

TENDER DOCUMENT

FOR

**Lining, Repair & Construction of Right Main Canal and its Structures
from RD 68.37 to 75.39 km under North Koel Reservoir Project,
Jharkhand and Bihar**

PACKAGE – 7

VOLUME – 5.1

Tender Drawings- Lining & Structures

Issued to M/s



SCALE

H- 1:2000

V- 1:100

Last Design Data			Existing Data				Proposed Data			
Chainage	NSL	Bed Level	FSL	Silted Bed Level	FSL	TOP OF BANK Left	TOP OF BANK Right	Bed Level	FSL	TOL
60000	136.261	135.066	138.723	135.368	139.178	140.217	140.210	135.066	138.922	139.672
60300	135.261	135.023	138.680	135.459	139.135	140.448	140.440	135.023	138.879	139.629
60442								135.003	138.860	139.610
60600	137.559	134.980	138.637	135.362	139.092	140.384	139.928	134.980	138.838	139.588
60890								134.939	138.797	139.547
60900	134.161	134.937	138.595	135.289	139.049	140.038	139.961	134.937	138.792	139.542
									138.790	139.540
61200	135.261	134.894	138.552	135.219	139.007	140.014	139.921	134.894	138.748	139.498
61500	137.980	134.852	138.509	135.255	138.964	140.105	140.220	134.852	138.705	139.455
61800	137.419	134.809	138.466	135.110	138.921	139.994	139.996	134.809	138.662	139.412
62100	136.575	134.766	138.423	135.111	138.878	140.022	139.997	134.766	138.619	139.369
62400	135.441	134.723	138.380	135.237	138.835	139.828	139.718	134.723	138.576	139.326
62600								134.695	138.549	139.299
62700	133.359	134.680	138.337	135.551	138.792	139.688	139.575	134.680	138.535	139.285
62880								134.654	138.509	139.259
63000	133.950	134.637	138.295	134.946	138.749	139.812	139.720	134.637	138.492	139.242
63300	134.871	134.594	138.252	135.197	138.707	139.994	139.832	134.594	138.449	139.199
63600	136.081	134.552	138.209	135.163	138.664	140.264	140.183	134.552	138.406	139.156
63900	136.660	134.509	138.166	135.090	138.621	140.322	140.218	134.509	138.363	139.113
64200	135.700	134.466	138.123	134.518	138.578	140.302	140.220	134.466	138.320	139.070
64343								134.445	138.302	139.052
64429								134.433	138.289	139.039
64500	135.200	134.423	138.080	134.508	138.535	140.142	140.155	134.423	138.279	139.029
64800	135.941	134.380	138.037	134.540	138.492	140.059	140.105	134.380	138.236	138.986
65100	135.630	134.337	137.995	134.473	138.449	139.864	139.898	134.337	138.193	138.943
65340								134.303	138.160	138.910
65400	136.051	134.294	137.952	134.599	138.407	139.804	139.485	134.294	138.152	138.902
65700	135.161	134.252	137.909	134.433	138.364	139.701	139.598	134.252	138.109	138.859
66000	135.279	134.209	137.866	134.266	138.321	139.598	139.564	134.209	138.066	138.816
66209								134.179	138.037	138.787
66300	133.999	134.166	137.823	134.278	138.278	139.973	140.036	134.166	138.024	138.774
66600	132.201	134.123	137.780	134.245	138.235	139.784	139.669	134.123	137.981	138.731
66728								134.105	137.964	138.714
66900	135.660	134.080	137.737	134.291	138.192	139.877	139.821	134.080	137.932	138.682
66989								134.067	137.920	138.670
67200	135.493	134.037	137.695	134.039	138.588	139.952	140.162	134.037	137.890	138.640
67500	135.660	133.994	137.652	134.474	138.107	139.644	139.823	133.994	137.847	138.597
67608								133.979	137.832	138.582
67800	135.542	133.952	137.609	134.422	138.064	139.738	139.866	133.952	137.804	138.554
68100	136.700	133.909	137.566	134.581	138.021	139.363	139.414	133.909	137.761	138.511
68367			137.529					133.871	137.725	138.475
68400	136.139	133.866	137.523	134.169	137.978	139.159	139.159	133.866	137.720	138.470
68671								133.827	137.682	138.432
68700	136.901	133.823	137.480	134.128	137.935	139.175	139.515	133.823	137.678	138.428
69000	135.898	133.780	137.437	134.002	137.892	140.340	138.319	133.780	137.635	138.385
69300	135.679	133.737	137.395	133.940	137.849	139.595	138.970	133.737	137.592	138.342
69525								133.705	137.561	138.311
69600	136.209	133.695	137.352	133.836	137.807	139.298	139.208	133.695	137.551	138.301
69857								133.658	137.514	138.264
69900	136.428	133.652	137.309	133.748	137.764	139.012	139.159	133.652	137.508	138.258
70200	136.358	133.609	137.266	133.820	137.721	138.950	138.972	133.609	137.465	138.215
70330								133.590	137.447	138.197
70500	135.819	133.566	137.223	133.830	137.678	139.085	139.097	133.566	137.423	138.173
70800	134.188	133.523	137.180	133.845	137.635	138.689	138.634	133.523	137.380	138.130
71018								133.492	137.350	138.100
71100	134.109	133.480	137.137	133.662	137.592	138.795	138.616	133.480	137.336	138.086
71400	135.599	133.437	137.095	133.576	137.549	138.620	138.511	133.437	137.294	138.044
71598								133.409	137.268	138.018
71700	135.401	133.395	137.052	133.653	137.507	138.690	139.040	133.395	137.253	138.003
71990								133.353	137.212	137.962
72000	135.721	133.352	137.009	133.770	137.464	138.078	138.508	133.352	137.211	137.961

LEGEND			
	Last Design NSL		Existing Top of Bank(Left)
	Last Design Bed Level		Existing Top of Bank(Right)
	Last Design FSL		Proposed Bed Level
	Existing Bed Level		Proposed FSL
	Existing FSL		Proposed TOL

Implementing Agency :-			Project Title :- NORTH KOEL RESERVOIR PROJECT, JHARKHAND		
WAPCOS LTD.			Drawing Title :- L-SECTION OF RIGHT MAIN CANAL (FOR REPAIRING & RAISING OF LINING)		
वाष्कोस लिमिटेड WAPCOS LIMITED (भारत सरकार का उद्योग - नाल संरक्षण, नदी विकास और गंगा संरक्षण मंत्रालय) Page 2 of 180			Drawing No :- WAP/INFRA/NORTH KOEL/RMC-02 - (6 / 9)		
Drawn By:-		Checked By :-		Approved By :-	

Elevation

Nature Of Soil

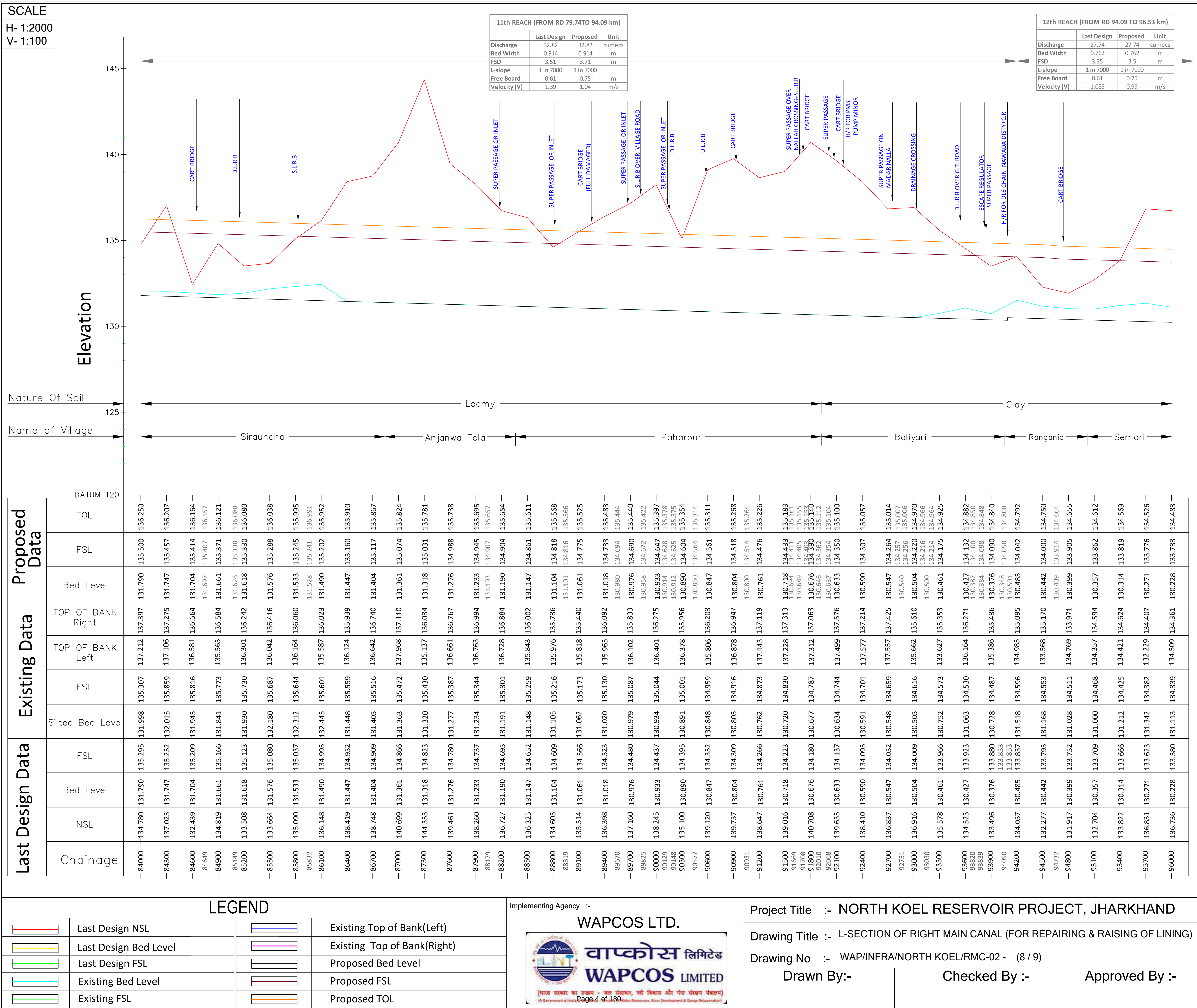
Name of Village

8th REACH (FROM RD 56.94 TO 68.37 km)			
	Last Design	Proposed	Unit
Discharge	47.74	47.74	cumecs
Bed Width	3.048	3.048	m
FSD	3.66	3.850	m
L-slope	1 in 7000	1 in 7000	
Free Board	0.762	0.75	m
Velocity (V)	1.226	1.13	m/s

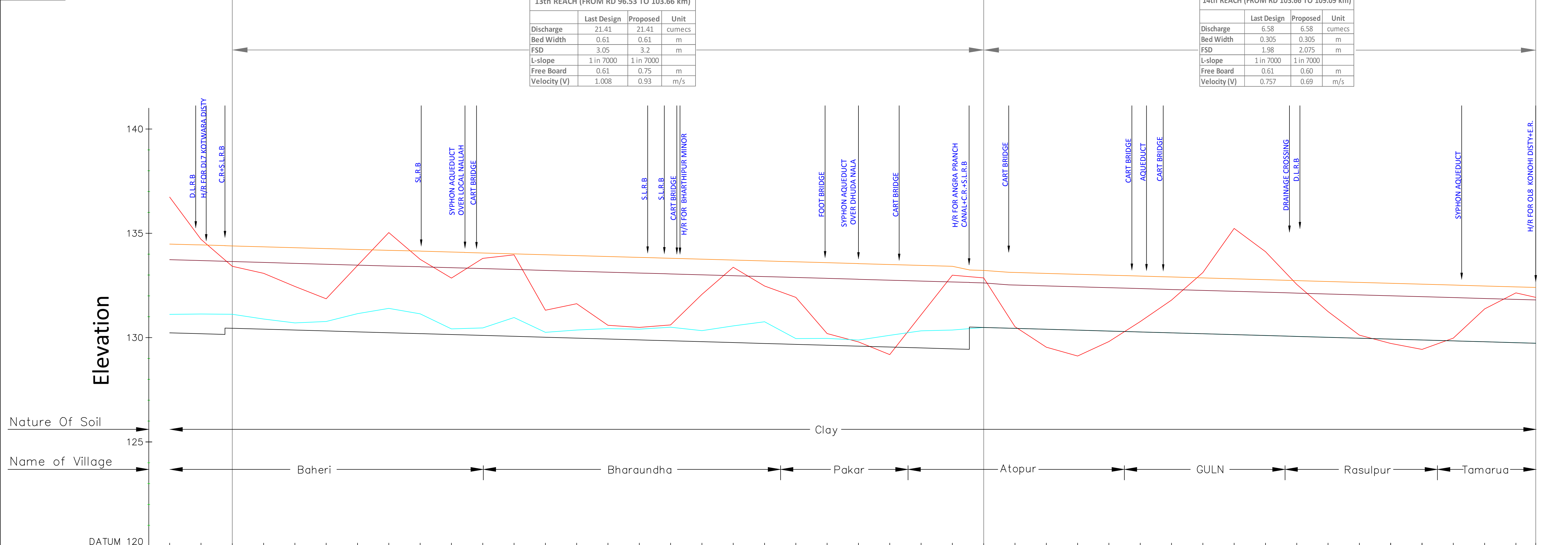
9th REACH (FROM RD 68.37 TO 72.94 km)			
	Last Design	Proposed	Unit
Discharge	39.49	39.49	cumecs
Bed Width	1.524	1.524	m
FSD	3.66	3.85	m
L-slope	1 in 7000	1 in 7000	
Free Board	0.61	0.75	m
Velocity (V)	1.179	1.09	m/s

Clay

JagdishpurBariawanBerhnaKantriDhanwanGamhariaBerhaniKhardiha



SCALE
H- 1:2000
V- 1:100



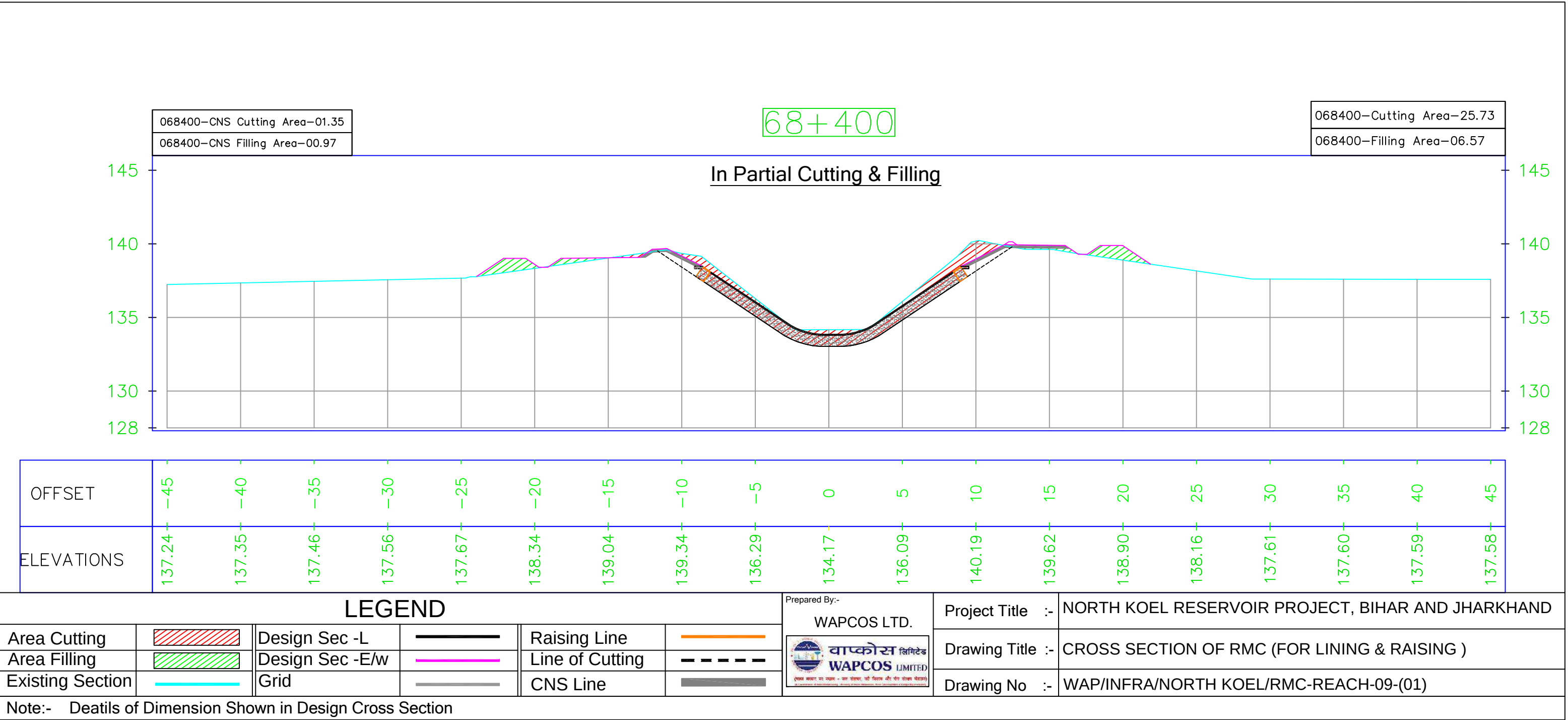
Last Design Data			Existing Data			Proposed Data		
Chainage	NSL	Bed Level	FSL	Silted Bed Level	FSL	TOP OF BANK Left	TOP OF BANK Right	Bed Level
96000	136.736	130.228	133.580	131.113	134.339	134.509	134.361	130.228
96250								
96300	134.709	130.185	133.537	131.131	134.296	132.724	134.335	130.192
96530								
96600	133.420	130.447	133.495	131.119	134.558	134.367	134.903	130.152
96900	133.082	130.404	133.452	130.889	134.516	134.288	134.174	130.457
97200	132.451	130.361	133.409	130.707	134.473	134.145	134.152	130.447
97500	131.863	130.319	133.366	130.772	134.430	134.058	133.182	130.603
97800	133.457	130.276	133.323	131.147	134.387	133.716	133.922	130.517
98100	135.036	130.233	133.280	131.402	134.344	134.425	133.859	134.224
98400	133.752	130.190	133.237	131.139	134.301	134.063	134.334	133.431
98411								
98700	132.853	130.147	133.195	130.419	134.258	133.820	133.552	130.150
98825								
99000	133.798	130.104	133.152	130.464	134.216	134.047	133.708	130.188
98940								
99300	133.966	130.061	133.109	130.962	134.173	133.800	133.560	130.393
99600	131.311	130.018	133.066	130.252	134.130	133.827	133.725	130.352
99900	131.625	129.976	133.023	130.365	134.087	133.212	133.236	130.335
100200	130.592	129.933	132.980	130.431	134.044	133.314	133.113	130.062
100500	130.491	129.890	132.937	130.405	134.001	133.466	133.410	130.015
100578								
100736	130.610	129.847	132.895	130.498	133.958	133.457	133.464	130.143
100800								
101100	132.073	129.804	132.852	130.335	133.916	133.286	133.000	130.085
101400	133.374	129.761	132.809	130.563	133.873	132.687	133.441	130.066
101700	132.472	129.718	132.766	130.759	133.830	133.226	133.375	130.018
101864								
102000	131.930	129.676	132.723	129.954	133.787	133.789	133.430	130.018
102279								
102300	130.195	129.633	132.680	129.962	133.744	133.315	130.849	130.018
102596								
102600	129.793	129.590	132.637	129.882	133.701	133.082	132.699	130.018
102900	129.186	129.547	132.595	130.111	133.658	133.108	133.071	130.018
102992								
103200	131.091	129.504	132.552	130.325	133.616	132.757	133.314	130.018
103500	132.993	129.461	132.509	130.362	133.573	132.831	132.527	130.018
103662								
103800	132.862	130.485	132.466	130.486	134.597	132.858	132.954	130.018
104040								
104100	130.525	130.442	132.423	130.444	134.554	134.132	134.304	130.018
104400	129.540	130.399	132.380	130.401	134.511	133.191	133.196	130.018
104700	129.119	130.357	132.337	130.358	134.468	132.152	132.100	130.018
105000	129.808	130.314	132.295	130.315	134.425	132.025	132.205	130.018
105220								
105300	130.768	130.271	132.252	130.272	134.383	131.773	131.917	130.018
105357								
105519	131.799	130.228	132.209	130.229	134.340	132.602	132.147	130.018
105600								
105900	133.118	130.185	132.166	130.186	134.297	132.474	132.074	130.018
106200	135.234	130.142	132.123	130.144	134.254	132.478	131.660	130.018
106500	134.118	130.099	132.080	130.101	134.211	134.515	133.784	130.018
106730								
106800	132.551	130.057	132.037	130.058	134.168	134.620	135.421	130.018
106832								
107100	131.250	130.014	131.995	130.015	134.125	131.527	133.375	130.018
107400	130.119	129.971	131.952	129.972	134.083	132.113	131.898	130.018
107700	129.723	129.928	131.909	129.929	134.040	131.500	131.652	130.018
108000	129.433	129.885	131.866	129.886	133.997	131.453	131.201	130.018
108300	129.973	129.842	131.823	129.844	133.954	131.126	130.651	130.018
108378								
108600	131.375	129.799	131.780	129.801	133.911	131.596	131.330	130.018
108900	132.143	129.757	131.737	129.758	133.868	131.301	131.485	130.018
109090	131.808	129.729	131.710	129.715	133.825	131.247	131.194	130.018

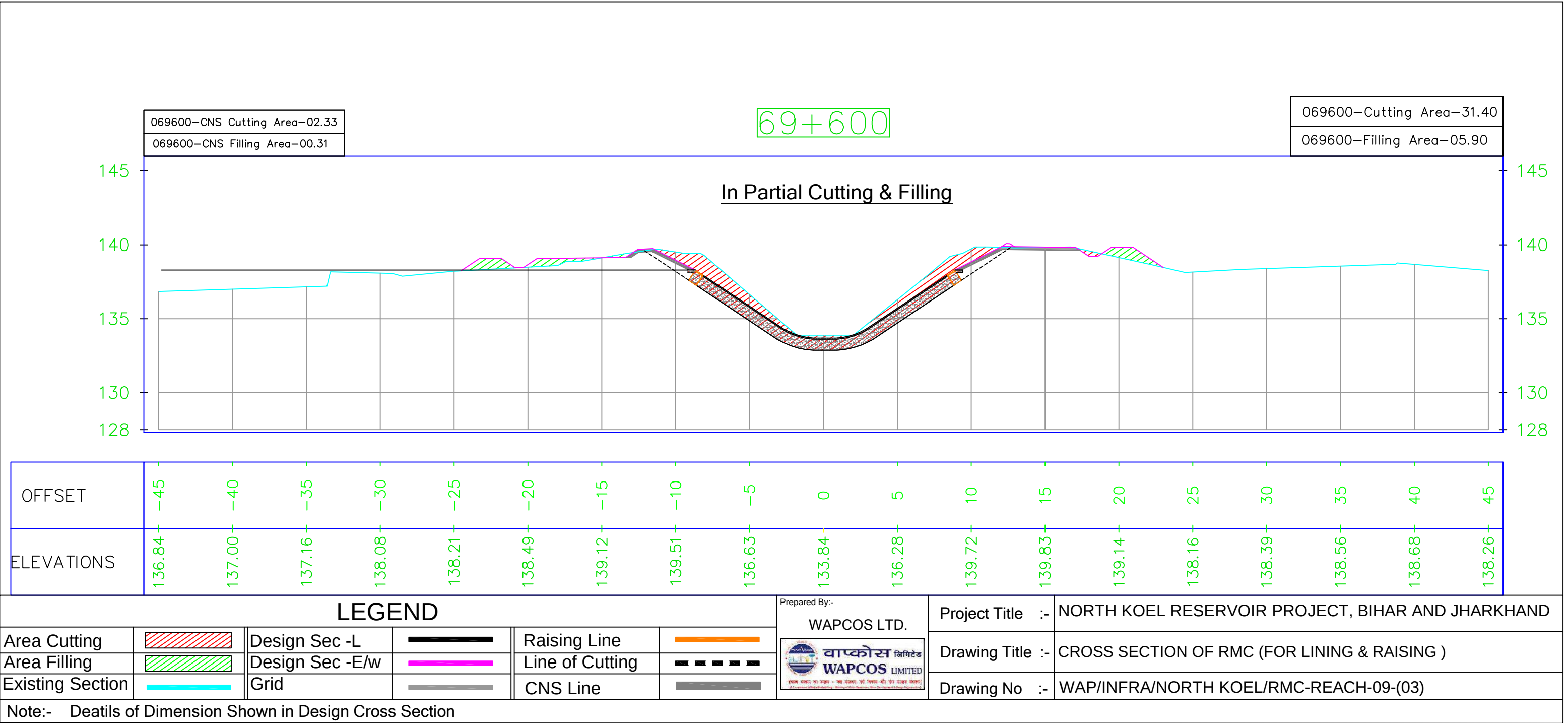
LEGEND			
	Last Design NSL		Existing Top of Bank(Left)
	Last Design Bed Level		Existing Top of Bank(Right)
	Last Design FSL		Proposed Bed Level
	Existing Bed Level		Proposed FSL
	Existing FSL		Proposed TOL

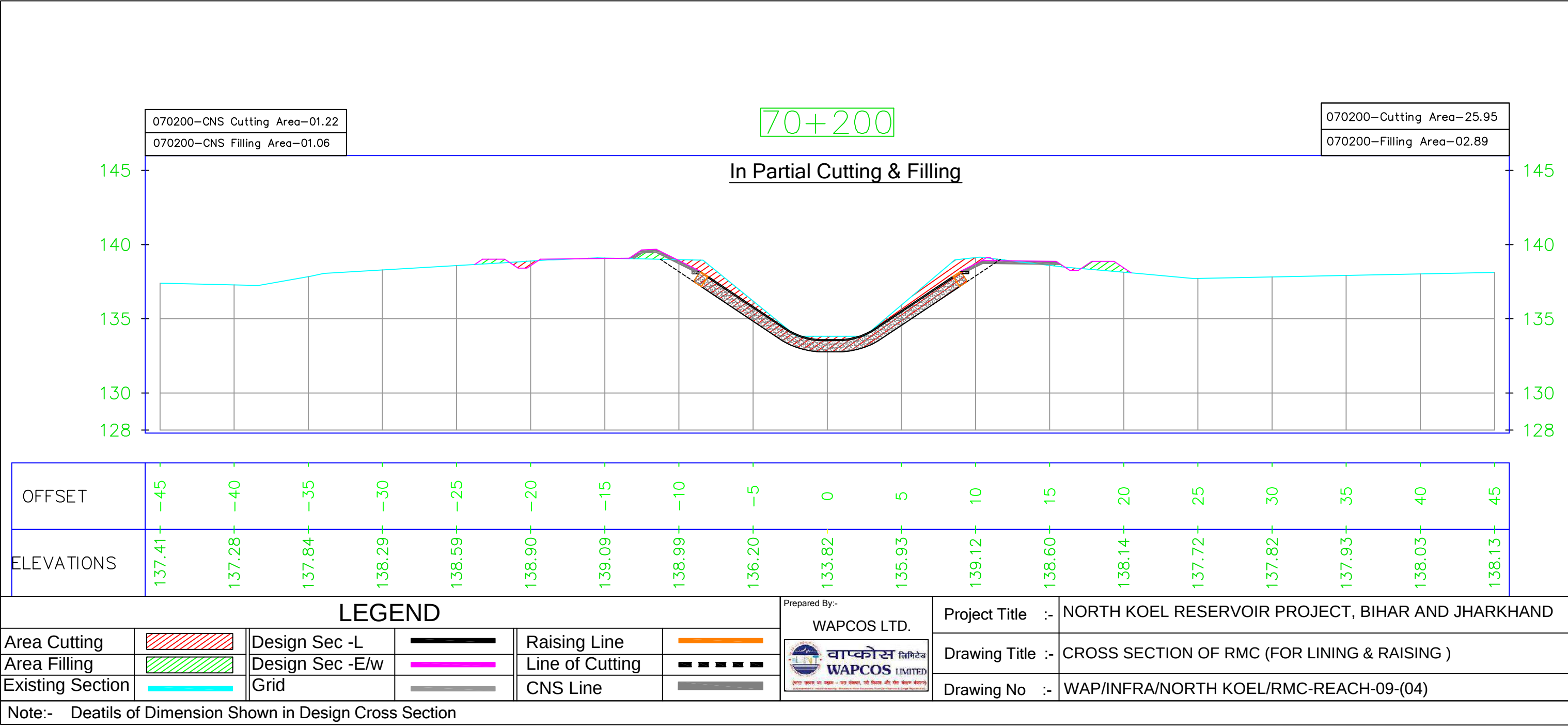
Implementing Agency :-
WAPCOS LTD.

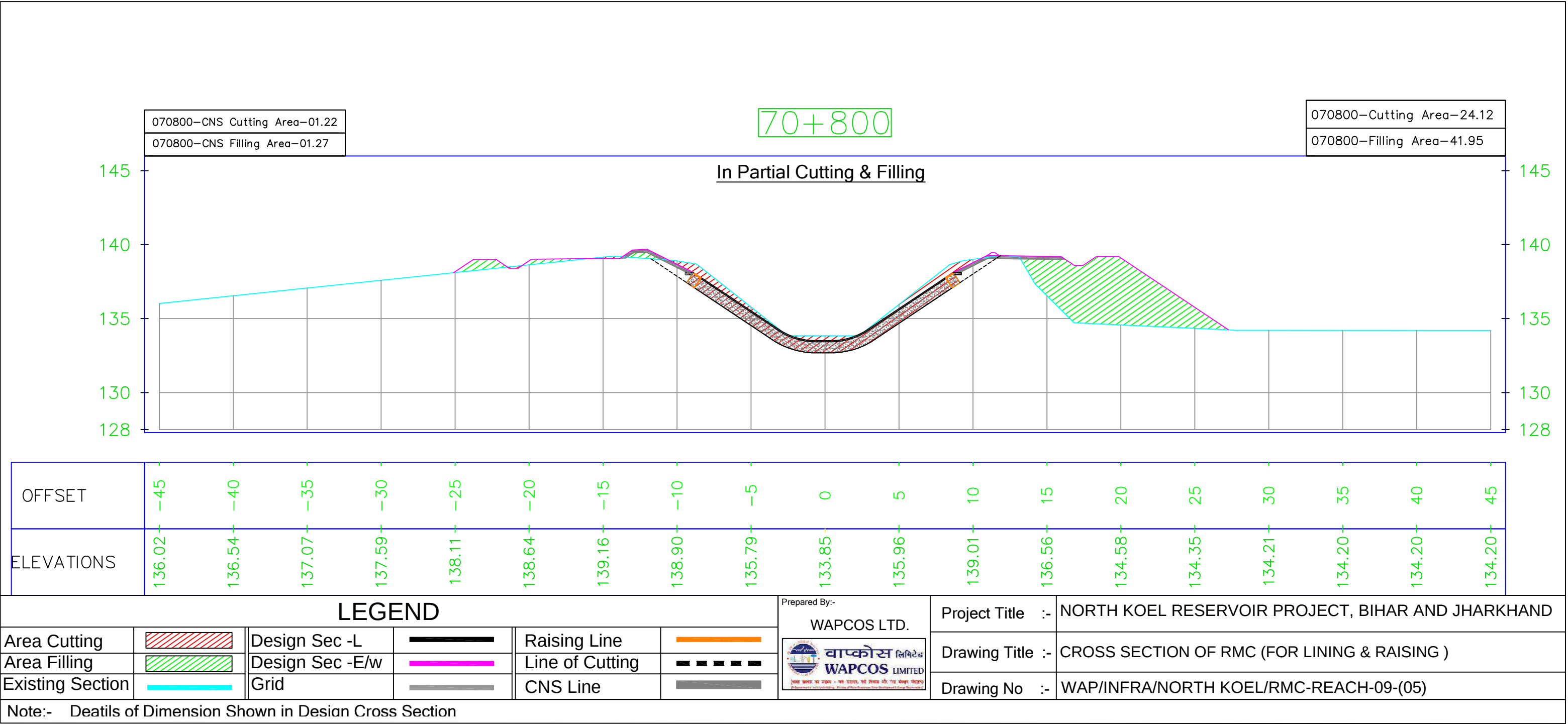

Page 5 of 180

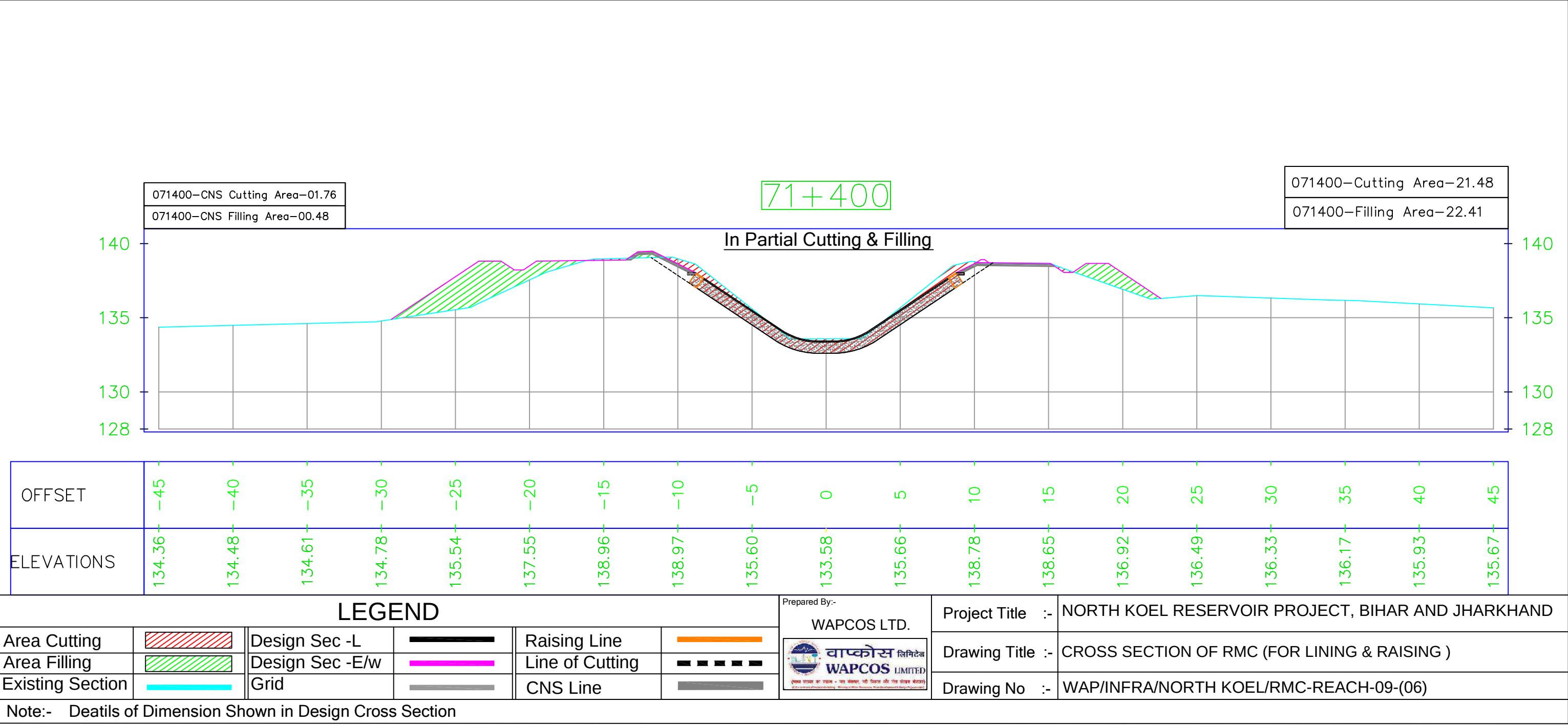
Project Title :-	NORTH KOEL RESERVOIR PROJECT, JHARKHAND		
Drawing Title :-	L-SECTION OF RIGHT MAIN CANAL (FOR REPAIRING & RAISING OF LINING)		
Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-02 - (9 / 9)		
Drawn By:-		Checked By :-	Approved By :-

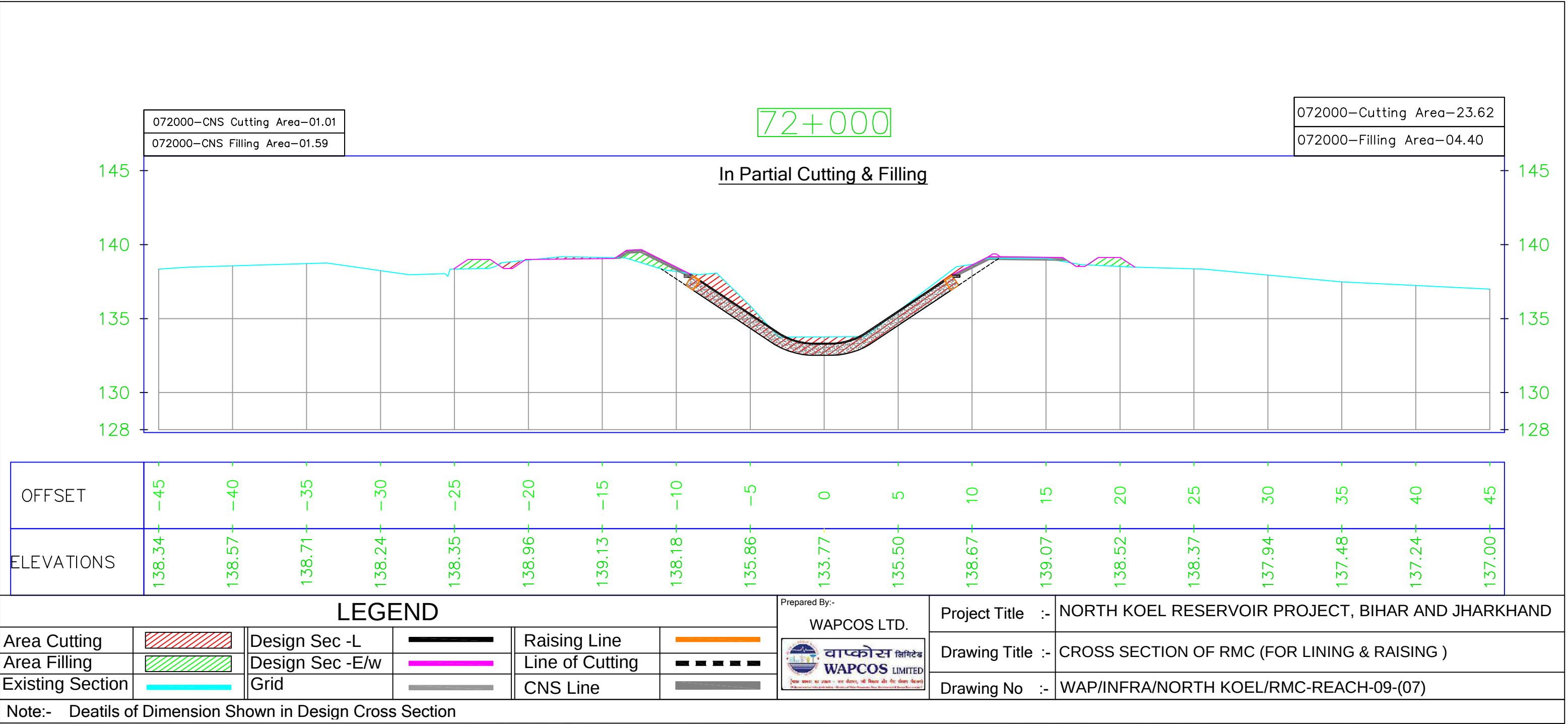


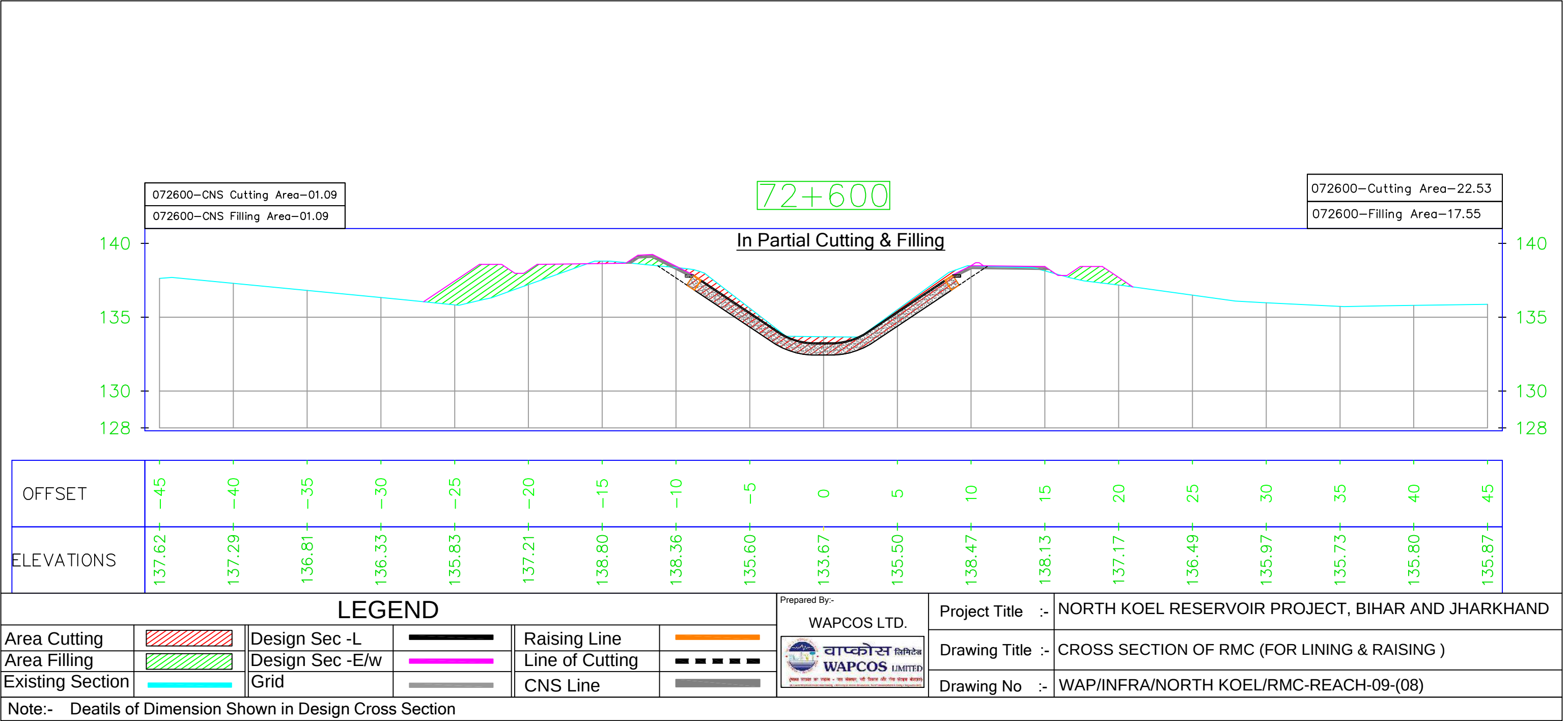


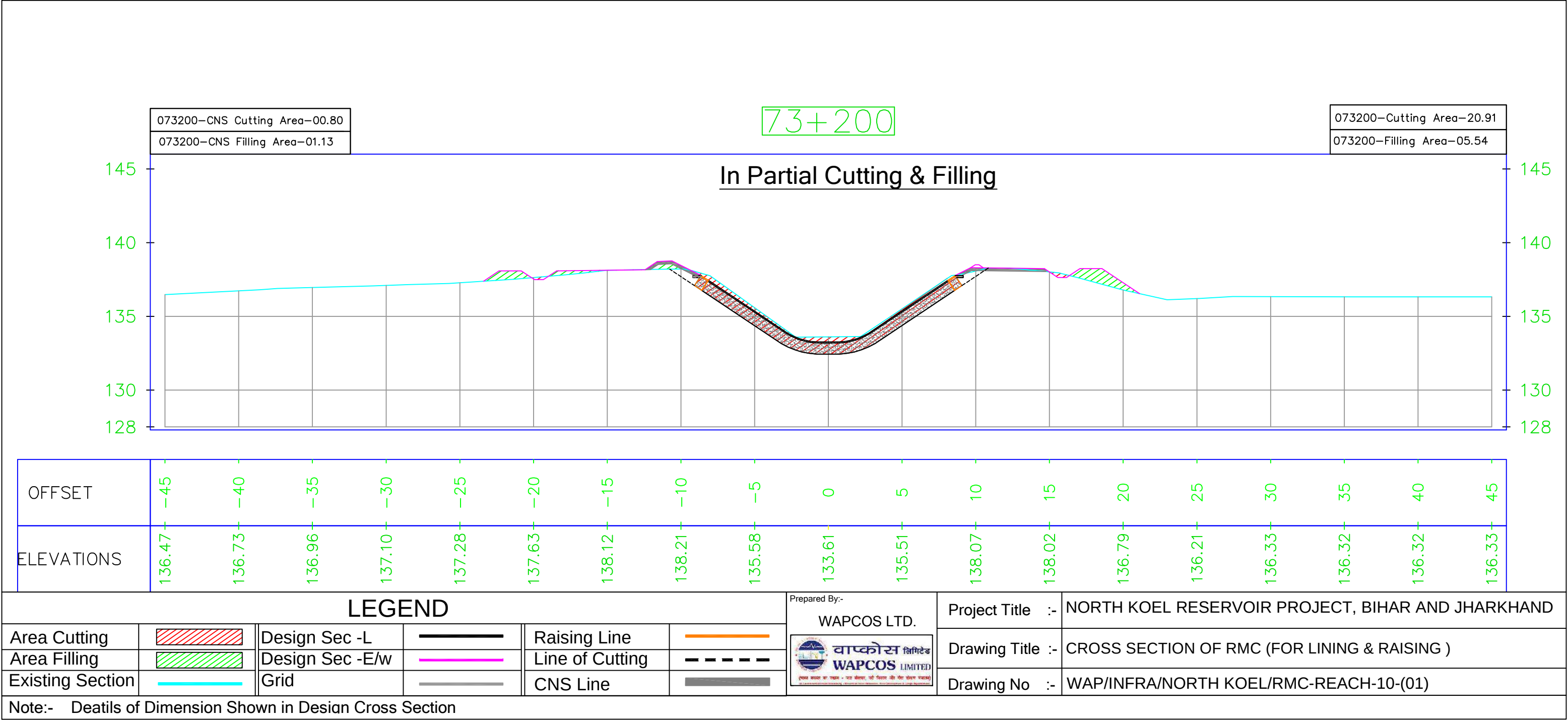


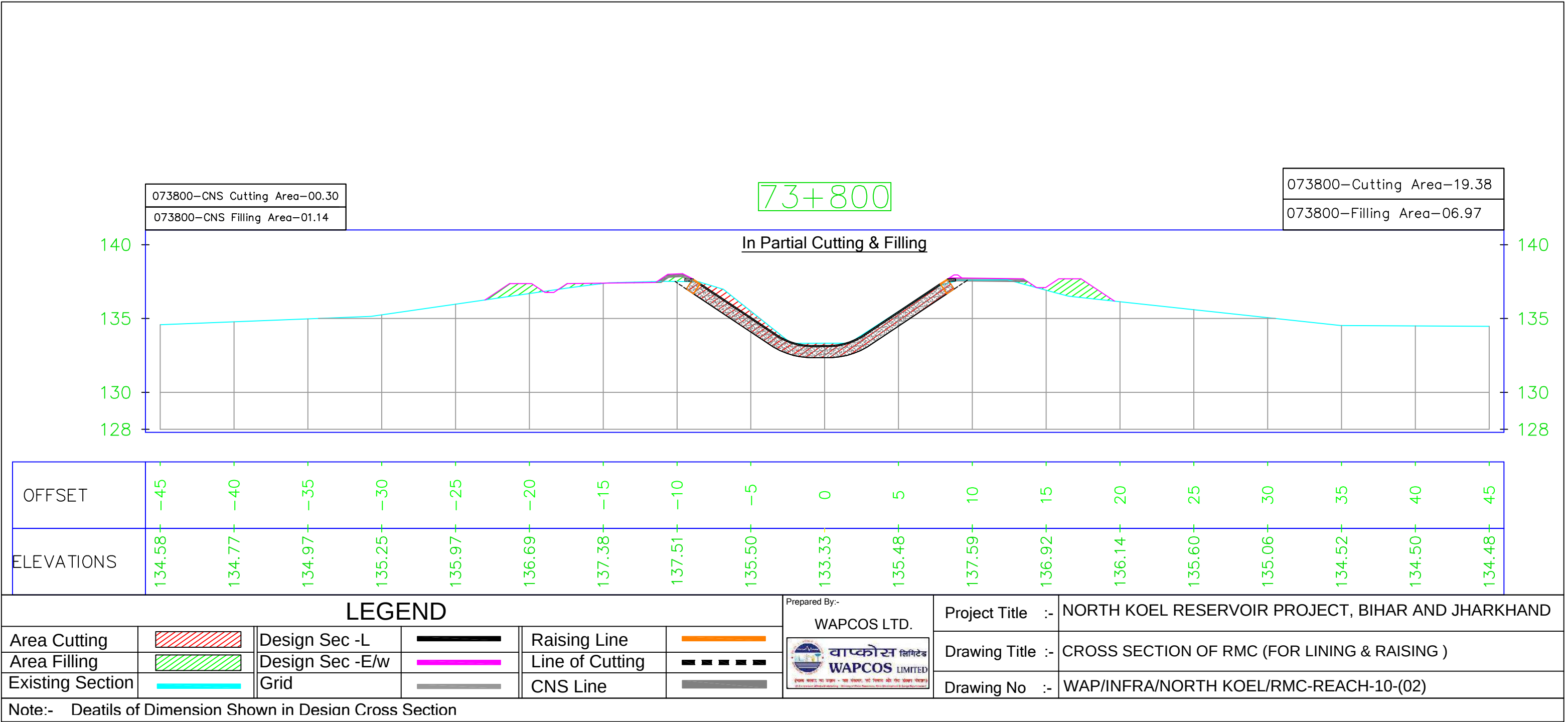


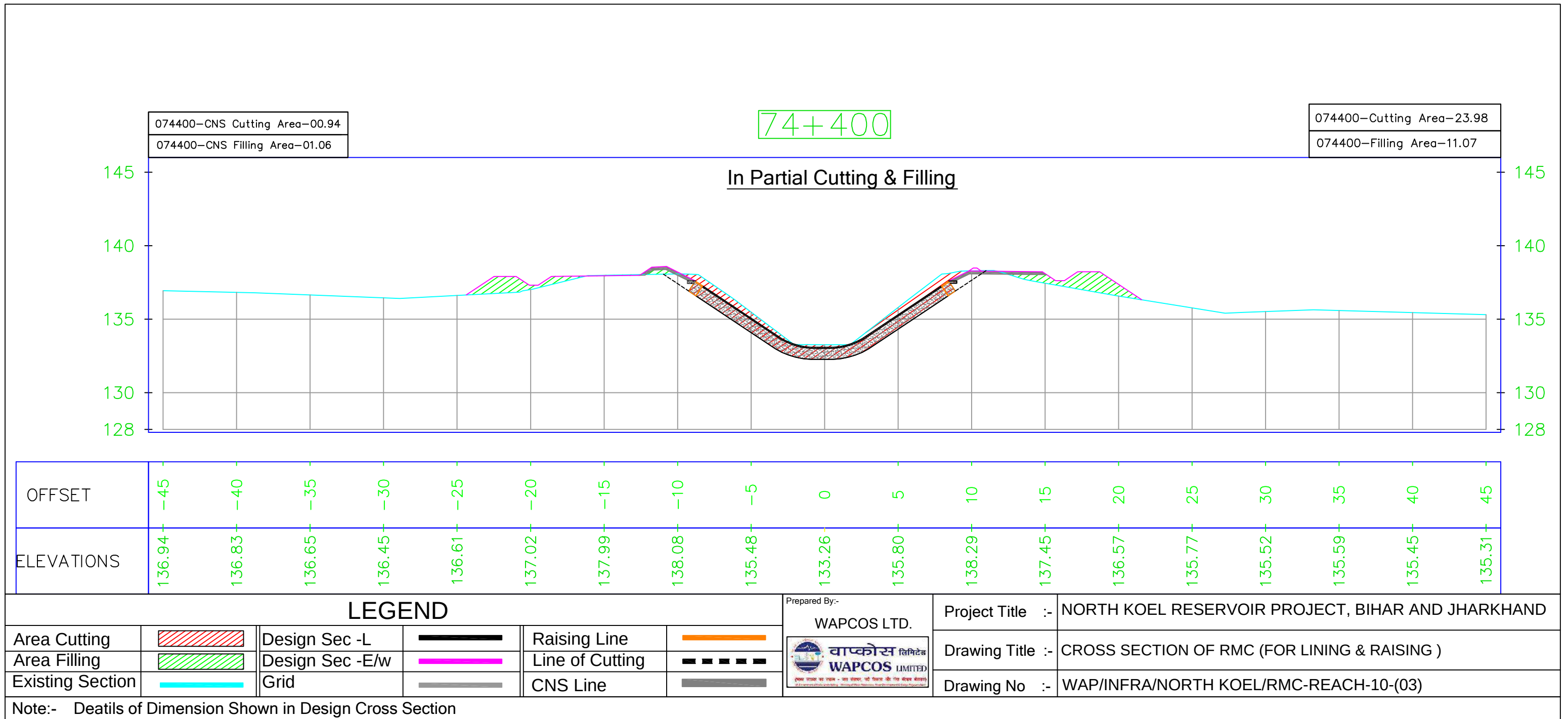


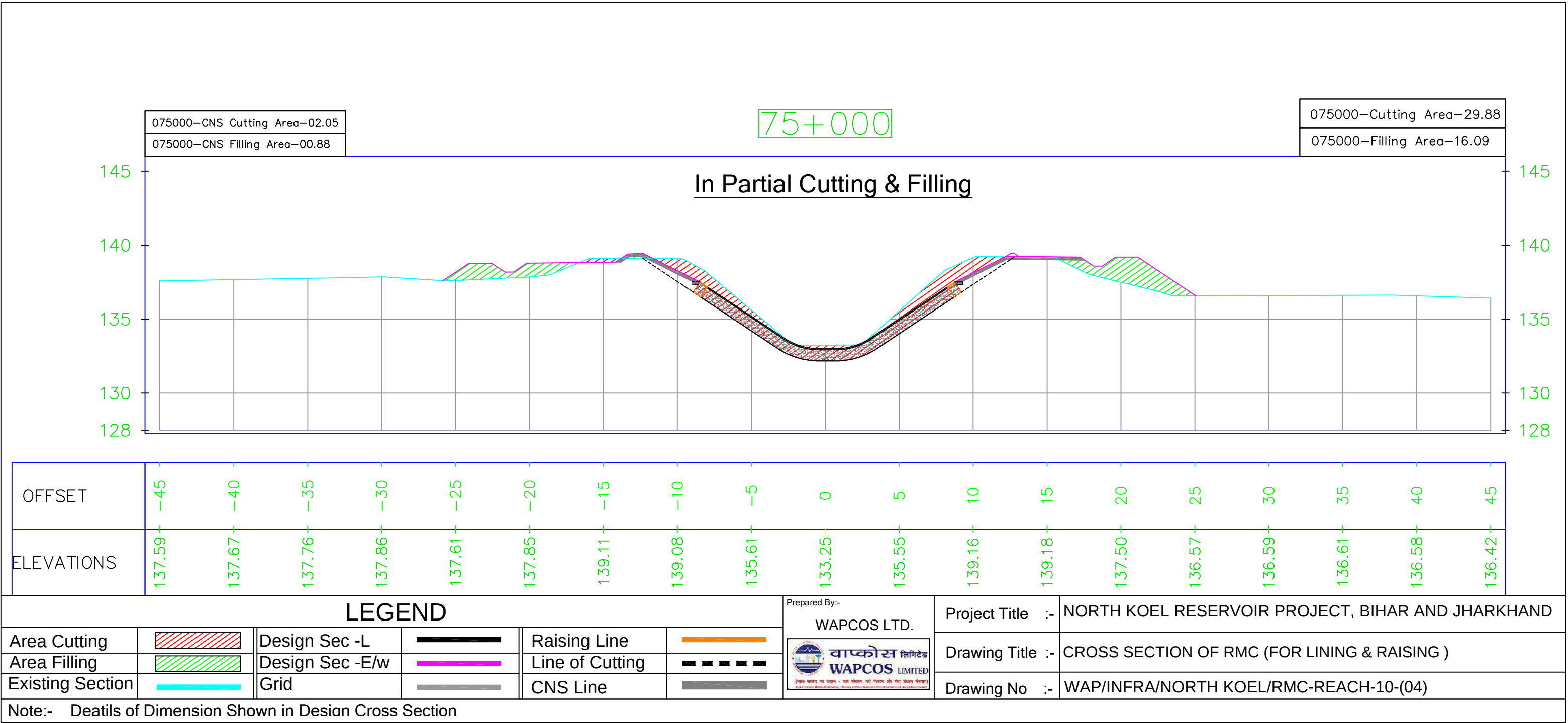




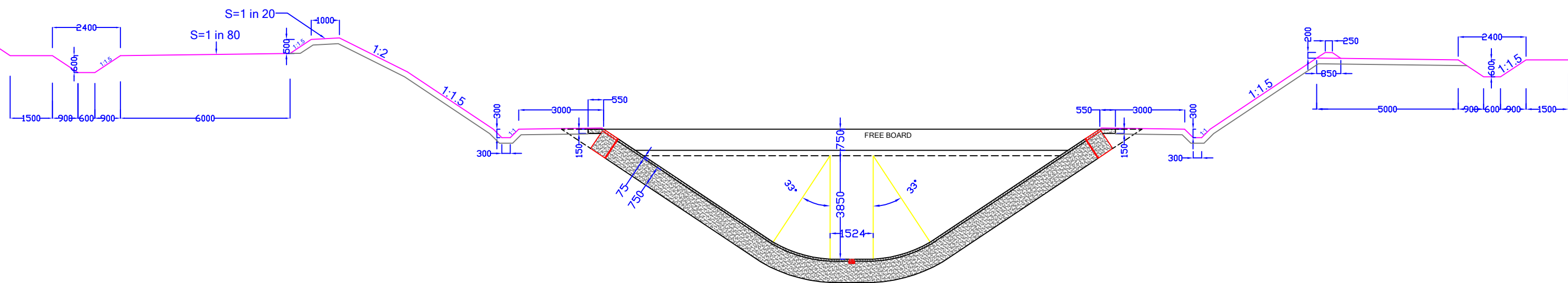








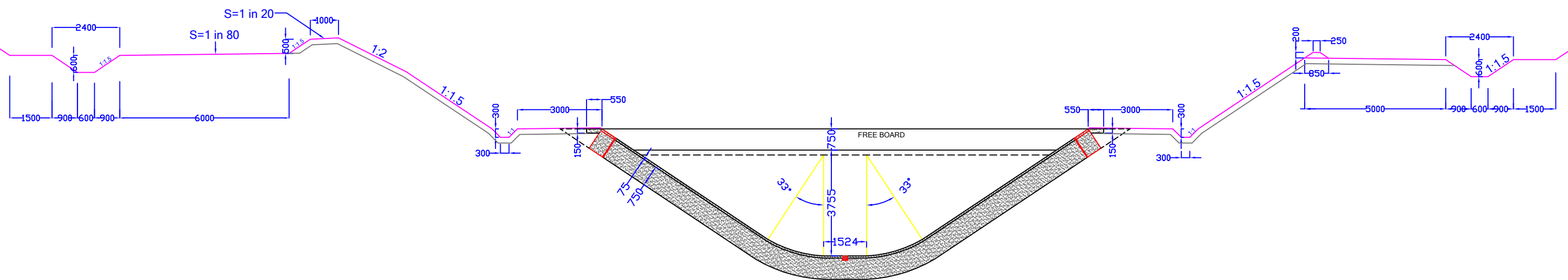
In Full Cutting



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -224.3 to 239.3) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03a (09 / 14)

In Full Cutting



Note :- All Dimensions in mm

Prepared By:-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

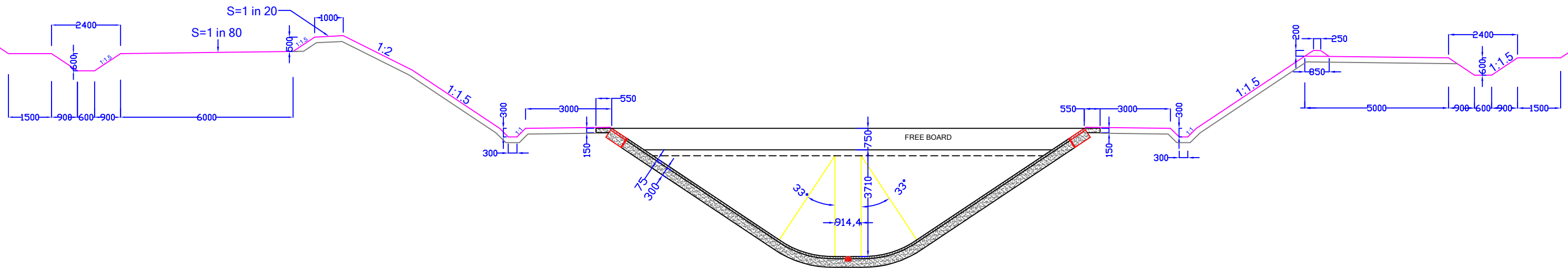
Drawing Title :-

DESIGN SECTIONS (FROM RD - 239.3 to 261.6) (FOR LINING & RAISING)

Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03a (10 / 14)

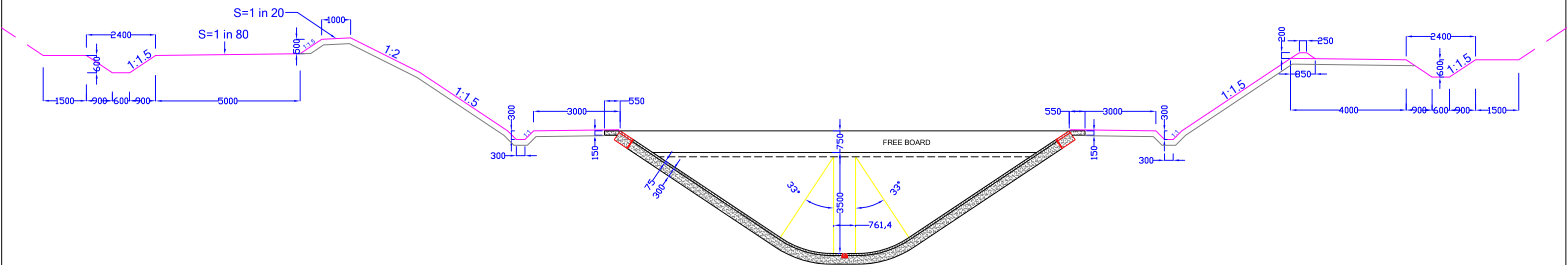
In Full Cutting



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -261.6 to 308.7) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03a (11 / 14)

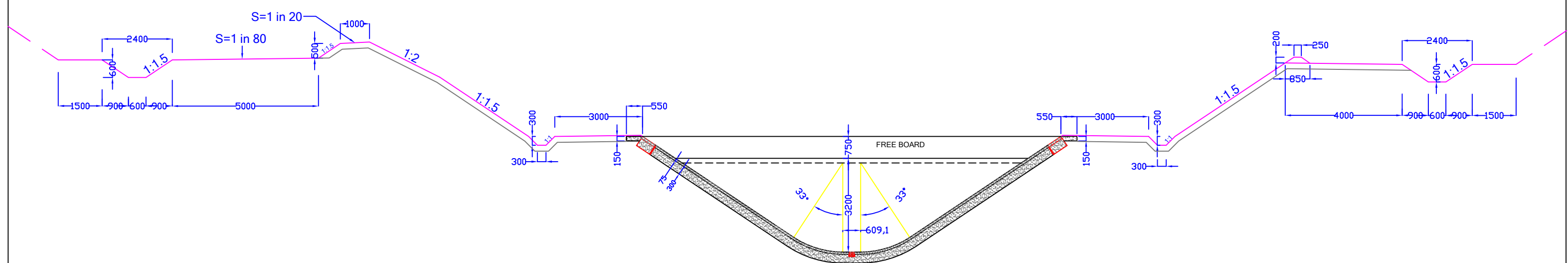
In Full Cutting



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD - 308.7 to 316.7) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03a (12 / 14)

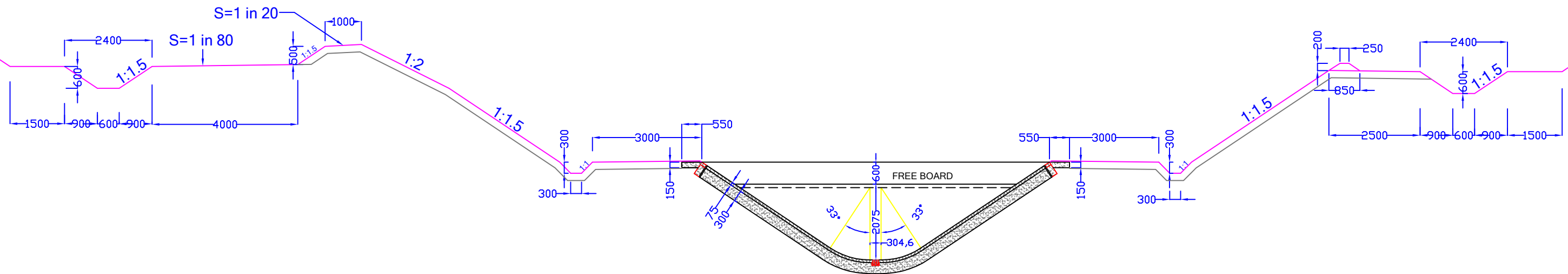
In Full Cutting



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD - 316.7 to 340.1) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03a (13 / 14)

In Full Cutting



Note :- All Dimensions in mm

Prepared By:-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

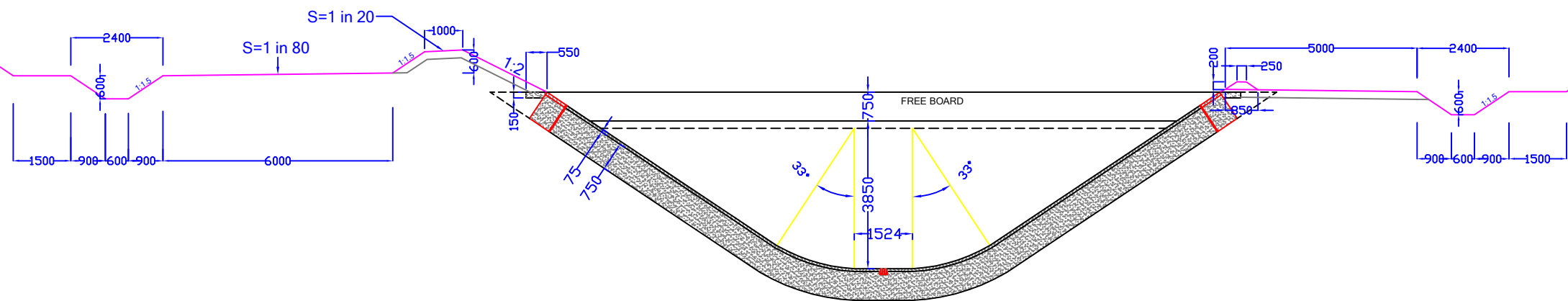
Drawing Title :-

DESIGN SECTIONS (FROM RD -340.1 to 357.9) (FOR LINING & RAISING)

Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03a (14 / 14)

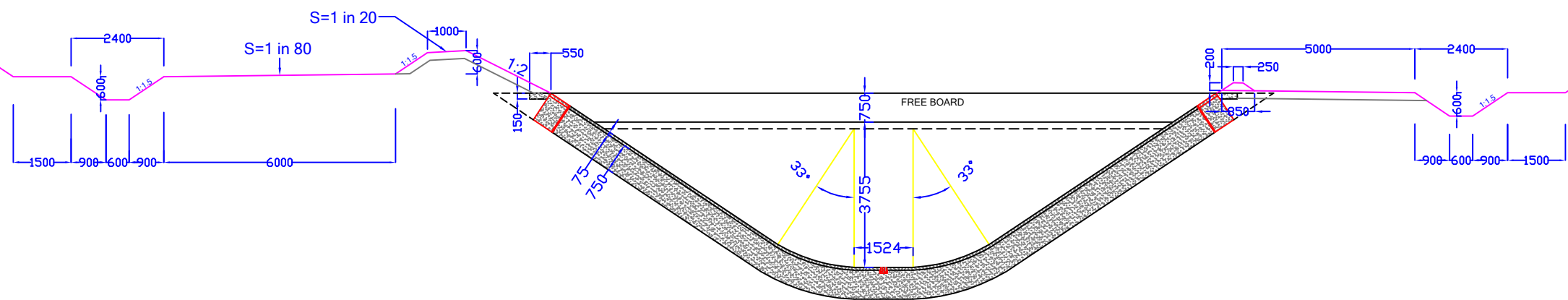
In Partial Cutting & Filling



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -224.3 to 239.3) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03b (09 / 14)

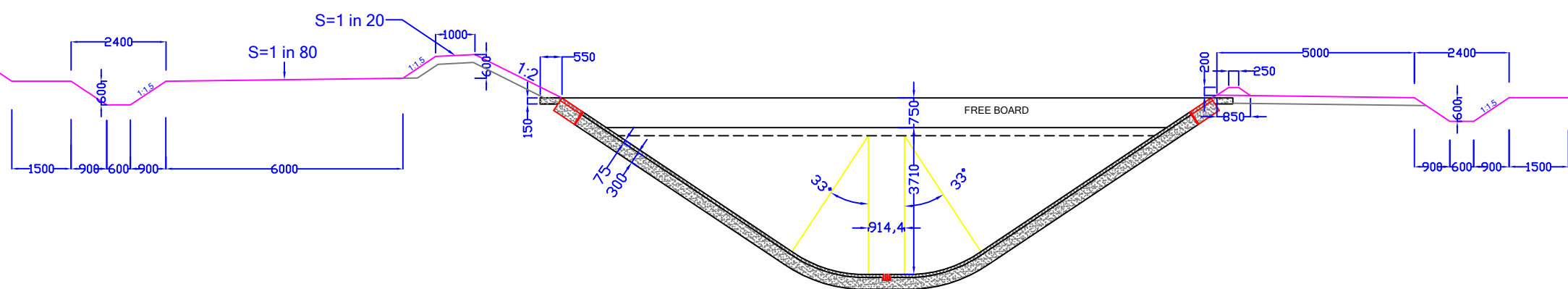
In Partial Cutting & Filling



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -239.3 to 261.6) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03b (10 / 14)

In Partial Cutting & Filling



Note :- All Dimensions in mm

Prepared By:-

WAPCOS LTD.

