BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 1155/2024

IN THE MATTER OF:

KAUSHALENDRA KUMAR

...APPLICANT

VERSUS

UNION OF INDIA & ORS.

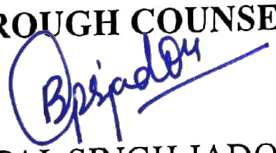
...RESPONDENT(s)

INDEX

S. NO.	PARTICULARS	PAGE NO.
1.	FURTHER JOINT COMMITTEE REPORT BY THE DISTRICT MAGISTRATE, GHAZIABAD IN COMPLIANCE OF ORDER DATED 10.01.2025 PASSED BY THE HON'BLE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI	
2.	A COPY OF THE JOINT COMMITTEE REPORT IS ANNEXED HEREWITH AND MARKED AS **ANNEXURE-1**	
3.	A COPY OF THE DEMARCATION REPORTS OF THE DISTRICT HAPUR AND GAUTAM BUDDHA NAGAR ARE ANNEXED HEREWITH AND MARKED AS **ANNEXURE-2**	
4.	A COPY OF THE REPORT SENT BY THE TEHSILDAR AS PER THE INSPECTION CONDUCTED IS ANNECED HEREWITH AND MARKED AS **ANNEXURE-3**	
5.	A COPY OF THE NOTIFICATION IS ANNEXED HEREWITH AND MARKED AS **ANNEXURE-4**	
6.	A COPY OF THE INSPECTION REPORT OF THE INDUSTRIES IS ANNEXED HEREWITH AND MARKED AS **ANNEXURE-5**	

7.	A COPY OF THE LETTER DATED 17.02.2025 BY UPSIDA IS ANNEXED HEREWITH AND MARKED AS **ANNEXURE-6**	
8.	A COPY OF WETLANDS (CONSERVATION AND MANAGEMENT) RULES, 2017 IS ANNEXED HEREWITH AND MARKED AS **ANNEXURE-7**	

THROUGH COUNSEL



BHANWAR PAL SINGH JADON
COUNSEL FOR UPPCB
EMAIL- bhanwar09jadon@gmail.com

DATE: 24/02/2025
PLACE: GHAZIABAD

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 1155/2024

IN THE MATTER OF:

KAUSHALENDRA KUMAR

...APPLICANT

VERSUS

UNION OF INDIA & ORS.

...RESPONDENT(s)

FURTHER JOINT COMMITTEE REPORT BY THE DISTRICT MAGISTRATE, GHAZIABAD IN COMPLIANCE OF ORDER DATED 10.01.2025 PASSED BY THE HON'BLE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

I, Deepak Meena, aged about 39 years, S/o R.C. Meena, currently posted as District Magistrate, Ghaziabad, do hereby solemnly affirm and state as under:

1. That I, Deepak Meena District Magistrate of Ghaziabad, am fully conversant with the facts of the case and am competent and authorized to swear the present Affidavit.

2. That the present matter pertains to grievance raised by the Applicant with regards to the pollution and encroachment on Hasanpur-Lodha wetland.

3. That the Hon'ble Tribunal on 10.01.2025 directed the joint committee to file a further report with respect to the discharge of the effluents by the

24 FEB 2025

industrial units. Furthermore, District Magistrate, Hapur and District Magistrate, Gautam Budh Nagar were made part of the joint committee constituted by the Hon'ble Tribunal dated 19.09.2024.

4. That in compliance of the directions issued by the Hon'ble Tribunal dated 10.01.2025, the joint committee conducted inspection dated 29.01.2025 of the site in question.

   A copy of the joint committee report is annexed herewith and marked as **ANNEXURE-1.**

5. That during the inspection conducted by the joint committee, the observations made are as follows:

   i. The Hasanpur-Lodha Lake is located 17km, east of District Headquarters Ghaziabad and surrounded by area falling in District Ghaziabad, Hapur and Gautambuddh Nagar.

   ii. So far as the matter of original record indicating the area of wetland reflected is concerned, in respect to Hasanpur lake area falling in the jurisdiction of District Hapur and Gautambuddh Nagar, the measurement and demarcation work were carried out by revenue officials of respective Districts and reports have been received.

   A copy of the demarcation reports of the district Hapur and Gautam Buddha Nagar are annexed herewith and marked as **ANNEXURE-2.**

NOTARY Sandeep Sharma Reg No. 14/1994 GOVT. OF INDIA

24 FEB 2025

iii. The Hasanpur-Lodha Lake does not come under the jurisdiction of the District Ghaziabad. Based on the records of the Regional Lekhpal during the on-site inspection, it was found that the concerned land records, including the *Khasra/Khatauni* and *Sajra*, do not indicate the presence of a lake in district Ghaziabad.

A copy of the report sent by the Tehsildar as per the inspection conducted is anneced herewith and marked as **ANNEXURE-3.**

6. That as per the inspection conducted by the joint committee, the current status of the Hasanpur lake is as follows:

i. According to the measurement report, of District Hapur, total area of Hasanpur Lake falling in village Hasanpur-Lodha, Tehsil Dhaulana District Hapur, is about 37 hectares and at present the area of lake is complete and encroachment free.

ii. As per report of District Ghaziabad, area of Hasanpur Lake is not falling in the jurisdiction of District Ghaziabad,

iii. As per the measurement report of District Gautambuddh Nagar, total area of Hasanpur Lake falling in Village Shadipur Chhidoli, Tehsil Dadri District Gautambuddh Nagar, recorded in revenue is about 15.331 hectares bearing 38 *khasra*. Further it is stated that out of the total area of *Khasra No.* 194 (0.6700 hectares), a Higher Primary Vidhyalay and Government School remains on area 0.3932 hectares approximately and except the above the area of lake is encroachment free. Further in said report it is also stated that except *Khasra No.* 194, lease for fishing has been sanctioned to Matsya jivee Sahakari Samiti

24 FEB 2025

Ltd, Jarcha on remaining khasras by Sub Divisional Magistrate Dadri.

7. That as per the above observations and status provided by the joint committee, it is clear that total area of Hasanpur Lake falling in District Hapur and Gautambuddh Nagar, is about 52.331 hectares, and excluding area 0.3932 hectares, bearing khasra no 194, (on which the school is built), the area of Lake is encroachment free.

8. That during the inspection, the joint team collected the water samples from the Hasanpur-Lake and deposited to the Regional Laboratory of UPPCB, Ghaziabad for analysis. As per primary water quality criteria, the pH is within the limits i.e. 7.43-7.58 against prescribed limit of 6.5-8.5; B.O.D. being 3.5 – 3.7 mg/l of Hasanpur Lake marginally exceeds the prescribed limit of 3.0 mg/l., D.O. at both the locations are as per standards. Further, fecal coliform of Hasanpur Lake within the permissible limit i.e. 2500 MPN/100 ml.

A copy of the notification is annexed herewith and marked as **ANNEXURE-4.**

9. That the joint committee visited the industrial units (Respondent No-17 to 38). During the inspection, the joint committee carried out various aspects of the inspection including the industrial processes, fresh, water consumption, effluent generation, collection of sample from Effluent Treatment Plant (ETP), discharge, waste disposal etc.

24 FEB 2025

A copy of the inspection report of the industries is annexed herewith and marked as **ANNEXURE-5.**

10. That with regards to the drains in the industrial area, the committee observed that there is a network of open drains. The existing storm water drain network is inadequate due to which the over flow of the industrial drains gets accumulated on vacant industrial land, green belt/ parks etc. Therefore, a complete replacement of the existing drains with a new storm water drainage network is required. However, outlet of industrial area is connected to Hasanpur drain near about 3.0 K.M. near Ganga Canal which eventually meets in Hindon River through Kot Escape in Greater Noida. Additionally, U.P. State Industrial Development Authority (UPSIDA) vide letter dated 17.02.2025 has submitted a plan reg. "Construction of External & Internal RCC Drain and Box Culvert at I.A. Masuri Gulawati Road (Phase-I, II & III) District Hapur" prepared by IIT, Kanpur to the Regional Officer, UPPCB, Hapur to address the issue of the inadequacy of the drainage network.

A copy of the letter dated 17.02.2025 by UPSIDA is annexed herewith and marked as **ANNEXURE-6.**

11. That the joint committee conducted a detailed survey of the Hasanpur Lake and no untreated industrial waste water was found being discharged into Hasanpur Lake. Furthermore, during the survey no solid waste, C&D at waste etc. was found being disposed of in Hasanpur Lake.

NOTARY Sandeep Sharma Reg. No. 11[illegible]/78 GOVT. OF INDIA

24 FEB 2025

12. That during the inspection, joint committee observed that there are local Villages namely Hasanpur-Lodha and Shadipur Chhidoli along the boundary of the lake and domestic waste water coming from house hold is being poured in the lake through drains. The sample of drains being meeting in Hasanpur Lake and deposited to the Regional Laboratory of UPPCB, Ghaziabad for analysis.

13. That as per the inspection carried out, the recommendations provided by the joint committee are as follows:

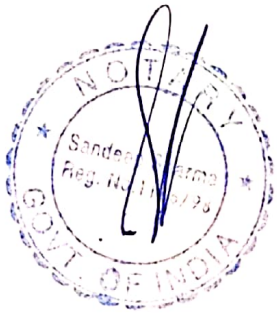
    i. UPSIDA may be directed to ensure the complete replacement of existing drains network with a new storm water drainage network so that no water logging takes place in the said area and drainage can flow normally.

    ii. Ministry of Environment, Forest and Climate Change has notified the Wetlands (Conservation and Management) Rules, 2017, wherein as per Rules 7(3), the State Governments/ Union Territories are entrusted with the responsibility to notify the wetlands in consultation with the Wetland Authorities of their respective States/UTs.

    A copy of Wetlands (Conservation and Management) Rules, 2017 is annexed herewith and marked as **ANNEXURE-7**.

    iii. Untreated domestic waste water coming from nearby villages should be diverted.

14. Hence, the present affidavit is being filed for the kind consideration and perusal of this Hon'ble Tribunal.



24 FEB 2025

15. I state that everything stated above has been stated by me in my official capacity on and derived from the official records and I state that nothing material has been concealed therefrom.

DEPONENT

VERIFICATION

Verified at Ghaziabad on this 24 day of February, 2025, that the contents of the above affidavit from paragraphs 1 to 15 are believed to be true and correct to the best of my knowledge and belief. No part of it is false and nothing material has been concealed therefrom.

DEPONENT

ATTESTED

(Sandeep Sharma)
Reg. No. 1136/98
NOTARY PUBLIC
Ghaziabad (U.P.)

24 FEB 2025

ANNEXURE-1

Joint Inspection report in compliance to the Hon'ble National Green Tribunal New Delhi order Dated 10.01.2025 in the matter of OA No 1155/2024 (IA No 445/2024) Kaushalendra Kumar Versus Union of India & Ors.

1- Back Ground :-

Original application has been filed by the applicant being aggrieved by the pollution and encroachment on the Hasanpur Lodha Wetland, which according to the inventorized in the National Wetland Inventory and Assessment Project (NWIA) was carried out by Space Applications Centre (SAC), Ahmedabad. The applicant has further alleged that the prohibited activities under Rule 4(1) of the Wetland Rules, 2017 are being carried out.

Order of Hon'ble National Green Tribunal, New Delhi passed on 19.09.2024.

The above referred matter was taken on 19.09.2024 for hearing and Hon'ble Tribunal was pleased to passed the following directions:-

6. *Having regard to the seriousness of the allegation, we also constitute a Joint Committee comprising of the representative of the Member Secretary, Central Pollution Control Board (CPCB), Member Secretary, Uttar Pradesh Pollution Control Board (UPPCB), Regional Office, MoEF & CC, Lucknow, Member Secretary, Uttar Pradesh State Wetland Authority, Member Secretary, National Wetland Authority and District Magistrate, Ghaziabad. District Magistrate, Ghaziabad will act as a nodal agency in the joint committee.*

7. Joint Committee will visit the site, and ascertain the truthfulness of the allegations, the sources of pollution in the wetland in question and the extent of industrial effluent flowing/discharged in the wetland. Joint Committee will get the water sample analysis of the wetland in question done, will obtain the original record indicating the area of the wetland reflected in the record and will also ascertain the existing area of the wetland to find out the extent of encroachment which has been done thereupon. The Joint Committee will complete this exercise within a period of two months and will submit the report immediately thereafter.

In compliance of above order of Hon'ble Tribunal joint committee visited the site in question on 19.12.2024 and status report was filed by District Magistrate, Ghaziabad on 09.01.2025. Copy of the same is attached herewith as **Annexure-I.**

Order of Hon'ble National Green Tribunal, New Delhi passed on 10.01.2025.

Thereafter the above referred matter was taken on 10.01.2025 and Hon'ble Tribunal was pleased to passed the following directions:-

4. The said Committee shall submit a further/fresh report covering all the aspects as also the observations made hereinabove within one month. Committee shall also examine water quality of effluent being discharged by industries as also of the lake in respect of all relevant aspects which includes, domestic sewage as well as industrial effluent, like presence of faecal coliform and chemicals, etc…….

7. List on 25.02.2025.

2- Sites visit of joint committee:-

In compliance of Hon'ble NGT order dated 10.01.2025, a joint committee comprising officials from the CPCB, UPPCB, Regional Office MOEF & CC Lucknow, Uttar Pradesh State wetland

Authority, National wetland Authority, and representative of District Administration Ghaziabad carried out inspection of sites in question on dated 29.01.2025 to ascertain the aspects to the observations made by Hon'ble Tribunal in order dated 10.01.2025.

3- Observation of the site visit:

1. The Hasanpur-Lodha Lake is located 17km, east of District Headquarters Ghaziabad and surrounded by falling area in District Ghaziabad, Hapur and Gautambuddh Nagar. Photographs of Lake is given below:-

2. So far as the matter of original record indicating the area of wetland reflected is concerned, in respect to Hasanpur lake falling area in the jurisdiction of District Ghaziabad, Hapur, and Gautambuddh Nagar, the measurement and demarcation work were carried out by revenue officials of respective Districts and reports have been received. Copy of the same are annexed as **Annexure as II, III & IV.**

Status of Hasanpur lake are given here under-:

I. According to the measurement report, of District Hapur, total area of Hasnpur Lake falling in village Hasanpur-Lodha, Tehsil Dhaulana District Hapur, is about 37 hectares and at present the area of lake is complete and encroachment free.

II. As per report of District Ghaziabad, area of Hasanpur Lake is not falling in the jurisdiction of District Ghaziabad,

III. As per the measurement report of District Gautambuddh Nagar, total area of Hasanpur Lake falling in Village Shadipur Chhidoli, Tehsil Dadri District Gautambuddh Nagar, recorded in revenue is about 15.331 hectares bearing 38 khasras. Further It is stated that out of the total area of khasra no 194, (0.6700 hectares), a Higher Primary Vidhyalay and Government School remains on area 0.3932 hectares approximately and except the above the area of lake is complete and encroachment free. Further in said report it is also stated that except khasra no

194, lease for fishing has been sanctioned to Matsya jivee Sahakari Samiti Ltd, Jarcha on remaining khasras by Sub Divisional Magistrate Dadri.

3. From the above observations it is clear that total area of Hasanpur Lake falling in District Hapur and Gautambuddh Nagar, is about 52.331 hectares, and excluding area 0.3932 hectares, bearing khasra no 194, (on which the school is built), The area of Lake is complete and encroachment free.

4. The joint team collected the water samples from the Hasanpur-Lake and deposited to the Regional Laboratory of UPPCB, Ghaziabad for analysis. The parameters of sample is tabulated below:-

S.No	Sampling point	pH	Color	Dissolved Oxygen (D.O) Mg/l	B.O.D Mg/l	C.O.D Mg/l	T.S.S Mg/l	Total Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
1.	Hasanpur Lake near Village-Hasanpur Lodha, Hapur	7.58	Colorless	7.56	3.5	22.0	25.0	$17X10^2$	930
2.	Hasanpur Lake towards industrial area	7.43	Colorless	7.24	3.7	25.0	27.0	$16X10^2$	920

Therefore, as per primary water quality criteria [GSR 742 (E), dt. 25.09.2000, copy enclosed as **Annexure-V**], the pH is within the limits i.e. 7.43-7.58 against prescribed limit of 6.5-8.5; B.O.D. being 3.5 – 3.7 mg/l of Hasanpur Lake marginally exceeds the prescribed limit of 3.0 mg/l., D.O. at both the locations are as per standards. Further, fecal coliform of Hasanpur Lake within the permissible limit i.e. 2500 MPN/100 ml.

5. The joint committee visited the industrial units (Respondent No-17 to 38) w.r.t various aspects including the industrial processes, fresh, water consumption, effluent generation, collection of sample from Effluent Treatment Plant (ETP), discharge, waste disposal etc. The detailed reports of industries are attached herewith as **Annexure-VI.** According to reports Status is tabulated as below:-

S. No	Respondent No.	Name & address of the industries	Operational status	Product	Effluent generation (KLD)	Treatment facility	Status of CTO	Complying Status
1	17	Al Naved Exports Private Limited, C-5, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015	Operational	Frozen Meat- 15 MT/day	Domestic-1.5 KLD Industrial-25 KLD	ETP Installed	31.12.2027	Yes
2	18	Allen India Agro Food, Plot No. A-	Operational	MBM Crushed Bone, Fish Meal,	Domestic-0.6 KLD	ETP Installed	31.12.2029	Yes

		37, Massorie-Gulawathi Road Industrial Area, Hapur, Uttar Pradesh-201015		Pet Food & Tallow	Industrial-1.5 KLD			
3	19	Shri Rathi Steel Limited, Plot No. E & C 133-152. Phase-III, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015	Operational	Glass Fibre Reinforced Polymer Bar -85 MTM Glass Fibre Reinforced Polymer Mesh – 60 MTM Glass Fibre Reinforced Polymer Bent Elements – 50 MTM	Domestic-1.6 KLD	Septic tank	31.07.2029	Yes
4	20	Space Chem, B-51-53, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015	Operational	SS & MS Steel Fabrication	Domestic-2.0 KLD	Septic tank	31.03.2025	Yes
5	21	Gemak Engineering Solutions, Plot No. F-521, Phase 11, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015	Operational	MILK TANK, BULK MILK COOLER – 10 MT/Day (Fabrication process only)	Domestic-0.6 KLD	Septic tank	31.07.2027	Yes
6	22	Centra Mack B-22/5, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015	Not Operational	Manufacturing Of Pyrolysis Oil- 4.0 Mt/Day, Carbon Black- 3.0 Mt/Day & Steel Wire- 1.5 Mt/Day	Domestic-0.5 KLD Industrial-0.5 KLD	ETP Installed	31.07.2027	Yes
7	23	S.N. Chemicals, E-29-30, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015	Operational	Industrial thinner through mixing process-5000 Ltr/Day	Domestic-0.5 KLD	Septic tank	31.07.2027	Yes
8	24	Weedicide India, E-9, UPSIDC Industrial Arca Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015	Operational	Pesticides Formulation	Domestic-0.6 KLD	Septic tank	31.07.2028	Yes
9	25	Krishna Organics, D-6, UPSIDC Industrial Area Mansorie-Gulawathi Rood, Hapur, Uttar Pradesh-201015	Operational	Thinners-180 MT/month, Paints -100 MT/month	Domestic-0.6 KLD	Septic tank	31.07.2027	Yes
10	26	MGL Pharma & Chemicals Pvt. Ltd. F-665-666,	Operational	Bulk Drugs (Intermediate and API)-1.0 MT/Day	Domestic-1.5 KLD	ETP Installed	31.12.2025	Yes

		Phase 1, UPSIDC Industrial Area, Mansori-Gulawathi Road, Hapur, Uttar Pradesh-201015			Industrial-4.5 KLD			
11	27	RRK Polymers Private Limited, Khasra No. 328,329, 330, Upper Ganga Canal Rd. Ravali, Uttar Pradesh-201015	Operational	Mfg. of HDPE Cloths -100 MT/Month	Domestic-1.8KLD	Septic tank	31.07.2029	Yes
12	28	Sukh Steel Private Limited, Plot No. D.N. 50 m 90, Phase-III UPSIDC Industrial Area, Masorie-Gulawathi Road, Hapur, Uttar Pradesh-201015	Operational	Expanded polyethylene foam (EPF 500 MT/Month)	Domestic-1.6 KLD	Septic tank	31.07.2029	Yes
13	29	KJS Concrete Pvt. Ltd. 1-1, Phase-1 HL UPSIOC leduserial Areu. Masaorio-Culawathi Road, Hapur, Uttar Pradesh-201015	Operational	Cement Brick & Block 1800 Metric Tones/Day	Domestic-1.2 KLD	Septic tank	31.07.2027	Yes
14	30	ASHTECH BUILDPRO INDIA PRIVATE LIMITED (MOD Crete Blos AAC), Khasra No. 48-49, MG Road Industrial Area, Village Dehra, Tehsil Dhaulana NTPC Road, Hapur, Utar Pradesh-243301	Operational	AAC BLOCKS-15000 MT/month BLOCK JOINTINGADHESIVE-600 MT/month	Domestic-0.6 KLD	Septic tank	31.07.2025	Yes
15	31	Ashtech Industries Pvt. Ltd. Khasra No. 233, Village Lakhan, NH-24, Near Jindal Nagar, Hapur-245101, Uttar Pradesh.	Operational	RMC-450 m3/day	Domestic-0.6 KLD	Septic tank	31.07.2025	Yes
16	32	Hello Aromatics Private Limited, Khasra no 19, Gulawati Road, Masuri, Hapur-201015, Uttar Pradesh.	Operational	L-CARVONE 12.75 MT/Month 2 CARVACAROL 9.60 MT/Month 3 Menthol 10.50 MT/Month 4 Menthone 10.50 MT/Month 5 Carvone 30.60	Domestic-0.4 KLD	Septic tank	31.07.2028	Yes
17	33	Shiv Shankar Industries, Khasra No. 293m, Hasanpur Road, Dinanathpur	Operational	Aluminum Casting – 500 KG/DAY, Copper Casting-350 KG/Day, Zinc	Domestic-1.5 KLD	Septic tank	31.07.2028	Yes

		Puthi, Ghaziabad-201015, Uttar Pradesh		Casting - 200 KG/day, Brass-350 KG/Day, Plastic Granule-2.5 MT/Day & C.I. Mould/C.I. Casting - 400 KG/Day				
18	34	Moon Beverages Private Limited, 5th Km milestone. Masuri Gulawati Road, Dasna, Tehsil Dhaulana, Haput-201015	Operational	Juice 27358.6 MT/Month 2 Carbonated Soft Drink 78179 MT/Month 3 Packaging Drinking Water 20987 MT/Month 4 BIB (Synthetic Syrup) 558 MT/Month 5 Pet Preform 300	Domestic - 100 KLD Industrial - 1900 KLD	STP & ETP Installed	31.12.2026	Yes
19	35	Golden Feeds Industries, -278-279, Massorie-Guluwathi Road Industrial Area, Hapur, Uttar Pradesh-201015	Operational	POULTRY FEED (MIXING & GRINDING PROCESS)- 9.5 MT/Day OMASSUM (COLD STORAGE)	Domestic - 0.8	Septic tank	31.07.2028	Yes
20	36	Vision Resins and Resol Pvt. Ltd. F-273-274, UPSIDC Industrial Ar Massorie-Gulawathi Road, Hapur, Uttar Pradesh-245101	Not Operational	Phenolic Resins 180 MT/Month	-	-	31.07.2025	Dismantled
21	37	Shri Krishna Chemicals F-451-452, Masorie-Gulawati Road Industrial Area, Hapur, Uttar Pradesh-245101	Operational	CARVONE-30 MT/Month META CRESOL 100 MT/Month BUTYLATED HYDROXY TOLUNE-250 MT/Month RESIDUE- 60 MT/Month CARVACROL - 30 MT/Month CRESOL- 30 MTM	Domestic-2 KLD Industrial-1 KLD	ETP Installed	31.07.2029	Yes
22	38	VDH Chemtech Private Limited, H-127-144, Masserie-Gulawathi Road Industrial Area, Hapur, Uttar Pradesh-245101	Operational	Meta Cresol-30 MT/Month Para Cresol-30 MT/Month Butylated Hydroxy Tolune-30 MT/Month Residue- 30 MTM	Domestic - 0.5 KLD Industrial-1 KLD	ETP Installed	31.7.2025	Yes

- Joint committee observed that units marked at serial no. 1, 2, 6, 10, 18, 21, 22 are generating waste water from industrial processes and as per analysis result of samples collect from outlet of ETPs, parameters are complying with the effluent discharge norms. These units are operational having CTO from UPPCB. Units mentioned at 3, 4,

5, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 19 are not generating any type of industrial effluent and are operational having CTO from UPPCB. Unit mentioned at Sr. No-20 is not operational and plant/machinery has been dismantled.

