ERT No. 50

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	298.709	298.709	297.924	298.238	298.40
2	1.0	294.044	294.359	295.301	294.044	294.44
3	2.0	266.399	266.399	265.143	268.284	266.56
4	3.0	257.289	259.174	260.116	258.231	258.70
5	4.0	234.984	237.497	237.497	238.754	237.18
6	5.0	158.646	158.646	157.075	158.646	158.25
7	6.0	184.725	184.725	179.070	180.955	182.37
8	7.0	193.521	200.118	193.521	202.317	197.37
9	8.0	198.547	201.060	198.547	201.060	199.80
10	10.0	223.050	235.616	229.333	232.475	230.12

Mean Resistivity at ERT-50 is 232.32 Ohm - m.

ERT No. 51

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	179.351	178.880	179.508	179.037	179.19
2	1.0	245.979	246.294	242.037	245.979	245.07
3	2.0	182.207	182.835	182.835	180.950	182.21
4	3.0	188.490	190.375	185.663	185.663	187.55
5	4.0	174.667	178.437	175.924	175.924	176.24
6	5.0	168.070	168.070	158.646	166.500	165.32
7	6.0	148.911	154.566	156.451	156.451	154.09
8	7.0	160.534	173.729	158.335	160.534	163.28
9	8.0	158.335	170.901	158.335	165.875	163.36
10	10.0	172.785	166.502	169.644	163.361	168.07

Mean Resistivity at ERT-51 is 178.44 Ohm - m.

ERT No. 52

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	280.491	281.905	280.648	281.120	281.04
2	1.0	317.292	318.234	317.292	317.920	317.68
3	2.0	373.839	376.980	376.980	376.352	376.04
4	3.0	343.994	349.649	343.052	344.937	345.41
5	4.0	315.407	301.584	311.637	304.097	308.18
6	5.0	317.292	328.287	317.292	322.004	321.22
7	6.0	271.433	284.627	271.433	277.088	276.15
8	7.0	244.100	246.299	239.702	246.299	244.10
9	8.0	201.060	198.547	201.060	201.060	200.43
10	10.0	166.502	160.219	160.219	160.219	161.79

Mean Resistivity at ERT-52 is 283.20 Ohm - m.

ERT No. 53

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	157.364	157.835	157.364	157.521	157.52
2	1.0	162.730	163.672	164.615	163.986	163.75
3	2.0	150.793	149.535	152.049	152.049	151.11
4	3.0	140.425	140.425	135.713	138.540	138.78
5	4.0	111.837	110.581	110.581	109.324	110.58
6	5.0	102.099	95.815	98.957	102.099	99.74
7	6.0	94.247	96.132	96.132	98.017	96.13
8	7.0	90.163	90.163	87.964	94.561	90.71
9	8.0	90.477	85.450	82.937	85.450	86.08
10	10.0	100.530	100.530	91.105	97.388	97.39

Mean Resistivity at ERT-53 is 119.18 Ohm - m.

ERT No. 54

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	291.485	291.799	291.171	291.956	291.60
2	1.0	270.169	268.598	269.855	270.169	269.70
3	2.0	248.179	250.063	251.320	253.205	250.69
4	3.0	277.080	270.483	274.253	268.598	272.60
5	4.0	236.241	243.780	236.241	238.754	238.75
6	5.0	226.188	216.764	226.188	226.188	223.83
7	6.0	220.539	224.309	226.194	220.539	222.90
8	7.0	193.521	184.724	191.322	186.924	189.12
9	8.0	158.335	163.361	165.875	165.875	163.36
10	10.0	135.087	131.945	125.662	128.804	130.37

Mean Resistivity at ERT-54 is 225.29 Ohm - m.

ERT No. 55

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	103.656	104.124	103.653	103.810	103.81
2	1.0	105.240	107.125	106.811	170.753	122.48
3	2.0	150.792	152.677	150.164	150.792	151.11
4	3.0	179.066	181.893	178.123	180.950	180.01
5	4.0	197.286	202.313	201.056	204.826	201.37
6	5.0	234.042	237.183	224.617	230.900	231.69
7	6.0	226.194	224.309	226.194	224.309	225.25
8	7.0	244.100	259.494	244.100	237.503	246.30
9	8.0	248.812	246.299	256.352	251.325	250.70
10	10.0	257.607	260.749	270.173	257.607	261.53

Mean Resistivity at ERT-55 is 197.42 Ohm - m.

ERT No. 56

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	161.919	162.547	161.919	161.762	162.04
2	1.0	194.773	197.600	195.715	197.286	196.34
3	2.0	128.173	128.173	129.430	126.917	128.17
4	3.0	121.576	117.806	116.864	115.921	118.04
5	4.0	106.811	115.607	110.581	115.607	112.15
6	5.0	122.519	111.523	116.236	116.236	116.63
7	6.0	130.062	118.752	116.867	113.097	119.69
8	7.0	120.951	116.552	114.353	107.756	114.90
9	8.0	125.663	120.636	120.636	113.096	120.01
10	10.0	131.945	135.087	135.087	125.662	131.95

Mean Resistivity at ERT-56 is 131.99 Ohm - m.

ERT No. 57

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	310.645	311.116	310.488	310.802	310.76
2	1.0	374.467	377.608	372.896	374.781	374.94
3	2.0	305.982	305.354	306.610	308.495	306.61
4	3.0	245.037	245.037	242.210	245.037	244.33
5	4.0	222.418	227.445	211.109	217.392	219.59
6	5.0	224.617	219.905	221.476	224.617	222.65
7	6.0	220.539	226.194	209.229	205.460	215.36
8	7.0	202.317	211.114	200.118	215.512	207.27
9	8.0	198.547	196.034	191.007	175.928	190.38
10	10.0	197.918	194.776	210.484	216.767	204.99

Mean Resistivity at ERT-57 is 249.69 Ohm - m.

ERT No. 58

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	124.227	125.012	125.169	124.855	124.82
2	1.0	109.953	107.125	108.068	107.125	108.07
3	2.0	113.722	113.094	112.466	113.722	113.25
4	3.0	131.943	133.828	132.885	131.943	132.65
5	4.0	149.535	145.766	150.792	155.818	150.48
6	5.0	157.075	158.646	155.504	157.075	157.08
7	6.0	137.601	135.716	139.486	148.911	140.43
8	7.0	114.353	109.955	109.955	112.154	111.60
9	8.0	115.610	108.070	105.557	105.557	108.70
10	10.0	128.804	122.520	125.662	116.237	123.31

Mean Resistivity at ERT-58 is 127.04 Ohm - m.

ERT No. 59

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	248.139	248.139	247.982	248.453	248.18
2	1.0	224.931	225.560	226.188	225.560	225.56
3	2.0	142.624	140.739	141.996	140.111	141.37
4	3.0	148.907	151.734	151.734	151.734	151.03
5	4.0	129.430	128.173	125.660	129.430	128.17
6	5.0	116.236	114.665	114.665	114.665	115.06
7	6.0	130.062	126.292	130.062	130.062	129.12
8	7.0	131.946	134.145	138.543	131.946	134.15
9	8.0	138.229	135.716	140.742	130.689	136.34
10	10.0	160.219	157.078	157.078	150.794	156.29

Mean Resistivity at ERT-59 is 156.53 Ohm - m.

ERT No. 60

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	169.928	170.085	170.556	169.928	170.12
2	1.0	150.164	150.478	149.221	149.535	149.85
3	2.0	150.792	148.907	152.049	149.535	150.32
4	3.0	132.885	130.058	131.001	130.058	131.00
5	4.0	115.607	124.403	115.607	118.120	118.43
6	5.0	114.665	113.094	111.523	111.523	112.70
7	6.0	109.327	114.982	107.442	111.212	110.74
8	7.0	112.154	123.150	114.353	120.951	117.65
9	8.0	105.557	118.123	115.610	110.583	112.47
10	10.0	125.662	131.945	122.520	125.662	126.45

Mean Resistivity at ERT-60 is 129.97 Ohm - m.

ERT No. 61

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	188.931	188.460	187.989	187.989	188.34
2	1.0	318.862	319.805	314.778	321.375	318.71
3	2.0	152.049	153.934	153.305	156.447	153.93
4	3.0	121.576	119.691	114.036	123.461	119.69
5	4.0	143.252	147.022	155.818	147.022	148.28
6	5.0	179.066	180.636	177.495	161.787	174.75
7	6.0	150.796	148.911	150.796	156.451	151.74
8	7.0	140.742	131.946	142.942	131.946	136.89
9	8.0	143.255	153.308	148.282	143.255	147.03
10	10.0	153.936	150.794	169.644	144.511	154.72

Mean Resistivity at ERT-61 is 169.41 Ohm - m.

