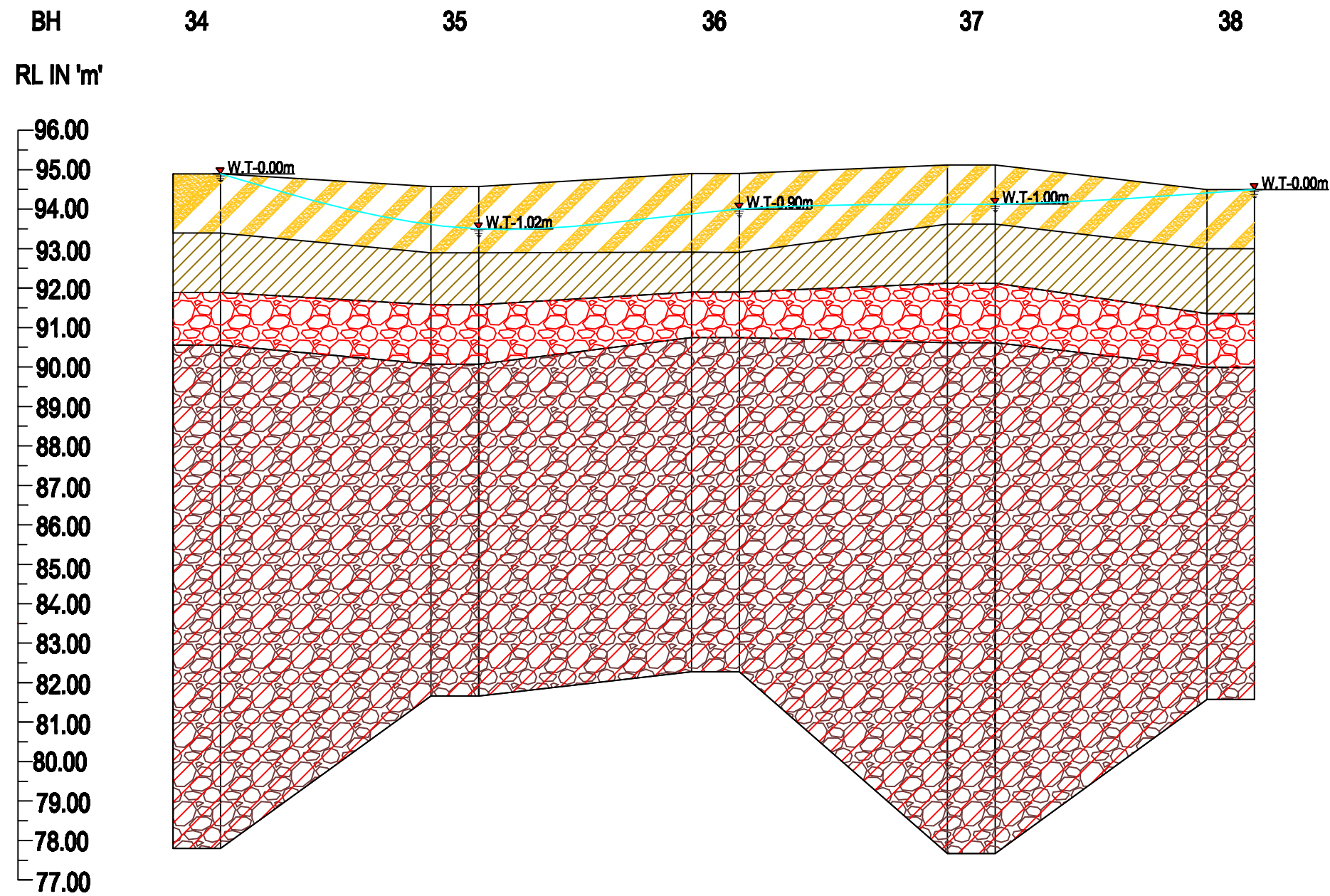


### SUB-SOIL & CROSS PROFILE (BH-34 TO BH-38)



**LEGEND:**

1	CLAYEY SAND (DENSE)	
2	COMPACTED CLAY	
3	SAND STONE	
4	CLAY STONE	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

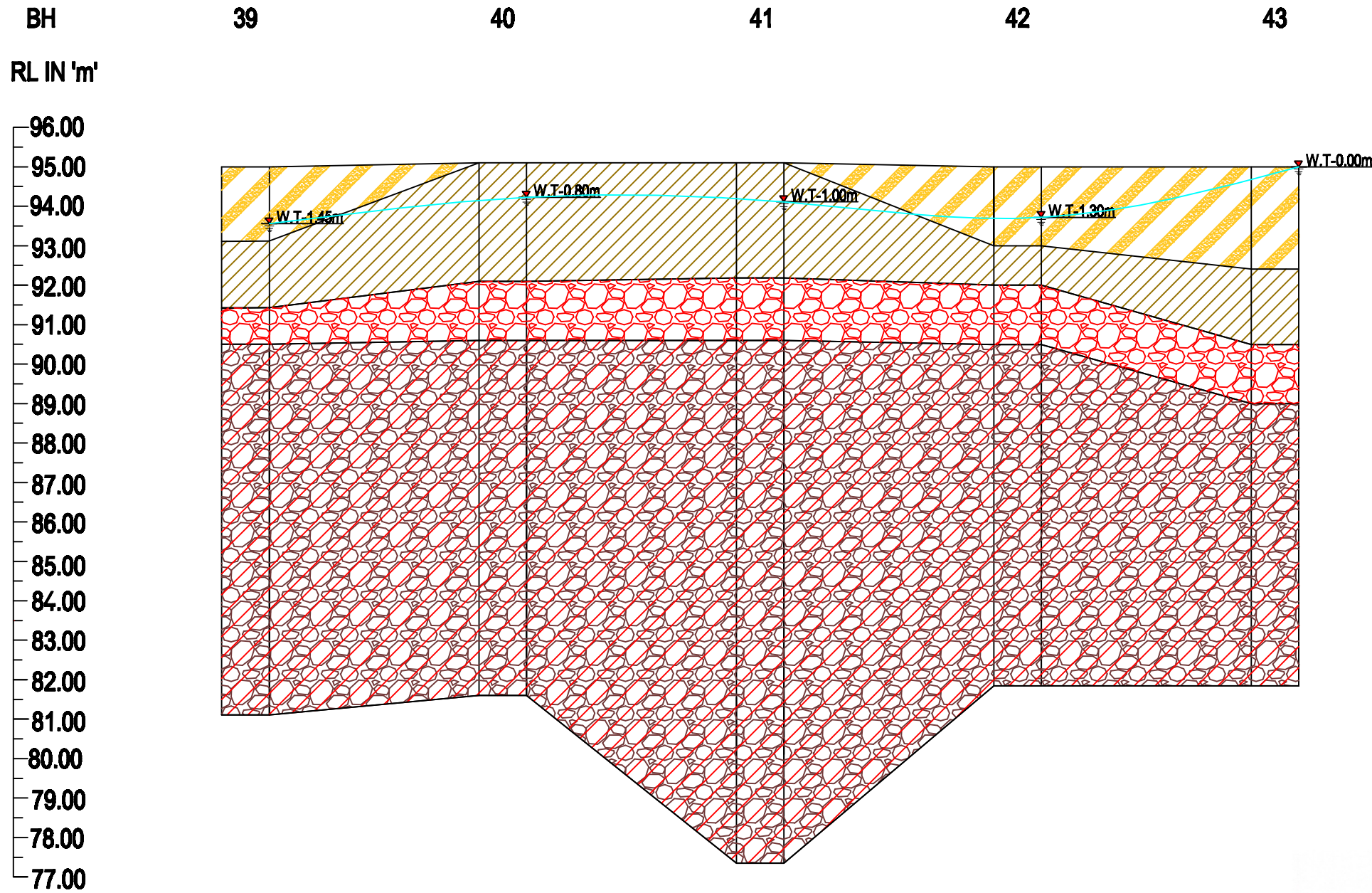
**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYA NAGAR, BHUBANESWAR  
 PH-(0674) 2570016, 2572871

**LOCATION** ASU  
**TITLE** SUB-SOIL & CROSS PROFILE

Bishwanath Kumar Das  
 M.TECH (GEO TECH)

**SUB-SOIL & CROSS PROFILE (BH-39 TO BH-43)**



**LEGEND:**

1	CLAYEY SAND (DENSE)	
2	COMPACTED CLAY	
3	SAND STONE	
4	CLAY STONE	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

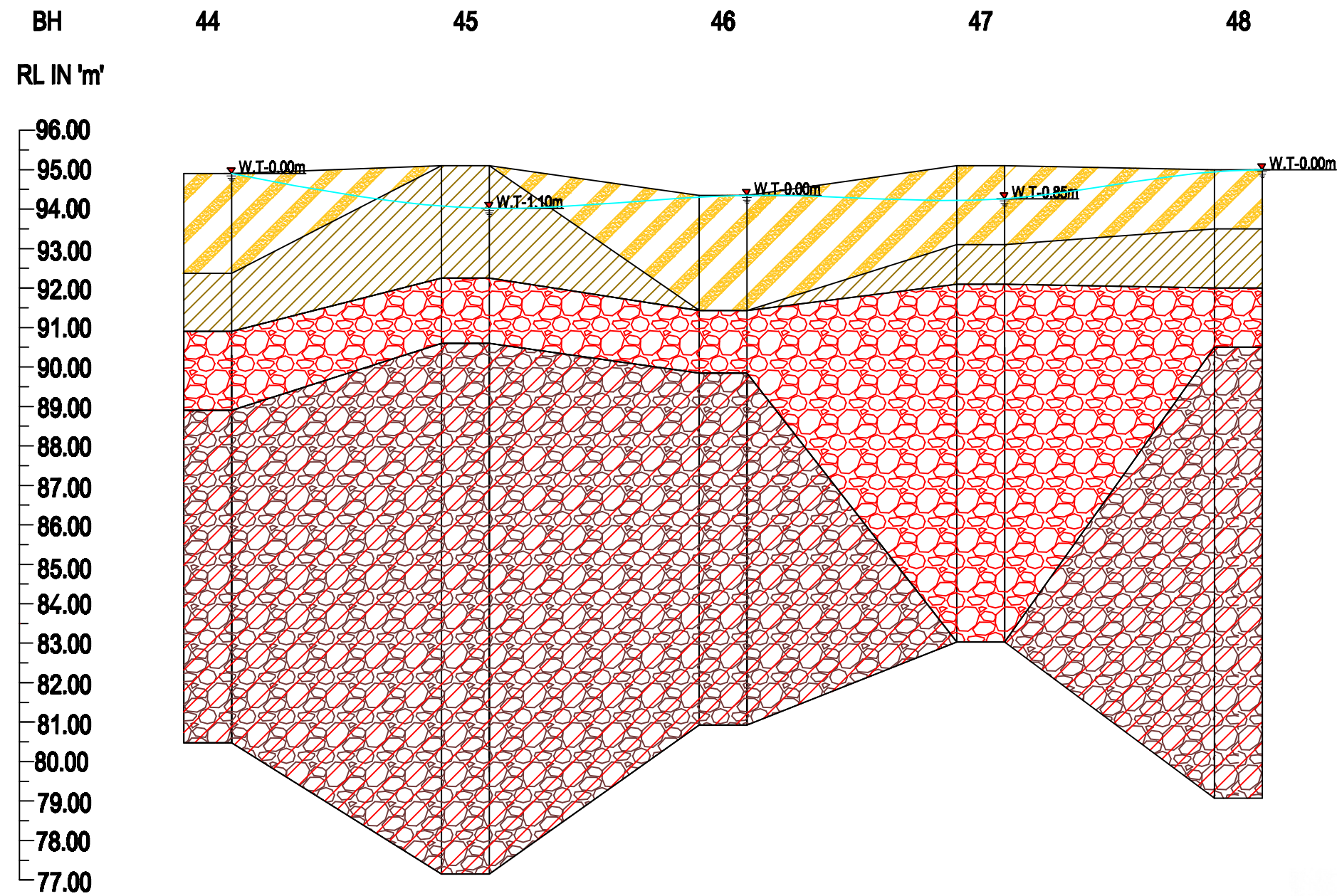
**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYA NAGAR, BHUBANESWAR  
 PH-(0674) 2570016, 2572871

<b>LOCATION</b>	ASU
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

**BISHWAJIT KUMAR DAS.**  
 M.TECH (P&EOT&CH)



### SUB-SOIL & CROSS PROFILE (BH-44 TO BH-48)



**LEGEND:**

1	CLAYEY SAND (DENSE)	
2	COMPACTED CLAY	
3	SAND STONE	
4	CLAY STONE	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

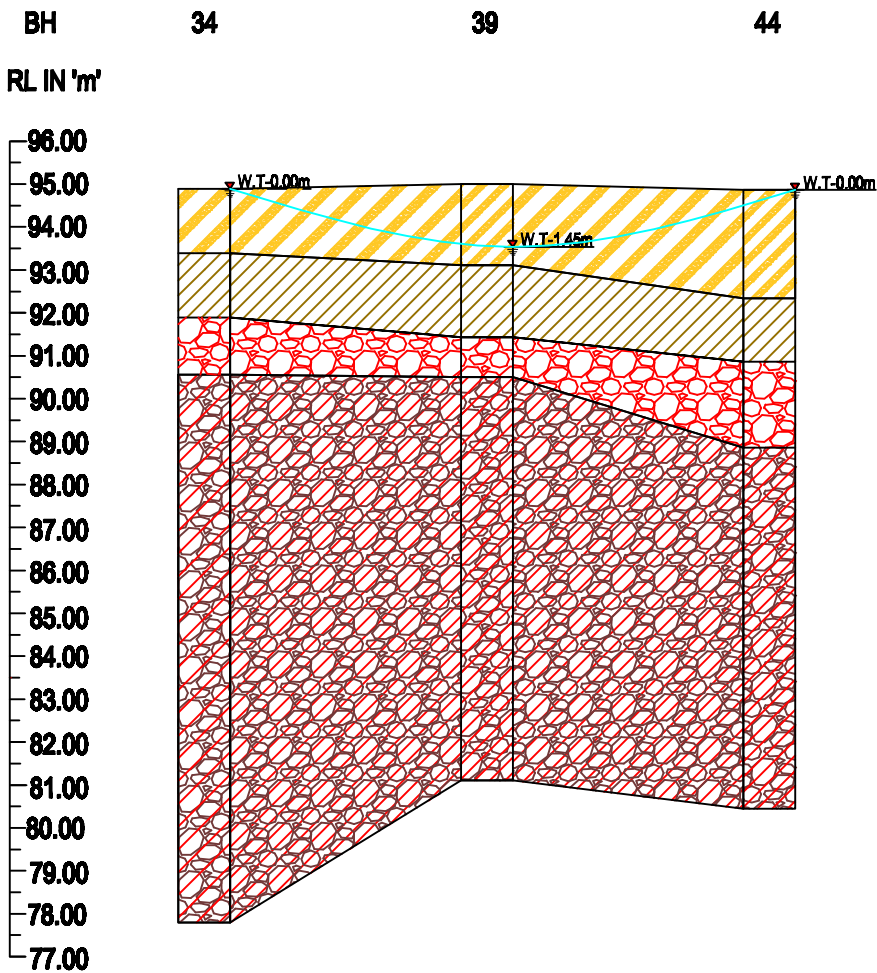
**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYA NAGAR, BHUBANESWAR  
 PH-(0674) 2570016, 2572871

**LOCATION** ASU  
**TITLE** SUB-SOIL & CROSS PROFILE

Biswajit Kumar Das  
 M.TECH (GEO TECH)

## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	CLAYEY SAND (DENSE)	
2	COMPACTED CLAY	
3	SAND STONE	
4	CLAY STONE	

**NOTE:** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT:** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT:** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR:** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**

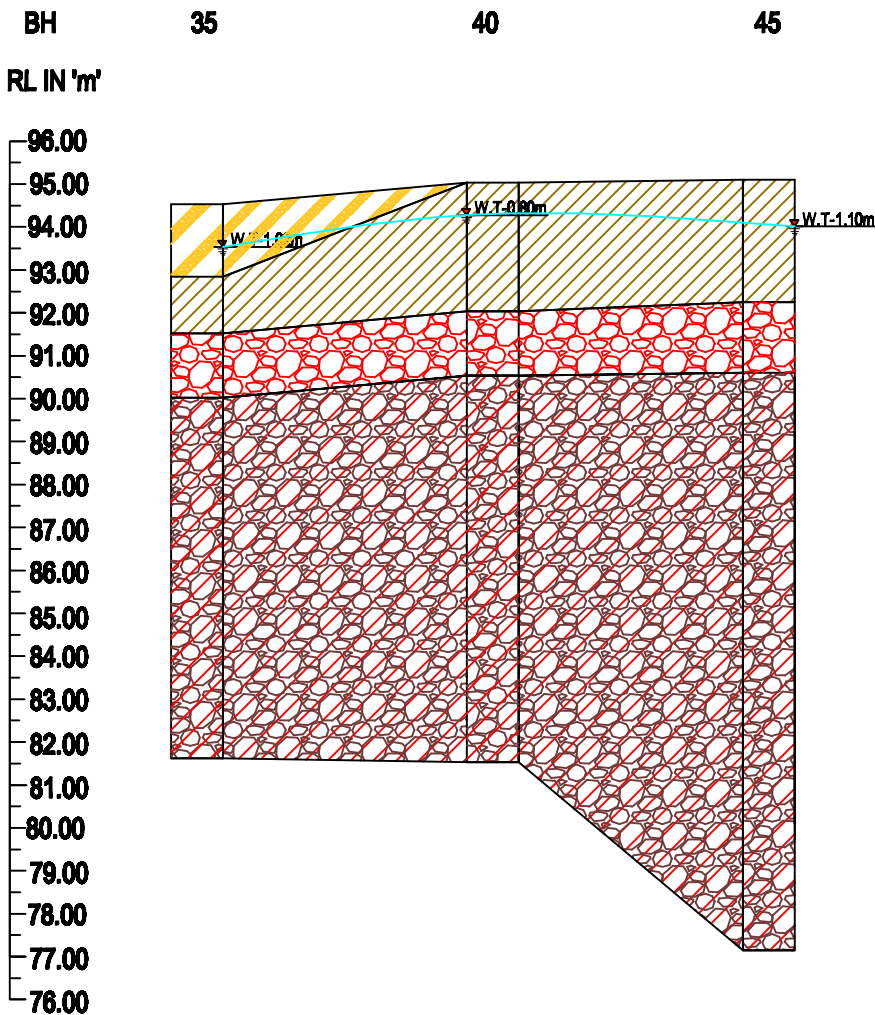
SWAYIN & ASSOCIATES,  
77, SATYANAGAR, Bhubaneswar  
PH: (0674) 227016, 227201

<b>LOCATION</b>	ASU
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

BISHWAJIT KUMAR DAS  
 MTECH (GEOTECH)



## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	CLAYEY SAND (DENSE)	
2	COMPACTED CLAY	
3	SAND STONE	
4	CLAY STONE	

**NOTE:** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT:** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT:** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR:** WUHUAN ENGG. CO., LTD.

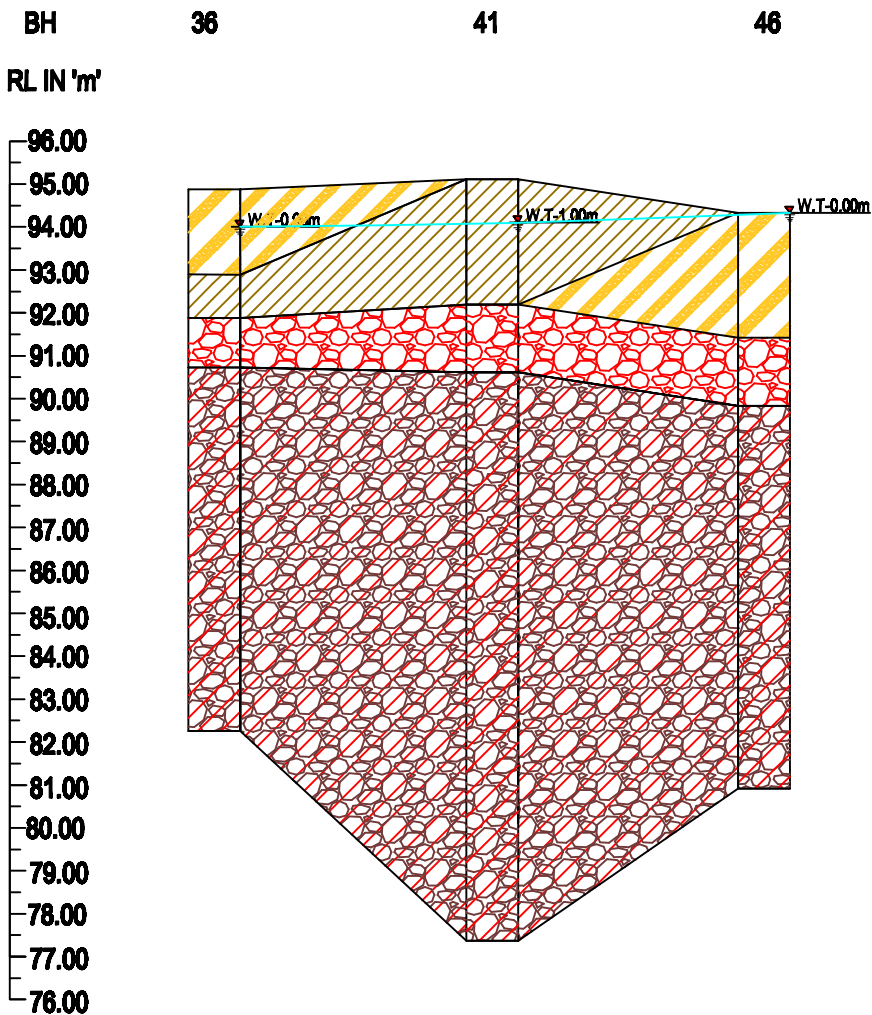
**INVESTIGATED AND PREPARED BY :-**

SWAYIN & ASSOCIATES,  
77, SATYANAGAR, BILHASNAPUR,  
PH: (0684) 287816, 287821

<b>LOCATION</b>	ASU
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

BISHWAJIT KUMAR DAS  
 M.TECH (GEOTECH)

## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	CLAYEY SAND (DENSE)	
2	COMPACTED CLAY	
3	SAND STONE	
4	CLAY STONE	

**NOTE:** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT:** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT:** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR:** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**

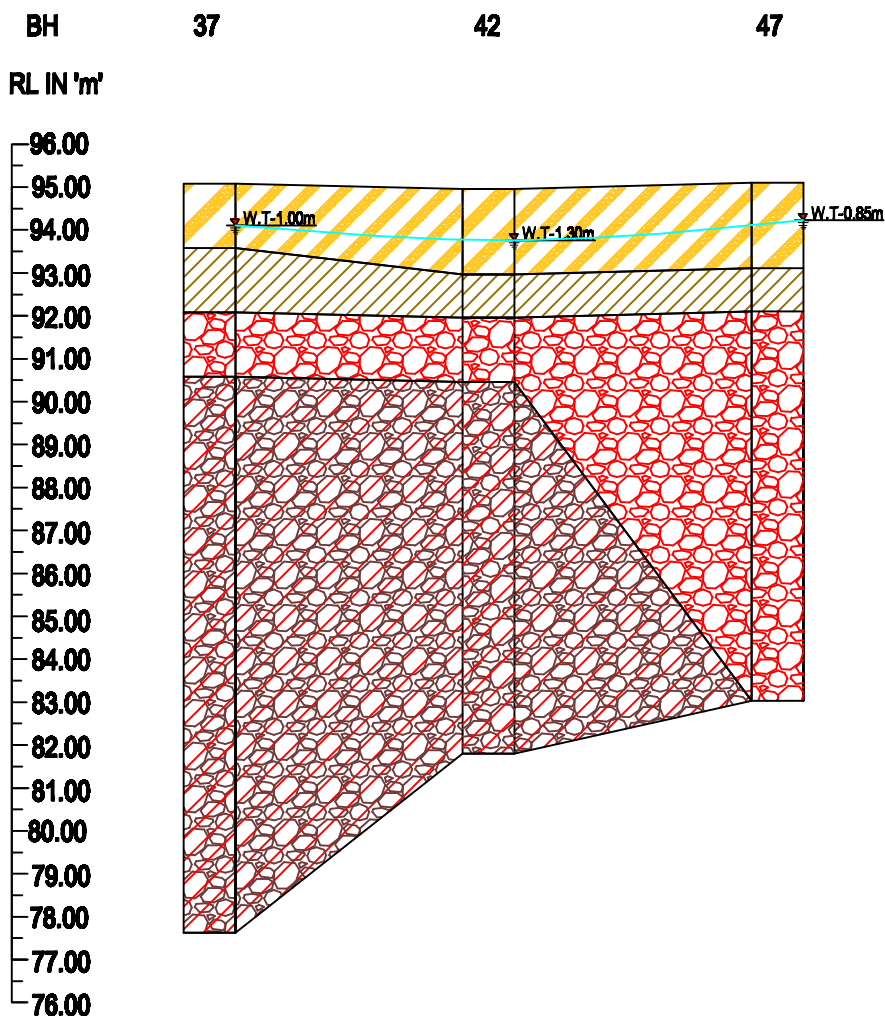
SWAYIN & ASSOCIATES,  
77, SATYANAGAR, Bhubaneswar  
PH: (0674) 227616, 227281

<b>LOCATION</b>	ASU
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

BISHWANATH KUMER DAS  
 M.TECH (P&OT, IIT)



## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	CLAYEY SAND (DENSE)	
2	COMPACTED CLAY	
3	SAND STONE	
4	CLAY STONE	

**NOTE:** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT:** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT:** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR:** WUHUAN ENGG. CO., LTD.

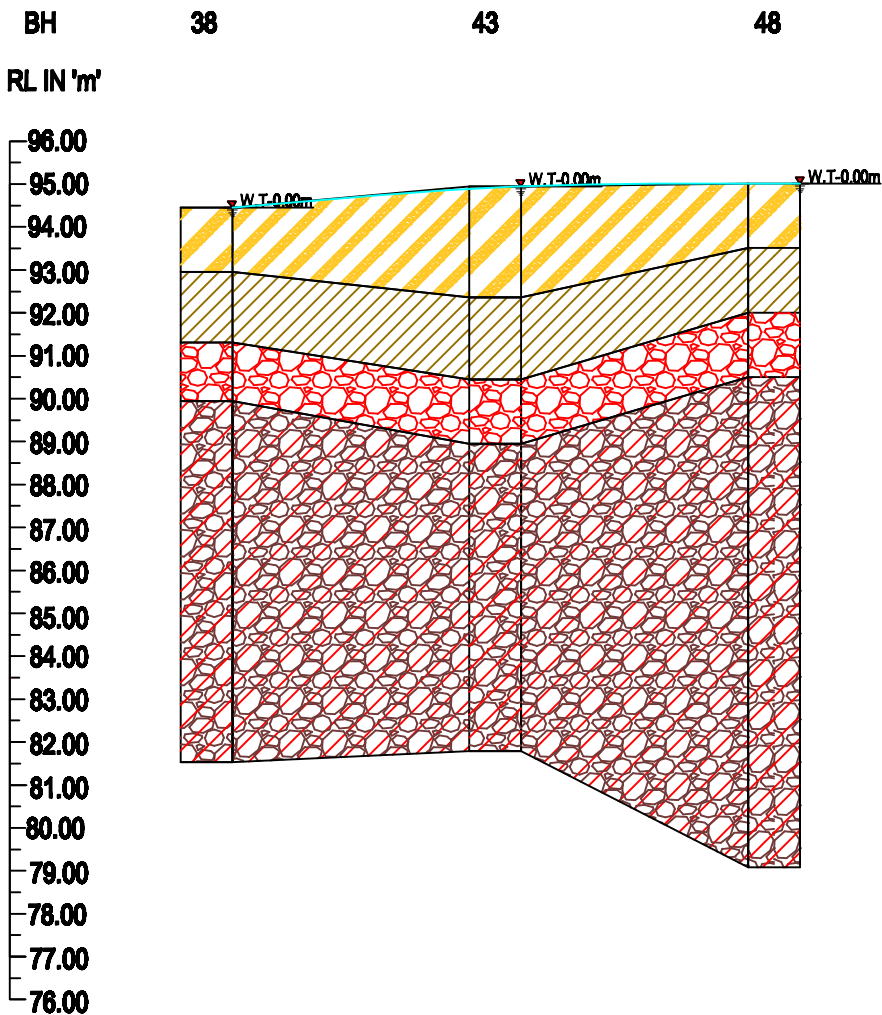
**INVESTIGATED AND PREPARED BY :-**

SWAYIN & ASSOCIATES,  
77, SATYANAGAR, BILASWAR  
PH: (0669) 287816, 287821

<b>LOCATION</b>	ASU
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

BISHWAJIT KUMAR DAS  
 M.TECH (P&OT, IIT)

## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	CLAYEY SAND (DENSE)	
2	COMPACTED CLAY	
3	SAND STONE	
4	CLAY STONE	

**NOTE:** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT:** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT:** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR:** WUHUAN ENGG. CO., LTD.

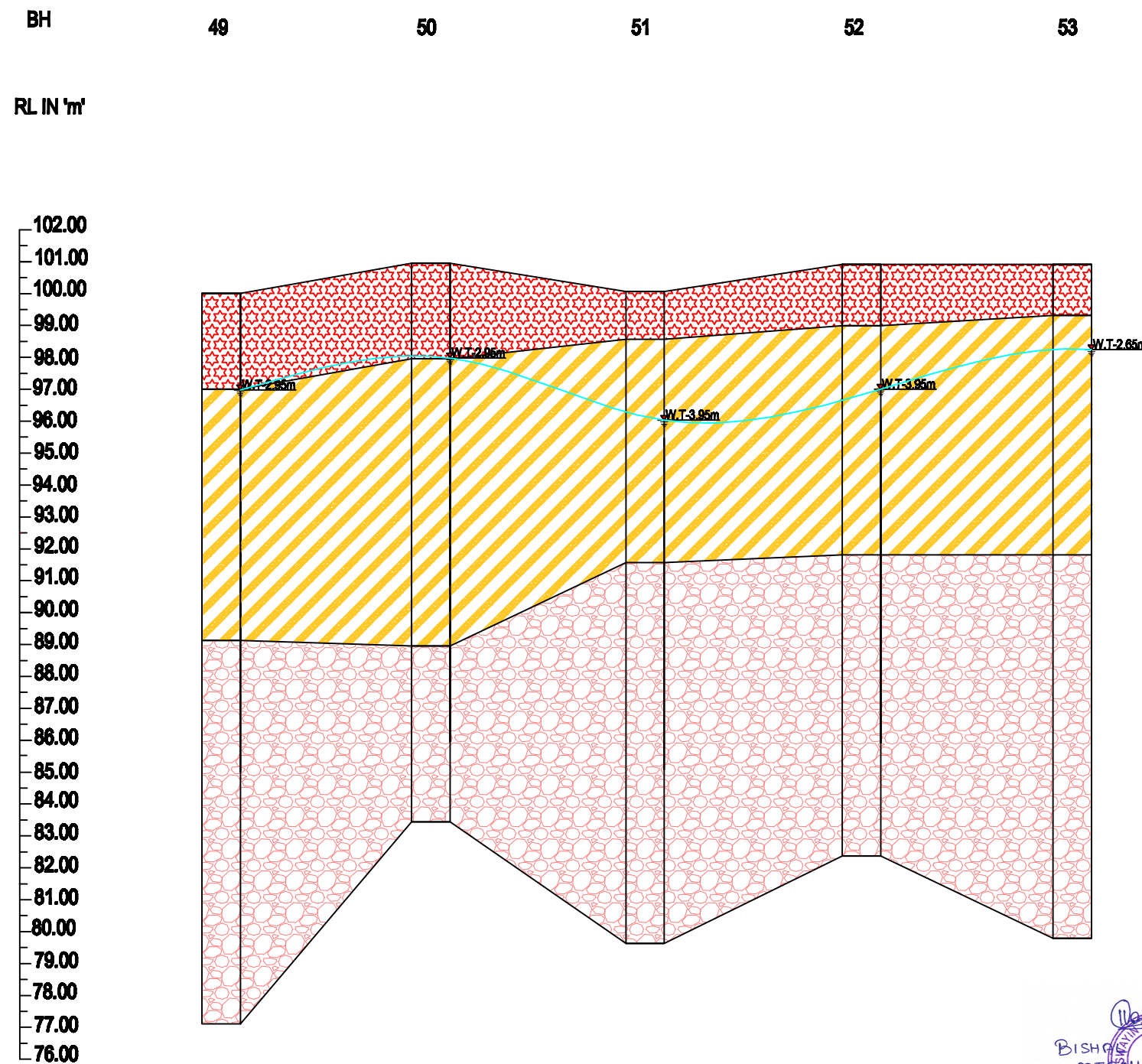
**INVESTIGATED AND PREPARED BY :-**  
 SWAYIN & ASSOCIATES,  
 77, SATYANAGAR, BILASWARR,  
 PH: (0669) 287816, 287821

<b>LOCATION</b>	ASU
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

**BISHWAJIT KUMAR DAS,**  
 M.TECH (GEOTECH)



## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	MORRUM	
2	CLAYEY SAND	
3	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**

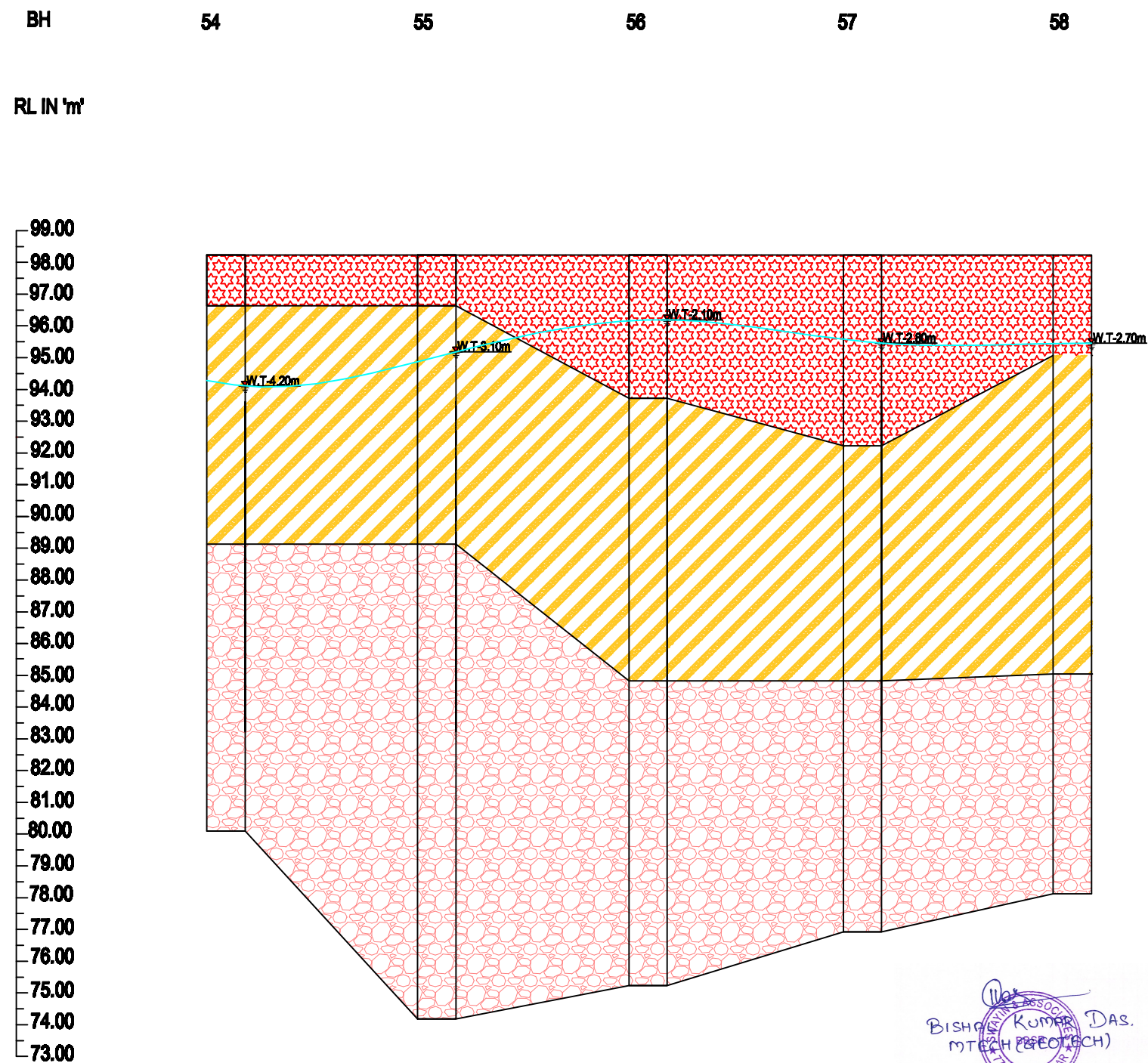
**SWAYIN & ASSOCIATES .**  
77, SATYANAGAR, BHUBANESWAR  
PH-(0674) 2570015, 2572371

**LOCATION** COAL STORAGE AREA

**TITLE** SUB-SOIL & CROSS PROFILE

BISHWAKUMAR DAS  
M.TECH (P.E.O.T.E.C.H.)

## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	MORRUM	
2	CLAYEY SAND	
3	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

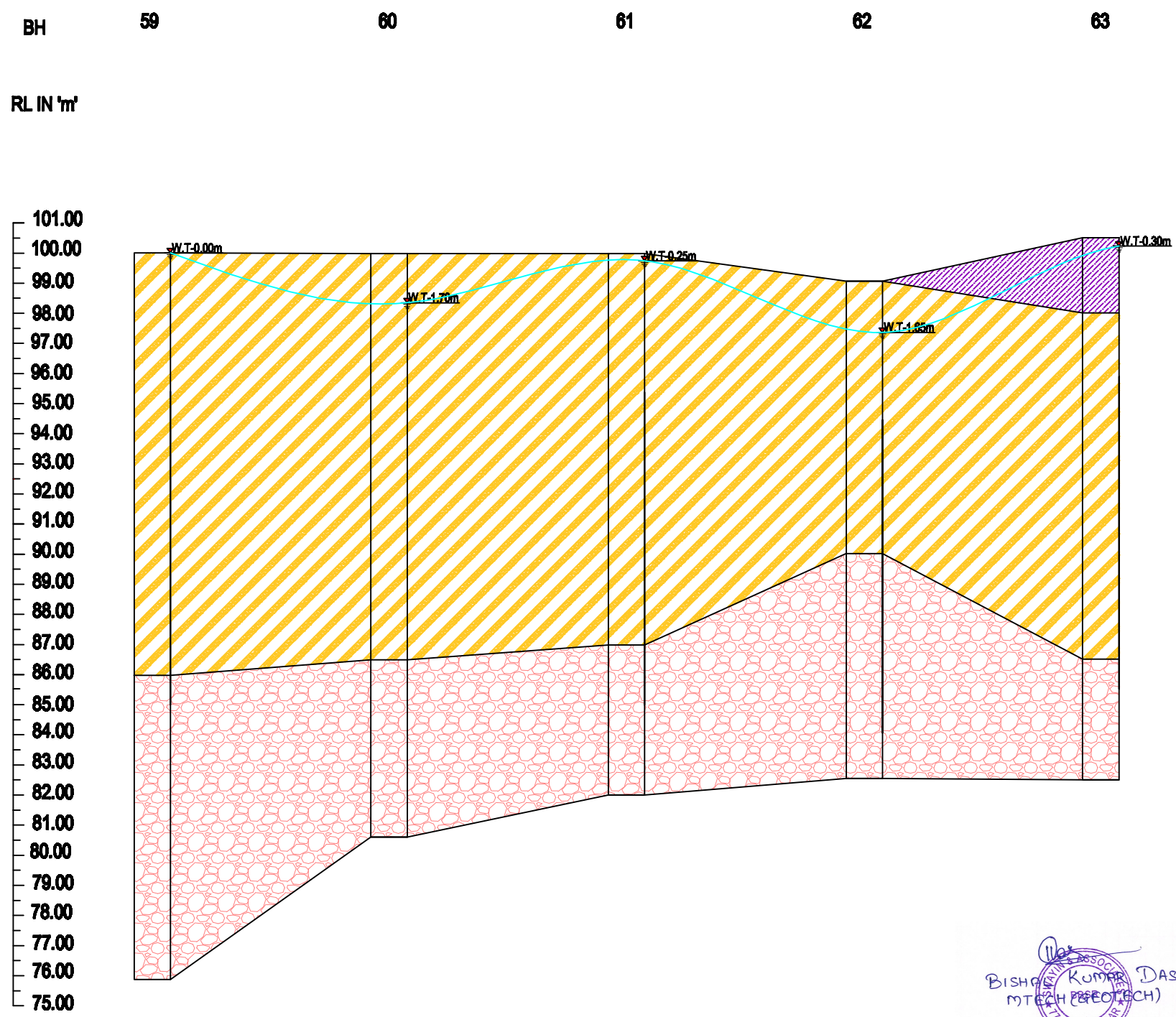
**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYA NAGAR, BHUBANESWAR  
 PH-(0674) 2570015, 2572871

<b>LOCATION</b>	COAL STORAGE AREA
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

**BISHWANATH KUMAR DAS.**  
 M.TECH (P&E) (I.I.T. KANPUR)  
 77, SATYA NAGAR



## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	CLAYEY SAND	
2	D.I ROCK	
3	FILLED UP ASH	

**NOTE:** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT:** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT:** TALCHER FERTILIZERS LIMITED (TFL)

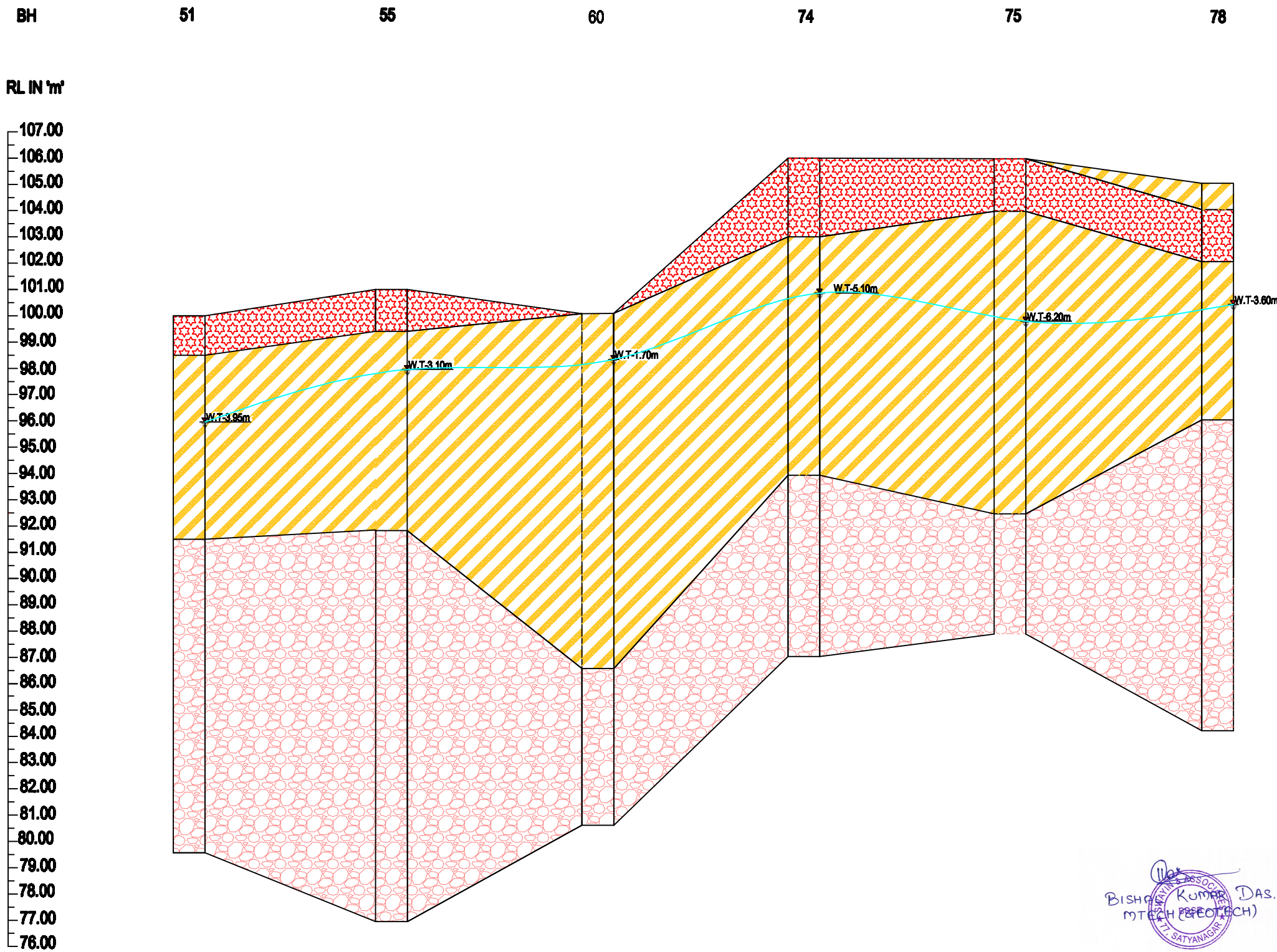
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**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYA NAGAR, BHUBANESWAR  
 PH-(0674) 2570015, 2572971

<b>LOCATION</b>	COAL STORAGE AREA
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

**Bishwanath Kumar Das.**  
 M.TECH (GEO TECH)

## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	MORRUM	
2	CLAYEY SAND	
3	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

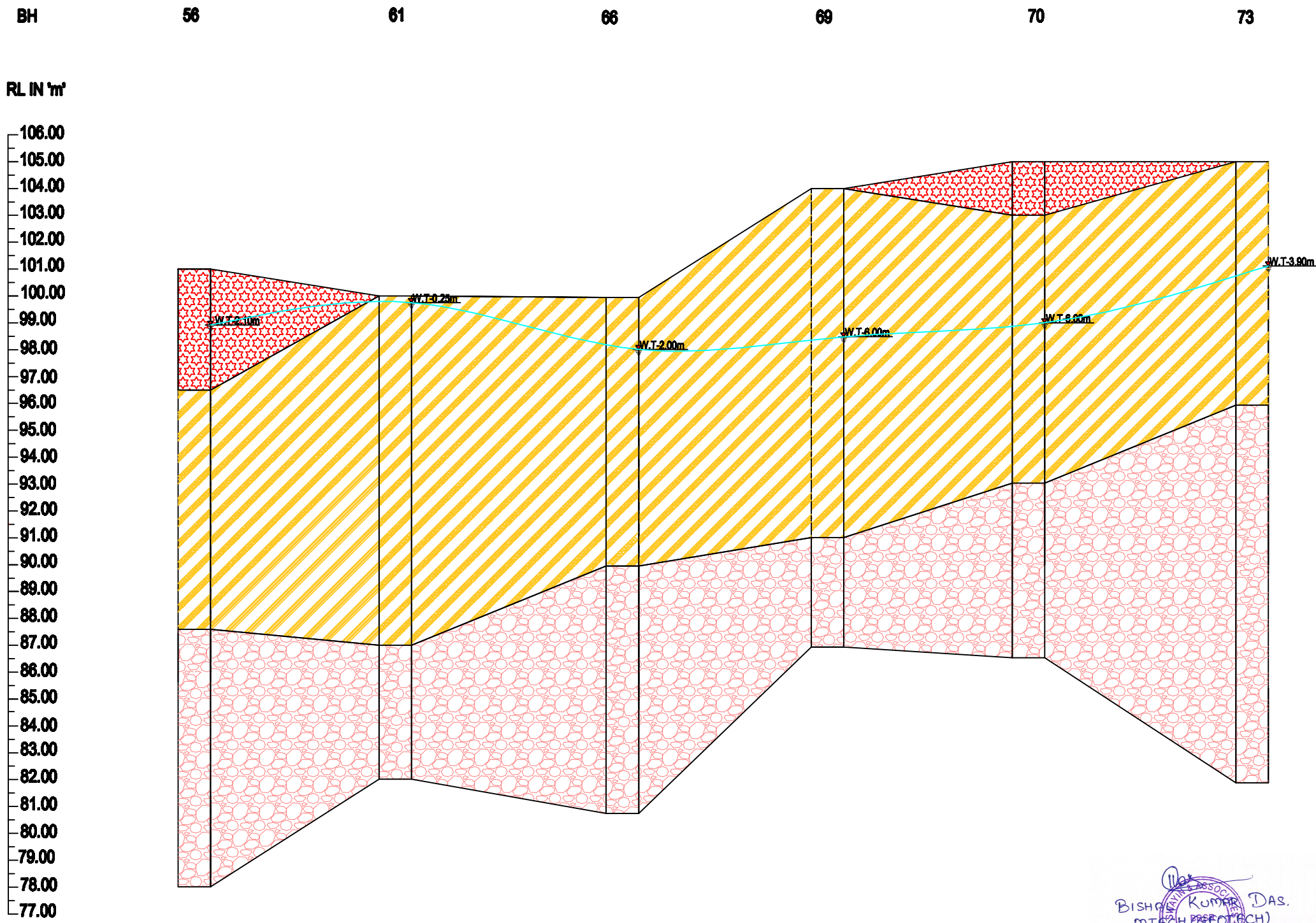
**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYA NAGAR, BHUBANESWAR  
 PH-(0674) 2570015, 2572971

<b>LOCATION</b>	COAL STORAGE AREA
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

BISHWANATH KUMAR DAS  
 M.TECH (GEO TECH)



# SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	MORRUM	
2	CLAYEY SAND	
3	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

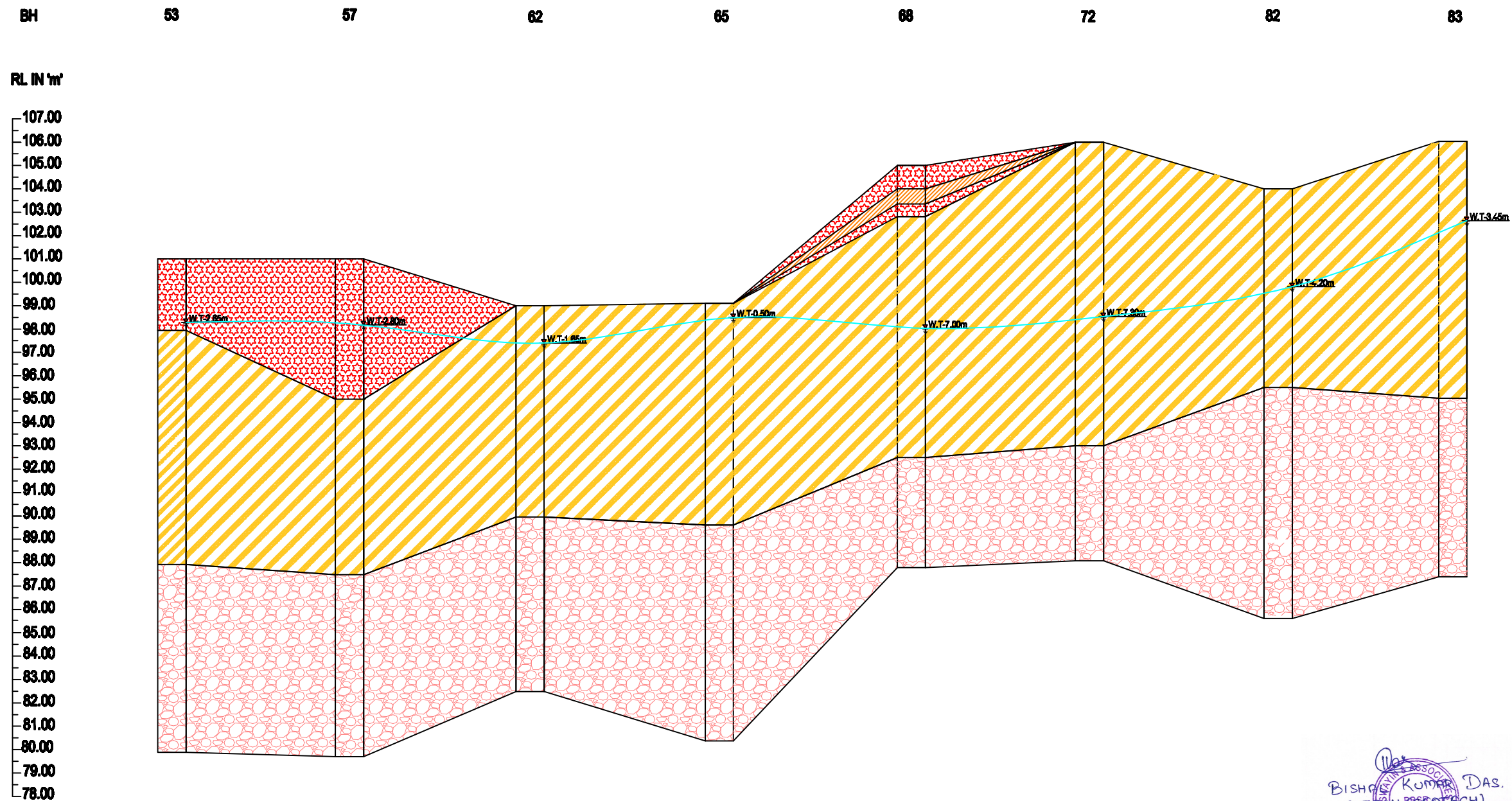
**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYANAGAR, BHUBANESWAR  
 PH-(0674) 2570015,2572971

**BISHWANATH KUMAR DAS.**  
 M.TECH (GEOTECH)

<b>LOCATION</b>	COAL STORAGE AREA
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	MORRUM	
2	CLAYEY SAND	
3	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

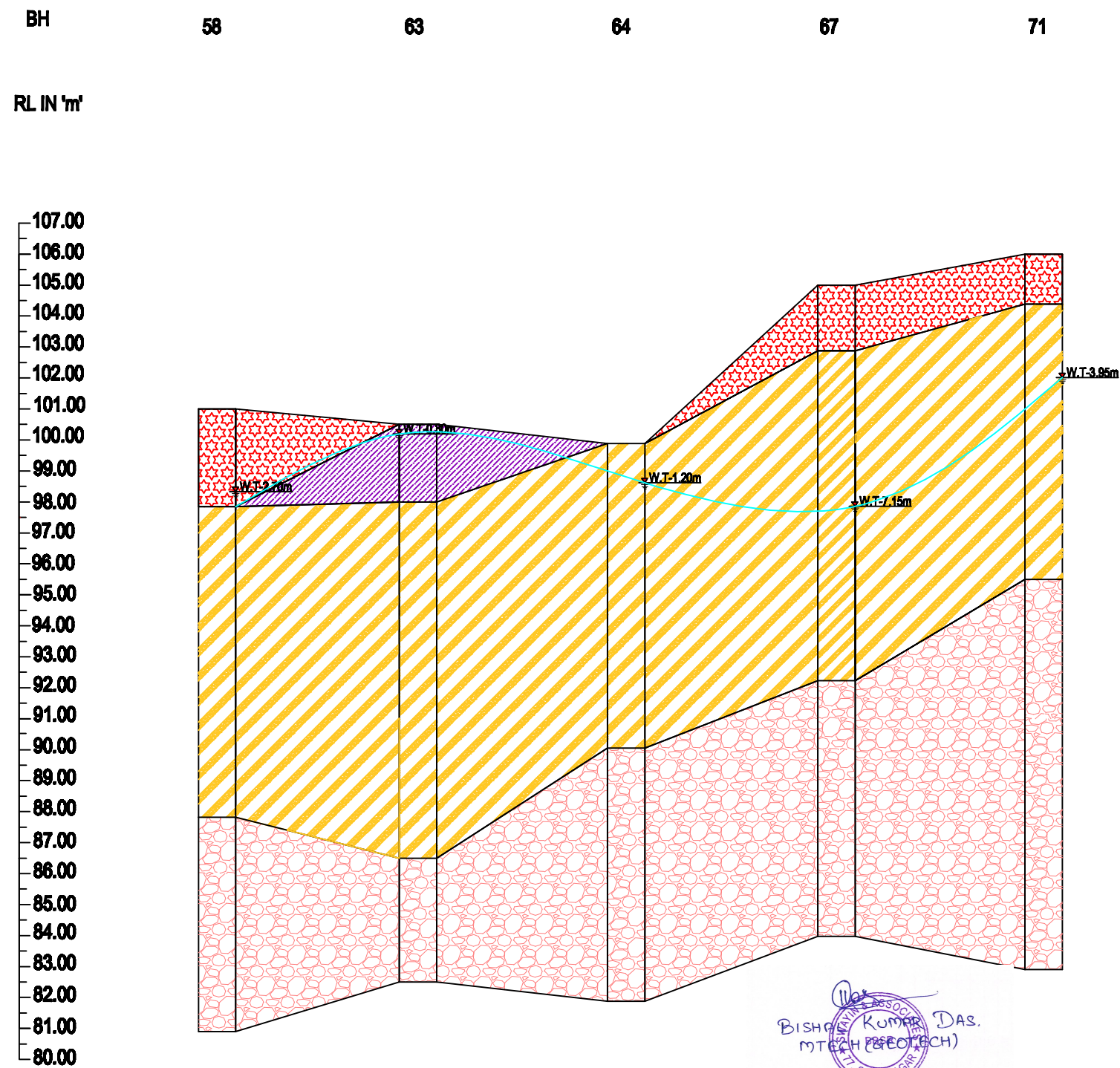
**INVESTIGATED AND PREPARED BY :-**  
 SWAYIN & ASSOCIATES.  
 77, SATYA NAGAR, BHUBANESWAR  
 PH: (0674) 2570016, 2572871

