

# **FIELD QUALITY PLAN FOR FGD CIVIL WORK**



## **BRBCL-NABINAGAR (4 X 250MW) FGD PACKAGE**

**NTPC DOC. NO. : 0270-109-QVC-G-001A, REV. NO.: 1**



**BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR - EASTERN REGION  
KOLKATA - 700091**

**BHEL Doc. No. : PP-QLY-1902-UT-QA-102  
REV. NO.: 1**

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PREPARED BY	<p><i>Arup Ratan Paul</i> अरुप रतन पाल / Arup Ratan Paul अधिकारी (गुणवत्ता) : Engineer (Quality) क्षेत्र : पूर्ब, उत्तर, दक्षिण, पश्चिम : BHEL : PSER : H.Q. मो. फ़ॉन : 033-2288-2288, मो. मोबाइल : 098333-09111 ई-मेल : DJ-911, SALT LAKE कोलकाता-700 091 KOLKATA-700 091</p> <p>ENGR./ QLY, BHEL- PSER</p>	APPROVED BY	<p><i>Seerattyje r</i></p> <p>HEAD / QLY, BHEL- PSER</p>
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ISSUED BY (SIGNATURE & DESIGNATION)	ENGR. / QLY, BHEL-PSER		



**BHARAT HEAVY ELECTRICALS LIMITED**  
POWER SECTOR - EASTERN REGION  
KOLKATA – 700091



FIELD QUALITY PLAN  
FOR  
FGD CIVIL WORK

QP NO.: PP-QLY-1902-UT-QA-102  
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 <b>PSER-QUALITY</b>	<b>FIELD QUALITY PLAN FOR FGD CIVIL WORK</b>	QP NO.: PP-QLY-1902-UT-QA-102	
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<b>RECORDS OF REVISION</b>			
<u>SL. NO.</u>	<u>REFERENCE OF SHEETS REVISED</u>	<u>REVISION NO. &amp; DATE</u>	<u>REMARKS</u>
01	All	0, Dtd.: 03/03/2020	Document prepared as per the owners technical specifications
02	2,3,7,8 & 11	1, Dtd.: 09/03/2020	Document revised as per comments from NTPC
* * * * *			

 <b>PSER-QUALITY</b>	<b>FIELD QUALITY PLAN FOR FGD CIVIL WORK</b>	QP NO.: PP-QLY-1902-UT-QA-102
		REV. NO.: 1
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<b>DOCUMENTS REFERRED</b>		
S. NO.	Reference Document	Issuing Authority
-	-	-

PSER-  
QUALITY

**AUTHORISATION FOR DIFFERENT CATEGORY OF  
CONSTRUCTION/ ERECTION CHECKS &  
NONCONFORMITY DISPOSITION**



A Maharatna Company

Category of Check	Inspection Authority	Witness Authority	Accepting Authority	Surveillance By NTPC	Nonconformity Disposition Authority
'A' Customer Hold Point	BHEL Erection Engineer & QAE	NTPC FQA in association with Executing Engineer.	NTPC FQA	Head (FQA)	BHEL ENGG Center/ Head (Quality): PS-ER
'B' Customer Hold Point	BHEL Erection Engineer	NTPC Executing Engineer	NTPC Executing Engineer	FQA Engineer	BHEL ENGG Center/ Head (Quality): PS-ER
'C'	BHEL Erection Engineer	BHEL Erection Engineer	BHEL Head of Erection	Another Engineer authorized by Head (executing Department)	BHEL ENGG Center/ Head (Quality): PS-ER

**LEGEND for TYPE OF CHECK:**

R – Record Verification, V – Visual Check, P – Physical Check, M – Measurement, T – Test.

**Note:**

- Disposition authority for all categories of checks shall be as under:  
Product nonconformities: BHEL Engineering Center.  
Process/System nonconformities: BHEL, Head (Quality): PS Region.
- Wherever log sheet is not called for, suitable record shall be maintained in logbook/protocol.
- In case of nonconformity, accepting authority shall ensure the disposition of the nonconformity before acceptance, and disposition shall be reflected in the log sheets/protocols.
- QAE shall witness 'A' category checks. He is also authorized to carry out surveillance in any of B & C category of checks at his discretion.
- Concerned agencies shall ensure that instruments having valid calibration are only used for measurements.
- Quantum of check shall be 100% for all characteristics unless otherwise mentioned specifically in Field Quality Plan/ reference documents.



PSER-QUALITY

FIELD QUALITY PLAN  
FOR  
FGD CIVIL WORK

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## STATEMENT OF CHECKS

**Unit Capacity : 660 MW**

**System : FGD SYSTEM**

**Sub System : FGD CIVIL WORK  
(INCLUDING GYPSUM HANDLING SYSTEM & LIMESTONE HANDLING SYSTEM)**

**Area : GEO-TECH INVESTIGATION, FOUNDATIONS, EXCAVATION & FILL,  
SITE LEVELING, CONCRETE, ROAD, BUILDING ETC.**

### NOTE:

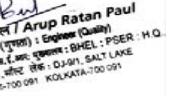
1. For checks where log sheets are not called for, suitable records should be maintained in the form of log book / protocols.
2. As an evidence of having carried out the work satisfactorily, a general purpose log sheet L-00 shall be maintained for all the checks.
3. Abbreviations used in the column "Type of check" are :  
  
R : Record Verification  
M : Measurement  
V : Visual
4. NDT, as applicable, shall be carried out by Qualified Personnel with compliance to Approved NDT procedures and Acceptance Norms, as per relevant standard.
5. Field Radiography, if applicable, shall be carried out in compliance with Local Statutory requirements and safety precautions by Approved Agency and the Agency carrying out RT shall be approved by Local Authorities.
6. Radiography Source handling and control procedure shall be established as per Local Statutory requirements and complied.
7. Preheating and Post Weld Heat treatment, as applicable, shall be in compliance with Approved Procedures.
8. Gauges and measuring Instruments, with valid calibration only shall be used
9. Cleaning, preservation and Painting of products shall be carried out as per Approved Painting Schedule.

FIELD QUALITY PLAN													
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)					
 <b>BHEL, PS:ER, KOLKATA</b>	<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>	REV. NO. : 1			PACKAGE: FGD SYSTEM PKG								
		DATE : 09/03/2020			CONTRACT NO. 0270-109								
		PAGE : 02 OF 25			MAIN CONTRACTOR BHEL, PS:ER, KOLKATA								
SI. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks		
1	2	3			4	5	6	7	8	9	D*		
1	<b>GENERAL REQUIREMENTS</b>										10		
A	Setting up of Field QA&QC laboratory, Availability of requisite laboratory set up and equipment in good working condition & duly calibrated, well before commencement of concerned activity			As agreed / required	B	Physical	Once prior to start of work and thereof monthly	Tech Specs and Const. Drawings	SR	✓	Functioning & calibration status of laboratory equipment in proper working condition to be verified on monthly basis		
B	Submission of QA & QC manpower deployment schedule and availability of manpower			As agreed / required	B	Physical	Manpower shall be deployed progressively as per the work front and discipline wise progress	Tech Specs and Const. Drawings		✓			
C	Sampling for testing of building materials, concrete admixture, concrete mix design etc.			As agreed / required	A	Physical	Once per each source	Tech Specs and Const. Drawings	SR/TR	✓	Test report along with the recommendations from Owner acceptable laboratories to be submitted to EIC for review and acceptance.		
D	Submission of monthly test reports/ data			As agreed / required	A	Physical	Monthly	Tech Specs and Const. Drawings	SR	✓			
E	Stacking and storage of construction materials and components at site			As per IS:4082	B	Physical	Random	Tech Specs and Const. Drawings, Manufacturer's guidelines and IS 4082	SR	✓			
2	<b>EXCAVATION AND FILLING IN FOUNDATION WORKS</b>												
	<b>Excavations-</b>												
2.1		Nature, type of soil/rock before and during excavations	As agreed / required	B	Visual	Random in each shift	Tech Specs and Const. Drawings	SR					
2.2		Initial ground level before start of excavations, shape, Dimensions of excavations & Side slope of final excavation and Final excavation levels.	As agreed / required	B	Measurement	100%	Tech Specs and Const. Drawings	SR	✓				
 <b>Arup Ratan Paul</b> अरुप रतन पाल : इंजीनियर (कॉलिंग) अधिकारी (फैक्ट्री) : BHEL-PS:ER-HQ क्र. नं. १२, अस्ट्रेलिया रोड, O.S.H, SALT LAKE ७०००१६, KOLKATA-100 016 MOBILE-700 091	<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR- Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate.					 A Maharatna Company For NTPC Use	NTPC DOC NO. : 0270-109-QVC-G-001A / R-1						
<b>Main-supplier</b>		Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					REVIEWED BY	APPROVED BY	APPROVAL SEAL				

