

**National Mission for Clean Ganga
Ministry of Water Resources
River Development & Ganga Rejuvenation
Government of India**

**82 MLD STP PROJECT AT HARIDWAR
Under HYBRID ANNUITY-based PPP-mode
(68 MLD STP AT JAGJEETPUR AND 14 MLD STP AT SARAI SITE)**

(LOA File Number: 3284/Le-6/677 dated 03.08.2017)

**Monthly QA / QC Report
Of
Project Engineer**

MAY – 2019



Executing Agency

Uttarakhand Pey Jal Nigam,
Haridwar, Uttarakhand
Pin: 249408



Funding Agency

National Mission for Clean
Ganga, Ministry of Water
Resources, New Delhi,
Pin: 110002



Project Engineer

Shah Technical Consultants
Pvt. Ltd., Haridwar,
Uttarakhand
Pin: 249408



Concessionaire

HNB Engineers (Haridwar)
Pvt. Ltd, Haridwar,
Uttarakhand
Pin: 249408



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MONTHLY QUALITY ASSURANCE / QUALITY CONTROL REPORT

○ INTRODUCTION:

Namami Gange is a flagship program of the Central Government for abatement of pollution in River Ganga by treating the domestic sewage in urban areas. National Mission for Clean Ganga (NMCG) is implementing this program all along the urban areas situated at River Ganga.

Detail of Project:

- Name of Project : 82 MLD STP Project at Haridwar, under Hybrid Annuity based PPP Mode under Namami Gange Program.
- Process of STP : SBR (Sequencing Batch Reactor) Process.
- Client : National Mission for Clean Ganga (NMCG), New Delhi
- Execution Agency : Uttarakhand Pey Jal Nigam (UKPJN)
- Project Engineer : Shah Technical Consultants (P) Ltd.
- Concessionaire : HNB Engineers (Haridwar) Pvt. Ltd.
- Concessionaire LOA : 3284/Le-6/677 dated 03.08.2017
- CA No. : 21/GM/2017-18 dated 11.10.2017
- Cost of Project (CAPEX) : Rs. 140.70 Cr.
- Effective Date of Start : 19.02.2018
- Construction Period : 21 Months
- Date of Commissioning : 18.11.2019
- O&M Period : 15 Yrs. after COD.

Population & Other Detail:

(Source: Brief Description Note dated 01 Nov 2017 on Haridwar Sewerage Plan prepared by Office of the Project Manager, Construction and Maintenance Unit (Ganga), UKPJN, Haridwar)

- Population of Haridwar : 2,30,681 (as per Census-2011)
- Additional Population : 76,916 in 5 Satellite Towns (as per Census-2011)
- Area of Haridwar : 1367.60 Ha
- Additional Area : 1441.16 Ha in 5 Satellite Towns
- Projected Population 2018 : 7,69,825 incl. Haridwar Town, 5 Satellite Towns, Camping Population and Floating Population
- Projected Population 2033 : 11,21,072 incl. Haridwar Town, 5 Satellite Towns, Camping Population and Floating Population
- Projected Population 2048 : 14,73,177 incl. Haridwar Town, 5 Satellite Towns, Camping Population and Floating Population

- Haridwar town is divided into '7' Zones, out of which zone 'A' to 'E' contribute to STP- Jagjeetpur complex and Zone 'F' contribute to STP- Sarai complex whereas Zone 'G' will contribute to STP complex Shivalik Nagar.

Laboratory Setup: Cube Testing Machine, Sieves, Slump Cone, Weighing Machine etc. relevant equipments have been setup at both the sites by the concessionaire.

Quality Control:

During progress of work all necessary precautions and quality related actions have been taken, as per the following;

1. Stage Passing Check before start of each stage of works has been ensured and record maintain at both the site.
2. Cubes have been prepared for 7 and 28 days test in case of both PCC & RCC as per requirement of IS 456-2000 and record maintain at both the site.
3. Slump Test has been carried out duly during progress of PCC & RCC works.
4. Sieve Analysis Register for Fine Aggregate and Coarse Aggregate (for 10mm & 20mm) maintain at both the site.
5. Site Order Books have been maintained at both the sites.
6. Hindrance Registers have been maintained at both the sites.

