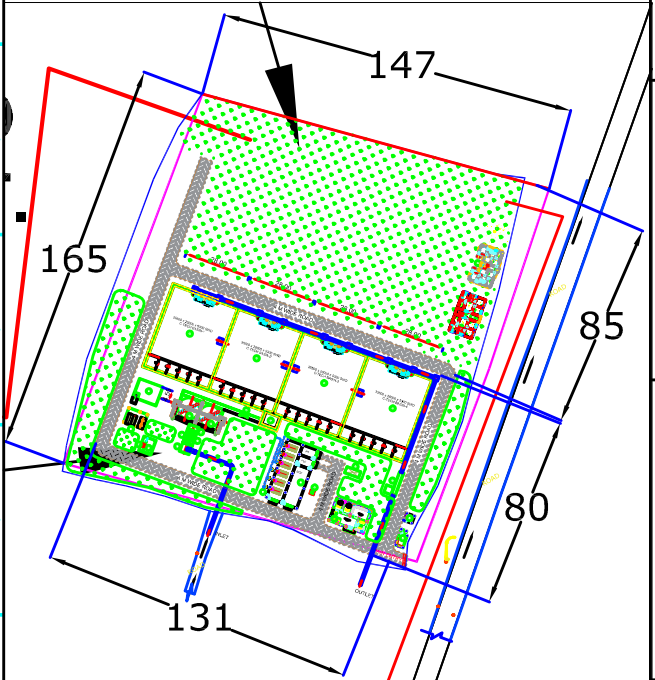
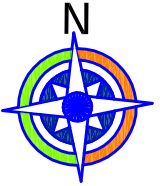
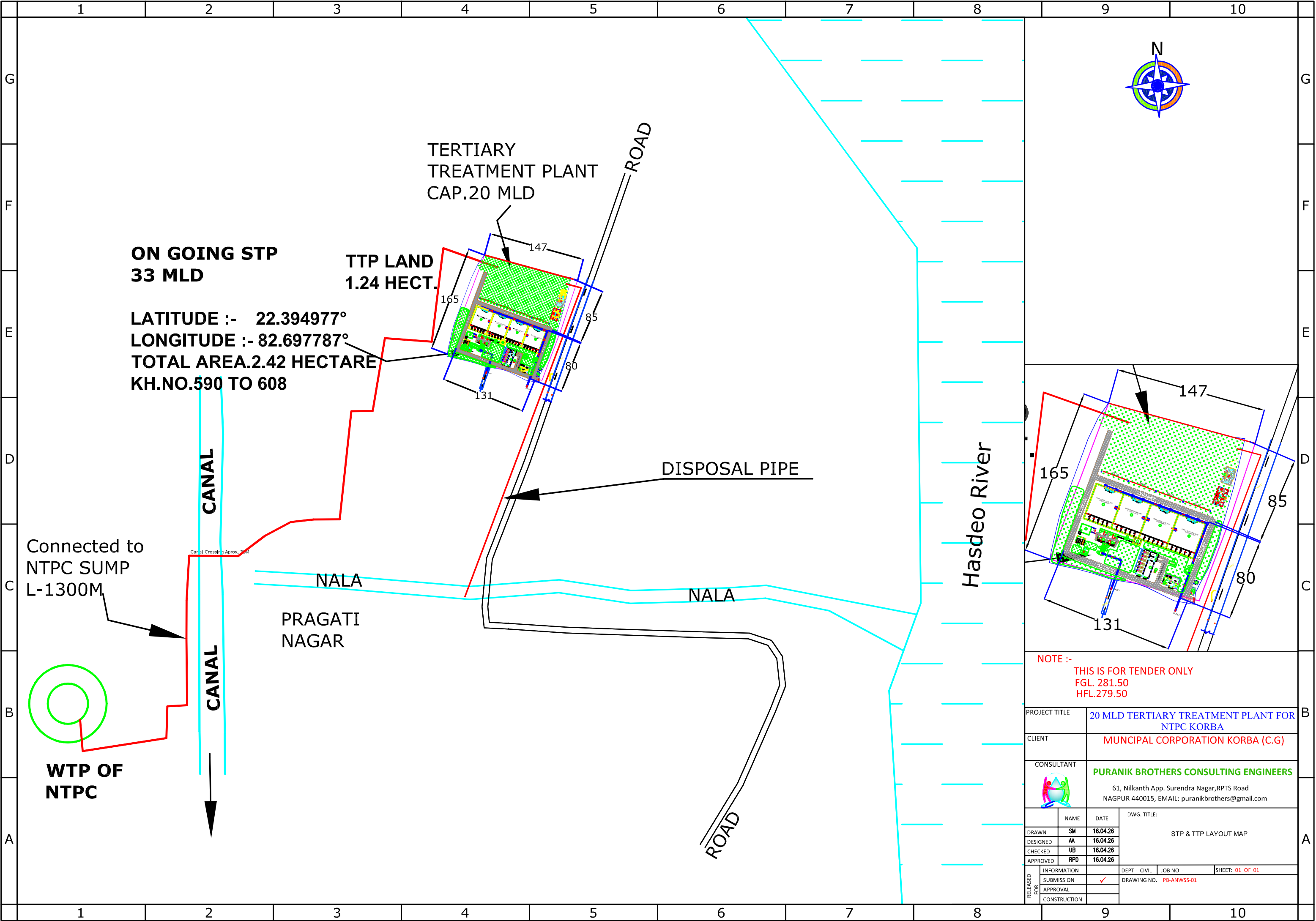


