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GEOTECHNOLOGY SBU

SBU PROCEDURES

ISO 9001:2015





 GEO-TECHNOLOGY SBU	QUALITY ASSURANCE PROCEDURES (ISO 9001-2015) CONTENTS	DOC : GT-PROC-1 Chapter No. : 0.0 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : 01
Approved by SBU Head : Issued by Management Representative: 		Effective Date:01.01.2018



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	<p align="center">PROCEDURE FOR BUSINESS DEVELOPMENT</p> <p align="center">(Clause-8.2 of ISO 9001:2015)</p>	<p align="center">DOC: GT/P/01 Issue No.: 01 Page 3 of 8 Page Rev.No.: Nil</p>
<p>Approved By: SBU Head </p> <p>Effective Date: :01.01.2018</p>		



Sl. No.	Activity	Description	Responsibility	Ref. Document
		/ the tender document.		
4.2	Preparation of expression of interest	<p>Once it has been decided that RITES Ltd. would bid for the project, the Expression of interest would be prepared giving details as required by the client Generally the Expression of interest would give</p> <ul style="list-style-type: none"> • The Corporate Profile of RITES Ltd. • The Financial Performance of RITES Ltd. • Profile of Geo-tech SBU. • Details of projects carried out in the required field exhibiting the expertise available with RITES Ltd. • Curriculum Vitae of experts in the field desired by the client. 	PC	GT-F-01-01
4.3	Pre tender offer review	<ul style="list-style-type: none"> • In competitive bid cases where RITES has been short listed Tender Evaluation and Estimate Report (GT-F-01-01) shall be prepared to include : • Analysis of work/tender /contract conditions. • Self-analysis. • Analysis of consultants if required to be associated. <p>Analysis of information /tender documents shall be initiated to :</p> <ul style="list-style-type: none"> • Understand the Customer's requirements/objectives. • Define the scope of work for RITES Ltd. and the 	PC	GT-F-01-01 BD file

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	PROCEDURE FOR BUSINESS DEVELOPMENT (Clause-8.2 of ISO 9001:2015)	DOC: GT/P/01 Issue No.: 01 Page 4 of 8 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		



Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>Consultant if associated / obligations of RITES Ltd./consultant and the Customer under the contract.</p> <ul style="list-style-type: none"> • Detect inconsistencies and ambiguities in the tender documents, if applicable. • Assess the adequacy of necessary resources to perform the obligations under the contract. • Once the above analysis has been carried out, detailed tender document containing Technical and Financial bid shall be prepared. The Technical document shall contain the analysis of objectives and scope of work, its methodology, the manpower deployment, expertise of the professionals to undertake the job, the time schedule and the deliverables etc. for RITES Ltd. as well as the associated Consultant. • The number of reports to be submitted at each stage shall be as specified by the customer or identified and included in the agreement. • Any differences or ambiguities, which may exist in the tender information, shall be discussed with the customer and resolved. • For financial bid, the estimate of input post and 	PC	Letter/BD file

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Sl. No.	Activity	Description	Responsibility	Ref. Document
		Cost and Profit Analysis (GT-F-05-02) shall be prepared including the cases where work has been awarded to RITES Ltd.	PC	GT-F-01-02
		<ul style="list-style-type: none"> • When Project Co-ordinator feels that a Site Visit Report is necessary to get clarity of Customer's requirements, a visit to the city (site) shall be undertaken and a Site Visit Report shall be prepared & kick off meeting may be done as per format GT-F-02-06. 	PC	GT-F-01-03
		<ul style="list-style-type: none"> • The Tender Evaluation & Estimate Report Cost & Profit Analysis and Site Visit Report (where applicable) and the Technical and Financial bids shall be prepared. 	PC	BD File
		<ul style="list-style-type: none"> • The price for the bid shall be finalized by SBU Head in consultation with Project Coordinator/Controlling Manager. 	PC	BD File
		<ul style="list-style-type: none"> • The Tender Papers shall be got signed by the competent authority as per the prevalent delegation of powers and the bid shall be submitted. One copy of the offer shall be submitted to library / GT / HQ. after the due date for opening of the tender, to be retained for record. 	PC GTA,HQ	BD File GT-F-01-04
		<ul style="list-style-type: none"> • Follow up of tenders filed/offers sent shall be 	PC	BD File

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Sl. No.	Activity	Description	Responsibility	Ref. Document
		done by Nominated Officer and clarifications furnished to the Customer, if required.		
4.4	Post tender / contract review	<ul style="list-style-type: none"> Before signing the contract, it shall be verified that the contract documents /offer: For any change in the contract document Deviation Statement (GT-F-01-05) shall be prepared and put up to SBU Head (GT) for his acceptance and approval. If the deviations are not acceptable, discussions at appropriate level with the Customer's representative shall be held to finally resolve the issue, to the satisfaction of both. 	PC	GT-F-01-05 Deviation statement
		<ul style="list-style-type: none"> After award of the contract, Project Co-ordinator shall prepare the project team and project quality plan and get it approved from SBU Head. 	PC	Project file
4.5	Amendments to contract	<ul style="list-style-type: none"> For any amendments to the contract, procedure specified above as applicable shall be followed. After any amendments are agreed to the information is to be passed on to all concerned project co-coordinators promptly. The extension of time frame, if required shall be through correspondence 	PC	Project files letter

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Sl. No.	Activity	Description	Responsibility	Ref. Document
		with the Client. Due justification for the same shall be made to the client.		
4.6	Records	Records of all the correspondence /important telephonic conversation with client, cost estimates etc. shall be maintained in case of competitive bids, cost analysis/scrutiny, Pre-tender and Post-tender reviews, deviations and amendments shall be maintained as per documents mentioned in Para 5.0 below	PC	Project files



5.0 Documented Information

Sl. No.	Name	Format no.	Location	Retention Period
5.1	Format for tender Evolution and Estimate Report	GT-F-01-01	PC	1 Year after completion of contract
5.2	Format for Site Visit Report	GT-F-01-02	PC	-do-
5.3	Format for Detailed project input Estimate	GT-F-01-03	PC	-do-
5.4	Format For Tender Register	GT-F-01-04	PC	-do-
5.5	Format For Deviation Statement	GT-F-01-05	PC	-do-
5.6	BD File		PC	-do-
5.7	Project File		PC	-do-
5.8	Project management (MOU)	GT-F-01-06	PC	-do-

6. Distribution

SBU Head
 All Project Co-coordinators
 MR

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 GEO-TECHNOLOGY SBU	Format for Contract review (Evaluation) (ISO 9001-2015)	DOC : GT-F-01-01 Issue No. : 01 Page No. : 1 of 2 Page Rev. No.: Nil
Approved by SBU Head :  Issued by Management Representative :		Effective Date:01.01.2018

Name of the Project : _____

Tender Closing Date : _____


Type of Project : _____

	ITEMS FOR EVALUATION	REMARKS
I.	ANALYSIS OF CUSTOMER - Any project executed earlier - The status - Any other relevant information	
II	SELF ANALYSIS - Present Commitment - Available Manpower Resources - Available equipment Resources - Potential Competitors.	
III.	ANALYSIS OF CONTRACT i) Contractual - Form and Type - Contract Period / Phase Completion - List of Specifications (if applicable) / Drawings available at Tender / Contract Stage. ii) Financial - Cost & Profit Analysis (GT-F-05-02) - Financial Requirements - Payment terms iii) Technical - Site Visit Report (if necessary) (GT-F-05-03). - Sub-consultant / Associates inputs	

 GEO-TECHNOLOGY SBU	Format for Contract review (Evaluation) (ISO 9001-2015)	DOC : GT-F-01-01 Issue No. : 01 Page No. : 2 of 2 Page Rev. No.: Nil
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	IV) Logistic <ul style="list-style-type: none">- Topography, Access.- Availability of local labour.- Camping arrangement / facilities v) Legal requirements and approvals vi) Specific project requirement, if any.	
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Signature

 IRITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format for Business development and requirement for product & services Clause 8.2 of (ISO 9001-2015) (Site Visit Report)	DOC : GT-F-01-02 Issue No. : 01 Page No. : 1 of 1 Page Rev. No.: Nil
<p style="text-align: center;"><i>[Signature]</i></p> Approved by SBU Head : Issued by Management Representative :		Effective Date:01.01.2018

Name of the Project : _____

Site visited by : _____

Date of visit : _____

Tender Closing Date : _____

1.	GEOGRAPHIC <ul style="list-style-type: none"> - Topography, existing features - Ease / difficulty for mobilisation - Trees / vegetation (whether cutting of trees is required for field work) 	
2.	LOGISTICS <ul style="list-style-type: none"> - Availability of consumables required for field work like HSD etc. - Vehicle hiring rates / availability (if required) - Camping arrangement - Arrangement of water for drilling - Road / Rail Network - Local sub contractors for required jobs - Socio-economic Characteristics (any social problem fore seen ?) 	
3	TECHNICAL <ul style="list-style-type: none"> - Idea of local geology, type of strata - Ground water table 	
4	Any other relevant data / legal requirements.	

Signature

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requirement for product & services (Project input Estimate Summary)

Clause 8.2 of (ISO 9001-2015)

DOC : GT-F-01-03

Issue no : 01

Page no : 1 of 1

Page Rev. No. : Nil

Approved by SBU Head : *[Signature]*
 Issued by Management Representative :

Effective date:01.01.2018

RITES LTD.

PROJECT ESTIMATE SUMMARY

SBU NAME :
 PROJECT NAME :
 DURATION :

SBU CODE :
 PROJECT CODE :

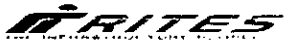
	Item	Amount
A	INCOME	
B	DIRECT EXPENDITURE	
	1 DIRECT STAFF COST	
	2 TRAVEL EXPENSES	
	3 CONSULTANTS	
	4 EXTERNAL PROCUREMENTS	
	5 COST OF SALES (TRADING ACTIVITIES ONLY)	
	6 LEASE & HIRE CHARGES	
	7 OTHER DIRECT COST	
	TOTAL DIRECT EXPENDITURE	
C	Less EXCEPTIONAL EXPENDITURE	
D	NORMALISED EXPENDITURE	
E	INDIRECT EXPENDITURE	
	1 DEPRECIATION & ASSET UTILISATION	
	2 SBU OVERHEADS	
	3 DIVISIONAL OVERHEADS	
	4 CORPORATE OVERHEADS	
	5 INTERNAL INTEREST CHARGES	
	TOTAL INDIRECT EXPENDITURE	
F	TOTAL EXPENDITURE (B+E)	
G	PROV. FOR PROFIT & TAXES	
H	GRAND TOTAL EXPENDITURE (F+G)	
I	OPERATING RATIO (=F/A)	
J	CONTRIBUTION (=A-H)	



Note : Overheads charged on (D) Normalised expenditure

Prepared by:
 CHECKED IN FIN. BY:

SIGNATURE:
 SIGNATURE:

DATE
 DATE

 GEO-TECHNOLOGY SBU	Format for Business development and requirement for product & services Clause 8.2 of (ISO 9001-2015) (Detailed project input Estimate)	DOC : GT-F-01-03A Issue no : 01 Page no : 1 of 1 Page Review No. : Nil		
Approved by SBU Head : _____ Issued by Management representative : _____		Effective date: 01.01.2018		
<table style="width: 100%;"> <tr> <td style="width: 50%;"> RITES LTD. SBU NAME : GT DIVISION SBU CODE : 50 </td> <td style="width: 50%;"> DETAILED PROJECT ESTIMATE PROJECT NAME: PROJECT CODE : 50 PROJECT DURATION: Project Value = </td> </tr> </table>			RITES LTD. SBU NAME : GT DIVISION SBU CODE : 50	DETAILED PROJECT ESTIMATE PROJECT NAME: PROJECT CODE : 50 PROJECT DURATION: Project Value =
RITES LTD. SBU NAME : GT DIVISION SBU CODE : 50	DETAILED PROJECT ESTIMATE PROJECT NAME: PROJECT CODE : 50 PROJECT DURATION: Project Value =			
S.No.	ITEM	AMOUNT(Rs.)		
A INCOME				
1	FEE			
2	SALE, LEASE & HIRE			
3	BUSINESS VENTURES			
4	MISCELLANEOUS (INTEREST, TENDER SALE ETC.)			
5	INTERNAL SERVICES (CR OF CODE A501) to be taken from other CG's			
TOTAL 'A' INCOME				
B DIRECT EXPENDITURE				
B1 DIRECT STAFF COST				
	Designation	NO.		
	Man-months	Rate		
	Amount (Rs.)			
	GM			
	Driver			
SUBTOTAL B1				
B2 TRAVEL EXPENSES				
a FARE				
	Designation	Mode of Travel		
	No of Trips	Fare		
	Amount			
	GGM/GM/AGM/JGM			
	DGM			
	MANAGER			
b TA/DA (Hotel+DA)				
	Designation	Days		
	Rate	Amount		
	GGM/GM/AGM/JGM	#VALUE!		
	DGM			
c MISC TRAV EXP				
SUB-TOTAL B2		#VALUE!		
B3 SUPPLIES & SERVICES				
a CONSULTANTS				
b EXTERNAL AGENCIES				
1	SATELLITE IMAGERIES & LAND USE PLAN ETC			
2	EQ DEPTT. IIT, KANPUR, IIT, DELHI			
3	OTHER CONSULTANCY INDIAN/FOREIGN			
c INTERNAL SERVICES				
1				
Total of B3 (c)				
SUB-TOTAL (B3)				
SUB-TOTAL (B3)- B3(c)				
B4	COST OF SALES			
B5	LEASE & HIRE CHARGES			
B6	OTHER DIRECT COST			
a STATIONERY, PRINTING/BINDING				
Engagement of sub consultant				
SUBTOTAL B 6				
TOTAL B-DIRECT EXPENDITURE (B1 TO B6 MINUS B3 (c))				
C	Less EXCEPTIONAL EXPENDITURE			
D	NORMALISED EXPENDITURE			
E	INDIRECT EXPENDITURE			
1	ASSET UTILISATION (Depreciation)			
2	SBU OVERHEADS	ON D		
3	NEHRU PLACE OVERHEADS	ON D+E2		
4	CORPORATE OVERHEADS	D+E2+E3		
5	Internal interest charges (10%)			
TOTAL E INDIRECT EXPENDITURE				
F	TOTAL EXPENDITURE (B+E)			
G	PROFIT & TAXES ON F			
H	OPERATING RATIO = F/A			
I	CONTRIBUTION = (A-F)			



 <p>RITES THE INFRASTRUCTURE PEOPLE GEO-TECHNOLOGY SBU</p>	<p align="center">Format for Project Management (Clause-8.2 of ISO 9001:2015) (MOU)</p>	<p>DOC : GT-F-01-06 Issue No. : 01 Page No. : 1 of 1 Page Rev. No.: Nil</p>
<p>Approved by SBU Head :  Issued by Management Representative :</p>		<p align="center">Effective Date:01.01.2018</p>

Annexure – A



RI/GEOTECH DIVISION
LIST OF PROJECT MANAGEMENT PROJECTS – ITEM NO. 7 a)
MOU 2018 – 19

SL. No.	Name of project	Value of the project (RITES Fee in Crores)	Name of Client	Date of Start	Date of Completion	Date/Month of most critical milestone to be achieved
1.						



