

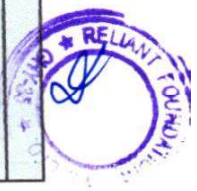
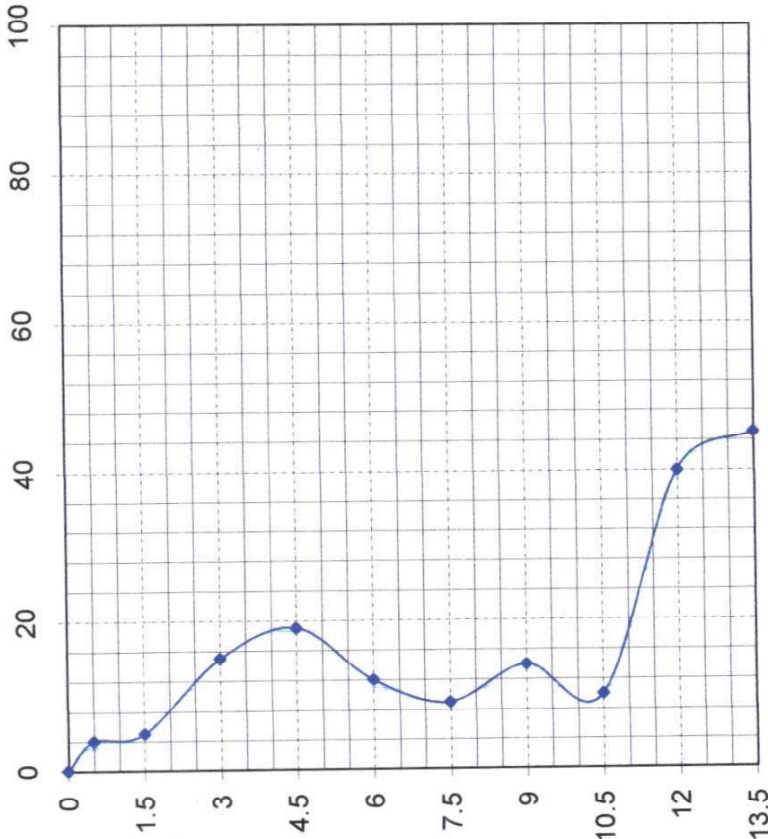
Name of Project : GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT BARPALAHA, BEZERA ASSAM

BORE LOG CHART

BORE HOLE NO: 07		DATE OF STARTING: 19-05-2022		GROUND WATER LEVEL		
		DATE OF COMPLETION: 19-05-2022		0.17M FROM EGL		
DEPTH (M)	TYPE OF SAMPLE	SPT		N-Value	VISUAL DESCRIPTION OF SOIL	LOG
		15 CM	15 CM			
0.50-0.95	P	1	2	4	Grayish silty CLAY	[Pattern]
1.0	U					
1.50-1.95	P	2	3	5	2.10M Brownish SANDY CLAY 2.90M	[Pattern]
2	U					
2.0-2.90					Grayish fine SAND	[Pattern]
3.0-3.45	P	4	7	15		
3.5	D				4.60M Brownish SANDY CLAY	[Pattern]
4.5-4.95	P	6	8	19		
5	D				6.10M Brownish silty CLAY	[Pattern]
6.0-6.45	P	5	6	12		
6.5	U				10.50M Grayish fine to medium SAND	[Pattern]
7.5-7.95	P	4	5	9		
8	U				15.50M D: DISTURBED SAMPLE::	[Pattern]
9.0-9.45	P	3	4	10		
9.5	U				EGL: EXISTING GROUND LEVEL	[Pattern]
10.5-10.95	P	4	4	6		
11	D				U: UNDISTURBED SAMPLE::	[Pattern]
12.00-12.45	P	15	19	21		
12.5	D				P: STANDARD PENETRATION TEST::	[Pattern]
13.5-13.95	P	18	21	24		
14	D				R: REFUSAL; N>100::	[Pattern]
15.00-15.45	P	21	23	27		
15.5	D					

P: STANDARD PENETRATION TEST::
R: REFUSAL; N>100::

