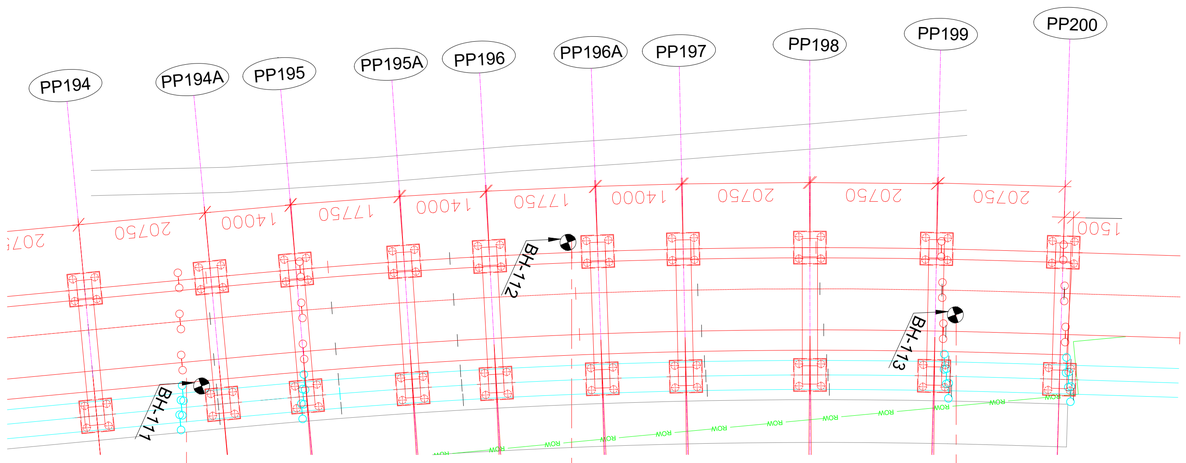
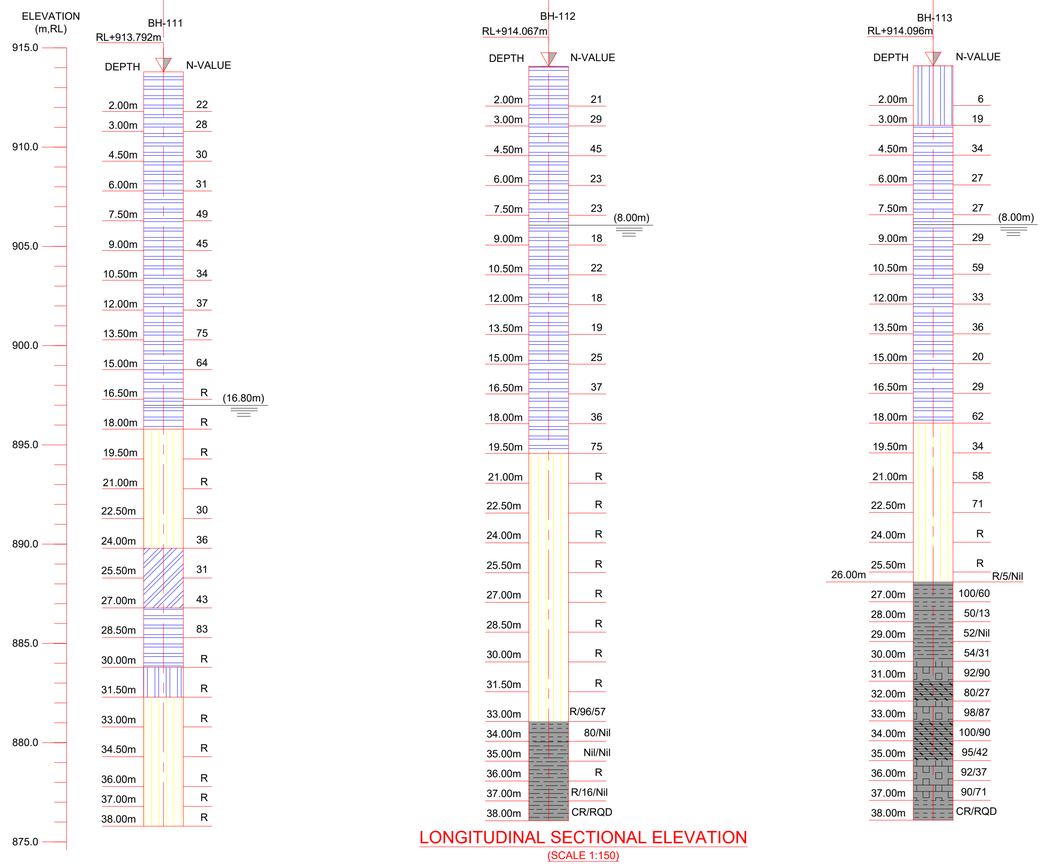
PLAN FOR BORE HOLE LOCATION (PP194 TO PP200)

SCALE (1:500)

BENNIGANAHALLI ← → YESVANTPUR





LONGITUDINAL SECTIONAL ELEVATION

(SCALE 1:150)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. HORIZONTAL PROFILE OF ALIGNMENT SHOWN IS SAME AS CLIENT'S PROFILE AND IS SUBJECT TO CHANGE AT A LATER STAGE.
4. SPANNING ARRANGEMENT SHOWN ARE TENTATIVE AND MAY CHANGE IF THERE IS ANY MODIFICATION TO ALIGNMENT.