(SBU Head)

	PROCEDURE FOR OPERATIONAL PLANNING & CONTROL (Clause 8.1 of ISO 9001:2015)	DOC: GT/P/02 Issue No.: 01 Page 2 of 10 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		



Sl. No.	Activity	Description	Responsibility	Ref. Document
		documentation, defining the manner of execution of various activities. <ul style="list-style-type: none"> • Maintaining compliance to the above through appropriate monitoring activity in line with Project Quality Plan. • Maintaining suitable Environment for the operation and process and providing adequate support facilities for successful and timely execution of work. • Availability and use of competent/trained personnel to carry out various activities ensuring co-ordination between various groups involved in the project. • Compliance to statutory / regulatory requirements including those relating to safety. • Control on identified activity parameters and ensuring fulfillment of acceptance criteria, maintenance of records and completion as per time schedules. • Timely submission of identified deliverables as per contractual requirements, obtaining 	CM PC/SBU Head PC/SBU Head PC/SBU Head CM CM CM	

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Sl. No.	Activity	Description	Responsibility	Ref. Document
		approvals for relevant stages from the Customer, statutory bodies and/or any other specified body. <ul style="list-style-type: none"> Control of quality materials used in Geotechnical investigation. Control of various geo-tech processes by monitoring of identified stages of investigation. 	CM CM	
4.2	Project Quality Plan	<ul style="list-style-type: none"> Various project stages are to be identified along with stages when the customer's approvals are required. Project plan shall be prepared in the form of bar chart for various activities as per work order and name of the person performing the activity. This should also Include Dates of Starting and Completion of Each task and dates for activity of the important milestones In consultation with SBU head, a project team is to be nominated keeping in view the expertise required. The deployment of manpower at each stage of work detailing 	PC/CM PC interface with CM PC Interface with SBU Head	Project Progress Monitoring GT-F-02-01 Inter office Noting Internal noting & Kick off(GT-F-2-06) meeting with

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Sl. No.	Activity	Description	Responsibility	Ref. Document
		who does what with their responsibility. <ul style="list-style-type: none"> • The requirement of Sub-contractors/Sub-consultants at various stages of the project and their experience/expertise/qualification to undertake the job shall be identified by the Project Co-ordinator. 	PC	Client to discuss the salient features, document requirement, product specifications and other various attributes related to project. Concerned PC/CM shall undertake such meeting with Client and other stakeholders of project
4.3	List of external documents	The list of all external project documents shall be identified and maintained in the project file by the Project Co-ordinator. The external project documents may include the master plan, standards, norms and such	CM	List of External Document GT-F-02-02

	PROCEDURE FOR OPERATIONAL PLANNING & CONTROL (Clause 8.1 of ISO 9001:2015)	DOC: GT/P/02 Issue No.: 01 Page 5 of 10 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		



Sl. No.	Activity	Description	Responsibility	Ref. Document
		relevant report. <ul style="list-style-type: none"> • SBU Head shall review the program submitted by PC every month and corrective actions for delays if any to be initiated. 	SBU Head	Progress report
4.4	Deployment of Resources	<ul style="list-style-type: none"> • Deployment of resources as identified and arranged as per procedure will be done as follows: • The field activities are undertaken as per the requirement of the contract and according to the relevant IS codes. These may includes one or more of the following. Topographic Survey Geological Survey Seismic survey Geophysical logging Drilling in soil Drilling in rock Sampling in soil and rock Standard penetration test Permeability test Pressure meter test Dynamic cone penetration test Static cone penetration test Plastic load test and cyclic PLT. Excavation of Pits. Vane Shear test. Block vibration test Installation of piezometers. 	SBU Head	ISO codes for Soil (IS 2720 (part IV) IS 2720 (part II) IS 2720 (part II) IS 2720(part II) IS 2720 (part V) IS 2720 (part XIII) IS 2720 (part XI). ISO Codes for rock: IS: 1124-1974, IS:1122,IS: 13030-1991,IS: 9143-1996,IS: 10050-1981

	PROCEDURE FOR OPERATIONAL PLANNING & CONTROL (Clause 8.1 of ISO 9001:2015)	DOC: GT/P/02 Issue No.: 01 Page 7 of 10 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		



Sl. No.	Activity	Description	Responsibility	Ref. Document
4.8	Infrastructure	<ul style="list-style-type: none"> Necessary infrastructure such as camping facility, (equipment etc.) shall be provided to meet the needs of the projects. Resources as needed may also be procured locally (as per procedure) in order to meet the project targets. The drilling availability with GT is maintained to ensure the continued suitability. These are maintained on periodic basis by the drillers. Such maintenance is usually undertaken after the work is completed at a particular site and the equipment is being transferred to other site. Break down maintenance shall be done at site through available resources by concerned PM. 	PC interface with SBU Head CM interface with PC PM/PC	List of Machinery
4.9	Information	<ul style="list-style-type: none"> Any information related with execution of project shall be promptly communicated to concerned PC. This may include customer requirements, regular requirements and directives from SBU/CO etc. Similarly, the customer shall be kept informed about the status of the project through identified nominee and at identified stages. Any non-conformity which 	SBU Head PC/CM	

	PROCEDURE FOR OPERATIONAL PLANNING & CONTROL (Clause 8.1 of ISO 9001:2015)	DOC: GT/P/02 Issue No.: 01 Page 9 of 10 Page Rev.No.: Nil
Approved By: SBU Head  Effective Date: :01.01.2018		

Sl. No.	Activity	Description	Responsibility	Ref. Document
		also be got approved by client. Field register & logs to be prepared & verified in field during execution of work.		
4.12	Data processing and analysis	<ul style="list-style-type: none"> The field and laboratory data is to be analyzed and interpreted in terms of its engineering impact. 		
4.13	Preparation of Report	After receipt of all result a report, in prescribed form is prepared and submitted as Draft final report. After incorporating the comments/suggestions of the client, final report is submitted as required in the work order.	PC/CM	Draft Final Report
4.14	The Draft Final Report (DFR)	<ul style="list-style-type: none"> It is last but one stage of any Project. A typical DFR for any Geo-tech work shall include (as applicable) the following. <ul style="list-style-type: none"> Executive Summary Introduction to study area and scope of work of the study. Methodology of the study. Details of field studies carried out. Bore logs Geological log Other field data collected Recommendations. Receipt of comments from client. 		GT-F-02-03 GT-F-02-04 GT-F-02-05
4.15	Release of	On preparation of the final	PC	Internal noting

	PROCEDURE FOR OPERATIONAL PLANNING & CONTROL (Clause 8.1 of ISO 9001:2015)	DOC: GT/P/02 Issue No.: 01 Page 10 of 10 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		

Sl. No.	Activity	Description	Responsibility	Ref. Document
	Report	report, the PC shall verify that all contractual requirements & deliverables have been addressed in the report. Once satisfied, he shall release the final report for delivery to client.		
4.16	Packaging & Delivery	<ul style="list-style-type: none"> The delivery of the study reports would be by PC/one of the team members or through courier. The number of study reports to be in conformity with agreement requirements. Control on packaging and delivery shall be limited to ensuring proper packing of study reports for dispatch. The presentation of top cover should contain the name of the client/project, stage of the report, month and year of submission and RITES logo. 	PC	
4.17	Lesson Learnt Report	<ul style="list-style-type: none"> After the execution of project, lesson learnt report shall be prepared for the useful learning/experience from project for implementation in future projects 	PC	Lesson Learnt report (GT-F-2-07)

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Approved By: SBU Head Effective Date: :01.01.2018		

5. DOCUMENTED INFORMATION



DOCUMENTS	LOCATION	RETENTION PERIOD
Engineering and Management Schemes of a contract.	PC	One year after completion
Project progress monitoring GT-F-02-01	PC	One year after completion of a contract.
List of external documents GT-F-02-02	CM	One year after completion of contract
Drill log performa (Soil) GT-F-02-03	PC	Placed in report of a contract.
Drill log performa (Soil & Rock mix) GT-F-02-04	PC	Placed in report of a contract.
Drill log Performa (Rock) GT-F-02-05	PC	Placed in report
Kick off meeting GT-F-2-06	PC	
Lesson Learnt report GT-F-2-07	PC	

6.0 DISTRIBUTION

SBU HEAD

All Project Co-coordinators

MR

	Format for Monthly Project Progress Review (Clause 8.1 of ISO 9001:2015)	DOC:GT-F-02-01 Issue No. : 01 Chapter No. : Page 1 of 1 Page Rev.No. : 00
Approved By: SBU Head (GT)  Effective Date: 01.01.2018		

1. Project Name:
2. Project Code:
3. Date of review:
4. Next date of review:
5. Period of review:
6. Key Milestones:

S. No.	Description	Total	Completed as on date	Balance	Scheduled for one month

7. Status of key Activities:

S. No.	Description	Scheduled	Actual as on 18.05.2018	Observations / Reason for delay, if any	Action required / taken

8. Key Issue if any :

S. No.	Description	Schedule	Root Cause for Delay	Action taken

7. Review of Addressed Risk of Project: As per format for Risk Assessment C-F-09-2

S. No.	Risk	Action taken	RPN after the action	Remarks

8. Corrective and Preventive Actions on Customer Complaints (If any):


S. No.	Complaint details	Root cause of non-confirming output	Action taken	Remarks

Signature of Project Coordinator

Signature of Risk assessment team

Signature of SBU Head



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 GEO-TECHNOLOGY SBU	FORMAT FOR	DOC : GT-F-02-04
	Drill Log Performa (Soil & Rock mix)	Issue no : 01
	(ISO 9001-2015)	Page no : 1 of 1
Approved by SBU Head : _____		Page Rev. No. Nil
Reviewed by Management representative : _____		Effective date : 01.01.2018

PROJECT	BORE HOLE NO.
LOCATION	CO-ORDINATES
TYPE OF DRILLING	CHAINAGE
CASING TYPE & DEPTH	GROUND LEVEL
WATER TABLE	DATE STARTED
DEPTH OF BORING	DATE COMPLETED

Depth	Description of Strata	Soil Classification	Strata Thickness	Samples			Run		Core Sample				SPT N values (observed)
				Type	No	Depth (m)	From	To	C.R. (cm)	C.R. %	R.Q.D. (cm)	R.Q.D. %	

A - ABNORMAL
 D - DISTURBED
 UD - UNDISTURBED
 #PT - STANDARD PENETRATION TEST

 <p>GEO-TECHNOLOGY SBU</p>	<p>Format for Kick off meeting (Clause 8.1 of ISO 9001:2015)</p>	<p>DOC : GT-F-2-06 Issue No. : 02 Page No. : 1 of 1 Page Rev. No. : 00</p>
<p>Approved by SBU Head :  Issued by Management Representative :</p>		<p>Effective Date:01.01.2018</p>

FORMAT FOR KICK-OFF MEETING

Name of Project:



Name of Client:

Value of Contract:

Location:

Potential Risks Involved	Project Action Plan
1	2

Signature:
Date:

 GEO-TECHNOLOGY SBU	Format for Lesson Learnt Report (Clause 8.1 of ISO 9001:2015)	DOC : GT-F-2-07 Issue No. : 02 Page No. : 1 of 2 Page Rev. No. : 00
Approved by SBU Head :  Issued by Management Representative :		Effective Date:01.01.2018

LESSON LEARNT REPORT FORMAT

Name of Project:

Name of Client:

Value of Contract:



Location: Lesson learnt report file of GT SBU

Lesson learnt:

Signature:

Date:



Copy: All Concerned JGM/DGM/Mgr

	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 1 of 15 Page Rev.No.: Nil</p>
<p>Approved By: SBU Head</p> <p>Effective Date: :01.01.2018</p> 		



1. Purpose : To ensure that proper procedure is followed by RITES Geo-Technology Division, while selecting the sub-contractor and / or sub-consultants for execution of field work. Supply /Installation works, as per contract requirements.
2. Scope : Applicable to all projects in Geo-Tech Division.
3. Overall Responsibility : Project Co-ordinator as nominated by SBU Head tender Committee and Tender Accepting Authority are responsible for implementation

4.