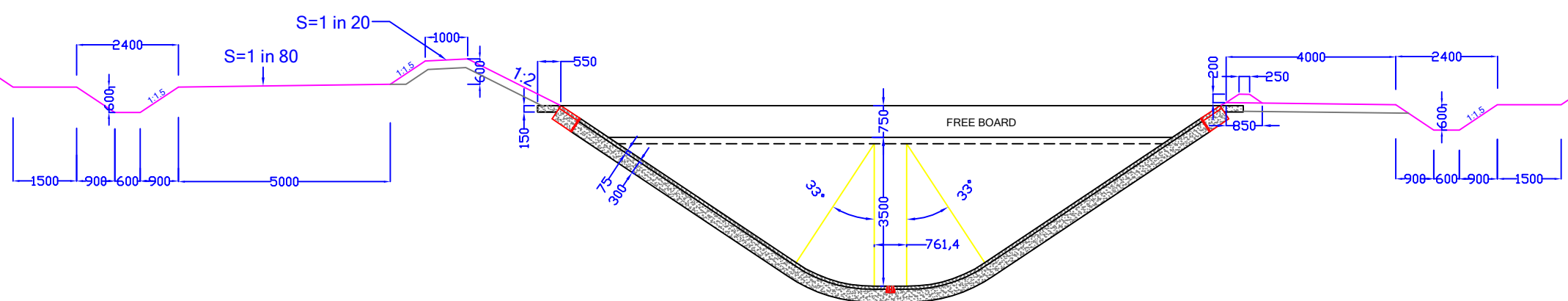


Project Title :- NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :- DESIGN SECTIONS (FROM RD -261.6 to 308.7) (FOR LINING & RAISING)

Drawing No :- WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03b (11 / 14)

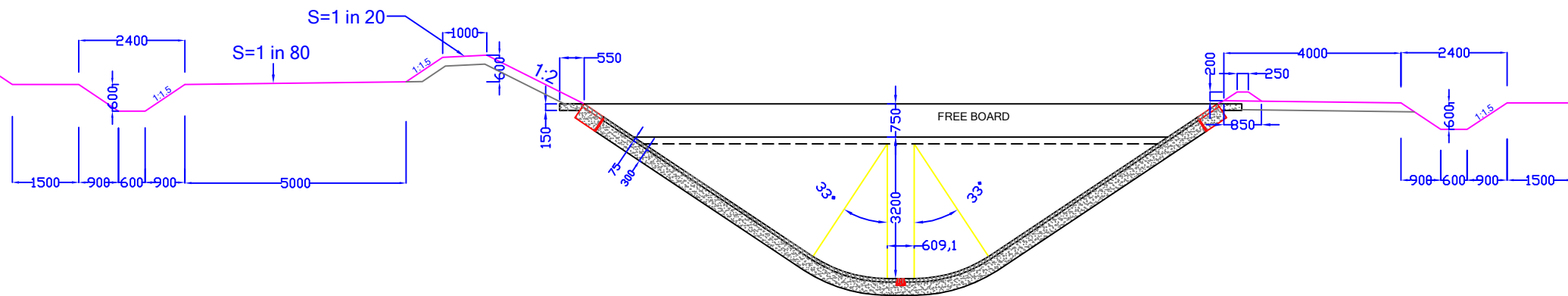
In Partial Cutting & Filling



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -308.7 to 316.7) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03b (12 / 14)

In Partial Cutting & Filling



Note :- All Dimensions in mm

Prepared By:-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

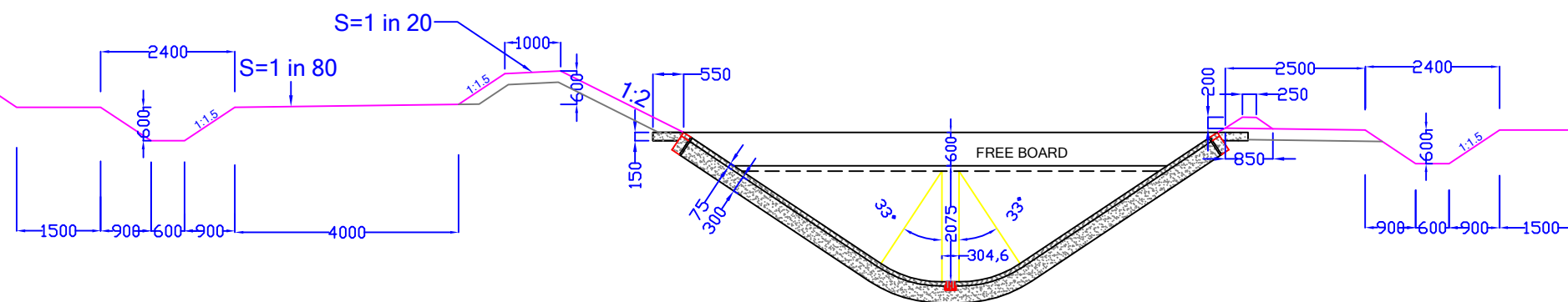
Drawing Title :-

DESIGN SECTIONS (FROM RD -316.7 to 340.1) (FOR LINING & RAISING)

Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03b (13 / 14)

In Partial Cutting & Filling



Note :- All Dimensions in mm

Prepared By:-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

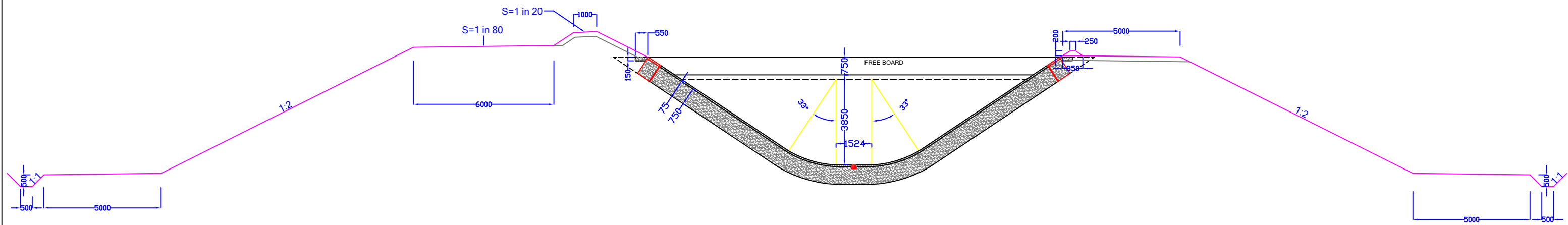
Drawing Title :-

DESIGN SECTIONS (FROM RD -340.1 to 357.9) (FOR LINING & RAISING)

Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03b (14 / 14)

In Full Filling



Note :- All Dimensions in mm

Prepared By:-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

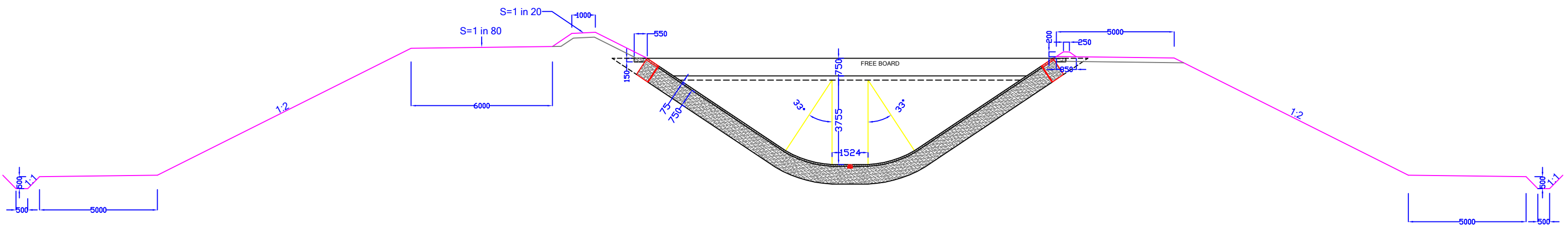
Drawing Title :-

DESIGN SECTIONS (FROM RD -224.3 to 239.3) (FOR LINING & RAISING)

Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03c (09 / 14)

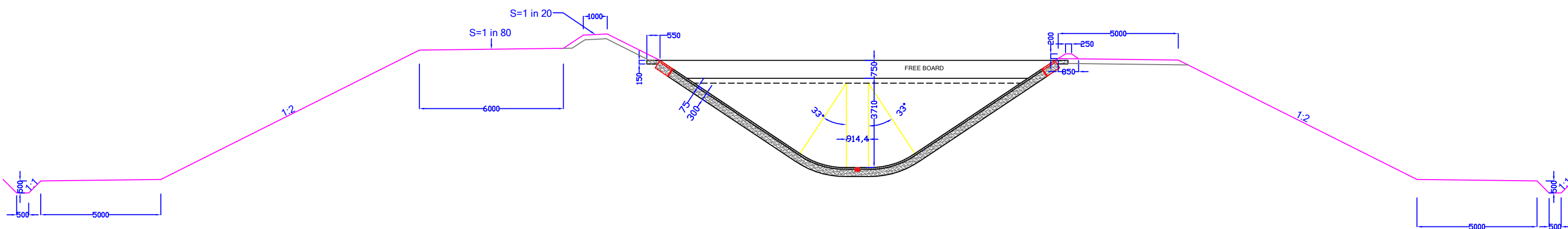
In Full Filling



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -239.3 to 261.6) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03c (10 / 14)

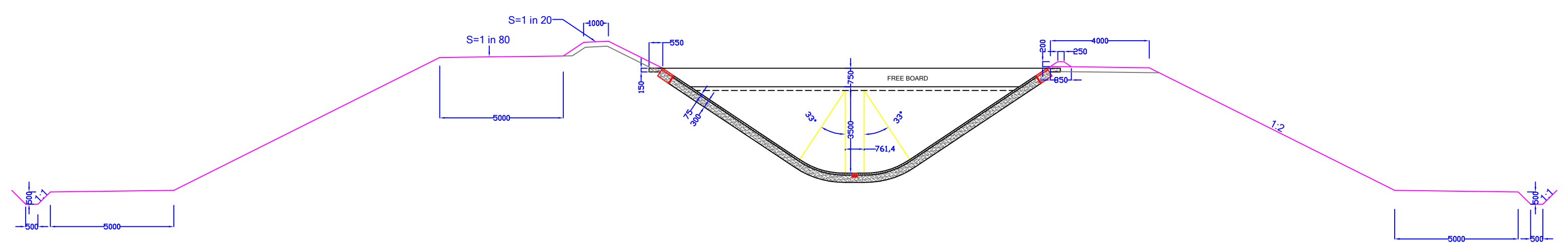
In Full Filling



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD - 261.6 to 308.7) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03c (11 / 14)

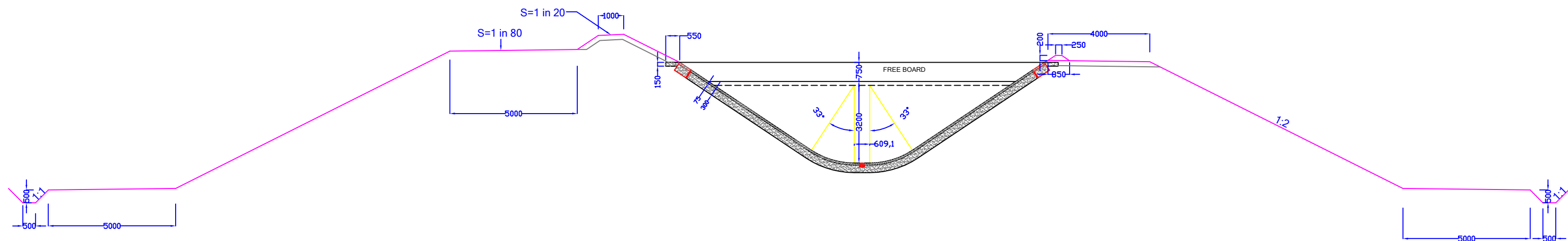
In Full Filling



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -308.7 to 316.7) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03c (12 / 14)

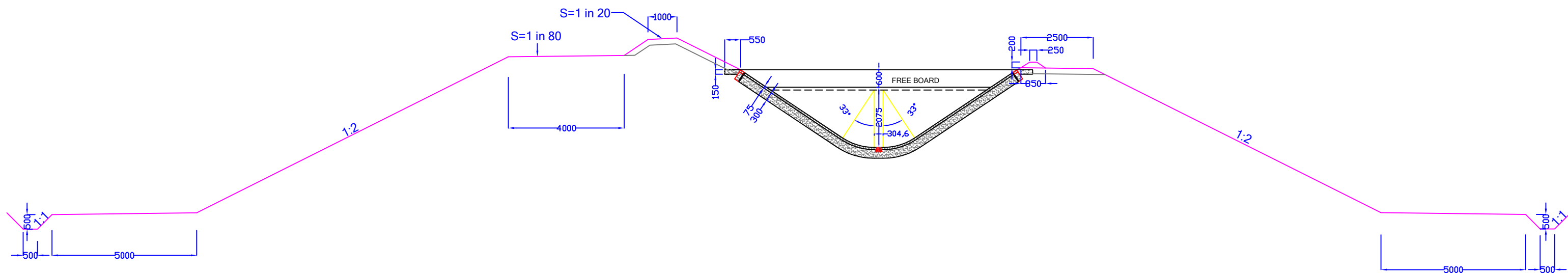
In Full Filling



Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -316.7 to 340.1) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03c (13 / 14)

In Full Filling

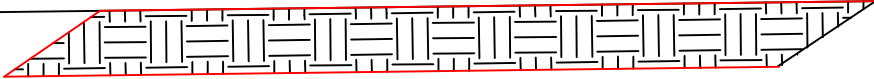


Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DESIGN SECTIONS (FROM RD -340.1 to 357.9) (FOR LINING & RAISING)
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-X-SECTION-03c (14 / 14)

Detail of GSB on Inspection Road

3.6 x 0.3m Group A1 Soil



Particle over 0.05mm =75%
0.05 to .005 = 15%
0.005 to .001 = 5%
Under 0.001 = 5%

Prepared By:-

WAPCOS LTD.



Project Title :-

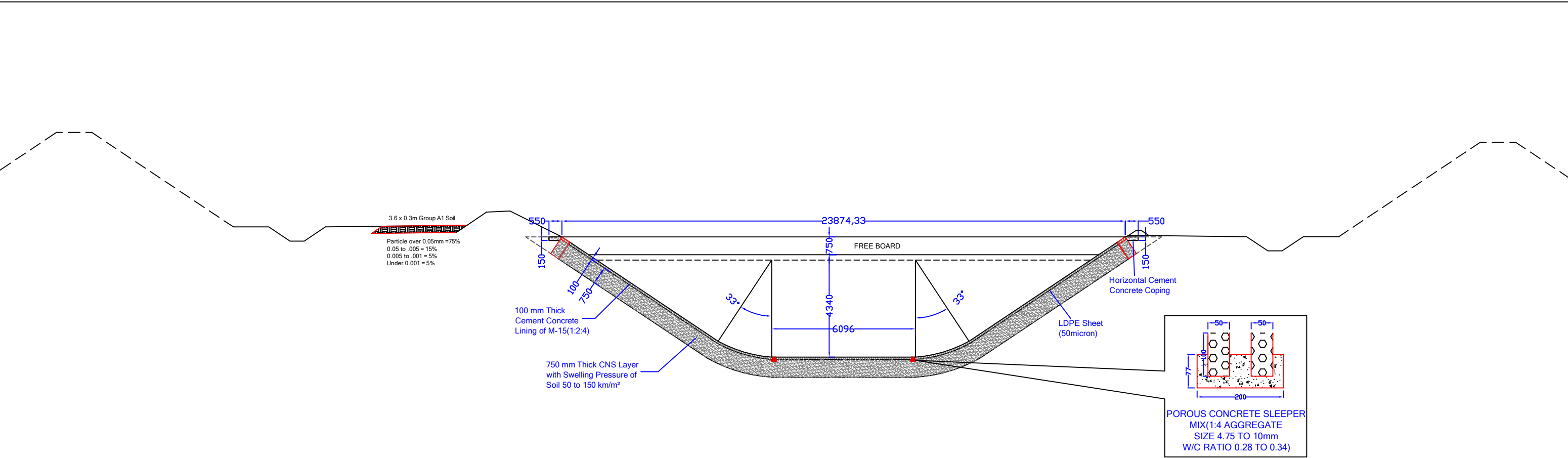
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

GSB ON INSPECTION ROAD IN FULL CUTTING

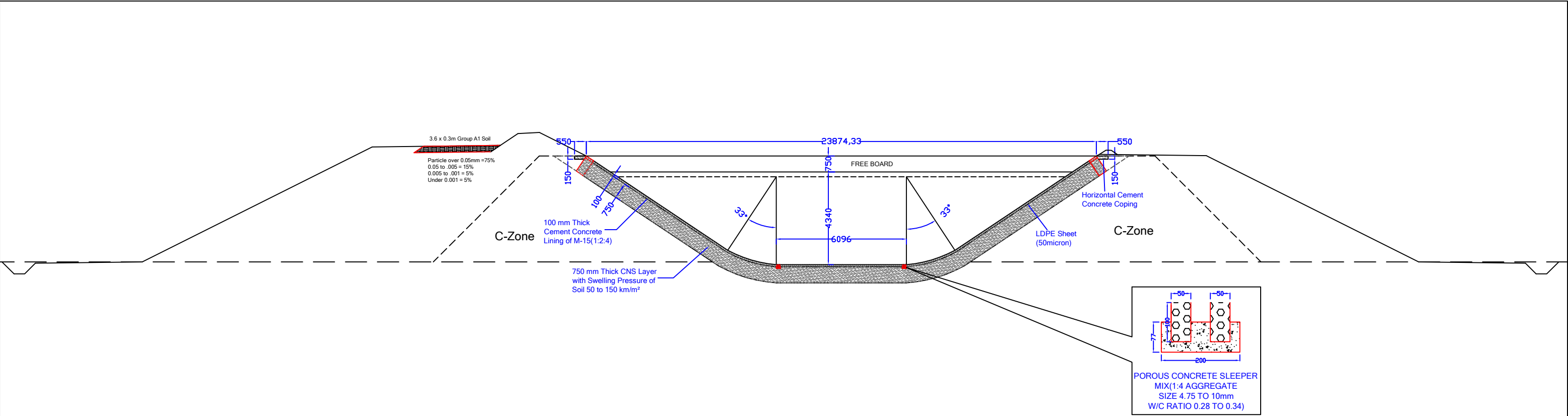
Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-04a (Sheet 2 of 2)



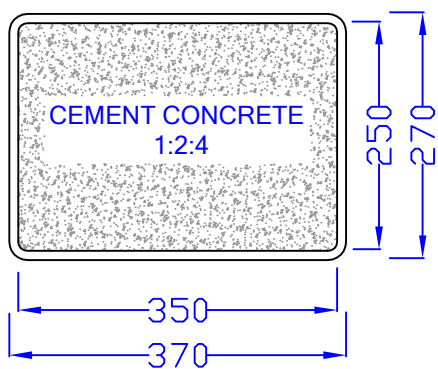
Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GSB ON INSPECTION ROAD IN PARTIAL CUTTING & FILLING
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-04b

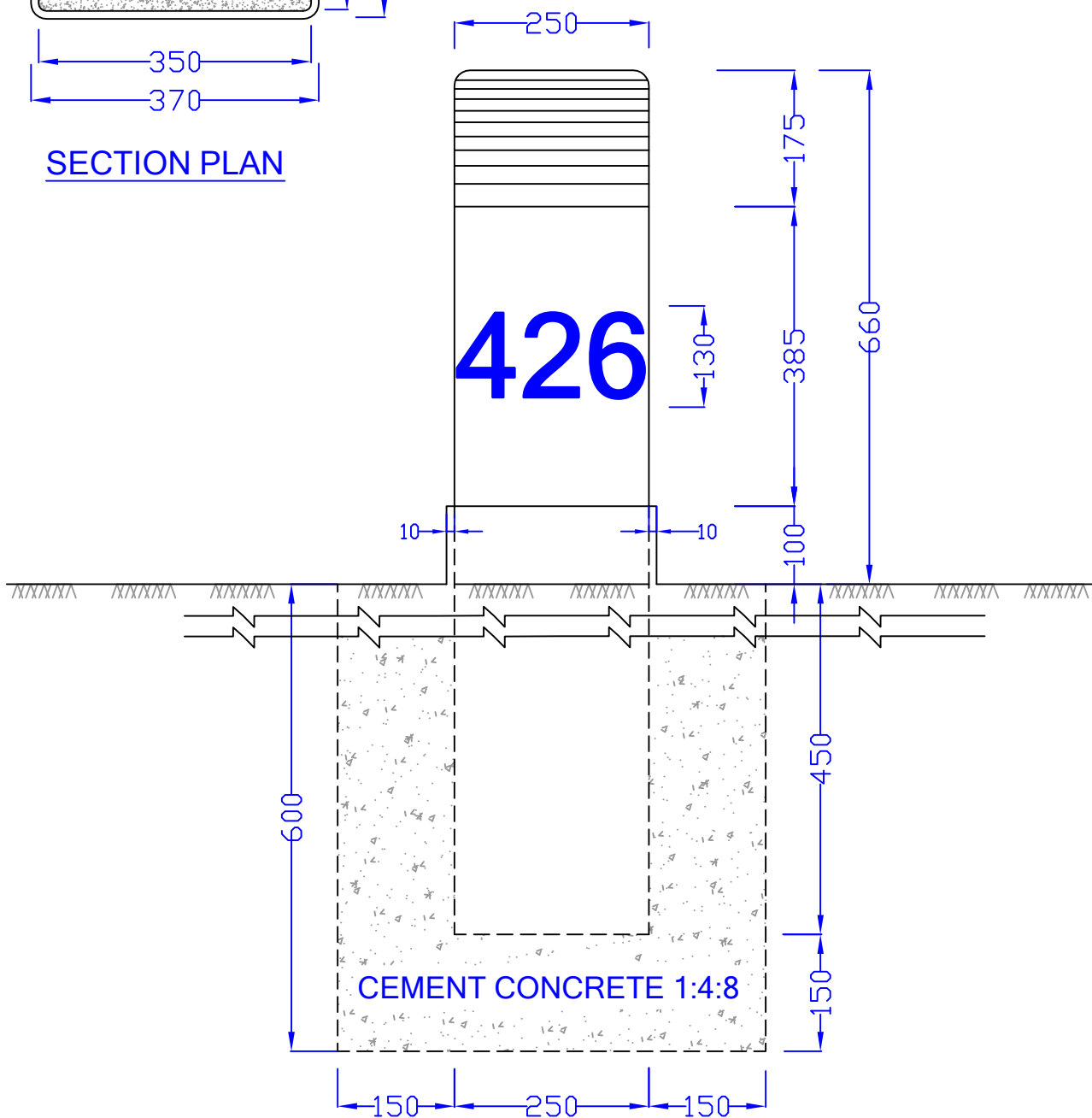


Note :- All Dimensions in mm

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	GSB ON INSPECTION ROAD IN FULL FILLING
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-04c



SECTION PLAN



SIDE ELEVATION

Prepared By:-

WAPCOS LTD.



Project Title :-

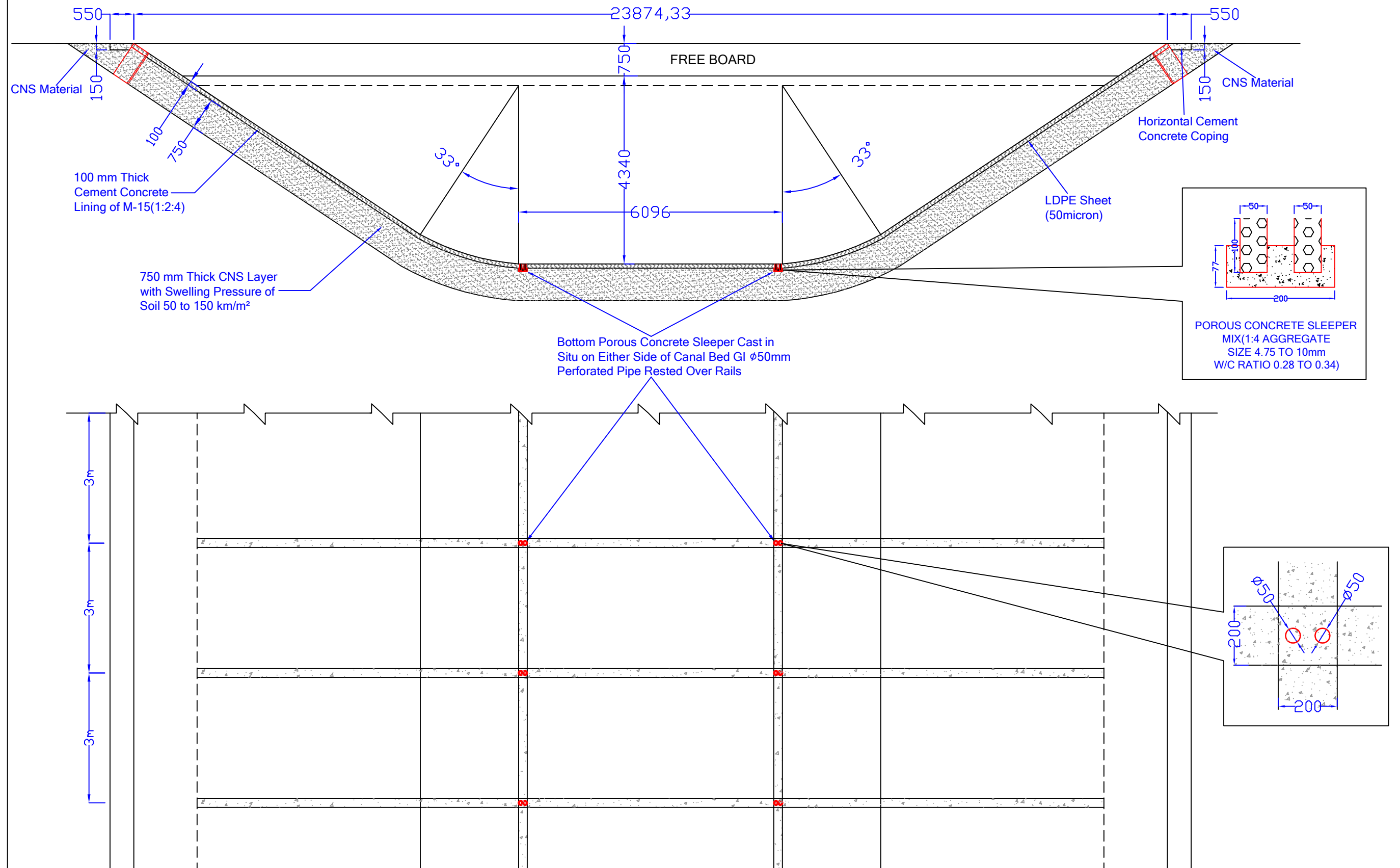
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

DETAILS OF DISTANCE MARKS

Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-05



Prepared By:-

WAPCOS LTD.



Project Title :-

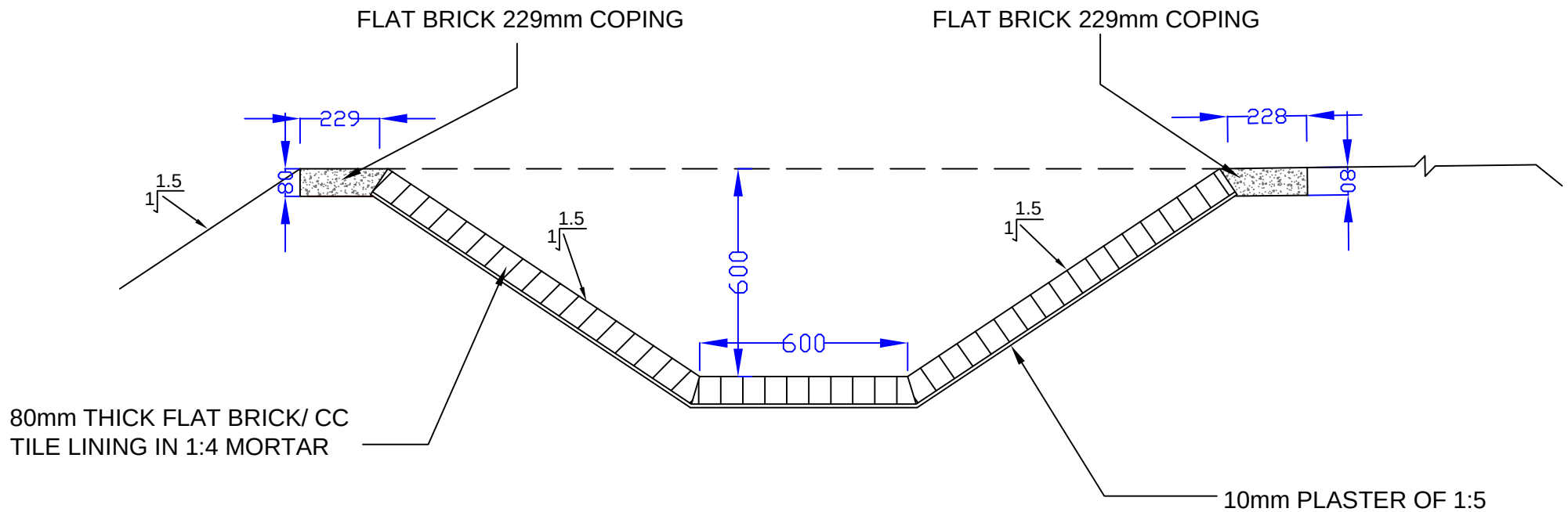
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

CROSS SECTION & PLAN SHOWING DRAINAGE ARRANGEMENT

Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-06



Note :- All Dimensions in mm

Prepared By:-

WAPCOS LTD.



Project Title :-

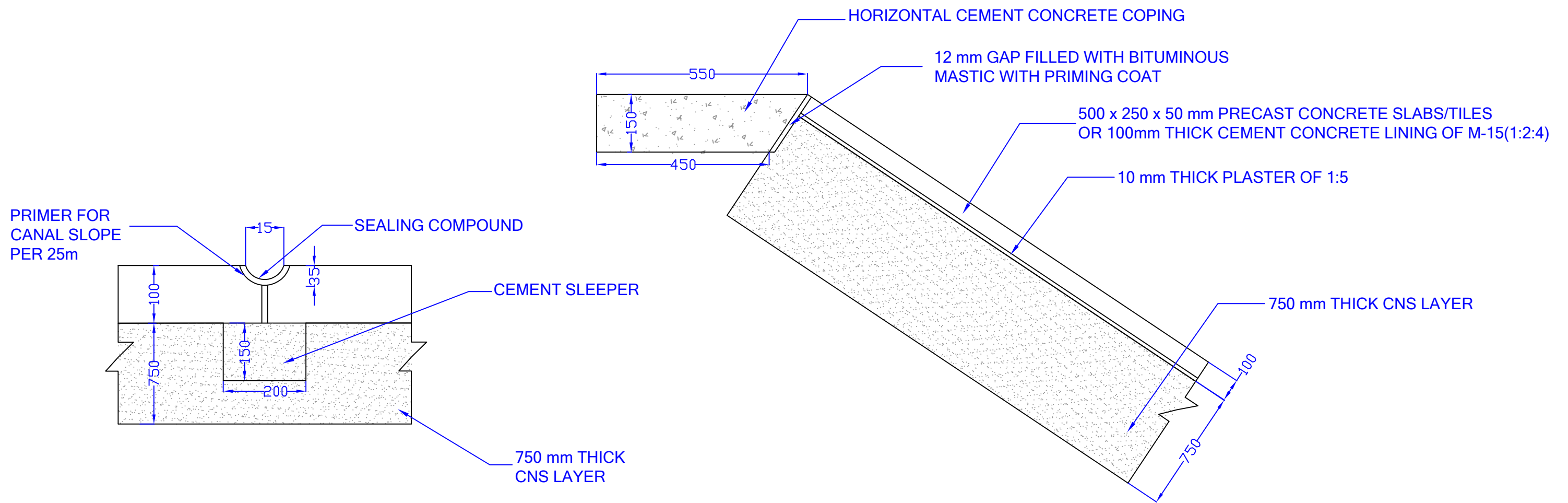
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

TYPICAL CROSS SECTION FOR CATCH WATER DRAIN

Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-07



CONTRACTION JOINT (BUTT JOINT)

DETAIL OF COPING

Prepared By:-

WAPCOS LTD.



Project Title :-

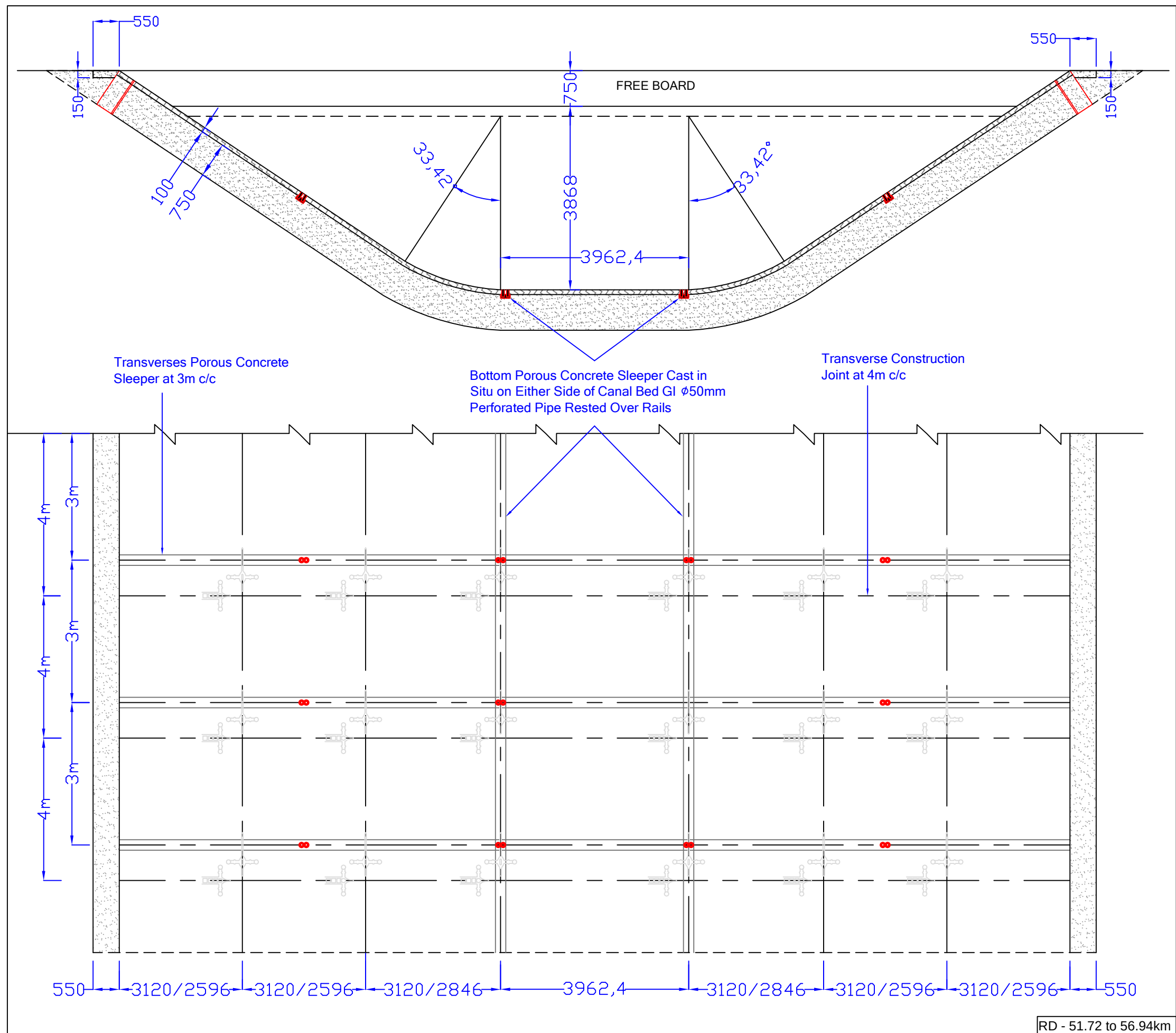
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

DETAILS OF COPING, JOINTS AND LINING

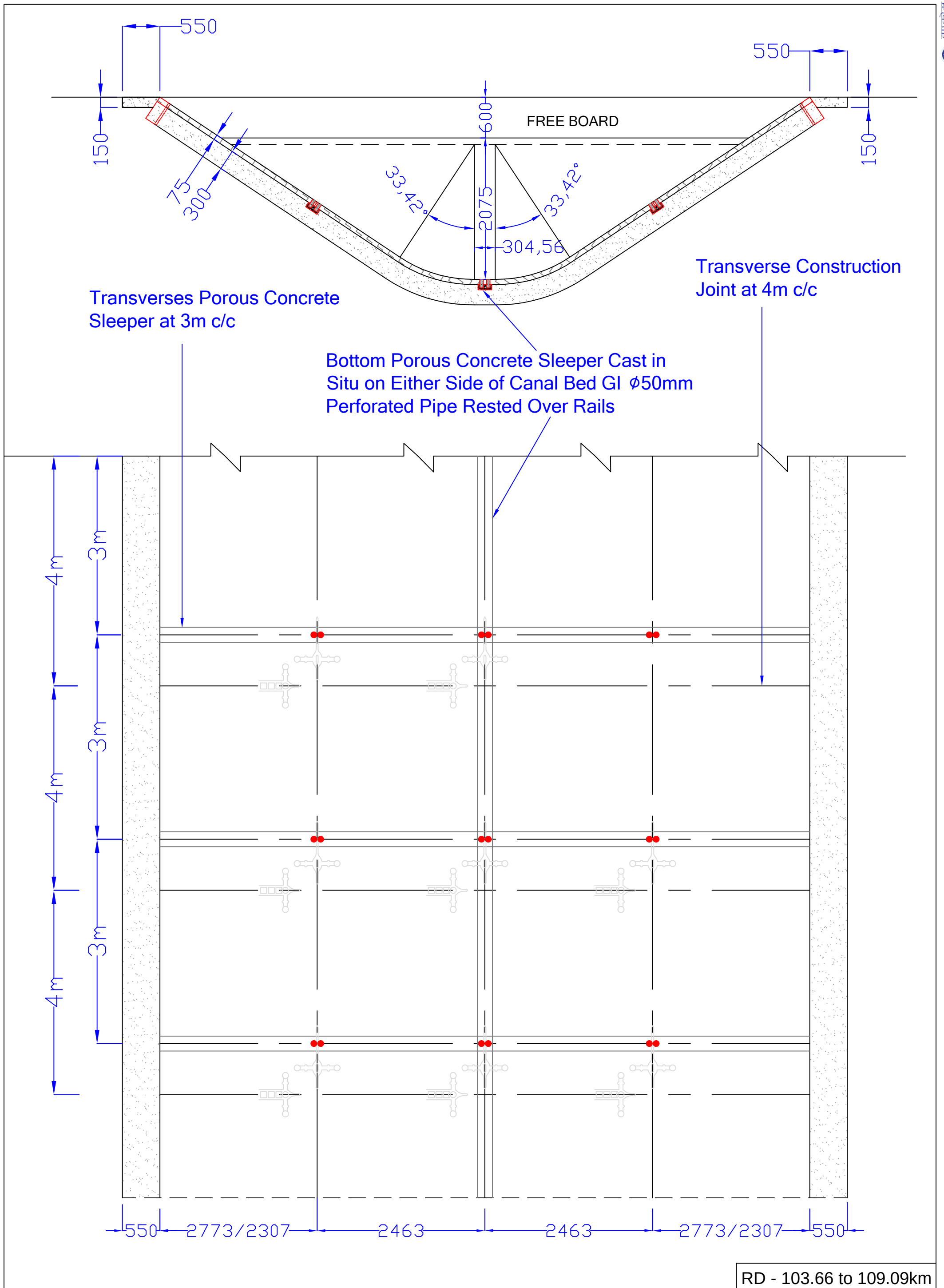
Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-08b

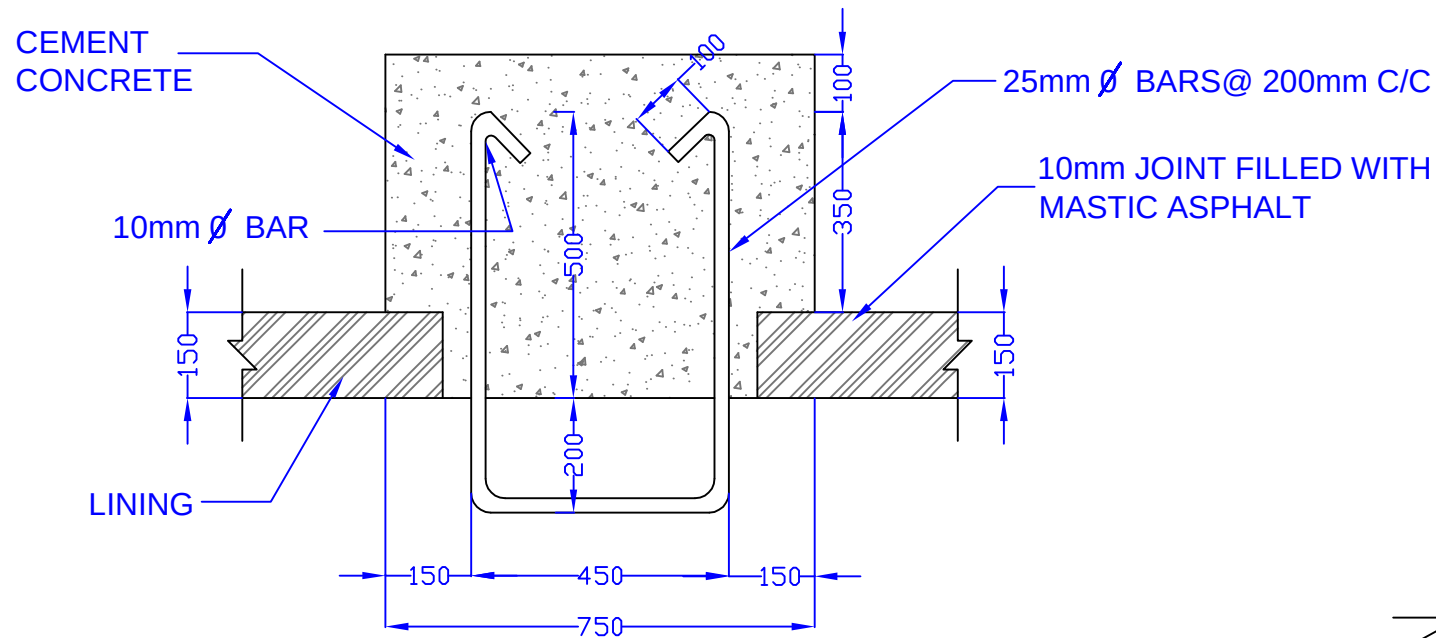


RD - 51.72 to 56.94km

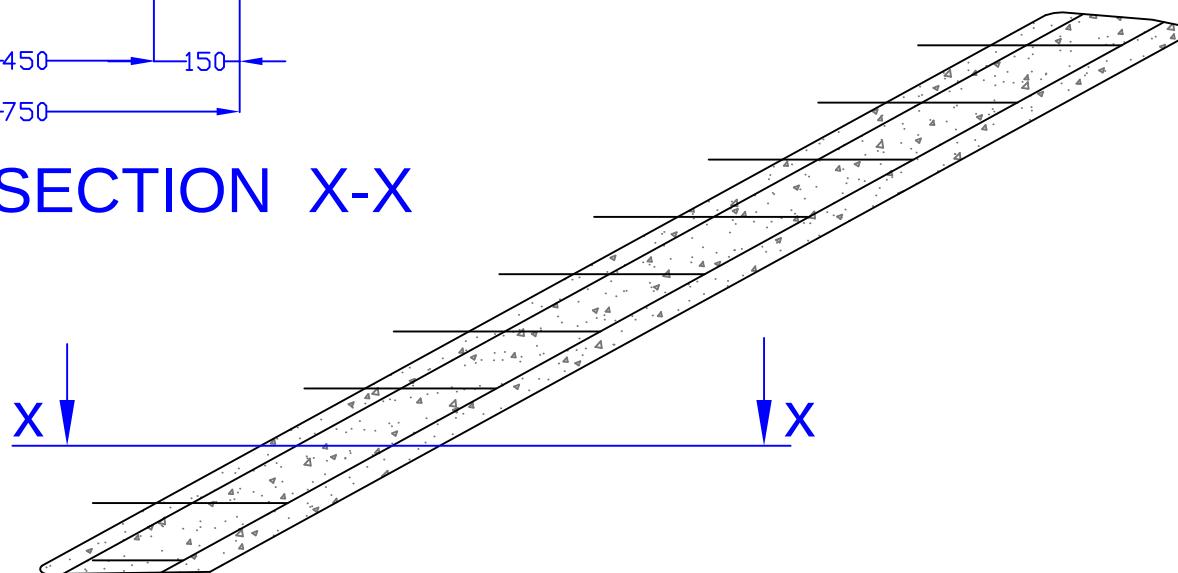
Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	CROSS SECTION & PLAN SHOWING CONSTRUCTION PVC JOINT& POROUS SLEEPER ARRANGEMENT
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-08c



Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	CROSS SECTION & PLAN SHOWING CONSTRUCTION PVC JOINT& POROUS SLEEPER ARRANGEMENT
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-08d



ENLARGED SECTION X-X



Prepared By:-

WAPCOS LTD.



Project Title :-

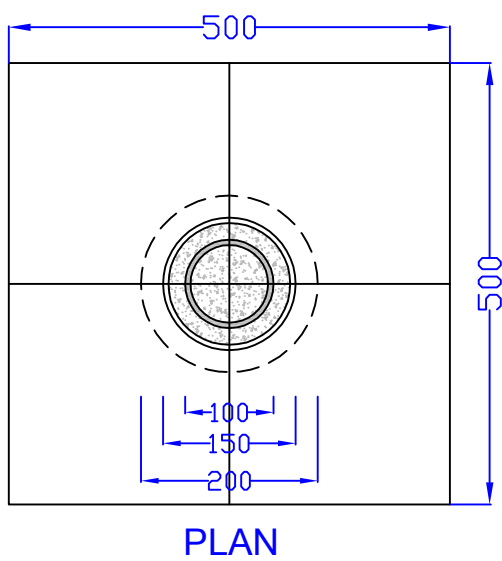
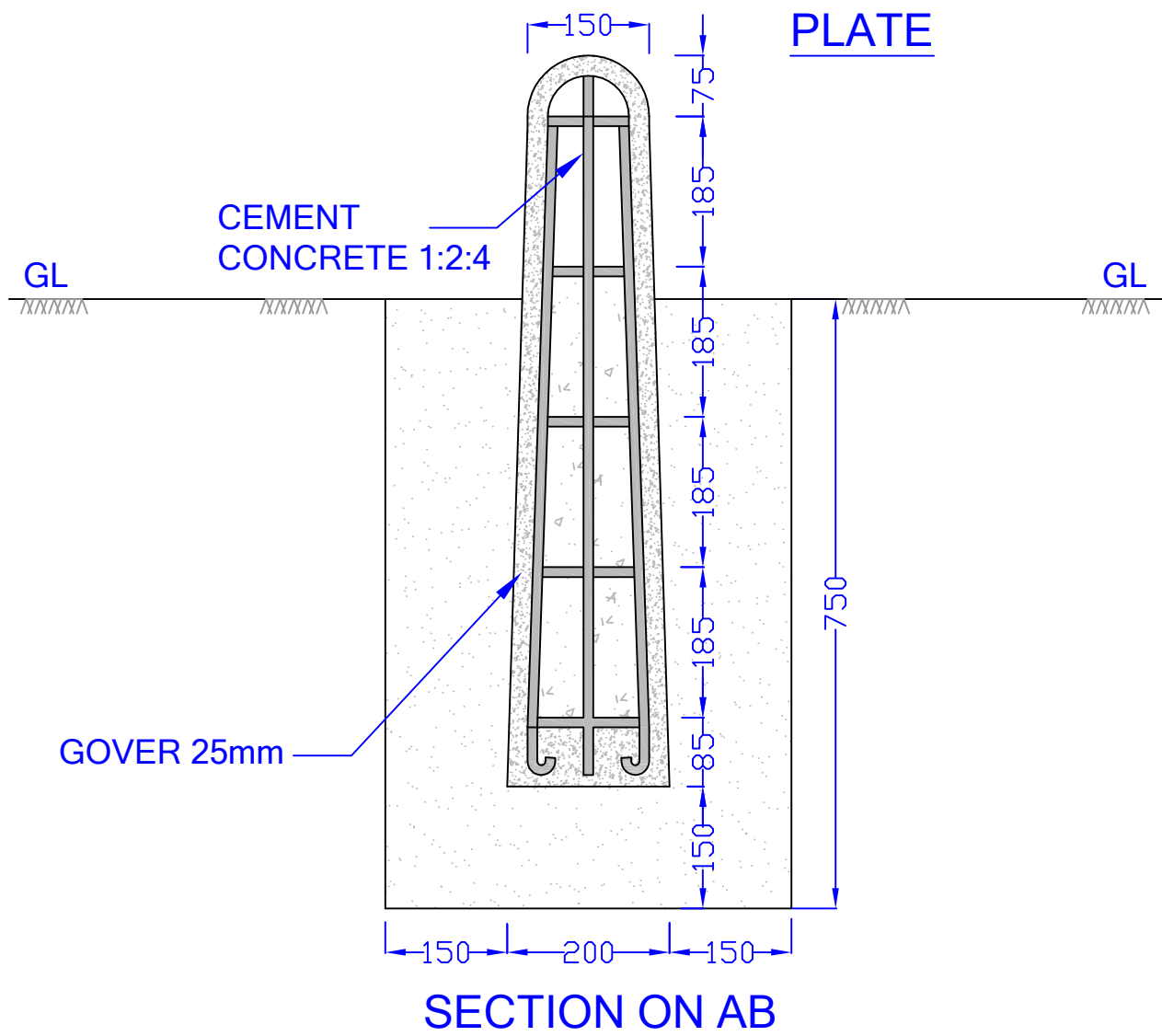
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

DETAILS OF SAFETY LADDERS

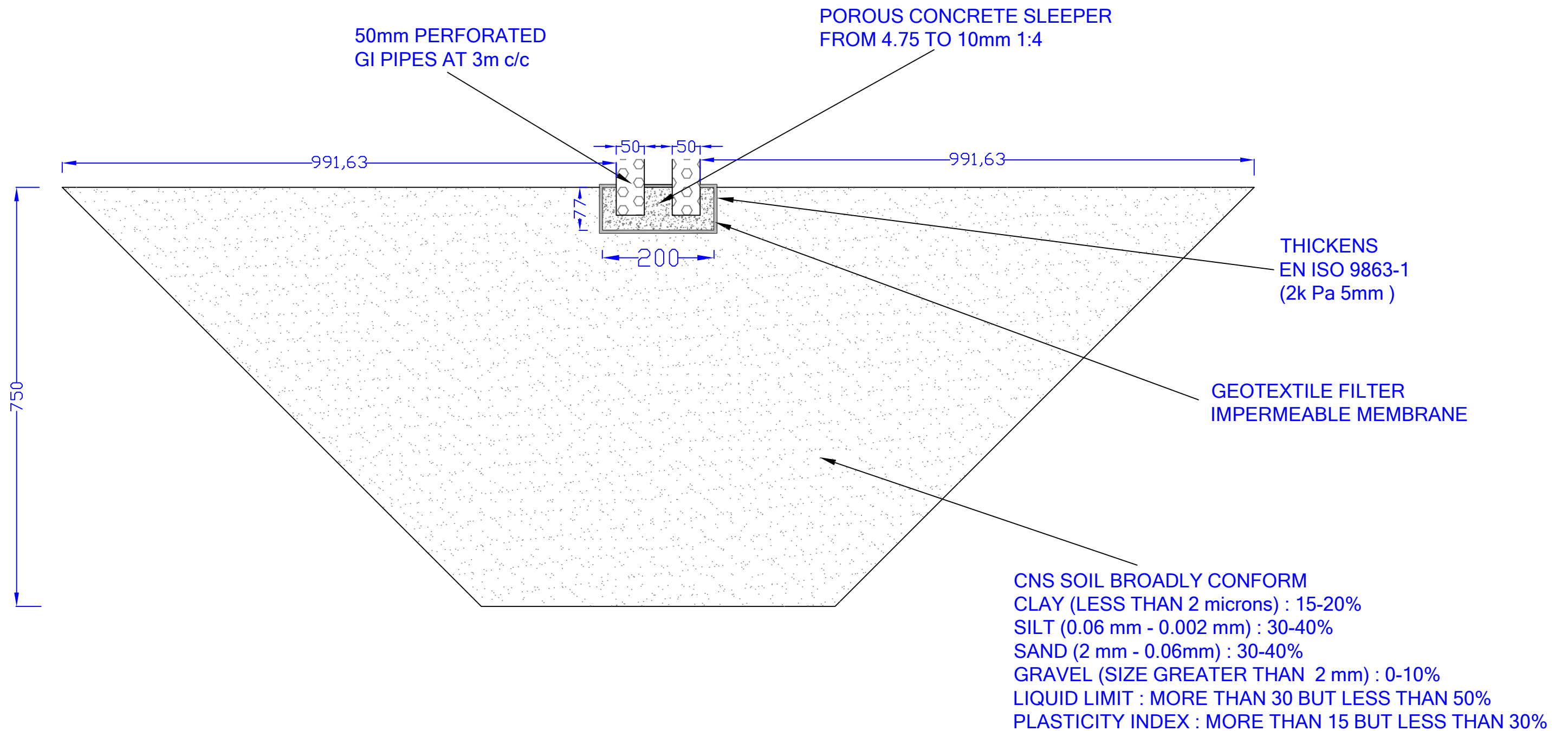
Drawing No :-

WAP/INFRA/NORTH KOEL/RMC-09



TYPE DESIGN WITH R.C.C AS MATERIAL

Prepared By:- WAPCOS LTD. 	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	DETAILS OF BOUNDARY PILLAR
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-10

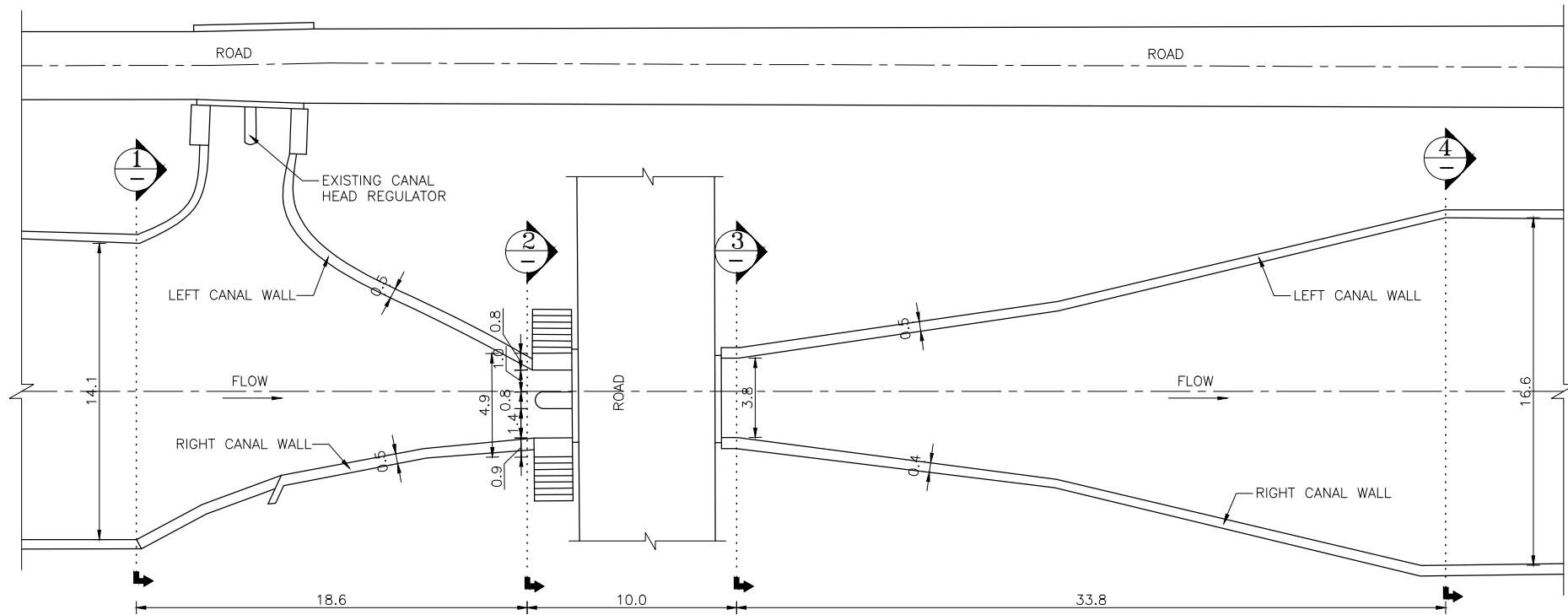


Prepared By:- WAPCOS LTD.  वाप्कोस लिमिटेड WAPCOS LIMITED (भारत सरकार का उद्योग - जल संवर्धन, नदी विकास और गंगा संरक्षण मंत्रालय) (A Government of India Undertaking - Ministry of Water Resources, River Development & Ganga Rejuvenation)	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :-	ARRANGEMENT OF FILTER BEHIND LINING
	Drawing No :-	WAP/INFRA/NORTH KOEL/RMC-11

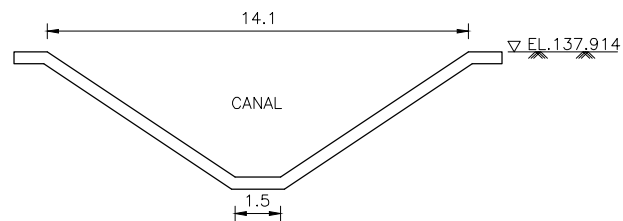
CROSS-REGULATOR



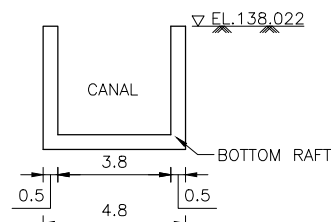
RD 72.85 CROSS REGULATOR



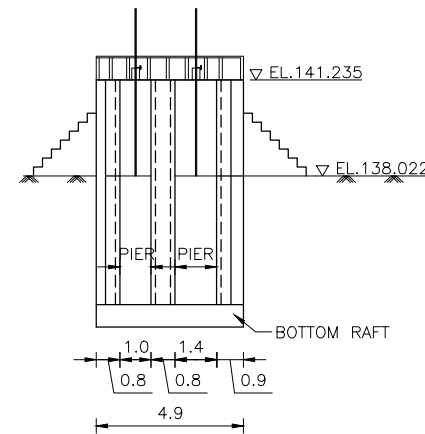
PLAN
(SCALE:- 1:300)



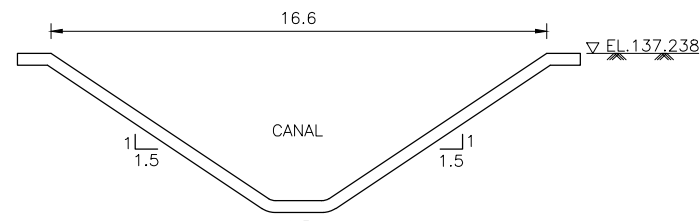
SECTION 1
(SCALE:- 1:250)



SECTION 3
(SCALE:- 1:250)



SECTION 2
(SCALE:- 1:250)

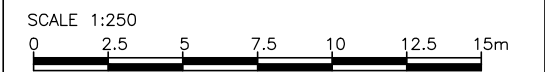


SECTION 4
(SCALE:- 1:250)

NOTES:-

1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. TOP WIDTH OF CANAL & LENGTH OF TRANSITION IN THIS DRAWING ARE AS MEASURED AT SITE.
4. BED WIDTH /BED LEVEL IS ARRIVED BY ASSUMING 1:1.5 SIDE SLOPE.