BISHWANATH KUMAR DAS.  
 M.TECH (P.E.O.T.E.C.H)

<b>LOCATION</b>	COAL STORAGE AREA
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE







## SUB-SOIL & CROSS PROFILE



  
 BISHWANATH KUMAR DAS.  
 M.TECH (GEOTECH)  
 TFL, SATYANAGAR

**LEGEND:**


1	MORRUM	
2	FILLED UP ASH	
3	CLAYEY SAND	
4	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :**  TALCHER FERTILIZERS LIMITED (TFL)

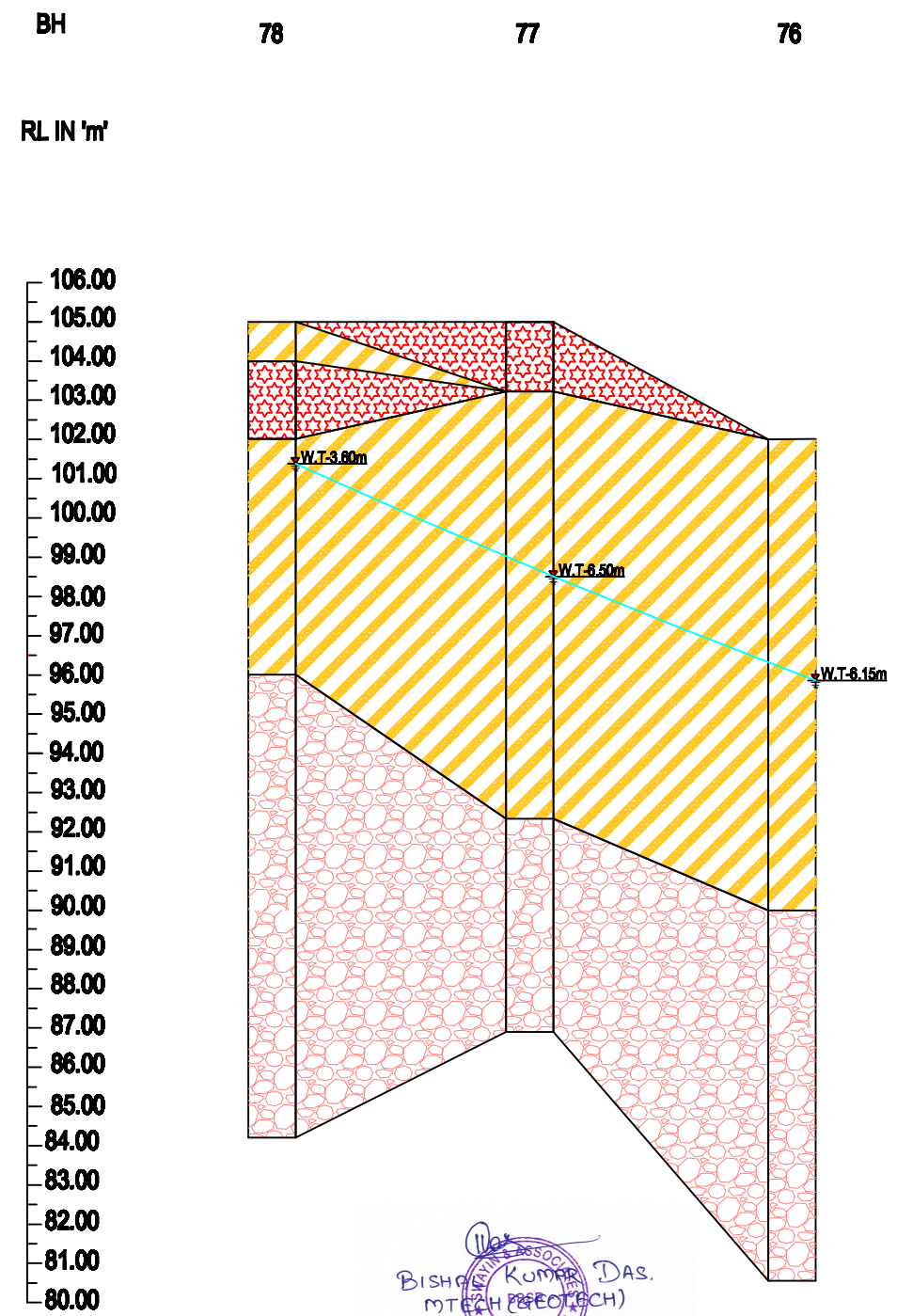
**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**  
 **SWAYIN & ASSOCIATES .**  
 77, SATYANAGAR, BHUBANESWAR  
 PH-(0674) 2570015,2572971

<b>LOCATION</b>	COAL STORAGE AREA
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE






## SUB-SOIL & CROSS PROFILE



  
**BISHWANATH KUMAR DAS.**  
 M.TECH (P&E) (IIT KANPUR)  
 M.TECH (P&E) (IIT KANPUR)

**LEGEND:**

1	CLAYEY SAND	
2	MORRUM	
3	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

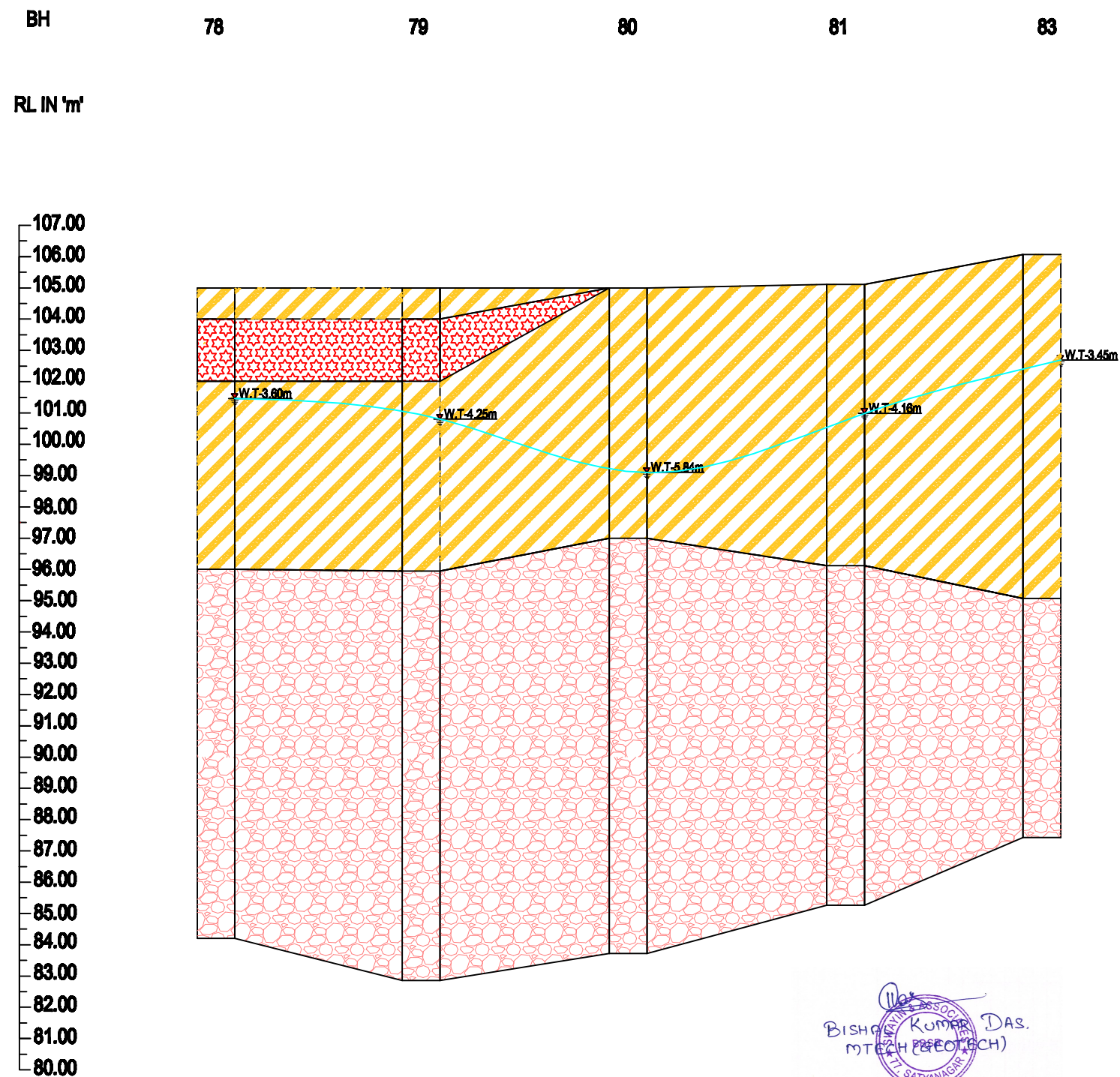
**CLIENT :**  **TALCHER FERTILIZERS LIMITED (TFL)**

**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**  
 **SWAYIN & ASSOCIATES .**  
 77, SATYA NAGAR, BHUBANESWAR  
 PH-(0674) 2570015, 2572871

<b>LOCATION</b>	COAL STORAGE AREA
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	CLAYEY SAND	
2	MORRUM	
3	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

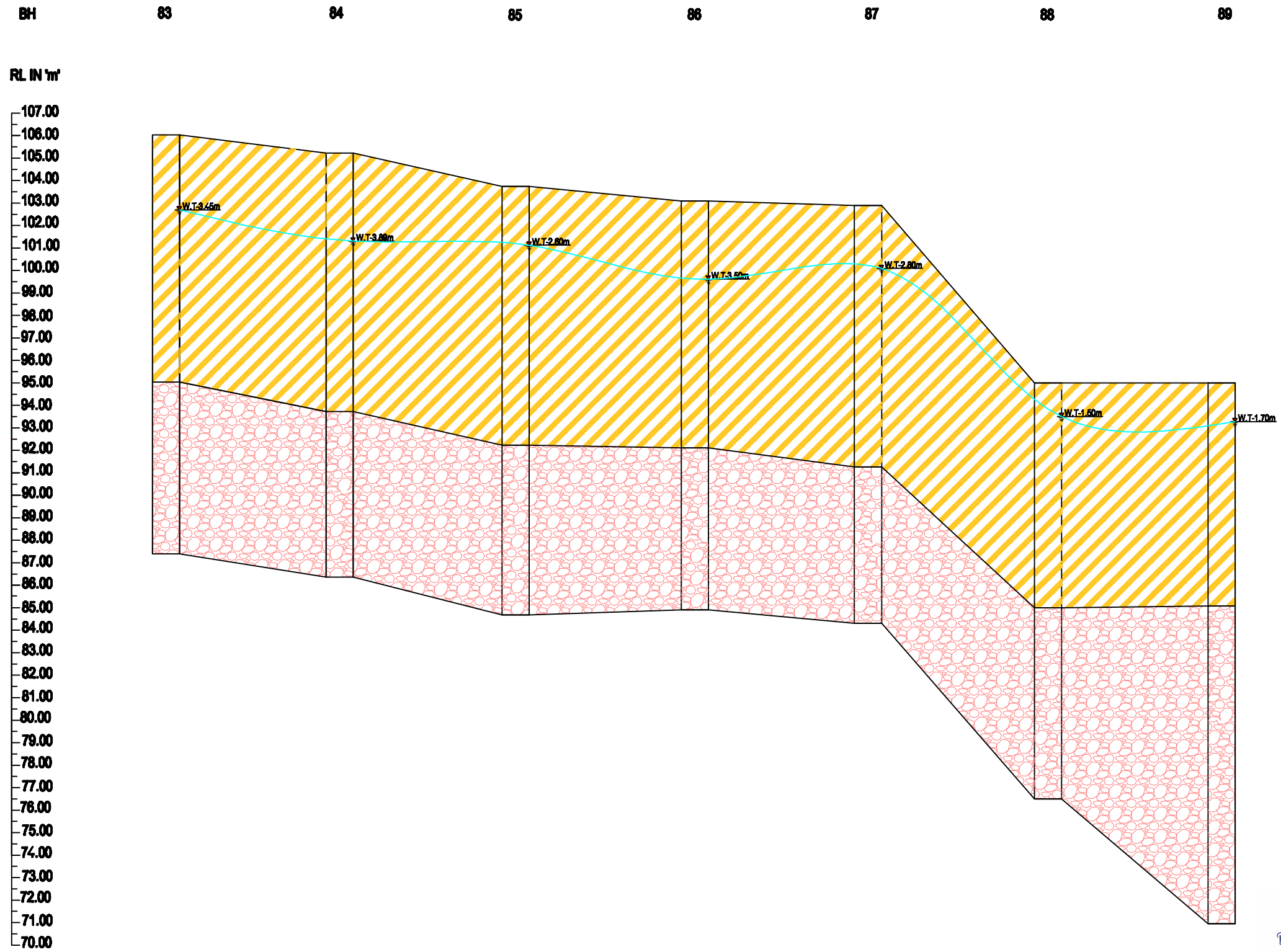
**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYANAGAR, BHUBANESWAR  
 PH-(0674) 2570015, 2572371

<b>LOCATION</b>	COAL STORAGE AREA
<b>TITLE</b>	SUB-SOIL & CROSS PROFILE

**BISHU KUMAR DAS.**  
 M.TECH (P&EOT) (ECH)  
 TALE SATYANAGAR

## SUB-SOIL & CROSS PROFILE



**LEGEND:**

1	CLAYEY SAND	
	D.I ROCK	

**NOTE :** ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.

**PROJECT :** DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

**CLIENT :** TALCHER FERTILIZERS LIMITED (TFL)

**CONTRACTOR :** WUHUAN ENGG. CO., LTD.

**INVESTIGATED AND PREPARED BY :-**  
**SWAYIN & ASSOCIATES .**  
 77, SATYA NAGAR, BHUBANESWAR  
 PH-(0674) 2670016, 2672871

*(Signature)*  
 BISHWAS KUMAR DAS.  
 M.TECH (GEO TECH)

LOCATION	COAL STORAGE AREA
TITLE	SUB-SOIL & CROSS PROFILE



NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -34	SHEET NO: -01
DEPTH:	17.18 m	CO-ORDINATES: E : 110.50 m N : 1256.90 m	GROUND LEVEL: RL- 94.912 M
COMMENCED ON: 25.02.2020	COMPLETED ON: 27.02.2020	LOCATION: - A.S.U	TYPE : - B
WATER TABLE : 0.00m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND (DENSE)	SC	0.00	0.00													
COMPACTED CLAY	CI	1.50	1.50		1.50					99	SPT	01				
SANDSTONE	SEDIMENTARY	3.00	3.00		3.00					>100	SPT	02				
	SEDIMENTARY	4.30	4.50		4.50					>100	SPT	03				
			6.00		6.00						CS	01	18	NIL		
			7.50		7.50						CS	02	25	NIL		
			9.00		9.00						CS	03	29	12		
			10.50		10.50						CS	04	38	14		
			12.00		12.00						CS	05	58	21		
			13.50		13.50						CS	06	68	32		
			15.00		15.00						CS	07	72	40		

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER S.  
 -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE REC




BISHU KUMAR DAS  
MTECH (GEO TECH)  
77, SATYANAGAR

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 09	No. of Water Sample : 01
	No. of SPT: 03	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -34	SHEET NO: -02
DEPTH:	17.18 m	COMPLETED ON: 27.02.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 25.02.2020	COMPLETED ON: 27.02.2020	CO-ORDINATES: E : 110.50 m N : 1256.90 m	GROUND LEVEL: RL- 94.912 M
WATER TABLE : 0.00m		LOCATION: - A.S.U	TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYSTONE  BH TERMINATED AT DEPTH → 17.18M	SEDIMENTARY	15.00	15.00		15.00							CS	07	72	40	
			16.00		16.50							CS	08	54	20	
			17.00		17.18							CS	09	57	21	
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

LEGEND: -  
 UDS-UNDISTURBED SAMPLE,      DS- DISTURBED SAMPLE,      SPT-STANDARD PENETRATION TEST      W- WATER SAI  
 ∇-WATER LEVEL      P-PENETROMETRE TEST,      V- VANE SHEAR TEST      C-CORE RECO

No. of disturbed sample: NIL      No. of Undisturbed sample: NIL      No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL      No. of CORE: 09      No. of Water Sample : 01  
 No. of SPT: 03

  
 BISHU KUMAR DAS.  
 M.TECH (GEOTECH)  


NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -35	SHEET NO: -01
DEPTH:	12.85 m	CO-ORDINATES: E : 110.50 m N : 1219.97 m	GROUND LEVEL: RL- 94.540 M
COMMENCED ON: 28.02.2020	COMPLETED ON: 29.02.2020	LOCATION: - A.S.U	TYPE : - D
WATER TABLE :1.02 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND (DENSE)	SC	0.00	0.00													
			1.00													
COMPACTED CLAY	CI	1.70	2.00		1.50					68	SPT	01				
			3.00													
SANDSTONE	SEDIMENTARY	3.00	3.00		3.00					>100	SPT	02				
			4.00													
			4.50													
			5.00													
			6.00													
			7.00													
CLAYSTONE	SEDIMENTARY	7.50	8.00		6.00						CS	01	16	NIL		
			9.00													
			10.00													
			11.00													
			12.00													
			13.00													
BH TERMINATED AT DEPTH 12.85M		12.85	13.00		13.50											
			14.00													
			15.00													

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLING  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 06 No. of Water Sample : 01  
 No. of SPT: 03

BISHNU KUMAR DAS  
M.TECH (GEO TECH)  
77, SATYANAGAR



NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -36	SHEET NO: -01
DEPTH:	12.69 m	CO-ORDINATES: E : 110.50 m N : 1182.65 m	GROUND LEVEL: RL- 94.900 M
COMMMENCED ON: 28.02.2020	COMPLETED ON: 29.02.2020	LOCATION: - A.S.U	TYPE : - D
WATER TABLE : 0.90 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND (DENSE)	SC	0.00	0.00													
			1.00													
COMPACTED CLAY	C	2.00	2.00		1.50						39	SPT	01			
			3.00													
SANDSTONE		3.00	3.00		3.00						>100	SPT	02			
			4.20													
			4.50									CS	01	23	NIL	
			5.00													
			6.00									CS	02	28	NIL	
			7.00													
CLAYSTONE			7.50									CS	03	46	18	
			8.00													
			9.00									CS	04	55	22	
			10.00													
			10.50									CS	05	58	26	
			11.00													
			12.00									CS	06	62	27	
BH TERMINATED AT DEPTH 12.69M		12.69	12.69													
			13.00													
			14.00													
			15.00													

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAM  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 06 No. of Water Sample : 01  
 No. of SPT: 03

BISHAL KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -37	SHEET NO: -01
DEPTH:	17.45 m	CO-ORDINATES: E : 110.50 m N : 1145.57 m	GROUND LEVEL: RL- 95.120 M
COMMENCED ON: 29.02.2020	COMPLETED ON: 02.03.2020	LOCATION: - A.S.U	TYPE :- B
WATER TABLE :1.00 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND (DENSE)	SC	0.00	0.00														
COMPACTED CLAY	CI	1.50	1.50		1.50						43	SPT	01				
SANDSTONE	SEDIMENTARY	3.00	3.00		3.00						>100	SPT	02				
CLAYSTONE	SEDIMENTARY	4.50	4.50		4.50							CS	01	36	10		
		6.00	6.00		6.00								CS	02	38	15	
		7.50	7.50		7.50								CS	03	41	19	
		9.00	9.00		9.00								CS	04	44	18	
		10.50	10.50		10.50								CS	05	48	22	
		12.00	12.00		12.00								CS	06	53	25	
		13.50	13.50		13.50								CS	07	56	26	
		15.00	15.00		15.00								CS	08	59	28	

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAM  
 -W- WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOV

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 10 No. of Water Sample : 01  
 No. of SPT: 02

BISHWANATH KUMAR DAS.  
MTECH (SPECIALTCH)  
T.L. SATYANAGAR




# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -37	SHEET NO: -02
DEPTH:	17.45 m	COMPLETED ON: 02.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 29.02.2020		CO-ORDINATES: E : 110.50 m N : 1145.57 m	GROUND LEVEL: RL- 95.120 M
WATER TABLE :1.00 m		LOCATION: - A.S.U	TYPE :- B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYSTONE	SEDIMENTARY	15.00	15.00		15.00							CS	08	59	28	
			16.00		16.50							CS	09	63	31	
			17.00		17.45							CS	10	20	10	
BH TERMINATED AT DEPTH → 17.45M		17.45														
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

*Bishu Kumar Das*  
MTECH (GEO TECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 10	No. of Water Sample : 01
	No. of SPT: 02	



NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -38	SHEET NO: -01
DEPTH: 12.95 m	CO-ORDINATES: E : 110.50 m N : 1108.52 m	GROUND LEVEL: RL- 94.450 M
COMMENCED ON: 02.03.2020	COMPLETED ON: 03.03.2020	LOCATION: - A.S.U
WATER TABLE :0.00 m		TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND (DENSE)	SC	0.00	0.00													
COMPACTED CLAY	CI	1.50	1.50		1.50					45	SPT	01				
SANDSTONE	SEDIMENTARY	3.20	3.00		3.00					>100	SPT	02				
	SEDIMENTARY	4.50	4.50		4.50					>100	SPT	03				
CLAYSTONE	SEDIMENTARY	6.00	6.00		6.00						CS	01	15	NIL		
	SEDIMENTARY	7.50	7.50		7.50						CS	02	22	NIL		
	SEDIMENTARY	9.00	9.00		9.00						CS	03	31	NIL		
	SEDIMENTARY	10.50	10.50		10.50						CS	04	40	21		
	SEDIMENTARY	12.00	12.00		12.00						CS	05	40	25		
BH TERMINATED AT DEPTH 12.95M	SEDIMENTARY	12.95	12.95		12.95						CS	06	58	27		

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMP  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVER

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 06 No. of Water Sample : 01  
 No. of SPT: 03

BISHAL KUMAR DAS.  
MTECH (GEOTECH)  
77, SATYANAGAR

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -39	SHEET NO: -01
DEPTH:	13.80 m	CO-ORDINATES: E : 148.49 m N : 1256.90 m	GROUND LEVEL: RL- 95.001 M
COMMMENCED ON: 24.02.2020	COMPLETED ON: 26.02.2020	LOCATION: - A.S.U	TYPE : - D
WATER TABLE :1.45m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND (DENSE)	SC	0.00	0.00													
			1.00													
			1.80													
COMPACTED CLAY	CI	2.00	2.00		1.50					48	SPT	01				
			3.00													
SANDSTONE		3.60	3.60		3.00					>100	SPT	02				
			4.00													
			4.50													
			5.00													
			6.00													
			7.00													
			8.00													
CLAYSTONE		9.00	9.00		4.50					>100	SPT	03				
			10.00													
			11.00													
			12.00													
			13.00													
BH TERMINATED AT DEPTH 13.80M		13.80	13.80		13.80											
			14.00													
			15.00													

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPL  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVER

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 06 No. of Water Sample : 01  
 No. of SPT: 03

BISHWANATH KUMAR DAS.  
MTECH (PRACTICE)  
T.L. SATYANAGAR

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -40	SHEET NO: -01
DEPTH:	13.50 m	CO-ORDINATES: E : 148.53 m N : 1219.83 m	GROUND LEVEL: RL- 95.080 M
COMMENCED ON: 23.02.2020	COMPLETED ON: 26.02.2020	LOCATION: - A.S.U	TYPE : - D
WATER TABLE : 0.80m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRES.	SYMBOL	SAMPLE DEPTH IN METRES.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
COMPACTED CLAY	CI		0.00		1.50						37	SPT	01			
			2.00													
SANDSTONE	SEDIMENTARY		3.00		3.00						>100	SPT	02			
			4.00													
CLAYSTONE	SEDIMENTARY		4.50		4.50							CS	01	34	16	
			5.00													
			6.00									CS	02	58	18	
			7.00													
			7.50									CS	03	42	20	
			8.00													
			9.00									CS	04	48	22	
10.00																
10.50	CS	05	49	24												
11.00																
12.00	CS	06	52	26												
12.00																
13.00																
BH TERMINATED AT DEPTH 13.50M			13.50		13.50							CS	07	50	25	
			14.00													
			15.00													

BISHWAJIT KUMAR DAS.  
MTECH (GEO TECH)  
SWAYIN & ASSOCIATES

LEGEND: -	UDS-UNDISTURBED SAMPLE, W- WATER SAMPLE,	DS- DISTURBED SAMPLE, P-PENETROMETRE TEST,	SPT-STANDARD PENETRATION TEST V- VANE SHEAR TEST	C-CORE RECOVERY
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No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 07	No. of Water Sample : 01
	No. of SPT: 02	

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -41	SHEET NO: -01
DEPTH:	17.70 m	CO-ORDINATES: E : 148.50 m N : 1182.68 m	GROUND LEVEL: RL- 95.100 M
COMMENCED ON: 29.02.2020	COMPLETED ON: 02.03.2020	LOCATION: - A.S.U	TYPE :- B
WATER TABLE :1.00m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
COMPACTED CLAY	CI		0.00		1.50						42	SPT	01				
			2.90								>100	SPT	02				
SANDSTONE	SEDIMENTARY		3.00		4.50							CS	01	38	10		
			4.50									CS	02	40	19		
CLAYSTONE	SEDIMENTARY		5.00		6.00							CS	03	42	21		
			6.00									CS	04	45	25		
			7.00									CS	05	49	21		
			8.00									CS	06	53	29		
			9.00									CS	07	58	25		
			10.00									CS	08	62	30		
			11.00														
			12.00														
			13.00		13.50												
			14.00		15.00												
			15.00														

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 -W- WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 10 No. of Water Sample : 01  
 No. of SPT: 02








**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -41	SHEET NO: -02
DEPTH:	17.70 m	COMPLETED ON: 02.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 29.02.2020	COMPLETED ON: 02.03.2020	CO-ORDINATES: E : 148.50 m N : 1182.68 m	GROUND LEVEL: RL- 95.100 M
WATER TABLE :1.00m		LOCATION: - A.S.U	TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYSTONE	SEDIMENTARY	15.00	15.00		15.00							CS	08	62	30	
			16.00		16.50							CS	09	51	20	
			17.00		17.70							CS	10	41	15	
BH TERMINATED AT DEPTH → 17.70M		17.70														
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

*(Signature)*  
BISHU KUMAR DAS.  
MTECH (PPEOTECH)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 10	No. of Water Sample : 01
	No. of SPT: 02	

**SWAYIN & ASSOCIATES**  
77, SATYANAGAR, BHUBANESWAR  
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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -42	SHEET NO: -01
DEPTH:	13.25 m	CO-ORDINATES: E : 148.55 m N : 1145.60 m	GROUND LEVEL: RL- 94.980 M
COMMENCED ON: 26.02.2020	COMPLETED ON: 27.02.2020	LOCATION: - A.S.U	TYPE : - D
WATER TABLE :1.30m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND (DENSE)	SC		0.00													
			1.00													
COMPACTED CLAY	CI		2.00		1.50						44	SPT	01			
			3.00													
SANDSTONE			3.00		3.00						>100	SPT	02			
			4.50													
			5.00													
			6.00													
			7.00													
			8.00													
CLAYSTONE			9.00		4.50							CS	01	23	NIL	
			10.00													
			11.00													
			12.00													
			13.00													
BH TERMINATED AT DEPTH 13.25M			13.25		13.25											
			14.00													
			15.00													

BISHWANATH KUMAR DAS  
M.TECH (GEO TECH)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 07	No. of Water Sample : 01
	No. of SPT: 02	

**SWAYIN & ASSOCIATES**  
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Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -43	SHEET NO: -01
DEPTH:	13.15 m	CO-ORDINATES: E : 148.57 m N : 1108.52 m	GROUND LEVEL: RL- 94.988 M
COMMENCED ON: 02.03.2020	COMPLETED ON: 03.03.2020	LOCATION: - A.S.U	TYPE : - D
WATER TABLE : 0.00m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND (DENSE)	SC	0.00	0.00		1.50	41	SPT	01									
		2.60	3.00														
COMPACTED CLAY	CI		4.00														
SANDSTONE	SEDIMENTARY	4.50	4.50		4.50		CS	01	31	14							
		6.00	6.00		6.00	CS	02	35	16								
		7.00	7.50		7.50	CS	03	42	20								
		8.00	9.00		9.00	CS	04	48	23								
CLAYSTONE	SEDIMENTARY	9.00	10.00		10.50		CS	05	52	24							
		11.00	12.00		12.00	CS	06	55	26								
		12.00	13.00		13.15	CS	07	53	25								
		13.15	13.15		13.15												
BH TERMINATED AT DEPTH 13.15M																	

BISHNU KUMAR DAS.  
MTECH (P&OT) (ECH)  
77, SATYANAGAR

LEGEND: -

UDS-UNDISTURBED SAMPLE, ▽-WATER LEVEL	DS- DISTURBED SAMPLE, P-PENETROMETRE TEST,	SPT-STANDARD PENETRATION TEST V- VANE SHEAR TEST	W- WATER SAMPLE, C-CORE RECOVERY
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No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 07 No. of SPT: 02	No. of Water Sample : 01

**SWAYIN & ASSOCIATES**  
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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -44	SHEET NO: -01
DEPTH: 14.40 m	CO-ORDINATES: E : 187.55 m N : 1256.97 m	GROUND LEVEL: RL- 94.890 M
COMMENCED ON: 25.02.2020	COMPLETED ON: 26.02.2020	LOCATION: - A.S.U
WATER TABLE :0.00m		TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND (DENSE)	SC	0.00	0.00													
			1.00													
			2.00		1.50					43	SPT	01				
COMPACTED CLAY	CI	2.54	3.00		3.00					>100	SPT	02				
			4.00													
SANDSTONE			4.50		4.50					>100	SPT	03				
			5.00													
			6.00		6.00						CS	01	18	NIL		
			7.00								CS	02	24	NIL		
			8.00								CS	03	35	NIL		
CLAYSTONE			10.00		10.50						CS	04	46	21		
			11.00								CS	05	52	28		
			12.00								CS	06	62	35		
			13.00								CS	07	70	39		
BH TERMINATED AT DEPTH 14.40M			14.40		14.40						CS	07	70	39		
			15.00													

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 07 No. of Water Sample : 01  
 No. of SPT: 02





NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -45	SHEET NO: -01
DEPTH:	17.97 m	CO-ORDINATES: E : 187.55 m N : 1219.97 m	GROUND LEVEL: RL- 95.111 M
COMMMENCED ON: 02.03.2020	COMPLETED ON: 03.03.2020	LOCATION: - A.S.U	TYPE : - B
WATER TABLE :1.10m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
COMPACTED CLAY	CI	SEDIMENTARY	0.00														
			1.50		40	SPT	01										
SANDSTONE	SEDIMENTARY	SEDIMENTARY	2.80		3.00												
			4.50		4.50		CS	01	33	11							
			6.00		6.00		CS	02	38	12							
			7.50		7.50		CS	03	39	NIL							
			9.00		9.00		CS	04	45	14							
			10.50		10.50		CS	05	48	16							
			12.00		12.00		CS	06	52	20							
			13.50		13.50		CS	07	58	25							
CLAYSTONE	SEDIMENTARY	SEDIMENTARY	15.00		15.00												
							CS	08	62	28							

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 10 No. of Water Sample : 01  
 No. of SPT: 02

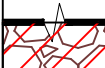
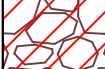

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR

**SWAYIN & ASSOCIATES**  
77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -45	SHEET NO: -02
DEPTH:	17.97 m	COMPLETED ON: 03.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 02.03.2020	COMPLETED ON: 03.03.2020	CO-ORDINATES: E : 187.55 m N : 1219.97 m	GROUND LEVEL: RL- 95.111 M
WATER TABLE :1.10m		LOCATION: - A.S.U	TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYSTONE	SEDIMENTARY	15.00	15.00		15.00							CS	08	62	28	
			16.00		16.50							CS	09	53	20	
			17.00		17.97	17.97							CS	10	56	20
BH TERMINATED AT DEPTH → 17.97M			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

BISHWANKAR KUMAR DAS.  
MTECH (GEOTECH)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 10	No. of Water Sample : 01
	No. of SPT: 02	

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Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -46	SHEET NO: -01
DEPTH:	13.40 m	CO-ORDINATES: E : 187.57 m N : 1182.70 m	GROUND LEVEL: RL- 94.341 M
COMMENCED ON: 02.03.2020	COMPLETED ON: 03.03.2020	LOCATION: - A.S.U	TYPE : - D
WATER TABLE : 0.00m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRES.	SYMBOL	SAMPLE DEPTH IN METRES.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND (DENSE)	SC	0.00	0.00		1.50						44	SPT	01			
		2.90	3.00				3.00						>100	SPT	02	
SANDSTONE	SEDIMENTARY	4.50	4.50		4.50									CS	01	32
		5.00	5.00									CS	02	38	18	
		6.00	6.00									CS	03	42	20	
		7.00	7.00									CS	04	49	23	
		8.00	8.00									CS	05	52	24	
		9.00	9.00									CS	06	68	26	
		10.00	10.00									CS	07	56	25	
CLAYSTONE	SEDIMENTARY	11.00	11.00		11.00							CS	07	56	25	
		12.00	12.00									CS	07	56	25	
		13.40	13.40									CS	07	56	25	
BH TERMINATED AT DEPTH 13.40M			13.40		13.40											

BISHWAJIT KUMAR DAS  
M.TECH (GEO TECH)  
TAL SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 07	No. of Water Sample : 01
	No. of SPT: 02	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -47	SHEET NO: -01
DEPTH:	12.08 m	CO-ORDINATES: E : 187.58 m N : 1145.58 m	GROUND LEVEL: RL- 95.100 M
COMMENCED ON: 01.03.2020	COMPLETED ON: 02.03.2020	LOCATION: - A.S.U	TYPE : - D
WATER TABLE : 0.85m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND (DENSE)	SC	0.00	0.00		1.50						47	SPT	01				
			2.00														
COMPACTED CLAY	CI	2.00	2.00		3.00						>100	SPT	02				
			3.00														
SEDIMENTARY SANDSTONE			4.00		4.50							CS	01	24	NIL		
			5.00														
			6.00									6.00	CS	02	38		NIL
			7.00									7.50	CS	03	46		20
			8.00									9.00	CS	04	58		26
			9.00									10.50	CS	05	61		29
			10.00									11.00					
			11.00									12.00	CS	06	66		31
			12.00														
			13.00														
			14.00														
15.00																	
BH TERMINATED AT DEPTH →			12.08		12.08												

*Bishwanath Kumar Das*  
MTECH (GEO TECH)  
T.L. SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 06	No. of Water Sample : 01
	No. of SPT: 02	

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -48	SHEET NO: -01
DEPTH:	15.90 m	CO-ORDINATES: E : 187.56 m N : 1108.51 m	GROUND LEVEL: RL- 95.003 M
COMMMENCED ON: 26.02.2020	COMPLETED ON: 28.02.2020	LOCATION: - A.S.U	TYPE : - B
WATER TABLE : 0.00m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND (DENSE)	SC	0.00	0.00														
COMPACTED CLAY	C	1.50	1.50		1.50						39	SPT	01				
SANDSTONE	SEDIMENTARY	3.00	3.00		3.00						>100	SPT	02				
CLAYSTONE	SEDIMENTARY	4.50	4.50		4.50							CS	01	36	15		
		6.00	6.00		6.00								CS	02	38	18	
		7.50	7.50		7.50								CS	03	41	21	
		9.00	9.00		9.00								CS	04	46	23	
		10.50	10.50		10.50								CS	05	51	25	
		12.00	12.00		12.00								CS	06	56	27	
		13.50	13.50		13.50								CS	07	63	35	
		15.00	15.00		15.00								CS	08	67	40	

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 -W- WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 09 No. of Water Sample : 01  
 No. of SPT: 02

BISHWANATH KUMAR DAS.  
MTECH (GEO TECH)  
77, SATYANAGAR



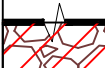

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Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -48	SHEET NO: -02
DEPTH:	15.90 m	CO-ORDINATES: E : 187.56 m N : 1108.51 m	GROUND LEVEL: RL- 95.003 M
COMMENCED ON: 26.02.2020	COMPLETED ON: 28.02.2020	LOCATION: - A.S.U	TYPE : - B
WATER TABLE : 0.00m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METERS	DEPTH IN METERS	SYMBOL	SAMPLE DEPTH IN METERS	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYSTONE BH TERMINATED AT DEPTH → 15.90M	SEDIMENTARY	15.00	15.00		15.00							CS	08	67	40	
		15.90	16.00		15.90							CS	09	76	51	
			17.00													
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

  
 BISHWANATH KUMAR DAS.  
 M.TECH (P&EOT&ECH)  


LEGEND: -	UDS-UNDISTURBED SAMPLE, ∇-WATER LEVEL	DS- DISTURBED SAMPLE, P-PENETROMETRE TEST,	SPT-STANDARD PENETRATION TEST V- VANE SHEAR TEST	W- WATER SAMPLE, C-CORE RECOVERY
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No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 09 No. of SPT: 02	No. of Water Sample : 01

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -49	SHEET NO: -01
DEPTH:	22.80 m	CO-ORDINATES: E : 899.618 m N : 1830.51 m	GROUND LEVEL: RL- 100.00 M
COMMMENCED ON: 19.03.2020	COMPLETED ON: 20.03.2020	LOCATION : -COAL STORAGE	TYPE : - B
WATER TABLE :2.95m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
			1.00													
			2.00		1.50					62	SPT	01				
			3.00		3.00					>100	SPT	02				
			4.00													
			5.00		4.50					>100	SPT	03				
			6.00		6.00					>100	SPT	04				
CLAYEY SAND	SC		7.00													
			8.00													
			9.00		7.50					>100	SPT	05				
			10.00		9.00					>100	SPT	06				
			10.80													
			11.00													
			12.00		12.00						CS	01	NIL	NIL		
D.I ROCK	ROCK		13.00													
			14.00													
			15.00		15.00						CS	02	NIL	NIL		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 06

BISHWANATH KUMAR DAS.  
 MTECH (GEO TECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -49	SHEET NO: -02
DEPTH:	22.80 m	CO-ORDINATES: E : 899.618 m N : 1830.51 m	GROUND LEVEL: RL- 100.00 M
COMMENCED ON: 19.03.2020	COMPLETED ON: 20.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 2.95m		TYPE : - B	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL			
			16.00															
			17.00															
			18.00										CS	03	NIL	NIL		
			19.00															
			20.00															
			21.00										CS	04	NIL	NIL		
			22.00															
			23.00										CS	05	NIL	NIL		
			BH TERMINATED AT DEPTH 22.80M		22.80	22.80		22.80										
			24.00															
			25.00															
			26.00															
			27.00															
			28.00															
			29.00															
			30.00															

BISHWANATH KUMAR DAS  
MTECH (GEOTECH)  
77, SATYANAGAR, BHUBANESWAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

**SWAYIN & ASSOCIATES**  
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Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -50	SHEET NO: -01
DEPTH:	17.50 m	CO-ORDINATES: E : 899.618 m N : 1784.518 m	GROUND LEVEL: RL- 101.00 M
COMMENCED ON: 19.03.2020	COMPLETED ON: 20.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 2.95m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00 - 3.00	0.00 - 3.00		1.50						65	SPT	01			
CLAYEY SAND	SC	3.00 - 4.00	3.00 - 4.00		3.00						>100	SPT	02			
		4.00 - 4.50	4.00 - 4.50		4.50						>100	SPT	03			
		4.50 - 6.00	4.50 - 6.00		6.00						>100	SPT	04			
		6.00 - 7.50	6.00 - 7.50		7.50						>100	SPT	05			
		7.50 - 10.00	7.50 - 10.00		10.00						>100	SPT	06			
D.I ROCK	ROCK	12.00 - 15.00	12.00 - 15.00		13.00							CS	01	NIL	NIL	

*Bishu Kumar Das*  
MTECH (GEOTECH)  
TFL SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAMPLE, -WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample: NIL      No. of Undisturbed sample: NIL      No. of Vane Shear Test : NIL  
No. of Large diameter sample: NIL      No. of CORE: NIL      No. of Water Sample : 01  
No. of SPT: 06

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## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)		CONTRACTOR: WUHUAN ENGG. CO., LTD.	
DIA OF HOLE:	150 mm	BORE HOLE NO: -50	SHEET NO: -02	JOB NO: -TLD/2020-03	
DEPTH:	17.50 m	CO-ORDINATES: E : 899.618 m N : 1784.518 m		GROUND LEVEL: RL- 101.00 M	LOCATION COAL STORAGE TYPE : - D
COMMENCED ON: 19.03.2020	COMPLETED ON: 20.03.2020	WATER TABLE : 2.95m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK  BH TERMINATED AT DEPTH 17.50M	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
			17.50		17.50								CS	03	NIL	NIL
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

  
 BISHWANATH KUMAR DAS.  
 M.TECH (GEOTECH)  
 77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	



NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -51	SHEET NO: -01
DEPTH:	20.49 m	COMPLETED ON: 21.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 20.03.2020	COMPLETED ON: 21.03.2020	CO-ORDINATES: E : 899.618 m N : 1736.512 m	GROUND LEVEL: RL- 100.00 M
WATER TABLE : 3.95 m		LOCATION : -COAL STORAGE	TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
CLAYEY SAND	SC	1.50	1.50		1.50					63	SPT	01				
		2.00	3.00		3.00					91	SPT	02				
		4.00	4.50		4.50					>100	SPT	03				
		5.00	6.00		6.00					>100	SPT	04				
		6.00	7.50		7.50					>100	SPT	05				
D.I ROCK	ROCK	8.50	9.00		9.00						CS	01	NIL	NIL		
		9.00	10.50		10.50						CS	02	NIL	NIL		
		10.00	12.00		12.00						CS	03	NIL	NIL		
		11.00	13.50		13.50						CS	04	NIL	NIL		
		12.00	15.00		15.00						CS	05	14	NIL		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 05 No. of Water Sample : 01  
 No. of SPT: 05

BISHWANATH KUMAR DAS.  
 MTECH (GEO TECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES

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Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -51	SHEET NO: -02
DEPTH:	20.49 m	CO-ORDINATES: E : 899.618 m N : 1736.512 m	GROUND LEVEL: RL- 100.00 M
COMMENCED ON: 20.03.2020	COMPLETED ON: 21.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 3.95 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK	ROCK	15.00	15.00		15.00							CS	05	14	NIL		
			16.00		16.50							CS	06	18	NIL		
			17.00		18.00							CS	07	20	NIL		
			18.00		19.50							CS	08	20	NIL		
			19.00		20.49							CS	09	25	NIL		
			20.00														
			21.00														
			22.00														
			23.00														
			24.00														
BH TERMINATED AT DEPTH 20.49M																	

  
 BISHWANATH KUMAR DAS  
 M.TECH (GEOTECH)  
 TFL SATYANAGAR

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 05	No. of Water Sample : 01
	No. of SPT: 05	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -52	SHEET NO: -01
DEPTH:	18.54 m	CO-ORDINATES: E : 899.618 m N : 1681.526 m	GROUND LEVEL: RL- 101.00 M
COMMENCED ON: 21.03.2020	COMPLETED ON: 23.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 3.95 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
CLAYEY SAND	SC	1.95	2.00		1.50					75	SPT	01				
			3.00		3.00					82	SPT	02				
			4.50		4.50					>100	SPT	03				
			6.00		6.00					>100	SPT	04				
			7.50		7.50					>100	SPT	05				
			9.20		9.00					>100	SPT	06				
D.I ROCK	ROCK		10.00		10.50						CS	01	NIL	NIL		
			11.00		12.00						CS	02	NIL	NIL		
			13.00		13.50							CS	03	NIL	NIL	
			14.00		15.00							CS	04	11	NIL	

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 03 No. of Water Sample : 01  
 No. of SPT: 06

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES



77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -52	SHEET NO: -02
DEPTH:	18.54 m	COMPLETED ON: 23.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 21.03.2020	COMPLETED ON: 23.03.2020	CO-ORDINATES: E : 899.618 m N : 1681.526 m	GROUND LEVEL: RL- 101.00 M
WATER TABLE : 3.95 m		LOCATION : -COAL STORAGE	TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METERS	DEPTH IN METERS.	SYMBOL	SAMPLE DEPTH IN METERS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK  BH TERMINATED AT DEPTH 18.54M	ROCK	15.00	15.00		15.00							CS	04	11	NIL	
			16.00		16.50							CS	05	15	NIL	
			17.00		18.00							CS	06	22	NIL	
			18.00		18.54							CS	07	NIL	NIL	
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
25.00																
26.00																
27.00																
28.00																
29.00																
30.00																

  
 BISHWANATH KUMAR DAS.  
 MTECH (PPEOTECH)  


LEGEND: -  
 UDS-UNDISTURBED SAMPLE,      DS- DISTURBED SAMPLE,      SPT-STANDARD PENETRATION TEST      W- WATER SAMPLE,  
 ▽-WATER LEVEL      P-PENETROMETRE TEST,      V- VANE SHEAR TEST      C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 03	No. of Water Sample : 01
	No. of SPT: 06	

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -53	SHEET NO: -01
DEPTH:	21.10 m	CO-ORDINATES: E : 899.618 m N : 1626.398 m	GROUND LEVEL: RL- 101.00 M
COMMENCED ON: 11.03.2020	COMPLETED ON: 12.03.2020	LOCATION : -COAL STORAGE	TYPE : - B
WATER TABLE : 2.65 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
			1.00													
			2.00		1.50					83	SPT	01				
			3.00		3.00					94	SPT	02				
		3.10	3.10													
			4.00		4.50					>100	SPT	03				
			5.00		6.00					>100	SPT	04				
CLAYEY SAND	SC		6.00		7.50					>100	SPT	05				
			7.00		9.00					>100	SPT	06				
			8.00		10.50					>100	SPT	07				
			9.00		12.00					>100	SPT	08				
			10.00													
			11.00													
			12.00													
			13.00													
D.I ROCK	ROCK	13.10	13.10													
			14.00													
			15.00		15.00						CS	01	NIL	NIL		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL; No. of SPT: 08 No. of Water Sample : 01

BISHWANATH KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR



# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -53	SHEET NO: -02
DEPTH:	21.10 m	COMPLETED ON: 12.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 11.03.2020	COMPLETED ON: 12.03.2020	CO-ORDINATES: E : 899.618 m N : 1626.398 m	GROUND LEVEL: RL- 101.00 M
WATER TABLE :2.65 m		LOCATION	COAL STORAGE
			TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL	
			18.00		18.00							CS	02	NIL	NIL	
BH TERMINATED AT DEPTH 21.10M		21.10	21.10		21.10							CS	03	NIL	NIL	
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

BISHAL KUMAR DAS  
MTECH (GEOTECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 08

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -54	SHEET NO: -01
DEPTH:	18.31 m	CO-ORDINATES: E : 844.125 m N : 1781.697 m	GROUND LEVEL: RL- 101.00 M
COMMENCED ON: 21.03.2020	COMPLETED ON: 23.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 4.2 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
		1.54	1.50		1.50						56	SPT	01			
			2.00													
			3.00		3.00						80	SPT	02			
			4.00													
CLAYEY SAND	SC		4.50		4.50						>100	SPT	03			
			5.00													
			6.00		6.00						>100	SPT	04			
			7.00													
			7.50		7.50						>100	SPT	05			
		9.10	9.00		9.00							CS	01	NIL	NIL	
			10.00		10.50							CS	02	NIL	NIL	
			11.00													
D.I ROCK	ROCK		12.00		12.00							CS	03	NIL	NIL	
			13.00													
			13.50		13.50							CS	04	NIL	NIL	
			14.00													
		15.00	15.00		15.00							CS	05	NIL	NIL	

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL  
 No. of Large diameter sample: NIL

No. of Undisturbed sample: NIL  
 No. of CORE: 01  
 No. of SPT: 05

No. of Vane Shear Test : NIL  
 No. of Water Sample : 01

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -54	SHEET NO: -02
DEPTH:	18.31 m	COMPLETED ON: 23.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 21.03.2020	COMPLETED ON: 23.03.2020	CO-ORDINATES: E : 844.125 m N : 1781.697 m	GROUND LEVEL: RL- 101.00 M
WATER TABLE : 4.2 m		LOCATION	COAL STORAGE
			TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
D.I ROCK	ROCK	15.00	15.00		15.00							CS	05	NIL	NIL			
			16.00															
			17.00															
BH TERMINATED AT DEPTH 18.31M	ROCK	18.31	18.00		18.31							CS	07	25	NIL			
			19.00															
			20.00															
			21.00															
			22.00															
			23.00															
			24.00															
			25.00															
			26.00															
			27.00															
			28.00															
			29.00															
			30.00															

BISHWANATH KUMAR DAS.  
M.TECH (GEO TECH)  
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77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 01	No. of Water Sample : 01
	No. of SPT: 05	

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# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -55	SHEET NO: -01
DEPTH:	24.08 m	CO-ORDINATES: E : 844.272 m N : 1736.516 m	GROUND LEVEL: RL- 101.00 M
COMMMENCED ON: 21.03.2020	COMPLETED ON: 23.03.2020	LOCATION : -COAL STORAGE	TYPE : - B
WATER TABLE : 3.10m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
MORRUM	SM	0.00	0.00														
CLAYEY SAND	SC	1.60	1.50		1.50						58	SPT	01				
		2.00	3.00		3.00						82	SPT	02				
		3.00	4.50		4.50						>100	SPT	03				
		4.00	6.00		6.00						>100	SPT	04				
		5.00	7.50		7.50						>100	SPT	05				
		6.00	9.00		9.00						>100	SPT	06				
D.I ROCK	ROCK	9.00	12.00		12.00							CS	01	NIL	NIL		
		10.00	13.00		13.00												
		11.00	14.00		14.00												
		12.00	15.00		15.00								CS	02	23	NIL	
		13.00															

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 04 No. of Water Sample : 01  
 No. of SPT: 06

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## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -55	SHEET NO: -02
DEPTH:	24.08 m	COMPLETED ON: 23.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 21.03.2020	COMPLETED ON: 23.03.2020	CO-ORDINATES: E : 844.272 m N : 1736.516 m	GROUND LEVEL: RL- 101.00 M
WATER TABLE : 3.10m		LOCATION	COAL STORAGE
			TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	23	NIL			
			16.00															
			17.00															
			18.00				18.00							CS	03	28	NIL	
			19.00															
BH TERMINATED AT DEPTH 24.08M	ROCK	24.08	20.00															
			21.00									CS	04	30	NIL			
			22.00															
			23.00															
			24.00				24.08							CS	05	31	NIL	
			25.00															
			26.00															
			27.00															
			28.00															
			29.00															
			30.00															

  
 BISHWANATH KUMAR DAS.  
 MTECH (GEO TECH)  
 SATYANAGAR

LEGEND: -

UDS-UNDISTURBED SAMPLE,	DS- DISTURBED SAMPLE,	SPT-STANDARD PENETRATION TEST	W- WATER SAMPLE,
∇-WATER LEVEL	P-PENETROMETRE TEST,	V- VANE SHEAR TEST	C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 04	No. of Water Sample : 01
	No. of SPT: 06	



NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -56	SHEET NO: -01
DEPTH: 23.00 m	CO-ORDINATES: E : 844.220 m N : 1671.386 m	GROUND LEVEL: RL- 101.00 M
COMMENCED ON: 05.03.2020	COMPLETED ON: 06.03.2020	LOCATION : -COAL STORAGE
WATER TABLE : 2.10m		TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00		1.50						97	SPT	01			
			1.00													
			2.00													
			3.00		3.00						>100	SPT	02			
			4.00													
		4.45	4.50		4.50						>100	SPT	03			
			5.00													
			6.00		6.00						>100	SPT	04			
			7.00													
			8.00		7.50						>100	SPT	05			
			9.00													
			10.00		9.00						>100	SPT	06			
			11.00													
			12.00		10.50						>100	SPT	07			
			13.00													
			14.00		12.00						>100	SPT	08			
			15.00		13.50						>100	SPT	09			
D.I ROCK	ROCK	13.40	13.50		13.50											
			14.00													
			15.00		15.00							CS	01	NIL	NIL	

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 - WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 09

BISHWANATH KUMAR DAS.  
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 77, SATYANAGAR

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## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -56	SHEET NO: -02
DEPTH:	23.00 m	CO-ORDINATES: E : 844.220 m N : 1671.386 m	GROUND LEVEL: RL- 101.00 M
COMMENCED ON: 05.03.2020	COMPLETED ON: 06.03.2020	LOCATION	COAL STORAGE
WATER TABLE :2.10 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL		
			16.00														
			17.00														
			18.00														
BH TERMINATED AT DEPTH 23.00M	ROCK	23.00	19.00		19.00							CS	02	NIL	NIL		
			20.00														
			21.00														
			22.00														
			23.00														
			24.00														
			25.00														
			26.00														
			27.00														
			28.00														
			29.00														
			30.00														

  
 BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  


LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 09	

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -57	SHEET NO: -01
DEPTH:	21.30 m	CO-ORDINATES: E : 844.214 m N : 1626.314 m	GROUND LEVEL: RL- 101.00 M
COMMMENCED ON: 07.03.2020	COMPLETED ON: 08.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 2.80 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00		1.50						95	SPT	01			
			1.00													
			2.00													
			3.00		3.00						>100	SPT	02			
			4.00													
			4.50		4.50						>100	SPT	03			
			5.00													
		6.00	6.00		6.00						>100	SPT	04			
			7.00													
			7.50		7.50						>100	SPT	05			
			8.00													
CLAYEY SAND	SC		9.00		9.00						>100	SPT	06			
			10.00													
			10.50		10.50						>100	SPT	07			
			11.00													
			12.00		12.00						>100	SPT	08			
			13.00													
		13.50	13.50		13.50											
D.I ROCK	ROCK		14.00													
			15.00		15.00							CS	01	NIL	NIL	

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 08  
 No. of SPT: 08

BISHWANATH KUMAR DAS.  
 MTECH (GEO TECH)  
 77, SATYANAGAR

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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -57	SHEET NO: -02
DEPTH:	21.30 m	COMPLETED ON: 08.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 07.03.2020		CO-ORDINATES: E : 844.214 m N : 1626.314 m	GROUND LEVEL: RL- 101.00 M
WATER TABLE :2.80 m		LOCATION	COAL STORAGE
			TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METERS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL	
			17.00	17.00		CS	02	NIL	NIL							
BH TERMINATED AT DEPTH 21.30M	ROCK	21.30	21.00		21.00							CS	03	NIL	NIL	
			21.30	21.30		CS	04	NIL	NIL							
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

BISHWANATH KUMAR DAS.  
MTECH (GEOTECH)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 09	

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -58	SHEET NO: -01
DEPTH:	20.05 m	CO-ORDINATES: E : 844.371 m N : 1581.33 m	GROUND LEVEL: RL- 101.00 M
COMMENCED ON: 06.03.2020	COMPLETED ON: 08.03.2020	LOCATION : -COAL STORAGE	TYPE : - B
WATER TABLE : 2.70 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
			1.00													
			2.00		1.50					60	SPT	01				
			3.00		3.00					73	SPT	02				
		3.20	4.00													
			5.00		4.50					>100	SPT	03				
			6.00		6.00					>100	SPT	04				
CLAYEY SAND	SC		7.00													
			8.00													
			9.00		7.50					>100	SPT	05				
			10.00													
			11.00													
			12.00		9.00					>100	SPT	06				
			13.00													
			14.00		12.00					>100	SPT	07				
D.I ROCK	ROCK	13.20	15.00		15.00						CS	01	NIL	NIL		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 07

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## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -58	SHEET NO: -02
DEPTH:	20.05 m	CO-ORDINATES: E : 844.371 m N : 1581.33 m	GROUND LEVEL: RL- 101.00 M
COMMENCED ON: 06.03.2020	COMPLETED ON: 08.03.2020	LOCATION	COAL STORAGE
WATER TABLE :2.70 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK  BH TERMINATED AT DEPTH 20.05M	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL	
			16.00													
			17.00													
			18.00		18.00							CS	02	NIL	NIL	
			19.00													
		20.05	20.00		20.05							CS	03	NIL	NIL	
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

*Bishu Kumar Das*  
MTECH (GEOTECH)  
SWAYIN & ASSOCIATES  
77, SATYANAGAR

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 07

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -59	SHEET NO: -01
DEPTH:	24.27 m	COMPLETED ON: 21.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 20.03.2020	COMPLETED ON: 21.03.2020	CO-ORDINATES: E : 746.863 m N : 1781.682 m	GROUND LEVEL: RL- 100.00 M
WATER TABLE : 0.0 m		LOCATION : -COAL STORAGE	TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
CLAYEY SAND	SC	0.00	0.00															
			1.50								>100	SPT	01					
			3.00									>100	SPT	02				
			4.50									>100	SPT	03				
			6.00									>100	SPT	04				
			7.50									>100	SPT	05				
			10.00									>100	SPT	06				
			13.00									>100	SPT	07				
		D.I ROCK	ROCK	14.00	14.00													
				15.00	15.00													

