

	TECHNICAL REQUIREMENTS
	<p><b><u>3. NCTPP(Dadri)</u></b></p> <p style="text-align: right;"><b><u>APPENDIX – I</u></b></p> <p><b><u>SITE SPECIFIC SEISMIC PARAMETERS FOR DESIGN OF STRUCTURES AND EQUIPMENT</u></b></p> <p>The various site specific seismic parameters for the project site shall be as follows:</p> <ol style="list-style-type: none"> <li>1) Peak ground horizontal acceleration (MCE) : 0.24g</li> <li>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       <ol style="list-style-type: none"> <li>a) for special moment resisting steel building frames designed and detailed as per IS:800 : 0.06</li> <li>b) for special concentrically braced steel building frames designed and detailed as per IS:800 : 0.045</li> <li>c) for special moment resisting RC building frames designed and detailed as per IS:456 and IS:13920 : 0.036</li> <li>d) for RCC chimney, RCC Natural Draft Cooling Tower : 0.12</li> <li>e) for Anchored base liquid retaining steel tanks (ground supported) : 0.072</li> <li>f) : 0.12</li> <li>g) for Unanchored base liquid retaining steel tanks (ground supported) : 0.09</li> <li>for steel chimney, Absorber tower, Vessels</li> </ol> </li> <li>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 : 0.12</li> </ol> <p>Note: g = Acceleration due to gravity</p> <p>The horizontal seismic acceleration spectral coefficients are furnished in subsequent pages.</p>

# TECHNICAL REQUIREMENTS

## ANNEXURE – I (NCTPP(Dadri))

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

Time Period (Sec)	Damping Factor (as a percentage of critical damping)		
	2%	3%	5%
0	1	1	1
0.03	1	1	1
0.05	1.605	1.531	1.413
0.1	3.049	2.729	2.259
0.12	3.61	3.178	2.556
0.124	3.735	3.266	2.621
0.127	3.735	3.332	2.744
0.133	3.735	3.330	2.744
0.2	3.735	3.330	2.744
0.25	3.735	3.330	2.744
0.3	3.735	3.330	2.744
0.35	3.735	3.330	2.744
0.4	3.735	3.330	2.744
0.45	3.735	3.330	2.744
0.5	3.735	3.330	2.744
0.55	3.735	3.330	2.744
0.6	3.735	3.330	2.744
0.622	3.735	3.330	2.744
0.634	3.666	3.330	2.744
0.65	3.575	3.249	2.744
0.667	3.487	3.166	2.744
0.7	3.32	3.017	2.613
0.75	3.099	2.816	2.439
0.8	2.905	2.640	2.286
0.85	2.734	2.485	2.152
0.9	2.582	2.347	2.032
0.95	2.446	2.223	1.925
1	2.324	2.112	1.829
1.05	2.213	2.011	1.742
1.1	2.113	1.920	1.663

# TECHNICAL REQUIREMENTS

## ANNEXURE – I (NCTPP(Dadri))

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

Time Period	Damping Factor (as a percentage of critical damping)		
1.15	2.021	1.837	1.59
1.2	1.937	1.760	1.524
1.25	1.859	1.690	1.463
1.3	1.788	1.625	1.407
1.35	1.721	1.564	1.355
1.4	1.66	1.509	1.306
1.45	1.603	1.457	1.261
1.5	1.549	1.408	1.219
1.55	1.499	1.363	1.18
1.6	1.453	1.320	1.143
1.65	1.408	1.280	1.108
1.7	1.367	1.242	1.076
1.75	1.328	1.207	1.045
1.8	1.291	1.173	1.016
1.85	1.256	1.142	0.989
1.9	1.223	1.112	0.963
1.95	1.192	1.083	0.938
2	1.162	1.056	0.915
2.05	1.134	1.030	0.892
2.1	1.107	1.006	0.871
2.15	1.081	0.982	0.851
2.2	1.056	0.960	0.831
2.25	1.033	0.939	0.813
2.3	1.01	0.918	0.795
2.35	0.989	0.899	0.778
2.4	0.968	0.880	0.762
2.45	0.949	0.862	0.747
2.5	0.93	0.845	0.732
2.55	0.911	0.828	0.717
2.6	0.894	0.812	0.703
2.65	0.877	0.797	0.69

# TECHNICAL REQUIREMENTS

## ANNEXURE – I (NCTPP(Dadri))

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

Time Period	Damping Factor (as a percentage of critical damping)		
2.7	0.861	0.782	0.677
2.75	0.845	0.768	0.665
2.8	0.83	0.754	0.653
2.85	0.815	0.741	0.642
2.9	0.801	0.728	0.631
2.95	0.788	0.716	0.62
3	0.775	0.704	0.61
3.05	0.762	0.692	0.6
3.1	0.75	0.681	0.59
3.15	0.738	0.670	0.581
3.2	0.726	0.660	0.572
3.25	0.715	0.650	0.563
3.3	0.704	0.640	0.554
3.35	0.694	0.630	0.546
3.4	0.684	0.621	0.538
3.45	0.674	0.612	0.53
3.5	0.664	0.603	0.523
3.55	0.655	0.595	0.515
3.6	0.646	0.587	0.508
3.65	0.637	0.579	0.501
3.7	0.628	0.571	0.494
3.75	0.62	0.563	0.488
3.775	0.616	0.559	0.485
3.8	0.612	0.556	0.481
3.85	0.604	0.549	0.475
3.9	0.596	0.542	0.469
3.95	0.588	0.535	0.463
4	0.581	0.528	0.457

**7. TANDA**

**APPENDIX – 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) : 0.16g
- 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 : 0.04
  - b) for special concentrically braced steel building frames designed and detailed as per IS:800 : 0.03
  - c) for special moment resisting RC building frames designed and detailed as per IS:456 and IS:13920 : 0.024
  - d) for RCC chimney, RCC Natural Draft Cooling Tower : 0.08
  - e) for Anchored base liquid retaining steel tanks (ground supported) : 0.048
  - f) for Unanchored base liquid retaining steel tanks (ground supported) : 0.08
  - g) for steel chimney, Absorber tower, Vessels : 0.06
- 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 : 0.08