TENDER DRAWING



IMPLEMENTING AGENCY :-

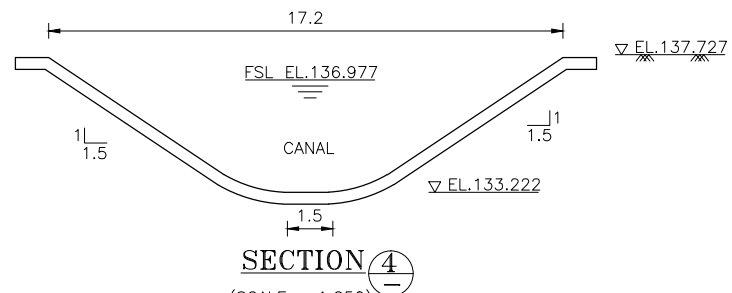
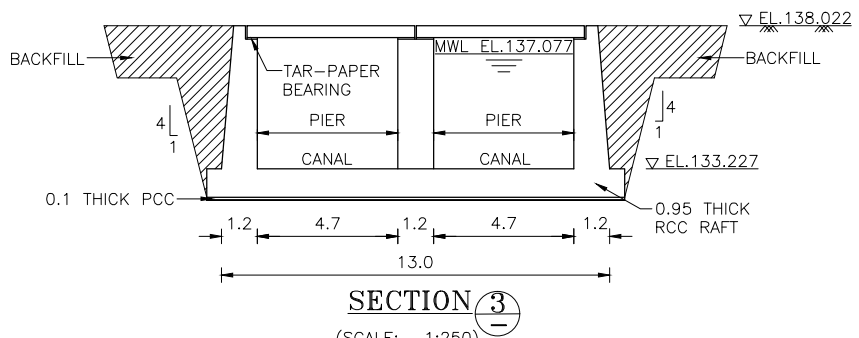
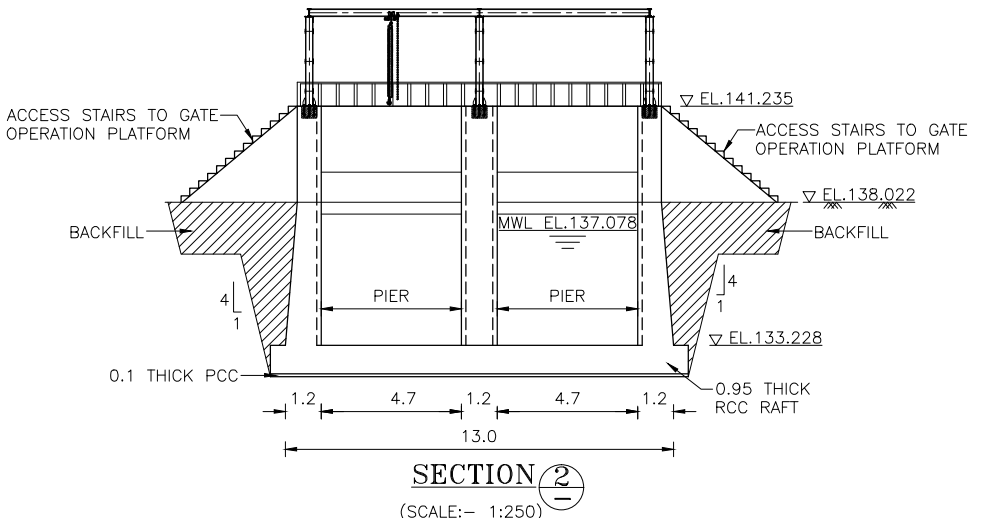
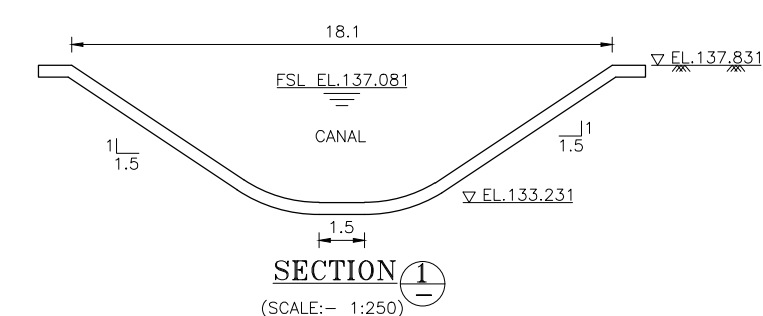
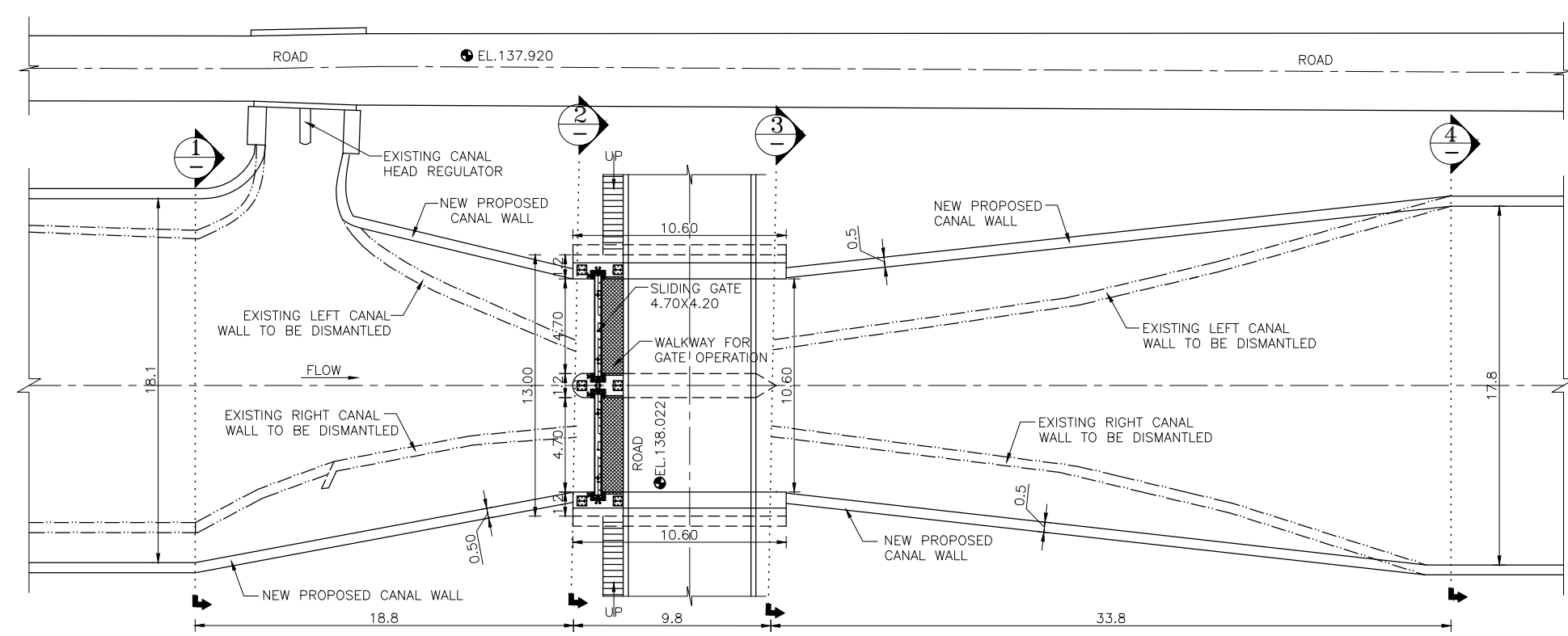


PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT,
BIHAR & JHARKHAND

DRAWING TITLE :- HR + CR + OR18 AT RD: 72.85
GENERAL ARRANGEMENT- ORIGINAL

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-033 (1/7)

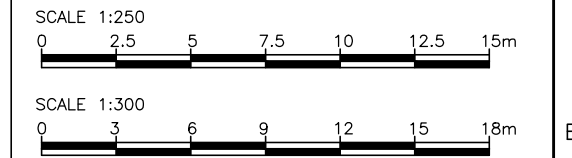
DRAWN BY:- CHECKED BY:- APPROVED BY:-



- NOTES:-**
1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. BED WIDTH/FULL SUPPLY DEPTH ARE OBTAINED FROM THE HYDRAULIC ANALYSIS CARRIED OUT FOR THE PROJECT.
 4. RCC SHALL BE OF GRADE M25 A20 AND PCC SHALL BE OF GRADE M10 A40 CONFORMING TO IS: 456-2000.

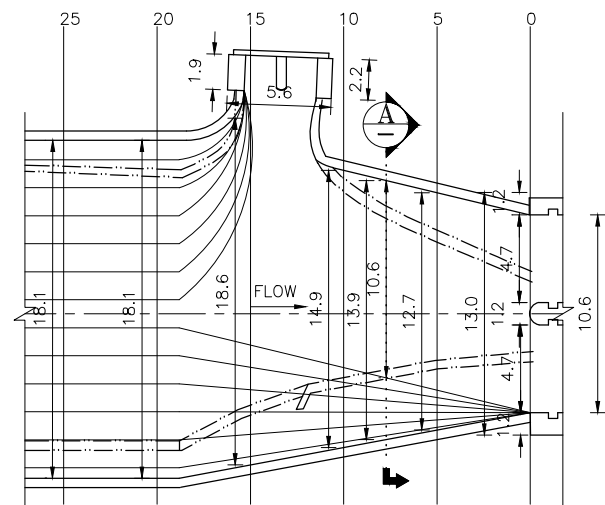
HEAD REGULATOR PARTICULARS		
S.NO.	PARAMETERS	PARTICULARS
1	FSL (m)	137.078
2	BED LEVEL (m)	133.228
3	FSD (m)	3.850
4	DISCHARGE (m ³ /s)	39.49
5	VELOCITY (m/s)	1.08

TENDER DRAWING

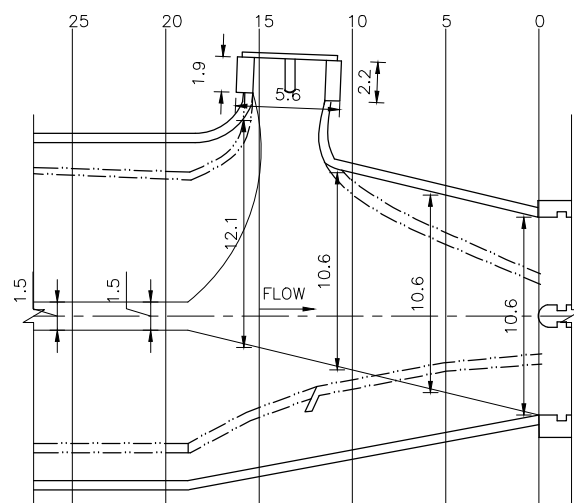


IMPLEMENTING AGENCY :-		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- HR + CR + OR18 AT RD: 72.85 GENERAL ARRANGEMENT- MODIFIED		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-033 (2/7)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



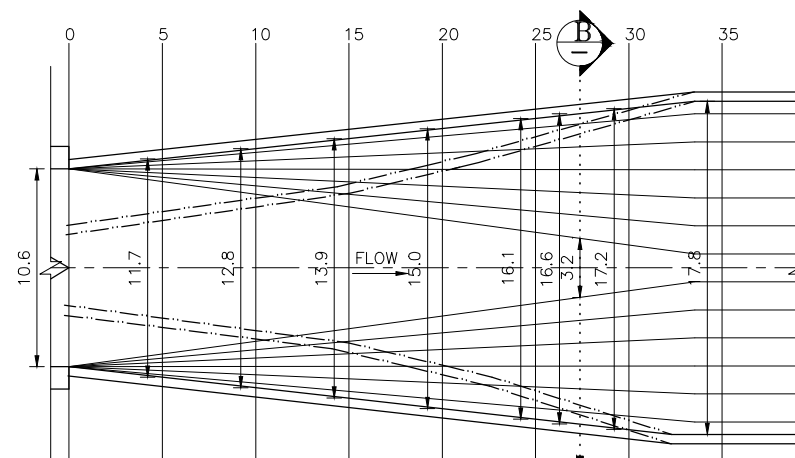


**UPSTREAM TRANSITION
TOP WIDTH KEY PLAN-1**
(SCALE:- 1:400)

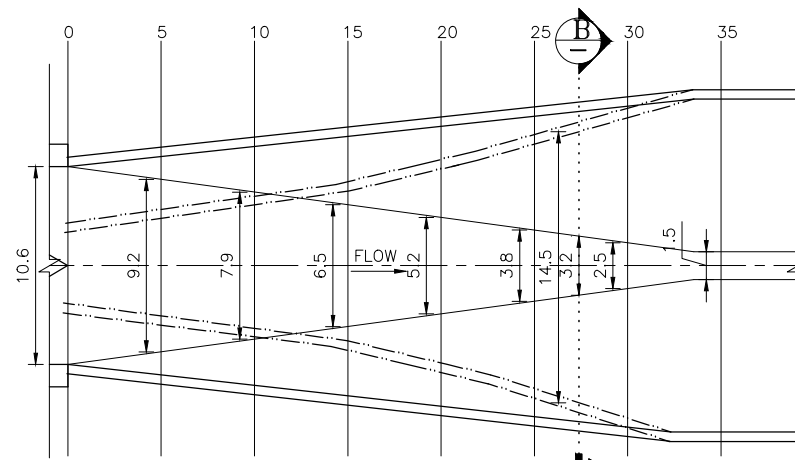


**UPSTREAM TRANSITION PLAN
AT BED LEVEL KEY PLAN-1**
(SCALE:- 1:400)

DISTANCE FROM CANAL SECTION 2-2 (m)	UPSTREAM TRANSITION	
	"TOP WIDTH (REFER KEY PLAN 1)"	"BED WIDTH (REFER KEY PLAN 2)"
0	10.6	10.6
5	12.7	10.6
10	14.9	10.6
15	18.6	12.1
20	18.1	1.5
25	18.1	1.5

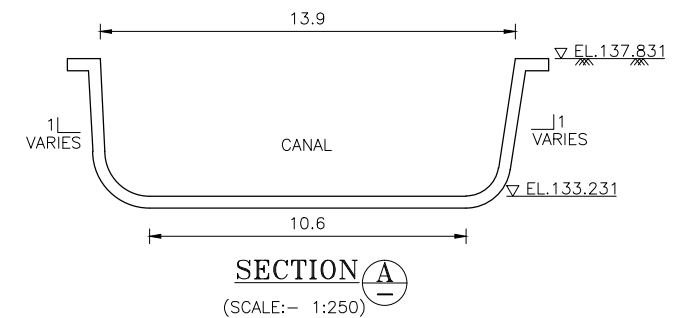


**DOWNSTREAM TRANSITION
TOP WIDTH KEY PLAN-2**
(SCALE:- 1:400)

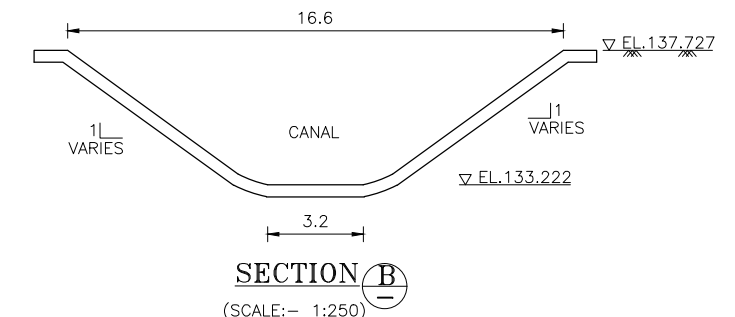


**DOWNSTREAM TRANSITION
TOP WIDTH KEY PLAN-2**
(SCALE:- 1:400)

DISTANCE FROM CANAL SECTION 3-3 (m)	DOWNSTREAM TRANSITION	
	"TOP WIDTH (REFER KEY PLAN 1)"	"BED WIDTH (REFER KEY PLAN 2)"
0	10.6	10.6
5	11.7	9.2
10	12.8	7.9
15	13.9	6.5
20	15.0	5.2
25	16.1	3.8
30	17.2	2.5
35	17.8	1.5



SECTION A
(SCALE:- 1:250)



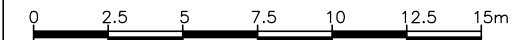
SECTION B
(SCALE:- 1:250)

NOTES:-

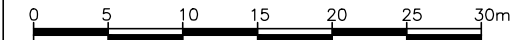
1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. BED WIDTH/FULL SUPPLY DEPTH ARE OBTAINED FROM THE HYDRAULIC ANALYSIS CARRIED OUT FOR THE PROJECT.

TENDER DRAWING

SCALE 1:250



SCALE 1:500



IMPLEMENTING AGENCY :-

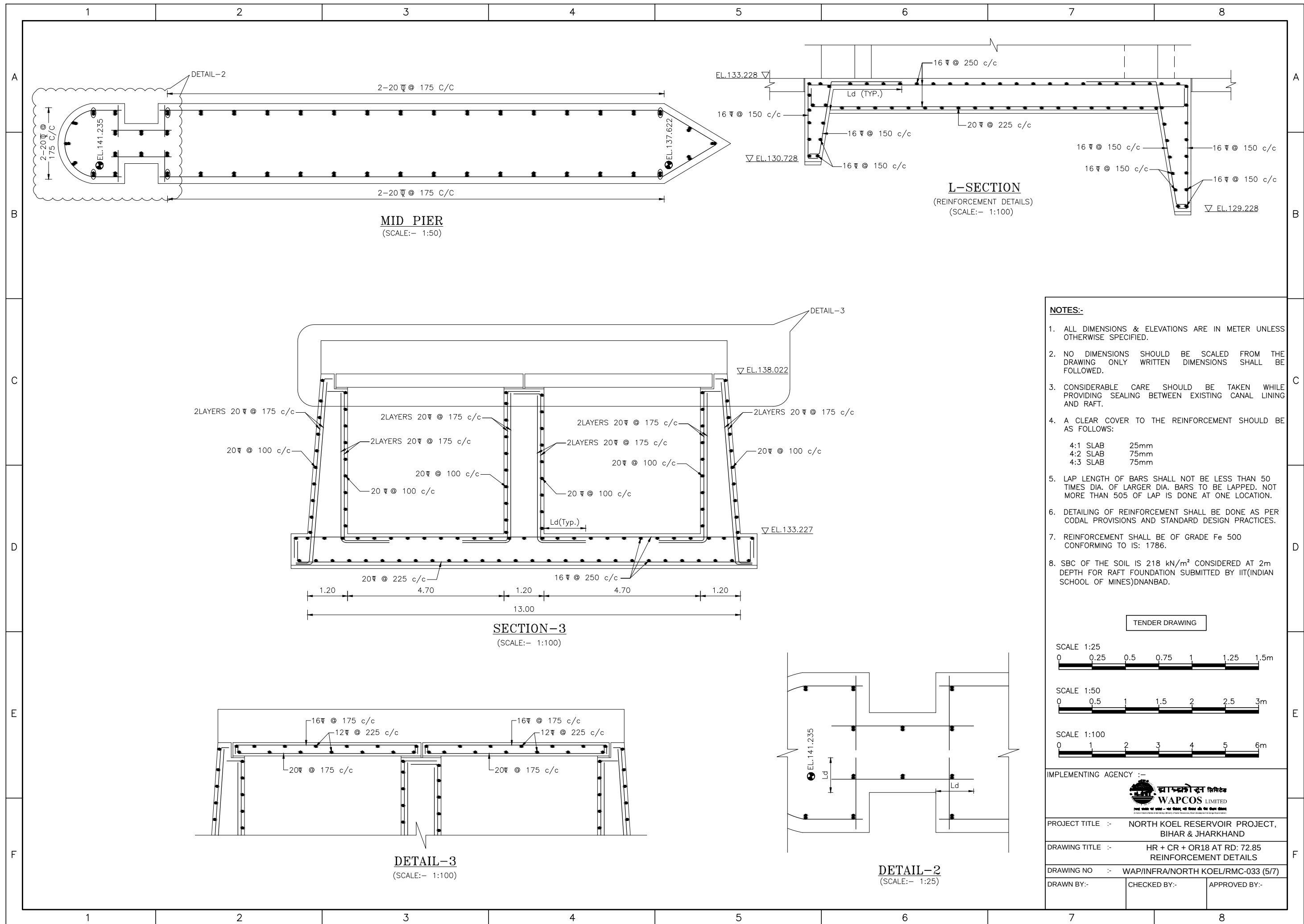


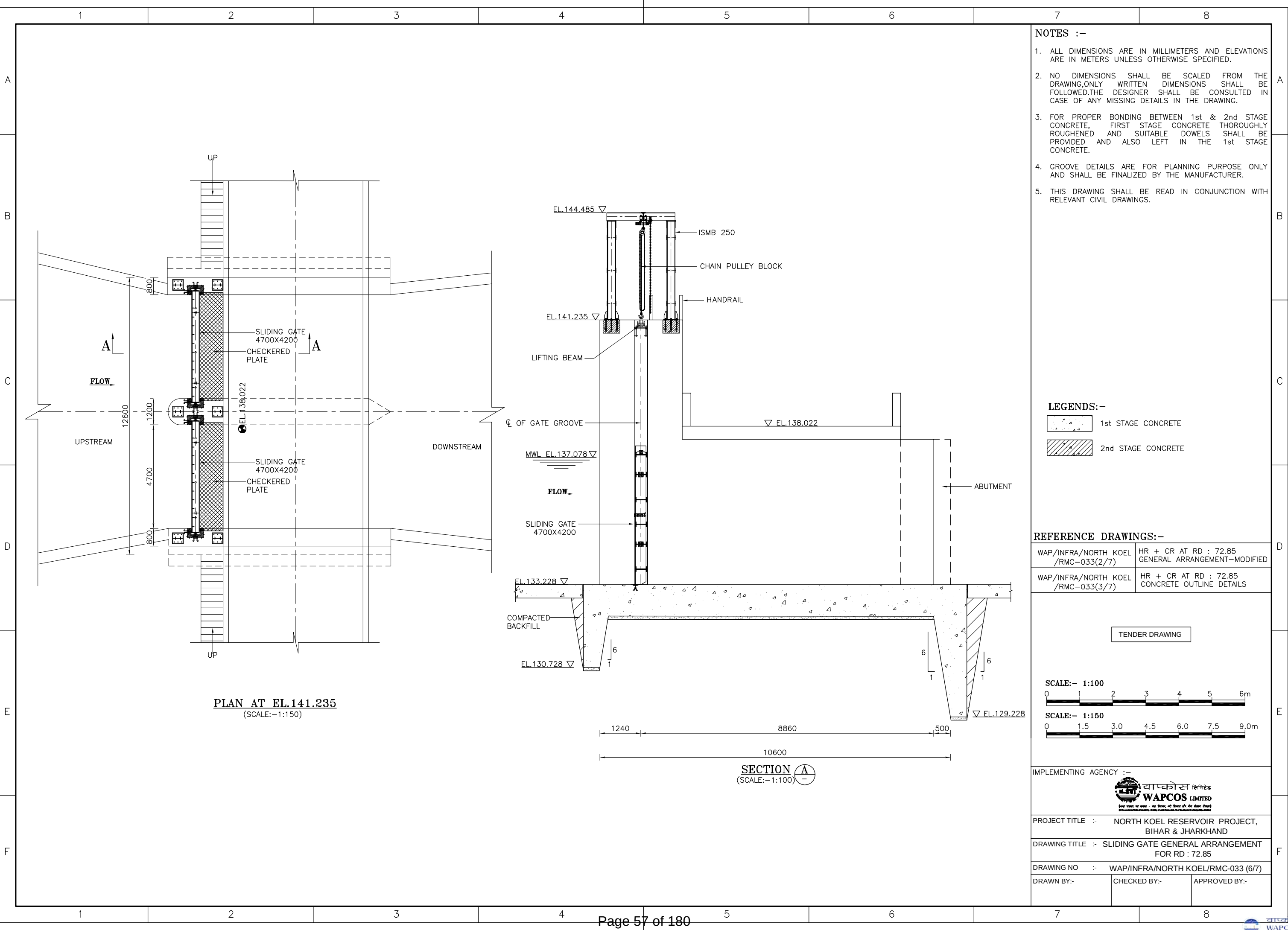
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT,
BIHAR & JHARKHAND

DRAWING TITLE :- HR + CR + OR18 AT RD: 72.85
MODIFIED TRANSITION DETAILS

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-033 (4/7)

DRAWN BY:- CHECKED BY:- APPROVED BY:-





NOTES :-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. THE DESIGNER SHALL BE CONSULTED IN CASE OF ANY MISSING DETAILS IN THE DRAWING.
3. FOR PROPER BONDING BETWEEN 1st & 2nd STAGE CONCRETE, FIRST STAGE CONCRETE THOROUGHLY ROUGHENED AND SUITABLE DOWELS SHALL BE PROVIDED AND ALSO LEFT IN THE 1st STAGE CONCRETE.
4. GROOVE DETAILS ARE FOR PLANNING PURPOSE ONLY AND SHALL BE FINALIZED BY THE MANUFACTURER.
5. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT CIVIL DRAWINGS.

LEGENDS:-

- 1st STAGE CONCRETE
- 2nd STAGE CONCRETE

REFERENCE DRAWINGS:-

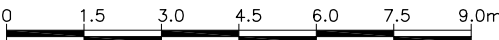
WAP/INFRA/NORTH KOEL /RMC-033(2/7)	HR + CR AT RD : 72.85 GENERAL ARRANGEMENT-MODIFIED
WAP/INFRA/NORTH KOEL /RMC-033(3/7)	HR + CR AT RD : 72.85 CONCRETE OUTLINE DETAILS

TENDER DRAWING

SCALE:- 1:100



SCALE:- 1:150



IMPLEMENTING AGENCY :-



PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT,
BIHAR & JHARKHAND
DRAWING TITLE :- SLIDING GATE GENERAL ARRANGEMENT
FOR RD : 72.85

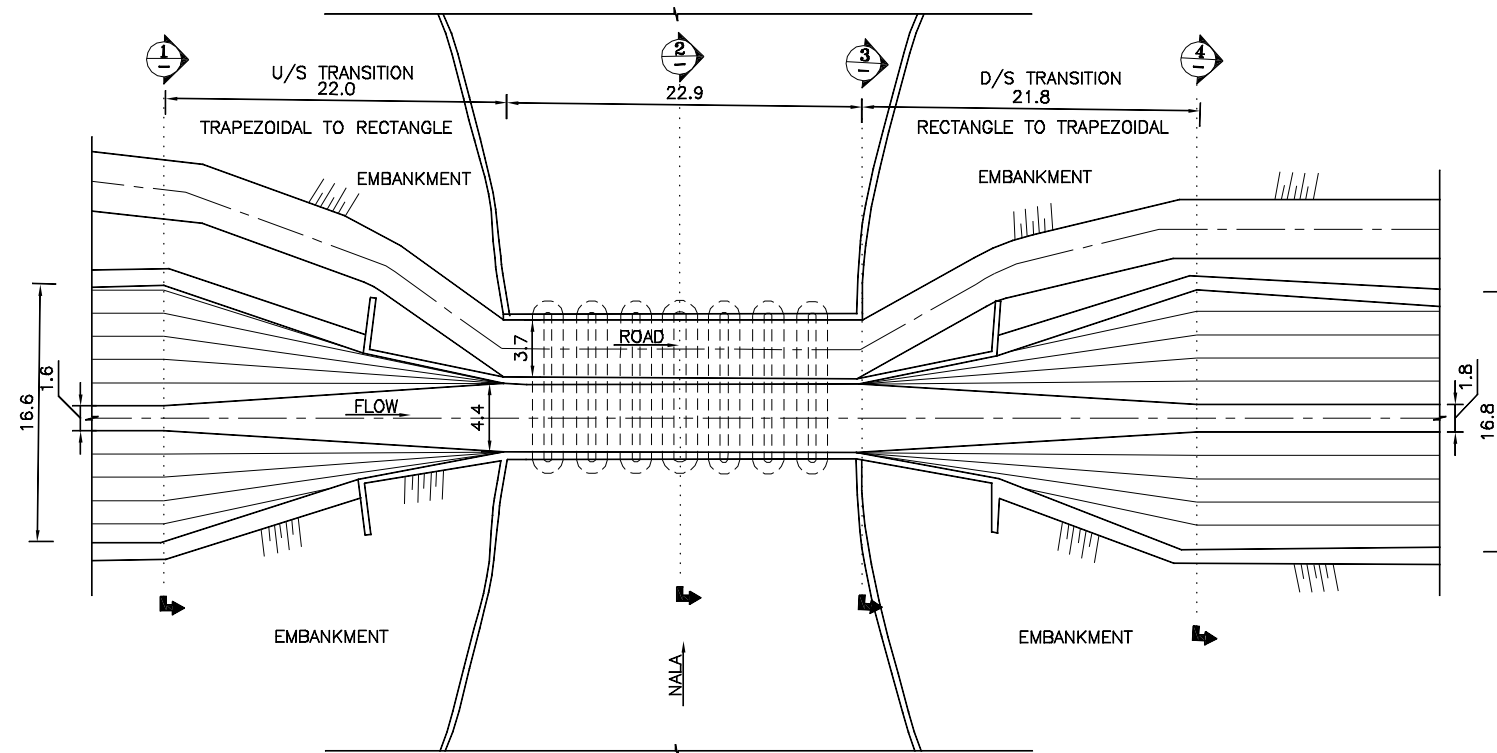
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-033 (6/7)

DRAWN BY:- CHECKED BY:- APPROVED BY:-

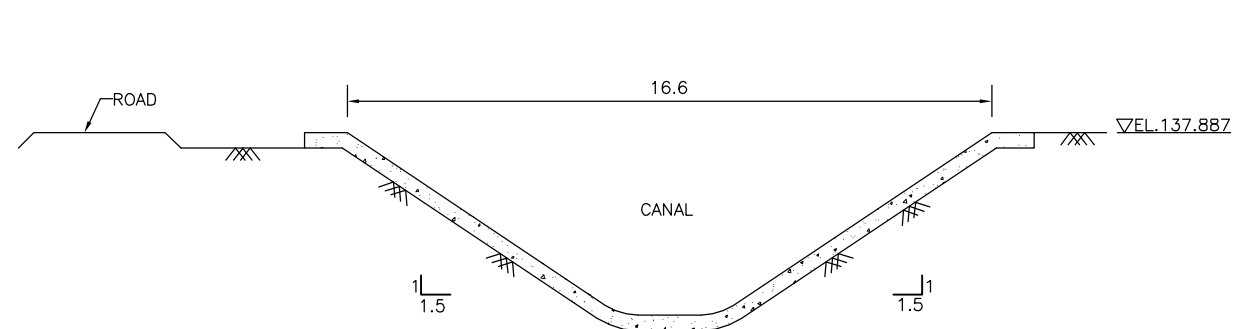
AQUEDUCT



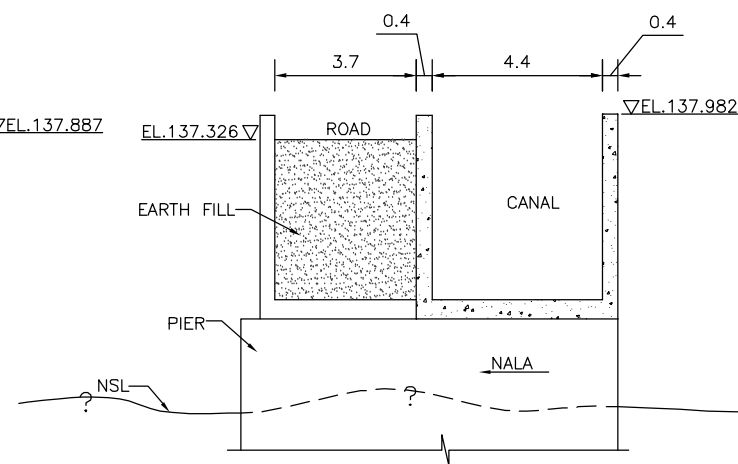
RD 71.02 SYPHON AQUEDUCT OVER TEKARI RIVER



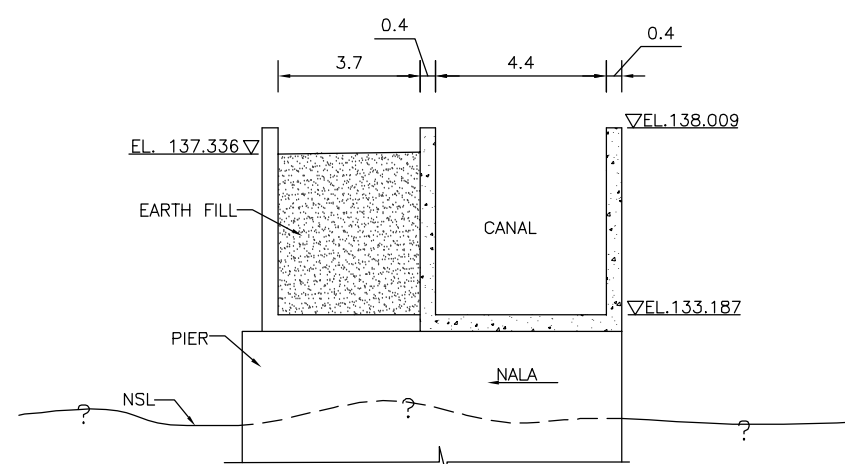
PLAN
EXISTING ARRANGEMENT
(SCALE:- 1:500)



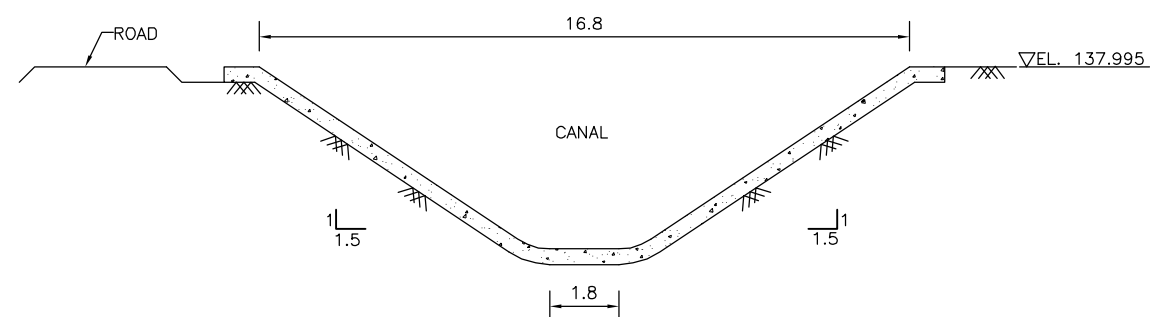
SECTION- 1
(SCALE:- 1:200) -



SECTION— 2
(SCALE:— 1:200) —



SECTION- 3
(SCALE:- 1:200)

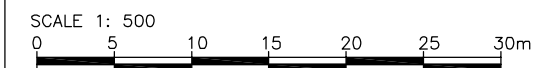
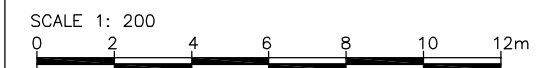


SECTION-4
(SCALE:- 1:200)

NOTES:-

1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. TOP WIDTH OF CANAL & LENGTH OF TRANSITION SHOWN IN THIS DRAWING ARE AS MEASURED AT SITE.

TENDER DRAWING



IMPLEMENTING AGENCY :-

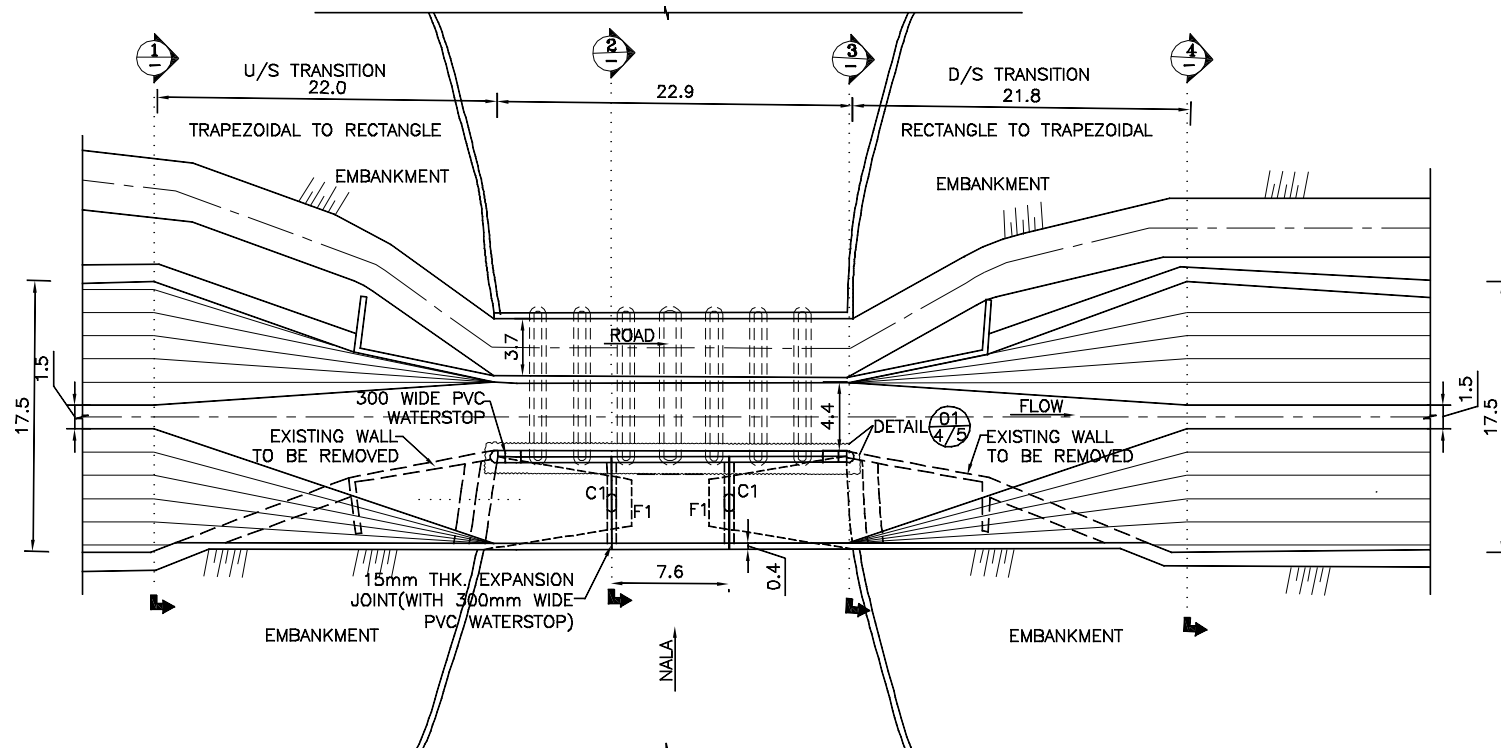


PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND
------------------	--

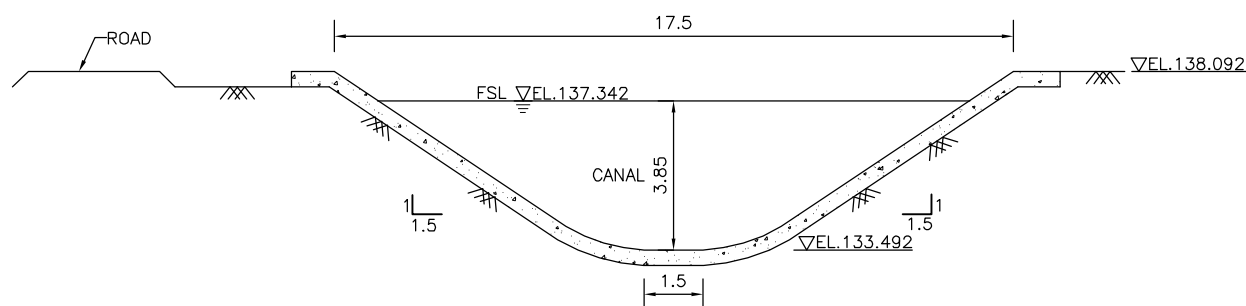
DRAWING TITLE :-	SYPHON AQUEDUCT AT RD:71.02 GENERAL ARRANGMENT-ORIGINAL
------------------	--

DRAWING NO	:-	WAP/INFRA/NORTH KOEL/RMC-032 (1/5)
------------	----	------------------------------------

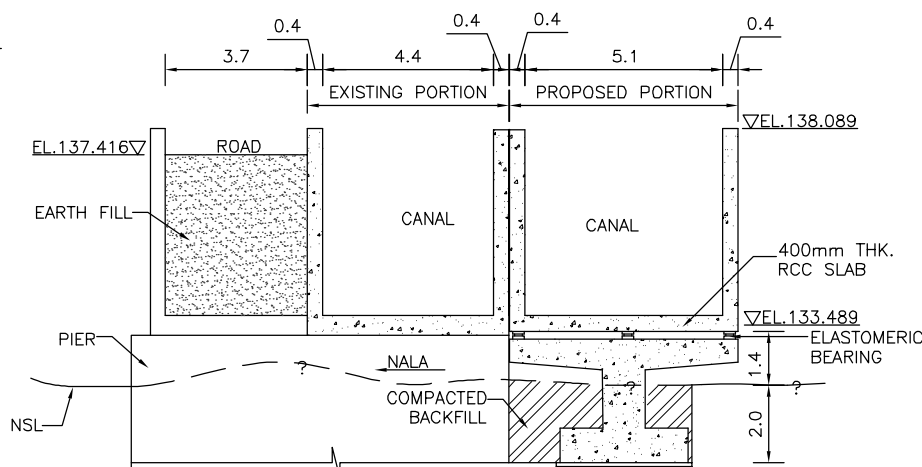
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-
------------	--------------	---------------



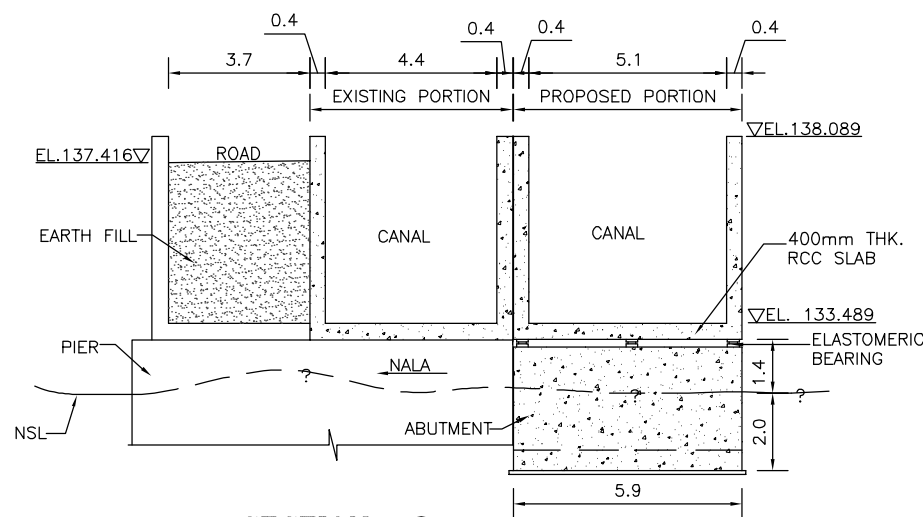
PLAN
MODIFIED ARRANGEMENT
(SCALE:- 1:500)



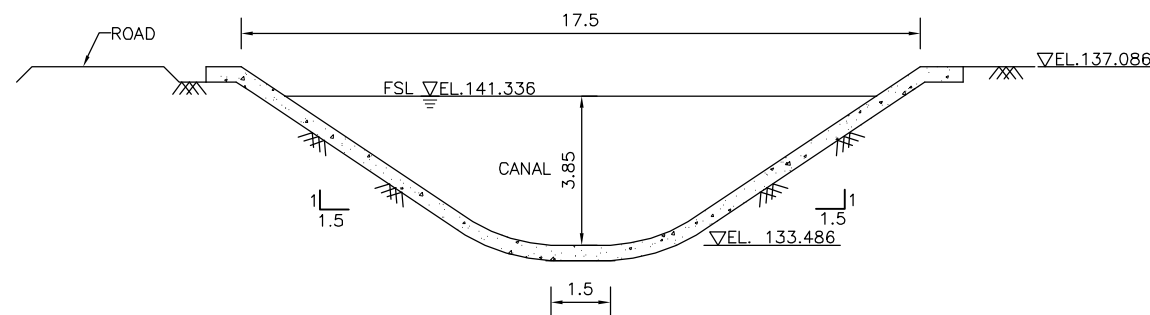
SECTION- ①
(SCALE:- 1:200)



SECTION- ②
(SCALE:- 1:200)



SECTION- ③
(SCALE:- 1:200)



SECTION- ④
(SCALE:- 1:200)

NOTES:-

1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. SBC IS CONSIDERED AT 2m DEPTH AS 229.1kN/m² WITH REFERENCE TO GEO-TECHNICAL REPORT.
4. EXCAVATION IN NALA FOR COLUMNS & ABUTMENTS SHALL BE CARRIED OUT WITH SHORING WITH HIGH PRECAUTIONS TO AVOID DISTURBANCE TO THE FOUNDATION OF THE EXISTING STRUCTURE.
5. BED WIDTH/FULL SUPPLY DEPTH ARE OBTAINED FROM THE HYDRAULIC CALCULATIONS CARRIED OUT FOR THE PROJECT.

CANAL PARTICULARS

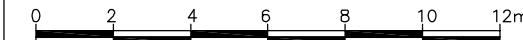
S.NO.	PARAMETERS	CANAL	AQUEDUCT
1	FSL (m)	137.342	137.339
2	BED LEVEL (m)	133.492	133.489
3	BED WIDTH (m)	1.5	10.3
4	FSD (m)	3.850	3.850
5	BED SLOPE	1 IN 7000	—
6	SIDE SLOPE	1:1.5	—
7	DISCHARGE (m ³ /s)	39.49	39.49
8	VELOCITY (m/s)	1.08	1.08
9	FREE BOARD (m)	0.75	0.75

DRAINAGE PARTICULARS

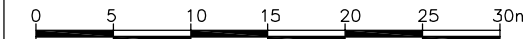
1	SILT FACTOR	1.89
2	BEARING PRESSURE (kN/m ²)	229.1

TENDER DRAWING

SCALE 1: 200



SCALE 1: 500



IMPLEMENTING AGENCY :-

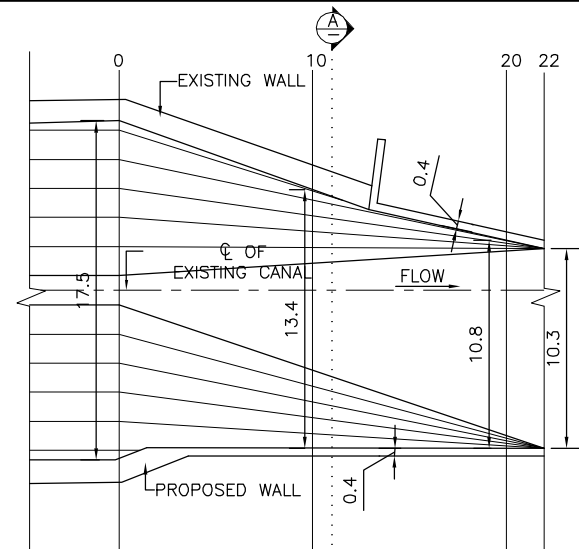


PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND

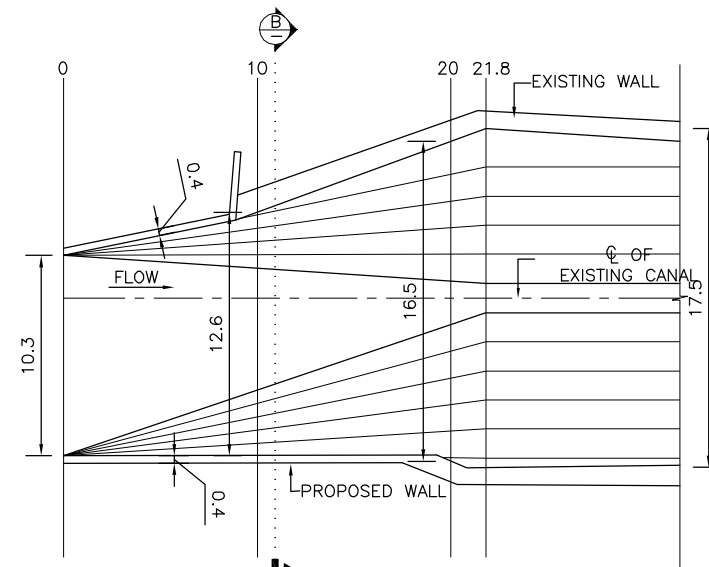
DRAWING TITLE :- SYPHON AQUEDUCT AT RD:71.02 GENERAL ARRANGMENT-MODIFIED

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-032 (2/5)

DRAWN BY:- CHECKED BY:- APPROVED BY:-



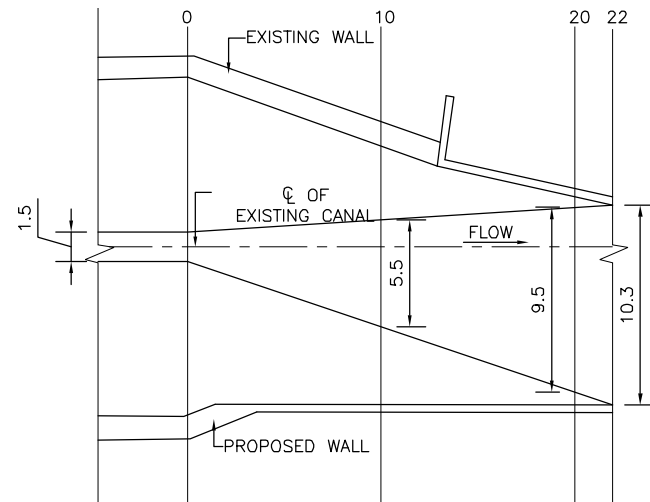
**UPSTREAM TRANSITION
PLAN-1 AT TOP**
(SCALE:- 1:400)



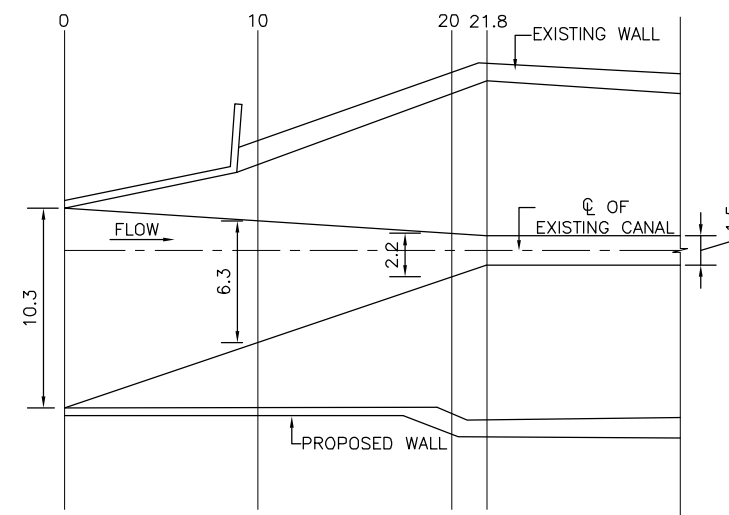
**DOWNSTREAM TRANSITION
PLAN-1 AT TOP**
(SCALE:- 1:400)

DISTANCE FROM CANAL SECTION 1-1 (m)	UPSTREAM TRANSITION	
	TOP WIDTH (REFER PLAN-1)	BED WIDTH (REFER PLAN-2)
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	17.5	1.5
10	13.4	5.5
20	10.8	9.5
22	10.3	10.3

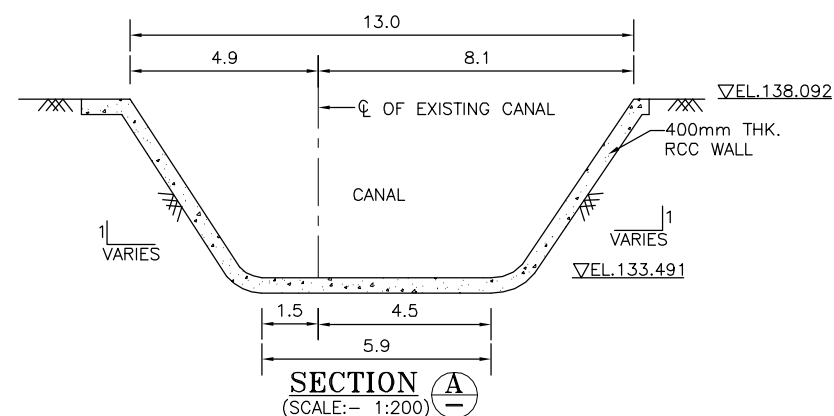
DISTANCE FROM CANAL SECTION 3-3 (m)	DOWNSTREAM TRANSITION	
	TOP WIDTH (REFER PLAN-1)	BED WIDTH (REFER PLAN-2)
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	10.3	10.3
10	12.6	6.3
20	16.5	2.2
21.8	17.5	1.5



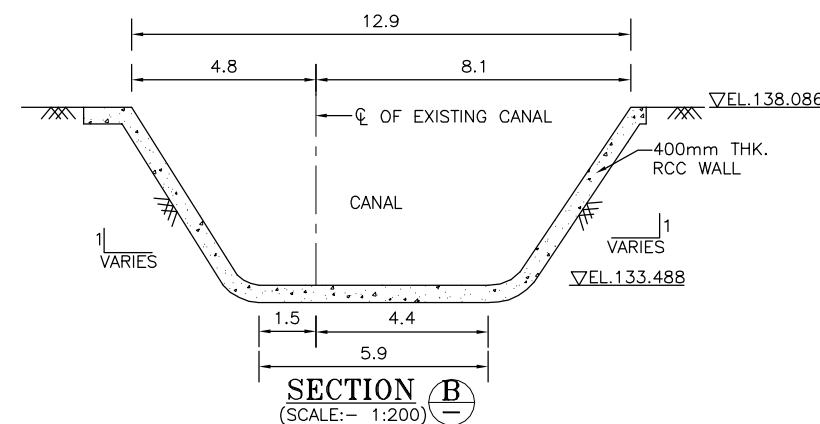
**UPSTREAM TRANSITION
PLAN-2 AT BED LEVEL**
(SCALE:- 1:400)



**DOWNSTREAM TRANSITION
PLAN-2 AT BED LEVEL**
(SCALE:- 1:400)



SECTION A
(SCALE:- 1:200)

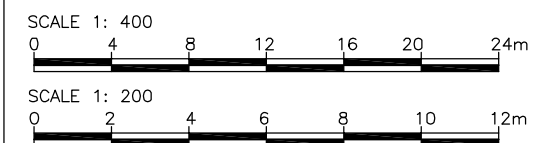


SECTION B
(SCALE:- 1:200)

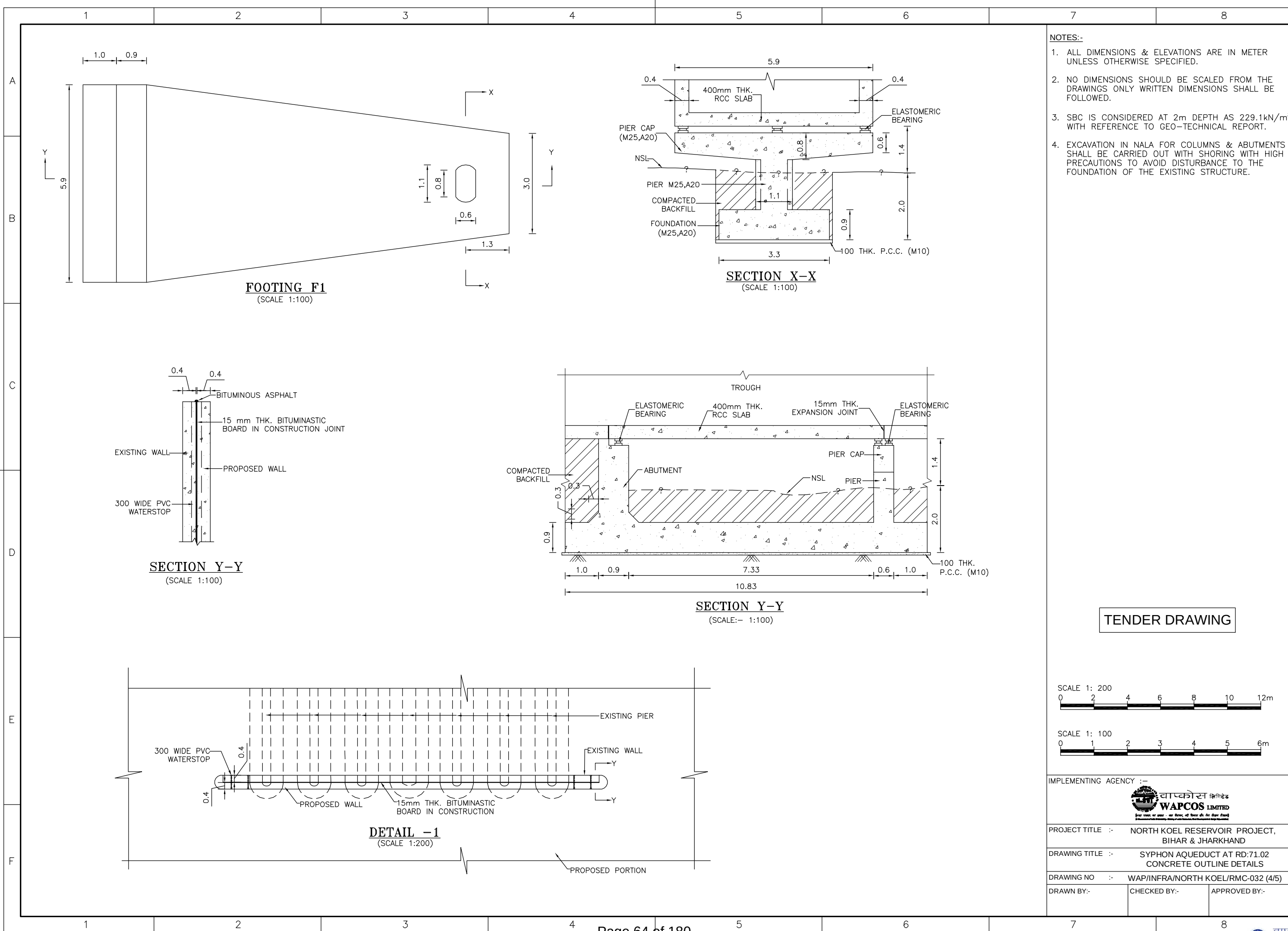
NOTES:-

- ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
- NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

TENDER DRAWING

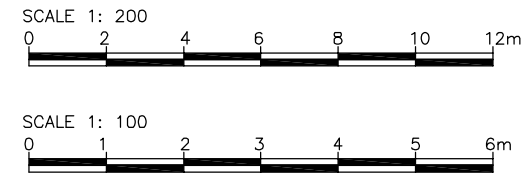


IMPLEMENTING AGENCY :-		
		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- SYPHON AQUEDUCT AT RD:71.02 MODIFIED TRANSITION DETAILS		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-032 (3/5)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-

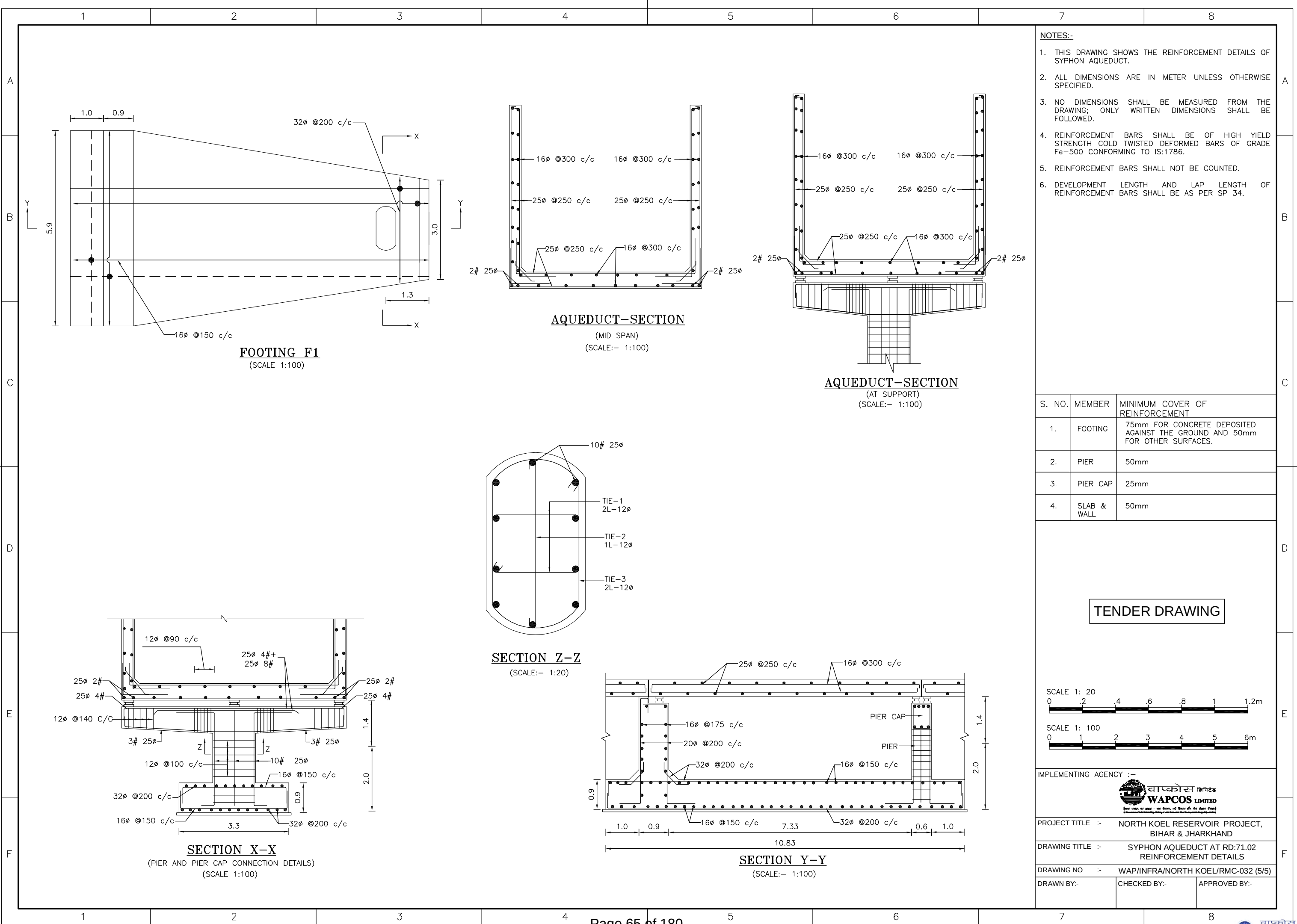


- NOTES:-**
1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. SBC IS CONSIDERED AT 2m DEPTH AS 229.1kN/m² WITH REFERENCE TO GEO-TECHNICAL REPORT.
 4. EXCAVATION IN NALA FOR COLUMNS & ABUTMENTS SHALL BE CARRIED OUT WITH SHORING WITH HIGH PRECAUTIONS TO AVOID DISTURBANCE TO THE FOUNDATION OF THE EXISTING STRUCTURE.