*BISHWANATH KUMAR DAS*  
M.TECH (GEOTECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample: NIL      No. of Undisturbed sample: NIL      No. of Vane Shear Test : NIL  
No. of Large diameter sample: NIL      No. of CORE: NIL      No. of Water Sample : 01  
No. of SPT: 08

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -59	SHEET NO: -02
DEPTH:	24.27 m	COMPLETED ON: 21.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 20.03.2020	COMPLETED ON: 21.03.2020	CO-ORDINATES: E : 746.863 m N : 1781.682 m	GROUND LEVEL: RL- 100.00 M
WATER TABLE : 0.0 m		LOCATION	COAL STORAGE
			TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
D.I ROCK	ROCK	15.00	15.00		15.00													
			16.00		16.00							SPT	08					
			17.00															
			18.00															
			19.00										CS	01	NIL	NIL		
			20.00															
			21.00															
			22.00											CS	02	NIL	NIL	
			23.00															
			24.00	24.27	24.00		24.27							CS	03	NIL	NIL	
BH TERMINATED AT DEPTH 24.27M																		

*Bishu Kumar Das*  
MTECH (GEOTECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 08	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -60	SHEET NO: -01
DEPTH:	19.40 m	COMPLETED ON: 08.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 06.03.2020	COMPLETED ON: 08.03.2020	CO-ORDINATES: E : 746.925 m N : 1736.335 m	GROUND LEVEL: RL- 100.00 M
WATER TABLE :1.70 m		LOCATION : -COAL STORAGE	TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			1.50								95	SPT	01				
			2.00														
			3.00								>100	SPT	02				
			4.00														
			4.50									>100	SPT	03			
			5.00														
			6.00									>100	SPT	04			
			7.00									>100	SPT	05			
	8.00																
	9.00									>100	SPT	06					
	10.00																
	10.50									>100	SPT	07					
	11.00																
	12.00									>100	SPT	08					
	13.00																
	13.50									>100	SPT	09					
D.I ROCK	ROCK		13.50		13.50												
			14.00														
			15.00														
					15.00							CS	01	NIL	NIL		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 09



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# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -60	SHEET NO: -02
DEPTH:	19.40 m	CO-ORDINATES: E : 746.925 m N : 1736.335 m	GROUND LEVEL: RL- 100.00 M
COMMENCED ON: 06.03.2020	COMPLETED ON: 08.03.2020	LOCATION	COAL STORAGE
WATER TABLE :1.70 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL	
			16.00		16.50							CS	02	NIL	NIL	
			17.00		18.00							CS	03	NIL	NIL	
			19.00	19.40	19.40							CS	04	NIL	NIL	
BH TERMINATED AT DEPTH 19.40M			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

BISHWANATH KUMAR DAS  
MTECH (PSEUDO)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 09	



**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -61	SHEET NO: -01
DEPTH:	18.00 m	CO-ORDINATES: E : 747.132 m N : 1671.397 m	GROUND LEVEL: RL- 100.00 M
COMMENCED ON: 05.03.2020	COMPLETED ON: 06.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 0.25 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			2.00		1.50							>100	SPT	01			
			3.00		3.00							>100	SPT	02			
			4.00		4.50							>100	SPT	03			
			5.00		6.00							>100	SPT	04			
			6.00		7.50							>100	SPT	05			
			7.00		9.00							>100	SPT	06			
			8.00		10.50							>100	SPT	07			
			9.00		12.00							>100	SPT	08			
			10.00		13.00							>100	SPT				
			11.00		15.00							>100	SPT				
		D.I ROCK	ROCK											CS	01	NIL	NIL

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 08




BISHWANATH KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR

**SWAYIN & ASSOCIATES**  
77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -61	SHEET NO: -02
DEPTH:	18.00 m	COMPLETED ON: 06.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 05.03.2020		CO-ORDINATES: E : 747.132 m N : 1671.397 m	GROUND LEVEL: RL- 100.00 M
WATER TABLE : 0.25 m		LOCATION	COAL STORAGE
			TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL	
			17.00		17.00							CS	02	NIL	NIL	
			18.00		18.00							CS	03	NIL	NIL	
BH TERMINATED AT DEPTH 18.00M			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

*Bishwajit Kumar Das*  
MTECH (GEO TECH)  
77 SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 08	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -62	SHEET NO: -01
DEPTH:	16.50 m	CO-ORDINATES: E : 747.126 m N : 1626.314 m	GROUND LEVEL: RL- 99.00 M
COMMENCED ON: 11.03.2020	COMPLETED ON: 12.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 1.65 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC		0.00														
			1.00														
			1.50									98	SPT	01			
			2.00														
			3.00									>100	SPT	02			
			4.00														
			4.50										>100	SPT	03		
			5.00														
D.I ROCK	ROCK		6.00														
			6.00									>100	SPT	04			
			7.00														
			7.50										>100	SPT	05		
			8.00														
			9.00										>100	SPT	06		
			10.00														
			10.50										>100	SPT	07		
			12.00														
			13.00										>100	SPT	08		
			15.00											CS	01	NIL	NIL

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 08

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# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -62	SHEET NO: -02
DEPTH:	16.50 m	COMPLETED ON: 12.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 11.03.2020	COMPLETED ON: 12.03.2020	CO-ORDINATES: E : 747.126 m N : 1626.314 m	GROUND LEVEL: RL- 99.00 M
WATER TABLE :1.65 m		LOCATION	COAL STORAGE
		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK  BH TERMINATED AT DEPTH 18.06M	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL	
			16.50	16.50								CS	02	NIL	NIL	
			17.00													
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

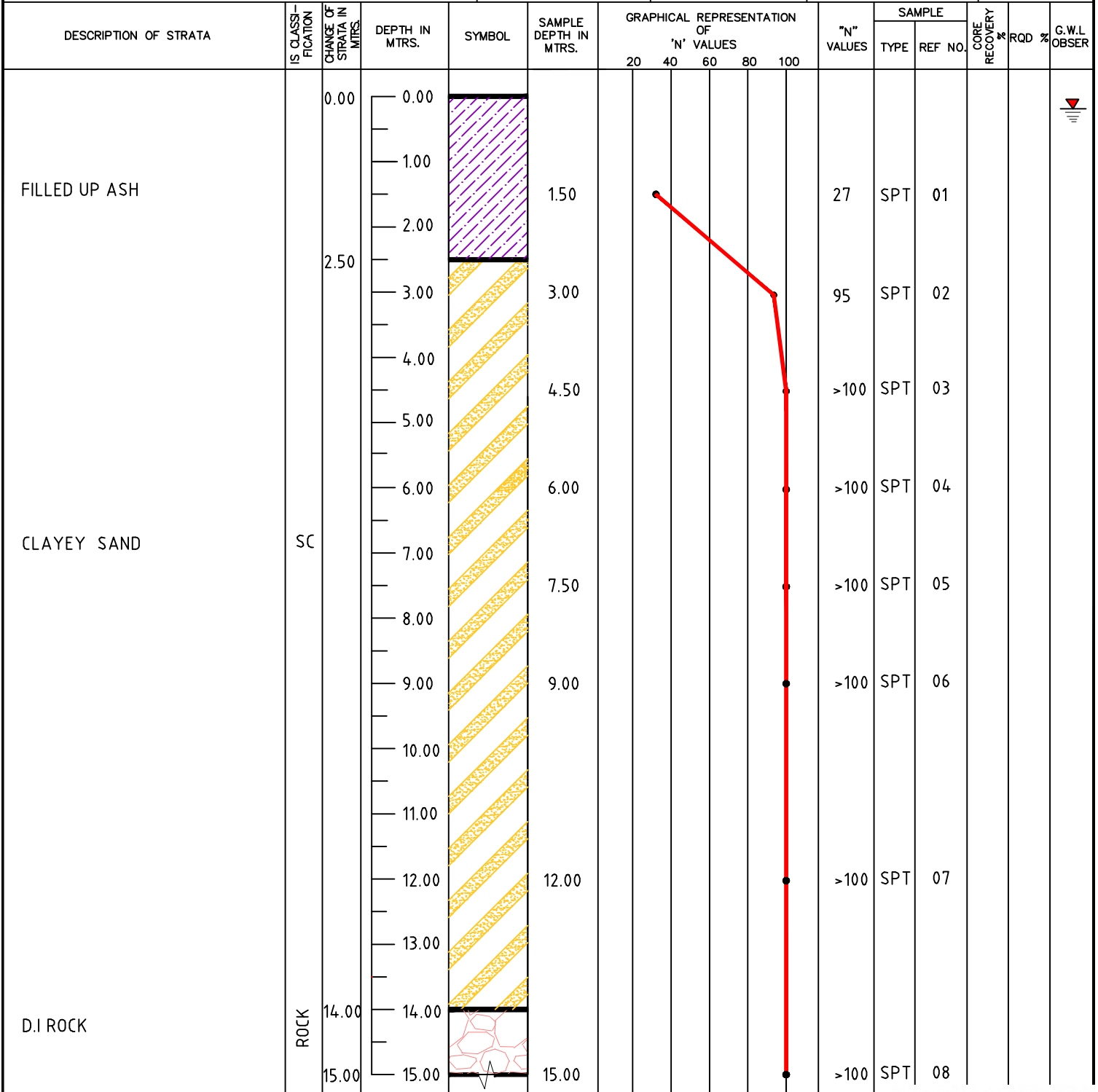
  
BISHWANATH KUMAR DAS.  
M.TECH (GEO TECH)  


LEGEND: -	UDS-UNDISTURBED SAMPLE, ∇-WATER LEVEL	DS- DISTURBED SAMPLE, P-PENETROMETRE TEST,	SPT-STANDARD PENETRATION TEST V- VANE SHEAR TEST	W- WATER SAMPLE, C-CORE RECOVERY
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No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL No. of SPT: 08	No. of Water Sample : 01

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -63	SHEET NO: -01
DEPTH:	18.00 m	CO-ORDINATES: E : 747.187 m N : 1581.149 m	GROUND LEVEL: RL- 100.50 M
COMMENCED ON: 05.03.2020	COMPLETED ON: 06.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 0.30 m			



LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 08

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR



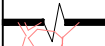



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Web Site : www.swayinassociates.com

## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -63	SHEET NO: -02
DEPTH:	18.00 m	CO-ORDINATES: E : 747.187 m N : 1581.149 m	GROUND LEVEL: RL- 100.50 M
COMMENCED ON: 05.03.2020	COMPLETED ON: 06.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 0.30 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK  BH TERMINATED AT DEPTH 18.00M	ROCK	15.00	15.00		15.00						>100	SPT	08				
			16.00		16.50								CS	01	NIL	NIL	
			17.00		18.00								CS	02	NIL	NIL	
			18.00														
			19.00														
			20.00														
			21.00														
			22.00														
			23.00														
			24.00														
			25.00														
			26.00														
			27.00														
			28.00														
			29.00														
30.00																	

BISHU KUMAR DAS.  
M.TECH (GEOTECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
No. of SPT: 08

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -64	SHEET NO: -01
DEPTH:	18.00 m	COMPLETED ON: 07.03.2020	JOB NO: -TLD/2020-03
COMMMENCED ON: 05.03.2020	COMPLETED ON: 07.03.2020	CO-ORDINATES: E : 666.682 m N : 1581.029 m	GROUND LEVEL: RL- 99.90 M
WATER TABLE :1.20 m		LOCATION : -COAL STORAGE	TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.50								>100	SPT	01				
			3.00									>100	SPT	02			
			4.50									>100	SPT	03			
			6.00									>100	SPT	04			
			7.50									>100	SPT	05			
			9.00									>100	SPT	06			
D.I ROCK	ROCK	9.80	10.00														
			12.00								>100	SPT	07				
			15.00														
			15.00														

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 07

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR




# SWAYIN & ASSOCIATES

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Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -64	SHEET NO: -02
DEPTH:	18.00 m	CO-ORDINATES: E : 666.682 m N : 1581.029 m	GROUND LEVEL: RL- 99.90 M
COMMENCED ON: 05.03.2020	COMPLETED ON: 07.03.2020	LOCATION	COAL STORAGE
WATER TABLE :1.20 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL	
			16.00		16.50							CS	02	NIL	NIL	
			17.00		18.00							CS	03	NIL	NIL	
BH TERMINATED AT DEPTH 18.00M		18.00	18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													



LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
No. of SPT: 07

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -65	SHEET NO: -01
DEPTH:	18.65 m	CO-ORDINATES: E : 666.633 m N : 1626.175 m	GROUND LEVEL: RL- 99.100 M
COMMENCED ON: 04.03.2020	COMPLETED ON: 05.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 0.50 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			2.00			1.50						>100	SPT	01			
			3.00			3.00						>100	SPT	02			
			4.00			4.50						>100	SPT	03			
			5.00			6.00						>100	SPT	04			
			6.00			7.50						>100	SPT	05			
			7.00			9.00						>100	SPT	06			
			8.00			10.50						>100	SPT	07			
			9.00	9.50		12.00							CS	01	NIL	NIL	
D.I ROCK	ROCK		13.00														
			14.00			13.50					>100	SPT	08				
			15.00		15.00							CS	02	NIL	NIL		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 08

BISHWANATH KUMAR DAS.  
 MTECH (GEO TECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES

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Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -65	SHEET NO: -02
DEPTH:	18.65 m	CO-ORDINATES: E : 666.633 m N : 1626.175 m	GROUND LEVEL: RL- 99.100 M
COMMENCED ON: 04.03.2020	COMPLETED ON: 05.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 0.50 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
			16.00		16.50							CS	03	NIL	NIL	
			17.00		18.65							CS	04	NIL	NIL	
			18.00													
BH TERMINATED AT DEPTH 18.65 M		18.65	19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

BISHWANATH KUMAR DAS  
M.TECH (P&EC) (IIT, SATYANAGAR)

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 08	



NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -66	SHEET NO: -01
DEPTH:	19.25 m	CO-ORDINATES: E : 666.636 m N : 1671.213 m	GROUND LEVEL: RL- 100.00 M
COMMENCED ON: 07.03.2020	COMPLETED ON: 08.03.2020	LOCATION : -COAL STORAGE	TYPE : - B
WATER TABLE : 2.00 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			1.50								79	SPT	01				
			2.00														
			3.00								>100	SPT	02				
			4.00														
			4.50								>100	SPT	03				
			5.00														
			6.00								>100	SPT	04				
			7.00								>100	SPT	05				
D.I ROCK	ROCK	10.00	10.00														
			10.50							>100	SPT	07					
			12.00									CS	01	NIL	NIL		
			13.00														
			13.50								>100	SPT	08				
			14.00														
			15.00														
			15.00									CS	02	NIL	NIL		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 08

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR

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# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -66	SHEET NO: -02
DEPTH:	19.25 m	COMPLETED ON: 08.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 07.03.2020	COMPLETED ON: 08.03.2020	CO-ORDINATES: E : 666.636 m N : 1671.213 m	GROUND LEVEL: RL- 100.00 M
WATER TABLE : 2.00 m		LOCATION	COAL STORAGE
			TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
			16.00		16.50							CS	03	NIL	NIL	
			17.00		17.00							CS	04	NIL	NIL	
			18.00		19.00											
BH TERMINATED AT DEPTH 19.25 M		19.25	19.25		19.25											
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

Bishal Kumar Das  
M.TECH (GEOTECH)  
SWAYIN & ASSOCIATES  
77, SATYANAGAR

LEGEND: -	UDS-UNDISTURBED SAMPLE, ∇-WATER LEVEL	DS- DISTURBED SAMPLE, P-PENETROMETRE TEST,	SPT-STANDARD PENETRATION TEST V- VANE SHEAR TEST	W- WATER SAMPLE, C-CORE RECOVERY
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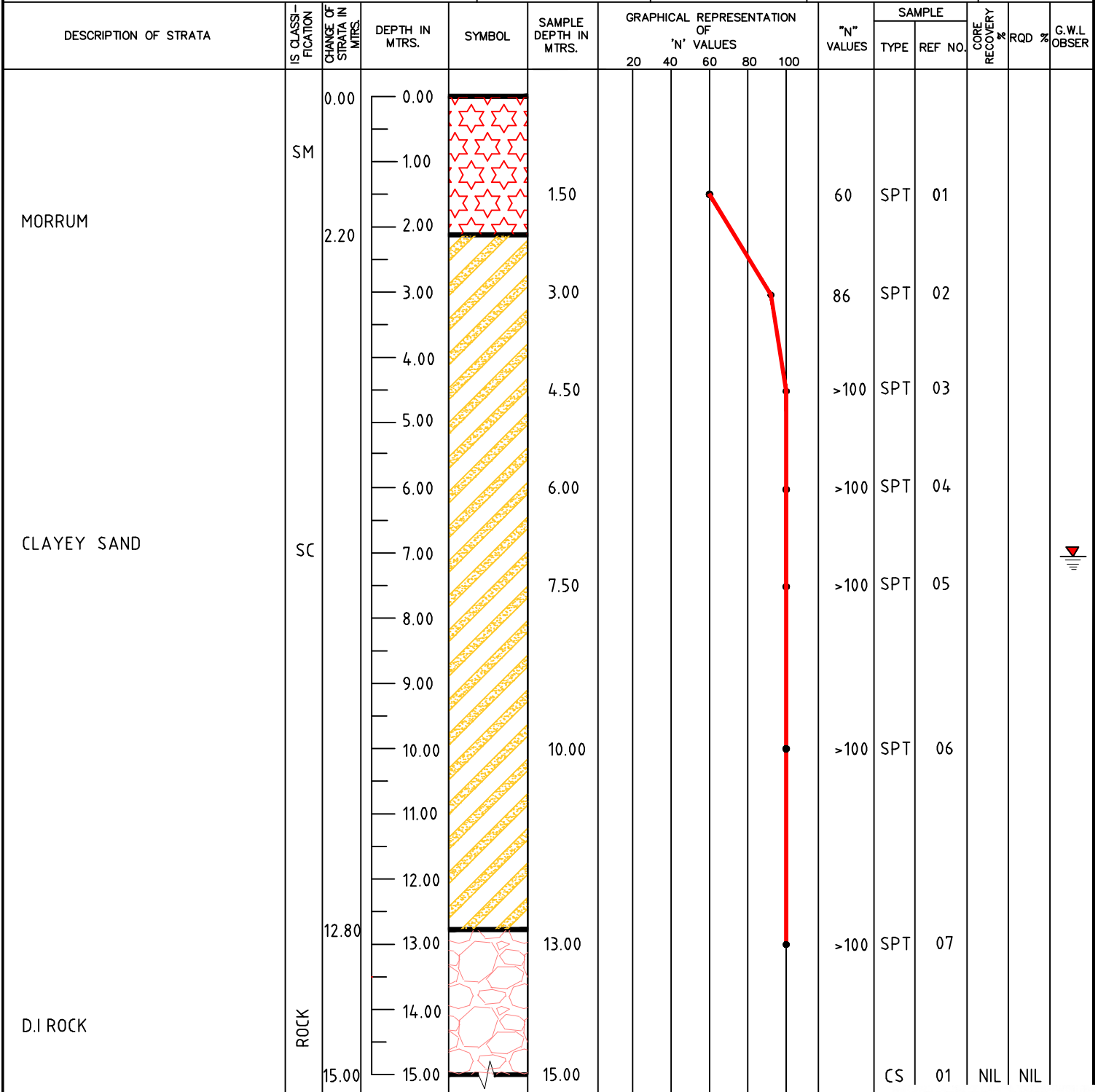
No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 08	

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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -67	SHEET NO: -01
DEPTH: 21.00 m	CO-ORDINATES: E : 567.838 m N : 1580.973 m	GROUND LEVEL: RL- 105.00 M
COMMENCED ON: 12.03.2020	COMPLETED ON: 14.03.2020	LOCATION : -COAL STORAGE
WATER TABLE : 7.15 m		TYPE : - B



LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▬-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 07

BISHWANATH KUMAR DAS.  
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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -67	SHEET NO: -02
DEPTH:	21.00 m	COMPLETED ON: 14.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 12.03.2020	COMPLETED ON: 14.03.2020	CO-ORDINATES: E : 567.838 m N : 1580.973 m	GROUND LEVEL: RL- 105.00 M
WATER TABLE : 7.15 m		LOCATION	COAL STORAGE
			TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL			
			16.00															
			17.00															
			18.00				17.85							CS	02	NIL	NIL	
			19.00				19.00							CS	03	NIL	NIL	
			20.00															
			21.00		21.00	21.00												
			22.00															
			23.00															
			24.00															
BH TERMINATED AT DEPTH 23.00M																		

*Bishu Kumar Das*  
MTECH (P&E) (TECH)  
77, SATYANAGAR

LEGEND: -

UDS-UNDISTURBED SAMPLE,	DS- DISTURBED SAMPLE,	SPT-STANDARD PENETRATION TEST	W- WATER SAMPLE,
∇-WATER LEVEL	P-PENETROMETRE TEST,	V- VANE SHEAR TEST	C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 07	

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -68	SHEET NO: -01
DEPTH:	17.35 m	CO-ORDINATES: E : 567.777 m N : 1626.175 m	GROUND LEVEL: RL- 105.00M
COMMENCED ON: 12.03.2020	COMPLETED ON: 14.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 7.00 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
STIFF CLAY	CI	1.00	1.00													
MORRUM	SM	1.60	2.00		1.50					81	SPT	01				
CLAYEY SAND	SC	2.20	3.00		3.00					>100	SPT	02				
		4.00	4.50		4.50					>100	SPT	03				
		5.00	6.00		6.00					>100	SPT	04				
		7.00	7.50		7.50					>100	SPT	05				
		8.00	9.00		9.00					>100	SPT	06				
		10.00	10.50		10.50					>100	SPT	07				
		11.00	12.00		12.00					>100	SPT	08				
		12.50	13.00		13.00											
D.I ROCK	ROCK	13.00	13.50		13.50						CS	01	NIL	NIL		
		14.00	15.00		15.00							CS	02	NIL	NIL	

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▬-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 08

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR

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## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -68	SHEET NO: -02
DEPTH:	17.35 m	CO-ORDINATES: E : 567.777 m N : 1626.175 m	GROUND LEVEL: RL- 105.00 M
COMMENCED ON: 12.03.2020	COMPLETED ON: 14.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 7.00 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METERS	DEPTH IN METERS.	SYMBOL	SAMPLE DEPTH IN METERS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
			16.00		16.50							CS	03	NIL	NIL	
BH TERMINATED AT DEPTH 17.35M		17.35	17.00		17.35											
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

  
BISHU KUMAR DAS.  
MTECH (GEOTECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 08	



**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -69	SHEET NO: -01
DEPTH: 17.09 m	CO-ORDINATES: E : 567.727 m N : 1671.010 m	GROUND LEVEL: RL- 104.400 M
COMMENCED ON: 13.03.2020	COMPLETED ON: 14.03.2020	LOCATION : -COAL STORAGE TYPE : - D
WATER TABLE : 6.00 m		

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			1.50								81	SPT	01				
			2.00														
			3.00								>100	SPT	02				
			4.00														
			4.50								>100	SPT	03				
			5.00														
			6.00								>100	SPT	04				
			7.00														
			7.50								>100	SPT	05				
			8.00														
			9.00								>100	SPT	06				
	10.00																
	10.50								>100	SPT	07						
	11.00																
	12.00								>100	SPT	08						
D.I ROCK	ROCK	13.00	13.00														
			13.50									CS	01	NIL	NIL		
			14.00														
	15.00		15.00														

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAI, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECO

No. of disturbed sample: NIL  
No. of Large diameter sample: NIL  
No. of Undisturbed sample: NIL  
No. of CORE: NIL  
No. of SPT: 08  
No. of Vane Shear Test : NIL  
No. of Water Sample : 01

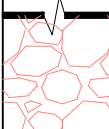
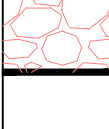



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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -69	SHEET NO: -02
DEPTH:	17.09 m	COMPLETED ON: 14.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 13.03.2020	COMPLETED ON: 14.03.2020	CO-ORDINATES: E : 567.727 m N : 1671.010 m	GROUND LEVEL: RL- 104.400 M
WATER TABLE : 6.00 m		LOCATION	COAL STORAGE
			TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
			16.50		16.50								CS	03	NIL	NIL
BH TERMINATED AT DEPTH 17.09M		17.09	17.00		17.09											
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

  
BISHWANATH KUMAR DAS.  
M.TECH (GEOTECH)  
SWAYIN & ASSOCIATES

LEGEND: -	UDS-UNDISTURBED SAMPLE, ∇-WATER LEVEL	DS- DISTURBED SAMPLE, P-PENETROMETRE TEST,	SPT-STANDARD PENETRATION TEST V- VANE SHEAR TEST	W- WATER SAMPLE, C-CORE RECOVERY
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No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL No. of SPT: 08	No. of Water Sample : 01

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -70	SHEET NO: -01
DEPTH:	18.45 m	CO-ORDINATES: E : 517.741 m N : 1671.010 m	GROUND LEVEL: RL- 105.00 M
COMMENCED ON: 14.03.2020	COMPLETED ON: 15.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 6.00 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
			1.00													
			2.00		1.50						61	SPT	01			
			3.00		3.00						63	SPT	02			
			4.00		4.50						>100	SPT	03			
			5.00		6.00						>100	SPT	04			
CLAYEY SAND	SC		6.00		7.50						>100	SPT	05			
			7.00		10.00						>100	SPT	06			
			8.00													
			9.00													
			10.00													
			11.00													
			12.00		13.00							CS	01	NIL	NIL	
D.I ROCK	ROCK		13.00													
			14.00													
			15.00		15.00											

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 06

BISHU KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -70	SHEET NO: -02
DEPTH:	18.45 m	CO-ORDINATES: E : 517.741 m N : 1671.010 m	GROUND LEVEL: RL- 105.00 M
COMMENCED ON: 14.03.2020	COMPLETED ON: 15.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 6.00 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00											
			16.00	16.50							CS	02	NIL	NIL		
BH TERMINATED AT DEPTH 18.45M	ROCK	18.45	17.00		17.00											
			18.00	18.45							CS	03	NIL	NIL		
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

  
 BISHWANATH KUMAR DAS  
 M.TECH (GEO TECH)  


LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

**SWAYIN & ASSOCIATES**  
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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -71	SHEET NO: -01
DEPTH:	23.09 m	CO-ORDINATES: E : 468.816 m N : 1580.818 m	GROUND LEVEL: RL- 106.00 M
COMMENCED ON: 16.03.2020	COMPLETED ON: 17.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 3.95m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
		1.60	1.50		1.50					70	SPT	01				
			3.00		3.00					>100	SPT	02				
			4.50		4.50					>100	SPT	03				
			6.00		6.00					>100	SPT	04				
			7.50		7.50					>100	SPT	05				
			10.00		10.00					>100	SPT	06				
CLAYEY SAND	SC	10.50	10.50													
			11.00													
			13.00		13.00						CS	01	NIL	NIL		
			14.00													
D.I ROCK	ROCK	15.00	15.00		15.00						CS	02	NIL	NIL		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 06

BISHWANATH KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -71	SHEET NO: -02
DEPTH:	23.09 m	CO-ORDINATES: E : 468.816 m N : 1580.818 m	GROUND LEVEL: RL- 106.00 M
COMMMENCED ON: 16.03.2020	COMPLETED ON: 17.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 3.95m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL		
			16.00														
			17.00										CS	03	NIL	NIL	
			18.00														
			19.00										CS	04	NIL	NIL	
			20.00														
			21.00														
			22.00										CS	05	NIL	NIL	
			23.00														
			23.09		23.09		23.09						CS	06	NIL	NIL	
					24.00												
					25.00												
			26.00														
			27.00														
			28.00														
			29.00														
			30.00														

BH TERMINATED AT DEPTH 23.09M

BISHAL KUMAR DAS.  
MTECH (P&OTECH)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY



No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
No. of SPT: 06



**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -72	SHEET NO: -01
DEPTH: 17.95 m	CO-ORDINATES: E : 468.844 m N : 1625.972 m	GROUND LEVEL: RL- 106.00 M
COMMENCED ON: 14.03.2020	COMPLETED ON: 15.03.2020	LOCATION : -COAL STORAGE TYPE : - D
WATER TABLE : 7.30 m		

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			2.00									64	SPT	01			
			3.00									>100	SPT	02			
			4.00														
			4.50									>100	SPT	03			
			5.00														
			6.00									>100	SPT	04			
			7.00									>100	SPT	05			
			8.00														
			9.00														
			10.00									>100	SPT	06			
		D.I ROCK	ROCK	13.00	13.00												
	14.00																
	15.00																

BISHAL KUMAR DAS.  
MTECH (GEO) (I.I.T. KANPUR)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

# SWAYIN & ASSOCIATES

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# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -72	SHEET NO: -02
DEPTH:	17.95 m	CO-ORDINATES: E : 468.844 m N : 1625.972 m	GROUND LEVEL: RL- 106.00 M
COMMENCED ON: 14.03.2020	COMPLETED ON: 15.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 7.30 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00											
			15.50									CS	02	NIL	NIL	
BH TERMINATED AT DEPTH 17.95M	ROCK	17.95	17.95		17.95											
			18.00									CS	03	NIL	NIL	
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

BISHWANATH KUMAR DAS  
M.TECH (GEO TECH)  
SWAYIN & ASSOCIATES  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -73	SHEET NO: -01
DEPTH:	23.09 m	COMPLETED ON: 16.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 15.03.2020	COMPLETED ON: 16.03.2020	CO-ORDINATES: E : 468.772 m N : 1671.010 m	GROUND LEVEL: RL- 105.00 M
WATER TABLE : 3.90 m		LOCATION : -COAL STORAGE TYPE : - B	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
CLAYEY SAND	SC	0.00	0.00															
			1.00															
			2.00		1.50						88	SPT	01					
			3.00		3.00						>100	SPT	02					
			4.00		4.50						>100	SPT	03					
			5.00		6.00						>100	SPT	04					
			6.00		7.50						>100	SPT	05					
			7.00		9.10													
		D.I ROCK	ROCK	9.00	9.00													
					10.00	10.00								CS	01	NIL	NIL	
	11.00																	
	12.00				13.00								CS	02	12	NIL		
	13.00				15.00													

BISHWANATH KUMAR DAS.  
MTECH (GEOTECH)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 05	No. of Water Sample : 01
	No. of SPT: 05	

# SWAYIN & ASSOCIATES

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Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -73	SHEET NO: -02
DEPTH:	23.09 m	COMPLETED ON: 16.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 15.03.2020	COMPLETED ON: 16.03.2020	CO-ORDINATES: E : 468.772 m N : 1671.010 m	GROUND LEVEL: RL- 105.00 M
WATER TABLE : 3.90 m		LOCATION : -COAL STORAGE	TYPE : - B

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK	ROCK	15.00	15.00		15.00												
			16.00		16.00	CS	03	20	NIL								
			17.00														
			18.00														
			19.00				19.00	CS	04	22	NIL						
			20.00														
			21.00				21.00	CS	05	20	NIL						
			22.00														
			23.00		23.09		23.09	CS	06	24	NIL						
			24.00														
			25.00														
			26.00														
			27.00														
28.00																	
29.00																	
30.00																	

BISHWANATH KUMAR DAS.  
MTECH (GEOTECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 05	No. of Water Sample : 01
	No. of SPT: 05	

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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -74	SHEET NO: -01
DEPTH:	18.98 m	CO-ORDINATES: E : 666.496 m N : 1736.244 m	GROUND LEVEL: RL- 106.00 M
COMMMENCED ON: 06.03.2020	COMPLETED ON: 07.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 5.10 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
			1.00													
			2.00		1.50					68	SPT	01				
			3.00		3.00					>100	SPT	02				
			4.00													
			5.00		4.50					>100	SPT	03				
			6.00		6.00					>100	SPT	04				
CLAYEY SAND	SC	7.00	7.00													
			8.00													
			9.00		7.50					>100	SPT	05				
			10.00													
			11.00		9.00					>100	SPT	06				
			12.00		10.50					>100	SPT	07				
			13.00													
			14.00		12.00					>100	SPT	08				
D.I ROCK	ROCK	12.30	12.00													
			13.00													
			14.00													
			15.00		15.00						CS	01	NIL	NIL		

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAI,  $\nabla$ -WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
No. of SPT: 08

BISHWANATH KUMAR DAS.  
MTECH (GEOTECH)  
77, SATYANAGAR







# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -74	SHEET NO: -02
DEPTH:	18.98 m	CO-ORDINATES: E : 666.496 m N : 1736.244 m	GROUND LEVEL: RL- 106.00 M
COMMENCED ON: 06.03.2020	COMPLETED ON: 07.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 5.10 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL		
			16.00														
			17.00														
BH TERMINATED AT DEPTH 18.98M	ROCK	18.98	18.00		18.00							CS	02	NIL	NIL		
			19.00		18.98												
			20.00														
			21.00														
			22.00														
			23.00														
			24.00														
			25.00														
			26.00														
			27.00														
			28.00														
			29.00														
			30.00														

  
BISHAL KUMAR DAS.  
MTECH (METEOROLOGICAL)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
No. of SPT: 08

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -75	SHEET NO: -01
DEPTH:	17.95 m	CO-ORDINATES: E : 581.059 m N : 1736.146 m	GROUND LEVEL: RL- 106.00 M
COMMMENCED ON: 13.03.2020	COMPLETED ON: 14.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 6.20 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00		1.50						95	SPT	01			
CLAYEY SAND	SC	2.00	2.00		3.00						>100	SPT	02			
		4.00	4.50		4.50						>100	SPT	03			
		6.00	6.00		6.00						>100	SPT	04			
		7.00	7.50		7.50						>100	SPT	05			
		8.00	9.00		9.00						>100	SPT	06			
		10.00	10.50		10.50						>100	SPT	07			
		11.00	12.00		12.00						>100	SPT	08			
		12.00	13.50		13.50						>100	SPT	09			
D.I ROCK	ROCK	13.50	14.00		15.00							CS	01	NIL	NIL	

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 09

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR



# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -75	SHEET NO: -02
DEPTH:	17.95 m	CO-ORDINATES: E : 581.059 m N : 1736.146 m	GROUND LEVEL: RL- 106.00 M
COMMMENCED ON: 13.03.2020	COMPLETED ON: 14.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 6.20 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK	ROCK	15.00	15.00		15.00							CS	01	NIL	NIL		
			16.00														
			17.00														
BH TERMINATED AT DEPTH 17.95 M	ROCK	17.95	17.95		17.95							CS	03	NIL	NIL		
			18.00														
			19.00														
			20.00														
			21.00														
			22.00														
			23.00														
			24.00														
			25.00														
			26.00														
			27.00														
			28.00														
			29.00														
30.00																	

BISHAL KUMAR DAS  
M.TECH (GEO TECH)  
SWAYIN & ASSOCIATES

LEGEND: -	UDS-UNDISTURBED SAMPLE, ∇-WATER LEVEL	DS- DISTURBED SAMPLE, P-PENETROMETRE TEST,	SPT-STANDARD PENETRATION TEST V- VANE SHEAR TEST	W- WATER SAMPLE, C-CORE RECOVERY
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No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL No. of SPT: 09	No. of Water Sample : 01

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -76	SHEET NO: -01
DEPTH:	21.45 m	CO-ORDINATES: E : 581.069 m N : 1703.705 m	GROUND LEVEL: RL- 102.00 M
COMMENCED ON: 11.03.2020	COMPLETED ON: 12.03.2020	LOCATION : -COAL STORAGE	TYPE : - B
WATER TABLE : 6.15 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
CLAYEY SAND	SC	0.00	0.00															
			1.00															
			2.00		1.50		81	SPT	01									
			3.00		3.00		>100	SPT	02									
			4.00		4.50		>100	SPT	03									
			5.00		6.00		>100	SPT	04									
			6.00		7.50		>100	SPT	05									
			8.00		10.00		>100	SPT	06									
			9.00		12.00													
		D.I ROCK	ROCK	12.00	12.00													
					13.00	13.00												
	14.00			15.00														

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 06



# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -76	SHEET NO: -02
DEPTH:	21.45 m	CO-ORDINATES: E : 581.069 m N : 1703.705 m	GROUND LEVEL: RL- 102.00 M
COMMENCED ON: 11.03.2020	COMPLETED ON: 12.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 6.15 m		TYPE : - B	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL		
			16.00														
			17.00			17.00							CS	03	NIL	NIL	
			18.00														
			19.00			19.00							CS	04	NIL	NIL	
			20.00														
			21.00														
			21.45				21.45						CS	05	NIL	NIL	

BH TERMINATED AT DEPTH 21.45M

*Bishal Kumar Das*  
MTECH (P&OT) (E.C.E.)  
TAL SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

**SWAYIN & ASSOCIATES**  
77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -77	SHEET NO: -01
DEPTH:	18.09 m	CO-ORDINATES: E : 525.783 m N : 1720.186 m	GROUND LEVEL: RL- 105.00 M
COMMENCED ON: 13.03.2020	COMPLETED ON: 14.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 6.50 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
MORRUM	SM	0.00	0.00													
		1.80	1.50		1.50						63	SPT	01			
			3.00		3.00						72	SPT	02			
			4.50		4.50						>100	SPT	03			
			6.00		6.00						>100	SPT	04			
			7.50		7.50						>100	SPT	05			
			10.00		10.00						>100	SPT	06			
			12.70													
			13.00		13.00							CS	01	NIL	NIL	
			14.00													
			15.00		15.00							CS	02	NIL	NIL	

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 06

BISHWANATH KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR

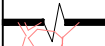



# SWAYIN & ASSOCIATES


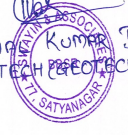
77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -77	SHEET NO: -02
DEPTH:	18.09 m	CO-ORDINATES: E : 525.783 m N : 1720.186 m	GROUND LEVEL: RL- 105.00 M
COMMMENCED ON: 13.03.2020	COMPLETED ON: 14.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 6.50 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
			16.00		16.50							CS	03	NIL	NIL	
			17.00		18.09	18.09							CS	04	NIL	NIL
BH TERMINATED AT DEPTH 18.09M			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

  
BISHU KUMAR DAS.  
MTECH (P&OTECH)  


LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 06

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -78	SHEET NO: -01
DEPTH:	20.81 m	CO-ORDINATES: E : 489.311 m N : 1736.150 m	GROUND LEVEL: RL- 105.00 M
COMMMENCED ON: 08.03.2020	COMPLETED ON: 09.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 3.60 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND	SC	0.00	0.00													
MORRUM	SM	1.00	1.00		1.50						53	SPT	01			
		2.00	2.00													
		3.00	3.00		3.00						87	SPT	02			
		4.00	4.00													
		5.00	5.00		4.50						>100	SPT	03			
		6.00	6.00													
CLAYEY SAND	SC	6.00	6.00		6.00						>100	SPT	04			
		7.00	7.00													
		8.00	8.00		7.50						>100	SPT	05			
		9.00	9.00													
		9.00	9.00		9.00							CS	01	NIL	NIL	
		10.00	10.00													
		11.00	11.00		10.50							CS	02	NIL	NIL	
		12.00	12.00													
		13.00	13.00		12.00							CS	03	NIL	NIL	
		14.00	14.00													
		15.00	15.00		15.00							CS	04	NIL	NIL	

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 03 No. of Water Sample : 01  
 No. of SPT: 05

BISHWANATH KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR








# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -78	SHEET NO: -02
DEPTH:	20.81 m	CO-ORDINATES: E : 489.311 m N : 1736.150 m	GROUND LEVEL: RL- 105.00 M
COMMENCED ON: 08.03.2020	COMPLETED ON: 09.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 3.60 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER			
						20	40	60	80	100		TYPE	REF NO.						
D.I ROCK	ROCK	15.00	15.00		15.00							CS	04	NIL	NIL				
			16.00																
			17.00																
			18.00			18.00								CS	05	18	NIL		
			19.00																
			20.00			19.50									CS	06	22	NIL	
			20.81			20.81									CS	07	26	NIL	
BH TERMINATED AT DEPTH 20.81M			21.00																
			22.00																
			23.00																
			24.00																
			25.00																
			26.00																
			27.00																
			28.00																
			29.00																
			30.00																

*Bishwajit Kumar Das*  
MTECH (GEO TECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 03	No. of Water Sample : 01
	No. of SPT: 05	



NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -79	SHEET NO: -01
DEPTH:	22.09 m	COMPLETED ON: 09.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 08.03.2020	COMPLETED ON: 09.03.2020	CO-ORDINATES: E : 453.835 m N : 1707.278 m	GROUND LEVEL: RL- 105.00 M
WATER TABLE : 4.25 m		LOCATION : -COAL STORAGE	TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
CLAYEY SAND	SC	0.00	0.00													
MORRUM	SM	1.00	1.00		1.50						53	SPT	01			
		2.00	2.00													
		3.00	3.00		3.00						87	SPT	02			
		4.00	4.00													
CLAYEY SAND	SC	5.00	4.50		4.50						>100	SPT	03			
		6.00	6.00		6.00						>100	SPT	04			
		7.00	7.00													
		8.00	8.00													
D.I ROCK	ROCK	9.00	9.00		9.00							CS	01	NIL	NIL	
		10.00	10.00		10.50							CS	02	NIL	NIL	
		11.00	11.00		12.00							CS	03	25	NIL	
		12.00	12.00		13.50							CS	04	28	NIL	
		13.00	13.00													
		14.00	14.00													
		15.00	15.00		15.00							CS	05	26	NIL	

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL  
 No. of Large diameter sample: NIL

No. of Undisturbed sample: NIL  
 No. of CORE: 08  
 No. of SPT: 04

No. of Vane Shear Test : NIL  
 No. of Water Sample : 01

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -79	SHEET NO: -02
DEPTH:	22.09 m	CO-ORDINATES: E : 453.835 m N : 1707.278 m	GROUND LEVEL: RL- 105.00 M
COMMMENCED ON: 08.03.2020	COMPLETED ON: 09.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 4.25 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	05	26	NIL	
			16.00		16.50							CS	06	30	NIL	
			17.00		18.00							CS	07	36	NIL	
			18.00		19.50							CS	08	34	NIL	
			19.00		21.00							CS	09	35	NIL	
			20.00		22.09							CS	10	31	NIL	
			21.00													
			22.00													
			23.00													
			24.00													

BH TERMINATED AT DEPTH 22.09M

BISHWANATH KUMAR DAS  
MTECH (P&OT&ECH)  
SWAYIN & ASSOCIATES

LEGEND: -

UDS-UNDISTURBED SAMPLE,	DS- DISTURBED SAMPLE,	SPT-STANDARD PENETRATION TEST	W- WATER SAMPLE,
∇-WATER LEVEL	P-PENETROMETRE TEST,	V- VANE SHEAR TEST	C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 08	No. of Water Sample : 01
	No. of SPT: 04	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -80	SHEET NO: -01
DEPTH: 21.10 m	CO-ORDINATES: E : 420.949 m N : 1679.987 m	GROUND LEVEL: RL- 105.00 M
COMMENCED ON: 08.03.2020	COMPLETED ON: 09.03.2020	LOCATION : -COAL STORAGE TYPE : - D
WATER TABLE : 5.84 m		

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC		0.00														
			1.00														
			1.50								85	SPT	01				
			2.00														
			3.00														
D.I ROCK	ROCK		4.00		4.50												
			5.00														
			6.00														
			6.00														
			7.00														
			7.50														
			8.00														
			9.00														
			10.00														
			10.50														
			11.00		12.00												
			12.00														
			12.60														
			13.00														
			13.50														
			14.00		14.00												
			15.00		15.00												

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 03 No. of Water Sample : 01  
 No. of SPT: 05










# SWAYIN & ASSOCIATES


77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -80	SHEET NO: -02
DEPTH:	21.10 m	COMPLETED ON: 09.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 08.03.2020	COMPLETED ON: 09.03.2020	CO-ORDINATES: E : 420.949 m N : 1679.987 m	GROUND LEVEL: RL- 105.00 M
WATER TABLE : 5.84 m		LOCATION : -COAL STORAGE	TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					"N" VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	05	NIL	NIL	
			16.00		16.50							CS	06	NIL	NIL	
			17.00		18.00							CS	07	NIL	NIL	
			18.00		19.50							CS	08	20	NIL	
			19.00		21.00							CS	09	18	NIL	
			20.00		21.10							CS	10	15	NIL	
			21.00													
			22.00													
			23.00													
			24.00													
25.00																
26.00																
27.00																
28.00																
29.00																
30.00																

  
BISHWANATH KUMAR DAS.  
MTECH (GEOTECH)  
SWAYIN & ASSOCIATES  
77, SATYANAGAR, BHUBANESWAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 03	No. of Water Sample : 01
	No. of SPT: 05	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -81	SHEET NO: -01
DEPTH:	19.85 m	CO-ORDINATES: E : 392.101 m N : 1658.403 m	GROUND LEVEL: RL- 105.10 M
COMMENCED ON: 17.03.2020	COMPLETED ON: 18.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 4.16 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			1.50								84	SPT	01				
			2.00														
			3.00								94	SPT	02				
			4.00														
			4.50								>100	SPT	03				
			5.00														
			6.00								>100	SPT	04				
			7.00														
D.I ROCK	ROCK	9.00	9.00														
			10.00														
			10.50														
			11.00														
			12.00														
			13.00														
			13.50														
			14.00														
	15.00																

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 03 No. of Water Sample : 01  
 No. of SPT: 05

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES

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Web Site : www.swayinassociates.com

## BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -81	SHEET NO: -02
DEPTH:	19.85 m	CO-ORDINATES: E : 392.101 m N : 1658.403 m	GROUND LEVEL: RL- 105.10M
COMMENCED ON: 17.03.2020	COMPLETED ON: 18.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 4.16 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
D.I ROCK  BH TERMINATED AT DEPTH 19.85M	ROCK	15.00	15.00		15.00							CS	05	NIL	NIL		
			16.00		16.50							CS	06	25	NIL		
			17.00		18.00							CS	07	31	NIL		
			18.00		19.00												
			19.00		19.85	19.85							CS	08	42	NIL	
			20.00														
			21.00														
			22.00														
			23.00														
			24.00														

*Bishu Kumar Das*  
M.TECH (GEO TECH)  
SWAYIN & ASSOCIATES  
77, SATYANAGAR

LEGEND: -  
 UDS-UNDISTURBED SAMPLE,      DS- DISTURBED SAMPLE,      SPT-STANDARD PENETRATION TEST      W- WATER SAMPLE,  
 ∇-WATER LEVEL      P-PENETROMETRE TEST,      V- VANE SHEAR TEST      C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 03	No. of Water Sample : 01
	No. of SPT: 05	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -82	SHEET NO: -01
DEPTH:	18.30 m	CO-ORDINATES: E : 402.831 m N : 1625.808 m	GROUND LEVEL: RL- 104.00 M
COMMENCED ON: 16.03.2020	COMPLETED ON: 17.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 4.20 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC		0.00														
			1.00														
			1.50								77	SPT	01				
			2.00														
			3.00								90	SPT	02				
			4.50								>100	SPT	03				
			6.00								>100	SPT	04				
			7.50								>100	SPT	05				
D.I ROCK	ROCK		8.50														
			9.00														
			9.00														
			10.50														
			12.60														
			13.50														
			15.00														

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: 02 No. of Water Sample : 01  
 No. of SPT: 05

BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 77, SATYANAGAR



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Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -82	SHEET NO: -02
DEPTH:	18.30 m	CO-ORDINATES: E : 402.831 m N : 1625.808 m	GROUND LEVEL: RL- 104.00 M
COMMENCED ON: 16.03.2020	COMPLETED ON: 17.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 4.20 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	18.30	15.00		15.00							CS	05	10	NIL	
			16.00		16.5							CS	06	15	NIL	
			17.00		18.00							CS	07	21	NIL	
			18.00		18.30							CS	08	NIL	NIL	
BH TERMINATED AT DEPTH 18.30M																
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

BISHO KUMAR DAS.  
MTECH (P&OTECH)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: 02	No. of Water Sample : 01
	No. of SPT: 05	

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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -83	SHEET NO: -01
DEPTH: 18.77 m	CO-ORDINATES: E : 352.799 m N : 1625.746 m	GROUND LEVEL: RL- 106.070 M
COMMENCED ON: 17.03.2020	COMPLETED ON: 19.03.2020	LOCATION : -COAL STORAGE TYPE : - D
WATER TABLE : 3.45 m		

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			2.00									78	SPT	01			
			3.00									>100	SPT	02			
			4.00									>100	SPT	03			
			5.00									>100	SPT	04			
			6.00									>100	SPT	04			
			7.00									>100	SPT	05			
			8.00									>100	SPT	05			
			9.00									>100	SPT	06			
			10.00									>100	SPT	06			
D.I ROCK	ROCK	11.00	11.00														
			12.00														
			13.00														
			14.00														
			15.00														

BISHWANATH KUMAR DAS  
M.TECH (GEO TECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -83	SHEET NO: -02
DEPTH:	18.77 m	CO-ORDINATES: E : 352.799 m N : 1625.746 m	GROUND LEVEL: RL- 106.070 M
COMMMENCED ON: 17.03.2020	COMPLETED ON: 19.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 3.45 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
		18.77	18.77		18.77							CS	03	NIL	NIL	
BH TERMINATED AT DEPTH 18.77M																

*Bishu Kumar Das*  
MTECH (GEOTECH)  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,   
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -84	SHEET NO: -01
DEPTH:	18.90 m	CO-ORDINATES: E : 352.797 m N : 1560.709 m	GROUND LEVEL: RL- 105.200 M
COMMENCED ON: 17.03.2020	COMPLETED ON: 18.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 3.89 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC	0.00	0.00														
			1.00														
			1.50								65	SPT	01				
			2.00														
			3.00								>100	SPT	02				
			4.00														
			4.50								>100	SPT	03				
			5.00														
			6.00								>100	SPT	04				
			7.00								>100	SPT	05				
			8.00														
D.I ROCK	ROCK	11.50															
			12.00														
			13.00														
			14.00														
			15.00														

BISHWANATH KUMAR DAS.  
MTECH (GEO TECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY





No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

**SWAYIN & ASSOCIATES**  
77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -84	SHEET NO: -02
DEPTH:	18.90 m	CO-ORDINATES: E : 352.797 m N : 1560.709 m	GROUND LEVEL: RL- 105.200 M
COMMENCED ON: 17.03.2020	COMPLETED ON: 18.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 3.89 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00											
			16.00		16.00						CS	02	NIL	NIL		
BH TERMINATED AT DEPTH 18.90M	ROCK	18.90	18.90		18.90											
			19.00		19.00						CS	03	NIL	NIL		
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

  
BISHWANATH KUMAR DAS.  
MTECH (GEOTECH)  
T.L. SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -85	SHEET NO: -01
DEPTH:	19.10 m	CO-ORDINATES: E : 352.799 m N : 1495.769 m	GROUND LEVEL: RL- 103.700 M
COMMENCED ON: 17.03.2020	COMPLETED ON: 18.03.2020	LOCATION : -COAL STORAGE	TYPE : - B
WATER TABLE : 2.60 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC		0.00														
			1.00														
			1.50								78	SPT	01				
			2.00														
			3.00								>100	SPT	02				
			4.00														
			4.50								>100	SPT	03				
			5.00														
			6.00								>100	SPT	04				
			7.00								>100	SPT	05				
			8.00														
9.00								>100	SPT	06							
10.00																	
10.50								>100	SPT	07							
11.00																	
D.I ROCK	ROCK		11.50														
			12.00														
			13.00									CS	01	NIL	NIL		
			14.00														
15.00										CS	02	NIL	NIL				

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 07

BISHWANATH KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR

# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -85	SHEET NO: -02
DEPTH:	19.10 m	CO-ORDINATES: E : 352.799 m N : 1495.769 m	GROUND LEVEL: RL- 103.700 M
COMMENCED ON: 17.03.2020	COMPLETED ON: 18.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 2.60 m		TYPE : - B	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
			17.00		17.00							CS	03	NIL	NIL	
			19.10		19.10							CS	04	NIL	NIL	
BH TERMINATED AT DEPTH 19.10M																
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

BISHWAJIT KUMAR DAS.  
MTECH (GEO TECH)  
T.T. SATYANAGAR

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  
 ∇-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 07	



**SWAYIN & ASSOCIATES**  
77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -86	SHEET NO: -01
DEPTH: 18.19 m	CO-ORDINATES: E : 352.914 m N : 1453.648 m	GROUND LEVEL: RL- 103.100 M
COMMENCED ON: 18.03.2020	COMPLETED ON: 19.03.2020	LOCATION : -COAL STORAGE TYPE : - D
WATER TABLE : 3.50 m		

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER	
						20	40	60	80	100		TYPE	REF NO.				
CLAYEY SAND	SC		0.00														
			1.00														
			1.50								72	SPT	01				
			2.00														
			3.00														
			3.00									>100	SPT	02			
			4.00														
			4.50									>100	SPT	03			
			5.00														
			6.00									>100	SPT	04			
7.00																	
7.50									>100	SPT	05						
8.00																	
9.00									>100	SPT	06						
10.00																	
10.50									>100	SPT	07						
11.00	ROCK		11.00														
12.00																	
13.00																	
14.00																	
15.00			15.00														

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 07

*(Signature)*  
 BISHW KUMAR DAS.  
 MTECH (GEO TECH)  
 77, SATYANAGAR

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -86	SHEET NO: -02
DEPTH:	18.19 m	CO-ORDINATES: E : 352.914 m N : 1453.648 m	GROUND LEVEL: RL- 103.100 M
COMMENCED ON: 18.03.2020	COMPLETED ON: 19.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 3.50 m		TYPE : - D	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00											
			16.00		16.50							CS	03	NIL	NIL	
BH TERMINATED AT DEPTH 18.19M	ROCK	18.19	18.00		18.19											
			18.19									CS	04	NIL	NIL	
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

*Bishwajit Kumar Das*  
M.TECH (GEO TECH)  
SWAYIN & ASSOCIATES

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY




No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 07	

**SWAYIN & ASSOCIATES**  
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**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING: ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE: 150 mm	BORE HOLE NO: -87	SHEET NO: -01
DEPTH: 18.55 m	CO-ORDINATES: E : 353.003 m N : 1407.574 m	GROUND LEVEL: RL- 102.900 M
COMMENCED ON: 18.03.2020	COMPLETED ON: 19.03.2020	LOCATION : -COAL STORAGE TYPE : - D
WATER TABLE : 2.80 m		

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
CLAYEY SAND	SC	0.00	0.00															
			1.00															
			2.00			1.50					65	SPT	01					
			3.00			3.00					71	SPT	02					
			4.00			4.50					>100	SPT	03					
			5.00			6.00					>100	SPT	04					
			6.00			7.50					>100	SPT	05					
			7.00			10.00					>100	SPT	06					
			8.00			11.60												
		D.I ROCK	ROCK		12.00													
					13.00		13.00											
	14.00																	
	15.00																	

*Bishal Kumar Das*  
MTECH (GEOTECH)  
77, SATYANAGAR

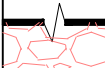
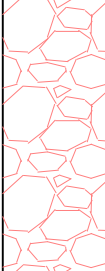
LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -87	SHEET NO: -02
DEPTH:	18.55 m	COMPLETED ON: 19.03.2020	JOB NO: -TLD/2020-03
COMMENCED ON: 18.03.2020	COMPLETED ON: 19.03.2020	CO-ORDINATES: E : 353.003 m N : 1407.574 m	GROUND LEVEL: RL- 102.900 M
WATER TABLE : 2.80 m		LOCATION	COAL STORAGE
			TYPE : - D

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK  BH TERMINATED AT DEPTH 18.55M	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
		18.55	18.55		18.55							CS	03	NIL	NIL	
			16.00													
			17.00													
			18.00													
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

*Bishu Kumar Das*  
MTECH (GEO TECH)  
SWAYIN & ASSOCIATES  
77, SATYANAGAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE, -W- WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -88	SHEET NO: -01
DEPTH:	18.50 m	CO-ORDINATES: E : 353.053 m N : 1361.245 m	GROUND LEVEL: RL- 95.00 M
COMMENCED ON: 18.03.2020	COMPLETED ON: 19.03.2020	LOCATION : -COAL STORAGE	TYPE : - D
WATER TABLE : 1.50 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
CLAYEY SAND	SC	0.00	0.00															
			1.00															
			2.00									87	SPT	01				
			3.00									>100	SPT	02				
			4.00									>100	SPT	03				
			5.00									>100	SPT	04				
D.I ROCK	ROCK	10.00	10.00															
			11.00															
			12.00															
			13.00															
			14.00															
			15.00															

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST, W- WATER SAI, -WATER LEVEL, P-PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECO

No. of disturbed sample: NIL  
No. of Large diameter sample: NIL  
No. of Undisturbed sample: NIL  
No. of CORE: NIL  
No. of SPT: 06  
No. of Vane Shear Test : NIL  
No. of Water Sample : 01

BISHWANATH KUMAR DAS.  
MTECH (GEOTECH)  
77, SATYANAGAR

**SWAYIN & ASSOCIATES**  
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Web Site : www.swayinassociates.com

**BORELOG DATA SHEET**

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -88	SHEET NO: -02
DEPTH:	18.50 m	CO-ORDINATES: E : 353.053 m N : 1361.245 m	GROUND LEVEL: RL- 95.00 M
COMMENCED ON: 18.03.2020	COMPLETED ON: 19.03.2020	LOCATION : -COAL STORAGE	TYPE : -D
WATER TABLE : 1.50 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS.	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00							CS	02	NIL	NIL	
			16.00		16.50							CS	03	NIL	NIL	
			17.00		18.50							CS	04	NIL	NIL	
BH TERMINATED AT DEPTH 18.50M		18.50														
			19.00													
			20.00													
			21.00													
			22.00													
			23.00													
			24.00													
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

*(Signature)*  
BISHAL KUMAR DAS.  
MTECH (GEO TECH)  
SWAYIN & ASSOCIATES  
77, SATYANAGAR, BHUBANESWAR

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAMPLE,  $\nabla$ -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECOVERY

No. of disturbed sample: NIL	No. of Undisturbed sample: NIL	No. of Vane Shear Test : NIL
No. of Large diameter sample: NIL	No. of CORE: NIL	No. of Water Sample : 01
	No. of SPT: 06	

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -89	SHEET NO: -01
DEPTH:	24.08 m	CO-ORDINATES: E : 353.197 m N : 1306.300 m	GROUND LEVEL: RL- 95.00 M
COMMENCED ON: 18.03.2020	COMPLETED ON: 19.03.2020	LOCATION : -COAL STORAGE	TYPE : - B
WATER TABLE : 1.70 m			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRES	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER		
						20	40	60	80	100		TYPE	REF NO.					
CLAYEY SAND	SC		0.00															
			1.00															
			1.50								84	SPT	01					
			2.00															
			3.00								>100	SPT	02					
			4.00															
			4.50								>100	SPT	03					
			5.00															
			6.00									>100	SPT	04				
			7.00									>100	SPT	05				
D.I ROCK	ROCK		9.80															
			10.00							>100	SPT	06						
			11.00															
			12.00															
			13.00									CS	01	NIL	NIL			
14.00																		
15.00																		

LEGEND: -  
 UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 ▽-WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 06

BISHWANATH KUMAR DAS.  
 M.TECH (GEOTECH)  
 77, SATYANAGAR



# SWAYIN & ASSOCIATES

77, SATYANAGAR, BHUBANESWAR  
Web Site : www.swayinassociates.com

# BORELOG DATA SHEET

NAME OF PROJECT: DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER.

