

FIELD QUALITY PLAN (F.Q.P)

PROJECT:- 220 KV SUBSTATION MEHNA KHERA.

CUSTOMER:- HARYANA VIDYUT PRASARAN NIGAM LIMITED, PANCHKULA.

Contract No.:- REC-138.

WORK:- CIVIL & CONSTRUCTION WORK, ETC.

SR NO.	CHARACTERISTIC / ITEM	TYPE OF CHECK	PLACE OF WORK	INSTRUMENTS	QUANTUM FREQ. OF TEST	REF DOCUMENT/ ACCEPTANCE STD.	FORMAT/ RECORDS	REMARKS
1	GENERAL							
1.1	Check General Ground level, final ground level, plinth levels, and permanent bench mark.	Field test	Field	Leveling instrument	100% area once	Contour Plan as per GELO & Spec.	Site Record	
1.2	Check grid lines for whole area	Visual	Field	Steel measuring tape	100% area once	As per GELO	Site Record	
1.3	Check for location of individual unit/foundation	Visual	Field	Theodolite	100% area once	As per GELO	Site Record	
1.4	Check excavation of pit(s)	Visual	Field	Leveling instrument	All foundation	As per approved foundation drawing	Site Record	
1.5	Grain, particle size, surface texture and chemical composition of earth used for filling brought from outside	Physical	Field	Field/Lab	One sample per source or change of source	Contract document/ relevant code	Site Record	
1.6	Compaction test after earth filling/backfilling	Physical	Field/Lab	Lab	One Sample per 250 Cum of compacted area or part thereof.	AS per IS:2720 (Part-II & Part-XXVIII)	Site Record	Atleast one sample per 100 cum of compacted area for backfilling.

2	43 Grade OPC Cement manufactured by reputed cement manufacturers as per IS:8112 i.e. Ambuja/Vikram/Birla Plus/Ultratech/J.K. Cement/ACC/Shree etc. as per specification.							
2.1	Check apparent condition of cement prior to consumption.	Visual	Field	-	Random at site	IS: 8112/IS:1489	Site Record	Manufacture & expiry date.
2.2	Check soundness of cement	Test	Field/Lab	Field/ Lab	M.T.C. will be acceptable to carry out the works. However, for 4000 bags tests as per remarks be carried out at laboratory.	IS: 8112 (M.T.C.) /4031	Site Record	5 tests per lot or part thereof.
2.3	Check initial and final setting time	Test	Field/Lab	Lab		IS: 8112/IS:1489	Site Record	5 tests per lot or part thereof.
2.4	Compressive strength	Test	Laboratory	Lab		IS: 8112 (M.T.C.) /4031	Site Record	10 tests per lot or part thereof.
3.	OPEN FOUNDATION							
3.1	Check form work and leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.2	Check inserts & their leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.3	Check placement, alignment and embedment of anchor bolts	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.4	Check curing	Visual	Field		Every foundation 100%	IS: 456 (latest amendment)	Site Record	Min. 7 days (10 days during hot weather) continuously shall be kept wet in ponding/ gunny bags etc.
4.	COARSE AGGREGATES							
4.1	Bulk density, loss angles abrasion & aggregate impact value, specific gravity, aggregate crushing strength, limit of deleterious substance, flakiness index.	Test	Lab/Field	Lab Test	Three tests per 40 cum or part thereof for RCC & 80 cum or part thereof for non RCC.	IS: 2386, IS: 383	Site Record	

4.2	Sieve analysis	Visual	Field/Lab	Site Lab	One sample per 50cum or part thereof or change of source	IS: 383	Site Record	
4.3	Presence of unwanted material	Visual	Field	Site Lab	Random [one sample for 40cum or part thereof]	IS: 383	Site Record	
4.4	Impact Value & Flakiness	Test	Laboratory	Lab Test	Random [one sample for 40cum or part thereof]	IS: 2386, IS: 383	Site Record	
5	FINE AGGREGATES							
5.1	Gradation, Fineness modules, Silt content. limit of deleterious material, moisture content, flexural strength, substance aggregate impact value.	Test	Field	Field/ Lab test	Three tests per 40 cum or part thereof for RCC & 80cum or part thereof for others.	IS: 2386, IS: 383, IS: 526	Site Record	
5.2	Check absorption density, organic impurities, deleterious material, specific gravity.	Test	Field	Lab Test	One per source or as per specification (zone-II Table-4).	IS: 2386, IS: 383	Site Record	
6.	WATER						Site Record	
6.1	Chemical analysis (PH Limit of Acidity Alkalinity, %age of Solids)	Test	Field/Lab	Field/Lab Test	Three tests per source or change of source	IS:456 , IS: 3025	Site Record	3 tests each per source
7	Reinforcement Bars for CTD(Cold Twisted Defoed Bar),TMT(Thermo Mechanically Treated Bars)-TISCON,SAIL, ISSCO, RASHTRIYA ISPAT (Prime Manufacturers) OR Amba/ Rathi/Kamadhenu Barnala only after non availability certificate from Prime Manufacturers.							

7.1	Conduct tensile test, bend re-bond test & compressive strength.	Test	Laboratory	Lab Test	MTC acceptable. However lab test for a lot 30 to 40 MT or part there of for each type of R/F Steel	IS: 1786/As per specification	Site Record	
7.2	Visual inspection, local defects	Visual	Field	--	Every lot	--	Site Record	
7.3	Unit Weight	Test	Field	Site Lab	Every lot	As per records	Site Record	
8	STRUCTURAL STEEL				MTC Acceptable, Occasional lab test for a lot 30 to 40 MT or part there for each type.	IS: 1786/As per specification	Site Record	
9	BRICKS							
9.1	Efflorescence water Absorption test and Compressive strength etc.	Test	Laboratory	Lab Test	One sample per 50,000 bricks or part thereof.		Site Record	
9.2	Shape and Size/colour/ soundness	Visual	Field	--	Random		Site Record	
10	CONCRETE							
10.1	Workability/Slump test	Physical	Field	Slump Cone	Random at the time of mixing	As per approved mix design & clause 10.9	Site Record	5cum or part thereof for RCC columns and 20cum or part thereof for other RCC works.
10.2	Crushing strength	Test	Field/lab	Compressive strength testing machine	One set of 6 cubes for every 20 cum or part thereof.	As per Clause 16.1 Table 11 IS: 456-2000	Site Record	Number of samples shall be as per clause 15.2.2 of IS: 456:2000.
10.3	Water cement ratio	Physical	Field/lab	Measuring jar test	At random during batching/ concreting	As per approved mix design	Site Record	
10.4	Curing	Visual	Field		Every foundation	IS:456	Site Record	Min. seven days (10 days during summer in ponding/ providing gunny bags

