

INDICATIVE FIELD QUALITY PLAN											Annexure III
SUPPLIERS NAME AND ADDRESS		ITEM : CIVIL WORKS		QP NO. :			PROJECT:	DEVELOPMENT OF BESS AT NTPC THERMAL POWER STATIONS			
		SUB-SYSTEM : GEOTECH INVESTIGATION, FOUNDATIONS, EXCAVATION & FILL, SITE LEVELLING, CONCRETE, ROAD, BUILDING ETC.		REV. NO. :			PACKAGE:				
				DATE :			BID DOC NO. :				
				PAGE :			MAIN CONTRACTOR :				
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
1	GENERAL REQUIREMENTS										
i	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	✓	Contractor to establish QA/QC lab., mobilize the requisite lab. equipment's/ set up including deployment of skilled QA/QC manpower within 30 days from the mobilization date of Main contractor at site. Proper functioning & valid calibration status of lab. equipment's to be ensured on monthly basis.
ii	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		SR	✓	
iii	Sampling for testing of construction materials (Coarse aggregate, fine aggregate etc.), materials for concrete mix design etc.		As agreed / required	A	Physical	Once per each source and further as per requirement well before commencement of concern work	Tech Specs and Const. Drawings		SR/TR	✓	Test report along with the recommendations from Owner acceptable laboratories to be submitted to EIC/FQA head for their review and acceptance.
iv	Submission of Monthly Test/QA reports/data		As agreed / required	A	Physical	Monthly	Tech Specs and Const. Drawings		SR/TR	✓	
v	Stacking and storage of construction materials and components at site		As per IS:4082	B	Physical	Random minimum 10% in each week	Tech Specs and Const. Drawings, Manufacturer's guidelines and IS 4082		SR		
vi	Survey: Construction of Bench Mark / Grid Pillars	To mark reference co-ordinate & elevation	As required / agreed	B	Physical	Each Bench Mark/ Grid Pillars	As per technical specifications/approved drawings		SR	✓	Joint protocol for co-ordinate and elevation
2 EXCAVATION, FILLING/BACKFILLING AND COMPACTION WORKS											
2.1 Excavations-											
i		Nature, type of soil/rock before and during excavations	As agreed / required	B	Visual/ Measurement	Random minimum 10%	Tech Specs and Const. Drawings/IS 1892		SR	✓	GTI report to be referred. In case of ambiguity localised GTI may be carried out or excavation samples to be send to NTPC acceptable Third party lab for determination of soil/rock strata.
ii		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	✓	
2.2 Excavation in Hard Rock- If required											
i		Receipt, Storage, accountability of Explosive	As agreed / required	B	Physical	Random minimum 10% in each week	Indian Explosive Act 1940/all statutory norms, Tech Specs and Const. Drawings		SR	✓	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 minimum 10% in each shift	IS:4081, Tech Specs and Const. Drawings/ scheme		SR		
iii		Submission of Blasting report to EIC	As agreed / required	B	Physical	Each blast	Tech Specs and Const. Drawings			✓	
iv		Excavation in Hard Rock (Blasting Prohibited)	As agreed / required	B	Physical	100%	As per approved drawing/ scheme, Tech Specs and Const. Drawings		SR	✓	
2.3 Filling/ Backfilling											
i	Suitability of fill material	Grain size analysis, Organic Matter, Liquid Limit, plastic limit, Shrinkage limit & Free Swell Index and chemical analysis(like Organic Matter, Calcium carbonate, pH value, Total soluble sulphate etc.) as required in TS	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	✓	Test report along with the recommendations regarding suitability of the fill material from NTPC acceptable laboratories to be submitted to EIC for review and acceptance. Geo technical investigation report may also be considered as basis for suitability of fill material if available as per the discretion of EIC.