TYPE OF BORING:	ROTARY CALYX DRILLING	CLIENT: TALCHER FERTILIZERS LIMITED (TFL)	CONTRACTOR: WUHUAN ENGG. CO., LTD.
DIA OF HOLE:	150 mm	BORE HOLE NO: -89	SHEET NO: -02
DEPTH:	24.08 m	CO-ORDINATES: E : 353.197 m N : 1306.300 m	GROUND LEVEL: RL- 95.00 M
COMMMENCED ON: 18.03.2020	COMPLETED ON: 19.03.2020	LOCATION	COAL STORAGE
WATER TABLE : 1.70 m		TYPE : - B	

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN METRS	DEPTH IN METRS.	SYMBOL	SAMPLE DEPTH IN METRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES					'N' VALUES	SAMPLE		CORE RECOVERY %	RQD %	G.W.L OBSER
						20	40	60	80	100		TYPE	REF NO.			
D.I ROCK	ROCK	15.00	15.00		15.00											
			16.00	16.00	CS	02	NIL	NIL								
			17.00													
			18.00													
			19.00	19.00	CS	03	NIL	NIL								
			20.00													
			21.00													
			22.00	22.00	CS	04	NIL	NIL								
			23.00													
			BH TERMINATED AT DEPTH 24.08M		24.08	24.00		24.08	CS	05	NIL	NIL				
			25.00													
			26.00													
			27.00													
			28.00													
			29.00													
			30.00													

LEGEND: - UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST W- WATER SAI  
 -WATER LEVEL P-PENETROMETRE TEST, V- VANE SHEAR TEST C-CORE RECO

No. of disturbed sample: NIL No. of Undisturbed sample: NIL No. of Vane Shear Test : NIL  
 No. of Large diameter sample: NIL No. of CORE: NIL No. of Water Sample : 01  
 No. of SPT: 06

BISHU KUMAR DAS.  
 MTECH (GEOTECH)  
 77, SATYANAGAR



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BHUBANESWAR  
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**TRIAL PIT-03**

LOCATION :- ASU AREA

CO-ORDINATE :- E-125.87 N-1202.44

PROJECT:- DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER, ODISHA, INDIA.

TP:-03

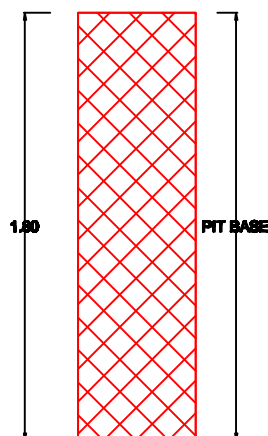
TOTAL DEPTH:1.80M

R.L:-94.682

DATE OF START :-15.05.2020

DATE OF COMP. :- 15.05.2020

SCALE IN METRES	STRATA				SAMPLE			LEGEND:-	
	DEPTH	SYMBOL			DEPTH (M)	TYPE	No.		
0.00	0.00	3.00 S	3.00 W	3.00 N	3.00 E				
1.00						1.00	UDS	01	
1.50									1.60
		3.00	3.00	3.00	3.00				



BISHAL KUMAR DAS.  
M.TECH (P&EOT&ECH)  
SWAYIN & ASSOCIATES  
77, SATYANAGAR



**SWAYIN & ASSOCIATES**  
77, SATYANAGAR,  
BHUBANESWAR  
www.swayinassociates.com

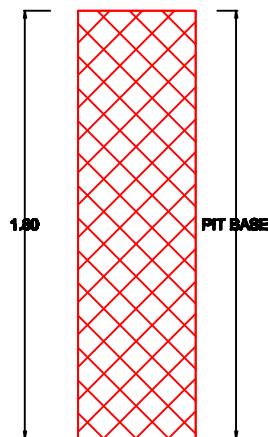
**TRIAL PIT-04**

LOCATION :- CSU AREA  
CO-ORDINATE :- E-799.43 N-1736.353  
PROJECT :- DETAILED SOIL INVESTIGATION WORKS, SURVEY WORKS OF COAL GASIFICATION & AMMONIA UREA PLANT, TALCHER, ODISHA, INDIA.

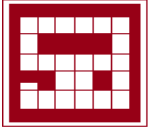
TP:-04  
TOTAL DEPTH:1.80M  
R.L:-100.00

DATE OF START :-14.05.2020  
DATE OF COMP. :- 14.05.2020

SCALE IN METRES	STRATA				SAMPLE			LEGEND:-	
	DEPTH	SYMBOL			DEPTH (M)	TYPE	No.		
0.00	0.00	3.00 S	3.00 W	3.00 N	3.00 E				
						1.00	UDS	01	1) CLAYEY SAND
									1.60
		3.00	3.00	3.00	3.00				



BISHW KUMAR DAS.  
M.TECH (GEO TECH)  
www.swayinassociates.com



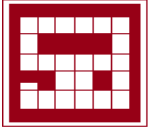
CLIENT: TALCHER FERTILIZERS LIMITED  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB CONTRACTOR: SWAYIN & ASSOCIATES.

JOB No. TLD/2020-03

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-13)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm2 (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Modulus of Elasticity (E) Kg/cm <sup>2</sup>	
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)					
ASU AREA	BH-34	1.5	SPT	CI	1.77	1.33	33	0	7	93	-	-	-	2.64	0.53	0	-	-	0.172	0.0002	-	-	-	321.21	
	BH-35	1.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.07	0.935 x 10 <sup>-4</sup>	270.84	
		3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	324.27	
	BH-36	1.5	SPT	SC	1.90	1.54	23	0	57	43	-	-	-	-	-	-	0.11	20	0.065	0.000095	-	-	-	176.21	
		3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	324.27	
	BH-37	1.5	SPT	CI	-	-	-	-	-	-	42	20	22	2.68	-	-	-	-	-	-	-	-	-	1.038 x 10 <sup>-7</sup>	-
		3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	324.27	
	BH-38	1.5	SPT	CI	1.76	1.33	32	-	-	-	-	-	-	2.65	0.51	0	-	-	0.063	0.000097	0.99	-	-	-	-
		3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	324.27	
	BH-39	1.5	SPT	SC	1.88	1.55	21	0	56	44	30	20	10	-	-	-	-	-	-	-	-	-	-	-	205.58
		3.0	SPT	CI	-	-	-	0	6	94	-	-	-	-	0.55	0	-	-	-	-	-	13.33	-	-	324.27
	BH-40	1.5	SPT	CI	-	-	34	0	8	92	-	-	-	2.64	0.52	0	-	-	0.175	0.00018	-	-	-	-	131.54

BISHW KUMAR DAS  
 M.TECH (GEO TECH)  

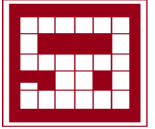
CLIENT: TALCHER FERTILIZERS LIMITED  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB CONTRACTOR: SWAYIN & ASSOCIATES.

JOB No. TLD/2020-03

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-13)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm2 (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Modulus of Elasticity (E) Kg/cm <sup>2</sup>	
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)					
ASU AREA	BH-41	1.5	SPT	CI	1.75	1.31	34	-	-	-	44	21	23	2.65	-	-	-	-	-	-	-	-	1.061 x 10 <sup>-7</sup>	-	
	BH-42	1.5	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	0.13	18	-	-	-	5.87	-	192.52	
		3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	324.27	
	BH-43	1.5	SPT	SC	1.90	1.54	23	-	-	-	32	21	11	-	-	-	-	-	0.066	0.000095	-	-	0.935 x 10 <sup>-4</sup>	182.73	
		3.0	SPT	CI	-	-	-	0	7	93	-	-	-	2.64	0.54	0	-	-	-	-	-	-	-	-	324.27
	BH-44	1.5	SPT	SC	-	-	-	0	58	42	-	-	-	-	-	-	0.10	21	-	-	-	-	-	-	189.26
		3.0	SPT	CI	1.77	1.33	33	-	-	-	41	20	21	-	-	-	-	-	0.174	0.0002	-	-	1.046 x 10 <sup>-7</sup>	324.27	
	BH-45	1.5	SPT	CI	-	-	-	0	9	91	-	-	-	-	0.52	0	-	-	0.174	0.00021	-	-	-	-	140.72
	BH-46	1.5	SPT	CI	1.79	1.34	34	-	-	-	-	-	-	2.65	-	-	-	-	-	-	0.98	11.20	-	-	
	BH-47	1.5	SPT	SC	1.88	1.54	22	0	55	45	-	-	-	2.67	-	-	-	-	0.066	0.000094	0.73	-	0.954 x 10 <sup>-4</sup>	202.31	
		3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	324.27
	BH-48	1.5	SPT	SC	-	-	-	-	-	-	31	20	11	-	-	-	0.13	19	0.175	0.00021	-	5.20	-	-	176.21
3.0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	324.27	

BISHU KUMAR DAS.  
 M.TECH (GEO TECH)  
 SATYANARAYANA



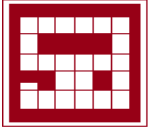
**CLIENT: TALCHER FERTILIZERS LIMITED**  
**CONTRACTOR: WUHUAN ENGINEERING CO., LTD.**  
**SUB CONTRACTOR: SWAYIN & ASSOCIATES.**

**JOB No. TLD/2020-03**

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-15)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)		
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)						
COAL STORAGE	BH-49	1.5	SPT	SM	2.01	1.69	19	27	63	10	-	-	-	-	-	-	-	-	-	-	8.27	-	832.09			
		3.0	SPT	SC	1.88	1.50	25	-	-	-	-	-	-	2.65	-	-	-	-	0.164	0.000109	0.76	-	-	-		
		4.5	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	375.26	
		6.0	SPT	SC	-	-	-	-	-	-	29	19	10	-	-	-	-	-	-	-	-	13.33	-	-	-	
		7.5	SPT	SC	1.86	1.52	22	-	-	-	-	-	-	-	-	-	0.10	23	-	-	-	-	-	-	-	-
	9.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.33	0.976 x 10 <sup>-4</sup>	-	-		
	BH-50	1.5	SPT	SM	1.99	1.69	18	-	-	-	-	-	-	2.68	-	-	0.00	34	-	-	-	-	-	-	-	868.8
		3.0	SPT	SC	-	-	-	2	60	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	1.87	1.51	24	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.76	-	-	-	375.26
		6.0	SPT	SC	-	-	-	-	-	-	-	32	21	11	-	-	-	-	-	-	-	13.33	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.12	20	-	-	-	-	-	-	-	-
	10.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.976 x 10 <sup>-4</sup>	-	-	
	BH-51	1.5	SPT	SC	1.89	1.51	25	-	-	-	-	-	-	2.65	-	-	-	-	-	-	0.161	0.000111	0.75	-	0.914 x 10 <sup>-4</sup>	-
		3.0	SPT	SC	-	-	-	0	58	42	34	20	14	-	-	-	-	-	-	-	-	-	-	-	-	345.89
		4.5	SPT	SC	1.86	1.51	23	-	-	-	-	-	-	2.67	-	-	-	-	-	-	-	0.77	-	-	-	-
		6.0	SPT	SC	-	-	-	0	62	38	30	20	10	-	-	-	-	-	-	-	-	13.33	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.09	26	-	-	-	-	-	-	-	-
	BH-52	1.5	SPT	SM	-	-	-	18	71	11	-	-	-	-	-	-	0.00	35	-	-	-	-	-	-	-	991.17
		3.0	SPT	SC	1.88	1.49	26	-	-	-	33	21	12	-	-	-	-	-	-	-	-	-	-	10.93	-	316.52
		4.5	SPT	SC	-	-	-	3	58	39	-	-	-	-	-	-	-	-	-	-	-	-	-	0.764 x 10 <sup>-5</sup>	-	-
6.0		SPT	SC	1.86	1.50	24	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.77	-	-	-	-	
7.5		SPT	SC	-	-	-	-	-	-	31	20	11	-	-	-	-	-	-	-	-	13.33	-	-	-	-	
9.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.11	24	-	-	-	-	-	-	-	-		

  
 BISHWANATH KUMAR DAS  
 M.TECH (PRACTICAL)  
 (SAYANPUR)



**CLIENT: TALCHER FERTILIZERS LIMITED**  
**CONTRACTOR: WUHUAN ENGINEERING CO., LTD.**  
**SUB CONTRACTOR: SWAYIN & ASSOCIATES.**

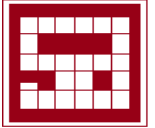
**JOB No. TLD/2020-03**

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-11)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)		
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)						
COAL STORAGE	BH-53	1.5	SPT	SM	2.00	1.71	17	-	-	-	-	-	2.68	-	-	-	-	0.165	0.000108	0.57	11.07	-	819.85			
		3.0	SPT	SM	-	-	-	21	70	9	-	-	-	-	-	-	0.00	34	-	-	-	-	-	-		
		4.5	SPT	SC	1.89	1.49	27	-	-	-	33	20	13	-	-	-	-	-	-	-	-	-	-	-	316.52	
		6.0	SPT	SC	-	-	-	0	59	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		7.5	SPT	SC	-	-	-	-	-	-	30	20	10	-	-	-	-	-	-	-	-	-	-	-	-	-
		9.0	SPT	SC	1.86	1.52	22	-	-	-	-	-	-	2.67	-	-	-	-	-	-	-	0.75	-	-	-	-
		10.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.10	24	-	-	-	-	-	-	-	-
	12.0	SPT	SC	-	-	-	3	57	40	-	-	-	-	-	-	-	-	-	-	-	-	-	0.887 x 10 <sup>-4</sup>	-	-	
	BH-54	1.5	SPT	SM	2.02	1.71	18	19	70	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	SPT	SC	-	-	-	2	56	42	-	-	-	-	-	-	-	-	-	-	-	-	10.67	-	-	-
		4.5	SPT	SC	1.85	1.52	22	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	0.75	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	31	20	11	-	-	-	0.13	19	-	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	0.932 x 10 <sup>-4</sup>	-	-
	BH-55	1.5	SPT	SM	-	-	-	23	66	11	-	-	-	-	-	-	0.00	36	-	-	-	-	-	-	-	-
		3.0	SPT	SC	1.87	1.55	21	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	-	0.72	-	0.915 x 10 <sup>-4</sup>	-
		4.5	SPT	SC	-	-	-	3	55	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	32	22	10	-	-	-	0.11	25	-	-	-	-	-	-	-	-
		7.5	SPT	SC	1.86	1.51	23	-	-	-	-	-	-	2.65	-	-	-	-	0.163	0.00011	-	13.33	-	-	-	-
	BH-56	1.5	SPT	SM	1.99	1.69	18	-	-	-	-	-	-	2.68	-	-	-	-	-	-	-	0.59	-	-	-	-
		3.0	SPT	SM	-	-	-	24	66	10	-	-	-	-	-	-	0.00	36	-	-	-	-	-	-	-	1297.08
		4.5	SPT	SC	1.88	1.52	24	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.75	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.961 x 10 <sup>-4</sup>	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	375.26
		9.0	SPT	SC	-	-	-	0	61	39	-	-	-	-	-	-	-	-	-	-	-	-	13.33	-	-	-
10.5		SPT	SC	-	-	-	-	-	-	33	22	11	-	-	-	-	-	-	-	-	-	-	-	-	-	
12.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.13	20	-	-	-	-	-	-	-	-		

  
 BISHNU KUMAR DAS  
 M.TECH (PRACTICAL)  
 S.WAYIN & ASSOCIATES





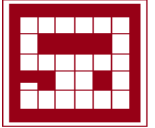
**CLIENT: TALCHER FERTILIZERS LIMITED**  
**CONTRACTOR: WUHUAN ENGINEERING CO., LTD.**  
**SUB CONTRACTOR: SWAYIN & ASSOCIATES.**

**JOB No. TLD/2020-03**

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-11)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)		
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)						
COAL STORAGE	BH-57	1.5	SPT	SM	-	-	-	19	69	12	-	-	-	-	-	-	-	-	-	-	-	12.67	-	-		
		3.0	SPT	SM	2.01	1.72	17	-	-	-	-	-	-	2.67	-	-	-	-	-	-	-	0.55	-	-	-	
		4.5	SPT	SC	-	-	-	3	56	41	-	-	-	-	-	-	-	-	-	-	-	-	-	0.889 x 10 <sup>-4</sup>	-	
		6.0	SPT	SC	1.84	1.51	22	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	-	0.76	-	-	-
		7.5	SPT	SC	-	-	-	0	58	42	-	-	-	-	-	-	-	-	-	-	-	-	-	13.33	-	-
		9.0	SPT	SC	-	-	-	-	-	-	30	21	9	-	-	-	-	-	-	-	-	-	-	-	-	-
		10.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.10	24	-	-	-	-	-	-	-	-
	12.0	SPT	SC	1.86	1.50	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.002 x 10 <sup>-4</sup>	-	
	BH-58	1.5	SPT	SM	2.00	1.71	17	-	-	-	-	-	-	2.69	-	-	-	-	-	-	-	-	0.57	-	-	-
		3.0	SPT	SM	-	-	-	23	66	11	-	-	-	-	-	-	0.00	34	-	-	-	-	-	-	-	966.69
		4.5	SPT	SC	1.88	1.53	23	0	56	44	-	-	-	-	-	-	-	-	-	-	-	-	9.73	-	-	-
		6.0	SPT	SC	-	-	-	0	59	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	375.26
		7.5	SPT	SC	-	-	-	-	-	-	34	22	12	-	-	-	-	-	-	-	-	-	-	-	-	-
		9.0	SPT	SC	1.86	1.50	24	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	-	0.77	-	-	-
	BH-59	1.5	SPT	SC	1.85	1.47	26	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	SPT	SC	-	-	-	3	62	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	32	21	11	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	1.87	1.52	23	-	-	-	-	-	-	2.66	-	-	-	-	0.162	0.000109	0.75	-	-	-	-	-
7.5		SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.935 x 10 <sup>-4</sup>	
10.0		SPT	SC	-	-	-	0	62	38	-	-	-	-	-	-	-	-	-	-	-	-	13.33	-	-	-	
13.0		SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.13	19	-	-	-	-	-	-	-	-	

  
 BISHAL KUMAR DAS  
 M.TECH (GEOTECH)  
 17, SATYANAGAR



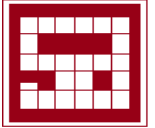
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**CONTRACTOR: WUHUAN ENGINEERING CO., LTD.**  
**SUB CONTRACTOR: SWAYIN & ASSOCIATES.**

**JOB No. TLD/2020-03**

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-11)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm2 (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)	
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)					
COAL STORAGE	BH-60	1.5	SPT	SC	1.87	1.46	28	-	-	-	33	21	12	-	-	-	-	-	-	-	-	12.67	-	358.94	
		3.0	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		4.5	SPT	SC	-	-	-	-	-	-	31	20	11	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	1.86	1.52	22	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	0.74	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.10	26	-	-	-	-	-	-	-
		9.0	SPT	SC	-	-	-	0	58	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.973 x 10 <sup>-4</sup>	-	-
	12.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.33	-	-	-	
	BH-61	1.5	SPT	SC	-	-	-	0	57	43	-	-	-	-	-	-	0.09	27	-	-	-	-	-	-	-
		3.0	SPT	SC	1.86	1.49	25	-	-	-	-	-	-	2.66	-	-	-	-	0.165	0.000107	0.79	-	-	-	-
		4.5	SPT	SC	-	-	-	0	61	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	33	21	12	-	-	-	-	-	-	-	-	-	-	-	-
		9.0	SPT	SC	-	-	-	0	58	42	-	-	-	-	-	-	0.11	24	-	-	-	-	-	-	-
		12.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.899 x 10 <sup>-4</sup>	-	-
	BH-62	1.5	SPT	SC	1.86	1.51	23	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	0.75	13.07	-	-
		3.0	SPT	SC	-	-	-	0	55	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	33	21	12	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.10	23	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.796 x 10 <sup>-4</sup>	-	-
	BH-63	3.0	SPT	SC	1.87	1.53	22	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	-	12.67	-	-
		4.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.74	-	0.833 x 10 <sup>-4</sup>	-
		6.0	SPT	SC	-	-	-	2	59	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	375.26
		7.5	SPT	SC	-	-	-	-	-	-	30	19	11	-	-	-	-	-	-	-	-	-	-	-	-
		9.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.13	20	-	-	-	-	-	-	-
12.0	SPT	SC	1.88	1.52	24	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

  
 BISHAL KUMAR DAS  
 M.TECH (P&E) (IIT KANPUR)  
 17 SATYANARAYAN



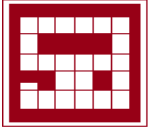
**CLIENT: TALCHER FERTILIZERS LIMITED**  
**CONTRACTOR: WUHUAN ENGINEERING CO., LTD.**  
**SUB CONTRACTOR: SWAYIN & ASSOCIATES.**

**JOB No. TLD/2020-03**

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-15)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)		
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)						
COAL STORAGE	BH-64	1.5	SPT	SC	1.86	1.52	22	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	0.74	-	-	375.26	
		3.0	SPT	SC	-	-	-	0	57	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		4.5	SPT	SC	-	-	-	-	-	-	33	21	12	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.12	22	-	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.33	-	-	-
	9.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.908 x 10 <sup>-4</sup>	-	-	
	BH-65	1.5	SPT	SC	1.88	1.55	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	306.73
		3.0	SPT	SC	-	-	-	-	-	-	32	21	11	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	2	59	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.10	25	-	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.927 x 10 <sup>-4</sup>	-	-
	9.0	SPT	SC	1.87	1.52	23	-	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.75	-	-	-	-
	BH-66	1.5	SPT	SC	-	-	-	0	57	43	-	-	-	-	-	-	-	-	-	-	-	-	10.53	-	-	-
		3.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.894 x 10 <sup>-4</sup>	-	-
		4.5	SPT	SC	1.86	1.50	24	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	0.77	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	30	19	11	-	-	-	-	-	-	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.12	21	-	-	-	-	-	-	-	-	
	BH-67	1.5	SPT	SM	1.99	1.69	18	-	-	-	-	-	-	-	-	-	0.00	35	-	-	-	-	-	-	-	-
		3.0	SPT	SC	-	-	-	0	56	44	-	-	-	-	-	-	-	-	-	-	-	-	7.47	-	-	-
4.5		SPT	SC	1.86	1.51	23	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.76	-	-	-	-	
6.0		SPT	SC	-	-	-	2	60	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7.5		SPT	SC	-	-	-	-	-	-	32	21	11	-	-	-	-	-	-	-	-	-	-	-	-	-	
10.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.09	26	-	-	-	-	-	-	-	-		

  
 Bishnu Kumar Das  
 M.Tech (Geotechnical)  
 Swayin & Associates



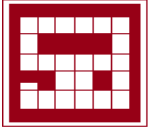
CLIENT: TALCHER FERTILIZERS LIMITED  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB CONTRACTOR: SWAYIN & ASSOCIATES.

JOB No. TLD/2020-03

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-11)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)		
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)						
COAL STORAGE	BH-68	1.5	SPT	CI	1.79	1.36	32	0	26	74	-	-	-	-	0.42	7	-	-	-	-	-	-	-	-	266.15	
		3.0	SPT	SC	-	-	-	0	55	45	-	-	-	-	-	-	-	-	-	-	-	13.33	-	-	375.26	
		4.5	SPT	SC	1.86	1.51	23	-	-	-	-	-	-	2.65	-	-	-	-	0.165	0.00011	0.75	-	-	-	-	
		6.0	SPT	SC	-	-	-	3	56	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		7.5	SPT	SC	-	-	-	-	-	-	34	22	12	-	-	-	-	-	-	-	-	-	-	-	-	
		9.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.11	23	-	-	-	-	-	-	-	
		10.5	SPT	SC	1.89	1.52	24	2	59	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.905 x 10 <sup>-4</sup>	-		
	BH-69	1.5	SPT	SC	1.87	1.53	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.80	-	-	
		3.0	SPT	SC	1.90	1.57	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		4.5	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		7.5	SPT	SC	-	-	-	-	-	-	30	21	9	-	-	-	-	-	-	-	-	-	-	-	-	
		9.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	0.08	28	-	-	-	-	-	-	-	-	
	BH-70	1.5	SPT	SM	2.02	1.70	19	-	-	-	-	-	-	-	-	-	0.00	36	-	-	-	-	-	-	-	819.85
		3.0	SPT	SC	-	-	-	3	54	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	254.52
		4.5	SPT	SC	1.86	1.55	20	-	-	-	-	-	-	2.66	-	-	-	-	-	-	0.72	-	-	-	-	
		6.0	SPT	SC	-	-	-	-	-	-	31	20	11	-	-	-	-	-	-	-	-	-	-	-	-	
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.68	-	-	-	
		10.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.932 x 10 <sup>-4</sup>	-	
	BH-71	1.5	SPT	SM	-	-	-	23	66	11	-	-	-	-	-	-	0.00	34	-	-	-	-	-	-	-	
3.0		SPT	SC	-	-	-	0	57	43	-	-	-	2.65	-	-	-	-	-	-	-	-	-	-	-		
4.5		SPT	SC	1.87	1.51	24	-	-	-	-	-	-	2.66	-	-	-	-	0.163	0.000109	0.76	-	-	-	-		
6.0		SPT	SC	-	-	-	-	-	-	33	23	10	-	-	-	-	-	-	-	-	-	-	-	-		
7.5		SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.892 x 10 <sup>-4</sup>	-		

Signature and Stamp of Rishabh Kumar, D.A., M.Tech (Petro-Geoch) at the bottom right of the table.



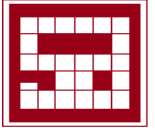
**CLIENT: TALCHER FERTILIZERS LIMITED**  
**CONTRACTOR: WUHUAN ENGINEERING CO., LTD.**  
**SUB CONTRACTOR: SWAYIN & ASSOCIATES.**

**JOB No. TLD/2020-03**

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-11)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)	
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)					
COAL STORAGE	BH-72	1.5	SPT	SC	1.85	1.50	23	0	56	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		3.0	SPT	SC	-	-	-	-	-	-	30	20	10	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	1.88	1.54	22	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.73	-	-	-
		6.0	SPT	SC	-	-	-	0	61	39	-	-	-	-	-	-	0.12	21	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.87	-	-
		10.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.911 x 10 <sup>-4</sup>	-
	BH-73	1.5	SPT	SC	-	-	-	0	55	45	-	-	-	-	-	-	-	-	-	-	-	-	11.73	-	336.1
		3.0	SPT	SC	1.90	1.52	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	0	59	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	29	19	10	-	-	-	-	-	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.10	24	-	-	-	-	-	-	-
	BH-74	1.5	SPT	SM	2.01	1.69	19	28	63	9	-	-	-	-	-	-	0.00	35	-	-	-	-	-	-	-
		3.0	SPT	SC	-	-	-	2	60	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	32	22	10	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	1.86	1.54	21	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	-	0.72	-	-
		7.5	SPT	SC	-	-	-	0	61	39	-	-	-	-	-	-	-	-	-	-	-	-	13.33	-	-
		10.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.957 x 10 <sup>-4</sup>	-
	BH-75	1.5	SPT	SM	1.98	1.69	17	-	-	-	-	-	-	2.68	-	-	-	-	-	-	-	-	0.58	-	1235.9
		3.0	SPT	SC	-	-	-	3	56	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	1.89	1.52	24	-	-	-	-	-	-	2.66	-	-	-	-	-	0.162	0.000108	-	-	-	-
		6.0	SPT	SC	-	-	-	0	61	39	-	-	-	-	-	-	0.12	22	-	-	-	-	-	-	375.26
7.5		SPT	SC	-	-	-	-	-	-	30	21	9	-	-	-	-	-	-	-	-	-	-	-	-	
10.5		SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.67	-	
12.0		SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.854 x 10 <sup>-4</sup>	-	

Bishwajit Kumar Das.  
 M.TECH (GEO TECH)  

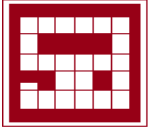
CLIENT: TALCHER FERTILIZERS LIMITED  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB CONTRACTOR: SWAYIN & ASSOCIATES.

JOB No. TLD/2020-03

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-11)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)	
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)					
COAL STORAGE	BH-76	1.5	SPT	SC	-	-	-	0	58	42	-	-	-	-	-	-	-	-	-	-	10.80	-	-		
		3.0	SPT	SC	1.89	1.52	24	-	-	-	-	-	-	2.64	-	-	-	-	-	-	0.73	-	-	-	
		4.5	SPT	SC	-	-	-	-	-	-	-	34	23	11	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.11	24	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.932 x 10 <sup>-4</sup>	-	
	BH-77	1.5	SPT	SM	-	-	-	24	65	11	-	-	-	-	-	-	0.00	35	-	-	-	-	-	-	844.33
		3.0	SPT	SC	1.87	1.53	22	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.74	-	-	283.89
		4.5	SPT	SC	-	-	-	2	57	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	31	21	10	-	-	-	-	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.876 x 10 <sup>-4</sup>	-
	10.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.09	26	-	-	-	-	-	-	-	
	BH-78	1.5	SPT	SM	2.00	1.69	18	-	-	-	-	-	-	-	-	-	0.00	34	-	-	-	-	-	-	-
		3.0	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	-	31	20	11	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.903 x 10 <sup>-4</sup>	-
		7.5	SPT	SC	1.87	1.52	23	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	0.74	-	-	-
	BH-79	1.5	SPT	SM	-	-	-	20	70	10	-	-	-	2.69	-	-	-	-	-	-	-	-	-	-	-
3.0		SPT	SC	1.89	1.51	25	-	-	-	-	-	-	2.65	-	-	0.11	23	-	-	-	0.75	-	-	-	
4.5		SPT	SC	-	-	-	0	59	41	-	-	-	-	-	-	-	-	0.164	0.000109	-	10.93	-	-		
6.0		SPT	SC	-	-	-	-	-	-	33	22	11	-	-	-	-	-	-	-	-	-	-	-	-	

BISHU KUMAR DAS  
 M.TECH (GEO TECH)  
 SWAYIN & ASSOCIATES



**CLIENT: TALCHER FERTILIZERS LIMITED**  
**CONTRACTOR: WUHUAN ENGINEERING CO., LTD.**  
**SUB CONTRACTOR: SWAYIN & ASSOCIATES.**

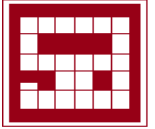
**JOB No. TLD/2020-03**

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-15)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)	
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)					
COAL STORAGE	BH-80	1.5	SPT	SC	-	-	-	0	58	42	-	-	-	-	-	-	-	-	-	-	11.33	-	326.31		
		3.0	SPT	SC	1.86	1.52	22	-	-	-	-	-	-	2.66	-	-	-	-	-	-	0.74	-	-	-	
		4.5	SPT	SC	-	-	-	-	-	-	30	20	10	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	0	61	39	-	-	-	-	-	-	0.10	24	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.896 x 10 <sup>-4</sup>	-
	BH-81	1.5	SPT	SC	1.90	1.50	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.20	-	-	-
		3.0	SPT	SC	-	-	-	2	57	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	355.68
		4.5	SPT	SC	-	-	-	-	-	-	30	21	9	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	1.87	1.51	24	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	0.76	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.13	19	-	-	-	-	-	-	-
	BH-82	1.5	SPT	SC	-	-	-	0	56	44	-	-	-	-	-	-	-	-	-	-	-	10.27	-	-	-
		3.0	SPT	SC	1.87	1.51	24	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.76	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.867 x 10 <sup>-4</sup>	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.10	25	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	0	61	39	33	23	10	-	-	-	-	-	-	-	-	-	-	-	-
BH-83	1.5	SPT	SC	1.87	1.53	22	-	-	-	31	20	11	-	-	-	-	-	-	-	-	-	10.40	-	303.47	
	3.0	SPT	SC	-	-	-	2	56	42	-	-	-	2.64	-	-	-	-	-	-	-	-	-	-	-	
	4.5	SPT	SC	1.89	1.52	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.74	-	-	-	
	6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.11	24	-	-	-	-	-	-	-	
	7.5	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		10.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.932 x 10 <sup>-4</sup>	-	

  
 BISHWANATH KUMAR DAS.  
 (SEAL)  
 (SATYANAGAR)





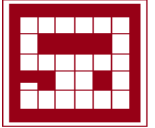
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 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB CONTRACTOR: SWAYIN & ASSOCIATES.

JOB No. TLD/2020-03

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-11)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)		
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)						
COAL STORAGE	BH-84	1.5	SPT	SC	1.96	1.63	20	11	60	29	-	-	-	2.68	-	-	-	-	-	-	0.64	-	-	-		
		3.0	SPT	SC	-	-	-	-	-	-	33	22	11	-	-	-	-	-	-	-	-	13.33	-	-	-	
		4.5	SPT	SC	1.86	1.51	23	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	-	-	0.913 x 10 <sup>-4</sup>	-	-
		6.0	SPT	SC	-	-	-	0	59	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	21	-	-	-	-	-	-	-
	10.0	SPT	SC	-	-	-	0	61	39	30	20	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH-85	1.5	SPT	SC	-	-	-	3	60	37	-	-	-	-	-	-	-	-	-	-	-	10.40	-	-	303.47	
		3.0	SPT	SC	1.87	1.51	24	-	-	-	-	-	-	2.67	-	-	-	-	0.163	0.000108	0.77	-	-	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	-	32	21	11	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.891 x 10 <sup>-4</sup>	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	25	-	-	-	-	-	-	-
	10.5	SPT	SC	-	-	-	0	61	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	283.89	
	BH-86	1.5	SPT	SC	1.91	1.52	26	0	54	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	SPT	SC	-	-	-	-	-	-	30	20	10	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.86	-	-
6.0		SPT	SC	1.87	1.51	24	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	0.76	-	-	-	-	
7.5		SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	22	-	-	-	-	-	-	-	
10.5	SPT	SC	-	-	-	-	-	-	2	60	38	-	-	-	-	-	-	-	-	-	-	-	0.864 x 10 <sup>-4</sup>	-		

BISHU KUMAR DAS  
 M.TECH (GEOTECH)  
 SATYANIGI



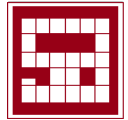
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 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB CONTRACTOR: SWAYIN & ASSOCIATES.

JOB No. TLD/2020-03

**ANNEXURE - A SUMMARY OF LABORATORY TEST RESULTS ON SOIL SAMPLES**

Location	Borehole No	Depth in Mtrs	Type of Sample	IS Classification (IS:1498-1970)	Density in gm/cc		Water Content (%) (IS:2720 Pt-II)	Particle Size (%) (IS:2720 Pt-IV)			Atterberg's Limits (IS:2720 Pt-V)			Specific gravity (IS:2720 Pt-III_2)	Triaxial Shear Test (UU) (IS:2720 Pt-12)		Direct Shear Test (IS:2720 Pt-11)		Consolidation Test (IS:2720 Pt-15)		Void Ratio	UCS in kg/cm <sup>2</sup> (IS:2720 Pt-10)	Permeability Test (IS:2720 Pt-17)	Permeability Test (IS:2720 Pt-17)		
					Bulk	Dry		Gravel	Sand	Silt & Clay	LL	PL	PI		C in kg/cm <sup>2</sup>	φ in degree	C in kg/cm <sup>2</sup>	φ in degree	Cc	Mv (cm <sup>2</sup> /kg)						
COAL STORAGE	BH-87	1.5	SPT	SC	1.87	1.46	28	-	-	-	33	21	12	-	-	-	-	-	-	-	-	12.67	-	-		
		3.0	SPT	SC	-	-	-	0	60	40	-	-	-	-	-	-	-	-	-	-	-	-	-	375.26	-	
		4.5	SPT	SC	-	-	-	-	-	-	31	20	11	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	1.86	1.52	22	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	-	0.74	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.10	26	-	-	-	-	-	-	-	-
	BH-88	1.5	SPT	SC	1.85	1.47	26	-	-	-	-	-	-	2.64	-	-	-	-	-	-	-	-	0.80	-	-	-
		3.0	SPT	SC	-	-	-	3	59	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	32	21	11	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	1.87	1.52	23	-	-	-	-	-	-	2.66	-	-	-	-	-	-	-	-	0.75	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.935 x 10 <sup>-4</sup>	-	-
	BH-89	1.5	SPT	SC	1.90	1.52	25	-	-	-	-	-	-	2.65	-	-	-	-	-	-	-	-	0.74	-	-	323.05
		3.0	SPT	SC	-	-	-	0	57	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		4.5	SPT	SC	-	-	-	-	-	-	29	20	9	-	-	-	-	-	-	-	-	-	-	-	-	-
		6.0	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	0.13	20	-	-	-	-	-	-	-	-
		7.5	SPT	SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.960 x 10 <sup>-4</sup>	-	-

*(Signature)*  
 BISHW KUMAR DAS  
 M.TECH (GEO TECH)  
 SATYANIGRAH



CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**CALCULATION FOR VOID RATIO**

**Example for some Boreholes**

1) For BH-38

Depth:-1.50m

Specific gravity: 2.65

Dry Density: 1.33

$$\text{Void Ratio } (e_0) = (2.65/1.33)-1 \\ = 0.99$$

5) For BH-68

Depth:-4.50m

Specific gravity: 2.65

Dry Density: 1.51

$$\text{Void Ratio } (e_0) = (2.65/1.51)-1 \\ = 0.75$$

2) For BH-47

Depth:-1.50m

Specific gravity: 2.67

Dry Density: 1.54

$$\text{Void Ratio } (e_0) = (2.67/1.54)-1 \\ = 0.73$$

6) For BH-75

Depth:- 1.50m

Specific gravity: 2.68

Dry Density: 1.69

$$\text{Void Ratio } (e_0) = (2.68/1.69)-1 \\ = 0.58$$

3) For BH-49

Depth:-3.00m

Specific gravity: 2.65

Dry Density: 1.50

$$\text{Void Ratio } (e_0) = (2.65/1.50)-1 \\ = 0.76$$

7) For BH-84

Depth:- 1.50m

Specific gravity: 2.68

Dry Density: 1.63

$$\text{Void Ratio } (e_0) = (2.68/1.63)-1 \\ = 0.64$$

4) For BH-60

Depth:-6.00m

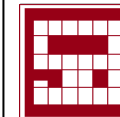
Specific gravity: 2.65

Dry Density: 1.52

$$\text{Void Ratio } (e_0) = (2.65/1.52)-1 \\ = 0.74$$



BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 SATYANIGR



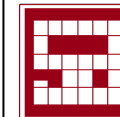
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SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**ANNEXURE-B (ANALYSIS OF ROCK PROPERTIES)**

Borehole No.	34	35	36	37	
Depth (in mtr)	15.00	12.00	12.00	4.50	
Core Piece No	7	5	6	1	
RQD (%)	40	28	27	10	
Density (g/cc)	2.49	2.48	2.48	2.54	
Water content	0.078	0.089	0.082	0.035	
Porosity	5.92	6.08	6.05	8.12	
Permeability	$1.79 \times 10^{-8}$	$2.45 \times 10^{-8}$	$2.14 \times 10^{-8}$	$1.65 \times 10^{-7}$	
Unconfined Compressive Strength (kg/cm <sup>2</sup> )	134.54	131.45	129.15	198.46	
Point Load Test (kg/cm <sup>2</sup> )	5.26	5.79	5.02	8.62	
Weatherability	Highly Weathered (Grade-IV)	Highly Weathered (Grade-IV)	Highly Weathered (Grade-IV)	Completely Weathered(Grade-V)	
Term	Weak to Strong	Weak to Strong	Weak to Strong	Weak	
Mohr's Scale of Hardness	3.5	3	4	4	
Cohesion and angle of internal friction	Shear Strength, C	21.54 kg/cm <sup>2</sup>	20.74 kg/cm <sup>2</sup>	20.65 kg/cm <sup>2</sup>	14.12 kg/cm <sup>2</sup>
	$\phi$	16°	15°	14°	27°
Mineralogical and Petrological composition	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 30° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 30° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 30° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained Sands Moderate spaced Fractures with 25° dip	
Corrosivity	Moderately Corrosive	Moderately Corrosive	Moderately Corrosive	Moderately to Mildly Corrosive	
The rock deformability characteristics	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V Description of Rock : Very Poor	

  
 BISHWANATH KUMAR DAS.  
 M.TECH (Petro Tech)  

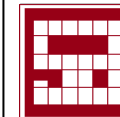



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**JOB No: TLD/2020-03**

Borehole No.	37	38	39	40	
Depth (in mtr)	16.50	12.95	13.80	4.50	
Core Piece No	9	6	6	1	
RQD (%)	31	27	31	16	
Density (g/cc)	2.50	2.48	2.47	2.54	
Water content	0.079	0.084	0.094	0.035	
Porosity	6.02	5.85	6.13	8.12	
Permeability	$2.22 \times 10^{-8}$	$2.34 \times 10^{-8}$	$2.19 \times 10^{-8}$	$1.65 \times 10^{-7}$	
Unconfined Compressive Strength (kg/cm <sup>2</sup> )	124.26	123.15	125.48	201.84	
Point Load Test (kg/cm <sup>2</sup> )	4.72	5.34	5.21	8.75	
Weatherability	Highly Weathered (Grade-IV)	Highly Weathered (Grade-IV)	Highly Weathered (Grade-IV)	Completely Weathered(Grade-V)	
Term	Weak to Strong	Weak to Strong	Weak to Strong	Weak	
Mohr's Scale of Hardness	3.5	4	4	4	
Cohesion and angle of internal friction	Shear Strength, C	19.15 kg/cm <sup>2</sup>	20.74 kg/cm <sup>2</sup>	19.65 kg/cm <sup>2</sup>	14.75 kg/cm <sup>2</sup>
	$\phi$	17°	15°	16°	28°
Mineralogical and Petrological composition	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 20° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 30° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 20° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained Sands Moderate spaced Fractures with 25° dip	
Corrosivity	Moderately Corrosive	Moderately Corrosive	Moderately Corrosive	Moderately to Mildy Corrosive	
The rock deformability characteristics	Quality of Deformation : IV Description of Rock : Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : IV Description of Rock : Poor	Quality of Deformation : V Description of Rock : Very Poor	

  
BISHWANATH KUMAR DAS  
M.TECH (P.E.C.O.TECH)  
SWAYIN & ASSOCIATES

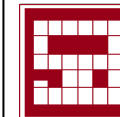


CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

Borehole No.	40	41	41	42
Depth (in mtr)	13.50	4.50	15.00	13.25
Core Piece No	7	1	8	7
RQD (%)	25	10	30	28
Density (g/cc)	2.56	2.54	2.50	2.48
Water content	0.83	0.042	0.62	0.55
Porosity	5.68	8.25	4.86	5.23
Permeability	2.14 x 10-8	1.95 x 10 <sup>-7</sup>	2.19 x 10-8	2.04 x 10-8
Unconfined Compressive Strength (kg/cm <sup>2</sup> )	136.26	199.54	162.34	132.24
Point Load Test (kg/cm <sup>2</sup> )	4.62	8.65	5.66	5.33
Weatherability	Highly Weathered (Grade-IV)	Completely Weathered(Grade-V)	Highly Weathered (Grade-IV)	Highly Weathered (Grade-IV)
Term	Weak to Strong	Weak	Weak to Strong	Weak to Strong
Mohr's Scale of Hardness	3.5	4	3.5	4
Cohesion and angle of internal friction	Shear Strength, C	19.15 kg/cm2	14.56 kg/cm2	18.66 kg/cm2
	φ	33°	27°	14°
Mineralogical and Petrological composition	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 30° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained Sands Moderate spaced Fractures with 25° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 20° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 20° dip
Corrosivity	Moderately Corrosive	Moderately to Mildy Corrosive	Moderately Corrosive	Moderately Corrosive
The rock deformability characteristics	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V Description of Rock : Very Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor

  
BISHWANATH KUMAR DAS.  
M.TECH (P&OT/ECHE)  

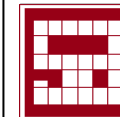
CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

Borehole No.	43	43	44	45
Depth (in mtr)	6.00	12.00	14.40	4.50
Core Piece No	2	6	7	1
RQD (%)	16	26	39	11
Density (g/cc)	2.57	2.56	2.53	2.56
Water content	0.037	0.83	0.62	0.038
Porosity	8.65	5.68	5.08	8.85
Permeability	$1.78 \times 10^{-7}$	$2.14 \times 10^{-8}$	$1.98 \times 10^{-8}$	$1.54 \times 10^{-7}$
Unconfined Compressive Strength (kg/cm <sup>2</sup> )	203.68	136.26	136.34	199.37
Point Load Test (kg/cm <sup>2</sup> )	8.62	4.62	5.78	8.49
Weatherability	Completely Weathered(Grade-V)	Highly Weathered (Grade-IV)	Highly Weathered (Grade-IV)	Completely Weathered (Grade-V)
Term	Weak	Weak to Strong	Weak to Strong	Weak
Mohr's Scale of Hardness	4	3	3.5	4
Cohesion and angle of internal friction	Shear Strength, C	14.48 kg/cm <sup>2</sup>	20.05 kg/cm <sup>2</sup>	18.20 kg/cm <sup>2</sup>
	$\phi$	26°	32°	16°
Mineralogical and Petrological composition	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained Sands Moderate spaced Fractures with 25° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 30° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Fractures closely with 30° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained Sands Moderate spaced Fractures with 25° dip
Corrosivity	Moderately to Mildly Corrosive	Moderately Corrosive	Moderately to Mildly Corrosive	Moderately to Mildly Corrosive
The rock deformability characteristics	Quality of Deformation : V Description of Rock : Very Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V Description of Rock : Very Poor

  
BISHU KUMAR DAS.  
M.TECH (GEO TECH)  
SWAYIN & ASSOCIATES



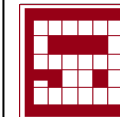


**CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES**

**JOB No: TLD/2020-03**

Borehole No.	45	46	46	47
Depth (in mtr)	15.00	4.50	12.00	12.00
Core Piece No	8	1	6	6
RQD (%)	28	15	26	31
Density (g/cc)	2.54	2.55	2.50	2.58
Water content	0.54	0.039	0.51	0.041
Porosity	5.21	8.72	6.34	11.54
Permeability	2.11 x 10 <sup>-8</sup>	1.84 x 10 <sup>-7</sup>	2.19 x 10 <sup>-8</sup>	2.38 x 10 <sup>-7</sup>
Unconfined Compressive Strength (kg/cm <sup>2</sup> )	129.76	202.68	135.48	226.12
Point Load Test (kg/cm <sup>2</sup> )	4.87	8.62	5.74	8.24
Weatherability	Highly Weathered (Grade-IV)	Completely Weathered(Grade-V)	Highly Weathered (Grade-IV)	Highly Weathered (Grade-IV)
Term	Weak to Strong	Weak	Weak to Strong	Weak to Strong
Mohr's Scale of Hardness	3.5	4	4	5
Cohesion and angle of internal friction	Shear Strength, C	12.00 kg/cm <sup>2</sup>	14.65 kg/cm <sup>2</sup>	17.02 kg/cm <sup>2</sup>
	φ	13°	26°	15°
Mineralogical and Petrological composition	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Fractures closely with 20° to 35° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained Sands Moderate spaced Fractures with 25° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 20° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained Sands Moderate spaced Fractures with 35° dip
Corrosivity	Moderately to Mildly Corrosive	Moderately to Mildly Corrosive	Moderately Corrosive	Moderately Corrosive
The rock deformability characteristics	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V Description of Rock : Very Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor	Quality of Deformation : V to IV Description of Rock : Very Poor to Poor

  
 Biswajit Kumar Das.  
 M.TECH (P.E.TECH)  

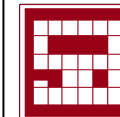



CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

Borehole No.	48	48	51	55	
Depth (in mtr)	4.50	15.00	20.48	18.00	
Core Piece No	1	8	9	7	
RQD (%)	15	40	-	-	
Density (g/cc)	2.55	2.48	2.46	2.42	
Water content	0.039	0.048	0.082	0.089	
Porosity	8.72	6.01	7.03	6.96	
Permeability	$1.84 \times 10^{-7}$	$2.24 \times 10^{-8}$	$1.34 \times 10^{-8}$	$1.26 \times 10^{-8}$	
Unconfined Compressive Strength (kg/cm <sup>2</sup> )	202.68	128.15	86.34	83.06	
Point Load Test (kg/cm <sup>2</sup> )	8.62	4.35	2.41	2.43	
Weatherability	Completely Weathered(Grade-V)	Highly Weathered (Grade-IV)	Completely Weathered (Grade-V)	Completely Weathered(Grade-V)	
Term	Weak	Weak to Strong	Weak	3	
Mohr's Scale of Hardness	4	3.5	3		
Cohesion and angle of internal friction	Shear Strength, C	14.15 kg/cm <sup>2</sup>	16.15 kg/cm <sup>2</sup>	15.33 kg/cm <sup>2</sup>	17.02 kg/cm <sup>2</sup>
	$\phi$	27°	25°	20°	15°
Mineralogical and Petrological composition	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained Sands Moderate spaced Fractures with 25° dip	Type of Rock: Sedimentary Rock Classification: Claystone Group: Argillaceous Composition: Hard Clays Moderate spaced Fractures with 20° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained sands Moderate spaced Fractures with 15° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained sands Moderate spaced Fractures with 15° dip	
Corrosivity	Moderately to Mildly Corrosive	Moderately Corrosive	Moderately to Mild Corrsive	Moderately to Mild Corrsive	
The rock deformability characteristics	Quality of Deformation : V Description of Rock : Very Poor	Quality of Deformation : III to V Description of Rock : Very Poor to Fair	Quality of Deformation : IV Description of Rock : Poor	Quality of Deformation : IV Description of Rock : Poor	

  
BISHWANATH KUMAR DAS.  
M.TECH (GEO TECH)  
L. SATYANAGAR

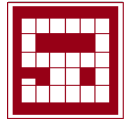


CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

Borehole No.	73	79	82	
Depth (in mtr)	23.09	21.00	17.00	
Core Piece No	6	9	7	
RQD (%)	-	-	-	
Density (g/cc)	2.45	2.44	2.46	
Water content	0.084	0.079	0.080	
Porosity	7.12	6.88	6.95	
Permeability	1.44 x 10-8	1.27 x 10-8	1.30 x 10-8	
Unconfined Compressive Strength (kg/cm <sup>2</sup> )	78.06	90.23	82.38	
Point Load Test (kg/cm <sup>2</sup> )	2.43	2.63	2.41	
Weatherability	Completely Weathered (Grade-V)	Completely Weathered (Grade-V)	Completely Weathered (Grade-V)	
Term	Weak	Weak	Weak	
Mohr's Scale of Hardness	3	3.5	3	
Cohesion and angle of internal friction	Shear Strength, C	18.12 kg/cm <sup>2</sup>	16.42 kg/cm <sup>2</sup>	15.76 kg/cm <sup>2</sup>
	φ	17°	19°	20°
Mineralogical and Petrological composition	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained sands Moderate spaced Fractures with 10° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained sands Moderate spaced Fractures with 15° dip	Type of Rock: Sedimentary Rock Classification: Sandstone Group: Arenaceous (Sandy) Composition: Fine Grained sands Moderate spaced Fractures with 15° dip	
Corrosivity	Moderately to Mild Corrsive	Moderately to Mild Corrsive	Moderately to Mild Corrsive	
The rock deformability characteristics	Quality of Deformation : IV Description of Rock : Poor	Quality of Deformation : IV Description of Rock : Poor	Quality of Deformation : IV Description of Rock : Poor	

  
 Biswajit Kumar Das.  
 M.TECH (GEO TECH)  

CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

238 ROCK MECHANICS FOR ENGINEERS

**Table 12.5**

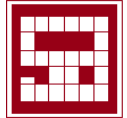
**Geomechanical classification of jointed rock masses**

Class No. and its description	1	2	3	4	5
	Very good	good	Fair	Poor	Very Poor
Rock Quality R.Q.D.(%)	90-100	75-90	50-75	25-50	< 25
Weathering	Unweathered	Slightly Weathered	Moderately weathered	Highly weathered	Completely weathered

**REFERENCE:-**

\* For Rock classification reference is taken from "ENGINEERING CLASSIFICATIONS OF ROCK MASS-Dr P. Verma.

  
 BISHU KUMAR DAS.  
 M.TECH (GEO TECH)  


CLIENT: TALCHER FERTILIZERS LIMITED  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

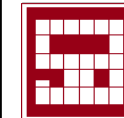
JOB No: TLD/2020-03

**ANNEXURE-C (ANALYSIS OF CHEMICAL PROPERTIES OF WATER SAMPLES)**

S No.	Borehole No.	pH	Chloride	Hardness	Sulphate	Carbondioxide	Ammonia	Magnesium
1	BH-35	7.30	93.65	260.15	136.26	0.86	0.36	6.17
2	BH-38	7.46	91.87	253.78	129.65	0.82	0.28	5.81
3	BH-41	7.25	94.02	252914	124.13	0.94	0.46	6.22
4	BH-42	7.37	92.54	266.94	132.54	0.92	0.33	5.68
5	BH-45	7.29	93.32	263.39	137.216	0.88	0.38	6.72
6	BH-46	7.40	95.96	260.43	140.285	0.91	0.45	6.54
7	BH-48	7.23	97.46	249.15	133.223	0.87	0.37	5.36
8	BH-52	7.40	89.96	252.09	118.96	0.90	0.42	6.23
9	BH-55	7.08	94.32	248.73	132.54	0.78	0.39	5.88
10	BH-72	7.14	97.81	261.18	126.87	0.86	0.41	6.07
11	BH-78	7.36	90.28	255.07	140.08	0.81	0.49	5.34
12	BH-80	7.22	94.33	258.74	133.77	0.88	0.53	5.68

- All test results are mentioned in mg/l except for pH.
- Ground water quality is assessed on the basis of water samples collected from site. Since the test results are in permissible limits, ground water of project site can be used for construction.

  
 BISHWANATH KUMAR DAS.  
 M.TECH (P.E.C.TECH)  

CLIENT: TALCHER FERTILIZERS LIMITED  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**ANNEXURE-D (ANALYSIS OF CHEMICAL PROPERTIES OF SOIL SAMPLES)**

S No.	Borehole No.	Depth in 'm'	Chloride (%)	Sulphate (%)
1	BH-34	1.50	0.19	0.14
2	BH-37	4.50	0.16	0.18
3	BH-39	1.50	0.22	0.15
4	BH-42	3.00	0.26	0.13
5	BH-43	3.00	0.19	0.19
6	BH-45	4.50	0.23	0.16
7	BH-48	1.50	0.25	0.17
8	BH-50	4.50	0.31	0.20
9	BH-61	1.50	0.28	0.17
10	BH-74	3.00	0.19	0.13
11	BH-78	4.50	0.22	0.16
12	BH-88	3.00	0.17	0.12

  
 BISHWANATH KUMAR DAS.  
 M.TECH (P&EOT) (IIT KGP)  




CLIENT: TALCHER FERTILIZERS LIMITED  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**ANNEXURE-E (ANALYSIS OF CHEMICAL PROPERTIES OF ROCK SAMPLES)**

S No.	Borehole No.	Depth in 'm'	Chloride (%)	Sulphate (%)
1	BH-36	10.50	0.052	0.024
2	BH-38	12.95	0.047	0.029
3	BH-39	12.00	0.053	0.033
4	BH-41	16.50	0.048	0.029
5	BH-43	13.15	0.046	0.031
6	BH-45	16.50	0.052	0.026
7	BH-47	10.50	0.055	0.034
8	BH-51	15.00	0.062	0.028
9	BH-64	16.50	0.057	0.036
10	BH-73	13.00	0.063	0.031
11	BH-79	15.00	0.054	0.027
12	BH-82	16.50	0.060	0.032

  
 BISHWANATH KUMAR DAS.  
 M.TECH (METEOROLOGICAL)  



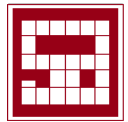



CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

## PLATE LOAD TEST RESULTS & GRAPHS

  
BISHU KUMAR DAS.  
MTECH (BOTECH)  

CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

### PLATE LOAD TEST PROCEDURE (AS PER IS 1888-1982)

#### **a) PLATE SIZE AND THICKNESS:**

The square plates used are of 0.50m was used for the Test.