6. The joint committee visited the industrial area. The committee observed that there is a network of open drains in industrial area. Over all the existing storm water drain network is inadequate due to which the over flow of the industrial drains gets accumulated on vacant industrial land, green belt/ parks etc. Therefore a complete replacement of the existing drains with a new storm water drainage network is required. However outlet of industrial area is connected to Hasanpur drain near about 3.0 K.M. near Ganga Canal which eventually meets in Hindon River through Kot Escape in Greater Noida. However U.P. State Industrial Development Authority (UPSIDA) vide letter dated 17.02.2025 has submitted a plan reg."**Construction of External & Internal RCC Drain and Box Culvert at I.A. Masuri Gulawati Road (Phase-I, II & III) District Hapur"** prepared by IIT, Kanpur. The Copy of same is attached herewith as **Annexure-VII.**

7. The joint committee collected the sample of Hasanpur Drain and deposited to the Regional Laboratory of UPPCB, Ghaziabad for analysis. The parameters of sample is tabulated below:-

Sr. N	Sampling location	pH	colour	odour	B.O.D Mg/l	C.O.D Mg/l	T.S.S Mg/l
1.	Hasanpur drain near the lake village Hasanpur-Lodha (Near origin point).	7.15	Turbid	Faint	16.0	238.0	55.0
2.	Industrial drain before confluence of Hasanpur Drain.	8.39	Turbid	Faint	58.0	344.0	138.0

Therefore, as per general standards for discharge of environmental pollutants (copy enclosed as **Annexure-IV)**, the pH is within the limits i.e. 7.2-8.5 against prescribed limit of 5.5-9. Further, B.O.D., C.O.D. and TSS of Hasanpur drain near the lake village Hasanpur-Lodha (near origin point) are within the prescribed limits of 30mg/l, 250 mg/l and 100 mg/l respectively, whereas, B.O.D., C.O.D. and TSS of Industrial drain before confluence of Hasanpur drain are exceeding the prescribed limits.

8. The joint committee walked most of the accessible portion of the said area. Joint team observed that there are local Villages namely Hasanpur-Lodha and Shadipur Chhidoli along with boundary of the lake and domestic waste water coming from house hold is being poured in the lake through drains. Photographs of the same is given below:-

9. The joint committee collected the sample of drains being meeting in Hasanpur Lake and deposited to the Regional Laboratory of UPPCB, Ghaziabad for analysis. The parameters of sample is tabulated below:-

S. No	Sampling point	pH	Color	B.O.D Mg/l	C.O.D Mg/l	T.S.S Mg/l	Total Coliform MPN/100ml	Fecal Coliform MPN/100ml
1.	Drain near the Lake, (D-1), Hapur.	7.12	Turbid	12.0	44.0	22.0	1600	350
2.	Drain near the Lake, Village- Hasanpur Lodha (D-2), Hapur.	6.80	Turbid	74.0	234.0	110.0	$25X10^5$	$21X10^5$
3.	Drain near the Lake Village- Shadipur Chhidoli, (D-3), Gautam Budha Nagar, Gr. Noida.	6.79	Turbid	82.0	254.0	142.0	$31X10^5$	$26X10^5$
4.	Drain near the Lake Village- Shadipur Chhidoli, (D-4), Gautam Budha Nagar, Gr. Noida.	6.22	Turbid	95.0	280.0	156.0	$40X10^6$	$33X10^6$

- Drain shown at serial number 01 carries canal water and meeting in Hasanpur Lake.
- Drain shown at serial number 02 carries domestic waste water coming from Village Hasanpur Lodha, Hapur and meeting in Hasanpur Lake.
- Drains shown at serial number 03 & 04 carries domestic waste water coming from Village Shadipur Chhidoli, Gautam Budh Nagar and meeting in Hasanpur Lake.

10. The joint committee conducted the detailed survey of the area and no industrial waste water was found being discharged into Hasanpur Lake further during the survey no solid waste, C&D at waste etc. was found being disposed of in Hasanpur Lake.

Conclusions-:-

1. The Hasanpur Lodha Lake is surrounded by District Ghaziabad, Hapur and Gautam buddh Nagar.
2. The measurement and demarcation of the Hasanpur Lake falling area in District Ghaziabad, Hapur, and Gautambuddh Nagar were carried out by revenue department

and reports in this regard also have been received. However total area of Hasanpur Lake falling in District Hapur and Gautambuddh Nagar, is about 52.331 hectares, and excluding area 0.3932 hectares, bearing Khasra no 194, (on which the school is built), the area of Lake is complete and encroachment free.

3. The joint team observed that no industrial waste water, C&D waste, solid waste etc. were found being disposed of in Hasanpur Lake.
4. Untreated domestic waste water coming from nearby villages should be diverted and action plan should be submitted by the respective authorities.
5. The joint committee during visit observed that fish farming is being carried out in some area of the Hasanpur Lake by contractor.
6. Joint committee also observed that in proximity to the Hasanpur Lake the developers/builders has constructed the boundary wall. However, no construction activities were found being carried out.

Recommendations:-

1. UPSIDA may be directed to ensure the complete replacement of existing drains network with a new storm water drainage network so that no water logging takes place in the said area and drainage can flow normally.
2. Ministry of Environment, Forest and Climate Change has notified the Wetlands (Conservation and Management) Rules, 2017, wherein as per Rules 7(3), the State Governments/ Union Territories are entrusted with the responsibility to notify the wetlands in consultation with the Wetland Authorities of their respective States/UTs. A copy of Wetlands (Conservation and Management) Rules, 2017 is enclosed.
3. Untreated domestic waste water coming from nearby villages should be diverted.

Photographs taken during visit as below:-

The above report of joint committee in the said matter may kindly be taken on record.

Inspection team:-

Sr. No.	Name & Designation of officials	Signature
1-	Shri Pramod Kumar, Divisional Forest Officer, Hapur.	
2-	Shri Chandresh Kumar, Deputy collector Ghaziabad.	
3-	Smt. Lavi Tripathi, Sub Divisional Magistrate, Dhaulana, Hapur.	
4-	Shri Ankur Tiwary, Scientist-E, Project office, CPCB, Agra.	
5-	Dr. A.K Gupta, scientist-E, MOEF & CC Lucknow.	
6-	Shri Pankaj Verma, Scientist-F, MOEF & CC, New Delhi.	
7-	Shri Vipul Kumar, A.E.E., U.P. Pollution Control Ghaziabad.	

ANNEXURE-2

कार्यालय : उप जिलाधिकारी/ उप जिला मजिस्ट्रेट, धौलाना (हापुड़)

9454449851 sdmdhlhp-up@nic.in

संख्याः–965 /एस0टी0–एस0डी0एम0/धौलाना(2024) दिनाँक 05 अप्रैल, 2024

अपर जिलाधिकारी(वि0/रा0),
हापुड़।

महोदय,

कृपया कार्यालय आयुक्त, मेरठ मण्डल, मेरठ के आदेश संख्या 281/पी0ए0–2024 दिनाँक 02.02.2024 का संदर्भ ग्रहण करने का कष्ट करें, जिसके द्वारा श्री एम0एल0 सेठी, अतिरिक्त निजी सचिव राज्य मंत्री सड़क परिवहन, राजमार्ग, एवं नागर विमानन मंत्रालय भारत सरकार, के पत्र संख्या 234/2023 दिनाँक 10.05.2023, के क्रम में श्री राजपाल सिंह, ग्राम प्रधान, हसनपुर लोढा, तहसील धौलाना के प्रार्थनापत्र में उल्लिखित तथ्यों के सम्बन्ध में तहसील धौलाना की आख्या दिनाँक 16.12.2023 के क्रम में जनपद हापुड़, गाजियाबाद व गौतमबुद्धनगर की सीमा पर स्थित झील की संयुक्त पैमाईश के उपरान्त् आख्या तैयार करने हेतु संयुक्त समिति का गठन किया गया है। जो निम्नप्रकार है–

1. श्री हिमांशु गौतम, अपर आयुक्त, मेरठ – अध्यक्ष
2. अपर जिलाधिकारी, हापुड़/गाजियाबाद/गौतमबुद्धनगर – सदस्य
3. उप जिलाधिकारी, धौलाना/गाजियाबाद/गौतमबुद्धनगर – सदस्य
4. उप जिलाधिकारी, धौलाना/गाजियाबाद/गौतमबुद्धनगर द्वारा नामित तहसीलदार – सदस्य

आयुक्त महोदया, मेरठ मण्डल, मण्डल के उक्त आदेश के अनुपालन में प्रश्नगत झील की पैमाईश/चिन्हाँकन किये जाने हेतु इस कार्यालय के पत्र संख्या 870/एस0टी0–एस0डी0एम0/धौलाना(2024), दिनाँक 03 फरवरी, 2024 के द्वारा तहसील धौलाना, जनपद हापुड़ में निम्नवत् राजस्व टीम का गठन किया गया–

1. तहसीलदार धौलाना।
2. नायब तहसीलदार धौलाना।
3. राजस्व निरीक्षक धौलाना/पिलखुवा।
4. श्रीमती सुनीता क्षेत्रीय लेखपाल, हसनपुर लौढा।
5. श्री टिंकुराम लेखपाल, तहसील धौलाना।
6. श्री गौरव कुमार लेखपाल, तहसील धौलाना।
7. श्री रितेश कुमार लेखपाल, तहसील धौलाना।

उपरोक्त नामित राजस्व टीम द्वारा मौके पर उपस्थित होकर प्रश्नगत झील की नियमानुसार आवश्यक पैमाईश/चिन्हाँकन करते हुये अपनी संयुक्त आख्या दिनाँकित 19.03.2024, मय फोटोग्राफ, गूगलमैप, नजरी नक्शा सहित अधोहस्ताक्षरी को उपलब्ध करायी। राजस्व टीम द्वारा उपलब्ध करायी गयी आख्या में उल्लिखित किया गया है कि–

"सादर अवगत कराना है कि जनपद हापुड़, तहसील धौलाना में स्थित ग्राम हसनपुर लौढा, परगना डासना, तहसील धौलाना व ग्राम छिड़ौली, तहसील दादरी, जिला गौतमबुद्धनगर की सीमा में स्थित झील की पैमाइश हेतु महोदय के आदेशानुसार नियत दिनाँक 21.02.2024 को मय राजस्व टीम मौके पर उपस्थित हुए। उक्त झील का अभिलेखीय निरीक्षण किया, जिसमें ग्राम हसनपुर लौढ़ा, परगना डासना, तहसील धौलाना, जिला हापुड़ की खसरा संख्या 405क रकबा 149–4–0 बीघा भूमि चकबन्दी आकार पत्र 41 व 45 में जोहड़/मिलकियत सरकार के रूप में दर्ज अंकित है। उपरोक्त भूमि में मौके पर पानी भरा हुआ है, जिसमें तहसील धौलाना, जिला हापुड़ की राजस्व टीम द्वारा ग्राम हसनपुर लौढ़ा, परगना डासना की सीमा के अन्दर स्थित झील के पूर्ण रकबे की पैमाईश कर वर्तमान ग्राम प्रधान श्री राजपाल सिंह की उपस्थिति में चिन्हाँकन करके बिन्दुनुसार डंडा झंडी लगवाकर, प्रार्थी/वर्तमान ग्राम प्रधान श्री राजपाल

सिंह को सुपुर्द कर दी गयी है। यदि किसी व्यक्ति द्वारा सुपुर्दगी पश्चात झील के रकबे पर किसी प्रकार का कब्जा/अतिक्रमण किया जाता है तो ग्राम प्रधान/शिकायर्ता स्वयं से सुसंगत धाराओं में वैधानिक कार्यवाही कर सकते हैं। झील अतिक्रमण मुक्त है तथा जो किसानों की अपनी काश्तकारी भूमि है, जिस पर पानी भर गया था उक्त भूमि को झील के रकबे से बाहर कर दिया गया है पैमाईश का कार्य 9 दिवस मे पूर्ण किया गया। पैमाईश के समय प्रत्येक दिवस पर उपस्थित राजस्व टीम व नायब तहसीलदार, धौलाना व प्रार्थी (ग्राम प्रधान) व मत्स्य पालन विभाग पट्टाधारक सदस्य व ग्रामवासियों का उपस्थिति पत्र साथ संलग्न है। अत्एव उपजिलाधिक़ारी महोदय धौलाना द्वारा उपजिलाधिकारी महोदय दादरी व उपजिलाधिकारी महोदय गाजियाबाद को तीन–चार बार दूरभाष द्वारा उक्त पत्र के सम्बन्ध में अवगत कराया गया परन्तु उक्त झील की पैमाईश हेतु प्रथम दिवस 21.02.2024 के अतिरिक्त उक्त जिलों की राजस्व टीम मौके पर उपस्थिति नही हुई, जिसके कारण सम्पूर्ण झील की पैमाईश का कार्य पूर्ण नही किया जा सका। ग्राम हसनपुर लौढ़ा, परगना डासना, तहसील धौलाना, जिला हापुड़ मे स्थित झील रकबा 37 हैक्टेयर की पैमाईश उपरान्त नजरीनक्शा, गूगलमैप, मौके का फोटोग्राफ व प्रत्येक दिवस का मौका उपस्थिति पत्र साथ संलग्न है।

इस प्रकार राजस्व़ टीम, धौलाना द्वारा उपलब्ध करायी गयी संयुक्त आख्या में उल्लिखित है कि ग्राम हसनपुर लौढ़ा, परगना डासना, तहसील धौलाना, जिला हापुड़ की खसरा संख्या 405क रकबा 149–4–0 बीघा भूमि चकबन्दी आकार पत्र 41 व 45 में जोहड़/मिलकियत सरकार के रूप में दर्ज अंकित है। उपरोक्त भूमि में मौके पर पानी भरा हुआ है, जिसमें तहसील धौलाना, जिला हापुड़ की राजस्व टीम द्वारा ग्राम हसनपुर लौढ़ा, परगना डासना की सीमा के अन्दर स्थित झील के पूर्ण रकबे की पैमाईश कर वर्तमान ग्राम प्रधान श्री राजपाल सिंह की उपस्थिति में चिन्हाँकन करके बिन्दुनुसार डंडा झंडी लगवाकर, प्रार्थी/वर्तमान ग्राम प्रधान श्री राजपाल सिंह को सुपुर्द कर दी गयी है। यदि किसी व्यक्ति द्वारा सुपुर्दगी पश्चात झील के रकबे पर किसी प्रकार का कब्जा/अतिक्रमण किया जाता है तो ग्राम प्रधान/शिकायर्ता स्वयं से सुसंगत धाराओं में वैधानिक कार्यवाही कर सकते हैं। झील अतिक्रमण मुक्त है तथा जो किसानों की अपनी काश्तकारी भूमि है, जिस पर पानी भर गया था उक्त भूमि को झील के रकबे से बाहर कर दिया गया है। वर्तमान में ग्राम हसनपुर लौढ़ा, तहसील धौलाना, जनपद हापुड़ में स्थित झील का रकबा पूर्ण एवं अतिक्रमण मुक्त है। यह भी संज्ञानित कराना है कि उक्त झील की पैमाईश हेतु प्रथम दिवस 21.02.2024 के अतिरिक्त जनपद गाजियाबद एवं गौतमबुद्धनगर की राजस्व टीम मौके पर उपस्थिति नही हुई, जिस कारण हापुड़ जनपद में अवस्थित हिस्से की पैमाईश तो पूर्ण हो गई परंतु सम्पूर्ण झील की पैमाईश का कार्य पूर्ण नही किया जा सका।

उपरोक्तानुसार तहसीलदार धौलाना की विस्तृत आख्या अग्रेतर कार्यवाही हेतु महोदय की सेवा में सादर प्रेषित है।

उप जिलाधिकारी
धौलाना

प्रतिलिपिः–

1– आयुक्त महोदया, मेरठ मण्डल, मण्डल की सेवा में सादर अवलोकनार्थ प्रेषित।
2– जिलाधिकारी महोदया, हापुड़ की सेवा में सादर अवलोकनार्थ।
3– श्री हिमांशु गौतम, अपर आयुक्त, मेरठ मण्डल, मेरठ की सेवा में सादर सूचनार्थ
4– मुख्य विकास अधिकारी महोदय, हापुड़ की सेवा में सादर सूचनार्थ।

महोदय,

संलग्न पत्रांक संख्या 870/एस0टी0–एस0डी0एम0/धौलाना (2024) दिनांक 03.02.2024 कार्यालय उपजिलाधिकारी/उपजिला मजिस्ट्रेट धौलाना (हापुड) व कार्यालय आयुक्त, मेरठ मण्डल, मेरठ के आदेश सं0 281/पी0ए0–2024 दिनांक 02.02.2024 के द्वारा श्री एम0एल0सेठी, अतिरिक्त निजी राज्यमंत्री सडक परिवहन, राजमार्ग एवं नागर विमानन मंत्रालय भारत सरकार के पत्र सं0 234/2023 दिनांक 10.05.2023 के कम में श्री राजपाल, ग्राम प्रधान हसनपुर लौढा तहसील धौलाना के प्रार्थना पत्र मे उल्लिखित तथ्यों के सम्बन्ध में तहसील धौलाना की आख्या दिनांक 16.12.2023 के कम में जनपद हापुड, गाजियाबाद व गौतमबुद्वनगर की सीमा पर स्थित झील की संयुक्त पैमाइश किये जाने हेतु प्राप्त हआ है। आख्या निम्न है।

सादर अवगत कराना है कि जनपद हापुड तहसील धौलाना में स्थित ग्राम हसनपुर लौढा परगना डासना तहसील धौलाना व ग्राम छिडौली तहर्सील दादरी जिला गौतमबुद्वनगर की सीमा में स्थित झील की पैमाइश हेतु महोदय के आदेशानुसार नियत दिनांक 21.02.2024 को मय राजस्व टीम मौके पर उपस्थित हुए। उक्त झील का अभिलेखीय निरीक्षण किया जिसमें ग्राम हसनपुर लौढा परगना डासना तहसील धौलाना जिला हापुड की खसरा सं0 405क रकबा 149–4–0 बीघा भूमि चकबन्दी आ0 पत्र 41 व 45 में जोहड/मि0 स0 के रूप में दर्ज अंकित है। उपरोक्त भूमि पर मौके पर पानी भरा हुआ है। जिसमें तहसील धौलाना जिला हापुड की राजस्व टीम द्वारा ग्राम हसनपुर लौढा परगना डासना की सीमा के अन्दर स्थित झील के पूर्ण रकबे की पैमाइश कर वर्तमान ग्राम प्रधान श्री राजपाल सिंह की उपस्थिति में चिन्हांकन करके बिन्दूनुसार डंडा झंडी लगवाकर, प्रार्थी/वर्तमान ग्राम प्रधान श्री राजपाल सिंह को सुपुर्द कर दी गयी है यदि किसी व्यक्ति द्वारा सुपुर्दगी पश्चात झील के रकबे पर किसी प्रकार का कब्जा/अतिक्रमण किया जाता है तो ग्राम प्रधान/प्रार्थी स्वयं से सुसंगत धाराओं में वैधानिक कार्यवाही कर सकते है। झील अतिकमण मुक्त है तथा जो किसानों की अपनी काश्तकारी भूमि है । जिस पर पानी भर गया था उक्त भूमि को झील के रकबे से बाहर कर दिया गया है पैमाइश का कार्य 9 दिवस मे पूर्ण किया गया । पैमाइश के समय प्रत्येक दिवस पर उपस्थित राजस्व टीम व नायब तहसीलदार व प्रार्थी (ग्राम प्रधान) व मत्स्य पालन विभाग

पटटाधारक सदस्य व ग्रामवासी का उपस्थिति पत्र साथ संलग्न है। अतएव उपजिलाधिकारी महोदय धौलाना द्वारा उपजिलाधिकारी महोदय दादरी व उपजिलाधिकारी महोदय गाजियाबाद को तीन–चार बार दूरभाष द्वारा उक्त पत्र के सम्बन्ध में अवगत कराया गया परन्तु उक्त झील की पैमाइश हेतु प्रथम दिवस 21.02.2024 के अतिरिक्त उक्त जिलों की राजस्व टीम मौके पर उपस्थिति नही हुई। जिसके कारण सम्पूर्ण झील की पैमाइश का कार्य पूर्ण नही किया जा सका। ग्राम हसनपुर लौढा परगना डासना तहसील धौलाना जिला हापुड मे स्थित झील रकबा 37 हैक्टेयर की पैमाइश उपरान्त नजरीनक्शा, गूगलमेप, मौके का फोटो व प्रत्येक दिवस का मौका उपस्थिति पत्र साथ संलग्न है। रिर्पोट महोदय की सेवा में सादर प्रस्तुत है।

18/03/024
टिकूराम
लेखपाल

18/03/2024
सुनीता यादव
लेखपाल

18/03/024
कुमार
लेखपाल

18/3/24
(R.I)

18/03/24

सुपुर्दगीनामा

आज दिनांक 01/03/2024 को ग्राम हसनपुर लोदा परगना डासना तहसील धौलाना जिला हापुड़ में प्रार्थी श्री राजपाल सिंह वर्तमान ग्राम प्रधान ग्राम हसनपुर लोदा द्वारा प्रस्तुत प्रार्थना पत्र पत्रांक सं० 1377/सात-डी०एल०आर०सी०/2024 दिनांक 20/02/2024 कार्यालय जिलाधिकारी महोदया के क्रम में ग्राम हसनपुर लोदा तहसील धौलाना जिला हापुड़ में स्थित झील की पैमाइश मय राजस्व टीम, नायब तहसीलदार महोदय व प्रार्थी/ग्राम प्रधान श्री राजपाल सिंह की उपस्थिति में की गयी। पैमाईश उपरान्त झील का रकबा पूर्ण कर प्रार्थी/ग्राम प्रधान की उपस्थिति में चिन्हांकन कर तथा रकबा पूर्ण कर ग्राम प्रधान को सुपुर्द कर दिया गया है। ग्राम प्रधान श्री राजपाल सिंह को निर्देशित किया जाता है कि उपरोक्त झील की सीमा का समय समय पर देखरेख करते रहे। यदि किसी व्यक्ति अथवा संस्था द्वारा उक्त सीमा के अन्दर अवैध अतिक्रमण/कब्जा किया जाता है तो संबन्धित व्यक्ति अथवा संस्था के विरुद्ध स्वयं द्वारा सुसंगत धाराओं में वैधानिक कार्यवाही कर सकते है।

01/03/2024

सुपुर्दगी देने वाले के हस्ताक्षर

01/03/2024
टिकूराम

01/03/2024
रिंकेश कुमार
लेखपाल

R Singh
सुपुर्दगी लेने वाले
प्रधान
ग्राम पंचायत हसनपुर लोढा
जिला-हापुड़

01/03/2024
N.T.