2.4	Standard proctor Test	Optimum moisture content (OMC) and max. dry density (MDD) of filling/backfilling materials	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	✓	

2.5	Compaction of Filling / Backfilling Works								
i	Moisture content	Moisture content of fill before compaction	As per IS: 2720	B	Physical	Random minimum 10%	IS 2720 (Pt.II), Tech Specs and Const. Drawings	SR/TR	✓
ii		Dry density by core cutter method ---- OR---- Dry density in place by sand replacement method ---- OR---- any other method as per IS 2720	As per IS: 2720	A	Physical	i) For foundation back fill: one in every 10 foundations for each compacted layer. ii) For area filling: every 1000 SQM area for each compacted layer.	IS 2720 (Pt. XXIX)/ IS 2720 (Pt. XXVIII)/ IS 2720 Relevant Part/ Tech Specs and Const. Drawings	SR / TR	✓ ✓
iii		Relative density (Density Index)	As per IS: 2720	A	Physical	----do---- (I) & (ii) above	IS 2720 (Pt. XIV), Tech Specs and Const. Drawings	SR/TR	✓
3	RAW MATERIALS FOR CONCRETE								
3.1	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	✓
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	✓
iii		Check for the storage of cement	As agreed / required	B	Physical	Monthly	IS:4082, IS 269, IS 1489, IS 455 and as per Tech. Specs	SR	✓
3.1 b	Fly ash (if applicable)								
		Physical and chemical properties as per IS 3812 Part I (Table 1 and 2)	As per IS 3812 Part I	A	Physical	once in a week or change of source whichever is earlier	IS:3812 Part I and Tech. Spec./Design mix.	SR/Test Report	✓
3.1 c	Silica Fume (If applicable)								
		Physical and chemical properties as per IS 15388 (Table 1 and 2)	as per IS 15388	A	Review of MTC/ test reports	For each batch of supply	IS 15388 and Tech. Spec./Design mix.	MTC	✓
3.2	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	✓
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/TR	✓
iii		Specific gravity, Soundness, Water absorption, Deleterious materials (coal & lignite, clay lumps, material finer than 75 micron sieve, soft fragment, shale, Total of % of all deleterious materials),	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/ TR	✓
iv		Alkali aggregate reactivity and Petrographic examination	IS 2386	A	Physical	Once for each source and after at an interval of 12 months whichever is earlier	IS: 2386 (Part-VII/VIII), IS:383 /Tech Spec/ASTM C-1260 / ASTM 1293	SR/LB/ TR	✓
v		Crushing value, Abrasion value and Impact value	IS:2386	A	Physical	Once for each source & for every change of source	IS:383, IS-2386 Part IV/Tech Spec	SR/LB/ TR	✓
3.3	Fine 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	✓
ii		Sieve analysis, Silt content (% finer than 75 micron)	As agreed / required	B	Physical	One per 100 cum. or part thereof	Tech Spec/ IS 2386 / IS 456/ IS 383	SR/LB/ TR	✓
iii		Specific gravity, Soundness, Water absorption, Deleterious materials (coal & lignite, clay lumps, material finer than 75 micron sieve, soft fragment, shale, Total of % of all deleterious materials (excluded mica as well as included mica content)), organic impurities	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/ TR	✓
iv		Alkali aggregate reactivity and Petrographic examination	IS 2386	A	Physical	Once for each source and after at an interval of 12 months which ever is earlier.	IS: 2386 (Part-VII/VIII), IS:383 /Tech Spec/ASTM C-1260 / ASTM 1293	SR/LB/ TR	✓

3.4	Water	Complete Testing as per IS:456-2000	As per IS:456	B	Testing	Once for each source and thereafter yearly in case of borewell. If water is used from open source like river, stream, canal etc., then water testing is to be done quarterly.	IS:456-2000/ Tech. spec.	TR	✓	
3.5	Admixtures for Concrete	Material/Type of admixture and its suitability	As per IS:9103	A	Review of MTC/ test reports	For each lot received at site	As per Designed mix and IS:9103/ Tech. Spec.	Test Report/ MTC	✓	Random sample may be send to Owner acceptable third party testing lab. for testing requirements as per TS and IS codes. Frequency of check may be decided by EIC/Head FQA based on quantity, requirement and Relevant IS code.
4	CONCRETING (MIXING, CONVEYING, PLACEMENT, COMPACTION, CURING & TESTING)									
4.1	Batching Plant (if installed)									
i		Calibration of Batching Plant		A	Physical	After initial setting up of batching plant, calibration by OEM / NABL accredited agency must be done before use of batching plant for production of concrete.	Review of calibration chart/ Certificate/IS 4925	Calibration Certificate	✓	Additionally, Batching Plant shall be calibrated regularly at least once in a 3 months in-house. The weights for batching plant calibration to be calibrated once in year by NPL/NABL accredited lab./Weights & Measures Dept. Load cells to be jointly signed (Agency, NTPC Execution & FQA) and sealed
4.2	CONCRETE									
i		Design Mix.	As per IS 456	A	Physical	Design mix shall be carried out at the start of the work and in case of change of source of concrete ingredients	Tech. Spec., IS 456	TR	✓	
ii		4 Trial mixes to ascertain the workability and cube strength	After receiving the recommended design	A	Physical	4 trial mix. for each mix proportion as per IS 10262	Tech. Spec., IS 456/IS 10262	SR/LB	✓	
iii		Concrete Cube strength Test	IS:516	A	Physical	As per IS 456 clause 15.2.2	IS:516, IS:456, Tech. Spec.	SR/LB/ TR	✓	1. For 7-day one sample/ 50 m3 or part thereof, 2. For 28 days sampling rate shall be as per IS 456 clause 15.2.2 Three test specimens shall be made for each sample
iv		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	✓	
v		Temperature Control of Concrete as per Tech. spec./IS standard	Thermometer	B	Physical	100%	Temperature as per technical specification/Relevant standard	SR	✓	
vi		Water Cement Ratio Batching of ingredients/ batch slip record.		B	Physical	For each batch of concrete	As per approved Design Mix	SR/Batch slip	✓	
