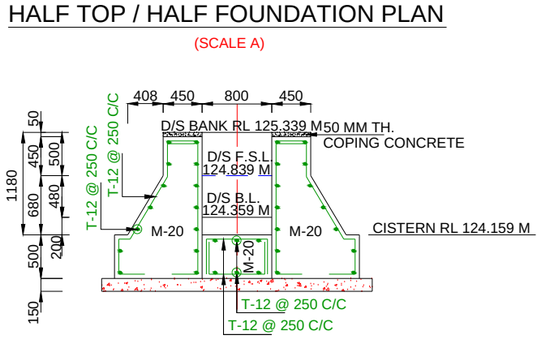
SECTION AT 4-4

(SCALE A)



SECTION AT 1-1

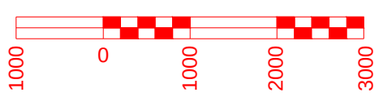
(SCALE A)



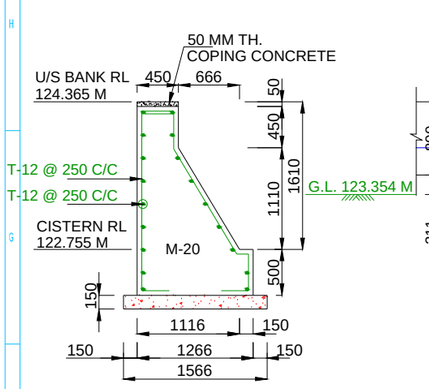
SECTION AT 2-2

(SCALE A)

SCALE A:-

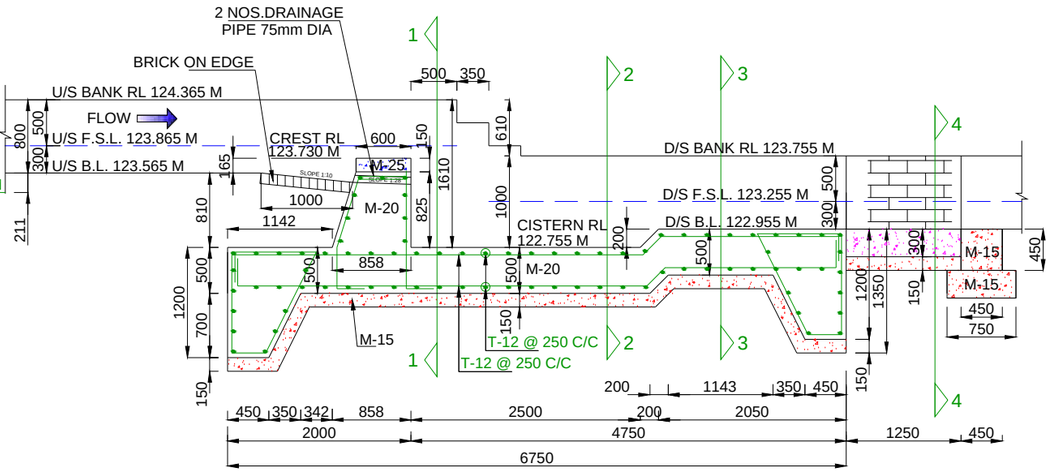


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 1.700 OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ FALL 1 of 1



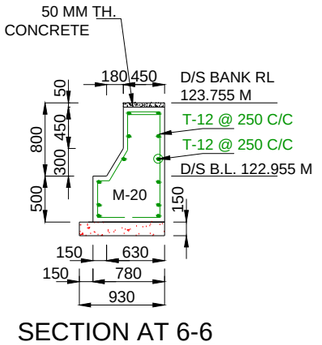
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

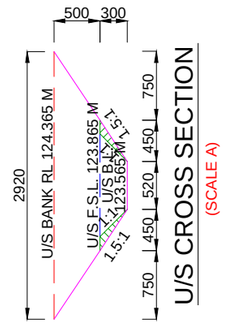
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

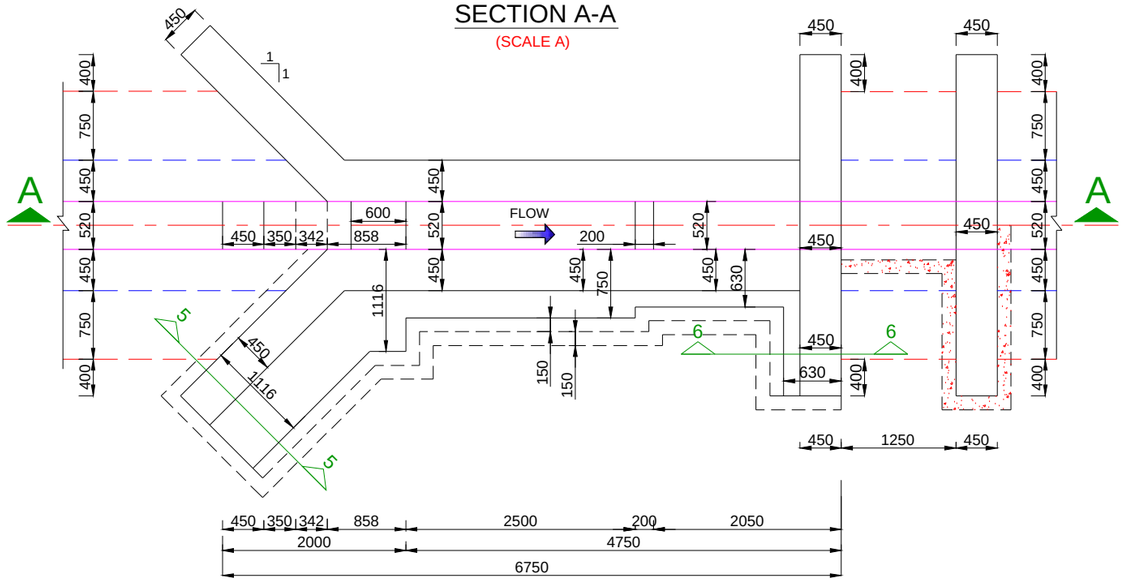
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.040	0.040	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	0.520	0.520	METRE
BED SLOPE	1 : 3000	1 : 3000	

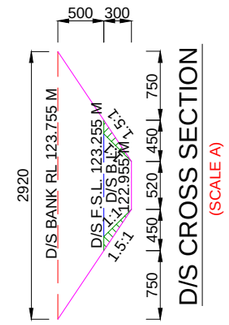


(SCALE A)

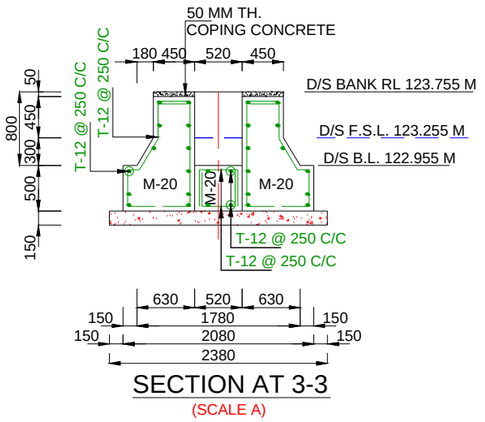


HALF TOP / HALF FOUNDATION PLAN

(SCALE A)

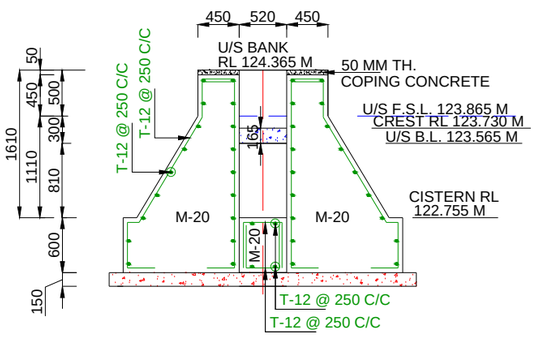


(SCALE A)



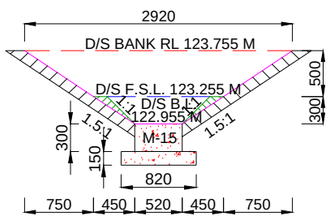
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

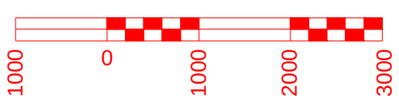
(SCALE A)

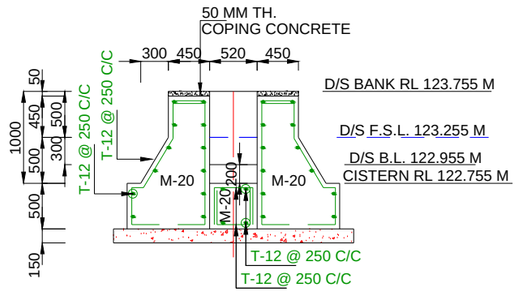


SECTION AT 4-4

(SCALE A)

SCALE A:-





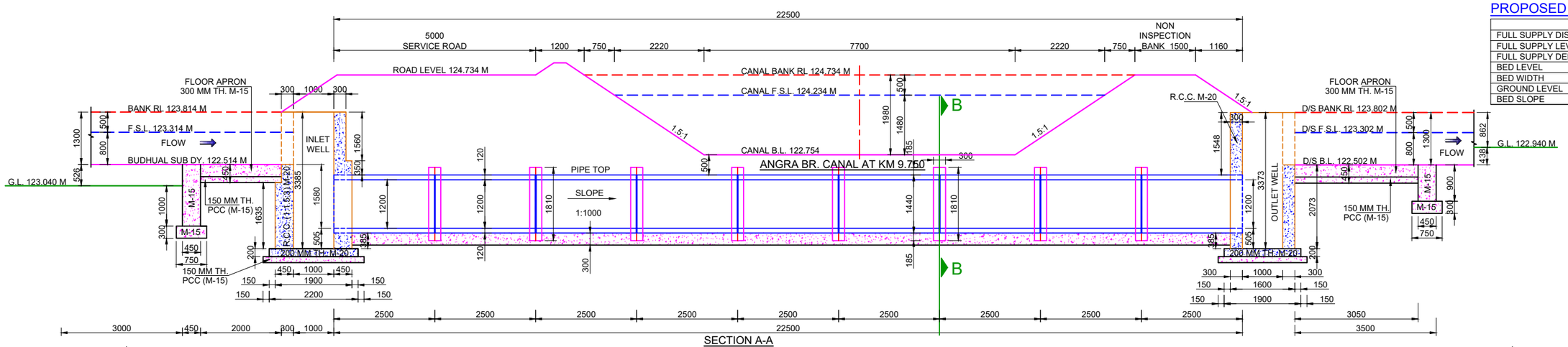
SECTION AT 2-2

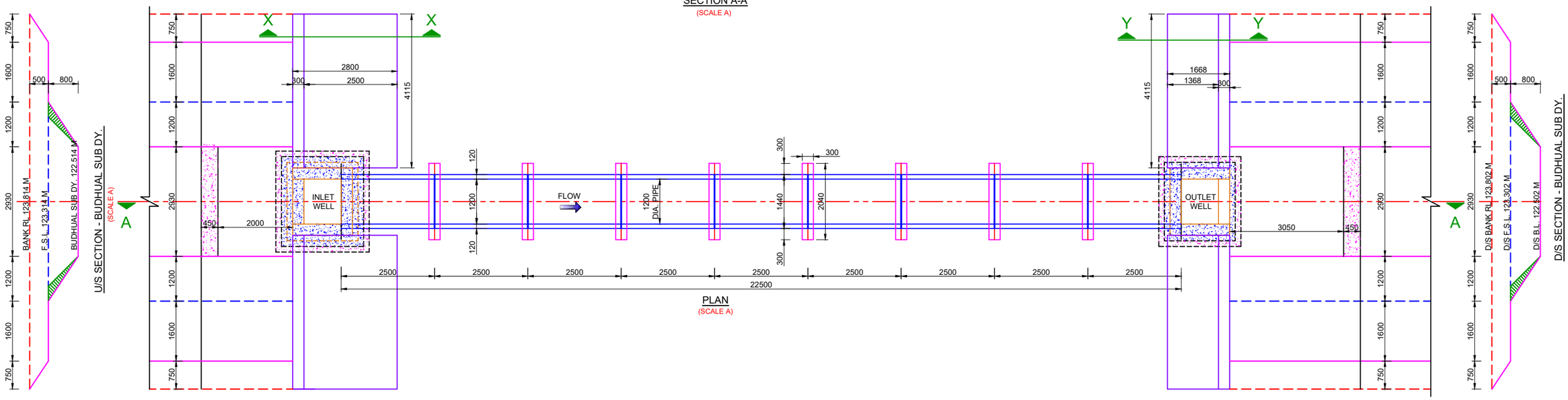
(SCALE A)

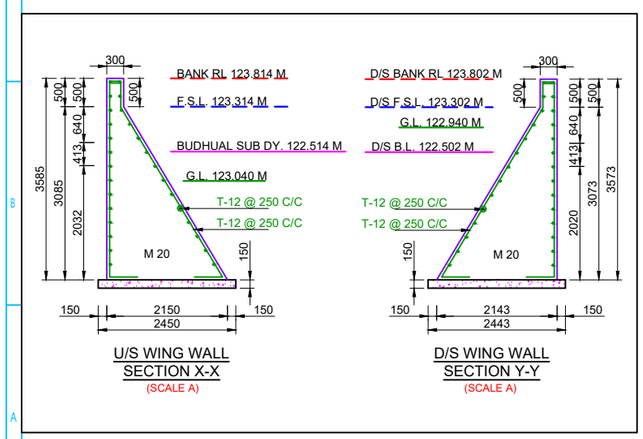
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 4.084 OF ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-02/ FALL 1 of 1

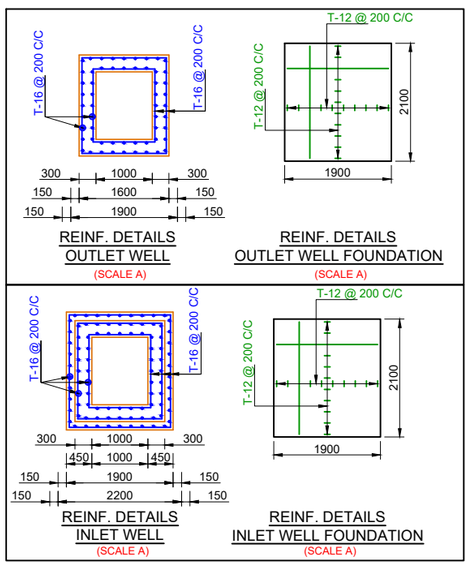
PROPOSED DESIGN DATA

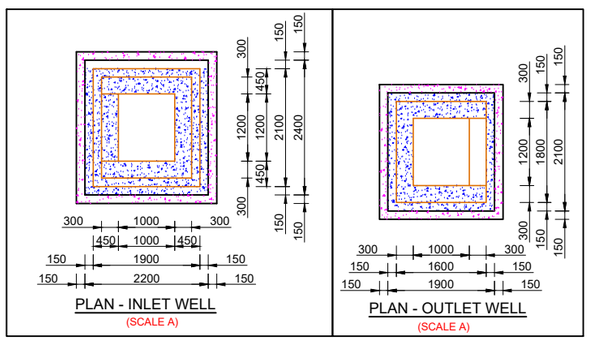
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.120	1.120	CUMEC
FULL SUPPLY LEVEL	123.314	123.302	METRE
FULL SUPPLY DEPTH	0.800	0.800	METRE
BED LEVEL	122.514	122.502	METRE
BED WIDTH	2.930	2.930	METRE
GROUND LEVEL	123.040	122.940	METRE
BED SLOPE	1 : 4200	1 : 4200	

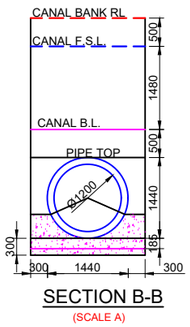












NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
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FLOOR	M 15
FOUNDATION OF ABUTMENTS & WING WALL	M 15
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.

TENDER PURPOSE ONLY

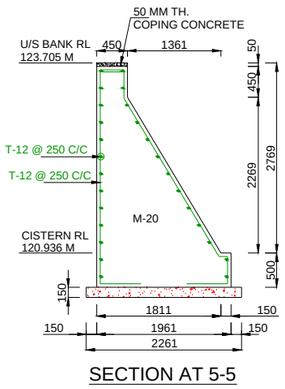
SCALE A:- 0 500 1000 1500

SCALE B:- 0 250 500 750

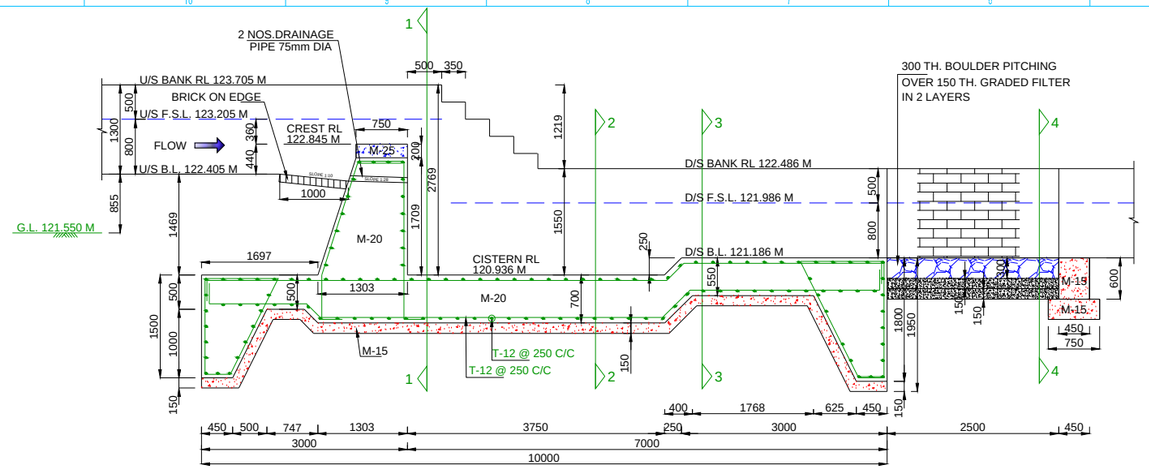
Prepared by :-

WAPCOS LTD.

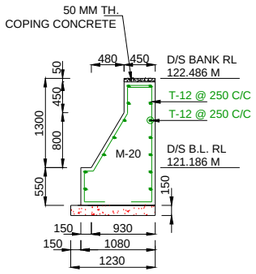
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	DRAWING OF CROSS DRAINAGE AT KM 0.800 OF BUDHUAL SUB DY. AND AT KM 9.750 OF ANGRA BRANCH CANAL
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-03/ CD 1 of 1



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(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.

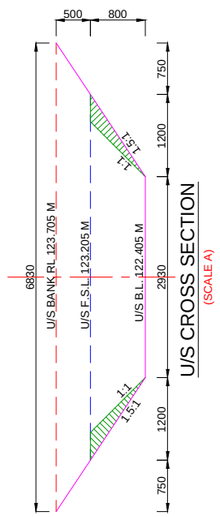
CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

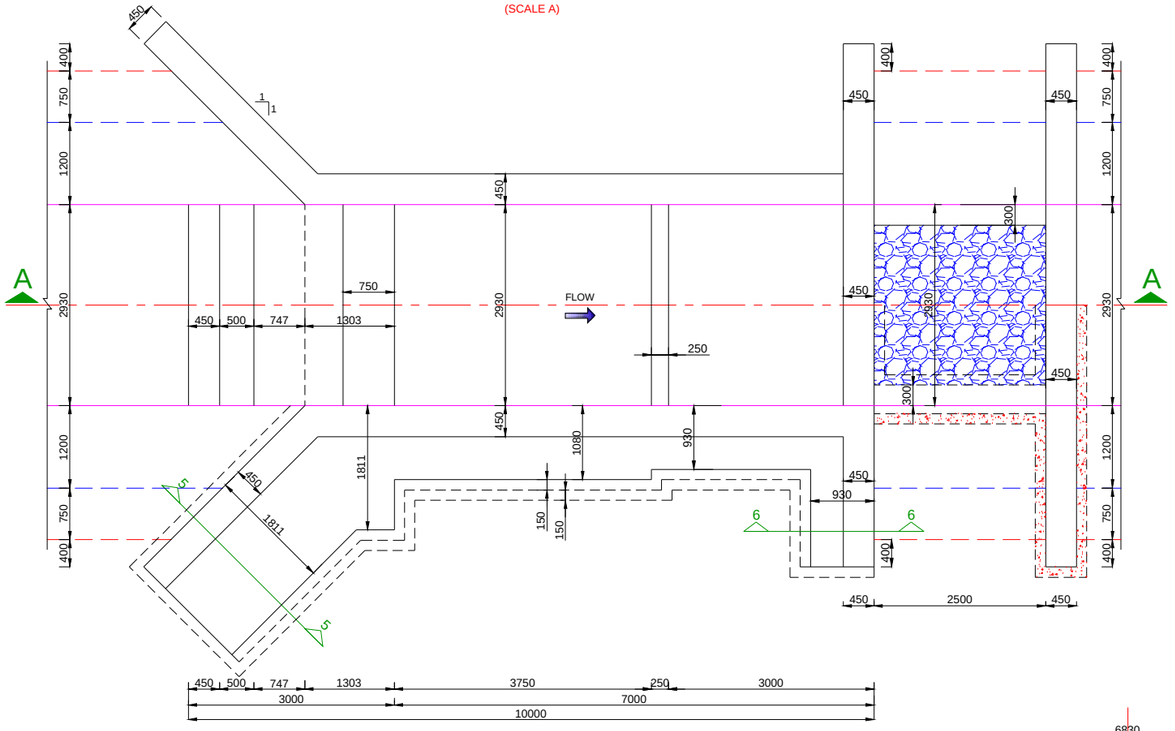
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

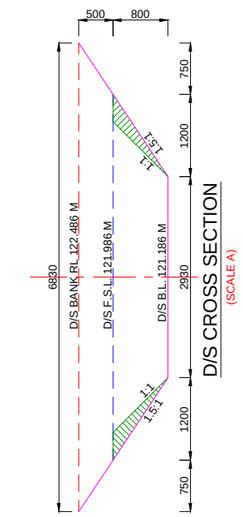
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.120	1.120	CUMEC
VERTICAL DROP	1.219	1.219	METRE
FULL SUPPLY DEPTH	0.800	0.800	METRE
BED WIDTH	2.930	2.930	METRE
BED SLOPE	1 : 4200	1 : 4200	



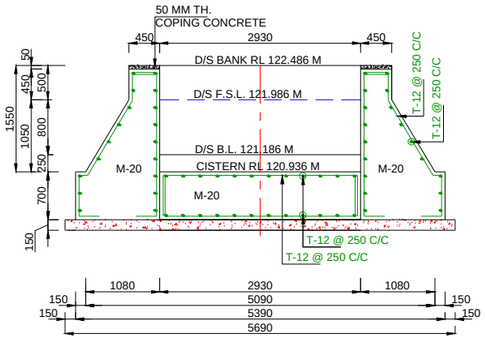
U/S CROSS SECTION
(SCALE A)



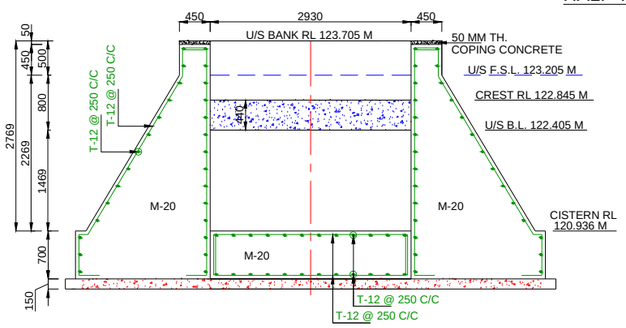
HALF TOP / HALF FOUNDATION PLAN
(SCALE A)



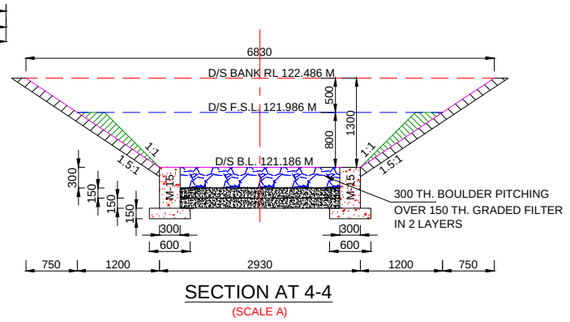
D/S CROSS SECTION
(SCALE A)



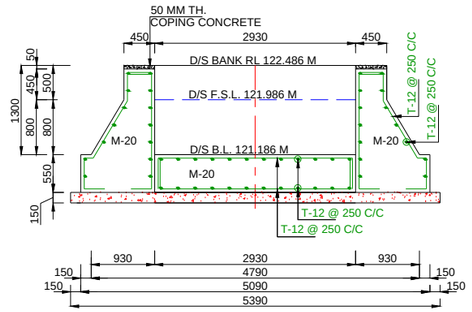
SECTION AT 2-2
(SCALE A)



SECTION AT 1-1
(SCALE A)



SECTION AT 4-4
(SCALE A)

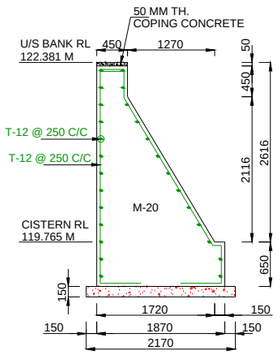


SECTION AT 3-3
(SCALE A)

SCALE A:-

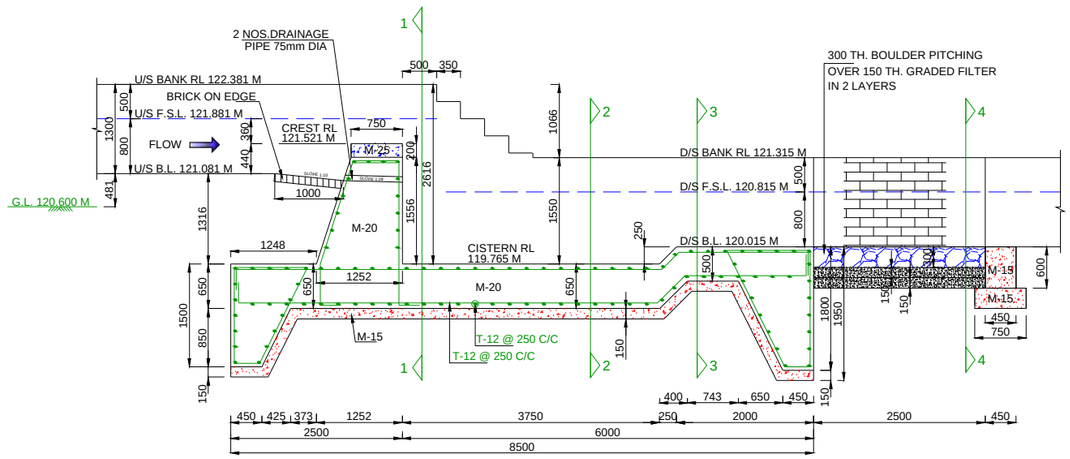
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.219 M HT. FALL AT KM. 1.260 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



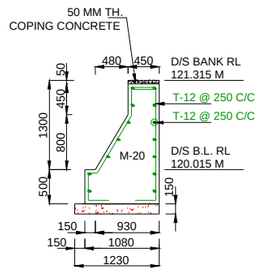
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(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.

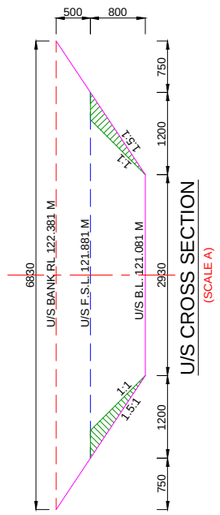
CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

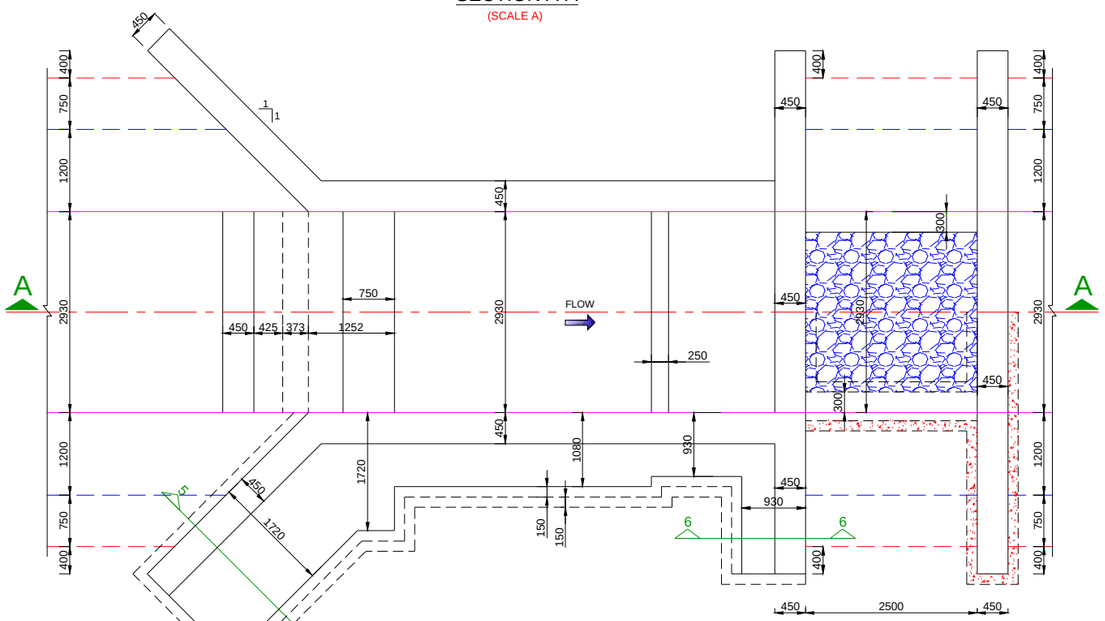
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.120	1.120	CUMEC
VERTICAL DROP	1.066	1.066	METRE
FULL SUPPLY DEPTH	0.800	0.800	METRE
BED WIDTH	2.930	2.930	METRE
BED SLOPE	1 : 4200	1 : 4200	



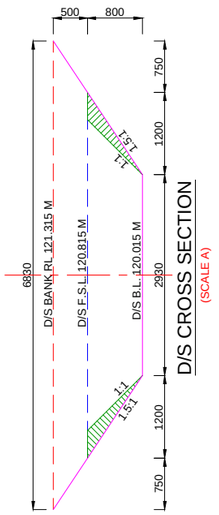
U/S CROSS SECTION

(SCALE A)



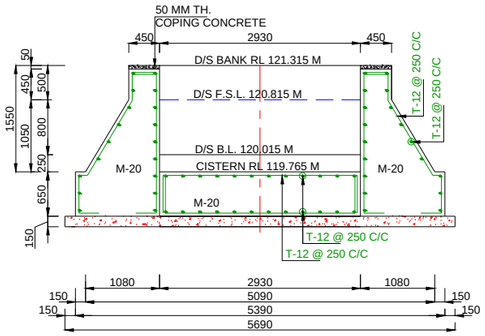
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



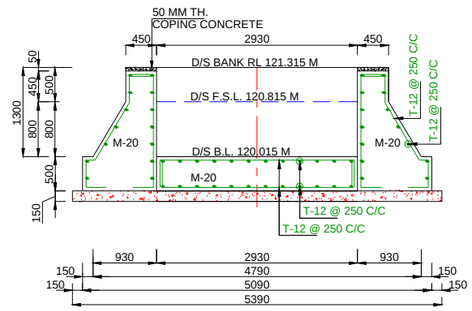
D/S CROSS SECTION

(SCALE A)



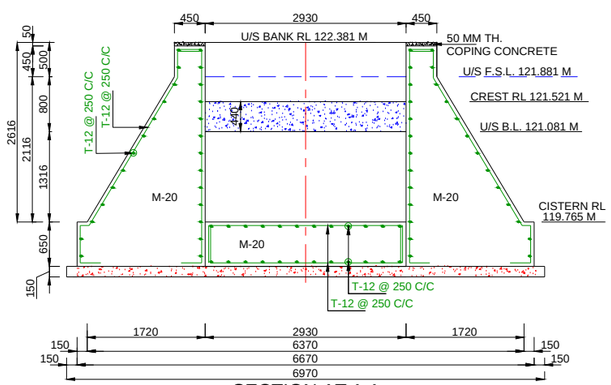
SECTION AT 2-2

(SCALE A)



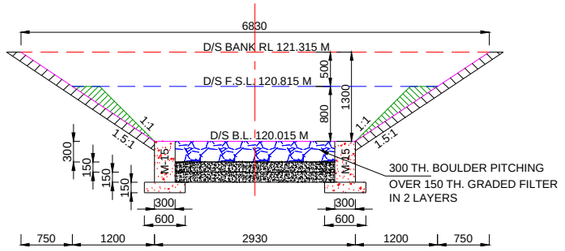
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

(SCALE A)



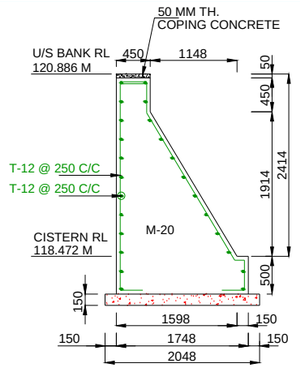
SECTION AT 4-4

(SCALE A)

SCALE A:-

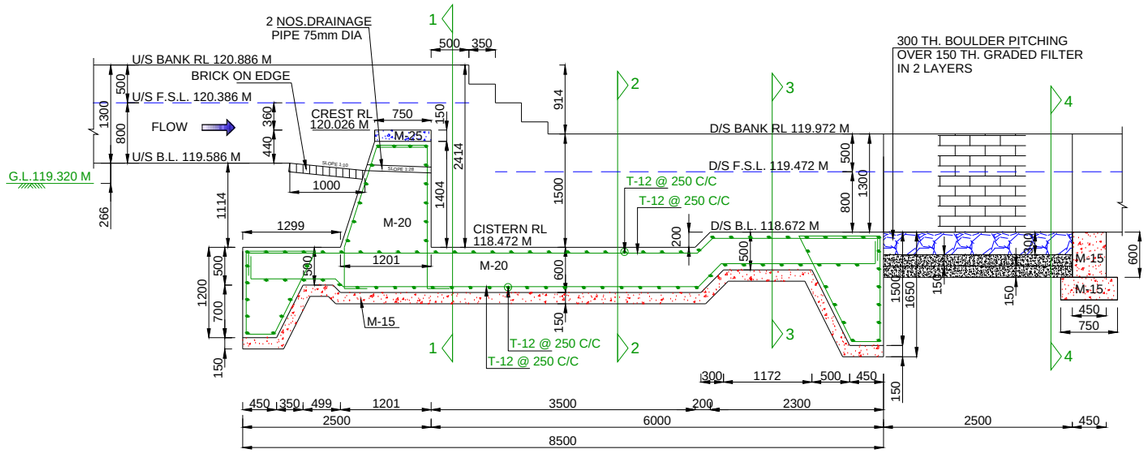
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.066 M HT. FALL AT KM. 1.700 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



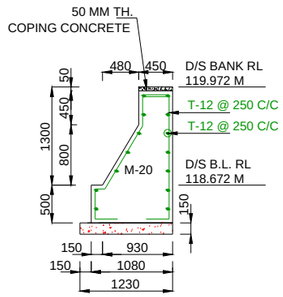
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

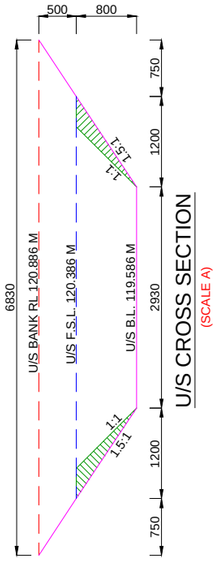
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

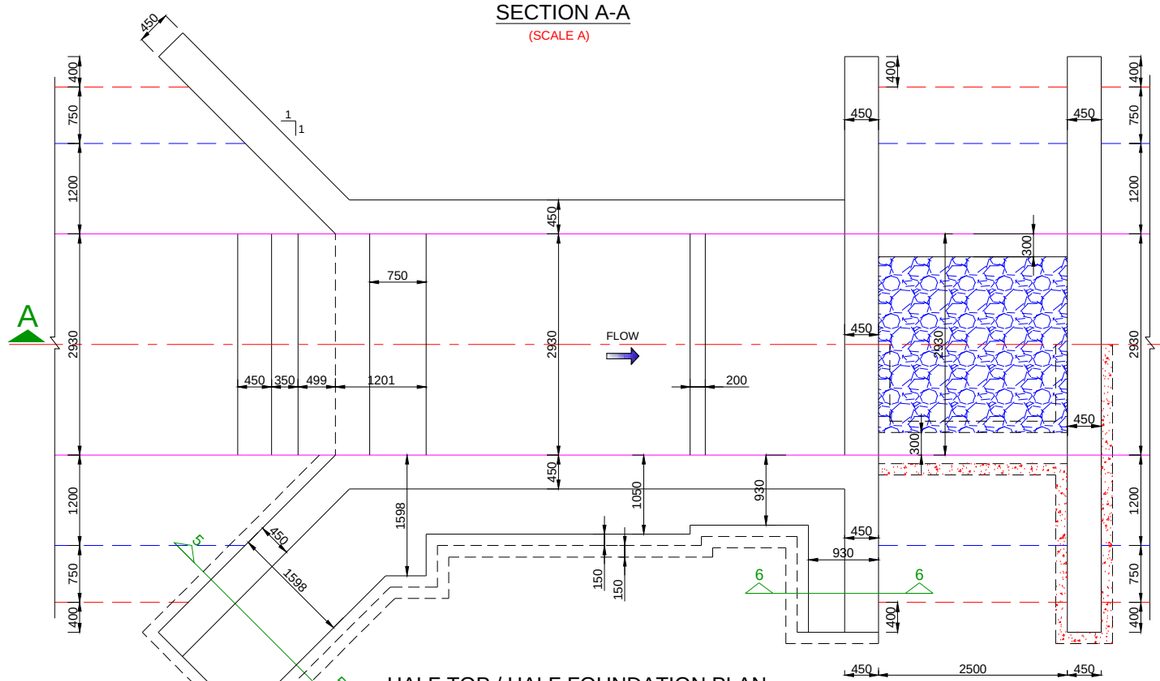
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

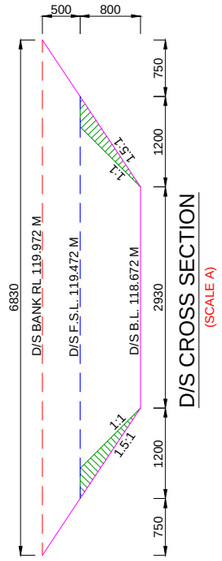
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

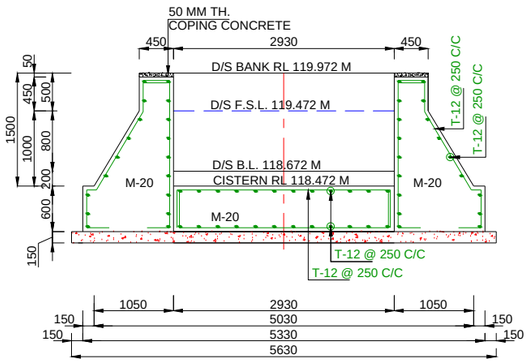
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.120	1.120	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.800	0.800	METRE
BED WIDTH	2.930	2.930	METRE
BED SLOPE	1 : 4200	1 : 4200	



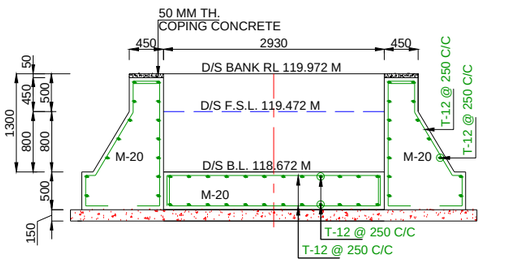






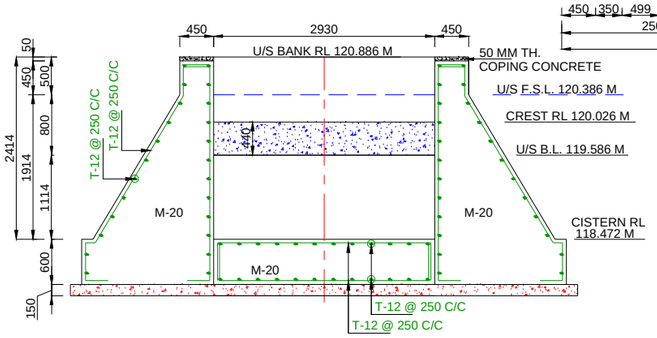
SECTION AT 2-2

(SCALE A)



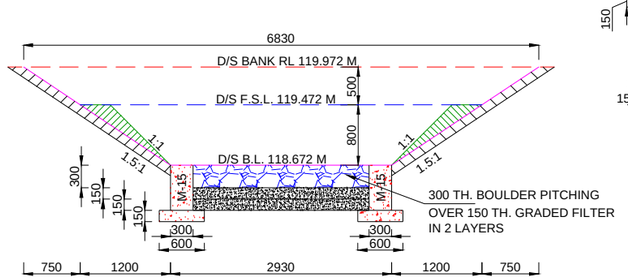
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

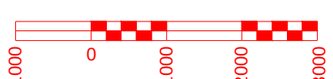
(SCALE A)



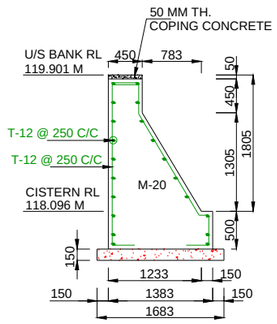
SECTION AT 4-4

(SCALE A)

SCALE A:-

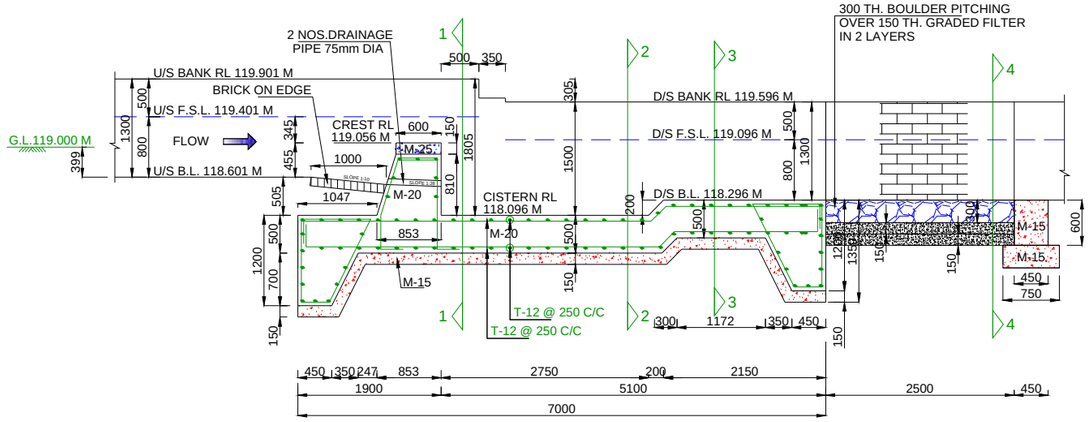


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 3.500 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



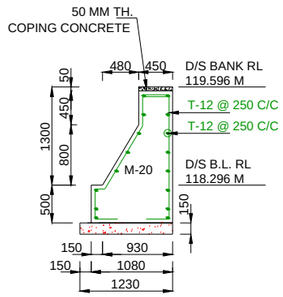
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

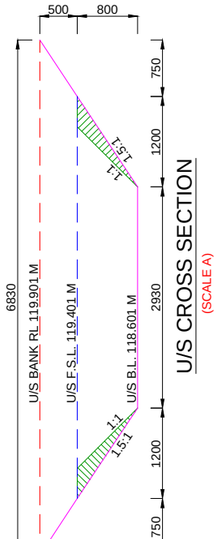
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

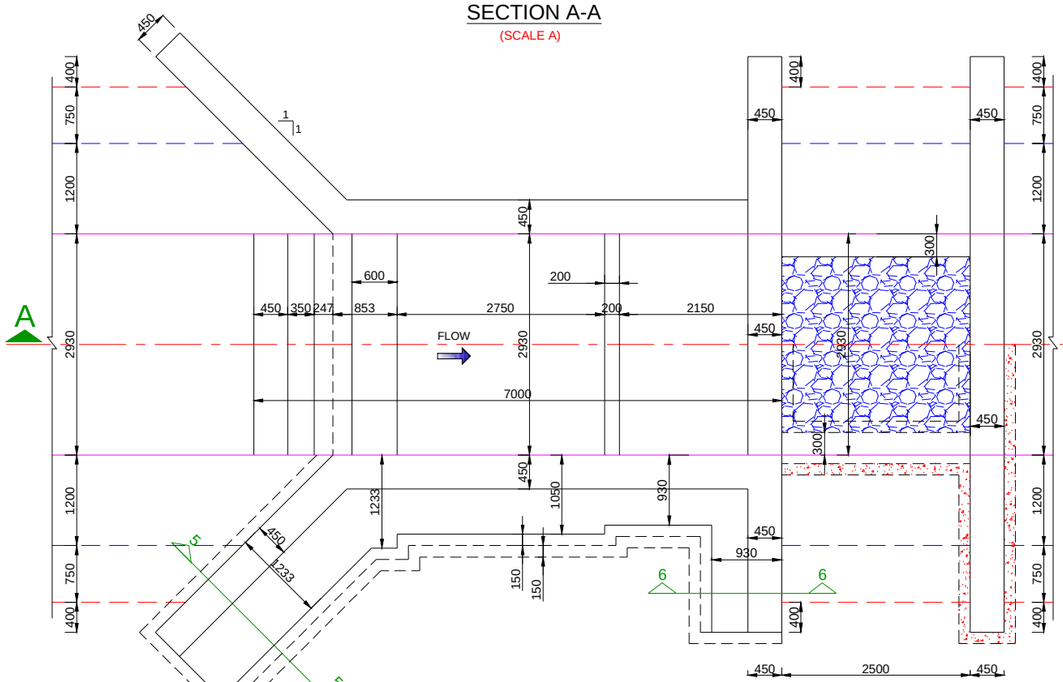
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.120	1.120	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.800	0.800	METRE
BED WIDTH	2.930	2.930	METRE
BED SLOPE	1 : 4200	1 : 4200	



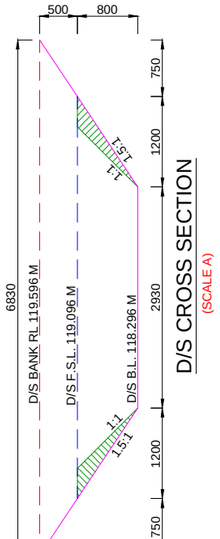
U/S CROSS SECTION

(SCALE A)



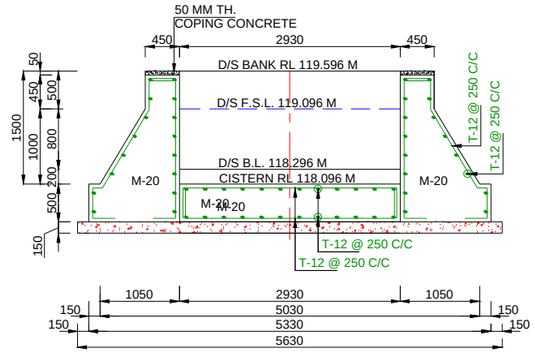
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



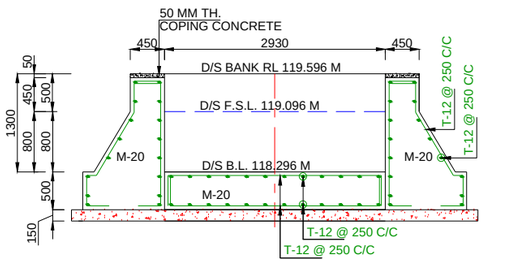
D/S CROSS SECTION

(SCALE A)



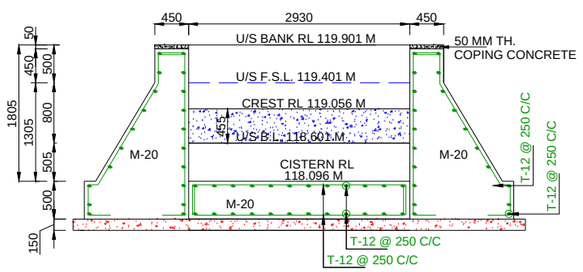
SECTION AT 2-2

(SCALE A)



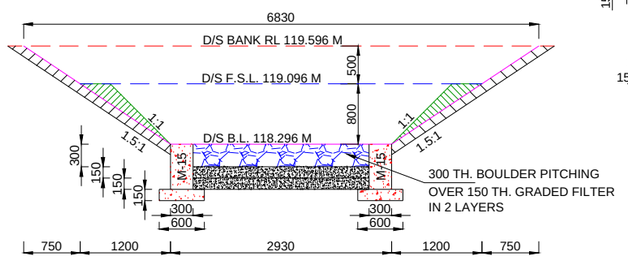
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

(SCALE A)

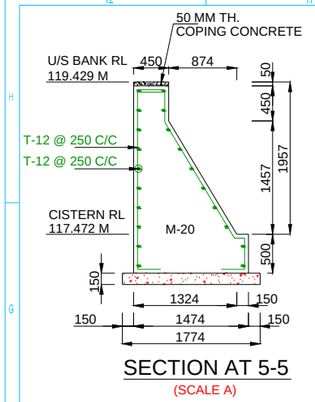


SECTION AT 4-4

(SCALE A)

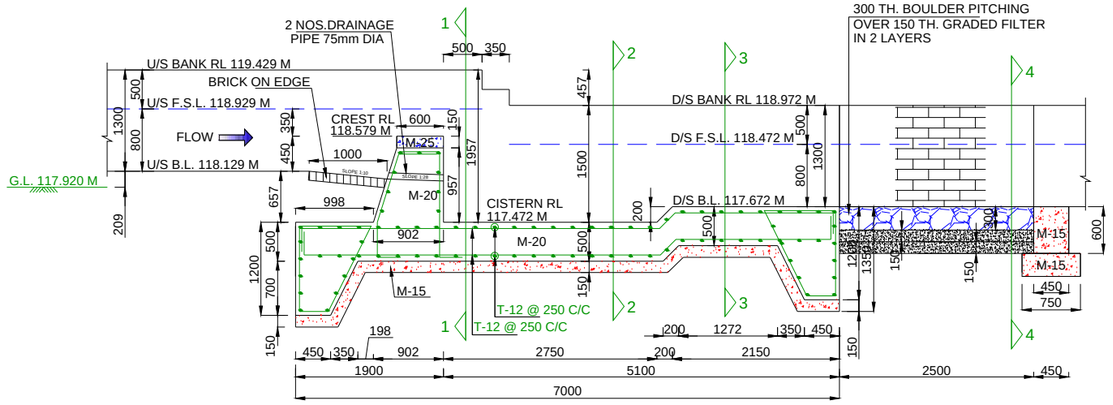
SCALE A:-

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.305 M HT. FALL AT KM. 3.800 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



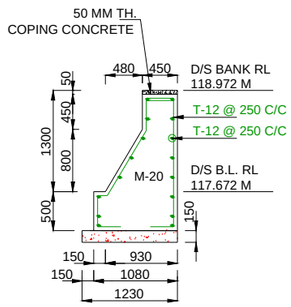
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

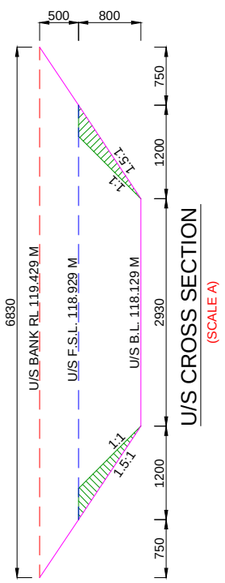
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

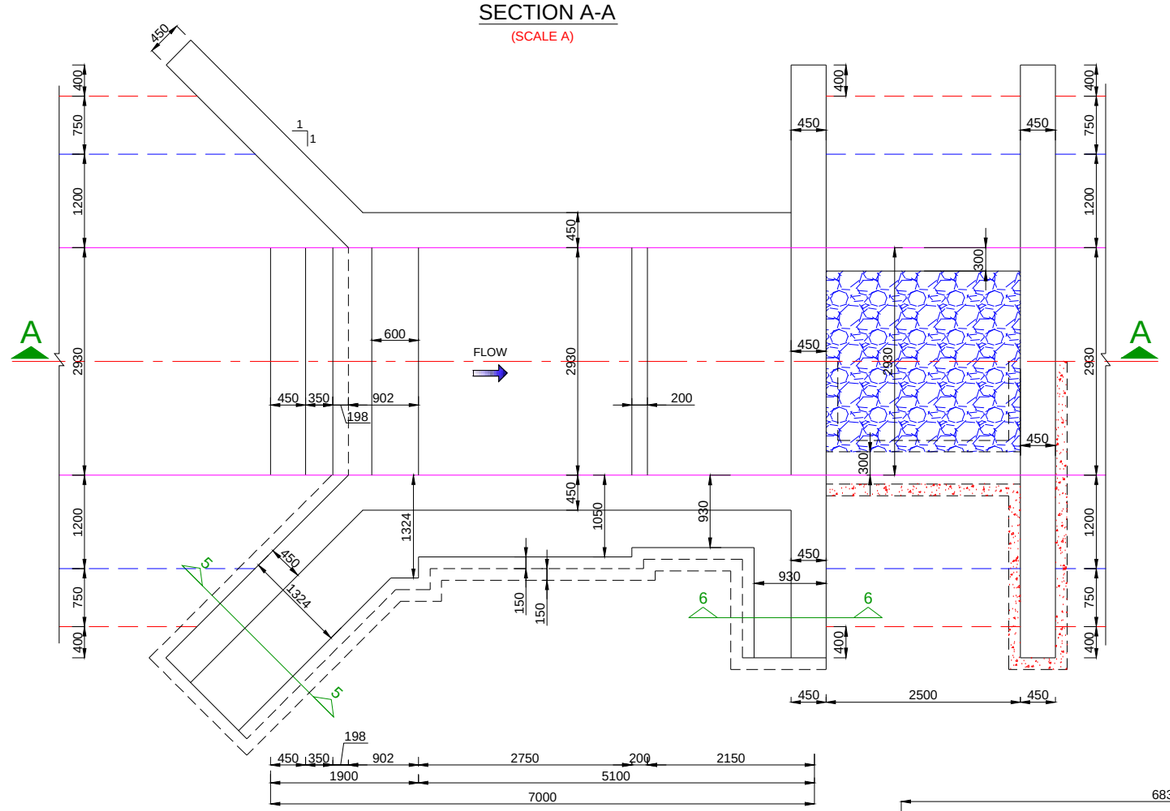
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.120	1.120	CUMEC
VERTICAL DROP	0.457	0.457	METRE
FULL SUPPLY DEPTH	0.800	0.800	METRE
BED WIDTH	2.930	2.930	METRE
BED SLOPE	1 : 4200	1 : 4200	



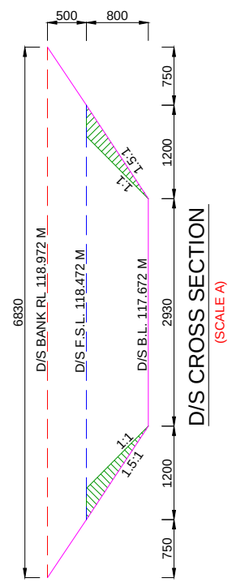
U/S CROSS SECTION

(SCALE A)



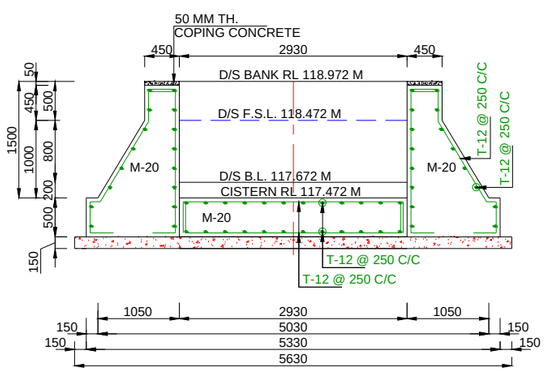
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



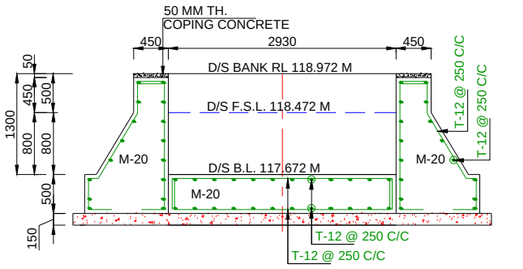
D/S CROSS SECTION

(SCALE A)



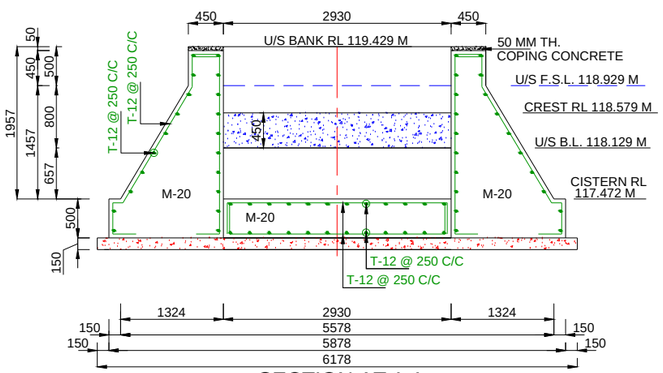
SECTION AT 2-2

(SCALE A)



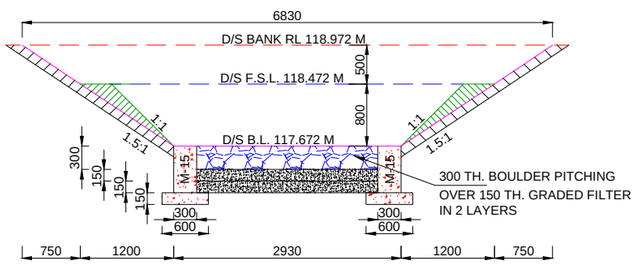
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

(SCALE A)



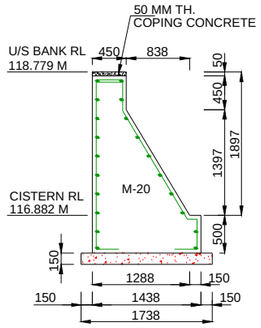
SECTION AT 4-4

(SCALE A)

SCALE A:-

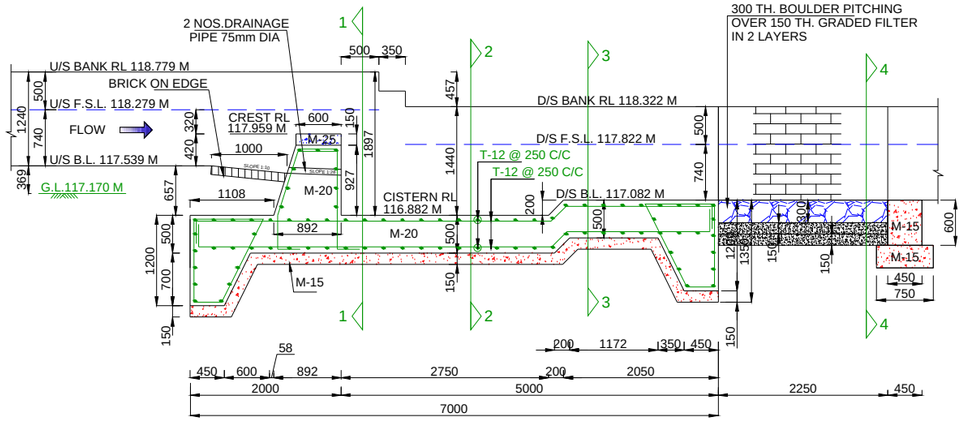
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.457 M HT. FALL AT KM. 4.500 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



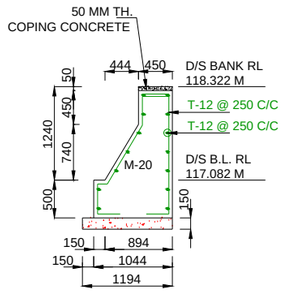
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

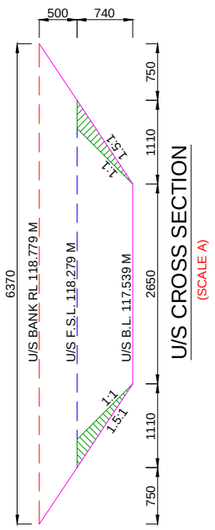
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

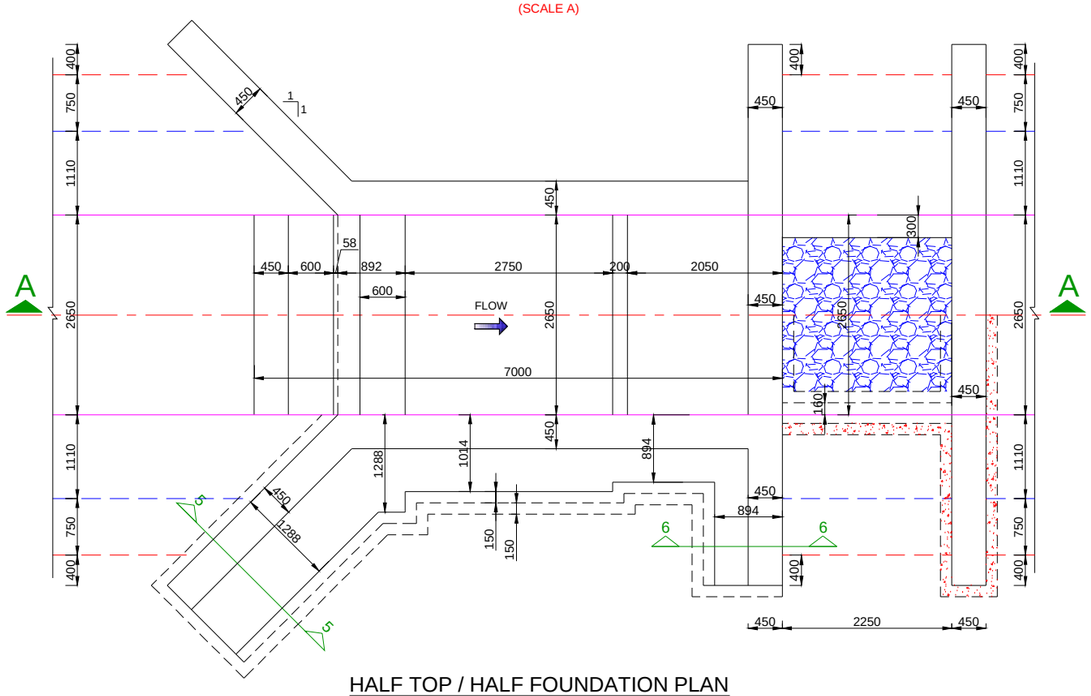
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.890	0.890	CUMEC
VERTICAL DROP	0.457	0.457	METRE
FULL SUPPLY DEPTH	0.740	0.740	METRE
BED WIDTH	2.650	2.650	METRE
BED SLOPE	1 : 4200	1 : 4200	



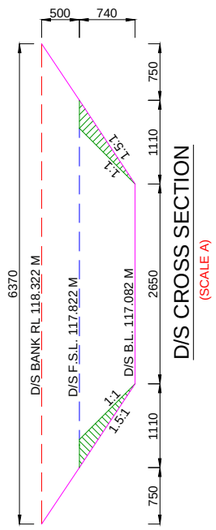
U/S CROSS SECTION

(SCALE A)



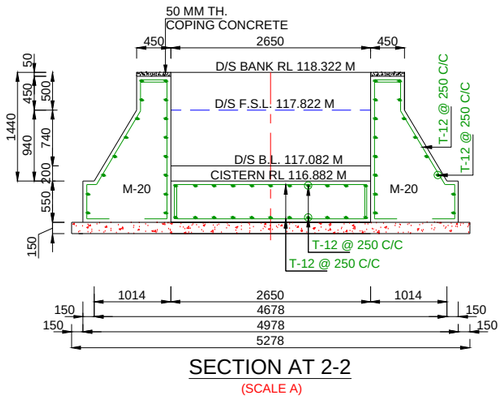
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



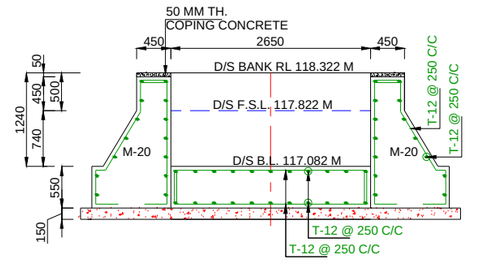
D/S CROSS SECTION

(SCALE A)



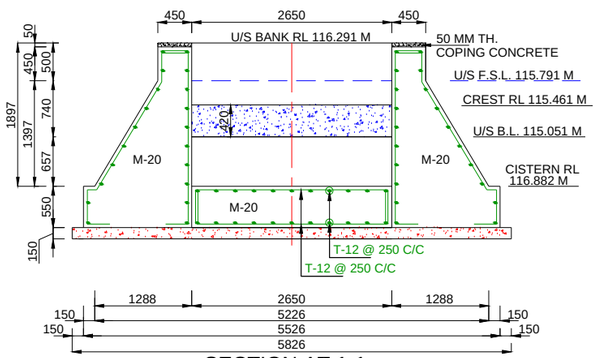
SECTION AT 2-2

(SCALE A)



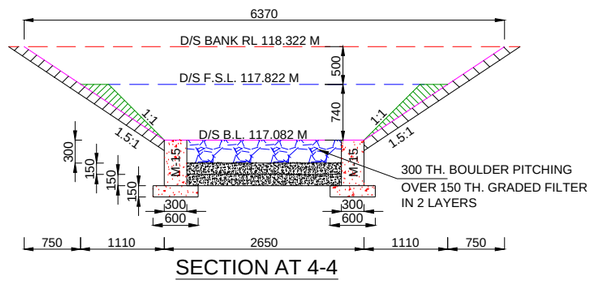
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

(SCALE A)



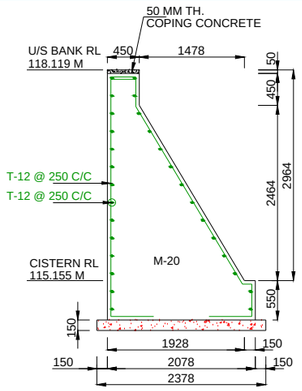
SECTION AT 4-4

(SCALE A)

SCALE A:-

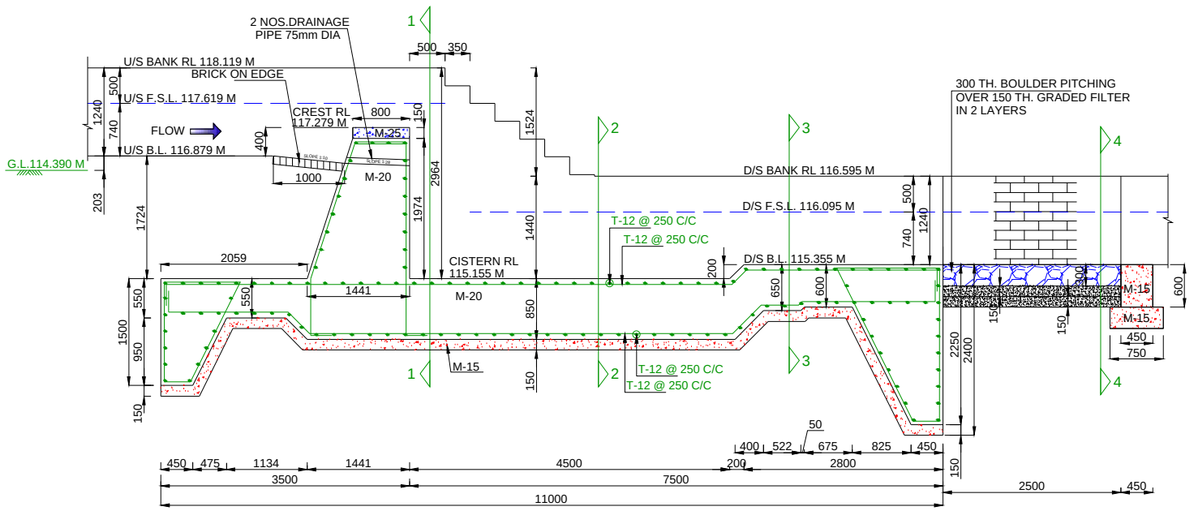
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.457 M HT. FALL AT KM. 5.060 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



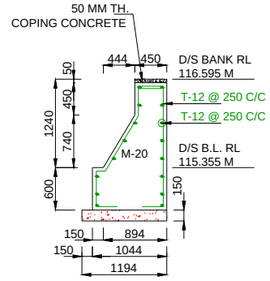
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

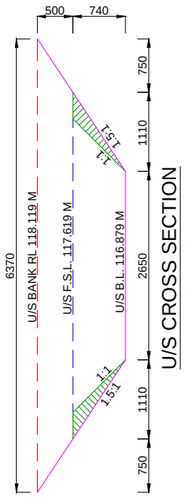
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

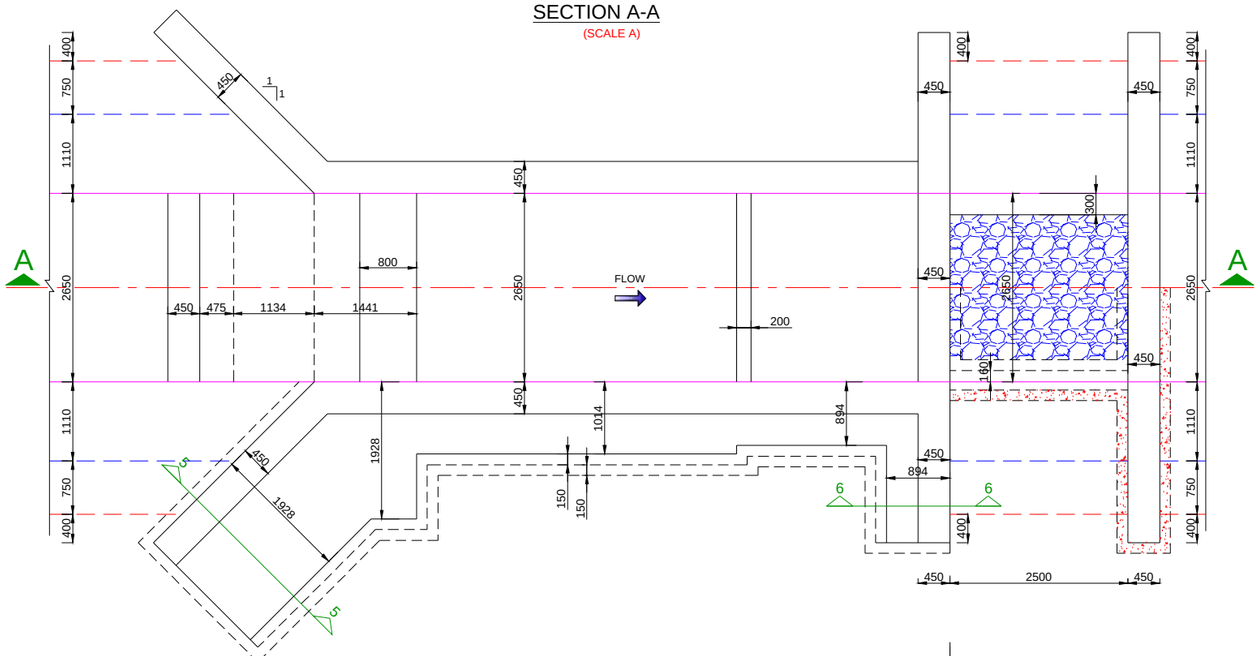
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.890	0.890	CUMEC
VERTICAL DROP	1.524	1.524	METRE
FULL SUPPLY DEPTH	0.740	0.740	METRE
BED WIDTH	2.650	2.650	METRE
BED SLOPE	1 : 4200	1 : 4200	



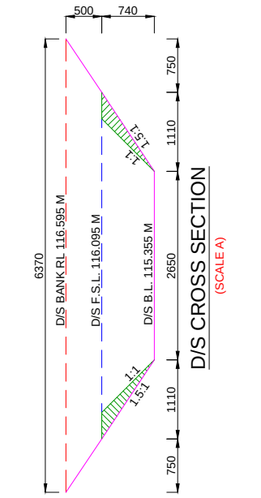
U/S CROSS SECTION

(SCALE A)



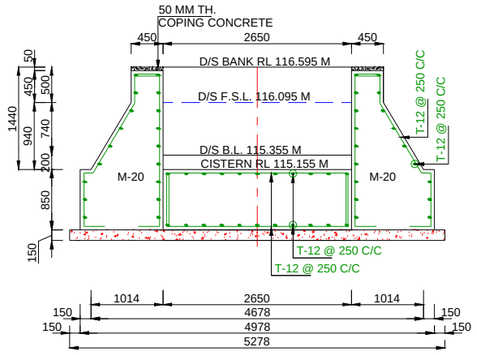
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



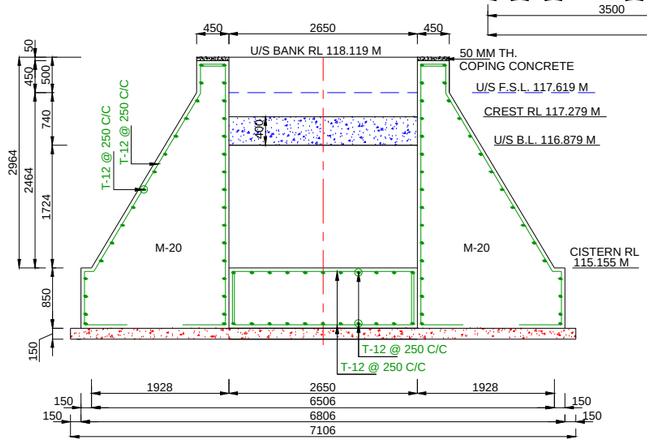
D/S CROSS SECTION

(SCALE A)



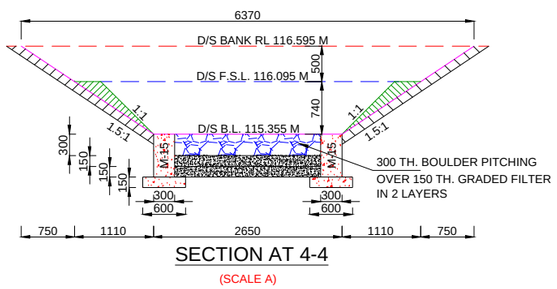
SECTION AT 2-2

(SCALE A)



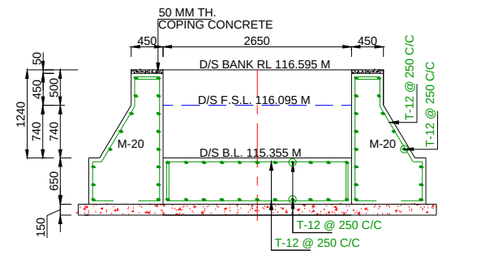
SECTION AT 1-1

(SCALE A)



SECTION AT 4-4

(SCALE A)



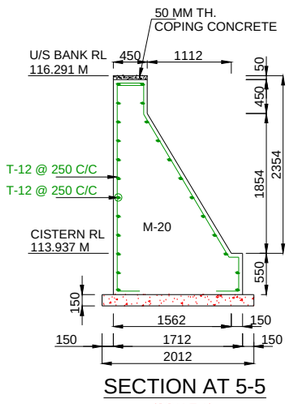
SECTION AT 3-3

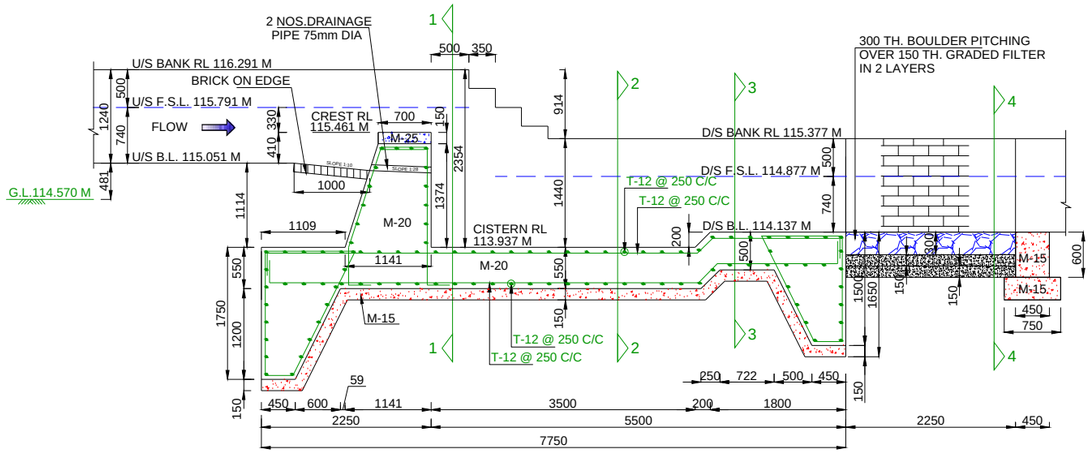
(SCALE A)

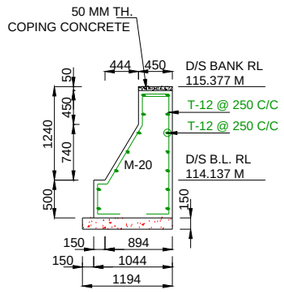
SCALE A:-

1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.524 M HT. FALL AT KM. 5.910 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1







NOTES:-

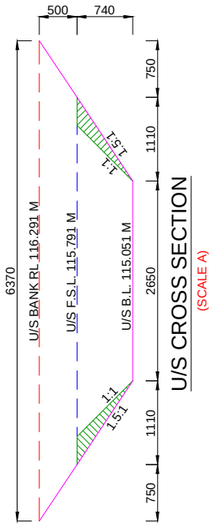
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

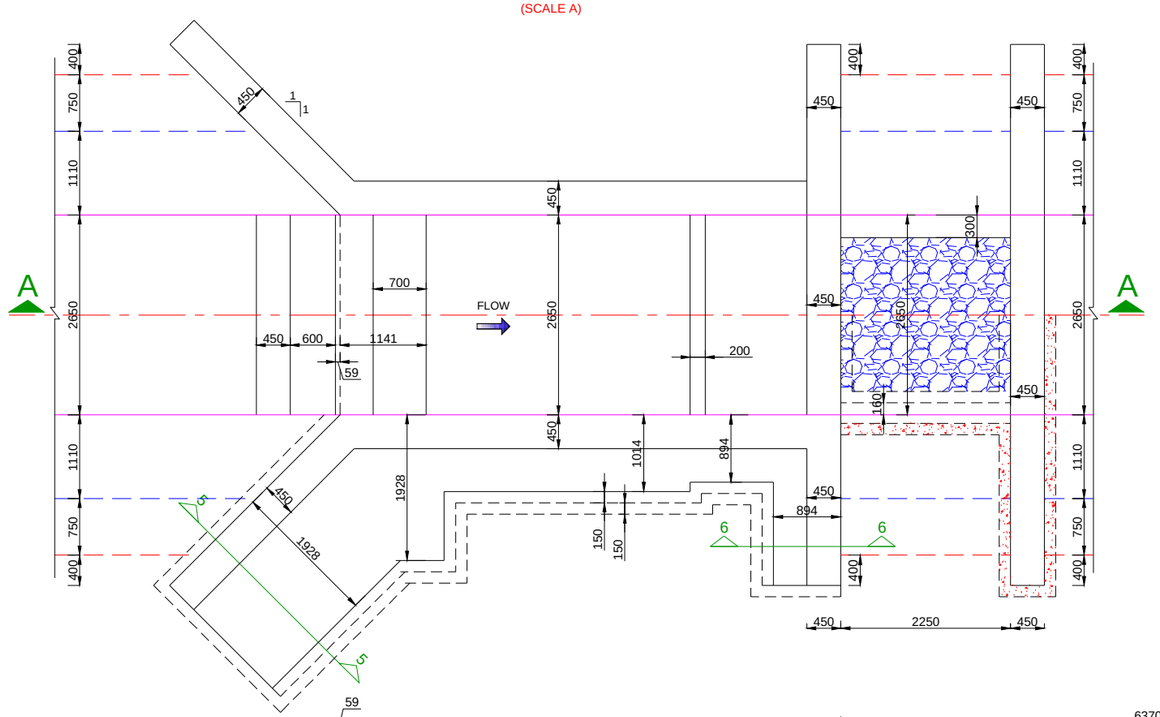
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

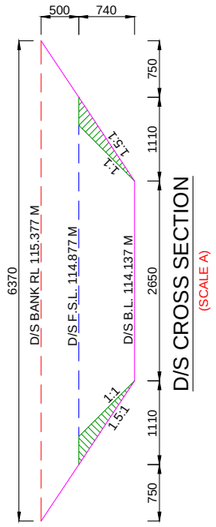
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

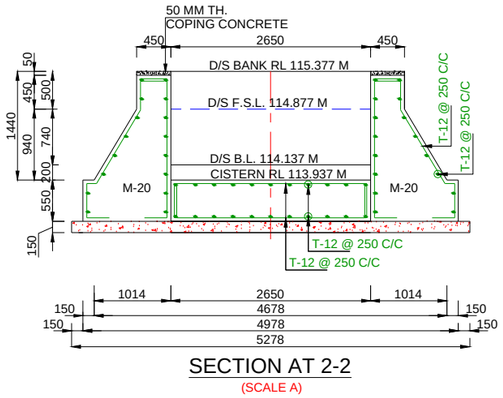
HYDRAULIC:- DATA

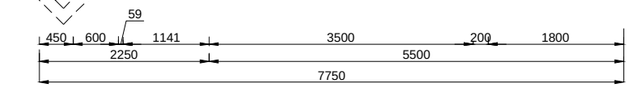
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.890	0.890	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.740	0.740	METRE
BED WIDTH	2.650	2.650	METRE
BED SLOPE	1 : 4200	1 : 4200	

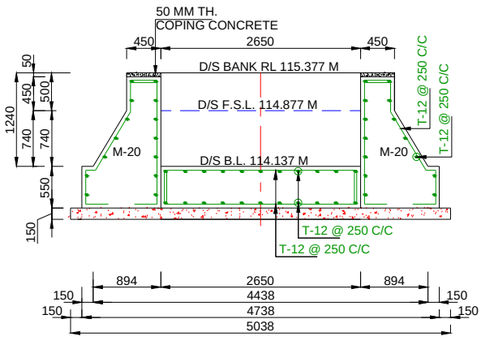


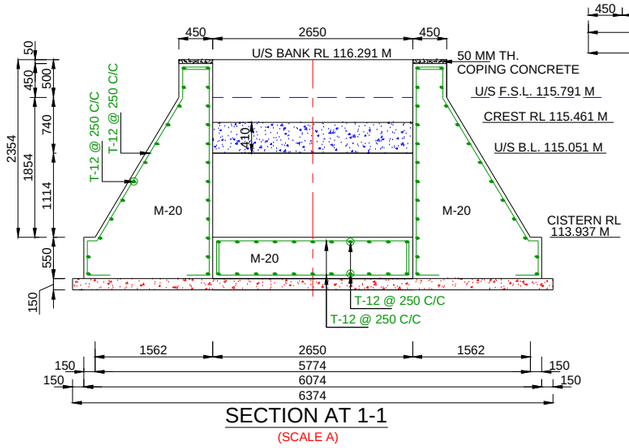


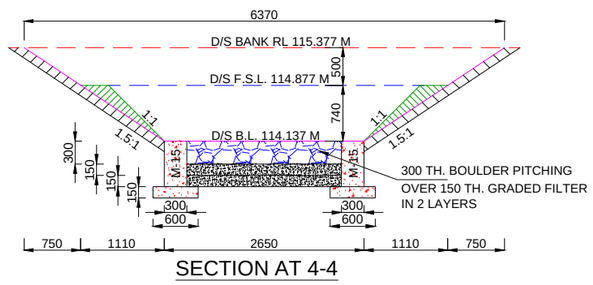




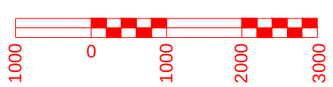




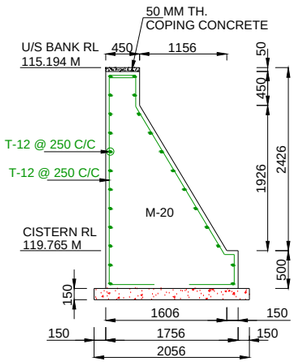




SCALE A:-

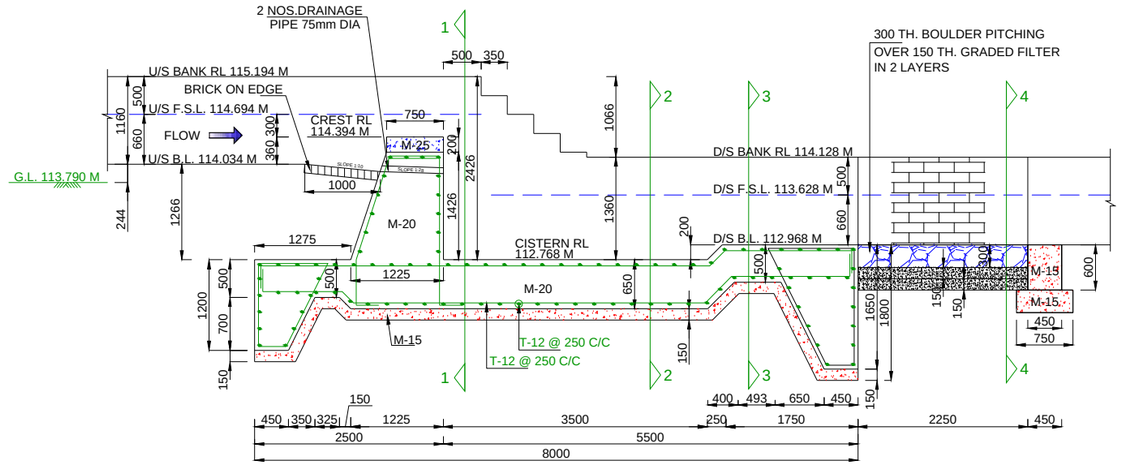


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 7.190 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



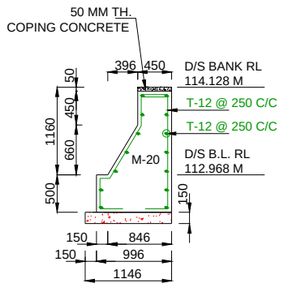
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(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.

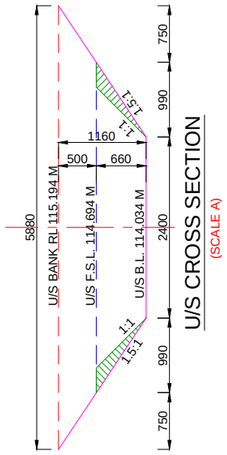
CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

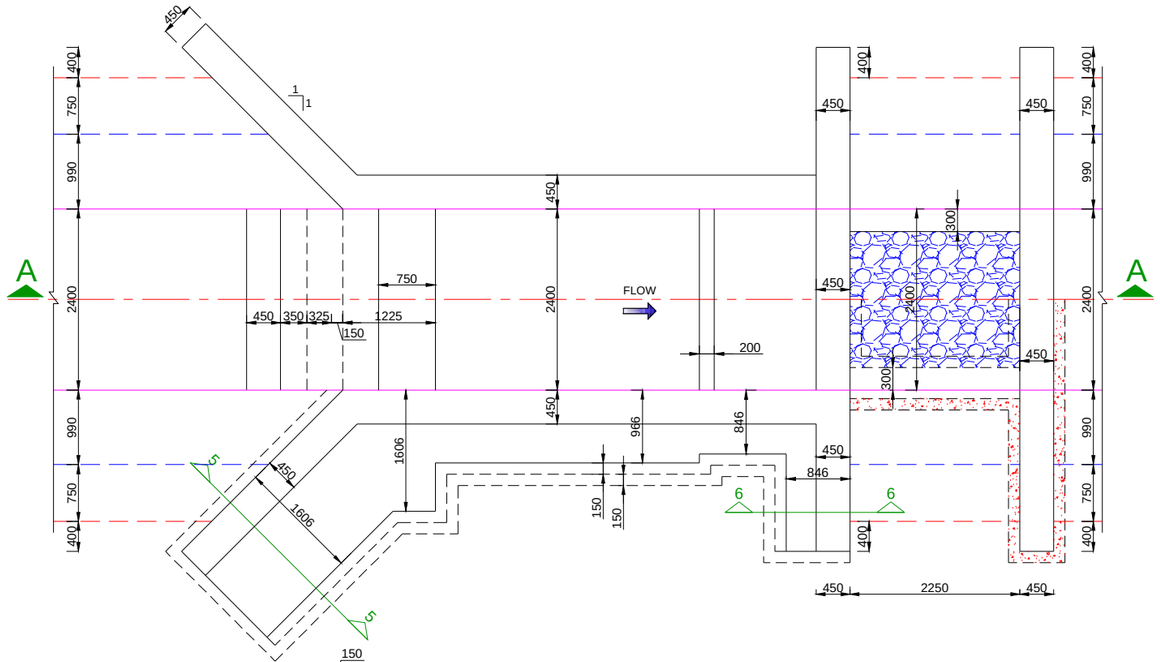
HYDRAULIC:- DATA

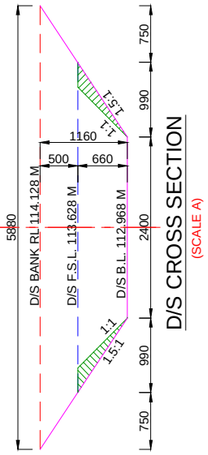
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.670	0.670	CUMEC
VERTICAL DROP	1.066	1.066	METRE
FULL SUPPLY DEPTH	0.660	0.660	METRE
BED WIDTH	2.400	2.400	METRE
BED SLOPE	1 : 4200	1 : 4200	



U/S CROSS SECTION

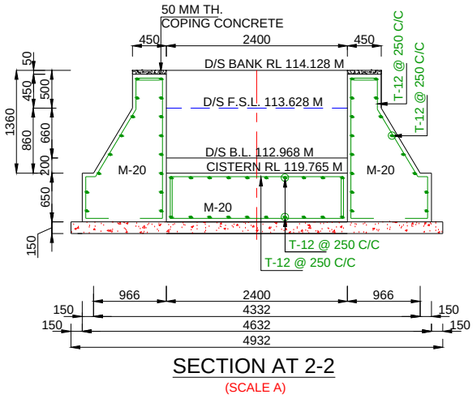
(SCALE A)





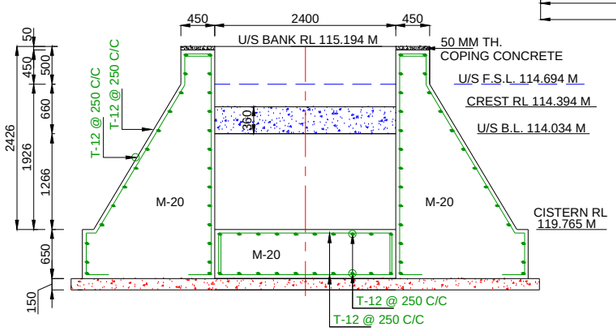
D/S CROSS SECTION

(SCALE A)



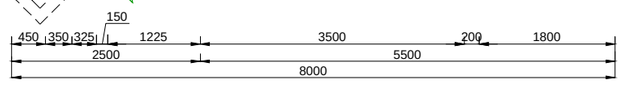
SECTION AT 2-2

(SCALE A)



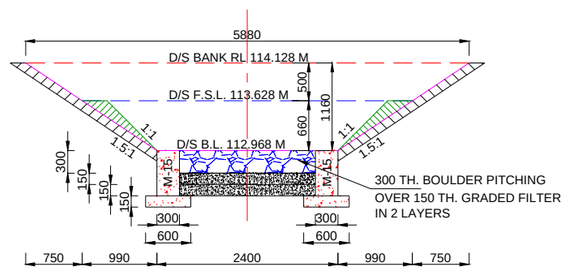
SECTION AT 1-1

(SCALE A)



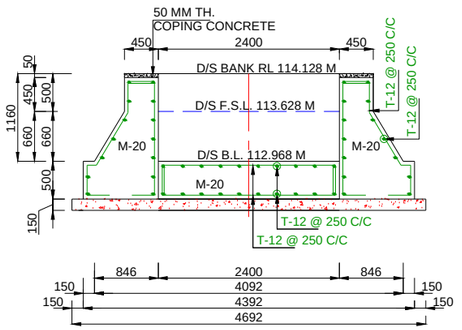
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



SECTION AT 4-4

(SCALE A)



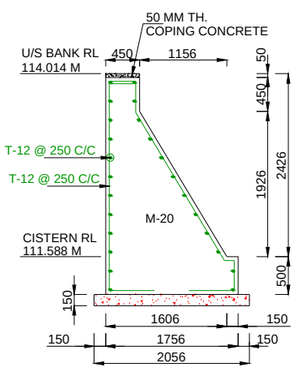
SECTION AT 3-3

(SCALE A)

SCALE A:-

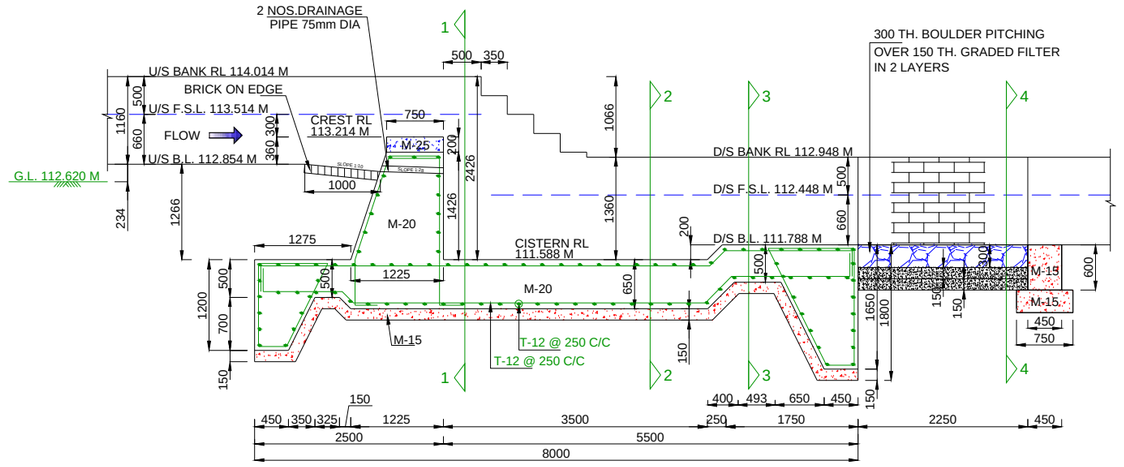
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.066 M HT. FALL AT KM. 7.620 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



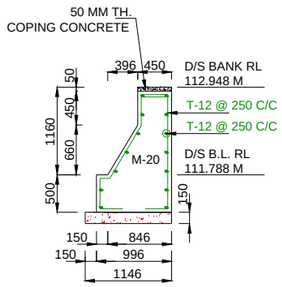
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(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.

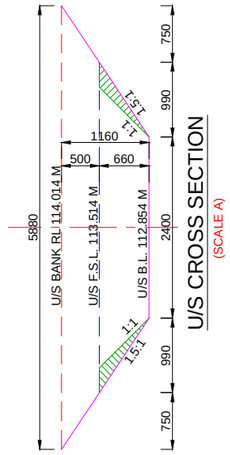
CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

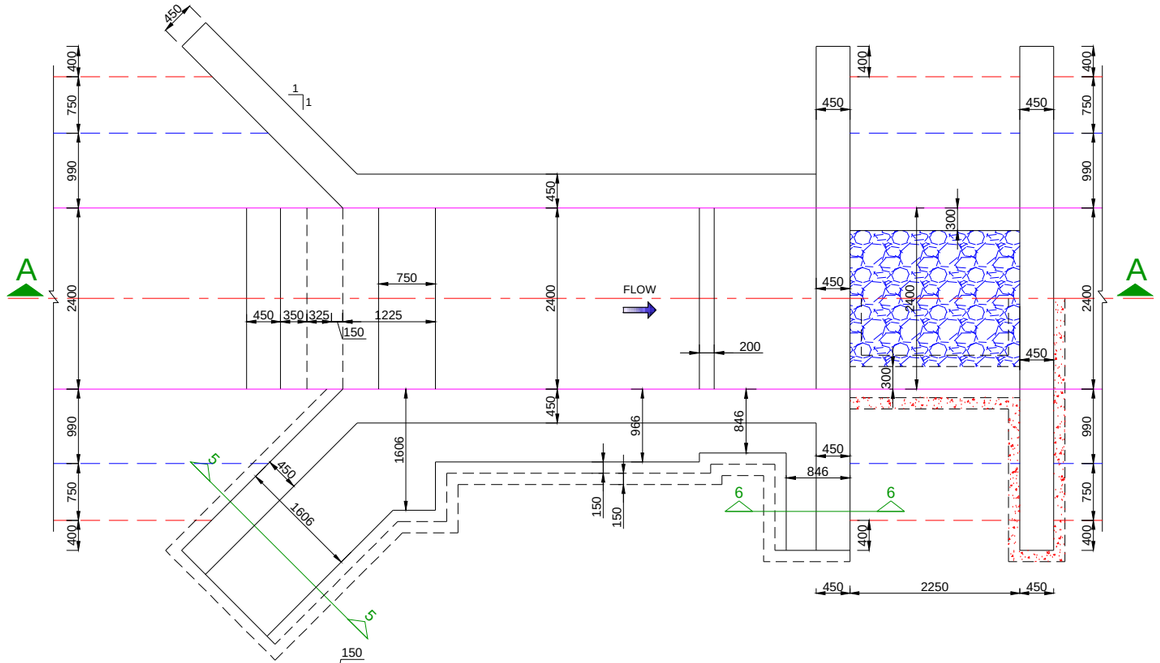
HYDRAULIC:- DATA

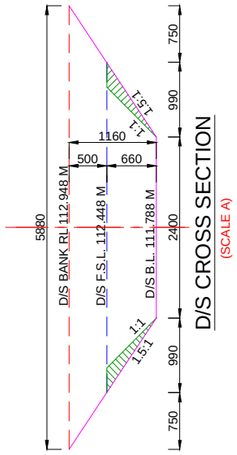
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.670	0.670	CUMEC
VERTICAL DROP	1.066	1.066	METRE
FULL SUPPLY DEPTH	0.660	0.660	METRE
BED WIDTH	2.400	2.400	METRE
BED SLOPE	1 : 4200	1 : 4200	



U/S CROSS SECTION

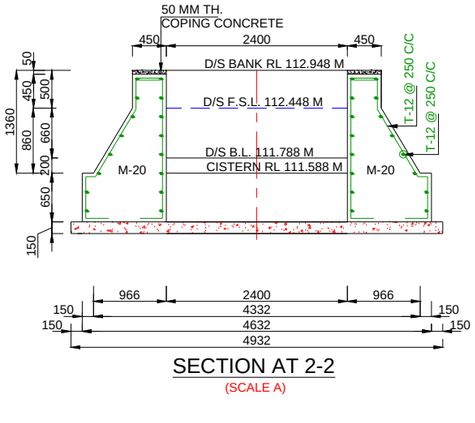
(SCALE A)





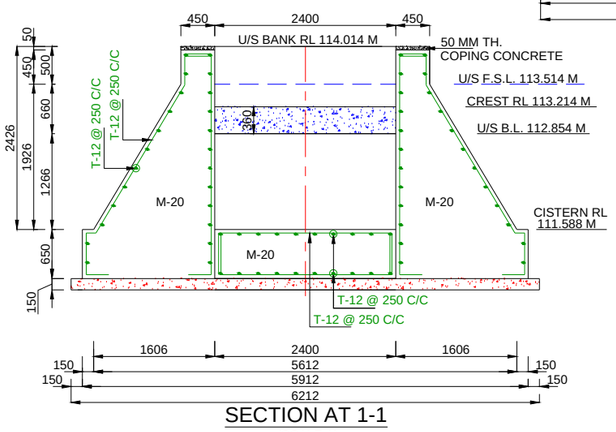
D/S CROSS SECTION

(SCALE A)



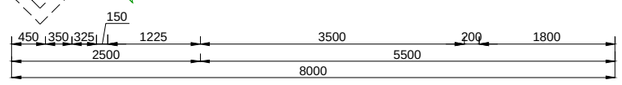
SECTION AT 2-2

(SCALE A)



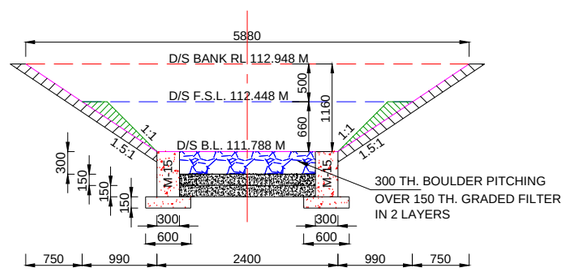
SECTION AT 1-1

(SCALE A)



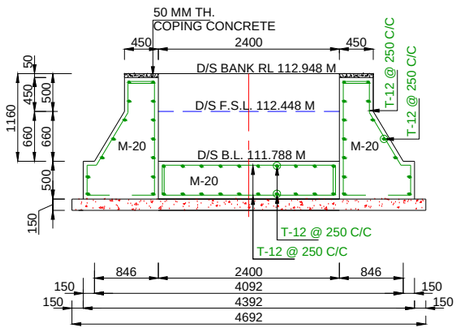
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



SECTION AT 4-4

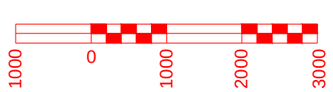
(SCALE A)



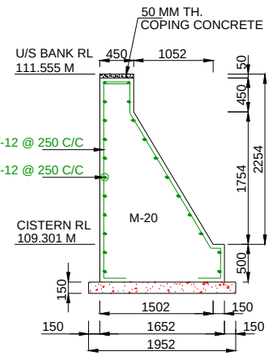
SECTION AT 3-3

(SCALE A)

SCALE A:-

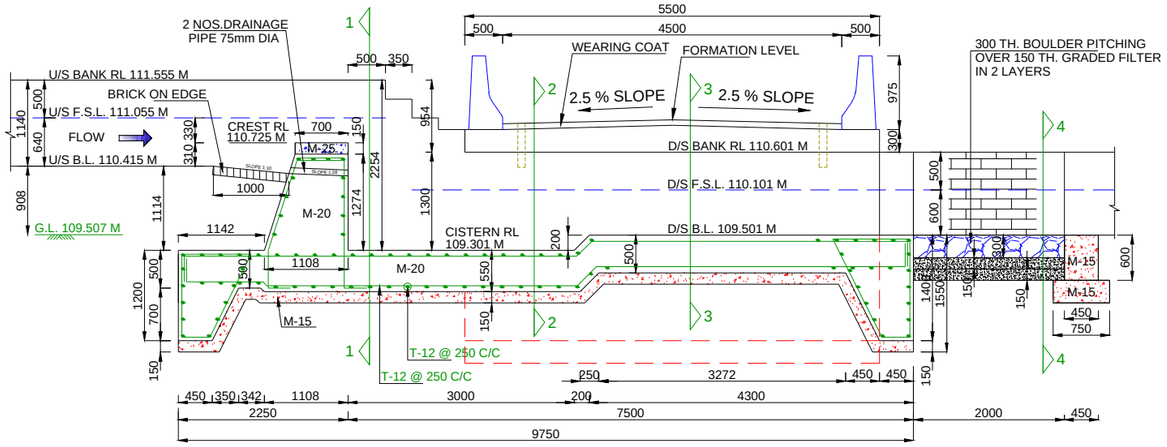


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.066 M HT. FALL AT KM. 8.100 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



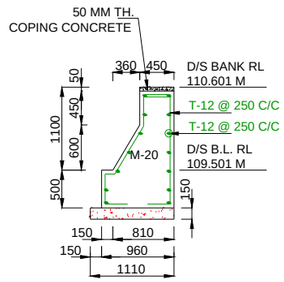
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

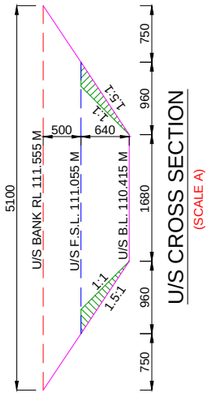
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

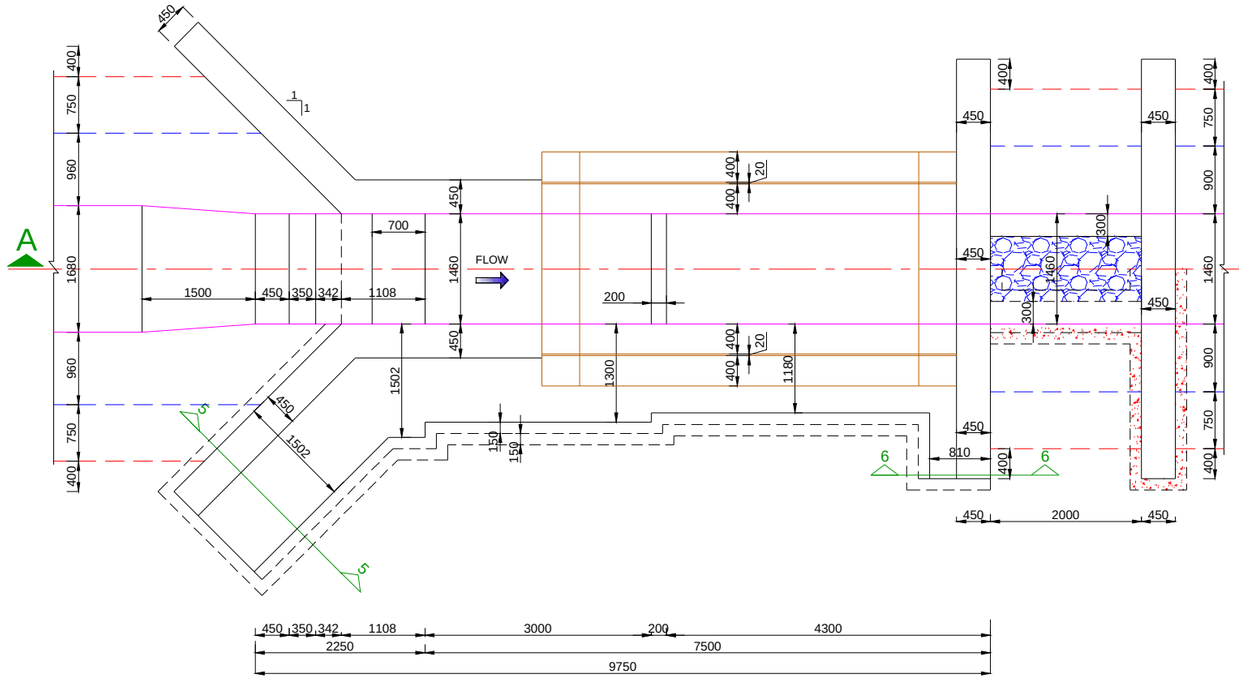
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.470	0.470	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.640	0.600	METRE
BED WIDTH	1.680	1.460	METRE
BED SLOPE	1 : 3600	1 : 3600	



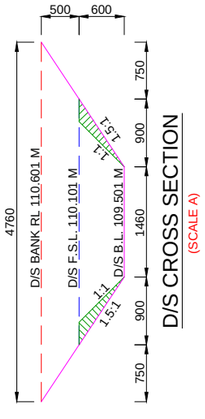
U/S CROSS SECTION

(SCALE A)



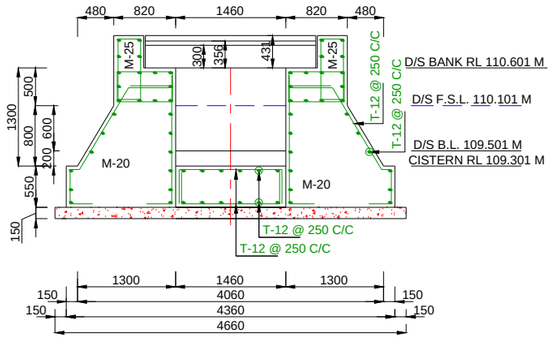
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



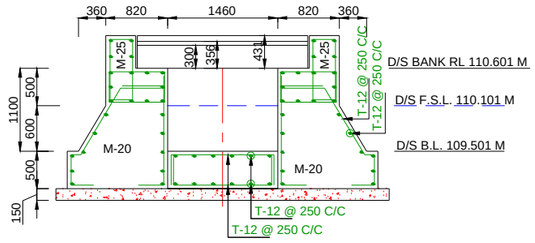
D/S CROSS SECTION

(SCALE A)



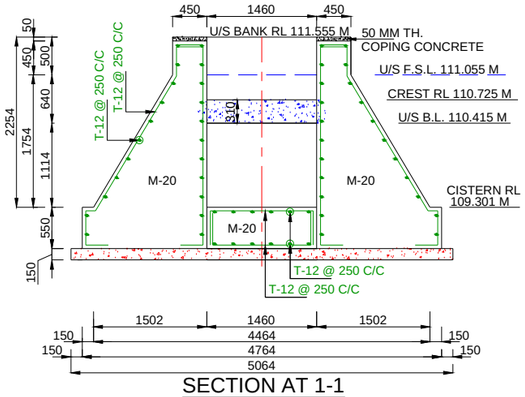
SECTION AT 2-2

(SCALE A)



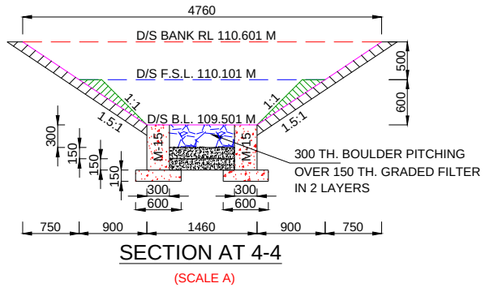
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

(SCALE A)



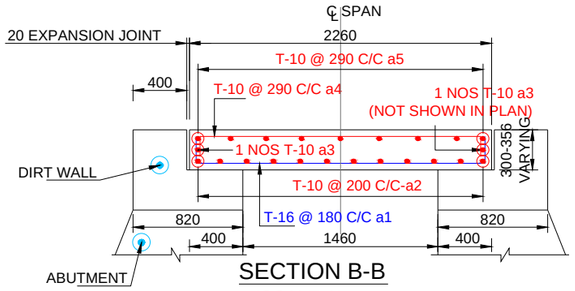
SECTION AT 4-4

(SCALE A)

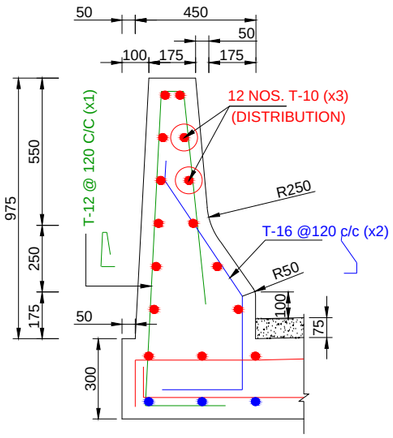
SCALE A:-

1000 0 1000 2000 3000

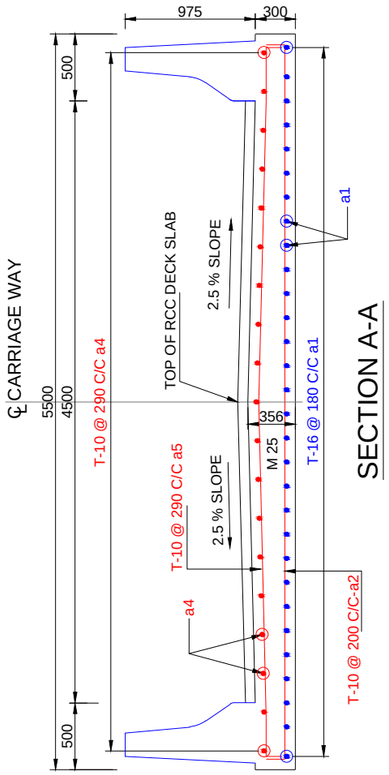
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 9.800 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



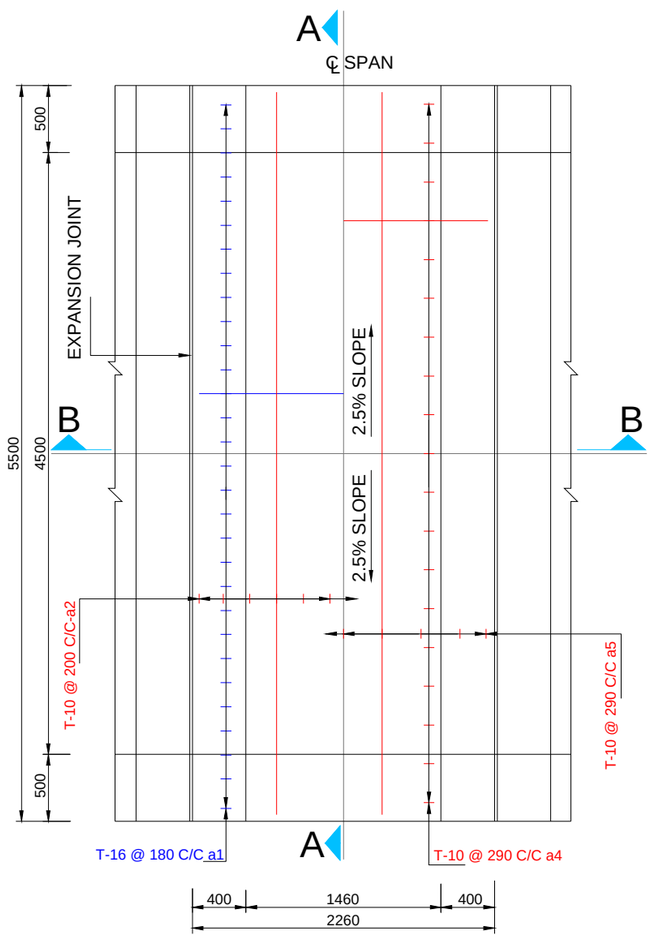
SECTION B-B
(SCALE A)



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



SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	200, R=80, 2160, 200	16	180	31
2	a2	200, R=50, 5400, 200	10	200	12
3	a3	5400	10	-	2
4	a4	2160, 200, R=40, 200	10	290	19
5	a5	200, 450, 2250, 2250, 450, 200	10	290	9
CRASH BARRIER					
1	x1	75, 1176, 950, 300	12	120	15X2
2	x2	75, 540, 350, 300	16	120	15X2
3	x3	2160	10	-	18X2

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3 ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (f_y=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

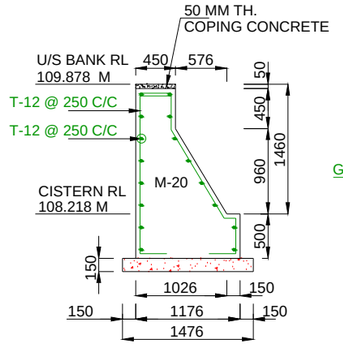
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

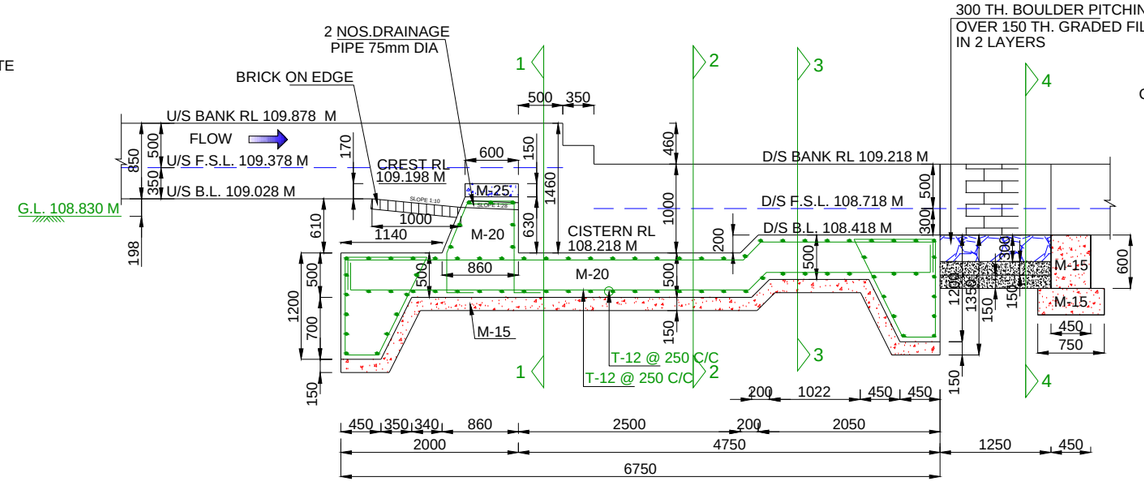
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 7.175 OF KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BR. CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ FALL 2 of 2



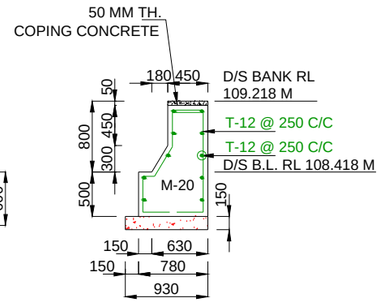
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

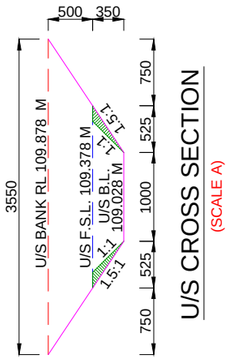
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

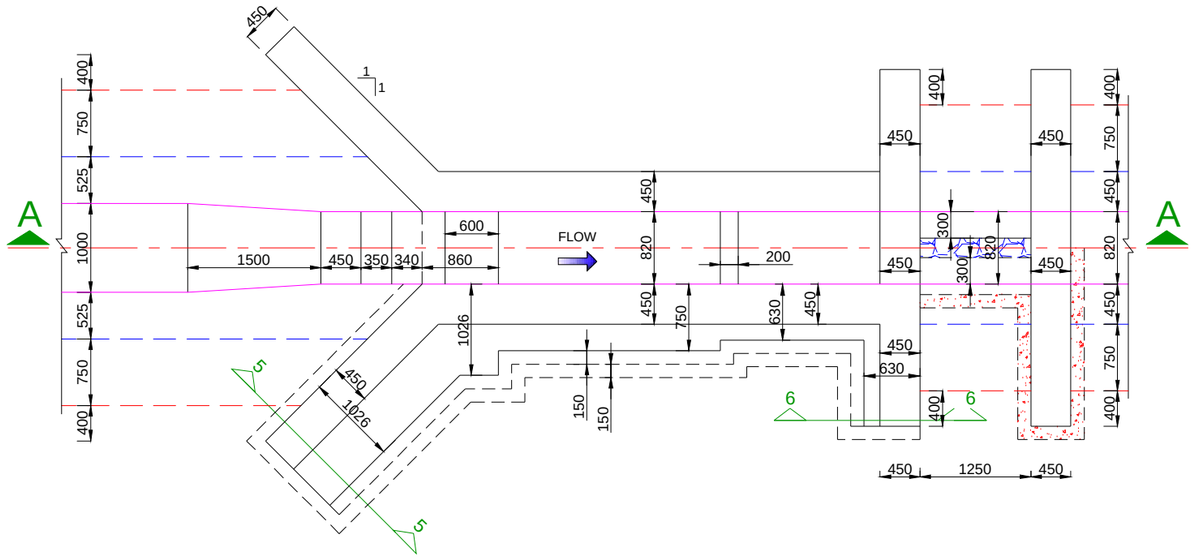
HYDRAULIC:- DATA

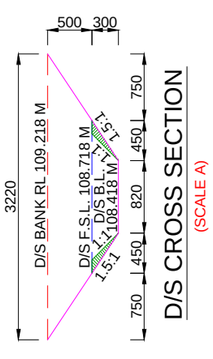
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.100	0.100	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.350	0.300	METRE
BED WIDTH	1.000	0.820	METRE
BED SLOPE	1 : 3600	1 : 3600	



U/S CROSS SECTION

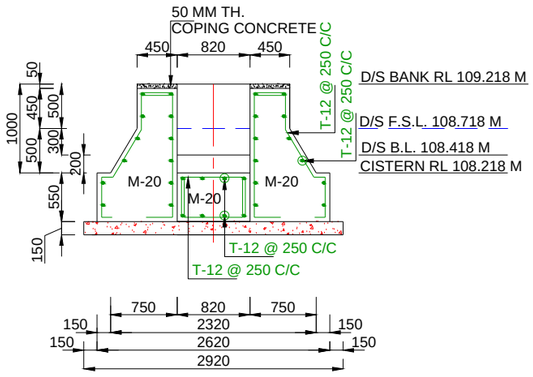
(SCALE A)





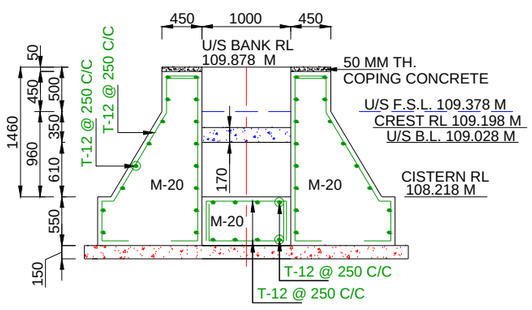
D/S CROSS SECTION

(SCALE A)



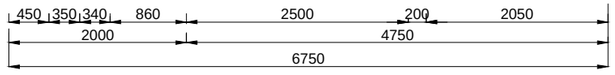
SECTION AT 2-2

(SCALE A)



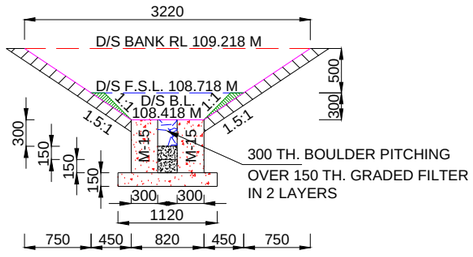
SECTION AT 1-1

(SCALE A)



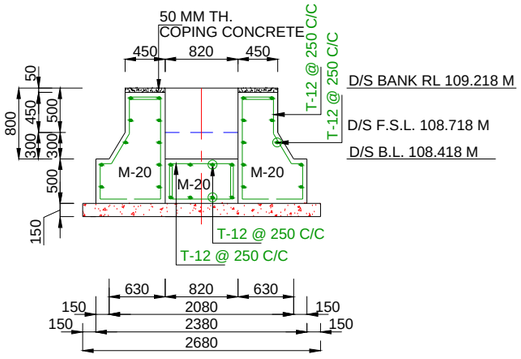
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



SECTION AT 4-4

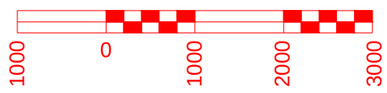
(SCALE A)



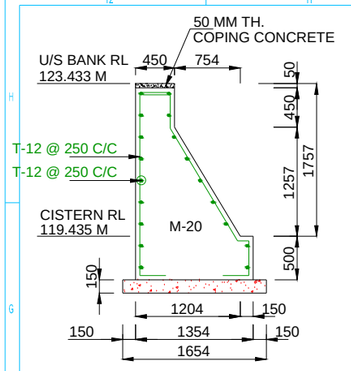
SECTION AT 3-3

(SCALE A)

SCALE A:-

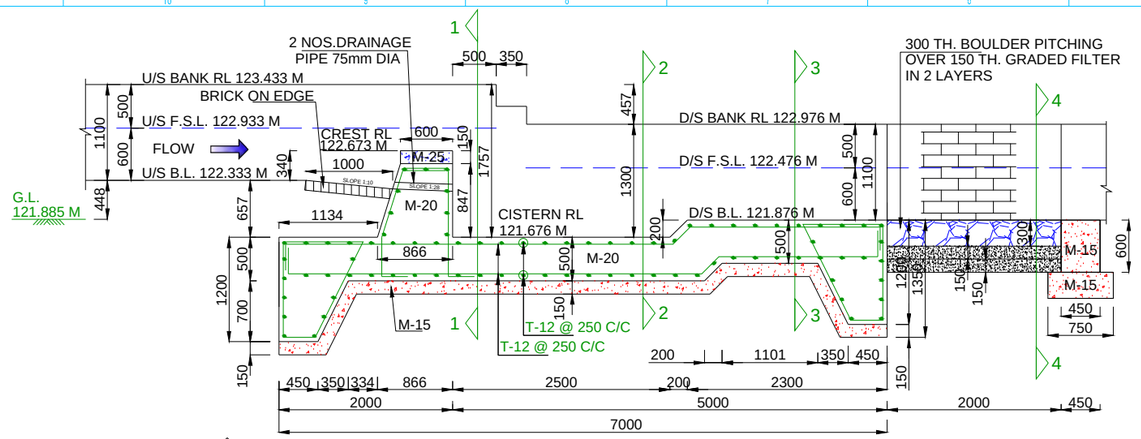


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 11.500 OF BUDHAUL SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-03/ FALL 1 of 1



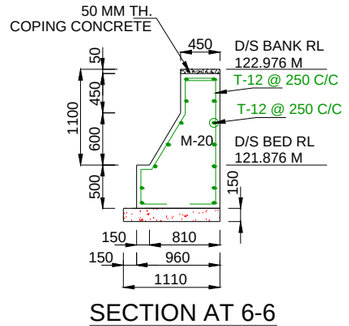
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

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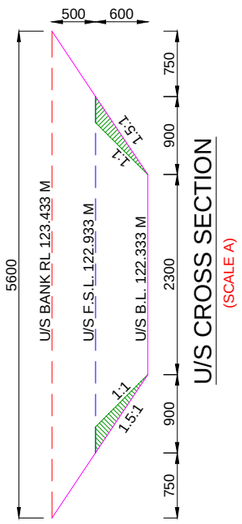
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

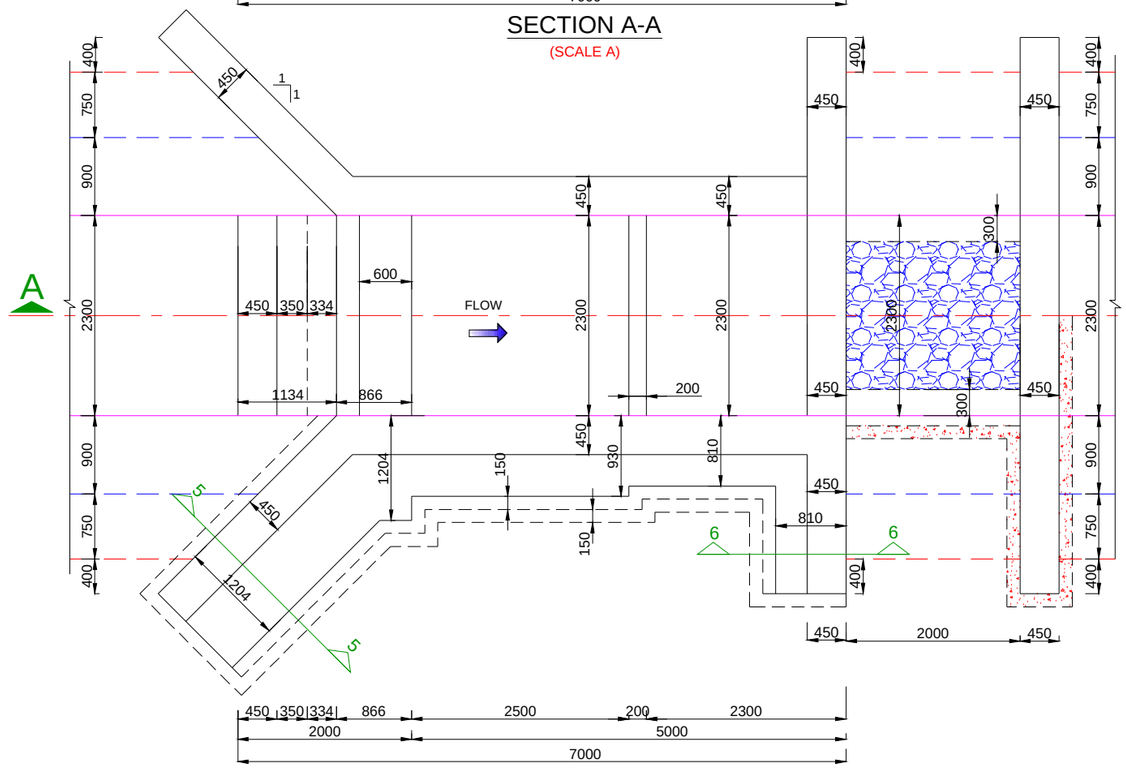
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.540	0.540	CUMEC
VERTICAL DROP	0.457	0.457	METRE
FULL SUPPLY DEPTH	2.300	2.300	METRE
BED WIDTH	0.600	0.600	METRE
BED SLOPE	1 : 4200	1 : 4200	



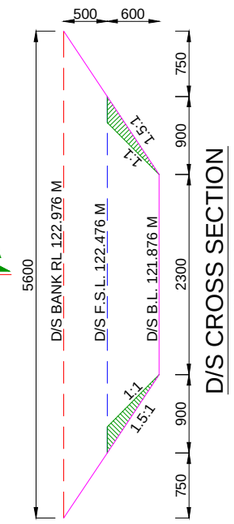
U/S CROSS SECTION

(SCALE A)



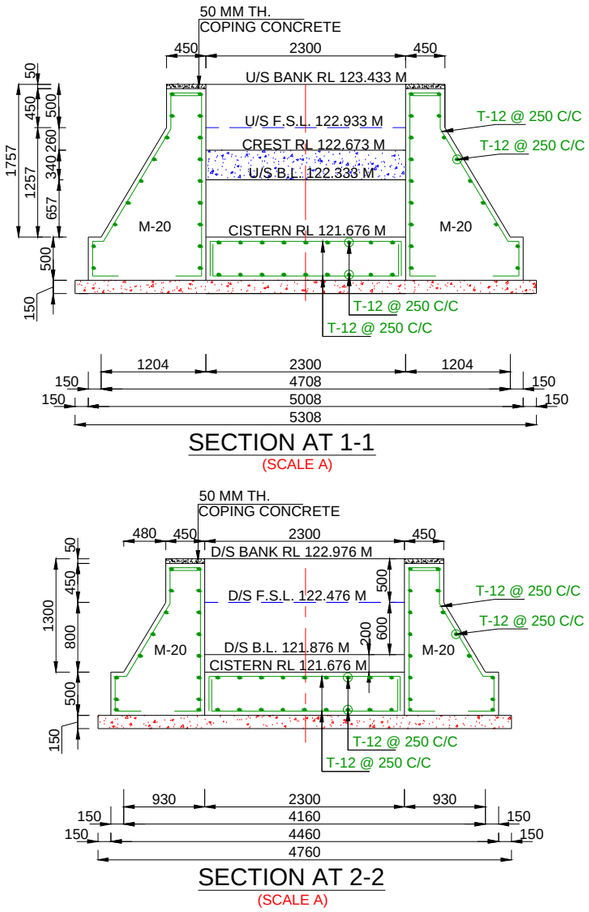
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



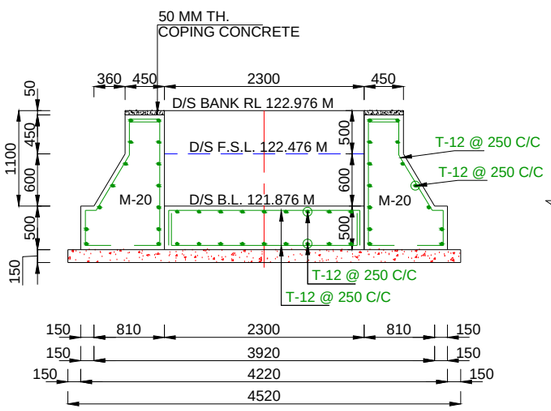
D/S CROSS SECTION

(SCALE A)



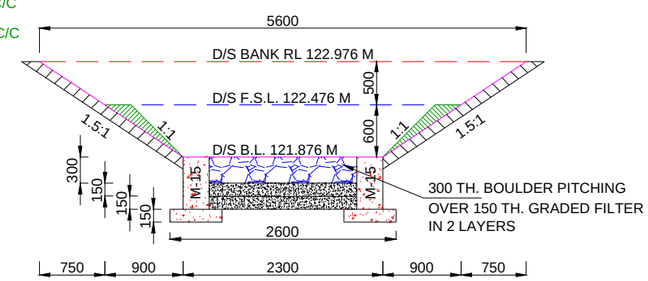
SECTION AT 1-1

(SCALE A)



SECTION AT 3-3

(SCALE A)



SECTION AT 4-4

(SCALE A)

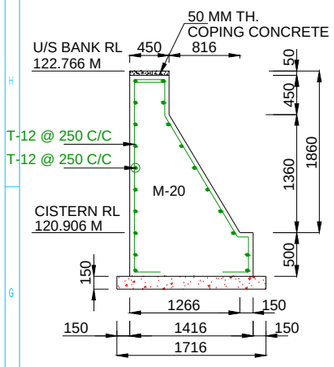
SECTION AT 2-2

(SCALE A)

SCALE A:-

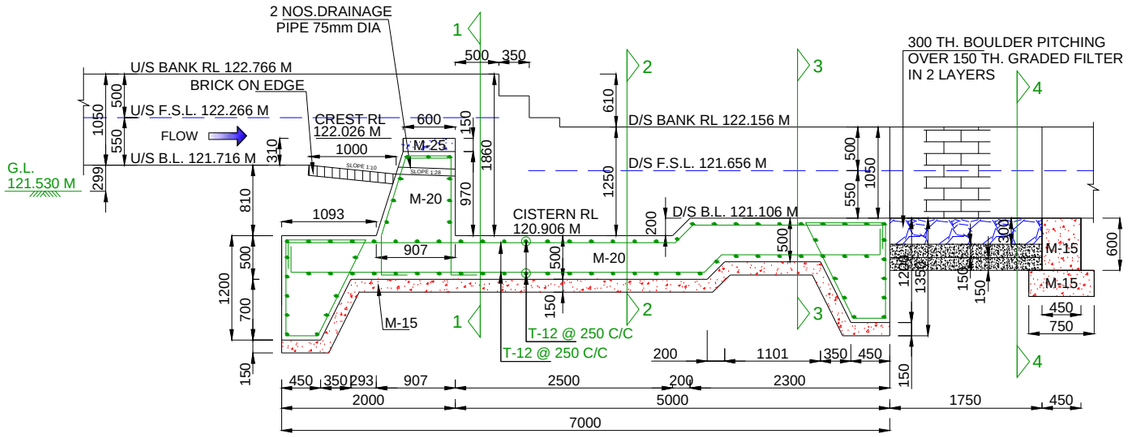
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 1.575OF KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ FALL 1 of 1



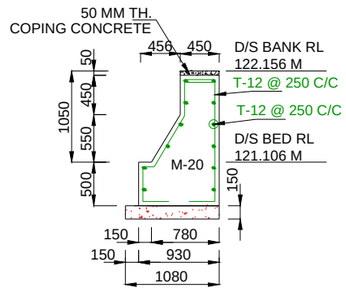
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

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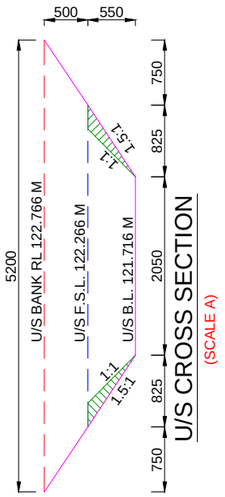
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

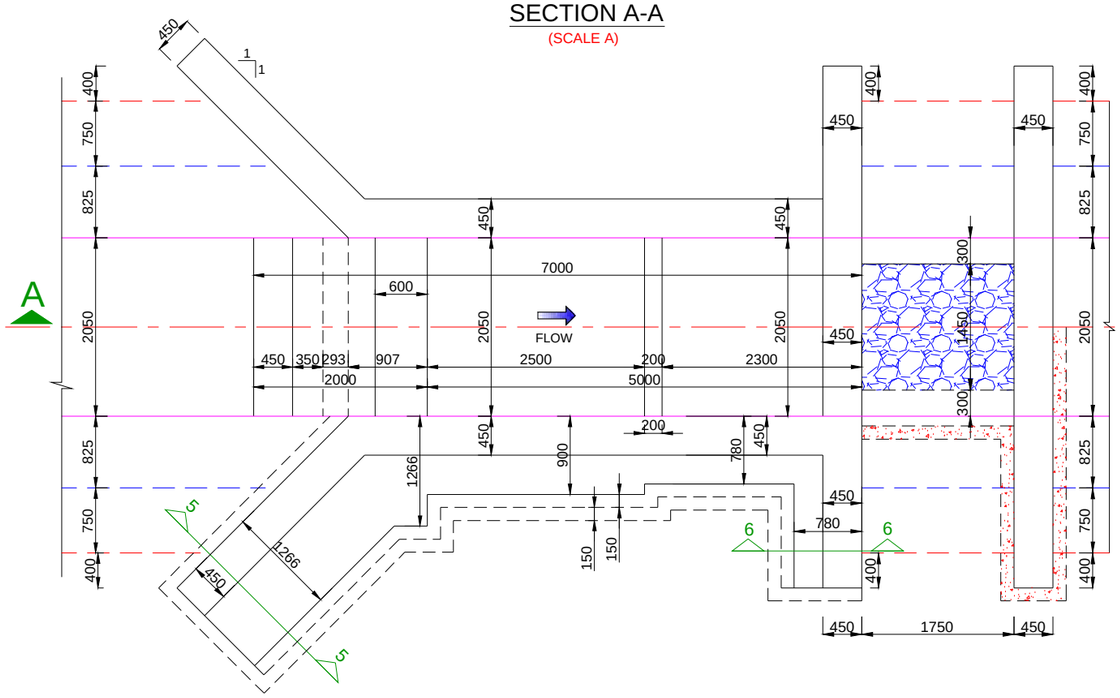
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.420	0.420	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.550	0.550	METRE
BED WIDTH	2.050	2.050	METRE
BED SLOPE	1 : 4200	1 : 4200	



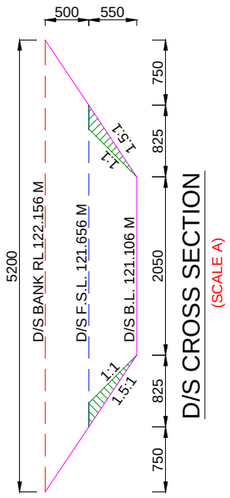
U/S CROSS SECTION

(SCALE A)



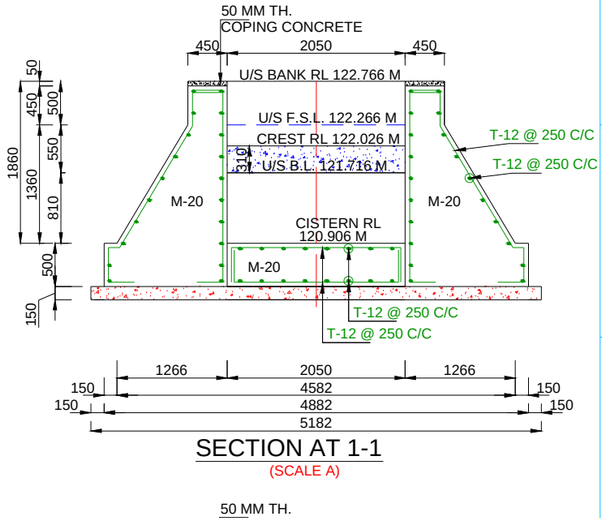
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



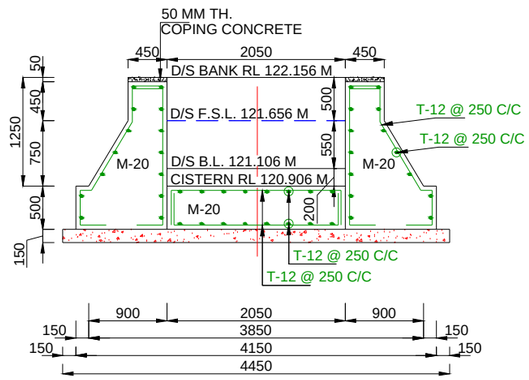
D/S CROSS SECTION

(SCALE A)



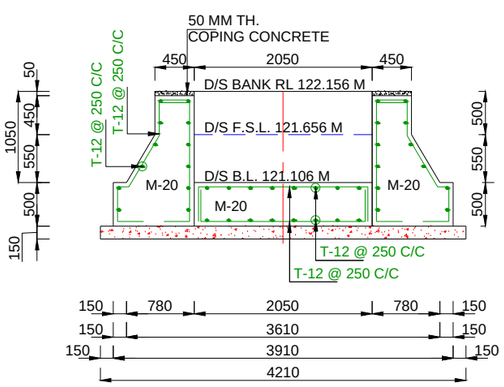
SECTION AT 1-1

(SCALE A)



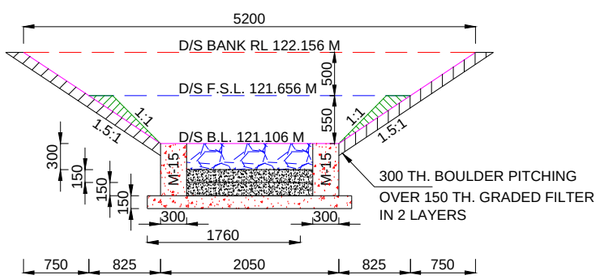
SECTION AT 2-2

(SCALE A)



SECTION AT 3-3

(SCALE A)



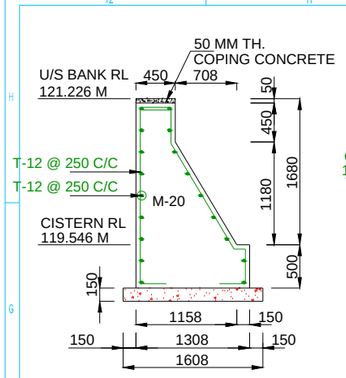
SECTION AT 4-4

(SCALE A)

SCALE A:-

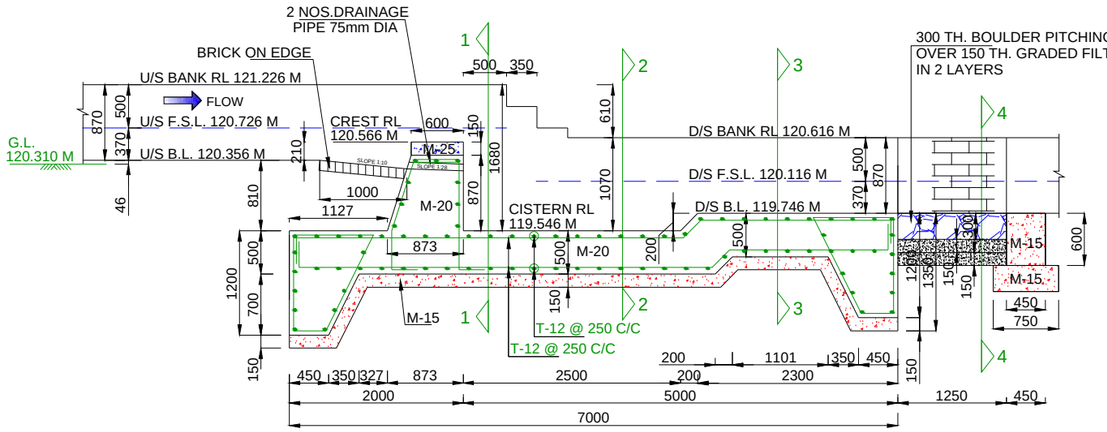
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 2.250 OF KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ FALL 1 of 1



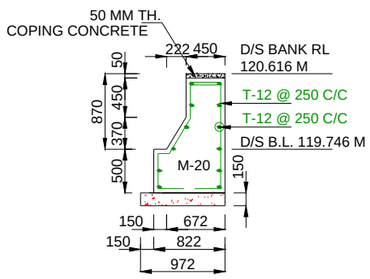
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

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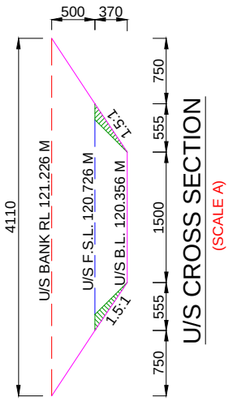
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

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.

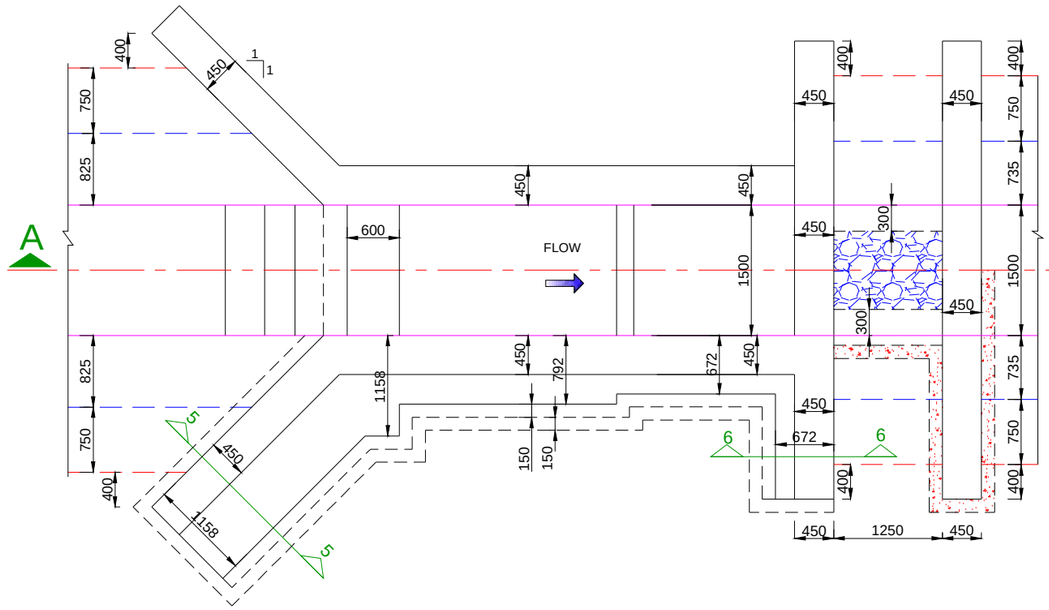
HYDRAULIC:- DATA

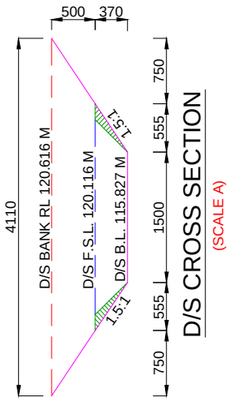
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.160	0.160	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.370	0.370	METRE
BED WIDTH	1.500	1.500	METRE
BED SLOPE	1 : 4200	1 : 4200	



U/S CROSS SECTION

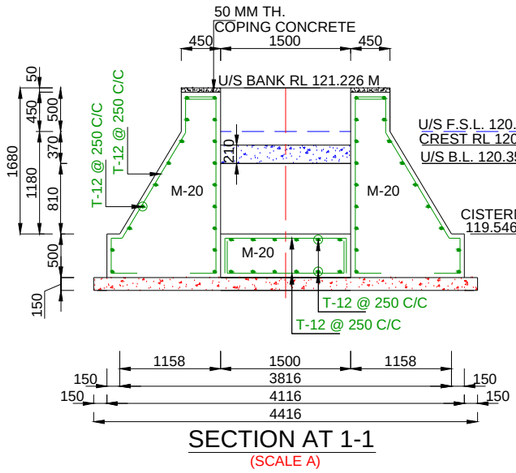
(SCALE A)





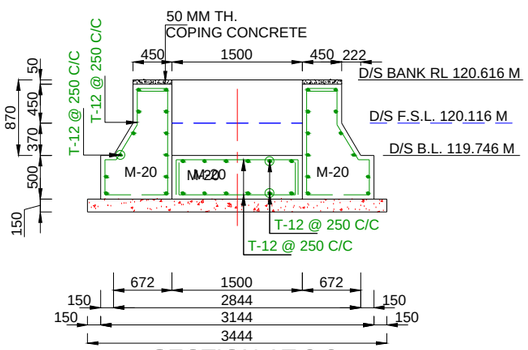
D/S CROSS SECTION

(SCALE A)



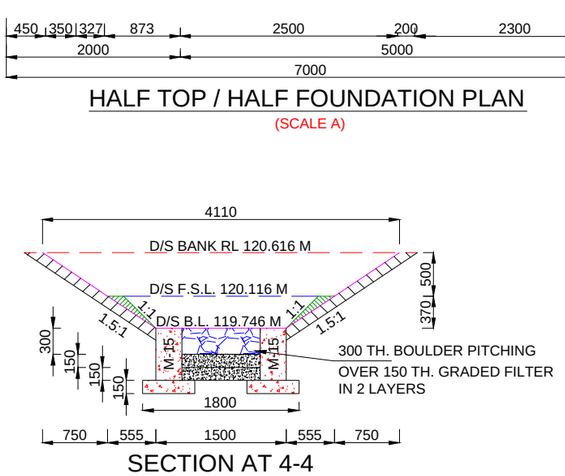
SECTION AT 1-1

(SCALE A)



SECTION AT 3-3

(SCALE A)

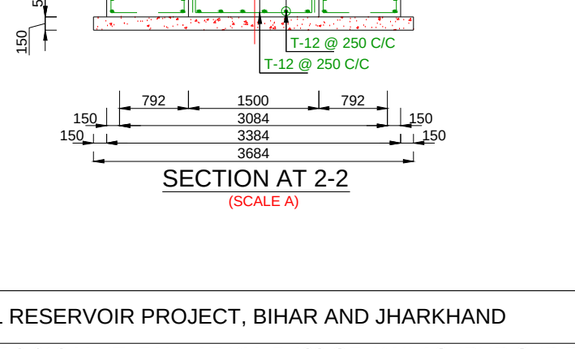


HALF TOP / HALF FOUNDATION PLAN

(SCALE A)

SECTION AT 4-4

(SCALE A)



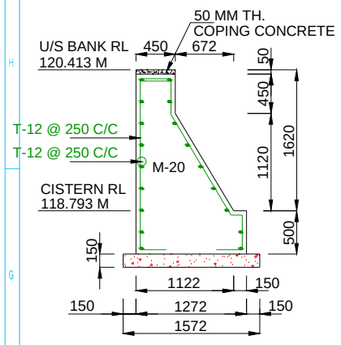
SECTION AT 2-2

(SCALE A)

SCALE A:-

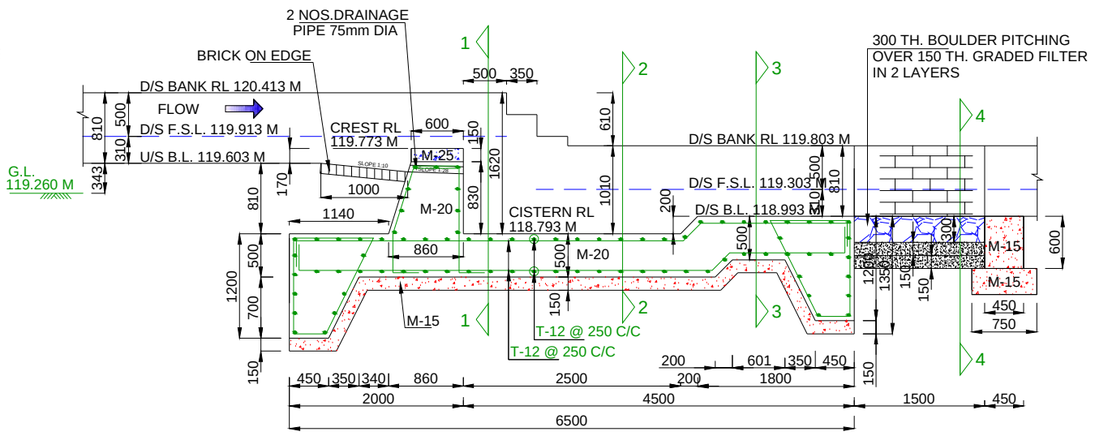
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 5.400 OF KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ FALL 1 of 1



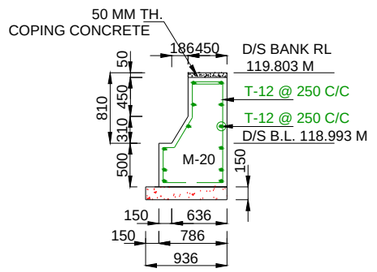
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

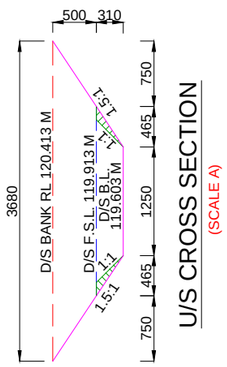
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

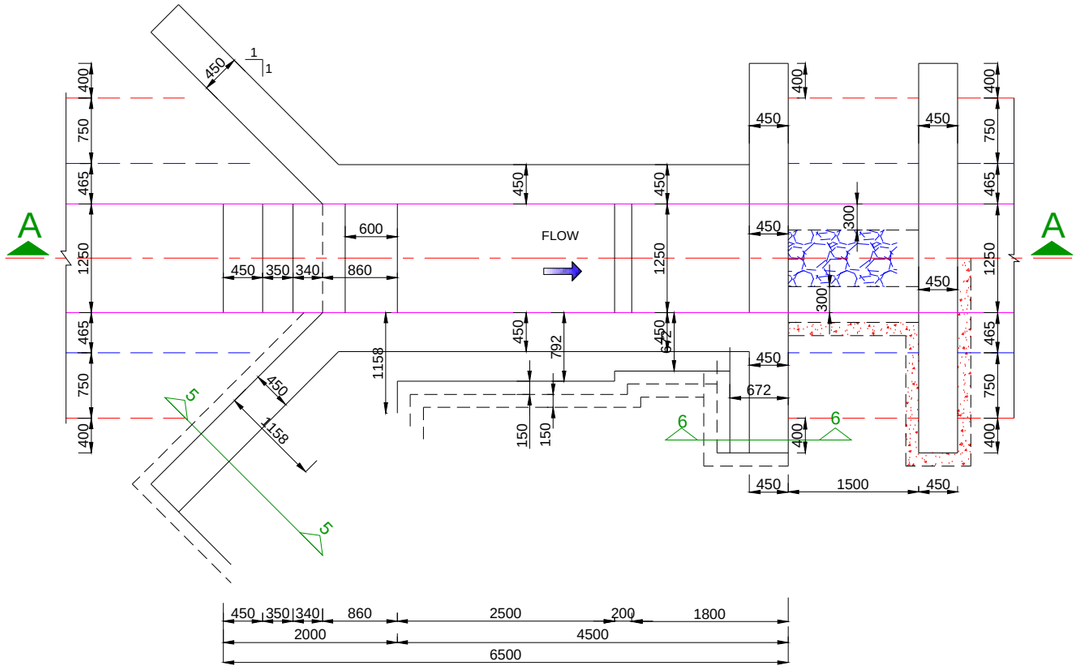
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.100	0.100	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.310	0.310	METRE
BED WIDTH	1.250	1.250	METRE
BED SLOPE	1 : 4200	1 : 4200	



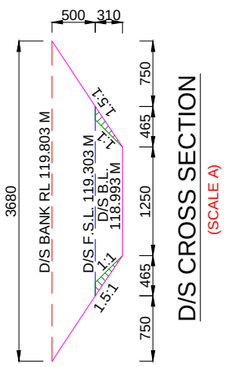
U/S CROSS SECTION

(SCALE A)



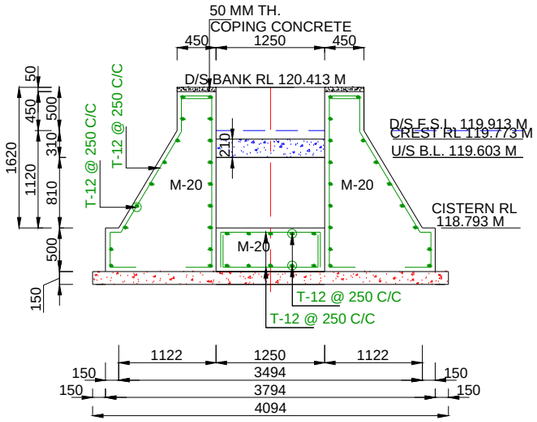
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



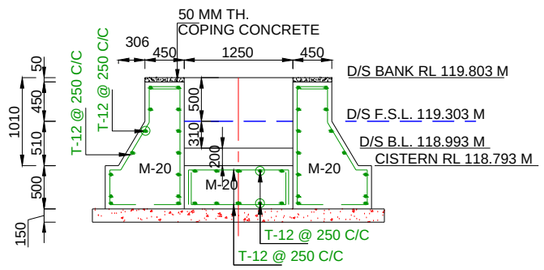
D/S CROSS SECTION

(SCALE A)



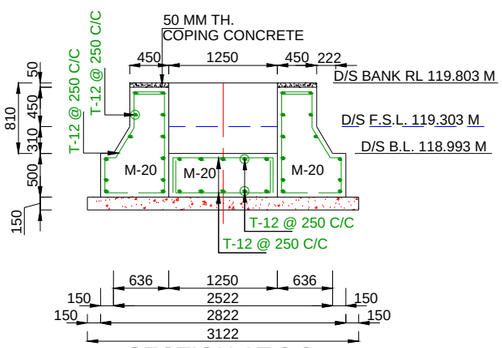
SECTION AT 1-1

(SCALE A)



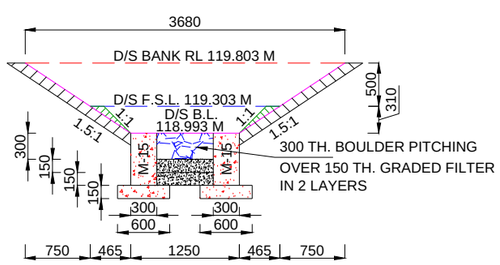
SECTION AT 2-2

(SCALE A)



SECTION AT 3-3

(SCALE A)



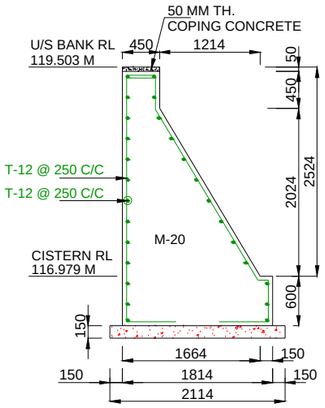
SECTION AT 4-4

(SCALE A)

SCALE A:-

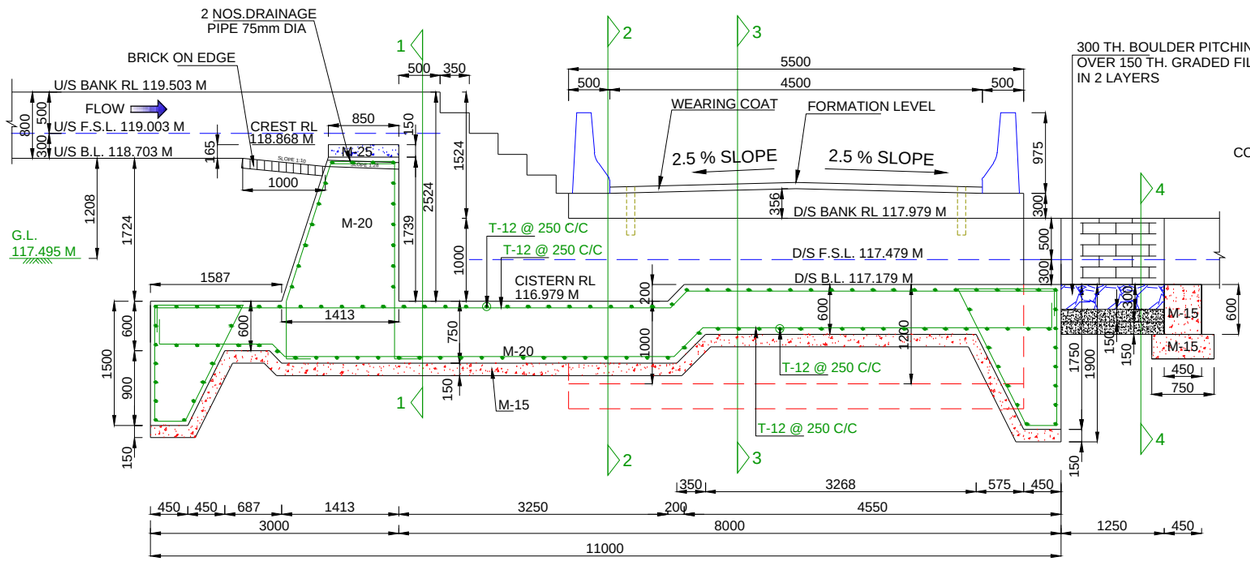
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 6.000 OF KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ FALL 1 of 1



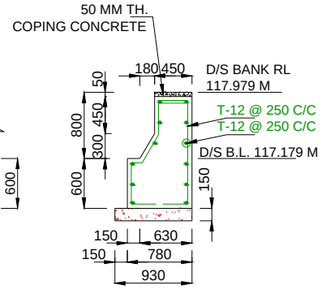
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

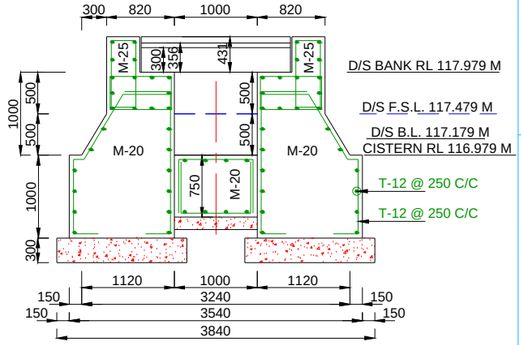
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

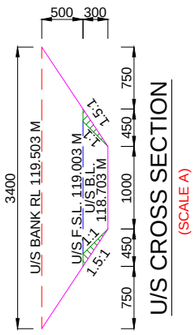
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.070	0.070	CUMEC
VERTICAL DROP	1.524	1.524	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	1.000	1.000	METRE
BED SLOPE	1 : 4000	1 : 4000	



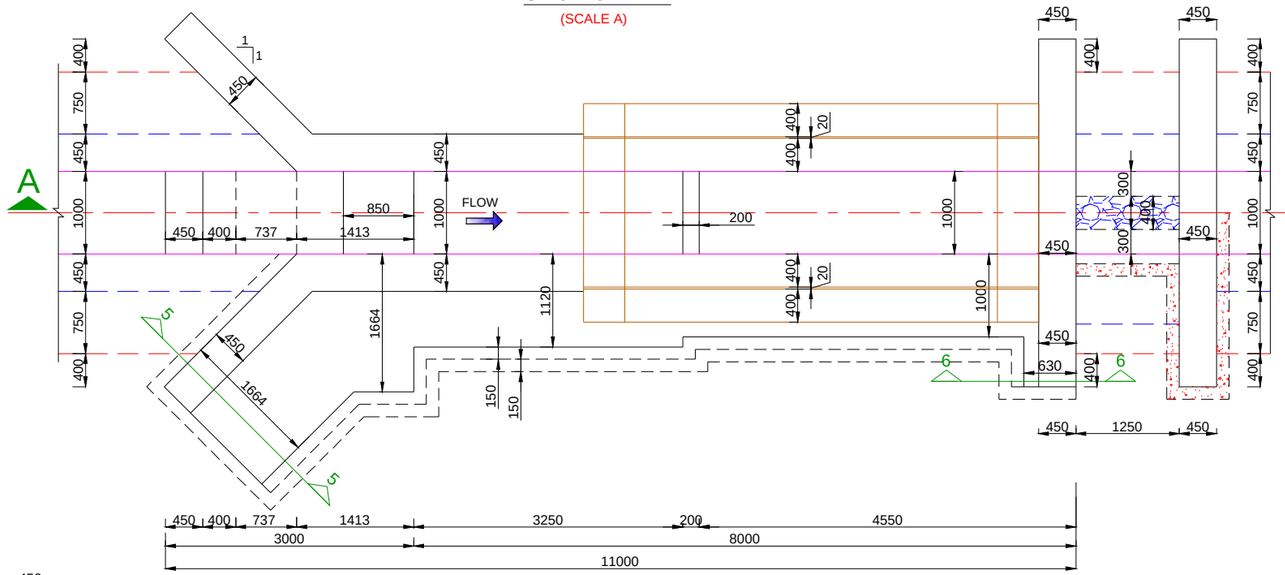
SECTION AT 2-2

(SCALE A)



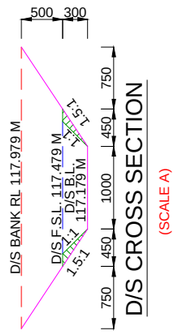
U/S CROSS SECTION

(SCALE A)



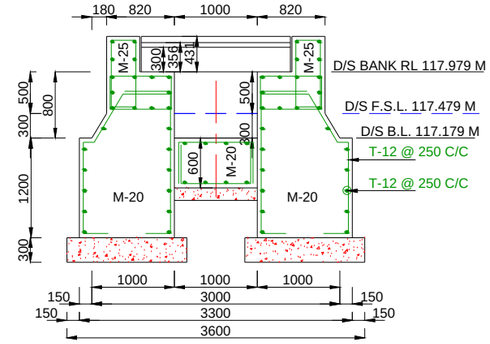
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



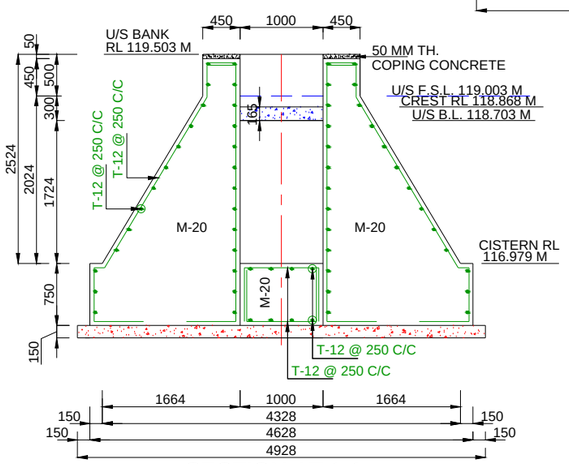
D/S CROSS SECTION

(SCALE A)



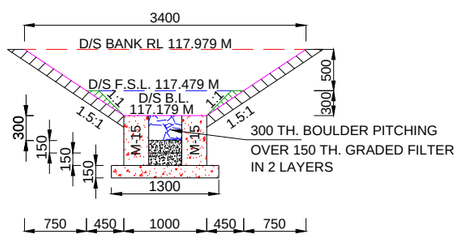
SECTION AT 3-3

(SCALE A)



SECTION AT 1-1

(SCALE A)



SECTION AT 4-4

(SCALE A)

SCALE A:-

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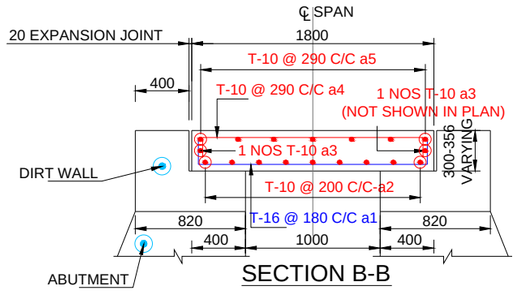
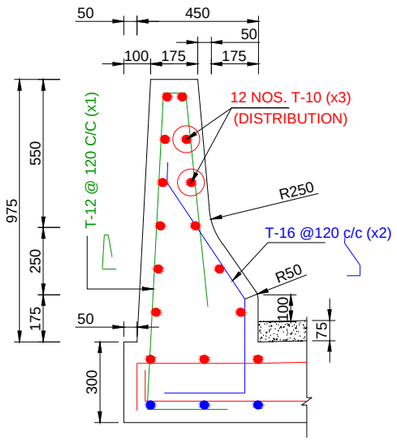
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.524 M HT. FALL AT KM. 7.175 OF KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ FALL 1 of 2



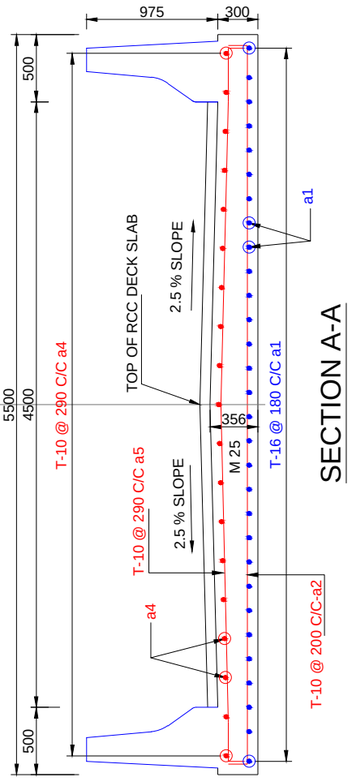
SECTION B-B

(SCALE A)

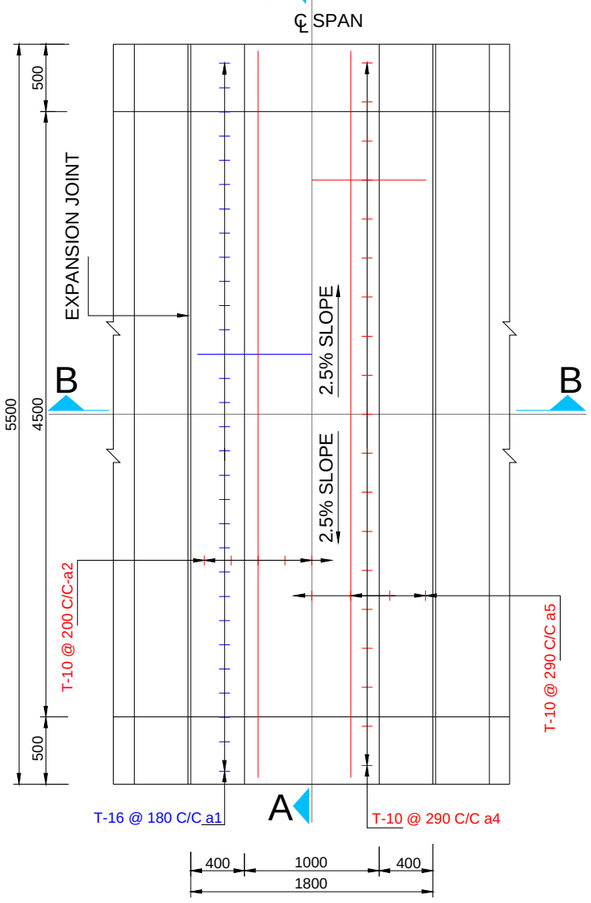


REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)

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	200, R=80, 1700, 200	16	180	31
2	a2	200, R=50, 5400, 200	10	200	9
3	a3	5400	10	-	2
4	a4	1700, 200, R=40, 200	10	290	19
5	a5	450, 2250, 2250, 450, 200, 200	10	290	7
CRASH BARRIER					
1	x1	75, 1176, 950, 300	12	120	15X2
2	x2	75, 540, 350, 300	16	120	15X2
3	x3	1700	10	-	12X2

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (f_y=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

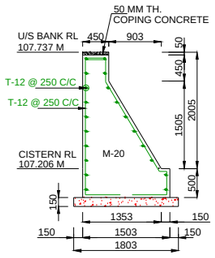
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

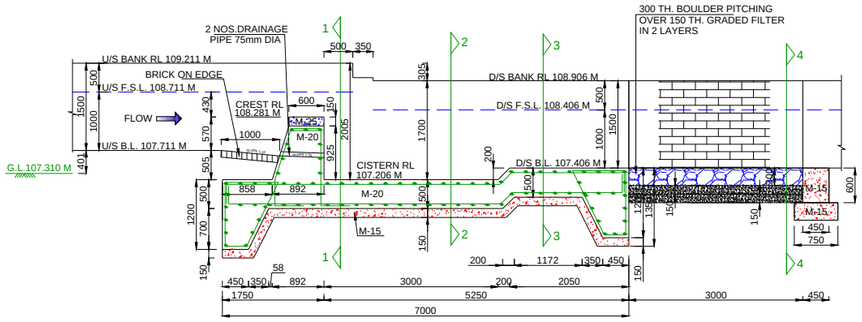
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 7.175 OF KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BR. CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-04/ FALL 2 of 2



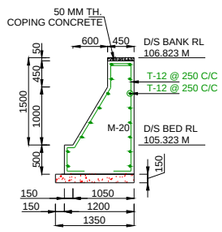
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

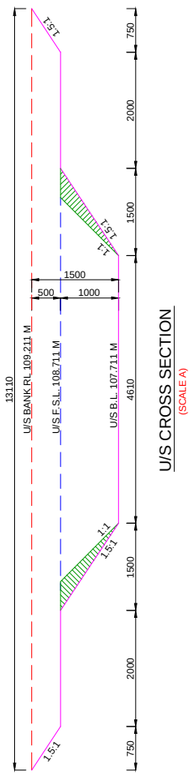
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

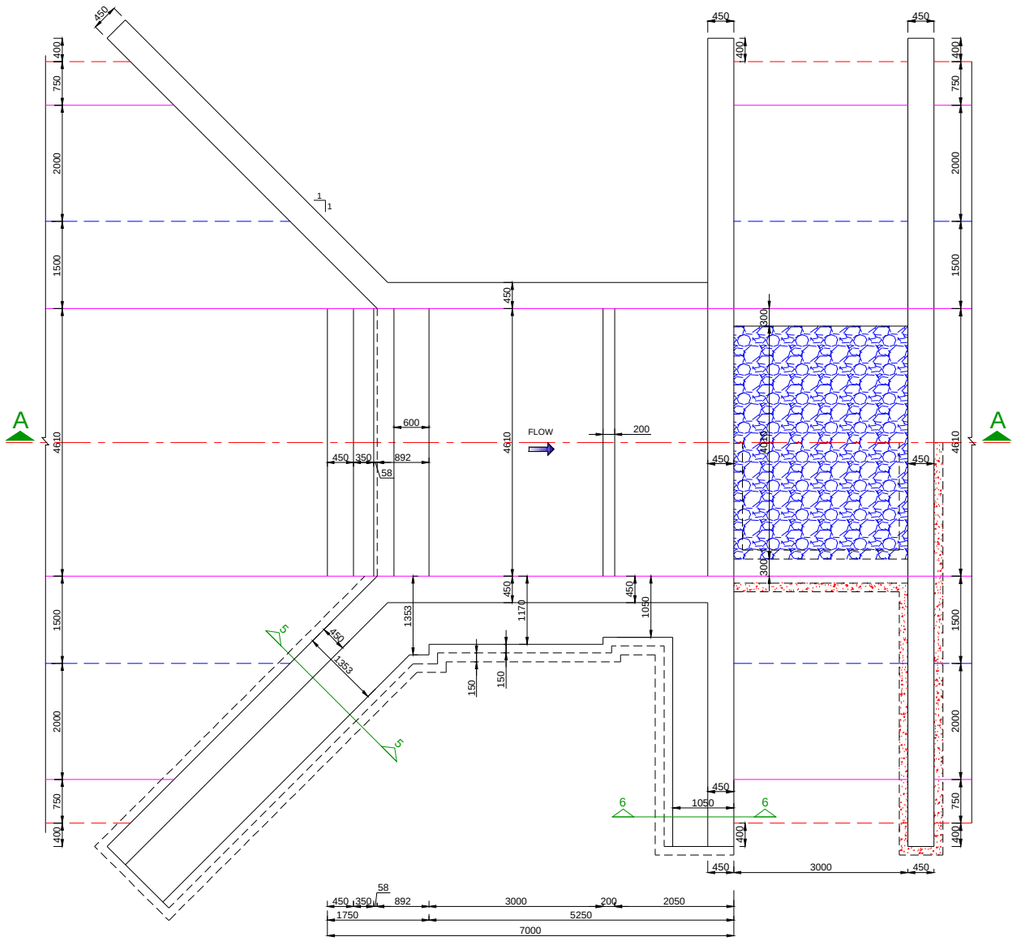
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	2.470	2.470	CUMEC
VERTICAL DROP	0.305	0.305	METRE
FULL SUPPLY DEPTH	1.000	1.000	METRE
BED WIDTH	4.610	4.610	METRE
BED SLOPE	1 : 5000	1 : 5000	

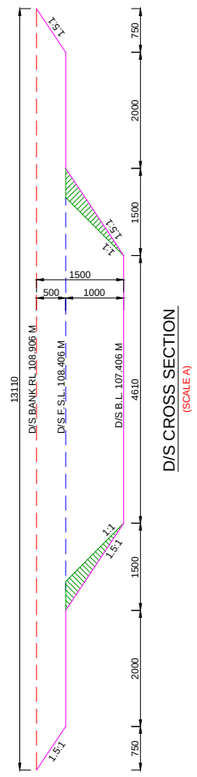


U/S CROSS SECTION

(SCALE A)

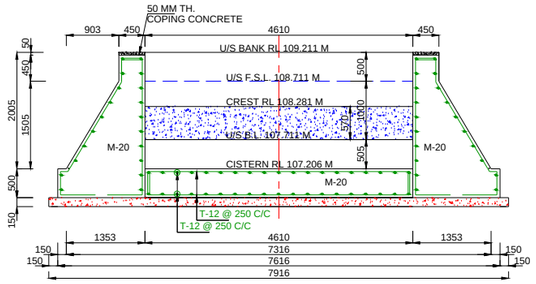


(SCALE A)



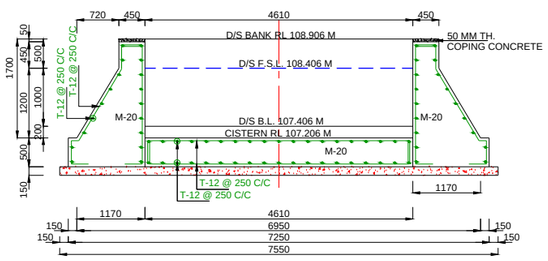
D/S CROSS SECTION

(SCALE A)



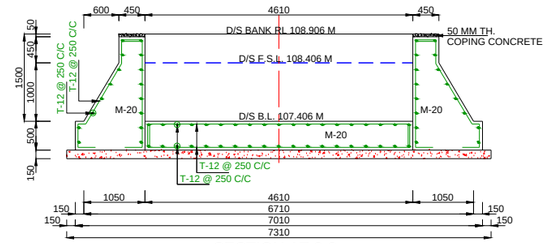
SECTION AT 1-1

(SCALE A)



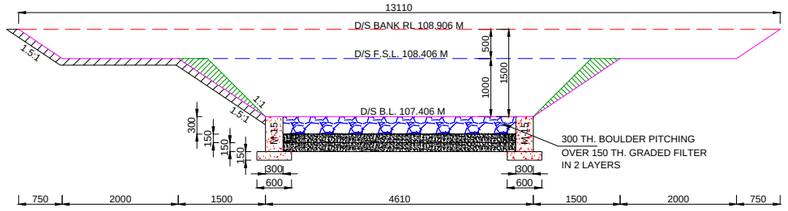
SECTION AT 2-2

(SCALE A)



SECTION AT 3-3

(SCALE A)



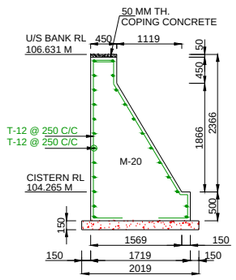
SECTION AT 4-4

(SCALE A)

SCALE A:-

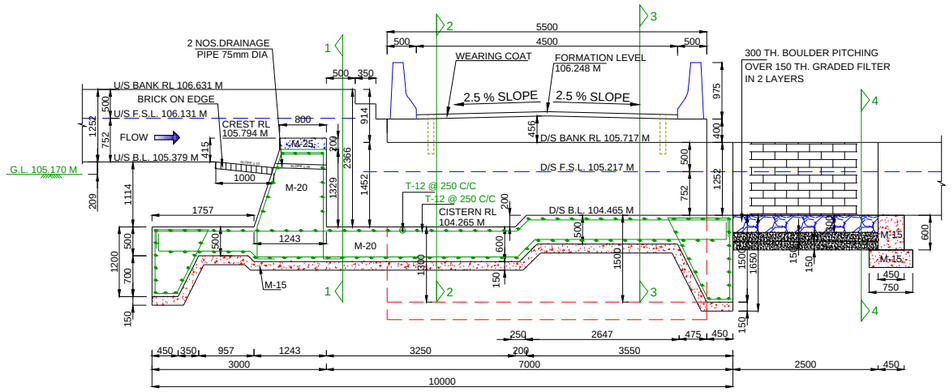
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.305 M HT. FALL AT KM. 0.475 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1



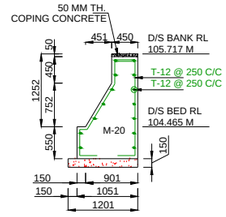
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

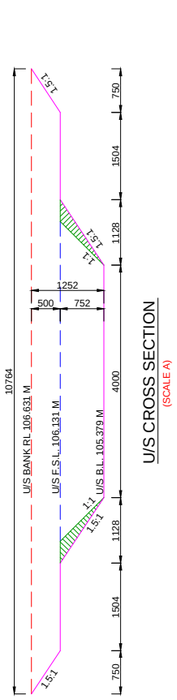
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

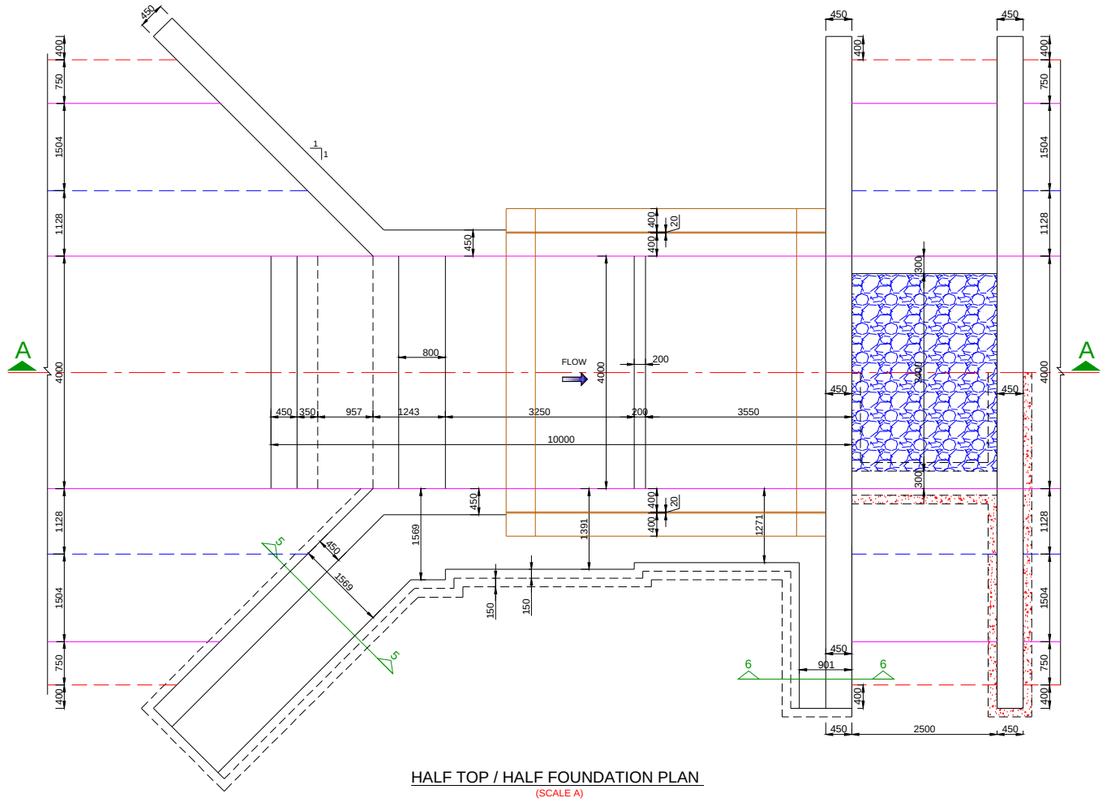
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.350	1.350	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.752	0.752	METRE
BED WIDTH	4.000	4.000	METRE
BED SLOPE	1 : 5000	1 : 5000	



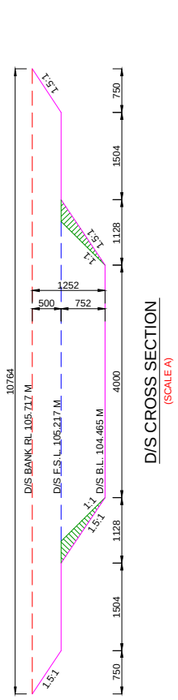
U/S CROSS SECTION

(SCALE A)



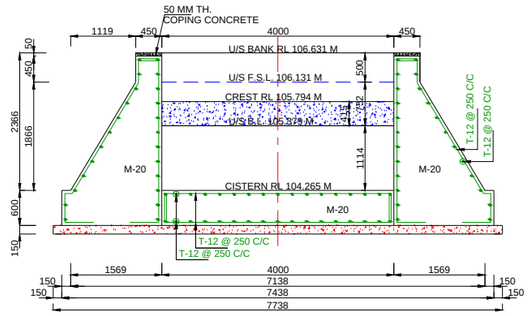
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



D/S CROSS SECTION

(SCALE A)

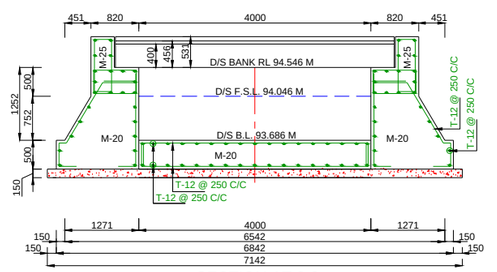


SECTION AT 1-1

(SCALE A)

SECTION AT 2-2

(SCALE A)

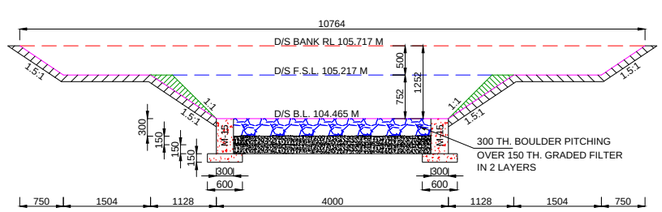


SECTION AT 3-3

(SCALE A)

SCALE A:-

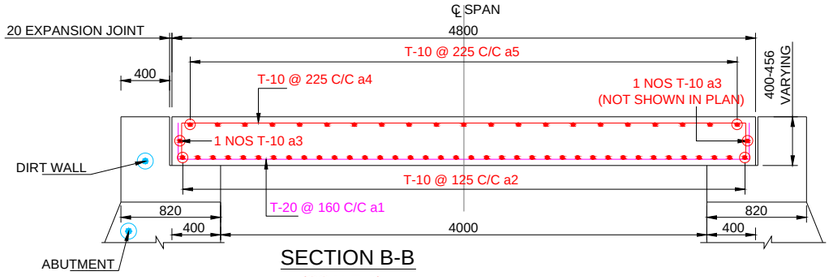
1000 0 1000 2000 3000



SECTION AT 4-4

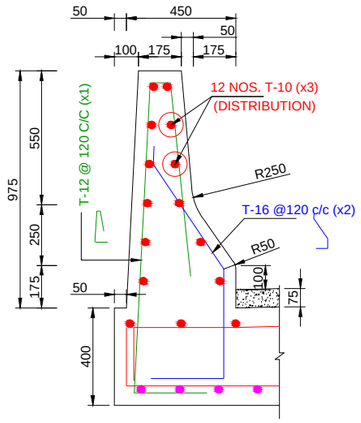
(SCALE A)

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 4.510 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 2



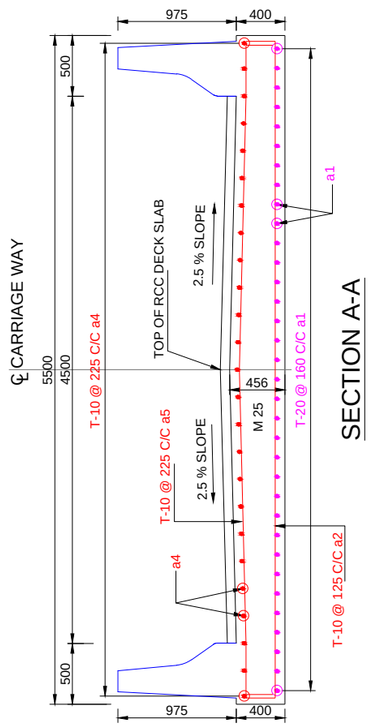
SECTION B-B

(SCALE A)

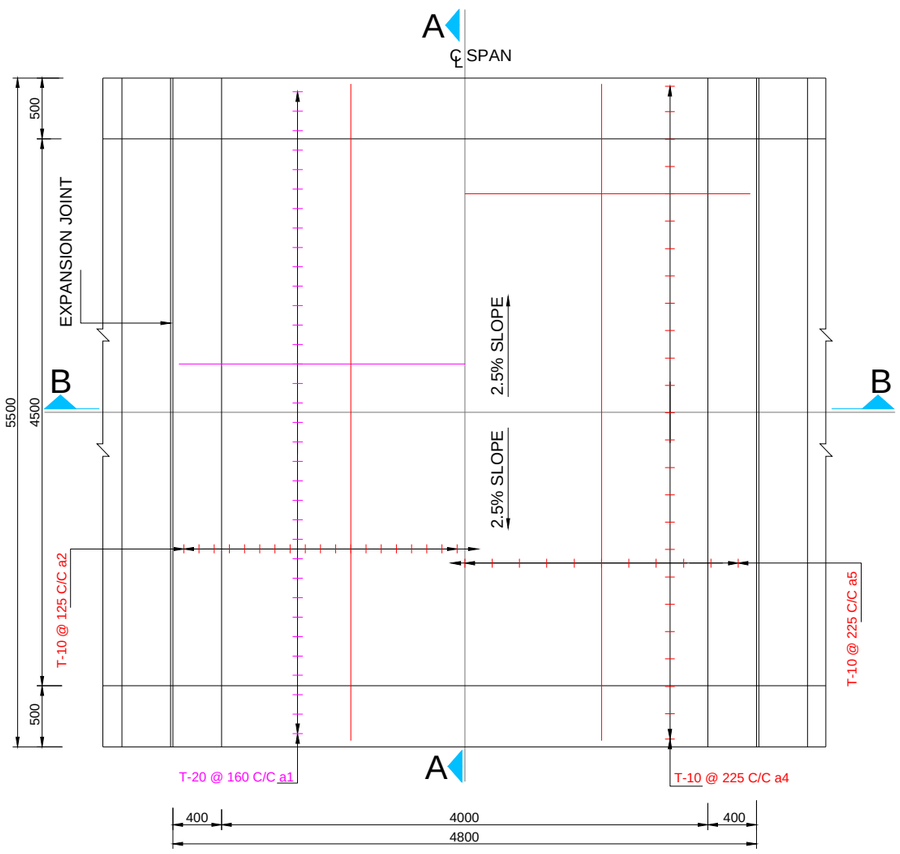


REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)

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	200, R=80, 4700, 200	20	160	34
2	a2	200, R=50, 5400, 200	10	125	38
3	a3	5400	10	-	2
4	a4	4700, 200, R=40, 200	10	225	25
5	a5	200, 450, 2250, 2250, 450, 200	10	225	21
CRASH BARRIER					
1	x1	75, 1247, 950, 300	12	120	40X2
2	x2	75, 540, 479, 300	16	120	40X2
3	x3	4700	10	-	18X2

NOTES:-

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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,
BRIDGE SLAB & PARAPET M-25

4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.

5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.

6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.

7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.

8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.

9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.

10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.

11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.

12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.

13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = $\alpha 1$. lbnet
WHERE, $\alpha 1$ = 1.0 for p%≤25%
$\alpha 1$ = 1.15 for 25%≤p%≤33%
$\alpha 1$ = 1.4 for 33%≤p%≤50%

17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)

18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.

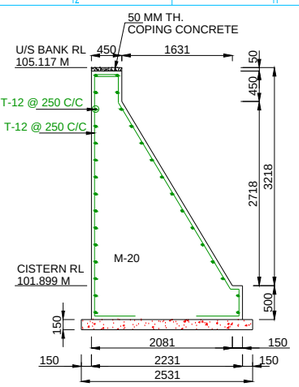
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.