### FIELD QUALITY PLAN

SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)			
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		DATE : 09/03/2020				CONTRACT NO.	0270-109				
		PAGE : 03 OF 25				MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA				
Sl. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks
1	2	3			4	5	6	7	8	9	D*
2.3	Excavation in Hard Rock- If required										
i		Receipt, Storage, accountability of Explosive	As agreed / required	B	Physical	Random in each week	Indian Explosive Act 1940/all statutory norms, Tech Specs and Const. Drawings	SR	<input checked="" type="checkbox"/>	Owner approved specialist blasting agency such as CMRI, NIRM shall be deployed at site for trial blasts, design blasts, blast vibration monitoring etc. Seismographs shall be deployed at site for monitoring of blast operation vibrations.	
ii		Execution of Blasting Operation	As agreed / required	B	Physical	Random in each shift	IS:4081, Tech Specs and Const. Drawings	SR	<input checked="" type="checkbox"/>		
iii		Submission of Blasting report to EIC	As agreed / required	B	Physical	Each blast	Tech Specs and Const. Drawings		<input checked="" type="checkbox"/>		
iv		Excavation in Hard Rock (Blasting Prohibited)	As agreed / required	B	Physical	100%	As per approved drawing/ scheme, Tech Specs and Const. Drawings	SR	<input checked="" type="checkbox"/>		
2.4	Fill/ Backfill -										
2.4.1	<b>Suitability of fill material</b>	Grain size analysis, Organic Matter, Liquid Limit, plastic limit, Shrinkage limit & Free Swell Index	As per IS: 2720	B	Physical	Once per each type of source or change of source subject to a min. of 2 samples	IS:2720 (Pt.IV), IS:2720 Pt.XXII, IS:2720 (Pt.XI)/relevant part, Tech Specs and Const. Drawings	SR/TR	<input checked="" type="checkbox"/>	Test report along with the recommendations regarding suitability of the fill material from Owner acceptable laboratories to be submitted to EIC for review and acceptance.	
2.4.2	<b>Standard proctor Test</b>	Optimum moisture content and max. dry density before fill	As per IS: 2720	A	Physical	One in every 10000 cum for each type and source of fill materials	IS 2720 (Pt.VII), Tech Specs and Const. Drawings	SR/TR	<input checked="" type="checkbox"/>		
2.4.3	<b>Degree Of Compaction Of Fill / Backfill</b>										
i		Dry density by core cutter method ---- OR---- Dry density in place by sand displacement method ----OR---- Any suitable method specified in IS 2720/Tech. Spec.	As per IS: 2720	A	Physical	I) For foundation fill/backfill one for every 10 foundations for each compacted layer.  ii) For area filling, one every 1000 SQM area for each compacted layer.	IS 2720 (Pt. XXIX) / IS 2720 (Pt. XXVIII) / IS 2720 relavant part, Tech Specs and Const. Drawings	SR/TR	<input checked="" type="checkbox"/>		
ii		Relative density (Density Index)	As per IS: 2720, balance oven etc.	A	Physical	----do---- (I) & (ii) above	IS 2720 (Pt. XIV), Tech Specs and Const. Drawings	SR/TR	<input checked="" type="checkbox"/>		
 <b>Arup Ratan Paul</b> <b>Engineer (Quality)</b> <b>BHEL - PS:ER, KOLKATA</b> <b>Mobile No. : 91-98301-02911</b> <b>Landline : 033-700 091</b>		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR - Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					 <b>A Maharatna Company</b>	NTPC DOC NO. : 0270-109-QVC-G-001A / R-1			
<b>Main-supplier</b>							<b>For NTPC Use</b>	<b>REVIEWED BY</b>	<b>APPROVED BY</b>	<b>APPROVAL SEAL</b>	

## FIELD QUALITY PLAN

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 BHEL, PS:ER, KOLKATA		SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION & FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.			REV. NO. : 1		PACKAGE:	FGD SYSTEM PKG		
					DATE : 09/03/2020		CONTRACT NO.	0270-109		
					PAGE : 04 OF 25		MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA		
Sl. No	Activity and operation	Characteristics / instruments		Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks
1	2	3		4	5	6	7	8	9	D*
3	RAW MATERIALS FOR CONCRETE									10
3.01	CEMENT									
i	Material	Physical and chemical properties as per relevant IS codes	As required/ agreed	A	Review of MTC/ test reports	for each manufacturing Week number	IS : 269/ IS:1489/ IS:455, Tech Specs and Const. Drawings	MTC	✓	To be procured from Owner approved source. Each consignment of cement shall be duly correlated with manufacturers TC.
ii		Testing of cement for Setting time (Initial & Final) and compressive strength	As per IS:4031	A	Physical	one for each manufacturing Week number	IS : 269/ IS:1489/ IS:455, Tech Specs and Const. Drawings	SR/Test Report	✓	If cement is stored more than 90 days in godown of contractor, same shall be retested for Setting time.& Comp. Strength
3.02	Coarse Aggregate									
i		Moisture content	IS:2386	B	Physical	To be done every day before start of work	IS : 456/IS : 383/IS: 2386 Part-III/Tech Spec	SR/LB	✓	During monsoon, frequency may be increased and accordingly water content in concrete will be adjusted.
ii		Sieve analysis, flakiness index, elongation index	IS:2386	B	Physical	One per 100 cum., or part thereof	IS: 2386 Part-I, IS:383 / Tech Spec	SR/LB	✓	
iii		Specific gravity, water absorption, Deleterious materials (coal & lignite, clay lumps, material finer than 75 micron sieve, soft fragment, shale, Total of % of all deleterious materials), Soundness	IS:2386	A	Physical	Once for each source & for every change of source	IS: 2386 Part-III, IS: 2386 Part-II, IS: 2386 Part-V, IS:456, IS:383/Tech Spec	SR/LB/ Test Report	✓	
iv		Alkali aggregate reactivity and Petrographic examination	IS 2386	A	Physical	-do-	IS: 2386 (Part-VII/VIII), IS:383 /Tech Spec/ASTM C-1260 / ASTM 1293	SR/LB/ Test Report	✓	The aggregate type (deleterious/innocuous result should be supported by petrographic examination)
v		Crushing value, abrasion value and impact value	IS:2386	A	Physical	-do-	IS:383, IS-2386 Part IV/Tech Spec	SR/LB/ Test Report	✓	
 Arup Ratan Paul / Arup Ratan Paul Engineer (Quality) : Executive (Quality) BHEL : PSER : H.Q. S. No. 1, R. No. 1, Sector 1, Salt Lake, Kolkata - 700 091 Mobile No. : 9833570091		LEGENDS :				* Records identified with tick (✓) shall be essentially included by supplier in QA documentation				NTPC DOC NO. : 0270-109-QVC-G-001A / R-1
		# Class A : Critical, Class B : Major, Class C : Minor				Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer				
		SR - Site Register, TR- Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate.				Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)				
Main-supplier										

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				DATE : 09/03/2020			CONTRACT NO.	0270-109					
				PAGE : 06 OF 25			MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA					
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1	2	3		4	5	6	7	8	9	D*	10		
4.2	CONCRETE												
i		4 Trial mixes to ascertain the workability and cube strength	After receiving the recommended mix design from specialist agency,	A	Physical	each mix proportion	Tech. Spec.	SR/LB	✓				
ii		Concrete Cube strength Test	IS:516	A	Physical	One set of 6 cubes per 50 Cum or part thereof for each grade of concrete per shift whichever is earlier.	IS:516, IS:456, Tech. Spec.	SR/LB/ Test Report	✓	Min. of 6 cubes for each mix, 3 specimen shall be tested at 7 days remaining 3 shall be for 28 days comp. Strength.			
iii		Workability - slump test	IS:1199	B	Physical	At the time of concrete pouring at site every two hrs.	IS:456/Tech. Spec.	SR/LB/ TR	✓				
		Water Cement Ratio		B	Physical	For each batch of concrete	As per approved Design Mix	SR/Batch slip	✓				
		Placement of concrete, Compacting, Curing	As required	B	Physical	At Random	IS:456, Period of curing as per IS 456	SR					
4.3	TEST / CHECK ON RCC STRUCTURE IN HARDENDED CONDITIONS (FOR CHECKES ON PILE REFER TO												
i		Visual inspection of concrete surface of all foundations just after removal of shuttering	As required	B	Visual	100%	As per Technical Specification	SR	✓				
		Dimensional check on finished structures & Dimensional tolerances	As required	B	Measurement	100%	As per IS:456/ tech. Specification.	SR/LB	✓				
i		position and alignment of embedded parts and inserts	--	B	Visual	100%	As per provisions and tolerances of equipment supplier, Tech Specs and Const. Drawings						
ii		Embedment of inserts in concrete shall be checked for gap if any using hammer for all dynamic foundations	Hammer	B	Physical	100%	As per Technical Specification	SR	✓	No hollow sound			
ii		Submission of grouting / repair methodology if concrete surface / position and alignment of embedded parts / inserts are found defective	--	B	Review and approval	once for each type of defect	As per provisions and tolerances, Tech Specs and Const. Drawings		✓				
 Arup Ratan Paul Engineer (Civil) BHEL, PS:ER, KOLKATA 9, B. R. D. Road, Salt Lake, Kolkata - 700 091 Mobile: 91-9833-08-0899		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR- Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					NTPC DOC NO. : 0270-109-QVC-G-001A / R-1						
Main-supplier							 A Maharatna Company For NTPC Use						
								REVIEWED BY	APPROVED BY	APPROVAL SEAL			

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1	2	3			4	5	6	7	8	9	D*	10	
iii		Core Test	IS:516	A	Physical	As required by Owner EIC.	As per IS:456, IS 516	SR/LB/ Test Report	✓	Compressive strength based on core test is required to be carried out in case of doubt regarding the grade of concrete used, either due to poor workmanship or based on the results of cube strength test as per 3.5 ii) above / discretion of EIC..			
iv		Rebound Hammer test	IS:13311	A	physical	as required by the Owner EIC	As per relevant / tech. Specification.	SR/LB	✓	This test may be carried out to assess the strength of concrete in case of non-critical and lightly loaded structures as the dispositions of EIC			
vi		Water Tightness Test of liquid retaining structure/ tanks	As required	A	Test	100%	IS:3370/ Tech. Specification	SR/LB	✓				
5	<b>REINFORCEMENT STEEL AND ITS PLACEMENT</b>												
i	Material	Physical and chemical properties as per relevant IS codes and Tech spec.	As agreed/ required	A	Review of MTC	Each batch/lot of delivery	As per IS 1786, IS 432, IS 1566, tech spec and cont. drawing	MTC	✓	To be procured from owner approved source.			
ii		Freedom from cracks surface flaws, Lamination & excessive rust.	As agreed / required	B	Visual	Random in each shift	IS: 1852, IS:432, IS:1786, Tech Specs and Const. Drawings	SR		To be checked at site. Steel collected from source should be free from excessive rust. To be stored as per Technical Specs.			
iii		Bar bending schedule with necessary lap, Spacers & Chairs	As agreed / required	B	Physical & Measurement	Random in each shift	Approved Drawings, Tech Specs and Const. Drawings, IS:2502	SR	✓				
iv		Acceptance - disposition of cage w.r.t. reference axes, cover, spacing of bars, spacers and chairs after the reinforcement cage is put inside the formwork	Measuring tape & as required	B	Visual & Measurement	Random in each shift*	IS 456, Tech Specs and Const. Drawings	SR	✓	* for foundations, frequency shall be Each foundation			
 <b>Arup Ratan Paul</b> <b>Engineer (Civil)</b> <b>BHEL, PS:ER, H.Q.</b> <b>8, 1st, 2nd, 3rd, 4th floors, 10th floor, D-91, SALT LAKE</b> <b>KOLKATA-700 091, KOLKATA-700 091</b>		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR- Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate.					NTPC DOC NO. : 0270-109-QVC-G-001A / R-1						
<b>Main-supplier</b>		Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					 <b>NTPC</b> A Maharatna Company	For NTPC Use			REVIEWED BY	APPROVED BY	APPROVAL SEAL