10.5	Finish to be smooth with forms having smooth and even surface	Visual	Field		100% foundation	No uneven surface	Site Record	
10.6	Mark the date of concreting	Visual	Field		100% foundation		Site Record	
11	REINFORCEMENT STEEL PLACEMENT							
11.1	Check for the bar bending schedule before the start of work	Visual	Field		100%	As per construction drawing	Site Record	
11.2	Check cleanliness of bars	Visual	Field		100%		Site Record	
11.3	Check that all joints and crossing are properly tied & placed as per drawing including overlaps & chairs, cover blocks etc.	Visual	Field		100%	As per construction drawing	Site Record	
12	FORM WORK							
12.1	Check for warping, breakage or damage of the form	Physical	Field		Random	No damage	Site Record	
12.2	Joint should be such as to prevent loss of water	Physical	Field		Random	No loss of water/slurry	Site Record	
12.3	Alignment, Dimension, level and Height etc.	Physical	Field		Before every concrete	Tolerance as per IS standard Engg. practice (-12 to +5mm)	Site Record	
12.4	Cleaning and oiling	Visual	Field			After every use surface should be cleaned and oiled.	Site Record	Only shuttering oil be used. Other oils, if any should be removed
12.5	Form work removal	Physical	Field		100%	No damage of structure	Site Record	
13	MASONRY							
13.1	Preparation of Mortar	Physical	Field		Random	To be uniformly placed in specified ratio	Site Record	Checking by Jar Method
14.	PLASTERING							
14.1	Preparation of the surface	Visual	Field		Random	To be smooth, clean and free from loose material	Site Record	

14.2	Checking of plumb and finish	Visual/ Physical	Field		100%	Approved drawings	Site Record	To be in plane and plumb as per approved drawing
14.3	Curing	Physical	Field		Random		Site Record	Min. seven days (10 days during summer.
15.	DOORS & WINDOWS (ALUMINIUM SECTION)							
15.1	Fabrication	Physical	Field		100%	Approved drawing	Site Record & manufacturers records	
15.2	Alignment, operation of shutters	Visual	Field		100%	Smooth opening, closing & alignment		
15.3	Glass and Glazing	Physical	Field	The thickness is to be checked by standard/ screw gauge	Random	Proper placement/breakage/ Looseness, thickness		
16.	PAINTING							
16.1	Preparation of the surface	Visual	Field		Random	Clean smooth and free from dust		Primer, putty (wall) etc. to be used to have smooth surface.
16.2	Quality of material	Branded	Field		100%	Approved brand as per contract	Site Record	
16.3	Application of no. of coats	Physical	Field		Random	As per specification/ Drawing	Site Record	
17.	FLOORING	Visual	Field		100%	As per specification/ Drawing	Site Record	
18	WATER PROOFING/ROOF TREATMENT	Physical	Field		Random	As per specification/ Drawing	Site Record	
19.	PLUMBING & SANITATION	Physical	Field		Random	As per specification/ Drawing	Site Record	

20.	ROADS							
A.	Bitumenous Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index	Field/Lab	Lab		One sample per 200 cum or part thereof.	As per IS:2386 (Part-I, IV & V) IS: 5640	Site Record	
	Grading requirement	Field/Lab	Lab		One sample per 100 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
(ii)	Fine aggregate							
	Deleterious material	Lab	Lab		As required by Engineer-in-charge	As per IS:2386 (Part-III)	Site Record	
(iii)	Bitumen	Lab	Lab		As required by Engineer-in-charge	As prescribed in IS:73	Site Record	
B.	Cement Concrete Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index.	Field/Lab	Lab		One sample per 100 cum or part thereof or change of source	As per IS:2386 (Part-I & IV)	Site Record	Before approval of the query and every subsequent change in source of supply one test per 100cum or part thereof is to be conducted.
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of one test per day.

(ii)	Fine aggregate							
	Silt content	Field	Field lab		One test per 15 cum or part thereof.	As per PWD specification	Site Record	
	Gradation of sand	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-II)	Site Record	
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of two tests per day.
	Mix aggregate	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
	Flexural strength	Lab	Lab		One test consisting of 8 specimen for 30 cum or part thereof.	As per IS:526	Site Record	
21	FENCING AND GATES							
21.1	Height of fencing	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.2	Spacing of fencing posts	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.3	Site surfacing and gravel spreading	Physical			Random	Tolerance as per IS specification/ drawings	Site Record	
22.	Terrazzo Tiles or Vitrified Tiles	Lab			One Test /Lot	As per IS:1237/ drawing	Site Record	

FIELD QUALITY PLAN (F.Q.P)

PROJECT:- 220 KV SUBSTATION NEEMWALA.

CUSTOMER:- HARYANA VIDYUT PRASARAN NIGAM LIMITED, PANCHKULA.

Contract No :- REC-138.

WORK:- CIVIL & CONSTRUCTION WORK, ETC.

SR NO.	CHARACTERISTIC / ITEM	TYPE OF CHECK	PLACE OF WORK	INSTRUMENTS	QUANTUM FREQ. OF TEST	REF DOCUMENT/ ACCEPTANCE STD.	FORMAT/ RECORDS	REMARKS
1	GENERAL							
1.1	Check General Ground level, final ground level, plinth levels, and permanent bench mark.	Field test	Field	Leveling instrument	100% area once	Contour Plan as per GELO & Spec.	Site Record	
1.2	Check grid lines for whole area	Visual	Field	Steel measuring tape	100% area once	As per GELO	Site Record	
1.3	Check for location of individual unit/foundation	Visual	Field	Theodolite	100% area once	As per GELO	Site Record	
1.4	Check excavation of pit(s)	Visual	Field	Leveling instrument	All foundation	As per approved foundation drawing	Site Record	
1.5	Grain, particle size, surface texture and chemical composition of earth used for filling brought from outside	Physical	Field	Field/Lab	One sample per source or change of source	Contract document/ relevant code	Site Record	
1.6	Compaction test after earth filling/backfilling	Physical	Field/Lab	Lab	One Sample per 250 Cum of compacted area or part thereof.	AS per IS:2720 (Part-II & Part-XXVIII)	Site Record	Atleast one sample per 100 cum of compacted area for backfilling.