20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

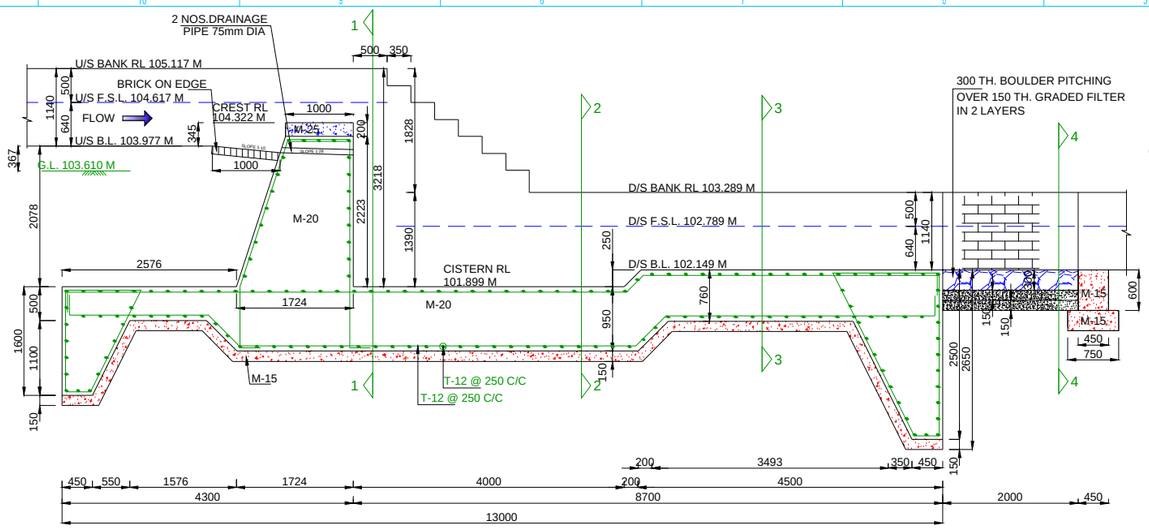
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 4.510 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 2 of 2



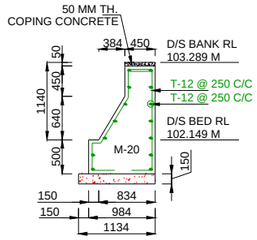
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
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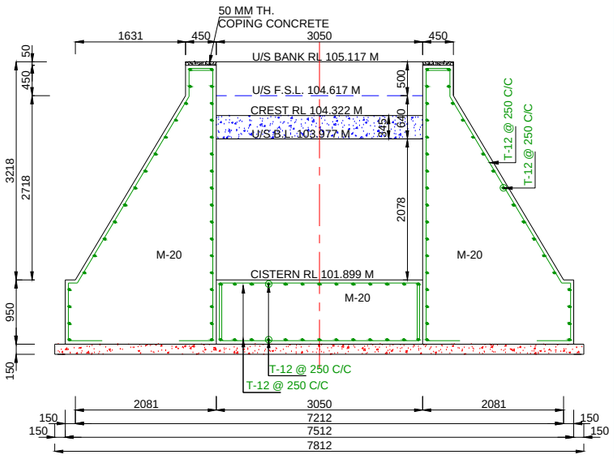
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

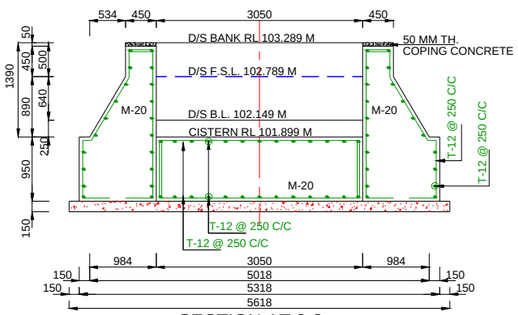
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.780	0.610	CUMEC
VERTICAL DROP	1.828	1.828	METRE
FULL SUPPLY DEPTH	0.640	0.640	METRE
BED WIDTH	3.050	3.050	METRE
BED SLOPE	1 : 5000	1 : 5000	



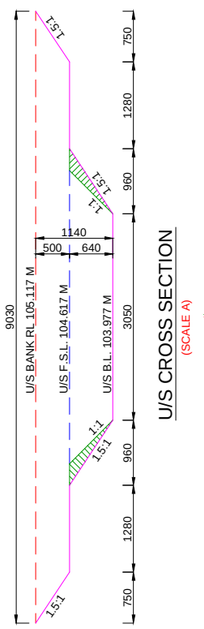
SECTION AT 1-1

(SCALE A)



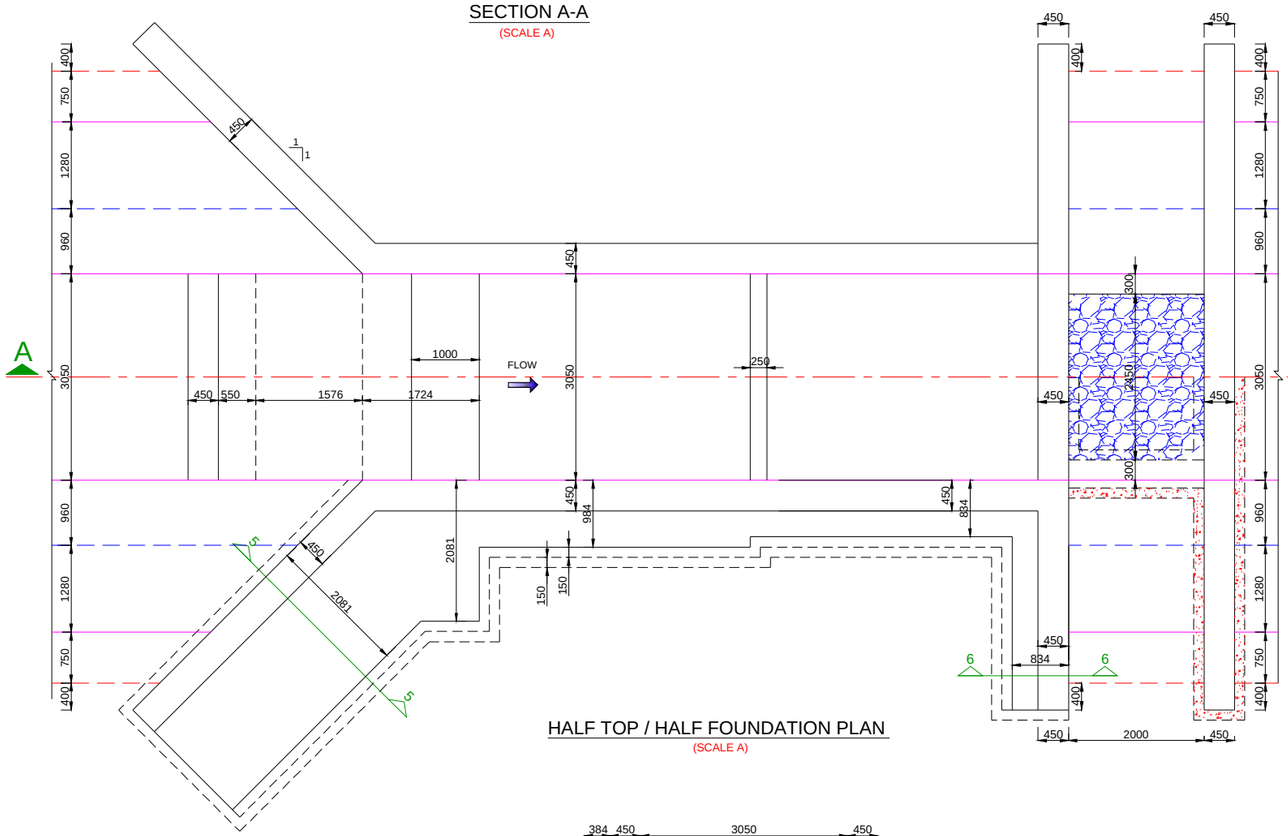
SECTION AT 2-2

(SCALE A)



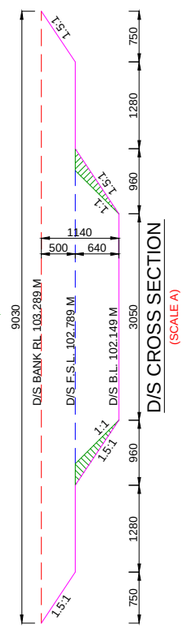
U/S CROSS SECTION

(SCALE A)



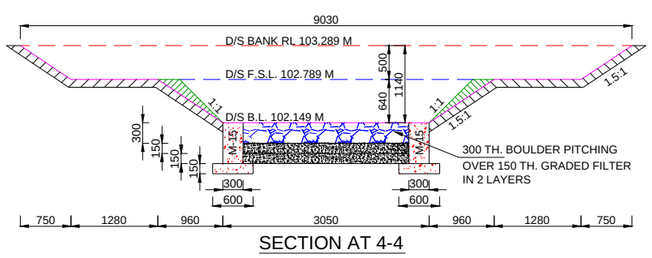
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



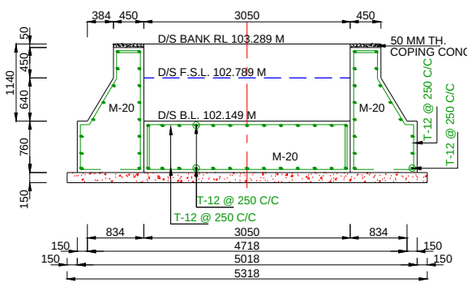
D/S CROSS SECTION

(SCALE A)



SECTION AT 4-4

(SCALE A)



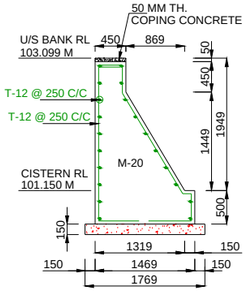
SECTION AT 3-3

(SCALE A)

SCALE A:-

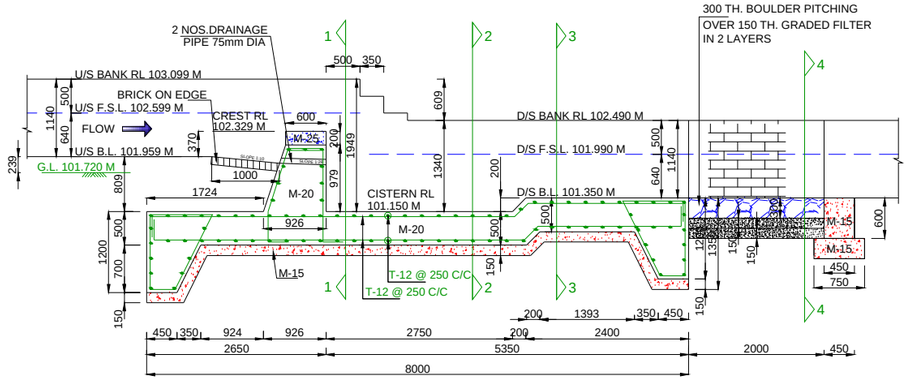
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.828 M HT. FALL AT KM. 6.950 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1



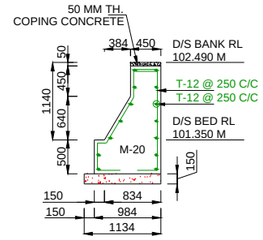
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

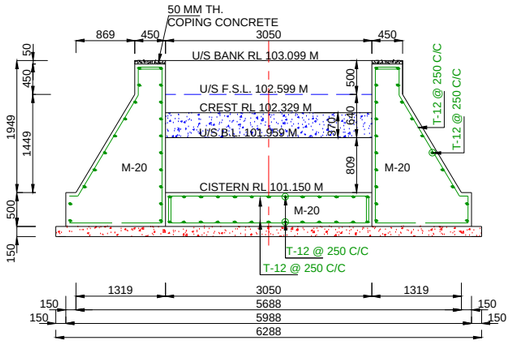
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

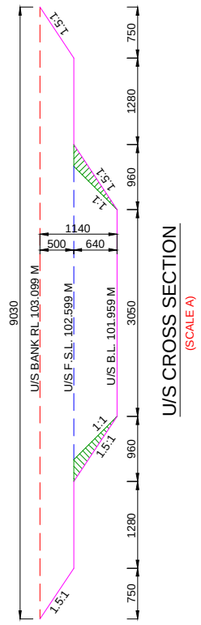
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.780	0.610	CUMEC
VERTICAL DROP	0.609	0.609	METRE
FULL SUPPLY DEPTH	0.640	0.640	METRE
BED WIDTH	3.050	3.050	METRE
BED SLOPE	1 : 5000	1 : 5000	



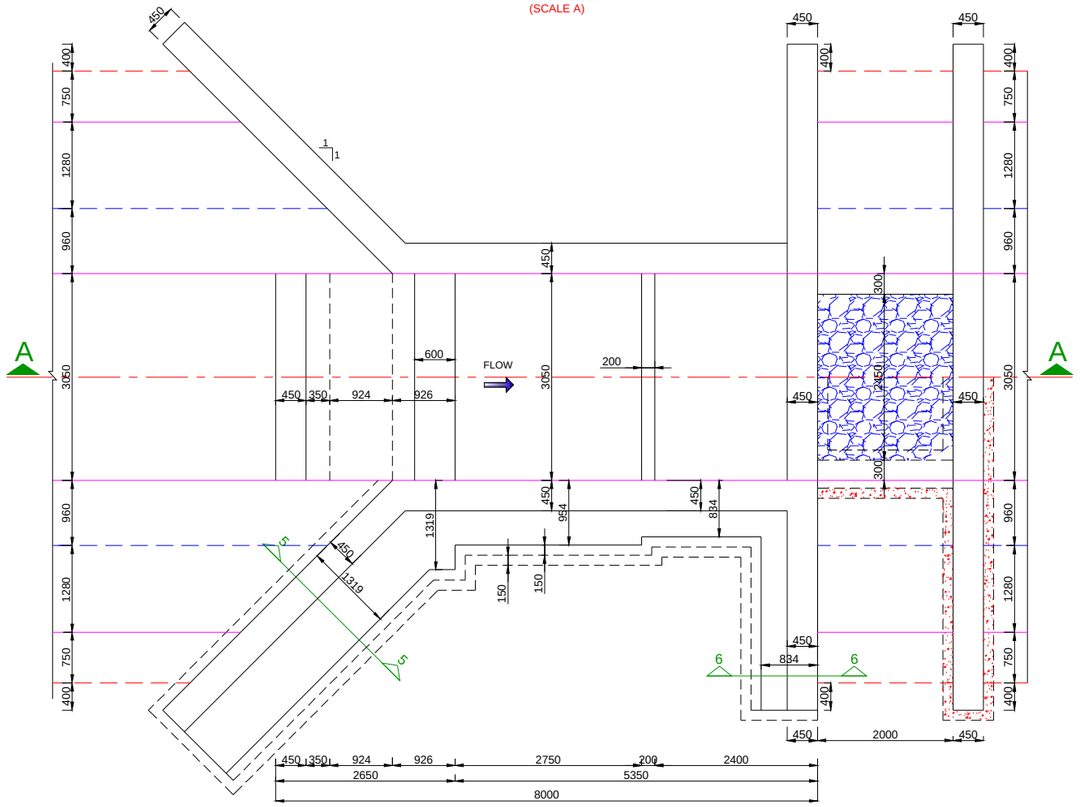
SECTION AT 1-1

(SCALE A)



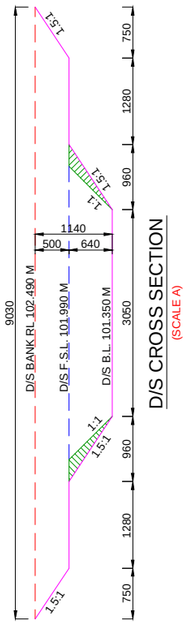
U/S CROSS SECTION

(SCALE A)



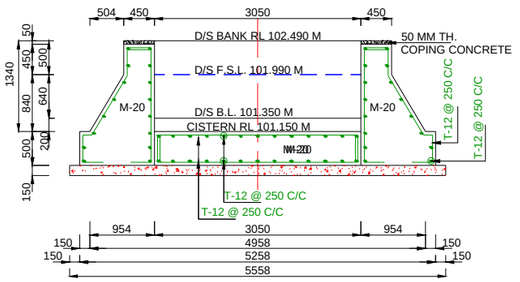
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



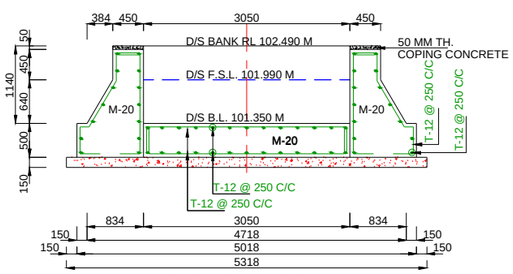
D/S CROSS SECTION

(SCALE A)



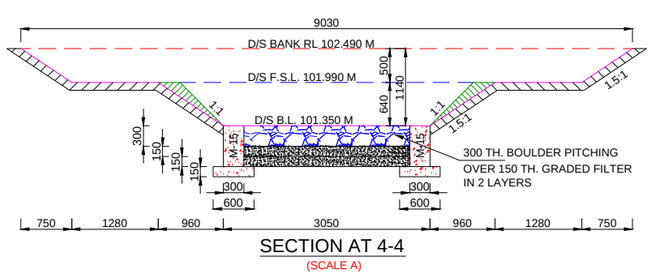
SECTION AT 2-2

(SCALE A)



SECTION AT 3-3

(SCALE A)



SECTION AT 4-4

(SCALE A)

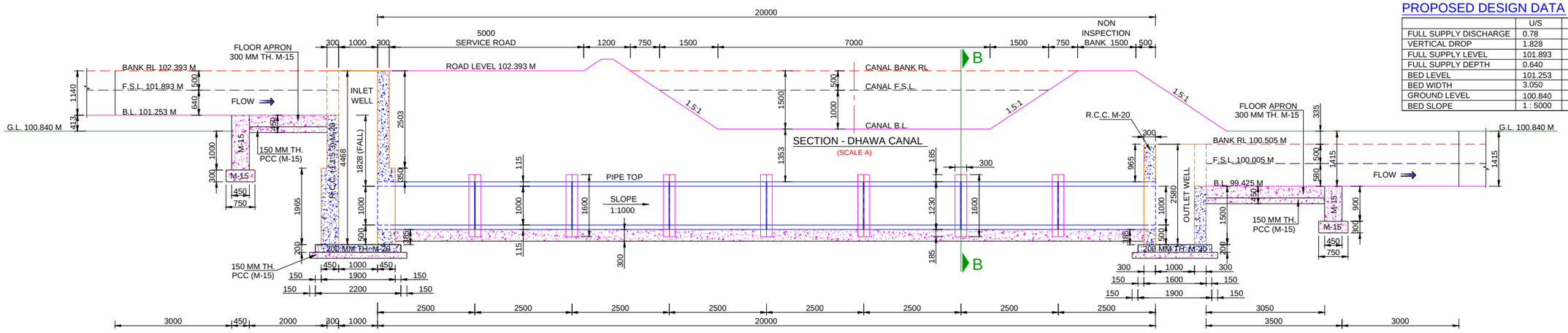
SCALE A:-

1000 0 1000 2000 3000

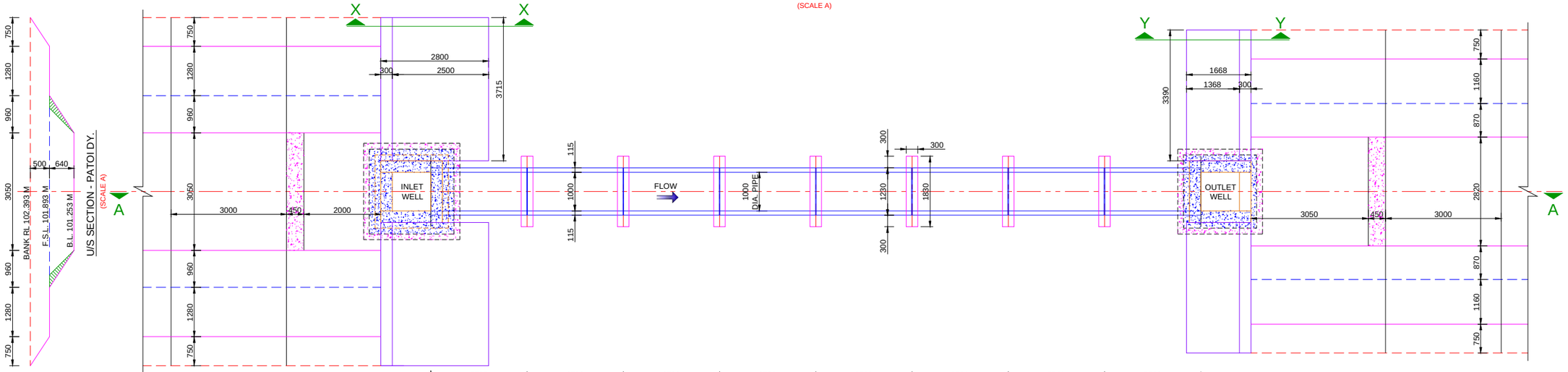
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 7.900 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1

PROPOSED DESIGN DATA

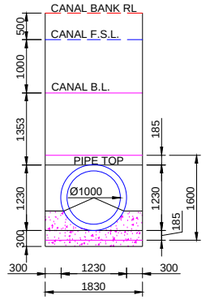
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.78	0.61	CUMEC
VERTICAL DROP	1.828	1.828	METRE
FULL SUPPLY LEVEL	101.893	100.005	METRE
FULL SUPPLY DEPTH	0.640	0.580	METRE
BED LEVEL	101.253	99.425	METRE
BED WIDTH	3.050	2.820	METRE
GROUND LEVEL	100.840	100.840	METRE
BED SLOPE	1 : 5000	1 : 5000	



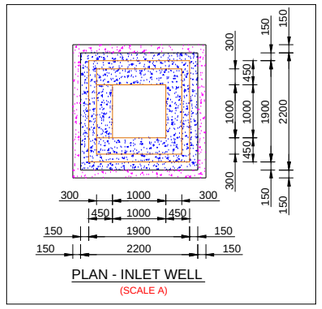
SECTION A-A
(SCALE A)



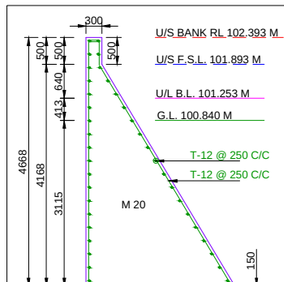
PLAN
(SCALE A)



SECTION B-B
(SCALE A)

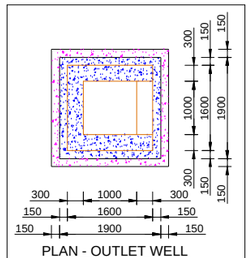


PLAN - INLET WELL
(SCALE A)

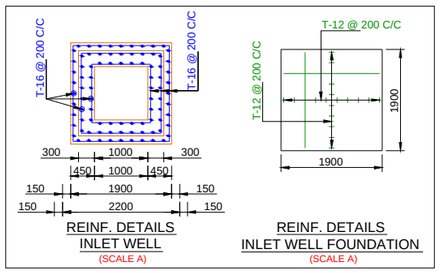


U/S WING WALL SECTION X-X
(SCALE A)

D/S WING WALL SECTION Y-Y
(SCALE A)

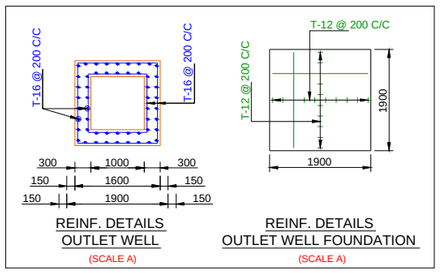


PLAN - OUTLET WELL
(SCALE A)



REINF. DETAILS INLET WELL
(SCALE A)

REINF. DETAILS INLET WELL FOUNDATION
(SCALE A)



REINF. DETAILS OUTLET WELL
(SCALE A)

REINF. DETAILS OUTLET WELL FOUNDATION
(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 15
FOUNDATION OF ABUTMENTS & WING WALL	M 15
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.

TENDER PURPOSE ONLY

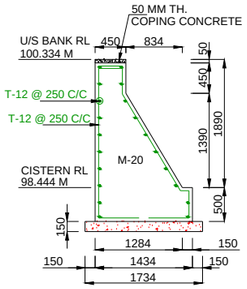
SCALE A:- 500 0 500 1000 1500

SCALE B:- 250 0 250 500 750

Prepared by :-

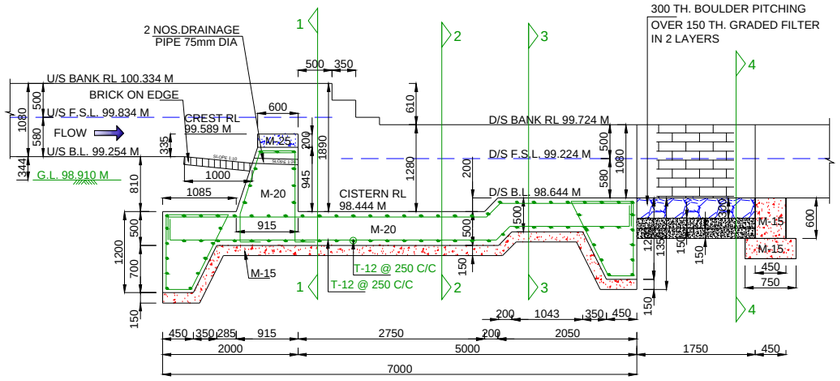
WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	DRAWING OF WELL TYPE FALL (1.828 M HT.) / CD DHAWA CANAL AT KM 8.382 OF PATOI DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-09/ FALL / CD 1 of 1



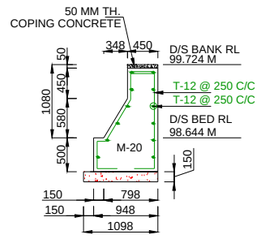
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

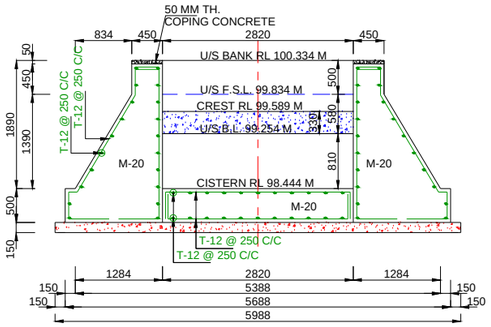
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

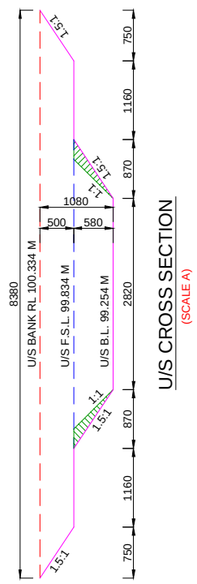
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.610	0.610	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.580	0.580	METRE
BED WIDTH	2.820	2.820	METRE
BED SLOPE	1 : 5000	1 : 5000	



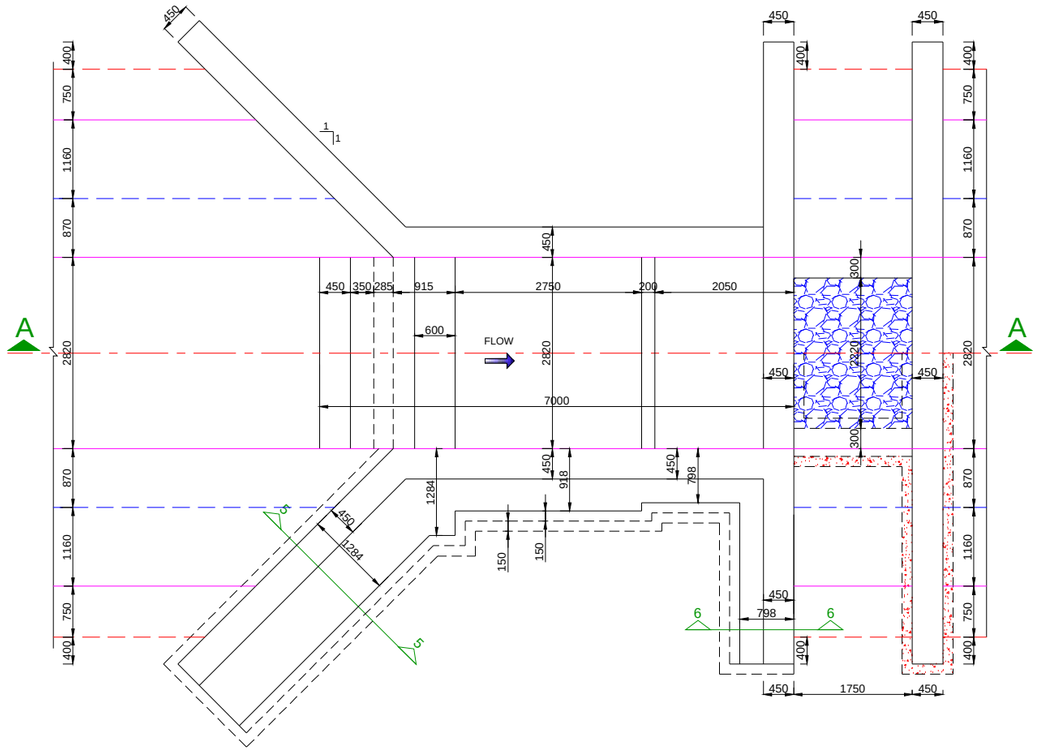
SECTION AT 1-1

(SCALE A)



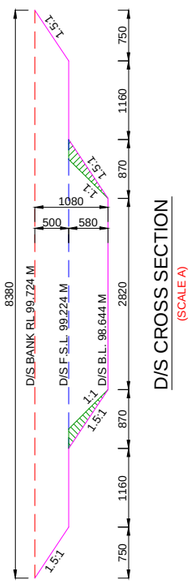
U/S CROSS SECTION

(SCALE A)



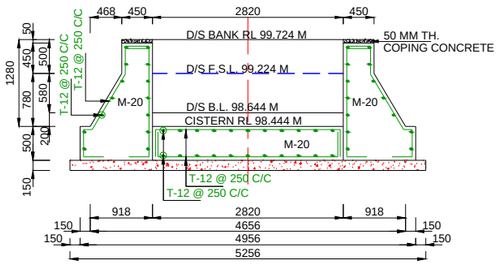
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



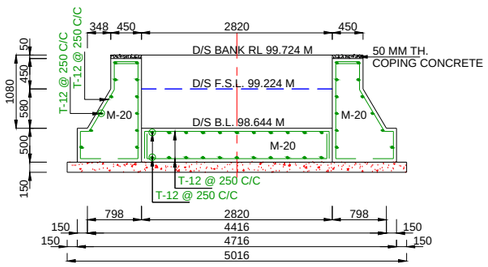
D/S CROSS SECTION

(SCALE A)



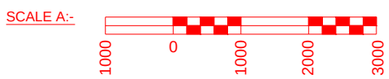
SECTION AT 2-2

(SCALE A)

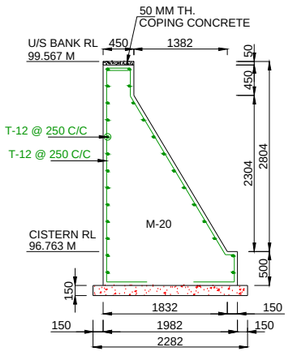


SECTION AT 3-3

(SCALE A)

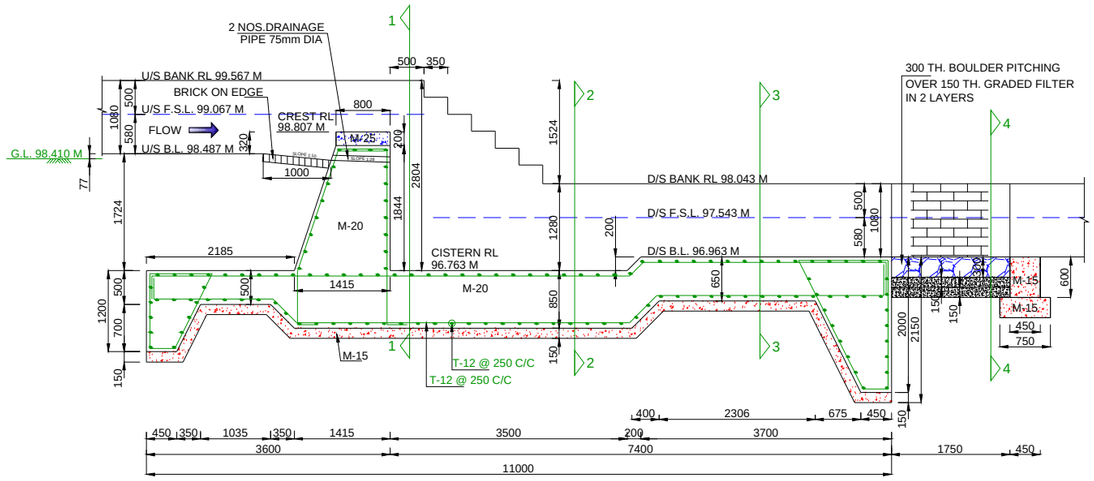


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 9.240 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1



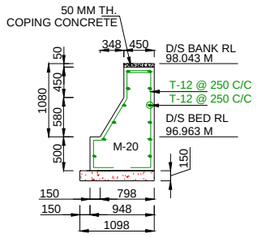
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

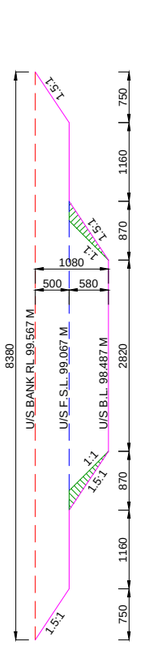
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

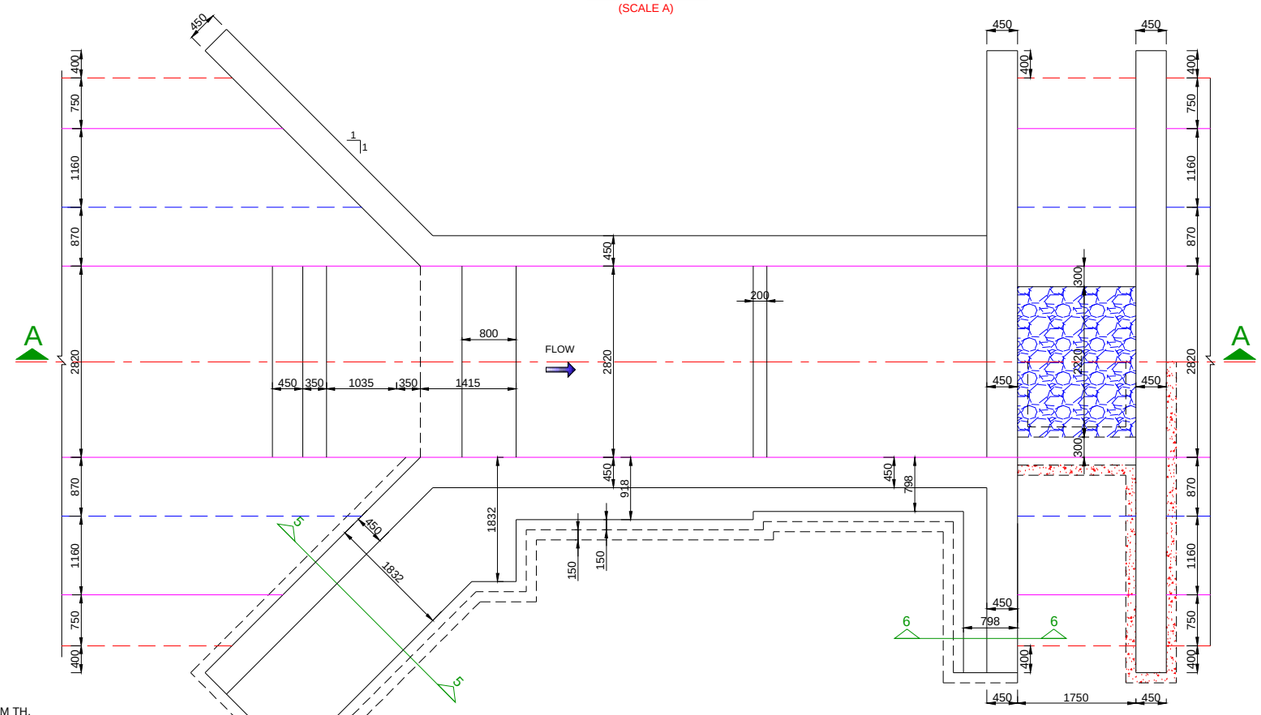
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

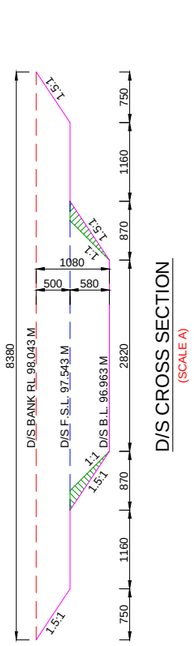
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

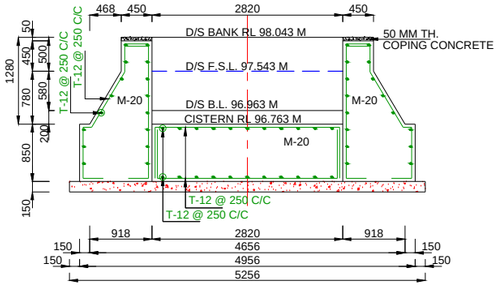
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.610	0.610	CUMEC
VERTICAL DROP	1.524	1.524	METRE
FULL SUPPLY DEPTH	0.580	0.580	METRE
BED WIDTH	2.820	2.820	METRE
BED SLOPE	1 : 5000	1 : 5000	



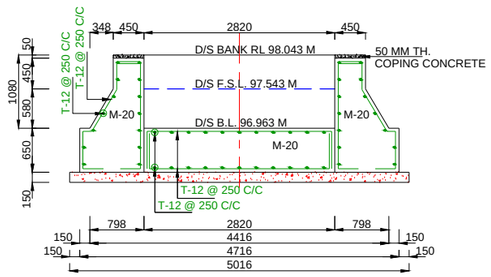






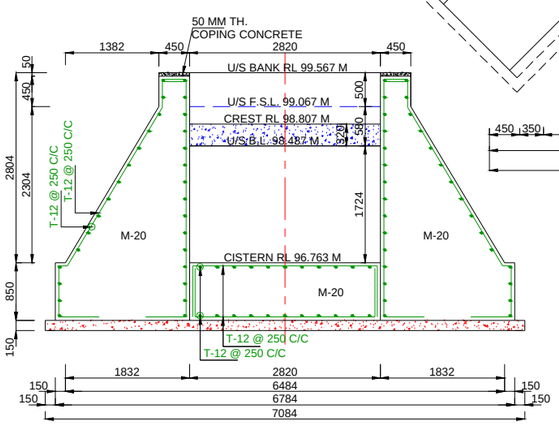
SECTION AT 2-2

(SCALE A)



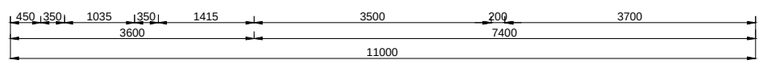
SECTION AT 3-3

(SCALE A)



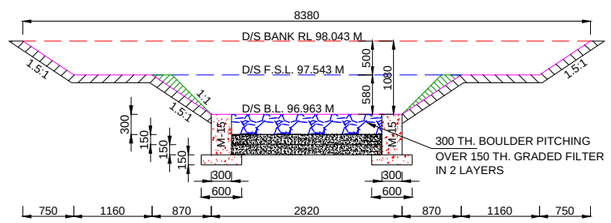
SECTION AT 1-1

(SCALE A)



HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



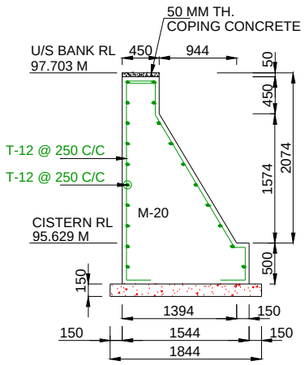
SECTION AT 4-4

(SCALE A)

SCALE A:-

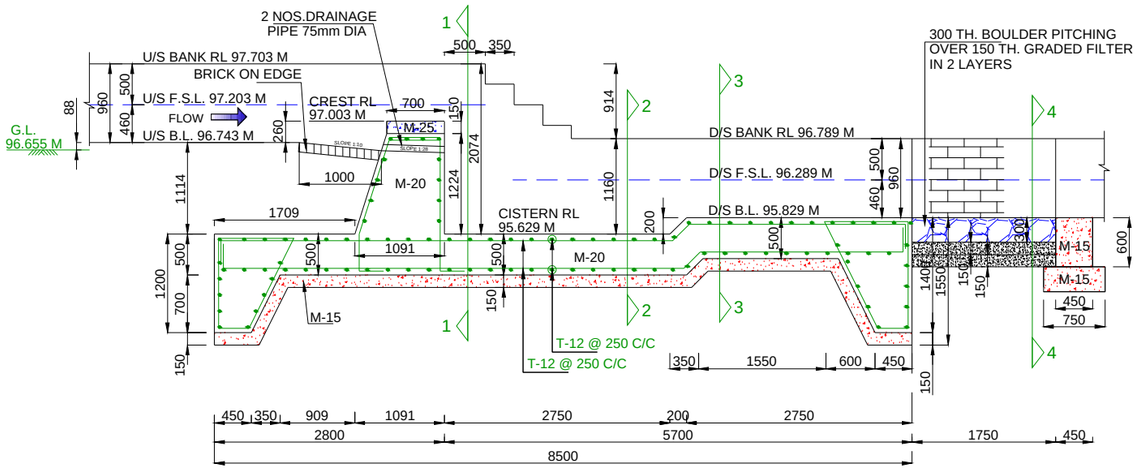
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.067 M HT. FALL AT KM. 10.825 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1



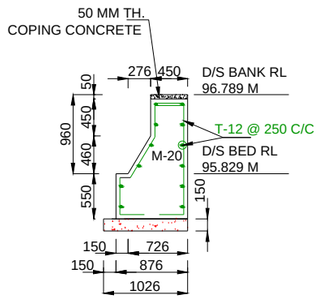
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

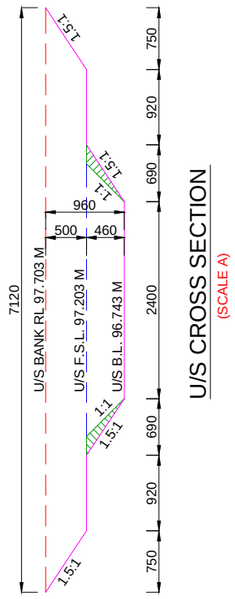
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

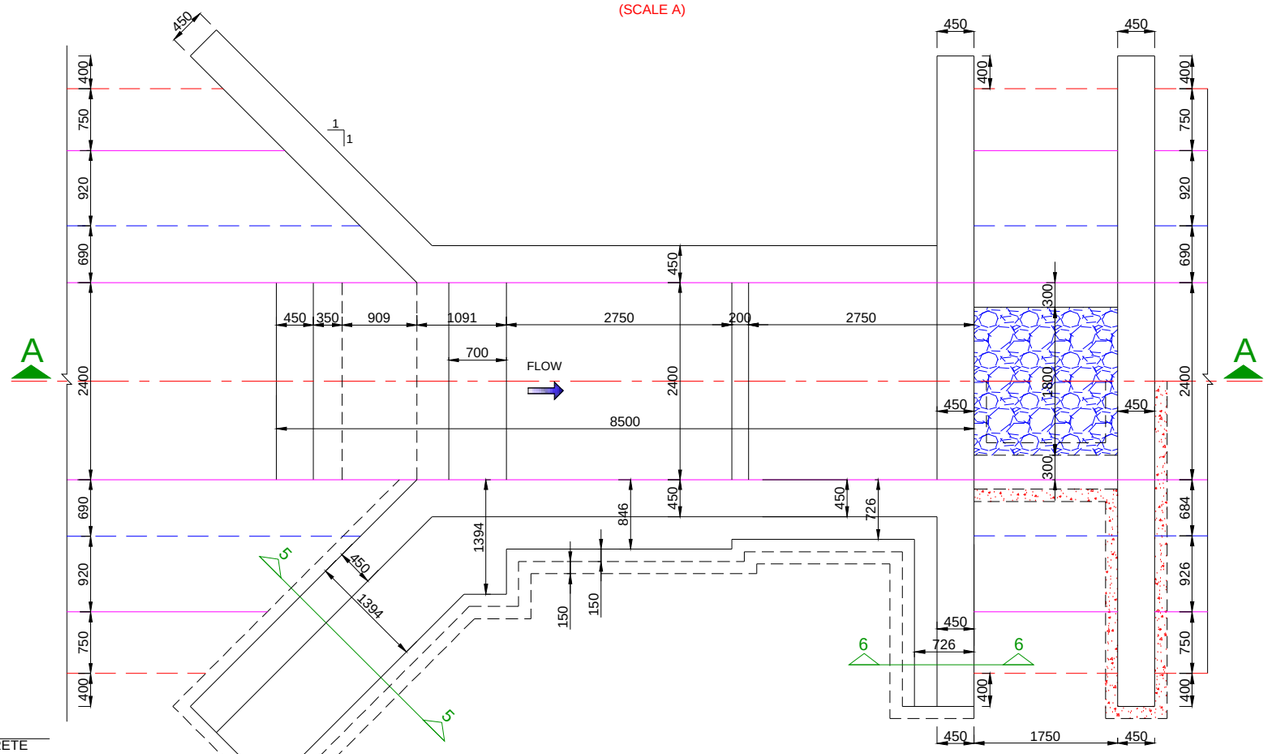
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.360	0.360	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.460	0.460	METRE
BED WIDTH	2.400	2.400	METRE
BED SLOPE	1 : 5000	1 : 5000	



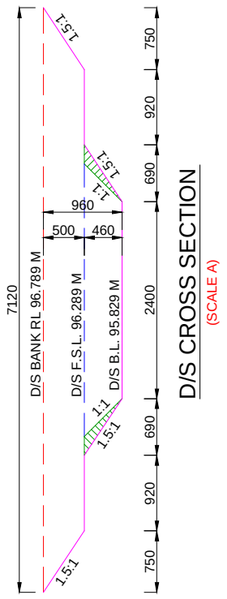
U/S CROSS SECTION

(SCALE A)



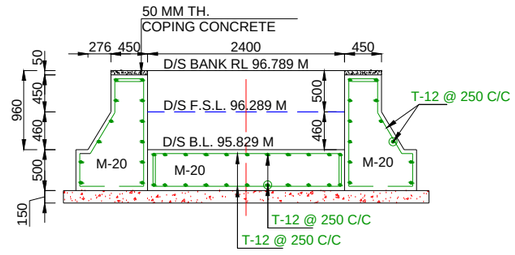
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



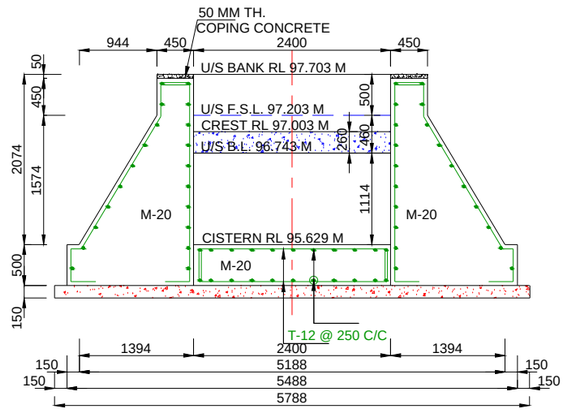
D/S CROSS SECTION

(SCALE A)



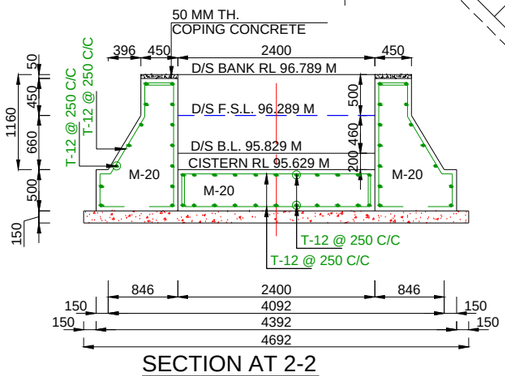
SECTION AT 3-3

(SCALE A)



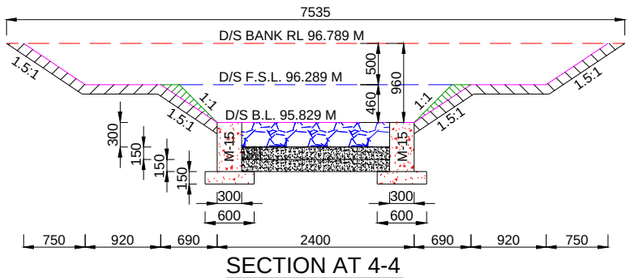
SECTION AT 1-1

(SCALE A)



SECTION AT 2-2

(SCALE A)



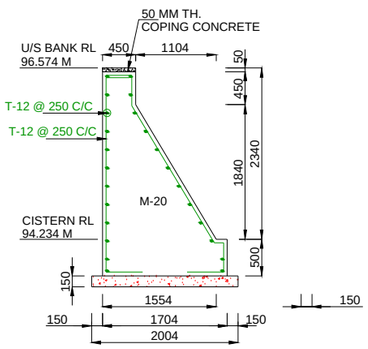
SECTION AT 4-4

(SCALE A)

SCALE A:-

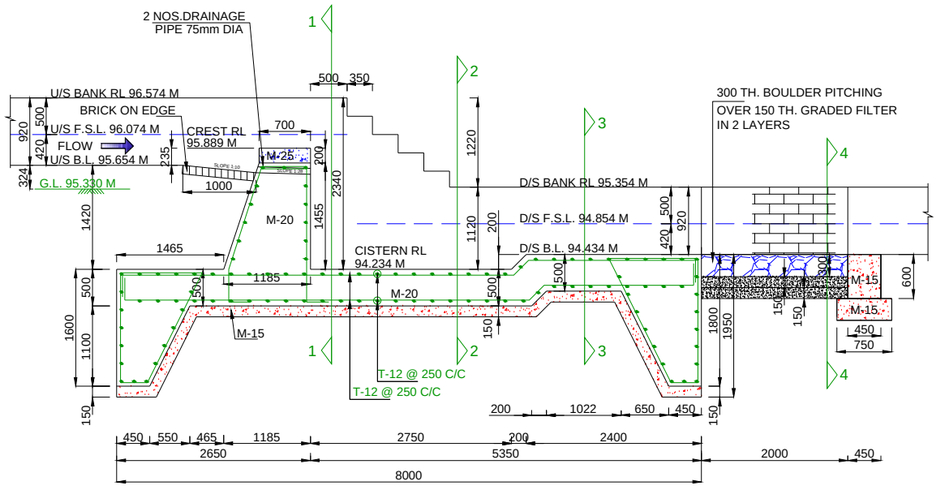
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 11.125 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1



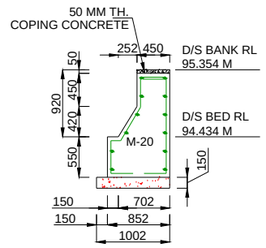
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

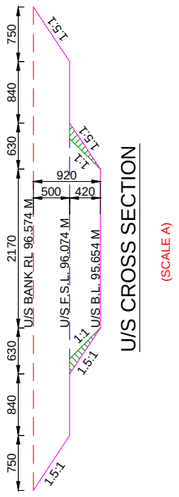
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

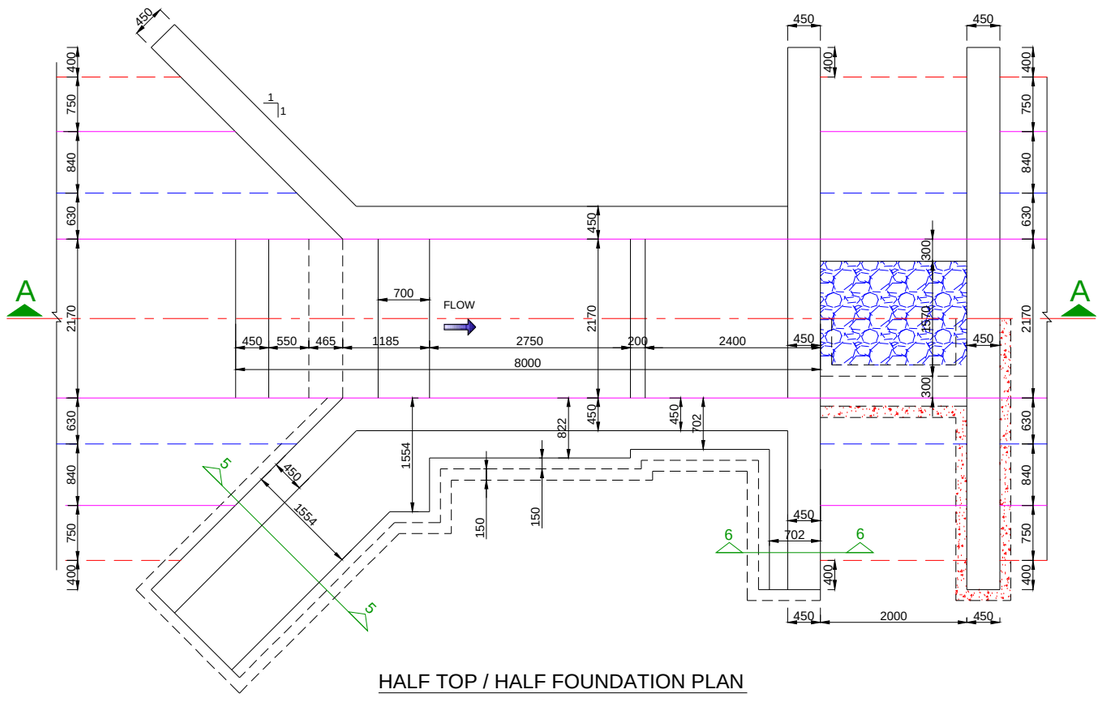
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.280	0.280	CUMEC
VERTICAL DROP	1.220	1.220	METRE
FULL SUPPLY DEPTH	0.420	0.420	METRE
BED WIDTH	2.170	2.170	METRE
BED SLOPE	1 : 5000	1 : 5000	



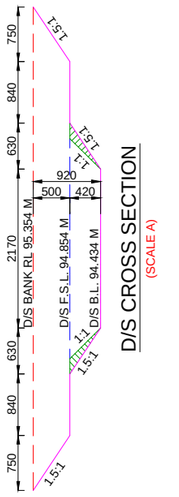
U/S CROSS SECTION

(SCALE A)



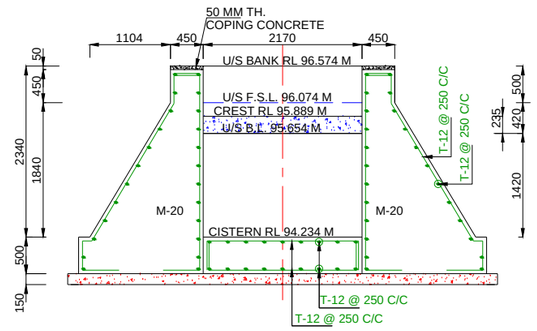
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



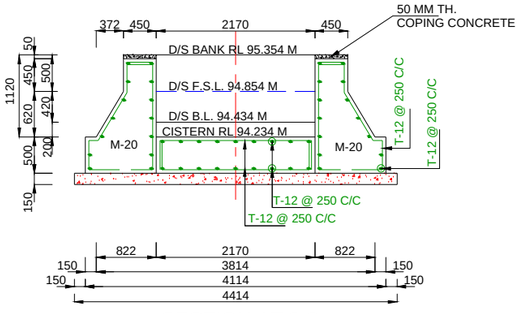
D/S CROSS SECTION

(SCALE A)



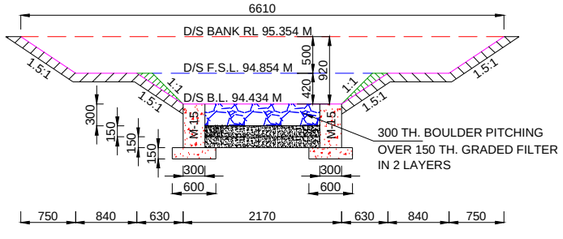
SECTION AT 1-1

(SCALE A)



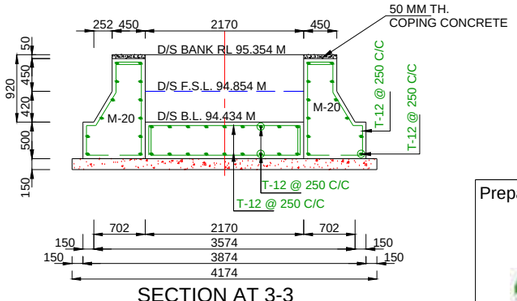
SECTION AT 2-2

(SCALE A)



SECTION AT 4-4

(SCALE A)



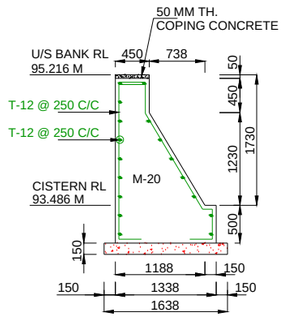
SECTION AT 3-3

(SCALE A)

SCALE A:-

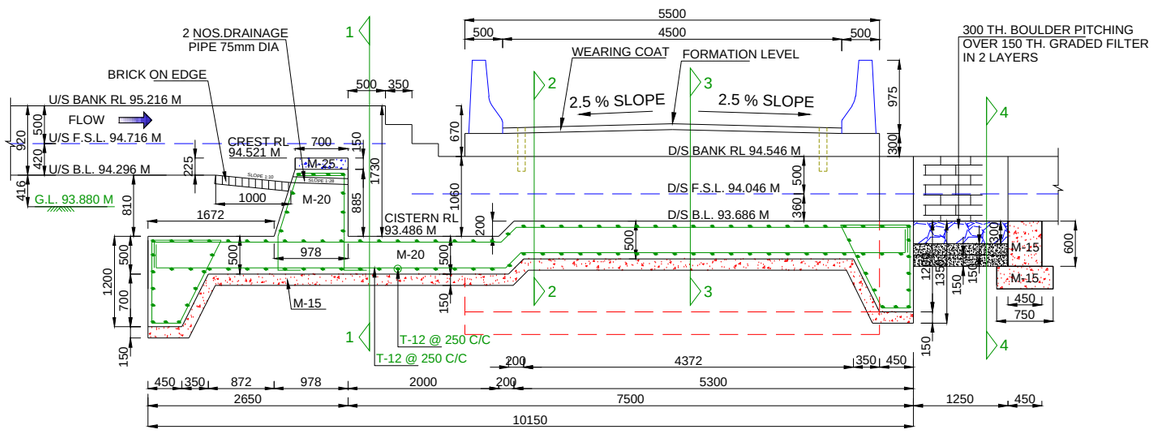
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.220 M HT. FALL AT KM. 12.000 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1



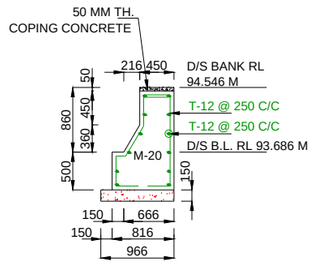
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(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.
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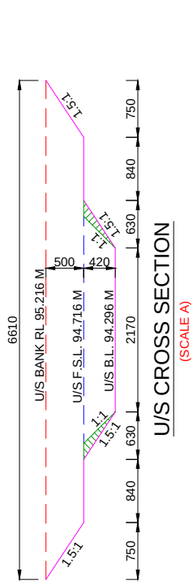
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

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.

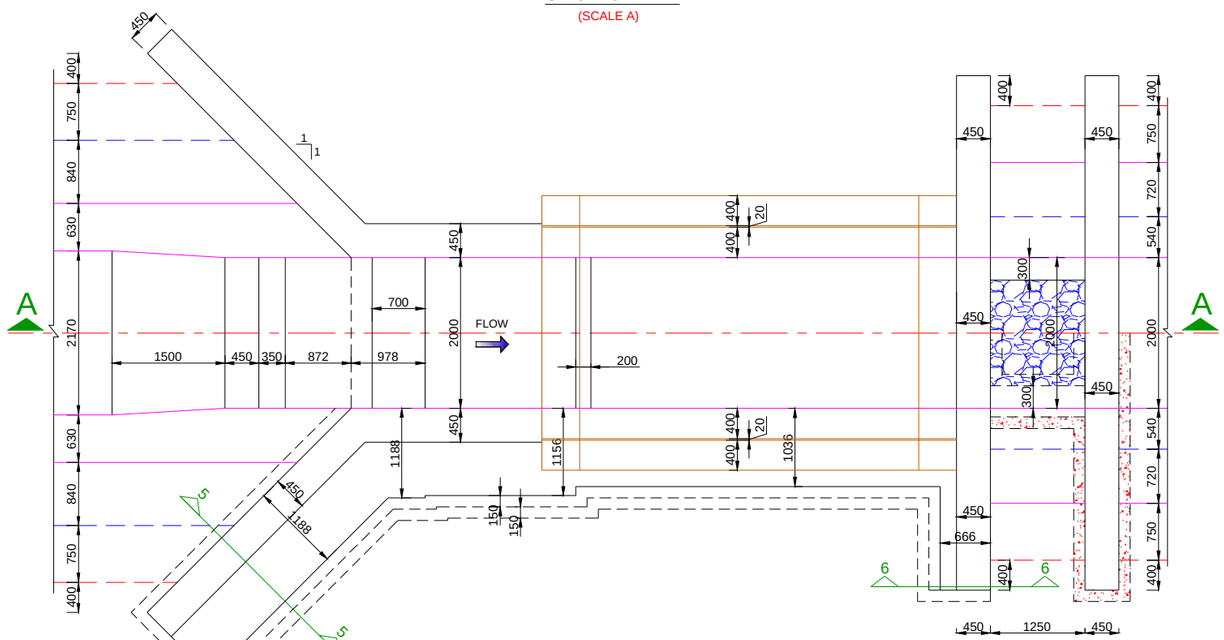
HYDRAULIC:- DATA

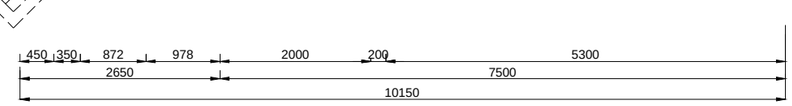
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.280	0.280	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.420	0.360	METRE
BED WIDTH	2.170	2.000	METRE
BED SLOPE	1 : 5000	1 : 5000	



U/S CROSS SECTION

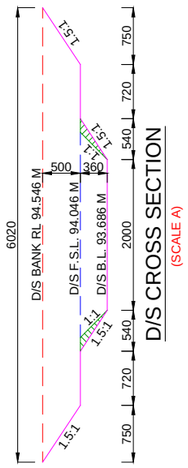
(SCALE A)





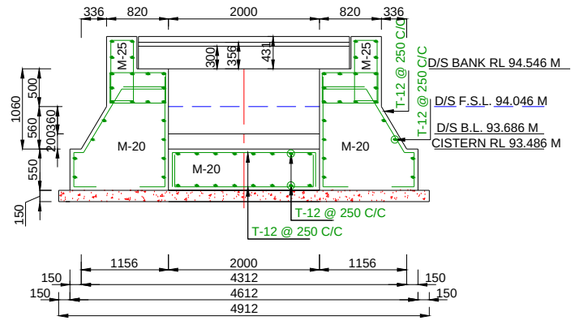
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



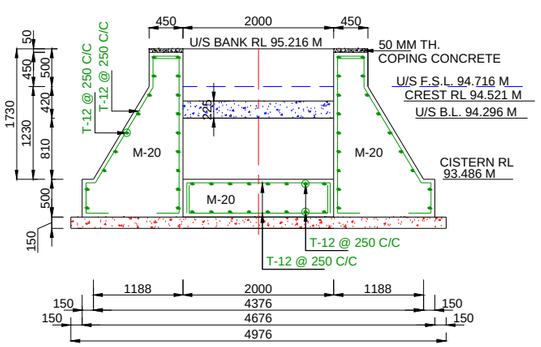
D/S CROSS SECTION

(SCALE A)



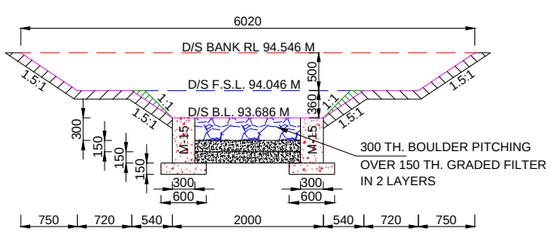
SECTION AT 2-2

(SCALE A)



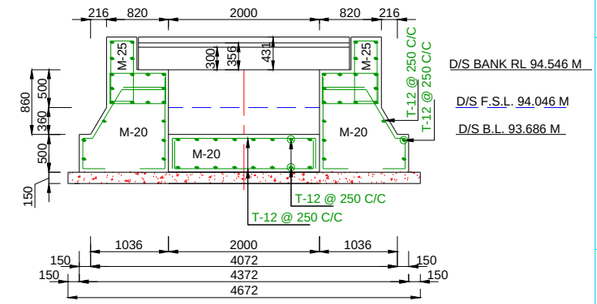
SECTION AT 1-1

(SCALE A)



SECTION AT 4-4

(SCALE A)



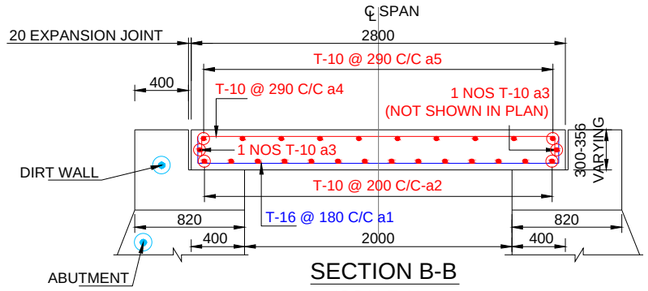
SECTION AT 3-3

(SCALE A)

SCALE A:-

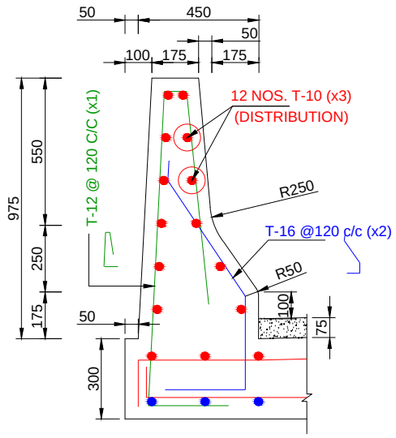
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 12.689 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1



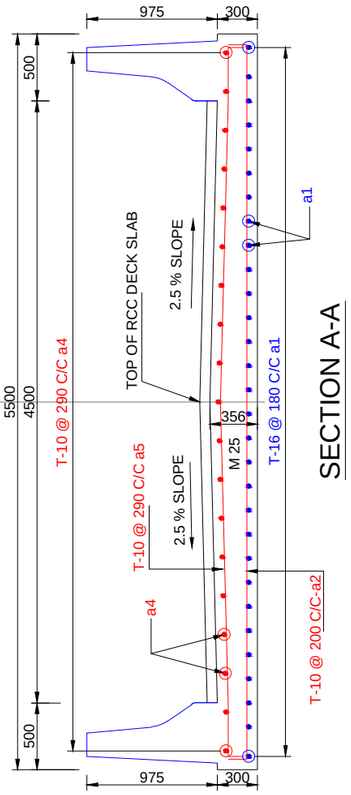
SECTION B-B

(SCALE A)

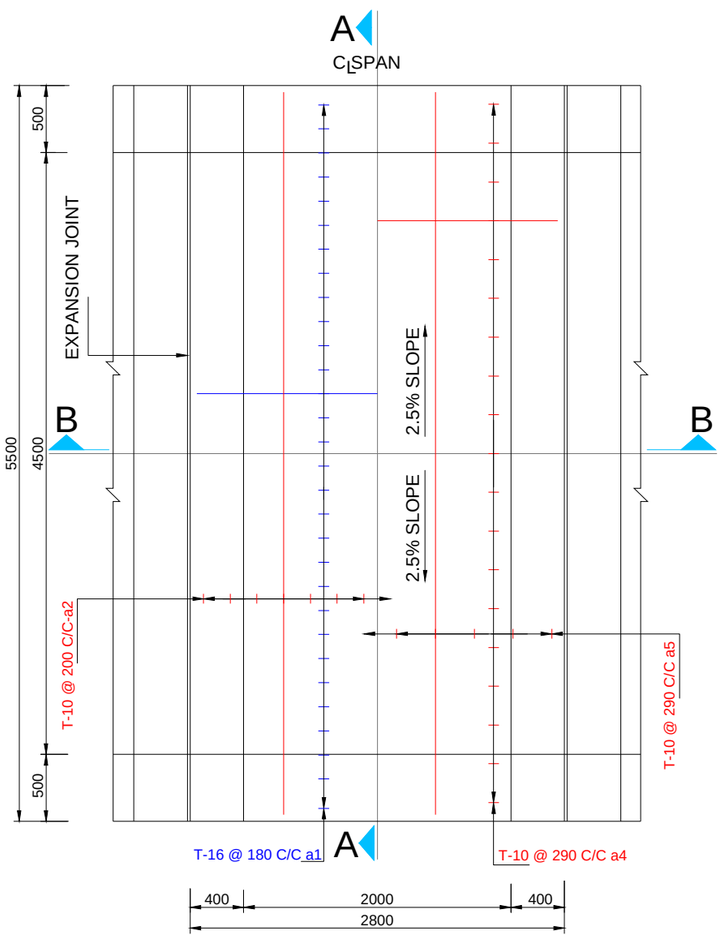


REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)

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	200, R=80, 2700, 200	16	180	30
2	a2	200, R=50, 5340, 200	10	200	14
3	a3	5400	10	-	2
4	a4	2640, R=40, 200, 200	10	290	19
5	a5	200, 450, 2250, 2250, 450, 200	10	290	10
CRASH BARRIER					
1	x1	75, 1176, 950, 300	12	120	23X2
2	x2	75, 540, 350, 300	16	120	23X2
3	x3	2700	10	-	18X2

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)							
TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

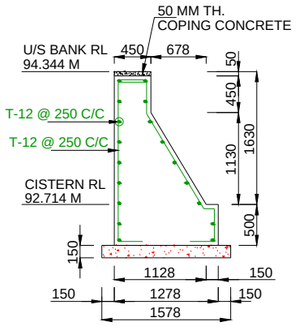
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

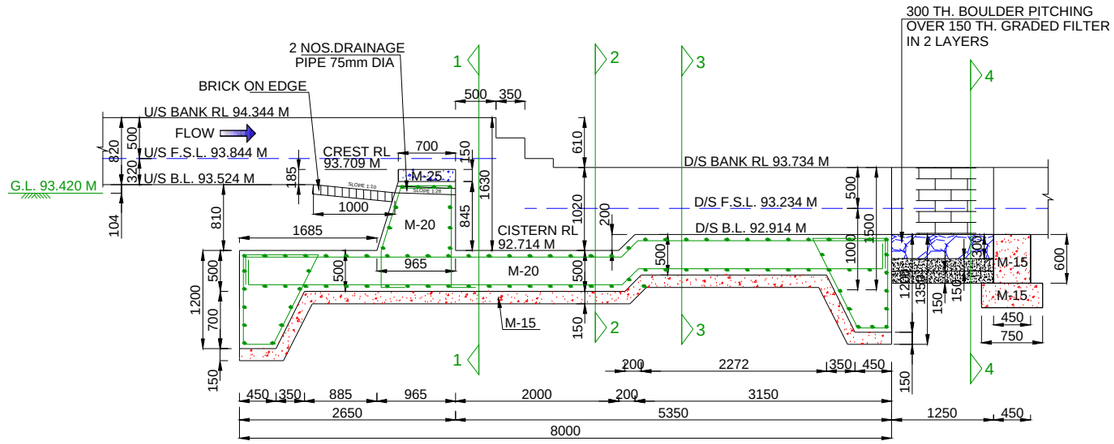
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 12.689 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 2 of 2



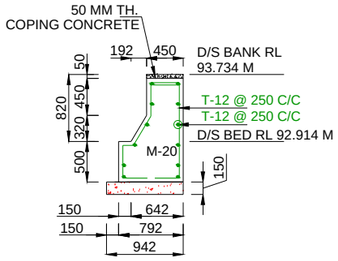
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

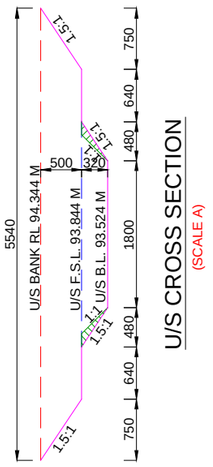
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

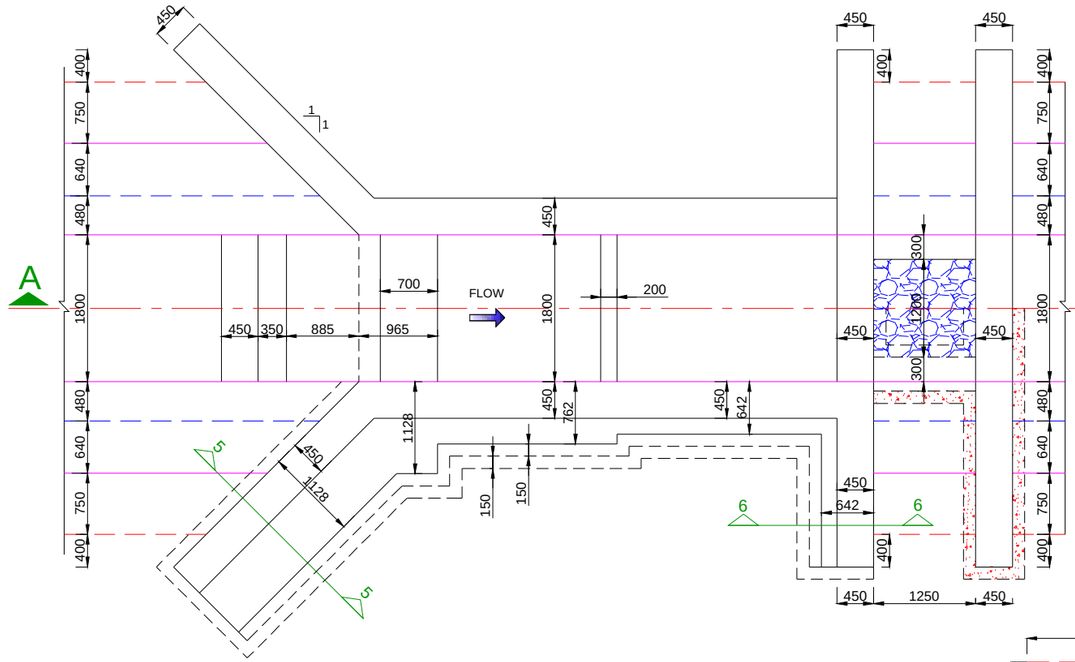
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.140	0.140	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.320	0.320	METRE
BED WIDTH	1.800	1.800	METRE
BED SLOPE	1 : 5000	1 : 5000	



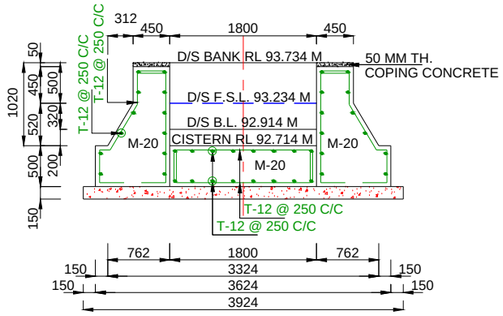
U/S CROSS SECTION

(SCALE A)



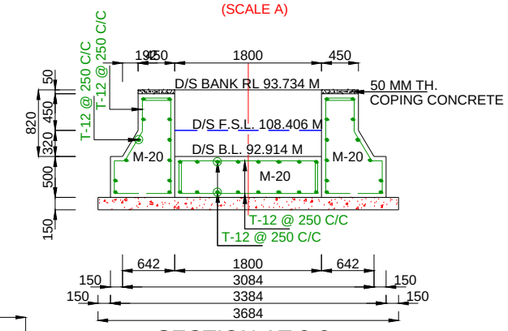
D/S CROSS SECTION

(SCALE A)



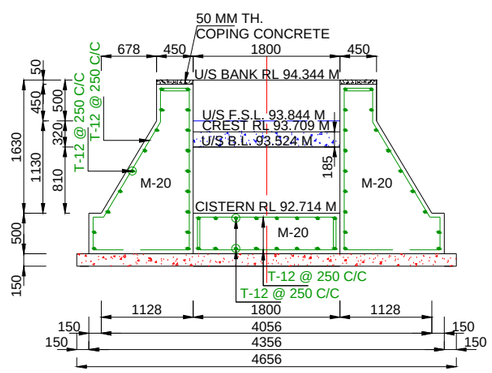
SECTION AT 2-2

(SCALE A)



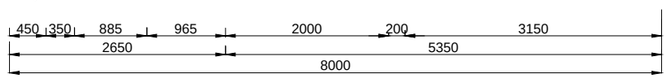
SECTION AT 3-3

(SCALE A)



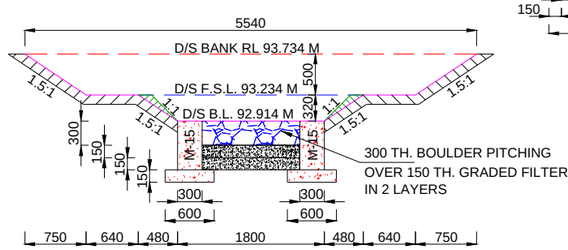
SECTION AT 1-1

(SCALE A)



HALF TOP / HALF FOUNDATION PLAN

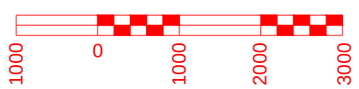
(SCALE A)



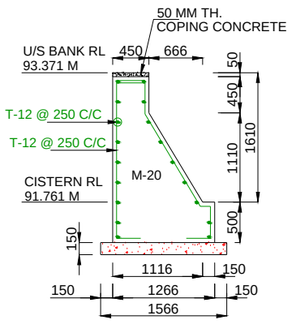
SECTION AT 4-4

(SCALE A)

SCALE A:-

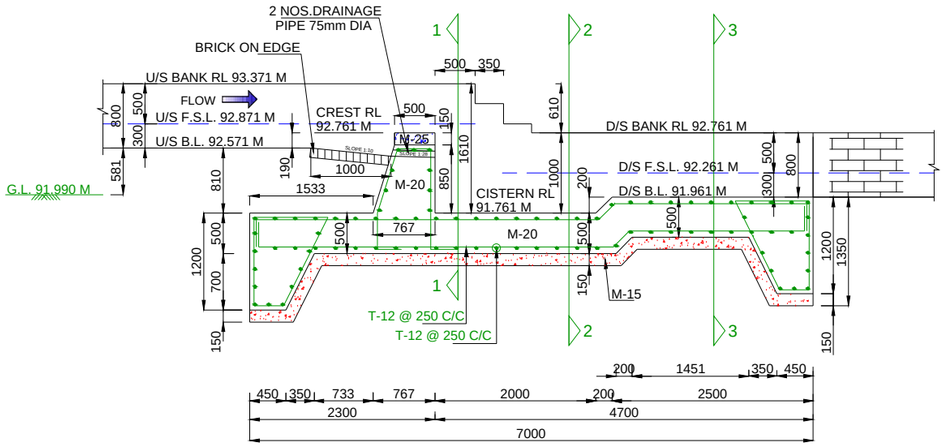


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 13.500 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1



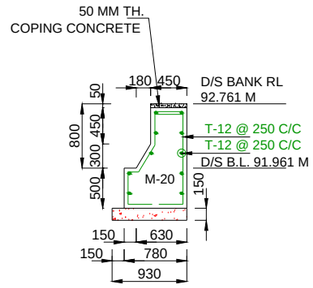
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

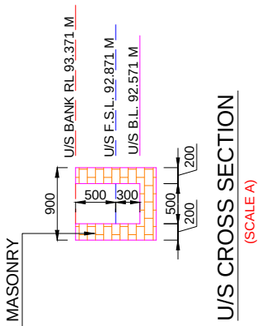
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

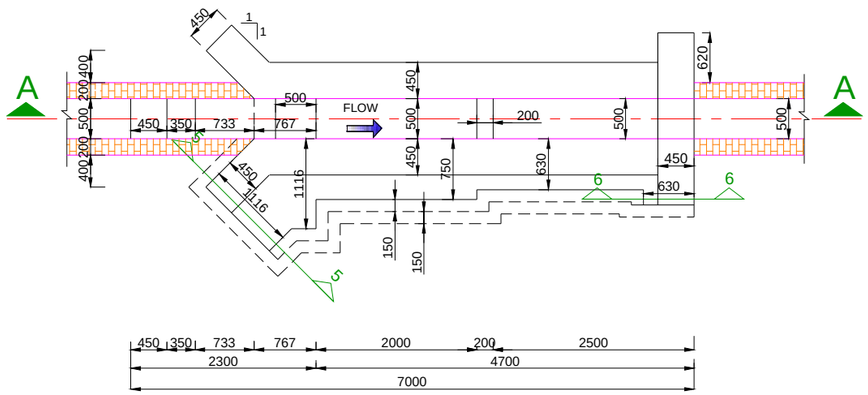
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.030	0.030	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	0.500	0.500	METRE
BED SLOPE	1 : 3000	1 : 3000	



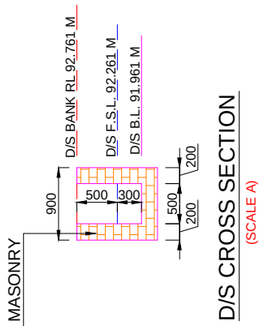
U/S CROSS SECTION

(SCALE A)



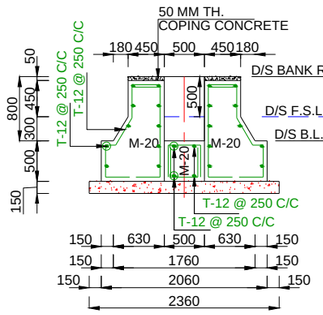
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



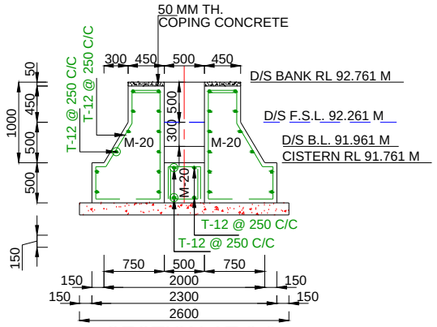
D/S CROSS SECTION

(SCALE A)



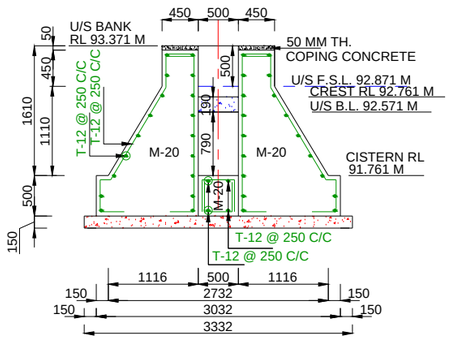
SECTION AT 3-3

(SCALE A)



SECTION AT 2-2

(SCALE A)



SECTION AT 1-1

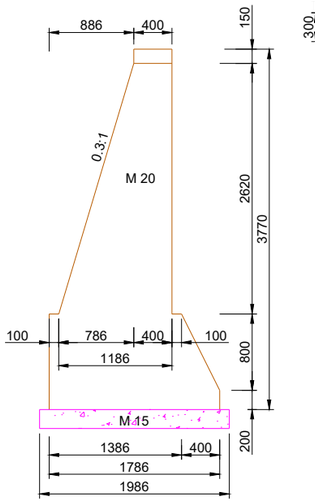
(SCALE A)

SCALE A:-

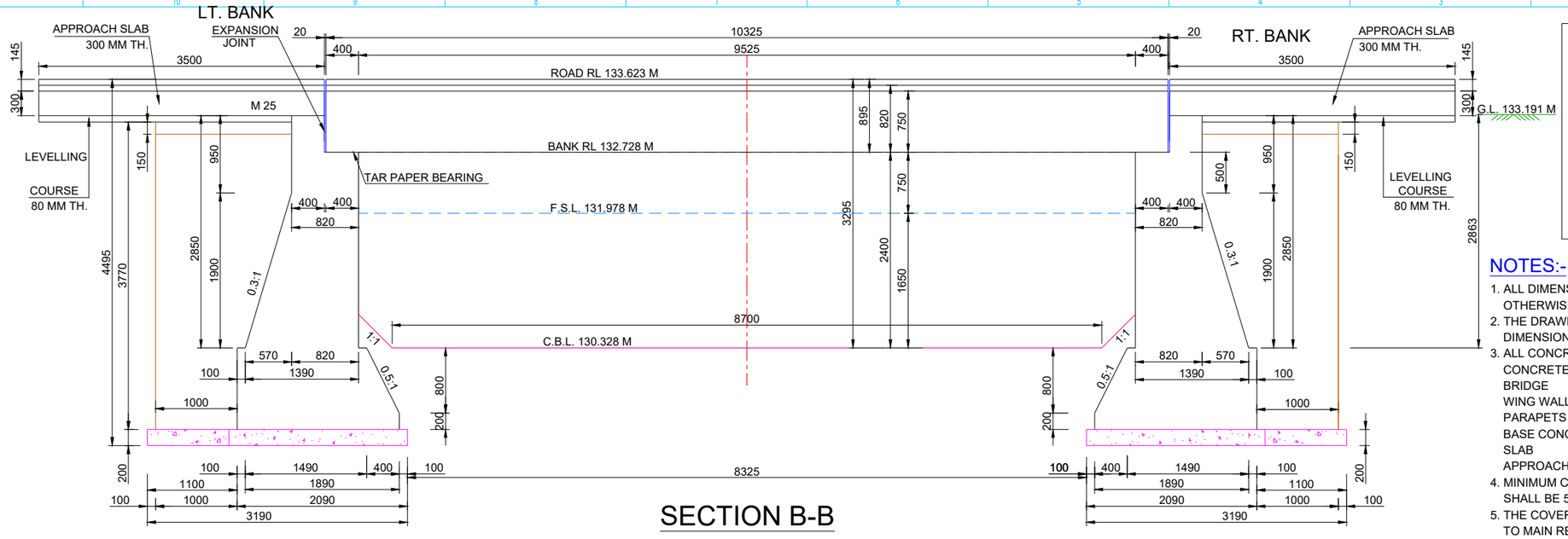
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 15.000 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37-09/ FALL 1 of 1

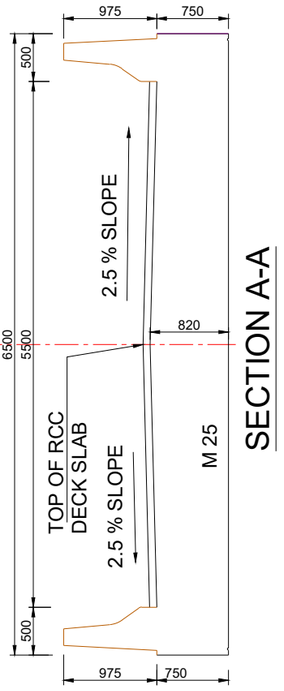
DRAWING OF CULVERT/SLAB BRIDGE



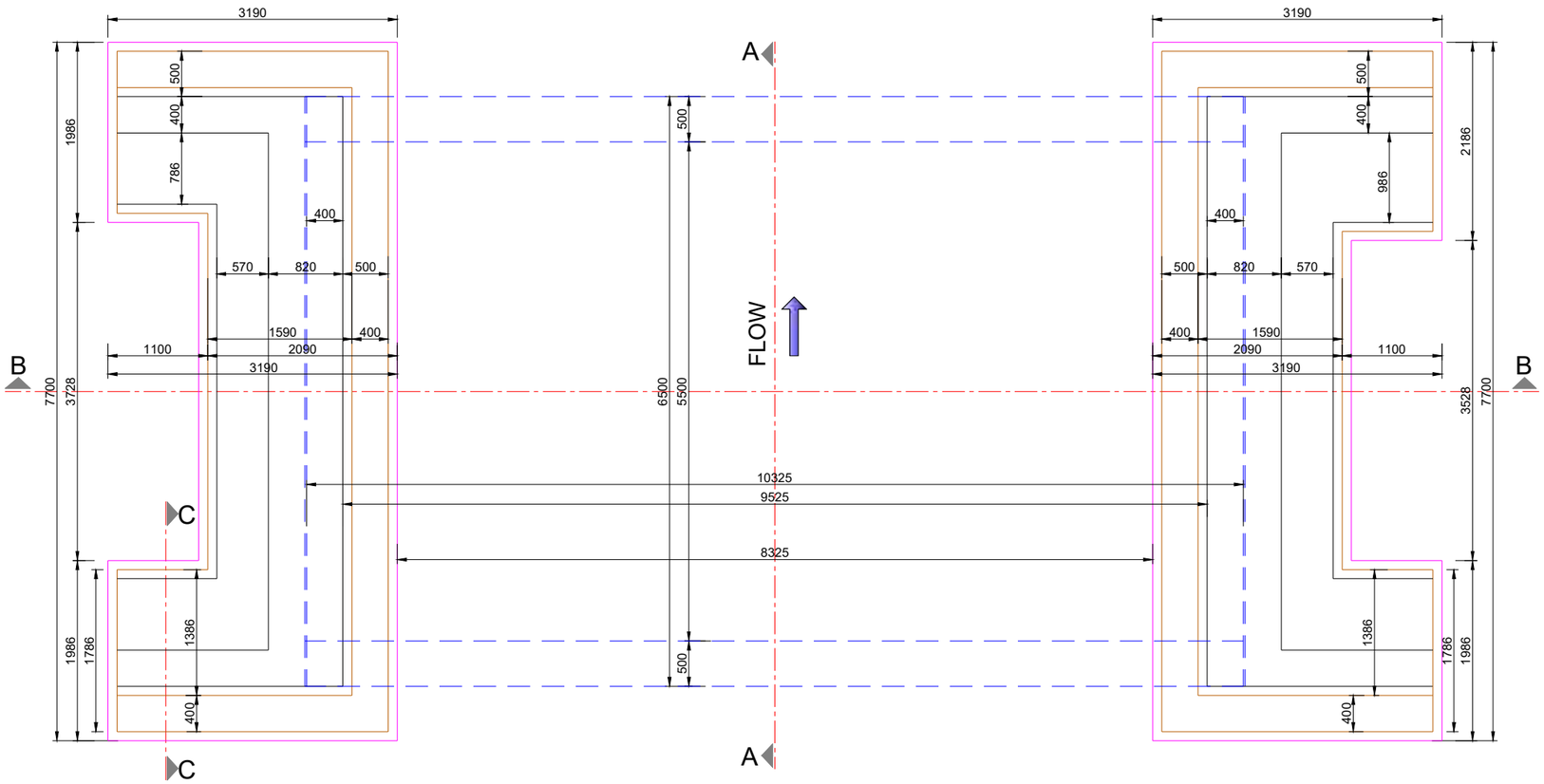
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	10.340 CUMECS
BED WIDTH	8.700 M
WATER DEPTH	1.650 M
FREE BOARD	0.750 M
BED LEVEL	130.328 M
F.S.L.	131.978 M
BANK R.L.	132.728 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	133.623 M
GROUND LEVEL	133.191 M

NOTES:-

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

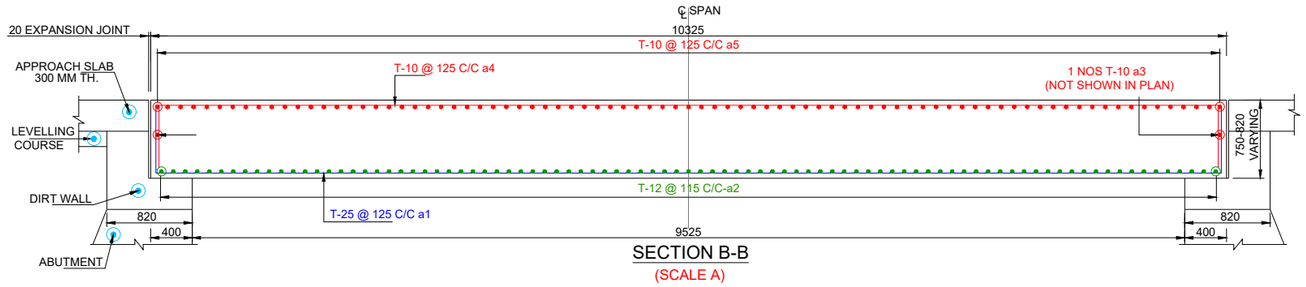
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:- 1000 0 1000 2000 3000

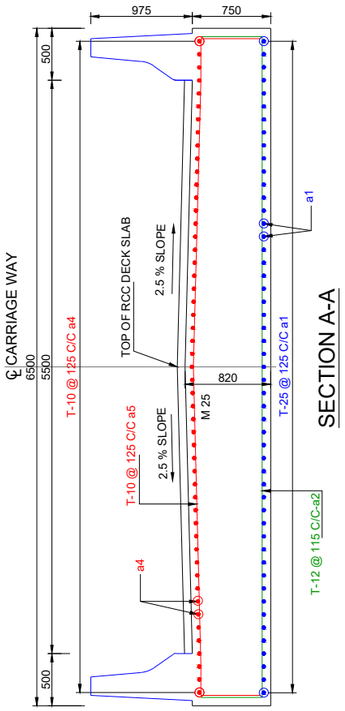
Prepared by :-
WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 0.914 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 1 of 2

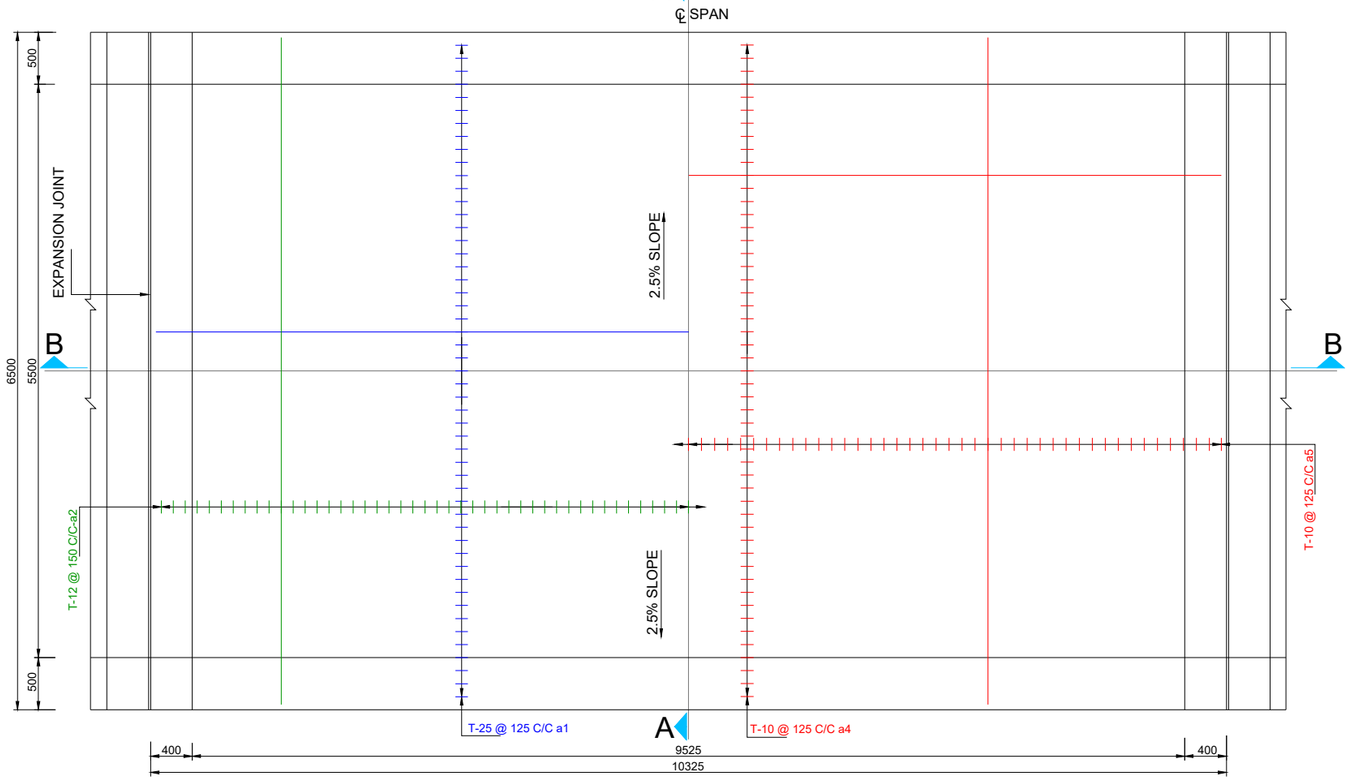


SECTION B-B

(SCALE A)



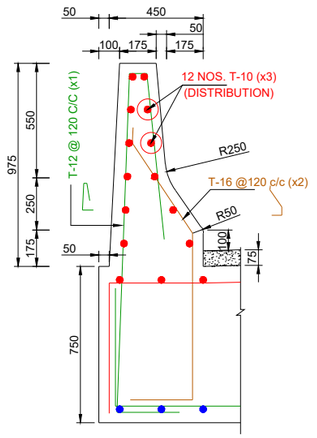
SECTION A-A



BOTTOM REINFORCEMENT — TOP REINFORCEMENT

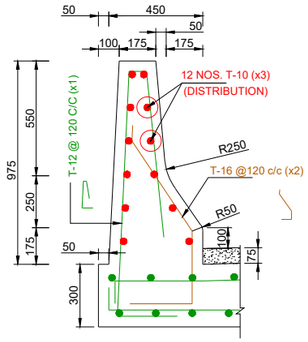
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)

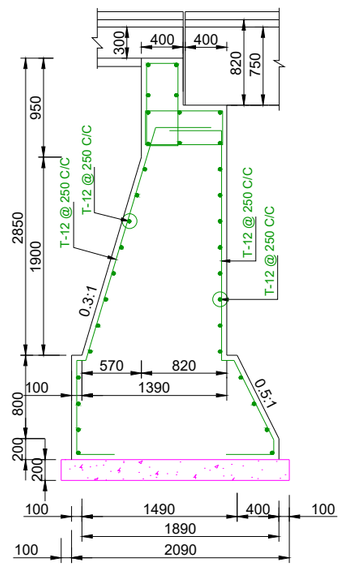


REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)

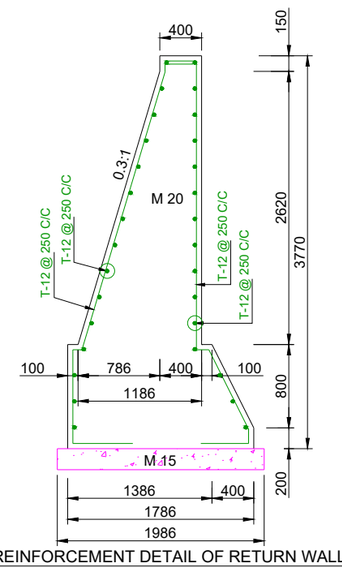
BAR BENDING SCHEDULE

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	650, R=80, 10225, 650	25	125	51
2	a2	650, R=50, 6400, 650	12	115	89
3	a3	6400	10	-	2
4	a4	650, 10225, R=40, 650	10	125	51
5	a5	650, 450, 2750, 2750, 450, 650	10	125	83
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	36X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	36X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1776, 800, 300	12	120	86X2
2	x2	75, 520, 799, 300	16	120	86X2
3	x3	10225	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



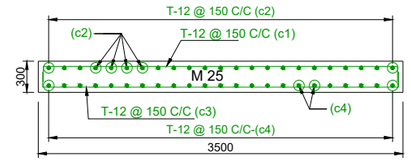
REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)



REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)



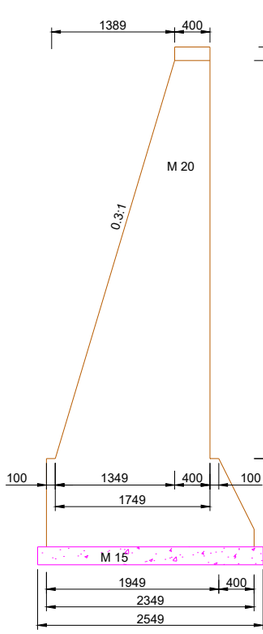
SECTION OF APPROACH SLAB

(SCALE A)

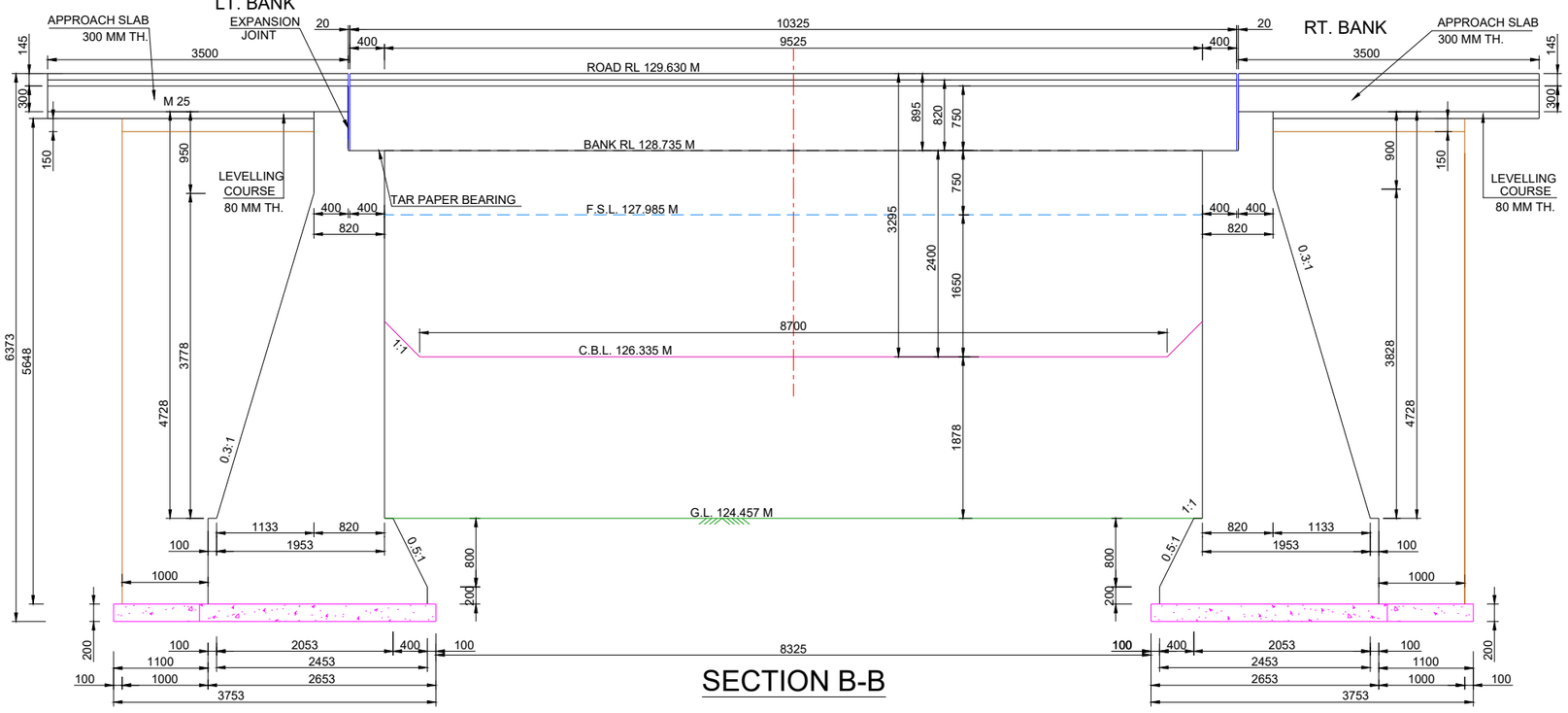
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 0.914 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 2 of 2

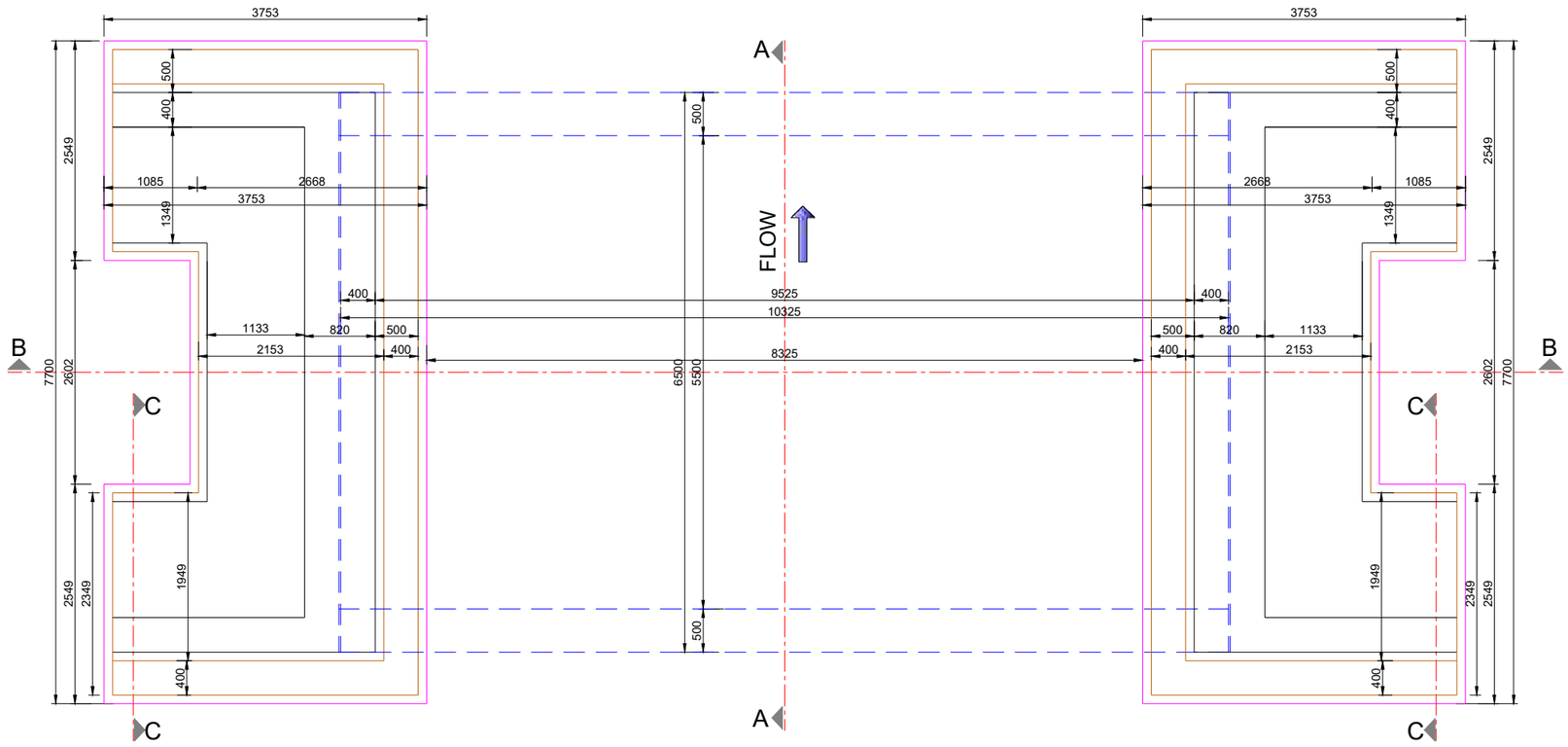


SECTION C-C



SECTION B-B

SECTION A-A



PLAN

SCALE A:-

1000 0 1000 2000 3000

DESIGN DATA:-

DESIGN DISCHARGE	10.340 CUMECS
BED WIDTH	8.700 M
WATER DEPTH	1.650 M
FREE BOARD	0.750 M
BED LEVEL	126.335 M
F.S.L.	127.985 M
BANK R.L.	128.735 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	129.630 M
GROUND LEVEL	124.457 M

NOTES:-

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

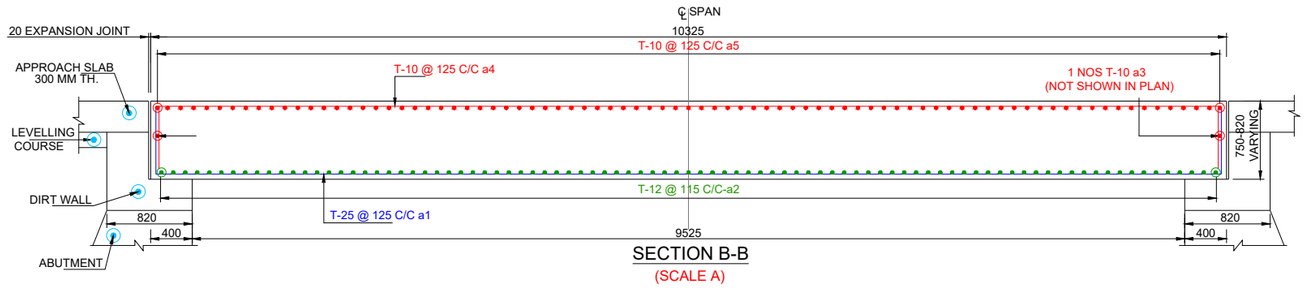
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
      a) C = 0 KG/SQCM.
      b) Ø = 30°
      c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

Prepared by :-

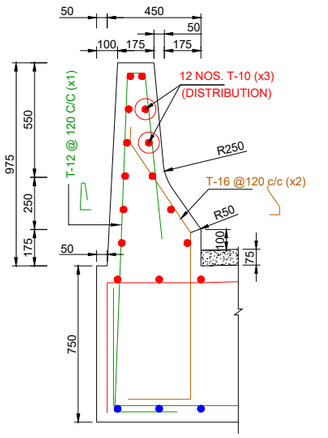
WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 2.925 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG.



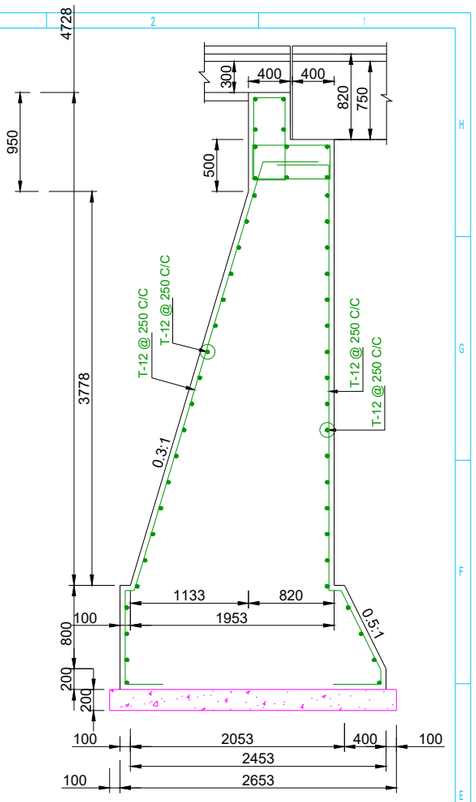
SECTION B-B

(SCALE A)



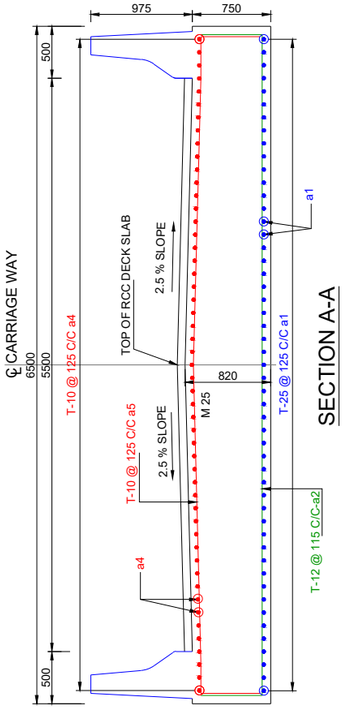
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)

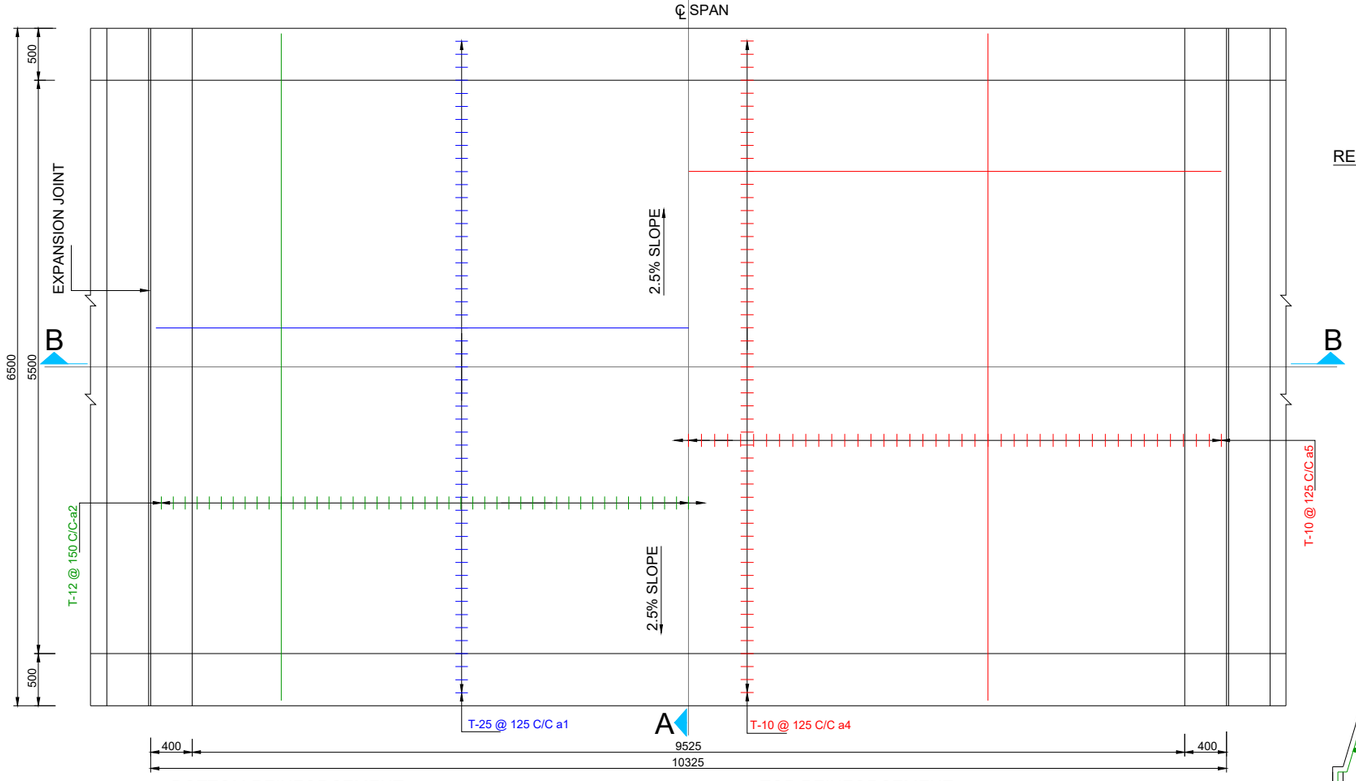


REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)



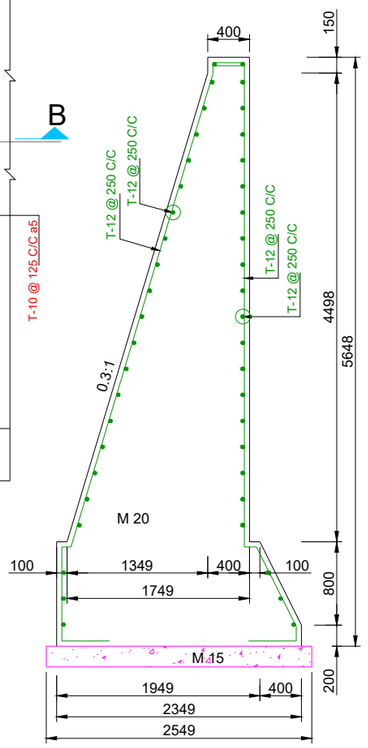
SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

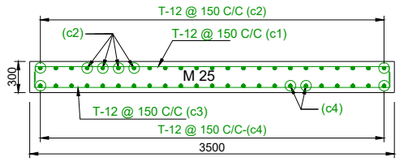
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



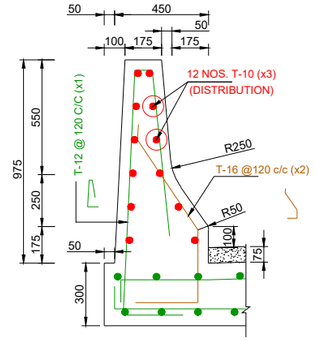
REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)



SECTION OF APPROACH SLAB

(SCALE A)



REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)

BAR BENDING SCHEDULE

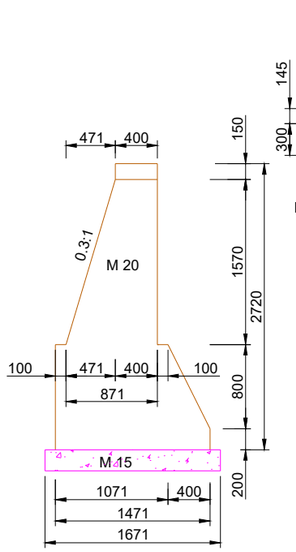
S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	R=80, 650, 10225, 650	25	125	51
2	a2	R=50, 650, 6400, 650	12	115	89
3	a3	6400	10	-	2
4	a4	10225, 650, R=40, 650	10	125	51
5	a5	650, 450, 2750, 2750, 450, 650	10	125	83
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	36X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	36X2
4	c4	150, 6400, 150	12	150	23X2

CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1776, 800, 300	12	120	86X2
2	x2	75, 520, 799, 300	16	120	86X2
3	x3	10225	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2

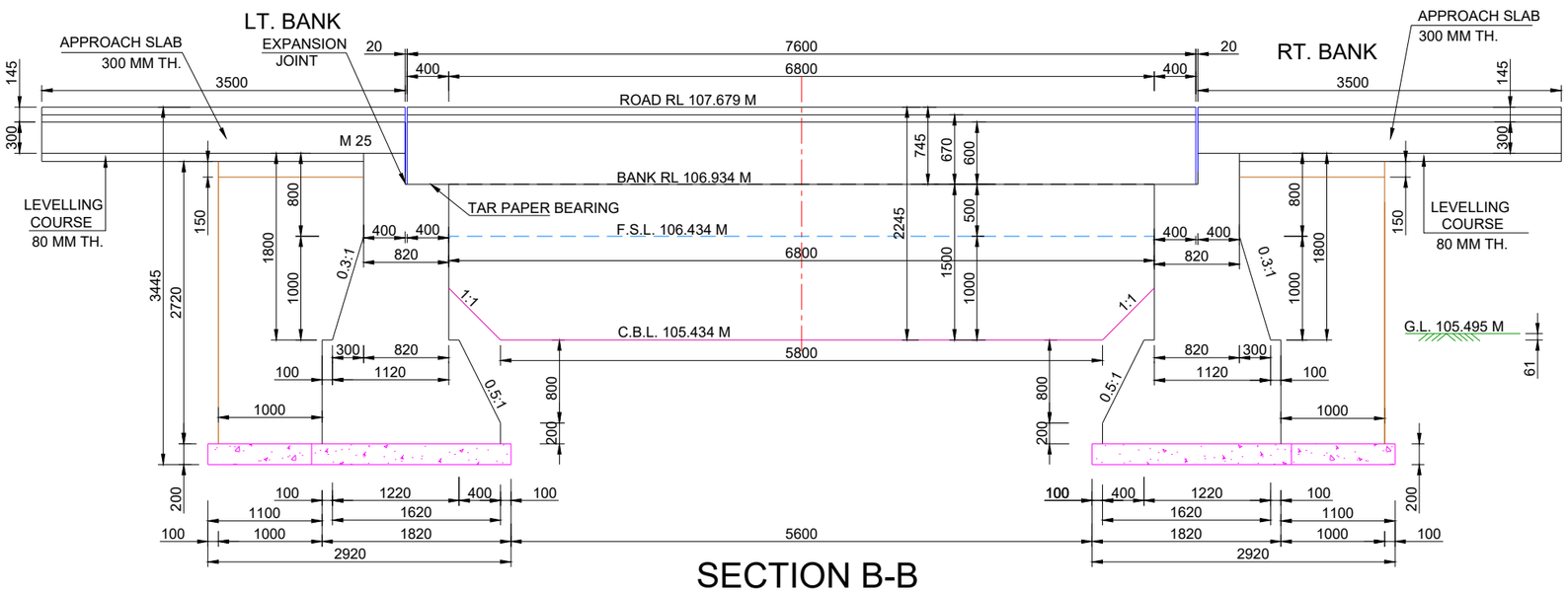
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

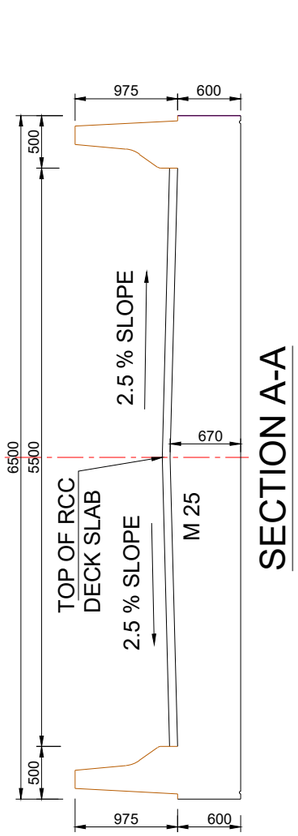
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 2.925 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 2 of 2



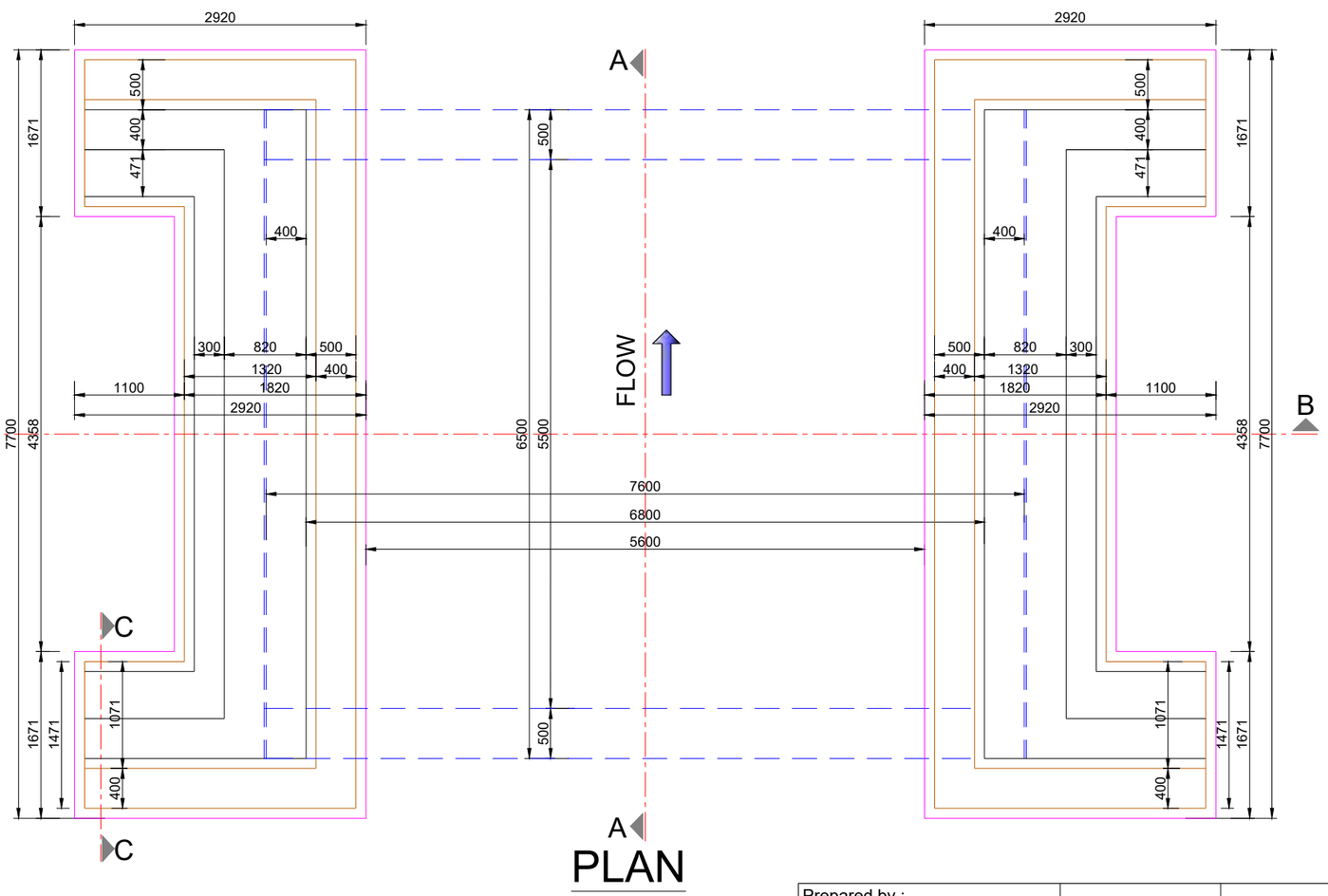
SECTION C-C



SECTION B-B



SECTION A-A



DESIGN DATA:-

DESIGN DISCHARGE	3.040 CUMECS
BED WIDTH	5.800 M
WATER DEPTH	1.000 M
FREE BOARD	0.500 M
BED LEVEL	105.434 M
F.S.L.	106.434 M
BANK R.L.	106.934 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	107.679 M
GROUND LEVEL	105.495 M

NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
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3. 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)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
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6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
      a) C = 0 KG/SQCM.
      b) Ø = 30°
      c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
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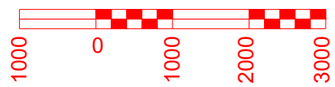
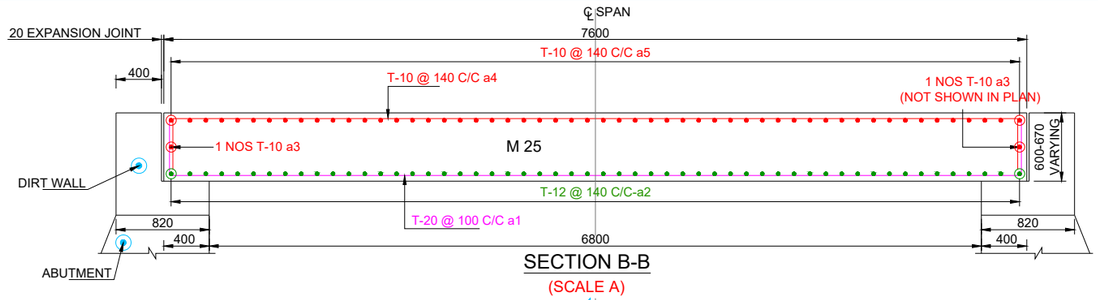
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

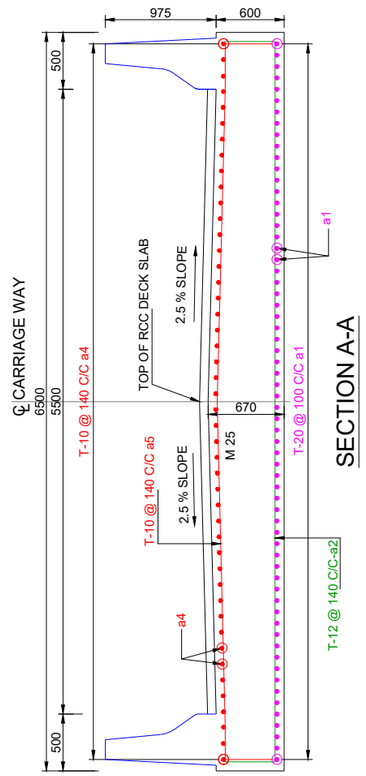


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 21.800 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 1 of 2

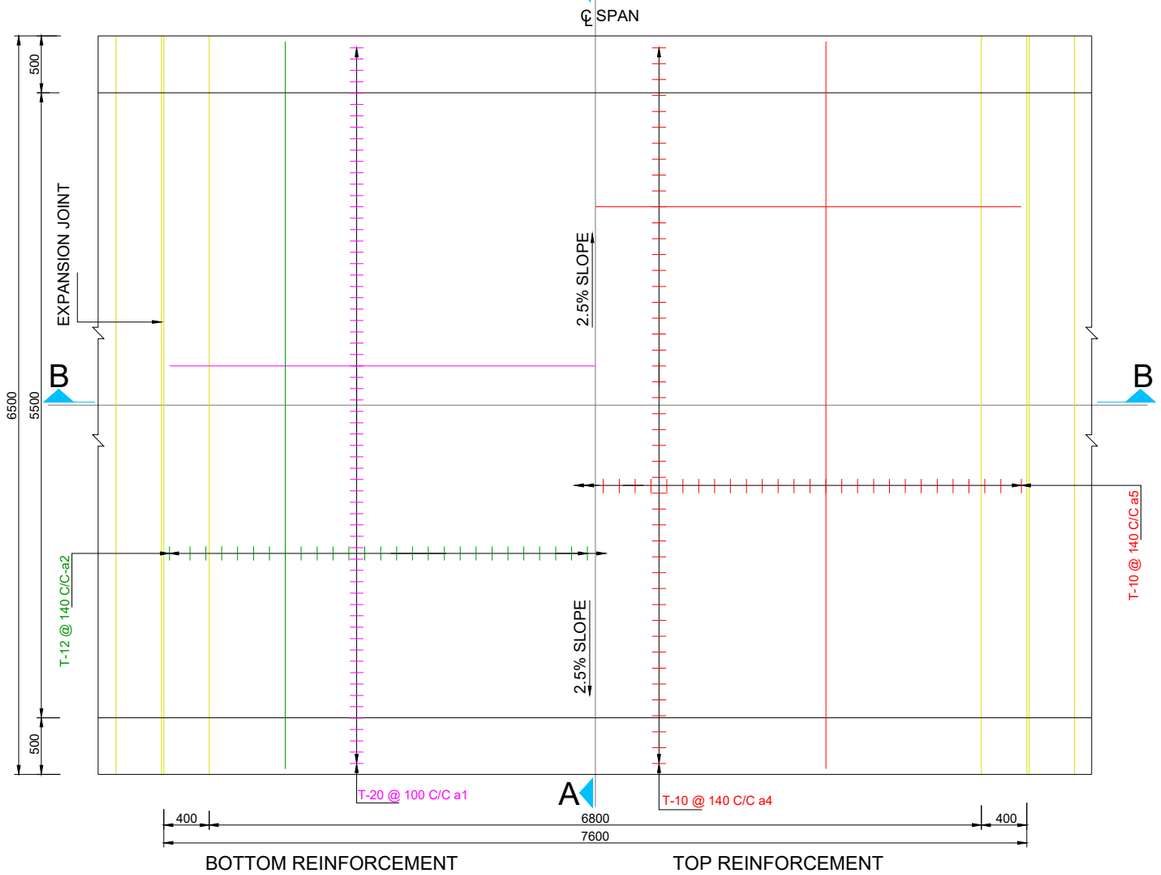


SECTION B-B

(SCALE A)



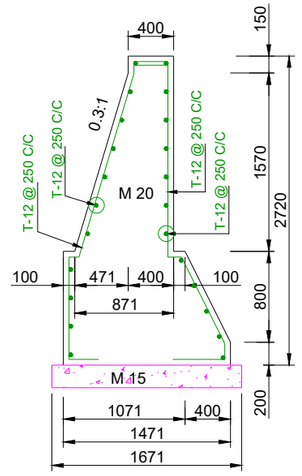
SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)

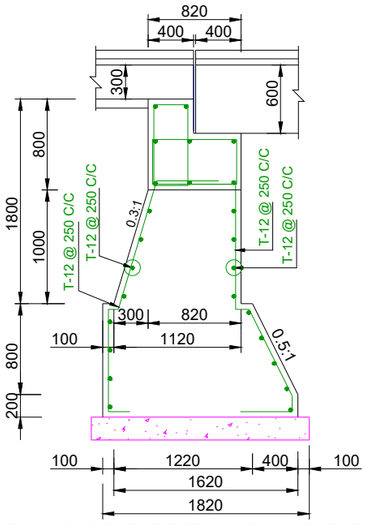


REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)

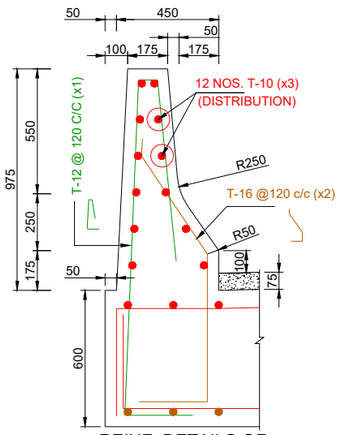
BAR BENDING SCHEDULE

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	500, R=80, 7500, 500	20	100	64
2	a2	500, R=50, 6400, 500	12	140	54
3	a3	6400	10	-	2
4	a4	500, 7500, R=40, 500	10	140	46
5	a5	500, 450, 2750, 2750, 450, 500	10	140	54
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1476, 800, 300	12	120	63X2
2	x2	75, 520, 650, 300	16	120	63X2
3	x3	7500	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 380, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



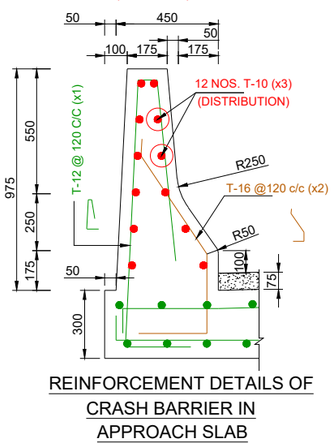
REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)



REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

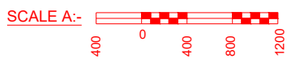
(SCALE B)



REINFORCEMENT DETAILS OF CRASH BARRIER IN APPROACH SLAB

(SCALE B)

SCALE A:-



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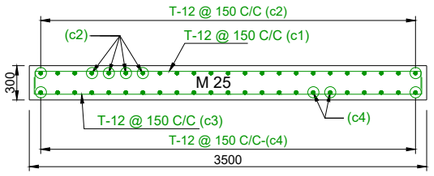
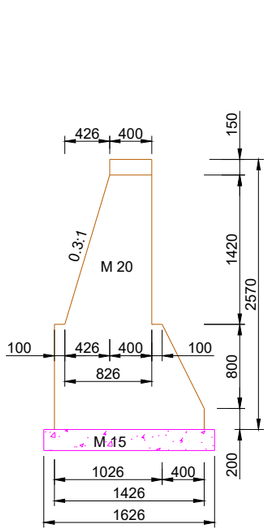


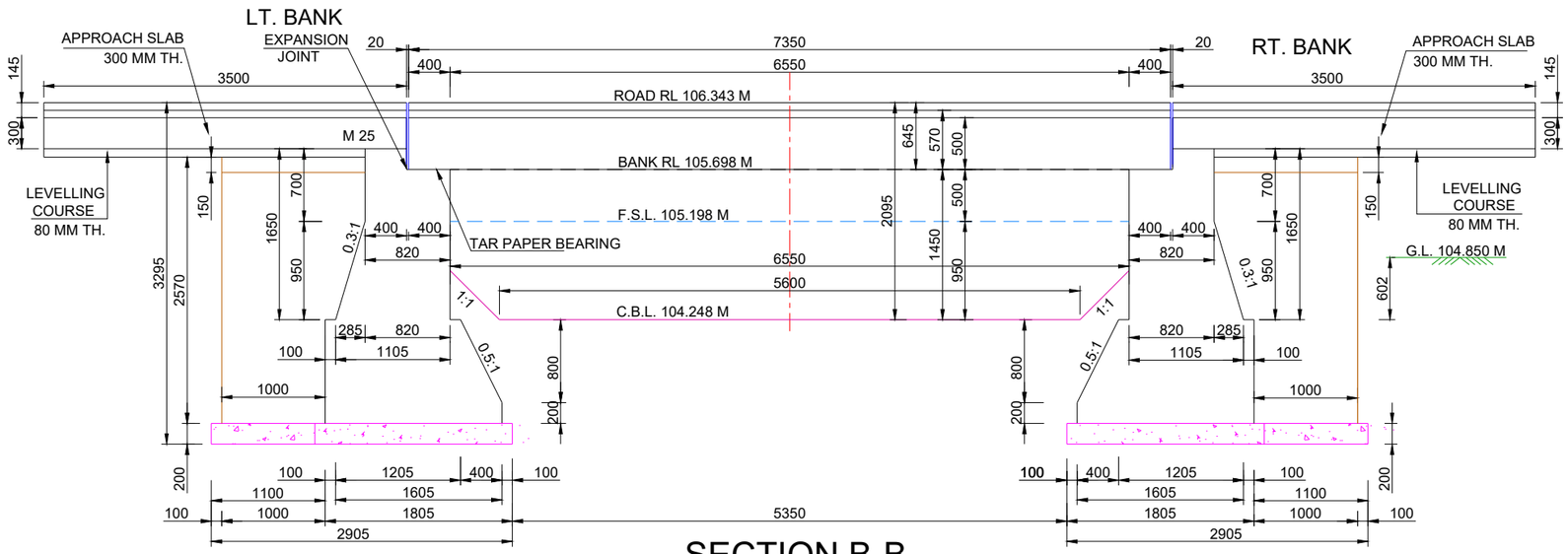
SECTION OF APPROACH SLAB

(SCALE A)

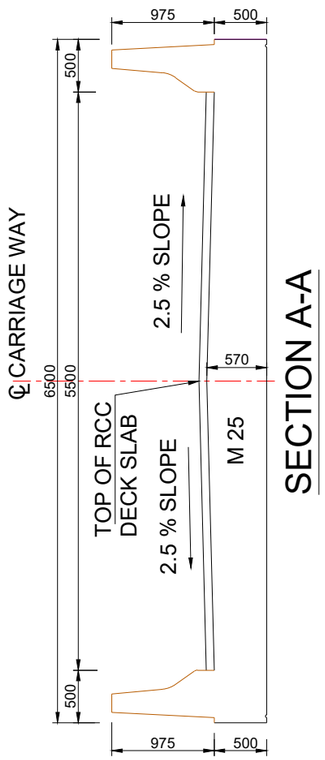
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 21.800 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 2 of 2



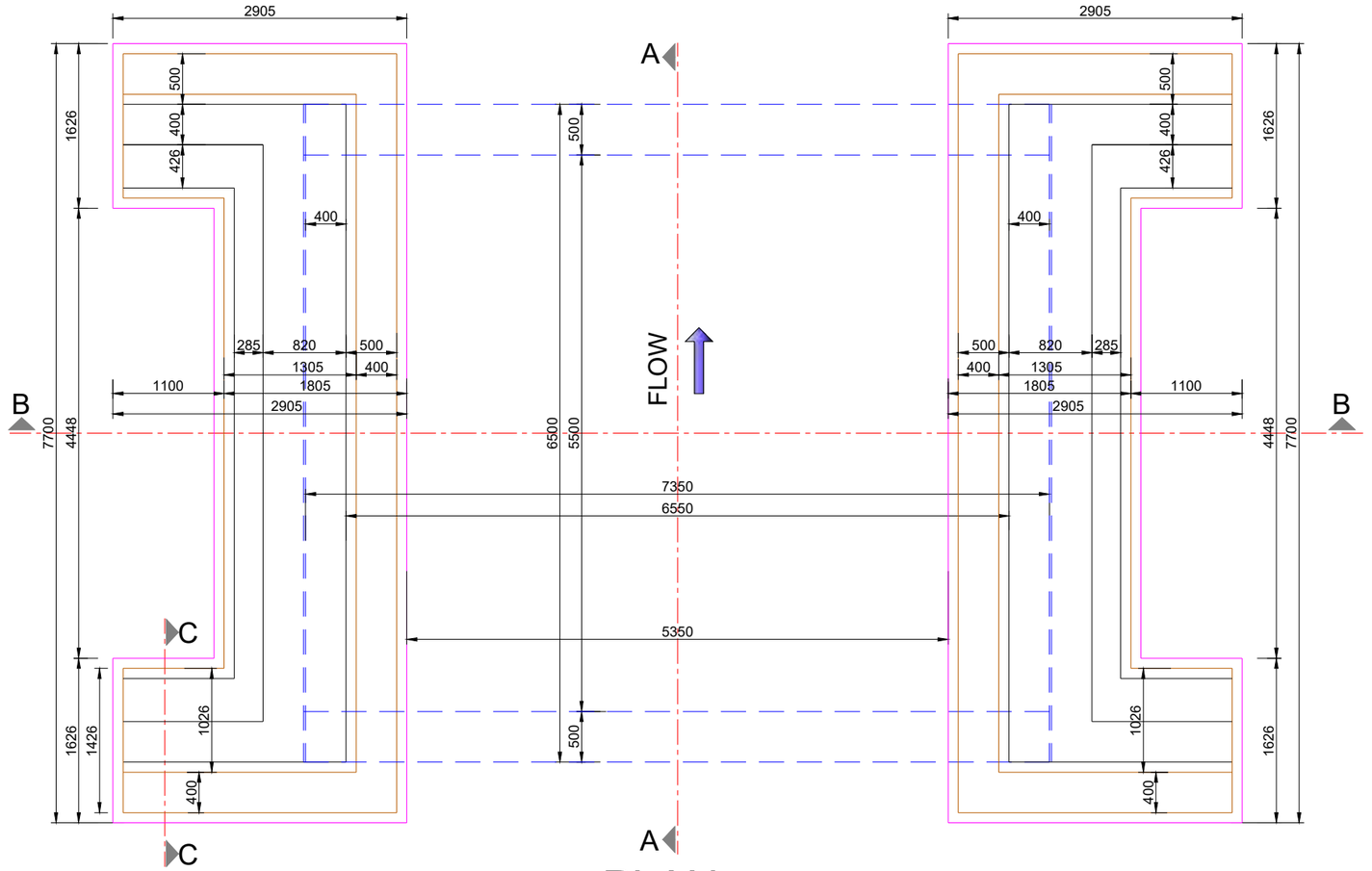
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	2.700 CUMECS
BED WIDTH	5.600 M
WATER DEPTH	0.950 M
FREE BOARD	0.500 M
BED LEVEL	104.248 M
F.S.L.	105.198 M
BANK R.L.	105.698 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	106.343 M
GROUND LEVEL	104.850 M

NOTES:-

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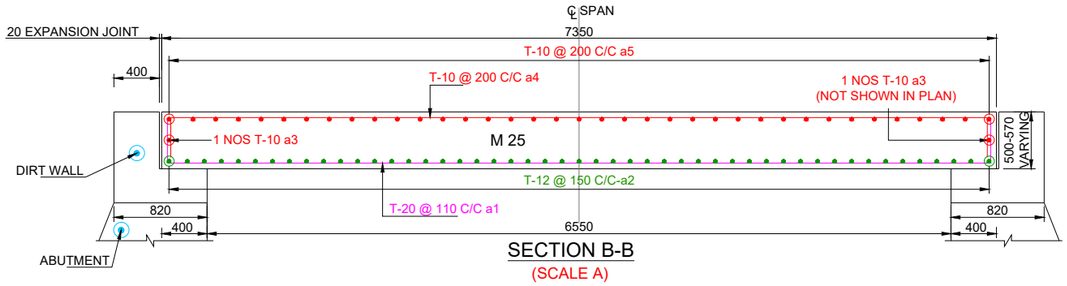
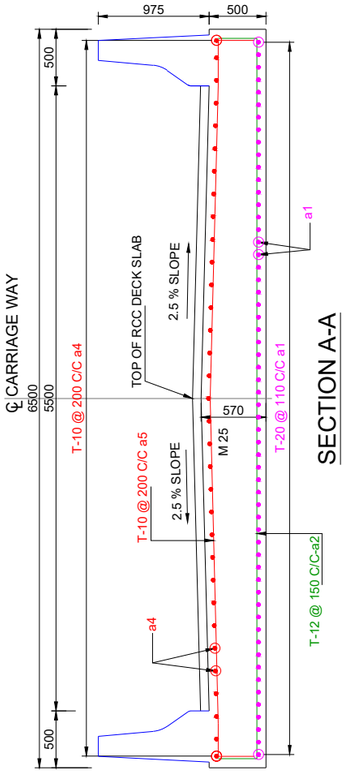
   a) & b) FOR BACK FILL ALSO.
      a) C = 0 KG/SQCM.
      b) Ø = 30°
      c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

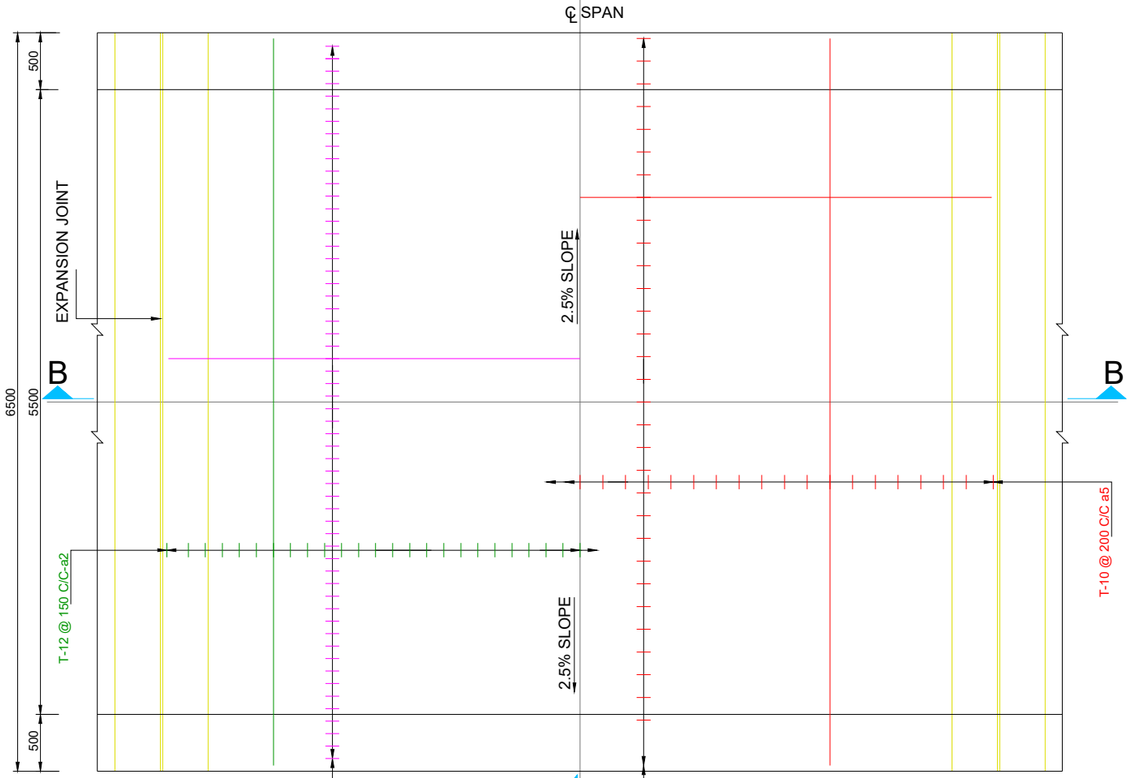
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 22.500 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 1 of 2



SECTION B-B
(SCALE A)

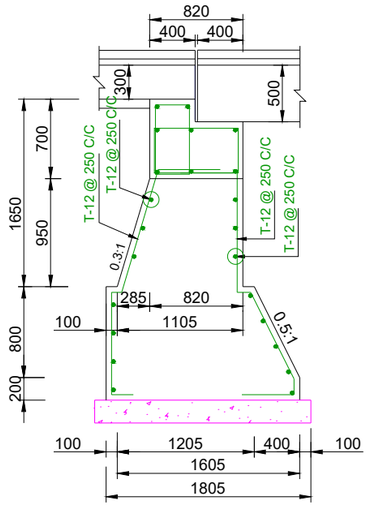


SECTION A-A

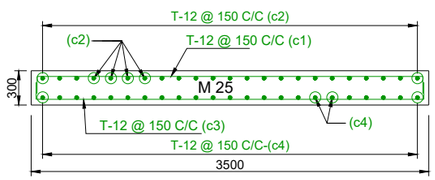


BOTTOM REINFORCEMENT TOP REINFORCEMENT

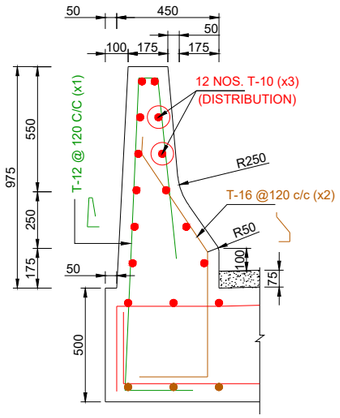
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



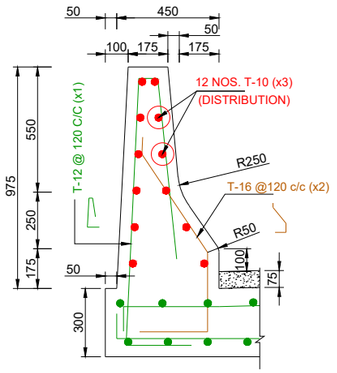
REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



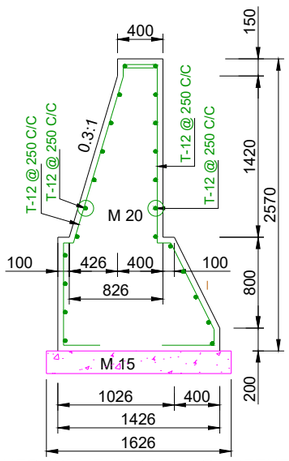
SECTION OF APPROACH SLAB
(SCALE A)



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



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



REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

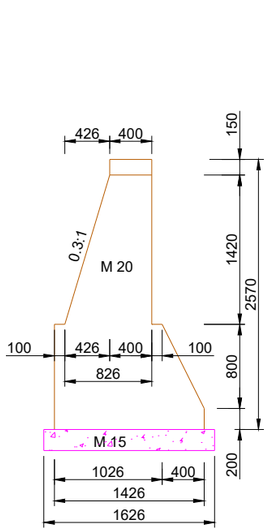
BAR BENDING SCHEDULE

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	400, R=80, 7250, 400	20	110	59
2	a2	400, R=50, 6400, 400	12	150	49
3	a3	6400	10	-	2
4	a4	7250, 400, R=40, 400	10	200	31
5	a5	400, 450, 2750, 2750, 450, 400	10	200	37
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1377, 800, 300	12	120	61X2
2	x2	75, 520, 300, 550	16	120	61X2
3	x3	7250	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 300, 379	16	120	29X2X2
3	y3	3400	10	-	12X2X2

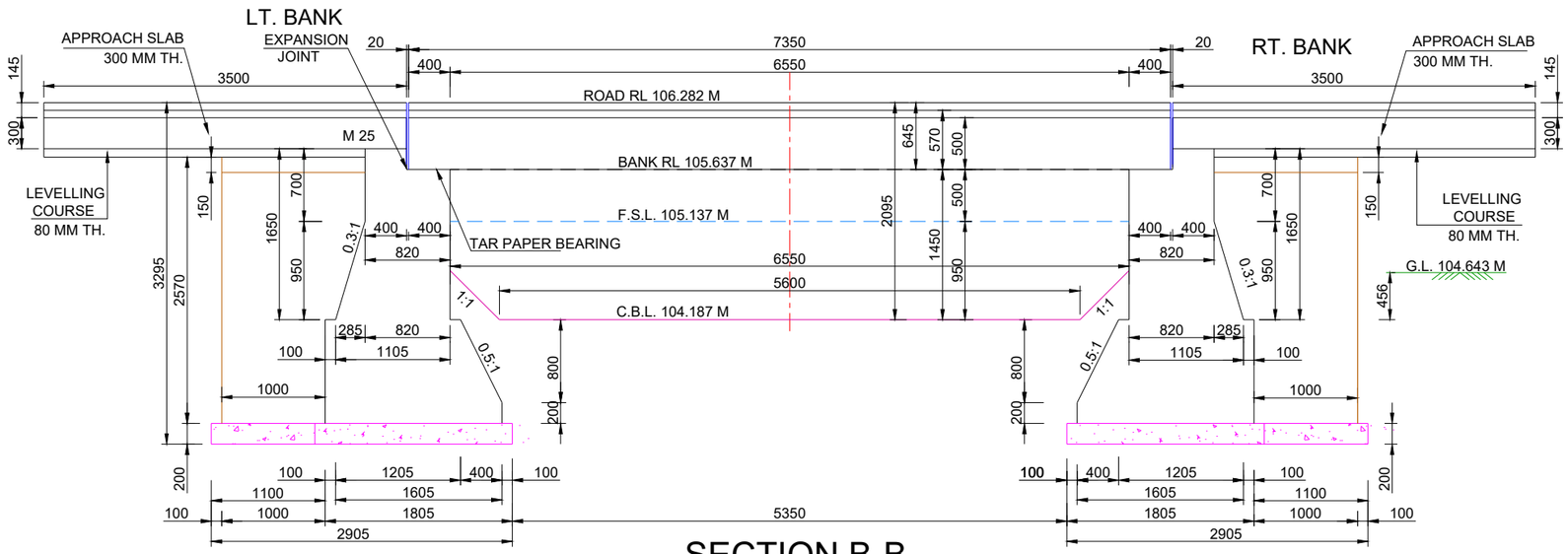
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 22.500 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 2 of 2



SECTION C-C



SECTION B-B

DESIGN DATA:-

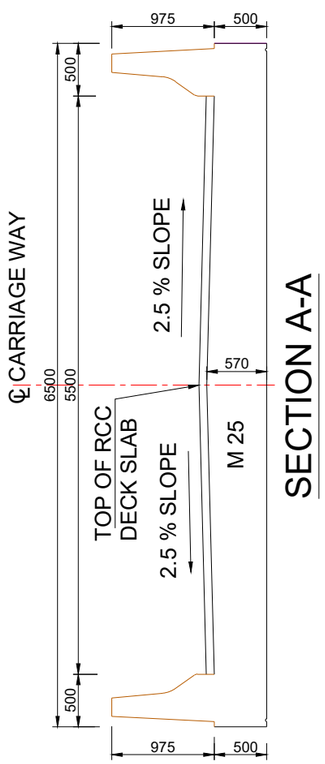
DESIGN DISCHARGE	2.700 CUMECS
BED WIDTH	5.600 M
WATER DEPTH	0.950 M
FREE BOARD	0.500 M
BED LEVEL	104.187 M
F.S.L.	105.137 M
BANK R.L.	105.637 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	106.282 M
GROUND LEVEL	104.643 M

NOTES:-

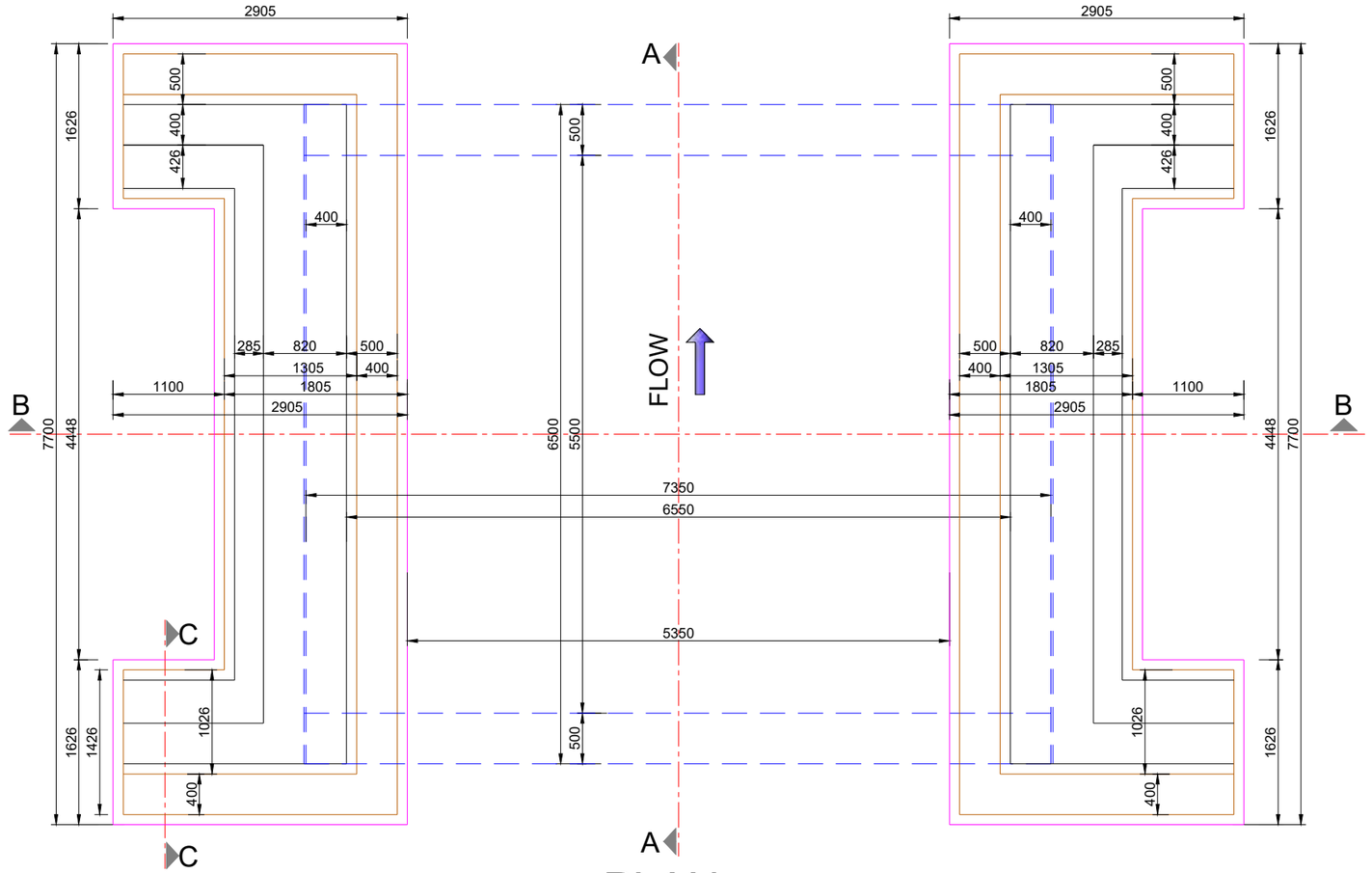
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456, GRADE OF CONCRETE IN DIFFERENT COMPONENT SHALL BE

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)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
      a) C = 0 KG/SQCM.
      b) Ø = 30°
      c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

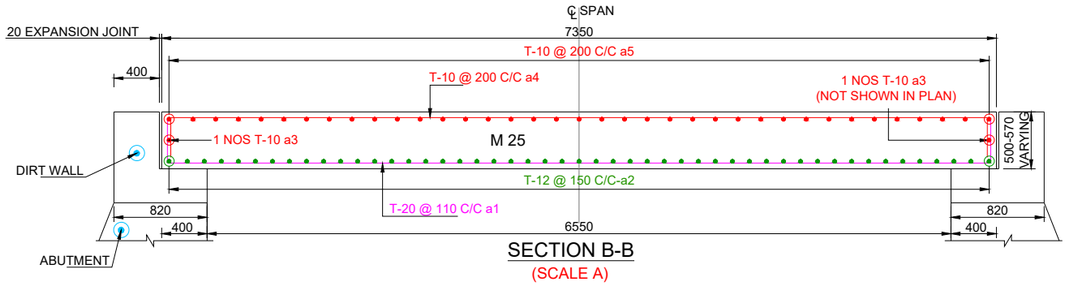


SECTION A-A

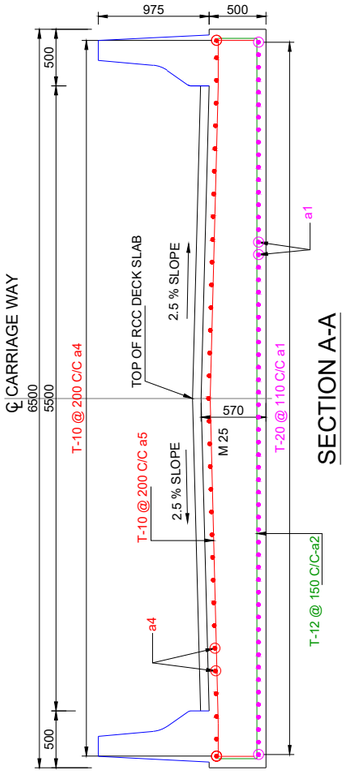


PLAN

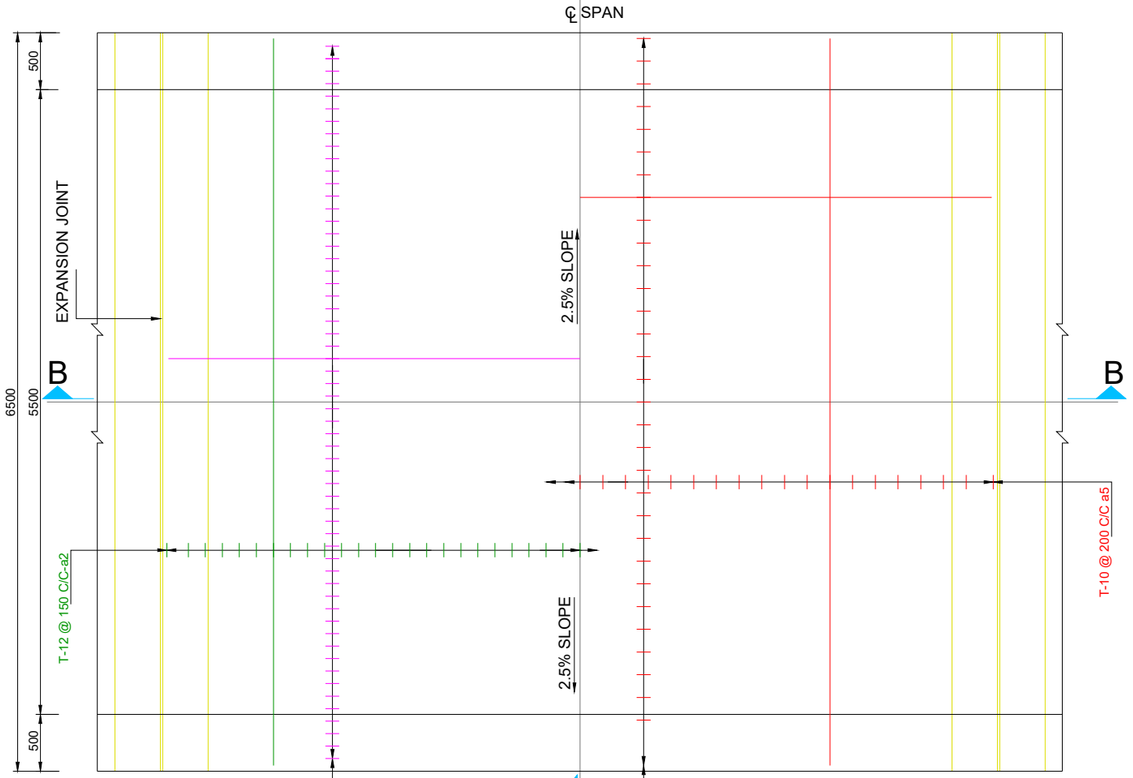
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 22.850 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 1 of 2



SECTION B-B
(SCALE A)

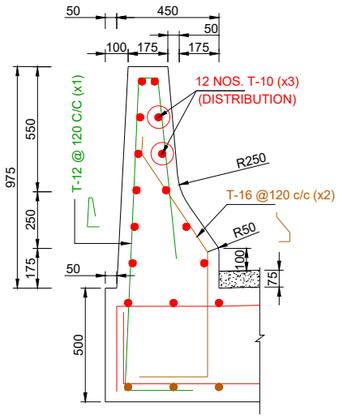


SECTION A-A

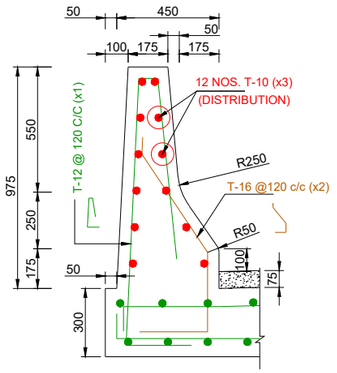


BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



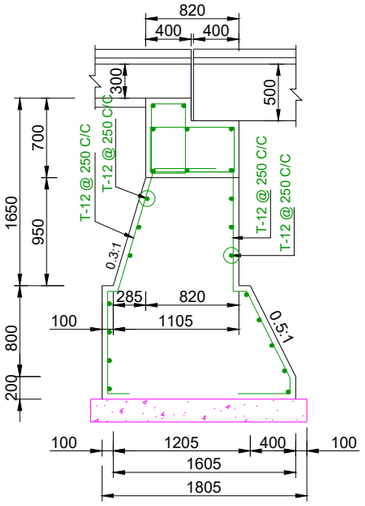
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)



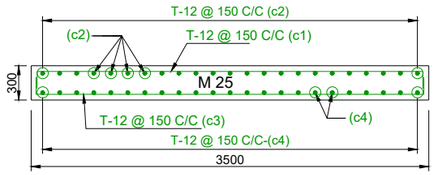
REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB
(SCALE B)

BAR BENDING SCHEDULE

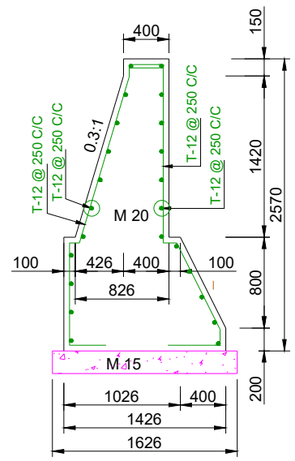
S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	400, R=80, 7250, 400	20	110	59
2	a2	400, R=50, 6400, 400	12	150	49
3	a3	6400	10	-	2
4	a4	7250, 400, R=40, 400	10	200	31
5	a5	400, 450, 2750, 2750, 450, 400	10	200	37
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1377, 800, 300	12	120	61X2
2	x2	75, 520, 300, 550	16	120	61X2
3	x3	7250	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 300, 379	16	120	29X2X2
3	y3	3400	10	-	12X2X2



REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



SECTION OF APPROACH SLAB
(SCALE A)

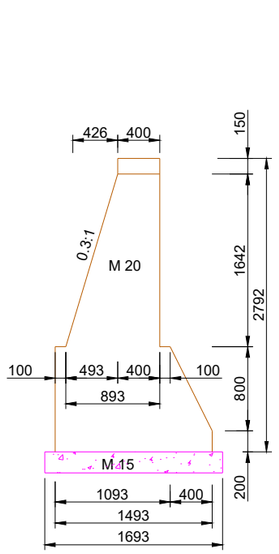


REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

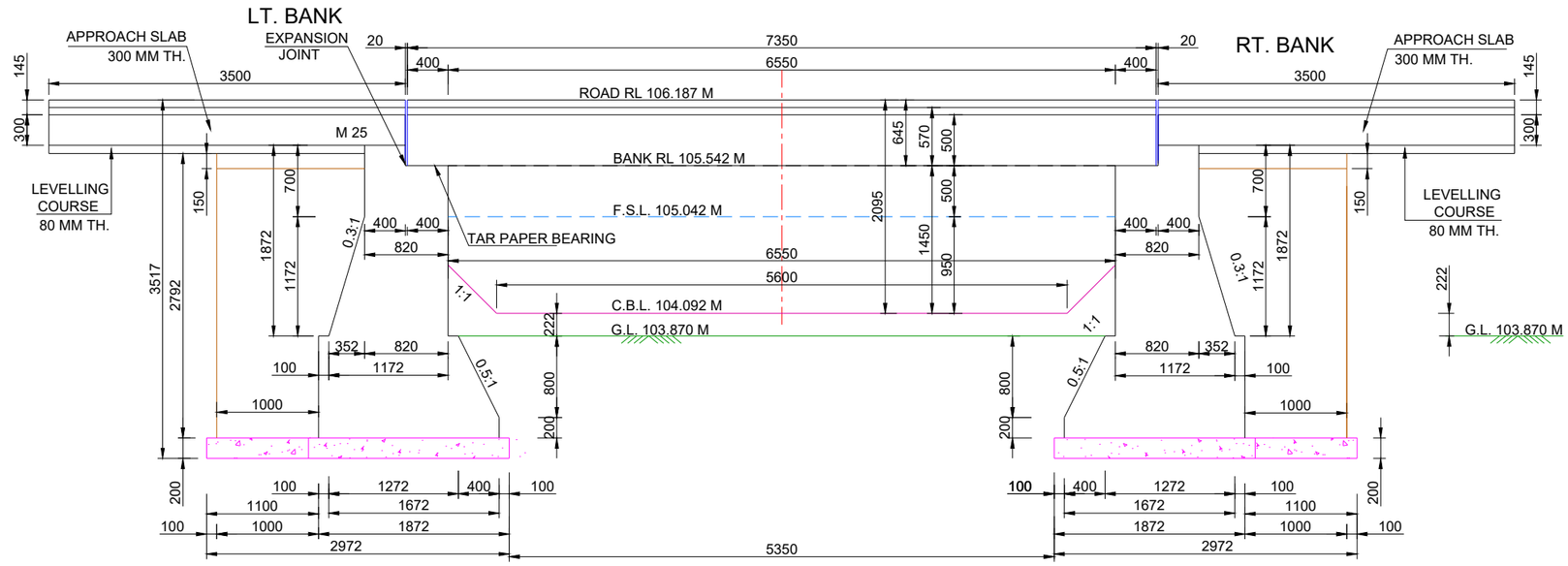
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 22.850 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 2 of 2



SECTION C-C



SECTION B-B

DESIGN DATA:-

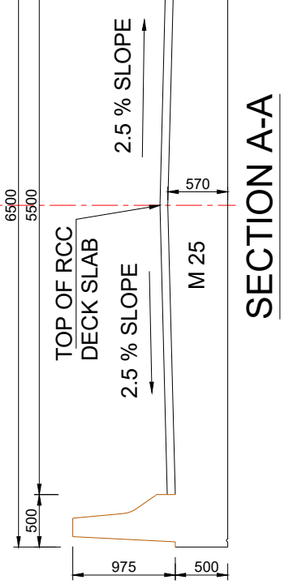
DESIGN DISCHARGE	2.700 CUMECS
BED WIDTH	5.600 M
WATER DEPTH	0.950 M
FREE BOARD	0.500 M
BED LEVEL	104.092 M
F.S.L.	105.042 M
BANK R.L.	105.542 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	106.187 M
GROUND LEVEL	103.870 M

NOTES:-

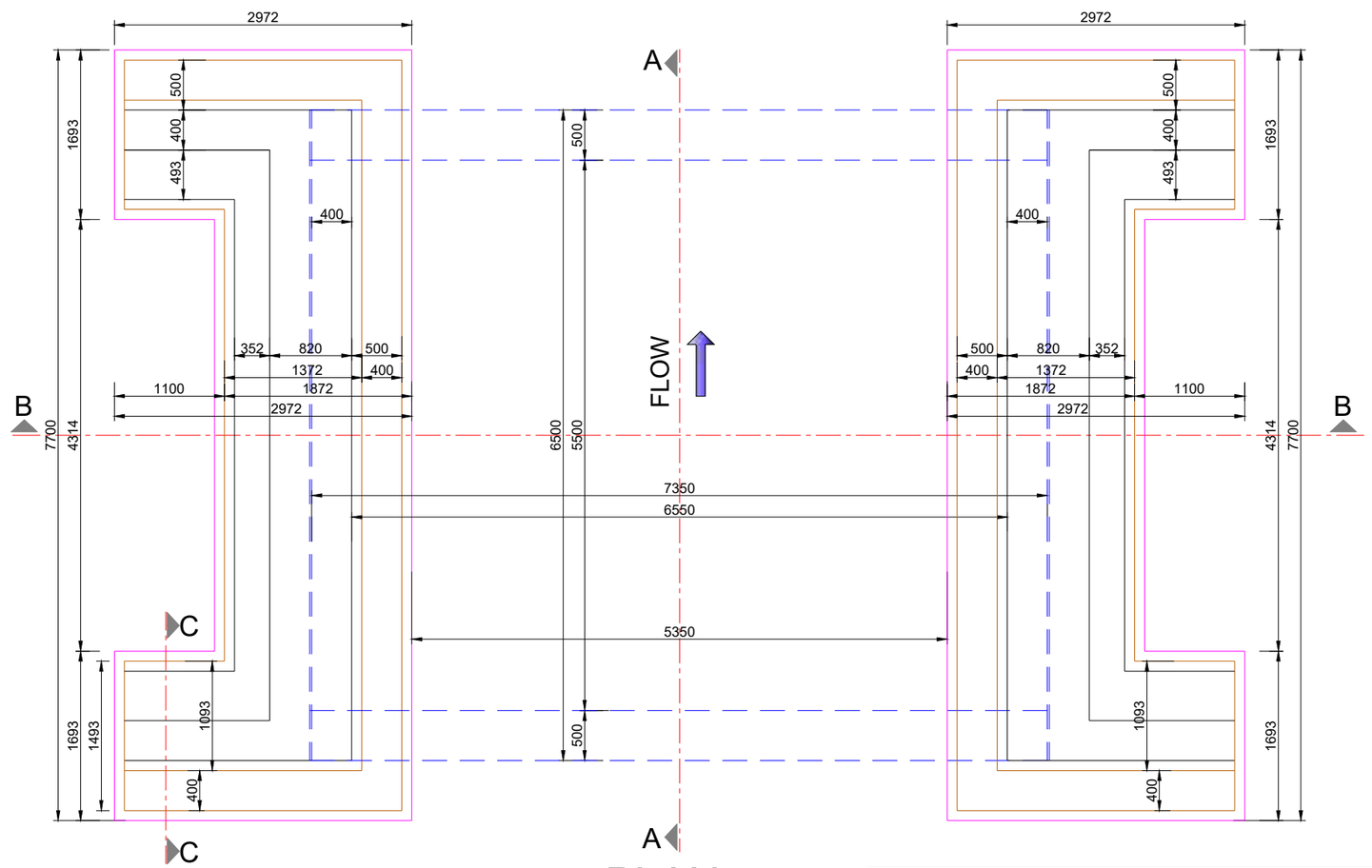
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456, GRADE OF CONCRETE IN DIFFERENT COMPONENT SHALL BE

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)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

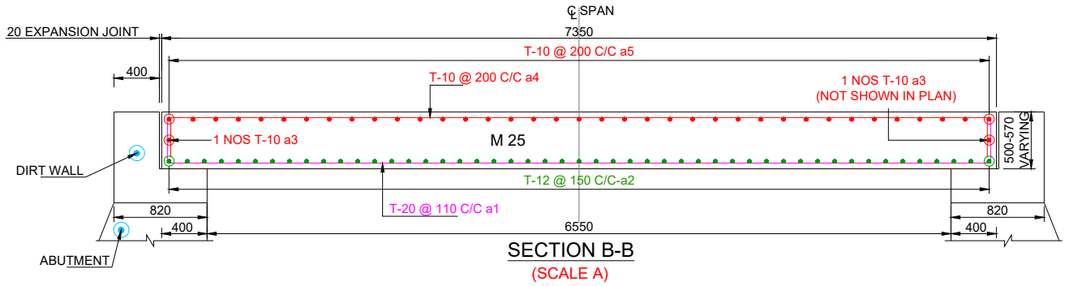


SECTION A-A

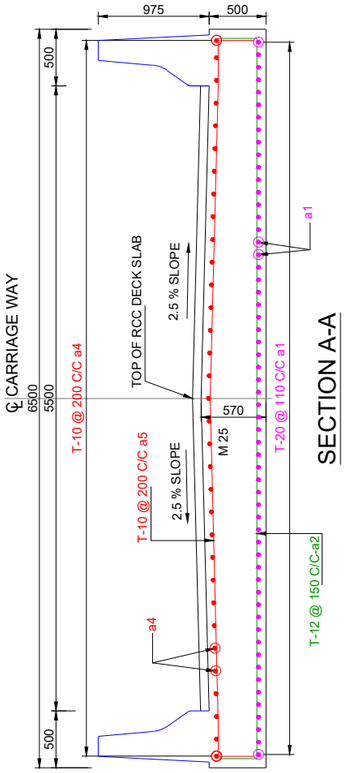


PLAN

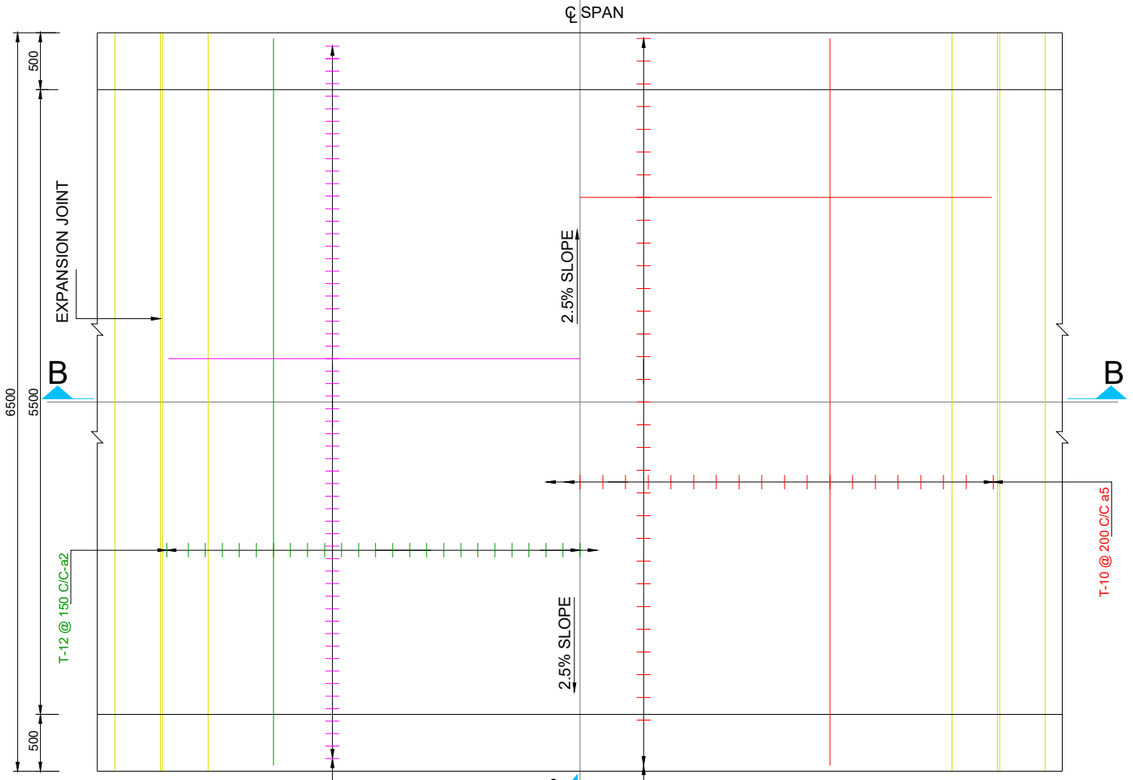
Prepared by :-	WAPCOS LTD.
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 23.400 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG.



SECTION B-B
(SCALE A)

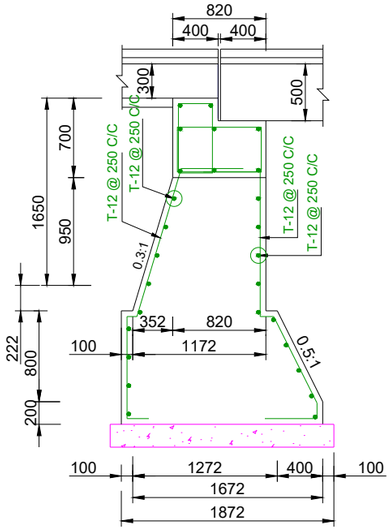


SECTION A-A

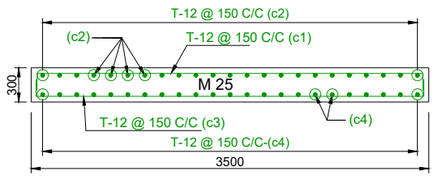


BOTTOM REINFORCEMENT TOP REINFORCEMENT

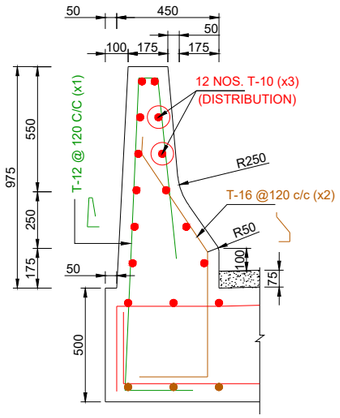
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



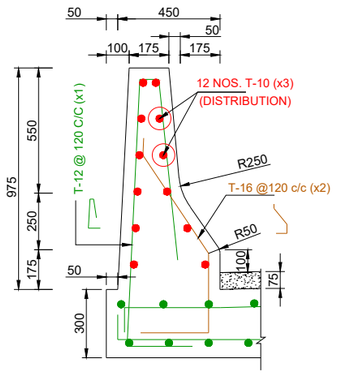
REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



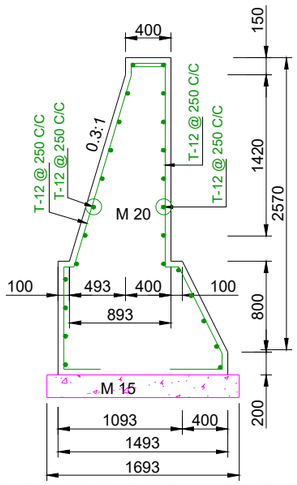
SECTION OF APPROACH SLAB
(SCALE A)



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



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



REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

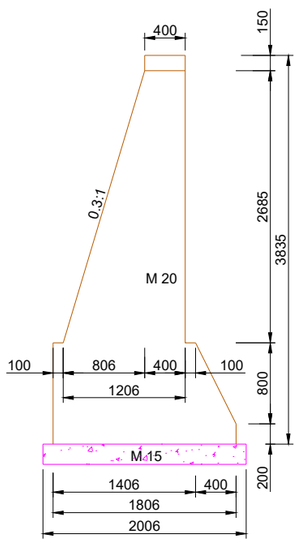
BAR BENDING SCHEDULE

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	R=80, 400, 7250, 400	20	110	59
2	a2	R=50, 400, 6400, 400	12	150	49
3	a3	6400	10	-	2
4	a4	7250, R=40, 400, 400	10	200	31
5	a5	400, 450, 2750, 2750, 450, 400	10	200	37
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1377, 800, 300	12	120	61X2
2	x2	75, 520, 300, 550	16	120	61X2
3	x3	7250	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2

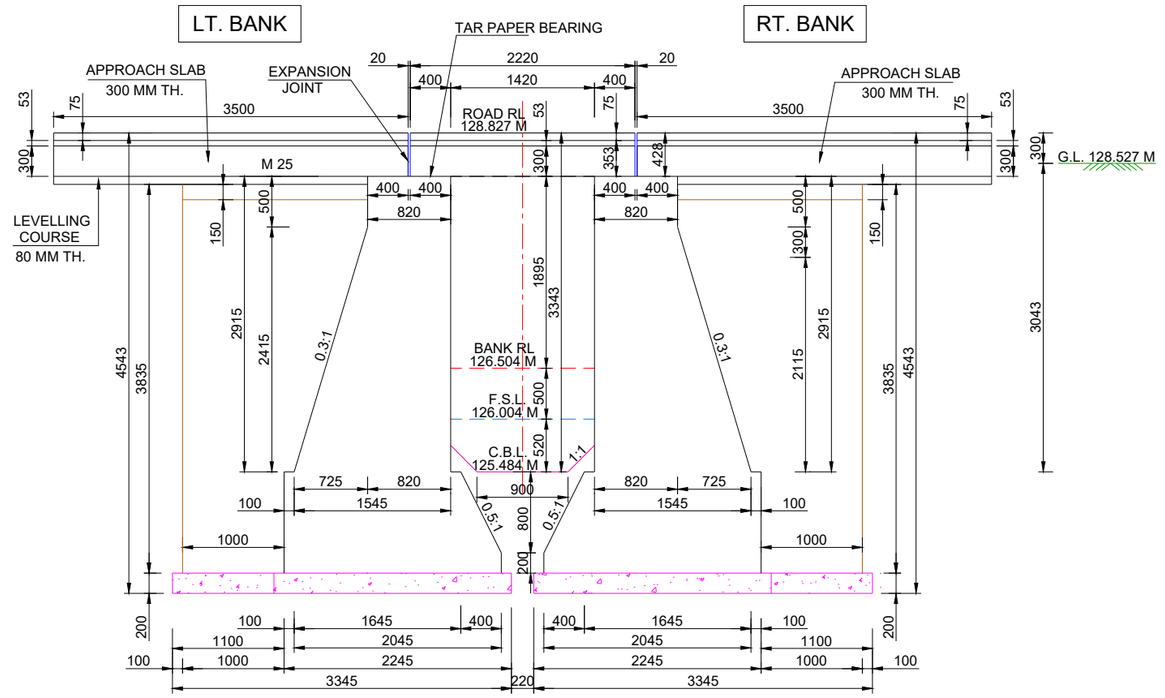
SCALE A:- 0 400 400 800 1200

SCALE B:- 200 0 200 400 600

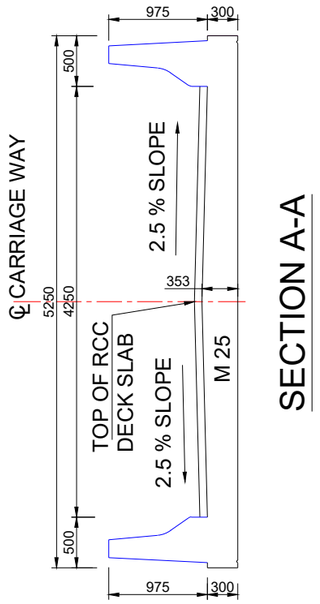
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 23.400 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37/SLAB BRG. 2 of 2



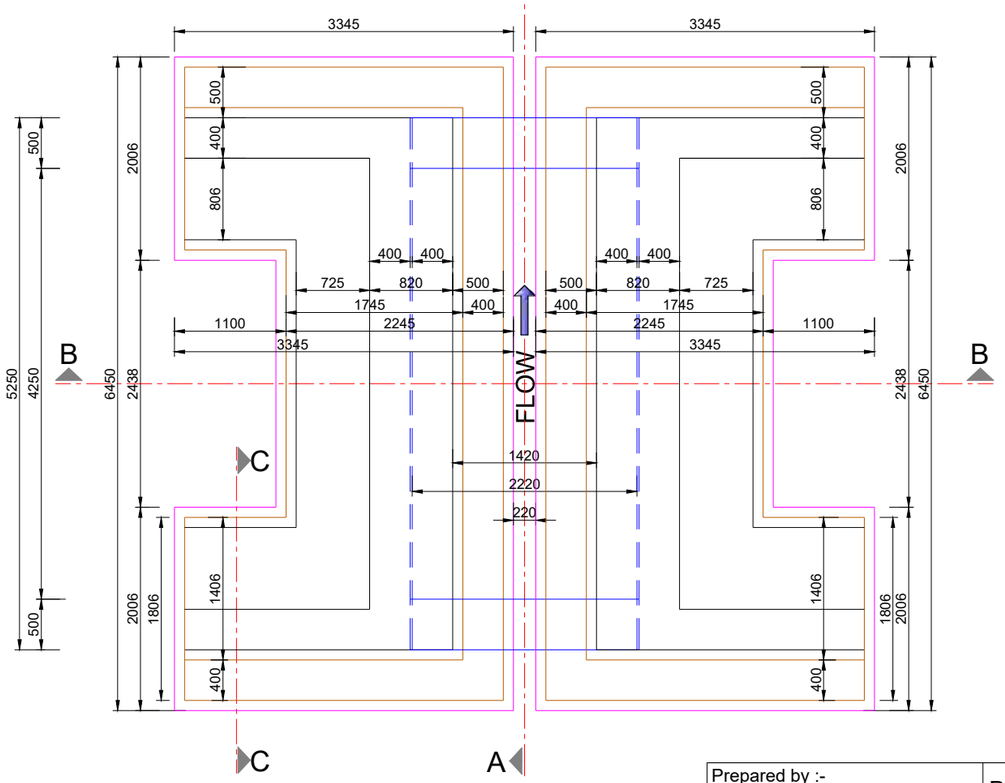
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

SCALE A:-

1000 0 1000 2000 3000

DESIGN DATA:-

DESIGN DISCHARGE	0.19 CUMECS
BED WIDTH	0.900 M
WATER DEPTH	0.520 M
FREE BOARD	0.500 M
BED LEVEL	125.484 M
F.S.L.	126.004 M
BANK R.L.	126.504 M
CARRIAGE WAY	4.250 M
ROAD LEVEL	128.827 M
GROUND LEVEL	128.527 M

NOTES:-

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

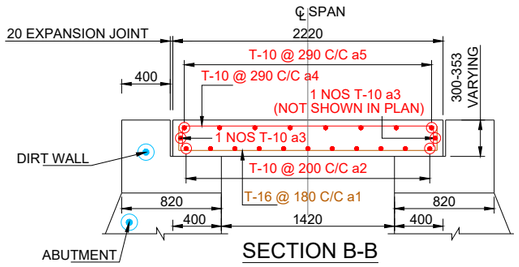
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

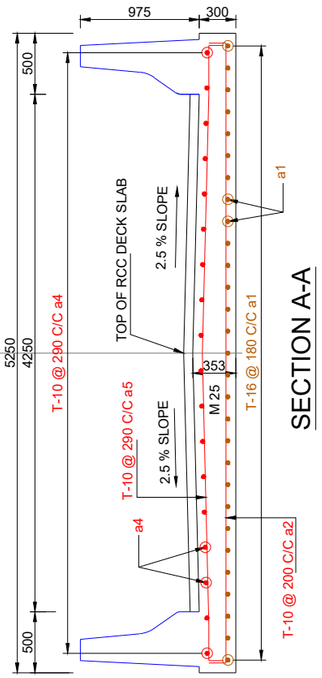
Prepared by :-

WAPCOS LTD.

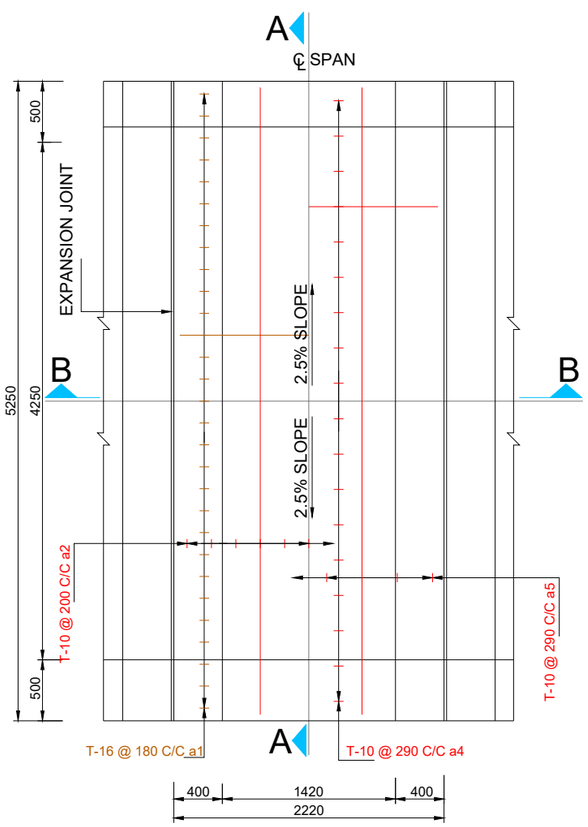
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF BRIDGE AT KM. 0.155 ON ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-02/SLR/BRG.