Site Meetings and its Minutes: During every site visit generally site meeting and discussions do take place with concern Project Managers of Concessionaire as part of site observations, discussions and suggestions. Minutes of Meeting and necessary actions have been issued.

Objectives of NMCG and UKPJN:

Government of India has approved the Namami Gange program as an integrated approach for effective abatement of pollution in river Ganga. As part of this and to ensure that no untreated domestic sewage flow into the river Ganga, various interventions are planned such as Interception & Diversion works and development & operation of Sewage Treatment Plants (STPs). Considering various development models in practice for the construction, operation and maintenance of Sewage Treatment Plants, Government of India has approved the Hybrid Annuity based Public Private Partnership (PPP) mode as one of the options for the development & operation of STPs. Under this model, private investor / developer will design, build, finance, operate and transfer the asset (STP) to the Project Executing Agency / Jal Nigam / Jal Sansthan / Urban Local body at the end of the Concession Period (say 15 years). 40% of the Capital cost will be paid to the developer during construction of the STP. Balance 60% along with Operation & Maintenance (O&M) cost will be paid over the Concession Period on achievement of key performance indicators as per the contract. Entire cost of development and operation of the STPs will

be 100% funded by the Government of India as central sector scheme. It is also envisaged to explore the possibility of recycle/ reuse of the treated waste water for non-potable purpose.

1. Project Components; (as per approved drawings of the Concessionaire)

1.1.1 Construction Units;

○ **68 MLD STP - Jagjeetpur Site**

Mark No.	Description	L/Dia.	Width	SWD	FB	Qty
PROCESS UNIT						
1	Inlet Chamber	4900	4550	2500	500	1
2	Mechanical Fine Screen Channel	6500	1300	1000	500	2
3	Manual Fine Screen Channel	6500	1550	1000	500	1
4	Grit Chamber	7750	7750	1000	500	2
5	Grit Bypass Channel	8150	1550	1000	500	1
6	Parshall Flume	8400	Throat width 600		500	1
7	Distribution Chamber	8000	3500	2500	500	1
8	Sequential Batch Reactor (SBR)	27600	48200	5500	500	6
9	Chlorine Contact Tank	24900	18000	3750	500	1
10	Sludge Thickener No.1 (on CCT side) /Distribution Chamber					
11	Sludge Thickener No.2 (on boundary wall side)	15500 dia.		3000	500	2
12	Centrifuge Feed Sludge Sump	7050	4300	3000	500	1
13	Polymer Dosing Tank	2000	2000	3000	500	2
14	Centrifuge Feed Pump House	12260	5500	4000 HT	Nil	1
15	Centrifuge House	9420	5500	4000 HT		1
16	Centrate Sump	5700	4300	2000	500	1
Building Units						
17	Workshop Room	55.25 Sqm.		3200 HT		1 (First Floor)
18	Tool Room					
19	DG Platform	16888	7230	-		1
20	Air Blower Room	34968	6000	6400 HT		1
21	Chlorinator Room & Tonner Yard	55 Sqm.		3700 HT		1
22	Admin Building, Conference & Lab. (First Floor)	150 Sqm.		3150 HT		1
23	Security Cabin	3500	3000	3000 HT		1
24	HT Substation Platform	6862	10550	-		1

○ **14 MLD STP - Sarai**

Mark No.	Description	L/Dia.	Width	SWD	FB	Qty
Process Unit						
1	Inlet Chamber	2300	2000	2500	500	1
2	Mechanical Fine Screen Channel	4500	900	600	500	1
3	Manual Fine Screen Channel	4500	1050	600	500	1
4	Grit Chamber	5000	5000	900	500	1
5	Grit Bypass Channel	5400	900	400	500	1
6	Parshall Flume	7700	450 Throat		500	1
7	Sequential Batch Reactor (SBR)	33100	16600	5500	500	3