TENDER DRAWING



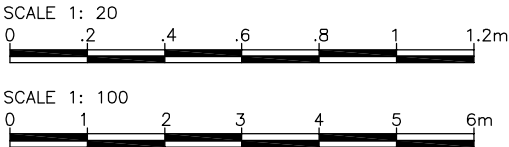
IMPLEMENTING AGENCY :-  WAPCOS LIMITED एन सी ई सी - एन सी ई सी - एन सी ई सी - एन सी ई सी		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- SYPHON AQUEDUCT AT RD:71.02 CONCRETE OUTLINE DETAILS		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-032 (4/5)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



- NOTES:-
1. THIS DRAWING SHOWS THE REINFORCEMENT DETAILS OF SYPHON AQUEDUCT.
 2. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
 3. NO DIMENSIONS SHALL BE MEASURED FROM THE DRAWING; ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 4. REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH COLD TWISTED DEFORMED BARS OF GRADE Fe-500 CONFORMING TO IS:1786.
 5. REINFORCEMENT BARS SHALL NOT BE COUNTED.
 6. DEVELOPMENT LENGTH AND LAP LENGTH OF REINFORCEMENT BARS SHALL BE AS PER SP 34.

S. NO.	MEMBER	MINIMUM COVER OF REINFORCEMENT
1.	FOOTING	75mm FOR CONCRETE DEPOSITED AGAINST THE GROUND AND 50mm FOR OTHER SURFACES.
2.	PIER	50mm
3.	PIER CAP	25mm
4.	SLAB & WALL	50mm

TENDER DRAWING



IMPLEMENTING AGENCY :-

**WAPCOS LIMITED**
वापकोस लिमिटेड

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

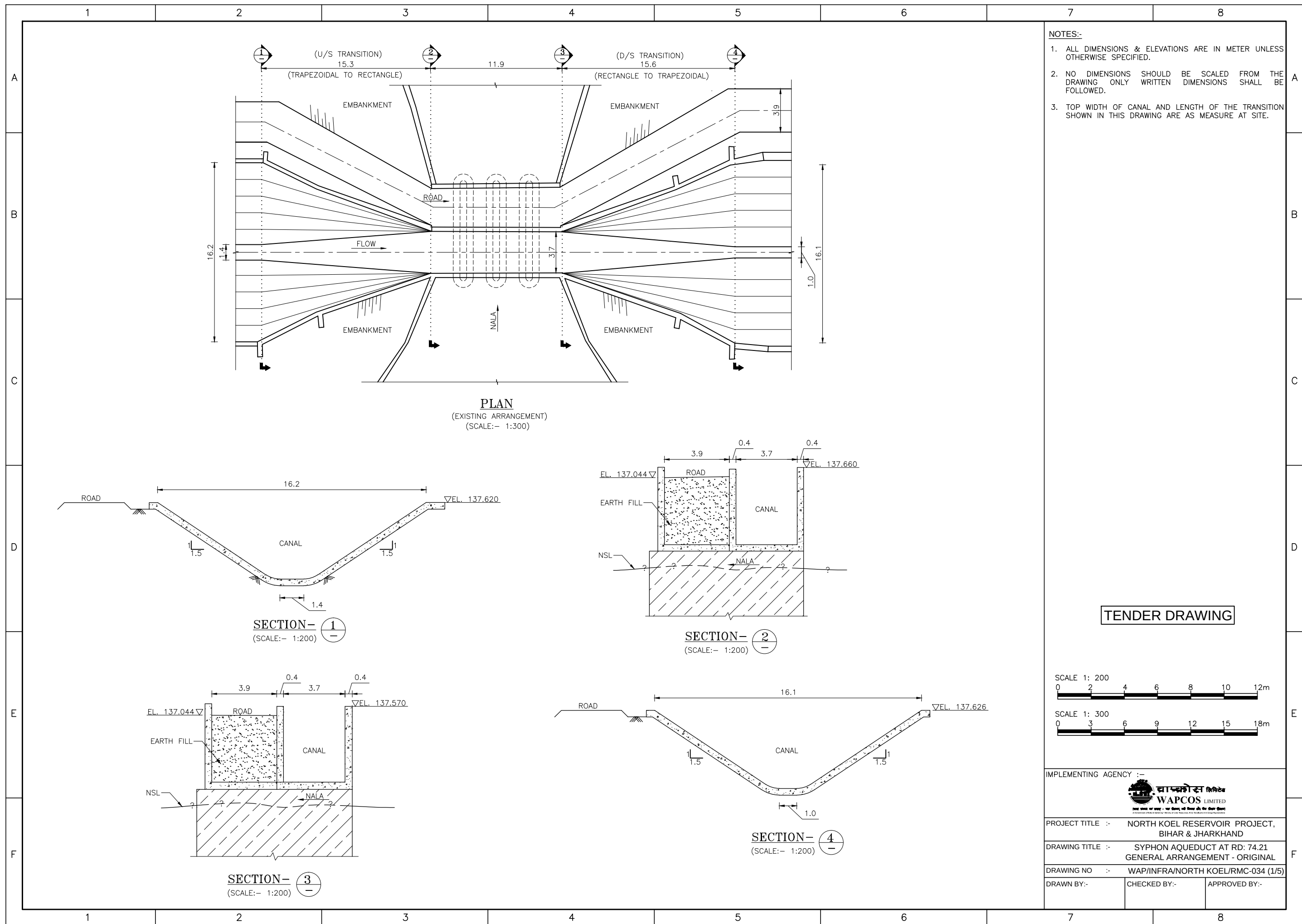
DRAWING TITLE :- SYPHON AQUEDUCT AT RD:71.02 REINFORCEMENT DETAILS

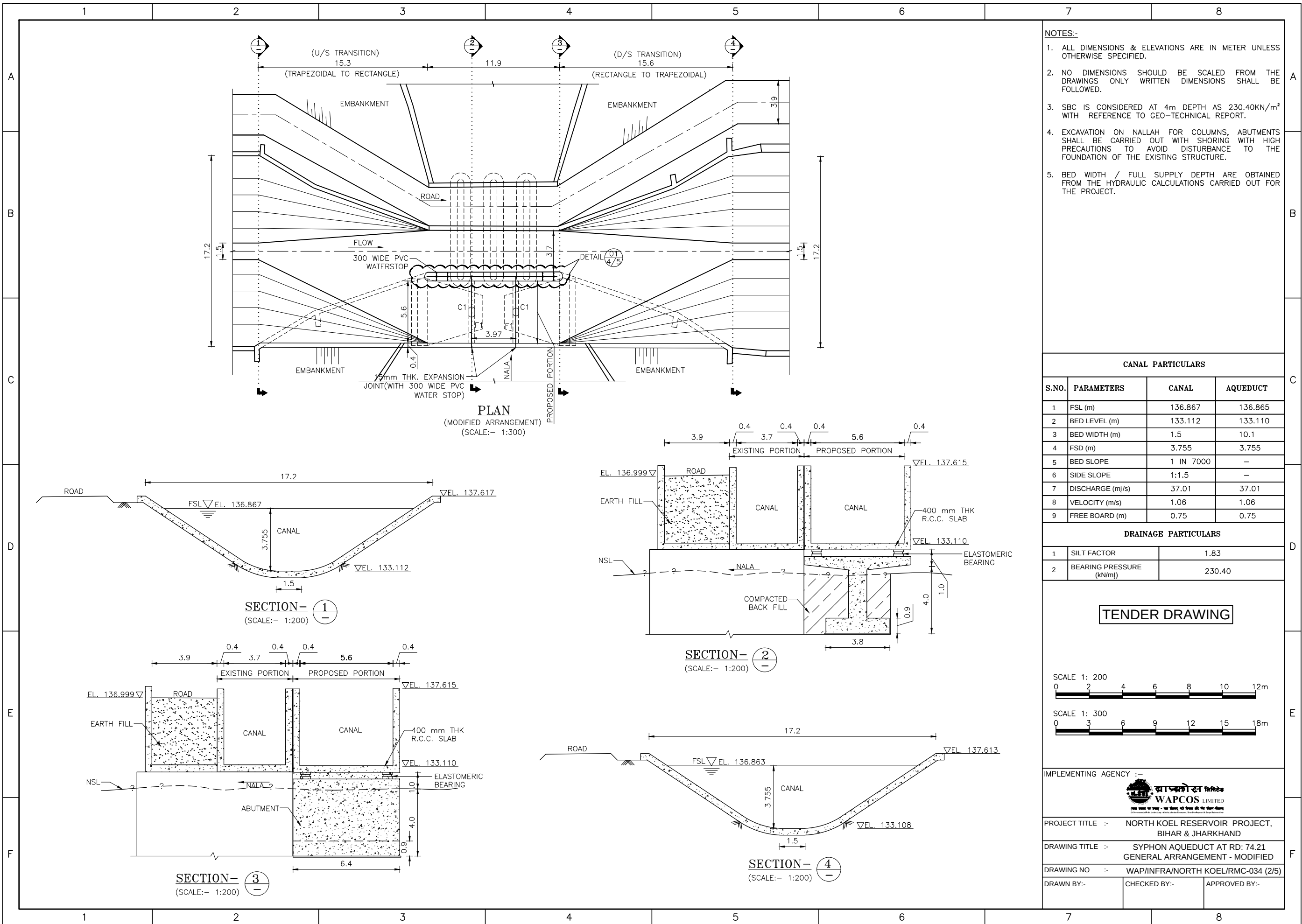
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-032 (5/5)

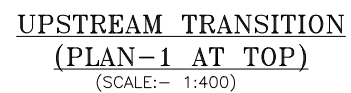
DRAWN BY:- CHECKED BY:- APPROVED BY:-



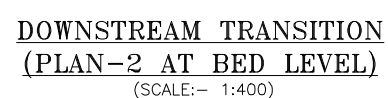
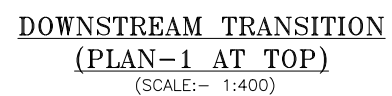
RD 74.21 L.D SYPHON OVER LOCAL NALLA



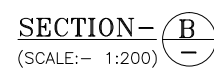




DISTANCE FROM CANAL SECTION 3-3 (m)	UPSTREAM TRANSITION	
	"TOP WIDTH (REFER PLAN-1)"	"BED WIDTH (REFER PLAN-2)"
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	17.2	1.5
10	12.1	7.2
15.3	10.1	10.1



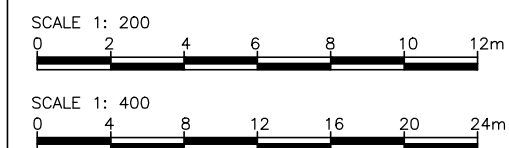
DISTANCE FROM CANAL SECTION 3-3 (m)	DOWNSTREAM TRANSITION	
	"TOP WIDTH (REFER PLAN-1)"	"BED WIDTH (REFER PLAN-2)"
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	10.1	10.1
10	13.9	4.6
15.6	17.2	1.5



NOTES:-

1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

TENDER DRAWING



IMPLEMENTING AGENCY :-

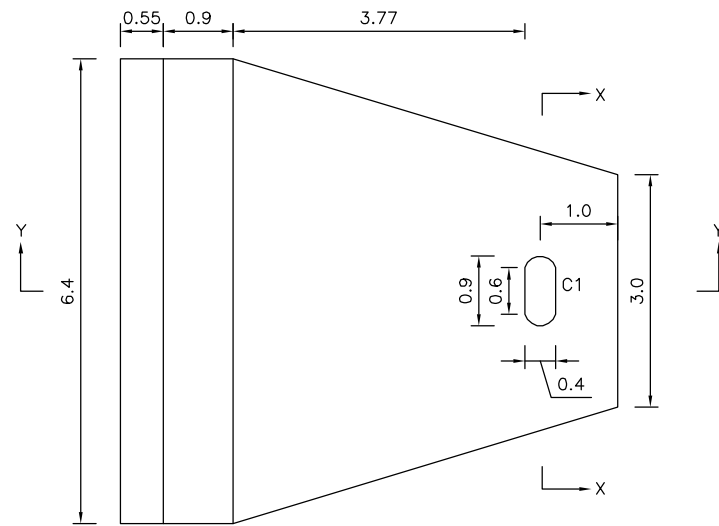


PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND
------------------	--

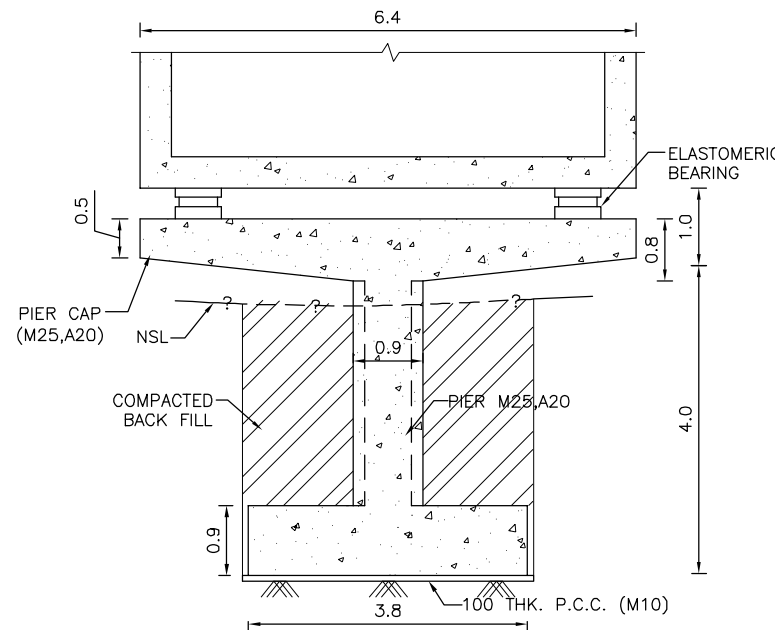
DRAWING TITLE :-	SYPHON AQUEDUCT AT RD: 74.21 MODIFIED TRANSITION DETAILS
------------------	---

DRAWING NO	:-	WAP/INFRA/NORTH KOEL/RMC-034 (3/5)
------------	----	------------------------------------

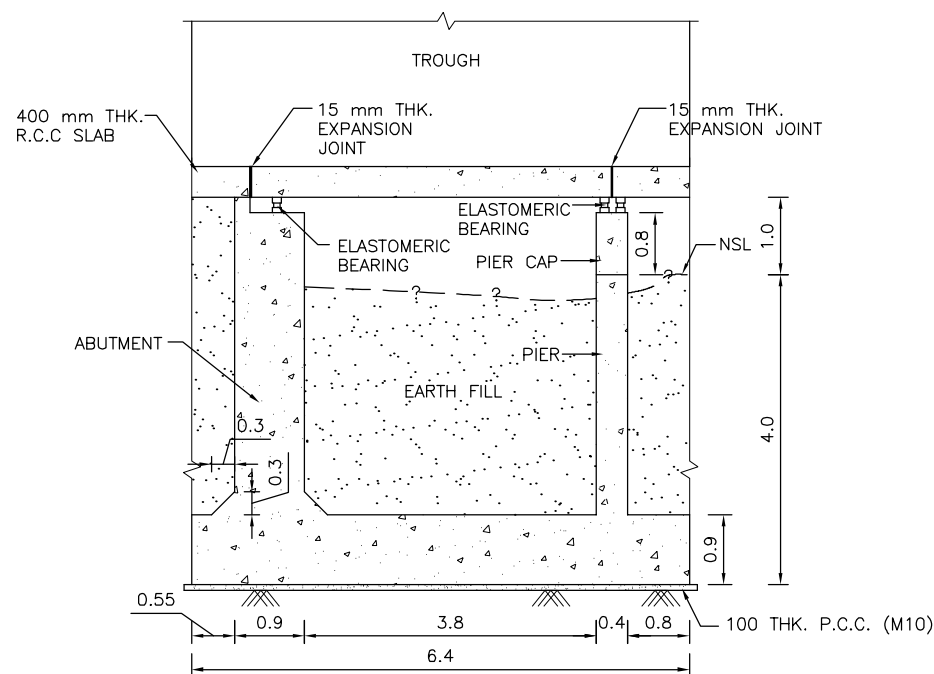
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-
------------	--------------	---------------



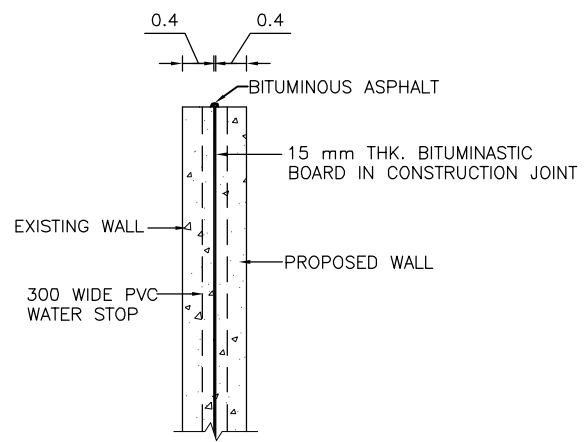
FOOTING F1
(SCALE 1:100)



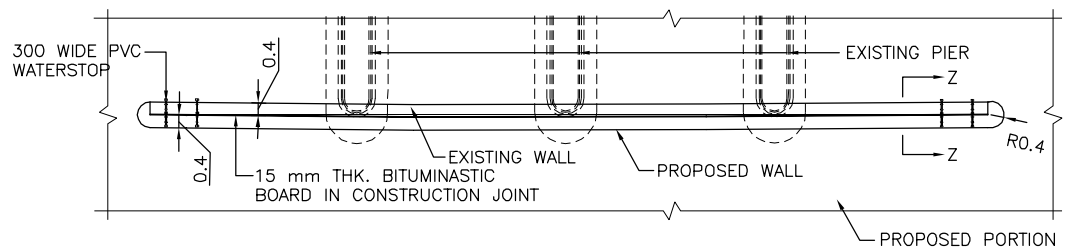
SECTION X-X
(SCALE 1:100)



SECTION A-A
(SCALE:- 1:100)



SECTION Z-Z
(SCALE 1:100)

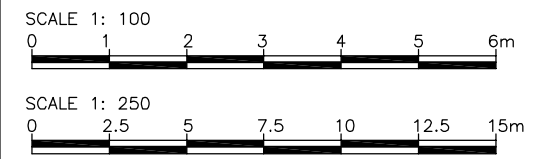


DETAIL 1
(SCALE:- 1:250)

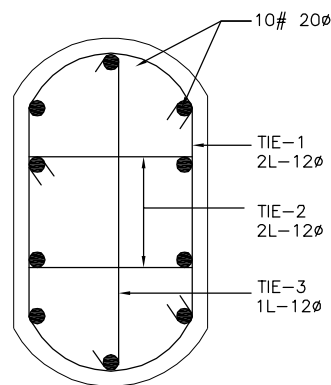
NOTES:-

1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. SBC IS CONSIDERED AT 4m DEPTH AS 230.4KN/m² WITH REFERENCE TO GEO-TECHNICAL REPORT.
4. EXCAVATION ON NALLAH FOR COLUMNS, ABUTMENTS SHALL BE CARRIED OUT WITH SHORING WITH HIGH PRECAUTIONS TO AVOID DISTURBANCE TO THE FOUNDATION OF THE EXISTING STRUCTURE.

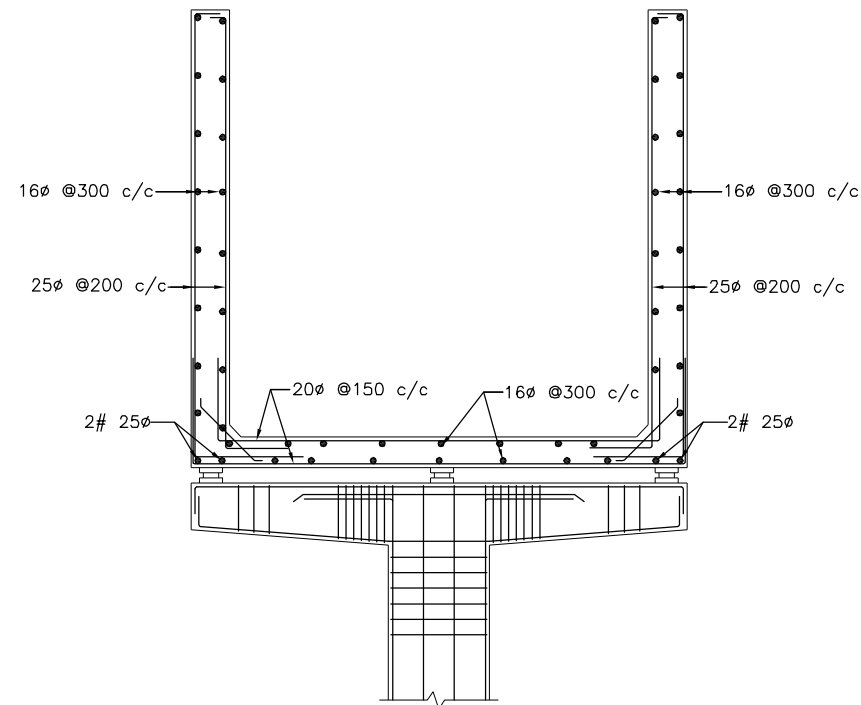
TENDER DRAWING



IMPLEMENTING AGENCY :-		
		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- SYPHON AQUEDUCT AT RD: 74.21 CONCRETE OUTLINE DETAILS		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-034 (4/5)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



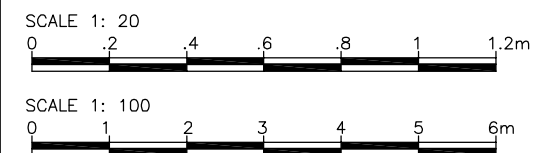
SECTION Y-Y
(SCALE:- 1:20)



NOTES:-

1. THIS DRAWING SHOWS THE REINFORCEMENT DETAILS OF SYPHON AQUEDUCT.
2. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
3. NO DIMENSIONS SHALL BE MEASURED FROM THE DRAWING; ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
4. REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH COLD TWISTED DEFORMED BARS OF GRADE Fe-500 CONFORMING TO IS:1786.
5. REINFORCEMENT BARS SHALL NOT BE COUNTED.
6. DEVELOPMENT LENGTH AND LAP LENGTH OF REINFORCEMENT BARS SHALL BE AS PER SP 34.

TENDER DRAWING



IMPLEMENTING AGENCY :-



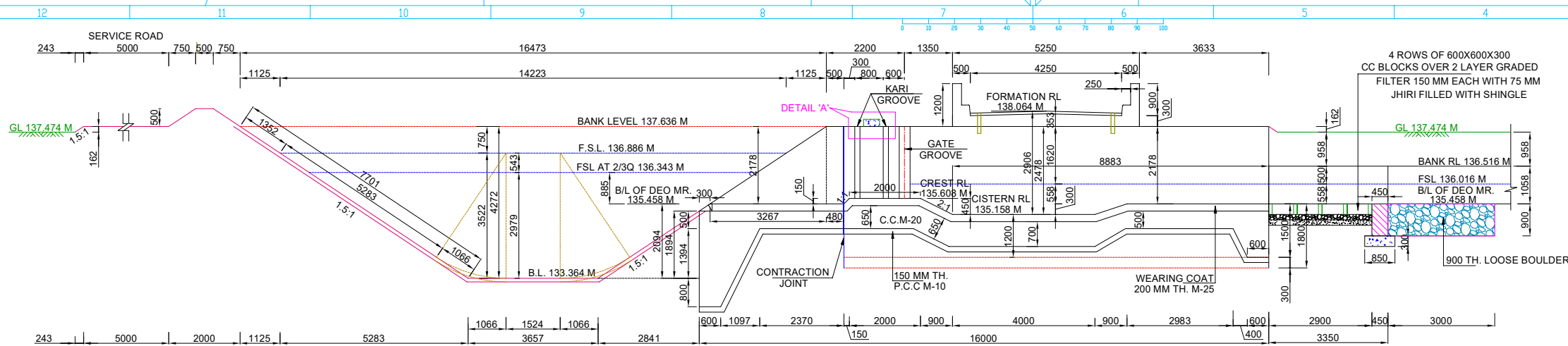
PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND
------------------	--

DRAWING TITLE :-	SYPHON AQUEDUCT AT RD: 74.21 REINFORCEMENT DETAILS
------------------	---

DRAWING NO	:-	WAP/INFRA/NORTH KOEL/RMC-034 (5/5)
------------	----	------------------------------------

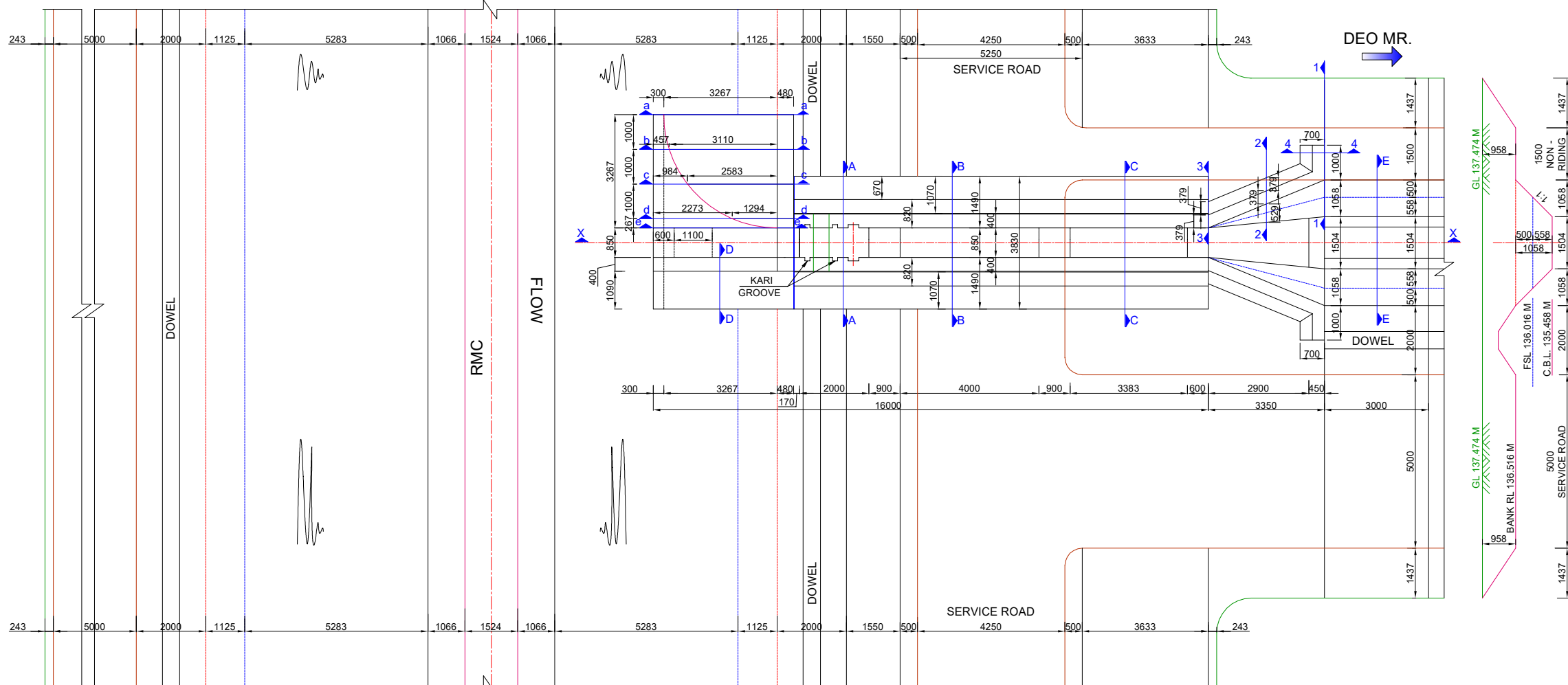
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-
------------	--------------	---------------

Head Regulators



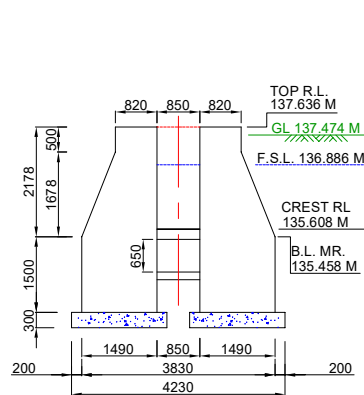
X- SEC OF RIGHT MAIN CANAL (SECTION X-X)

(SCALE A)



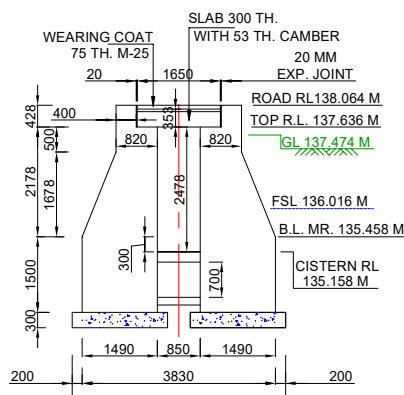
PLAN OF HEAD REGULATOR

(SCALE A)



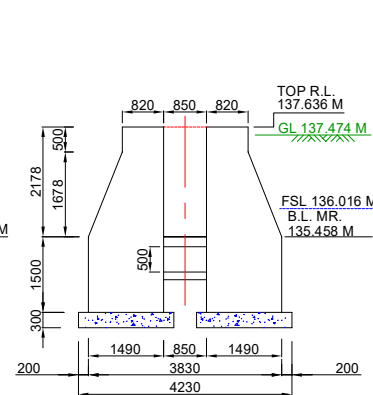
SECTION A-A
(AT CREST)

(SCALE A)



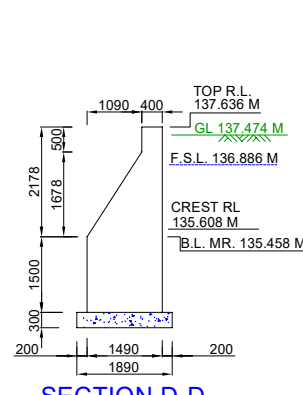
SECTION B-B
(AT CISTERN LEVEL)

(SCALE A)



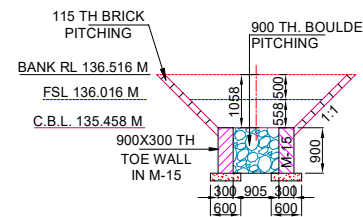
SECTION C-C
(AT D/S FLOOR)

(SCALE A)



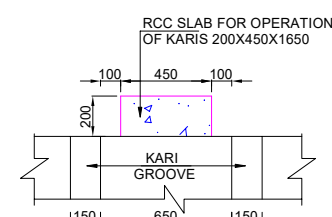
SECTION D-D

(SCALE A)



SECTION E-E

(SCALE A)



DETAIL 'A'

(SCALE B)

DESIGN DATA :-

RIGHT MAIN CANAL

DISCHARGE OF FEEDER	32.13 CUMEC
BED WIDTH	1.524 M
WATER DEPTH	3.522 M
FREE BOARD	0.750 M
BED LEVEL	133.364 M
F.S.L.	136.886 M
GROUND LEVEL	137.474 M

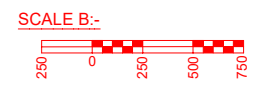
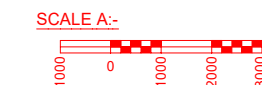
DEO MR.

CHAINAGE	71.930 M
DISCHARGE	0.369 CUMEC OR 13.031 CUSEC
BED WIDTH	1.504 M
WATER DEPTH	0.558 M
SIDE SLOPE	1:1
FREE BOARD	0.500 M
BED LEVEL	135.458 M
F.S.L.	136.016 M
CREST LEVEL	135.608 M
WIDTH OF CREST	2.0 M
BED SLOPE	33.3 CM/ KM

NOTES:-

(A) GENERAL

- THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ M.
- ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
- DESIGN CRITERIA
 - THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
 - IRC:5-1998
 - IS: 6531-1972
 - IRC:5-1998
 - IS: 456-2000
 - THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
 - 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.
 - 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.
 - FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
 - 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.
 - D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
 - 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.
 - THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
- ALL CONCRETE WORK SHALL COFORM TO IS: 456- 2000. WITH FOLLOWING GRADE OF CONCRETE:-
 - SLAB, CRASH BARRIER AND WEARING COAT M-25
 - FLOOR, ABUTMENT AND TRANSITIONS M-20
 - C.C.BLOCKS AND TOE WALLS M-15
 - P.C.C. M-10
- M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
- 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 DEO MR.
(OFFTAKE FROM RMC RD - 71+930 KM. (LT),

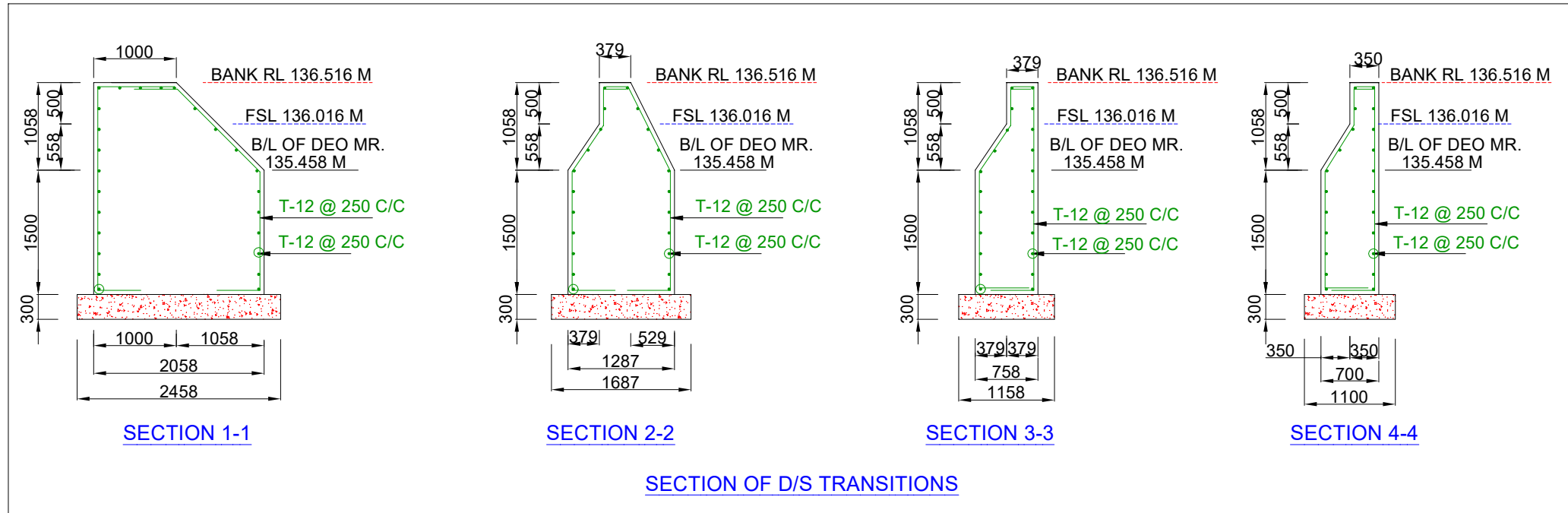
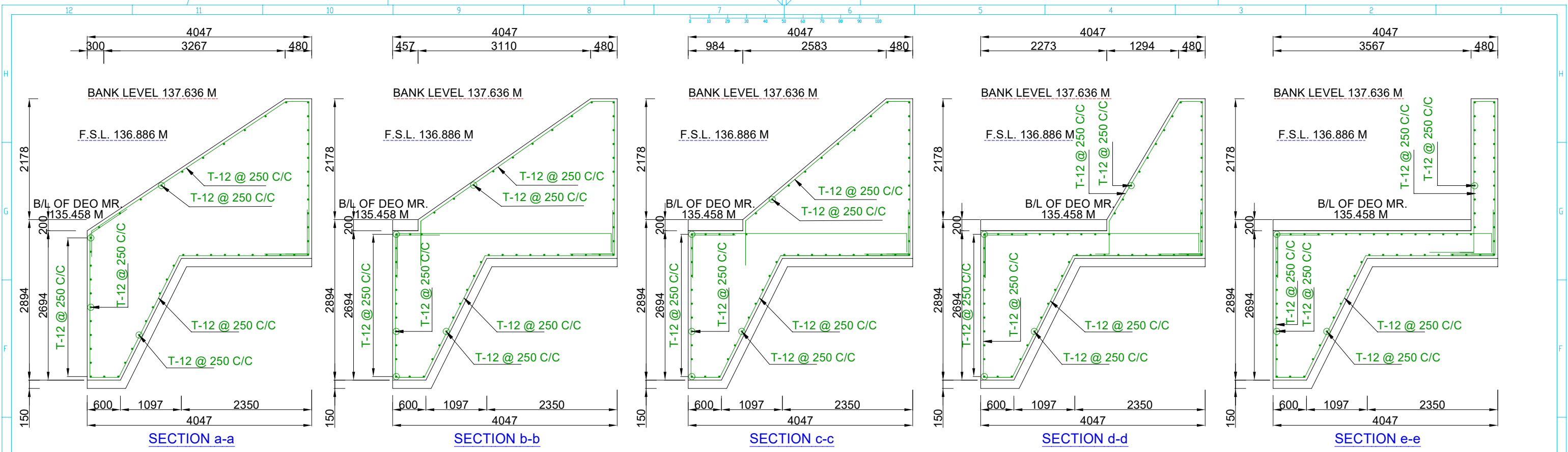
Drawing No. :-

WAP/INFRA/NORTH KOEL/RMC/R-26/HR-1 01 of 04

Drawn by:-

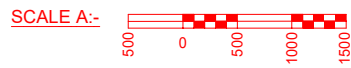
Checked by:-

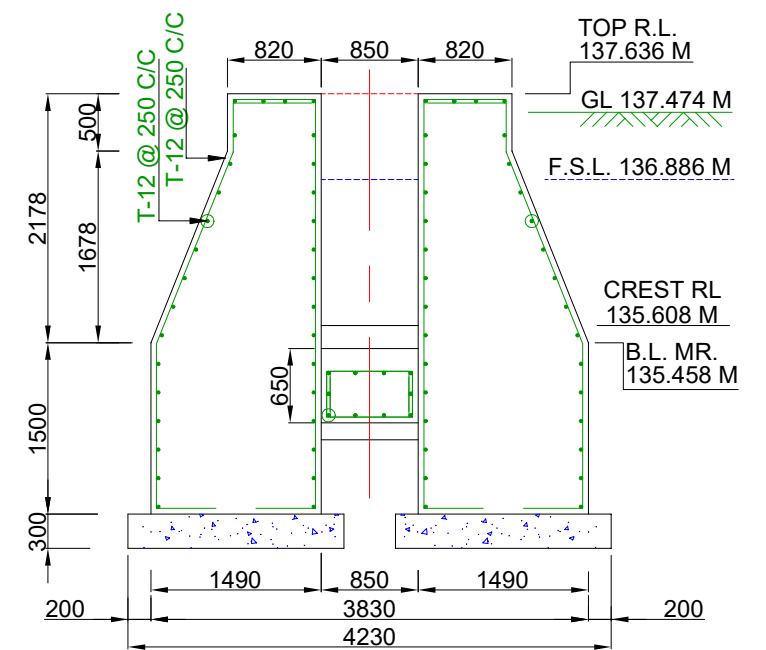
Approved by:-



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

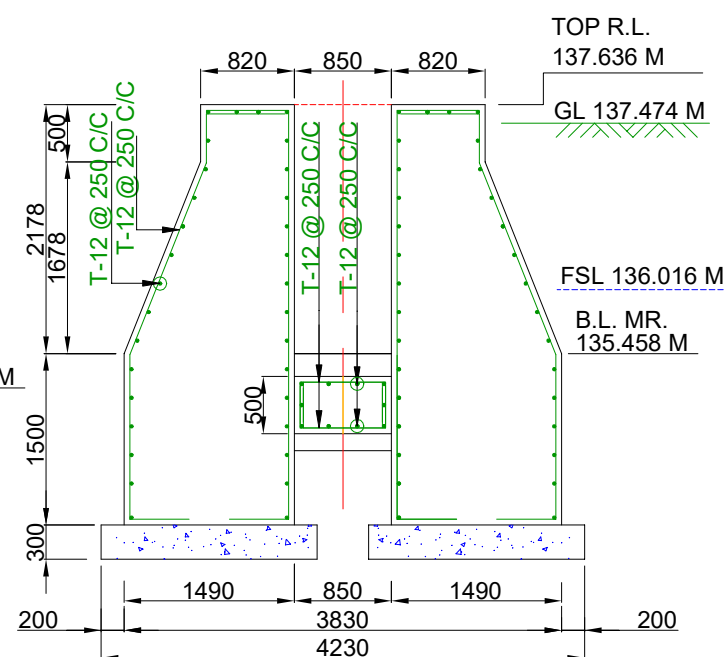
Prepared by :- WAPCOS LTD.  (निर्वाह संस्थान का समकाल - जल संसाधन विभाग) (A Government of India Undertaking - Ministry of Water Resources)	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	
	Drawing Title :-	SECTION DETAILS DRAWING OF HEAD REGULATOR OF DEO MR. (OFFTAKE FROM RMC RD - 71+930 KM. (LT),	
	Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-26/HR-1	02 of 04
	Drawn by:-	Checked by:-	Approved by:-





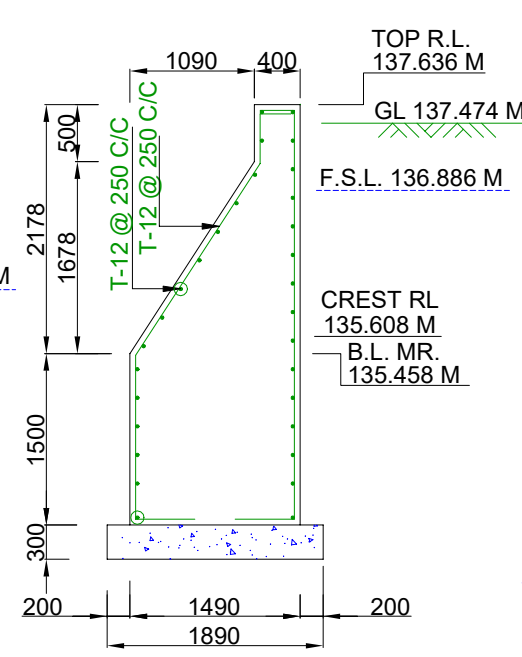
SECTION A-A
(AT CREST)

(SCALE A)

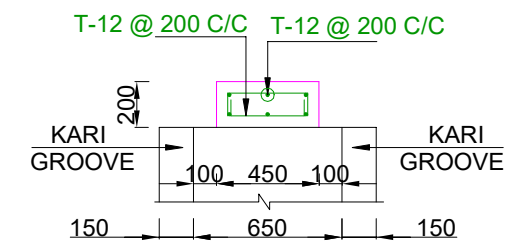


SECTION B-B
(AT CISTERN LEVEL)
(SCALE A)

SECTION C-C
(AT D/S FLOOR)
(SCALE A)

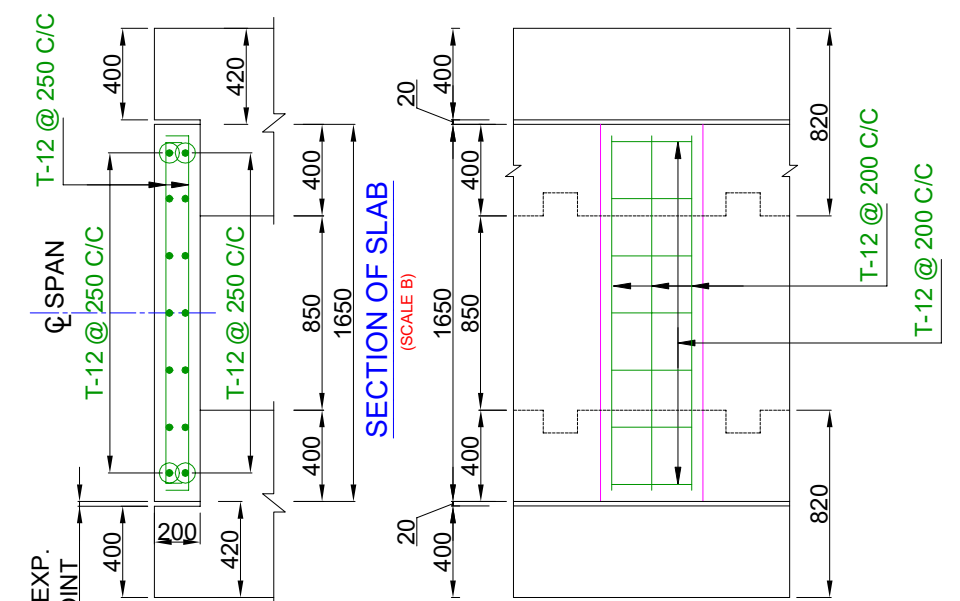


SECTION D-D
(SCALE A)

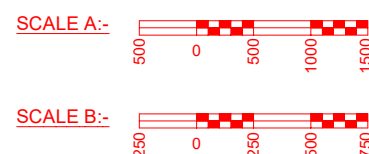


RCC SLAB FOR KARIS

(SCALE B)



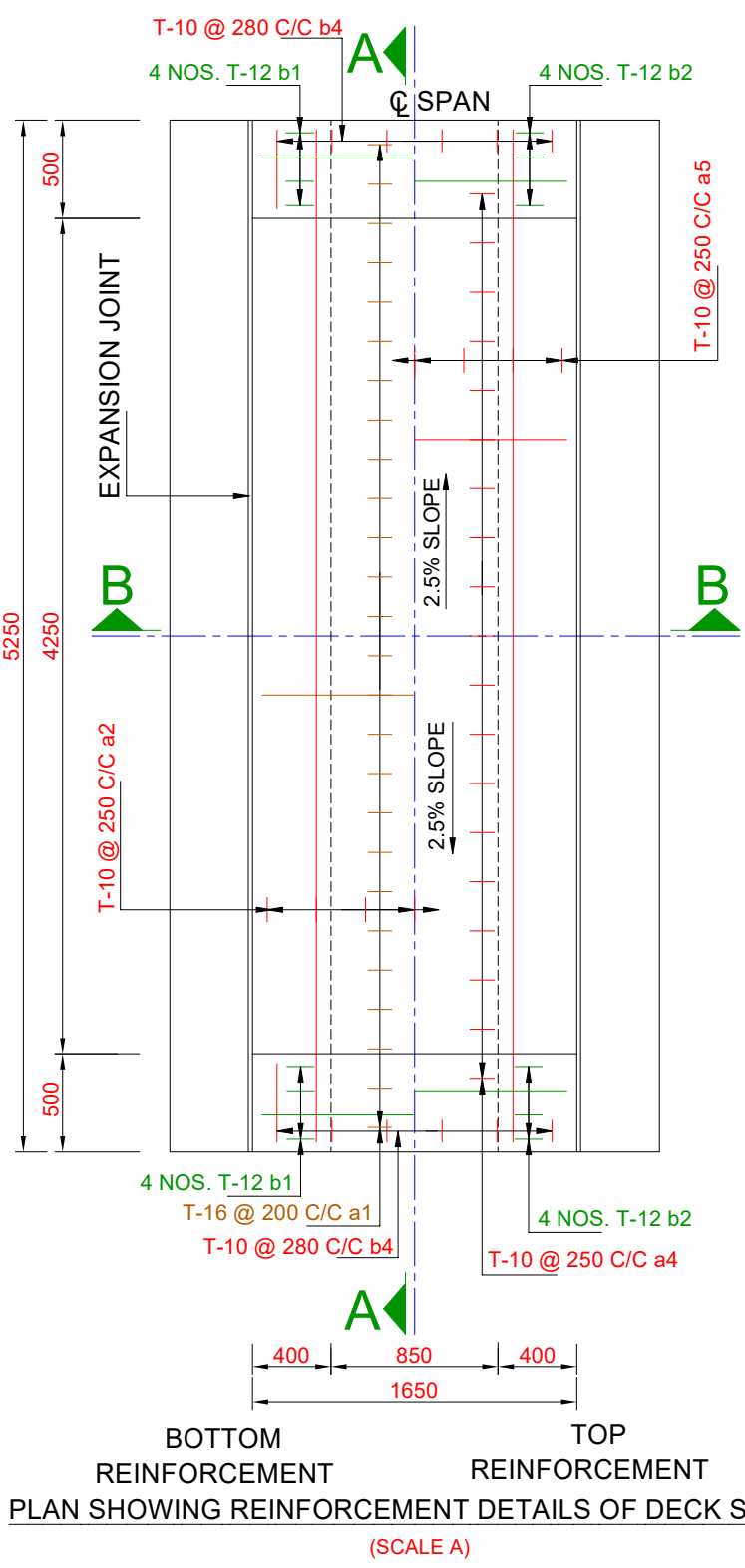
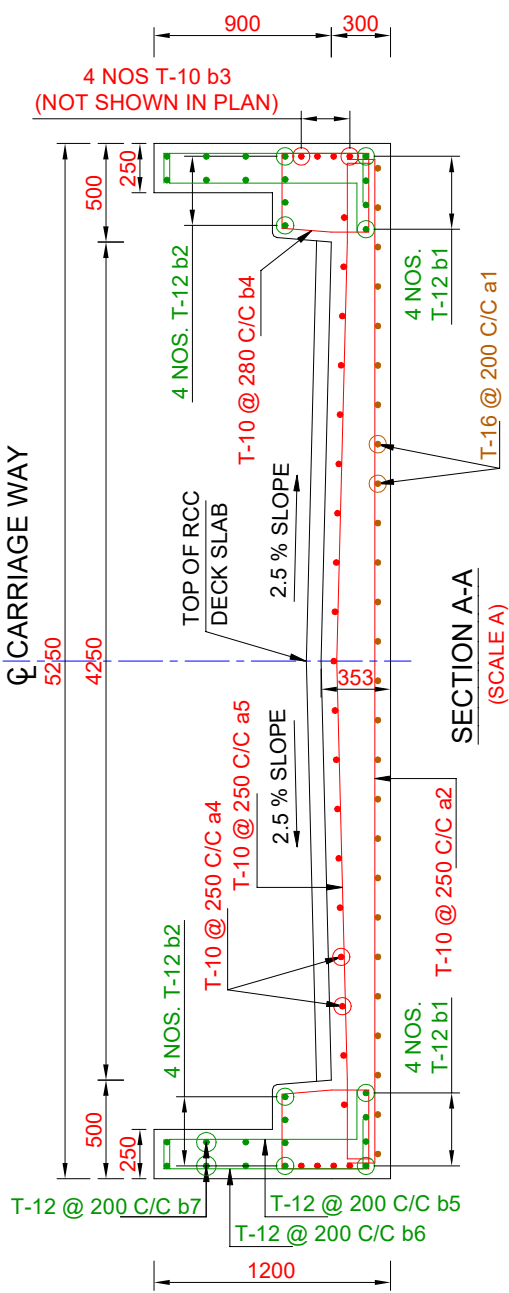
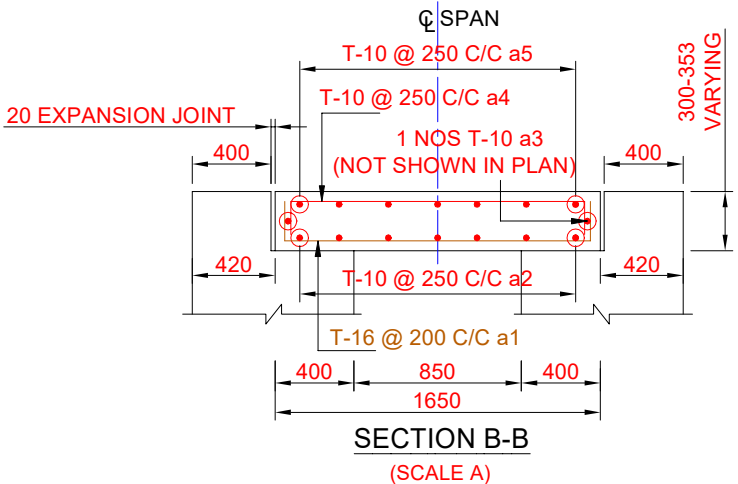
PLAN OF SLAB
FOR OPERATION KARI
(SCALE B)



WAPCOS LTD.



Approved by:-



BAR BENDING SCHEDULE

S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres))	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1		16	200	26
2	a2		10	250	7
3	a3		10	-	2
4	a4		10	250	19
5	a5		10	250	7
6	b1		12	-	4x2
7	b2		12	-	4x2
8	b3		10	-	4x2
9	b4		10	280	6x2
10	b5		12	200	8x2
11	b6		12	200	8x2
12	b7		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.

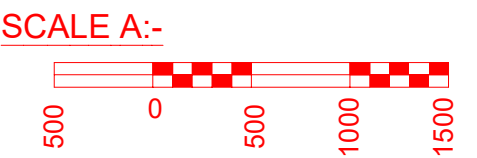
11. 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.

12. APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.

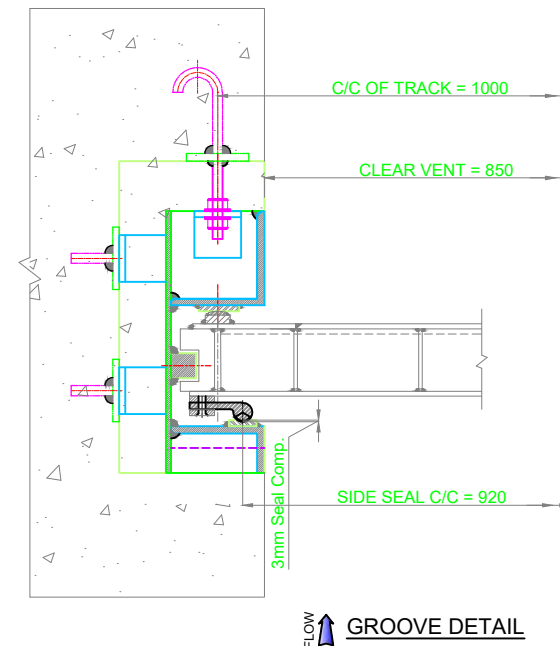
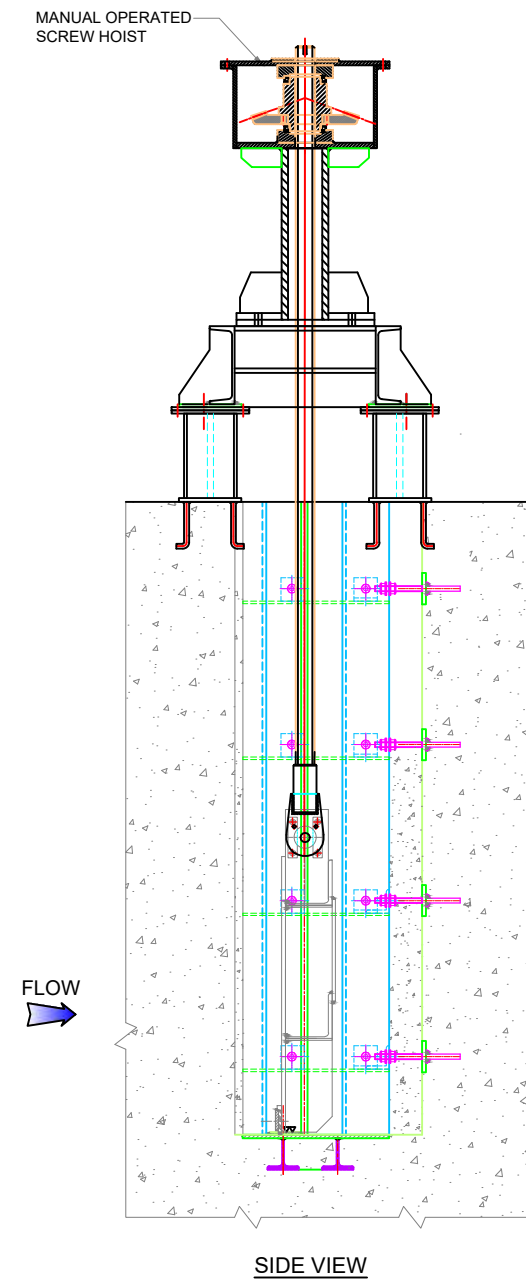
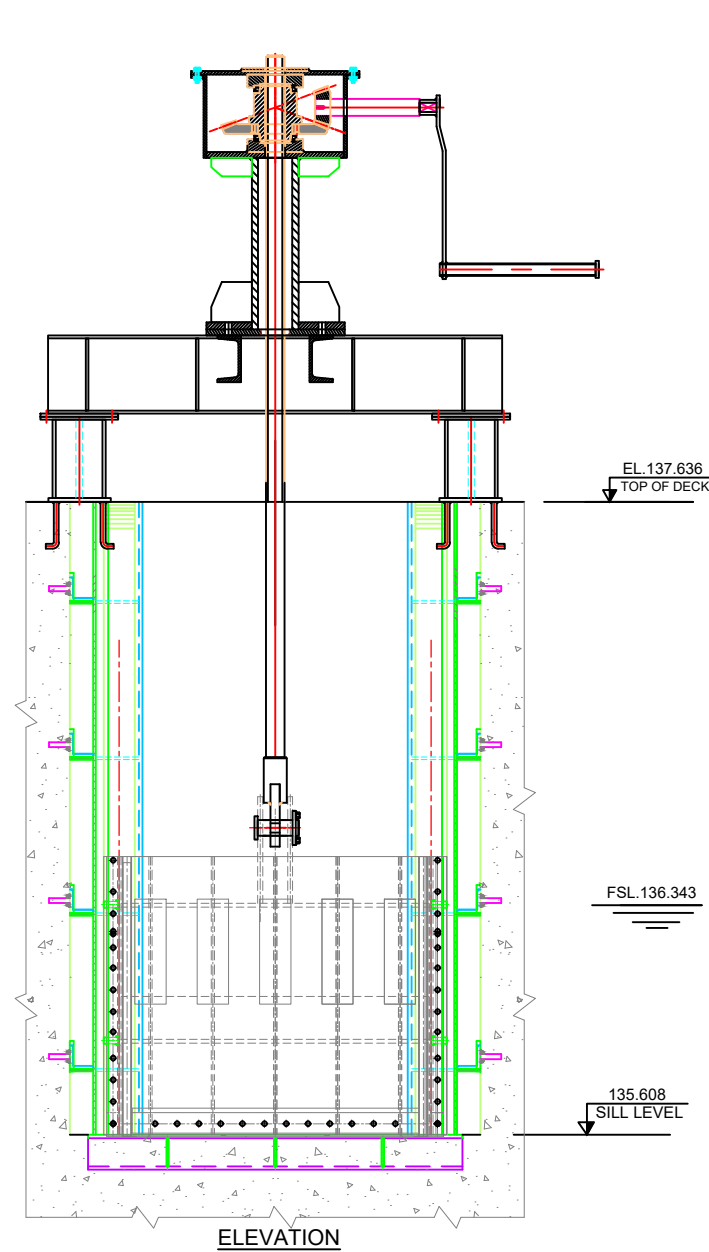
13. TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.

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.