SECTION B-B
(SCALE A)

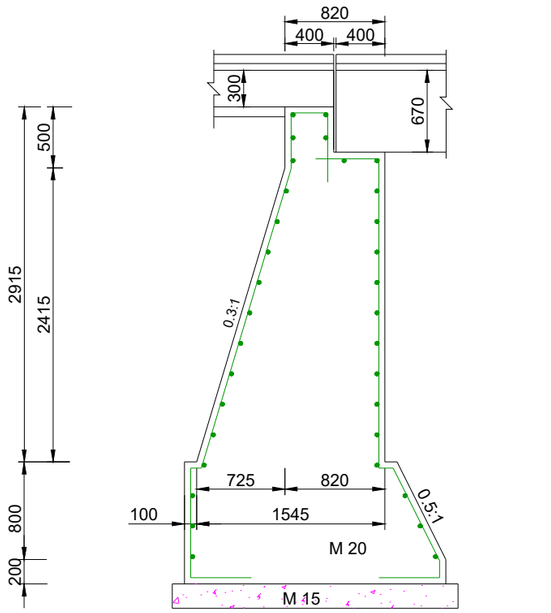


SECTION A-A

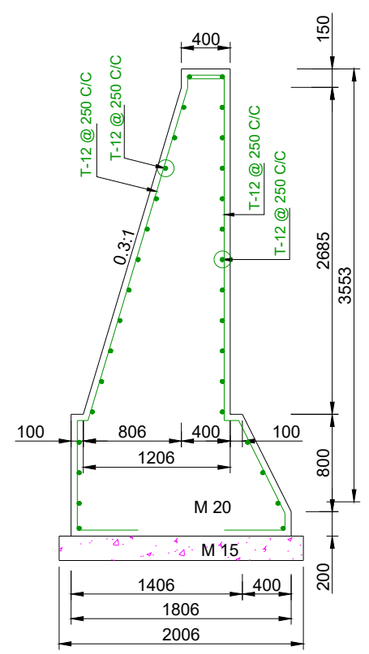


BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



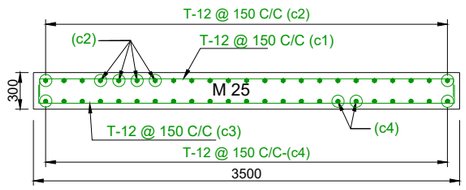
REINFORCEMENT DETAIL - ABUTMENT
(SCALE A)



REINFORCEMENT DETAIL - RETURN WALL
(SCALE A)

BAR BENDING SCHEDULE

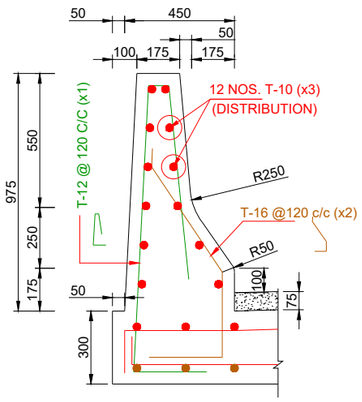
S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	200, R=80, 2120, 200	16	180	29
2	a2	200, R=50, 5150, 200	10	200	11
3	a3	5150	10	-	2
4	a4	2120, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	8
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	35X2
2	c2	150, 450, 2125, 2125, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	35X2
4	c4	150, 5150, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1146, 800, 300	12	120	18X2
2	x2	75, 520, 379, 300	16	120	18X2
3	x3	2120	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



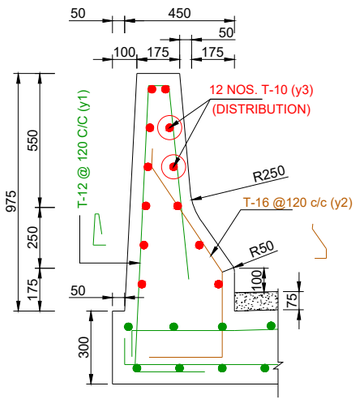
SECTION OF APPROACH SLAB
(SCALE A)

SCALE A:- 0 400 400 800 1200

SCALE B:- 0 200 200 400 600

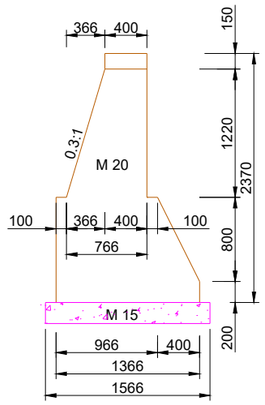


REINF. DETAILS OF
CRASH BARRIER - MAIN SLAB
(SCALE B)

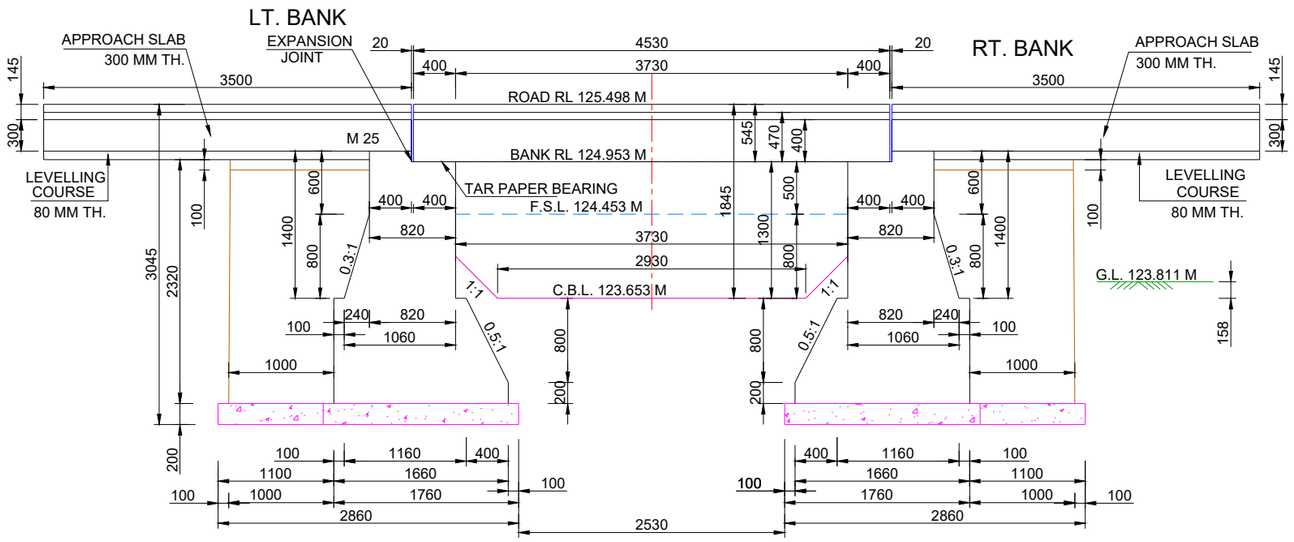


REINFORCEMENT DETAILS OF
CRASH BARRIER - APPROACH SLAB
(SCALE B)

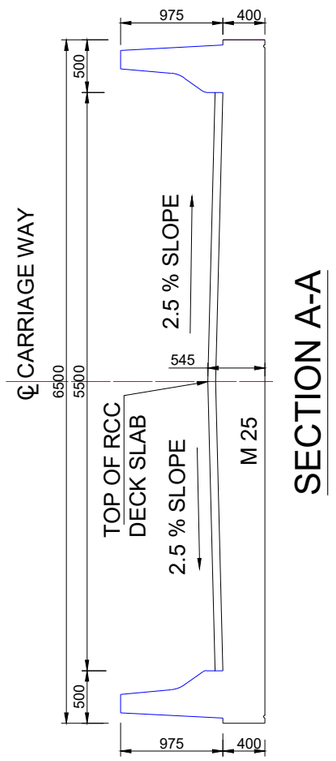
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 0.155 ON ASHNI MR. (OFFTAKE FROM RD -4+240 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-02/SLR/BRG. 2 of 2



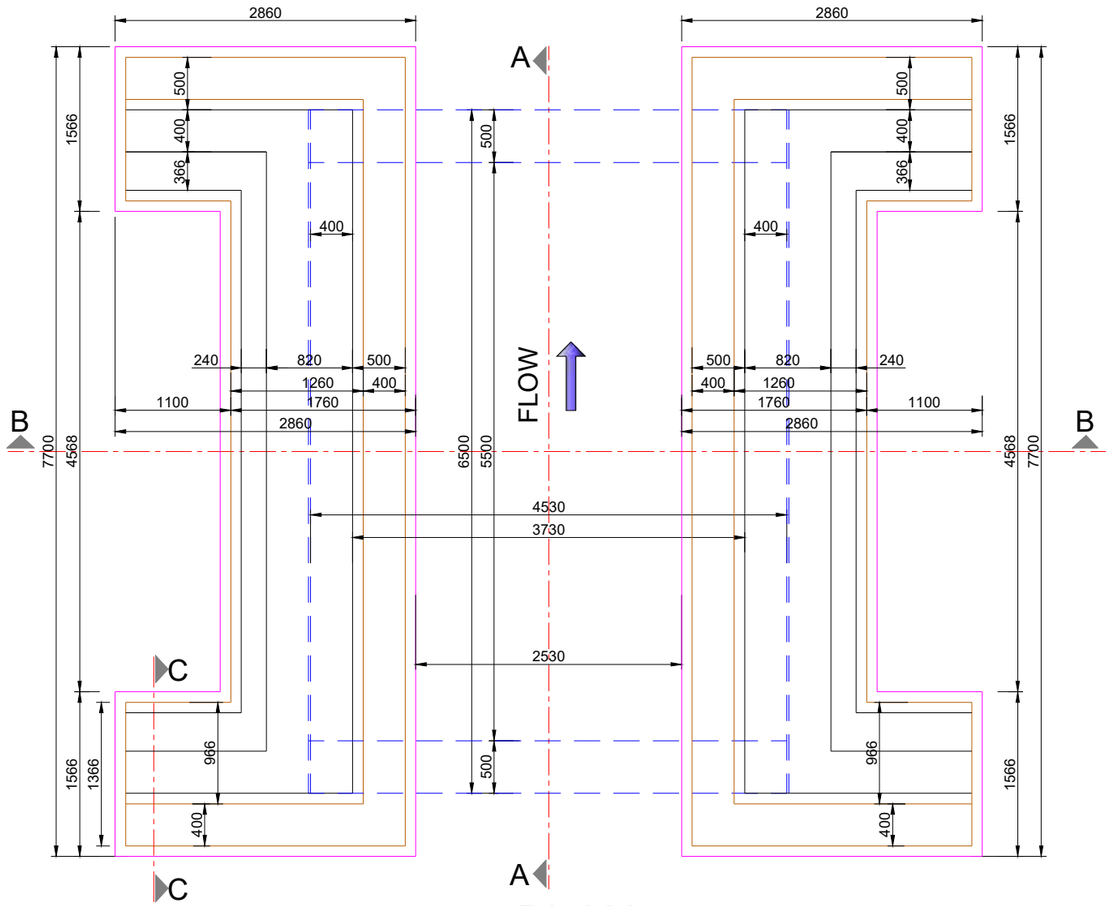
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	1.120 CUMECS
BED WIDTH	2.930 M
WATER DEPTH	0.800 M
FREE BOARD	0.500 M
BED LEVEL	123.653 M
F.S.L.	124.453 M
BANK R.L.	124.953 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	125.498 M
GROUND LEVEL	123.811 M

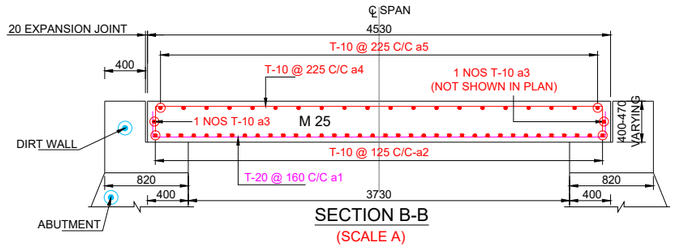
NOTES:-

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

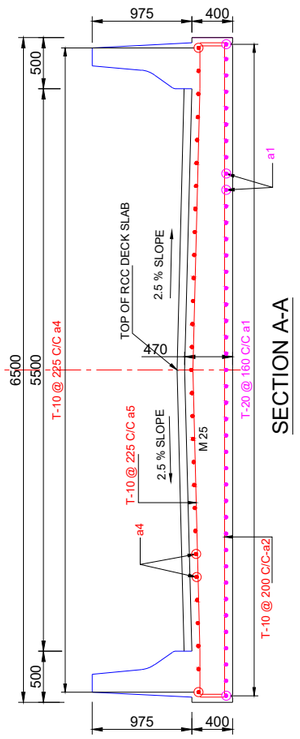
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

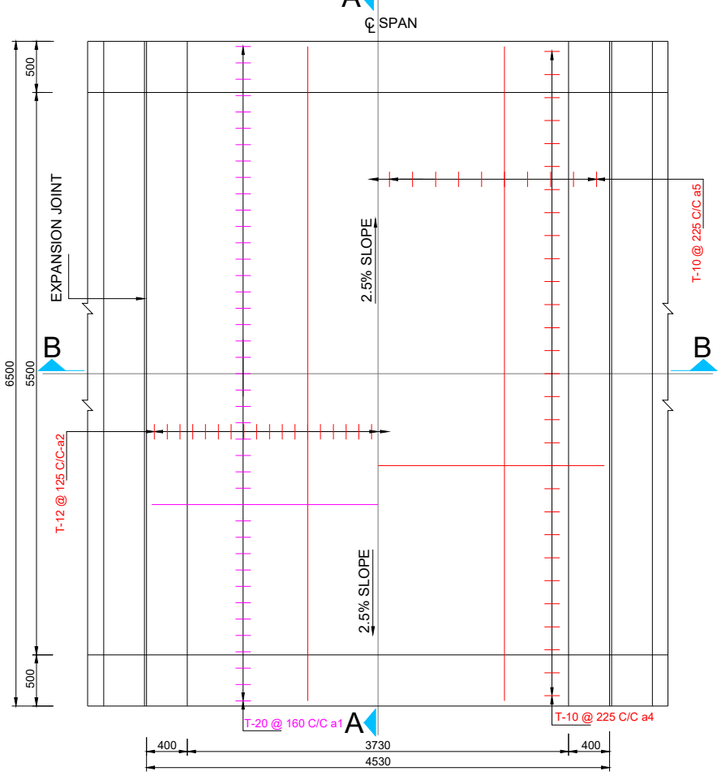
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 6.370 OF BUDHAUL SUB DY. (OFFTAKE FROM RD - 9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-03/SLAB BRG. 1 of 2



SECTION B-B
(SCALE A)

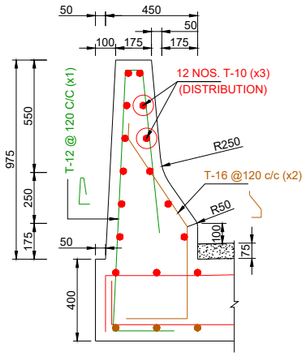


SECTION A-A

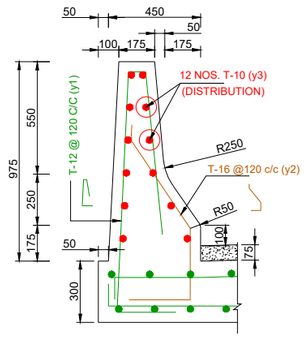


BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



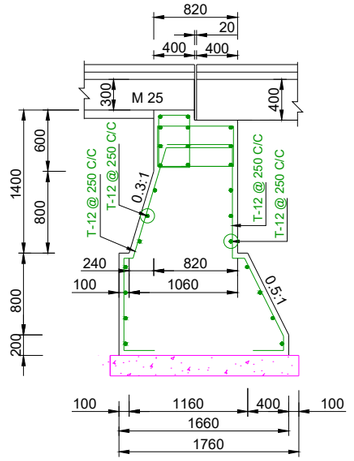
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)



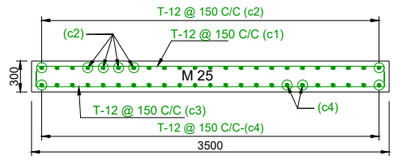
REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB
(SCALE B)

BAR BENDING SCHEDULE

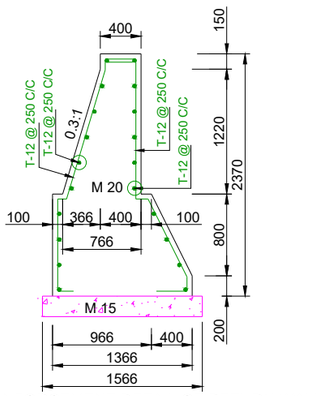
S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	300, R=80, 4430, 300	20	160	41
2	a2	250, R=50, 6400, 250	10	125	36
3	a3	6400	10	-	2
4	a4	300, 4430, R=40, 300	10	225	29
5	a5	250, 450, 2750, 2750, 450, 250	10	225	20
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1277, 800, 300	12	120	38X2
2	x2	75, 520, 350, 300	16	120	38X2
3	x3	4430	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



SECTION OF APPROACH SLAB
(SCALE A)

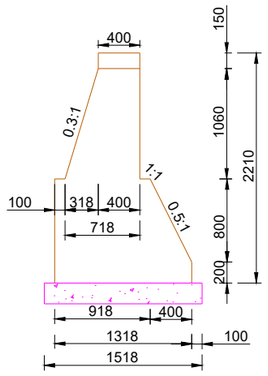


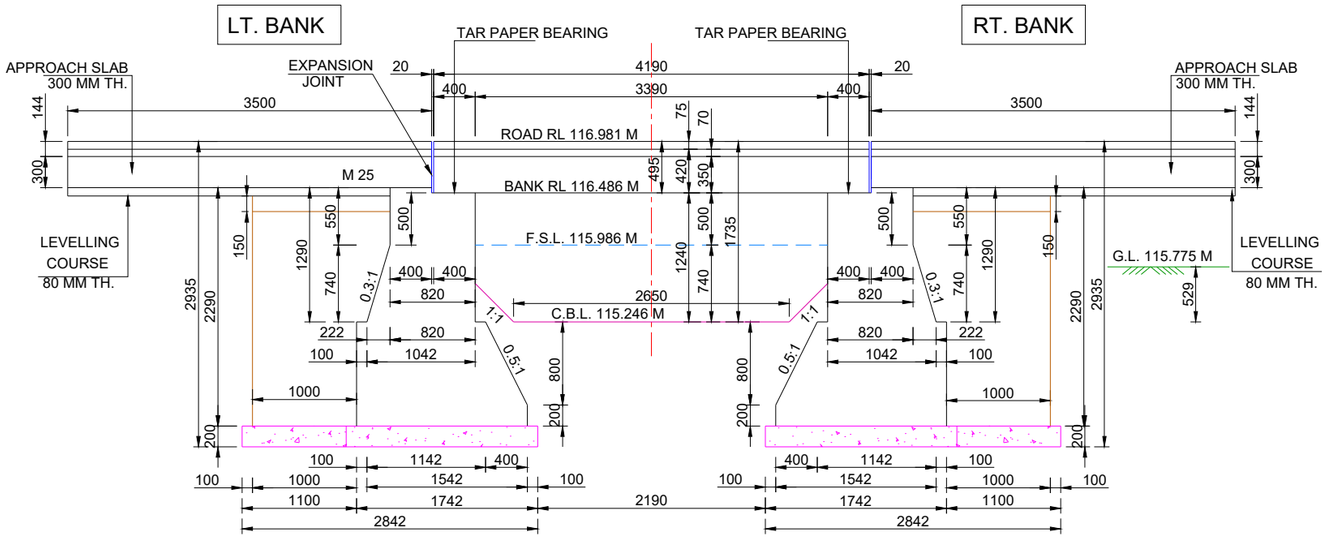
REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

SCALE A:-
400 0 400 800 1200

SCALE B:-
200 0 200 400 600

Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 0.500 OF BUDHAUL SUB DY. (OFFTAKE FROM RD - 9+050 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-03/SLAB BRG. 2 of 2

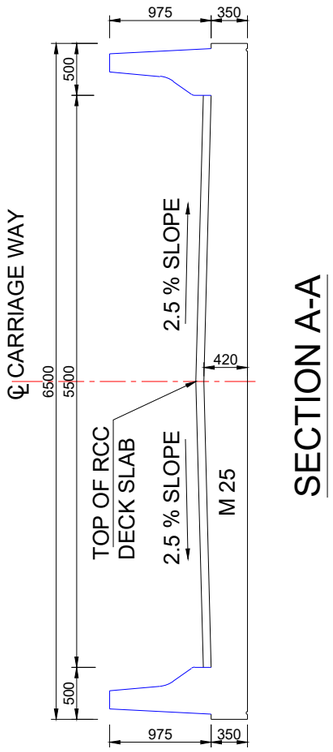




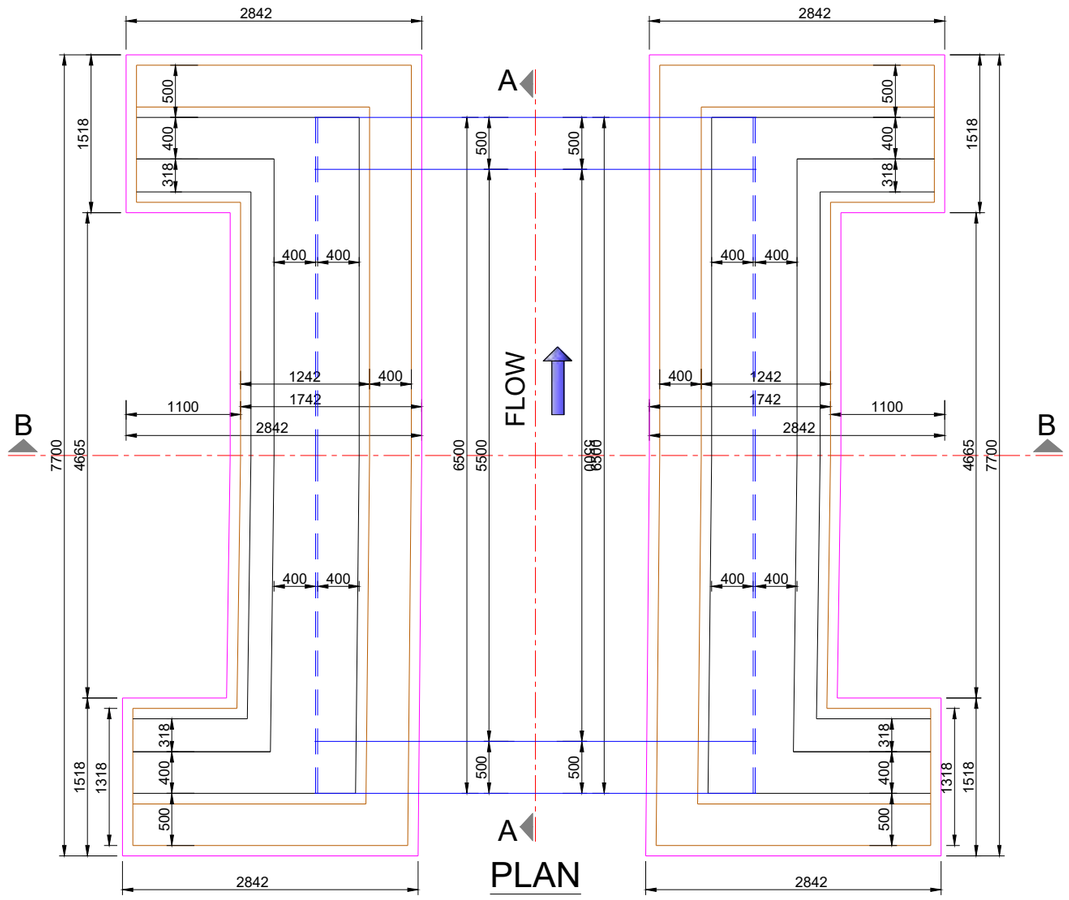
SECTION B-B

DESIGN DATA:-

DESIGN DISCHARGE	0.89 CUMECS
BED WIDTH	2.650 M
WATER DEPTH	0.740 M
FREE BOARD	0.500 M
BED LEVEL	115.246 M
F.S.L.	115.986 M
BANK R.L.	116.486 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	116.981 M
GROUND LEVEL	115.775 M



SECTION A-A



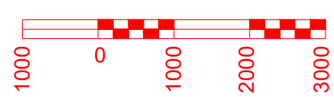
NOTES:-

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

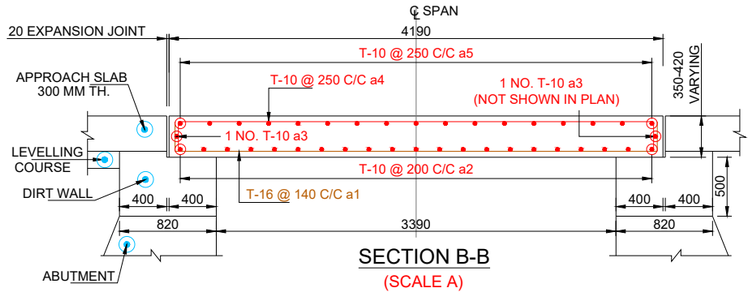
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

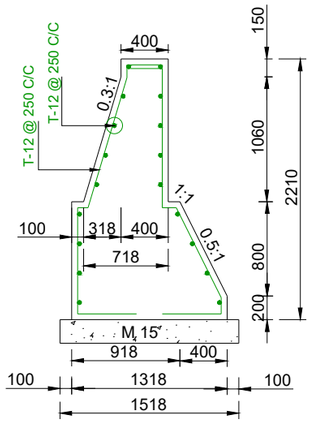
SCALE A:-



Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 6.370 OF BUDHUAL SUB DY. (OFFTAKE FROM RD - 9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-03/SLAB BRG. 1 of 2



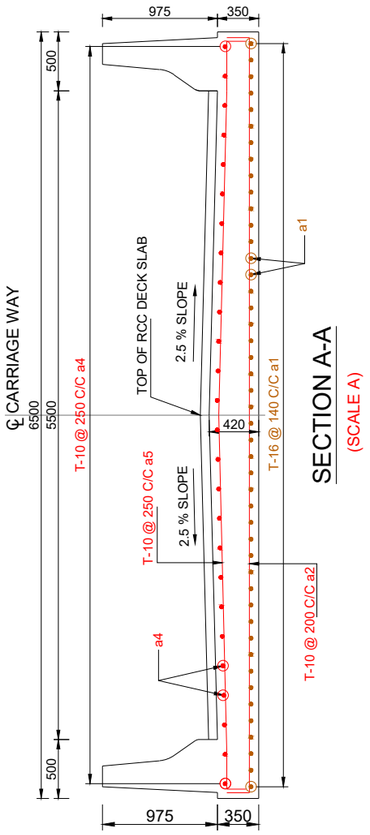
SECTION B-B
(SCALE A)



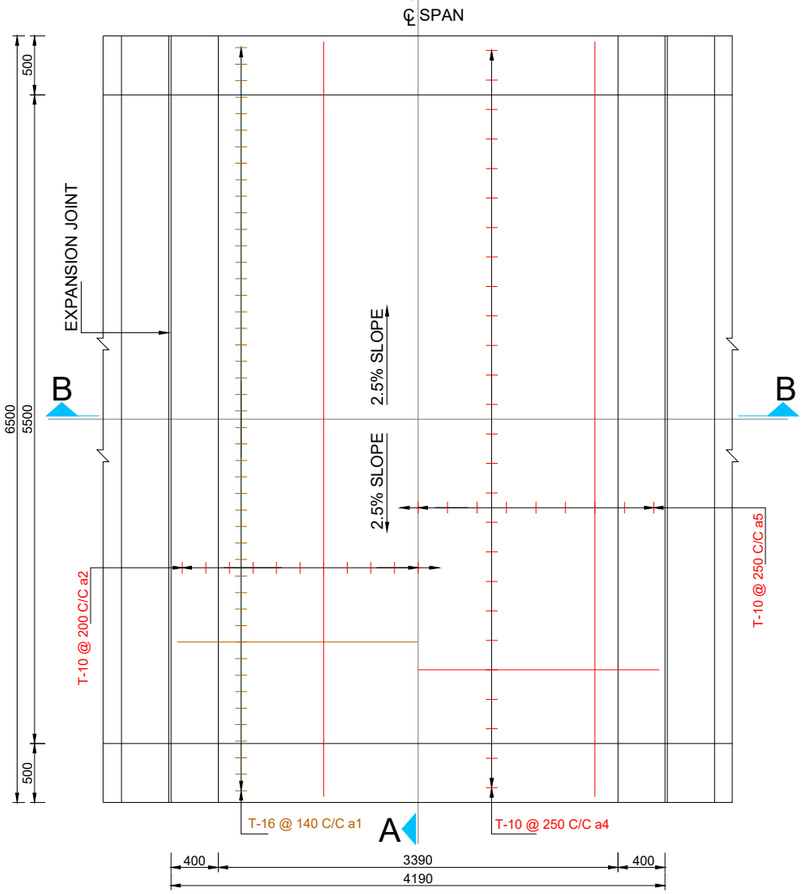
REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

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	250, R=60, 4090, 250	16	140	46
2	a2	250, R=40, 6400, 250	10	200	21
3	a3	6400	10	-	2
4	a4	4030, 250, R=40, 250	10	250	26
5	a5	250, 450, 2750, 2750, 450, 250	10	250	17
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1197, 800, 300	12	120	35X2
2	x2	75, 520, 429, 300	16	120	35X2
3	x3	4090	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2

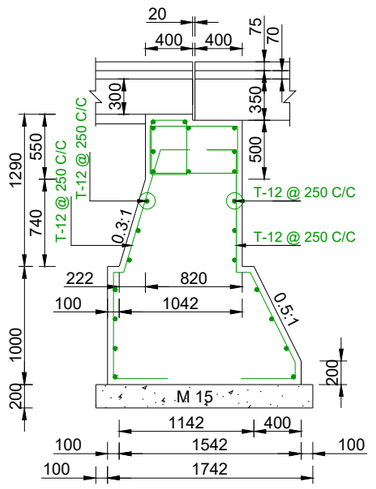


SECTION A-A
(SCALE A)

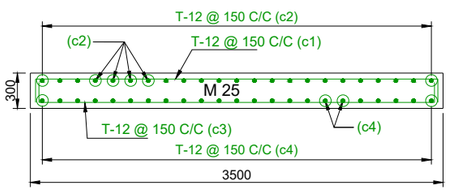


BOTTOM REINFORCEMENT TOP REINFORCEMENT

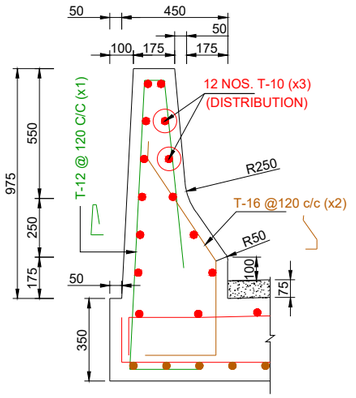
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



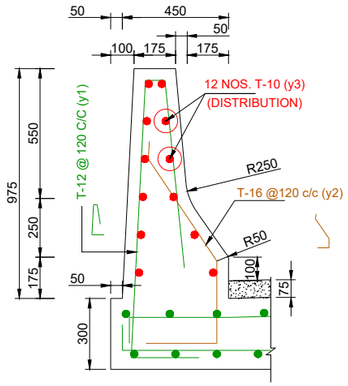
REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



SECTION OF APPROACH SLAB
(SCALE A)



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



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

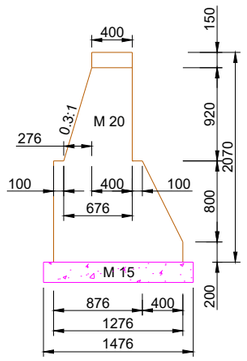
SCALE A:-
400 0 400 800 1200

SCALE B:-
200 0 200 400 600

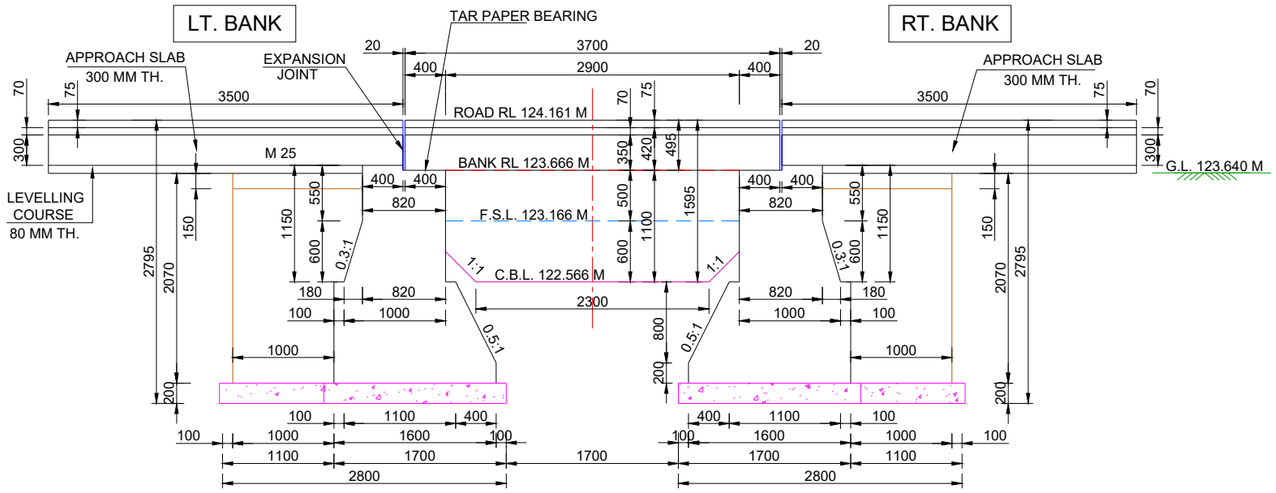
Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 6.370 OF BUDHUAL SUB DY. (OFFTAKE FROM RD - 9+050 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-03/SLAB BRG. 2 of 2



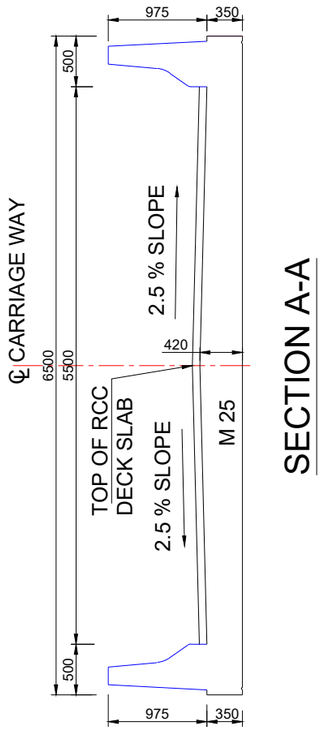
SECTION C-C



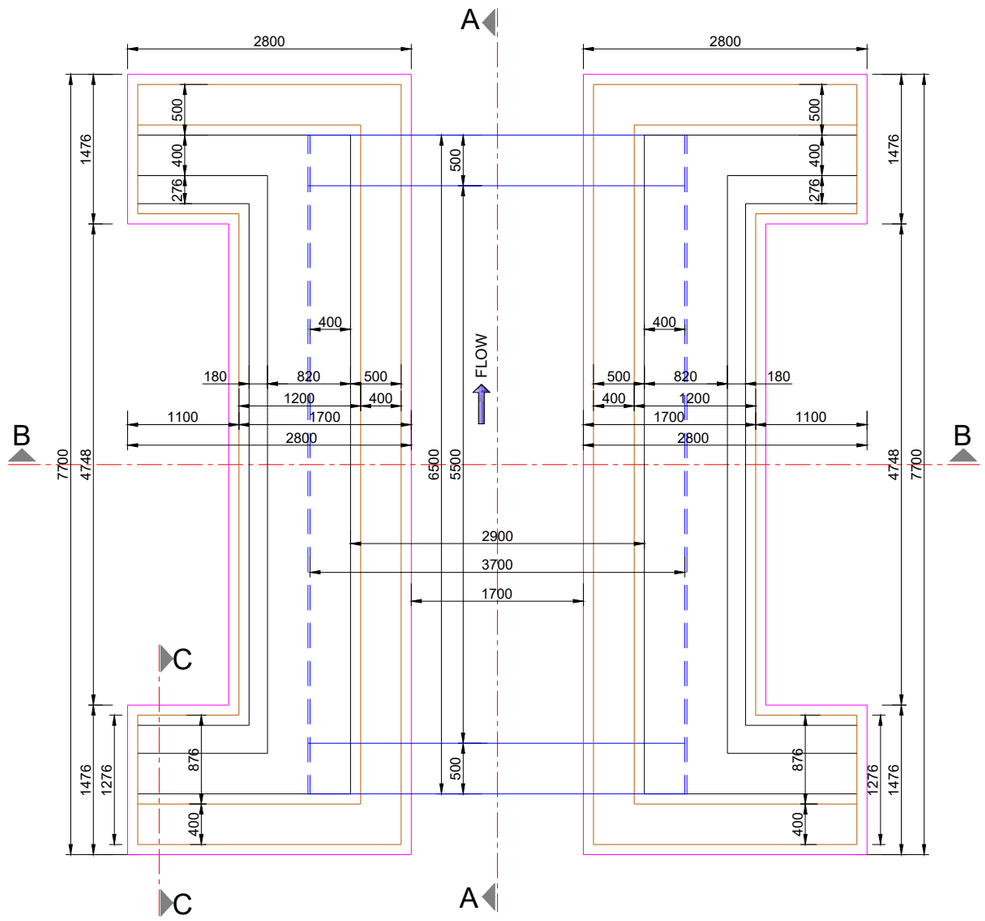
SECTION B-B

DESIGN DATA:-

DESIGN DISCHARGE	0.540 CUMECS
BED WIDTH	2.300 M
WATER DEPTH	0.600 M
FREE BOARD	0.500 M
BED LEVEL	122.566 M
F.S.L.	123.166 M
BANK R.L.	123.666 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	124.161 M
GROUND LEVEL	123.640 M



SECTION A-A



PLAN

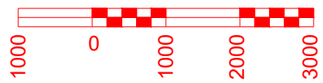
NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. 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)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

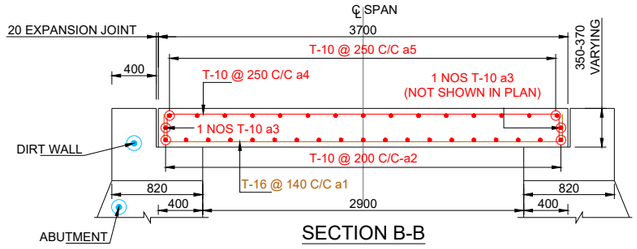
SCALE A:-



Prepared by :-

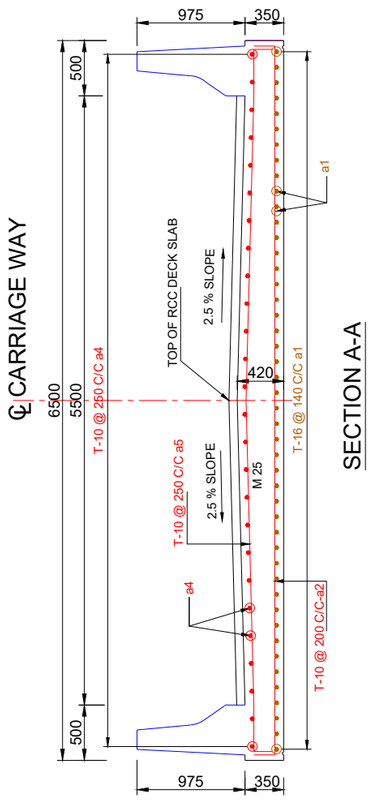
WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF BRIDGE AT KM. 0.600 ON KAILASHPUR SUB DY. (OFFTAKE FROM RD - 9+050 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-04/SLR/BRG. 1 of 2

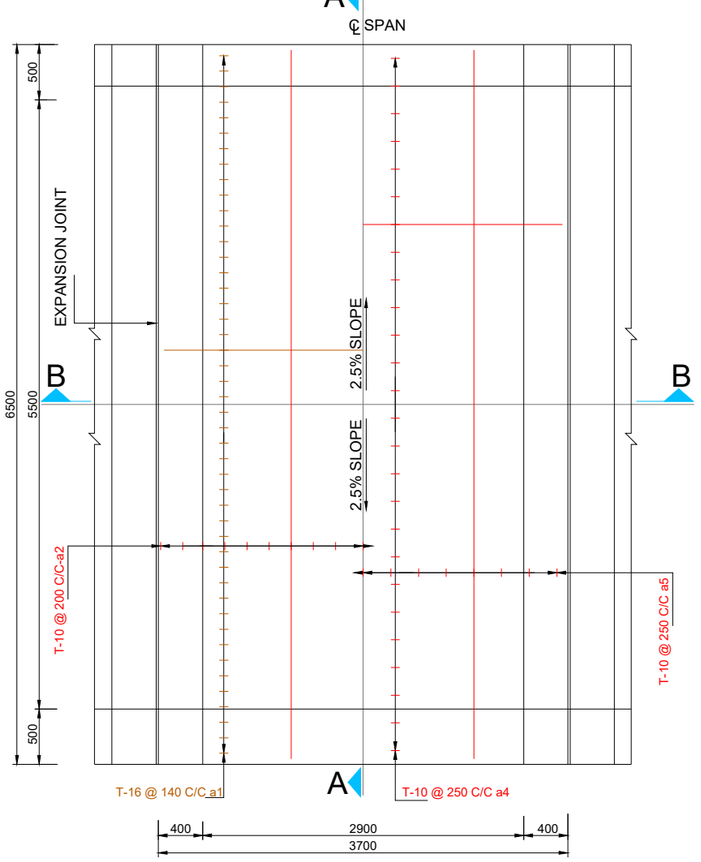


SECTION B-B

(SCALE A)



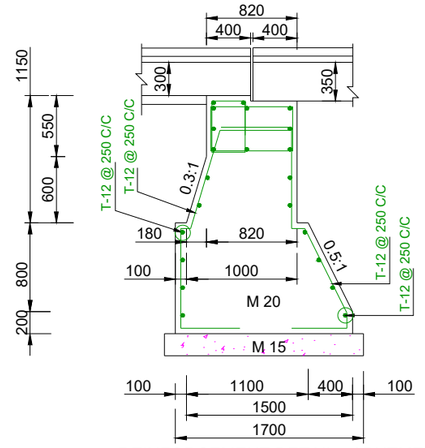
SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

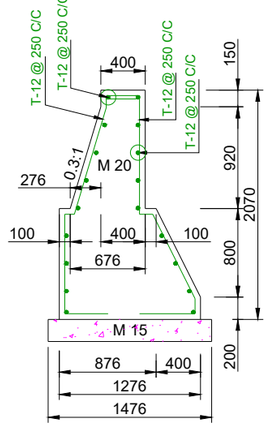
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINFORCEMENT DETAIL - ABUTMENT

(SCALE A)



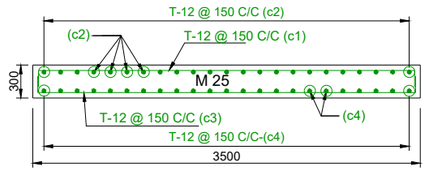
SECTION C-C

REINFORCEMENT DETAIL - RETURN WALL

(SCALE A)

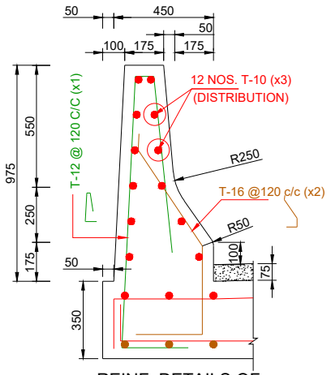
BAR BENDING SCHEDULE

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	250, R=80, 3600, 250	16	140	46
2	a2	200, R=50, 6400, 200	10	200	19
3	a3	6400	10	-	2
4	a4	3600, 250, R=40, 250	10	250	26
5	a5	200, 450, 2750, 2750, 450, 200	10	250	15
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	35X2
2	c2	150, 450, 2125, 2125, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	35X2
4	c4	150, 5150, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1227, 800, 300	12	120	31X2
2	x2	75, 520, 400, 300	16	120	31X2
3	x3	3600	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1177, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



SECTION OF APPROACH SLAB

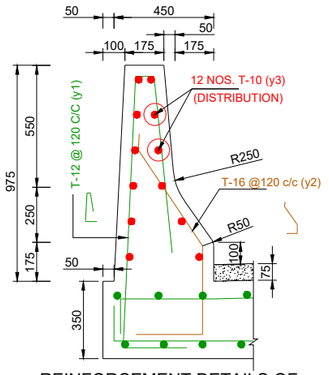
(SCALE A)



REINF. DETAILS OF

CRASH BARRIER - MAIN SLAB

(SCALE B)



REINFORCEMENT DETAILS OF

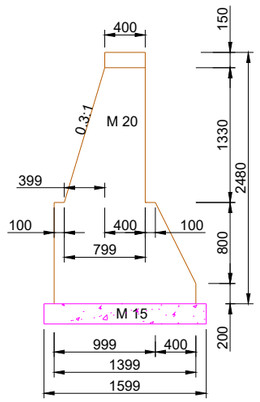
CRASH BARRIER - APPROACH SLAB

(SCALE B)

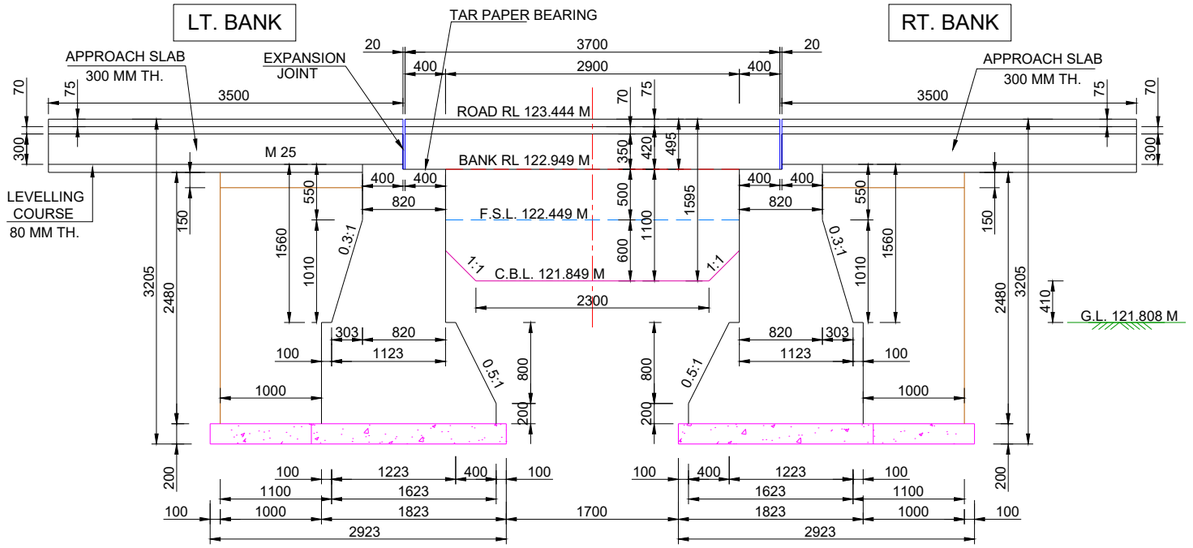
SCALE A:-

SCALE B:-

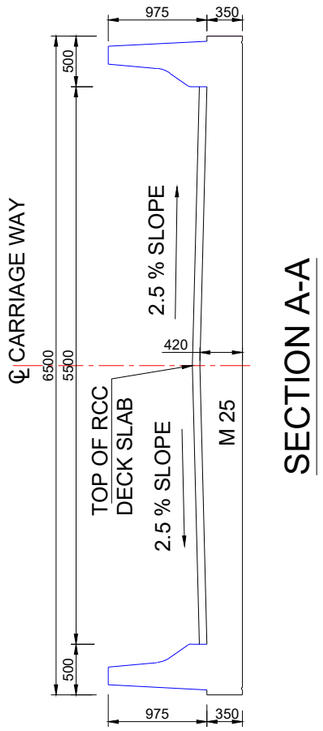
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 0.600 ON KAILASHPUR SUB DY. (OFFTAKE RD - 9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-04/SLR/BRG. 2 of 2



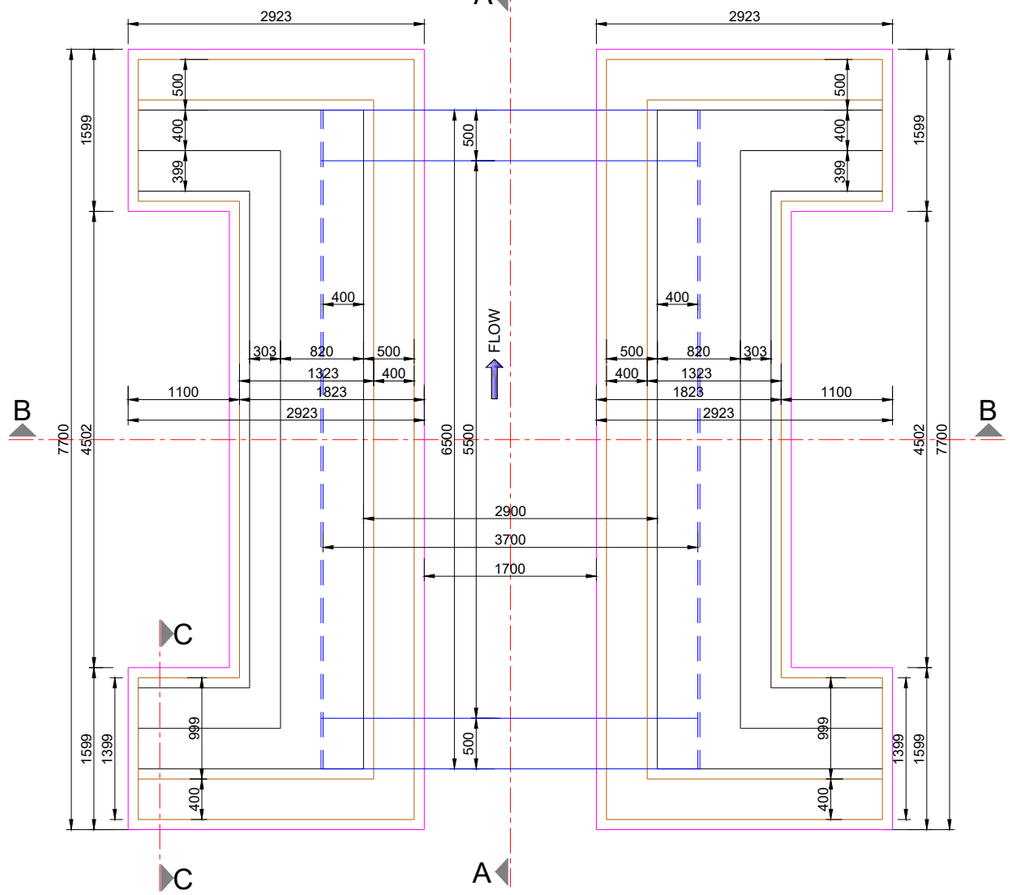
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.540 CUMECS
BED WIDTH	2.300 M
WATER DEPTH	0.600 M
FREE BOARD	0.500 M
BED LEVEL	121.849 M
F.S.L.	122.449 M
BANK R.L.	122.949 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	123.444 M
GROUND LEVEL	121.808 M

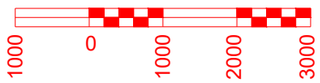
NOTES:-

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

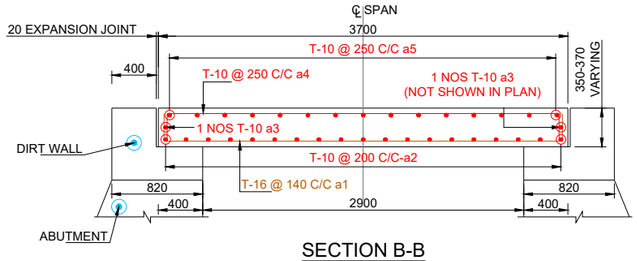
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

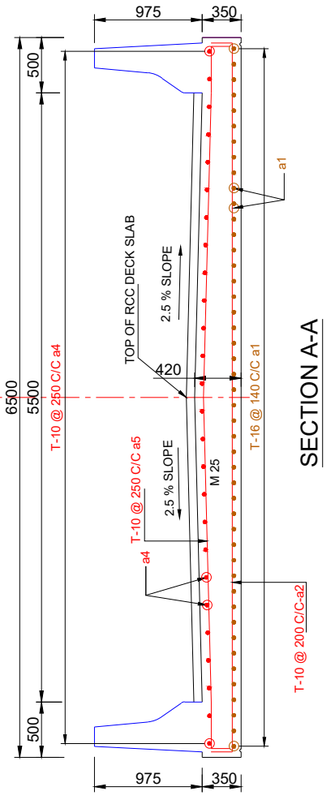
SCALE A:-



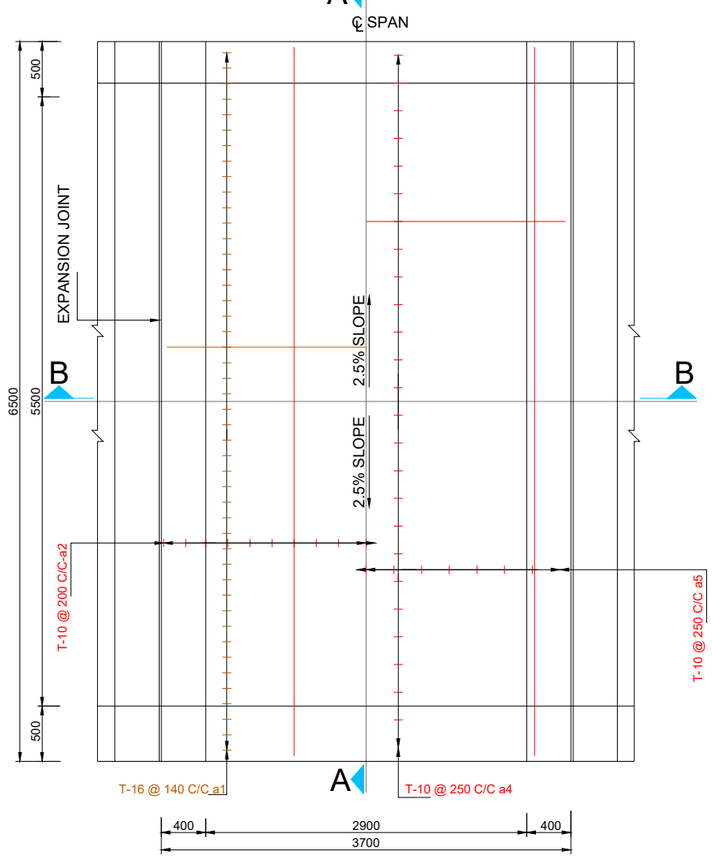
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 1.690 ON KAILASHPUR SUB DY. (OFFTAKE FROM RD - 9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-04/SLR/BRG. 1 of 2



SECTION B-B
(SCALE A)

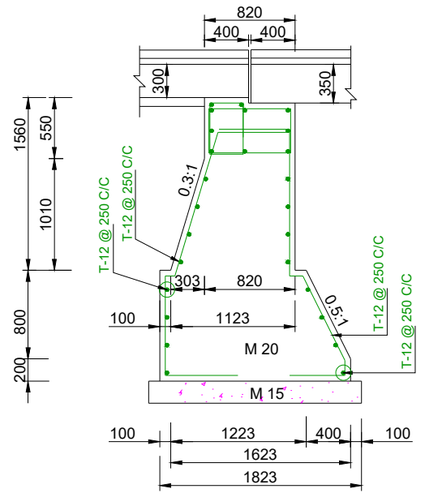


SECTION A-A

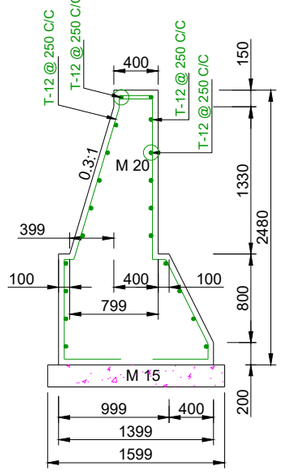


BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



REINFORCEMENT DETAIL - ABUTMENT
(SCALE A)

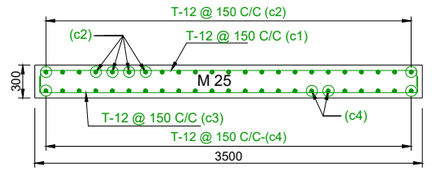


SECTION C-C

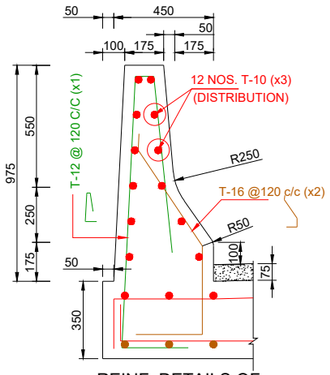
REINFORCEMENT DETAIL - RETURN WALL
(SCALE A)

BAR BENDING SCHEDULE

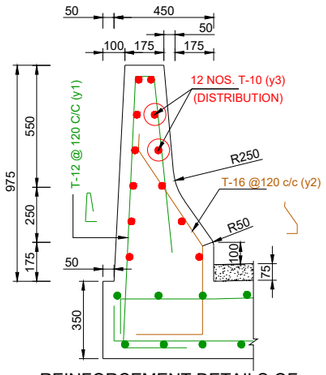
S. No.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	250, R=80, 3600, 250	16	140	46
2	a2	200, R=50, 6400, 200	10	200	19
3	a3	6400	10	-	2
4	a4	250, 3600, R=40, 250	10	250	26
5	a5	200, 450, 2750, 2750, 450, 200	10	250	15
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	35X2
2	c2	150, 450, 2125, 2125, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	35X2
4	c4	150, 5150, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1227, 800, 300	12	120	31X2
2	x2	75, 520, 300, 400	16	120	31X2
3	x3	3600	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1277, 800, 300	12	120	29X2X2
2	y2	75, 520, 300, 379	16	120	29X2X2
3	y3	3400	10	-	12X2X2



SECTION OF APPROACH SLAB
(SCALE A)



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

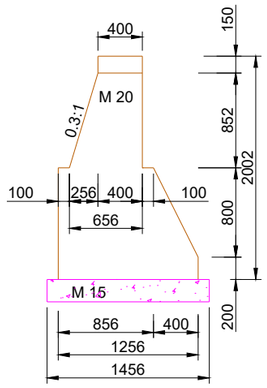


REINFORCEMENT DETAILS OF
CRASH BARRIER - APPROACH SLAB
(SCALE B)

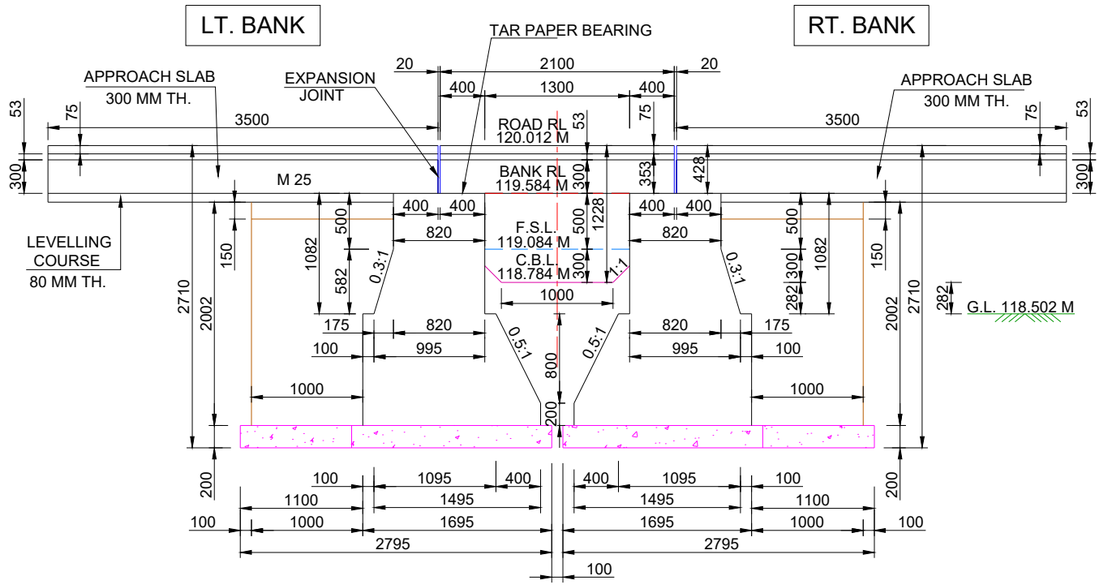
SCALE A:-
400 0 400 800 1200

SCALE B:-
200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 1.690 ON KAILASHPUR SUB DY. (OFFTAKE RD - 9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-04/SLR/BRG. 2 of 2

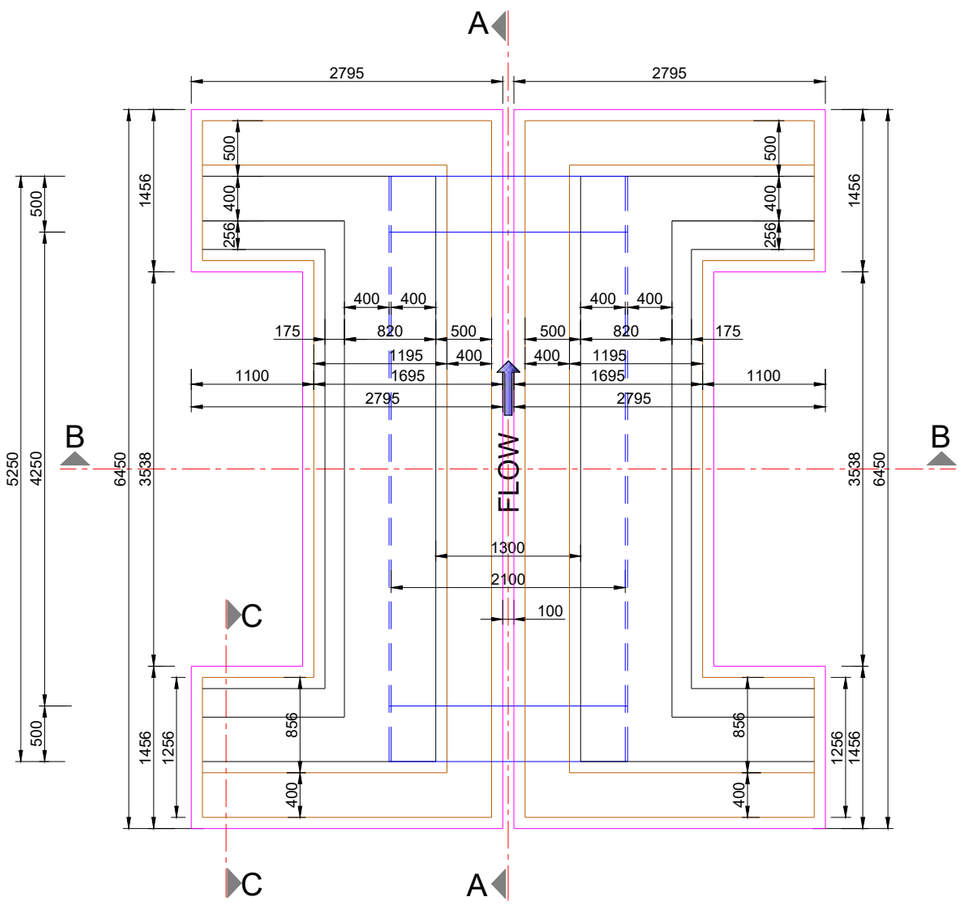


SECTION C-C



SECTION B-B

SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.070 CUMECS
BED WIDTH	1.000 M
WATER DEPTH	0.300 M
FREE BOARD	0.500 M
BED LEVEL	118.784 M
F.S.L.	119.084 M
BANK R.L.	119.584 M
CARRIAGE WAY	4.250 M
ROAD LEVEL	120.012 M
GROUND LEVEL	118.502 M

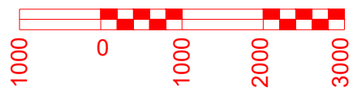
NOTES:-

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

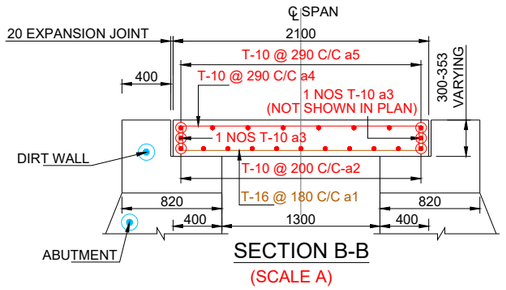
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

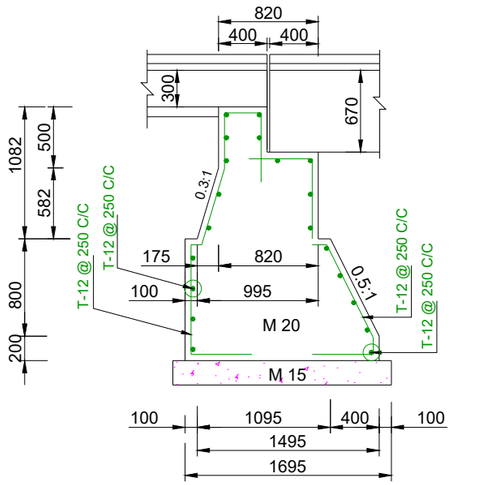


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 6.850 ON KAILASHPUR SUB DY. (OFFTAKE FROM RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-04/SLR/BRG. 1 of 2



SECTION B-B

(SCALE A)

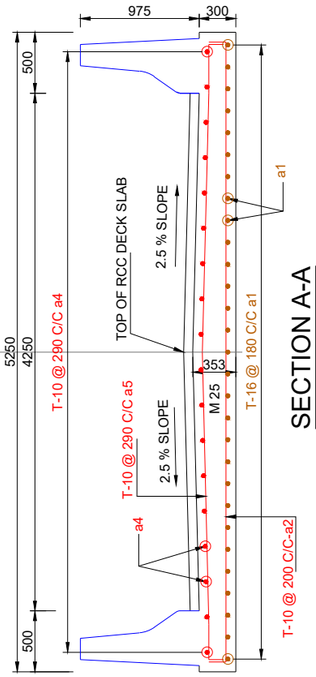


REINFORCEMENT DETAIL - ABUTMENT

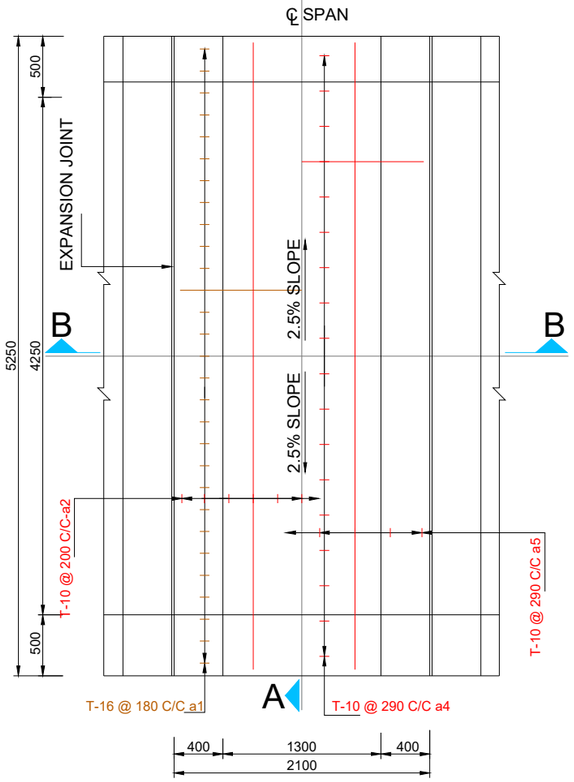
(SCALE A)

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	200, R=80, 2000, 200	16	180	29
2	a2	200, R=50, 5150, 200	10	200	11
3	a3	5150	10	-	2
4	a4	2000, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	8
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	35X2
2	c2	150, 450, 2125, 2125, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	35X2
4	c4	150, 5150, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1146, 800, 300	12	120	18X2
2	x2	75, 520, 379, 300	16	120	18X2
3	x3	2000	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



SECTION A-A



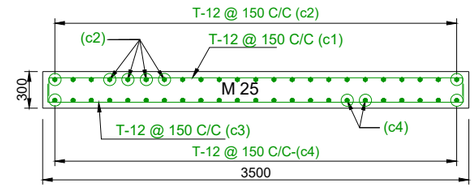
BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)

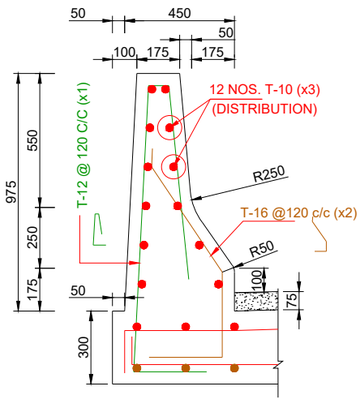
REINFORCEMENT DETAIL - RETURN WALL

(SCALE A)



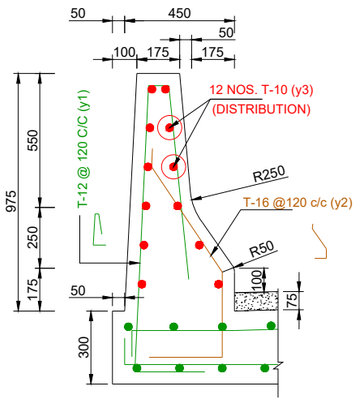
SECTION OF APPROACH SLAB

(SCALE A)



REINF. DETAILS OF CRASH BARRIER - MAIN SLAB

(SCALE B)



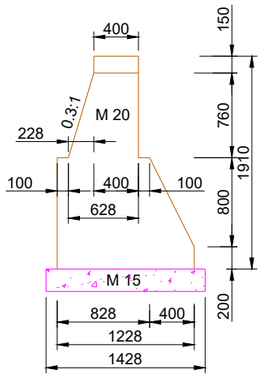
REINFORCEMENT DETAILS OF CRASH BARRIER - APPROACH SLAB

(SCALE B)

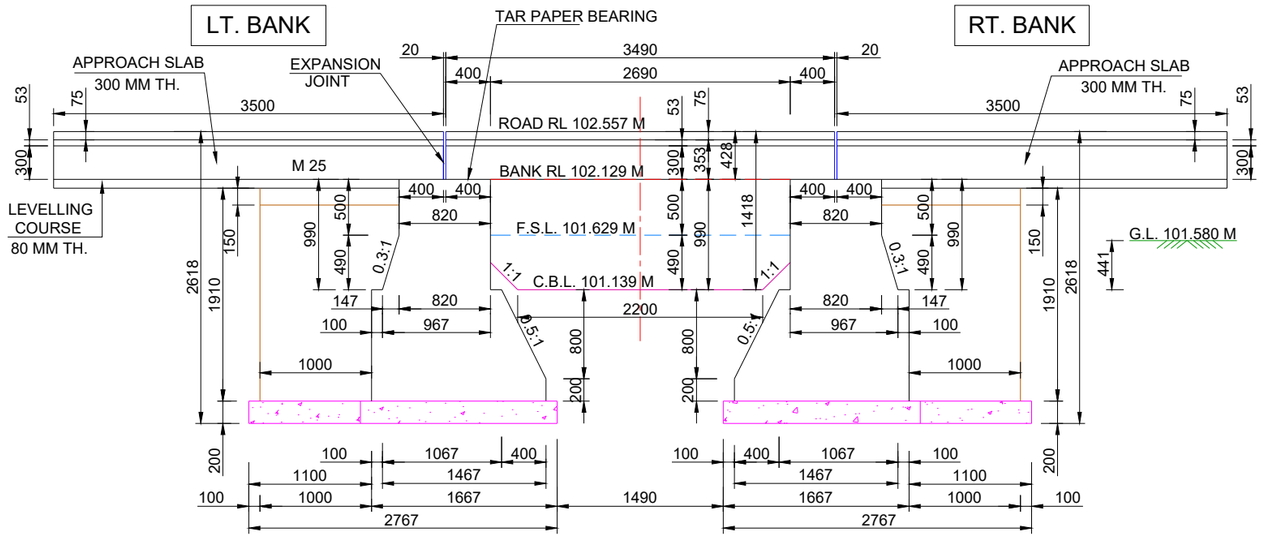
SCALE A:- 0, 400, 400, 800, 1200

SCALE B:- 200, 0, 200, 400, 600

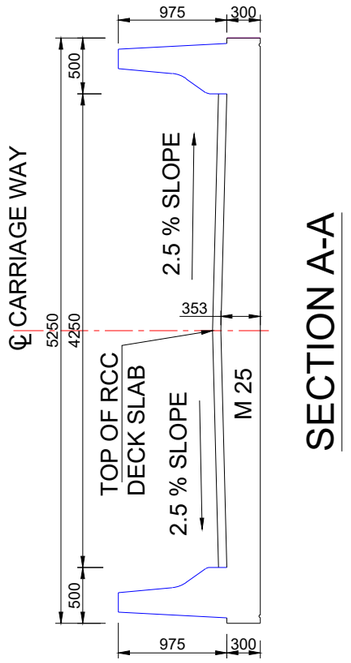
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 6.850 ON KAILASHPUR SUB DY. (OFFTAKE RD -9+050 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-04/SLR/BRG. 2 of 2



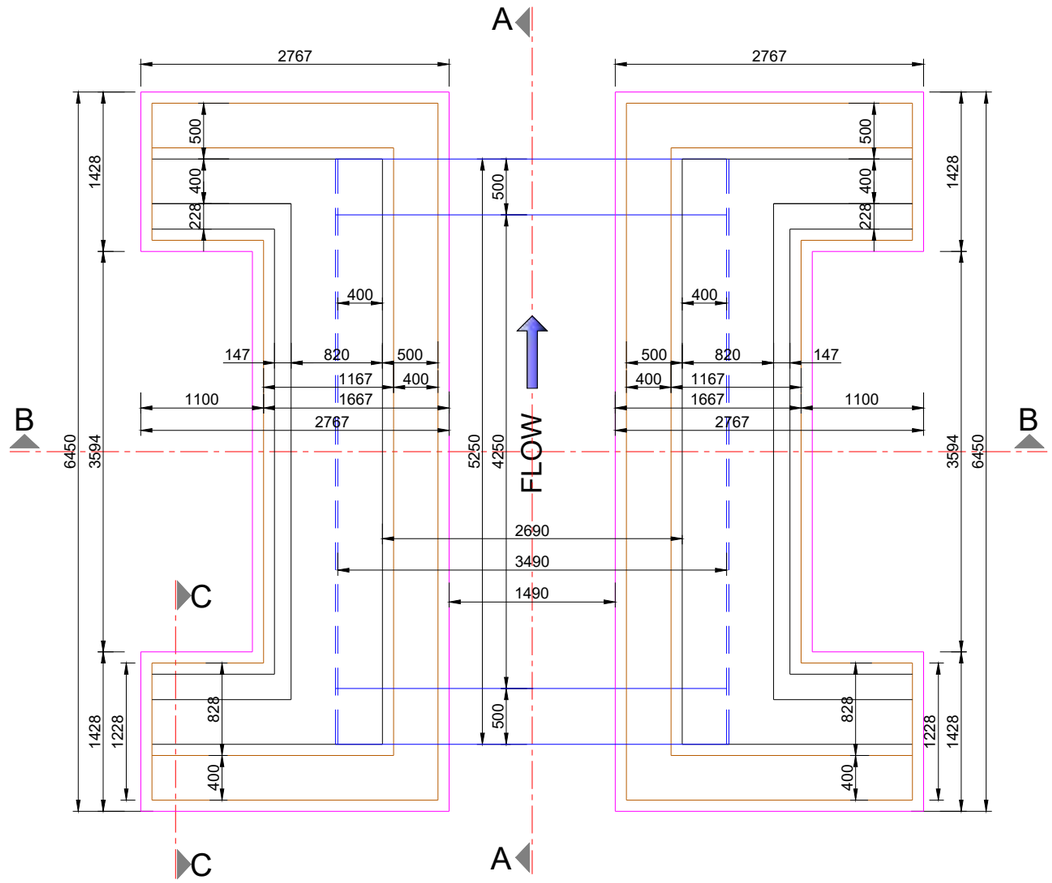
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.360 CUMECS
BED WIDTH	2.200 M
WATER DEPTH	0.490 M
FREE BOARD	0.500 M
BED LEVEL	101.139 M
F.S.L.	101.629 M
BANK R.L.	102.129 M
CARRIAGE WAY	4.250 M
ROAD LEVEL	102.557 M
GROUND LEVEL	101.580 M

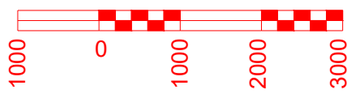
NOTES:-

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

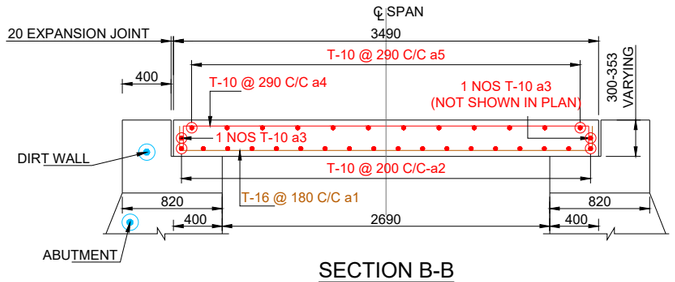
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

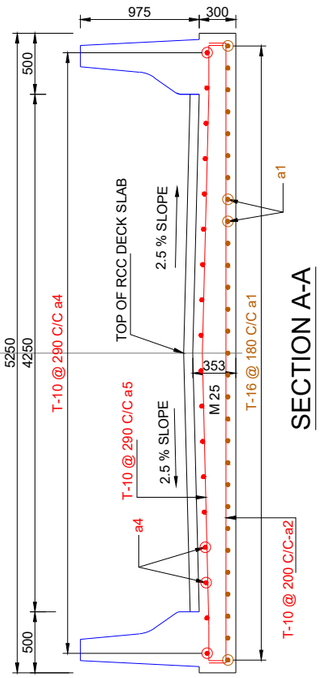
SCALE A:-



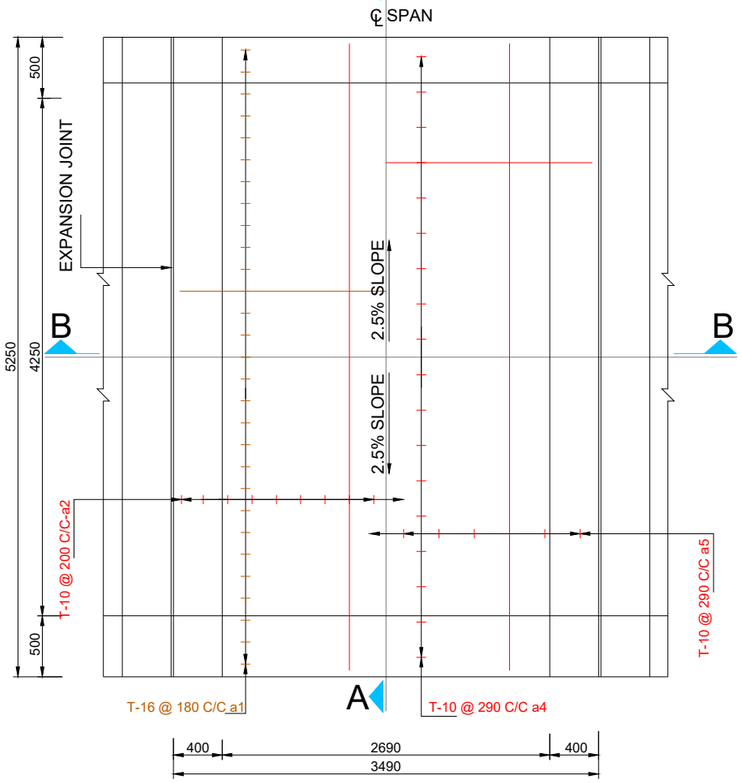
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 8.600 ON DHARAMPUR SUB DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-08/SLR/BRG. 1 of 2



SECTION B-B
(SCALE A)

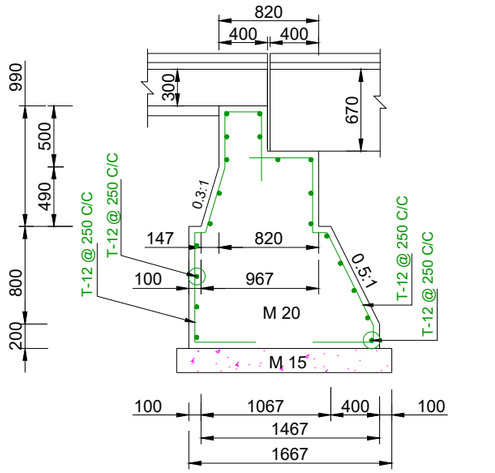


SECTION A-A

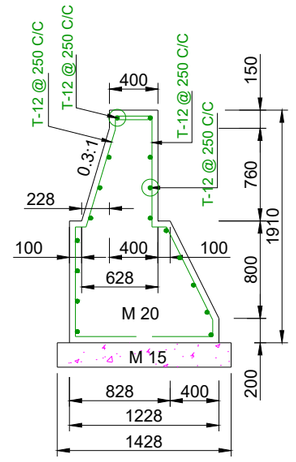


BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



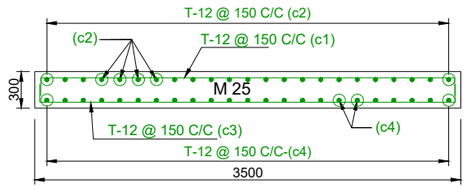
REINFORCEMENT DETAIL - ABUTMENT
(SCALE A)



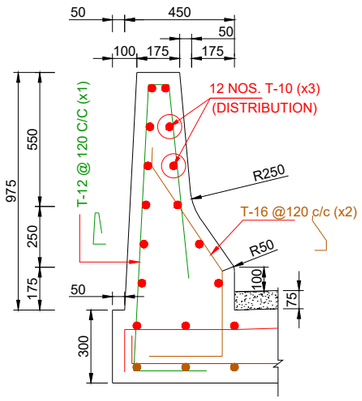
REINFORCEMENT DETAIL - RETURN WALL
(SCALE A)

BAR BENDING SCHEDULE

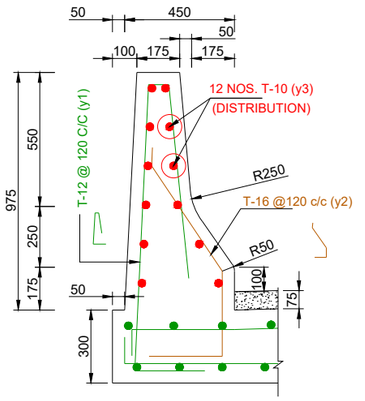
S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	R=80, 200, 3390, 200	16	180	29
2	a2	R=50, 200, 5150, 200	10	200	18
3	a3	5150	10	-	2
4	a4	3390, R=40, 200, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	12
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	35X2
2	c2	150, 450, 2125, 2125, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	35X2
4	c4	150, 5150, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1146, 800, 300	12	120	29X2
2	x2	75, 520, 379, 300	16	120	29X2
3	x3	3390	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



SECTION OF APPROACH SLAB
(SCALE A)



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

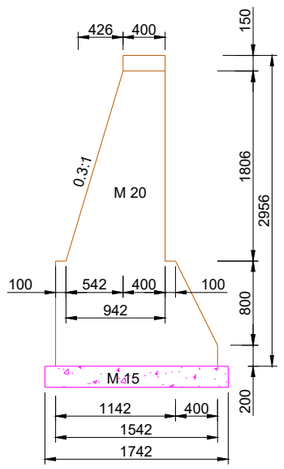


REINFORCEMENT DETAILS OF
CRASH BARRIER - APPROACH SLAB
(SCALE B)

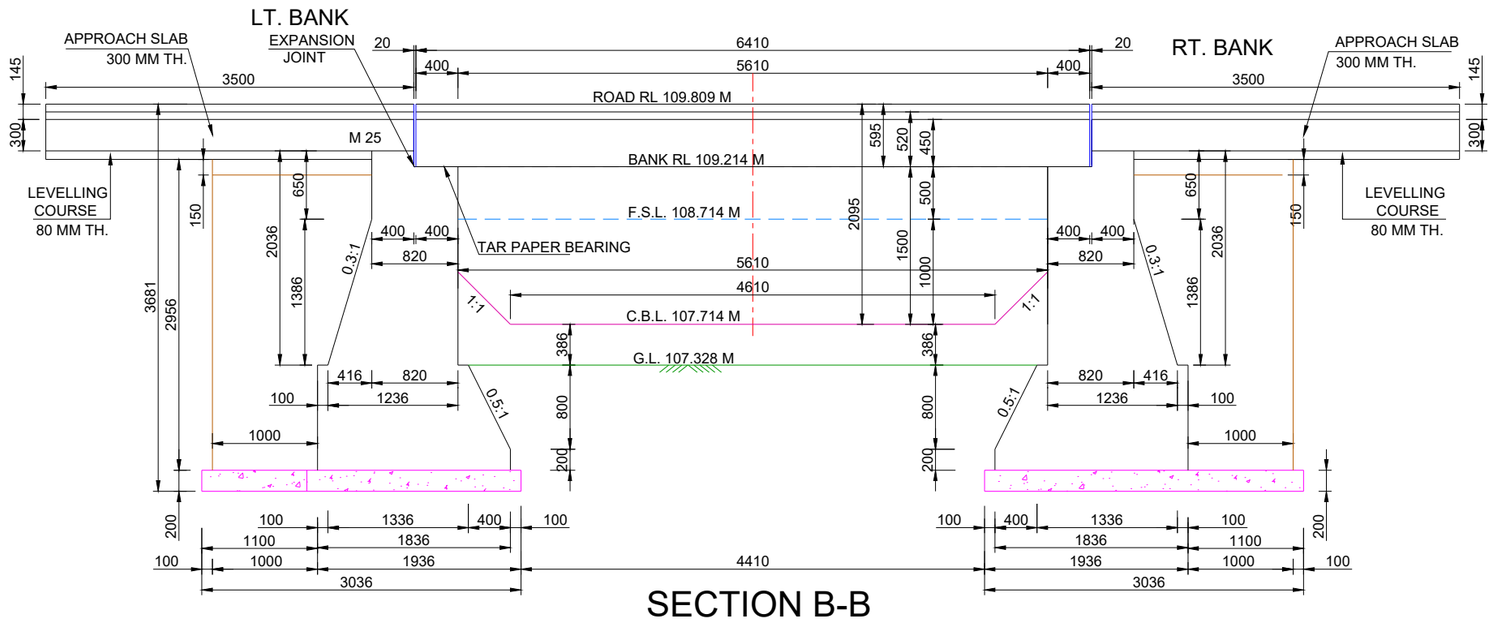
SCALE A:- 0 400 400 800 1200

SCALE B:- 200 0 200 400 600

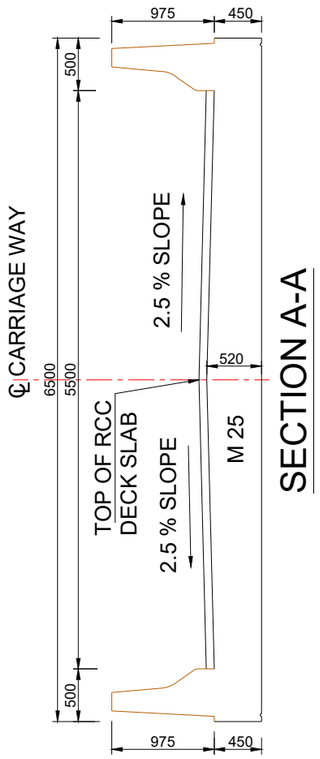
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 8.600 ON DHARAMPUR SUB DY. (OFFTAKE RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-08/SLR/BRG. 2 of 2



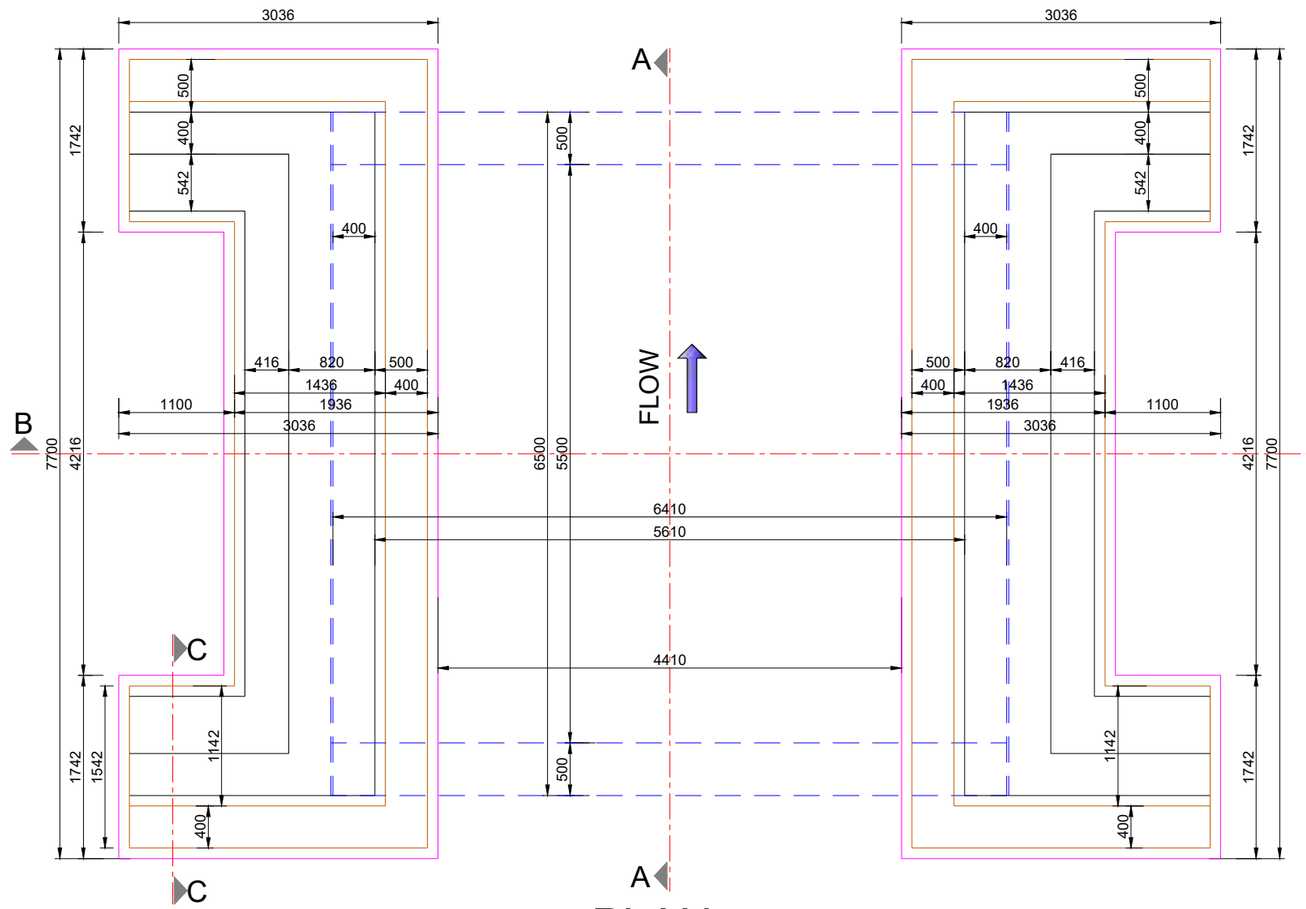
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	2.470 CUMECS
BED WIDTH	4.610 M
WATER DEPTH	1.000 M
FREE BOARD	0.500 M
BED LEVEL	107.714 M
F.S.L.	108.714 M
BANK R.L.	109.214 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	109.809 M
GROUND LEVEL	107.328 M

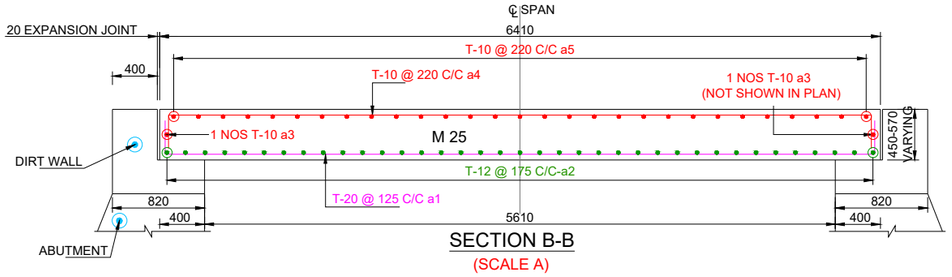
NOTES:-

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

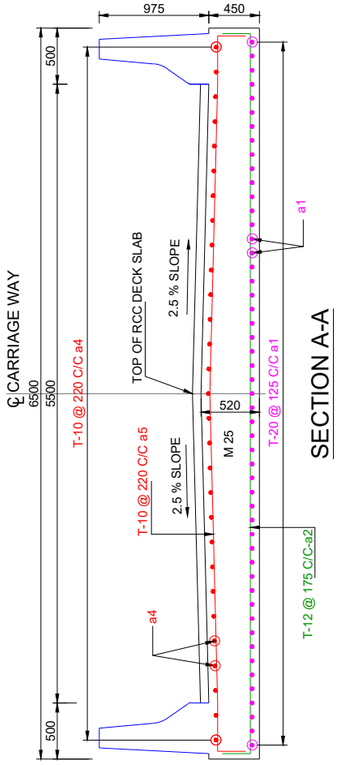
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
      a) C = 0 KG/SQCM.
      b) Ø = 30°
      c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

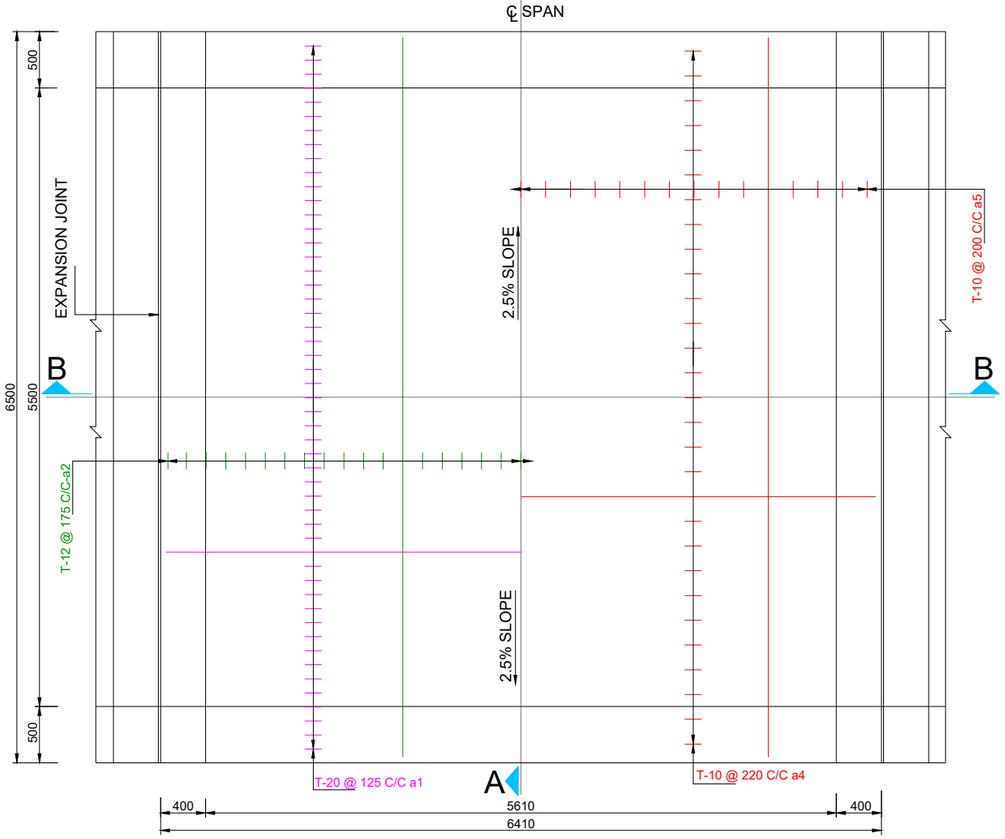
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 0.460 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



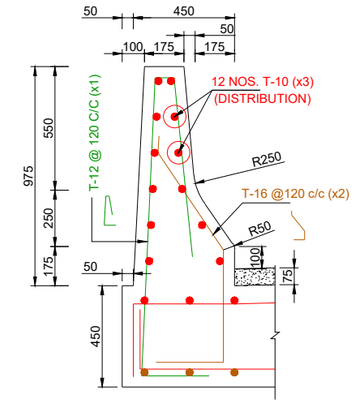
SECTION B-B
(SCALE A)



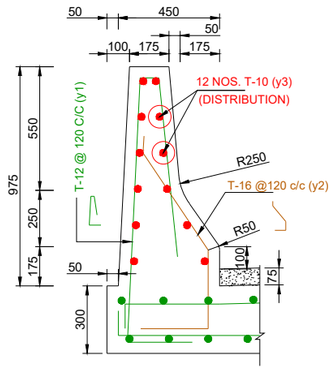
SECTION A-A



PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



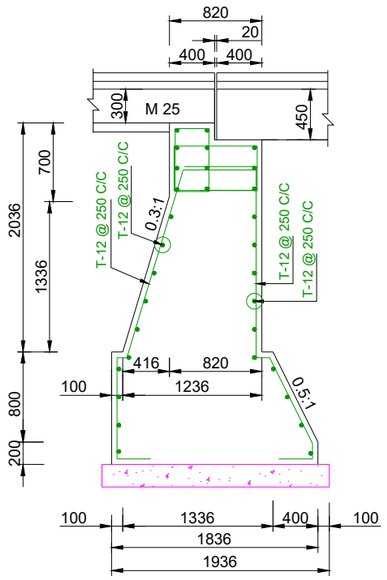
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)



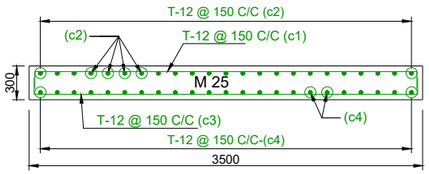
REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB
(SCALE B)

BAR BENDING SCHEDULE

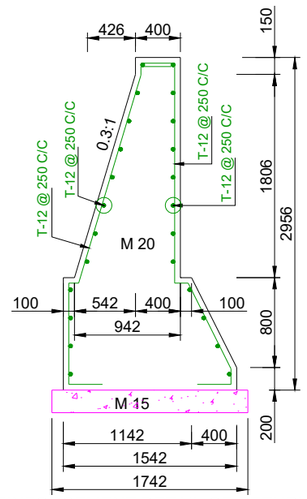
S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	325, R=80, 6310, 325	20	125	51
2	a2	250, R=50, 6400, 250	12	175	37
3	a3	6400	10	-	2
4	a4	325, 6310, R=40, 325	10	220	29
5	a5	250, 450, 2750, 2750, 450, 250	10	220	29
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1296, 800, 300	12	120	53X2
2	x2	75, 520, 530, 300	16	120	53X2
3	x3	6310	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



SECTION OF APPROACH SLAB
(SCALE A)

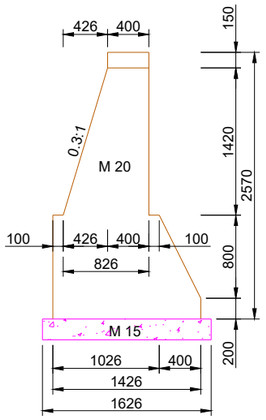


REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

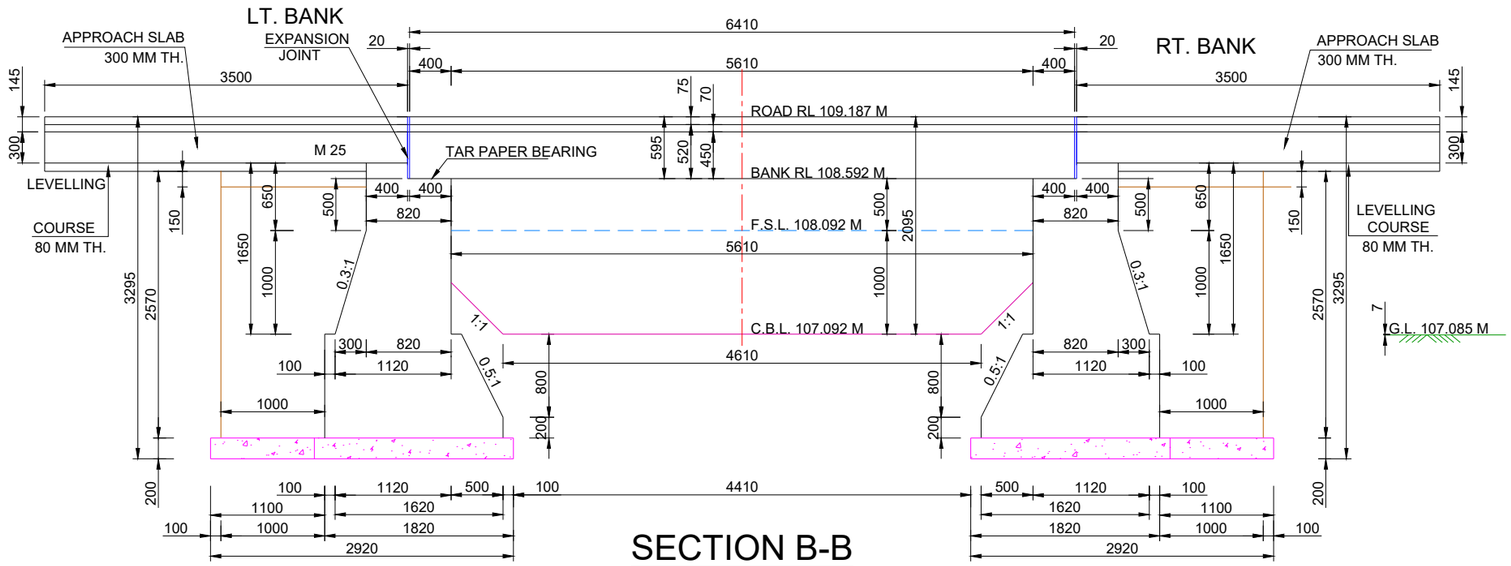
SCALE A:-
400 0 400 800 1200

SCALE B:-
200 0 200 400 600

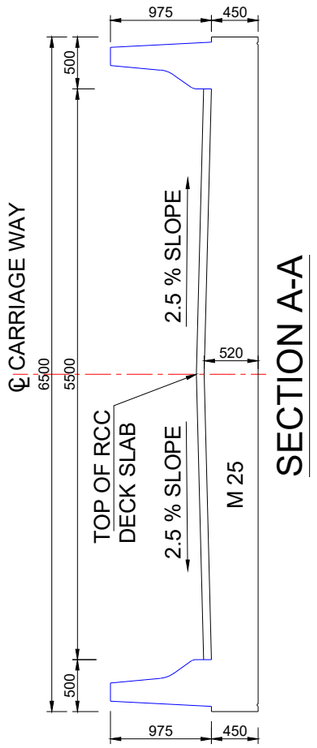
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 0.460 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



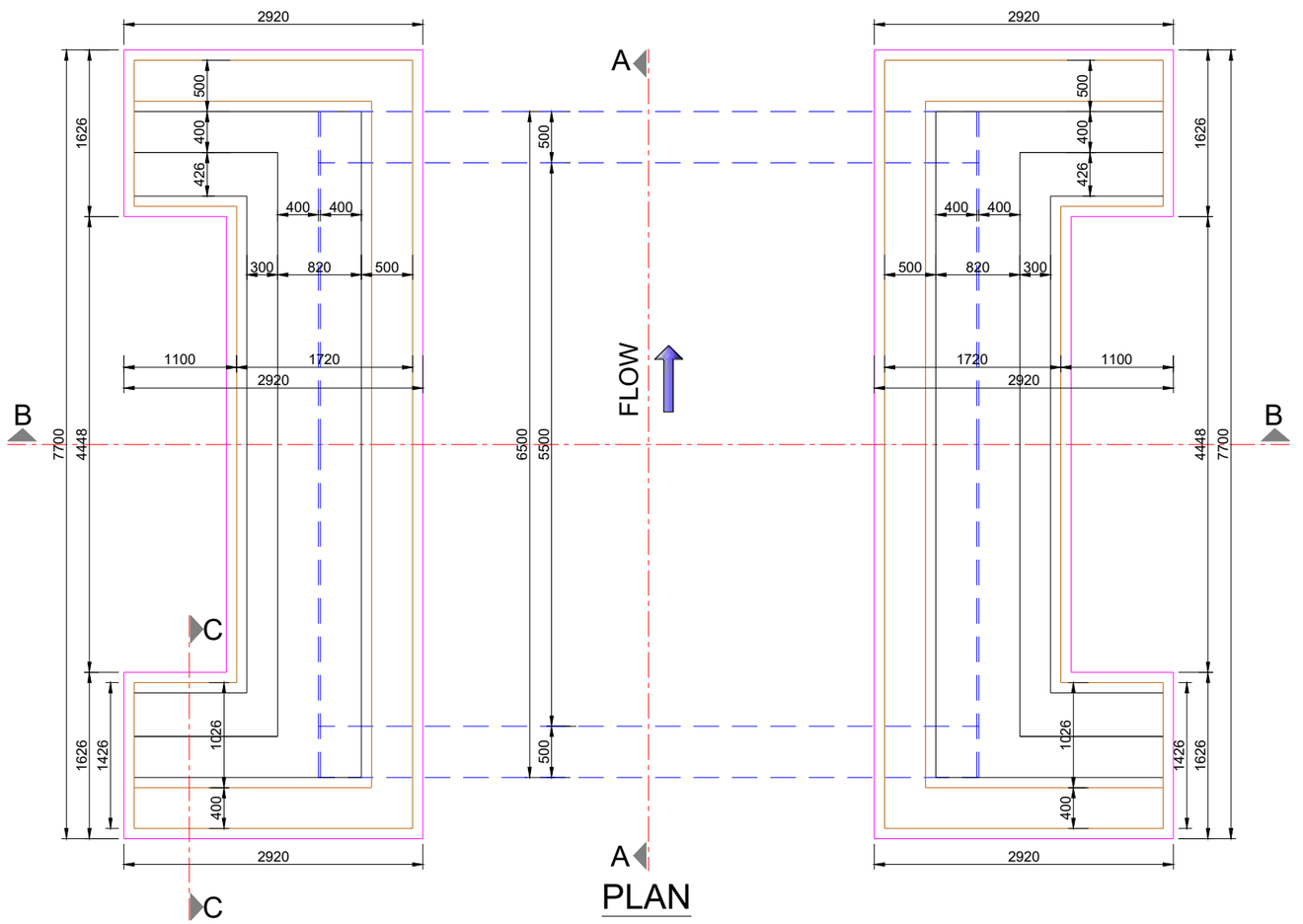
SECTION C-C



SECTION B-B



SECTION A-A



DESIGN DATA:-

DESIGN DISCHARGE	2.470 CUMECS
BED WIDTH	4.610 M
WATER DEPTH	1.000 M
FREE BOARD	0.500M
BED LEVEL	107.092 M
F.S.L.	108.092 M
BANK R.L.	108.592 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	109.187 M
GROUND LEVEL	107.085 M

NOTES:-

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3. 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)

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6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
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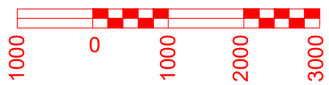
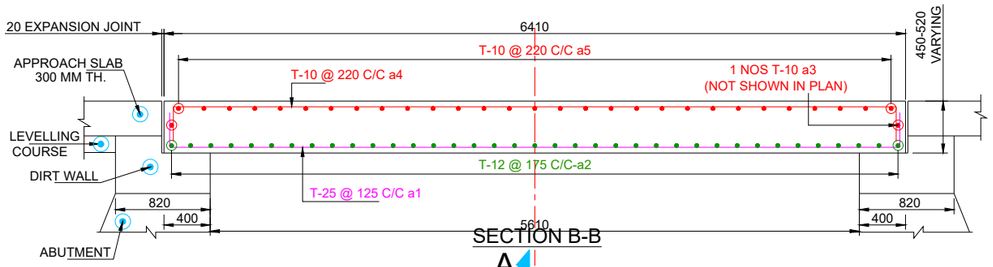
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

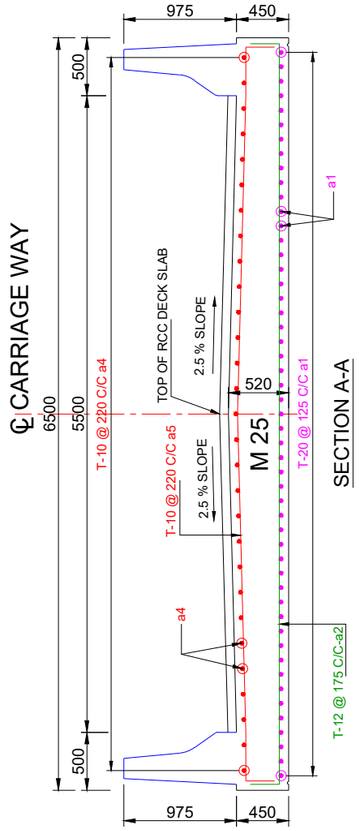
SCALE A:-



Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 2.045 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2

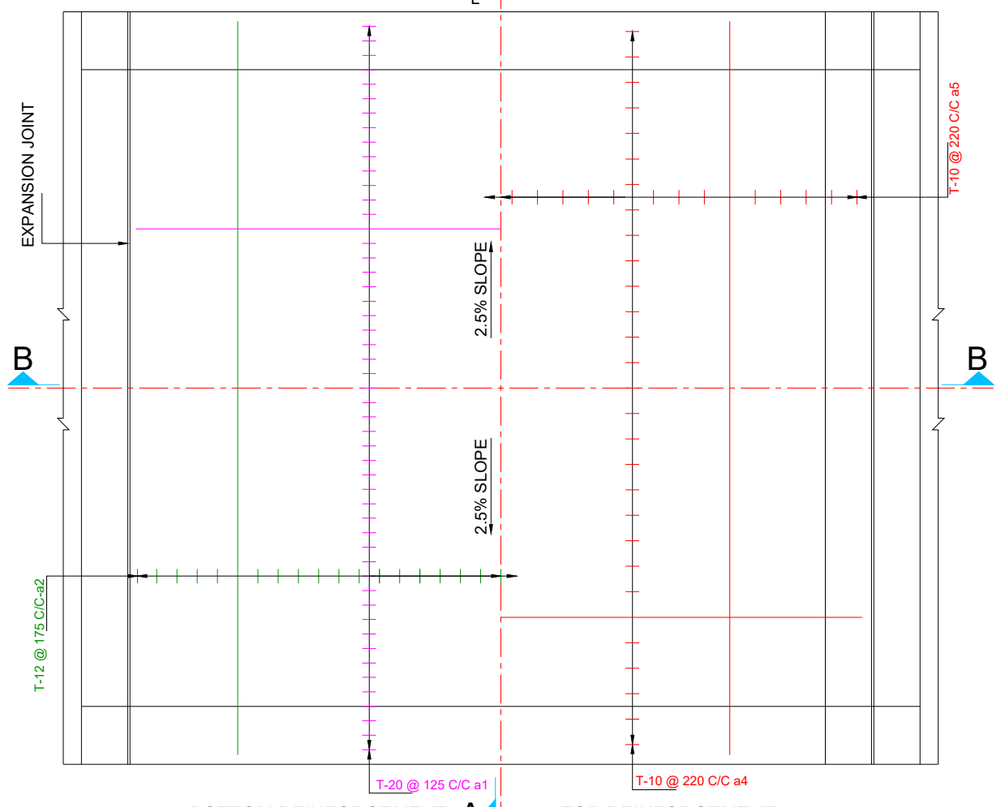


SECTION B-B



℄ CARRIAGE WAY

SECTION A-A

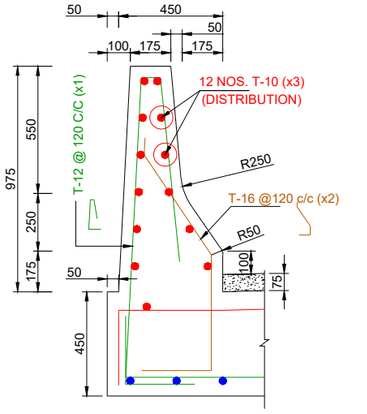


℄ SPAN

BOTTOM REINFORCEMENT A TOP REINFORCEMENT

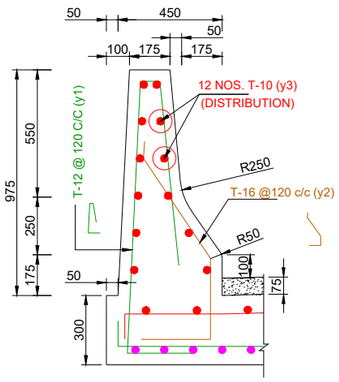
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)

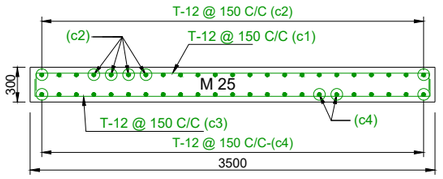


REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)

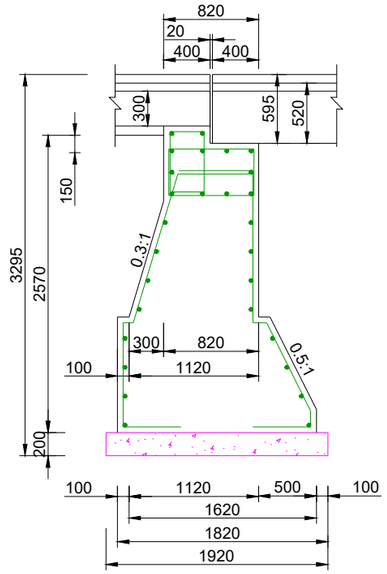
BAR BENDING SCHEDULE

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	R=80, 300, 6310, 325	20	125	51
2	a2	R=50, 250, 6340, 250	12	175	37
3	a3	6400	10	-	2
4	a4	6282, R=40, 250, 250	10	220	29
5	a5	250, 450, 2700, 2700, 450, 250	10	220	29
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1295, 800, 300	12	120	53X2
2	x2	75, 520, 529, 300	16	120	53X2
3	x3	6310	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



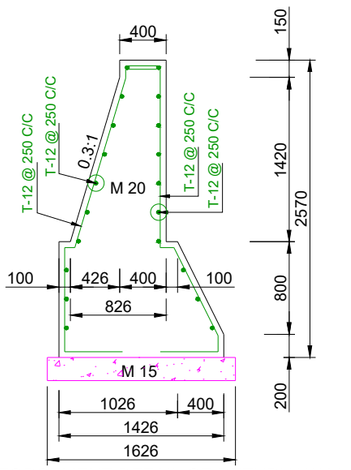
SECTION OF APPROACH SLAB

(SCALE A)



REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)



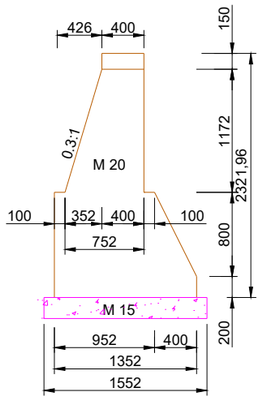
REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)

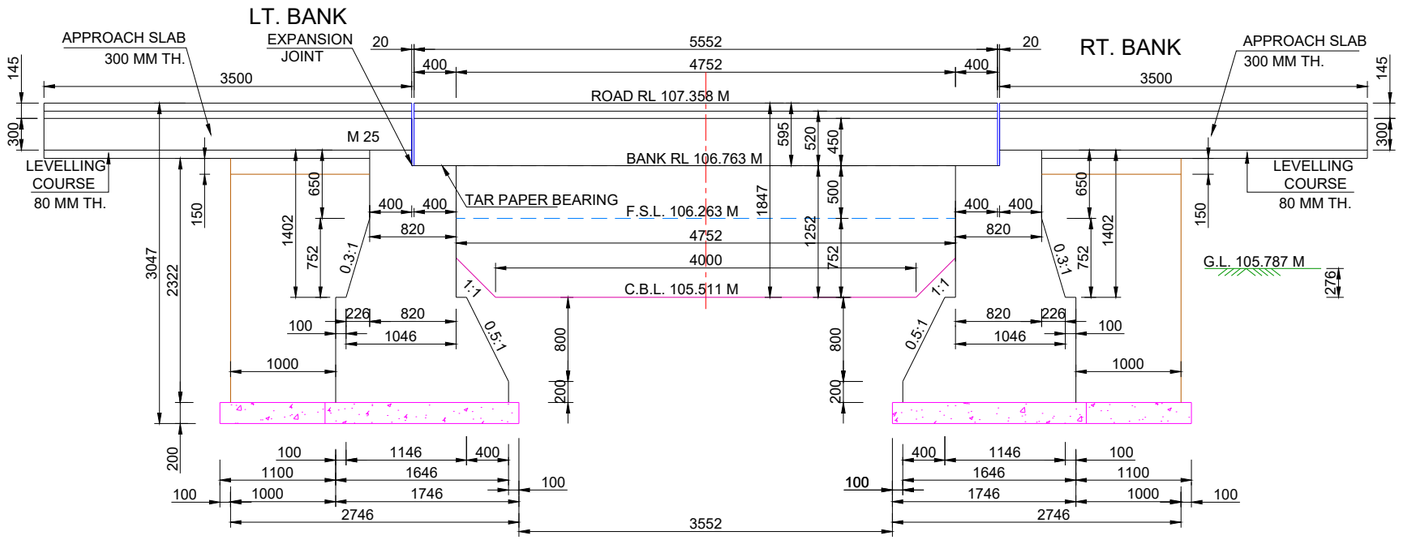
SCALE A:- 0 400 400 800 1200

SCALE B:- 200 0 200 400 600

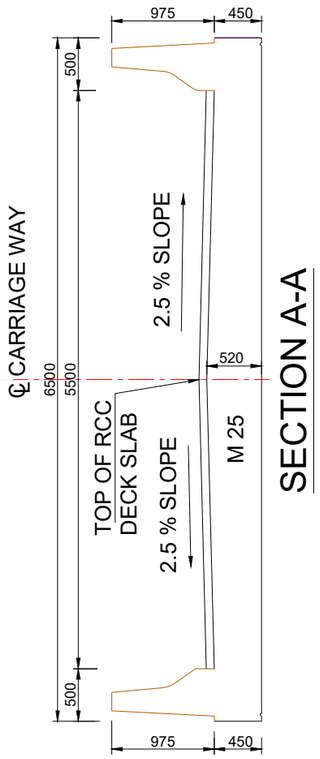
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 2.045 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



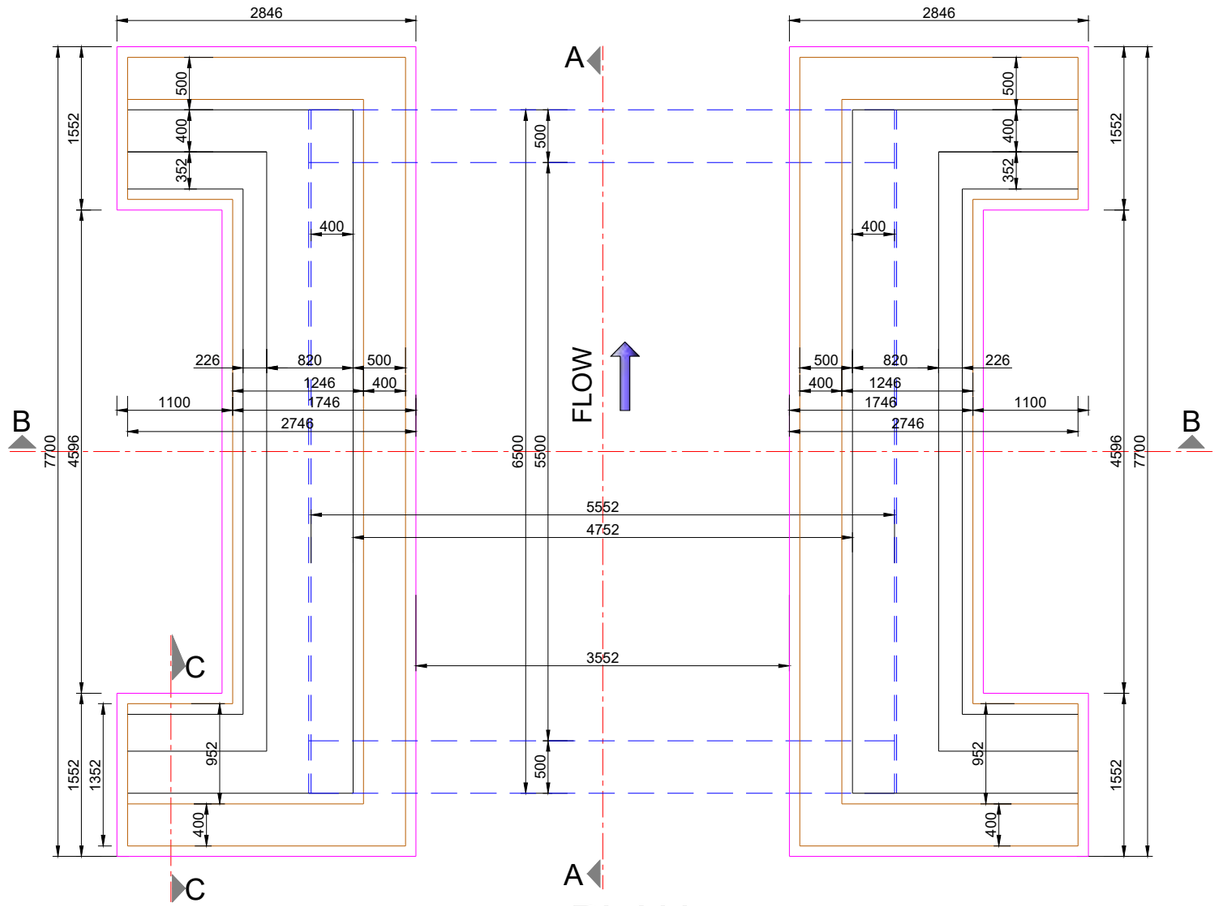
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	1.350 CUMECS
BED WIDTH	4.000 M
WATER DEPTH	0.752 M
FREE BOARD	0.500 M
BED LEVEL	105.511 M
F.S.L.	106.263 M
BANK R.L.	106.763 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	107.358 M
GROUND LEVEL	105.787 M

NOTES:-

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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)
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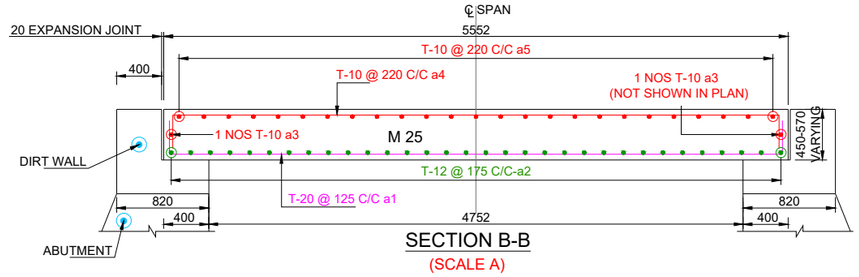
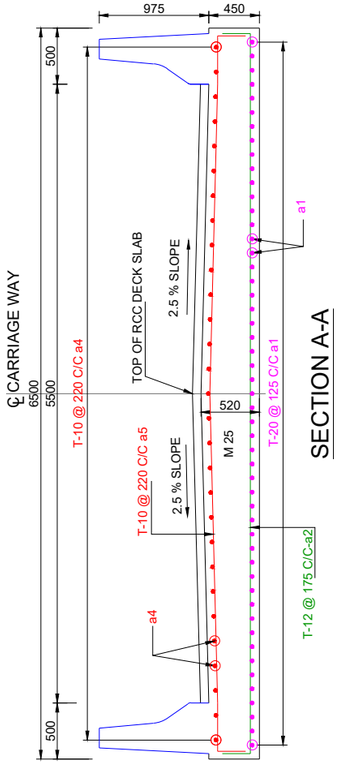
5. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHER WISE.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
      a) C = 0 KG/SQCM.
      b) Ø = 30°
      c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

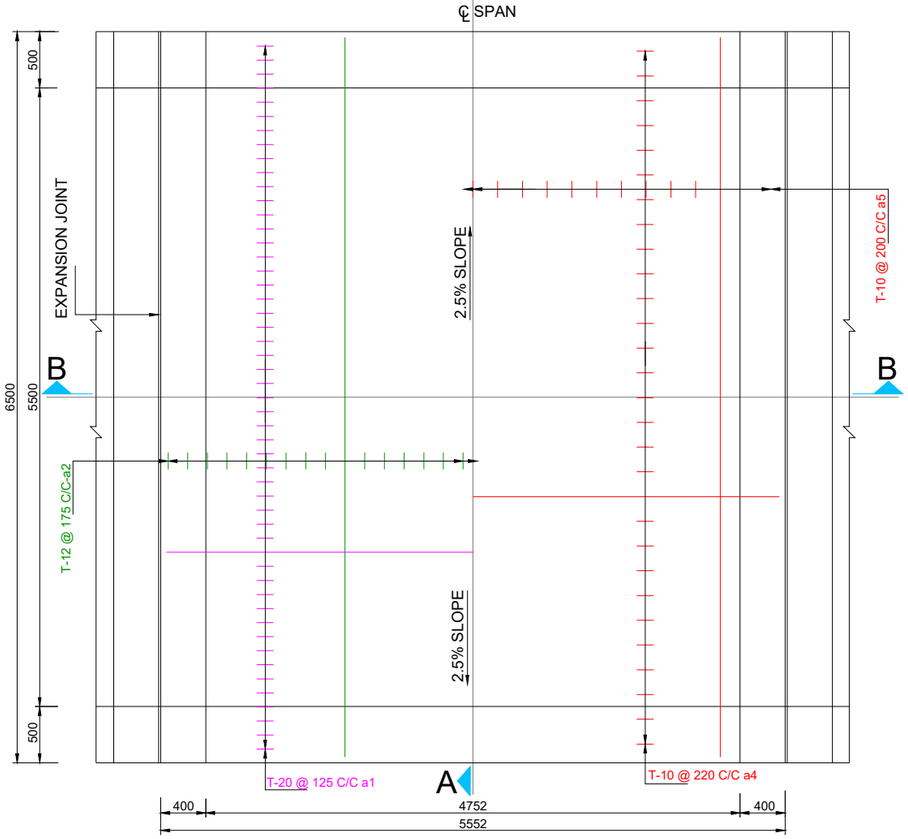
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 3.850 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



SECTION B-B
(SCALE A)

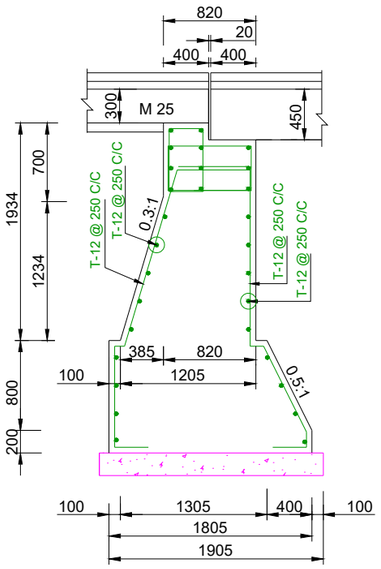


SECTION A-A

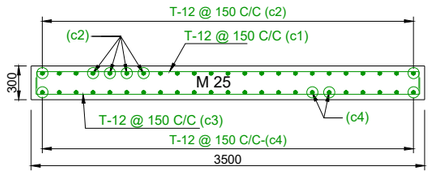


BOTTOM REINFORCEMENT TOP REINFORCEMENT

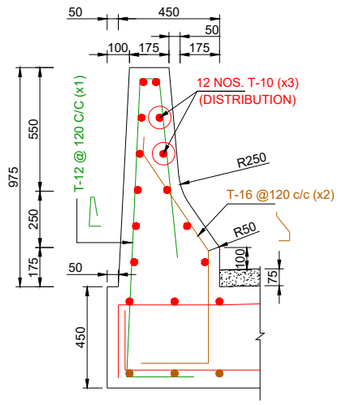
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



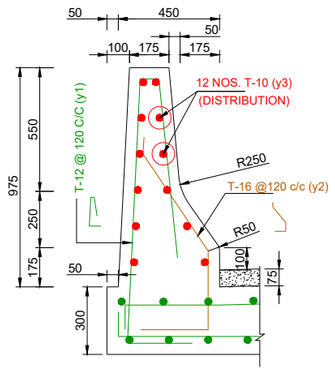
REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



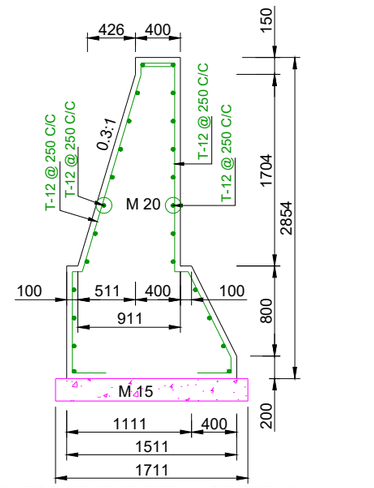
SECTION OF APPROACH SLAB
(SCALE A)



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



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



REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

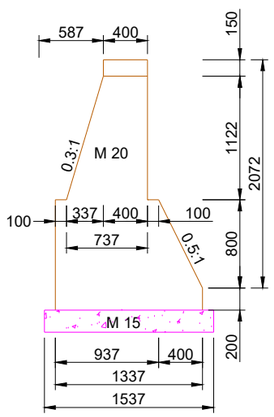
BAR BENDING SCHEDULE

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	R=80, 325, 6310, 325	20	125	51
2	a2	R=50, 250, 6400, 250	12	175	37
3	a3	6400	10	-	2
4	a4	325, 6310, R=40, 325	10	220	29
5	a5	250, 450, 2750, 2750, 450, 250	10	220	29
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1296, 800, 300	12	120	45X2
2	x2	75, 520, 300, 530	16	120	45X2
3	x3	5452	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 300, 379	16	120	29X2X2
3	y3	3400	10	-	12X2X2

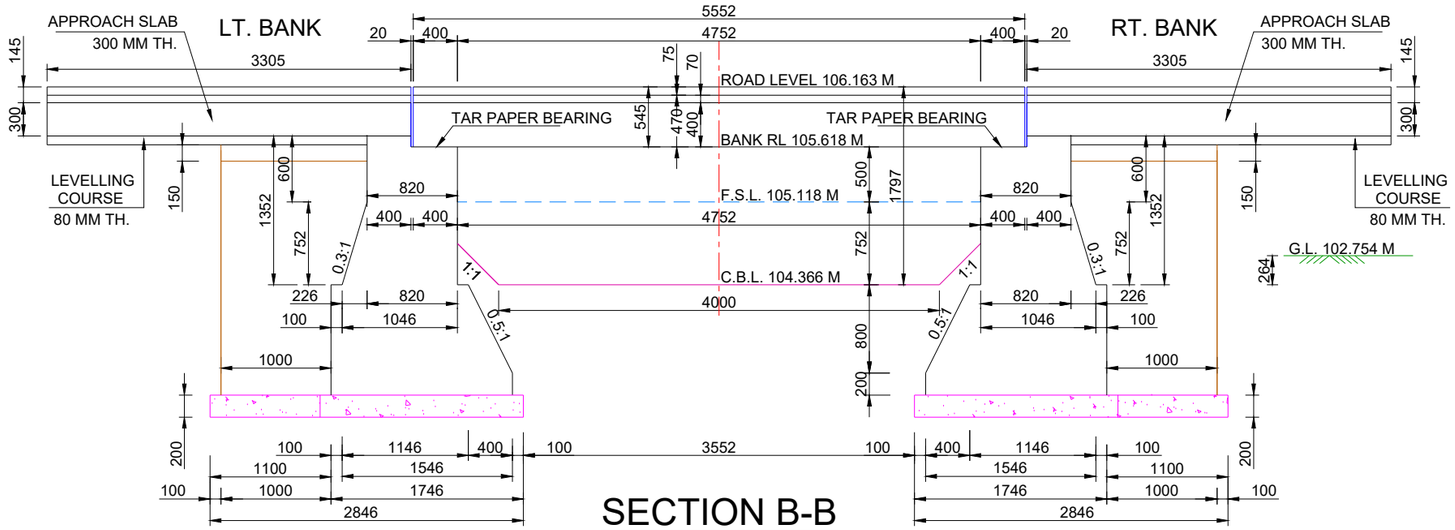
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

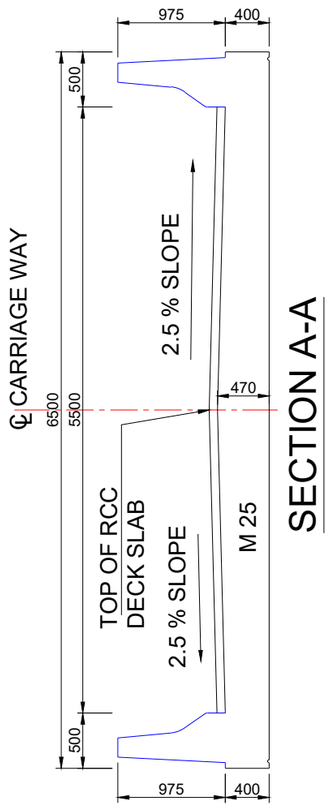
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 3.850 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



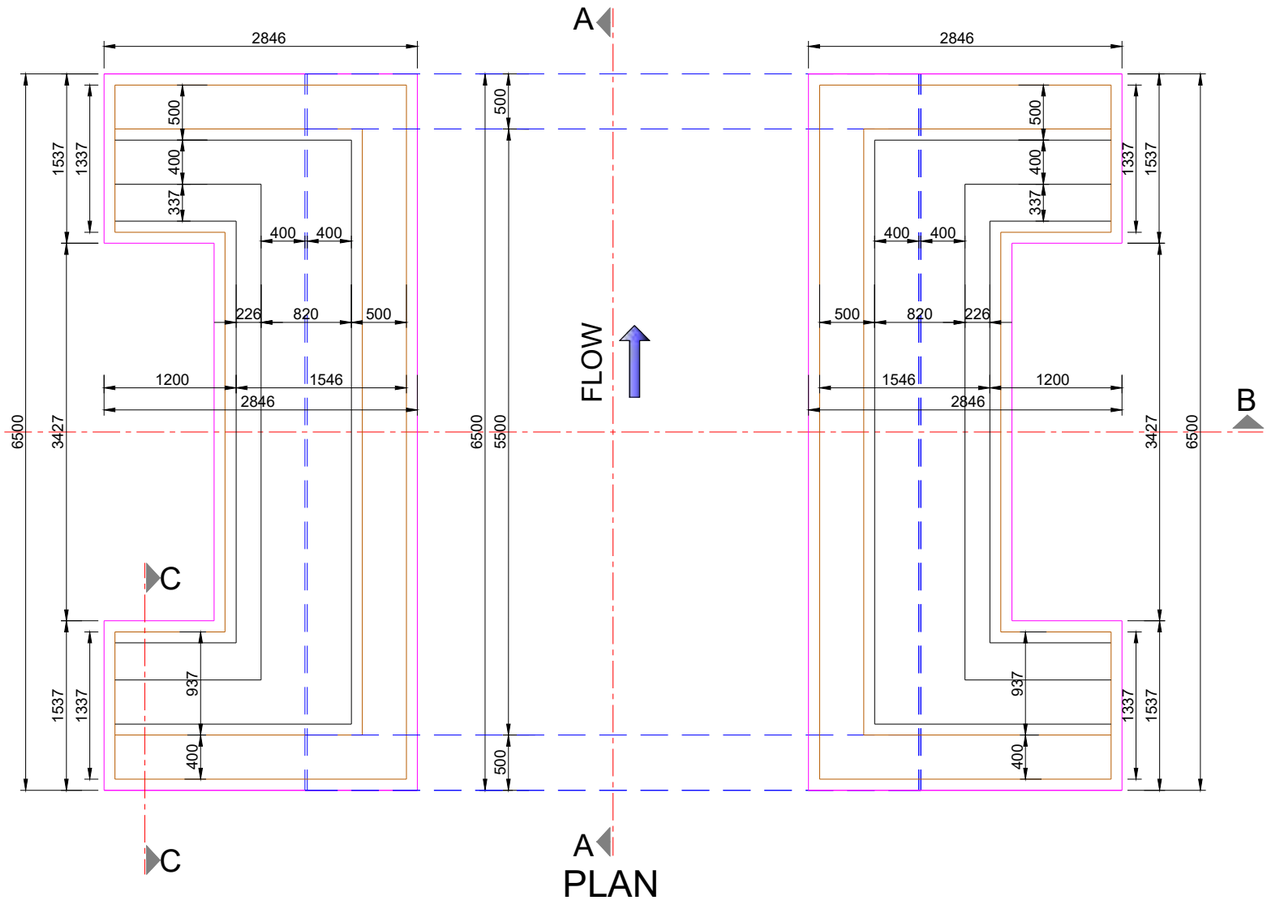
SECTION C-C



SECTION B-B



SECTION A-A



DESIGN DATA:-

DESIGN DISCHARGE	1.350 CUMECS
BED WIDTH	4.000 M
WATER DEPTH	0.752 M
FREE BOARD	0.500 M
BED LEVEL	104.366 M
F.S.L.	105.118 M
BANK R.L.	105.618 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	106.163 M
GROUND LEVEL	104.630 M

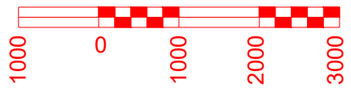
NOTES:-

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

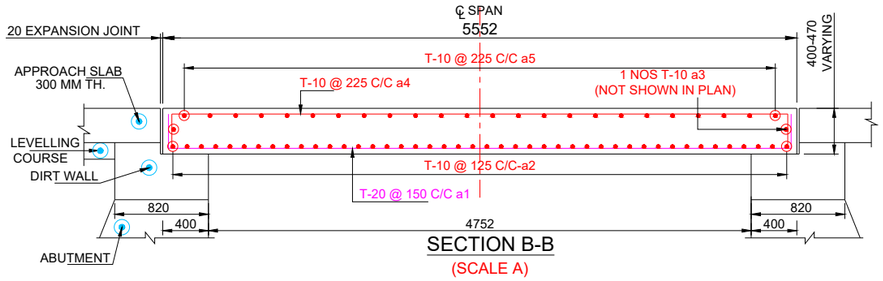
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

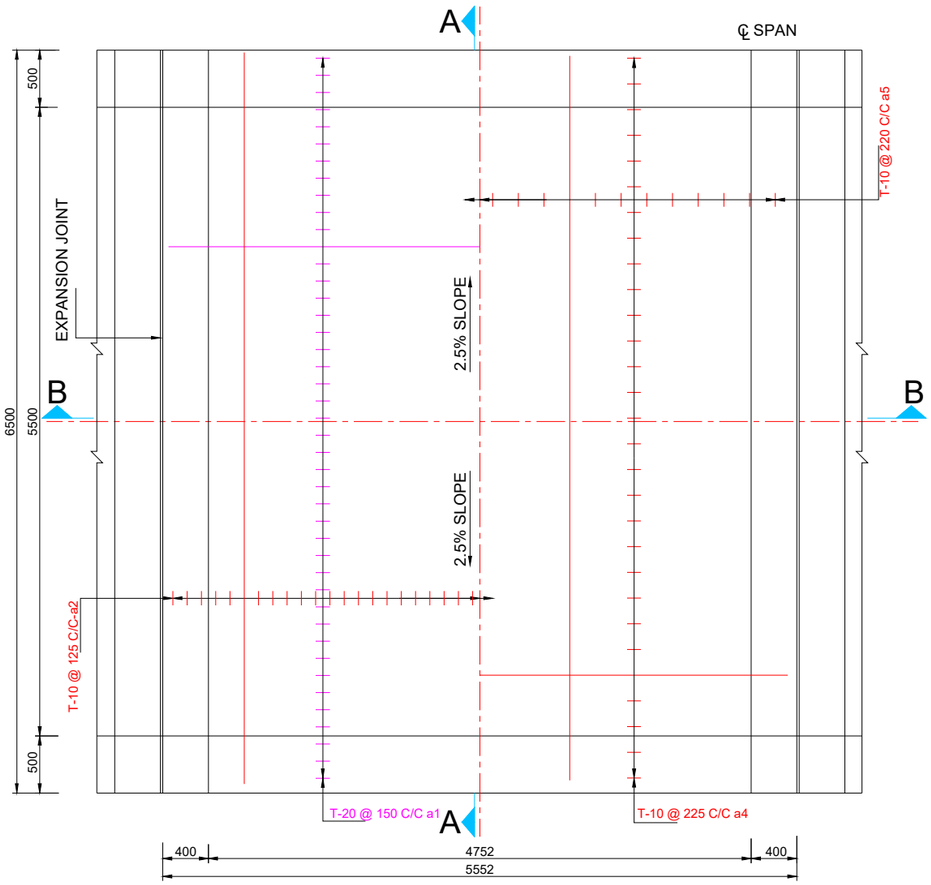


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 5.005 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



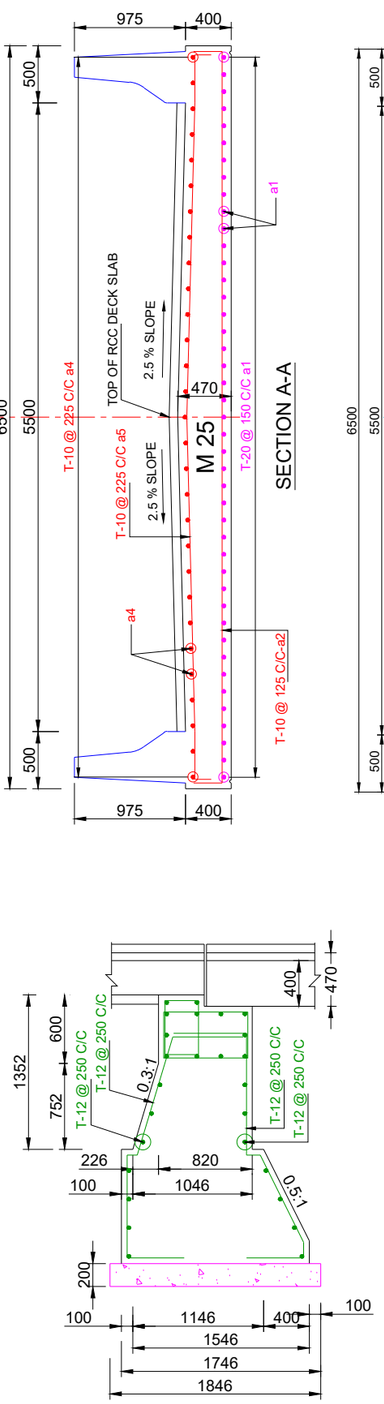
SECTION B-B
(SCALE A)

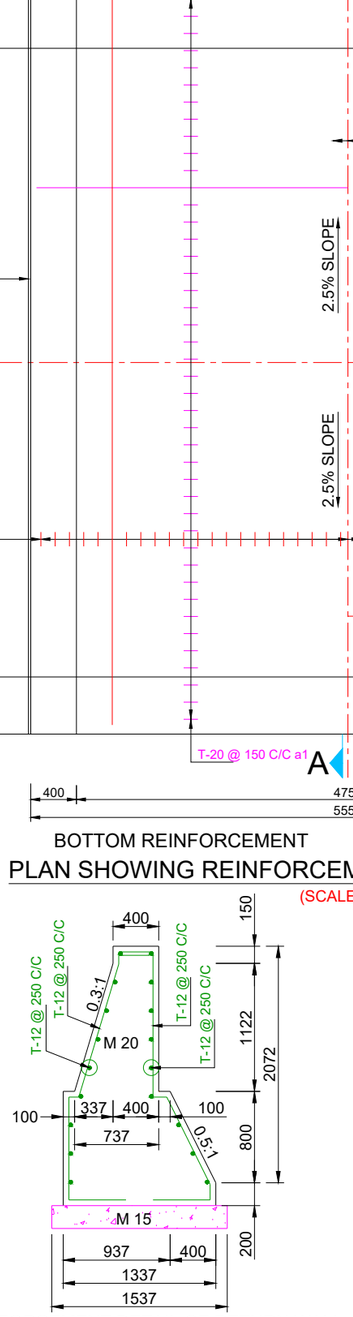
SECTION A-A



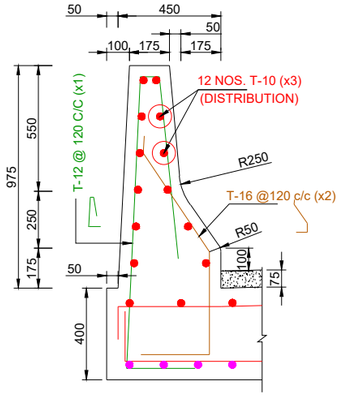
BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

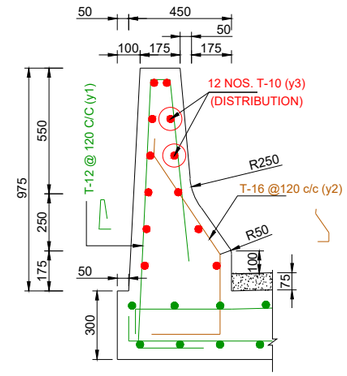




REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)



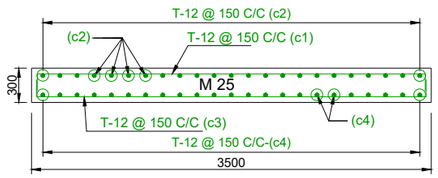
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)



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	R=80, 300, 5452, 300	20	150	43
2	a2	R=50, 250, 6400, 250	10	125	44
3	a3	6400	10	-	2
4	a4	300, 5392, R=40, 300	10	225	29
5	a5	145, 450, 2750, 2750, 450, 145	10	225	24
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1246, 800, 300	12	120	46X2
2	x2	75, 520, 479, 300	16	120	46X2
3	x3	5452	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2

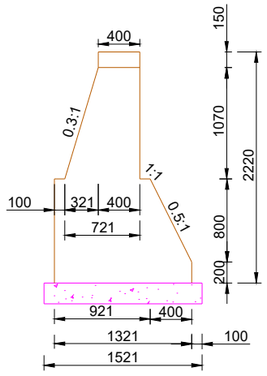


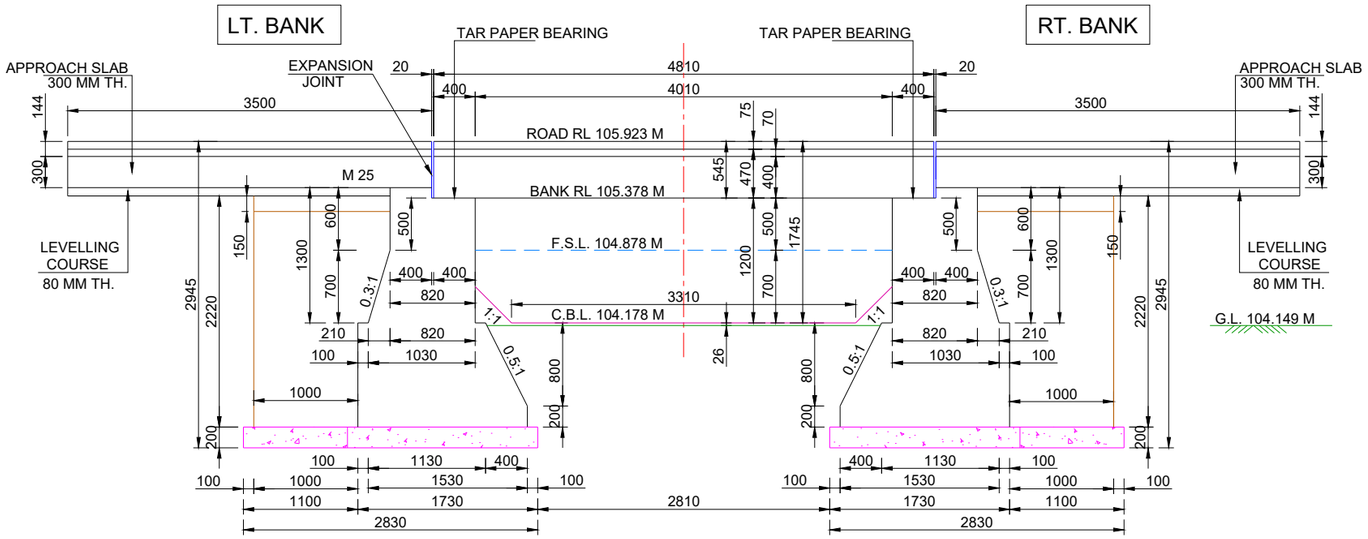
SECTION OF APPROACH SLAB
(SCALE A)

SCALE A:- 400 0 400 800 1200

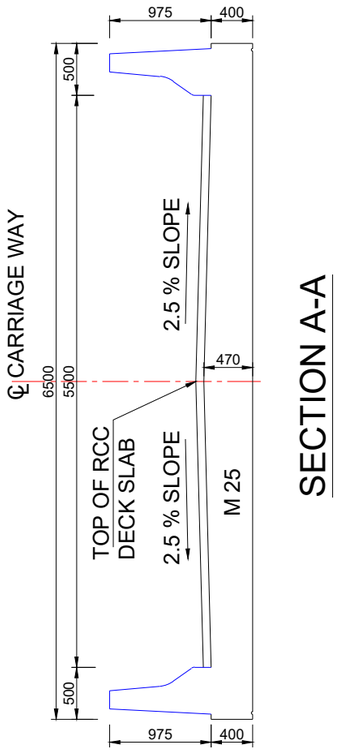
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 5.005 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2

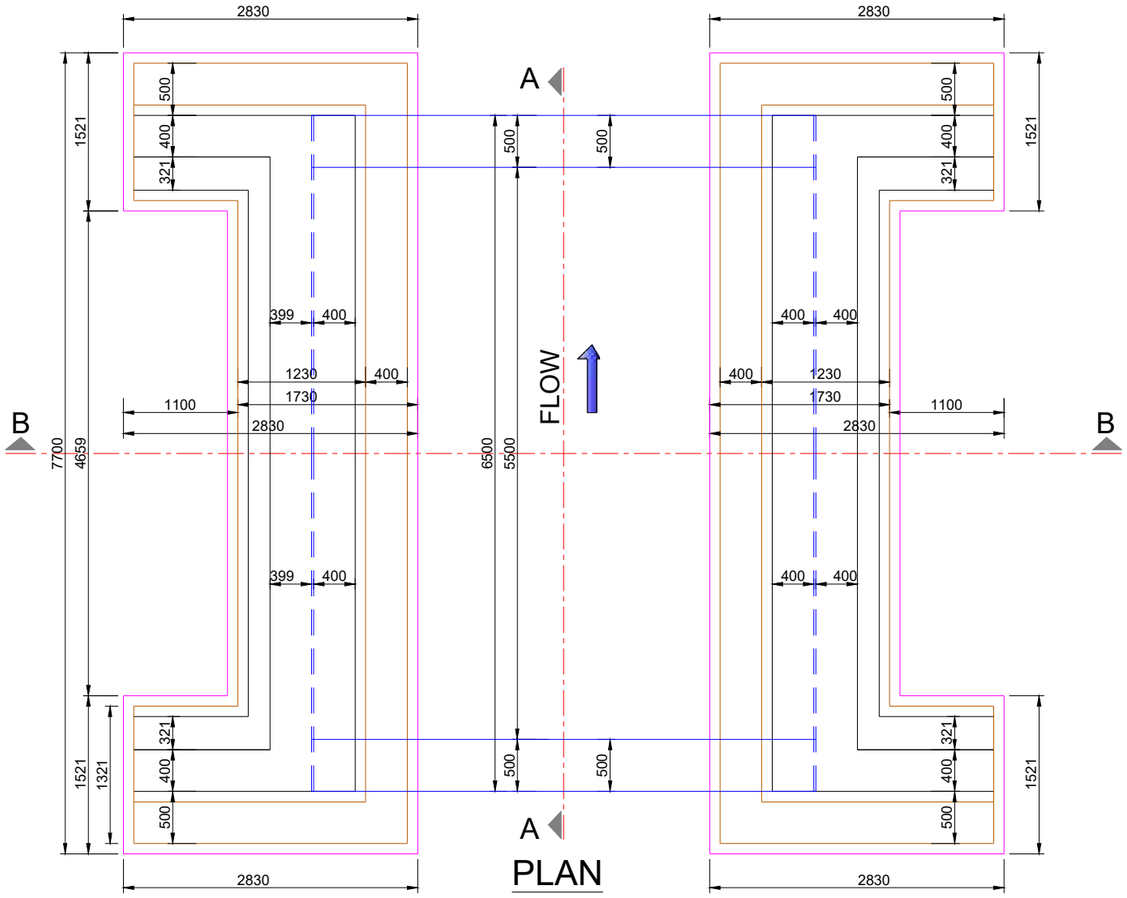




SECTION B-B



SECTION A-A



DESIGN DATA:-

DESIGN DISCHARGE	0.98 CUMECS
BED WIDTH	3.310 M
WATER DEPTH	0.700 M
FREE BOARD	0.500 M
BED LEVEL	104.178 M
F.S.L.	104.878 M
BANK R.L.	105.378 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	105.923 M
GROUND LEVEL	104.149 M

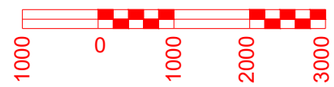
NOTES:-

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

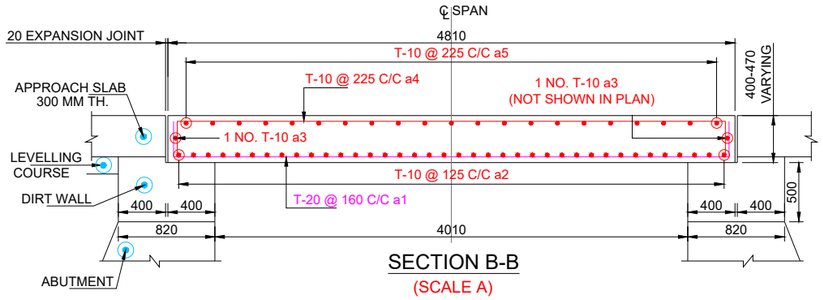
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

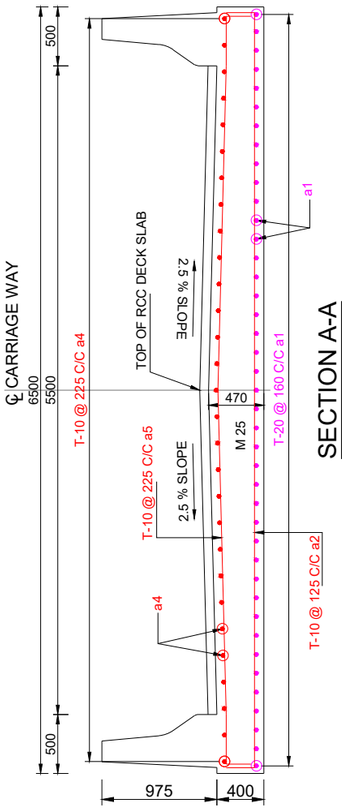


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 5.944 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



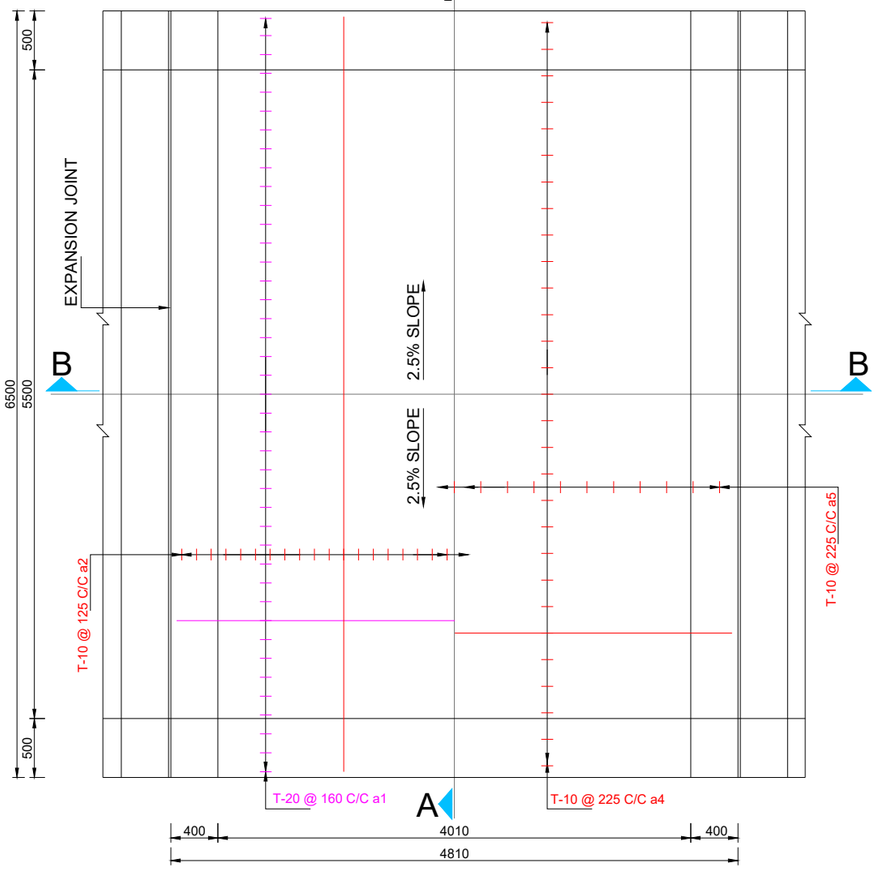
SECTION B-B

(SCALE A)



SECTION A-A

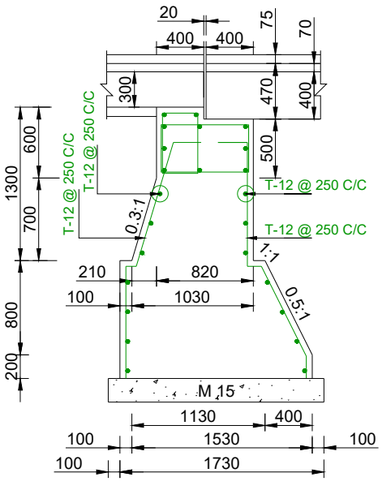
(SCALE A)



BOTTOM REINFORCEMENT TOP REINFORCEMENT

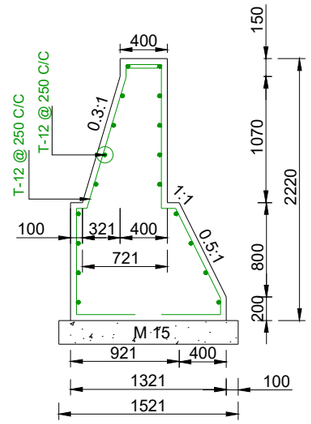
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)

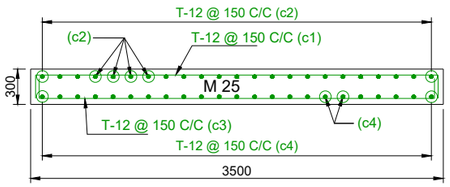


REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)

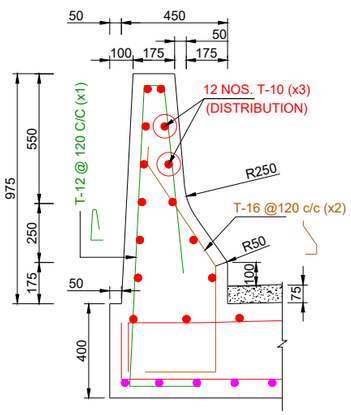
BAR BENDING SCHEDULE

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	300, R=60, 4710, 300	20	160	41
2	a2	250, R=40, 6400, 250	10	125	38
3	a3	6400	10	-	2
4	a4	4710, 300, R=40, 300	10	225	29
5	a5	250, 450, 2750, 2750, 450, 250	10	225	21
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1277, 800, 300	12	120	40X2
2	x2	75, 520, 350, 300	16	120	40X2
3	x3	4710	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



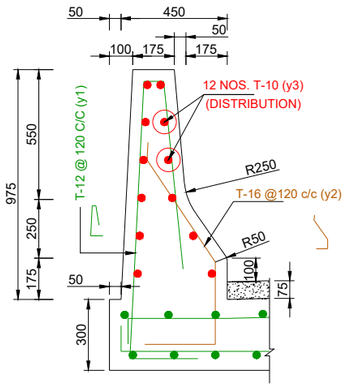
SECTION OF APPROACH SLAB

(SCALE A)



REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)

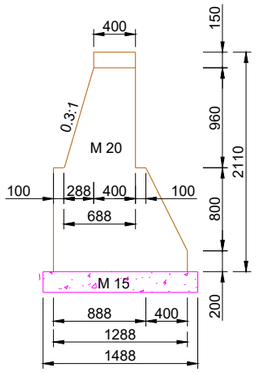
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

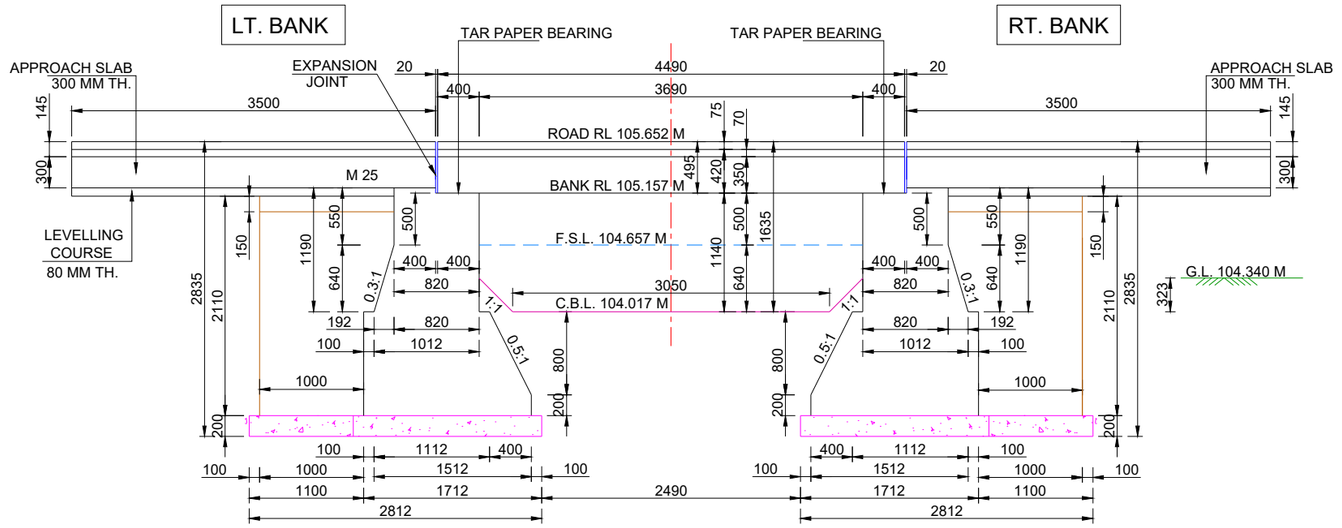
Prepared by :-

WAPCOS LTD.

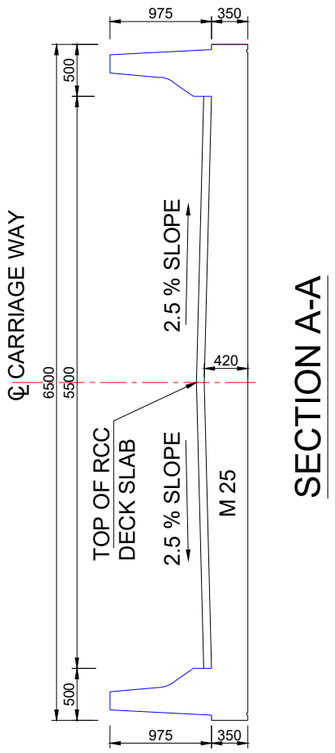
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 5.944 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



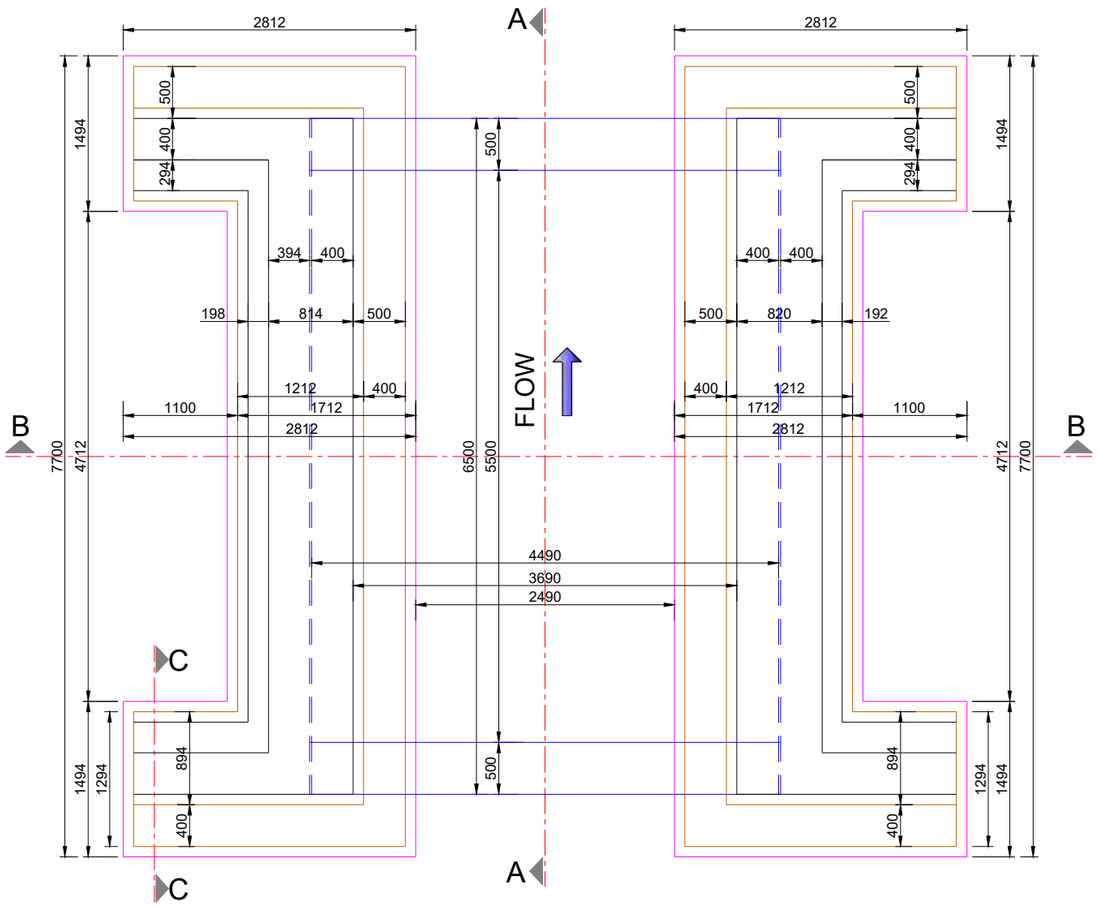
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.78 CUMECS
BED WIDTH	3.050 M
WATER DEPTH	0.640 M
FREE BOARD	0.500 M
BED LEVEL	104.017 M
F.S.L.	104.657 M
BANK R.L.	105.157 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	105.652 M
GROUND LEVEL	104.340 M

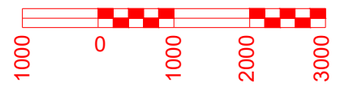
NOTES:-

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

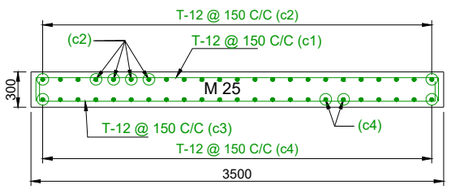
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

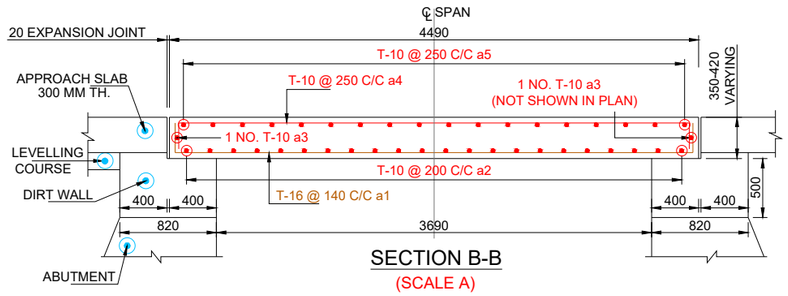
SCALE A:-



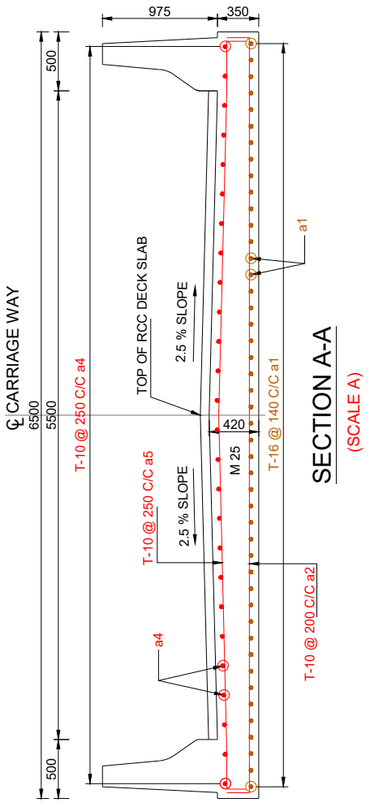
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 6.750 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



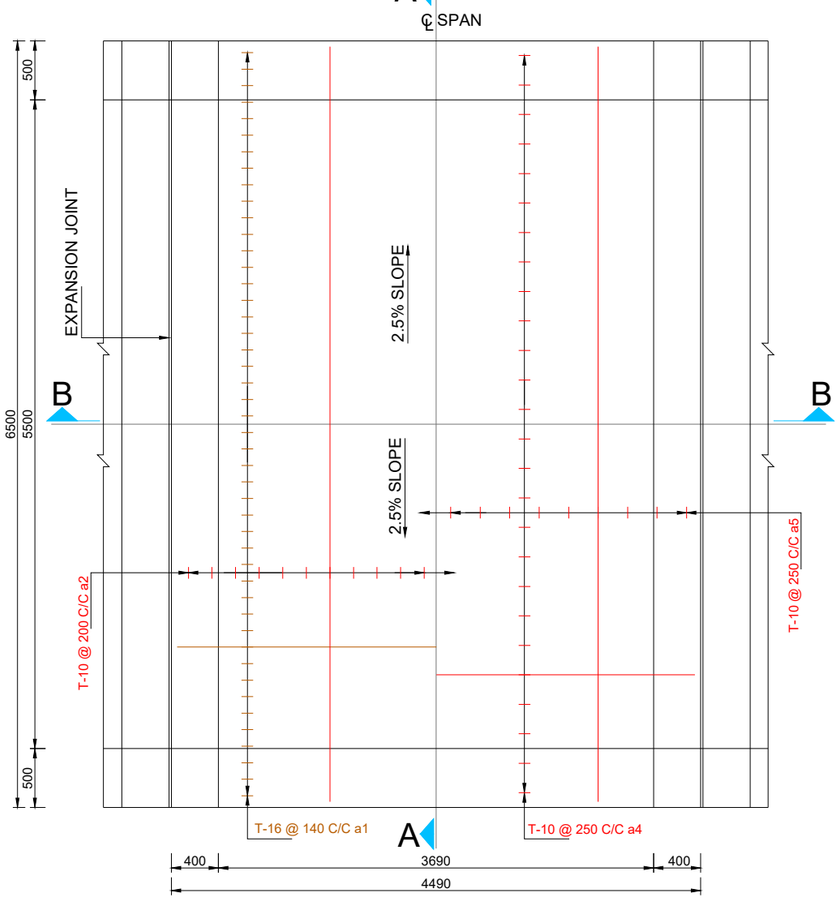
SECTION OF APPROACH SLAB
(SCALE A)



SECTION B-B
(SCALE A)

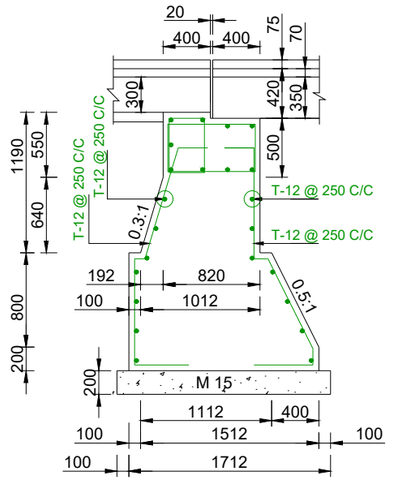


SECTION A-A
(SCALE A)

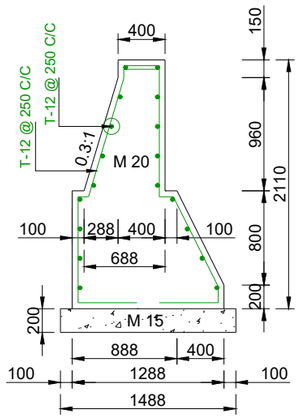


BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



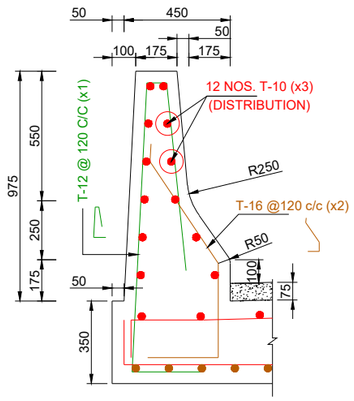
REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



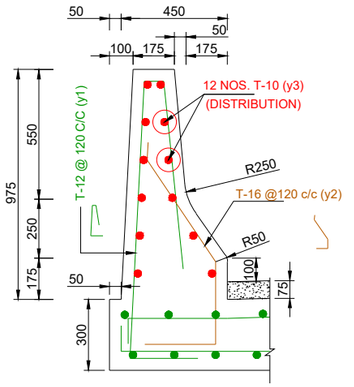
REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

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	250, R=60, 4390, 250	16	140	46
2	a2	250, R=40, 6400, 250	10	200	22
3	a3	6400	10	-	2
4	a4	4390, 250, R=40, 250	10	250	26
5	a5	250, 450, 2750, 2750, 450, 250	10	250	18
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1197, 800, 300	12	120	37X2
2	x2	75, 520, 429, 300	16	120	37X2
3	x3	4390	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



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

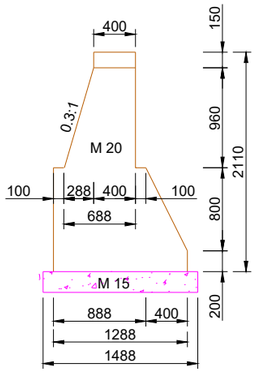


REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB
(SCALE B)

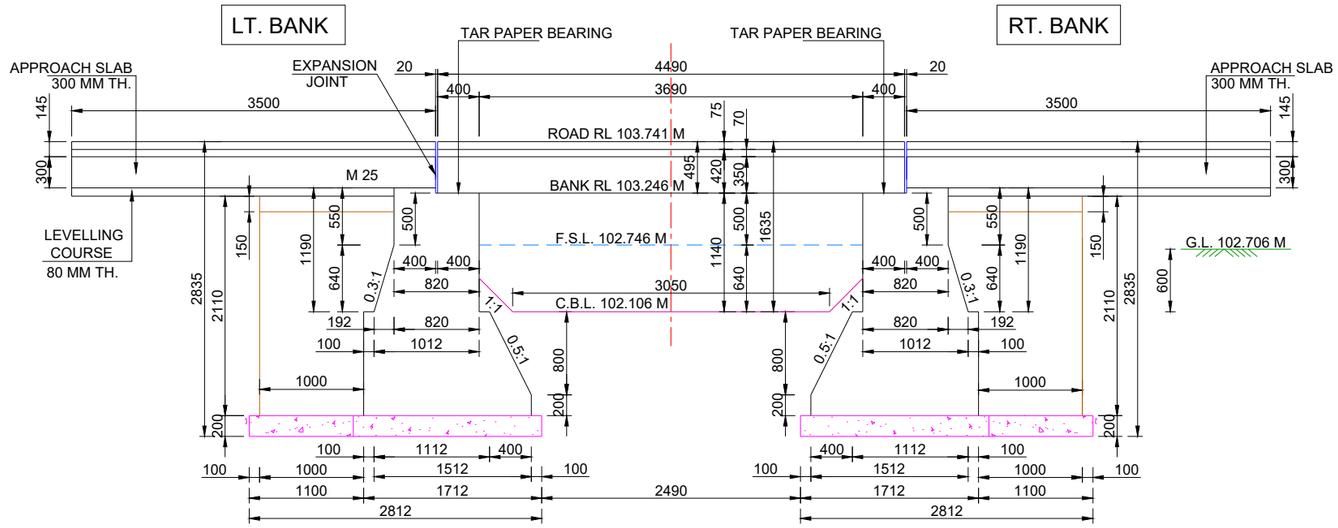
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

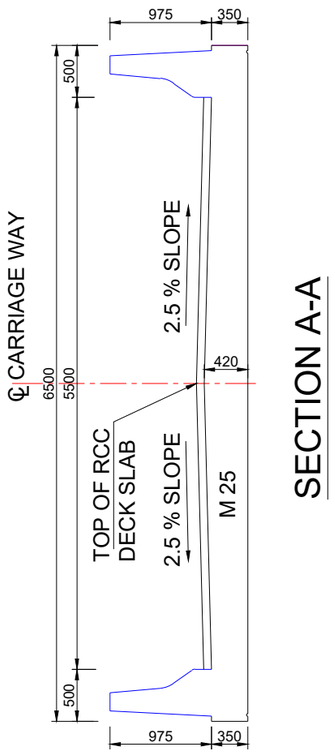
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 6.750 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



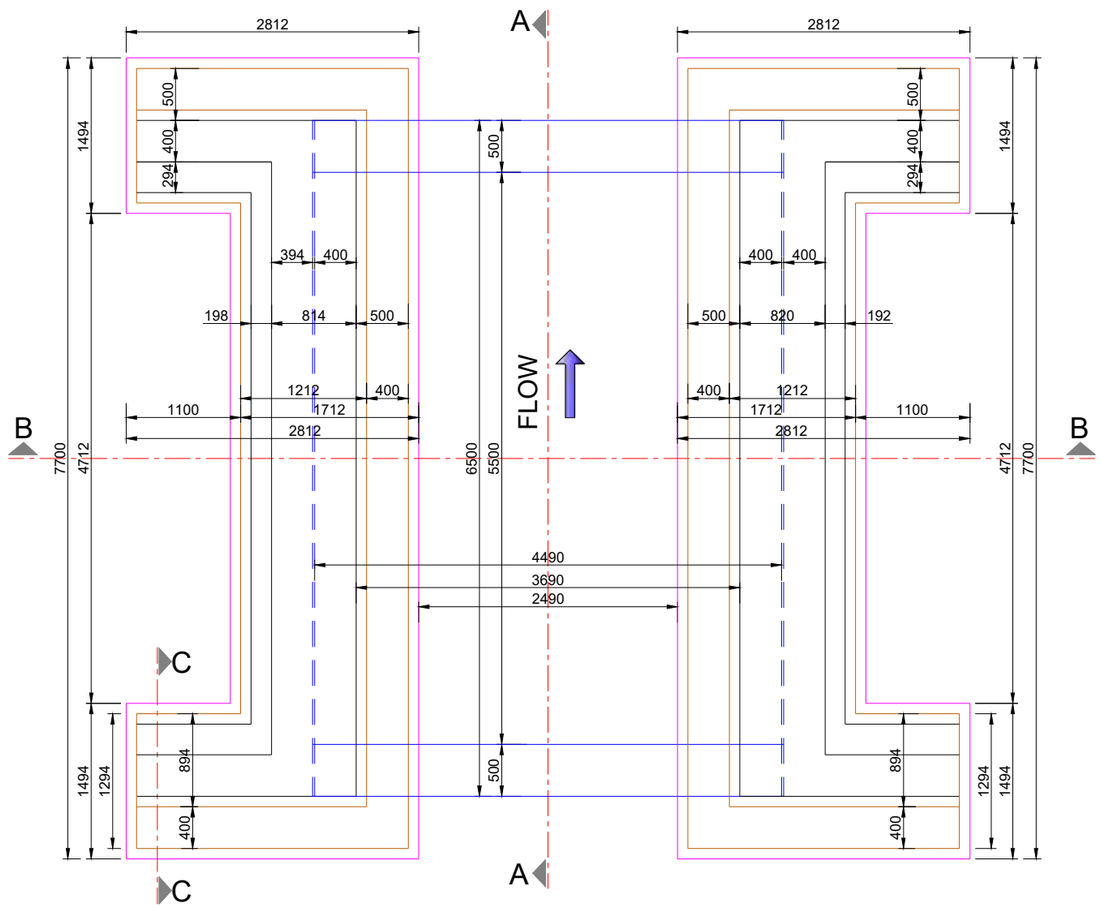
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.78 CUMECS
BED WIDTH	3.050 M
WATER DEPTH	0.640 M
FREE BOARD	0.500 M
BED LEVEL	102.106 M
F.S.L.	102.746 M
BANK R.L.	103.246 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	103.741 M
GROUND LEVEL	102.706 M

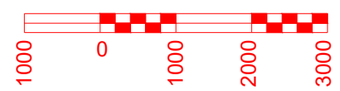
NOTES:-

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

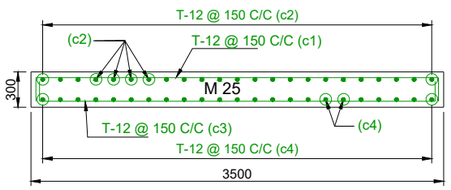
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

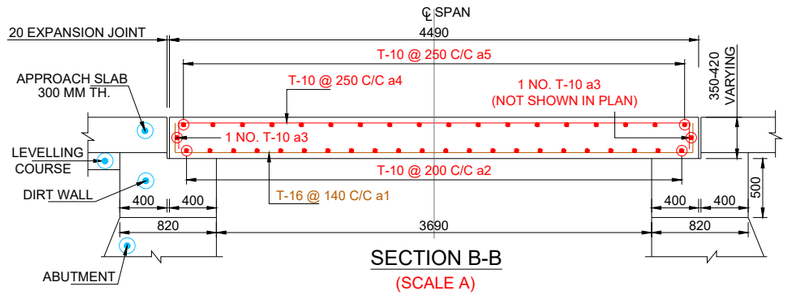


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 7.165 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



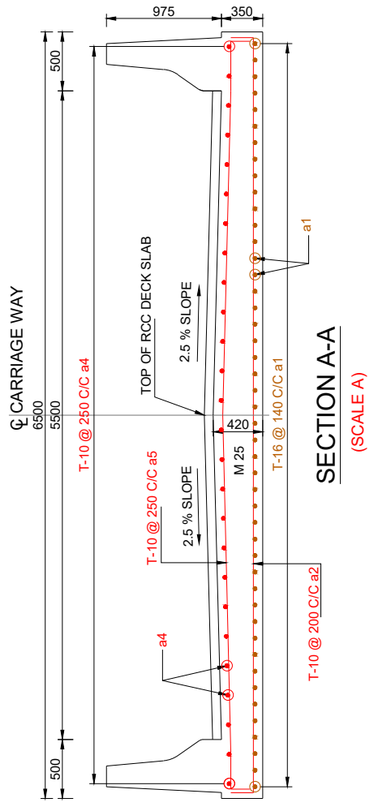
SECTION OF APPROACH SLAB

(SCALE A)



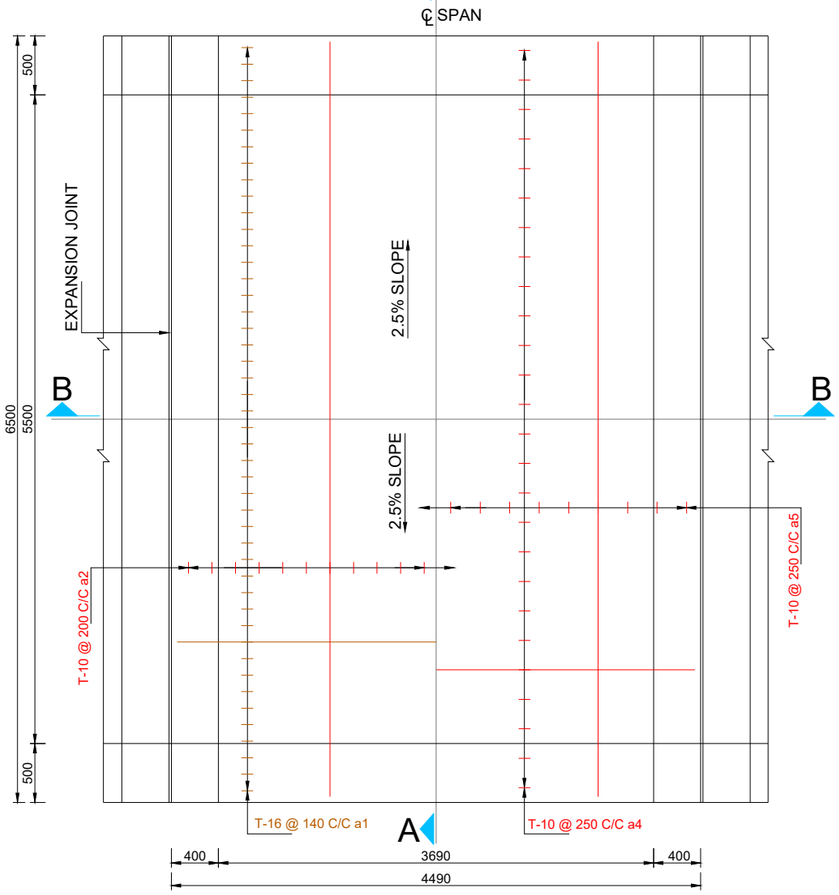
SECTION B-B

(SCALE A)



SECTION A-A

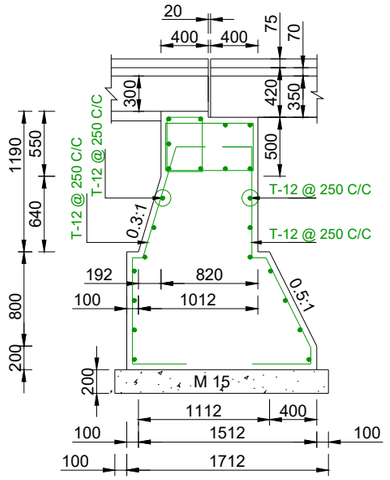
(SCALE A)



BOTTOM REINFORCEMENT TOP REINFORCEMENT

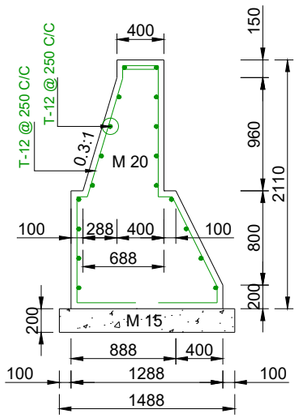
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)

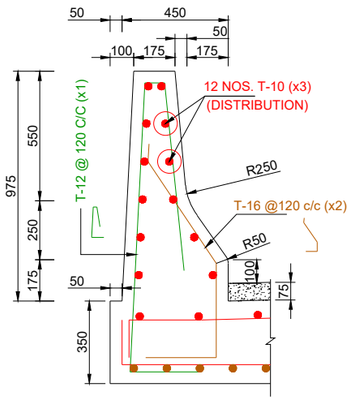


REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)

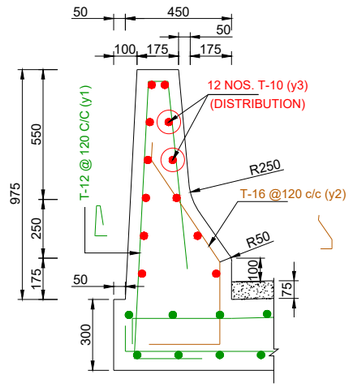
BAR BENDING SCHEDULE

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	250, R=60, 4390, 250	16	140	46
2	a2	250, R=40, 6400, 250	10	200	22
3	a3	6400	10	-	2
4	a4	4390, 250, R=40, 250	10	250	26
5	a5	250, 450, 2750, 2750, 450, 250	10	250	18
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1197, 800, 300	12	120	37X2
2	x2	75, 520, 429, 300	16	120	37X2
3	x3	4390	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)

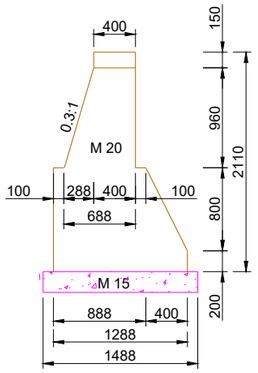
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

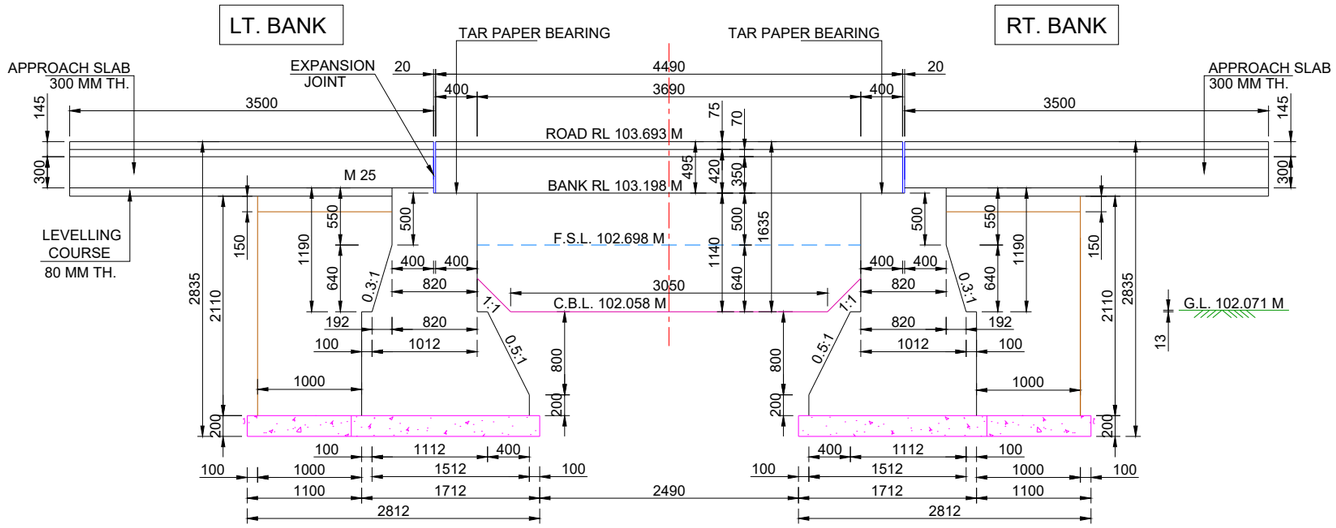
Prepared by :-

WAPCOS LTD.