# Annexure - 1

## Key Plan



**NOTE :-**  
THIS IS FOR TENDER ONLY  
FGL. 281.50  
HFL. 279.50

PROJECT TITLE		20 MLD TERTIARY TREATMENT PLANT FOR NTPC KORBA	
CLIENT		MUNCIPAL CORPORATION KORBA (C.G)	
CONSULTANT		PURANIK BROTHERS CONSULTING ENGINEERS	
		61, Nilkanth App. Surendra Nagar, RPTS Road NAGPUR 440015, EMAIL: puranikbrothers@gmail.com	
	NAME	DATE	DWG. TITLE:  STP & TTP LAYOUT MAP
DRAWN	SM	16.04.26	
DESIGNED	AA	16.04.26	
CHECKED	UB	16.04.26	
APPROVED	RPD	16.04.26	

RELEASED FOR	INFORMATION		DEPT - CIVIL	JOB NO -	SHEET: 01 OF 01
	SUBMISSION	✓	DRAWING NO.	PB-ANWSS-01	
	APPROVAL				
	CONSTRUCTION				

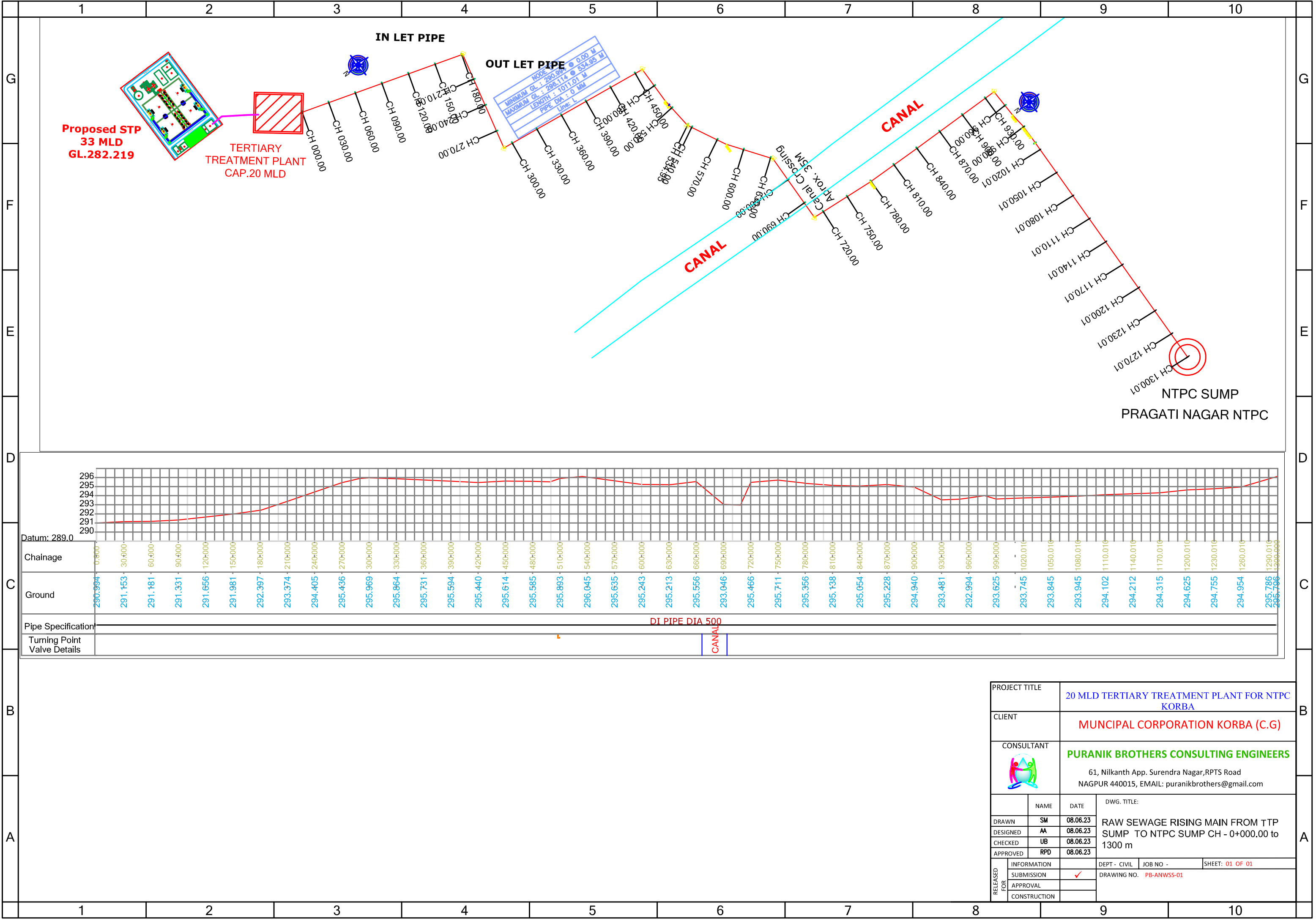
## Annexure - 2

### Plot Plan

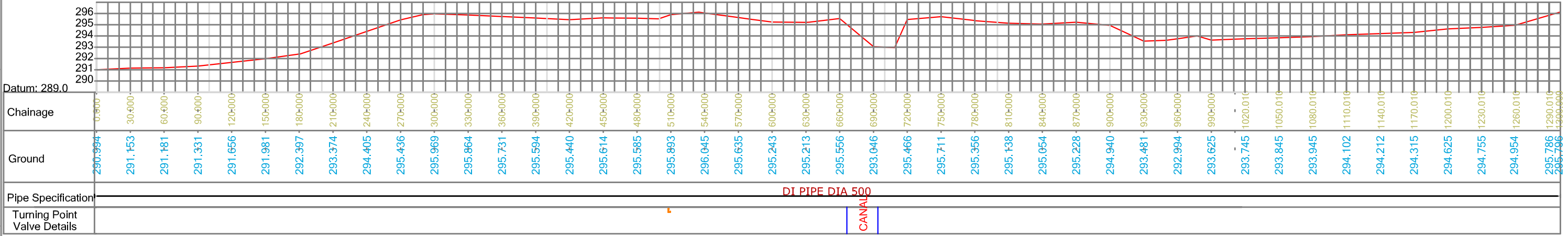


## Annexure - 3

### L- Section



NOTE:	● 0.00 M
MINIMUM GL :	290.99 M
MAXIMUM GL :	296.114 M
LENGTH :	1011.01 M
PIPE DIA :	0 MM
Line:	L



PROJECT TITLE		20 MLD TERTIARY TREATMENT PLANT FOR NTPC KORBA			
CLIENT		MUNCIPAL CORPORATION KORBA (C.G)			
CONSULTANT		PURANIK BROTHERS CONSULTING ENGINEERS			
		61, Nilkanth App. Surendra Nagar,RPTS Road NAGPUR 440015, EMAIL: puranikbrothers@gmail.com			
	NAME	DATE	DWG. TITLE:		
DRAWN	SM	08.06.23	RAW SEWAGE RISING MAIN FROM TTP SUMP TO NTPC SUMP CH - 0+000.00 to 1300 m		