vii		Placement of concrete, Compacting, Curing	As required	B	Physical	100%	IS:456, Period of curing as per IS 456	SR		
4.3	TESTS / CHECKS ON RCC STRUCTURE IN HARDENED CONDITION									
i		Visual inspection of concrete surface just after removal of shuttering	As agreed / required	B	Visual	100%	As per IS:456/ tech. Specification.	SR		
ii		Dimensional check on finished structures	As agreed / required	B	Measurement	100%	As per IS:456/ tech. Specification and Const. Drawings	SR/LB	✓	
iii		Position and alignment of embedded parts and inserts	As agreed / required	B	Visual	100%	As per provisions and tolerances of equipment supplier, Tech Specs and Const. Drawings			
iv		Embedment of inserts in concrete shall be checked for gap if any using hammer for all dynamic foundations	As agreed / required	B	Physical	100%	As per Technical Specification	SR	✓	No hollow sound
v		Submission of grouting / repair methodology to EIC for approval if concrete surface / position and alignment of embedded parts / inserts are found not complying to requirements.	--	B	Review and approval	once for each type of defect	As per provisions and tolerances, Tech Specs and Const. Drawings		✓	
vi		UPV Tests on top deck of TG foundation, Columns & Other Foundations as per Technical Spec.	IS : 516	A	Physical	As per Tech. Spec.	IS : 516/ As per Technical Specification	Test Report	✓	
vii		Core Test	IS:516	A	Physical	As required by Owner EIC.	As per IS:456, IS 516	SR/LB/ TR	✓	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 4.2 iii) above and as per discretion of EIC.
viii		Water Tightness Test of liquid retaining structure/ tanks	As required	A	Test	100%	IS:3370/ Tech. Specification	SR/LB	✓	

5	REINFORCEMENT STEEL AND ITS PLACEMENT								
i	Material	Physical/Mechanical 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, IS 13920 , Tech spec and cont. drawing	MTC	✓ To be procured from Owner approved source.
	Coupler	Physical/Mechanical and chemical properties as per relevant IS codes and Tech spec.	As agreed/required	A	Review of MTC	Each batch/lot of delivery	IS 16172, Tech spec and cont. drawing	MTC	✓ MTC shall contain all the parameters specified in the technical specifications
ii		Freedom from cracks surface flaws, Lamination & excessive rust.	As agreed / required	B	Visual	Random minimum 10% 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	100%	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	100%	IS 456, Tech Specs and Const. Drawings	SR	✓
v		Check for storage of steel	As agreed / required	B	Physical	Each delivery at site	IS 4082, IS 1786, IS 2062, As per Tech. Specs and relevant codes	SR	✓
6	FOUNDATION SYSTEM								
i		Foundation casting - Layout, Shape, dimensions, Reinforcement, concreting, curing etc.	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	STAGING AND FORMS								
i		Materials and accessories	As agreed / required	B	Visual	Once before start of work	As per relevant IS, Tech Specs and Const. Drawings	SR	
ii		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	
iii		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 concreting	As per provisions and tolerances in IS 456, Tech Specs and Const. Drawings	SR	✓
8	Deleted								
9	EMBEDDED PARTS (INCLUDING LAYING OF RAILS & ANCHOR FASTENERS) --If Applicable.								
i		Material	As agreed / required	B	Review of MTC/ test reports	Each batch/lot of delivery	As per Tech Specs and Const. Drawings	SR/MTC	✓
i		Position / alignment / levels of embedded parts / bolt hole / pipe sleeves / rails / PVC pipes / etc. as per TS and construction Drg.	As agreed / required	B	Physical/ measurement	100%	As per 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.
ii		Welding / tying of embedment to reinforcement	As agreed / required	B	Physical/ measurement	Random minimum 10% in each shift	As per Tech Specs and Const. Drawings	SR	
10	JOINTS IN CONCRETE, DAMP PROOF COURSE								
i	JOINTS IN CONCRETE	Joint material - bitumen impregnated fibre board, PVC water stops, Sealing compound, Expanded polystyrene board, Hydrophilic strip, Acrylic polymer etc. (as given in technical spec)	As per manufacturer Standards	A	Review of MTC/ test reports	Each batch/lot of delivery	Tech Specs and Const. Drawings, IS 1838, IS 1834, IS12200	SR/MTC	✓
ii	DAMP PROOF COURSE	Material - Hot bitumen and water proofing materials etc. (as given in technical spec).	As agreed / required	A	Review of MTC/ test reports	Each batch/lot of delivery	Tech Specs and Const. Drawings, IS 702	SR/MTC	✓
iii		Acceptance of installation of Joints material & Acceptance of damp proof course.	As agreed / required	B	Acceptance	Each installation Random minimum 10%	Tech Specs and Const. Drawings		✓

11	GROUTING									
i		Material	As agreed / required	A	Review of MTC/ test reports	Each batch/lot of delivery	Tech Specs and Const. Drawings	SR/MTC	✓	
ii		Compressive strength of grouting material before its use.	As agreed / required	A	Physical	Each batch/lot of delivery	Tech Specs and Const. Drawings	SR/LB/ TR	✓	
iii		Compressive strength of cubes after grouting.	As agreed / required	A	Physical	Random minimum 10%	Tech Specs and Const. Drawings	SR/LB/ TR	✓	
iv		Acceptance of the grouts : Mixing, placement, application and grout pressure (as applicable)	As agreed / required	B	Physical	Each grout section	Tech Specs and Const. Drawings	SR	✓	
12	MASONARY WORKS									
12.1	Test on Bricks									
i		Compressive strength, water absorption, efflorescence.	As agreed / required	A	Measurement/ Physical Test	As per relevant IS Code/ One Sample for 30,000 nos. or part thereof	IS: 1077, IS:13757, IS: 12894 / Tech Specs and const. Drawings	SR/LB/ TR	✓	Pulverized Fuel Ash-Cement Bricks to confirm to IS 16720 (latest revision).