TERMINATION CRITERIA:

1.SOIL

LENGTH OF PILE WILL BE DETERMINED WHERE THE SAFE CAPACITY IS EXCEEDING THE REQUIRED DESIGN LOAD BASED ON THE STATIC AND SEISMIC CONDITION.(REFER TABLE-1 FOR SUMMARY OF PILE DETAILS)

2.ROCK (AS PER EMPLOYEE REQUIREMENT PRE BID QUERY NUMBER 353)

THE TERMINATION OF PILE OF 1.2M DIA FOR ROCK ANCHORING, CONTRACTOR SHALL FOLLOW ANY OF FOLLOWING CRITERIAS:-

A. CONTRACTOR SHALL USE MIN. 3.6MT WEIGHT OF THE CHISEL FOR SOCKET LENGTH IN SOFT ROCK/HARD ROCK. IN CASE THE CONTRACTOR USES 3.6MT CHISEL THE TERMINATION CRITERIA SHALL BE AS FOLLOWS.
   a. BETWEEN 20-40CM, THEN ROCK WILL BE CALLED 'SOFT ROCK' AND ANCHORING SHALL BE 2.5 DIA OF PILE i.e 3.0M.
   b. LESS THAN 20CM, THEN ROCK WILL BE CALLED 'HARD ROCK' AND ANCHORING SHALL BE 1 DIA OF PILE i.e 1.2M.

OR

B. FOR THE PURPOSE OF SOCKETING OF END BEARING PILE IN SOFT/HARD ROCK, THE FOLLOWING ALTERNATIVE CRITERIA CAN BE ADOPTED TO DETERMINE THE SOFT/HARD ROCK.
   a. ROCK WILL QUALIFY AS SOFT ROCK IF RQD=35% AND CORE RECOVERY=35% AND CORE STRENGTH 35Mpa~ 350T/M2.
   b. ROCK WILL QUALIFY AS HARD ROCK IF RQD=75% AND CORE RECOVERY=75 AND CORE STRENGTH 50Mpa AND ABOVE i.e MORE THAN 500T/M2.

NOTE:- TERMINATION LEVEL OF PILE WILL BE DECIDED BY ENGINEER BASED ON ABOVE CRITERIA OR ANY OTHER STANDARD PRACTICE BASED ON ENERGY CRITERIA. IN SIMILAR LINES, THE SOCKETING DEPTH TO BE CALCULATED FOR 1.0M DIA PILE ALSO BE THE CONTRACTOR.

ABBREVIATIONS:

BH - BORE HOLE
BR - BRIDGE
CH - CHAINAGE
FL - FOUNDING LEVEL
◔ - LOCATION OF BOREHOLE

SUB-SOIL PROFILE LEGEND:-

- ROCK

BORE LOG LEGEND:-

- SP
- SC
- CI
- RQD%(90-100)
- SM
- MI
- CL
- RQD%(75-90)
- CH
- MH
- ML
- RQD%(50-75)
- SW
- GM
- BOULDER
- RQD%(25-50)
- GC
- RESIDUAL SOIL
- FILLED UP SOIL
- RQD%(<25)

NOTES :

NOTES :

LEGEND :

REFERENCE DRAWINGS :

REFERENCE DOCUMENTS :

KEY PLAN (N)

STATION BOX KEY PLAN

EMPLOYER :

DESIGNATION	NAME	SIGN

REVISIONS

REV	DATE	BRIEF DESCRIPTION
a	28.04.2023	FOR APPROVAL

CONTRACTOR :
TRANSPORTATION INFRASTRUCTURE IC
EDRC-SPECIAL BRIDGES

DETAILED DESIGN CONSULTANT (DDC) :
L&T CONSTRUCTION
EDRC - GEOTECH &
STUP Consultants Pvt. Ltd.
JP & Devi Jamkhedkar Arcade
69, 4th Floor,
Millers Road, Bengaluru-560052.
Tel.: 080-40397979
Email : bangalore@easystem.com
www.easystem.com

PROOF CONSULTANT (PC) :

QUALITY ASSURANCE

The responsibility of control, check and verification of accuracy, correctness, completeness, integration and full compliance of Contract provisions in respect of design analysis and drawing rests with Design & Build Contractor.

	DDC			PC	Contractor
SIGN					
DATE	28.04.2023	28.04.2023	28.04.2023	-	-
NAME	AKS	VHN	BDS/VKN	-	-
	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY	ISSUED BY

GENERAL CONSULTANTS

CHECKED	NAME	SIGN
CIVIL & STRUCTURAL		
GEO-TECHNICAL		

	REVIEWED DY. PD	PROJECT DIRECTOR
SIGN		
NAME		
DATE		

EMPLOYER :
RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

GENERAL CONSULTANTS :
AECOM egis WSP AECOM-EGIS-WSP

PROJECT :
BENGALURU SUBURBAN RAILWAY PROJECT (BSRP)
K-RIDE CORRIDOR - 2

DRAWING TITLE :
SUB SOIL PROFILE FOR (BH-111 TO BH-113)

DRAWING NO. : O22077-BSRP-CR2-C-VD-GEN-10-1762

REVISION	DWG STATUS
a	-

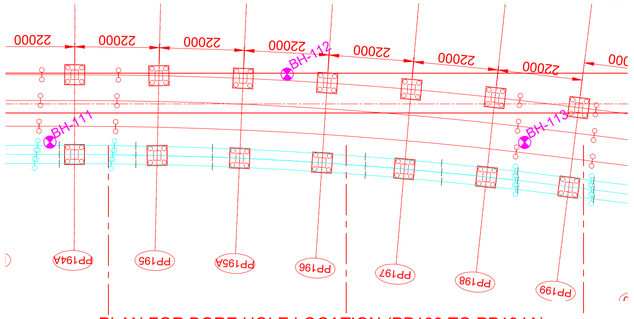
SCALE : AS SHOWN

DATE : 28.04.2023

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M).