2	43 Grade OPC Cement manufactured by reputed cement manufacturers as per IS:8112 i.e. Ambuja/Vikram/Birla Plus/Ultratech/J.K. Cement/ACC/Shree etc. as per specification.							
2.1	Check apparent condition of cement prior to consumption.	Visual	Field	-	Random at site	IS: 8112/IS:1489	Site Record	Manufacture & expiry date.
2.2	Check soundness of cement	Test	Field/Lab	Field/ Lab	M.T.C. will be acceptable to carry out the works. However, for 4000 bags tests as per remarks be carried out at laboratory.	IS: 8112 (M.T.C.) /4031	Site Record	5 tests per lot or part thereof.
2.3	Check initial and final setting time	Test	Field/Lab	Lab		IS: 8112/IS:1489	Site Record	5 tests per lot or part thereof.
2.4	Compressive strength	Test	Laboratory	Lab		IS: 8112 (M.T.C.) /4031	Site Record	10 tests per lot or part thereof.
3.	OPEN FOUNDATION							
3.1	Check form work and leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.2	Check inserts & their leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.3	Check placement, alignment and embedment of anchor bolts	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.4	Check curing	Visual	Field		Every foundation 100%	IS: 456 (latest amendment)	Site Record	Min. 7 days (10 days during hot weather) continuously shall be kept wet in ponding/ gunny bags etc.
4.	COARSE AGGREGATES							
4.1	Bulk density, loss angles abrasion & aggregate impact value, specific gravity, aggregate crushing strength, limit of deleterious substance, flakiness index.	Test	Lab/Field	Lab Test	Three tests per 40 cum or part thereof for RCC & 80 cum or part thereof for non RCC.	IS: 2386, IS: 383	Site Record	

4.2	Sieve analysis	Visual	Field/Lab	Site Lab	One sample per 50cum or part thereof or change of source	IS: 383	Site Record	
4.3	Presence of unwanted material	Visual	Field	Site Lab	Random [one sample for 40cum or part thereof]	IS: 383	Site Record	
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6.	WATER						Site Record	
6.1	Chemical analysis (PH Limit of Acidity Alkalinity, %age of Solids)	Test	Field/Lab	Field/Lab Test	Three tests per source or change of source	IS:456 , IS: 3025	Site Record	3 tests each per source
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7.2	Visual inspection, local defects	Visual	Field	--	Every lot	--	Site Record	
7.3	Unit Weight	Test	Field	Site Lab	Every lot	As per records	Site Record	
8	STRUCTURAL STEEL				MTC Acceptable, Occasional lab test for a lot 30 to 40 MT or part there for each type.	IS: 1786/As per specification	Site Record	
9	BRICKS							
9.1	Efflorescence water Absorption test and Compressive strength etc.	Test	Laboratory	Lab Test	One sample per 50,000 bricks or part thereof.		Site Record	
9.2	Shape and Size/colour/ soundness	Visual	Field	--	Random		Site Record	
10	CONCRETE							
10.1	Workability/Slump test	Physical	Field	Slump Cone	Random at the time of mixing	As per approved mix design & clause 10.9	Site Record	5cum or part thereof for RCC columns and 20cum or part thereof for other RCC works.
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10.3	Water cement ratio	Physical	Field/lab	Measuring jar test	At random during batching/ concreting	As per approved mix design	Site Record	
10.4	Curing	Visual	Field		Every foundation	IS:456	Site Record	Min. seven days (10 days during summer in ponding/ providing gunny bags

10.5	Finish to be smooth with forms having smooth and even surface	Visual	Field		100% foundation	No uneven surface	Site Record	
10.6	Mark the date of concreting	Visual	Field		100% foundation		Site Record	
11	REINFORCEMENT STEEL PLACEMENT							
11.1	Check for the bar bending schedule before the start of work	Visual	Field		100%	As per construction drawing	Site Record	
11.2	Check cleanliness of bars	Visual	Field		100%		Site Record	
11.3	Check that all joints and crossing are properly tied & placed as per drawing including overlaps & chairs, cover blocks etc.	Visual	Field		100%	As per construction drawing	Site Record	
12	FORM WORK							
12.1	Check for warping, breakage or damage of the form	Physical	Field		Random	No damage	Site Record	
12.2	Joint should be such as to prevent loss of water	Physical	Field		Random	No loss of water/slurry	Site Record	
12.3	Alignment, Dimension, level and Height etc.	Physical	Field		Before every concrete	Tolerance as per IS standard Engg. practice (-12 to +5mm)	Site Record	
12.4	Cleaning and oiling	Visual	Field			After every use surface should be cleaned and oiled.	Site Record	Only shuttering oil be used. Other oils, if any should be removed
12.5	Form work removal	Physical	Field		100%	No damage of structure	Site Record	
13	MASONRY							
13.1	Preparation of Mortar	Physical	Field		Random	To be uniformly placed in specified ratio	Site Record	Checking by Jar Method
14.	PLASTERING							
14.1	Preparation of the surface	Visual	Field		Random	To be smooth, clean and free from loose material	Site Record	

14.2	Checking of plumb and finish	Visual/ Physical	Field		100%	Approved drawings	Site Record	To be in plane and plumb as per approved drawing
14.3	Curing	Physical	Field		Random		Site Record	Min. seven days (10 days during summer.
15.	DOORS & WINDOWS (ALUMINIUM SECTION)							
15.1	Fabrication	Physical	Field		100%	Approved drawing	Site Record & manufacturers records	
15.2	Alignment, operation of shutters	Visual	Field		100%	Smooth opening, closing & alignment		
15.3	Glass and Glazing	Physical	Field	The thickness is to be checked by standard/ screw gauge	Random	Proper placement/breakage/ Looseness, thickness		
16.	PAINTING							
16.1	Preparation of the surface	Visual	Field		Random	Clean smooth and free from dust		Primer, putty (wall) etc. to be used to have smooth surface.
16.2	Quality of material	Branded	Field		100%	Approved brand as per contract	Site Record	
16.3	Application of no. of coats	Physical	Field		Random	As per specification/ Drawing	Site Record	
17.	FLOORING	Visual	Field		100%	As per specification/ Drawing	Site Record	
18	WATER PROOFING/ROOF TREATMENT	Physical	Field		Random	As per specification/ Drawing	Site Record	
19.	PLUMBING & SANITATION	Physical	Field		Random	As per specification/ Drawing	Site Record	

20.	ROADS							
A.	Bitumenous Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index	Field/Lab	Lab		One sample per 200 cum or part thereof.	As per IS:2386 (Part-I, IV & V) IS: 5640	Site Record	
	Grading requirement	Field/Lab	Lab		One sample per 100 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
(ii)	Fine aggregate							
	Deleterious material	Lab	Lab		As required by Engineer-in-charge	As per IS:2386 (Part-III)	Site Record	
(iii)	Bitumen	Lab	Lab		As required by Engineer-in-charge	As prescribed in IS:73	Site Record	
B.	Cement Concrete Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index.	Field/Lab	Lab		One sample per 100 cum or part thereof or change of source	As per IS:2386 (Part-I & IV)	Site Record	Before approval of the query and every subsequent change in source of supply one test per 100cum or part thereof is to be conducted.
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of one test per day.

(ii)	Fine aggregate							
	Silt content	Field	Field lab		One test per 15 cum or part thereof.	As per PWD specification	Site Record	
	Gradation of sand	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-II)	Site Record	
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of two tests per day.
	Mix aggregate	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
	Flexural strength	Lab	Lab		One test consisting of 8 specimen for 30 cum or part thereof.	As per IS:526	Site Record	
21	FENCING AND GATES							
21.1	Height of fencing	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.2	Spacing of fencing posts	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.3	Site surfacing and gravel spreading	Physical			Random	Tolerance as per IS specification/ drawings	Site Record	
22.	Terrazzo Tiles or Vitrified Tiles	Lab			One Test /Lot	As per IS:1237/ drawing	Site Record	

FIELD QUALITY PLAN (F.Q.P)

PROJECT:- 02 NO. 220 KV BAYS AT BHIWANI .