ERT No. 62

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	229.136	228.979	229.136	229.607	229.21
2	1.0	233.099	232.471	233.099	232.785	232.86
3	2.0	240.011	236.869	237.497	236.869	237.81
4	3.0	234.670	236.555	231.843	229.015	233.02
5	4.0	278.965	273.939	278.965	278.965	277.71
6	5.0	278.023	274.881	273.311	278.023	276.06
7	6.0	269.548	280.858	269.548	265.778	271.43
8	7.0	261.693	270.489	263.892	261.693	264.44
9	8.0	238.759	248.812	243.785	243.785	243.79
10	10.0	223.050	223.050	223.050	229.333	224.62

Mean Resistivity at ERT-62 is 249.10 Ohm - m.

ERT No. 63

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	152.339	152.181	151.867	152.024	152.10
2	1.0	144.823	146.394	145.451	146.708	145.84
3	2.0	189.118	188.490	203.569	187.862	192.26
4	3.0	166.814	161.159	159.274	160.217	161.87
5	4.0	175.924	175.924	185.977	179.694	179.38
6	5.0	204.198	204.198	199.485	199.485	201.84
7	6.0	180.955	186.610	196.035	192.265	188.97
8	7.0	173.729	173.729	189.123	180.326	179.23
9	8.0	173.414	180.954	170.901	178.441	175.93
10	10.0	185.351	185.351	172.785	175.927	179.85

Mean Resistivity at ERT-63 is 175.73 Ohm - m.

ERT No. 64

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	110.877	111.506	111.034	110.720	111.03
2	1.0	115.921	113.408	113.722	114.351	114.35
3	2.0	101.156	100.528	100.528	99.271	100.37
4	3.0	98.014	100.842	100.842	100.842	100.14
5	4.0	101.785	101.785	103.041	100.528	101.78
6	5.0	100.528	98.957	103.670	92.674	98.96
7	6.0	103.672	111.212	103.672	109.327	106.97
8	7.0	107.756	116.552	114.353	120.951	114.90
9	8.0	105.557	103.043	98.016	108.070	103.67
10	10.0	116.237	122.520	122.520	125.662	121.73

Mean Resistivity at ERT-64 is 107.39 Ohm - m.

ERT No. 65

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	408.644	408.330	408.801	409.272	408.76
2	1.0	448.292	446.407	448.606	449.549	448.21
3	2.0	429.757	427.872	429.192	429.757	429.14
4	3.0	348.707	358.131	354.361	360.016	355.30
5	4.0	291.531	290.275	289.018	287.761	289.65
6	5.0	245.037	243.466	240.325	241.896	242.68
7	6.0	212.999	214.884	209.229	212.999	212.53
8	7.0	189.123	186.924	189.123	191.322	189.12
9	8.0	180.954	188.494	180.954	180.954	182.84
10	10.0	197.918	191.635	188.493	179.068	189.28

Mean Resistivity at ERT-65 is 294.75 Ohm - m.

ERT No. 66

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	420.737	421.208	420.894	420.737	420.89
2	1.0	290.275	288.076	290.275	289.646	289.57
3	2.0	187.862	192.260	185.977	187.747	188.46
4	3.0	140.425	143.252	141.368	140.425	141.37
5	4.0	129.430	134.456	124.403	123.147	127.86
6	5.0	113.094	113.094	109.953	113.094	112.31
7	6.0	118.752	114.982	111.212	99.902	111.21
8	7.0	118.751	125.349	114.353	101.159	114.90
9	8.0	123.149	133.202	110.583	115.610	120.64
10	10.0	125.662	128.804	122.520	122.520	124.88

Mean Resistivity at ERT-66 is 175.21 Ohm - m.

ERT No. 67

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	157.835	157.364	157.050	156.736	157.25
2	1.0	151.420	151.106	151.420	151.106	151.26
3	2.0	204.826	202.941	203.569	204.826	204.04
4	3.0	228.073	228.073	228.073	228.073	228.07
5	4.0	247.550	250.063	251.320	247.550	249.12
6	5.0	256.032	259.174	249.749	254.462	254.85
7	6.0	228.079	246.928	229.964	237.504	235.62
8	7.0	204.516	213.313	197.919	204.516	205.07
9	8.0	198.547	188.494	185.981	183.467	189.12
10	10.0	147.653	150.794	141.370	147.370	146.80

Mean Resistivity at ERT-67 is 202.12 Ohm - m.

ERT No. 68

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	322.267	322.424	322.738	322.581	322.50
2	1.0	319.805	319.805	320.119	320.747	320.12
3	2.0	220.533	223.047	218.02	224.931	221.63
4	3.0	180.008	185.663	186.605	190.375	185.66
5	4.0	166.845	164.615	170.898	169.641	168.00
6	5.0	147.651	149.221	158.646	153.934	152.36
7	6.0	143.256	148.911	156.451	150.795	149.85
8	7.0	138.543	142.942	149.539	151.738	145.69
9	8.0	133.202	143.255	148.282	150.795	143.88
10	10.0	150.794	150.794	157.078	166.502	156.29

Mean Resistivity at ERT-68 is 196.60 Ohm - m.

ERT No. 69

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	346.138	347.395	246.923	347.081	321.88
2	1.0	368.498	369.440	368.498	367.241	368.42
3	2.0	378.237	376.980	376.980	376.980	377.29
4	3.0	376.98	372.268	382.635	376.038	376.98
5	4.0	354.361	354.361	354.361	354.361	354.36
6	5.0	340.853	342.424	339.282	343.994	341.64
7	6.0	331.751	331.751	352.486	335.636	337.91
8	7.0	312.272	314.471	325.467	310.073	315.57
9	8.0	256.352	256.352	263.891	258.865	258.87
10	10.0	197.918	216.767	185.351	213.625	203.42

Mean Resistivity at ERT-69 is 325.63 Ohm - m.

ERT No. 70

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	430.631	430.631	430.631	431.259	430.79
2	1.0	382.006	383.263	382.321	383.263	382.71
3	2.0	227.445	229.958	229.958	231.843	229.80
4	3.0	156.447	159.274	158.332	163.044	159.27
5	4.0	149.353	154.562	154.562	159.588	154.52
6	5.0	141.368	141.368	147.651	144.509	143.72
7	6.0	137.601	130.062	131.947	135.716	133.83
8	7.0	149.539	142.942	153.937	149.539	148.99
9	8.0	153.308	155.822	160.848	160.848	157.71
10	10.0	185.351	188.493	191.635	197.918	190.85

Mean Resistivity at ERT-70 is 213.22 Ohm - m.

ERT No. 71

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	225.681	226.152	225.210	226.309	225.84
2	1.0	288.701	229.015	229.644	229.644	244.25
3	2.0	215.507	214.879	214.879	214.879	215.04
4	3.0	226.188	229.015	228.073	225.246	227.13
5	4.0	247.550	242.524	253.833	250.063	248.49
6	5.0	274.881	279.594	267.028	274.881	274.10
7	6.0	269.548	265.778	263.893	275.203	268.61
8	7.0	270.489	268.290	268.290	270.489	269.39
9	8.0	228.706	226.193	231.215	233.732	229.96
10	10.0	197.918	197.918	191.635	197.918	196.35

Mean Resistivity at ERT-71 is 239.91 Ohm - m.

ERT No. 72

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	291.956	292.584	291.642	292.270	292.11
2	1.0	283.677	283.677	283.049	282.735	283.28
3	2.0	277.800	277.080	277.080	275.195	276.79
4	3.0	281.793	279.908	283.677	284.620	282.50
5	4.0	315.407	320.433	301.584	306.610	311.01
6	5.0	306.296	314.150	314.150	306.296	310.22
7	6.0	305.362	305.362	303.477	318.557	308.19
8	7.0	321.069	332.064	312.272	312.272	319.42
9	8.0	321.696	321.696	319.183	304.103	316.67
10	10.0	251.324	248.182	254.466	248.182	250.54

Mean Resistivity at ERT-72 is 295.07 Ohm - m.