ii		Dimensions , shape, warpage.	As agreed / required	B	Measurement/ Physical Test	As per relevant IS Code/ One Sample for 30,000 nos. or part thereof	IS: 1077, IS:13757, IS: 12894 / Tech Specs and const. Drawings	SR/LB	✓	Warpage test is applicable for facing bricks only as per IS:2691.
12.2	Modular aerated panel									
i	Material	As required	As agreed / required	A	Review of test report	Each batch/lot of delivery	Tech Specs and Const. Drawings	SR/LR	✓	
12.3	Autoclaved Aerated Concrete (AAC) block									
i		Material	As agreed / required	B	Review of MTC	Each batch/lot of delivery	Tech Specs /IS 2185 Part III and Const. Drawings	SR/MTC	✓	
ii		Compressive Strength and Density	As agreed / required	A	Physical	As per relevant IS Code/ One Sample for 10,000 nos. or part thereof	Tech Specs /IS 2185 Part III	TR	✓	
iii		Dimensions, shape	As agreed / required	B	Physical	As per relevant IS Code/ One Sample for 10,000 nos. or part thereof	Tech Specs /IS 2185 Part III	TR/SR	✓	
12.4	Test on Mortar									
i	Sand	Grading	As agreed / required	B	Test	once per 100 Cum or part thereof	IS:2116	SR/LB	✓	
ii		Compressive strength	As agreed / required	B	Test	At Random minimum 10%	IS 2250-1981, Tech Specs and Const. Drawings	SR/TR	✓	
12.5	Masonry construction	Workmanship, verticality and alignment	As agreed / required	B	Visual/ Physical	100%	IS 2212, IS 1905 , Tech Specs and Const. Drawings	SR/LB		
13	PLASTERING- MATERIAL AND WORKMANSHIP									
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/TR	✓	
ii		Grading	As agreed / required	B	Physical	50 Cum./or part thereof	Tech Specs and Const. Drawings	SR/TR	✓	
iii		Silt content (% finer than 75 micron)	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 (if applicable)	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 (if applicable)	Galvanized hexagonal wire netting for lath plastering	As agreed / required	B	Review of MTC/ test reports	Each batch/lot of delivery at site	Tech Specs and Const. Drawings	SR/MTC	✓	
vi		Thickness, Trueness and finishing of plaster, grooves etc.	As agreed / required	B	Visual/ Measurement	Random minimum 10% in each shift	Tech Specs and Const. Drawings	SR/LB	✓	
14	PAINTING SYSTEM - CONCRETE WORKS AND PLASTERED MASONARY SURFACES									
i		Materials and accessories- Oil Bound, Acrylic Emulsion, Chemical Resistant, Oil Resistant Paint etc. as applicable (as given in technical spec).	As agreed / required	A	Review of MTC/ test reports	Each batch/lot of delivery	Tech Specs and Const. Drawings	SR/MTC	✓	
ii	Surface preparation	As required	As agreed / required	B	Physical / visual	Random minimum 10% in each shift	Tech Specs and Const. Drawings	SR		
iii	Acceptance of painted surfaces	Shade, finish, DFT	As agreed / required	B	Physical/visual	Each surface at Random minimum 10%	Tech Specs and Const. Drawings	SR	✓	

14.2	PAINTING SYSTEM - STEEL WORKS (OTHER THAN STRUCTURAL STEEL WORKS)									
i		Painting 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	✓	
v		Acceptance of painted surfaces : DFT, Finish, Shade	Elcometer	A	Visual and measurement	Each Erection Mark	Tech Specs and Const. Drawings	SR	✓	
15	SHEETING, INSULATION & ALLIED WORK									
i		Material : Profiled Colour coated Metal Deck & Cladding sheets	As agreed / required	A	Review of CHP/ Test reports	Each lot received at site	Tech Specs and/ Const. Drawings/ profiled drawing	CHP/TR	✓	Co-relation with CHP/TR (Video-jet printing or coil no. or any other means) may be verified with the lot received at site.