### FIELD QUALITY PLAN

SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)					
 BHEL, PS:ER, KOLKATA		<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>		REV. NO. : 1			PACKAGE:	FGD SYSTEM PKG					
				DATE : 09/03/2020			CONTRACT NO.	0270-109					
				PAGE : 08 OF 25			MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA					
SI. No	Activity and operation	Characteristics / instruments		Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks			
1	2	3		4	5	6	7	8	9	D*	10		
6.0	<b>FOUNDATION SYSTEM</b>												
	<b>SHALLOW FOUNDATIONS</b>												
i		Foundation casting - Layout, Shape, dimensions.	As required / agreed	B	Physical	Each foundation	As per technical specifications and construction drawings	SR	✓	lines and levels to be checked. Concrete Grade to be checked as per Mix Design			
7.0	<b>STAGING AND FORMS</b>												
7.01		Materials and accessories	As agreed / required	B	Visual	Once before start of work	As per relevant IS, Tech Specs and Const. Drawings	SR					
7.02		Soundness of staging, shuttering and scaffolding including application of mould oil / release agent	As agreed / required	B	Visual	Once before start of work	As per manufacturer's spec.and as per 3696,4014, 4990, Tech Specs and Const. Drawings	SR					
7.03		Acceptance of formwork before start of concreting : disposition w.r.t. reference axes, size, etc.	Measuring tape & as required	B	Physical / visual	Before start of each concreting	As per provisions and tolerances in IS 456, Tech Specs and Const. Drawings	SR	✓				
7.04	<b>SLIPFORM SHUTTERING</b>												
i		Submission of Slip form Work system to be used	-	B	Submission	Before Commencement of work	As per specifications	SR					
ii		Check for the Slip form shutters	As required	B	Physical	Before Commencement of work	As per specifications	SR		Check for water level system, Controls, Walkways etc.			
iii		Details Positions and arrangement of Jack rods	-	B	Approval	Before commencement of work	As per specifications	SR		Submitted to EIC for approval			
iv		Details of Proposed arrangement for continuous readings	-	B	Approval	Before Commencement of work	As per specifications	SR		Submitted to EIC for approval			
v		Check for All type of openings, Chases, Fixing of Blocks and similar built-up features	As required	B	Physical	100% during execution	Construction Drawings and specifications	SR		No any type of openings ,chases , blocks other than shown in the construction drawings or approved by EIC shall be executed in the concrete.			
vi		Details of proposed method for concrete curing and protection	-	B	Approval	Before Commencement of work	Construction Drawings and specifications	SR		Submitted to EIC for approval			
vii		Check of Concrete Curing and Protection	As required	B	Physical	At Random	Construction Drawings and specifications	SR		Concrete shall not remain uncured for period longer than 12 hours			
 Arup Ratan Paul / Arup Ratan Paul Engineer (Civil) BHEL, PS:ER, KOLKATA-100016 91-33-2431-0000, 91-33-2431-0001, 91-33-2431-0002, 91-33-2431-0003, 91-33-2431-0004, 91-33-2431-0005, 91-33-2431-0006, 91-33-2431-0007, 91-33-2431-0008, 91-33-2431-0009, 91-33-2431-0010, 91-33-2431-0011, 91-33-2431-0012, 91-33-2431-0013, 91-33-2431-0014, 91-33-2431-0015, 91-33-2431-0016, 91-33-2431-0017, 91-33-2431-0018, 91-33-2431-0019, 91-33-2431-0020, 91-33-2431-0021, 91-33-2431-0022, 91-33-2431-0023, 91-33-2431-0024, 91-33-2431-0025, 91-33-2431-0026, 91-33-2431-0027, 91-33-2431-0028, 91-33-2431-0029, 91-33-2431-0030, 91-33-2431-0031, 91-33-2431-0032, 91-33-2431-0033, 91-33-2431-0034, 91-33-2431-0035, 91-33-2431-0036, 91-33-2431-0037, 91-33-2431-0038, 91-33-2431-0039, 91-33-2431-0040, 91-33-2431-0041, 91-33-2431-0042, 91-33-2431-0043, 91-33-2431-0044, 91-33-2431-0045, 91-33-2431-0046, 91-33-2431-0047, 91-33-2431-0048, 91-33-2431-0049, 91-33-2431-0050, 91-33-2431-0051, 91-33-2431-0052, 91-33-2431-0053, 91-33-2431-0054, 91-33-2431-0055, 91-33-2431-0056, 91-33-2431-0057, 91-33-2431-0058, 91-33-2431-0059, 91-33-2431-0060, 91-33-2431-0061, 91-33-2431-0062, 91-33-2431-0063, 91-33-2431-0064, 91-33-2431-0065, 91-33-2431-0066, 91-33-2431-0067, 91-33-2431-0068, 91-33-2431-0069, 91-33-2431-0070, 91-33-2431-0071, 91-33-2431-0072, 91-33-2431-0073, 91-33-2431-0074, 91-33-2431-0075, 91-33-2431-0076, 91-33-2431-0077, 91-33-2431-0078, 91-33-2431-0079, 91-33-2431-0080, 91-33-2431-0081, 91-33-2431-0082, 91-33-2431-0083, 91-33-2431-0084, 91-33-2431-0085, 91-33-2431-0086, 91-33-2431-0087, 91-33-2431-0088, 91-33-2431-0089, 91-33-2431-0090, 91-33-2431-0091, 91-33-2431-0092, 91-33-2431-0093, 91-33-2431-0094, 91-33-2431-0095, 91-33-2431-0096, 91-33-2431-0097, 91-33-2431-0098, 91-33-2431-0099, 91-33-2431-0100, 91-33-2431-0101, 91-33-2431-0102, 91-33-2431-0103, 91-33-2431-0104, 91-33-2431-0105, 91-33-2431-0106, 91-33-2431-0107, 91-33-2431-0108, 91-33-2431-0109, 91-33-2431-0110, 91-33-2431-0111, 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### FIELD QUALITY PLAN

SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)					
 BHEL, PS:ER, KOLKATA		SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION & FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.		REV. NO. : 1			PACKAGE:	FGD SYSTEM PKG					
				DATE : 09/03/2020			CONTRACT NO.	0270-109					
				PAGE : 09 OF 25			MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA					
Sl. No	Activity and operation	Characteristics / instruments		Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks			
1	2	3		4	5	6	7	8	9	D*	10		
viii		Check for Sliding Operation & Monitoring of Sliding Portion	As required	B	Physical	Each Sliding	As per specifications	SR			Rate of Sliding, Delays in sliding, Discontinuity or stop start sliding to be checked		
ix		Progress Height	As required	B	Physical	Once per shift	As per specifications	SR			To be recorded in tabular form and on graphs immediately after each monitoring		
x		Centre line in relation to the centres at the base	As required	B/A	Physical	Min. once per shift/ once per day	As per specifications	SR		✓	To be recorded in tabular form and on graphs immediately after each monitoring		
xi		Internal wall faces in relation to the concrete at the base	As required	B	Physical	Once per shift	As per specifications	SR			To be recorded in tabular form and on graphs immediately after each monitoring		
xii		Wall thickness	As required	B	Physical	Once per shift	As per specifications	SR		✓	To be recorded in tabular form and on graphs immediately after each monitoring		
xiii		Twist	As required	B	Physical	Once per shift	As per specifications	SR		✓	To be recorded in tabular form and on graphs immediately after each monitoring		
xiv		Verticality of the structure	Optical Theodolite	B	Physical	Every day in morning	As per specifications	SR			To be recorded in tabular form and on graphs immediately after each monitoring		
xv		Check for Tolerances for chimney construction	As required	B	Physical	For every day monitoring	As per specifications	SR					
8	EMBEDDED PART (INCLUDING LAYING OF RAILS & ANCHOR FASTENERS)												
i		Position / alignment / levels of embedded parts / bolt hole / pipe sleeves / rails / PVC pipes / etc	As agreed / required	B	Physical/ measurement	100%	As per drawing, Tech Specs and Const. Drawings	SR/ Protocol		✓	Exposed surface of the embedded parts other than holding down bolts are to be painted with as per technical specifications		
 अरुप रतन पाल / Arup Ratan Paul अधिकारी (FQA) : Engineer (Quality) क्र. नं. : १०२, रोड नं. : १०२, वार्ड नं. : १०२, अस्ट्रेलिया नगर, डिग्गी, सॉल्ट लेक, बंगलुरु-५६०००१, कोलकाता-७०००१ मोबाइल: ९१-९८७६५४३२१०९८, ९१-९८७६५४३२१०९९९		LEGENDS : * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR- Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate.				 एनटीपीसी NTPC A Maharatna Company		NTPC DOC NO. : 0270-109-QVC-G-001A / R-1					
Main-supplier		Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)				For NTPC Use		REVIEWED BY	APPROVED BY	APPROVAL SEAL			