DESIGNED	AA	08.06.23			
CHECKED	UB	08.06.23			
APPROVED	RPD	08.06.23			
RELEASED FOR	INFORMATION		DEPT - CIVIL	JOB NO -	SHEET: 01 OF 01
	SUBMISSION	✓	DRAWING NO. PB-ANWSS-01		
	APPROVAL				
	CONSTRUCTION				

## Annexure - 4

### Soil Report

#### 4.5 DETERMINATION OF BEARING CAPACITY AS PER IS: 6403-1981

BH-1 AT DEPTH- 1.5M

##### Size of Foundation

Depth of Foundation,  $D_f$  = 1.5 M (Below EGL)  
Width of Foundation,  $B$  = 2 M  
Length of Foundation,  $L$  = 2 M  
 $B + D_f$  = 3.5  
Water Table Correction Factor,  $w'$  = 0  
 $\alpha$  = (Inclination of the Load to the vertical, in Degree) = 0 °  
Void Ratio,  $e$  =

##### As per the soil Report

$\phi$  = 22.00 °  $\phi'$  = 15.15 °  
 $C$  = 0 t/sqm  $C'$  = 0 t/sqm  
The Net Ultimate Bearing Capacity is given as:  $q_u = C.N_c.Sc.Dc.Ic + q.(Nq-1).Sq.Dq.Iq + 0.5.B.\gamma.N\gamma.S\gamma.D\gamma.I\gamma.w'$   
FOS = 2.5

##### Bearing Capacity Factors:

$N_c$ =	16.88	$N_c'$ =	11.08	Overburden Pressure, $q$ =	1.173 t/sqm
$N_q$ =	7.82	$N_q'$ =	4.00	Width of Foundation, $B$ =	2 m
$N_\gamma$ =	7.13	$N_\gamma'$ =	2.71	Bulk Density below Foundation, $\gamma$ =	1.782 t/sqm
				Submerge Density =	0.782 t/sqm

##### Shape Factors: [IS: 6403-1981]

[Table 2]