Mark No.	Description	L/Dia.	Width	SWD	FB	Qty
8	Chlorine Contact Tank	20800	11200	3000	500	1
9	Sludge Thickener	10500 dia.		3000	500	1
	Sludge Thickener (outer wall)	11.00 dia.				
10	Centrifuge Feed Sludge Sump	4000	2000	3000	500	1
	Centrifuge House/Platform					
	Centrifuge Feed Pump House					
11	Polymer Dosing Tank	1530	1530	3000	500	2
12	Centrare Sump	4000	2000	2000	500	1
13	Sludge Drying Bed	11000	3100	300	300.00	5
14	sludge Storage Platform	11000	4350	3000	500.00	1
Building Units						
15	Workshop	6035	3950	6400 HT		1
16	Tool Room	6035	3950	6400 HT		1
17	DG Platform	10000	4000	-		1
18	Air Blower Room	11355	6500	6400 HT		1
19	Admin Building, Conference & Lab. (First Floor)	150 Sqm.		3000 HT		1
20	Centrifuge Feed Pump Sump	7500	5050	4000 HT		1
21	Centrifuge House	5200	4880	4000 HT		1
22	Chlorinator Room & Chlorine Storage	55 Sqm.		3700 HT		1
23	Security Cabin	3500	3000	3000 HT		1
24	HT Substation Platform	10000	5000	-		1

1.2. Executive Agency:

- Uttarakhand Pey Jal Nigam (UKPJN)

1.3. Implementation Agency:

- Uttarakhand Pey Jal Nigam (UKPJN).

1.4. Consulting Services:

- **Project Engineer**
 - Shah Technical Consultants Pvt. Ltd.

1.5. Concessionaire:

- HNB Engineers (Haridwar) Pvt. Ltd.

2.0. STATUS OF PROJECT:

STATUS	:	CONSTRUCTION STAGE
Concessionaire LOA	:	3284/Le-6/677 dated 03.08.2017
CA No.	:	21/GM/2017-18 dated 11.10.2017
Name of Concessionaire	:	HNB Engineers (Haridwar) Pvt. Ltd.
Effective Date of Start	:	19th February 2018
Completion Date (As per contract)	:	18th November 2019



QUALITY ASSURANCE / QUALITY CONTROL

3.0 Procedures being adopted for Quality Assurance

Quality Assurance / Quality Control for Civil & E&M Works

Quality control is part of quality management. This ensures that anything built will be usable by a client. Quality management measures the quality of a unit against the established standards to determine whether something is up to par. In order to ensure quality, companies use a variety of tests and inspection. Quality control managers work on more than just the material level. Inspectors or quality control officers can test quality at various levels of completion as well. Contractors can use this to ensure their work will pass inspection in the end and avoid expensive rework.

Contractors should always ensure they are using quality materials. This also prevents later rework since they can prove the materials weren't faulty, to begin with. It also can prevent expensive lawsuits due to any issues because of poor quality materials.

The final inspection that contractors and owners can do is at the end of the project. This determines whether the project is usable because it checks the finished product. The main issue with this is that if there are issues with a product or project, it is on the subcontractor to fix the issue. At this level, the repairs are more expensive because usually an entire section must be rebuilt. In order to prevent this, it is important to have some sort of construction quality control plan.

1. QUALITY ASSURANCE PLAN (CIVIL WORK) - A periodic check carried out by site supervisor/ Project Engineer to ensure quality in the construction. The checks are carried out essentially at the following stages:

(1) Start of every new item of work.

(2) Once every week for each relevant item. The Engineer in-charge may also decide to carry out the check at shorter interval.

(3) Apart from above, the supervisors / engineers follow the daily or routine supervision/ inspection/ site visits to ensure strict adherence for quality control measures.

Test conducted at Site:

1. Soil Bearing capacity Test (SBC Test).
2. Water Test.
3. Fine Aggregate (Sieve Analysis) Test.
4. Coarse Aggregate (Sieve Analysis) Test.
5. Cement Test.
6. Reinforcement Tests (Tensile Strength).
7. Mix Design Test.
8. Slump Cone (Workability) Test.
9. Cube Tests (Compressive Strength Test).

Quality Registers Maintaining at Site:

1. Soil bearing capacity Test (SBC Test) Register.
2. Water Test Register.
3. Fine Aggregate (Sieve Analysis) Test Register.
4. Coarse Aggregate (Sieve Analysis) Test Register.
5. Cement Test Register.
6. Reinforcement Tests (Tensile Strength) Register.
7. Mix Design Register.
8. Stage Passing Register.



9. Slump Cone (Workability) Test Register.
10. Cube Tests (Compressive Strength Test) Register.

All the above quality control registers are duly maintained at site and inspected time to time.