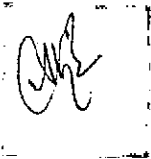
Sl. No.	Activity	Description	Responsibility	Ref. Document
4.0	Criteria of approved agencies	All those Sub-consultants who have successfully completed the assignments during the past 5 years are considered as approved based on their satisfactory performance. A list of such qualified and approved sub consultants shall be maintained with PA to SBU Head. A list of all the sub-contractors/suppliers enlisted with RITES/GT shall be maintained with PA to SBU Head.	PA to SBU Head	GT-F-03-01 GT-F-03-02 GT-F-03-03

	<p style="text-align: center;">PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p style="text-align: center;">(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 2 of 16 Page Rev.No.: Nil</p>
<p>Approved By: SBU Head</p> <p>Effective Date: :01.01.2018</p> 		



Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>A decision regarding mode of selection of contractors/supplier is taken by the Competent Authority (as per RITES prevalent delegation of powers) in respect of open tender or limited tender or single tender basis.</p> <p>Similarly depending upon the value of the work, the approval of the competent authority (as per RITES prevalent delegation of powers), shall be obtained for short listed sub-consultants.</p>		Delegation of Powers
4.1	Open tender (for field work execution)	<p>In case, it is decided to select the Sub-Contractor on open tender basis, the bidders shall be asked to submit their bid in two envelopes in one outer sealed cover. However, in certain cases open tender bids shall be received in single bid system, in which case both technical and commercial/price bids shall be submitted in single.</p> <p>The Technical Bid may contain the following information and documents. The required data is to be submitted by all the bidders as per the pre-qualification stipulated regardless of their status i.e. being RITES working</p>	PC	

	<p style="text-align: center;">PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p style="text-align: center;">(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 3 of 16 Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>contractors or otherwise.</p> <ul style="list-style-type: none"> (i) The requisite Earnest Money deposit in acceptable form. (ii) Valid Income Tax Clearance Certificate. (iii) Unconditional acceptance of Tender conditions. (iv) Copy of testimonials/documents confirming requisite experience and works of similar nature and size as per the Notice inviting Tender (NIT) of tender document. (v) Design data/Methodology wherever applicable. (vi) Details of equipment available with the supplier and proposed for deployment at site, in case of civil works. <p>The commercial bid shall contain the financial/price part. Procedure The procedure shall consist of</p> <ul style="list-style-type: none"> (i) Issue of Notice Inviting Tenders. (ii) Supply & receipt of 		

	<p style="text-align: center;">PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p style="text-align: center;">(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 4 of 15 Page Rev.No.: Nil</p>
<p>Approved By: SBU Head</p> <p>Effective Date: :01.01.2018</p> <div style="text-align: center;">  </div>		



		<ul style="list-style-type: none"> (iv) Amendment/Corrigendum to Tender documents, if deemed necessary, for the Tender. (v) Formation of tender evaluating team. (vi) Tender opening and Evaluation by nominated Team. (vii) Negotiation if necessary and recommendation based on tender requirement and lowest financial bid. (viii) Obtaining approval from tender Accepting Authority for final recommendations. (ix) Award of Contract. 		
4.2	Issue of Notice inviting Tender (NIT)	<p>The NIT shall be issued as an advertisement in at least one newspaper of national circulation as per Format GT-F-03-04. The purpose of NIT is to supply information to enable the potential tenders to decide on their participating. Apart from essential items listed in the format, the NIT shall also indicate any important or unusual tender evaluation criteria.</p> <p>NIT shall also be incorporated in the tender documents.</p>	PC	GT-F-03-04

	<p style="text-align: center;">PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p style="text-align: center;">(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 5 of 16 Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>any important or unusual tender evaluation criteria.</p> <p>NIT shall also be incorporated in the tender documents.</p>		
4.3	Supply & Receipt of tender Documents	<p>The Tender documents may consists of following relevant details</p> <ul style="list-style-type: none"> (i) Detailed Notice Inviting Tender. (ii) The date & time of submission. (iii) Tender Form along with General Rules & Directors. (iv) General Conditions of Contract. (v) Special Conditions of Contract. (vi) Local regulations/ customs. The supplier shall confirm that the acquaints himself with and complies with legal requirements. (vii) Scope of work. (viii) Schedule of requirements/quantities. (ix) Programme of work. The tenderer shall set out the 	PC	

	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 6 of 16 Page Rev.No.: Nil</p>
<p>Approved By: SBU Head</p> <p>Effective Date: :01.01.2018</p> <div style="text-align: center; margin-top: 10px;">  </div>		



Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>programme, he intends to follow for each of the man activities.</p> <p>(x) Particular specification.</p> <p>(xi) Additional Conditions, if any.</p> <p>(xii) Additional information/drawings if any.</p> <p>The tender box shall be sealed after the elapse of submission time and the box shall be opened in presence the tenderers who wish to be present during the opening.</p>		
4.4	Clarifications of Tender Documents / Pre-bid Conference	<p>A prospective tenderer requiring any clarification of the Tender Documents may notify RITES Geo-technology Division in writing or fax at the address indicated in NIT, RITES will respond to any request for clarification received earlier than 10 days prior to the last date for submission of tenders. Copies of RITES response will be forwarded to all purchasers of Tender documents, including a description of the inquiry, but without identifying its source. Pre-bid conference will be</p>	PC	

	<p style="text-align: center;">PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p style="text-align: center;">(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 7 of 16 Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>arranged for the prospective tenderers, as necessary, if needed.</p>		
4.5	Amendment/Corrigendum of Tender Documents	<p>Before the last date for submission of tenders RITES may modify the tender documents by issuing addenda/corrigenda. Any addendum Corrigendum issued shall form part of the tender documents and shall be communicated in writing or by tax/speed post to all purchasers of tender documents.</p> <p>To give prospective tenderers reasonable time to take an addendum/corrigendum into account for preparing their tenders, RITES shall extend, as necessary, the last date of submission of tenders.</p>		
4.6	Tender Opening & Evaluation of Technical Bid (Envelope I)	<p>Depending upon the value of contract, the members of Tender Opening Committee (TDC) and Tender Committee (TC) are nominated by the Competent Authority (as per RITES prevalent delegation of powers).</p> <p>The tenders will be opened by TOC in the presence of tenderers /their authorised representatives</p>	TOC/PC	Delegation of powers

	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 8 of 16 Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>who choose to attend at the time and in the place specified in the NIT and read out to the representatives. The TOC will prepare minutes of tender opening.</p> <p>The Project Co-ordinator (PC) shall prepare a briefing note and put up to the TC for perusal. The TC will scrutinize the Briefing note, and all relevant documents and recommend the names of tenders who meet the qualifying criteria stipulated in the NIT for opening of their Financial Bids (Envelope II). The Competent Authority (CA) shall approve the list based on the recommendations of the TC.</p>		
4.7	Tender Opening and Evaluation of Financial BID (Envelope II)	<p>Financial Bid of the qualified tenders will be opened by RITES TOC in the presence of tenderers / their authorized representatives who choose to attend at the time and in the place specified in the NIT. The names of tenderers, the tender prices, the total amount of each tender including discussion offered, if any will be read out by TOC.</p> <p>Tenders briefing note along with all papers concerning the Tenders will be handed over to</p>	TOC/PC	

	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03</p> <p>Issue No.: 01</p> <p>Page 9 of 16</p> <p>Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>Tender Committee (TC) for perusal.</p> <p>Information relating to examination, clarification, evaluation and comparison of tenders and recommendations of RITES TC for the award of contract shall not be disclosed to tenderers or any other persons not officially concerned with such process until the award to successful tenderer has been announced.</p> <p>RITES TC at their discretion, may ask any tenderer for clarification of his tender but no change in the price or substance of the tender shall be sought, offered and permitted except as required to confirm the correction of arithmetic errors discovered by RITES TC during evaluation of the tenders.</p> <p>Prior to the detailed evaluation of tenders. RITES TC will determine whether each tenderer</p> <ul style="list-style-type: none"> a) Meets the eligibility criteria mentioned in NIT. b) Has submitted the offer as per requirement. c) Is accompanied by EMD in requisite form. 		

	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 10 of 16 Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>ii) Tenders determine to be qualifying will be checked by RITES TC for any arithmetic errors, RITES TC, while evaluating the tenders will bear in mind the estimated cost/ present day cost of the project based on market rate analysis. In case any variations are observed the same may be recorded as a part of recommended.</p> <p>The tenderer is expected to have read and comply with general terms and conditions of contract/Tender document.</p> <p>The TC may recommend calling of tenderer with the lowest evaluated price, for negotiations.</p> <p>Re-tendering may also be recommended with due justification, when felt necessary</p>		
4.8	Award of Contract	The TC will recommended award of the contract PC to the tenderer whose tender has been determined to be substantially responsive to the tender documents and who has offered the lowest evaluated tender price provided that such tenderer has been determined to be otherwise qualified.	TC, The competent Authority	

	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 11 of 16 Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>The tenderer whose bid has been recommended for acceptance by TC and after the acceptance of recommendation of TC by the Competent Authority (as per RITES prevalent delegation of powers) will be notified of the award. This letter (hereinafter and conditions of the contract called the 'Letter of award') shall be issued by not less than authority as per SOP and will state the sum that RITES will pay the supplier in consideration of execution, completion and maintenance of the works by the contractor as prescribed by the Contract (hereinafter and in the contract called the Contract (hereinafter and in the contract called the Contract Price/Contract Value) The award letter or its attachments shall clearly describe the nature of work, specifications delivery time etc. as applicable.</p> <p>The notification of award will constitute the formation of the contract subject to the tenderer agreeing and fulfilling the requirements of tender within the period mentioned in LOA.</p>		<p>Letter of award of work</p>

	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 12 of 16 Page Rev.No.: Nil</p>
<p>Approved By: SBU Head</p> <p>Effective Date: :01.01.2018</p> <div style="text-align: center; margin-top: 10px;">  </div>		



		<p>After award of contract to successful bidder the EMD/BG submitted by the unsuccessful bidders shall be returned with acknowledgement.</p>	PC	
4.9	Limited tenders	<p>Based on the amount of work (cost) to be executed and urgency of the requirement, Limited Tender may be asked for by PC after approval from competent authority</p> <p>In case it is decided to select the empanelled suppliers/sub-consultants on limited tender basis, the procedures shall consists of Firms /individual consultants shall be short listed short listed from the list of suppliers (GT-F-03-02). Keeping nature of work, location, value etc. in view, the list of short listed contractor/sub-consultants shall be approved by the Competent Authority (as per RITES Delegation of powers).</p> <p>Based on the specific requirements of the project, the sealed quotations shall be invited by the Competent Authority (as per RITES prevalent delegation of powers) from the short-listed and approved suppliers advising</p>	PC	List of Approved Sub-Contractors

	<p style="text-align: center;">PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p style="text-align: center;">(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 13 of 16 Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>following details :</p> <ul style="list-style-type: none"> • Brief of the Project work. • Nature and Approximate cost of the work. • Last date for submission of quotation. • Scope of work of Sub-consultants. • Obligations of the RITES. • Terms of payment. • Time period • Other terms and conditions • Any, Special terms & conditions • Arbitration clause • Compensation for delay • Validity of quotations • Fore-closure of work. <p>Further procedure shall remain same as in case of Open Tender, as applicable.</p>	PC	

	<p style="text-align: center;">PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p style="text-align: center;">(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 14 of 16 Page Rev.No.: Nil</p>
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Sl. No.	Activity	Description	Responsibility	Ref. Document
4.10	Single tender	<p>In very rare circumstances when it is decided to select the contractor on single tender field and social conditions.</p> <p>a) No other sub-contractor /supplier is agreeing to work in the area due to special field and social conditions.</p> <p>b) The sub contractor is a Govt. organization and services are required on urgent basis. The procedure shall be consist of :</p> <p>The Name of the Contractor approved by the Competent Authority, (as per RITES prevalent delegation of powers) for sending NIT.</p> <p>NIT is sent to the contractor purchasing the tender documents.</p> <p>Further procedure shall remain as in the case of Open Tender, as applicable.</p>	<p>PC</p> <p>PC</p> <p>PC</p>	

	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 14 of 15 Page Rev.No.: Nil</p>
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4.11	Performance evaluation	<p>The performance of the supplier/Contractor shall be evaluated on continuous basis. This shall be done by the concerned CM and PC during and after completion of the project on the basis of</p> <ul style="list-style-type: none"> a) Quality of work executed. b) Time frame. c) Expertise to carry out the assigned job. d) Promptness to provides necessary support. e) Availability of equipment/infrastructure etc. <p>Such evolution shall be recorded and performance evaluation form put up to GM and retained in project file. In case the supplier may be removed from the approved list</p>	PC & CM	GT-F-03-05
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5. Documented Information

	Name	Format No.	Location	Retention
5.1	List of Approved Sub-Contractors suppliers	GT-F-03-01 GT-F-03-02	PA to SBU Head	Continuous
5.2	List of Approved Sub-Consultants	GT-F-03-03	PA to SBU Head	Continuous
5.3	Notice Inviting Tender	GT-F-03-04	PC	3 years after
5.4	Performance evaluation	GT-F-03-05	PC	completion of project


	<p>PROCEDURE FOR CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES</p> <p>(Clause-8.4 of ISO 9001:2015)</p>	<p>DOC: GT/P/03 Issue No.: 01 Page 15 of 15 Page Rev.No.: Nil</p>
<p>Approved By: SBU Head</p> <p>Effective Date: :01.01.2018</p> 		

6. Distribution
SBU Head All Project Co-ordinators MR

 IRITES <small>THE INFRASTRUCTURE PEOPLE</small> GEOTECHNOLOGY SBU	Format For List of Approved suppliers Clause 8.4 of (ISO 9001-2015)	DOC :GT-F-03-02 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved by SBU Head :  Issued by Management Representative :		Effective Date

LIST OF APPROVED SUPPLIERS

Sr. No.	Name of the Firm	Address	City	Remarks, if any



 GEO-TECHNOLOGY SBU	FORMAT FOR Notice Inviting Tenders Clause 8.4 of (ISO 9001-2015)	DOC :GT-F-03-04 Issue No. : 01 Page No. : 1 of 1 Page Rev.No . : Nil
Approved by SBU Head : _____ Issued by Management Representative: _____		Effective Date:01.01.2018

RITES LTD
Notice Inviting e-Tenders

The _____ (Designation of the Officer), RITES Ltd. invites on behalf of _____ online item rate / percentage rate / combination of item rate & percentage rate / lump sum bids on _____ single / two packet system for the following work (s) :

1. NIT No. _____ name of Work _____
_____ Estimate cost
Rs. _____ Earnest Money _____ Period of completion _____
_____ last time & date of submission of bid _____
2. NIT No. _____ name of Work _____
_____ Estimate cost
Rs. _____ Earnest Money _____ Period of completion _____
_____ last time & date of submission of bid _____

The bid forms and other details can be obtained form the website <https://rites.rproc.in> Addendum / Corrigendum, if any, shall be hosted online only.