#### **b) TEST PIT:**

Test was conducted at depths of 1.80m Below Ground Level after proper leveling. The top surface was finished and leveled properly.

#### **c) PLACING OF TEST PLATE:**

The plate was bedded to the soil by spreading fine sand carefully leveled and set horizontally at the bottom of the pit. At the commencement of the test the seating load of 10.00 kg/cm<sup>2</sup> at the plate level was applied.

#### **d) METHOD OF LISTING:**

Loading is applied by the method consisting of a hydraulic jack. The loading system is adequate to ensure that the test can be carried up to the specified limit. A ball and socket arrangement was inserted suitably in the assembly so as to allow the plate to rotate while keeping the direction of the load vertical throughout. Hydraulic jack with a load gauge attachment applied the loading increment.

#### **e) LOAD INCREMENTS:**

The numbers of loading increments were decided on the basis of ultimate bearing capacity according to clause no. 4.6 of IS 1888.

#### **f) SETTLEMENT AND OBSERVATION:**

Settlement was recorded with two dial gauges of 30mm range and least count of 0.01 mm placed diagonally opposite on the test plate. Settlement was observed for each increment of load after an interval of 1, 2.25, 4, 6.25, 9, 16, 25min. the average of two dial-gauge readings were considered. The next load increment was applied when the rate of settlement is less than 0.02 mm/ min.

  
BISHU KUMAR DAS.  
MTECH (GEOTECH)  
SATYANGIR





CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

### PLATE LOAD TEST REPORT

Client: TALCHER FERTILIZERS LIMITED	DOS: 15.05.2020
Co-ordinate: E-125.87 N-1202.44	DOC: 16.05.2020
Size of the plate: 500 mm x 500 mm x 25mm	Location:-ASU Area
Plate Loading Test No. 03	Depth of Testing: 1.80m
RL-94.682m	

SI No:	Date	Time	Pressure at plate level	Load Intensity	Dial Gauge Readings		Settlement in mm		Remarks.
					D1	D2	Average	Net	
1	2	3	4	5	6	7	8	9	10
1	15.05.2020	3.30 PM	10kg/cm <sup>2</sup>	40.00KN/m <sup>2</sup>					
2		3.31 PM			1.30	1.32	1.31	1.31	
3		3.32 PM			1.33	1.35	1.34	1.34	
4		3.34 PM			1.36	1.38	1.37	1.37	
5		3.36 PM			1.39	1.43	1.41	1.41	
6		3.39 PM			1.40	1.44	1.42	1.42	
7		3.46 PM			1.45	1.49	1.47	1.47	
8		3.55 PM			2.05	2.09	2.07	2.07	
9		4.30 PM			2.11	2.15	2.13	2.13	
10	15.05.2020	4.35 PM	20 kg/cm <sup>2</sup>	80.00KN/m <sup>2</sup>					
11		4.36 PM			3.67	3.68	3.68	3.68	
12		4.37 PM			3.68	3.69	3.69	3.69	
13		4.39 PM			3.68	3.70	3.69	3.69	
14		4.41 PM			3.69	3.70	3.70	3.70	
15		4.44 PM			3.71	3.75	3.73	3.73	
16		4.51 PM			3.76	3.79	3.78	3.78	
17		5.00 PM			3.80	3.85	3.83	3.83	
18		5.35 PM			3.84	3.88	3.86	3.86	
19	15.05.2020	5.40 PM	40 kg/cm <sup>2</sup>	160.00KN/m <sup>2</sup>					
20		5.41 PM			4.78	4.93	4.86	4.86	
21		5.42 PM			4.79	4.94	4.87	4.87	
22		5.44 PM			4.79	4.95	4.87	4.87	
23		5.46 PM			4.80	4.95	4.88	4.88	
24		5.49 PM			4.81	4.96	4.89	4.89	
25		5.56 PM			4.81	4.97	4.89	4.89	
26		6.05 PM			4.91	5.06	4.99	4.99	
27		6.40 PM			5.01	5.10	5.06	5.06	

  
 BISHWANATH KUMAR DAS.  
 M.TECH (GEOTECH)  






CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**PLATE LOAD TEST REPORT**

Client: TALCHER FERTILIZERS LIMITED	DOS: 15.05.2020
Co-ordinate: E-125.87 N-1202.44	DOC: 16.05.2020
Size of the plate: 500 mm x 500 mm x 25mm	Location:-ASU Area
Plate Loading Test No. 03	Depth of Testing: 1.80m
RL-94.682m	

SI No:	Date	Time	Pressure at plate level	Load Intensity	Dial Gauge Readings		Settlement in mm		Remarks.
					D1	D2	Average	Net	
1	2	3	4	5	6	7	8	9	10
28	15.05.2020	6.45 PM	70 kg/cm <sup>2</sup>	280.00KN/m <sup>2</sup>					
29		6.46 PM			5.33	5.41	5.37	5.37	
30		6.47 PM			5.34	5.42	5.38	5.38	
31		6.49 PM			5.34	5.43	5.39	5.39	
32		6.51 PM			5.36	5.44	5.40	5.40	
33		6.54 PM			5.38	5.46	5.42	5.42	
34		7.01 PM			5.41	5.49	5.45	5.45	
35		7.10 PM			5.48	5.56	5.52	5.52	
36		7.45 PM			6.41	6.45	6.43	6.43	
37	15.05.2020	7.50 PM	100 kg/cm <sup>2</sup>	400.00KN/m <sup>2</sup>					
38		7.51 PM			7.31	7.42	7.37	7.37	
39		7.52 PM			7.32	7.44	7.38	7.38	
40		7.54 PM			7.35	7.46	7.41	7.41	
41		7.56 PM			7.38	7.46	7.42	7.42	
42		7.59 PM			7.39	7.47	7.43	7.43	
43		8.06 PM			7.42	7.49	7.46	7.46	
44		8.15 PM			7.53	7.58	7.56	7.56	
45		8.50 PM			7.61	7.64	7.63	7.63	
46	15.05.2020	8.55 PM	130 kg/cm <sup>2</sup>	520.00KN/m <sup>2</sup>					
47		8.56 PM			7.86	8.12	7.99	7.99	
48		8.57 PM			7.91	8.13	8.02	8.02	
49		8.59 PM			7.91	8.13	8.02	8.02	
50		9.01 PM			7.92	8.14	8.03	8.03	
51		9.04 PM			7.94	8.15	8.05	8.05	
52		9.11 PM			7.94	8.15	8.05	8.05	
53		9.20 PM			7.98	8.19	8.09	8.09	
54		9.55 PM			7.99	8.20	8.10	8.10	

  
 BISHWANATH RUMPA DAS.  
 M.TECH (GEO TECH)  





CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

### PLATE LOAD TEST REPORT

Client: TALCHER FERTILIZERS LIMITED	DOS: 15.05.2020
Co-ordinate: E-125.87 N-1202.44	DOC: 16.05.2020
Size of the plate: 500 mm x 500 mm x 25mm	Location:-ASU Area
Plate Loading Test No. 03	Depth of Testing: 1.80m
RL-94.682m	

SI No:	Date	Time	Pressure at plate level	Load Intensity	Dial Gauge Readings		Settlement in mm		Remarks.
					D1	D2	Average	Net	
1	2	3	4	5	6	7	8	9	10
55	15.05.2020	10.00 PM	160 kg/cm <sup>2</sup>	640.00KN/m <sup>2</sup>					
56		10.01 PM			8.50	8.61	8.56	8.56	
57		10.02 PM			8.51	8.62	8.57	8.57	
58		10.04 PM			8.52	8.63	8.58	8.58	
59		10.06 PM			8.53	8.64	8.59	8.59	
60		10.09 PM			8.53	8.64	8.59	8.59	
61		10.16 PM			8.54	8.65	8.60	8.60	
62		10.25 PM			8.55	8.67	8.61	8.61	
63		11.00 PM			8.62	8.71	8.67	8.67	
64	15.05.2020	11.05 PM	200 kg/cm <sup>2</sup>	800.00KN/m <sup>2</sup>					
65		11.06 PM			10.41	10.47	10.44	10.44	
66		11.07 PM			10.42	10.48	10.45	10.45	
67		11.09 PM			10.42	10.48	10.45	10.45	
68		11.11 PM			10.43	10.48	10.46	10.46	
69		11.14 PM			10.45	10.50	10.48	10.48	
70		11.21 PM			10.50	10.54	10.52	10.52	
71		11.30 PM			10.61	10.65	10.63	10.63	
72	16.05.2020	12.05 AM			10.73	10.81	10.77	10.77	
73		12.10 AM	230 kg/cm <sup>2</sup>	920.00KN/m <sup>2</sup>					
74		12.11 AM			11.84	11.88	11.86	11.86	
75		12.12 AM			11.85	11.89	11.87	11.87	
76		12.14 AM			11.85	11.90	11.88	11.88	
77		12.16 AM			11.85	11.90	11.88	11.88	
78		12.19 AM			11.86	11.91	11.89	11.89	
79		12.26 AM			11.87	11.92	11.90	11.90	
80		12.30 AM			11.89	11.93	11.91	11.91	

  
 BISHAL KUMAR DAS  
 M.TECH (GEO TECH)  
 L. SATYANIGR




CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

### PLATE LOAD TEST REPORT

Client: TALCHER FERTILIZERS LIMITED	DOS: 14.05.2020
Co-ordinate: E-799.43 N-1736.353	DOC: 14.05.2020
Size of the plate: 500 mm x 500 mm x 25mm	Location:-CSU Area
Plate Loading Test No. 04	Depth of Testing: 1.80m
RL-100.00m	

SI No:	Date	Time	Pressure at plate level	Load Intensity	Dial Gauge Readings		Settlement in mm		Remarks.
					D1	D2	Average	Net	
1	2	3	4	5	6	7	8	9	10
1	14.05.2020	7.31 AM	10kg/cm <sup>2</sup>	40.00KN/m <sup>2</sup>	0.24	0.40	0.32	0.32	
2		7.32 AM			0.25	0.41	0.33	0.33	
3		7.34 AM			0.26	0.42	0.34	0.34	
4		7.36 AM			0.27	0.46	0.37	0.37	
5		7.39 AM			0.28	0.47	0.38	0.38	
6		7.46 AM			0.29	0.48	0.39	0.39	
7		7.55 AM			0.35	0.51	0.43	0.43	
8		8.30 AM			0.47	0.65	0.56	0.56	
9	14.05.2020	8.35 AM	20 kg/cm <sup>2</sup>	80.00KN/m <sup>2</sup>					
10		8.36 AM			0.95	1.02	0.99	0.99	
11		8.37 AM			0.98	1.05	1.02	1.02	
12		8.39 AM			1.01	1.05	1.03	1.03	
13		8.41 AM			1.03	1.08	1.06	1.06	
14		8.44 AM			1.04	1.09	1.07	1.07	
15		8.51 AM			1.15	1.13	1.14	1.14	
16		9.00 AM			1.19	1.14	1.17	1.17	
17		9.35 AM			1.31	1.17	1.24	1.24	
18	14.05.2020	9.40 AM	40 kg/cm <sup>2</sup>	160.00KN/m <sup>2</sup>	3.84	3.88	3.86	3.86	
19		9.41 AM			3.96	3.80	3.88	3.88	
20		9.42 AM			3.97	3.80	3.89	3.89	
21		9.44 AM			3.98	3.82	3.90	3.90	
22		9.46 AM			4.01	3.95	3.98	3.98	
23		9.49 AM			4.06	4.01	4.04	4.04	
24		9.56 AM			4.07	4.02	4.05	4.05	
25		10.05 AM			4.50	4.40	4.45	4.45	
26		10.40 AM			4.50	4.40	4.45	4.45	

  
 BISHWAJIT KUMAR DAS.  
 M.TECH (GEO TECH)  
 T. SATYANAGAR



CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

### PLATE LOAD TEST REPORT

Client: TALCHER FERTILIZERS LIMITED	DOS: 14.05.2020
Co-ordinate: E-799.43 N-1736.353	DOC: 14.05.2020
Size of the plate: 500 mm x 500 mm x 25mm	Location:-CSU Area
Plate Loading Test No. 04	Depth of Testing: 1.80m
RL-100.00m	

Sl No:	Date	Time	Pressure at plate level	Load Intensity	Dial Gauge Readings		Settlement in mm		Remarks.
					D1	D2	Average	Net	
1	2	3	4	5	6	7	8	9	10
27	14.05.2020	10.45 AM	60 kg/cm <sup>2</sup>	240.00KN/m <sup>2</sup>					
28		10.46 AM			6.09	5.95	6.02	6.02	
29		10.47 AM			6.11	6.01	6.06	6.06	
30		10.49 AM			6.13	6.03	6.08	6.08	
31		10.51 AM			6.15	6.06	6.11	6.11	
32		10.54 AM			6.16	6.09	6.13	6.13	
33		11.01 AM			6.19	6.11	6.15	6.15	
34		11.10 AM			6.25	6.19	6.22	6.22	
35		11.45 AM			6.29	6.21	6.25	6.25	
36	14.05.2020	11.50 AM	80 kg/cm <sup>2</sup>	320.00 KN/m <sup>2</sup>					
37		11.51 AM			8.26	8.43	8.35	8.35	
38		11.52 AM			8.27	8.45	8.36	8.36	
39		11.54 AM			8.28	8.47	8.38	8.38	
40		11.56 AM			8.31	8.48	8.40	8.40	
41		11.59 AM			8.33	8.51	8.42	8.42	
42		12.06 PM			8.39	8.53	8.46	8.46	
43		12.15 PM			8.40	8.50	8.45	8.45	
44		12.50 PM			8.41	8.51	8.46	8.46	
45	14.05.2020	12.55 PM	120 kg/cm <sup>2</sup>	480.00KN/m <sup>2</sup>					
46		12.56 PM			9.45	9.39	9.42	9.42	
47		12.57 PM			9.52	9.43	9.48	9.48	
48		12.59 PM			9.53	9.44	9.49	9.49	
49		01.01 PM			9.55	9.45	9.50	9.50	
50		01.04 PM			9.55	9.45	9.50	9.50	
51		01.11 PM			9.58	9.46	9.52	9.52	
52		01.20 PM			9.58	9.47	9.53	9.53	
53		01.55 PM			9.59	9.50	9.55	9.55	

  
 BISHNU KUMAR DAS  
 M.TECH (RECTECH)  
 T. SATYANAGAR







CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

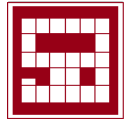
JOB No: TLD/2020-03

### PLATE LOAD TEST REPORT

Client: TALCHER FERTILIZERS LIMITED	DOS: 14.05.2020
Co-ordinate: E-799.43 N-1736.353	DOC: 14.05.2020
Size of the plate: 500 mm x 500 mm x 25mm	Location:-CSU Area
Plate Loading Test No. 04	Depth of Testing: 1.80m
RL-100.00m	

Sl No:	Date	Time	Pressure at plate level	Load Intensity	Dial Gauge Readings		Settlement in mm		Remarks.
					D1	D2	Average	Net	
1	2	3	4	5	6	7	8	9	10
54	14.05.2020	02.00 PM	160 kg/cm <sup>2</sup>	640.00KN/m <sup>2</sup>					
55		02.01 PM			10.70	10.50	10.60	10.60	
56		02.02 PM			11.38	11.33	11.36	11.36	
57		02.04 PM			11.44	11.36	11.40	11.40	
58		02.06 PM			11.46	11.38	11.42	11.42	
59		02.09 PM			11.49	11.42	11.46	11.46	
60		02.16 PM			11.50	11.40	11.45	11.45	
61		02.25 PM			11.50	11.40	11.45	11.45	
62		03.00 PM			11.54	11.43	11.49	11.49	
63	14.05.2020	03.05 PM	200 kg/cm <sup>2</sup>	800.00KN/m <sup>2</sup>					
64		03.06 PM			13.89	13.70	13.80	13.80	
65		03.07 PM			13.89	13.70	13.80	13.80	
66		03.09 PM			13.90	13.71	13.81	13.81	
67		03.11 PM			13.91	13.71	13.81	13.81	
68		03.14 PM			13.94	13.76	13.85	13.85	
69		03.21 PM			14.00	13.82	13.91	13.91	
70		03.30 PM			14.01	13.85	13.93	13.93	
71		04.05 PM			14.03	13.91	13.97	13.97	
72	14.05.2020	04.10 PM	230 kg/cm <sup>2</sup>	920.00KN/m <sup>2</sup>					
73		04.11 PM			11.84	11.88	11.86	11.86	
74		04.12 PM			11.85	11.89	11.87	11.87	
75		04.14 PM			11.85	11.90	11.88	11.88	
76		04.16 PM			11.85	11.90	11.88	11.88	
77		04.19 PM			11.86	11.91	11.89	11.89	
78		04.26 PM			11.87	11.92	11.90	11.90	
79		04.30 PM			11.89	11.93	11.91	11.91	
80	REVERS								
81		05.00 PM	200 kg/cm <sup>2</sup>	800.00 KN/m <sup>2</sup>	15.01	13.55	14.28	14.28	
82		05.05 PM	150 kg/cm <sup>2</sup>	600.00 KN/m <sup>2</sup>	13.00	11.72	12.36	12.36	
83		05.10 PM	100 kg/cm <sup>2</sup>	400.00 KN/m <sup>2</sup>	10.70	9.75	10.23	10.23	
84		05.15 PM	50 kg/cm <sup>2</sup>	200.00 KN/m <sup>2</sup>	8.96	8.40	8.68	8.68	
85		05.20 PM	0 kg/cm <sup>2</sup>	0 KN/m <sup>2</sup>	8.11	8.06	8.09	8.09	

  
 BISHAL KUMAR DAS.  
 M.TECH (GEOTECH)  




CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**Load Intensity calculation for PLT**

Size of the Plate = (0.50 x 0.50) m  
= 0.25 m<sup>2</sup>

Pressure applied on Plate in 1<sup>st</sup> stage = 10 kg/cm<sup>2</sup>

Load Intensity = Applied Pressure on plate / Size of the Plate  
= (10/0.25) = 40 Kn/m<sup>2</sup>

  
BISHAL KUMAR DAS.  
MTECH (METALLURGY)  
SATYANAGAR

**PLATE LOAD TEST NO - PLT-03**

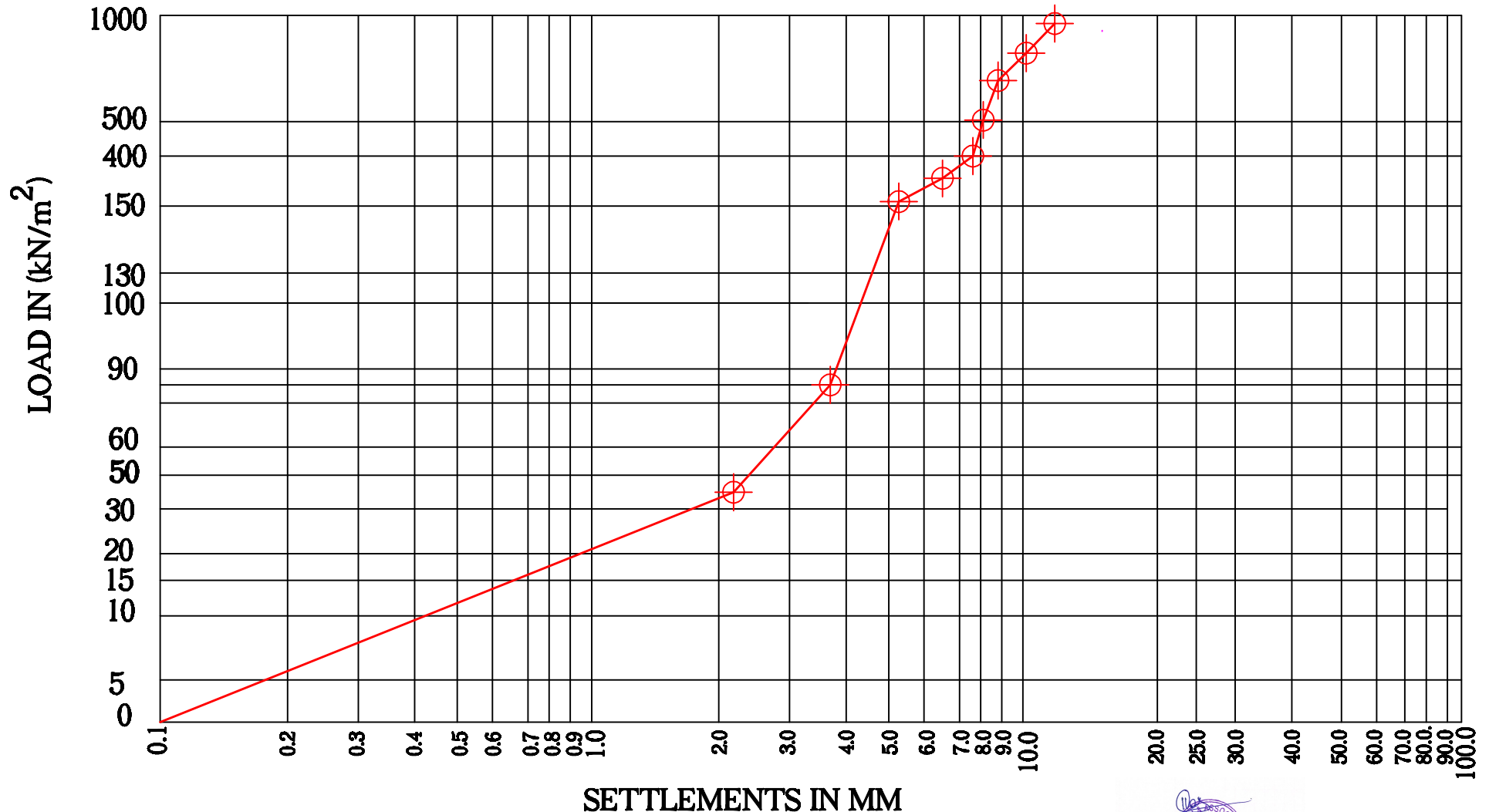
**DEPTH - 1.80M**

**CLIENT : TFL (TALCHER FERTILIZERS LIMITED)**

**CO-ORDINATE: E-125.87, N- 1202.44**

**RL - 94.682M**

**SIZE OF THE PLATE :- 500mm X 500mm**



**LOAD-SETTLEMENT CURVE (LOG-LOG SCALE)**

BISHWANKUMAR DAS.  
M.TECH (PRACTICAL)  
SWAYIN & ASSOCIATES

**PLATE LOAD TEST NO - PLT-04**

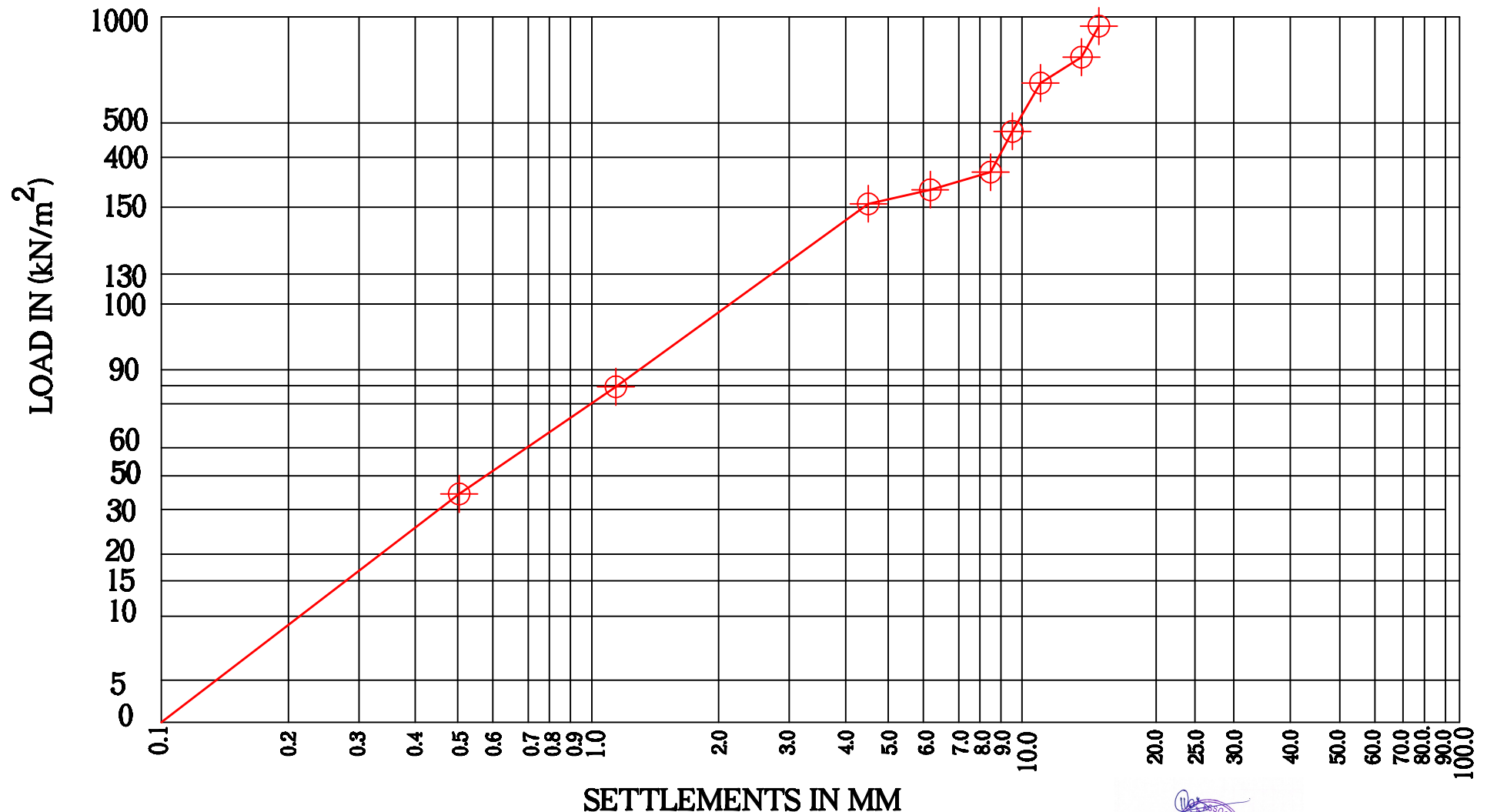
**DEPTH - 1.80M**

**CLIENT : TFL (TALCHER FERTILIZERS LIMITED)**

**CO-ORDINATE: E-799.43, N- 1736.353**

**RL - 100.00M**

**SIZE OF THE PLATE :- 500mm X 500mm**



**LOAD-SETTLEMENT CURVE (LOG-LOG SCALE)**

BISHWANKUMAR DAS.  
M.TECH (PRACTICAL)  
SWAYIN & ASSOCIATES

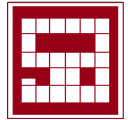


CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

## ERT TEST RESULTS & GRAPHS

  
BISHAL KUMAR DAS.  
MTECH (GEOTECH)  

CLIENT: TALCHER FERTILIZERS LIMITED.  
CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

## SCOPE OF WORK

The scope of work in brief involved in the above studies included-

- Soil Resistivity survey at Spacing of 100cm, 200cm, 400cm, 600cm, 800cm and 1000cm at each location.

## CORROSION SURVEY

### METHODOLOGY:

#### Corrosion Survey:

- Method -- Wenner Configuration
- Electrode Spacing -- 50cm, 100 cm, 200cm, 300cm, 400cm and 500cm at each location(Care has to be taken while taking readings)

### INSTRUMENT USED & PROCEDURE

Digital Soil Resistivity Meter	:	01 No.
Make	:	Electronic Devices, Panki, and Kanpur.
Least Count	:	0.01 Ohm.
Method	:	Werner configuration
Electrode spacing	:	100cm, 200cm, 400cm, 600cm, 800cm and 1000cm at each location.

  
BISHAL KUMAR DAS.  
M.TECH (P&EOT&CH)  




CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES


JOB No: TLD/2020-03

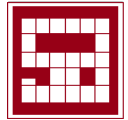
**TABULATION OF ELECTRICAL RESISTIVITY TEST RESULTS**

S No.	ERT No.	Date	Location	Spacing in mtr.	Resistance in $\Omega$	Resistivity in $\Omega\text{-m}$ ( $\rho=2\pi rR$ )
1		2	3	5	6	7
1	1	16.03.20	ASU Area	1.00	9.12	57.27
				2.00	6.95	87.29
				4.00	3.63	91.19
				7.00	2.36	103.75
				9.00	2.10	118.69
2	2	16.03.20		1.00	8.50	53.38
				3.00	4.95	93.26
				5.00	3.38	106.13
				7.00	2.48	109.02
3	3	13.05.20		10.00	1.90	119.32
				1.00	9.14	57.40
				2.00	7.18	90.18
				4.00	3.94	98.97
				6.00	2.83	106.63
4	4	13.05.20		8.00	2.22	111.53
			10.00	2.01	126.23	
			1.00	9.15	57.46	
			2.00	7.08	88.92	
			4.00	3.84	96.46	
			6.00	2.72	102.49	
			8.00	2.15	108.02	
			10.00	1.91	119.95	

**TABULATION OF ELECTRICAL RESISTIVITY TEST RESULTS**

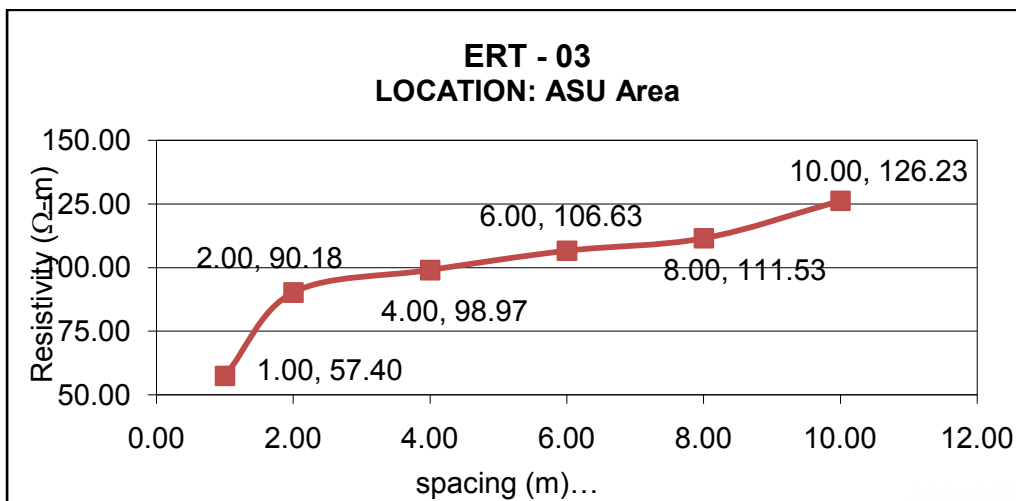
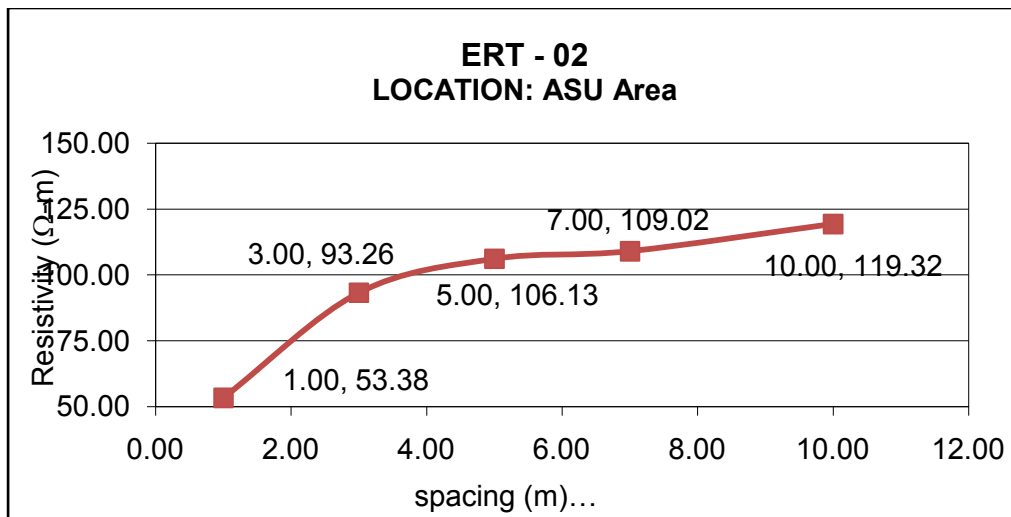
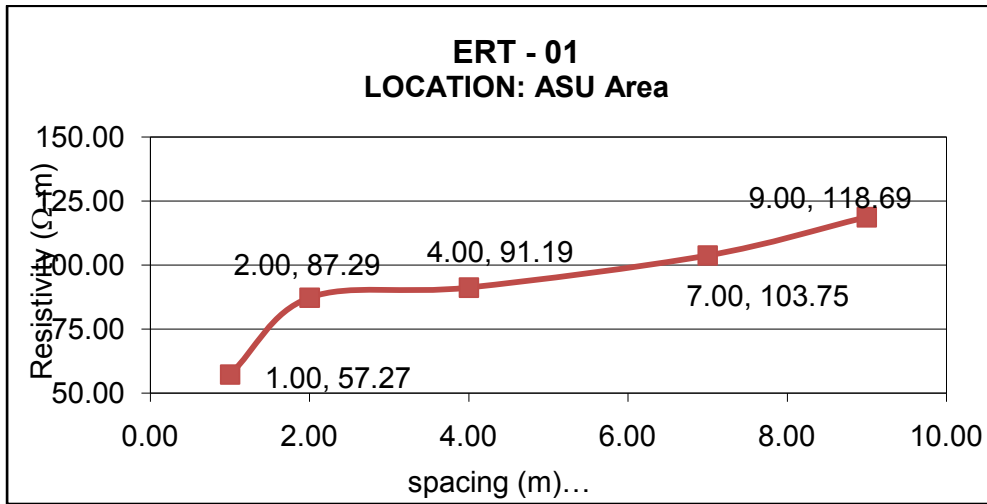
S No.	ERT No.	Date	Location	Spacing in mtr.	Resistance in $\Omega$	Resistivity in $\Omega\text{-m}$ ( $\rho=2\pi rR$ )
1		2	3	5	6	7
1	1	16.03.20	CSU Area	1.00	8.79	55.20
				2.00	5.25	65.94
				4.00	3.06	76.87
				6.00	2.13	80.26
				9.00	1.62	91.56
1	1	16.03.20		1.00	9.13	57.34
				2.00	5.12	64.31
				4.00	3.05	76.62
				6.00	2.15	81.01
				9.00	1.68	94.95

Signature:   
 BISHWANATH KUMAR DAS.  
 M.TECH (ELECTRICAL)  
 S.WAYIN & ASSOCIATES  
 T. SATYANAGAR



CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03



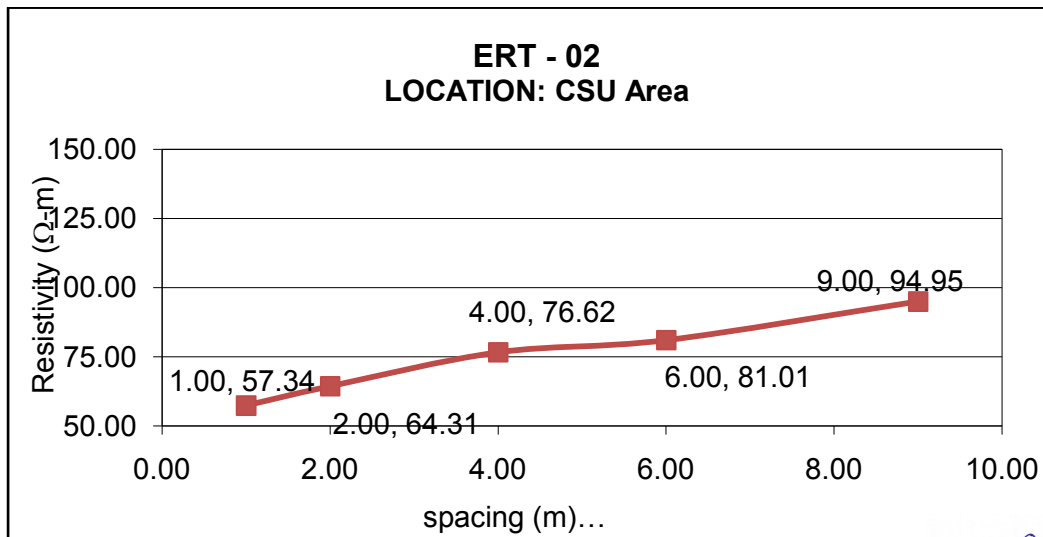
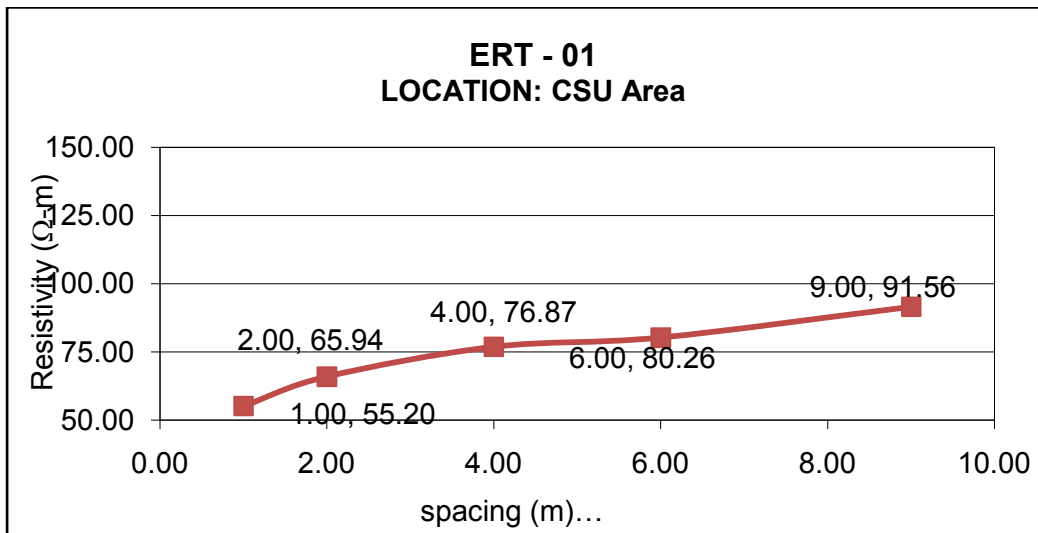
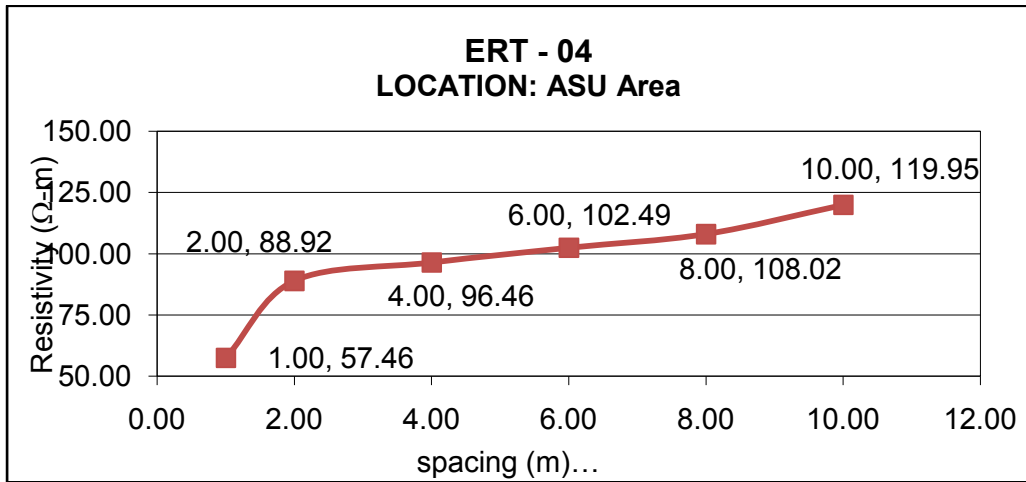
  
 Biswajit Kumar Das.  
 M.TECH (GEOTECH)  








CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

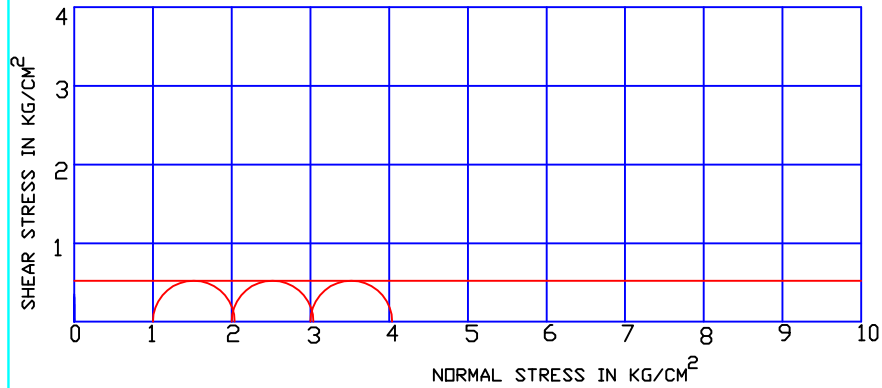
JOB No: TLD/2020-03



  
 BISHWANATH KUMAR DAS  
 M.TECH (ELECTRICAL)  


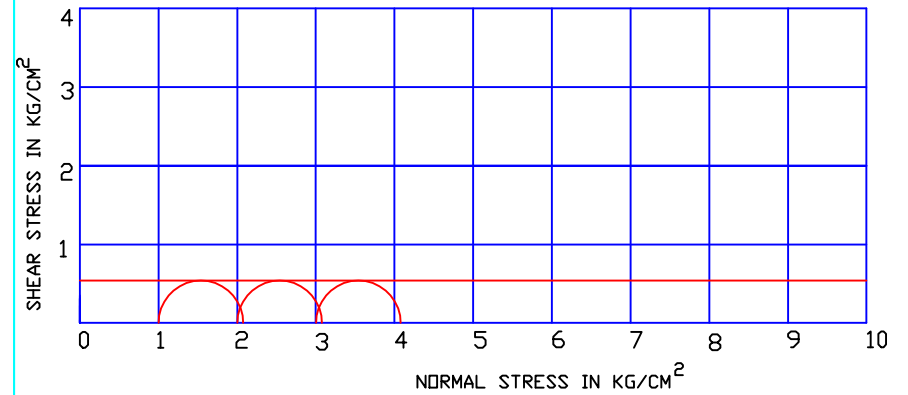
LOCATION:-ASU AREA  
DEPTH :-1.50M.  
BH-40

CONSOLIDATION UNDRAINED  
C=0.52KG/CM<sup>2</sup>  
Ø=0°



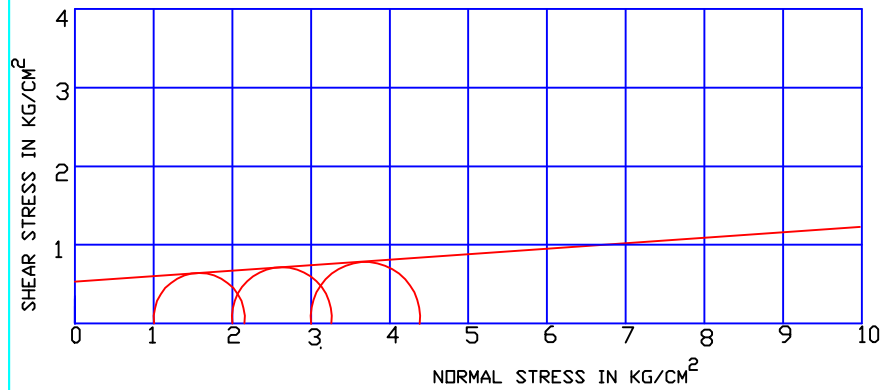
LOCATION:-ASU AREA  
DEPTH :-3.00M.  
BH-43

CONSOLIDATION UNDRAINED  
C=0.54KG/CM<sup>2</sup>  
Ø=0°



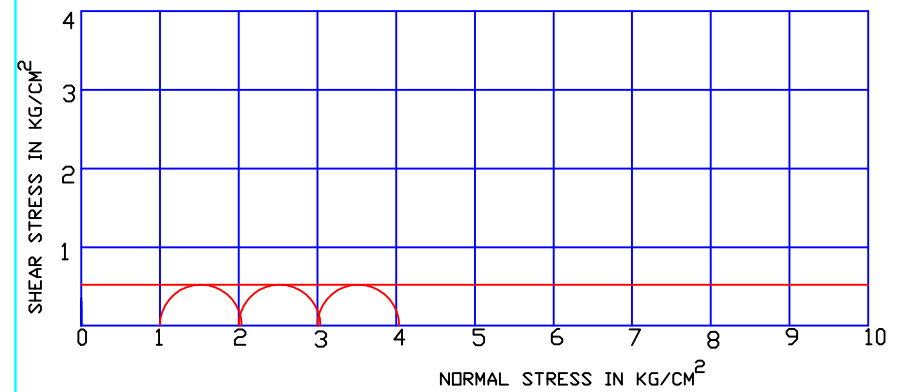
LOCATION:-ASU AREA  
DEPTH :-3.00M.  
BH-44

CONSOLIDATION UNDRAINED  
C=0.53KG/CM<sup>2</sup>  
Ø=4°



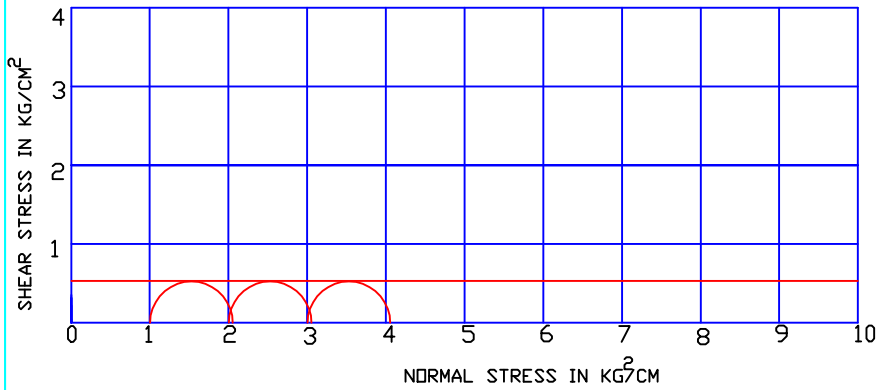
LOCATION:-ASU AREA  
DEPTH :-1.50M.  
BH-45

CONSOLIDATION UNDRAINED  
C=0.52KG/CM<sup>2</sup>  
Ø=0°



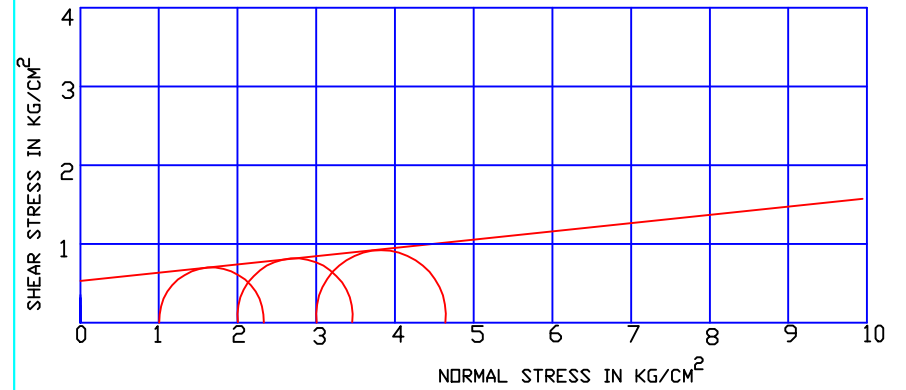
LOCATION:-ASU AREA  
 DEPTH :-1.50M.  
 BH-34

CONSOLIDATION UNDRAINED  
 $C=0.53\text{KG}/\text{CM}^2$   
 $\phi=0^\circ$



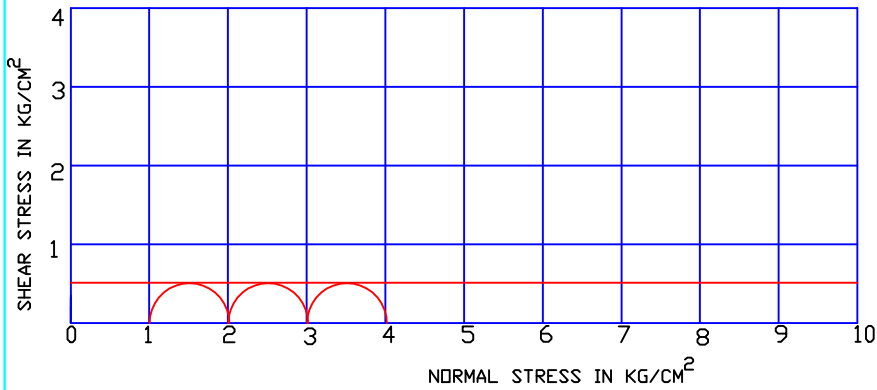
LOCATION:-ASU AREA  
 DEPTH :-1.50M.  
 BH-37

CONSOLIDATION UNDRAINED  
 $C=0.53\text{KG}/\text{CM}^2$   
 $\phi=6^\circ$



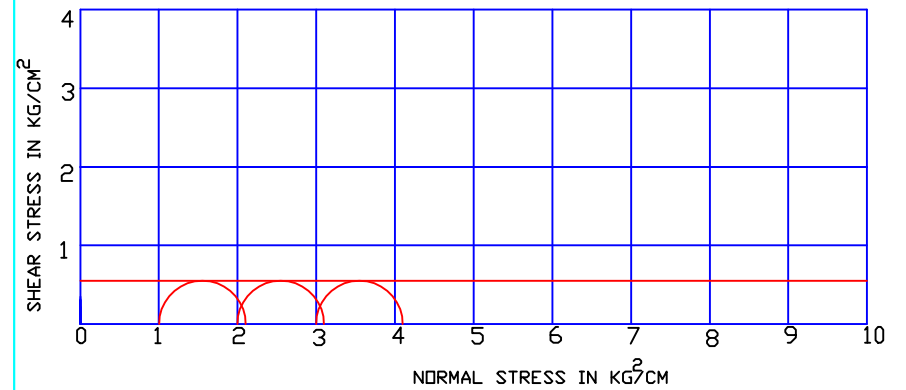
LOCATION:-ASU AREA  
 DEPTH :-1.50M.  
 BH-38

CONSOLIDATION UNDRAINED  
 $C=0.51\text{KG}/\text{CM}^2$   
 $\phi=0^\circ$



LOCATION:-ASU AREA  
 DEPTH :-3.00M.  
 BH-39

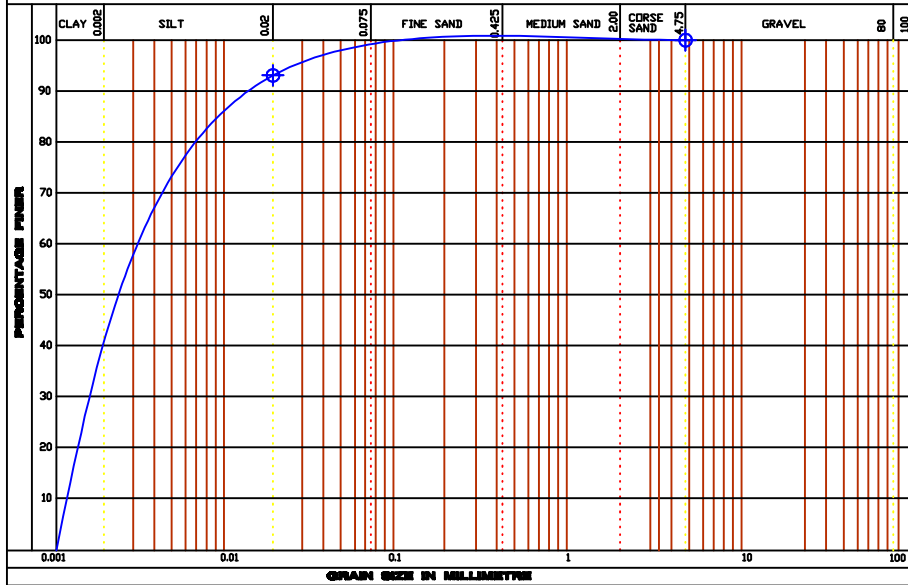
CONSOLIDATION UNDRAINED  
 $C=0.55\text{KG}/\text{CM}^2$   
 $\phi=0^\circ$