Note: g = Acceleration due to gravity

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

CLAUSE NO.	TECHNICAL REQUIREMENTS																																																																																																																																							
	<div><div>ANNEXURE – I (TANDA)</div><div><div>HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS</div><div>(In units of ‘g’)</div><table><tr><th rowspan="2">Time Period (Sec)</th><th colspan="3">Damping Factor (as a percentage of critical damping)</th></tr><tr><th>2%</th><th>3%</th><th>5%</th></tr><tr><td>0.000</td><td>1.000</td><td>1.000</td><td>1.000</td></tr><tr><td>0.030</td><td>1.000</td><td>1.000</td><td>1.000</td></tr><tr><td>0.040</td><td>1.319</td><td>1.260</td><td>1.201</td></tr><tr><td>0.050</td><td>1.635</td><td>1.508</td><td>1.385</td></tr><tr><td>0.060</td><td>1.948</td><td>1.746</td><td>1.555</td></tr><tr><td>0.070</td><td>2.259</td><td>1.976</td><td>1.716</td></tr><tr><td>0.080</td><td>2.569</td><td>2.200</td><td>1.868</td></tr><tr><td>0.090</td><td>2.877</td><td>2.419</td><td>2.013</td></tr><tr><td>0.100</td><td>3.184</td><td>2.633</td><td>2.153</td></tr><tr><td>0.110</td><td>3.490</td><td>2.842</td><td>2.288</td></tr><tr><td>0.108</td><td>3.429</td><td>2.801</td><td>2.261</td></tr><tr><td>0.110</td><td>3.490</td><td>2.842</td><td>2.288</td></tr><tr><td>0.115</td><td>3.643</td><td>2.946</td><td>2.354</td></tr><tr><td>0.120</td><td>3.795</td><td>3.048</td><td>2.418</td></tr><tr><td>0.125</td><td>3.947</td><td>3.150</td><td>2.482</td></tr><tr><td>0.130</td><td>4.098</td><td>3.251</td><td>2.545</td></tr><tr><td>0.134</td><td>4.220</td><td>3.331</td><td>2.594</td></tr><tr><td>0.141</td><td>4.220</td><td>3.470</td><td>2.680</td></tr><tr><td>0.147</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.150</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.200</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.250</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.300</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.350</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.400</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.450</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.500</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.550</td><td>4.220</td><td>3.470</td><td>2.750</td></tr><tr><td>0.555</td><td>4.182</td><td>3.470</td><td>2.750</td></tr><tr><td>0.560</td><td>4.145</td><td>3.470</td><td>2.750</td></tr><tr><td>0.565</td><td>4.108</td><td>3.470</td><td>2.750</td></tr><tr><td>0.570</td><td>4.072</td><td>3.470</td><td>2.750</td></tr></table></div></div>	Time Period (Sec)	Damping Factor (as a percentage of critical damping)			2%	3%	5%	0.000	1.000	1.000	1.000	0.030	1.000	1.000	1.000	0.040	1.319	1.260	1.201	0.050	1.635	1.508	1.385	0.060	1.948	1.746	1.555	0.070	2.259	1.976	1.716	0.080	2.569	2.200	1.868	0.090	2.877	2.419	2.013	0.100	3.184	2.633	2.153	0.110	3.490	2.842	2.288	0.108	3.429	2.801	2.261	0.110	3.490	2.842	2.288	0.115	3.643	2.946	2.354	0.120	3.795	3.048	2.418	0.125	3.947	3.150	2.482	0.130	4.098	3.251	2.545	0.134	4.220	3.331	2.594	0.141	4.220	3.470	2.680	0.147	4.220	3.470	2.750	0.150	4.220	3.470	2.750	0.200	4.220	3.470	2.750	0.250	4.220	3.470	2.750	0.300	4.220	3.470	2.750	0.350	4.220	3.470	2.750	0.400	4.220	3.470	2.750	0.450	4.220	3.470	2.750	0.500	4.220	3.470	2.750	0.550	4.220	3.470	2.750	0.555	4.182	3.470	2.750	0.560	4.145	3.470	2.750	0.565	4.108	3.470	2.750	0.570	4.072	3.470	2.750
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1.100	2.110	1.893	1.500																																																																																																																																												
1.150	2.018	1.810	1.435																																																																																																																																												
1.200	1.934	1.735	1.375																																																																																																																																												
1.250	1.857	1.666	1.320																																																																																																																																												
1.300	1.785	1.602	1.269																																																																																																																																												
1.350	1.719	1.542	1.222																																																																																																																																												
1.400	1.658	1.487	1.179																																																																																																																																												
1.450	1.601	1.436	1.138																																																																																																																																												
1.500	1.547	1.388	1.100																																																																																																																																												
1.550	1.497	1.343	1.065																																																																																																																																												
1.600	1.451	1.301	1.031																																																																																																																																												
1.650	1.407	1.262	1.000																																																																																																																																												
1.700	1.365	1.225	0.971																																																																																																																																												
1.750	1.326	1.190	0.943																																																																																																																																												
1.800	1.289	1.157	0.917																																																																																																																																												
1.850	1.255	1.125	0.892																																																																																																																																												
1.900	1.222	1.096	0.868																																																																																																																																												
1.950	1.190	1.068	0.846																																																																																																																																												

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## TECHNICAL REQUIREMENTS

### Annexure-I (Dadri)

#### SOIL DATA AND FOUNDATION SYSTEM

Employer has carried out geotechnical investigation in the proposed area. Logs of boreholes of proposed area are enclosed at Annexure-II.

- a) The minimum founding level and the corresponding net allowable bearing pressure shall be as given in Table – 1 below

Table-1

Founding RL	Net Allowable Bearing Pressure T/m <sup>2</sup>		
	Isolated and combined footings		Rafts (width > 6m)
	Width upto 3.0m	Width > 3.0m upto 6m	
RL (+) 206.5 M	5	5	5
RL (+) 206.0 M	8	6	8
RL (+) 205.0 M	10	8	10
RL (+) 204.0 M	14	10	14

For Finished ground level (FGL) refer General layout plan (GLP)

In case any loose/soft pockets is encountered at founding level, the same shall be removed completely upto the hard strata and filled up with PCC (1:4:8).