$S_c$ =	$[1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	=	1.2
$S_q$ =	$[1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	=	1.2
$S_\gamma$ =	$[1 - 0.4 \times (B/L)]$	$= (1 - 0.4 \times (2/2))$	=	0.6

##### Depth Factors: [IS:6403-1981]

$N\phi$ =	$\tan^2 (45^\circ + \phi/2)$	$N\phi'$ =	$\tan^2 (45^\circ + \phi'/2)$
	2.20		1.71
$D_c$ =	1.22	$D_c'$ =	1.2
$D_q$ =	1.11	$D_q'$ =	1.1
$D_\gamma$ =	1.11	$D_\gamma'$ =	1.1

##### Inclination Factors: [IS:6403-1981]

$I_c$ =	$[1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	=	1.00
$I_q$ =	$[1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	=	1.00
$I_\gamma$ =	$[1 - (f/\alpha)]^2$	$= (1 + 0.1 (0/22))^2$	=	1.00

##### Net Safe Bearing Capacity

For General Shear Failure Criteria = 4.26 t/sqm  
For Local Shear Failure Criteria = 1.86 t/sqm  
Recommended Net Safe Bearing Capacity = 4.26 t/sqm



#### 4.5 DETERMINATION OF BEARING CAPACITY AS PER IS: 6403-1981

BH-1 AT DEPTH- 3M

##### Size of Foundation

Depth of Foundation,  $D_f$  = 3 M (Below EGL)  
Width of Foundation,  $B$  = 2 M  
Length of Foundation,  $L$  = 2 M  
 $B + D_f$  = 5  
Water Table Correction Factor,  $w'$  = 0  
 $\alpha$  = (Inclination of the Load to the vertical, in Degree) = 0 °  
Void Ratio,  $e$  =