2. Electro-Mechanical Works:

Quality Checks before Dispatch:-

For Electro Mechanical Items, the Concessioner has submitted the QAPs based on relevant IS/IEC/BS standards, the same have been reviewed and recommended for approval.

Following documents are sought from the Concessionaire and Manufacturer on its behalf before or at the time of Inspection.

- a) Type Test Certificates
- b) Calibrations certificates for the instruments used for testing of the Electrical and instrumentation items.
- c) Internal Factory test reports before the actual inspection witnessed by TPA/PE/Client.

Above documents have been maintained in Triplicates files, one with the PE, one with Concessionaire, one with the Client/Jal Nigam.

Quality Check for Electrical Works at Site:-

As a minimum requirement the following dry tests shall be carried out on the electrical Systems:

- a. Check phasing and polarity.
- b. Carry out point to point check on cables.
- c. Check on security of cable terminations.
- d. Check on completeness and adequacy of earthing systems.
- e. Check setting on protection relays, sizes of fuses and motor overload settings.
- f. Carry out checks on cabling systems in accordance with the requirements of the relevant Standards.
- g. Check operation of main circuit breakers by secondary injection methods.
- h. Check rotational direction of Plant.
- i. Check instrument loop integrity, functionality and calibration.
- j. Check operation of standby generator installation and mains / generator changeover Procedures; a 4 hour load test (using the normal load of the Works) shall be carried out On the generator when the load is available.
- k. Check plant functionality.
- l. Check functionality of the central MMI and its power supply.

3. QAP for Software portion for Control and Instrumentation:-

To ensure total conformation of the application to the user requirement and to make sure that S/W Package development is of high quality, proper quality control activities shall be performed and Documented throughout the development. For this, the Concessionaire shall give an S/W quality Assurance plan to establish system of controls and make the S/W development activity less Intangible and more manageable throughout life cycle of S/W development. The Vendor shall be ISO 9001:2000 certified and shall ensure that all the activities including Documentation comply with the standards. PE shall ensure that the exercise of the inspection or monitoring rights do not impede or obstruct the construction and/or operation of the Facilities in any manner whatsoever;

4.0. Quality Assurance / Quality Control:

4.1 For 68 MLD STP Site at Jagjeetpur:

4.1.1. Construction Unit (Primary Treatment Unit, SBR, CCT, Sludge Thickener, Blower Room/Panel Room, Staff Quarters, Administrative buildings etc.)

Sl. No.	Description	Ref. IS Code	Upto Previous Month				During This Month (May 2019)				Remarks
			As per IS No. of Test	No. of Test Conducted	No. of Acceptance	No. of Rejects	As per IS No. of Test	No. of Test Conducted	No. of Acceptance	No. of Rejects	
1	Water	IS 10500 :2012	1	1	1	0	No test required since the source is same				One test has been conducted from the Central Pollution control Lab BHEL area, Haridwar before taking into use.
2	Mix Design (For M15,M25, M30)	IS 10262 :1986	2	2	2	0	0	0	0	0	This is required at commencement of the project
3	Determining of Safe Load Bearing Capacity of soil/ Sub-Stratum	IS 4968 : 1976 (Cone Penetration) & IS 1888 : 1982 (Plate Load Test)	1	4	4	0	0	0	0	0	This is required once at the stage of designing of the structures.
4	Calibration Test of Compression Testing Machine		One Test after every 12 month	1	1	N.A.					This test is required after every 12 months.
5	Cement (OPC)	IS 4031 -68 / IS 269 : 2015	N.A.	5	5	0	N.A.	0	0	0	At the change of batch
7	Concrete Cubes (15 x15 x15 cm)										
	M 15	IS 456 : 2000	Min.3 cubes	64 sets	64	0	No M15 concreting during this month				192 cubes=64 sets (a set of 3 cubes)
	M 25	IS 456 : 2000	Min.3 cubes	66 Sets	66	0	-	4	4	0	Up-to-date 210 Cubes = 70 Sets (a set of 3 cubes)
	M 30	IS 456 : 2000	Min.3 cubes	270 Sets	270	0	22	14	14	0	Up-to-date 852 Cubes = 284 Sets (a set of 3 cubes)
.8	Coarse aggregate 20mm	IS 383 : 1970	1 set of test done for change of one quarry	49 samples	49	0	1 set of test done for change of one quarry	3 samples	3 samples	0	Samples are tested after change of source or every fortnightly whichever occurs earlier
9	Coarse aggregate 10 mm	IS 383 : 1970	1 set of test done for change of one quarry	59 samples	59	0	1 set of test done for change of one quarry	3 samples	3 samples	0	Samples are tested after change of source or every fortnightly whichever occurs earlier
10	Fine Aggregate	IS 383 : 1970	1 set of test done for change of one quarry	53 samples	52	1	1 set of test done for change of one quarry	3 samples	3 samples	0	Samples are tested after change of source or every fortnightly whichever occurs earlier
11	Reinforcement Bars	IS 1786 : 2008	1 sample from each lot & size	2 Lots	2 Lots	0	1 sample from each lot & size	0	0	0	Tested at I.I.T, Roorkee
12	Slump Test	IS 1199 - 1959		551	534	17		25	25	0	At Site