ii		Insulation material (other than Chimney insulation), galvanized wire net, aluminium foil, fasteners	As agreed / required	A	Review of MTC/ test reports	Each lot received at site	Tech Specs and/ Const. Drawings	SR / LB/MTC	✓	All tests as per specification
iii		Insulation material (for Chimney insulation)	As agreed / required	A	Review of MTC/CHP/MDCC reports	Each lot received at site	Tech Specs and/ Const. Drawings	MTC/CHP/ MDCC/Insp ection report	✓	
iv		Installation, lap alignment & workmanship.	As agreed / required	B	Visual/ Physical	Random minimum 10% in each shift	Tech Specs and/ Const. Drawings	SR		No gas cutting of colour coated sheets acceptable .
v		Finishing and acceptance	As agreed / required	B	Visual/ Physical	Each installation	Tech Specs and/ Const. Drawings	SR/LB	✓	
16	DOORS , WINDOWS, VENTILATORS & GRILLS									
i	Steel doors	Materials & Check for shape tolerances thickness, welding & finishing of sections as per TS	As agreed / required	B	Visual/ Physical / test report	For each lot received at site	Tech Specs and Const. Drawings	SR / LB/TR	✓	Review of test report
ii	Wood/Timber	Moisture content & anatomy	As agreed / required	A	Physical	For each lot received at site	Tech Specs and Const. Drawings/ IS 287	SR/LB	✓	Tests to be carried out from Owner acceptable third party lab. like Forest Research Institute Dehradun. Frequency of check may be decided by EIC based on quantity and requirement.
iii	Wood work in frames	Check for dimensions, surface finish	As agreed/ required	B	Physical	Random minimum 10% for each installation	Tech Specs and Const. Drawings	SR	✓	
iv	Flush Door shutter	End emersion test, knife test, adhesion test	As agreed/ required	A	Review of MTC/test reports	For each lot received at site	IS 2202, Tech Specs and Const. Drawings	SR/MTC	✓	The required tests to be carried out from Owner acceptable third party lab. like Forest Research Institute Dehradun in addition to review of MTC/TR. Frequency of check may be decided by EIC based on quantity, requirement and IS 2202.
v	Particle Door		As agreed / required	A	Review of MTC/ test reports	For each lot received at site	IS:12823, Tech Specs and Const. Drawings	SR/MTC	✓	The required tests to be carried out from Owner acceptable third party lab. like Forest Research Institute Dehradun in addition to review of MTC/TR. Frequency of check may be decided by EIC based on quantity, requirement and IS 12823.
vi	Aluminium works (Door & Window)	Materials- Aluminium sections, Coating (Anodizing/powder coating etc)	As agreed / required	A	Visual/ Physical / test report	For each lot received at site	IS: 1948, IS: 1949, IS:733, IS1285, IS:1868, IS:11857/ Tech Specs and Const. Drawings	SR / LB	✓	Randomly one sample of each type may be send to Owner acceptable third party testing lab. for testing requirements as per TS and IS codes. Anodization shall be as per Tech. Spec. Frequency of check may be decided by EIC based on quantity, requirement and relevant IS code.
vii	Fire proof doors	Material & Receipt inspection	As agreed / required	A	Review of MTC/ purchase order (unpriced copy) / drawings of suppliers / certificate of CBRI/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	Each lot of delivery	Tech Specs and Const. Drawings	SR/MTC	✓	
xi	Glass and glazing, Reflective toughened glass as per TS.	Material	As agreed / required	B	Review of MTC/ test reports	Each lot of delivery	IS: 14900, IS:1081, IS: 3548, IS:5437 Tech Specs and Const. Drawings	SR/MTC	✓	
xii	Curved dome on roof/ Poly Carbonate Sheet	Materials - As per tech spec.	As agreed / required	B	Review of MTC/ test reports	Each lot of delivery	Tech Specs and Const. Drawings	SR/MTC	✓	Randomly one sample of each type may be send to Owner acceptable third party testing lab. for testing requirements as per TS and IS codes. Frequency of check may be decided by EIC based on quantity, requirement and Relevant IS code.


xiii	False Ceiling	Materials - As per tech spec.	As agreed / required	A	Review of MTC/ test reports	For each lot received at site	Tech Specs and Const. Drawings	SR/MTC	✓	Randomly one sample of each type may be send to Owner acceptable third party testing lab. for testing requirements as per TS and IS codes. Frequency of check may be decided by EIC based on quantity, requirement and Relevant IS code.
