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

FEBRUARY – 2019

Executing Agency	Funding Agency	Project Engineer	Concessionaire
Uttarakhand Pey Jal Nigam, Haridwar, Uttarakhand Pin: 249408	National Mission for Clean Ganga, Ministry of Water Resources, New Delhi, Pin: 110002	Shah Technical Consultants Pvt. Ltd., Haridwar, Uttarakhand Pin: 249408	HNB Engineers (Haridwar) Pvt. Ltd, Haridwar, Uttarakhand Pin: 249408

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MONTHALY QUALITY ASSURANCE / QUALITY CONTROL REPORT

INTRODUCTION:

Namami Gange is a flagship program of the Central Government for abetment 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 have 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 earthling 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 a 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;

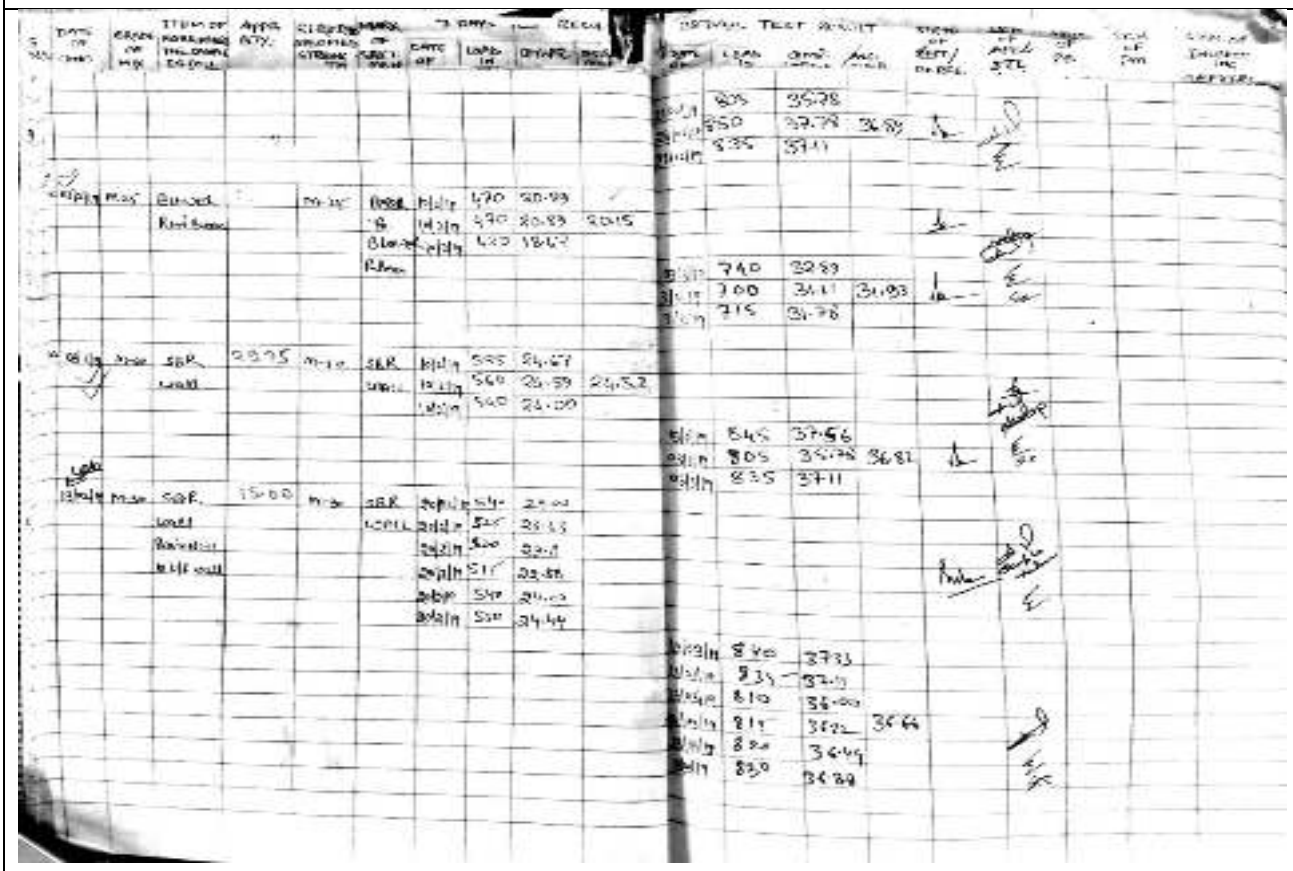
4.0. Quality Assurance / Quality Control:

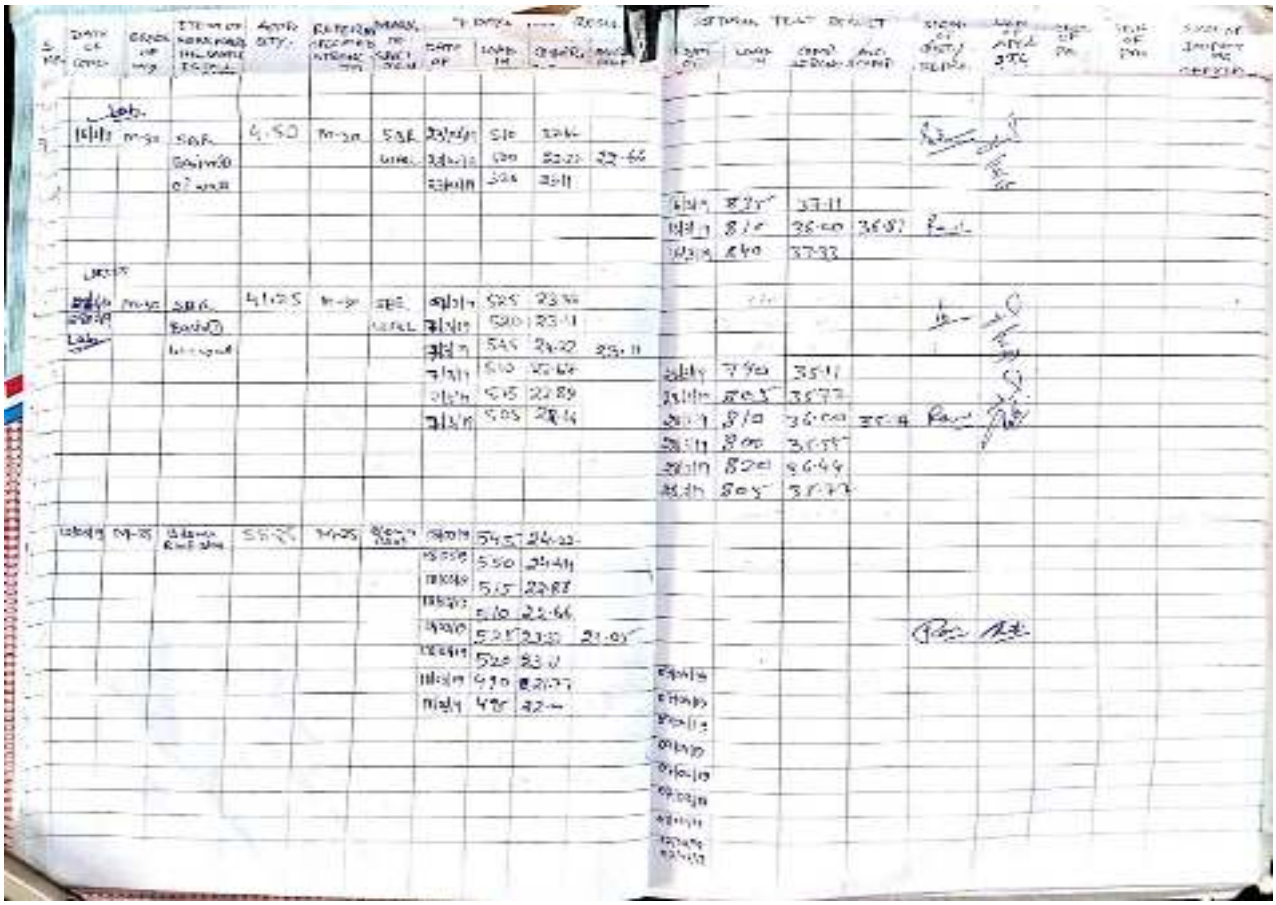
4.1 For 68 MLD STP Site at Jagjeetpur:

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 (Feb.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	56 Sets	56	0	6 Sets	3	3	0	Up-to-date 177 Cubes = 59 Sets (a set of 3 cubes)
	M 30	IS 456 : 2000	Min.3 cubes	214 Sets	214	0	16 sets	15	15	0	Up-to-date 687 Cubes = 229 Sets (a set of 3 cubes)
.8	Coarse aggregate 20mm	IS 383 : 1970	1 set of test done for change of one quarry	41 sam ples	41	0	1 set of test done for change of one quarry	2 sam ples	2 sam ples	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	51 sam ples	51	0	1 set of test done for change of one quarry	2 sam ples	2 sam ples	0	Samples are tested after change of source or every fortnightly whichever occurs earlier
10	Coarse sand	IS 383 : 1970	1 set of test done for change of one quarry	44 sam ples	43	1	1 set of test done for change of one quarry	2 sam ples	2 sam ples	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		431	414	17		45	45	0	At Site

Concrete compressive strength test (Cube Test) Reports:





Concrete compressive strength test (Cube Test) Reports:

Office of Project Manager
Construction & Maintenance Unit (Ganga)
Uttarakhand Peyjal Nigam,
Jagjeetpur, Post Kankhal,
Haridwar

Construction of 68 MLD STP at Jagjeetpur & 14 MLD STP at Sarai in Haridwar with 15 years Operation & Maintenance period on hybrid annuity PPP model under Namami Gange Programme.

Sl. No.	Cube of size	Mix Concrete	Place	Date of Concreting	Cube Strength
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	SBR Wall	27.12.2018	28 Day's cube Strength Test
3	[illegible]	[illegible]	Primary Screen channel bottom slab	[illegible]	[illegible]
4	[illegible]	[illegible]	S.B.R. Wall	05.01.2019	28 Day's cube Strength Test

M/s HNB Engineers (Haridwar) Pvt. Ltd.

NOTE: Forwarding letter to IIT for Testing. Report awaited.