##### As per the soil Report

$\phi$  = 25.00 °  $\phi'$  = 17.35 °  
 $C$  = 0 t/sqm  $C'$  = 0 t/sqm  
The Net Ultimate Bearing Capacity is given as:  $q_u = C \cdot N_c \cdot S_c \cdot D_c \cdot I_c + q \cdot (N_q - 1) \cdot S_q \cdot D_q \cdot I_q + 0.5 \cdot B \cdot \gamma \cdot N_\gamma \cdot S_\gamma \cdot D_\gamma \cdot I_\gamma \cdot w'$   
FOS = 2.5

##### Bearing Capacity Factors:

$N_c$ =	20.72	$N_c'$ =	12.61	Overburden Pressure, $q$ =	2.355 t/sqm
$N_q$ =	10.66	$N_q'$ =	4.94	Width of Foundation, $B$ =	2 m
$N_\gamma$ =	10.88	$N_\gamma'$ =	3.72	Bulk Density below Foundation, $\gamma$ =	1.785 t/sqm
				Submerge Density =	0.785 t/sqm

##### Shape Factors: [IS: 6403-1981]

[Table 2]

$S_c$ =	$[1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	=	1.2
$S_q$ =	$[1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	=	1.2
$S_\gamma$ =	$[1 - 0.4 \times (B/L)]$	$= (1 - 0.4 \times (2/2))$	=	0.6

##### Depth Factors: [IS:6403-1981]

$N\phi$ =	$\tan^2 (45^\circ + \phi/2)$	$N\phi'$ =	$\tan^2 (45^\circ + \phi'/2)$
	2.46		1.85
$D_c$ =	1.47	$D_c'$ =	1.41
$D_q$ =	1.24	$D_q'$ =	1.2
$D_\gamma$ =	1.24	$D_\gamma'$ =	1.2

##### Inclination Factors: [IS:6403-1981]

$I_c$ =	$[1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	=	1.00
$I_q$ =	$[1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	=	1.00
$I_\gamma$ =	$[1 - (f/\alpha)]^2$	$= (1 + 0.1 (0/25))^2$	=	1.00

##### Net Safe Bearing Capacity

For General Shear Failure Criteria = 13.54 t/sqm  
For Local Shear Failure Criteria = 5.35 t/sqm  
Recommended Net Safe Bearing Capacity = 13.54 t/sqm

**4.5 DETERMINATION OF BEARING CAPACITY AS PER IS: 6403-1981****BH-1 AT DEPTH- 4.5M****Size of Foundation**

Depth of Foundation,  $D_f = 4.5$  M (Below EGL)  
 Width of Foundation,  $B = 2$  M  
 Length of Foundation,  $L = 2$  M  
 $B + D_f = 6.5$   
 Water Table Correction Factor,  $w' = 0$   
 $\alpha =$  (Inclination of the Load to the vertical, in Degree) =  $0^\circ$   
 Void Ratio,  $e =$

**As per the soil Report**

$\phi = 25.60^\circ$        $\phi' = 17.80^\circ$   
 $C = 0$  t/sqm       $C' = 0$  t/sqm  
**The Net Ultimate Bearing Capacity is given as:**       $q_u = C.N_c.Sc.Dc.Ic + q.(Nq-1).Sq.Dq.Iq + 0.5.B.\gamma.N\gamma.S\gamma.D\gamma.I\gamma.w'$   
**FOS = 2.5**

**Bearing Capacity Factors:**

$N_c = 21.64$	$N_c' = 12.95$	Overburden Pressure, $q = 3.537$ t/sqm
$N_q = 11.37$	$N_q' = 5.16$	Width of Foundation, $B = 2$ m
$N_\gamma = 11.88$	$N_\gamma' = 3.96$	Bulk Density below Foundation, $\gamma = 1.786$ t/sqm
		<b>Submerge Density = 0.786 t/sqm</b>

**Shape Factors:** [IS: 6403-1981]

[Table 2]

$S_c = [1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	$= 1.2$
$S_q = [1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	$= 1.2$
$S_\gamma = [1 - 0.4 \times (B/L)]$	$= (1 - 0.4 \times (2/2))$	$= 0.6$