 GEO-TECHNOLOGY SBU	FORMAT FOR Performance Evaluation Clause of 8.4 of (ISO 9001-2015)	DOC :GT-F-03-05 Issue No. : 01 Page No. : 1 of 1 Page Rev.No . : Nil
Approved by SBU Head :  Issued by Management Representative:		Effective Date:01.01.2018

PERFORMANCE EVALUATION

Name of work:



S.No	Description of item	Agency Name	Remarks
1	Quality of work executed		
2	Time frame		
3	Expertise to carry out the assigned job		
4	Promptness to provides necessary support		
5	Availability of equipment/ infrastructure etc		

Any other issue:



	PROCEDURE FOR PROCESSING OF PAYMENTS (Clause 7.5 of ISO 9001:2015)	DOC: GT/P/04 Issue No.: 01 Page 1 of 5 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		

1. Purpose : To ensure that appropriate procedure to followed for Payment of Work done and Material Supplied by the Sub-Contractor and for the billing the client for the services rendered by Geo-Tech wing.
2. Scope : Bills raised for work executed by Geo-Tech Division as per Scope of work.
Applicable to all the payments made to the Sub-Contractor in respect of Work done and material supplied by him including RA bills.
3. Overall Responsibility : Controlling manager and Project coordinator is responsible for implementation of this procedure
- 4.



Sl. No.	Activity	Description	Responsibility	Ref. Document
4.1	Rites billing	<p>Stages of billing by RITES to our clients in terms of time or completion of work shall be identified by the PC in consultation with SBU Head. These shall be stipulation in the contract agreement/offer.</p> <p>At these identified stages the project in-charge is to prepare a bill in triplicate as per the quantities indicated in work order to RITES and on designated bill form.</p> <p>The executed quantities verified by the client are to be kept by site in-charge.</p> <p>The bill prepared is to be sent to Finance division for raising the bill to the client as per their system.</p>	PC	GT-F-4-01

	PROCEDURE FOR PROCESSING OF PAYMENTS (Clause 7.5 of ISO 9001:2015)	DOC: GT/P/04 Issue No.: 01 Page 2 of 5 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		



Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>The final bill to the client shall be prepared after completion of job as per information obtained from Project Manager.</p> <p>The PC is to pursue the payment after one month from the date of submission of bill if payment not received.</p> <p>Reminders will be sent periodically if payment is delayed.</p> <p>In addition, statement of pending payments shall be received from Finance Dept. on monthly basis. Follow up shall be done with the clients for timely payment.</p>	 PC PC	
4.2	PREPARATION OF BILLS (for subcontractor)	<p>The measurements of works executed or supply received shall be entered in the Measurements Books by Manager / AM / Engineers, giving brief description of Nomenclature of these items as per the quantities in work order.</p> <p>Before the bill of a Sub-Contractor / Supplied is prepared, the entries in the Measurement Book relating to the description and quantities of work / supplies shall be scrutinized by Project Manager and calculations of "Quantities / Contents or Area" shall be checked arithmetically under his supervision.</p> <p>The bill shall be prepared based</p>	CM	

	PROCEDURE FOR PROCESSING OF PAYMENTS (Clause 7.5 of ISO 9001:2015)	DOC: GT/P/04 Issue No.: 01 Page 3 of 5 Page Rev.No.: Nil
Approved By: SBU Head  Effective Date: :01.01.2018		

Sl. No.	Activity	Description	Responsibility	Ref. Document
		on the Measurement Books entries. Full rates as per the agreement / Supply order shall be allowed only if the quantity of work done or supplies made conforms to the specifications of that standard and under the Contract which is done through verification by CM. In case of Supplies, the payment is not permissible until the stores have been received and entered in stock register.		GT-F-4-02
4.3	Forms of bill for payment	The authorized forms of bills shall be used for payment to Contractors/ Suppliers. Forms as per format GT-F-4-01 & GT-F-4-02 shall be used for all running and final payments to Contractors / Suppliers, including cases where advance payments are proposed to be made or already outstanding in respect of the some work against the Contractor. In cases where, secured advances are to be made or are already outstanding in respect of the same work against the Contractor, Account of secured advances shall be attached to the bills.	PM	
4.4	Authorities to pass the bills	The authorities to pass the bills shall be as per RITES prevalent delegation of powers	PC	Delegation of Powers

	PROCEDURE FOR PROCESSING OF PAYMENTS (Clause 7.5 of ISO 9001:2015)	DOC: GT/P/04 Issue No.: 01 Page 4 of 5 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		

Sl. No.	Activity	Description	Responsibility	Ref. Document
4.5	Payment for work done	<p>Payment for work done or supplies on a running account shall be made monthly or at specified periodicity. Both the 'Quantities and Amount' of each distinct item of work or supply shall be shown separately in the bill, except in case of advance payments when such quantities need not be specified.</p> <p>Certain Percentage of advance may be released against a running account bill, if there is delay in processing the bill at HQ on certification of Project Co-ordinator/ Client.</p> <p>The recovery of mobilization advance, taken by the Contractor, shall be made from every running account bill, starting after payment of 10% of contract value and completed till payment of 80% of the total contract value, as stipulated in contract.</p> <p>After completion of the project and at the time of final payment to the sub-consultant / contractor, cost and profit analysis is to be conducted.</p>		

	PROCEDURE FOR PROCESSING OF PAYMENTS (Clause 7.5 of ISO 9001:2015)	DOC: GT/P/04 Issue No.: 01 Page 5 of 5 Page Rev.No.: Nil
Approved By: SBU Head  Effective Date: :01.01.2018		



SI. No.	Activity	Description	Responsibility	Ref. Document
4.3	Documents Name	Format for raising invoice. Format for details of Bills for payment (In case of measurement books retention period is 10 years) Formal for cost and profit analysis.	Retention period as per their procedure	

5. Documented Information



SI. No.	Name	Format	Retention Period
5.1	Format for raising invoice	GT-F-4-01	As per procedure
5.2	Format for details of bills for payment (in case of measurement books retention period is 5 year	GT-F-4-02	-Do-
5.3	Format for Cost and profit analysis	GT-F-4-03	One year after completion of the project

6. Distribution



SBU Head
 All Controlling Managers
 All Project Managers
 MR

	<p style="text-align: center;">PROCEDURE FOR LABORATORY TESTING</p> <p style="text-align: center;">(Clause-7.1.5 of ISO 9001:2015)</p>	<p>DOC: GT-P-05 Issue No.: 01 Page 3 of 7 Page Rev.No.: Nil</p>
<p>Approved By: SBU Head </p> <p>Effective Date: :01.01.2018</p>		



Sl. No.	Activity	Description	Responsibility	Ref. Document
		<p>calibrated before use.</p> <ul style="list-style-type: none"> • After calibration, stickers are fixed on each equipment indicating • Date of last Calibration • Date due for next Calibration. • Ensure that the handling, preservation and storage of equipment are carried out in such a manner that their accuracy is not disturbed. In case of non-conformity, get the equipment re-calibration before use. • If in any report it is observed that the results have been reported on account of instrument being out of calibration, the client to be informed accordingly. Report on retained samples shall be performed using calibrated equipment, if felt necessary. • Entry of each equipment is made in format (GT-F-05-31) which describes its history regarding instrument name, number, manufacturer and calibration frequency. • In house procedure for calibrating measuring cylinders is done as described in work instruction (GT-W-05-01) and recorded in the format (GT-W-05-02) 		<p>GT-F-05-31 (Instrument history)</p> <p>(GT-W-05-01)</p> <p>(GT-W-05-02)</p>

	PROCEDURE FOR LABORATORY TESTING (Clause-7.1.5 of ISO 9001:2015)	DOC: GT-P-05 Issue No.: 01 Page 4 of 7 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		

Sl. No.	Activity	Description	Responsibility	Ref. Document
4.2.1	Sample coding	<ul style="list-style-type: none"> The samples drawn from identified location or position are kept duly identified with a label or tag. The sample is sent to the laboratory along with a Test schedule indicating nature of tests to be conducted. 	Site Incharge	GT-F-05-01 (Format for sample coding)
4.2.2	Transportation of samples from site to laboratory and Test schedule	Controlling manager shall nominate a person for transportation of soil/rock samples under safe condition along with testing schedule to Geo-technology laboratory. Samples shall be received by the laboratory representative with date after checking and counting each sample. A copy of the list of the samples received with date will be recorded in GT-F-05-01.	AM (lab)	GT-F-05-02 (Test schedule of Samples)
4.2.3	Identification of sample in laboratory	<ul style="list-style-type: none"> For proper identification, each sample with sample code, shall be recorded in sample entry register. Each sample shall be identified by the laboratory representative with testing details and shall be maintained in the record register. Time to time records shall be reviewed by laboratory in-charge. 	AM(lab)	GT-F-05-03 (Sample record register)
4.2.4	Procedure for testing(Soil & rock)	For Soil <ul style="list-style-type: none"> Prior to start of the tests, sample shall be extracted from sample tubes & poly bags. Samples shall be prepared as per IS code 	AM(lab)	Test Result/Report Proforma GT-F-05-04 GT-F-05-05

	<p style="text-align: center;">PROCEDURE FOR LABORATORY TESTING</p> <p style="text-align: center;">(Clause-7.1.5 of ISO 9001:2015)</p>	<p>DOC: GT-P-05 Issue No.: 01 Page 6 of 7</p>
<p>Approved By: SBU Head </p> <p>Effective Date: :01.01.2018</p>		<p>Page Rev.No.: Nil</p>



Sl. No.	Activity	Description	Responsibility	Ref. Document
4.2.5	Preparation of Lab Report	<ul style="list-style-type: none"> On completion of analysis and review of all test data, a report shall be generated in tabulated, format with all calculation, graphs, plots as per technical specification and as per requirement of the project and the same shall be approved by the testing technician /manager prior to release. The data shall be submitted to a technical person associated with the project as nominated by PC along with its acceptance in the form of test result dispatch receipt. 	AM(lab)	GT-F-05-19 GT-F-05-27 (GT-W-05-03) (Test result dispatch receipt)
4.2.6	Preservation of Samples	Remaining samples after extraction of required quantity for testing and preparation shall be sealed by waxing/poly bags to avoid any loss of moisture. The same shall be preserved till the approval of final report from the client or shall be destroyed after three months, whichever is earlier, after obtaining permission from the project co-ordinator.	AM(lab)	
4.2.7	Disposal of Samples	The remnants of the samples shall be disposed off suitably. Mainly soil & rock samples are tested in GT lab which does not require any special treatment for disposal.	AM(lab)	

	PROCEDURE FOR LABORATORY TESTING (Clause-7.1.5 of ISO 9001:2015)	DOC: GT-P-05 Issue No.: 01 Page 7 of 7 Page Rev.No.: Nil
Approved By: SBU Head  Effective Date: :01.01.2018		

Sl. No.	Activity	Description	Responsibility	Ref. Document
4.2.8	Equipment maintenance/ calibrators	The equipment of the laboratory shall be maintained in good working order. In case services of authorized representative/supplier are utilized for maintenance, these equipment shall be calibrated as per prescribed procedure.		List of maintenance agencies (GT-W-05-04)

Note: SBUs may issue additional work instructions / guidelines at their level for effective implementation of this procedure, if needed.