Concrete compressive strength test (Cube Test) Reports:

S. No.	DATE OF TEST	ITEM OF WORK	APPX. QUANTITY	MARK	CLASS	CURE	TEST RESULT		SIGN. OFFICER	DATE	SIGN. OFFICER	DATE
							LOAD IN KN	COMP. STRENGTH IN MPa				
1	26/07/19	m-s	Foundation	-	M25	28	02/07/19	25.35	[Signature]	26/07/19	[Signature]	26/07/19
							02/07/19	25.00				
							02/07/19	24.50				
2	26/07/19	m-s	SBR	-	M25	28	02/07/19	22.14	[Signature]	26/07/19	[Signature]	26/07/19
							02/07/19	22.11				
							02/07/19	22.70				
3	26/07/19	m-s	SBR	-	M25	28	02/07/19	21.00	[Signature]	26/07/19	[Signature]	26/07/19
							02/07/19	22.13				
							02/07/19	23.70				
4	26/07/19	m-s	SBR	-	M25	28	02/07/19	22.64	[Signature]	26/07/19	[Signature]	26/07/19
							02/07/19	22.20				
							02/07/19	22.22				
							02/07/19	23.52				
							02/07/19	23.55				

S. No.	DATE OF TEST	ITEM OF WORK	APPX. QUANTITY	MARK	CLASS	CURE	TEST RESULT		SIGN. OFFICER	DATE	SIGN. OFFICER	DATE
							LOAD IN KN	COMP. STRENGTH IN MPa				
5	26/07/19	m-s	SBR	-	M25	28	02/07/19	4.00	[Signature]	26/07/19	[Signature]	26/07/19
							02/07/19	7.25				
							02/07/19	4.10				
6	26/07/19	m-s	SBR	-	M25	28	02/07/19	19.72	[Signature]	26/07/19	[Signature]	26/07/19
							02/07/19	18.41				
							02/07/19	16.00				
7	26/07/19	m-s	SBR	-	M25	28	02/07/19	19.72	[Signature]	26/07/19	[Signature]	26/07/19
							02/07/19	18.41				
							02/07/19	16.00				
							02/07/19	19.72				
							02/07/19	18.41				

Fine Aggregate test report:

Fine Aggregate

Date : 06/05/19
 Type of Aggregate : Fine Aggregate
 Zone : Zone - IV
 Total Sample : 1000 gm (1000 kg)

Sl. No.	Sieve Size	Weight retained	% age retained	Cumulative % age Retained	% age Passing	% age Passing as per IS: 380 (Zone-IV)	Conforming
01	02	03	04	05	06	07	08
	10 mm	0	0	0	100%	100	
	4.75 mm	30	3.00%	3.00%	97.00%	95-100	
	2.50 mm	62	6.20%	9.20%	90.80%	85-100	
	1.18 mm	118	11.80%	21.00%	79.00%	60-70	
	600 μ	92	9.20%	30.20%	69.80%	50-60	
	300 μ	523	52.30%	82.50%	17.50%	10-15	
	150 μ	102	10.20%	92.70%	7.30%	0-5	
	Pan	3	0.30%	100%	0%		
	Total						

Where the grading falls outside the limits of any particular grading zone of sieves other than the 600-micron IS Sieve by a total amount not exceeding 5 percent, it shall be regarded as falling within that grading zone. This tolerance shall not be applied to percentage passing the 600-micron Sieve or to percentage passing any other sieve size of the 600 to 75 μm of Grading zone IV.