The net allowable bearing pressure higher than above mentioned values shall not be permitted. At intermediate levels the bearing capacity shall be same as the net allowable bearing pressure corresponding to the immediate shallower level mentioned above.

For open foundations, the total permissible settlement shall be governed by IS: 1904 / IS: 13063 and from functional requirements whichever is more stringent. However, total settlement shall be restricted to the following:

Isolated & Strip	40 mm
Raft	75 mm

In case the total permissible settlement is to be restricted to less than as above specified from functional requirements, then the net allowable bearing pressure shall be reduced after review in consultation with Engineer.

#### b) TREATMENT FOR RCC CONSTRUCTION BELOW GROUND LEVEL

All foundations and surfaces of substructures coming in contact with earth shall be applied with Minimum two coats of hot bitumen of Industrial grade 85/25, conforming to IS: 702 (latest), mixed with 1% anti-stripping compound at the rate 1.7 Kg/Sq.m (for sum of all coats). This shall be followed by providing of 300mm thick sand jacket all around the foundation concrete surface in contact with soil.



**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger

**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**ANNEXURE-II DADRI**

**PROJECT NO :** 2872  
**BORING SIZE :** 150 MM  
**CO-ORDINATES :** 238S, 640W  
**WATER TABLE :** 1.85 M  
**RECORDED ON :** 21/08/2006

**TABLE NO :** 113  
**BORE HOLE NO :** BH-56  
**TERMINATION DEPTH :** 30.45 M  
**BORING START DATE :** 19/08/2006  
**BORING FINISH DATE :** 20/08/2006

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol	Grain Size Analysis				Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test				Free Swell Index (%)	Swell Pressure (kg/ cm <sup>2</sup> )
									Gravel (%)	Sand (%)	Silt (%)	Clay (%)									Type of Test	Cohesion C (kg/cm <sup>2</sup> )	Friction Angle ϕ (Deg.)	Pressure Range (kg/cm <sup>2</sup> )	Cv X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	Mv X 10 <sup>-2</sup> (cm <sup>2</sup> /kg.)	Compression Index (Cc)		
209.915	G.L.	DS1				Filled up Soil	0		10	22	62	6	25	19	-	1.78	1.47	21.2	-	-	-	-	-	-	-	-	-	-	-
207.415	1.00	UDS1	6(3+3+3)	6		ML-CL: Medium Yellowish Sandy Silt of Low Plasticity	1.00		2	23	65	10	29	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1.65	SPT1					5.50																						
	2.50	UDS2	5(2+3+2)	5																									
	3.15	SPT2																											
201.415	4.00	UDS3	7(3+3+4)	7		CL: Stiff to Very Stiff Yellowish Sandy Silt of Low Plasticity			0	84	16	0	N.	P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	4.65	SPT3																											
	5.50	UDS4	10(5+5+5)	10																									
	6.15	SPT4																											
201.415	8.50	UDS5	12(4+5+7)	12					0	84	16	0	N.	P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	9.15	SPT5																											
195.265	11.50	UDS6	17(5+7+10)	17		SM: Dense to Very Dense Greyish Silty Sand			0	84	16	0	N.	P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12.15	SPT6																											
	14.65	SPT7	39(9+13+26)	24																									
	16.15	SPT8	45(11+15+30)	26																									
195.265	17.65	SPT9	52(12+18+34)	28					0	84	16	0	N.	P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	19.15	SPT10	54(15+22+32)	28																									

UUT : Unconsolidated Undrained Triaxial Shear Test      UCT : Unconfined Compression Test      + : Test on Remoulded Sample      \* : Sample Slipped  
CDT : Consolidated Drained Triaxial Shear Test      DST : Direct Shear Test      DS : Disturbed Soil Sample      UDS : Undisturbed Soil Sample      N.P. : Non Plastic



<b>BORING METHOD :</b>	Shell and Auger
<b>NAME OF WORK :</b>	Geotechnical Investigation for NCPS Stage-II (1 x 490 MW) at Dadri, Distt. Gautam Budh Nagar (U.P.).
<b>CO-ORDINATES</b>	: 238S, 640W
<b>WATER TABLE</b>	: 1.85 M
<b>RECORDED ON</b>	: 21/08/2006
<b>TERMINATION DEPTH</b>	: 30.45 M
<b>BORING START DATE</b>	: 19/08/2006
<b>BORING FINISH DATE</b>	: 20/08/2006

PROJECT NO	:	2872	TABLE NO	:	114
BORING SIZE	:	150 MM	BORE HOLE NO	:	BH-56
CO-ORDINATES	:	238S, 640W	TERMINATION DEPTH	:	30.45 M
WATER TABLE	:	1.85 M	BORING START DATE	:	19/08/2006
RECORDED ON	:	21/08/2006	BORING FINISH DATE	:	20/08/2006

[illegible]

UUT : Unconsolidated Undrained Triaxial Shear Test      UCT : Unconfined Compression Test      + : Test on Remoulded Sample  
 CDT : Consolidated Drained Triaxial Shear Test      DST : Direct Shear Test      DS : Disturbed Soil Sample      UDS : Undisturbed Soil Sample      N.P. : Non Plastic  
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**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger












**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**PROJECT NO :** 2872  
**BORING SIZE :** 150 MM  
**CO-ORDINATES :** 261S, 657W  
**WATER TABLE :** 2.15 M  
**RECORDED ON :** 11/08/2006

**TABLE NO :** 115  
**BORE HOLE NO :** BH-57  
**TERMINATION DEPTH :** 30.45 M  
**BORING START DATE :** 09/08/2006  
**BORING FINISH DATE :** 10/08/2006