5. **DISTRIBUTION:**
 SBU HEAD
 All project Co-ordinators
 Laboratory In Charge
 MR

 RITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format For Grain Size Analysis, (Hydrometer test) Clause 7.1.5 of ISO-9001-2015	Doc : GT-F-05-04 Issue No. : 01 Page No. : 1 of 1 Page Rev. No.: Nil
Approved by SBUHead : Issued by Management Representative : 		Effective Date : 01.01.2018

Project :
Lab sample no :

Date :
Wt. of Soil Taken :
Ref. Standard/Method of Test
IS 2720 (Part 4)

DRY ANALYSIS

Sieve no.	Cumulative wt. of soil retained (gms)	Cumulative wt. of soil passing (gms)	% of soil passing through	Remarks
20mm				
10mm				
4.75mm				
2.00mm				
1.00mm				
600u				
425u				
300u				
150u				
75.u				

WET ANALYSIS

Wt of sample taken



gm, Starting Time :

Dispersion agent correction :

Temperature Correction :

Time Elapsed	Hydro-meter reading	Hydro-meter Reading After CM	Temperature °C	Reading After Combined Correction °C	Grain Size From Nemo graph	Weight Of Suspension In (gm)	% of suspension	Remarks
30 sec								
1 min								
2 min								
4 min								
15 min								
45 min								
90 min								
180 min								
6 Hr.								
24 Hr.								
48 Hr.								

Signature
Designation

 RITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format for Grain Size Analysis, NMC & NDD Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-05 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : 01
Approved by SBU Head: Issued by Management Representative: 		Effective Date: 01.01.2018

GRAIN SIZE ANALYSIS AND NMC+NDD REPORT



Project :-
 Bore hole/pit id :-
 Lab sample no. :-
 Wt. of sample taken: 100 gm

Date :-
 Lab Report no. :-
 Ref. Standard/Method of Test
 IS (2720 Part-4)

Sieve no.	Cumulative Wt. Of Soil Retained (gm)	Cumulative Wt. Of Soil Passing (gm)	% Of soil Passing Through	Remarks
20mm				
10mm				
4.75mm				
2.00mm				
1.00mm				
600u				
425.u				
300.u				
150.u				
75.u				

NMC AND NDD				
TRIALS		1	2	Volume of Density ring (Cc)
Wt. Of Density Ring + Wet Soil (gm)				
Wt. Of Density Ring + Dry Soil (gm)				
Wt. Of Water (gm)				
Wt. Of Density Ring (gm)				
Wt. Of Dry Soil (gm)				
Moisture Content (%)				
Dry Density (gm/Cc)				

Tested by:
 Designation:

 GEO-TECHNOLOGY SBU	Format for Atterberg Limit Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-06 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative : 		Effective Date : 01.01.2018

REPORT FOR ATTERBERG'S LIMIT

Project:

Date:

Bore hole/Pit No.:

Report No:

Sample No

Reference standard/Method of test

IS: 2720 (Part-5)

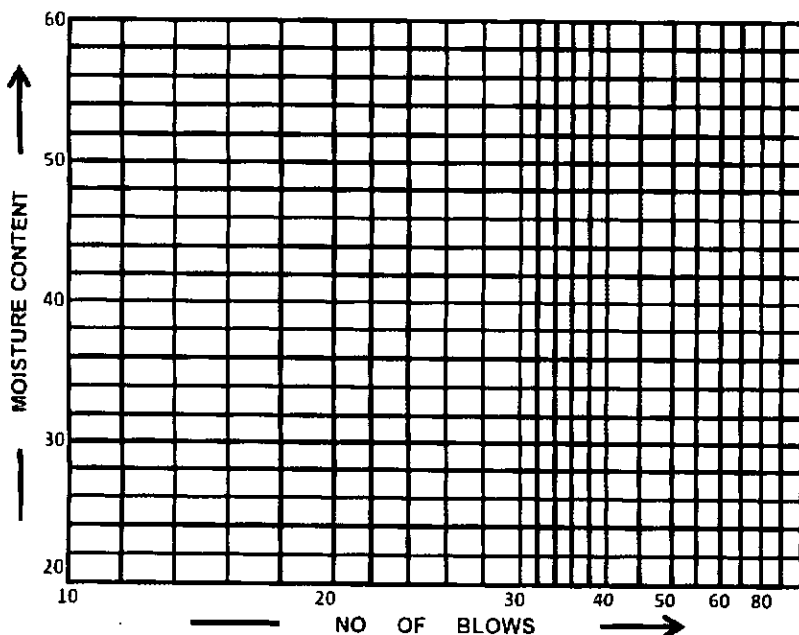
LIQUID LIMIT

PLASTIC LIMIT



No. of Blows					
Container no.					
Wt. of Cont+ Wet soil (gm)					
Wt. of Cont+ dry soil (gm)					
Wt. of water (gm)					
Wt. of empty container (gm)					
Wt. of dry soil (gm)					
Moisture Content (%)					

LIQUID LIMIT AT 25 BLOWS

PLASTIC LIMIT PLASTICITY INDEX



Tested By
Designation


 IRITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format For Triaxial Shear Test Clause 7.1.5 of ISO 9001- 20152015	DOC : GT-F-05-07 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved by SBU Head: Issued by Management Representative: 		Effective Date : 01.01.2018

TRIAXIAL TEST REPORT (U.U)

Project:	Date:
Bore hole/pit Id:	Lab report no.:
Lab Sample no:	Ref. Standard/Method of Test IS: (2720 Part-11)
Initial area of specimen:	P.R.F :
Initial weight of specimen:	Diameter: 38 mm
Dry weight of specimen:	Height: 76 mm
Initial moisture content:	Strain Rate: 1.20 mm/min

Sr. No	Deformation (mm)	Dial gauge reading	Proving ring reading	Force in Kg	Strain in % E	Corrected Area (cm ²) A=Ao/l-E	Stress in kg/cm ²	Remarks
		0						
		50						
		100						
		150						
		200						
		250						
		300						
		350						
		400						
		450						
		500						
		550						
		600						
		650						
		700						
		750						
		800						
		850						
		900						
		950						
		1000						

Tested by
Designation

 IRITES <small>INFRA STRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format For Direct Shear Test Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-08 IssueNo. : 01 PageNo. : 1 of 1 PageRev.No. : Nil
Approved by SBU Head: Issued by Management Representative: <i>[Signature]</i>		EffectiveDate : 1.01.2018



DIRECT SHEAR TEST REPORT (U. U)

Project:
 Bore hole/Pit id:
 Lab sample No:
 Strain rate: 1.25 mm/min

Date:
 Lab Report No:
 Load :
 P.R.F :
 Ref. Standard/Method of Test
 IS (2720 Part-13)

Elapsed time (in sec.)	Watch time	Proving ring reading	Corrected area cm ²	Load in kg	Stress kg/cm ²	Remark
0						
15						
30						
45						
60						
75						
90						
105						
120						
135						
150						
165						
180						
195						
210						
225						
240						
255						
270						
285						
300						
315						
330						
345						
360						

Tested by
 Designation

 GEOTECHNOLOGY SBU	Format For Consolidation Test Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-5-09 IssueNo. : 01 PageNo. : 1 of 4 PageRev.No. : Nil
Approved by SBU Head: Issued by Management Representative : 		EffectiveDate : 01.01.2018



CONSOLIDATION TEST REPORT

Project :- Bore hole/pit id :- Lab sample no. :-	Date :- Lab Report no. :- Ref. Standard/Method of Test <b style="text-align: center;">IS (2720 Part-15)
---	---

Consolido meter id :-

	Before test	After test	Remarks
Wt. Of ring+wet soil : Wt. Of ring+dry soil: Wt. Of Dry soil : Wt. Of ring : Wt. Of water: Moisture percent : Degree of Saturation:			
MEASUREMENTS OF CONSOLIDATION RING Weight of ring : (in gm) Diameter : (in mm) Height of ring : Area of ring : Specific gravity of soil : (Gs) : Equivalent height of solid: $2H_o = \frac{W_s X G_s X G_w}{A_o}$			


MASTER COPY

 RITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format For Consolidation Test Clause 7.1.5 of ISO9001-2015	DOC :GT-F-05-09 IssueNo. :01 PageNo. : 2 of 4 Page Rev.No. : Nil
Approved by SBU Head: Issued by Management Representative:		 EffectiveDate : 01.01.2018

Initial Reading :-


Applied Pressure in Kg/Sq.cm	Final dial guage reading	change in dial guage reading	Thickness of soil sample (2H)	Equivalente nt height of Voids 2H-2H _o	VoidRatio 2H e=--- -1 2H _o	Cc value	Remarks
0.05							
0.25							
0.5							
1.0							
2.0							
4.0							
8.0							
0.05							

Tested by
Designation

 GEO-TECHNOLOGY SBU	Format for Laboratory tests (Consolidation Test Proforma) Clause 7.1.5 of ISO 9001 -2015	DOC : GT-F-05-09 Issue No. : 1 Page No. : 3 of 4 Page Rev. No. : Nil
	Approved by SBU Head : issued by management representative :	Effective Date : 01.01.2018

Seating Load		Initial Reading				Final Reading				Gange No.				
DATE	0.25 kg/cm ²		0.5 kg/cm ²		1.0 kg/cm ²		1.0 kg/cm ²		2.0 kg/cm ²		4.0 kg/cm ²		8.0 kg/cm ²	
Time in (min)	WATCH TIME	COMP	WATCH TIME	COMP	WATCH TIME	COMP	WATCH TIME	COMP	WATCH TIME	COMP	WATCH TIME	COMP	WATCH TIME	COMP
0.00														
0.25														
1.00														
2.25														
4.00														
6.25														
9.00														
16.00														
20.25														
25.00														
36.00														
49.00														
64.00														
80.00														
100.00														
120.00														
240.00														
360.00														
480.00														

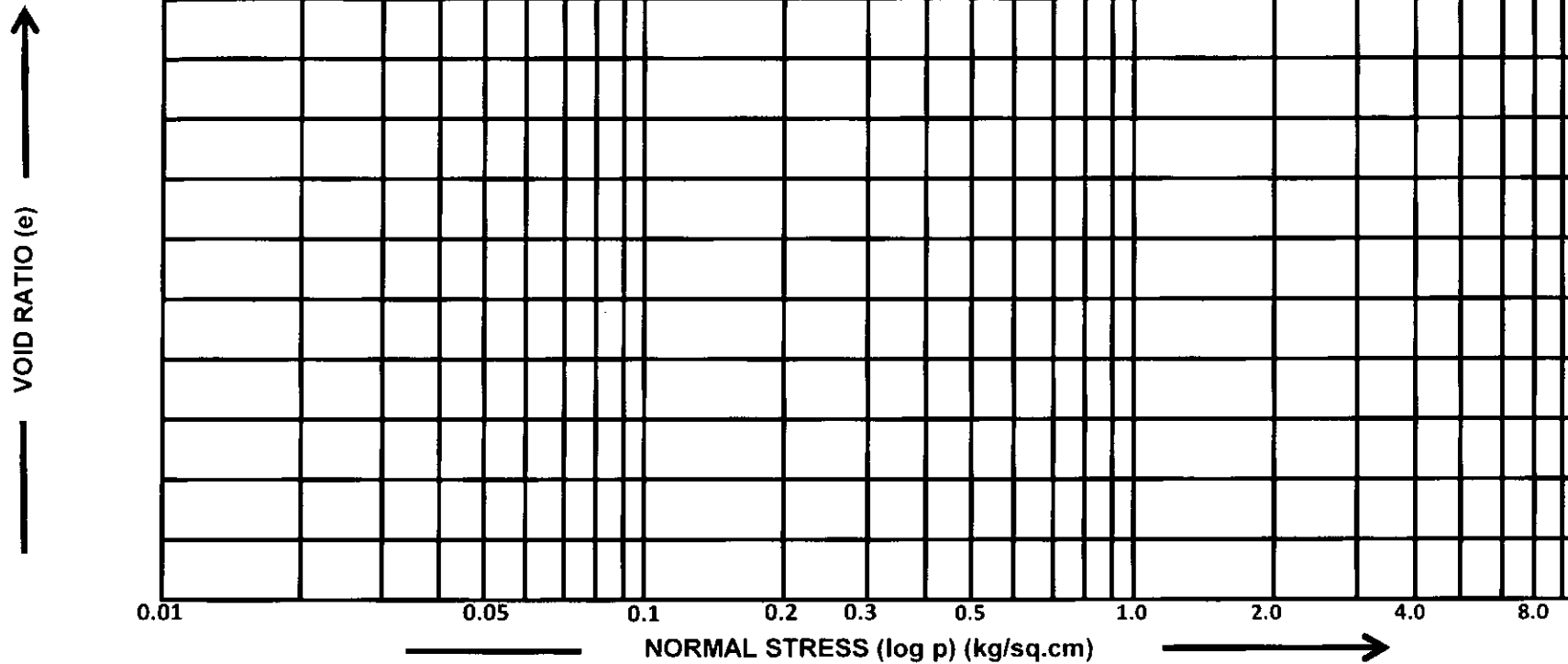
Signature
Designation

 GEO-TECHNOLOGY SBU	Format for Consolidation Test Clause 7.1.5 of ISO 9001 -2015	DOC : GT-F-05-09
		Issue No. : 1
		Page No. : 4 of 4
Approved by SBU Head : issued by management representative :		Page Rev. No. : Nil Effective Date : 01.01.2018

CONSOLIDATION TEST RESULT



PROJECT :
 LAB SAMPLE NO. :
 BORE HOLE NO. :
 DEPTH :

Date :
 Cc :
 eo :



Signature
 Designation

MASTER COPY

 IRITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format for U.C.C. Test Clause 7.1.5 of ISO9001-2015	DOC : GT-F-05-10 IssueNo. : 01 PageNo. : 1 of 1 PageRev.No. : Nil
Approved by SBU Head: Issued by Management Representative : 		Effective Date : 1.01.2018

U.C.C. TEST REPORT

Project :	Date :
Bore hole/Pit ID:	Lab Report No.:
Lab Sample No.:	Ref. Standard/Method of Test IS (2720 part-10)


Initial area of specimen :	Size of Sample
Initial wt. of sample :	Diameter :
Dry wt. of specimen :	Height :
Initial moisture content :	

Sr.no.	Deformation in mm	Dial Gauge Reading	Proving Ring Reading	Force In Kg	Strain in % E	Corrected Area cm ² A=A0/(1-E)	Stress in Kg/cm ²	Remarks
		0						
		50						
		100						
		150						
		200						
		250						
		300						
		350						
		400						
		450						
		500						

Sketch of failed specimen and description of failure on the back of this report.