Result: Sample meets the condition required of Fine aggregate (Zone - IV)

Signature: *[Handwritten Signature]* Date: *[Handwritten Date]*

APE/PE
[Handwritten Signature]

Fine Aggregate

Date : 15/5/19
 Type of Aggregate : Fine Aggregate
 Zone : Zone - V
 Total Sample : 1000 gm (1000 kg)

Sl. No.	Sieve Size	Weight retained	% age retained	Cumulative % age Retained	% age Passing	% age Passing as per IS: 380 (Zone-V)	Conforming
01	02	03	04	05	06	07	08
	10 mm	0	0	0	100%	100	
	4.75 mm	52	5.20%	5.20%	94.80%	95-100	
	2.50 mm	68	6.80%	12.00%	88.00%	85-100	
	1.18 mm	123	12.30%	24.30%	75.70%	60-70	
	600 μ	91	9.10%	33.40%	66.60%	50-60	
	300 μ	590	59.00%	92.40%	7.60%	15-20	
	150 μ	126	12.60%	100%	0%	0-15	
	Pan						
	Total						

Where the grading falls outside the limits of any particular grading zone of sieves other than the 600-micron IS Sieve by a total amount not exceeding 5 percent, it shall be regarded as falling within that grading zone. This tolerance shall not be applied to percentage passing the 600-micron Sieve or to percentage passing any other sieve size of the 600 to 75 μm of Grading zone V.

Result: Sample does not meet the condition required of Fine aggregate (Zone - V)

Signature: *[Handwritten Signature]* Date: *[Handwritten Date]*

APE/PE
[Handwritten Signature]

Fine Aggregate

Date: 24/05/17
 Type of Aggregate: Fine Aggregate
 Zone: Zone-IV
 Total Sample: 1000 gms (100kg)

Sl. No.	sieve size	Weight retained	% Age retained	Contribution % Age Retained	% Age Passing	% Age Passing as per IS : 382 (Zone-IV)	Conforming
01	IS 425	0	0	0	100%	100	50
	75 mm	0	0	0	100%	100	
	4.75 mm	41	4.1%	4.1%	95.9%	85-102	
	7.5 mm	62	6.2%	10.3%	89.7%	85-100	
	150 mm	118	11.8%	22.1%	77.9%	90-120	
	300	90	9.0%	31.1%	68.9%	90-100	
	600	52	5.2%	36.3%	63.7%	1-5.50	
	1000	107	10.7%	100%	0%	0-10	
Pen							
Total							

Where the grading table is the limit of any particular grading zone or zone other than 100% zone - IS 382 by a total amount not exceeding 5 percent, it shall be regarded as complying with that grading zone. This tolerance shall not be applied to percentage passing the 600-micron IS sieve or to percentage passing any other sieve size on the coarse limit of grading zone I or the lower limit of grading zone IV.

Result: Sample does not meet the criteria as per IS 382 (Zone-IV)

Raw
MSBA

[Signature]

APP/PE
[Signature]
 24/5/17

Concrete Ingredients Course Aggregate 20mm / 10mm test report:

Course Aggregate

Name of Site : 08 MLD STP, Jagdolpur
 Date : 05/05/19
 Type of Aggregate : Course Aggregate (20mm)
 Total Sample : 1000 gms (100kg)

Sl. No	Sieve Size	Weight retained				%age retained	cumulative %age retained	%age passing	%age passing as per IS :383		Confirming
		1st	2nd	3rd	Average				20mm	12.50mm	
1	02	03	04	05	06	07	08	09	10	12.50mm	11
	40mm	0	0	0	0	0	0	0	10		
	20mm	22	36	32	30	32%	32%	68%	0		
	16mm								95-100		
	12.5mm										
	10mm	635	635	648	636	63%	66.6%	33.4%		90-100	
	4.75mm	348	328	313	327	32.7%	99.3%	0.7%	25-55	40-85	
	pan	3	2	1	2	0.2%	100%	0%	0-10	0-10	

Result: Sample meet /Do not meet the condition required of course aggregate

APE/PE
[Signature]



Course Aggregate

Name of Site : 08 MLD STP, Jagdolpur
 Date : 15/05/19
 Type of Aggregate : Course Aggregate (20mm)
 Total Sample : 1000 gms (100kg)