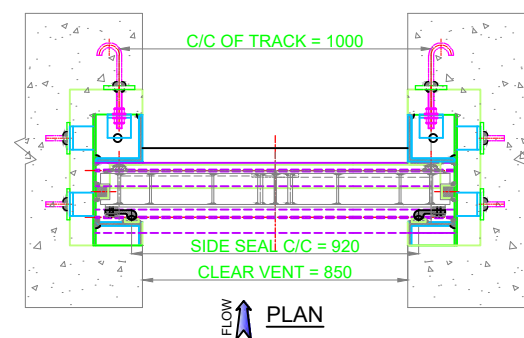


Prepared by :- WAPCOS LTD. (एनपीएल लिमिटेड का उपक्रम - जल संसाधन विभाग) (A Government of India Undertaking - Ministry of Water Resources)	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR OF DEO MR. (OFFTAKE FROM RMC RD - 71+930 KM. (LT),	
	Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-26/HR-1	04 of 04
	Drawn by:-	Checked by:-	Approved by:-

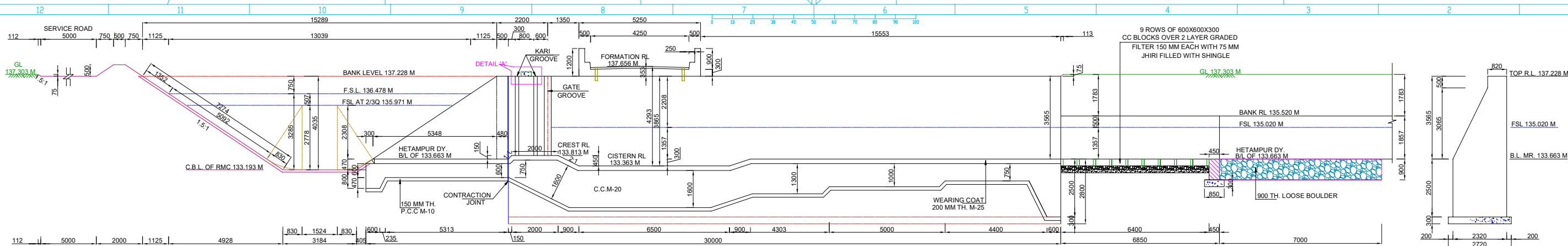


TECHNICAL DETAILS	
HEAD REGULATOR GATE OF DEO MR.	
NO OF VENTS	2 No.
NO OF GATES	2 No.
TYPE OF GATE	SLIDE TYPE
CLEAR VENT WIDTH	850 mm
CLEAR VENT HEIGHT	735mm + 150 mm (Free Board) 885
SILL LEVEL	EL. 135.608 M
DECK LEVEL	EL. 137.636 M
FSL	EL. 136.343 M
DESIGN HEAD	0.735 M
C/C OF SIDE SEAL	920 mm
C/C OF SLIDE TRACK	1000 mm
LOCATION OF SKIN PLATE	U/s SIDE
LOCATION OF SIDE SEAL	U/s SIDE
OPERATED BY	MANUAL OPERATED SCREW HOIST
DESIGN OF GATE	IS : 5620

NOTE:
 1. ALL DIMENSIONS ARE IN MM.
 2. ALL WELDS ARE 6mm FILLET UNLESS OTHERWISE SPECIFIED.
 3. STRUCTURAL STEEL CONFIRMING TO IS2062 - 2006 GRADE - E = 250 - A/B.
 4. ARRANGEMENT SHOWN IN DRAWING IS TENTATIVE. MAY UNDER GO REVISION REVISION DURING DETAIL DESIGN STAGE

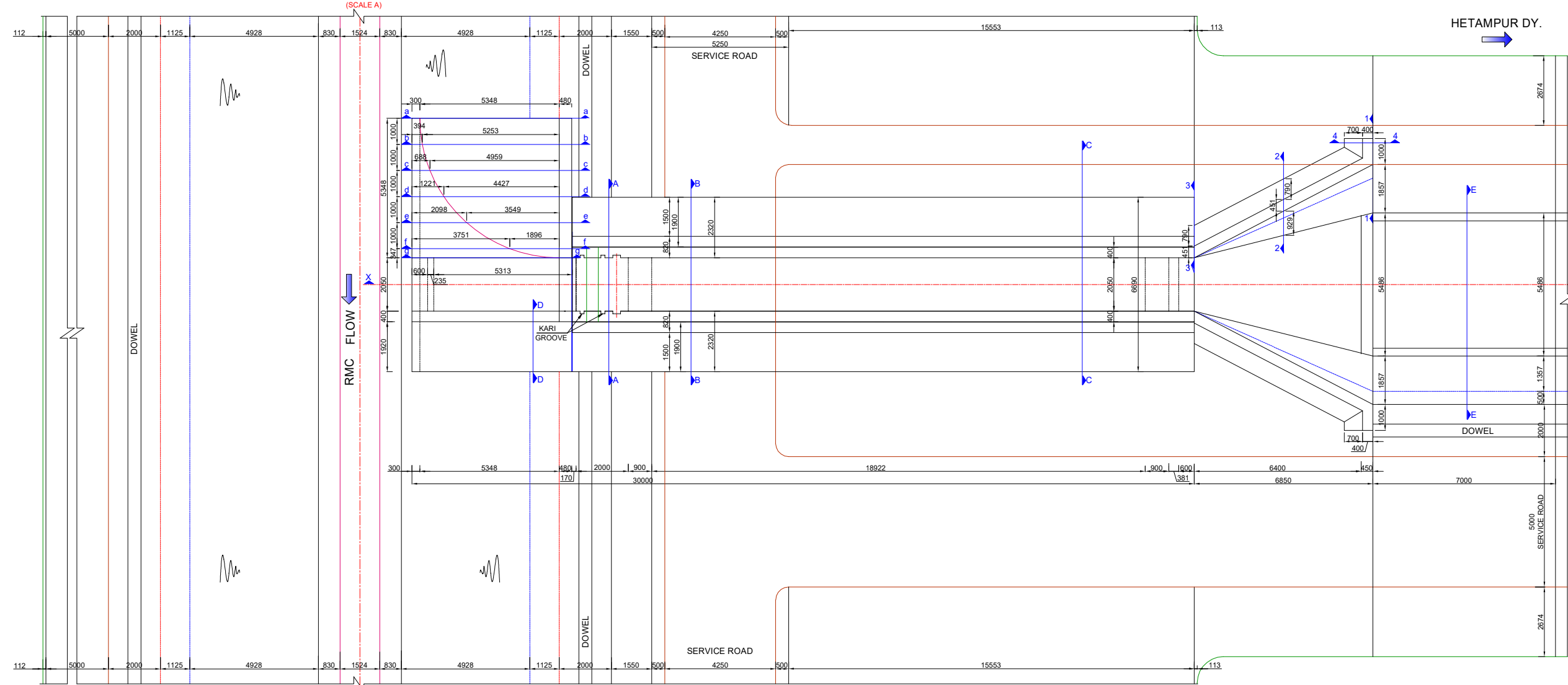


Prepared by :- WAPCOS LTD.  (एनपीएल लिमिटेड - एनपीएल लिमिटेड) (A Government of India Undertaking - Ministry of Water Resources)	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	
	Drawing Title :-	G.A.D. OF HEAD REGULATOR OF DEO MINOR(OFF TAKE FROM RMC RD-71+930 KM,(LT)) GENERAL ARRANGEMENT	
	Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-13/HM-014	
	Drawn by:-	Checked by:-	Approved by:-

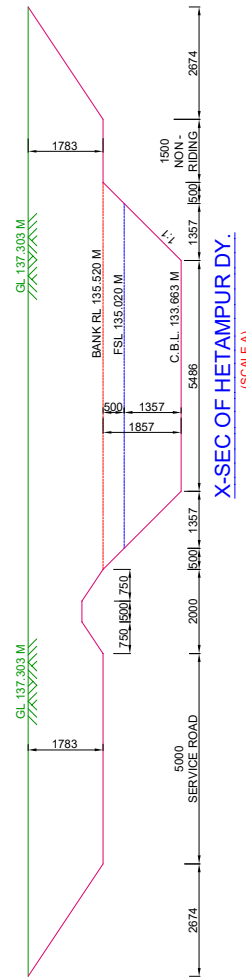


X- SEC OF RIGHT MAIN CANAL (SECTION X-X)

SECTION D-D



PLAN OF HEAD REGULATOR



X-SEC OF HETAMPUR DY.

DESIGN DATA :- RIGHT MAIN CANAL

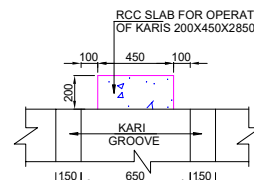
DISCHARGE OF FEEDER	27.13 CUMECs
BED WIDTH	1.524 M
WATER DEPTH	3.285 M
FREE BOARD	0.750 M
BED LEVEL	133.193 M
F.S.L.	136.478 M
GROUND LEVEL	137.303 M
HETAMPUR DY.	
CHAINAGE	73.660 M
DISCHARGE	5.002 CUMEC OR 176.65 CUSEC
BED WIDTH	5.486 M
WATER DEPTH	1.357 M
SIDE SLOPE	1:1
FREE BOARD	0.500 M
BED LEVEL	133.663 M
F.S.L.	135.020 M
CREST LEVEL	133.813 M
WIDTH OF CREST	2.0 M
BED SLOPE	18.5 CM/ M

NOTES:-

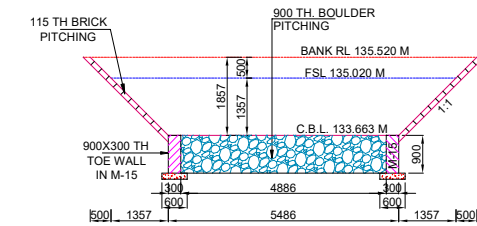
(A) GENERAL

- THE STRUCTURE IS DESIGNED FOR MINIMUM SAFE BEARING CAPACITY OF 20 T/SQ. M.
- ALL DIMENSIONS ARE IN MM AND R.L. IN M UNLESS OTHERWISE MENTIONED. NO DRAWING SHALL BE SCALED OFF.
- DESIGN CRITERIA
 - THE DRAWING IS ACCORDING TO THE FOLLOWING BIS CODES AND CRITERIA.
 - IRC-5-1998
 - IS: 6531-1972
 - IRC-5-1998
 - IS: 456-2000
 - UPID DESIGN CRITERIA
 - THE HEAD REGULATOR IS PROPERLY ALIGNED TO CHECK EXCESSIVE SILT ENTRY IN TO THE OFFTAKE CHANNEL.
 - 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.
 - 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.

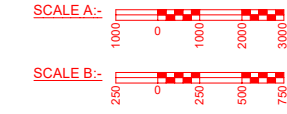
- FLOOR IS DESIGNED AS GRAVITY FLOOR AND MADE SAFE AGAINST UPLIFT PRESSURE FOR STATIC AND DYNAMIC CONDITIONS.
- THE U/S SIDE WING WALL SHALL BE WRAPPED FROM VERTICAL NEAR ITS JUNCTION WITH ABUTMENT TO 1.5:1 SIDE SLOPE OF CHANNEL IN THE END.
- D/S TRANSITIONS, U/S & D/S PROTECTION WORKS ARE PROVIDED AS PER IS CODE 6531-1972.
- 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.
- THE DESIGN OF DECK SLAB HAS BEEN ADOPTED AS PER M.O.S.T. DESIGN.
- ALL CONCRETE WORK SHALL COFORM TO IS: 456-2000. WITH FOLLOWING GRADE OF CONCRETE:-
 - SLAB, CRASH BARRIER AND WEARING COAT M-25
 - FLOOR, ABUTMENT AND TRANSITIONS M-20
 - C.C.BLOCKS AND TOE WALLS M-15
 - D.P.C.C. M-10
- M-20 CONCRETE SHALL BE USED FOR GATE EMBEDMENTS.
- BRIDGE ROADWAY HAS BEEN PROVIDED 4.250 M WIDE AS PER IRC 5.



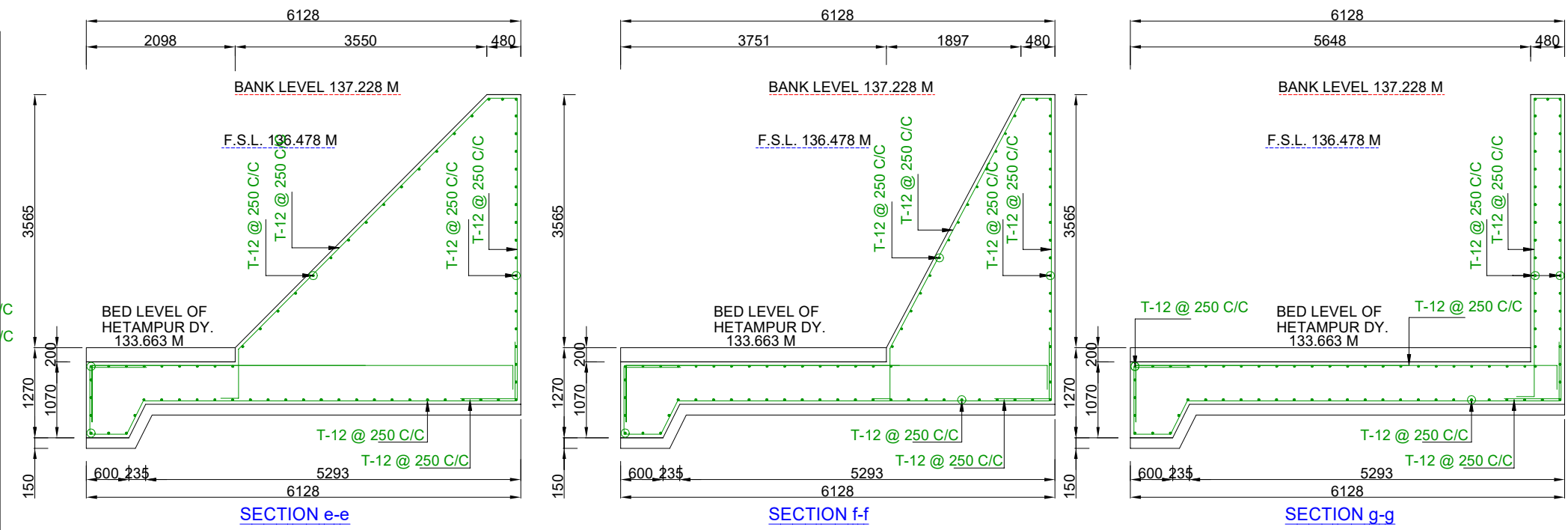
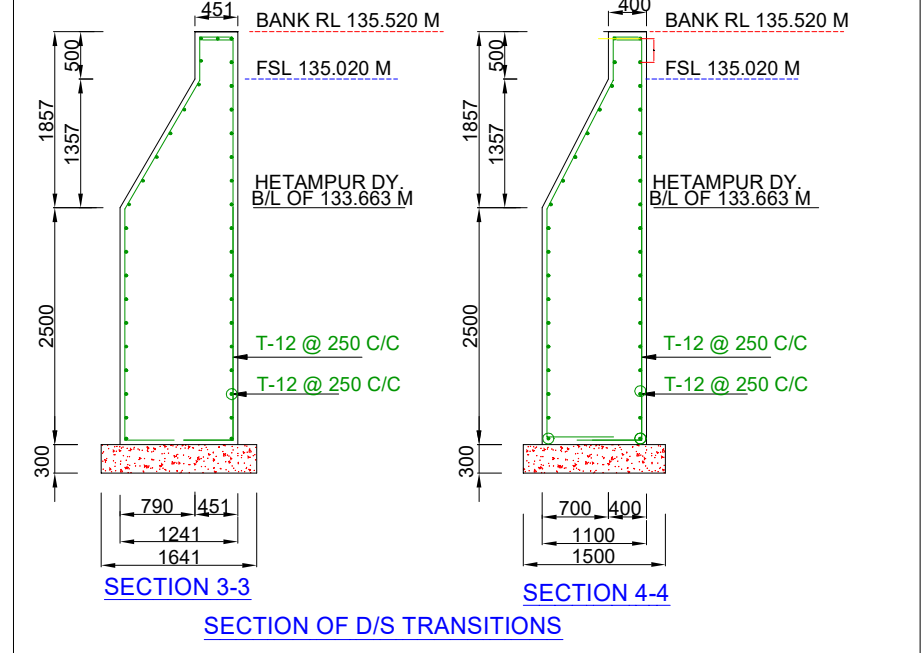
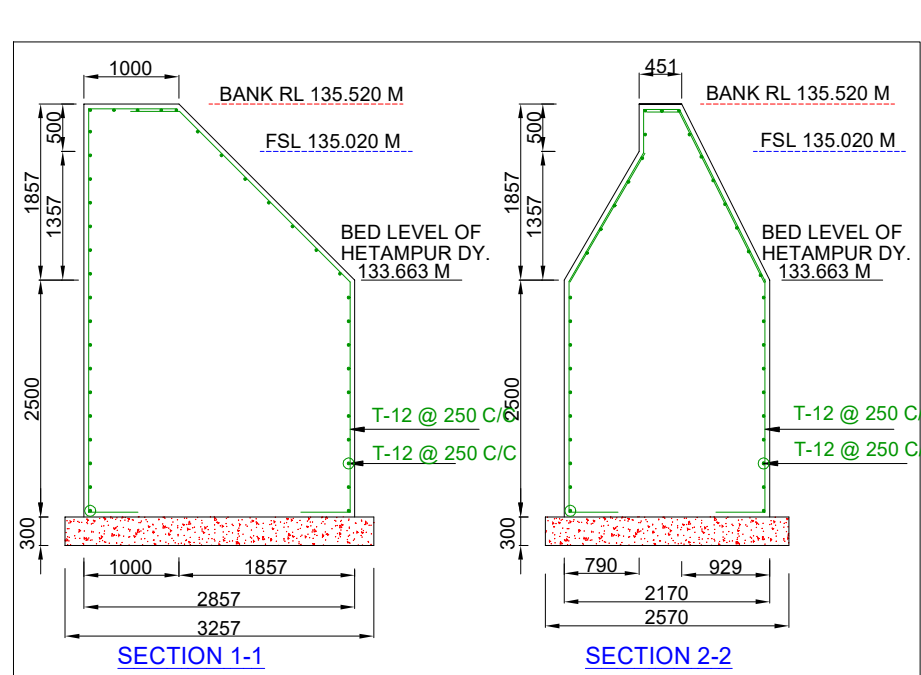
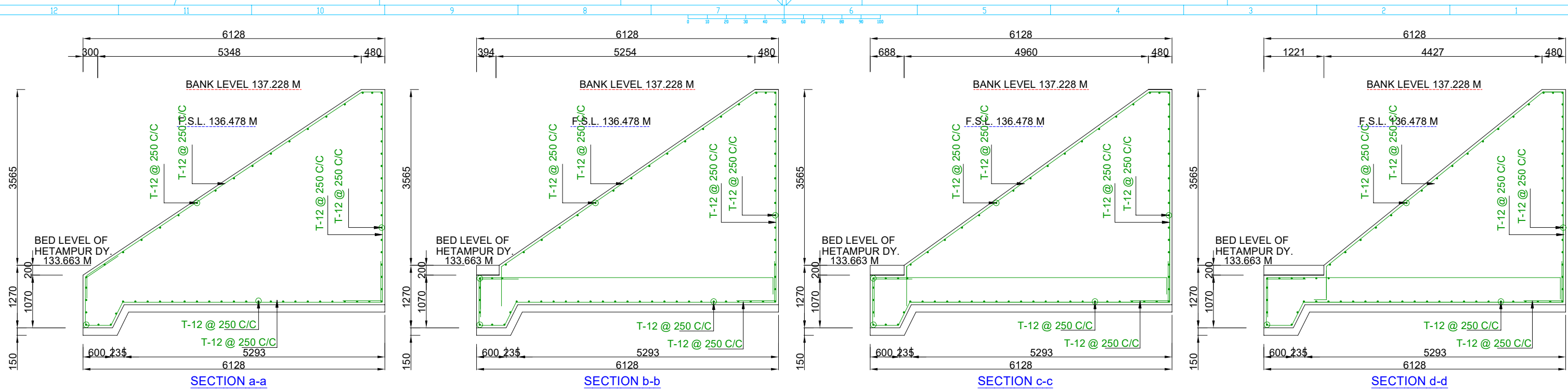
DETAIL 'A'



SECTION E-E

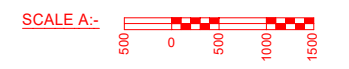


Prepared by :- WAPCOS LTD.  (एनएसएल सरकार का उपक्रम - नवल संस्थापन संस्थागत) (A Government of India Undertaking - Ministry of Water Resources)	Project Title :- NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND
	Drawing Title :- G.A.D. OF HEAD REGULATOR OF HETAMPUR DY. (OFFTAKE FROM RMC RD - 73+660 KM. (LT),
Drawing No. :- WAP/INFRA/NORTH KOEL/RMC/R-27/HR-1	01 of 04
Drawn by:-	Checked by:-
	Approved by:-

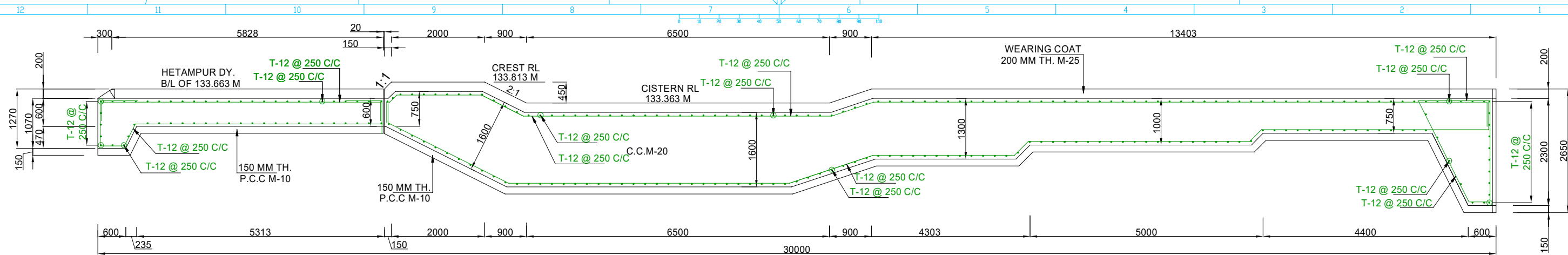


NOTES:-

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

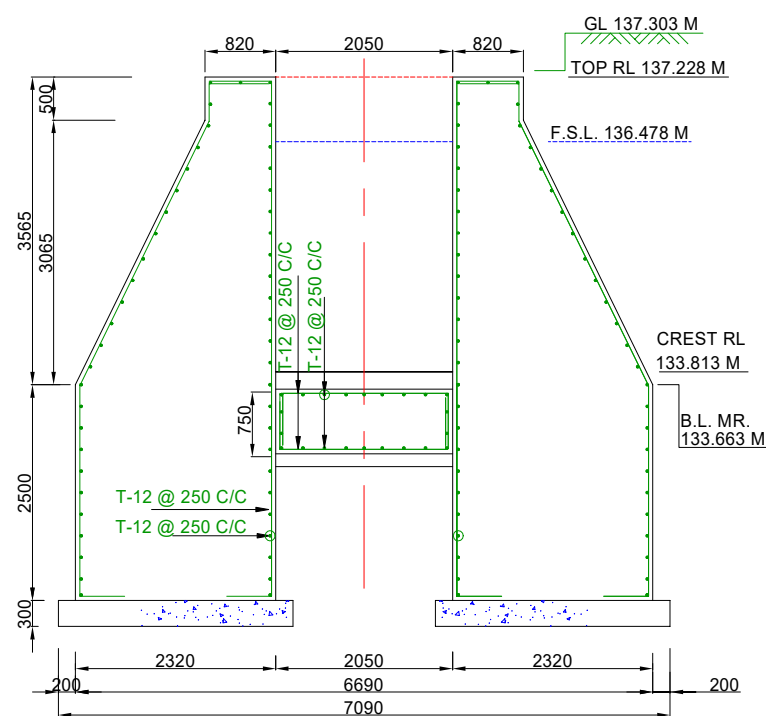


Prepared by :- WAPCOS LTD.		Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	
 (निर्वाह संस्थान का समर्थन - जल संसाधन विभाग) (A Government of India Undertaking - Ministry of Water Resources)		Drawing Title :-	SECTION DETAILS DRAWING OF HEAD REGULATOR OF HETAMPUR DY. (OFFTAKE FROM RMC RD - 73+660 KM. (LT),	
		Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-27/HR-1 02 of 04	
Drawn by:-		Checked by:-	Approved by:-	



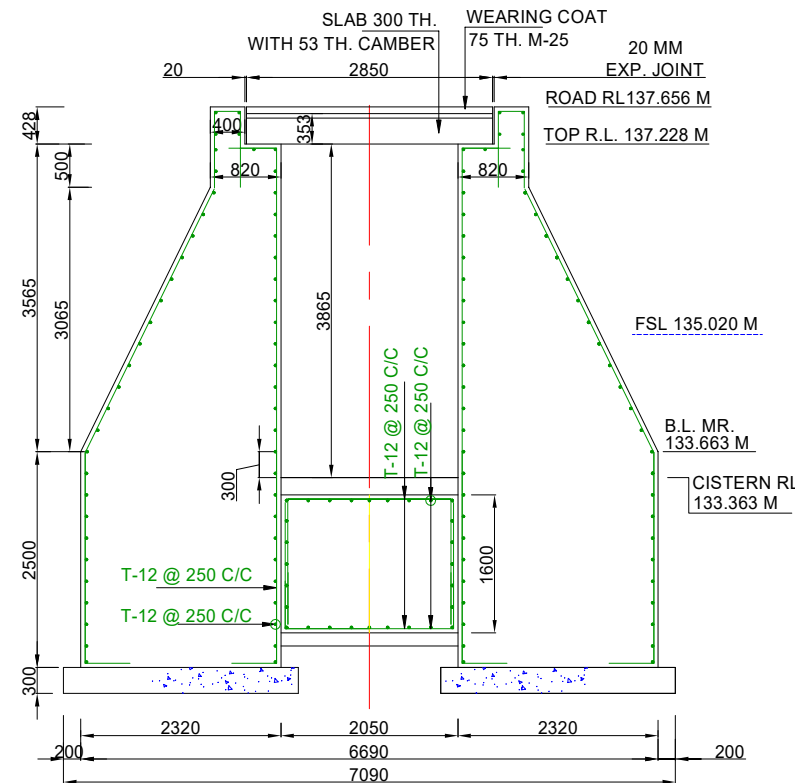
REINFORCEMENT DETAIL OF RAFT (SECTION X-X)

(SCALE A)



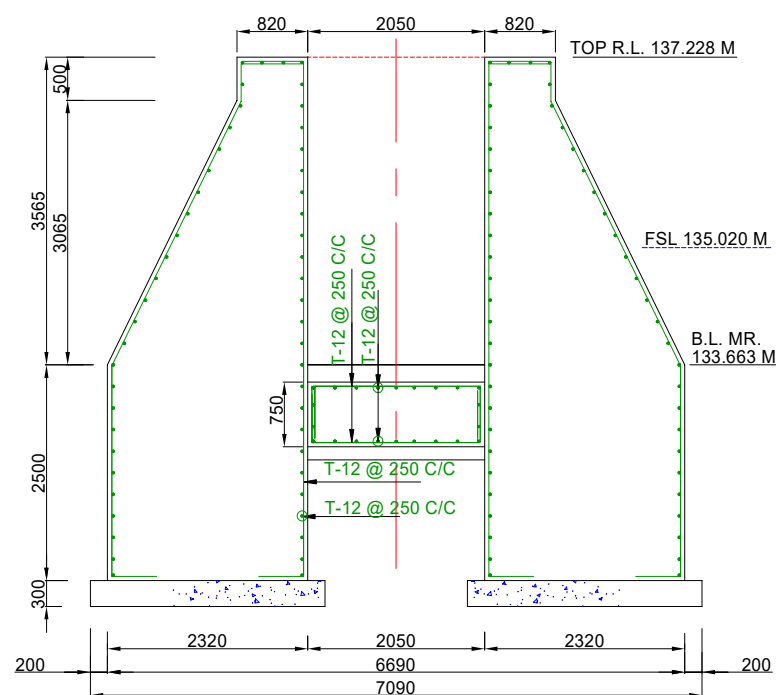
SECTION A-A
(AT CREST)

(SCALE A)



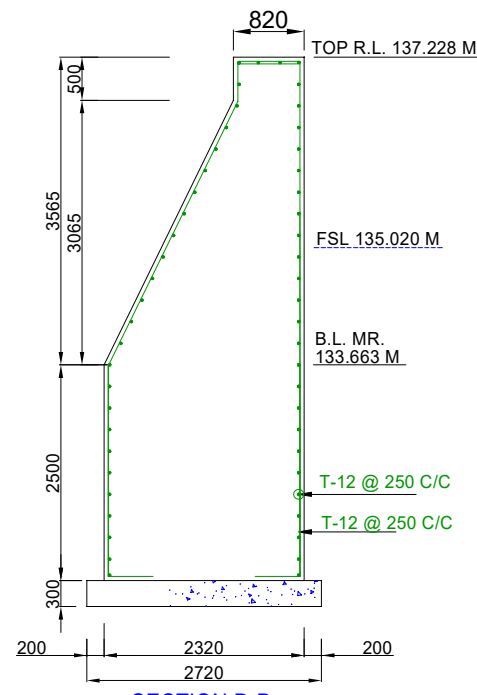
SECTION B-B
(AT CISTERN LEVEL)

(SCALE A)



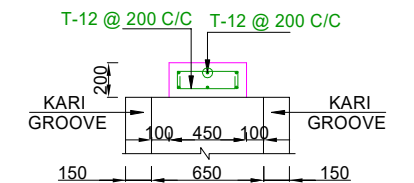
SECTION C-C
(AT D/S FLOOR)

(SCALE A)



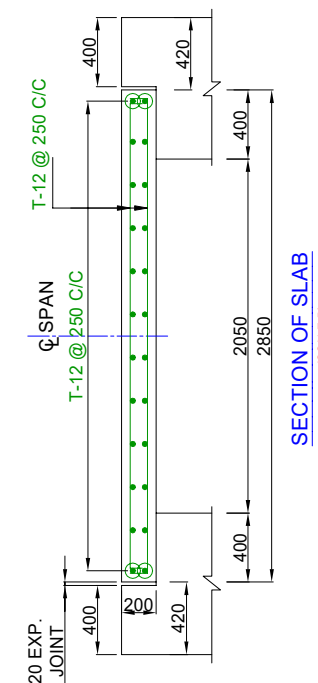
SECTION D-D

(SCALE A)



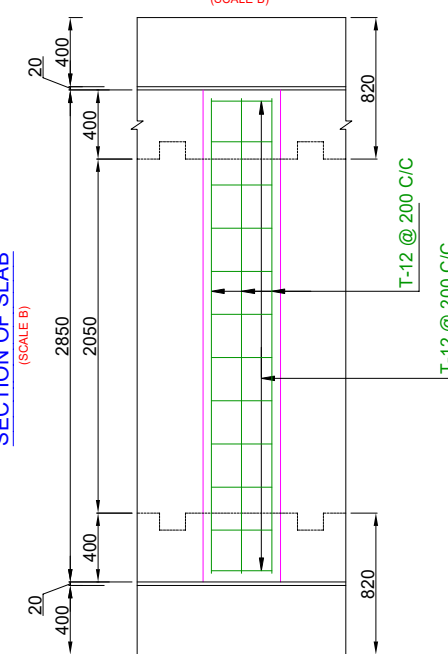
RCC SLAB FOR KARIS

(SCALE B)



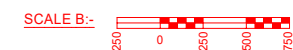
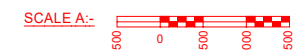
SECTION OF SLAB

(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 OF SECTION IN HEAD REGULATOR OF HETAMPUR DY. (OFFTAKE FROM RMC RD - 73+660 KM. (LT),

Drawing No. :-

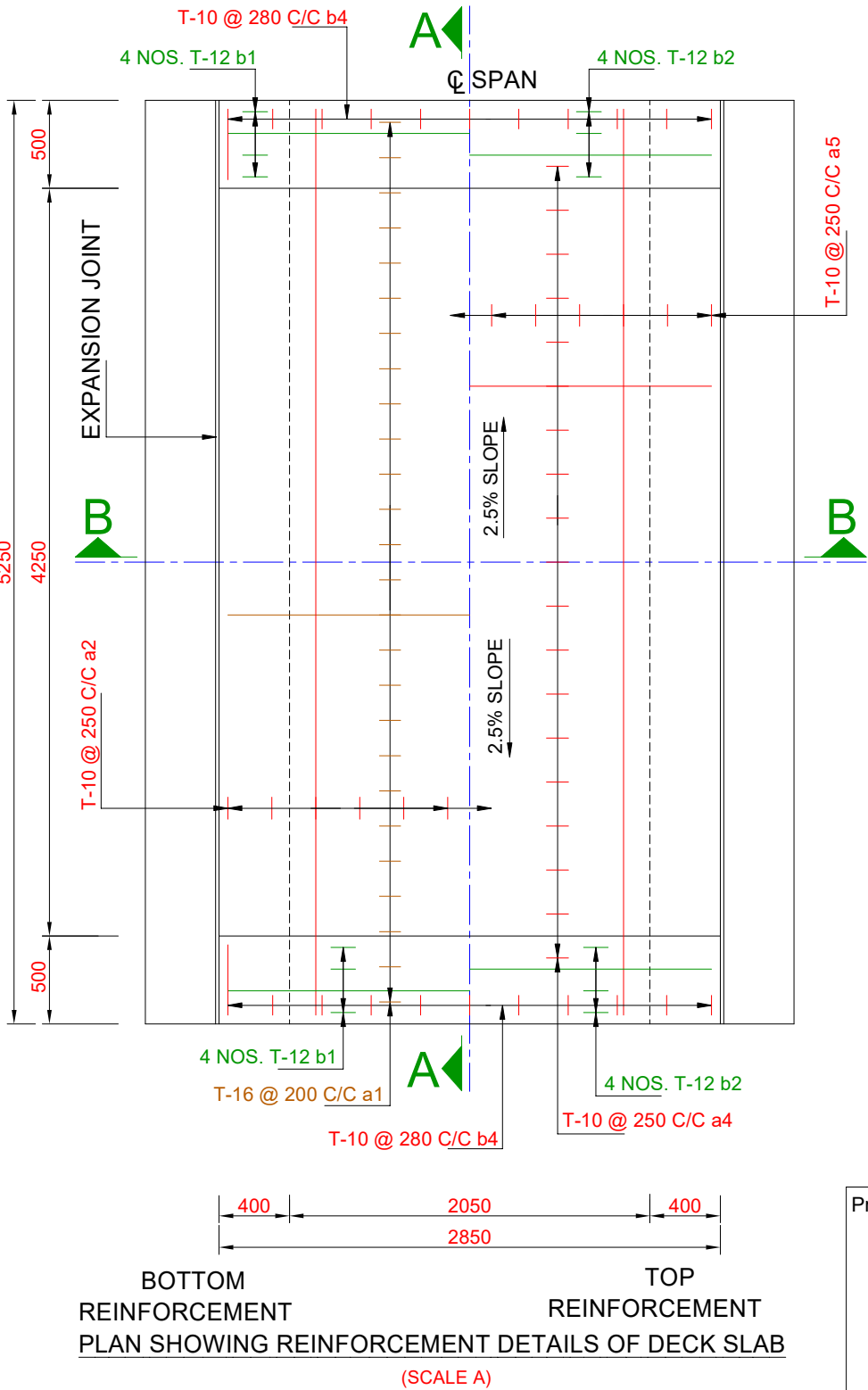
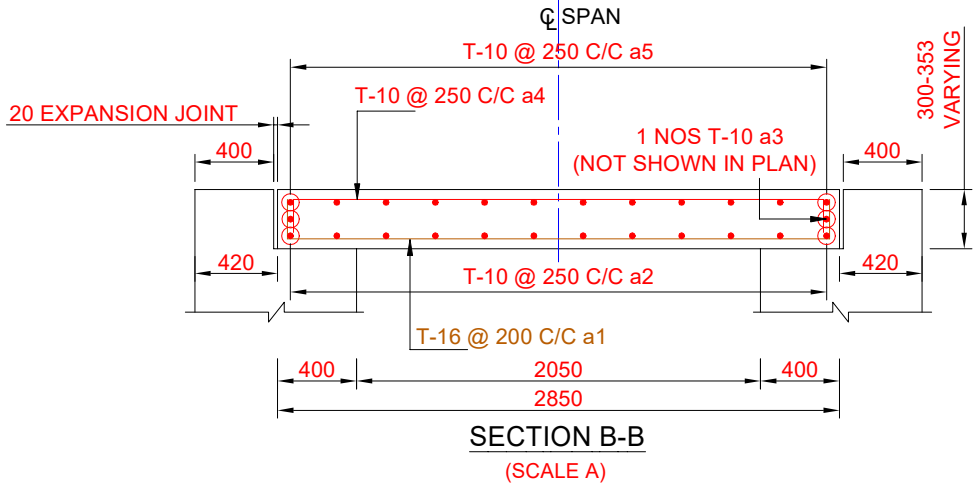
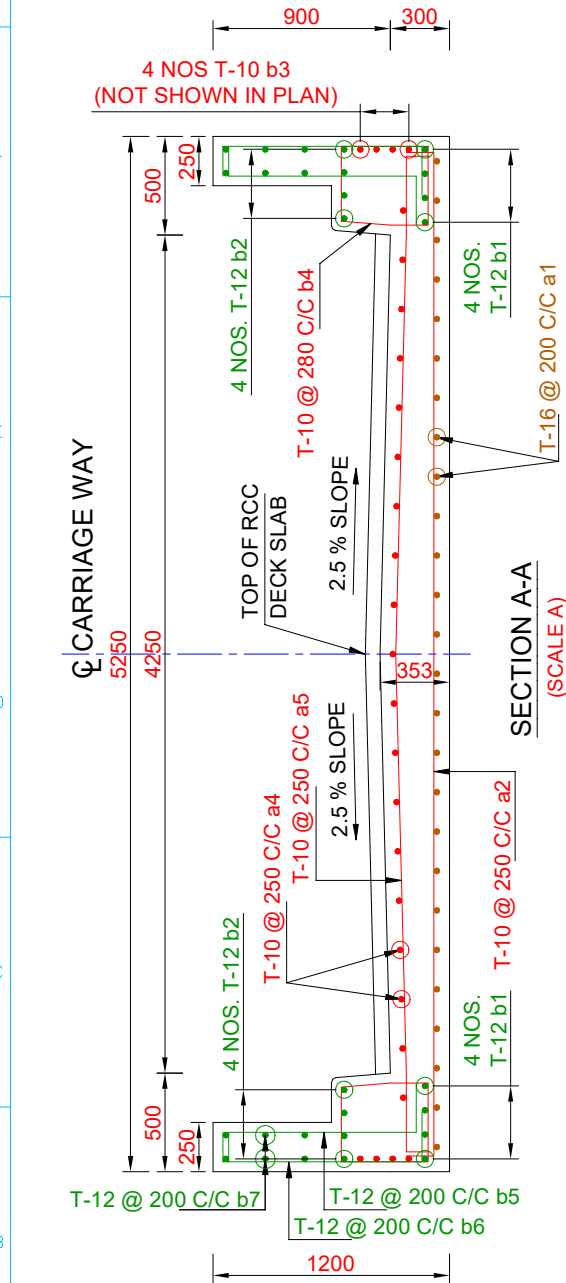
WAP/INFRA/NORTH KOEL/RMC/R-26/HR-1

03 of 04

Drawn by:-

Checked by:-

Approved by:-



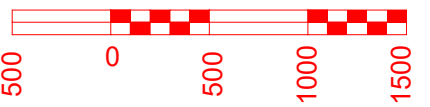
BAR BENDING SCHEDULE

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 2750 200	16	200	26
2	a2	200 5150 200	10	250	12
3	a3	5150	10	-	2
4	a4	200 2750 200	10	250	19
5	a5	200 450 2125 2125 450 200	10	250	12
6	b1	150 2750 150	12	-	4x2
7	b2	150 2750 150	12	-	4x2
8	b3	150 2750 150	10	-	4x2
9	b4	251 220 379 470 400	10	280	11x2
10	b5	150 1100 250	12	200	14x2
11	b6	150 1100 250	12	200	14x2
12	b7	150 2750 150	12	200	6x2

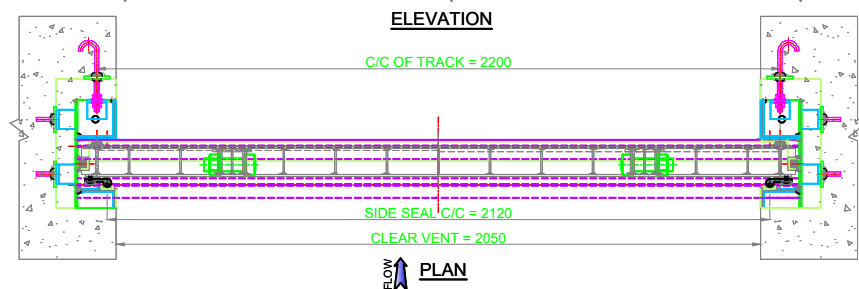
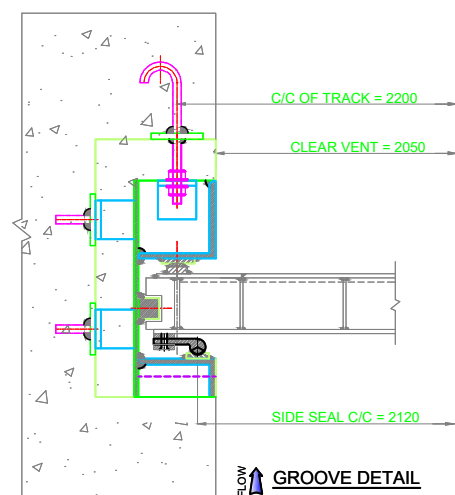
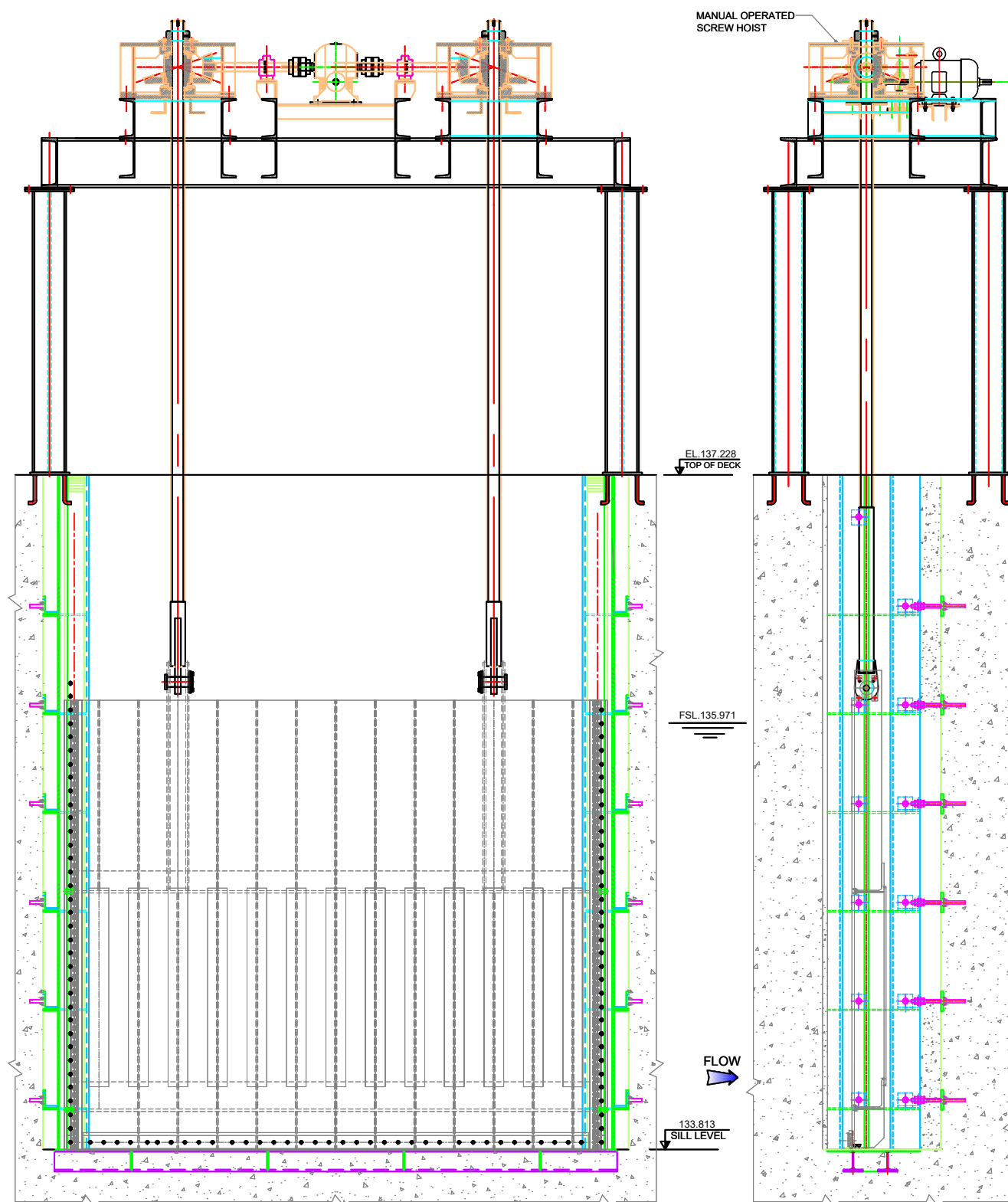
NOTES:-

- ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES EXCEPT OTHERWISE MENTIONED.
- THE DRAWING SHALL NOT BE SCALED OFF ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- ALL CONCRETE WORK SHALL CONFORM TO IS:456 - 2000. GRADE OF CONCRETE IN DIFFERENT COMPONENTS SHALL BE AS FOLLOWS, BRIDGE SLAB M 25
- THE DESIGN IS APPLICABLE FOR 'MODERATE CONDITION OF EXPOSURE FOR C.C.
- ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (Fe 415) COMFORMING I.S. 1786.
- MIN. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 MM OR UNLESS OTHERWISE SPECIFIED.
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED OTHERWISE.
- BENDING OF REINF. BARS SHALL CONFORM TO I.S. 2502.
- REINF. BARS SHALL BE CUT AND ADJUSTED TO ACCOMMODATE DRAINAGE SPOUT.
- TYPE OF RAILING SHALL BE DECIDED BY FIELD ENGINEERS.
- 75 MM THK. WEARING COAT IN M-25 CC SHALL BE PROVIDED.
- APPROACH SLAB & APPROACH SLAB SUPPORT SHALL BE DECIDED BY FIELD ENGINEERS ACCORDING TO THE SITE CONDITIONS.
- TARFELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.
- THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.
- 8 MM DIA BAR @ 200 C/C IN BOTH DIRECTION SHALL BE PROVIDED IN WEARING COAT AT MIDDLE DEPTH.

SCALE A:-



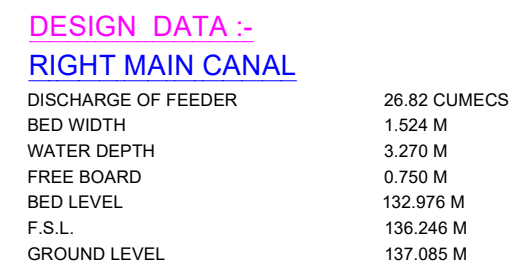
Prepared by :- WAPCOS LTD.  (भारत सरकार का उपक्रम - जल संसाधन विभाग) (A Government of India Undertaking - Ministry of Water Resources)	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR OF HETAMPUR DY. (OFFTAKE FROM RMC RD - 73+660 KM. (LT),	
	Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-27/HR-1	04 of 04
	Drawn by:-	Checked by:-	Approved by:-



NOTE:

- 1.ALL DIMENSIONS ARE IN MM.
- 2.ALL WELDS ARE 6mm FILLET UNLESS OTHERWISE SPECIFIED.
- 3.STRUCTURAL STEEL CONFIRMING TO IS2062 - 2006 GRADE - E = 250 - A/B.
4. ARRANGEMENT SHOWN IN DRAWING IS TENTATIVE. MAY UNDER GO REVISION REVISION DURING DETAIL DESIGN STAGE

	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
Prepared by :- WAPCOS LTD.  वाष्कोस लिमिटेड WAPCOS LIMITED (भारत सरकार का उद्योग — पब्लिक एंटरप्राइज निगम) (A Government of India Undertaking - Ministry of Water Resources)	Drawing Title :-	G.A.D. OF HEAD REGULATOR OF HETAMPUR DY. (OFF TAKE FROM RMC RD-73+660 KM,(LT)) GENERAL ARRANGEMENT		
	Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-13/HM-015		
	Drawn by:-	Checked by:-	Approved by:-	



<u>RASALPUR-1 MR.</u>	
CHAINAGE	75.180 M
DISCHARGE	0.27 CUMEC OR 9.535 CUSEC
BED WIDTH	1.402 M
WATER DEPTH	0.482 M
SIDE SLOPE	1:1
FREE BOARD	0.500 M
BED LEVEL	135.150 M
F.S.L.	135.632 M
CREST LEVEL	135.300 M
WIDTH OF CREST	2.0 M
BED SLOPE	33.3 CM/ KM

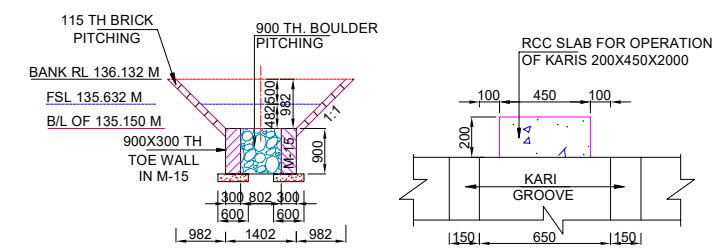
(A) GENERAL

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. UPD 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-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.



SECTION E-E

DETAIL 'A'



Prepared by :-

WAPCOS LTD.



Project Title :-

Drawing Title :-

Drawing No. :-

Drawn by:-

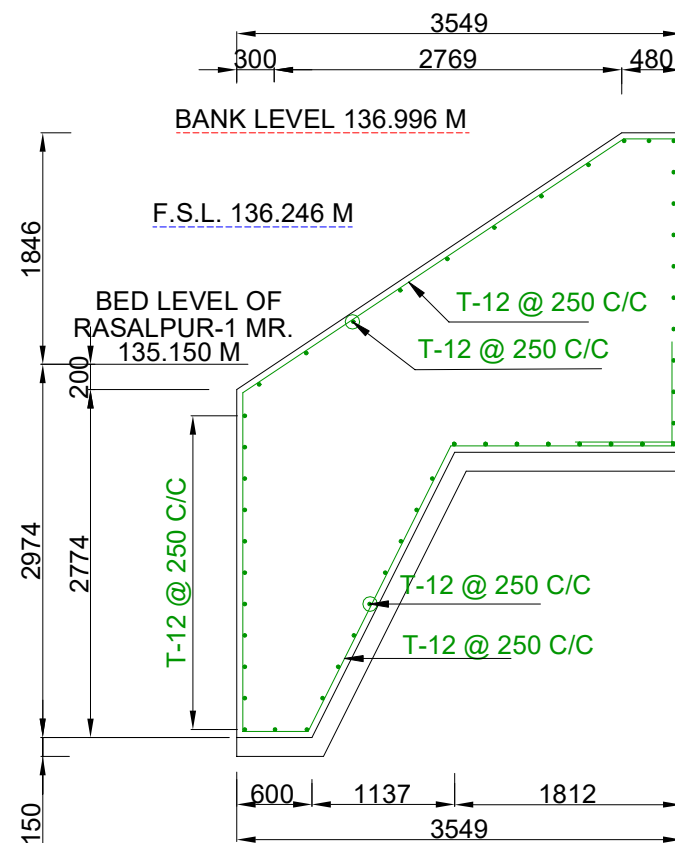
NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

G.A.D. OF HEAD REGULATOR OF RASALPUR-1 MR.
(OFFTAKE FROM RMC RD - 75+180 KM. (LT),

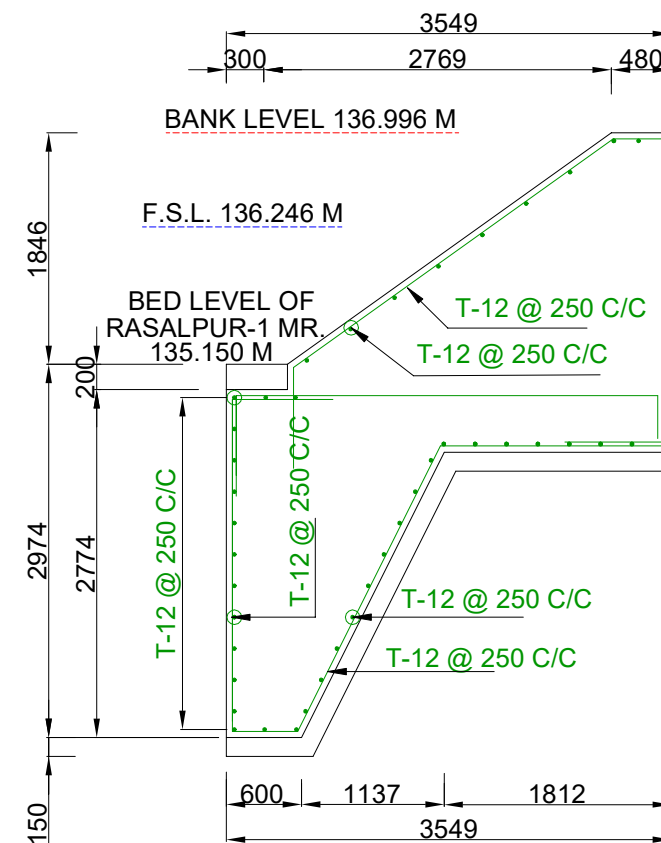
WAP/INFRA/NORTH KOEL/RMC/R-28/HR-1 01 of 04

Checked by:-

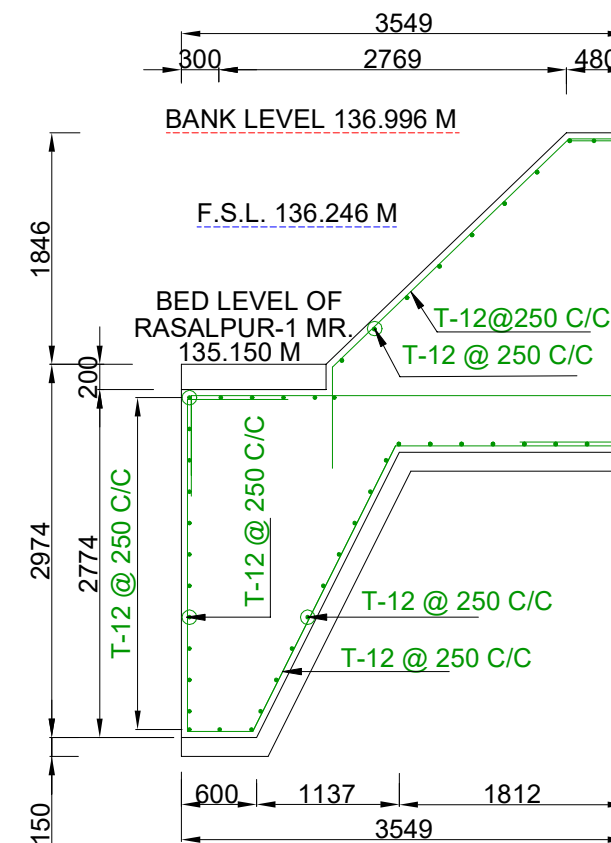
Approved by:-



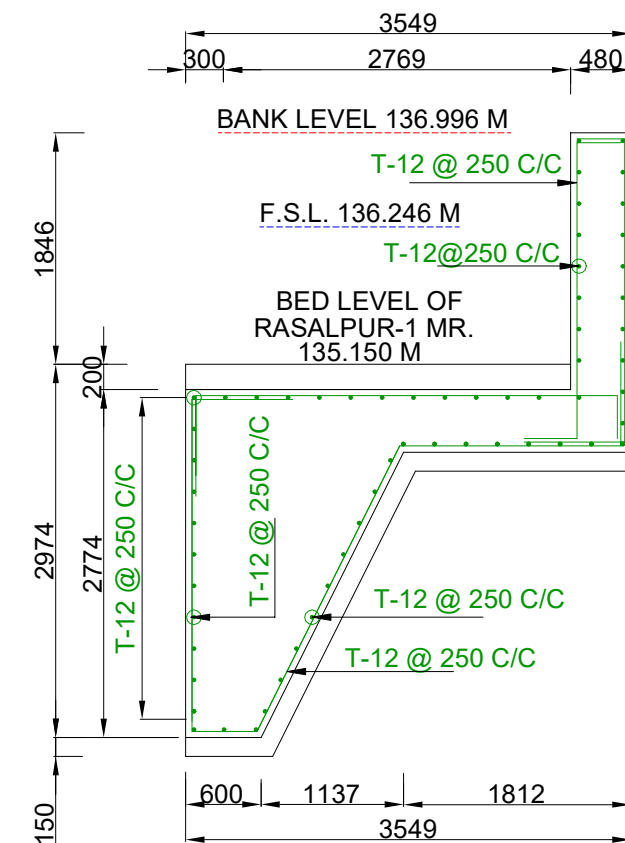
SECTION a-a



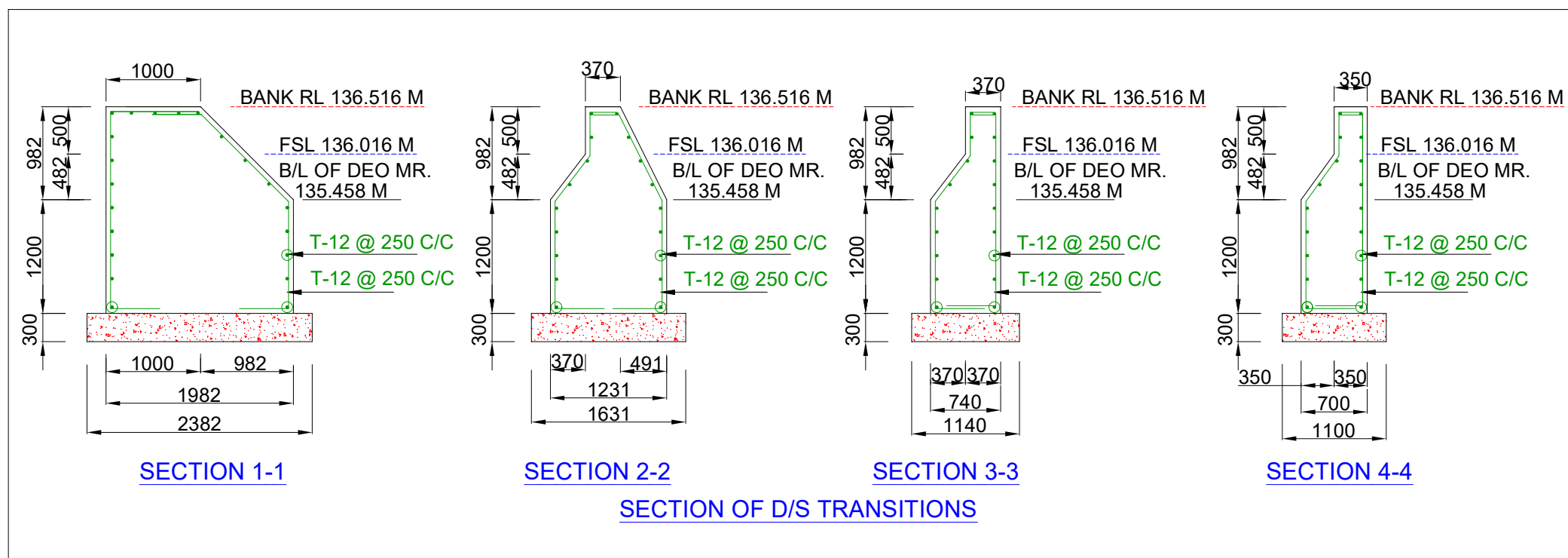
SECTION b-b



SECTION c-c



SECTION d-d



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.

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

SECTION DETAILS DRAWING OF HEAD REGULATOR OF RASALPUR-1 MR. (OFFTAKE FROM RMC RD - 75+180 KM. (LT),

Drawing No. :-

WAP/INFRA/NORTH KOEL/RMC/R-28/HR-1

02 of 04

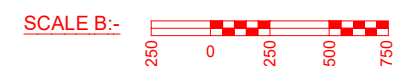
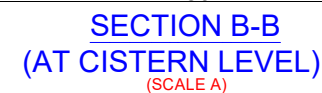
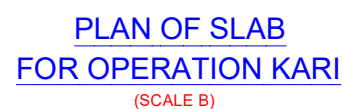
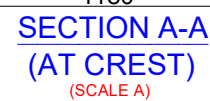
Drawn by:-

Checked by:-

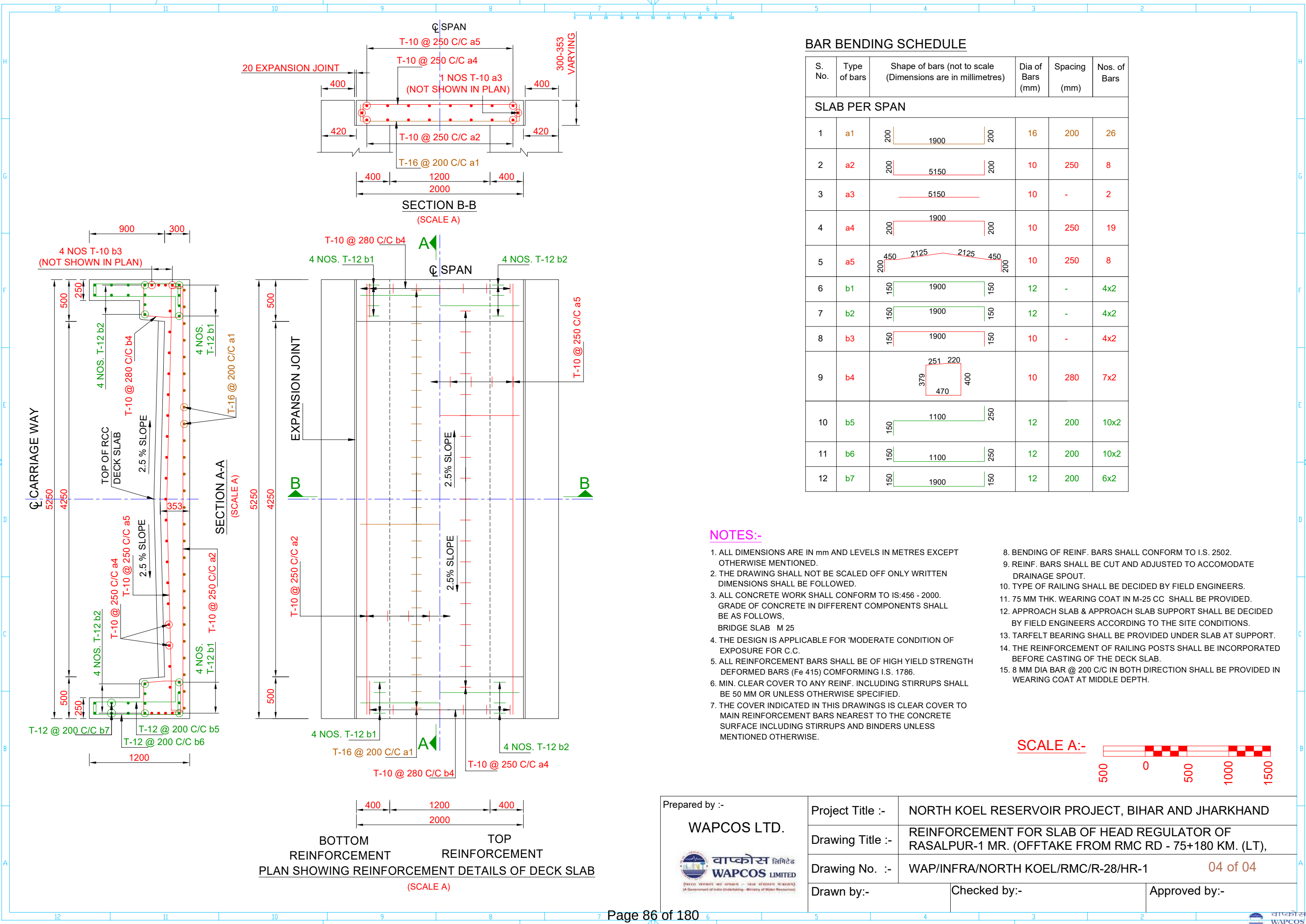
Approved by:-

SCALE A:-





वाष्कोस लिमिटेड
WAPCOS LIMITED



BAR BENDING SCHEDULE

S. No.	Type of bars	Shape of bars (not to scale (Dimensions are in millimetres)	Dia of Bars (mm)	Spacing (mm)	Nos. of Bars
SLAB PER SPAN					
1	a1		16	200	26
2	a2		10	250	8
3	a3		10	-	2
4	a4		10	250	19
5	a5		10	250	8
6	b1		12	-	4x2
7	b2		12	-	4x2
8	b3		10	-	4x2
9	b4		10	280	7x2
10	b5		12	200	10x2
11	b6		12	200	10x2
12	b7		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. TAFEELT BEARING SHALL BE PROVIDED UNDER SLAB AT SUPPORT.