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol	Grain Size Analysis				Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test				Free Swell Index (%)	Swell Pressure (kg/ cm <sup>2</sup> )	
									Gravel (%)	Sand (%)	Silt (%)	Clay (%)									Type of Test	Cohesion C (kg/cm <sup>2</sup> )	Friction Angle $\phi$ (Deg.)	Pressure Range (kg/cm <sup>2</sup> )	Cv X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	Mv X 10 <sup>-2</sup> (cm <sup>2</sup> /kg.)	Compression Index (Cc)			
209.479	G.L. 0.50	DS1 UDS1				Filled up Soil	0																							
206.979	1.65	SPT1	7(2+3+4)	7		CL: Medium Yellowish Sandy Silt of Low Plasticity	0.50		4	18	65	13	30	20	-	-	-	-	-	-									-	-
	2.50	UDS2				CL: Stiff Yellowish Clayey Silt of Medium Plasticity	3.00		0	3	63	34	48	26	-	-	-	-	-	-									-	-
	3.15	SPT2	11(3+4+7)	11		CL: Stiff Yellowish Clayey Silt of Medium Plasticity																								
	4.00	UDS3	13(3+5+8)	13		CL: Stiff Yellowish Clayey Silt of Medium Plasticity																								
205.479	4.65	SPT3				CL: Stiff Yellowish Clayey Silt of Medium Plasticity																								
	5.50	UDS4	15(4+6+9)	15		CL: Stiff Yellowish Clayey Silt of Medium Plasticity	6.00		2	8	76	14	32	21	-	1.96	1.57	24.8	-	-		UUT	0.55	11					-	-
200.979	8.50	UDS5				CL: Stiff Yellowish Clayey Silt of Medium Plasticity																								
	9.15	SPT5	20(7+9+11)	20		CL: Stiff Yellowish Clayey Silt of Medium Plasticity	11.50		0	74	26	0	N.	P.	-	-	-	-	-	-									-	-
197.829	11.65	SPT6	31(9+13+18)	21		SM: Dense Yellowish Silty Sand																								
	13.15	SPT7	34(8+15+19)	22		SM: Dense Yellowish Silty Sand																								
	14.65	SPT8	37(10+16+21)	23		SM: Dense Yellowish Silty Sand																								
	16.15	SPT9	41(12+18+23)	24		SM: Dense Yellowish Silty Sand																								
191.829	17.65	SPT10	48(15+21+27)	26		SP-SM: Dense to Very Dense Greyish Silty Sand	17.50		5	85	10	0	N.	P.	-	-	-	-	-	-									-	-
	19.15	SPT11	57(17+23+34)	29		SP-SM: Dense to Very Dense Greyish Silty Sand	20.00																							

UUT : Unconsolidated Undrained Triaxial Shear Test  
CDT : Consolidated Drained Triaxial Shear Test

DST : Direct Shear Test  
UCT : Unconfined Compression Test

DS : Disturbed Soil Sample  
UDS : Undisturbed Soil Sample

+ : Test on Remoulded Sample

\* : Sample Slipped  
N. P. : Non Plastic



**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger

**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**PROJECT NO :** 2872  
**BORING SIZE :** 150 MM  
**CO-ORDINATES :** 261S, 657W  
**WATER TABLE :** 2.15 M  
**RECORDED ON :** 11/08/2006

**TABLE NO :** 116  
**BORE HOLE NO :** BH-57  
**TERMINATION DEPTH :** 30.45 M  
**BORING START DATE :** 09/08/2006  
**BORING FINISH DATE :** 10/08/2006

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test				Free Swell Index (%)	Swell Pressure (kg/ cm <sup>2</sup> )	
																							Type of Test	Cohesion C (kg/cm <sup>2</sup> )	Friction Angle ϕ (Deg.)	Pressure Range (kg/cm <sup>2</sup> )	Cv X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	Mv X 10 <sup>-2</sup> (cm <sup>2</sup> /kg.)	Compression Index (Cc)			
185.829	20.65	SPT12	62(15+26+36)	30		SP-SM: Dense to Very Dense Greyish Silty Sand	20.00		1	90	9	0	N.																			
	22.15	SPT13	68(18+30+38)	32																												
	23.65	SPT14	72(17+32+40)	32																												
	25.15	SPT15	79(20+35+44)	34																												
	26.65	SPT16	80(22+33+47)	34																												
	28.15	SPT17	92(29+39+53)	37																												
	30.15	SPT18	98(32+38+60)	38			30.45																									

UUT : Unconsolidated Undrained Triaxial Shear Test	UCT : Unconfined Compression Test	+	Test on Remoulded Sample	*	Sample Slipped
CDT : Consolidated Drained Triaxial Shear Test	DST : Direct Shear Test	DS : Disturbed Soil Sample	UDS : Undisturbed Soil Sample	N. P. :	Non Plastic



**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger

**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**PROJECT NO** : 2872

**BORING SIZE** : 150 MM

**CO-ORDINATES** : 281S, 640W

**WATER TABLE** : 1.90 M

**RECORDED ON** : 14/08/2006

**TABLE NO**

**BORE HOLE NO**

**TERMINATION DEPTH**

**BORING START DATE**

**BORING FINISH DATE**

: 117

: BH-58

: 30.45 M

: 12/08/2006

: 13/08/2006

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol	Grain Size Analysis				Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test				Free Swell Index (%)	Swell Pressure (Kg/ cm <sup>2</sup> )	
									Gravel (%)	Sand (%)	Silt (%)	Clay (%)									Type of Test	Cohesion C (Kg/cm <sup>2</sup> )	Friction Angle $\phi$ (Deg.)	Pressure Range (Kg/cm <sup>2</sup> )	CV X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	MV X 10 <sup>-2</sup> (cm <sup>2</sup> /Kg.)	Compression Index (Cc)			
209.534	G.L. 0.50	DS1 UDS1				Filled up Soil	0																							
207.034	1.65	SPT1	5(3+2+3)	5		CL: Medium Yellowish Sandy Silt of Low Plasticity	0.50		0	23	66	11	30	20	-	-	-	-	-	-									-	-
	2.50	UDS2	6(3+3+3)	6		CI: Medium to Stiff Yellowish Clayey Silt	3.00		0	5	69	26	44	25	-	1.87	1.48	26.6	-	-	UCT	0.45	-						-	-
	3.15	SPT2	10(4+5+5)	10		CL: Stiff Yellowish Sandy Silt of Low Plasticity	5.50		8	9	75	8	29	20	-	1.87	1.51	23.7	-	-									-	-
205.534	4.00	UDS3																												
	4.65	SPT3																												
	5.50	UDS4	9(3+5+4)	9																										
201.034	6.15	SPT4																												
	8.50	UDS5	10(4+5+5)	10																										
	9.15	SPT5																												
197.884	11.65	SPT6	22(7+10+12)	17		SM: Medium to Dense Greyish Silty Sand	11.50		0	71	29	0	N.	P.	-	-	-	-	-	-									-	-
	13.15	SPT7	32(8+15+17)	21																										
	14.65	SPT8	37(10+17+20)	23																										
190.384	16.15	SPT9	39(9+16+23)	23																										
	17.65	SPT10	53(13+18+35)	28		SP-SM: Very Dense Greyish Silty Sand	17.50		1	87	12	0	N.	P.	-	-	-	-	-	-									-	-
	19.15	SPT11	65(19+28+37)	32			20.00																							