U: UNDISTURBED SAMPLE::
D: DISTURBED SAMPLE::
EGL: EXISTING GROUND LEVEL



Name of Project : **GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT BARPALAHA, BEZERA ASSAM**

BORE LOG CHART

BORE HOLE NO: 08		DATE OF STARTING: 20-05-2022		GROUND WATER LEVEL		
		DATE OF COMPLETION: 20-05-2022		0.18M FROM EGL		
DEPTH (M)	TYPE OF SAMPLE	SPT		VISUAL DESCRIPTION OF SOIL	LOG	GRAPHICAL REPRESENTATION OF N-Value
		15 CM	15 CM			
0.50-0.95	P	1	1	2	3	
1	U					
1.50-1.95	P					
2	U	1	2	1	3	
3.0-3.45	P					
3.5	U	2	3	6	9	
4.5-4.95	P					
5	U	1	2	2	4	
6.0-6.45	P					
6.5	U	2	1	3	4	
7.5-7.95	P					
8	U	2	4	3	7	
9.0-9.45	P					
9.5	U	3	3	4	7	
10.5-10.95	P					
11	U	2	3	5	8	
12.00-12.45	P					
12.5	D	4	6	8	14	
13.5-13.95	P					
14	D	6	8	9	17	
15.00-15.45	P					
15.5	D	6	8	10	18	
15.50M	D					

P: STANDARD PENETRATION TEST::
R: REFUSAL; N>100::

D: DISTURBED SAMPLE::
EGL: EXISTING GROUND LEVEL

Name of Project : GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT BARPALAHA, BEZERA ASSAM

BORE LOG CHART

BORE HOLE NO: 09		DATE OF STARTING: 20-05-2022		GROUND WATER LEVEL		AUGER & WASH BORING	
		DATE OF COMPLETION: 20-05-2022		0.10M FROM EGL			
DEPTH (M)	TYPE OF SAMPLE	SPT		N-Value	VISUAL DESCRIPTION OF SOIL	LOG	GRAPHICAL REPRESENTATION OF N-Value
		15 CM	30 CM				
0.50-0.95	P	2	2	3	5		
1.0	U						
1.50-1.95	P	2	3	4	7		
2	U						
3.0-3.45	P	2	2	4	6		
3.5	U						
4.5-4.95	P	3	3	4	7		
5	U						
6.0-6.45	P	3	4	6	10		
6.5	D						
7.5-7.95	P	4	4	7	11		
8	D						
9.0-9.45	P	6	7	7	14		
9.5	D						
10.5-10.95	P	8	9	11	20		
11	D						
12.00-12.45	P	10	13	15	28		
12.5	D						
13.5-13.95	P	13	14	17	31		
14	D						
15.00-15.45	P	16	16	19	35		
15.5	D						

P: STANDARD PENETRATION TEST::
R: REFUSAL; N > 100::

D: DISTURBED SAMPLE::
EGL: EXISTING GROUND LEVEL

U: UNDISTURBED SAMPLE::



Name of Project : **GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT BARPALAHA, BEZERA ASSAM**

BORE LOG CHART

BORE HOLE NO: 10		DATE OF STARTING: 21-05-2022		GROUND WATER LEVEL		AUGER & WASH BORING
		DATE OF COMPLETION: 21-05-2022		0.20M FROM EGL		
DEPTH (M)	TYPE OF SAMPLE	SPT		N-Value	VISUAL DESCRIPTION OF SOIL	LOG
		15 CM	15 CM			
0.50-0.95	P	1	1	3	Grayish silty CLAY	
1.0	U					
1.0-1.10					1.10M Grayish brown silty CLAY	
1.50-1.95	P	2	2	6	2.80M Grayish fine SAND	
2	U					
3.0-3.45	P	3	4	8		
3.5	D					
4.5-4.95	P	5	7	15		
5	D				5.20M Grayish silty CLAY	
6.0-6.45	P	5	6	14	6.00M Grayish fine to medium SAND	
6.5	U					
7.5-7.95	P	6	8	17		
8	D					
9.0-9.45	P	5	7	15		
9.5	D					
10.5-10.95	P	7	9	18		
11	D					
12.00-12.45	P	7	10	21		
12.5	D					
13.5-13.95	P	9	12	25		
14	D					
15.00-15.45	P	10	13	28		
15.5	D				15.50M	