Sl. No	Sieve Size	Weight retained				%age retained	cumulative %age retained	%age passing	%age passing as per IS :383		Confirming
		1st	2nd	3rd	Average				20mm	12.50mm	
1	02	03	04	05	06	07	08	09	10	12.50mm	11
	40mm	0	0	0	0	0	0	0	10		
	20mm	42	36	44	41	41%	41%	59%	0		
	16mm								95-100		
	12.5mm										
	10mm	635	648	618	631	63.1%	67.2%	32.8%		90-100	
	4.75mm	322	314	335	327	32.7%	99.9%	0.1%	25-55	40-85	
	pan	1	2	1	1	0.1%	100%	0%	0-10	0-10	

Result: Sample meet /Do not meet the condition required of course aggregate

APE/PE
[Signature]



Concrete Ingredients Course Aggregate 20mm / 10mm test report:

Coarse Aggregate

Name Of Site : 82 MLD STP Jagjeetpur
 Date : 24/05/19 (24/05/19)
 Type of Aggregate : Coarse Aggregate 20mm
 Total Sample : 1000 gms (1000g)

Sl. No	Sieve Size	Weight retained				%age retained	cumulative %age retained	%age passing	%age passing as per IS :383		Confirming
		1st	2nd	3rd	Average				20mm	12.50mm	
1	02	03	04	05	06	07	08	09	10	11	
	40mm	0	0	0	0	0	0	0	0		
	20mm	25	31	37	31	31.0%	31.0%	66.9%	95-100		
	16mm										
	12.5mm										
	10mm	645	625	623	631	63.4%	66.5%	33.1%	25-55	40-85	
	4.75mm	330	334	341	335	33.5%	100%	0%	0-10	0-10	
	pan	0	0	0	0	0					

Result : Sample meet /Do not meet the condition required of course aggregate

APE/PE
[Signature]
STC

[Signature]
HM/DEPL

Coarse Aggregate

Name Of Site : 82 MLD STP Jagjeetpur
 Date : 2/05/19
 Type of Aggregate : Coarse Aggregate (10mm)
 Total Sample : 1000 gms (1000g)

Sl. No	Sieve Size	Weight retained				%age retained	cumulative %age retained	%age passing	%age passing as per IS :383		Confirming
		1st	2nd	3rd	Average				20mm	12.50mm	
1	02	03	04	05	06	07	08	09	10	11	
	40mm	0	0	0	0	0	0	0	0		
	20mm								95-100		
	16mm										
	12.5mm	25	35	39	33	33.0%	33.0%	66.9%	90-100		
	10mm	225	230	232	229	22.9%	55.9%	44.1%	25-55	40-85	
	4.75mm	410	435	419	421	42.1%	100%	0%	0-10	0-10	
	pan										

Result : Sample meet /Do not meet the condition required of course aggregate

APE/PE
[Signature]
STC

[Signature]
HM/DEPL

Concrete Ingredients Course Aggregate 20mm / 10mm test report:

Coarse Aggregate

Name Of Site : 82 MLD STP (Haridwar)
Date : 16/05/19
Type of Aggregate : Coarse Aggregate
Total Sample : 1000 gms (1000g)

Sl. No	Sieve Size	Weight retained				%age retained	cumulative %age retained	%age passing	%age passing as per IS 383		Confirming
		1st	2nd	3rd	Average				20mm	12.50mm	
1	02	03	04	05	06	07	08	09	10	11	
	40mm	0	0	0	0	0	0	100%	0		
	20mm								95-100		
	10mm										
	12.5mm	28	29	41	36	34%	34%	66%	90-100		
	10mm	223	217	237	224	22.3%	22.3%	77.7%	75-85	40-85	
	4.75mm	719	706	729	718	71.8%	71.8%	28.2%	0-10	0-10	
	pan										

Result: Sample meet/don't meet the condition required of coarse aggregate

APE/PE
[Signature]

Coarse Aggregate

Name Of Site : 82 MLD STP (Haridwar)
Date : 25/05/19
Type of Aggregate : Coarse Aggregate
Total Sample : 1000 gms (1000g)