CUSTOMER:- HARYANA VIDYUT PRASARAN NIGAM LIMITED, PANCHKULA.

Contract No :- REC-138.

WORK:- CIVIL & CONSTRUCTION WORK, ETC.

SR NO.	CHARACTERISTIC / ITEM	TYPE OF CHECK	PLACE OF WORK	INSTRUMENTS	QUANTUM FREQ. OF TEST	REF DOCUMENT/ ACCEPTANCE STD.	FORMAT/ RECORDS	REMARKS
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1.2	Check grid lines for whole area	Visual	Field	Steel measuring tape	100% area once	As per GELO	Site Record	
1.3	Check for location of individual unit/foundation	Visual	Field	Theodolite	100% area once	As per GELO	Site Record	
1.4	Check excavation of pit(s)	Visual	Field	Leveling instrument	All foundation	As per approved foundation drawing	Site Record	
1.5	Grain, particle size, surface texture and chemical composition of earth used for filling brought from outside	Physical	Field	Field/Lab	One sample per source or change of source	Contract document/ relevant code	Site Record	
1.6	Compaction test after earth filling/backfilling	Physical	Field/Lab	Lab	One Sample per 250 Cum of compacted area or part thereof.	AS per IS:2720 (Part-II & Part-XXVIII)	Site Record	Atleast one sample per 100 cum of compacted area for backfilling.

2	43 Grade OPC Cement manufactured by reputed cement manufacturers as per IS:8112 i.e. Ambuja/Vikram/Birla Plus/Ultratech/J.K. Cement/ACC/Shree etc. as per specification.							
2.1	Check apparent condition of cement prior to consumption.	Visual	Field	-	Random at site	IS: 8112/IS:1489	Site Record	Manufacture & expiry date.
2.2	Check soundness of cement	Test	Field/Lab	Field/ Lab	M.T.C. will be acceptable to carry out the works. However, for 4000 bags tests as per remarks be carried out at laboratory.	IS: 8112 (M.T.C.) /4031	Site Record	5 tests per lot or part thereof.
2.3	Check initial and final setting time	Test	Field/Lab	Lab		IS: 8112/IS:1489	Site Record	5 tests per lot or part thereof.
2.4	Compressive strength	Test	Laboratory	Lab		IS: 8112 (M.T.C.) /4031	Site Record	10 tests per lot or part thereof.
3.	OPEN FOUNDATION							
3.1	Check form work and leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.2	Check inserts & their leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.3	Check placement, alignment and embedment of anchor bolts	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.4	Check curing	Visual	Field		Every foundation 100%	IS: 456 (latest amendment)	Site Record	Min. 7 days (10 days during hot weather) continuously shall be kept wet in ponding/ gunny bags etc.
4.	COARSE AGGREGATES							
4.1	Bulk density, loss angles abrasion & aggregate impact value, specific gravity, aggregate crushing strength, limit of deleterious substance, flakiness index.	Test	Lab/Field	Lab Test	Three tests per 40 cum or part thereof for RCC & 80 cum or part thereof for non RCC.	IS: 2386, IS: 383	Site Record	

4.2	Sieve analysis	Visual	Field/Lab	Site Lab	One sample per 50cum or part thereof or change of source	IS: 383	Site Record	
4.3	Presence of unwanted material	Visual	Field	Site Lab	Random [one sample for 40cum or part thereof]	IS: 383	Site Record	
4.4	Impact Value & Flakiness	Test	Laboratory	Lab Test	Random [one sample for 40cum or part thereof]	IS: 2386, IS: 383	Site Record	
5	FINE AGGREGATES							
5.1	Gradation, Fineness modules, Silt content. limit of deleterious material, moisture content, flexural strength, substance aggregate impact value.	Test	Field	Field/ Lab test	Three tests per 40 cum or part thereof for RCC & 80cum or part thereof for others.	IS: 2386, IS: 383, IS: 526	Site Record	
5.2	Check absorption density, organic impurities, deleterious material, specific gravity.	Test	Field	Lab Test	One per source or as per specification (zone-II Table-4).	IS: 2386, IS: 383	Site Record	
6.	WATER						Site Record	
6.1	Chemical analysis (PH Limit of Acidity Alkalinity, %age of Solids)	Test	Field/Lab	Field/Lab Test	Three tests per source or change of source	IS:456 , IS: 3025	Site Record	3 tests each per source
7	Reinforcement Bars for CTD(Cold Twisted Defoed Bar),TMT(Thermo Mechanically Treated Bars)-TISCON,SAIL, ISSCO, RASHTRIYA ISPAT (Prime Manufacturers) OR Amba/ Rathi/Kamadhenu Barnala only after non availability certificate from Prime Manufacturers.							

7.1	Conduct tensile test, bend re-bond test & compressive strength.	Test	Laboratory	Lab Test	MTC acceptable. However lab test for a lot 30 to 40 MT or part there of for each type of R/F Steel	IS: 1786/As per specification	Site Record	
7.2	Visual inspection, local defects	Visual	Field	--	Every lot	--	Site Record	
7.3	Unit Weight	Test	Field	Site Lab	Every lot	As per records	Site Record	
8	STRUCTURAL STEEL				MTC Acceptable, Occasional lab test for a lot 30 to 40 MT or part there for each type.	IS: 1786/As per specification	Site Record	
9	BRICKS							
9.1	Efflorescence water Absorption test and Compressive strength etc.	Test	Laboratory	Lab Test	One sample per 50,000 bricks or part thereof.		Site Record	
9.2	Shape and Size/colour/ soundness	Visual	Field	--	Random		Site Record	
10	CONCRETE							
10.1	Workability/Slump test	Physical	Field	Slump Cone	Random at the time of mixing	As per approved mix design & clause 10.9	Site Record	5cum or part thereof for RCC columns and 20cum or part thereof for other RCC works.
10.2	Crushing strength	Test	Field/lab	Compressive strength testing machine	One set of 6 cubes for every 20 cum or part thereof.	As per Clause 16.1 Table 11 IS: 456-2000	Site Record	Number of samples shall be as per clause 15.2.2 of IS: 456:2000.
10.3	Water cement ratio	Physical	Field/lab	Measuring jar test	At random during batching/ concreting	As per approved mix design	Site Record	
10.4	Curing	Visual	Field		Every foundation	IS:456	Site Record	Min. seven days (10 days during summer in ponding/ providing gunny bags