उपस्थिति पत्र

आज दिनांक 21/02/2024 को ग्राम- हसनपुर लौंदा परगना असरना तहसील- धौलाना जिला - हापुड़ में प्रार्थी श्री राजपाल सिंह ग्रामप्रधान हसनपुर लौदा द्वारा प्रस्तुत प्रार्थना पत्र पत्रांक सं० - 1377/सात- DLRC/2024 दिनांक 20/02/2024 कार्यालय अभिप्रत्र- जिलाधिकारी महोदया के क्रम में ग्राम हसनपुर लौदा, तहसील- धौलाना व ग्राम- हिंडौली; तहसील- दादरी, गौतमबुद्ध-नगर की सीमा पर स्थित झील की संयुक्त पैमाइश हेतु मय राजस्व टीम, नायब तहसीलदार महोदय के नेतृत्व में मौके पर उपस्थित हुए, पैमाइश की गयी, मौके पर उपस्थित प्रार्थी/ग्रामप्रधान व अन्य ग्रामवासियों के हस्ताक्षर निम्न प्रकार है

9999188837 Pawan Singh 21/02/24

21/02/024

21/02/024

9818922088 सुनीता यादव 21/02/2024

9654972578/21/02/24 Pawan 21/02/24

R Singh 21/02/2024

21/02/24 N.K.G

7819007779 21/02/2024

R I (B) Dadri (नरेश कुमार शर्मा)

8449222015 21/02/024

Parvez Alam. 9412671906

67

हस्तपुर | इनाम | २९५ | ता. आळंदवाद

सर्वे १९-४	त्यांचे १९-४	२	—	.		Gujarati (पंजर)
३ ॥३	त्यांचे ॥३	४३१	—	..		पंजर
४०६ ॥।२	४६७ ॥।२	३४७	सेवा सोसायटी (बापी)	आलीचेतो		
४०७ ॥१	४६८ ॥१	४०६	सेवा सोसायटी (बापी)	.		पंजर
४०८ १॥३	४७० १॥३	४०६	सेवा सोसायटी (बापी)	.		पंजर
४०९ ॥।२	४७१ ॥।२	३३६	सेवा सोसायटी (बापी)	आलीचेतो		
४१० ॥३	४७२ ॥३	३३६	सेवा सोसायटी (बापी)	आलीचेतो		
४११ ॥	४७३ ॥	४०६	सेवा सोसायटी	.		पंजर
४१२ ॥।२	४७४ ॥।२	४०६	सेवा सोसायटी	.		पंजर
४१३ ॥२	४७५ ॥२	१८५	सेवा सोसायटी (बापी)	आलीचेतो		
१४ ॥२	४७५ ॥२	१०५	सेवा सोसायटी (बापी)	आलीचेतो		
३१ ॥२	४७५ ॥२	२२०	सेवा सोसायटी (बापी)	आलीचेतो		
४१४ १॥१	४७६ १॥१	४०६	सेवा सोसायटी (बापी)	-		पंजर
४१५ ॥३	४७७ ॥३	४०६	सेवा सोसायटी (बापी)	-		पंजर
४१६ ॥३	४७८ ॥३	४०६	सेवा सोसायटी (बापी)	-		पंजर
४१७ ॥२	४७९ ॥२	४०६	सेवा सोसायटी (बापी)	.		पंजर
४१८ ॥१	४८० ॥१	४०६	सेवा सोसायटी (बापी)	.		पंजर
४१९ ॥।२	४८१ ॥।२	४०६	सेवा सोसायटी (बापी)	-		पंजर
४२० ॥२	४८२ ॥२	४०६	सेवा सोसायटी (बापी)	.		पंजर
४२१ ॥१	४८३ ॥१	३३२	सेवा सोसायटी (बापी)	आलीचेतो		
४२२ ॥।४	४८४ ॥।४	२२६	सेवा सोसायटी (बापी)	आलीचेतो		

१६२ | १६२ | Gujarati खातेदार ५३ | आलीचेतो खाते ६॥३ | पंजर १९-४

आलीचेतो ५३

हस्ताक्षर (signature)

Gujarat

प्रॉमापुर लीडा

ार पूटरी

उ०

प०

द०

जि० बुलन्दराज

सहायक चकबन्दी अधिकारी

अधिकारी चकबन्दी गाजियाबाद

हसनपुर लोढ़ा और गुलाब कोठे

की सीमा के अन्दर

र्यालय : उप जिलाधिकारी/ उप जिला मजिस्ट्रेट, धौलाना (हापुड़)

9454449851

M sdmdhlhp-up@nic.in

संख्या- 870 /एस0टी0-एस0डी0एम0/धौलाना(2024) दिनांक 03 फरवरी, 2024

कार्यालय-आदेश

कार्यालय आयुक्त, मेरठ मण्डल, मेरठ के आदेश संख्या 281/सी0ए0-2024 दिनांक 02.02.2024 के द्वारा श्री एम0एल0 रोठी, अतिरिक्त निजी सचिव राज्य मंत्री सड़क परिवहन, राजमार्ग, एवं नागर विमानन मंत्रालय भारत सरकार, के पत्र संख्या 234/2023 दिनांक 10.05.2023 के क्रम में श्री राजपाल सिंह, ग्राम प्रधान, हसनपुर लोढा, तहसील धौलाना के प्रार्थनापत्र में उल्लिखित तथ्यों के सम्बन्ध मे तहसील धौलाना की आख्या दिनांक 10.12.2023 के क्रम में जनपद हापुड़, गाजियाबाद व गौतमबुद्धनगर की सीमा पर स्थित झील की संयुक्त पैमाईश के उपरान्त आख्या तैयार करने हेतु संयुक्त समिति का गठन किया गया है। जो निम्नप्रकार है-

1. श्री हिमांशु गौतम, अपर आयुक्त, मेरठ - अध्यक्ष
2. अपर जिलाधिकारी, हापुड़/गाजियाबाद/गौतमबुद्धनगर - सदस्य
3. उप जिलाधिकारी, धौलाना/गाजियाबाद/गौतमबुद्धनगर - सदस्य
4. उप जिलाधिकारी, धौलाना/गाजियाबाद/गौतमबुद्धनगर द्वारा नामित तहसीलदार - सदस्य

आयुक्त महोदया, मेरठ मण्डल, मण्डल के उक्त आदेश के अनुपालन में प्रश्नगत झील की पैमाईश/चिन्हाँकन किये जाने हेतु तहसील धौलाना, जनपद हापुड़ में निम्नवत् राजस्व टीम का गठन किया जाता है-

1. तहसीलदार धौलाना।
2. नायब तहसीलदार धौलाना।
3. राजस्व निरीक्षक धौलाना/पिलखुवा।
4. श्रीमती सुनीता क्षेत्रीय लेखपाल, हसनपुर लौढा।
5. श्री टिंकुराम लेखपाल, तहसील धौलाना।
6. श्री गौरव कुमार लेखपाल, तहसील धौलाना।
7. श्री रितेश कुमार लेखपाल, तहसील धौलाना।

उपरोक्त नामित राजस्व टीम को निर्देशित किया जाता है वह आयुक्त महोदया, मेरठ मण्डल, मण्डल के उक्त आदेश के अनुपालन में अपर आयुक्त, मेरठ मण्डल, मेरठ के निर्देशन में अधोहस्ताक्षरी संयुक्त रूप से स्थल पर उपस्थित होकर प्रश्नगत झील की नियमानुसार आवश्यक पैमाईश/चिन्हाँकन करते हुये अपनी संयुक्त आख्या मय फोटोग्राफ, गूगलमैप, नजरी नक्शा सहित अधोहस्ताक्षरी को उपलब्ध करायेंगे।

उप जिलाधिकारी
धौलाना

प्रतिलिपि:-

1- आयुक्त महोदया, मेरठ मण्डल, मण्डल की सेवा में सादर अवलोकनार्थ प्रेषित।
2- जिलाधिकारी महोदया, हापुड़ की सेवा में सादर अवलोकनार्थ।
3- श्री हिमांशु गौतम, अपर आयुक्त, मेरठ मण्डल, मेरठ की सेवा में सादर सूचनार्थ
4- मुख्य विकास अधिकारी महोदय, हापुड़ की सेवा में सादर सूचनार्थ।
5- अपर जिलाधिकारी(वि0/रा0) जिलाधिकारी महोदय, हापुड़ की सेवा में सादर सूचनार्थ।
6- सम्बन्धित राजस्व अधिकारी/कर्मचारियों को अनुपालन हेतु।

उप जिलाधिकारी
धौलाना

:: आदेश ::

जिलाधिकारी, हापुड़ के पत्रांक–1356 / सात–डी०एल०आर०सी० / 2024 दिनांक 29–01–2024 के द्वारा श्री एम०एल० सेठी, अतिरिक्त निजी सचिव, राज्य मंत्री, सड़क परिवहन, राजमार्ग एवं नागर विमानन मंत्रालय भारत सरकार के पत्र दिनांक 10–05–2023 के साथ संलग्न श्री राजपाल सिंह, ग्राम प्रधान, हसनपुर लोढ़ा, तहसील धौलाना के प्रार्थना–पत्र में उल्लिखित तथ्यों के सम्बन्ध में उपजिलाधिकारी, धौलाना की आख्या दिनांक 16–12–2023 के क्रम में जनपद हापुड़, गाजियाबाद व गौतमबुद्धनगर की सीमा पर स्थित झील की संयुक्त पैमाईश के उपरान्त आख्या तैयार करने हेतु निम्न अधिकारियों की संयुक्त समिति गठित की जाती है।

1. श्री हिमांशु गौतम, अपर आयुक्त, मेरठ – अध्यक्ष
2. अपर जिलाधिकारी, हापुड़ / गाजियाबाद / गौतमबुद्धनगर – सदस्य
3. उपजिलाधिकारी, धौलाना / गाजियाबाद / गौतमबुद्धनगर – सदस्य
4. उपजिलाधिकारी, धौलाना / गाजियाबाद / गौतमबुद्धनगर द्वारा नामित तहसीलदार – सदस्य

उक्त समिति अपनी संयुक्त जाँच आख्या अधोहस्ताक्षरी को एक पक्ष में जिलाधिकारी, हापुड़ के माध्यम से उपलब्ध कराना सुनिश्चित करें।

संलग्नक : यथोक्त।

(सेल्वा कुमारी जे.),
आयुक्त,
मेरठ मण्डल, मेरठ।

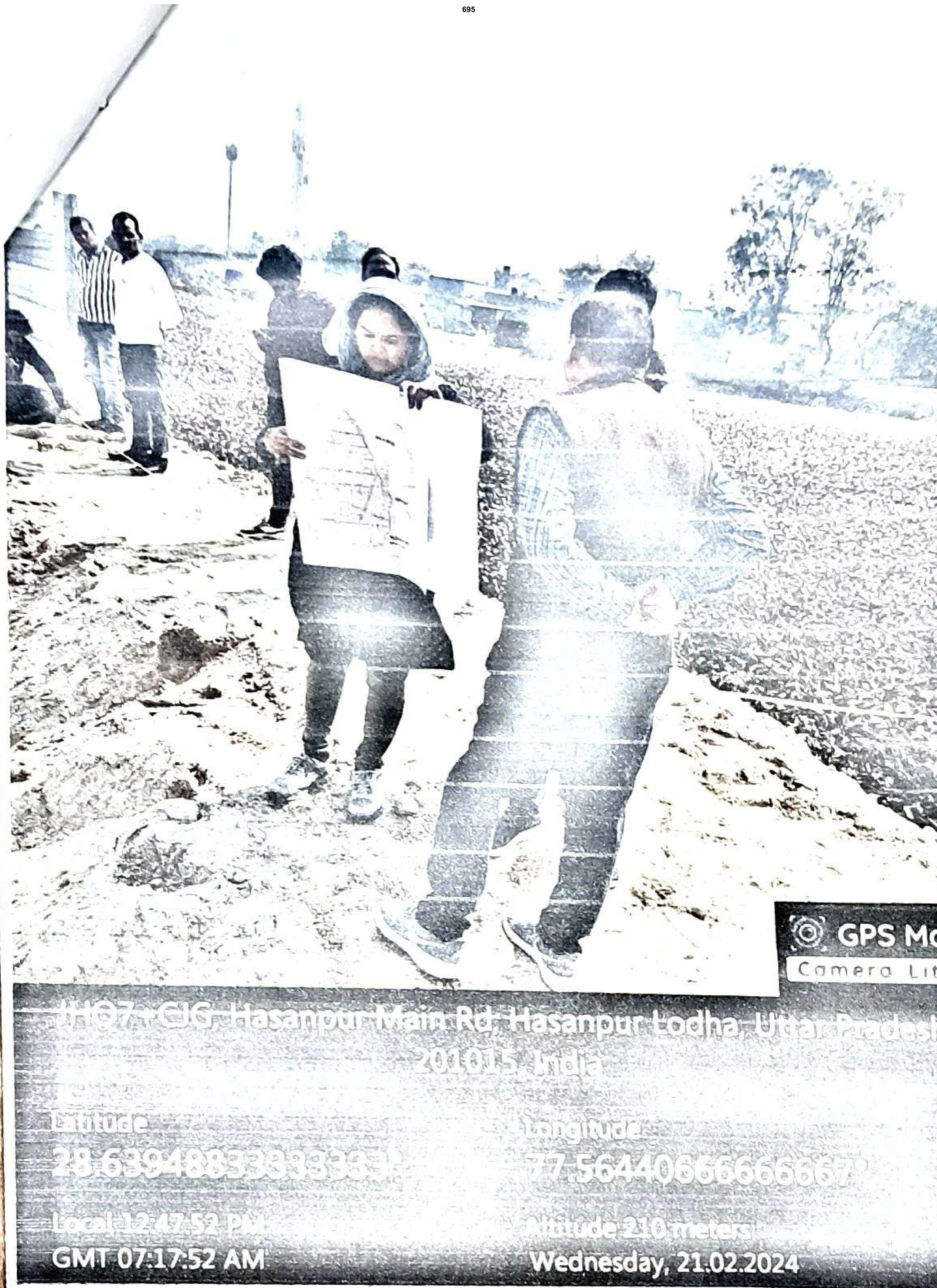
कार्यालय आयुक्त, मेरठ मण्डल, मेरठ।

पत्रांक : 261 / पी०ए०–2024 दिनांक: 02–02–2024

प्रतिलिपि–

1. जिलाधिकारी, हापुड़ को उनके पत्र दिनांक 29–01–2014 के क्रम में आवश्यक कार्यवाही हेतु प्रेषित।
2. श्री हिमांशु गौतम, अपर आयुक्त, मेरठ मण्डल, मेरठ को अनुश्रवण हेतु प्रेषित।
3. गठित समिति को अनुश्रवण हेतु प्रेषित।
4. श्री राजपाल सिंह, ग्राम प्रधान, हसनपुर लोढ़ा, तहसील धौलाना, जिला हापुड़ को सूचनार्थ प्रेषित।

(सेल्वा कुमारी जे.),
आयुक्त,
मेरठ मण्डल, मेरठ।


GPS Ma
Camera Lit
Latitude
28.6394088333333°
Longitude
77.5644066666667°
Local 12:47:52 PM
Altitude 210 meters
GMT 07:17:52 AM
Wednesday, 21.02.2024

GPS Map Camer

हसनपुर लोधा, उत्तर प्रदेश, भारत
JHP6+XW9, हसनपुर मेन मार्ग, हसनपुर लोधा, उत्तर प्रदेश 201015, भारत
Lat 28.637825°
Long 77.560385°
22/02/24 03:02 PM GMT +05:30

Google


GPS Map Camera
हसनपुर लोधा, उत्तर प्रदेश, भारत
Lat 28.637071°
Long 77.560000°
22/02/24 02:41 PM GMT +05:30
Google

GPS Map Camera

हसनपुर लोधा, उत्तर प्रदेश, भारत

JHV5+9RC हसनपुर लेक व्यू पॉइंट, हसनपुर लोधा, उत्तर प्रदेश 201015, भारत

Lat 28.64362°

Long 77.559496°

21/02/24 03:18 PM GMT +05:30

Google


GPS Map
Camera Lite
JHV5+9RC Hasanpur Lake View Point, Hasanpur Lodha, Uttar Pradesh 207015,
India
GMT 10:12:29 AM
Wednesday, 21.02.2024

कार्यालय जिलाधिकारी, गौतमबुद्धनगर

पत्रॉक 3733/35-1 दिनॉक गौतमबुद्धनगर २०–02–2025।

सेवा में,

जिलाधिकारी,
गाजियाबाद।

विषयः– मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या 443/2024 इन ओ0ए0 संख्या 1155/2024 Kaushalendra Kumar Versus Uninon of India& ors में पारित आदेश दिनांक 19–09–2024 के अनुपालन

संदर्भः– आपका पत्रांक 2334/एनजीटी–232/ओए–1155/2025 दिनांक 08–01–2025

महोदय,

कृपया अपने उपरोक्त विषयक संदर्भित पत्र का अवलोकन करने की कृपा करें। संदर्भित पत्र के माध्यम से अवगत कराया गया था कि मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या 443/2024 इन ओ0ए0 संख्या 1155/2024 Kaushalendra Kumar Versus Uninon of India& ors में पारित आदेश दिनांक 19–09–2024 के अनुपालन में जनपद गाजियाबाद द्वारा संयुक्त निरीक्षण किया गया। संयुक्त समिति द्वारा निम्नवत संस्तुति की गयी थीः–

.1 The concerned authority, District Administration, Gautam Budh Nagar may be directed to complete the measurement and demarcation of the Hasanpur Lake so that original record indicating the area of wetland and existing area to the extent to the encroachment could be ascertained.

4. Untreated domestic waste water coming from nearby villages should be diverted.

पत्र में उल्लेख किया गया था कि बिन्दु संख्या 1 एवं 4 के संबंध में कार्यवाही जनपद गौतमबुद्धनगर एवं हापुड द्वारा किया जाना अपेक्षित है। इस संबंध में इस कार्यालय के पत्रांक 3229/18–1 दिनांक 23–01–2025 द्वारा उक्त स्थल का संयुक्त निरीक्षण करने हेतु निम्न प्रकार समिति का गठन किया गया थाः–

(क) ओ0एस0डी0 (भूमि एवं प्लानिंग) ग्रेटर नोएडा औद्योगिक विकास प्राधिकरण।
(ख) उप जिलाधिकारी, दादरी
(ग) क्षेत्रीय अधिकारी, उ0प्र0 प्रदूषण नियन्त्रण बोर्ड, नोएडा।
(घ) भूगर्भ जल अधिकारी, गौतमबुद्धनगर
(ड) क्षेत्रीय वन अधिकारी, दादरी।

उप जिलाधिकारी, दादरी द्वारा अपने पत्रांक 2370/एसटी–एसडीएम/2025 द्वारा 14–02–2025 द्वारा गठित समिति की जॉच आख्या उपलब्ध करायी गयी है जिसे आपके अवलोनार्थ संलग्न कर आवश्यक कार्यवाही हे प्रेषित किया जा रहा है।

भवदीय,

17.4.25
जिलाधिकारी
गौतमबुद्धनगर।

पत्रॉक 3733 / दिनॉक्ति

प्रतिलिपि क्षेत्रीय अधिकारी, उ0प्र0 प्रदूषण नियन्त्रण बोर्ड, ग्रेटर नोएडा को इस निर्देश के साथ प्रेषित कि मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या 443/2024 इन ओ0ए0 संख्या 1155/2024 Kaushalendra Kumar Versus Uninon of India& ors में पारित आदेश के अनुपालन प्रकरण में नियत तिथि पर मा0 एन0जी0टी0 समक्ष उपस्थित होकर रिपोर्ट दाखिल करना सुनिश्चित करें। आवश्यक कार्यवाही हेतु प्रेषित।

जिलाधिकारी
गौतमबुद्धनगर।

पत्रॉक 3733 / दिनॉक्ति

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं उपरोक्तनुसार एवं आवश्यक कार्यवाही हेतु प्रेषित।

1. अपर जिलाधिकारी, वित्त एवं राजस्व, गौतमबुद्धनगर।
2. प्रभागीय वनाधिकारी, गौतमबुद्धनगर।
3. उप जिलाधिकारी, दादरी

17.4.25
जिलाधिकारी
गौतमबुद्धनगर।

कार्यालय जिलाधिकारी, गौतमबुद्ध नगर

पत्रांक :3962 /एस0टी0–ए0डी0एम0/2025 दिनांक:18-02-2025

प्रभागीय वनाधिकारी,
गौतमबुद्ध नगर।

विषय : मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या 443/2024 इन ओ0ए0 संख्या 1155/2024 **Kaushalendra Kumar Versus Union of India & Ors** में पारित आदेश दिनांक 19.09.2024 के सम्बन्ध में।

कृपया उपर्युक्त विषयक अवगत कराना है कि जिलाधिकारी महोदय के आदेश संख्या 3229/18–1 दिनांक 23.01.2025 द्वारा मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या 443/2024 इन ओ0ए0 संख्या 1155/2024 Kaushalendra Kumar Versus Union of India & Ors में पारित आदेश दिनांक 19.09.2024 के अनुपालन हेतु ओ0एस0डी0(भूमि एवं प्लानिंग), ग्रेटर नोएडा औद्योगिक विकास प्राधिकरण, उप जिलाधिकारी, दादरी, क्षेत्रीय अधिकारी, उ0प्र0 प्रदूषण नियंत्रण, बोर्ड, नोएडा, भूगर्भ जल अधिकारी, गौतमबुद्ध नगर एवं क्षेत्रीय वन अधिकारी, दादरी की समिति गठित करते हुए ग्राम–हसनपुर, तहसील दादरी में स्थित वेडलैण्ड का संयुक्त निरीक्षण कर समिति की संयुक्त आख्या अपर जिलाधिकारी(वि0/रा0) तथा प्रभागीय वनाधिकारी, गौतमबुद्ध नगर को उपलब्ध कराये जाने के निर्देश दिये गये हैं।

जिलाधिकारी महोदय द्वारा दिये गये निर्देशों के अनुपालन में उप जिलाधिकारी, दादरी के पत्र संख्या 2370/एसटी–एसडीएम/2025 दिनांक 14 फरवरी, 2025 के साथ संलग्न तहसीलदार, दादरी, क्षेत्रीय अधिकारी, उ0प्र0 प्रदूषण नियंत्रण, बोर्ड, नोएडा, भूगर्भ जल अधिकारी, गौतमबुद्ध नगर एवं क्षेत्रीय वन अधिकारी, दादरी की संयुक्त आख्या दिनांक 06.02.2025 इस आशय के साथ प्रेषित की जा रही है कि कृपया मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या 443/2024 इन ओ0ए0 संख्या 1155/2024 Kaushalendra Kumar Versus Union of India & Ors में पारित आदेश दिनांक 19.09.2024 के दृष्टिगत प्रकरण में यथावांछित कार्यवाही कराने का कष्ट करें।

संलग्नक : उपरोक्तानुसार।

(अतुल कुमार),
अपर जिलाधिकारी(वि0/रा0),
गौतमबुद्धनगर।

प्रतिलिपि :

01. जिलाधिकारी महोदय, गौतमबुद्ध नगर को अवलोकनार्थ प्रेषित।

अपर जिलाधिकारी(वि0/रा0),
गौतमबुद्धनगर।

उपजिलाधिकारी
दादरी, गौतमबुद्धनगर।

कार्यालय
पत्र सं0– 2370/एसटी–एसडीएम/2025

दिनांकः– 14 फरवरी, 2025

अपर जिलाधिकारी (वि0/रा0),
गौतमबुद्धनगर।

विषय– मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या–443/2024 इन ओ0ए0 संख्या–1155/2024 Kaushalendra Kumar Versus Union of India & ors में पारित आदेश दिनांक 19.09.2024 के सम्बन्ध में।

महोदय,

कृपया उपर्युक्त विषयक जिलाधिकारी महोदय, गौतमबुद्धनगर के आदेश पत्रांक–3229/18–1 दिनांक 23.01.2025 के साथ संलग्न जिलाधिकारी महोदय, गाजियाबाद के पत्रांक–2334/एनजीटी–232/ओए–1155/2025, दिनांक 08.01.2025 का संदर्भ ग्रहण करने का कष्ट करें, जिसके द्वारा मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या–443/2024 इन ओ0ए0 संख्या–1155/2024 Kaushalendra Kumar Versus Union of India & ors में पारित आदेश दिनांक 19.09.2024 के अनुपालन में बिन्दु सं0–01 एवं 04 के सम्बन्ध में मा0 एन0जी0टी0 द्वारा पारित आदेश दिनांक 10.01.2025 एवं मा0 राष्ट्रीय हरित अधिकरण नई दिल्ली के उपरोक्त आदेश के क्रम में ग्राम हसनपुर/शादीपुर छिड़ौली, तहसील दादरी में स्थित वेटलेण्ड का संयुक्त निरीक्षण कर आख्या आपको तथा प्रभागीय वनाधिकारी, कार्यालय गौतमबुद्धनगर को प्रेषित किये जाने हेतु निर्देशित किया गया है।