Water content of specimen after test in %age
 Unconfined compressive strength Kg/cm²

Tested by:
 Designation:

 THE INFRASTRUCTURE PEOPLE GEO-TECHNOLOGY SBU	Format for CBR Test Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-11 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved by SBU Head: _____ Issued by Management Representative : _____		Effective Date : 01.01.2018

C.B.R. TEST REPORT

Project:
 Bore hole/Pit ID
 Lab Sample no:
 IS: 2720 (Part-16)

Date:
 Lab Report No:
 Ref. Standard/Method of Test

PREPARATION OF SPECIMEN: Undisturbed/Remolded
TYPE OF COMPACTION USED: Light / Heavy
SURCHARGE WEIGHT USED:
SOAKING PERIOD:
STRAIN RATE:
PRF:

DENSITY OF SPECIMEN

WATER CONTENT

- | | | |
|---|-----------|-----------|
| a) Dry Density: gm/cm ³ | a) N.M.C. | |
| b) Bulk density, Before soaking: gm/cm ³ | | b) O.M.C. |
| After soaking: gm/cm ³ | | |



Penetration in mm	Dial gauge reading	Proving ring reading	Load kgf	Corrected load kgf.
0.0				
0.5				
1.0				
1.5				
2.0				
2.5				
4.0				
5.0				
7.5				
10.0				
12.0				

CBR of specimen at 2.5 mm penetration :

CBR of specimen at 5.0 mm penetration :

Recommended Value:

Tested by : _____
 Designation: _____

 IRITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format for Specific Gravity test Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-14 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved by SBU Head: Issued by Management Representative : 		Effective Date : 01.01.2018

SPECIFIC GRAVITY TEST REPORT



Project: Bore hole/Pit ID : Lab Sample no: Wt.of sample taken in (gm) :	Date: Lab Report No: Ref. Standard/Method of Test IS : 2720 (Part-3)
---	--

Determination No.			
Bottle No.			
Temp. T _x °C			
Wt. of Bottle (W ₁) gm.			
Wt. of bottle + Oven dry Sample (W ₂) gm.			
Wt. of oven dry sample (W ₂ - W ₁) gm.			
Wt. of bottle + dry Soil + water (W ₃) gm.			
Wt. of bottle + water (W ₄) gm.			
Specific gravity T _x °C, $G = (W_2 - W_1) / (W_4 - W_1) - (W_3 - W_2)$			
Specific Gravity at 27 °C = $G \text{ at } T_x \text{ °C} \times \frac{\text{Specific Gr. Of water at } T_x \text{ °C}}{\text{Specific Gr. Of water at } 27 \text{ °C}}$			

Result -

Specific Gravity (Average of three Determinations) =

Tested by
Designation

 GEO-TECHNOLOGY SBU	Format for Shrinkage Limit (Remoulded Soil) Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-15 Issue No. : 01 Page No. : 1 of 2 Page Rev. No. : Nil
Approved by SBU Head : Issued by Management Representative :		Effective Date : 01.01.2018

SHRINKAGE LIMIT TEST REPORT

Project: Bore hole/Pit ID : Lab Sample no:	Date: Lab Report No: Ref. Standard/Method of Test IS : 2720 (Part-6)
--	---

Location : _____ Depth :- _____ Test No.: _____

1. Determination No. _____
2. Shrinkage dish No. _____
3. Weight of shrinkage dish (in gm) _____
4. Weight of shrinkage dish + dry Soil pat (in gm). _____
5. Weight of shrinkage dish + dry soil pat (in gm) _____
6. Weight of oven dry soil pat (W0) (in gm) _____
7. Weight of water (in gm) _____
8. Moisture content (w) of soil Pat, (in %) _____
9. Evaporating dish No. (dish into Which mercury filling shrinkage Dish is transferred for weighing) (in gm) _____
10. Weight of mercury filling shrinkage dish + weight of evaporating dish.(in gm) _____
11. Weight of evaporating dish. (in gm) _____
12. Weight of mercury filling shrinkage Dish (In gm) _____
13. Volume of wet soil pat (V) (in ml.) _____
14. Evaporating dish No. _____
15. Weight of mercury displaced by the dry soil pat + weight of Evaporatingdish (in gm) _____

16. Weight of evaporating dish (in gm)

17. Weight of mercury displaced by the dry soil pat (in gm)

18. Volume of dry soil pat (V_0) (in ml)

$$19. \left[\frac{V - V_0}{W_0} \right] \quad 100$$

20. Shrinkage limit (remoulded soil)

$$W_s = w - \left[\frac{V - V_0}{W_0} \right] \quad 100$$


$$21. \text{ Shrinkage ratio } R = \frac{W_0}{V_0}$$

22. Given moisture content w , percent.

$$23. (W_1 - w_s)$$

$$24. \text{ Volumetric shrinkage } V_s = (W_1 - w_s) R$$

Tested by:
Designation:

 <p>IRITES THE INFRASTRUCTURE PEOPLE</p> <p>GEO-TECHNOLOGY SBU</p>	<p>Format for Free Swell Index Clause 7.1.5 of ISO 9001-2015</p>	<p>DOC : GT-F-05-16 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil</p>
<p>Approved by SBU Head : Issued by Management Representative :</p>		<p>Effective Date : 01.01.2018</p>

FREE SWELL INDEX TEST REPORT

Project:
Bore hole/Pit ID:
Lab Sample no:
Weight of sample taken:

Date:
Lab Report No:
Ref. Standard/Method of Test
IS : 2720 (Part-40)

Where


V_d = The volume of soil specimen read from the graduated cylinder containing Distilled water =

V_k = The volume of soil specimen read from the graduated cylinder containing Kerosene =

$$\text{Free swell index, percent} = \frac{V_d - V_k}{V_k} \times 100$$

Differential free swell index =

Tested by :
Designation:

	Format for Permeability Test Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-17 Issue No. : 01 Page No. : 1 of 2 Page Rev. No. : Nil
Approved by SBU Head : <i>[Signature]</i> Issued by Management Representative :		Effective Date : 01.01.2018

PERMEABILITY TEST (Constant Head Method)

Project:

Date:

Bore hole/Pit ID :

Lab Report No:

Lab Sample no:

Ref. Standard/Method of Test

IS : 2720 (Part-17/36)

SAMPLE DETAIL

Diameter of specimen (D)(in cm) :-

Length of specimen (L)(in cm) :-

Area of specimen (A)(in cm²) :-

Volume of specimen (V) (in cc) :-

Head Loss $h = H_1 - H_2 =$

Hydraulic Gradient $i = h/L$

Temperature of water T⁰C =

SI No.	Quantity, Q Cm ³	Time, t seconds	Permeability Kr = Q/Ait cm/s	Remarks
1.				
2.				
3.				

Weight of wet soil specimen after test, w_t = gm

Weight of dry soil specimen, W_s = gm

Water content, $W = \frac{W_t - W_s}{W_s} \times 100 =$ %


Specific gravity of specimen, $G_s =$

Void ratio, $e = \frac{VG_s - W_s}{W_s} =$

Degree of saturation, $S = \frac{G_s \cdot W}{e} =$ %

Permeability at 27°C, $k_{27} = \frac{k_{ryr}}{\gamma_{27}} =$ cm/s

Tested by
Designation

	Format for Permeability Test Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-18 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
	Approved by SBU Head : Issued by Management Representative :	Effective Date : 01.01.2018

PERMEABILITY TEST (Falling Head Method)

Project: _____ Date: _____
 Bore hole/Pit ID _____ Lab Report No: _____
 Lab Sample no: _____
 Size of sample taken _____ Ref. Standard/Method of Test
 IS : 2720 (Part-17/36)

Diameter of specimen (D) cm
 Length of specimen (L) cm
 Area of specimen (A) cm²
 Volume of specimen [V] cm³
 Area of stand pipe [a] = cm²

C = 2.303 a L/A = cm

Temperature of water, T = C

Sr. No.	Initial Time T _i (seconds)	Final Final t _f (seconds)	Initial Head h ₁ (cm)	Final Head h ₂ (cm)	h ₁ /h ₂ C =	log ₁₀ h ₁ /h ₂ (t _f - t _i) cm/s	h ₁ /h ₂ Kr =	log ₁₀ h ₁ /h ₂	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	

Weight of wet soil specimen after test, W_t = gm.
 Weight of dry soil specimen, W_s = gm
 Water content, W = $\frac{W_t - W_s}{W_s} \times 100$ = %
 Specific gravity of specimen, G_s = =
 Void ratio, e = $\frac{VG_s - W_s}{W_s}$ = =
 Degree of saturation, S = $\frac{G_s \cdot W}{e}$ = %
 Permeability at 27° C, k₂₇ = $\frac{k_{r27}}{\gamma_{27}}$ = cm/s

Tested by
 Designation



FORMAT FOR
LABORATORY TEST REPORT
(SOIL SAMPLES)
Clause 7.1.5 of ISO 9001 - 2015

DOC : GT-F-05-19
Issue No. : 1
Page No. : 1 of 1
Page Rev. No. : 0

Approved by SBU Head : _____
Issued by management representative : _____
Effective Date : 01.01.2018


LABORATORY TEST REPORT (FOR SOIL SAMPLE)

PROJECT NAME : _____
PROJECT CODE : _____
TABLE NO. : _____

SL. No.	Borehole	Lab Sample No.	DETAIL OF SAMPLE		Soil Classification	Natural Moisture Content %	Natural dry density (gm/cc)	MECHANICAL ANALYSIS				CONSISTENCY LIMIT			DIRECT/ TRIAXIAL SHEAR TEST		Specific Gravity	Silt factor	Consolidation		UCC © Kg/cm ²	Free Swell in %	Remarks		
			Type of sample	Depth of Sample (m)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index(PI)	Cohesion 'c' (kg/cm ²)	Angle of internal friction (degree)			Cc	e0					
1																									
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									

Abbreviations :
NP-Non-Plastic
Direct Shear Test
Triaxial Shear Test

Signature
Designation

 GEO-TECHNOLOGY SBU	Format For UCS Test Of Rock Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-20 Issue No. : 1 Page No. : 1 of 1 Page Rev. No. : Nil
Approved by SBU Head : Issued by management representative :		Effective Date : 01.01.2018


UCS TEST REPORT

Project : Location : Bore Hole/Pit ID : Depth : Lab Sample No. : Core piece no: Diameter of Specimen (in mm) Length of the Specimen (in mm) Type of Sample	Date : Lab Report No. : Ref. Standard/Method of Test IS 9143-1979 Area of Specimen : Strain Rate : PRF :
---	---

Si.No.	Specimen No.	Load in KN	Remarks
1			
2			
3			
4			
5			

$$UCS = \frac{\text{Load}}{C/S \text{ Area}}$$

Tested By :
Designation :

 GEO-TECHNOLOGY SBU	Format For Point Load Strength index of Rock Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-21 Issue No. : 1 Page No. : 1 of 1 Page Rev. No. : Nil
Approved by SBU Head: Issued by management representative:		Effective Date : 01.01.2018

POINT LOAD STRENGTH INDEX TEST REPORT

Project : Location : Bore Hole/Pit ID : Depth : Lab Sample No. :	Date : Lab Report No. : Ref. Standard/Method of Test <p style="text-align: center;">IS 8764-1998</p> Area of Specimen :
---	--

Diameter of Specimen (in mm)
Length of the Specimen (in mm)
Core piece no:

Si.No.	Specimen No.	Failure Load in KN	Remarks
1			
2			
3			
4			
5			

$$IS_{(50)} = \frac{P}{D \times D}$$

Where :


IS(50) = Point load strength index (for the standard core size) in MN/m² (Kgf/cm²)

P = Failure load in KN (Kgf)



D = Core diameter in mm

D* = Standard core diameter (50mm)

Tested By :
Designation :

 RITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format For Dry & Bulk Density, and moisture content Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-22 Issue No. : 1 Page No. : 1 of 1 Page Rev. No. : Nil	
Approved by SBU Head : _____ Issued by management representative : _____		Effective Date : 01.01.2018	
<h3>DRY & BULK DENSITY, AND WATER ABSORPTION TEST REPORT</h3>			
Project : _____ Location : _____ Bore Hole/Pit ID : _____ Depth : _____ Lab Sample No. : _____		Date : _____ Lab Report No. : _____ Ref. Standard/Method of Test IS 13030-1991 IS 1124-1974	
S.No.	Description	Test-1	Test-2
1	Determination No.		
2	Wt. of wet sample (gm)		
3	wt. of mercury displaced by wet samples+cont wt. (gm)		
4	Wt. of empty cont. (gm)		
5	Wt. of mercury displaced(gm)		
6	Volume of wet sample		
7	Wt. of dry sample(gm)		
8	Water content in % =		
	Wt. of wet sample-wt of dry sample/wt of dry sample X 100		
9	$Y_b = \frac{\text{wt of wet sample}}{\text{volume of wet sample}}$ (in gm/cc)		
10	$Y_d = \frac{Y_b}{1+w/100}$ (in gm/cc)		