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S-121, Harsha Compound
Site-2, Loni Road, Indl. Area
Mohan Nagar, Ghaziabad - 201007 (UP)

E-mail: info@qualitytestinglaboratories.com
akssinghndl@gmail.com
Web.: www.qualitytestinglaboratories.com

QF-1402

TEST REPORT

Issued To:

S.NO	TEST (with unit of measurement)	Weight Of Cube (g)	Avg. of Area (mm²)	Load (KN)	Test Result (N/mm²)	Test Method
	Compressive Strength (N/mm²)(28 Days)					
	CUBE NO.1	[illegible]	22519	[illegible]	[illegible]	
	CUBE NO.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	CUBE NO.3	[illegible]	[illegible]	[illegible]	[illegible]	
	Average=				36.0 N/mm²	

Date of Casting –
Date of Testing –

End of Report

Technical Manager
Authorised Signatory

AN ISO 9001:2015 CERTIFIED & NABL ACCREDITED TESTING LABORATORY

Test Report from NABL Approved Lab

Concrete compressive strength test (Cube Test) Reports:

QUALITY TESTING LABORATORIES™

TESTING OF NDT | BUILDING MATERIAL | CHEMICAL | WATER | ENVIRONMENT

S-121, Harsha Compound
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aksinghndl@gmail.com
Web.: www.qualitytestinglaboratories.com

QF-1402

TEST REPORT

(This certificate is not valid without a hologram)

S.NO	TEST (With unit of measurement)	Weight Of Cube (g)	Avg. of Area (mm²)	Load (KN)	Test Result (N/mm²)	Test Method
1.	Compressive Strength (N/mm²)@28 Days					
	CUBE NO.1	8[illegible]1	9,[illegible]43	[illegible]85	35.1	
	CUBE NO.2	8[illegible]5	22553	800	35.5	IS:516:1959
	CUBE NO.3	8[illegible]9	22557	801	35.5	
	Average:	-	-	-	35.6 N/mm²	

Date of Casting : [illegible].2019
Date of Testing : 15.02.2019

End of Report

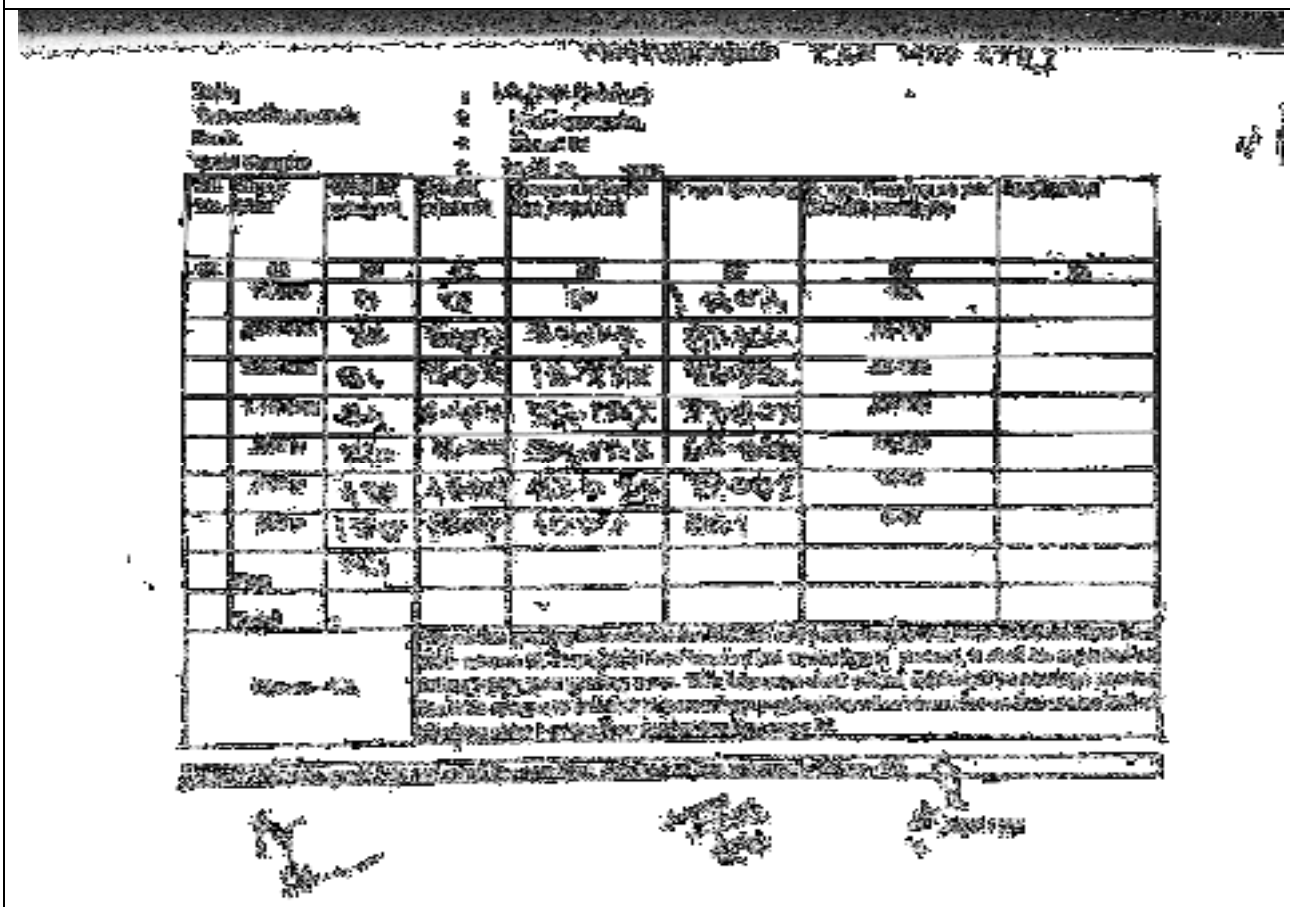
A.K. Singh (Technical Manager)
Authorised Signatory