10.5	Finish to be smooth with forms having smooth and even surface	Visual	Field		100% foundation	No uneven surface	Site Record	
10.6	Mark the date of concreting	Visual	Field		100% foundation		Site Record	
11	REINFORCEMENT STEEL PLACEMENT							
11.1	Check for the bar bending schedule before the start of work	Visual	Field		100%	As per construction drawing	Site Record	
11.2	Check cleanliness of bars	Visual	Field		100%		Site Record	
11.3	Check that all joints and crossing are properly tied & placed as per drawing including overlaps & chairs, cover blocks etc.	Visual	Field		100%	As per construction drawing	Site Record	
12	FORM WORK							
12.1	Check for warping, breakage or damage of the form	Physical	Field		Random	No damage	Site Record	
12.2	Joint should be such as to prevent loss of water	Physical	Field		Random	No loss of water/slurry	Site Record	
12.3	Alignment, Dimension, level and Height etc.	Physical	Field		Before every concrete	Tolerance as per IS standard Engg. practice (-12 to +5mm)	Site Record	
12.4	Cleaning and oiling	Visual	Field			After every use surface should be cleaned and oiled.	Site Record	Only shuttering oil be used. Other oils, if any should be removed
12.5	Form work removal	Physical	Field		100%	No damage of structure	Site Record	
13	MASONRY							
13.1	Preparation of Mortar	Physical	Field		Random	To be uniformly placed in specified ratio	Site Record	Checking by Jar Method
14.	PLASTERING							
14.1	Preparation of the surface	Visual	Field		Random	To be smooth, clean and free from loose material	Site Record	

14.2	Checking of plumb and finish	Visual/ Physical	Field		100%	Approved drawings	Site Record	To be in plane and plumb as per approved drawing
14.3	Curing	Physical	Field		Random		Site Record	Min. seven days (10 days during summer.
15.	DOORS & WINDOWS (ALUMINIUM SECTION)							
15.1	Fabrication	Physical	Field		100%	Approved drawing	Site Record & manufacturers records	
15.2	Alignment, operation of shutters	Visual	Field		100%	Smooth opening, closing & alignment		
15.3	Glass and Glazing	Physical	Field	The thickness is to be checked by standard/ screw gauge	Random	Proper placement/breakage/ Looseness, thickness		
16.	PAINTING							
16.1	Preparation of the surface	Visual	Field		Random	Clean smooth and free from dust		Primer, putty (wall) etc. to be used to have smooth surface.
16.2	Quality of material	Branded	Field		100%	Approved brand as per contract	Site Record	
16.3	Application of no. of coats	Physical	Field		Random	As per specification/ Drawing	Site Record	
17.	FLOORING	Visual	Field		100%	As per specification/ Drawing	Site Record	
18	WATER PROOFING/ROOF TREATMENT	Physical	Field		Random	As per specification/ Drawing	Site Record	
19.	PLUMBING & SANITATION	Physical	Field		Random	As per specification/ Drawing	Site Record	

20.	ROADS							
A.	Bitumenous Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index	Field/Lab	Lab		One sample per 200 cum or part thereof.	As per IS:2386 (Part-I, IV & V) IS: 5640	Site Record	
	Grading requirement	Field/Lab	Lab		One sample per 100 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
(ii)	Fine aggregate							
	Deleterious material	Lab	Lab		As required by Engineer-in-charge	As per IS:2386 (Part-III)	Site Record	
(iii)	Bitumen	Lab	Lab		As required by Engineer-in-charge	As prescribed in IS:73	Site Record	
B.	Cement Concrete Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index.	Field/Lab	Lab		One sample per 100 cum or part thereof or change of source	As per IS:2386 (Part-I & IV)	Site Record	Before approval of the query and every subsequent change in source of supply one test per 100cum or part thereof is to be conducted.
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of one test per day.

(ii)	Fine aggregate							
	Silt content	Field	Field lab		One test per 15 cum or part thereof.	As per PWD specification	Site Record	
	Gradation of sand	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-II)	Site Record	
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of two tests per day.
	Mix aggregate	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
	Flexural strength	Lab	Lab		One test consisting of 8 specimen for 30 cum or part thereof.	As per IS:526	Site Record	
21	FENCING AND GATES							
21.1	Height of fencing	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.2	Spacing of fencing posts	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.3	Site surfacing and gravel spreading	Physical			Random	Tolerance as per IS specification/ drawings	Site Record	
22.	Terrazzo Tiles or Vitrified Tiles	Lab			One Test /Lot	As per IS:1237/ drawing	Site Record	

FIELD QUALITY PLAN (F.Q.P)

PROJECT:- 220 KV BAYS AT FATEHABAD .

CUSTOMER:- HARYANA VIDYUT PRASARAN NIGAM LIMITED, PANCHKULA.

Contract No :- REC-138.

WORK:- CIVIL & CONSTRUCTION WORK, ETC.

SR NO.	CHARACTERISTIC / ITEM	TYPE OF CHECK	PLACE OF WORK	INSTRUMENTS	QUANTUM FREQ. OF TEST	REF DOCUMENT/ ACCEPTANCE STD.	FORMAT/ RECORDS	REMARKS
1	GENERAL							
1.1	Check General Ground level, final ground level, plinth levels, and permanent bench mark.	Field test	Field	Leveling instrument	100% area once	Contour Plan as per GELO & Spec.	Site Record	
1.2	Check grid lines for whole area	Visual	Field	Steel measuring tape	100% area once	As per GELO	Site Record	
1.3	Check for location of individual unit/foundation	Visual	Field	Theodolite	100% area once	As per GELO	Site Record	
1.4	Check excavation of pit(s)	Visual	Field	Leveling instrument	All foundation	As per approved foundation drawing	Site Record	
1.5	Grain, particle size, surface texture and chemical composition of earth used for filling brought from outside	Physical	Field	Field/Lab	One sample per source or change of source	Contract document/ relevant code	Site Record	
1.6	Compaction test after earth filling/backfilling	Physical	Field/Lab	Lab	One Sample per 250 Cum of compacted area or part thereof.	AS per IS:2720 (Part-II & Part-XXVIII)	Site Record	Atleast one sample per 100 cum of compacted area for backfilling.

2	43 Grade OPC Cement manufactured by reputed cement manufacturers as per IS:8112 i.e. Ambuja/Vikram/Birla Plus/Ultratech/J.K. Cement/ACC/Shree etc. as per specification.							
2.1	Check apparent condition of cement prior to consumption.	Visual	Field	-	Random at site	IS: 8112/IS:1489	Site Record	Manufacture & expiry date.
2.2	Check soundness of cement	Test	Field/Lab	Field/ Lab	M.T.C. will be acceptable to carry out the works. However, for 4000 bags tests as per remarks be carried out at laboratory.	IS: 8112 (M.T.C.) /4031	Site Record	5 tests per lot or part thereof.
2.3	Check initial and final setting time	Test	Field/Lab	Lab		IS: 8112/IS:1489	Site Record	5 tests per lot or part thereof.
2.4	Compressive strength	Test	Laboratory	Lab		IS: 8112 (M.T.C.) /4031	Site Record	10 tests per lot or part thereof.
3.	OPEN FOUNDATION							
3.1	Check form work and leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.2	Check inserts & their leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.3	Check placement, alignment and embedment of anchor bolts	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.4	Check curing	Visual	Field		Every foundation 100%	IS: 456 (latest amendment)	Site Record	Min. 7 days (10 days during hot weather) continuously shall be kept wet in ponding/ gunny bags etc.
4.	COARSE AGGREGATES							
4.1	Bulk density, loss angles abrasion & aggregate impact value, specific gravity, aggregate crushing strength, limit of deleterious substance, flakiness index.	Test	Lab/Field	Lab Test	Three tests per 40 cum or part thereof for RCC & 80 cum or part thereof for non RCC.	IS: 2386, IS: 383	Site Record	

4.2	Sieve analysis	Visual	Field/Lab	Site Lab	One sample per 50cum or part thereof or change of source	IS: 383	Site Record	
4.3	Presence of unwanted material	Visual	Field	Site Lab	Random [one sample for 40cum or part thereof]	IS: 383	Site Record	
4.4	Impact Value & Flakiness	Test	Laboratory	Lab Test	Random [one sample for 40cum or part thereof]	IS: 2386, IS: 383	Site Record	
5	FINE AGGREGATES							
5.1	Gradation, Fineness modules, Silt content. limit of deleterious material, moisture content, flexural strength, substance aggregate impact value.	Test	Field	Field/ Lab test	Three tests per 40 cum or part thereof for RCC & 80cum or part thereof for others.	IS: 2386, IS: 383, IS: 526	Site Record	
5.2	Check absorption density, organic impurities, deleterious material, specific gravity.	Test	Field	Lab Test	One per source or as per specification (zone-II Table-4).	IS: 2386, IS: 383	Site Record	
6.	WATER						Site Record	
6.1	Chemical analysis (PH Limit of Acidity Alkalinity, %age of Solids)	Test	Field/Lab	Field/Lab Test	Three tests per source or change of source	IS:456 , IS: 3025	Site Record	3 tests each per source
7	Reinforcement Bars for CTD(Cold Twisted Deford Bar),TMT(Thermo Mechanically Treated Bars)-TISCON,SAIL, ISSCO, RASHTRIYA ISPAT (Prime Manufacturers) OR Amba/Rathi/Kamadhenu Barnala only after non availability certificate from Prime Manufacturers.							

7.1	Conduct tensile test, bend re-bond test & compressive strength.	Test	Laboratory	Lab Test	MTC acceptable. However lab test for a lot 30 to 40 MT or part there of for each type of R/F Steel	IS: 1786/As per specification	Site Record	
7.2	Visual inspection, local defects	Visual	Field	--	Every lot	--	Site Record	
7.3	Unit Weight	Test	Field	Site Lab	Every lot	As per records	Site Record	
8	STRUCTURAL STEEL				MTC Acceptable, Occasional lab test for a lot 30 to 40 MT or part there for each type.	IS: 1786/As per specification	Site Record	
9	BRICKS							
9.1	Efflorescence water Absorption test and Compressive strength etc.	Test	Laboratory	Lab Test	One sample per 50,000 bricks or part thereof.		Site Record	
9.2	Shape and Size/colour/ soundness	Visual	Field	--	Random		Site Record	
10	CONCRETE							
10.1	Workability/Slump test	Physical	Field	Slump Cone	Random at the time of mixing	As per approved mix design & clause 10.9	Site Record	5cum or part thereof for RCC columns and 20cum or part thereof for other RCC works.
10.2	Crushing strength	Test	Field/lab	Compressive strength testing machine	One set of 6 cubes for every 20 cum or part thereof.	As per Clause 16.1 Table 11 IS: 456-2000	Site Record	Number of samples shall be as per clause 15.2.2 of IS: 456:2000.
10.3	Water cement ratio	Physical	Field/lab	Measuring jar test	At random during batching/ concreting	As per approved mix design	Site Record	
10.4	Curing	Visual	Field		Every foundation	IS:456	Site Record	Min. seven days (10 days during summer in ponding/ providing gunny bags

10.5	Finish to be smooth with forms having smooth and even surface	Visual	Field		100% foundation	No uneven surface	Site Record	
10.6	Mark the date of concreting	Visual	Field		100% foundation		Site Record	
11	REINFORCEMENT STEEL PLACEMENT							
11.1	Check for the bar bending schedule before the start of work	Visual	Field		100%	As per construction drawing	Site Record	
11.2	Check cleanliness of bars	Visual	Field		100%		Site Record	
11.3	Check that all joints and crossing are properly tied & placed as per drawing including overlaps & chairs, cover blocks etc.	Visual	Field		100%	As per construction drawing	Site Record	
12	FORM WORK							
12.1	Check for warping, breakage or damage of the form	Physical	Field		Random	No damage	Site Record	
12.2	Joint should be such as to prevent loss of water	Physical	Field		Random	No loss of water/slurry	Site Record	
12.3	Alignment, Dimension, level and Height etc.	Physical	Field		Before every concrete	Tolerance as per IS standard Engg. practice (-12 to +5mm)	Site Record	
12.4	Cleaning and oiling	Visual	Field			After every use surface should be cleaned and oiled.	Site Record	Only shuttering oil be used. Other oils, if any should be removed
12.5	Form work removal	Physical	Field		100%	No damage of structure	Site Record	
13	MASONRY							
13.1	Preparation of Mortar	Physical	Field		Random	To be uniformly placed in specified ratio	Site Record	Checking by Jar Method
14.	PLASTERING							
14.1	Preparation of the surface	Visual	Field		Random	To be smooth, clean and free from loose material	Site Record	

14.2	Checking of plumb and finish	Visual/ Physical	Field		100%	Approved drawings	Site Record	To be in plane and plumb as per approved drawing
14.3	Curing	Physical	Field		Random		Site Record	Min. seven days (10 days during summer.
15.	DOORS & WINDOWS (ALUMINIUM SECTION)							
15.1	Fabrication	Physical	Field		100%	Approved drawing	Site Record & manufacturers records	
15.2	Alignment, operation of shutters	Visual	Field		100%	Smooth opening, closing & alignment		
15.3	Glass and Glazing	Physical	Field	The thickness is to be checked by standard/ screw gauge	Random	Proper placement/breakage/ Looseness, thickness		
16.	PAINTING							
16.1	Preparation of the surface	Visual	Field		Random	Clean smooth and free from dust		Primer, putty (wall) etc. to be used to have smooth surface.
16.2	Quality of material	Branded	Field		100%	Approved brand as per contract	Site Record	
16.3	Application of no. of coats	Physical	Field		Random	As per specification/ Drawing	Site Record	
17.	FLOORING	Visual	Field		100%	As per specification/ Drawing	Site Record	
18	WATER PROOFING/ROOF TREATMENT	Physical	Field		Random	As per specification/ Drawing	Site Record	
19.	PLUMBING & SANITATION	Physical	Field		Random	As per specification/ Drawing	Site Record	

20.	ROADS							
A.	Bitumenous Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index	Field/Lab	Lab		One sample per 200 cum or part thereof.	As per IS:2386 (Part-I, IV & V) IS: 5640	Site Record	
	Grading requirement	Field/Lab	Lab		One sample per 100 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
(ii)	Fine aggregate							
	Deleterious material	Lab	Lab		As required by Engineer-in-charge	As per IS:2386 (Part-III)	Site Record	
(iii)	Bitumen	Lab	Lab		As required by Engineer-in-charge	As prescribed in IS:73	Site Record	
B.	Cement Concrete Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index.	Field/Lab	Lab		One sample per 100 cum or part thereof or change of source	As per IS:2386 (Part-I & IV)	Site Record	Before approval of the query and every subsequent change in source of supply one test per 100cum or part thereof is to be conducted.
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of one test per day.

(ii)	Fine aggregate							
	Silt content	Field	Field lab		One test per 15 cum or part thereof.	As per PWD specification	Site Record	
	Gradation of sand	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-II)	Site Record	
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of two tests per day.
	Mix aggregate	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
	Flexural strength	Lab	Lab		One test consisting of 8 specimen for 30 cum or part thereof.	As per IS:526	Site Record	
21	FENCING AND GATES							
21.1	Height of fencing	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.2	Spacing of fencing posts	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.3	Site surfacing and gravel spreading	Physical			Random	Tolerance as per IS specification/ drawings	Site Record	
22.	Terrazzo Tiles or Vitrified Tiles	Lab			One Test /Lot	As per IS:1237/ drawing	Site Record	

FIELD QUALITY PLAN (F.Q.P)

PROJECT:- 220 KV BAYS AT RANIA .

CUSTOMER:- HARYANA VIDYUT PRASARAN NIGAM LIMITED, PANCHKULA.

Contract No :- REC-138.

WORK:- CIVIL & CONSTRUCTION WORK, ETC.

SR NO.	CHARACTERISTIC / ITEM	TYPE OF CHECK	PLACE OF WORK	INSTRUMENTS	QUANTUM FREQ. OF TEST	REF DOCUMENT/ ACCEPTANCE STD.	FORMAT/ RECORDS	REMARKS
1	GENERAL							
1.1	Check General Ground level, final ground level, plinth levels, and permanent bench mark.	Field test	Field	Leveling instrument	100% area once	Contour Plan as per GELO & Spec.	Site Record	
1.2	Check grid lines for whole area	Visual	Field	Steel measuring tape	100% area once	As per GELO	Site Record	
1.3	Check for location of individual unit/foundation	Visual	Field	Theodolite	100% area once	As per GELO	Site Record	
1.4	Check excavation of pit(s)	Visual	Field	Leveling instrument	All foundation	As per approved foundation drawing	Site Record	
1.5	Grain, particle size, surface texture and chemical composition of earth used for filling brought from outside	Physical	Field	Field/Lab	One sample per source or change of source	Contract document/ relevant code	Site Record	
1.6	Compaction test after earth filling/backfilling	Physical	Field/Lab	Lab	One Sample per 250 Cum of compacted area or part thereof.	AS per IS:2720 (Part-II & Part-XXVIII)	Site Record	Atleast one sample per 100 cum of compacted area for backfilling.

2	43 Grade OPC Cement manufactured by reputed cement manufacturers as per IS:8112 i.e. Ambuja/Vikram/Birla Plus/Ultratech/J.K. Cement/ACC/Shree etc. as per specification.							
2.1	Check apparent condition of cement prior to consumption.	Visual	Field	-	Random at site	IS: 8112/IS:1489	Site Record	Manufacture & expiry date.
2.2	Check soundness of cement	Test	Field/Lab	Field/ Lab	M.T.C. will be acceptable to carry out the works. However, for 4000 bags tests as per remarks be carried out at laboratory.	IS: 8112 (M.T.C.) /4031	Site Record	5 tests per lot or part thereof.
2.3	Check initial and final setting time	Test	Field/Lab	Lab		IS: 8112/IS:1489	Site Record	5 tests per lot or part thereof.
2.4	Compressive strength	Test	Laboratory	Lab		IS: 8112 (M.T.C.) /4031	Site Record	10 tests per lot or part thereof.
3.	OPEN FOUNDATION							
3.1	Check form work and leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.2	Check inserts & their leveling	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.3	Check placement, alignment and embedment of anchor bolts	Visual	Field	Steel Tape, Leveling instruments	Every foundation 100%	As per Foundation Drg.	Site Record	
3.4	Check curing	Visual	Field		Every foundation 100%	IS: 456 (latest amendment)	Site Record	Min. 7 days (10 days during hot weather) continuously shall be kept wet in ponding/ gunny bags etc.
4.	COARSE AGGREGATES							
4.1	Bulk density, loss angles abrasion & aggregate impact value, specific gravity, aggregate crushing strength, limit of deleterious substance, flakiness index.	Test	Lab/Field	Lab Test	Three tests per 40 cum or part thereof for RCC & 80 cum or part thereof for non RCC.	IS: 2386, IS: 383	Site Record	

4.2	Sieve analysis	Visual	Field/Lab	Site Lab	One sample per 50cum or part thereof or change of source	IS: 383	Site Record	
4.3	Presence of unwanted material	Visual	Field	Site Lab	Random [one sample for 40cum or part thereof]	IS: 383	Site Record	
4.4	Impact Value & Flakiness	Test	Laboratory	Lab Test	Random [one sample for 40cum or part thereof]	IS: 2386, IS: 383	Site Record	
5	FINE AGGREGATES							
5.1	Gradation, Fineness modules, Silt content. limit of deleterious material, moisture content, flexural strength, substance aggregate impact value.	Test	Field	Field/ Lab test	Three tests per 40 cum or part thereof for RCC & 80cum or part thereof for others.	IS: 2386, IS: 383, IS: 526	Site Record	
5.2	Check absorption density, organic impurities, deleterious material, specific gravity.	Test	Field	Lab Test	One per source or as per specification (zone-II Table-4).	IS: 2386, IS: 383	Site Record	
6.	WATER						Site Record	
6.1	Chemical analysis (PH Limit of Acidity Alkalinity, %age of Solids)	Test	Field/Lab	Field/Lab Test	Three tests per source or change of source	IS:456 , IS: 3025	Site Record	3 tests each per source
7	Reinforcement Bars for CTD(Cold Twisted Defored Bar),TMT(Thermo Mechanically Treated Bars)-TISCON,SAIL, ISSCO, RASHTRIYA ISPAT (Prime Manufacturers) OR Amba/Rathi/Kamadhenu Barnala only after non availability certificate from Prime Manufacturers.							

