



# Marshal Geo Test Laboratory

For Testing of Civil Engineering Materials

## TEST - REPORT

T.R. No. / MGTL / TRR / R-0912213/001

Date:- 13/12/2021

To,  
The Executive Engineer ( Civil )  
Civil Trans. Dn. CSPTCL  
Bhilai -3 (C.G.)

Subject :- Test result of Soil Sample for the proposed Construction of 220 /132/33 KV S/s AHIWARA, Distt.- Durg (C.G.)

Your Ref.:- Letter No.:- EEC/CSPTCL/Works/3055 Bhilai-3 Dtd.:- 10/12/2021

Sample ID Mark :- Pit No.-01, ( Control Room ), Depth- 3.00 m.

Dear Sir,

Vide subject and reference cited above, the test results report is as follows: -

### Mechanical Testing

### Soil and Rock ( Clays & Soils )

#### PARTICULAR OF SAMPLE (S)

Nature:- Disturbed Soil Sample

Sample No.(S) Details:- One Sample

Dt. of Receipt in the Lab :-09/12/2021

Testing Dt. :- 09/12/2021

LAB JOB NO. :- R-2112093/001

			TEST RESULT	
S. No.	Parameters	Test Method	Result	Unit
1	Type of Soil	As per IS 2720 Part XI (RA-2016) ( Unconsolidated - Undrained ) Triaxial Test	Inorganic Clay of Medium Plasticity ( CI )	
2	Depth form EGL		3.00 m.	
3	Bulk Density ( Remoulded )		2.06	t/m <sup>3</sup>
4	C <sub>u</sub> Value of Soil		3.80	t/m <sup>2</sup>
5	Φ <sub>u</sub> Value of Soil		19.1	degree
6	Gross Safe Bearing Capacity		17.24	t/m <sup>2</sup>

- Remark:-
1. The SBC is calculated based on shear failure criteria.
  2. The SBC has been computed taking 1m x 1m footing size.
  3. The ground water table variation is taken into account while calculating SBC.
  4. Sample was submitted by client.

Verified by  
Himanshu R Varma  
( Geotechnical Engineer )

Authorised Signatory  
V. Avinash ( TM )

Note:-

- 1 Samples Drawn by us, unless otherwise mentioned.
- 2 Samples may be destroyed / Removed away from Laboratory after Testing, unless otherwise particular request is made.
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- 4 Although Site name has been mentioned, MGTL is not responsible for the actual site conditions.
- 5 This report pertains to only sample submitted by client & Tested at Raipur Laboratory.

\*\*\*\*\*END OF REPORT\*\*\*\*\*





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Directorate

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# Marshal Geo Test Laboratory

For Testing of Civil Engineering Materials

SHEET 1 OF 2

T. R. No. / MGTL / TRR / R-0912213/002

Date:-13/12/2021

To,  
The Executive Engineer ( Civil )  
Civil Trans. Dn. CSPTCL  
Bhilai -3 (C.G.)

Subject :- Test result of Soil Sample for the proposed Construction of 220 /132/33 KV S/s AHIWARA, Distt.- Durg (C.G.)

Your Ref.: Letter No.: EEC/CSPTCL/Works/3055 Bhilai-3 Dtd.: 10/12/2021

Sample ID Mark :- Pit No.- 01 ( Control Room ), Depth- 3.00 Mtr.

Dear Sir,

Vide subject and reference cited above, the test results report is as follows: -

## PARTICULAR OF SAMPLES (S) :-

Nature:- Soil Sample

Sample No.(S) Details:- One sample

Packing/Container :- Poly Bags

Dt. of Receipt in the Lab:- 09/12/2021

Testing Dt. :- 13/12/2021

LAB JOB NO.- R-2112093/002

## TEST RESULTS

S. No.	Name of Test	Test Method	Results	Unit
A)	Soil Sample			
1	LL, PL & PI	As per IS : 2720 ( Part V )- 1985 (RA-2015)	As per table 1 below	%
2	Grain Size Analysis	As per IS : 2720 (Part IV )-1985 (RA-2015)	As per table 2 below	%

Table -1

LAB JOB NO.- R-2112093/002

## TEST RESULTS

Sr. No.	% of Fines	Type of Soil	LL	PL	PI	
			%	%	%	
1	64.40	( CI ) Inorganic Clay of Medium Plasticity	38.00	17.49	20.51	







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Table -2

LAB JOB NO.- R-2112093/002				TEST RESULTS	
Sr. No.	SIEVE SIZE (MM)	WT. RET.	% OF WT.RET	CUM.WT. RET.	PERCENTAGE FINER (%)
1	10	26.0	5.20	5.20	94.80
2	4.75	23.0	4.60	9.80	90.20
3	2	35.0	7.00	16.80	83.20
4	0.6	83.0	16.60	33.40	66.60
5	0.425	4.0	0.80	34.20	65.80
6	0.75	7.0	1.40	35.60	64.40
Gravel		Coarse Sand	Medium Sand	Fine Sand	Silt & Clay
9.80		7.00	17.40	1.40	64.40

Note :- 1) Soil Sample is expansive in nature.

Verified by  
Himanshu R Varma  
( Geotechnical Engineer )

Authorised Signatory  
V. Avinash ( TM )

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\*\*\*\*\*END OF REPORT\*\*\*\*\*

P.S. City Road, Near Kushalpur Chowk,  
Changorabhata, Ring Road No. -01,  
Raipur 492013 (C.G.) , Ph. : 7879798900  
E-mail : raipur\_marshall@yahoo.co.in  
raipur\_marshall@gmail.com  
Website : marshallgeoraipur.com







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## TEST - REPORT

T.R. No. / MGTL / TRR / R-0912213/003

Date:- 13/12/2021

To,  
The Executive Engineer ( Civil )  
Civil Trans. Dn. CSPTCL  
Bhilai -3 (C.G.)

Subject :- Test result of Soil Sample for the proposed Construction of 220 /132/33 KV S/s AHIWARA, Distt.- Durg (C.G.)

Your Ref.:- Letter No.:- EEC/CSPTCL/Works/3055 Bhilai-3 Dtd:- 10/12/2021

Sample ID Mark :- Pit No.-02, ( Transformer ), Depth- 3.00 m.

Dear Sir,

Vide subject and reference cited above, the test results report is as follows: -

### Mechanical Testing

### Soil and Rock ( Clays & Soils )

#### PARTICULAR OF SAMPLE (S)

Nature:- Disturbed Soil Sample

Sample No.(S) Details:- One Sample

Dt. of Receipt in the Lab :-09/12/2021

Testing Dt. :- 10/12/2021

LAB JOB NO. :- R-2112093/003

#### TEST RESULT

S. No.	Parameters	Test Method	Result	Unit
1	Type of Soil	As per IS 2720 Part XI (RA-2016) ( Unconsolidated - Undrained ) Triaxial Test	Inorganic Clay of Medium Plasticity ( CI )	
2	Depth form EGL		3.00 m.	
3	Bulk Density ( Remoulded )		1.97	t/m <sup>3</sup>
4	C <sub>u</sub> Value of Soil		3.92	t/m <sup>2</sup>
5	Φ <sub>u</sub> Value of Soil		16.9	degree
6	Gross Safe Bearing Capacity		15.79	t/m <sup>2</sup>

- Remark:-
1. The SBC is calculated based on shear failure criteria.
  2. The SBC has been computed taking 1m x 1m footing size.
  3. The ground water table variation is taken into account while calculating SBC.
  4. Sample was submitted by client.

Verified by  
Manishu R Varma  
( Geotechnical Engineer )

Authorised Signatory  
V. Avinash ( TM )

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Raipur 492013 (C.G.) , Ph. : 7879798900  
E-mail : raipur\_marshall@yahoo.co.in  
raipur\_marshall@gmail.com  
Website : marshalgeoraipur.com







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SHEET 1 OF 2

T. R. No. / MGTL / TRR / R-0912213/004

Date:-13/12/2021

To,  
The Executive Engineer ( Civil )  
Civil Trans. Dn. CSPTCL  
Bhilai -3 (C.G.)

Subject :- Test result of Soil Sample for the proposed Construction of 220 /132/33 KV S/s AHIWARA, Distt.- Durg (C.G.)

Your Ref.: Letter No.: EEC/CSPTCL/Works/3055 Bhilai-3 Dtd.: 10/12/2021

Sample ID Mark :- Pit No.- 02 ( Transformer ), Depth- 3.00 Mtr.

Dear Sir,

Vide subject and reference cited above, the test results report is as follows: -

## PARTICULAR OF SAMPLES (S) :-

Nature:- Soil Sample

Sample No.(S) Details:- One sample

Packing/Container :- Poly Bags

Dt. of Receipt in the Lab:- 09/12/2021

Testing Dt. :- 13/12/2021

LAB JOB NO.- R-2112093/004

## TEST RESULTS

S. No.	Name of Test	Test Method	Results	Unit
A)	Soil Sample			
1	LL, PL & PI	As per IS : 2720 ( Part V )- 1985 (RA-2015)	As per table 1 below	%
2	Grain Size Analysis	As per IS : 2720 (Part IV )-1985 (RA-2015)	As per table 2 below	%

Table -1

LAB JOB NO.- R-2112093/004

## TEST RESULTS

Sr. No.	% of Fines	Type of Soil	LL %	PL %	PI %	
1	74.80	( CI ) Inorganic Clay of Medium Plasticity	46.00	21.49	24.51	

P.S. City Road, Near Kushalpur Chowk,  
Changorabhata, Ring Road No. -01,  
Raipur 492013 (C.G.) , Ph. : 7879798900  
E-mail : raipur\_marshall@yahoo.co.in  
raipur\_marshall@gmail.com  
Website : marshalgeoripur.com







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## SHEET 2 OF 2

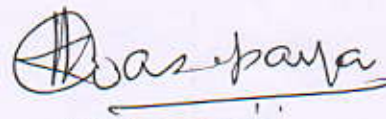
Table -2

LAB JOB NO.- R-2112093/004

				TEST RESULTS	
Sr. No.	SIEVE SIZE (MM)	WT. RET.	% OF WT.RET	CUM.WT. RET.	PERCENTAGE FINER (%)
1	10	0.0	0.00	0.00	100.00
2	4.75	32.0	6.40	6.40	93.60
3	2	49.0	9.80	16.20	83.80
4	0.6	33.0	6.60	22.80	77.20
5	0.425	1.0	0.20	23.00	77.00
6	0.75	11.0	2.20	25.20	74.80
Gravel		Coarse Sand	Medium Sand	Fine Sand	Silt & Clay
6.40		9.80	6.80	2.20	74.80

Note :- 1) Soil Sample is expansive in nature.

  
 Certified by  
 Himanshu R Varma  
 (Geotechnical Engineer)

  
 Authorised Signatory  
 V. Avinash ( TM )

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## TEST - REPORT

T.R. No. / MGTL / TRR / R-0912213/005

Date:- 13/12/2021

To,  
The Executive Engineer ( Civil )  
Civil Trans. Dn. CSPTCL  
Bhilai -3 (C.G.)

Subject :- Test result of Soil Sample for the proposed Construction of 220 /132/33 KV S/s AHIWARA, Distt.- Durg (C.G.)

Your Ref.:- Letter No.:- EEC/CSPTCL/Works/3055 Bhilai-3 Dtd:- 10/12/2021

Sample ID Mark :- Pit No.-03, ( Gaietry ), Depth- 3.00 m.

Dear Sir,

Vide subject and reference cited above, the test results report is as follows: -

### Mechanical Testing

### Soil and Rock ( Clays & Soils )

#### PARTICULAR OF SAMPLE (S)

Nature:- Disturbed Soil Sample

Sample No.(S) Details:- One Sample

Dt. of Receipt in the Lab :-09/12/2021

Testing Dt. :- 10/12/2021

LAB JOB NO. :- R-2112093/005

#### TEST RESULT

S. No.	Parameters	Test Method	Result	Unit
1	Type of Soil	As per IS 2720 Part XI (RA-2016) ( Unconsolidated - Undrained ) Triaxial Test	Inorganic Clay of Medium Plasticity ( CI )	
2	Depth form EGL		3.00 m.	
3	Bulk Density ( Remoulded )		2.11	t/m <sup>3</sup>
4	C <sub>u</sub> Value of Soil		3.89	t/m <sup>2</sup>
5	Φ <sub>u</sub> Value of Soil		17.6	degree
6	Gross Safe Bearing Capacity		16.59	t/m <sup>2</sup>

- Remark:-
1. The SBC is calculated based on shear failure criteria.
  2. The SBC has been computed taking 1m x 1m footing size.
  3. The ground water table variation is taken into account while calculating SBC.
  4. Sample was submitted by client.

Verified by  
Himanshu R Varma  
( Geotechnical Engineer )

*V. Avinash*

Authorised Signatory  
V. Avinash ( TM )

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SHEET 1 OF 2

T. R. No. / MGTL / TRR / R-0912213/006

Date:-13/12/2021

To,  
The Executive Engineer ( Civil )  
Civil Trans. Dn. CSPTCL  
Bhilai -3 (C.G.)

Subject :- Test result of Soil Sample for the proposed Construction of 220 /132/33 KV S/s AHIWARA, Distt.- Durg (C.G.)

Your Ref.: Letter No.: EEC/CSPTCL/Works/3055 Bhilai-3 Dtd.: 10/12/2021

Sample ID Mark :- Pit No.- 03 ( Gaintry ), Depth- 3.00 Mtr.

Dear Sir,

Vide subject and reference cited above, the test results report is as follows: -

## PARTICULAR OF SAMPLES (S) :-

Nature:- Soil Sample

Sample No.(S) Details:- One sample

Packing/Container :- Poly Bags

Dt. of Receipt in the Lab:- 09/12/2021

Testing Dt. :- 13/12/2021

LAB JOB NO.- R-2112093/006

## TEST RESULTS

S. No.	Name of Test	Test Method	Results	Unit
A)	<u>Soil Sample</u>			
1	LL, PL & PI	As per IS : 2720 ( Part V )- 1985 (RA-2015)	As per table 1 below	%
2	Grain Size Analysis	As per IS : 2720 (Part IV )-1985 (RA-2015)	As per table 2 below	%

Table -1

LAB JOB NO.- R-2112093/006

## TEST RESULTS

Sr. No.	% of Fines	Type of Soil	LL	PL	PI	
			%	%	%	
1	75.80	( CI ) Inorganic Clay of Medium Plasticity	41.00	17.99	23.01	

P.S. City Road, Near Kushalpur Chowk,  
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SHEET 1 OF 2

T. R. No. / MGTL / TRR / R-0912213/006

Date:-13/12/2021

To,  
The Executive Engineer ( Civil )  
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Bhilai -3 (C.G.)

Subject :- Test result of Soil Sample for the proposed Construction of 220 /132/33 KV S/s AHIWARA, Distt.- Durg (C.G.)

Your Ref.: Letter No.: EEC/CSPTCL/Works/3055 Bhilai-3 Dtd.: 10/12/2021

Sample ID Mark :- Pit No.- 03 ( Gaintry ), Depth- 3.00 Mtr.

Dear Sir,

Vide subject and reference cited above, the test results report is as follows: -

## PARTICULAR OF SAMPLES (S) :-

Nature:- Soil Sample

Sample No.(S) Details:- One sample

Packing/Container :- Poly Bags

Dt. of Receipt in the Lab:- 09/12/2021

Testing Dt. :- 13/12/2021

LAB JOB NO.- R-2112093/006

## TEST RESULTS

S. No.	Name of Test	Test Method	Results	Unit
A)	<u>Soil Sample</u>			
1	LL, PL & PI	As per IS : 2720 ( Part V )- 1985 (RA-2015)	As per table 1 below	%
2	Grain Size Analysis	As per IS : 2720 (Part IV )-1985 (RA-2015)	As per table 2 below	%

Table -1

LAB JOB NO.- R-2112093/006

## TEST RESULTS

Sr. No.	% of Fines	Type of Soil	LL	PL	PI	
			%	%	%	
1	75.80	( CI ) Inorganic Clay of Medium Plasticity	41.00	17.99	23.01	

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## SHEET 2 OF 2

Table -2

LAB JOB NO.- R-2112093/006				TEST RESULTS	
Sr. No.	SIEVE SIZE (MM)	WT. RET.	% OF WT.RET	CUM.WT. RET.	PERCENTAGE FINER (%)
1	10	0.0	0.00	0.00	100.00
2	4.75	24.0	4.80	4.80	95.20
3	2	13.0	2.60	7.40	92.60
4	0.6	62.0	12.40	19.80	80.20
5	0.425	3.0	0.60	20.40	79.60
6	0.75	19.0	3.80	24.20	75.80
Gravel		Coarse Sand	Medium Sand	Fine Sand	Silt & Clay
4.80		2.60	13.00	3.80	75.80

Note :- 1) Soil Sample is expansive in nature.

Verified by  
Himanshu R Varma  
( Geotechnical Engineer )

Authorised Signatory  
V. Avinash ( TM )

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