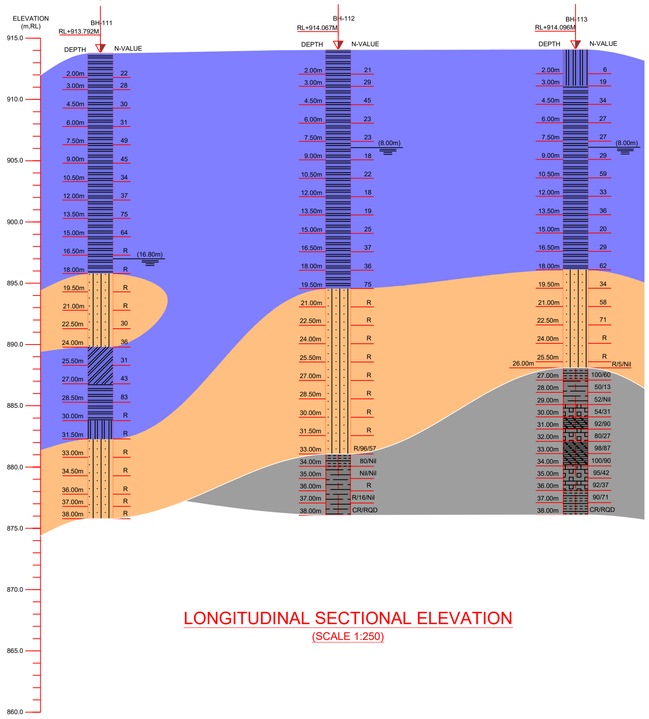
SHEET SIZE - A1

BENNIGANAHALLI ← → **YESVANTPUR**



PLAN FOR BORE HOLE LOCATION (PP199 TO PP194A)

SCALE (1:800)



LONGITUDINAL SECTIONAL ELEVATION

(SCALE 1:250)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
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4. SPANNING ARRANGEMENT SHOWN ARE TENTATIVE AND MAY CHANGE IF THERE IS ANY MODIFICATION TO ALIGNMENT.

TERMINATION CRITERIA:

1.SOIL

LENGTH OF PILE WILL BE DETERMINED WHERE THE SAFE CAPACITY IS EXCEEDING THE REQUIRED DESIGN LOAD BASED ON THE STATIC AND SEISMIC CONDITION.(REFER TABLE-1 FOR SUMMARY OF PILE DETAILS)

2.ROCK (AS PER EMPLOYEE REQUIREMENT PRE BID QUERY NUMBER 353)

THE TERMINATION OF PILE OF 1.2M DIA FOR ROCK ANCHORING, CONTRACTOR SHALL FOLLOW ANY OF FOLLOWING CRITERIAS:-

A. CONTRACTOR SHALL USE MIN. 3.6MT WEIGHT OF THE CHISEL FOR SOCKET LENGTH IN SOFT ROCK/HARD ROCK. IN CASE THE CONTRACTOR USES 3.6MT CHISEL THE TERMINATION CRITERIA SHALL BE AS FOLLOWS.
   a. BETWEEN 20-40CM, THEN ROCK WILL BE CALLED 'SOFT ROCK' AND ANCHORING SHALL BE 2.5 DIA OF PILE i.e 3.0M.
   b. LESS THAN 20CM, THEN ROCK WILL BE CALLED 'HARD ROCK' AND ANCHORING SHALL BE 1 DIA OF PILE i.e 1.2M.

OR

B. FOR THE PURPOSE OF SOCKETING OF END BEARING PILE IN SOFT/HARD ROCK, THE FOLLOWING ALTERNATIVE CRITERIA CAN BE ADOPTED TO DETERMINE THE SOFT/HARD ROCK.
   a. ROCK WILL QUALIFY AS SOFT ROCK IF RQD=35% AND CORE RECOVERY=35% AND CORE STRENGTH 35Mpa~ 350T/M2.
   b. ROCK WILL QUALIFY AS HARD ROCK IF RQD=75% AND CORE RECOVERY=75 AND CORE STRENGTH 50Mpa AND ABOVE i.e MORE THAN 500T/M2.

NOTE:- TERMINATION LEVEL OF PILE WILL BE DECIDED BY ENGINEER BASED ON ABOVE CRITERIA OR ANY OTHER STANDARD PRACTICE BASED ON ENERGY CRITERIA. IN SIMILAR LINES, THE SOCKETING DEPTH TO BE CALCULATED FOR 1.0M DIA PILE ALSO BE THE CONTRACTOR.

ABBREVIATIONS:

BH - BORE HOLE
BR - BRIDGE
CH - CHAINAGE
FL - FOUNDING LEVEL
⊕ - LOCATION OF BOREHOLE

SUB-SOIL PROFILE LEGEND:-

- CLAY
- SILT
- SAND
- ROCK

BORE LOG LEGEND:-

- SP
- SC
- CI
- GRANITE
- GRANULITE
- SM
- MI
- CL
- QUARTZITE
- GRANITIC GNEISS
- MH
- DOLERITE

NOTES :	NOTES :	LEGEND :	REFERENCE DRAWINGS :	REFERENCE DOCUMENTS :

KEY PLAN (N)

STATION BOX KEY PLAN

EMPLOYER :

DESIGNATION	NAME	SIGN

REVISIONS

REV	DATE	BRIEF DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
a	28.04.2023	FOR APPROVAL

CONTRACTOR :

TRANSPORTATION INFRASTRUCTURE IC
EDRC-SPECIAL BRIDGES

DETAILED DESIGN CONSULTANT (DDC) :

L&T CONSTRUCTION
EDRC - GEOTECH &
STUP Consultants Pvt. Ltd.
JP & Devi Jambookeshwar Arcade
65, 4th Floor,
Millers Road, Bengaluru-560052.
Tel.: 080-40397870
Email : bangalore@easystem.com
www.easystem.com

PROOF CONSULTANT (PC) :

QUALITY ASSURANCE

The responsibility of control, check and verification of accuracy, correctness, completeness, integration and full compliance of Contract provisions in respect of design analysis and drawing rests with Design & Build Contractor.

	DDC			PC	Contractor
SIGN					
DATE				-	-
NAME	SMR	VHN	BDS/VKN	-	-
	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY	ISSUED BY

GENERAL CONSULTANTS

CHECKED	NAME	SIGN
CIVIL & STRUCTURAL		
GEO-TECHNICAL		

	REVIEWED DY. PD	PROJECT DIRECTOR
SIGN		
NAME		
DATE		

EMPLOYER :

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

GENERAL CONSULTANTS :

AECOM egis wsp AECOM-EGIS-WSP

PROJECT : **BENGALURU SUBURBAN RAILWAY PROJECT (BSRP)**
K-RIDE CORRIDOR - 2

DRAWING TITLE :

SUB SOIL PROFILE FOR
(BH-111 AND BH-113)

DRAWING NO. :

REVISION	DWG STATUS
a	-

SCALE : AS SHOWN

DATE : 12.12.2023

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A1

K-RIDE SUB SOIL PROFILE COMBINED BASED IN LOAD CASE (1).dwg

BOREHOLE LOG

Borehole ID: BH-111

Sheet 1 of 3

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 31 Dec 2022	Completed Date : 02 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441342.064m	Easting: 776542.476m	Ground Water Table : 16.80 m
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 913.792 m		BSRP Chainage (km) : 16+937

Elevation (m)	Depth	Legend	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD	Strength Parameters	Index Properties	
	0		Medium Dense to Very Dense Inorganic SILT of Medium Plasticity (MI)							UCS (Mpa) 40 80 120 160 / Point Load (MPa) 2 4 6 8	SG / Bulk Density / Dry Density 5 10 15 20	SPT N Value / MC / LL / PL / Fines Content 10 20 30 40 50 60 70 80 90
	2			SPT-1	N=22 (5/9/13)							
	3			SPT-2	N=28 (9/12/16)							
	4			UD-1		16	32					
	5			SPT-3	N=30 (9/12/18)							
	6			SPT-4	N=31 (7/13/18)							
	7			SPT-5	N=49 (11/19/30)							
	9			SPT-6	N=45 (12/21/24)							
	10			SPT-7	N=34 (11/12/22)							
	12			SPT-8	N=37 (9/21/16)							
	13											

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

BOREHOLE LOG

Borehole ID: BH-111

Sheet 2 of 3

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 31 Dec 2022	Completed Date : 02 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441342.064m	Easting: 776542.476m	Ground Water Table : 16.80 m
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 913.792 m		BSRP Chainage (km) : 16+937

Elevation (m)	Depth	Legend	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD
	14		Medium Dense to Very Dense Inorganic SILT of Medium Plasticity (MI)	SPT-9	N=75 (16/34/41)				
	15			SPT-10	N=64 (13/26/38)				
	16			SPT-11	R (32/50 for 40mm)				
	17								
895.79	18		Dense to Very Dense Silty SAND(SM)	SPT-12	R (34/50 for 70mm)	13	36		
	19			SPT-13	R (28/50 for 90mm)				
	20								
	21			SPT-14	R (19/38/50 for 30mm)				
	22								
	23			SPT-15	N=30 (14/14/16)				
889.79	24		Dense Inorganic SILT of High Compressibility(MH)	SPT-16	N=36 (15/17/19)				
	25								
	26			SPT-17	N=31 (10/16/15)				

Strength Parameters: UCS (Mpa) 40 80 120 160; Point Load (MPa) 2 4 6 8

Index Properties: SG, Bulk Density, Dry Density; 5 10 15 20

SPT N Value, MC, LL, PL, Fines Content; 10 20 30 40 50 60 70 80 90

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

BOREHOLE LOG

Borehole ID: BH-111

Sheet 3 of 3

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 31 Dec 2022	Completed Date : 02 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441342.064m	Easting: 776542.476m	Ground Water Table : 16.80 m
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 913.792 m		BSRP Chainage (km) : 16+937

Elevation (m)	Depth	Legend	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD
			Dense Inorganic SILT of High Compressibility(MH)						
886.79	27		Dense to Very Dense Inorganic SILT of Medium Plasticity(MI)	SPT-18	N=43 (11/20/23)				
	28			SPT-19	N=83 (18/33/50)	14	37		
	29								
883.79	30		Very Dense Inorganic SILT of Low Plasticity(ML)	SPT-20	R (26/50 for 130mm)				
	31								
882.29			Very Dense Silty SAND	SPT-21	R (50 for 120mm)				
	32								
	33			SPT-22	R (50 for 60mm)				
	34								
				SPT-23	R (50 for 130mm)				
	35								
	36			SPT-24	R (50 for 50mm)				
	37			SPT-25	R (50 for 60mm)				
				SPT-26	R (50 for 30mm)				
875.79	38		End of Borehole at 38.00m						
	39								

Strength Parameters
UCS (Mpa) 40 80 120 160
Point Load (MPa) 2 4 6 8

Index Properties
SG
Bulk Density
Dry Density
5 10 15 20

SPT N Value
MC
LL
PL
Fines Content
10 20 30 40 50 60 70 80 90

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

BOREHOLE LOG

Borehole ID: BH-112

Sheet 1 of 3

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 03 Jan 2023	Completed Date : 05 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441297.098m	Easting: 776588.629m	Ground Water Table : 8.00 m
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 914.067 m	BSRP Chainage (km) : 16+999	

Elevation (m)	Depth	Legend	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD	Strength Parameters	Index Properties	SPT N Value / MC / LL / PL / Fines Content
	0		Medium Dense to Dense Inorganic SILT of Medium Plasticity(MI)							UCS (Mpa) 40 80 120 160; Point Load (MPa) 2 4 6 8	SG; Bulk Density; Dry Density 5 10 15 20	10 20 30 40 50 60 70 80 90
	2			SPT-1	N=21 (5/9/12)							
	3			SPT-2	N=29 (7/13/16)							
	4			UD-1		16	33					
				SPT-3	N=45 (9/19/26)							
	6			SPT-4	N=23 (8/11/12)							
	7			SPT-5	N=23 (6/10/13)							
	9			SPT-6	N=18 (6/7/11)							
	10			SPT-7	N=22 (7/10/12)	10	31					
	12			SPT-8	N=18 (6/7/11)							
	13											

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

BOREHOLE LOG

Borehole ID: BH-112

Sheet 2 of 3

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 03 Jan 2023	Completed Date : 05 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441297.098m	Easting: 776588.629m	Ground Water Table : 8.00 m
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 914.067 m		BSRP Chainage (km) : 16+999

Elevation (m)	Depth	Legend	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD	Strength Parameters: UCS (Mpa) 40 80 120 160; Point Load (MPa) 2 4 6 8	Index Properties: SG, Bulk Density, Dry Density 5 10 15 20	SPT N Value, MC, LL, PL, Fines Content 10 20 30 40 50 60 70 80 90
	14		Medium Dense to Dense Inorganic SILT of Medium Plasticity(MI)	SPT-9	N=19 (5/8/11)							
	15			SPT-10	N=25 (9/11/14)	10	34					
	16			SPT-11	N=37 (8/17/20)							
	17											
	18			SPT-12	N=36 (14/15/21)							
	19											
894.57	20		Very Dense Silty SAND with traces of gravels(SM)	SPT-13	N=75 (17/36/39)							
	21			SPT-14	R (24/50 for 120mm)	14	37					
	22											
	23			SPT-15	R (50 for 140mm)							
	24			SPT-16	R (50 for 70mm)							
	25											
	26			SPT-17	R (50 for 90mm)							

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

SGES | L&T Construction

BOREHOLE LOG

Borehole ID: BH-112

Sheet 3 of 3

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 03 Jan 2023	Completed Date : 05 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441297.098m	Easting: 776588.629m	Ground Water Table : 8.00 m
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 914.067 m		BSRP Chainage (km) : 16+999

Elevation (m)	Depth	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD
	27	Very Dense Silty SAND with traces of gravels(SM)	SPT-18	R (50 for 130mm)				
	28		SPT-19	R (50 for 140mm)				
	29							
	30		SPT-20	R (50 for 30mm)				
	31							
	32		SPT-21	R (50 for 80mm)				
881.07	33	Moderately weathered, horizontal to angularly fractured, medium to coarse grained, greenish grey to white GRANULITIC GNEISS	SPT-22 / RC-1	R (50 for 100mm)			96	57
880.07	34	Completely weathered, horizontally fractured, medium to coarse grained, yellowish grey to white GRANULITIC GNEISS	RC-2				80	Nil
879.07	35	Residual Soil	RC-3				Nil	Nil
	36		SPT-23	R (50 for 20mm)				
877.07	37	Completely weathered, highly fractured, disintegrated, yellowish grey - white GRANULITIC GNEISS	SPT-24 / RC-4	R (50 for 40mm)			16	Nil
876.07	38	End of Borehole at 38.00m						
	39							

Strength Parameters: UCS (Mpa) 40 80 120 160; Point Load (MPa) 2 4 6 8

Index Properties: SG; Bulk Density; Dry Density 5 10 15 20

SPT N Value; MC; LL; PL; Fines Content 10 20 30 40 50 60 70 80 90

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

SGES | L&T Construction

BOREHOLE LOG

Borehole ID: BH-113

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 11 Jan 2023	Completed Date : 13 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441234.402m	Easting: 776603.950m	Ground Water Table : Collapsed
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 914.096 m		BSRP Chainage (km) : 17+061

Elevation (m)	Depth	Legend	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD	Strength Parameters	Index Properties	SPT N Value / MC / LL / PL / Fines Content
	0		Loose Inorganic SILT of Low Plasticity (ML)							UCS (Mpa) 40 80 120 160; Point Load (MPa) 2 4 6 8	SG; Bulk Density; Dry Density 5 10 15 20	10 20 30 40 50 60 70 80 90
	2			SPT-1	N=6 (2/2/4)							
911.10	3		Medium Dense to Very Dense Inorganic SILT of Medium Plasticity (MI)	SPT-2	N=19 (4/7/12)							
	4			UD-1		17	33					
				SPT-3	N=34 (9/16/18)							
	6			SPT-4	N=27 (7/12/15)							
	7			SPT-5	N=27 (7/12/15)							
	9			SPT-6	N=29 (8/13/16)							
	10			SPT-7	N=59 (13/22/37)							
	12			SPT-8	N=33 (8/12/21)	11	35					
	13											

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

BOREHOLE LOG

Borehole ID: BH-113

Sheet 2 of 3

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 11 Jan 2023	Completed Date : 13 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441234.402m	Easting: 776603.950m	Ground Water Table : Collapsed
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 914.096 m		BSRP Chainage (km) : 17+061

Elevation (m)	Depth	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD
	14	Medium Dense to Very Dense Inorganic SILT of Medium Plasticity (MI)	SPT-9	N=36 (9/15/21)				
	15		SPT-10	N=20 (8/9/11)				
	16		SPT-11	N=29 (10/12/17)				
	17							
896.10	18	Dense to Very Dense Silty SAND(SM)	SPT-12	N=62 (17/36/26)	10	37		
	19		SPT-13	N=34 (13/15/19)				
	20							
	21		SPT-14	N=58 (15/24/34)				
	22							
	23		SPT-15	N=71 (20/34/37)				
	24		SPT-16	R (25/50 for 90mm)				
	25							
			SPT-17	R (41/50 for 40mm)	6	37		
888.10	26							

Strength Parameters
- UCS (Mpa): 40 80 120 160
- Point Load (MPa): 2 4 6 8

Index Properties
- SG
- Bulk Density
- Dry Density: 5 10 15 20

- SPT N Value
- MC
- LL
- PL
- Fines Content: 10 20 30 40 50 60 70 80 90

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

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BOREHOLE LOG

Borehole ID: BH-113

Sheet 3 of 3

Project Name : Geotechnical Investigation for Proposed Construction of "K-Ride Bangalore Suburban Rail Project (BSRP) Corridor-2"				Project Number : S-2286
Client : L & T Construction Ltd.	Project Location : Bangalore	Logged By: BM	Checked By: VDP	Approved By: MKP
Rig ID : TMG-02	Energy Transfer Ratio (%) : 82	Started Date : 11 Jan 2023	Completed Date : 13 Jan 2023	
Equipment: Hydraulic	Termination Depth	Northing: 1441234.402m	Easting: 776603.950m	Ground Water Table : Collapsed
Drilling Method: Rotary Drilling	38.00 m	Ground Elevation : 914.096 m		BSRP Chainage (km) : 17+061

Elevation (m)	Depth	Material Description	Sample Type	Blow Counts (N Value)	C (kPa)	ϕ (°)	Coring (%) CR	Coring (%) RQD
		Completely weathered, fractured, medium to coarse grained, greyish white GRANULITE	RC-1				5	Nil
887.10	27	Moderately weathered, angularly fractured, medium to coarse grained, yellowish grey - green GRANULITE	RC-2				100	60
886.10	28	Completely weathered, angularly fractured, medium to coarse grained, yellowish grey - green GRANULITE	RC-3				50	13
	29		RC-4				52	Nil
884.10	30	Highly weathered, sub-horizontally fractured, medium to coarse grained, yellowish grey - green GRANULITE	RC-5				54	31
883.10	31	Slightly weathered, horizontal to angularly fractured, medium to coarse grained, greyish white GRANULITE	RC-6				92	90
882.10	32	Highly weathered, sub-horizontally fractured, medium to coarse grained, greyish white GRANULITE	RC-7				80	27
881.10	33	Slightly weathered, sub-horizontally fractured, medium to coarse grained, greyish white GRANULITE	RC-8				98	87
880.10	34	Slightly weathered, sub-horizontally fractured, medium to coarse grained, greyish white GNEISSIC GRANULITE	RC-9				100	90
879.10	35	Highly weathered, angular to sub-horizontally fractured, medium to coarse grained, greyish white GNEISSIC GRANULITE	RC-10				95	42
	36		RC-11				92	37
877.10	37	Moderately weathered, sub-horizontally fractured, medium to coarse grained, greyish white GNEISSIC GRANULITE	RC-12				90	71
876.10	38	End of Borehole at 38.00m						
	39							

Strength Parameters
UCS (Mpa) 40 80 120 160
Point Load (MPa) 2 4 6 8

Index Properties
SG
Bulk Density
Dry Density
5 10 15 20

SPT N Value
MC
LL
PL
Fines Content
10 20 30 40 50 60 70 80 90

Abbreviation

SPT: Standard Penetration Test	C: Cohesion	UCS-Unconfined Compressive Strength
UD: Undistrubed Sample	ϕ: Angle of Internal Friction	LL : Liquid Limit PL: Plastic Limit
MC: Moisture Content	SG: Specific Gravity	Bulk & Dry Density in kN/cu.m
CR : Core Recovery	RQD: Rock Quality Designation	

TEST REPORT

Test Report No: SRTL/2022-23/TRN-106 **Date: 18-Jan-23**

ULR No.-TC600722000001931P

Sample ID	IS Classification	SOIL PARAMETERS																			ROCK PARAMETERS												CHEMICAL PARAMETERS							
		CLASSIFICATION & INDEX													STRENGTH PARAMETERS				Consolidation IS: 2720-Part 15:1986 (RA - 2016)		*Permeability (cm/s) IS 2720 - Part 17:1986 (RA-2011)	PHYSICAL PROPERTIES IS 13030:1991, RA - 2016						STRENGTH PARAMETERS						*Chemical Testing(Soil)				*Chemical Testing(Water)			
		Water Content (%) IS 2720 - 2 :1973, RA 2015	Atterberg Limits IS: 2720-Part 5:1985, (RA - 2015)			Shrinkage Limit (%) IS: 2720-Part 6:1972, RA 2016	* Bulk Unit weight kN/m3	* Dry density kN/m3	Specific Gravity IS: 2720-Part 3, Section 1 :1980, RA 2016	Grain Size Distribution IS: 2720 - Part 4:1985, (RA - 2015)			Hydrometer Analysis IS: 2720 - Part 4 :1985 (RA - 2015)		Free swell Index (%) IS: 2720 -Part 40:1977 (RA - 2011)	Direct Shear Test (Undrained) IS 2720 - Part 13:1986 (RA - 2016)		UU Triaxial Test IS: 2720 - Part 11 : 1993 (RA-2016)		Pre Consolidation Pressure (kPa)	Compression Index Cc		Water Content %	Water Absorption %	Specific Gravity	Bulk Density g/cc	Dry Density g/cc	Porosity %	Unconfined Compressive Strength MPa (IS 9143: 1979 (RA - 2016)	Point Load Index (Soaked Condition) MPa (IS 8764: 1998 (RA-2014))	Modulus & Poisson's IS 9221:1979 (RA -2016) - (Soaked condition)				ph value	Sulphate As SO4 (% by mass)	chloride (% by mass)	Organic Content (% by mass)	ph value	Sulphate (mg/l)	Chlorides (mg/l)	Organic Solids (mg/l)
			Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)					Gravel %	Sand %	% passing 75 micron	Silt %	Clay %		Angle of Internal Friction deg Φ	Cohesion C kPa	Angle of Internal Friction deg Φ	Cohesion C kPa												Unconfined Compressive Strength MPa	Modulus of Elasticity MPa	Poissons Ratio											
S2286/BH-111/2.0	MI	24.08	47	37	10		18.20	14.67	2.66	1	34	65																													
S2286/BH-111/3.0	MI	19.28	43	31	12		18.40	15.43	2.65	0	43	57																													
S2286/BH-111/4.0(U)	MI	19.68	40	32	8		19.46	16.26	2.67	5	38	57				32	16			Ongoing																				
S2286/BH-111/4.5	MI	22.33	40	33	7		19.5	15.94	2.65	0	42	58																													
S2286/BH-111/6.0		22.51					19.52	15.93	2.66	0	44	56																													
S2286/BH-111/7.5	MI	23.85	38	33	5		19.86	16.04	2.65	0	39	61																										Ongoing			
S2286/BH-111/9.0	MI	24.31	46	33	13		19.75	15.89	2.66	8	33	59																													
S2286/BH-111/10.5		24.24					19.3	15.53	2.67	0	11	89																													
S2286/BH-111/12.0	MI	27.39	42	34	8		19.33	15.17	2.65	0	41	59																													
S2286/BH-111/13.5		23.20					20.8	16.88	2.67	0	35	65																													
S2286/BH-111/15.0	MI	27.46	38	33	5		20.60	16.16	2.66	0	36	64																													
S2286/BH-111/16.5	MI	21.20	48	32	16				2.65	1	44	55																													
S2286/BH-111/18.0		17.64					21.00	17.85	2.64	2	52	46				36	13			`																				
S2286/BH-111/19.5		19.35							2.65	2	51	47																													
S2286/BH-111/21.0	SM	20.47	35	27	8				2.64	2	50	48																													
S2286/BH-111/22.5	SM	22.88	41	30	11		19.50	15.87	2.66	3	49	48																													
S2286/BH-111/24.0	MH	33.65	66	44	22		19.40	14.52	2.68	0	4	96																													
S2286/BH-111/25.5		32.27					19.52	14.76	2.67	0	10	90																													
S2286/BH-111/27.0	MI	30.35	44	33	11		19.63	15.06	2.66	0	23	77																													
S2286/BH-111/28.5		22.42					21.00	17.15	2.66	0	42	58				37	14																								
S2286/BH-111/30.0	ML	22.55	33	26	7				2.65	0	31	69																													
S2286/BH-111/31.5		15.62							2.64	0	54	46																													
S2286/BH-111/33.0		14.12							2.65	1	56	43																													
S2286/BH-111/34.5		14.45							2.64	0	51	49																													
Chemical test of Water																																						Ongoing			

'Note: Parameters marked with an * are not accredited by NABL

Checked By:
CT
Chikkanna T

Approved By:
PT
Prashanth Talkad

TEST REPORT

Test Report No: SRTL/2022-23/TRN-106 **Date: 18-Jan-23**

ULR No.-TC600722000001931P

Sample ID	IS Classification	SOIL PARAMETERS																			ROCK PARAMETERS											CHEMICAL PARAMETERS							
		CLASSIFICATION & INDEX														STRENGTH PARAMETERS				Consolidation IS: 2720-Part 15:1986 (RA - 2016)		*Permeability (cm/s) IS 2720 - Part 17:1986 (RA-2011)	PHYSICAL PROPERTIES IS 13030:1991, RA - 2016						STRENGTH PARAMETERS					*Chemical Testing(Soil)				*Chemical Testing(Water)			
		Water Content (%) IS 2720 - 2 :1973, RA 2015	Atterberg Limits IS: 2720-Part 5:1985, (RA - 2015)			Shrinkage Limit (%) IS: 2720-Part 6:1972, RA 2016	* Bulk Unit weight kN/m3	* Dry density kN/m3	Specific Gravity IS: 2720-Part 3, Section 1 :1980, RA 2016	Grain Size Distribution IS: 2720 - Part 4:1985, (RA - 2015)			Hydrometer Analysis IS: 2720 - Part 4 :1985 (RA - 2015)		Free swell Index (%) IS: 2720 -Part 40:1977 (RA - 2011)	Direct Shear Test (Undrained) IS 2720 - Part 13:1986 (RA - 2016)		UU Triaxial Test IS: 2720 - Part 11 : 1993 (RA-2016)		Pre Consolidation Pressure (kPa)	Compression Index Cc		Water Content %	Water Absorption %	Specific Gravity	Bulk Density g/cc	Dry Density g/cc	Porosity %	Unconfined Compressive Strength MPa (IS 9143: 1979 (RA - 2016)	Point Load Index (Soaked Condition) MPa (IS 8764: 1998 (RA-2014))	Modulus & Poisson's IS 9221:1979 (RA -2016) - (Soaked condition)			ph value	Sulphate As SO4 (% by mass)	chloride (% by mass)	Organic Content (% by mass)	ph value	Sulphate (mg/l)	Chlorides (mg/l)	Organic Solids (mg/l)
			Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)					Gravel %	Sand %	% passing 75 micron	Silt %	Clay %		Angle of Internal Friction deg Φ	Cohesion C kPa	Angle of Internal Friction deg Φ	Cohesion C kPa													Unconfined Compressive Strength MPa	Modulus of Elasticity MPa	Poissons Ratio									
S2286/BH-112/2.0		24.53					18.23	14.64	2.67	1	37	62																												
S2286/BH-112/3.0	MI	22.88	44	31	13		18.40	14.97	2.66	1	38	61																												
S2286/BH-112/4.0(U)		20.52					19.01	15.77	2.66	0	39	61				33	16			Ongoing																			
S2286/BH-112/4.5	MI	24.16	45	32	13		20.5	16.51	2.67	0	32	68																												
S2286/BH-112/6.0		28.63					19.34	15.04	2.65	0	35	65																												
S2286/BH-112/7.5		24.54					19.32	15.51	2.65	0	41	59																									Ongoing				
S2286/BH-112/9.0	MI	29.03	43	30	13		18.2	14.11	2.66	0	42	58																												
S2286/BH-112/10.5		26.13					18.21	14.44	2.65	0	40	60				31	10																							
S2286/BH-112/12.0	MI	28.34	41	33	8		18.38	14.32	2.66	0	35	65																												
S2286/BH-112/13.5		26.20					18.2	14.42	2.67	0	39	61																												
S2286/BH-112/15.0		26.05					18.34	14.55	2.65	0	41	59				34	10																							
S2286/BH-112/16.5	MI	23.06	40	30	10		19.50	15.85	2.64	1	46	53																												
S2286/BH-112/18.0		20.66					19.49	16.15	2.64	0	47	53																												
S2286/BH-112/19.5	SM	21.57	32	NP			20.80	17.11	2.65	0	54	46																												
S2286/BH-112/21.0		20.62					21.00	17.41	2.66	0	57	43				37	14																							
S2286/BH-112/22.5	SM	16.23	33	26	7				2.62	3	62	35																												
S2286/BH-112/24.0		12.93							2.64	19	59	22																												
S2286/BH-112/25.5		15.55							2.62	5	66	29																												
S2286/BH-112/27.0		13.58							2.63	8	57	35																												
S2286/BH-112/28.5		15.08							2.64	9	53	38																												
S2286/BH-112/31.5		8.90							2.63	21	60	19																												
S2286/BH-112/33.0-34.0																																		20.44							
S2286/BH-112/34.0-35.0																																			0.78						
Chemical test of Water																																							Ongoing		