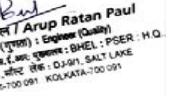
## FIELD QUALITY PLAN

## FIELD QUALITY PLAN

FIELD QUALITY PLAN																		
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102		PROJECT:	BRBCL-NabinagarTPP (4X250 MW)											
 <b>BHEL, PS:ER, KOLKATA</b>	<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>			REV. NO. : 1		PACKAGE:	FGD SYSTEM PKG											
				DATE : 09/03/2020		CONTRACT NO.	0270-109											
				PAGE : 11 OF 25		MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA											
Sl. No	Activity and operation	Characteristics / instruments		Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks								
1	2	3		4	5	6	7	8	9	D*								
11.03	Masonry construction	Workmanship, verticality and alignment	As agreed / required	B	Visual/ Physical	100%	IS 2212, IS 1905 , Tech Specs and Const. Drawings		SR/LB									
12	<b>PLASTERING- MATERIAL AND WORKMANSHIP</b>																	
i	Sand	Deleterious Material	As agreed / required	B	Physical	Once per source	IS : 2386 (Part-I &II) & IS :2116, Tech Specs and Const. Drawings		SR	✓								
ii		Grading	As agreed / required	B	Physical	50 Cum./or part thereof	Tech Specs and Const. Drawings		SR	✓								
iii		Silt content	As agreed/ required	B	Physical	One per 100 cum., or part thereof	CPWD/ Tech Spec/ IS 2386/ IS 456/ IS 383		SR/LB/ TR	✓								
iv	Stone grit plaster/ granular textured coat finish	Material	As agreed / required	B	Review of MTC	For each lot received at site	Tech Specs and Const. Drawings		SR/MTC	✓								
v	Galvanised wire mesh	Galvanized hexagonal wire netting for lath plastering	As agreed / required	B	Review of MTC/ test reports	Each batch of delivery	Tech Specs and Const. Drawings		SR/MTC	✓								
vi		Thickness, Trueness and finishing of plaster, grooves etc.	As agreed / required	B	Visual/ Measurement	Random in each shift	Tech Specs and Const. Drawings		SR/LB									
13	<b>PAINTING</b>																	
13.01	<b>PAINTING SYSTEM - CONCRETE WORKS AND PLASTERED MASONARY SURFACES</b>																	
i	Materials and accessories- Oil Bound, Acrylic Emulsion, Chemical Resistant, Oil Resistant Paint etc., as applicable	Shade, type from brand and manufacturer as approved by EIC.	As agreed / required	A	Review of MTC/ test reports	Each batch of delivery	Tech Specs and Const. Drawings		SR/MTC	✓								
ii	Surface preparation	As required	As agreed / required	B	Physical / visual	Random in each shift	Tech Specs and Const. Drawings		SR									
iii	Acceptance of painted surfaces	Shade, finish, WFT	As agreed / required	B	Physical/visual	Each surface at random	Tech Specs and Const. Drawings		SR									
13.02	<b>PAINTING SYSTEM - STEEL WORKS (OTHER THAN STRUCTURAL STEEL WORKS)</b>																	
i		Paining Materials and accessories	-	A	Review of MTC/ test reports	Each batch of delivery	Tech Specs and Const. Drawings		SR/MTC	✓								
ii		Surface preparation	As agreed / required	B	Physical / visual	Each Erection Mark	Tech Specs and Const. Drawings, Relevant code/ standards		SR	✓								
iii		Primer Thickness	Elcometer	B	Measurement	Each Erection Mark	Tech Specs and Const. Drawings		SR	✓								
iv		Acceptance of painted surfaces : DFT, Finish, Shade	Elcometer	B	Visual and measurement	Each Erection Mark	Tech Specs and Const. Drawings		SR									
 <b>Arup Ratan Paul / Arup Ratan Paul</b> <b>Engineer (Quality)</b> <b>BHEL, PS:ER, KOLKATA - 700 081, KOLKATA - 700 081</b>		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR- Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)				 A Maharatna Company For NTPC Use	NTPC DOC NO. : 0270-109-QVC-G-001A / R-1											
<b>Main-supplier</b>																		

## FIELD QUALITY PLAN

## FIELD QUALITY PLAN

FIELD QUALITY PLAN											
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)			
 <b>BHEL, PS:ER, KOLKATA</b>		SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION & FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.			REV. NO. : 1			PACKAGE:	FGD SYSTEM PKG		
		DATE : 09/03/2020			CONTRACT NO.			0270-109			
		PAGE : 13 OF 25			MAIN CONTRACTOR			BHEL, PS:ER, KOLKATA			
Sl. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks
1	2	3			4	5	6	7	8	9	D*
vii	Fire proof doors	Material & Receipt inspection	As agreed / required	A	Review of MTC/ purchase order (unpriced copy) / drawings of suppliers / certificate of CBR/CPRI/GOV. LAB. & Visual/ Physical/ Review of MTC	For each source & For each lot received at site	Tech Specs and Const. Drawings	SR/MTC	✓	The door drawing proposed for supply should have been tested and approved by CBRI Roorkee/CPRI/GOV. LAB. for the similar dimensions for minimum fire rating as required in Tech. spec..	
viii	Rolling shutters	Surface finish and thickness of plate of approved make and DFT	As agreed / required	B	Physical / visual / review of MTC	Random for each lot of delivery	Tech Specs and Const. Drawings	SR/MTC	✓		
ix	Steel windows / Grills/ Louvre	Material fabrication and fixtures	As agreed / required	B	Review of MTC/ test reports	Each lot of delivery	IS: 1038 / IS:1361, IS: 7452 and Tech Specs and Const. Drawings	SR/MTC	✓		
x	Doors / Windows Sections	Material - Rolled Steel, Z Sections, T-iron frames sections, Plates etc.	As agreed / required	B	Review of MTC/ test reports	For each batch of delivery	Tech Specs and Const. Drawings	SR/MTC	✓		
xi	Glass and glazing (Clear float glass, wired glass)	Material	As agreed / required	B	Review of MTC/ test reports	For each lot received at site	IS: 14900, IS:1081, IS: 3548, IS:5437 Tech Specs and Const. Drawings	SR/MTC	✓		
xii	Curved dome on roof/ Poly Carbonate Sheet	Source of supply Material : Impact strength, K value, light transmission value with class -I fire rating	As agreed / required	B	Review of MTC/ test reports	For each lot received at site	Tech Specs and Const. Drawings	SR/MTC	✓		
xiii	False Ceiling	Materials ( gypsum glass, glass fibre membrane, fibre board acoustical tiles etc)	As agreed / required	A	Review of MTC/ test reports	For each lot received at site	Tech Specs and Const. Drawings	SR/MTC	✓	Compare MTC with technical specification and requirement	
xiv		Installation finishing and acceptance	As agreed / required	B	Visual / physical	Random	Tech Specs and Const. Drawings	SR			
<b>16</b>	<b>WATER PROOFING (Roof / Basement Treatment)</b>										
i		Methodology for the application of water proofing system	As required	B	Review	for each type of treatment	Tech Specs and Const. Drawings	SR	✓		
ii	Graded under bed	Levels / slopes	As required	C	Physical	100%	Tech Specs and Const. Drawings				
 Arup Ratan Paul : Engineer (Quality) BHEL : PS:ER : H.Q. 8, 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 38th, 39th, 40th, 41st, 42nd, 43rd, 44th, 45th, 46th, 47th, 48th, 49th, 50th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th, 59th, 60th, 61st, 62nd, 63rd, 64th, 65th, 66th, 67th, 68th, 69th, 70th, 71st, 72nd, 73rd, 74th, 75th, 76th, 77th, 78th, 79th, 80th, 81st, 82nd, 83rd, 84th, 85th, 86th, 87th, 88th, 89th, 90th, 91st, 92nd, 93rd, 94th, 95th, 96th, 97th, 98th, 99th, 100th, 101st, 102nd, 103rd, 104th, 105th, 106th, 107th, 108th, 109th, 110th, 111st, 112nd, 113rd, 114th, 115th, 116th, 117th, 118th, 119th, 120th, 121st, 122nd, 123rd, 124th, 125th, 126th, 127th, 128th, 129th, 130th, 131st, 132nd, 133rd, 134th, 135th, 136th, 137th, 138th, 139th, 140th, 141st, 142nd, 143rd, 144th, 145th, 146th, 147th, 148th, 149th, 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## FIELD QUALITY PLAN

### FIELD QUALITY PLAN

SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)					
 BHEL, PS:ER, KOLKATA		<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>		REV. NO. : 1			PACKAGE:	FGD SYSTEM PKG					
				DATE : 09/03/2020			CONTRACT NO.	0270-109					
				PAGE : 15 OF 25			MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA					
SI. No	Activity and operation	Characteristics / instruments		Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks			
1	2	3		4	5	6	7	8	9	D*	10		
iii	Interlocking Blocks	Materials	As agreed / required	B	Review of MTC / test reports	Each lot of delivery	Tech Specs and Const. Drawings	SR/MTC	✓	MTC shall contain all the parameters specified in the technical specifications			
iv	Kota Stone, Granite and Marble	Materials: Quality, texture, thickness, colour for each lot of delivery	As agreed / required	B	Physical	Each batch of delivery	Tech Specs/ BOQ and Const. Drawings	SR	✓				
v	Metallic / non-metallic hardener	Material	As agreed / required	B	Review of MTC / test reports	Each batch of delivery	Tech Specs and Const. Drawings	SR	✓				
vi	Rubber Flooring	Material	As agreed / required	B	Review of MTC/ test reports	Each batch of delivery	Tech Specs and Const. Drawings / IS 809	SR/MTC	✓	MTC shall contain all the parameters specified in the technical specifications			
vii	Acid / alkali and oil resistant high built seamless epoxy based resin and treatment	Material	As agreed / required	A	Review of MTC / test reports	Each batch of delivery	Tech Specs and Const. Drawings	SR/MTC	✓	work to be done by skilled manpower			
viii	Acid / alkali and oil resistant high built seamless epoxy based resin and treatment	Surface preparation (as applicable)	As agreed / required	B	Physical	Random in each shift	Tech Specs and Const. Drawings, IS 2395						
ix		Finishing and acceptance	As agreed / required	B	Physical	100%	Tech Specs and Const. Drawings	SR					
19	<b>WATER SUPPLY / SANITORY INSTALLATIONS</b>												
i	Material	Sanitary items and fixtures i.e. water closets, urinals, wash basins, sinks, mirrors, shelves, towel rail, soap containers, geyser, water cooler, etc, water supply / sanitation pipes (GI/ MS/ SCI/ CI / RCC), manhole cover and frames, Over head / loft type Water Storage Tanks etc.	As agreed / required	B	Review of MTC/ test reports	Each lot of delivery as per Specifications	Tech Specs and Const. Drawings	SR/MTC	✓				
ii	Disinfection	Before use	As agreed / required	B	Physical	Each installation	Tech Specs and Const. Drawings	SR					
iii	Hydraulic test	Before use / leakage of pipes	As agreed / required	A	Physical	Each installation	Tech specs and const drawings	SR	✓				
ii		Acceptance of installations of all sanitary items and fixtures	As agreed / required	B	Acceptance	100%	Tech Specs and Const. Drawings	SR					
 अरुप रतन पाल / Arup Ratan Paul अधिकारी (FQA) : Engineer (Quality) क्र. नं. : १०१, अस्ट्रेलियन एवेन्यू, डॉ. गी. सॉल लैक कोलकाता-१०००९८, बंगलादेश		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR - Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					NTPC DOC NO. : 0270-109-QVC-G-001A / R-1   A Maharatna Company						
Main-supplier		For NTPC Use					REVIEWED BY	APPROVED BY	APPROVAL SEAL				