QUALITY TESTING LABORATORIES

AN ISO 9001:2015 CERTIFIED & NABL ACCREDITED TESTING LABORATORY

Test Report from NABL Approved Lab

Fine Aggregate test report:



Fine Aggregate (62 MLD STP)

Date : 23/02/2019
Type of Aggregate : Fine Aggregate
Zone : Zone - IV
Total Sample : 1000 gms

Sl. No.	Sieve Size	Weight retained	% age retained	Commulative % age Retained	% age Passing	% age Passing as per IS : 383 (Zone-IV)	Confirming
01	02	03	04	05	06	07	08
	10 mm					100	
	4.75 mm	80	8.00%	8.00%	92%	95-100	
	2.36 mm	56	5.60%	13.60%	86.40%	85-100	
	1.18 mm	88	8.8%	22.40%	77.60%	90-100	
	600 µ	135	13.50%	35.90%	64.10%	80-100	
	300 µ	490	49.00%	84.90%	15.10%	15-50	
	150 µ	150	15.0%	99.90%	0.1%	0-15	
	Pan	1	0.1%	100%	Nil		
	Total						
Clause - 4.3		Where the grading falls outside the limits of any particular grading zone of sieves other than 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 IS sieve or to percentage passing any other sieve size on the coarse limit of Grading zone I or the finer limit of Grading zone IV.					

Result : Sample meet / do not meet the condition recured of fine aggregate (Zone - IV)

STC

APE / PE

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

Coarse Aggregate

Name Of Site : 68 MLD STP Jagjeetpure
Date : 10/02/2019
Type of Aggregate : Coarse Aggregate 20 mm
Total Sample : 1000 gms

Sl. No	Sieve Size	Weight retained				%age retained	commulative %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	0.00%	0.00	100%	0		
	20mm	49	26	55	43.33	4.33%	4.33	95.67%	95-100		
	16mm										
	12.5mm	665	673	684	674.00	67.07%	71.40	28.60%		90-100	
	10mm								25-55	40-85	
	4.75mm	262	284	285	277.00	27.70%	99.10	0.90%	0-10	0-10	
	pan	4	17	6	9.00	0.90%	100.00	0.00			

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

APE/PE
STC.

Palak Bansal

Coarse Aggregate

Name Of Site : 68 MLD STP Jagjeetpure
Date : 21/02/2019
Type of Aggregate : Coarse Aggregate 20 mm
Total Sample : 1000 gms

Sl. No	Sieve Size	Weight retained				%age retained	commulative %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%	0.00	100%	0		
	20mm	86	39	42	39	3.90%	3.90	96.10%	95-100		
	16mm										
	12.5mm									90-100	
	10mm	709	721	691	707	70.70%	74.60%	25.40%	25-55	40-85	
	4.75mm	255	240	267	254	25.40%	100%	0%	0-10	0-10	
	pan										

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

APE/PE
STC.

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

Coarse Aggregate

Name Of Site : 68 MLD STP Jagjeetpure
Date : 08/02/19
Type of Aggregate : Coarse Aggregate (20mm)
Total Sample : 1000 gm (2.20 kg)

Sl. No	Sieve Size	Weight retained				%age retained	commulative %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		
	20mm	0	0	0	0	00%	00%	100%	95-100		
	16mm										
	12.5mm	21	27	33	27.00	2.70	2.70%	97.30%		90-100	
	10mm	227	231	235	231	23.10%	25.80%	74.20%	25-55	40-85	
	4.75mm	749	728	750	739	73.90%	99.70%	0.30%	0-10	0-10	
	pan	03	04	02	03	0.3%	100%	00%			

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

APE/PE

HNBPL

Coarse Aggregate

Name Of Site : 68 MLD STP Jagjeetpure
Date : 27/02/19
Type of Aggregate : Coarse Aggregate (10mm)
Total Sample : 1000 gms (1 kg)

Sl. No	Sieve Size	Weight retained				%age retained	commulative %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		
	20mm	0	0	0	0	00%	00%	100%	95-100		
	16mm										
	12.5mm	29	22	21	24	2.4%	2.40%	97.60%		90-100	
	10mm	225	235	238	233	23.30%	25.70%	74.30%	25-55	40-85	
	4.75mm	746	743	740	743	74.30%	100%	00%	0-10	0-10	
	pan										

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

APE/PE

HNOEP

Field Control Test: Slump Cone test report:

Slump Test

Name of work: 68 MLD STP at Jogiwala
C.B. No.: 21/GM/201-18

Sl. No.	Date of Testing	Unit	Location	Vibrators used Yes / No	Quantity of water added per bag of cement (Litres)	Height of Slump cone	Height of specimen after removal of Slump cone (mm)	Slump (mm)	Acceptability of result or action taken	Sign. of Site Engineer with date JSC	Sign. of Contractor with date	Remarks
01	02		03	04	05		06	07	08	09	10	11
	21/01/19	SBR	Wall	Yes	22	300mm	270 mm	30mm				
				Yes	23	300mm	275mm	25mm				
				Yes	23	300mm	295 mm	05mm				
				Yes	21	300mm	240 mm	60mm				
	29/01/19	SBR	Wall	Yes	23	300mm	235 mm	65mm				
				Yes	21	300mm	240mm	60mm				
				Yes	22	300mm	220mm	80mm				
	5/01/19	Primary	Slab	Yes	23	300mm	251mm	49 mm				
		Unit	Slab	Yes	22	300mm	230mm	70 mm				
				Yes	21	300mm	240mm	60mm				
				Yes	22	300mm	230mm	70mm				
				Yes	22	300mm	235mm	65mm				
	21/01/19	SBR	Wall	Yes	21	300mm	230 mm	70mm				
		SBR	Wall	YES	22	300	230	70mm				

Slump Test

Name of work: 68 MLD STP at Jogiwala
C.B. No.: 21/GM/201-18

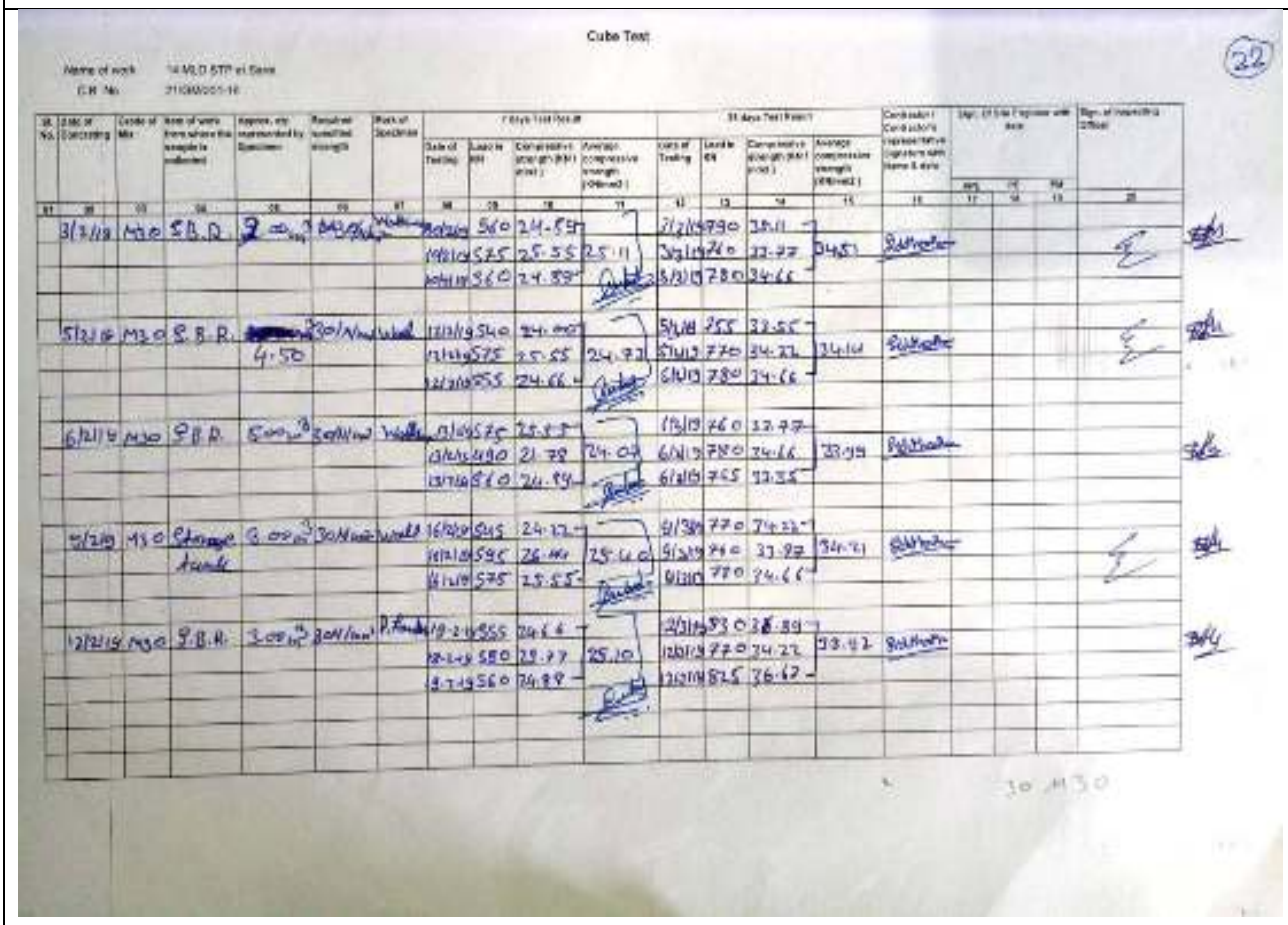
Sl. No.	Date of Testing	Unit	Location	Vibrators used Yes / No	Quantity of water added per bag of cement (Litres)	Height of Slump cone	Height of specimen after removal of Slump cone (mm)	Slump (mm)	Acceptability of result or action taken SJE	Sign. of Site Engineer with date	Sign. of Contractor with date	Remarks
01	02		03	04	05		06	07	08	09	10	11
	11/02/19	SBR	Wall	YES	23	300 mm	220 mm	80 mm				
	11/02/19	SBR	Wall	YES	22	300mm	225 mm	75mm				
	13/02/19	SBR	Wall	YES	23	300mm	220mm	80mm				
	〃	SBR	Wall	YES	23	300mm	220mm	80mm				
	16/02/19	SBR	Wall	YES	21	300mm	235 mm	65 mm				
	19/02/19	SBR	Wall	YES	20	300mm	235 mm	65mm				
	21/02/19	SBR	Slab	YES	23	300mm	245mm	55 mm				
	22/02/19	RTU	Slab	YES	21	300mm	230 mm	70mm				
	25/02/19	RTU	Wall	YES	22	300mm	225 mm	75mm				
	27/02/19	SBR	Wall	YES	23	300mm	220mm	80 mm				
	〃	SBR	Wall	YES	22	300mm	225mm	75mm				
	〃	SBR	Wall	YES	23	300mm	220mm	80mm				
	〃	SBR	Wall	YES	23	300mm	220mm	80mm				

4.2. For 14 MLD STP Site at Sarai:

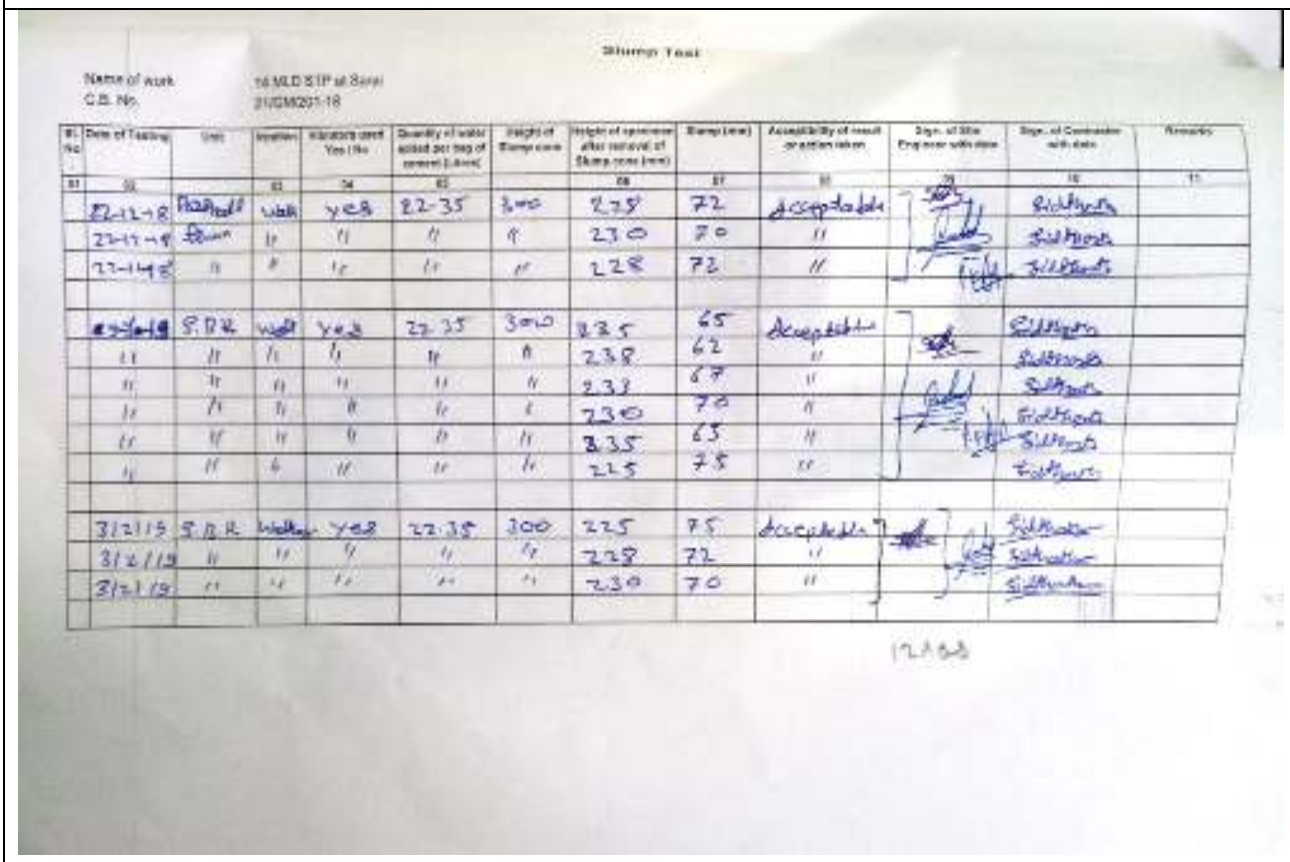
4.2.1 Construction Unit (Primary Treatment Unit, SBR, CCT, Sludge Thickener, Blower Room/Panel Room, Staff Quarters, Administrative buildings etc..)