ERT No. 73

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	229.293	229.293	228.979	229.450	229.25
2	1.0	188.490	187.548	188.176	190.061	188.57
3	2.0	157.075	157.075	158.960	160.217	158.33
4	3.0	112.152	114.036	113.094	119.691	114.74
5	4.0	85.448	87.962	86.705	67.854	81.99
6	5.0	75.396	80.108	84.820	50.264	72.65
7	6.0	62.203	54.663	65.973	54.663	59.38
8	7.0	48.380	50.579	57.176	46.181	50.58
9	8.0	42.725	45.238	50.265	50.265	47.12
10	10.0	47.123	47.123	53.406	28.274	43.98

Mean Resistivity at ERT-73 is 104.66 Ohm - m.

ERT No. 74

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	229.764	228.665	229.293	229.293	229.25
2	1.0	250.378	252.577	251.32	250.692	251.24
3	2.0	263.886	263.886	263.886	264.514	264.04
4	3.0	245.979	245.037	245.037	244.095	245.04
5	4.0	265.143	266.399	261.373	251.320	261.06
6	5.0	256.032	262.315	257.603	267.028	260.74
7	6.0	243.159	250.698	239.389	239.389	243.16
8	7.0	226.507	222.109	219.910	224.308	223.21
9	8.0	218.653	223.679	216.140	216.140	218.65
10	10.0	229.333	223.050	226.192	223.050	225.41

Mean Resistivity at ERT-74 is 242.18 Ohm - m.

ERT No. 75

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	229.293	229.293	229.293	229.293	229.29
2	1.0	223.989	223.989	226.188	224.931	224.77
3	2.0	211.737	212.994	215.507	215.507	213.94
4	3.0	204.512	209.224	203.569	208.281	206.40
5	4.0	183.464	179.694	184.720	182.207	182.52
6	5.0	188.490	183.778	193.202	193.202	189.67
7	6.0	184.725	182.840	186.610	180.955	183.78
8	7.0	169.331	167.132	175.928	167.132	169.88
9	8.0	155.822	153.308	158.335	158.335	156.45
10	10.0	160.219	157.078	160.219	157.078	158.65

Mean Resistivity at ERT-75 is 191.54 Ohm - m.

ERT No. 76

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	166.630	166.473	167.258	166.473	166.71
2	1.0	170.583	169.013	172.468	173.097	171.29
3	2.0	240.011	240.639	241.267	239.382	240.32
4	3.0	236.555	236.555	233.728	236.555	235.85
5	4.0	216.135	221.162	217.392	227.445	220.53
6	5.0	227.759	237.183	238.754	241.896	236.40
7	6.0	207.345	216.769	216.769	222.424	215.83
8	7.0	191.322	200.118	200.118	204.516	199.02
9	8.0	178.441	180.954	168.388	160.848	172.16
10	10.0	188.493	188.493	191.635	201.059	192.42

Mean Resistivity at ERT-76 is 205.05 Ohm - m.

ERT No. 77

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	194.114	194.114	194.585	194.428	194.31
2	1.0	138.540	138.226	138.540	137.912	138.30
3	2.0	212.994	217.392	213.622	213.622	214.41
4	3.0	250.692	245.979	250.692	246.922	248.57
5	4.0	228.701	229.958	226.188	223.675	227.13
6	5.0	224.617	234.042	223.047	223.047	226.19
7	6.0	194.150	196.035	192.265	192.265	193.68
8	7.0	186.924	195.720	178.127	184.724	186.37
9	8.0	208.600	203.573	198.547	198.547	202.32
10	10.0	160.219	166.502	153.936	157.078	159.43

Mean Resistivity at ERT-77 is 199.07 Ohm - m.

ERT No. 78

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	179.979	179.822	180.293	180.450	180.14
2	1.0	133.828	134.142	133.514	133.200	133.67
3	2.0	118.749	121.262	116.864	118.749	118.91
4	3.0	84.820	84.820	82.935	84.820	84.35
5	4.0	56.547	56.547	52.777	54.033	54.98
6	5.0	45.551	48.693	42.410	43.981	45.16
7	6.0	39.584	35.814	35.814	37.699	37.23
8	7.0	30.787	35.185	30.787	32.986	32.44
9	8.0	27.645	32.672	30.159	27.645	29.53
10	10.0	34.557	34.557	31.415	28.274	32.20

Mean Resistivity at ERT-78 is 74.86 Ohm - m.

ERT No. 79

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	181.393	181.079	181.236	181.707	181.35
2	1.0	103.355	103.670	103.984	103.670	103.67
3	2.0	62.830	64.714	64.714	63.458	63.93
4	3.0	45.237	45.237	46.180	48.065	46.18
5	4.0	42.724	46.494	47.750	50.264	46.81
6	5.0	39.268	43.981	47.122	47.122	44.37
7	6.0	28.274	35.814	39.584	37.699	35.34
8	7.0	24.190	26.389	26.389	28.588	26.39
9	8.0	22.619	25.132	27.645	27.645	25.76
10	10.0	21.990	28.274	31.415	31.415	28.27

Mean Resistivity at ERT-79 is 60.21 Ohm - m.

ERT No. 80

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	292.584	292.270	291.799	292.427	292.27
2	1.0	299.071	298.757	299.385	297.814	298.76
3	2.0	331.114	327.973	331.742	327.973	329.70
4	3.0	339.282	339.282	339.282	336.455	338.58
5	4.0	343.052	348.078	335.512	343.052	342.42
6	5.0	345.565	350.277	343.994	345.565	346.35
7	6.0	301.592	292.167	297.822	288.397	294.99
8	7.0	314.471	290.281	303.476	290.281	299.63
9	8.0	273.944	263.891	276.458	263.891	269.55
10	10.0	229.333	245.041	238.758	238.758	237.97

Mean Resistivity at ERT-80 is 305.02 Ohm - m.

ERT No. 81

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	0.50	295.411	295.728	295.254	295.097	295.37
2	1.0	315.721	314.150	316.663	314.778	315.33
3	2.0	361.901	362.529	357.503	359.388	360.33
4	3.0	347.764	349.649	345.879	345.879	347.29
5	4.0	348.822	355.618	340.539	349.335	348.58
6	5.0	309.438	309.438	317.292	314.150	312.58
7	6.0	277.088	273.318	275.203	271.433	274.26
8	7.0	263.892	261.693	252.897	255.096	258.39
9	8.0	185.981	191.007	201.060	206.087	196.03
10	10.0	169.644	185.351	175.927	175.927	176.71

Mean Resistivity at ERT-81 is 288.49 Ohm - m.

D-1-12(D)

Annexure- (D)

CRITERIA FOR WIND RESISTANT DESIGN OF STRUCTURES AND EQUIPMENT

All structures shall be designed for wind forces in accordance with IS:875 (Part-3) and as specified in this document. See Annexure – B for site specific information.

Along wind forces shall generally be computed by the Peak (i.e. 3 second gust) Wind Speed method as defined in the standard.

Along wind forces on slender and wind sensitive structures and structural elements shall also be computed, for dynamic effects, using the Gust Factor or Gust Effectiveness Factor Method as defined in the standard. The structures shall be designed for the higher of the forces obtained from Gust Factor method and the Peak Wind Speed method.

Analysis for dynamic effects of wind must be undertaken for any structure which has a height to minimum lateral dimension ratio greater than “5” and/or if the fundamental frequency of the structure is less than 1 Hz.

Susceptibility of structures to across-wind forces, galloping, flutter, ovalling etc. should be examined and designed/detailed accordingly following the recommendations of IS:875(Part-3) and other relevant Indian standards.

It should be estimated if size and relative position of other structures are likely to enhance the wind loading on the structure under consideration. Enhancement factor, if necessary, shall suitably be estimated and applied to the wind loading to account for the interference effects.

Damping in Structures

The damping factor (as a percentage of critical damping) to be adopted shall not be more than as indicated below for:

a)	Welded steel structures	:	1.0%
b)	Bolted steel structures/RCC structures	:	2.0%
c)	Prestressed concrete structures	:	1.6%
d)	Steel stacks	:	As per IS:6533 & CICIND Model Code whichever is more critical.

~~ANNEXURE I~~

SITE SPECIFIC DESIGN PARAMETERS

The various design parameters, as defined in IS: 875 (Part-3), to be adopted for the project site shall be as follows:

a) The basic wind speed "Vb" at ten metres above the mean ground level : 44 metres/second

b) The risk coefficient "K_1" : 1.07

c) Category of terrain : Category-2

SEISMIC DESIGN CRITERIA - Revised..
(Amendment No 03, D-2-23)

D-1-12(E)

Annexure-(E)

CRITERIA FOR EARTHQUAKE RESISTANT DESIGN OF STRUCTURES AND EQUIPMENT

All structures and equipment shall be designed for seismic forces adopting the site specific seismic information provided in this document and using the other provisions in accordance with IS:1893 (Part 1 to Part 4). Pending finalization of Parts 5 of IS:1893, provisions of part 1 shall be read along with the relevant clauses of IS:1893:1984, for embankments.