## FIELD QUALITY PLAN

FIELD QUALITY PLAN												
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102		PROJECT:	BRBCL-NabinagarTPP (4X250 MW)					
 <b>BHEL, PS:ER, KOLKATA</b>	<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>	REV. NO. : 1			PACKAGE:	FGD SYSTEM PKG						
		DATE : 09/03/2020			CONTRACT NO.	0270-109						
		PAGE : 16 OF 25			MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA						
Sl. No	Activity and operation	Characteristics / instruments		Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks		
1	2	3		4	5	6	7	8	9	D*		
20.0	SPECIAL ITEMS											
i	Bitumen layer for tank foundation	Material: Grade of bitumen	As agreed / required	B	Review of MTC/ test reports	Each lot of delivery as per Specifications	As per relevant IS and Tech. Specs /MTC	SR/MTC	✓	approved source for material procurement shall be all government refinaries		
ii	Modular aerated panel	As required	As agreed / required	A	Review of MTC/test report	Each batch of delivery	Tech Specs and Const. Drawings	SR/LR/MTC	✓			
iii	Composite Aluminium Panels and structural glazing	Material : Type of aluminium panels / structural glazing / fasteners and fixtures / silicon sealant	As agreed / required	A	Review of MTC/ test reports	Each lot of delivery as per Specifications	Technical specifications / drawings	SR/MTC	✓	MTC shall cover all the properties / parameters as per technical spec.		
iv	Pressure Relief Valves	Material	As agreed / required	B	Review of MTC/ test reports	Each lot of delivery as per Specifications	IS 4558/ Technical specifications / drawings	SR/MTC	✓			
v	Acceptance and workmanship	Acceptance / Installation / workmanship	As agreed / required	B	Physical	Random	Tech Specs and Const. Drawings	SR	✓			
21.0	ANTI WEED TREATMENT											
i		Anti-weed treatment materials	As agreed / required	B	Review of MTC/ test reports	Each batch of delivery	Tech Specs and Const. Drawings	SR/MTC	✓			
ii		Execution of treatment	As agreed / required	B	Physical	Random check for each treatment	Tech Specs and Const. Drawings	SR				
22	PILING WORK (If Applicable)											
22.01	Execution											
i		Borehole diameter	As required	B	Physical	100%	As per appd. Drawings and technical specification	SR/LB	✓			
ii		Pile layout	Total station	B	Measurement	100%	As per appd. Drawings and technical specification	SR/LB	✓			
iii		Recording ground level	As required	B	Measurement	Random	As per appd. Drawings and technical specification	SR/LB	✓			
iv		Cleaning/Flushing of pile bore	As required	B	Visual	Random	As per appd. Drawings and technical specification	SR/LB	✓			
v		Size of bore and During boring of pile record commencement of SPT/ core recovery to ensure socketing length equivalent in terms of the Diameter of the pile below the socketing horizon.(if applicable)	As required	B	Measurement	100%	As per appd. Drawings and technical specification	SR/LB	✓			
viii		Pouring of concrete to project above cut off level.	As required	B	Measurement	100%	As per appd. Drawings and technical specification	SR/LB	✓			
 Arup Ratan Paul / Arup Ratan Paul अरुप रतन पाल / Arup Ratan Paul अधिकारी (प्रौद्योगिकी) : इंजीनियर (कॉलाइन) : अधिकारी (प्रौद्योगिकी) : इंजीनियर (कॉलाइन) : BHEL : PSER : H.Q. 8, प्लॉ. 1, रोड नं. 1, अस्ट्रेलिया एवं लेन्ड, डी-001, सॉल लैक, बॉम्बे, भारत - 400 091 फ़ोन: +91-22-2700 0911 कॉलकाता-100 091 ई-मेल: arup_ratan@bhel.com		LEGENDS : * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC Site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR - Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)				NTPC DOC NO. : 0270-109-QVC-G-001A / R-1						
<b>Main-supplier</b>						 एनटीपीसी <b>NTPC</b> A Maharatna Company						
							REVIEWED BY		APPROVED BY	APPROVAL SEAL		

### FIELD QUALITY PLAN

SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)					
 <b>BHEL, PS:ER, KOLKATA</b>		<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>		REV. NO. : 1			PACKAGE:	FGD SYSTEM PKG					
				DATE : 09/03/2020			CONTRACT NO.	0270-109					
				PAGE : 17 OF 25			MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA					
Sl. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks		
1	2	3			4	5	6	7	8	9	D*		
22.02	Testing												
i		Bentonite	IS:2720	A	Physical / testing	Once per source	As per IS:2720, IS 2911/ tech. Specs.	SR/LB	✓	One sample from each source(brand/manufacurer) to be tested at owner acceptable third party lab.			
ii		Density check on sample of mud collected from pile bore bottom	Sample collection	A	Physical	As per Tech. Spec.	Tech Spec.	SR/LB	✓	Tests to be done before placing concrete. Samples to be collected from pile bore bottom.			
iii		Slump test of concrete	IS:1199	B	Physical	Every 2 hrs at pouring point of concrete	IS:2911, As per appd. Drawings and technical specification	SR/LB	✓				
iv		Concrete Cube strength Test	IS:456	A	Physical	One set of 6 cubes per 50 CuM or part thereof for each grade of concrete per shift whichever is earlier.	IS:2911, As per appd. Drawings and technical specification	SR/LB	✓				
v		Initial pile load test, Vertical (Compression), Lateral (horizontal) and pull-out (tension).	IS:2911 / as required	A	Testing	100% for each type or as specified in BOQ / Tech. Spec.	IS:2911, As per appd. Drawings and technical specification	SR/LB	✓	In case of compression test method the loading shall be cyclic.			
vi		Routine pile tests, compression and horizontal	Calibrated LVDT etc. as required.	A	Testing	100% for 0.5% of the total number of piles provided for each type of test/Tech. Spec. subject to a min. of 2 nos.	IS:2911, As per appd. Drawings and technical specification	SR/LB	✓	Routine Test shall be conducted by direct loading method.			
vii		Integrity Tests	PEM	A	Testing	100%	IS:2911, As per appd. Drawings and technical specification and suppliers manual	Test Report	✓				
23	ROAD WORKS												
23.01	Tests on Embankment, Subgrade Construction and Cut Formation												
A)	Suitability of Borrow Fill material												
i		Sand Content	As per IS 2720	A	Physical	2 tests per 3000 cum of soil	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Part IV)	SR/TR	✓				
 <b>Arup Ratan Paul</b> <b>Engineer (Civil)</b> <b>Project Manager (Civil)</b> <b>Address : BHEL, PS:ER, H.Q.</b> <b>9, R.R. Rd, Sector 12, Salt Lake, Durgi, Salt Lake</b> <b>Pin - 700 091, KOLKATA - 700 091</b>		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR- Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					 <b>NTPC</b> A Maharatna Company	NTPC DOC NO. : 0270-109-QVC-G-001A / R-1					
Main-supplier									REVIEWED BY	APPROVED BY	APPROVAL SEAL		

FIELD QUALITY PLAN											
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)			
 <b>BHEL, PS:ER, KOLKATA</b>	<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>	REV. NO. : 1			PACKAGE: FGD SYSTEM PKG						
		DATE : 09/03/2020			CONTRACT NO. 0270-109						
		PAGE : 18 OF 25			MAIN CONTRACTOR BHEL, PS:ER, KOLKATA						
Sl. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks
1	2	3			4	5	6	7	8	9	D*
ii		Plasticity Test	As per IS 2720	A	Physical	Each type to be tested, 2 tests	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Part V)			SR/TR	✓
iii		Density Test	As per IS 2720	A	Physical	Each soil type to be tested, 2 tests	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Part VIII)			SR/TR	✓
iv		Deleterious Content Test	As per IS 2720	B	Physical	As and when required by Engineer in charge	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Part XXVII)			SR/TR	✓
v		Moisture Content Test	As per IS 2720	A	Physical	Two Tests	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Part II)			SR/TR	✓
vi		CBR Test	As per IS 2720	A	Physical	One CBR test (Avg. of three specimens) or closer as and when required by EIC	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Part XVI)			SR/TR	✓
vii		Free swell Index	Measuring Cylinder	A	Physical	Once per each type of source or change of source	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Part XI)			SR/TR	✓
<b>B</b>	<b>Compaction</b>										
i		Standard proctor Test	As per IS: 2720	A	Physical	One in every 2000 cum for each type and source of fill materials	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Pt.VII)			SR/TR	✓
ii		Dry density by core cutter method ---- OR---- Dry density in place by sand displacement method	As per IS: 2720	A	Physical	One in every 2000 SQM area for each compacted layer.	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 2720 (Pt. XXIX)/ IS 2720 (Pt. XXVIII),			SR/TR	✓
iii		Lines, grade and cross section	As required / agreed	B	Physical	One in every 500 SQM area	As per Tech Specs and Const. Drawings			SR	Template, straight edge
<b>23.02</b>	<b>Granular Sub-Base (GSB) ( if applicable)</b>										
i		Grading of aggregate	Set of IS Sieves	B	Physical	One test per 400 cum	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification,			SR/TR	✓
 <b>Arup Ratan Paul</b> <b>Project Manager (Civil)</b> <b>Address : BHEL, PS:ER, HQ, O.P. SALT LAKE KOLKATA-700 081, KOLKATA-700 081</b>		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR - Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					NTPC DOC NO. : 0270-109-QVC-G-001A / R-1		 A Maharatna Company For NTPC Use		
<b>Main-supplier</b>							REVIEWED BY		APPROVED BY	APPROVAL SEAL	