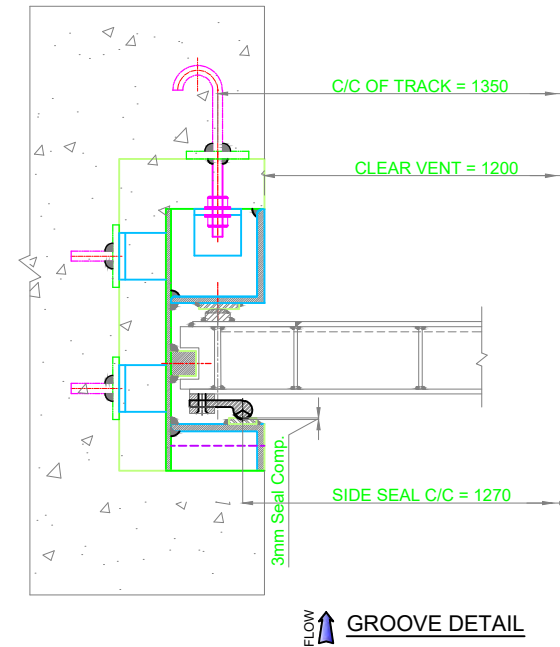
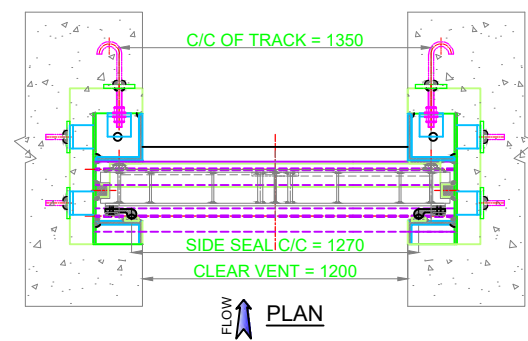
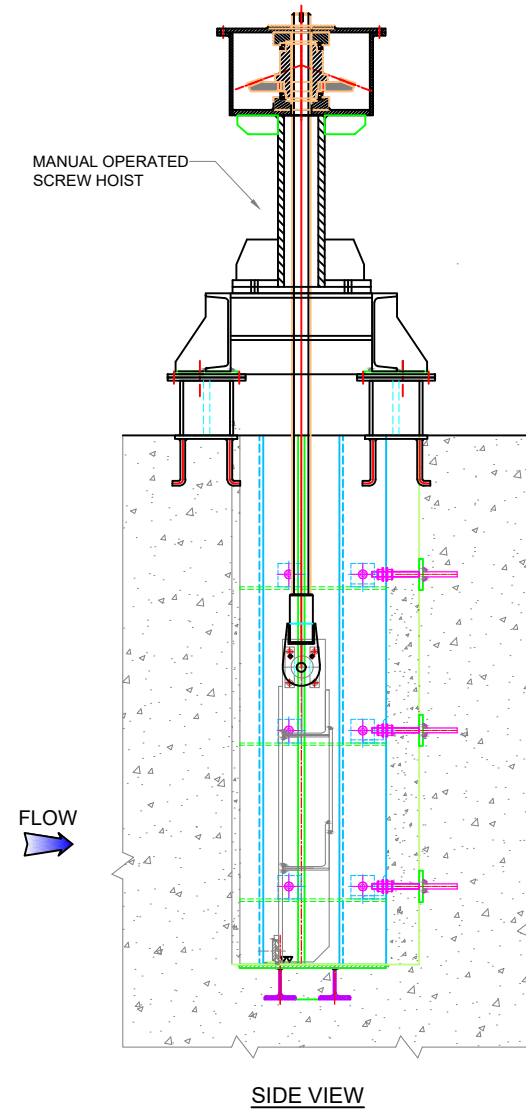
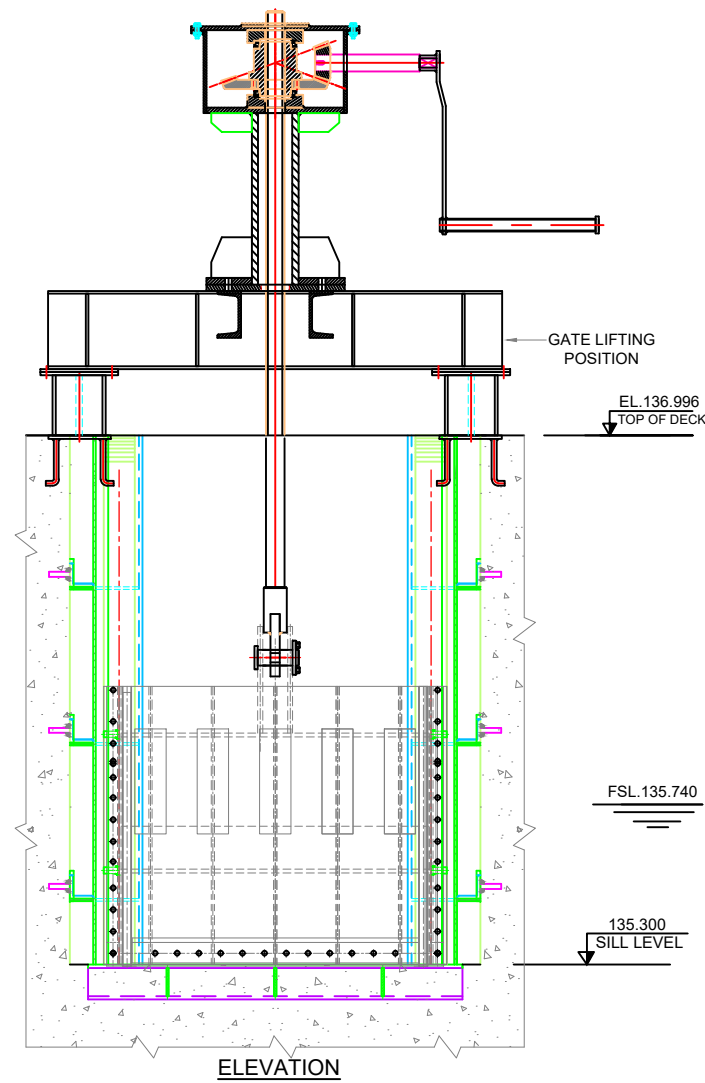
14. THE REINFORCEMENT OF RAILING POSTS SHALL BE INCORPORATED BEFORE CASTING OF THE DECK SLAB.

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. (भारत सरकार का उपकरण - जल संसाधन विभाग) (A Government of India Undertaking - Ministry of Water Resources)	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND	
	Drawing Title :-	REINFORCEMENT FOR SLAB OF HEAD REGULATOR OF RASALPUR-1 MR. (OFFTAKE FROM RMC RD - 75+180 KM. (LT),	
	Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-28/HR-1	04 of 04
	Drawn by:-	Checked by:-	Approved by:-



TECHNICAL DETAILS		
HEAD REGULATOR GATE OF RASALPUR-1 MR.		
NO OF VENTS	1 No.	
NO OF GATES	1 No.	
TYPE OF GATE	SLIDE TYPE	
CLEAR VENT WIDTH	1200 mm	
CLEAR VENT HEIGHT	440mm + 150 mm (Free Board) 590	
SILL LEVEL	EL. 135.30 M	
DECK LEVEL	EL. 136.996 M	
FSL	EL. 135.740 M	
DESIGN HEAD	0.440 M	
C/C OF SIDE SEAL	1270 mm	
C/C OF SLIDE TRACK	1350 mm	
LOCATION OF SKIN PLATE	U/s SIDE	
LOCATION OF SIDE SEAL	U/s SIDE	
OPERATED BY	MANUAL OPERATED SCREW HOIST	
DESIGN OF GATE	IS : 5620	

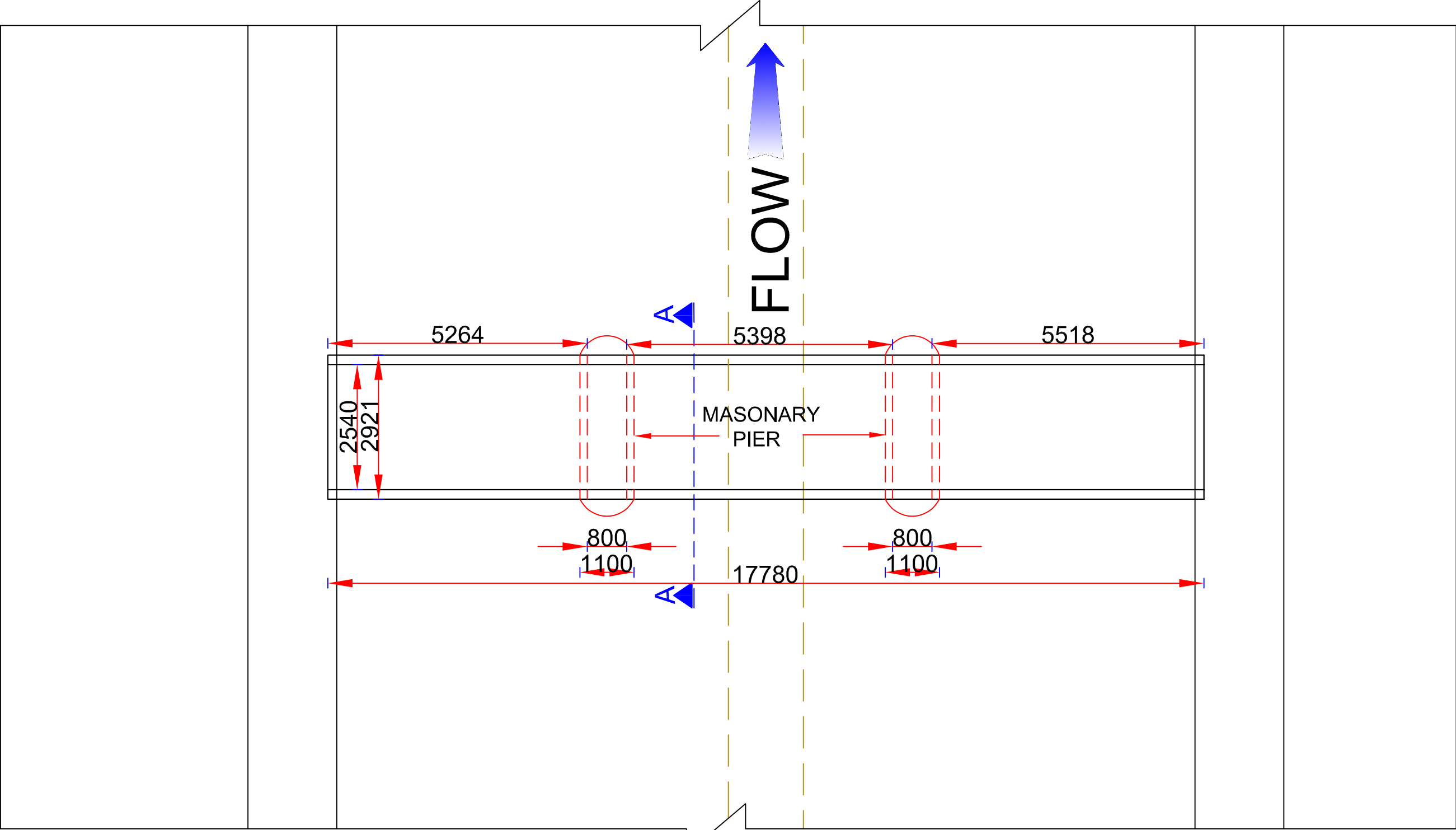
NOTE:

1. ALL DIMENSIONS ARE IN MM.
2. ALL WELDS ARE 6mm FILLET UNLESS OTHERWISE SPECIFIED.
3. STRUCTURAL STEEL CONFIRMING TO IS2062 - 2006 GRADE - E = 250 - A/B.
4. ARRANGEMENT SHOWN IN DRAWING IS TENTATIVE. MAY UNDER GO REVISION REVISION DURING DETAIL DESIGN STAGE

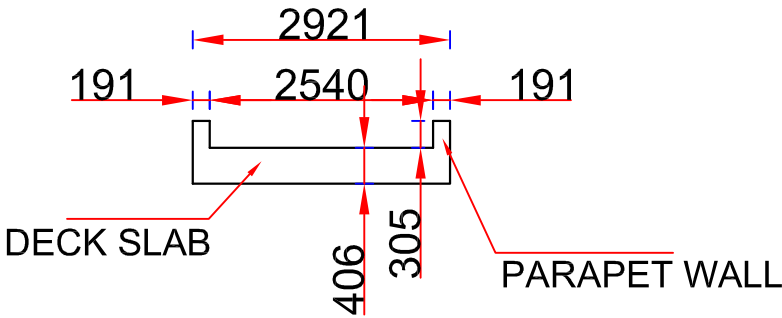
Prepared by :- WAPCOS LTD.  (एनएसएल - नए एनएसएल - नए एनएसएल) (A Government of India Undertaking - Ministry of Water Resources)	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
	Drawing Title :-	G.A.D. OF HEAD REGULATOR OF RASALPUR-1 MINOR (OFF TAKE FROM RMC RD-75+180 KM,(LT)) GENERAL ARRANGEMENT		
	Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/R-13/HM-016		
	Drawn by:-	Checked by:-	Approved by:-	



CART BRIDGE
AT
CH. 68.671 KM

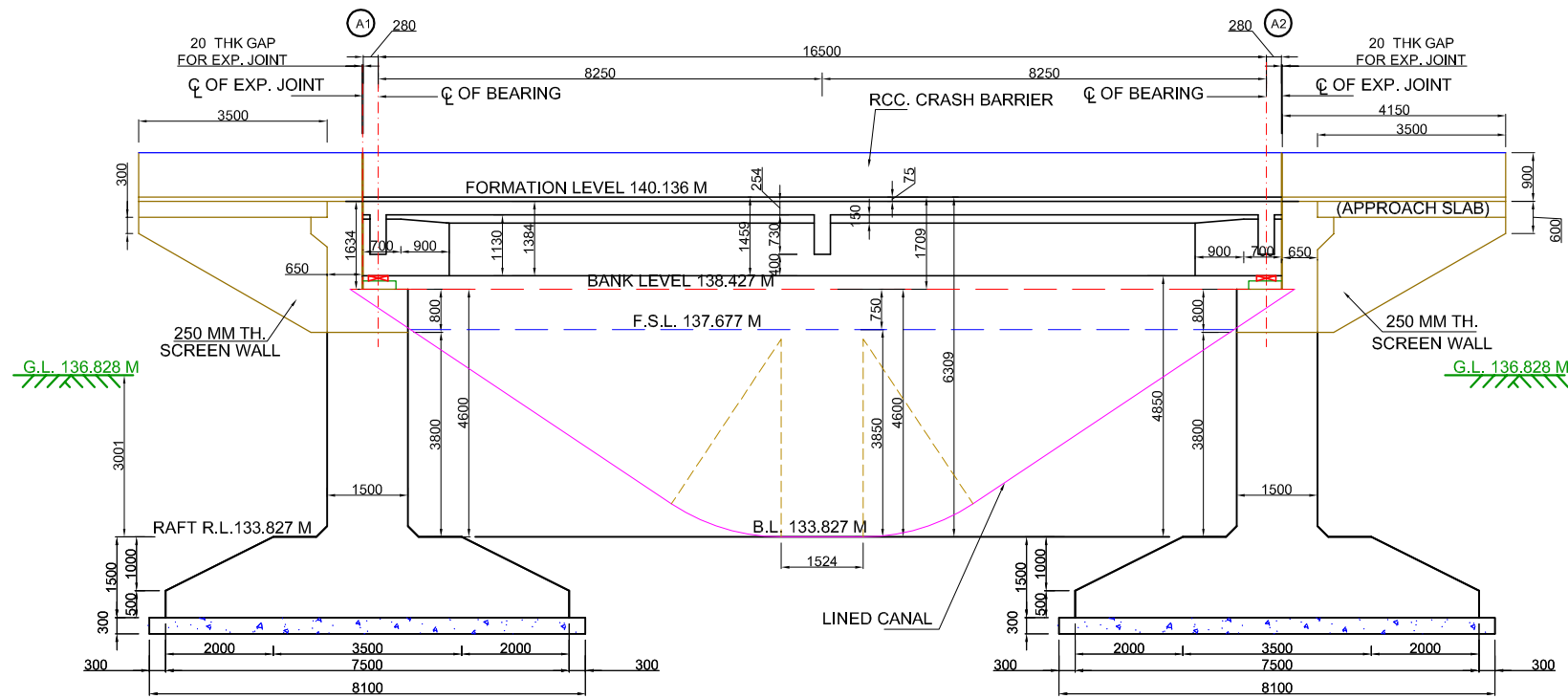


PLAN



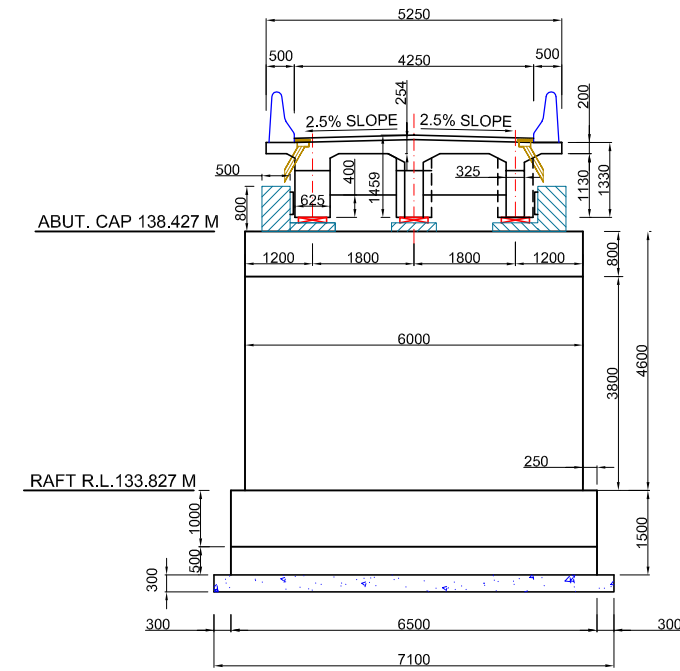
SECTION A-A
OF PLAN

Prepared by :- WAPCOS LTD.  Page 89 of 180	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
	Drawing Title :-	SKETCH OF CART BRIDGE AT KM 68.671 (EXISTING)		
	Drawing No. :-	01 of 11		
	Drawn by:-	Checked by:-	Approved by:-	



SECTION ACROSS NORTH KOEL RMC AT BRIDGE CENTRE LINE

(SCALE A)



SIDE VIEW OF ABUTMENT

(SCALE A)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE NOT TO BE SCALED OFF. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. EXPANSION JOINTS ARE PROVIDED AT EVERY ABUTMENT LOCATIONS.
4. ROAD LEVEL REFER TO CARRIAGEWAY CENTER.
5. ONE LANES OF CLASS-A LOADING HAS BEEN CONSIDERED IN DESIGN.
6. FOLLOWING DATA HAS BEEN CONSIDERED IN DESIGN:-

CANAL DISCHARGE	39.49 CUMEC
BED LEVEL	133.827 M
WATER DEPTH	3.850 M
F.S.L.	137.677 M
FREE BOARD	0.75 M

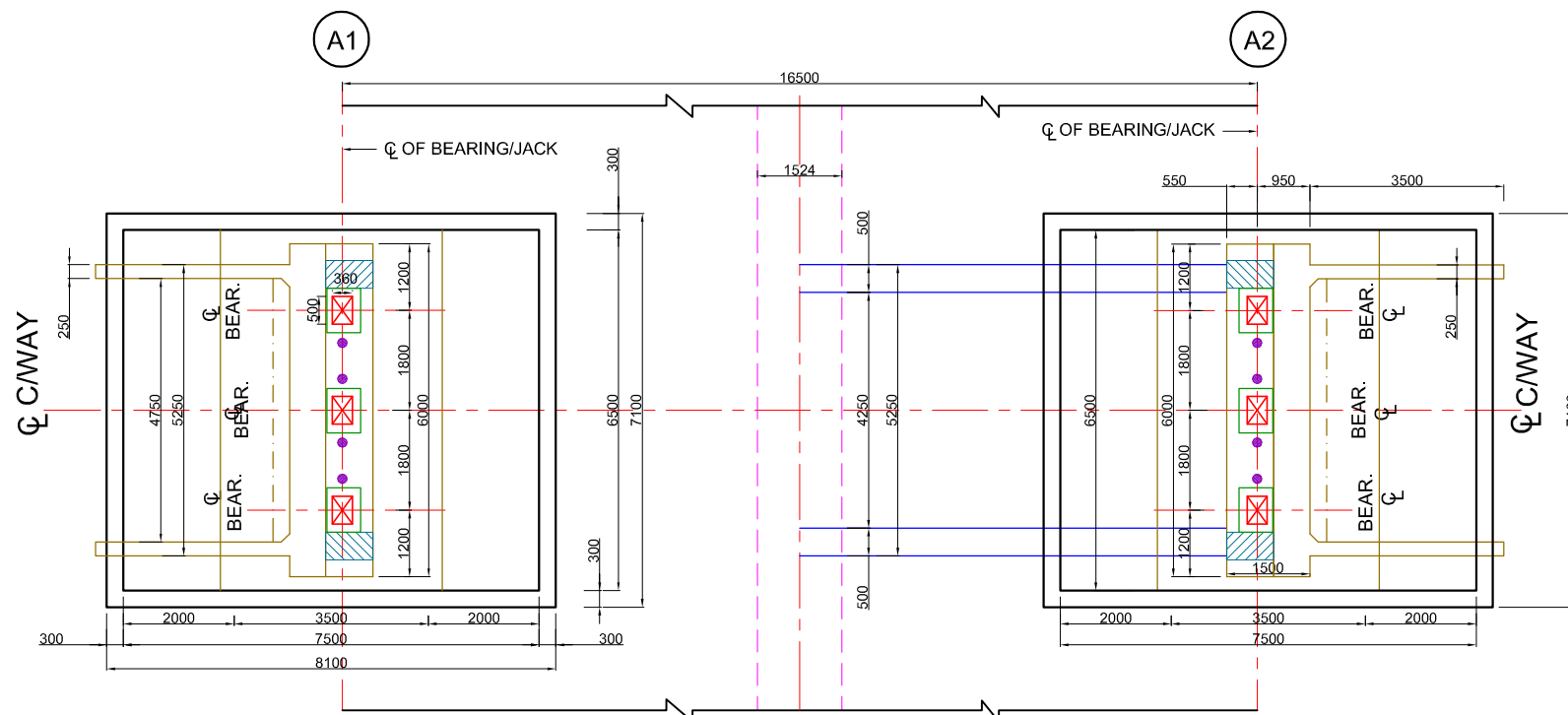
7. FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR DIFFERENT COMPONENTS OF BRIDGE :-

a) RAFT	M35
b) ABUTMENT	M25
c) SUPER STRUCTURE	M35 (TABLE -5 OF IRC21)
d) CRASH BARRIER	M30
e) PEDESTAL (SEISMIC)	M35
f) WEARING COAT	M35

8. TYPE OF SOIL AT FOUNDING LEVEL IS GRAYISH CLAY. FOLLOWING PARAMETERS ARE USED IN DESIGN

SKWESSNESS ANGLE	0°
ROAD LEVEL	140.136 M
GROUND LEVEL	136.828 M
CARRIAGE WAY WIDTH	4.250 M
ALLOWABLE B/C	22.81 T/SQ M

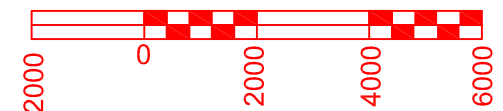
9. SIZE OF ELASTOMERIC BEARING SHALL BE 360X500X96 MM



HALF BOTTOM PLAN / HALF TOP PLAN

(SCALE A)

SCALE A:-



Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

GENERAL ARRANGEMENT DRAWING OF SLR BRIDGE AT KM 68.671 WITH THREE BEAMS

Drawing No. :-

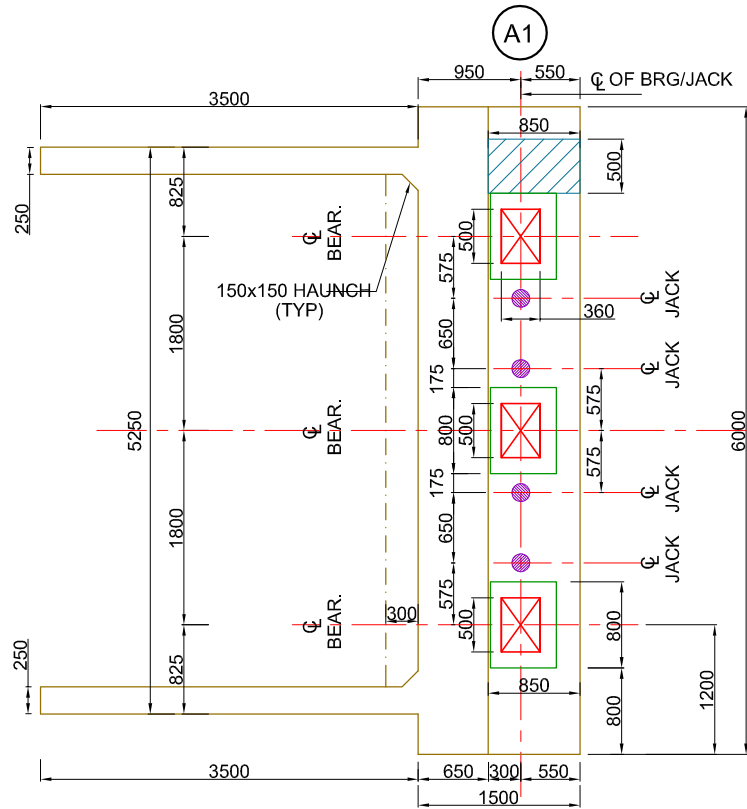
WAP/INFRA/NORTH KOEL/RMC/BRG-51

02 of 11

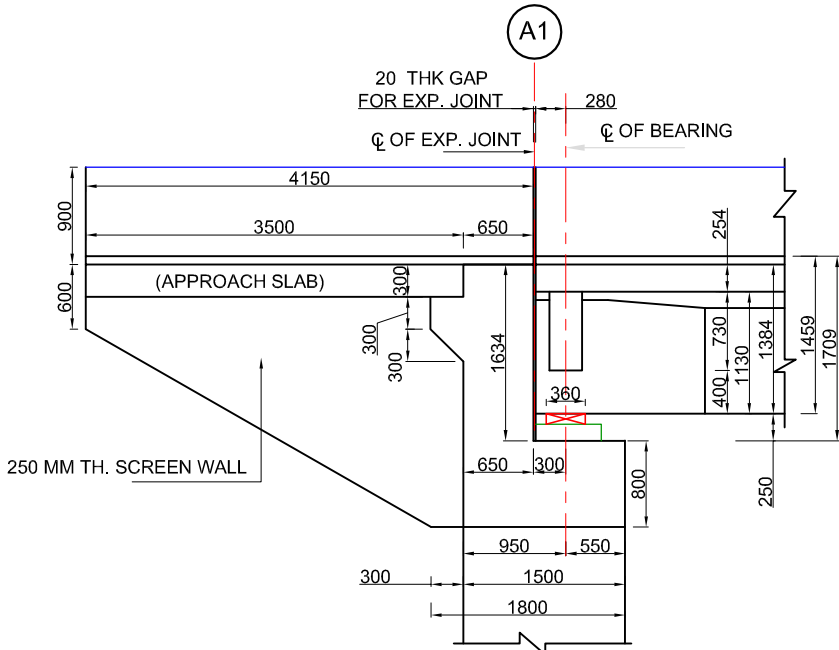
Drawn by:-

Checked by:-

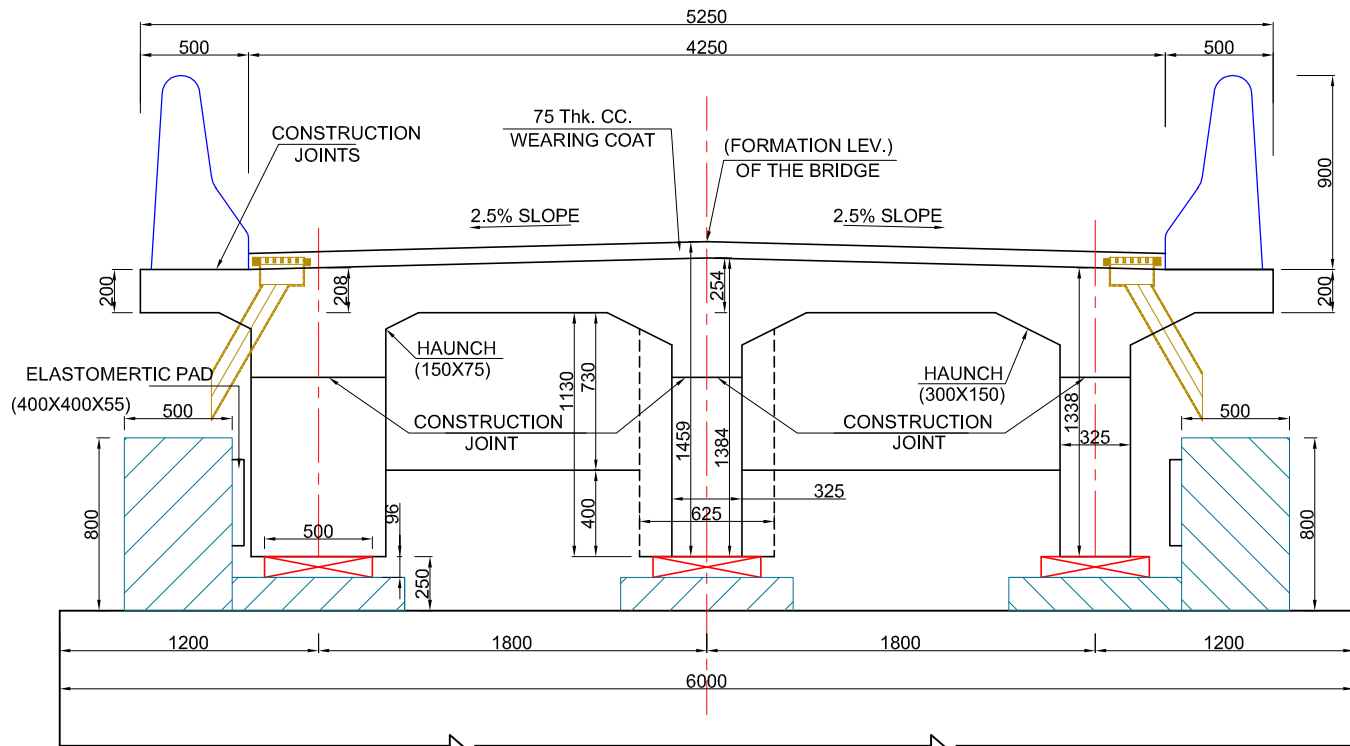
Approved by:-



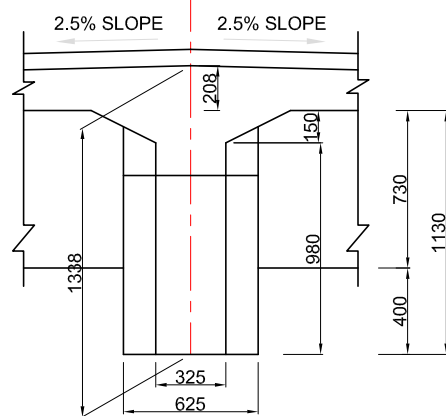
PLAN OF ABUTMENT AT BEARING LEVEL
(SCALE B)



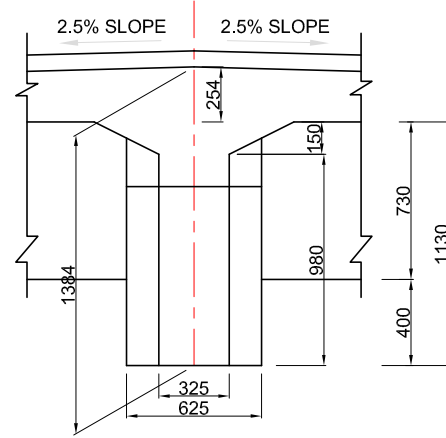
DETAIL - 'D1'
(SCALE B)



CROSS SECTION OF GIRDERS
(SCALE C)



**CROSS SECTION OF
RCC 'I' OUTER GIRDER**
(SCALE C)

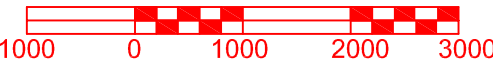


**CROSS SECTION OF
RCC 'I' INTERMEDIATE GIRDER**
(SCALE C)

NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DIMENSION SHALL BE SCALED OFF.
- THE DETAILS SHOWN IN THIS DRAWING ARE APPLICABLE FOR R.C.C. T-BEAM SLAB SUPERSTRUCTURE WITHOUT FOOTPATHS.
- THE DESIGN IS APPLICABLE FOR SEVERE CONDITION OF EXPOSURE.
- GRADE OF CONCRETE FOR T-BEAM AND SLAB SHALL BE M-35. CONFORMING TO I.S. 456
- PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCEMENT.
- H.Y.S.D Fe500 BARS CONFORMING TO I.S.-456 SHALL BE PROVIDED AS REINFORCEMENT.
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED TO THE CONTRARY.
- CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 mm.
- BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
- OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
- 75 MM THICK CEMENT CONCRETE WEARING COAT IN M-35 GRADE CONCRETE SHALL BE LAID WITH 8 MM DIA MESH @200 MM.
- DRAINAGE SPOUT AND COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL AND AFTER FABRICATION THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANISED COATING.
- THE FIXING CLAMPS WILL BE OF HOT DIPPED GALVANISED MS FLAT. MINIMUM NUMBER OF CLAMPS TO BE PROVIDED WITH VERTICAL DRAIN-AGE SPOUT FOR FIXING TO LONGITUDINAL GIRDERS SHALL BE TWO.
- CRASH BARRIER TYPE RAILING SHALL BE USED.
- THE DESIGN OF VARIOUS COMPONENTS OF BRIDGE IS BASED ON THE PROVISIONS MADE IN THE M.O.S.T. DESIGN HANDBOOK.
- ALL CONCRETE WORKS SHALL CONFORM TO IS; 456- 2000.

SCALE B:-



SCALE C:-

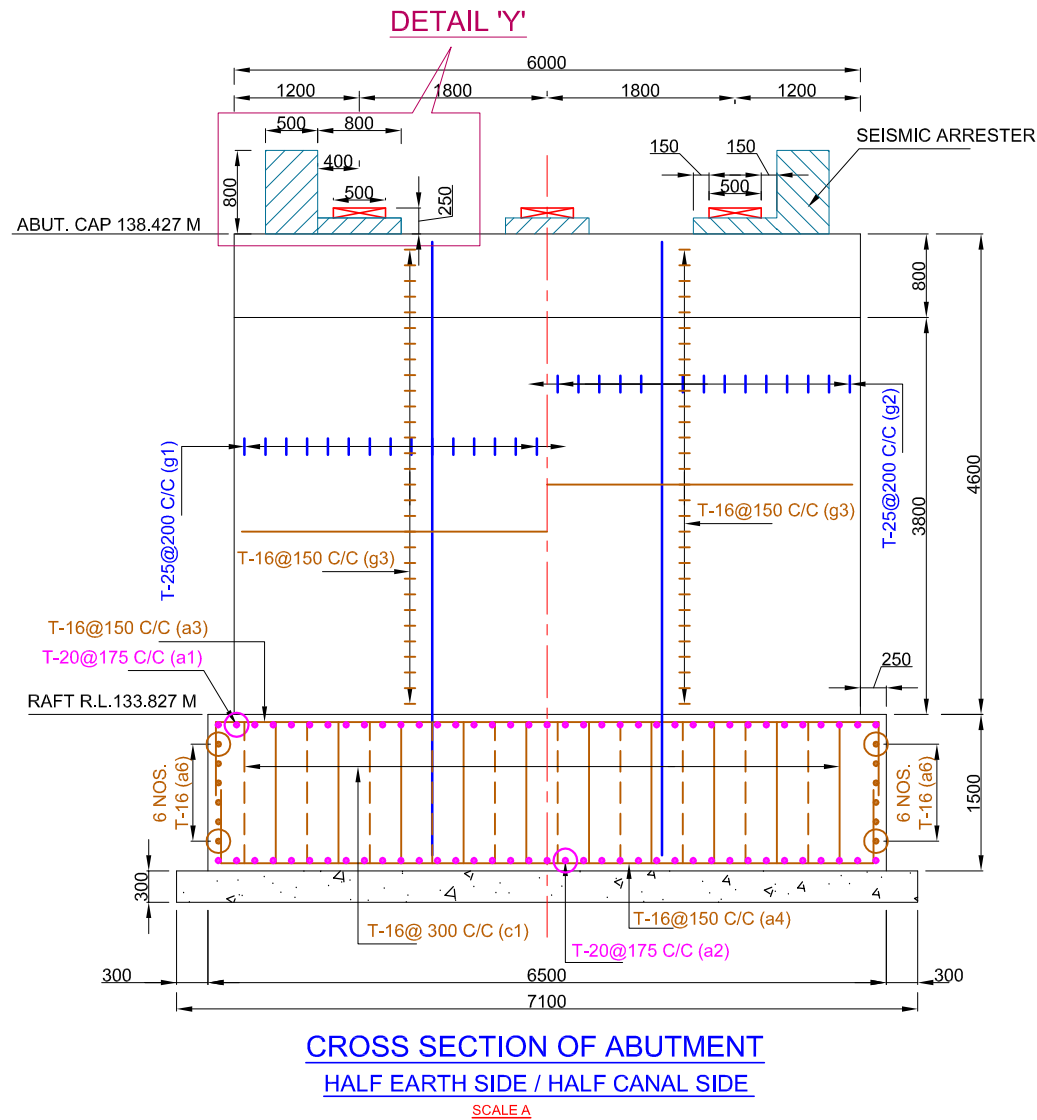
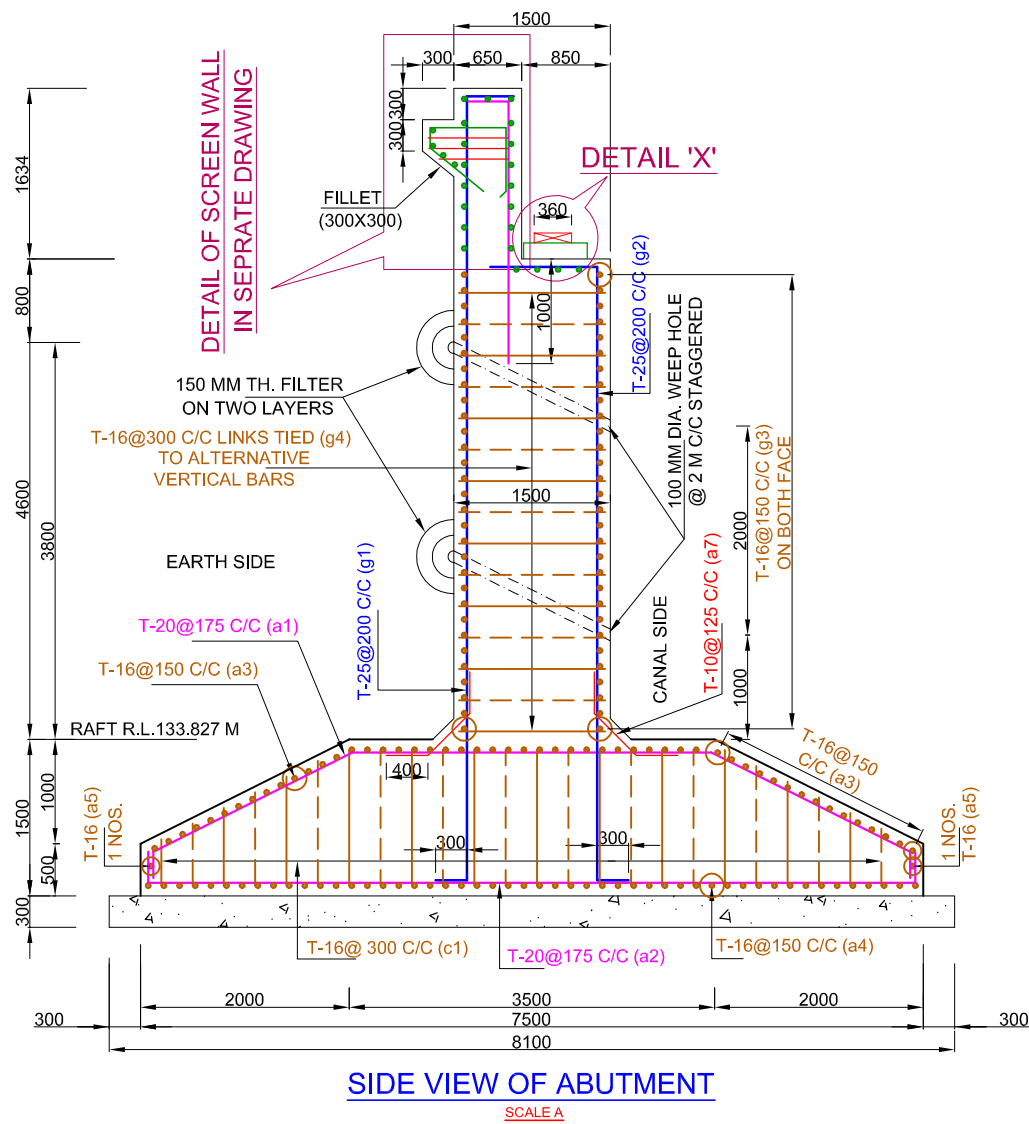


Prepared by :-

WAPCOS LTD.



Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
Drawing Title :-	SECTION DETAILS OF G.A.D. OF SLR BRIDGE AT KM 68.671 WITH THREE BEAMS		
Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/BRG-51		03 of 11
Drawn by:-	Checked by:-	Approved by:-	



BARS BENDING SCHEDULE

	S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing (mm)	No. of bars (mm)
ABUTMENT COLUMN WITH CAP	1	g1		25	200	30X2
	2	g2		25	200	30X2
	3	g3		16	150	30X2X2
	4	g4		16	300	8X9X2
IN RAFT FOR ABUTMENT	5	a1		20	175	37X2
	6	a2		20	175	37X2
	7	a3		16	150	52X2
	8	a4		16	150	50X2
	9	a5		16	-	1X2X2
	10	a6		16	-	6X2X2
	11	a7		10	125	47X2X2
	12	c1		16	300	12X10X2

NOTES

- ALL DIMENSIONS ARE IN mm AND LEVELS IN METRE
- THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- EXPANSION JOINTS ARE PROVIDED AT EVERY ABUTMENT LOCATIONS.
- ROAD LEVEL REFERS TO CARRIAGEWAY CENTRE.
- ONE LANE OF CLASS-A LOADING HAS BEEN CONSIDERED IN DESIGN.
- FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR DIFFERENT COMPONENTS OF BRIDGE:-
 - RAFT M35
 - SUBSTRUCTURE M25
 - PEDESTAL M35
- ELASTOMERIC BEARINGS WILL BE PROVIDED AS PER IRC: 83(PARTII)-1987.
- THIS DRAWING SHOWS DETAILS OF ABUTMENT AND ABUTMENT CAP.
- OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
- PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCMENT.
- CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50mm
- BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED TO THE CONTRARY.
- ALL HOOKS AND OVERLAPS TO BE OF STANDARD DIMENSION.
- H.Y.S.D Fe500 BARS SHALL CONFORM TO I.S.-456:2000
- MAIN VERTICAL REINFORCEMENT OF ABUTMENT WILL BE EMBEDDED IN RAFT.

SCALE A:-

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

REINFORCEMENT DETAILS OF ABUTMENT OF SLR BRIDGE AT KM 68.671 WITH THREE BEAMS

Drawing No. :-

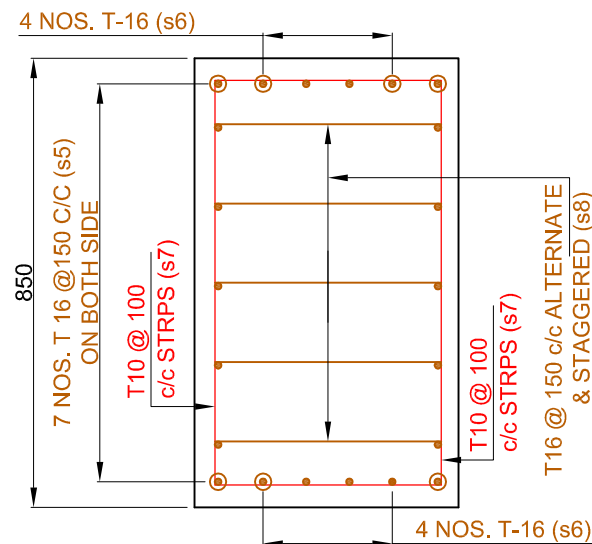
WAP/INFRA/NORTH KOEL/RMC/BRG-51

04 of 11

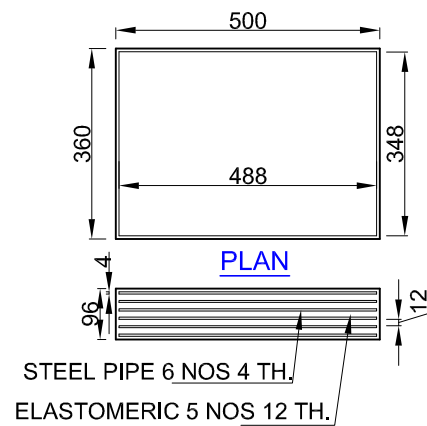
Drawn by:-

Checked by:-

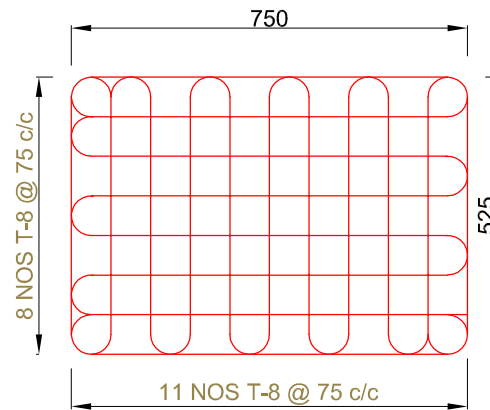
Approved by:-



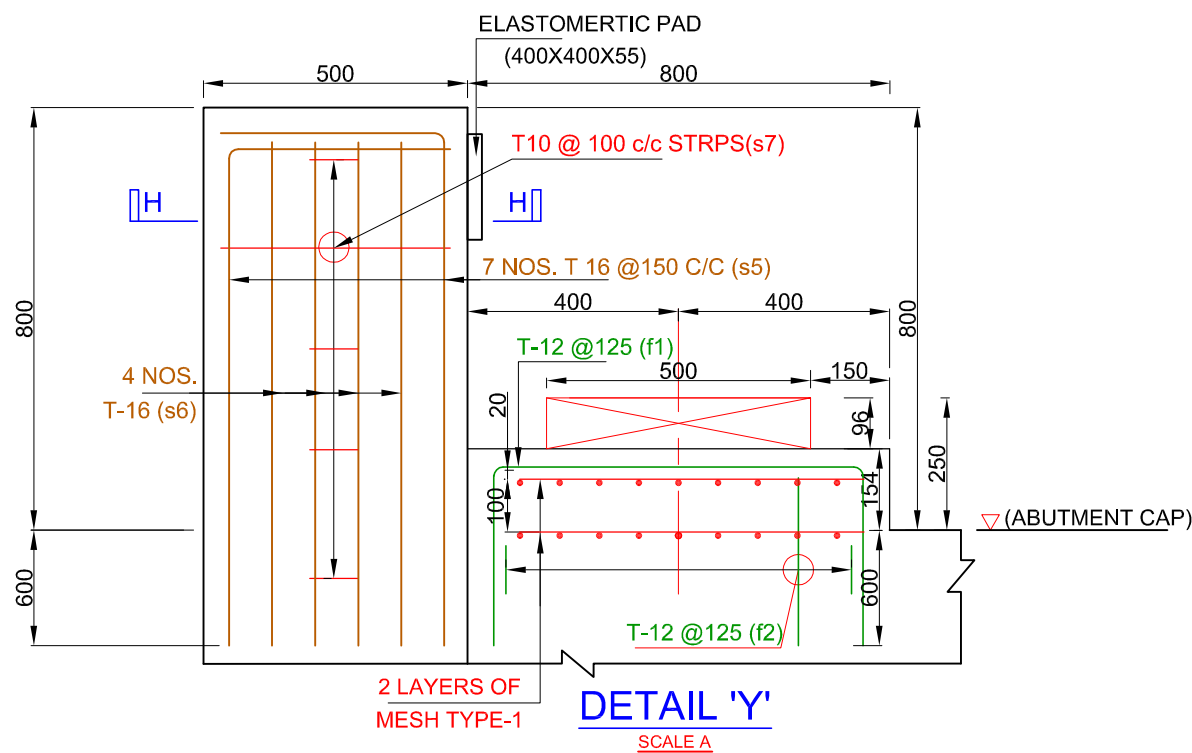
SECTION H-H
SCALE A



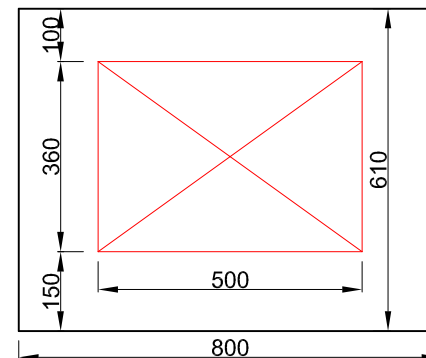
DETAILS OF ELASTOMERIC BEARINGS
SCALE A



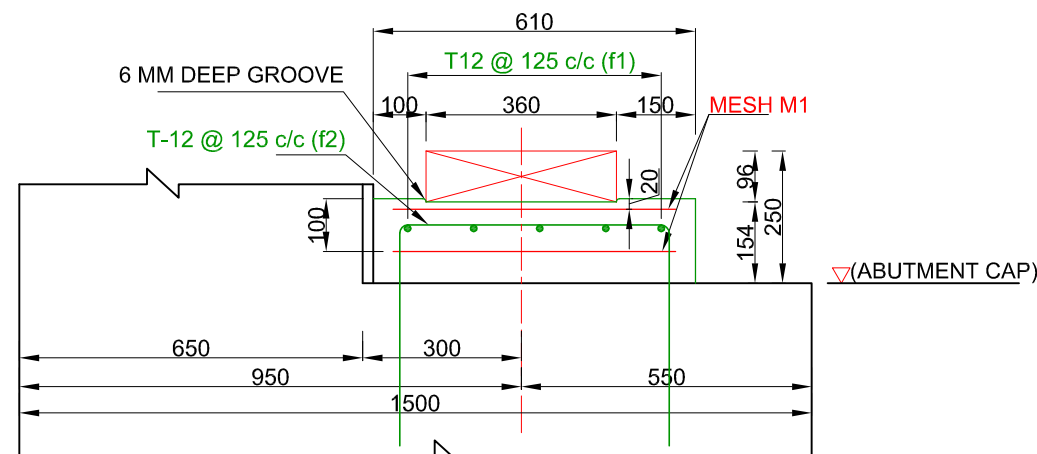
DETAIL OF MESH M1
SCALE A



DETAIL 'Y'
SCALE A



PLAN
SCALE A



DETAIL 'X'
SCALE A



BARS BENDING SCHEDULE

	S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing (mm)	No. of bars (mm)
SEISMIC ARRESTER FOR ABUTMENT	1	s5		16	150	14X2X2
	2	s6		16	-	8X2X2
	3	s7		10	100	5X2X2
	4	s8		16	150	5x2x2
PEDESTAL FOR ABUTMENT	5	f1		12	125	5X2X2
	6	f2		12	125	5X2X2

NOTES

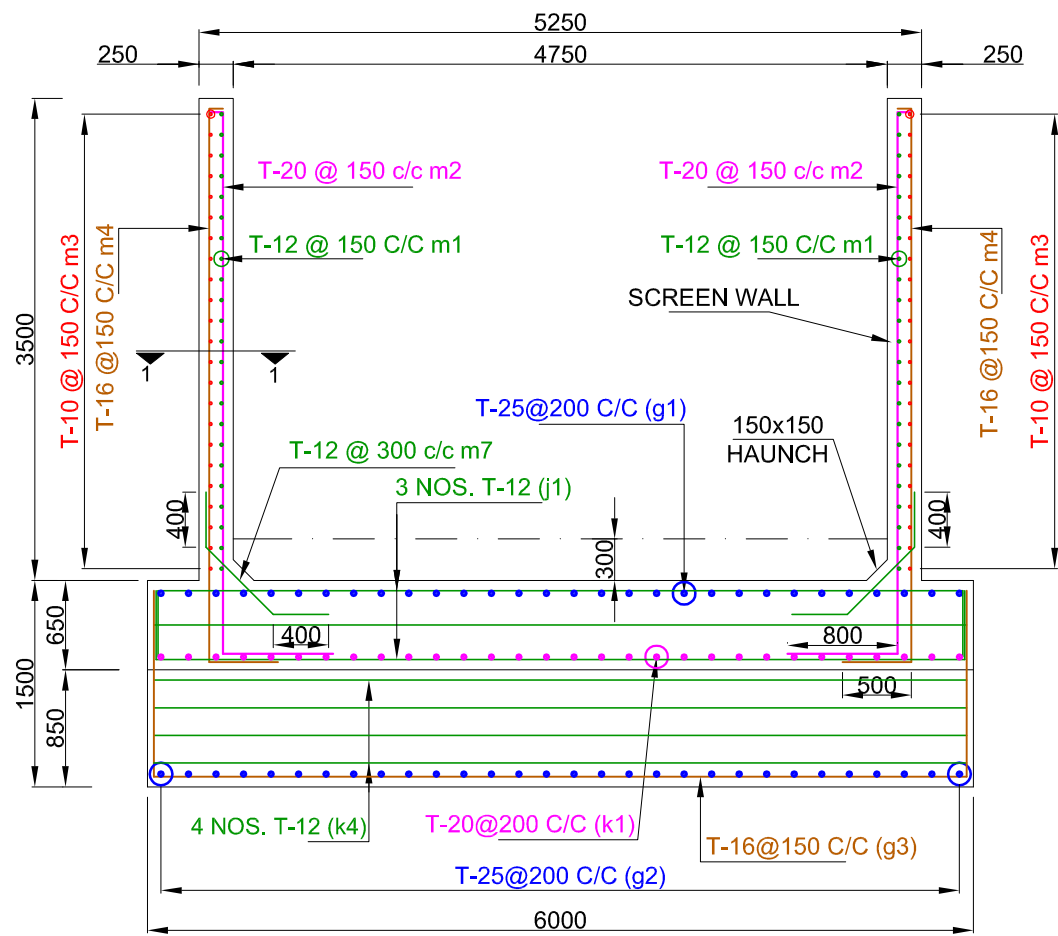
- ALL DIMENSIONS ARE IN mm AND LEVELS IN METRE
- THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- EXPANSION JOINTS ARE PROVIDED AT EVERY ABUTMENT LOCATIONS.
- ROAD LEVEL REFERS TO CARRIAGEWAY CENTRE.
- ONE LANE OF CLASS-A LOADING HAS BEEN CONSIDERED IN DESIGN.
- FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR DIFFERENT COMPONENTS OF BRIDGE:-
 - RAFT M35
 - SUBSTRUCTURE M25
 - PEDESTAL M35
- ELASTOMERIC BEARINGS WILL BE PROVIDED AS PER IRC: 83(PARTII)-1987.
- THIS DRAWING SHOWS DETAILS OF ABUTMENT AND ABUTMENT CAP.
- OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
- PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCMENT.
- CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50mm
- BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED TO THE CONTRARY.
- ALL HOOKS AND OVERLAPS TO BE OF STANDARD DIMENSION.
- H.Y.S.D Fe500 BARS SHALL CONFORM TO I.S.-456:2000
- MAIN VERTICAL REINFORCEMENT OF ABUTMENT WILL BE EMBEDDED IN RAFT.

Prepared by :-

WAPCOS LTD.

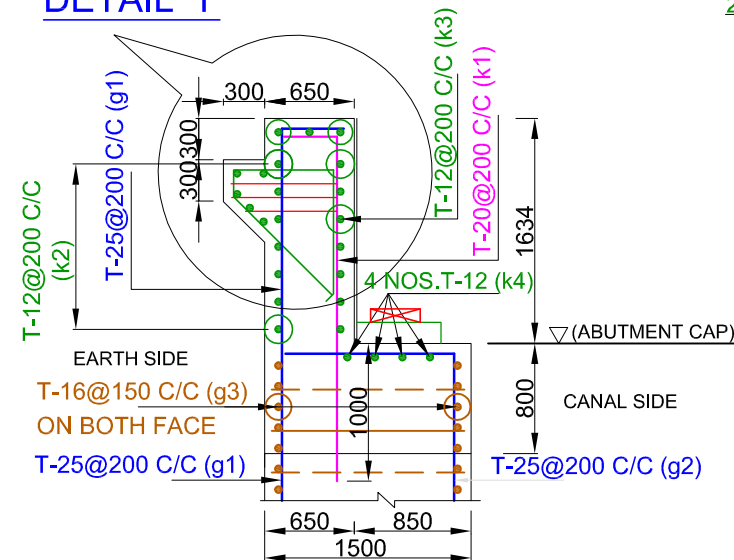


Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
Drawing Title :-	REINFORCEMENT DETAILS OF SEISMIC ARRESTERS AND PEDESTAL AT KM 68.671 WITH THREE BEAMS		
Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/BRG-51		05 of 11
Drawn by:-	Checked by:-	Approved by:-	

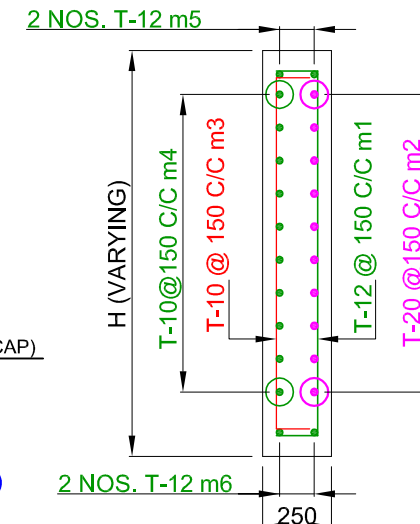


REINFORCEMENT DETAILS IN PLAN OF DIRT WALL
SCALE A

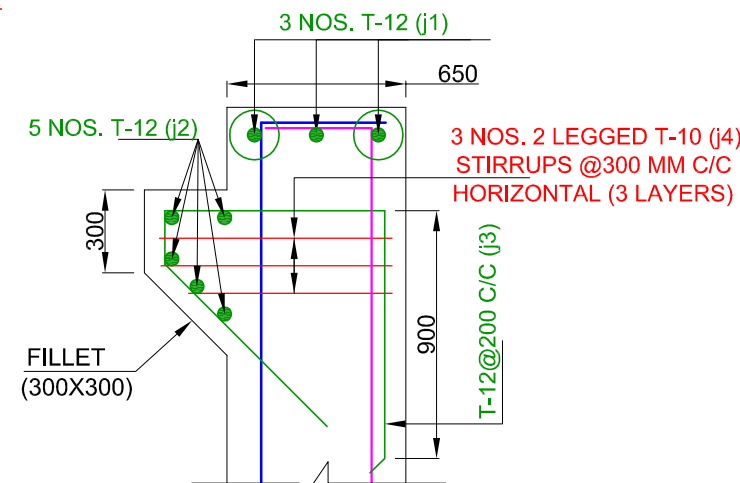
DETAIL '1'



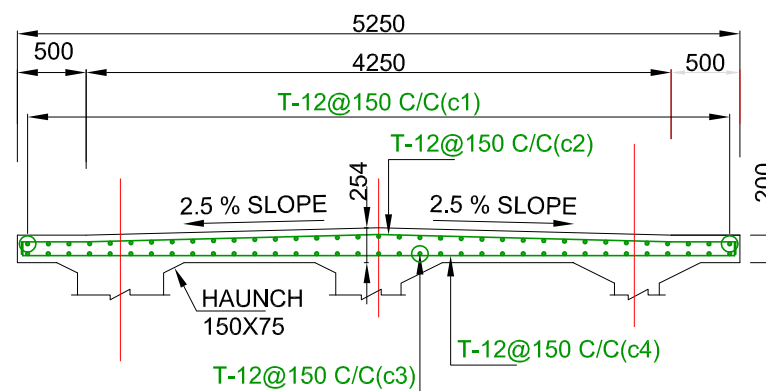
REINFORCEMENT DETAILS IN SECTION OF DIRT
SCALE A



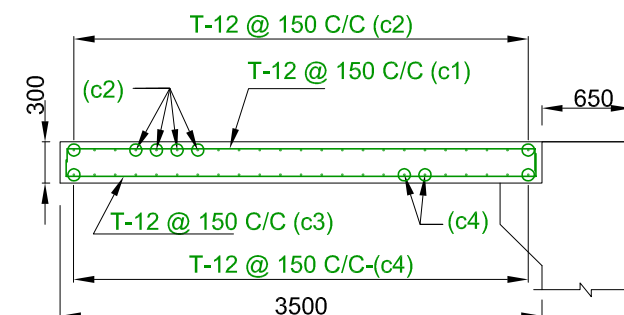
SECTION AT 1-1
SCALE B



DETAIL '1'
SCALE B



REINFORCEMENT IN APPROACH SLAB
SCALE A



SECTION OF APPROACH SLAB
SCALE A

BARS BENDING SCHEDULE

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing (mm)	No. of bars (mm)
1	k1		20	200	30X2
2	k2		12	200	7X2
3	k3		12	200	7X2
4	k4		12	200	4X2
5	j1		12	-	3X2
6	j2		12	-	5X2
7	j3		12	200	23X2
8	j4		10	300	3X2
9	m1		12	150	23X2X2
10	m2		20	150	13X2X2
11	m3		10	150	23X2X2
12	m4		16	150	13X2X2
13	m5		12	-	4X2
14	m6		12	-	4X2
15	m7		12	300	5X2X2
16	c1		12	150	34X2
17	c2		12	150	23X2
18	c3		12	150	34X2
19	c4		12	150	23X2

NOTES

- ALL DIMENSIONS ARE IN mm AND LEVELS IN METRE
- THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- EXPANSION JOINTS ARE PROVIDED AT EVERY ABUTMENT LOCATIONS.
- ROAD LEVEL REFERS TO CARRIAGEWAY CENTRE.
- ONE LANE OF CLASS 70R OR TWO LANES OF CLASS-A LOADING WHICHEVER IS CRITICAL HAS BEEN CONSIDERED IN DESIGN.
- FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR DIFFERENT COMPONENTS OF BRIDGE:-

a) RAFT	M35
b) SUBSTRUCTURE	M25
c) PEDESTAL	M35
- ELASTOMERIC BEARINGS WILL BE PROVIDED AS PER IRC: 83(PARTII)-1987.
- THIS DRAWING SHOWS DETAILS OF PIER AND PIER CAP.
- OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
- PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCMENT.
- CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50mm
- BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED TO THE CONTRARY.
- ALL HOOKS AND OVERLAPS TO BE OF STANDARD DIMENSION.
- H.Y.S.D Fe500 BARS SHALL CONFORM TO I.S.-456:2000
- MAIN VERTICAL REINFORCEMENT OF ABUTMENT WILL BE EMBEDDED IN RAFT.