उक्त के सम्बन्ध में इस कार्यालय के पत्रांक–1996/एसटी–एसडीएम/2025, दिनांक 04.12.2025 के द्वारा नायब तहसीलदार दादरी की अध्यक्षता में ग्राम हसनुपर/शादीपुर छिड़ौली, तहसील दादरी में स्थित वेटलेण्ड का संयुक्त निरीक्षण करने हेतु दिनांक 06.02.2025 की तिथि नियत की गयी है। तहसीलदार दादरी, क्षेत्रीय अधिकारी, उ0प्र0 प्रदूषण नियन्त्रण बोर्ड नोएडा, भू–गर्भ जल अधिकारी, गौतमबुद्धनगर व क्षेत्रीय वन अधिकारी दादरी द्वारा अपनी संयुक्त आख्या दिनांक 06.02.2025 अधोहस्ताक्षरी के समक्ष प्रस्तुत की गयी है, जो मूल रूप में संलग्न कर आवश्यक कार्यवाही हेतु सादर प्रेषित है।

संलग्नक–उपरोक्तानुसार।

14/2/25
उप जिलाधिकारी,
दादरी (गौतमबुद्धनगर)।

प्रतिलिपि–
1– जिलाधिकारी महोदय, गौतमबुद्धनगर को सादर सूचनार्थ प्रेषित।
2– प्रभागीय वनाधिकारी, गौतमबुद्धनगर को सूचनार्थ प्रेषित।

उप जिलाधिकारी,
दादरी (गौतमबुद्धनगर)।

महोदय,

संलग्न प्रार्थना पत्र कार्यालय उपजिलाधिकारी दादरी गौतमबुद्धनगर के पत्रांक 1976/एस.टी.एस.डी.एम/2025 दिनांक 06.02.2025 आदेश जिलाधिकारी महोदय, गाजियाबाद के पत्रांक–2334/एन.जी.टी. 232/ओए. 1155 2025 दिनांक 08.01.2025 के कम में माननीय राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई.ए.संख्या–443/2024 इन.ओ.ए. संख्या 1155/2024 कौशलेन्द्र कुमार बनाम यूनियन ऑफ इंडिया और ओ. आर.एस. में पारित आदेश दिनांक 19.09.2024 के अनुपालन में बिन्दु 01 एवं 02 के सम्बंध में मा0 एन.जी.टी. द्वारा पारित आदेश दिनांक 10.01.2025 के कम में चार सदस्यीय समिति का गठन किया गया है। मा. राष्ट्रीय हरित अधिकरण नई दिल्ली के उपरोक्त आदेश के कम में ग्राम शादीपुर छिडौली, तहसील दादरी में स्थित वेटलैण्ड का संयुक्त निरीक्षण कर आख्या चाही गयी है।

जांच आख्या इस प्रकार है:–

उपरोक्त पत्र के सापेक्ष गठित विभागो की टीम द्वारा स्थलीय तथा अभिलेखीय निरीक्षण किया गया। ग्राम शादीपुर छिडौली परगना व तहसील दादरी जिला गौतमबुद्धनगर के गाटा सं0 276/1.8210है0, 277/0.3160, 280/0.2150है0, 281/0.2280है0, 294/0.0250है0, 295/0.2780है0, 314/0.4550है0, 316/0.3540है0, 317/0.2150है0, 321/0.3040है0, 332/0.1900है0, 348/0.0380है0, 349/0.9610है0, 351/0.1520है0, 352/0.2780है0, 353/0.1010है0, 354/0.1010है0, 355/0.5190है0, 194/0.6700है0, 356/0.2910है0, 357/0.1520है0, 359/0.3670है0, 363/0.4680है0, 366/0.2660है0, 367/0.2150है0, 368/0.4430है0, 369/0.1640है0, 370/0.3920है0, 371/1.3910है0, 372/0.8980है0, 376/0.6450है0, 378/0.0890है0, 377/0.0890है0, 380/0.4680है0, 381/0.1770है0, 382क/0.5190है0, 383/0.7340है0, 404/0.3420है0 कुल 38 खेत कुल रकबा 15.3310है0 भूमि राजस्व अभिलेखो में झील के नाम दर्ज है। मौके पर सभी खसरो का स्थलीय व अभिलेखीय निरीक्षण किया गया तथा सजरे के अनुसार पैमाइश की गई। मौके पर खसरा सं0 294/0.0250है0, 295/0.2780है0, 280/0.2150है0, 281/0.2280है0, 277/0.3160है0,

P.T.O

276/1.8210है0 भूमि मौके पर खाली पडी है। किसी प्रकार का कोई अतिक्रमण नही पाया गया। मौके पर जंगली झाडी खडी है। खसरा सं0 194/0.6700है0 भूमि मे से लगभग 0.3932है0 भूमि पर उच्च प्राथमिक विद्यालय व राजकीय हाईस्कूल शादीपुर छिडौली बना है तथा शेष भूमि मौके पर खाली पडी है। इसके अतिरिक्त खसरा सं0 314, 316, 317, 321, 332, 348, 349, 351, 352, 353, 354, 355, 357, 359, 363(खसरा), 366, 367, 368, 369, 370, 371, 372, 376, 378, 377, 380, 381, 382क, 383, 404 मौके पर जलमग्न है। झील के रूप में यथास्थिति बने है। इन खसरों पर किसी प्रकार का कोई अतिक्रमण नही है। उपजिलाधिकारी महोदय दादरी के स्वीकृति दिनांक 06.11.2024 को ग्राम शादीपुर छिडौली के खसरा सं0 194 को छोडकर शेष उपरोक्त 37 खसरो/रकबा 14.6610है0 पर मतस्य पालन हेतु मतस्य जीवी सहकारी समिति लिमिटेड जारचा को पटटा स्वीकृत किया गया। मौके पर उपस्थित टीम के हस्ताक्षर सहित उपस्थिति पत्र साथ में संलग्न है। उचित कार्यवाही हेतु रिपोर्ट सेवा में सादर प्रस्तुत है।

06/02/2025
सोनिया देवी
क्षेत्र... दादरी
तहसील - दादरी
जिला गौतमबुद्धनगर

उप क्षेत्रीय अधिकारी
06/02/2025

06/02/2025
राजस्व निरीक्षक

Aranik. (RFO), Dadri
06/02/2025
Forest Deptt., GBN

UPPCB
06/02/2025

RIL सहायक

06/02/25

AEE, UPPCB,
Greater Noida

कार्यालय जिलाधिकारी, गौतमबुद्धनगर
पत्रॉक 33291 /18-1 दिनॉक गौतमबुद्धनगर 23 –01–2025।

कार्यालय आदेश

जिलाधिकारी, गाजियाबाद द्वारा अपने पत्रांक 2334/एनजीटी–232/आए–1155/2025 दिनांक 08–01–2025 द्वारा अवगत कराया गया है कि मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में विचाराधीन आई0ए0 संख्या 443/2024 इन ओ0ए0 संख्या 1155/2024 Kaushalendra Kumar Versus Uninon of India& ors में पारित आदेश दिनांक 19–09–2024 के अनुपालन में जनपद गाजियाबाद द्वारा संयुक्त निरीक्षण किया गया। संयुक्त समिति द्वारा निम्नवत संस्तुति की गयी है:–

.1 The concerned authority, District Administration, Gautam Budh Nagar may be directed to complete the measurement and demarcation of the Hasanpur Lake so that original record indicating the area of wetland and existing area to the extent to the encroachment could be ascertained.

4. Untreated domestic waste water coming from nearby villages should be diverted.

बिन्दु संख्या 1 एवं 4 के संबंध में कार्यवाही जनपद गौतमबुद्धनगर एवं हापुड द्वारा किया जाना अपेक्षित है। इस संबंध में मा0 एन0जी0टी0 द्वारा दिनांक 10–01–2025 को आदेश पारित किया गया है(छायाप्रति संलग्न) तत्कम में मा0 एन0जी0टी0 के आदेश के अनुपालन में उक्त स्थल का संयुक्त निरीक्षण करने हेतु निम्न प्रकार चार सदस्यीय समिति का गठन किया जाता है

(क) ओ0एस0डी0 (भूमि एवं प्लानिंग) ग्रेटर नोएडा औद्योगिक विकास प्राधिकरण।
(ख) उप जिलाधिकारी, दादरी
(ग) क्षेत्रीय अधिकारी, उ0प्र0 प्रदूषण नियन्त्रण बोर्ड, नोएडा।
(घ) भूगर्भ जल अधिकारी, गौतमबुद्धनगर
(ड) क्षेत्रीय वन अधिकारी, दादरी।

मा0 राष्ट्रीय हरित अधिकरण नई दिल्ली के उपरोक्त आदेश के कम में उक्त समिति ग्राम हसनपुर, तहसील दादरी में स्थित वेटलैण्ड का सयुंक्त निरीक्षण एक सप्ताह के अन्दर रिपोर्ट अपर जिलाधिकारी, वित्त एवं राजस्व तथा प्रभागीय वनाधिकारी, कार्यालय गौतमबुद्धनगर में उपलब्ध करायेगी।

जिलाधिकारी
गौतमबुद्धनगर।

पत्रॉक ____/____ दिनॉक्ति

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

1. मुख्य कार्यपालक अधिकारी ग्रेटर नोएडा औद्योगिक विकास प्राधिकरण, ग्रेटर नोएडा।
2. मुख्य विकास अधिकारी, गौतमबुद्धनगर।
3. अपर जिलाधिकारी, वित्त एवं राजस्व, गौतमबुद्धनगर।
4. प्रभागीय वनाधिकारी, गौतमबुद्धनगर।

जिलाधिकारी
गौतमबुद्धनगर।

पत्रॉक ____/____ दिनॉक्ति

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं उपरोक्तनुसार एवं आवश्यक कार्यवाही हेतु प्रेषित।

1. उप जिलाधिकारी, दादरी
2. क्षेत्रीय अधिकारी, उ0प्र0 प्रदूषण नियन्त्रण बोर्ड, नोएडा।
3. भूगर्भ जल अधिकारी, गौतमबुद्धनगर
4. क्षेत्रीय वन अधिकारी, दादरी।

ANNEXURE-3

महोदय,

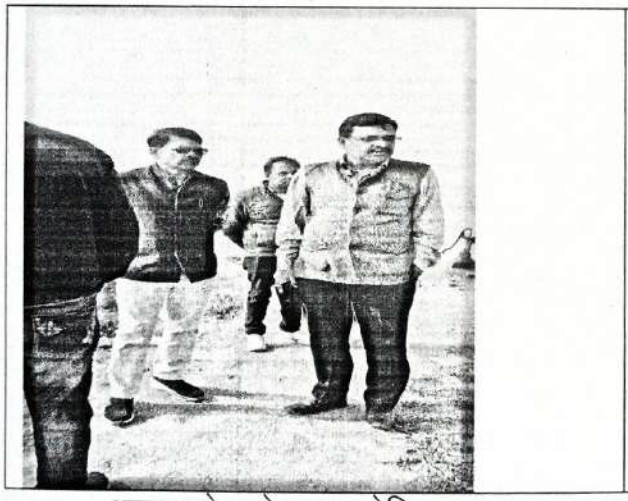
सादर अवगत कराना है कि दिनांक 29.01.2025 को ग्राम दीनानाथपुर पूठी तहसील व जिला गाजियाबाद की सीमा के निकट झील का स्थलीय/अभिलेखीय निरीक्षण किया गया। निरीक्षण के समय राजस्व विभाग के निम्नलिखित अधिकारी/ कर्मचारी उपस्थित रहे ।

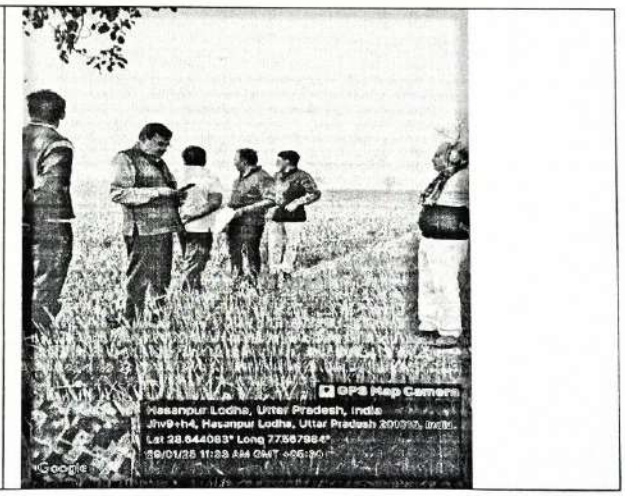
1– श्री चन्द्रेश कुमार सिंह, अपर उपजिलाधिकारी (मुख्यालय) जनपद गाजियाबाद ।
2– डॉ0 प्रवीण कुमार गुप्ता, नायब तहसीलदार सदर, गाजियाबाद ।
3– श्री मनोज कुमार, क्षेत्रीय लेखपाल क्षेत्र बयाना ।

स्थलीय निरीक्षण के समय क्षेत्रीय लेखपाल के अभिलेखो के आधार पर पाया गया कि खसरा/खतौनी एवं शजरे मे झील अंकित नही है तथा मौके पर उपस्थित श्री राजेश पुत्र हेम सिंह, रोबीन यादव पुत्र श्री राजेश कुमार यादव, मनोज कुमार पुत्र श्री राम सिंह एवं रिंकू यादव पुत्र श्री दिनेश कुमार निवासीगण दीनानाथपुर पूठी के व्यक्तियों द्वारा भी अवगत कराया गया कि प्रश्नगत झील जनपद गाजियाबाद के क्षेत्रान्तर्गत नही आती है ।

राजस्व ग्राम दीनानाथपुर पूठी परगना डासना तहसील व जिला गाजियाबाद के खसरा संख्या 460 जो कि हसनपुर लौढ़ा (तहसील धौलाना जनपद हापुड़) की झील की दक्षिण दिशा मे है व ग्राम शादीपुर छिडौली (तहसील दादरी जनपद गौतमबुद्धनगर) के दक्षिण–पूर्व दिशा में स्थित है । ग्राम हसनपुर लौढ़ा के काश्तकार अमर सिंह, सत्यपाल, जितेन्द्र कुमार यादव, संजय यादव आदि व खसरा संख्या 313 जो कि दक्षिण पूर्व दिशा मे है, के काश्तकार मुन्नी, विजेन्द्र व नीरज है तथा खसरा संख्या 314 भी दक्षिण पूर्व दिशा मे है, के काश्तकार अमर सिंह, सत्यपाल, जितेन्द्र कुमार यादव, संजय यादव आदि है । उक्त तीनों खसरा नम्बरान ग्राम हसनपुर लौढ़ा (तहसील धौलाना जनपद हापुड़) एवं ग्राम शादीपुर छिडौली (तहसील दादरी जनपद गौतमबुद्धनगर) की सीमा से लगे है। इन खसरा नम्बरानों में झील का पानी नही आता है। उक्त खसरा नम्बरानों की झील से दूरी लगभग 800 मीटर है।

अतः शासकीय अभिलेखों के आधार पर भी जनपद गाजियाबाद की सीमा से लगभग 800 मीटर की दूरी पर जनपद हापुड एवं गौतमबुद्ध नगर की सीमा मे स्थित है अर्थात जनपद गाजियाबाद के क्षेत्रफल में नही आती है।





आख्या सेवा मे सादर प्रेषित ।

10-02-2025
(मनोज कुमार)
लेखपाल क्षेत्र–बयाना

10/02/2025
(प्रवीण कुमार गुप्ता)
नायब तहसीलदार
गाजियाबाद

(चन्द्रेश कुमार सिंह)
अपर उप जिलाधिकारी
गाजियाबाद

ANNEXURE-4

Annexure -V

रजिस्ट्री सं० डी० एल०-33004/99

REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (i)

PART II—Section 3—Sub-section (i)

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 494] नई दिल्ली, सोमवार, सितम्बर 25, 2000/आश्विन 3, 1922

No. 494] NEW DELHI, MONDAY, SEPTEMBER 25, 2000/ASVINA 3, 1922

पर्यावरण और वन मंत्रालय

अधिसूचना

नई दिल्ली, 25 सितम्बर, 2000

सा. का. नि. 742(अ).—केन्द्रीय सरकार, पर्यावरण (संरक्षण) अधिनियम, 1996 (1996 का 29) की धारा 6 और धारा 25 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, पर्यावरण (संरक्षण) नियम, 1996 का और संशोधन करने के लिए निम्नलिखित नियम बनाती है, अर्थात् :—

1. (1) इन नियमों का संक्षिप्त नाम पर्यावरण (संरक्षण) संशोधन नियम, 2000 है।

(2) इस अधिसूचना में अन्यथा जैसा उपबंधित है उसके सिवाय, वे राजपत्र में प्रकाशन की तारीख को प्रवृत्त होंगे।

2. पर्यावरण (संरक्षण) नियम, 1986 में,—

(1) अनुसूची 1 में पटाखों के लिए शोर मानकों से संबंधित क्रम संख्याक 89 और उससे संबंधित प्रविष्टियों के पश्चात् निम्नलिखित क्रम संख्यांक और उनसे संबंधित प्रविष्टियां अन्तःस्थापित की जाएंगी, अर्थात् :—

"90. कोयला खानों के लिए मानक

1. वायु क्वालिटी मानक

निम्नलिखित धूल उत्पादक स्रोतों से 500 मीटर की दूरी पर प्रबल हवा की दशा पर विचार करते हुए नीचे की ओर हवा की दिशा में निलंबित कणिकीय पदार्थ (एस. पी. एम.), अन्तः श्वसनीय कणिकीय पदार्थ (आर. पी. एम.), सल्फर डाईआक्साइड (एस ओ$_2$) और नाइट्राजन आक्साइड (एन ओ$_2$) का संकेन्द्रण नीचे दी गई सारणी-I, और II, और III में विनिर्दिष्ट मानकों से अधिक नहीं होगा।

धूल उत्पादन के स्रोत

लदाई या उतराई, कर्षण सड़क, कोयला परिवहन सड़क, कोयला हथालने का संयंत्र (सी. एच. बी.) रेल सरकवां, विस्फोट, छेदन, अधिक ऊंचे ढेर या कोई अन्य धूल उत्पादन के बाहरी स्रोत जैसे कोक भट्टी (कठोर तथा मृदुकोक), इष्टिका उद्योग, पास की सड़क आदि।

टिप्पण :—1. जहां उपचारित बहिस्राव ऐसे नगर सीवर में डाला जाता है जो अंतिम उपचार संयंत्र में जाता है, वहां जैव-रसायन आक्सीजन मांग (बी ओ डी) की 100 मि.ग्रा./लि. तक और रसायन आक्सीजन मांग (सी ओ डी) की 400 मि.ग्रा./लि. तक छूट दी जा सकेगी।

2. बहिस्राव की क्वालिटी (एक लिटर प्रति किलोग्राम उत्पाद) संयुक्त सूती वस्त्र उद्योग संयुक्त ऊनी वस्त्र उद्योग और टैक्सटाइल प्रसंस्करण उद्योग में क्रमश: 100, 250 और 80 होगी।

93. स्नान-जल के लिए प्राथमिक जल क्वालिटी मानदंड

जलाशय या उसके भाग में के जल का कई प्रकार से उपयोग किया जाता है। जल के उपयोगों और क्रियाकलापों के प्रकार पर निर्भर रहते हुए जल क्वालिटी की कसौटी किसी विशिष्ट प्रयोजन के लिए उसकी उपयुक्तता अवधारित करने के लिए विनिर्दिष्ट कर दी गई है। विभिन्न प्रकार के उपयोगों में एक उपयोग यह भी है जो जल के उच्चतर स्तर की क्वालिटी या शुद्धता की मांग करता है और उस जलाशय के विस्तार में उसे "अभिहित सर्वोत्तम उपयोग" के रूप में जाना जाता है। इस पर आधारित प्राथमिक जल क्वालिटी की कसौटी के निबंधनों के अनुसार विभिन्न उपयोगों के लिए जल क्वालिटी अपेक्षाएं विनिर्दिष्ट की गई हैं। सारणी 1 में स्नान-जल के लिए प्राथमिक जल क्वालिटी की तर्कयुक्त कसौटी विनिर्दिष्ट की गई है।

सारणी 1

स्नान-जल के लिए प्राथमिक जल क्वालिटी मानदंड

(संगठित बाह्य स्नान के लिए प्रयुक्त जल)

मानदंड		तर्कआधार
1. फिकल कोली फॉर्म एम. पी. एन./100 मि.लि.	500 (वांछनीय) 2500 (अधिकतम अनुज्ञेय)	निम्न मल जल संदूषण सुनिश्चित करने के लिए, फिकल कोलीफार्म और फिकल स्ट्रेप्टोकोक्की के बारे में यह माना गया है कि वे जीवाणु रोगोत्पादकता
2. फिकल स्ट्रेप्टोकोक्की एम. पी. एन./100 मि.लि.	100 (वांछनीय) 500 (अधिकतम अनुज्ञेय)	को दर्शित करते हैं। वांछनीय और अनुज्ञेय मात्राएं पर्यावर्णिय दशाओं में उतार-चढ़ाव को अनुज्ञात करने के लिए सुझाव देती हैं जैसे कि मौसमी परिवर्तन, बहाव की दशाओं में परिवर्तन आदि।
2. पी. एस.	6.5 से 8.5 के बीच	यह रेंज त्वचा और आँख, नाक, कान आदि जैसे कोमल अंगों को संरक्षण प्रदान करती है जो बाह्य स्नान के दौरान सीधे प्रभावित होते हैं।
3. घुली हुई आक्सीजन		5 मि.ग्रा./लि. के न्यूनतम घुली हुई आक्सीजन संकेन्द्रण ठीक ऊपरोधारा में आर्गनिक प्रदूषण युक्त आक्सीजन लेने से युक्तियुक्त मुक्ति सुनिश्चित करते हैं जो तलछट से अनाइरोबिक गैसों (आक्सनोक्सीयस गैसों) के उत्पादन को निवारित करने के लिए आवश्यक है।
4. जैव-रसायन आक्सीजन मांग (बी ओ डी) (27° से. पर 3 दिन)		3 मि.ग्रा./लि. या इससे कम जल की जैव रसायन आक्सीजन मांग आक्सीजन डिमांडिंग प्रदूषकों से युक्तियुक्त मुक्ति सुनिश्चित करती है और आक्सनाक्सीयस गैसों के उत्पादन को रोकती है।"

(2) अनुसूची 6 के शोर मान दंडों से संबंधित भाग ङ में, मोटरगाड़ियों के लिए शोर सीमा से संबंधित भाग क के पश्चात् निम्नलिखित अन्त: स्थापित किया जाएगा :—

"कक. 1 जनवरी, 2003 से मोटर यानों के लिए शोर सीमा

मोटर यानों के लिए निम्नलिखित शोर सीमा 1 जनवरी, 2003 से लागू होगी। अनुसरण किए जाने वाली [illegible] मा.

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 25th September, 2000

G.S.R. 742(E).— In exercise of the powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely.

1. (1) These rules may be called the Environment (Protection) Amendment Rules, 2000.

(2) Save as otherwise provided in this notification, they shall come into force on the date of their publication in the Official Gazette.

2. In the Environment (Protection) Rules, 1986,—

(1) In Schedule I, after serial number 89 relating to Noise standards for fire crackers and the entries relating thereto, the following serial numbers and entries shall be inserted, namely:—

"90. Standards for coal mines

1. Air Quality Standards

The Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur dioxide (SO_2) and Oxides of Nitrogen (NOx) concentration in downwind direction considering predominant wind direction, at a distance of 500 metres from the following dust generating sources shall not exceed the standards specified in the Tables I, II and III given below:

Dust Generating Sources

Loading or unloading, Haul road, coal transportation road, Coal handling plant (CHP), Railway sliding, Blasting, Drilling, Overburden dumps, or any other dust generating external sources like coke ovens (hard as well as soft), briquette industry, nearby road etc.

NOTARY Sandeep Sharma Reg. No. 11396/98 GOVT. OF INDIA

ATTESTED
(Sandeep Sharma)
Reg. No. 11396/98
NOTARY PUBLIC
Ghaziabad (U.P.)