U: UNDISTURBED SAMPLE:: **D: DISTURBED SAMPLE::** **P: STANDARD PENETRATION TEST::**
EGL: EXISTING GROUND LEVEL **R: REFUSAL; N>100::**

Name of Project : GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT BARPALAHA, BEZERA ASSAM

BORE LOG CHART

BORE HOLE NO: 12		DATE OF STARTING: 20-05-2022		GROUND WATER LEVEL	
		DATE OF COMPLETION: 20-05-2022		0.20M FROM EGL	
DEPTH (M)	TYPE OF SAMPLE	SPT		VISUAL DESCRIPTION OF SOIL	LOG
		15 CM	15 CM		
		N-Value		GRAPHICAL REPRESENTATION OF N-Value	
		15 CM	15 CM		
0.50-0.95	P	1	2	3	
1.0	U				
1.50-1.95	P	1	2	3	
2	U				
3.0-3.45	P	1	2	4	
3.5	U				
4.5-4.95	P	2	2	5	
5	U				
6.0-6.45	P	4	7	12	
6.5	D				
7.5-7.95	P	7	9	17	
8	U				
9.0-9.45	P	3	3	6	
9.5	U				
10.5-10.95	P	8	10	19	
11	D				
12.00-12.45	P	7	11	19	
12.5	D				
13.5-13.95	P	7	13	22	
14	D				
15.00-15.45	P	8	12	22	
15.5	D				

U: UNDISTURBED SAMPLE;; D: DISTURBED SAMPLE;; P: STANDARD PENETRATION TEST;; R: REFUSAL;N>100;; EGL: EXISTING GROUND LEVEL



Name of Project : GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT
 BARPALAHA, BEZERA ASSAM

BORE LOG CHART

BORE HOLE NO: 13		DATE OF STARTING: 21-05-2022		GROUND WATER LEVEL		AUGER & WASH BORING	
		DATE OF COMPLETION: 21-05-2022		0.18M FROM EGL			
DEPTH (M)	TYPE OF SAMPLE	SPT		N-Value	VISUAL DESCRIPTION OF SOIL	LOG	GRAPHICAL REPRESENTATION OF N-Value
		15 CM	15 CM				
0.50-0.95	P	1	2	4	Grayish brown silty CLAY		
1.0	U				0.80M		
1.50-1.95	P	1	1	3	Grayish brown silty CLAY		
2	U						
3.0-3.45	P	2	2	4			
3.5	U						
4.5-4.95	P	1	2	3			
5	U						
6.0-6.45	P	2	3	8			
6.5	U						
7.5-7.95	P	3	3	9			
8	U						
9.0-9.45	P	2	4	11			
9.5	U						
10.5-10.95	P	3	4	9			
11	U						
12.00-12.45	P	2	4	12			
12.5	U						
13.5-13.95	P	3	5	11			
14	U						
15.00-15.45	P	4	4	11			
15.5	U				15.50M		

P: STANDARD PENETRATION TEST::
 R: REFUSAL; N>100::

D: DISTURBED SAMPLE::
 EGL: EXISTING GROUND LEVEL



Name of Project : GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT BARPALAHA, BEZERA ASSAM