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

REINFORCEMENT DETAILS OF SCREEN WALL OF SLR BRIDGE AT KM 68.671 WITH THREE BEAMS

Drawing No. :-

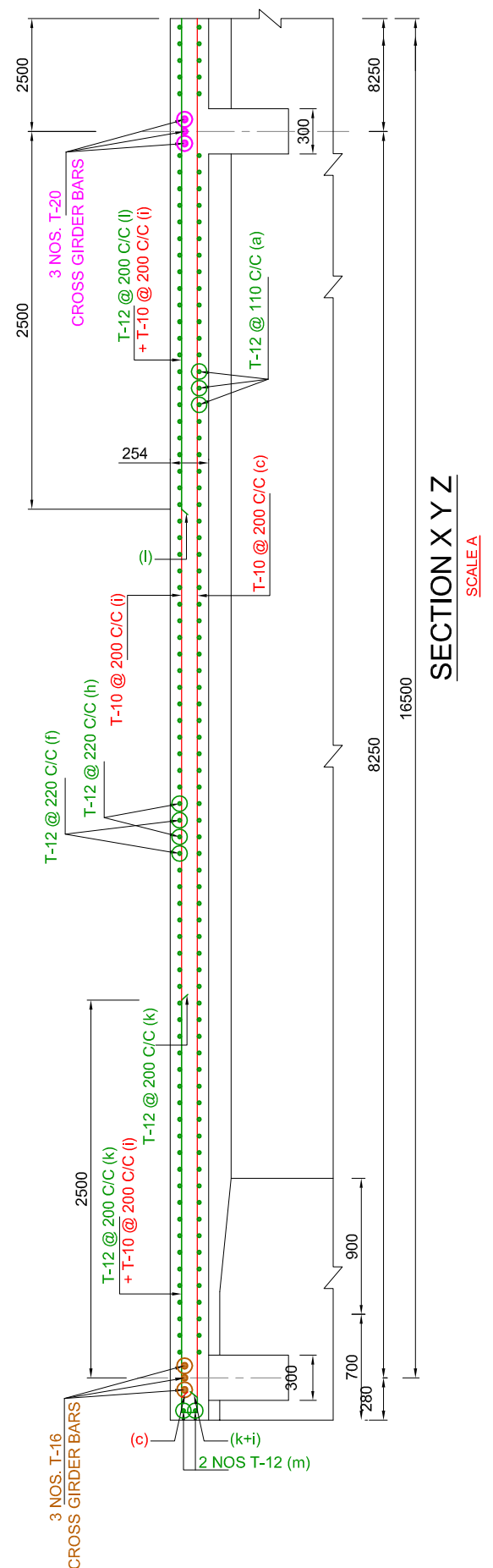
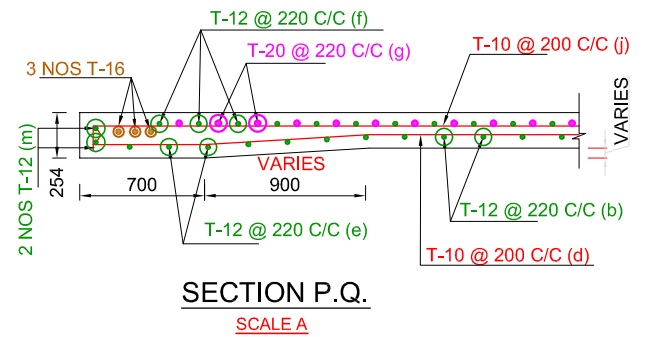
WAP/INFRA/NORTH KOEL/RMC/BRG-51

06 of 11

Drawn by:-

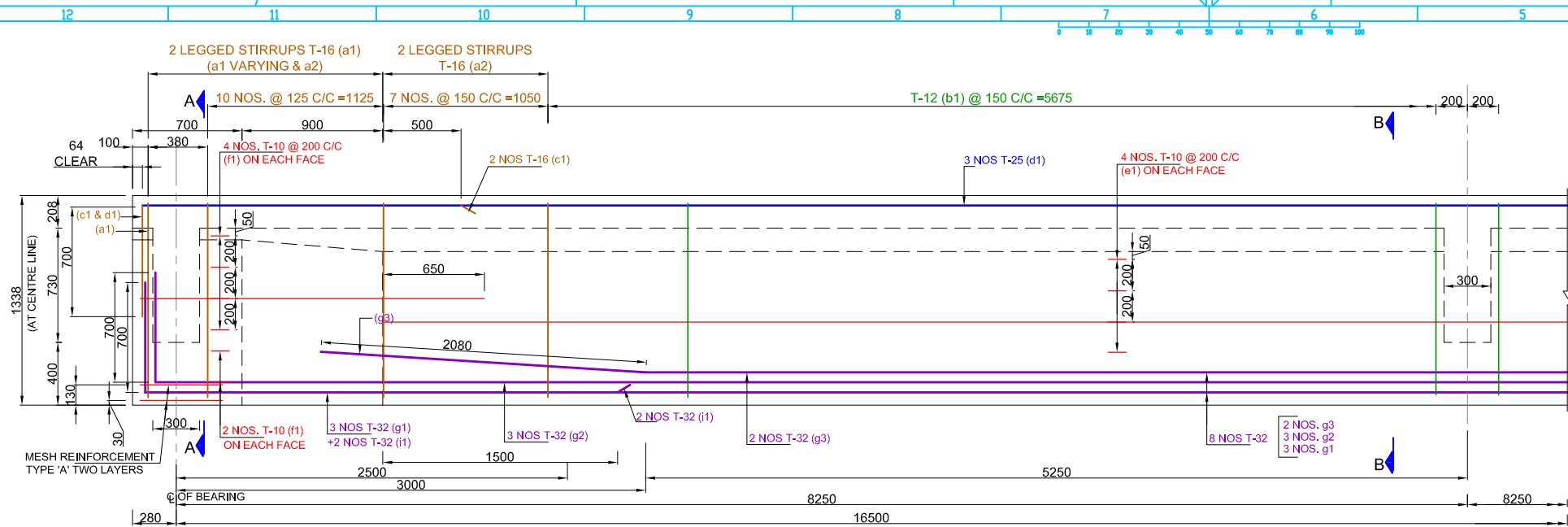
Checked by:-

Approved by:-

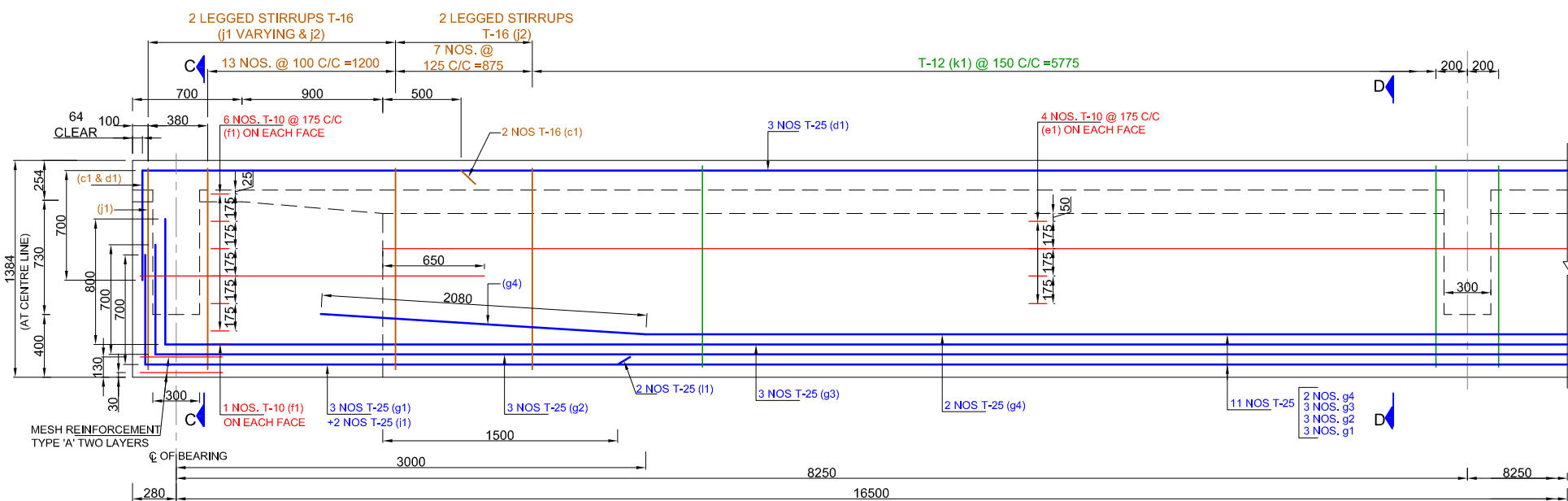


1. M.O.S.T. R.C.C. T-BEAM AND SLAB SUPER
STRUCTURES DRG. NO. SD/212.

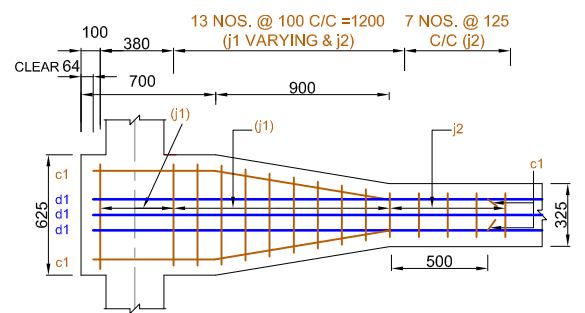
Page 96 of 180



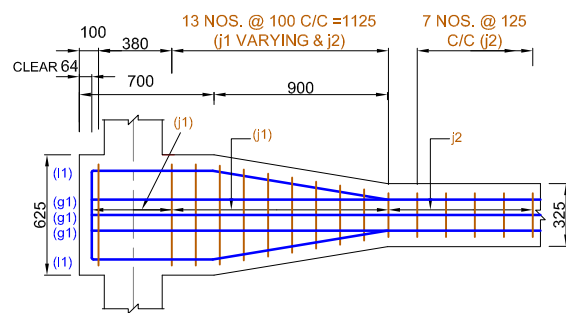
LONGITUDINAL SECTION OF OUTER GIRDER
SCALE A



LONGITUDINAL SECTION OF INNER GIRDER
SCALE A

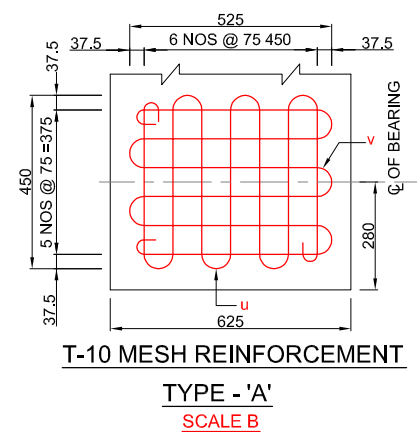


INNER GIRDER
PLAN SHOWING TOP REINFORCEMENT AT THE END
SCALE A



INNER GIRDER
PLAN SHOWING BOTTOM REINFORCEMENT AT THE END
SCALE A

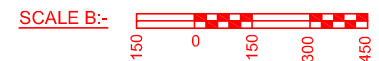
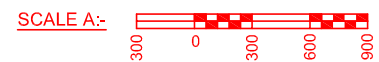
(SIMILAR DETAILING WILL BE FOLLOWED FOR OUTER GIRDERS)



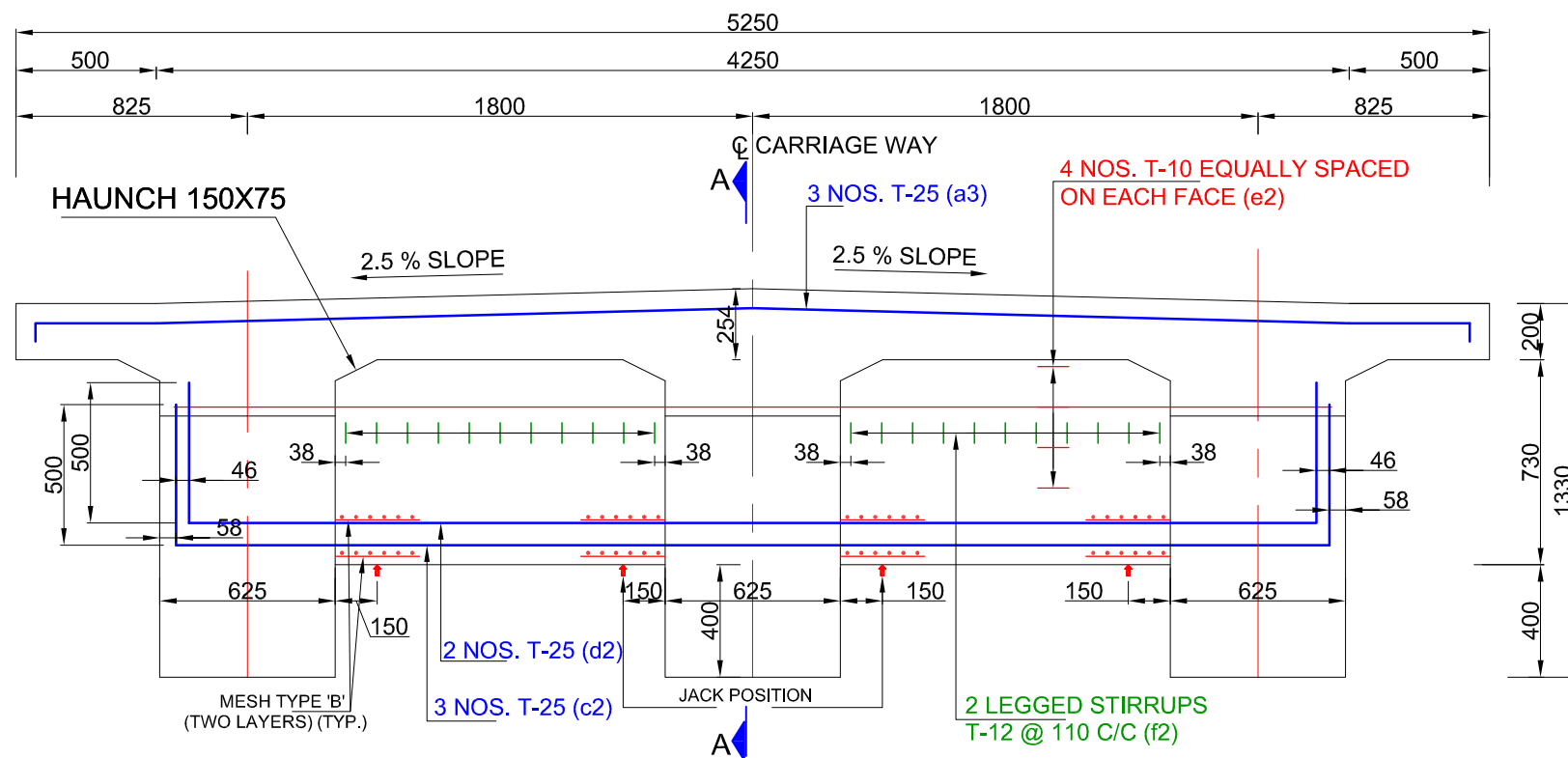
T-10 MESH REINFORCEMENT
TYPE - 'A'
SCALE B

REFERENCES:-

- M.O.S.T. R.C.C. T-BEAM AND SLAB SUPER STRUCTURES DRG. NO. SD/214.

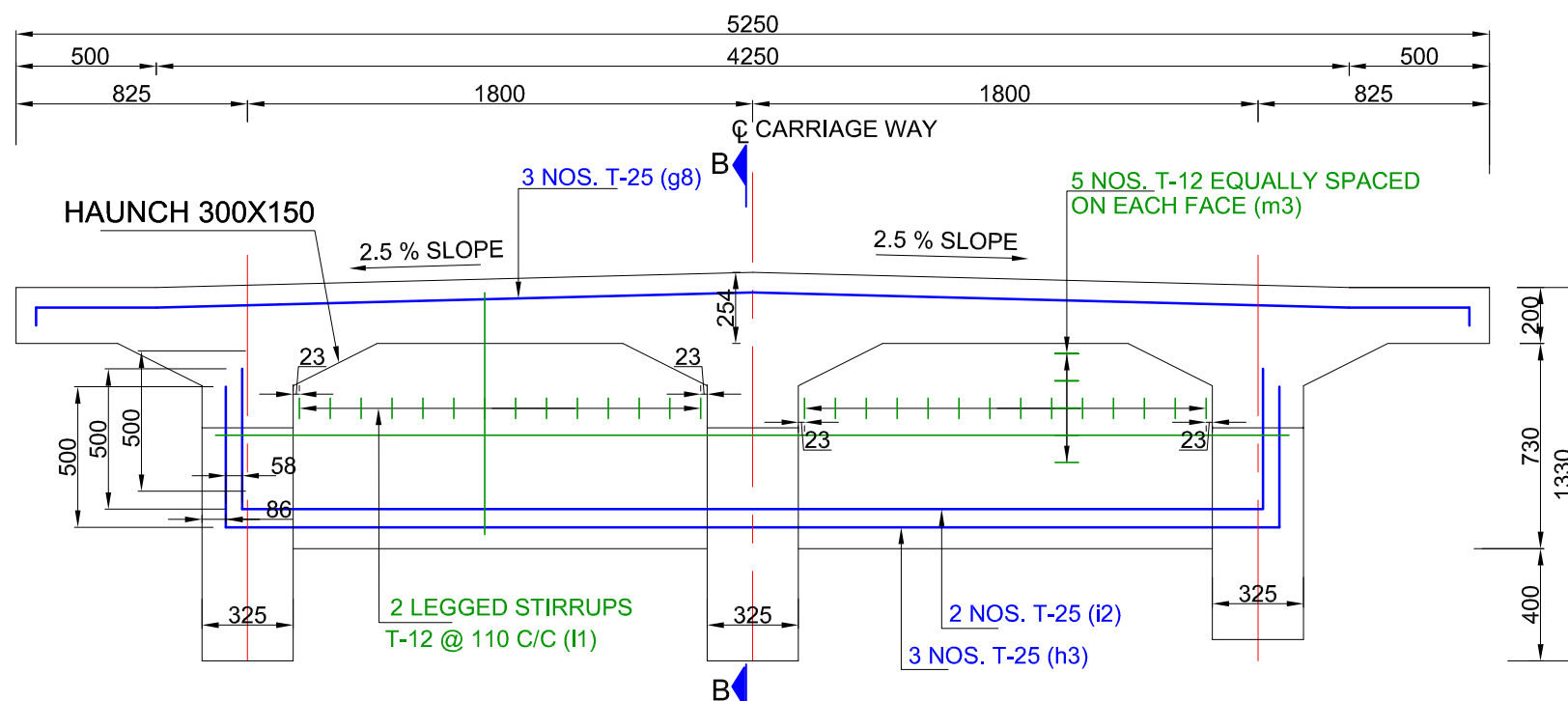


Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
Drawing Title :-	REINFORCEMENT OF LONGITUDINAL GIRDER OF SLR BRIDGE AT KM 68.671 WITH THREE BEAMS		
Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/BRG-51		09 of 11
Drawn by:-	Checked by:-	Approved by:-	



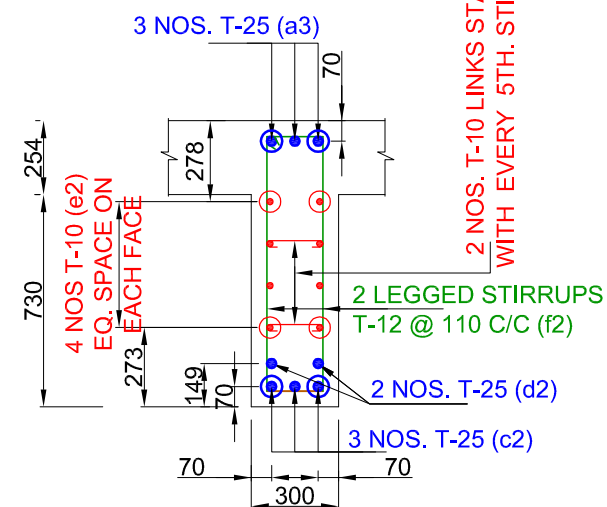
LONGITUDINAL SECTION OF END CROSS GIRDER

SCALE A



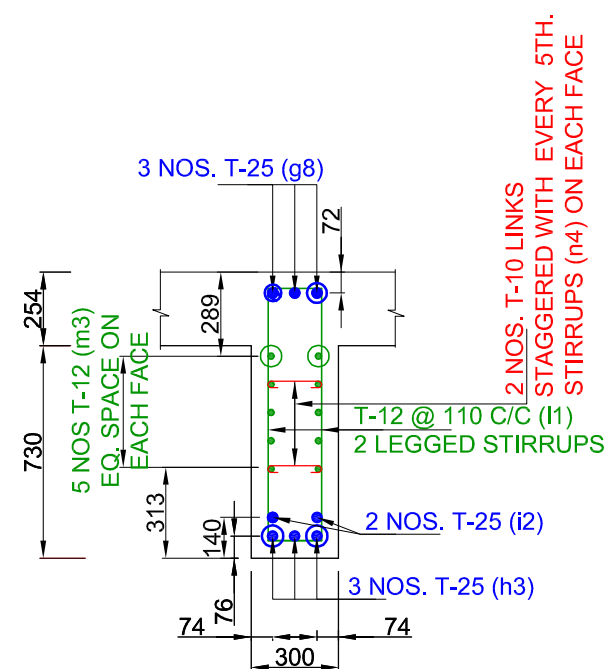
LONGITUDINAL SECTION OF MIDDLE CROSS GIRDER

SCALE A



SECTION A-A

SCALE A

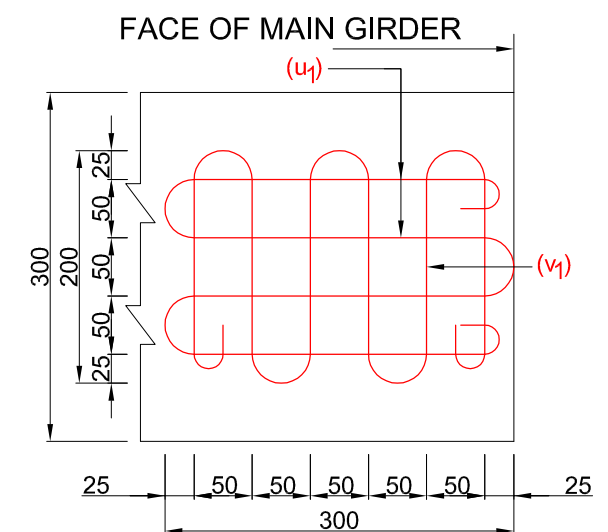


SECTION B-B

SCALE A

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DIMENSION SHALL BE SCALED OFF.
2. THE DETAILS SHOWN IN THIS DRAWING ARE APPLICABLE FOR R.C.C. T-BEAM SLAB SUPERSTRUCTURE WITHOUT FOOTPATHS.
3. THE DESIGN IS APPLICABLE FOR SEVERE CONDITION OF EXPOSURE.
4. GRADE OF CONCRETE FOR T-BEAM AND SLAB SHALL BE M-35. CONFORMING TO I.S. 456
5. PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCEMENT.
6. H.Y.S.D Fe500 BARS CONFORMING TO I.S.-456 SHALL BE PROVIDED AS REINFORCEMENT.
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 TO THE CONTRARY.
8. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 mm.
9. BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
10. OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
11. 75 MM THICK CEMENT CONCRETE WEARING COAT IN M-30 GRADE CONCRETE SHALL BE LAID WITH 8 MM DIA MESH @200 MM.
12. DRAINAGE SPOUT AND COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL AND AFTER FABRICATION THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANISED COATING.
13. THE FIXING CLAMPS WILL BE OF HOT DIPPED GALVANISED MS FLAT. MINIMUM NUMBER OF CLAMPS TO BE PROVIDED WITH VERTICAL DRAIN-AGE SPOUT FOR FIXING TO LONGITUDINAL GIRDERS SHALL BE TWO.
14. CRASH BARRIER TYPE RAILING SHALL BE USED.
15. THE DESIGN OF VARIOUS COMPONENTS OF BRIDGE IS BASED ON THE PROVISIONS MADE IN THE M.O.S.T. DESIGN HANDBOOK.
16. ALL CONCRETE WORKS SHALL CONFORM TO IS; 456- 2000.



T-10 MESH REINFS. TYPE - 'B'

SCALE B

REFERENCES:-

1. M.O.S.T. R.C.C. T-BEAM AND SLAB SUPER STRUCTURES DRG. NO. SD/215.

SCALE A:-



SCALE B:-



Prepared by :-

WAPCOS LTD.



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

Drawing Title :- REINFORCEMENT OF CROSS GIRDER OF SLR BRIDGE AT KM 68.671 WITH THREE BEAMS

Drawing No. :- WAP/INFRA/NORTH KOEL/RMC/BRG-51

10 of 11

Drawn by:-

Checked by:-

Approved by:-

A) H.Y.S.D. BARS

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
SLAB						
1	a		12	110	3600	144
2	b		12	220	1927	126
3	c		10	200	17460	18
4	d		10	200	17460	6
5	e		12	220	1927	32
6	f		12	220	5304	74
7	g		20	220	5182	72
8	h		12	220	3732	72
9	i		10	200	17460	19
10	j		10	200	17388	6
11	k		12	200	2958	36
12	l		12	200	5000	18
13	m		12	-	5150	4
14	n1		16	-	16960	8
15	q		10	200	2110	82

LONGITUDINAL OUTER GIRDERS

1	a1		16	125	3418	11X2X2
2	a2		16	150	3118	7X2X2
3	b1		12	150	3038	38X2X2
4	c1		16	-	2693	2X2X2
5	d1		25	-	18148	3X2
6	e1		10	-	13860	4X2X2
7	f1		10	-	2199	12X2X2
8	g1		32	-	18108	3X2
9	g2		32	-	17980	3X2
10	g3		32	-	14660	2X2
11	i1		32	-	6335	2X2
12	n2		10	-	583	4X2X2
13	n3		10	-	433	18X2X2

A) H.Y.S.D. BARS

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
LONGITUDINAL INNER GIRDER						
1	i1		16	100	3510	14X2X1
2	j2		16	125	3210	7X2X1
3	k1		12	150	3130	39X2X1
4	c1		16	-	2693	2X2X1
5	d1		25	-	18188	3X1
6	e1		10	-	13860	4X2X1
7	f1		10	-	2199	14X2X1
8	g1		25	-	18108	3X1
9	g2		25	-	17980	3X1
10	g3		25	-	18108	3X1
11	g4		25	-	14660	2X1
12	i1		25	-	6335	2X1
13	n2		10	-	583	6X2X1
14	n3		10	-	433	18X2X1

CRASH BARRIER PER M

1	x1		12	120	2125	9
2	x2		16	120	1165	9
3	x3		10	-	1000	12

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	no. of bars
B)M.S. BARS (MESH REINFORCEMENT LONGITUDINAL GIRDERS)						
1	u		10	-	3550	12
2	v		10	-	3506	12

A) H.Y.S.D. BARS

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
END CROSS GIRDERS						
1	a3		25	-	5342	3X2
2	c2		25	-	5029	3X2
3	d2		25	-	4961	2X2
4	e2		10	-	4261	4X2X2
5	f2		12	110	2074	11X2X2
6	n4		10	-	416	4X2X2
MIDDLE CROSS GIRDERS						
1	g6		25	-	5352	3
2	h3		25	-	4582	3
3	i2		25	-	4465	2
4	l1		12	110	2074	14X2
5	m3		12	-	4787	5X2
6	n4		10	-	416	6X2

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	no. of bars
--------	--------------	---	---------------------	---------	----------------------------	-------------

B)M.S. BARS (MESH REINFORCEMENT IN CROSS GIRDERS)

19	u1		10	-	1453	16
20	v1		10	-	1510	16

REFERENCES:-

1. M.O.S.T. R.C.C. T-BEAM AND SLAB SUPER STRUCTURES DRG. NO. SD/216 SH1 & SH2

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

BAR BENDING SCHEDULE OF SUPER STRUCTURE OF SLR BRIDGE AT KM 68.671 WITH THREE BEAMS

Drawing No. :-

WAP/INFRA/NORTH KOEL/RMC/BRG-51 11 of 11

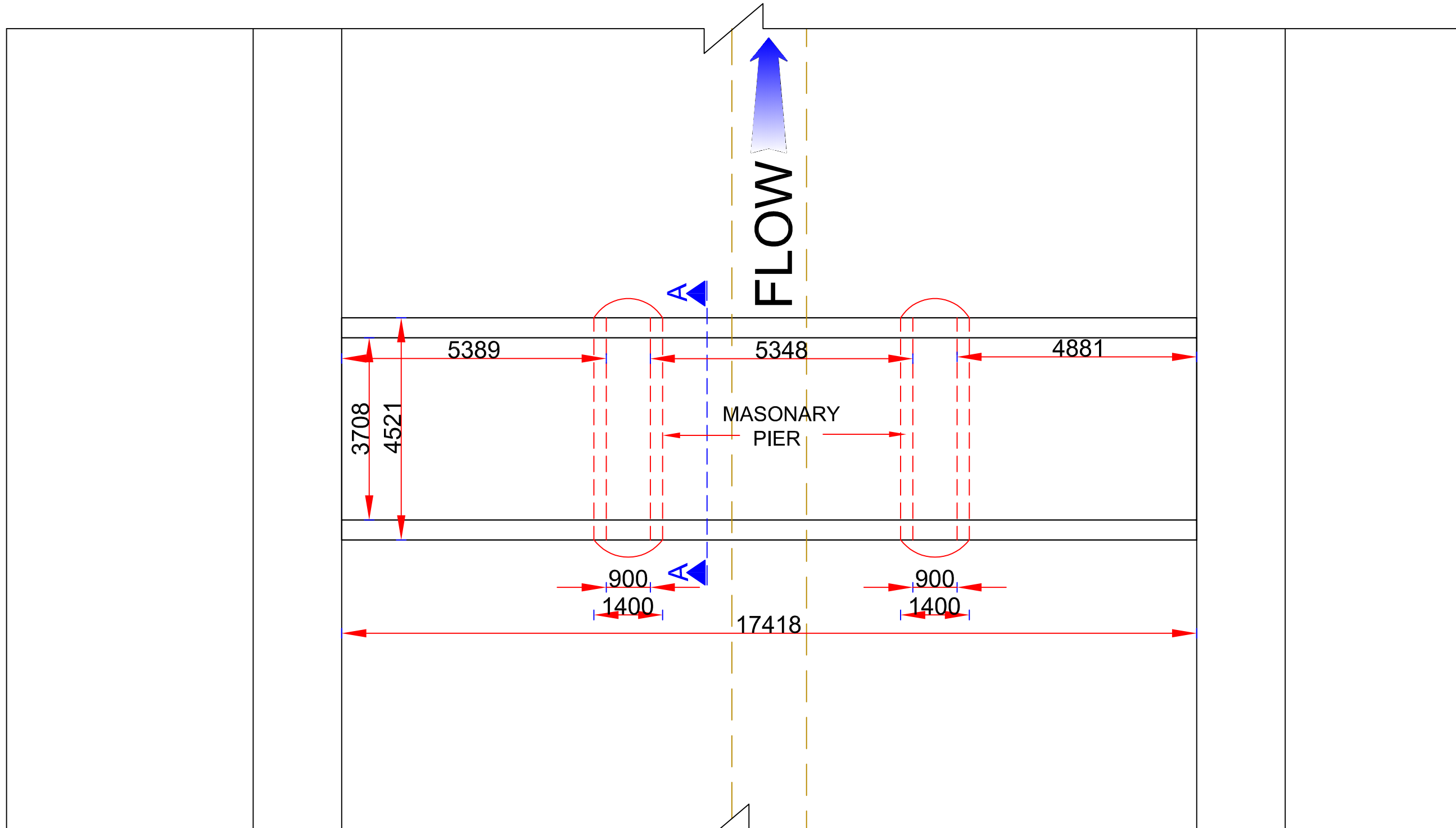
Drawn by:-

Checked by:-

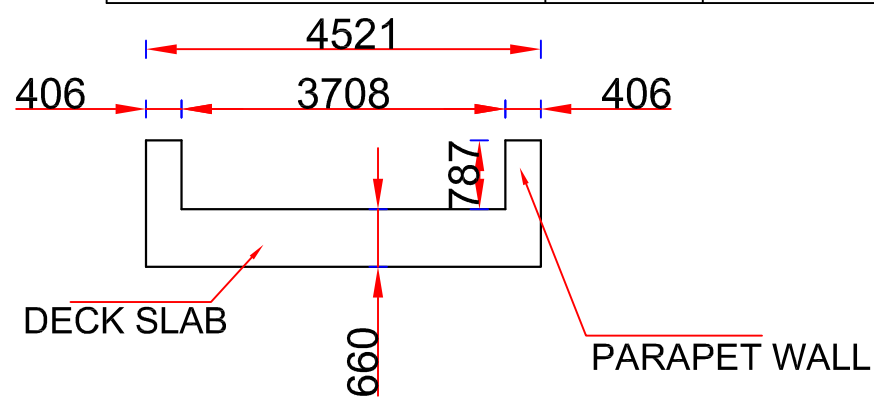
Approved by:-



S.L.R BRIDGE
AT
CH. 69.525 KM

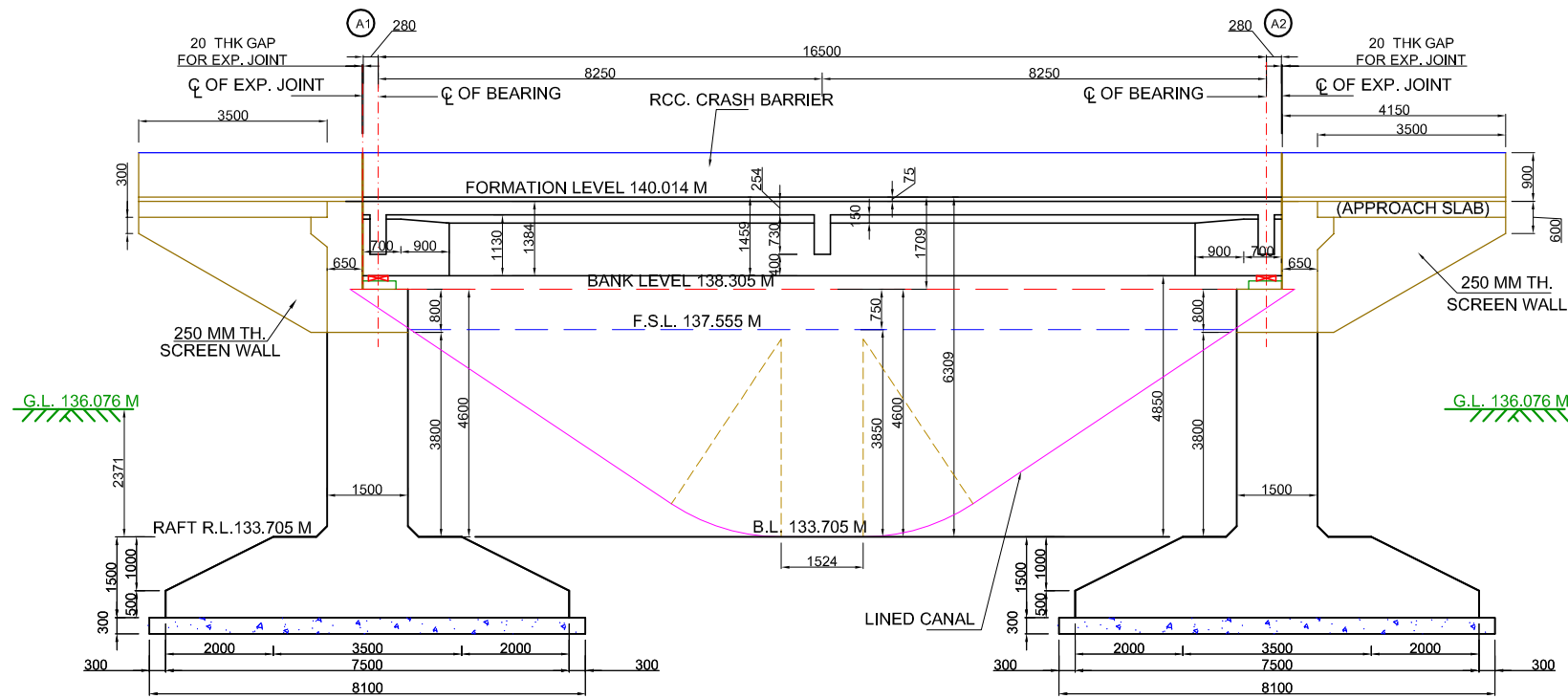


PLAN



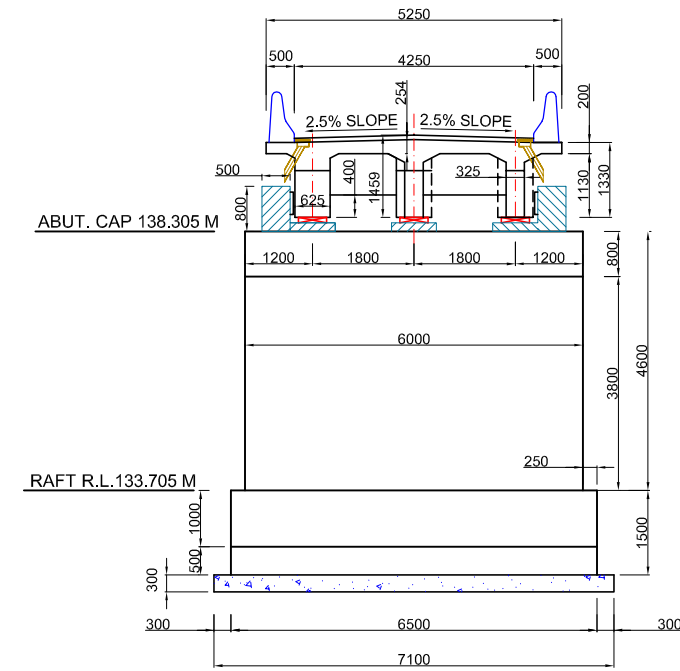
SECTION A-A
OF PLAN

Prepared by :- WAPCOS LTD.  एनपीआर संसाधन प्रा. लिमिटेड — नगर, नरसिंहपुर, मध्यप्रदेश (A Government of India Undertaking - Ministry of Water Resources)	Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
	Drawing Title :-	SKETCH OF SINGLE LANE ROAD BRIDGE AT KM 69.525 (EXISTING)		
	Drawing No. :-	01 of 11		
	Drawn by:-	Checked by:-	Approved by:-	



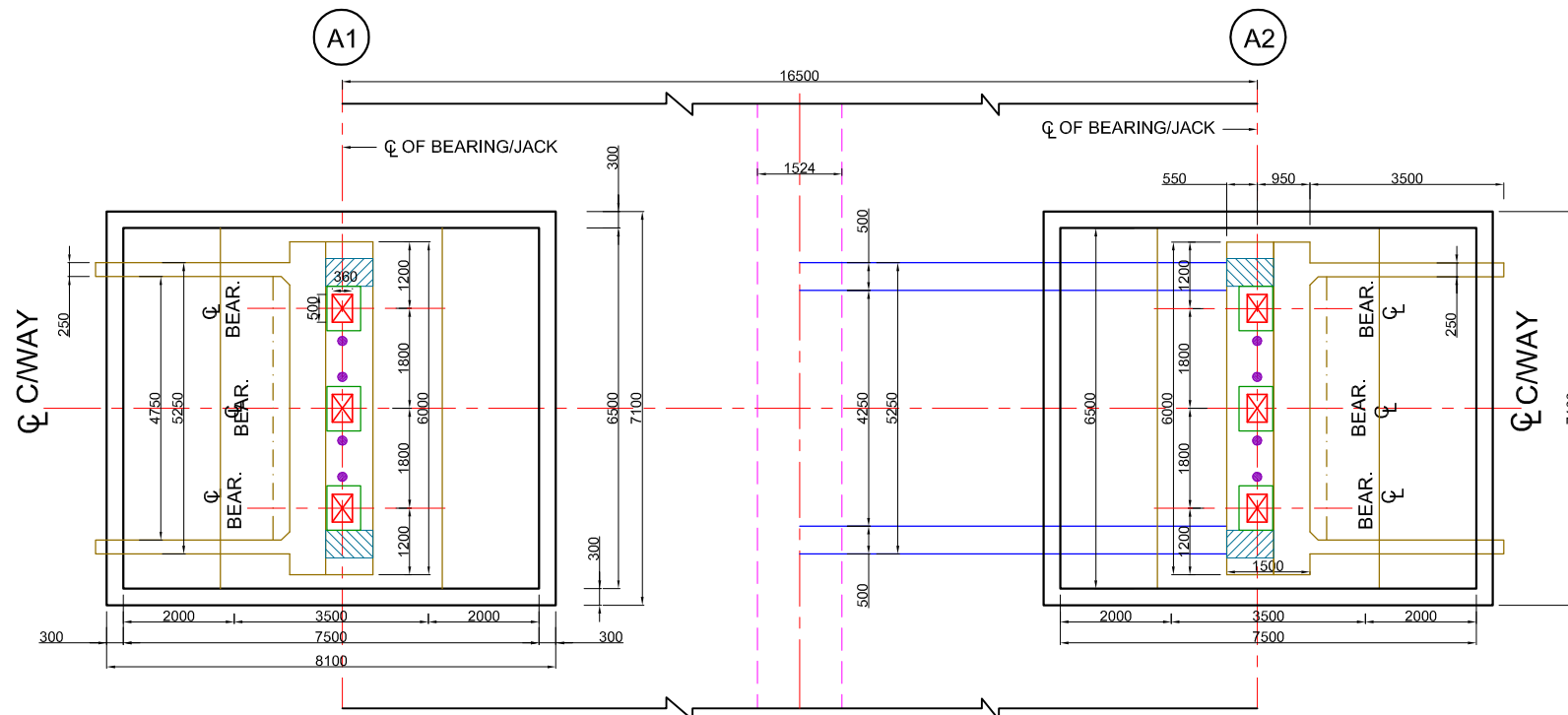
SECTION ACROSS NORTH KOEL RMC AT BRIDGE CENTRE LINE

(SCALE A)



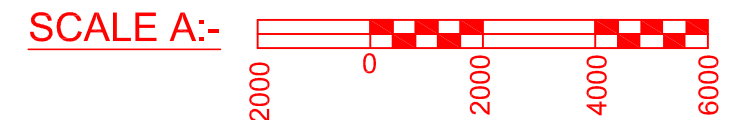
SIDE VIEW OF ABUTMENT

(SCALE A)



HALF BOTTOM PLAN / HALF TOP PLAN

(SCALE A)



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE NOT TO BE SCALED OFF. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. EXPANSION JOINTS ARE PROVIDED AT EVERY ABUTMENT LOCATIONS.
4. ROAD LEVEL REFER TO CARRIAGEWAY CENTER.
5. ONE LANES OF CLASS-A LOADING HAS BEEN CONSIDERED IN DESIGN.
6. FOLLOWING DATA HAS BEEN CONSIDERED IN DESIGN:-

CANAL DISCHARGE	39.49 CUMEC
BED LEVEL	133.705 M
WATER DEPTH	3.850 M
F.S.L.	137.555 M
FREE BOARD	0.75 M

7. FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR DIFFERENT COMPONENTS OF BRIDGE :-

a) RAFT	M35
b) ABUTMENT	M25
c) SUPER STRUCTURE	M35 (TABLE -5 OF IRC21)
d) CRASH BARRIER	M30
e) PEDESTAL (SEISMIC)	M35
f) WEARING COAT	M35

8. TYPE OF SOIL AT FOUNDING LEVEL IS GRAYISH CLAY. FOLLOWING PARAMETERS ARE USED IN DESIGN

SKWESSNESS ANGLE	0°
ROAD LEVEL	140.014 M
GROUND LEVEL	136.076 M
CARRIAGE WAY WIDTH	4.250 M
ALLOWABLE B/C	22.81 T/SQ M

9. SIZE OF ELASTOMERIC BEARING SHALL BE 360X500X96 MM

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

GENERAL ARRANGEMENT DRAWING OF SLR BRIDGE AT KM 69.525 WITH THREE BEAMS

Drawing No. :-

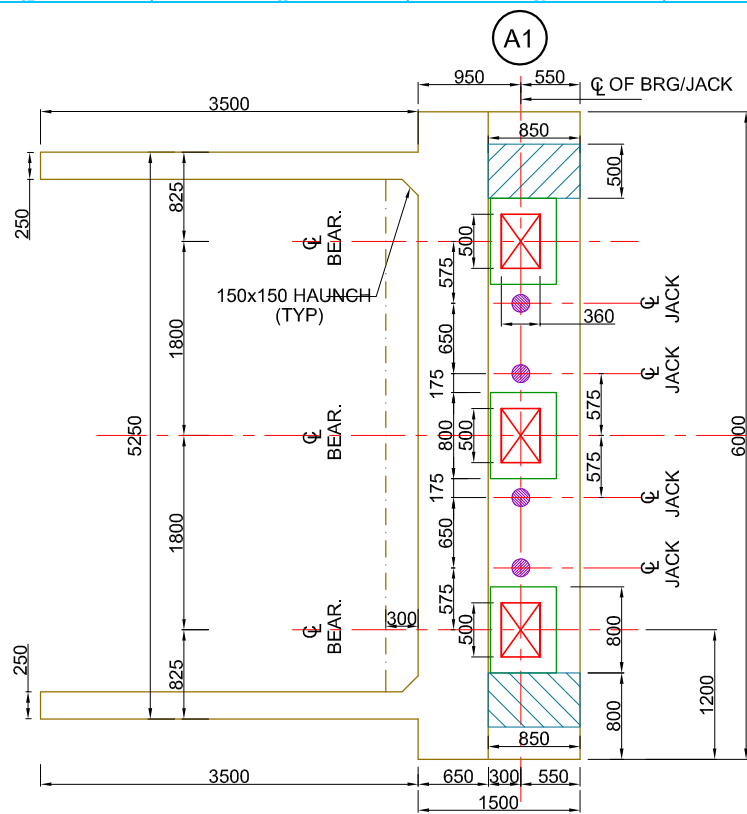
WAP/INFRA/NORTH KOEL/RMC/BRG-52

02 of 11

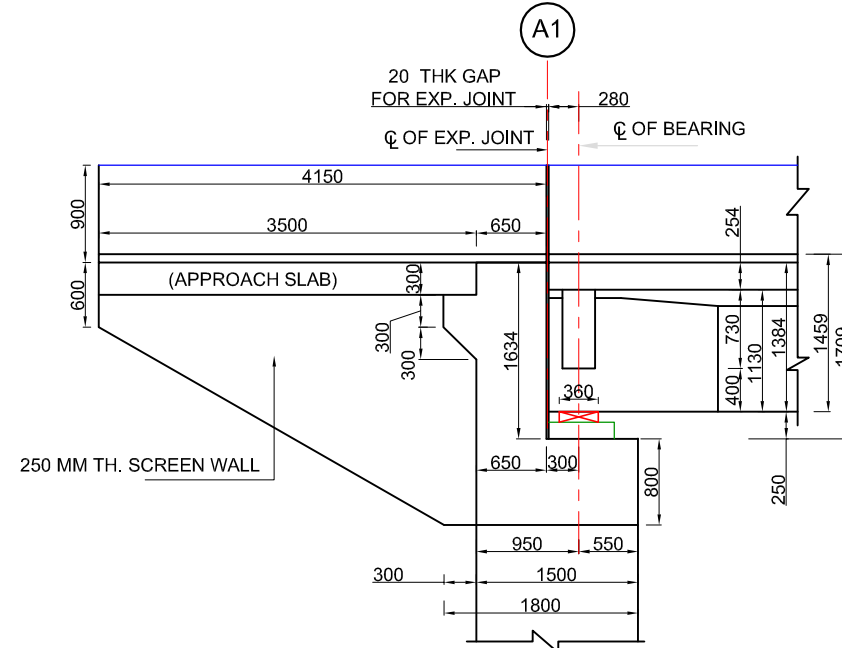
Drawn by:-

Checked by:-

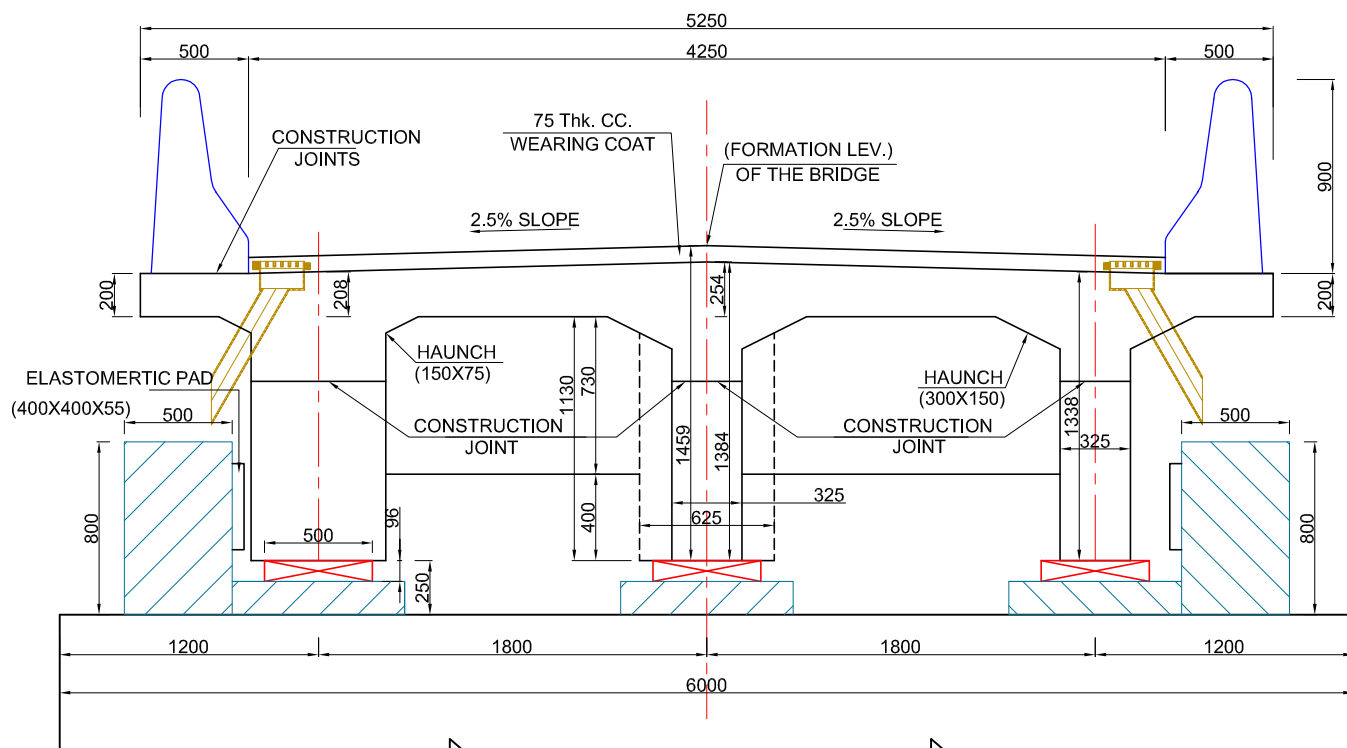
Approved by:-



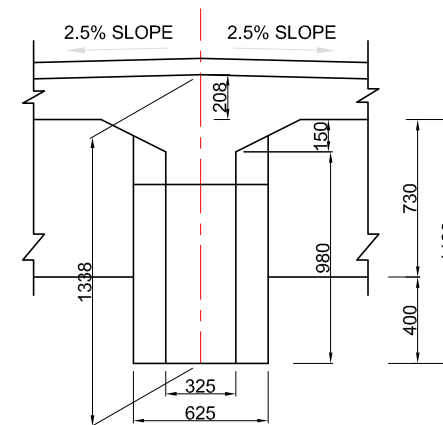
PLAN OF ABUTMENT AT BEARING LEVEL
(SCALE B)



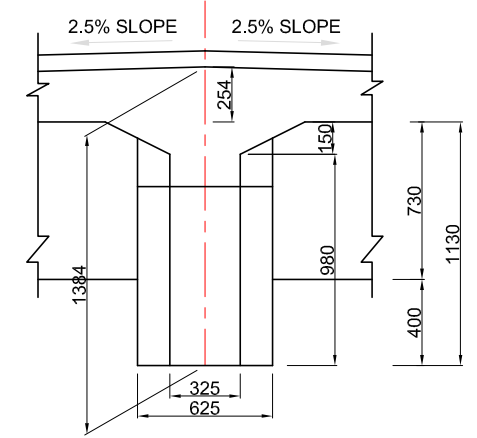
DETAIL - 'D1'
(SCALE B)



CROSS SECTION OF GIRDERS
(SCALE C)



CROSS SECTION OF RCC 'I' OUTER GIRDER
(SCALE C)



CROSS SECTION OF RCC 'I' INTERMEDIATE GIRDER
(SCALE C)

NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DIMENSION SHALL BE SCALED OFF.
- THE DETAILS SHOWN IN THIS DRAWING ARE APPLICABLE FOR R.C.C. T-BEAM SLAB SUPERSTRUCTURE WITHOUT FOOTPATHS.
- THE DESIGN IS APPLICABLE FOR SEVERE CONDITION OF EXPOSURE.
- GRADE OF CONCRETE FOR T-BEAM AND SLAB SHALL BE M-35. CONFORMING TO I.S. 456
- PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCEMENT.
- H.Y.S.D Fe500 BARS CONFORMING TO I.S.-456 SHALL BE PROVIDED AS REINFORCEMENT.
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED TO THE CONTRARY.
- CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 mm.
- BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
- OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
- 75 MM THICK CEMENT CONCRETE WEARING COAT IN M-35 GRADE CONCRETE SHALL BE LAID WITH 8 MM DIA MESH @200 MM.
- DRAINAGE SPOUT AND COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL AND AFTER FABRICATION THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANISED COATING.
- THE FIXING CLAMPS WILL BE OF HOT DIPPED GALVANISED MS FLAT. MINIMUM NUMBER OF CLAMPS TO BE PROVIDED WITH VERTICAL DRAIN-AGE SPOUT FOR FIXING TO LONGITUDINAL GIRDERS SHALL BE TWO.
- CRASH BARRIER TYPE RAILING SHALL BE USED.
- THE DESIGN OF VARIOUS COMPONENTS OF BRIDGE IS BASED ON THE PROVISIONS MADE IN THE M.O.S.T. DESIGN HANDBOOK.
- ALL CONCRETE WORKS SHALL CONFORM TO IS; 456- 2000.

SCALE B:-



SCALE C:-



Prepared by :-

WAPCOS LTD.



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

Drawing Title :- SECTION DETAILS OF G.A.D. OF SLR BRIDGE AT KM 69.525 WITH THREE BEAMS

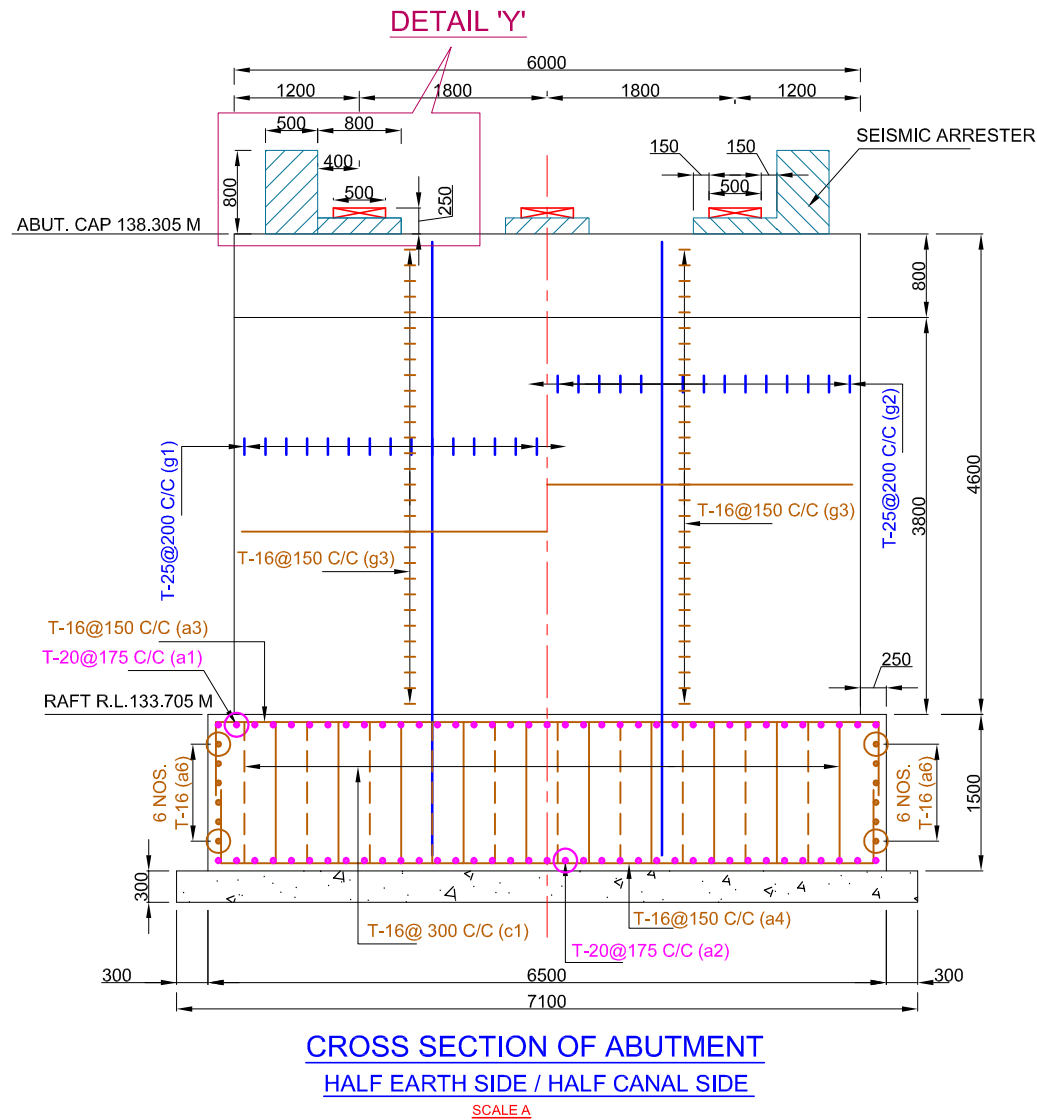
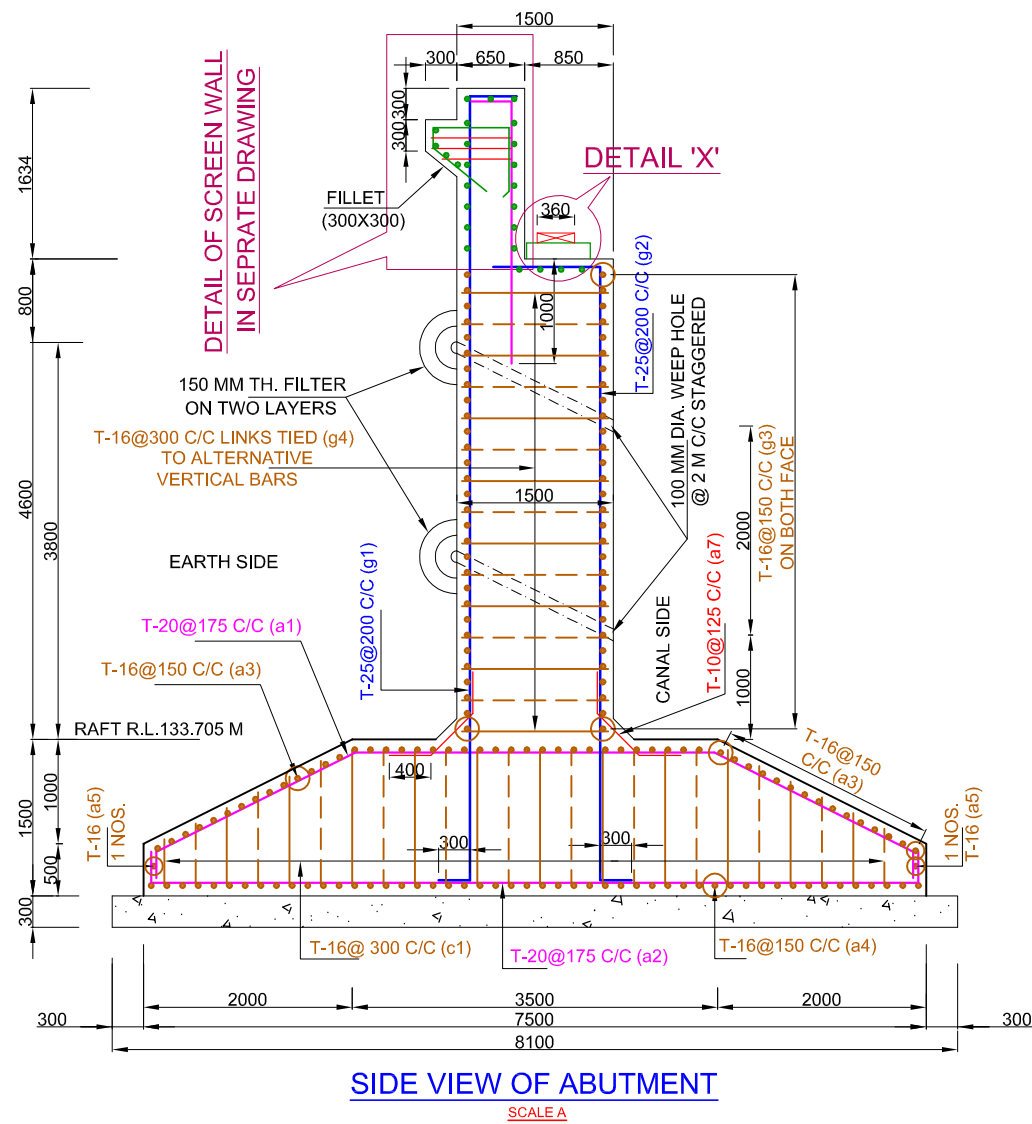
Drawing No. :- WAP/INFRA/NORTH KOEL/RMC/BRG-52

03 of 11

Drawn by:-

Checked by:-

Approved by:-



BARS BENDING SCHEDULE

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing (mm)	No. of bars (mm)
1	g1	450 7509 300	25	200	30X2
2	g2	1025 5875 300	25	200	30X2
3	g3	700 5850 700	16	150	30X2X2
4	g4	150 VERTICAL LINK BARS 1350	16	300	8X9X2
5	a1	250 2130 3440 2130 250	20	175	37X2
6	a2	300 7350 300	20	175	37X2
7	a3	L 6350 L = Varying 250-700 L	16	150	52X2
8	a4	L 6350 L = Varying 250-700 L	16	150	50X2
9	a5	700 6350 700	16	-	1X2X2
10	a6	700 4420-7400 Varying 700	16	-	6X2X2
11	a7	400 560 400 400 560	10	125	47X2X2
12	c1	150 390-1350 Varying 150	16	300	12X10X2

NOTES

- ALL DIMENSIONS ARE IN mm AND LEVELS IN METRE
- THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- EXPANSION JOINTS ARE PROVIDED AT EVERY ABUTMENT LOCATIONS.
- ROAD LEVEL REFERS TO CARRIAGEWAY CENTRE.
- ONE LANE OF CLASS-A LOADING HAS BEEN CONSIDERED IN DESIGN.
- FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR DIFFERENT COMPONENTS OF BRIDGE:-
 - RAFT M35
 - SUBSTRUCTURE M25
 - PEDESTAL M35
- ELASTOMERIC BEARINGS WILL BE PROVIDED AS PER IRC: 83(PARTII)-1987.
- THIS DRAWING SHOWS DETAILS OF ABUTMENT AND ABUTMENT CAP.
- OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
- PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCMENT.

- CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50mm
- BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED TO THE CONTRARY.
- ALL HOOKS AND OVERLAPS TO BE OF STANDARD DIMENSION.
- H.Y.S.D Fe500 BARS SHALL CONFORM TO I.S.-456:2000
- MAIN VERTICAL REINFORCEMENT OF ABUTMENT WILL BE EMBEDDED IN RAFT.

SCALE A:-

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

REINFORCEMENT DETAILS OF ABUTMENT OF SLR BRIDGE AT KM 69.525 WITH THREE BEAMS

Drawing No. :-

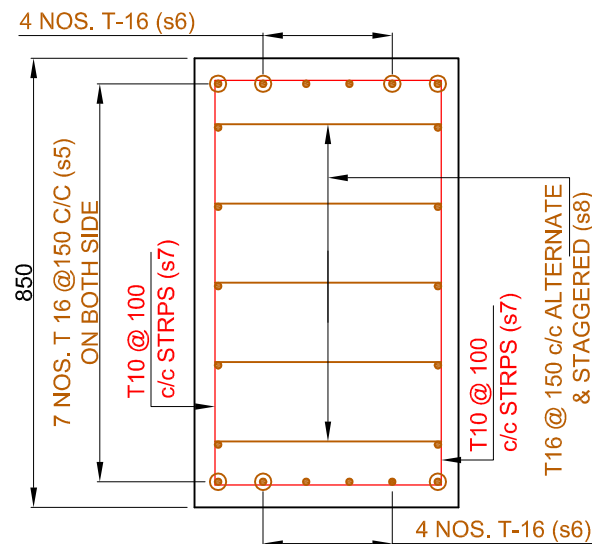
WAP/INFRA/NORTH KOEL/RMC/BRG-52

04 of 11

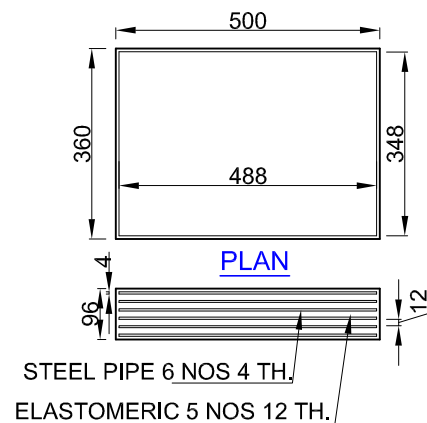
Drawn by:-

Checked by:-

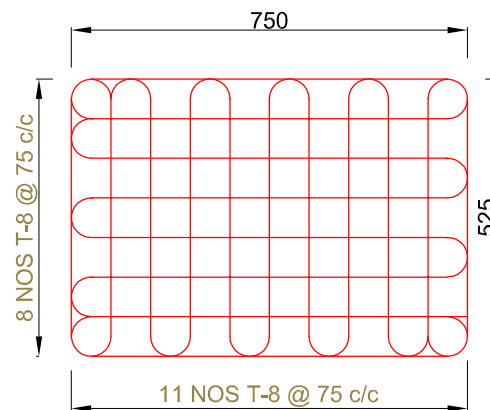
Approved by:-



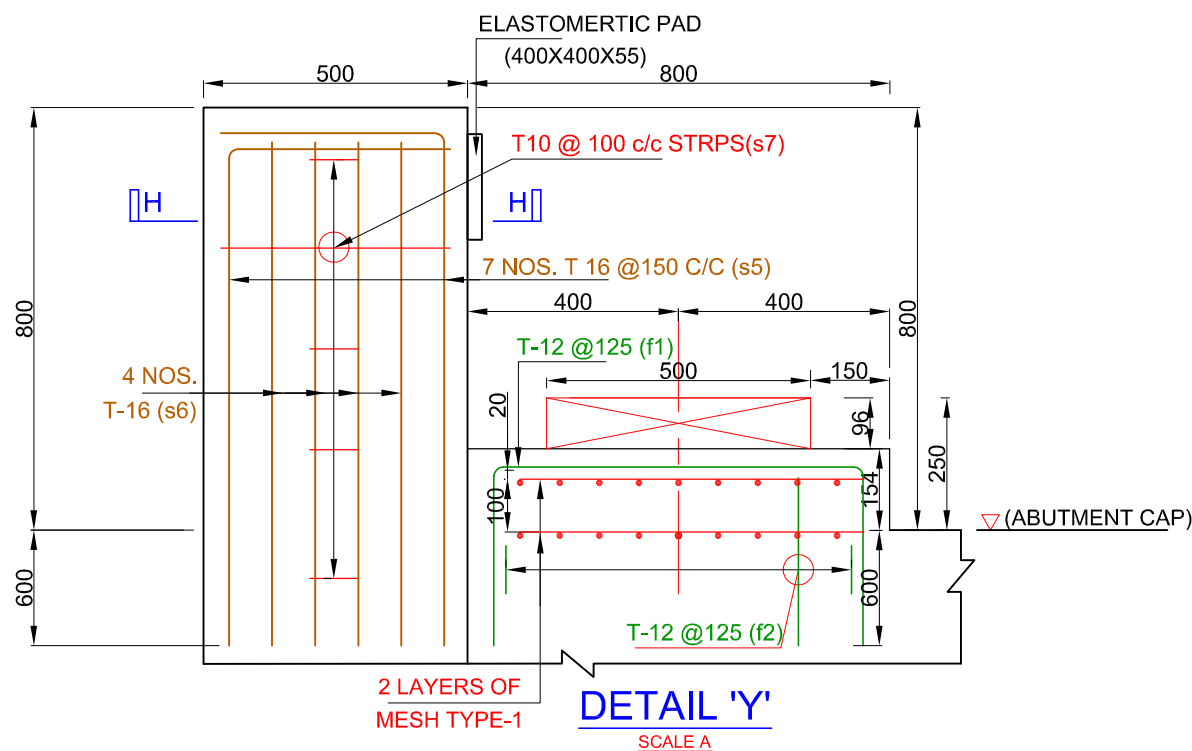
SECTION H-H
SCALE A



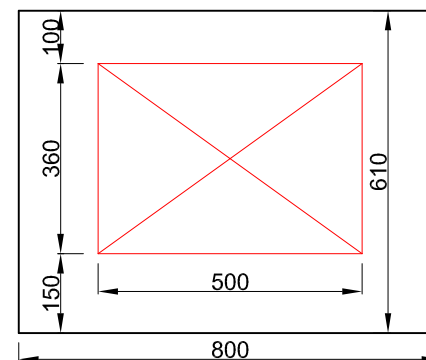
DETAILS OF ELASTOMERIC BEARINGS
SCALE A



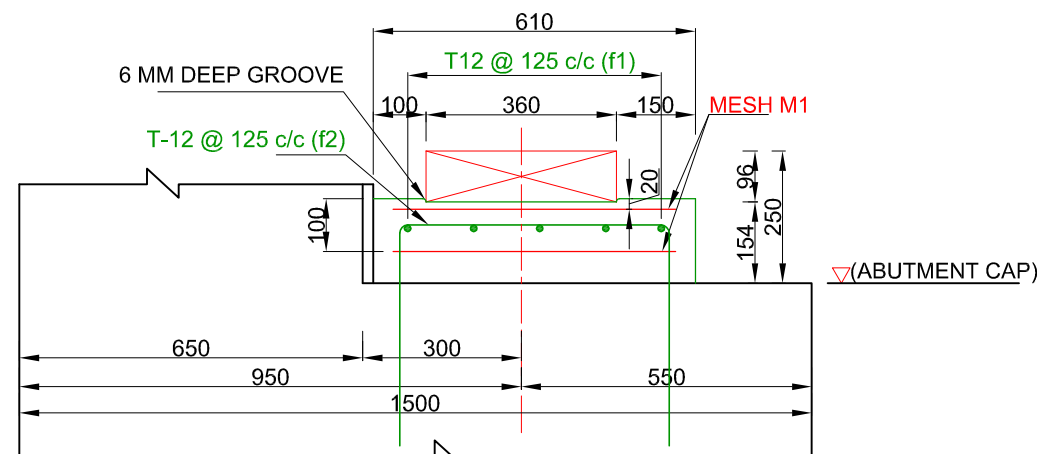
DETAIL OF MESH M1
SCALE A



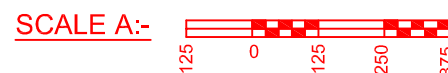
DETAIL 'Y'
SCALE A



PLAN
SCALE A



DETAIL 'X'
SCALE A



BARS BENDING SCHEDULE

	S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing (mm)	No. of bars (mm)
SEISMIC ARRESTER FOR ABUTMENT	1	s5		16	150	14X2X2
	2	s6		16	-	8X2X2
	3	s7		10	100	5X2X2
	4	s8		16	150	5x2x2
PEDESTAL FOR ABUTMENT	5	f1		12	125	5X2X2
	6	f2		12	125	5X2X2

NOTES

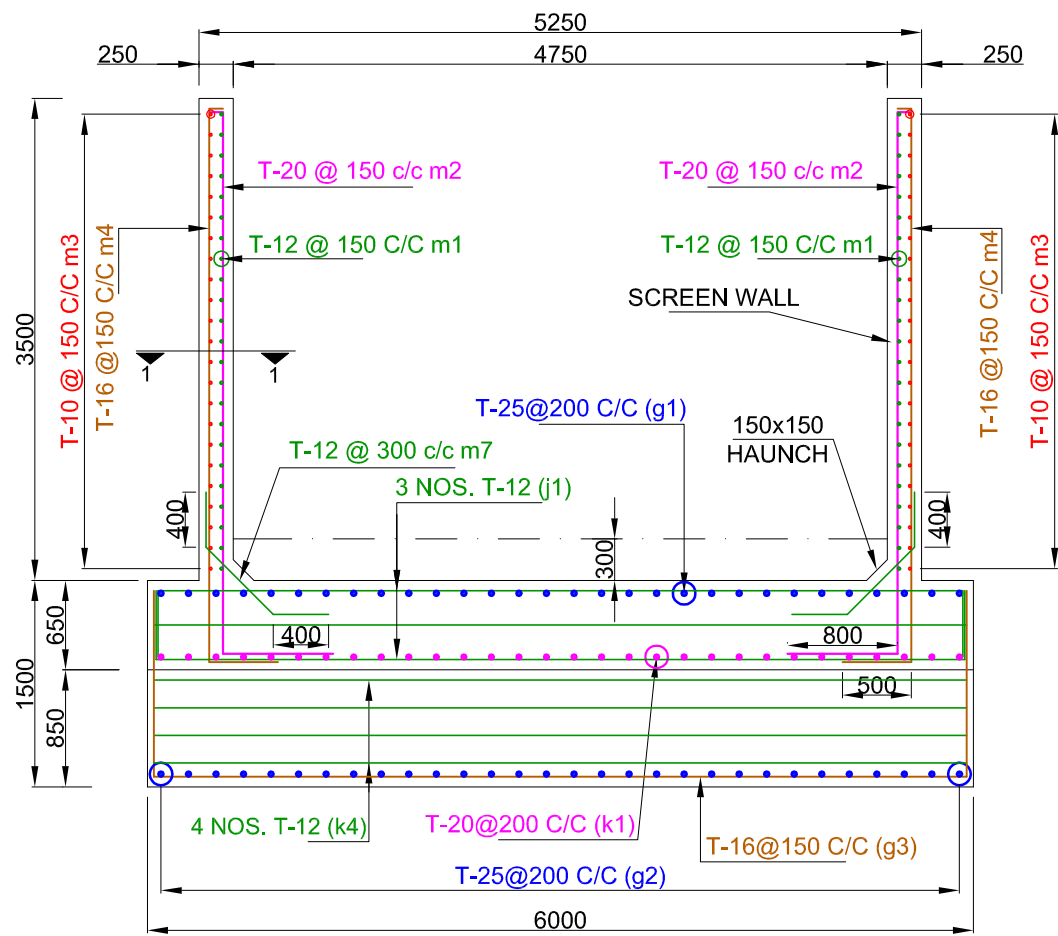
- ALL DIMENSIONS ARE IN mm AND LEVELS IN METRE
- THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- EXPANSION JOINTS ARE PROVIDED AT EVERY ABUTMENT LOCATIONS.
- ROAD LEVEL REFERS TO CARRIAGEWAY CENTRE.
- ONE LANE OF CLASS-A LOADING HAS BEEN CONSIDERED IN DESIGN.
- FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR DIFFERENT COMPONENTS OF BRIDGE:-
 - RAFT M35
 - SUBSTRUCTURE M25
 - PEDESTAL M35
- ELASTOMERIC BEARINGS WILL BE PROVIDED AS PER IRC: 83(PARTII)-1987.
- THIS DRAWING SHOWS DETAILS OF ABUTMENT AND ABUTMENT CAP.
- OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
- PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCMENT.
- CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50mm
- BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED TO THE CONTRARY.
- ALL HOOKS AND OVERLAPS TO BE OF STANDARD DIMENSION.
- H.Y.S.D Fe500 BARS SHALL CONFORM TO I.S.-456:2000
- MAIN VERTICAL REINFORCEMENT OF ABUTMENT WILL BE EMBEDDED IN RAFT.

Prepared by :-

WAPCOS LTD.

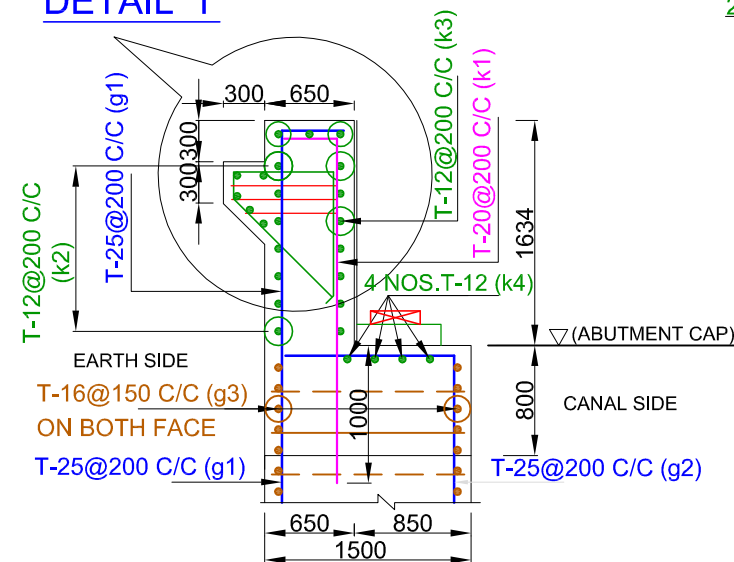


Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
Drawing Title :-	REINFORCEMENT DETAILS OF SEISMIC ARRESTERS AND PEDESTAL AT KM 69.525 WITH THREE BEAMS		
Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/BRG-52		05 of 11
Drawn by:-	Checked by:-	Approved by:-	

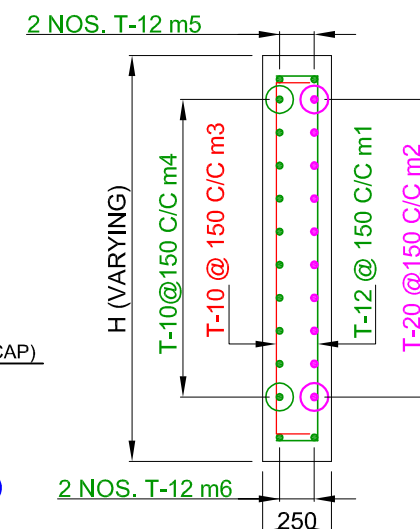


REINFORCEMENT DETAILS IN PLAN OF DIRT WALL
SCALE A

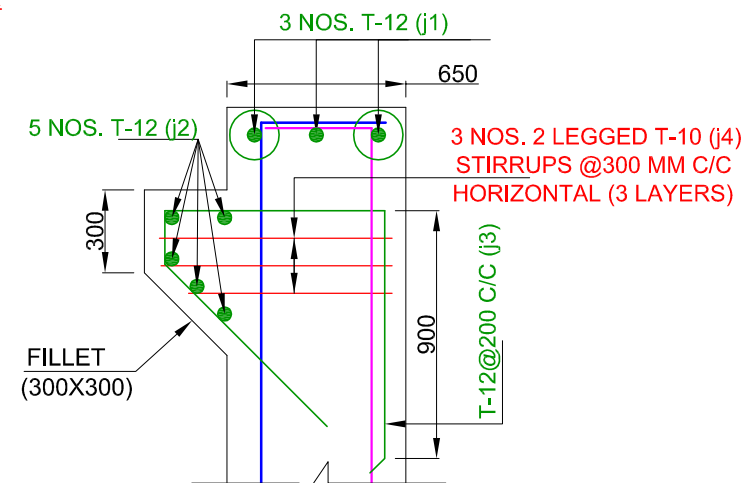
DETAIL '1'



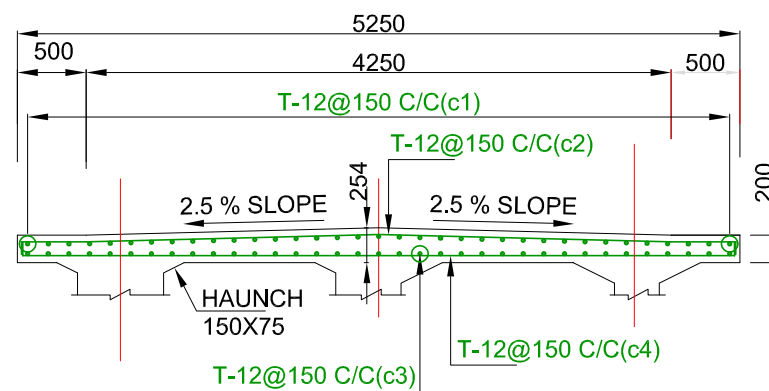
REINFORCEMENT DETAILS IN SECTION OF DIRT
SCALE A



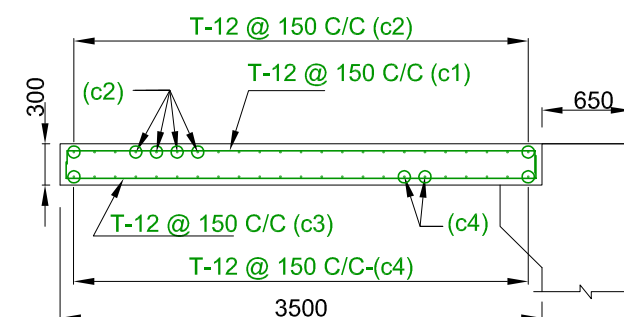
SECTION AT 1-1
SCALE B



DETAIL '1'
SCALE B



REINFORCEMENT IN APPROACH SLAB
SCALE A



SECTION OF APPROACH SLAB
SCALE A

BARS BENDING SCHEDULE

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing (mm)	No. of bars (mm)
1	k1		20	200	30X2
2	k2		12	200	7X2
3	k3		12	200	7X2
4	k4		12	200	4X2
5	j1		12	-	3X2
6	j2		12	-	5X2
7	j3		12	200	23X2
8	j4		10	300	3X2
9	m1		12	150	23X2X2
10	m2		20	150	13X2X2
11	m3		10	150	23X2X2
12	m4		16	150	13X2X2
13	m5		12	-	4X2
14	m6		12	-	4X2
15	m7		12	300	5X2X2
16	c1		12	150	34X2
17	c2		12	150	23X2
18	c3		12	150	34X2
19	c4		12	150	23X2

NOTES

- ALL DIMENSIONS ARE IN mm AND LEVELS IN METRE
- THE DRAWING SHALL NOT BE SCALED OFF, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- EXPANSION JOINTS ARE PROVIDED AT EVERY ABUTMENT LOCATIONS.
- ROAD LEVEL REFERS TO CARRIAGEWAY CENTRE.
- ONE LANE OF CLASS 70R OR TWO LANES OF CLASS-A LOADING WHICHEVER IS CRITICAL HAS BEEN CONSIDERED IN DESIGN.
- FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR DIFFERENT COMPONENTS OF BRIDGE:-

a) RAFT	M35
b) SUBSTRUCTURE	M25
c) PEDESTAL	M35
- ELASTOMERIC BEARINGS WILL BE PROVIDED AS PER IRC: 83(PARTII)-1987.
- THIS DRAWING SHOWS DETAILS OF PIER AND PIER CAP.
- OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
- PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCMENT.
- CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50mm
- BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
- THE COVER INDICATED IN THIS DRAWINGS IS CLEAR COVER TO MAIN REINFORCEMENT BARS NEAREST TO THE CONCRETE SURFACE INCLUDING STIRRUPS AND BINDERS UNLESS MENTIONED TO THE CONTRARY.
- ALL HOOKS AND OVERLAPS TO BE OF STANDARD DIMENSION.
- H.Y.S.D Fe500 BARS SHALL CONFORM TO I.S.-456:2000
- MAIN VERTICAL REINFORCEMENT OF ABUTMENT WILL BE EMBEDDED IN RAFT.

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

REINFORCEMENT DETAILS OF SCREEN WALL OF SLR BRIDGE AT KM 69.525 WITH THREE BEAMS

Drawing No. :-

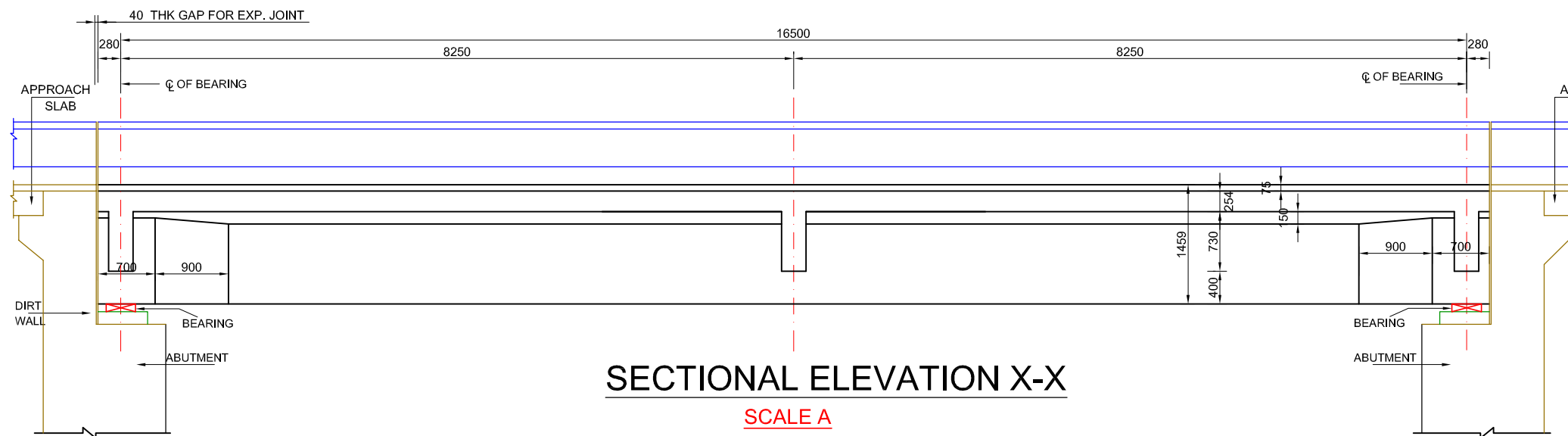
WAP/INFRA/NORTH KOEL/RMC/BRG-52

06 of 11

Drawn by:-

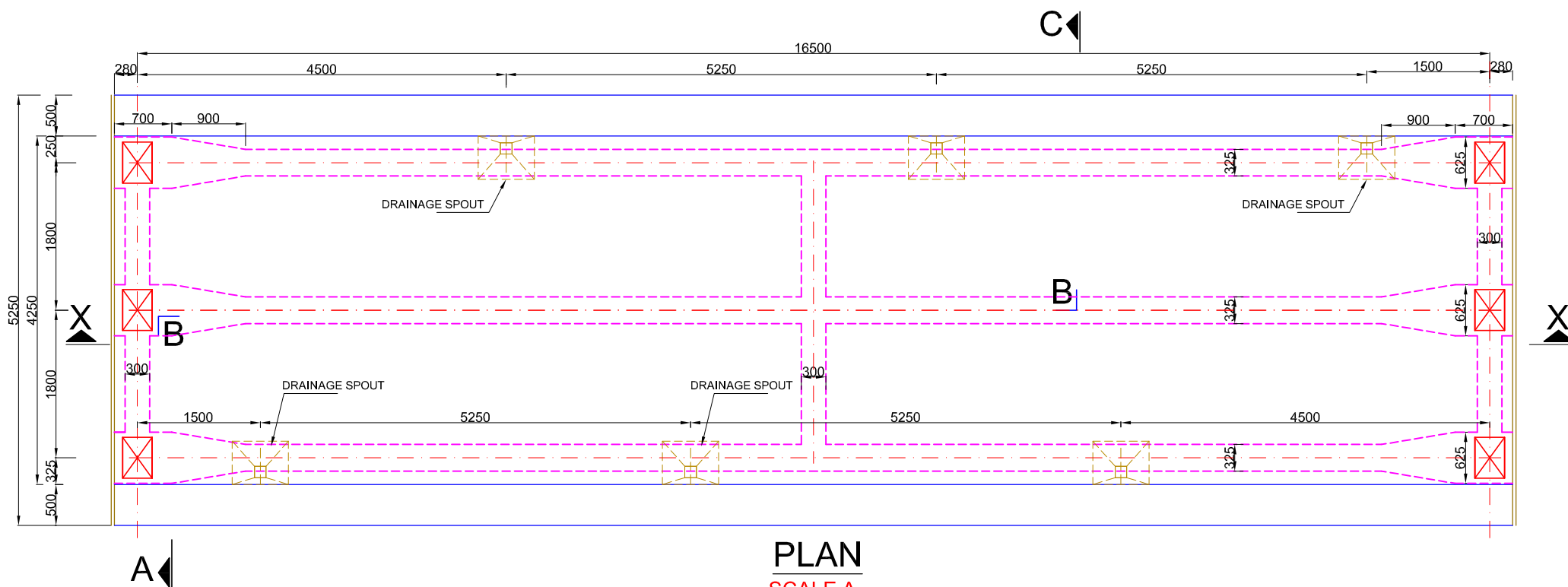
Checked by:-

Approved by:-



SECTIONAL ELEVATION X-X

SCALE A

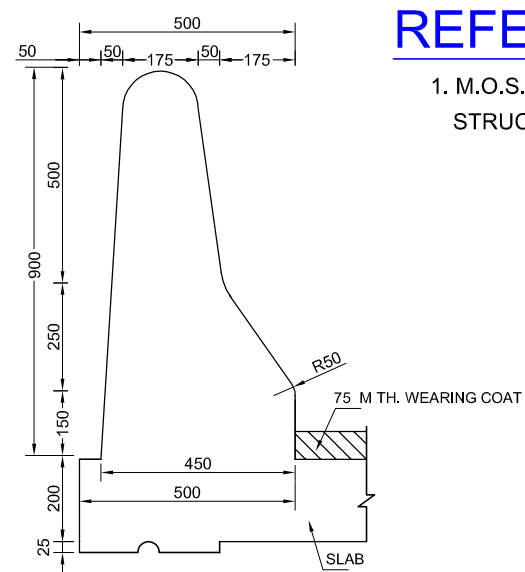


PLAN

SCALE A

NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DIMENSION SHALL BE SCALED OFF.
- THE DETAILS SHOWN IN THIS DRAWING ARE APPLICABLE FOR R.C.C. T-BEAM SLAB SUPERSTRUCTURE WITHOUT FOOTPATHS.
- THE DESIGN IS APPLICABLE FOR SEVERE CONDITION OF EXPOSURE.
- GRADE OF CONCRETE FOR T-BEAM AND SLAB SHALL BE M-35. CONFORMING TO IS 456.
- 75 MM THICK CEMENT CONCRETE WEARING COAT IN M-30 GRADE CONCRETE SHALL BE LAID WITH 8 MM DIA BAR MESH @ 200 C/C ..
- DRAINAGE SPOUT AND COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL AND AFTER FABRICATION THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANISED COATING.
- THE FIXING CLAMPS WILL BE OF HOT DIPPED GALVANISED MS FLAT. MINIMUM NUMBER OF CLAMPS TO BE PROVIDED WITH VERTICAL DRAIN-AGE SPOUT FOR FIXING TO LONGITUDINAL GIRDERS SHALL BE TWO.
- REINFORCED RAILING POST SHOULD BE SUITABLY ANCHORED IN DECK SLAB.
- THE DESIGN OF VARIOUS COMPONENTS OF BRIDGE IS BASED ON THE PROVISIONS MADE IN THE M.O.S.T. DESIGN HANDBOOK.
- CLEAR COVER TO ANY REINFORCEMENT SHALL BE 50 MM.

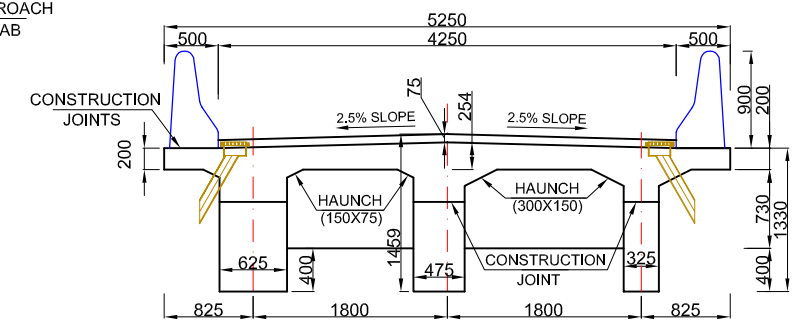
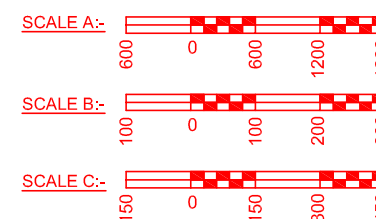


DETAILS OF CRASH BARRIER

SCALE C

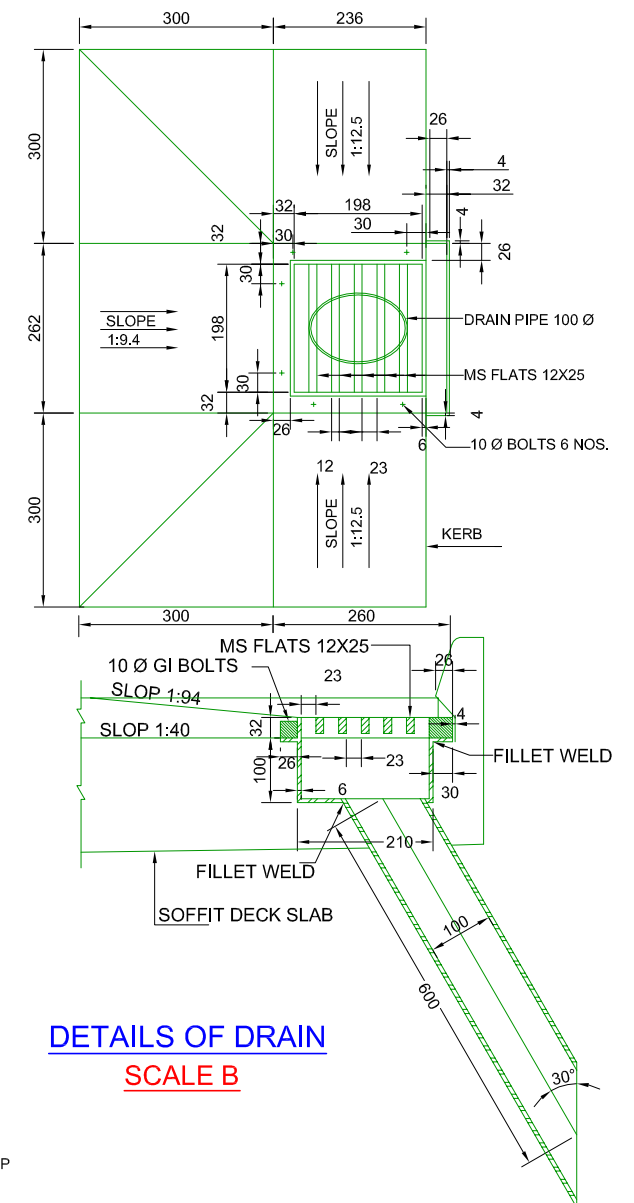
REFERENCES:-

- M.O.S.T. R.C.C. T-BEAM AND SLAB SUPER STRUCTURES DRG. NO. SD/210.



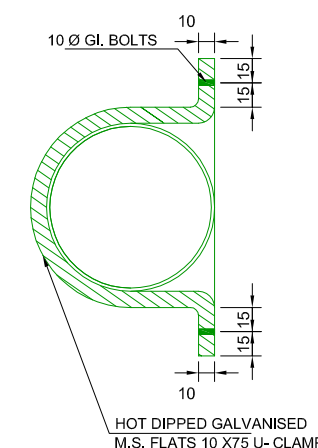
SECTION ABC

SCALE A



DETAILS OF DRAIN

SCALE B



Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

DETAIL DRAWING OF DECK SLAB OF SLR BRIDGE AT KM 69.525 WITH THREE BEAMS

Drawing No. :-

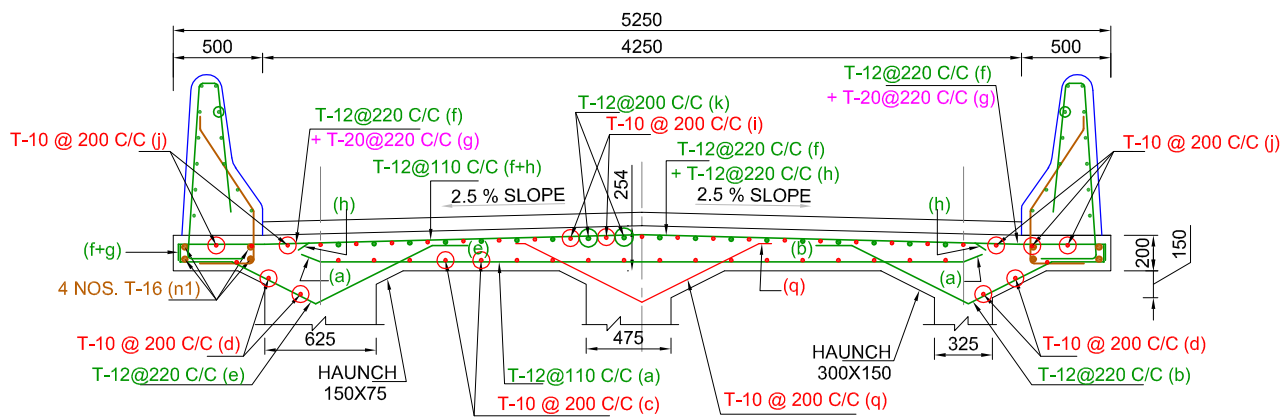
WAP/INFRA/NORTH KOEL/RMC/BRG-52

07 of 11

Drawn by:-

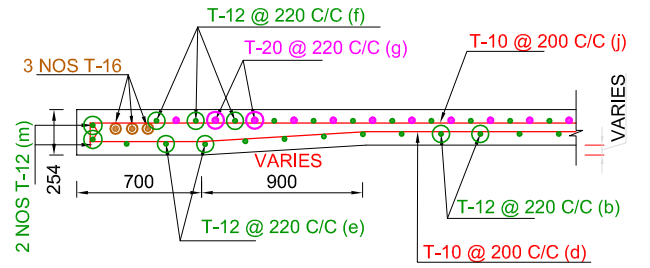
Checked by:-

Approved by:-



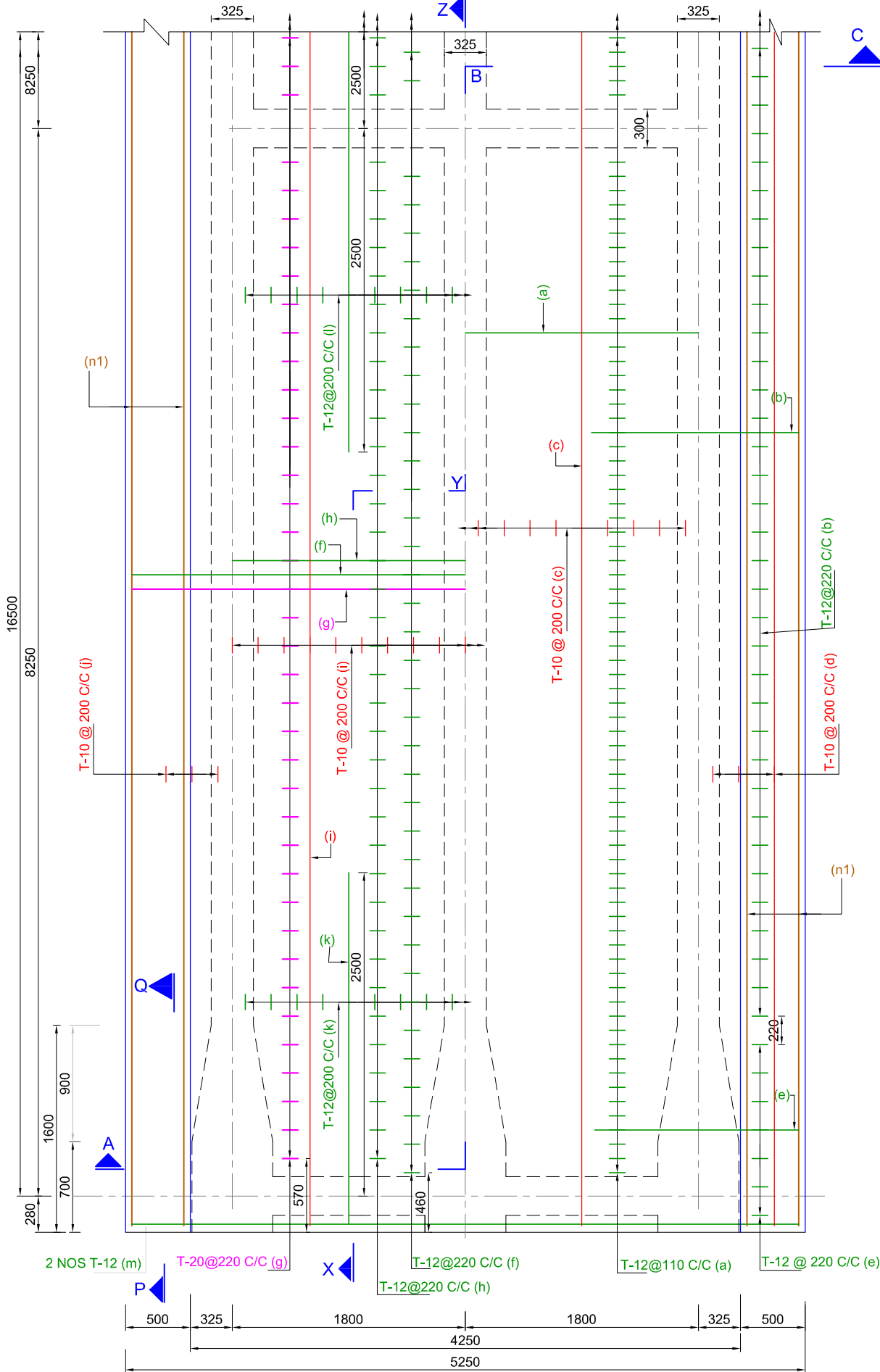
CROSS SECTION ABC

SCALE A



SECTION P.Q.

SCALE A

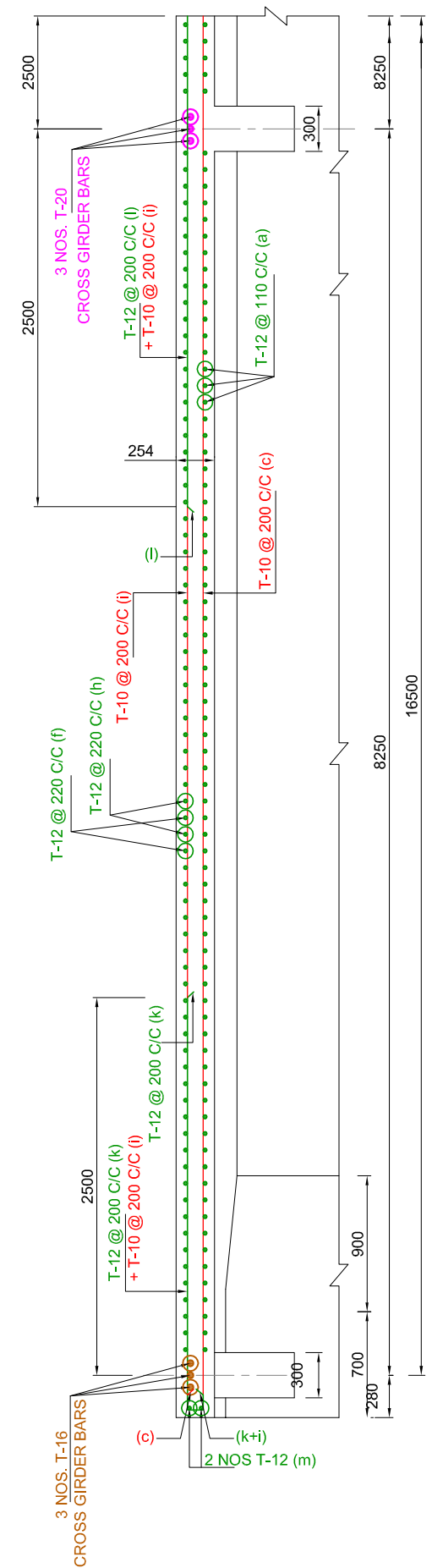


HALF TOP REINFORCEMENT

HALF BOTTOM REINFORCEMENT

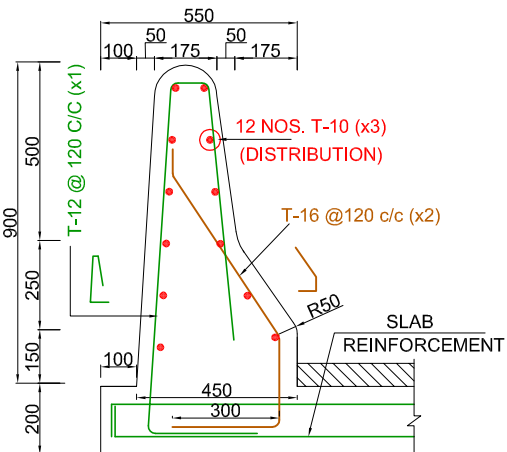
PLAN

SCALE A



SECTION X Y Z

SCALE A



REINFORCEMENT DETAIL OF CRASH BARRIER

SCALE B

REFERENCES:-

1. M.O.S.T. R.C.C. T-BEAM AND SLAB SUPER STRUCTURES DRG. NO. SD/212.

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

REINFORCEMENT DETAIL DRAWING OF DECK SLAB OF SLR BRIDGE AT KM 69.525 WITH THREE BEAMS

Drawing No. :-

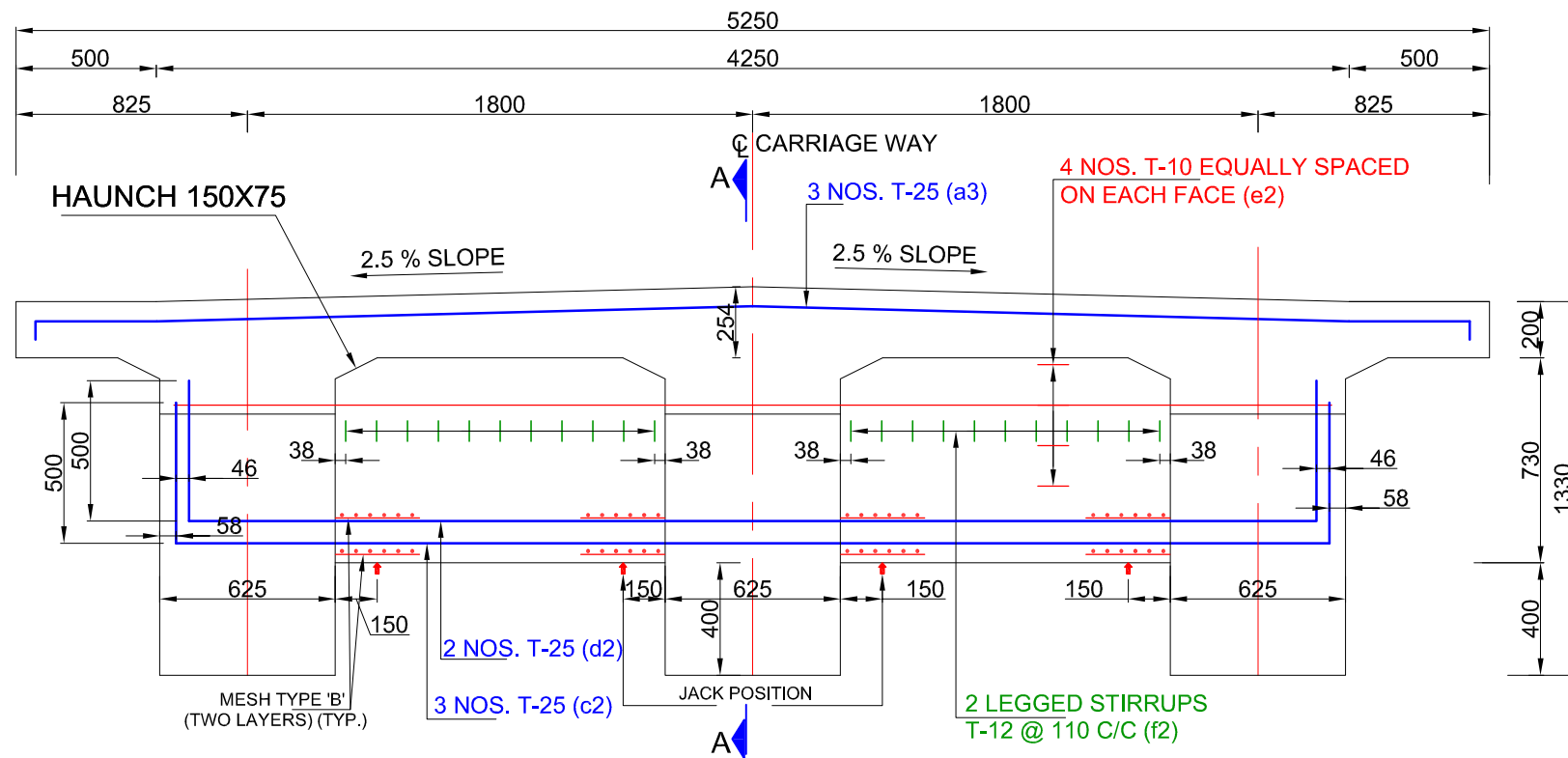
WAP/INFRA/NORTH KOEL/RMC/BRG-52

08 of 11

Drawn by:-

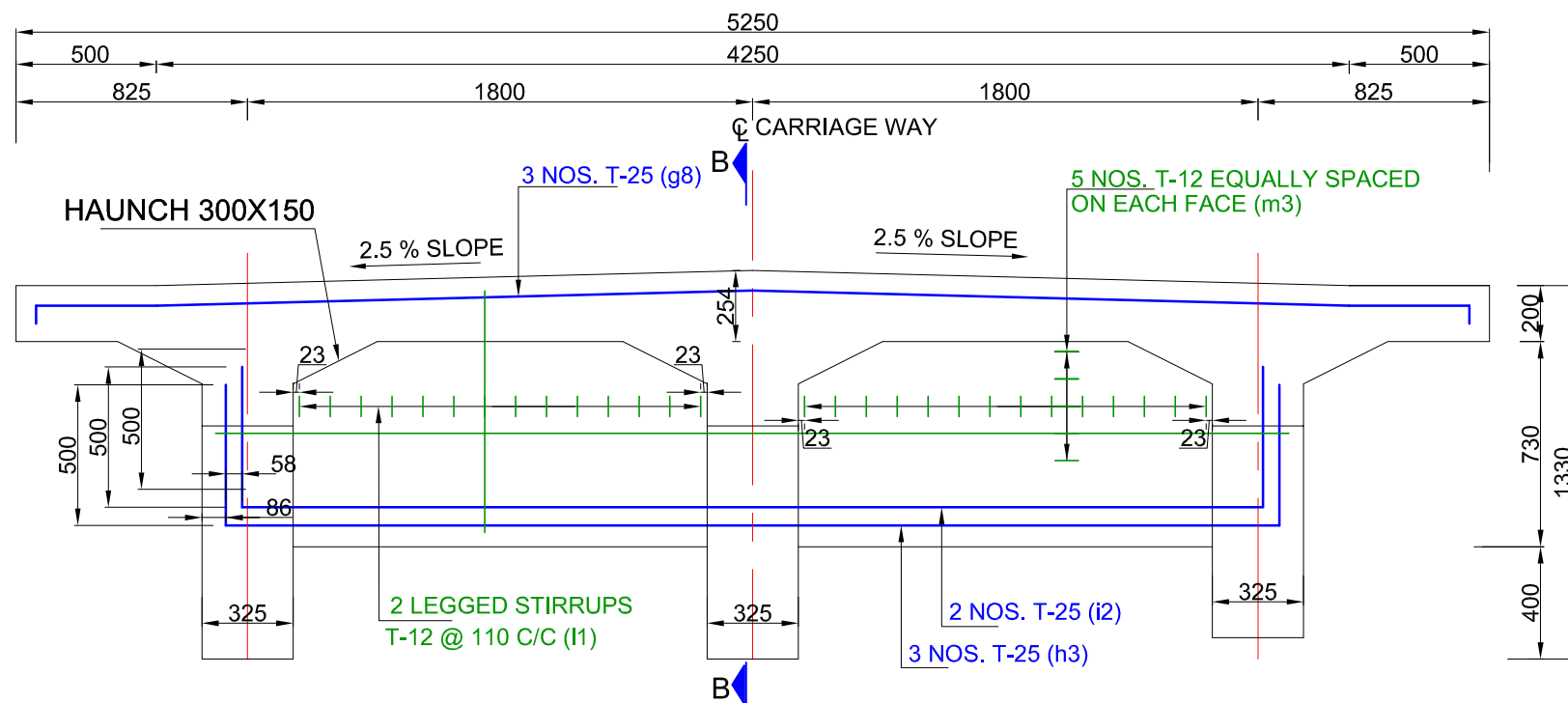
Checked by:-

Approved by:-



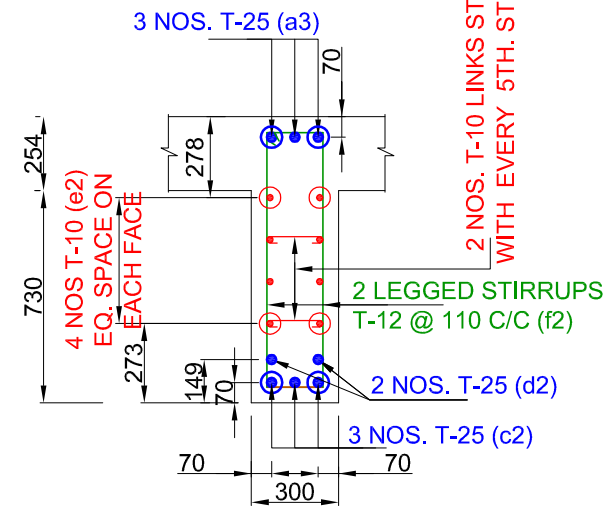
LONGITUDINAL SECTION OF END CROSS GIRDER

SCALE A



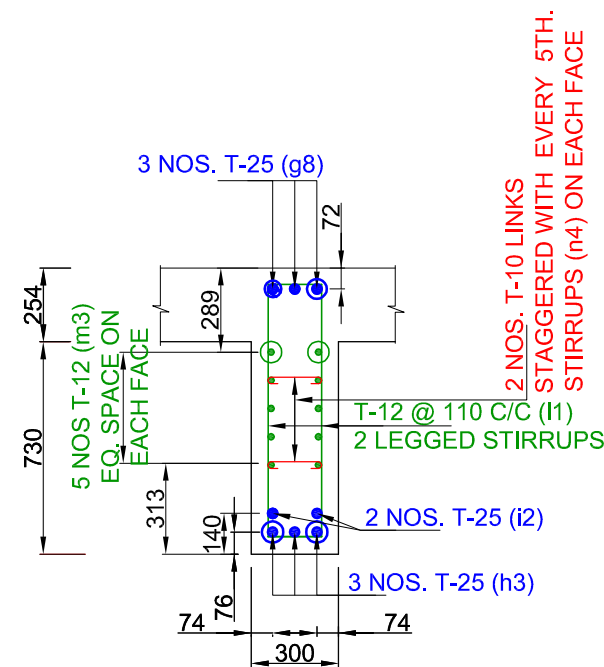
LONGITUDINAL SECTION OF MIDDLE CROSS GIRDER

SCALE A



SECTION A-A

SCALE A

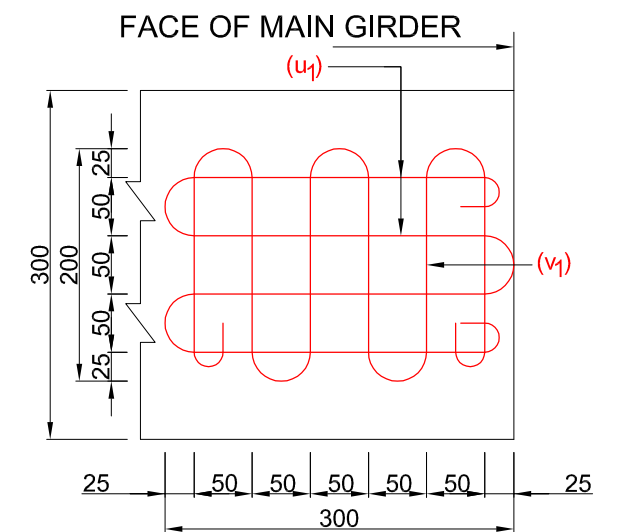


SECTION B-B

SCALE A

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DIMENSION SHALL BE SCALED OFF.
2. THE DETAILS SHOWN IN THIS DRAWING ARE APPLICABLE FOR R.C.C. T-BEAM SLAB SUPERSTRUCTURE WITHOUT FOOTPATHS.
3. THE DESIGN IS APPLICABLE FOR SEVERE CONDITION OF EXPOSURE.
4. GRADE OF CONCRETE FOR T-BEAM AND SLAB SHALL BE M-35. CONFORMING TO I.S. 456
5. PRECAST MORTAR BLOCKS OF THE SAME STRENGTH AS THAT OF THE CONCRETE OF THE COMPONENT SHALL BE USED TO ENSURE THE REQUIRED COVER TO REINFORCEMENT.
6. H.Y.S.D Fe500 BARS CONFORMING TO I.S.-456 SHALL BE PROVIDED AS REINFORCEMENT.
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 TO THE CONTRARY.
8. CLEAR COVER TO ANY REINF. INCLUDING STIRRUPS SHALL BE 50 mm.
9. BENDING OF REINF. BAR SHALL BE AS PER IS. 2502
10. OVERLAPS IF NECESSARY SHALL BE STAGGERED AND PROVIDED AS PER CL. 304.6.6.3 OF IRC 21-2000
11. 75 MM THICK CEMENT CONCRETE WEARING COAT IN M-30 GRADE CONCRETE SHALL BE LAID WITH 8 MM DIA MESH @200 MM.
12. DRAINAGE SPOUT AND COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL AND AFTER FABRICATION THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANISED COATING.
13. THE FIXING CLAMPS WILL BE OF HOT DIPPED GALVANISED MS FLAT. MINIMUM NUMBER OF CLAMPS TO BE PROVIDED WITH VERTICAL DRAIN-AGE SPOUT FOR FIXING TO LONGITUDINAL GIRDERS SHALL BE TWO.
14. CRASH BARRIER TYPE RAILING SHALL BE USED.
15. THE DESIGN OF VARIOUS COMPONENTS OF BRIDGE IS BASED ON THE PROVISIONS MADE IN THE M.O.S.T. DESIGN HANDBOOK.
16. ALL CONCRETE WORKS SHALL CONFORM TO IS; 456- 2000.



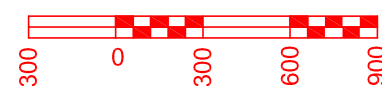
T-10 MESH REINFS. TYPE - 'B'

SCALE B

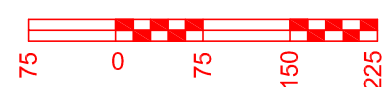
REFERENCES:-

1. M.O.S.T. R.C.C. T-BEAM AND SLAB SUPER STRUCTURES DRG. NO. SD/215.

SCALE A:-



SCALE B:-



Prepared by :-

WAPCOS LTD.



Project Title :-	NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND		
Drawing Title :-	REINFORCEMENT OF CROSS GIRDER OF SLR BRIDGE AT KM 69.525 WITH THREE BEAMS		
Drawing No. :-	WAP/INFRA/NORTH KOEL/RMC/BRG-52		10 of 11
Drawn by:-	Checked by:-	Approved by:-	

A) H.Y.S.D. BARS

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
SLAB						
1	a		12	110	3600	144
2	b		12	220	1927	126
3	c		10	200	17460	18
4	d		10	200	17460	6
5	e		12	220	1927	32
6	f		12	220	5304	74
7	g		20	220	5182	72
8	h		12	220	3732	72
9	i		10	200	17460	19
10	j		10	200	17388	6
11	k		12	200	2958	36
12	l		12	200	5000	18
13	m		12	-	5150	4
14	n1		16	-	16960	8
15	q		10	200	2110	82

LONGITUDINAL OUTER GIRDERS

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
1	a1		16	125	3418	11X2X2
2	a2		16	150	3118	7X2X2
3	b1		12	150	3038	38X2X2
4	c1		16	-	2693	2X2X2
5	d1		25	-	18148	3X2
6	e1		10	-	13860	4X2X2
7	f1		10	-	2199	12X2X2
8	g1		32	-	18108	3X2
9	g2		32	-	17980	3X2
10	g3		32	-	14660	2X2
11	i1		32	-	6335	2X2
12	n2		10	-	583	4X2X2
13	n3		10	-	433	18X2X2

A) H.Y.S.D. BARS

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
LONGITUDINAL INNER GIRDER						
1	i1		16	100	3510	14X2X1
2	i2		16	125	3210	7X2X1
3	k1		12	150	3130	39X2X1
4	c1		16	-	2693	2X2X1
5	d1		25	-	18188	3X1
6	e1		10	-	13860	4X2X1
7	f1		10	-	2199	14X2X1
8	g1		25	-	18108	3X1
9	g2		25	-	17980	3X1
10	g3		25	-	18108	3X1
11	g4		25	-	14660	2X1
12	i1		25	-	6335	2X1
13	n2		10	-	583	6X2X1
14	n3		10	-	433	18X2X1

CRASH BARRIER PER M

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
1	x1		12	120	2125	9
2	x2		16	120	1165	9
3	x3		10	-	1000	12

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
B)M.S. BARS (MESH REINFORCEMENT LONGITUDINAL GIRDERS)						
1	u		10	-	3550	12
2	v		10	-	3506	12

A) H.Y.S.D. BARS

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	No. of bars
END CROSS GIRDERS						
1	a3		25	-	5342	3X2
2	c2		25	-	5029	3X2
3	d2		25	-	4961	2X2
4	e2		10	-	4261	4X2X2
5	f2		12	110	2074	11X2X2
6	n4		10	-	416	4X2X2
MIDDLE CROSS GIRDERS						
1	g6		25	-	5352	3
2	h3		25	-	4582	3
3	i2		25	-	4465	2
4	l1		12	110	2074	14X2
5	m3		12	-	4787	5X2
6	n4		10	-	416	6X2

S. no.	Type of bars	Shape of bars (not to scale) (Dimensions are in millimetres)	Dia of bars (mm)	Spacing	Length of each bar (mm)	no. of bars
B)M.S. BARS (MESH REINFORCEMENT IN CROSS GIRDERS)						
19	u1		10	-	1453	16
20	v1		10	-	1510	16

REFERENCES:-

1. M.O.S.T. R.C.C. T-BEAM AND SLAB SUPER STRUCTURES DRG. NO. SD/216 SH1 & SH2

Prepared by :-

WAPCOS LTD.



Project Title :-

NORTH KOEL RESERVOIR PROJECT, BIHAR AND JHARKHAND

Drawing Title :-

BAR BENDING SCHEDULE OF SUPER STRUCTURE OF SLR BRIDGE AT KM 69.525 WITH THREE BEAMS

Drawing No. :-

WAP/INFRA/NORTH KOEL/RMC/BRG-52 11 of 11

Drawn by:-

Checked by:-

Approved by:-