09 JAN 2025

93. Primary Water Quality Criteria for Bathing Waters.

In a water body or its part, water is subjected to several types of uses. Depending on the types of uses and activities, water quality criteria have been specified to determine its suitability for a particular purpose. Among the various types of uses there is one use that demands highest level of water quality or purity and that is termed as "Designated Best Use" in that stretch of water body. Based on this, water quality requirements have been specified for different uses in terms of primary water quality criteria. The primary water quality criteria for bathing water are specified along with the rationale in table 1.

Table 1.

PRIMARY WATER QUALITY CRITERIA FOR BATHING WATER
(Water used for organised outdoor bathing)

CRITERIA		RATIONALE
1. Fecal Coliform MPN/100 ml:	500 (desirable) 2500 (Maximum Permissible)	To ensure low sewage contamination. Fecal coliform and fecal streptococci are considered as they reflect the bacterial pathogenicity.
2. Fecal Streptococci MPN/100 ml:	100 (desirable) 500 (Maximum Permissible)	The desirable and permissible limits are suggested to allow for fluctuation in environmental conditions such as seasonal change, changes in flow conditions etc.
2. pH:	Between 6.5 –8.5	The range provides protection to the skin and delicate organs like eyes, nose, ears etc. which are directly exposed during outdoor bathing.
3. Dissolved Oxygen:	5 mg/l or more	The minimum dissolved oxygen concentration of 5 mg/l ensures reasonable freedom from oxygen consuming organic pollution immediately upstream which is necessary for preventing production of anaerobic gases (obnoxious gases) from sediment.
4. Biochemical Oxygen demand 3 day,27°C:	3 mg/l or less	The Biochemical Oxygen Demand of 3 mg/l or less of the water ensures reasonable freedom from oxygen demanding pollutants and prevent production of obnoxious gases";

NOTARY Sandeep Sharma Reg. No.I 86/98

ATTESTED
(Sandeep Sharma)
Reg. No. A136/98
NOTARY PUBLIC
Ghaziabad (U.P.)

09 JAN 2025

[1][SCHEDULE – VI]

(See rule 3A)

GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART-A : EFFLUENTS

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
1.	Colour and odour	See 6 of Annexure-I	--	See 6 of Annexure -I	See 6 of Annexure-I
2.	Suspended solids mg/l, Max.	100	600	200	(a) For process waste water- 100 (b) For cooling water effluent 10 percent above total suspended matter of influent.
3.	Particulate size of suspended solids	Shall pass 850 micron IS Sieve	--	--	(a) Floatable solids, max. 3 mm. (b) Settleable solids, max. 850 microns.
[2]4.	***	*	--	***	--
5.	pH Value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	shall not exceed 5^{o}C above the receiving water temperature	--	--	shall not exceed 5^{o}C above the receiving water temperature

[1] Schedule VI inserted by Rule 2(d) of the Environment (Protection) Second Amendment Rules, 1993 notified vide G.S.R. 422(E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.

[2] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
7.	Oil and grease mg/l Max.	10	20	10	20
8.	Total residual chlorin mg/l Max.	1.0	--	--	1.0
9.	Ammonical nitrogen (as N), mg/l Max.	50	50	--	50
10.	Total Kjeldahl Nitrogen (as NH_3) mg/l, Max.	100	--	--	100
11.	Free ammonia (as NH_3) mg/l, Max.	5.0	--	--	5.0
12.	Biochemical Oxygen demand [1][3 days at 27°C] mg/l max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/l, max.	250	--	--	250
14.	Arsenic (as As), mg/l, max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg), mg/l, Max.	0.01	0.01	--	0.01
16.	Lead (as Pb) mg/l, Max.	0.1	1.0	--	2.0
17.	Cadmium (as Cd) mg/l, Max.	2.0	1.0	--	2.0
18.	Hexavalent Chromium (as Cr+6), mg/l max.	0.1	2.0	--	1.0

[1] Substituted by Rule2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176, dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
19.	Total chromium (as Cr.) mg/l, Max.	2.0	2.0	--	2.0
20.	Copper (as Cu) mg/l, Max.	3.0	3.0	--	3.0
21.	Zinc (As Zn.) mg/l, Max.	5.0	15	--	15
22.	Selenium (as Se.) mg/l, Max.	0.05	0.05	--	0.05
23.	Nickel (as Ni) mg/l, Max.	3.0	3.0	--	5.0
[1]24.	* * *	*	*	*	*
[1]25.	* * *	*	*	*	*
[1]26.	* * *	*	*	*	*
27.	Cyanide (as CN) mg/l Max.	0.2	2.0	0.2	0.2
[1]28.	* * *	*	*	*	*
29.	Fluoride (as F) mg/l Max.	2.0	15	--	15
30.	Dissolved Phosphates (as P), mg/l Max.	5.0	--	--	--
[2]31.	* * *	*	*	*	*
32.	Sulphide (as S) mg/l Max.	2.0	--	--	5.0
33.	Phenoile compounds (as C_6H_5OH) mg/l, Max.	1.0	5.0	--	5.0

[1] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
34.	Radioactive materials :				
	(a) Alpha emitter micro curie/ml.	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	(b) Beta emitter micro curie/ml.	10^{-6}	10^{-6}	10^{-7}	10^{-6}
35.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
36.	Manganese (as Mn)	2 mg/l	2 mg/l	--	2 mg/l
37.	Iron (as Fe)	3 mg/l	3 mg/l	--	3 mg/l
38.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	--	0.2 mg/l
39.	Nitrate Nitrogen	10 mg/l	--	--	20 mg/l
[1]40.	* * *	*	*	*	*

[1] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No. G.S.R. 801(E) dated 31.12.1993

WASTE WATER GENERATION STANDARDS - PART-B

S.No.	Industry	Quantum
1.	Integrated Iron & Steel	16 m^3/tonne of finished steel
2.	Sugar	0.4 m^3/tonne of cane crushed
3.	Pulp & Paper Industries	
	(a) Larger pulp & paper	
	(i) Pulp & Paper	175 m^3/tonne of paper produced
	(ii)Viscose Staple Fibre	150 m^3/tonne of product
	(iii)Viscose Filament Yarn	500 m^3/tonne of product
	(b) Small Pulp & Paper :	
	(i) Agro residue based	150 m^3/tonne of paper produced
	(ii) Waste paper based	50 m^3/tonne of paper produced
4.	Fermentation Industries :	
	(a) Maltry	3.5 m^3/tonne of grain produced
	(b) Brewery	0,.25 m^3/KL of beer produced
	(c) Distillery	12 m^3/KL of alcohol produced
5.	Caustic Soda	
	(a) Membrane cell process	1 m^3/tonne of caustic soda produced excluding cooling tower blowdown
	(b) Mercury cell process	4 m^3/tonne of caustic soda produced (mercury bearing) 10% blowdown permitted for cooling tower
6.	Textile Industries : Man-made Fibre	
	(i) Nylon & Polyster	120 m^3/tonne of fibre produced
	(ii) Vixcose rayon	150 m^3/tonne of product
7.	Tanneries	28 m^3/tonne of raw hide
8.	Starch. Glucose and related products	8 m^3/tonne of maize crushed
9.	Dairy	3 m^3/KL of Milk

10.	Natural rubber processing industry	4 m^3/tonne of rubber
11.	Fertilizer	
	(a) Straight nitrogenous fertilizer	5 m^3/tonne of urea or equivalent produced
	(b) Straight phosphatic fertilizer (SSP & TSP) excluding manufacture of any acid	0.5 m^3/tonne of SSP/TSP
	(c) Complex fertilizer	Standards of nitrogenous and phosphatic fertilizers are applicable depending on the primary product

LOAD BASED STANDARDS - PART-C

[1][1. Petroleum Oil Refinery:

Parameter 1	Standard 2
	Quantum limit in Kg/l 1,000 tonne of crude processed
1. Oil & Grease	2.0
2. BOD $_{3\ days,\ 27^{o}C}$	6.0
3. COD	50
4. Suspended Solids	8.0
5. Phenols	0.14
6. Sulphides	0.2
7. CN	0.08
8. Ammonia as N	6.0
9. TKN	16
10. P	1.2
11. Cr (Hexavalent)	0.04
12. Cr(Total)	0.8
13. Pb	0.04
14. Hg	0.004
15. Zn	2.0
16. Ni	0.4
17. Cu	0.4
18. V	0.8
19. Benzene	0.04
20. Benzo (a) – Pyrene	0.08

[1] Substituted by Rule 2(ii)(a) of the Environment (Protection) Amendment Rules, 2008 notified by G.S.R.186(E), dated 18.3.2008

Notes:

(i) Quantum limit shall be applicable for discharge of total effluent (process effluent, cooling water blow down including sea cooling water blow down, washings, etc.) to receiving environment (excluding direct application on land for irrigation/horticulture purposes within the premises of refinery).

(ii) In order to measure the quantity of effluent (separately for discharge to receiving environment, application for irrigation/horticulture purposes within the premises of refinery & blow-down of cooling systems), appropriate flow measuring devices (e.g. V-notch, flow meters) shall be provided with.

(iii) Quantum of pollutants shall be calculated on the basis of daily average of concentration values (one 24-hourly composite sample or average of three grab samples, as the case may be), average flow of effluent during the day and crude throughput capacity of the refinery.

(iv) Limit for quantity of effluent discharged (excluding blow-down from seawater cooling) shall be 400 m^3/1000 tonne of crude processed. However, for refineries located in high rain fall area, limit of quantity of effluent only during rainy days shall be 700 m^3/1000 tonne of crude processed].

2. Large Pulp & Paper, News Print/ Rayon grade Plants of capacity above 24000 tonne/ Annum

Parameter	Quantum
Total Organic Chloride (TOCI)	2 kg/tonne of product.

GENERAL EMISSION STANDARDS - PART-D

I. Concentration Based Standards

Sl. No.	Parameter	Standard Concentration not to exceed (in mg/Nm^3)
1.	Particulate Matter (PM)	150
2.	Total Fluoride	25
3.	Asbestos	4 Fibres/cc and dust should not be more than 2 mg/Nm^3

4.	Mercury	0.2
5.	Chlrine	15
6.	Hydrochloric acid vapour and mist	35
[1]7.	* * *	*
8.	Sulphuric acid mist	50
9.	Carbon monoxide	1% max. (v/v)
[1]10.	* * *	*
11.	Lead	10 mg/Nm^3
[1]12.	* * *	*

II. Equipment based Standards

[2][For dispersal of sulphur dioxide, in minimum stack height limit is accordingly prescribed as below]

Sl. No.	Parameter	Standard	
1.	Sulphur dioxide	Stack-height limit in metre	
	(i) Power generation capacity :		
	- 500 MW and more	275	
	- 200/210 MW and above to less than 500 MW	220	
	- less than 200/210 MW	$H=14(Q)^{0.3}$	
	(ii) Steam generation capacity		
	- Less than 2 tonne/h	Less than 8.5 MT	9
	- 2 to 5 tonne/h	8.5 to 21 MT	12
	- 5 to 10 tonne/h	21 to 42 MT	15
	- 10 to 15 tonne/h	42 to 64 MT	18
	- 15 to 20 tonne/h	64 to 104 MT	21
	- 20 to 25 tonne/h	104 to 105 MT	24
	- 25 to 30 tonne/h	105 to 126 MT	27
	- More than 30 tonne/h	More than 126 MT	30
		or using the formula $H=14(Q)^{0.3}$	

[1] Omitted by Rule 2 (g) (iv) of the Environment (Protection) Third Amendment Rules, 1993 vide G.S.R. 801(E) dated 31.12.1993.

[2] Substituted by Rule 2(h)(i), ibid.

Note : H – Physical height of the stack in metre
Q – Emission rate of SO_2 in kg/hr.

III. Load/Mass based Standards

Sl. No.	Industry	Parameter	Standard
1.	Fertiliser (Urea)		
	Commissioned Prior to 1.1.82	Particulate Matter (PM)	2 kg/tonne of product
	Commissioned after 1.1.82	Particulate Matter (PM)	0.5 kg/tonne of product
2.	Copper, Lead and Zinc Smelter/converter	Sulphur dioxide	4 kg/tonne of concentrated (100% acid produced
3.	Nitric Acid	Oxides of Nitrogen	3 kg/tonne of weak acid (before concentration) produced
[1][4.	Sulphuric Acid Plant		Quantum Limit in kg/tonne Plant capacity for 100% concentration of Sulphuric Acid (tonne/day) Existing Unit: Upto 300: 2.5; Above 100: 2.0 New Unit: Upto 300: 2.0; Above 100: 1.5]
5.	Coke Oven	Carbon Monoxide	3 kg/tonne of coke produced.
[2][6.	Petroleum Oil Refinery (Sulphur Recovery)	Sulphur Dioxide	Kg/tonne of sulphur in the feed to SRU Installed Capacity of SRU* (tonne/day): Above 20; 5 to 20; Upto 5 Existing SRU: 26; 80; 120 New SRU: 10; 40; 80

* SRU – Sulphur Recovery Unit]

---

1 Substituted by Rule 2(ii) of the Environment (Protection) Third Amendment Rules, 2008 notified by G.S.R.344(E), dated 7.5.2008.

2 Substituted by Rule 2 of the Environment (Protection) Fifth Amendment Rules, 2009 notified by G.S.R.595(E), dated 21.8.2009.

7. Aluminium Plants :

(i)	Anode Bake Oven Total Fluoride		0.3 Kg/MT of Aluminium
(ii)	Pot room		
(a)	VSS	-do-	4.7 Kg/MT of Aluminium
(b)	HSS	-do-	6 Kg/MT of Aluminium
(c)	PBSW	-do-	2.5 Kg/MT of Aluminium
(d)	PBCW	-do-	1.0 Kg/MT of Aluminium

Note : VSS = Vertical Stud Soderberg
HSS = Horizontal Stud Soderberg
PBSW = Pre Backed Side Work
PBCW = Pre Backed Centre Work

8. Glass Industry :

(a) Furnace Capacity

(i)	Up in the product draw capacity of 60 MTD/Day	Particulate matter	2 Kg/hr ca
(ii)	Product draw capacity more than 60 MT/Day	-do-	0.8 Kg/MT of Product drawn

***NOISE STANDARDS - PART-E**

A. Noise Limits for Automobiles (Free Field Distance at 7.5 Metre in dB(A) at the manufacturing Stage

(a) Motorcycle, Scooters & Three Wheelers	80
(b) Passenger Cars	82
(c) Passenger or Commercial vehicles upto 4 MT	85
(d) Passenger or Commercial vehicles above 4 MT and upto 12 MT	89
(e) Passenger or Commercial vehicles exceeding 12MT	91

* Standards notified at S. No. 46 may also be referred.

[1][AA. Noise limits for vehicles at manufacturing stage

The test method to be followed shall be IS:3028-1998.

(1) Noise limits for vehicles applicable at manufacturing stage from the year 2003

Serial Number	Type of vehicle	**Noise limits dB(A)**	Date of implementation
(1)	(2)	**(3)**	(4)
1.	**Two wheeler**		
	Displacement upto 80 cm^3	75	
	Displacement more than 80 cm^3 but upto 175 cm^3	77	1st January,2003
	Displacement more than 175 cm^3	80	
2.	**Three wheeler**		
	Displacement upto 175 cm^3	77	1st January,2003
	Displacement more than 175 cm^3	80	
3.	**Passenger Car**	75	1st January, 2003
4.	**Passenger or Commercial Vehicles**		
	Gross vehicle weight upto 4 tonnes	80	
	Gross vehicle weight more than 4 tonnes but upto 12 tonnes.	83	1st July, 2003
	Gross vehicle weight more than 12 tonnes.	85	

(2)Noise limits for vehicles at manufacturing stage applicable on and from 1st April, 2005

Serial Number	Type of vehicles	**Noise limits dB(A)**
1.0	**Two wheelers**	
1.1	Displacement upto 80 cc	75
1.2	Displacement more than 80 cc but upto 175 cc	77
1.3	Displacement more than 175 cc	80
2.0	**Three wheelers**	
2.1	Displacement upto 175 cc	77
2.2	Displacement more than 175 cc	80
3.0	**Vehicles used for the carriage of passengers and capable of having not more than nine seats, including the driver's seat**	74

[1] Substituted by Rule 2 of the Environment (Protection) Fourth Amendment Rules, 2002 notified vide Notificat6ion G.S.R.849(E), dated 30.12.2002 (Earlier 'AA – Noise limits for vehicles w.e.f. 1st January 2003' inserted by Rule 2 (2) of the Environment (Protection) Amendment Rules, 2000 notified vide Notification G.S.R. 742(E), dated 25.9.2000.)

4.0	**Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat, and a maximum Gross Vehicle Weight (GVW) of more than 3.5 tonnes**	
4.1	With an engine power less than 150 KW	78
4.2	With an engine power of 150 KW or above.	80
5.0	**Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat : vehicles used for the carriage of goods.**	
5.1	With a maximum GVW not exceeding 2 tonnes	76
5.2	With a maximum GVW greater than 3 tonnes but not exceeding 3.5 tonnes	77
6.0	**Vehicles used for the transport of goods with a maximum GVW exceeding 3.5 tonnes.**	
6.1	With an engine power less than 75 KW	77
6.2	With an engine power of 75 KW or above but less than 150 KW.	78
6.3	With an engine power of 150 KW or above.	80]

[1][Provided that for vehicles mentioned at serial numbers 3.0 to 6.3, the noise limits for the following States shall be applicable on and from the date specified against that State,-

(i) Himachal Pradesh with effect from 1st October, 2005
(ii) Jammu and Kashmir with effect from 1st October, 2005
(iii) Madhya Pradesh with effect from 1st September, 2005
(iv) Punjab with effect from 1st October, 2005
(v) Rajasthan with effect from 1st June, 2005
(vi) Uttar Pradesh (Mathura, Kannauj, Muzaffarnagar, Aligarh, Farukkabad, Saharanpur, Badaun, Barreily, Moradabad, Hathras, Rampur, Bijnor, Agra, Pilibhit, J.P. Nagar, Mainpuri, Lalitpur, Hardio, Ferozabad, Jhansi, Shahjahanpur, Etawah, Jalon, Lakhimpur, Kheri, Etah, Mahoba, and Sitapur) with effect from 1st June, 2005.
(vii) Uttranchal with effect from 1st July, 2005.]

B. Domestic appliances and construction equipments at the manufacturing stage to be achieved by 31st December,1993.

(a) Window Air Conditioners of 1 ton to 1.5 ton 68
(b) Air Coolers 60
(c) Refrigerators 46
[2][(d) * * * …… …]
(e) Compactors (rollers),Front Loaders,Concrete mixers,Cranes(moveable),Vibrators and Saws 75

---

[1] Inserted by the Environment (Protection) Amendment Rules, 2005 notified vide Notification G.S.R.272 (E), dated 5.5.2005.

[2] Entry (d) relating to 'Diesel Generator of Domestic Purposes…….85 – 90' omitted by Rule 3 of the Environment (Protection) Second Amendment, Rules, 2002 notified vide Notification G.S.R. 371(E), dated 17.5.2002.

ANNEXURE-I

(For the purposes of Parts – A, B and C)

The State Boards shall following guide-lines in enforcing the standards specified under the schedule VI :

(1) the waste waters and gases are to be treated with the best available technology (BAT) in order to achieve the prescribed standards.

(2) the industries need to be encouraged for recycling and reuse, of waste materials as far as practicable in order to minimize the discharge of wastes into the environments.

(3) the industries are to be encouraged for recovery of biogas, energy and reusable materials.

(4) while permitting the discharge of effluent and emission into the environment, State Boards have to take into account the assimilative capacities of the receiving bodies, especially water bodies so that quality of the intended use of the receiving waters is not affected. Where such quality is likely to be effected discharges should not be allowed into water bodies.

(5) the Central and State Boards shall put emphasis on the implementation of clean technologies by the industries in order to increase fuel efficiency and reduce the generation of environmental pollutants.

(6) All efforts should be made to remove colour and unpleasant odour as far as practicable.

(7) The standards mentioned in the Schedule shall also apply to all other effluents discharged such as industrial mining, and mineral processing activities and sewage.

(8) the limit given for the total concentration of mercury in the final effluent of caustic soda industry, is for the combined effluent from (a) Cell house, (b) Brine Plant, (c) Chlorine handling, (d) hydrogen handling and (e) hydro choleric acid plant.

(9) [1][(a)….(f)]

(10) All effluents discharge including from the industries such as cotton textile, composite woolen mills, synthetic rubber, small pulp & paper, natural rubber, petro-chemicals, tanneries, point dyes,

---

[1] Omitted by Rule 4 of the Environment (Protection) Rules, 1996 notified by notification G.S.R. 176(E), dated 2.4.1996.

slaughter houses, food & fruit processing and diary industries into surface waters shall conform to be BOD limit specified above, namely 30 mg/l. For discharge an effluent having a BOD more than 30 mg./l, the standards shall conform to those given, above for other receiving bodies, namely, sewers, coastal waters, and land for irrigation.

(11) [1][***…….]

(12) In case of fertilizer industry the limits in respect of chromium and fluoride shall be complied with at the outlet of chromium and fluoride removal units respectively.

(13) In case of pesticides :

(a) The limits should be complied with at the end of the treatment plant before dilution.

(b) Bio-assay test should be carried out with the available species of fish in the receiving water, the COD limits to be specified in the consent conditions should be correlated with the BOD limits.

(c) In case metabolites and isomers of the Pesticides in the given list are found in significant concentration, standards should be prescribed for these also in the same concentration as the individual pesticides.

(d) Industries are required to analyze pesticides in waste water by advanced analytical methods such as GLC/HPLC.

([2]14) The chemical oxygen demands (COD) concentration in a treated effluent, if observed to be persistently greater than 250 mg/l before disposal to any receiving body (public sewer, land for irrigation, inland surface water and marine coastal areas), such industrial units are required to identify chemicals causing the same. In case these are found to be toxic as defined in the Schedule I of the Hazardous Rules 1989 the State Board in such cases shall direct the industries to install tertiary treatment stipulating time limit.

(15) Standards specified in Part A of Schedule – VI for discharge of effluent into the public sewer shall be applicable only if such sewer leads to a secondary treatment including biological treatment system, otherwise the discharge into sewers shall be treated as discharge into inland surface waters].

---

1 Omitted by Rule, 2(k) (vii) of the Environment (Protection) Third amendment Rules, 1993 vide G.S.R. 801 (E), dated 31.12.1993.

2 Inserted by rule 2(k) (ix), ibid.

ANNEXURE-II

(For the purpose of Part-D)

The State Boards shall follow the following guidelines in enforcing the standards specified under Schedule VI:

(a) In case of cement plants, the total dust (from all sections) shall be within 400 mg/Nm^3 and 250 mg/Nm^3 for the plants upto 200 t/d and more than 200 t/d capacities respectively.

(b) In respect of calcinations process (e.g. Aluminum Plants) Kilns. and step Grate Bagasse fired-Boilers. Particulate Matter (PM) emissions shall be within 250 mg/Nm^3.

(c) In case of thermal power plants commissioned prior to 01.01.1982 and having generation capacity less than 62.5 MW, the PM emission shall be within 350 mg/Nm^3.

(d) In case of Lime Kilns of capacity more than 5 t/day and upto 40 t/day, the PM emission shall be within 500 mg/Nm^3.

(e) In case of horse shoe/pulsating Grate and Spreader Stroker Bagasse-fired-Boilders, the PM emission shall be within 500 (12% CO_2) and 800 (12% CO_2) mg/Nm^3 respectively. In respect of these boilers, if more than attached to a single stack, the emission standards shall be fixed, based on added capacity of all the boilers connected with the stack.

(f) In case of asbestos dust, the same shall not exceed 2mg/Nm^3.

(g) In case of the urea plants commissioned after 01.01.92, coke ovens and lead glass units, the PM emission shall be within 50 mg/Nm^3.

(h) In case of small boilers of capacity less than 2 tons/hour and between 2 to 5 tons/ hour, the PM emissions shall be within 1000 and 1200 mg/Nm^3.

(i) In case of integrated Iron and Steel Plants, PM emission upto 400 mg/Nm^3 shall be allowed during oxygen lancing.

(j) In case of stone crushing units, the suspended PM contribution value at a distance of 40 meters from a controlled, isolated as well as from a unit located in cluster should be less than 600 micrograms/Nm^3. [1][* * *] These units must also adopt the following pollution control measures :

(i) Dust containment cum suppression system for the equipment;

(ii) Construction of wind breaking walls;

(iii) Construction of the metalled roads within the premises;

(iv) Regular cleaning and wetting of the ground within the premises;

(v) Growing of a green belt along with periphery.