BORE LOG CHART

BORE HOLE NO: 14		DATE OF STARTING: 21-05-2022		GROUND WATER LEVEL		AUGER & WASH BORING	
		DATE OF COMPLETION: 21-05-2022		0.15M FROM EGL			
DEPTH (M)	TYPE OF SAMPLE	SPT		VISUAL DESCRIPTION OF SOIL	LOG	GRAPHICAL REPRESENTATION OF N-Value	
		15 CM	15 CM			N-Value	
0.50-0.95	P	0	1	Grayish brown silty CLAY	[Grid area with data points]	0	
1	U					1.5	
1.50-1.95	P	0	1			3	
2	U					4.5	
3.0-3.45	P	0	1			6	
3.5	U					7.5	
4.5-4.95	P	1	1			9	
5	U					10.5	
6.0-6.45	P	1	2			12	
6.5	U					13.5	
7.5-7.95	P	2	1			15	
8	U						
9.0-9.45	P	1	1				
9.5	U						
10.5-10.95	P	1	2				
11	U						
12.00-12.45	P	1	2				
12.5	U						
13.5-13.95	P	2	1				
14	U						
15.00-15.45	P	2	2				
15.5	U						

P: STANDARD PENETRATION TEST::
R: REFUSAL; N>100::

D: DISTURBED SAMPLE::

U: UNDISTURBED SAMPLE::
EGL: EXISTING GROUND LEVEL



Name of Project : GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT BARPALAHA, BEZERA ASSAM

BORE LOG CHART

BORE HOLE NO: 15		DATE OF STARTING: 22-05-2022		GROUND WATER LEVEL		AUGER & WASH BORING
		DATE OF COMPLETION: 22-05-2022		0.23M FROM EGL		
DEPTH (M)	TYPE OF SAMPLE	SPT		N-Value	VISUAL DESCRIPTION OF SOIL	LOG
		15 CM	15 CM			
0.50-0.95	P	0	0	1	Grayish silty CLAY	
1	U				1.10M	
1.50-1.95	P	0	1	2	Grayish brown silty CLAY With Some Fine Sand. 2.80M	
2	U					
3.0-3.45	P	1	2	4	Grayish silty CLAY	
3.5	U					
4.5-4.95	P	3	3	7		
5	U					
6.0-6.45	P	3	4	9	6.80M	
6.5	U					
7.5-7.95	P	4	6	12	Grayish Fine To Medium SAND.	
8	D					
9.0-9.45	P	5	8	17		
9.5	D					
10.5-10.95	P	5	7	15		
11	D					
12.00-12.45	P	7	7	17		
12.5	D					
13.5-13.95	P	6	8	20		
14	D					
15.00-15.45	P	7	9	23	15.45M	
15.5	D					

UNDISTURBED SAMPLE:: D: DISTURBED SAMPLE:: P: STANDARD PENETRATION TEST:: R: REFUSAL; N>100::
EGL: EXISTING GROUND LEVEL



Name of Project : GEO-TECHNICAL INVESTIGATION WORK FOR PROPOSED CONSTRUCTION OF BOUNDARY WALL, NEGG PIPE LINE AT BARPALAHA, BEZERA ASSAM

BORE LOG CHART

BORE HOLE NO: 16 DATE OF STARTING: 20-05-2022 GROUND WATER LEVEL: 0.10M FROM EGL
 DATE OF COMPLETION: 20-05-2022 AUGER & WASH BORING

DEPTH (M)	TYPE OF SAMPLE	SPT		N-Value	VISUAL DESCRIPTION OF SOIL	LOG
		15 CM	15 CM			
0.50-0.95	P	1	1	2	Grayish silty CLAY	
1	U					
1.50-1.95	P	2	2	5		
2	U				3.00M	
3.0-3.45	P	3	4	7	Grayish silty CLAY With Some Fine SAND.	
3.5	U				4.20M	
4.5-4.95	P	3	5	13	Grayish Brown silty CLAY	
5	U					
6.0-6.45	P	4	4	12		
6.5	U					
7.5-7.95	P	3	4	10		
8	U					
9.0-9.45	P	3	5	11		
9.5	U					
10.5-10.95	P	5	7	14		
11	U					
12.00-12.45	P	5	6	14		
12.5	U					
13.5-13.95	P	3	4	8		
14	U				14.20M	
15.00-15.45	P	4	6	14	Grayish silty CLAY With Some Fine SAND.	
15.5	U				15.50M	

UPUNDISTURBED SAMPLE:: **D: DISTURBED SAMPLE::** **P: STANDARD PENETRATION TEST::**
EGL: EXISTING GROUND LEVEL **R: REFUSAL; N>100::**