xiv		Installation finishing and acceptance	As agreed / required	B	Visual / physical	Random minimum 10%	Tech Specs and Const. Drawings	SR		
17	WATER PROOFING (Roof / Basement Treatment)									
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			
iii	Elastomeric coatings	Material- Primer coat, finishing coat	As 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	Wearing course	Materials - As per tech spec.	As 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
v		Acceptance of water proofing work	As agreed / required	B	Physical	100%	Tech Specs and Const. Drawings			
18	Fencing and Gates									
i	PVC coated chain link fencing (IS 2720), Welded wire mesh (IS 1566), Reinforced barbed tape galvanised (IS 2629) etc.	Materials	As agreed / required	A	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
ii	Structural steel, painting system, caster wheel, ball and bearing, fixtures and fasteners	Materials	As agreed / required	A	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
iii		Alignments, erection painting, DFT etc. and acceptance of the installation and working	As agreed / required	B	Physical / measurements	Each installation	Tech Specs and Const. Drawings	SR	✓	
19	FLOOR FINISHES AND ALIED WORKS									
i	Cement Concrete Flooring	Glass/ PVC strips in joints	As agreed / required	B	Physical	Random minimum 10% in each shift	Tech Specs and Const. Drawings	SR		
ii	Ceramic tiles, vitrified tiles, glass mosaic, acid alkali resistant tiles, heavy duty cement concrete tiles (Materials as per TS)	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. In case non-availability of MTC, sample to be tested as per relevant IS code.
iii	Interlocking Blocks	Materials	As agreed / required	A	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 lot of delivery	Tech Specs/ BOQ and Const. Drawings	SR/TR	✓	
v	Metallic / non-metallic hardener	Material	As agreed / required	B	Review of MTC / test reports	Each lot of delivery	Tech Specs and Const. Drawings	SR/TR/MT C	✓	
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 lot of delivery	Tech Specs and Const. Drawings	TR/MTC	✓	work to be done by skilled manpower
		Surface preparation (as applicable)	As agreed / required	B	Physical	Random minimum 10% in each shift	Tech Specs and Const. Drawings, IS 2395			
viii	Rubber Flooring	Material	As agreed / required	A	Review of MTC/ test reports	Each lot of delivery	Tech Specs and Const. Drawings / IS 809	TR/MTC	✓	MTC shall contain all the parameters specified in the technical specifications
ix		Finishing and acceptance of all above BOI	As agreed / required	B	Physical	100%	Tech Specs and Const. Drawings	SR		
20	WATER SUPPLY / SANITORY INSTALLATIONS									
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 etc. as per TS	As agreed / required	B	Review of MTC/ test reports	Each lot of delivery	Tech Specs and Const. Drawings	SR/TR/MT C	✓	
ii		Leakage of pipes	As agreed / required	B	Physical	Each installation	Tech specs and const drawings	SR	✓	
iii		Acceptance of installations of all sanitary items and fixtures	As agreed / required	B	Acceptance	100%	Tech Specs and Const. Drawings	SR		
20.2	RCC Pipes									
i	Material (As per TS)	RCC pipes	As agreed / required	A	Review of MTC/ test reports	Each lot of delivery	Tech Specs,IS 458 and Const. Drawings	SR/TR/MT C	✓	To be procured from BIS Approved Sources having valid BIS License.
ii		Acceptance and leakage	As agreed / required	B	Physical	Random minimum 10%	Tech Specs and Const. Drawings	SR		
20.3	Water Storage Tanks									
i	Material (As per TS)	Over head / loft type	As agreed / required	A	Review of MTC/ test reports	Each lot of delivery	Tech Specs and Const. Drawings	SR/TR/MT C	✓	To be procured from BIS Approved Sources having valid BIS License.
ii		Acceptance and leakage	As agreed / required	B	Acceptance	Random minimum 10%	Tech Specs and Const. Drawings	SR		

21.0	SPECIAL ITEMS								
21.1	Earthing Mat (Grounding System)								
i	Material (As per TS)	Earthing mat	As agreed / required	A	Review of MTC/ test reports	Each lot of delivery	As per relevant IS and Tech. Specs / Manufacturer's, IS 3043	SR/TR/MTC	✓
ii		Weld sizes & length	Visual/Tape	B	Visual/ Measurement	100%	Tech Specs and Const. Drawings		Owner approved electrodes shall be used
iii		D P test	DP test Kit	A	Physical	10% at random of the offered lot	Tech Specs and Const. Drawings	TR	✓
iv		Earth test	Earthing test kit	A	Physical	100%	Tech Specs and Const. Drawings,	SR/TR	✓
21.2	Bitumen layer for tank foundation								
i	Material (As per TS)	Grade of bitumen	As agreed / required	B	Review of MTC/ test reports	Each lot of delivery	As per relevant IS and Tech. Specs /MTC	SR/MTC	✓
ii	Acceptance and workmanship	Application / workmanship	As agreed / required	B	Physical	Random minimum 10%	Tech Specs and Const. Drawings	SR	
21.3	Composite Aluminium Panels and structural glazing								
i	Material (As per TS)	Type of aluminium panels / structural glazing / fasteners and fixtures / silicon sealant	As agreed / required	A	Review of MTC/ test reports	Each lot of delivery	Technical specifications / drawings	SR/TR/MTC	✓ MTC shall cover all the properties / parameters as per technical specifications
ii	Acceptance and workmanship	Installation / workmanship	As agreed / required	B	Physical	Random minimum 10%	Technical specifications / drawings	SR	
21.4	Pressure Release Valves								
i	Material (As per TS)		As agreed / required	B	Review of MTC/ test reports	Each lot of delivery	Technical specifications / drawings	SR/TR/MTC	✓
ii	Acceptance and workmanship	Acceptance / Installation / workmanship	As agreed / required	B	Physical	Random minimum 10%	Tech Specs and Const. Drawings	SR	✓
21.5	ANTI WEED TREATMENT								
i	Material (As per TS)	Anti-weed treatment materials	As agreed / required	B	Review of MTC/ test reports	Each batch of delivery	Tech Specs and Const. Drawings	SR/TR/MTC	✓
ii		Execution of treatment	As agreed / required	B	Physical	Random minimum 10% check for each treatment	Tech Specs and Const. Drawings	SR	
22	PILING WORK (If Applicable)								
22.1	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 and pile termination level	As required	B	Measurement	Random minimum 10%	As per appd. Drawings and technical specification	SR/LB	✓
iv		Cleaning/Flushing of pile bore	As required	B	Measurement	Each pile	IS 2911/ Tech. Specs.	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	✓
vi		Reinforcement cage/ alignment/ cover etc and pouring of concrete above cut off level.	As required	B	Measurement	100%	As per appd. Drawings and technical specification	SR/LB	✓
22.2	Testing								
i		Bentonite	IS:2720	A	Physical / Test report	Once per lot	As per IS:2720, IS 2911/ tech. Specs.	MTC/TR	✓ One sample from each source (brand/manufacturer) to be tested at Owner acceptable third party lab.