A site specific seismic study has been conducted for the project site. The peak ground horizontal acceleration for the project site, the site specific acceleration spectral coefficients (in units of gravity acceleration 'g') in the horizontal direction for the various damping values and the multiplying factor (to be used over the spectral coefficients) for evaluating the design acceleration spectra are as given at Annexure-I.

Vertical acceleration spectral values shall be taken as 2/3rd of the corresponding horizontal values.

The site specific design acceleration spectra specified shall be used in place of the response acceleration spectra, given at figure-2 in IS:1893 (Part 1) and Annex B of IS:1893 (Part 4). The site specific acceleration spectra along with multiplying factors specified in Annexure-I includes the effect of the seismic environment of the site, the importance factor related to the structures and the response reduction factor. Hence, the design spectra do not require any further consideration of the zone factor (Z), the importance factor (I) and response reduction factor (R) as used in the IS:1893 (Part 1 and Part 4).

Damping in Structures

The damping factor (as a percentage of critical damping) to be adopted shall not be more than as indicated below for:

a)	Steel structures	:	2%
b)	Reinforced Concrete structures	:	5%
c)	Reinforced Concrete Stacks	:	3%
d)	Steel stacks	:	2%

Method of Analysis

Since most structures in a power plant are irregular in shape and have irregular distribution of mass and stiffness, dynamic analysis for obtaining the design seismic forces shall be carried out using the response spectrum method. The number of vibration modes used in the analysis should be such that the sum total of modal masses of all modes considered is at least 90 percent of the total seismic mass and shall also meet requirements of IS:1893 (Part 1). Modal combination of the peak response quantities shall be performed as per Complete Quadratic Combination (CQC) method or by an acceptable alternative as per IS:1893 (Part 1).

In general, seismic analysis shall be performed for the three orthogonal (two principal horizontal and one vertical) components of earthquake motion. The seismic response from the three components shall be combined as specified in IS:1893.

The spectral acceleration coefficient shall get restricted to the peak spectral value if the fundamental natural period of the structure falls to the left of the peak in the spectral acceleration curve.

For buildings, if the design base shear (V_B) obtained from modal combination is less than the base shear ($\bar{V}_B$) computed using the approximate fundamental period (T_a) given in IS:1893:Part 1 and using site specific acceleration spectra with appropriate multiplying factor specified at Annexure-I, the response quantities (e.g. member forces, displacements, storey forces, storey shears and base reactions) shall be enhanced in the ratio of $\bar{V}_B$/ V_B. However, no reduction is permitted if $\bar{V}_B$ is less than V_B.

Design/Detailing for Ductility for Structures

The site specific design acceleration spectra is a reduced spectra and has an in-built allowance for ductility. Structures shall be engineered and detailed in accordance with relevant Indian/International standards to achieve ductility.

ANNEXURE – I

SITE SPECIFIC SEISMIC PARAMETERS FOR DESIGN OF STRUCTURES AND EQUIPMENT

The various site specific seismic parameters for the project site shall be as follows:

1) Peak ground horizontal acceleration (MCE) : 0.204g

2) Multiplying factor to be applied to the site specific horizontal acceleration spectral coefficients (in units of gravity acceleration 'g') to obtain the design acceleration spectra

a) for special moment resisting steel building frames designed and detailed as per IS:800 : 0.051

b) for special concentrically braced steel building frames designed and detailed as per IS:800 : 0.038

c) For special moment resisting RC building frames designed and detailed as per IS:456 and IS:13920 : 0.031

d) for RCC chimney, RCC Natural Draft Cooling Tower : 0.102

e) for Anchored base liquid retaining steel tanks (ground supported) : 0.061

f) for Unanchored base liquid retaining steel tanks (ground supported) : 0.102

g) for steel chimney, Absorber tower, Vessels : 0.077

3) Multiplying factor to be applied to the site specific horizontal acceleration spectral coefficients (in units of gravity acceleration 'g') for design of equipment and structures where Inelastic action is not relevant or not permitted : 0.102

Note: g = Acceleration due to gravity

The horizontal seismic acceleration spectral coefficients are furnished in subsequent pages.

Annexure – I

HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS
(In units of 'g')

Time Period	Damping Factor (as a percentage of critical damping)		
(Sec)	5 %	3 %	2 %
0.000	1.000	1.000	1.000
0.010	1.000	1.000	1.000
0.020	1.167	1.236	1.300
0.030	1.333	1.472	1.600
0.040	1.500	1.708	1.900
0.050	1.667	1.944	2.200
0.055	1.750	2.063	2.350
0.060	1.833	2.181	2.500
0.080	2.167	2.653	3.100
0.090	2.333	2.889	3.400
0.100	2.500	3.125	3.700
0.103	2.550	3.196	3.790
0.120	2.550	3.210	4.150
0.140	2.550	3.210	4.150
0.160	2.550	3.210	4.150
0.180	2.550	3.210	4.150
0.200	2.550	3.210	4.150
0.220	2.550	3.210	4.150
0.240	2.550	3.210	4.150
0.260	2.550	3.210	4.150
0.280	2.550	3.210	4.150
0.300	2.550	3.210	4.150

Annexure – I

HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS
(In units of 'g')

Time Period	Damping Factor (as a percentage of critical damping)		
(Sec)	5 %	3 %	2 %
0.320	2.550	3.210	4.150
0.340	2.550	3.210	4.150
0.360	2.550	3.210	4.150
0.380	2.550	3.210	4.150
0.400	2.550	3.210	4.150
0.420	2.550	3.210	4.150
0.440	2.550	3.210	4.150
0.460	2.550	3.210	4.150
0.480	2.550	3.210	4.150
0.500	2.550	3.210	4.150
0.520	2.550	3.210	4.150
0.540	2.550	3.210	4.150
0.550	2.550	3.210	4.150
0.560	2.550	3.210	4.150
0.580	2.550	3.210	4.150
0.600	2.550	3.210	4.150
0.620	2.550	3.210	4.150
0.640	2.550	3.210	4.150
0.660	2.550	3.210	4.150
0.670	2.550	3.210	4.150
0.680	2.550	3.210	4.118
0.700	2.550	3.210	4.000
0.720	2.550	3.210	3.889
0.740	2.550	3.210	3.784
0.760	2.550	3.210	3.684
0.780	2.550	3.210	3.590

Annexure – I

HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS
(In units of 'g')

Time Period	Damping Factor (as a percentage of critical damping)		
(Sec)	5 %	3 %	2 %
0.800	2.500	3.125	3.500
0.820	2.439	3.049	3.415
0.840	2.381	2.976	3.333
0.860	2.326	2.907	3.256
0.880	2.273	2.841	3.182
0.900	2.222	2.778	3.111
0.920	2.174	2.717	3.043
0.940	2.128	2.660	2.979
0.960	2.083	2.604	2.917
0.980	2.041	2.551	2.857
1.000	2.000	2.500	2.800
1.020	1.961	2.451	2.745
1.040	1.923	2.404	2.692
1.060	1.887	2.358	2.642
1.080	1.852	2.315	2.593
1.100	1.818	2.273	2.545
1.120	1.786	2.232	2.500
1.140	1.754	2.193	2.456
1.160	1.724	2.155	2.414
1.180	1.695	2.119	2.373
1.200	1.667	2.083	2.333
1.220	1.639	2.049	2.295
1.240	1.613	2.016	2.258
1.260	1.587	1.984	2.222
1.280	1.563	1.953	2.188
1.300	1.538	1.923	2.154

Annexure – I

HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS
(In units of 'g')

Time Period	Damping Factor (as a percentage of critical damping)		
(Sec)	5 %	3 %	2 %
1.320	1.515	1.894	2.121
1.340	1.493	1.866	2.090
1.360	1.471	1.838	2.059
1.380	1.449	1.812	2.029
1.400	1.429	1.786	2.000
1.420	1.408	1.761	1.972
1.440	1.389	1.736	1.944
1.460	1.370	1.712	1.918
1.480	1.351	1.689	1.892
1.500	1.333	1.667	1.867
1.520	1.316	1.645	1.842
1.540	1.299	1.623	1.818
1.560	1.282	1.603	1.795
1.580	1.266	1.582	1.772
1.600	1.250	1.563	1.750
1.620	1.235	1.543	1.728
1.640	1.220	1.524	1.707
1.660	1.205	1.506	1.687
1.680	1.190	1.488	1.667
1.700	1.176	1.471	1.647
1.720	1.163	1.453	1.628
1.740	1.149	1.437	1.609
1.760	1.136	1.420	1.591
1.780	1.124	1.404	1.573
1.800	1.111	1.389	1.556
1.820	1.099	1.374	1.538