UUT : Unconsolidated Undrained Triaxial Shear Test  
CDT : Consolidated Drained Triaxial Shear Test

DST : Direct Shear Test  
UCT : Unconfined Compression Test

DS : Disturbed Soil Sample  
+ : Test on Remoulded Sample

UDS : Undisturbed Soil Sample  
N.P. : Non Plastic

\* : Sample Slipped  
N.P. : Non Plastic



**NAME OF WORK** : Geotechnical Investigation for NCPS Stage-II (1 x 490 MW) at Dadri, Distt. Gautam Budh Nagar (U.P.).

PROJECT NO	:	2872	TABLE NO	:	118
BORING SIZE	:	150 MM	BORE HOLE NO	:	BH-58
CO-ORDINATES	:	281S, 640W	TERMINATION DEPTH	:	30.45 M
WATER TABLE	:	1.90 M	BORING START DATE	:	12/08/2006
RECORDED ON	:	14/08/2006	BORING FINISH DATE	:	13/08/2006

[illegible]

UUT : Unconsolidated Undrained Triaxial Shear Test  
 CDT : Consolidated Drained Triaxial Shear Test  
 UCT : Unconfined Compression Test  
 DST : Direct Shear Test  
 DS : Disturbed Soil Sample  
 UDS : Undisturbed Soil Sample  
 + : Test on Remoulded Sample  
 \* : Sample Slipped  
 N.P. : Non Plastic





**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger

**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**PROJECT NO :** 2872

**BORING SIZE :** 150 MM

**CO-ORDINATES :** 330S, 628W

**WATER TABLE :** 1.85 M

**RECORDED ON :** 24/08/2006

**TABLE NO**

**BORE HOLE NO**

**TERMINATION DEPTH**

**BORING START DATE**

**BORING FINISH DATE**




**: 119**

**: BH-59**

**: 30.45 M**

**: 22/08/2006**

**: 23/08/2006**

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol	Grain Size Analysis				Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test				Free Swell Index (%)	Swell Pressure (Kg/ cm <sup>2</sup> )	
									Gravel (%)	Sand (%)	Silt (%)	Clay (%)									Type of Test	Cohesion C (Kg/cm <sup>2</sup> )	Friction Angle $\phi$ (Deg.)	Pressure Range (Kg/cm <sup>2</sup> )	Cv X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	Mv X 10 <sup>-2</sup> (cm <sup>2</sup> /Kg.)	Compression Index (Cc)			
209.541	G.L. 0.50	DS1 UDS1				Filled up Soil CL: Medium Yellowish Silty Silt of Low Plasticity CI: Medium to Stiff Yellowish Clayey Silt of Medium Plasticity	0		1	18	67	14	30	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
207.041	1.65	SPT1	6(2+3+3)	6																										
	2.50	UDS2	8(3+4+4)	8																										
	3.15	SPT2	7(3+3+4)	7																										
204.041	4.00	UDS3				SM: Medium to Dense Yellowish Silty Sand	11.50		0	86	14	0	N.	P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	5.50	UDS4	10(4+5+5)	10																										
	6.15	SPT4																												
	8.50	UDS5																												
	9.15	SPT5	9(4+4+5)	9																										
197.891	11.65	SPT6	12(3+4+8)	11																										
	13.15	SPT7	31(9+13+18)	21																										
	14.65	SPT8	26(7+11+15)	18																										
	16.15	SPT9	36(10+16+20)	22																										
191.891	17.65	SPT10	51(12+18+33)	27		SP-SM: Very Dense Greyish Silty Sand	17.50		0	91	9	0	N.	P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	19.15	SPT11	59(15+22+37)	29																										

UUT : Unconsolidated Undrained Triaxial Shear Test  
CDT : Consolidated Drained Triaxial Shear Test

DST : Direct Shear Test  
UCT : Unconfined Compression Test

DS : Disturbed Soil Sample  
+ : Test on Remoulded Sample

UDS : Undisturbed Soil Sample  
N.P. : Non Plastic

\* : Sample Slipped  
N.P. : Non Plastic



**NAME OF WORK** : Geotechnical Investigation for NCPS Stage-II (1 x 490 MW) at Dadri, Distt. Gautam Budh Nagar (U.P.).

PROJECT NO	:	2872	TABLE NO	:	120
BORING SIZE	:	150 MM	BORE HOLE NO	:	BH-59
CO-ORDINATES	:	330S, 628W	TERMINATION DEPTH	:	30.45 M
WATER TABLE	:	1.85 M	BORING START DATE	:	22/08/2006
RECORDED ON	:	24/08/2006	BORING FINISH DATE	:	23/08/2006

[illegible]

UUT : Unconsolidated Undrained Triaxial Shear Test	UCT : Unconfined Compression Test	+	:	Test on Remoulded Sample	*	:	Sample Slipped
CDT : Consolidated Drained Triaxial Shear Test	DST : Direct Shear Test	DS	:	Disturbed Soil Sample	UDS	:	Undisturbed Soil Sample
					N. P.	:	Non Plastic



**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger


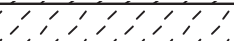
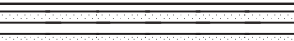

**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**PROJECT NO :** 2872  
**BORING SIZE :** 150 MM  
**CO-ORDINATES :** 362S, 656W  
**WATER TABLE :** 1.85 M  
**RECORDED ON :** 28/08/2006