*(Signature)*  
 BISHWANATH KUMAR DAS.  
 M.TECH (GEO TECH)  
 SATYANAGAR

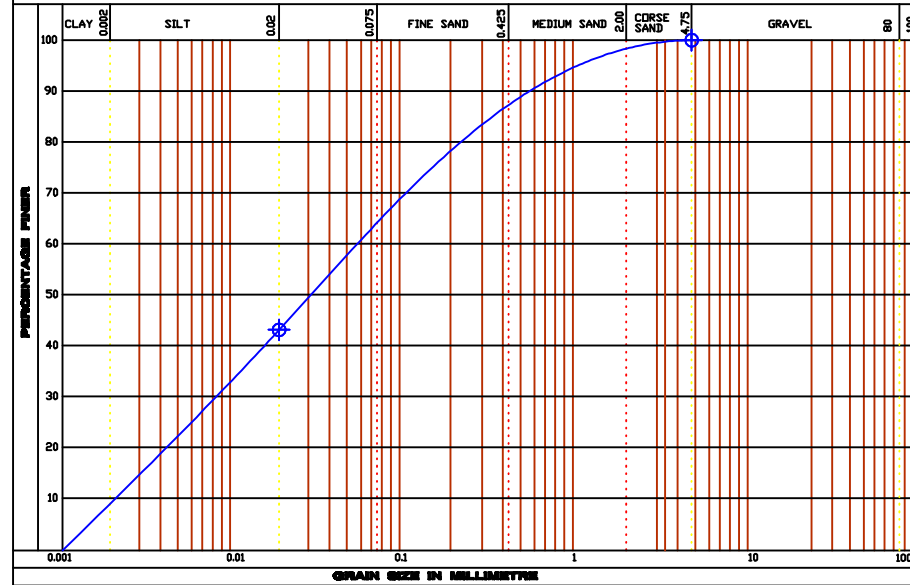
**LOCATION - ASU AREA**  
**DEPTH-1.50M**  
**GRAIN SIZE DISTRIBUTION CURVE**

SLH NO- 24



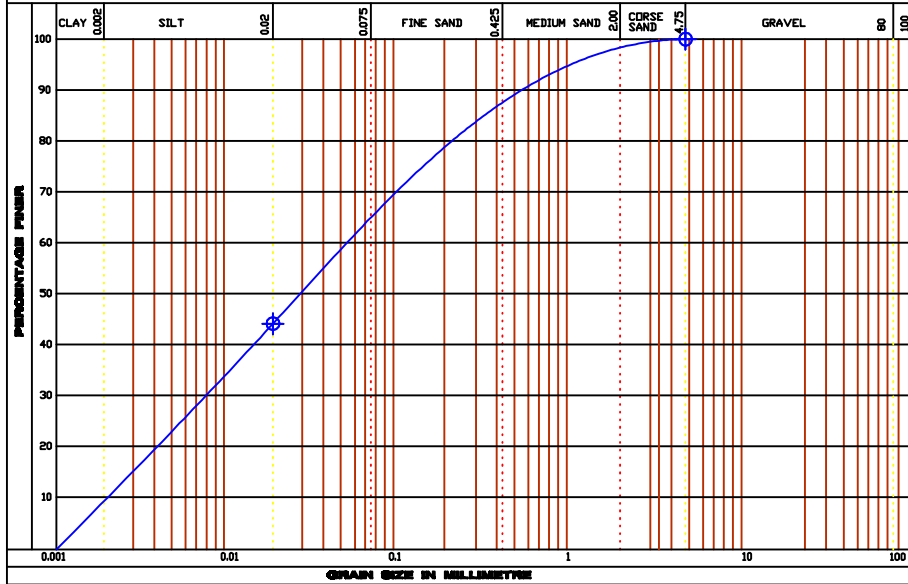
**LOCATION - ASU AREA**  
**DEPTH-1.50M**  
**GRAIN SIZE DISTRIBUTION CURVE**

SLH NO- 25



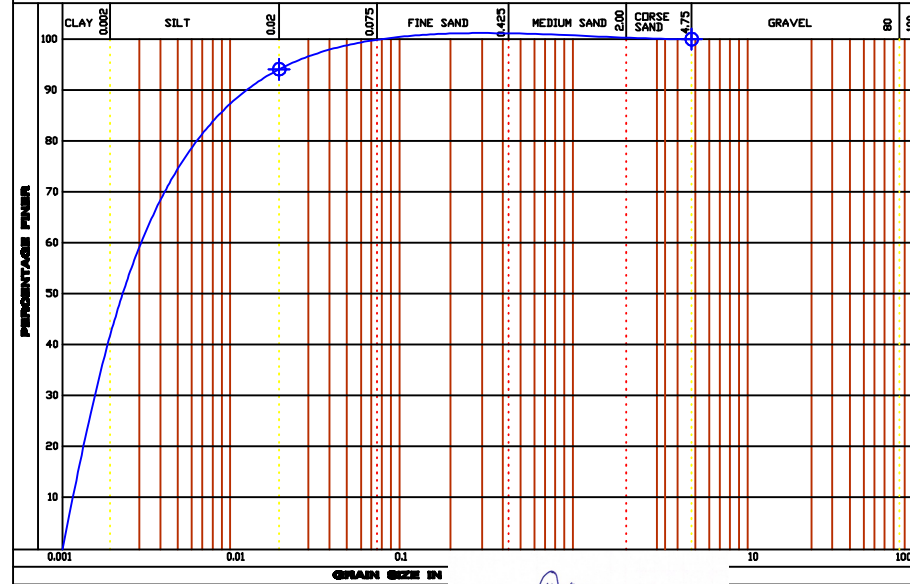
**LOCATION - ASU AREA**  
**DEPTH-1.50M**  
**GRAIN SIZE DISTRIBUTION CURVE**

SLH NO- 26



**LOCATION - ASU AREA**  
**DEPTH-3.00M**  
**GRAIN SIZE DISTRIBUTION CURVE**

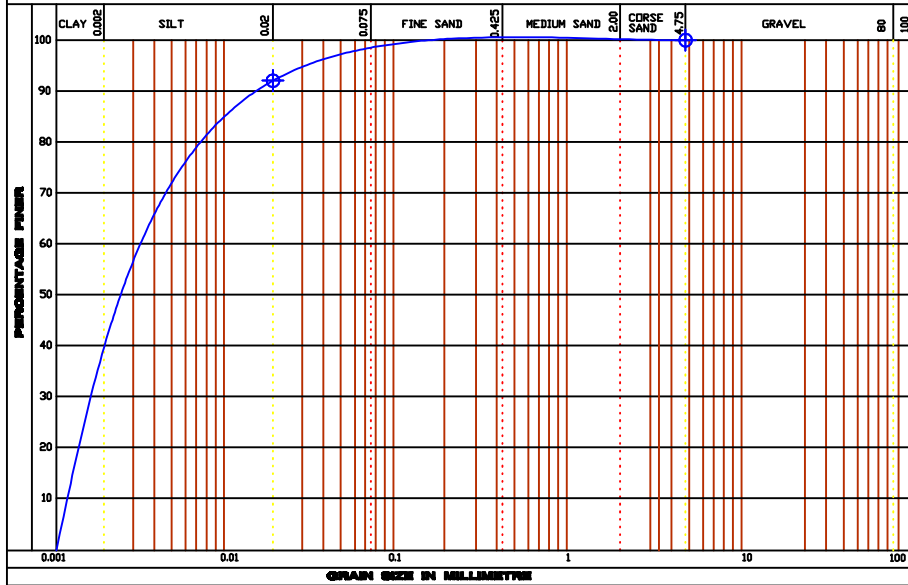
SLH NO- 27



*Dex*  
 BISHW KUMAR DAS.  
 M.TECH (GEOTECH)  
 S.WAYIN & ASSOCIATES

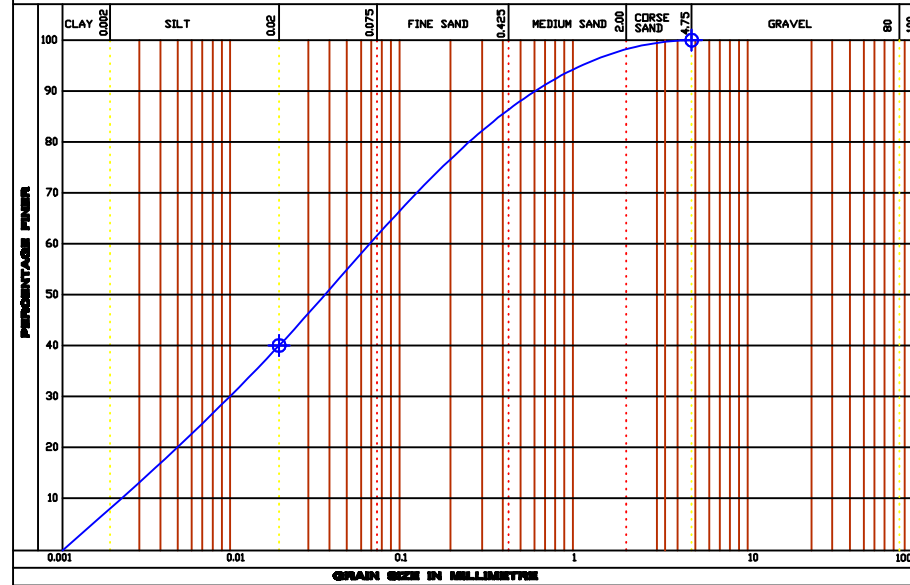
**LOCATION - ASU AREA**  
**DEPTH-1.50M**  
**GRAIN SIZE DISTRIBUTION CURVE**

BLH NO- 40



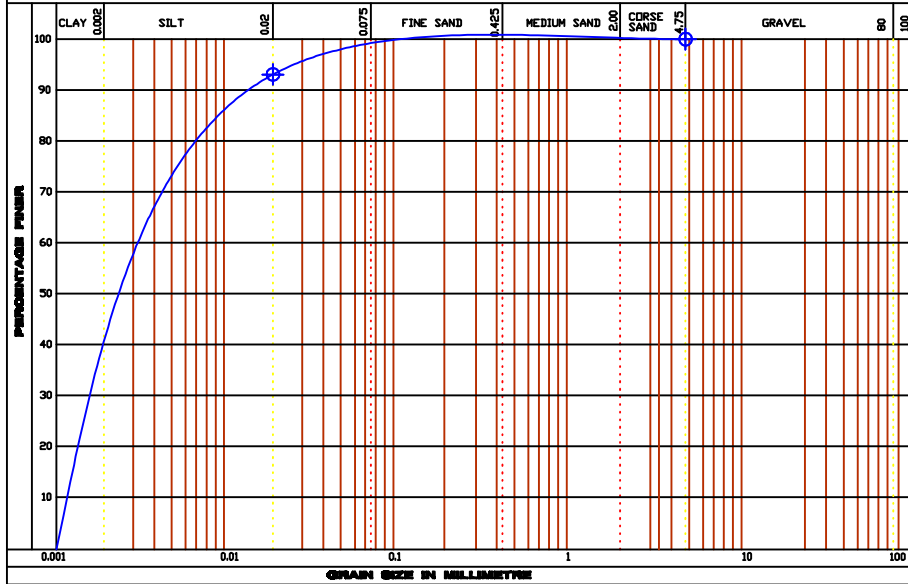
**LOCATION - ASU AREA**  
**DEPTH-1.50M**  
**GRAIN SIZE DISTRIBUTION CURVE**

BLH NO- 42



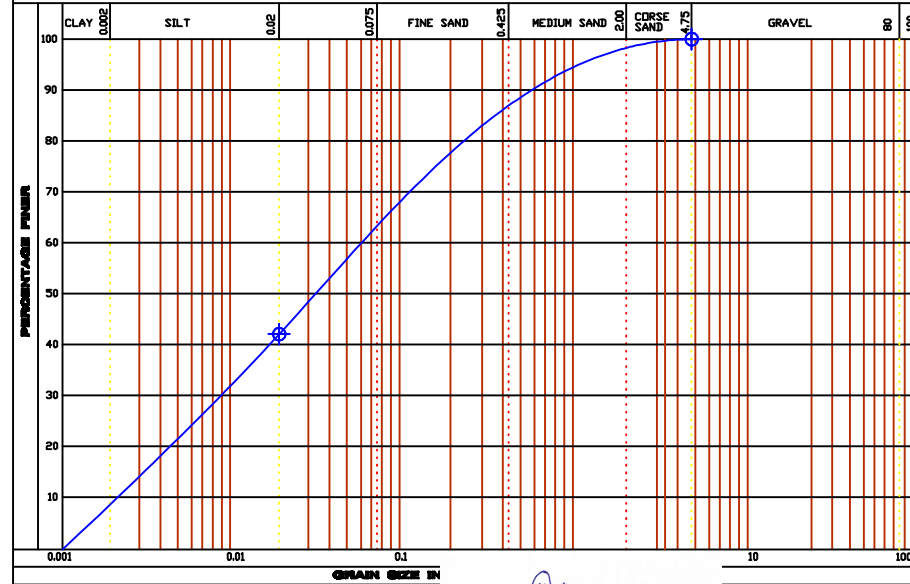
**LOCATION - ASU AREA**  
**DEPTH-3.00M**  
**GRAIN SIZE DISTRIBUTION CURVE**

BLH NO- 48

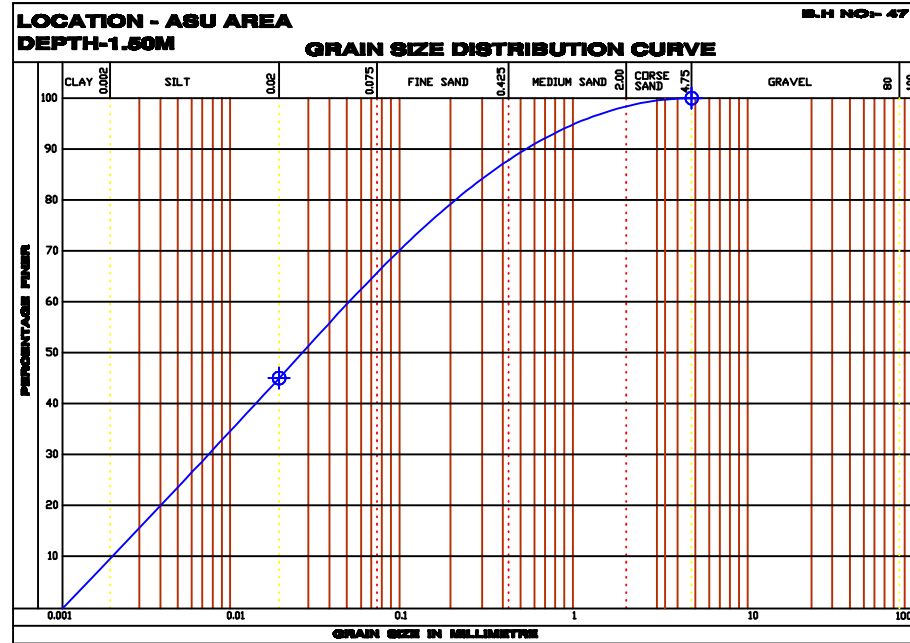
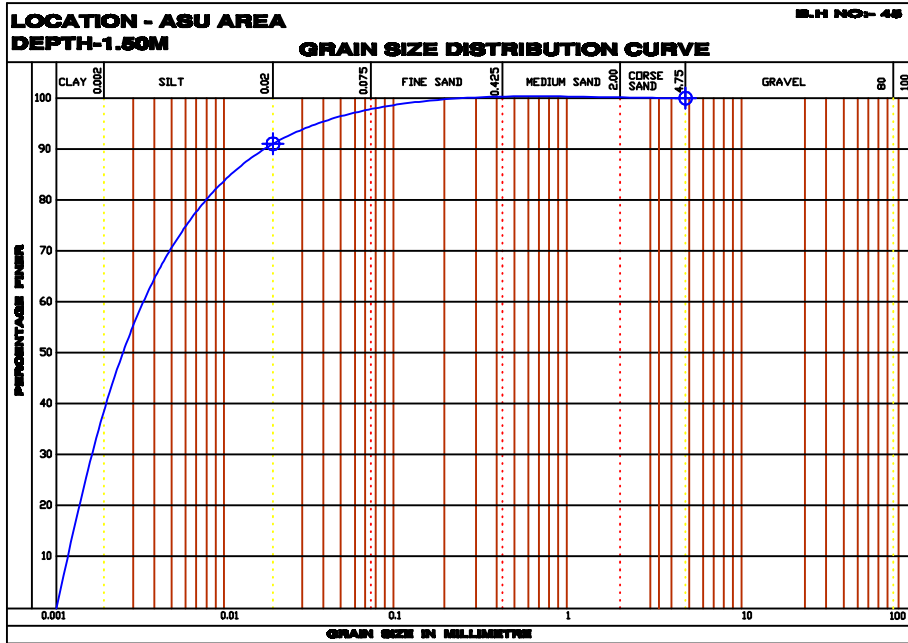


**LOCATION - ASU AREA**  
**DEPTH-1.50M**  
**GRAIN SIZE DISTRIBUTION CURVE**

BLH NO- 44

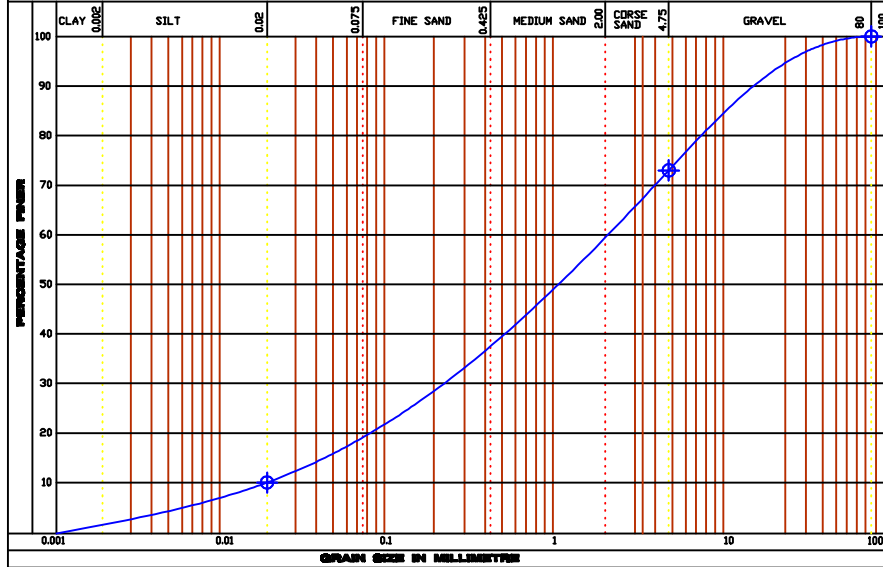


BISHWAL ENGINEERING ASSOCIATES  
RUPAK KUMAR DAS  
M.TECH (GEOTECH)  
T. SATYANARAYAN

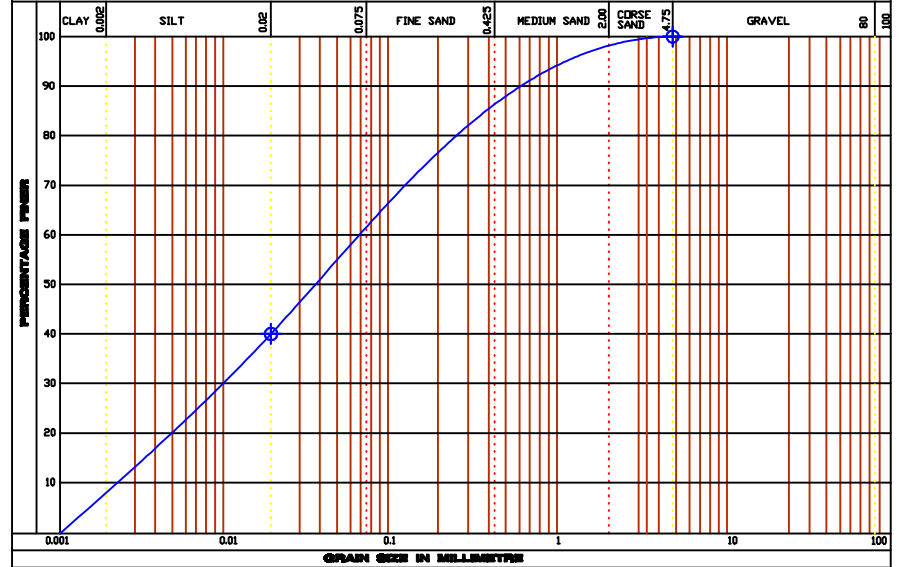


**BISHWANATH KUMAR DAS,**  
 M.TECH (GEOTECH)  
 I.I.T. SATYAGRAH

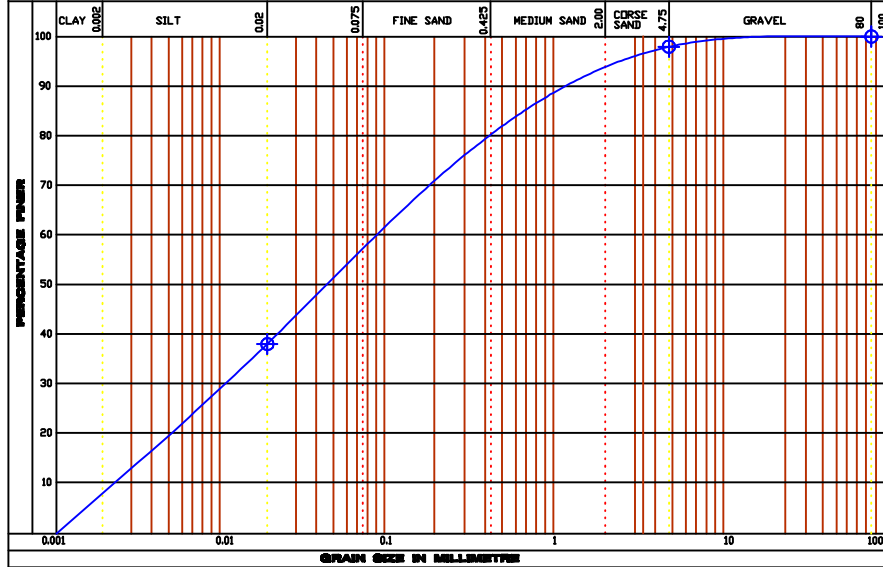
**LOCATION - COAL STORAGE** B.H NO- 48  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**



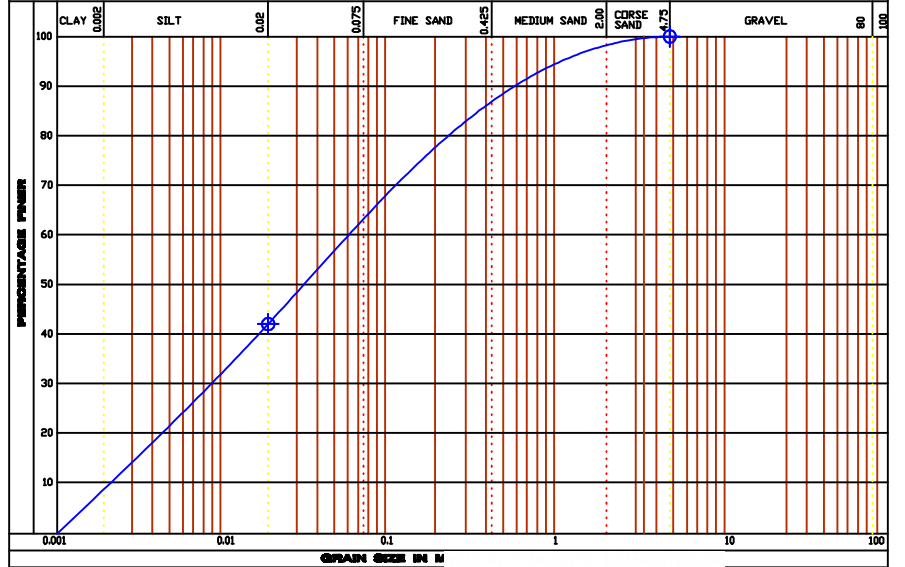
**LOCATION - COAL STORAGE** B.H NO- 48  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**




**LOCATION - COAL STORAGE** B.H NO- 48  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

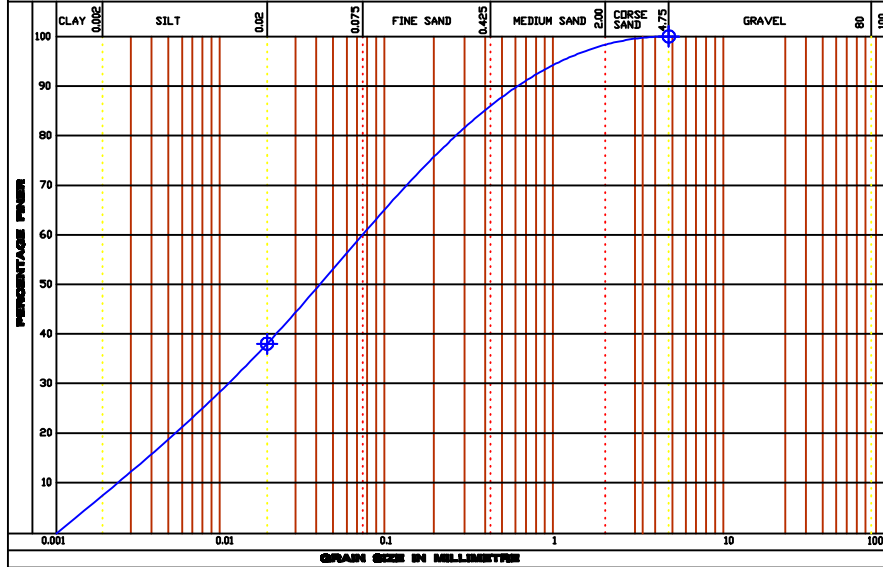


**LOCATION - COAL STORAGE** B.H NO- 48  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

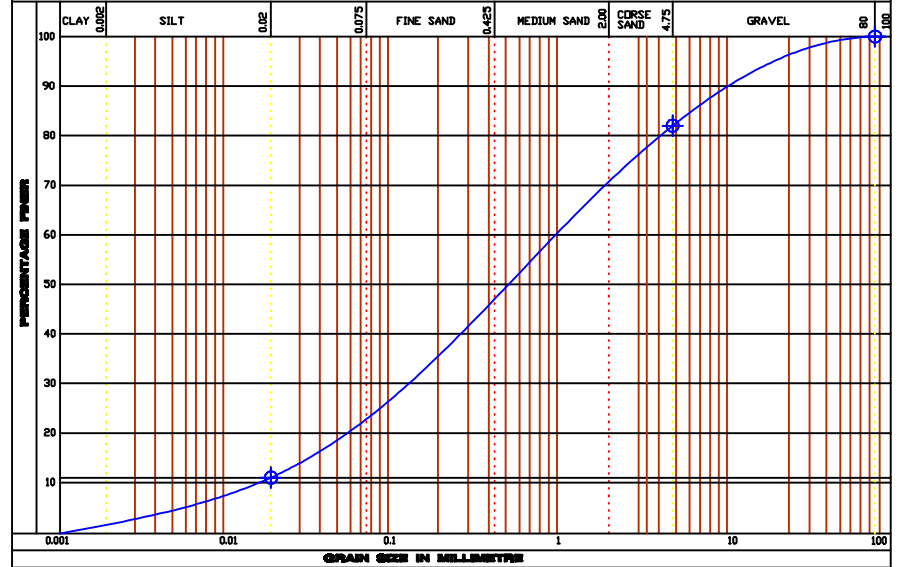


  
 BISHWAJIT KUMAR DAS.  
 M.TECH (GEO TECH)  
 SATYANAGAR

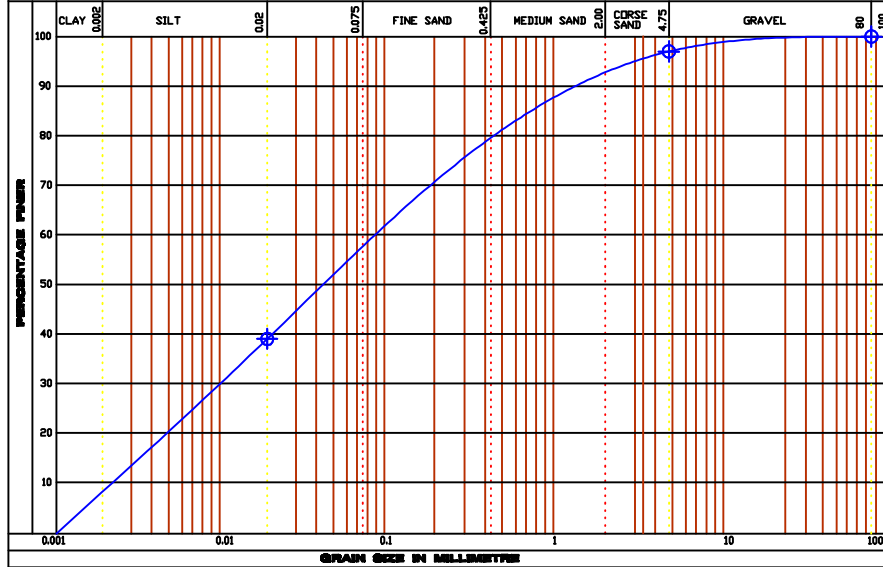
**LOCATION - COAL STORAGE** B.H NO- 81  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**



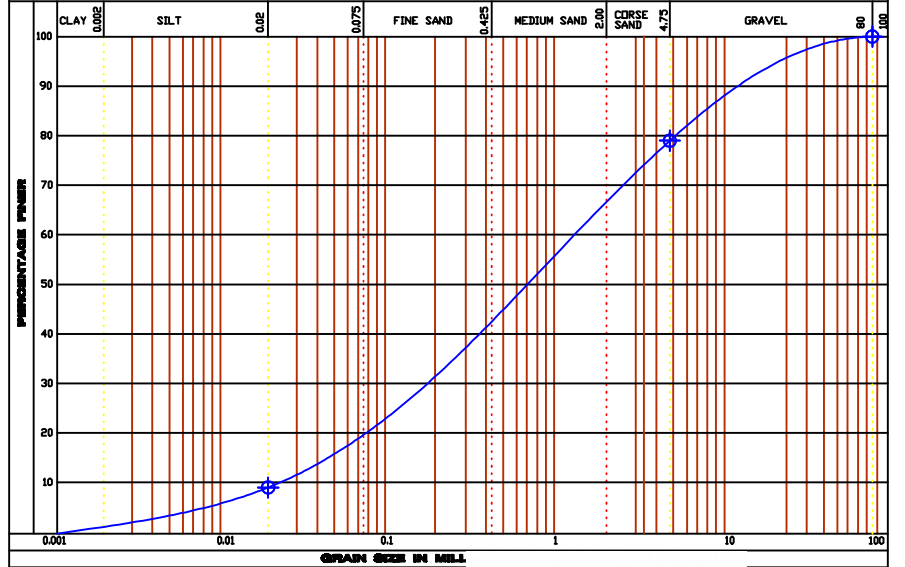
**LOCATION - COAL STORAGE** B.H NO- 82  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 83  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**



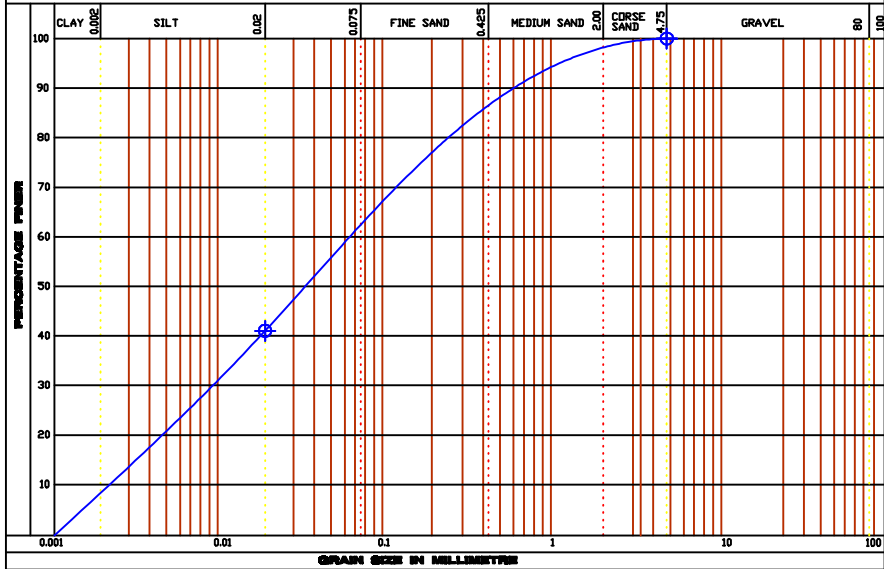
**LOCATION - COAL STORAGE** B.H NO- 84  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



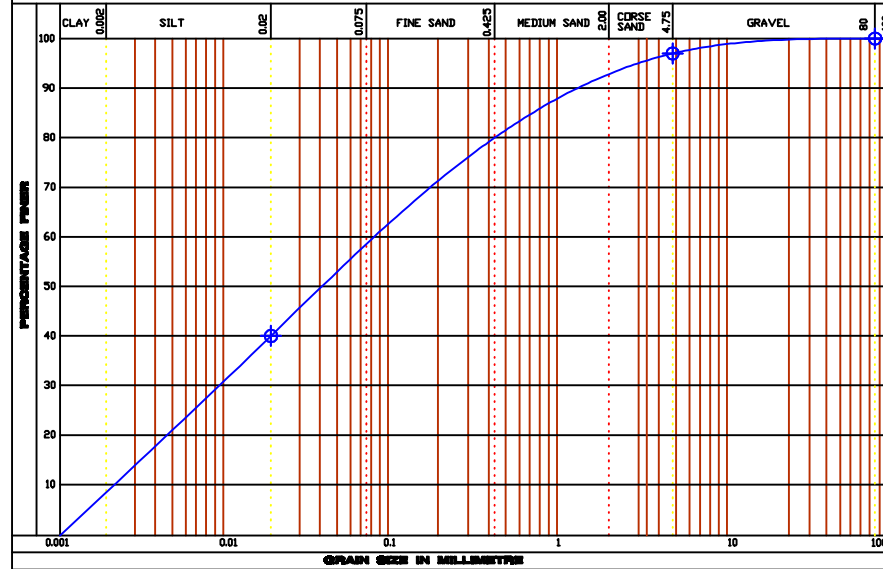
BISHU KUMER DAS.  
 M.TECH (GEOTECH)  
 License No. 15177, State of West Bengal.



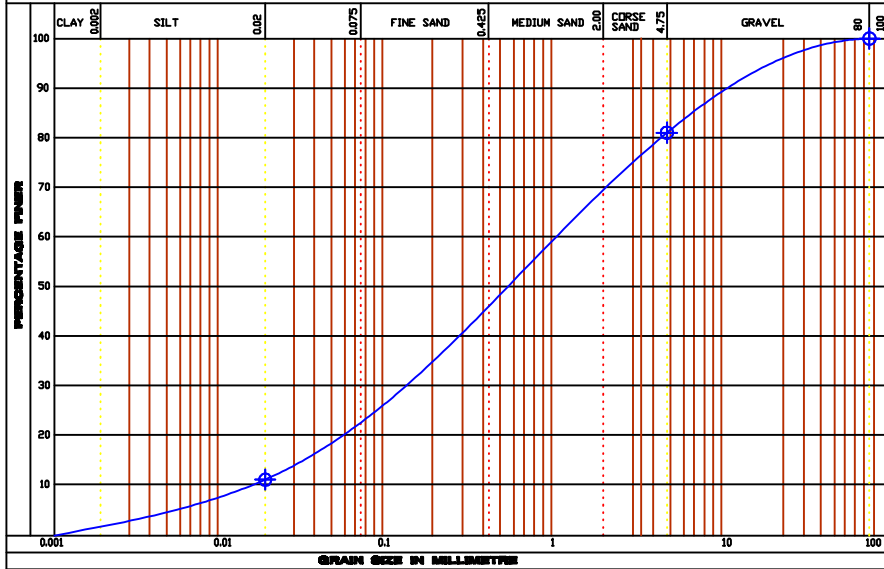
**LOCATION - COAL STORAGE** B.H NO- 88  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**



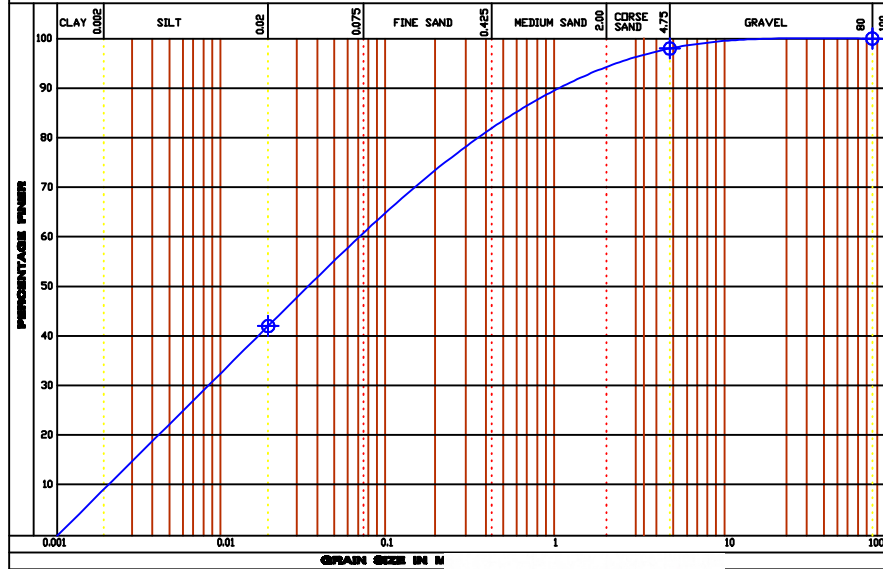
**LOCATION - COAL STORAGE** B.H NO- 88  
**DEPTH-12.00M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 84  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

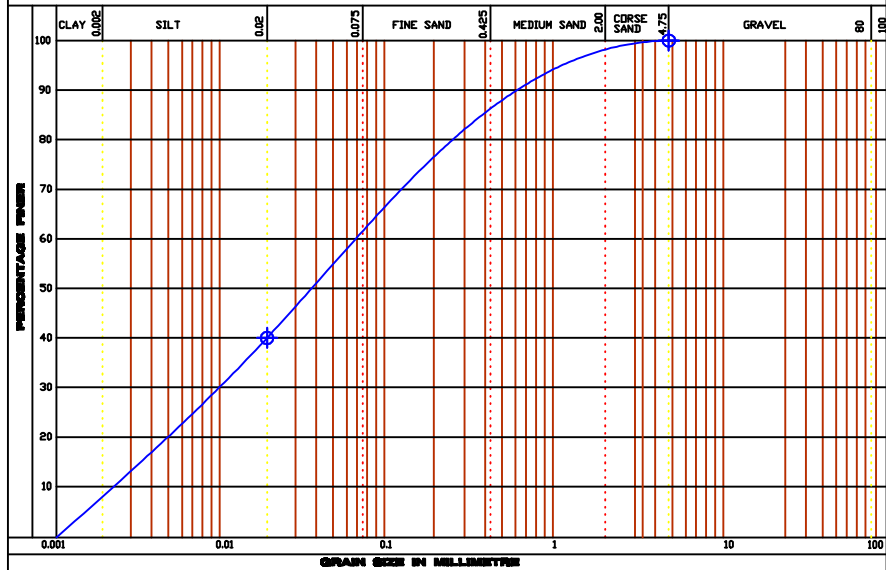


**LOCATION - COAL STORAGE** B.H NO- 84  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

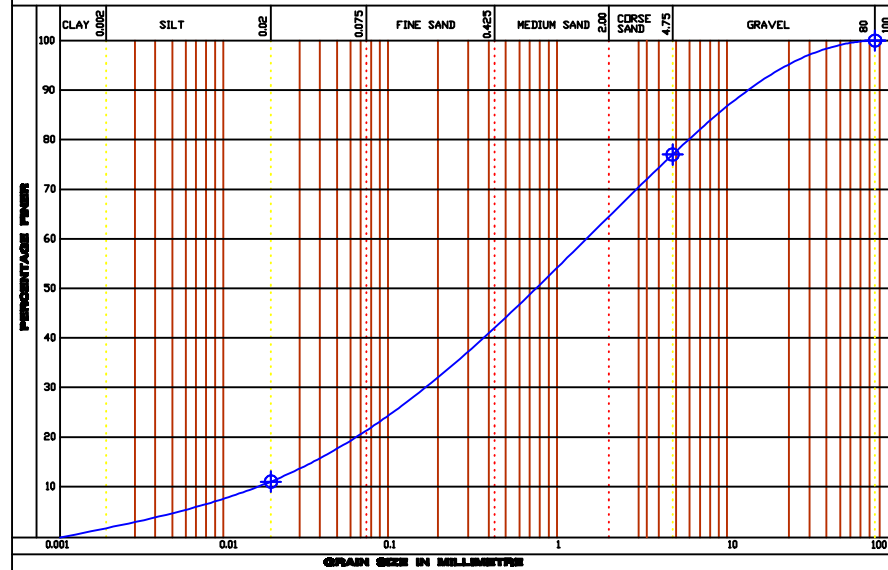


  
**BISHWANATH KUMAR DAS.**  
 M.TECH (GEO TECH)  
 SATYANAGAR

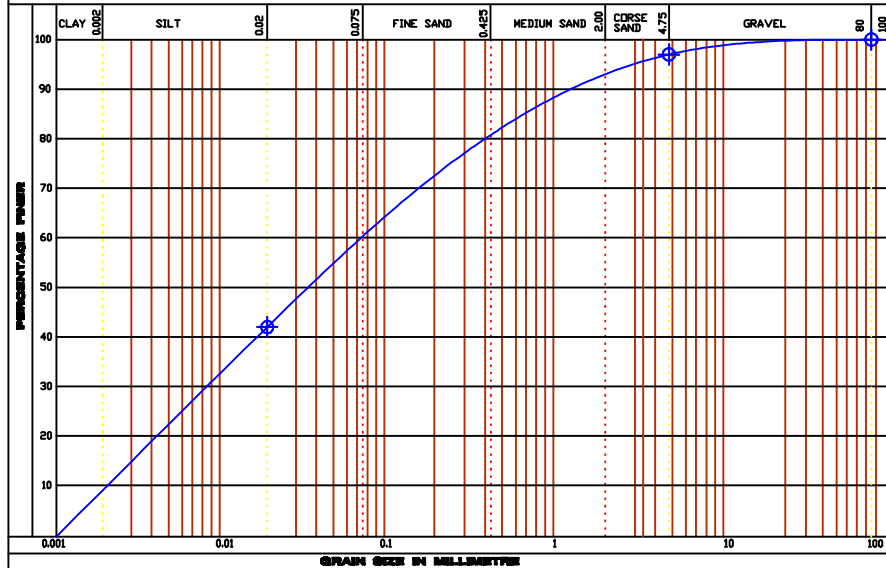
**LOCATION - COAL STORAGE** B.H NO- 84  
**DEPTH-7.50M** **GRAIN SIZE DISTRIBUTION CURVE**



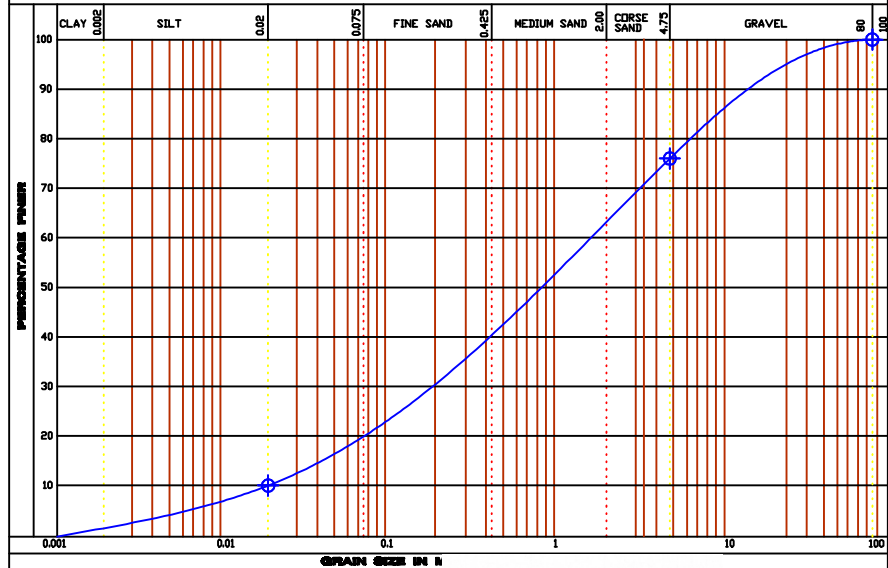
**LOCATION - COAL STORAGE** B.H NO- 85  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 86  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**

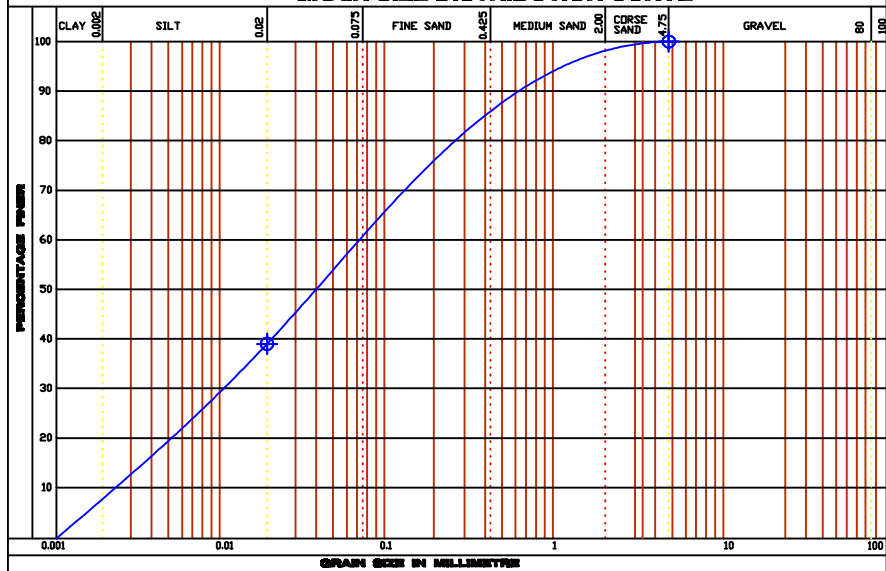


**LOCATION - COAL STORAGE** B.H NO- 88  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

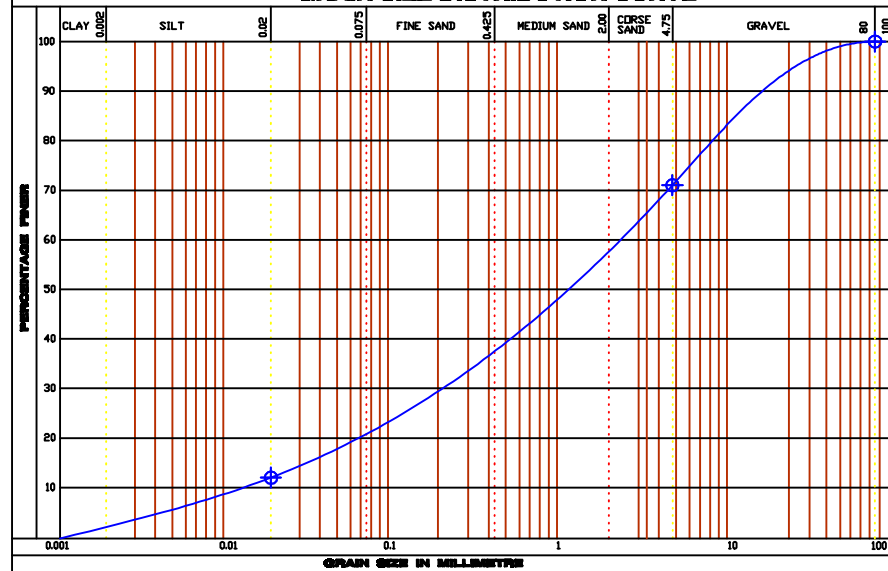


BISHWAKUMAR DAS  
 M.TECH (GEO TECH)  
 SATYANAGAR

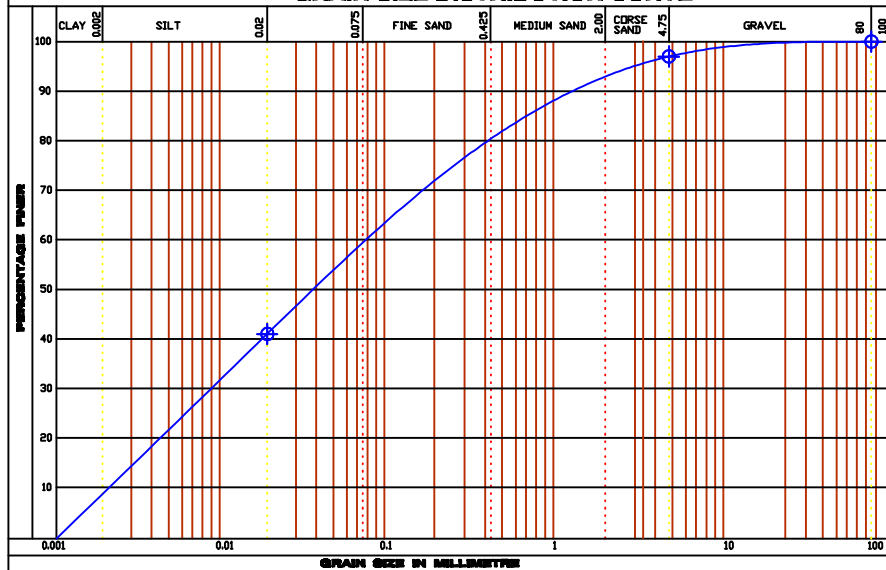
**LOCATION - COAL STORAGE** B.H NO- 88  
**DEPTH-9.00M** **GRAIN SIZE DISTRIBUTION CURVE**



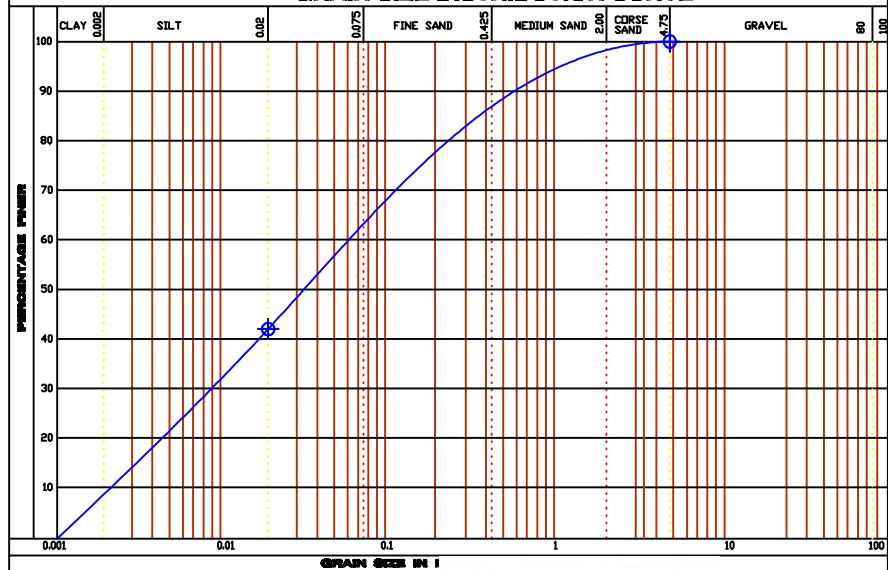
**LOCATION - COAL STORAGE** B.H NO- 87  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 87  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**

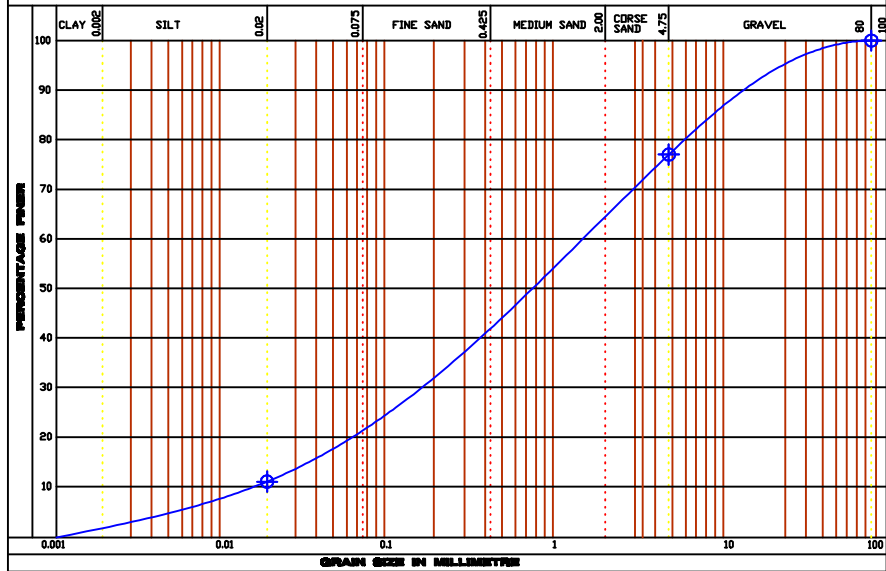


**LOCATION - COAL STORAGE** B.H NO- 87  
**DEPTH-7.50M** **GRAIN SIZE DISTRIBUTION CURVE**

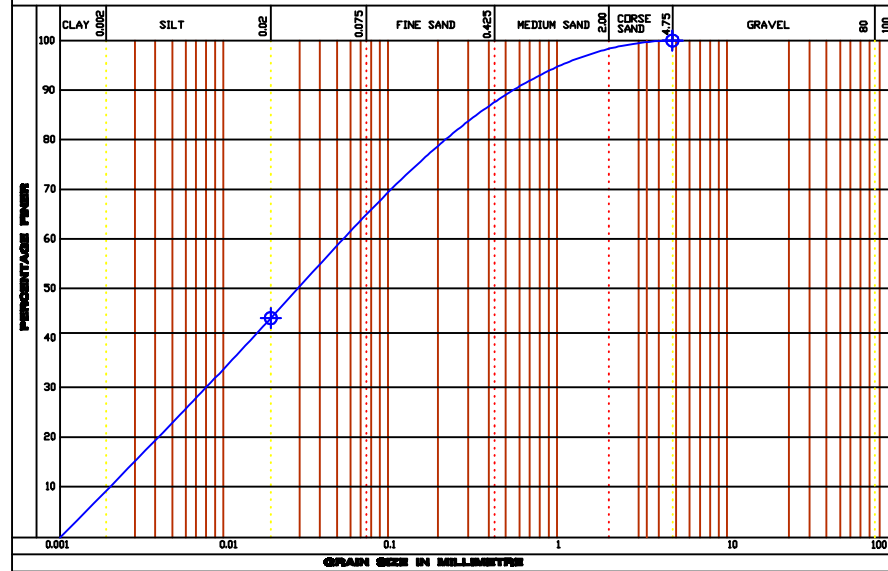


  
 BISHWAJIT KUMAR DAS.  
 M.TECH (GEOTECH)  
 T. SATYANARAYANA

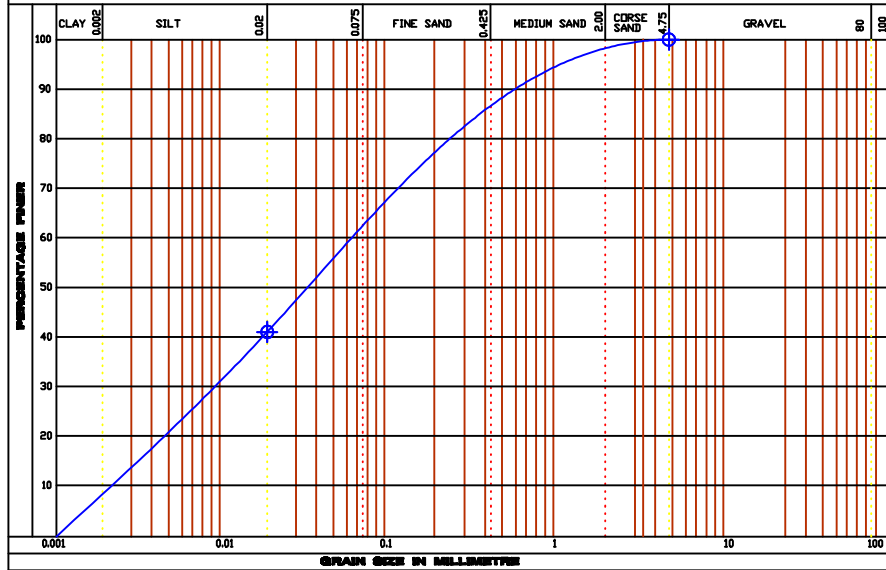
**LOCATION - COAL STORAGE** B.H NO- 58  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



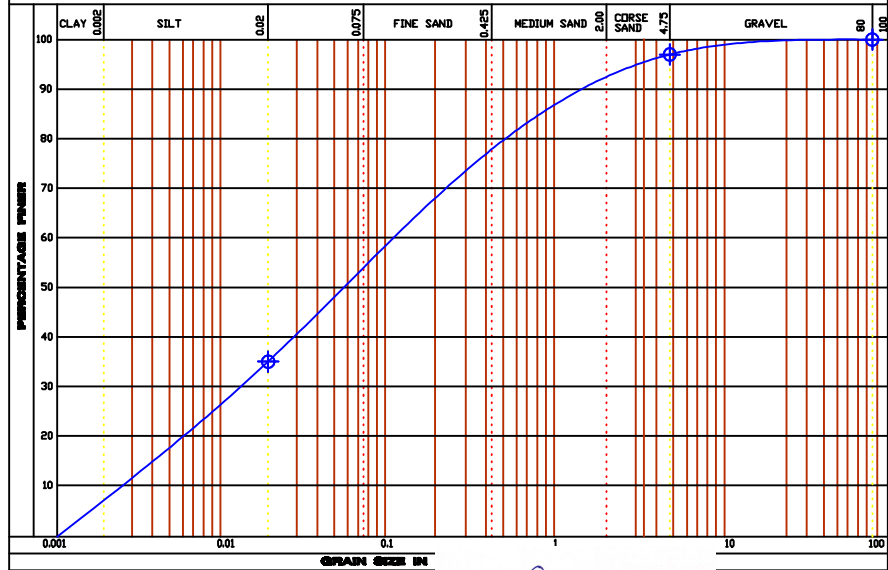
**LOCATION - COAL STORAGE** B.H NO- 58  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**





**LOCATION - COAL STORAGE** B.H NO- 58  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**

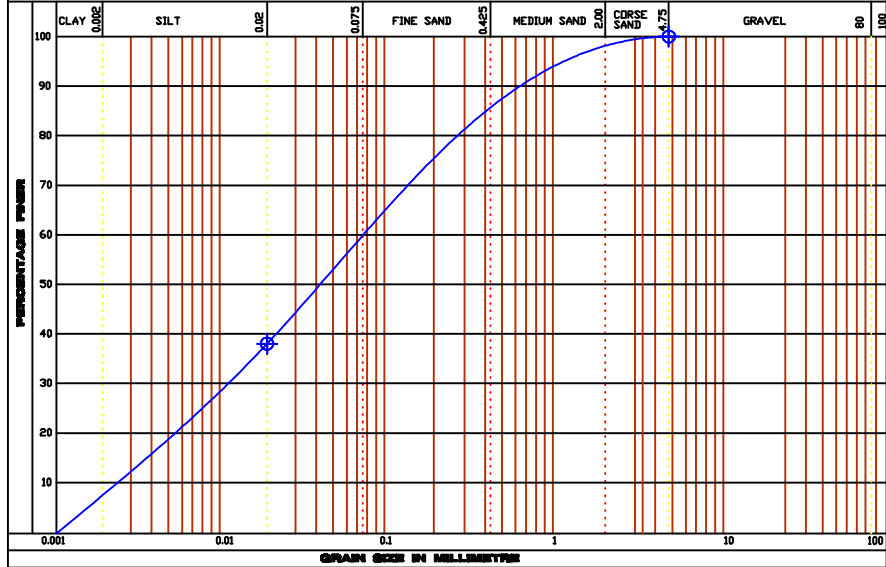


**LOCATION - COAL STORAGE** B.H NO- 58  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

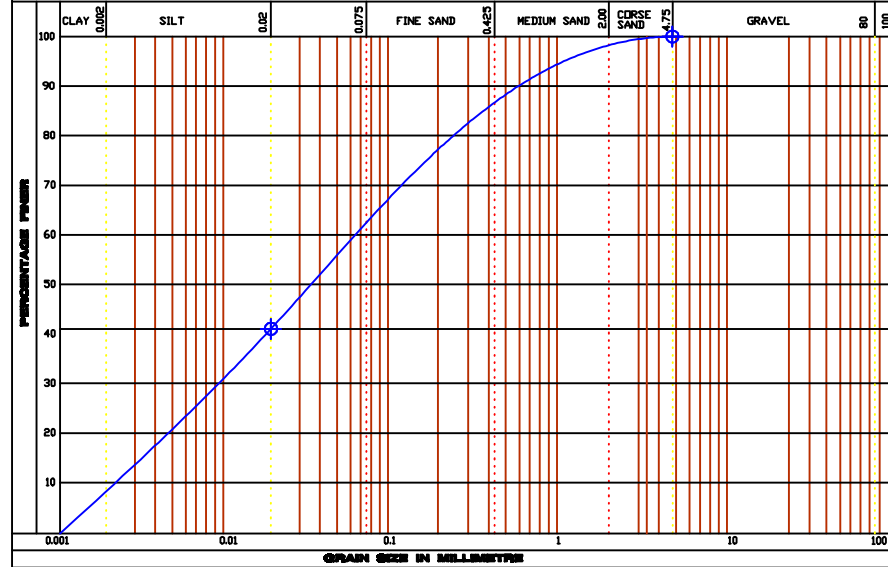


  
 BISHAL KUMAR DAS.  
 M.TECH (METEOROLOGICAL)  


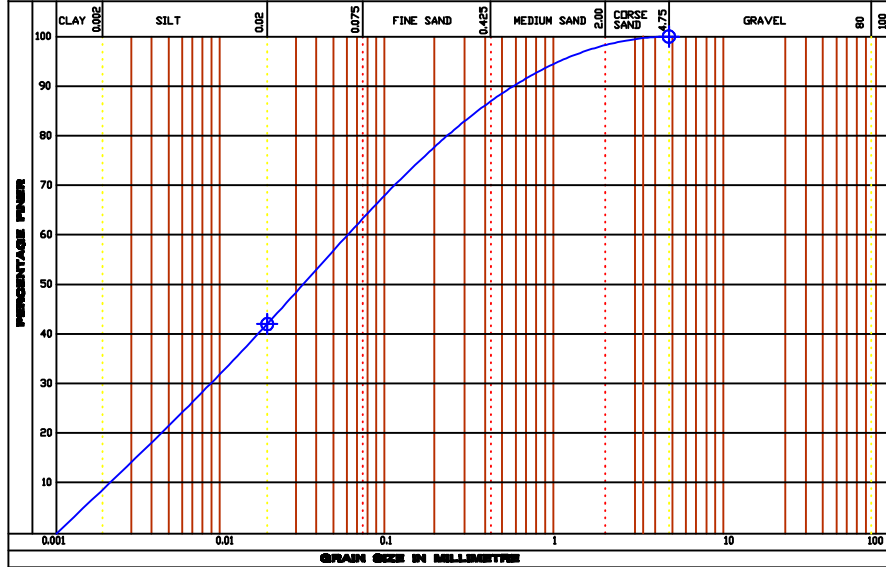
**LOCATION - COAL STORAGE** B.H NO- 88  
**DEPTH-10.00M** **GRAIN SIZE DISTRIBUTION CURVE**



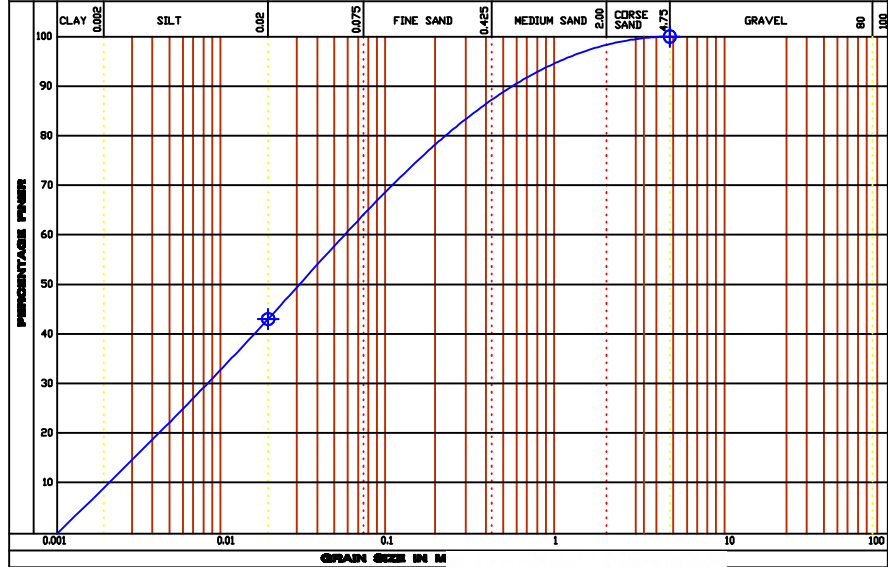
**LOCATION - COAL STORAGE** B.H NO- 89  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 89  
**DEPTH-9.00M** **GRAIN SIZE DISTRIBUTION CURVE**

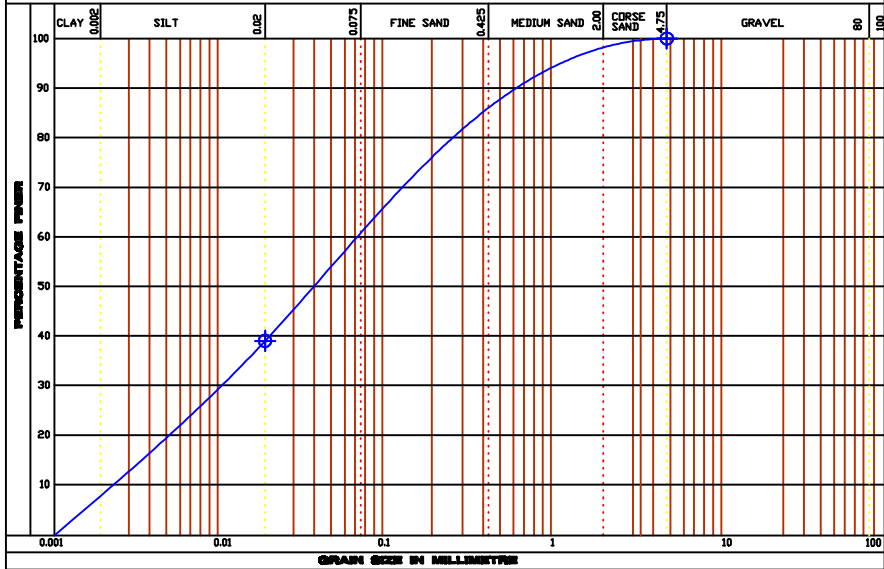


**LOCATION - COAL STORAGE** B.H NO- 81  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

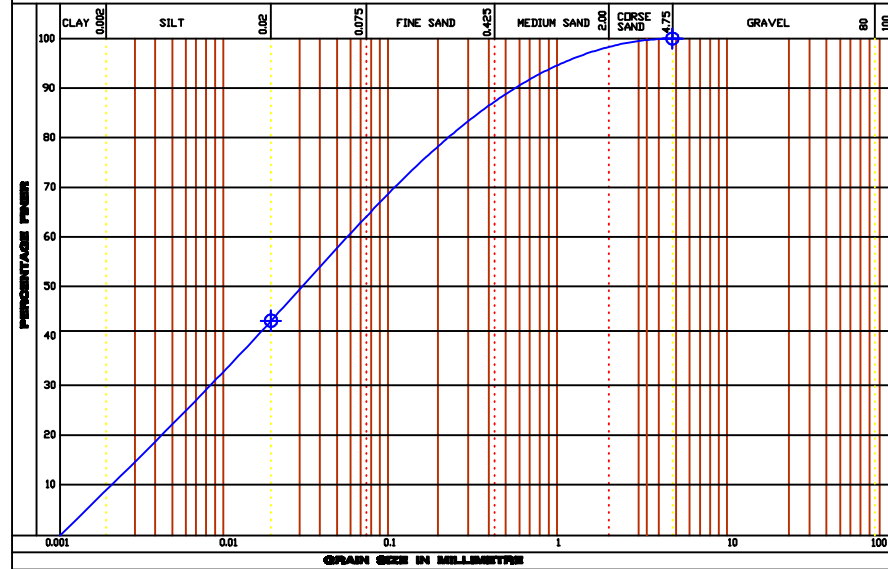


Bishwajit Kumar Das  
 M.Tech (Geo Tech)  
 SATYANAGAR

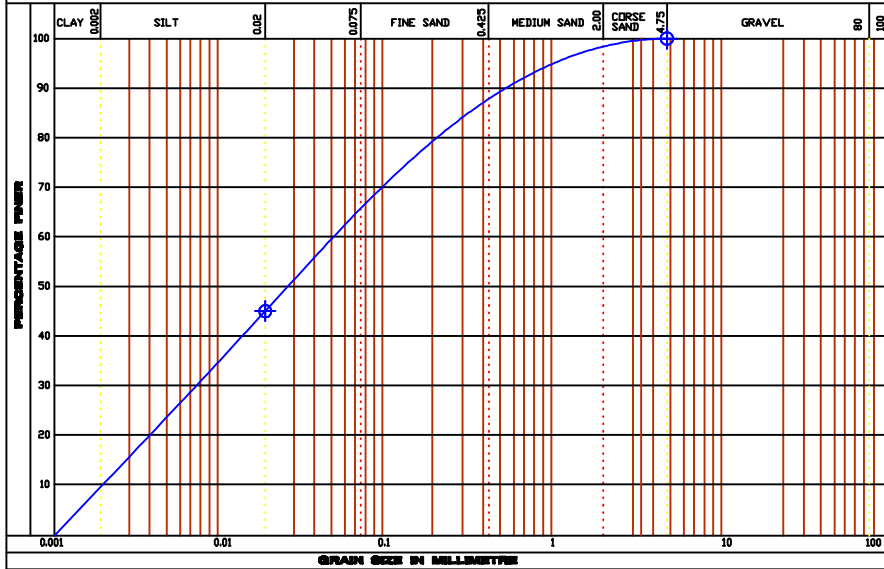
**LOCATION - COAL STORAGE** B.H NO- 01  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**



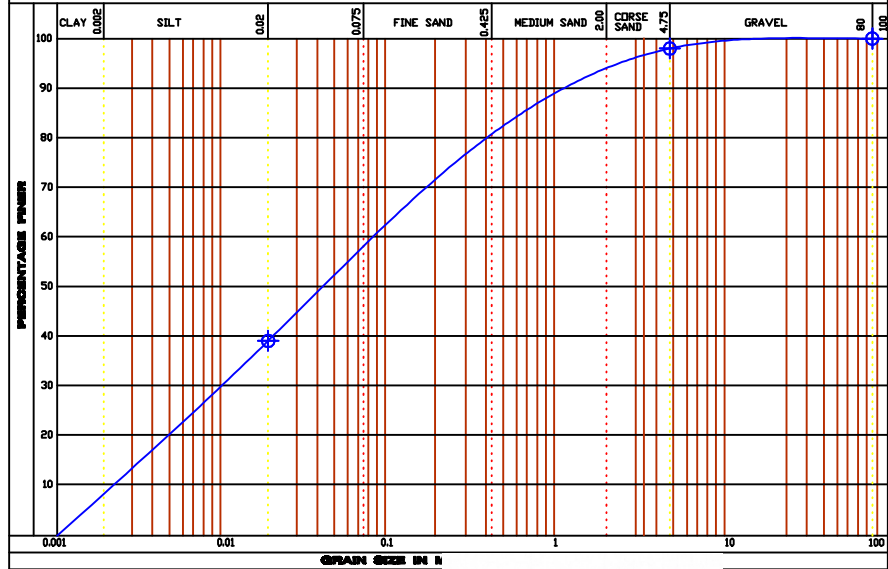
**LOCATION - COAL STORAGE** B.H NO- 01  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 02  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

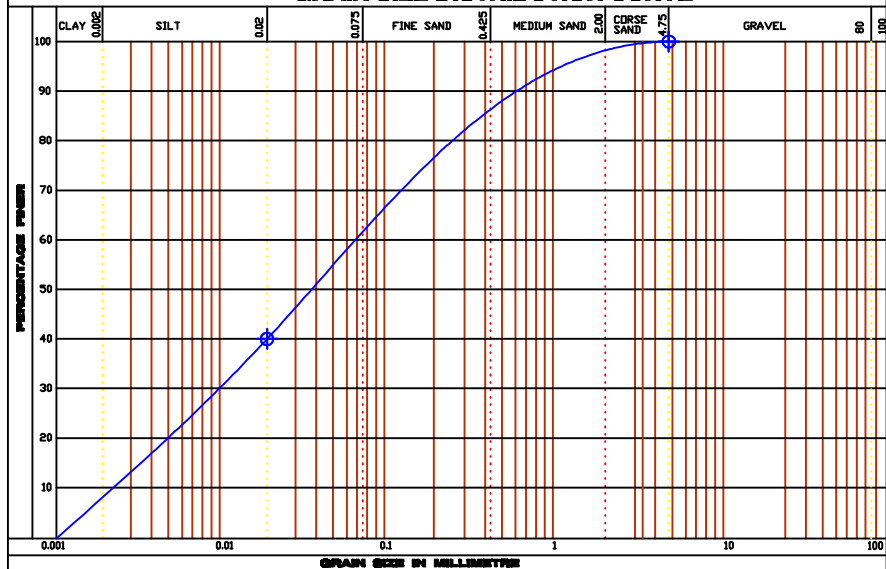


**LOCATION - COAL STORAGE** B.H NO- 02  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**

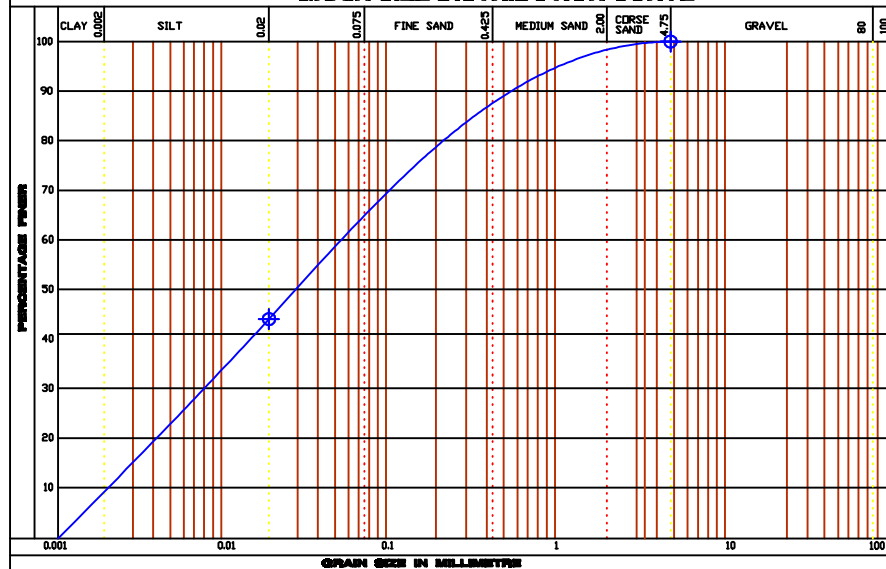


BISHU KUMAR DAS  
 M.TECH (GEO TECH)  
 SATYANAGAR

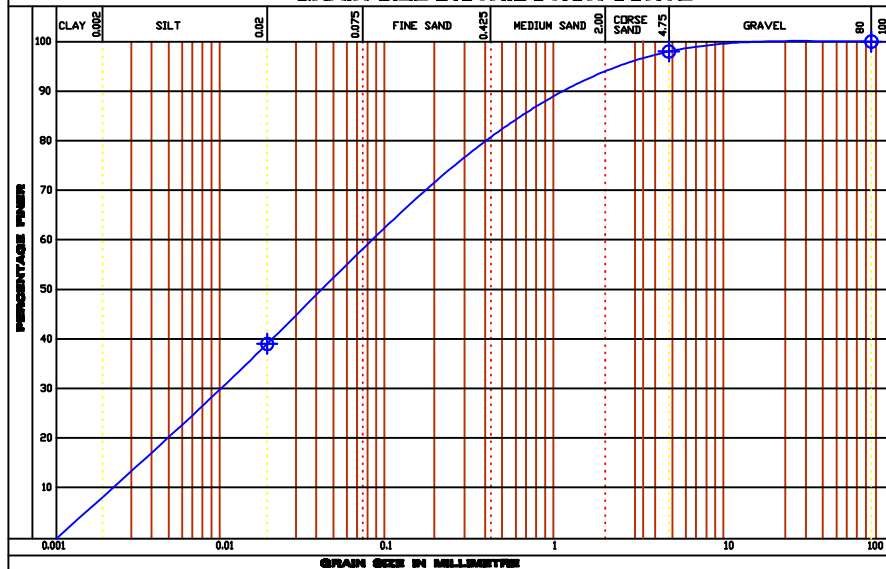
**LOCATION - COAL STORAGE** B.H NO- 03  
**DEPTH-12.00M** **GRAIN SIZE DISTRIBUTION CURVE**



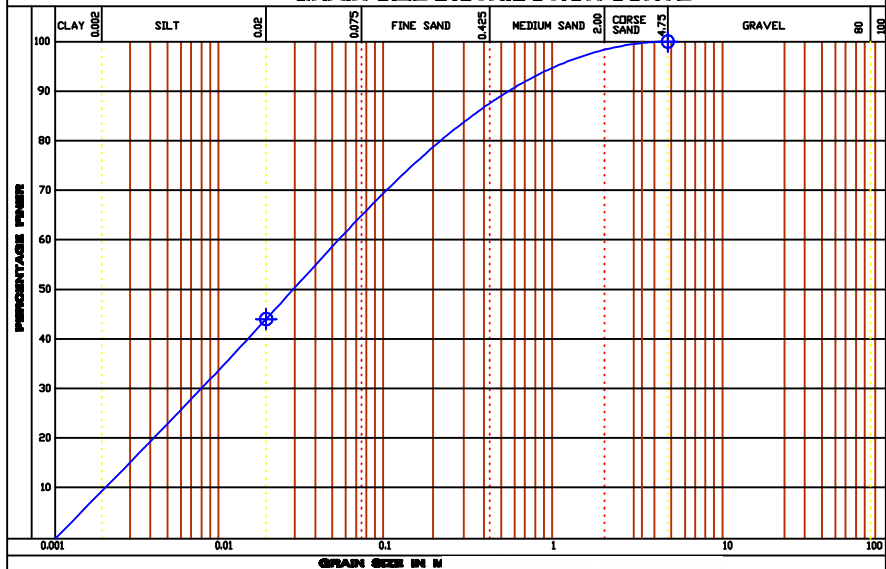
**LOCATION - COAL STORAGE** B.H NO- 04  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**




**LOCATION - COAL STORAGE** B.H NO- 03  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**

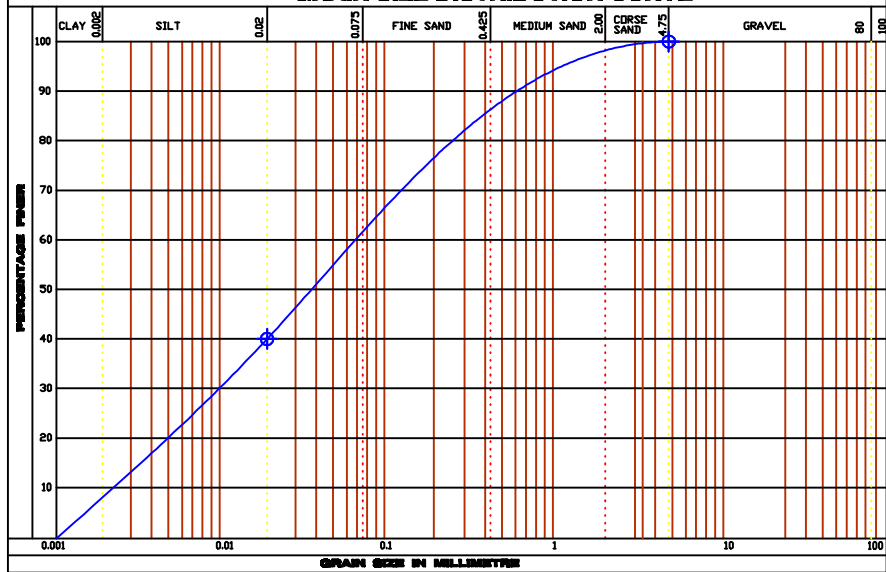


**LOCATION - COAL STORAGE** B.H NO- 03  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

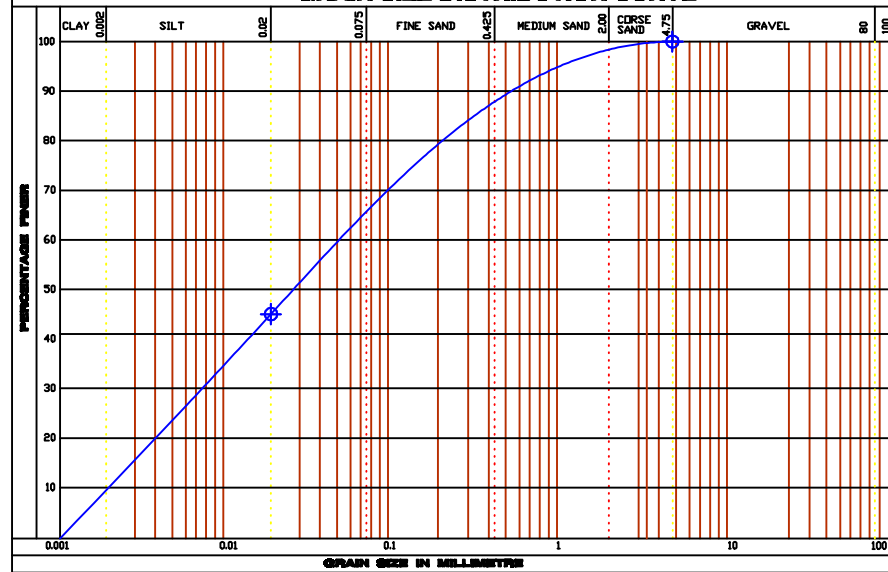


  
**BISHWANATH KUMAR DAS.**  
 M.TECH (GEO TECH)  
 SATYANAGARI

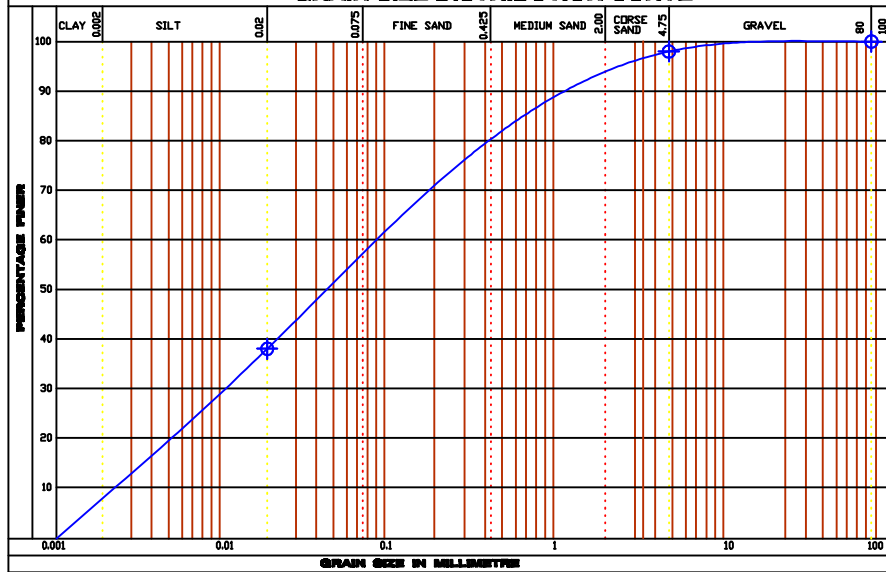
**LOCATION - COAL STORAGE** B.H NO- 66  
**DEPTH-7.50M** **GRAIN SIZE DISTRIBUTION CURVE**



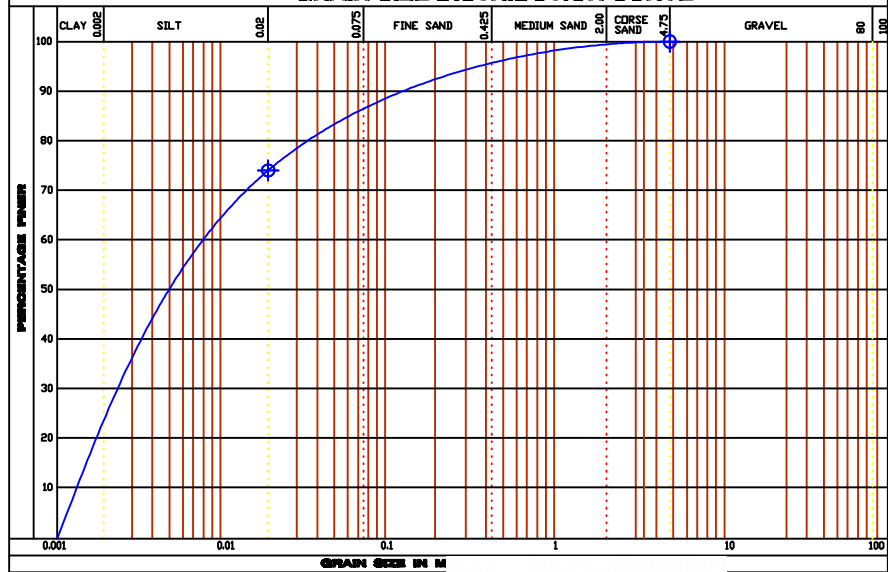
**LOCATION - COAL STORAGE** B.H NO- 67  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 67  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**



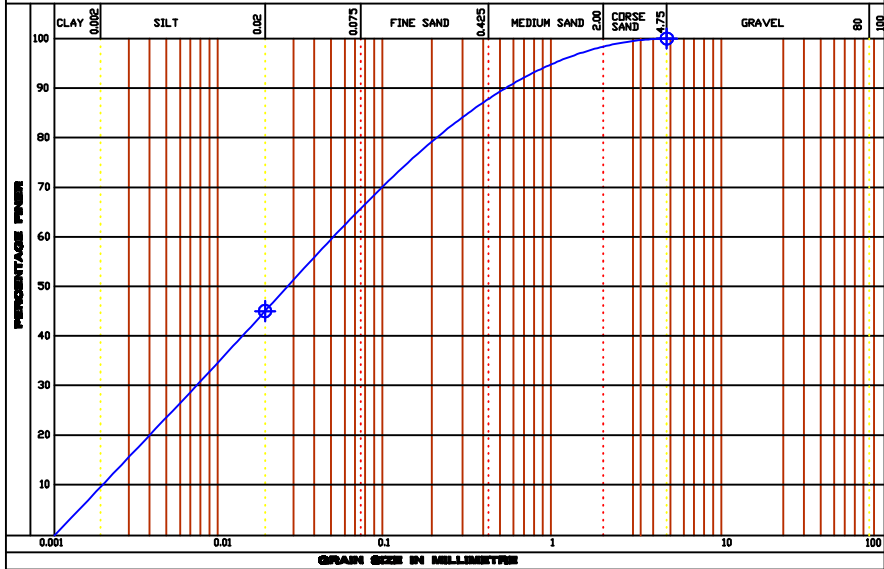
**LOCATION - COAL STORAGE** B.H NO- 66  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**



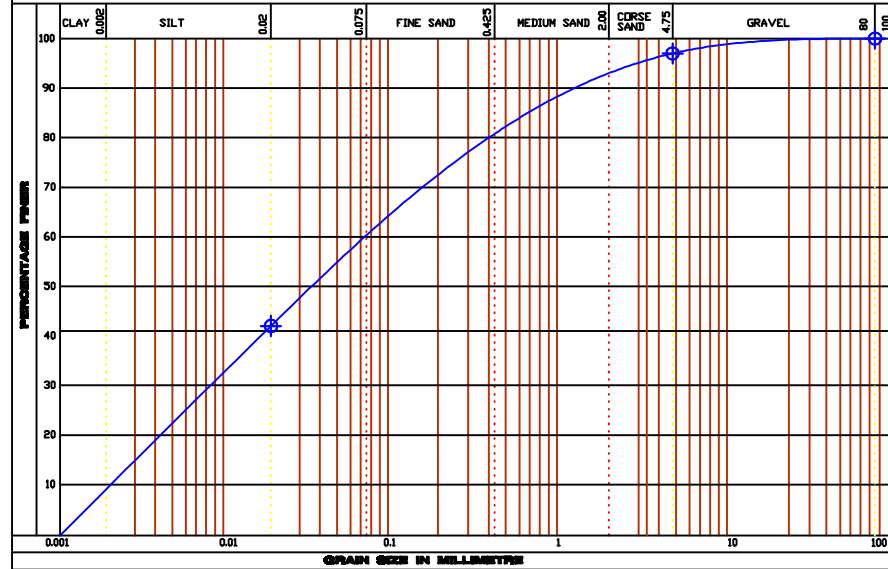
BISHW KUMAR DAS  
 M.TECH (GEO TECH)  
 SATYANAGAR



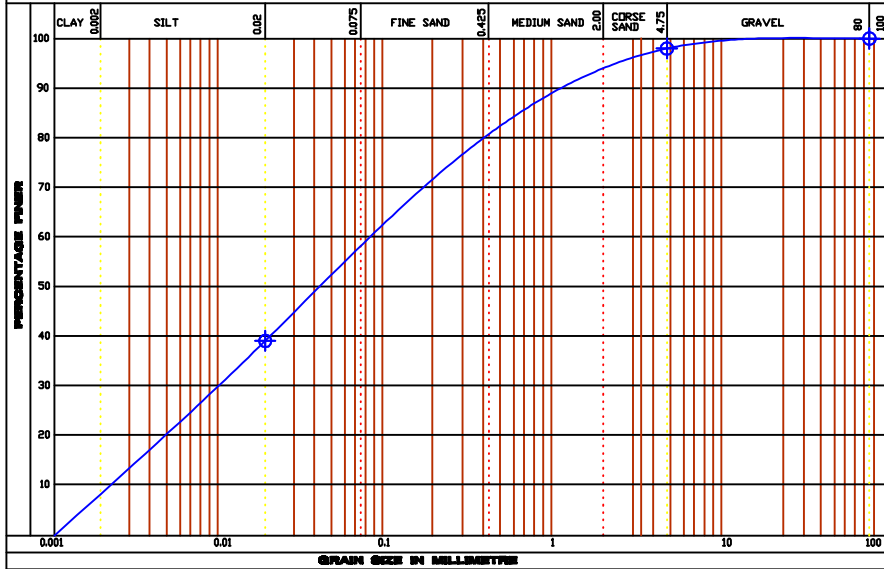
**LOCATION - COAL STORAGE** B.H NO- 68  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



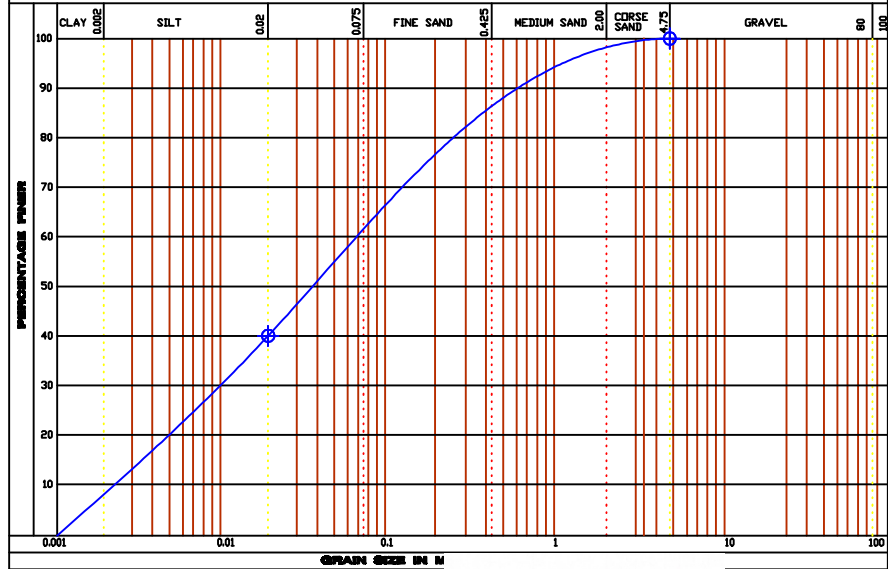
**LOCATION - COAL STORAGE** B.H NO- 68  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 68  
**DEPTH-10.50M** **GRAIN SIZE DISTRIBUTION CURVE**

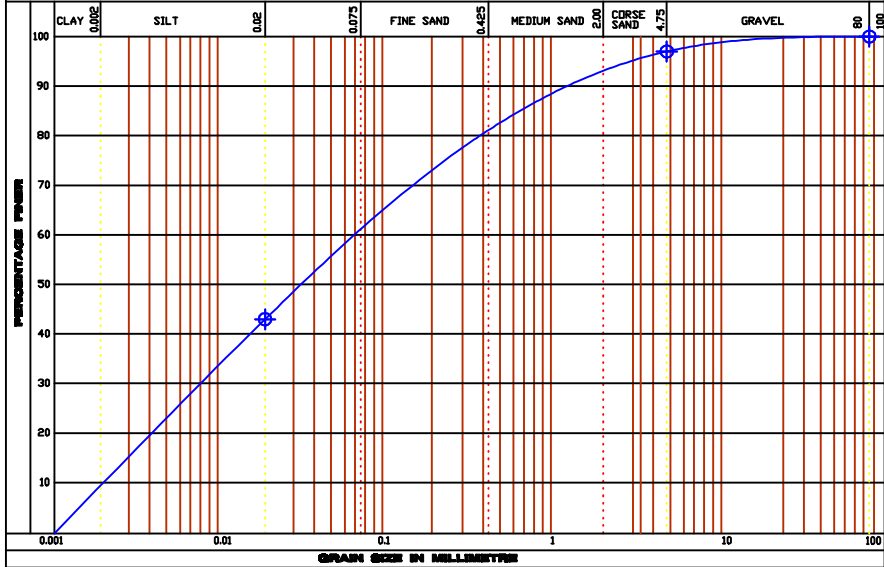


**LOCATION - COAL STORAGE** B.H NO- 68  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**

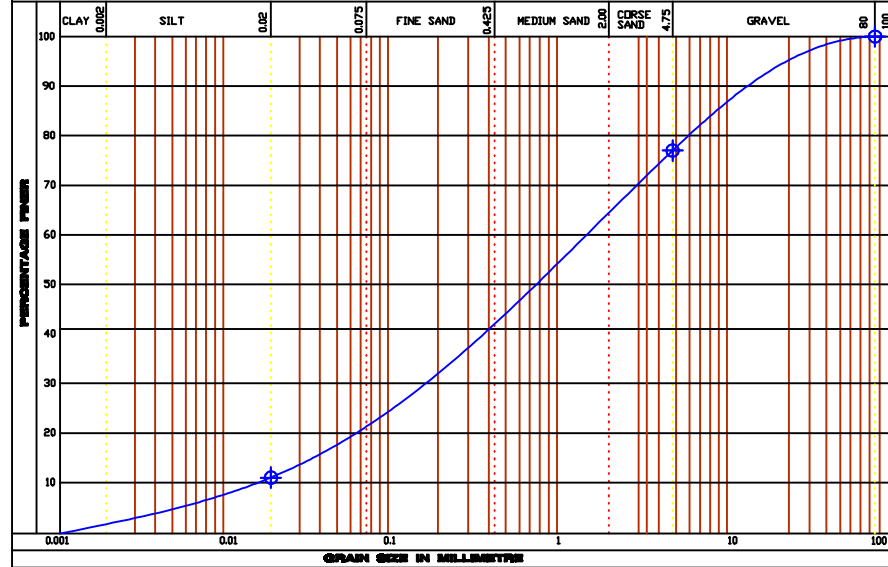


  
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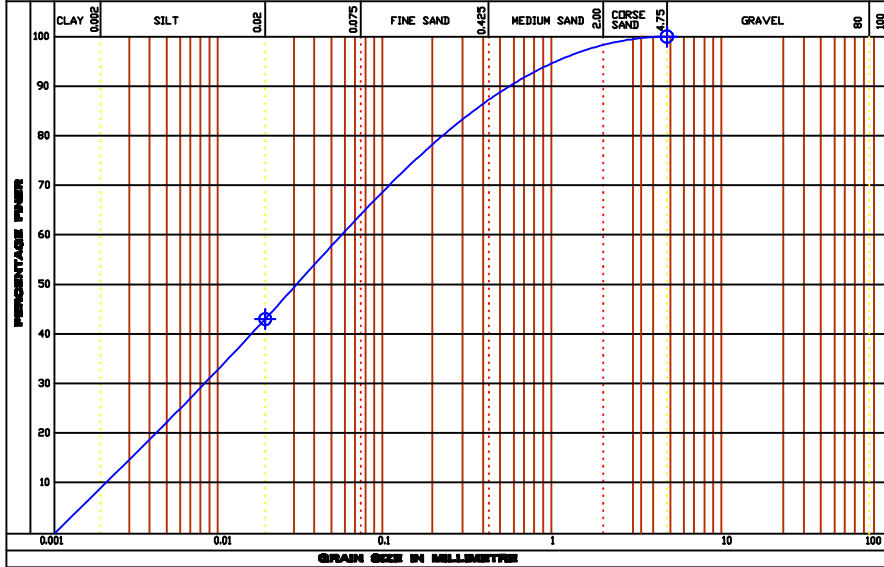
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**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



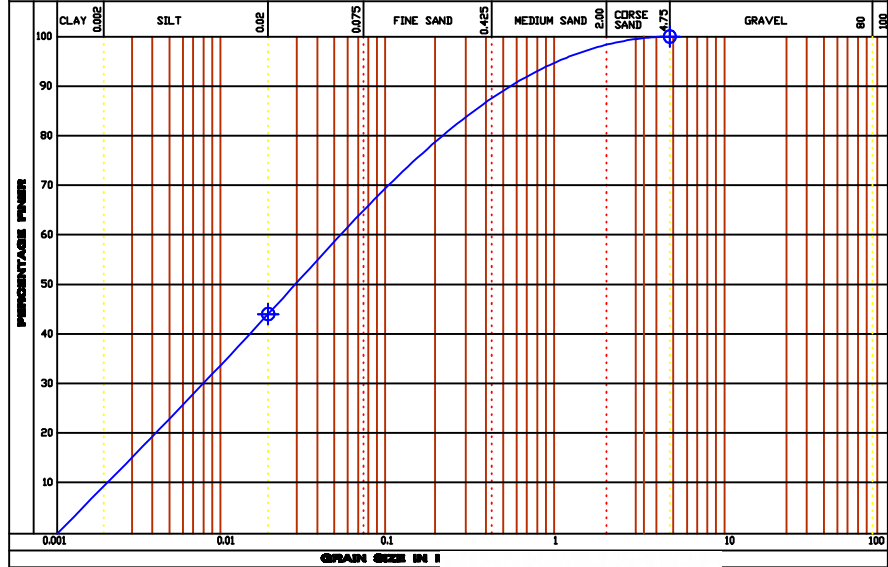
**LOCATION - COAL STORAGE** **B.H NO- 71**  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

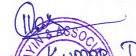



**LOCATION - COAL STORAGE** **B.H NO- 71**  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

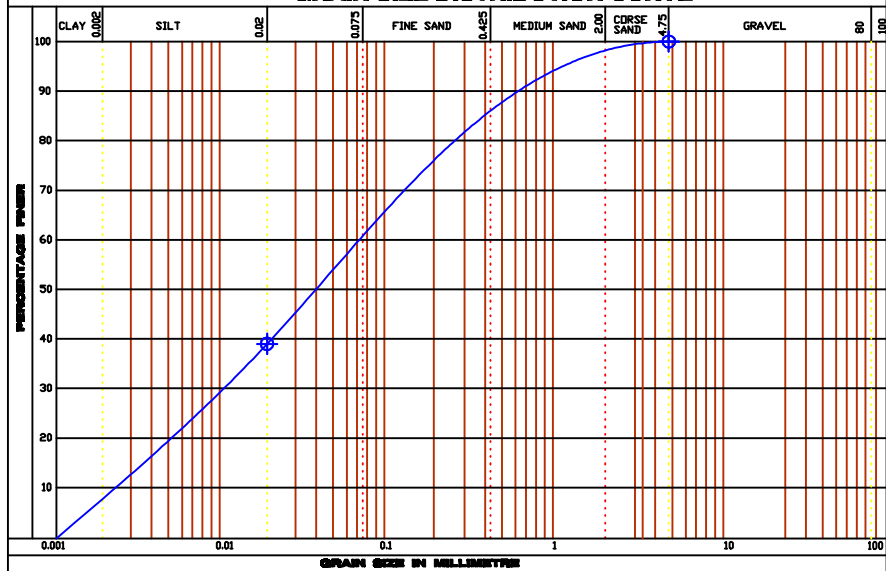


**LOCATION - COAL STORAGE** **B.H NO- 70**  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

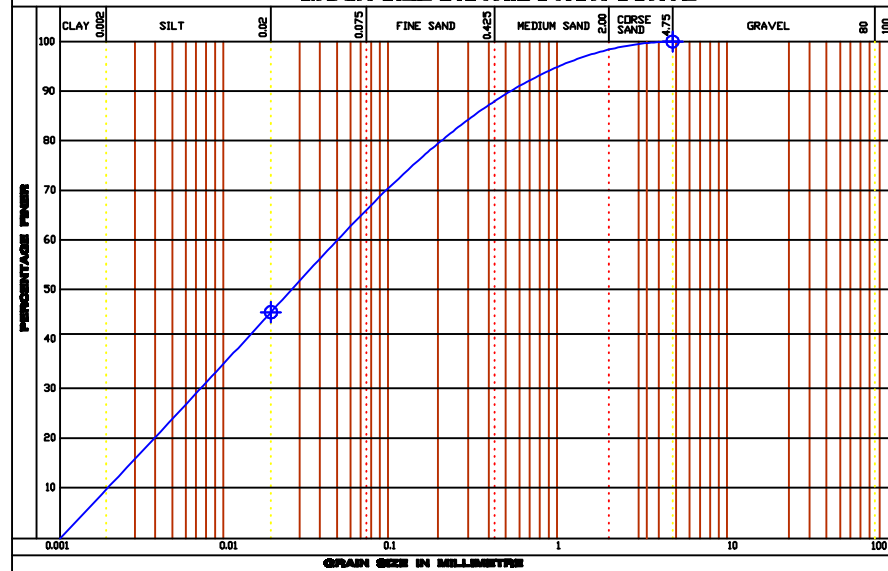


  
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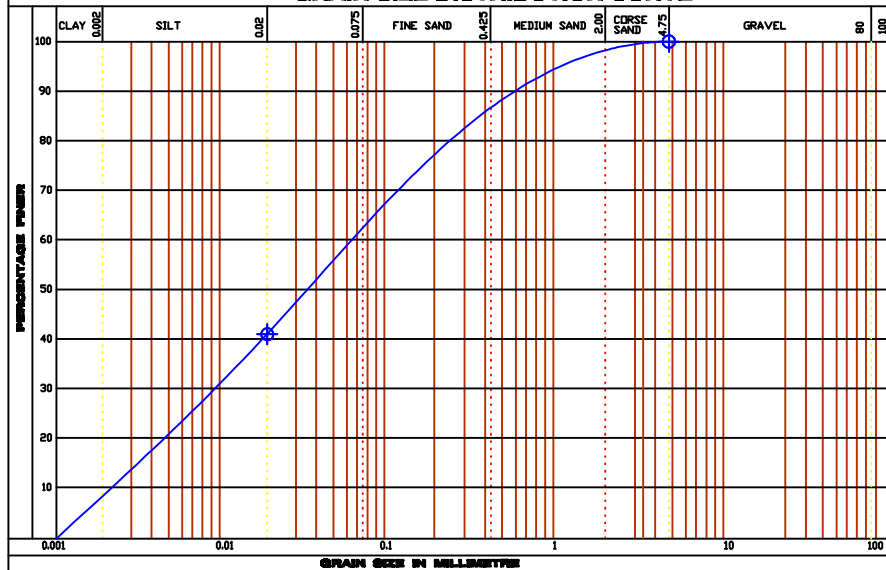
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**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**



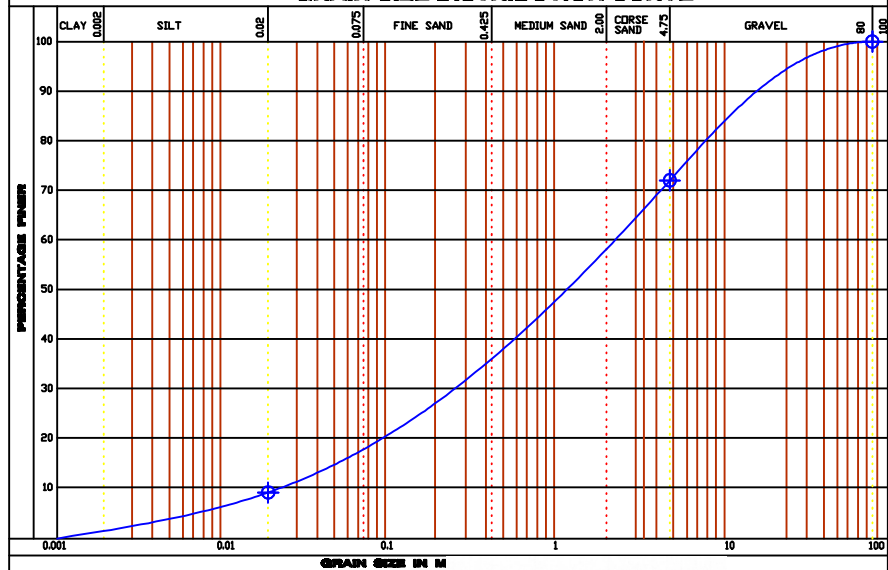
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**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 73  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**

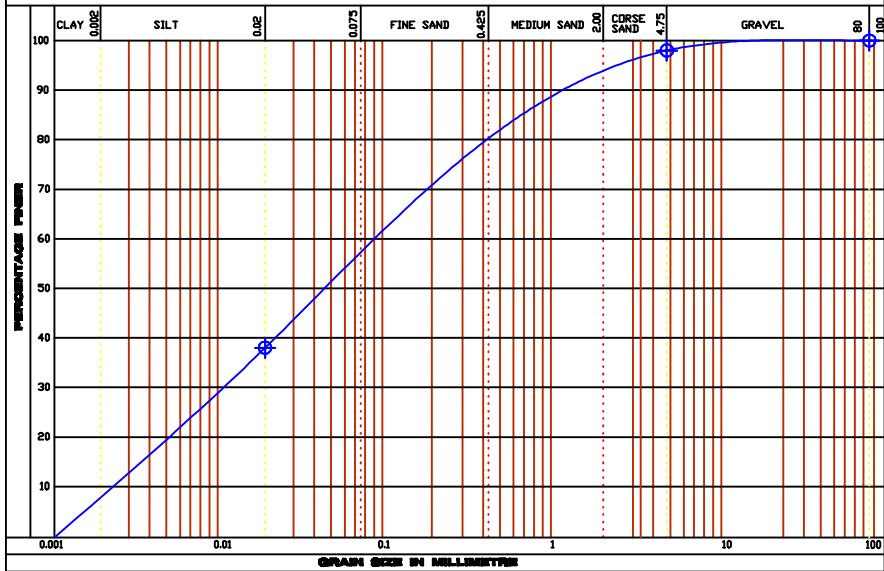


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**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

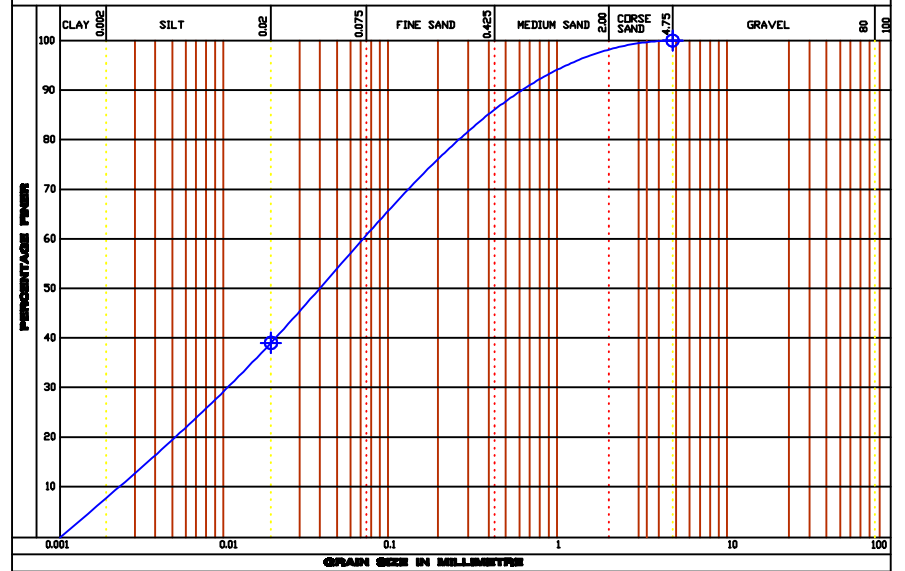


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 SATYANAGAR

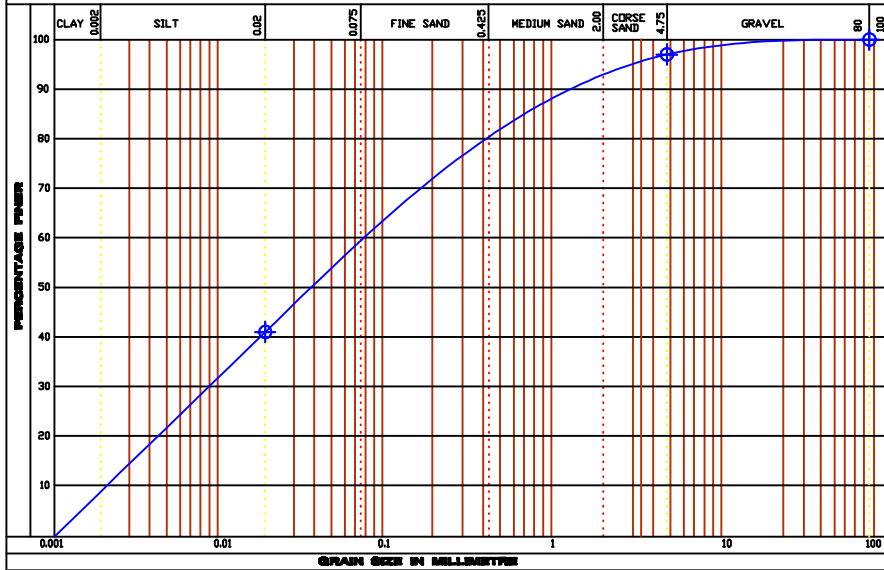
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**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



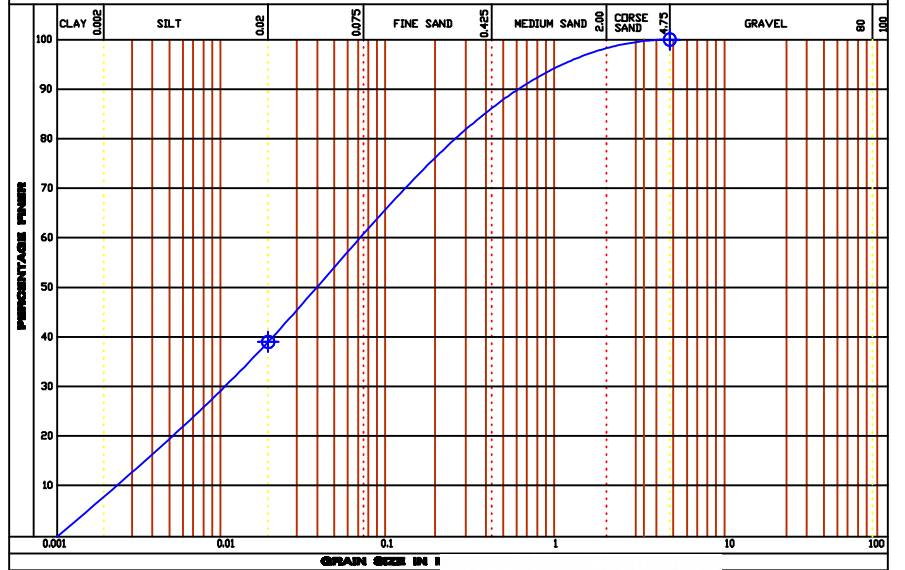
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**DEPTH-7.50M** **GRAIN SIZE DISTRIBUTION CURVE**





**LOCATION - COAL STORAGE** B.H NO- 75  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

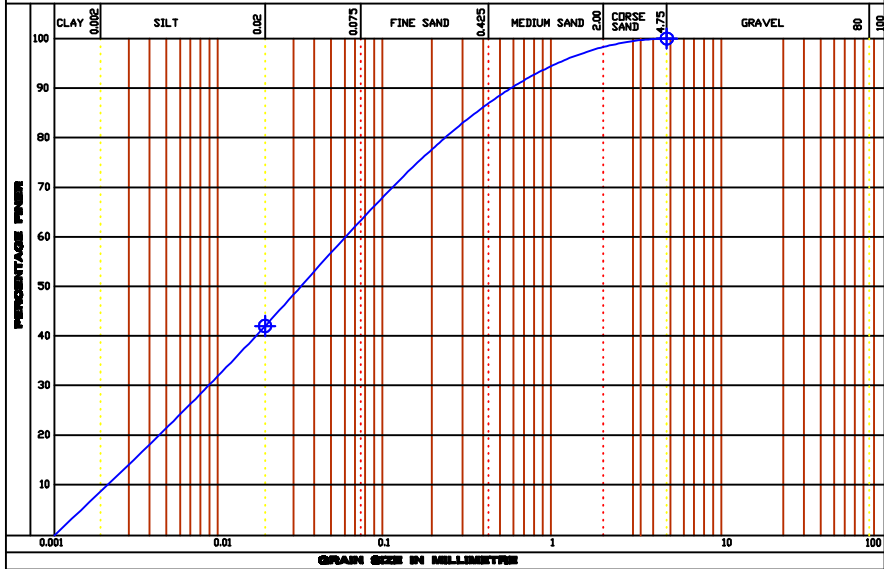


**LOCATION - COAL STORAGE** B.H NO- 75  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**

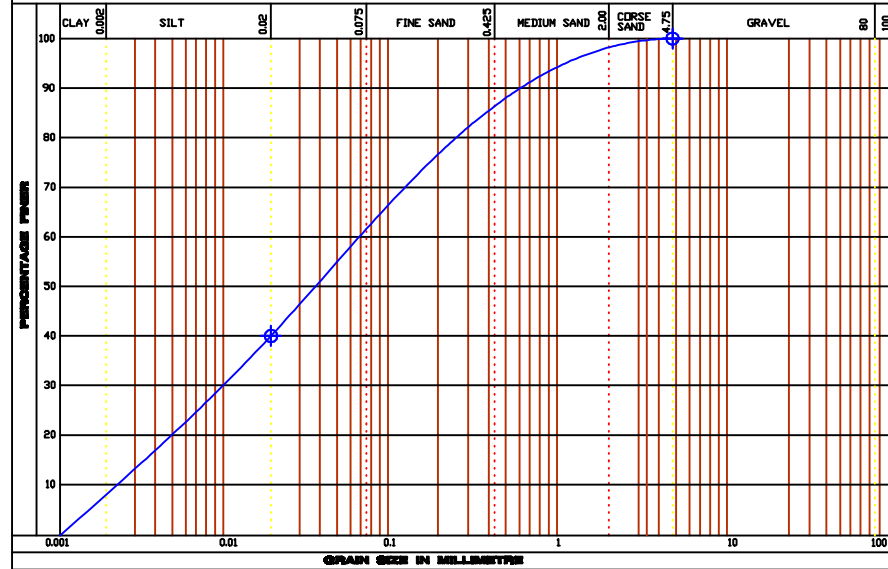


  
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 M.TECH (GEOTECH)  


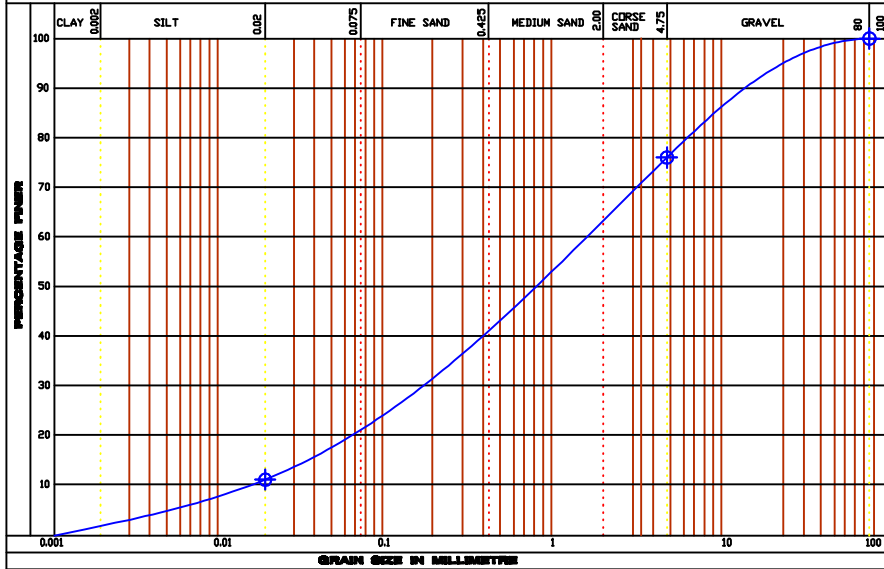
**LOCATION - COAL STORAGE** B.H NO- 76  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**