Annexure – I

HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS
(In units of 'g')

Time Period	Damping Factor (as a percentage of critical damping)		
(Sec)	5 %	3 %	2 %
1.840	1.087	1.359	1.522
1.860	1.075	1.344	1.505
1.880	1.064	1.330	1.489
1.900	1.053	1.316	1.474
1.920	1.042	1.302	1.458
1.940	1.031	1.289	1.443
1.960	1.020	1.276	1.429
1.980	1.010	1.263	1.414
2.000	1.000	1.250	1.400
2.020	0.990	1.238	1.386
2.040	0.980	1.225	1.373
2.060	0.971	1.214	1.359
2.080	0.962	1.202	1.346
2.100	0.952	1.190	1.333
2.150	0.930	1.163	1.302
2.200	0.909	1.136	1.273
2.250	0.889	1.111	1.244
2.300	0.870	1.087	1.217
2.350	0.851	1.064	1.191
2.400	0.833	1.042	1.167
2.450	0.816	1.020	1.143
2.500	0.800	1.000	1.120
2.550	0.784	0.980	1.098
2.600	0.769	0.962	1.077
2.650	0.755	0.943	1.057
2.700	0.741	0.926	1.037

Annexure – I

HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS
(In units of 'g')

Time Period	Damping Factor (as a percentage of critical damping)		
(Sec)	5 %	3 %	2 %
2.750	0.727	0.909	1.018
2.800	0.714	0.893	1.000
2.850	0.702	0.877	0.982
2.900	0.690	0.862	0.966
2.950	0.678	0.847	0.949
3.000	0.667	0.833	0.933
3.050	0.656	0.820	0.918
3.100	0.645	0.806	0.903
3.150	0.635	0.794	0.889
3.200	0.625	0.781	0.875
3.250	0.615	0.769	0.862
3.300	0.606	0.758	0.848
3.350	0.597	0.746	0.836
3.400	0.588	0.735	0.824
3.450	0.580	0.725	0.812
3.500	0.571	0.714	0.800
3.550	0.563	0.704	0.789
3.600	0.556	0.694	0.778
3.650	0.548	0.685	0.767
3.700	0.541	0.676	0.757
3.750	0.533	0.667	0.747
3.800	0.526	0.658	0.737
3.850	0.519	0.649	0.727
3.900	0.513	0.641	0.718
3.950	0.506	0.633	0.709
4.000	0.500	0.625	0.700

D-1-12(F)

Annexure-(F)

QA REQUIREMENT

All Civil, Structural and Architectural construction work at the project shall be executed strictly in accordance with the Quality Assurance guidelines specified in separate part of the Specification.

D-1-12(G)

ANNEXURE –G

Specification For High Performance Moisture Compatible Corrosion Resistant Coating System

a) Providing & applying **High Performance Moisture Compatible Corrosion Resistant Coating System** manufactured as per technical specifications of Central Electrochemical Research Institute, Karaikudi, (C.S.I.R. affiliate Institute), Tamil Nadu, Pin - 630 006.

b) The coating system shall be water compatible, compatible for applying in wet conditions also and shall be tolerant to under-prepared surfaces and existing residual tar / paint. The system shall also be quick curing so as to be suitable for application during shutdowns.

The coating material shall be stored in the manner as per recommendations of the manufacturer until ready for use. The coating material shall be used within the manufacturer's written recommended shelf life.

c) The coating system shall conform to the following :

PROPERTIES OF PAINT

Base	High Performance Moisture Compatible Corrosion Resistant Coating System CECRI know-how system
Volume Solids	70%
Specific Gravity (ASTM-D-1475)	1.25 ± 0.1
Dry Film Thickness (ASTM-D-1186)	160 ± 10 µm per coat
Coverage	4 - 4.5 sq.m/ ltr
Touch Dry	2 Hours
Recoating	24 Hours

PROPERTIES OF COATING

Salt Spray (ASTM-B 117)	2000 Hours
Resistance to sea water (Carried out upto 6 months)	Passes
Coating Resistance (Carried out upto 6 months)	10^9 Ω. cm^2
Adhesion (ASTM-D 4541)	4.5 N/mm Sq
Flexibility (ASTM-D-522) Elongation	1/8" passes 33%
Impact (ASTM G 14–04)	45 cm passes

Paint material & its application method shall be obtained from any manufacturer who has been granted License by CECRI, Karaikudi for technical know how for **High Performance Moisture Compatible Corrosion Resistant Coating System**. The application method of coating shall be got duly approved from CECRI, Karaikudi.

ANNEXURE – I

SPECIFICATIONS FOR 100% SOLIDS, HIGH BUILD, ELASTOMERIC POLYURETHANE COATING FOR CONCRETE

1.00.00 The PU coating shall meet minimum requirements for materials, equipment, application, inspection, repair and handling aspects associated with the coating of Concrete using 100% Solids (Solventless) Two Component, Fast Curing Elastomeric Polyurethane Coating classified under ASTM D -16, Type V.

1.01.00 The polyurethane on the surface of concrete shall provide a hard yet flexible, impermeable barrier with outstanding adhesion impact and abrasion resistance as well as crack spanning capability to protect the concrete from corrosion and abrasion. It shall cover all variations associated with operating conditions of cooling tower.

1.02.00 Supplier or his licensed applicator shall obtain prior written approval from the Owner for any deviations from the requirements of this specification and / or the standard referred herein.

1.03.00 The work shall conform to following documents (latest revision or as specified) and as referred in this specification.

a) SSPC-PS Guide 17.00, 1 Aug, 1991	Guide for Selecting Urethane Painting System
b) RP 0892-92	NACE International Linings Over Concrete for Immersion Service
c) RP 0187-96	NACE International Design Considerations for Corrosion Control of Reinforcing Steel In Concrete.
d) ASTM D 4541	Method for Pull Off Strength of Coatings Using Portable Adhesion Testers

2.00.00 **GENERAL REQUIREMENT**

2.01.00 The bidder shall perform all work in accordance with this specification and other requirements noted herein.

Bidder shall submit a detailed written description in the form of a manual covering coating equipment, procedure, materials, inspection, tests and repair etc, for Owner's approval.

2.02.00 The bidder shall also supply copies of test reports conducted by in internationally reputed test agencies evidencing that materials conform to minimum performance

requirements. The bidder shall also supply certificates from coating manufacturer as under.

- That the materials (with batch numbers, dates of manufacture and shelf life) are free from all manufacturing defects.
- That the materials will meet performance criteria as given below when applied.
- That the bidder or his applicator possesses the necessary technical skills and equipment to apply these materials and is authorized by the manufacturer for this purpose.

100% Solids, Two Component Polyurethane are specialized coatings. The coating shall be applied either by the coating material manufacturer himself or by his authorized applicator. The authorized applicator should have been trained and certified by the coating manufacturer and shall possess the necessary specialized equipment, trained crew and experience in spraying fast setting plural component polyurethane coatings. Contractor shall provide, for the owner's approval, details of coating manufacturer's authorized applicator including details of equipment, experience in spraying fast setting 100% Solids Polyurethane Coatings and client references for verification. In no case shall coating application be undertaken by coating contractors without prior track record of applying these materials. In addition, contractor shall provide certificate from coating materials manufacturers that the applicator possesses the necessary technical skills and equipment to apply these materials and is authorized by the manufacturer for this purpose.

2.03.00 Applied coating will be tested for dry film thickness and adhesion and hardness.

All coating operations shall be performed under the supervision of, and performed by, personnel skilled in the application of the coating system.

2.04.00 The bidder shall provide access, during all phases of work, to the Owner and their representatives.

2.05.00 All cleaning, priming and coating machines shall be equipped with rubber or wheels overlaid with hard fiber to prevent damaging the concrete surface.

2.06.00 The materials shall be applied by Airless Spray System, as per the standards specified by the material manufacturer.

2.07.00 100% Solids Polyurethane systems are solvent free eliminating solvent health hazards and flammability concerns All safety precautions warranted by good industrial hygiene practices and regulated by local, state or central laws must be taken into consideration while applying these coatings.

3.00.00 MATERIAL SPECIFICATIONS

3.01.00 ELASTOMERIC POLYURETHANE COATING :

Spray applied, Impermeable, 100% Solids, Elastomeric Aromatic Polyurethane Coating (Non Tar Extended), as per ASTM D-16, Type V (Two Component, Chemical Cure). Shall meet following criteria. All tests at ambient (25 C) unless otherwise specified.

- NOMINAL THICKNESS — 2,000 Microns
- TENSILE STRENGTH ASTM D-638 — ASTM — 17 N / mm^2
- ADHESION ASTM D-4541 (Elcometer Pull Off) — 2 N / mm^2
- RECOVERABLE ELONGATION ASTM D-638 — 50% Min.
- SURFACE HARDNESS ASTM D 2240 (Cured Film - Shore D) — ASTM — 50 Min.
- WATER VAPOUR PERMEABILITY ASTM E - 96 / F-1249-90 — 0.3 gms. / 24 Hour / M2 Max.
- RESISTANCE TEMPERATURES — 0^{o} C to 60^{o}C
- FLEXIBILITY 180° Bend -1.0 mm thick ASTM D 1737 — Pass over 12 mm Mandrel
- ACCELERATED WEATHERING ASTM G – 154 53 / BS 3800 2,000 Hours — Excellent. Some Discoloration.
- ABRASION RESISTANCE ASTM D 4060 /FTMS 141 Taber Abraser H - 10 Wheel 1,000 gms., 1,000 cycles — Weight Loss 0.05 gms. Max
- CHEMICAL RESISTANCE Immersion of 30 days in sea water followed by
  - (%) Weight Change — < 1.0 %
  - (%) Hardness (Shore D) Change — < 5.0 %
  - (%) Tensile Strength Change — < 5.0 %

3.02.00 **PRIMER**

Primer shall be used on new concrete surfaces before application of PU coating.

Damp tolerant, penetrating, sealing primer shall be applied at 100-125 Microns Wet Film Thickness in accordance with the recommendation of the Polyurethane Coating manufacturer.

4.00.00 **SURFACE PREPARATION**

4.01.00 The bidder shall be responsible for the structural integrity of the concrete.

The use of form release agents shall be compatible to the coating. Contractor shall take measures in concrete casting to provide a suitable surface finish that shall be compatible with subsequent application of coating. The measures shall include providing well compacted, dense concrete with minimal air entrainment and a relatively smooth surface finish. Pond floor shall be vacuum dewatered.

Remove any fins or protrusions using power grinding. These may also be required to be removed for applications requiring an even finish.

Residual bug – holes beneath the surface of the coating shall be opened by sweep blasting and flooded with Polyurethane coating during spray application. Any larger voids shall be filled with Elastomeric Polyurethane hand mix material or compatible grout. Active cracks shall be bridged by using Elastomeric Polyurethane over Industrial Nylon / Polyester Fabric. Any exposed steel surfaces shall be wire brush cleaned and primed before coating application.

4.02.00 Exterior waterproofing shall be applied to the structure below the finished ground level and upto atleast 300 mm above it. The structure shall be sealed from the exterior (soil side) to block capillary action of moisture through the concrete. Leaks from groundwater can permeate the entire concrete thickness. The exterior waterproofing system must be suitable for the expected exposure condition.

4.03.00 Before general surface preparation, surface contaminants (if any) shall be removed. Oil and Grease shall be removed by multiple detergent wash, preferably using steam. (Solvents shall not be used as they will cause the petroleum products to penetrate the concrete surface). Chemically contaminated concrete shall be neutralized prior to complete surface preparation. Acidic surfaces shall be neutralized using an alkaline cleaner and rinsed with fresh water and then cleaned with steam and detergent. After chemical cleaning, surface will be tested for residual chemicals. pH shall be tested using ASTM D - 4262 using pH test paper on rinse water . Concrete shall be dried thoroughly thereafter.

4.04.00 Sweep blast the concrete surface using expendable abrasive. The blast nozzle should be kept at sufficient distance to avoid over blast and exposing of aggregate. Following blasting remove dust using air jet (with the abrasive turned off).

4.05.00 Any of the following methods of surface preparation may be used to achieve a near white blast cleaned surface:

a) Dry abrasive blasting using compressed air, blast nozzles and abrasive.
b) Dry abrasive blasting using a dosed cycle, re-circulating abrasive system, with compressed air, blast nozzle, and abrasive, with or without vacuum for dust and abrasive recovery.
c) Dry abrasive blasting using a dosed cycle, re-circulating abrasive system with centrifugal, wheels and abrasive (such as Wheelabrator).

4.06.00 Compressed air used for blast cleaning shall be dean, dry and free of moisture and oil. Moisture separators, oil separators, traps or other equipment may be necessary to achieve dean, dry air.

4.07.00 Blast cleaning operations shall be done in such a manner that no damage is done to partially or entirely completed portions of the work.

4.08.00 Dry blast cleaning shall not be concluded during times when the surface will become wet after blast cleaning.

4.09.00 Non-metallic disposable mineral abrasive such as silica sand shall be the chosen abrasive for open blasting operations Steel grit and shot are approved abrasive media for blast cleaning in closed cycle, recirculating abrasive systems (compressed air, vacuum and centrifugal wheel). No other abrasive media shall be used without prior approval.

4.10.00 The cleanliness and size of recycled abrasive shall be maintained to ensure compliance with this standard.

4.11.00 The blast cleaning abrasive shall be dry and free of oil, grease and other contaminants. Applicator shall use abrasive media of size that will ensure the necessary roughness desired.

4.12.00 Dust and residues shall be removed from prepared surface by brushing, blowing off with dean, dry air or vacuum cleaning. Moisture separators, oil separators, traps or other equipment may be necessary to achieve clean, dry air.

4.13.00 Prior to the application of Elastomeric Urethane on new concrete surface, sufficient time must pass to allow the excess moisture to evaporate. This time will vary on conditions and is normally 14-28 days. After the curing period has elapsed, concrete must be checked for the presence of excess moisture on and beneath the surface using a Delmhorst BD-8 Moisture Detector. A reading of 2% and under indicates that the concrete is ready to be coated. The moisture content must not only be checked on the surface but beneath it by driving nails 6-12 mm into the concrete and placing the probes on the nail - heads. Alternatively the moisture may be tested by the Plastic Sheet Test ASTM D-4263. The test involves taping a 450 mm X 450 mm , 0.1 mm thick dear plastic sheet to the surface of the concrete for a duration of 16 hours. Absence of any droplets of moisture underneath the plastic sheet indicates that the concrete is ready for coating.

In cases of continued ingress of moisture from localised areas of concrete, apply

propane blow torch to ensure that the moisture content as specified above is achieved.

5.00.00 **PRIMING**

5.01.00 Before beginning priming and coating, measure the humidity using a sling psychrometer and calculate the dew point. The relative humidity must be lower than 85%. Temperature of concrete surface must be at least 3°C higher than the dew point. Under controlled conditions, it is possible to heat the concrete surface to eliminate condensation problems.

5.02.00 The type of primer used shall be as described in the coating specification 3.02.00.

5.03.00 Primer shall be sprayed onto the cleaned surface with a wet film thickness of 75-125 Microns. Since the primer penetrates into the concrete surface, no DFT measurements will be taken and estimation shall be on volumetric basis. The primer on application shall be free from runs or drips or areas of excessive thickness.

5.04.00 The primed surface shall be protected so that it will not come into contact with rain, dust or other substances until completely hardened and coated with the Elastomeric Polyurethane Top Coat.

5.05.00 Primed surface should be over coated within the time recommended for the approved type of primer. In the event that the re-coat interval of primed surface is exceeded without top-coating with the Elastomeric Polyurethane, the surface must be re-primed.

6.00.00 **COATING**

6.01.00 Nominal thickness of the Elastomeric Polyurethane shall be 2,000 Microns, measured in accordance with 7.02.02. Being a thixotropic, high build, non-levelling coating, the Elastomeric Polyurethane coating shall take the contour / profile of the substrate.

Coating shall be done only at times when the substrates temperature is at least 3°C over the dew point. Hourly measurements of dew point and surface temperatures shall be made prior to and when coating is under progress. Surface temperature should be minimum 5°C and should not exceed 70°C.

6.02.00 Equipment for the spray application shall be in conformity with system specification, meeting minimum specified by the coating manufacturer. Equipment shall consist of Material Feed Pumps, Purge Pump, Proportioning Pump, Mix Manifold, Static Mixer, Interconnecting Hoses etc.

6.03.00 Partially used and unused material drums must be tightly sealed and contain a blanket of nitrogen to prevent moisture contamination when not in use.

6.04.00 Before application on the substrate apply a test patch for runs or drips and gel time as well as tack free time.

6.05.00 The proportioning pump shall be fitted with a numeric counter to keep track of the volume while spraying.

6.06.00 Entire thickness shall be built up in a single application (with a number of passes). If the surface is large enough to require more than one day for the coating, the edges of the coated areas shall be feathered and roughened with a grinding too) prior to beginning priming and coating.

6.07.00 Areas not to be coated shall be masked with disposable plastic sheets, cardboard etc.

6.08.00 Visual inspection shall be made for film discontinuities such as air bubbles, blowholes, skips, shadows. Such defects will be marked and repaired with Elastomeric Polyurethane hand mix kit with slower pot life after roughening the edges.

7.00.00 **INSPECTION**

7.01.00 All work under this specification shall be subject to inspection by the owner or his representative. All parts of work shall be accessible. The applicator shall correct such work as is found defective and not as per the specifications.

7.02.00 The following tests shall be made :

During coating application the wet film thickness will be measured using Nordson wet Film Gauge as per ASTM D 4414.

7.02.01 Adhesion

Pull Off adhesion to Concrete measured using an portable adhesion tester such as Positest AT-CM Elcometer or equivalent as per ASTM D4541 on fully cured (7 days) concrete. Frequency shall be 3 readings per 1,000 Sq.M of coated area. The average of readings from three randomly selected areas shall constitute the adhesion and shall be minimum 2 N/mm2 (see below). Test area to be flat (without curvature). The following method will be used to determine whether coating meets adhesion requirements

Elcometer Reading	Type of Failure		Result / Conclusion
> 2 N / mm^2	T1	90% or more of break at coating - concrete interface	Coating meets adhesion criteria. Take actual reading of bond strength.
	T2	90% of more of break within the concrete	Concrete Failure. Coating adhesion exceeds 2N/mm^2

< 2 N / mm ^{2}	T1	90% or more of break at coating - concrete interface	Coating does not meet adhesion criteria. Take actual reading of bond strength achieved.
	T2	90% of more of break within the concrete	Concrete lacks sufficient strength to provide necessary adhesion figure. Coating adhesion accepted.

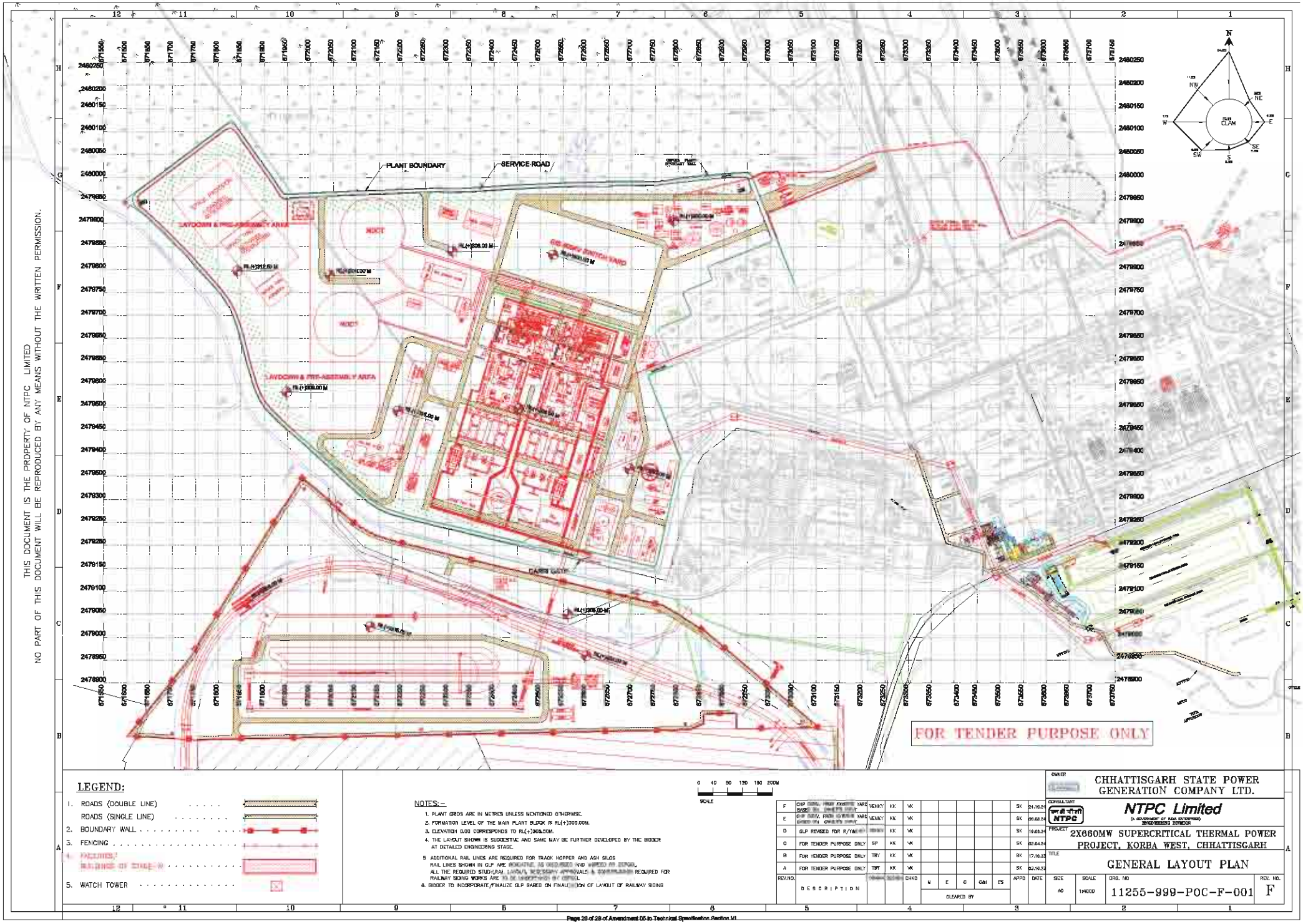
7.02.02 Film Thickness (DFT)

The film thickness shall be determined from the thickness of the coating detached along with the Elcometer dollies of the adhesion test and the readings shall be recorded. Frequency shall be identical to adhesion test. Average of 3 reading shall constitute the film thickness and shall be at least 2,000 Microns. Minimum spot reading shall be 1,800 Microns. Recommended spread rate by the manufacturer for the specified thickness of the PU coating shall be ascertained and adhered to during the coating process.

7.02.03 Hardness (Durometer)

Cured films (7 days) shall be tested for hardness using Durometer (Shore D) as per ASTM D 2240.

ANNEXURE-J (TENDER DRAWINGS)



LEGEND:

1. ROADS (DOUBLE LINE) . . . . .
   ROADS (SINGLE LINE) . . . . . .
2. BOUNDARY WALL . . . . . .
3. FENCING . . . . . .
4. FACILITIES/ BUILDINGS OF STAGE-II . . . . . .
5. WATCH TOWER . . . . . .

NOTES:-

1. PLANT GRIDS ARE IN METRES UNLESS MENTIONED OTHERWISE.
2. FORMATION LEVEL OF THE MAIN PLANT BLOCK IS RL(+)305.00M.
3. ELEVATION 0.00 CORRESPONDS TO RL(+)305.50M.
4. THE LAYOUT SHOWN IS SUGGESTIVE AND SAME MAY BE FURTHER DEVELOPED BY THE BIDDER AT DETAILED ENGINEERING STAGE.
5. ADDITIONAL RAIL LINES ARE REQUIRED FOR TRACK HOPPER AND ASH SILOS RAIL LINES SHOWN IN GLP ARE INDICATIVE AS DESIGNED AND WIDTH BY OTHERS. ALL THE REQUIRED STUDY,RAIL LAYOUT, NECESSARY APPROVALS & COMMISSION REQUIRED FOR RAILWAY SIDING WORKS ARE TO BE UNDERTAKEN BY OTHERS.
6. BIDDER TO INCORPORATE/FINALIZE GLP BASED ON FINALISATION OF LAYOUT OF RAILWAY SIDING

SCALE 0 40 80 120 160 200M

REV.NO.	DESCRIPTION	DRN	CHKD	N	E	C	Cal	ES	APPD	DATE
F	CHP CIVIL FINAL FOUNDATION YARD BASED ON CHETTY DWG	VENKY	KK	VK					SK	24.10.24
E	CHP CIVIL FOUNDATION YARD BASED ON CHETTY DWG	VENKY	KK	VK					SK	09.08.24
D	GLP REVISED FOR R/Y		KK	VK					SK	19.03.24
C	FOR TENDER PURPOSE ONLY	SP	KK	VK					SK	02.04.24
B	FOR TENDER PURPOSE ONLY	TSY	KK	VK					SK	17.10.23
A	FOR TENDER PURPOSE ONLY	TSY	KK	VK					SK	03.10.23

CLEARED BY

OWNER: CHHATTISGARH STATE POWER GENERATION COMPANY LTD.