ii		Density check on sample of mud collected from pile bore bottom	IS 2911	B/A	Physical	Each pile/ Randomly 1 in 10 piles (i.e. 10%)	IS 2911/ Tech. Specs./approved PILING METHODOLOGY	SR/LB	✓ Tests to be done before placing of concrete.
ii		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/TR	✓
iii		Concrete Cube strength Test	IS:456	A	Physical	Frequency as per 4.2 (ii) above	IS:2911,IS:516, IS:456, As per appd. Drawings and technical specification	SR/LB/TR	✓
iv		Initial Pile Load Tests - Vertical (Compression), Lateral (Horizontal) and Pull-Out (Tension).	IS:2911 / as required	A	Testing	As per Technical Specification/IS standard	IS:2911, As per appd. Drawings and technical specification	SR/LB/TR	✓
v		Routine Pile Tests - Vertical Load Test (Compression) and Lateral Load Test (Horizontal)	IS:2911 / as required	A	Testing	As per Technical Specification/IS standard	IS:2911, As per appd. Drawings and technical specification	SR/LB/TR	✓
vi		Pile Integrity Tests (PIT)	PEM / as required	A	Testing	100%	IS:2911, As per appd. Drawings and technical specification and suppliers manual	Test Report	✓

23.0	GEOTECHNICAL INVESTIGATION WORK									
i		Deployment of Owner approved Geotechnical Investigation Agency - Equipment, 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 , approved drawing 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 , approved drawing and relevant IS Codes	SR		
iv		Conducting filed tests as per investigation scheme- such as, SPT/ERT/SCPT/PLT/PMT etc. if applicable	As required / agreed	B	Physical	each field test	As per technical specifications , approved drawing and relevant IS Codes	SR	✓	
v		Submission of Owner approved Final Geotechnical investigation report along with recommendations.	As required / agreed	B	Physical	After completion of investigation work	As per technical specifications and relevant IS Codes	-	✓	
24	ROAD WORKS									
24.1	Tests on Embankment, Subgrade Construction and Cut Formation									
A)	Suitability of Borrow Fill material									
i		Sand Content	As per IS 2720	A	Physical	Once per each type of source or change of source subject to a min. of 2 samples	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification, IS 2720 (Part IV)	SR/TR	✓	
ii		Plasticity Index Test	As per IS 2720	A	Physical	Once per each type of source or change of source subject to a min. of 2 samples	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification, IS 2720 (Part V)	SR/TR	✓	
iii		Density/ relative 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 MORTH 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 MORTH 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 MORTH 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 MORTH 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 MORTH specification, IS 2720 (Part XI)	SR/TR	✓	
B	Compaction									
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 MORTH specification, IS 2720 (Pl.VII)	SR/TR	✓	
ii		Moisture content of fill before compaction	As per IS: 2720	B	Physical	Random minimum 10%	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification, IS 2720 (Pl.II)	SR/TR	✓	
iii		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 MORTH specification, IS 2720 (Pl. XXIX)/ IS 2720 (Pl. XXVIII),	SR/TR	✓	
iv		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
24.2	Granular Sub-Base (GSB) (if applicable)									
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 MORTH specification	SR/TR	✓	
ii		Atterberg limits	Atterberg determination limits	A	Physical	One test per 400 cum	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
iii		Moisture Content prior to compaction	As required / agreed	B	Physical	One test per 400 cum	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
iv		Density of compacted Layer	As required / agreed	B	Physical	one test per 1000 sqm.	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
v		Deleterious Constituents	As required / agreed	B	Physical	As required	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
vi		CBR	As required / agreed	B	Physical	As required	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
		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

24.3 Water Bound Macadam (WBM)									
i		Aggregate Impact Value	Aggregate Impact value Test Apparatus	A	Physical	One test per 1000 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓
ii		Grading of aggregate	Set of IS Sieves	B	Physical	One test per 250 cum	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓
iii		combined Flakiness and Elongation Indices	Flakiness & Elongation test gauge	B	Physical	One test per 500 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓
iv		Atterberg limits of binding material	Atterberg limits determination	A	Physical	One test per 50 cum of binding material	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓
v		Atterberg limits of screenings	Atterberg limits determination	A	Physical	One test per 100 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓
24.4 Wet Mix Macadam (WMM) for base course and sub-base course									
i		Aggregate Impact value	Aggregate Impact value Test Apparatus	A	Physical	One test per 1000 cum of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓
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 MORTH 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 MORTH 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 MORTH 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 MORTH specification	SR/TR	✓ Template, straight edge
24.5 Premix Bituminous Macadam (BM)									
i		Quality of binder	As required / agreed	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 MORTH specification, IS 73	SR/TR	✓ Approved Source for Material Procurement shall be all Government Refineries