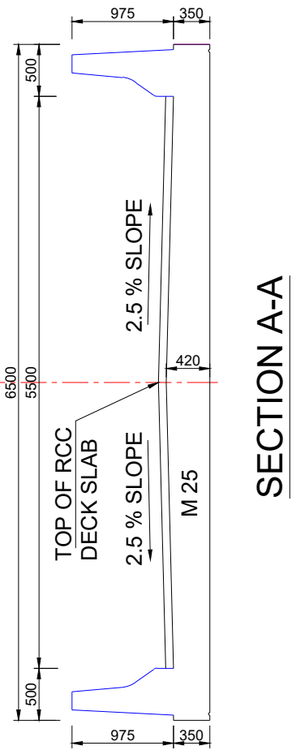
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 7.165 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



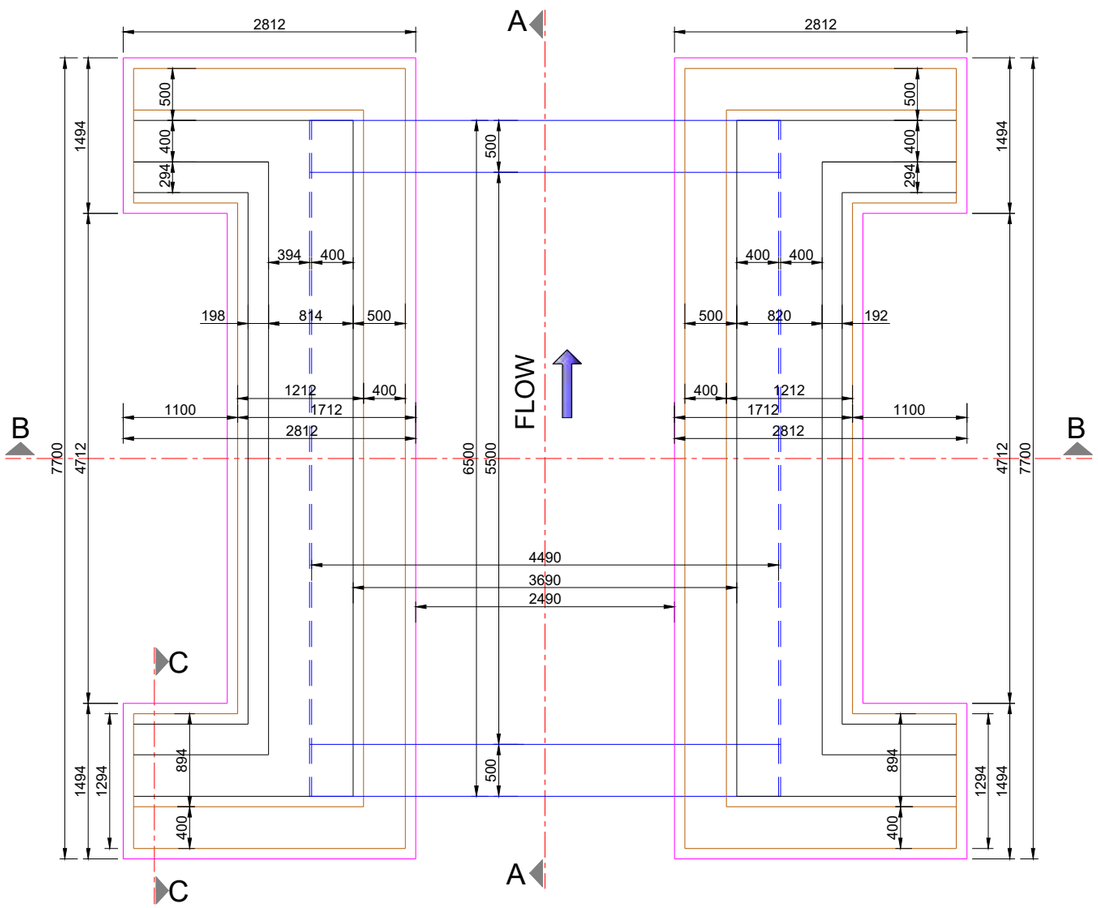
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.78 CUMECS
BED WIDTH	3.050 M
WATER DEPTH	0.640 M
FREE BOARD	0.500 M
BED LEVEL	102.058 M
F.S.L.	102.698 M
BANK R.L.	103.198 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	103.693 M
GROUND LEVEL	102.071 M

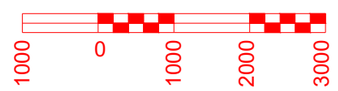
NOTES:-

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

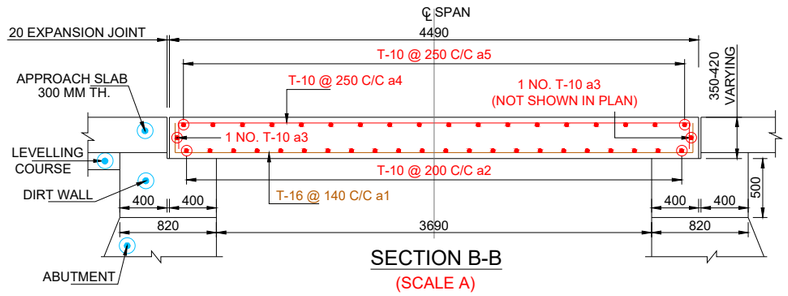
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

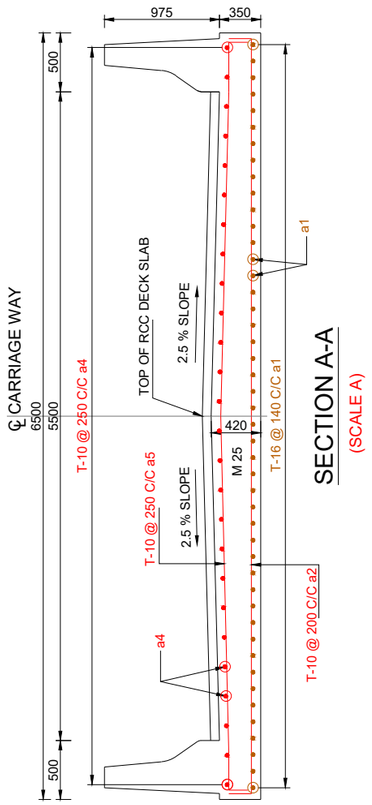


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 7.405 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



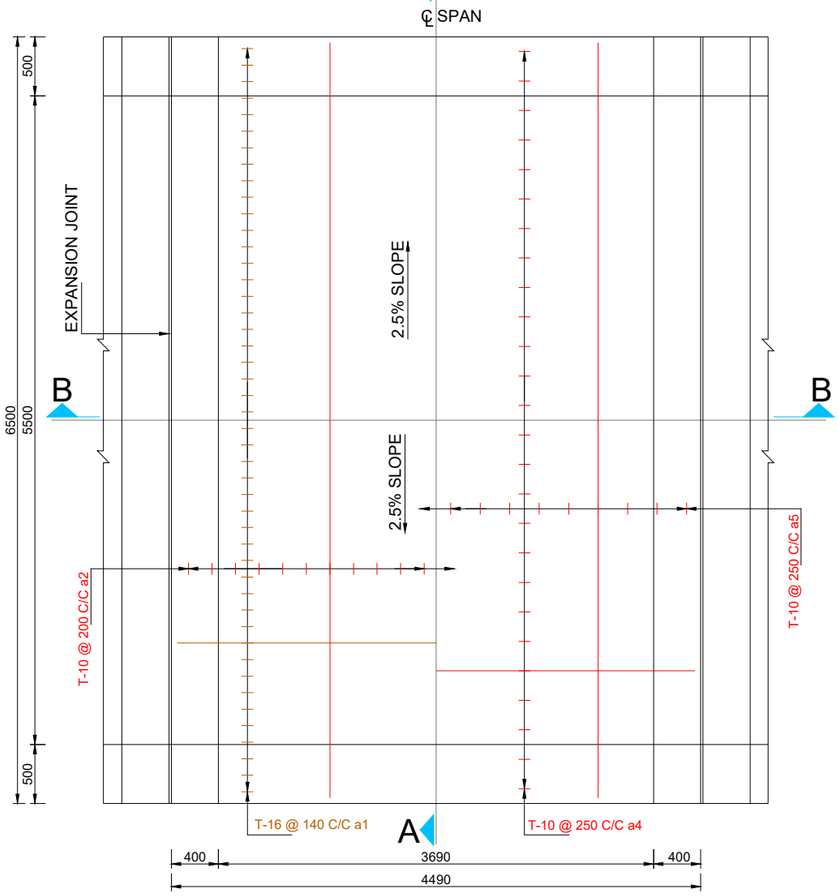
SECTION B-B

(SCALE A)



SECTION A-A

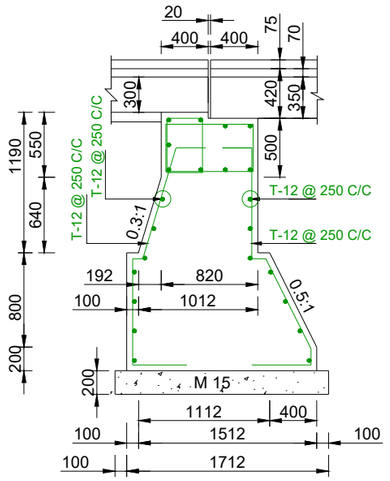
(SCALE A)



BOTTOM REINFORCEMENT TOP REINFORCEMENT

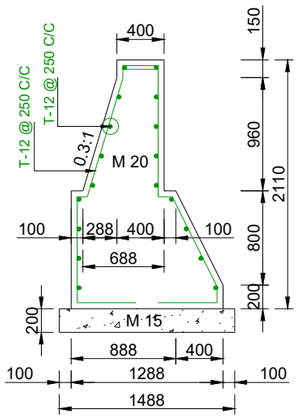
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)

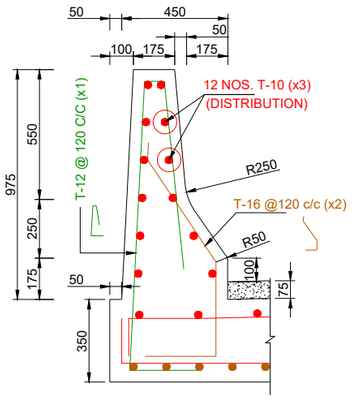


REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)

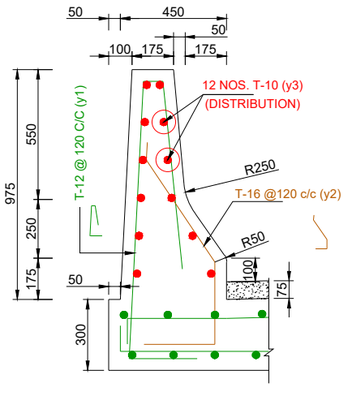
BAR BENDING SCHEDULE

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	250, R=60, 4390, 250	16	140	46
2	a2	250, R=40, 6400, 250	10	200	22
3	a3	6400	10	-	2
4	a4	4390, 250, R=40, 250	10	250	26
5	a5	250, 450, 2750, 2750, 450, 250	10	250	18
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1197, 800, 300	12	120	37X2
2	x2	75, 520, 429, 300	16	120	37X2
3	x3	4390	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



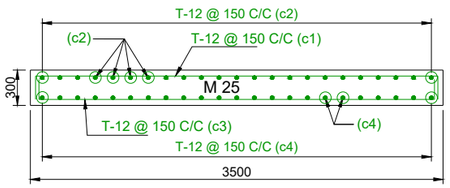
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)



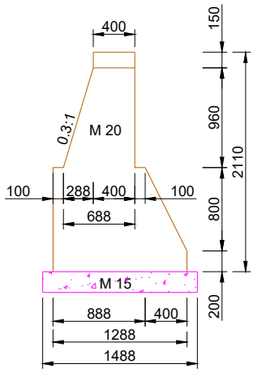
SECTION OF APPROACH SLAB

(SCALE A)

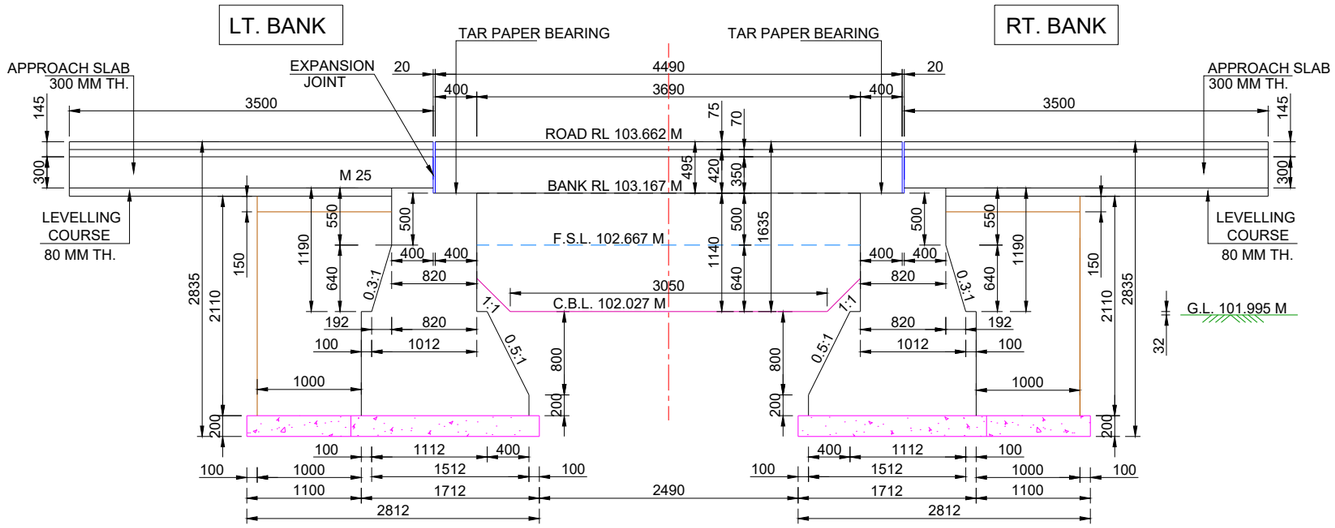
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

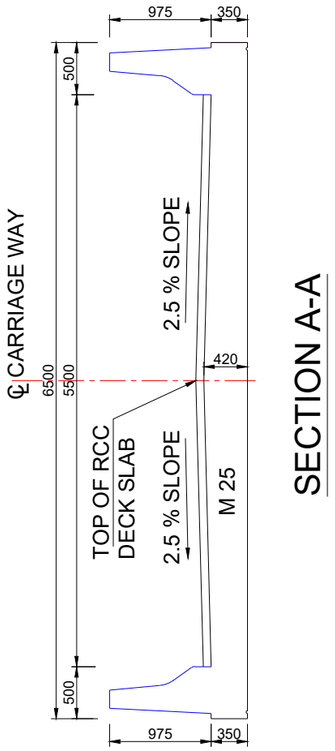
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 7.405 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



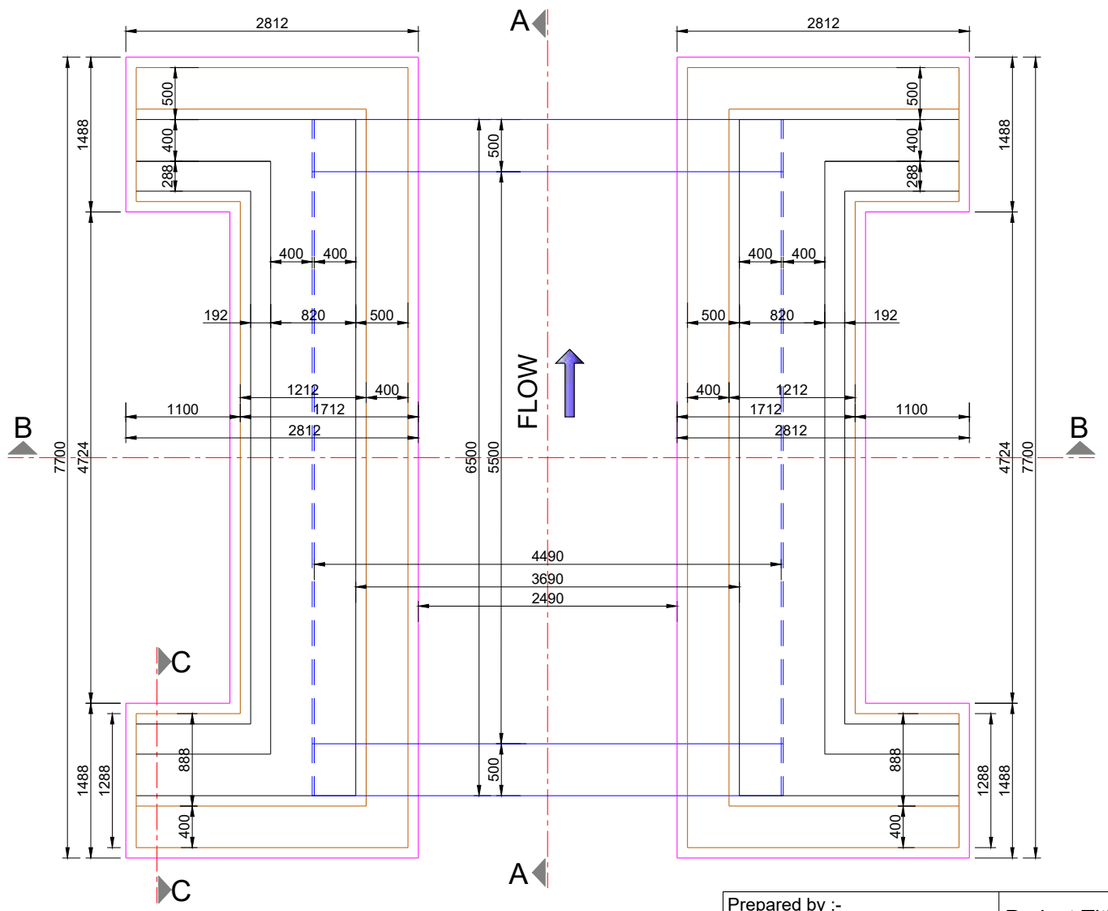
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.78 CUMECS
BED WIDTH	3.050 M
WATER DEPTH	0.640 M
FREE BOARD	0.500 M
BED LEVEL	102.027 M
F.S.L.	102.667 M
BANK R.L.	103.167 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	103.662 M
GROUND LEVEL	101.995 M

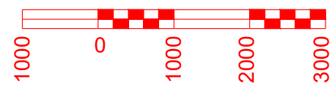
NOTES:-

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

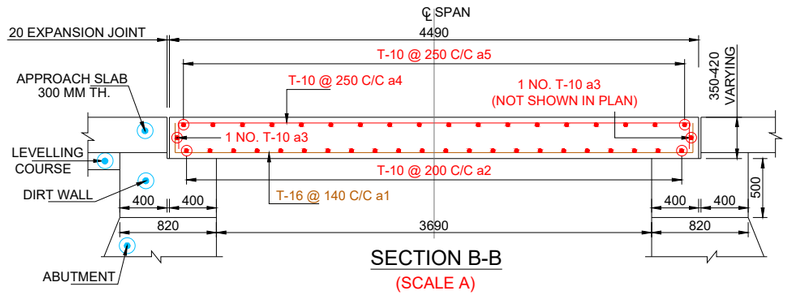
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

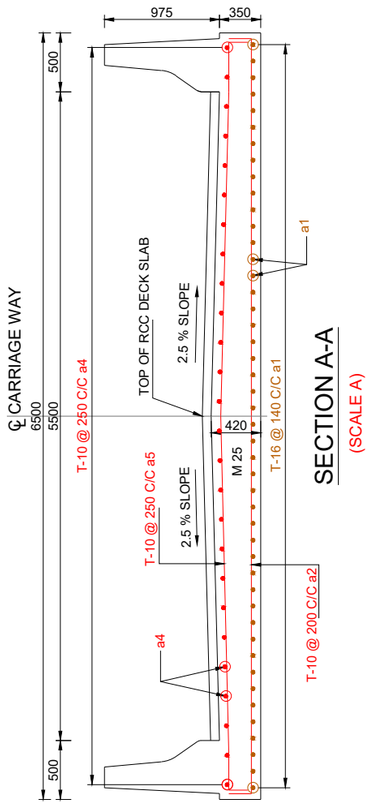


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 7.560 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



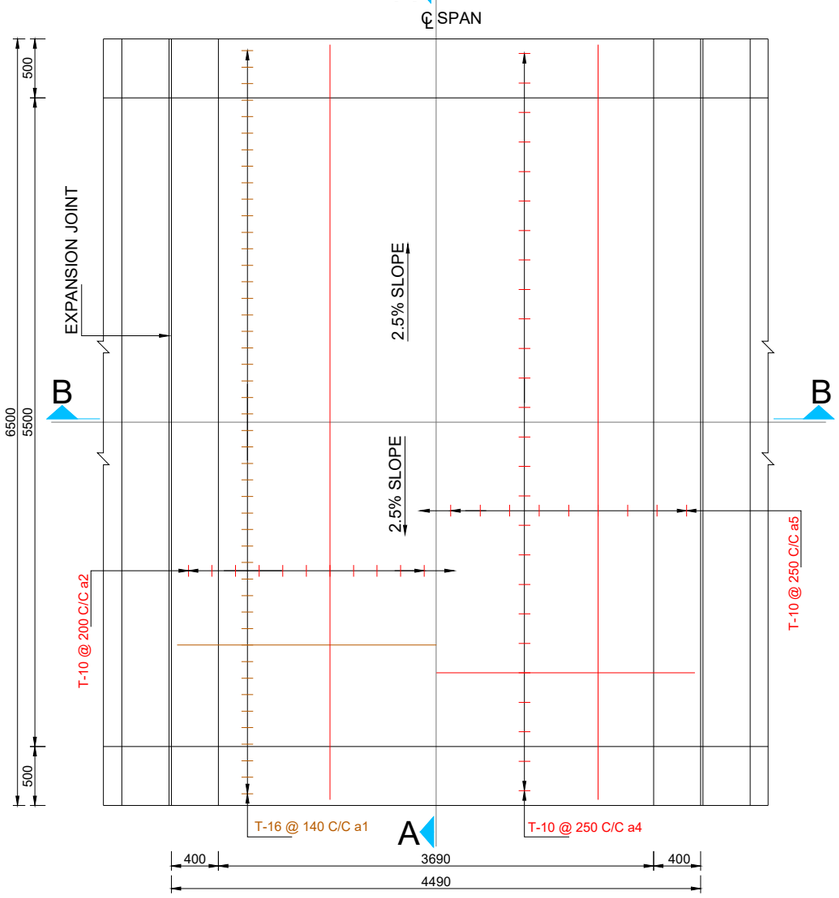
SECTION B-B

(SCALE A)



SECTION A-A

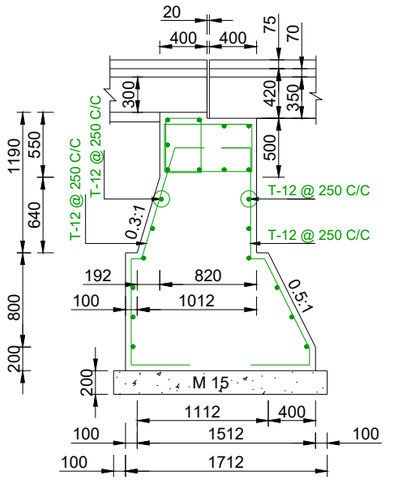
(SCALE A)



BOTTOM REINFORCEMENT TOP REINFORCEMENT

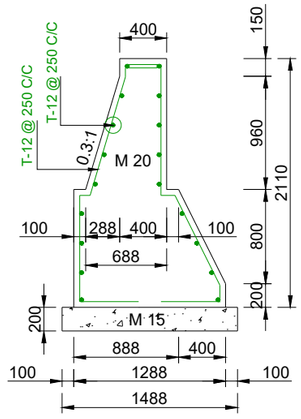
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)

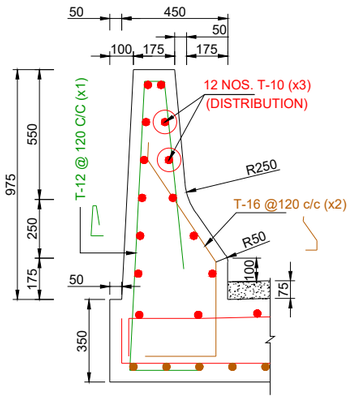


REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)

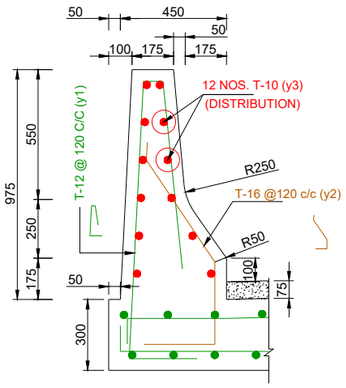
BAR BENDING SCHEDULE

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	250, R=60, 4390, 250	16	140	46
2	a2	250, R=40, 6400, 250	10	200	22
3	a3	6400	10	-	2
4	a4	4390, 250, R=40, 250	10	250	26
5	a5	250, 450, 2750, 2750, 450, 250	10	250	18
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1197, 800, 300	12	120	37X2
2	x2	75, 520, 429, 300	16	120	37X2
3	x3	4390	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



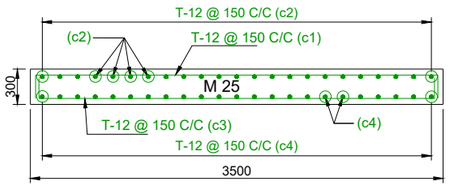
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)



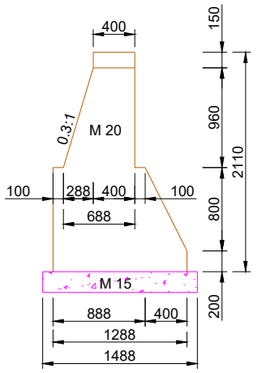
SECTION OF APPROACH SLAB

(SCALE A)

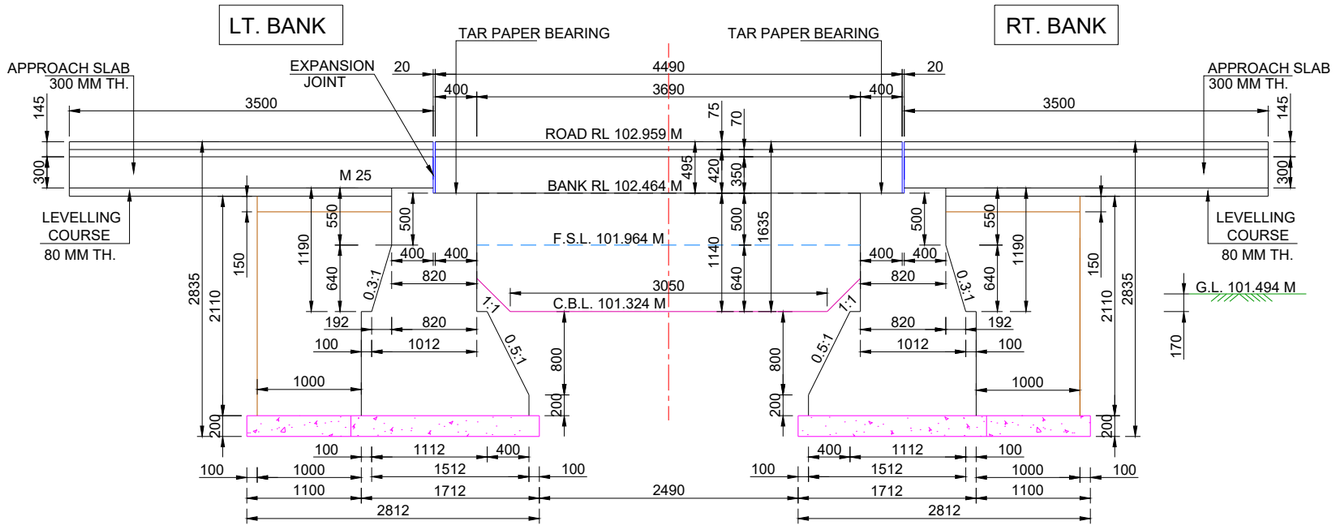
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

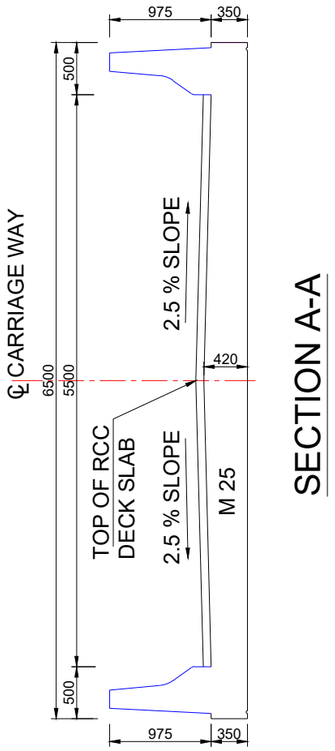
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 7.560 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



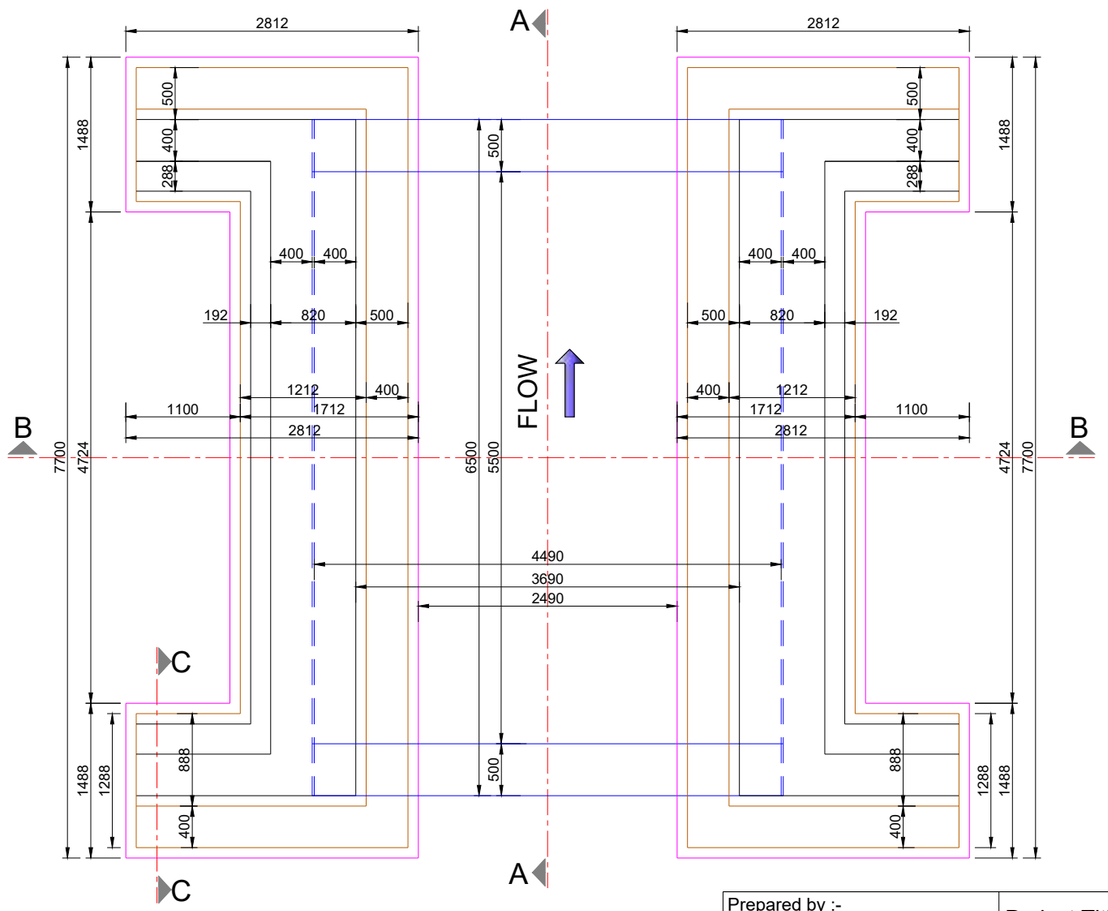
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.78 CUMECS
BED WIDTH	3.050 M
WATER DEPTH	0.640 M
FREE BOARD	0.500 M
BED LEVEL	101.324 M
F.S.L.	101.964 M
BANK R.L.	102.464 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	102.959 M
GROUND LEVEL	101.494 M

NOTES:-

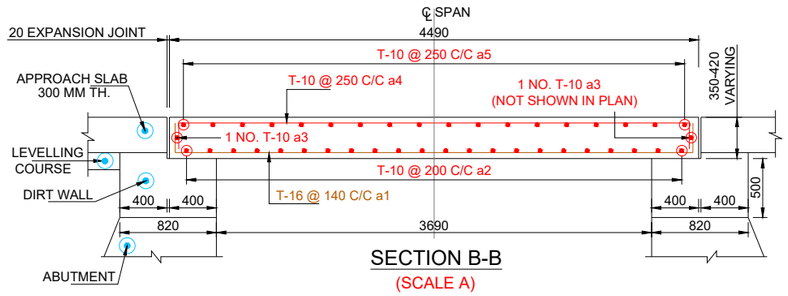
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456, GRADE OF CONCRETE IN DIFFERENT COMPONENT SHALL BE

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)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

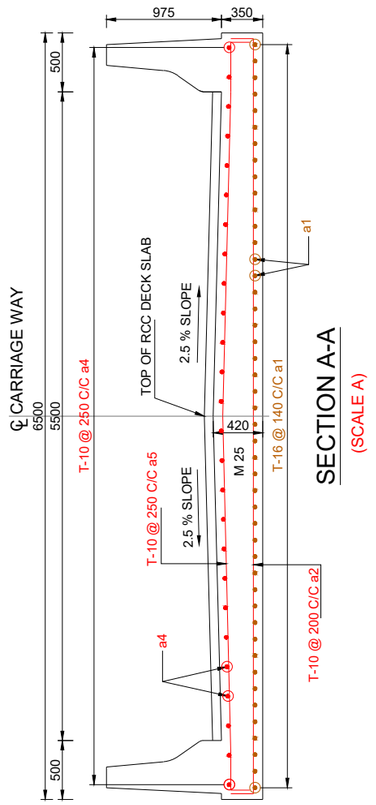
SCALE A:-

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 8.030 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



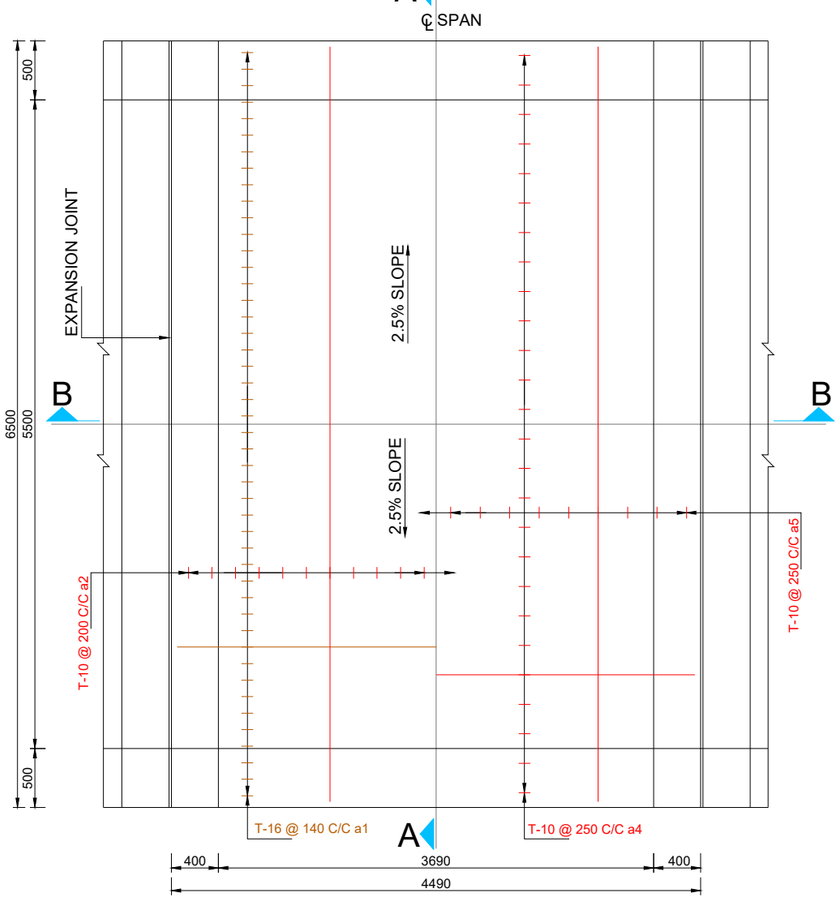
SECTION B-B

(SCALE A)



SECTION A-A

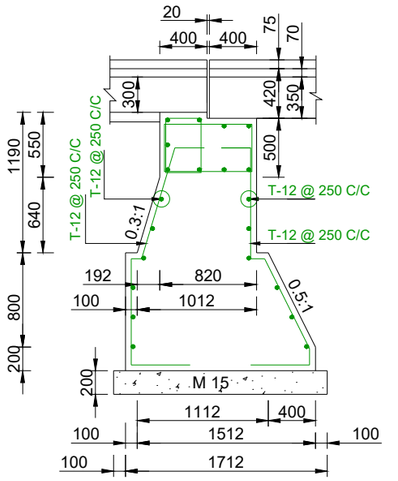
(SCALE A)



BOTTOM REINFORCEMENT TOP REINFORCEMENT

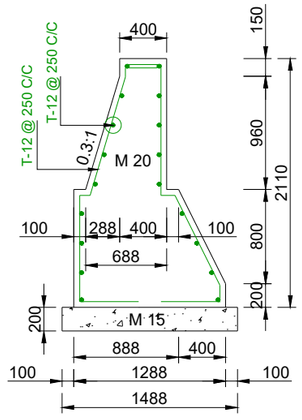
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)



REINFORCEMENT DETAIL OF ABUTMENT

(SCALE A)

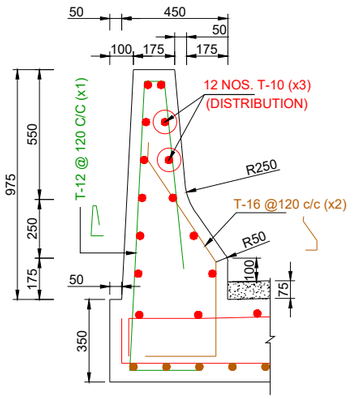


REINFORCEMENT DETAIL OF RETURN WALL

(SCALE A)

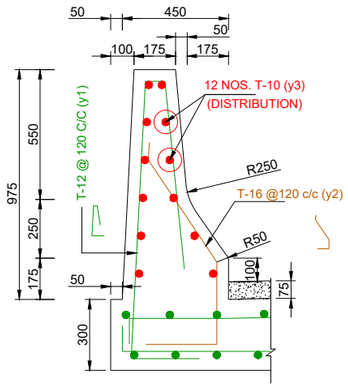
BAR BENDING SCHEDULE

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	250, R=60, 4390, 250	16	140	46
2	a2	250, R=40, 6400, 250	10	200	22
3	a3	6400	10	-	2
4	a4	4390, 250, R=40, 250	10	250	26
5	a5	250, 450, 2750, 2750, 450, 250	10	250	18
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1197, 800, 300	12	120	37X2
2	x2	75, 520, 429, 300	16	120	37X2
3	x3	4390	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



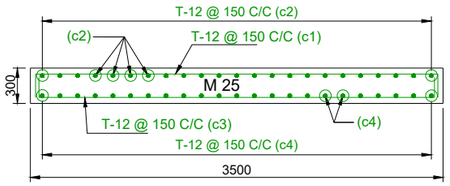
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)



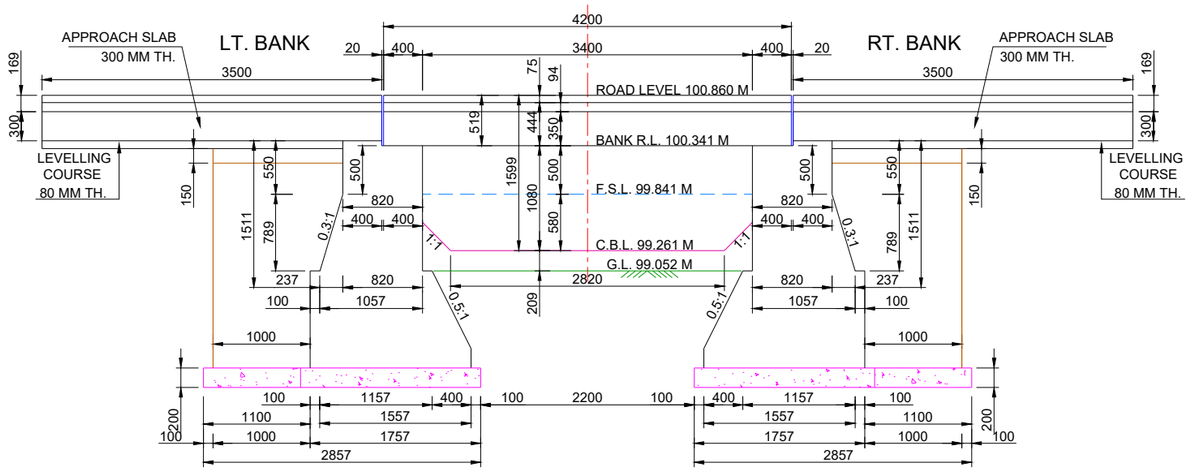
SECTION OF APPROACH SLAB

(SCALE A)

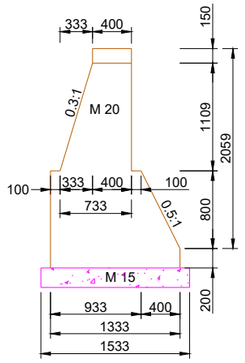
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

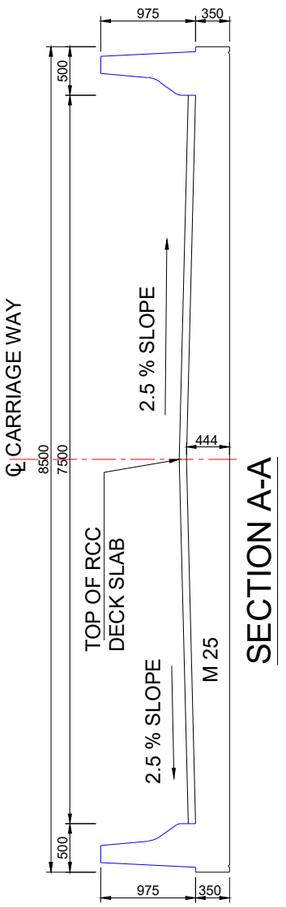
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 8.030 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



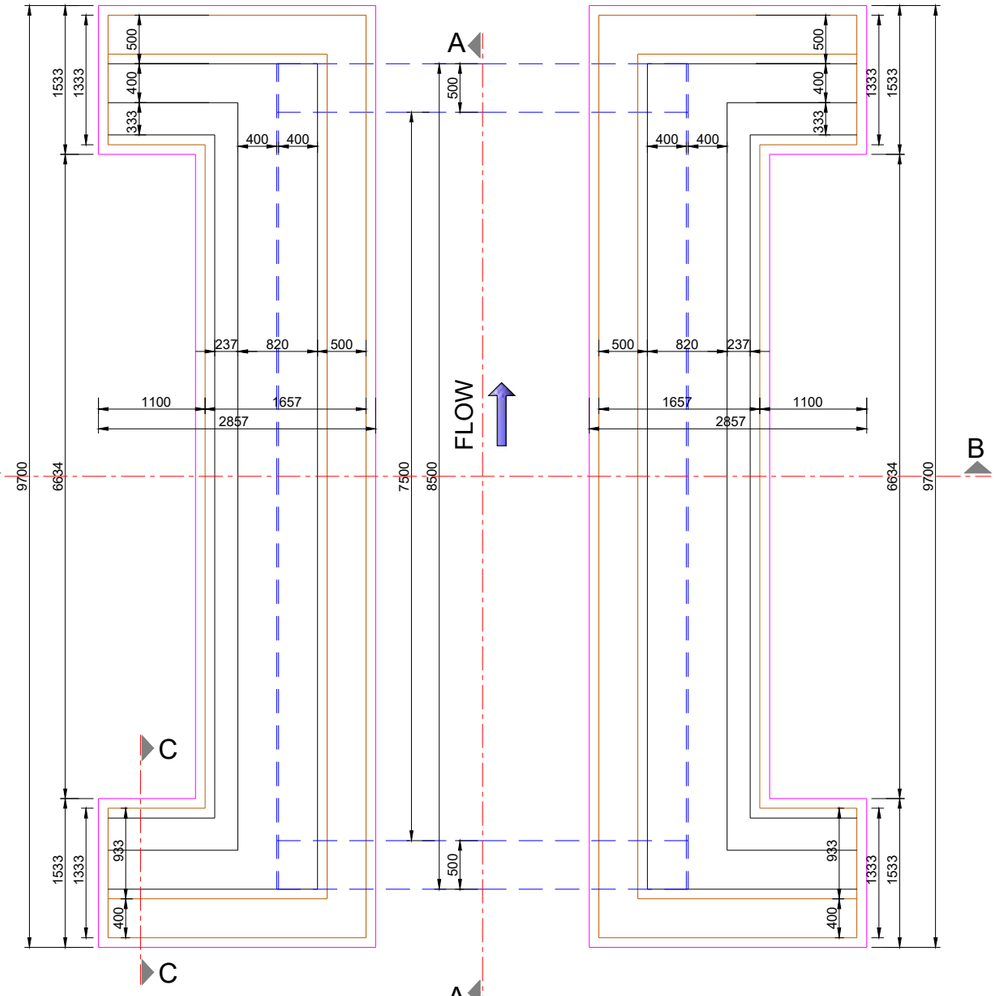
SECTION B-B



SECTION C-C



SECTION A-A



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.610 CUMECS
BED WIDTH	2.820 M
WATER DEPTH	0.580 M
FREE BOARD	0.500 M
BED LEVEL	99.261 M
F.S.L.	99.841 M
BANK R.L.	100.341 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	100.860 M
GROUND LEVEL	99.052 M

NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. 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)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND
   a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

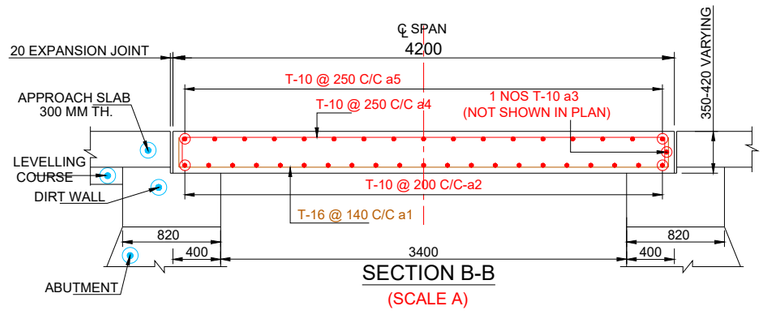
SCALE A:-

1000 0 1000 2000 3000

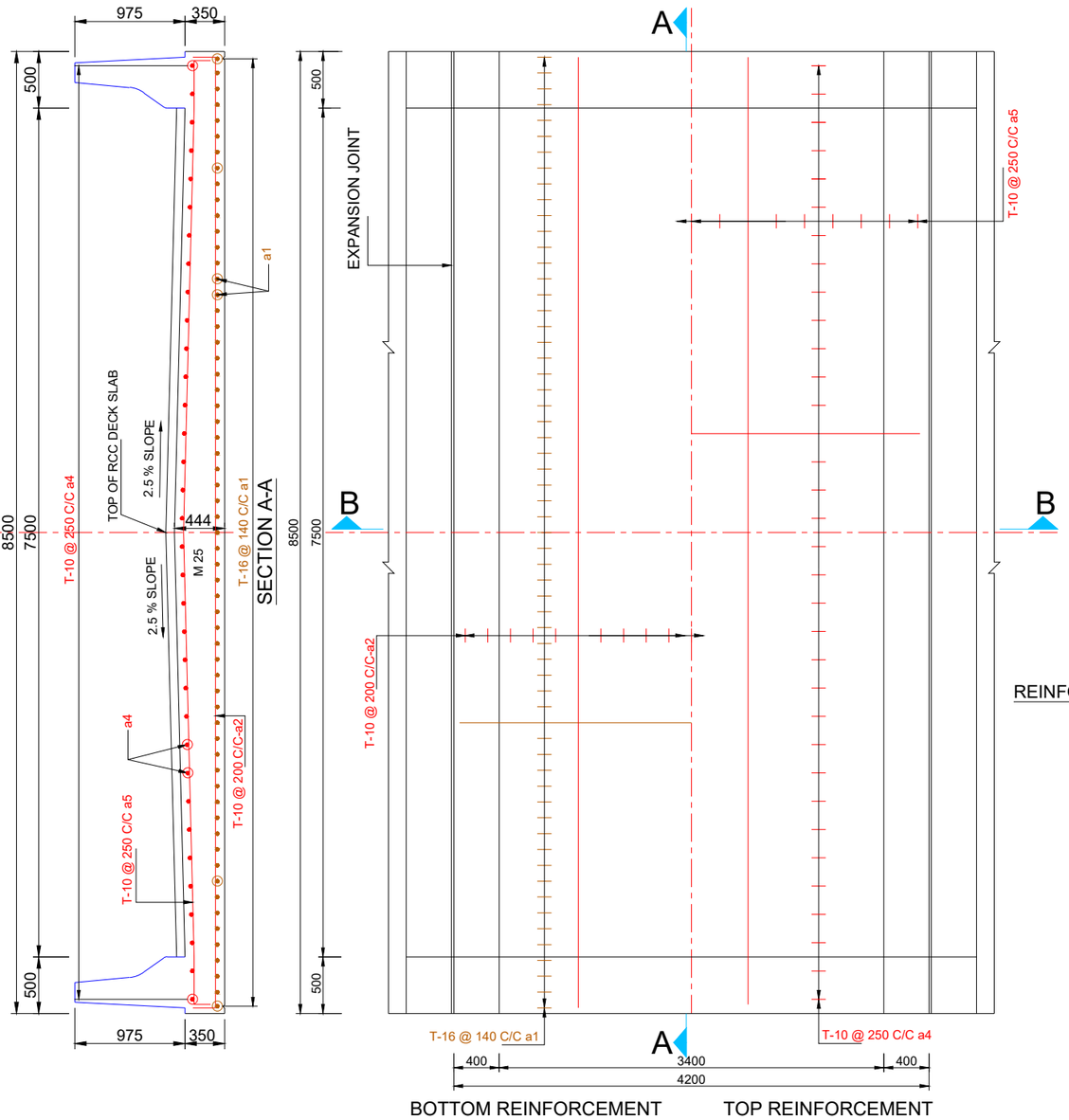
Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 9.205 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG.

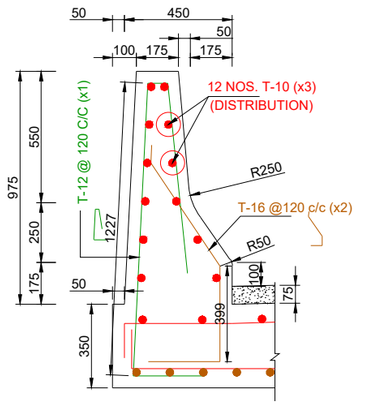


SECTION B-B
(SCALE A)

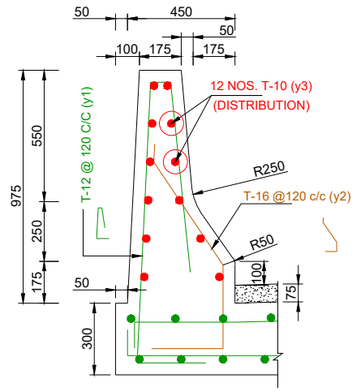


BOTTOM REINFORCEMENT TOP REINFORCEMENT

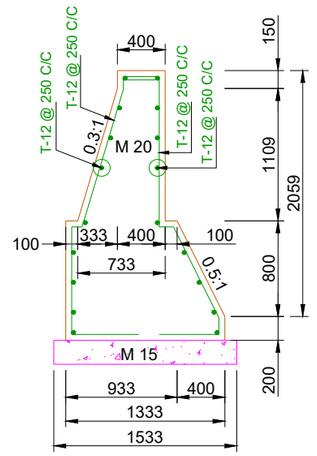
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



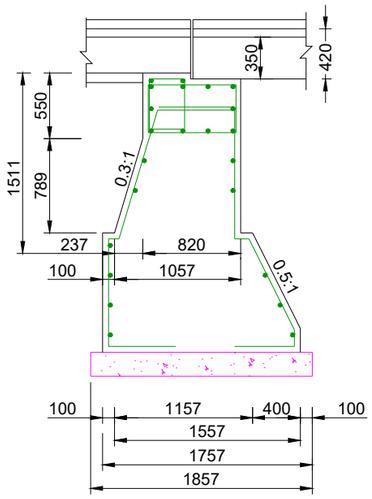
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)



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



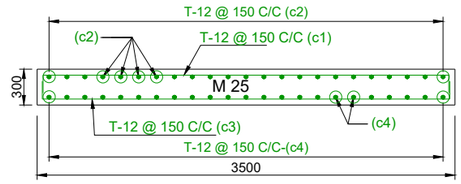
REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)



REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)

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	250 R=80 4100 250	16	140	61
2	a2	200 R=50 8400 200	10	200	21
3	a3	8400	10	-	2
4	a4	4040 220 R=40 220	10	250	38
5	a5	145 450 3750 3750 450 145	10	250	17
APPROACH SLAB					
1	c1	150 3400 150	12	150	57X2
2	c2	150 450 3750 3750 450 150	12	150	23X2
3	c3	150 3400 150	12	150	57X2
4	c4	150 8400 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75 1196 800 300	12	120	35X2
2	x2	75 520 300 429	16	120	35X2
3	x3	4100	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75 1146 800 300	12	120	29X2X2
2	y2	75 520 300 379	16	120	29X2X2
3	y3	3400	10	-	12X2X2



SECTION OF APPROACH SLAB
(SCALE A)

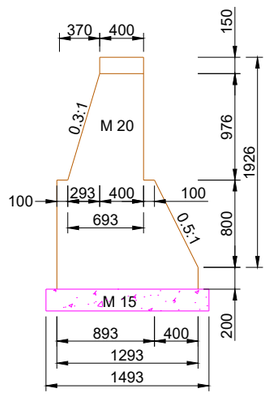
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

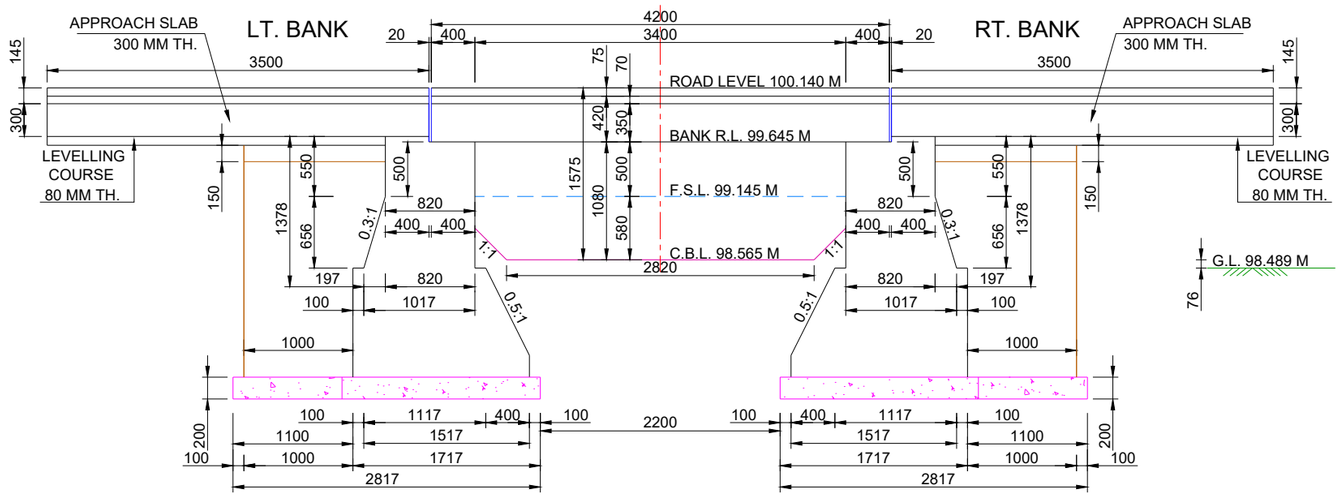
Prepared by :-

WAPCOS LTD.

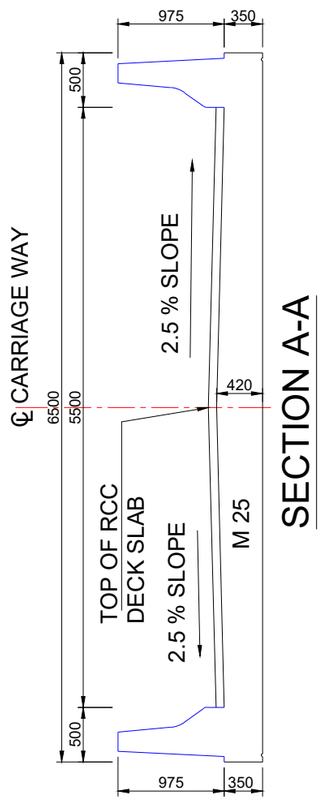
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 9.205 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



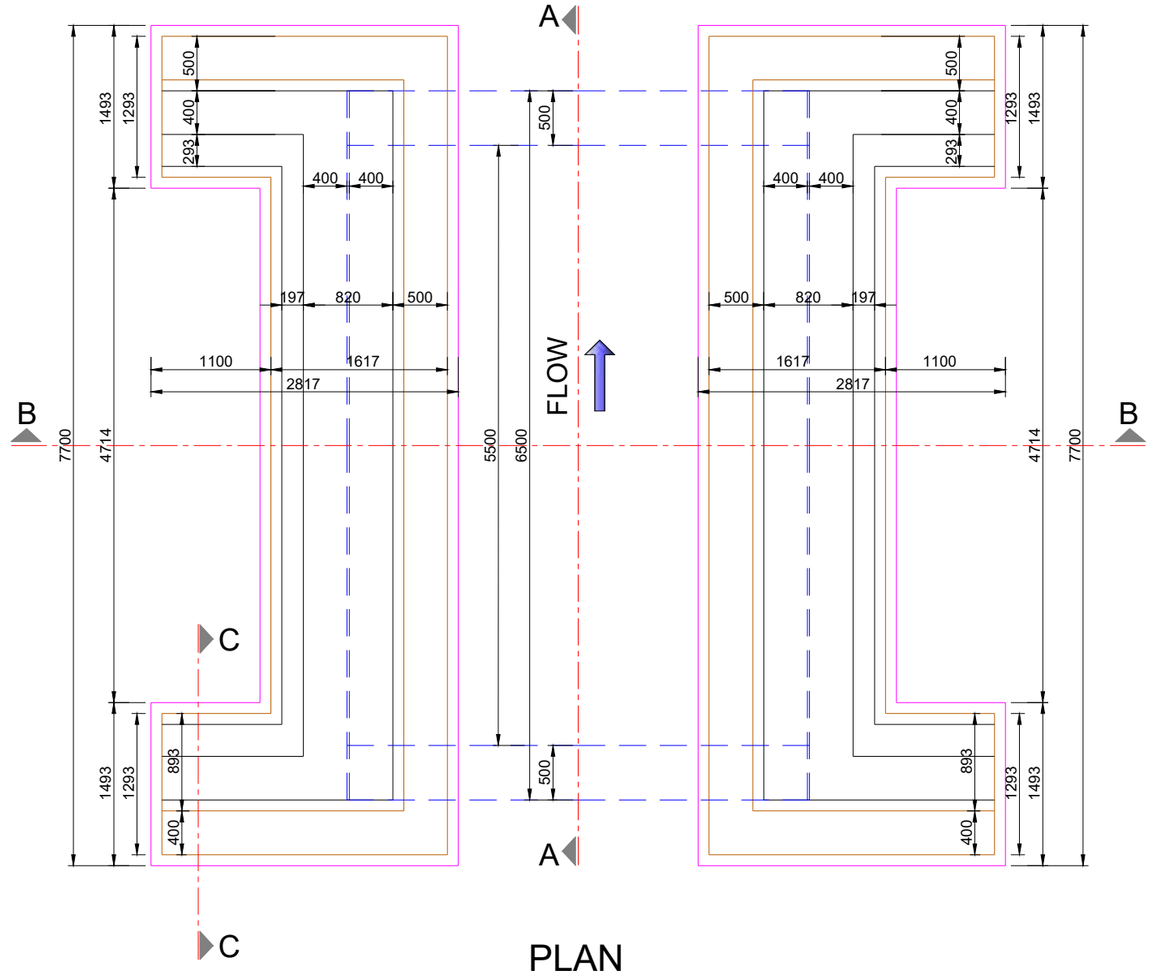
SECTION C-C



SECTION B-B



SECTION A-A



PLAN

SCALE A:-

1000 0 1000 2000 3000

DESIGN DATA:-

DESIGN DISCHARGE	0.610 CUMECS
BED WIDTH	2.820 M
WATER DEPTH	0.580 M
FREE BOARD	0.500 M
BED LEVEL	98.565 M
F.S.L.	99.145 M
BANK R.L.	99.645 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	100.140 M
GROUND LEVEL	98.489 M

NOTES:-

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

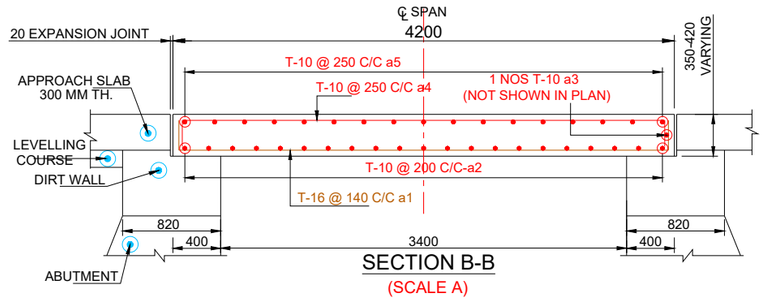
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

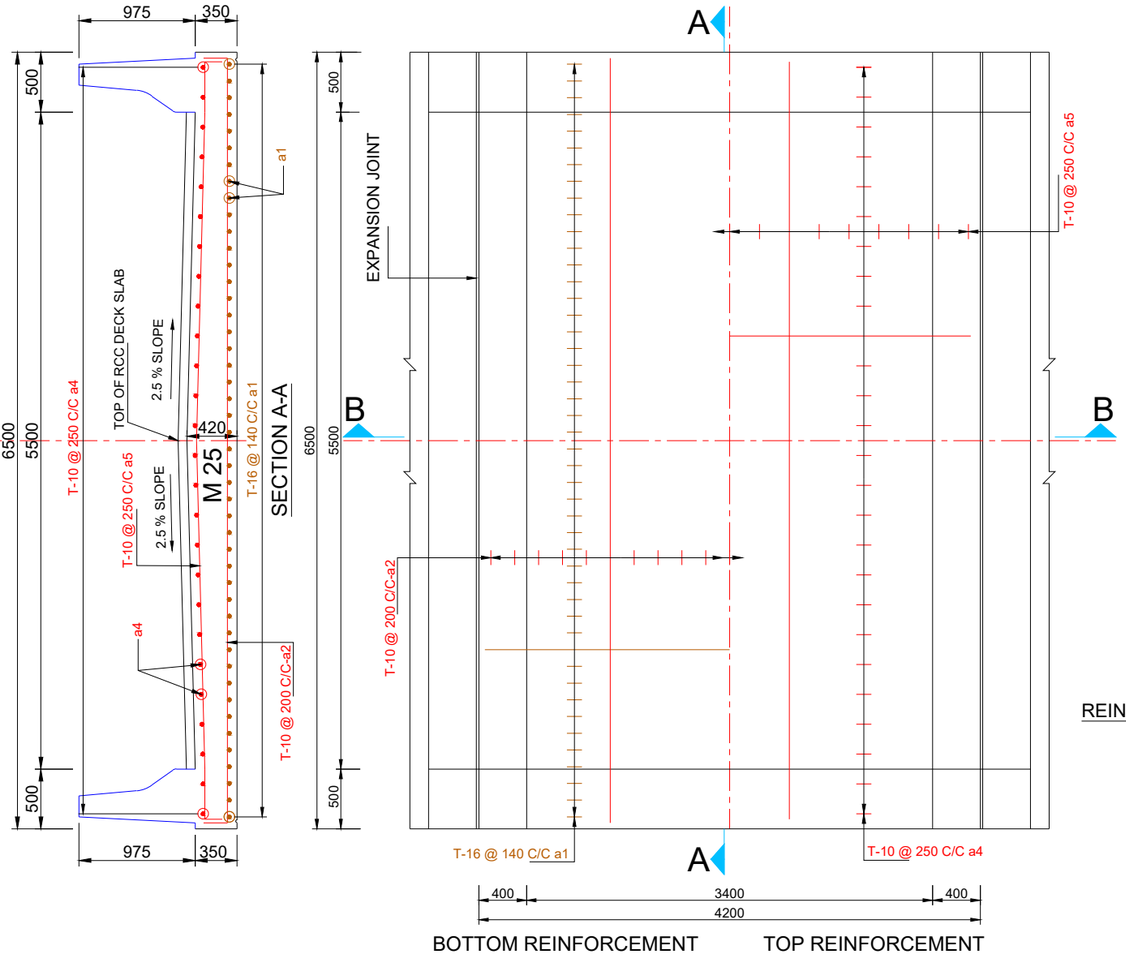
Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF BRIDGE AT KM. AT KM. 9.632 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2

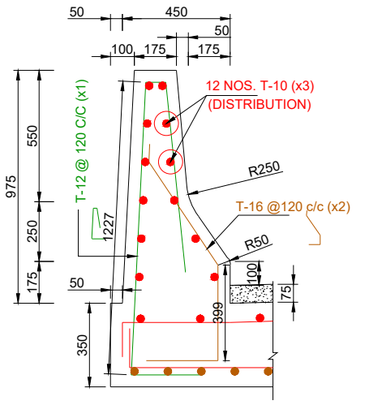


SECTION B-B
(SCALE A)

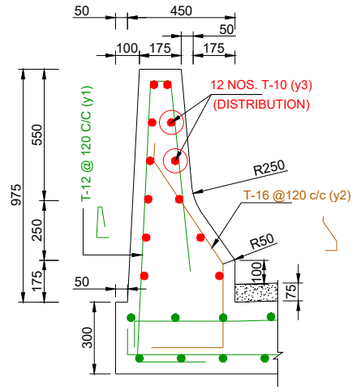


BOTTOM REINFORCEMENT TOP REINFORCEMENT

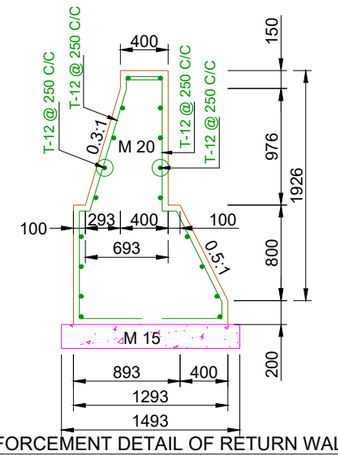
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



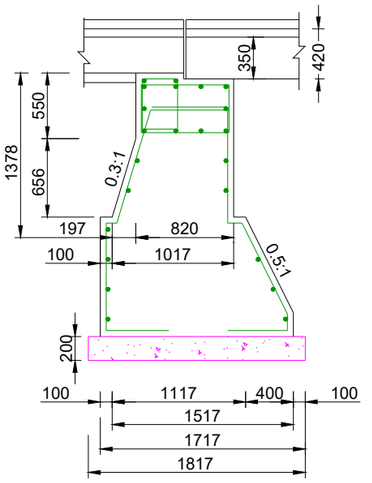
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)



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



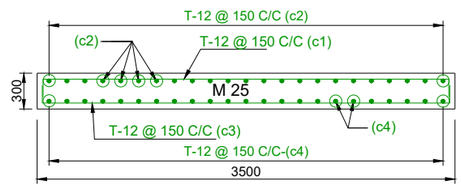
REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)



REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)

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	R=80, 250, 4100, 250	16	140	46
2	a2	R=50, 200, 6400, 200	10	200	21
3	a3	6400	10	-	2
4	a4	4040, R=40, 220, 220	10	250	26
5	a5	145, 450, 2750, 2750, 450, 145	10	250	17
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1196, 800, 300	12	120	35X2
2	x2	75, 520, 429, 300	16	120	35X2
3	x3	4100	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2

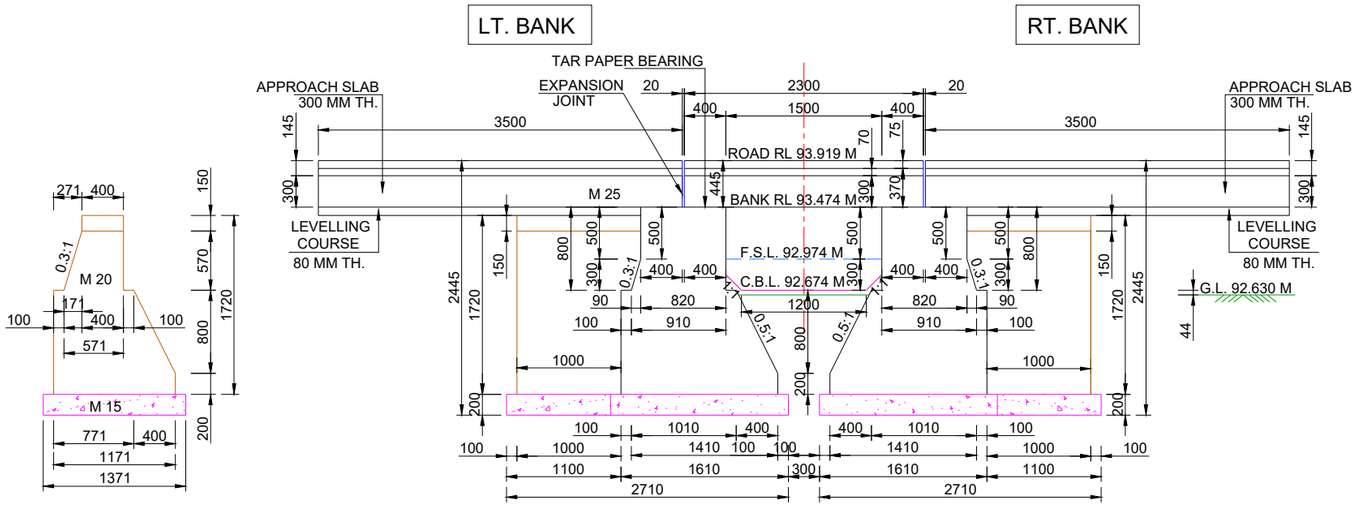


SECTION OF APPROACH SLAB
(SCALE A)

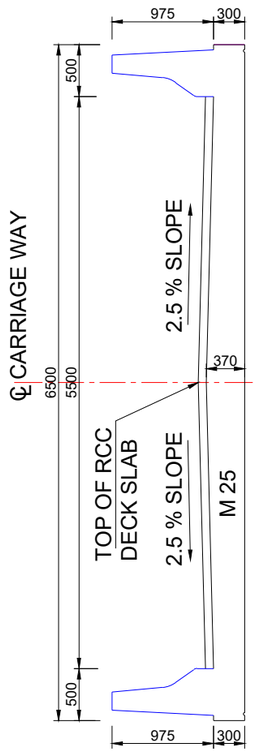
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 9.632 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2

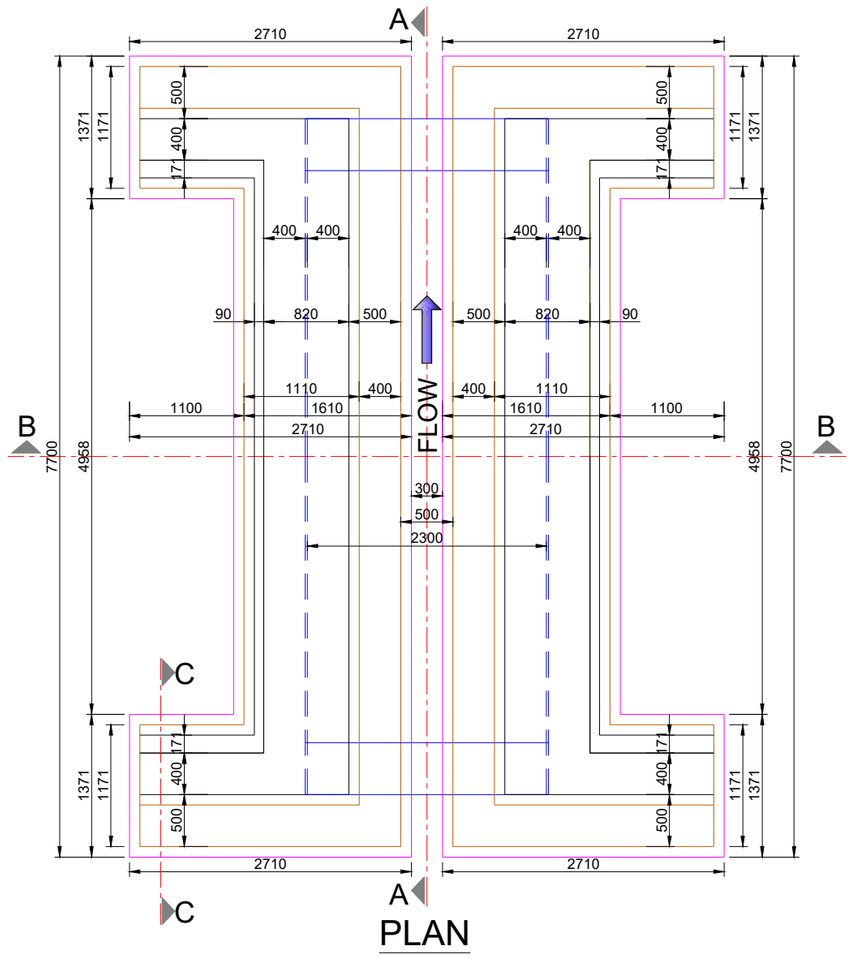


SECTION C-C



SECTION A-A

SECTION B-B



PLAN

DESIGN DATA:-

DESIGN DISCHARGE	0.09 CUMECS
BED WIDTH	1.200 M
WATER DEPTH	0.300 M
FREE BOARD	0.500 M
BED LEVEL	92.674 M
F.S.L.	92.974 M
BANK R.L.	93.474 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	93.919 M
GROUND LEVEL	92.630 M

NOTES:-

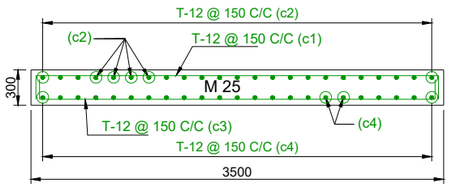
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456, GRADE OF CONCRETE IN DIFFERENT COMPONENT SHALL BE

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)

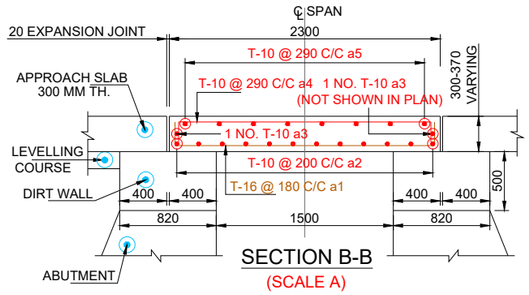
4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHER WISE.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

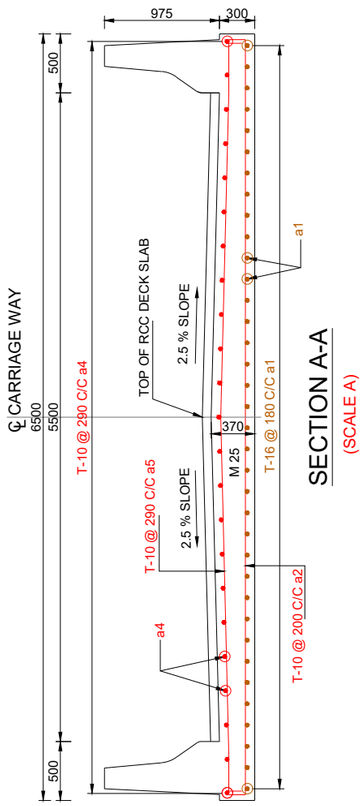
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 14.640 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



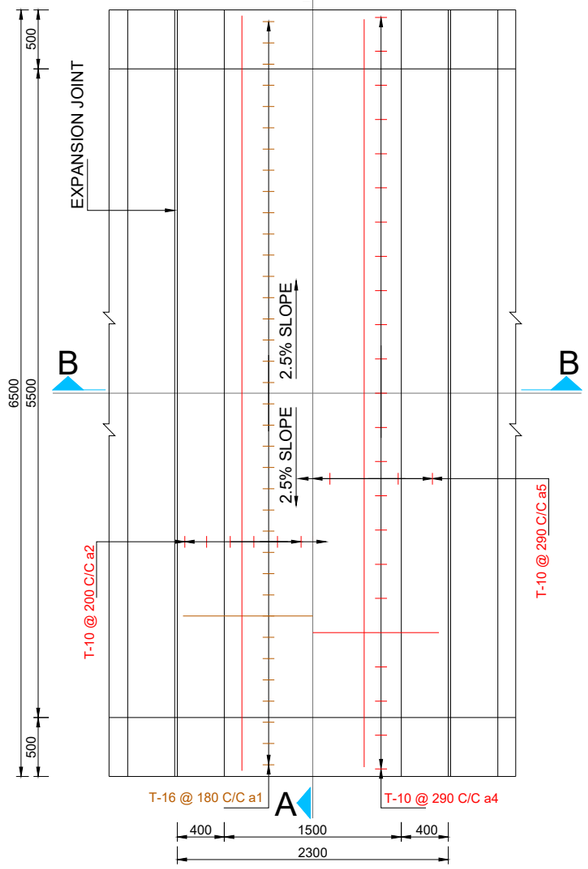
SECTION OF APPROACH SLAB
(SCALE A)



SECTION B-B
(SCALE A)

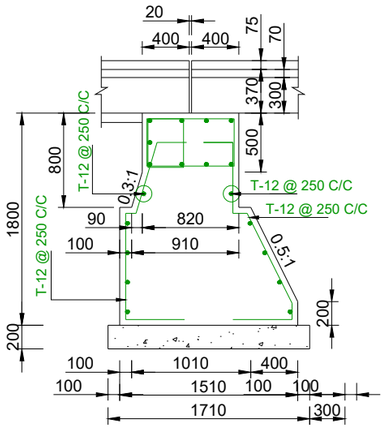


SECTION A-A
(SCALE A)

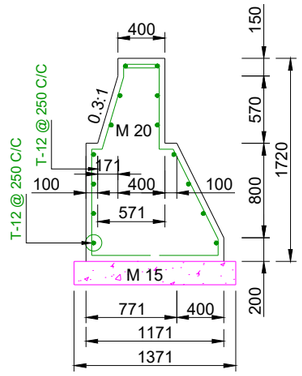


BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



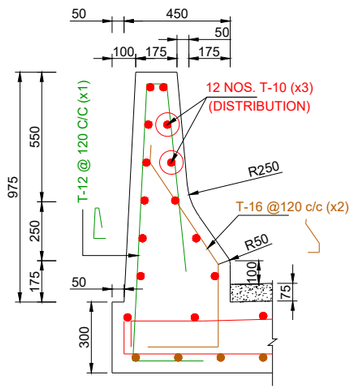
REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



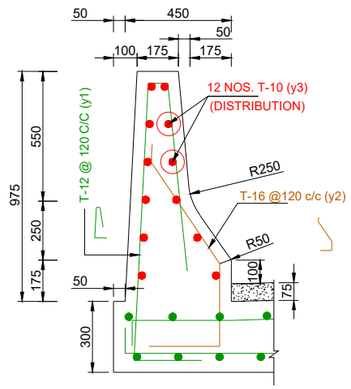
REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

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	200, R=60, 2200, 200	16	180	36
2	a2	200, R=40, 6400, 200	10	200	12
3	a3	6400	10	-	2
4	a4	2140, R=40, 200, 200	10	290	23
5	a5	200, 450, 2750, 2750, 450, 200	10	290	7
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1146, 800, 300	12	120	28X2
2	x2	75, 520, 379, 300	16	120	28X2
3	x3	3290	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



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

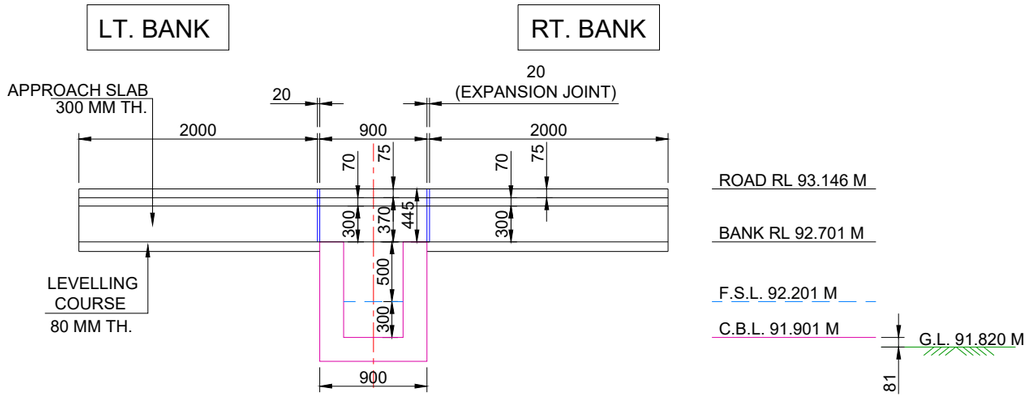


REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB
(SCALE B)

SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

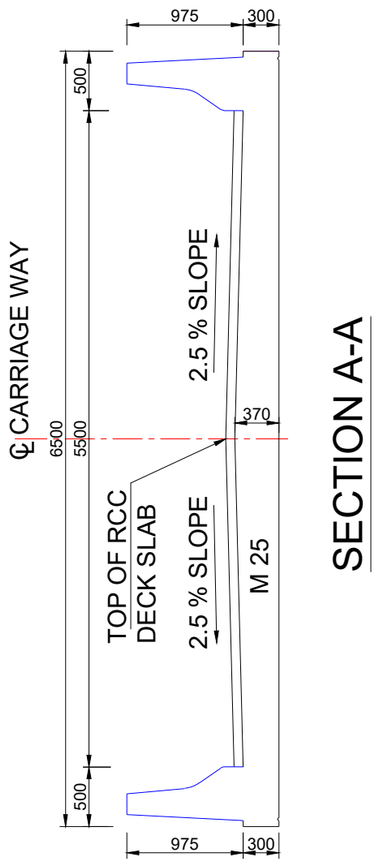
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 14.640 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2



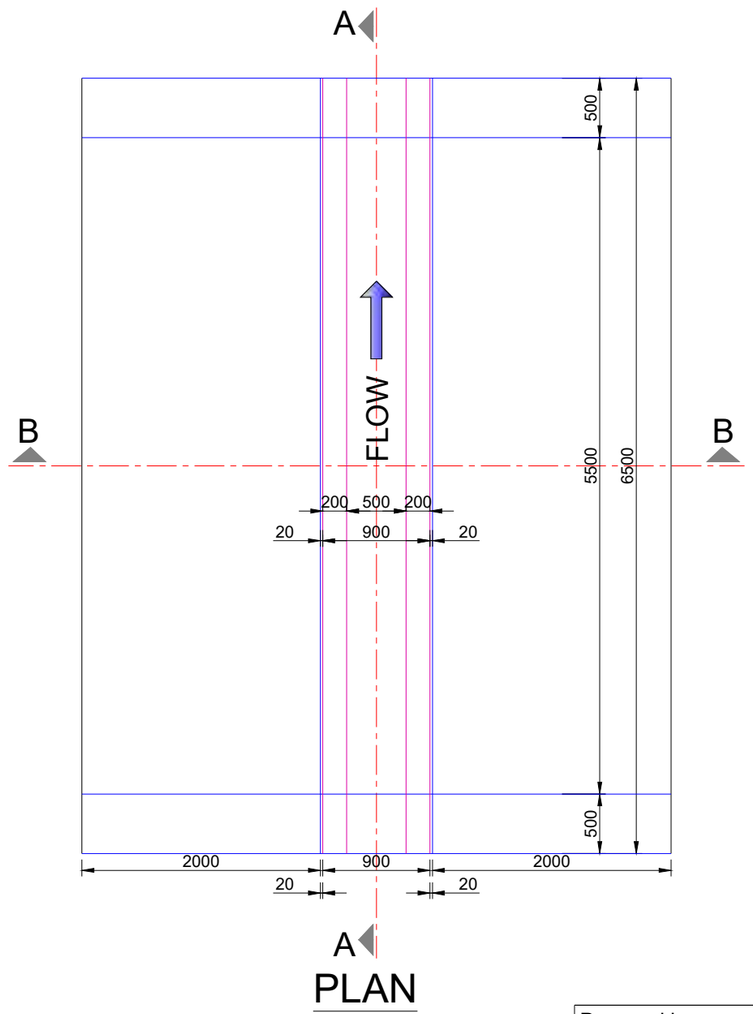
SECTION B-B

DESIGN DATA:-

DESIGN DISCHARGE	0.03 CUMECS
BED WIDTH	0.500 M
WATER DEPTH	0.300 M
FREE BOARD	0.500 M
BED LEVEL	91.901 M
F.S.L.	92.201 M
BANK R.L.	92.701 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	93.146 M
GROUND LEVEL	91.820 M



SECTION A-A



PLAN

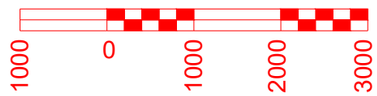
NOTES:-

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

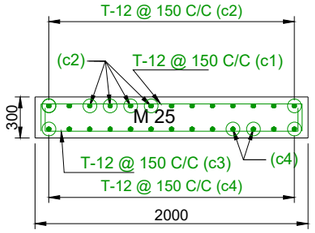
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

SCALE A:-

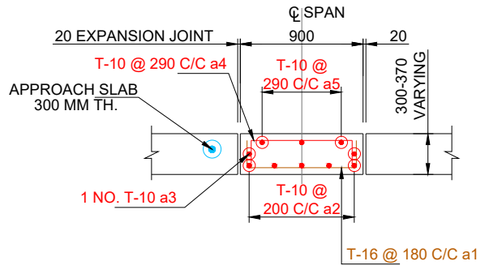


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 15.179 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 1 of 2



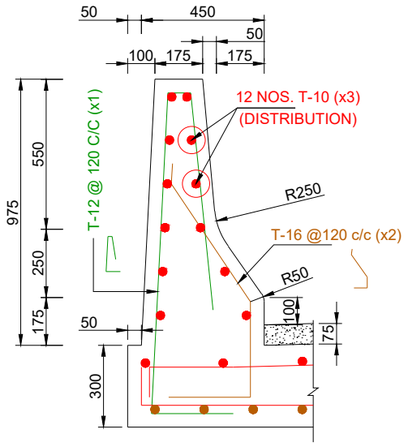
SECTION OF APPROACH SLAB

(SCALE A)



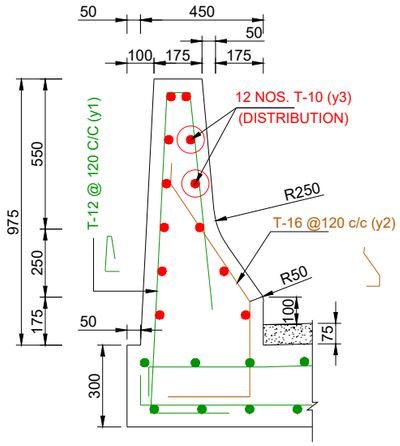
SECTION B-B

(SCALE A)



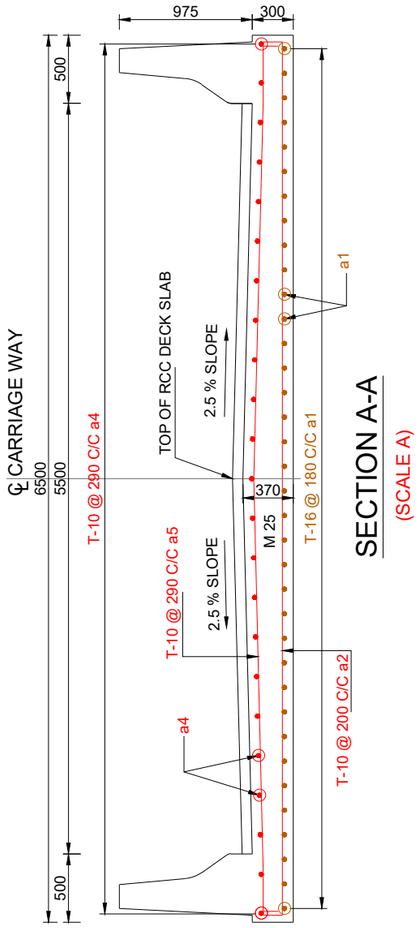
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB

(SCALE B)



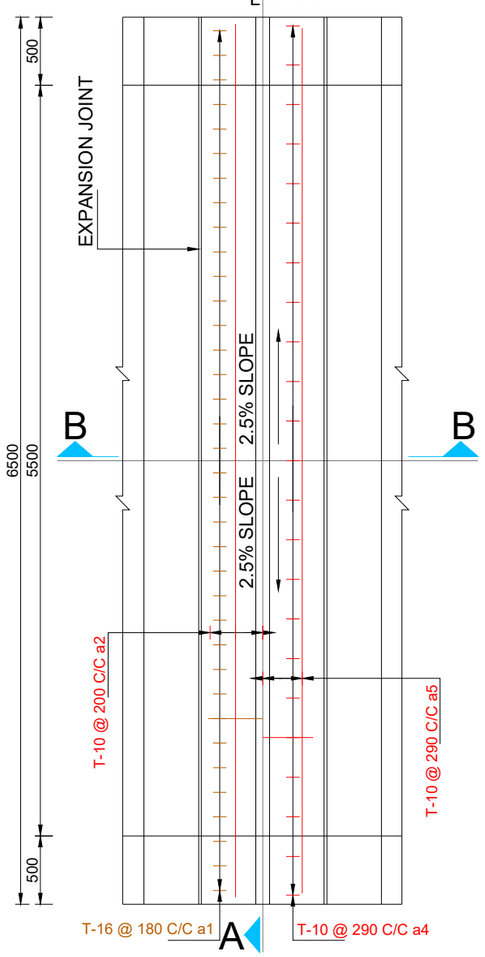
REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB

(SCALE B)



SECTION A-A

(SCALE A)



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)

SCALE A:-

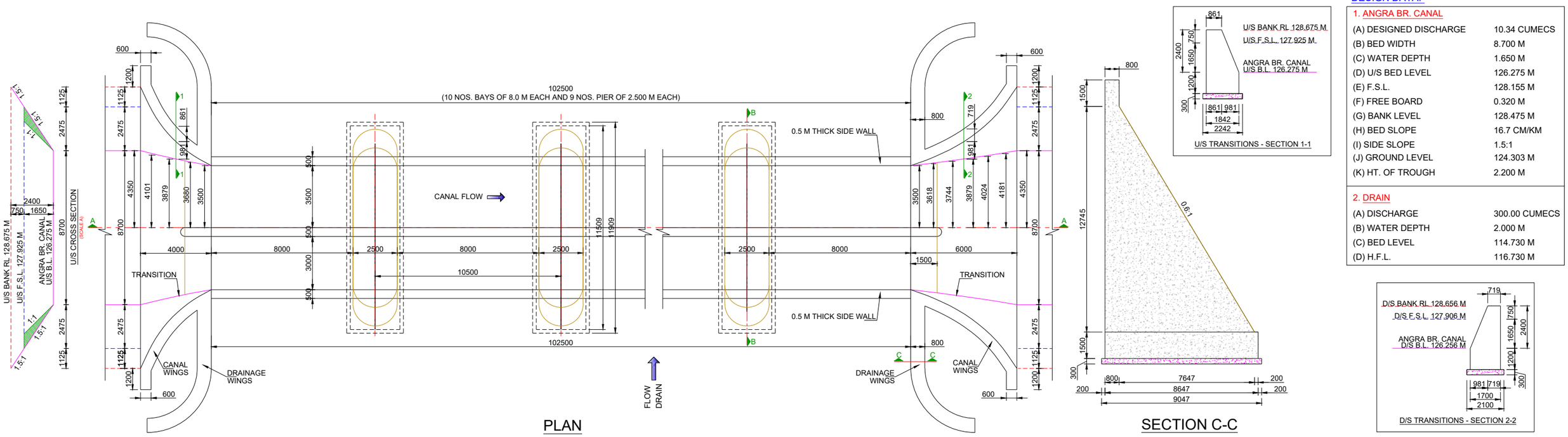
SCALE B:-

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	200, R=60, 800, 200	16	180	36
2	a2	200, R=40, 6400, 200	10	200	5
3	a3	6400	10	-	2
4	a4	800, 200, R=40, 200	10	290	23
5	a5	200, 450, 2750, 2750, 450, 200	10	290	3
APPROACH SLAB					
1	c1	150, 1900, 150	12	150	43X2
2	c2	150, 450, 2750, 2750, 450, 150	12	150	13X2
3	c3	150, 1900, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	13X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1146, 800, 300	12	120	7X2
2	x2	75, 520, 379, 300	16	120	7X2
3	x3	800	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	16X2X2
2	y2	75, 520, 379, 300	16	120	16X2X2
3	y3	1900	10	-	12X2X2

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 15.179 OF PATOI DY. (OFFTAKE FROM RD - 19+980 KM., ANGRA BRANCH CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-37-09/SLAB BRG. 2 of 2

DRAWING OF CROSS DRAINAGE WORK



DESIGN DATA:-

1. ANGRA BR. CANAL	
(A) DESIGNED DISCHARGE	10.34 CUMECS
(B) BED WIDTH	8.700 M
(C) WATER DEPTH	1.650 M
(D) U/S BED LEVEL	126.275 M
(E) F.S.L.	128.155 M
(F) FREE BOARD	0.320 M
(G) BANK LEVEL	128.475 M
(H) BED SLOPE	16.7 CM/KM
(I) SIDE SLOPE	1.5:1
(J) GROUND LEVEL	124.303 M
(K) HT. OF TROUGH	2.200 M

2. DRAIN	
(A) DISCHARGE	300.00 CUMECS
(B) WATER DEPTH	2.000 M
(C) BED LEVEL	114.730 M
(D) H.F.L.	116.730 M

NOTES:-

1. ALL DIMENSIONS ARE IN MM AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456, GRADE OF CONCRETE IN DIFFERENT COMPONENT SHALL BE

WEARING COAT	M-30
WING WALL	M-20
ABUTMENT	M-25
SLAB & PARAPET	M-30
TROUGH	M-30
PIER	M-25
PCC	M-15

4. EXPANSION JOINTS PROVIDED AT SUITABLE INTERVALS AS PER ENGINEER-IN-CHIEF.
5. HYSD BARS OF Fe 500 SHALL BE USED.
6. THE FOUNDATION HAS BEEN PROVIDED BY ASSUMING THE SBC AS 20 T/M². HOWEVER, GEO-TECHNICAL INVESTIGATION SHALL BE CARRIED OUT BEFORE CONSTRUCTION AND FOUNDATION BE DESIGNED ACCORDINGLY.
7. WEEP HOLES 80 MM DIA IN 1:20 SLOPE TOWARDS CANAL SHALL BE PROVIDED IN TRANSITION/ABUTMENT WALLS TO FACILITATE PROPER DRAINAGE.
8. SOFT AND LOOSE PATCHES IN THE BEARING AREA ARE TO BE REPLACED BY COMPACTED GRANULAR FILLS WITH LAYERS NOT EXCEEDING 300 MM.

SCALE A:-

2000 0 2000 4000 6000

TENDER PURPOSE ONLY

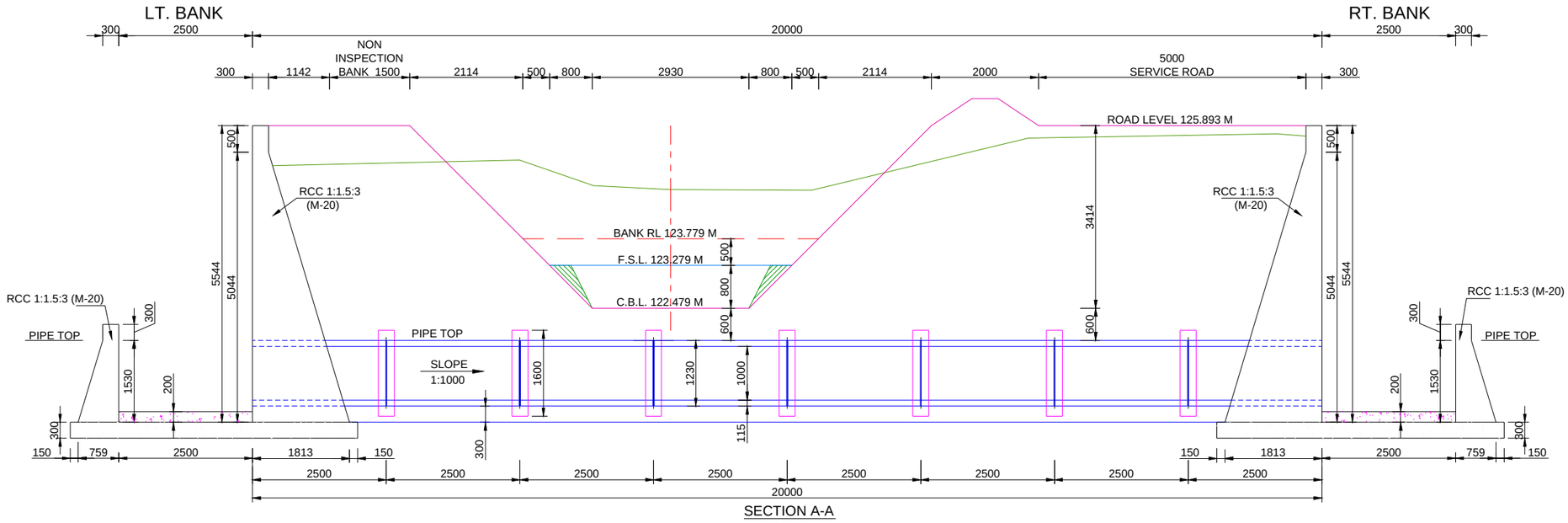
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	AQUEDUCT AT KM. 3.280 OF ANGRA BR. CANAL (OFFTAKE FROM RD - 103+660 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-37/ AQUEDUCT 1 of 1

PROPOSED DESIGN DATA

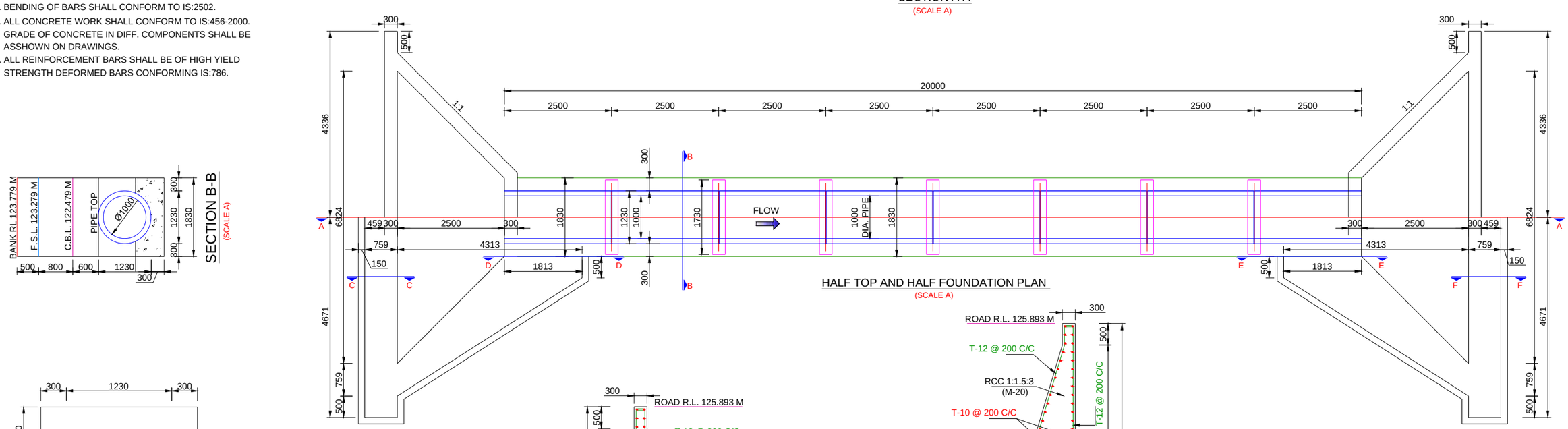
	KM 0.950	Unit
Discharge	1.12	cumec
Bed Width	2.930	m
Water Depth	0.800	m
Internal Dia	1.000	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.

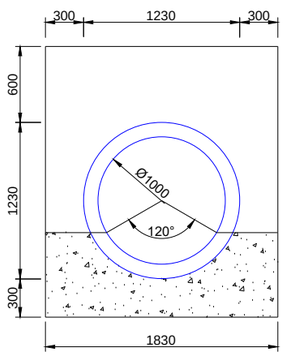


SECTION A-A
(SCALE A)

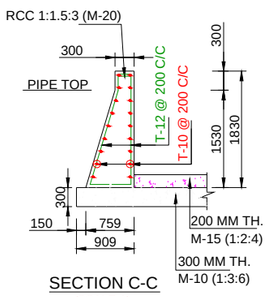


HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)

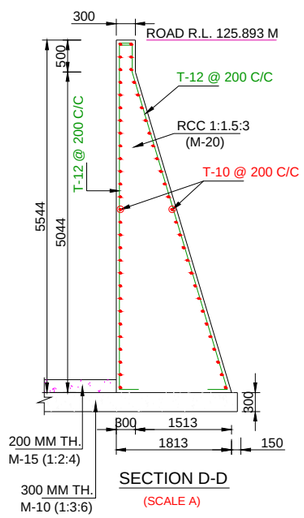
SECTION B-B
(SCALE A)



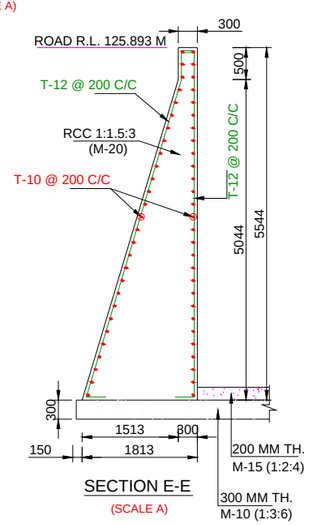
DETAILS OF JOINT OF PIPE
(SCALE B)



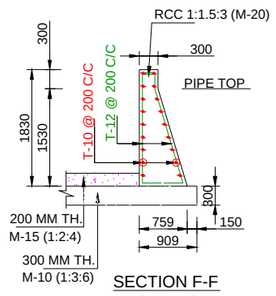
SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)



SECTION E-E
(SCALE A)



SECTION F-F
(SCALE A)

SCALE A:-

SCALE B:-

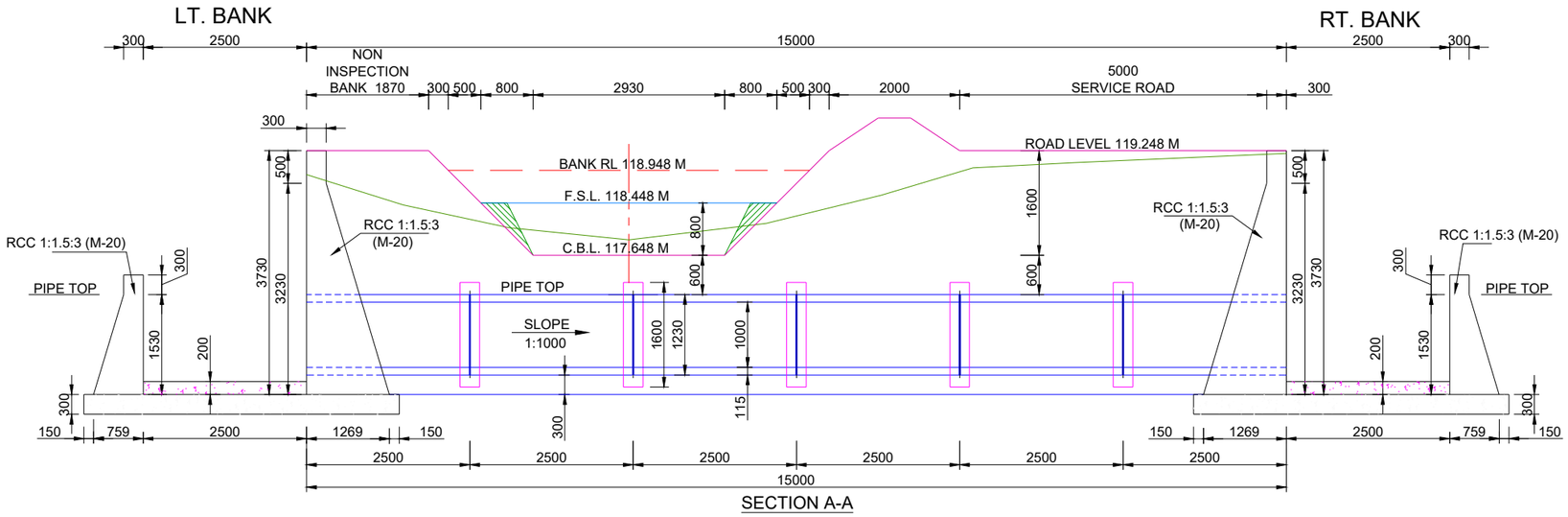
Prepared by :-	WAPCOS LTD.
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 0.950 OF BUDHUAL SUB DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-03/ CD 1 of 1

PROPOSED DESIGN DATA

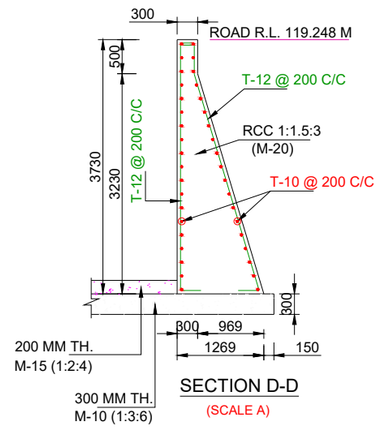
	KM 4.600	Unit
Discharge	1.12	cumec
Bed Width	2.930	m
Water Depth	0.800	m
Internal Dia	1.000	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

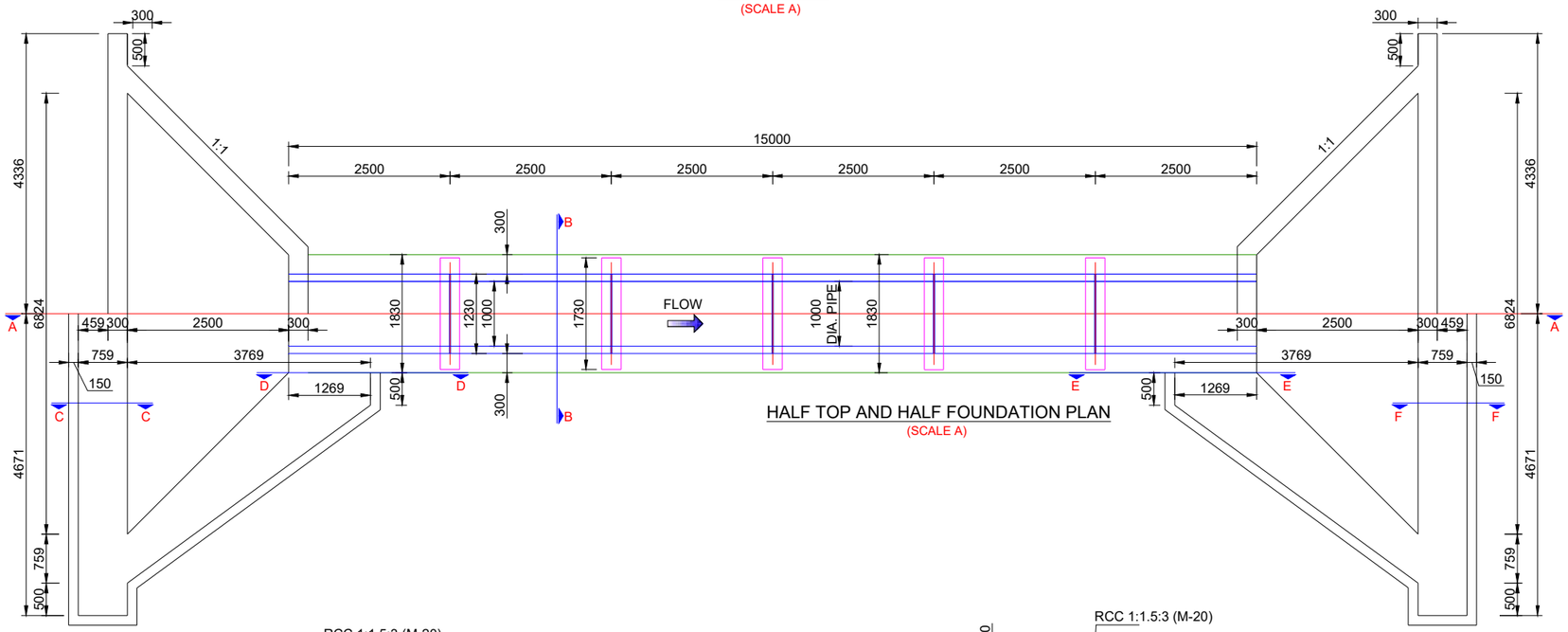
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



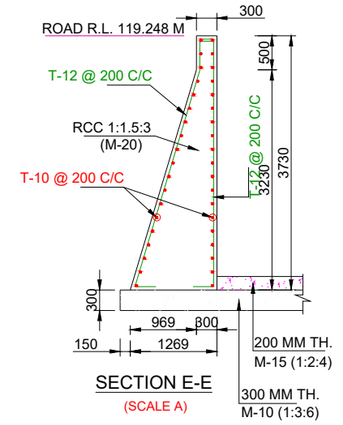
SECTION A-A
(SCALE A)



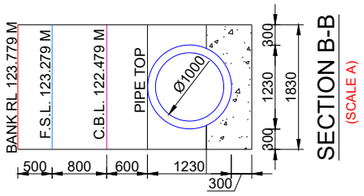
SECTION D-D
(SCALE A)



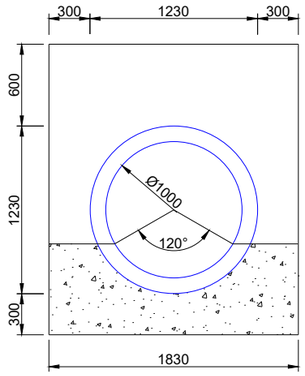
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)



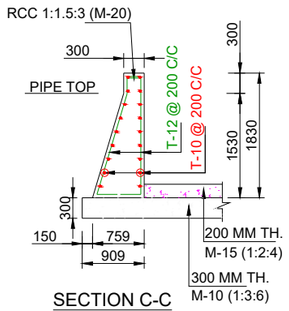
SECTION E-E
(SCALE A)



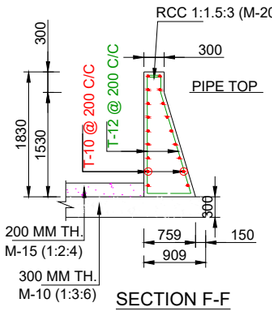
SECTION B-B
(SCALE A)



DETAILS OF JOINT OF PIPE
(SCALE B)



SECTION C-C
(SCALE A)



SECTION F-F
(SCALE A)

SCALE A:-

SCALE B:-

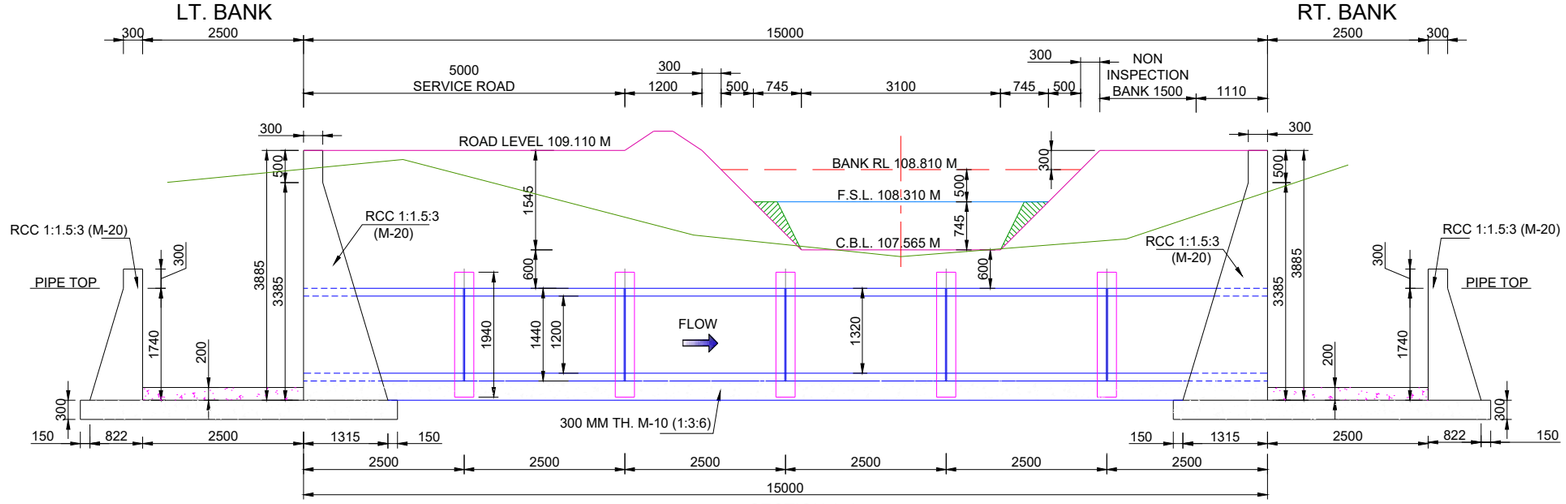
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 4.600 OF BUDHUAL SUB DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-03/ CD 1 of 1

PROPOSED DESIGN DATA

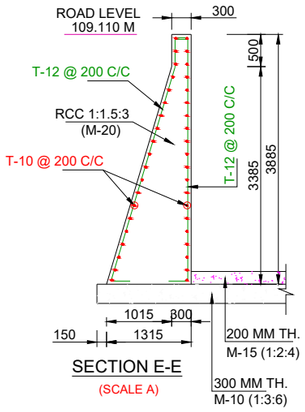
	KM 1.900	Unit
Discharge	1.00	cumec
Bed Width	3.100	m
Water Depth	0.745	m
Internal Dia	1.200	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

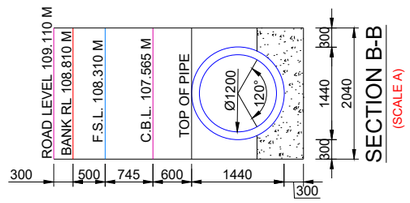
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



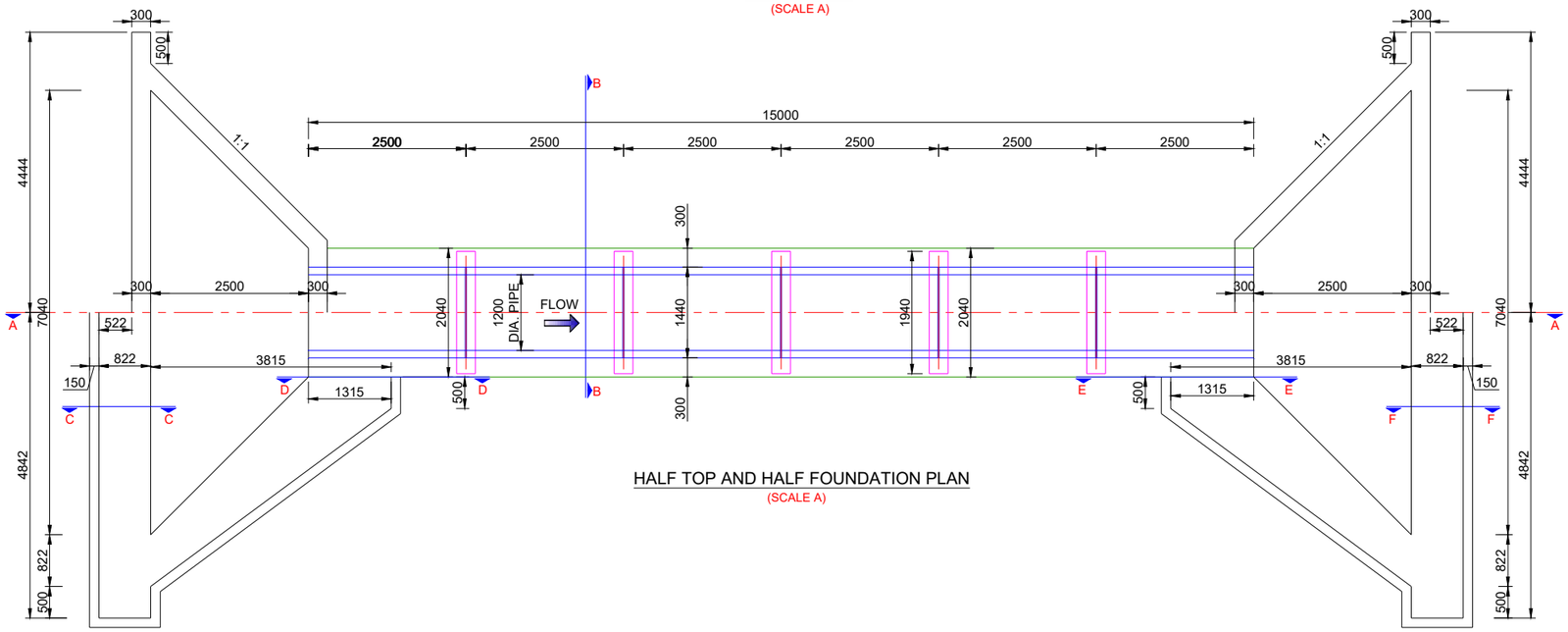
SECTION A-A
(SCALE A)



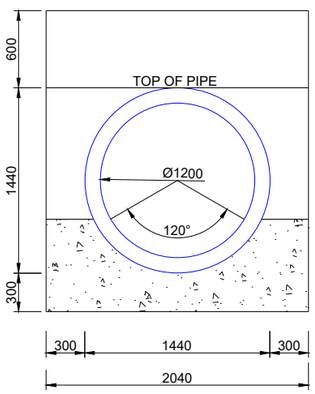
SECTION E-E
(SCALE A)



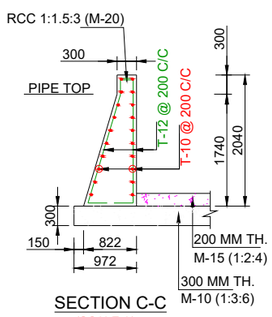
SECTION B-B
(SCALE A)



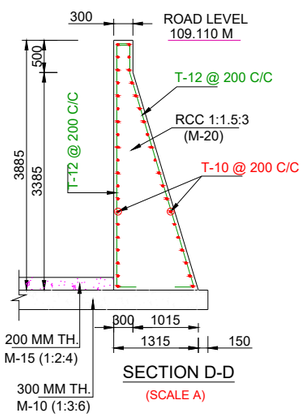
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)



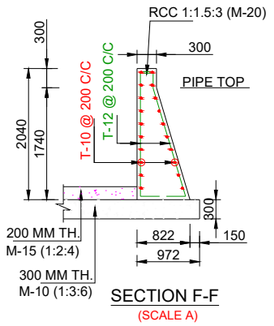
DETAILS OF JOINT OF PIPE
(SCALE B)



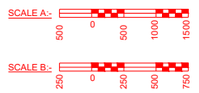
SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)



SECTION F-F
(SCALE A)



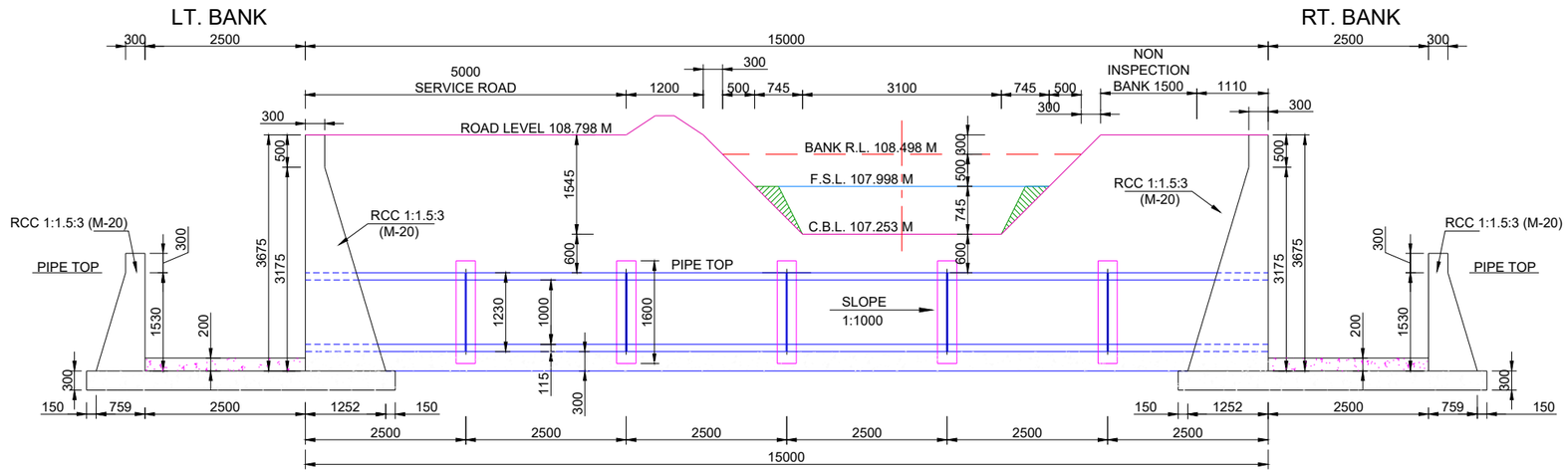
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 1.900 OF DHARAMPUR SUB DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-08/ CD 1 of 1

PROPOSED DESIGN DATA

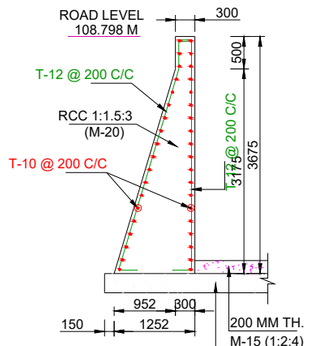
	KM 3.400	Unit
Discharge	1.00	cumec
Bed Width	3.100	m
Water Depth	0.745	m
Internal Dia	1.000	m
No. of Dia	2	No.
Free Board	0.500	m

NOTES:-

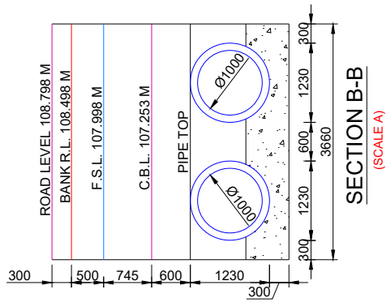
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



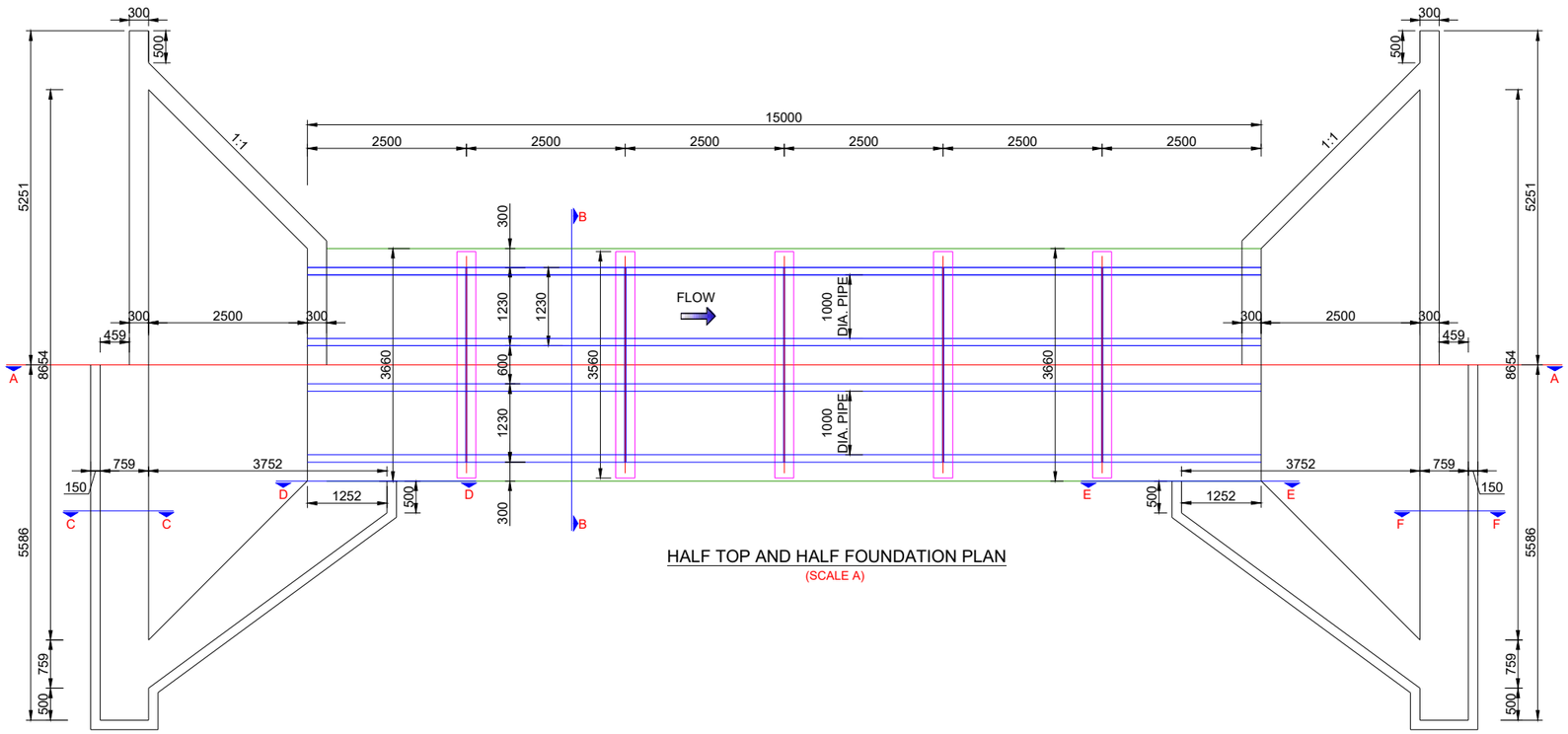
SECTION A-A
(SCALE A)



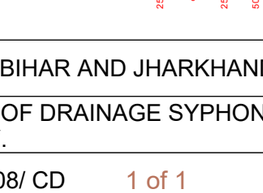
SECTION D-D
(SCALE A)



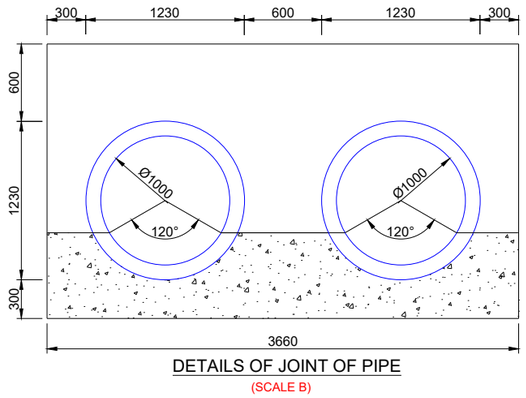
SECTION B-B
(SCALE A)



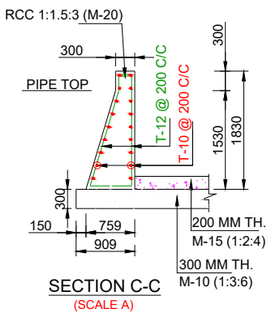
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)



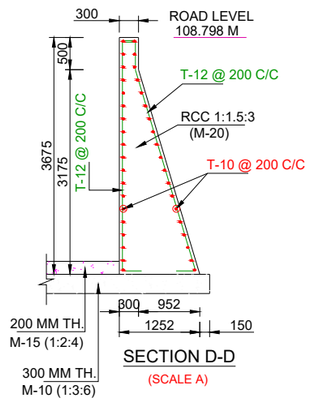
SECTION C-C
(SCALE A)



DETAILS OF JOINT OF PIPE
(SCALE B)



SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)

SCALE A:-

SCALE B:-

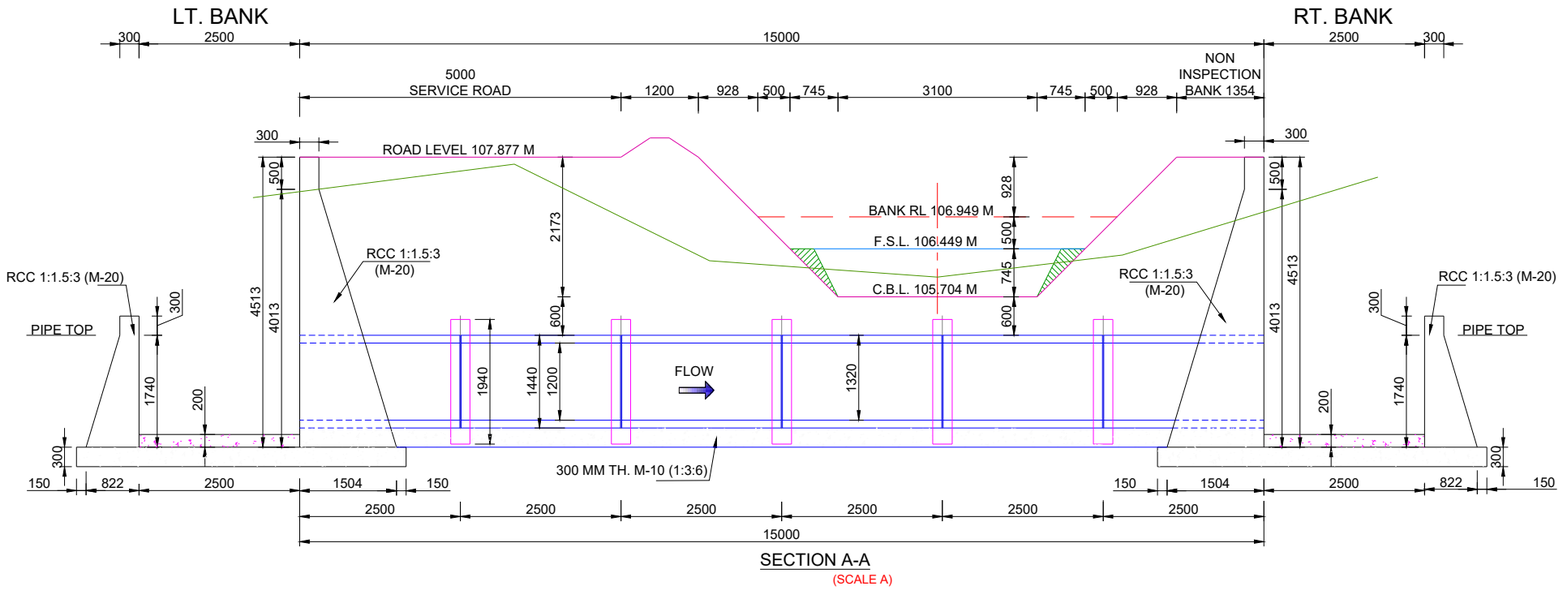
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 3.400 OF DHARAMPUR SUB DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-08/ CD 1 of 1

PROPOSED DESIGN DATA

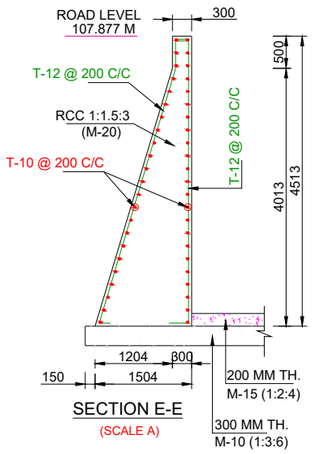
	KM 4.250	Unit
Discharge	1.00	cumec
Bed Width	3.100	m
Water Depth	0.745	m
Internal Dia	1.200	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

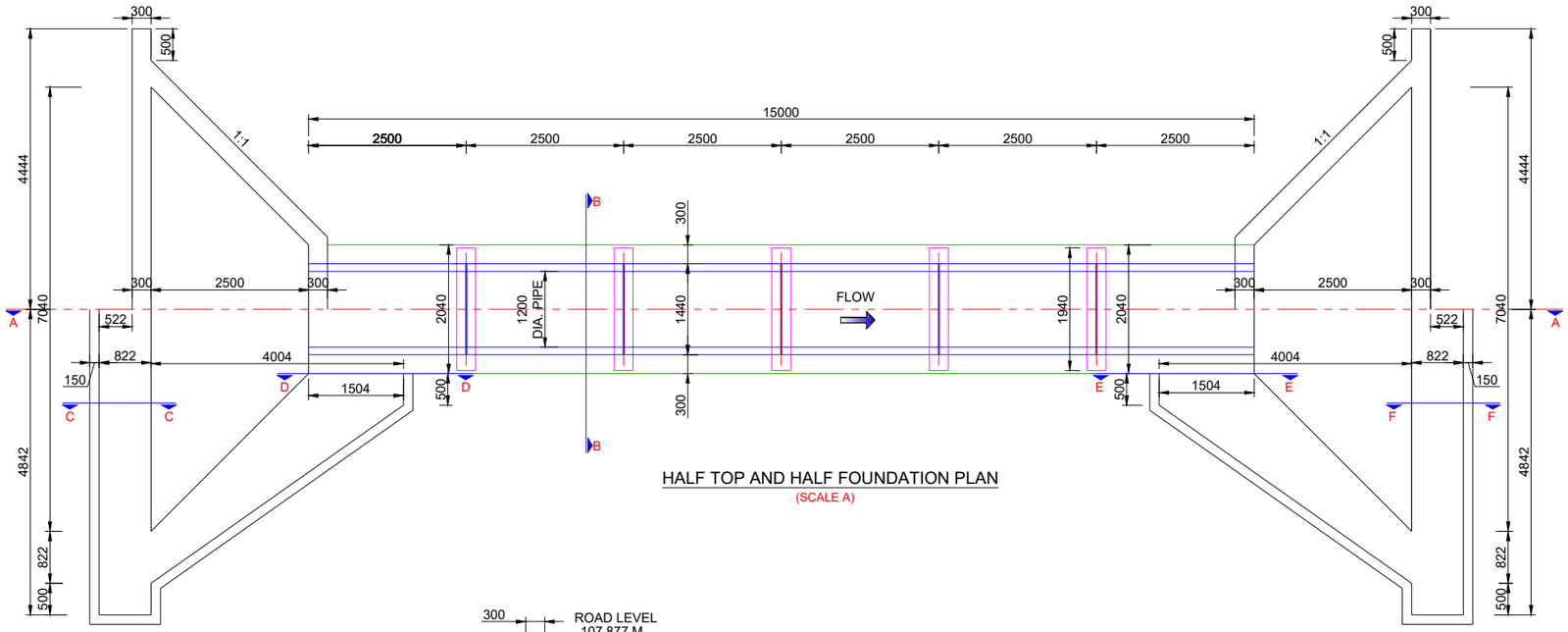
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



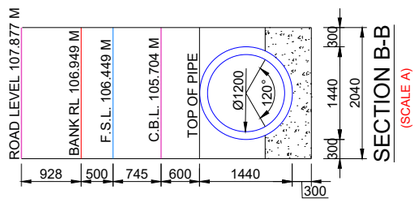
SECTION A-A
(SCALE A)



SECTION E-E
(SCALE A)

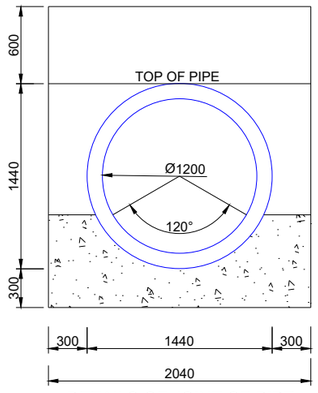


(SCALE A)

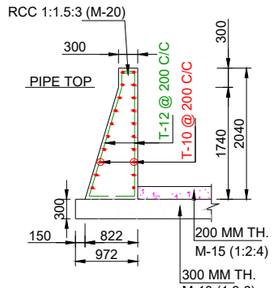


SECTION B-B
(SCALE A)

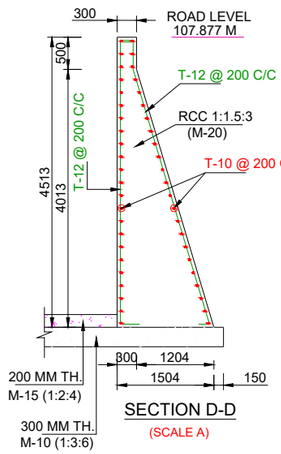
SECTION F-F
(SCALE A)



DETAILS OF JOINT OF PIPE
(SCALE B)



SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)

SCALE A:-

SCALE B:-

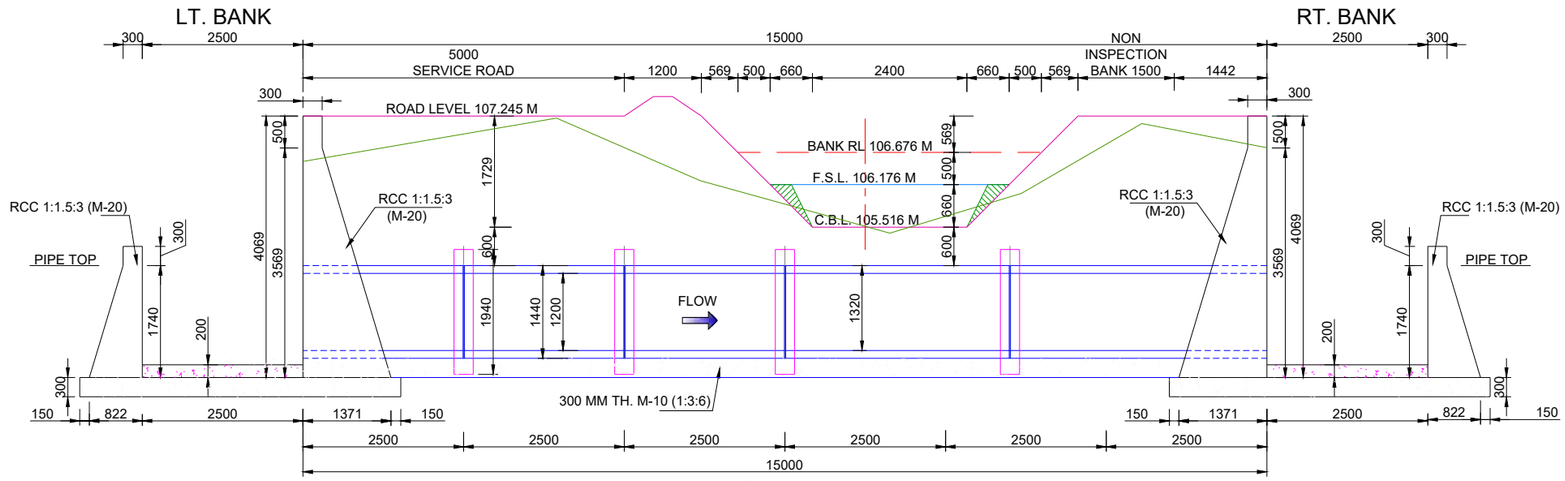
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 4.250 OF DHARAMPUR SUB DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-08/ CD 1 of 1

PROPOSED DESIGN DATA

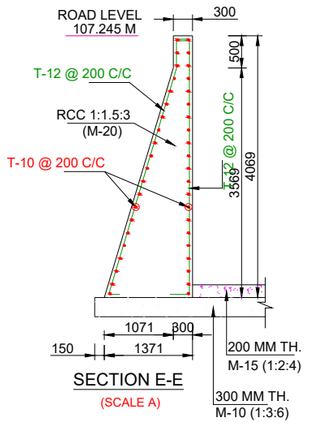
	KM 5.150	Unit
Discharge	1.00	cumec
Bed Width	2.400	m
Water Depth	0.660	m
Internal Dia	1.200	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

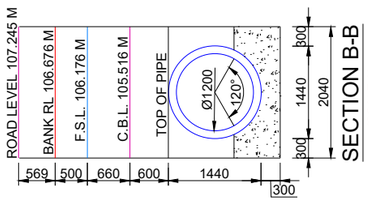
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



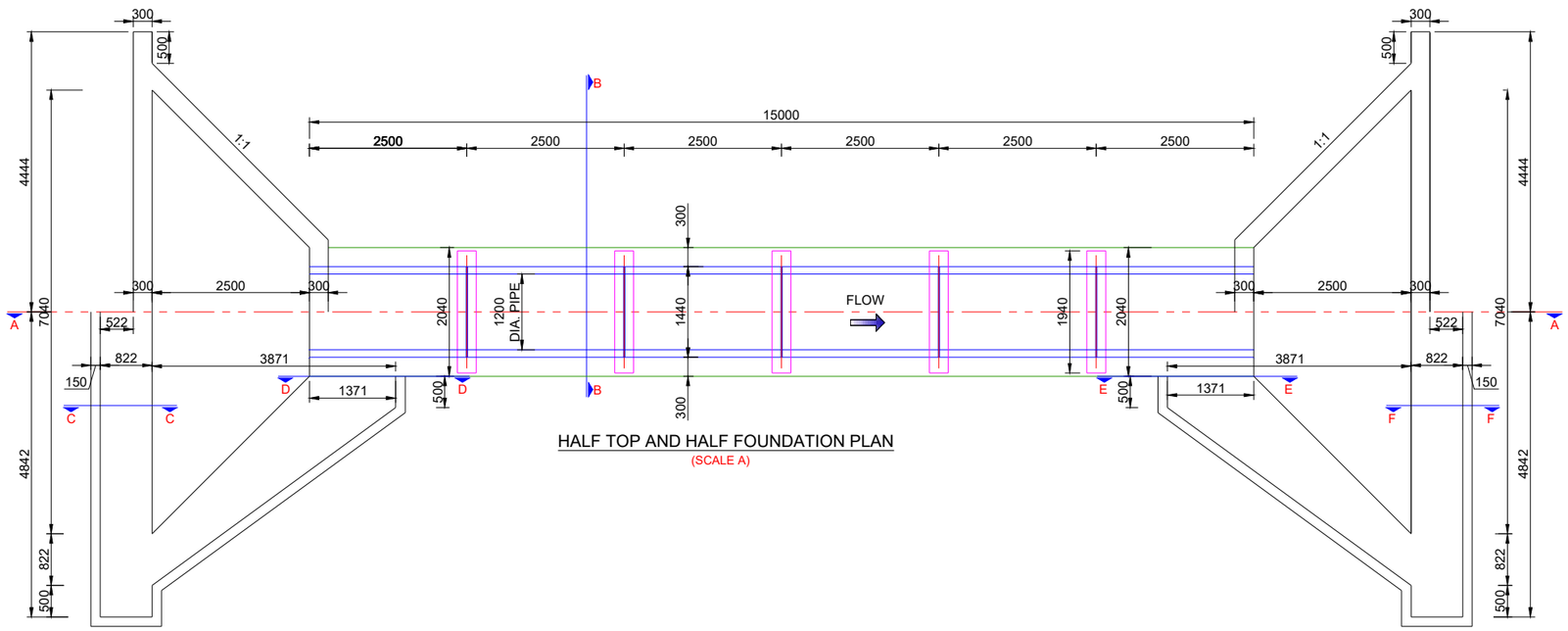
SECTION A-A
(SCALE A)



SECTION E-E
(SCALE A)

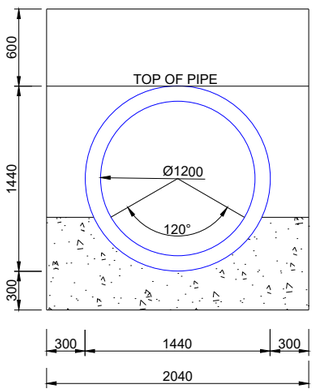


SECTION B-B
(SCALE A)

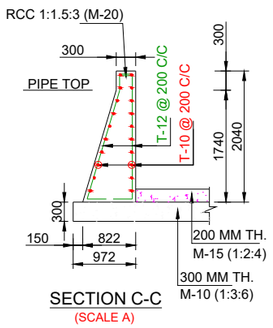


HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)

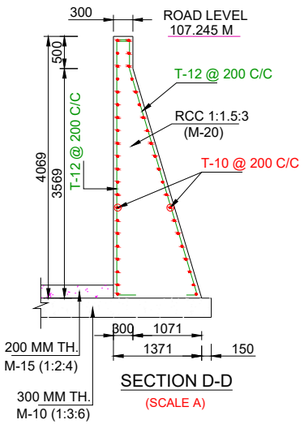
SECTION C-C
(SCALE A)



DETAILS OF JOINT OF PIPE
(SCALE B)



SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)

SCALE A:-

SCALE B:-

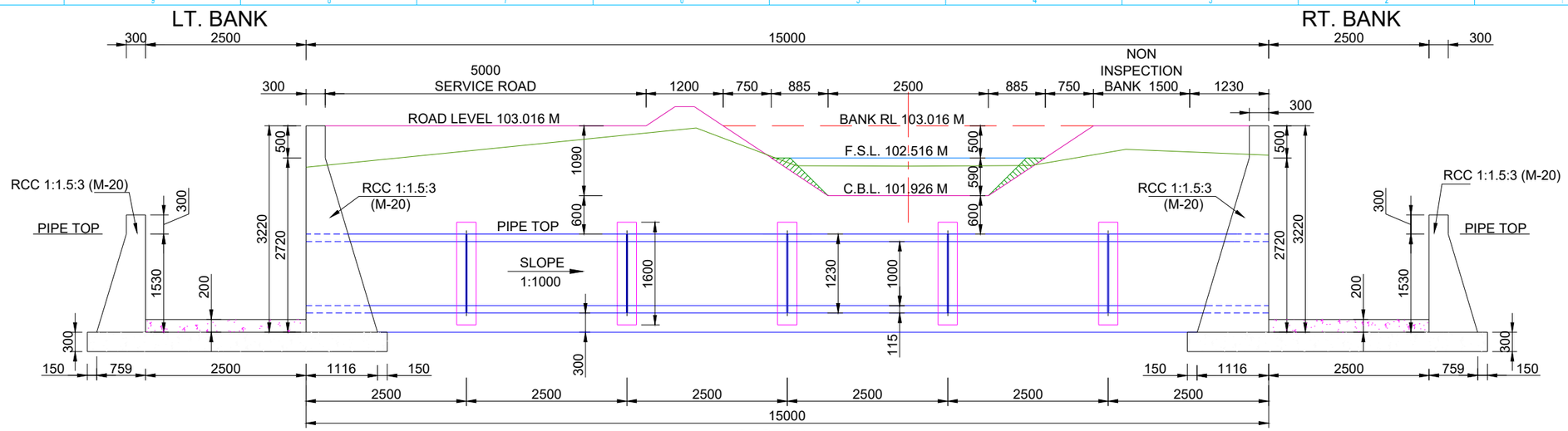
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 5.150 OF DHARAMPUR SUB DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-08/ CD 1 of 1

PROPOSED DESIGN DATA

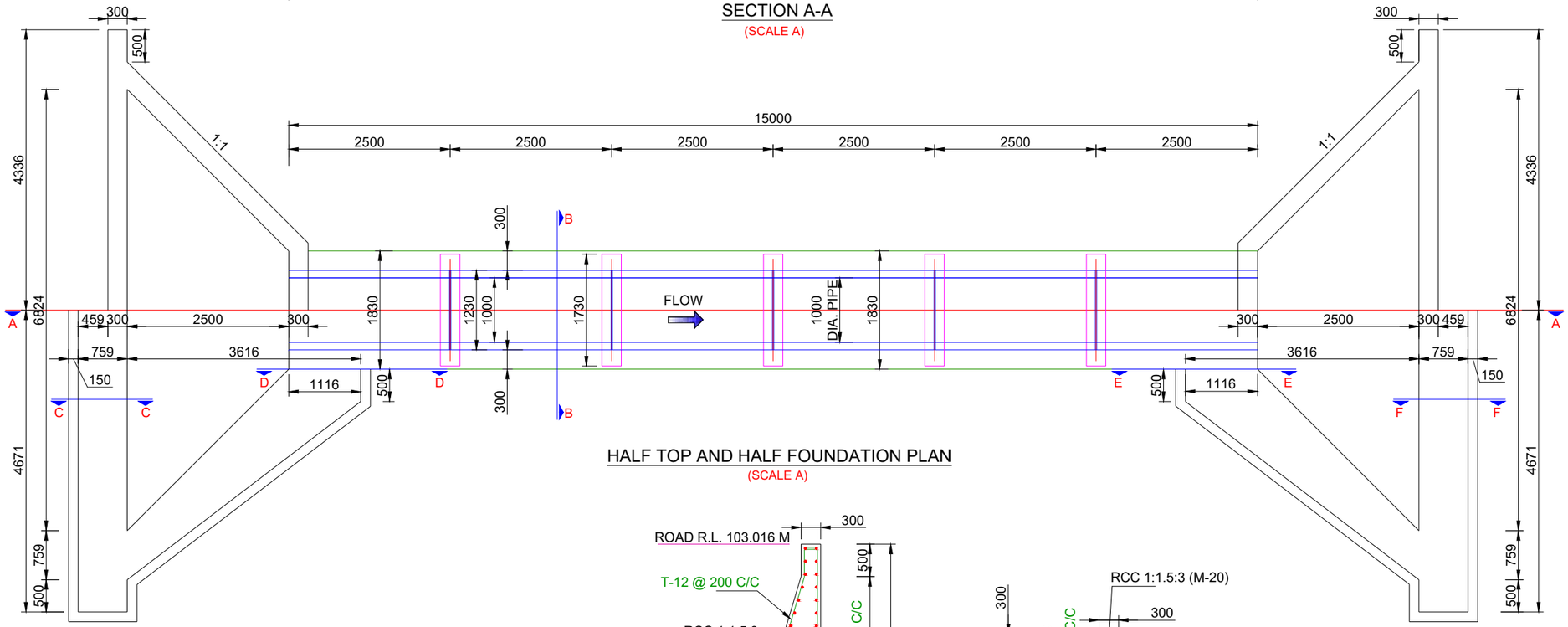
	KM 7.750	Unit
Discharge	0.57	cumec
Bed Width	2.500	m
Water Depth	0.590	m
Internal Dia	1.000	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

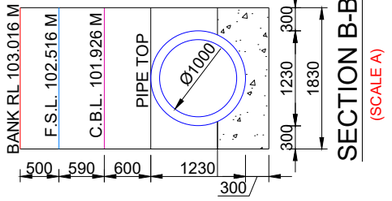
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



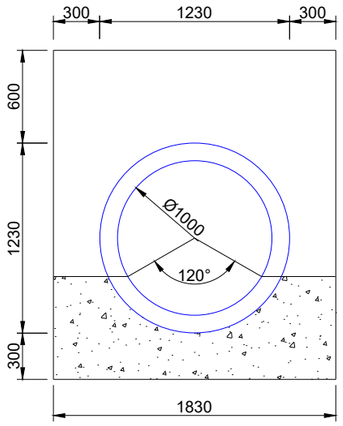
SECTION A-A
(SCALE A)



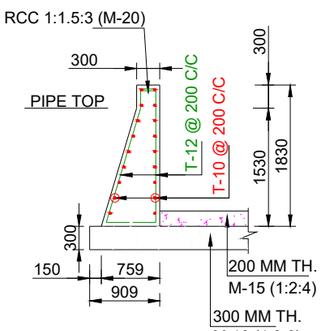
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)



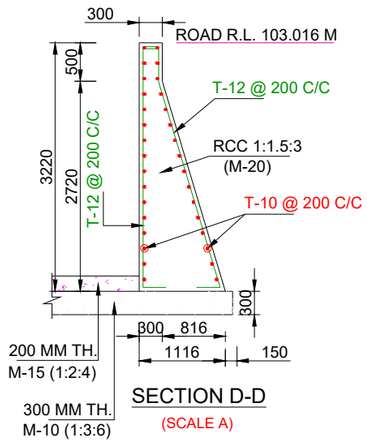
SECTION B-B
(SCALE A)



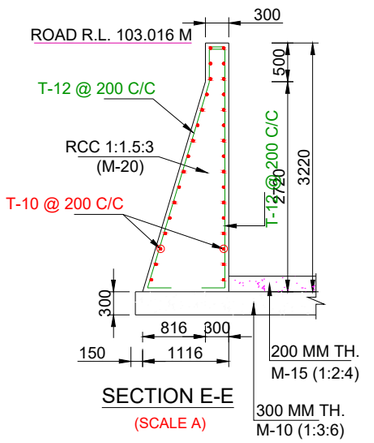
DETAILS OF JOINT OF PIPE
(SCALE B)



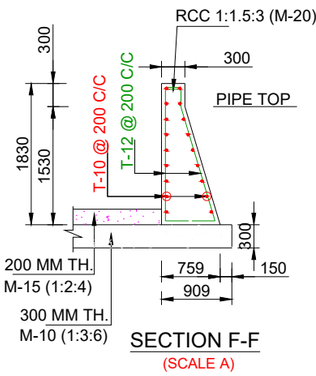
SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)



SECTION E-E
(SCALE A)



SECTION F-F
(SCALE A)

SCALE A:-

SCALE B:-

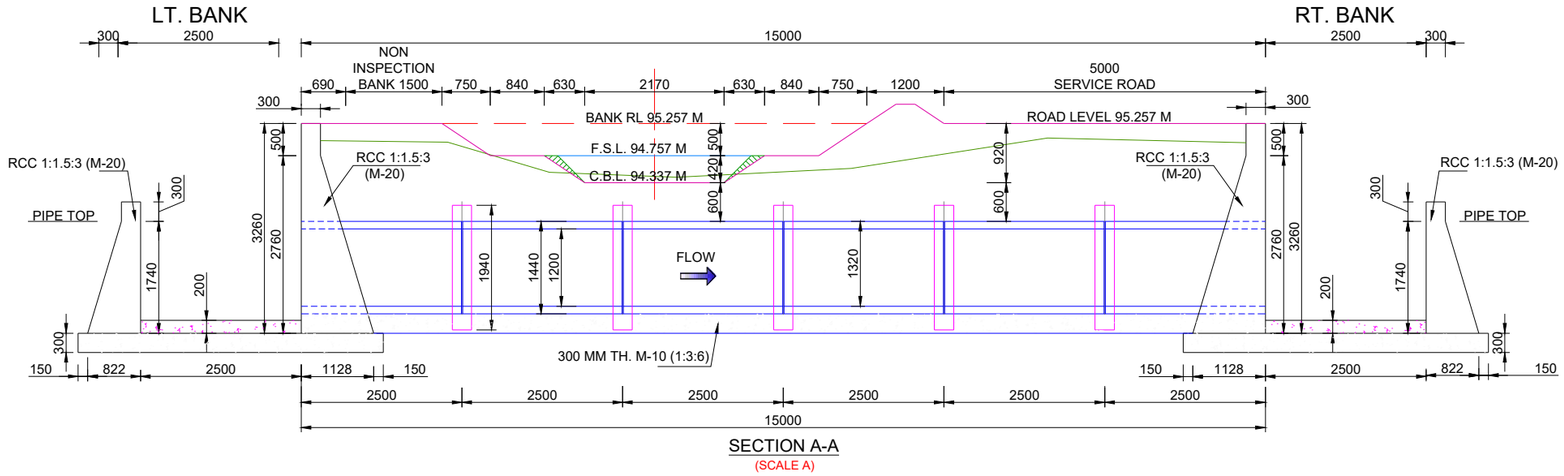
Prepared by :-	WAPCOS LTD.
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 7.750 OF DHARAMPUR SUB DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-08/ CD 1 of 1

PROPOSED DESIGN DATA

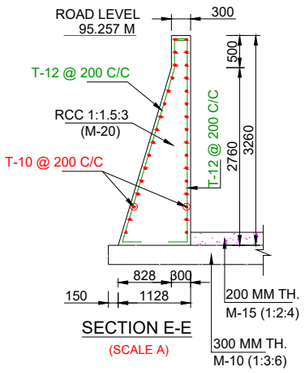
	KM 12.482	Unit
Discharge	0.28	cumec
Bed Width	2.170	m
Water Depth	0.420	m
Internal Dia	1.200	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

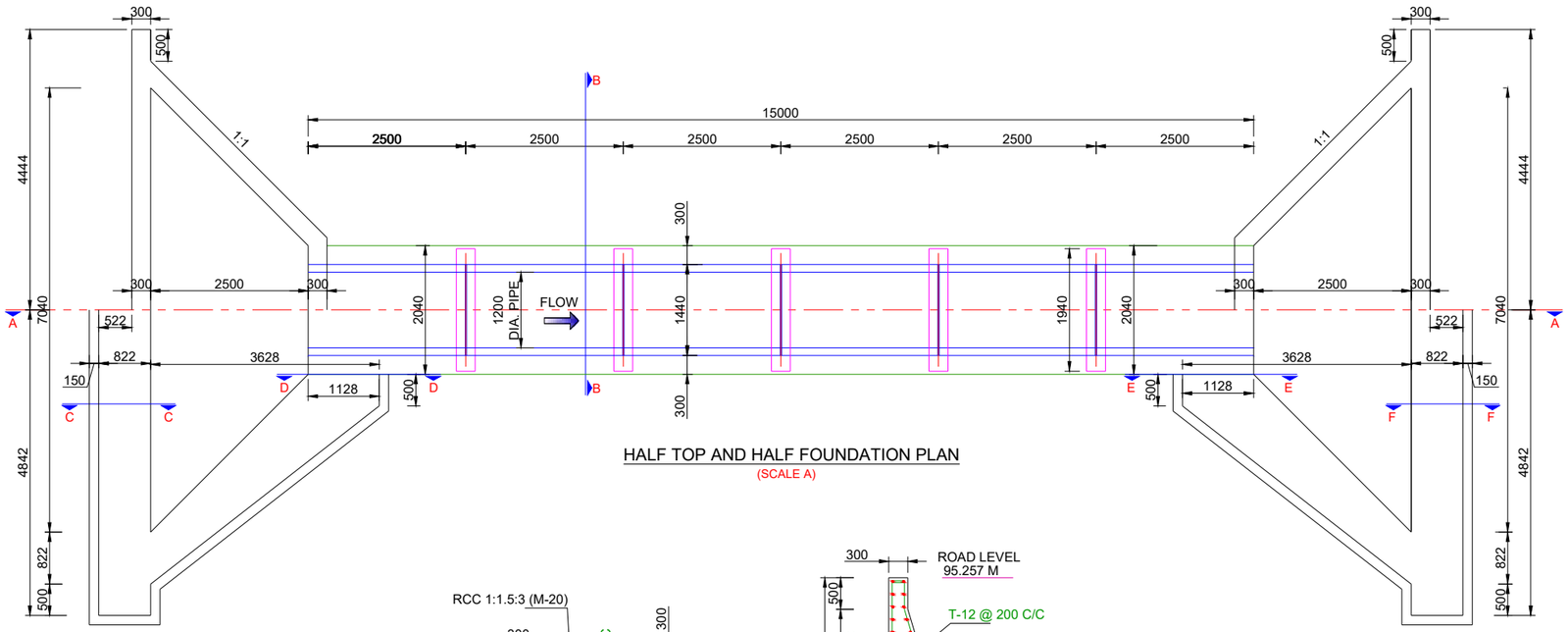
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



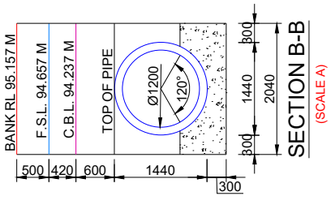
SECTION A-A
(SCALE A)



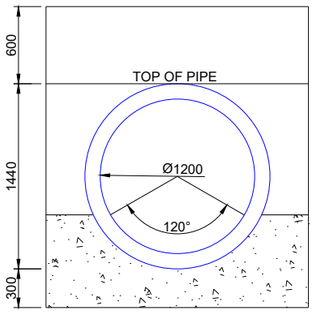
SECTION E-E
(SCALE A)



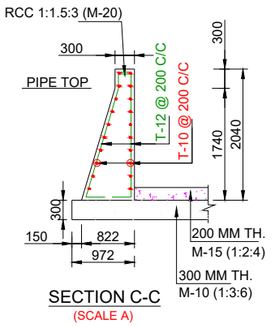
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)



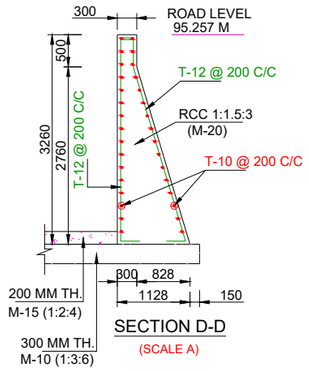
SECTION B-B
(SCALE A)



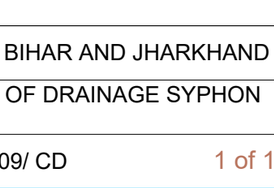
DETAILS OF JOINT OF PIPE
(SCALE B)



SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)



SECTION F-F
(SCALE A)

SCALE A:-

SCALE B:-

Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 12.482 OF PATOI DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-09/ CD 1 of 1

PROPOSED DESIGN DATA

	KM 13.800	Unit
Discharge	0.14	cumec
Bed Width	1.800	m
Water Depth	0.320	m
Internal Dia	1.000	m
No. of Dia	2	No.
Free Board	0.500	m

NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
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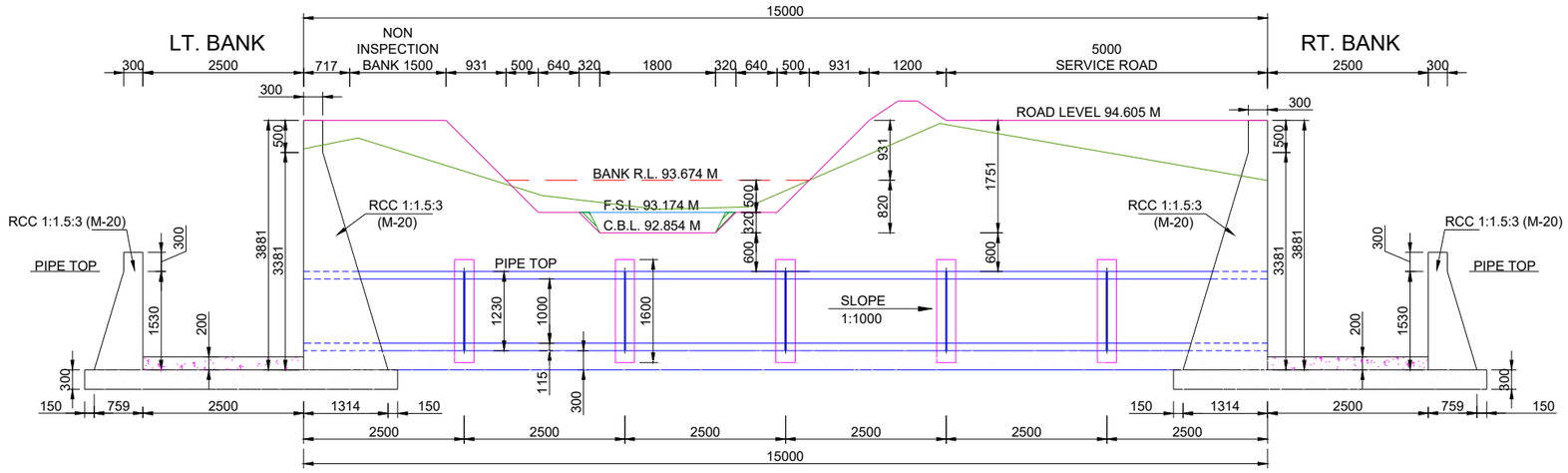
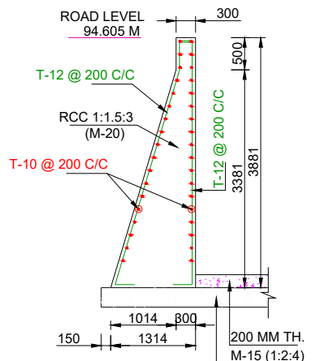
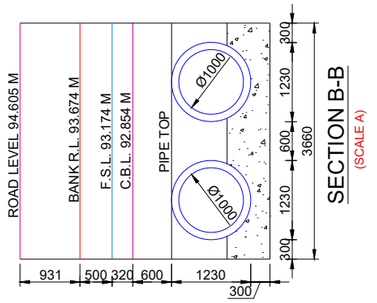
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



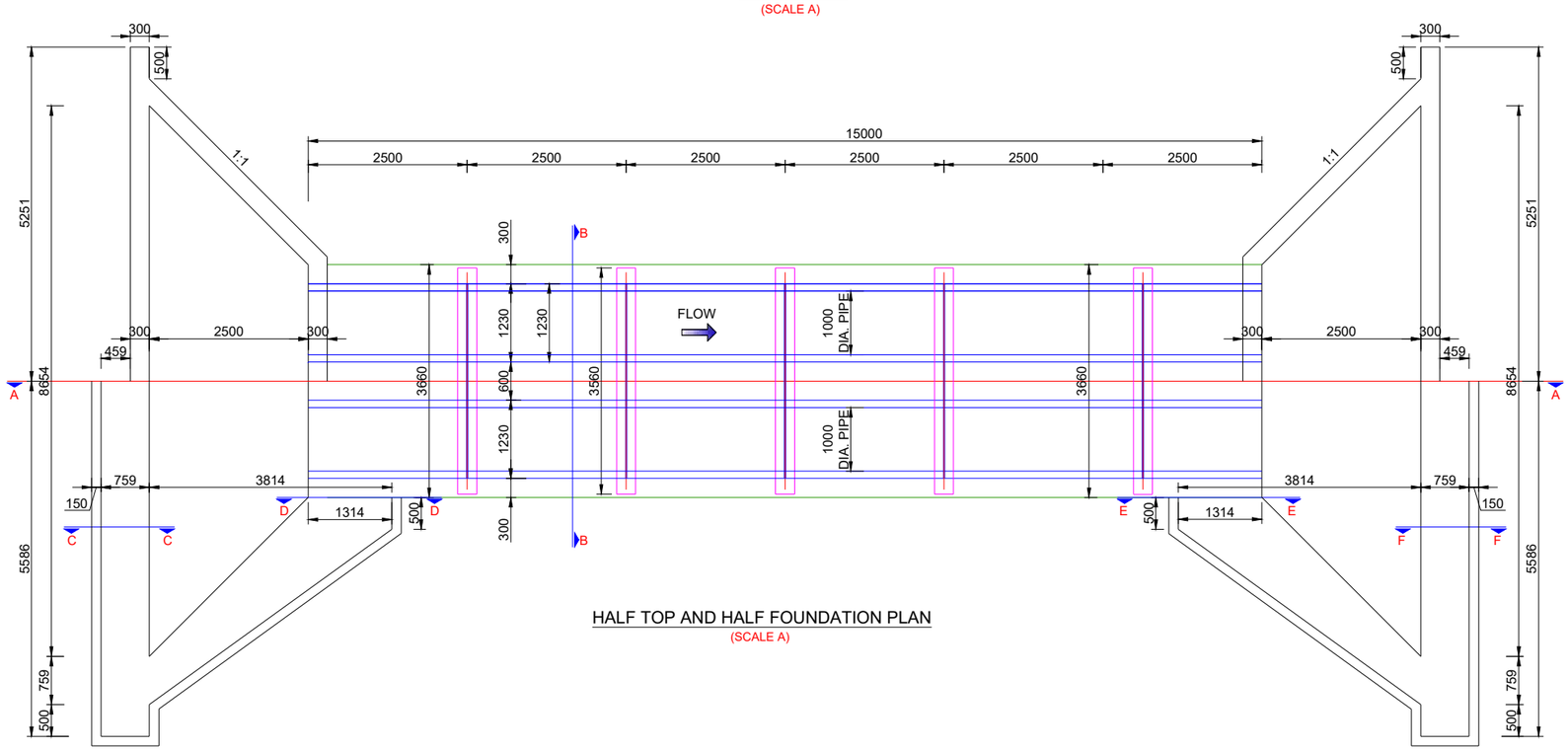
SECTION A-A
(SCALE A)



SECTION E-E
(SCALE A)

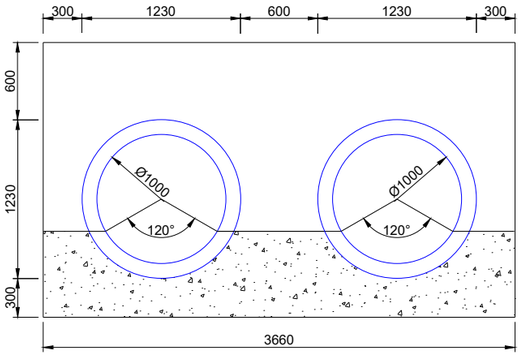


SECTION B-B
(SCALE A)

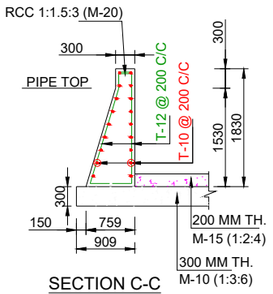


HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)

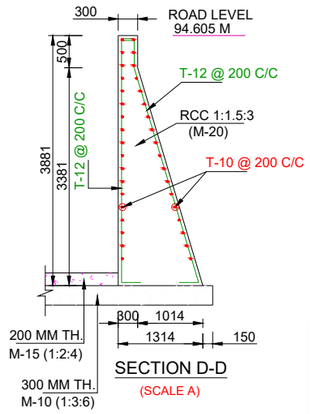
SECTION F-F
(SCALE A)



DETAILS OF JOINT OF PIPE
(SCALE B)



SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)

SCALE A:-

SCALE B:-

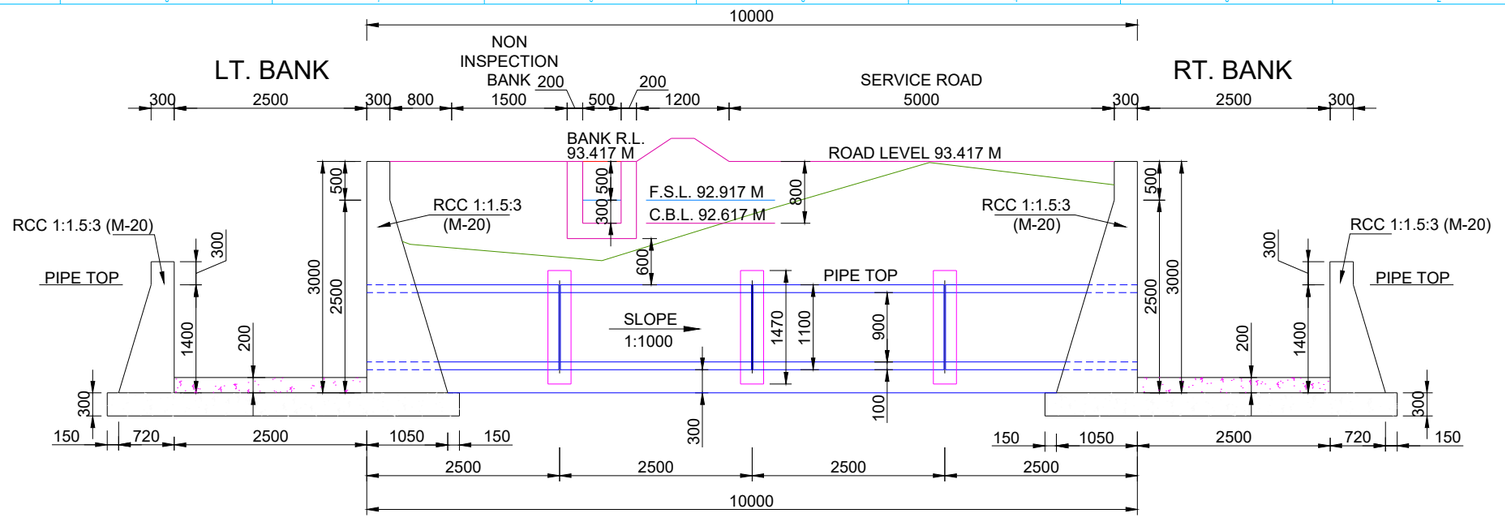
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 13.800 OF PATOI DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-09/ CD 1 of 1

PROPOSED DESIGN DATA

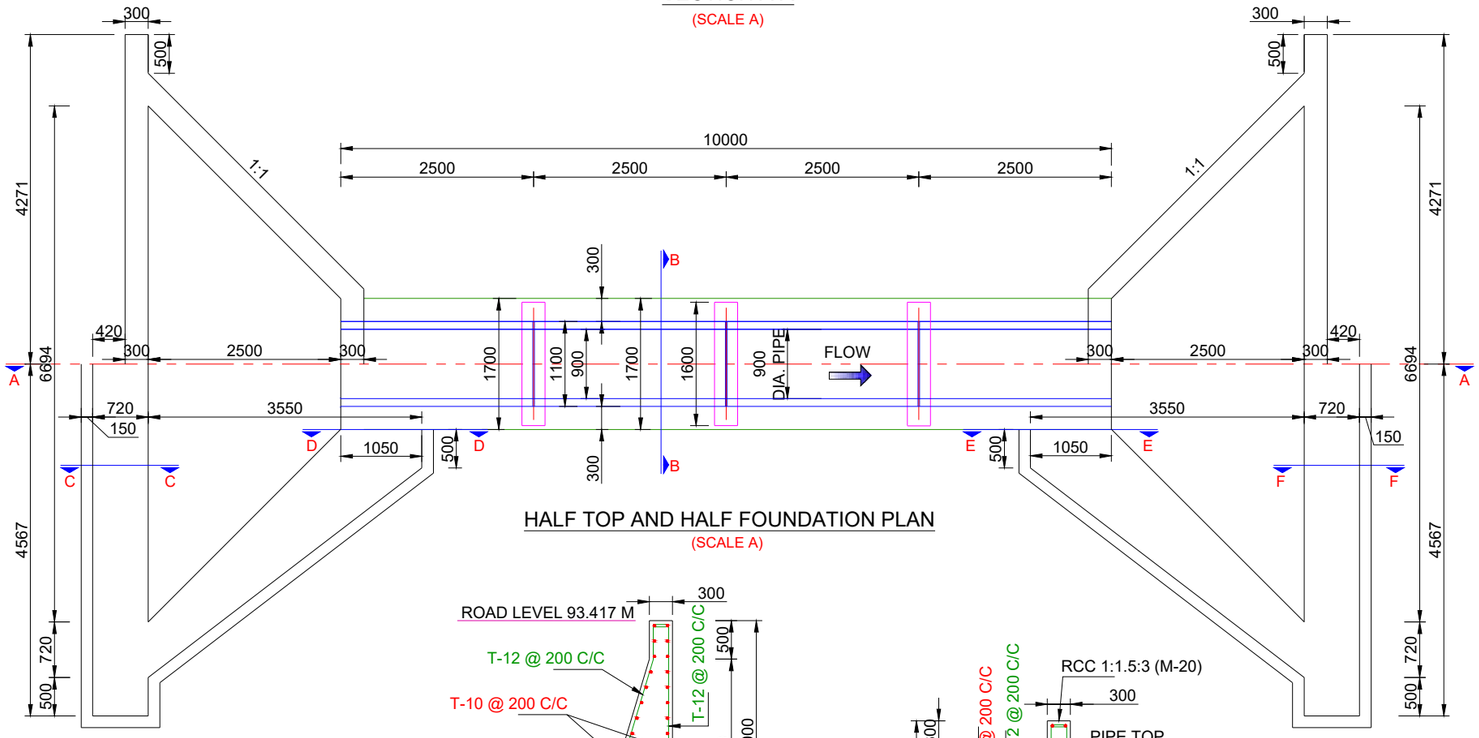
Discharge	0.06	cumec
Bed Width	0.800	m
Water Depth	0.300	m
Internal Dia	0.900	m
No. of Dia	1	Nos.
Free Board	0.500	m

NOTES:-

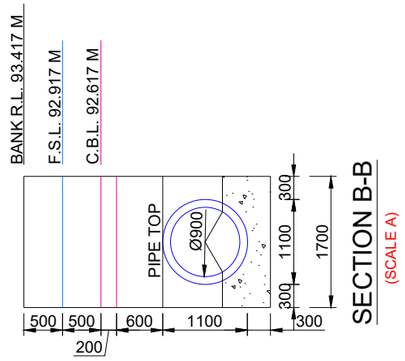
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



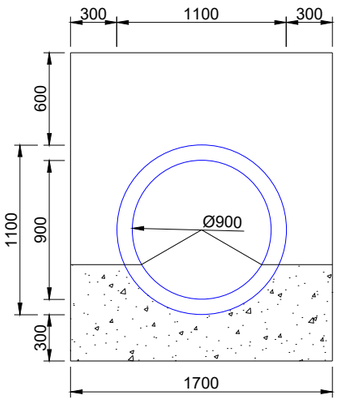
SECTION A-A
(SCALE A)



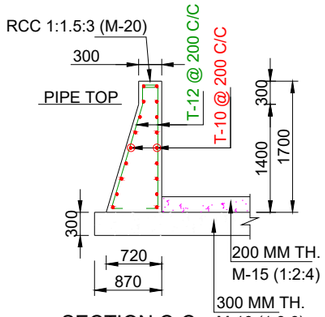
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)



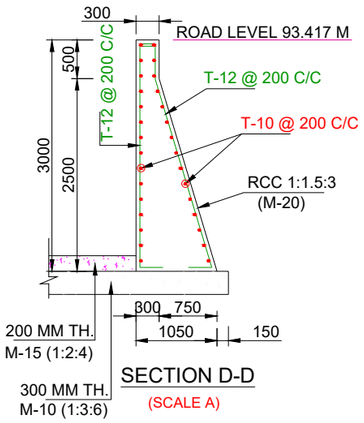
SECTION B-B
(SCALE A)



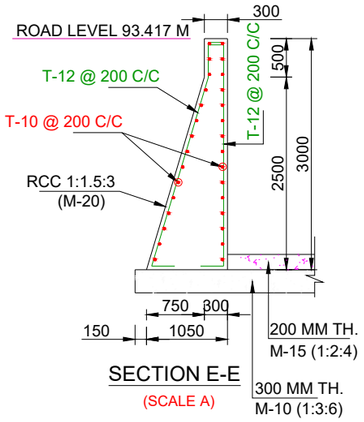
DETAILS OF JOINT OF PIPE
(SCALE B)



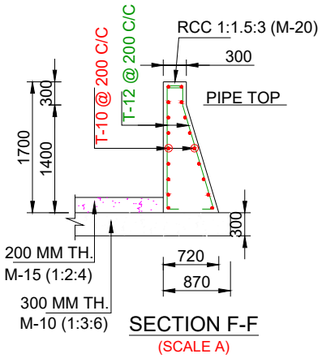
SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)



SECTION E-E
(SCALE A)

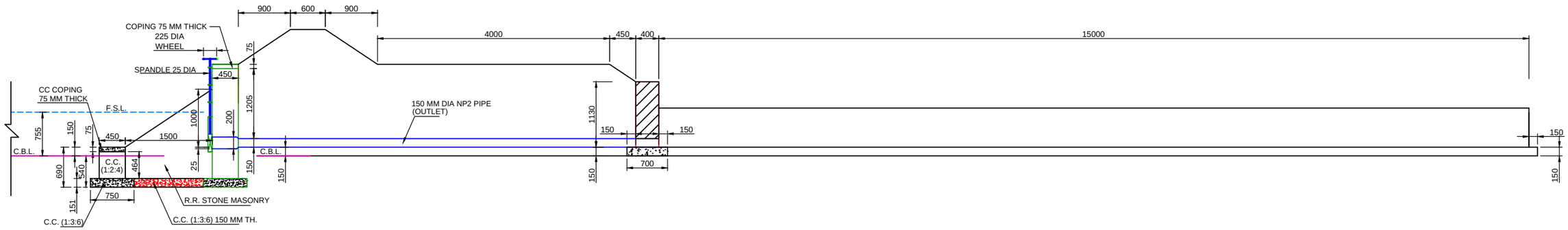


SECTION F-F
(SCALE A)

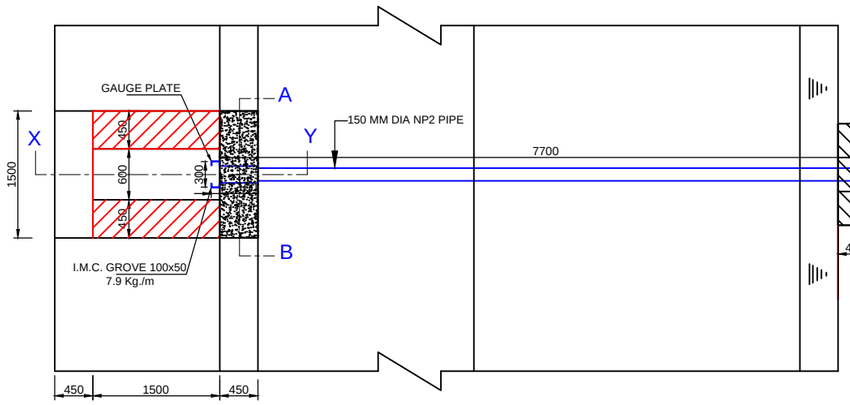
SCALE A:-

SCALE B:-

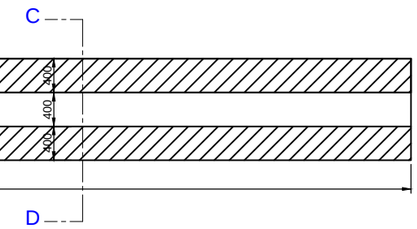
Prepared by :-	WAPCOS LTD.
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 14.865 OF PATOI DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-37-09/ CD 1 of 1



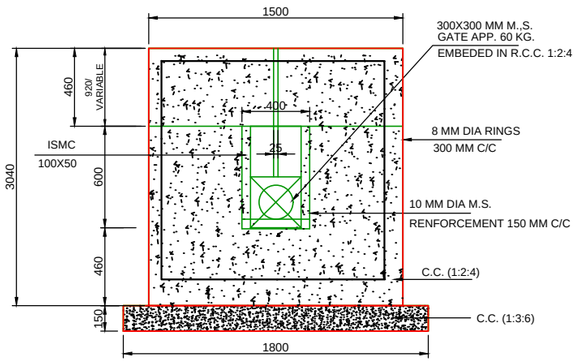
SECTION X-Y
SCALE A



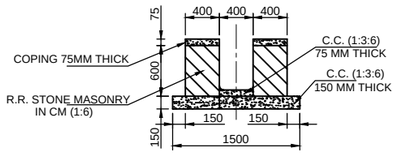
PLAN
SCALE A



ELEVATION
SCALE A



SECTION A-B
SCALE B



SECTION C-D
SCALE A

NOTES

1. ALL DIMENSIONS ARE IN MM EXCEPT LEVELS IN METRES UNLESS OTHERWISE SPECIFIED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION SHALL BE SCALED OFF.
2. ALL MASONRY WORKS SHALL BE DONE AS PER SPECIFICATION OF GOVT. OF JHARKHAND
3. THIS DWG. IS FOR OUTLET PIPE OF 150 MM DIA EMBEDED IN MASONRY.
4. 300X300 MM SIZE GATE SHALL BE FIXED IN ISMC. 100X50 FRAME.
5. THE GATE SHALL BE LIFTED THROUGH SPANDLE, THIS SPANDLE SHALL BE KEY LOCKED TO AVOID UNNECCESSARY OPERATION BY UN-AUTHORIZED PERSON.
6. THE 600 MM DIA DRAIN PIPE SHALL BE PROVIDED BELOW GULE DRAIN IF REQUIRED AT THE LOCATION.

SCALE A:-

SCALE B:-

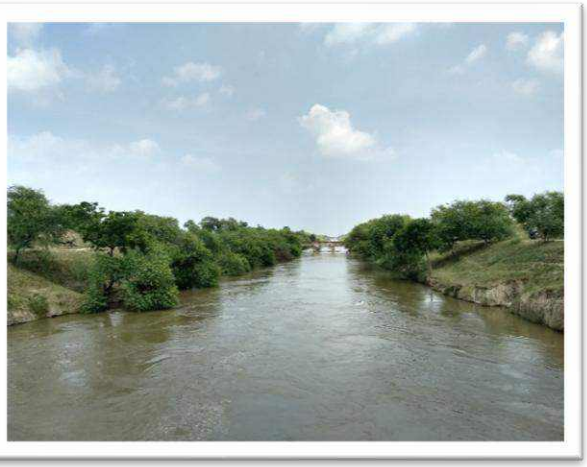
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	TYPICAL OUTLET DRAWING
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ OUTLET 1 of 1
	Drawn by:-	Checked by:- / Approved by:-

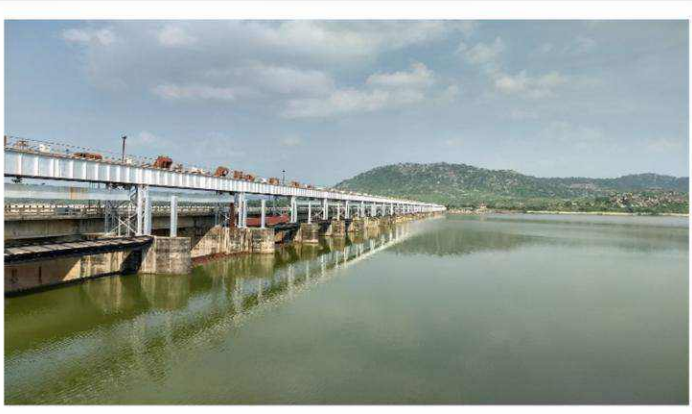
NORTH KOEL RESERVOIR PROJECT

MARCH 2025

Completion of Balance Works of North Koel Reservoir Project

DRAWING REPORT – MISHRICHAK MINOR (OFFTAKING FROM RIGHT MAIN CANAL AT 105.70 KM)





WAPCOS LIMITED

(GOVT. OF INDIA UNDERTAKING)

76- C SECTOR-18 INDUSTRIAL AREA, GURUGRAM-122015 (HARYANA)

INDEX		
S.NO	**DESCRIPTION**	**PAGE NO.**
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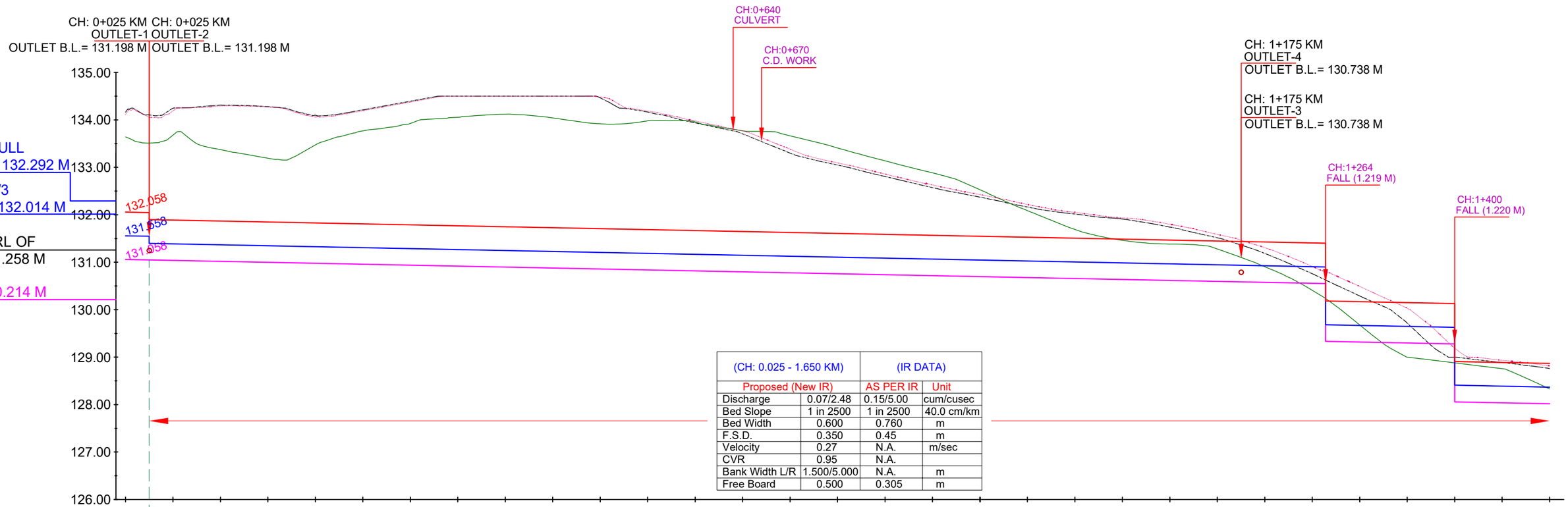
2	TYPICAL X-SECTION OF MISHRICHAK MINOR	4
3	CROSS-SECTION OF MISHRICHAK MINOR	11
4	DRAWINGS OF STRUCTURES	17

L-SECTION

L- SECTION OF MISHRICHAK MINOR
(OFFTAKE FROM RD - 105+700 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
FROM CH 0+000 TO 1+500

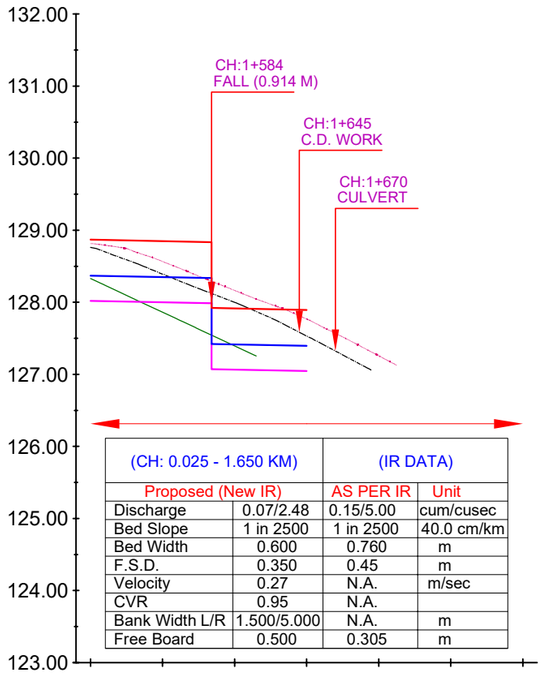
(CH: 0.000 - 0.025 KM)		(IR DATA)	
Proposed (New IR)		AS PER IR	Unit
Discharge	0.15/5.29	0.15/5.00	cum/cusec
Bed Slope	1 in 2500	1 in 2500	40.0 cm/km
Bed Width	0.700	0.760	m
F.S.D.	0.500	0.45	m
Velocity	0.33	N.A.	m/sec
CVR	0.93	N.A.	
Bank Width L/R	1.500/5.000	N.A.	m
Free Board	0.500	0.305	m



(CH: 0.025 - 1.650 KM)		(IR DATA)	
Proposed (New IR)		AS PER IR	Unit
Discharge	0.07/2.48	0.15/5.00	cum/cusec
Bed Slope	1 in 2500	1 in 2500	40.0 cm/km
Bed Width	0.600	0.760	m
F.S.D.	0.350	0.45	m
Velocity	0.27	N.A.	m/sec
CVR	0.95	N.A.	
Bank Width L/R	1.500/5.000	N.A.	m
Free Board	0.500	0.305	m

| | | |

L- SECTION OF MISHRICHAK MINOR
(OFFTAKE FROM RD - 105+700 KM. (LT), NORTH KOEL RIGHT MAIN CANAL)
FROM CH 1+500 TO 1+650



(CH: 0.025 - 1.650 KM)		(IR DATA)	
Proposed (New IR)		AS PER IR	Unit
Discharge	0.07/2.48	0.15/5.00	cum/cusec
Bed Slope	1 in 2500	1 in 2500	40.0 cm/km
Bed Width	0.600	0.760	m
F.S.D.	0.350	0.45	m
Velocity	0.27	N.A.	m/sec
CVR	0.95	N.A.	
Bank Width L/R	1.500/5.000	N.A.	m
Free Board	0.500	0.305	m

DESIGN DATA	TOP OF BANK LEVEL	128.869	128.849	128.835 / 127.921	127.915	127.895
	F.S.L.	128.369	128.349	128.335 / 127.421	127.415	127.395
	Proposed Bed Level	128.019	127.999	127.985 / 127.071	127.065	127.045
EXISTING DATA	Bed Level	128.762	128.393		128.002	127.533
	TOP OF BANK LEVEL	128.816	128.567		128.166	127.768
	NSL	128.331	127.864		127.395	
	Chainage IN KM	1+500	1+550		1+600	1+650

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		

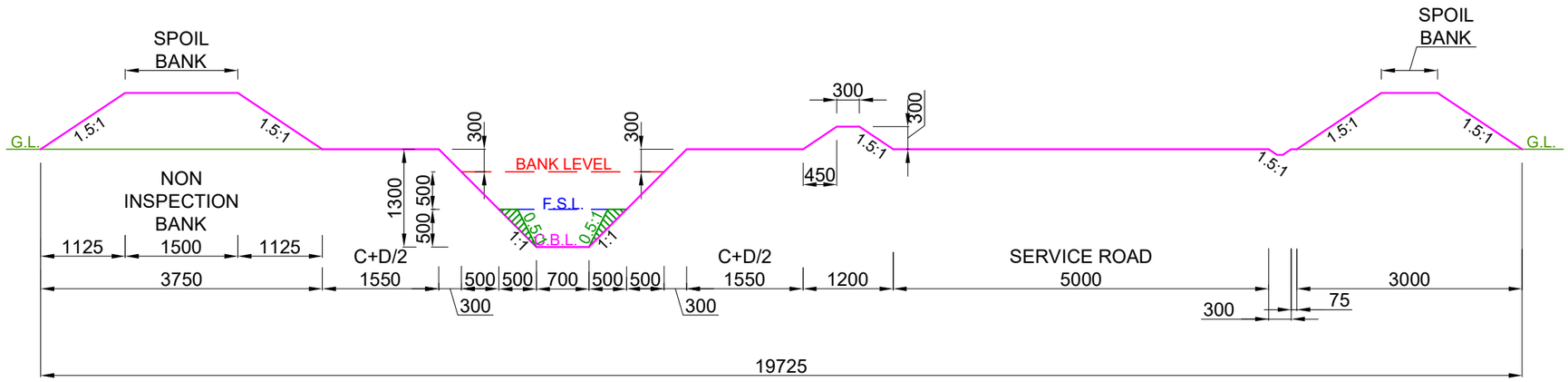
IMPLEMENTING AGENCY :-
WAPCOS LTD.

PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
DRAWING TITLE :-	L- SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM. (L), NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-035/ LSEC- 2 of 2

TYPICAL X-SECTION

TYPICAL X - SECTION OF MISHRICHAK MINOR
(OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 0.000 KM TO CH: 0.025 KM

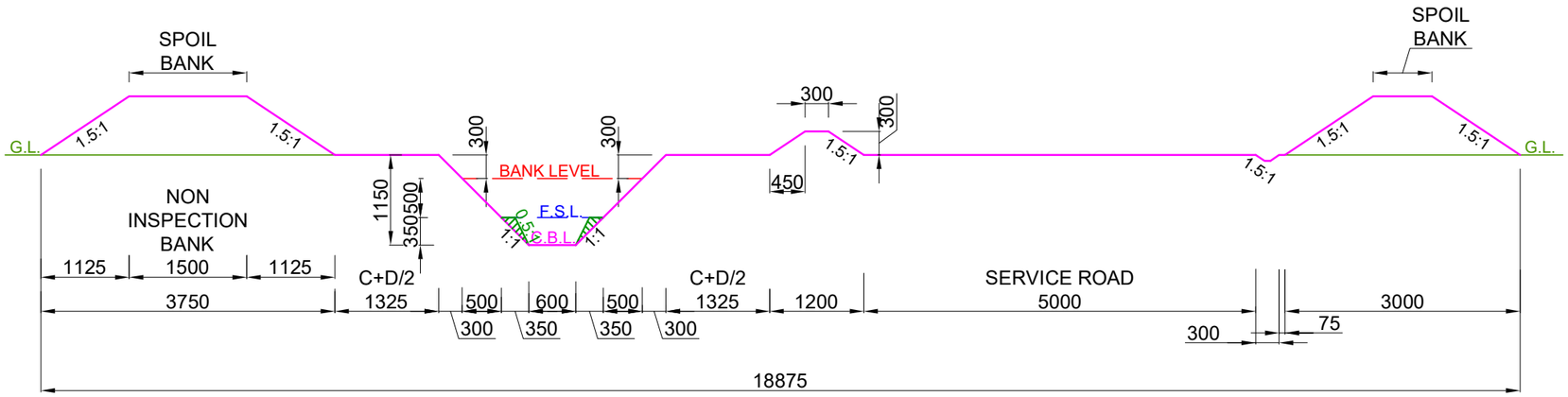
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X - SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC /TYP-(FC) 1 of 2

TYPICAL X - SECTION OF MISHRICHAK MINOR
(OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 0.025 KM TO CH: 1.650 KM

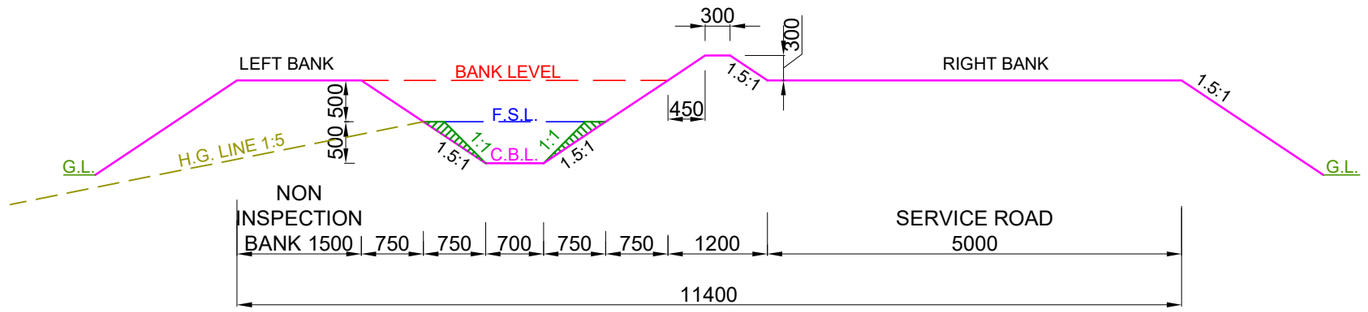
NOTE:-

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 :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X - SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC /TYP-(FC) 2 of 2

TYPICAL X - SECTION OF MISHRICHAK MINOR
(OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 0.000 KM TO CH: 0.025 KM

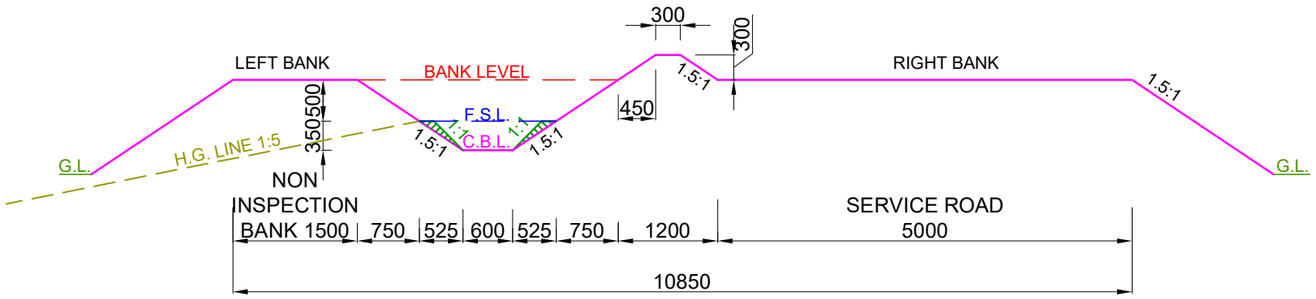
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X - SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC /TYP-(FF) 1 of 2

TYPICAL X - SECTION OF MISHRICHAK MINOR
(OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 0.025 KM TO CH: 1.650 KM

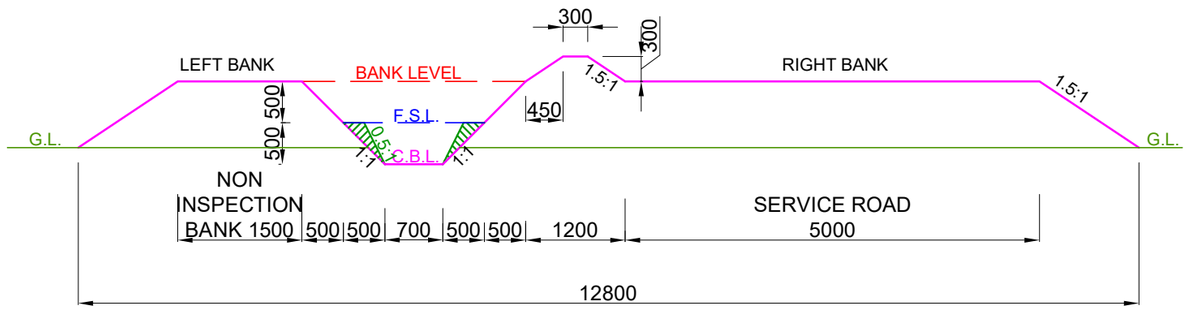
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X - SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC /TYP-(FF) 2 of 2

TYPICAL X - SECTION OF MISHRICHAK MINOR
(OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 0.000 KM TO CH: 0.025 KM

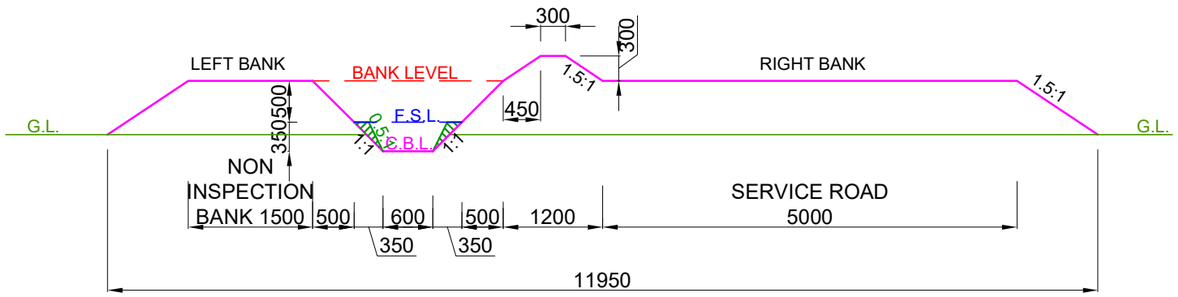
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X - SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC /TYP-(PCF) 1 of 2

TYPICAL X - SECTION OF MISHRICHAK MINOR
(OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 0.025 KM TO CH: 1.650 KM

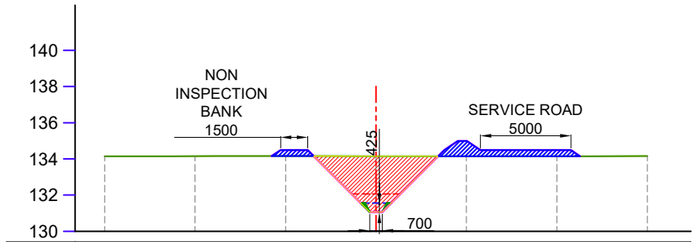
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X - SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC /TYP-(PCF) 2 of 2

CROSS-SECTION

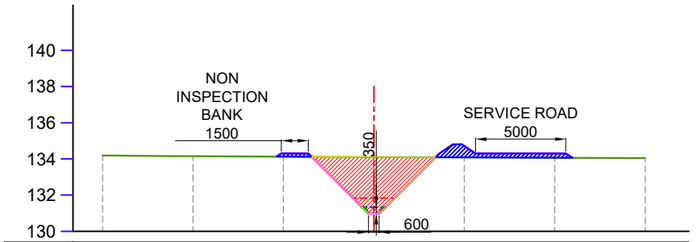
X SECTION OF MISHRICHAK MINOR



EXIST. LEVEL (M)	134.14	134.15	134.15	134.14	134.14	134.15	134.15
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 11.691
FILLING AREA (SQ.M) = 3.771

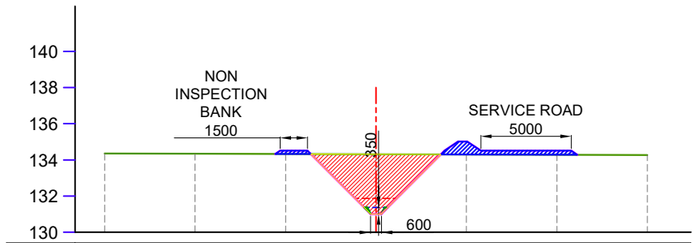
CH. (KM):- 0+000
DESIGNED BED LEVEL = 131.058 M



EXIST. LEVEL (M)	134.18	134.15	134.13	134.10	134.08	134.06	134.04
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 11.619
FILLING AREA (SQ.M) = 2.571

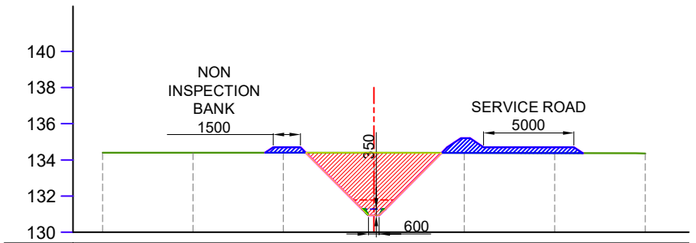
CH. (KM):- 0+200
DESIGNED BED LEVEL = 130.978 M



EXIST. LEVEL (M)	134.35	134.34	134.33	134.31	134.30	134.29	134.28
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 12.834
FILLING AREA (SQ.M) = 2.501

CH. (KM):- 0+100
DESIGNED BED LEVEL = 131.018 M



EXIST. LEVEL (M)	134.40	134.40	134.40	134.39	134.38	134.37	134.36
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 14.014
FILLING AREA (SQ.M) = 3.563

CH. (KM):- 0+300
DESIGNED BED LEVEL = 130.938 M

LEGEND

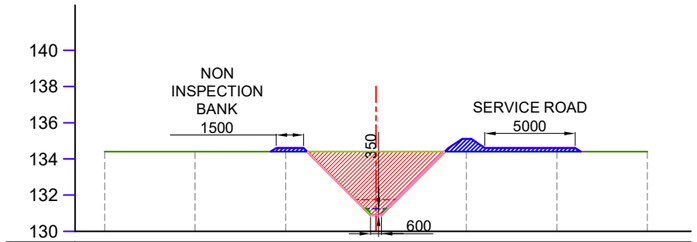
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 1 of 5

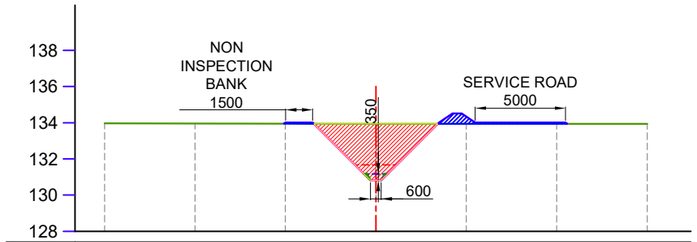
X SECTION OF MISHRICHAK MINOR



EXIST. LEVEL (M)	134.40	134.40	134.40	134.40	134.40	134.40	134.40
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 14.365
FILLING AREA (SQ.M) = 2.505

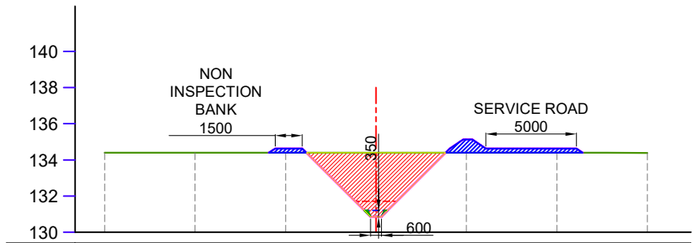
CH. (KM):- 0+400
DESIGNED BED LEVEL = 130.898 M



EXIST. LEVEL (M)	133.97	133.95	133.95	133.94	133.94	133.94	133.94
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 11.630
FILLING AREA (SQ.M) = 1.193

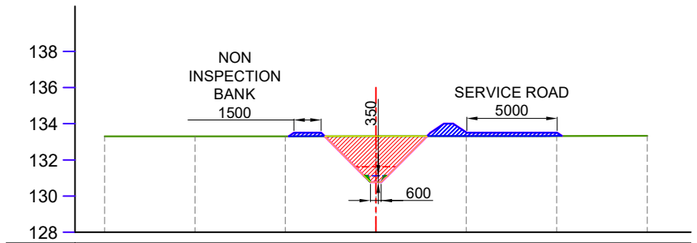
CH. (KM):- 0+600
DESIGNED BED LEVEL = 130.818 M



EXIST. LEVEL (M)	134.40	134.40	134.40	134.40	134.40	134.40	134.38
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 14.671
FILLING AREA (SQ.M) = 2.766

CH. (KM):- 0+500
DESIGNED BED LEVEL = 130.858 M



EXIST. LEVEL (M)	133.30	133.30	133.31	133.31	133.32	133.33	133.33
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 7.958
FILLING AREA (SQ.M) = 2.263

CH. (KM):- 0+700
DESIGNED BED LEVEL = 130.778 M

LEGEND

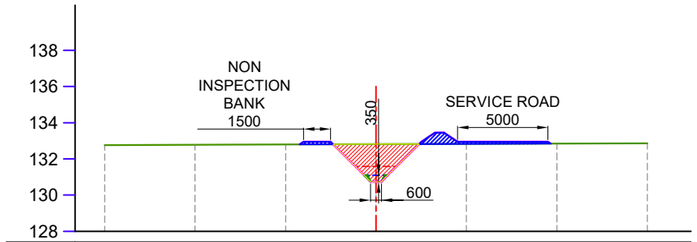
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 2 of 5

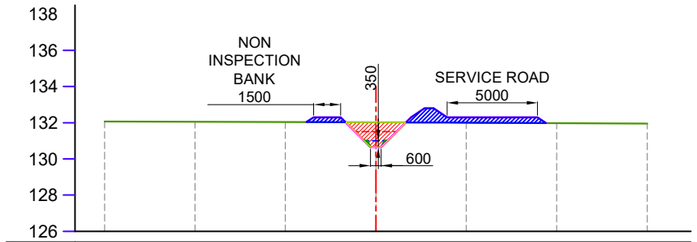
X SECTION OF MISHRICHAK MINOR



EXIST. LEVEL (M)	132.77	132.78	132.80	132.81	132.83	132.84	132.86
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 5.542
FILLING AREA (SQ.M) = 1.690

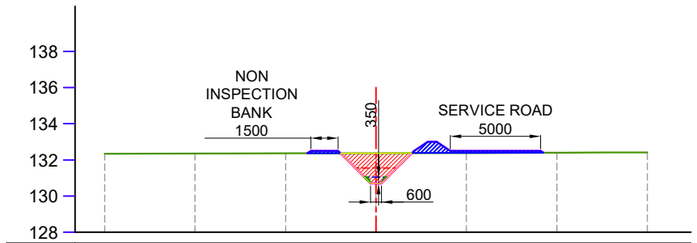
CH. (KM):- 0+800
DESIGNED BED LEVEL = 130.738 M



EXIST. LEVEL (M)	132.07	132.05	132.03	132.02	132.00	131.98	131.96
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 2.665
FILLING AREA (SQ.M) = 3.328

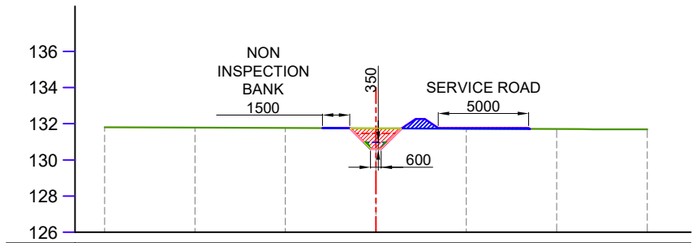
CH. (KM):- 1+000
DESIGNED BED LEVEL = 130.658 M



EXIST. LEVEL (M)	132.34	132.35	132.36	132.38	132.39	132.40	132.42
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 3.824
FILLING AREA (SQ.M) = 1.634

CH. (KM):- 0+900
DESIGNED BED LEVEL = 130.698 M



EXIST. LEVEL (M)	131.81	131.79	131.77	131.75	131.73	131.71	131.69
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 1.948
FILLING AREA (SQ.M) = 0.944

CH. (KM):- 1+100
DESIGNED BED LEVEL = 130.618 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

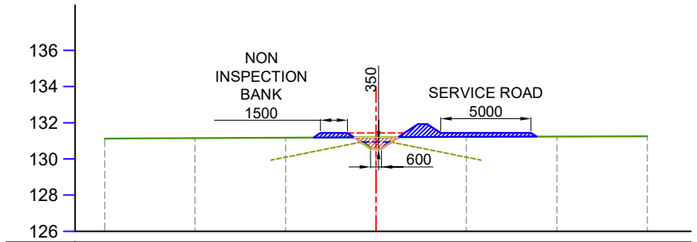
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 3 of 5

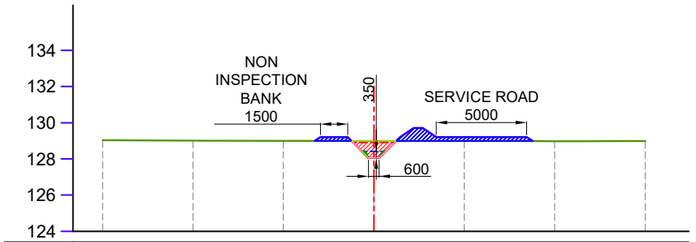
X SECTION OF MISHRICHAK MINOR



EXIST. LEVEL (M)	131.12	131.15	131.17	131.19	131.22	131.23	131.25
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 0.936
FILLING AREA (SQ.M) = 2.644

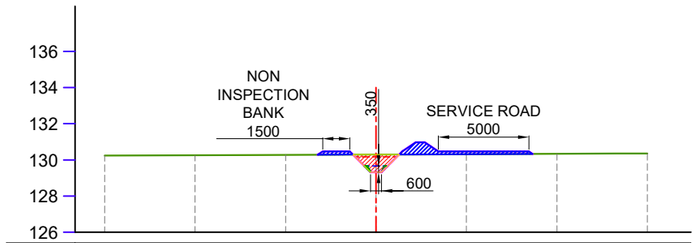
CH. (KM):- 1+200
DESIGNED BED LEVEL = 130.578 M



EXIST. LEVEL (M)	129.03	129.00	129.00	128.99	128.98	128.98	128.98
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 1.424
FILLING AREA (SQ.M) = 2.642

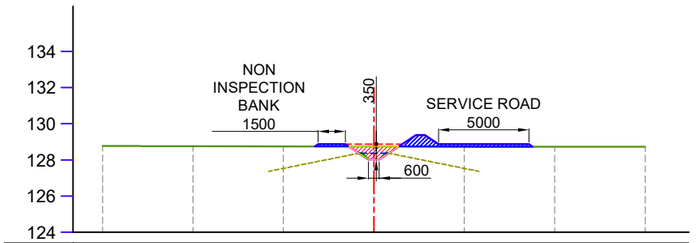
CH. (KM):- 1+400
DESIGNED BED LEVEL = 128.059 M



EXIST. LEVEL (M)	130.24	130.26	130.28	130.30	130.32	130.34	130.36
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 1.545
FILLING AREA (SQ.M) = 2.033

CH. (KM):- 1+300
DESIGNED BED LEVEL = 129.319 M



EXIST. LEVEL (M)	128.77	128.76	128.75	128.74	128.74	128.73	128.73
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 1.212
FILLING AREA (SQ.M) = 1.806

CH. (KM):- 1+500
DESIGNED BED LEVEL = 128.019 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

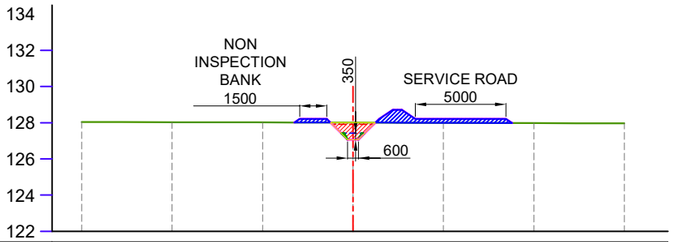
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 4 of 5

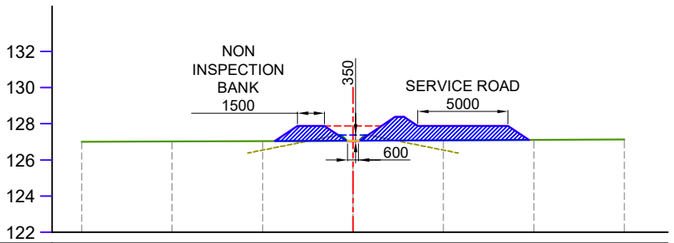
X SECTION OF MISHRICHAK MINOR



EXIST. LEVEL (M)	128.04	128.03	128.02	128.01	127.99	127.98	127.96
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 1.456
FILLING AREA (SQ.M) = 2.593

CH. (KM):- 1+600
DESIGNED BED LEVEL = 127.065 M



EXIST. LEVEL (M)	127.00	127.02	127.04	127.06	127.08	127.10	127.13
OFFSET (M)	-15	-10	-5	0	5	10	15

CUTTING AREA (SQ.M) = 0.024
FILLING AREA (SQ.M) = 9.370

CH. (KM):- 1+695.69
DESIGNED BED LEVEL = 127.027 M

LEGEND

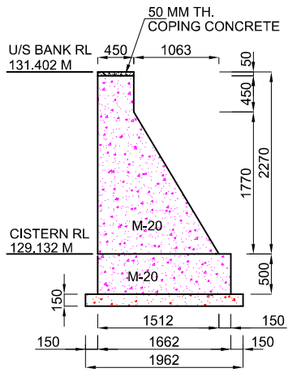
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

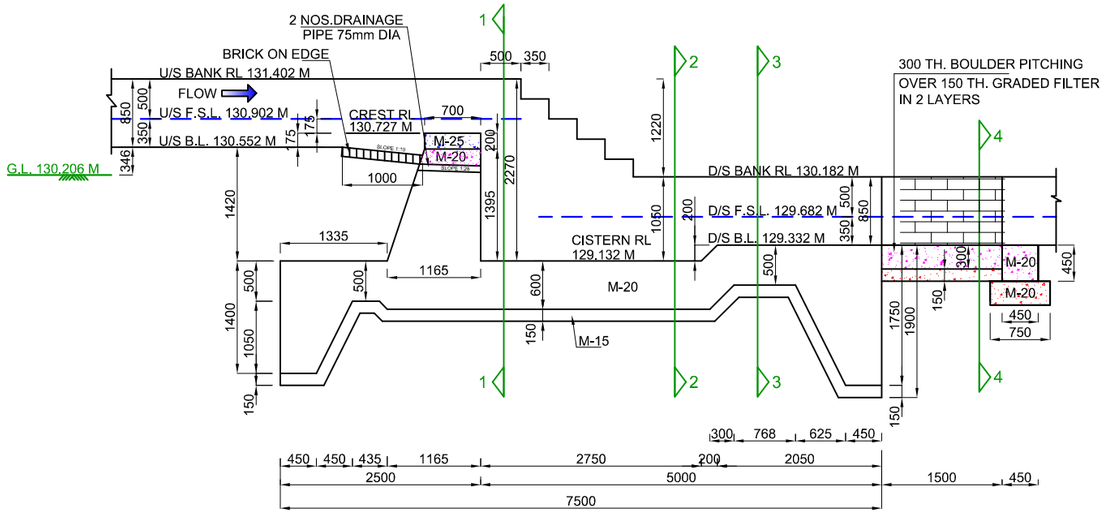
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 5 of 5

DRAWING OF STRUCTURES



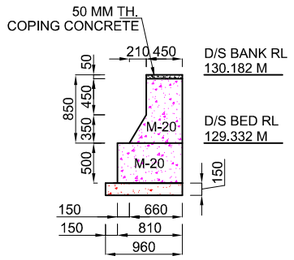
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

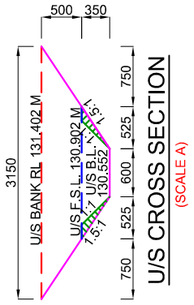
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

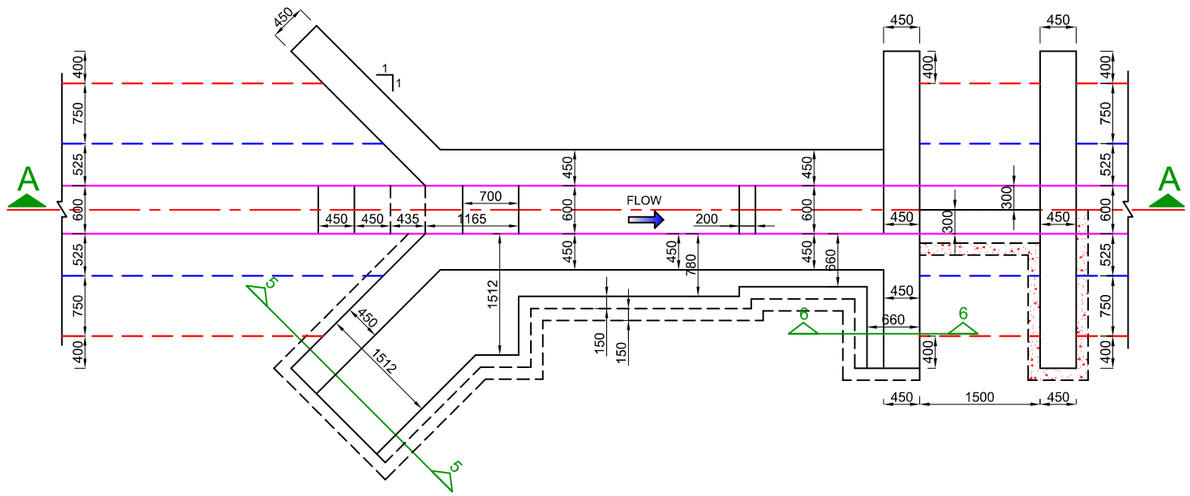
HYDRAULIC:- DATA

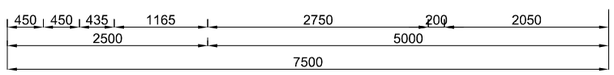
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.070	0.070	CUMEC
VERTICAL DROP	1.219	1.219	METRE
FULL SUPPLY DEPTH	0.350	0.350	METRE
BED WIDTH	0.600	0.600	METRE
BED SLOPE	1 : 2500	1 : 2500	



U/S CROSS SECTION

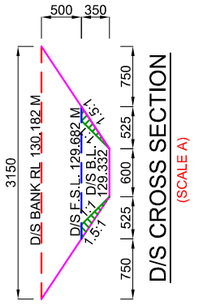
(SCALE A)





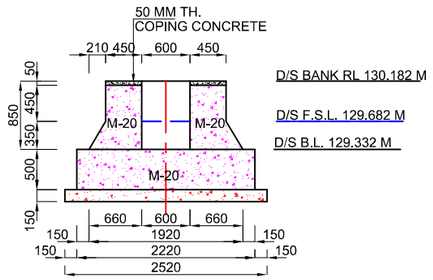
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



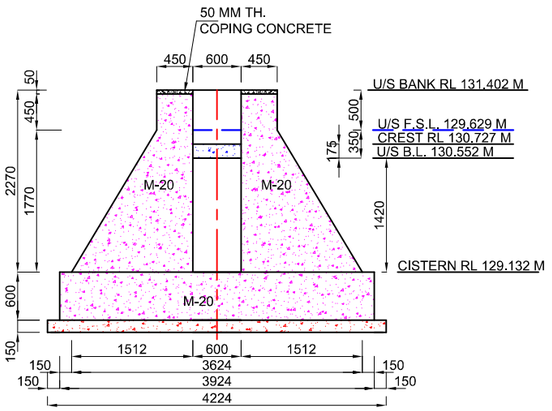
D/S CROSS SECTION

(SCALE A)



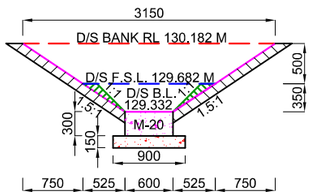
SECTION AT 3-3

(SCALE A)



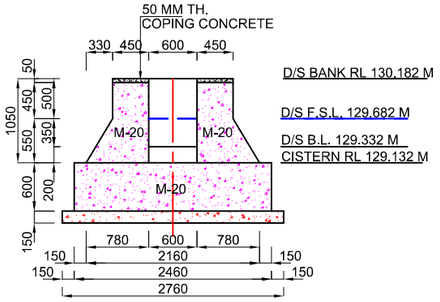
SECTION AT 1-1

(SCALE A)



SECTION AT 4-4

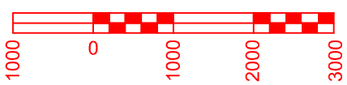
(SCALE A)



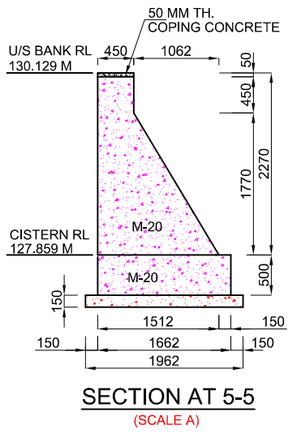
SECTION AT 2-2

(SCALE A)

SCALE A:-

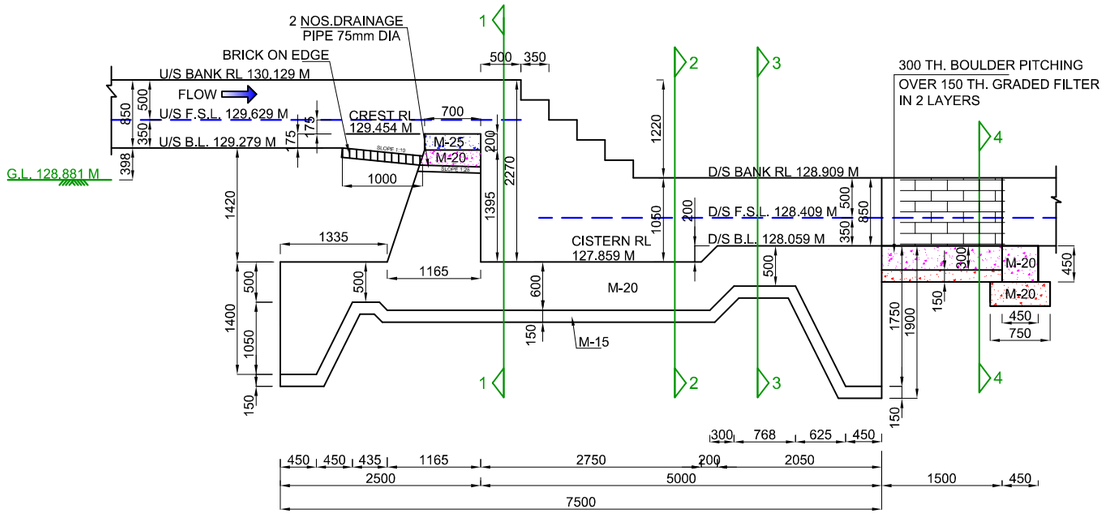


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.220 M HT. FALL AT KM. 1.264 OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ FALL 1 of 1



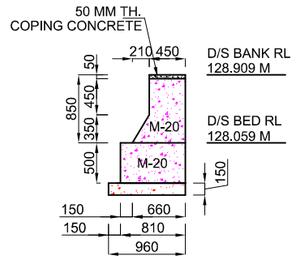
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

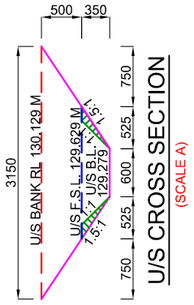
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

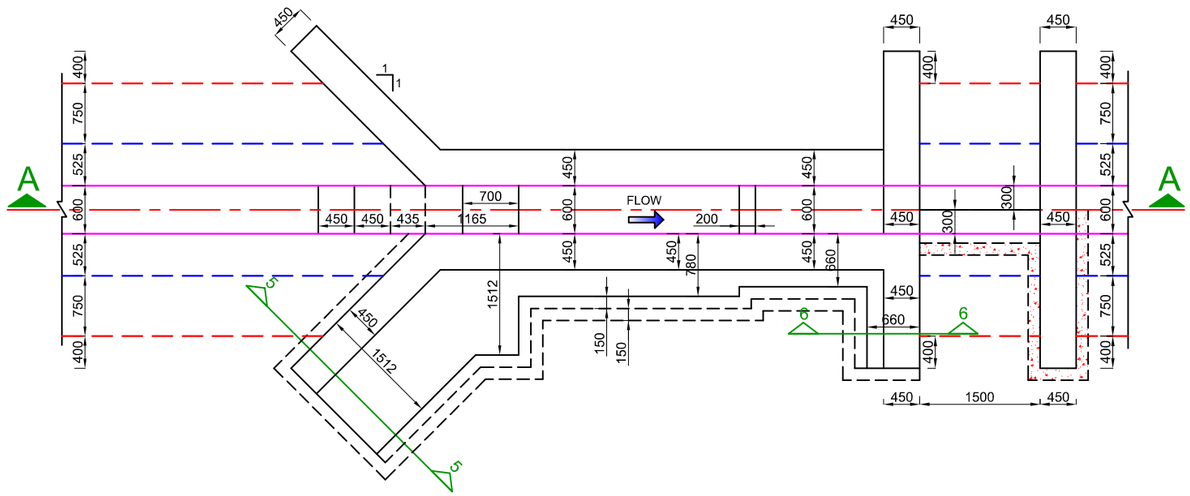
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.070	0.070	CUMEC
VERTICAL DROP	1.220	1.220	METRE
FULL SUPPLY DEPTH	0.350	0.350	METRE
BED WIDTH	0.600	0.600	METRE
BED SLOPE	1 : 2500	1 : 2500	



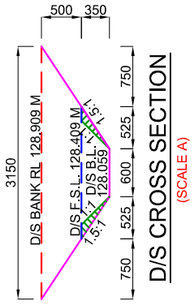
U/S CROSS SECTION

(SCALE A)



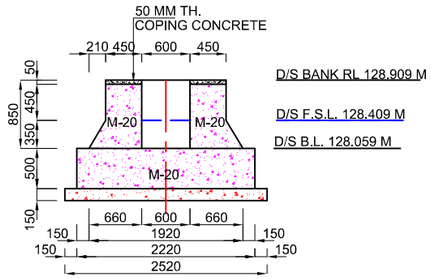
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



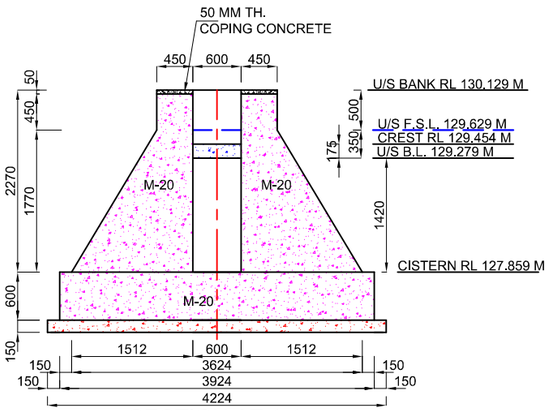
D/S CROSS SECTION

(SCALE A)



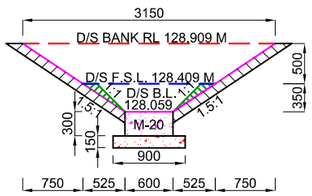
SECTION AT 3-3

(SCALE A)



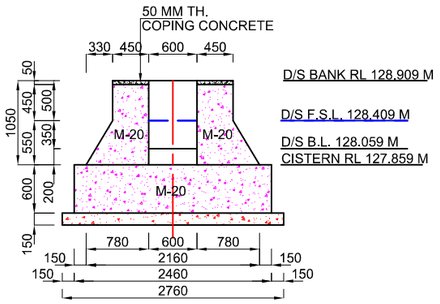
SECTION AT 1-1

(SCALE A)



SECTION AT 4-4

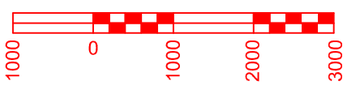
(SCALE A)



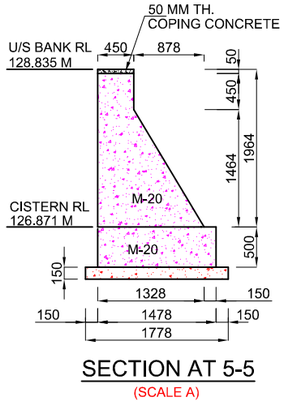
SECTION AT 2-2

(SCALE A)

SCALE A:-

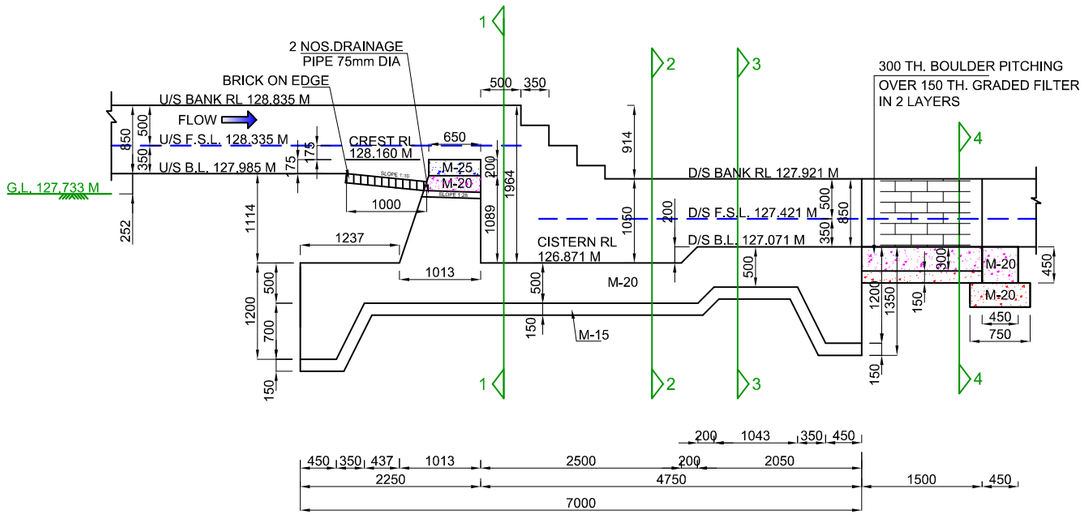


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.220 M HT. FALL AT KM. 1.400 OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ FALL 1 of 1



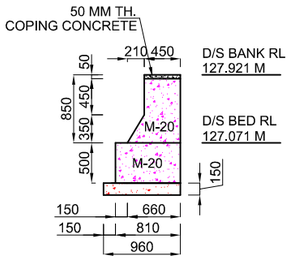
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

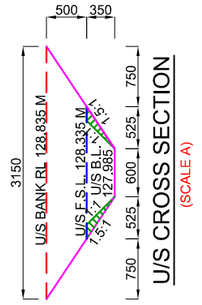
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

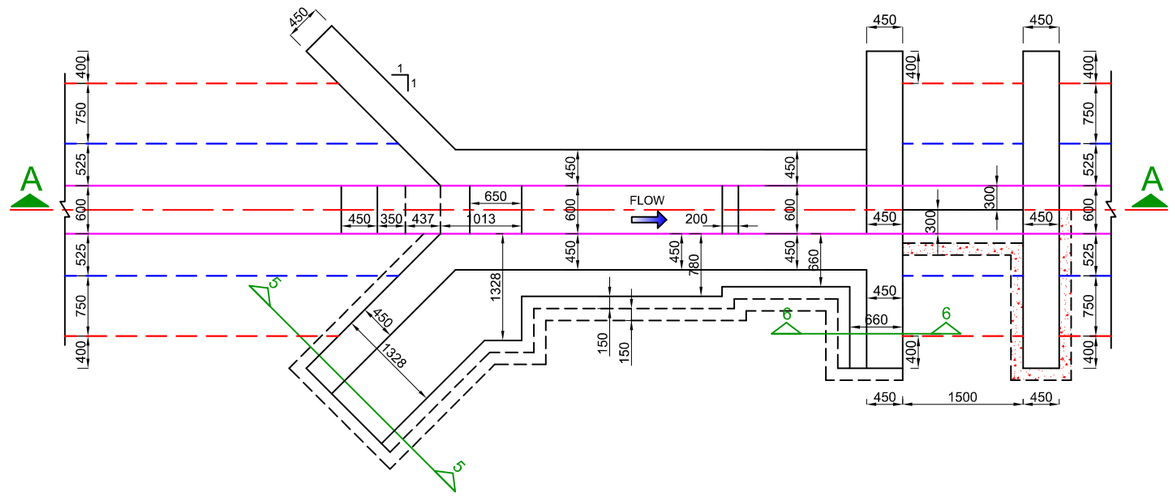
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.070	0.070	CUMEC
VERTICAL DROP	0.914	0.914	METRE
FULL SUPPLY DEPTH	0.350	0.350	METRE
BED WIDTH	0.600	0.600	METRE
BED SLOPE	1 : 2500	1 : 2500	

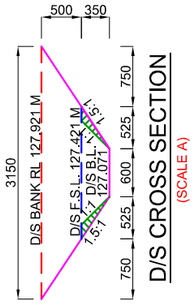


(SCALE A)



HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



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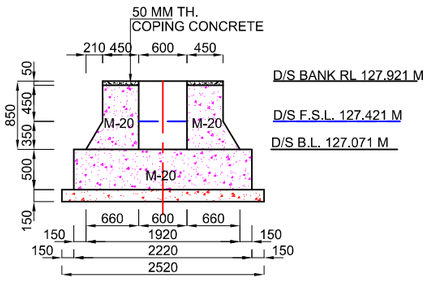
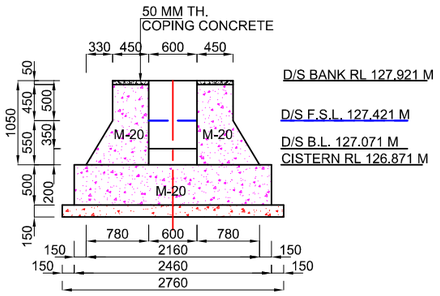


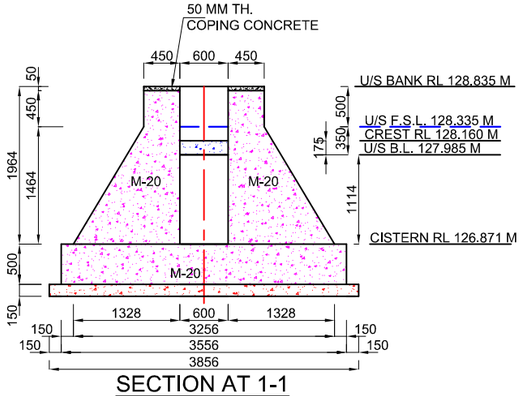
SECTION AT 3-3

(SCALE A)



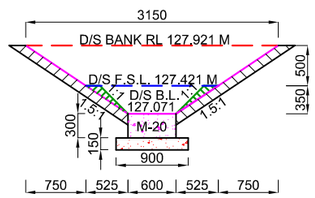
SECTION AT 2-2

(SCALE A)



SECTION AT 1-1

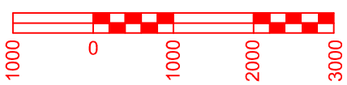
(SCALE A)



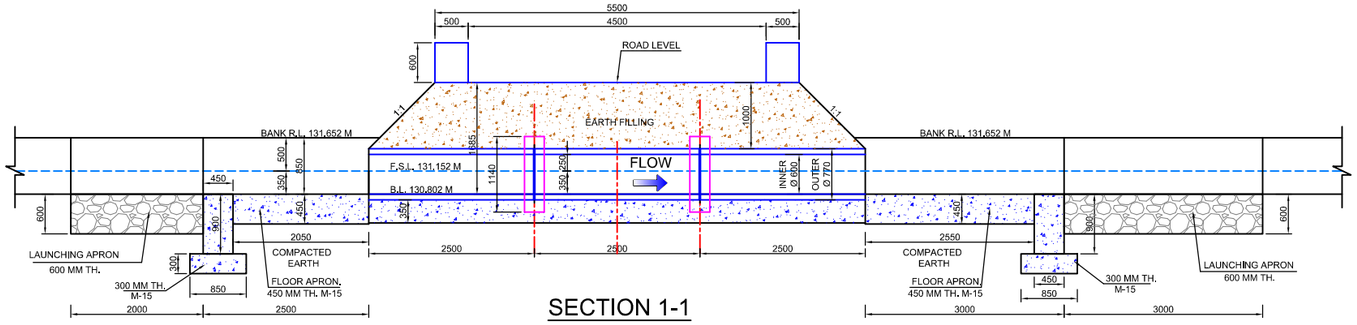
SECTION AT 4-4

(SCALE A)

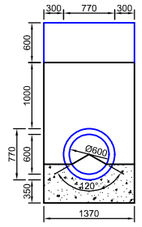
SCALE A:-



Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.914 M HT. FALL AT KM. 1.584 OF MISHRICHAK MINOR (OFFTAKE FROM RD - 105+700 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ FALL 1 of 1



SECTION 1-1
(SCALE A)



DETAILS OF JOINT OF PIPE
(SCALE A)

DESIGN DATA:-

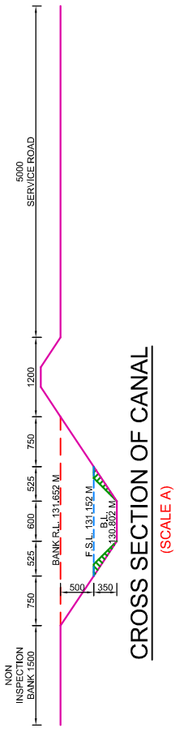
DISCHARGE	0.46 CUMEC
BED LEVEL	130.802 M
BED WIDTH	0.600 M
WATER DEPTH	0.350 M
FREE BOARD	0.500 M
CARRIAGE WAY	5.500 M
NO. OF PIPE	1 NOS.
SIDE SLOPE	1 IN 1
INTERNAL DIA OF PIPE	0.600 M

NOTES :-

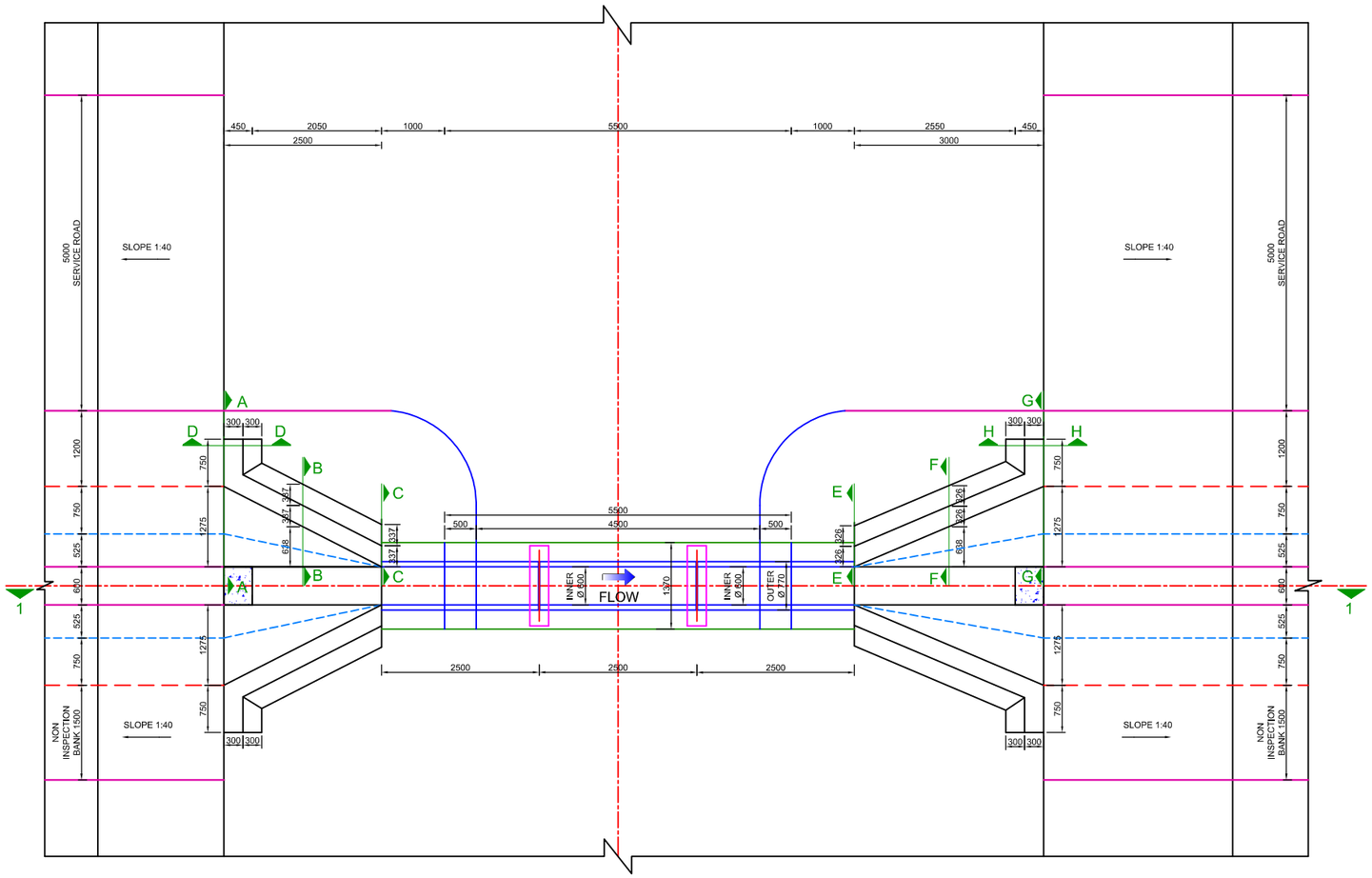
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456, GRADE OF CONCRETE IN DIFFERENT COMPONENT SHALL BE
   TRANSITION WALL M-20
   BASE CONCRETE & CURTAIN WALL M-15

TRANSITIONS WALL

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. WEEP HOLES WITH A DIAMETER OF 80MM, SPACED AT 1500MM IN A STAGGERED ARRANGEMENT, SHALL BE PROVIDED IN THE TRANSITION WALL WITH A 1:20 SLOPE TOWARDS THE CANAL TO ENSURE PROPER DRAINAGE.
4. SKIN REINFORCEMENT OF 12 Ø @250 MM C/C FOR TEMPERATURE STRESSES SHALL BE PROVIDED IN TRANSITIONS WALL.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.



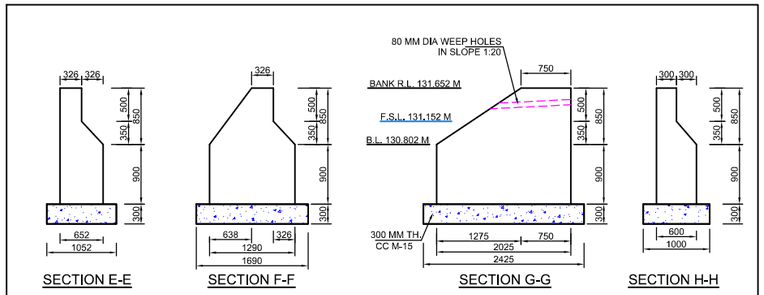
CROSS SECTION OF CANAL
(SCALE A)



LAYOUT PLAN
(SCALE A)

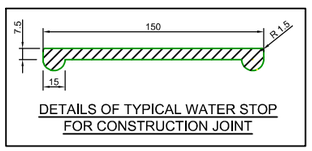
SECTION A-A | SECTION B-B | SECTION C-C | SECTION D-D

SECTION OF U/S TRANSITIONS
(SCALE A)



SECTION E-E | SECTION F-F | SECTION G-G | SECTION H-H

SECTION OF D/S TRANSITIONS
(SCALE A)



DETAILS OF TYPICAL WATER STOP FOR CONSTRUCTION JOINT

SCALE A:- 500 0 500 1000 1500

SCALE B:- 250 0 250 500 750

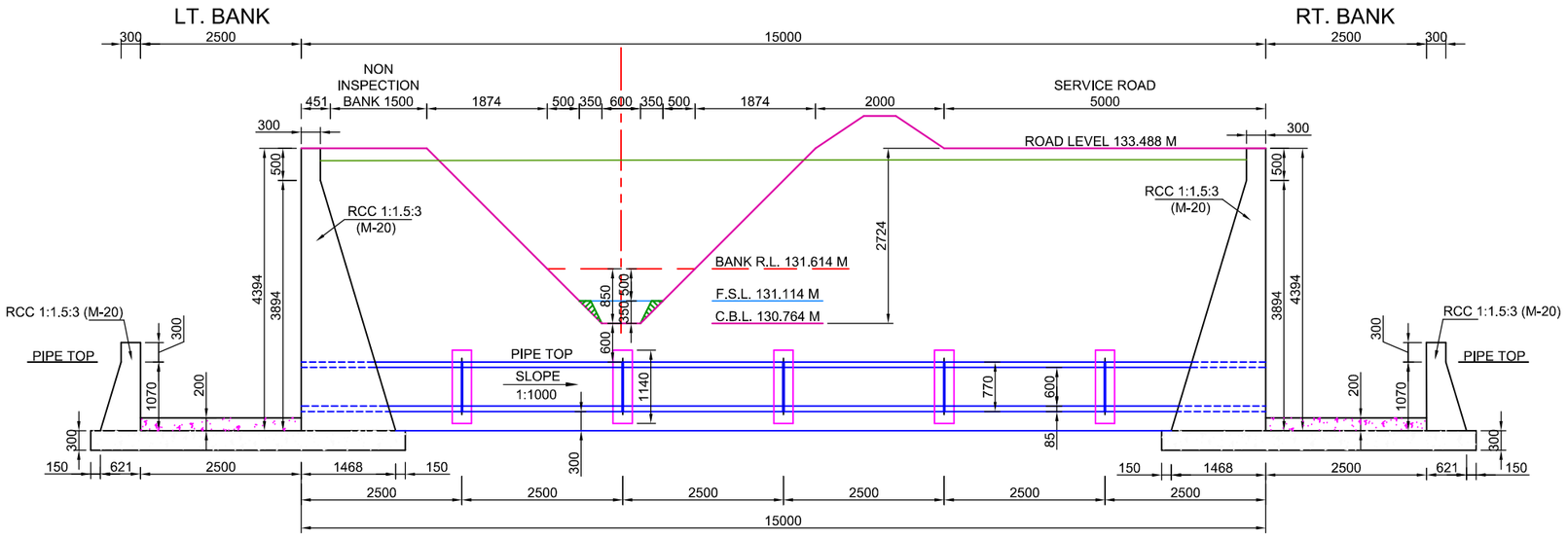
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF PIPE BRIDGE AT KM 0.640 OF MISHRICHAK MR.
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-36/PIPE BRG. 1 of 1

PROPOSED DESIGN DATA

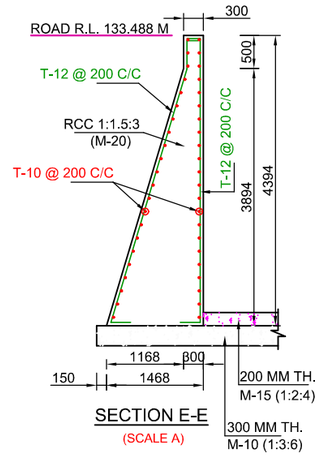
Discharge	0.07	cumec
Bed Width	0.600	m
Water Depth	0.350	m
Internal Dia	0.600	m
No. of Dia	1	Nos.
Free Board	0.500	m

NOTES:-

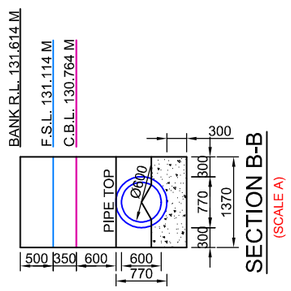
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



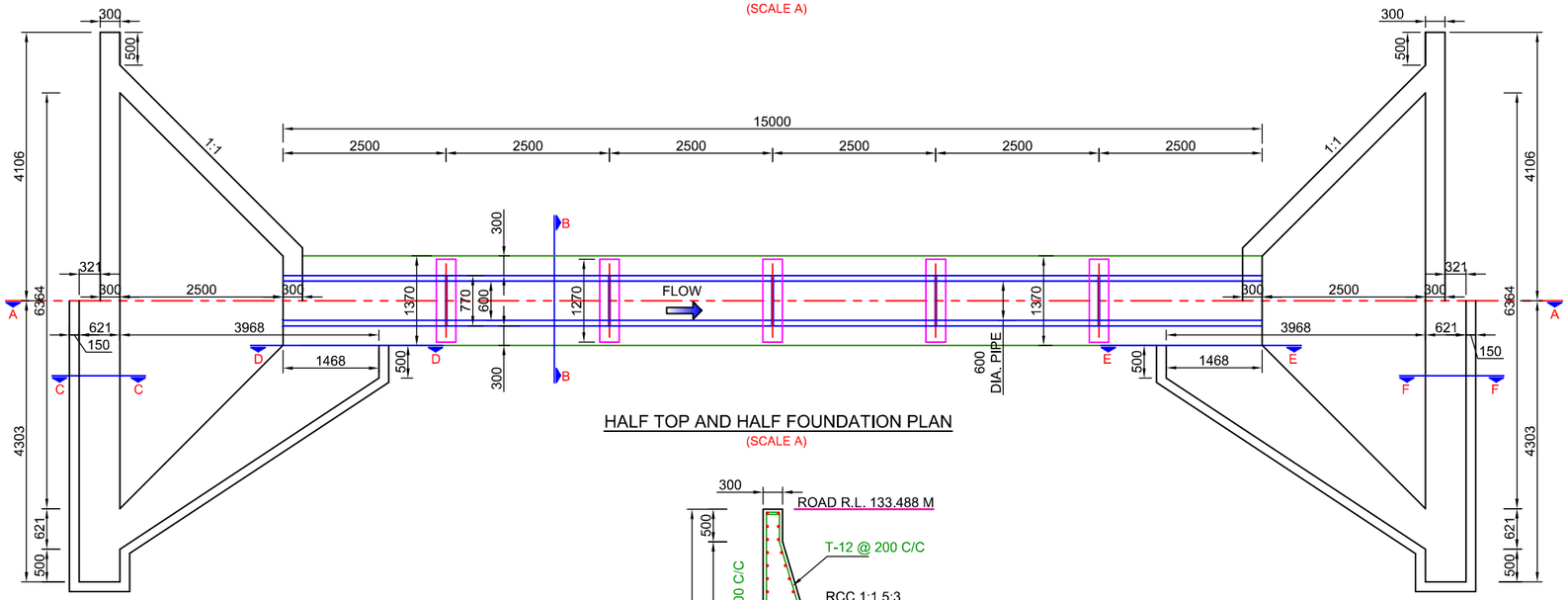
SECTION A-A
(SCALE A)



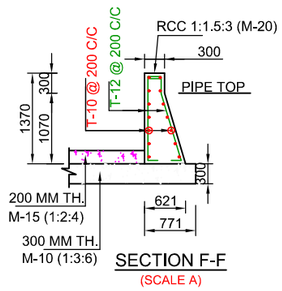
SECTION E-E
(SCALE A)



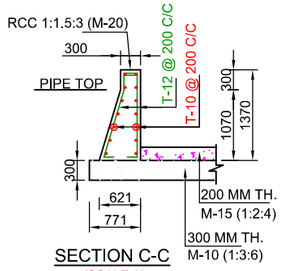
SECTION B-B
(SCALE A)



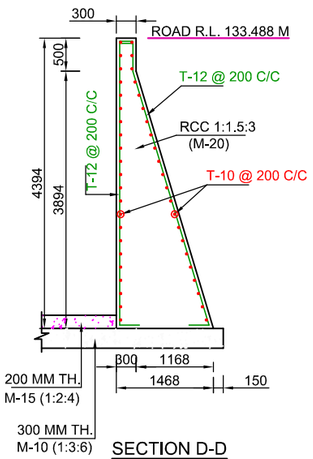
(SCALE A)



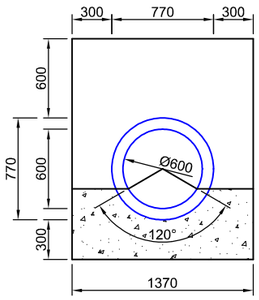
SECTION F-F
(SCALE A)



SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)



DETAILS OF JOINT OF PIPE
(SCALE B)

SCALE A :-

SCALE B :-

Prepared by :-

WAPCOS LTD.

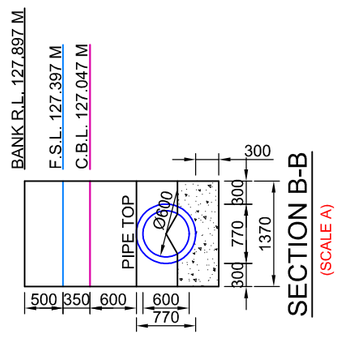
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 0.735 OF MISHRICHAK MR.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ CD 1 of 1

PROPOSED DESIGN DATA

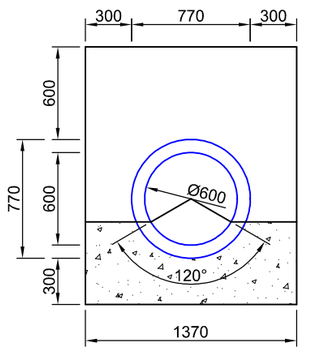
Discharge	0.07	cumec
Bed Width	0.600	m
Water Depth	0.350	m
Internal Dia	0.600	m
No. of Dia	1	Nos.
Free Board	0.500	m

NOTES:-

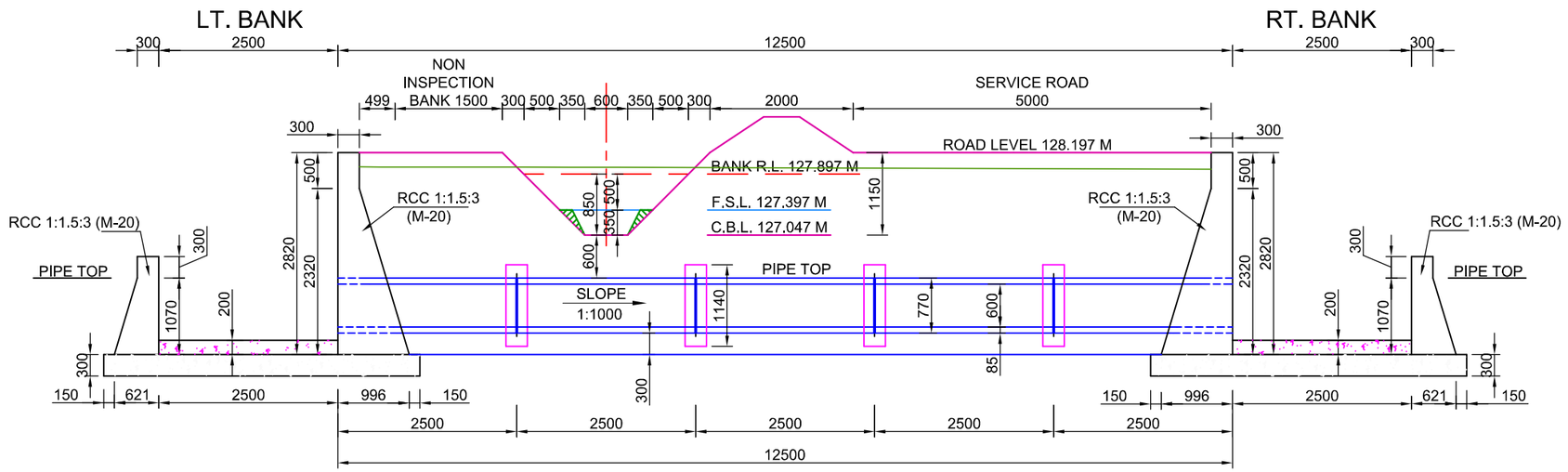
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



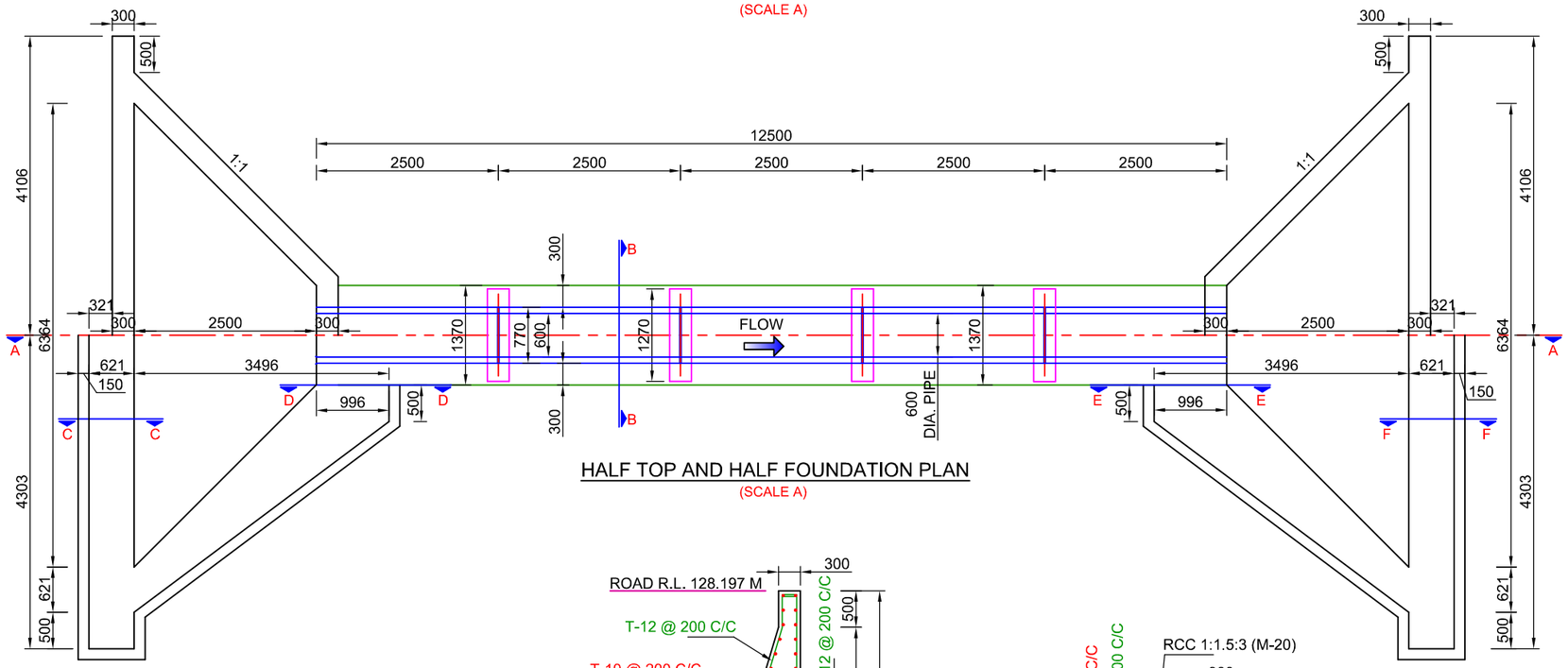
SECTION B-B
(SCALE A)



DETAILS OF JOINT OF PIPE
(SCALE B)

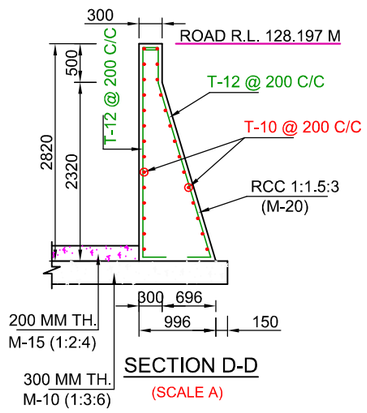


SECTION A-A
(SCALE A)

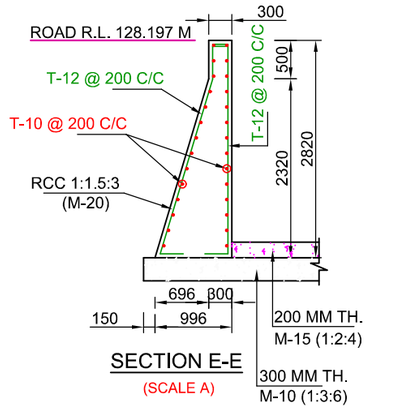


HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)

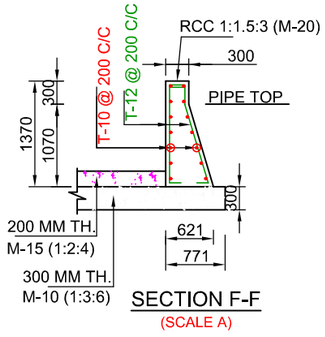
SECTION C-C
(SCALE A)



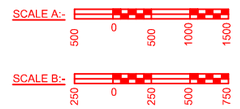
SECTION D-D
(SCALE A)



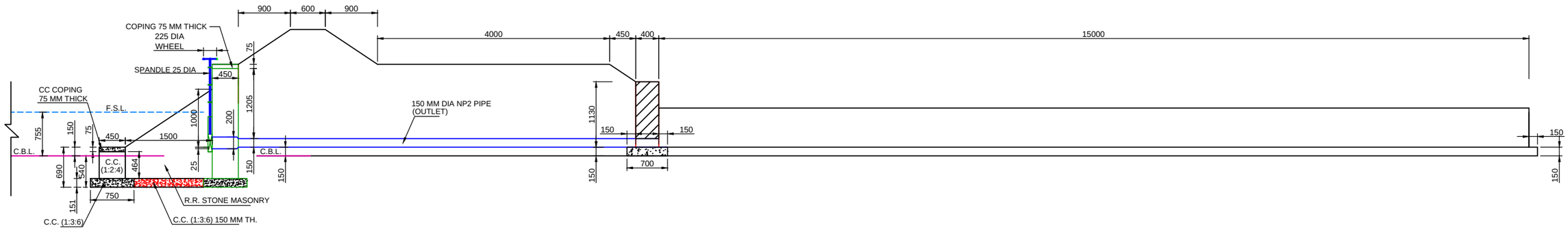
SECTION E-E
(SCALE A)



SECTION F-F
(SCALE A)

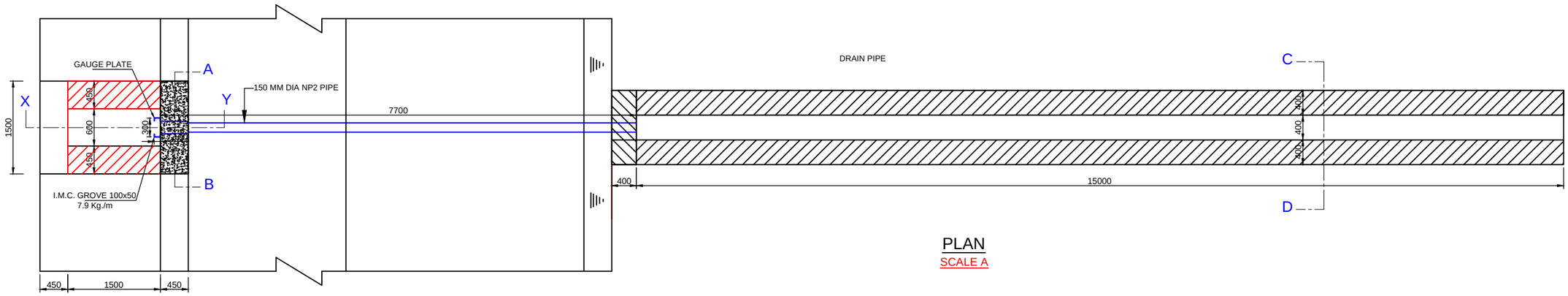


Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 1.645 OF MISHRICHAK MR.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ CD 1 of 1

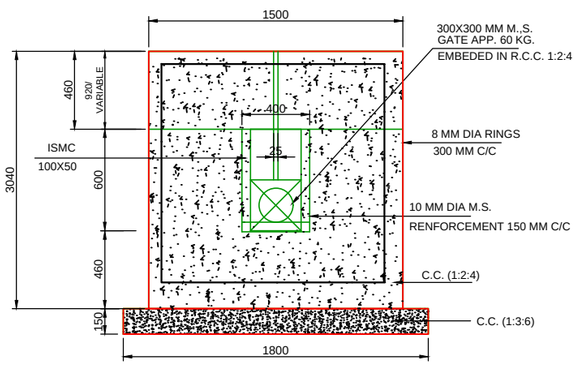


SECTION X-Y
SCALE A

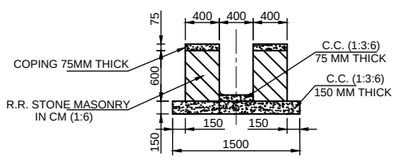
ELEVATION
SCALE A



PLAN
SCALE A



SECTION A-B
SCALE B



SECTION C-D
SCALE A

NOTES

1. ALL DIMENSIONS ARE IN MM EXCEPT LEVELS IN METRES UNLESS OTHERWISE SPECIFIED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION SHALL BE SCALED OFF.
2. ALL MASONRY WORKS SHALL BE DONE AS PER SPECIFICATION OF GOVT. OF JHARKHAND
3. THIS DWG. IS FOR OUTLET PIPE OF 150 MM DIA EMBEDED IN MASONRY.
4. 300X300 MM SIZE GATE SHALL BE FIXED IN ISMC. 100X50 FRAME.
5. THE GATE SHALL BE LIFTED THROUGH SPANDLE, THIS SPANDLE SHALL BE KEY LOCKED TO AVOID UNNECCESSARY OPERATION BY UN-AUTHORIZED PERSON.
6. THE 600 MM DIA DRAIN PIPE SHALL BE PROVIDED BELOW GULE DRAIN IF REQUIRED AT THE LOCATION.

SCALE A:- 0 1000 2000 3000 4000MM

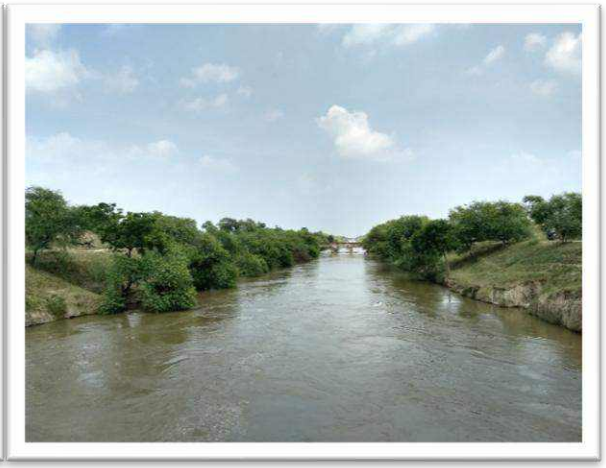
SCALE B:- 0 2000 4000 6000 8000MM

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	TYPICAL OUTLET DRAWING
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ OUTLET 1 of 1

NORTH KOEL RESERVOIR PROJECT

Completion of Balance Works of North Koel Reservoir Project

DRAWING REPORT – KONCHI DISTRIBUTARY (OFFTAKING FROM RIGHT MAIN CANAL AT 109.09 KM)



WAPCOS LIMITED

(GOVT. OF INDIA UNDERTAKING)

76- C SECTOR-18 INDUSTRIAL AREA, GURUGRAM-122015 (HARYANA)

INDEX		
S.NO	**DESCRIPTION**	**PAGE NO.**
1	L-SECTION OF KONCHI DISTRIBUTARY	1
2	TYPICAL X-SECTION OF KONCHI DISTRIBUTARY	28
3	CROSS-SECTION OF KONCHI DISTRIBUTARY	74
4	DRAWINGS OF STRUCTURES	123
5	DRAWING OF HEAD REGULATORS	124
6	DRAWING OF FALLS	147
7	DRAWING OF CULVERT/SLAB BRIDGE	155
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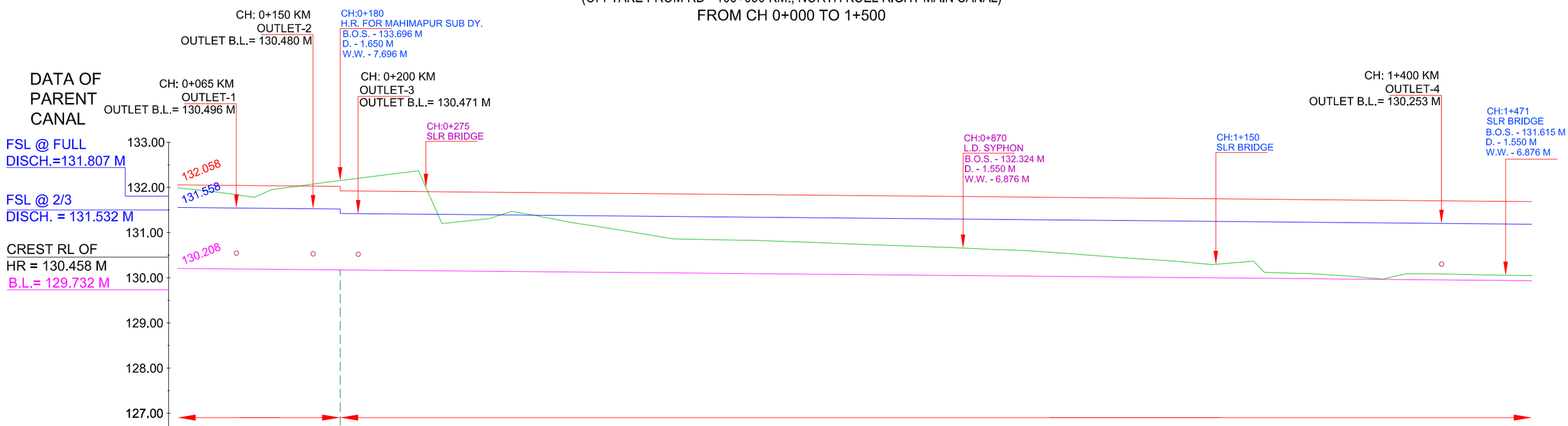
L-SECTION

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 0+000 TO 1+500



(CH: 0.000 - 0.180 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	5.54/195.74	6.14/216.73	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	6.300	6.294	m
F.S.D.	1.350	1.402	m
Velocity	0.590	0.626	m/sec
CVR	0.890	0.920	
Bank Width L/R	1.500/5.000	1.500/3.048	m
Free Board	0.500	0.500	m

(CH: 0.180 - 3.600 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	4.15/146.53	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.500	5.593	m
F.S.D.	1.250	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.860	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

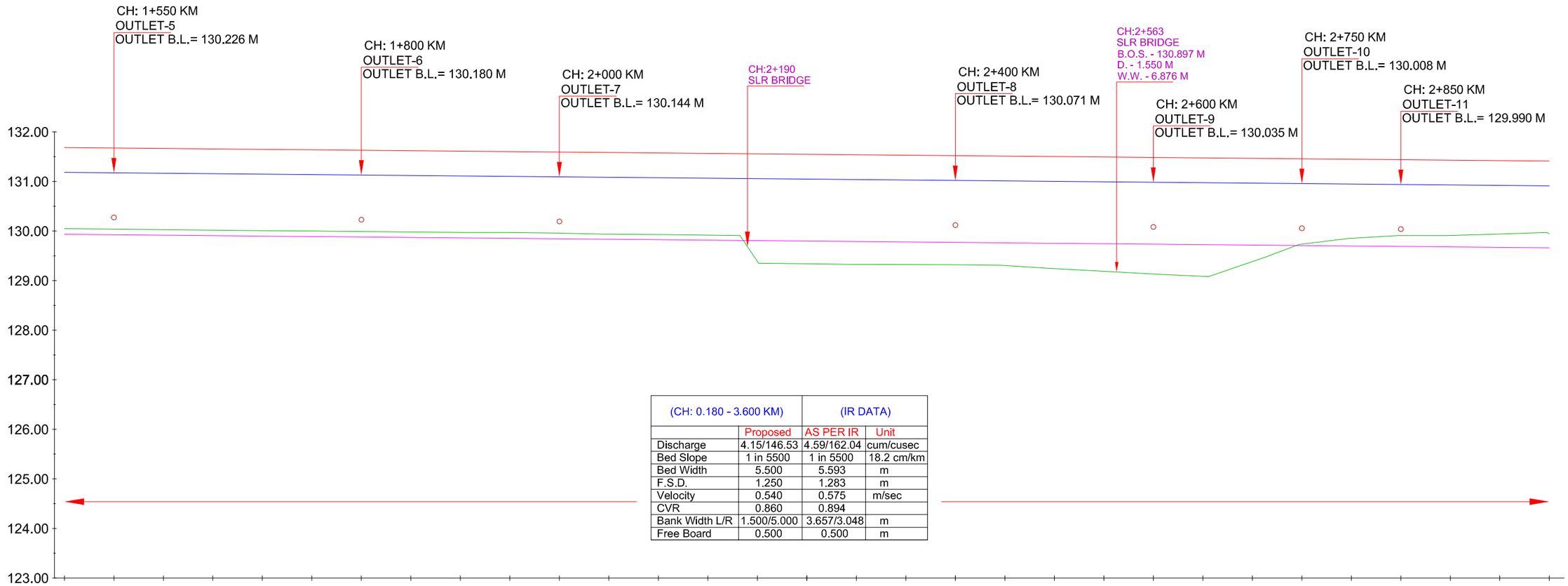
		Chainage IN KM	TOP OF BANK LEVEL	F.S.L.	Proposed Bed Level	Bed Level	TOP OF BANK LEVEL	NSL
DESIGN DATA	EXISTING DATA	0+000	132.058	131.558	130.208			131.990
		0+050	132.049	131.549	130.199			131.910
		0+100	132.040	131.540	130.190			131.780
		0+150	132.030	131.530	130.180			131.950
		0+180	132.025	131.525	130.175			132.110
		0+200	131.921	131.421	130.171			
		0+250	131.912	131.412	130.162			132.240
		0+300	131.903	131.403	130.153			132.370
		0+350	131.894	131.394	130.144			131.200
		0+400	131.885	131.385	130.135			131.310
		0+450	131.876	131.376	130.126			131.470
		0+500	131.867	131.367	130.117			131.370
		0+550	131.858	131.358	130.108			131.230
		0+600	131.849	131.349	130.099			131.150
		0+650	131.840	131.340	130.090			131.040
		0+700	131.830	131.330	130.080			130.860
		0+750	131.821	131.321	130.071			130.840
		0+800	131.812	131.312	130.062			130.830
		0+850	131.803	131.303	130.053			130.790
		0+900	131.794	131.294	130.044			130.750
		0+950	131.785	131.285	130.035			130.710
		1+000	131.776	131.276	130.026			130.670
		1+050	131.767	131.267	130.017			130.630
		1+100	131.758	131.258	130.008			130.600
		1+150	131.749	131.249	129.999			130.530
		1+200	131.740	131.240	129.990			130.450
		1+250	131.730	131.230	129.980			130.370
		1+300	131.721	131.221	129.971			130.290
		1+350	131.712	131.212	129.962			130.370 130.120
		1+400	131.703	131.203	129.953			130.090
		1+450	131.694	131.194	129.944			130.030
		1+500	131.685	131.185	129.935			129.970 130.090 130.090 130.080 130.060 130.050

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 01 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 1+500 TO 3+000



(CH: 0.180 - 3.600 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	4.15/146.53	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.500	5.593	m
F.S.D.	1.250	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.860	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

		Chainage IN KM	1+500	1+550	1+600	1+650	1+700	1+750	1+800	1+850	1+900	1+950	2+000	2+050	2+100	2+150	2+200	2+250	2+300	2+350	2+400	2+450	2+500	2+550	2+600	2+650	2+700	2+750	2+800	2+850	2+900	2+950	3+000
DESIGN DATA	TOP OF BANK LEVEL		131.685	131.676	131.667	131.658	131.649	131.640	131.630	131.621	131.612	131.603	131.594	131.585	131.576	131.567	131.558	131.549	131.540	131.530	131.521	131.512	131.503	131.494	131.485	131.476	131.467	131.458	131.449	131.440	131.430	131.421	131.412
	F.S.L.		131.185	131.176	131.167	131.158	131.149	131.140	131.130	131.121	131.112	131.103	131.094	131.085	131.076	131.067	131.058	131.049	131.040	131.030	131.021	131.012	131.003	130.994	130.985	130.976	130.967	130.958	130.949	130.940	130.930	130.921	130.912
	Proposed Bed Level		129.935	129.926	129.917	129.908	129.899	129.890	129.880	129.871	129.862	129.853	129.844	129.835	129.826	129.817	129.808	129.799	129.790	129.780	129.771	129.762	129.753	129.744	129.735	129.726	129.717	129.708	129.699	129.690	129.680	129.671	129.662
EXISTING DATA	Bed Level																																
	TOP OF BANK LEVEL																																
	NSL		130.050	130.040	130.030	130.020	130.010	130.000	129.990		129.970	129.970	129.960	129.940	129.930	129.920	129.910	129.350	129.340	129.330		129.320	129.310	129.250	129.190	129.130	129.080	129.470	129.730	129.850	129.910	129.910	129.940	129.970

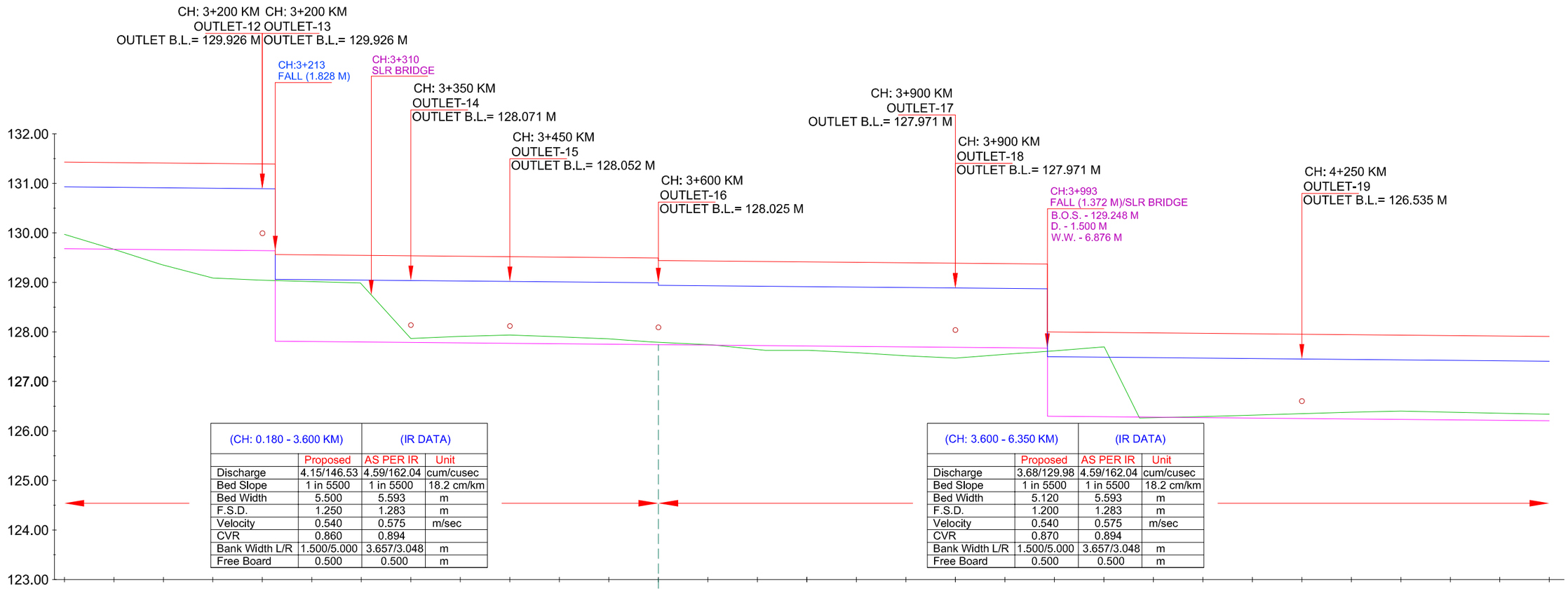
LEGEND

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 02 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 3+000 TO 4+500



(CH: 0.180 - 3.600 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	4.15/146.53	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.500	5.593	m
F.S.D.	1.250	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.860	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 3.600 - 6.350 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	3.68/129.98	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.120	5.593	m
F.S.D.	1.200	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.870	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

		3+000	3+050	3+100	3+150	3+200	3+250	3+300	3+350	3+400	3+450	3+500	3+550	3+600	3+650	3+700	3+750	3+800	3+850	3+900	3+950	4+000	4+050	4+100	4+150	4+200	4+250	4+300	4+350	4+400	4+450	4+500
DESIGN DATA	TOP OF BANK LEVEL	131.412	131.403	131.394	131.385	131.376	131.374	129.546	129.539	129.530	129.521	129.512	129.502	129.493	129.484	129.475	129.416	129.407	129.398	129.389	129.380	129.371	129.362	129.354	127.982	127.980	127.971	127.962	127.953	127.944	127.935	127.926	127.917	127.908	127.899	127.890
	F.S.L.	130.912	130.903	130.894	130.885	130.876	130.874	129.046	129.039	129.030	129.021	129.012	129.002	128.993	128.984	128.975	128.916	128.907	128.898	128.889	128.880	128.871	128.862	128.854	127.482	127.480	127.471	127.462	127.453	127.444	127.435	127.426	127.417	127.408	127.399	127.390
	Proposed Bed Level	129.662	129.653	129.644	129.635	129.626	129.624	127.796	127.789	127.780	127.771	127.762	127.752	127.743	127.734	127.725	127.716	127.707	127.698	127.689	127.680	127.671	127.662	127.654	126.282	126.280	126.271	126.262	126.253	126.244	126.235	126.226	126.217	126.208	126.199	126.190
EXISTING DATA	Bed Level																															
	TOP OF BANK LEVEL																															
	NSL	129.970	129.670	129.360	129.090	129.050	129.020	128.990	127.870	127.910	127.940	127.900	127.860	127.800	127.740	127.680	127.630	127.580	127.520	127.470	127.550	127.620	127.700	126.260	126.270	126.290	126.320	126.350	126.380	126.400	126.380	126.360	126.340			
	Chainage IN KM	3+000	3+050	3+100	3+150	3+200	3+250	3+300	3+350	3+400	3+450	3+500	3+550	3+600	3+650	3+700	3+750	3+800	3+850	3+900	3+950	4+000	4+050	4+100	4+150	4+200	4+250	4+300	4+350	4+400	4+450	4+500

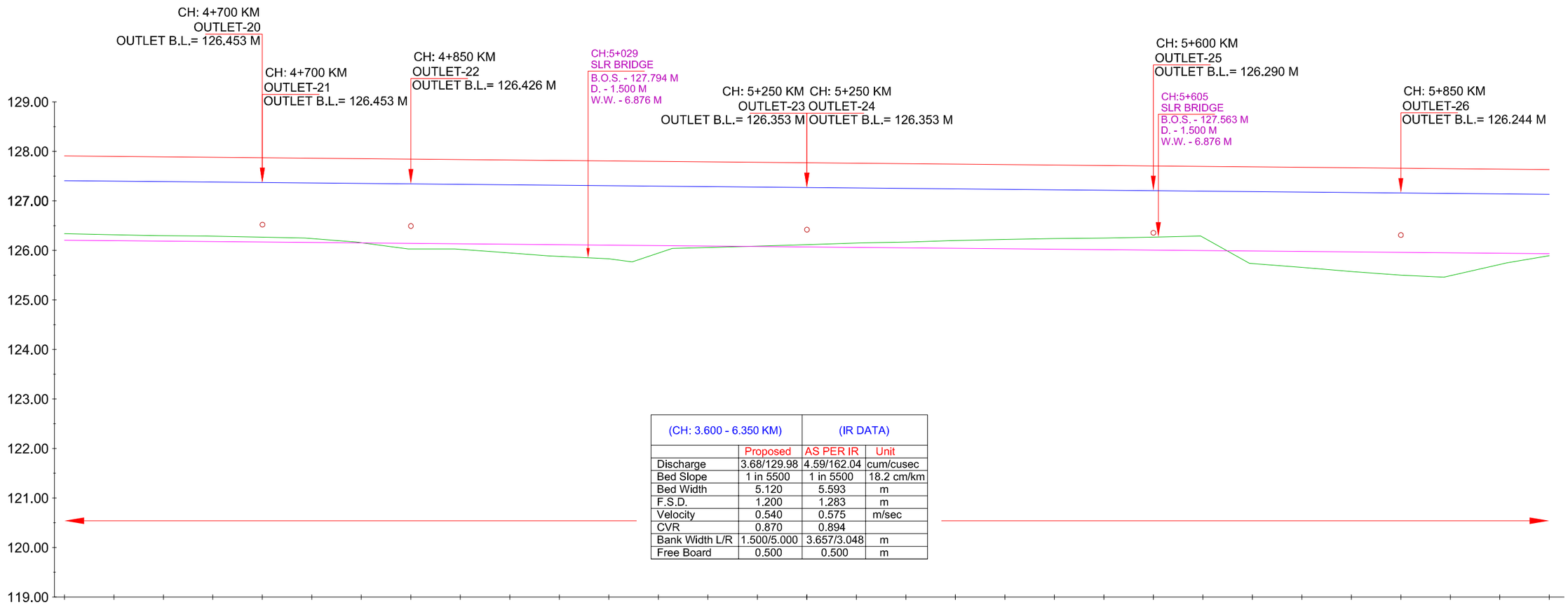
LEGEND

	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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 03 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 4+500 TO 6+000



(CH: 3.600 - 6.350 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	3.68/129.98	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.120	5.593	m
F.S.D.	1.200	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.870	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

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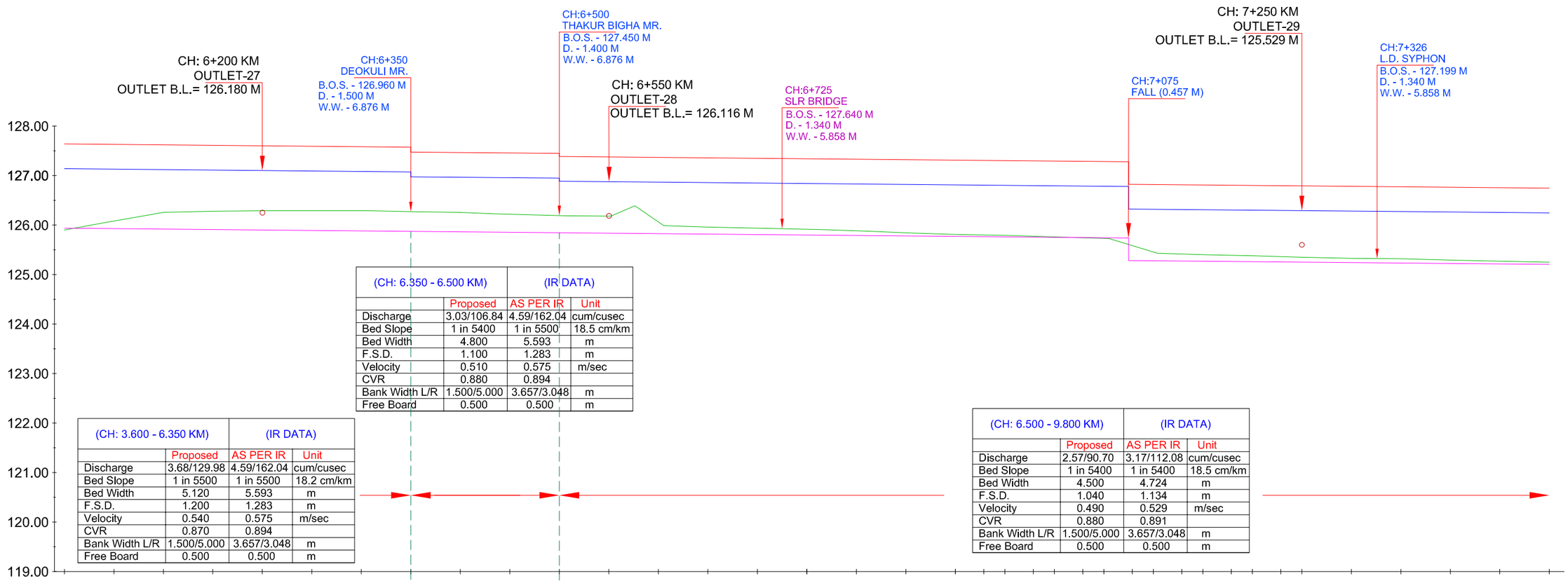
L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 6+000 TO 7+500



(CH: 6.350 - 6.500 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	3.03/106.84	4.59/162.04	cum/cusec
Bed Slope	1 in 5400	1 in 5500	18.5 cm/km
Bed Width	4.800	5.593	m
F.S.D.	1.100	1.283	m
Velocity	0.510	0.575	m/sec
CVR	0.880	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 3.600 - 6.350 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	3.68/129.98	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.120	5.593	m
F.S.D.	1.200	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.870	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 6.500 - 9.800 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	2.57/90.70	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.500	4.724	m
F.S.D.	1.040	1.134	m
Velocity	0.490	0.529	m/sec
CVR	0.880	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

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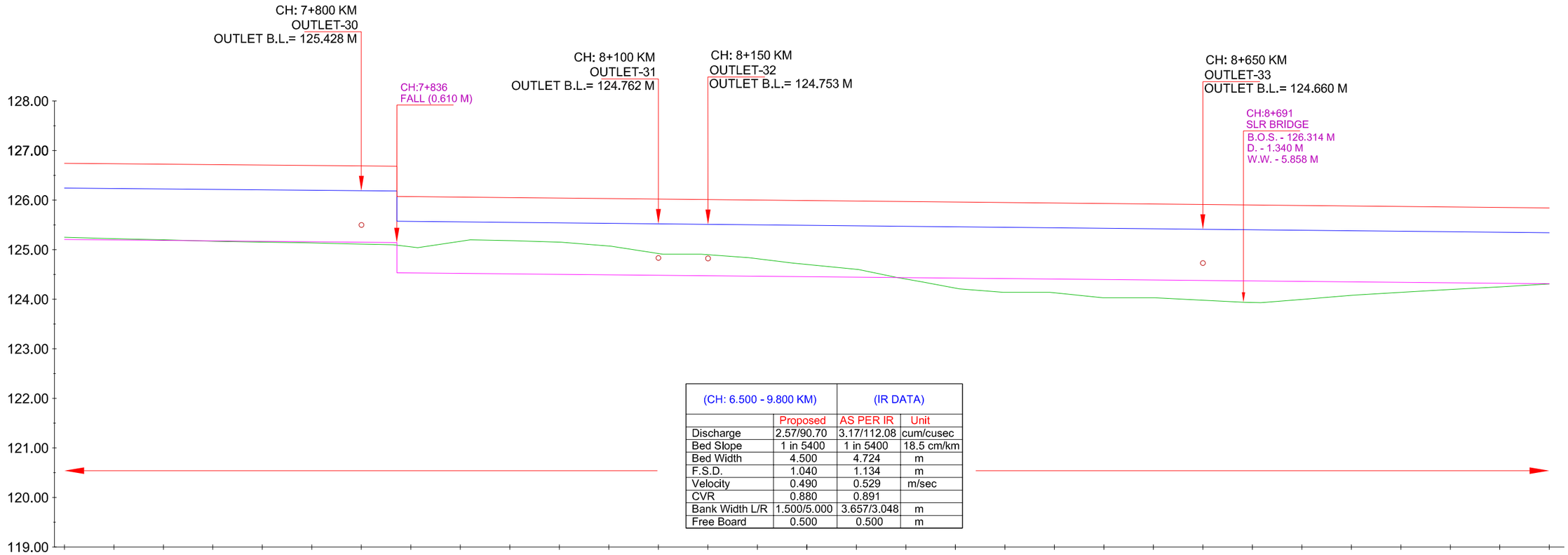
L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 7+500 TO 9+000



(CH: 6.500 - 9.800 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	2.57/90.70	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.500	4.724	m
F.S.D.	1.040	1.134	m
Velocity	0.490	0.529	m/sec
CVR	0.880	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

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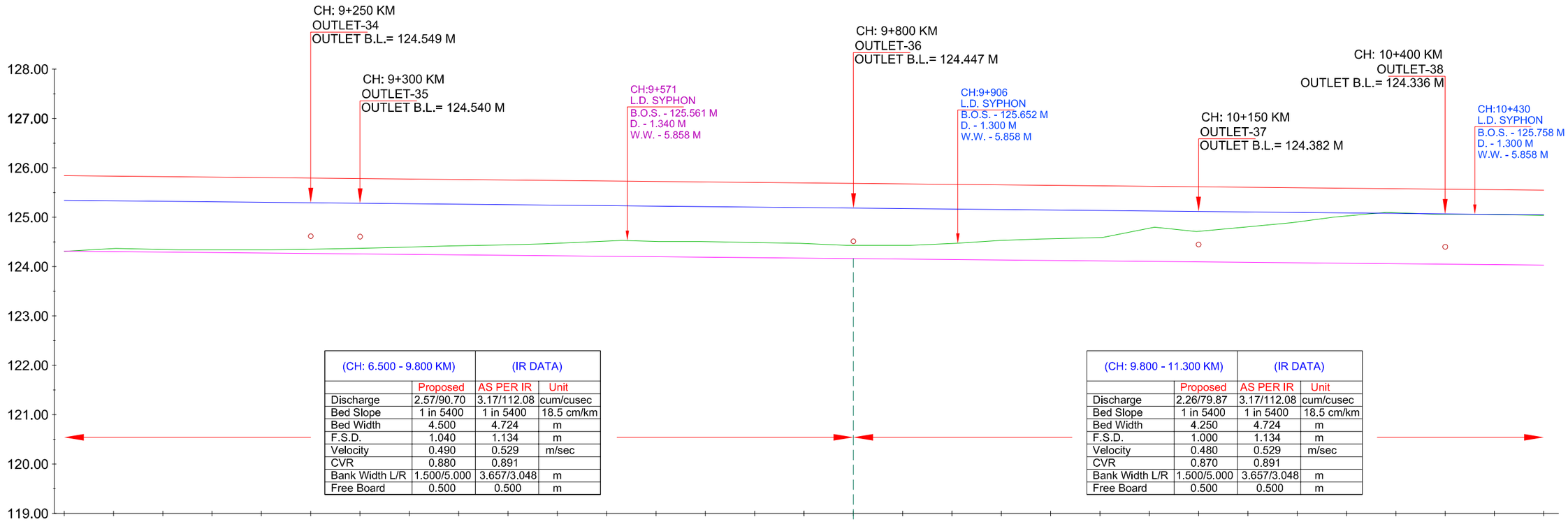
L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 9+000 TO 10+500



(CH: 6.500 - 9.800 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	2.57/90.70	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.500	4.724	m
F.S.D.	1.040	1.134	m
Velocity	0.490	0.529	m/sec
CVR	0.880	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 9.800 - 11.300 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	2.26/79.87	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.250	4.724	m
F.S.D.	1.000	1.134	m
Velocity	0.480	0.529	m/sec
CVR	0.870	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

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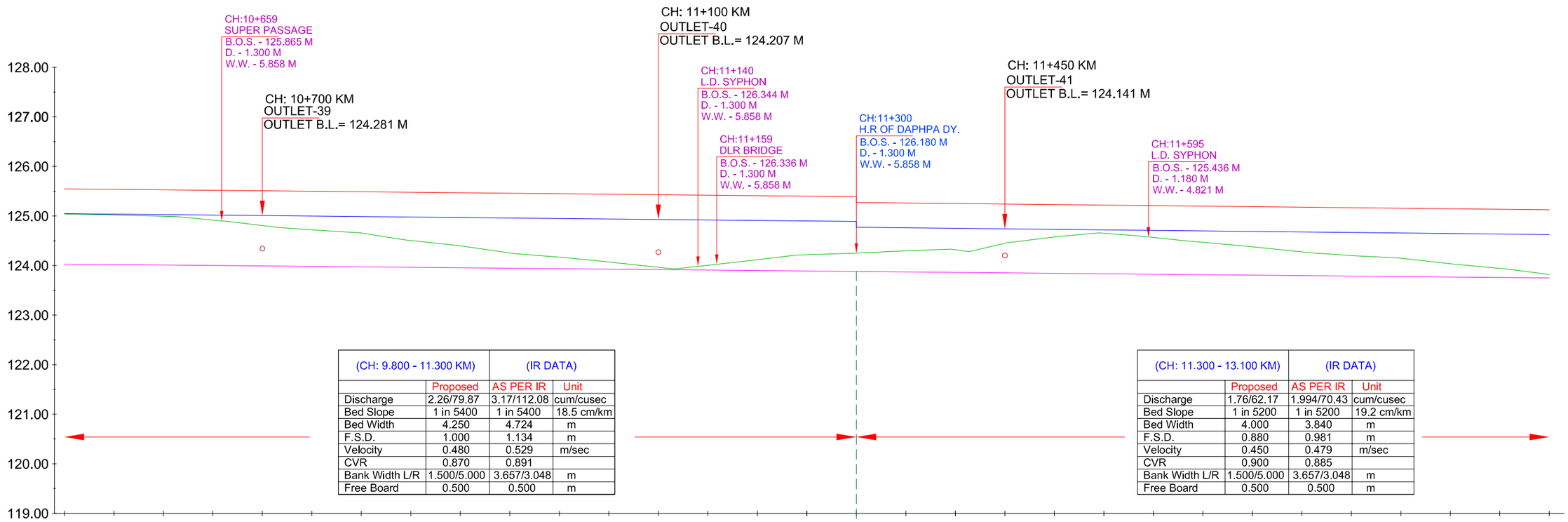
L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 10+500 TO 12+000



(CH: 9.800 - 11.300 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	2.26/79.87	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.250	4.724	m
F.S.D.	1.000	1.134	m
Velocity	0.480	0.529	m/sec
CVR	0.870	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 11.300 - 13.100 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.76/62.17	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	4.000	3.840	m
F.S.D.	0.880	0.981	m
Velocity	0.450	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

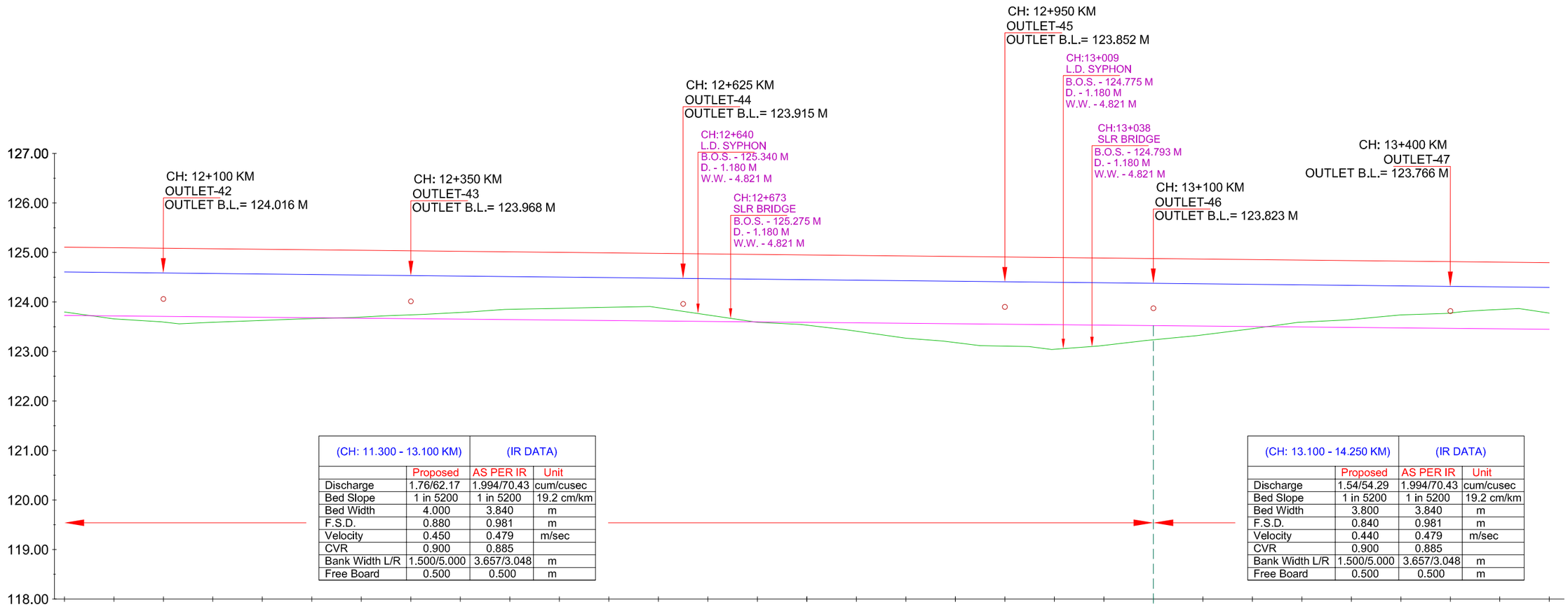
		Chainage IN KM	10+500	10+550	10+600	10+650	10+700	10+750	10+800	10+850	10+900	10+950	11+000	11+050	11+100	11+150	11+200	11+250	11+300	11+350	11+400	11+450	11+500	11+550	11+600	11+650	11+700	11+750	11+800	11+850	11+900	11+950	12+000
DESIGN DATA	TOP OF BANK LEVEL		125.518	125.508	125.499	125.490	125.481	125.471	125.462	125.453	125.444	125.434	125.425	125.416	125.407	125.397	125.388	125.379	125.369	125.240	125.230	125.221	125.211	125.201	125.192	125.182	125.173	125.163	125.153	125.144	125.134	125.124	125.115
	F.S.L.		125.018	125.008	124.999	124.990	124.981	124.971	124.962	124.953	124.944	124.934	124.925	124.916	124.907	124.897	124.888	124.879	124.869	124.740	124.730	124.721	124.711	124.701	124.692	124.682	124.673	124.663	124.653	124.644	124.634	124.624	124.615
	Proposed Bed Level		124.018	124.008	123.999	123.990	123.981	123.971	123.962	123.953	123.944	123.934	123.925	123.916	123.907	123.897	123.888	123.879	123.869	123.860	123.850	123.841	123.831	123.821	123.812	123.802	123.793	123.783	123.773	123.764	123.754	123.744	123.735
EXISTING DATA	Bed Level																																
	TOP OF BANK LEVEL																																
	NSL		125.040	125.020	124.990	124.880	124.770	124.720	124.660	124.520	124.400	124.240	124.160	124.080	123.930	124.020	124.130	124.210	124.250	124.300	124.330	124.280	124.460	124.590	124.660	124.610	124.570	124.510	124.460	124.390	124.260	124.200	124.150	124.030	123.930	123.800

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 08 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 12+000 TO 13+500



(CH: 11.300 - 13.100 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.76/62.17	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	4.000	3.840	m
F.S.D.	0.880	0.981	m
Velocity	0.450	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 13.100 - 14.250 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.54/54.29	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.800	3.840	m
F.S.D.	0.840	0.981	m
Velocity	0.440	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

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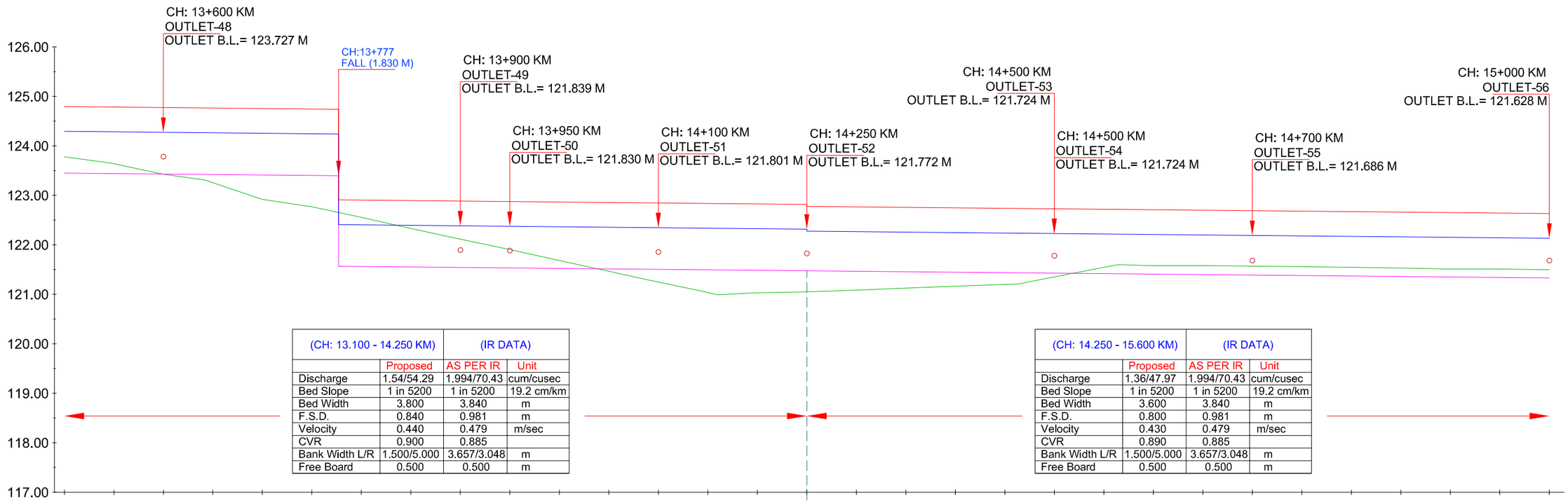
L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 13+500 TO 15+000



(CH: 13.100 - 14.250 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.54/54.29	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.800	3.840	m
F.S.D.	0.840	0.981	m
Velocity	0.440	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 14.250 - 15.600 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.36/47.97	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.600	3.840	m
F.S.D.	0.800	0.981	m
Velocity	0.430	0.479	m/sec
CVR	0.890	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

DESIGN DATA	TOP OF BANK LEVEL	124.786	124.777	124.767	124.758	124.748	124.738	124.733 122.903	122.899	122.889	122.879	122.870	122.860	122.851	122.841	122.831	122.822	122.812	122.763	122.753	122.743	122.734	122.724	122.714	122.705	122.695	122.686	122.676	122.666	122.657	122.647	122.638	122.628
	F.S.L.	124.286	124.277	124.267	124.258	124.248	124.238	124.233 122.403	122.399	122.389	122.379	122.370	122.360	122.351	122.341	122.331	122.322	122.312	122.263	122.253	122.243	122.234	122.224	122.214	122.205	122.195	122.186	122.176	122.166	122.157	122.147	122.138	122.128
	Proposed Bed Level	123.446	123.437	123.427	123.418	123.408	123.398	123.393 121.563	121.559	121.549	121.539	121.530	121.520	121.511	121.501	121.491	121.482	121.472	121.463	121.453	121.443	121.434	121.424	121.414	121.405	121.395	121.386	121.376	121.366	121.357	121.347	121.338	121.328
EXISTING DATA	Bed Level																																
	TOP OF BANK LEVEL																																
	NSL	123.780	123.650	123.430	123.310	122.920	122.770	122.560	122.370	122.170	121.920	121.640	121.460	121.300	121.070 120.990	121.030	121.050	121.080	121.120	121.160	121.190	121.210	121.350	121.600	121.590	121.580	121.570	121.560	121.550	121.530	121.520	121.510	121.500
	Chainage IN KM	13+500	13+550	13+600	13+650	13+700	13+750	13+800	13+850	13+900	13+950	14+000	14+050	14+100	14+150	14+200	14+250	14+300	14+350	14+400	14+450	14+500	14+550	14+600	14+650	14+700	14+750	14+800	14+850	14+900	14+950	15+000	

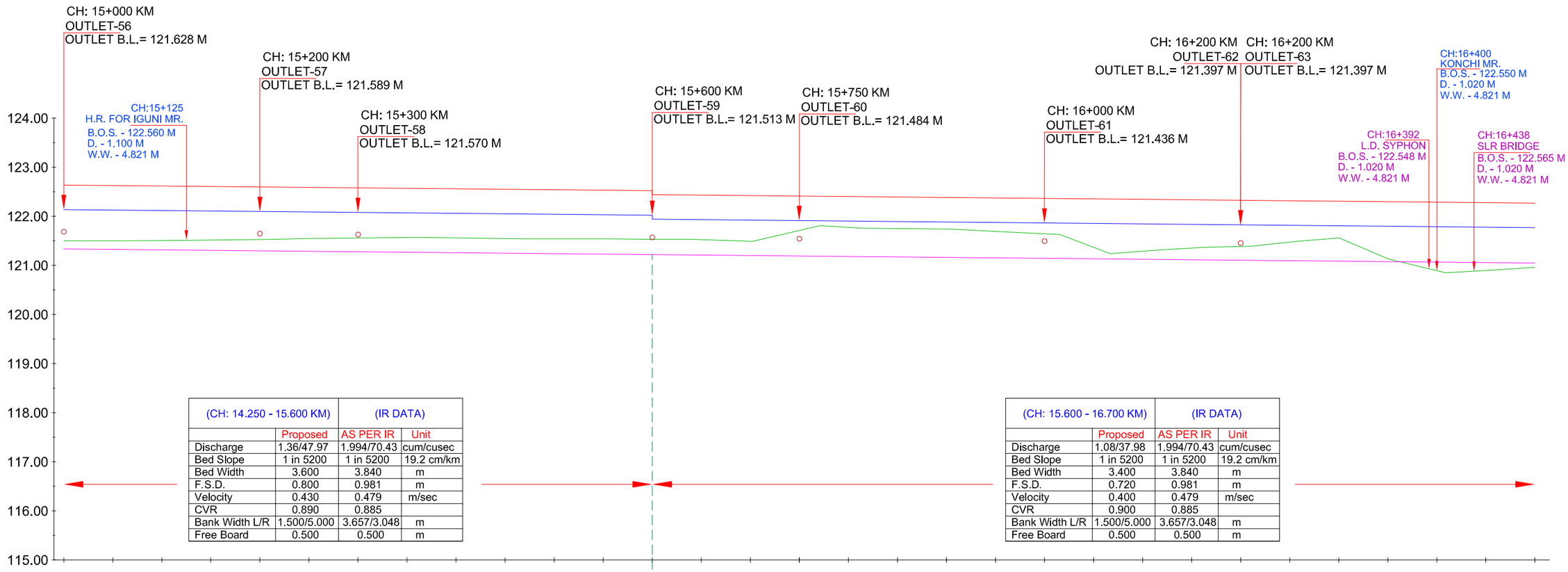
LEGEND

	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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 10 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 15+000 TO 16+500



(CH: 14.250 - 15.600 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	1.36/47.97	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.600	3.840	m
F.S.D.	0.800	0.981	m
Velocity	0.430	0.479	m/sec
CVR	0.890	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 15.600 - 16.700 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	1.08/37.98	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.400	3.840	m
F.S.D.	0.720	0.981	m
Velocity	0.400	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

DESIGN DATA	TOP OF BANK LEVEL	122.628	122.618	122.609	122.599	122.589	122.580	122.570	122.561	122.551	122.541	122.532	122.522	122.513	122.423	122.413	122.404	122.394	122.384	122.375	122.365	122.356	122.346	122.336	122.327	122.317	122.308	122.298	122.288	122.279	122.269	122.259
	F.S.L.	122.128	122.118	122.109	122.099	122.089	122.080	122.070	122.061	122.051	122.041	122.032	122.022	122.013	121.923	121.913	121.904	121.894	121.884	121.875	121.865	121.856	121.846	121.836	121.827	121.817	121.808	121.798	121.788	121.779	121.769	121.759
	Proposed Bed Level	121.328	121.318	121.309	121.299	121.289	121.280	121.270	121.261	121.251	121.241	121.232	121.222	121.213	121.203	121.193	121.184	121.174	121.164	121.155	121.145	121.136	121.126	121.116	121.107	121.097	121.088	121.078	121.068	121.059	121.049	121.039
EXISTING DATA	Bed Level																																	
	TOP OF BANK LEVEL																																	
	NSL	121.500	121.500	121.510	121.520	121.530	121.550	121.560	121.570	121.560	121.550	121.540	121.540	121.530	121.530	121.490	121.810	121.760	121.750	121.740	121.690	121.630	121.240	121.310	121.370	121.390	121.490	121.560	121.130	120.850	120.910	120.980
	Chainage IN KM	15+000	15+050	15+100	15+150	15+200	15+250	15+300	15+350	15+400	15+450	15+500	15+550	15+600	15+650	15+700	15+750	15+800	15+850	15+900	15+950	16+000	16+050	16+100	16+150	16+200	16+250	16+300	16+350	16+400	16+450	16+500

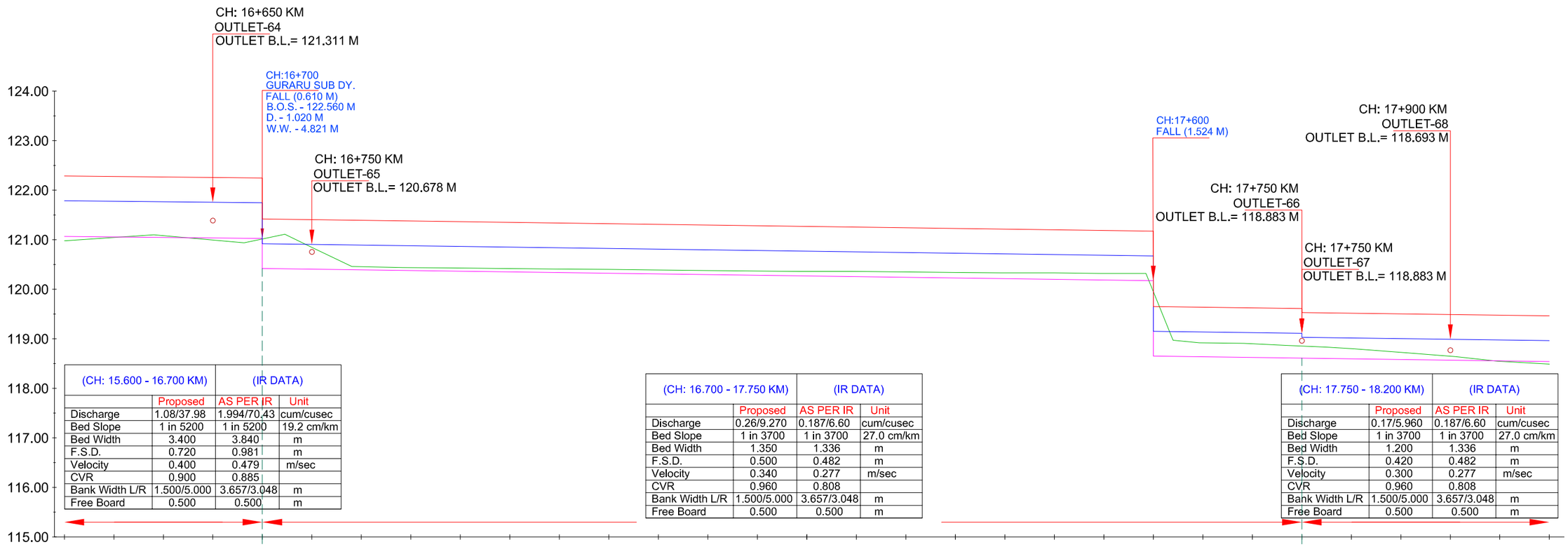
LEGEND

	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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 11 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 16+500 TO 18+000



(CH: 15.600 - 16.700 KM)	Proposed	(IR DATA) AS PER IR	Unit
Discharge	1.08/37.98	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.400	3.840	m
F.S.D.	0.720	0.981	m
Velocity	0.400	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 16.700 - 17.750 KM)	Proposed	(IR DATA) AS PER IR	Unit
Discharge	0.26/9.270	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	1.350	1.336	m
F.S.D.	0.500	0.482	m
Velocity	0.340	0.277	m/sec
CVR	0.960	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 17.750 - 18.200 KM)	Proposed	(IR DATA) AS PER IR	Unit
Discharge	0.17/5.960	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	1.200	1.336	m
F.S.D.	0.420	0.482	m
Velocity	0.300	0.277	m/sec
CVR	0.960	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

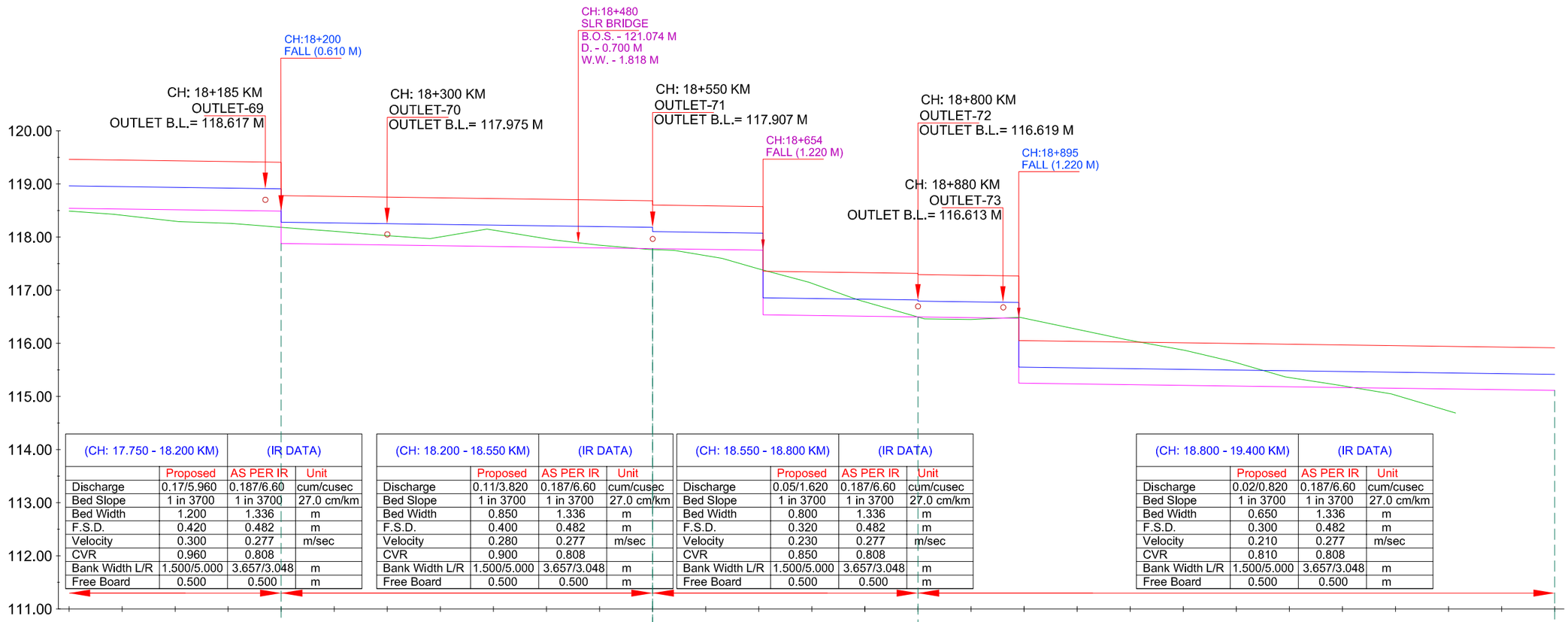
		Chainage IN KM	-16+500	-16+550	-16+600	-16+650	-16+700	-16+750	-16+800	-16+850	-16+900	-16+950	-17+000	-17+050	-17+100	-17+150	-17+200	-17+250	-17+300	-17+350	-17+400	-17+450	-17+500	-17+550	-17+600	-17+650	-17+700	-17+750	-17+800	-17+850	-17+900	-17+950	-18+000
DESIGN DATA	TOP OF BANK LEVEL		122.259	122.250	122.240	122.231	122.221	121.378	121.364	121.350	121.337	121.323	121.310	121.296	121.283	121.269	121.256	121.242	121.229	121.215	121.202	121.188	121.175	121.161	121.148	119.610	119.597	119.583	119.490	119.476	119.463	119.449	119.436
	F.S.L.		121.759	121.750	121.740	121.731	121.721	120.878	120.864	120.850	120.837	120.823	120.810	120.796	120.783	120.769	120.756	120.742	120.729	120.715	120.702	120.688	120.675	120.661	120.648	119.110	119.097	119.083	118.990	118.976	118.963	118.949	118.936
	Proposed Bed Level		121.039	121.030	121.020	121.011	121.001	120.378	120.364	120.350	120.337	120.323	120.310	120.296	120.283	120.269	120.256	120.242	120.229	120.215	120.202	120.188	120.175	120.161	120.148	118.610	118.597	118.583	118.570	118.556	118.543	118.529	118.516
EXISTING DATA	Bed Level																																
	TOP OF BANK LEVEL																																
	NSL		120.980	121.050	121.100	121.010	120.940	121.110	120.850	120.620	120.460	120.440	120.430	120.420	120.410	120.400	120.390	120.380	120.370	120.360	120.360	120.350	120.340	120.330	120.330	120.330	120.320	118.970	118.920	118.910	118.870	118.850	118.830	118.800	118.720	118.640	118.550	118.490

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 12 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 18+000 TO 19+400



(CH: 17.750 - 18.200 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	0.17/5.960	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	1.200	1.336	m
F.S.D.	0.420	0.482	m
Velocity	0.300	0.277	m/sec
CVR	0.960	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 18.200 - 18.550 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	0.11/3.820	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	0.850	1.336	m
F.S.D.	0.400	0.482	m
Velocity	0.280	0.277	m/sec
CVR	0.900	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 18.550 - 18.800 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	0.05/1.620	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	0.800	1.336	m
F.S.D.	0.320	0.482	m
Velocity	0.230	0.277	m/sec
CVR	0.850	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 18.800 - 19.400 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	0.02/0.820	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	0.650	1.336	m
F.S.D.	0.300	0.482	m
Velocity	0.210	0.277	m/sec
CVR	0.810	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

DESIGN DATA	TOP OF BANK LEVEL	119.436	119.422	119.409	119.395	119.382 / 118.752	118.738	118.725	118.711	118.698	118.684	118.671	118.657 / 118.657	118.564	118.550 / 118.549	117.316	117.303	117.289 / 116.769	117.256	116.024 / 116.744	116.009	115.995	115.982	115.968	115.955	115.941	115.928	115.914	115.901	115.887 / 115.387
	F.S.L.	118.936	118.922	118.909	118.895	118.882 / 118.252	118.238	118.225	118.211	118.198	118.184	118.171	118.057 / 118.057	118.064	118.050 / 118.049	116.816	116.803	116.789 / 116.769	116.756	116.744 / 116.524	115.509	115.495	115.482	115.468	115.455	115.441	115.428	115.414	115.401	115.387
	Proposed Bed Level	118.516	118.502	118.489	118.475	118.462 / 117.852	117.838	117.825	117.811	117.798	117.784	117.771	117.757 / 117.757	117.744	117.730 / 117.729	116.496	116.483	116.469 / 116.469	116.456	116.444 / 116.224	115.209	115.195	115.182	115.168	115.155	115.141	115.128	115.114	115.101	115.087
EXISTING DATA	Bed Level																																	
	TOP OF BANK LEVEL																																	
	NSL	118.490	118.430	118.290	118.260	118.180	118.110	118.030	117.970	118.150	117.950	117.850	117.770	117.750	117.600	117.410	117.150	116.820	116.460	116.450	116.490	116.280	116.070	115.870	115.660	115.370	115.210	115.050	114.690					
	Chainage IN KM	18+000	18+050	18+100	18+150	18+200	18+250	18+300	18+350	18+400	18+450	18+500	18+550	18+600	18+650	18+700	18+750	18+800	18+850	18+900	18+950	19+000	19+050	19+100	19+150	19+200	19+250	19+300	19+350	19+400				

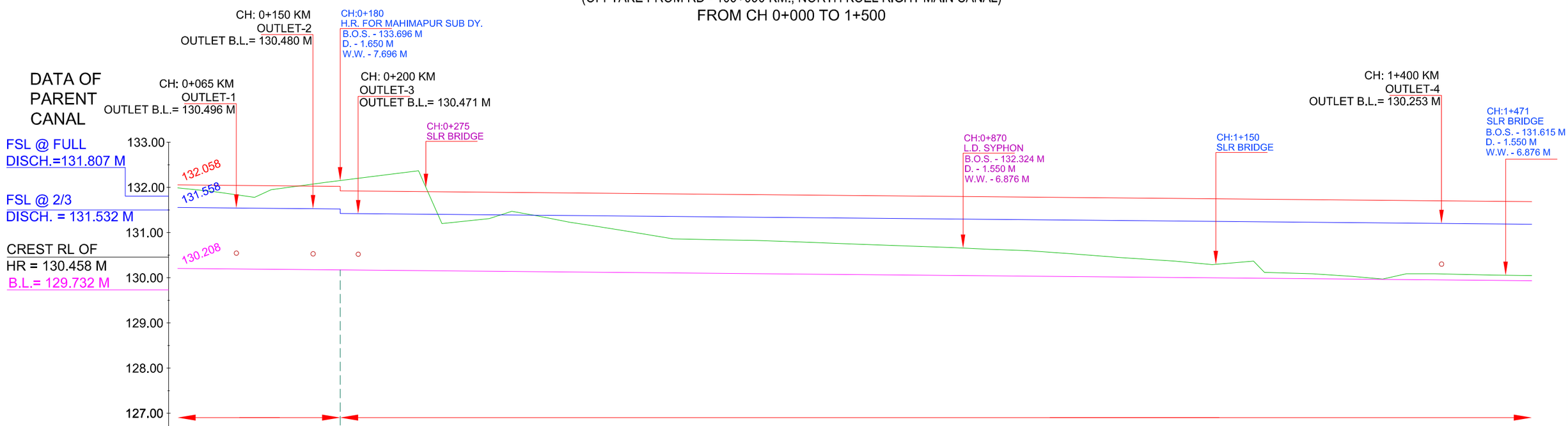
LEGEND

	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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 13 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 0+000 TO 1+500



(CH: 0.000 - 0.180 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	5.54/195.74	6.14/216.73	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	6.300	6.294	m
F.S.D.	1.350	1.402	m
Velocity	0.590	0.626	m/sec
CVR	0.890	0.920	
Bank Width L/R	1.500/5.000	1.500/3.048	m
Free Board	0.500	0.500	m

(CH: 0.180 - 3.600 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	4.15/146.53	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.500	5.593	m
F.S.D.	1.250	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.860	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

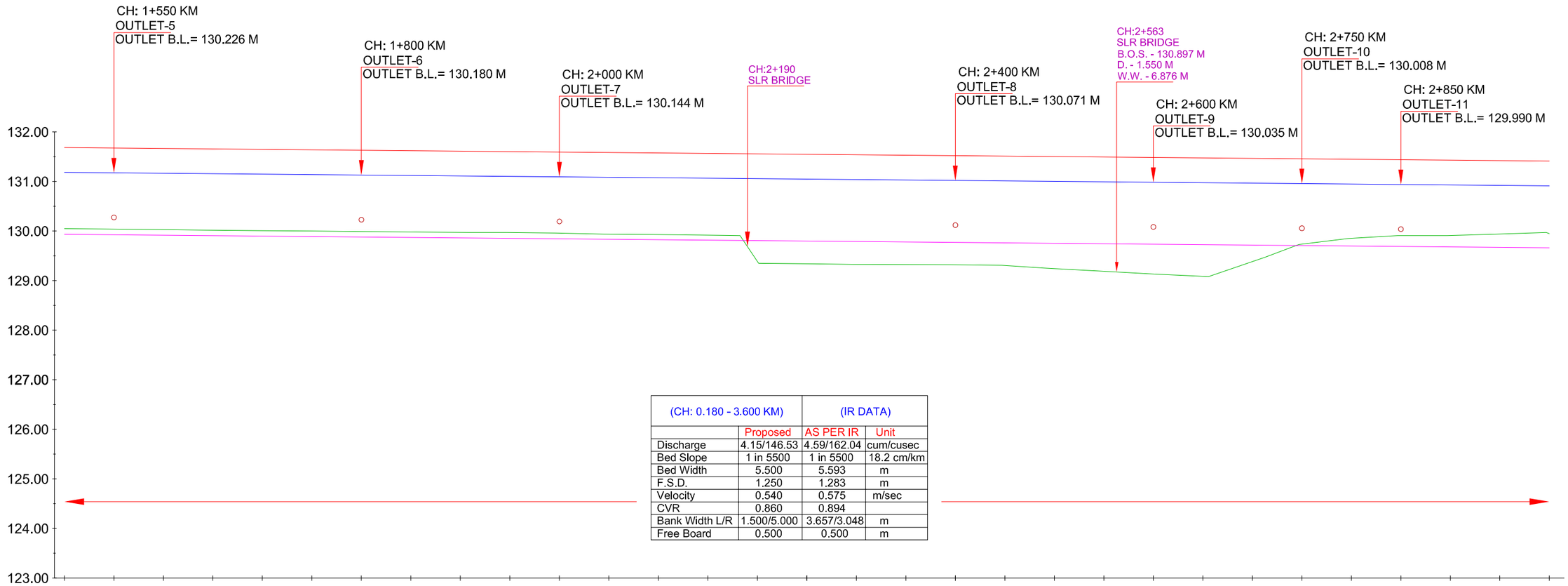
		Chainage IN KM	TOP OF BANK LEVEL	F.S.L.	Proposed Bed Level	Bed Level	TOP OF BANK LEVEL	NSL
DESIGN DATA	EXISTING DATA	0+000	132.058	131.558	130.208			131.990
		0+050	132.049	131.549	130.199			131.910
		0+100	132.040	131.540	130.190			131.780
		0+150	132.030	131.530	130.180			131.950
		0+180	132.025	131.525	130.175			132.110
		0+200	131.921	131.421	130.171			
		0+250	131.912	131.412	130.162			132.240
		0+300	131.903	131.403	130.153			132.370
		0+350	131.894	131.394	130.144			131.200
		0+400	131.885	131.385	130.135			131.310
		0+450	131.876	131.376	130.126			131.470
		0+500	131.867	131.367	130.117			131.370
		0+550	131.858	131.358	130.108			131.230
		0+600	131.849	131.349	130.099			131.150
		0+650	131.840	131.340	130.090			131.040
		0+700	131.830	131.330	130.080			130.860
		0+750	131.821	131.321	130.071			130.840
		0+800	131.812	131.312	130.062			130.830
		0+850	131.803	131.303	130.053			130.790
		0+900	131.794	131.294	130.044			130.750
		0+950	131.785	131.285	130.035			130.710
		1+000	131.776	131.276	130.026			130.670
		1+050	131.767	131.267	130.017			130.630
		1+100	131.758	131.258	130.008			130.600
		1+150	131.749	131.249	129.999			130.530
		1+200	131.740	131.240	129.990			130.450
		1+250	131.730	131.230	129.980			130.370
		1+300	131.721	131.221	129.971			130.290
		1+350	131.712	131.212	129.962			130.370 130.120
		1+400	131.703	131.203	129.953			130.090
		1+450	131.694	131.194	129.944			130.030
		1+500	131.685	131.185	129.935			129.970 130.090 130.090 130.080 130.060 130.050

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 01 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 1+500 TO 3+000



(CH: 0.180 - 3.600 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	4.15/146.53	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.500	5.593	m
F.S.D.	1.250	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.860	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

DESIGN DATA	TOP OF BANK LEVEL	131.685	131.676	131.667	131.658	131.649	131.640	131.630	131.621	131.612	131.603	131.594	131.585	131.576	131.567	131.558	131.549	131.540	131.530	131.521	131.512	131.503	131.494	131.485	131.476	131.467	131.458	131.449	131.440	131.430	131.421	131.412
	F.S.L.	131.185	131.176	131.167	131.158	131.149	131.140	131.130	131.121	131.112	131.103	131.094	131.085	131.076	131.067	131.058	131.049	131.040	131.030	131.021	131.012	131.003	130.994	130.985	130.976	130.967	130.958	130.949	130.940	130.930	130.921	130.912
	Proposed Bed Level	129.935	129.926	129.917	129.908	129.899	129.890	129.880	129.871	129.862	129.853	129.844	129.835	129.826	129.817	129.808	129.799	129.790	129.780	129.771	129.762	129.753	129.744	129.735	129.726	129.717	129.708	129.699	129.690	129.680	129.671	129.662
EXISTING DATA	Bed Level																															
	TOP OF BANK LEVEL																															
	NSL	130.050	130.040	130.030	130.020	130.010	130.000	129.990		129.970	129.970	129.960	129.940	129.930	129.920	129.910	129.350	129.340	129.330		129.320	129.310	129.250	129.190	129.130	129.080		129.470	129.730	129.850	129.910	129.910	129.940	129.970
	Chainage IN KM	1+500	1+550	1+600	1+650	1+700	1+750	1+800	1+850	1+900	1+950	2+000	2+050	2+100	2+150	2+200	2+250	2+300	2+350	2+400	2+450	2+500	2+550	2+600	2+650	2+700	2+750	2+800	2+850	2+900	2+950	3+000

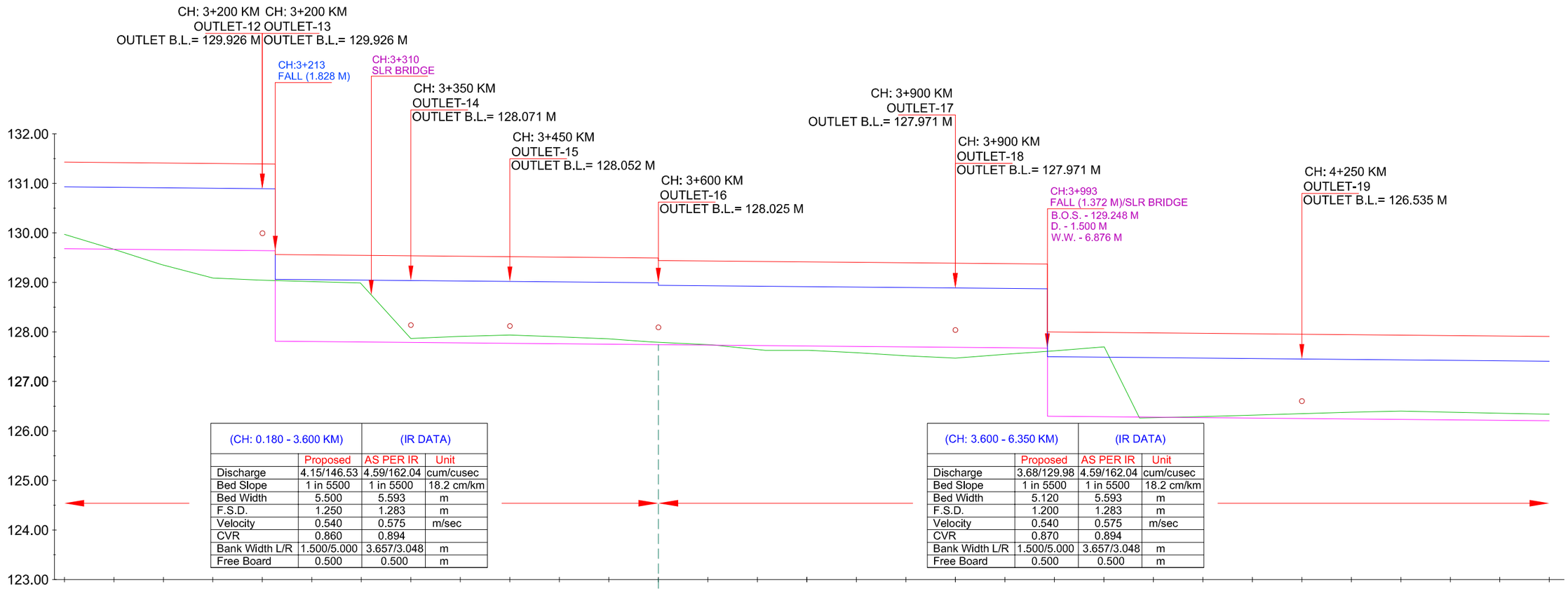
LEGEND

	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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 02 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 3+000 TO 4+500



(CH: 0.180 - 3.600 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	4.15/146.53	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.500	5.593	m
F.S.D.	1.250	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.860	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 3.600 - 6.350 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	3.68/129.98	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.120	5.593	m
F.S.D.	1.200	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.870	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

		3+000	3+050	3+100	3+150	3+200	3+250	3+300	3+350	3+400	3+450	3+500	3+550	3+600	3+650	3+700	3+750	3+800	3+850	3+900	3+950	4+000	4+050	4+100	4+150	4+200	4+250	4+300	4+350	4+400	4+450	4+500
DESIGN DATA	TOP OF BANK LEVEL	131.412	131.403	131.394	131.385	131.376 / 131.374 / 129.546	129.539	129.530	129.521	129.512	129.502	129.493	129.484	129.475	129.416	129.407	129.398	129.389	129.380	129.371	129.362	129.354 / 127.982 / 127.980	127.971	127.962	127.953	127.944	127.935	127.926	127.917	127.908	127.899	127.890
	F.S.L.	130.912	130.903	130.894	130.885	130.876 / 130.874 / 129.046	129.039	129.030	129.021	129.012	129.002	128.993	128.984	128.925	128.916	128.907	128.898	128.889	128.880	128.871	128.862	128.854 / 127.482 / 127.480	127.471	127.462	127.453	127.444	127.435	127.426	127.417	127.408	127.399	127.390
	Proposed Bed Level	129.662	129.653	129.644	129.635	129.626 / 129.624 / 127.796	127.789	127.780	127.771	127.762	127.752	127.743	127.734	127.725	127.716	127.707	127.698	127.689	127.680	127.671	127.662	127.654 / 126.282 / 126.280	126.271	126.262	126.253	126.244	126.235	126.226	126.217	126.208	126.199	126.190
EXISTING DATA	Bed Level																															
	TOP OF BANK LEVEL																															
	NSL	129.970	129.670	129.360	129.090	129.050	129.020	128.990	127.870	127.910	127.940	127.900	127.860	127.800	127.740	127.680	127.630	127.580	127.520	127.470	127.550	127.620	127.700	126.260 / 126.270	126.290	126.320	126.350	126.380	126.400	126.380	126.360	126.340
	Chainage IN KM	3+000	3+050	3+100	3+150	3+200	3+250	3+300	3+350	3+400	3+450	3+500	3+550	3+600	3+650	3+700	3+750	3+800	3+850	3+900	3+950	4+000	4+050	4+100	4+150	4+200	4+250	4+300	4+350	4+400	4+450	4+500

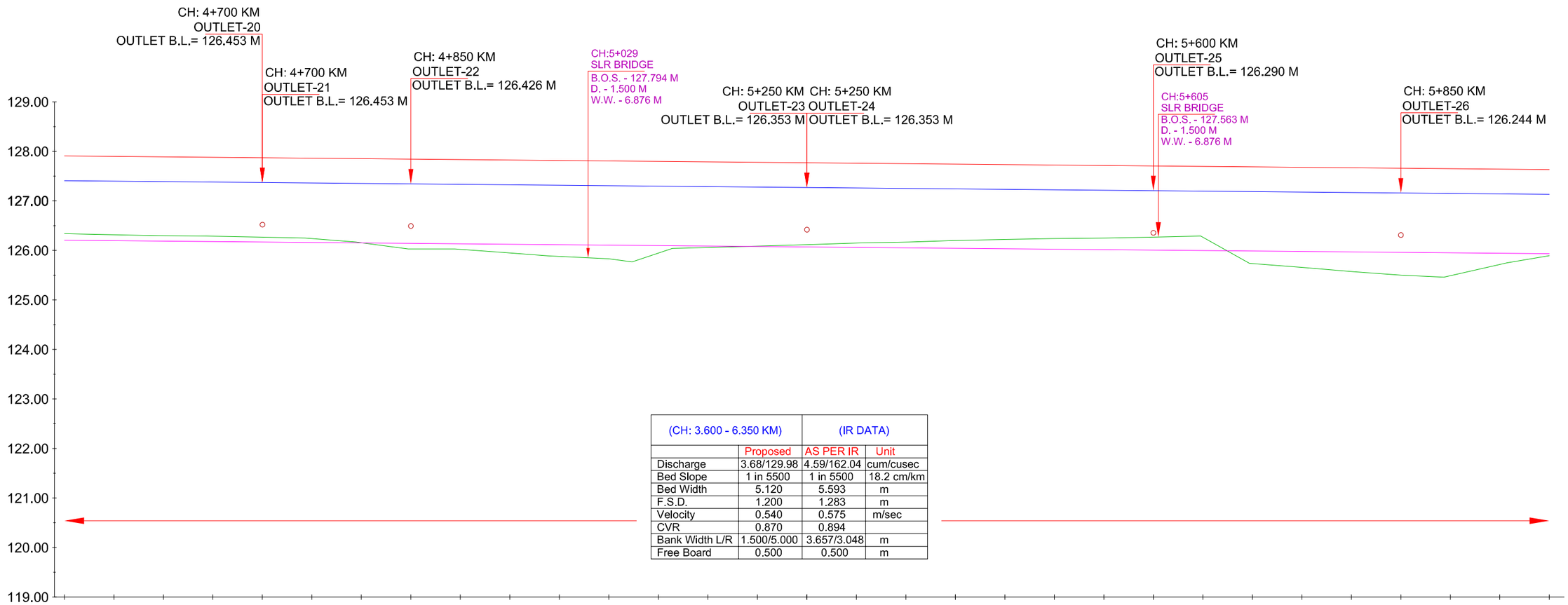
LEGEND

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 03 of 13

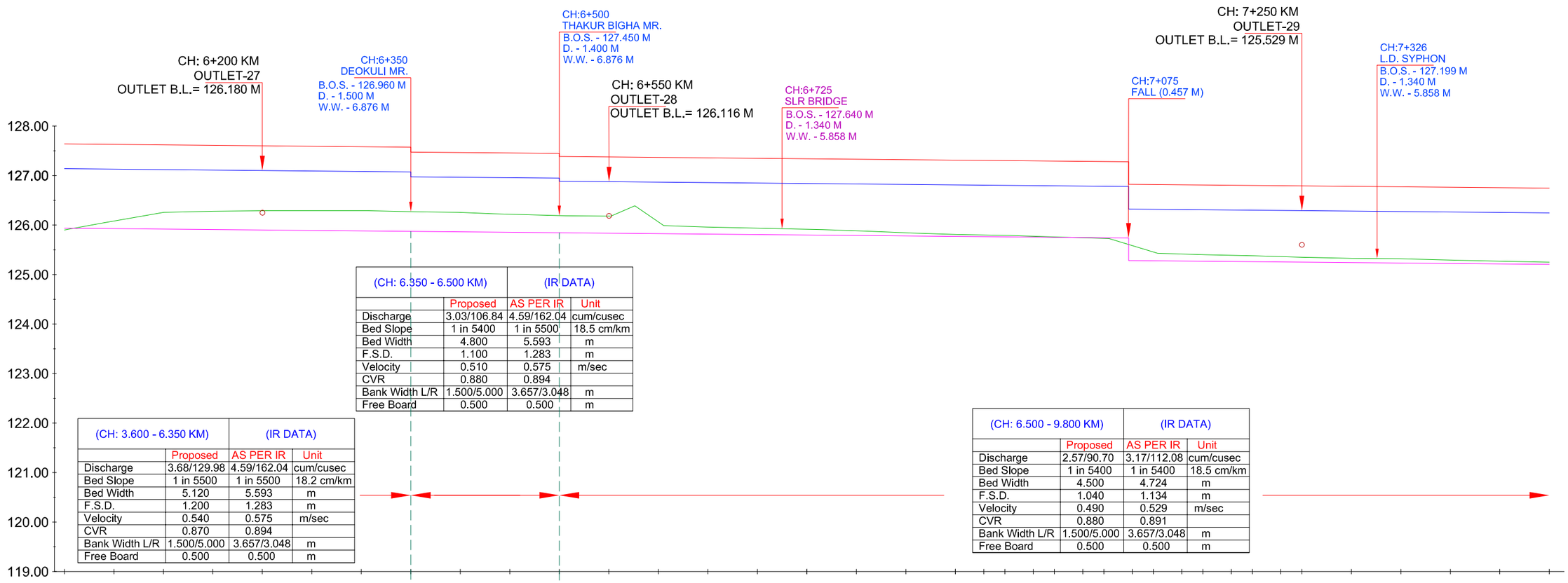
L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 4+500 TO 6+000



(CH: 3.600 - 6.350 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	3.68/129.98	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.120	5.593	m
F.S.D.	1.200	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.870	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

| | | |

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 6+000 TO 7+500



(CH: 6.350 - 6.500 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	3.03/106.84	4.59/162.04	cum/cusec
Bed Slope	1 in 5400	1 in 5500	18.5 cm/km
Bed Width	4.800	5.593	m
F.S.D.	1.100	1.283	m
Velocity	0.510	0.575	m/sec
CVR	0.880	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 3.600 - 6.350 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	3.68/129.98	4.59/162.04	cum/cusec
Bed Slope	1 in 5500	1 in 5500	18.2 cm/km
Bed Width	5.120	5.593	m
F.S.D.	1.200	1.283	m
Velocity	0.540	0.575	m/sec
CVR	0.870	0.894	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 6.500 - 9.800 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	2.57/90.70	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.500	4.724	m
F.S.D.	1.040	1.134	m
Velocity	0.490	0.529	m/sec
CVR	0.880	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

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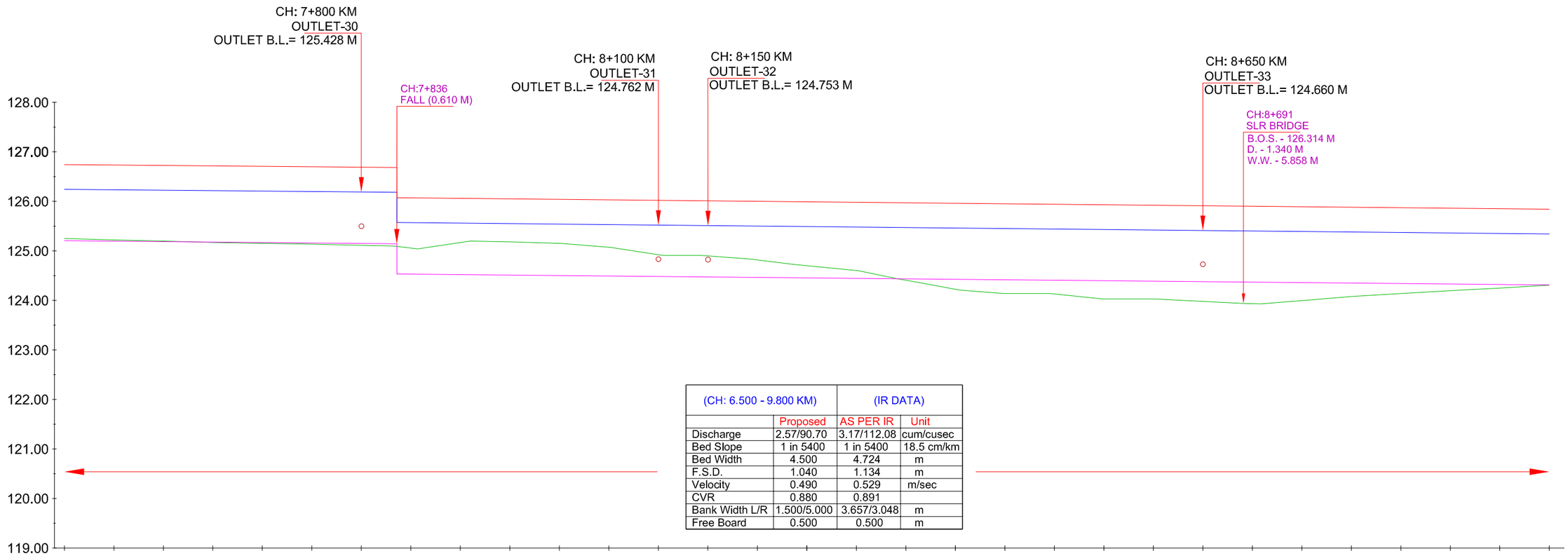
L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 7+500 TO 9+000



(CH: 6.500 - 9.800 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	2.57/90.70	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.500	4.724	m
F.S.D.	1.040	1.134	m
Velocity	0.490	0.529	m/sec
CVR	0.880	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

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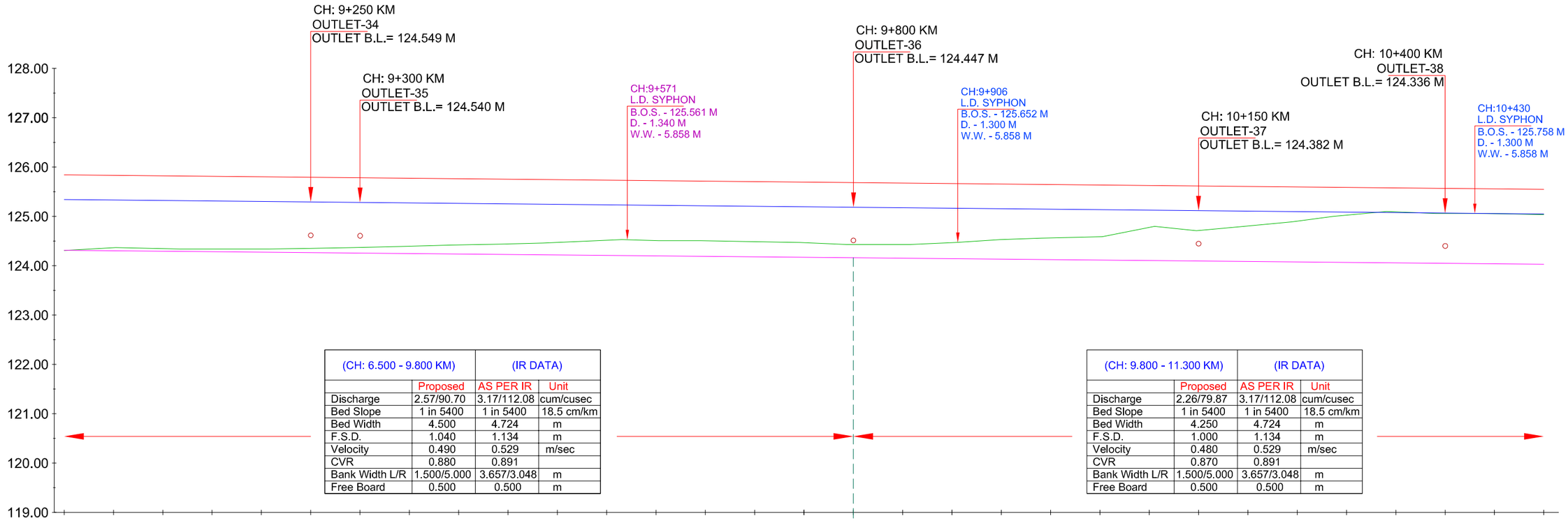
L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 9+000 TO 10+500



(CH: 6.500 - 9.800 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	2.57/90.70	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.500	4.724	m
F.S.D.	1.040	1.134	m
Velocity	0.490	0.529	m/sec
CVR	0.880	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 9.800 - 11.300 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	2.26/79.87	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.250	4.724	m
F.S.D.	1.000	1.134	m
Velocity	0.480	0.529	m/sec
CVR	0.870	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

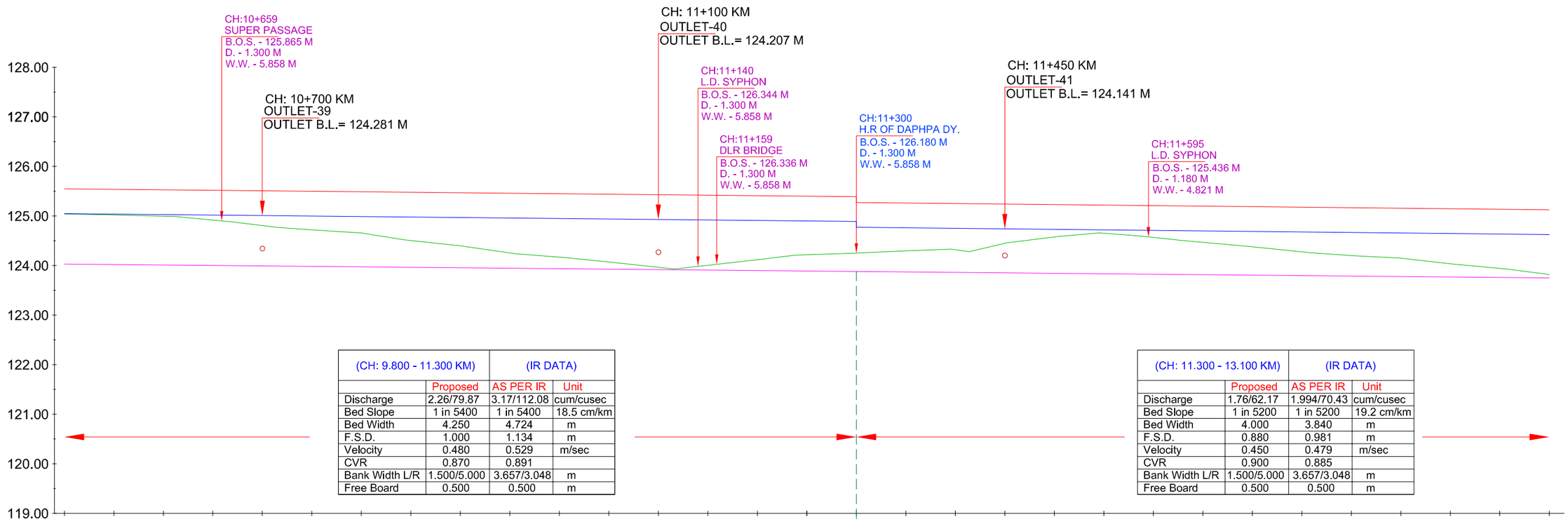
		Chainage IN KM	NSL	Bed Level	TOP OF BANK LEVEL	F.S.L.	Proposed Bed Level
EXISTING DATA	DESIGN DATA	9+000	124.310		125.835	125.335	124.295
		9+050	124.370		125.826	125.326	124.286
		9+100	124.440		125.817	125.317	124.277
		9+150	124.380		125.808	125.308	124.268
		9+200	124.340		125.798	125.298	124.258
		9+250	124.350		125.789	125.289	124.249
		9+300	124.370		125.780	125.280	124.240
		9+350	124.390		125.771	125.271	124.231
		9+400	124.420		125.761	125.261	124.221
		9+450	124.440		125.752	125.252	124.212
		9+500	124.460		125.743	125.243	124.203
		9+550	124.530		125.734	125.234	124.194
		9+600	124.510		125.724	125.224	124.184
		9+650	124.510		125.715	125.215	124.175
		9+700	124.490		125.706	125.206	124.166
		9+750	124.470		125.697	125.197	124.157
		9+800	124.450		125.687	125.187	124.147
		9+850	124.430		125.638	125.138	124.138
		9+900	124.470		125.629	125.129	124.129
		9+950	124.530		125.619	125.119	124.119
		10+000	124.560		125.610	125.110	124.110
		10+050	124.590		125.601	125.101	124.101
		10+100	124.800		125.592	125.092	124.092
		10+150	124.710		125.582	125.082	124.082
		10+200	124.790		125.573	125.073	124.073
		10+250	124.890		125.564	125.064	124.064
		10+300	125.000		125.555	125.055	124.055
		10+350	125.100		125.545	125.045	124.045
		10+400	125.080		125.536	125.036	124.036
		10+450	125.060		125.527	125.027	124.027
		10+500	125.040		125.518	125.018	124.018

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 07 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 10+500 TO 12+000



(CH: 9.800 - 11.300 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	2.26/79.87	3.17/112.08	cum/cusec
Bed Slope	1 in 5400	1 in 5400	18.5 cm/km
Bed Width	4.250	4.724	m
F.S.D.	1.000	1.134	m
Velocity	0.480	0.529	m/sec
CVR	0.870	0.891	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 11.300 - 13.100 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.76/62.17	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	4.000	3.840	m
F.S.D.	0.880	0.981	m
Velocity	0.450	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

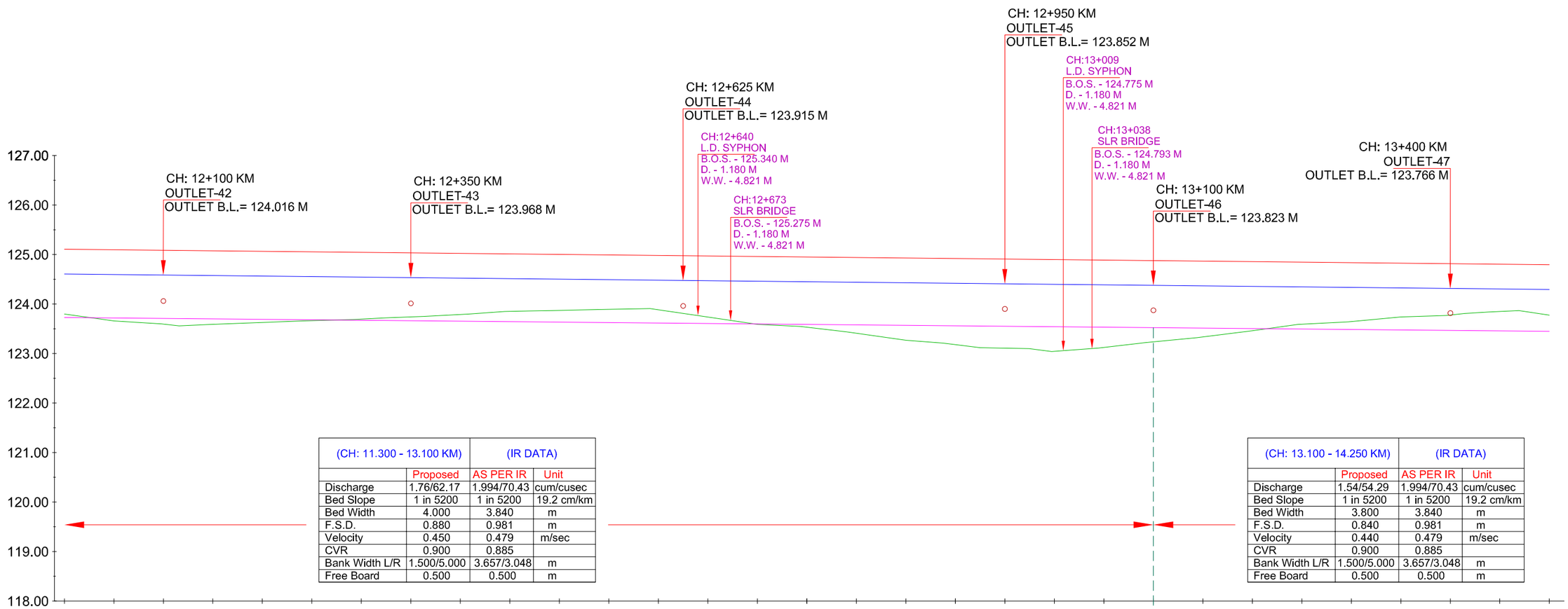
		Chainage IN KM	10+500	10+550	10+600	10+650	10+700	10+750	10+800	10+850	10+900	10+950	11+000	11+050	11+100	11+150	11+200	11+250	11+300	11+350	11+400	11+450	11+500	11+550	11+600	11+650	11+700	11+750	11+800	11+850	11+900	11+950	12+000
DESIGN DATA	TOP OF BANK LEVEL		125.518	125.508	125.499	125.490	125.481	125.471	125.462	125.453	125.444	125.434	125.425	125.416	125.407	125.397	125.388	125.379	125.369	125.240	125.230	125.221	125.211	125.201	125.192	125.182	125.173	125.163	125.153	125.144	125.134	125.124	125.115
	F.S.L.		125.018	125.008	124.999	124.990	124.981	124.971	124.962	124.953	124.944	124.934	124.925	124.916	124.907	124.897	124.888	124.879	124.869	124.740	124.730	124.721	124.711	124.701	124.692	124.682	124.673	124.663	124.653	124.644	124.634	124.624	124.615
	Proposed Bed Level		124.018	124.008	123.999	123.990	123.981	123.971	123.962	123.953	123.944	123.934	123.925	123.916	123.907	123.897	123.888	123.879	123.869	123.860	123.850	123.841	123.831	123.821	123.812	123.802	123.793	123.783	123.773	123.764	123.754	123.744	123.735
EXISTING DATA	Bed Level																																
	TOP OF BANK LEVEL																																
	NSL		125.040	125.020	124.990	124.880	124.770	124.720	124.660	124.520	124.400	124.240	124.160	124.080	123.930	124.020	124.130	124.210	124.250	124.300	124.330 124.280	124.460	124.590	124.660	124.610	124.570	124.510	124.460	124.390	124.260	124.200	124.150	124.030	123.930	123.800

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 08 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 12+000 TO 13+500

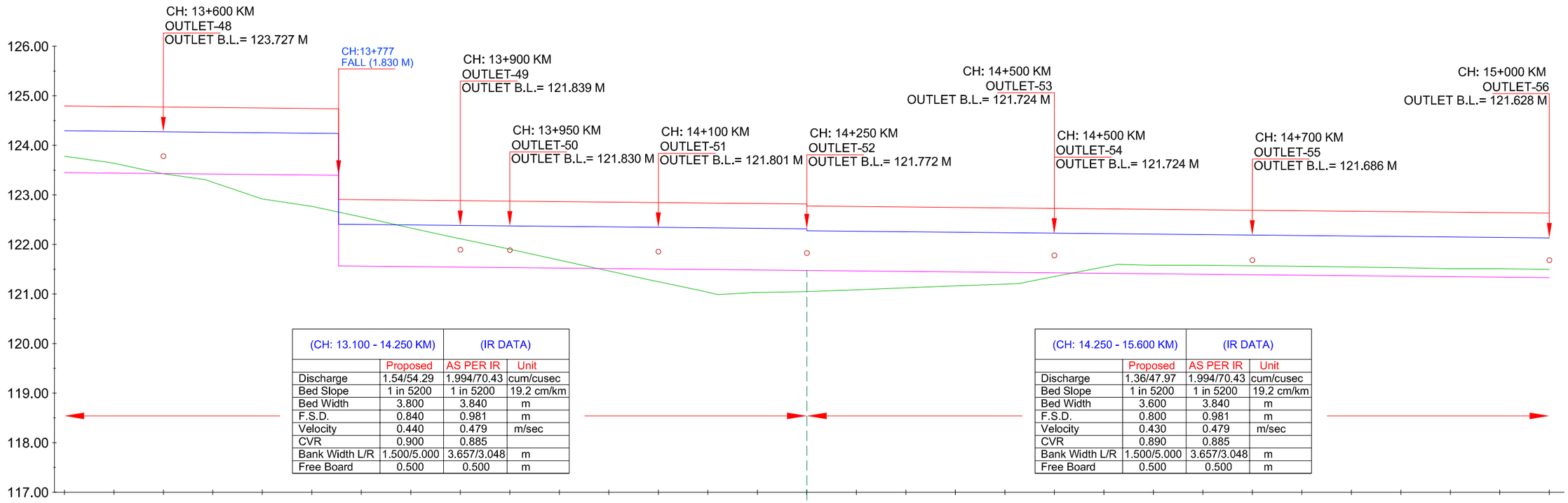


(CH: 11.300 - 13.100 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.76/62.17	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	4.000	3.840	m
F.S.D.	0.880	0.981	m
Velocity	0.450	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 13.100 - 14.250 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.54/54.29	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.800	3.840	m
F.S.D.	0.840	0.981	m
Velocity	0.440	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

| | | |

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 13+500 TO 15+000

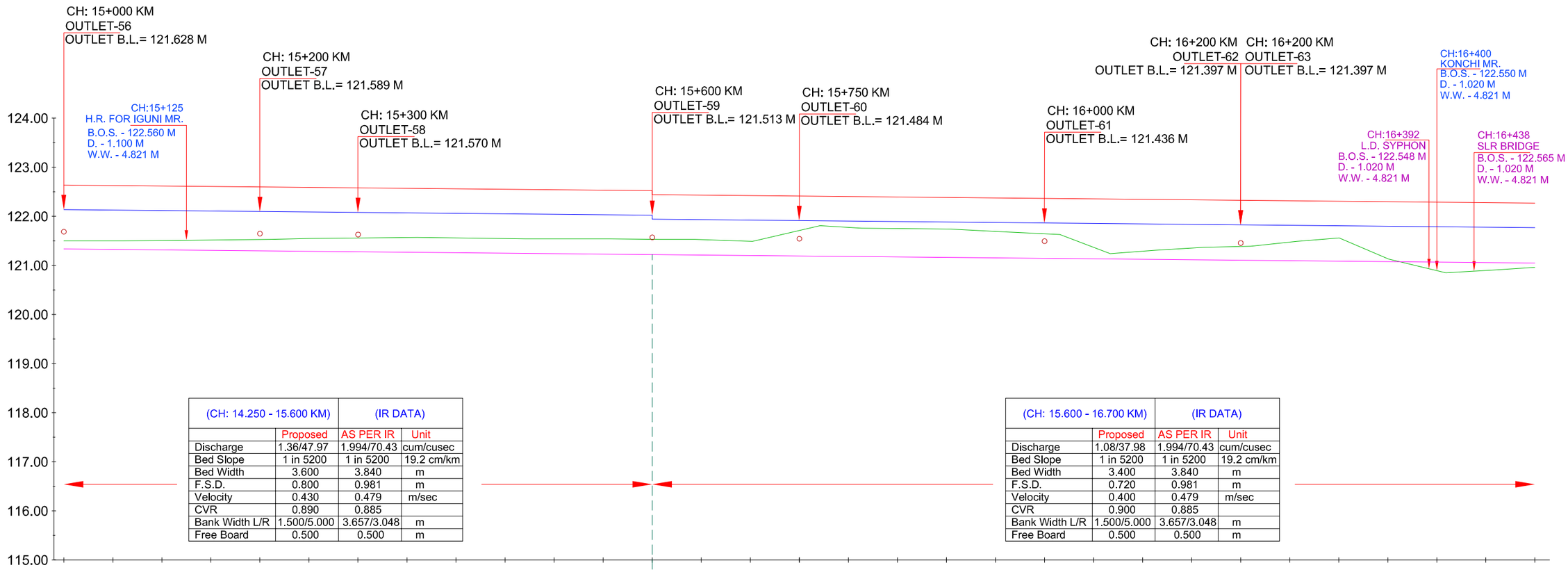


(CH: 13.100 - 14.250 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.54/54.29	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.800	3.840	m
F.S.D.	0.840	0.981	m
Velocity	0.440	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 14.250 - 15.600 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.36/47.97	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.600	3.840	m
F.S.D.	0.800	0.981	m
Velocity	0.430	0.479	m/sec
CVR	0.890	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

| | | |

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 15+000 TO 16+500



(CH: 14.250 - 15.600 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	1.36/47.97	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.600	3.840	m
F.S.D.	0.800	0.981	m
Velocity	0.430	0.479	m/sec
CVR	0.890	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 15.600 - 16.700 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	1.08/37.98	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.400	3.840	m
F.S.D.	0.720	0.981	m
Velocity	0.400	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

DESIGN DATA	TOP OF BANK LEVEL	122.628	122.618	122.609	122.599	122.589	122.580	122.570	122.561	122.551	122.541	122.532	122.522	122.513	122.423	122.413	122.404	122.394	122.384	122.375	122.365	122.356	122.346	122.336	122.327	122.317	122.308	122.298	122.288	122.279	122.269	122.259
	F.S.L.	122.128	122.118	122.109	122.099	122.089	122.080	122.070	122.061	122.051	122.041	122.032	122.022	122.013	121.923	121.913	121.904	121.894	121.884	121.875	121.865	121.856	121.846	121.836	121.827	121.817	121.808	121.798	121.788	121.779	121.769	121.759
	Proposed Bed Level	121.328	121.318	121.309	121.299	121.289	121.280	121.270	121.261	121.251	121.241	121.232	121.222	121.213	121.203	121.193	121.184	121.174	121.164	121.155	121.145	121.136	121.126	121.116	121.107	121.097	121.088	121.078	121.068	121.059	121.049	121.039
EXISTING DATA	Bed Level																																	
	TOP OF BANK LEVEL																																	
	NSL	121.500	121.500	121.510	121.520	121.530	121.550	121.560	121.570	121.560	121.550	121.540	121.540	121.530	121.530	121.490	121.810	121.760	121.750	121.740	121.690	121.630	121.240	121.310	121.370	121.390	121.490	121.560	121.130	120.850	120.910	120.980
	Chainage IN KM	15+000	15+050	15+100	15+150	15+200	15+250	15+300	15+350	15+400	15+450	15+500	15+550	15+600	15+650	15+700	15+750	15+800	15+850	15+900	15+950	16+000	16+050	16+100	16+150	16+200	16+250	16+300	16+350	16+400	16+450	16+500

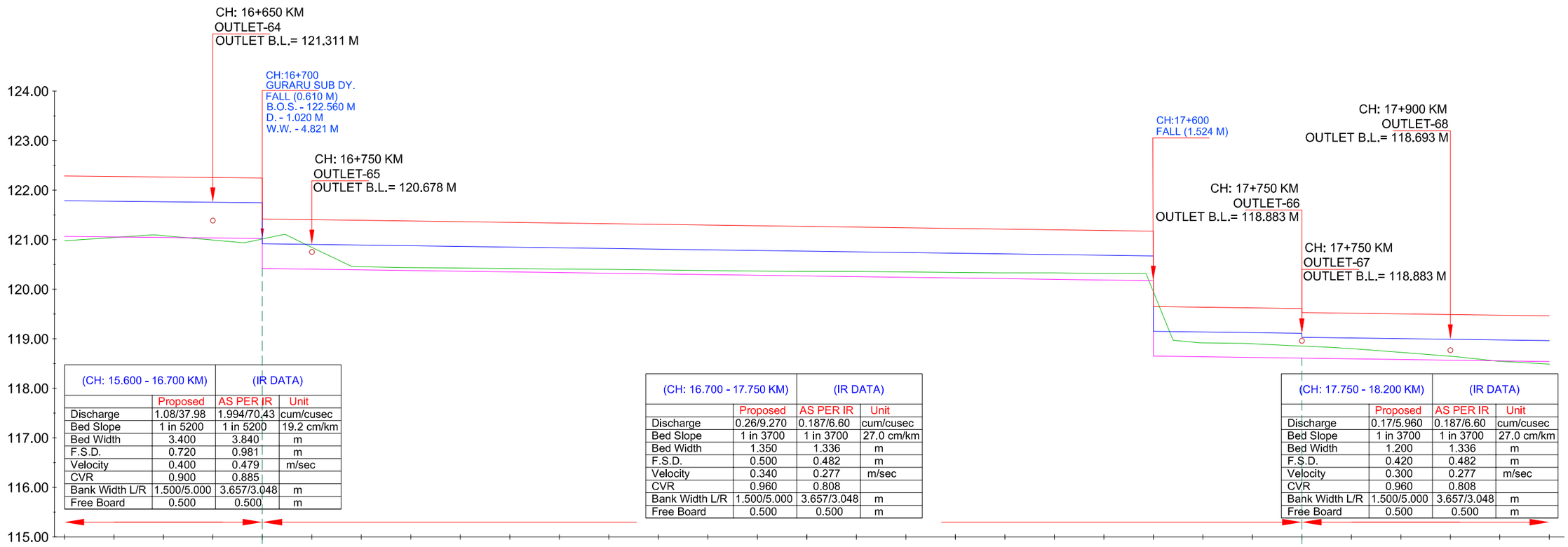
LEGEND

	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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 11 of 13

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 16+500 TO 18+000



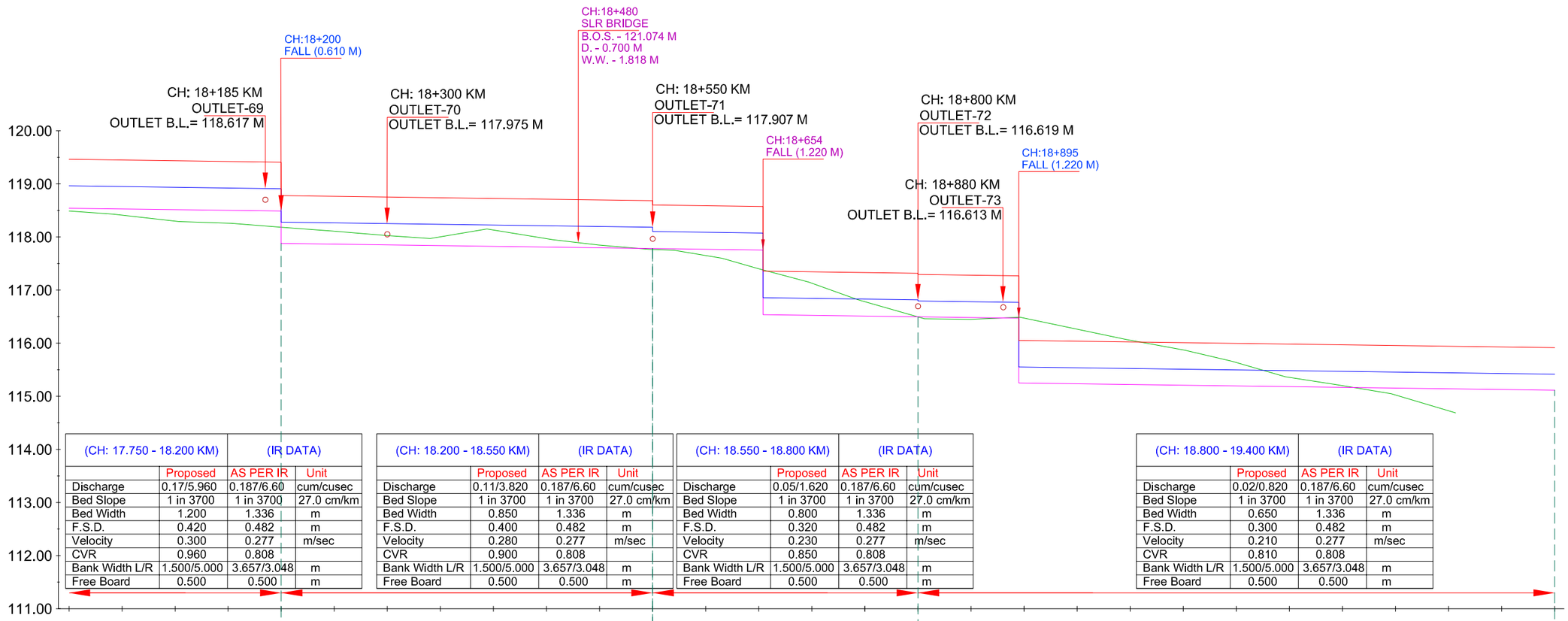
(CH: 15.600 - 16.700 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	1.08/37.98	1.994/70.43	cum/cusec
Bed Slope	1 in 5200	1 in 5200	19.2 cm/km
Bed Width	3.400	3.840	m
F.S.D.	0.720	0.981	m
Velocity	0.400	0.479	m/sec
CVR	0.900	0.885	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 16.700 - 17.750 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	0.26/9.270	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	1.350	1.336	m
F.S.D.	0.500	0.482	m
Velocity	0.340	0.277	m/sec
CVR	0.960	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 17.750 - 18.200 KM)	(IR DATA)		
	Proposed	AS PER IR	Unit
Discharge	0.17/5.960	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	1.200	1.336	m
F.S.D.	0.420	0.482	m
Velocity	0.300	0.277	m/sec
CVR	0.960	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

| | | |

L- SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
FROM CH 18+000 TO 19+400



(CH: 17.750 - 18.200 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	0.17/5.960	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	1.200	1.336	m
F.S.D.	0.420	0.482	m
Velocity	0.300	0.277	m/sec
CVR	0.960	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 18.200 - 18.550 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	0.11/3.820	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	0.850	1.336	m
F.S.D.	0.400	0.482	m
Velocity	0.280	0.277	m/sec
CVR	0.900	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 18.550 - 18.800 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	0.05/1.620	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	0.800	1.336	m
F.S.D.	0.320	0.482	m
Velocity	0.230	0.277	m/sec
CVR	0.850	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

(CH: 18.800 - 19.400 KM)		(IR DATA)	
	Proposed	AS PER IR	Unit
Discharge	0.02/0.820	0.187/6.60	cum/cusec
Bed Slope	1 in 3700	1 in 3700	27.0 cm/km
Bed Width	0.650	1.336	m
F.S.D.	0.300	0.482	m
Velocity	0.210	0.277	m/sec
CVR	0.810	0.808	
Bank Width L/R	1.500/5.000	3.657/3.048	m
Free Board	0.500	0.500	m

DESIGN DATA	TOP OF BANK LEVEL	119.436	119.422	119.409	119.395	119.382 ~~118.752~~	118.738	118.725	118.711	118.698	118.684	118.671	~~118.657~~	118.564	118.550 ~~118.549~~	117.329	117.316	117.303	~~117.289~~	117.256	116.024 116.744	116.009	115.995	115.982	115.968	115.955	115.941	115.928	115.914	115.901	~~115.887~~
	F.S.L.	118.936	118.922	118.909	118.895	~~118.882~~ 118.252	118.238	118.225	118.211	118.198	118.184	118.171	~~118.057~~	118.064	118.050 ~~118.049~~	116.829	116.816	116.803	~~116.769~~	116.756	116.744 115.524	115.509	115.495	115.482	115.468	115.455	115.441	115.428	115.414	115.401	~~115.387~~
	Proposed Bed Level	118.516	118.502	118.489	118.475	~~118.462~~ 117.852	117.838	117.825	117.811	117.798	117.784	117.771	~~117.757~~	117.744	117.730 ~~117.729~~	116.509	116.496	116.483	~~116.469~~	116.456	116.444 115.224	115.209	115.195	115.182	115.168	115.155	115.141	115.128	115.114	115.101	~~115.087~~
EXISTING DATA	Bed Level																																	
	TOP OF BANK LEVEL																																	
	NSL	118.490	118.430	118.290	118.260	~~118.180~~	118.110	118.030	117.970	118.150	117.950	117.850	117.770	117.750	117.600	117.410	117.150	116.820	116.460	116.450	116.490	116.280	116.070	115.870	115.660	115.370	115.210	115.050	114.690					
	Chainage IN KM	18+000	18+050	18+100	18+150	18+200	18+250	18+300	18+350	18+400	18+450	18+500	18+550	18+600	18+650	18+700	18+750	18+800	18+850	18+900	18+950	19+000	19+050	19+100	19+150	19+200	19+250	19+300	19+350	19+400				

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		

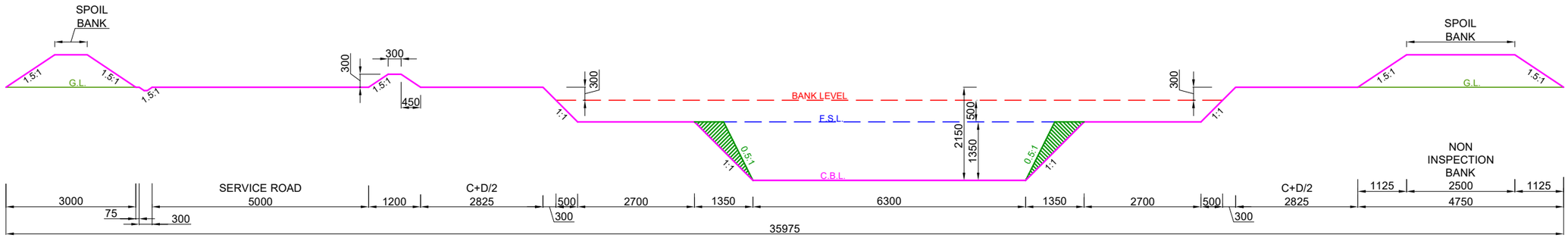
IMPLEMENTING AGENCY :-
WAPCOS LTD.

PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
DRAWING TITLE :-	L- SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
DRAWING NO. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ LSEC- 13 of 13

TYPICAL X-SECTION

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 0.000 KM TO CH: 0.065 KM

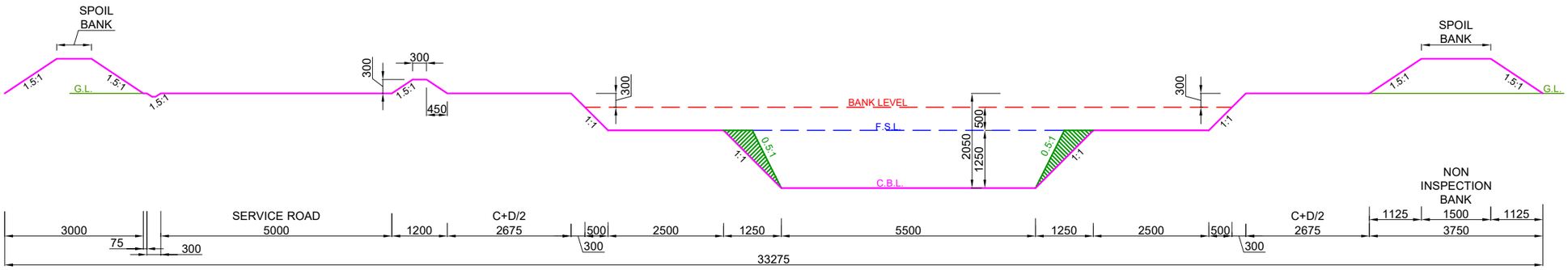
NOTE:-

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	FILL AREA		Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 1 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 0.065 KM TO CH: 0.200 KM

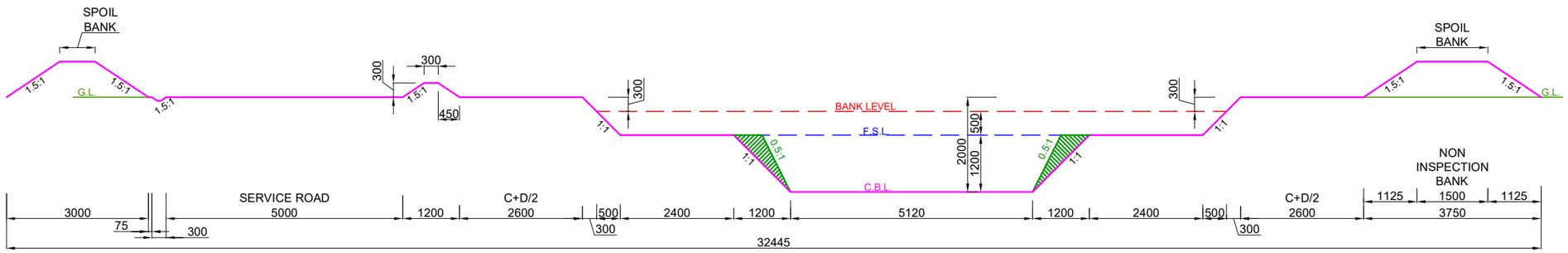
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 2 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 0.200 KM TO CH: 3.900 KM

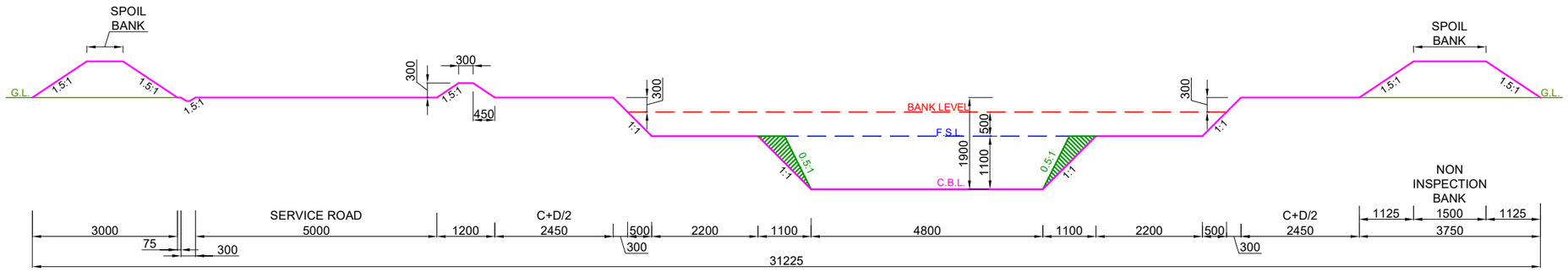
NOTE:-

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		Prepared by :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 3 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 3.900 KM TO CH: 6.500 KM

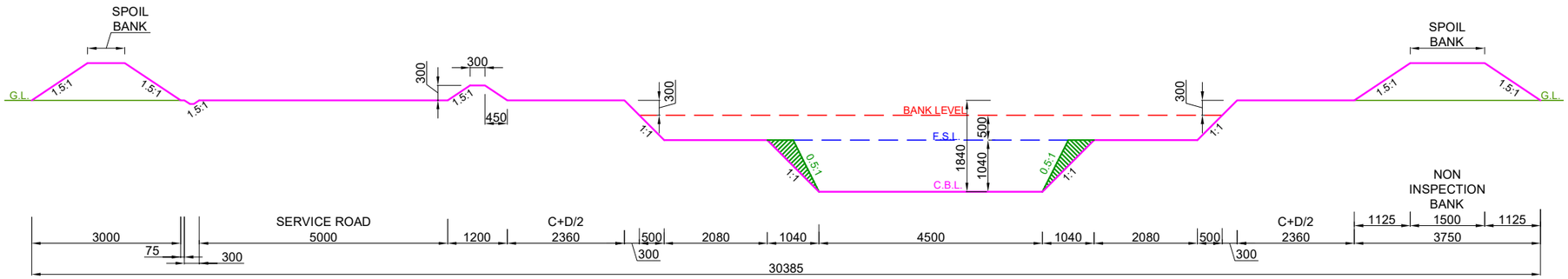
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 4 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 6.500 KM TO CH: 6.550 KM

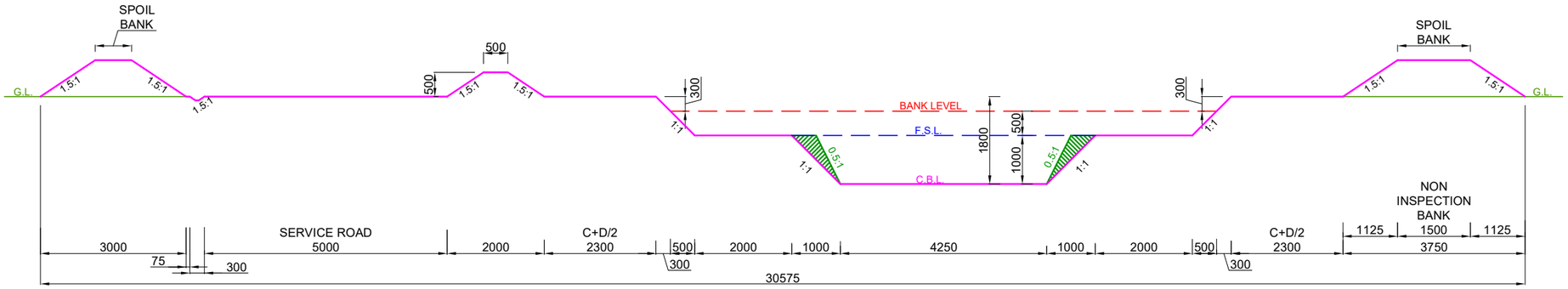
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 5 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 6.550 KM TO CH: 10.150 KM

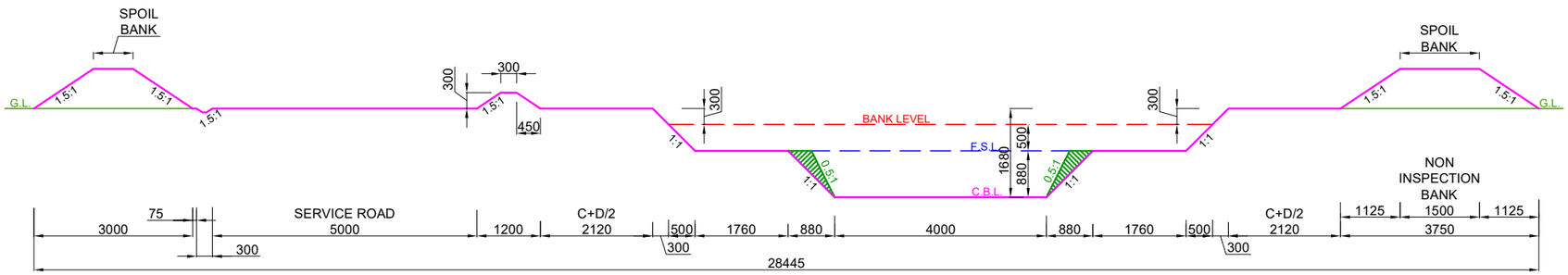
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 6 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 10.150 KM TO CH: 11.450 KM

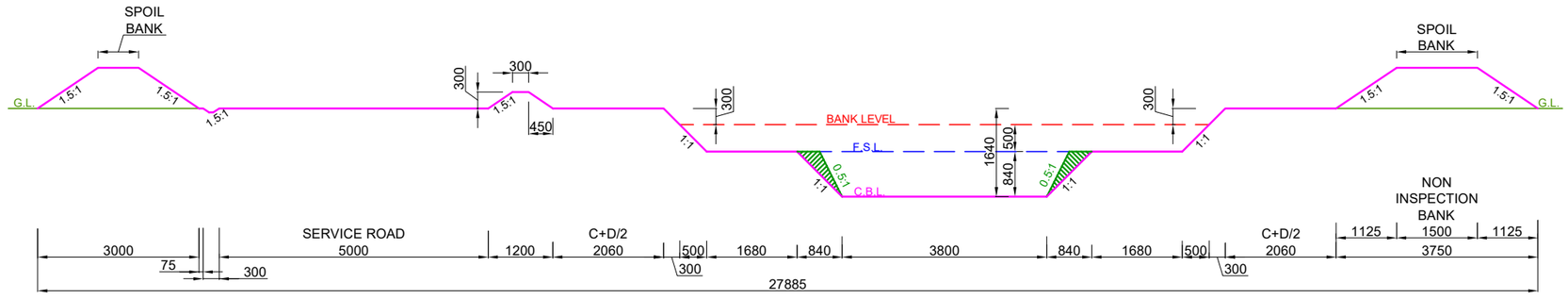
NOTE:-

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		Prepared by :- WAPCOS LTD.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 7 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 11.450 KM TO CH: 13.400 KM

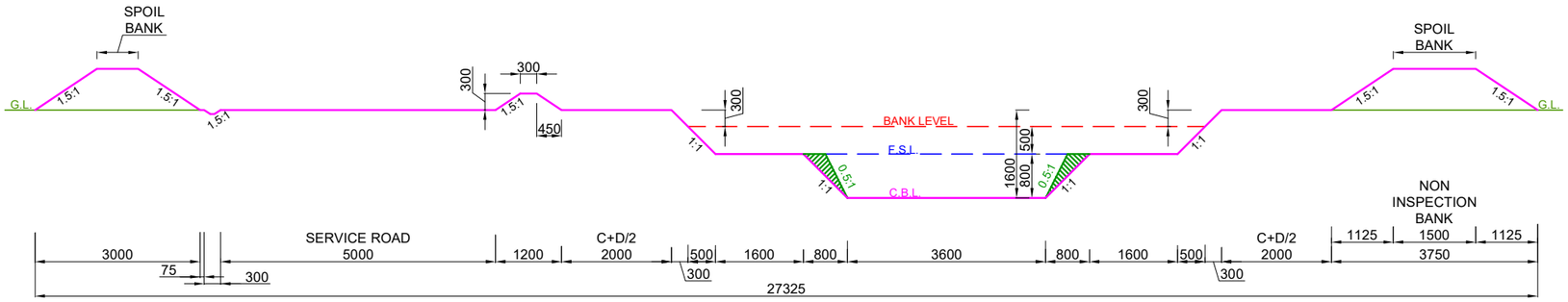
NOTE:-

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	FILL AREA		Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 8 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 13.400 KM TO CH: 14.500 KM

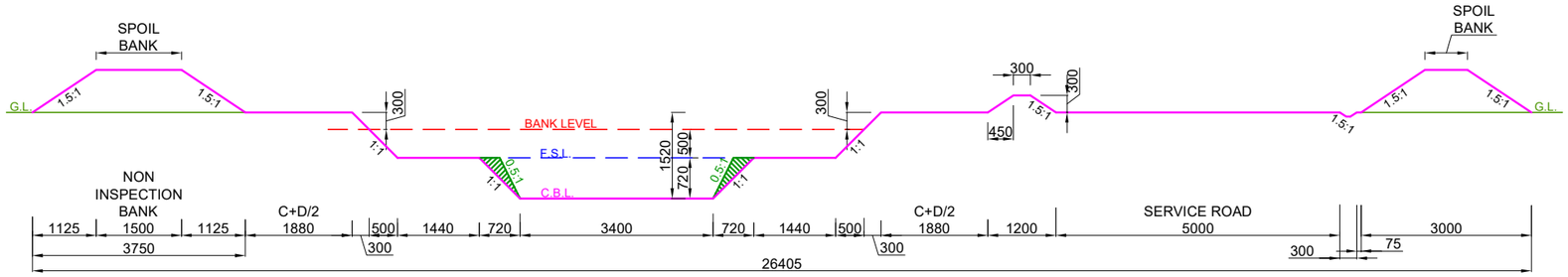
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 9 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 14.500 KM TO CH: 15750 KM

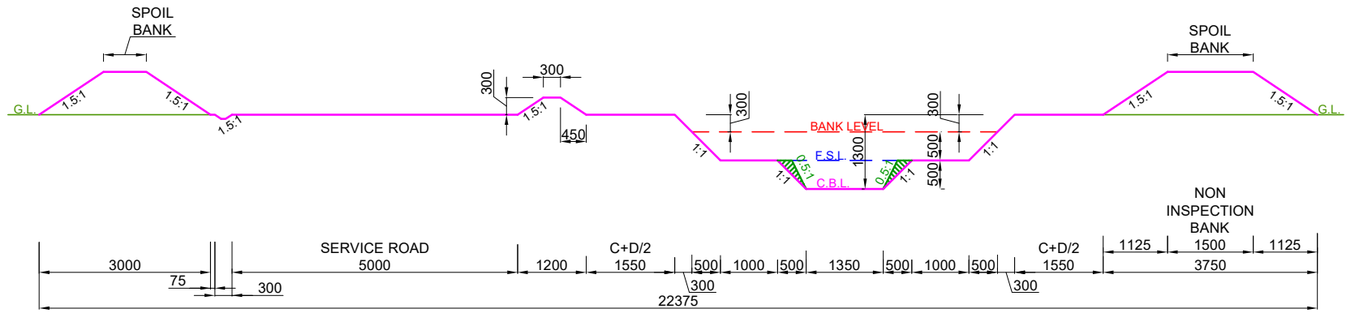
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 10 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 15.750 KM TO CH: 16.750 KM

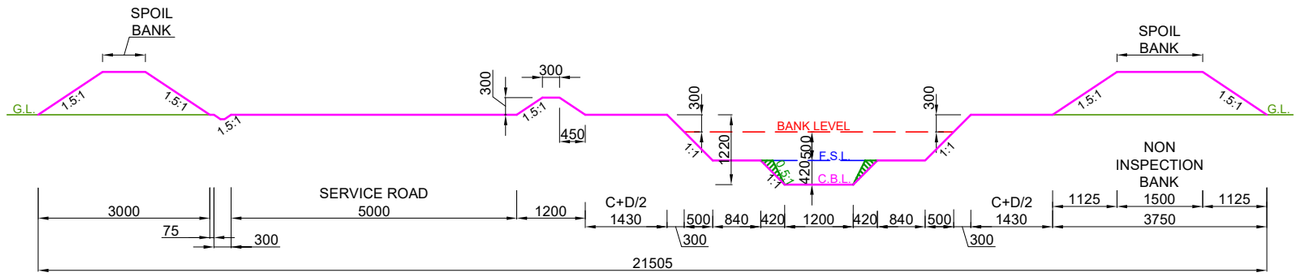
NOTE:-

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 :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 11 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 16.750 KM TO CH: 17.900 KM

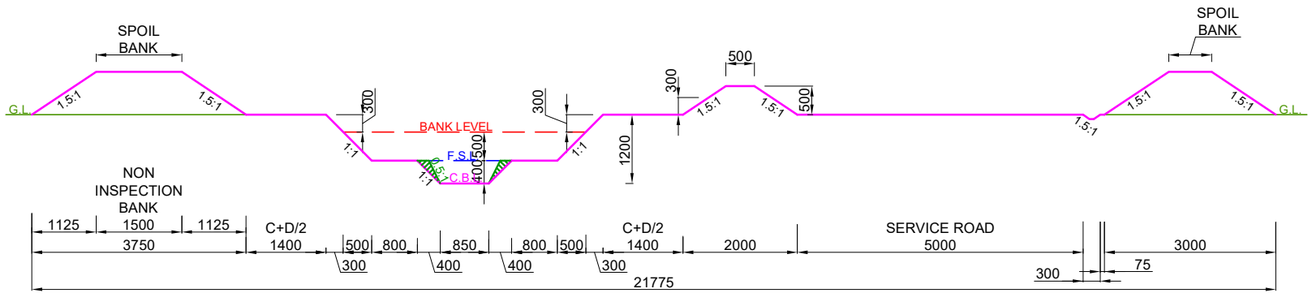
NOTE:-

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		Prepared by :- WAPCOS LTD.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 12 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 17.900 KM TO CH: 18.300 KM

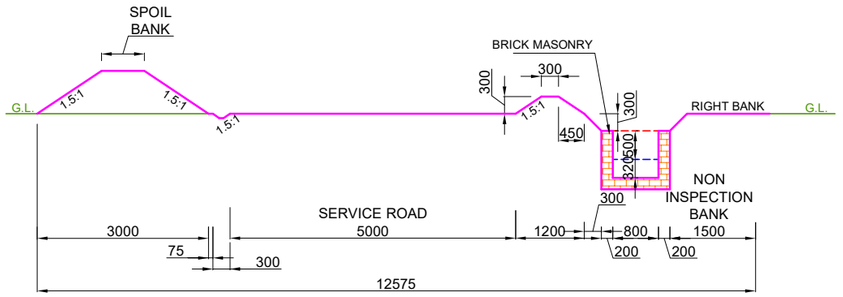
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 13 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 18.300 KM TO CH: 18.800 KM

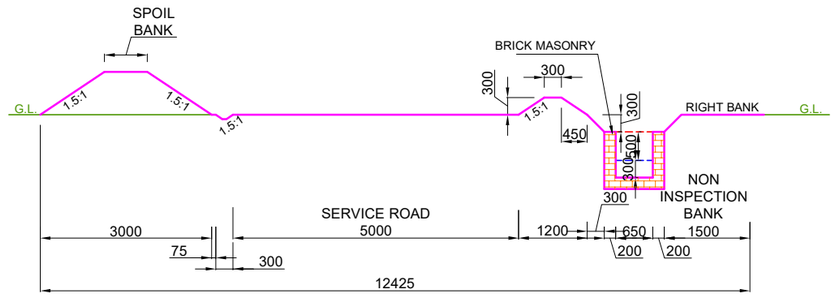
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 14 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL CUTTING



DESIGN SECTION FROM CH: 18.800 KM TO CH: 18.900 KM

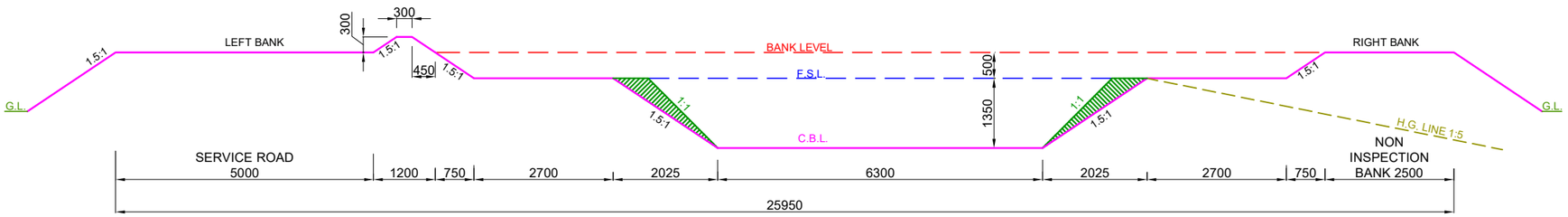
NOTE:-

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		Prepared by :- WAPCOS LTD.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FC) 15 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 0.000 KM TO CH: 0.065 KM

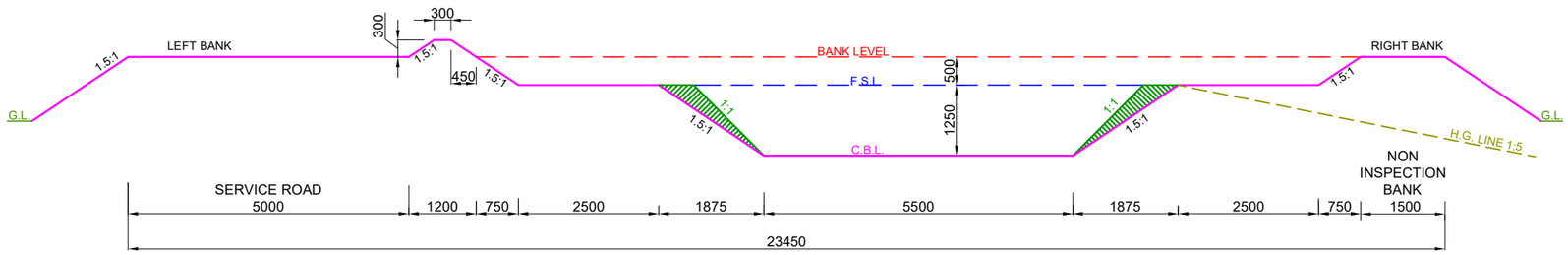
NOTE:-

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 :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 1 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 0.065 KM TO CH: 0.200 KM

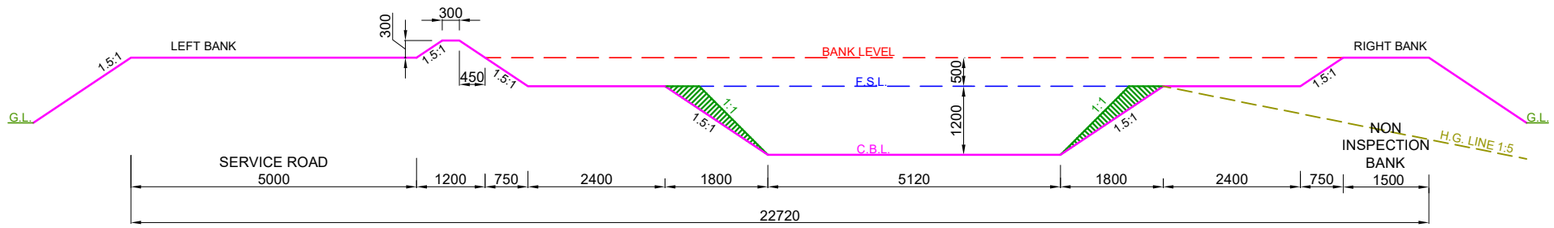
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 2 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 0.200 KM TO CH: 3.900 KM

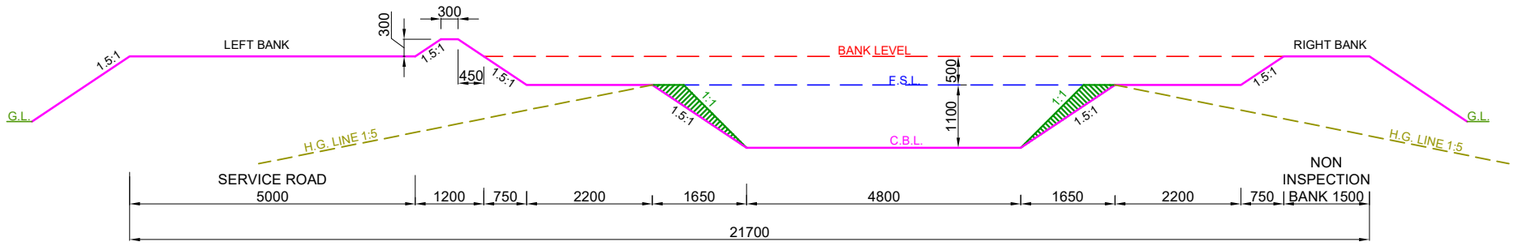
NOTE:-

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		Prepared by :- WAPCOS LTD.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 3 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 3.900 KM TO CH: 6.500 KM

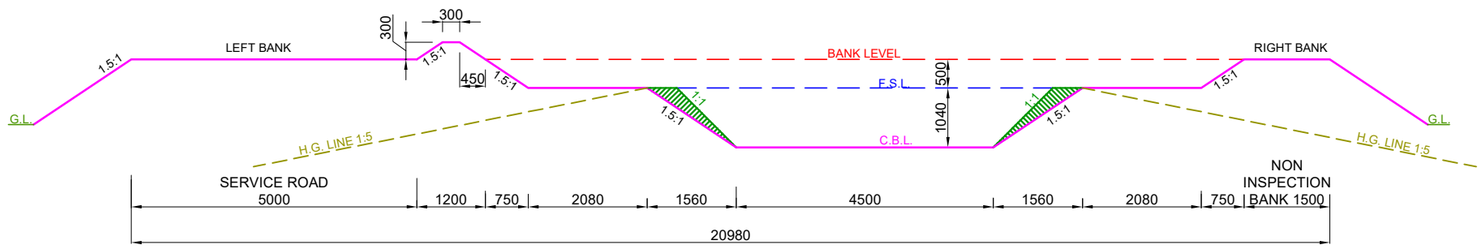
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 4 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 6.500 KM TO CH: 6.550 KM

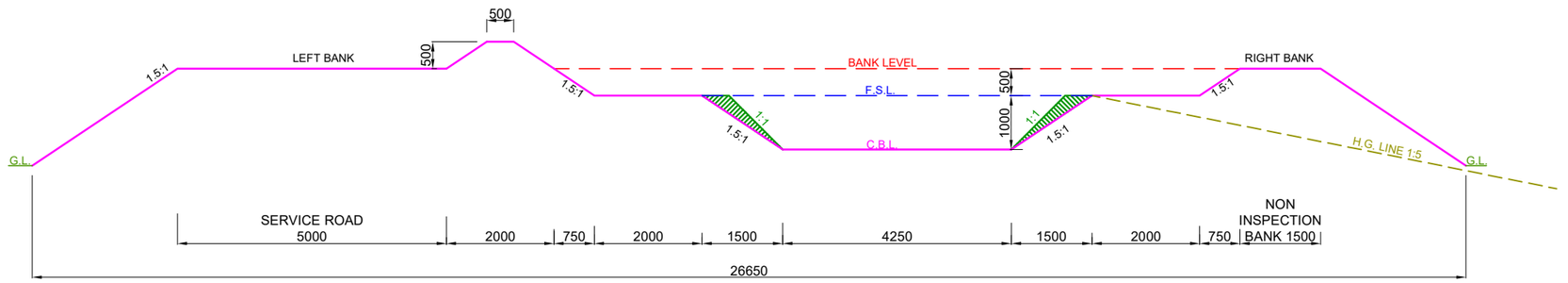
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 5 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 6.550 KM TO CH: 10.150 KM

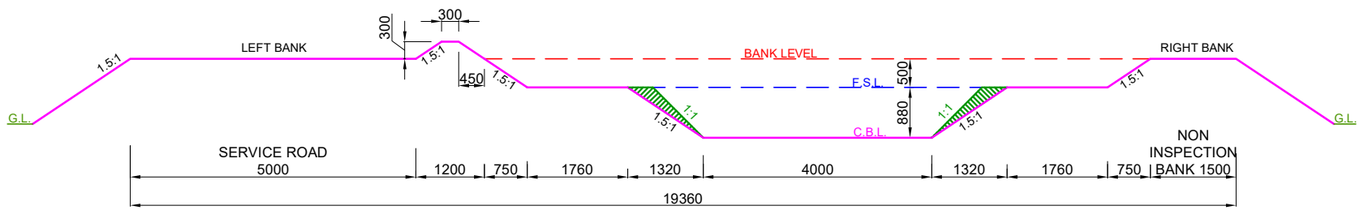
NOTE:-

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 :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 6 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 10.150 KM TO CH: 11.450 KM

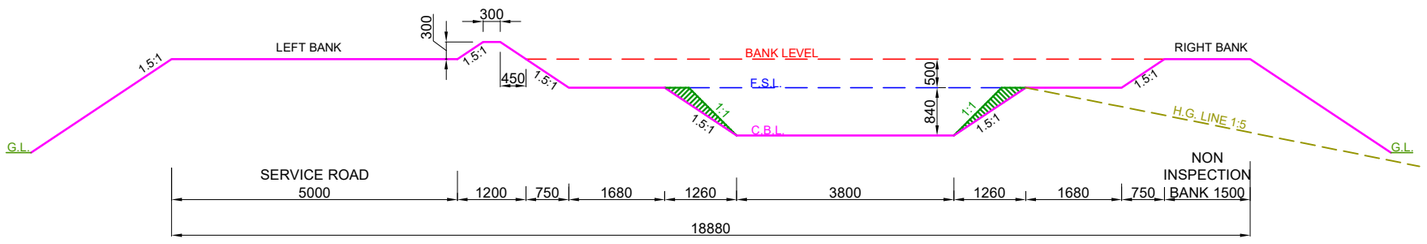
NOTE:-

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		Prepared by :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 7 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 11.450 KM TO CH: 13.400 KM

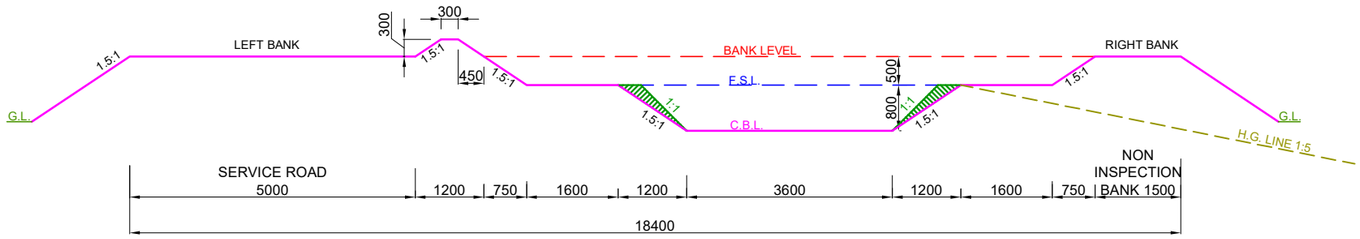
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 8 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 13.400 KM TO CH: 14.500 KM

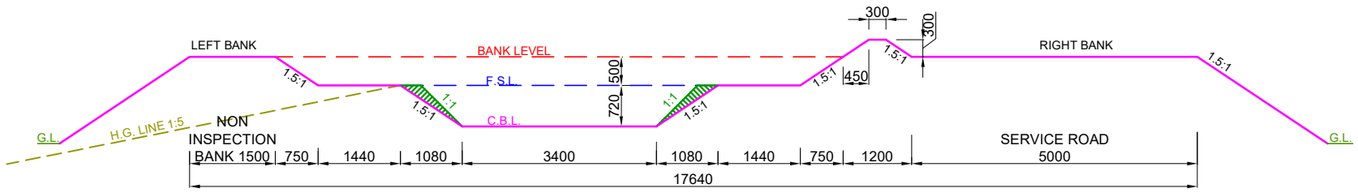
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 9 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 14.500 KM TO CH: 15750 KM

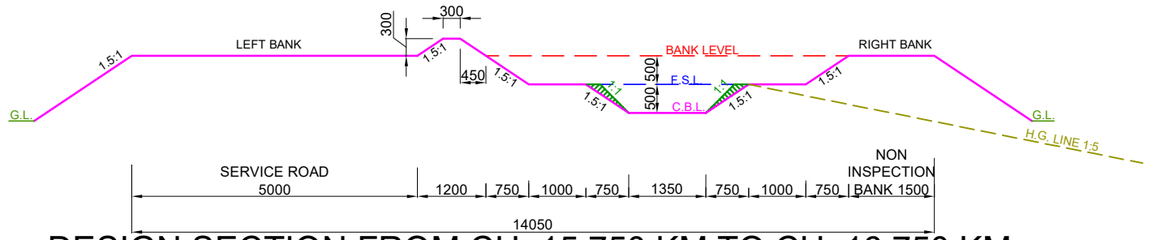
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 10 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 15.750 KM TO CH: 16.750 KM

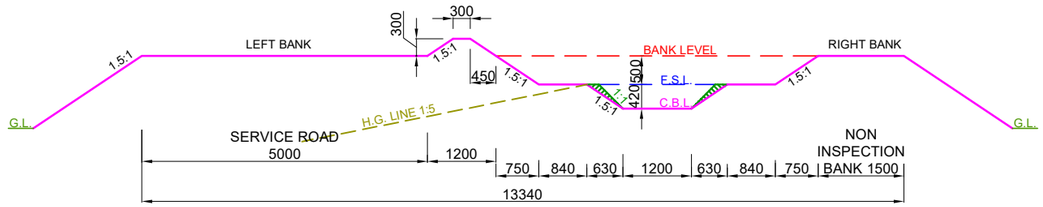
NOTE:-

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 :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 11 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 16.750 KM TO CH: 17.900 KM

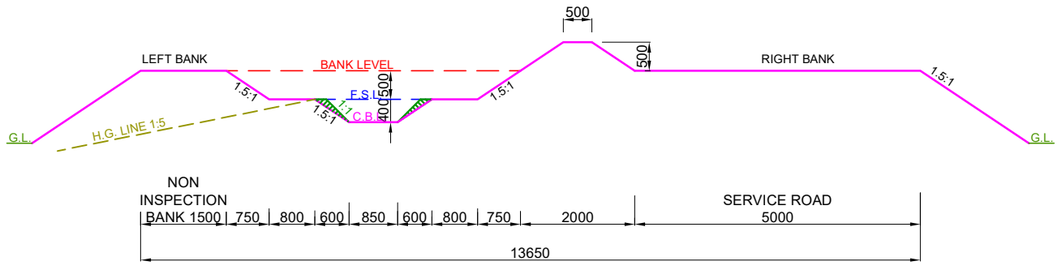
NOTE:-

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		Prepared by :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 12 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 17.900 KM TO CH: 18.300 KM

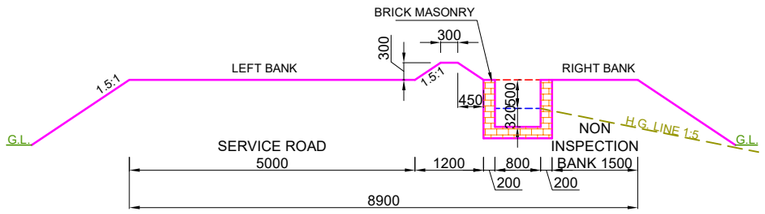
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 13 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 18.300 KM TO CH: 18.800 KM

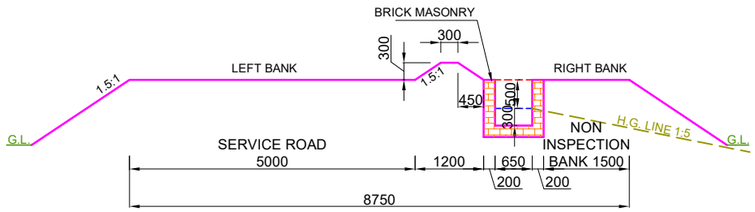
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 14 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR FULL FILLING



DESIGN SECTION FROM CH: 18.800 KM TO CH: 18.900 KM

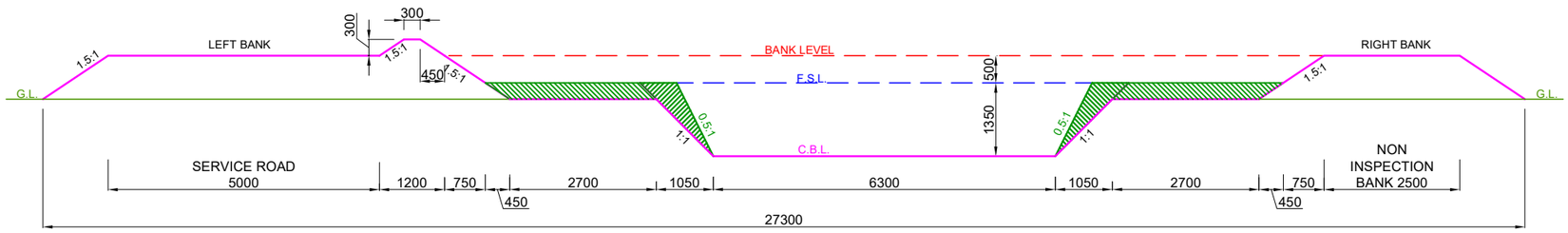
NOTE:-

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		Prepared by :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(FF) 15 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 0.000 KM TO CH: 0.065 KM

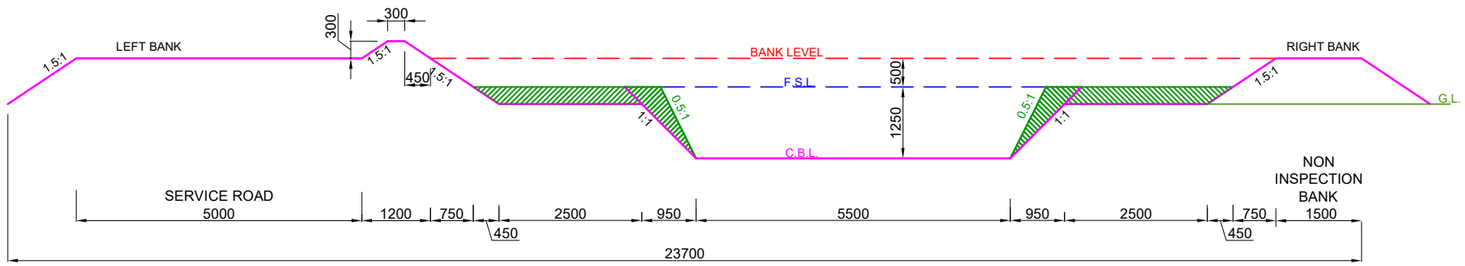
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 1 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 0.065 KM TO CH: 0.200 KM

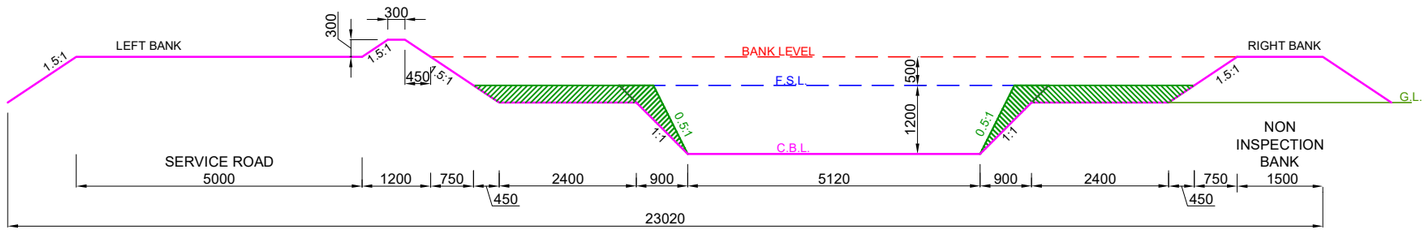
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 2 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 0.200 KM TO CH: 3.900 KM

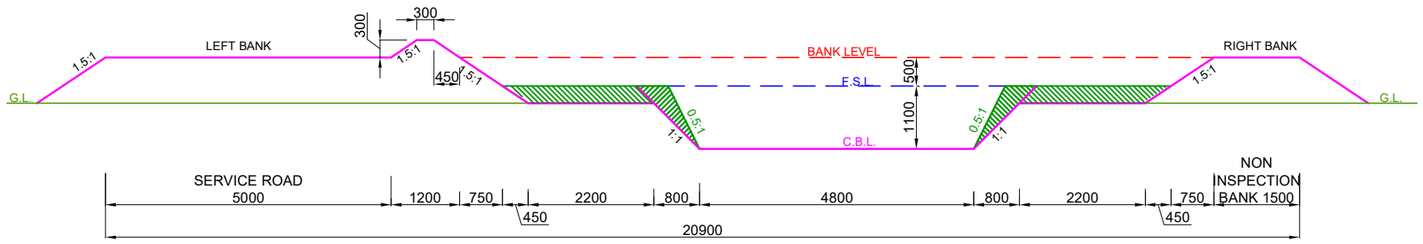
NOTE:-

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		Prepared by :- WAPCOS LTD.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 3 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 3.900 KM TO CH: 6.500 KM

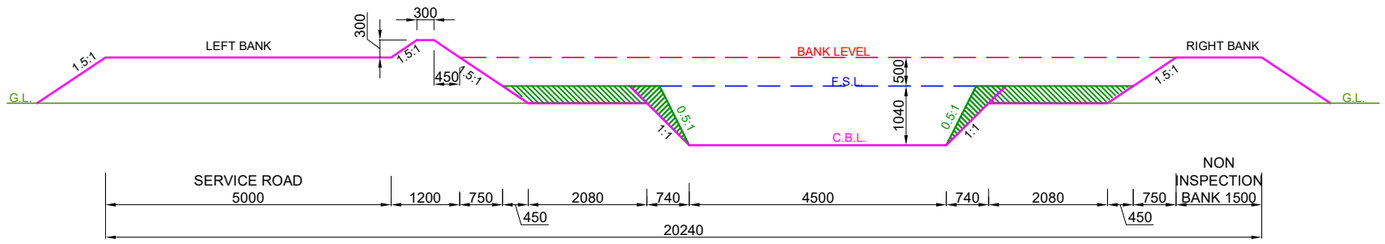
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 4 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 6.500 KM TO CH: 6.550 KM

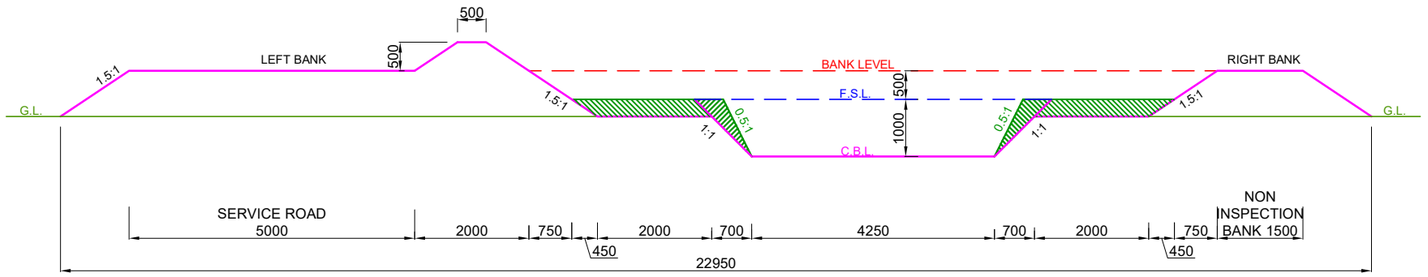
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 5 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 6.550 KM TO CH: 10.150 KM

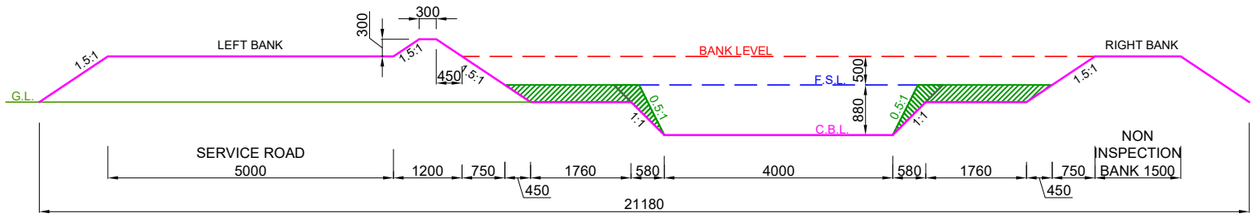
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 6 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 10.150 KM TO CH: 11.450 KM

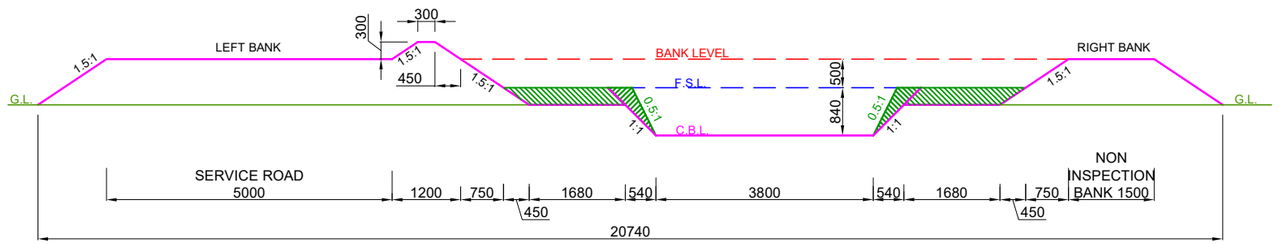
NOTE:-

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		Prepared by :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 7 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 11.450 KM TO CH: 13.400 KM

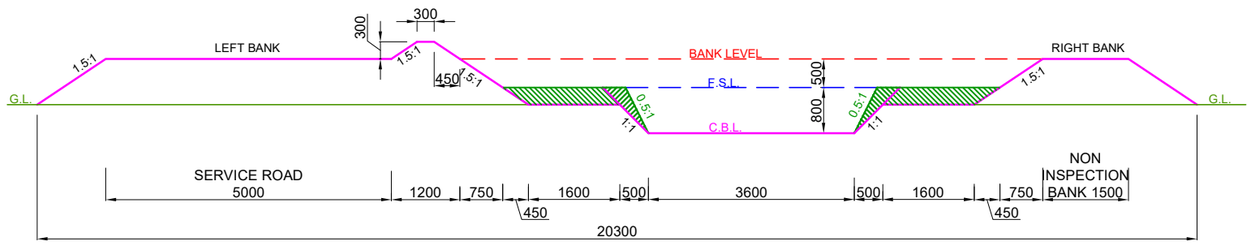
NOTE:-

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 :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 8 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 13.400 KM TO CH: 14.500 KM

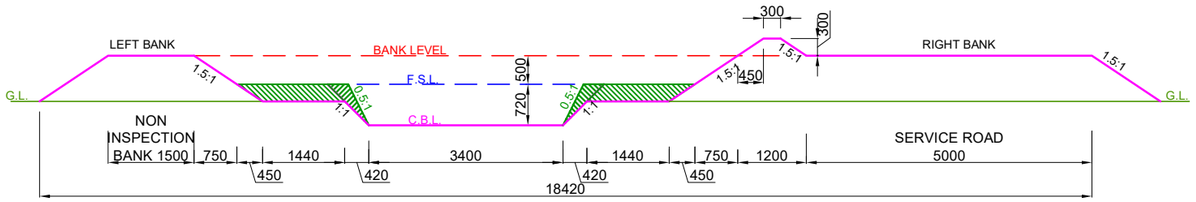
NOTE:-

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 KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	FILL AREA		Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 9 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 14.500 KM TO CH: 15750 KM

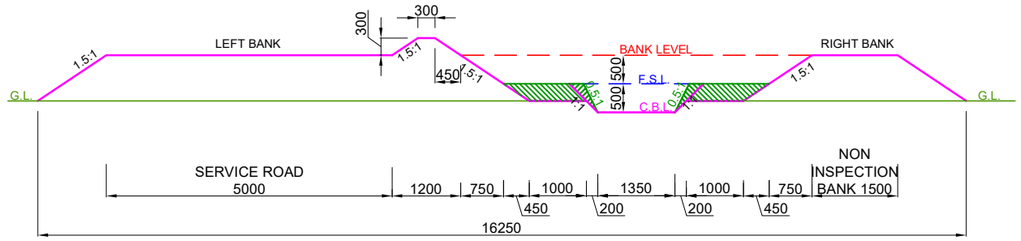
NOTE:-

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 :-		
	CUT AREA	WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 10 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 15.750 KM TO CH: 16.750 KM

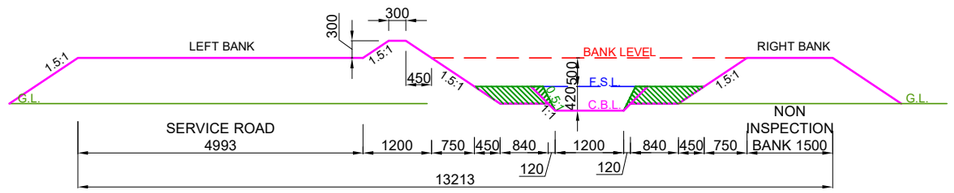
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 11 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 16.750 KM TO CH: 17.900 KM

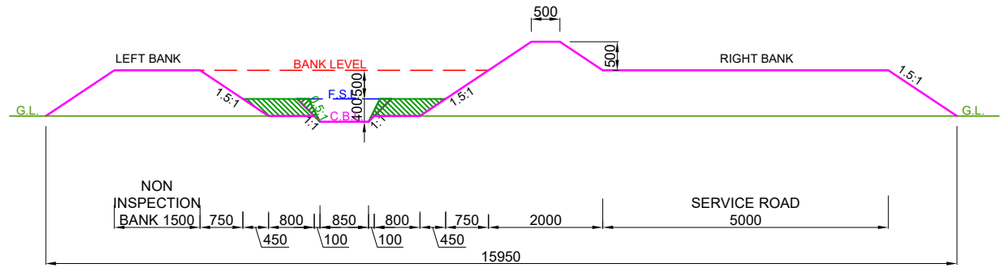
NOTE:-

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		Prepared by :- WAPCOS LTD.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 12 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 17.900 KM TO CH: 18.300 KM

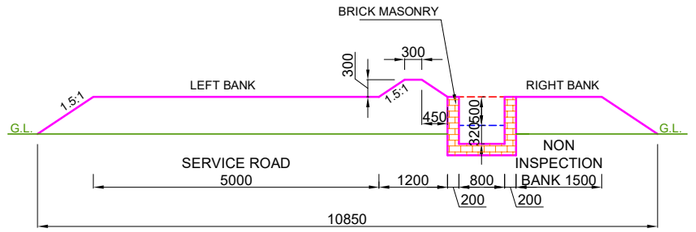
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 13 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 18.300 KM TO CH: 18.800 KM

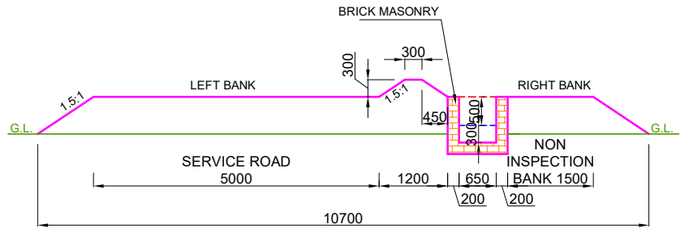
NOTE:-

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.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 14 of 15

TYPICAL X - SECTION OF KONCHI DISTRIBUTARY
(OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)

DESIGN SECTION FOR PARTLY CUTTING/ PARTLY FILLING



DESIGN SECTION FROM CH: 18.800 KM TO CH: 18.900 KM

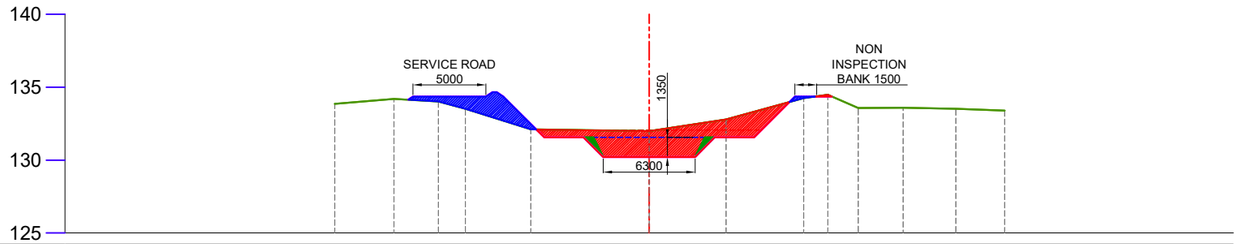
NOTE:-

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		Prepared by :- WAPCOS LTD.		
	CUT AREA		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	FILL AREA		Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
			Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ XSEC /TYP-(PCF) 15 of 15

CROSS-SECTION

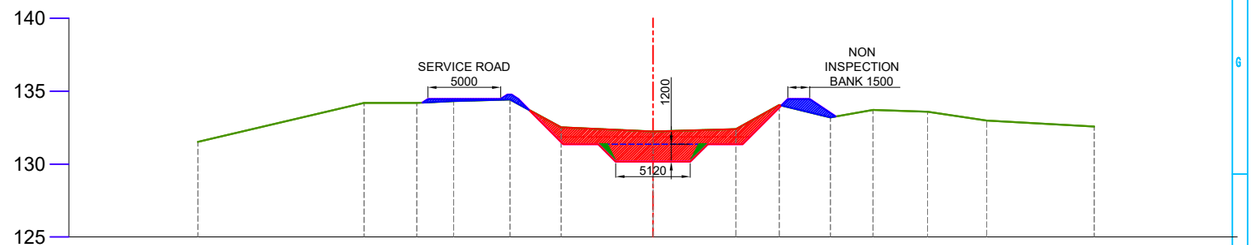
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	133.862	134.198	134.026	133.511	132.106	131.990	132.782	134.476	133.572	133.594	133.516	133.390		
OFFSET (M)	21.564	17.516	14.457	12.604	8.121	0.000	5.282	10.611	12.259	14.338	17.435	21.047	24.398	

CUTTING AREA (SQ.M) = 23.369
FILLING AREA (SQ.M) = 7.311

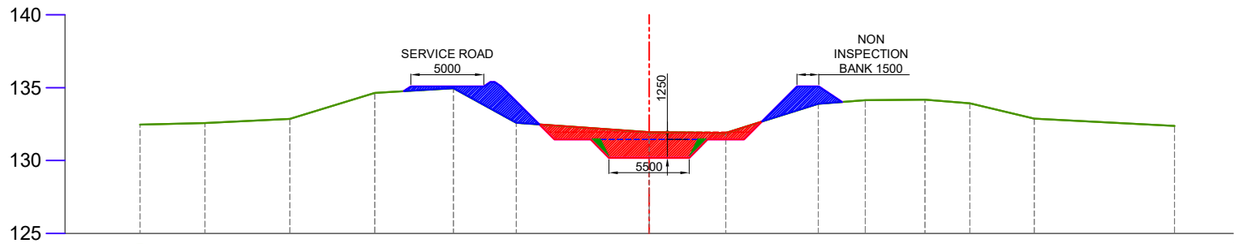
CH. : 0+000 KM.
DESIGNED BED LEVEL = 130.208 M



EXIST. LEVEL (M)	131.5300	134.190	134.190	134.324	134.428	132.529	132.240	132.399	134.060	133.205	133.719	133.584	132.985	132.576
OFFSET (M)	31.226	19.823	16.207	13.678	9.818	6.303	0.000	5.693	8.672	12.172	15.096	18.844	22.899	30.278

CUTTING AREA (SQ.M) = 22.875
FILLING AREA (SQ.M) = 3.247

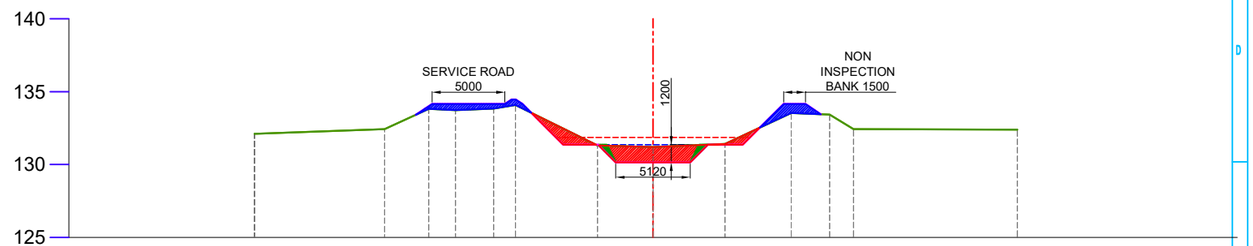
CH. : 0+200 KM.
DESIGNED BED LEVEL = 130.171 M



EXIST. LEVEL (M)	132.4720	132.572	132.858	134.636	134.961	132.582	131.954	131.889	133.895	134.139	134.174	133.924	132.872	132.369
OFFSET (M)	34.935	30.478	24.643	18.819	13.421	9.118	0.000	5.253	11.596	14.829	18.920	22.007	26.427	36.053

CUTTING AREA (SQ.M) = 17.585
FILLING AREA (SQ.M) = 12.239

CH. : 0+100 KM.
DESIGNED BED LEVEL = 130.190 M



EXIST. LEVEL (M)	132.1080	132.430	133.814	133.720	133.841	134.078	131.306	131.198	131.404	133.539	133.425	132.419	132.393	
OFFSET (M)	27.339	18.421	15.390	13.553	10.936	9.429	3.804	0.000	4.944	9.483	12.124	13.753	24.996	

CUTTING AREA (SQ.M) = 10.204
FILLING AREA (SQ.M) = 4.496

CH. : 0+300 KM.
DESIGNED BED LEVEL = 130.153 M

LEGEND

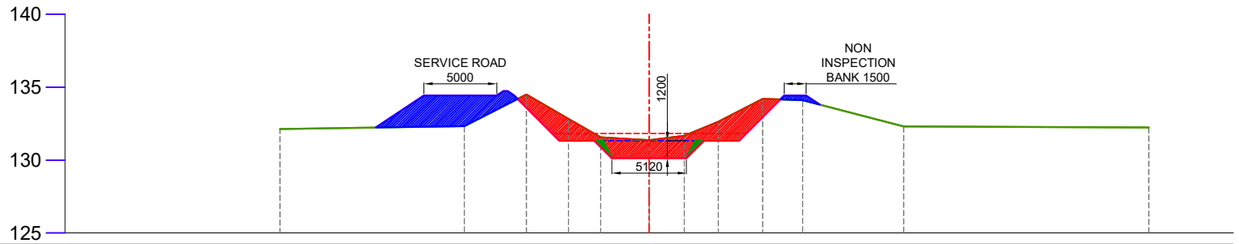
CUT AREA	EXISTING BED LINE	F.S.L.	
FILL AREA	DESIGNED BED LINE	H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 1 of 48

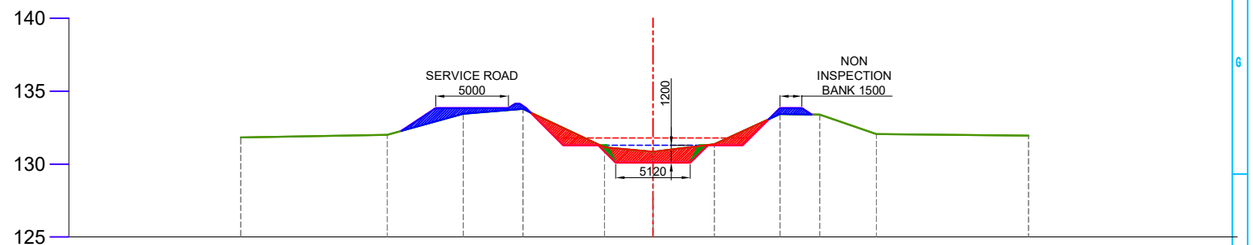
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	132.132	132.332	134.491	132.830	131.553	131.3653	131.675	132.623	134.195	134.106	132.307	132.228
OFFSET (M)	25.323	12.674	8.425	5.532	3.318	0.000	2.408	4.748	7.789	10.527	17.470	34.289

CUTTING AREA (SQ.M) = 22.382
FILLING AREA (SQ.M) = 14.650

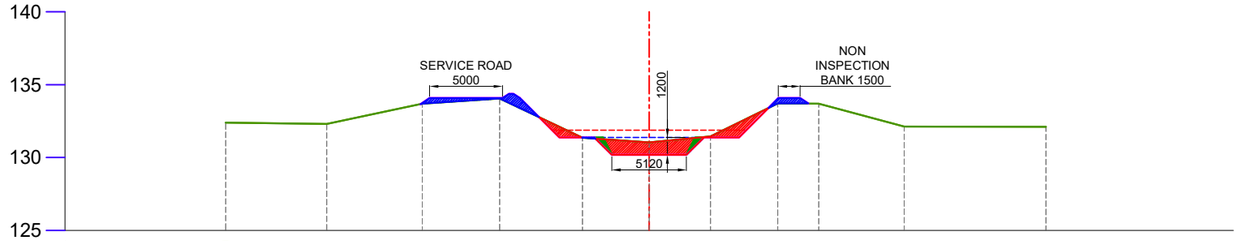
CH. : 0+400 M.
DESIGNED BED LEVEL = 130.135 M



EXIST. LEVEL (M)	131.8360	132.012	133.442	133.778	131.148	130.841	131.369	133.433	133.386	132.050	131.951	
OFFSET (M)	28.288	18.234	13.021	8.921	3.333	0.000	4.210	8.712	11.436	15.319	25.860	

CUTTING AREA (SQ.M) = 10.387
FILLING AREA (SQ.M) = 4.560

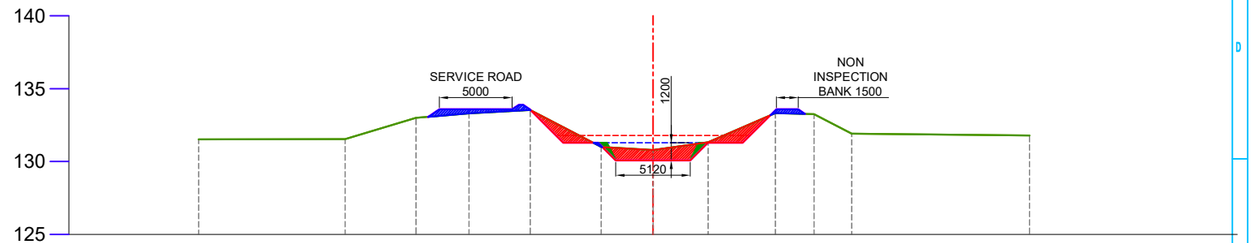
CH. : 0+600 KM.
DESIGNED BED LEVEL = 130.099 M



EXIST. LEVEL (M)	132.3960	132.309	133.685	134.040	131.357	131.040	131.449	133.713	133.699	132.131	132.101	
OFFSET (M)	29.052	22.115	15.557	10.251	4.569	0.000	4.214	8.826	11.632	17.496	27.217	

CUTTING AREA (SQ.M) = 9.430
FILLING AREA (SQ.M) = 3.066

CH. : 0+500 KM.
DESIGNED BED LEVEL = 130.177 M



EXIST. LEVEL (M)	131.5260	131.540	132.989	133.302	133.525	130.995	130.790	131.315	133.317	133.249	131.918	131.786
OFFSET (M)	31.168	21.128	16.254	12.626	8.422	3.549	0.000	3.789	8.388	11.049	13.626	25.818

CUTTING AREA (SQ.M) = 9.937
FILLING AREA (SQ.M) = 2.450

CH. : 0+700 KM.
DESIGNED BED LEVEL = 130.080 M

LEGEND

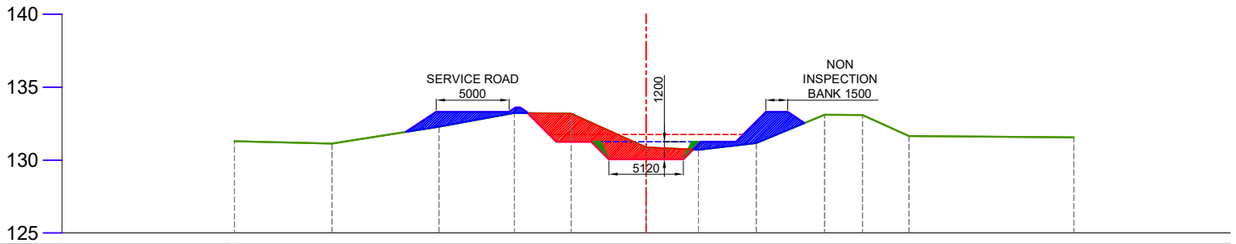
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 2 of 48

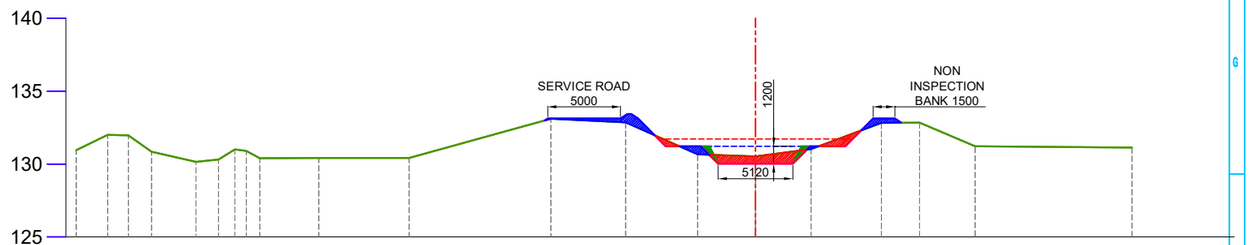
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	131.2960	131.126	132.290	133.235	133.186	130.866	130.710	131.172	133.115	133.091	131.657	131.554
OFFSET (M)	31.838	25.137	17.793	12.630	8.740	3.588	0.000	3.969	8.651	11.257	14.439	25.716

CUTTING AREA (SQ.M) = 13.718
FILLING AREA (SQ.M) = 10.896

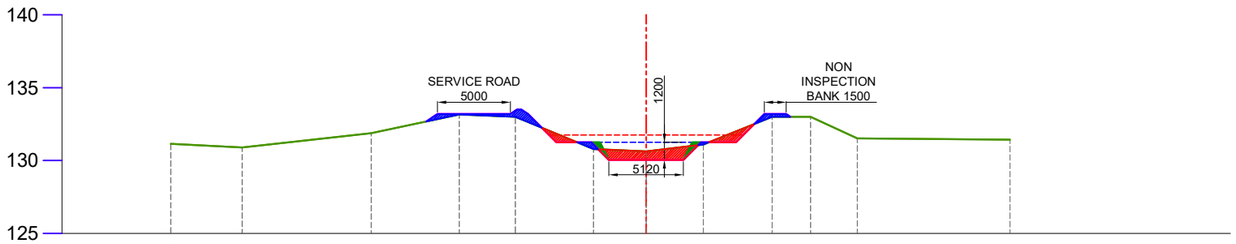
CH. : 0+800 KM.
DESIGNED BED LEVEL = 130.062 M



EXIST. LEVEL (M)	130.9620	131.965	130.852	130.150	130.306	130.409	130.418	130.417	133.106	132.860	130.671	130.525	131.034	132.830	132.843	131.213	131.138
OFFSET (M)	46.605	43.025	41.441	38.397	35.728	34.009	29.972	23.764	14.036	8.910	3.971	0.000	3.813	8.631	11.249	15.077	25.822

CUTTING AREA (SQ.M) = 5.049
FILLING AREA (SQ.M) = 3.219

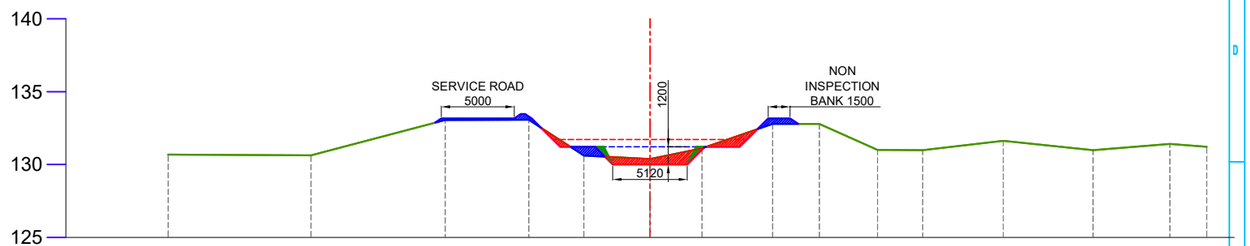
CH. : 1+000 KM.
DESIGNED BED LEVEL = 130.026 M



EXIST. LEVEL (M)	131.1510	130.887	131.881	133.161	132.990	130.781	130.630	131.096	133.001	133.005	131.512	131.427
OFFSET (M)	32.622	27.721	18.855	12.815	8.971	3.605	0.000	3.919	8.649	11.276	14.481	24.970

CUTTING AREA (SQ.M) = 6.128
FILLING AREA (SQ.M) = 2.575

CH. : 0+900 KM.
DESIGNED BED LEVEL = 130.044 M



EXIST. LEVEL (M)	130.6840	130.628	133.046	133.064	130.616	130.372	131.112	132.780	132.780	130.997	130.981	131.622	130.990	131.410	131.214
OFFSET (M)	33.061	23.265	14.059	8.322	4.538	0.000	3.577	8.411	11.612	15.618	18.706	24.232	30.403	35.663	38.205

CUTTING AREA (SQ.M) = 5.212
FILLING AREA (SQ.M) = 2.831

CH. : 1+100 KM.
DESIGNED BED LEVEL = 130.008 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

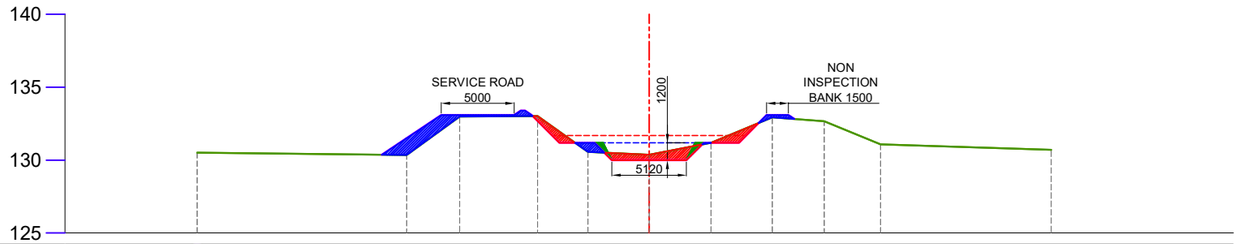
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 3 of 48

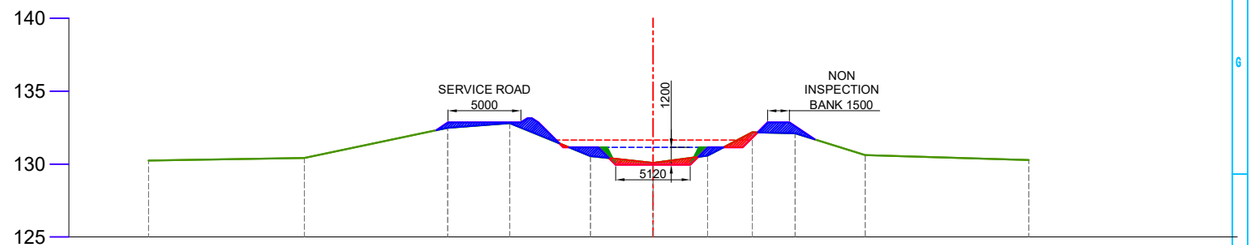
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	130.5070	130.342	132.986	133.024	130.562	130.373	131.188	132.925	132.672	131.082	130.710
OFFSET (M)	31.018	16.630	13.002	7.652	4.204	0.000	4.248	8.443	12.016	15.875	27.575

CUTTING AREA (SQ.M) = 5.925
FILLING AREA (SQ.M) = 6.231

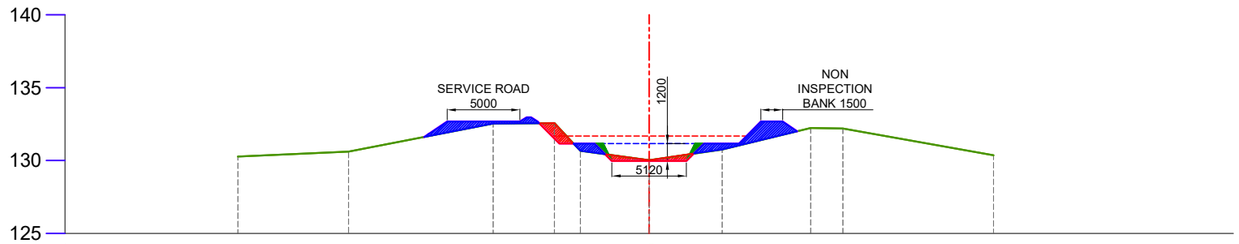
CH. : 1+200 KM.
DESIGNED BED LEVEL = 129.990 M



EXIST. LEVEL (M)	130.2480	130.416	132.481	132.813	130.548	130.090	130.574	132.181	132.120	130.622	130.281
OFFSET (M)	34.610	23.921	14.091	9.828	4.280	0.000	3.740	6.813	9.745	14.556	25.530

CUTTING AREA (SQ.M) = 2.617
FILLING AREA (SQ.M) = 6.081

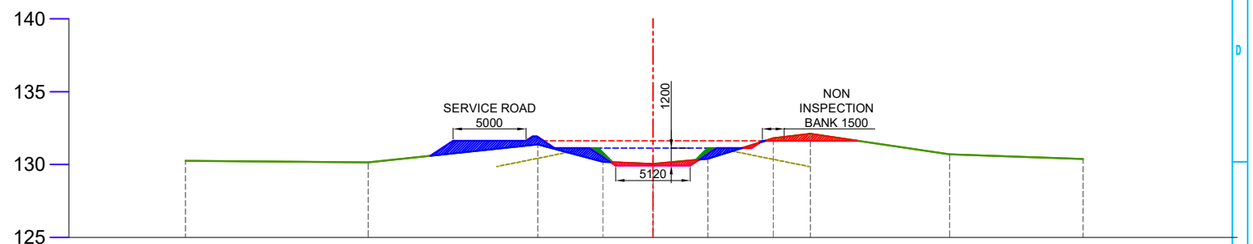
CH. : 1+400 KM.
DESIGNED BED LEVEL = 129.953 M



EXIST. LEVEL (M)	130.281	130.614	132.527	132.572	130.0315	130.761	132.237	132.188	130.360	
OFFSET (M)	28.218	20.627	10.709	6.503	0.000	5.017	11.093	13.297	23.630	

CUTTING AREA (SQ.M) = 2.849
FILLING AREA (SQ.M) = 7.793

CH. : 1+300 M.
DESIGNED BED LEVEL = 129.971 M



EXIST. LEVEL (M)	130.2520	130.141	131.378	130.191	130.046	130.390	131.806	132.110	130.702	130.375
OFFSET (M)	32.088	19.529	7.902	3.436	0.000	3.773	8.262	10.802	20.358	29.506

CUTTING AREA (SQ.M) = 2.896
FILLING AREA (SQ.M) = 6.832

CH. : 1+500 KM.
DESIGNED BED LEVEL = 129.935 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

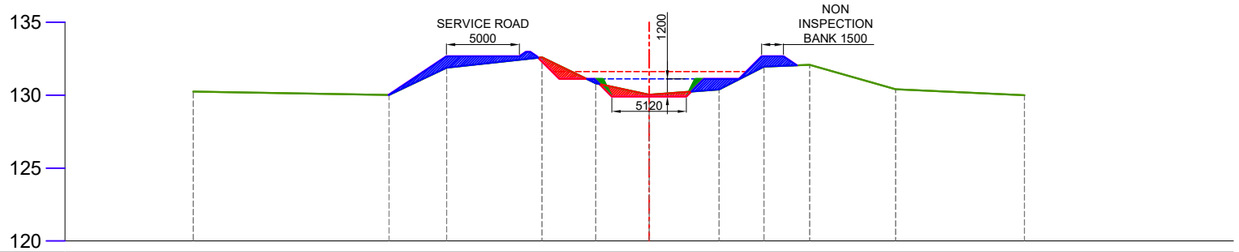
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 4 of 48

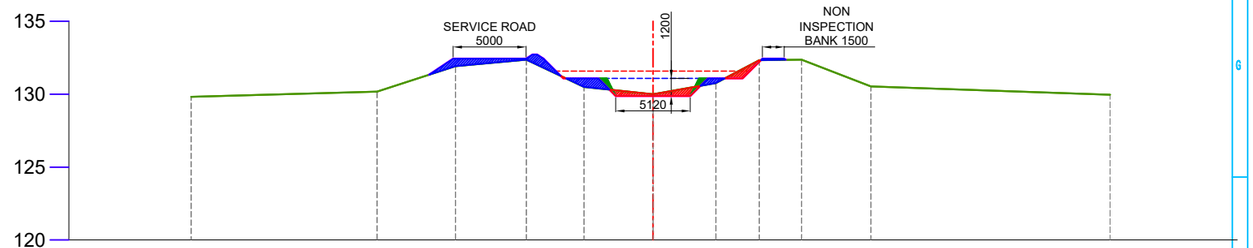
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	130.2540	130.016	131.884	132.599	130.815	130.025	130.392	131.963	132.080	130.403	129.991
OFFSET (M)	31.278	17.847	13.896	7.352	3.666	0.000	4.793	7.872	11.018	16.908	25.754

CUTTING AREA (SQ.M) = 3.433
FILLING AREA (SQ.M) = 8.338

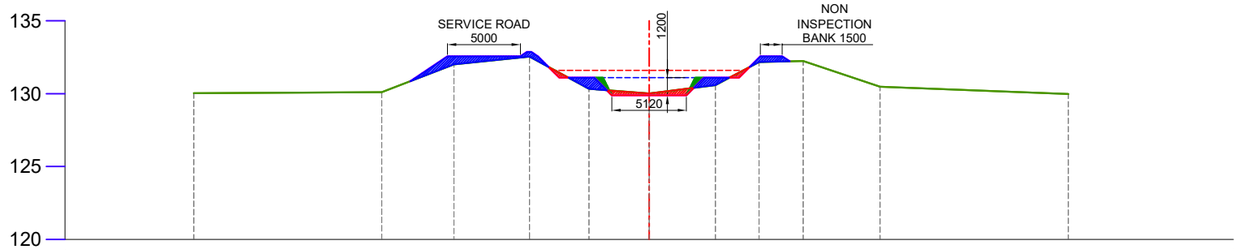
CH. : 1+600 KM.
DESIGNED BED LEVEL = 129.917 M



EXIST. LEVEL (M)	129.8170	130.168	131.920	132.363	130.502	129.995	130.759	132.338	132.376	130.531	129.969
OFFSET (M)	31.696	18.928	13.543	8.687	4.733	0.000	4.322	7.285	10.202	14.952	31.368

CUTTING AREA (SQ.M) = 2.677
FILLING AREA (SQ.M) = 4.718

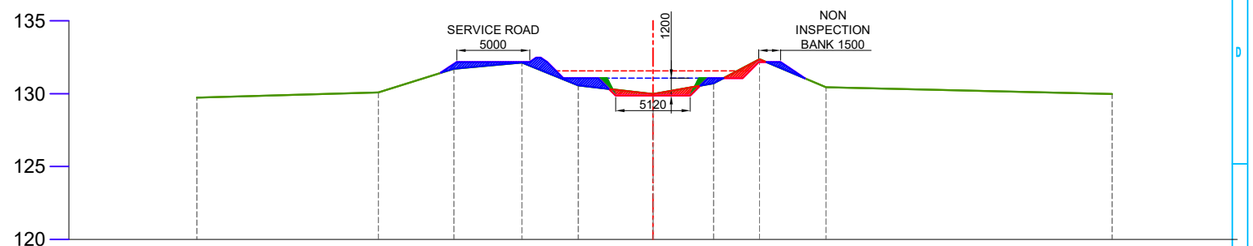
CH. : 1+800 KM.
DESIGNED BED LEVEL = 129.880 M



EXIST. LEVEL (M)	130.0230	130.098	132.014	132.539	130.326	130.009	130.588	132.164	132.238	130.472	129.979
OFFSET (M)	31.243	18.344	13.390	8.200	4.133	0.000	4.541	7.541	10.563	15.840	28.763

CUTTING AREA (SQ.M) = 1.929
FILLING AREA (SQ.M) = 5.925

CH. : 1+700 KM.
DESIGNED BED LEVEL = 129.889 M



EXIST. LEVEL (M)	129.7340	130.080	131.711	132.129	130.561	129.973	130.697	132.357	130.447	129.976
OFFSET (M)	31.302	18.848	13.661	8.984	5.129	0.000	4.156	7.310	11.865	31.498

CUTTING AREA (SQ.M) = 2.773
FILLING AREA (SQ.M) = 4.881

CH. : 1+900 KM.
DESIGNED BED LEVEL = 129.862 M

LEGEND

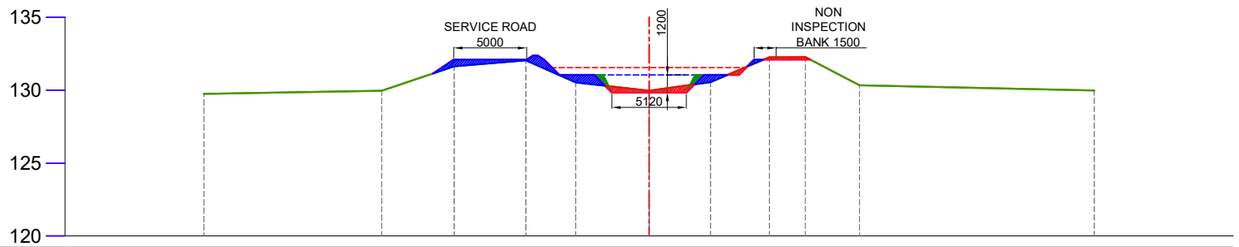
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 5 of 48

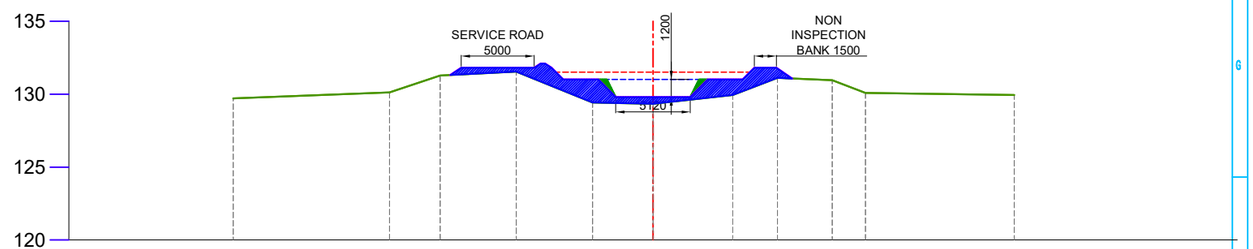
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	129.7540	129.963	131.637	132.041	130.537	129.958	130.557	132.266	132.271	130.330	129.988
OFFSET (M)	30.551	18.354	13.369	8.461	5.037	0.000	4.208	8.253	10.716	14.441	30.543

CUTTING AREA (SQ.M) = 2.382
FILLING AREA (SQ.M) = 4.677

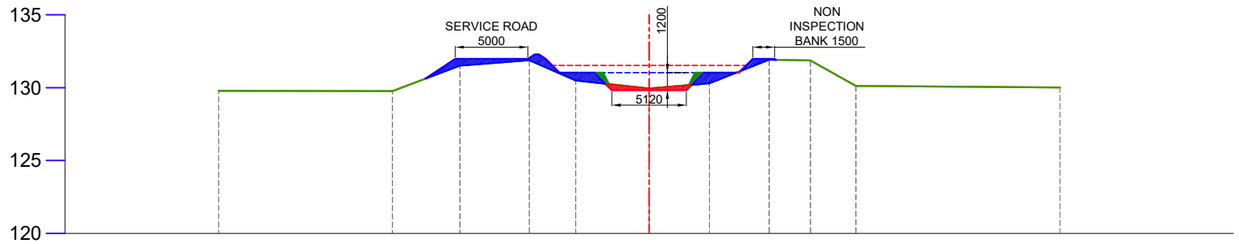
CH. : 2+000 KM.
DESIGNED BED LEVEL = 129.844 M



EXIST. LEVEL (M)	129.7190	130.124	131.278	131.547	129.431	129.346	129.952	131.119	130.960	130.092	129.944
OFFSET (M)	28.809	18.083	14.603	9.379	4.150	0.000	5.474	8.532	12.299	14.581	24.789

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 16.644

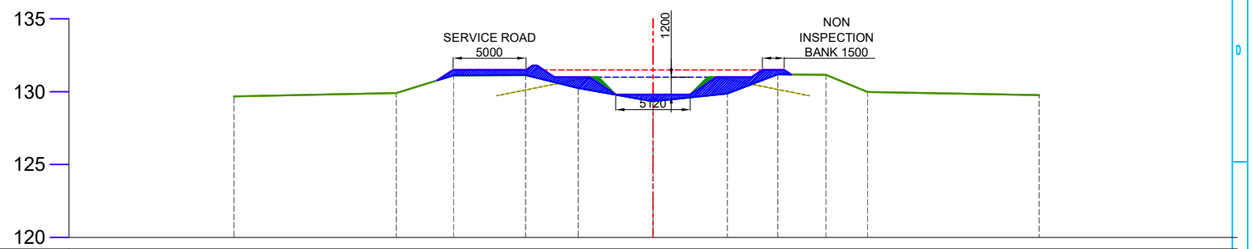
CH. : 2+200 KM.
DESIGNED BED LEVEL = 129.808 M



EXIST. LEVEL (M)	129.7870	129.762	131.511	131.885	130.494	129.932	130.304	131.912	131.863	130.116	130.008
OFFSET (M)	29.529	17.608	12.981	8.231	5.041	0.000	4.129	8.238	11.063	14.193	28.196

CUTTING AREA (SQ.M) = 1.362
FILLING AREA (SQ.M) = 6.156

CH. : 2+100 KM.
DESIGNED BED LEVEL = 129.826 M



EXIST. LEVEL (M)	129.6700	129.910	131.112	131.134	130.235	129.329	129.865	131.185	131.154	129.974	129.765
OFFSET (M)	28.739	17.608	13.669	8.737	5.123	0.000	5.103	8.550	11.877	14.714	26.495

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 11.684

CH. : 2+300 KM.
DESIGNED BED LEVEL = 129.790 M

LEGEND

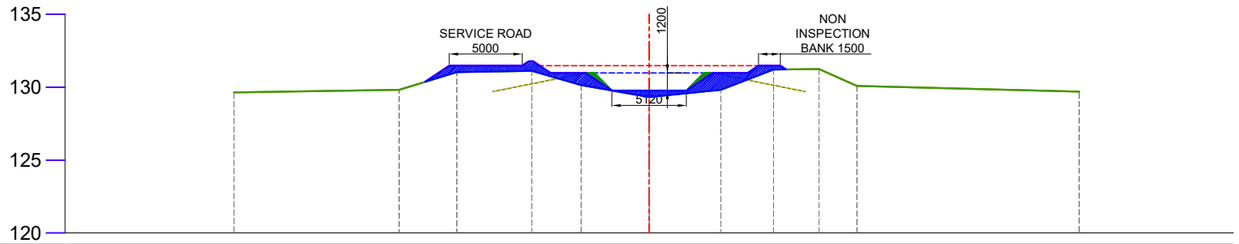
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 6 of 48

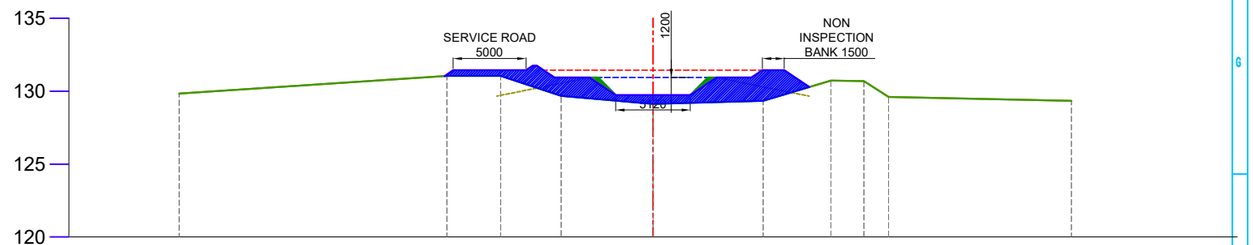
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	129.6480	129.813	131.039	131.122	130.149	129.322	129.826	131.214	131.239	130.083	129.694
OFFSET (M)	28.485	17.145	13.200	8.051	4.672	0.000	4.914	8.532	11.650	14.259	29.504

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 11.410

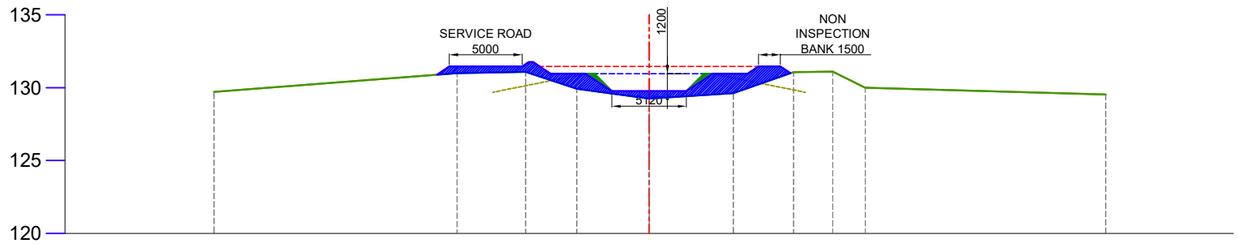
CH. : 2+400 KM.
DESIGNED BED LEVEL = 129.771 M



EXIST. LEVEL (M)	129.8390	131.047	131.043	129.672	129.132	129.332	130.732	130.691	129.602	129.345	
OFFSET (M)	32.514	14.144	10.459	6.309	0.000	7.557	12.207	14.465	16.159	28.698	

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 24.285

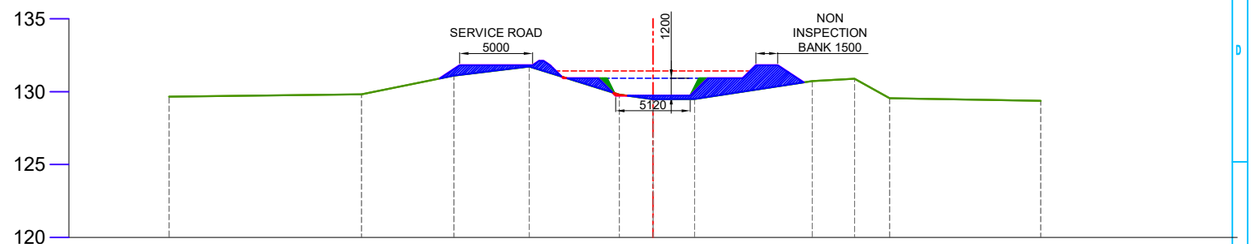
CH. : 2+600 KM.
DESIGNED BED LEVEL = 129.735 M



EXIST. LEVEL (M)	129.7030	130.994	131.087	129.926	129.249	129.626	131.063	131.101	129.985	129.532	
OFFSET (M)	29.857	13.180	8.482	4.965	0.000	5.780	9.915	12.606	14.821	31.328	

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 15.763

CH. : 2+500 KM.
DESIGNED BED LEVEL = 129.753 M



EXIST. LEVEL (M)	129.6580	129.823	131.097	131.729	129.797	129.475	129.502	130.717	130.875	129.555	129.371
OFFSET (M)	33.200	19.997	13.664	8.500	2.306	0.000	2.861	10.926	13.830	16.227	26.601

CUTTING AREA (SQ.M) = 0.087
FILLING AREA (SQ.M) = 13.344

CH. : 2+700 KM.
DESIGNED BED LEVEL = 129.717 M

LEGEND

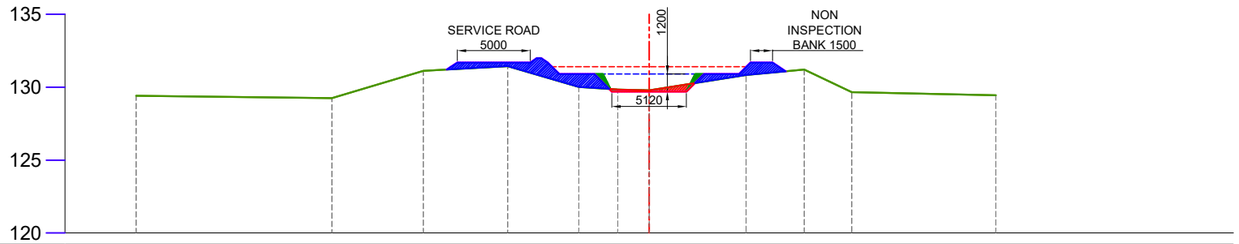
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 7 of 48

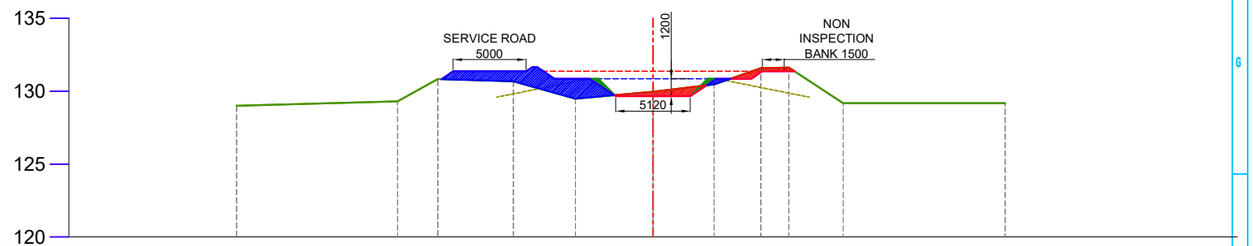
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	129.4190	129.244	131.123	131.446	130.015	129.846	129.783	130.841	131.205	129.658	129.451
OFFSET (M)	35.194	21.761	15.489	9.709	4.831	2.150	0.000	6.654	10.635	13.896	23.787

CUTTING AREA (SQ.M) = 1.209
FILLING AREA (SQ.M) = 9.186

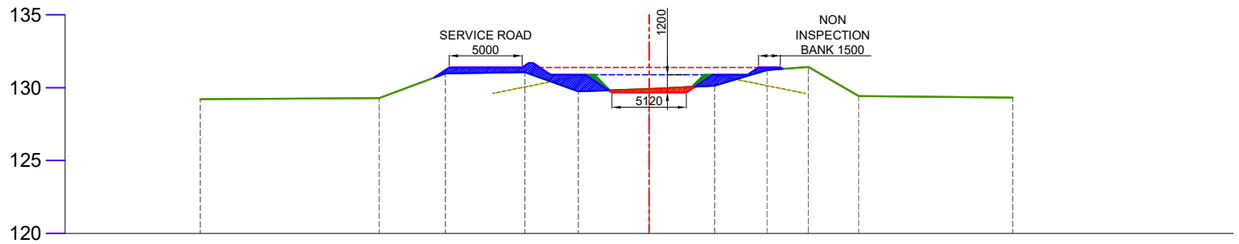
CH. : 2+800 KM.
DESIGNED BED LEVEL = 129.699 M



EXIST. LEVEL (M)	129.0050	129.304	130.827	130.681	129.489	129.965	130.466	131.577	131.623	129.181	129.183
OFFSET (M)	28.570	17.520	14.758	9.583	5.330	0.000	4.189	7.392	9.327	13.049	24.169

CUTTING AREA (SQ.M) = 3.114
FILLING AREA (SQ.M) = 10.226

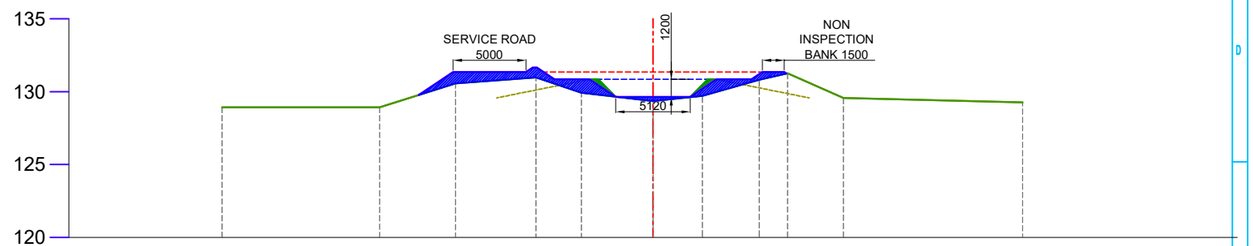
CH. : 3+000 KM.
DESIGNED BED LEVEL = 129.662 M



EXIST. LEVEL (M)	129.2160	129.274	130.976	131.062	129.750	129.906	130.131	131.208	131.414	129.419	129.315
OFFSET (M)	30.790	18.516	13.983	8.527	4.867	0.000	4.486	8.099	10.927	14.375	24.943

CUTTING AREA (SQ.M) = 1.333
FILLING AREA (SQ.M) = 8.075

CH. : 2+900 KM.
DESIGNED BED LEVEL = 129.680 M



EXIST. LEVEL (M)	128.9240	128.917	130.560	130.975	129.919	129.356	129.709	130.819	131.251	129.562	129.261
OFFSET (M)	29.572	18.754	13.550	8.026	4.904	0.000	3.391	7.299	9.233	13.056	25.361

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 11.207

CH. : 3+100 KM.
DESIGNED BED LEVEL = 129.644 M

LEGEND

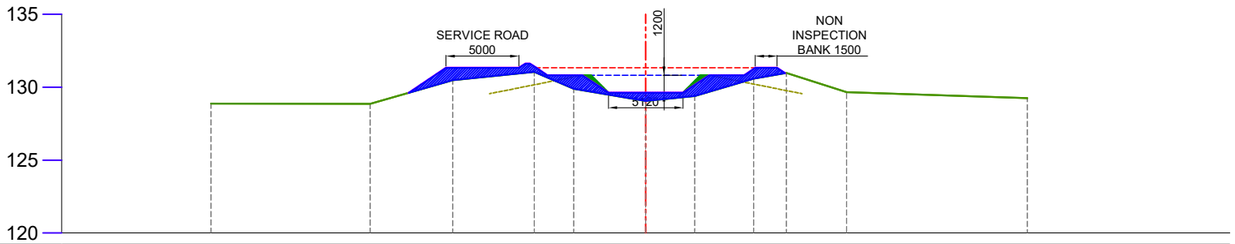
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 8 of 48

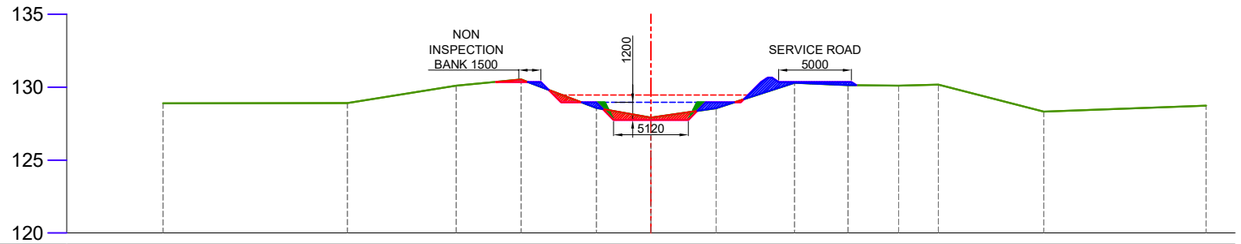
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	128.8840	128.862	130.485	131.044	129.891	129.054	129.389	130.579	130.983	129.660	129.244
OFFSET (M)	29.832	18.904	13.241	7.644	4.935	0.000	3.356	7.408	9.642	13.778	26.187

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 14.667

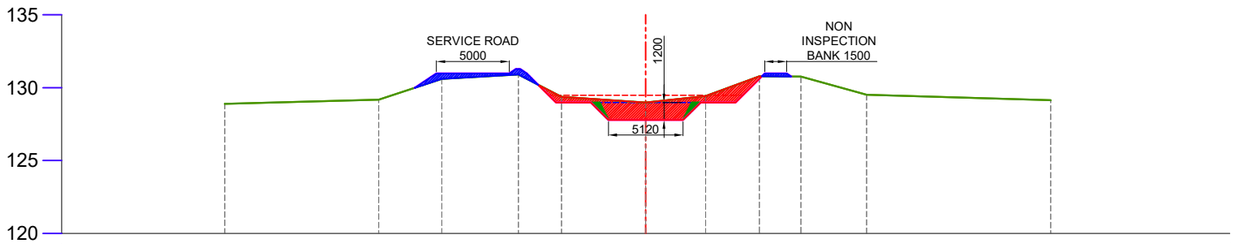
CH. : 3+200 KM.
DESIGNED BED LEVEL = 129.626 M



EXIST. LEVEL (M)	128.8910	128.915	130.102	130.528	128.577	127.906	128.562	130.302	130.144	130.104	130.174	128.316	128.730
OFFSET (M)	33.472	20.828	13.352	8.897	3.743	0.000	4.478	9.863	13.518	16.996	19.719	26.960	38.095

CUTTING AREA (SQ.M) = 3.008
FILLING AREA (SQ.M) = 3.542

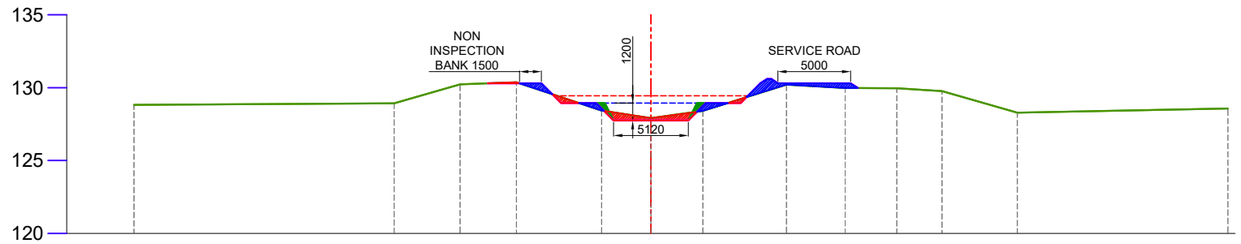
CH. : 3+400 KM.
DESIGNED BED LEVEL = 127.762 M



EXIST. LEVEL (M)	128.8850	129.166	130.593	130.899	129.378	128.986	129.421	130.781	130.750	129.511	129.144
OFFSET (M)	28.880	18.327	13.985	8.746	5.780	0.000	4.103	7.792	10.646	15.160	27.777

CUTTING AREA (SQ.M) = 13.034
FILLING AREA (SQ.M) = 2.663

CH. : 3+300 KM.
DESIGNED BED LEVEL = 127.780 M



EXIST. LEVEL (M)	128.8100	128.921	130.220	130.368	128.433	127.900	128.401	130.211	129.970	129.960	129.761	128.287	128.560
OFFSET (M)	35.468	17.614	13.097	9.233	3.387	0.000	3.564	9.310	13.332	16.874	19.969	25.144	39.588

CUTTING AREA (SQ.M) = 2.755
FILLING AREA (SQ.M) = 3.611

CH. : 3+500 KM.
DESIGNED BED LEVEL = 127.743 M

LEGEND

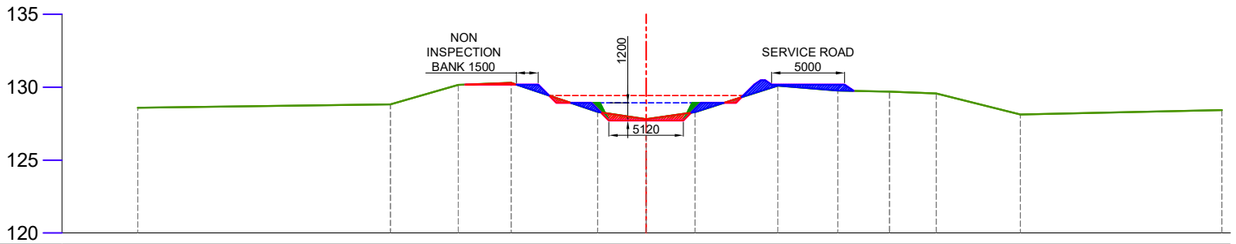
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 9 of 48

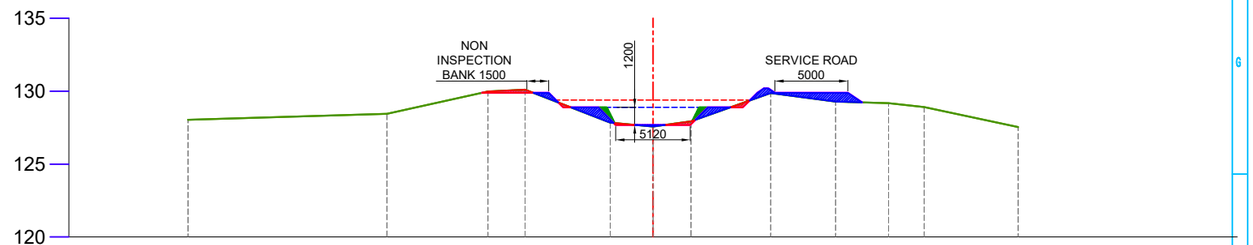
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	128.5880	128.817	130.157	130.294	128.311	127.804	128.293	130.111	129.774	129.698	129.570	128.126	128.430
OFFSET (M)	34.877	17.537	12.898	9.251	3.327	0.000	3.357	9.038	13.154	16.698	19.911	25.679	39.509

CUTTING AREA (SQ.M) = 2.252
FILLING AREA (SQ.M) = 3.895

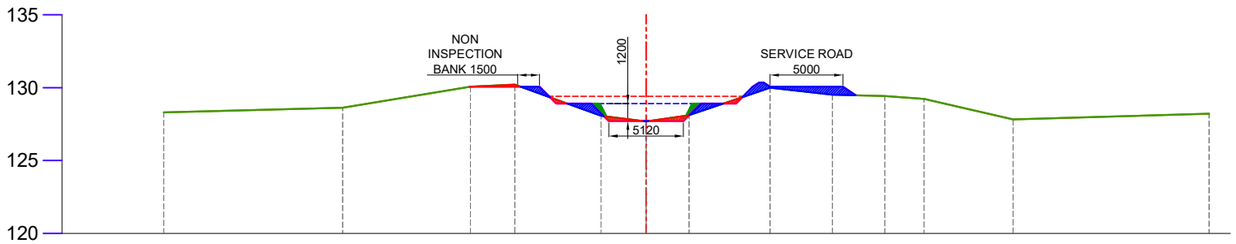
CH. : 3+600 KM.
DESIGNED BED LEVEL = 127.725 M



EXIST. LEVEL (M)	128.0400	128.456	129.979	130.110	127.846	127.575	127.934	129.872	129.283	129.177	128.908	127.534	
OFFSET (M)	31.905	18.254	11.318	8.780	2.940	0.000	2.610	8.083	12.529	16.161	18.598	25.051	

CUTTING AREA (SQ.M) = 1.099
FILLING AREA (SQ.M) = 4.910

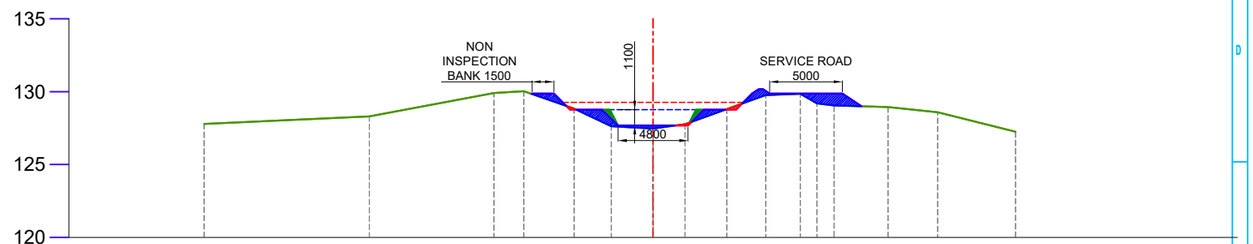
CH. : 3+800 KM.
DESIGNED BED LEVEL = 127.689 M



EXIST. LEVEL (M)	128.2950	128.626	130.063	130.198	128.067	127.684	128.104	129.985	129.515	129.425	129.225	127.814	128.203
OFFSET (M)	33.090	20.096	12.353	9.045	3.178	0.000	3.135	8.760	12.955	16.521	19.316	24.941	38.634

CUTTING AREA (SQ.M) = 1.461
FILLING AREA (SQ.M) = 4.565

CH. : 3+700 KM.
DESIGNED BED LEVEL = 127.707 M



EXIST. LEVEL (M)	127.7900	128.296	129.898	130.027	128.833	127.632	127.469	127.766	128.801	129.760	129.856	129.053	128.933	128.594	127.252
OFFSET (M)	30.791	19.475	10.909	8.858	5.415	2.858	0.000	2.205	5.056	7.739	10.107	12.423	16.126	19.537	24.869

CUTTING AREA (SQ.M) = 0.283
FILLING AREA (SQ.M) = 6.171

CH. : 3+900 KM.
DESIGNED BED LEVEL = 127.671 M

LEGEND

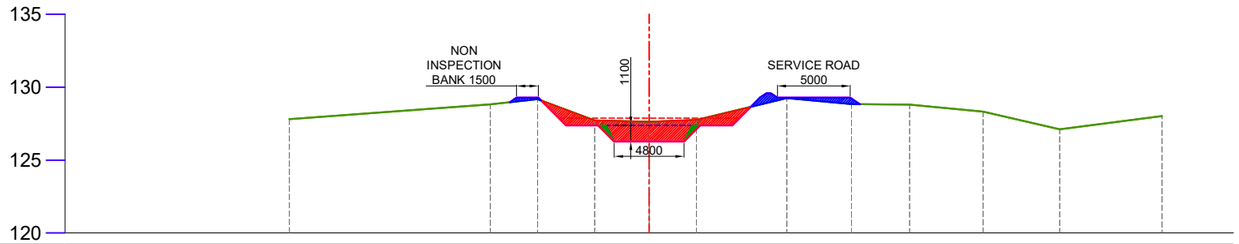
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 10 of 48

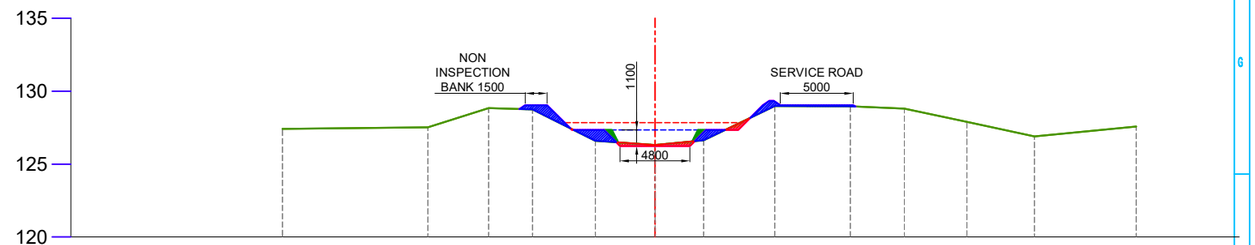
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	127.8090	128.827	129.180	127.724	127.624	127.748	129.256	128.832	128.806	128.324	127.119	128.028
OFFSET (M)	24.693	10.902	7.653	3.736	0.000	3.255	9.450	13.882	17.875	22.920	28.166	35.190

CUTTING AREA (SQ.M) = 13.135
FILLING AREA (SQ.M) = 2.330

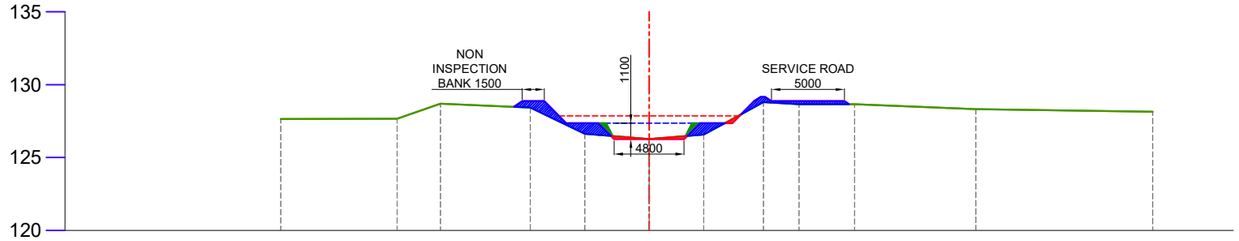
CH. : 4+000 KM.
DESIGNED BED LEVEL = 126.280 M



EXIST. LEVEL (M)	127.414	127.528	128.843	128.745	126.598	126.3190	126.632	128.986	128.957	128.809	127.901	126.906	127.569
OFFSET (M)	25.564	15.586	11.415	8.410	4.095	0.000	3.329	8.221	13.396	17.114	21.403	26.040	33.009

CUTTING AREA (SQ.M) = 1.281
FILLING AREA (SQ.M) = 4.449

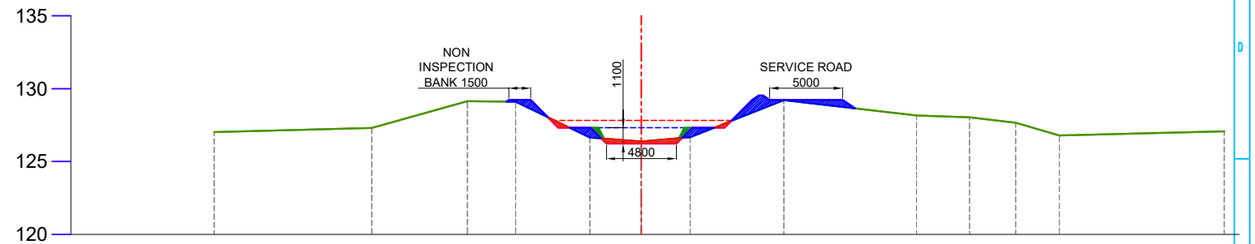
CH. : 4+200 M.
DESIGNED BED LEVEL = 126.244 M



EXIST. LEVEL (M)	127.649	127.660	128.701	128.433	126.624	126.2707	126.571	128.795	128.656	128.656	128.314	128.135
OFFSET (M)	25.271	17.296	14.314	8.149	4.411	0.000	3.749	7.843	10.292	14.097	22.421	34.540

CUTTING AREA (SQ.M) = 0.692
FILLING AREA (SQ.M) = 6.042

CH. : 4+100 M.
DESIGNED BED LEVEL = 126.262 M



EXIST. LEVEL (M)	127.0150	127.305	129.138	129.103	126.643	126.375	126.667	129.205	128.158	128.039	127.658	126.783	127.079
OFFSET (M)	29.321	18.492	11.947	8.635	3.528	0.000	3.339	9.770	18.875	22.511	25.679	28.671	39.993

CUTTING AREA (SQ.M) = 1.735
FILLING AREA (SQ.M) = 5.321

CH. : 4+300 KM.
DESIGNED BED LEVEL = 126.226 M

LEGEND

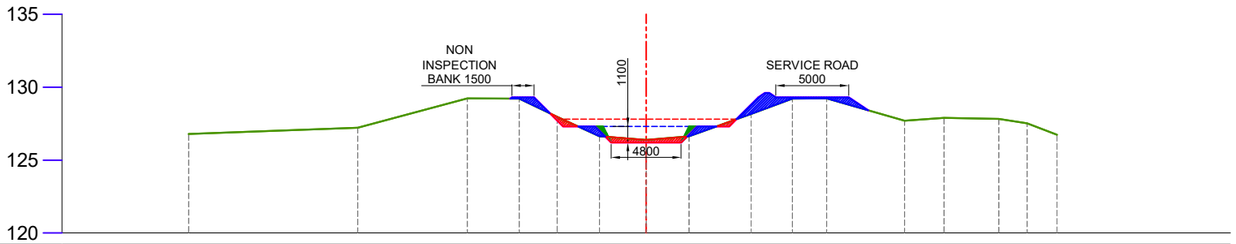
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 11 of 48

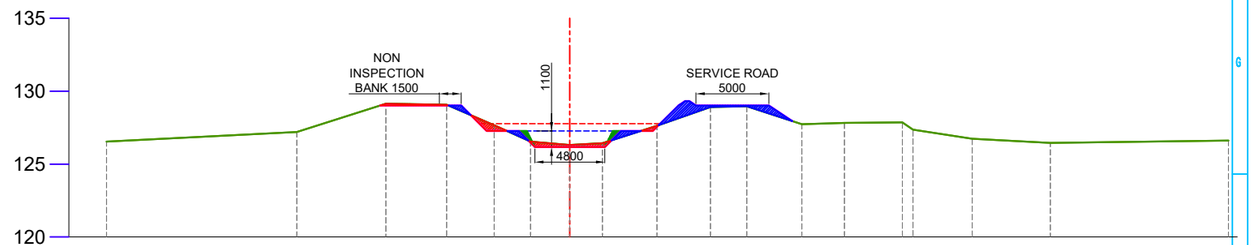
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	126.7990	127.216	129.236	129.216	127.976	126.639	126.378	126.630	128.161	129.218	129.229	127.708	127.898	127.824	127.520	126.733
OFFSET (M)	31.388	19.792	12.275	8.704	6.108	3.203	0.000	2.942	7.196	10.041	12.388	17.739	20.447	24.197	26.146	28.183

CUTTING AREA (SQ.M) = 2.128
FILLING AREA (SQ.M) = 4.866

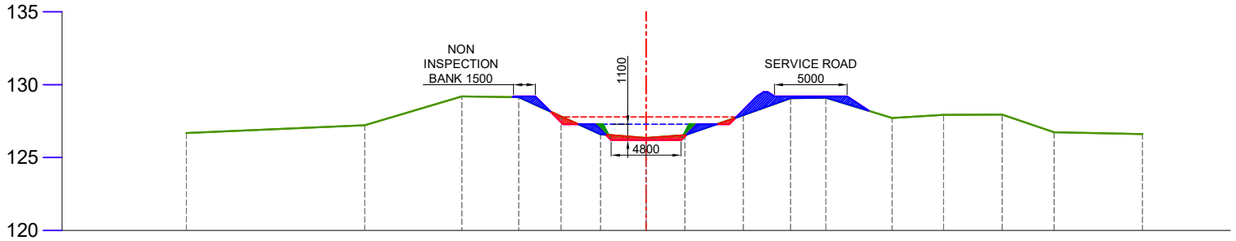
CH. : 4+400 KM.
DESIGNED BED LEVEL = 126.208 M



EXIST. LEVEL (M)	126.5390	127.206	129.150	129.071	127.672	126.551	126.303	126.427	127.623	128.914	128.965	127.733	127.822	127.868	126.739	126.455	126.607
OFFSET (M)	31.794	18.736	12.613	8.443	5.185	2.703	0.000	2.239	5.988	9.653	12.151	15.913	18.836	22.823	27.607	32.969	45.197

CUTTING AREA (SQ.M) = 2.539
FILLING AREA (SQ.M) = 4.014

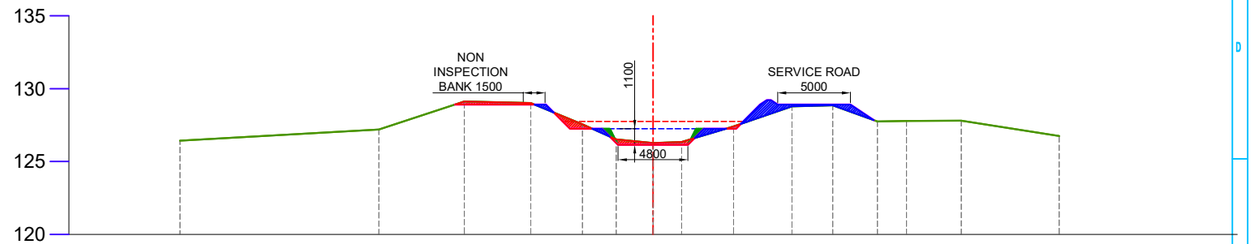
CH. : 4+600 KM.
DESIGNED BED LEVEL = 126.171 M



EXIST. LEVEL (M)	126.6730	127.211	129.194	129.145	127.828	126.596	126.342	126.532	127.900	129.071	129.101	127.720	127.933	127.949	126.736	126.600
OFFSET (M)	31.548	19.310	12.639	8.745	5.833	3.133	0.000	2.650	6.664	9.913	12.339	16.880	20.406	24.421	27.995	34.053

CUTTING AREA (SQ.M) = 1.927
FILLING AREA (SQ.M) = 4.930

CH. : 4+500 KM.
DESIGNED BED LEVEL = 126.190 M



EXIST. LEVEL (M)	126.4300	127.203	129.115	129.011	127.546	126.515	126.272	126.343	127.403	128.789	128.859	127.743	127.786	127.799	126.742	
OFFSET (M)	32.450	18.807	12.939	8.390	4.836	2.530	0.000	1.968	5.536	9.545	12.328	15.403	17.386	21.146	27.873	

CUTTING AREA (SQ.M) = 2.906
FILLING AREA (SQ.M) = 3.720

CH. : 4+700 KM.
DESIGNED BED LEVEL = 126.153 M

LEGEND

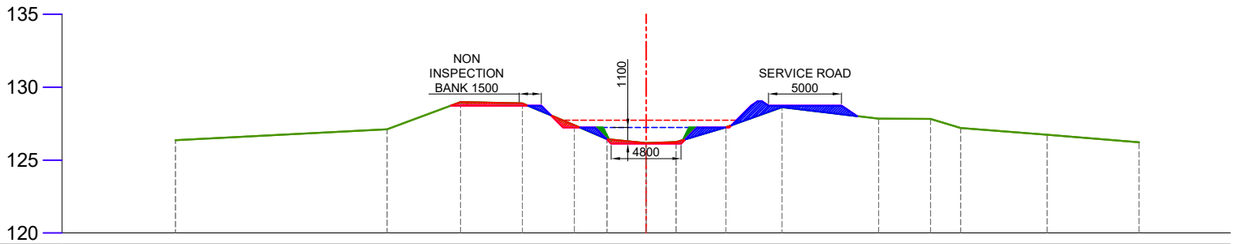
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 12 of 48

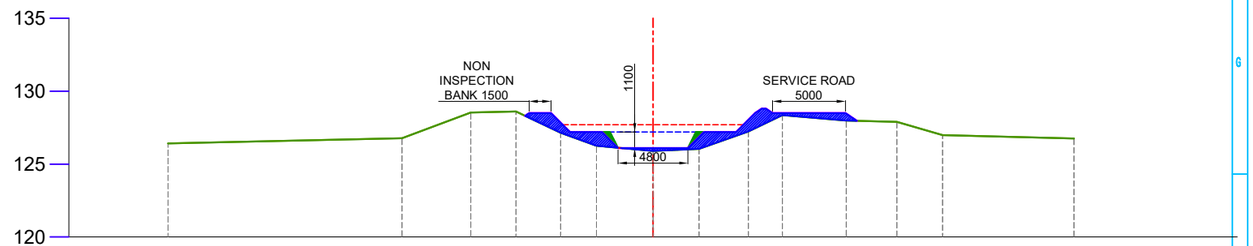
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	126.3610	127.113	128.976	128.894	127.395	126.441	126.175	126.236	127.248	128.628	127.836	127.822	127.204	126.745	126.220
OFFSET (M)	32.286	17.779	12.739	8.496	4.922	2.680	0.000	2.054	5.480	9.314	15.948	19.520	21.575	27.503	33.825

CUTTING AREA (SQ.M) = 2.112
FILLING AREA (SQ.M) = 5.094

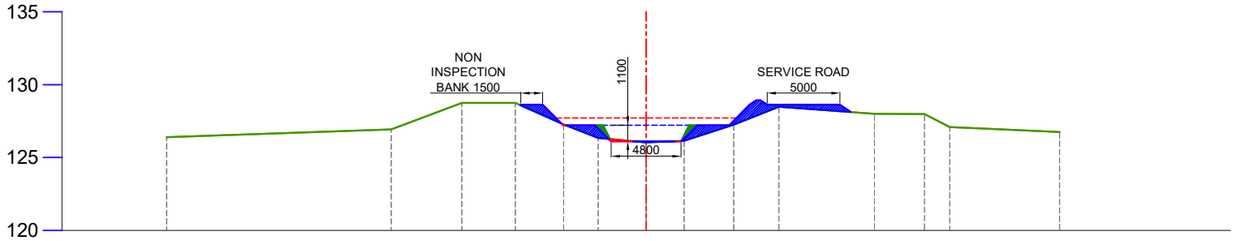
CH. : 4+800 KM.
DESIGNED BED LEVEL = 126.135 M



EXIST. LEVEL (M)	126.4090	126.768	128.537	128.600	127.148	126.252	125.893	126.051	127.243	128.351	127.990	127.894	126.992	126.751	
OFFSET (M)	33.278	17.228	12.507	9.400	6.337	3.879	0.000	3.164	6.537	8.875	13.266	16.741	19.870	28.878	

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 10.413

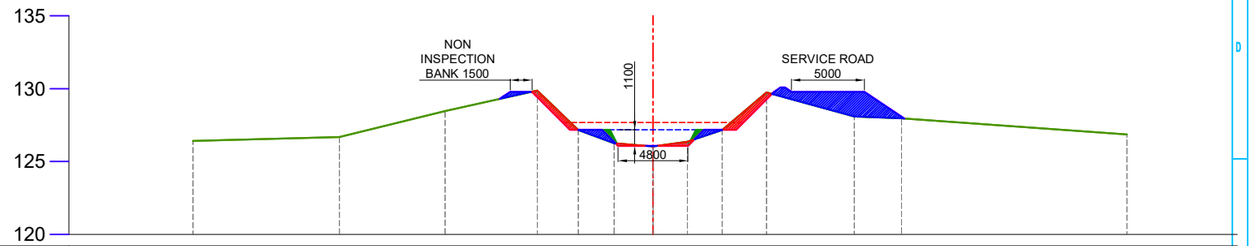
CH. : 5+000 KM.
DESIGNED BED LEVEL = 126.099 M



EXIST. LEVEL (M)	126.3860	126.936	128.751	128.743	127.268	126.344	126.030	126.141	127.245	128.486	128.000	127.980	127.094	126.748	
OFFSET (M)	32.896	17.499	12.636	8.974	5.654	3.296	0.000	2.598	6.016	9.108	15.668	19.106	20.822	28.358	

CUTTING AREA (SQ.M) = 0.130
FILLING AREA (SQ.M) = 7.113

CH. : 4+900 KM.
DESIGNED BED LEVEL = 126.117 M



EXIST. LEVEL (M)	126.4133	126.687	128.454	129.876	127.154	126.254	126.041	126.351	127.154	129.737	128.095	127.957	126.863		
OFFSET (M)	31.562	21.506	14.261	7.948	5.122	2.661	0.000	2.357	4.737	7.783	13.804	17.055	32.523		

CUTTING AREA (SQ.M) = 3.613
FILLING AREA (SQ.M) = 10.545

CH. : 5+100 KM.
DESIGNED BED LEVEL = 126.080 M

LEGEND

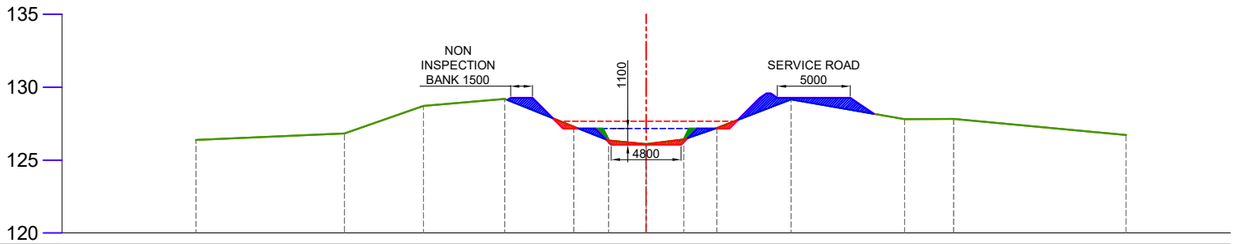
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 13 of 48

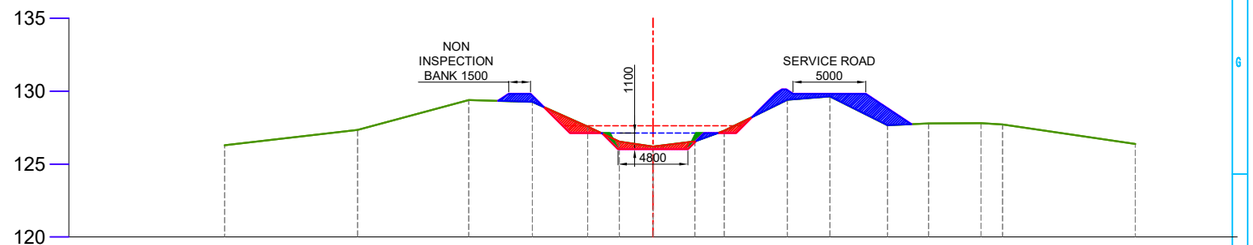
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	126.3772	126.826	128.709	129.194	127.289	126.342	126.090	126.415	127.195	129.164	127.806	127.831	126.715
OFFSET (M)	30.888	20.689	15.281	9.697	4.959	2.571	0.000	2.595	4.855	9.947	17.736	21.090	32.932

CUTTING AREA (SQ.M) = 1.535
FILLING AREA (SQ.M) = 6.753

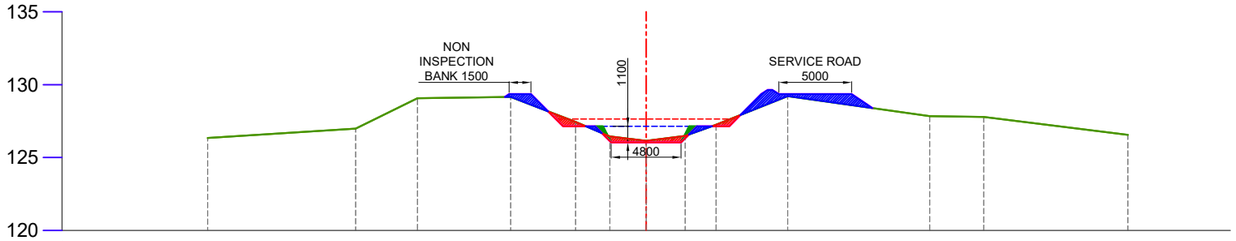
CH. : 5+200 KM.
DESIGNED BED LEVEL = 126.062 M



EXIST. LEVEL (M)	126.3000	127.338	129.400	129.264	127.582	126.534	126.199	126.556	127.285	129.403	129.634	127.667	127.795	127.804	127.710	126.385
OFFSET (M)	29.381	20.267	12.647	8.276	4.486	2.306	0.000	2.876	4.890	9.221	12.133	16.091	18.901	22.506	23.978	33.083

CUTTING AREA (SQ.M) = 4.642
FILLING AREA (SQ.M) = 8.642

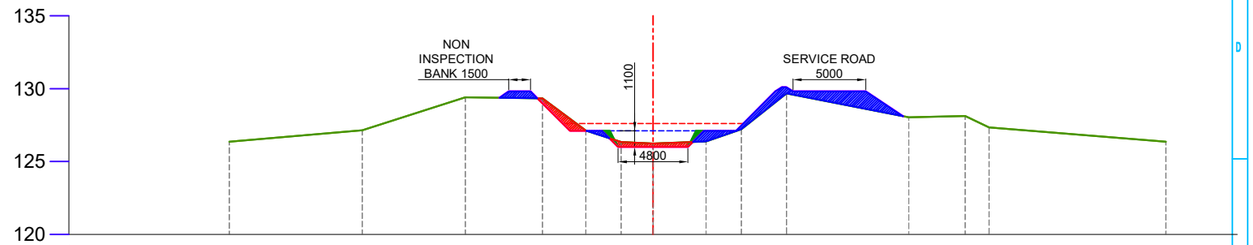
CH. : 5+400 KM.
DESIGNED BED LEVEL = 126.026 M



EXIST. LEVEL (M)	126.3378	126.982	129.060	129.162	127.440	126.441	126.147	126.488	127.242	129.213	127.837	127.788	126.546
OFFSET (M)	30.085	19.925	15.682	9.290	4.849	2.487	0.000	2.682	4.804	9.723	19.465	23.170	33.046

CUTTING AREA (SQ.M) = 2.665
FILLING AREA (SQ.M) = 5.756

CH. : 5+300 KM.
DESIGNED BED LEVEL = 126.044 M



EXIST. LEVEL (M)	126.3580	127.134	129.412	129.334	127.121	126.333	126.236	126.377	127.218	129.678	128.028	128.116	127.342	126.357
OFFSET (M)	29.068	19.955	12.882	7.587	4.614	2.183	0.000	3.633	6.059	9.169	17.548	21.420	23.057	35.197

CUTTING AREA (SQ.M) = 3.116
FILLING AREA (SQ.M) = 9.255

CH. : 5+500 KM.
DESIGNED BED LEVEL = 126.008 M

LEGEND

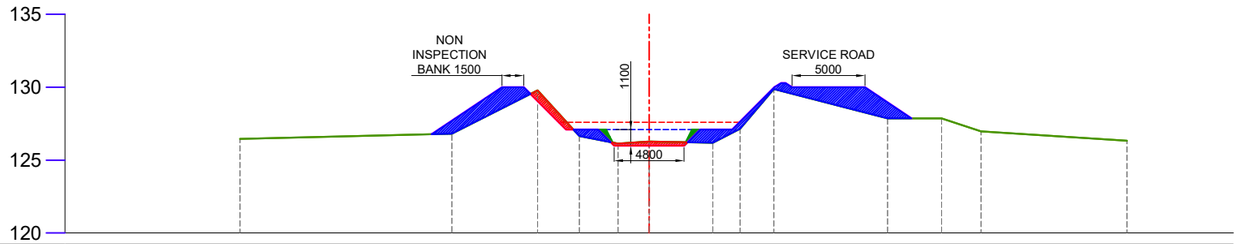
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 14 of 48

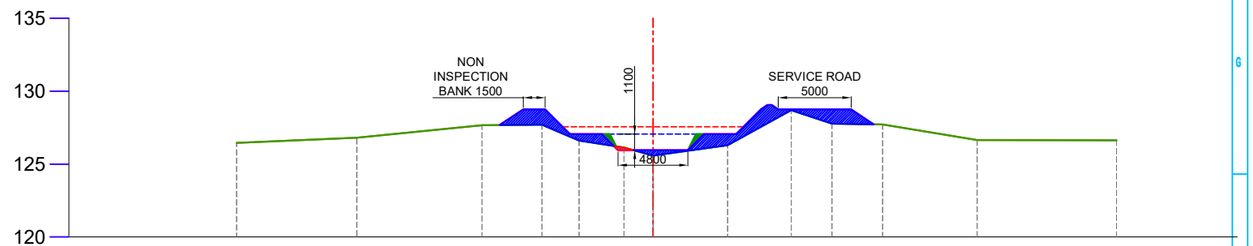
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	126.4606	126.803	129.779	126.647	126.127	126.273	126.193	127.150	129.872	127.863	127.866	126.962	126.327	
OFFSET (M)	28.070	13.542	7.660	4.795	2.133	0.000	4.368	6.237	8.554	16.352	20.071	22.774	32.778	

CUTTING AREA (SQ.M) = 2.722
FILLING AREA (SQ.M) = 19.332

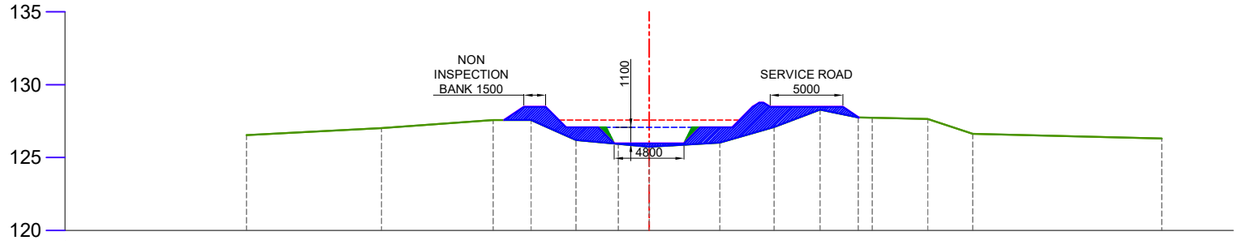
CH. : 5+600 KM.
DESIGNED BED LEVEL = 125.991 M



EXIST. LEVEL (M)	126.4600	126.813	127.664	127.697	126.605	126.141	125.572	126.289	128.696	127.775	127.713	126.658	126.627	
OFFSET (M)	28.564	20.323	11.736	7.620	5.076	0.000	5.124	9.483	12.276	15.762	22.236	31.812		

CUTTING AREA (SQ.M) = 0.186
FILLING AREA (SQ.M) = 14.556

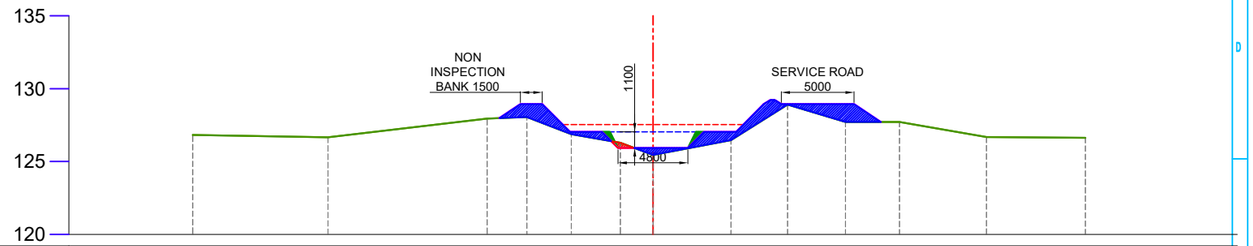
CH. : 5+800 KM.
DESIGNED BED LEVEL = 125.953 M



EXIST. LEVEL (M)	126.5370	127.010	127.569	127.569	126.201	125.933	125.737	126.022	127.086	128.283	127.740 127.729	127.650	126.627	126.302
OFFSET (M)	27.635	18.368	10.703	8.102	5.016	2.120	0.000	4.843	8.573	11.725	14.348 15.313	19.113	22.206	35.170

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 17.339

CH. : 5+700 KM.
DESIGNED BED LEVEL = 125.971 M



EXIST. LEVEL (M)	126.8210	126.653	127.945	128.048	126.881	126.285	125.456	126.473	128.903	127.714	127.709	126.680	126.627	
OFFSET (M)	31.575	22.294	11.386	8.656	5.611	2.231	0.000	5.359	9.227	13.200	16.913	22.877	29.676	

CUTTING AREA (SQ.M) = 0.314
FILLING AREA (SQ.M) = 14.177

CH. : 5+900 KM.
DESIGNED BED LEVEL = 125.935 M

LEGEND

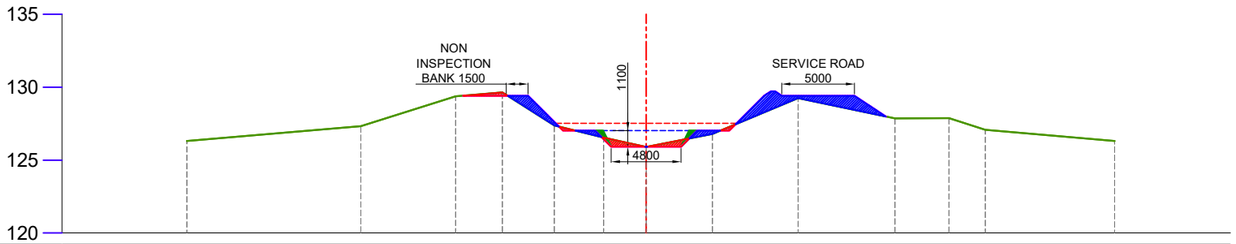
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 15 of 48

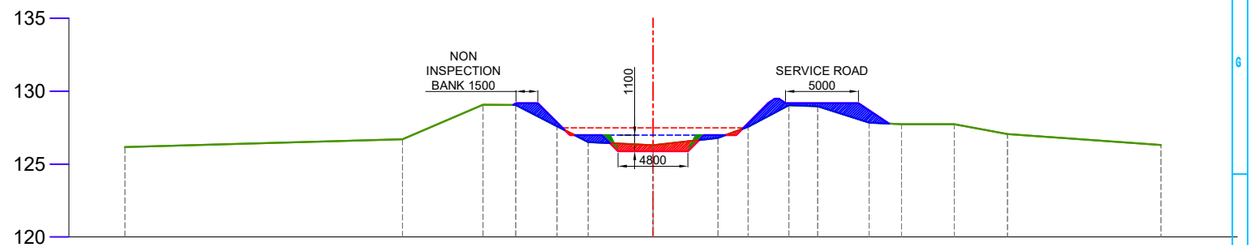
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	126.3140	127.329	129.374	129.648	127.374	126.536	125.901	126.792	129.248	127.857	127.872	127.073	126.302	
OFFSET (M)	31.503	19.574	13.063	9.860	6.297	2.912	0.000	4.553	10.418	17.076	20.782	23.279	32.141	

CUTTING AREA (SQ.M) = 2.014
FILLING AREA (SQ.M) = 8.644

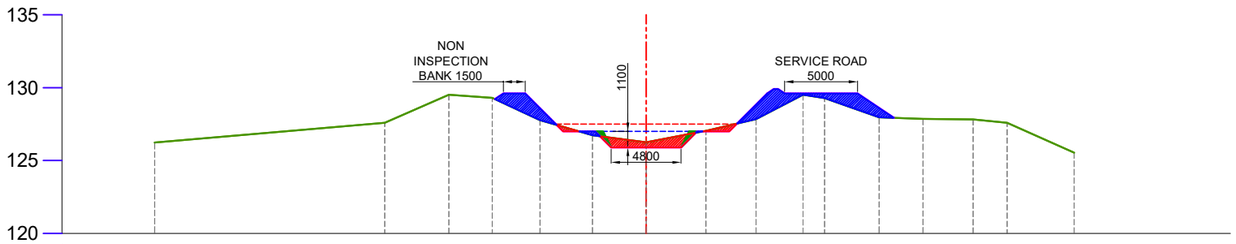
CH. : 6+000 KM.
DESIGNED BED LEVEL = 125.917 M



EXIST. LEVEL (M)	126.1640	126.705	129.063	129.047	127.602	126.512	126.294	126.798	127.552	129.040	128.967	127.840	127.740	127.740	127.050	126.302
OFFSET (M)	36.235	17.178	11.659	9.425	6.577	4.445	0.000	4.467	6.534	9.325	11.305	14.827	17.063	20.671	24.324	34.846

CUTTING AREA (SQ.M) = 3.081
FILLING AREA (SQ.M) = 8.086

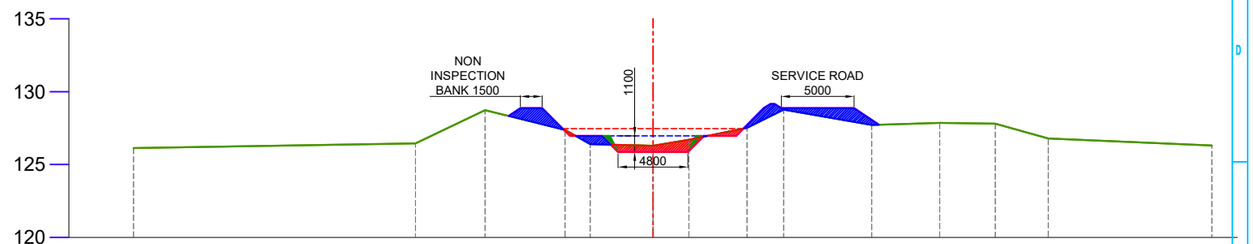
CH. : 6+200 KM.
DESIGNED BED LEVEL = 125.880 M



EXIST. LEVEL (M)	126.2430	127.588	129.507	129.296	127.764	126.735	126.259	127.042	127.834	129.518	129.286	127.964	127.858	127.816	127.582	125.545
OFFSET (M)	33.721	17.942	13.531	10.553	7.275	3.676	0.000	4.103	7.538	10.760	12.245	15.976	18.987	22.425	24.775	29.355

CUTTING AREA (SQ.M) = 4.042
FILLING AREA (SQ.M) = 10.599

CH. : 6+100 KM.
DESIGNED BED LEVEL = 125.899 M



EXIST. LEVEL (M)	126.1300	126.443	128.735	127.373	126.396	126.287	126.706	127.518	128.767	127.710	127.847	127.802	126.794	126.302
OFFSET (M)	35.645	16.289	11.529	6.039	4.306	0.000	2.459	6.459	8.973	15.007	19.676	23.490	27.123	38.338

CUTTING AREA (SQ.M) = 3.754
FILLING AREA (SQ.M) = 8.176

CH. : 6+300 KM.
DESIGNED BED LEVEL = 125.862 M

LEGEND

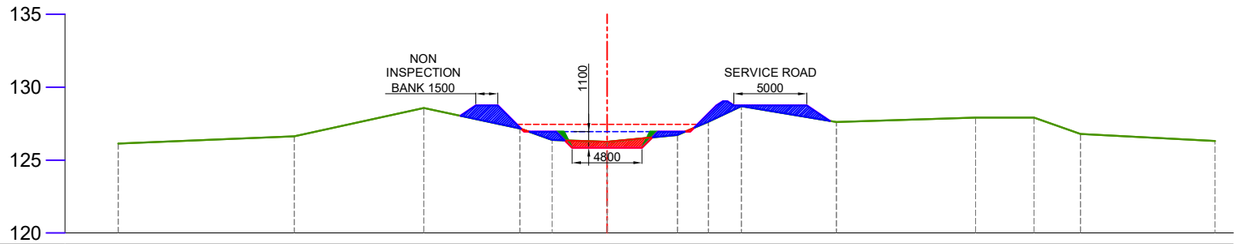
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 16 of 48

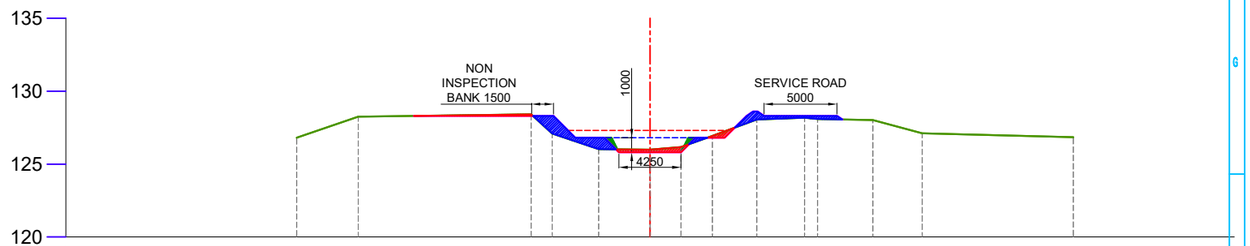
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	126.1310	126.623	128.568	127.171	126.376	126.258	126.728	127.635	128.689	127.613	127.916	127.922	126.786	126.302
OFFSET (M)	33.548	21.453	12.564	5.975	3.776	0.000	4.834	6.950	9.216	15.740	25.288	29.291	32.487	41.716

CUTTING AREA (SQ.M) = 2.797
FILLING AREA (SQ.M) = 8.592

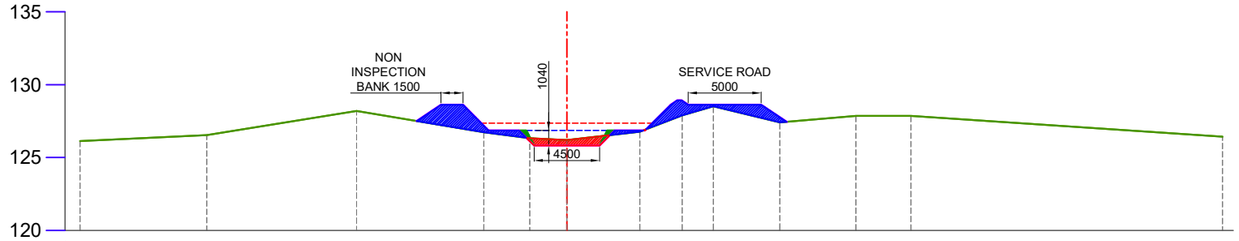
CH. : 6+400 KM.
DESIGNED BED LEVEL = 125.844 M



EXIST. LEVEL (M)	126.808	128.255	128.417	127.101	126.020	125.987	126.172	126.929	128.059	128.088	128.017	127.109	126.810	
OFFSET (M)	24.235	20.018	8.151	6.704	3.527	0.000	2.132	4.289	7.324	11.497	15.289	18.685	28.548	

CUTTING AREA (SQ.M) = 1.954
FILLING AREA (SQ.M) = 5.472

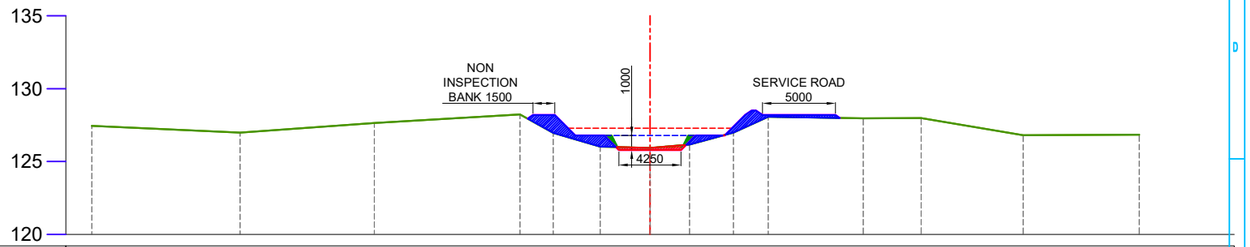
CH. : 6+600 KM.
DESIGNED BED LEVEL = 125.807 M



EXIST. LEVEL (M)	126.1330	126.542	128.195	126.728	126.332	126.195	126.776	127.884	128.518	127.412	127.849	127.847	126.432	
OFFSET (M)	33.402	24.711	14.423	5.702	2.543	0.000	5.018	7.906	10.051	14.617	20.471	24.245	46.925	

CUTTING AREA (SQ.M) = 2.453
FILLING AREA (SQ.M) = 11.485

CH. : 6+500 KM.
DESIGNED BED LEVEL = 125.825 M



EXIST. LEVEL (M)	127.4454	126.983	127.634	128.233	126.970	126.029	125.939	126.168	126.986	128.069	127.955	127.987	126.813	126.843
OFFSET (M)	38.289	28.123	18.919	8.918	6.644	3.424	0.000	2.708	5.729	8.108	14.627	18.598	25.612	33.576

CUTTING AREA (SQ.M) = 0.976
FILLING AREA (SQ.M) = 6.845

CH. : 6+700 KM.
DESIGNED BED LEVEL = 125.788 M

LEGEND

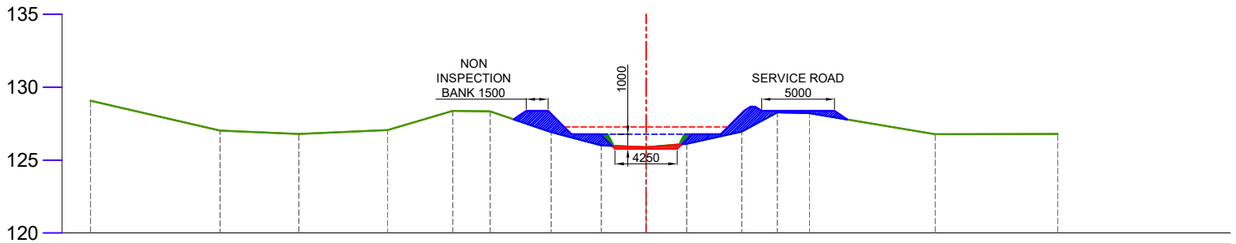
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 17 of 48

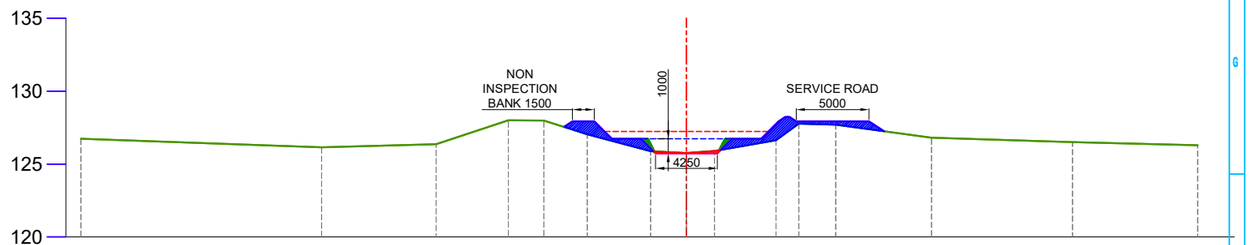
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	129.0730	127.021	126.793	127.052	128.377	128.344	126.917	126.003	125.876	126.113	126.947	128.272	128.219	126.765	126.795
OFFSET (M)	38.111	29.239	23.825	17.743	13.273	10.706	6.512	3.084	0.000	2.792	6.557	8.995	11.204	19.824	28.242

CUTTING AREA (SQ.M) = 0.799
FILLING AREA (SQ.M) = 9.627

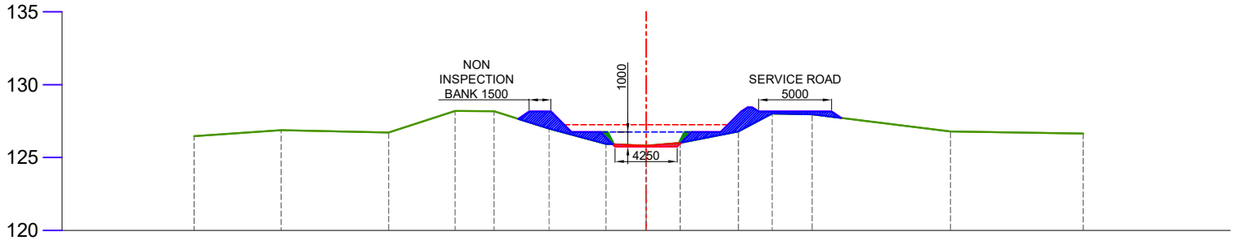
CH. : 6+800 KM.
DESIGNED BED LEVEL = 125.770 M



EXIST. LEVEL (M)	126.7390	126.145	126.371	128.000	127.992	127.040	125.879	125.758	125.901	126.633	127.776	127.701	126.804	126.506	126.295
OFFSET (M)	41.556	25.042	17.176	12.233	9.787	6.811	2.455	0.000	1.917	6.142	7.705	10.242	16.809	26.488	35.072

CUTTING AREA (SQ.M) = 0.422
FILLING AREA (SQ.M) = 8.040

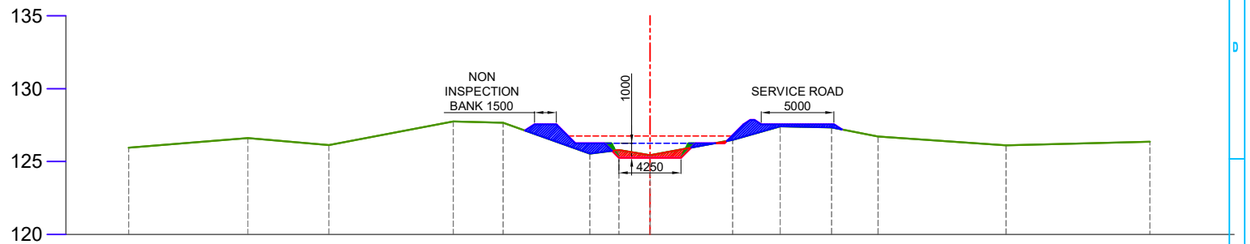
CH. : 7+000 KM.
DESIGNED BED LEVEL = 125.733 M



EXIST. LEVEL (M)	126.4580	126.876	126.707	128.188	128.167	126.980	125.940	125.815	126.005	126.787	128.017	127.956	126.785	126.649	
OFFSET (M)	31.009	25.048	17.676	13.100	10.440	6.653	2.755	0.000	2.331	6.329	8.652	11.387	20.892	29.990	

CUTTING AREA (SQ.M) = 0.602
FILLING AREA (SQ.M) = 8.634

CH. : 6+900 KM.
DESIGNED BED LEVEL = 125.751 M



EXIST. LEVEL (M)	125.9490	126.601	126.120	127.744	127.654	125.546	125.787	125.426	126.475	127.414	127.335	126.707	126.109	126.358	
OFFSET (M)	35.760	27.588	22.033	13.504	10.080	4.130	2.133	0.000	5.667	8.935	12.466	15.641	24.424	34.291	

CUTTING AREA (SQ.M) = 1.884
FILLING AREA (SQ.M) = 6.933

CH. : 7+100 KM.
DESIGNED BED LEVEL = 125.257 M

LEGEND

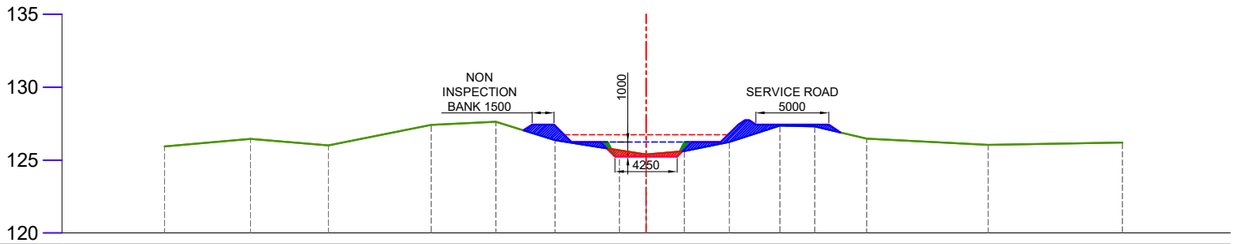
	CUT AREA		EXISTING BED LINE
			F.S.L.
	FILL AREA		DESIGNED BED LINE
			H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 18 of 48

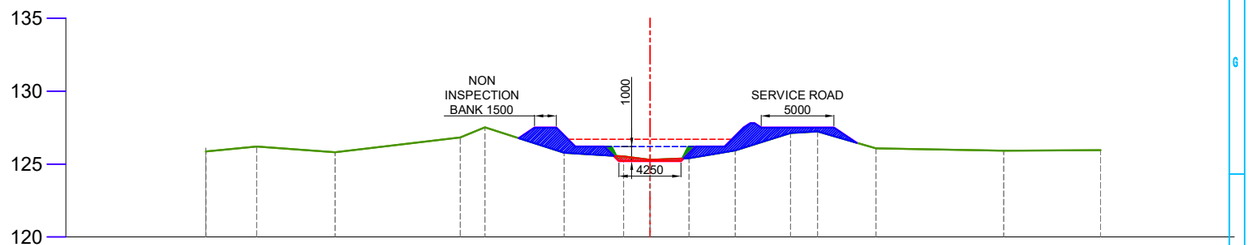
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	125.9340	126.453	126.004	127.412	127.627	126.372	125.661	125.377	125.613	126.237	127.360	127.302	126.476	126.046	126.211
OFFSET (M)	33.048	27.139	21.805	14.740	10.306	6.243	1.832	0.000	2.623	5.701	9.179	11.569	15.122	23.464	32.677

CUTTING AREA (SQ.M) = 1.330
FILLING AREA (SQ.M) = 6.461

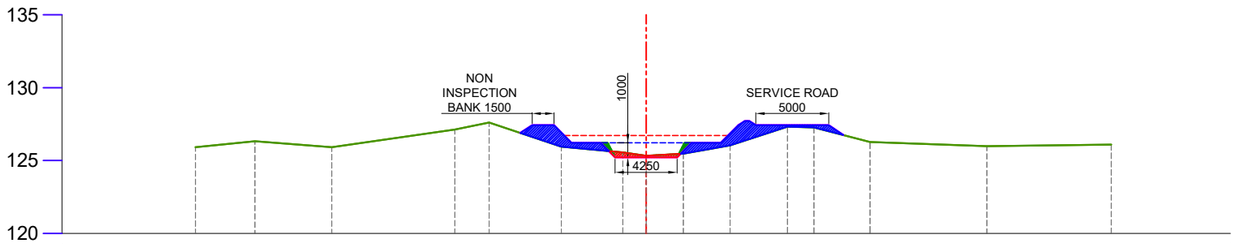
CH. : 7+200 KM.
DESIGNED BED LEVEL = 125.239 M



EXIST. LEVEL (M)	125.859	126.203	125.805	126.827	127.515	125.775	125.523	125.291	125.400	125.928	127.131	127.245	126.073	125.923	125.950
OFFSET (M)	30.482	26.982	21.605	13.023	11.324	5.886	1.812	0.000	2.678	5.853	9.643	11.495	15.506	24.262	30.915

CUTTING AREA (SQ.M) = 0.833
FILLING AREA (SQ.M) = 12.395

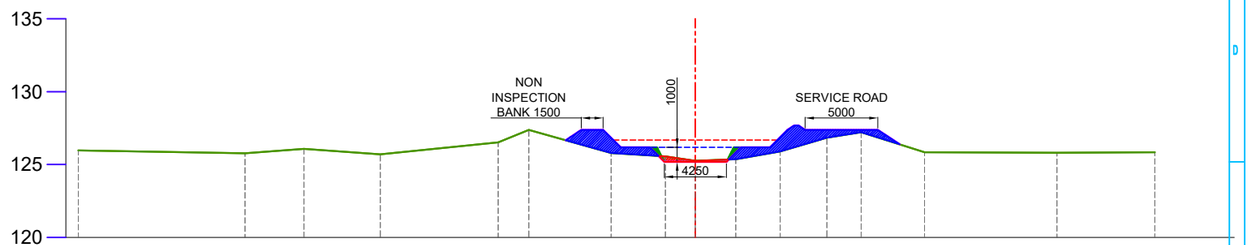
CH. : 7+400 KM.
DESIGNED BED LEVEL = 125.202 M



EXIST. LEVEL (M)	125.9210	126.330	125.905	127.123	127.604	125.946	125.550	125.334	125.475	126.030	127.314	127.274	126.277	125.991	126.083
OFFSET (M)	30.930	26.847	21.574	13.116	10.775	5.820	1.603	0.000	2.551	5.752	9.695	11.517	15.364	23.369	31.903

CUTTING AREA (SQ.M) = 1.015
FILLING AREA (SQ.M) = 9.217

CH. : 7+300 KM.
DESIGNED BED LEVEL = 125.220 M



EXIST. LEVEL (M)	125.9720	125.764	126.071	125.699	126.518	127.372	125.791	125.555	125.247	125.370	125.896	126.832	127.214	125.850	125.808	125.839
OFFSET (M)	42.333	30.905	26.853	21.619	13.538	11.436	5.786	2.049	0.000	2.769	5.812	9.018	11.380	15.730	24.814	31.530

CUTTING AREA (SQ.M) = 0.800
FILLING AREA (SQ.M) = 11.683

CH. : 7+500 KM.
DESIGNED BED LEVEL = 125.183 M

LEGEND

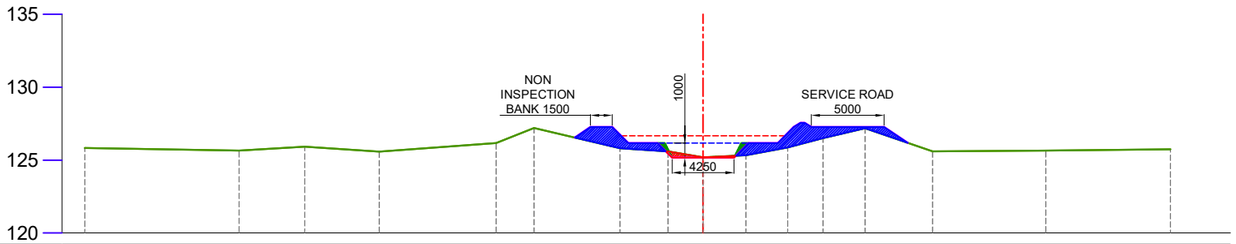
CUT AREA	EXISTING BED LINE	F.S.L.	
FILL AREA	DESIGNED BED LINE	H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 19 of 48

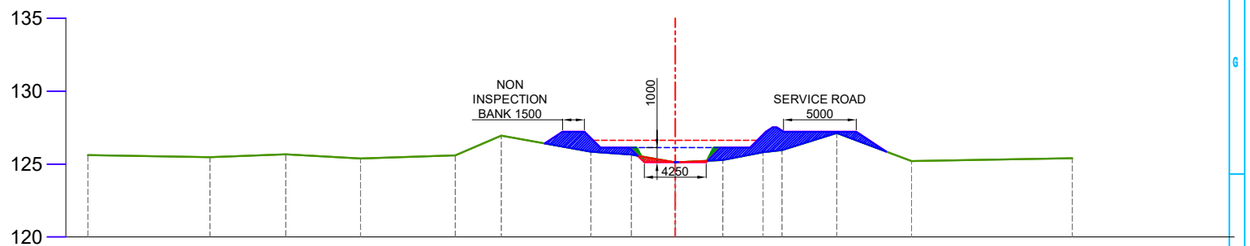
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	125.8310	125.656	125.917	125.575	126.161	127.207	125.810	125.590	125.196	125.336	125.860	126.498	127.180	125.606	125.650	125.744
OFFSET (M)	42.422	31.838	27.333	22.217	14.196	11.587	5.706	2.398	0.000	2.941	5.801	8.228	11.124	15.753	23.520	32.075

CUTTING AREA (SQ.M) = 0.704
FILLING AREA (SQ.M) = 11.180

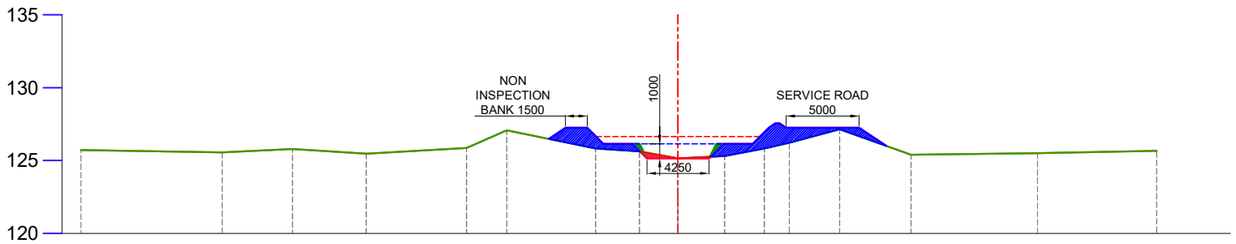
CH. : 7+600 KM.
DESIGNED BED LEVEL = 125.165 M



EXIST. LEVEL (M)	125.6180	125.481	125.674	125.382	125.600	126.950	125.839	125.645	125.117	125.283	125.803	125.963	127.124	125.210	125.394	
OFFSET (M)	40.292	31.917	26.728	21.584	15.092	11.928	5.791	3.017	0.000	3.256	6.025	7.316	11.083	16.216	27.248	

CUTTING AREA (SQ.M) = 0.549
FILLING AREA (SQ.M) = 12.399

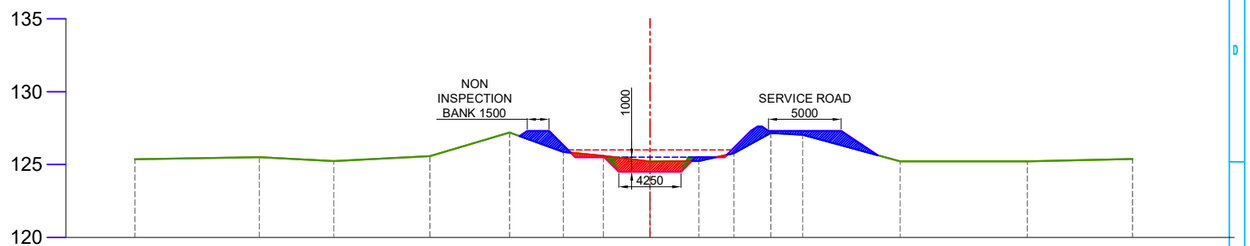
CH. : 7+800 KM.
DESIGNED BED LEVEL = 125.128 M



EXIST. LEVEL (M)	125.7210	125.559	125.783	125.469	125.853	127.073	125.826	125.620	125.155	125.307	125.829	126.217	127.149	125.390	125.512	125.662
OFFSET (M)	40.965	31.277	26.442	21.380	14.498	11.738	5.646	2.643	0.000	3.210	5.927	7.635	11.095	15.988	24.674	32.841

CUTTING AREA (SQ.M) = 0.635
FILLING AREA (SQ.M) = 11.740

CH. : 7+700 KM.
DESIGNED BED LEVEL = 125.146 M



EXIST. LEVEL (M)	125.360	125.504	125.244	125.582	127.190	125.860	125.593	125.196	125.245	125.763	127.164	127.042	125.210	125.218	125.379	
OFFSET (M)	35.337	26.803	21.699	15.102	9.630	5.953	3.200	0.000	3.350	5.769	8.294	10.474	17.157	25.893	33.114	

CUTTING AREA (SQ.M) = 4.525
FILLING AREA (SQ.M) = 7.548

CH. : 7+900 KM.
DESIGNED BED LEVEL = 124.499 M

LEGEND

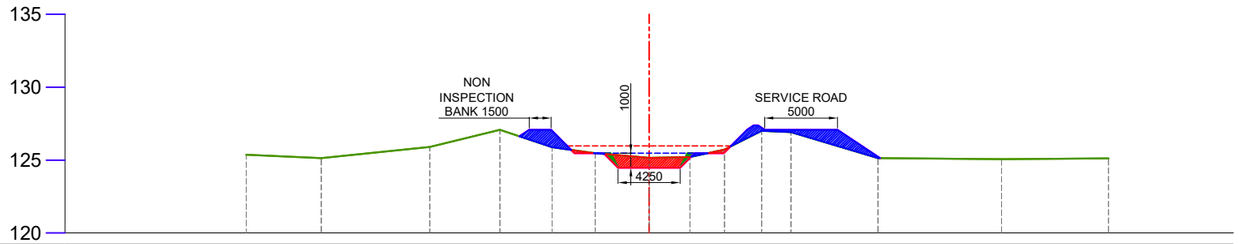
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 20 of 48

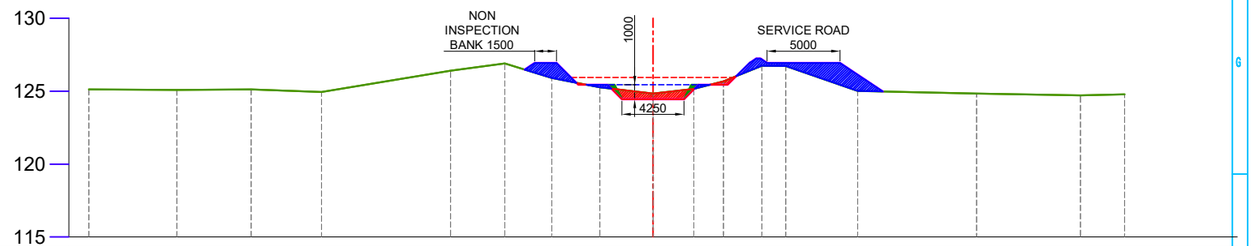
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	125.359	125.129	125.902	127.076	125.877	125.467	125.149	125.214	125.729	127.000	126.919	125.138	125.070	125.124
OFFSET (M)	27.641	22.502	15.044	10.232	6.663	3.696	0.000	2.805	5.166	7.719	9.726	15.707	24.172	31.522

CUTTING AREA (SQ.M) = 4.069
FILLING AREA (SQ.M) = 7.441

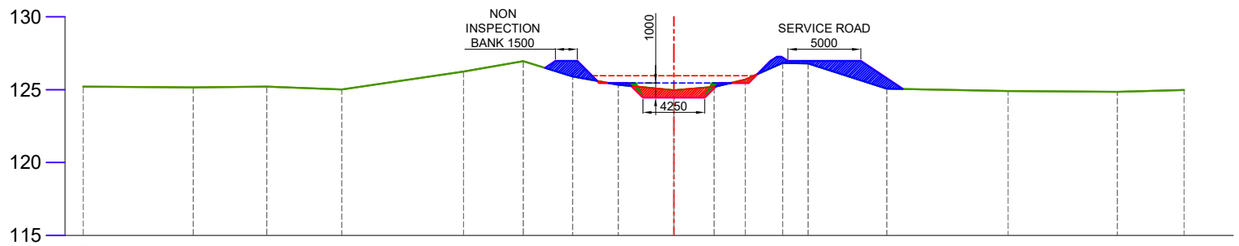
CH. : 8+000 KM.
DESIGNED BED LEVEL = 124.481 M



EXIST. LEVEL (M)	125.125	125.091	125.126	124.945	126.410	126.897	125.905	125.265	124.8400	125.163	125.675	126.736	126.719	125.020	124.830	124.705	124.787
OFFSET (M)	38.707	32.661	27.577	22.753	13.884	10.164	6.945	3.655	0.000	2.806	4.827	7.466	9.112	14.047	22.205	29.324	32.356

CUTTING AREA (SQ.M) = 3.002
FILLING AREA (SQ.M) = 9.581

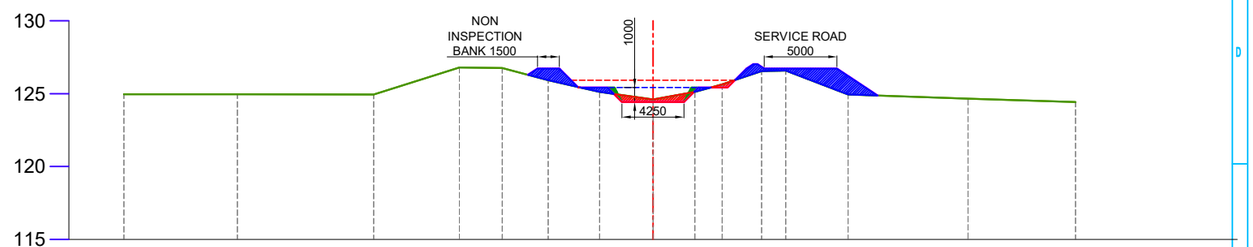
CH. : 8+200 M.
DESIGNED BED LEVEL = 124.444M



EXIST. LEVEL (M)	125.1990	125.151	125.211	125.010	126.231	126.960	125.895	125.337	124.955	125.181	125.694	126.827	126.788	125.060	124.909	124.847	124.971
OFFSET (M)	40.529	32.980	27.927	22.783	14.430	10.321	6.948	3.803	0.000	2.769	4.897	7.472	9.215	14.609	22.939	30.430	35.015

CUTTING AREA (SQ.M) = 3.341
FILLING AREA (SQ.M) = 8.608

CH. : 8+100 KM.
DESIGNED BED LEVEL = 124.462 M



EXIST. LEVEL (M)	124.9660	124.957	124.946	126.785	126.765	125.925	125.116	124.596	125.126	125.636	126.545	126.575	124.936	124.662	124.417
OFFSET (M)	36.306	28.511	19.165	13.278	10.351	7.199	3.658	0.000	2.879	4.743	7.452	9.112	13.377	21.620	28.989

CUTTING AREA (SQ.M) = 2.062
FILLING AREA (SQ.M) = 8.951

CH. : 8+300 KM.
DESIGNED BED LEVEL = 124.425 M

LEGEND

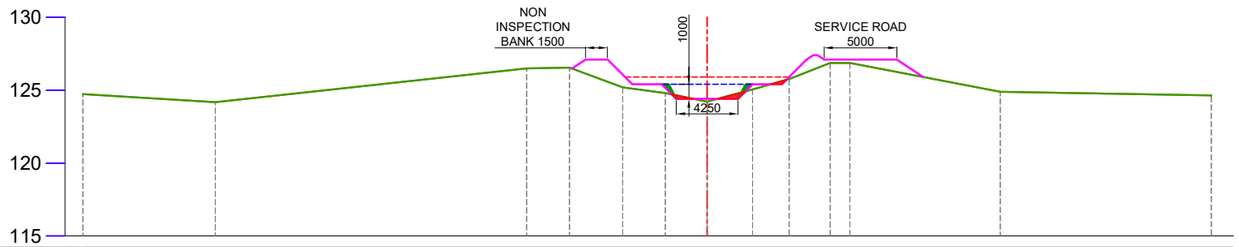
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 21 of 48

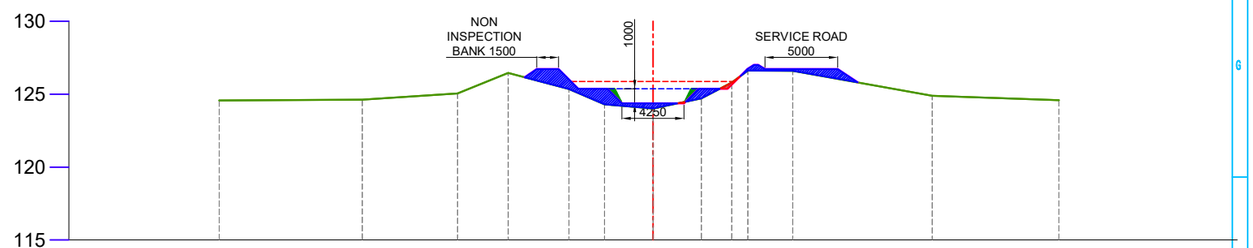
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	124.7260	124.187	126.495	126.545	125.186	124.807	124.207	125.046	125.766	126.865	126.875	124.886	124.636
OFFSET (M)	42.828	33.739	12.378	9.444	5.796	2.872	0.000	3.118	5.625	8.434	9.793	20.117	34.591

CUTTING AREA (SQ.M) = 0.645
FILLING AREA (SQ.M) = 0.000

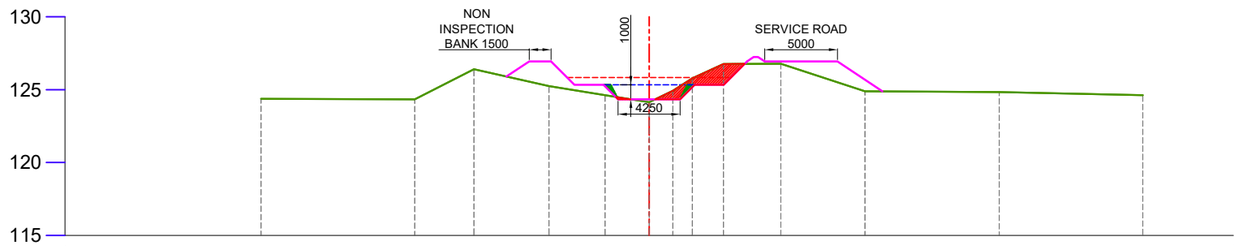
CH. : 8+400 KM.
DESIGNED BED LEVEL = 124.407 M



EXIST. LEVEL (M)	124.573	124.617	125.048	126.461	125.354	124.298	124.025	124.711	126.621	126.607	124.893	124.585	
OFFSET (M)	29.760	19.939	13.409	9.940	5.768	3.325	0.000	3.323	6.501	9.595	19.157	27.467	

CUTTING AREA (SQ.M) = 0.212
FILLING AREA (SQ.M) = 8.735

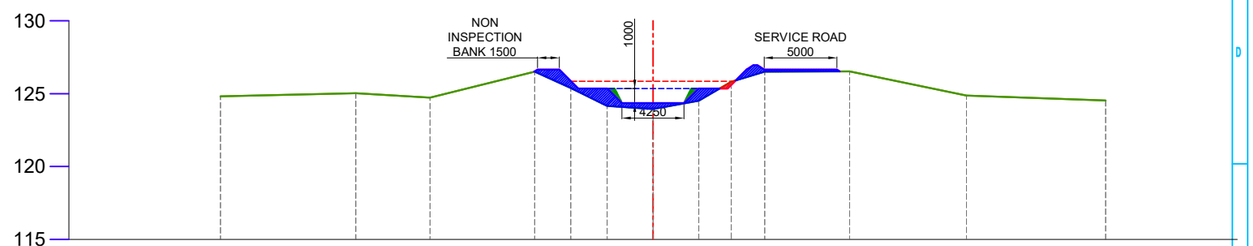
CH. : 8+600 KM.
DESIGNED BED LEVEL = 124.369 M



EXIST. LEVEL (M)	124.364	124.337	126.397	125.250	124.612	124.137	125.780	126.764	126.775	124.889	124.835	124.616	
OFFSET (M)	26.631	16.084	12.029	6.874	3.028	0.000	2.968	5.098	9.030	14.801	24.013	33.875	

CUTTING AREA (SQ.M) = 4.478
FILLING AREA (SQ.M) = 0.000

CH. : 8+500 KM.
DESIGNED BED LEVEL = 124.388 M



EXIST. LEVEL (M)	124.820	125.021	124.731	126.511	125.385	124.151	123.942	124.520	125.810	126.515	126.521	124.875	124.524
OFFSET (M)	29.669	20.401	15.295	8.114	5.646	3.147	0.000	3.142	5.372	7.658	13.492	21.509	31.057

CUTTING AREA (SQ.M) = 0.184
FILLING AREA (SQ.M) = 7.481

CH. : 8+700 KM.
DESIGNED BED LEVEL = 124.351 M

LEGEND

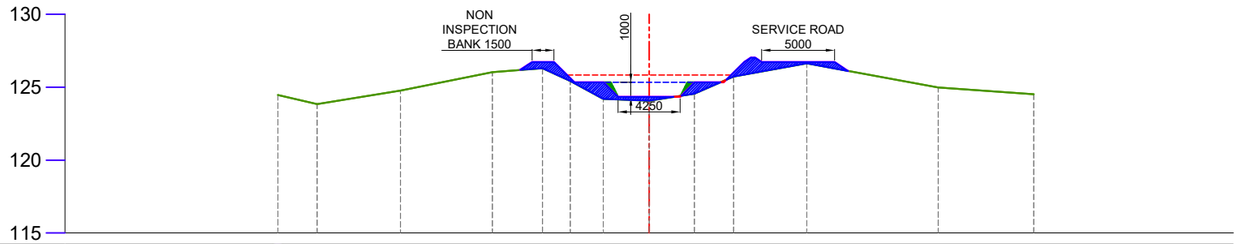
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 22 of 48

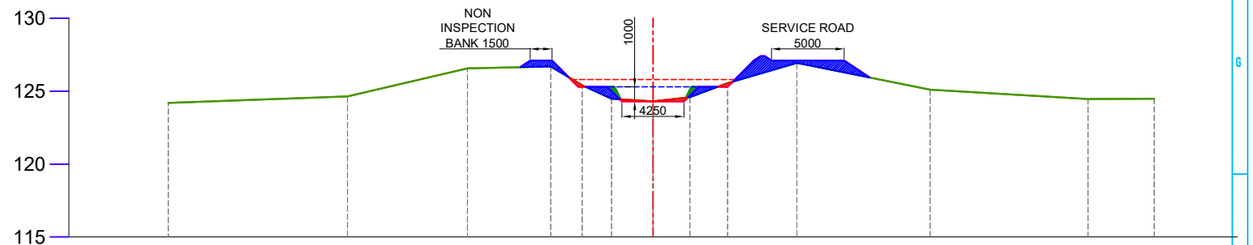
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	124.4660	123.837	124.763	126.040	126.300	125.428	124.200	124.075	124.550	125.723	126.634	124.973	124.521
OFFSET (M)	25.471	22.781	17.060	10.759	7.315	5.412	3.154	0.000	3.106	5.794	10.818	19.830	26.395

CUTTING AREA (SQ.M) = 0.037
FILLING AREA (SQ.M) = 8.709

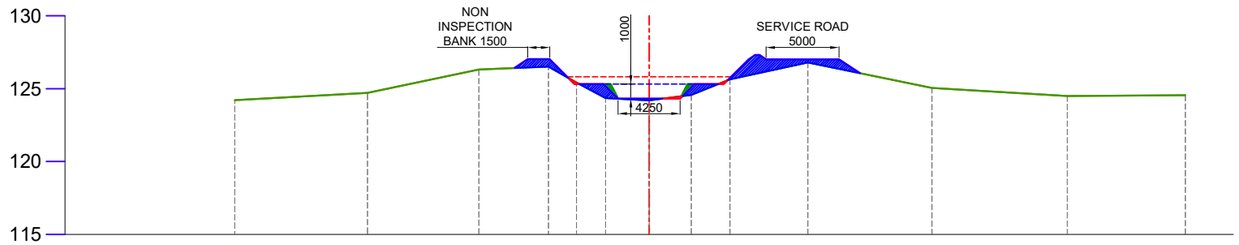
CH. : 8+800 KM.
DESIGNED BED LEVEL = 124.332 M



EXIST. LEVEL (M)	124.1970	124.638	126.572	126.691	125.401	124.488	124.308	124.586	125.557	126.934	125.108	124.456	124.489
OFFSET (M)	33.248	20.961	12.735	7.016	4.858	2.850	0.000	2.542	5.127	9.872	19.007	29.842	34.389

CUTTING AREA (SQ.M) = 0.778
FILLING AREA (SQ.M) = 7.346

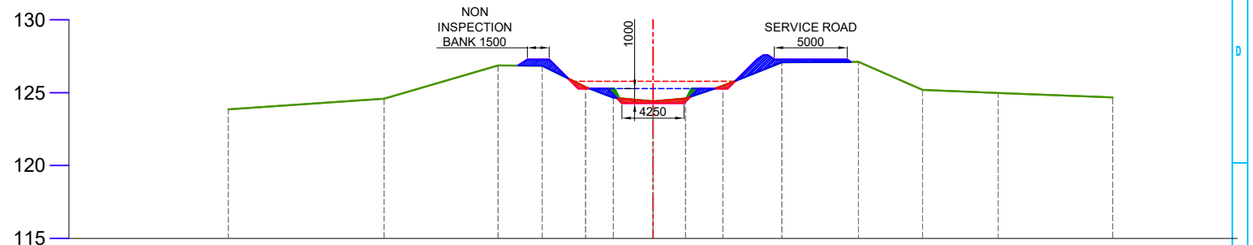
CH. : 9+000 KM.
DESIGNED BED LEVEL = 124.295M



EXIST. LEVEL (M)	124.2070	124.699	126.313	126.503	125.414	124.351	124.197	124.569	125.636	126.788	125.042	124.487	124.546
OFFSET (M)	28.434	19.317	11.685	6.904	4.988	2.993	0.000	2.882	5.537	10.883	19.412	28.679	36.794

CUTTING AREA (SQ.M) = 0.225
FILLING AREA (SQ.M) = 8.769

CH. : 8+900 KM.
DESIGNED BED LEVEL = 124.314M



EXIST. LEVEL (M)	123.8570	124.576	126.865	126.845	125.386	124.646	124.413	124.606	125.466	127.074	127.105	125.186	124.979	124.666
OFFSET (M)	29.141	18.448	10.628	7.602	4.634	2.723	0.000	2.231	4.806	8.847	14.090	18.504	23.686	31.540

CUTTING AREA (SQ.M) = 1.553
FILLING AREA (SQ.M) = 4.738

CH. : 9+100 KM.
DESIGNED BED LEVEL = 124.277 M

LEGEND

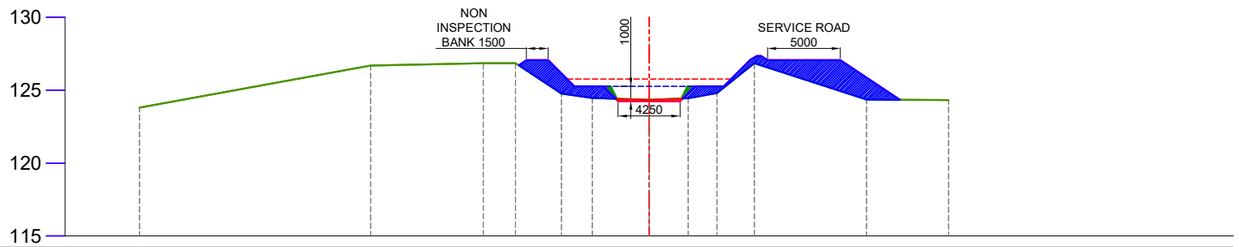
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 23 of 48

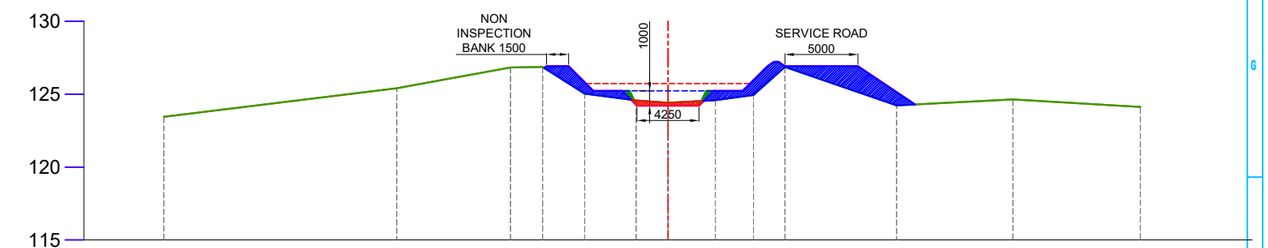
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	123.7976	126.684	126.844	126.856	124.775	124.467	124.337	124.449	124.807	126.846	124.353	124.316
OFFSET (M)	34.958	19.114	11.384	9.165	6.019	3.896	0.000	2.670	4.651	7.213	14.919	20.546

CUTTING AREA (SQ.M) = 0.532
FILLING AREA (SQ.M) = 20.073

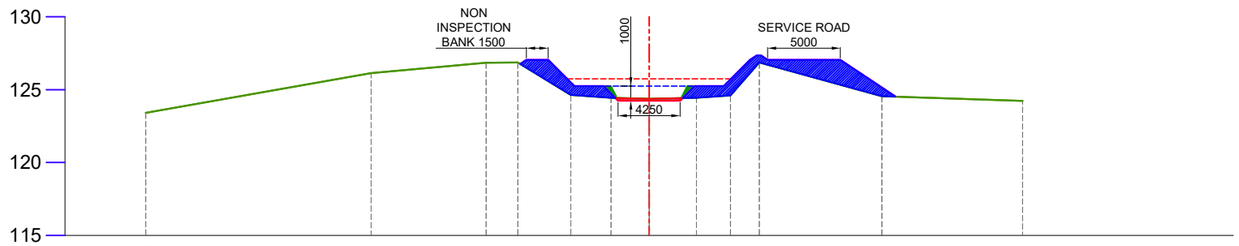
CH. : 9+200 KM.
DESIGNED BED LEVEL = 124.258 M



EXIST. LEVEL (M)	123.4470	125.408	126.838	126.861	125.039	124.573	124.415	124.581	124.940	126.872	124.228	124.639	124.117
OFFSET (M)	34.595	18.612	10.811	8.596	5.716	2.180	0.000	3.251	5.874	8.025	15.674	23.670	32.412

CUTTING AREA (SQ.M) = 1.220
FILLING AREA (SQ.M) = 15.906

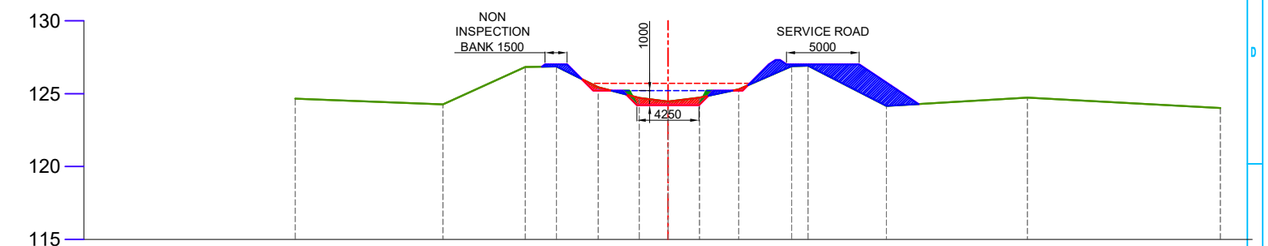
CH. : 9+400 KM.
DESIGNED BED LEVEL = 124.221 M



EXIST. LEVEL (M)	123.4070	126.128	126.842	126.858	124.638	124.438	124.370	124.442	124.595	126.858	124.555	124.231
OFFSET (M)	34.541	19.075	11.176	9.006	5.384	2.617	0.000	3.243	5.584	7.563	15.960	25.631

CUTTING AREA (SQ.M) = 0.695
FILLING AREA (SQ.M) = 18.227

CH. : 9+300 KM.
DESIGNED BED LEVEL = 124.240 M



EXIST. LEVEL (M)	124.646	124.267	126.835	126.865	125.436	124.709	124.460	124.722	125.289	126.887	124.157	124.723	124.007
OFFSET (M)	25.569	15.438	9.790	7.655	4.779	1.979	0.000	2.168	4.848	8.491	14.996	24.670	37.896

CUTTING AREA (SQ.M) = 2.489
FILLING AREA (SQ.M) = 11.079

CH. : 9+500 KM.
DESIGNED BED LEVEL = 124.203 M

LEGEND

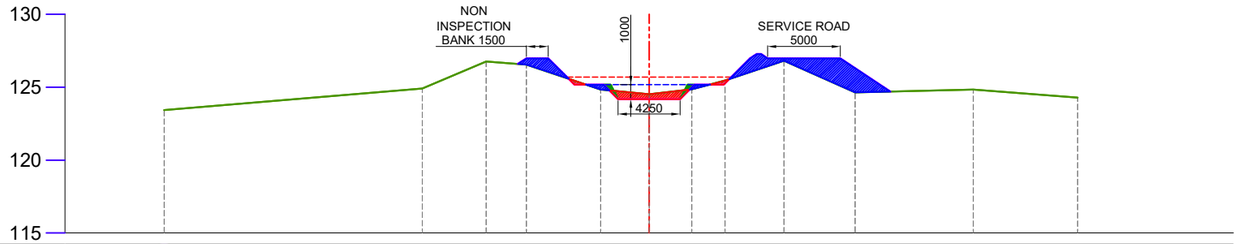
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 24 of 94

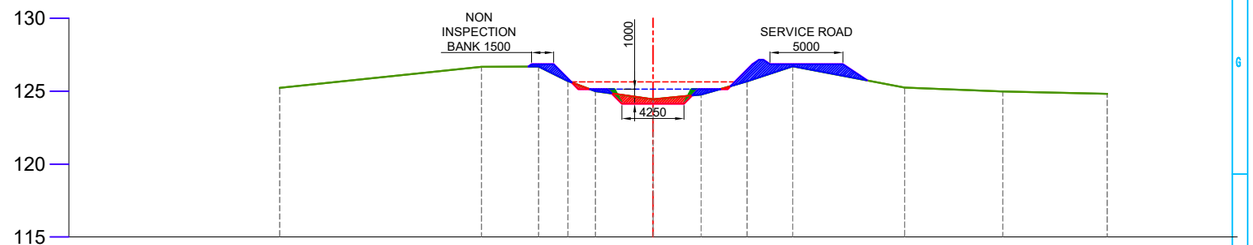
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	123.4270	124.912	126.764	126.555	124.841	124.514	124.848	125.456	126.823	124.643	124.839	124.281
OFFSET (M)	33.279	15.570	11.185	8.417	3.333	0.000	2.934	5.204	9.258	14.138	22.244	29.398

CUTTING AREA (SQ.M) = 2.542
FILLING AREA (SQ.M) = 12.289

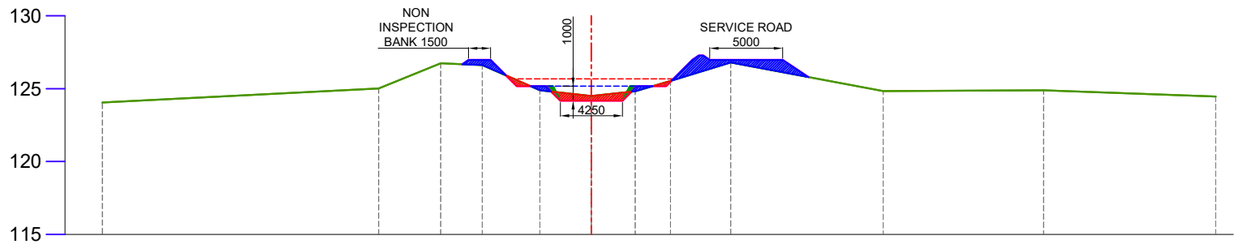
CH. : 9+600 KM.
DESIGNED BED LEVEL = 124.184 M



EXIST. LEVEL (M)	125.229	126.679	126.699	125.691	125.004	124.4500	124.767	125.668	126.707	125.256	124.984	124.824
OFFSET (M)	25.606	11.762	7.853	5.838	3.941	0.000	3.297	6.455	9.584	17.262	24.006	31.158

CUTTING AREA (SQ.M) = 2.401
FILLING AREA (SQ.M) = 6.506

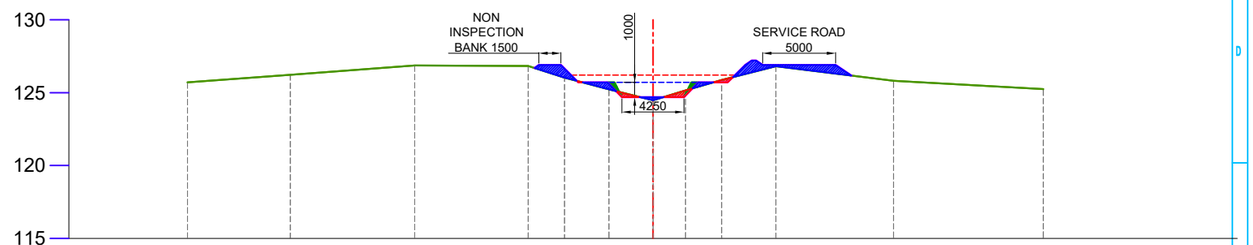
CH. : 9+800 M.
DESIGNED BED LEVEL = 124.147 M



EXIST. LEVEL (M)	124.047	125.009	126.738	126.615	124.892	124.4940	124.822	125.523	126.787	124.832	124.885	124.456
OFFSET (M)	33.549	14.599	10.335	7.484	3.531	0.000	3.010	5.433	9.551	20.011	31.028	42.844

CUTTING AREA (SQ.M) = 2.786
FILLING AREA (SQ.M) = 6.482

CH. : 9+700 M.
DESIGNED BED LEVEL = 124.166 M



EXIST. LEVEL (M)	125.6980	126.223	126.855	126.832	126.026	125.217	124.472	125.148	125.859	126.813	125.806	125.247
OFFSET (M)	31.928	24.886	16.343	8.563	6.065	3.017	0.000	2.224	4.709	8.430	16.511	26.782

CUTTING AREA (SQ.M) = 0.857
FILLING AREA (SQ.M) = 5.161

CH. : 9+900 KM.
DESIGNED BED LEVEL = 124.697 M

LEGEND

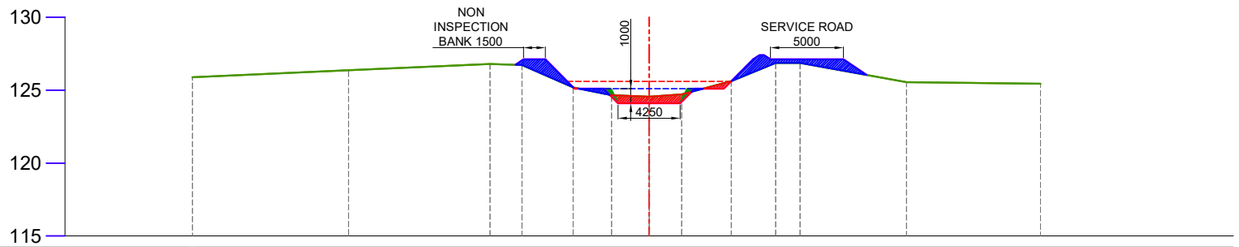
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 25 of 48

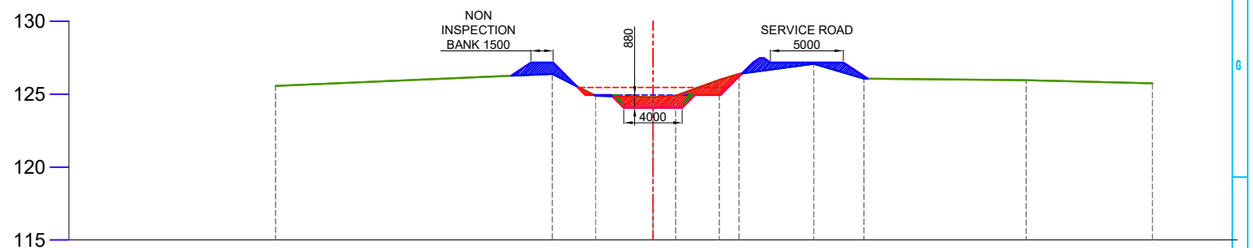
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	125.8810	126.366	126.805	126.725	125.186	124.656	124.556	124.706	125.626	126.875	126.875	125.547	125.440
OFFSET (M)	31.335	20.624	10.924	8.727	5.212	2.578	0.000	2.240	5.635	8.683	10.357	17.665	26.858

CUTTING AREA (SQ.M) = 2.872
FILLING AREA (SQ.M) = 6.977

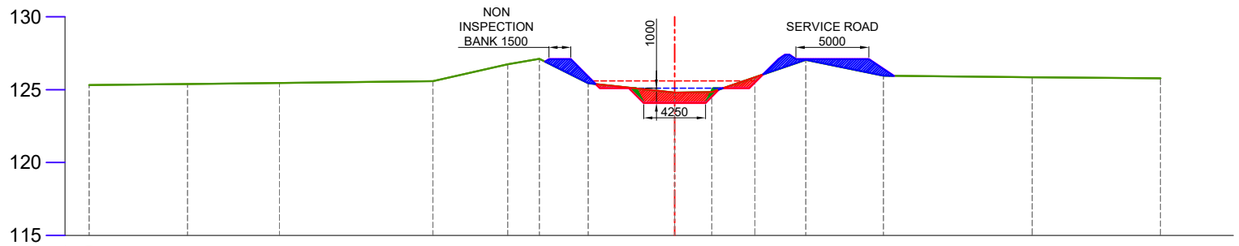
CH. : 10+000 KM.
DESIGNED BED LEVEL = 124.110 M



EXIST. LEVEL (M)	125.565	126.379	124.884	124.792	124.897	125.975	126.391	127.080	126.061	125.955	125.751		
OFFSET (M)	25.896	6.898	3.934	0.000	1.554	4.540	5.902	11.032	14.480	25.606	34.260		

CUTTING AREA (SQ.M) = 6.267
FILLING AREA (SQ.M) = 6.042

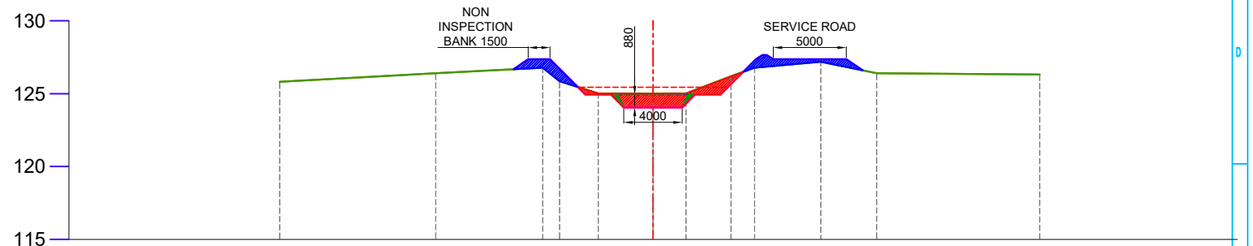
CH. : 10+200 KM.
DESIGNED BED LEVEL = 124.073 M



EXIST. LEVEL (M)	125.3160	125.390	125.460	125.576	126.745	127.115	125.445	124.798	124.825	125.844	127.049	125.950	125.846	125.771
OFFSET (M)	40.177	33.416	27.120	16.586	11.459	9.278	5.924	0.000	2.544	5.513	9.004	14.330	24.542	33.335

CUTTING AREA (SQ.M) = 5.259
FILLING AREA (SQ.M) = 6.340

CH. : 10+100 KM.
DESIGNED BED LEVEL = 124.092 M



EXIST. LEVEL (M)	125.806	126.406	126.772	125.016	124.995	125.008	126.775	127.180	126.403	126.306			
OFFSET (M)	25.610	14.913	7.562	3.749	0.000	2.262	6.977	11.509	15.351	26.535			

CUTTING AREA (SQ.M) = 7.000
FILLING AREA (SQ.M) = 5.503

CH. : 10+300 KM.
DESIGNED BED LEVEL = 124.055 M

LEGEND

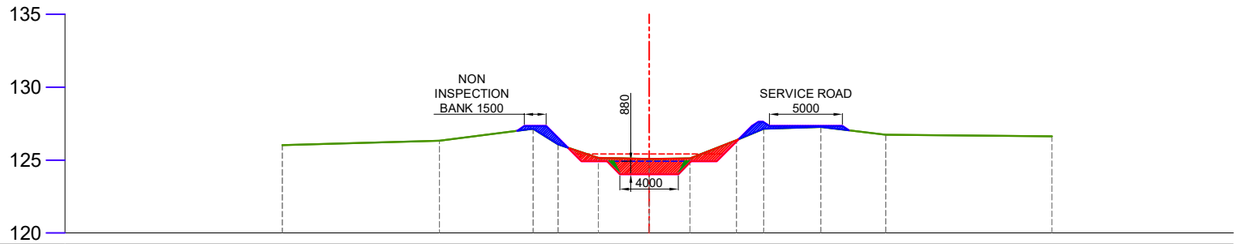
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 26 of 48

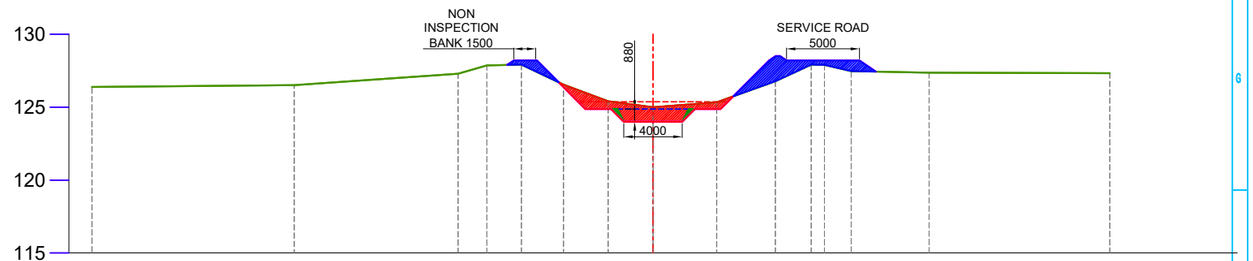
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	126.030	126.335	127.145	126.075	125.144	125.076	125.114	126.373	127.147	127.276	126.734	126.636
OFFSET (M)	25.151	14.832	7.962	6.252	3.484	0.000	2.807	5.991	7.853	11.789	16.238	27.631

CUTTING AREA (SQ.M) = 7.979
FILLING AREA (SQ.M) = 2.770

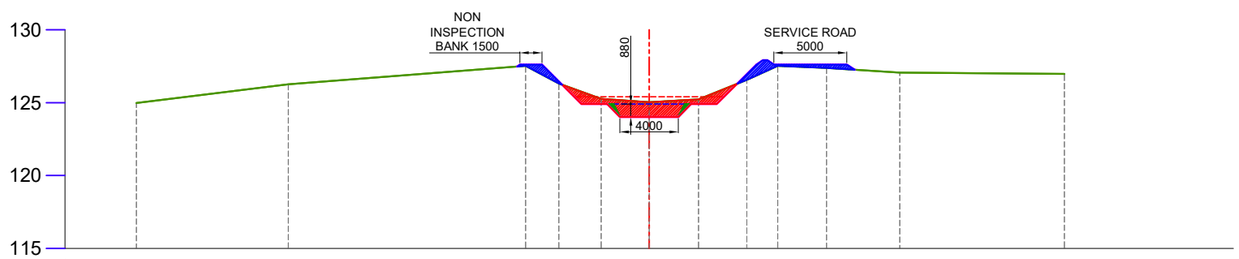
CH. : 10+400 KM.
DESIGNED BED LEVEL = 124.036 M



EXIST. LEVEL (M)	126.395	126.515	127.295	127.864	127.924	126.555	125.406	124.991	125.336	126.775	127.914	127.904	127.474	127.369	127.325
OFFSET (M)	38.487	24.611	13.377	11.397	9.026	6.149	3.073	0.000	4.368	8.388	10.856	13.602	18.937	31.344

CUTTING AREA (SQ.M) = 9.171
FILLING AREA (SQ.M) = 8.299

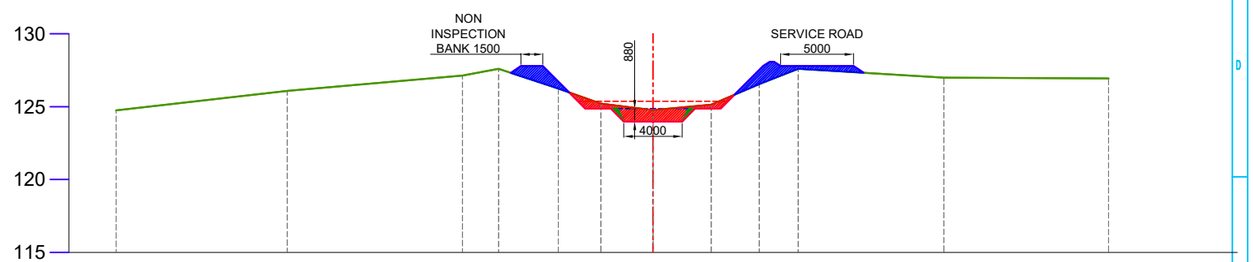
CH. : 10+600 KM.
DESIGNED BED LEVEL = 123.999 M



EXIST. LEVEL (M)	124.982	126.266	127.523	126.306	125.269	125.036	125.220	126.567	127.516	127.372	127.061	126.976
OFFSET (M)	35.174	24.761	8.473	6.187	3.295	0.000	3.397	6.700	8.819	12.181	17.200	28.483

CUTTING AREA (SQ.M) = 8.600
FILLING AREA (SQ.M) = 3.422

CH. : 10+500 KM.
DESIGNED BED LEVEL = 124.018 M



EXIST. LEVEL (M)	124.7450	126.075	127.137	127.595	126.236	125.209	124.765	125.128	126.539	127.594	126.980	126.942
OFFSET (M)	36.832	25.098	13.075	10.597	6.499	3.571	0.000	3.999	7.298	9.969	19.961	31.246

CUTTING AREA (SQ.M) = 6.575
FILLING AREA (SQ.M) = 6.963

CH. : 10+700 KM.
DESIGNED BED LEVEL = 123.981 M

LEGEND

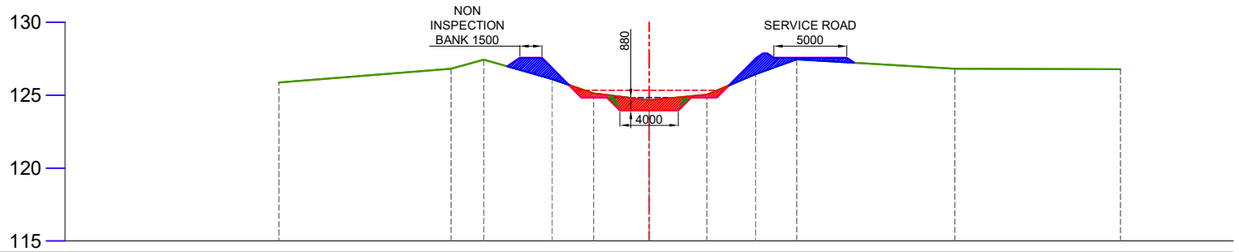
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 27 of 48

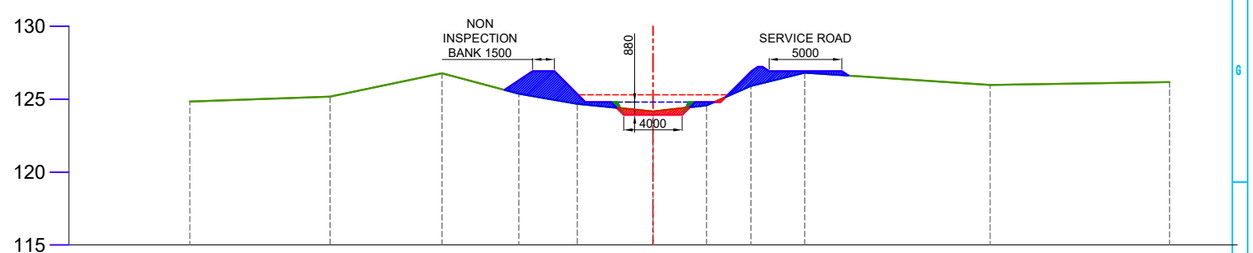
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	125.879	126.814	127.444	126.095	125.123	124.657	125.036	126.438	127.456	126.811	126.780
OFFSET (M)	25.399	13.592	11.347	6.657	3.812	0.000	3.965	7.305	10.121	20.976	32.343

CUTTING AREA (SQ.M) = 5.508
FILLING AREA (SQ.M) = 6.829

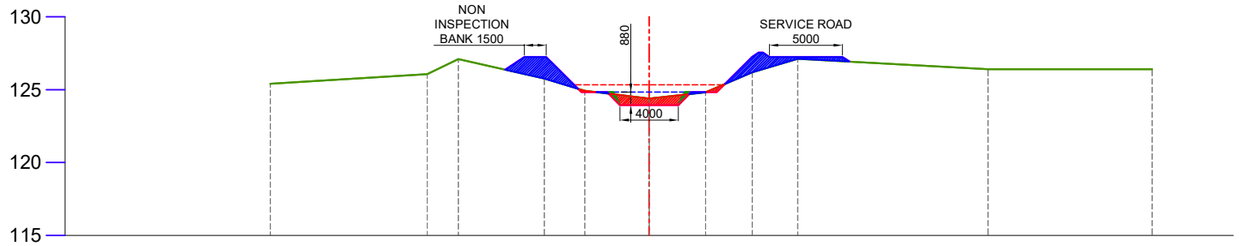
CH. : 10+800 KM.
DESIGNED BED LEVEL = 123.962 M



EXIST. LEVEL (M)	124.835	125.175	126.788	125.375	124.684	124.162	124.570	125.910	126.815	125.970	126.175
OFFSET (M)	31.782	22.152	14.478	9.210	5.204	0.000	3.668	6.729	10.418	23.124	35.440

CUTTING AREA (SQ.M) = 1.671
FILLING AREA (SQ.M) = 11.373

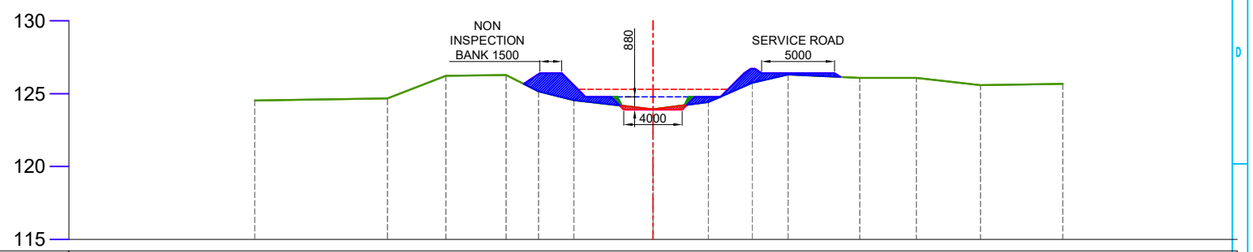
CH. : 11+000 KM.
DESIGNED BED LEVEL = 123.925 M



EXIST. LEVEL (M)	125.394	126.056	127.098	125.760	124.918	124.396	124.815	126.191	127.119	126.407	126.403
OFFSET (M)	25.983	15.227	13.088	7.199	4.420	0.000	3.876	7.083	10.196	23.259	34.520

CUTTING AREA (SQ.M) = 3.070
FILLING AREA (SQ.M) = 8.348

CH. : 10+900 KM.
DESIGNED BED LEVEL = 123.944 M



EXIST. LEVEL (M)	124.533	124.676	126.225	126.275	125.156	124.546	123.927	124.417	125.746	126.305	126.085	126.085	125.586	125.666
OFFSET (M)	27.395	20.672	18.219	14.204	10.079	7.853	5.425	0.000	3.794	6.802	9.277	11.282	13.912	17.924	22.337	27.998

CUTTING AREA (SQ.M) = 0.645
FILLING AREA (SQ.M) = 9.083

CH. : 11+100 KM.
DESIGNED BED LEVEL = 123.907 M

LEGEND

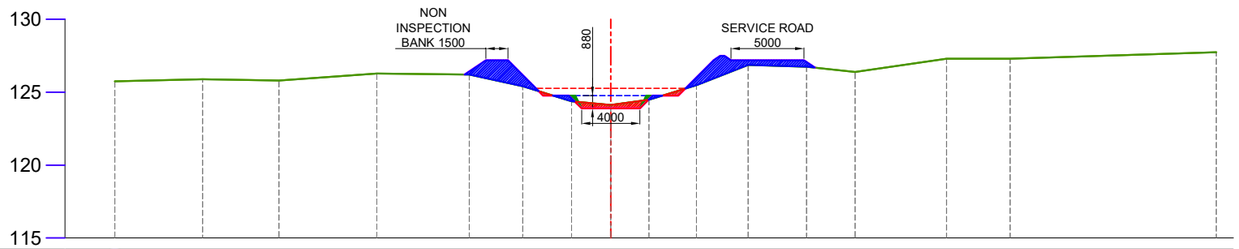
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 28 of 48

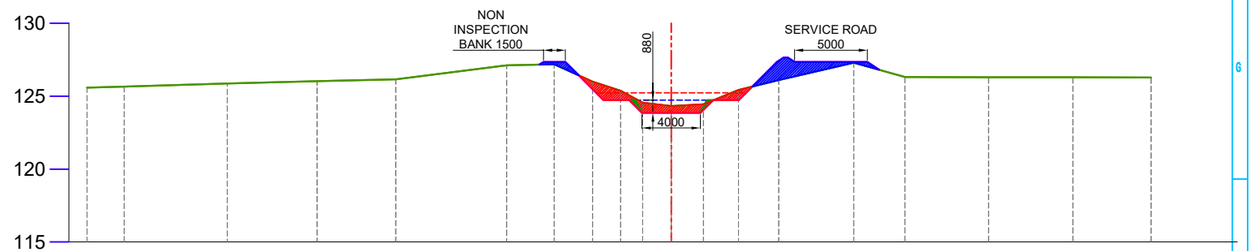
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	125.7510	125.885	125.800	126.275	126.210	125.402	124.375	124.132	124.484	125.475	126.874	126.752	126.384	127.305	127.305	127.744
OFFSET (M)	34.025	28.009	22.765	16.056	9.704	6.042	2.682	0.000	2.621	5.878	9.424	13.437	16.774	23.720	28.034	41.549

CUTTING AREA (SQ.M) = 2.034
FILLING AREA (SQ.M) = 9.827

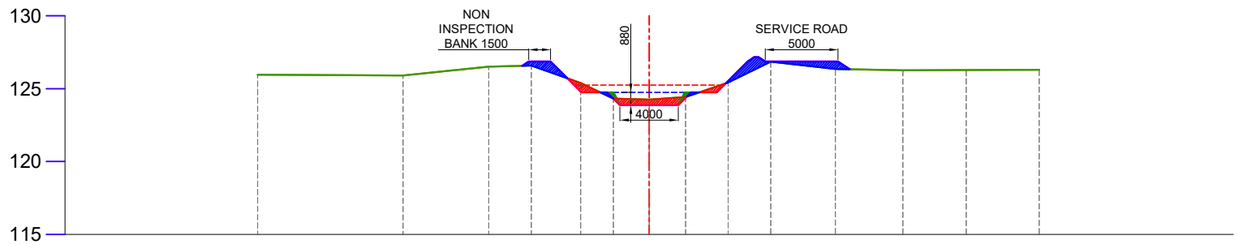
CH. : 11+200 KM.
DESIGNED BED LEVEL = 123.888 M



EXIST. LEVEL (M)	125.5800	125.655	125.873	126.030	126.160	127.110	127.190	125.990	124.560	124.330	124.440	125.420	126.110	127.290	126.320	126.306	126.293	126.280
OFFSET (M)	40.085	37.528	30.451	24.304	18.902	11.288	8.033	5.389	1.962	0.000	2.207	4.624	7.384	12.529	16.032	21.768	27.566	32.928

CUTTING AREA (SQ.M) = 5.924
FILLING AREA (SQ.M) = 5.753

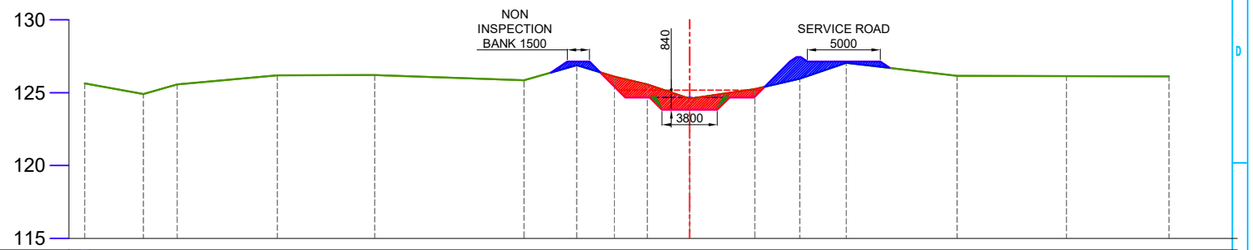
CH. : 11+400 KM.
DESIGNED BED LEVEL = 123.850 M



EXIST. LEVEL (M)	125.9470	125.903	126.514	126.579	125.384	124.324	124.246	124.424	125.415	126.850	126.341	126.251	126.271	126.295
OFFSET (M)	26.868	16.888	11.008	8.089	4.694	2.458	0.000	2.494	5.424	8.336	12.784	17.409	21.756	26.764

CUTTING AREA (SQ.M) = 3.003
FILLING AREA (SQ.M) = 4.458

CH. : 11+300 KM.
DESIGNED BED LEVEL = 123.869 M



EXIST. LEVEL (M)	125.6300	124.900	125.560	126.194	126.197	125.842	126.882	126.092	125.563	124.586	125.244	125.946	127.050	126.157	126.134	126.112
OFFSET (M)	41.508	37.470	35.157	28.289	21.604	11.360	7.738	5.164	2.894	0.000	4.478	7.553	10.741	18.352	25.859	32.883

CUTTING AREA (SQ.M) = 9.007
FILLING AREA (SQ.M) = 5.861

CH. : 11+500 KM.
DESIGNED BED LEVEL = 123.831 M

LEGEND

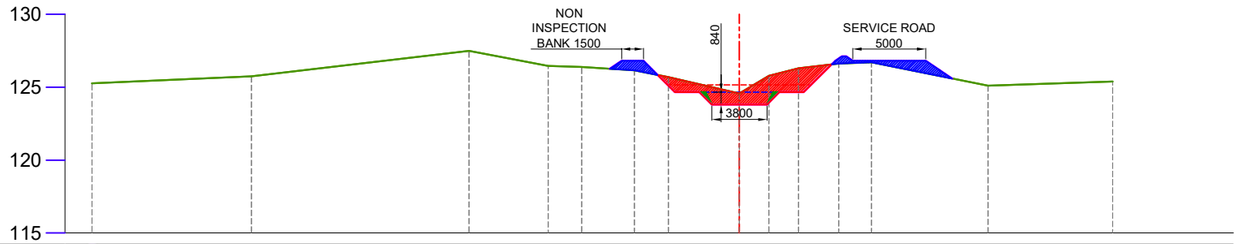
CUT AREA	EXISTING BED LINE	F.S.L.	
FILL AREA	DESIGNED BED LINE	H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 29 of 48

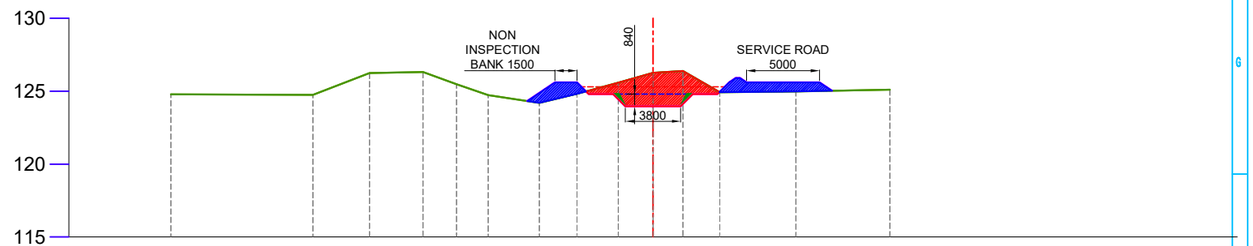
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	125.2610	125.754	127.490	126.460	126.380	126.162	125.692	124.566	125.777	126.296	126.620	126.700	125.105	125.386
OFFSET (M)	44.414	33.477	18.548	13.122	10.824	7.203	4.866	0.000	2.025	4.060	6.812	9.063	17.062	25.619

CUTTING AREA (SQ.M) = 12.421
FILLING AREA (SQ.M) = 4.827

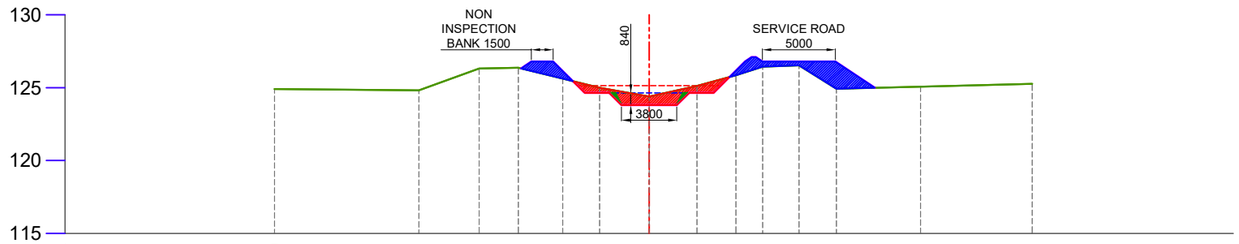
CH. : 11+600 KM.
DESIGNED BED LEVEL = 123.812 M



EXIST. LEVEL (M)	124.7700	124.742	126.245	126.321	125.472	124.727	124.205	124.812	125.581	126.255	126.381	124.921	124.982	125.109
OFFSET (M)	33.075	23.341	19.448	15.785	13.484	11.312	7.789	5.206	2.382	0.000	2.055	4.591	9.808	16.260

CUTTING AREA (SQ.M) = 12.852
FILLING AREA (SQ.M) = 7.616

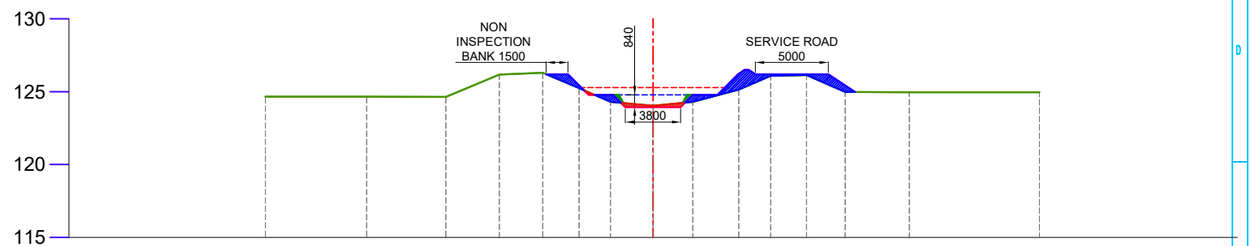
CH. : 11+800 KM.
DESIGNED BED LEVEL = 123.962 M



EXIST. LEVEL (M)	124.8970	124.823	126.314	126.357	125.617	124.991	124.394	125.121	125.848	126.436	126.533	124.919	125.065	125.268
OFFSET (M)	25.981	15.798	11.666	8.970	5.922	3.401	0.000	3.291	5.961	7.791	10.286	12.841	18.617	26.287

CUTTING AREA (SQ.M) = 6.410
FILLING AREA (SQ.M) = 9.389

CH. : 11+700 KM.
DESIGNED BED LEVEL = 123.793 M



EXIST. LEVEL (M)	124.6530	124.649	124.645	126.175	126.288	125.236	124.304	124.025	124.291	125.130	126.080	126.138	124.976	124.961	124.956
OFFSET (M)	26.639	19.645	14.205	10.547	7.564	5.070	2.912	0.000	2.740	5.877	8.083	10.540	13.187	17.587	26.148

CUTTING AREA (SQ.M) = 0.793
FILLING AREA (SQ.M) = 5.868

CH. : 11+900 KM.
DESIGNED BED LEVEL = 123.944 M

LEGEND

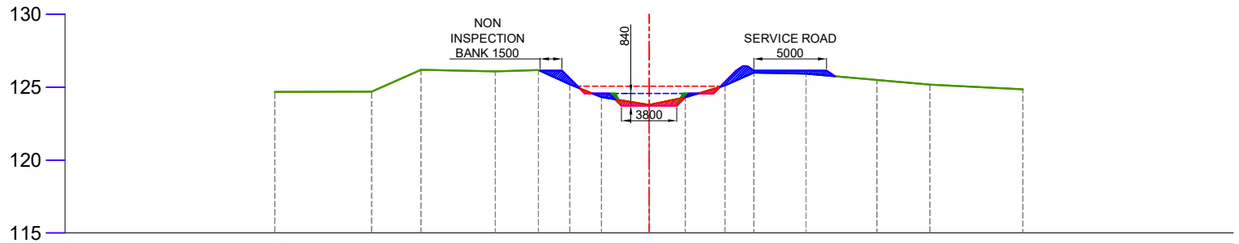
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 30 of 48

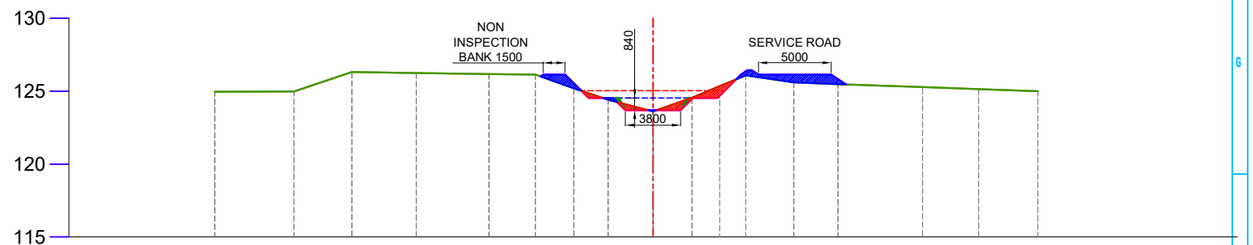
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	124.6780	124.691	126.184	126.088	126.179	125.196	124.318	123.795	124.301	125.118	125.994	125.927	125.502	125.185	124.856
OFFSET (M)	26.022	19.036	15.660	10.564	7.595	5.449	3.278	0.000	2.482	5.198	7.180	10.770	15.630	19.255	25.365

CUTTING AREA (SQ.M) = 1.402
FILLING AREA (SQ.M) = 3.573

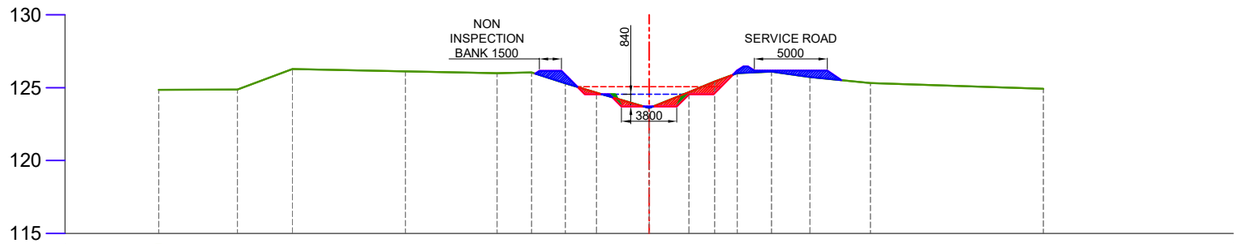
CH. : 12+000 KM.
DESIGNED BED LEVEL = 123.735 M



EXIST. LEVEL (M)	124.9600	124.983	126.321	126.248	126.166	126.136	125.191	124.414	123.616	124.558	125.347	126.085	125.596	125.488	125.281	125.144	124.999
OFFSET (M)	30.058	24.633	20.655	16.235	11.246	8.061	5.436	3.069	0.000	2.676	4.591	6.372	9.663	12.695	18.499	22.338	26.405

CUTTING AREA (SQ.M) = 2.569
FILLING AREA (SQ.M) = 4.434

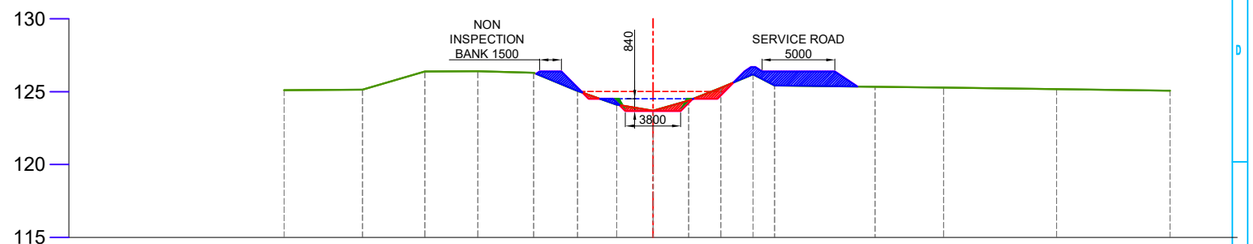
CH. : 12+200 KM.
DESIGNED BED LEVEL = 123.696 M



EXIST. LEVEL (M)	124.8540	124.874	126.269	126.115	125.990	126.038	125.297	124.652	123.600	124.696	125.416	125.999	126.100	125.726	125.320	124.927
OFFSET (M)	33.651	28.244	24.477	16.726	10.440	8.068	5.742	3.619	0.000	2.735	4.491	6.044	8.395	11.036	15.189	26.424

CUTTING AREA (SQ.M) = 2.957
FILLING AREA (SQ.M) = 3.400

CH. : 12+100 KM.
DESIGNED BED LEVEL = 123.716 M



EXIST. LEVEL (M)	125.1010	125.131	126.390	126.396	126.298	125.054	124.107	123.685	124.384	125.262	126.190	125.427	125.336	125.274	125.172	125.069
OFFSET (M)	25.310	19.932	15.650	12.014	8.192	5.178	2.483	0.000	2.454	4.649	6.872	8.346	15.231	19.949	27.684	35.484

CUTTING AREA (SQ.M) = 2.188
FILLING AREA (SQ.M) = 7.946

CH. : 12+300 KM.
DESIGNED BED LEVEL = 123.677 M

LEGEND

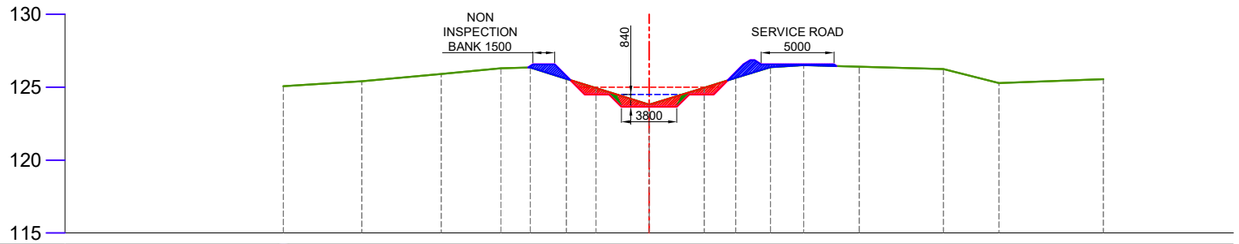
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 31 of 48

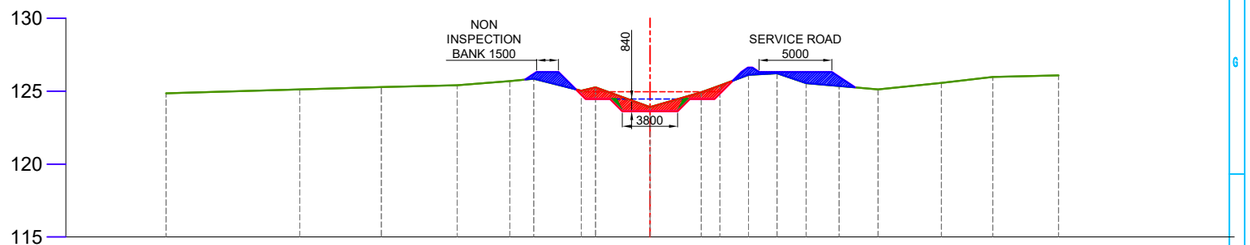
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	125.0770	125.404	125.910	126.290	126.350	125.574	124.943	123.804	124.967	125.633	126.370	126.510	126.404	126.244	125.287	125.559
OFFSET (M)	25.257	19.715	14.258	10.161	8.162	5.675	3.651	0.000	3.773	5.934	8.326	10.604	14.415	20.193	24.001	31.157

CUTTING AREA (SQ.M) = 4.484
FILLING AREA (SQ.M) = 3.124

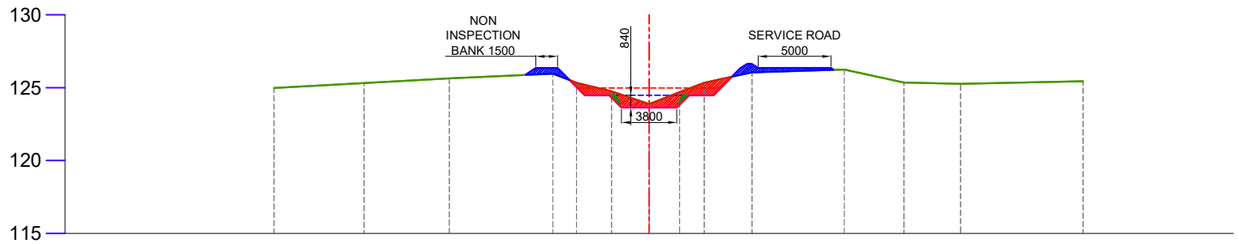
CH. : 12+400 KM.
DESIGNED BED LEVEL = 123.658 M



EXIST. LEVEL (M)	124.8600	125.123	125.278	125.410	125.860	125.260	123.910	124.930	126.120	126.220	125.550	125.358	125.130	125.560	125.980	126.080
OFFSET (M)	33.195	24.021	18.430	13.238	7.973	3.742	0.000	3.524	6.762	8.720	10.720	12.971	15.649	20.002	23.517	28.025

CUTTING AREA (SQ.M) = 5.971
FILLING AREA (SQ.M) = 5.608

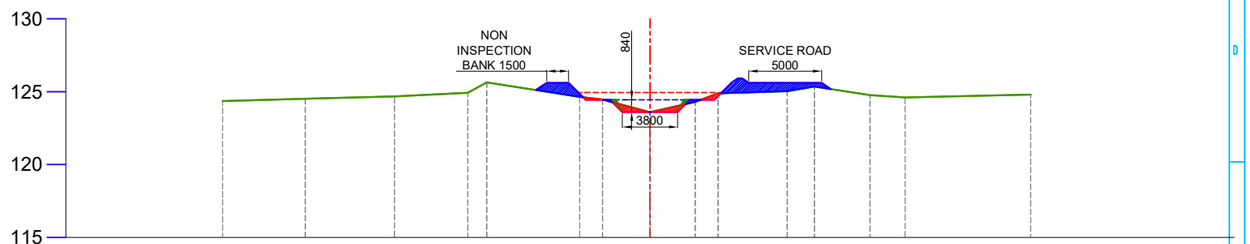
CH. : 12+600 KM.
DESIGNED BED LEVEL = 123.619 M



EXIST. LEVEL (M)	124.9732	125.315	125.628	125.964	124.751	123.869	125.334	126.050	126.242	125.351	125.260	125.430
OFFSET (M)	25.854	19.561	13.720	6.608	2.579	0.000	3.780	7.059	13.379	17.482	21.369	29.770

CUTTING AREA (SQ.M) = 6.450
FILLING AREA (SQ.M) = 2.756

CH. : 12+500 KM.
DESIGNED BED LEVEL = 123.639 M



EXIST. LEVEL (M)	124.3440	124.510	124.667	124.922	125.643	124.645	124.452	123.588	124.291	124.878	125.034	125.352	124.770	124.596	124.805
OFFSET (M)	29.322	23.662	17.522	12.494	11.203	4.830	3.255	0.000	3.105	4.682	9.419	11.280	15.100	17.498	25.710

CUTTING AREA (SQ.M) = 1.471
FILLING AREA (SQ.M) = 5.781

CH. : 12+700 KM.
DESIGNED BED LEVEL = 123.600 M

LEGEND

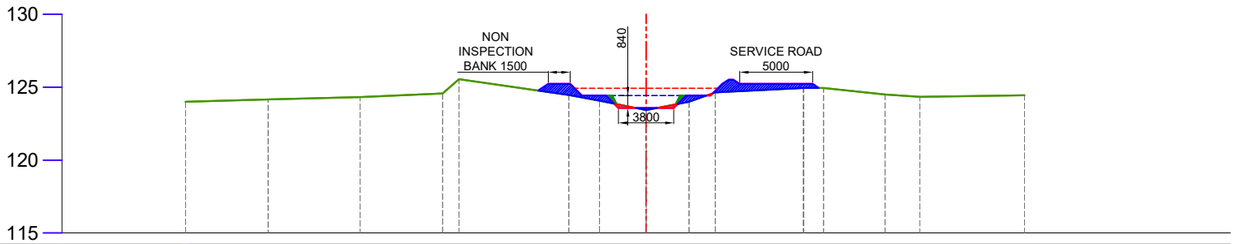
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

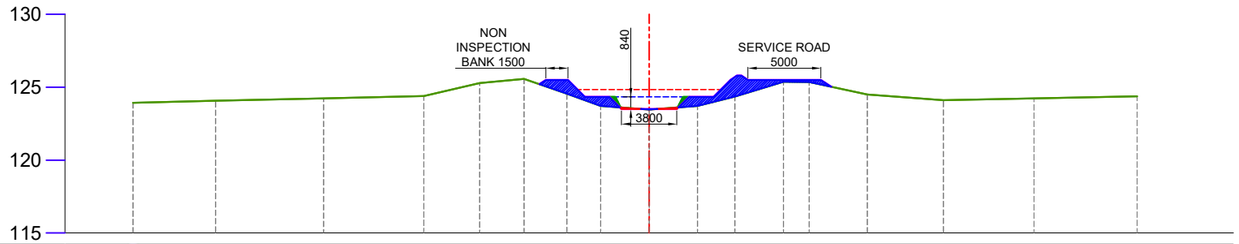
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 32 of 48

X SECTION OF KONCHI DY.



| | | |

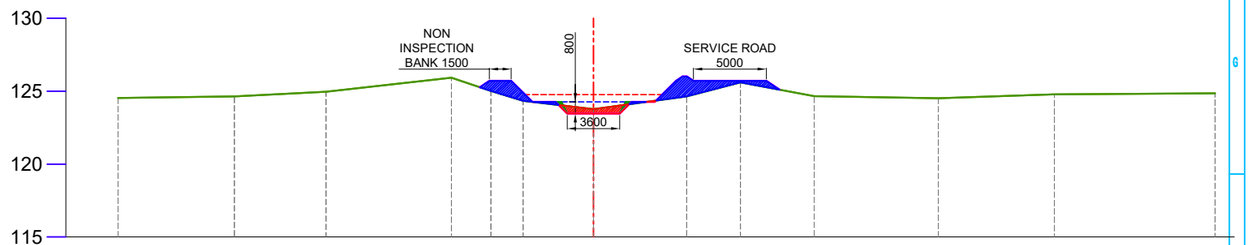
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	123.9350	124.064	124.237	124.399	125.291	125.569	124.556	123.715	123.461	123.711	124.357	125.367	125.347	124.504	124.101	124.236	124.383
OFFSET (M)	35.409	29.754	22.327	15.452	11.637	8.580	5.639	3.331	0.000	3.322	5.882	9.217	10.980	14.967	20.185	26.406	33.485

CUTTING AREA (SQ.M) = 0.145
FILLING AREA (SQ.M) = 8.368

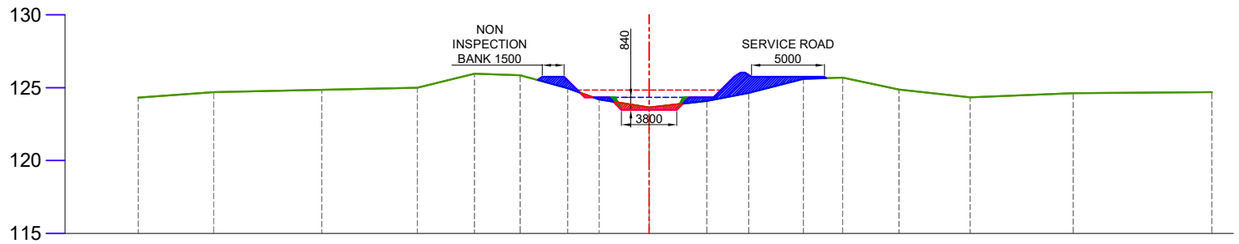
CH. : 13+200 KM.
DESIGNED BED LEVEL = 123.504 M



EXIST. LEVEL (M)	124.5360	124.646	124.955	125.932	125.013	124.336	123.774	124.650	125.603	124.662	124.510	124.789	124.860				
OFFSET (M)	32.629	24.645	18.365	9.759	7.050	4.835	0.000	6.384	10.070	15.132	23.650	31.623	42.634				

CUTTING AREA (SQ.M) = 1.879
FILLING AREA (SQ.M) = 7.405

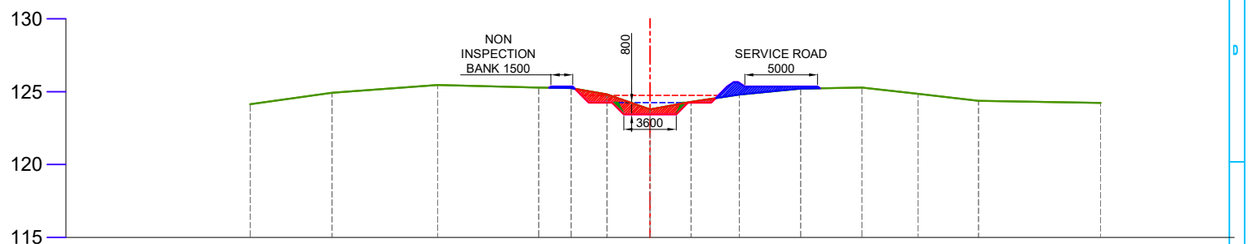
CH. : 13+400 KM.
DESIGNED BED LEVEL = 123.466 M



EXIST. LEVEL (M)	124.3227	124.696	124.854	124.985	125.963	125.856	124.952	124.185	123.638	124.089	124.628	125.603	125.696	124.862	124.326	124.621	124.697
OFFSET (M)	35.060	29.864	22.456	15.904	11.988	8.841	5.590	3.433	0.000	3.951	6.826	10.578	13.271	17.143	22.016	29.104	38.610

CUTTING AREA (SQ.M) = 1.374
FILLING AREA (SQ.M) = 6.849

CH. : 13+300 KM.
DESIGNED BED LEVEL = 123.485 M



EXIST. LEVEL (M)	124.1300	124.915	125.464	125.284	125.238	124.814	123.785	124.302	124.793	125.198	125.280	124.845	124.376	124.224			
OFFSET (M)	27.429	21.816	14.561	7.638	5.410	2.951	0.000	2.812	6.142	10.342	14.534	18.393	22.544	30.917			

CUTTING AREA (SQ.M) = 4.581
FILLING AREA (SQ.M) = 2.811

CH. : 13+500 KM.
DESIGNED BED LEVEL = 123.446 M

LEGEND

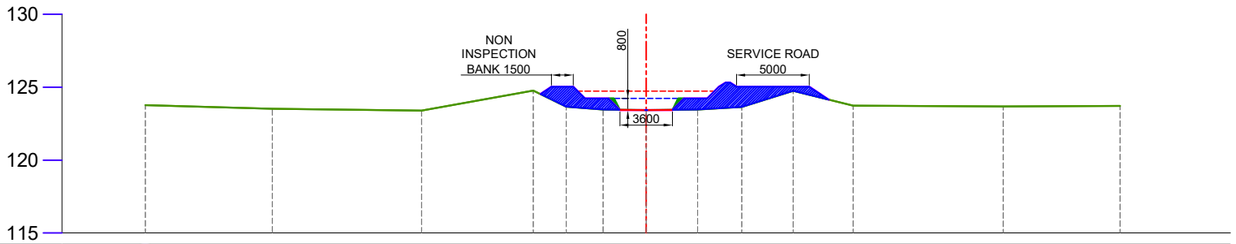
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 34 of 48

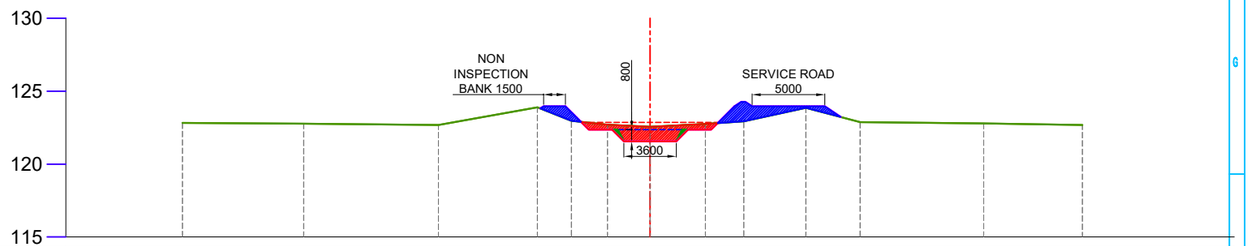
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	123.7630	123.524	123.395	124.775	123.661	123.475	123.426	123.475	123.641	124.754	123.728	123.685	123.716
OFFSET (M)	34.362	25.655	15.411	7.743	5.490	2.957	0.000	3.529	6.564	10.087	14.197	24.508	32.510

CUTTING AREA (SQ.M) = 0.046
FILLING AREA (SQ.M) = 12.966

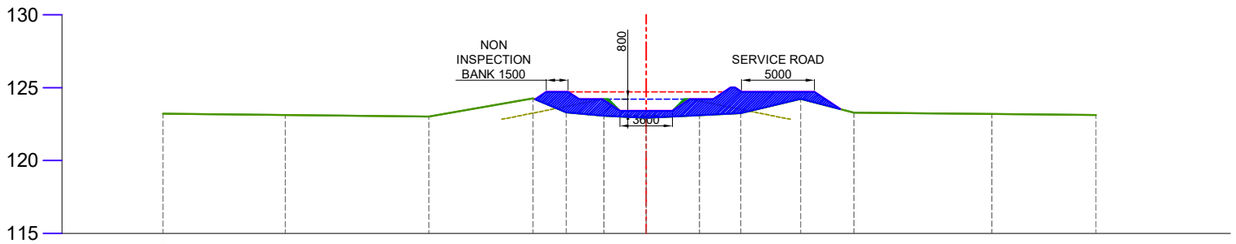
CH. : 13+600 KM.
DESIGNED BED LEVEL = 123.427 M



EXIST. LEVEL (M)	122.8250	122.769	122.686	123.893	122.971	122.696	122.556	122.760	122.929	123.863	122.886	122.784	122.686
OFFSET (M)	32.085	23.760	14.511	7.721	5.396	2.913	0.000	3.803	6.441	10.697	14.417	22.901	29.667

CUTTING AREA (SQ.M) = 6.351
FILLING AREA (SQ.M) = 5.797

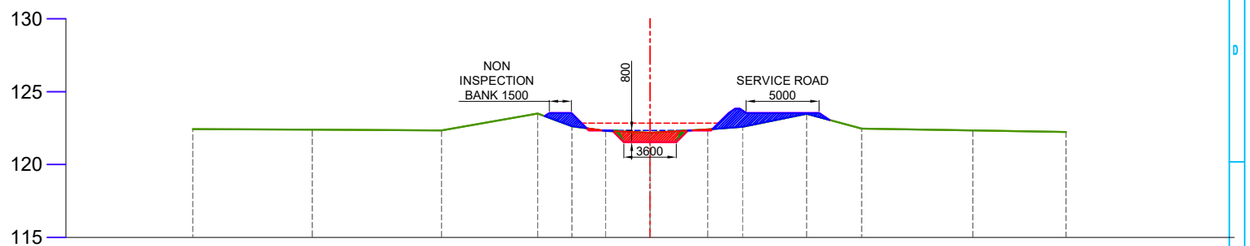
CH. : 13+800 KM.
DESIGNED BED LEVEL = 121.559 M



EXIST. LEVEL (M)	123.2030	123.121	123.020	124.265	123.300	123.068	122.921	123.103	123.254	124.231	123.285	123.192	123.117
OFFSET (M)	33.146	24.766	14.910	7.766	5.480	2.904	0.000	3.665	6.481	10.603	14.263	23.724	30.858

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 17.869

CH. : 13+700 KM.
DESIGNED BED LEVEL = 123.408 M



EXIST. LEVEL (M)	122.4360	122.396	122.341	123.504	122.629	122.310	122.174	122.404	122.587	123.477	122.466	122.345	122.233
OFFSET (M)	31.364	23.164	14.306	7.701	5.356	3.039	0.000	3.960	6.365	10.754	14.525	22.143	28.539

CUTTING AREA (SQ.M) = 3.140
FILLING AREA (SQ.M) = 5.697

CH. : 13+900 KM.
DESIGNED BED LEVEL = 121.539 M

LEGEND

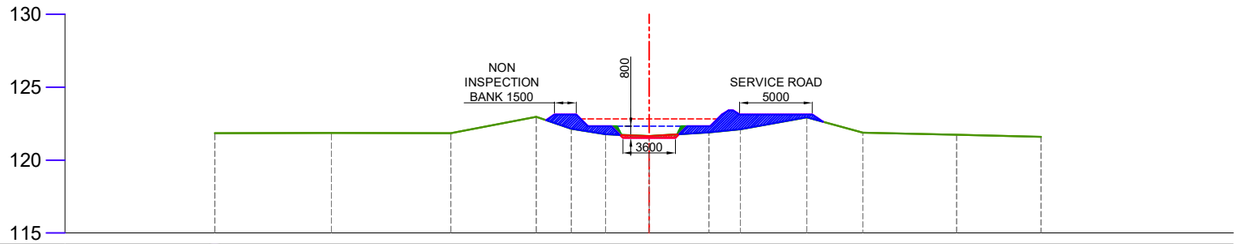
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 35 of 48

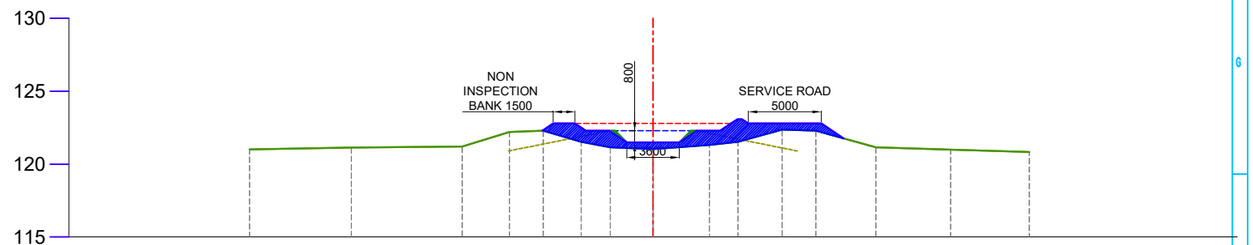
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	121.8540	121.855	121.848	122.961	122.150	121.767	121.641	121.907	122.110	122.940	121.881	121.736	121.590	
OFFSET (M)	29.806		13.612	7.744	5.344	2.990	0.000	4.105	6.264	10.821	14.675	21.090	26.884	

CUTTING AREA (SQ.M) = 0.659
FILLING AREA (SQ.M) = 8.862

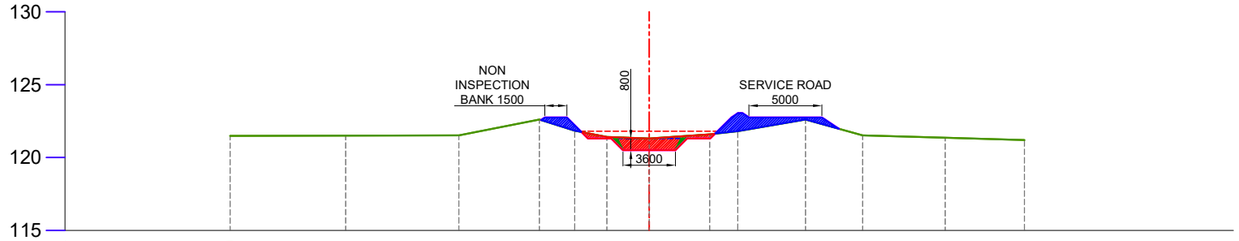
CH. : 14+000 KM.
DESIGNED BED LEVEL = 121.520 M



EXIST. LEVEL (M)	121.0150	121.133	121.205	122.204	122.290	121.532	121.147	121.033	121.316	121.532	122.364	122.286	121.146	120.993	120.834
OFFSET (M)	27.686	20.688	13.083	9.853	7.533	4.937	2.936	0.000	3.878	5.831	8.853	11.183	15.290	20.421	25.821

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 14.501

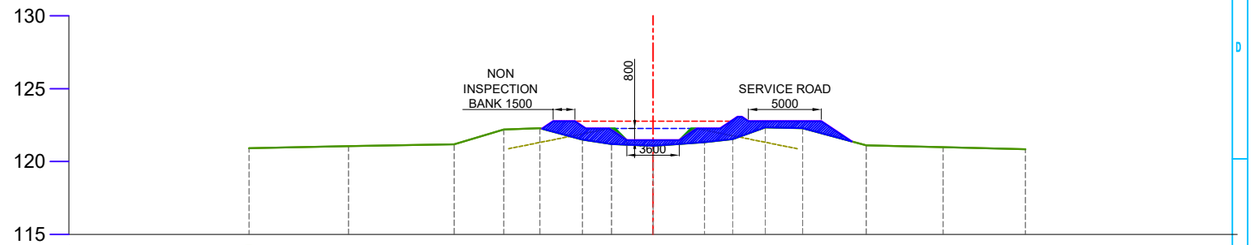
CH. : 14+200 KM.
DESIGNED BED LEVEL = 121.482 M



EXIST. LEVEL (M)	121.4850	121.508	121.528	122.612	121.843	121.419	121.302	121.593	121.811	122.604	121.516	121.357	121.196	
OFFSET (M)	28.756	20.822	13.047	7.538	5.116	2.894	0.000	4.147	6.077	10.737	14.652	20.306	25.753	

CUTTING AREA (SQ.M) = 4.765
FILLING AREA (SQ.M) = 5.492

CH. : 14+100 KM.
DESIGNED BED LEVEL = 121.501 M



EXIST. LEVEL (M)	120.9170	121.064	121.173	122.198	122.290	121.505	121.192	121.076	121.332	121.534	122.341	122.282	121.110	120.983	120.851
OFFSET (M)	27.717	20.888	13.643	10.240	7.756	4.847	2.852	0.000	3.535	5.467	7.700	10.272	14.624	19.898	25.550

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 13.908

CH. : 14+300 KM.
DESIGNED BED LEVEL = 121.463 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

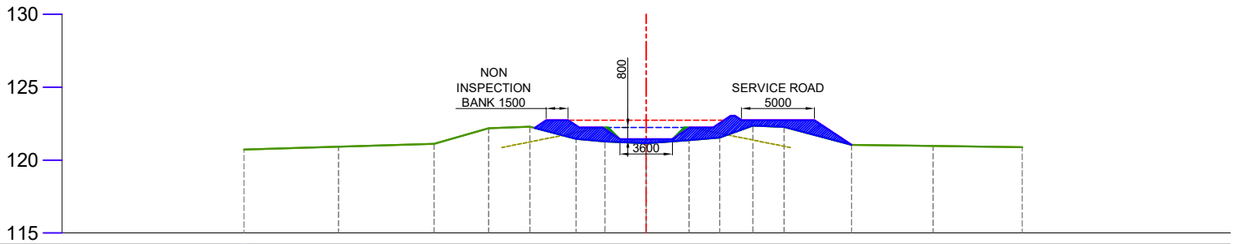
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 36 of 48

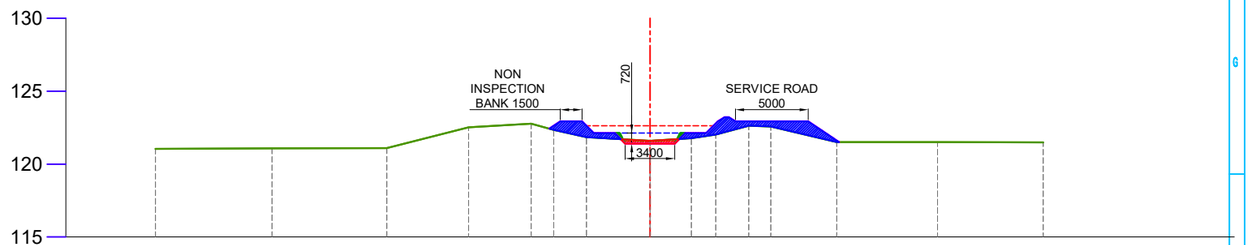
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	120.7260	120.927	121.109	122.187	122.290	121.452	121.278	121.158	121.363	121.538	122.356	122.275	121.043	120.965	120.881
OFFSET (M)	27.592	21.105	14.559	10.805	7.981	4.800	2.821	0.000	2.942	5.038	7.334	9.472	14.102	19.685	25.807

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 8.275

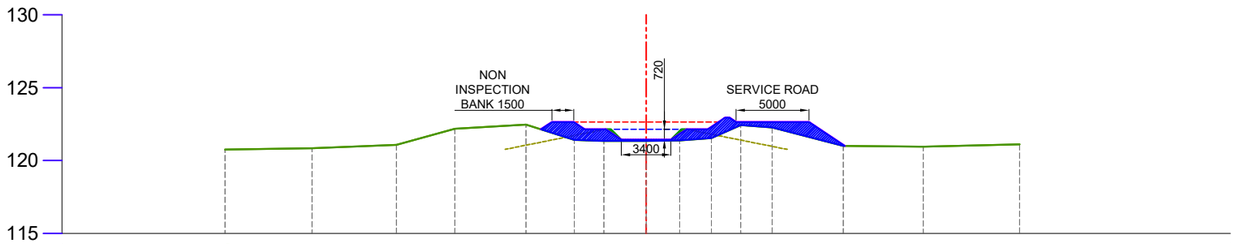
CH. : 14+400 KM.
DESIGNED BED LEVEL = 121.443 M



EXIST. LEVEL (M)	121.0400	121.072	121.103	122.516	122.778	122.348	121.840	121.590	121.768	122.022	122.633	122.575	121.512	121.500	121.488
OFFSET (M)	33.926	25.939	18.054	12.439	8.151	6.611	4.355	0.000	2.843	4.508	6.782	8.292	12.809	19.727	26.974

CUTTING AREA (SQ.M) = 0.890
FILLING AREA (SQ.M) = 8.275

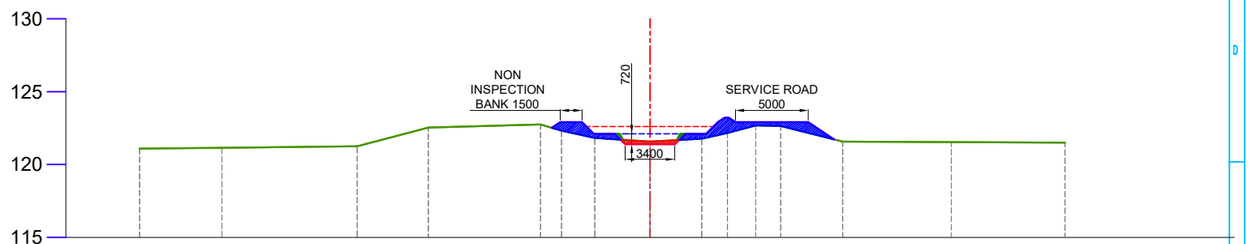
CH. : 14+600 KM.
DESIGNED BED LEVEL = 121.405 M



EXIST. LEVEL (M)	120.7593	120.844	121.070	122.180	122.469	121.420	121.333	121.348	121.382	121.540	122.435	122.270	121.000	120.953	121.108
OFFSET (M)	28.883	22.914	17.131	13.130	8.250	4.923	2.908	0.000	2.302	4.471	6.494	8.638	13.531	19.017	25.631

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 11.088

CH. : 14+500 KM.
DESIGNED BED LEVEL = 121.424 M



EXIST. LEVEL (M)	121.0870	121.154	121.245	122.534	122.751	122.320	121.815	121.569	121.775	122.677	122.635	121.575	121.542	121.502	
OFFSET (M)	35.018	29.363	20.091	15.214	7.514	6.069	3.789	0.000	3.547	7.251	8.973	13.219	20.665	28.482	

CUTTING AREA (SQ.M) = 0.888
FILLING AREA (SQ.M) = 7.097

CH. : 14+700 KM.
DESIGNED BED LEVEL = 121.386 M

LEGEND

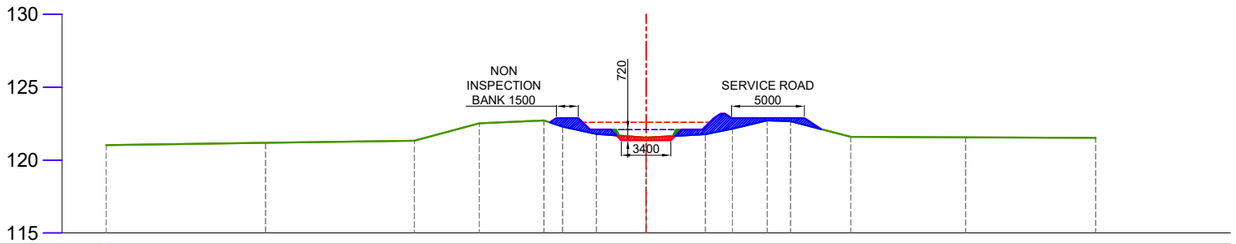
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 37 of 48

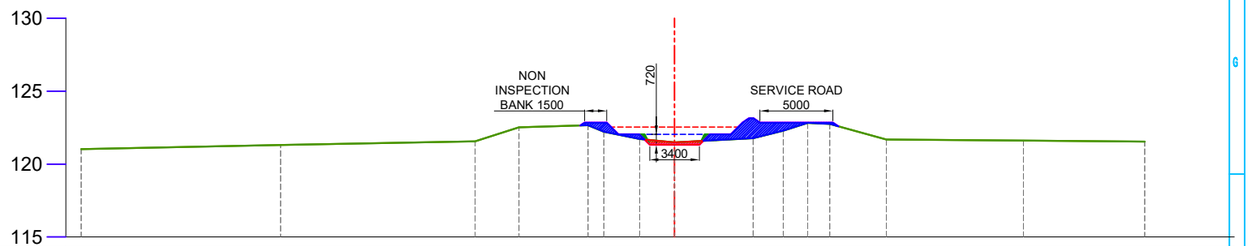
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	121.0340	121.184	121.320	122.518	122.721	121.784	121.546	121.768	122.143	122.723	122.661	121.591	121.555	121.516
OFFSET (M)	37.049	26.114	15.901	11.442	7.010	3.417	0.000	4.075	5.920	8.312	9.917	14.048	21.925	30.841

CUTTING AREA (SQ.M) = 0.878
FILLING AREA (SQ.M) = 6.501

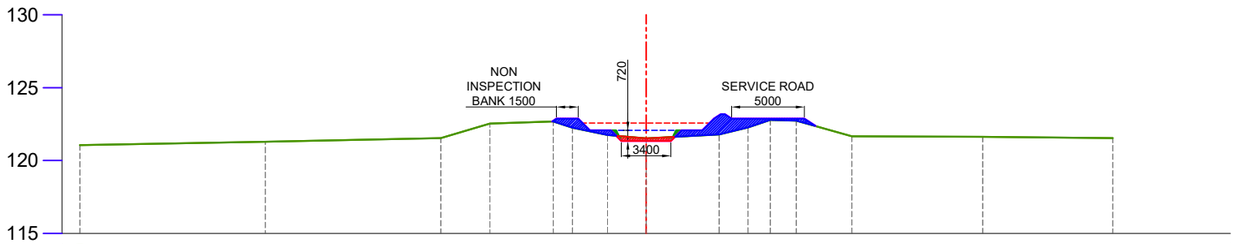
CH. : 14+800 KM.
DESIGNED BED LEVEL = 121.366 M



EXIST. LEVEL (M)	121.0280	121.307	121.566	122.520	122.656	121.720	121.497	121.768	122.825	122.758	121.681	121.617	121.547	
OFFSET (M)	40.717	27.023	13.686	10.668	5.929	2.400	0.000	5.402	9.127	10.645	14.535	23.935	32.265	

CUTTING AREA (SQ.M) = 0.874
FILLING AREA (SQ.M) = 5.830

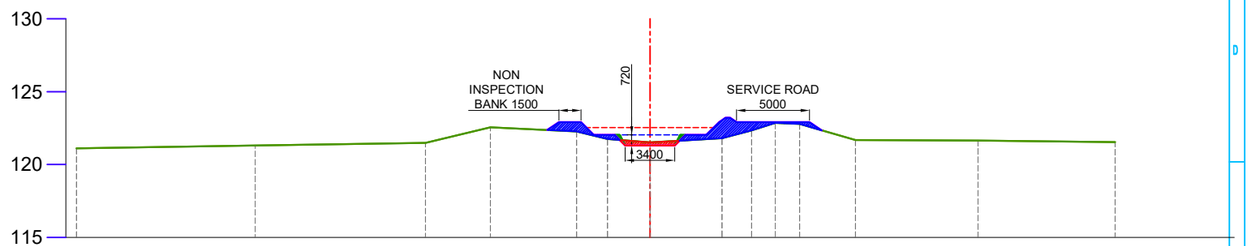
CH. : 15+000 KM.
DESIGNED BED LEVEL = 121.328 M



EXIST. LEVEL (M)	121.0570	121.295	121.540	122.535	122.685	121.751	121.519	121.785	122.779	122.735	121.662	121.621	121.534	
OFFSET (M)	38.853	26.134	14.081	10.719	6.375	2.651	0.000	5.008	8.528	10.298	14.118	23.086	32.021	

CUTTING AREA (SQ.M) = 0.881
FILLING AREA (SQ.M) = 5.875

CH. : 14+900 KM.
DESIGNED BED LEVEL = 121.347 M



EXIST. LEVEL (M)	121.1130	121.304	121.479	122.559	122.275	121.757	121.514	121.800	122.850	122.784	121.678	121.644	121.542	
OFFSET (M)	39.343	27.097	15.413	10.952	5.043	2.912	0.000	4.937	8.597	10.270	14.091	22.506	31.909	

CUTTING AREA (SQ.M) = 1.015
FILLING AREA (SQ.M) = 6.107

CH. : 15+100 KM.
DESIGNED BED LEVEL = 121.309 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

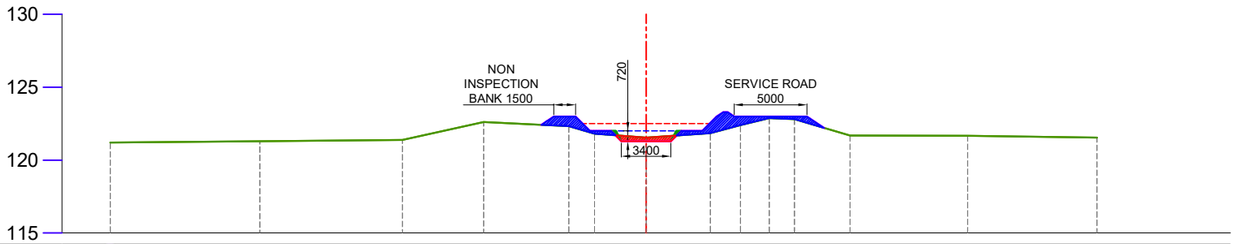
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 38 of 48

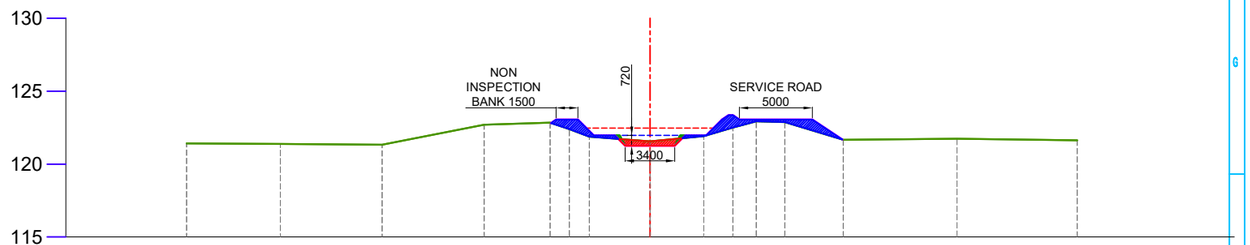
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	121.2090	121.299	121.375	122.606	122.331	121.802	121.535	121.839	122.405	122.879	122.815	121.676	121.675	121.537
OFFSET (M)	36.766	26.502	16.719	11.149	5.306	3.540	0.000	4.401	6.480	8.448	10.178	13.994	22.068	30.934

CUTTING AREA (SQ.M) = 1.191
FILLING AREA (SQ.M) = 6.118

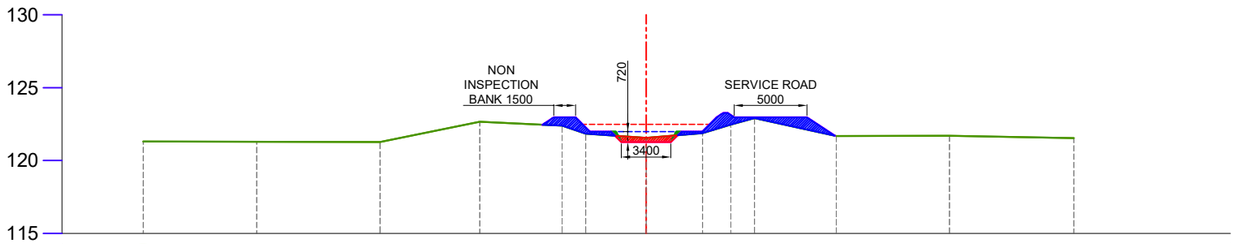
CH. : 15+200 KM.
DESIGNED BED LEVEL = 121.289 M



EXIST. LEVEL (M)	121.4230	121.374	121.320	122.704	122.837	121.875	121.558	121.910	122.926	122.881	121.660	121.740	121.634	
OFFSET (M)	31.795	25.363	18.381	11.376	6.855	4.168	0.000	3.702	7.300	9.258	13.255	21.066	29.310	

CUTTING AREA (SQ.M) = 1.514
FILLING AREA (SQ.M) = 5.636

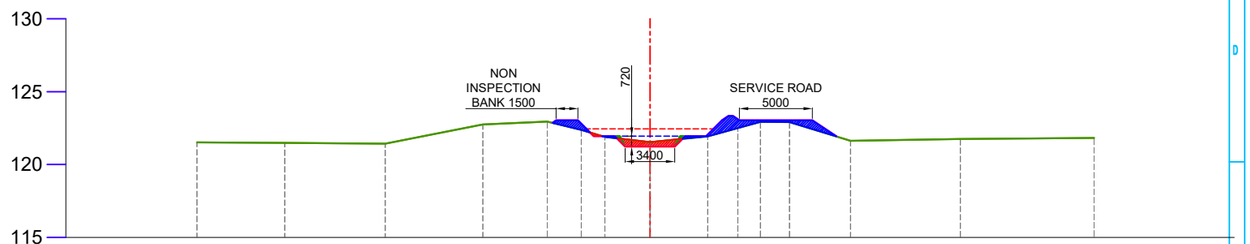
CH. : 15+400 KM.
DESIGNED BED LEVEL = 121.251 M



EXIST. LEVEL (M)	121.3050	121.296	121.275	122.651	122.386	121.845	121.555	121.876	122.908	121.673	121.705	121.532	
OFFSET (M)	34.511	26.716	18.254	11.420	5.767	4.153	0.000	3.877	7.430	13.045	20.810	29.341	

CUTTING AREA (SQ.M) = 1.376
FILLING AREA (SQ.M) = 6.644

CH. : 15+300 KM.
DESIGNED BED LEVEL = 121.270 M



EXIST. LEVEL (M)	121.5263	121.475	121.435	122.754	122.941	121.898	121.543	121.935	122.931	122.915	121.632	121.752	121.815	
OFFSET (M)	31.090	25.066	18.162	11.467	7.041	4.716	3.103	0.000	3.959	7.585	9.564	13.761	21.286	30.473

CUTTING AREA (SQ.M) = 1.707
FILLING AREA (SQ.M) = 5.356

CH. : 15+500 KM.
DESIGNED BED LEVEL = 121.232 M

LEGEND

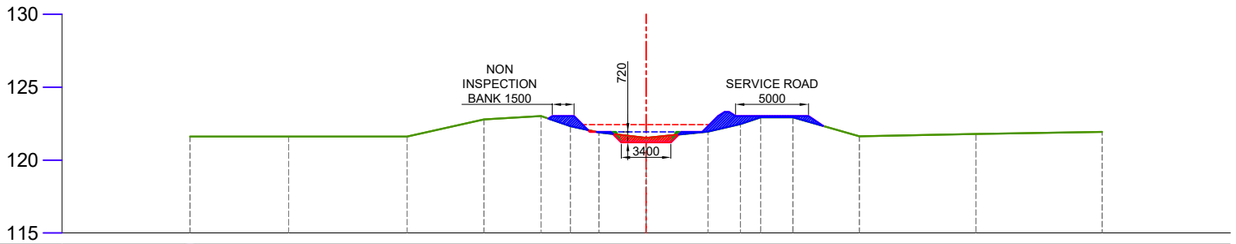
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 39 of 48

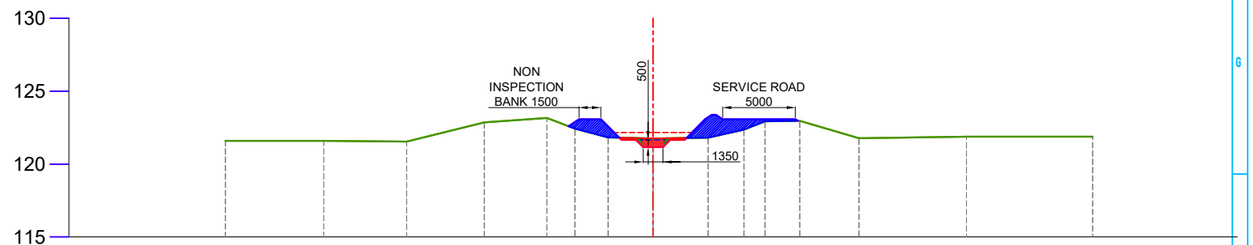
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	121.6100	121.619	121.621	122.785	123.013	122.324	121.894	121.533	121.949	122.934	122.938	121.629	121.798	121.935
OFFSET (M)	31.293	24.520	16.396	11.125	7.217	5.196	3.247	0.000	4.238	7.853	10.074	14.640	22.625	31.294

CUTTING AREA (SQ.M) = 1.694
FILLING AREA (SQ.M) = 4.275

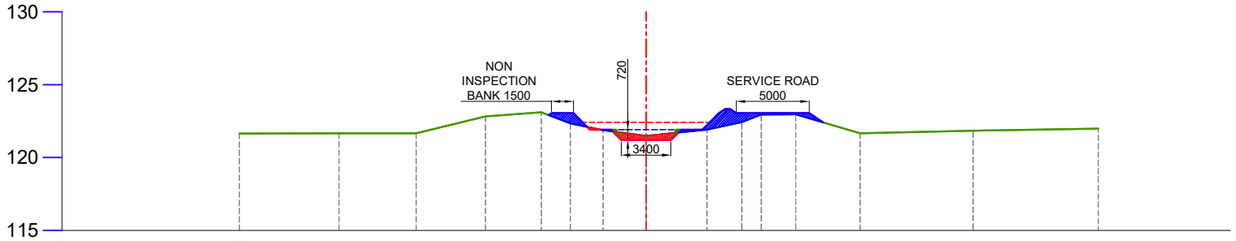
CH. : 15+600 KM.
DESIGNED BED LEVEL = 121.213 M



EXIST. LEVEL (M)	121.5910	121.600	121.536	122.859	123.171	122.425	121.822	121.764	121.818	122.937	122.962	121.768	121.877	121.880
OFFSET (M)	29.327	22.579	16.901	11.569	7.276	5.356	3.069	0.000	3.786	7.680	10.071	14.126	21.506	30.162

CUTTING AREA (SQ.M) = 1.411
FILLING AREA (SQ.M) = 7.005

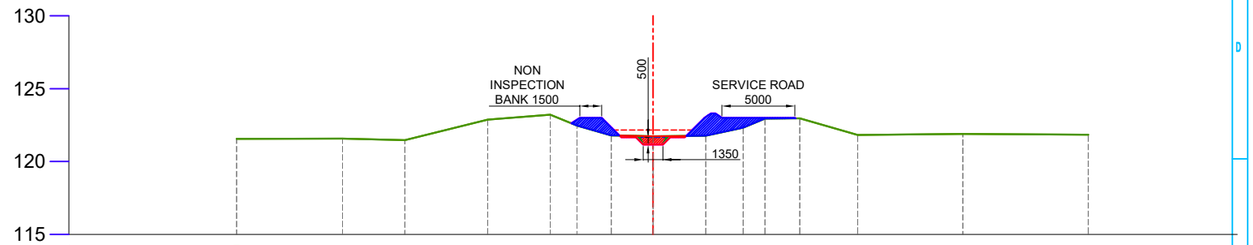
CH. : 15+800 KM.
DESIGNED BED LEVEL = 121.174 M



EXIST. LEVEL (M)	121.6480	121.665	121.659	122.825	123.099	122.341	121.875	121.487	121.915	122.936	122.957	121.667	121.835	121.977
OFFSET (M)	27.905	21.062	15.786	11.016	7.192	5.195	2.955	0.000	4.171	7.903	10.268	14.693	22.432	31.019

CUTTING AREA (SQ.M) = 1.682
FILLING AREA (SQ.M) = 4.436

CH. : 15+700 KM.
DESIGNED BED LEVEL = 121.193 M



EXIST. LEVEL (M)	121.5610	121.566	121.474	122.878	123.208	122.469	121.795	121.739	121.768	122.937	122.965	121.819	121.898	121.834
OFFSET (M)	28.564	21.293	17.029	11.347	7.055	5.216	2.870	0.000	3.618	7.682	10.078	14.042	21.253	29.869

CUTTING AREA (SQ.M) = 1.368
FILLING AREA (SQ.M) = 6.313

CH. : 15+900 KM.
DESIGNED BED LEVEL = 121.155 M

LEGEND

CUT AREA

FILL AREA

EXISTING BED LINE

F.S.L.

DESIGNED BED LINE

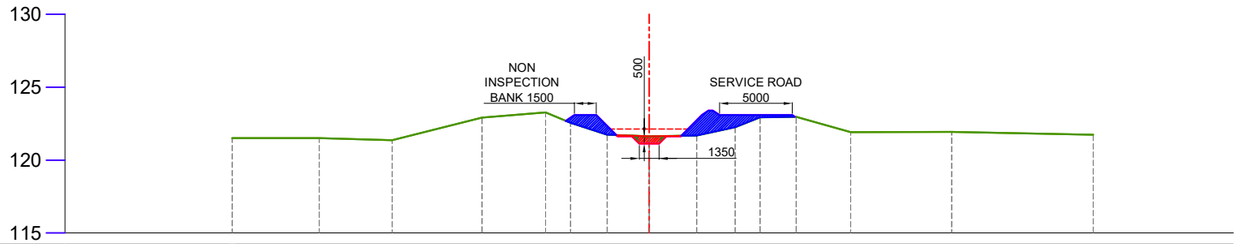
H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 40 of 48

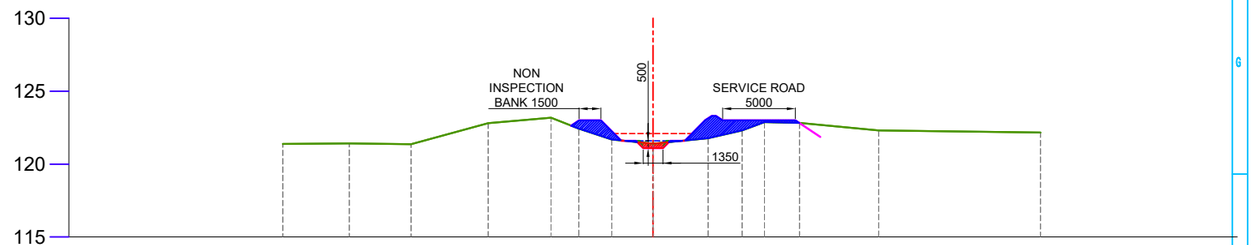
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	121.5020	121.503	121.357	122.911	123.277	121.746	121.631	121.676	122.938	122.970	121.913	121.938	121.745
OFFSET (M)	28.603	22.633	17.635	11.462	7.104	2.884	0.000	3.273	7.619	10.087	13.831	20.765	30.469

CUTTING AREA (SQ.M) = 1.033
FILLING AREA (SQ.M) = 7.130

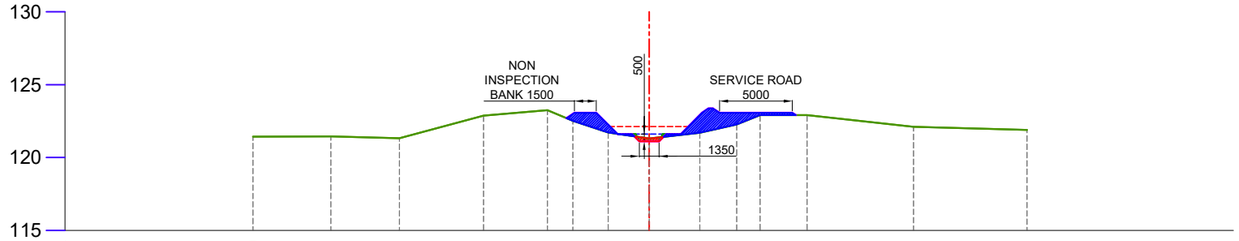
CH. : 16+000 KM.
DESIGNED BED LEVEL = 121.136 M



EXIST. LEVEL (M)	121.3820	121.414	121.360	122.812	123.180	122.426	121.691	121.395	121.774	122.884	122.822	122.303	122.163
OFFSET (M)	25.407	20.838	16.591	11.309	6.993	5.095	2.820	0.000	3.776	7.650	10.054	15.487	26.592

CUTTING AREA (SQ.M) = 0.604
FILLING AREA (SQ.M) = 6.725

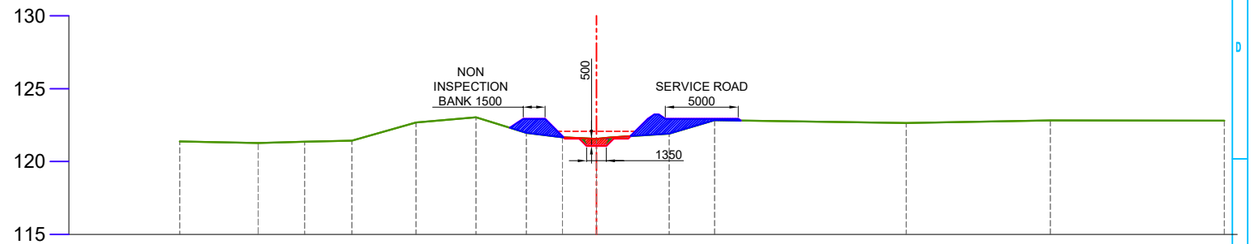
CH. : 16+200 KM.
DESIGNED BED LEVEL = 121.097 M



EXIST. LEVEL (M)	121.4300	121.445	121.328	122.873	123.249	122.512	121.708	121.312	121.698	122.264	122.913	122.903	122.115	121.902
OFFSET (M)	27.180	21.845	17.132	11.356	6.985	5.229	2.816	0.000	3.483	6.003	7.609	10.841	18.140	25.923

CUTTING AREA (SQ.M) = 0.412
FILLING AREA (SQ.M) = 7.399

CH. : 16+100 KM.
DESIGNED BED LEVEL = 121.116 M



EXIST. LEVEL (M)	121.376	121.274	121.350	121.427	122.685	123.041	121.972	121.657	121.56	121.920	122.829	122.648	122.814	122.801
OFFSET (M)	28.585	23.211	20.015	16.772	12.371	8.258	4.812	2.333	0.000	4.997	8.118	21.250	31.144	43.087

CUTTING AREA (SQ.M) = 1.166
FILLING AREA (SQ.M) = 7.006

CH. : 16+300 KM.
DESIGNED BED LEVEL = 121.078 M

LEGEND

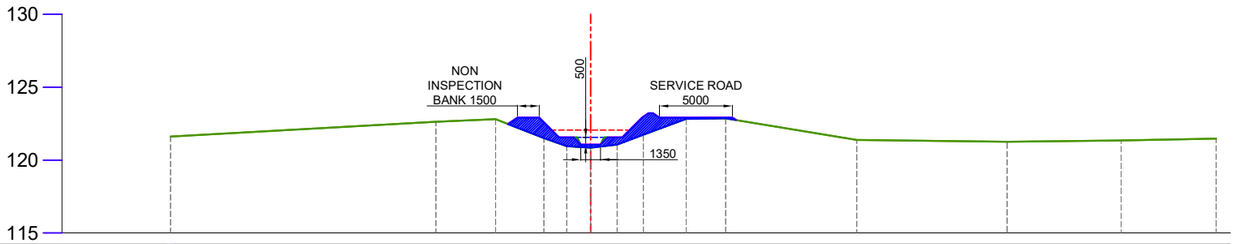
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 41 of 48

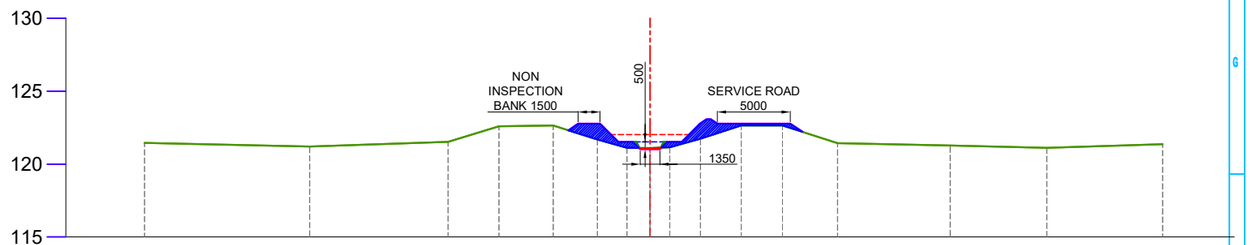
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	121.6090	122.637	122.804	121.509	120.846	121.730	122.816	122.864	121.376	121.257	121.346	121.468
OFFSET (M)	28.573	10.617	6.529	3.215	0.000	3.617	6.554	9.256	18.265	28.566	36.395	42.908

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 8.070

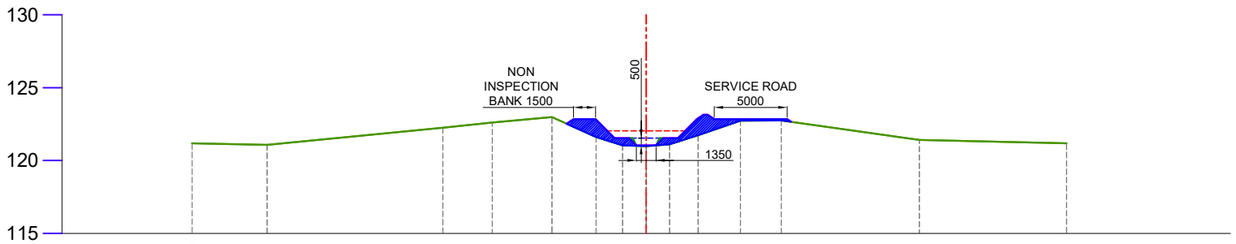
CH. : 16+400 KM.
DESIGNED BED LEVEL = 121.059 M



EXIST. LEVEL (M)	121.4600	121.209	121.531	122.595	122.645	121.681	121.099	121.731	122.655	122.655	121.440	121.267	121.119	121.360
OFFSET (M)	34.679	23.342	13.857	10.362	6.635	3.610	0.000	3.461	6.253	9.093	12.860	20.593	27.227	35.169

CUTTING AREA (SQ.M) = 0.127
FILLING AREA (SQ.M) = 6.415

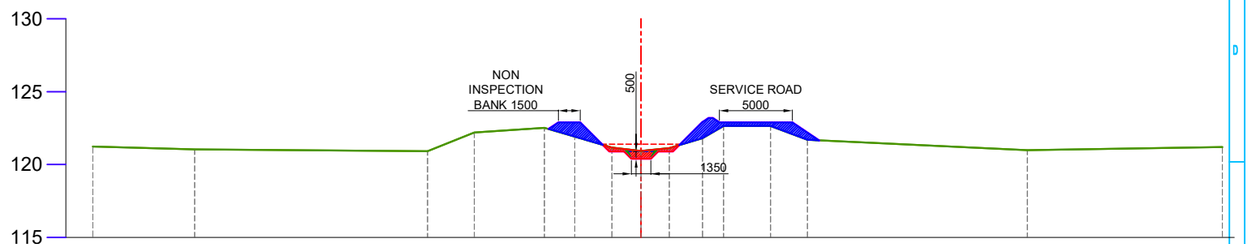
CH. : 16+600 KM.
DESIGNED BED LEVEL = 121.020 M



EXIST. LEVEL (M)	121.1870	121.073	122.246	122.614	122.975	121.602	120.982	121.731	122.730	122.753	121.410	121.182
OFFSET (M)	31.155	26.003	13.944	10.562	6.471	3.435	0.000	3.569	6.478	9.277	18.742	28.840

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 6.951

CH. : 16+500 KM.
DESIGNED BED LEVEL = 121.039 M



EXIST. LEVEL (M)	121.2390	121.039	120.908	122.203	122.524	121.912	121.159	120.938	121.119	122.635	122.635	121.691	120.988	121.199
OFFSET (M)	37.613	30.641	14.647	11.454	6.642	4.554	2.012	0.000	1.936	5.648	8.963	11.452	26.546	39.924

CUTTING AREA (SQ.M) = 1.755
FILLING AREA (SQ.M) = 6.982

CH. : 16+700 KM.
DESIGNED BED LEVEL = 120.391 M

LEGEND

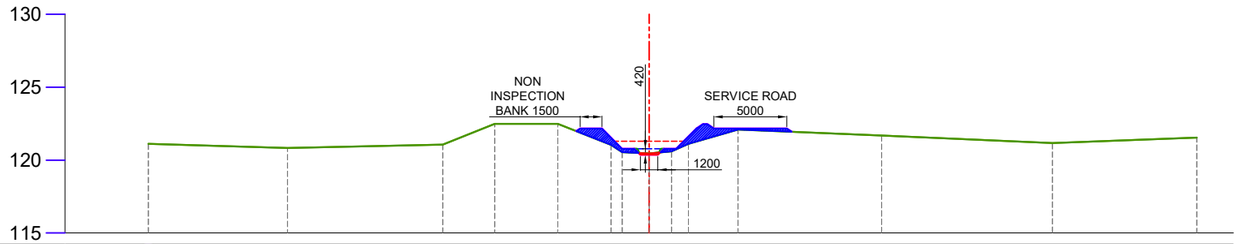
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 42 of 48

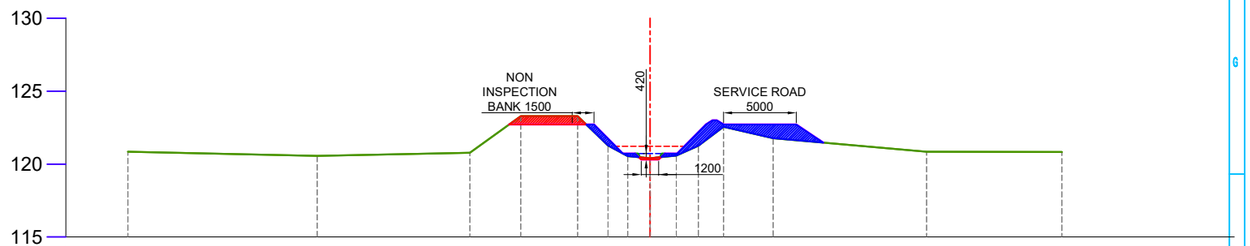
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	121.1090	120.821	121.067	122.492	122.480	121.049	120.456	121.119	122.097	121.685	121.175	121.551
OFFSET (M)	34.366	24.806	14.153	10.604	6.261	2.615	0.000	2.702	6.105	15.943	27.667	37.570

CUTTING AREA (SQ.M) = 0.154
FILLING AREA (SQ.M) = 4.733

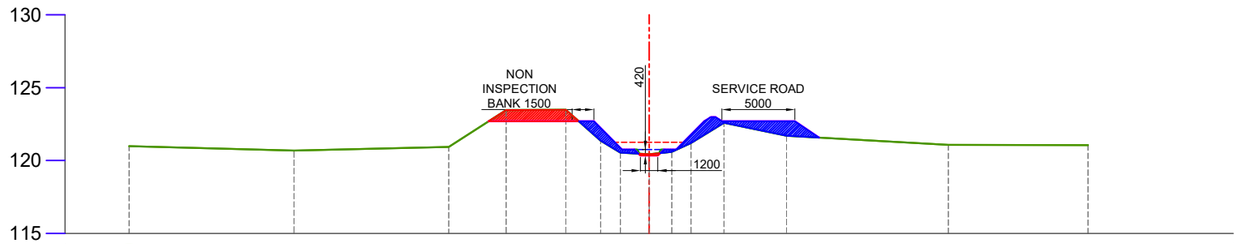
CH. : 16+800 KM.
DESIGNED BED LEVEL = 120.364 M



EXIST. LEVEL (M)	120.8510	120.558	120.785	123.286	123.285	121.272	120.409	121.260	122.560	121.778	120.853	120.826
OFFSET (M)	35.815	22.839	12.356	8.858	4.972	2.879	0.000	3.327	5.049	8.451	18.976	28.269

CUTTING AREA (SQ.M) = 2.819
FILLING AREA (SQ.M) = 7.869

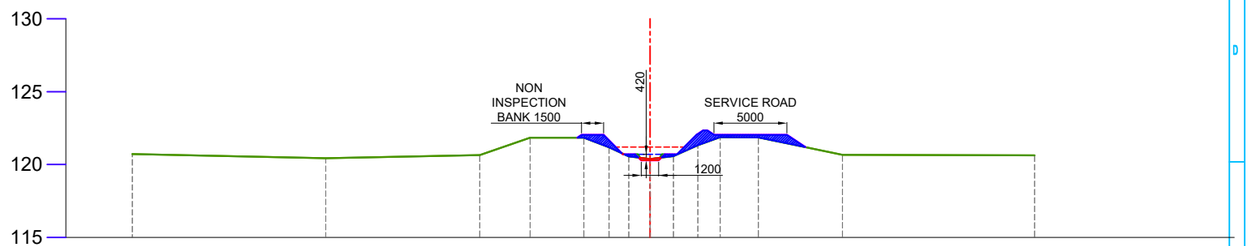
CH. : 17+000 KM.
DESIGNED BED LEVEL = 120.310 M



EXIST. LEVEL (M)	120.9770	120.687	120.924	123.462	123.472	121.367	120.433	121.190	122.595	121.703	121.065	121.054
OFFSET (M)	35.682	24.360	13.743	9.814	5.709	3.327	0.000	2.880	5.142	9.433	20.521	30.120

CUTTING AREA (SQ.M) = 4.181
FILLING AREA (SQ.M) = 7.746

CH. : 16+900 KM.
DESIGNED BED LEVEL = 120.337 M



EXIST. LEVEL (M)	120.7170	120.426	120.647	121.842	121.842	121.179	120.386	121.330	121.872	121.852	120.667	120.637
OFFSET (M)	35.515	22.239	11.677	8.226	4.543	2.811	0.000	3.275	4.814	7.428	13.205	26.396

CUTTING AREA (SQ.M) = 0.203
FILLING AREA (SQ.M) = 4.369

CH. : 17+100 KM.
DESIGNED BED LEVEL = 120.283 M

LEGEND

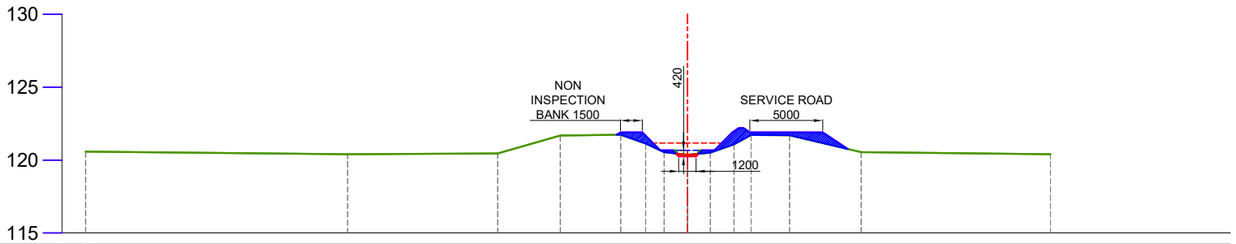
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 43 of 48

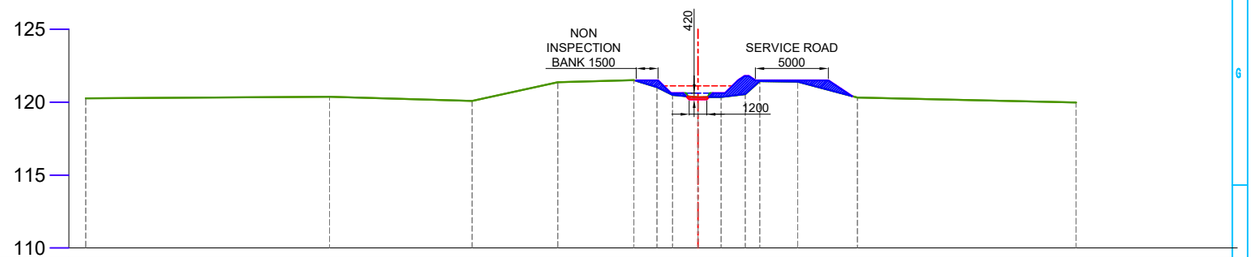
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	120.5770	120.410	120.462	121.687	121.734	121.129	120.371	121.073	121.727	121.707	120.548	120.408
OFFSET (M)	41.285	23.314	13.016	8.719	4.572	2.857	0.000	3.196	4.372	7.011	11.923	24.920

CUTTING AREA (SQ.M) = 0.204
FILLING AREA (SQ.M) = 5.085

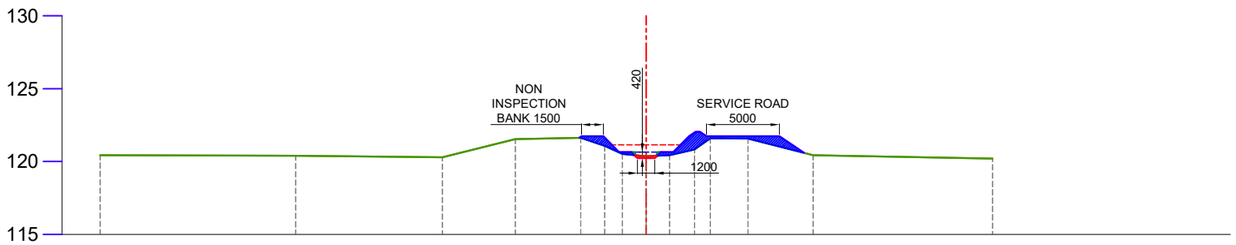
CH. : 17+200 KM.
DESIGNED BED LEVEL = 120.256 M



EXIST. LEVEL (M)	120.2650	120.376	120.086	121.370	121.513	120.500	120.342	120.550	121.413	120.311	119.972	
OFFSET (M)	42.004	25.278	15.505	9.624	4.398	2.823	0.000	3.240	6.844	10.934	25.947	

CUTTING AREA (SQ.M) = 0.218
FILLING AREA (SQ.M) = 4.346

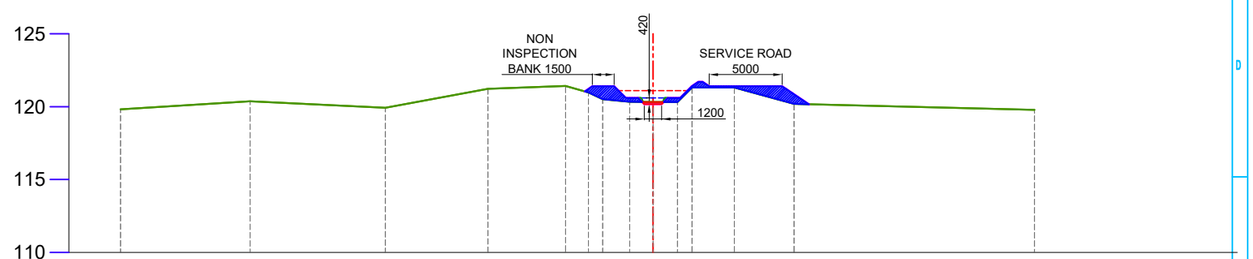
CH. : 17+400 KM.
DESIGNED BED LEVEL = 120.202 M



EXIST. LEVEL (M)	120.4360	120.395	120.289	121.541	121.632	120.358	121.592	121.572	120.438	120.202		
OFFSET (M)	37.466	24.049	13.978	8.979	4.476	0.000	4.410	6.985	11.464	23.766		

CUTTING AREA (SQ.M) = 0.214
FILLING AREA (SQ.M) = 4.887

CH. : 17+300 KM.
DESIGNED BED LEVEL = 120.229 M



EXIST. LEVEL (M)	119.8220	120.367	119.925	121.229	121.416	120.514	120.314	121.308	121.310	120.184	119.777	
OFFSET (M)	36.533	27.636	18.363	11.331	5.996	3.452	0.000	3.274	7.175	11.277	26.181	

CUTTING AREA (SQ.M) = 0.188
FILLING AREA (SQ.M) = 5.709

CH. : 17+500 KM.
DESIGNED BED LEVEL = 120.175 M

LEGEND

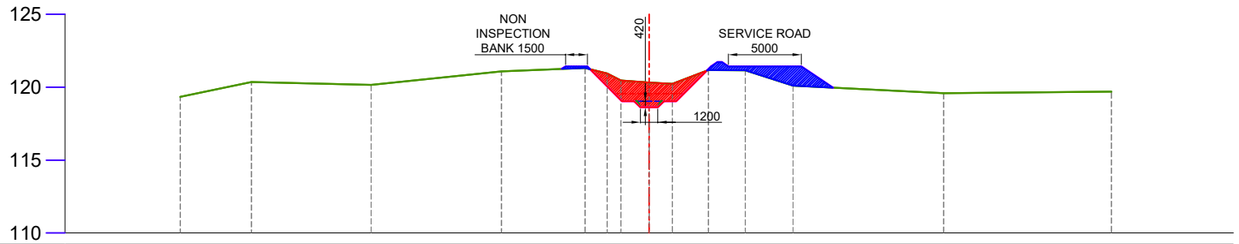
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 44 of 48

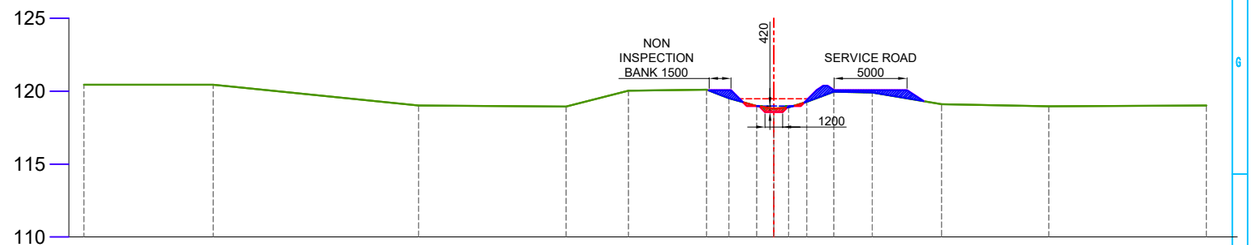
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	119.3420	120.346	120.165	121.089	121.320	120.316	121.179	121.159	120.105	119.593	119.693
OFFSET (M)	32.175	27.291	19.066	10.125	4.396	0.000	4.058	6.589	9.873	20.207	31.722

CUTTING AREA (SQ.M) = 8.489
FILLING AREA (SQ.M) = 5.913

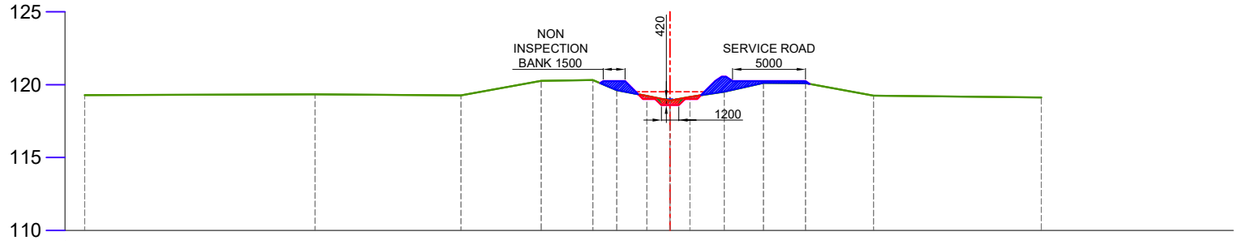
CH. : 17+600 KM.
DESIGNED BED LEVEL = 118.624 M



EXIST. LEVEL (M)	120.451	120.451	119.011	118.950	120.025	120.105	118.800	119.262	119.954	119.904	119.111	118.960	119.011
OFFSET (M)	47.340	38.460	24.376	14.246	9.983	4.609	0.000	2.260	4.114	6.758	11.503	18.866	29.682

CUTTING AREA (SQ.M) = 0.571
FILLING AREA (SQ.M) = 3.177

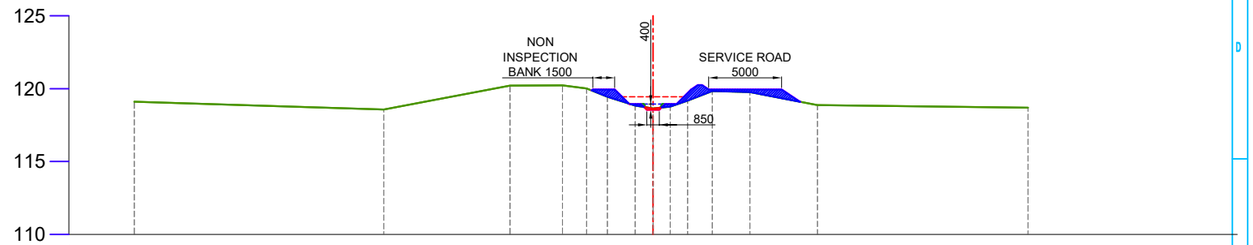
CH. : 17+800 KM.
DESIGNED BED LEVEL = 118.570 M



EXIST. LEVEL (M)	119.2730	119.341	119.261	120.256	120.316	119.614	118.907	119.517	120.125	120.105	119.244	119.124
OFFSET (M)	40.168	24.364	14.350	8.848	5.307	3.664	0.000	3.718	6.406	9.285	13.957	25.460

CUTTING AREA (SQ.M) = 1.015
FILLING AREA (SQ.M) = 3.817

CH. : 17+700 KM.
DESIGNED BED LEVEL = 118.597 M



EXIST. LEVEL (M)	119.0950	118.574	120.216	120.216	120.018	118.640	119.179	119.753	118.865	118.700
OFFSET (M)	35.592	18.468	9.818	6.219	4.555	0.000	2.370	6.651	11.291	25.727

CUTTING AREA (SQ.M) = 0.135
FILLING AREA (SQ.M) = 3.943

CH. : 17+900 KM.
DESIGNED BED LEVEL = 118.543 M

LEGEND

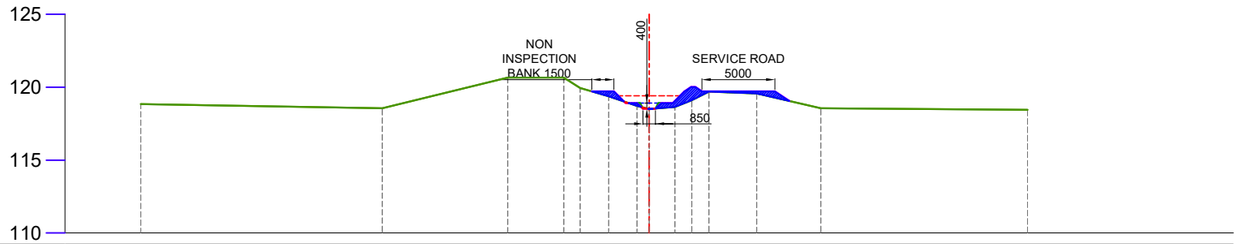
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 45 of 48

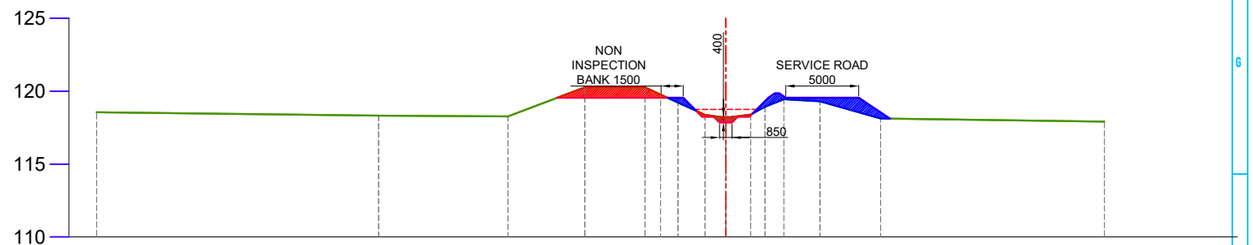
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	118.8400	118.554	120.658	120.658	119.939	118.494	119.704	119.564	118.562	118.441
OFFSET (M)	34.878	18.301	9.702	4.732	2.772	0.000	4.097	7.376	11.776	25.960

CUTTING AREA (SQ.M) = 0.034
FILLING AREA (SQ.M) = 3.188

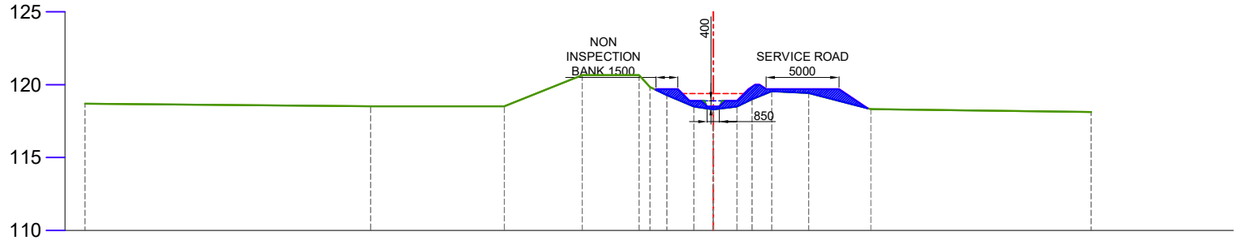
CH. : 18+000 KM.
DESIGNED BED LEVEL = 118.516 M



EXIST. LEVEL (M)	118.5495	118.329	118.273	120.269	120.269	119.769	118.181	119.447	119.302	118.120	117.919
OFFSET (M)	43.159	23.809	14.940	9.668	5.533	4.470	0.000	3.997	6.470	10.627	25.980

CUTTING AREA (SQ.M) = 4.873
FILLING AREA (SQ.M) = 4.649

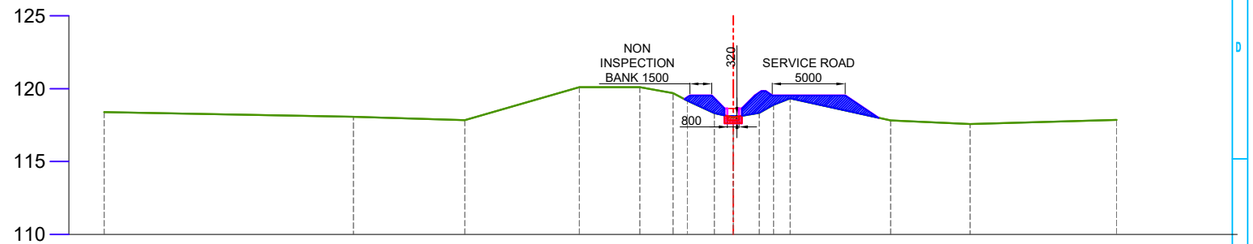
CH. : 18+200 KM.
DESIGNED BED LEVEL = 117.852 M



EXIST. LEVEL (M)	118.7000	118.513	118.516	120.658	120.660	119.830	118.292	119.539	119.423	118.320	118.117
OFFSET (M)	43.102	23.503	14.329	8.981	4.331	3.184	0.000	4.014	6.544	10.820	25.924

CUTTING AREA (SQ.M) = 0.000
FILLING AREA (SQ.M) = 5.942

CH. : 18+100 KM.
DESIGNED BED LEVEL = 118.489 M



EXIST. LEVEL (M)	118.3840	118.067	117.842	120.107	120.107	119.689	118.032	119.326	117.818	117.567	117.850
OFFSET (M)	43.164	26.065	18.417	10.555	6.407	4.124	0.000	3.904	10.795	16.258	26.293

CUTTING AREA (SQ.M) = 0.558
FILLING AREA (SQ.M) = 8.186

CH. : 18+300 KM.
DESIGNED BED LEVEL = 117.825 M

LEGEND

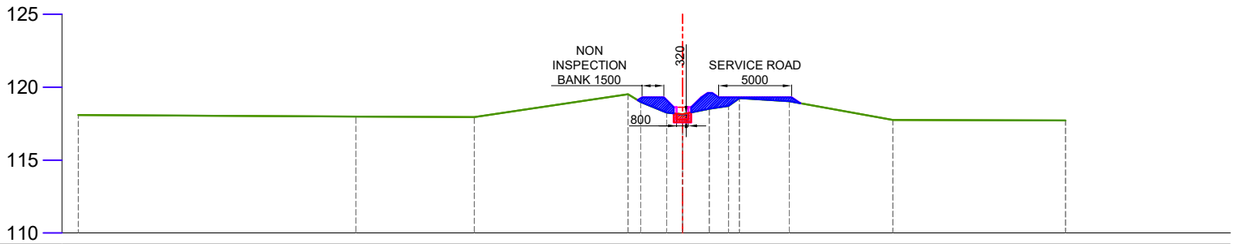
CUT AREA	EXISTING BED LINE
	F.S.L.
FILL AREA	DESIGNED BED LINE
	H.G. LINE

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 46 of 48

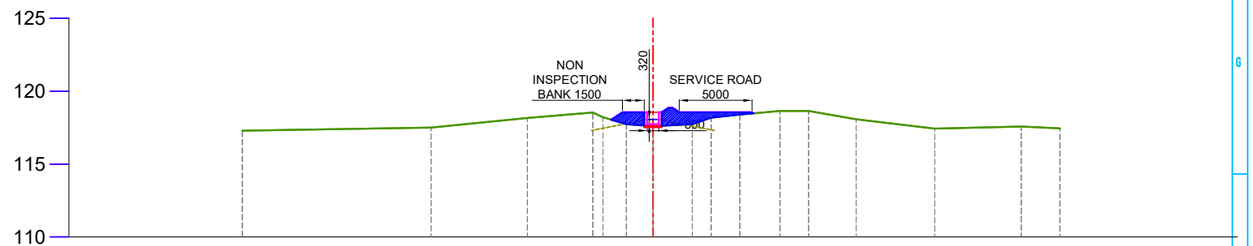
X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	118.0940	117.984	117.955	119.513	118.151	119.256	119.032	117.751	117.723
OFFSET (M)	41.448	22.407	14.277	3.728	0.000	3.900	7.325	14.434	26.105

CUTTING AREA (SQ.M) = 0.715
FILLING AREA (SQ.M) = 4.435

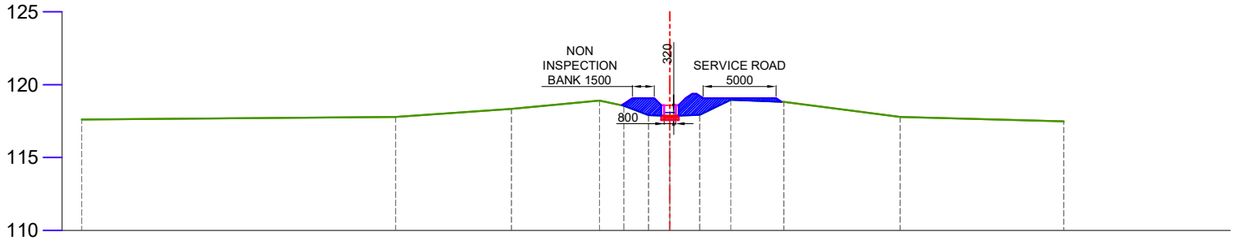
CH. : 18+400 KM.
DESIGNED BED LEVEL = 117.798 M



EXIST. LEVEL (M)	117.2910	117.500	118.169	118.535	117.727	117.600	118.173	118.403	118.651	118.649	118.072	117.441	117.575	117.444
OFFSET (M)	28.176	15.224	8.610	4.136	1.824	0.000	3.988	5.961	8.713	10.675	13.932	19.336	25.271	27.914

CUTTING AREA (SQ.M) = 0.088
FILLING AREA (SQ.M) = 5.117

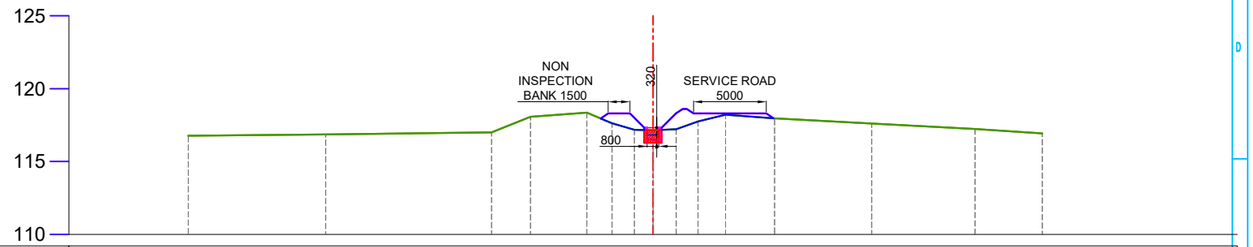
CH. : 18+600 KM.
DESIGNED BED LEVEL = 117.744 M



EXIST. LEVEL (M)	117.610	117.777	118.329	118.915	117.852	118.951	118.817	117.776	117.488
OFFSET (M)	40.356	18.822	10.868	4.836	0.000	4.208	7.848	15.831	27.025

CUTTING AREA (SQ.M) = 0.349
FILLING AREA (SQ.M) = 5.987

CH. : 18+500 KM.
DESIGNED BED LEVEL = 117.771 M



EXIST. LEVEL (M)	116.7640	116.862	116.995	118.064	118.346	117.621	117.150	117.757	118.219	117.964	117.601	117.223	116.930
OFFSET (M)	31.886	22.451	11.079	8.403	4.540	2.814	0.000	3.081	4.969	8.342	15.006	22.090	26.713

CUTTING AREA (SQ.M) = 1.037
FILLING AREA (SQ.M) = 0.000

CH. : 18+700 KM.
DESIGNED BED LEVEL = 116.496 M

LEGEND

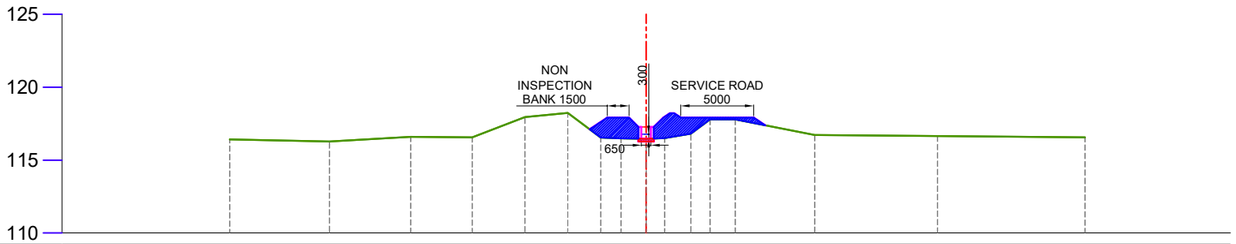
CUT AREA		EXISTING BED LINE	
		F.S.L.	
FILL AREA		DESIGNED BED LINE	
		H.G. LINE	

Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 47 of 48

X SECTION OF KONCHI DY.



EXIST. LEVEL (M)	116.4170	116.272	116.592	116.555	117.946	118.227	116.547	116.460	117.786	117.786	116.717	116.641	116.568
OFFSET (M)	28.568	21.725	16.146	11.923	8.316	5.373	3.117	0.000	4.390	6.123	11.574	19.999	30.118

CUTTING AREA (SQ.M) = 0.207

FILLING AREA (SQ.M) = 8.694

CH. : 18+800 KM.

DESIGNED BED LEVEL = 116.469 M

LEGEND

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

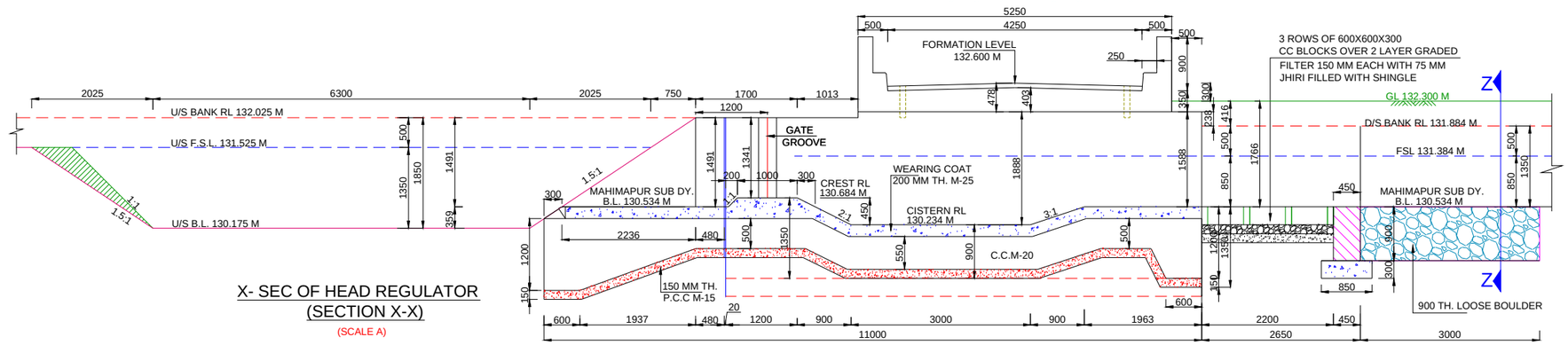
Prepared by :-

WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	X SECTION OF KONCHI DY. (OFFTAKE FROM 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-38/ XSEC- 48 of 48

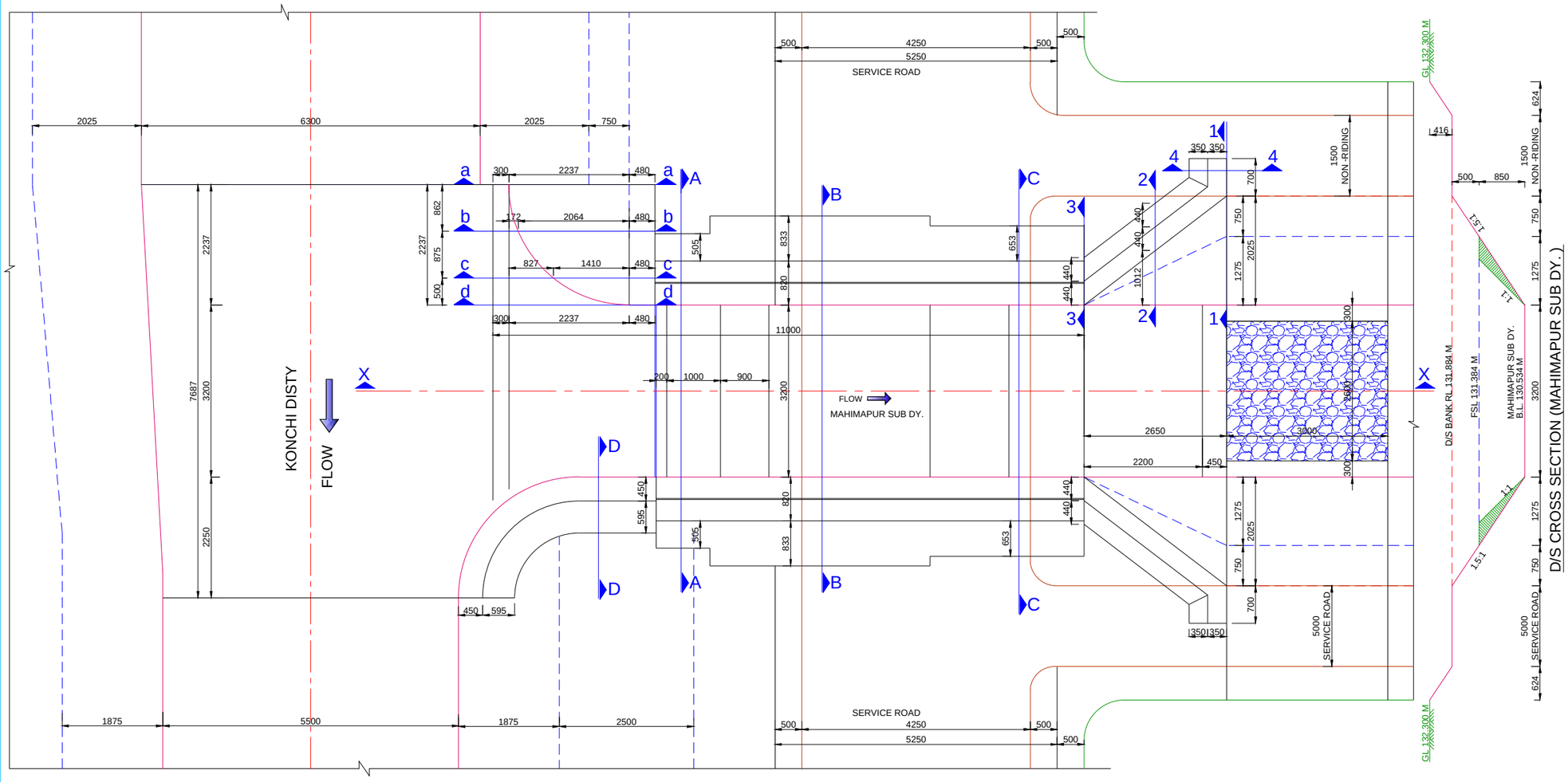
DRAWING OF STRUCTURES

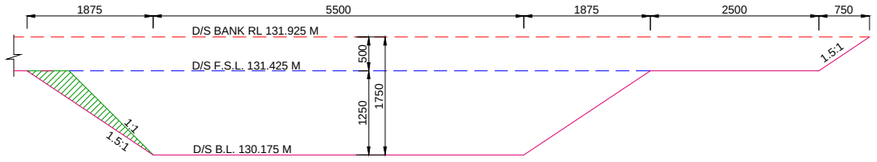
DRAWING OF HEAD REGULATOR



X- SEC OF HEAD REGULATOR (SECTION X-X)

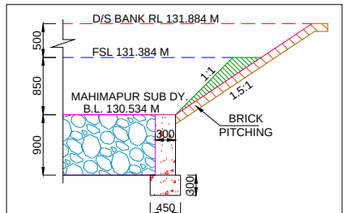
(SCALE A)





D/S CROSS SECTION (KONCHI DISTY)

(SCALE A)



SECTION Z-Z

(SCALE A)

SCALE A:-

1000 0 1000 2000 3000

DESIGN DATA :-

KONCHI DISTY

	U/S	D/S
DISCHARGE OF FEEDER	5.540 CUMECS	4.150 CUMECS
BED WIDTH	6.300 M	5.500 M
WATER DEPTH	1.350 M	1.250 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	130.175 M	130.175 M
F.S.L.	131.525 M	131.425 M
GROUND LEVEL	132.300 M	132.300 M

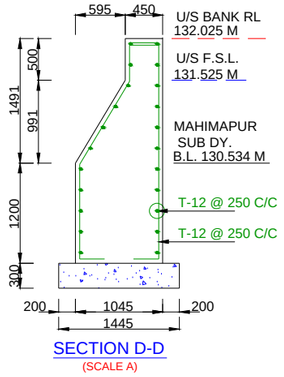
MAHIMAPUR SUB DY.

CHAINAGE	0.180 M
DISCHARGE	1.333 CUMEC
BED WIDTH	3.200 M
WATER DEPTH	0.850 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	130.534 M
F.S.L.	131.384 M
CREST LEVEL	130.534 M
BED SLOPE	23.3 CM/ KM

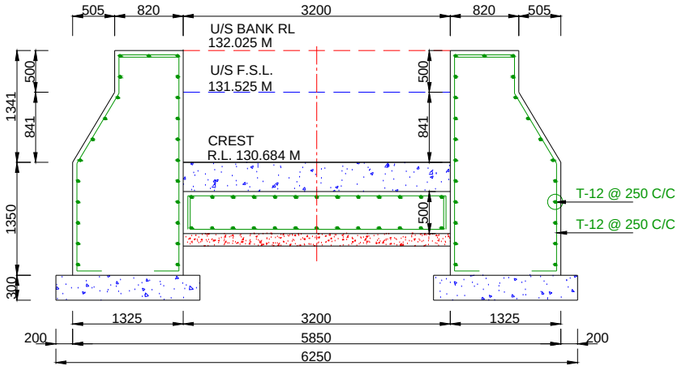
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
   2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
      a. IRC:5-1998
      b. IS: 6531-1972
      c. IS: 456-2000
      d. UPID DESIGN CRITERIA
   II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   A. SLAB, CRASH BARRIER AND WEARING COAT M-25
   B. FLOOR, ABUTMENT AND TRANSITIONS M-20
   C. C.C.BLOCKS AND TOE WALLS M-15
   D. P.C.C. M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

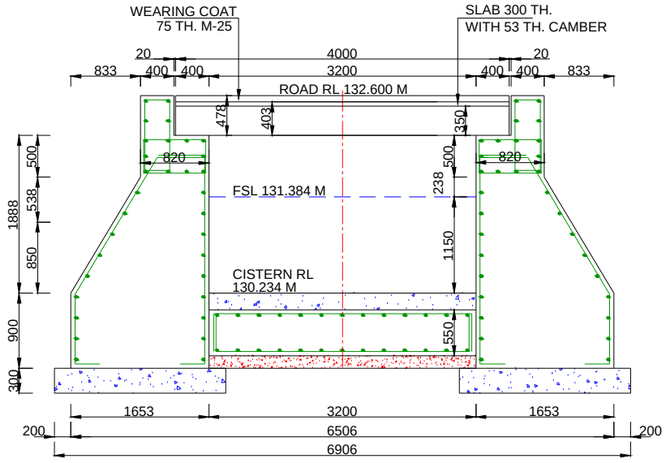
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR MAHIMAPUR SUB DY. (OFFTAKE FROM RD - 0+180 KM., KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-01/ HR 1 of 3



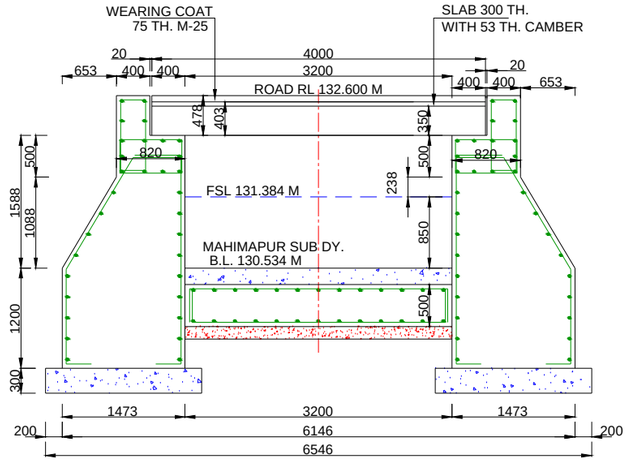
SECTION D-D
(SCALE A)



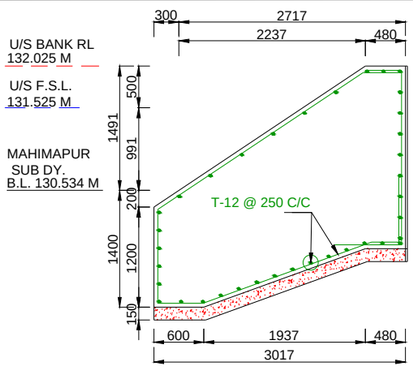
SECTION A-A
(AT CREST)
(SCALE A)



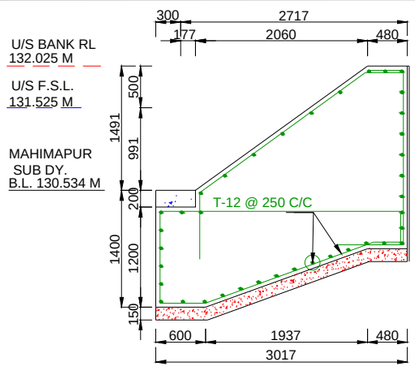
SECTION B-B
(AT CISTERN)
(SCALE A)



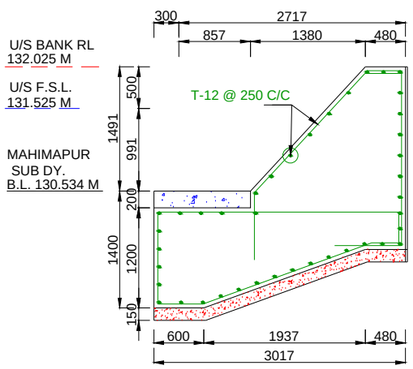
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



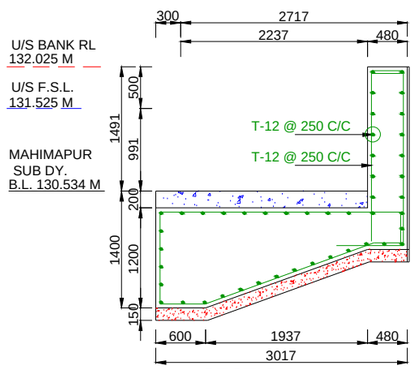
SECTION a-a



SECTION b-b

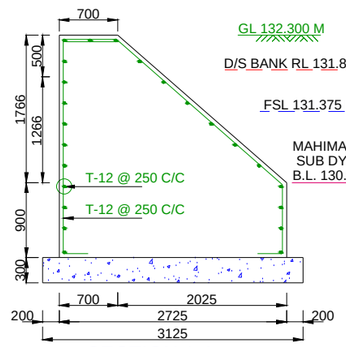


SECTION c-c

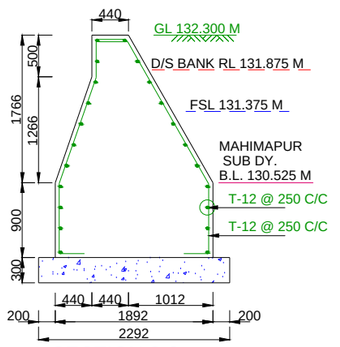


SECTION d-d

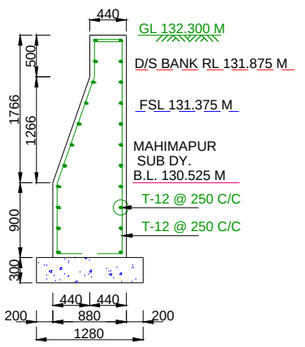
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



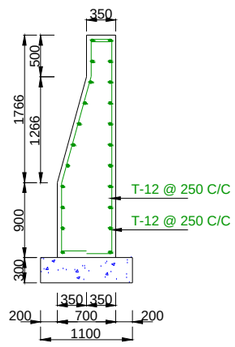
SECTION 1-1



SECTION 2-2

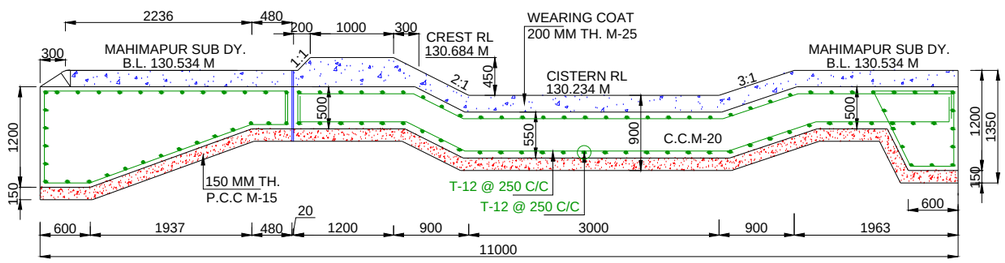


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)



SECTION OF FLOOR (REINF.)
(SCALE A)

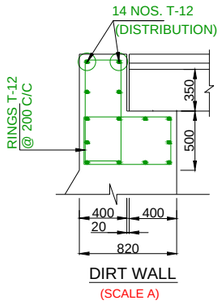
NOTES:-

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

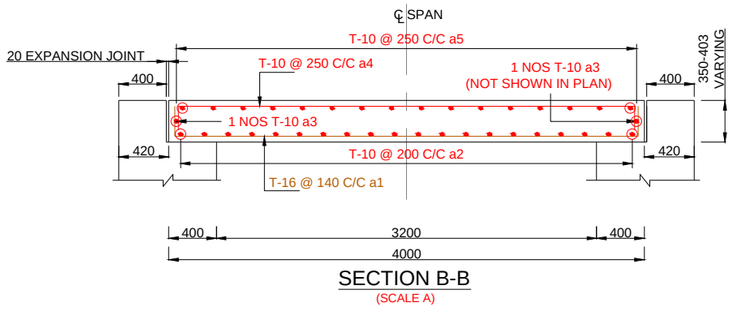
SCALE A:-

1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR MAHIMAPUR SUB DY. (OFFTAKE FROM RD - 0+180 KM., KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-01/ HR 2 of 3



DIRT WALL
(SCALE A)



SECTION B-B
(SCALE A)

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	200, R=60, 3900, 200	16	140	37
2	a2	200, R=40, 5150, 200	10	200	20
3	a3	5150	10	-	2
4	a4	3900, 200, R=40, 200	10	250	21
5	a5	200, 450, 2125, 2125, 450, 200	10	250	16
DIRT WALL					
1	d1	850, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1227, 950, 300	12	120	33X2
2	x2	75, 540, 400, 300	16	120	33X2
3	x3	3900	10	-	12X2

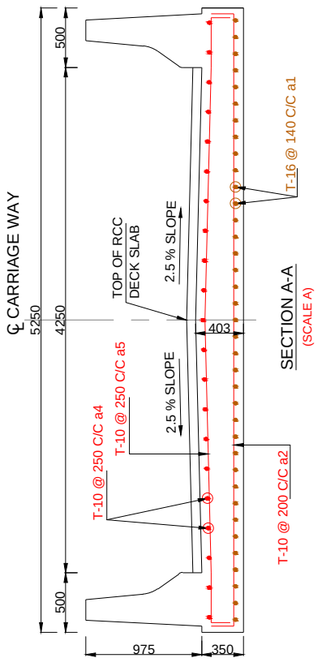
NOTES:-

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

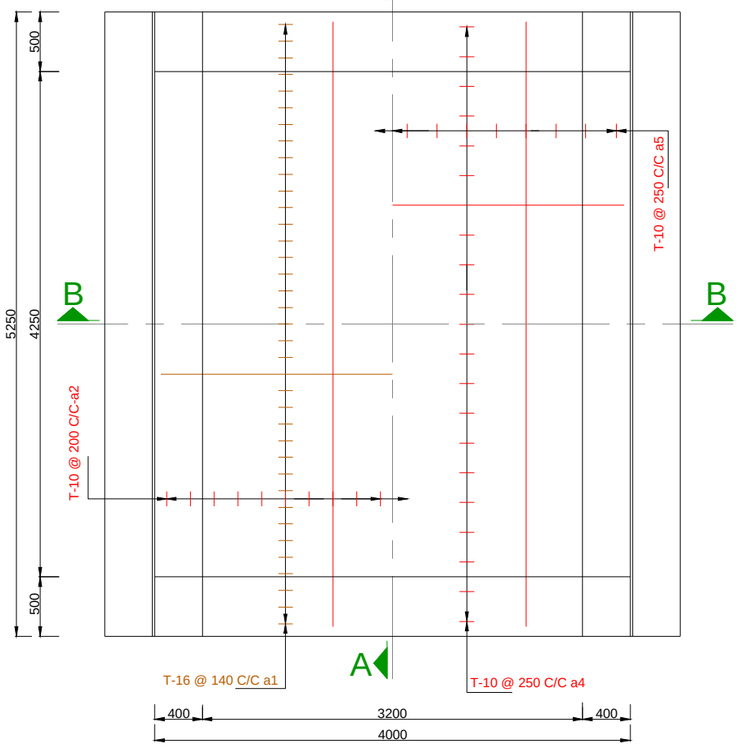
DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm² (IS 456 CLAUSE 26.2.1)							
TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.



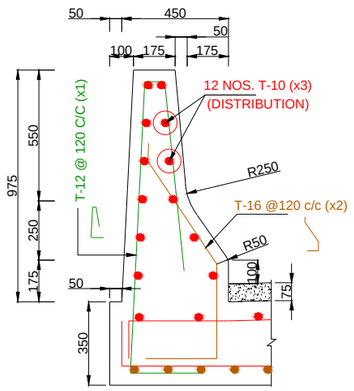
SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

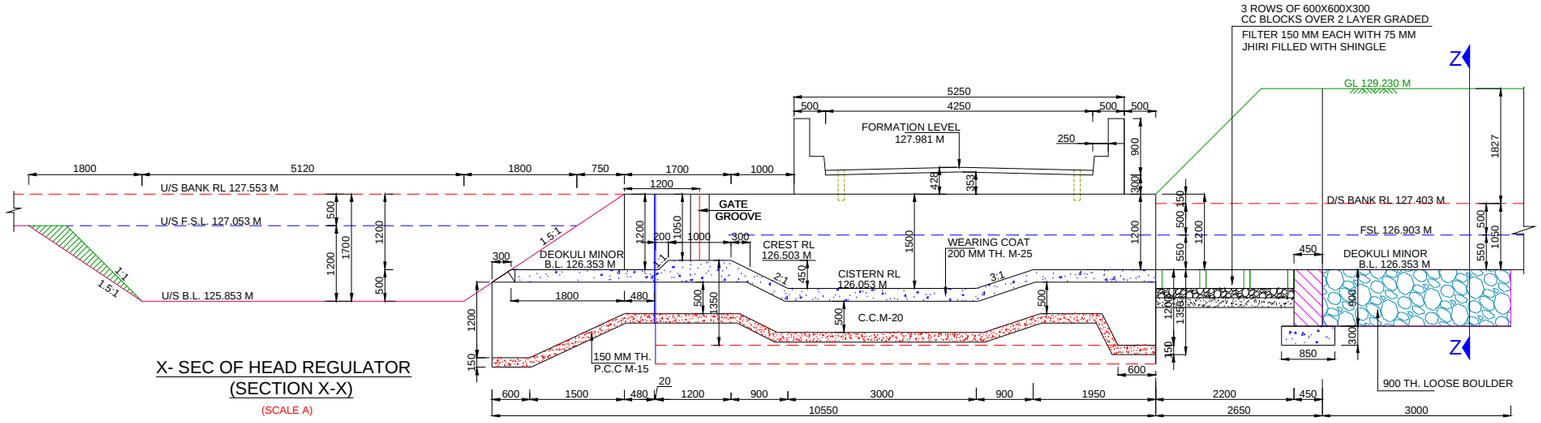


REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)

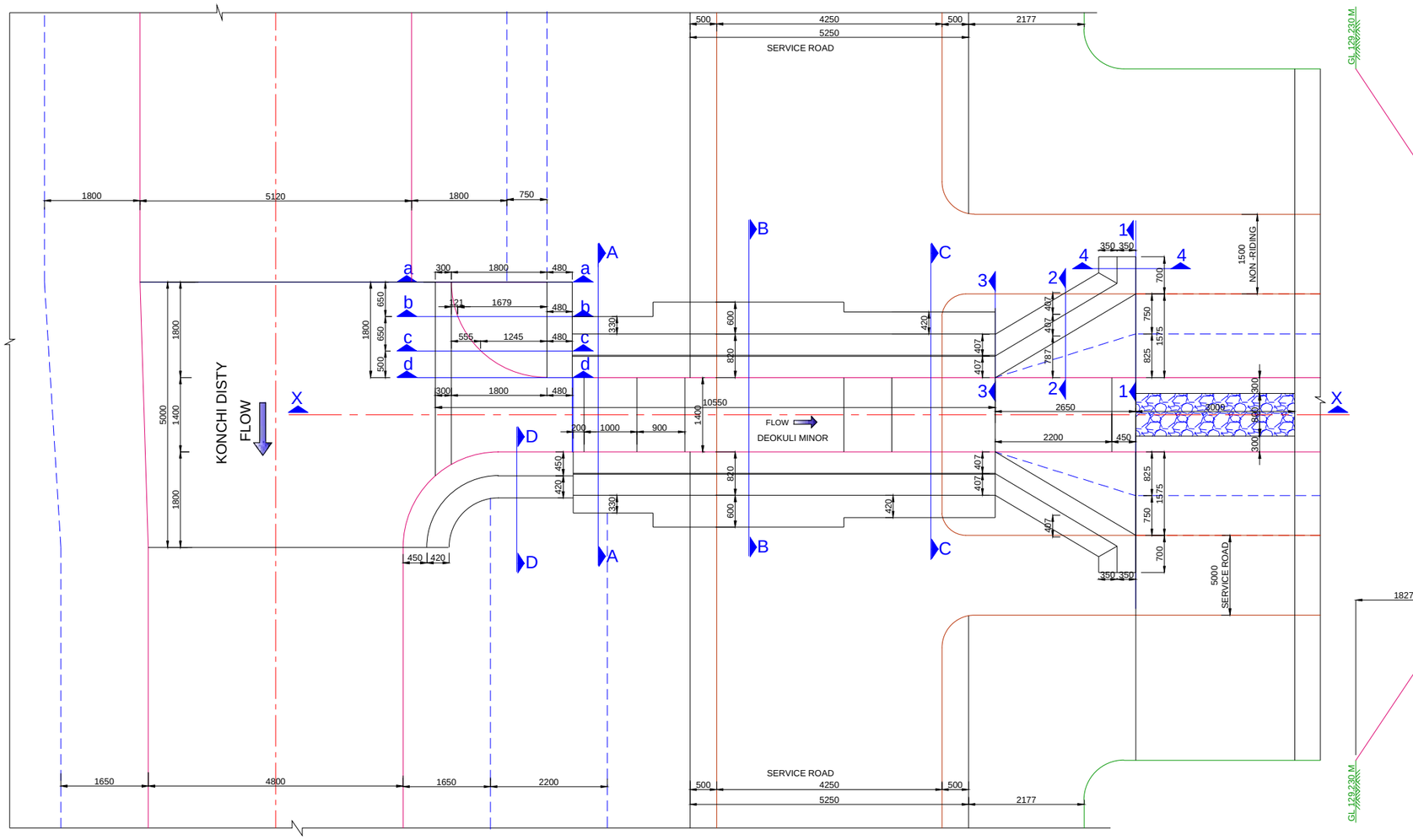
SCALE A:- 400 0 400 800 1200

SCALE B:- 200 0 200 400 600

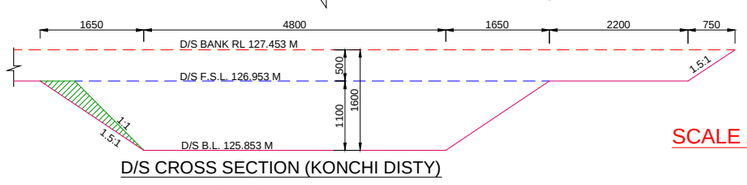
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR MAHIMAPUR SUB DY. (OFFTAKE FROM RD - 0+180 KM., KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-01/ HR 3 of 3



X- SEC OF HEAD REGULATOR
(SECTION X-X)
(SCALE A)

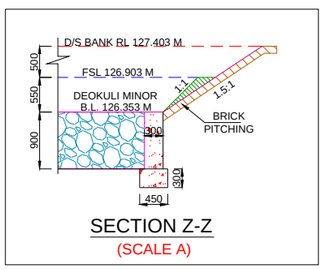


D/S CROSS SECTION (DEOKULI MINOR)
(SCALE A)



D/S CROSS SECTION (KONCHI DISTY)
(SCALE A)

SCALE A:-



SECTION Z-Z
(SCALE A)

DESIGN DATA :-
KONCHI DISTY

	U/S	D/S
DISCHARGE OF FEEDER	3.680 CUMECS	3.030 CUMECS
BED WIDTH	5.150 M	4.800 M
WATER DEPTH	1.200 M	1.100 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	125.853 M	125.853 M
F.S.L.	127.053 M	126.953 M
GROUND LEVEL	129.230 M	129.230 M

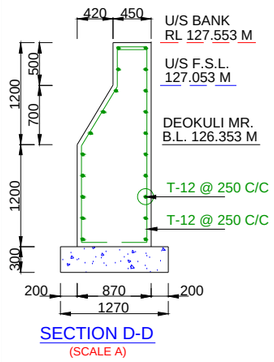
DEOKULI MINOR

CHAINAGE	6.350 M
DISCHARGE	0.307 CUMEC
BED WIDTH	1.400 M
WATER DEPTH	0.550 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	126.353 M
F.S.L.	126.903 M
CREST LEVEL	126.353 M
BED SLOPE	28.6 CM/ KM

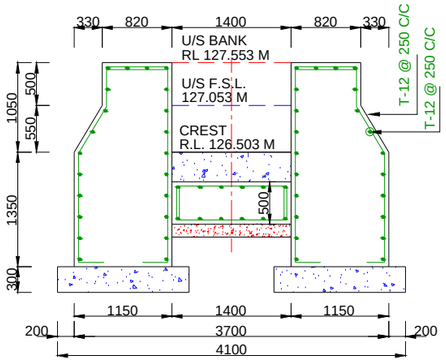
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS M-20
   - C. C.C.BLOCKS AND TOE WALLS M-15
   - D. P.C.C. M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

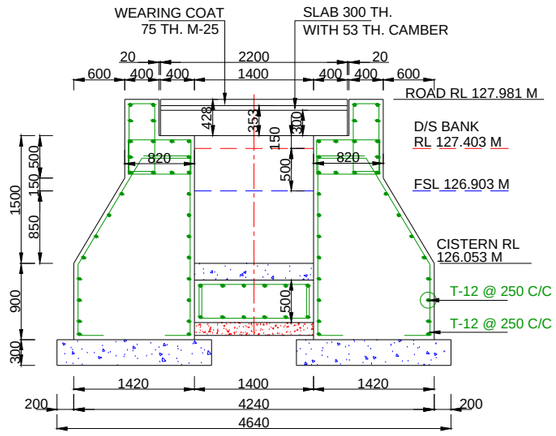
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR DEOKULI MINOR (OFFTAKE FROM RD - 6+350 KM. (RT), KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-02/ HR — 1 of 3



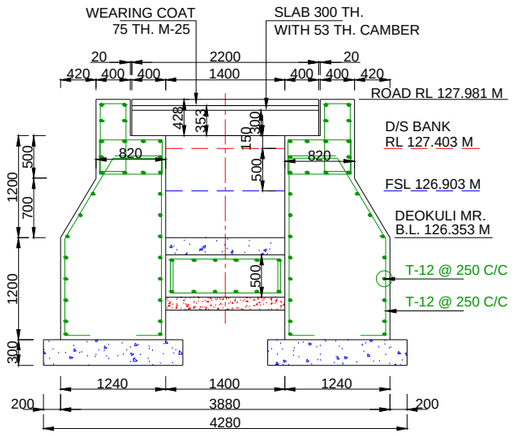
SECTION D-D
(SCALE A)



SECTION A-A
(AT CREST)
(SCALE A)



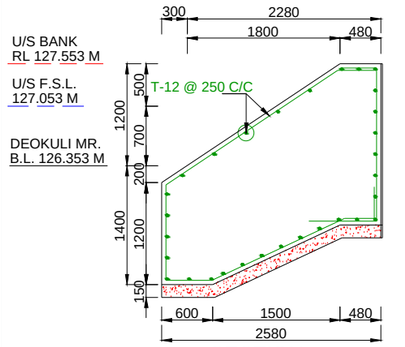
SECTION B-B
(AT CISTERN)
(SCALE A)



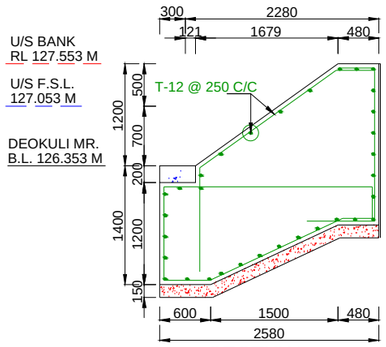
SECTION C-C
(AT D/S FLOOR)
(SCALE A)

NOTES:-

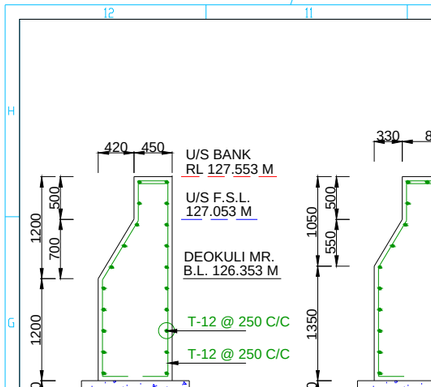
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.



SECTION a-a



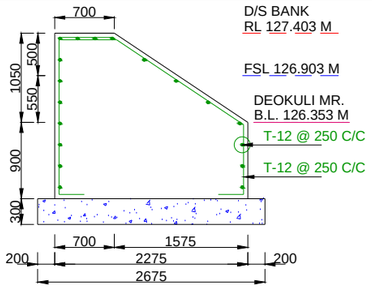
SECTION b-b



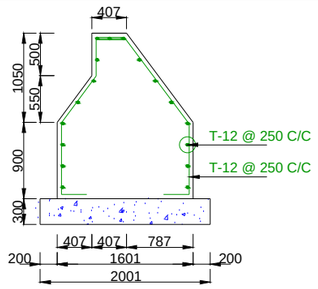
SECTION c-c

SECTION d-d

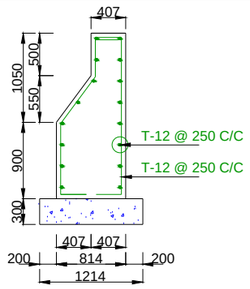
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



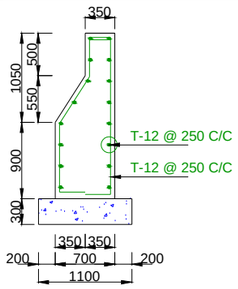
SECTION 1-1



SECTION 2-2

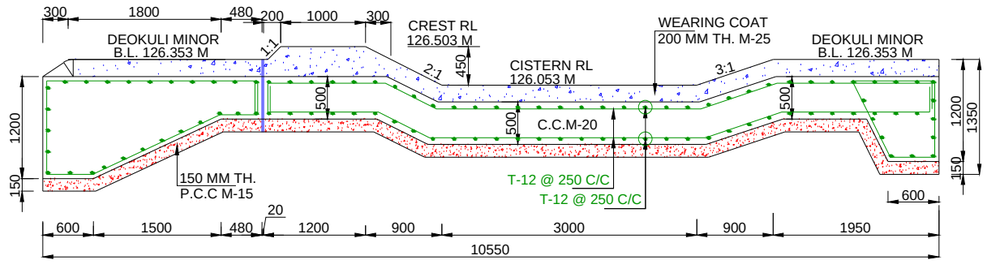


SECTION 3-3



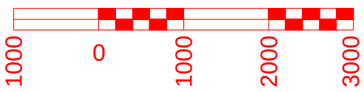
SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

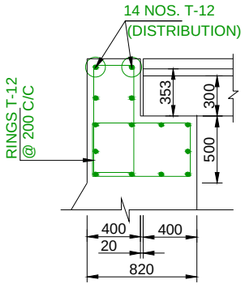


SECTION OF FLOOR (REINF.)
(SCALE A)

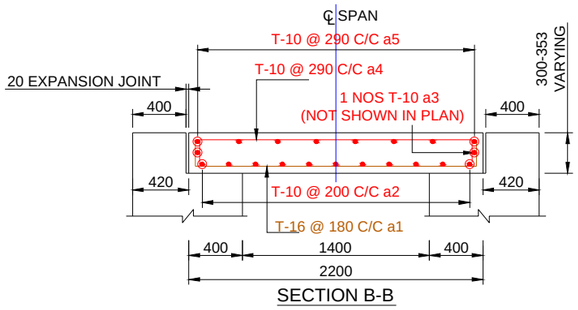
SCALE A:-



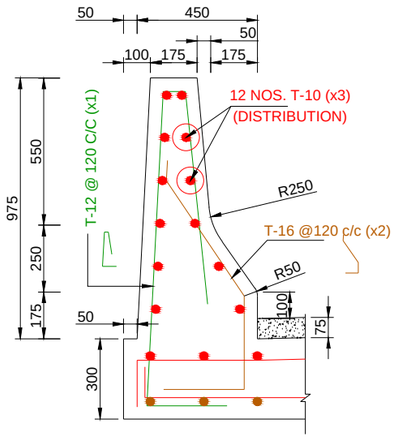
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR DEOKULI MINOR (OFFTAKE FROM RD - 6+350 KM. (RT), KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-02/ HR 2 of 3



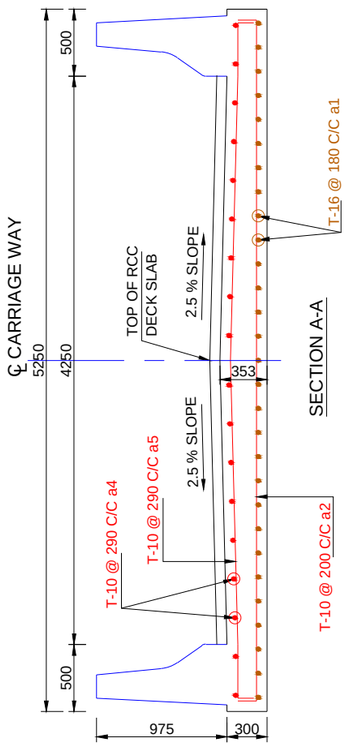
DIRT WALL
(SCALE A)



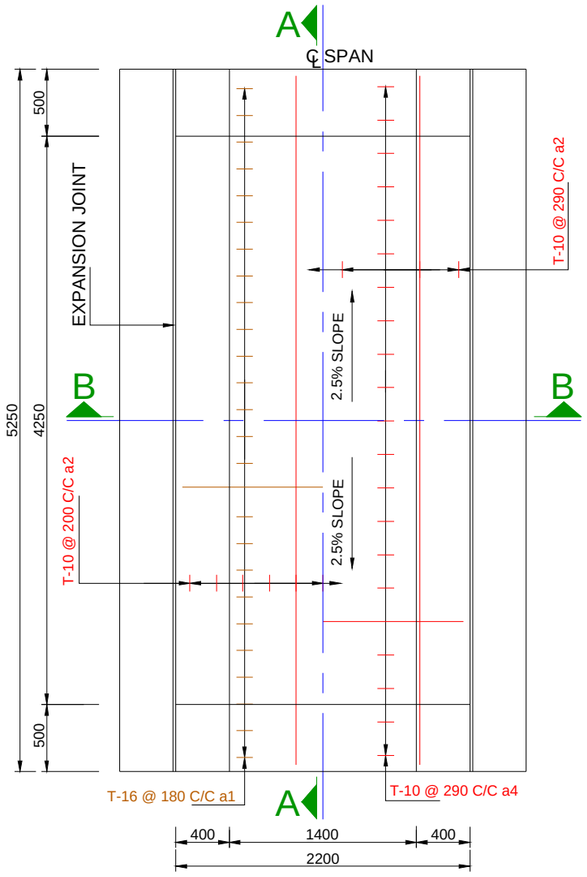
SECTION B-B
(SCALE A)



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



SECTION A-A



BOTTOM
REINFORCEMENT

TOP
REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	200, R=80, 2100, 200	16	180	29
2	a2	200, R=50, 5150, 200	10	200	11
3	a3	5150	10	-	2
4	a4	2100, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	8
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	18X2
2	x2	75, 540, 350, 300	16	120	18X2
3	x3	2100	10	-	12X2

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (f_y=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

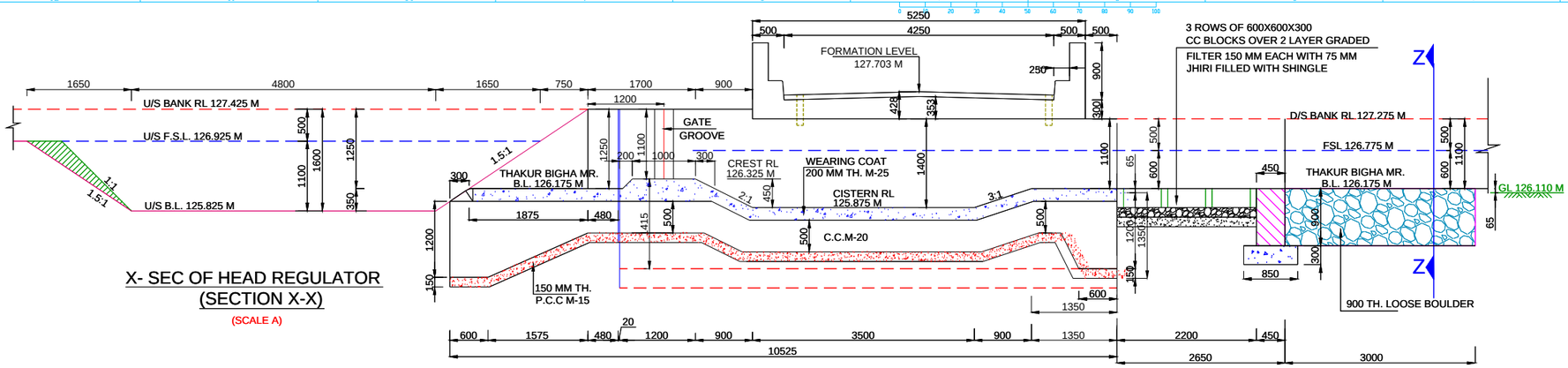
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

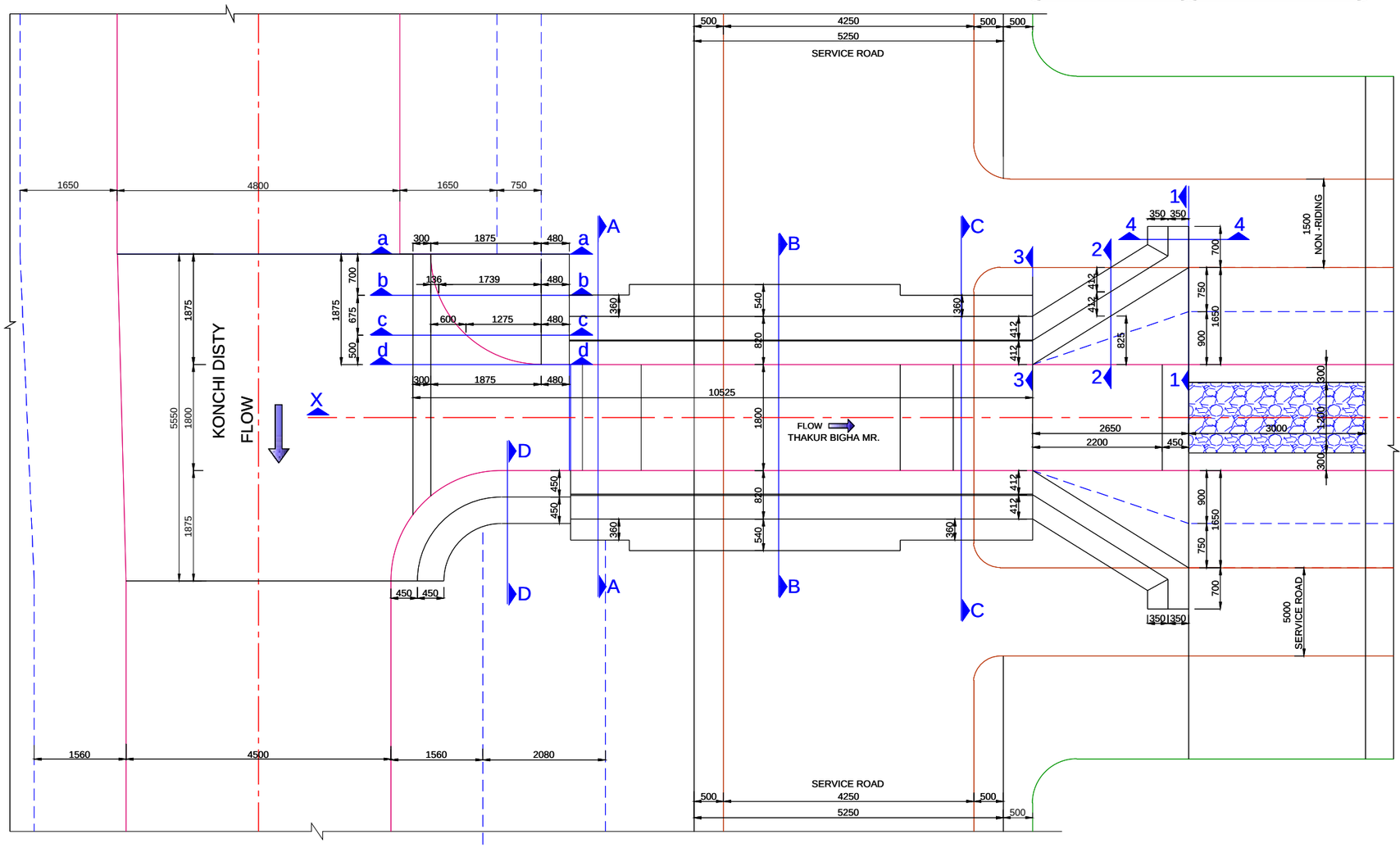
SCALE B:- 200 0 200 400 600

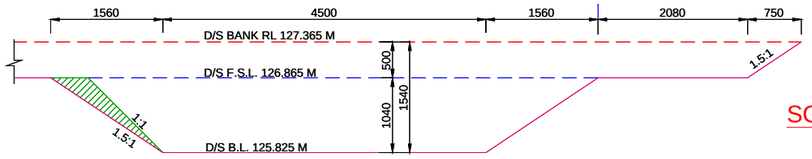
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR DEOKULI MINOR (OFFTAKE FROM RD - 6+350 KM. (RT), KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-02/ HR 3 of 3



X- SEC OF HEAD REGULATOR
(SECTION X-X)

(SCALE A)



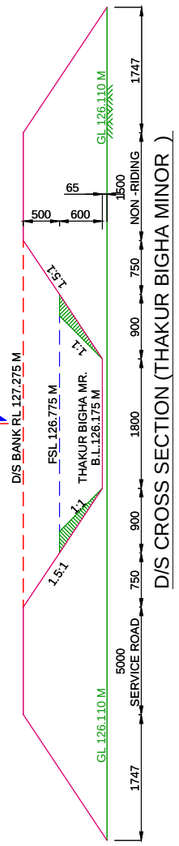


D/S CROSS SECTION (KONCHI DISTY)

(SCALE A)

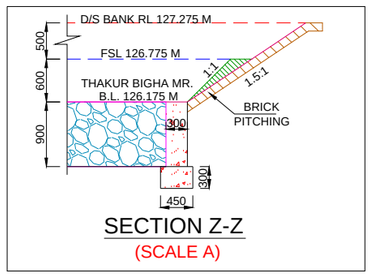
SCALE A:-

1000 0 1000 2000 3000



D/S CROSS SECTION (THAKUR BIGHA MINOR)

(SCALE A)



SECTION Z-Z

(SCALE A)

DESIGN DATA :-
KONCHI DISTY

	U/S	D/S
DISCHARGE OF FEEDER	3.030 CUMECS	2.570 CUMECS
BED WIDTH	4.800 M	4.500 M
WATER DEPTH	1.100 M	1.040 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	125.825 M	125.825 M
F.S.L.	126.925 M	126.865 M
GROUND LEVEL	126.110 M	126.110 M

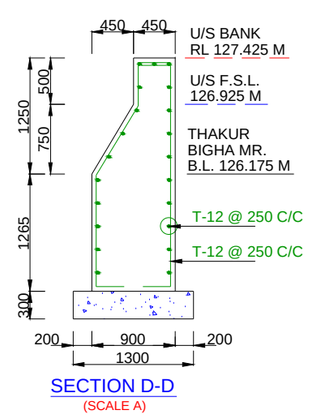
THAKUR BIGHA MINOR

CHAINAGE	6.500 M
DISCHARGE	0.456 CUMEC
BED WIDTH	1.800 M
WATER DEPTH	0.600 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	126.175 M
F.S.L.	126.775 M
CREST LEVEL	126.175 M
BED SLOPE	27.80 CM/ KM

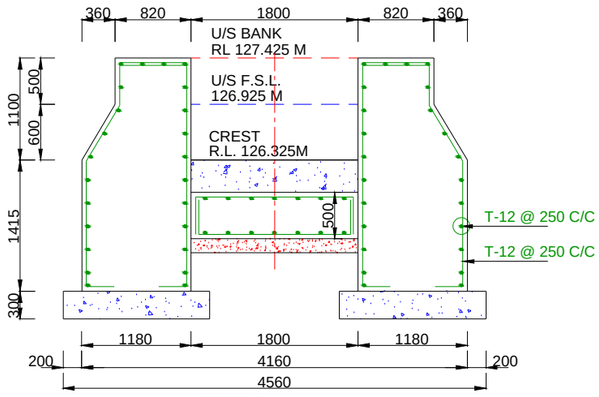
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR CONSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

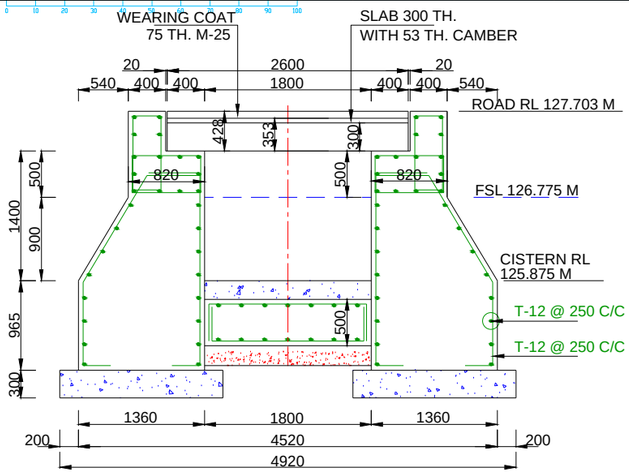
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR THAKUR BIGHA MINOR (OFFTAKE FROM RD - 6+500 KM. (RT), KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-03/ HR — 1 of 3



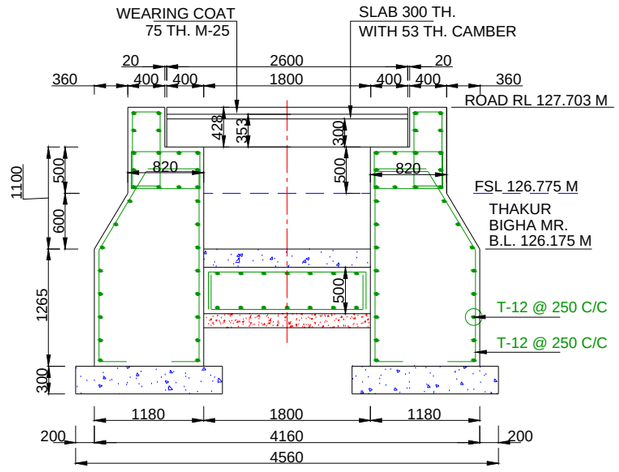
SECTION D-D
(SCALE A)



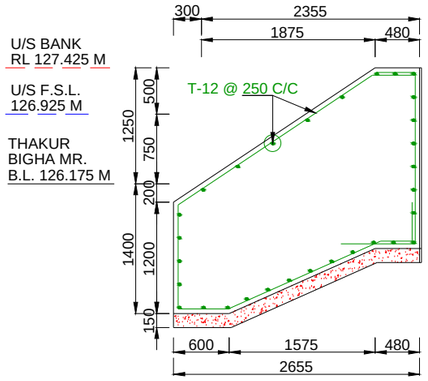
SECTION A-A
(AT CREST)
(SCALE A)



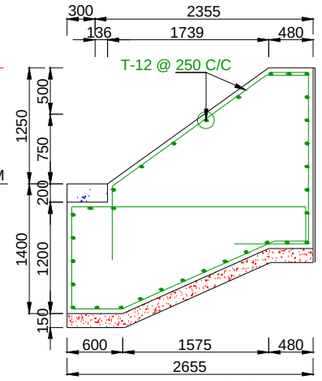
SECTION B-B
(AT CISTERN)
(SCALE A)



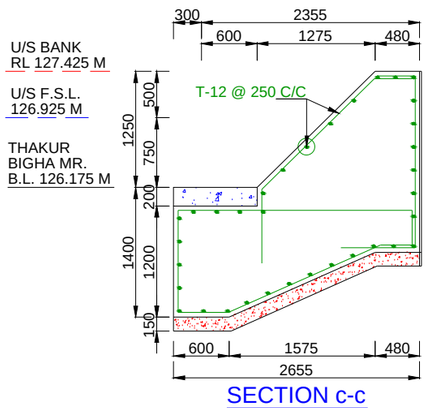
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



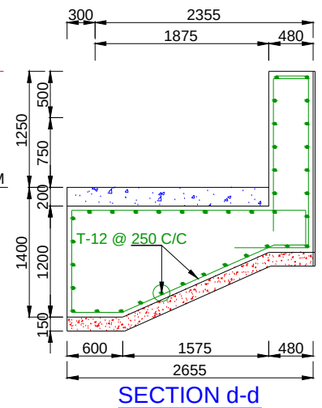
SECTION a-a



SECTION b-b

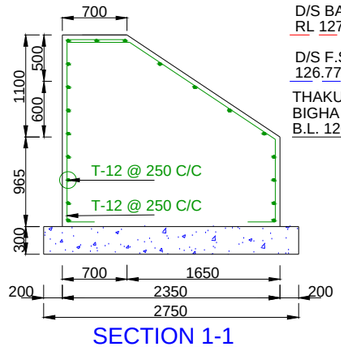


SECTION c-c

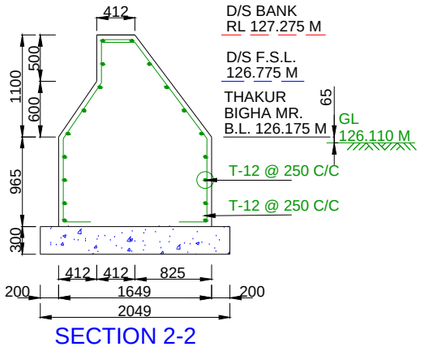


SECTION d-d

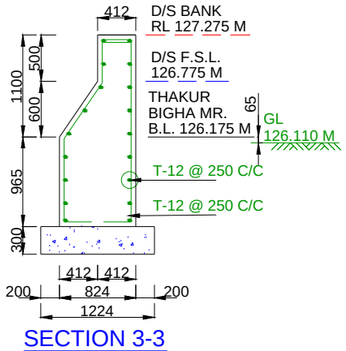
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



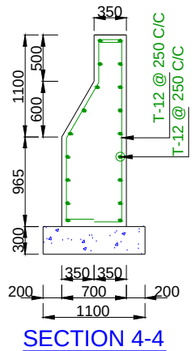
SECTION 1-1



SECTION 2-2

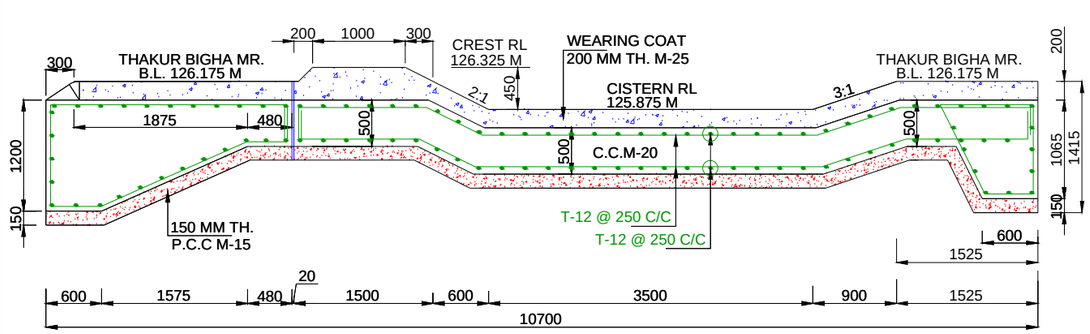


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

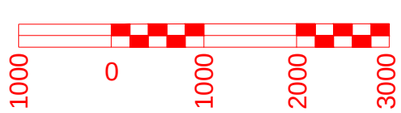


SECTION OF FLOOR (REINF.)
(SCALE A)

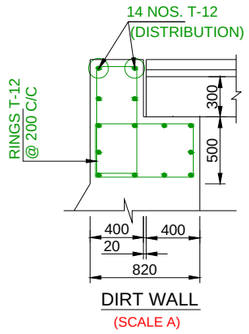
NOTES:-

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

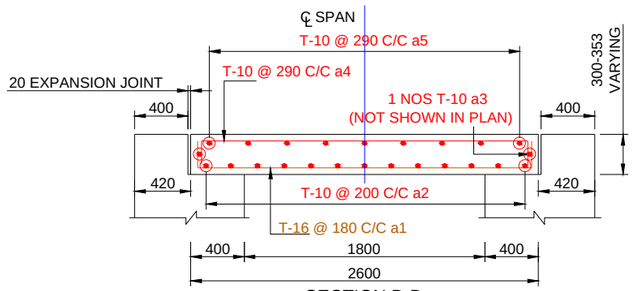
SCALE A:-



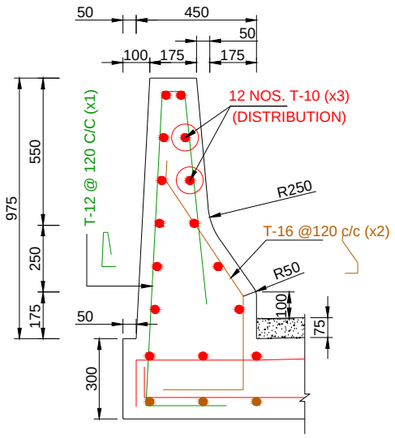
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR THAKUR BIGHA MINOR (OFFTAKE FROM RD - 6+500 KM. (RT), KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-03/ HR 2 of 3



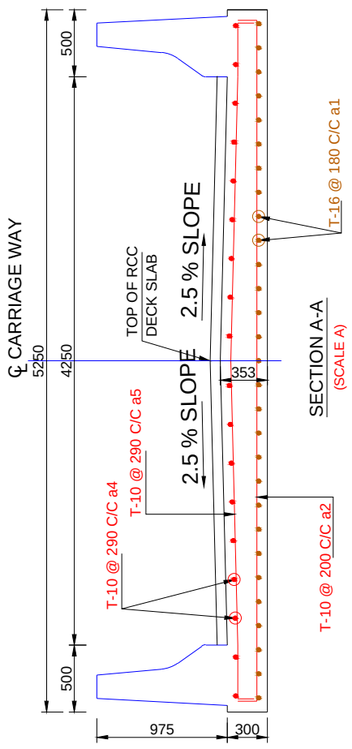
DIRT WALL
(SCALE A)



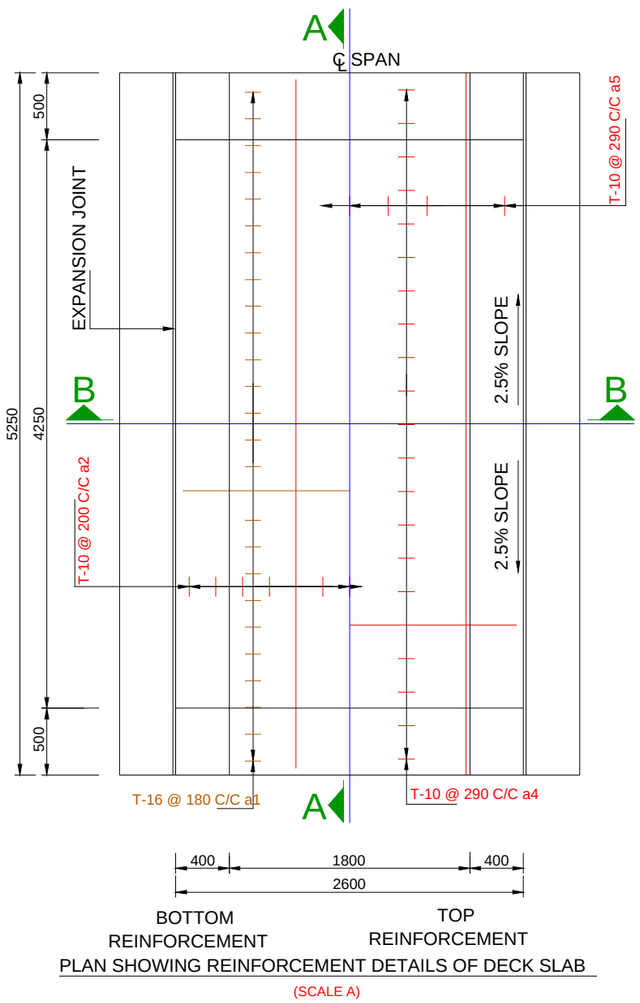
SECTION B-B
(SCALE A)



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



SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	200, R=80, 2500, 200	16	180	29
2	a2	200, R=50, 5150, 200	10	200	13
3	a3	5150	10	-	2
4	a4	2500, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	9
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	21X2
2	x2	75, 540, 350, 300	16	120	21X2
3	x3	2500	10	-	12X2

NOTES:-

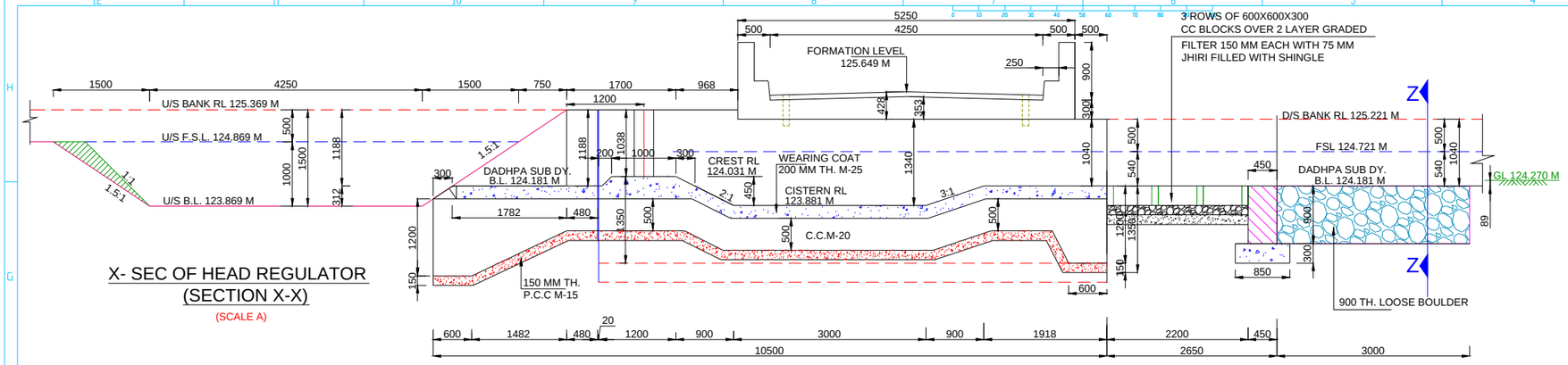
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,
   BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)							
TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

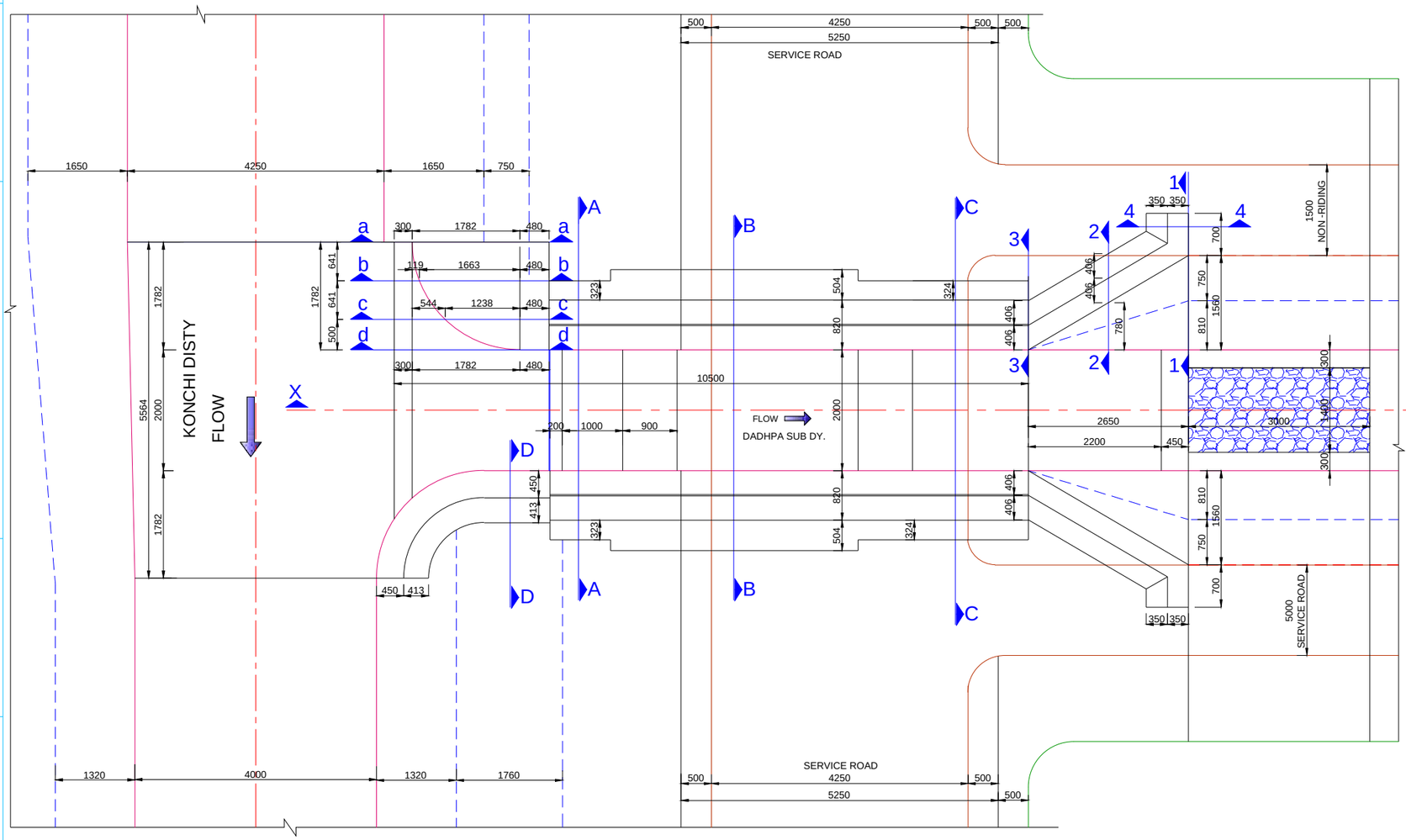
16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
    LAP LENGTH = $\alpha 1$. lbnet
    WHERE, $\alpha 1$ = 1.0 for p%≤25%
    $\alpha 1$ = 1.15 for 25%≤p%≤33%
    $\alpha 1$ = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

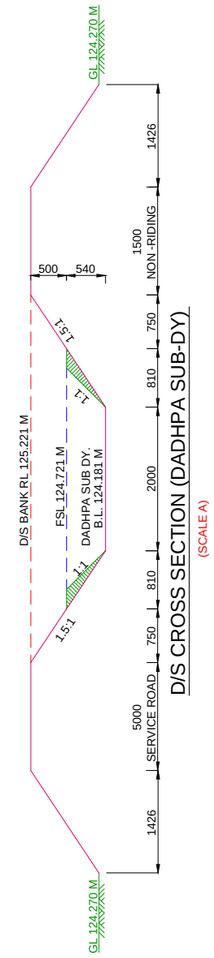
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR THAKUR BIGHA MR (OFFTAKE FROM RD - 6+500 KM. (RT), KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-03/ HR 3 of 3



X- SEC OF HEAD REGULATOR (SECTION X-X)

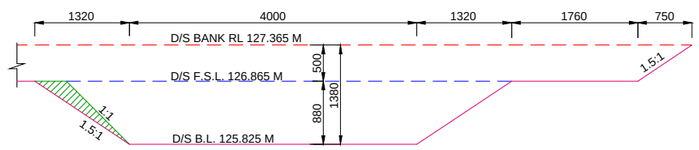
(SCALE A)





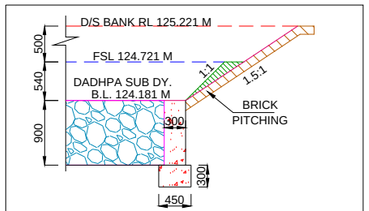
D/S CROSS SECTION (DADHPA SUB-DY)

(SCALE A)



D/S CROSS SECTION (KONCHI DISTY)

(SCALE A)



SECTION Z-Z

(SCALE A)

DESIGN DATA :-

KONCHI DISTY

	U/S	D/S
DISCHARGE OF FEEDER	2.260 CUMECS	1.760 CUMECS
BED WIDTH	4.250 M	4.000 M
WATER DEPTH	1.000 M	0.880 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	123.869 M	123.869 M
F.S.L.	124.869 M	124.749 M
GROUND LEVEL	124.270 M	124.270 M

DADHPA SUB-DISTRIBUTARY

CHAINAGE	11.300 M
DISCHARGE	0.380 CUMEC
BED WIDTH	2.000 M
WATER DEPTH	0.540 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	124.181 M
F.S.L.	124.721 M
CREST LEVEL	124.181 M
BED SLOPE	22.70 CM/ KM

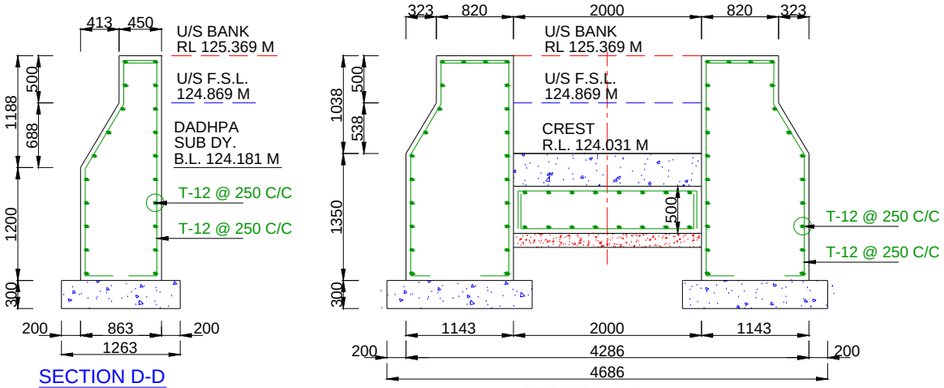
NOTES:-

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

SCALE A:-

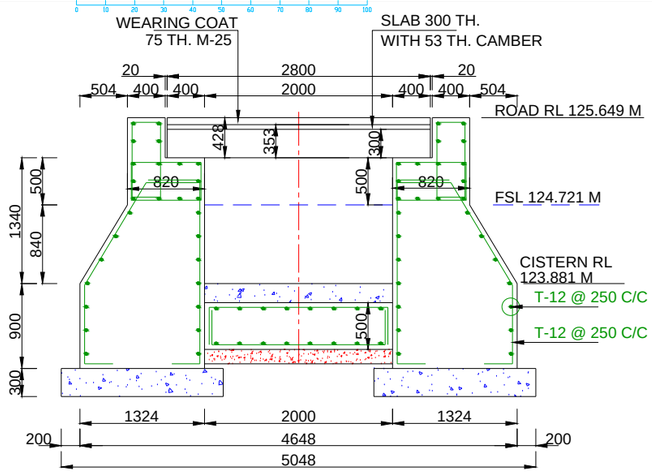
1000 0 1000 2000 3000

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GAD OF HEAD REGULATOR FOR DADHPA SUB-DISTRIBUTARY (OFFTAKE FROM RD - 11+300 KM., KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-04/ HR — 1 of 3

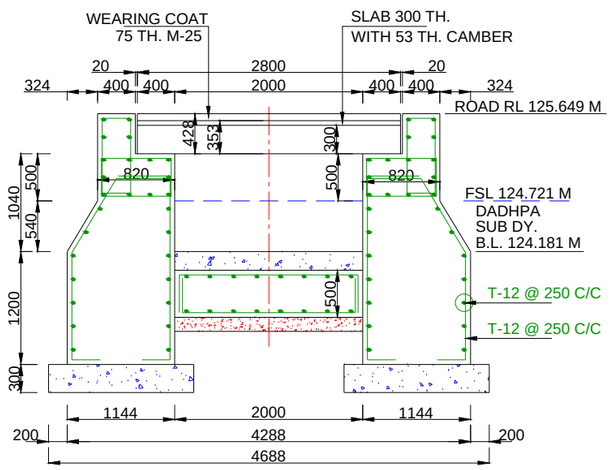


SECTION D-D
(SCALE A)

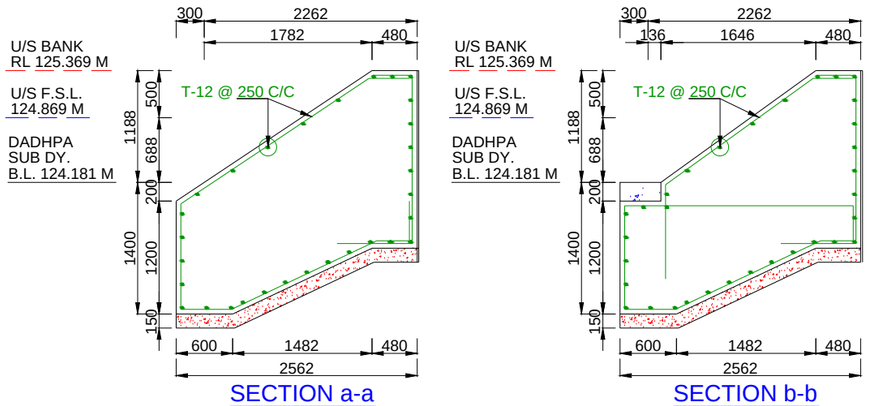
SECTION A-A
(AT CREST)
(SCALE A)



SECTION B-B
(AT CISTERN)
(SCALE A)

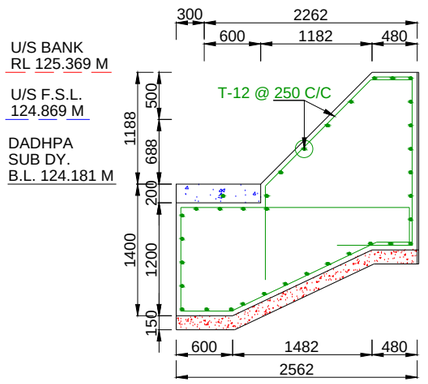


SECTION C-C
(AT D/S FLOOR)
(SCALE A)

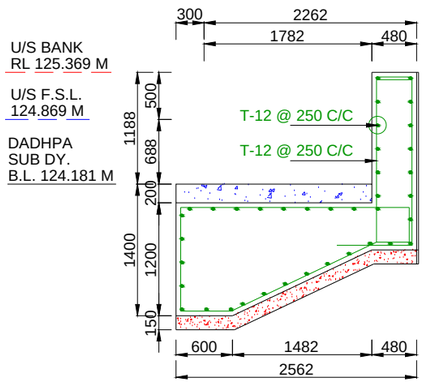


SECTION a-a

SECTION b-b

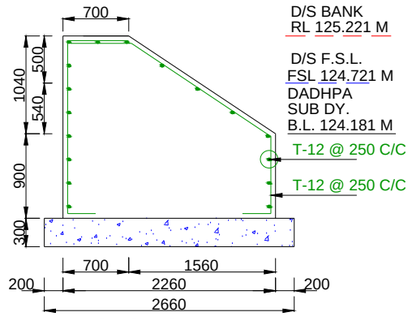


SECTION c-c

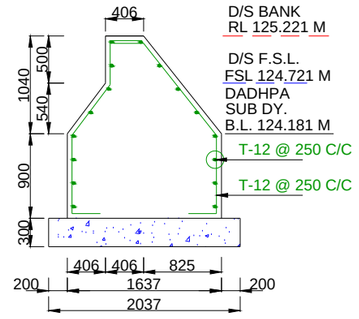


SECTION d-d

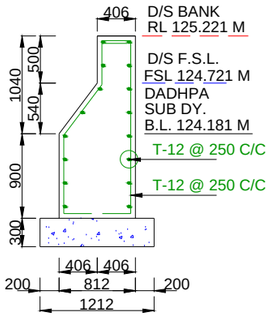
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



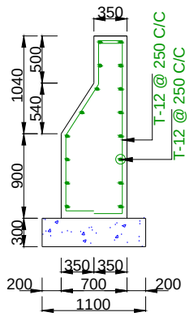
SECTION 1-1



SECTION 2-2

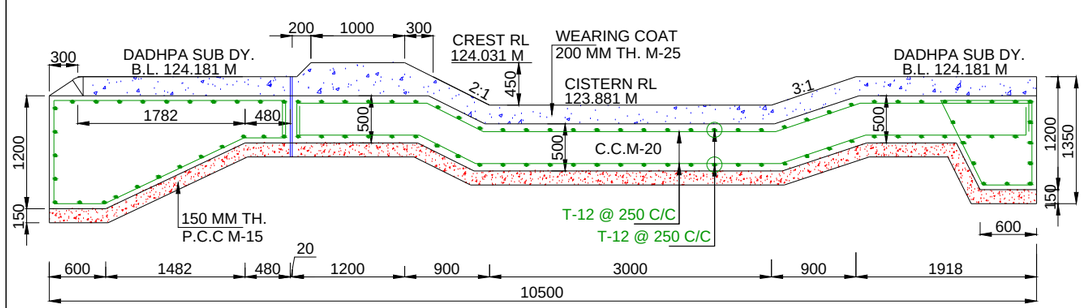


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

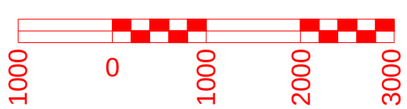


SECTION OF FLOOR (REINF.)
(SCALE A)

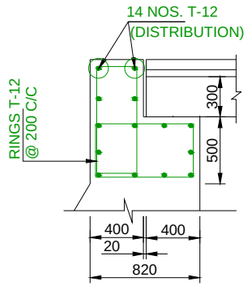
NOTES:-

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

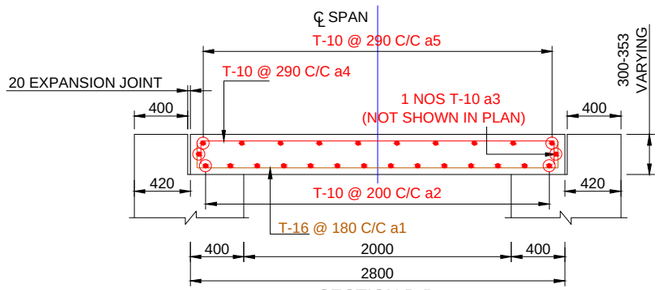
SCALE A:-



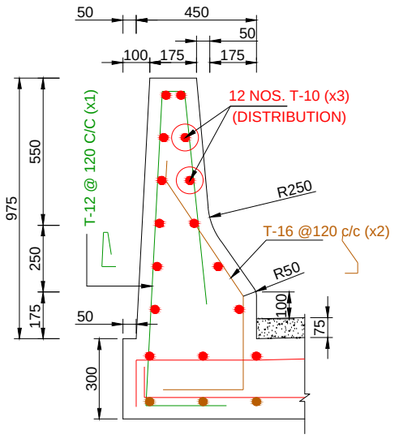
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR DADHPA SUB-DISTRIBUTARY (OFFTAKE FROM RD - 11+300 KM., KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-04/ HR 2 of 3



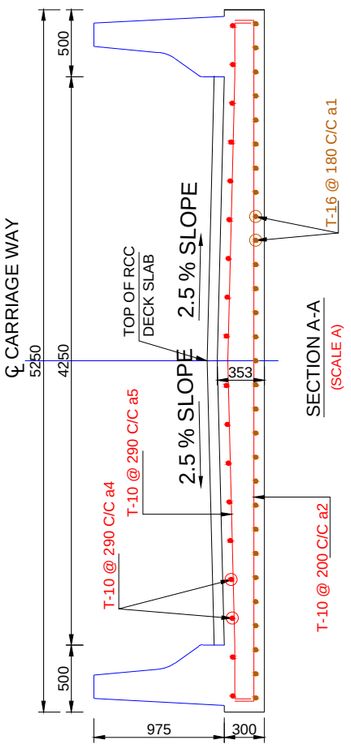
DIRT WALL
(SCALE A)



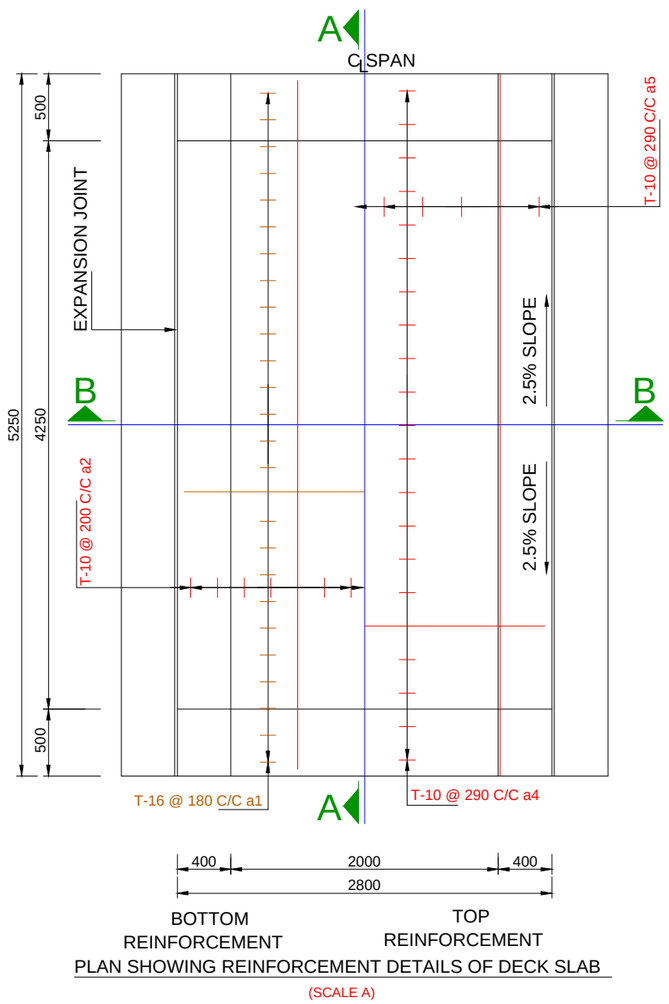
SECTION B-B
(SCALE A)



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



SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	200, R=80, 2700, 200	16	180	29
2	a2	200, R=50, 5150, 200	10	200	14
3	a3	5150	10	-	2
4	a4	2700, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	10
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	23X2
2	x2	75, 540, 350, 300	16	120	23X2
3	x3	2700	10	-	12X2

NOTES:-

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BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
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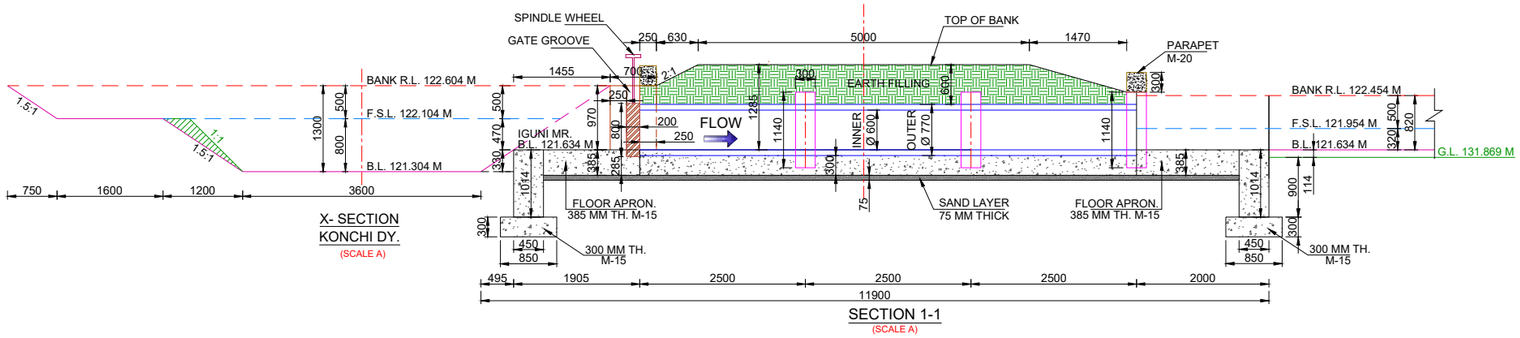
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm²) (IS 456 CLAUSE 26.2.1)							
TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

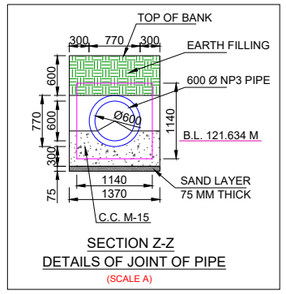
16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = $\alpha 1$. lbnet
WHERE, $\alpha 1$ = 1.0 for p%≤25%
$\alpha 1$ = 1.15 for 25%≤p%≤33%
$\alpha 1$ = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR DADHPA SUB-DY (OFFTAKE FROM RD - 11+300 KM., KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-04/ HR 3 of 3



X- SECTION KONCHI DY.
(SCALE A)

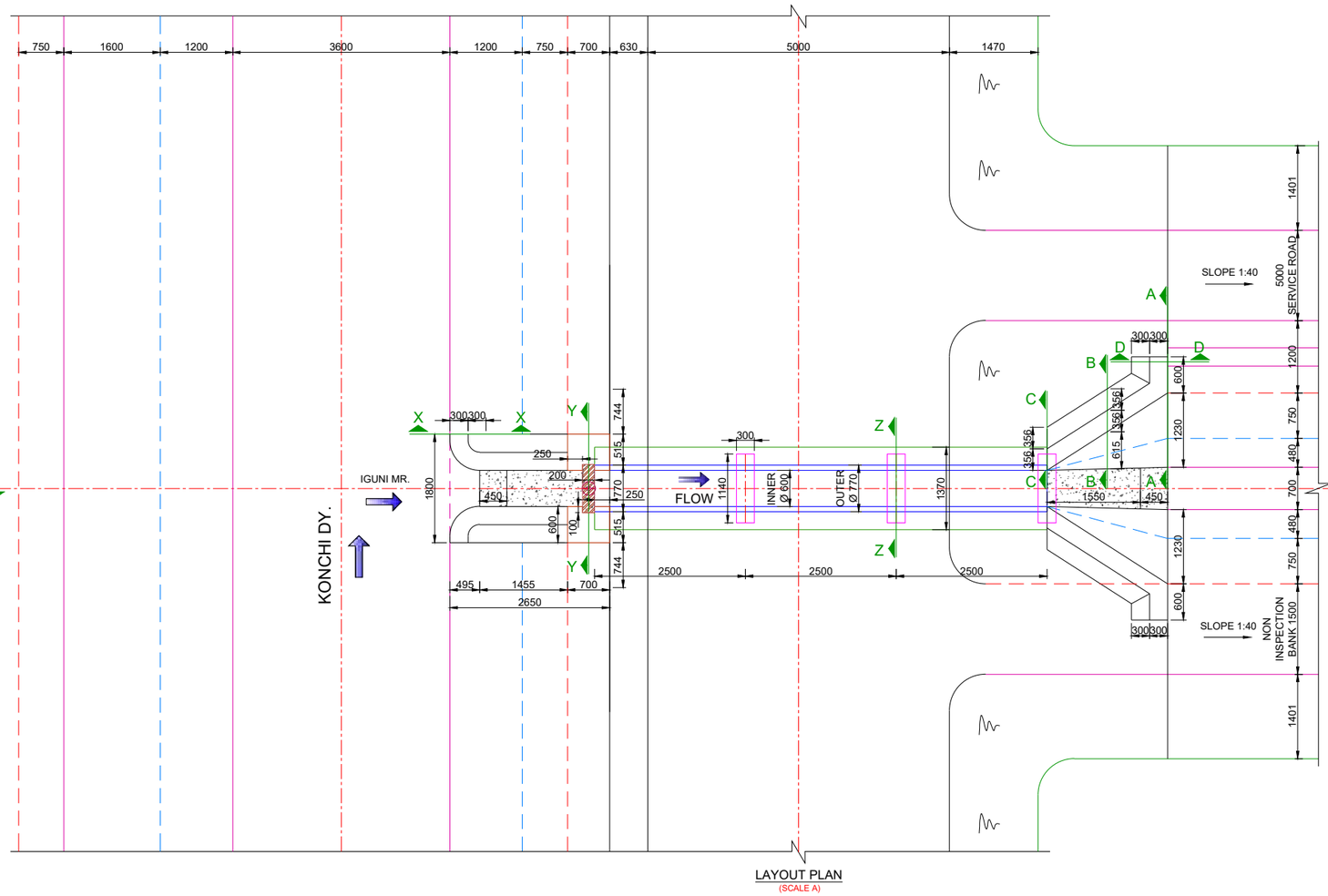
SECTION 1-1
(SCALE A)



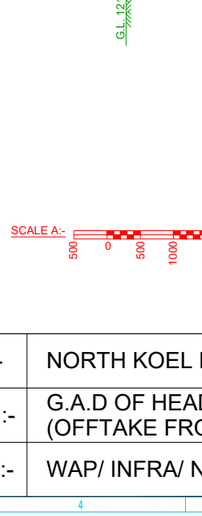
SECTION Z-Z
DETAILS OF JOINT OF PIPE
(SCALE A)

DESIGN DATA :-

KONCHI DY.	
DISCHARGE OF FEEDER	1.36 CUMEC
BED WIDTH	3.600 M
WATER DEPTH	0.800 M
FREE BOARD	0.500 M
BED LEVEL	121.304 M
F.S.L.	122.104 M
GROUND LEVEL	121.520 M
IGUNI MR.	
CHAINAGE	15.125 KM
DISCHARGE	0.06 CUMEC/ 1.99 CUSEC
BED WIDTH	0.700 M
WATER DEPTH	0.320 M
SIDE SLOPE	1.5:1
FREE BOARD	0.500 M
BED LEVEL	121.634 M
F.S.L.	121.954 M
BED SLOPE	25.0 CM/KM
INTERNAL DIA OF PIPE	0.600 M



LAYOUT PLAN
(SCALE A)

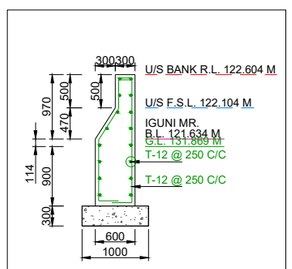


NOTES:-

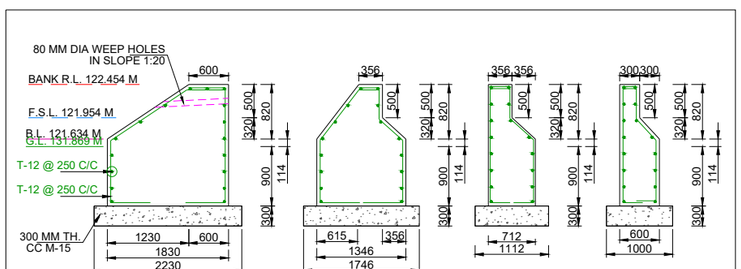
1. AS PER UPID DESIGN CRITERIA, PIPE HEAD REGULATOR SHOULD BE CONSTRUCTED FOR DISTRIBUTARIES & MONIRS HAVING DISCHARGE LESS THAN 0.40 CUMEC.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-2015
     - b. IS: 6531-1994
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1994, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VI. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-

A. FLOOR, ABUTMENT AND TRANSITIONS	M-20
B. TOE WALLS	M-15
C. P.C.C.	M-15
D. PIPE	NP-3

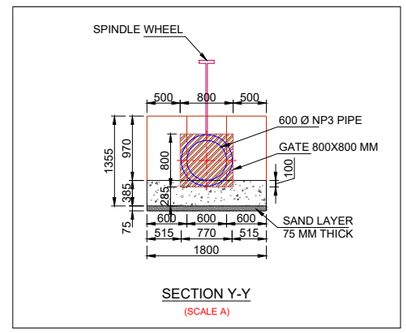
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.



SECTION X-X
(SCALE A)



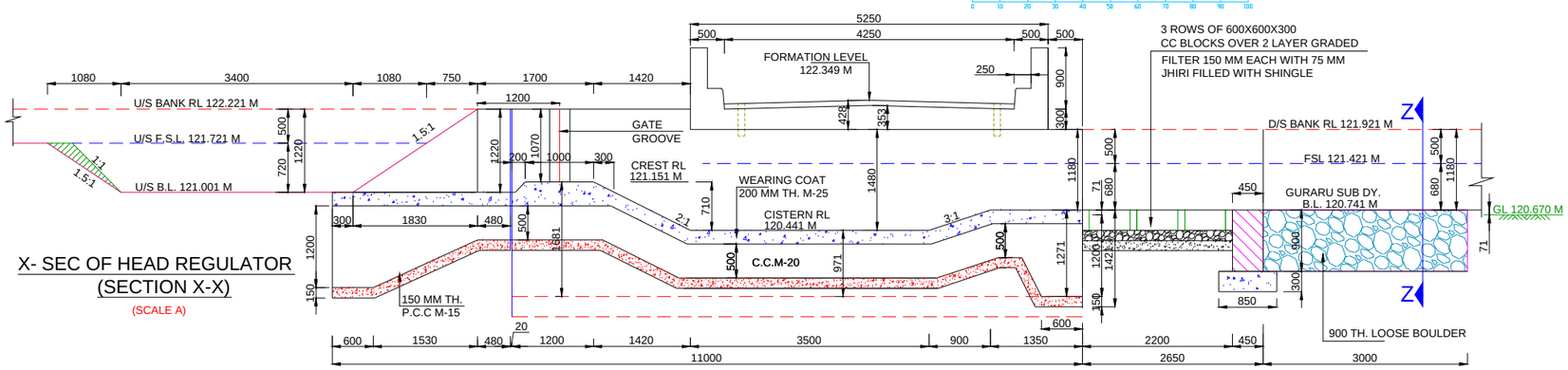
SECTION OF D/S TRANSITIONS
(SCALE A)



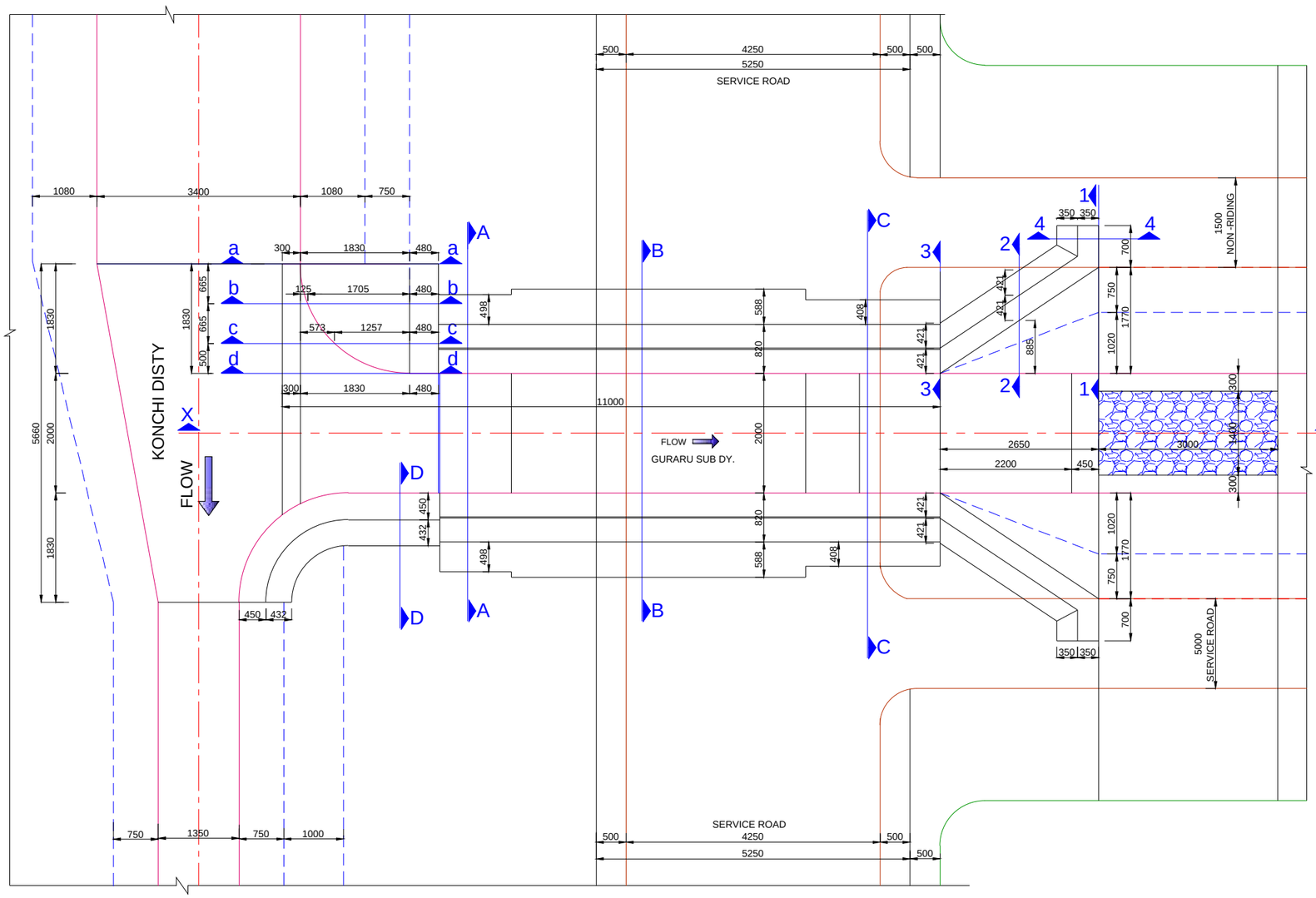
SECTION Y-Y
(SCALE A)

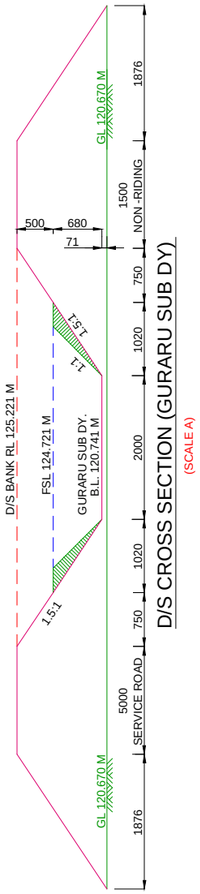
SCALE A:-
500 0 500 1000 1500

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D OF HEAD REGULATOR OF IGUNI MINOR (OFFTAKE FROM RD - 15+125 KM., KONCHI DISTRIBUTARY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-05/HR 1 of 1

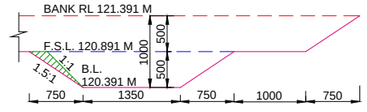


X- SEC OF HEAD REGULATOR
(SECTION X-X)
(SCALE A)





D/S CROSS SECTION (GURARU SUB DY)
(SCALE A)



D/S CROSS SECTION (KONCHI DISTY)
(SCALE A)

SCALE A:-

1000 0 1000 2000 3000

DESIGN DATA :- KONCHI DISTY

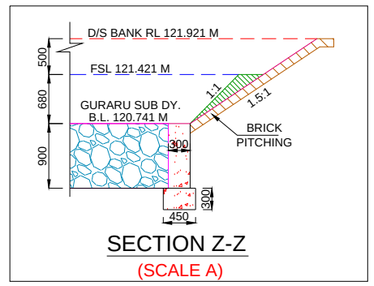
	U/S	D/S
DISCHARGE OF FEEDER	1.080 CUMECS	0.260 CUMECS
BED WIDTH	3.400 M	1.350 M
WATER DEPTH	0.720 M	0.500 M
FREE BOARD	0.500 M	0.500 M
BED LEVEL	121.001 M	120.391 M
F.S.L.	121.721 M	120.891 M
GROUND LEVEL	120.670 M	120.670 M

GURARU SUB DISTRIBUTARY

CHAINAGE	16.700 M
DISCHARGE	0.590 CUMEC
BED WIDTH	2.000 M
WATER DEPTH	0.680 M
SIDE SLOPE	0.5:1
FREE BOARD	0.500 M
BED LEVEL	120.741 M
F.S.L.	121.421 M
CREST LEVEL	120.741 M
BED SLOPE	22.70 CM/ KM

NOTES:-

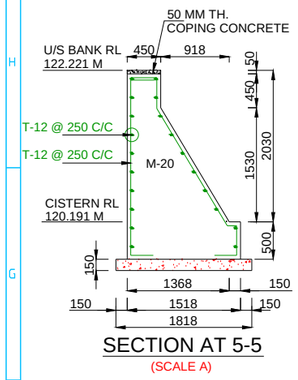
1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
   - A. SLAB, CRASH BARRIER AND WEARING COAT — M-25
   - B. FLOOR, ABUTMENT AND TRANSITIONS — M-20
   - C. C.C.BLOCKS AND TOE WALLS — M-15
   - D. P.C.C. — M-15
5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

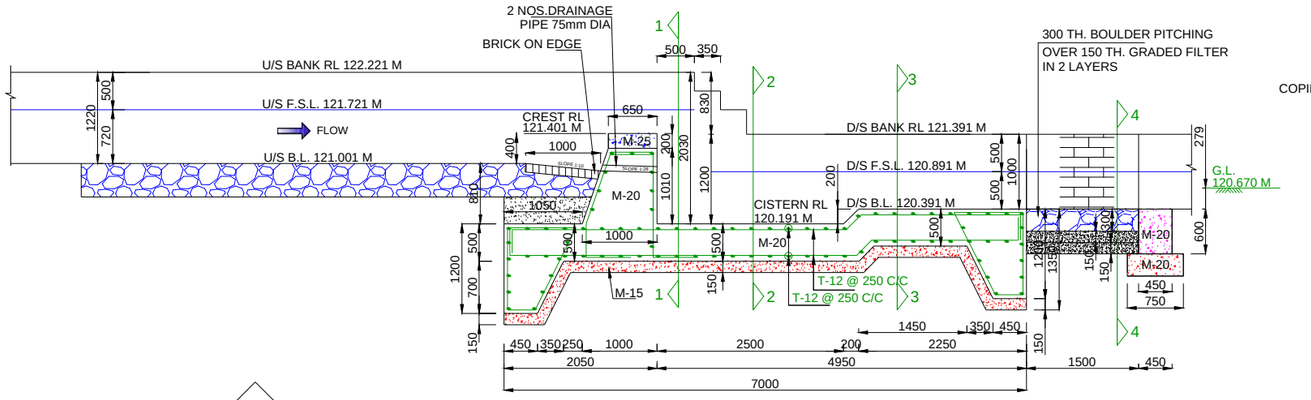


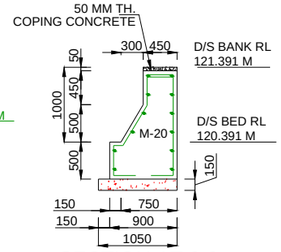
SECTION Z-Z
(SCALE A)

Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GAD OF HEAD REGULATOR FOR GURARU SUB DISTRIBUTARY (OFFTAKE FROM RD - 16+700 KM., KONCHI DISTY)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-06/ HR CUM FALL

1 of 4







NOTES:-

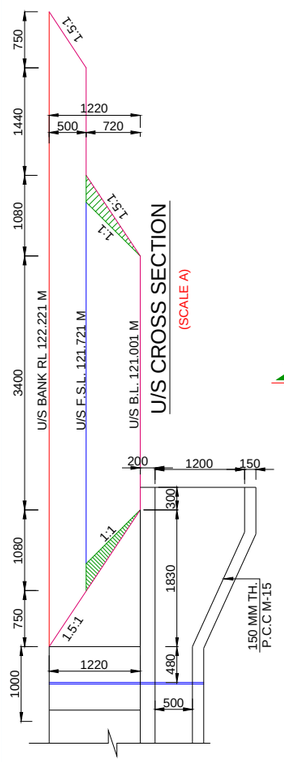
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

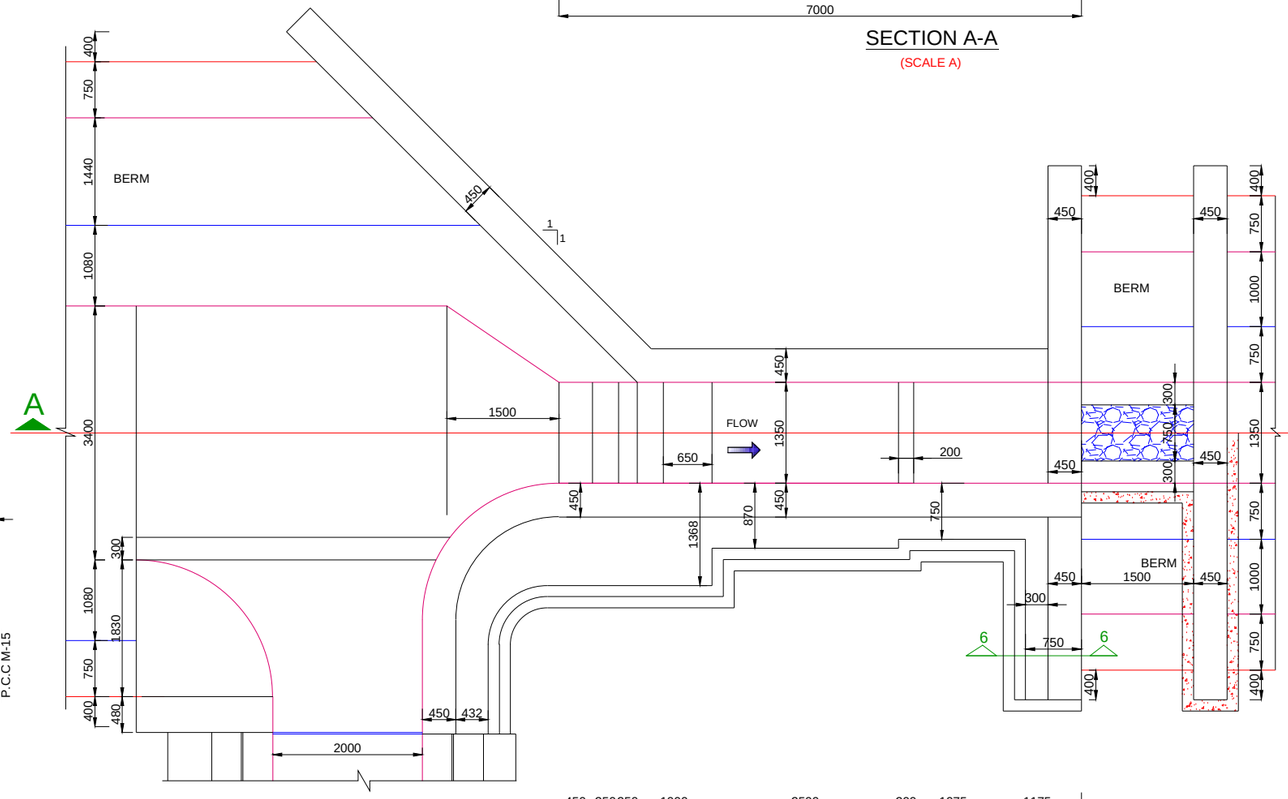
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

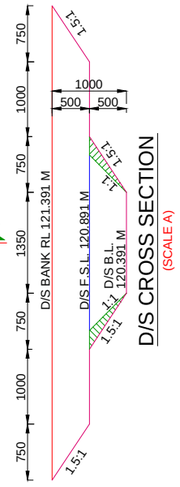
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

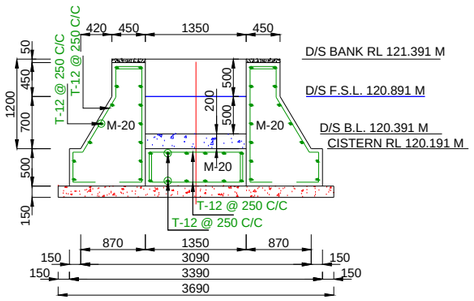
HYDRAULIC:- DATA

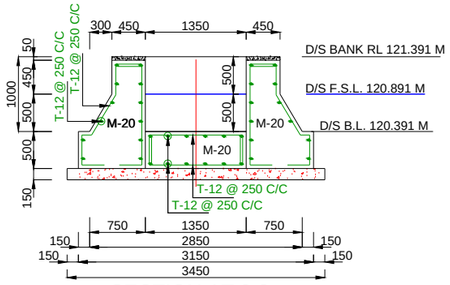
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.080	1.080	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.720	0.500	METRE
BED WIDTH	3.400	1.350	METRE
BED SLOPE	1 : 3700	1 : 3700	

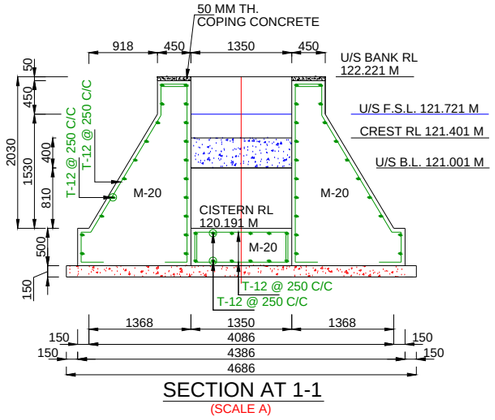


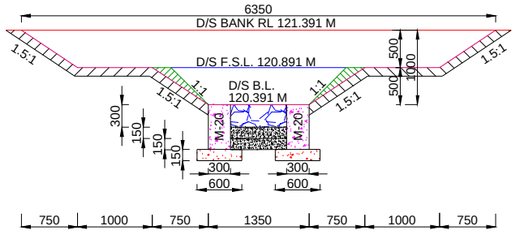




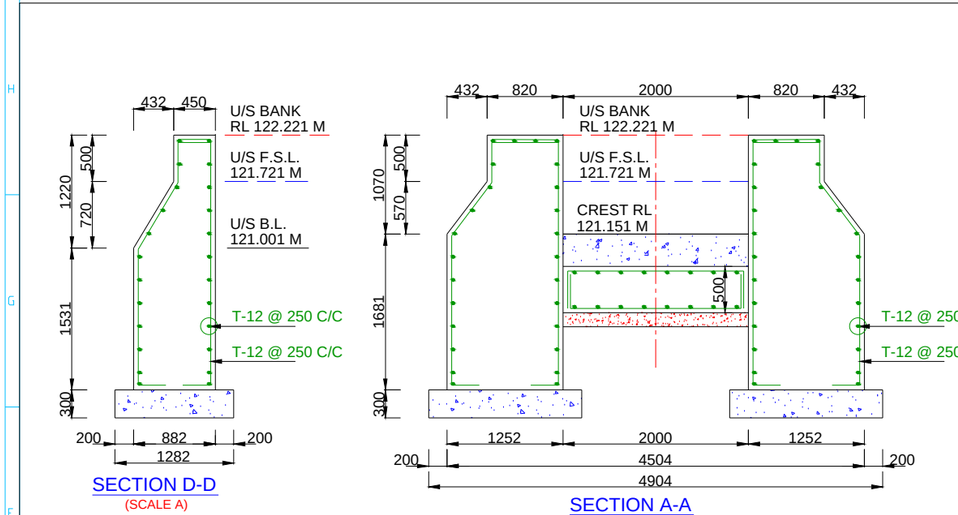






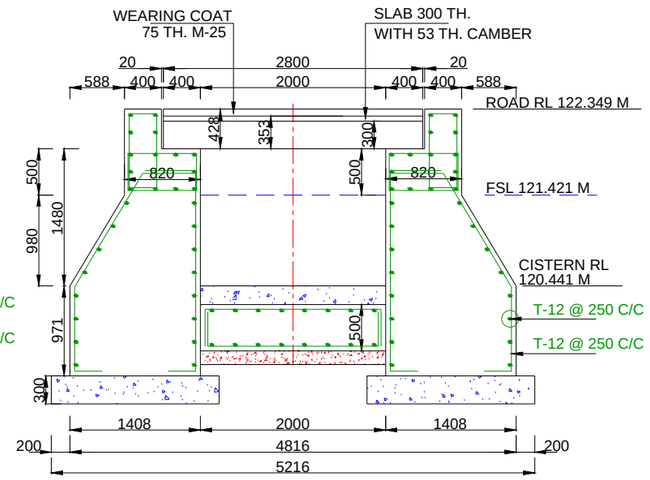


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 16.700 OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ FALL 2 of 4

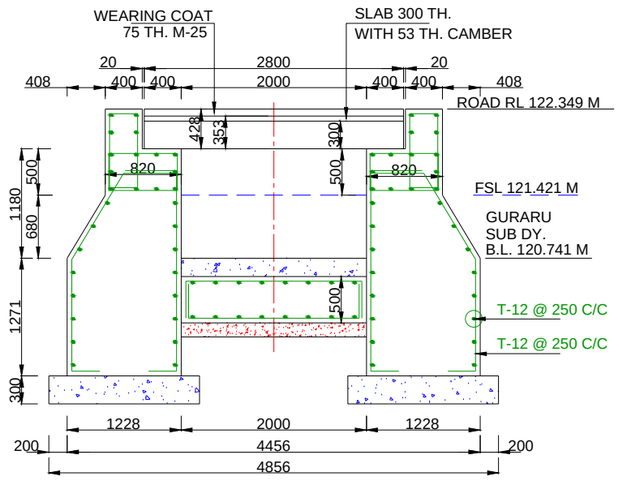


SECTION D-D
(SCALE A)

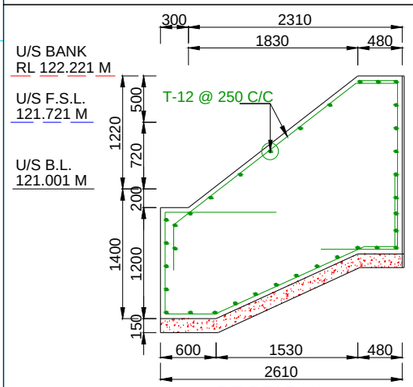
SECTION A-A
(AT CREST)
(SCALE A)



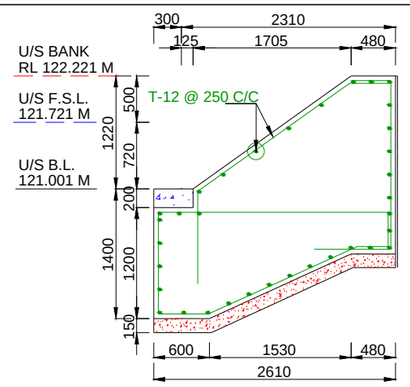
SECTION B-B
(AT CISTERN)
(SCALE A)



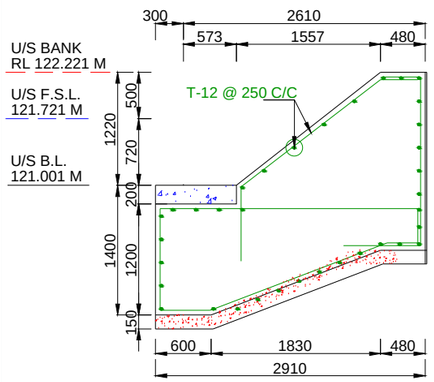
SECTION C-C
(AT D/S FLOOR)
(SCALE A)



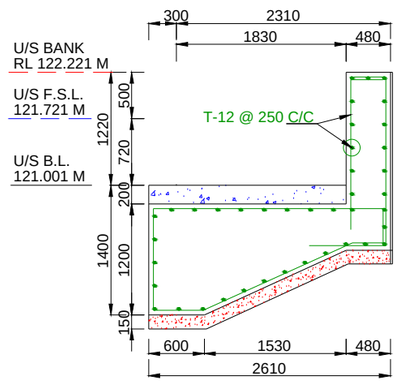
SECTION a-a



SECTION b-b

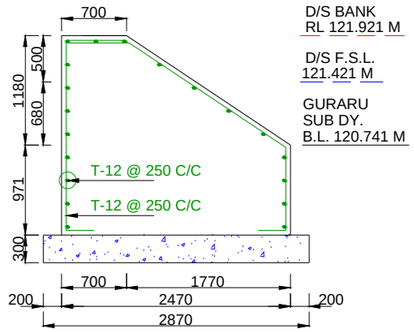


SECTION c-c

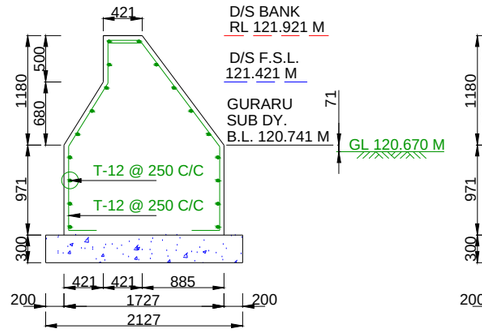


SECTION d-d

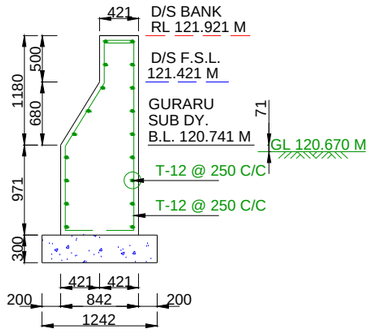
SECTION OF UP STREAM TRANSITIONS
(SCALE A)



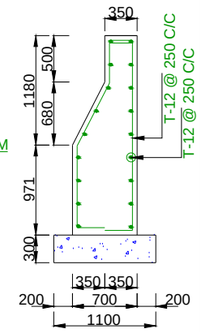
SECTION 1-1



SECTION 2-2

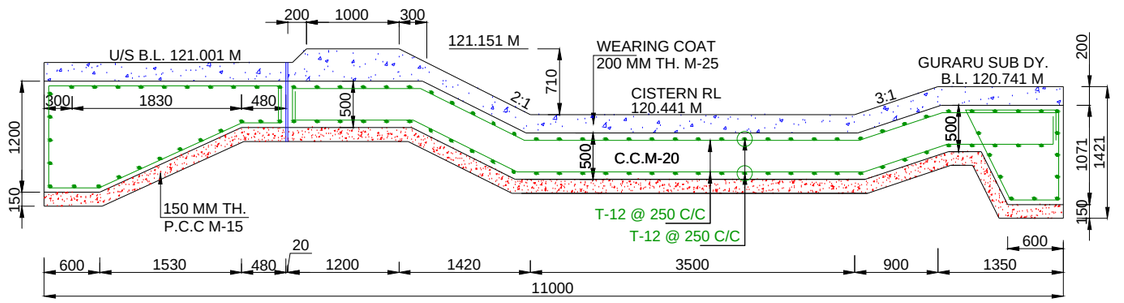


SECTION 3-3



SECTION 4-4

SECTION OF D/S TRANSITIONS
(SCALE A)

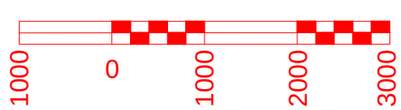


SECTION OF FLOOR (REINF.)
(SCALE A)

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

SCALE A:-

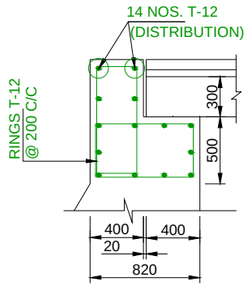


Prepared by :-

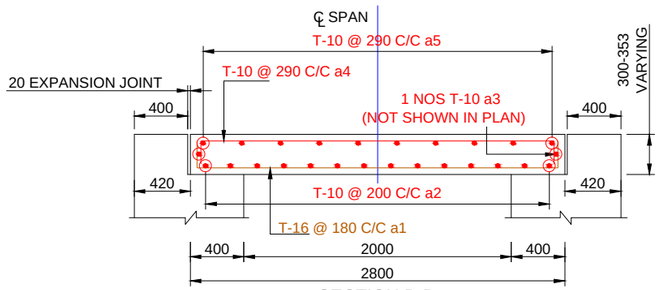
WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	SECTION DETAILS OF HEAD REGULATOR FOR GURARU SUB DISTRIBUTARY (OFFTAKE FROM RD - 16+700 KM., KONCHI DISTY)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-06/ HR CUM FALL

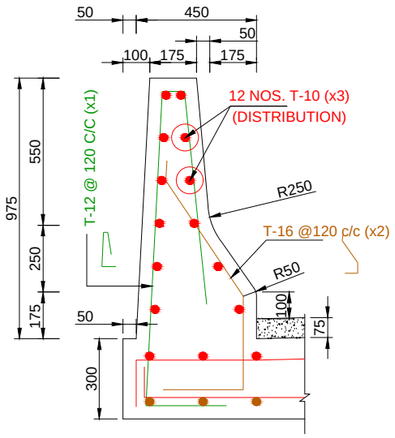
3 of 4



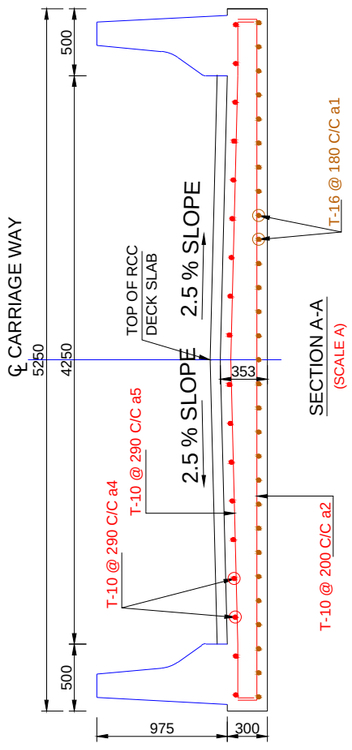
DIRT WALL
(SCALE A)



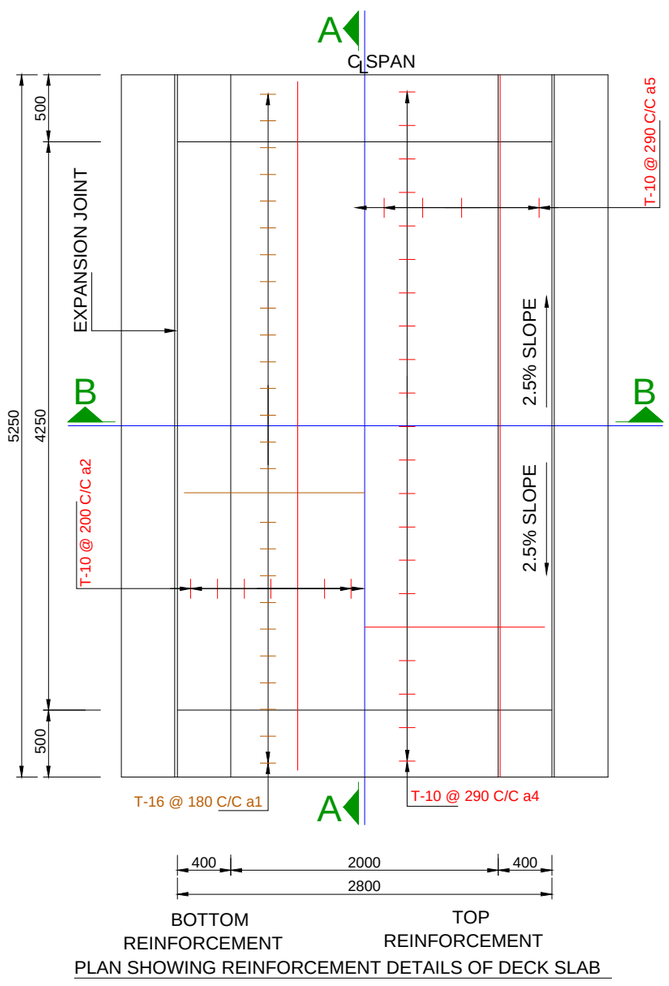
SECTION B-B
(SCALE A)



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



SECTION A-A
(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	200, R=80, 2700, 200	16	180	29
2	a2	200, R=50, 5150, 200	10	200	14
3	a3	5150	10	-	2
4	a4	2700, 200, R=40, 200	10	290	18
5	a5	200, 450, 2125, 2125, 450, 200	10	290	10
DIRT WALL					
1	d1	800, 300, 730, 400	12	200	26
2	d2	200, 5150, 200	12	-	14
CRASH BARRIER					
1	x1	75, 1177, 950, 300	12	120	23X2
2	x2	75, 540, 350, 300	16	120	23X2
3	x3	2700	10	-	12X2

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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 500) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

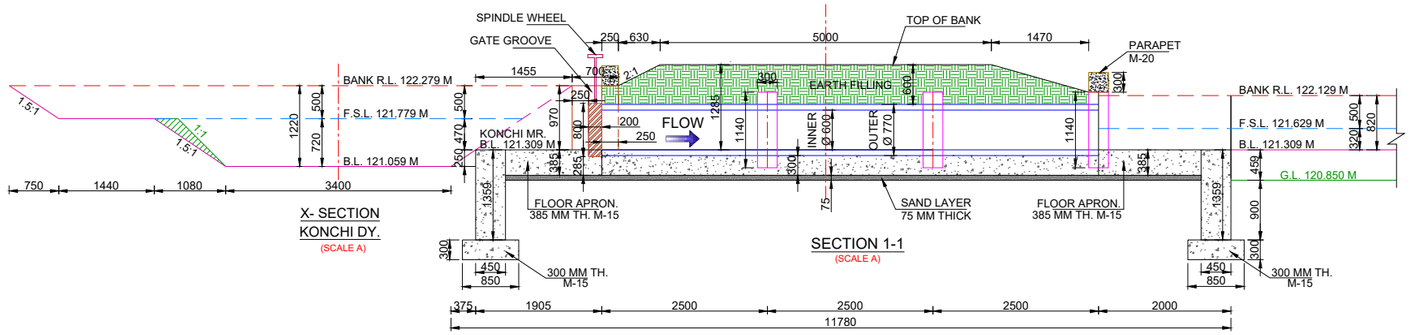
DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (f_y=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

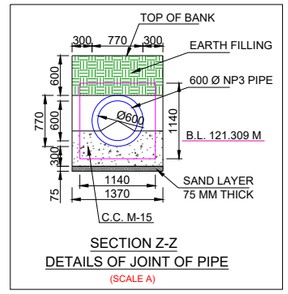
16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR FOR GURARU SUB DY (OFFTAKE FROM RD - 16+700 KM., KONCHI DISTY)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-06/ HR CUM FALL 4 of 4



X- SECTION KONCHI DY.
(SCALE A)

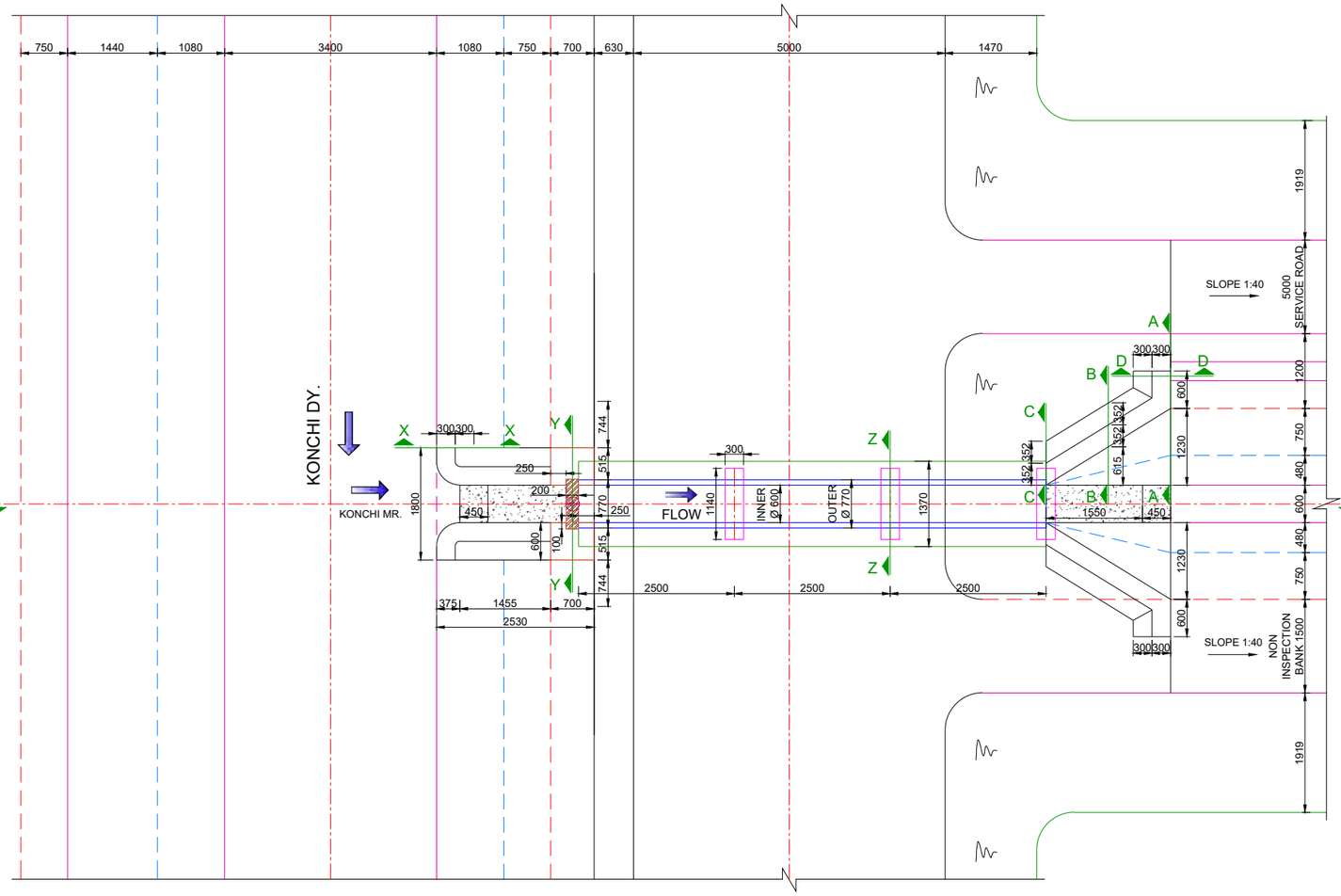
SECTION 1-1
(SCALE A)



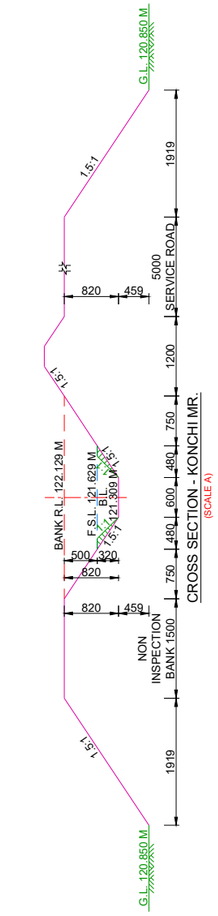
SECTION Z-Z
DETAILS OF JOINT OF PIPE
(SCALE A)

DESIGN DATA :-

KONCHI DY.	
DISCHARGE OF FEEDER	1.08 CUMEC
BED WIDTH	3.400 M
WATER DEPTH	0.720 M
FREE BOARD	0.500 M
BED LEVEL	121.059 M
F.S.L.	121.779 M
GROUND LEVEL	120.850 M
KONCHI MR.	
CHAINAGE	16.400 KM
DISCHARGE	0.06 CUMEC/ 2.01 CUSEC
BED WIDTH	0.600 M
WATER DEPTH	0.320 M
SIDE SLOPE	1.5:1
FREE BOARD	0.500 M
BED LEVEL	121.309 M
F.S.L.	121.629 M
BED SLOPE	25.0 CM/KM
INTERNAL DIA OF PIPE	0.600 M



LAYOUT PLAN
(SCALE A)



CROSS SECTION - KONCHI MR.
(SCALE A)

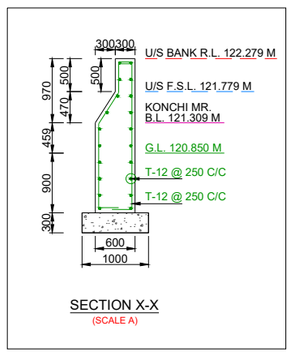
SCALE A:-

NOTES:-

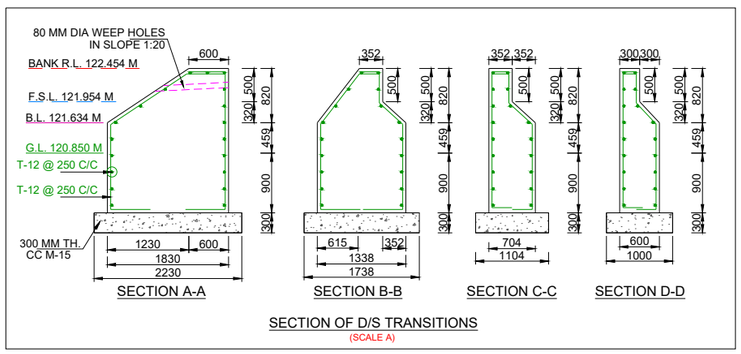
1. AS PER UPID DESIGN CRITERIA, PIPE HEAD REGULATOR SHOULD BE CONSTRUCTED FOR DISTRIBUTARIES & MONIRS HAVING DISCHARGE LESS THAN 0.40 CUMEC.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-2015
     - b. IS: 6531-1994
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1994, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VI. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-

A. FLOOR, ABUTMENT AND TRANSITIONS	M-20
B. TOE WALLS	M-15
C. P.C.C.	M-15
D. PIPE	NP-3

5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.

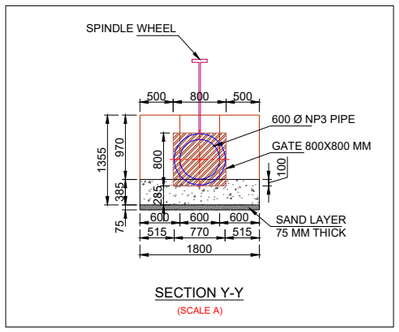


SECTION X-X
(SCALE A)



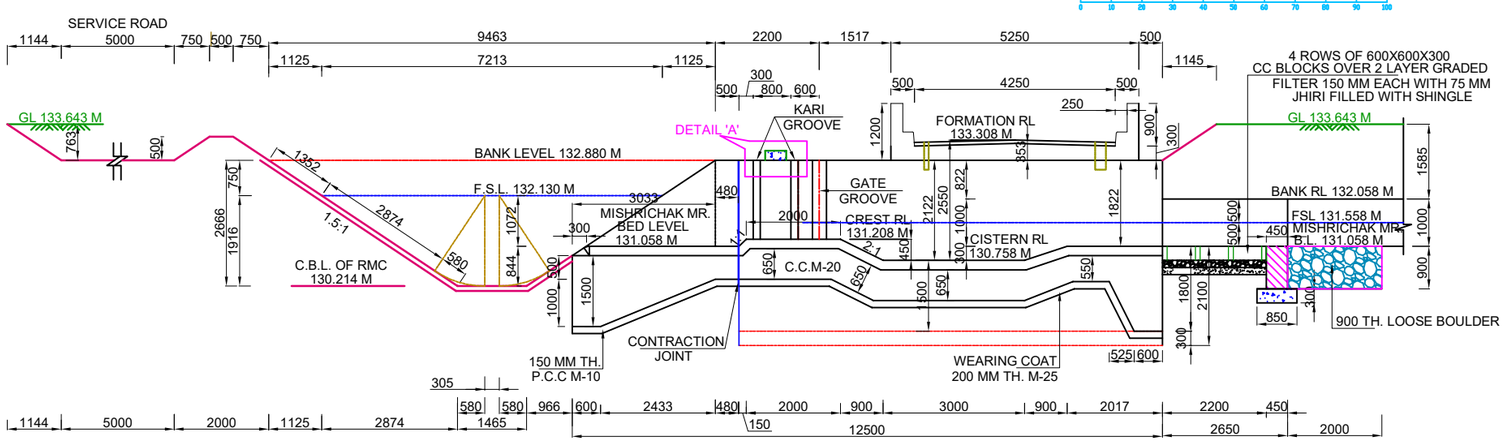
SECTION A-A | SECTION B-B | SECTION C-C | SECTION D-D

SECTION OF D/S TRANSITIONS
(SCALE A)



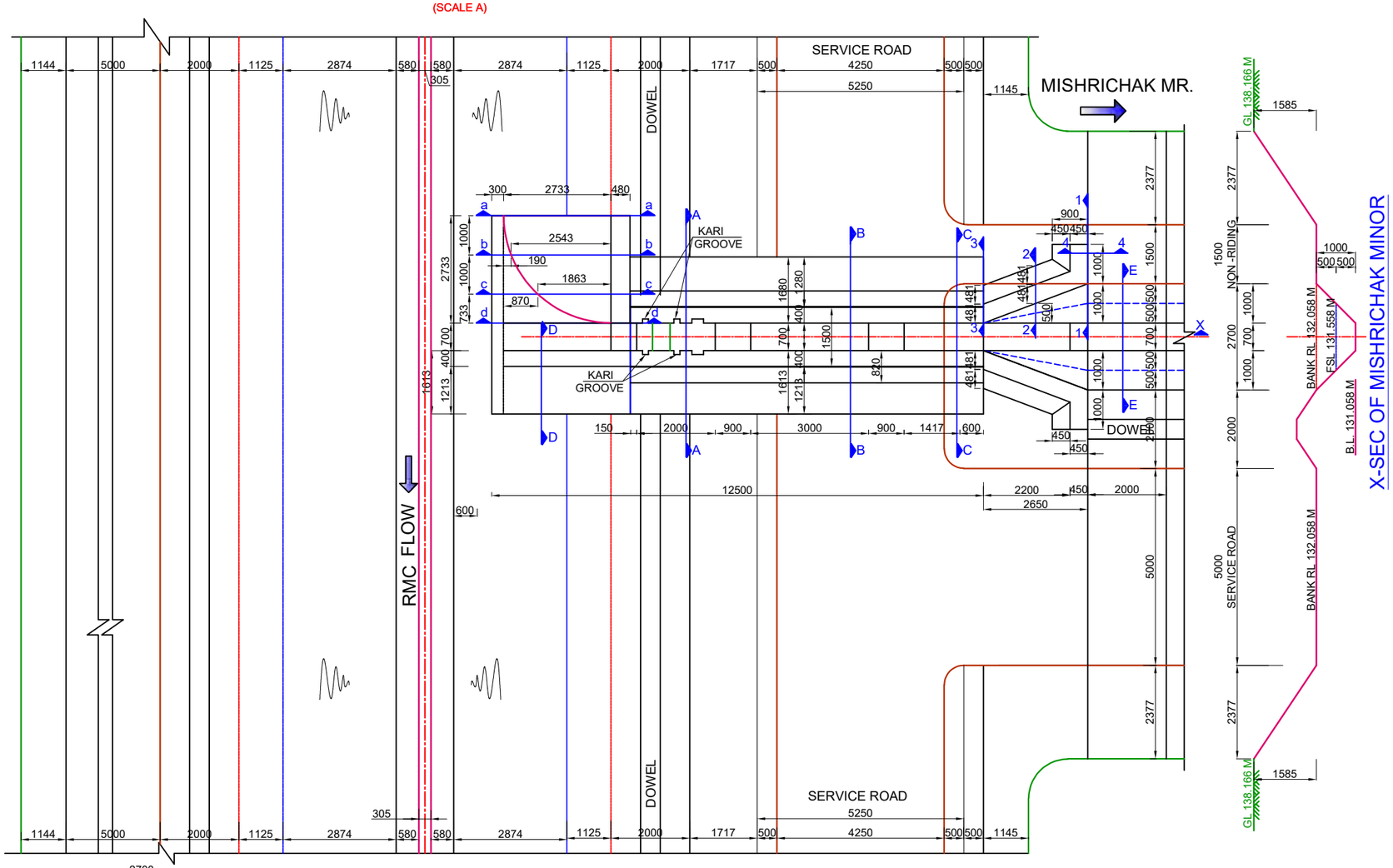
SECTION Y-Y
(SCALE A)

Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D OF HEAD REGULATOR OF KONCHI MINOR (OFFTAKE FROM RD - 16+400 KM. (LT), KONCHI DISTRIBUTARY)
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39-07/HR 1 of 1

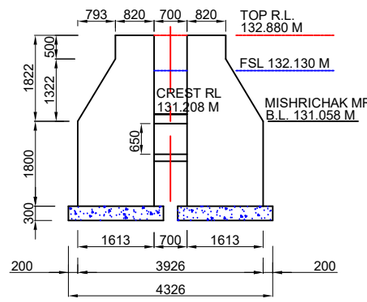


X- SEC OF RIGHT MAIN CANAL (SECTION X-X)

(SCALE A)

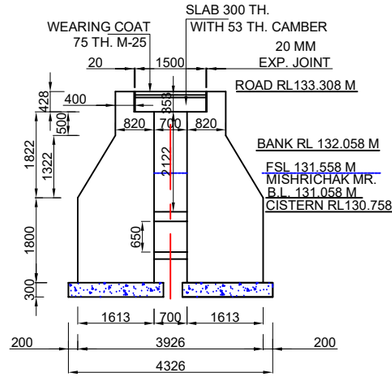


X-SEC OF MISHRICHAK MINOR



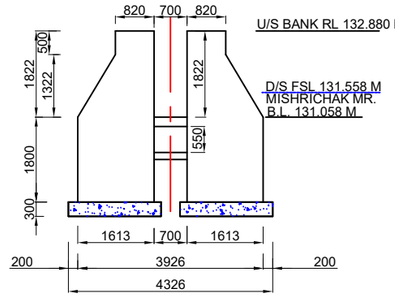
SECTION A-A (AT CREST)

(SCALE A)



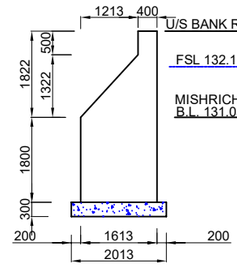
SECTION B-B (AT CISTERN LEVEL)

(SCALE A)



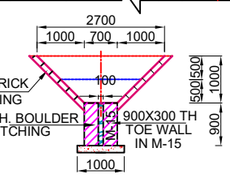
SECTION C-C (AT D/S FLOOR)

(SCALE A)



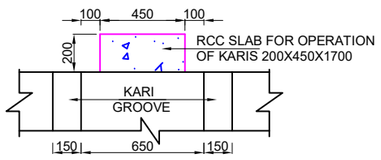
SECTION D-D

(SCALE A)



SECTION E-E

(SCALE A)



DETAIL 'A'

(SCALE B)

SCALE A:-

SCALE B:-

DESIGN DATA :-

RIGHT MAIN CANAL

DISCHARGE OF FEEDER	6.580 CUMECS
BED WIDTH	0.305 M
WATER DEPTH	1.916 M
FREE BOARD	0.750 M
BED LEVEL	130.214 M
F.S.L.	132.130 M
GROUND LEVEL	133.643 M

MISHRICHAK MINOR

CHAINAGE	105.700 M
DISCHARGE	0.150 CUMEC
	OR 5.290 CUSEC
BED WIDTH	0.700 M
WATER DEPTH	0.500 M
SIDE SLOPE	1:1
FREE BOARD	0.500 M
BED LEVEL	131.058 M
F.S.L.	131.558 M
CREST LEVEL	131.058 M
WIDTH OF CREST	2.5 M
BED SLOPE	14.0 CM/ KM

NOTES:-

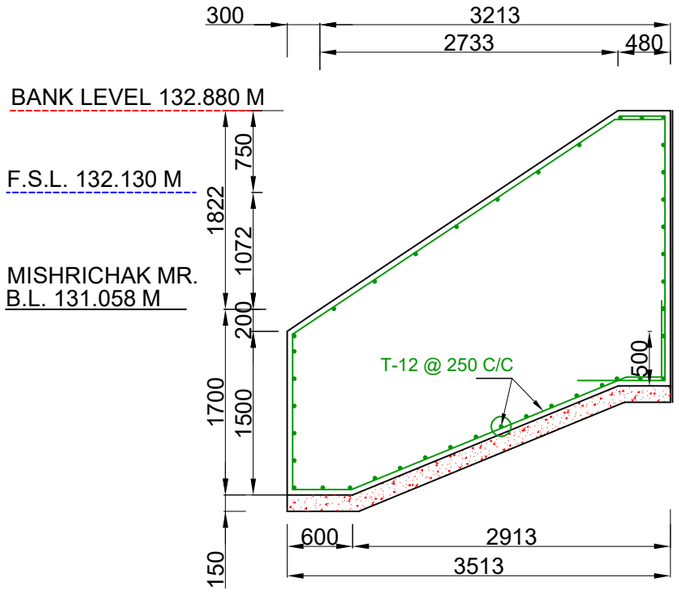
(A) GENERAL

1. THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
2. ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
3. DESIGN CRITERIA
   - I. THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
     - a. IRC:5-1998
     - b. IS: 6531-1972
     - a. IRC:5-1998
     - c. IS: 456-2000
     - d. UPID DESIGN CRITERIA
   - II. THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
   - III. AS PER IS CODE 6531-1973, THE AXIS OF HEAD REGULATOR MAY BE LOCATED AT AN ANGLE 90° TO 110° WITH RESPECT TO THE AXIS OF PARENT CHANNEL. HERE ANGLE HAS BEEN KEPT AS 90° AS MOST SUITABLE FOR THIS CASE.
   - IV. U/S AND D/S CUT OFFS FROM SCOUR COSIDERATIONS ARE PROVIDED AS PER IS: 6966-1989 AND WATER DEPTH CONSIDERATIONS. THESE CUTOFF SHALL BE SUITABLY EXTENDED INTO BANKS ON EITHER SIDES UP TO LENGTH EQUAL TO TWICE THE DEPTH OF CUT OFFS BELOW BED LEVEL FROM ITS JUNCTION WITH SIDE SLOPES. THE CUT OFF SHALL BE MADE BY CONCRETING THE FOUNDATION PIT WITHOUT USE OF SHUTTERING SO AS NOT TO LEAVE ANY SPACE BETWEEN CONCRETE AND THE EARTH.
   - V. FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
   - VI. THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
   - VII. D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
   - VIII. THE SECTIONS OF ABUTMENTS AND WING WALLS ARE PROVIDED AS PER ACTUAL DESIGN FROM THE GOVERNING CONSIDERATION OF SAFE BEARING CAPACITY AND OTHER SAFETY CONSIDERATIONS.
   - IX. THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
4. ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-

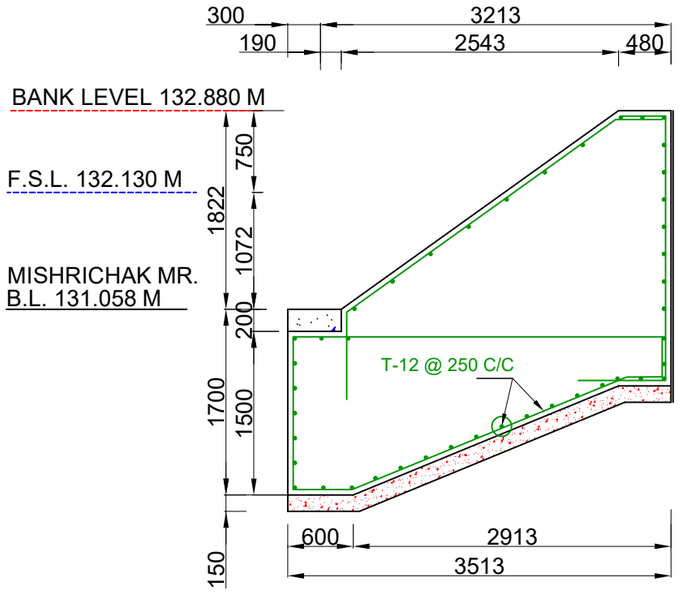
A. SLAB, CRASH BARRIER AND WEARING COAT	M-25
B. FLOOR, ABUTMENT AND TRANSITIONS	M-20
C. C.C.BLOCKS AND TOE WALLS	M-15
D. P.C.C.	M-10

5. M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
6. BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.

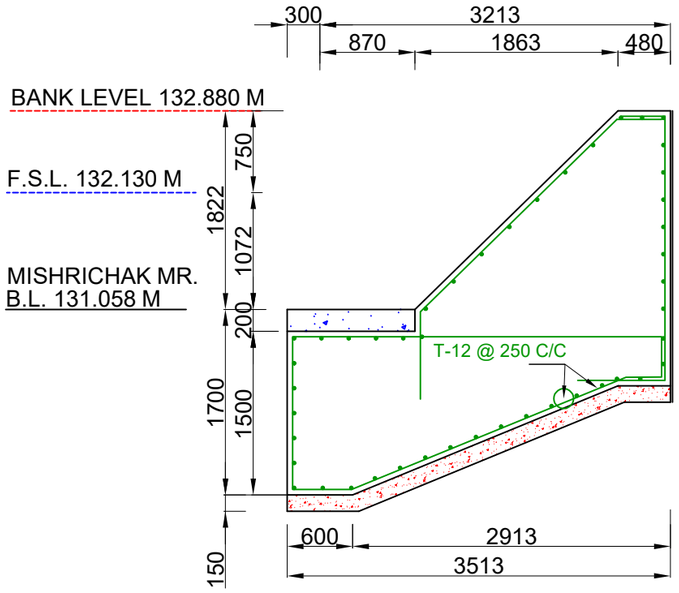
Prepared by :-	WAPCOS LTD.
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF HEAD REGULATOR OF MISHRICHAK MINOR OFFTAKE FROM RD - 105+700 KM. (L), NORTH KOEL RMC)
Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-38/HR-1 01 of 04



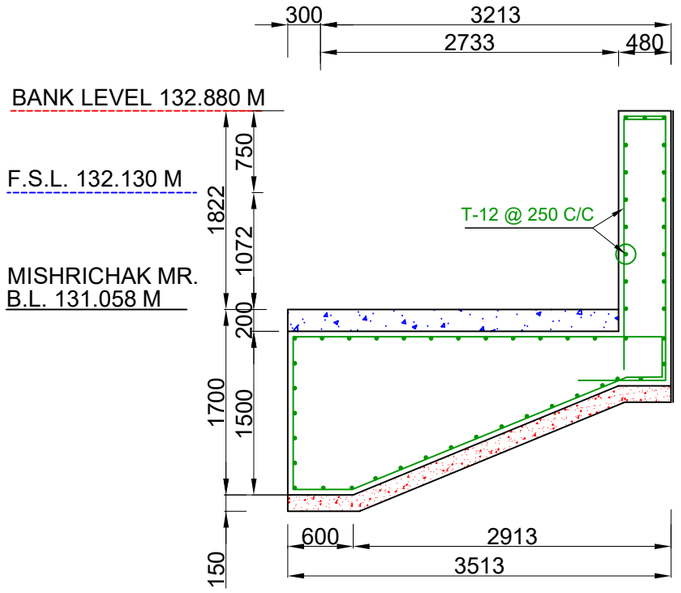
SECTION a-a



SECTION b-b

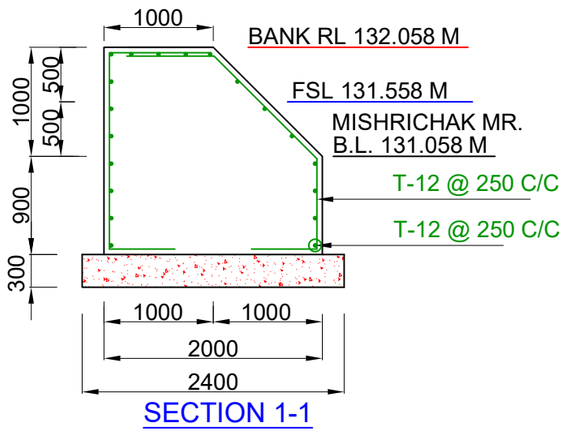


SECTION c-c

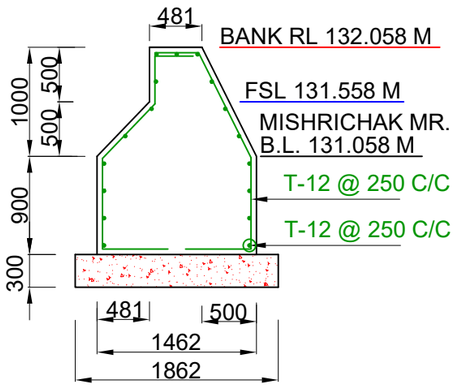


SECTION d-d

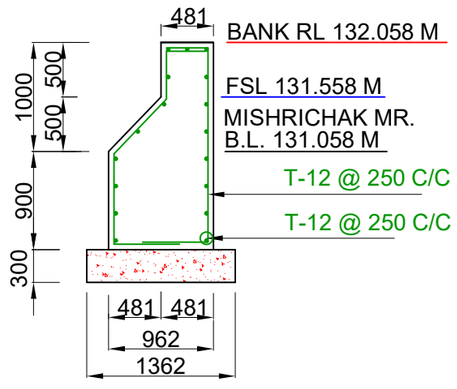
SECTION OF UP STREAM TRANSITIONS



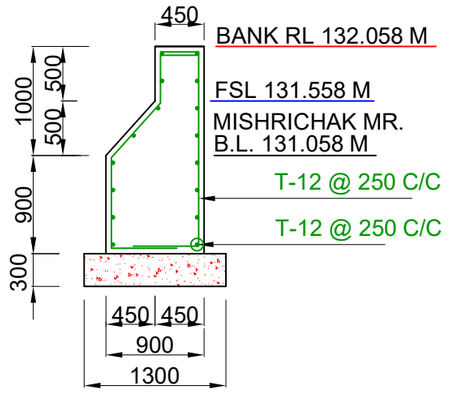
SECTION 1-1



SECTION 2-2



SECTION 3-3



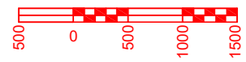
SECTION 4-4

SECTION OF D/S TRANSITIONS

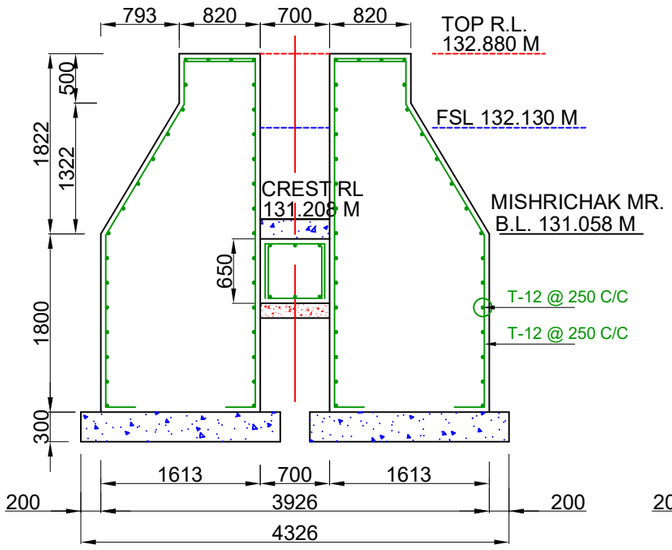
NOTES:-

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 MENTIONS IN THE DRAWING.
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM TH. WEARING COAT IN M-30 CC SHALL BE PROVIDED.
10. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
11. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

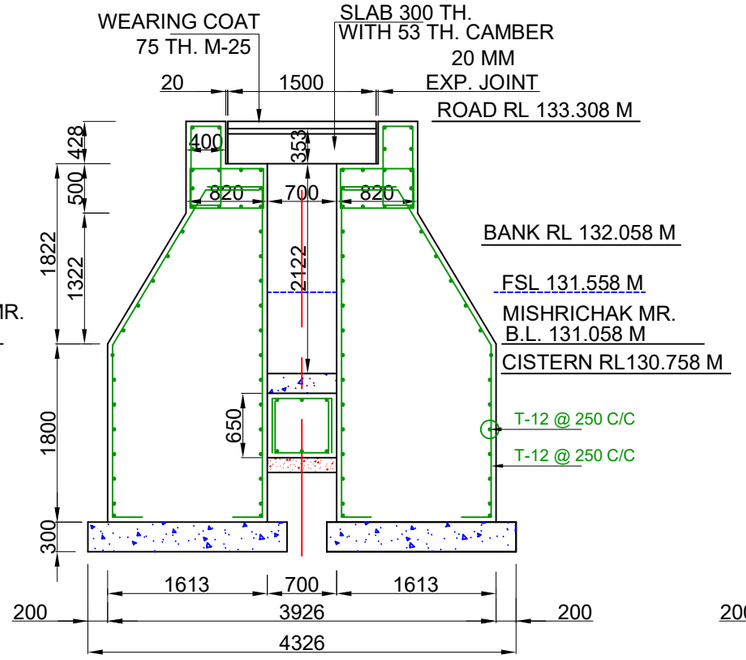
SCALE A:-



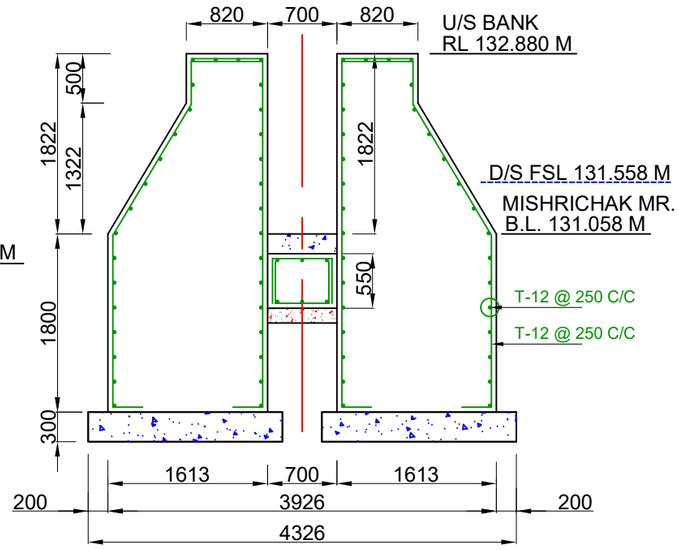
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	SECTION DETAILS DRAWING OF H.R. OF MISHRICHAK MINOR OFFTAKE FROM RD - 105+700 KM. (L), NORTH KOEL RMC)
Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-38/HR-1 02 of 04



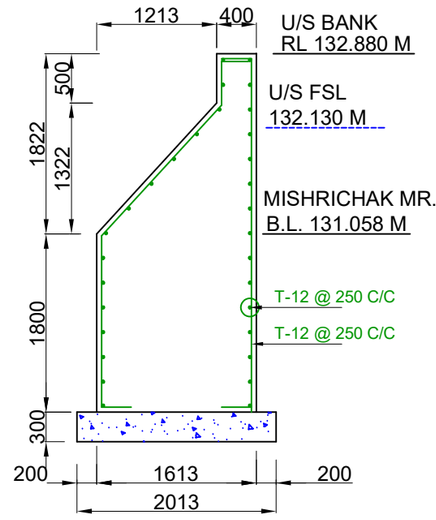
SECTION A-A
(AT CREST)



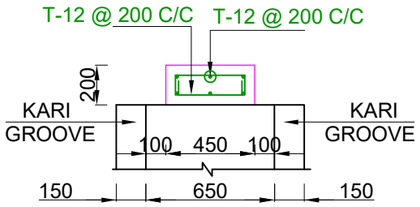
SECTION B-B
(AT CISTERN LEVEL)



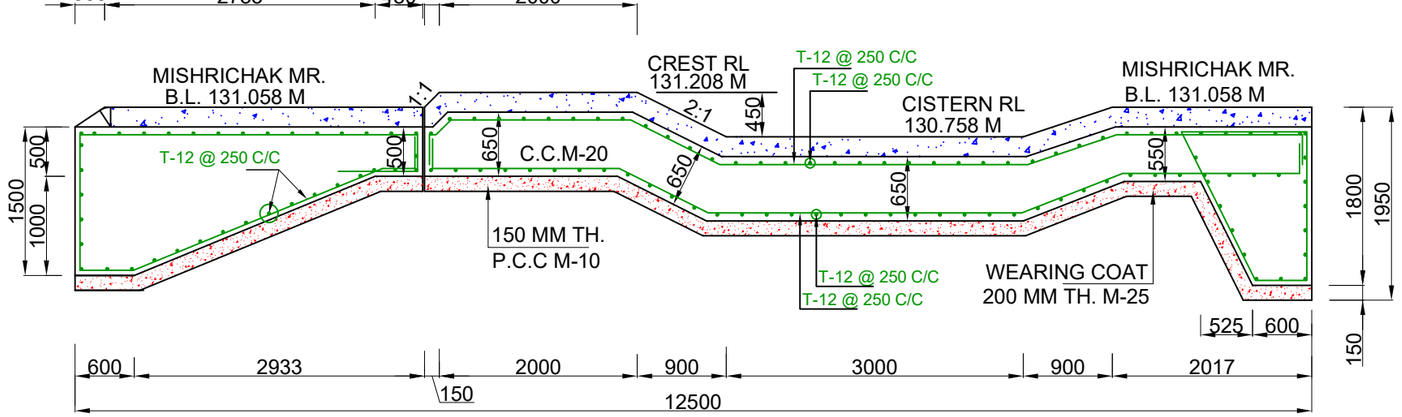
SECTION C-C
(AT D/S FLOOR)



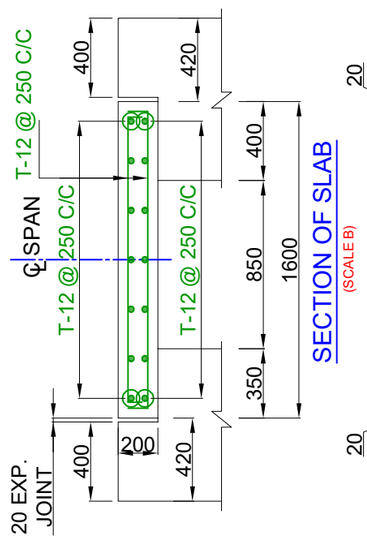
SECTION D-D



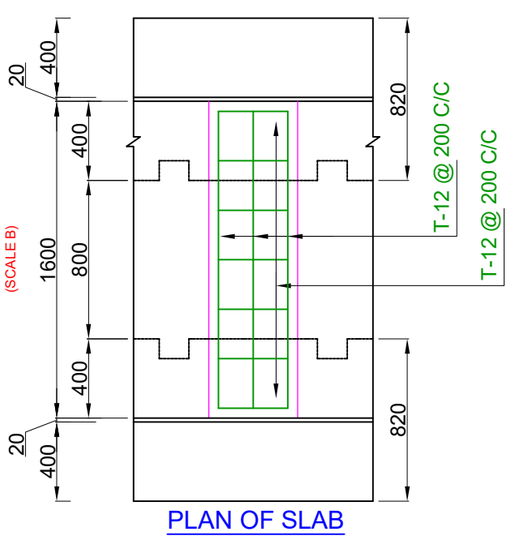
RCC SLAB FOR KARIS
(SCALE B)



REINFORCEMENT DETAIL OF RAFT (SECTION X-X)

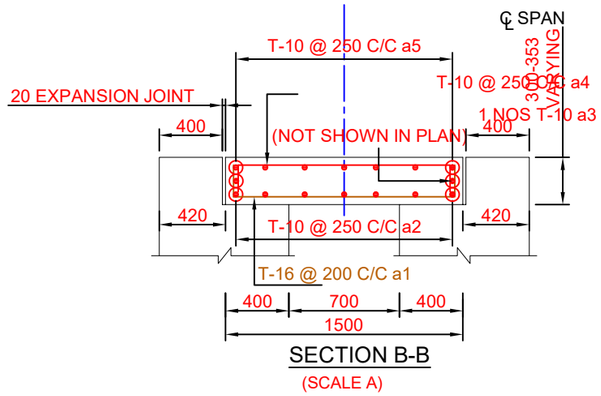


SECTION OF SLAB
(SCALE B)



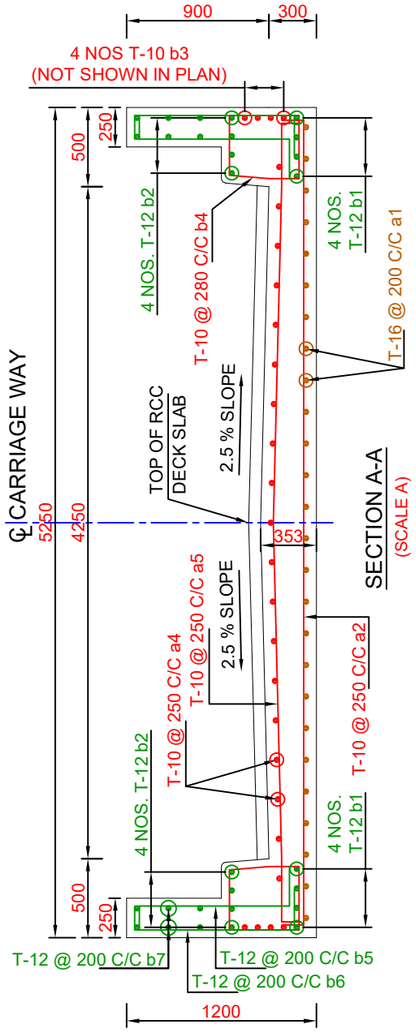
PLAN OF SLAB
FOR OPERATION KARI
(SCALE B)

Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	REINFORCEMENT DETAILS IN SECTION OF H.R. OF MISHRICHAK MR OFFTAKE FROM RD - 105+700 KM. (L), NORTH KOEL RMC)
Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-38/HR-1 03 of 04



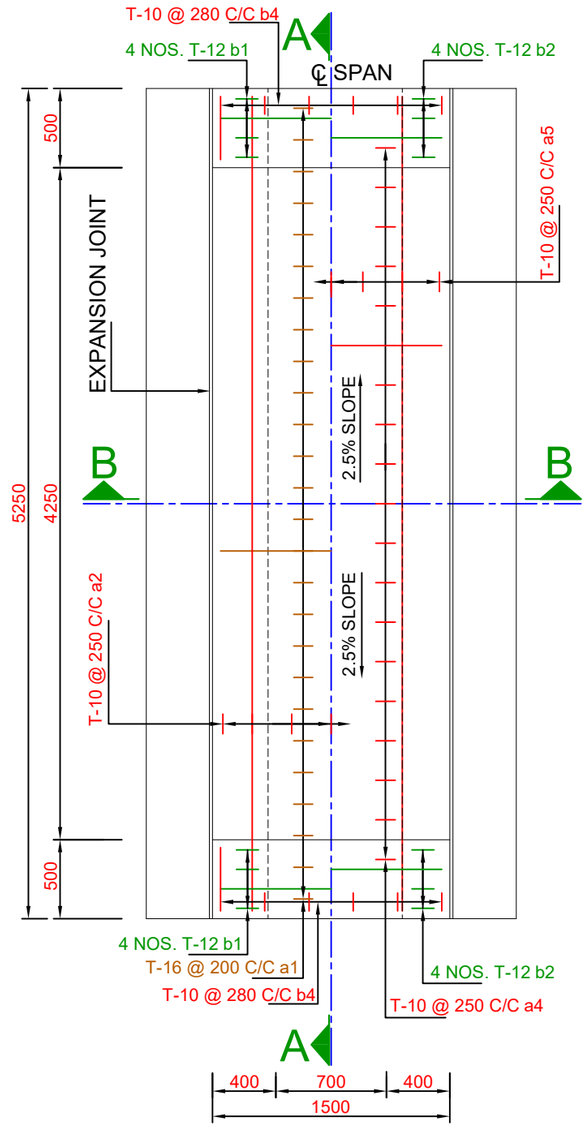
SECTION B-B

(SCALE A)



SECTION A-A

(SCALE A)



BOTTOM REINFORCEMENT

TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB

(SCALE A)

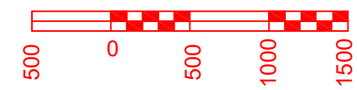
BAR BENDING SCHEDULE

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	200, 1400, 200	16	200	26
2	a2	200, 5150, 200	10	250	7
3	a3	5150	10	-	2
4	a4	1400; 200, 200	10	250	19
5	a5	200, 450, 2125, 2125, 450, 200	10	250	7
6	b1	150, 1400, 150	12	-	4x2
7	b2	150, 1400, 150	12	-	4x2
8	b3	150, 1400, 150	10	-	4x2
9	b4	251, 220; 379, 400; 470	10	280	6x2
10	b5	1100; 150, 250	12	200	6x2
11	b6	150, 1100, 250	12	200	6x2
12	b7	150, 1400, 150	12	200	6x2

NOTES:-

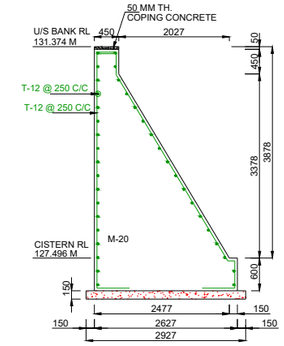
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,
   BRIDGE SLAB M 25
4. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
5. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
6. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
7. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
8. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
9. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
10. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
11. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
12. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
13. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
14. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
15. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

SCALE A:-

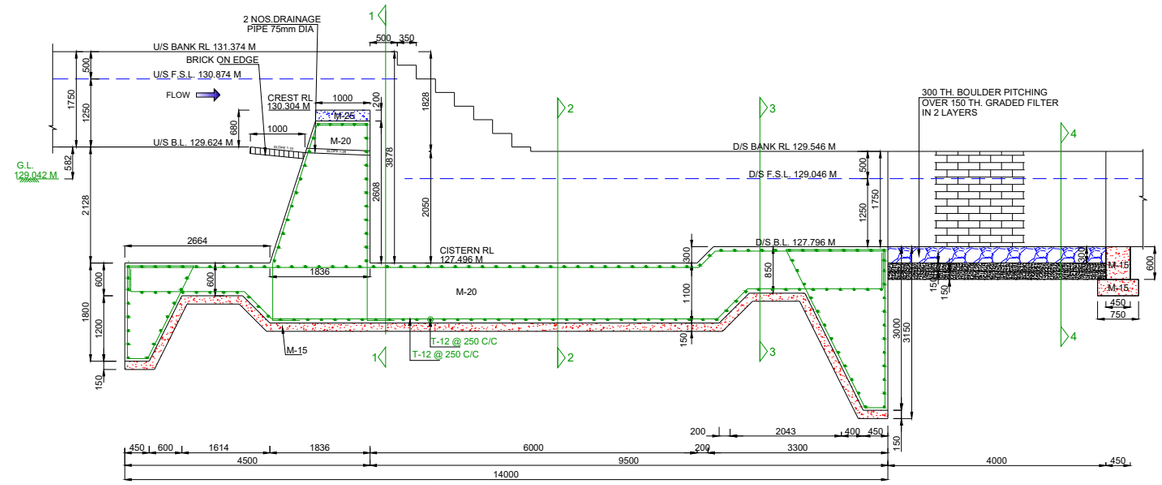


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT FOR SLAB OF H.R. OF MISHRICHAK MINOR OFFTAKE FROM RD - 105+700 KM. (L), NORTH KOEL RMC)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-38/HR-1 04 of 04

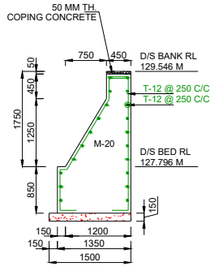
DRAWING OF FALL



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)

NOTES:-

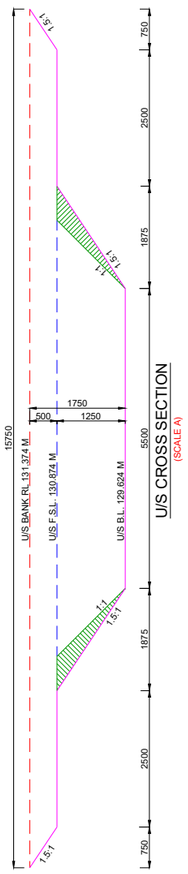
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

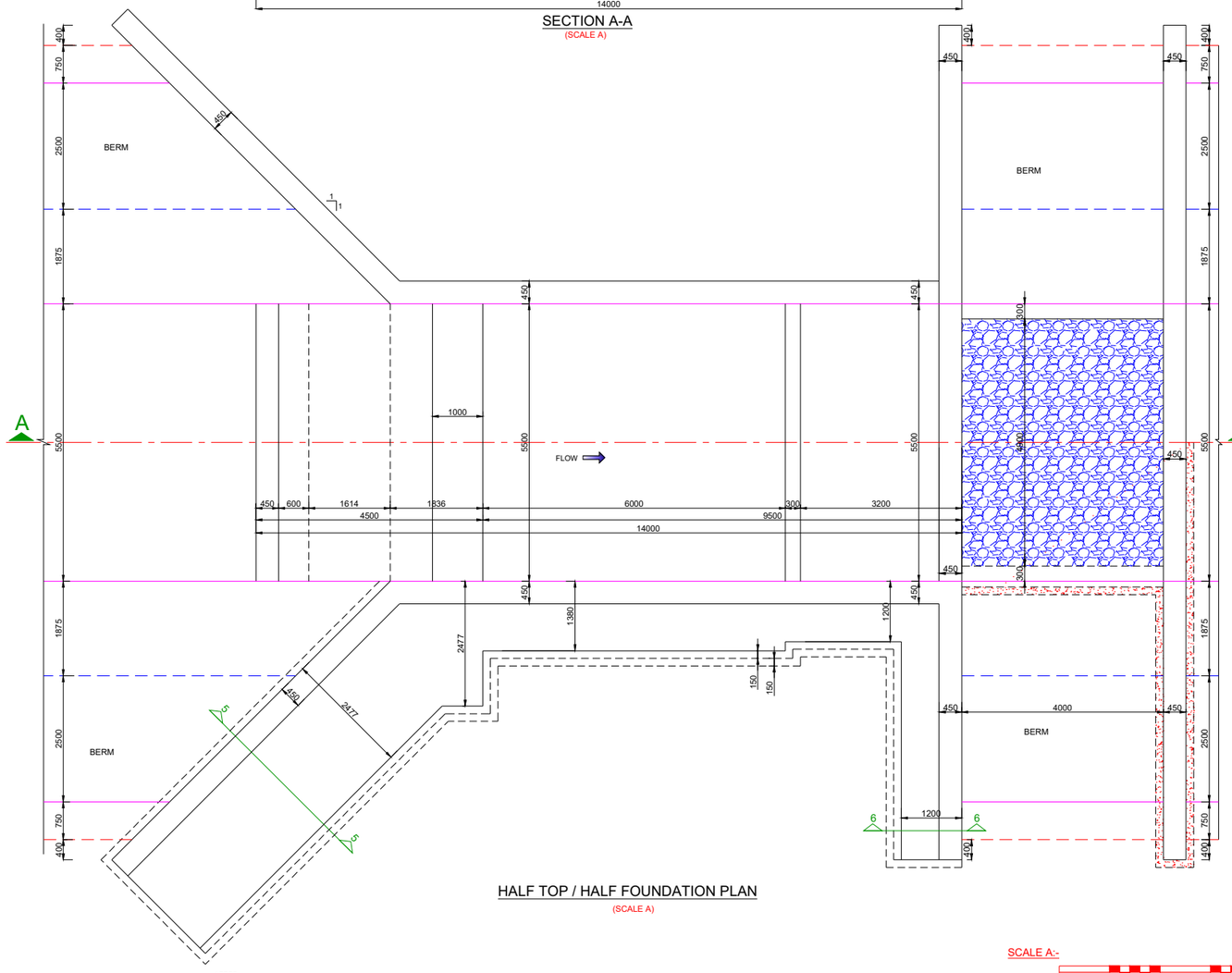
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

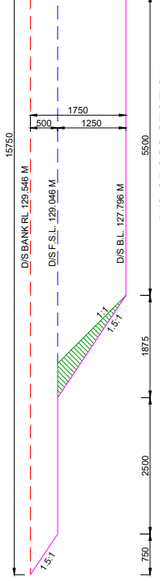
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	4.150	4.150	CUMEC
VERTICAL DROP	1.828	1.828	METRE
FULL SUPPLY DEPTH	1.250	1.250	METRE
BED WIDTH	5.500	5.500	METRE
BED SLOPE	1 : 5500	1 : 5500	



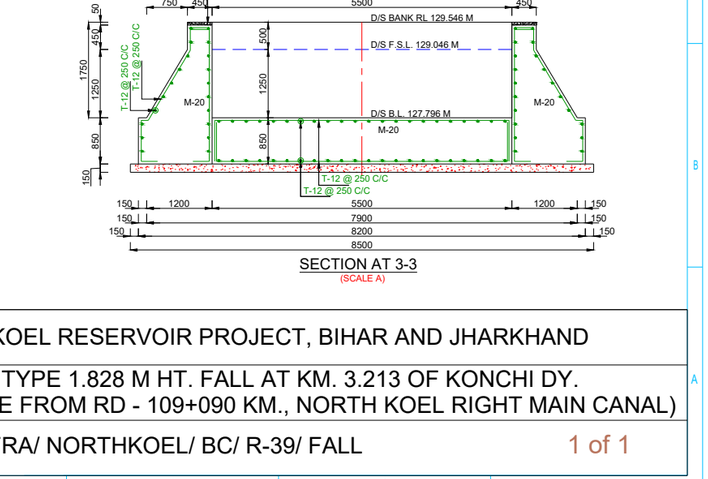
U/S CROSS SECTION
(SCALE A)



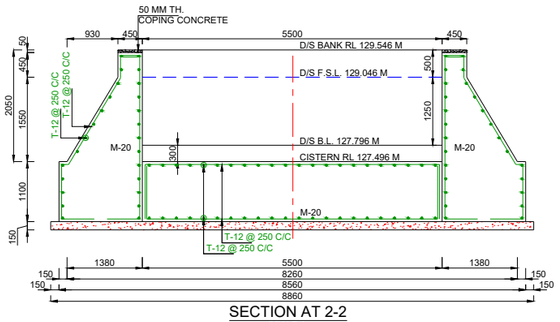
HALF TOP / HALF FOUNDATION PLAN
(SCALE A)



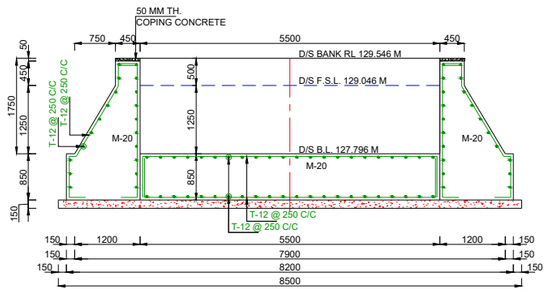
D/S CROSS SECTION
(SCALE A)



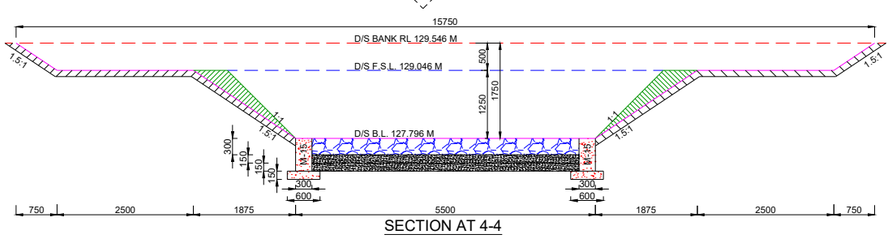
SECTION AT 1-1
(SCALE A)



SECTION AT 2-2
(SCALE A)



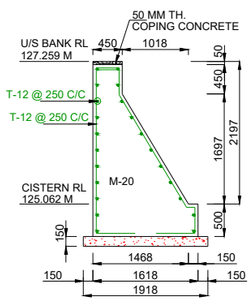
SECTION AT 3-3
(SCALE A)



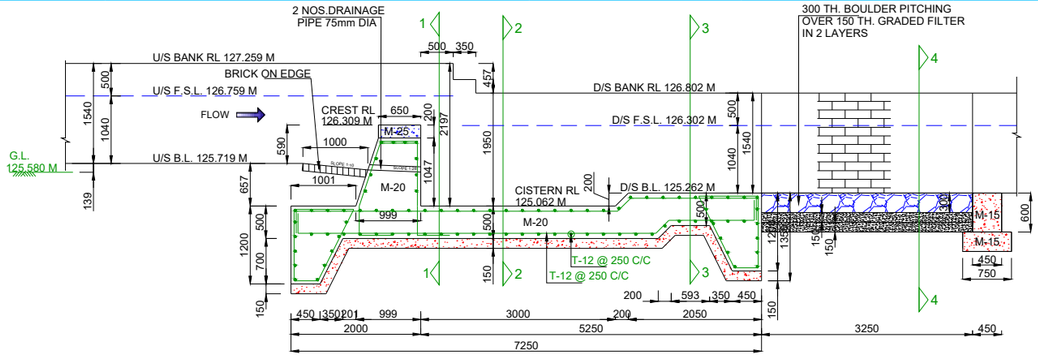
SECTION AT 4-4
(SCALE A)

SCALE A:-
1000 0 1000 2000 3000

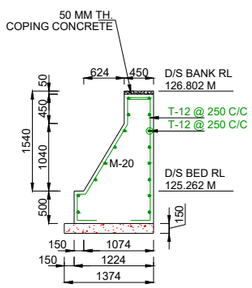
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.828 M HT. FALL AT KM. 3.213 OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ FALL 1 of 1



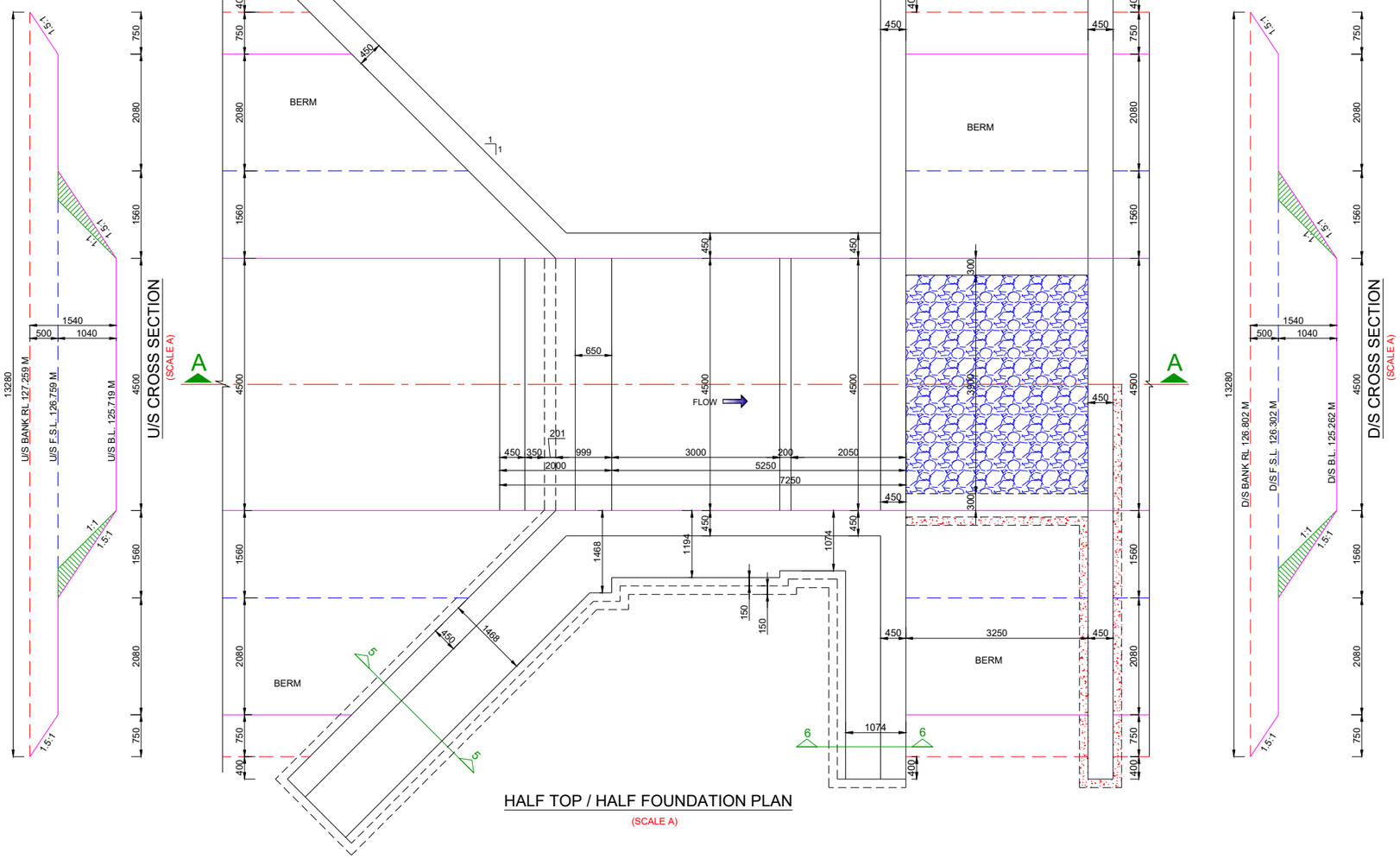
SECTION AT 5-5
(SCALE A)



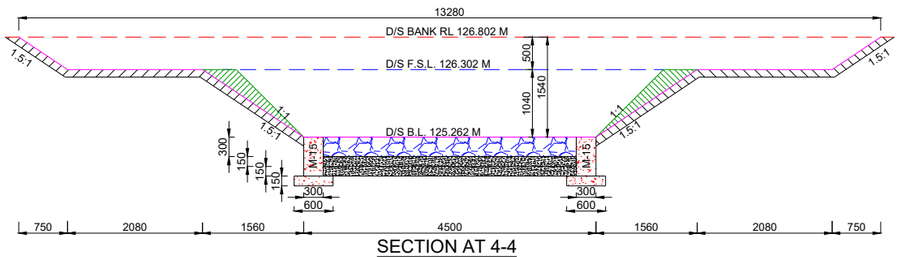
SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)



HALF TOP / HALF FOUNDATION PLAN
(SCALE A)



SECTION AT 4-4
(SCALE A)

SCALE A:-

1000 0 1000 2000 3000

NOTES:-

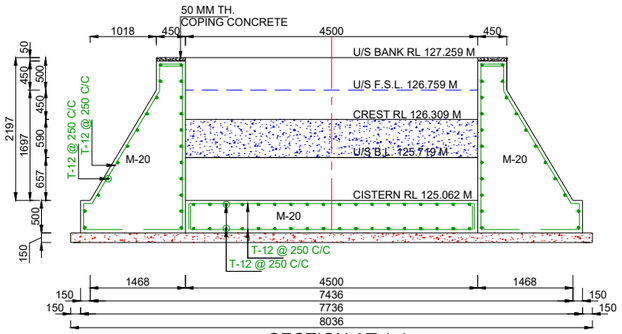
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

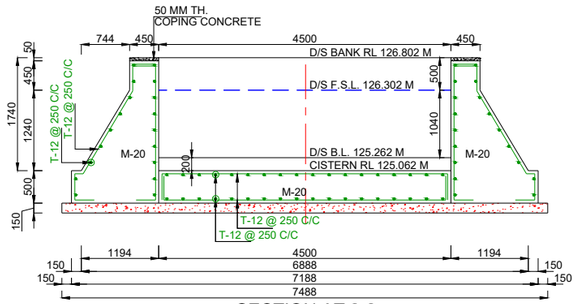
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

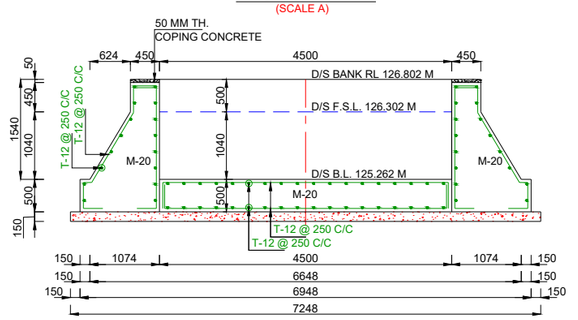
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	2.570	2.570	CUMEC
VERTICAL DROP	0.457	0.457	METRE
FULL SUPPLY DEPTH	1.040	1.040	METRE
BED WIDTH	4.500	4.500	METRE
BED SLOPE	1 : 5400	1 : 5400	



SECTION AT 1-1
(SCALE A)

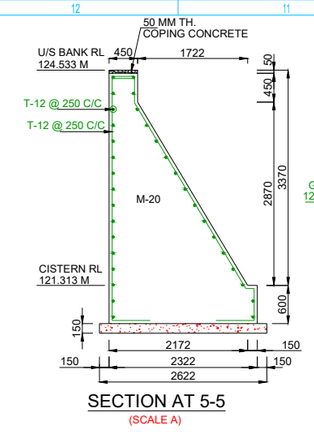


SECTION AT 2-2
(SCALE A)

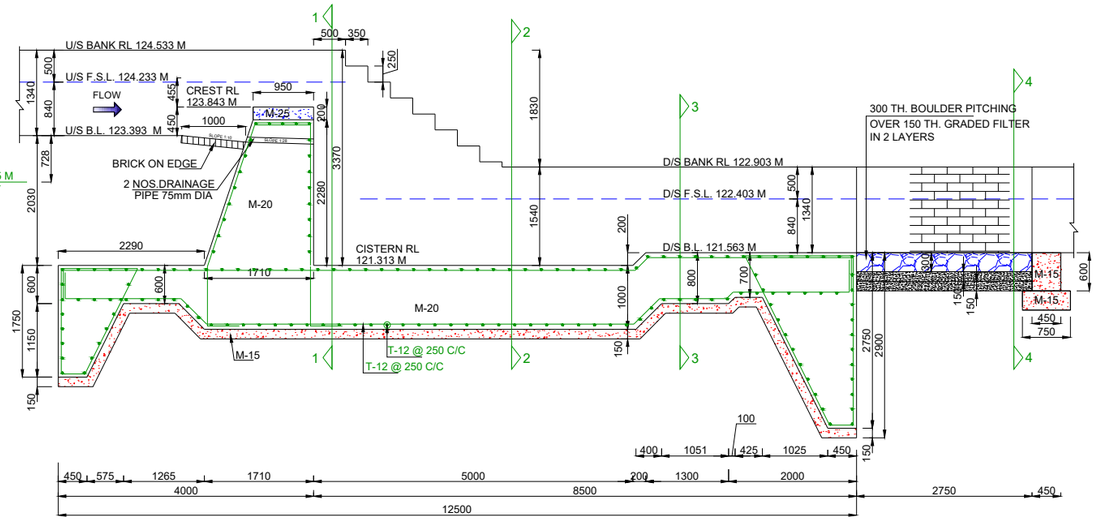


SECTION AT 3-3
(SCALE A)

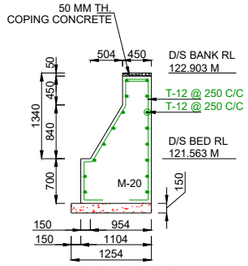
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.457 M HT. FALL AT KM. 7.075 OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ FALL 1 of 1



SECTION AT 5-5
(SCALE A)



SECTION A-A
(SCALE A)



SECTION AT 6-6
(SCALE A)

NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
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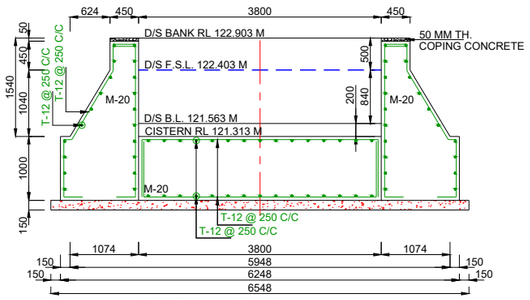
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

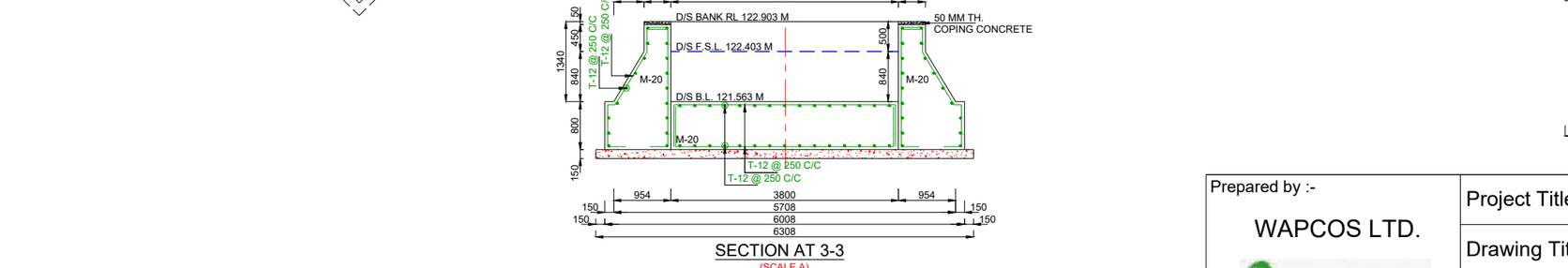
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	1.540	1.540	CUMEC
VERTICAL DROP	1.830	1.830	METRE
FULL SUPPLY DEPTH	0.840	0.840	METRE
BED WIDTH	3.800	3.800	METRE
BED SLOPE	1 : 5200	1 : 5200	

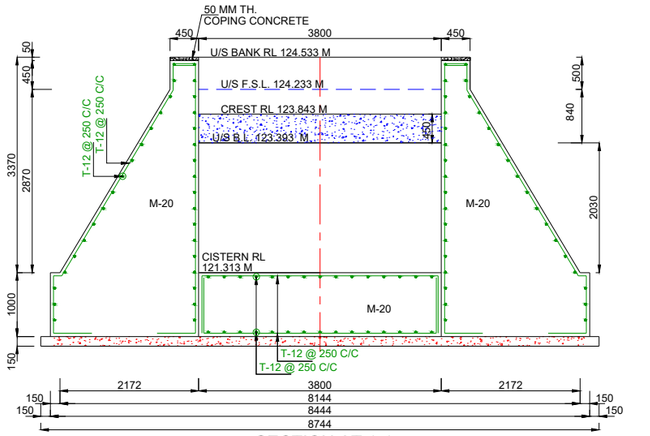


SECTION AT 2-2
(SCALE A)

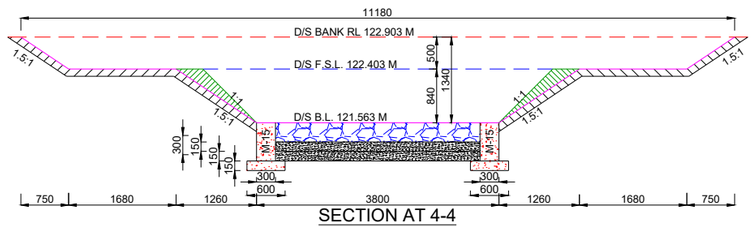


HALF TOP / HALF FOUNDATION PLAN
(SCALE A)

SECTION AT 3-3
(SCALE A)

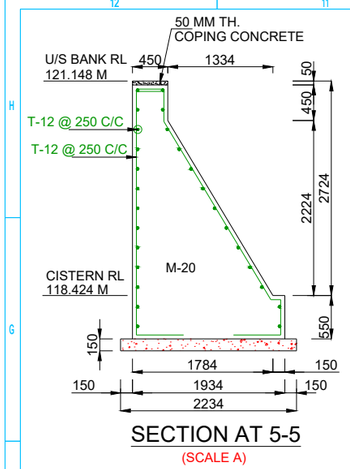


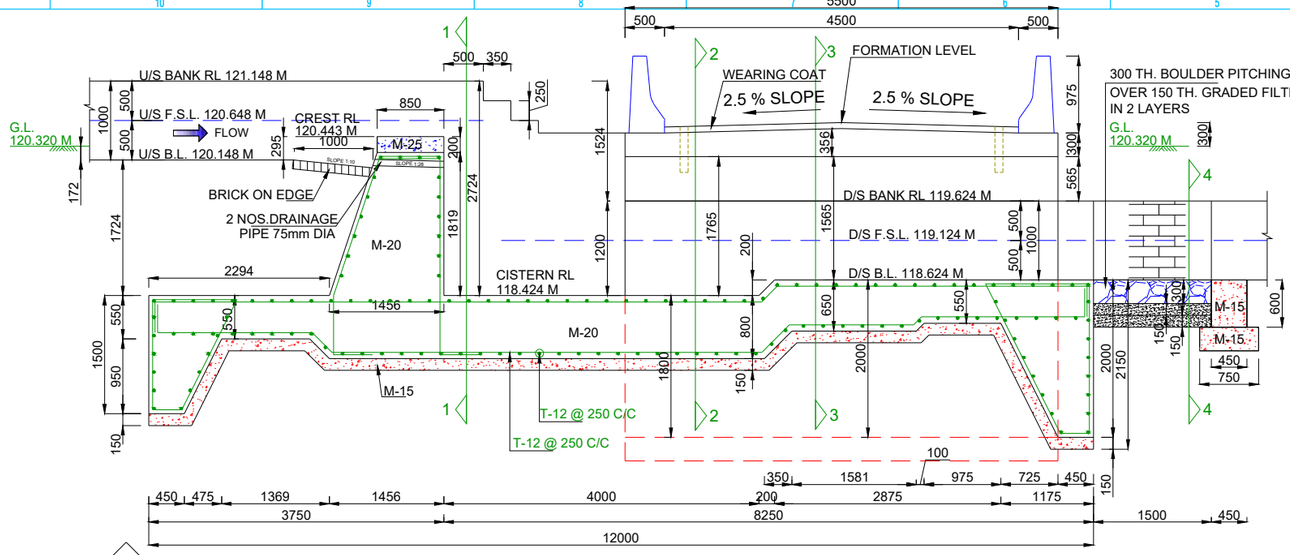
SECTION AT 1-1
(SCALE A)

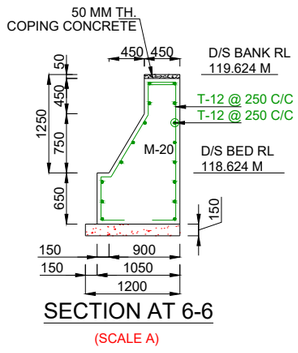


SECTION AT 4-4
(SCALE A)

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.830 M HT. FALL AT KM. 13.777 OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ FALL 1 of 1







NOTES:-

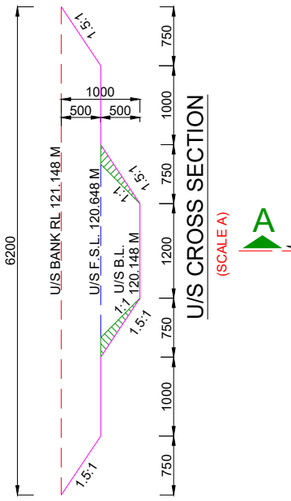
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

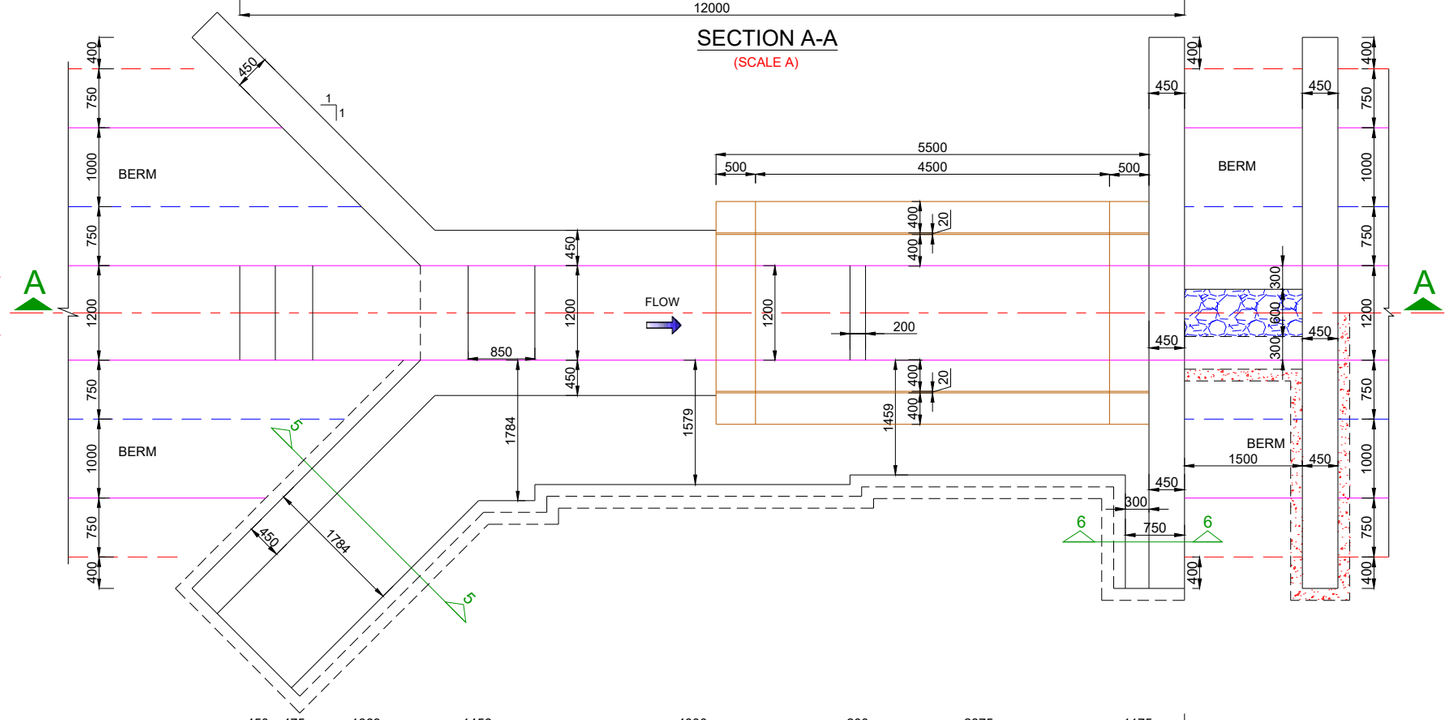
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

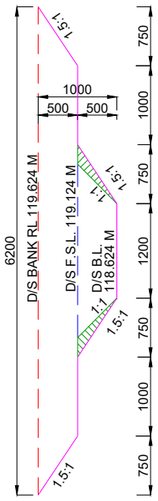
4. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE 1:3:6 GRADE.
5. SKIN REINFORCEMENT SHALL BE PROVIDED IN FLOOR AND ABUTMENT OF 12 MM DIA BARS @ 250 MM.

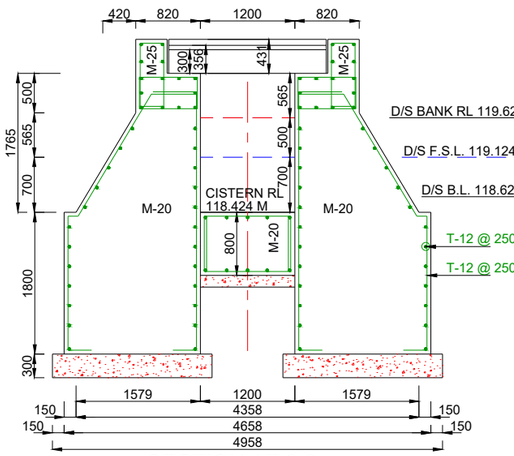
HYDRAULIC:- DATA

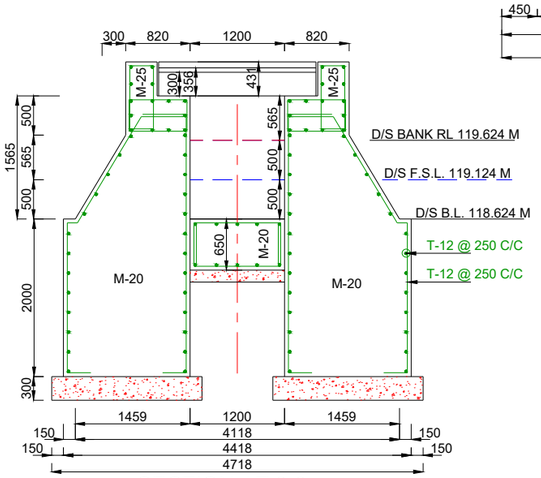
	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.170	0.170	CUMEC
VERTICAL DROP	1.524	1.524	METRE
FULL SUPPLY DEPTH	0.500	0.500	METRE
BED WIDTH	1.200	1.200	METRE
BED SLOPE	1 : 3700	1 : 3700	

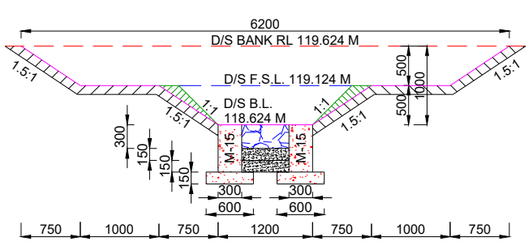


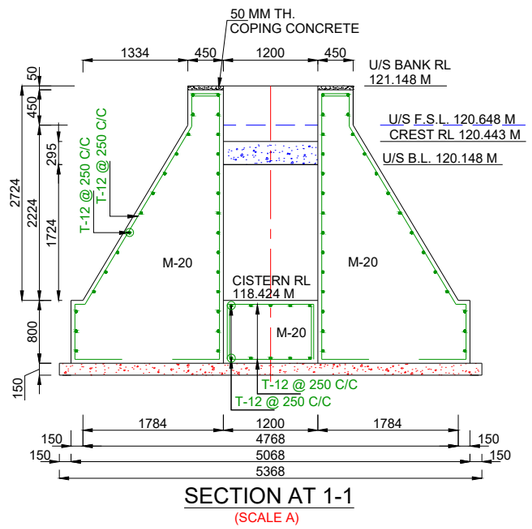




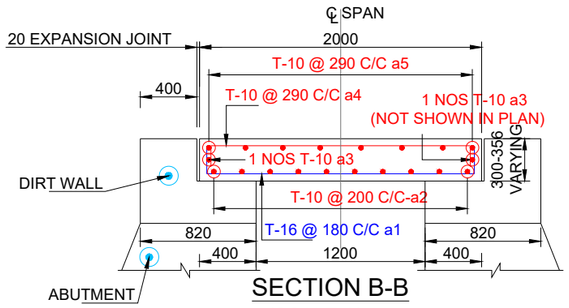




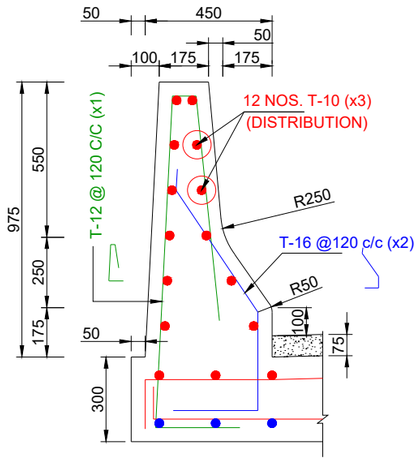




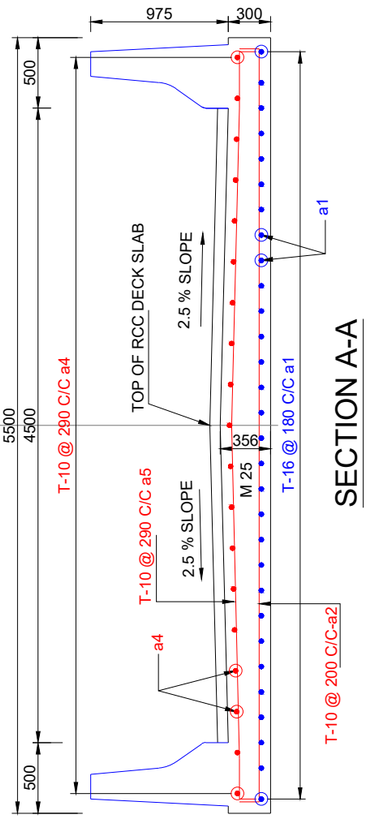
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.524 M HT. FALL AT KM. 17.600 OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ FALL 1 of 1



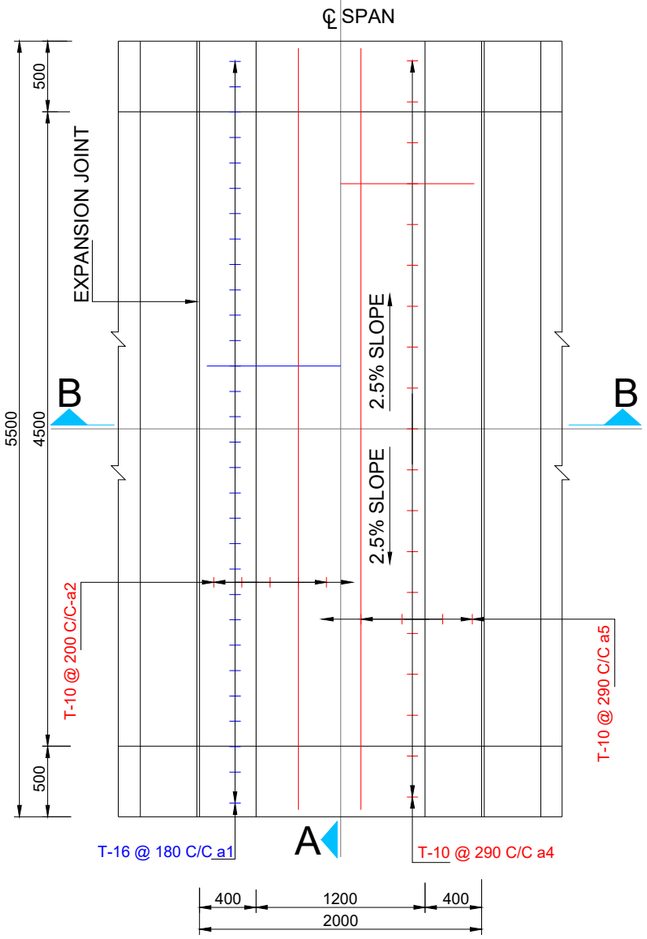
SECTION B-B
(SCALE A)



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



SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)

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	R=80, 200, 1900, 200	16	180	31
2	a2	R=50, 200, 5400, 200	10	200	10
3	a3	5400	10	-	2
4	a4	1900, 200, R=40, 200	10	290	19
5	a5	450, 2250, 2250, 450, 200, 200	10	290	8
CRASH BARRIER					
1	x1	75, 1176, 950, 300	12	120	15X2
2	x2	75, 540, 350, 300	16	120	15X2
3	x3	1900	10	-	12X2

NOTES:-

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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,
BRIDGE SLAB & PARAPET M-25
4. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
5. MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 40 MM OR UNLESS OTHERWISE SPECIFIED.
6. THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
7. BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
8. REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMODATE DRAINAGE SPOUT.
9. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
10. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
11. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
12. THE REINFORCEMENT OF CRASH BARRIER SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
13. 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.
14. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.
15. THE DEVELOPMENT LENGTH OF BARS ARE GIVEN BELOW:

DEVELOPMENT LENGTH FULLY STRESSED DEFORMED BARS (fy=500N/mm^2) (IS 456 CLAUSE 26.2.1)

TENSION BARS GRADE OF CONCRETE				COMPRESSION BARS GRADE OF CONCRETE			
M15	M20	M25	M30	M15	M20	M25	M30
68.00	56.60	48.50	45.30	54.40	45.30	38.80	36.30
81.60	68.00	58.30	54.40	65.30	54.40	46.60	43.50
108.80	90.60	77.70	72.50	87.00	87.00	62.10	58.00
135.90	113.30	97.10	90.60	108.80	108.80	77.70	72.50
169.90	141.60	121.40	113.30	135.90	135.90	97.10	90.60
217.50	181.30	155.40	145.00	174.00	174.00	124.30	116.00

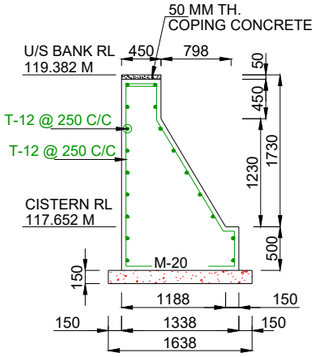
1. THE DEVELOPMENT LENGTHS GIVEN ABOVE ARE FOR A STRESS OF 0.87 fy IN THE BAR
2. THE DEVELOPMENT LENGTH INCLUDES ANCHORAGE VALUES OF HOOKS IN TENSION REINFORCEMENT.

16. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR IS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50 % ONLY (IRC:112 - 2011) CLAUSE: 15.2.5.1)
LAP LENGTH = α1. lbnet
WHERE, α1 = 1.0 for p%≤25%
α1 = 1.15 for 25%≤p%≤33%
α1 = 1.4 for 33%≤p%≤50%
17. THE STRAIGHT LENGTH OF THE LAP SHOULD NOT BE LESS THAN 15Ø OR 200 MM (WHICH EVER IS MORE)
18. THE LAP LENGTH MUST BE AT LEAST EQUAL TO DEVELOPMENT LENGTH IN NO CASE, THE LAP LENGTH SHOULD BE LESS THAN 30Ø FOR FLEXURAL AND DIRECT TENSION AND 24Ø FOR COMPRESSION.
19. LAP SPLICES SHALL BE CONSIDERED AS STAGGERED IF THE C/C DISTANCE OF SPLICES IS NOT LESS THAN 1.3 TIMES THE LAP LENGTH CALCULATED.
20. WHEN BARS OF TWO DIFFERENT DIAMETERS ARE TO BE SPLICED, THE LAP LENGTH SHALL BE CALCULATED ON THE BASIS OF DIAMETER OF SMALLER BAR.

SCALE A:- 400 0 400 800 1200

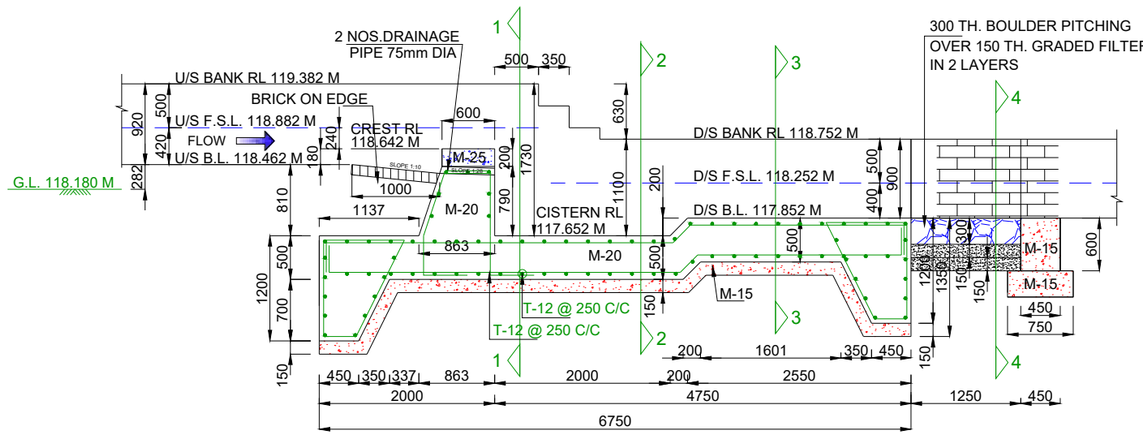
SCALE B:- 200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB FOR FALL CUM BRG. AT KM. 17.600 OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RMC)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ FALL 2 of 2



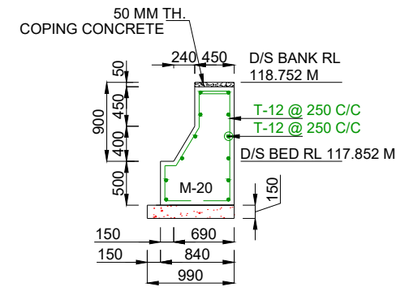
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

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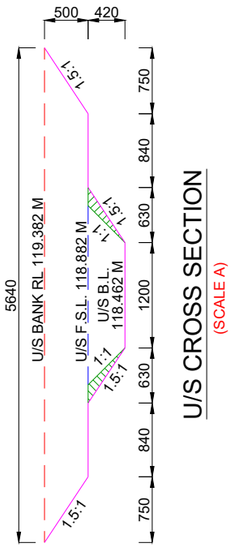
FLOOR	M 20
FOUNDATION OF ABUTMENTS & WING WALL	M 20
PCC UNDER FLOOR	M 15
ABUTMENTS / WING WALLS	M 20

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.

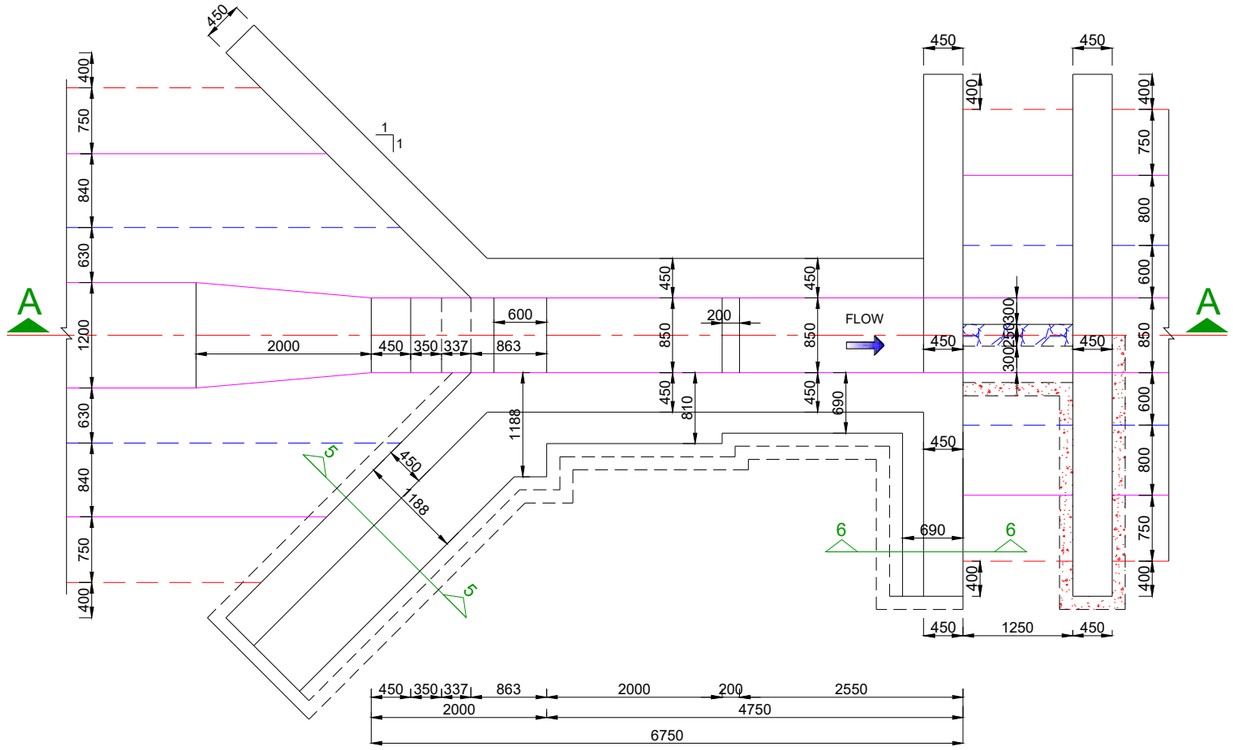
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.170	0.170	CUMEC
VERTICAL DROP	0.610	0.610	METRE
FULL SUPPLY DEPTH	0.420	0.400	METRE
BED WIDTH	1.200	0.850	METRE
BED SLOPE	1 : 3700	1 : 3700	



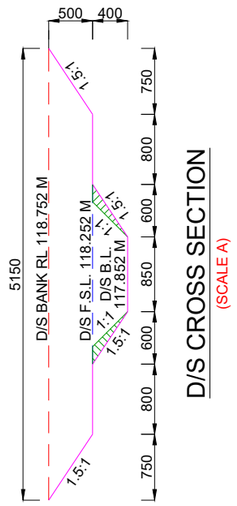
U/S CROSS SECTION

(SCALE A)



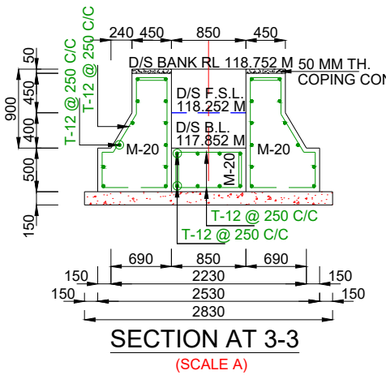
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



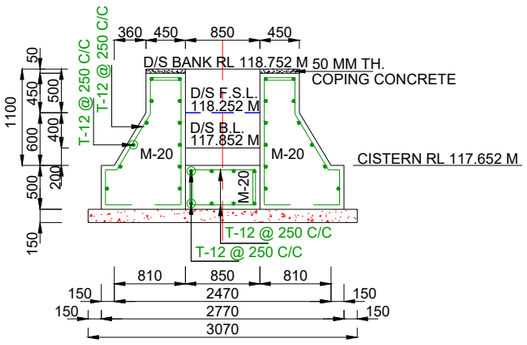
D/S CROSS SECTION

(SCALE A)



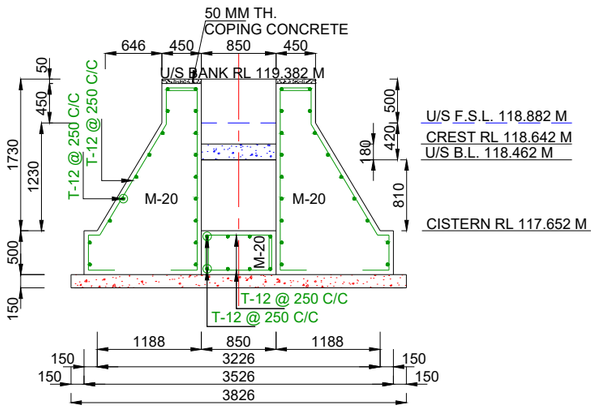
SECTION AT 3-3

(SCALE A)



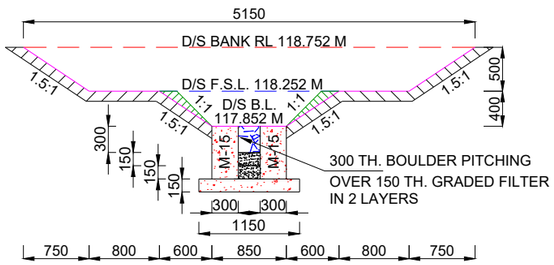
SECTION AT 2-2

(SCALE A)



SECTION AT 1-1

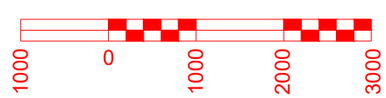
(SCALE A)



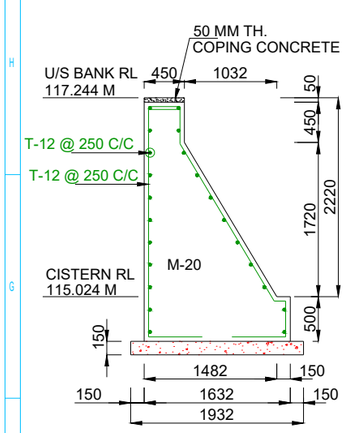
SECTION AT 4-4

(SCALE A)

SCALE A:-

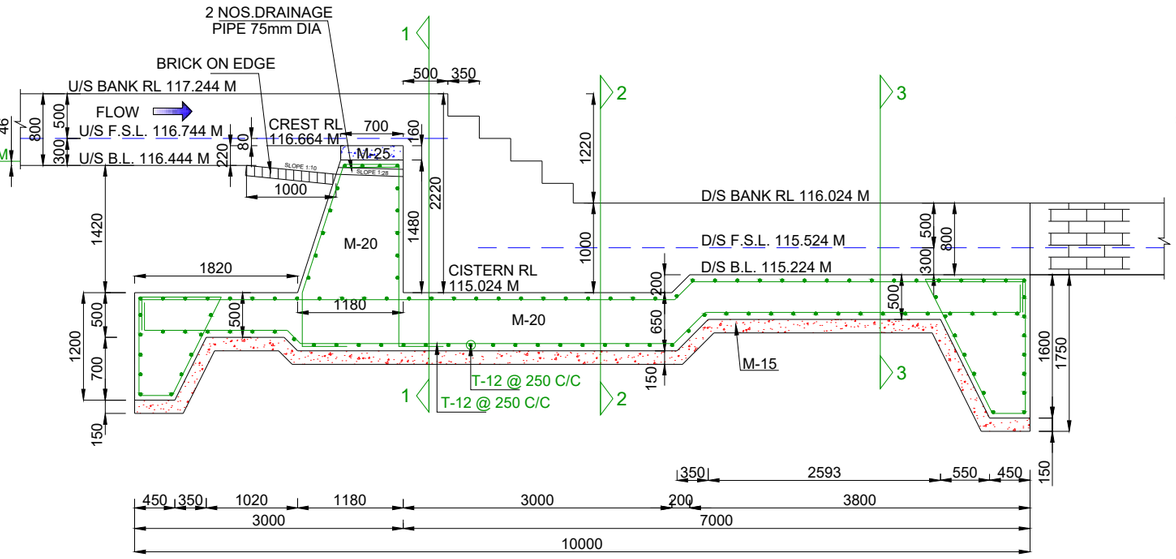


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 0.610 M HT. FALL AT KM. 18.200 OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ FALL 1 of 1



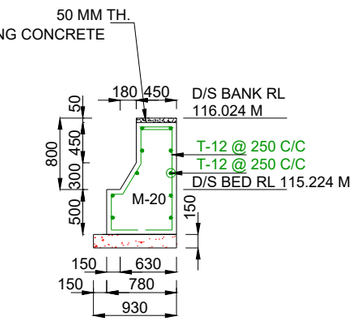
SECTION AT 5-5

(SCALE A)



SECTION A-A

(SCALE A)



SECTION AT 6-6

(SCALE A)

NOTES:-

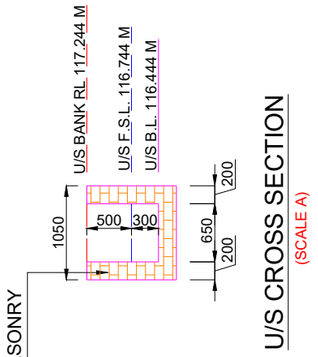
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ALL CONCRETE WORK SHALL CONFORM TO IS: 456 -2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS,

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.

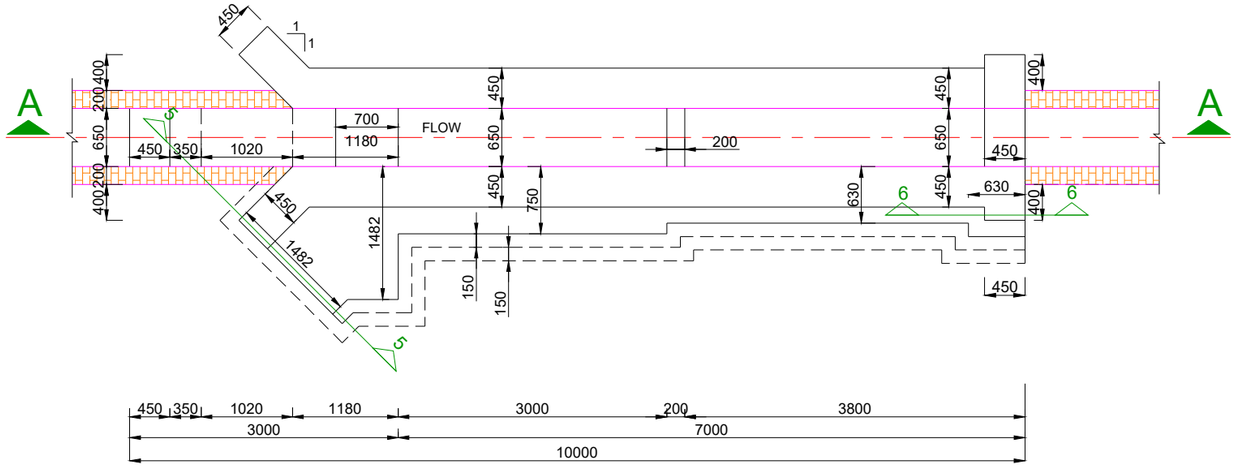
HYDRAULIC:- DATA

	U/S	D/S	UNIT
FULL SUPPLY DISCHARGE	0.020	0.020	CUMEC
VERTICAL DROP	1.220	1.220	METRE
FULL SUPPLY DEPTH	0.300	0.300	METRE
BED WIDTH	0.650	0.650	METRE
BED SLOPE	1 : 3700	1 : 3700	



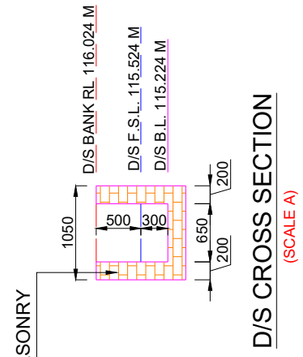
U/S CROSS SECTION

(SCALE A)



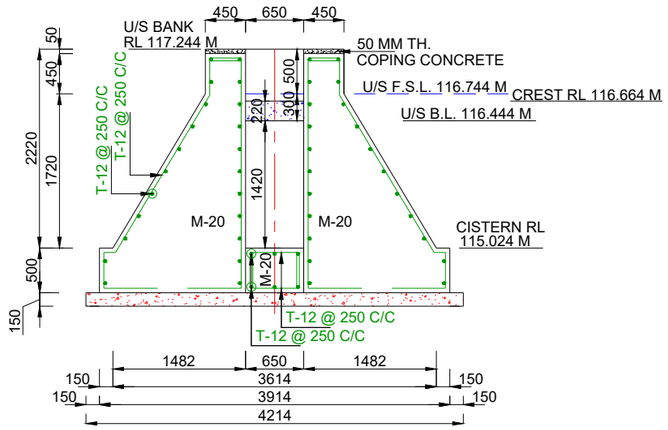
HALF TOP / HALF FOUNDATION PLAN

(SCALE A)



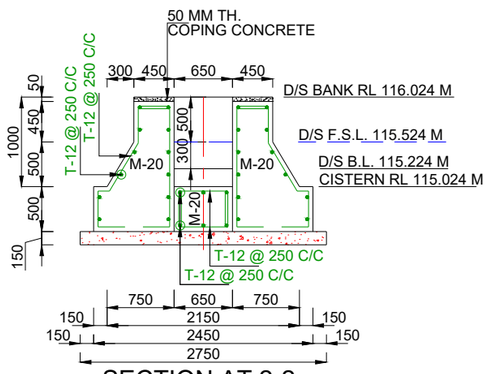
D/S CROSS SECTION

(SCALE A)



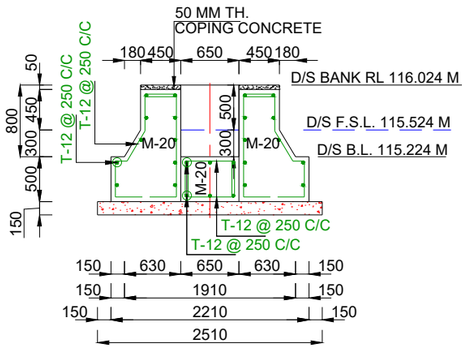
SECTION AT 1-1

(SCALE A)



SECTION AT 2-2

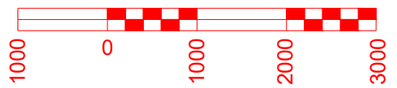
(SCALE A)



SECTION AT 3-3

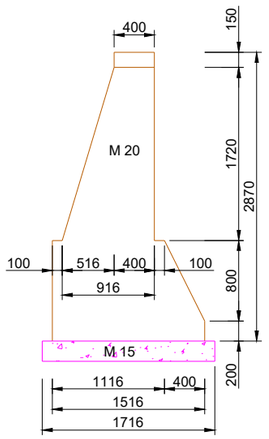
(SCALE A)

SCALE A:-

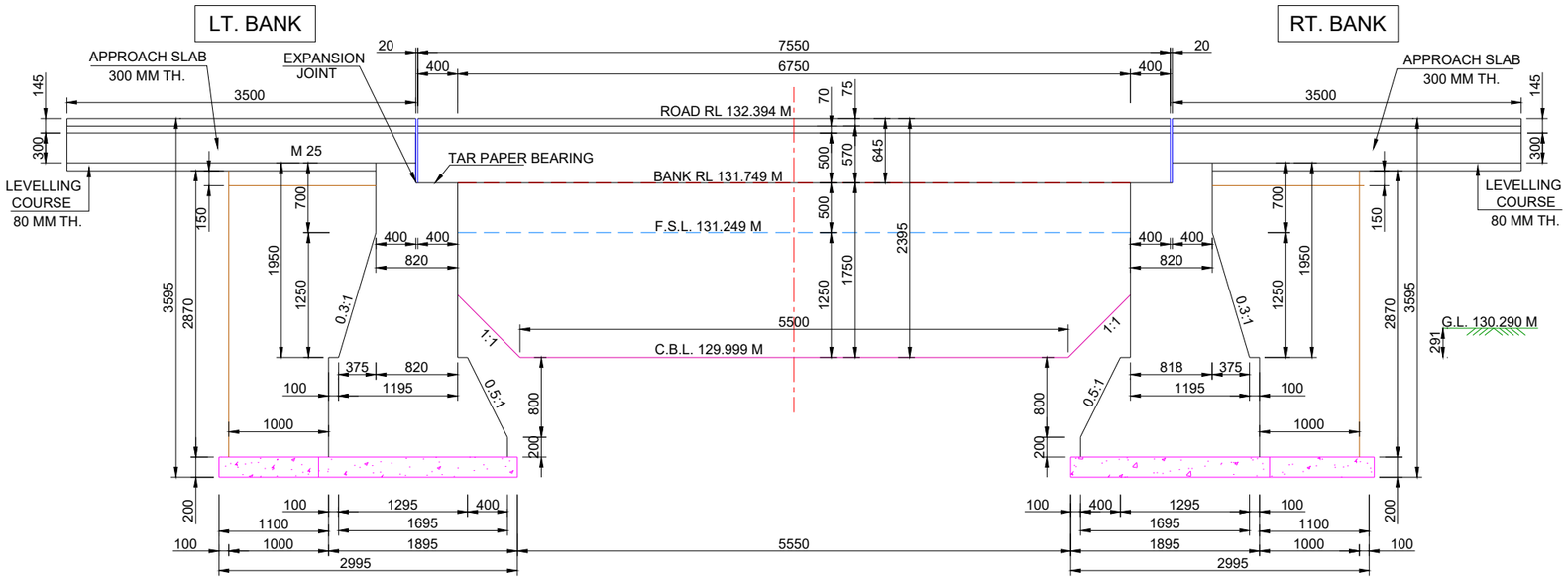


Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	SHARDA TYPE 1.220 M HT. FALL AT KM. 18.895 OF KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ BC/ R-39/ FALL 1 of 1

DRAWING OF CULVERT/SLAB BRIDGE



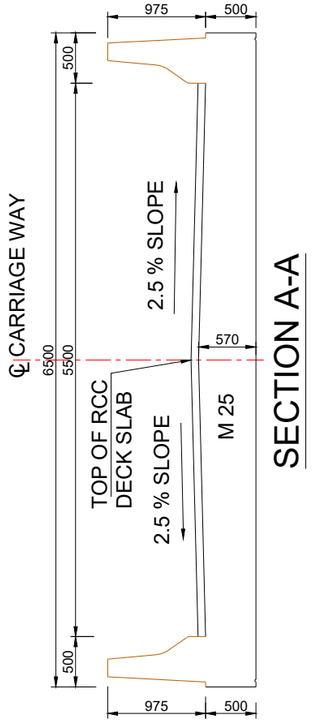
SECTION C-C



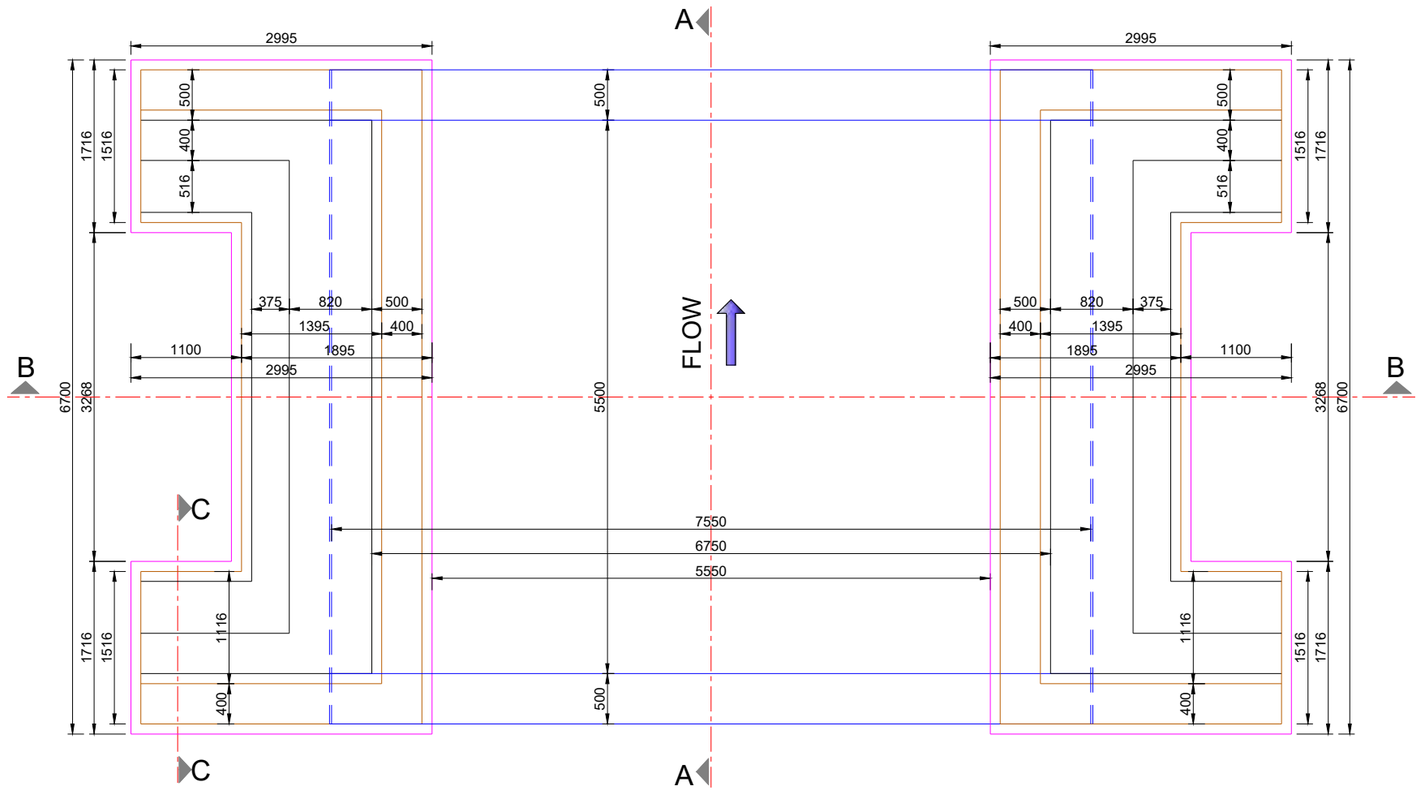
SECTION B-B

DESIGN DATA:-

DESIGN DISCHARGE	4.15 CUMECS
BED WIDTH	5.500 M
WATER DEPTH	1.250 M
FREE BOARD	0.500 M
BED LEVEL	129.999 M
F.S.L.	131.249 M
BANK R.L.	131.749 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	132.491 M
GROUND LEVEL	130.290 M



SECTION A-A



NOTES:-

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. 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)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

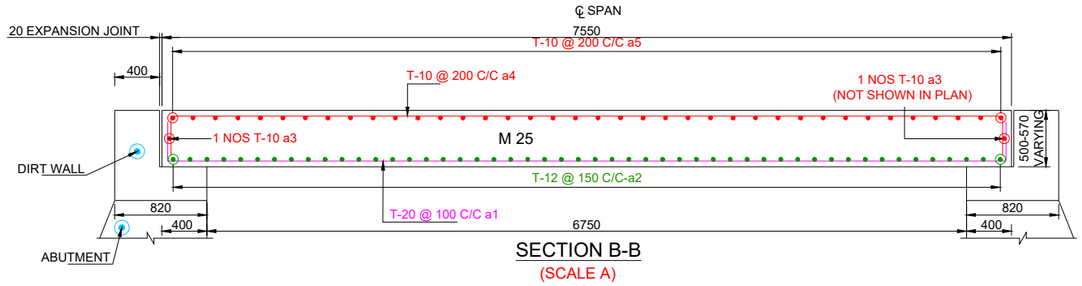
SCALE A:- 1000 0 1000 2000 3000

Prepared by :-

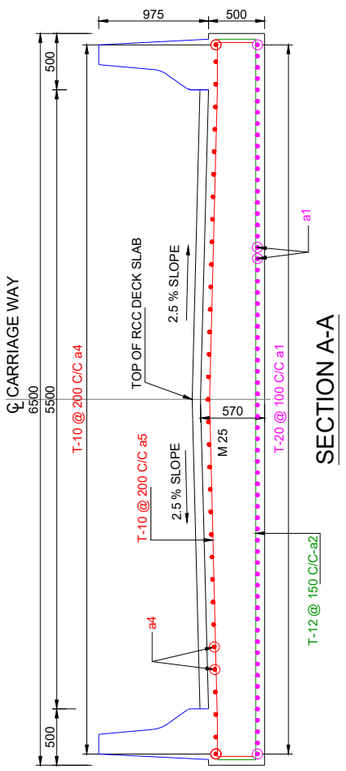
WAPCOS LTD.

Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	G.A.D. OF BRIDGE AT KM. 1.150 ON KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-39/SLR/BRG.

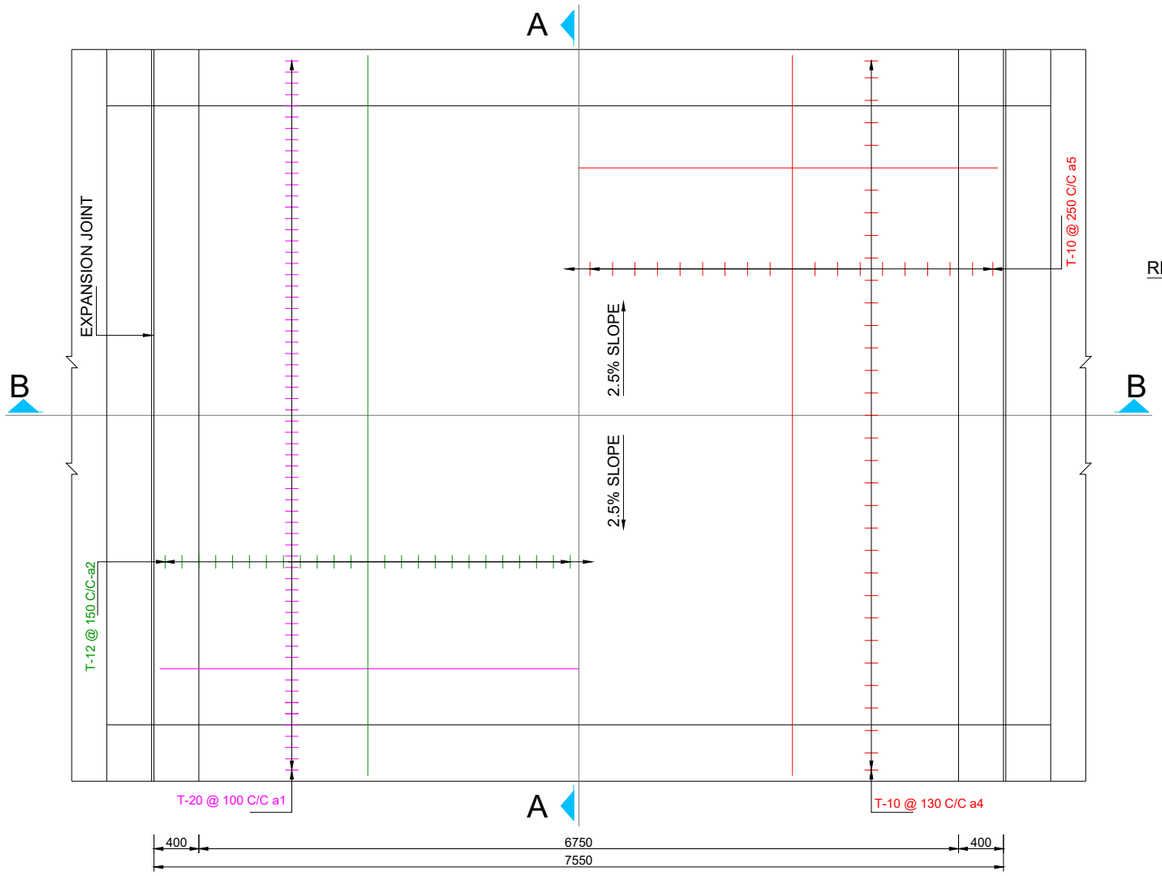
1 of 2



SECTION B-B
(SCALE A)

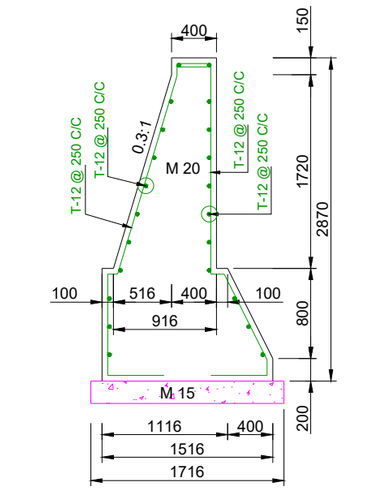


SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

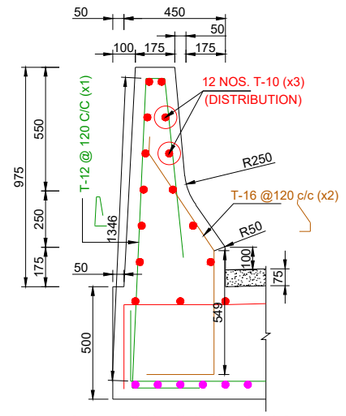
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



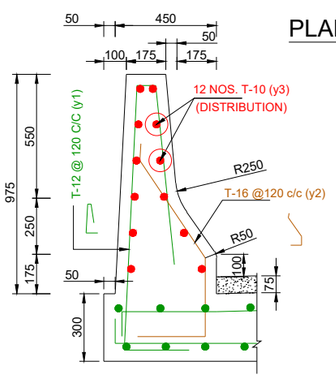
REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

BAR BENDING SCHEDULE

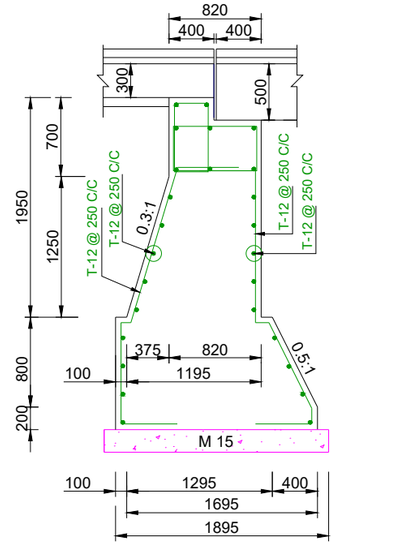
S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	270, R=80, 7450, 270	20	100	66
2	a2	250, R=50, 6340, 250	12	150	50
3	a3	5400	10	-	2
4	a4	350, 7390, R=40, 350	10	200	33
5	a5	145, 450, 2750, 2750, 450, 145	10	200	38
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2250, 2250, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1346, 800, 300	12	120	63X2
2	x2	75, 520, 549, 300	16	120	63X2
3	x3	7450	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



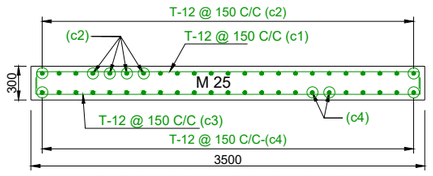
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)



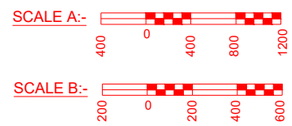
REINFORCEMENT DETAILS OF CRASH BARRIER FOR APPROACH SLAB
(SCALE B)



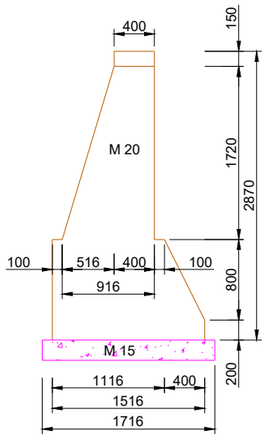
REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



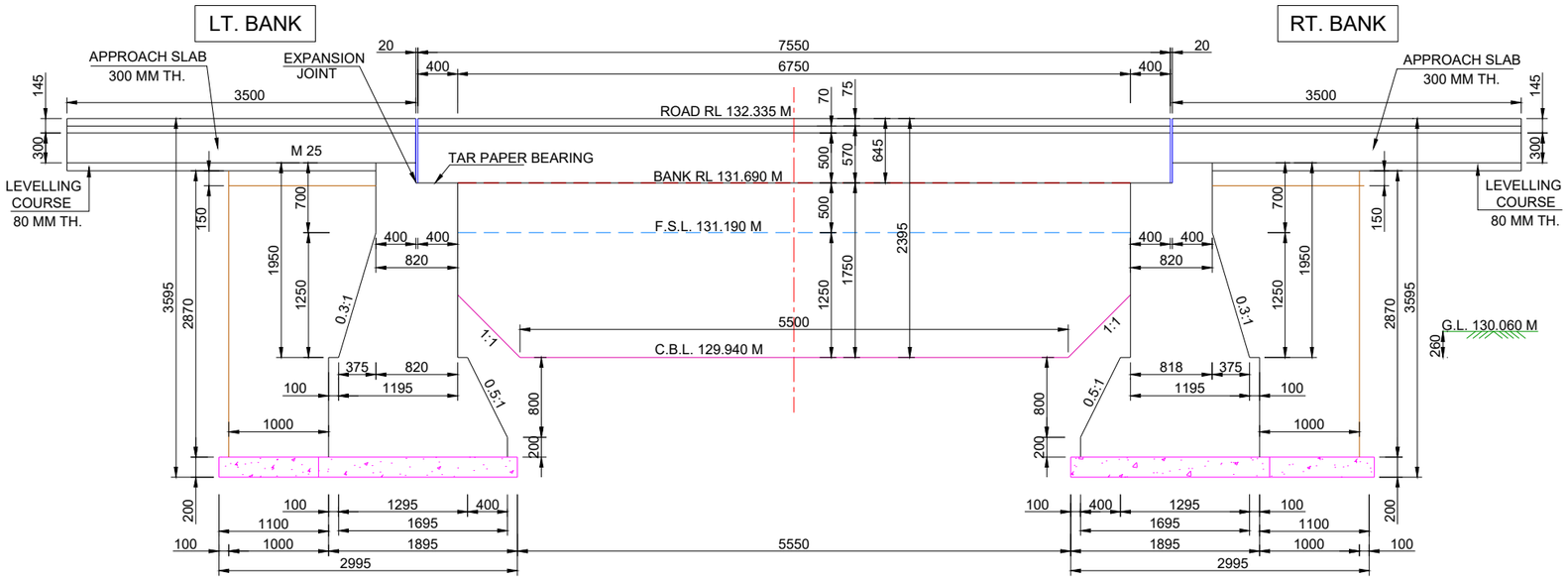
SECTION OF APPROACH SLAB
(SCALE A)



Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 1.150 ON KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-39/SLR/BRG. 2 of 2



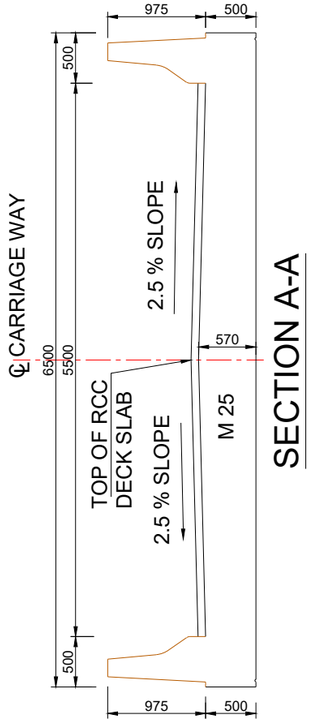
SECTION C-C



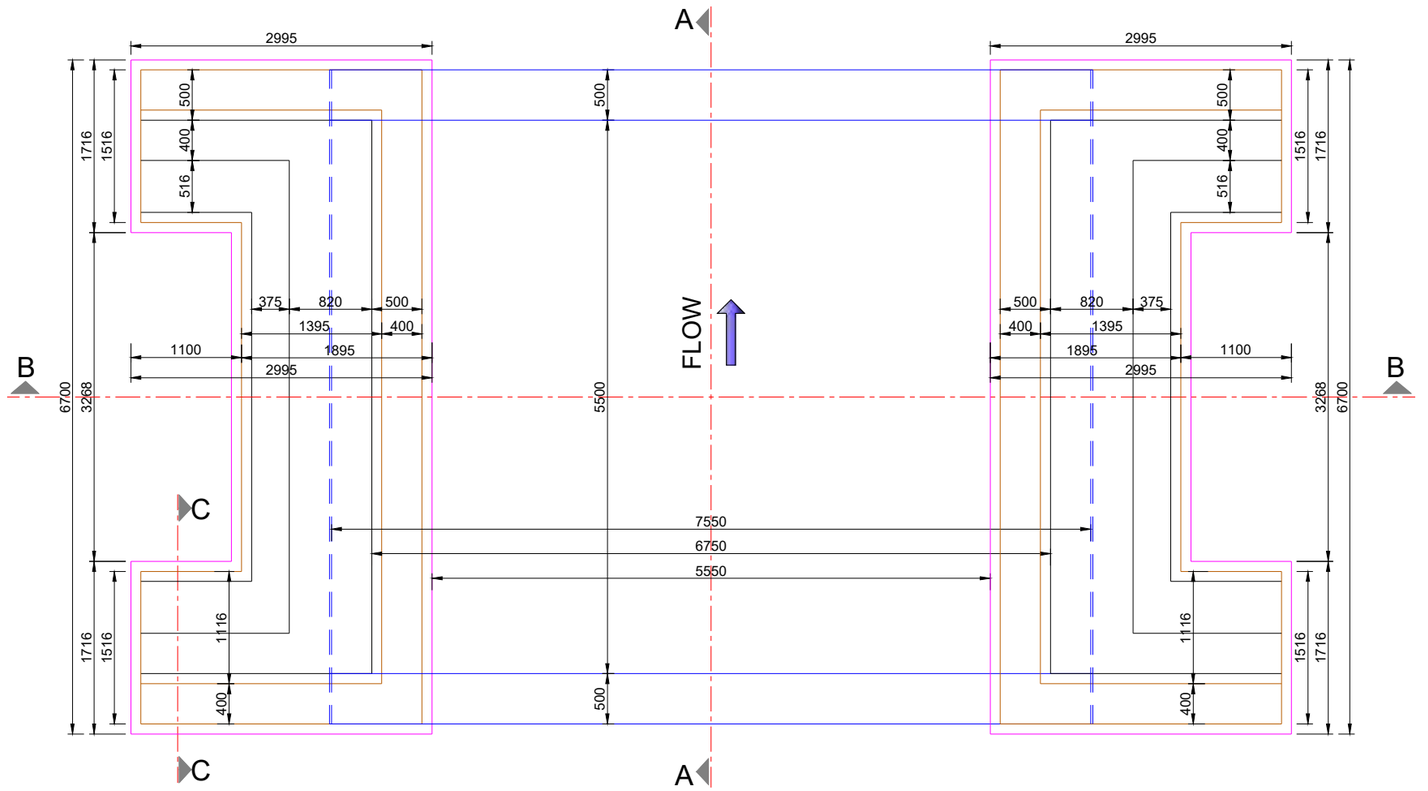
SECTION B-B

DESIGN DATA:-

DESIGN DISCHARGE	4.15 CUMECS
BED WIDTH	5.500 M
WATER DEPTH	1.250 M
FREE BOARD	0.500 M
BED LEVEL	129.940 M
F.S.L.	131.190 M
BANK R.L.	131.690 M
CARRIAGE WAY	5.500 M
ROAD LEVEL	132.335 M
GROUND LEVEL	130.060 M



SECTION A-A



SCALE A:-

1000 0 1000 2000 3000

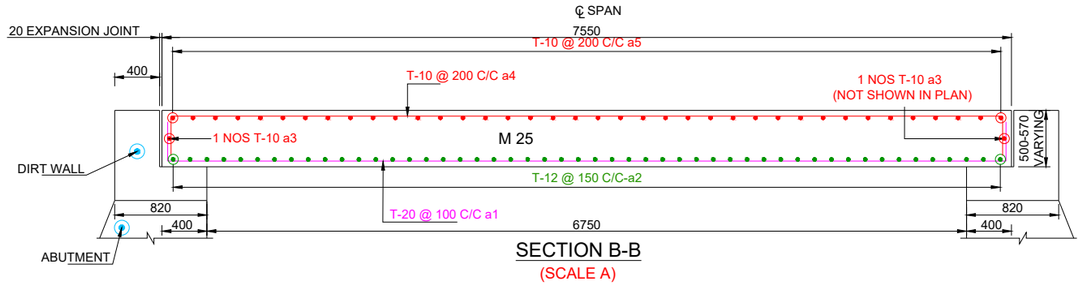
NOTES:-

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

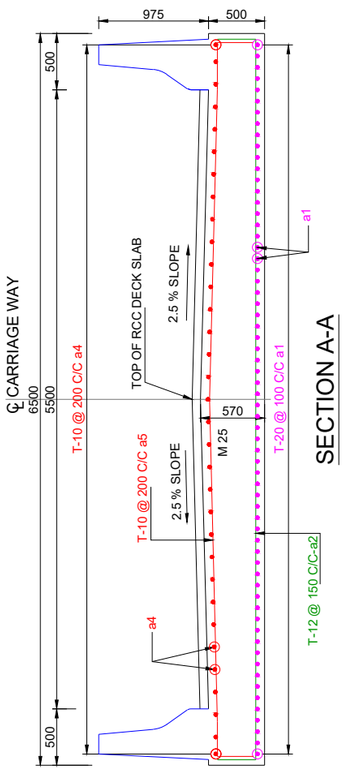
BRIDGE	M 20 (1:1.5:3)
WING WALL	M 20 (1:1.5:3)
PARAPETS	M 20 (1:1.5:3)
BASE CONCRETE UNDER BRIDGE	M 15 (1:2:4)
SLAB	M 25 (1:1:2)
APPROACH SLAB	M 25 (1:1:2)

4. MINIMUM CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
5. 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.
6. BENDING OF REINF. BAR SHALL CONFORM TO I.S. 2502
7. THE BRIDGE HAS BEEN DESIGNED FOR THE FOLLOWING ASSUMED PROPERTIES OF SOIL AT FOUNDING LEVEL AND a) & b) FOR BACK FILL ALSO.
   a) C = 0 KG/SQCM.
   b) Ø = 30°
   c) ASSUMED BEARING CAPACITY 20 T/SQM
8. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
9. THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C. M 20 (1:1.5:3).
11. TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
12. 75 MM THK. WEARING COAT IN M-25 CC WITH MAX. W.C.RATIO AS 0.4 SHALL BE PROVIDED.
13. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
14. TAR PAPER BEARING SHOULD BE PROVIDED ON ALL SUPPORTS OF DECK SLAB.
15. 20 MM TH. BITUMINOUS EXPANSION PAD SHALL BE PROVIDED AS EXPANSION JOINT.

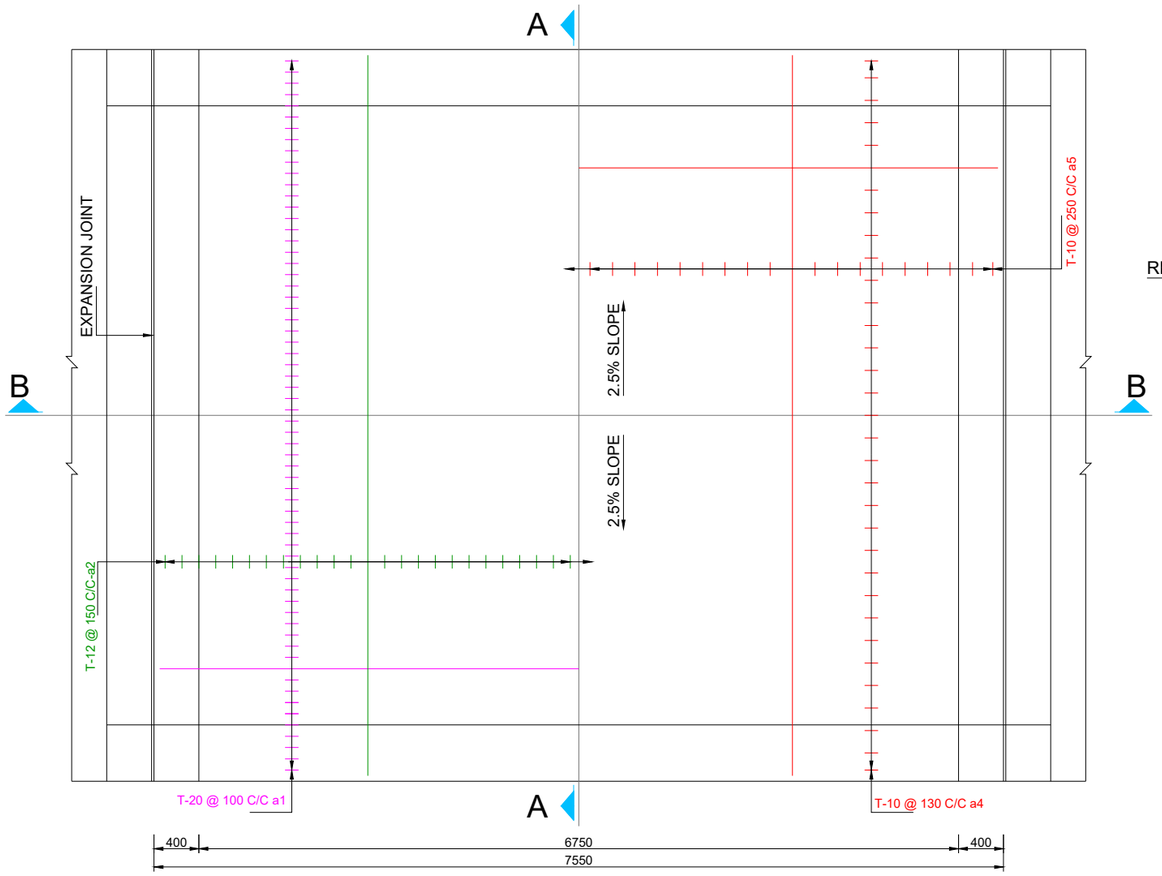
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	G.A.D. OF BRIDGE AT KM. 1.471 ON KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-39/SLR/BRG. 1 of 2



SECTION B-B
(SCALE A)

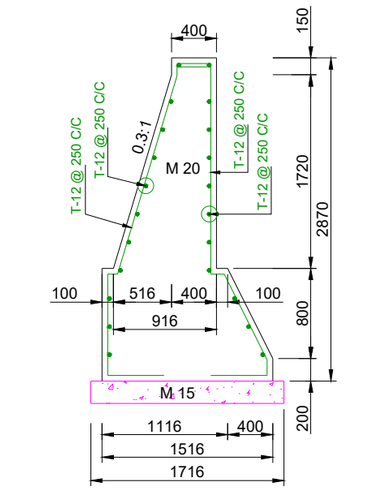


SECTION A-A



BOTTOM REINFORCEMENT TOP REINFORCEMENT

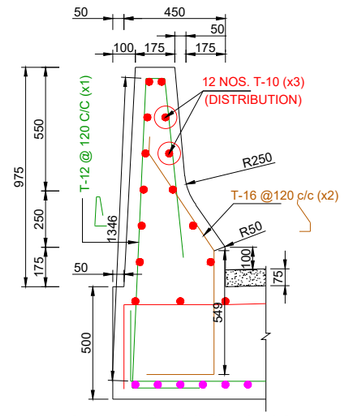
PLAN SHOWING REINFORCEMENT DETAILS OF DECK SLAB
(SCALE A)



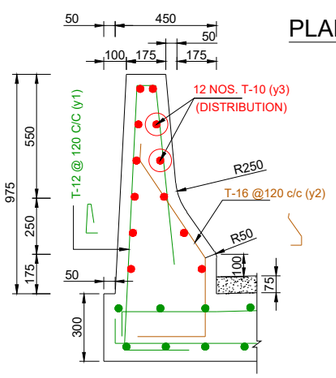
REINFORCEMENT DETAIL OF RETURN WALL
(SCALE A)

BAR BENDING SCHEDULE

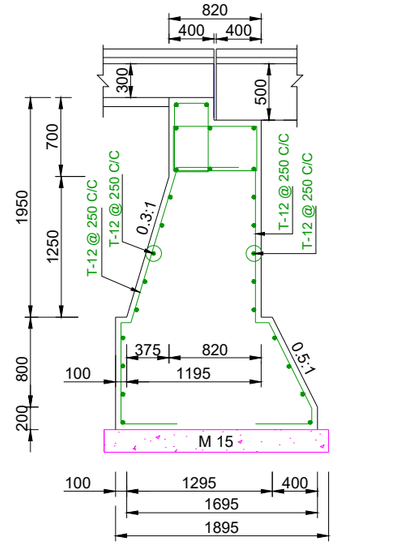
S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1	270, R=80, 7450, 270	20	100	66
2	a2	250, R=50, 6340, 250	12	150	50
3	a3	5400	10	-	2
4	a4	350, 7390, R=40, 350	10	200	33
5	a5	145, 450, 2750, 2750, 450, 145	10	200	38
APPROACH SLAB					
1	c1	150, 3400, 150	12	150	43X2
2	c2	150, 450, 2250, 2250, 450, 150	12	150	23X2
3	c3	150, 3400, 150	12	150	43X2
4	c4	150, 6400, 150	12	150	23X2
CRASH BARRIER FOR MAIN SLAB					
1	x1	75, 1346, 800, 300	12	120	63X2
2	x2	75, 520, 549, 300	16	120	63X2
3	x3	7450	10	-	12X2
CRASH BARRIER FOR APPROACH SLAB					
1	y1	75, 1146, 800, 300	12	120	29X2X2
2	y2	75, 520, 379, 300	16	120	29X2X2
3	y3	3400	10	-	12X2X2



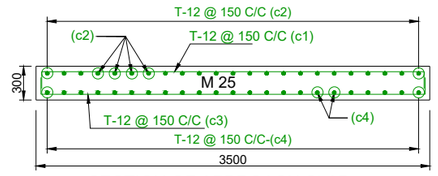
REINF. DETAILS OF CRASH BARRIER IN MAIN SLAB
(SCALE B)



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



REINFORCEMENT DETAIL OF ABUTMENT
(SCALE A)



SECTION OF APPROACH SLAB
(SCALE A)

SCALE A:-
400 0 400 800 1200

SCALE B:-
200 0 200 400 600

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	REINFORCEMENT DETAILS OF SLAB AT KM. 1.471 ON KONCHI DY. (OFFTAKE FROM RD - 109+090 KM., NORTH KOEL RIGHT MAIN CANAL)
	Drawing No. :-	WAP/INFRA/NORTH KOEL/DY./R-39/SLR/BRG. 2 of 2

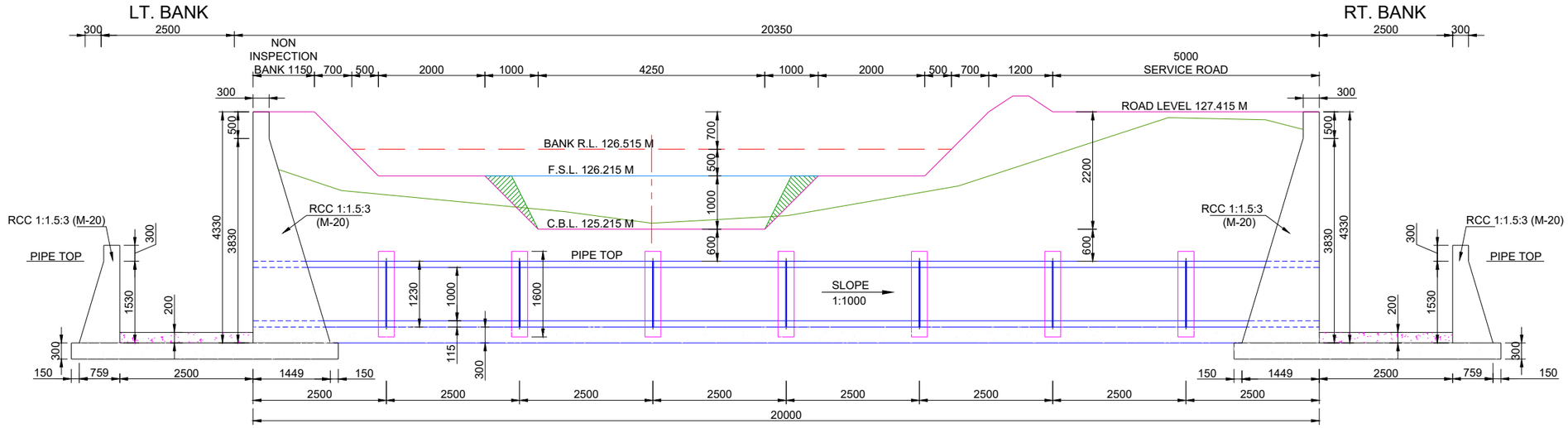
DRAWING OF CROSS DRAINAGE WORK

PROPOSED DESIGN DATA

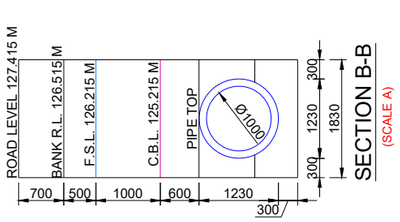
	KM 7.326	Unit
Discharge	2.57	cumec
Bed Width	4.250	m
Water Depth	1.000	m
Internal Dia	1.000	m
No. of Dia	2	No.
Free Board	0.500	m

NOTES:-

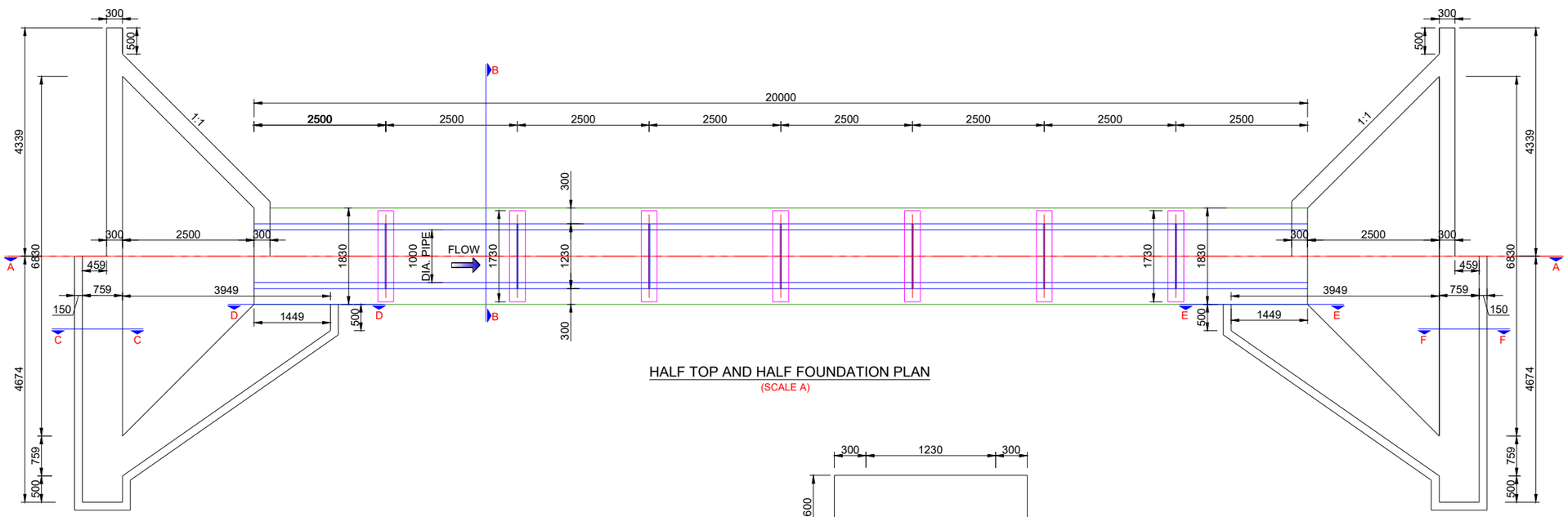
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



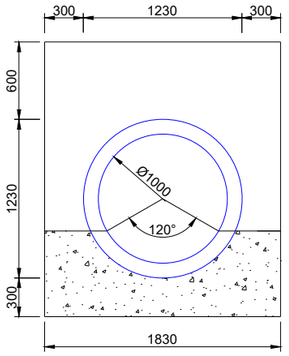
SECTION A-A
(SCALE A)



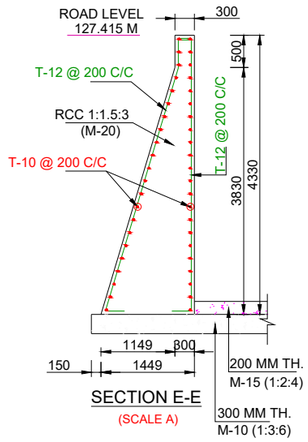
SECTION B-B
(SCALE A)



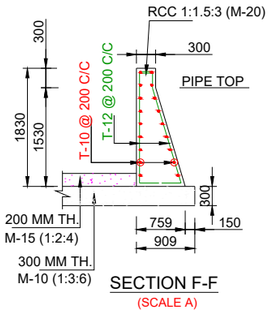
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)



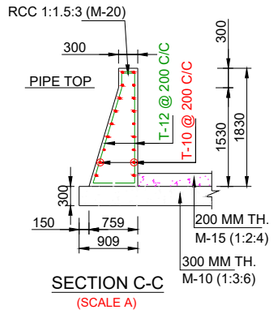
DETAILS OF JOINT OF PIPE
(SCALE B)



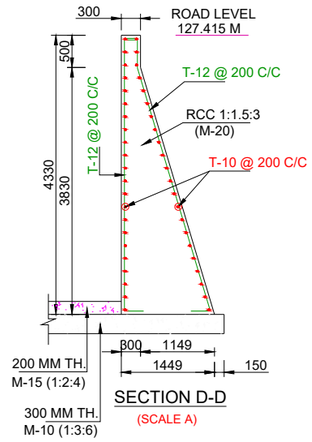
SECTION E-E
(SCALE A)



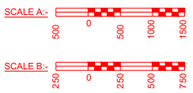
SECTION F-F
(SCALE A)



SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)



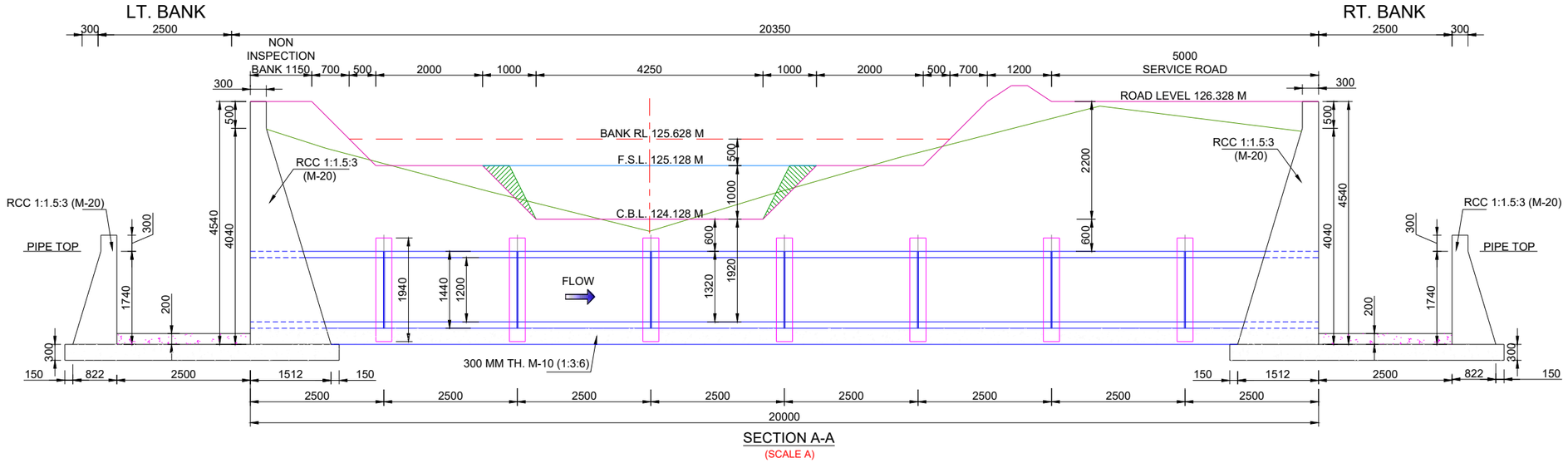
Prepared by :- WAPCOS LTD.	
Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 7.326 OF KONCHI DY.
Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-39/ CD 1 of 1

PROPOSED DESIGN DATA

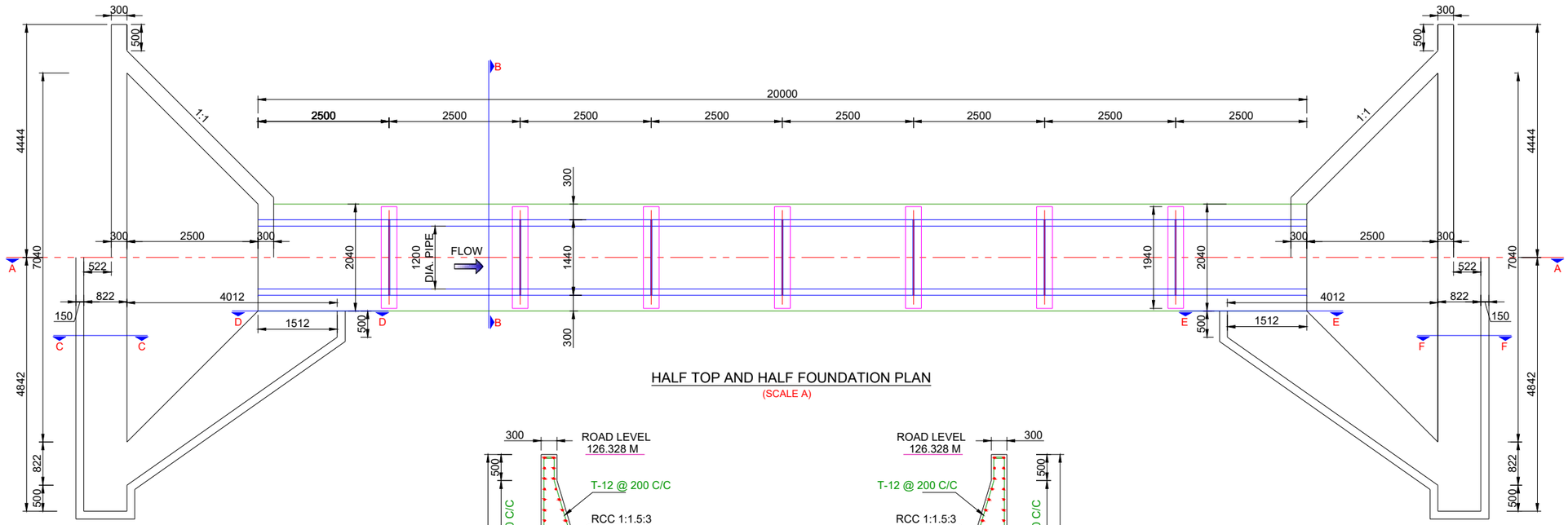
	KM 9.906	Unit
Discharge	2.26	cumec
Bed Width	4.250	m
Water Depth	1.000	m
Internal Dia	1.200	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

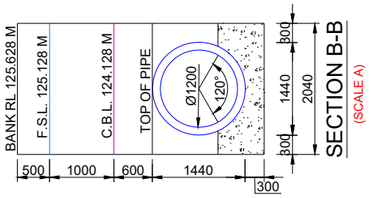
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.



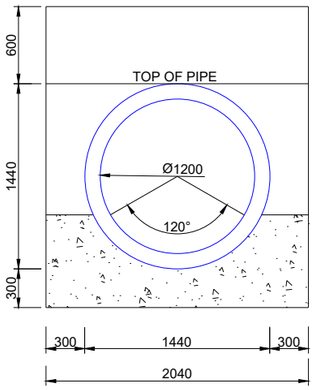
SECTION A-A
(SCALE A)



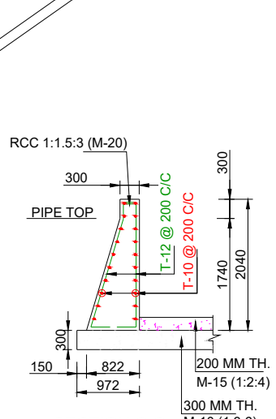
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)



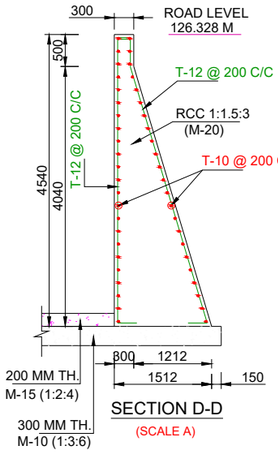
SECTION B-B
(SCALE A)



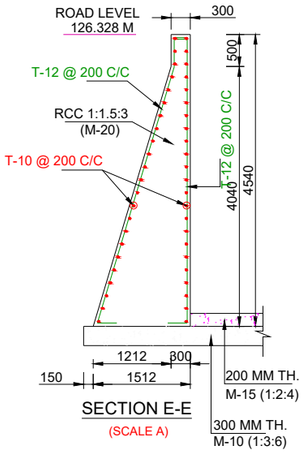
DETAILS OF JOINT OF PIPE
(SCALE B)



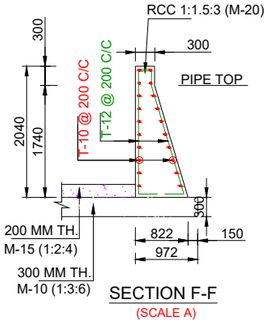
SECTION C-C
(SCALE A)



SECTION D-D
(SCALE A)



SECTION E-E
(SCALE A)



SECTION F-F
(SCALE A)

SCALE A:- 500 0 500 1000 1500

SCALE B:- 250 0 250 500 750

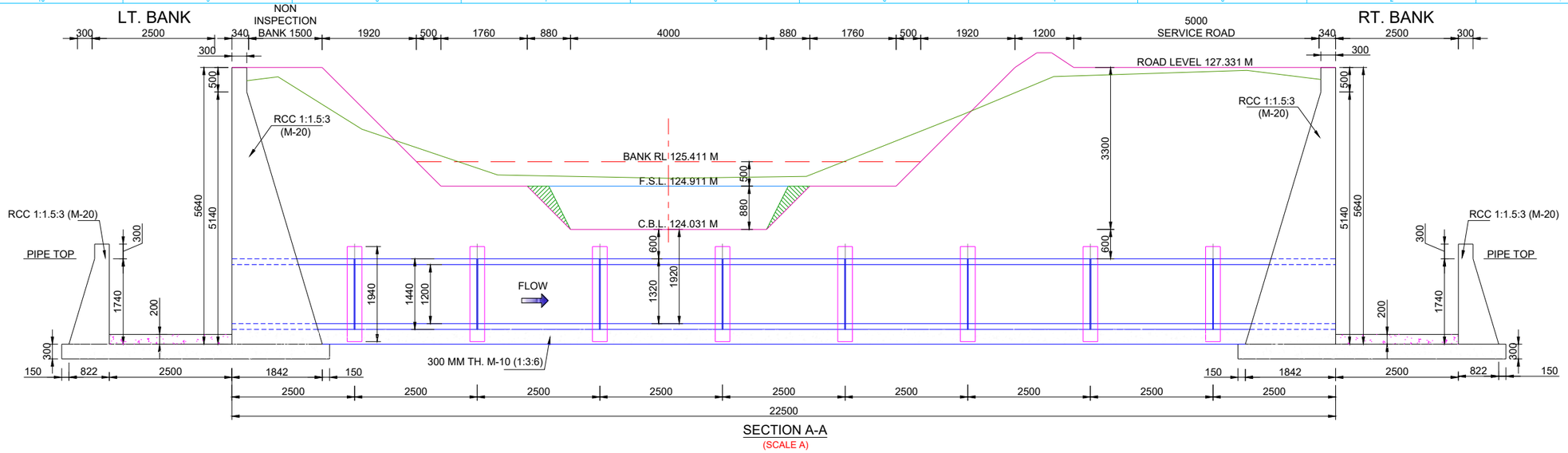
Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 9.906 OF KONCHI DY.
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-39/ CD 1 of 1

PROPOSED DESIGN DATA

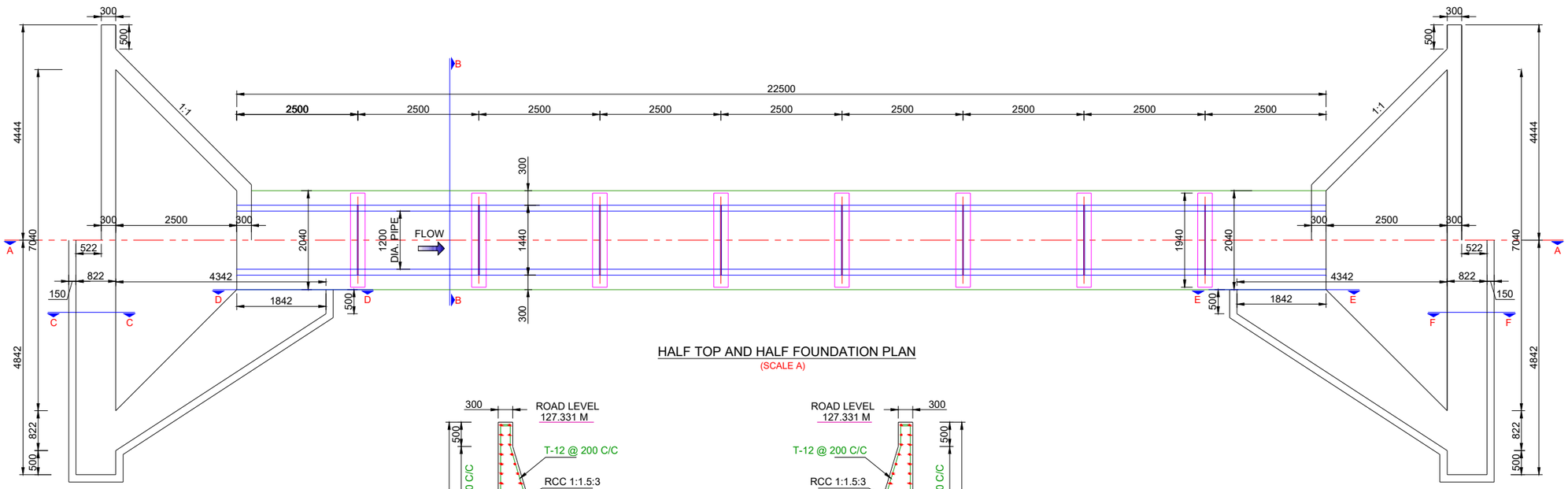
	KM 10.430	Unit
Discharge	2.26	cumec
Bed Width	4.000	m
Water Depth	0.880	m
Internal Dia	1.200	m
No. of Dia	1	No.
Free Board	0.500	m

NOTES:-

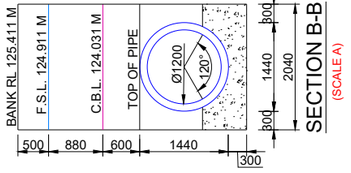
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS EXCEPT OTHERWISE MENTIONED.
2. THE DRAWING SHALL NOT TO BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. ANY OVER DIGGING SHALL BE FILLED BY CONCRETE M-10
4. THE PIPES SHALL BE RCC NP3 NON PRESSURE PIPES. THE SPECIFICATION OF PIPES SHALL BE AS PER IS:458.
5. BENDING OF BARS SHALL CONFORM TO IS:2502.
6. ALL CONCRETE WORK SHALL CONFORM TO IS:456-2000. GRADE OF CONCRETE IN DIFF. COMPONENTS SHALL BE ASSHOWN ON DRAWINGS.
7. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING IS:786.

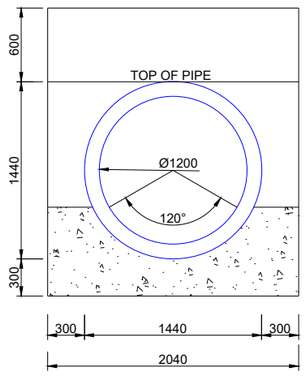


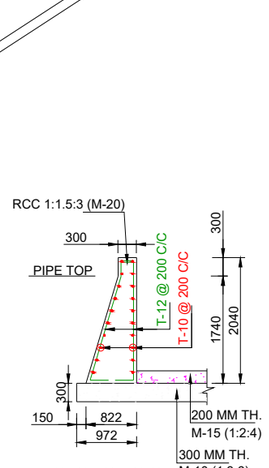
SECTION A-A
(SCALE A)

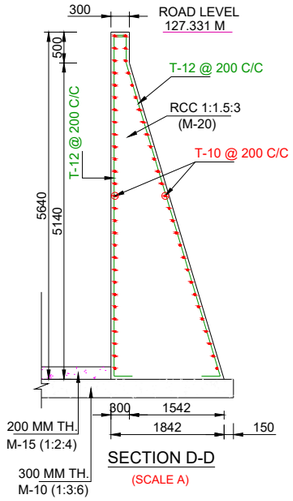


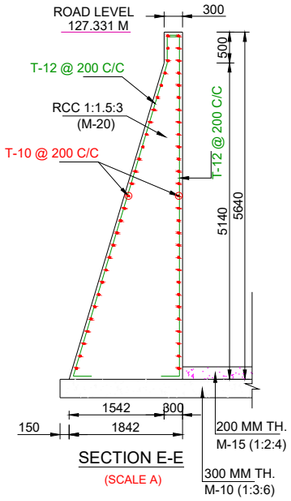
HALF TOP AND HALF FOUNDATION PLAN
(SCALE A)

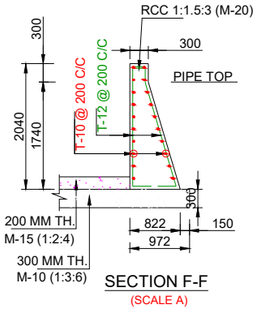








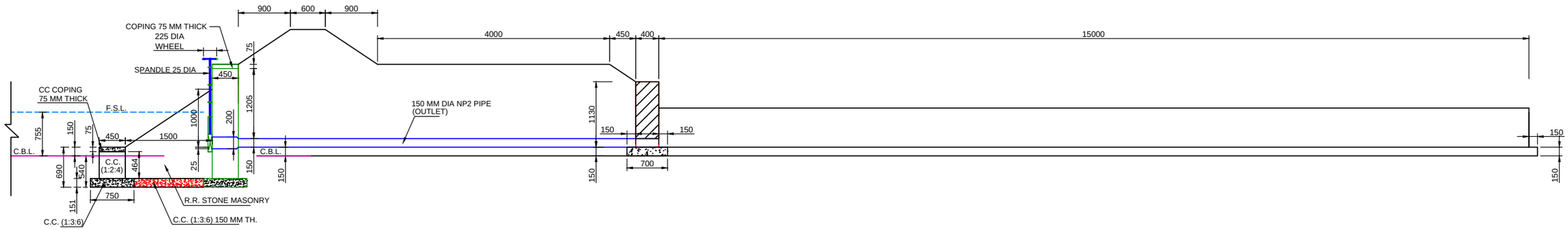




SCALE A:- 0 500 500 1000 1500

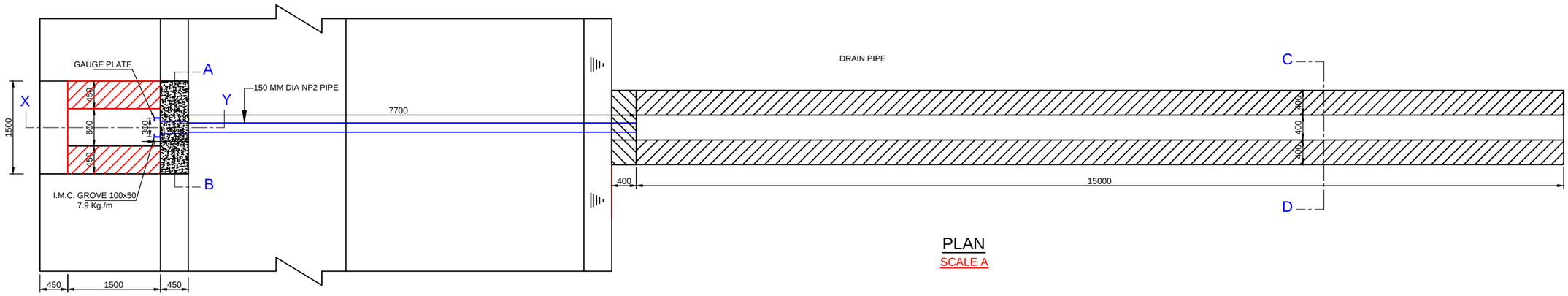
SCALE B:- 0 250 250 500 750

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GENERAL ARRANGEMENT DRAWING OF DRAINAGE SYPHON AT KM 10.430 OF KONCHI DY.
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ DY./ R-39/ CD 1 of 1

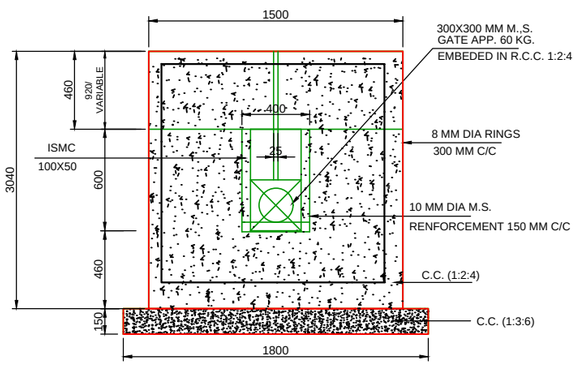


SECTION X-Y
SCALE A

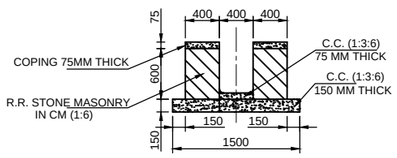
ELEVATION
SCALE A



PLAN
SCALE A



SECTION A-B
SCALE B



SECTION C-D
SCALE A

NOTES

1. ALL DIMENSIONS ARE IN MM EXCEPT LEVELS IN METRES UNLESS OTHERWISE SPECIFIED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION SHALL BE SCALED OFF.
2. ALL MASONRY WORKS SHALL BE DONE AS PER SPECIFICATION OF GOVT. OF JHARKHAND
3. THIS DWG. IS FOR OUTLET PIPE OF 150 MM DIA EMBEDED IN MASONRY.
4. 300X300 MM SIZE GATE SHALL BE FIXED IN ISMC. 100X50 FRAME.
5. THE GATE SHALL BE LIFTED THROUGH SPANDLE, THIS SPANDLE SHALL BE KEY LOCKED TO AVOID UNNECCESSARY OPERATION BY UN-AUTHORIZED PERSON.
6. THE 600 MM DIA DRAIN PIPE SHALL BE PROVIDED BELOW GULE DRAIN IF REQUIRED AT THE LOCATION.

SCALE A:- 0 1000 2000 3000 4000MM

SCALE B:- 0 2000 4000 6000 8000MM

Prepared by :- WAPCOS LTD.	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	TYPICAL OUTLET DRAWING
	Drawing No. :-	WAP/ INFRA/ NORTHKOEL/ OUTLET 1 of 1
	Drawn by:-	Checked by:- / Approved by:-