**TABLE NO :** 121  
**BORE HOLE NO :** BH-60  
**TERMINATION DEPTH :** 30.45 M  
**BORING START DATE :** 25/08/2006  
**BORING FINISH DATE :** 27/08/2006

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol	Grain Size Analysis				Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test				Free Swell Index (%)	Swell Pressure (kg/ cm <sup>2</sup> )	
									Gravel (%)	Sand (%)	Silt (%)	Clay (%)									Type of Test	Cohesion C (kg/cm <sup>2</sup> )	Friction Angle ϕ (Deg.)	Pressure Range (kg/cm <sup>2</sup> )	Cv X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	Mv X 10 <sup>-2</sup> (cm <sup>2</sup> /kg.)	Compression Index (Cc)			
209.559	G.L. 0.50	DS1 UDS1				Filled up Soil CL: Medium Yellowish Gravelly Silt of Low Plasticity	0 0.50		12	6	70	12	31	21	-	1.79	1.47	21.9	-	-	-	-	-	-	-	-	-	-	-	-
207.059	1.65	SPT1	7(2+3+4)	7																										
	2.50	UDS2	6(3+3+3)	6																										
	3.15	SPT2																												
	4.00	UDS3	10(4+5+5)	10																										
204.059	4.65	SPT3																												
	5.50	UDS4	14(4+6+8)	14		CI: Stiff to Very Stiff Yellowish Clayey Silt of Medium Plasticity	4.50		2	10	72	16	35	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
197.909	6.15	SPT4																												
	8.50	UDS5																												
	9.15	SPT5	17(5+7+10)	17																										
	11.65	SPT6	30(8+13+17)	21		SM: Dense to Very Dense Greyish Silty Sand	11.50		2	69	29	0	N.	P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	13.15	SPT7	36(10+15+21)	23																										
	14.65	SPT8	44(12+17+27)	26																										
	16.15	SPT9	53(15+21+32)	29																										
	17.65	SPT10	56(13+23+33)	29																										
	19.15	SPT11	66(17+26+40)	32			20.00																							

UUT : Unconsolidated Undrained Triaxial Shear Test  
CDT : Consolidated Drained Triaxial Shear Test

DST : Direct Shear Test  
UCT : Unconfined Compression Test

+ : Test on Remoulded Sample  
UDS : Undisturbed Soil Sample

\* : Sample Slipped  
N. P. : Non Plastic



**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger

**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**PROJECT NO** :

**2872**

**BORING SIZE** :

**150 MM**

**CO-ORDINATES** :

**362S, 656W**

**WATER TABLE** :

**1.85 M**

**RECORDED ON** :

**28/08/2006**

**TABLE NO**

**: 122**

**BORE HOLE NO**

**: BH-60**

**TERMINATION DEPTH**

**: 30.45 M**

**BORING START DATE**

**: 25/08/2006**

**BORING FINISH DATE**

**: 27/08/2006**

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Grain Size Analysis	Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test					Free Swell Index (%)	Swell Pressure (Kg/ cm <sup>2</sup> )	
								Type of Test	Cohesion C (Kg/cm <sup>2</sup> )														Friction Angle ϕ (Deg.)	Pressure Range (Kg/cm <sup>2</sup> )	Cv X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	Mv X 10 <sup>-2</sup> (cm <sup>2</sup> /Kg.)	Compression Index (Cc)						
184.409	20.65	SPT12	70(18+28+42)	33		SP-SM: Very Dense Greyish Silty Sand	20.00		1	91	8	0	N.	P.																			
	22.15	SPT13	73(20+29+44)	33																													
	23.65	SPT14	68(22+31+37)	31																													
	25.15	SPT15	78(24+35+43)	34																													
	26.65	SPT16	85(26+40+45)	36																													
	28.15	SPT17	95(28+44+51)	38																													
	30.15	SPT18	92(29+37+55)	36			30.45																										

UUT : Unconsolidated Undrained Triaxial Shear Test

CDT : Consolidated Drained Triaxial Shear Test

DST : Direct Shear Test

UCT : Unconfined Compression Test

+

Test on Remoulded Sample

UDS : Undisturbed Soil Sample

\* : Sample Slipped

N.P. : Non Plastic



**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger

**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**PROJECT NO** : 2872

**BORING SIZE** : 150 MM

**CO-ORDINATES** : 400S, 642W

**WATER TABLE** : 1.85 M

**RECORDED ON** : 31/08/2006

**TABLE NO**

**BORE HOLE NO**

**TERMINATION DEPTH**

**BORING START DATE**

**BORING FINISH DATE**

: 123

: BH-61

: 30.45 M

: 29/08/2006

: 30/08/2006

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol	Grain Size Analysis				Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test				Free Swell Index (%)	Swell Pressure (Kg/ cm <sup>2</sup> )
									Gravel (%)	Sand (%)	Silt (%)	Clay (%)									Type of Test	Cohesion C (Kg/cm <sup>2</sup> )	Friction Angle $\phi$ (Deg.)	Pressure Range (Kg/cm <sup>2</sup> )	Cv X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	Mv X 10 <sup>-2</sup> (cm <sup>2</sup> /Kg.)	Compression Index (Cc)		
209.568	G.L. 0.50	UDS1				Filled up Soil	0 0.50		0	9	85	6	29	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
207.068	1.65	SPT1	5(2+3+2)	5		CL: Medium to Stiff Yellowish Sandy Silt of Low Plasticity	5.50		0	3	74	23	40	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2.50	UDS2																											
	3.15	SPT2	6(3+3+3)	6																									
	4.00	UDS3	9(4+4+5)	9																									
204.068	4.65	SPT3																											
	5.50	UDS4																											
	6.15	SPT4	7(3+3+4)	7		CL: Medium Yellowish Clayey Silt of Medium Plasticity	8.50		2	11	78	9	30	20	-	1.86	1.54	20.7	2.66	0.725	UUT	0.45	11	0.5-1.0 1.0-2.0 2.0-4.0 4.0-8.0	8.51 6.86 5.57 4.54	2.00 1.48 0.99 0.62	0.133	-	-
201.068	8.50	UDS5	14(4+6+8)	14		CL: Stiff Yellowish Sandy Silt of Low Plasticity	11.50																						
	9.15	SPT5																											
	11.65	SPT6	21(5+8+13)	17		SM: Medium to Very Dense Greyish Silty Sand																							
	13.15	SPT7	26(9+10+16)	19																									
	14.65	SPT8	33(11+13+20)	21																									
193.418	16.15	SPT9	38(10+15+23)	23					0	66	34	0	N.	P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17.65	SPT10	48(12+19+29)	26																									
	19.15	SPT11	56(15+21+35)	28			20.00																						

UUT : Unconsolidated Undrained Triaxial Shear Test  
CDT : Consolidated Drained Triaxial Shear Test

DST : Direct Shear Test  
UCT : Unconfined Compression Test

DS : Disturbed Soil Sample  
+ : Test on Remoulded Sample

UDS : Undisturbed Soil Sample  
N.P. : Non Plastic

\* : Sample Slipped



**GEOTECH CONSULTANTS PVT. LTD.**  
**NEW DELHI**

**BORING METHOD :** Shell and Auger

**NAME OF WORK :** Geotechnical Investigation for NCPS

Stage-II (1 x 490 MW) at Dadri, Distt.

Gautam Budh Nagar (U.P.).

**PROJECT NO :** 2872  
**BORING SIZE :** 150 MM  
**CO-ORDINATES :** 400S, 642W  
**WATER TABLE :** 1.85 M  
**RECORDED ON :** 31/08/2006

**TABLE NO :** 124  
**BORE HOLE NO :** BH-61  
**TERMINATION DEPTH :** 30.45 M  
**BORING START DATE :** 29/08/2006  
**BORING FINISH DATE :** 30/06/2006

Elevation in metre	Sample Depth Below Reference Level (m)	Sample Reference No.	SPT Observed 'N' value	SPT Corrected 'N' value	Standard Penetration Curve	Visual Description of Soil with IS Classification	Depth (m)	IS Symbol				Grain Size Analysis	Liquid Limit	Plastic Limit	Shrinkage Limit	Bulk Density (gm/cc)	Dry Density (gm/cc)	Natural Moisture Content (%)	Specific Gravity	Void Ratio (e <sub>0</sub> )	Shear Test			Consolidation Test				Free Swell Index (%)	Swell Pressure (kg/ cm <sup>2</sup> )	
								Gravel (%)	Sand (%)	Silt (%)	Clay (%)										Type of Test	Cohesion C (kg/cm <sup>2</sup> )	Friction Angle ϕ (Deg.)	Pressure Range (kg/cm <sup>2</sup> )	Cv X 10 <sup>-4</sup> (cm <sup>2</sup> /Sec)	Mv X 10 <sup>-2</sup> (cm <sup>2</sup> /kg.)	Compression Index (Cc)			
187.418	20.65	SPT12	70(13+34+36)	33		SM: Medium to Very Dense Greyish Silty Sand SP-SM: Very Dense Greyish Silty Sand	20.00		1	90	9	0	N.																	
	22.15	SPT13	75(18+36+39)	34			22.00																							
	23.65	SPT14	80(20+35+45)	35																										
	25.15	SPT15	82(22+38+44)	35																										
	26.65	SPT16	74(23+37+37)	32																										
	28.15	SPT17	88(20+39+49)	36																										
	30.15	SPT18	92(24+38+54)	36			30.45																							

UUT : Unconsolidated Undrained Triaxial Shear Test  
CDT : Consolidated Drained Triaxial Shear Test

DST : Direct Shear Test  
UCT : Unconfined Compression Test

DS : Disturbed Soil Sample  
+ : Test on Remoulded Sample

UDS : Undisturbed Soil Sample  
N.P. : Non Plastic

\* : Sample Slipped  
N.P. : Non Plastic

## TECHNICAL REQUIREMENTS

### Annexure-I (TANDA)

#### SOIL DATA AND FOUNDATION SYSTEM

Employer has carried out geotechnical investigations in the proposed area. Logs of boreholes of proposed area are enclosed at Annexure-II.

- a) The minimum founding level and the corresponding net allowable bearing pressure shall be as given in Table – 1 below

Table-1

Founding RL	Net Allowable Bearing Pressure T/m <sup>2</sup>		
	Isolated and combined footings		Rafts (width > 6m)
	Width upto 3.0m	Width > 3.0m upto 6m	
RL (+) 86.5 M	12	10	13
RL (+) 85.5 M	15	12	16
RL (+) 84.5 M	16	14	19
RL (+) 83.5 M	18	16	20

For Finished ground level (FGL) refer General layout plan (GLP)

In case any loose/soft pockets is encountered at founding level, the same shall be removed completely upto the hard strata and filled up with PCC (1:4:8).

The net allowable bearing pressure higher than above mentioned values shall not be permitted. At intermediate levels the bearing capacity shall be same as the net allowable bearing pressure corresponding to the immediate shallower level mentioned above.

For open foundations, the total permissible settlement shall be governed by IS: 1904 / IS: 13063 and from functional requirements whichever is more stringent. However, total settlement shall be restricted to the following:

Isolated & Strip	40 mm
Raft	75 mm

In case the total permissible settlement is to be restricted to less than as above specified from functional requirements, then the net allowable bearing pressure shall be reduced after review in consultation with Engineer.

Project : Geotechnical Investigation Work for Stage II at NTPC Tanda.

Job No : 3160

Created by : Chandrani

Created on : 06/03/2014

Sheet No:

## BORE LOG DATA SHEET

## BORE HOLE NO.45

Co-ordinates E=-134  
N= 1234

Field Test	Nos	Samples	Nos	Commencement Date : 22/02/14
Penetrometer (SPT)	20	Undisturbed (UDS)	2	Completion Date : 24/02/14
Cone (Pc)		Penetrometer (SPT)	20	Bore Hole Diameter : 150 mm.
Vane (V)		Disturbed (DS)	21	Level Of Ground : 87.985 m.
		Water Sample (WS)	0	Water Struck At :
				Standing Water Level : 3.5 m.

DESCRIPTION	SYMBOL	N-VALUE						SAMPLES	
		EACH DIVN. = 7.5cm.						Ref. No	Depth (m)
0.00m								DS-1	0.50
								DS-2	1.00
								UDS-1	1.50-1.95
								SPT-1	1.95-2.40
								DS-3	3.00
								SPT-2	3.50-3.95
								DS-4	4.50
								SPT-3	5.00-5.45
								DS-5	6.00
								SPT-4	6.50-6.95
								DS-6	7.50
								SPT-5	8.00-8.45
								DS-7	9.00
								SPT-6	9.50-9.95
								DS-8	10.50
								SPT-7	11.00-11.45
								DS-9	12.00
12.30m								SPT-8	12.50-12.95
								DS-10	13.50
								SPT-9	14.00-14.45
								DS-11	14.70
								SPT-10	15.00-15.45
15.50m									

Medium dense, brownish grey, silty fine sand. Obs. mica. (SM)

Hard, greyish brown / brownish grey, silty clay. Obs. high % of concretion silt. (CL)



## BORE LOG DATA SHEET

## BORE HOLE NO.45

Co-ordinates E=10493.000  
N=11157.000

Field Test	Nos	Samples	Nos	Commencement Date : 22/02/14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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N.B. - '\*' means sample could not be recovered.

Bore Hole	Sample Number	Depth M	Sample Description	Bulk		Dry Dens. gms/cc	Spec. Grav.	Nat. Mois. %	Void Ratio	Strength Test Results					Atter. Limits			IS Classification	Grain Size				Test Method
				Dens. gms/cc						Pc/sqcm	Shear kg/sqcm	Cohesn kg/sqcm	Fricth Deg.	LL %	PL %	SL %	Gravl %		Sand %	Silt %	Clay %		
BH44	UDS01	2.50	Light grey, silty clay with steel grey patches.	2.05	1.72	2.65	20 S			UNCONFD	1.76	0		47	23	21	Cl		2	66	32	Do	
							20 T			0.0	1.607												
										0.0	1.745												
										0.0	1.920												
										REMOULD	1.49	0											
										0.0	1.329												
										0.0	1.487												
										0.0	1.639												
BH44	UDS02	5.50	Light grey, silty sand.							DRSH-CQ	0.09	36					SM*					Do	
										0.5	0.439												
										1.0	0.817												
										1.5	1.158												
BH44	UDS04	11.50	Light grey, clayey silt with traces of sand mixture & calcareous	2.05	1.72		18 S		0.392	TRSH-UU	0.33	17		30	21		CL		38	53	9	Do	
							19 T			3.0	1.859												
							17 C			2.0	1.294												
										1.0	0.970												
BH44	SPT10	15.00	Light grey, clayey silt with sand mixture & mica.														CL*		30	53	17	Do	
BH44	SPT13	19.50	Steel grey, clayey silt with sand mixture & traces of calcareous														Cl*		14	26	47	13	Do
BH44	SPT20	30.00	Light grey, clayey silt with sand mixture & mica.														CL*		38	48	14	Do	
BH44	SPT25	37.50	Brownish grey, silty sand with traces of mica & clay binder.														SM		79	21 (silt+clay)		Do	
BH45	UDS01	1.50	Greyish brown, silty sand with traces of clay binders.	1.67	1.55		8 S			DRSH-CQ	0.11	38					SM		61	39 (silt+clay)		Do	
							8DR			0.5	0.522												
										1.0	0.855												
										1.5	1.304												

Bore Hole	Sample Number	Depth M	Sample Description	Bulk		Dry Dens. gms/cc	Spec. Grav.	Nat. Mois. %	Void Ratio	Strength Test Results				Atter. Limits			IS Classification	Grain Size				Test Method
				Dens. gms/cc						Pc/Pn kg/sqcm	Shear kg/sqcm	Cohesn kg/sqcm	Fricth Deg.	LL %	PL %	SL %		Gravl %	Sand %	Silt %	Clay %	
BH45	SPT06	9.50	Brownish grey, silty sand with traces of mica & clay binder.														SM-SP		89	11	(silt+clay)	Do
BH45	SPT08	12.50	Brownish grey, clayey silt.				2.66							30	18		CL					Do
BH45	SPT14	21.55	Whitish grey, silty sand with traces of mica & clay binder.														SM		76	24	(silt+clay)	Do
BH45	SPT19	28.50	Brownish grey, clayey silt.											29	19		CL		20	65	15	Do
BH46	UDS01	3.00	Brownish grey silty sand with traces of silt stone.							DRSH-CQ	0.02	0.308	30				SM*					Do
										0.5		0.597										
										1.0		0.886										
										1.5												
BH46	UDS02	6.00	Brownish grey silty sand with traces of sand stone.	1.67	1.43			15 S									SM-SP		91	9	(silt+clay)	Do
BH46	UDS04	11.50	Brownish grey clayey silt.				2.65		0.573	TRSH-UU	0.89	10	33	19			CL		12	72	16	Do
										3.0	1.686											
										2.0	1.494											
										1.0	1.279											
BH46	SPT14	21.00	Brownish grey silty sand with traces of calcareous nodules & mica.														SM		55	23	(silt+clay)	Do
BH47	UDS01	1.50	Brownish grey, clayey silt with traces of fine sand mixture.	1.92	1.59			18 S 20 T		TRSH-UU	0.23	8	26				ML		23	71	6	Do
										3.0	0.748											
										2.0	0.592											
										1.0	0.415											

## ERT No. 19

SI No.	S ( M )	Apparent Resistivity (Ohm-m)		Mean Resistivity (Ohm-m)
		( N - S )	( E - W )	
1	0.50	46.187	49.015	47.60
2	1.00	57.193	53.422	55.31
3	2.00	100.568	75.426	88.00
4	3.00	96.170	107.484	101.83
5	4.00	115.653	115.653	115.65
6	5.00	125.712	128.854	127.28
7	6.00	131.999	131.999	132.00
8	7.00	123.200	127.600	125.40
9	8.00	125.712	130.741	128.23
10	10.00	131.999	125.714	128.86

Mean Resistivity at ERT-19 is **105.02** Ohm-m.