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 MORTH 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 MORTH 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 MORTH 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 MORTH 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 MORTH specification	SR/TR	✓
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 MORTH 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 MORTH 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 MORTH 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 MORTH 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 MORTH specification	SR/TR	✓
xii		Rate of spread of mixed materials	As required / agreed	B	Physical	At Regular Interval	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓
xiii		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
24.6 Bituminous Concrete									
i		Quality of binder	As required / agreed	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 MORTH specification, IS 73	SR/TR	✓ Approved Source for Material Procurement shall be all Government Refineries
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 MORTH specification	SR/TR	✓
iii		Flakiness Index and elongation index of aggregates	Flakiness & Elongation test gauge	B	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 MORTH specification	SR/TR	✓
iv		Soundness Test (Magnesium and Sodium Sulphate)	As required as per IS:2386	A	Physical	One test for each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓
v		Water absorption of aggregate	As required / agreed	B	Physical	One test for each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓

vi		Sand equivalent test	As required / agreed	B	Physical	One test for each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
vii		Plasticity Index	As required / agreed	B	Physical	One test for each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
viii		Polished stone value	As required / agreed	B	Physical	One test for each source and whenever there is change in the quality of aggregate	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
ix		Percentage of fractured faces	As required / agreed	B	Physical	One test per 350 cum of aggregate when crushed gravel is used	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
x		Mix Grading	Set of Sieves	B	Physical	One set for individual constituent and mixed aggregate from dryer 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 MORTH specification	SR/TR	✓	
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 MORTH 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 MORTH 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 MORTH 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 MORTH 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 MORTH 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 MORTH specification	SR/TR	✓	
		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
24.7 Premix surfacing and Seal coat										
i		Quality of binder	As required / agreed	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 MORTH 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 MORTH 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 MORTH 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 MORTH 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 MORTH specification	SR/TR	✓	
vi		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 MORTH specification	SR/TR	✓	
vii		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 MORTH specification	SR/TR	✓	
viii		Polished stone value	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 MORTH specification	SR/TR	✓	
ix		Temperature of binder at application	Thermometer	B	Physical	At regular interval	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
x		Binder Content	Bitumen extractor	A	Physical	Two tests per day per plant	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
xi		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 MORTH specification	SR/TR	✓	

24.8 Tack Coat/ Prime coat										
i		Quality of binder	As required / agreed	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 MORTH 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 MORTH 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 MORTH specification	SR/TR	✓	
24.9 RCC pavement/ PQC/ Geopolymer Concrete										
Quality checks for Materials used for Pavement concrete		As per Table 900-6 of MORTH Spec.								
Quality checks for concrete used for Pavement concrete		As per Table 900-6 of MORTH Spec.								
24.10 Alignment, Level, Surface regularity and rectification										
i		Horizontal alignment, Surface levels and Surface regularity	As required / agreed	B	Physical	As per section 900 of MORTH specification	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR		
ii		Rectification	As required / agreed	B	Physical	Each rectification	As per Tech Specs and Const. Drawings, Section 900 of MORTH specification	SR/TR	✓	
Main-supplier		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 Owner FQA and Execution Engineer, Class 'B' checks shall be witnessed by Owner Execution Engineer, Class 'C' checks shall be witnessed by Main contractor engineer. CLASS 'A' & 'B' CHECKS SHALL BE NTPC CHP STAGE.				For Owner Use		Owner DOC NO. :		
		SR - Site Register, TR- Test Report, LB-Log Book, 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). Note: Any non conformity/ deviation to the Quality plan must be brought to notice of NTPC/Owner. Dispositioning authority shall be the authorised representative of NTPC/Owner as per NTPC FQA system manual				 A Maharatna Company		REVIEWED BY	APPROVED BY	APPROVAL SEAL