7.1	Conduct tensile test, bend re-bond test & compressive strength.	Test	Laboratory	Lab Test	MTC acceptable. However lab test for a lot 30 to 40 MT or part there of for each type of R/F Steel	IS: 1786/As per specification	Site Record	
7.2	Visual inspection, local defects	Visual	Field	--	Every lot	--	Site Record	
7.3	Unit Weight	Test	Field	Site Lab	Every lot	As per records	Site Record	
8	STRUCTURAL STEEL				MTC Acceptable, Occasional lab test for a lot 30 to 40 MT or part there for each type.	IS: 1786/As per specification	Site Record	
9	BRICKS							
9.1	Efflorescence water Absorption test and Compressive strength etc.	Test	Laboratory	Lab Test	One sample per 50,000 bricks or part thereof.		Site Record	
9.2	Shape and Size/colour/ soundness	Visual	Field	--	Random		Site Record	
10	CONCRETE							
10.1	Workability/Slump test	Physical	Field	Slump Cone	Random at the time of mixing	As per approved mix design & clause 10.9	Site Record	5cum or part thereof for RCC columns and 20cum or part thereof for other RCC works.
10.2	Crushing strength	Test	Field/lab	Compressive strength testing machine	One set of 6 cubes for every 20 cum or part thereof.	As per Clause 16.1 Table 11 IS: 456-2000	Site Record	Number of samples shall be as per clause 15.2.2 of IS: 456:2000.
10.3	Water cement ratio	Physical	Field/lab	Measuring jar test	At random during batching/ concreting	As per approved mix design	Site Record	
10.4	Curing	Visual	Field		Every foundation	IS:456	Site Record	Min. seven days (10 days during summer in ponding/ providing gunny bags

10.5	Finish to be smooth with forms having smooth and even surface	Visual	Field		100% foundation	No uneven surface	Site Record	
10.6	Mark the date of concreting	Visual	Field		100% foundation		Site Record	
11	REINFORCEMENT STEEL PLACEMENT							
11.1	Check for the bar bending schedule before the start of work	Visual	Field		100%	As per construction drawing	Site Record	
11.2	Check cleanliness of bars	Visual	Field		100%		Site Record	
11.3	Check that all joints and crossing are properly tied & placed as per drawing including overlaps & chairs, cover blocks etc.	Visual	Field		100%	As per construction drawing	Site Record	
12	FORM WORK							
12.1	Check for warping, breakage or damage of the form	Physical	Field		Random	No damage	Site Record	
12.2	Joint should be such as to prevent loss of water	Physical	Field		Random	No loss of water/slurry	Site Record	
12.3	Alignment, Dimension, level and Height etc.	Physical	Field		Before every concrete	Tolerance as per IS standard Engg. practice (-12 to +5mm)	Site Record	
12.4	Cleaning and oiling	Visual	Field			After every use surface should be cleaned and oiled.	Site Record	Only shuttering oil be used. Other oils, if any should be removed
12.5	Form work removal	Physical	Field		100%	No damage of structure	Site Record	
13	MASONRY							
13.1	Preparation of Mortar	Physical	Field		Random	To be uniformly placed in specified ratio	Site Record	Checking by Jar Method
14.	PLASTERING							
14.1	Preparation of the surface	Visual	Field		Random	To be smooth, clean and free from loose material	Site Record	

14.2	Checking of plumb and finish	Visual/ Physical	Field		100%	Approved drawings	Site Record	To be in plane and plumb as per approved drawing
14.3	Curing	Physical	Field		Random		Site Record	Min. seven days (10 days during summer.
15.	DOORS & WINDOWS (ALUMINIUM SECTION)							
15.1	Fabrication	Physical	Field		100%	Approved drawing	Site Record & manufacturers records	
15.2	Alignment, operation of shutters	Visual	Field		100%	Smooth opening, closing & alignment		
15.3	Glass and Glazing	Physical	Field	The thickness is to be checked by standard/ screw gauge	Random	Proper placement/breakage/ Looseness, thickness		
16.	PAINTING							
16.1	Preparation of the surface	Visual	Field		Random	Clean smooth and free from dust		Primer, putty (wall) etc. to be used to have smooth surface.
16.2	Quality of material	Branded	Field		100%	Approved brand as per contract	Site Record	
16.3	Application of no. of coats	Physical	Field		Random	As per specification/ Drawing	Site Record	
17.	FLOORING	Visual	Field		100%	As per specification/ Drawing	Site Record	
18	WATER PROOFING/ROOF TREATMENT	Physical	Field		Random	As per specification/ Drawing	Site Record	
19.	PLUMBING & SANITATION	Physical	Field		Random	As per specification/ Drawing	Site Record	

20.	ROADS							
A.	Bitumenous Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index	Field/Lab	Lab		One sample per 200 cum or part thereof.	As per IS:2386 (Part-I, IV & V) IS: 5640	Site Record	
	Grading requirement	Field/Lab	Lab		One sample per 100 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
(ii)	Fine aggregate							
	Deleterious material	Lab	Lab		As required by Engineer-in-charge	As per IS:2386 (Part-III)	Site Record	
(iii)	Bitumen	Lab	Lab		As required by Engineer-in-charge	As prescribed in IS:73	Site Record	
B.	Cement Concrete Pavement							
(i)	Coarse Aggregate							
	Loss Angles, abrasion value or aggregate impact value, flakiness index.	Field/Lab	Lab		One sample per 100 cum or part thereof or change of source	As per IS:2386 (Part-I & IV)	Site Record	Before approval of the query and every subsequent change in source of supply one test per 100cum or part thereof is to be conducted.
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of one test per day.

(ii)	Fine aggregate							
	Silt content	Field	Field lab		One test per 15 cum or part thereof.	As per PWD specification	Site Record	
	Gradation of sand	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-II)	Site Record	
	Deleterious material	Field/Lab	Lab			As per IS:2386 (Part-II)	Site Record	Before approval of the query and every subsequent change in source of supply.
	Moisture content	Field/Lab	Lab			As per IS:2386 (Part-III)	Site Record	Regularly as required subject to a minimum of two tests per day.
	Mix aggregate	Field	Field lab		One test per 15 cum or part thereof.	As per IS:2386 (Part-I)	Site Record	
	Flexural strength	Lab	Lab		One test consisting of 8 specimen for 30 cum or part thereof.	As per IS:526	Site Record	
21	FENCING AND GATES							
21.1	Height of fencing	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.2	Spacing of fencing posts	Physical			Random	Tolerance as per IS standard engineering practice (-12 to 5mm)	Site Record	
21.3	Site surfacing and gravel spreading	Physical			Random	Tolerance as per IS specification/ drawings	Site Record	
22.	Terrazzo Tiles or Vitrified Tiles	Lab			One Test /Lot	As per IS:1237/ drawing	Site Record	