CONSULTANT: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: 2X660MW SUPERCRITICAL THERMAL POWER PROJECT, KORBA WEST, CHHATTISGARH

TITLE: GENERAL LAYOUT PLAN

SIZE: A0 | SCALE: 1:4000 | DRG. NO: 11255-999-POC-F-001 | REV. NO.: F

LEGEND:

1. ROAD
2. BOUNDARY WALL IN VENDOR SCOPE
3. FACILITIES/BUILDINGS/STRUCTURES
4. SPOT LEVEL — RL(+)305.00/309.00/309.00/306.00/306.00/308.00/300.00/305.00/312.50
5. CONTOUR LEVEL

NOTES:

1. ALL DIMENSIONS AND LEVELS ARE IN METRES.
2. ±0.00 OF MAIN PLANT AREA CORRESPONDS TO (+)305.00M.
3. THIS DRAWING IS FOR TOPOGRAPHICAL SURVEY PURPOSE ONLY.

SCALE: 0 40 80 120 160 200M

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION			CHKD	N	E	C	Cal	ES	APPD	DATE
C	FOR TENDER PURPOSE ONLY	VENKY	KK	VK						SK	16.08.24
B	FOR TENDER PURPOSE ONLY	TS/	KK	VK						SK	28.10.23
A	FOR TENDER PURPOSE ONLY	TPT	KK	VK						SK	03.10.23

CLEARED BY

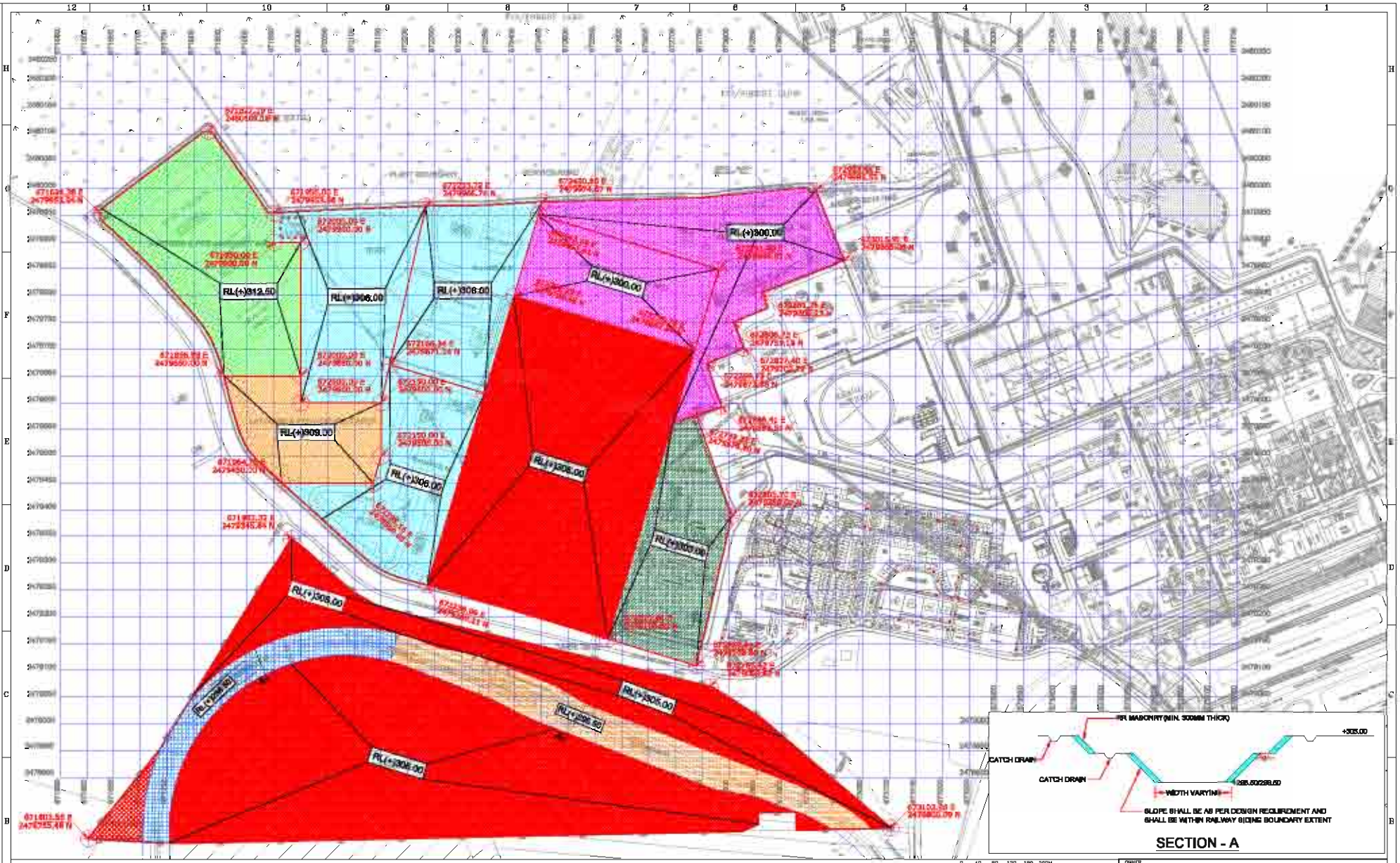
OWNER: CHHATTISGARH STATE POWER GENERATION COMPANY LTD.

CONSULTANT: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: 2X660MW SUPERCRITICAL THERMAL POWER PROJECT, KORBA WEST, CHHATTISGARH

TITLE: TOPOGRAPHICAL SURVEY

SIZE	SCALE	DRG. NO	REV. NO.
A0	1:4000	11255-999-POC-F-002	C



SECTION - A

SCALE 0 40 80 120 160 200M

LEGEND:-

1. SITE LEVELLING . . . . .

NOTES:

1. ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METRES.
2. GRIDS ARE MARKED AT 200M INTERVALS IN BOTH DIRECTIONS.
3. SITE CLEARANCE SHALL BE DONE AS PER TECHNICAL SPECIFICATIONS UPTO 30M BEYOND EXPECTED LINE OF FILLING/CUTTING.
4. FILLING WITH EARTH SHALL BE DONE IN LAYERS AND COMPACTED TO 95% OR MORE OF STANDARD PROCTOR'S MAXIMUM DRY DENSITY AS PER SPECIFICATIONS.
5. SLOPES IN FILLING SHALL BE 1V:2.5H UNLESS SPECIFICALLY NOTED OTHERWISE.
6. ALL CO-ORDINATES ARE SPECIFIED FOR THE TOP EDGE OF THE SLOPE OF FILLING/CUTTING.
7. PRIORITIES FOR VARIOUS BLOCKS SHALL BE AS PER THE WORK PROGRAMME AND INSTRUCTIONS OF ENGINEER

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	CHKD	N	E	C	Cal	ES	APPD	DATE
D	FOR TENDER PURPOSE ONLY	VENKY	KK	VK				SK	14.06.24
C	FOR TENDER PURPOSE ONLY	BP	KK	VK				SK	28.03.24
B	FOR TENDER PURPOSE ONLY	TSV	KK	VK				SK	29.10.23
A	FOR TENDER PURPOSE ONLY	TSV	KK	VK				SK	23.10.23

CLEARED BY

OWNER: CHHATTISGARH STATE POWER GENERATION COMPANY LTD.

CONSULTANT: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: 2X660MW SUPERCRITICAL THERMAL POWER PROJECT, KORBA WEST, CHHATTISGARH

TITLE: SITE LEVELLING PLAN

SIZE	SCALE	DRG. NO	REV. NO.
A0	1:4000	11255-001-POC-A-003	D