Tested By : _____
 Designation : _____

 RITES <small>THE INFRASTRUCTURE PEOPLE</small>	Format For Specific Gravity Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-23 Issue No. : 1 Page No. : 1 of 1 Page Rev. No. : Nil
GEO-TECHNOLOGY SBU	Approved by SBU Head :  Issued by management representative :	Effective Date : 01.01.2018



SPECIFIC GRAVITY

Project :	Date :
Location :	Lab Report No. :
Bore Hole/Pit ID :	Ref. Standard/Method of Test
Depth :	IS CODE: 1122
Lab Sample No. :	

S.No.	Description	Test-1	Test-2
1	Determination No.		
2	Beaker No.		
3	Temperature °C		
4	Wt. of Beaker (W1) in gm		
5	Wt. of Dry sample (W2) in gm		
6	Wt. of Beaker+Water (W3) in gm		
7	Wt. of Beaker+water+Sample (W4) in gm		
8	Specific Gravity $G = W2 / (W2) - (W4 - W3)$		

Specific Gravity =

Tested By :
Designation :

 RITES <small>THE INFRASTRUCTURE PEOPLE</small> GEO-TECHNOLOGY SBU	Format For Slake Durability Index of Rock Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-24 Issue No. : 1 Page No. : 1 of 1 Page Rev. No. : Nil
Approved by SBU Head :  Issued by management representative :		Effective Date : 01.01.2018



Slake Durability Index Test Report

Project :	Date :
Location :	Lab Report No. :
Bore Hole/Pit ID :	Ref. Standard/Method of Test
Depth :	IS 10050-1981
Lab Sample No. :	Rotation Period = 10 min
Revolution of Drum : 20 rev/min	Water Temp:

Sr.No	Round I		Round II		Slake Durability index in % Id2=D/A x100
	A	B	C	D	
	Oven dried weight of rock specimen before test	Weight of oven dry rock specimen after test	Weight of wet rock specimen before test	Weight of oven dry rock specimen after test	
1					
2					
3					

Slake Durability :

Tested By :
Designation :


 GEO-TECHNOLOGY SBU	Format for Triaxial Shear Test of Rock Clause 7.1.5 of ISO 9001-2015	DOC : GT-F-05-25 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative : 		Effective Date : 01.01.2018

Triaxial Shear Test

Project : _____ **Date :** _____
Location : _____ **Lab Report No. :** _____
Borehole/Pit ID : _____ **Ref. Standard/Method of Test**
Depth : _____ **IS 13047-1991**
Lab Sample No. : _____ **Area of Specimen :** _____
Core piece No. : _____ **Strain Rate :** _____
Diameter of Specimen (in mm)
Length of the Specimen (in mm)
Type of Sample

Sl. No.	Specimen No.	Confining Pressure (kg/cm ²)	Load (KN)	Remarks
1				
2				
3				
4				
5				

Signature
Designation



 GEO-TECHNOLOGY SBU	Format for Laboratory testing Schedule (For Rock Sample) Clause 7.1.5 of ISO 9001 - 2015	DOC : GT-F-05-26
		Issue No. : 1
		Page No. : 1 of 1
		Page Rev. No. : Nil
Approved by SBU Head : issued by management representative :		Effective Date : 01.01.2018

LABORATORY TESTING SCHEDULE (FOR ROCK SAMPLE)

PROJECT NAME :
 PROJECT CODE :



Si. No.	Chainage	Core piece No.	Core Length (m)	Borehole No.	Typr Of rock	Water absorption	Bulk Density	Dry Density	Specific Gravity	UCS	Slake Durability	Point Load Index	Triaxial Shear	Remarks
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														

Signature
 Designation

 GEO-TECHNOLOGY SBU	Format for List of Equipment (ISO 9001-2015)	DOC : GT-F-05-28 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative : 		Effective Date : 01.01.2018



Sr. No.	Equipment ID No.	Equipment Name	Range and LC	Used for	Frequency of Calibration	Remarks

Signature
Designation

 GEO-TECHNOLOGY SBU	Format for List of laboratories (ISO 9001-2015)	DOC : GT-F-05-29 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative : 		Effective Date : 01.01.2018

Sr. No.	Name of laboratory	Address	Contact person and Phone No.	Facilities of Calibration

Signature
Designation



 GEO-TECHNOLOGY SBU	Format for Calibration Register (ISO 9001-2015)	DOC : GT-F-05-30 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative :		<div style="text-align: center;"></div> Effective Date : 01.01.2018

1. PARTICULARS OF THE EQUIPMENT :
2. IDENTIFICATION NUMBER, IF ANY :
3. CALIBRATION FREQUENCY :
4. SOURCE OF CALIBRATION : INTERNAL/EXTERNAL

SI. No.	DATE OF CALIBRATION	STATUS	CALIBRATION	ERROR TO BE CONSIDERED	SIGNATURE

Signature
Designation

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 GEO-TECHNOLOGY SBU	Format for Instrument History Card (ISO 9001-2015)	DOC : GT-F-05-31 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative : 		Effective Date : 01.01.2018

Instrument No. :

Instrument Name :



Used for :

Manufacturer :

Calibration frequency :

Sr.. No.	Date	Activity Done Repair/Calib	Calib Report No.	Source of Repair/Calib	Status	Sig.


**Signature
Designation**

 <p>GEO-TECHNOLOGY SBU</p>	<p>Format for Work Instruction for Calibration of Measuring Cylinder (ISO 9001-2015)</p>	<p>DOC : GT-W-05-01 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil</p>
<p>Approved SBU Head : Issued by Management Representative :</p> 		<p>Effective Date : 01.01.2018</p>

WORK INSTRUCTION FOR CALIBRATION OF MEASURING CYLINDER

<p>Apparatus</p>	<p>Water, cylinder (A) to be calibrated, calibrated cylinder (B) of similar of higher capacity, water bottle.</p>
<p>Experiment</p>	<p>Calibration of measuring cylinder.</p>
<p>Procedure</p>	<p>Take cylinder 'B' and fill with water up to capacity of 'A' say 1000 ml. Transfer this solution to empty cylinder 'A' is to be calibrated. Now measure the level of water in cylinder to be calibrated.</p>
<p>Observation and result</p>	<p>If the level of water in cylinder to be calibrated is same as it is in calibrated cylinder and there is no water left in cylinder 'B' the there is no correction to be applied.</p> <p>If some water in cylinder 'B' remains after filling cylinder A up to the 1000 ml mark, the amount of water which remains in B is noted and gives the -ve correction.</p> <p>If no water in cylinder 'B' remains and cylinder A could also not be filled up to the 1000 ml mark, the amount of water which is needed to fill A is noted and gives the +ve correction.</p> <p>Corrections are to be applied as per calibration test report GT-F-07-20 .</p>

Signature
Designation

 GEO-TECHNOLOGY SBU	Format for Thermometer Calibration (ISO 9001-2015)	DOC : GT-W-05-02 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative :		Effective Date : 01.01.2018

CALIBRATION TEST REPORT

Ref. No. : _____ **Date :** _____
Report No. : _____ **Identification :** _____
Date of Calibration : _____ **Mark :** _____
Next Calibration due : _____
Capacity : _____



Description

S. NO.	Name of Test	Temperature on Calibrated Thermometer (A)	Temperature Thermometer to be calibrated (B)	Correction (A-B)
1.	GLASS THERMOMETER 0-250°	250°C		
		200°C		
		150°C		
		100°C		
		50°C		
		0°C		

Linear correction is to be applied for intermediate temperature values.

SPECIAL REMARKS

Signature
Designation

 GEO-TECHNOLOGY SBU	Format for Test result dispatch receipt Clause 7.1.5 of ISO 9001-2015	Doc : GT-W-05-03 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative : 		Effective Date : 01.01.2018

TEST RESULT DISPATCH RECEIPT

Date :-

Sub : Receipt of Laboratory test results of soil/rock samples.



Kindly receive the following test results from GT lab at ROC Gurgaon.

Project Name :-

Project Code :

Description :-



Signature
Designation

 GEO-TECHNOLOGY SBU	Format for List of Maintenance Agencies Clause 7.1.5 of ISO 9001-2015	DOC : GT-W-05-04 Issue No. : 01 Page No. : 1 of 1 Page Rev. No. : Nil
Approved SBU Head : Issued by Management Representative : 		Effective Date : 01.01.2018

Sl. No.	Name of Maintenance Agencies	Address	Contact person and Phone No.	Remarks

Signature
Designation

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 GEO-TECHNOLOGY SBU	Format for Note for Raising Invoice (Clause 7.5 of ISO 9001:2015)	DOC : GT-F-4-01 Issue No. : 02 Page No. : 1 of 1 Page Rev. No.: 00
Approved by SBU Head:  Issued by Management Representative :		Effective Date :01.01.2018

FORMAT FOR RAISING INVOICE

PROJECT FILE CODE :		
1.	SBU :	
2.	Wing :	
3.	Project Name :	
4.	Project Code :	
5.	Client Name & Address :	
6.	Total Value of the Project	
7.	Stage of the Project for which Bill is to be raised :	
8.	Reference Document of Deliverables of the stage :	
9.	Billing till date (for information only)	
10.	Present invoice amount	Rs.
11.	Service Tax (5% of item no. 7) :	Rs.
12.	Total Amount :	Rs.

Forwarded to Dy. GM (Accounts) through GGM (GT) for raising the invoice.



Signature of Project Co-ordinator

Name of Project Co-ordinator

APPROVING AUTHORITY

GM(GT)

DGM (Accounts)

 THE INFRASTRUCTURE PEOPLE GEO-TECHNOLOGY SBU	Format for Verifying Sub-consultant's / Sub-contractor's Bill (Clause 7.5 of ISO 9001:2015)	DOC : GT-F-4-02 Issue No. : 02 Page No. : 1 of 1 Page Rev. No.: 00
Approved by SBU Head:  Issued by Management Representative:		Effective Date 01.01.2018

1.	SBU	G.T.
2.	Wing	G.T.
3.	Project Name	
4.	Project Code	
5.	Sub-consultant's Name & Address	
6.	Total Duration of the Sub-consultancy	
7.	Total Value of the Sub-consultancy	Rs.
8.	Stage period of the work for which the Bill is to be passed	
9.	Reference Document of Deliverables of the stage	
10.	Amount to be Passed	Rs.

Verified that the work has been completed satisfactorily on time by the Sub-consultant

Signature of Project Co-ordinator

Name of the Project Co-ordinator



Dated :

APPROVING AUTHORITY



GM (GT)

DGM (Accounts)

MASTER COPY



 GEO-TECHNOLOGY SBU	Format for Cost & Profit Analysis (Clause 7.5 of ISO 9001:2015)	DOC : GT-F-4-03 Issue No. : 02 Page No. : 1 of 2 Page Rev. No. : 00
Approved by SBU Head :  Issued by Management Representative :		Effective Date:01.01.2018

ITEMS	TOTAL AMOUNT
DIRECT EXPENDITURE <ul style="list-style-type: none">- Direct Staff Cost- Travel Expenses- Consultants- External Procurements- Cost of sales (Trading activities only)- Lease & Hire charges- Other Direct Cost	
INDIRECT EXPENDITURE <ul style="list-style-type: none">- Depreciation & Asset utilisation- SBU overheads- Project office overheads- Internal Interest charges	

 <p>RITES THE INFRASTRUCTURE PEOPLE GEO-TECHNOLOGY SBU</p>	<p>Format for Cost & Profit Analysis (Clause 7.5 of ISO 9001:2015)</p>	<p>DOC : GT-F-4-03 Issue No. : 02 Page No. : 2 of 2 Page Rev. No. : 00</p>
<p>Approved by SBU Head :  Issued by Management Representative :</p>		<p>Effective Date:01.01.2018</p>



<p>ADD</p> <ul style="list-style-type: none"> - Corporate Overheads - Profits - Service Tax - Other Taxes 	
<p>TOTAL</p>	
<p>TENDER FIGURE</p>	

Signature

	PROCEDURE FOR Monitoring, measurement, analysis and evaluation (Clause 9.1 of ISO 9001:2015)	DOC: GT/P/6 Issue No.: 01 Page 1 of 2 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		

- | | | | |
|----|------------------------|---|--|
| 1. | Purpose | : | To develop a procedure for effective presentation of data using appropriate statistical tools in order to take up review and associated improvement. |
| 2. | Scope | : | Applicable to various undertaken by GT. |
| 3. | Overall Responsibility | : | Concerned PC/MR |

Sl. No.	Activity	Description	Responsibility	Ref. Document
4.1	Data analysis	<p>Data analysis shall be carried out in following areas to review the outputs and take appropriate decision.</p> <p>a) Customer satisfaction index. b) Non conformities observed. c) Samples tested. d) Soil status report etc.</p> <p>After conduct of each internal/external quality audit a bar chart for each activity/project shall be prepared indicating total number of Non conformances observed and closed. This shall be put up to SBU Head prior to MRM.</p> <p>The Laboratory shall prepare a data for total number of samples received and number of samples tested (including break up of tests). The status shall be put upto SBU Head every month.</p> <p>The status of the soil tested in each area for a specific project)</p>		

	PROCEDURE FOR Monitoring, measurement, analysis and evaluation (Clause 9.1 of ISO 9001:2015)	DOC: GT/P/6 Issue No.: 01 Page 2 of 2 Page Rev.No.: Nil
Approved By: SBU Head Effective Date: :01.01.2018		

Sl. No.	Activity	Description	Responsibility	Ref. Document
		shall be compiled and presentation made through pie chart to indicate %age composition of the soil in the work area as per the drilling/tests conducted. The status details shall be kept in respective project file after completion of drilling.		