Sl. No	Sieve Size	Weight retained				%age retained	cumulative %age retained	%age passing	%age passing as per IS 383		Confirming
		1st	2nd	3rd	Average				20mm	12.50mm	
1	02	03	04	05	06	07	08	09	10	11	
	40mm	0	0	0	0	0	0	100%	0		
	20mm								95-100		
	10mm										
	12.5mm	42	32	28	34	3.4%	3.4%	96.6%	90-100		
	10mm	219	225	231	224	22.4%	22.4%	77.6%	75-85	40-85	
	4.75mm	439	443	441	441	44.1%	44.1%	55.9%	0-10	0-10	
	pan										

Result: Sample meet/don't meet the condition required of coarse aggregate

APE/PE
[Signature]

4.2. For 14 MLD STP Site at Sarai:

4.2.1 Construction Unit (Primary Treatment Unit, SBR, CCT, Sludge Thickener, Blower Room/Panel Room, Staff Quarters, Administrative buildings etc.)

Sl. No.	Description	Ref. IS Code	Upto Previous Month				During This Month (May 2019)				Remarks
			As per IS No. of Test	No. of Test Conducted	No. of Acceptance	No. of Rejects	As per IS No. of Test	No. of Test Conducted	No. of Acceptance	No. of Rejects	
1	Water	IS 10500 :2012	1	1	1	0	No test required since the source is same				One test has been conducted from the Central Pollution control Lab BHEL area, Haridwar before taking into use.
2	Mix Design (For M15,M25, M30)	IS 10262 :1986	2	2	2	0	0	0	0	0	This is required at the commencement of the project
3	Determining of Safe Load Bearing Capacity of soil/ Sub-Stratum	IS 4968 : 1976 (Cone Penetration) & IS 1888 : 1982 (Plate Load Test)	1	4	4	0	0	0	0	0	This is required once at the stage of designing of the structures.
4	Calibration Test of Compression Testing Machine (CTM)		One Test after every 12 months	1	1	N.A.					This test is required after every 12 months.
5	Cement (OPC)	IS 4031 -68 / IS 269 : 2015	N.A.	6	6	0	N.A.	0	0	0	At the change of batch
7	Concrete Cubes (15 x15 x15 cm)										
	M 15	IS 456 : 2000	Min.3 cubes	48 sets	48	0	No M15 concreting during this month				144 cubes=48 sets (a set of 3 cubes)
	M 25	IS 456 : 2000	Min.3 cubes	46 Sets	46	0	No M25 concreting during this month				Up-to-date 138 Cubes = 46 Sets (a set of 3 cubes)
	M 30	IS 456 : 2000	Min.3 cubes	167 Sets	167	0	4 sets	0	0	0	Up-to-date 501 Cubes = 167 Sets (a set of 3 cubes)
8	Coarse aggregate 20mm	IS 383 : 1970	1 set of test done for change of one quarry	7 samples	7	0	1 set of test done for change of one quarry	0 samples	0	0	Samples are tested after change of source or every fortnightly whichever occurs earlier
9	Coarse aggregate 10 mm	IS 383 : 1970	1 set of test done for change of one quarry	8 samples	8	0	1 set of test done for change of one quarry	0 samples	0	0	Samples are tested after change of source or every fortnightly whichever occurs earlier
10	sand	IS 383 : 1970	1 set of test done for change of one quarry	9 samples	9	0	1 set of test done for change of one quarry	0	0	0	Samples are tested after change of source or every fortnightly whichever occurs earlier
11	Reinforcement Bars	IS 1786 : 2008	1 sample from each lot & size	2 Lots	2 Lots	0	1 sample from each lot	0	0	0	Tested at I.I.T, Roorkee
12	Slump Test	IS 1199 - 1959		453	436	19		0	0	0	At Site



4.3. Construction running material / equipments:

Sl. No.	Description	Ref. IS Code	Upto Previous Month				During This Month (May 2019)				Remarks
			As per IS No. of Test	No. of Test Conducted	No. of Acceptance	No. of Rejects	As per IS No. of Test	No. of Test Conducted	No. of Acceptance	No. of Rejects	
1	Cube Testing Machine	IS 516-2001	Yearly Once	2	2	0	NA				
2	Laboratory weighing machine	IS 460 - 1980	Yearly Once	2	2	0					
3	Ready Mix Concrete Plant	IS 4926 - 2013	Whenever Required	2	2	0					