(k) In case of Ceramic industry, from the other sources of pollution, such as basic raw materials and processing operations, heat recovery dryers, mechanical finishing operation, all possible preventive measures should be taken to control PM emission as far as practicable.

2. The total fluoride emission in respect of Glass and Phosphatic Fertilizers shall not exceed 5 mg/Nm^3 and 25 mg/Nm^3 respectively.

[2]3. [In case of copper, lead and zinc smelting, the off-gases may, as far as possible, be utilized for manufacturing sulphuric acid]

[3]4. [In case of cupolas (Foundries) having capacity (melting rate) less than 3 tonne/hour, the particulate matter emission shall be within 450 mg/Nm^3. In these cases it is essential that stack is constructed over the cupolas beyond the charging door and the emissions are directed through the stack, which should be at least six times the diameter of cupola. In respect of Arc Furnaces and Induction Furnaces, provision has to be made for collecting the fumes before discharging the emissions through the stack].

[No. Q-15017/24/89-CPW]
MUKUL SANWAL, Jt. Secy.

---

1 Omitted by Rule 2(i)(iii) of the Environment (Protection) Third Amendment Rules, 1993, vide G.S.R. 801(E) dated 31.12.1993.

2 Substituted by Rule 2(1)(i); Ibid.

3 Added by Rule 2(1)(ii), Ibid.

ANNEXURE-5

Inspection report of Al Naved Exports Private Limited, C-5, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015.

A: General Information		
1.	Name & Address of the Industry	Al Naved Exports Private Limited, C-5, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015
2.	Sector	Red category (Meat Processing)
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.12.2027
5.	Production Capacity	Frozen Meat 15 MT/day
6.	Raw materials & their requirement	Raw Meat
B: Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – 25 KLD Domestic – 1.5 KLD
9.	ETP details	ETP Installed. Units are Oil and grease trap, Bar Screen, Equalization tank, chemical reaction tank, tube settler, aeration tank, Clarifier tank, treated water collection tank, dual media filter, sludge drying beds & OCEMS etc.
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
11.	Hazardous waste Details	Used or Spent Oil – 0.04 KL/Annum Wastes or residues containing oil – 0.002 Ton/Annum Wastes or residues containing oil (Used Filter) – 5 Nos/Annum Chemical sludge from waste water treatment – 0.05 Ton/Annum
12.	Facility for disposal of Hazardous waste	Through TSDF
13.	Status of Hazardous waste Authorization	Granted, valid upto 31.12.2027.

D: Details of parameters of sample collected from outlet of ETP on dated 19.12.2024.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	6.86	5.5 – 9.0
2.	B.O.D.	16.0	30.0 mg/l
3.	C.O.D.	128.0	250.0 mg/l
4.	T.S.S.	42.0	100.0mg/l

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.12.2027.

(Vipul Kumar)
Assistant Environment Engineer

Inspection report of Allen India Agro Food, Plot No. A-37, Massorie-Gulawathi Road Industrial Area, Hapur, Uttar Pradesh-201015.

A: General Information		
1.	Name & Address of the Industry	Allen India Agro Food, Plot No. A-37, Massorie-Gulawathi Road Industrial Area, Hapur, Uttar Pradesh-201015
2.	Sector	Red category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.12.2029
5.	Production Capacity	MBM-15.0 Ton/Day Crushed Bone-9.0 Ton/Day Fish Meal-2.0 Ton/Day Pet Food-1.0 Ton/Day Tallow-2.0 Ton/Day
6.	Raw materials & their requirement	Raw Bones and Solid Waste from Slaughter Houses & Meat Processing Industries-40.0 Ton/Day
B: Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – 1.5 KLD Domestic – 0.6 KLD
9.	ETP details	ETP Installed. Units are Collection tank, Chemical Dosing tank, Settling tank, PSF, ACF, Sludge Drying Beds etc.
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
11.	Hazardous waste Details	N.A.
12.	Facility for disposal of Hazardous waste	N.A.
13.	Status of Hazardous waste Authorization	N.A.

D: Details of parameters of sample collected from outlet of ETP on dated 13.02.2025.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	7.0	5.5 – 9.0
2.	B.O.D.	18.0	30.0 mg/l
3.	C.O.D.	196.0	250.0 mg/l
4.	T.S.S.	78.0	100.0 mg/l

Observation: - The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.12.2029.

(Vipul Kumar)
Assistant Environment Engineer

M/s Shri Rathi Steel Limited, Plot No. E & C 133-152. Phase-III, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015.

A: General Information		
1.	Name & Address of the Industry	Shri Rathi Steel Limited, Plot No. E & C 133-152. Phase-III, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2029
5.	Production Capacity	Glass Fibre Reinforced Polymer Bar -85 MTM Glass Fibre Reinforced Polymer Mesh – 60 MTM Glass Fibre Reinforced Polymer Bent Elements – 50 MTM
6.	Raw materials & their requirement	Glass Fibre & Chemicals - As Per Requirement
B: Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic –1.6 KLD
9.	ETP details	N.A.
10.	Mode of Treated effluent disposal	Septic tank sock pit.
C: Hazardous waste and its Disposal		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
5.	pH	NA	NA
6.	B.O.D.	NA	NA
7.	C.O.D.	NA	NA
8.	T.S.S.	NA	NA

Observation:- The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.07.2029.

(Vipul Kumar)
Assistant Environment Engineer

M/s Space Chem, B-51-53, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015.

A: General Information		
1.	Name & Address of the Industry	Space Chem, B-51-53, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015
2.	Year of Commissioning	2014
3.	Sector	Green category
4.	Operational status	Operational
5.	Consolidated consent (Air & Water)	Granted, valid up to 31.03.2025
6.	Production Capacity	ENGINEERING WORK – (Job Work Basis)
7.	Raw materials & their requirement	MANUFACTURE OF FABRICATED METAL PRODUCTS EXCEPT MACHINERY AND EQUIPMENT
B: Water Pollution and its Control		
8.	Freshwater source	Ground Water
9.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.4 KLD
10.	ETP details	N.A.
11.	Mode of Treated effluent disposal	Septic tank sock pit.
C: Hazardous waste and its Disposal		
12.	Hazardous waste Details	NA
13.	Facility for disposal of Hazardous waste	NA
14.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:- The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.03.2025.

(Vipul Kumar)
Assistant Environment Engineer

M/s Gemak Engineering Solutions, Plot No. F-521, Phase-11, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015

A: General Information		
1.	Name & Address of the Industry	Gemak Engineering Solutions, Plot No. F-521, Phune 11, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015
2.	Year of Commissioning	2023
3.	Sector	Green category
4.	Operational status	Operational
5.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2027
6.	Production Capacity	MILK TANK, BULK MILK COOLER – 10 MT/Day (Fabrication process only)
7.	Raw materials & their requirement	STEEL COIL
B: Water Pollution and its Control		
8.	Freshwater source	Ground Water
9.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.6 KLD
10.	ETP details	N.A.
11.	Mode of Treated effluent disposal	N.A.
C: Hazardous waste and its Disposal		
12.	Hazardous waste Details	N.A.
13.	Facility for disposal of Hazardous waste	N.A.
14.	Status of Hazardous waste Authorization	N.A.

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	N.A.	N.A.
2.	B.O.D.	N.A.	N.A.
3.	C.O.D.	N.A.	N.A.
4.	T.S.S.	N.A.	N.A.

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.12.2027.

(Vipul Kumar)
Assistant Environment Engineer

M/s Centra Mack B-22/5, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015

A: General Information		
1.	Name & Address of the Industry	M/s Centra Mack B-22/5, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015.
2.	Year of Commissioning	2024
3.	Sector	Green category
4.	Operational status	Not Operational
5.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2027
6.	Production Capacity	Manufacturing Of Pyrolysis Oil- 4.0 Mt/Day, Carbon Black- 3.0 Mt/Day & Steel Wire- 1.5 Mt/Day
7.	Raw materials & their requirement	All Types Of Rubber Scrap And Old Waste Tyre
B: Water Pollution and its Control		
8.	Freshwater source	Ground Water
9.	Consented wastewater discharge (KLD)	Cooling – 0.5 Domestic – 0.5 KLD
10.	ETP details	N.A.
11.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
12.	Hazardous waste Details	NA
13.	Facility for disposal of Hazardous waste	NA
14.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-

- The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.07.2027.
- At the time of inspection unit not operational, due to own reason.

(Vipul Kumar)
Assistant Environment Engineer

M/s S.N. Chemicals, E-29-30, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015

A: General Information		
1.	Name & Address of the Industry	M/s S.N. Chemicals, E-29-30, UPSIDC Industrial Area, Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2027
5.	Production Capacity	Industrial thinner through mixing process-5000 Ltr/Day
6.	Raw materials & their requirement	Toluene Ethyl Acetate, Acetone, Butyl Acetate, Mix Solvents, Mix Chemicals etc.
B: Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.5 KLD
9.	ETP details	N.A.
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:- The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.07.2027.

(Vipul Kumar)
Assistant Environment Engineer

M/s Weedicide India, E-9, UPSIDC Industrial Arca Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015

A: General Information		
1.	Name & Address of the Industry	M/s Weedicide India, E-9, UPSIDC Industrial Arca Massorie-Gulawathi Road, Hapur, Uttar Pradesh-201015
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2028
5.	Production Capacity	Industrial thinner through mixing process-5000 Ltr/Day
6.	Raw materials & their requirement	Technical Grade Pesticides, Zinc Sulphate, Monohydrate, Ferrous Sulphate, Boric Acid, Emulsifier etc.
B: Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.6 KLD
9.	ETP details	N.A.
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:- The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.07.2028.

(Vipul Kumar)
Assistant Environment Engineer

M/s Krishna Organics, D-6, UPSIDC Industrial Arco Mansorie-Gulawathi Rood, Hapur, Uttar Pradesh-201015

A:General Information		
1.	Name & Address of the Industry	M/s Krishna Organics, D-6, UPSIDC Industrial Arco Mansorie-Gulawathi Rood, Hapur, Uttar Pradesh-201015
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2028
5.	Production Capacity	Thinners-180 MT/month, Paints -100 MT/month
6.	Raw materials & their requirement	Resin, Plasticizers, Pigments, Organic Chemicals, Fillers, Solvents.
B:Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.6 KLD
9.	ETP details	N.A.
10.	Mode of Treated effluent disposal	UPSIDA Drain
C:Hazardous waste and its Disposal		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D:Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.07.2028.

(Vipul Kumar)
Assistant Environment Engineer

M/s MGL Pharma & Chemicals Pvt. Ltd. F-665-666, Phase 1, UPSIDC Industrial Area, Mansoriz-Gulawathi Road, Hapur, Uttar Pradesh-201015

A: General Information		
1.	Name & Address of the Industry	M/s MGL Pharma & Chemicals Pvt. Ltd. F-665-666, Phase 1, UPSIDC Industrial Area, Mansoriz-Gulawathi Road, Hapur, Uttar Pradesh-201015.
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2025
5.	Production Capacity	Thinners-180 MT/month, Paints -100 MT/month
6.	Raw materials & their requirement	Resin, Plasticizers, Pigments, Organic Chemicals, Fillers, Solvents.
B: Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – 4.5 Domestic – 1.5 KLD
9.	ETP details	ETP installed on physio chemical treatment system (ETP Capacity-10 KLD) Collection tank, Reaction tank, tube settler, filter feed tank, MGF, ACF & SDB.
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
11.	Hazardous waste Details	Process Residue and wastes - 0.76 Ton/Annum
12.	Facility for disposal of Hazardous waste	TSDF
13.	Status of Hazardous waste Authorization	Granted upto 04.01.2025. Not Applied.

D: Details of parameters of sample collected from outlet of ETP on dated 13.02.2025.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	6.5	5.5 – 9.0
2.	B.O.D.	12.0	30.0 mg/l
3.	C.O.D.	188.0	250.0 mg/l
4.	T.S.S.	82.0	100.0 mg/l

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.07.2025.

(Vipul Kumar)
Assistant Environment Engineer

M/s RRK Polymers Private Limitad, Khasra No. 328,329, 330, Upper Ganga Canal Rd. Ravali, Uttar Pradesh-201015

A: General Information		
1.	Name & Address of the Industry	M/s RRK Polymers Private Limited, Khasra No. 328,329, 330, Upper Ganga Canal Rd. Ravali, Uttar Pradesh-201015.
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2029
5.	Production Capacity	Mfg. of HDPE Cloths-100 MT/Month
6.	Raw materials & their requirement	FABRIC, THREAD ETC.
B: Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 1.8 KLD
9.	ETP details	NA
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.07.2028.

(Vipul Kumar)
Assistant Environment Engineer

M/s Sukh Steel Private Limited, Plot No. D.N. 50 m 90, Phase-III UPSIDC Industrial Area, Masorie-Gulawathi Road, Hapur, Uttar Pradesh-201015

A: General Information:-		
1.	Name & Address of the Industry	M/s Sukh Steel Private Limited, Plot No. D.N. 50 m 90, Phase-III UPSIDC Industrial Area, Masorie-Gulawathi Road, Hapur, Uttar Pradesh-201015
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2029
5.	Production Capacity	Expanded polyethylene foam(EPF)- 500MT/month
6.	Raw materials & their requirement	Low Density Polyethylene (LDPE) Butane/LPG
B: Water Pollution and its Control:-		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 1.6 KLD
9.	ETP details	NA
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2029.

(Vipul Kumar)
Assistant Environment Engineer

M/s KJS Concrete Pvt. Ltd. 1-1, Phase-1 HL UPSIDA Industrial Area MG Road, Hapur, Uttar Pradesh-201015

A: General Information:-		
1.	Name & Address of the Industry	M/s KJS Concrete Pvt. Ltd. 1-1, Phase-1 HL UPSIDA Industrial Area MG Road, Hapur, Uttar Pradesh-201015
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2027
5.	Production Capacity	Cement Brick & Block- 1800 MT/day
6.	Raw materials & their requirement	FLY ASH, CEMENT, ETC.
B: Water Pollution and its Control:-		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 1.2 KLD
9.	ETP details	NA
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2027.

(Vipul Kumar)
Assistant Environment Engineer

M/s ASHTECH BUILDPRO INDIA PRIVATE LIMITED (MOD Crete Blos AAC), Khasra No. 48-49, MG Road Industrial Area, Village Dehra, Tehsil Dhaulana NTPC Road, Hapur, Utar Pradesh-243301

A: General Information:-		
1.	Name & Address of the Industry	M/s ASHTECH BUILDPRO INDIA PRIVATE LIMITED (MOD Crete Bloc AAC), Khasra No. 48-49, MG Road Industrial Area, Village Dehra, Tehsil Dhaulana NTPC Road, Hapur, Utar Pradesh-243301
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2025
5.	Production Capacity	AAC BLOCKS-15000 MT/month BLOCK JOINTING ADHESIVE- 600MT/month
6.	Raw materials & their requirement	FLY ASH, CEMENT, ETC.
B: Water Pollution and its Control:-		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.6 KLD
9.	ETP details	NA
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2025.

(Vipul Kumar)
Assistant Environment Engineer

M/s Ashtech Industries Pvt. Ltd. Khasra No. 233, Village Lakhan, NH-24, Near Jindal Nagar, Hapur-245101, Uttar Pradesh.

A: General Information:-		
1.	Name & Address of the Industry	M/s Ashtech Industries Pvt. Ltd. Khasra No. 233, Village Lakhan, NH-24, Near Jindal Nagar, Hapur-245101, Uttar Pradesh.
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2025
5.	Production Capacity	RMC-450 m3/day
6.	Raw materials & their requirement	FLY ASH, CEMENT, ETC.
B: Water Pollution and its Control:-		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.6 KLD
9.	ETP details	NA
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
5.	pH	NA	NA
6.	B.O.D.	NA	NA
7.	C.O.D.	NA	NA
8.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2025.

(Vipul Kumar)
Assistant Environment Engineer

M/s Hello Aromatics Private Limited, Khasra no 19, Gulawati Road, Masuri, Hapur-201015, Uttar Pradesh.

A: General Information:-		
1.	Name & Address of the Industry	M/s Hello Aromatics Private Limited, Khasra no 19, Gulawati Road, Masuri, Hapur-201015, Uttar Pradesh.
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2028
5.	Production Capacity	L CARVONE-12.75 MT/month, CARVACAROL-9.60 MT/month, Menthol-10.50 MT/month, Menthone-10.50 MT/month, Carvone-30.60 MT/month
6.	Raw materials & their requirement	DEPP PANTINE, DLAMINIUM, ETC
B: Water Pollution and its Control:-		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.4 KLD
9.	ETP details	NA
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2028.

(Vipul Kumar)
Assistant Environment Engineer

M/s Shiv Shankar Industries, Khasra No. 293m, Hasanpur Road, Dinanathpur Puthi, Ghaziabad-201015, Uttar Pradesh.

A: General Information:-		
1.	Name & Address of the Industry	M/s Shiv Shankar Industries, Khasra No. 293m, Hasanpur Road, Dinanathpur Puthi, Ghaziabad-201015, Uttar Pradesh.
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2028
5.	Production Capacity	Aluminum Casting – 500 KG/DAY, Copper Casting-350 KG/Day, Zinc Casting - 200 KG/day, Brass-350 KG/Day, Plastic Granule-2.5 MT/Day & C.I. Mould/C.I. Casting - 400 KG/Day
6.	Raw materials & their requirement	Aluminum and Copper Scrap, Plastic Scrap.
B: Water Pollution and its Control:-		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 1.5 KLD
9.	ETP details	NA
10.	Mode of Treated effluent disposal	NA
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2028.

(Vipul Kumar)
Assistant Environment Engineer

M/s Moon Beverages Private Limited, 5th Km milestone. Masuri Gulanthi Road, Dasna, Tehsil Dhaulana, Haput-201015

A: General Information		
1.	Name & Address of the Industry	Moon Beverages Private Limited, 5th Km milestone. Masuri Gulanthi Road, Dasna, Tehsil Dhaulana, Haput-201015.
2.	Year of Commissioning	1998
3.	Sector	RED category
4.	Operational status	Operational
5.	Consolidated consent (Air & Water)	Granted, valid up to 31.12.2026
6.	Production Capacity	Juice 27358.6 MT/M Carbonated Soft Drink 78179 MT/M Packaging Drinking Water 20987 MT/M BIB(Synthetic Syrup) 558 MT/Month Pet Preform 300
7.	Raw materials & their requirement	Sugar, Concentrate, Carbon Dioxide, Pulp.
B: Water Pollution and its Control		
8.	Freshwater source	Ground Water
9.	Consented wastewater discharge (KLD)	Industrial – 1.0 KLD Domestic – 0.5 KLD
10.	ETP details	Installed, units are Bar Screen Chamber, Equalization tank, Primary Clarifier, Secondary Clarifier, Polishing tank, DMF/PSF/ACF, Aeration tank, DAF, SDB etc.
11.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
12.	Hazardous waste Details	Used or spent Oil-5.7 T/Annum Wastes or residues containing oil – 5.7 T/Annum Empty Barrels/containers/liners/ contaminated with hazardous chemicals/wastes – 2.04 T/Annum Chemical sludge from waste water treatment – 1500 T/Annum
13.	Facility for disposal of Hazardous waste	Through TSDF
14.	Status of Hazardous waste Authorization	Granted, valid upto 28.08.2029

D: Details of parameters of sample collected from outlet of ETP on dated 19.12.2024.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	7.59	5.5 – 9.0
2.	B.O.D.	18.0	30.0 mg/l
3.	C.O.D.	156.0	250.0 mg/l
4.	T.S.S.	72.0	100.0 mg/l

Observation:- The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.12.2026.

(Vipul Kumar)
Assistant Environment Engineer

M/s Golden Feeds Industries, -278-279, Massorie-Guluwathi Road Industrial Area, Hapur, Uttar Pradesh-201015.

A: General Information:-		
1.	Name & Address of the Industry	M/s Golden Feeds Industries, -278-279, Massorie-Guluwathi Road Industrial Area, Hapur, Uttar Pradesh-201015
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2028
5.	Production Capacity	POULTRY FEED (MIXING & GRINDING PROCESS) 9.5 MT/Day 2 OMASSUM (COLD STORAGE) 26
6.	Raw materials & their requirement	POULTRY FEEDS & ANIMAL FEEDS
B: Water Pollution and its Control:-		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – Nil Domestic – 0.8 KLD
9.	ETP details	NA
10.	Mode of Treated effluent disposal	NA
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	NA	NA
2.	B.O.D.	NA	NA
3.	C.O.D.	NA	NA
4.	T.S.S.	NA	NA

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2028.

(Vipul Kumar)
Assistant Environment Engineer

M/s Vision Resins and Resol Pvt. Ltd. F-273-274, UPSIDC Industrial Ar Massorie-Gulawathi Road, Hapur, Uttar Pradesh-245101.

A: General Information:-		
1.	Name & Address of the Industry	M/s Vision Resins and Resol Pvt. Ltd. F-273-274, UPSIDC Industrial Area Massorie-Gulawathi Road, Hapur, Uttar Pradesh-245101.
2.	Sector	Orange category
3.	Operational status	Not Operational (Dismantled)
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2025
5.	Production Capacity	-
6.	Raw materials & their requirement	-
B: Water Pollution and its Control:-		
7.	Freshwater source	-
8.	Consented wastewater discharge (KLD)	-
9.	ETP details	-
10.	Mode of Treated effluent disposal	-
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	-
12.	Facility for disposal of Hazardous waste	-
13.	Status of Hazardous waste Authorization	-

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
5.	pH	-	-
6.	B.O.D.	-	-
7.	C.O.D.	-	-
8.	T.S.S.	-	-

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2025.

(Vipul Kumar)
Assistant Environment Engineer

M/s Shri Krishna Chemicals F-451-452, Matsorie-Gulawathi Road Industrial Aena, Hapur, Uttar Pradesh-245101.

A: General Information:-		
1.	Name & Address of the Industry	M/s Shri Krishna Chemicals F-451-452, Matsorie-Gulawathi Road Industrial Aena, Hapur, Uttar Pradesh-245101.
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2029
5.	Production Capacity	CARVONE 30 Metric Tonnes/Month META CRESOL 100 Metric Tonnes/Month BUTYLATED HYDROXY TOLUNE 250 Metric Tonnes/Month, RESIDUE 60 Metric Tonnes/Month CARVACROL 30 MT/Month CRESOL - 30 MT/Month
6.	Raw materials & their requirement	Major raw material are phenol, formaldehyde, hexamine
B: Water Pollution and its Control:-		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – 1.0 Domestic – 2.0 KLD
9.	ETP details	ETP Sludge, Used Oil, Waste Residue, Contaminated Cotton Bags & Chemical Drums
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal:-		
11.	Hazardous waste Details	NA
12.	Facility for disposal of Hazardous waste	NA
13.	Status of Hazardous waste Authorization	NA

D: Details of parameters of sample collected from outlet of ETP on dated 13.02.2025.

S. No.	Parameters	Tested Results (mg/L except pH)	Permissible limit
1.	pH	6.7	5.5 – 9.0
2.	B.O.D.	14.0	30.0 mg/l
3.	C.O.D.	198.0	250.0 mg/l
4.	T.S.S.	84.0	100.0 mg/l

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid up-to 31.07.2029.