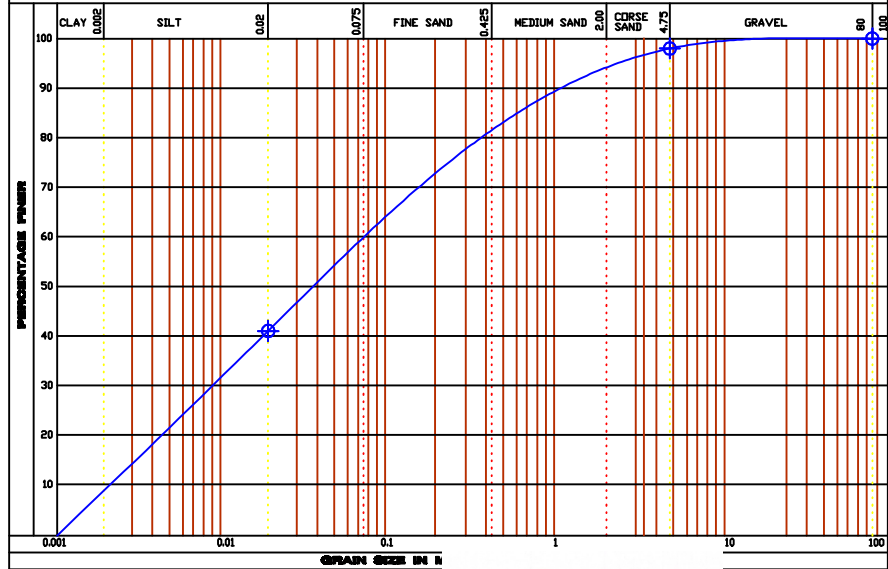
**LOCATION - COAL STORAGE** B.H NO- 76  
**DEPTH-7.50M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 77  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

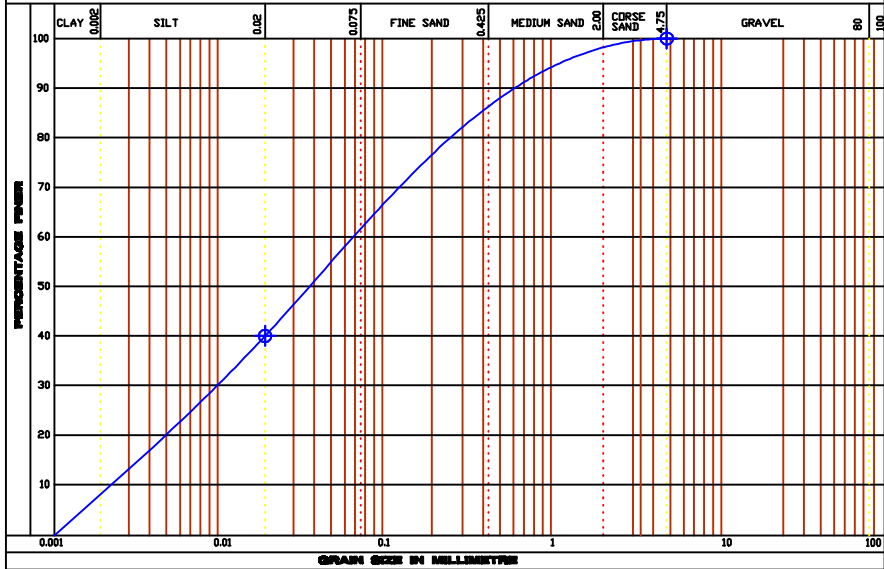


**LOCATION - COAL STORAGE** B.H NO- 77  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**

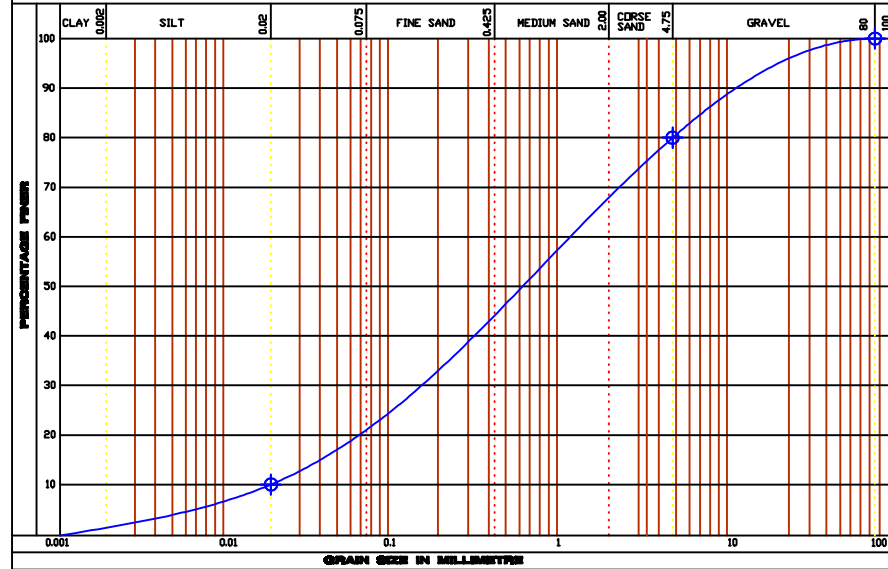


  
 BISHWAJIT KUMAR DAS.  
 M.TECH (GEO TECH)  

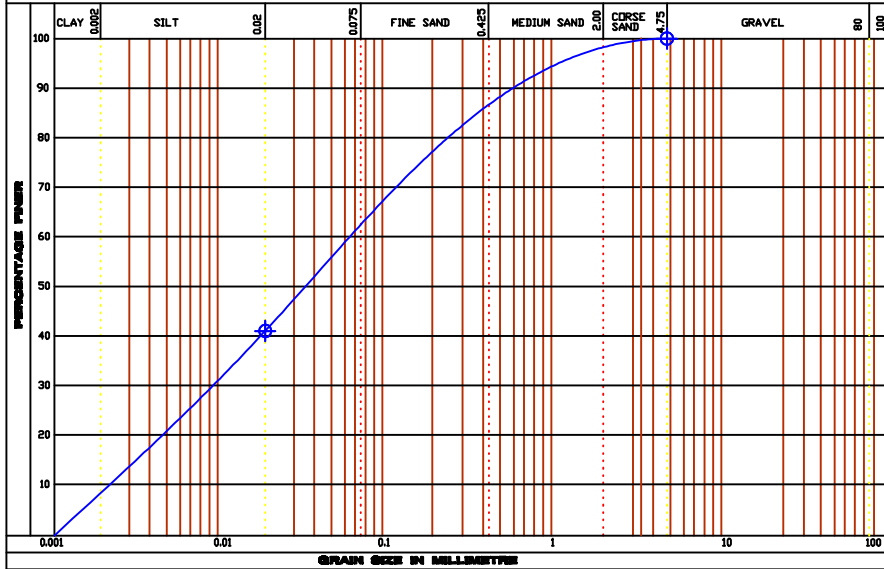

**LOCATION - COAL STORAGE** **B.H NO- 78**  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



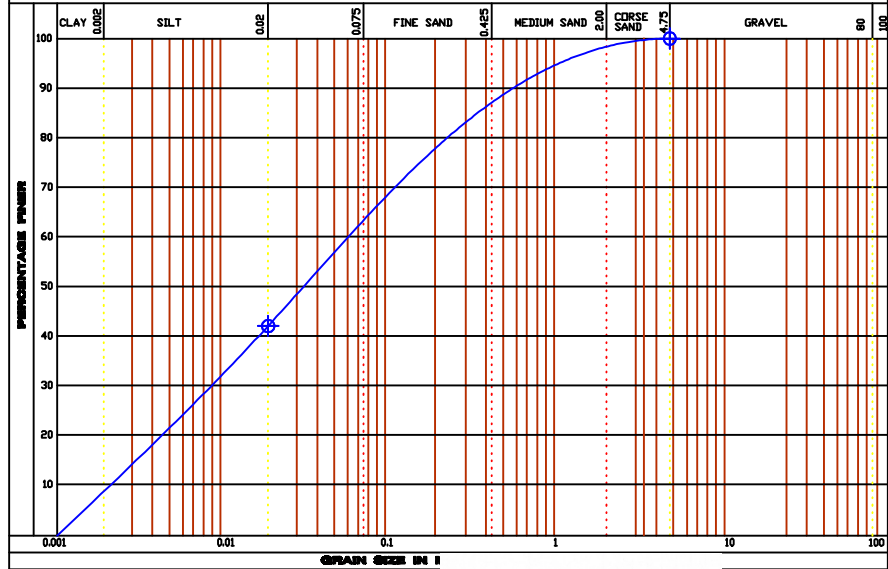
**LOCATION - COAL STORAGE** **B.H NO- 78**  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

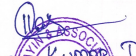



**LOCATION - COAL STORAGE** **B.H NO- 78**  
**DEPTH-4.50M** **GRAIN SIZE DISTRIBUTION CURVE**

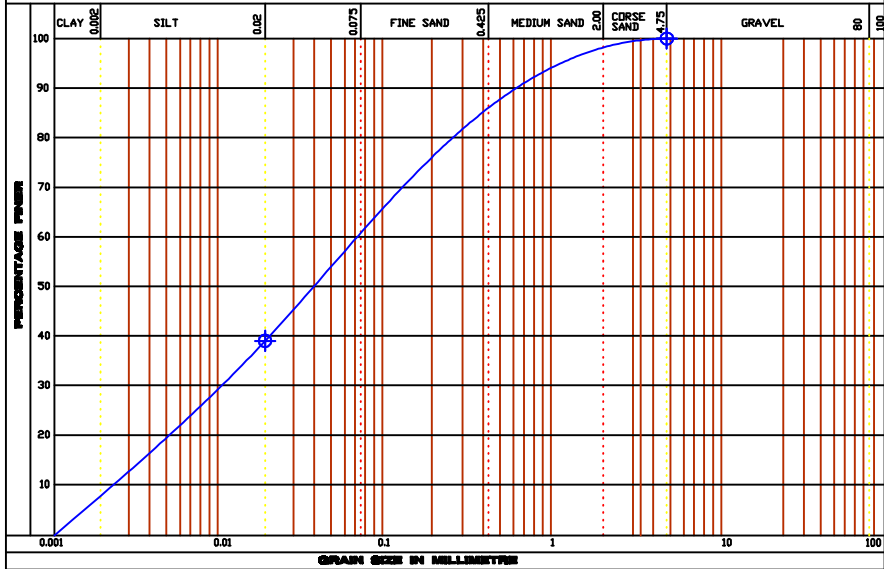


**LOCATION - COAL STORAGE** **B.H NO- 80**  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

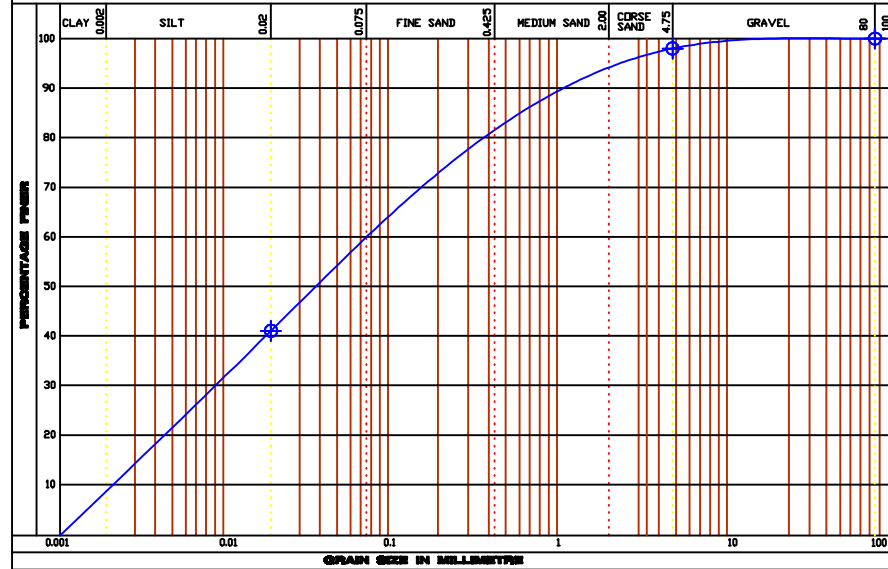


  
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**M.TECH (GEOTECH)**  


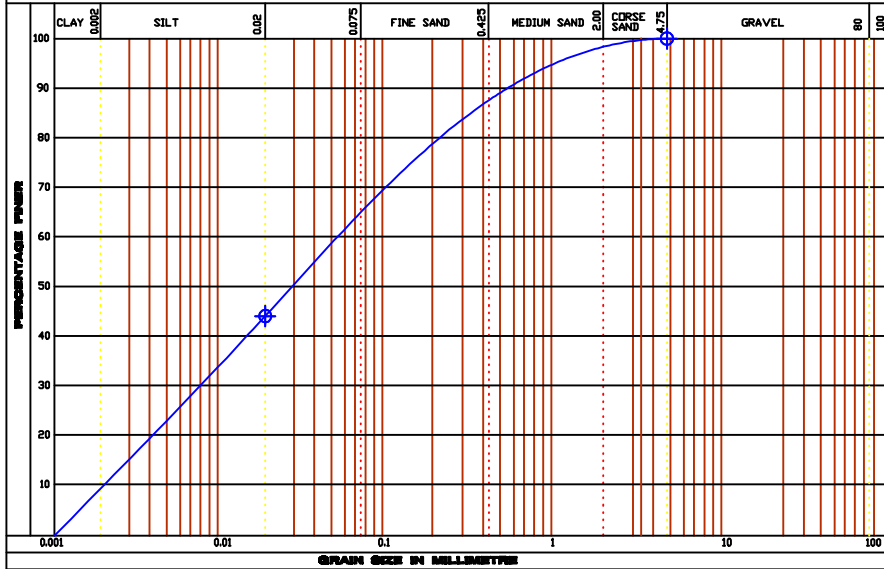
**LOCATION - COAL STORAGE** B.H NO- 80  
**DEPTH-6.00M** **GRAIN SIZE DISTRIBUTION CURVE**



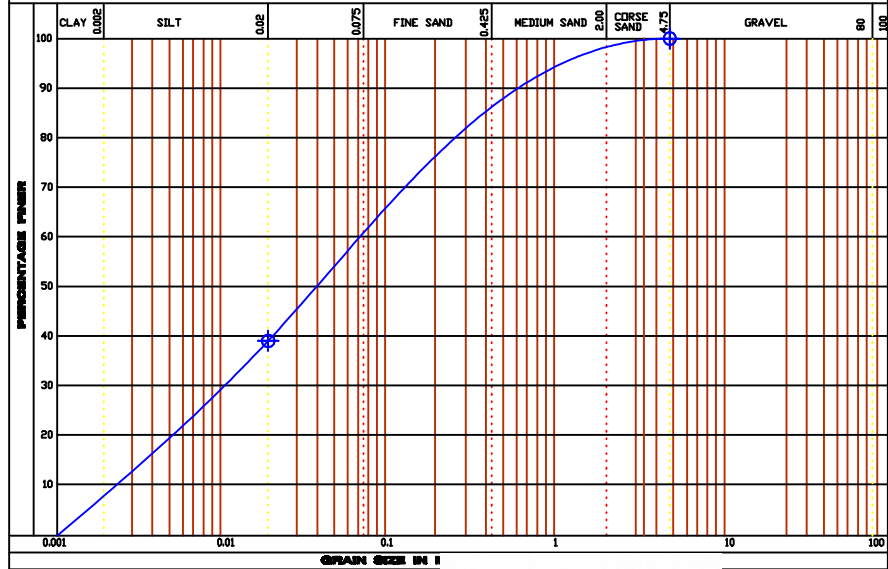
**LOCATION - COAL STORAGE** B.H NO- 81  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**





**LOCATION - COAL STORAGE** B.H NO- 82  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

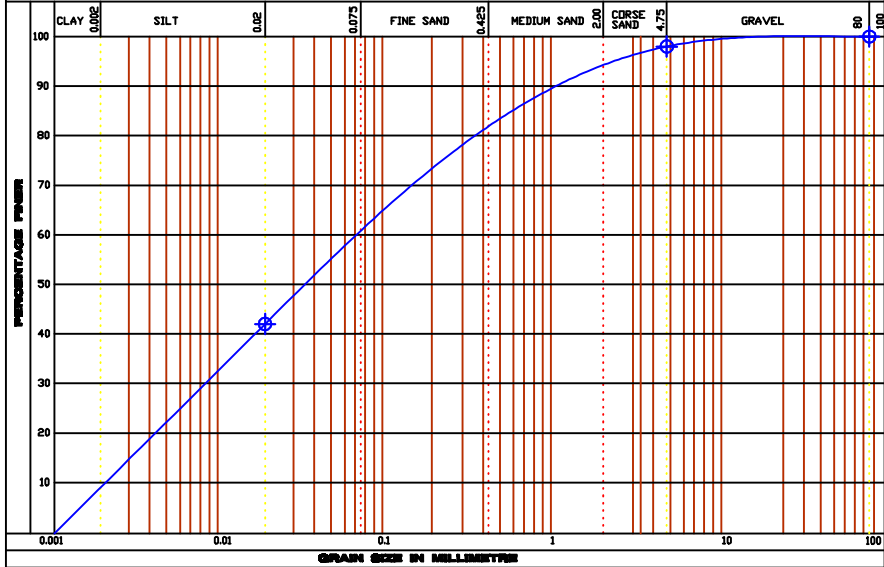


**LOCATION - COAL STORAGE** B.H NO- 83  
**DEPTH-7.50M** **GRAIN SIZE DISTRIBUTION CURVE**

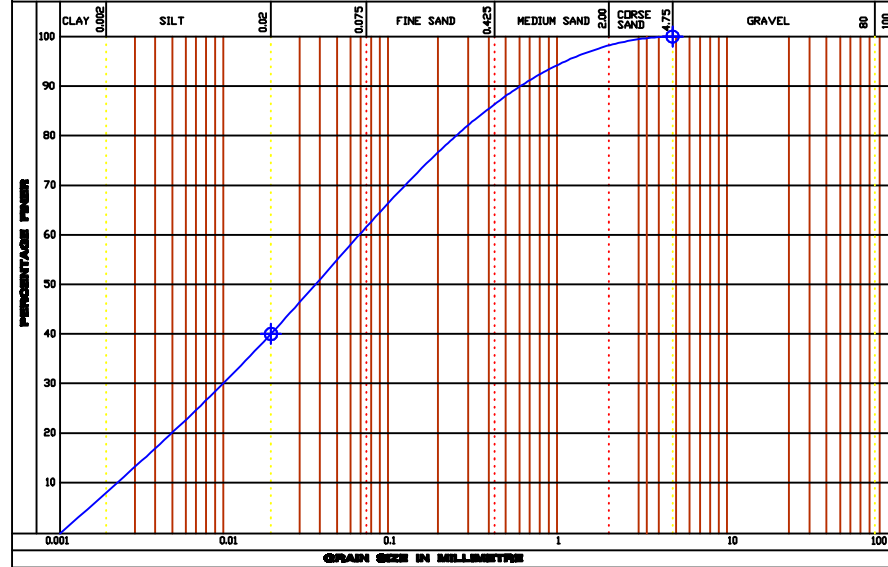


  
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 M.TECH (P&EOT&CH)  


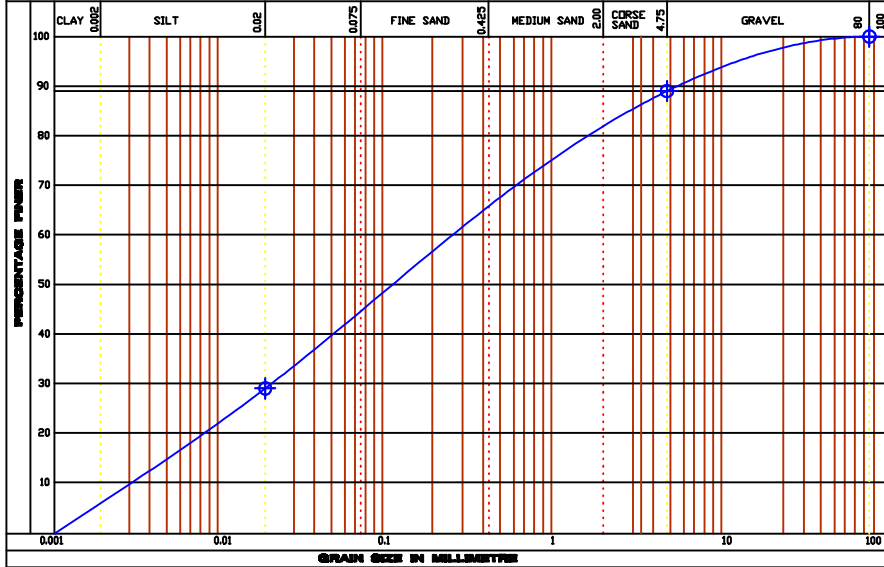
**LOCATION - COAL STORAGE** B.H NO- 83  
**DEPTH-3.00M**  
**GRAIN SIZE DISTRIBUTION CURVE**



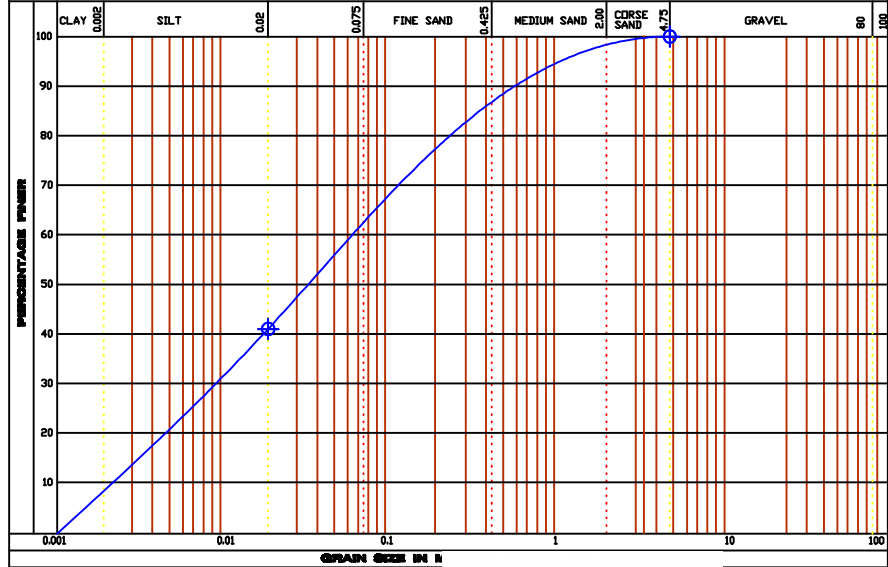
**LOCATION - COAL STORAGE** B.H NO- 83  
**DEPTH-7.50M**  
**GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 84  
**DEPTH-1.50M**  
**GRAIN SIZE DISTRIBUTION CURVE**



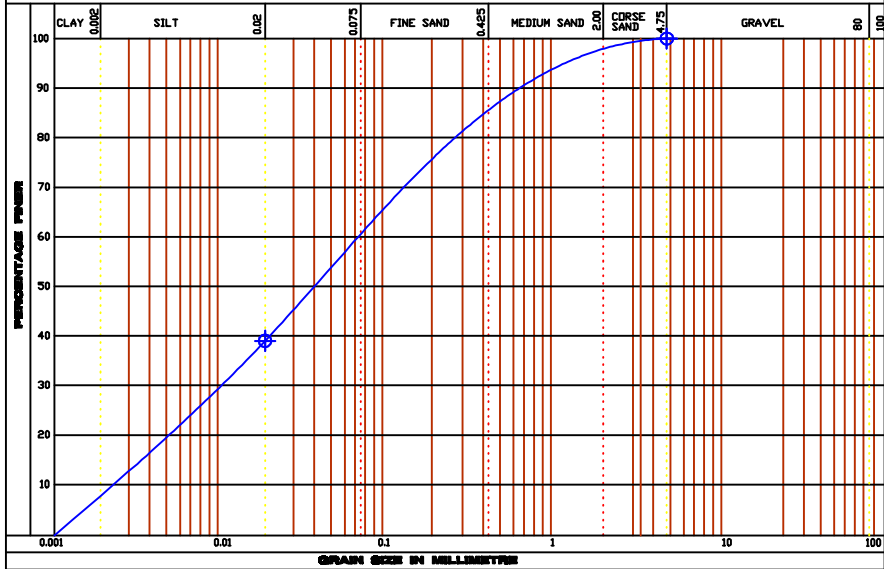
**LOCATION - COAL STORAGE** B.H NO- 84  
**DEPTH-6.00M**  
**GRAIN SIZE DISTRIBUTION CURVE**



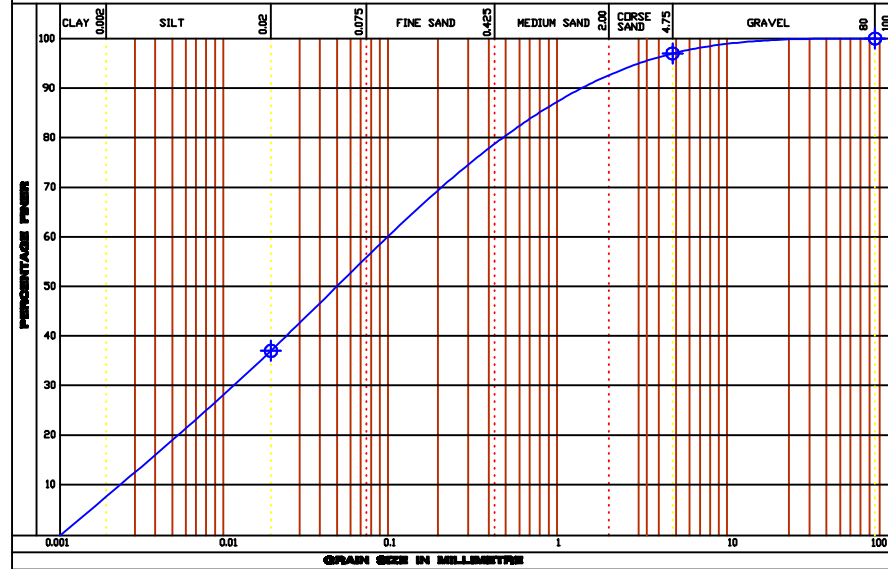
BISHW  
 KUMAR DAS  
 M.TECH (GEO TECH)  
 SATYANAGAR



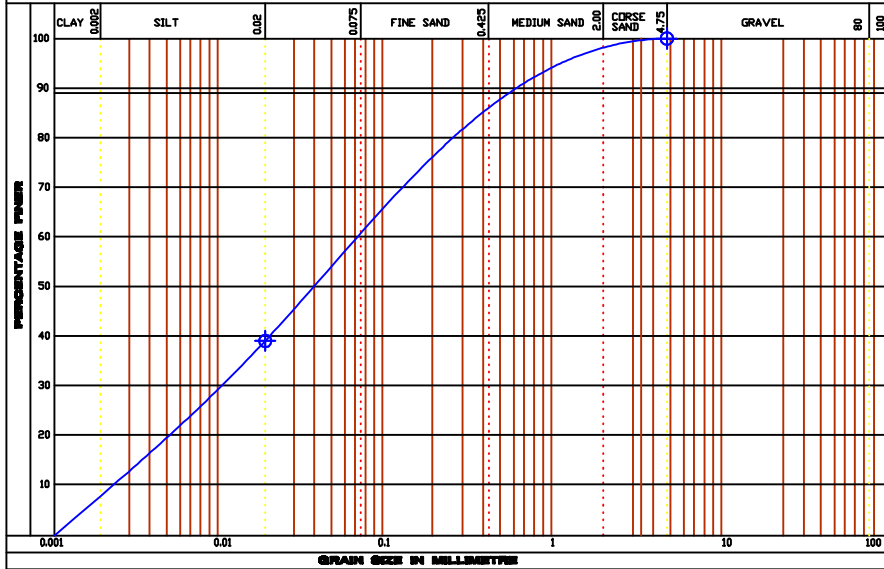
**LOCATION - COAL STORAGE** B.H NO- 84  
**DEPTH-10.00M** **GRAIN SIZE DISTRIBUTION CURVE**



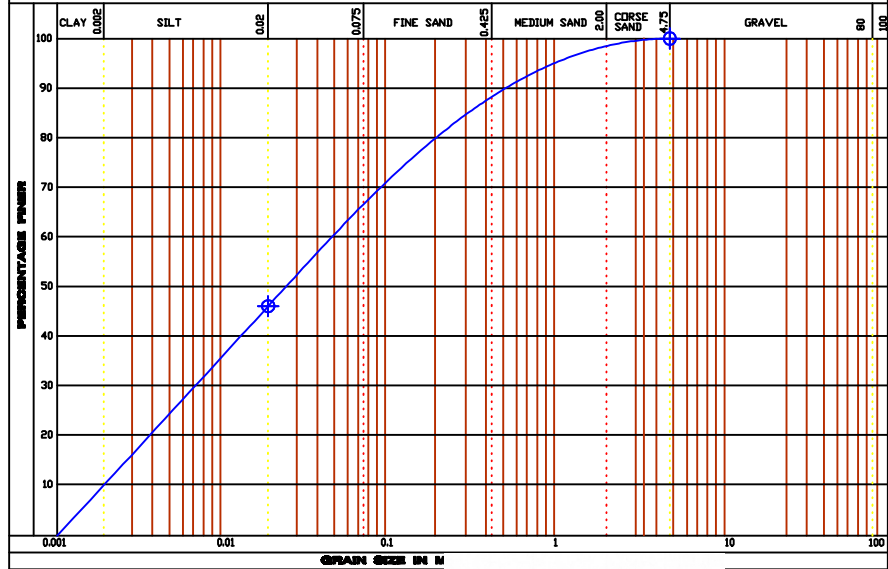
**LOCATION - COAL STORAGE** B.H NO- 85  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**



**LOCATION - COAL STORAGE** B.H NO- 86  
**DEPTH-10.50M** **GRAIN SIZE DISTRIBUTION CURVE**

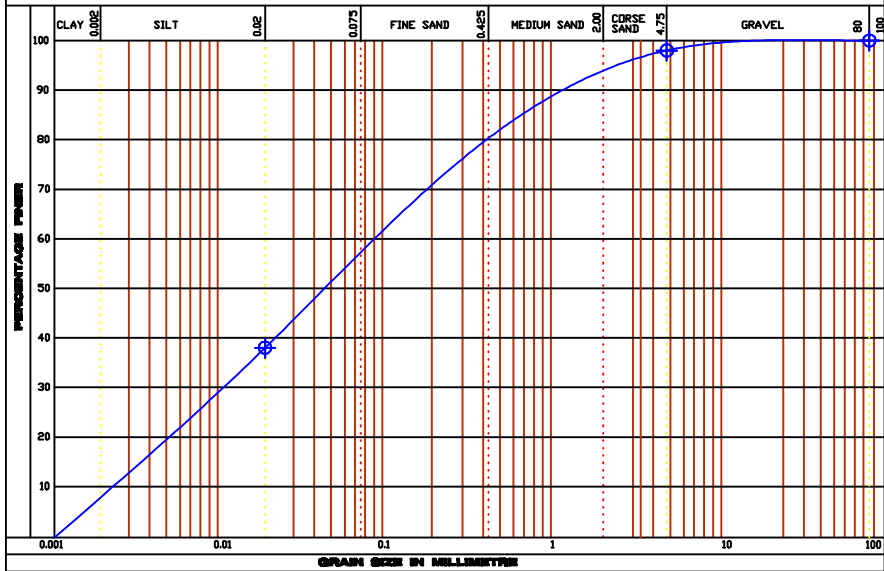


**LOCATION - COAL STORAGE** B.H NO- 88  
**DEPTH-1.50M** **GRAIN SIZE DISTRIBUTION CURVE**

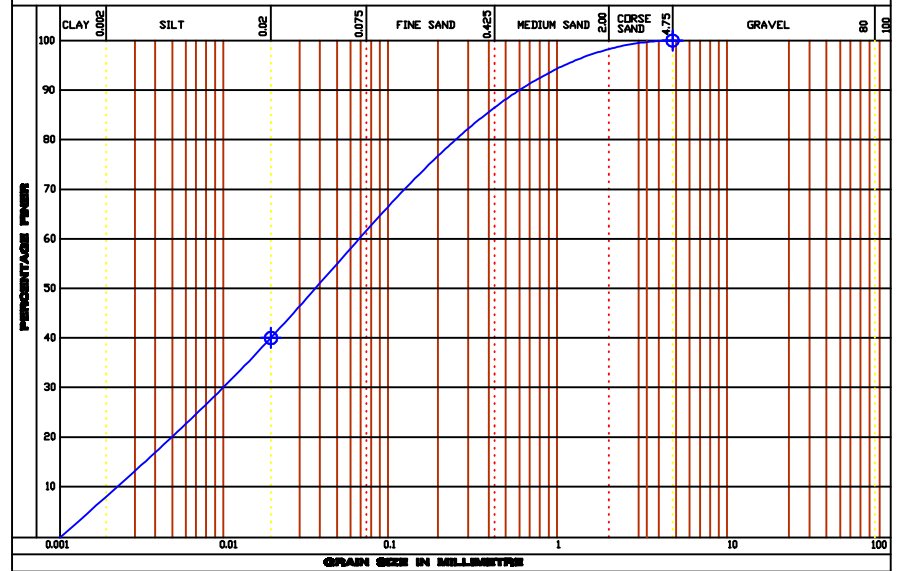


  
**BISHWANATH KUMAR DAS.**  
 M.TECH (GEO TECH)  
 SWAYIN & ASSOCIATES

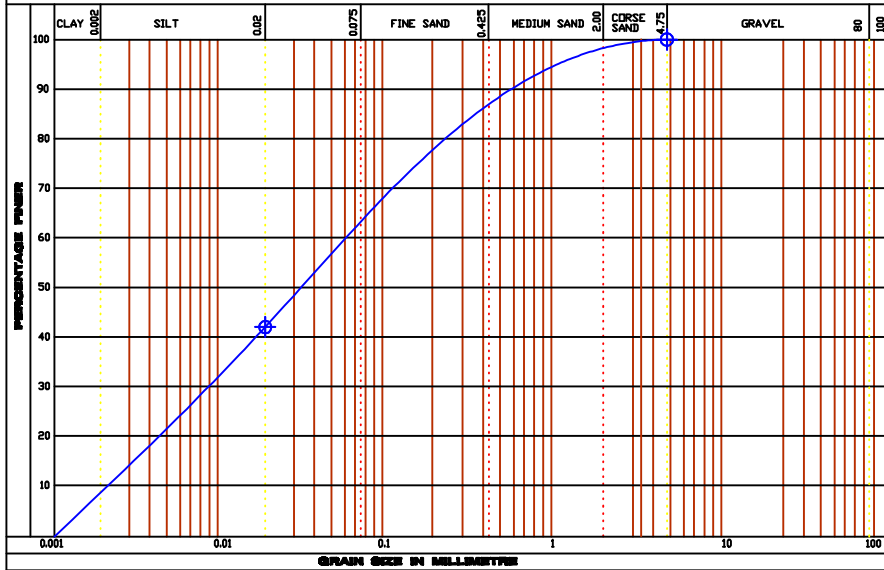
**LOCATION - COAL STORAGE** B.H NO- 86  
**DEPTH-10.50M** **GRAIN SIZE DISTRIBUTION CURVE**



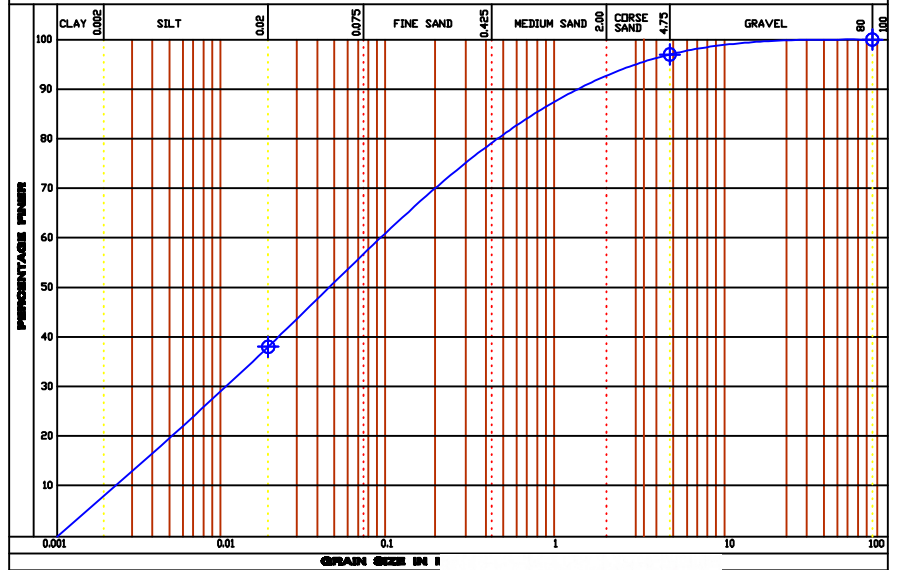
**LOCATION - COAL STORAGE** B.H NO- 87  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**





**LOCATION - COAL STORAGE** B.H NO- 87  
**DEPTH-10.00M** **GRAIN SIZE DISTRIBUTION CURVE**

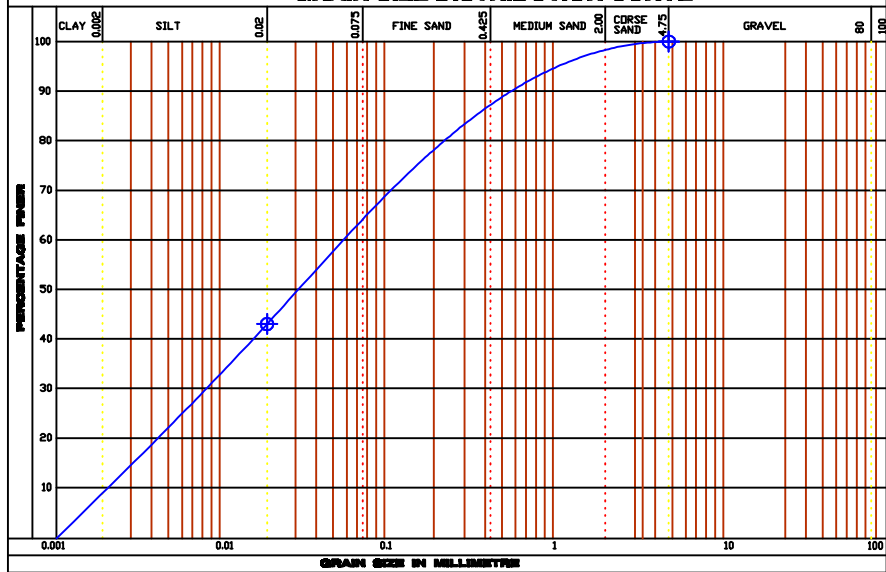


**LOCATION - COAL STORAGE** B.H NO- 86  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**

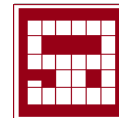


  
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 M.TECH (P&OT) (ECH)  


**LOCATION - COAL STORAGE** **S.N NO- 88**  
**DEPTH-3.00M** **GRAIN SIZE DISTRIBUTION CURVE**



  
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 M.TECH (GEOTECH)  

CLIENT: TALCHER FERTILIZERS LIMITED.  
 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

## NET SAFE BEARING CAPACITY

LOCATION:-ASU Area

BH No:- 34 to 42 & 45 to 48

SQUARE ▼

Shape of Footing:-

Size of footing :- **3 X 3**

CLAYEY SAND ▼

Founding stratum:-

6

C	φ
1.2	24
5.3	6
0	35
0	32
0	0

**THICKNESS OF 1st LAYER = 1.72 M**  
**THICKNESS OF 2nd LAYER = 1.84 M**  
**THICKNESS OF 3rd LAYER = 2.01 M**  
**THICKNESS OF 4th LAYER = 10.43 M**  
**THICKNESS OF 5th LAYER = 0 M**  
**FOUNDATION DEPTH = 3 M**  
**WIDTH OF FOOTING = 3 M**

### SHEAR CRITERIA:

**Based on Lab. Test results -**

Considering sub - stratum as cohesive

**D<sub>f</sub>** = 3 m  
**Cohesion (c)** = 5.3 t/sqm  
**Angle of shearing Resistance (φ)** = 6

**N<sub>c</sub>**= 6.862      **N<sub>q</sub>**= 1.75      **N<sub>γ</sub>**= 0.604  
**S<sub>c</sub>**= 1.3      **S<sub>q</sub>**= 1.2      **S<sub>γ</sub>**= 0.8  
**dc**= 1.199841      **dq**= 1      **d<sub>γ</sub>**= 1  
**i<sub>c</sub>**= 1      **i<sub>q</sub>**= 1      **i<sub>γ</sub>**= 1  
**B**= 3 m  
**γ<sub>sub</sub>**= 1.9 t/m2  
**F**= 2.5  
**W'**= 0.5

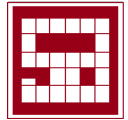
$$q_d = cN_c S_c d_c i_c + q(N_q - 1)S_q d_q i_q + .5B\gamma'N_\gamma S_\gamma d_\gamma i_\gamma W'$$

**q<sub>d</sub>** = 62.54605

**q<sub>s</sub>** = (1/F)q<sub>d</sub> = 25.02 t/m<sup>2</sup>

where, F=Factor of safety

**BISHWANATH KUMAR DAS,**  
 MTECH (PGEOTECH)  
 T. SATYANAGAR



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 CONTRACTOR: WUHUAN ENGINEERING CO., LTD.  
 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**SETTLEMENT CRITERIA -**

Settlement of 1st layer  $S1 = \lambda_1 \Delta p_1 m_{v1} H1$

$\lambda_1 = 0.7$   
 $\Delta p_1 = 0 \text{ T/m}^2$   
 $m_{v1} = 0.00095 \text{ SQ.M/T}$   
 $H1 = 0 \text{ m}$   
**S1 = 0 mm**

Settlement of 2nd layer  $S2 = \lambda_2 \Delta p_2 m_{v2} H2 I_{F2}$

$\lambda_2 = 0.7$   
 $\Delta p_2 = 22.69129662 \text{ T/m}^2$   
 $m_{v2} = 0.002 \text{ SQ.M/T}$   
 $H2 = 0.56 \text{ m}$   
**S2 = 17.78997655 mm**

Settlement of 3rd layer  $S3 = \Delta p_3 H3 (1 - \mu_3) / E$

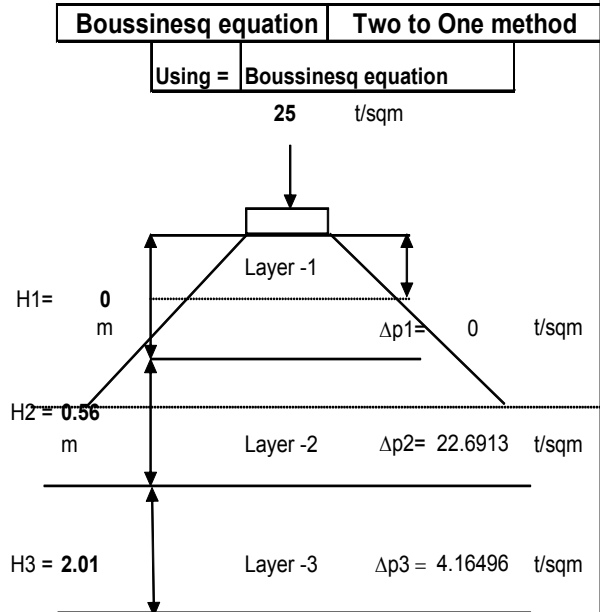
$E = 3000 \text{ T/m}^2$   
 $\Delta p_3 = 4.164959277 \text{ T/m}^2$   
 $\mu_3 = 0.3$   
 $H3 = 2.01 \text{ m}$   
**S3 = 3.790112942 mm**

Settlement of 4th layer  $S4 = \Delta p_4 H4 (1 - \mu_4) / E$

$E = 5000 \text{ T/m}^2$   
 $\Delta p_4 = 0.635990106 \text{ T/m}^2$   
 $\mu_4 = 0.3$   
 $H4 = 3.43 \text{ m}$   
**S4 = 0.347250598 mm**

Total settlement S =  $S1 + S2 + S3 + S4 + S5 = 21.92734009 \text{ mm}$   
 Depth correction factor = **0.74**  
 Rigidity Factor = **1**  
 Final Settlement Sf = **16.22623166**

**16.22623** mm settlement is for **25 t/sqm**  
 so, for **25** mm settlement ABP is = **38.52 t/sqm**  
**40** mm settlement ABP is = **61.63 t/sqm**  
**75** mm settlement ABP is = **115.55 t/sqm**



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 M.TECH (GEOTECH)



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 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

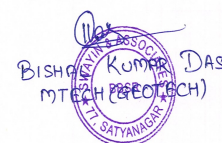
152 Design Aids in Soil Mechanics and foundation Engineering

Table 9.14 Typical Range of Values for the static Stress-strain Modulus E for Selected Soils (Field Values Depend on Stress History, Water Content,, Density, etc.)

Soil	E Kg/cm <sup>2</sup>
Clay:	
Very soft	20-150
Soft	50-250
Medium	150-500
Hard	500-1000
Sandy	250-2500
Glacial till:	
Loose	100-1600
Dense	1500-7250
Very dense	4800-15000
Loose	150-600
Sand:	
Silty	75-250
Loose	100-250
Dense	500-850
Sand and gravel:	
Loose	500-1500
Dense	1000-2000
Shale	1500-150000
Silt	20-200

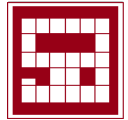
Table 9.15 Typical Range of Values for Poisson's Ratio,  $\mu$

Type of soil	$\mu$
Clay, saturated	0.4-0.5
Clay, Unsaturated	0.1-0.3
Sandy clay	0.2-0.3
Silt	0.3-0.35
Sand (dense)	
Coarse (void ratio = 0.4-0.7)	0.2-0.4
Fine grained (void ratio =0.4-0.7)	0.15
Rock	0.25
	0.1-0.4 (depends somewhat on type of rock)
Loose	0.1-0.3
Ice	0.36
Concrete	0.15

  
 BISHWANATH KUMAR DAS.  
 M.TECH (GEO. TECH)  
 U. SATYANIGR

**REFERENCE:-**

\* Modulus of Elastic 'E' & Poisson's Ratio are taken from the textbook 'Design Aids in Soil Mechanics and Foundation Engineering-Shenbaga R Kaniraj' pg no.152.



CLIENT: TALCHER FERTILIZERS LIMITED.  
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 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**SAMPLE CALCULATION OF SAFE BEARING CAPACITY (IS-6403:1981)**  
**(FROM SHEAR PARAMETER)**

**BH No:-34 to 42 & 45 to 48**

**Zone-01**

Shape of footing:-Square

Size of footing: 3 x 3m

Depth of footing: 3.00m

Founding Stratum: - Clayey sand

Average Thickness of 1<sup>st</sup> Layer:-1.72 m

Average Thickness of 2<sup>nd</sup> Layer:-1.88 m

Average Thickness of 3<sup>rd</sup> Layer:-2.01 m

Average Thickness of 4<sup>th</sup> Layer:-10.43 m

C = Cohesion

$\phi$  = Angle of shear Resistance

$D_f$  = Depth of foundation

B = Width of footing

$N_c, N_q, N_\gamma$  = Bearing Capacity Factor

$S_c, S_q, S_\gamma$  = Shape Factor

$d_c, d_q, d_\gamma$  = Depth Factor

$I_c, I_q, I_\gamma$  = Inclination Factor

$\gamma$  = Bulk density

$W'$  = Correction factor for location of water table

**SHEAR CRITERIA AS PER IS 6403:**

**BASED ON LAB TEST RESULTS :**

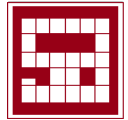
Considering sub - stratum as cohesive

Depth of Foundation  $D_f$  = 3.00 m

Cohesion (c) = 1.20 t/sqm (from shear parameter)

Angle of Shearing Resistance ( $\phi$ ) = 24 (from shear parameter)

  
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 SATYANAGAR



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 SUB - CONTRACTOR: SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

**BEARING CAPACITY FACTOR**

(As per IS 6403-1981 Class 5.1.2.2 page no 8)

$$So, Nc= 6.862 \quad Nq= 1.75 \quad N\gamma= 0.604$$

**SHAPE FACTOR**

(As per IS 6403-1981 Table No-02 page no 8)

For Square Footing

$$Sc= 1.30 \quad Sq= 1.2 \quad S\gamma= 0.80$$

**DEPTH FACTOR**

As per IS 6403-1981 page no 9)

$$dc = 1+0.2 \times (\text{depth of foundation/width of footing}) \times \tan \left( \left( \frac{\pi}{180} \right) \times (45 + \left( \frac{\phi}{2} \right)) \right) = 1.20$$

$$dq = dy$$

For 'φ' Value > 10

$$dq = dy = 1 + 0.1 \left( \frac{Df}{B} \right) \times \left( \sqrt{\tan \left( \frac{\pi}{180} + \phi \right) \times 3.14 / 2 \times 180} \right) = 1.00$$

**INCLINATION FACTOR**

$$Ic = Iq = I\gamma = 1$$

( $\gamma_{bulk}$ ) 1.90 t/sqm (As per lab test data)

Factor of Safety taken as = 2.5

$$W' = 0.50 \quad \text{Due to water table likely to rise have taken as } 0.5$$

**ULTIMATE NET BEARING CAPACITY (As Per IS 6403: clause 5.1.2**

(GENERAL SHEAR FAILURE)

$$q_d = cN_c S_c d_{c_i} + q(N_q - 1) S_q d_{q_i} + 0.5 B \gamma' N_\gamma S_\gamma d_{\gamma_i} W'$$

$$= 62.54 \text{ t/m}^2.$$

$$q_s = (1/F) q_d$$

$$= 62.54 / 2.5$$

$$= 25.02 \text{ t/m}^2$$

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**LOAD CARRYING CAPACITY OF PILE IN ROCK**  
**AS PER IS 2911 (Part 1/Sec 2) : 2010**

**Location:** ASU Area (Zone-1)

**Borehole No:** BH-34 to42 & 45 to48

Cut-off Level of Pile,  $L_c$  = 2.0 Mtr.

After Cut-off Length of Pile,  $L_p$  = 8.0 Mtr. Total Length of Pile from NGL = 10.00 Mtr.

Dia. of Pile, B = 0.45 Mtr.

Length of Socket, L = 3.65 Mtr. (i.e., from Weathered Rock Layer)

Safe load carrying of pile, in tones

$$Q_s = C_{u1} \cdot N_c \cdot (\pi \cdot B^2 / 4 \cdot F_s) + \alpha \cdot C_{u2} \cdot (\pi \cdot B \cdot L / F_s) \quad \text{- As per B-8 of Annex-B of IS 2911 (Part 1/Sec 2)}$$

$C_{u1}$  = Shear strength of rock below the base of the pile

$C_{u2}$  = Average shear strength of rock along socketed length of Pile

L = Length of Socket in 'm'

$Q_s$  = Allowable capacity of Pile

$C_{u1} = 14.00 \text{ MPa} = 1372.93 \text{ KN/m}^2$

$C_{u2} = 16.62 \text{ MPa} = 1629.87 \text{ KN/m}^2$

$F_s$  = Factor of Safety taken as 3

$N_c = 9$

$\alpha = 0.9$

- As per B-8 of Annex-B of IS 2911 (Part 1/Sec 2)

- Please refer Fig.3 of IS 2911 (Part 1/Sec 2)

- As per B-8 of Annex-B of IS 2911 (Part 1/Sec 2)

**Details of Layer I & II as per IS 2911 (Part 1/Sec 2) :**

Layer No.	Thickness of Stratum (m)	Cohesion (t/m <sup>2</sup> )	Angle of friction (φ°)	Density (γ)	Alpha (α)	K <sub>i</sub>	P <sub>Di</sub>	A <sub>si</sub> (m <sup>2</sup> )	Q <sub>s</sub>
1 (NGL to 1.88m)	1.72	1.20	21	1.82	0	1	1.57	2.43	1.46 T
2 (1.88m to 3.70m)	1.84	5.30	2	1.77	1	0	5.17	2.60	13.79 T
3 (3.70m to 5.680m)	2.01	0.00	35	1.00	0	1	8.16	2.84	16.23 T
4 (5.68m to 10.00m)	4.43	0.00	35	1.00	0	1	11.97	6.26	52.47 T

Skin Friction Resistance,  $Q_s$  = 53.93 T

**Note:** \* Since the Cut-Off length of Pile has been considered as 4.00m, the thickness of stratum has been considered accordingly.

\* For Cohesiveless Soils,  $Q_s = K_i \cdot P_{Di} \cdot \tan \delta \cdot A_{si}$  - As per Appendix-A of IS 2911 (Part 1/Sec 2)

\* For Cohesive Soils,  $Q_s = \alpha \cdot C \cdot A_{si}$  - As per Appendix-B of IS 2911 (Part 1/Sec 2)

Allowable End Bearing Component =  $C_{u1} \cdot N_c \cdot (\pi \cdot B^2 / 4 \cdot F_s)$   
= 655.07 KN

Allowable Shear Component =  $\alpha \cdot C_{u2} \cdot (\pi \cdot B \cdot L / F_s)$   
= 2523.06 KN

**Allowable Capacity of Pile,  $Q_s$  in Compr.** = **374.92 T**

Ultimate Uplift Load Carrying capacity = (Shear Comp. + Skin Friction + Weight of Pile) - As per clause no.6.3.2 of IS 2911 (Part 1/Sec 2)

**Allowable Uplift Load Carrying capacity** = **122.01 T** - (Unit wt. of pile as 15KN/m<sup>3</sup>)

Allowable Load Carrying capacity in Lateral = Modulus of Sub Grade Reaction = 10.00 MN/m<sup>3</sup> - From Table-3 of IS 2911 (Part 1/Sec 2)

Length of pile above GL  $L_1$  = 0.00 m

Grade of concrete  $f_{ck}$  = 35.00 N/mm<sup>2</sup>

Modulus of Elasticity of Concrete, E =  $5000 \sqrt{f_{ck}}$   
= 29580 N/mm<sup>2</sup>  
= 29580 MN/m<sup>2</sup>

Moment of Inertia of Pile, I =  $\pi D^4 / 64$   
= 0.0020 m<sup>4</sup>

Pile Stiffness, T =  $(EI / \eta h)^{1/5}$  - From Clause C-2.3.2 of IS 2911 (Part 1/Sec 2)  
= 1.562 m

$L_1 / T$  = 0.00 m

$L_f / T$  = 2.20

Length of Fixity  $L_f$  = 343.66 cm - From Fig 4 - IS 2911 (Part 1/Sec 2)

Y =  $Q(L_1 + L_f)^3 / 12EI$  - (For Fixed Head) as per IS 2911 (Part 1/Sec 2)

Y = 0.50 cm = 0.005 m

$L_1$  = 0.00 cm = 0.00 m

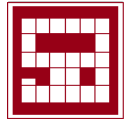
$L_f$  = 343.66 cm = 3.437 m

0.005 =  $Q(0 + 6.110)^3 / (12 \cdot 29580 \cdot 0.0201)$

Q = 0.08802 MN

**Allowable Load Carrying capacity in Lateral** = **8.80 T**

  
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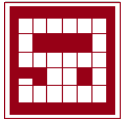
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## SITE PHOTOGRAPHS



*Biswajit Kumar Das*  
BISHWAJIT KUMAR DAS.  
M.TECH (P&OT/TECH)  
SWAYIN & ASSOCIATES





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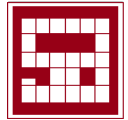
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**BISHWANKUMAR DAS**  
 M.TECH (GEOTECH)  
 T.L. SATYANAGAR

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## INTRODUCTION


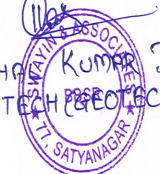
M/s Swayin & Associates has awarded to conduct the Soil Investigation Works, Survey works of coal gasification & ammonia urea plant, Talcher, Odisha, India for M/s Talcher Fertilizers Limited for the proposed construction structures, Industrial plant, Building, Boundary wall etc. located at Talcher in Odisha. This report provides the results of the geotechnical investigation conducted at Gas cleaning unit area Location of Talcher for TFL.

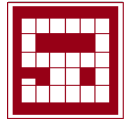
The geotechnical Investigation was completed and provides accurate detailed data of soil conditions of Proposed Area at Talcher under Talcher Fertilizers limited.

Through correspondence with the WUHUAN ENGINEERING CO.,LTD. The investigation was intended to assist in determining the most appropriate method for the development of construction structures, Industrial plant, Building, Boundary wall etc.

The work was completed in accordance with the proposal as per LOI No: WUHUAN/SWAYIN/SOIL/TFL/2020: DTD.03.01.2020.

This report has been prepared specifically and solely for the project described herein. It contains the Geotechnical Investigation and provides the observations and Recommendations for the proposed Gas cleaning unit at Talcher, Odisha under M/s Talcher Fertilizers limited.

  
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CONTRACTOR: M/S WUHUAN ENGINEERING CO., LTD.  
SUB - CONTRACTOR: M/S SWAYIN & ASSOCIATES

JOB No: TLD/2020-03

1. **GENERAL INFORMATION ABOUT THE FIELD INVESTIGATION, INCLUDING EQUIPMENTS, METHODS, PERSONNEL, COMMENTS:**

a) **General Data:**

**Name of Owner:** M/s Talcher Fertilizers Limited.

**Name of Contractor:** Wuhan Engineering Co., Ltd.

**Name of Sub-Contractor:** M/s Swayin & Associates.

**Name of Project:** Detailed soil Investigation Works, Survey works of coal gasification & ammonia urea plant, Talcher, Odisha, India.

**LOI No:** WUHUAN/SWAYIN/SOIL/TFL/2020: DTD.03.01.2020

**Description of Work:** To execute/ providing services for soil investigation & allied works at TFL's Coal gasification, Ammonia & Urea unit for Gas cleaning unit in Talcher.

  
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