## FIELD QUALITY PLAN

FIELD QUALITY PLAN											
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)			
 <b>BHEL, PS:ER, KOLKATA</b>	<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>	REV. NO. : 1			PACKAGE: FGD SYSTEM PKG						
		DATE : 09/03/2020			CONTRACT NO. 0270-109						
		PAGE : 20 OF 25			MAIN CONTRACTOR BHEL, PS:ER, KOLKATA						
Sl. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks
1	2	3			4	5	6	7	8	9	D*
ii		Grading of aggregate	Set of IS Sieves	B	Physical	One test per 200 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification,	SR/TR	✓		
iii		Combined Flakiness index and elongation index	Flakiness & Elongation test gauge	B	Physical	One test per 500 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification,	SR/TR	✓		
iv		Atterberg Limits of portion of aggregate passing 425 micron sieve	Atterberg limits determination	A	Physical	One test per 200 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification,	SR/TR	✓		
v		Density of compacted Layer	As required / agreed	B	Physical	one set of three tests per 1000 sqm.	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification,	SR/TR	✓	Template, straight edge	
23.05	<b>Premix Bituminous Macadam (BM)</b>										
i		Quality of binder	Penetrometer with St. needle	A	Physical	Number of samples per lot and tests as per IS:73, IS:217 and IS:8887 as applicable	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 73	SR/TR	✓	APPROVED SOURCE FOR MATERIAL PROCUREMENT SHALL BE ALL GOVERNMENT REFINARIES	
ii		Aggregate Impact Value / Los Angeles Abrasion value	Aggregate Impact Value/Los Angeles Test apparatus	A	Physical	One test per 200 cum of each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
iii		Combined Flakiness Index and elongation index of aggregates	Flakiness & Elongation test gauge	B	Physical	One test per 350 cum for each source	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
iv		Stripping value of aggregate (Immersion tray test)	As required / agreed	B	Physical	one test of each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
v		Water absorption of aggregate	As required / agreed	B	Physical	one test of each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
vi		Water sensitivity of mix	As required / agreed	B	Physical	one test of each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
 <b>Arup Ratan Paul / Arup Ratan Paul</b> <b>Engineer (Civil)</b> <b>BHEL, PS:ER, KOLKATA</b> <b>9, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 38th, 39th, 40th, 41st, 42nd, 43rd, 44th, 45th, 46th, 47th, 48th, 49th, 50th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th, 59th, 60th, 61st, 62nd, 63rd, 64th, 65th, 66th, 67th, 68th, 69th, 70th, 71st, 72nd, 73rd, 74th, 75th, 76th, 77th, 78th, 79th, 80th, 81st, 82nd, 83rd, 84th, 85th, 86th, 87th, 88th, 89th, 90th, 91st, 92nd, 93rd, 94th, 95th, 96th, 97th, 98th, 99th, 100th, 101st, 102nd, 103rd, 104th, 105th, 106th, 107th, 108th, 109th, 110th, 111st, 112nd, 113rd, 114th, 115th, 116th, 117th, 118th, 119th, 120th, 121st, 122nd, 123rd, 124th, 125th, 126th, 127th, 128th, 129th, 130th, 131st, 132nd, 133rd, 134th, 135th, 136th, 137th, 138th, 139th, 140th, 141st, 142nd, 143rd, 144th, 145th, 146th, 147th, 148th, 149th, 150th, 151st, 152nd, 153rd, 154th, 155th, 156th, 157th, 158th, 159th, 160th, 161st, 162nd, 163rd, 164th, 165th, 166th, 167th, 168th, 169th, 170th, 171st, 172nd, 173rd, 174th, 175th, 176th, 177th, 178th, 179th, 180th, 181st, 182nd, 183rd, 184th, 185th, 186th, 187th, 188th, 189th, 190th, 191st, 192nd, 193rd, 194th, 195th, 196th, 197th, 198th, 199th, 200th, 201st, 202nd, 203rd, 204th, 205th, 206th, 207th, 208th, 209th, 210th, 211st, 212nd, 213rd, 214th, 215th, 216th, 217th, 218th, 219th, 220th, 221st, 222nd, 223rd, 224th, 225th, 226th, 227th, 228th, 229th, 230th, 231st, 232nd, 233rd, 234th, 235th, 236th, 237th, 238th, 239th, 240th, 241st, 242nd, 243rd, 244th, 245th, 246th, 247th, 248th, 249th, 250th, 251st, 252nd, 253rd, 254th, 255th, 256th, 257th, 258th, 259th, 260th, 261st, 262nd, 263rd, 264th, 265th, 266th, 267th, 268th, 269th, 270th, 271st, 272nd, 273rd, 274th, 275th, 276th, 277th, 278th, 279th, 280th, 281st, 282nd, 283rd, 284th, 285th, 286th, 287th, 288th, 289th, 290th, 291st, 292nd, 293rd, 294th, 295th, 296th, 297th, 298th, 299th, 300th, 301st, 302nd, 303rd, 304th, 305th, 306th, 307th, 308th, 309th, 310th, 311st, 312nd, 313rd, 314th, 315th, 316th, 317th, 318th, 319th, 320th, 321st, 322nd, 323rd, 324th, 325th, 326th, 327th, 328th, 329th, 330th, 331st, 332nd, 333rd, 334th, 335th, 336th, 337th, 338th, 339th, 340th, 341st, 342nd, 343rd, 344th, 345th, 346th, 347th, 348th, 349th, 350th, 351st, 352nd, 353rd, 354th, 355th, 356th, 357th, 358th, 359th, 360th, 361st, 362nd, 363rd, 364th, 365th, 366th, 367th, 368th, 369th, 370th, 371st, 372nd, 373rd, 374th, 375th, 376th, 377th, 378th, 379th, 380th, 381st, 382nd, 383rd, 384th, 385th, 386th, 387th, 388th, 389th, 390th, 391st, 392nd, 393rd, 394th, 395th, 396th, 397th, 398th, 399th, 400th, 401st, 402nd, 403rd, 404th, 405th, 406th, 407th, 408th, 409th, 410th, 411st, 412nd, 413rd, 414th, 415th, 416th, 417th, 418th, 419th, 420th, 421st, 422nd, 423rd, 424th, 425th, 426th, 427th, 428th, 429th, 430th, 431st, 432nd, 433rd, 434th, 435th, 436th, 437th, 438th, 439th, 440th, 441st, 442nd, 443rd, 444th, 445th, 446th, 447th, 448th, 449th, 450th, 451st, 452nd, 453rd, 454th, 455th, 456th, 457th, 458th, 459th, 460th, 461st, 462nd, 463rd, 464th, 465th, 466th, 467th, 468th, 469th, 470th, 471st, 472nd, 473rd, 474th, 475th, 476th, 477th, 478th, 479th, 480th, 481st, 482nd, 483rd, 484th, 485th, 486th, 487th, 488th, 489th, 490th, 491st, 492nd, 493rd, 494th, 495th, 496th, 497th, 498th, 499th, 500th, 501st, 502nd, 503rd, 504th, 505th, 506th, 507th, 508th, 509th, 510th, 511st, 512nd, 513rd, 514th, 515th, 516th, 517th, 518th, 519th, 520th, 521st, 522nd, 523rd, 524th, 525th, 526th, 527th, 528th, 529th, 530th, 531st, 532nd, 533rd, 534th, 535th, 536th, 537th, 538th, 539th, 540th, 541st, 542nd, 543rd, 544th, 545th, 546th, 547th, 548th, 549th, 550th, 551st, 552nd, 553rd, 554th, 555th, 556th, 557th, 558th, 559th, 560th, 561st, 562nd, 563rd, 564th, 565th, 566th, 567th, 568th, 569th, 570th, 571st, 572nd, 573rd, 574th, 575th, 576th, 577th, 578th, 579th, 580th, 581st, 582nd, 583rd, 584th, 585th, 586th, 587th, 588th, 589th, 590th, 591st, 592nd, 593rd, 594th, 595th, 596th, 597th, 598th, 599th, 600th, 601st, 602nd, 603rd, 604th, 605th, 606th, 607th, 608th, 609th, 610th, 611st, 612nd, 613rd, 614th, 615th, 616th, 617th, 618th, 619th, 620th, 621st, 622nd, 623rd, 624th, 625th, 626th, 627th, 628th, 629th, 630th, 631st, 632nd, 633rd, 634th, 635th, 636th, 637th, 638th, 639th, 640th, 641st, 642nd, 643rd, 644th, 645th, 646th, 647th, 648th, 649th, 650th, 651st, 652nd, 653rd, 654th, 655th, 656th, 657th, 658th, 659th, 660th, 661st, 662nd, 663rd, 664th, 665th, 666th, 667th, 668th, 669th, 670th, 671st, 672nd, 673rd, 674th, 675th, 676th, 677th, 678th, 679th, 680th, 681st, 682nd, 683rd, 684th, 685th, 686th, 687th, 688th, 689th, 690th, 691st, 692nd, 693rd, 694th, 695th, 696th, 697th, 698th, 699th, 700th, 701st, 702nd, 703rd, 704th, 705th, 706th, 707th, 708th, 709th, 710th, 711st, 712nd, 713rd, 714th, 715th, 716th, 717th, 718th, 719th, 720th, 721st, 722nd, 723rd, 724th, 725th, 726th, 727th, 728th, 729th, 730th, 731st, 732nd, 733rd, 734th, 735th, 736th, 737th, 738th, 739th, 740th, 741st, 742nd, 743rd, 744th, 745th, 746th, 747th, 748th, 749th, 750th, 751st, 752nd, 753rd, 754th, 755th, 756th, 757th, 758th, 759th, 760th, 761st, 762nd, 763rd, 764th, 765th, 766th, 767th, 768th, 769th, 770th, 771st, 772nd, 773rd, 774th, 775th, 776th, 777th, 778th, 779th, 780th, 781st, 782nd, 783rd, 784th, 785th, 786th, 787th, 788th, 789th, 790th, 791st, 792nd, 793rd, 794th, 795th, 796th, 797th, 798th, 799th, 800th, 801st, 802nd, 803rd, 804th, 805th, 806th, 807th, 808th, 809th, 810th, 811st, 812nd, 813rd, 814th, 815th, 816th, 817th, 818th, 819th, 820th, 821st, 822nd, 823rd, 824th, 825th, 826th, 827th, 828th, 829th, 830th, 831st, 832nd, 833rd, 834th, 835th, 836th, 837th, 838th, 839th, 840th, 841st, 842nd, 843rd, 844th, 845th, 846th, 847th, 848th, 849th, 850th, 851st, 852nd, 853rd, 854th, 855th, 856th, 857th, 858th, 859th, 860th, 861st, 862nd, 863rd, 864th, 865th, 866th, 867th, 868th, 869th, 870th, 871st, 872nd, 873rd, 874th, 875th, 876th, 877th, 878th, 879th, 880th, 881st, 882nd, 883rd, 884th, 885th, 886th, 887th, 888th, 889th, 890th, 891st, 892nd, 893rd, 894th, 895th, 896th, 897th, 898th, 899th, 900th, 901st, 902nd, 903rd, 904th, 905th, 906th, 907th, 908th, 909th, 910th, 911st, 912nd, 913rd, 914th, 915th, 916th, 917th, 918th, 919th, 920th, 921st, 922nd, 923rd, 924th, 925th, 926th, 927th, 928th, 929th, 930th, 931st, 932nd, 933rd, 934th, 935th, 936th, 937th, 938th, 939th, 940th, 941st, 942nd, 943rd, 944th, 945th, 946th, 947th, 948th, 949th, 950th, 951st, 952nd, 953rd, 954th, 955th, 956th, 957th, 958th, 959th, 960th, 961st, 962nd, 963rd, 964th, 965th, 966th, 967th, 968th, 969th, 970th, 971st, 972nd, 973rd, 974th, 975th, 976th, 977th, 978th, 979th, 980th, 981st, 982nd, 983rd, 984th, 985th, 986th, 987th, 988th, 989th, 990th, 991st, 992nd, 993rd, 994th, 995th, 996th, 997th, 998th, 999th, 1000th, 1001st, 1002nd, 1003rd, 1004th, 1005th, 1006th, 1007th, 1008th, 1009th, 1010th, 1011st, 1012nd, 1013rd, 1014th, 1015th, 1016th, 1017th, 1018th, 1019th, 1020th, 1021st, 1022nd, 1023rd, 1024th, 1025th, 1026th, 1027th, 1028th, 1029th, 1030th, 1031st, 1032nd, 1033rd, 1034th, 1035th, 1036th, 1037th, 1038th, 1039th, 1040th, 1041st, 1042nd, 1043rd, 1044th, 1045th, 1046th, 1047th, 1048th, 1049th, 1050th, 1051st, 1052nd, 1053rd, 1054th, 1055th, 1056th, 1057th, 1058th, 1059th, 1060th, 1061st, 1062nd, 1063rd, 1064th, 1065th, 1066th, 1067th, 1068th, 1069th, 1070th, 1071st, 1072nd, 1073rd, 1074th, 1075th, 1076th, 1077th, 1078th, 1079th, 1080th, 1081st, 1082nd, 1083rd, 1084th, 1085th, 1086th, 1087th, 1088th, 1089th, 1090th, 1091st, 1092nd, 1093rd, 1094th, 1095th, 1096th, 1097th, 1098th, 1099th, 1100th, 1101st, 1102nd, 1103rd, 1104th, 1105th, 1106th, 1107th, 1108th, 1109th, 1110th, 1111st, 1112nd, 1113rd, 1114th, 1115th, 1116th, 1117th, 1118th, 1119th, 1120th, 1121st, 1122nd, 1123rd, 1124th, 1125th, 1126th, 1127th, 1128th, 1129th, 1130th, 1131st, 1132nd, 1133rd, 1134th, 1135th, 1136th, 1137th, 1138th, 1139th, 1140th, 1141st, 1142nd, 1143rd, 1144th, 1145th, 1146th, 1147th, 1148th, 1149th, 1150th, 1151st, 1152nd, 1153rd, 1154th, 1155th, 1156th, 1157th, 1158th, 1159th, 1160th, 1161st, 1162nd, 1163rd, 1164th, 1165th, 1166th, 1167th, 1168th, 1169th, 1170th, 1171st, 1172nd, 1173rd, 1174th, 1175th, 1176th, 1177th, 1178th, 1179th, 1180th, 1181st, 1182nd, 1183rd, 1184th, 1185th, 1186th, 1187th, 1188th, 1189th, 1190th, 1191st, 1192nd, 1193rd, 1194th, 1195th, 1196th, 1197th, 1198th, 1199th, 1200th, 1201st, 1202nd, 1203rd, 1204th, 1205th, 1206th, 1207th, 1208th, 1209th, 1210th, 1211st, 1212nd, 1213rd, 1214th, 1215th, 1216th, 1217th, 1218th, 1219th, 1220th, 1221st, 1222nd, 1223rd, 1224th, 1225th, 1226th, 1227th, 1228th, 1229th, 1230th, 1231st, 1232nd, 1233rd, 1234th, 1235th, 1236th, 1237th, 1238th, 1239th, 12310th, 12311st, 12312nd, 12313rd, 12314th, 12315th, 12316th, 12317th, 12318th, 12319th, 12320th, 12321st, 12322nd, 12323rd, 12324th, 12325th, 12326th, 12327th, 12328th, 12329th, 12330th, 12331st, 12332nd, 12333rd, 12334th, 12335th, 12336th, 12337th, 12338th, 12339th, 12340th, 12341st, 12342nd, 12343rd, 12344th, 12345th, 12346th, 12347th, 12348th, 12349th, 12350th, 12351st, 12352nd, 12353rd, 12354th, 12355th, 12356th, 12357th, 12358th, 12359th, 12360th, 12361st, 12362nd, 12363rd, 12364th, 12365th, 12366th, 12367th, 12368th, 12369th, 12370th, 12371st, 12372nd, 12373rd, 12374th, 12375th, 12376th, 12377th, 12378th, 12379th, 12380th, 12381st, 12382nd, 12383rd, 12384th, 12385th, 12386th, 12387th, 12388th, 12389th, 12390th, 12391st, 12392nd, 12393rd, 12394th, 12395th, 12396th, 12397th, 12398th, 12399th, 12400th, 12401st, 12402nd, 12403rd, 12404th, 12405th, 12406th, 12407th, 12408th, 12409th, 12410th, 12411st, 12412nd, 12413rd, 12414th, 12415th, 12416th, 12417th, 12418th, 12419th, 12420th, 12421st, 12422nd, 12423rd, 12424th, 12425th, 12426</b>											