(Vipul Kumar)
Assistant Environment Engineer

M/s VDH Chemtech Private Limited, H-127-144, Masserie-Gulawathi Road Industrial Area, Hapur, Uttar Pradesh-245101

A: General Information		
1.	Name & Address of the Industry	VDH Chemtech Private Limited, H-127-144, Masserie-Gulawathi Road Industrial Area, Hapur, Uttar Pradesh-245101
2.	Sector	Orange category
3.	Operational status	Operational
4.	Consolidated consent (Air & Water)	Granted, valid up to 31.07.2029
5.	Production Capacity	CARVONE – 30 MTM, CARVACROL – 30 MTM, META CRESOL-100 MTM, PARA CRESOL-30 MTM, BUTYLATED HYDROXY TOLUNE – 250 MTM & RESIDUE-60 MTM
6.	Raw materials & their requirement	Meta Para Cresol, ISO Butylene Gas
B: Water Pollution and its Control		
7.	Freshwater source	Ground Water
8.	Consented wastewater discharge (KLD)	Industrial – 1.0 KLD Domestic – 0.5 KLD
9.	ETP details	Installed, units are Bar Screen, Oil & Grease Trap, Equalization tank, Chemical Dosing tank, Tube settler, MBBR Reactor, DMF, SDB etc.
10.	Mode of Treated effluent disposal	UPSIDA Drain
C: Hazardous waste and its Disposal		
11.	Hazardous waste Details	ETP Sludge, Used Oil, Waste Residue, Contaminated Cotton Bags & Chemical Drums.
12.	Facility for disposal of Hazardous waste	Through TSDF
13.	Status of Hazardous waste Authorization	Granted, valid upto 31.07.2029

D: Details of parameters of sample collected from outlet of ETP.

S. No.	Parameters	Tested Results (mg/L except pH	Permissible limit
1.	pH	6.5	5.5 – 9.0
2.	B.O.D.	14.0	30.0 mg/l
3.	C.O.D.	196.0	250.0 mg/l
4.	T.S.S.	82	100 mg/l

Observation:-The unit has valid consent under the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution), Act, 1981 valid upto 31.12.2029.

(Vipul Kumar)
Assistant Environment Engineer

ANNEXURE-6

उत्तर प्रदेश राज्य औद्योगिक विकास प्राधिकरण

क्षेत्रीय अधिकारी,
उत्तर प्रदेश प्रदूषण नियंत्रण बोर्ड,
जनपद–हापुड़।

कार्यालय उप–महाप्रबन्धक(सिविल)
निर्माण खण्ड–प्रथम,
भवन संख्या– ए–03, यूपीसीडा
आवासीय कालोनी, सैक्टर–16,
शास्त्री नगर, गाजियाबाद–201001
दूरभाष :–0120– 2791512
ई–मेल : cd1@upsida.co.in
GSTIN:-09AAALU1000G1ZF

पत्रांक सं0 1351 /यूपीसीडा/डी0जी0एम0(सि0)/सीडी–1/गा0बाद दिनांक 17/9/25

महोदय,

कृपया अवगत कराना है कि औद्योगिक क्षेत्र मसूरी गुलावठी रोड, हापुड़ के अन्तर्गत स्थित नालियों के पुनरूद्धार हेतु तैयार किया गया आगणन धनराशि रू0 5873.19 लाख, आई0आई0टी0 दिल्ली से वैट कराने के उपरान्त स्वीकृति हेतु मुख्यालय प्रेषित किया गया है। जिसकी छायाप्रति पत्र के साथ संलग्न कर आवश्यक कार्यवाही हेतु प्रेषित है।

संलग्नकः–उपरोक्तानुसार।

भवदीय,

(आर0एस0यादव)
उप महाप्रबन्धक(सिविल)

पत्रांक सं0 /यूपीसीडा/डी0जी0एम0(सि0)/सीडी–1/गा0बाद दिनांक

प्रतिलिपिः– श्री ब्रहम सिंह/ श्री सोनू कुमार पाण्डेयप्रबन्धक(सिविल), निर्माण खण्ड–प्रथम, यूपीसीडा, गाजियाबाद को अनुपालनार्थ।

(आर0एस0यादव)
उप महाप्रबन्धक(सिविल)

उत्तर प्रदेश राज्य औद्योगिक विकास प्राधिकरण

महाप्रबन्धक(अभियंत्रण)(के)
उ0प्र0रा0औ0वि0प्रा0,
ए–1/4, लखनपुर,
कानपुर।

कार्यालय उप–महाप्रबन्धक(सिविल)
निर्माण खण्ड–प्रथम,
भवन संख्या– ए–03, यूपीसीडा
आवासीय कालोनी, सैक्टर–16,
शास्त्री नगर, गाजियाबाद–201001
दूरभाष :–0120– 2791512
ई–मेल : cd1@upsida.co.in
GSTIN:-09AAALU1000G1ZF

पत्रांक सं0 645 /यूपीसीडा/डी0जी0एम0(सि0)/सीडी–1/गा0बाद दिनांक 27/9/24

विषयः– निर्माण खण्ड–प्रथम गाजियाबाद के अधीन औद्योगिक मसूरी गुलावठी रोड, हापुड़ के अन्तर्गत **CONSTRUCTION OF EXTERNAL & INTERNAL RCC DRAINN AND BOX CULVERT AT I.A. MASURI GULAWATHI ROAD (PHASE-I, II & III) DISTT:HAPUR** के आगणन के सम्बन्ध में।

महोदय,

औद्योगिक क्षेत्र के उद्यमियों के द्वारा की गई मांगो को दृष्टिगत रखते हुये उक्त औद्योगिक क्षेत्र के अन्तर्गत **CONSTRUCTION OF EXTERNAL & INTERNAL RCC DRAINN AND BOX CULVERT AT I.A. MASURI GULAWATHI ROAD (PHASE-I, II & III) DISTT:HAPUR** का आगणन आई0आई0टी0 दिल्ली द्वारा तैयार किया गया है। जिसकी अनुमानित लागत रू0 6170.26 लाख आती है।

उक्त कार्य हेतु आई0आई0टी0 दिल्ली द्वारा तैयार किये गये आगणन, जिसकी अनुमानित लागत रू0 6170.26 लाख आती है। उक्त आगणन प्रशासनिक, तकनीकी एवं वित्तीय स्वीकृति हेतु पत्र के साथ संलग्न कर प्रेषित है।

संलग्नकः–उपरोक्तानुसार

भवदीय

(आर0एस0यादव)
उप महाप्रबन्धक(सिविल)

पत्रांक सं0 /यूपीसीडा/डी0जी0एम0(सि0)/सीडी–1/गा0बाद दिनांक

प्रतिलिपिः–

1. प्रधान महाप्रबन्धक(एस), यूपीसीडा, कानपुर को सूचनार्थ प्रेषित।
2. क्षेत्रीय प्रबन्धक, यूपीसीडा गाजियाबाद को सूचनार्थ प्रेषित।
3. श्री सोनू कुमार पाण्डेय, प्रबन्धक(सिविल), निर्माण खण्ड–प्रथम, यूपीसीडा, गाजियाबाद को आवश्यक कार्यवाही हेतु।

(आर0एस0यादव)
उप महाप्रबन्धक(सिविल)

ESTIMATE

NAME OF WORK :

CONSTRUCTION OF EXTERNAL & INTERNAL RCC DRAINN AND BOX CULVERT AT I.A. MASURI GULAWATHI ROAD (PHASE-I, II & III) DISTT:HAPUR

AMOUNT Rs 6170.26 LAKH

JOB NO.

Construction Divison-Ist

Uttar Pradesh Industrial Development Authority

Ghaziabad

INDEX

CHECK-LIST

CHECK LIST FOR ESTIMATE

Certified that I have personally gone through the estimate and verified the following points as per estimate submitted for sanctions, it is also certified that the estimate has been framed as per norms laid down in the manual and covering the following points.

1. The report furnishes complete relevant information about the work. "subhead wise" as per instructions specified in manual and signed by AE and EE.
2. The list of attested copies of relevant correspondence attached with estimate (Reference no, and date) on Page nos .....
3. The specifications of all items of work have been attached on page nos .....
4. Designs of important component estimation are attached with estimate on page nos .....
5. Rates of all items of works have been provided on the basis of approved SOR of PWD/SIDC/Jal Nigam/CPWD and item no. quoted against each. (A photocopy of SOR is enclosedin separate file cover).
6. Analysis of rates have been attached for all items of work not covered by any SOR and signed by AE and EE on each page and available on page nos .....
7. Rates of materials not covered by SOR, and to be purchased from market have been sanctioned by the Purchase Committee and copy of PCR enclosed on page nos .....
8. The details of measurements and bill of quantities have been prepared correctly as per standard norms and practice and signed by JE/AE on each page.
9. Provisions made in the estimate have been critically examined and are considered to be bareminimum and absolutely necessary for proper completion of this work.
10. The position of Funds received from clients of Deposit and Cost plus works have been explained in the report and statement is attached on page nos .....
11. The relevant basic information about the provisions made in this estimate for original/maintenance work has been furnished.
12. The site for development Has been inspected personally by EE and position explained in "Report".
13. The Abstract of Cost provides for contingencies as specified for this type of work (Normally 3% upto Rs. 100 lacs and 2% thereafter) and Centage charges for Deposit works of other Dept. (Normally 12.5% unless approved otherwise) and is attached on Page nos .....
14. The Plans and Drawing connected with the works provided in this estimate have been attached on page nos ..... to ..... The copies of relevant SOR and PCR have also been enclosed in a separate cover.
15. Pages of this estimate have been serially numbered and estimate has been bound properly.
16. The Barchart (Zero date shall be date of sanction of the estimate) showing details of activities has been attached on page nos .....

Signature of Dy. General Manager
Name of officer :
Name of Division :
Date :

REPORT

REPORT

NAME OF WORK :- CONSTRUCTION OF EXTERNAL & INTERNAL RCC DRAINN AND BOX CULVERT AT I.A. MASURI GULAWATHI ROAD (PHASE-I, II & III) DISTT:HAPUR

The detailed estimate for **CONSTRUCTION OF EXTERNAL & INTERNAL RCC DRAINN AND BOX CULVERT AT I.A. MASURI GULAWATHI ROAD (PHASE-I, II & III) DISTT:HAPUR** has been framed as per continuous demand raised by Industrialist/Entrepreneurs of Industrial Area Masuri Gulawathi Road Hapur and instruction given by Head office. UPSIDA Kanpur. Accordingly request letter for Design, Drawing and Estimation for upgradation of all the drains raised by this office to IIT Delhi, Kanpur and Roorkee. From these IITs, IIT Delhi has submitted their Performa Invoice for above said work of Rs. 35,40,000.00(Invoice Enclosed). They have done Their survey work and submit the final Design, Drawing and Estimate to this office. in which Following provisions has been made as per requirement at site:-

1- Provision of Dismantling of R.C.C. Brick Work
2- Provision of Excavation in Foundation.
3- Provision of C.C. of Ratio 1:4:8
4- Provision of Precast RCC Drain of M-30 Grade and its shifting
5- Provision of Mild Steel
6- Provision of R.C.C. of Grade M-30 for Parapet of Culvert.
7- Provision of GSB below interlocking Tiles
8- Provision of P/F Screening Fixtures.

All The Rates have been taken in Estimate as per U.P.P.W.D. Schedule of Rates Distt. Ghaziabad & MoRTH analysis.

The Detailed Estimate for **CONSTRUCTION OF EXTERNAL & INTERNAL RCC DRAINN AND BOX CULVERT AT I.A. MASURI GULAWATHI ROAD (PHASE-I, II & III) DISTT:HAPUR** amounting to Rs. 6170.26 Lacs, including 18% GST, Contingency, 1.5% for Quality control & Tender Publication charges is being Submitted to accord Administrative, Financial and Technical Sanction Please..

(R.S YADAV)
Dy. General Manager (civil)
UPSIDA,CD-I, Ghaziabad

REFERENCE

(~~Books~~ Report Attached)

SPECIFICATION

SPECIFICATIONS

In this Estimate all specifications shall be carried out as per UP PWD SOR, MoRTH Analysis, DSR

Manager(Civil) **Dy. General Manager(Civil)**

DETAILS

OF

MEASUREMENTS

(As per ~~Rules~~ I.I.T. measurement Attached)

Name of Work:- Upgradation of All Internal & External Drains of Industrial Area Masuri Gulawathi Road, Hapur

Sl no	Description	L(m)	W(mm)	H/D(mm)	Qty	Unit
1	Dismantling reinforced cement concrete or reinforced brick work including stacking of materials as directed by the engineer-in-charge within a distance of 60 metre (200 feet)	1515	1500	200	**454.50**	**Cum**
2	Excavation in foundation in ordinary soil including lift upto 1.5 m and lead upto 30 m and including filling, watering and ramming of excavated earth into the trenches or into the space between the building and the sides of foundation trenches or into the plinth and removal and disposal of surplus earth all complete as per direction of engineer in charge. {AS PER PWD SOR 2022 PAGE NO 15 SI NO 4.01 ITEM NO 251 (a).}					
	D1	39115	1250	550	26891.56	Cum
	D2	1601	1250	700	1400.88	Cum
	D3	60	1400	550	46.20	Cum
	D4	10141	1400	700	9938.18	Cum
	D5	149	1400	850	177.31	Cum
	D7	1892	1550	700	2052.82	Cum
	D8	2017	1550	850	2657.40	Cum
	D9	2266	1700	850	3274.37	Cum
	D10	263	1700	1000	447.10	Cum
	D12	1838	2000	1000	3676.00	Cum
	D13	351	2000	1300	912.60	Cum
	D14	204	2300	1000	469.20	Cum
	D15	385	2300	1150	1018.33	Cum
	D16	265	2600	1150	792.35	Cum
	D17	813	2600	1300	2747.94	Cum
	D19	1642	2900	1450	6904.61	Cum
	D20	40	2900	1600	185.60	Cum
	D21	1164	3200	1600	5959.68	Cum
	D22	245	3500	1750	1500.63	Cum
	D23	691	3800	1750	4595.15	Cum
	D24	680	4100	2350	6551.80	Cum
	Culvert					
	C1	352	1550	700	381.92	Cum
	C2	160	1550	850	210.80	Cum
	C4	405	1700	850	585.23	Cum
	C7	128	1850	850	201.28	Cum
	C8	112	1850	1000	207.20	Cum
	C9	128	2000	1000	256.00	Cum
	C10	64	2000	1250	160.00	Cum
	C11	16	2300	1100	40.48	Cum
	C12	64	2300	1250	184.00	Cum
	C14	32	2600	1250	104.00	Cum
	C15	16	2600	1400	58.24	Cum
	C16	46	2900	1400	186.76	Cum
	C17	16	2900	1550	71.92	Cum
	C18	16	3200	1550	79.36	Cum
	C19	48	3200	1700	261.12	Cum
	C22	32	3800	2000	243.20	Cum
	C23	32	4100	2000	262.40	Cum
	C24	16	4400	2600	183.04	Cum

Sl no	Description	L(m)	W(mm)	H/D(mm)	Qty	Unit
	Silt Chamber					
	C3/55 (1800x900)	3.5	2.5	1.75	15.31	Cum
	C271 (1800x1050)	3.5	2.5	1.9	16.63	Cum
	C22 (2700x1500)	4.4	2.5	2.35	25.85	Cum
	C23 (3000x1500)	4.7	2.5	2.35	27.61	Cum
					85962.04	**Cum**
3	Extra rates for quantities of works, executed: In or under foul position, including pumping out water as required.					
	Qty Same as item No.2			**Total**	**85962.04**	**Cun**
4	Cement Concrete with 4 cm guage approved stone ballast, coarse sand & cement in the proportion of 8:4:1 including supply of all material, labour, tools & Plant etc. required for proper completion of work. As per Sl No. 281					
	D1	39115	950	100	3715.93	Cum
	D2	1601	950	100	152.10	Cum
	D3	60	1100	100	6.60	Cum
	D4	10141	1100	100	1115.51	Cum
	D5	149	1100	100	16.39	Cum
	D7	1892	1250	100	236.50	Cum
	D8	2017	1250	100	252.13	Cum
	D9	2266	1400	100	317.24	Cum
	D10	263	1400	100	36.82	Cum
	D12	1838	1700	100	312.46	Cum
	D13	351	1700	100	59.67	Cum
	D14	204	2000	100	40.80	Cum
	D15	385	2000	100	77.00	Cum
	D16	265	2300	100	60.95	Cum
	D17	813	2300	100	186.99	Cum
	D19	1642	2600	100	426.92	Cum
	D20	40	2600	100	10.40	Cum
	D21	1164	2900	100	337.56	Cum
	D22	245	3200	100	78.40	Cum
	D23	691	3500	100	241.85	Cum
	D24	680	3800	100	258.40	Cum
	Culvert					
	C1	352	1250	100	44.00	Cum
	C2	160	1250	100	20.00	Cum
	C4	405	1400	100	56.70	Cum
	C7	128	1550	100	19.84	Cum
	C8	112	1550	100	17.36	Cum
	C9	128	1700	100	21.76	Cum
	C10	64	1700	100	10.88	Cum
	C11	16	2000	100	3.20	Cum
	C12	64	2000	100	12.80	Cum
	C14	32	2500	100	8.00	Cum
	C15	16	2500	100	4.00	Cum
	C16	46	2800	100	12.88	Cum
	C17	16	2800	100	4.48	Cum
	C18	16	3100	100	4.96	Cum
	C19	48	3100	100	14.88	Cum
	C22	32	3700	100	11.84	Cum
	C23	32	4000	100	12.80	Cum
	C24	16	4300	100	6.88	Cum

Sl no	Description	L(m)	W(mm)	H/D(mm)	Qty	Unit
	Silt chamber					
	C3/55 (1800x900)	2.9	2.5	0.1	0.73	Cum
	C271 (1800x1050)	2.9	2.5	0.1	0.73	Cum
	C22 (2700x1500)	3.8	2.5	0.1	0.95	Cum
	C23 (3000x1500)	4.1	2.5	0.1	1.03	Cum
					8231.29	Cum
5	Providing and laying RCC design mix concrete of M-30 grade in drain including supply of all materials, centering and shuttering, labour, T&P for completion of work. All necessary arrangement for vibration, compaction & curing etc. complete as directed by Engineer In charge. Cost of reinforcement is not included here.					
	Base Slab					
	D1	39115	750	150	4400.44	Cum
	D2	1601	750	150	180.11	Cum
	D3	60	900	150	8.10	Cum
	D4	10141	900	150	1369.04	Cum
	D5	149	900	150	20.12	Cum
	D7	1892	1050	150	297.99	Cum
	D8	2017	1050	150	317.68	Cum
	D9	2266	1200	150	407.88	Cum
	D10	263	1200	150	47.34	Cum
	D12	1838	1500	150	413.55	Cum
	D13	351	1500	150	78.98	Cum
	D14	204	1800	150	55.08	Cum
	D15	385	1800	150	103.95	Cum
	D16	265	2100	150	83.48	Cum
	D17	813	2100	150	256.10	Cum
	D19	1642	2400	150	591.12	Cum
	D20	40	2400	150	14.40	Cum
	D21	1164	2700	150	471.42	Cum
	D22	245	3000	150	110.25	Cum
	D23	691	3300	150	342.05	Cum
	D24	680	3600	150	367.20	Cum
	Wall					
	D1	39115	150	600	7040.70	Cum
	D2	1601	150	750	360.23	Cum
	D3	60	150	600	10.80	Cum
	D4	10141	150	750	2281.73	Cum
	D5	149	150	900	40.23	Cum
	D7	1892	150	750	425.70	Cum
	D8	2017	150	900	544.59	Cum
	D9	2266	150	900	611.82	Cum
	D10	263	150	1050	82.85	Cum
	D12	1838	150	1050	578.97	Cum
	D13	351	150	1350	142.16	Cum
	D14	204	150	1050	64.26	Cum
	D15	385	150	1200	138.60	Cum
	D16	265	150	1200	95.40	Cum
	D17	813	150	1350	329.27	Cum
	D19	1642	150	1500	738.90	Cum
	D20	40	150	1650	19.80	Cum
	D21	1164	150	1650	576.18	Cum
	D22	245	150	1800	132.30	Cum
	D23	691	150	1800	373.14	Cum
	D24	680	150	2400	489.60	Cum
					25013.51	**Cum**

Sl no	Description	L(m)	W(mm)	H/D(mm)	Qty	Unit
	Culvert Base Slab					
	C1	352	1050	300	110.88	Cum
	C2	160	1050	300	50.40	Cum
	C4	405	1200	300	145.80	Cum
	C7	128	1350	300	51.84	Cum
	C8	112	1350	300	45.36	Cum
	C9	128	1500	300	57.60	Cum
	C10	64	1700	300	32.64	Cum
	C11	16	2000	300	9.60	Cum
	C12	64	2000	400	51.20	Cum
	C14	32	2300	400	29.44	Cum
	C15	16	2300	400	14.72	Cum
	C16	46	2600	400	47.84	Cum
	C17	16	2600	400	16.64	Cum
	C18	16	2900	400	18.56	Cum
	C19	48	2900	400	55.68	Cum
	C22	32	3500	400	44.80	Cum
	C23	32	3800	400	48.64	Cum
	C24	16	4100	400	26.24	Cum
	Culvert Top Slab					
	C1	352	1050	300	110.88	Cum
	C2	160	1050	300	50.40	Cum
	C4	405	1200	300	145.80	Cum
	C7	128	1350	300	51.84	Cum
	C8	112	1350	300	45.36	Cum
	C9	128	1500	300	57.60	Cum
	C10	64	1500	300	28.80	Cum
	C11	16	1800	300	8.64	Cum
	C12	64	1800	300	34.56	Cum
	C14	32	2300	300	22.08	Cum
	C15	16	2300	300	11.04	Cum
	C16	46	2600	300	35.88	Cum
	C17	16	2600	300	12.48	Cum
	C18	16	2900	300	13.92	Cum
	C19	48	2900	300	41.76	Cum
	C22	32	3500	300	33.60	Cum
	C23	32	3800	300	36.48	Cum
	C24	16	4100	300	19.68	Cum
	Culvert Wall					
	C1	352	300	300	63.36	Cum
	C2	160	300	450	43.20	Cum
	C4	405	300	450	109.35	Cum
	C7	128	300	450	34.56	Cum
	C8	112	300	600	40.32	Cum
	C9	128	300	600	46.08	Cum
	C10	64	300	750	28.80	Cum
	C11	16	300	600	5.76	Cum
	C12	64	300	750	28.80	Cum
	C14	32	400	750	19.20	Cum
	C15	16	400	900	11.52	Cum
	C16	46	400	900	33.12	Cum
	C17	16	400	1050	13.44	Cum
	C18	16	400	1050	13.44	Cum
	C19	48	400	1200	46.08	Cum
	C22	32	400	1500	38.40	Cum
	C23	32	400	1500	38.40	Cum
	C24	16	400	2100	26.88	Cum
					2259.39	**Cum**

Sl no	Description	L(m)	W(mm)	H/D(mm)	Qty	Unit
	Silting Chamber (W+600, L=2500, D=D+500					
	Base slab					
	C3/55 (1800x900)	2700	2500	150	1.01	Cum
	C271 (1800x1050)	2700	2500	150	1.01	Cum
	C22 (2700x1500)	3600	2500	150	1.35	Cum
	C23 (3000x1500)	3900	2500	150	1.46	Cum
	Wall					
	C3/55 (1800x900)	2700	2500	1500	2.34	Cum
	C271 (1800x1050)	2700	2500	1650	2.57	Cum
	C22 (2700x1500)	3600	2500	2100	3.84	Cum
	C23 (3000x1500)	3900	2500	2100	4.03	Cum
					17.61	Cum
				Total	27290.47	Cum
6	Shifting of segment from casting Yard to site by trailer including loading, unloading, placing and aligning the segment as per the line level.					
	Qty Same as item No.4			Total	27290.47	Cum
7	S/F M:S (tor steel or plain) in plain work such as R:C:C or R:B work including bending for proper shape as necessary including bending for proper completion of the work and including supply of all steel & wastage, bend, hooks, and authorised overlapping shall be measured etc all complete as per direction of engineer in charge.					
	Calculaton attached in Annexure.					
	Drain					
	D1 (450x300)	39115.00	21.55		842928.250	Kg
	D2	1601.00	23.55		37703.550	Kg
	D3	60.00	22.95		1377.000	Kg
	D4	10141.00	25.73		260927.930	Kg
	D5	149.00	26.94		4014.060	Kg
	D7	1892.00	26.52		50175.840	Kg
	D8	2017.00	28.34		57161.780	Kg
	D9	2266.00	28.94		65578.040	Kg
	D10	263.00	30.15		7929.450	Kg
	D12	1838.00	33.73		61995.740	Kg
	D13	351.00	36.15		12688.650	Kg
	D14	204.00	47.27		9643.080	Kg
	D15	385.00	50.74		19534.900	Kg
	D16	265.00	55.00		14575.000	Kg
	D17	813.00	56.89		46251.570	Kg
	D19	1642.00	62.24		102198.080	Kg
	D20	40.00	65.71		2628.400	Kg
	D21	1164.00	82.60		96146.400	Kg
	D22	245.00	91.31		22370.950	Kg
	D23	691.00	120.95		83576.450	Kg
	D24	680.00	134.57		91507.600	Kg
	Parapet				13023.15	Kg
	Silting chamber				1383.96	Kg
	Culvert @ 1.25%				221702.6438	Kg
				Total	2127022.4688	Kg
	Add:- 5% Extra				106351.1234	Kg
				Total	2233373.592	Kg