Location:-BH1

CALCULATION OF NET SAFE BEARING CAPACITY (SHEAR CRITERIA)

Depth of foundn , Df = 3 m

Width(B)M= 2 Length L = 2

Soil parameterCohesion, C= 0.31 kg/scm= 3.1 t/sqm Saturated density , γ (Metric ton/m³) = 1.80

Angle of internal

friction, ϕ (deg)= 8 , shear condition **Local**Angle of shearing resistance for local failure = $\phi_m = \tan^{-1} 2/3 \tan \phi$

		Bearing capacity factor		
ϕ	8	Nc	Nq	Ny
ϕ_m	5	6.49	1.57	0.45

Shape, Depth and inlination factor

Shape factor		Depth factor		Inclination factor		Water table corection factor $W' = 0.5$
Sc=	1.3	dc=	1.33	ic=	1	
Sq=	1.2	dq=	1	iq=	1	
Sy =	0.8	dy =	1	iy =	1	

Ultimate bearing capacity (qd) (Local shear Condition)

$$q_d = \{2/3 c N_c s_c d_c i_c\} + \{\gamma D (N_q - 1) s_q d_q i_q\} + \{0.5 \gamma B N_y s_y d_y i_y W'\}$$

$$q_d = \{0.67 \times 3.1 \times 6.49 \times 1.3 \times 1.33 \times 1\} + \{1.8 \times 3 \times (1.57 - 1) \times 1.2 \times 1 \times 1\} + \{0.5 \times 1.8 \times 2 \times 0.45 \times 0.8 \times 1 \times 1 \times 1\}$$

$$q_d = 23.26 + 3.6936 + 0.324 = 27.27 \text{ Metric tonne/sqm}$$

$$\text{Net Safe bearing capacity , } q_{ns} = Q_d / F = 27.27 \text{ Metric tonne/sqm}$$

F= factor of safety =2.5

$q_{ns} =$	10.91 Metric tonne/sqm
$q_{ns} =$	106.9 KN/sqm



Location:-BH2

**CALCULATION OF NET SAFE BEARING CAPACITY
(SHEAR CRITERIA)**

Depth of foundn , Df = 3 m

Width(B)M= 2 Length L = 2

Soil parameterCohesion, C= 0.35 kg/scm= 3.5 t/sqm Saturated density , γ (Metric ton/m3) = 1.80

Angle of internal

friction, ϕ (deg)= 8 , shear condition **Local**Angle of shearing resistance for local failure = $\phi_m = \tan^{-1} 2/3 \tan \phi$

		Bearing capacity factor		
ϕ	8	Nc	Nq	N γ
ϕ_m	5	6.49	1.57	0.45

Shape, Depth and inlination factor

Shape factor		Depth factor		Inclination factor		Water table corection factor $W' = 0.5$
Sc=	1.3	dc=	1.33	ic=	1	
Sq=	1.2	dq=	1	iq=	1	
S γ =	0.8	d γ =	1	i γ =	1	

Ultimate bearing capacity (qd) (Local shear Condition)

$$q_d = \{2/3 c N_c s_c d_c i_c\} + \{\gamma D (N_q - 1) s_q d_q i_q\} + \{0.5 \gamma B N_\gamma s_\gamma d_\gamma i_\gamma W'\}$$

$$q_d = \{0.67 \times 3.5 \times 6.49 \times 1.3 \times 1.33 \times 1\} + \{1.8 \times 3 \times (1.57 - 1) \times 1.2 \times 1 \times 1\} + \{0.5 \times 1.8 \times 2 \times 0.45 \times 0.8 \times 1 \times 1 \times 1\}$$

$$q_d = 26.26 + 3.6936 + 0.324 = 30.27 \text{ Metric tonne/sqm}$$

$$\text{Net Safe bearing capacity , } q_{ns} = Q_d / F = 30.27 \text{ Metric tonne/sqm}$$

F= factor of safety = 2.5

$q_{ns} =$	12.11 Metric tonne/sqm
$q_{ns} =$	118.7 KN/sqm



Location:-BH 3

**CALCULATION OF NET SAFE BEARING CAPACITY
(SHEAR CRITERIA)**

Depth of foundn , Df = 3 m

Width(B)M= 2 Length L = 2

Soil parameterCohesion, C= 0.28 kg/scm= 2.8 t/sqm Saturated density , γ (Metric ton/m3) = 1.80

Angle of internal

friction, ϕ (deg)= 7 , shear condition LocalAngle of shearing resistance for local failure = $\phi_m = \tan^{-1} 2/3 \tan \phi$

		Bearing capacity factor		
ϕ	7	Nc	Nq	N γ
ϕ m	4	6.22	1.45	0.36

Shape, Depth and inlination factor

Shape factor		Depth factor		Inclination factor		Water table corection factor
Sc=	1.3	dc=	1.32	ic=	1	
Sq=	1.2	dq=	1	iq=	1	W' = 0.5
S γ =	0.8	d γ =	1	i γ =	1	

Ultimate bearing capacity (qd) (Local shear Condition)

$$q_d = \{2/3 c N_c s_c d_c i_c\} + \{\gamma D (N_q - 1) s_q d_q i_q\} + \{0.5 \gamma B N_\gamma s_\gamma d_\gamma i_\gamma W'\}$$

$$q_d = \{0.67 \times 2.8 \times 6.22 \times 1.3 \times 1.32 \times 1\} + \{1.8 \times 3 \times (1.45 - 1) \times 1.2 \times 1 \times 1\} + \{0.5 \times 1.8 \times 2 \times 0.36 \times 0.8 \times 1 \times 1 \times 1\}$$

$$q_d = 20.05 + 2.916 + 0.2592 = 23.22 \text{ Metric tonne/sqm}$$

$$\text{Net Safe bearing capacity , } Q_{ns} = Q_d / F = 23.22 \text{ Metric tonne/sqm}$$

F= factor of safety =2.5

Q _{ns} =	9.29 Metric tonne/sqm
Q _{ns} =	91.02 KN/sqm

C 4.2



Location: BH4

CALCULATION OF NET SAFE BEARING CAPACITY (SHEAR CRITERIA)

Depth of foundn , Df = 2 m

Width(B)M= 2 Length L = 2

Soil parameterCohesion, C= 0.31 kg/scm= 3.1 t/sqm Saturated density , γ (Metric ton/m³) = 1.80

Angle of internal

friction, ϕ (deg)= 7 , shear condition **Local**Angle of shearing resistance for local failure = $\phi_m = \tan^{-1} 2/3 \tan \phi$

		Bearing capacity factor		
ϕ		Nc	Nq	N γ
ϕ m	4	6.22	1.45	0.36

Shape, Depth and inlication factor

Shape factor		Depth factor		Inclination factor		Water table corection factor $W' = 0.5$
Sc=	1.3	dc=	1.21	ic=	1	
Sq=	1.2	dq=	1	iq=	1	
S γ =	0.8	d γ =	1	i γ =	1	

Ultimate bearing capacity (qd) (Local shear Condition)

$$q_d = \{2/3 c N_c s_c d_c i_c\} + \{\gamma D (N_q - 1) s_q d_q i_q\} + \{0.5 \gamma B N_\gamma s_\gamma d_\gamma i_\gamma W'\}$$

$$q_d = \{0.67 \times 3.1 \times 6.22 \times 1.3 \times 1.21 \times 1\} + \{1.8 \times 2 \times (1.45 - 1) \times 1.2 \times 1 \times 1\} + \{0.5 \times 1.8 \times 2 \times 0.36 \times 0.8 \times 1 \times 1 \times 1\}$$

$$q_d = 20.39 + 1.944 + 0.2592 = 22.6 \text{ Metric tonne/sqm}$$

$$\text{Net Safe bearing capacity , } q_{ns} = Q_d / F = 22.60 \text{ Metric tonne/sqm}$$

F= factor of safety = 2.5

$q_{ns} =$	9.04 Metric tonne/sqm
$q_{ns} =$	88.58 KN/sqm



Location: BH5

CALCULATION OF NET SAFE BEARING CAPACITY (SHEAR CRITERIA)