**FIELD QUALITY PLAN**

SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)			
 <b>BHEL, PS:ER, KOLKATA</b>		<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>		REV. NO. : 1			PACKAGE:	FGD SYSTEM PKG			
				DATE : 09/03/2020			CONTRACT NO.	0270-109			
				PAGE : 21 OF 25			MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA			
SI. No	Activity and operation	Characteristics / instruments		Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks	
1	2	3		4	5	6	7	8	9	D*	10
vii		Grading of aggregates	Set of Sieves	B	Physical	Two test per day per plant both on individual constituents and mixed aggregate from dryer	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
viii		Soundness ( Magnesium and Sodium Sulphate)	As required as per IS:2386	A	Physical	one test of each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
ix		Percentage of fractured faces	As required / agreed	B	Physical	one test per 100 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
x		Binder content	Bitumen extractor	A	Physical	Periodic, subject to a min of two tests per day per plant	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
xi		Control of Temperature of binder and aggregate for mix and of the mix at the time of laying and rolling	Thermometer	B	Physical	At regular close intervals	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
xii		Density of compacted Layer	As required / agreed	A	Physical	One test per 700 Sqm of area	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
xiii		Rate of spread of mixed materials	As required / agreed	B	Physical	At Regular Interval	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
<b>23.06</b>	<b>Bituminous Concrete</b>										
i		Quality of binder	Penetrometer with St. needle	A	Physical	Number of samples per lot and tests as per IS:73 or IRC:SP:53, IS:15462	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 73	SR/TR	✓	APPROVED SOURCE FOR MATERIAL PROCUREMENT SHALL BE ALL GOVERNMENT REFINARIES	
ii		Aggregate Impact Value / Los angels abrasion value	Aggregate Impact Value/Los Angeles Test apparatus	A	Physical	One test per 350 cum of aggregate for each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
 <b>Arup Ratan Paul / Arup Ratan Paul</b> <b>Engineer (Civil)</b> <b>BHEL, PS:ER, KOLKATA - 700 091</b> <b>Mobile: 91-98301-091, 033-2288-700 091</b>		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR - Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					NTPC DOC NO. : 0270-109-QVC-G-001A / R-1				
<b>Main-supplier</b>		For NTPC Use					REVIEWED BY	APPROVED BY	APPROVAL SEAL		
 <b>NTPC</b> A Maharatna Company											