*Note: Parameters marked with an * are not accredited by NABL

Checked By:
CT
Chikkanna T

Approved By:
PT
Prashanth Talkad

TEST REPORT

Test Report No: SRTL/2022-23/TRN-107 **Date: 18-Jan-23**

ULR No.-TC600722000001932P

Sample ID	IS Classification	SOIL PARAMETERS																			ROCK PARAMETERS												CHEMICAL PARAMETERS							
		CLASSIFICATION & INDEX													STRENGTH PARAMETERS				Consolidation IS: 2720-Part 15:1986 (RA - 2016)		*Permeability (cm/s) IS 2720 - Part 17:1986 (RA-2011)	PHYSICAL PROPERTIES IS 13030:1991, RA - 2016						STRENGTH PARAMETERS						*Chemical Testing(Soil)				*Chemical Testing(Water)			
		Water Content (%) IS 2720 - 2 :1973, RA 2015	Atterberg Limits IS: 2720-Part 5:1985, (RA - 2015)			Shrinkage Limit (%) IS: 2720-Part 6:1972, RA 2016	* Bulk Unit weight kN/m3	* Dry density kN/m3	Specific Gravity IS: 2720-Part 3, Section 1 :1980, RA 2016	Grain Size Distribution IS: 2720 - Part 4:1985, (RA - 2015)			Hydrometer Analysis IS: 2720 - Part 4 :1985 (RA - 2015)		Free swell Index (%) IS: 2720 -Part 40:1977 (RA - 2011)	Direct Shear Test (Undrained) IS 2720 - Part 13:1986 (RA - 2016)		UU Triaxial Test IS: 2720 - Part 11 : 1993 (RA-2016)					Water Content %	Water Absorption %	Specific Gravity	Bulk Density g/cc	Dry Density g/cc	Porosity %	Unconfined Compressive Strength MPa (IS 9143: 1979 (RA - 2016)	Point Load Index (Soaked Condition) MPa (IS 8764: 1998 (RA-2014))	Modulus & Poisson's IS 9221:1979 (RA -2016) - (Soaked condition)				ph value	Sulphate As SO4 (% by mass)	chloride (% by mass)	Organic Content (% by mass)	ph value	Sulphate (mg/l)	Chlorides (mg/l)	Organic Solids (mg/l)
			Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)					Gravel %	Sand %	% passing 75 micron	Silt %	Clay %		Angle of Internal Friction deg Φ	Cohesion C kPa	Angle of Internal Friction deg Φ	Cohesion C kPa	Pre Consolidation Pressure (kPa)	Compression Index Cc												Unconfined Compressive Strength MPa	Modulus of Elasticity MPa	Poissons Ratio										
S2286/BH-113/2.0	ML	20.92	33	29	4		17.60	14.56	2.65	1	40	59																														
S2286/BH-113/3.0	MI	22.78	37	29	8		18.70	15.23	2.66	0	32	68																														
S2286/BH-113/4.0(U)		28.82					18.89	14.66	2.65	0	30	70				33	17			Ongoing																						
S2286/BH-113/4.5	MI	21.16	39	28	11		19.70	16.26	2.67	0	35	65																														
S2286/BH-113/6.0	MI	24.03	42	35	7		19.50	15.72	2.65	0	38	62																												Ongoing		
S2286/BH-113/7.5	MI	18.89	39	32	7		19.50	16.40	2.66	0	44	56																														
S2286/BH-113/9.0		21.55					19.60	16.13	2.65	0	40	60																														
S2286/BH-113/10.5	MI	16.00	35	28	7		19.90	17.16	2.64	0	48	52																														
S2286/BH-113/12.0		18.49					19.68	16.61	2.65	0	45	55				35	11																								
S2286/BH-113/13.5	MI	19.45	39	31	8		19.72	16.51	2.63	0	47	53																														
S2286/BH-113/15.0		21.77					18.80	15.44	2.66	0	41	59																														
S2286/BH-113/16.5	MI	28.43	46	38	8		19.62	15.28	2.65	0	32	68																														
S2286/BH-113/18.0		15.76					20.10	17.36	2.63	4	53	43				37	10																								
S2286/BH-113/19.5	SM	23.18	36	27	9		19.70	15.99	2.65	2	50	48																														
S2286/BH-113/21.0		36.33					19.80	14.52	2.66	0	55	45																														
S2286/BH-113/22.5	SM	16.41	34	29	5		20.30	17.44	2.63	2	59	39																														
S2286/BH-113/24.0	SM	20.50	37	30	7			0.00	2.65	1	52	47																														
S2286/BH-113/25.5		20.46					21.00	17.43	2.66	2	54	44				37	6																								
S2286/BH-113/27.0-28.0																														9.95											
S2286/BH-113/28.0-29.0																															2.26										
S2286/BH-113/29.0-30.0																					0.76	1.32	2.50	2.51	2.49	3.31		0.74												
S2286/BH-113/30.0-31.0																											12.55													
S2286/BH-113/31.0-32.0																					0.54	0.85	2.56	2.56	2.55	2.17	17.78			Ongoing									
S2286/BH-113/32.0-33.0																												1.99												
S2286/BH-113/33.0-34.0																					0.61	1.01	2.60	2.61	2.59	2.63	15.82			Ongoing									
S2286/BH-113/34.0-35.0																					0.92	1.03	2.64	2.65	2.63	2.71				Ongoing									
S2286/BH-113/35.0-36.0																											19.74													
S2286/BH-113/36.0-37.0																											2.65													
S2286/BH-113/37.0-38.0																					1.28	1.66	2.67	2.69	2.66	4.42				Ongoing									

*Note: Parameters marked with an * are not accredited by NABL

Checked By:
CT
Chikkanna T

Approved By:
PT
Prashanth Talkad