5. Distribution

SBU Head
 All Project Co-ordinatnators
 MR



FORMAT FOR LIST OF RISKS
(Clause 6.1 of ISO 9001:2015)

DOC : C/F/09-1

Issue No. 01

Approved By: DF, Chairman Steering Committee

Page 1 of 2

Effective Date:01.01.2018

Page Rev.No. Nil

LIST OF RISKS

SBU : GT

PERIOD :

DATE:

Risk No. SBU-R-	Risk Description	RPN	Category (Significant / Non significant)	Remarks
SR-1	Time Over run on the initial contractual commitment	6	Significant	
SR-2	Cost overrun	9	Significant	
SR-3	Non availability of sufficient skilled staff	9	Significant	
R-1	Major Changes in requirements of customers & regulatory requirements leading to duplication of work.	2	Non Significant	
R-2	Client disputes on the deliverables	2	Non Significant	
R-3	Unresponsive client on physical/ financial closure	4	Non Significant	
R-4	Unauthentic data or information supplied by client	2	Non Significant	
R-5	Dormant projects	1	Non Significant	
R-6	Increased competitive bidding instead of earlier awarded works on nomination basis	4	Non Significant	
R-7	Non fulfilment of contractual obligations by client	1	Non Significant	
R-8	Inaccurate submission of information by the contractor/ sub contractor	1	Non Significant	
R-9	Contractual conditions do not cater to major design changes	3	Non Significant	
R-10	Wrong estimates in new project cost	2	Non Significant	
R-11	Error in estimation of project description-Scope of Project	2	Non Significant	
SR-4	Loss of business because of high value estimates in project bids	6	Significant	
R-12	Non fulfilment of contractual obligations by the contractor	1	Non Significant	
R-13	Delayed response from other SBUs of RITES	4	Non Significant	
R-14	Lack of availability of sufficient fund at Client's end	2	Non Significant	
SR-5	Non compliance to Safety requirements while working at site	9	Significant	
R-15	Unplanned Exit of experienced & trained manpower	2	Non Significant	



FORMAT FOR LIST OF RISKS
(Clause 6.1 of ISO 9001:2015)

DOC : C/F/09-1

Issue No. 01

Approved By: DF, Chairman Steering Committee

Effective Date:01.01.2018

Page 2 of 2

Page Rev.No. Nil

Risk No. SBU-R-	Risk Description	RPN	Category (Significant / Non significant)	Remarks
R-16	Blacklisting/ debarring by a client	3	Non Significant	
SR-6	Due to inadequate planning of client, GT investigation attributes to inadequate investigations for design & delay in project execution	6	Significant	
SR-7	Non performance of quality work lead to geotechnical failures	6	Significant	
SR-8	Non availability of domain specific experts	6	Significant	
SR-9	Selection of agencies through tendering for specific geo-tech investigations	6	Significant	



- Note: 1. Risks for the SBUs are numbered as SBU-R-1, SBU-R-2, -----
2. Significant risks of the SBU are numbered as SBU-SR-1, SBU-SR-2. -----
where SBU in the above nomenclature stands for the acronym of SBU like Expo, MSM, UT etc.
3. For reference to risk assessment procedure, refer to Corporate Procedure C/P/09

Names & Signatures of SBU Risk Assessment Team :

- 1) Sh.ANIL KHANNA GGM/GT
- 2) Sh..S.MADAN JGM/GT
- 3) Sh.S.K ASTHANA JGM/GT

Reviewed & Endorsed by SBU Head

(Signature)

	FORMAT FOR RISK ASSESSMENT (Clause 6.1 of ISO 9001:2015)	DOC : C/F/09-2 Issue No. 01 Page 1 of 2 Page Rev.No. Nil
	Approved By: DF, Chairman Steering Committee  Effective Date:01.01.2018	

RISK ASSESSMENT

SBU :

PERIOD :

DATE:

Risk No.	Risk Description	Impact Rating (R)	Probability Rating (P)	RPN ³ (RxP)	Significant / Non Significant ⁴
SBU-R- SR-1	Time Over run on the initial contractual commitment	2	3	6	Significant
SR-2	Cost overrun	3	3	9	Significant
SR-3	Non availability of sufficient skilled staff	3	3	9	Significant
R-1	Major Changes in requirements of customers & regulatory requirements leading to duplication of work.	2	1	2	Non Significant
R-2	Client disputes on the deliverables	2	1	2	Non Significant
R-3	Unresponsive client on physical/ financial closure	2	2	4	Non Significant
R-4	Unauthentic data or information supplied by client	2	1	2	Non Significant
R-5	Dormant projects	1	1	1	Non Significant
R-6	Increased competitive bidding instead of earlier awarded works on nomination basis	2	2	4	Non Significant
R-7	Non fulfilment of contractual obligations by client	1	1	1	Non Significant
R-8	Inaccurate submission of information by the contractor/ sub contractor	1	1	1	Non Significant
R-9	Contractual conditions do not cater to major design changes	3	1	3	Non Significant
R-10	Wrong estimates in new project cost	2	1	2	Non Significant
R-11	Error in estimation of project description-Scope of Project	2	1	2	Non Significant
SR-4	Loss of business because of high value estimates in project bids	2	3	6	Significant
R-12	Non fulfilment of contractual obligations by the contractor	1	1	1	Non Significant
R-13	Delayed response from other SBUs of RITES	2	2	4	Non Significant
R-14	Lack of availability of sufficient fund at Client's end	2	1	2	Non Significant
SR-5	Non compliance to Safety requirements while working at site	3	3	9	Significant



FORMAT FOR RISK ASSESSMENT
(Clause 6.1 of ISO 9001:2015)

DOC : C/F/09-2

Issue No. 01

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Page Rev.No. Nil

Approved By: DF, Chairman Steering Committee

Effective Date:01.01.2018

Risk No. SBU-R-	Risk Description	Impact Rating (R)	Probability Rating (P)	RPN ³ (RxP)	Significant / Non Significant ⁴
R-15	Unplanned Exit of experienced & trained manpower	2	1	2	Non Significant
R-16	Blacklisting/ debaring by a client	3	1	3	Non Significant
SR-6	Due to inadequate planning of client, GT inv. attributes to inadequate investigations for design & delay in project execution	3	2	6	Significant
SR-7	Non performance of quality work lead to geotechnical failures	3	2	6	Significant
SR-8	Non availability of domain specific experts	3	2	6	Significant
SR-9	Selection of agencies through tendering for specific geo-tech investigations	3	2	6	Significant

- Note: 1. Risks for the SBUs are numbered as SBU-R-1, SBU-R-2, -----
2. Significant risks of the SBU are numbered as SBU-SR-1, SBU-SR-2. -----
(where SBU in the above nomenclature stands for the acronym of SBU like Expo, MSM, UT etc.)
3. Severity of impact and probability ratings are awarded the numeric value 1 to 3 for both the criteria and RPN is the multiplication of the values allotted to impact and probability of risk respectively.
4. The risks with RPN value of 6 and above signifies "SIGNIFICANT RISKS" which are to be reviewed towards deciding & taking the appropriate action towards mitigation of their adverse effect.
5. For reference to risk assessment procedure, refer to Corporate Procedure C/P/09.

Names & Signatures of SBU Risk Assessment Team:

- 1) Sh.ANIL KHANNA GGM/GT
- 2) SH.S.MADAN JGM/GT
- 3) SH.S.K ASTHANA JGM/GT

Reviewed & Endorsed by SBU Head

(Signature)



FORMAT FOR LIST OF SIGNIFICANT RISKS & CONTROL PLAN

(Clause 6.1 of ISO 9001:2015)

DOC : C/F/09-3

Issue No. 01

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Page Rev.No. Nil

Approved By: DF, Chairman Steering Committee

Effective Date:01.01.2018

LIST OF SIGNIFICANT RISKS WITH CONTROL PLAN

SBU:

PERIOD:

DATE:

Risk No.	Risk Description	RPN (initial)	Action Plan (Control / Tolerate / Transfer/ Eliminate)	Action decided by Risk Assessment Team, Endorsed by SBU Head & Ratified during MRM	Responsibility	Target Completion date	Actual date of Completion	Residual risk value RPN (after 1 year of implementation)
SR-1	Time Over run on the initial contractual commitment due to -Unforeseen underground strata -Blockage of roads due to monsoons -Barrel jam during drilling -Strike by labours -non availability of Vehicle -Non availability of shifting equipments i. e Hydra,crane,tractor etc. -Repair/Spare parts at long distances.	6	Control	Regular reviews to control through: • bi-monthly site visits • at least 1 client interaction per quarter • deployment of adequate & competent manpower • monthly scrutiny of progress report • Review in MRM & also by Div Head. • Adequate backup and prior efforts to cater to these irregularities • Training of drilling staff in repair work of machine& pump.	Project Coordinator	continuous	continuous	

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FORMAT FOR LIST OF SIGNIFICANT RISKS & CONTROL PLAN
(Clause 6.1 of ISO 9001:2015)

DOC : C/F/09-3

Issue No. 01

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Page Rev.No. Nil

Approved By: DF, Chairman Steering Committee

Effective Date:01.01.2018

Risk No.	Risk Description	RPN (initial)	Action Plan (Control / Tolerate / Transfer/ Eliminate)	Action decided by Risk Assessment Team, Endorsed by SBU Head & Ratified during MRM	Responsibility	Target Completion date	Actual date of Completion	Residual risk value RPN (after 1 year of implementation)
SR-2	Cost overrun due to -Higher shifting charges in hilly terrains -Monopoly of labour suppliers -Longer time due to drilling in complex geological conditions -wear out drilling spares i.e bits,barrels etc -Higher charges due to scarcity of shifting equipments	9	Control	To the extent possible: <ul style="list-style-type: none"> Linking the offer submitted with Inflation to the extent possible. Review of Legal compliances & approval required in the Projects at the time of initiation of project & timely monitoring for legal approvals & compliance. Building-in the terms & conditions in the contract to ensure the responsibility of obtaining licences/clearances/authorizations from authorities by the client. Delay in obtaining above approvals etc not to be on RITES account Review of Income & expenditure at different stages of projects through MIS/PCDO & resulting re-deployment of manpower, automation etc to improve efficiency Prior arrangements(approvals) & fixing an agency for shifting & labour. 	Project Coordinator	continuous	continuous	

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SR-3	Non availability of sufficient skilled staff due to site in remote and different areas. -Non availability of permanent labours.	9	Control	<ul style="list-style-type: none"> Annual review of manpower & training needs specially in emerging areas of business. Regular Identification of Training needs, providing training and need based induction of employees with specialization in required competencies. 	SBU Head Project Coordinator	continuous	continuous	
SR-4	Loss of business because of high value estimates in project bids -Higher overheads -higher mandays costs. -Influx of more private players/companies	6	Control/ Tolerate	<ul style="list-style-type: none"> Tolerate for small business as the competition with small players with low overheads Developing in new areas of business which have less competition or large professional players Efficient deployment of manpower & mobilization of manpower/other resources to the site of operations (cutting down travel, stay & temporary deployments) enhanced monitoring with more deployment of lower level executives in assignments 	SBU Head Project Coordinator	continuous	continuous	

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SR-5	<p>Non compliance to Safety requirements while working at site.</p> <p>-No permanent labour and hence no labour laws formalities are met at site.</p> <p>-no defined labour hiring formalities/rules in RITES.</p> <p>-No permanent agency for supply of labour.</p>	9	Control	<ul style="list-style-type: none"> Regular Safety Training of employees, Displaying safety instructions & compliance to safety requirements at site. Periodic visit /check at site for ensuring the follow-up of instruction for general safety, wearing of PPEs as well as compliance to applicable contractual & legal requirements. Reiteration of safety instruction by Site in charge to all workers before start of day work. 	Project Coordinator	continuous	continuous	

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SR-6	Due to inadequate planning of client, GT inv. attributes to inadequate investigations for design & delay in project execution.	6	Control	<ul style="list-style-type: none"> Client should be educated through knowledge sharing, pre-bid discussions and power point presentation, if required. 	Project Coordinator	continuous	continuous	
SR-7	Non performance of quality work lead to geotechnical failures.	6	Control	<ul style="list-style-type: none"> Concerned drilling staff should be regularly trained on quality objectives. 	Project Coordinator	continuous	continuous	
SR-8	Non availability of domain specific experts	6	Control	<ul style="list-style-type: none"> Routine induction of relative experts should be maintained. 	SBU Head	continuous	continuous	
SR-9	Selection of agencies through tendering for specific geo-tech investigations	6	Control	<ul style="list-style-type: none"> QCBS tendering should be preferred for selection of agencies 	Project Coordinator	continuous	continuous	


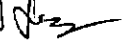

- Note:** 1. Risks for the SBUs are numbered as SBU-R-1, SBU-R-2, -----
 2. Significant risks of the SBU are numbered as SBU-SR-1, SBU-SR-2. ----- where SBU in the above nomenclature stands for the acronym of SBU like Expo, MSM, UT etc.
 3. On completion of the action decided, the risk assessment for the significant risks shall be carried out again to ensure that the RPN of residual risk

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- Reduces from the original value.
- 4. For reference to risk assessment procedure, refer to Corporate Procedure C/P/09.

Names & Signatures of SBU Risk Assessment Team :

- 1) Sh.ANIL KHANNA GGM/GT 
- 2) SH.S.MADAN JGM/GT 
- 3) SH.S.K ASTHANA JGM/GT 

Reviewed & Endorsed by SBU Head


(Signature)