Depth of foundn , Df = 3 m

Width(B)M= 2 Length L = 2

Soil parameterCohesion, C= 0.33 kg/scm= 3.3 t/sqm Saturated density , γ (Metric ton/m³) = 1.80Angle of internal friction, ϕ (deg)= 8 , shear condition **Local**Angle of shearing resistance for local failure = $\phi_m = \tan^{-1} 2/3 \tan \phi$

		Bearing capacity factor		
ϕ	8	Nc	Nq	Ny
ϕ_m	5	6.49	1.57	0.45

Shape, Depth and inlination factor

Shape factor		Depth factor		Inclination factor		Water table corection factor $W' = 0.5$
Sc=	1.3	dc=	1.33	ic=	1	
Sq=	1.2	dq=	1	iq=	1	
Sy =	0.8	dy =	1	iy =	1	

Ultimate bearing capacity (qd) (Local shear Condition)

$$q_d = \{ 2/3 c N_c s_c d_c i_c \} + \{ \gamma D (N_q - 1) s_q d_q i_q \} + \{ 0.5 \gamma B N_y s_y d_y i_y W' \}$$

$$q_d = \{ 0.67 \times 3.3 \times 6.49 \times 1.3 \times 1.33 \times 1 \} + \{ 1.8 \times 3 \times (1.57 - 1) \times 1.2 \times 1 \times 1 \} + \{ 0.5 \times 1.8 \times 2 \times 0.45 \times 0.8 \times 1 \times 1 \times 1 \}$$

$$q_d = 24.76 + 3.6936 + 0.324 = 28.77 \text{ Metric tonne/sqm}$$

$$\text{Net Safe bearing capacity , } q_{ns} = q_d / F = 28.77 \text{ Metric tonne/sqm}$$

F= factor of safety =2.5

$q_{ns} =$	11.51 Metric tonne/sqm
$q_{ns} =$	112.8 KN/sqm



Location: BH6

CALCULATION OF NET SAFE BEARING CAPACITY (SHEAR CRITERIA)

Depth of foundn , Df = 3.0 m

Width(B)M= 2 Length L = 2

Soil parameterCohesion, C= 0.33 kg/scm= 3.3 t/sqm Saturated density , γ (Metric ton/m³) = 1.80

Angle of internal

friction, ϕ (deg)= 7 , shear condition **Local**Angle of shearing resistance for local failure = $\phi_m = \tan^{-1} 2/3 \tan \phi$

		Bearing capacity factor		
ϕ	7	Nc	Nq	N γ
ϕ m	4	6.22	1.45	0.36

Shape, Depth and inlination factor

Shape factor		Depth factor		Inclination factor		Water table corection factor $W' = 0.5$
Sc=	1.3	dc=	1.32	ic=	1	
Sq=	1.2	dq=	1	iq=	1	
S γ =	0.8	d γ =	1	i γ =	1	

Ultimate bearing capacity (qd) (Local shear Condition)

$$q_d = \{2/3 c N_c s_c d_c i_c\} + \{\gamma D (N_q - 1) s_q d_q i_q\} + \{0.5 \gamma B N_\gamma s_\gamma d_\gamma i_\gamma W'\}$$

$$q_d = \{0.67 \times 3.3 \times 6.22 \times 1.3 \times 1.32 \times 1\} + \{1.8 \times 3 \times (1.45 - 1) \times 1.2 \times 1 \times 1\} + \{0.5 \times 1.8 \times 2 \times 0.36 \times 0.8 \times 1 \times 1 \times 1\}$$

$$q_d = 23.62 + 2.916 + 0.2592 = 26.8 \text{ Metric tonne/sqm}$$

$$\text{Net Safe bearing capacity , } q_{ns} = Q_d / F = 26.80 \text{ Metric tonne/sqm}$$

F= factor of safety = 2.5

$q_{ns} =$	10.72 Metric tonne/sqm
$q_{ns} =$	105.1 KN/sqm