Sl. No.	Description	Ref. IS Code	Upto Previous Month				During This Month (Feb.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 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.					Thiis 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	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	44 Sets	44	0	2 Sets	2	2	0	Up-to-date 136 Cubes = 44 Sets (a set of 3 cubes)
	M 30	IS 456 : 2000	Min.3 cubes	149 Sets	149	0	7 sets	8	8	0	Up-to-date 447 Cubes = 149 Sets (a set of 3 cubes)
8	Coarse aggregate 20mm	IS 383 : 1970	1 set of test done for change of one quarry	6 sam ples	6	0	1 set of test done for change of one quarry	1 sam ples	1	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	7 sam ples	7	0	1 set of test done for change of one quarry	1 sam ples	1	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	8 sam ples	8	0	1 set of test done for change of one quarry	1 sam ples	1	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		378	364	14		9	9	0	At Site

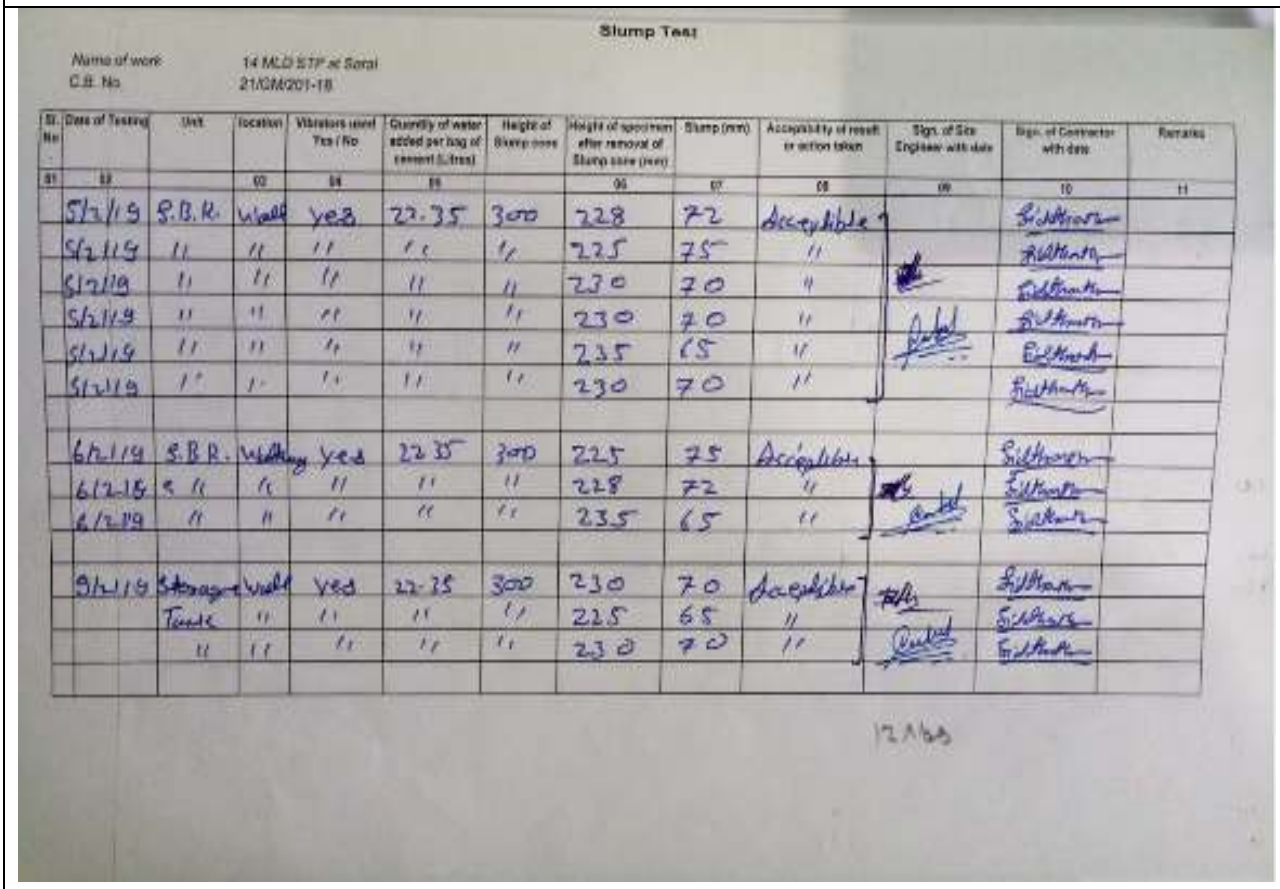
Concrete compressive strength test (Cube Test) Reports:



Field Control Test: Slump Cone test report:



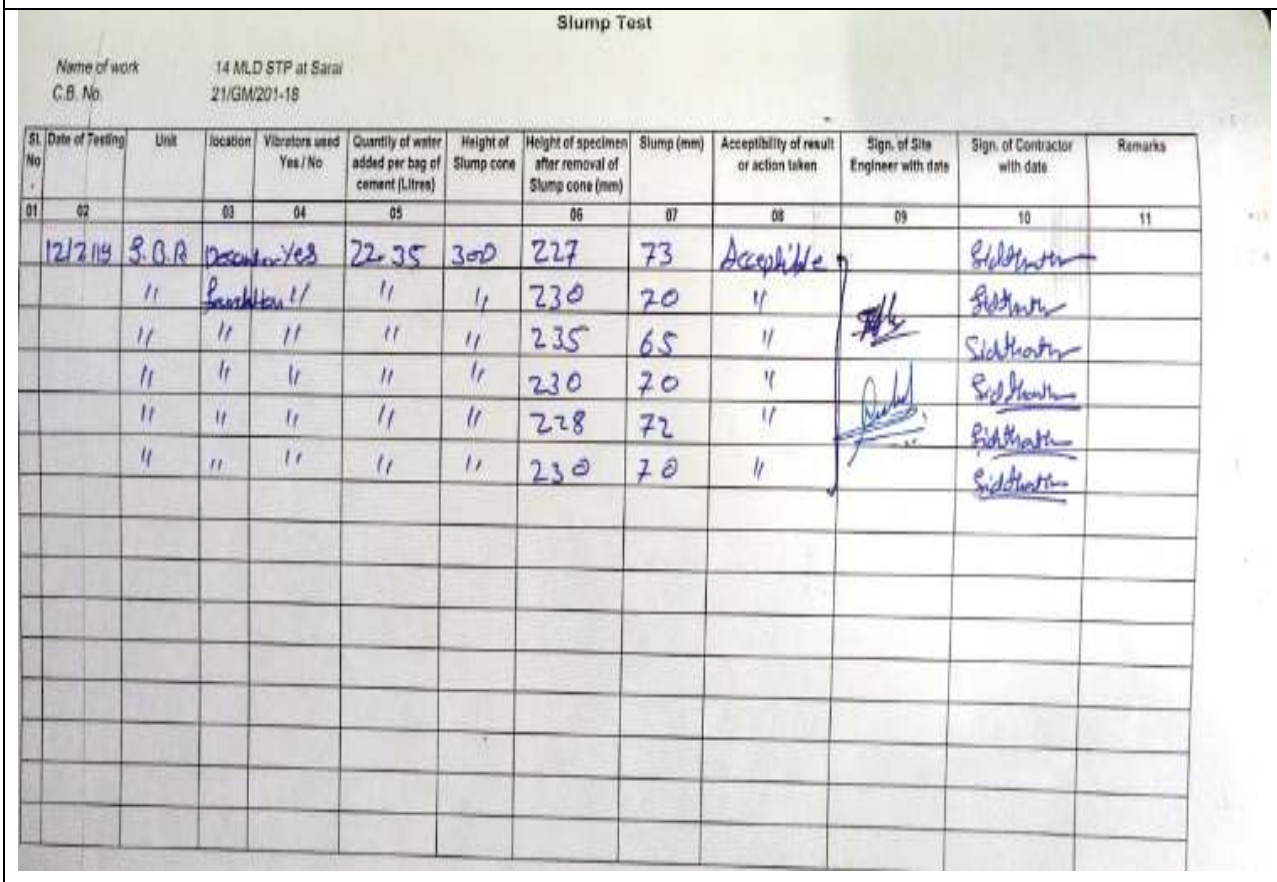
Field Control Test: Slump Cone test report:



Slump Test

Name of work: 14 MLD STP at Sarai
C.B. No: 21/GM/201-18

Sl. No.	Date of Testing	Unit	location	Vibrators used Yes / No	Quantity of water added per bag of cement (Litres)	Height of Slump cone	Height of specimen after removal of Slump cone (mm)	Slump (mm)	Acceptibility of result or action taken	Sign. of Site Engineer with date	Sign. of Contractor with date	Remarks
01	02		03	04	05		06	07	08	09	10	11
	5/2/19	S.B.R.	Wall	Yes	22.35	300	228	72	Acceptible			
	5/2/19	11	11	11	11	11	225	75	11			
	5/2/19	11	11	11	11	11	230	70	11			
	5/2/19	11	11	11	11	11	230	70	11			
	5/2/19	11	11	11	11	11	235	65	11			
	5/2/19	11	11	11	11	11	230	70	11			
	6/2/19	S.B.R.	Wall	Yes	22.35	300	225	75	Acceptible			
	6/2/19	11	11	11	11	11	228	72	11			
	6/2/19	11	11	11	11	11	235	65	11			
	9/2/19	Storage Tank	Wall	Yes	22.35	300	230	70	Acceptible			
			11	11	11	11	225	65	11			
			11	11	11	11	230	70	11			



Slump Test

Name of work: 14 MLD STP at Sarai
C.B. No: 21/GM/201-18

Sl. No.	Date of Testing	Unit	location	Vibrators used Yes / No	Quantity of water added per bag of cement (Litres)	Height of Slump cone	Height of specimen after removal of Slump cone (mm)	Slump (mm)	Acceptibility of result or action taken	Sign. of Site Engineer with date	Sign. of Contractor with date	Remarks
01	02		03	04	05		06	07	08	09	10	11
	12/2/19	S.B.R	Wall	Yes	22.35	300	227	73	Acceptible			
		11	11	11	11	11	230	70	11			
		11	11	11	11	11	235	65	11			
		11	11	11	11	11	230	70	11			
		11	11	11	11	11	228	72	11			
		11	11	11	11	11	230	70	11			

4.3. Construction running material / equipments:

Sl. No.	Description	Ref. IS Code	Upto Previous Month				During This Month (Feb.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	Not Applicable				Digital weighing machine available at site
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					