## FIELD QUALITY PLAN

FIELD QUALITY PLAN											
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)			
 <b>BHEL, PS:ER, KOLKATA</b>		<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>			REV. NO. : 1			PACKAGE:	<b>FGD SYSTEM PKG</b>		
					DATE : 09/03/2020			CONTRACT NO.	<b>0270-109</b>		
					PAGE : 23 OF 25			MAIN CONTRACTOR	<b>BHEL, PS:ER, KOLKATA</b>		
SI. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks
1	2	3			4	5	6	7	8	9	D*
xi		Stability and voids analysis of mix including theoretical maximum specific of loose mix	As required / agreed	B	Physical	Three tests for stability, flow value, density and void contents for each 400 tonnes of mix subject to minimum of two tests per day per plant	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
xii		Moisture Susceptibility of mix (AASHTO T283 )	As required / agreed	A	Physical	One test for each mix type whenever there is change in the quality or source of coarse or fine aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
xiii		Temperature of binder in boiler, aggregate in dryer and mix at the time of laying and compaction	Thermometer	B	Physical	At regular intervals	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
xiv		Binder content	Bitumen extractor	A	Physical	One set for each 400 tonnes of mix subject to minimum of two tests per day per plant	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
xv		Rate of spread of mixed materials	As required / agreed	B	Physical	After every 5th truck load	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
xvi		Density of compacted Layer	As required / agreed	A	Physical	One test per 700 Sqm of area	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
<b>23.07</b>	<b>Premix surfacing and Seal coat</b>										
i		Quality of binder	Penetrometer with St. needle	A	Physical	Number of samples per lot and tests as per IS:73, IS:217 and IS:8887 as applicable	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification, IS 73	SR/TR	✓	APPROVED SOURCE FOR MATERIAL PROCUREMENT SHALL BE ALL GOVERNMENT REFINARIES	
ii		Aggregate Impact Value / Los Angeles Abrasion value	Aggregate Impact Value/Los Angeles Test apparatus	A	Physical	One test per 200 cum of each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
iii		Combined Flakiness Index and elongation index of aggregates	Flakiness & Elongation test gauge	B	Physical	One test per 100 cum of aggregate for each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓		
 Arup Ratan Paul : Engineer (Quality) BHEL : PS:ER : H.Q. 8, R.R. Dutt Marg, Salt Lake, Kolkata - 700 091 MOBILE: 9833520091		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR - Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)					 A Maharatna Company For NTPC Use	NTPC DOC NO. : 0270-109-QVC-G-001A / R-1			
<b>Main-supplier</b>									REVIEWED BY	APPROVED BY	APPROVAL SEAL

FIELD QUALITY PLAN													
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)					
 BHEL, PS:ER, KOLKATA		<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>			REV. NO. : 1			PACKAGE:	FGD SYSTEM PKG				
					DATE : 09/03/2020			CONTRACT NO.	0270-109				
					PAGE : 24 OF 25			MAIN CONTRACTOR	BHEL, PS:ER, KOLKATA				
Sl. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks		
1	2	3			4	5	6	7	8	9	D*	10	
iv		Stripping value of aggregate (Immersion tray test)	As required / agreed	B	Physical	one test of each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓				
v		Water absorption of aggregate	As required / agreed	B	Physical			SR/TR	✓				
vi		Water sensitivity of mix	As required / agreed	B	Physical			SR/TR	✓				
vii		Grading of aggregates	Set of Sieves	B	Physical			SR/TR	✓				
viii		Soundness ( Magnesium and Sodium Sulphate)	As required as per IS:2386	A	Physical			SR/TR	✓				
ix		Polished stone value	As required / agreed	B	Physical			SR/TR	✓				
x		Temperature of binder at application	Thermometer	B	Physical	At regular interval	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓				
xi		Binder Content	Bitumen extractor	A	Physical	Two tests per day per plant	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓				
xii		Percentage of fractured faces	As required / agreed	B	Physical	One test per 100 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓				
23.08	Tack Coat/ Prime coat												
i		Quality of binder	Penetrometer with Standard needle	A	Physical	Number of samples per lot and tests as per IS:73, IS:217 and IS:8887 as applicable	IS 73, Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓	approved source for material procurement shall be all government refinaries			
ii		Binder temperature for application	Thermometer	B	Physical	At regular close intervals	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓				
iii		Rate of spread of binder	As required / agreed	B	Physical	Three tests per day	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓				
23.09	RCC Pavements												
 Arup Ratan Paul : Engineer (Quality)		<b>LEGENDS :</b> * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR - Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate. Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)						NTPC DOC NO. : 0270-109-QVC-G-001A / R-1					
Main-supplier								For NTPC Use					
									REVIEWED BY	APPROVED BY	APPROVAL SEAL		

FIELD QUALITY PLAN											
SUPPLIERS NAME AND ADDRESS		ITEM : Civil Work of FGD System, Gymsum Handling Plant & Limestone Handling Plant		QP NO. : PP-QLY-1902-UT-QA-102			PROJECT:	BRBCL-NabinagarTPP (4X250 MW)			
 <b>BHEL, PS:ER, KOLKATA</b>	<b>SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION &amp; FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.</b>	REV. NO. : 1			PACKAGE:			FGD SYSTEM PKG			
		DATE : 09/03/2020			CONTRACT NO.			0270-109			
		PAGE : 25 OF 25			MAIN CONTRACTOR			BHEL, PS:ER, KOLKATA			
Sl. No	Activity and operation	Characteristics / instruments			Class of check	Type of Check	Quantum Of check	Reference Document	Acceptance Norms	Format of Record	Remarks
1	2	3			4	5	6	7	8	9	D*
i	Quality checks for Materials used for Pavement concrete				As per Table 900-6 of MORTH Spec.						
ii	Quality checks for concrete used for Pavement concrete				As per Table 900-6 of MORTH Spec.						
23.10	Alignment, Level, Surface regularity and rectification										
i		Horizontal alignment, Surface levels and Surface regularity		As required / agreed	B	Physical	As per section 900 of MOSRTH specification	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR		
ii		Rectification		As required / agreed	B	Physical	Each rectification	As per Tech Specs and Const. Drawings, Section 900 of MOSRTH specification	SR/TR	✓	
24.0	GEOTECHNICAL INVESTIGATION WORK										
i		Deployment of approved Geotechnical Investigation Agency - Equipments, Manpower etc.		As required / agreed	B	Physical	Once before commencement of work	As per technical specifications and relevant IS Codes	SR	✓	
ii		Execution of Geotechnical Investigation locations, type etc. as per scheme		As required / agreed	B	Physical	Each Location	As per technical specifications and relevant IS Codes	SR	✓	
iii		Collection of disturbed and undisturbed samples , their packing and storage		As required / agreed	B	Physical	each sampling	As per technical specifications and relevant IS Codes	SR		
iv		Conducting field tests as per investigation scheme- such as, SPT/ERT/SCPT/PLT/PMT etc.		As required / agreed	B	Physical	each field test	As per technical specifications and relevant IS Codes	SR		
v		Submission of Field Bore logs in approved format		As required / agreed	B	Review	Within 24 hours after completion of each BH	As per technical specifications and relevant IS Codes	SR	✓	
vi		Submission of laboratory test schedule and selection of samples for laboratory testing		As required / agreed	B	Review and acceptance	as per consultation with engineer during dispatch of samples to approved laboratory	As per technical specifications and relevant IS Codes	SR	✓	
vii		Submission of Final Geotechnical investigation report along with recommendations		As required / agreed	B	Physical	After completion of investigation work and review of draft reports	As per technical specifications and relevant IS Codes	-	✓	
viii		Topographical Survey works with calibrated instrument (Total Station/GPS, etc.)		As required / agreed	C	Physical/Review	On completion of area (partial/complete)	As per technical specifications and relevant IS Codes, approved drawings	SR	✓	Copy of calibration certificates of instruments shall be submitted for records
ix	Construction of Bench Mark / Grid Pillars	To mark reference co-ordinate & elevation : Selection of location, checking of co-ordinate & elevation		As required / agreed	B	Physical	each Bench Mark/ Grid Pillars	As per technical specifications and relevant IS Codes, approved drawings	SR	✓	Joint protocol for co-ordinate and elevation
 Arup Ratan Paul / Arup Ratan Paul Executive Engineer (Civil) BHEL, PS:ER, KOLKATA 1, R.C. Dutt Road, D.J.S.T. Salt Lake Salt Lake, KOLKATA-700 091 MOBILE-98331 20011		LEGENDS : * Records identified with tick (✓) shall be essentially included by supplier in QA documentation # Class A : Critical, Class B : Major, Class C : Minor Class A checks shall be witnessed by NTPC FQA and Execution Engineer, Class B checks shall be witnessed by NTPC site Engineer/Supervisor, Class C checks shall be witnessed by BHEL Site engineer SR - Site Register, TR - Test Report, IR - Inspection Report, MTC - Manufacturer's Test Certificate.						NTPC DOC NO. : 0270-109-QVC-G-001A / R-1			
Main-supplier		Surveillance of Class 'A' checks shall be perform By Owner Head (FQA), Class 'B' by Owner FQA Engineer and for class 'C' Another Executing Engineer authorised by Head (Executing Deptt)						 A Maharatna Company  For NTPC Use	REVIEWED BY	APPROVED BY	APPROVAL SEAL

 <b>PSER : QUALITY</b>	<b>RECORD OF QUALITY CHECKS</b>							
SHEET NO. OF QPI	CHECK NO.	RESULTS ACHIEVED OK/ NOT OK	REFERENCE DOCUMENT	DRAWING/	FORMAT OF RECORD	CHECKED BY SIGN. & DATE	ACCEPTED BY SIGN. & DATE	REMARKS
<b>Note:</b> Any protocol made is to be numbered & mentioned in "Format of Record" column.								
PROJECT		SYSTEM	SUB-SYSTEM	AREA	FQP NO. : PP-QLY-1902-UT-QA-102			
					REV NO.: 1			
UNIT NO.					LOG SHEET NO.: L-00			
RATING					SHEET:			

 <b>BHEL</b> PSER : QUALITY	INSTRUMENT TAG NO.	
	DATE OF INSPECTION	
	DRAWING / DOCUMENT REF.	

PROJECT :	UNIT NO.:	RATING:
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**PROTOCOL**

SAMPLE FORMAT

	NAME	SIGNATURE & DATE	FQP NO. : PP-QLY-1902-UT-QA-102
INSPECTED BY			REV.NO.: 1
WITNESSED BY			PROTOCOL NO.
ACCEPTED BY			PAGE: