



# Marshal Geo Test Laboratory

For Testing of Civil Engineering Materials

ISO 9001:2015



Certified By :

Standardisation Testing  
& Quality Certification

Directorate

UDYAM-CG-14-0000899

## TEST - REPORT

T.R. No. / MGTL / TRR / R-0811211/003

Date:- 12/11/2021

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

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

Your Ref.:- Letter No.:- EEC/Civil Trans./PS/21/2759 Bhilai-3 Dtd.:- 02/11/2021

Sample ID Mark :- Pit No.-02, ( Control Room ), Depth- 2.00 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 :-08/11/2021

Testing Dt. :- 09/11/2021

LAB JOB NO. :- R-2111081/003

S. No.	Parameters	Test Method	TEST RESULT	
			Result	Unit
1	Type of Soil	As per IS 2720 Part XI (RA-2016) ( Unconsolidated - Undrained ) Triaxial Test	( CI ) Inorganic Clay of Medium Plasticity	
2	Depth form EGL		2.00 m.	
3	Bulk Density ( Remoulded )		1.89	t/m <sup>3</sup>
4	C <sub>u</sub> Value of Soil		2.70	t/m <sup>2</sup>
5	Φ <sub>u</sub> Value of Soil		23.0	degree
6	Gross Safe Bearing Capacity		13.90	t/m <sup>2</sup>

- Remark:-
1. SBC is calculated based on shear failure criteria.
  2. SBC has been computed taking 1m x 1m footing size.
  3. Soil is susceptible to variation of GWT.
  4. This soil is susceptible to longterm consolidation settlement.

*Himanshu R Varma*  
Verified by  
Himanshu R Varma  
( Geotechnical Engineer )

*Arun Bhawe*  
Authorised Signatory  
Arun Bhawe  
( CEO )

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.
- 3 This report in full or part may not be reproduced, published or used for any legal action unless prior permission is secured from C.E.O. MGTL Raipur. Subject to Raipur Jurisdiction.
- 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\*\*\*\*\*





# Marshal Geo Test Laboratory

For Testing of Civil Engineering Materials

ISO 9001:2015



Certified By :

Standardisation Testing  
& Quality Certification

Directorate

UDYAM-CG-14-000089

SHEET 1 OF 2

Date:-12/11/2021

T. R. No. / MGTL / TRR / R-0811211/004

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

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

Your Ref.: Letter No.: EEC/Civil Trans./PS/21/2759 Bhilai-3 Dtd.: - 02/11/2021

Sample ID Mark :- Pit No.- 02 ( Control Room ), Depth- 2.00 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:- 08/11/2021

Testing Dt. :- 12/11/2021

LAB JOB NO.- R-2111081/004		TEST RESULTS	
S. No.	Name of Test	Test Method	Results Unit
A)	Soil Sample	As per IS : 2720 ( Part V )- 1985 (RA-2015)	As per table 1 below %
1	LL, PL & PI	As per IS : 2720 (Part IV)-1985 (RA-2015)	As per table 2 below %
2	Grain Size Analysis		

Table -1

LAB JOB NO.- R-2111081/004		TEST RESULTS			
Sr. No.	% of Fines	Type of Soil	LL	PL	PI
			%	%	%
1	76.20	( CI ) Inorganic Clay of Medium Plasticity	42.00	14.40	27.60

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 : marshalgeoraipur.com





# Marshall Geo Test Laboratory

For Testing of Civil Engineering Materials

ISO 9001:2015

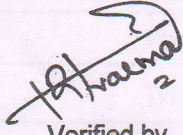



Certified By :  
Standardisation Testing  
& Quality Certification  
Directorate  
UDYAM-CG-14-000089

## SHEET 2 OF 2

Table -2

LAB JOB NO.- R-2111081/004				TEST RESULTS	
Sr. No.	SIEVE SIZE (MM)	WT. RET.	% OF WT.RET	CUM.WT. RET.	PERCENTAGE FINER (%)
1	10	31.0	6.20	6.20	93.80
2	4.75	24.0	4.80	11.00	89.00
3	2	30.0	6.00	17.00	83.00
4	0.6	28.0	5.60	22.60	77.40
5	0.425	1.0	0.20	22.80	77.20
6	0.75	5.0	1.00	23.80	76.20
Gravel		Coarse Sand	Medium Sand	Fine Sand	Silt & Clay
11.00		6.00	5.80	1.00	76.20

  
Verified by  
(Himanshu R Varma)  
(Geotechnical Engineer)

  
Authorised Signatory  
Arun Bhawe (CEO)

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.
- 3 This report in full or part may not be reproduced, published or used for any legal action unless prior permission is secured from C.E.O. MGTL Raipur. Subject to Raipur Jurisdiction.
- 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\*\*\*\*\*





# Marshal Geo Test Laboratory

For Testing of Civil Engineering Materials

ISO 9001:2015



Certified By :

Standardisation Testing  
& Quality Certification

Directorate

UDYAM-CG-14-0000899

## TEST - REPORT

T.R. No. / MGTL / TRR / R-0811211/005

Date:- 12/11/2021

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

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

Your Ref.:- Letter No.:- EEC/Civil Trans./PS/21/2759 Bhilai-3 Dtd.:- 02/11/2021

Sample ID Mark :- Pit No.-03, ( Transformer ), Depth- 1.50 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 :-08/11/2021

LAB JOB NO. :- R-2111081/005

Testing Dt. :- 09/11/2021

S. No.	Parameters	Test Method	TEST RESULT	
			Result	Unit
1	Type of Soil	As per IS 2720 Part XI (RA-2016) ( Unconsolidated - Undrained ) Triaxial Test	( CI ) Inorganic Clay of Medium Plasticity	
2	Depth form EGL		1.50 m.	
3	Bulk Density ( Remoulded )		2.06	t/m <sup>3</sup>
4	C <sub>u</sub> Value of Soil		4.25	t/m <sup>2</sup>
5	Φ <sub>u</sub> Value of Soil		8.0	degree
6	Gross Safe Bearing Capacity		10.18	t/m <sup>2</sup>

- Remark:-
1. SBC is calculated based on shear failure criteria.
  2. SBC has been computed taking 1m x 1m footing size.
  3. Soil is susceptible to variation of GWT.
  4. This soil is susceptible to longterm consolidation settlement.

Verified by  
Himanshu R Varma  
( Geotechnical Engineer )

Authorised Signatory  
Arun Bhawe  
( CEO )

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.
- 3 This report in full or part may not be reproduced, published or used for any legal action unless prior permission is secured from C.E.O. MGTL Raipur. Subject to Raipur Jurisdiction.
- 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\*\*\*\*\*

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 : marshalgeoraipur.com





**SHEET 1 OF 2**

Date:-12/11/2021

T. R. No. / MGTL / TRR / R-0811211/006

To,

The Executive Engineer ( Civil )

Civil Trans. Dn. CSPTCL

Bhilai -3 (C.G.)

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

Your Ref.: Letter No.: EEC/Civil Trans./PS/21/2759 Bhilai-3 Dtd.: 02/11/2021

Sample ID Mark :- Pit No.- 03 ( Transfarmer ), Depth- 1.50 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:- 08/11/2021

Testing Dt. :- 12/11/2021

**LAB JOB NO.- R-2111081/006****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-2111081/006****TEST RESULTS**

Sr. No.	% of Fines	Type of Soil	LL	PL	PI	
			%	%	%	
1	88.60	( CI ) Inorganic Clay of Medium Plasticity	48.00	17.90	30.10	






Table -2

**SHEET 2 OF 2**

LAB JOB NO.- R-2111081/006

Sr. No.	SIEVE SIZE (MM)	WT. RET.	% OF WT.RET	TEST RESULTS	
				CUM.WT. RET.	PERCENTAGE FINER (%)
1	10	0.0	0.00	0.00	100.00
2	4.75	17.0	3.40	3.40	96.60
3	2	11.0	2.20	5.60	94.40
4	0.6	21.0	4.20	9.80	90.20
5	0.425	2.0	0.40	10.20	89.80
6	0.75	6.0	1.20	11.40	88.60
Gravel		Coarse Sand	Medium Sand	Fine Sand	Silt & Clay
3.40		2.20	4.60	1.20	88.60

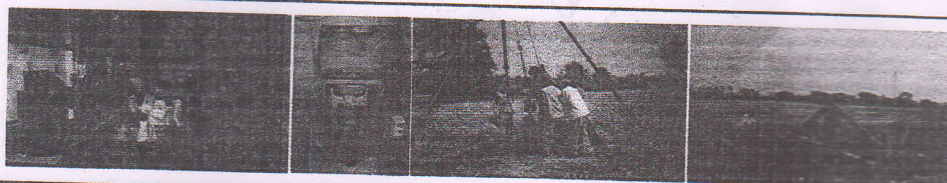
*[Signature]*  
Verified by  
(Himanshu R Varma)  
(Geotechnical Engineer)