**Depth Factors:** [IS:6403-1981]

$N\phi = \tan^2 (45^\circ + \phi/2)$	$N\phi' = \tan^2 (45^\circ + \phi'/2)$
$2.52$	$1.88$
$D_c = 1.71$	$D_c' = 1.62$
$D_q = 1.36$	$D_q' = 1.31$
$D_\gamma = 1.36$	$D_\gamma' = 1.31$

**Inclination Factors:** [IS:6403-1981]

$I_c = [1 - (\alpha/90)]^2$	$= [1 - (0/90)]^2$	$= 1.00$
$I_q = [1 - (\alpha/90)]^2$	$= [1 - (0/90)]^2$	$= 1.00$
$I_\gamma = [1 - (f/\alpha)]^2$	$= [1 + 0.1 (0/25.6)]^2$	$= 1.00$

**Net Safe Bearing Capacity**

For General Shear Failure Criteria =  $23.95$  t/sqm  
 For Local Shear Failure Criteria =  $9.25$  t/sqm  
**Recommended Net Safe Bearing Capacity =  $23.95$  t/sqm**

#### 4.5 DETERMINATION OF BEARING CAPACITY AS PER IS: 6403-1981

BH-1 AT DEPTH- 6M

##### Size of Foundation

Depth of Foundation,  $D_f$  = 6 M (Below EGL)  
Width of Foundation,  $B$  = 2 M  
Length of Foundation,  $L$  = 2 M  
 $B + D_f$  = 8  
Water Table Correction Factor,  $w'$  = 0  
 $\alpha$  = (Inclination of the Load to the vertical, in Degree) = 0 °  
Void Ratio,  $e$  =

##### As per the soil Report

$\phi$  = 27.80 °  $\phi'$  = 19.46 °  
 $C$  = 0 t/sqm  $C'$  = 0 t/sqm  
The Net Ultimate Bearing Capacity is given as:  $q_u = C \cdot N_c \cdot S_c \cdot D_c \cdot I_c + q \cdot (N_q - 1) \cdot S_q \cdot D_q \cdot I_q + 0.5 \cdot B \cdot \gamma \cdot N_\gamma \cdot S_\gamma \cdot D_\gamma \cdot I_\gamma \cdot w'$   
FOS = 2.5

##### Bearing Capacity Factors:

$N_c$ =	25.43	$N_c'$ =	14.34	Overburden Pressure, $q$ =	4.764 t/sqm
$N_q$ =	14.42	$N_q'$ =	6.07	Width of Foundation, $B$ =	2 m
$N_\gamma$ =	16.29	$N_\gamma'$ =	5.00	Bulk Density below Foundation, $\gamma$ =	1.794 t/sqm
				Submerge Density =	0.794 t/sqm

##### Shape Factors: [IS: 6403-1981]

[Table 2]

$S_c$ =	$[1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	=	1.2
$S_q$ =	$[1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	=	1.2
$S_\gamma$ =	$[1 - 0.4 \times (B/L)]$	$= (1 - 0.4 \times (2/2))$	=	0.6

##### Depth Factors: [IS:6403-1981]

$N\phi$ =	$\tan^2 (45^\circ + \phi/2)$	$N\phi'$ =	$\tan^2 (45^\circ + \phi'/2)$
	2.75		2.00
$D_c$ =	1.99	$D_c'$ =	1.85
$D_q$ =	1.5	$D_q'$ =	1.42
$D_\gamma$ =	1.5	$D_\gamma'$ =	1.42

##### Inclination Factors: [IS:6403-1981]

$I_c$ =	$[1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	=	1.00
$I_q$ =	$[1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	=	1.00
$I_\gamma$ =	$[1 - (f/\alpha)]^2$	$= (1 + 0.1 (0/27.8))^2$	=	1.00

##### Net Safe Bearing Capacity

For General Shear Failure Criteria = 46.02 t/sqm  
For Local Shear Failure Criteria = 16.48 t/sqm  
Recommended Net Safe Bearing Capacity = 46.02 t/sqm