*[Signature]*  
Authorised Signatory  
Arun Bhawe (CEO)

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.
- 3 This report in full or part may not be reproduced, published or used for any legal action unless prior permission is secured from C.E.O. MGTL Raipur. Subject to Raipur Jurisdiction.
- 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\*\*\*\*\*





# Marshal Geo Test Laboratory

For Testing of Civil Engineering Materials

ISO 9001:2015



Certified By :  
Standardisation Testing  
& Quality Certification  
Directorate  
UDYAM-CG-14-0000899

## TEST - REPORT

T.R. No. / MGTL / TRR / R-0811211/001

Date:- 12/11/2021

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

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

Your Ref.:- Letter No.:- EEC/Civil Trans./PS/21/2759 Bhilai-3 Dtd.:- 02/11/2021

Sample ID Mark :- Pit No.-01, ( Gaintry ), 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 :-08/11/2021

Testing Dt. :- 09/11/2021

LAB JOB NO. :- R-2111081/001

S. No.	Parameters	Test Method	TEST RESULT	
			Result	Unit
1	Type of Soil	As per IS 2720 Part XIII ( Direct Shear Test ) (RA-2016)	Clayey Sand	
2	Depth form EGL		3.00 m.	
3	Bulk Density ( Remoulded )		1.94	t/m <sup>3</sup>
4	C <sub>u</sub> Value of Soil		1.20	t/m <sup>2</sup>
5	Φ <sub>u</sub> Value of Soil		34.0	degree
6	Gross Safe Bearing Capacity		21.58	t/m <sup>2</sup>

Remark:-  
1. SBC is calculated based on shear failure criteria.  
2. SBC has been computed taking 1m x 1m footing size.  
3. Soil is susceptible to variation of GWT.

Verified by  
Himanshu R Varma  
( Geotechnical Engineer )

Authorised Signatory  
Arun Bhawe  
( CEO )

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.
- 3 This report in full or part may not be reproduced, published or used for any legal action unless prior permission is secured from C.E.O. MGTL Raipur. Subject to Raipur Jurisdiction.
- 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\*\*\*\*\*

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 : marshalgeoraipur.com





# Marshal Geo Test Laboratory

For Testing of Civil Engineering Materials

ISO 9001:2015



Certified By :

Standardisation Testing

& Quality Certification

Directorate

UDYAM-CG-14-000089

SHEET 1 OF 2

T. R. No. / MGTL / TRR / R-0811211/002

Date:-12/11/2021

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

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

Your Ref.: Letter No.- EEC/Civil Trans./PS/21/2759 Bhilai-3 Dtd.- 02/11/2021

Sample ID Mark :- Pit No.- 01 ( 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:- 08/11/2021

Testing Dt. :- 12/11/2021

LAB JOB NO.- R-2111081/002

## 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-2111081/002

## TEST RESULTS

Sr. No.	% of Fines	Type of Soil	LL	PL	PI	
			%	%	%	
1	15.40	Clayey Sand	33.00	11.80	21.20	

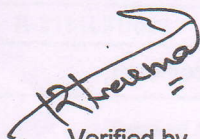
P.S. City Road, Near Kushalpur Chowk,  
Changorabhata, Ring Road No. -01,  
Raipur 492013 (C.G.) , Ph. : 7879798900  
E-mail : raipur\_marshall@yahoo.co.in  
raipur\_marshall@gmail.com  
Website : marshalgeoraipur.com



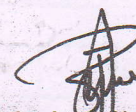


**SHEET 2 OF 2****Table -2****LAB JOB NO.- R-2111081/002****TEST RESULTS**

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	41.0	8.20	8.20	91.80
3	2	159.0	31.80	40.00	60.00
4	0.6	186.0	37.20	77.20	22.80
5	0.425	10.0	2.00	79.20	20.80
6	0.75	27.0	5.40	84.60	15.40
<b>Gravel</b>		<b>Coarse Sand</b>	<b>Medium Sand</b>	<b>Fine Sand</b>	<b>Silt &amp; Clay</b>
8.20		31.80	39.20	5.40	15.40



Verified by  
 ( Himanshu R Varma )  
 ( Geotechnical Engineer )



Authorised Signatory  
 Arun Bhawe ( CEO )

**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.
- 3 This report in full or part may not be reproduced, published or used for any legal action unless prior permission is secured from C.E.O. MGTL Raipur. Subject to Raipur Jurisdiction.
- 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\*\*\*\*\*