Sl no	Description	L(m)	W(mm)	H/D(mm)	Qty	Unit
8	Providing and laying RCC of M30 grade concrete inside forms including all materials, centring and shuttering, labour, T&P for for parapet wall of culvert. All necessary arrangement for vibration, compaction & curing etc. at yard complete as directed by Engineer In charge. Cost of reinforcement is not included here					
	Parapet for culvert					
	C10	32	200	750	9.60	Cum
	C11	208	200	750	62.40	Cum
	C12	48	200	750	14.40	Cum
	C14	16	200	750	4.80	Cum
	C15	32	200	750	9.60	Cum
	C16	48	200	750	14.40	Cum
	C17	25	200	750	7.50	Cum
	C18	16	200	750	4.80	Cum
	C19	48	200	750	14.40	Cum
	C22	16	200	750	4.80	Cum
	C23	48	200	750	14.40	Cum
	C24	16	200	750	4.80	Cum
				Total	**165.90**	Cum
9	Providing and fixing of screening fixtures as per design at silting chamber of different sizes					
				Total	**10.00**	**Nos.**
10	(Less)Rebate for refused material/malwa used by contractor					
	50% of Item No.2			**Total**	**42981.02**	**cum**

Annexure 1: Calculations for reinforcement quantity

Sl no	Description	Unit		L	W	H/D	Qty
D1	10 Rmt Drain Size (450x300)						
	Excavation	Cum		10	1250	550	6.88
	PCC	Cum		10	950	100	0.95
	RCC Base	Cum		10	750	150	1.13
	Wall	Cum		20	150	600	1.80
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		600	24.00
	R/F Base 8@200 C/C both way		102	850			34.25
			10	10000			39.50
	Wall (8@200 C/C both way)		204	975			78.57
			16	10000			63.20
							215.51
					Kg/Rmt		**21.55**

Annexure 2

Sl no	Description	Unit		L	W	H/D	Qty
D2	10 Rmt Drain Size (450x450)						
	Excavation	Cum		10	1250	700	8.75
	PCC	Cum		10	950	100	0.95
	RCC Base	Cum		10	750	150	1.13
	Wall	Cum		20	150	750	2.25
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		750	30.00
	R/F Base 8@200 C/C both way		102	850			34.25
			12	10000			47.40
	Wall (8@200 C/C both way)		204	1125			90.65
			16	10000			63.20
							235.50
					Kg/Rmt		**23.55**

Annexure 3

Sl no	Description	Unit		L	W	H/D	Qty
D3	10 Rmt Drain Size (600x300)						
	Excavation	Cum		10	1400	550	7.70
	PCC	Cum		10	1100	100	1.10
	RCC Base	Cum		10	900	150	1.35
	Wall	Cum		20	150	600	1.80
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		600	24.00
	R/F Base 8@200 C/C both way		102	1000			40.29
			12	10000			47.40
	Wall (8@200 C/C both way)		204	975			78.57
			16	10000			63.20
							229.46
					Kg/Rmt		**22.95**

Annexure 4

Sl no	Description	Unit		L	W	H/D	Qty
D4	10 Rmt Drain Size (600x450)						
	Excavation	Cum		10	1400	700	9.80
	PCC	Cum		10	1100	100	1.10
	RCC Base	Cum		10	900	150	1.35
	Wall	Cum		20	150	750	2.25
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		750	30.00
	R/F Base 8@200 C/C both way		102	1000			40.29
			12	10000			47.40
	Wall (8@200 C/C both way)		204	1125			90.65
			20	10000			79.00
							257.34
					Kg/Rmt		**25.73**

Annexure 5

Sl no	Description	Unit		L	W	H/D	Qty
D5	10 Rmt Drain Size (600x600)						
	Excavation	Cum		10	1400	850	11.90
	PCC	Cum		10	1100	100	1.10
	RCC Base	Cum		10	900	150	1.35
	Wall	Cum		20	150	900	2.70
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		900	36.00
	R/F Base 8@200 C/C both way		102	1000			40.29
			12	10000			47.40
	Wall (8@200 C/C both way)		204	1275			102.74
			20	10000			79.00
							269.43
					Kg/Rmt		**26.94**

Annexure 6

Sl no	Description	Unit		L	W	H/D	Qty
D7	10 Rmt Drain Size (750x450)						
	Excavation	Cum		10	1400	850	11.90
	PCC	Cum		10	1100	100	1.10
	RCC Base	Cum		10	900	150	1.35
	Wall	Cum		20	150	750	2.25
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		750	30.00
	R/F Base 8@200 C/C both way		102	1000			40.29
			14	10000			55.30
	Wall (8@200 C/C both way)		204	1125			90.65
			20	10000			79.00
							265.24
					Kg/Rmt		**26.52**

Annexure 7

Sl no	Description	Unit		L	W	H/D	Qty
D8	10 Rmt Drain Size (750x600)						
	Excavation	Cum		10	1550	700	10.85
	PCC	Cum		10	1250	100	1.25
	RCC Base	Cum		10	1050	150	1.58
	Wall	Cum		20	150	900	2.70
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		900	36.00
	R/F Base 8@200 C/C both way		102	1150			46.33
			14	10000			55.30
	Wall (8@200 C/C both way)		204	1275			102.74
			20	10000			79.00
							283.37
					Kg/Rmt		**28.34**

Annexure 8

Sl no	Description	Unit		L	W	H/D	Qty
D9	10 Rmt Drain Size (900x600)						
	Excavation	Cum		10	1700	850	14.45
	PCC	Cum		10	1400	100	1.40
	RCC Base	Cum		10	1200	150	1.80
	Wall	Cum		20	150	900	2.70
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		900	36.00
	R/F Base 8@200 C/C both way		102	1300			52.38
			14	10000			55.30
	Wall (8@200 C/C both way)		204	1275			102.74
			20	10000			79.00
							289.42
					Kg/Rmt		**28.94**

Annexure 9

Sl no	Description	Unit		L	W	H/D	Qty
D10	10 Rmt Drain Size (900x750)						
	Excavation	Cum		10	1700	0	0.00
	PCC	Cum		10	1400	100	1.40
	RCC Base	Cum		10	1200	150	1.80
	Wall	Cum		20	150	1050	3.15
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1050	42.00
	R/F Base 8@200 C/C both way		102	1300			52.38
			14	10000			55.30
	Wall (8@200 C/C both way)		204	1425			114.83
			20	10000			79.00
							301.50
					Kg/Rmt		**30.15**

Annexure 10

Sl no	Description	Unit		L	W	H/D	Qty
D12	10 Rmt Drain Size (1200x750)						
	Excavation	Cum		10	2000	850	17.00
	PCC	Cum		10	1700	100	1.70
	RCC Base	Cum		10	1500	150	2.25
	Wall	Cum		20	150	1050	3.15
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1050	42.00
	R/F Base 8@200 C/C both way		102	1600			64.46
			16	10000			63.20
	Wall (8@200 C/C both way)		204	1425			114.83
			24	10000			94.80
							337.29
					Kg/Rmt		**33.73**

Annexure 11

Sl no	Description	Unit		L	W	H/D	Qty
D13	10 Rmt Drain Size (1200x1050)						
	Excavation	Cum		10	2000	2000	40.00
	PCC	Cum		10	1700	100	1.70
	RCC Base	Cum		10	1500	150	2.25
	Wall	Cum		20	150	1350	4.05
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1350	54.00
	R/F Base 8@200 C/C both way		102	1600			64.46
			16	10000			63.20
	Wall (8@200 C/C both way)		204	1725			139.00
			24	10000			94.80
							361.46
					Kg/Rmt		**36.15**

Annexure 12

Sl no	Description	Unit		L	W	H/D	Qty
D14	10 Rmt Drain Size (1500x750)						
	Excavation	Cum		10	2300	1000	23.00
	PCC	Cum		10	2000	100	2.00
	RCC Base	Cum		10	1800	150	2.70
	Wall	Cum		20	150	1050	3.15
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1050	42.00
	R/F Base 10@200 C/C		102	1900			119.57
	8@200c/c		20	10000			79.00
	Wall (10@200 C/C)		204	1425			179.36
	8@200c/c		24	10000			94.80
							472.74
					Kg/Rmt		**47.27**

Annexure 13

Sl no	Description	Unit		L	W	H/D	Qty
D15	10 Rmt Drain Size (1500x900)						
	Excavation	Cum		10	2300	1000	23.00
	PCC	Cum		10	2000	100	2.00
	RCC Base	Cum		10	1800	150	2.70
	Wall	Cum		20	150	1200	3.60
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1200	48.00
	R/F Base 10@200 C/C		102	1900			119.57
	8@200c/c		20	10000			79.00
	Wall (10@200 C/C)		204	1575			198.24
	8@200c/c		28	10000			110.60
							507.42
					Kg/Rmt		**50.74**

Annexure 14

Sl no	Description	Unit		L	W	H/D	Qty
D16	10 Rmt Drain Size (1800x900)						
	Excavation	Cum		10	2600	1150	29.90
	PCC	Cum		10	2300	100	2.30
	RCC Base	Cum		10	2100	150	3.15
	Wall	Cum		20	150	1200	3.60
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1200	48.00
	R/F Base 10@200 C/C		102	2200			138.45
	8@200c/c		22	10000			86.90
	Wall (10@200 C/C)		204	1575			198.24
	8@200c/c		32	10000			126.40
							550.00
					Kg/Rmt		**55.00**

Annexure 15

Sl no	Description	Unit		L	W	H/D	Qty
D17	10 Rmt Drain Size (1800x1050)						
	Excavation	Cum		10	2600	1300	33.80
	PCC	Cum		10	2300	100	2.30
	RCC Base	Cum		10	2100	150	3.15
	Wall	Cum		20	150	1350	4.05
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1350	54.00
	R/F Base 10@200 C/C		102	2200			138.45
	8@200c/c		22	10000			86.90
	Wall (10@200 C/C)		204	1725			217.12
	8@200c/c		32	10000			126.40
							568.88
					Kg/Rmt		**56.89**

Annexure 16

Sl no	Description	Unit		L	W	H/D	Qty
D19	10 Rmt Drain Size 2100x1200)						
	Excavation	Cum		10	2900	1450	42.05
	PCC	Cum		10	2600	100	2.60
	RCC Base	Cum		10	2400	150	3.60
	Wall	Cum		20	150	1500	4.50
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1500	60.00
	R/F Base 10@200 C/C		102	2500			157.34
	8@200c/c		22	10000			86.90
	Wall (10@200 C/C)		204	1875			236.00
	8@200c/c		36	10000			142.20
							622.44
					Kg/Rmt		**62.24**

Annexure 17

Sl no	Description	Unit		L	W	H/D	Qty
D20	10 Rmt Drain Size (2100x1350)						
	Excavation	Cum		10	2900	1600	46.40
	PCC	Cum		10	2600	100	2.60
	RCC Base	Cum		10	2400	150	3.60
	Wall	Cum		20	150	1650	4.95
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1650	66.00
	R/F Base 10@200 C/C		102	2500			157.34
	8@200c/c		26	10000			102.70
	Wall (10@200 C/C)		204	2025			254.88
	8@200c/c		36	10000			142.20
							657.12
					Kg/Rmt		**65.71**

Annexure 18

Sl no	Description	Unit		L	W	H/D	Qty
D21	10 Rmt Drain Size (2400x1350)						
	Excavation	Cum		10	3200	1600	51.20
	PCC	Cum		10	2900	100	2.90
	RCC Base	Cum		10	2700	150	4.05
	Wall	Cum		20	150	1650	4.95
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1650	66.00
	R/F Base 10@200 C/C		102	2800			176.22
	10@200c/c		28	10000			172.76
	Wall (10@200 C/C)		204	2025			254.88
	10@200c/c		36	10000			222.12
							825.98
					Kg/Rmt		**82.60**

Annexure 19

Sl no	Description	Unit		L	W	H/D	Qty
D22	10 Rmt Drain Size (2700x1500)						
	Excavation	Cum		10	3500	1750	61.25
	PCC	Cum		10	3200	100	3.20
	RCC Base	Cum		10	3000	150	4.50
	Wall	Cum		20	150	1800	5.40
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1800	72.00
	R/F Base 10@200 C/C		102	3100			195.10
	10@200c/c		32	10000			197.44
	Wall (10@200 C/C)		204	2175			273.76
	10@200c/c		40	10000			246.80
							913.10
					Kg/Rmt		**91.31**

Annexure 20

Sl no	Description	Unit		L	W	H/D	Qty
D23	10 Rmt Drain Size (3000x1500)						
	Excavation	Cum		10	3800	2350	89.30
	PCC	Cum		10	3500	100	3.50
	RCC Base	Cum		10	3300	150	4.95
	Wall	Cum		20	150	1800	5.40
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1800	72.00
	R/F Base 10@200 C/C		102	3400			308.65
	10@200c/c		38	10000			234.46
	Wall (10@200 C/C)		204	2175			394.89
	10@200c/c		44	10000			271.48
							1209.49
					Kg/Rmt		**120.95**

Annexure 21

Sl no	Description	Unit		L	W	H/D	Qty
D24	10 Rmt Drain Size (3300x2100)						
	Excavation	Cum		10	4100	2350	96.35
	PCC	Cum		10	3800	100	3.80
	RCC Base	Cum		10	3600	150	5.40
	Wall	Cum		20	150	2400	7.20
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		2400	96.00
	R/F Base 10@200 C/C		102	3700			335.89
	10@200c/c		38	10000			234.46
	Wall (10@200 C/C)		204	2775			503.83
	10@200c/c		44	10000			271.48
							1345.66
					Kg/Rmt		**134.57**

BILL OF QUANTITY

(BOQ Attached)

Name of Work:- Upgradation of All Internal & External Drains of Industrial Area Masuri Gulawathi Road, Hapur						
S no.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT	
1	Dismantling reinforced cement concrete or reinforced brick work including stacking of materials as directed by the engineer-in-charge within a distance of 60 metre (200 feet)	Cum	454.50	1340.00	609,030.00	SOR2022/694/ 17.4
2	Excavation (by mechanical/manual mean) in foundation in mixed soil with Moorum, shingle, kankar, bricks (requiring the use of special tools and plant such as pickaxes, sabbals etc.) including lift up to 1.5m and lead up to 30m. and including filling watering and ramming of excavated earth into the space between the building and the sides of foundation trenches or into the plinth and removal and disposal of surplus earth as directed by the Engineer in charge up to a distance of 30m. from the foundation trenches including all T&P phowarah and basket etc. complete	Cum.	85962.04	115.00	9,885,634.60	SOR2022/252
3	Extra rates for quantities of works, executed: In or under foul position, including pumping out water as required.	Cum.	85962.04	28.75	2,471,408.65	
4	Cement Concrete with 4 cm gauge approved stone ballast, coarse sand & cement in the proportion of 8:4:1 including supply of all materials, labour, Tools & plants etc. required for proper completion of the work.	Cum.	8231.29	6100.00	50,210,869.00	SOR2022/281
5	Providing and laying precast RCC drain of M30 grade concrete inside forms including all materials, centring and shuttering, labour, T&P for fixing of the same. All necessary arrangement for vibration, compaction & curing etc. at yard complete as directed by Engineer In charge. Cost of reinforcement is not included here	Cum	27290.47	8545.15	233,201,159.72	AOR/ SOR2022/283(a)/ 5.15
6	Shifting of segment from casting yard to site by trailer including loading, unloading, placing and aligning the segment as per the line level.	Cum	27290.47	1800.00	49,122,846.00	AOR
7	S/F M:S (tor steel or plain) in plain work such as R:C:C work including bending for proper shape as necessary including bending for proper completion of the work and including supply of all steel & wastage, bend, hooks, and authorised overlapping shall be measured etc all complete as per direction of engineer in charge. Thermo-Mechanically Treated bars.	Kg	2233373.59	79.85	178,334,881.34	MR & AOR based on MORTH
8	Providing and laying RCC of M30 grade concrete inside forms including all materials, centring and shuttering, labour, T&P for for parapet wall of culvert. All necessary arrangement for vibration, compaction & curing etc. at yard complete as directed by Engineer In charge. Cost of reinforcement is not included here	Cum	165.90	8545.15	1,417,640.39	AOR based on SOR
9	Providing and fixing of screening fixtures as per design at silting chamber of different sizes	Nos	10.00	25000.00	250,000.00	AOR based on SOR
10	(Less)Rebate for refused material/malwa used by contractor	Cum.	-42981.02	250.00	(10,745,255.00)	SOR2022/231(a)
			TOTAL RS.		514,758,214.70	

SUMMARY OF COST

(Detailed cost Summary attached)

UPSIDA

Name of Work:- Upgradation of All Internal & External Drains of Industrial Area Masuri Gulawathi Road, Hapur

S. No.	Particulars	Amount (INR)
1	Cost of Work	514,758,214.70
2	GST @ 18% on above	92,656,478.65
	Total cost including GST	**607,414,693.34**
3	Add for Contingencies on work	5,00,000.00
4	Add for Third Party @1.5% on work	9,111,220.40
5	Add for Advertisement L.S.	500,000.00
	Total Cost	**617,025,913.74**
	Say	**617,025,913.74**
		6170.26 Lacs

Design And

DRAWINGS

(Attached)

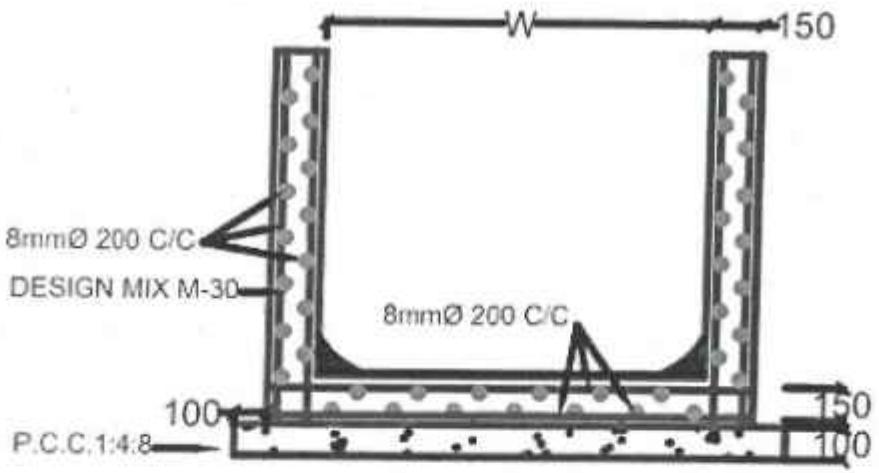
From Table 3, it is observed that the proposed depth of drains varies from 300 mm to 2100 mm.

The RC sections for various depths are provided in Figures 24 to Figures 26. The culvert sections are provided in Figures 27&28 and for silt chamber refer figure 29.

The grade of concrete proposed is M30 and Reinforcement proposed is Fe 500.

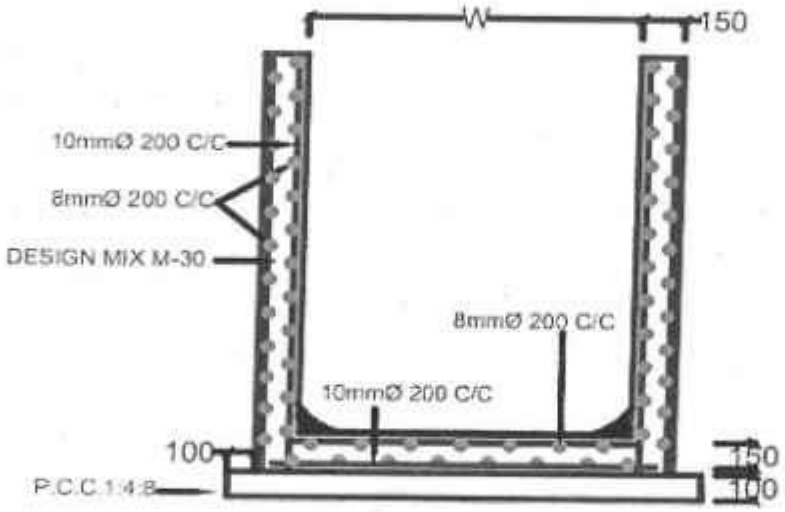
To enhance the quality and speed of construction, it is proposed to use precast drains.

The details of measurement and bill of quantity for the entire drain sections along with culvert of various lengths is provided in 'Measurement' and 'Bill of Quantity' Sections, respectively. The calculations for reinforcement quantities for different drains and culverts are given in Annexures 1 to 21.



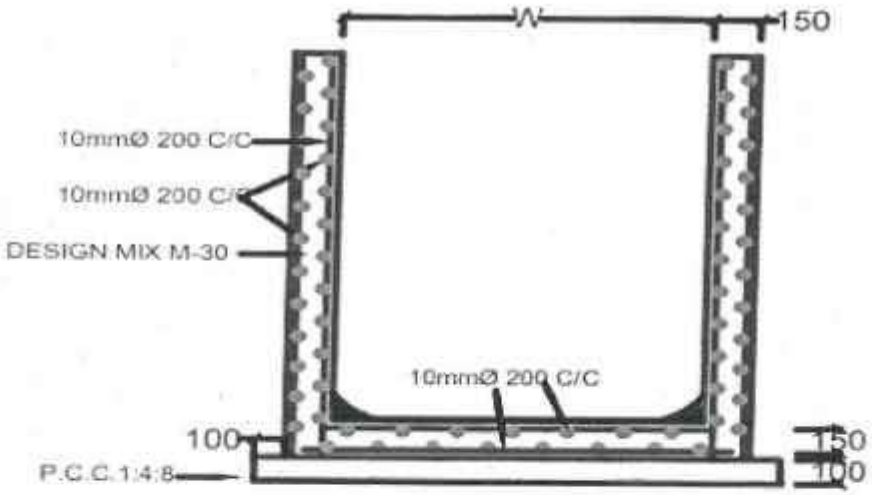
X SEC- For D1 to D10 Type Drain)

Fig. 24



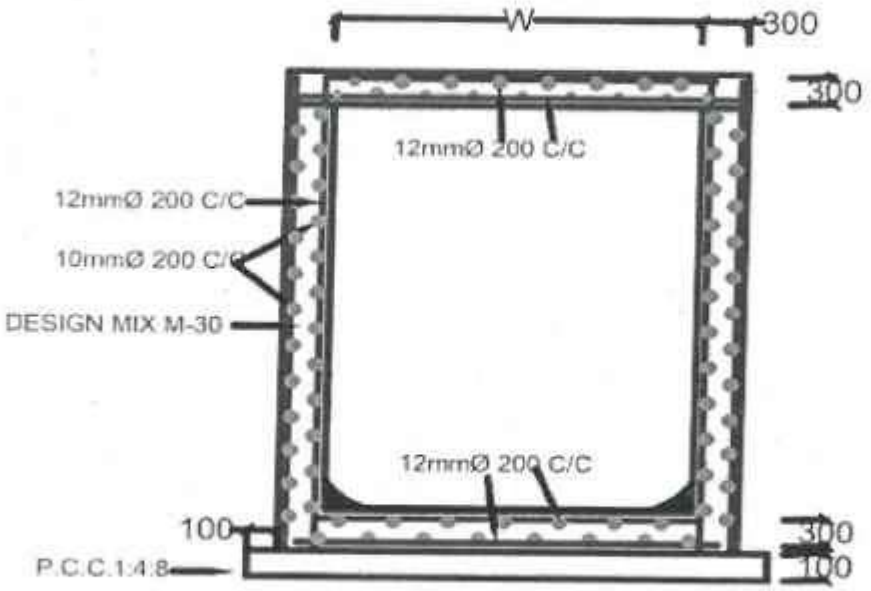
X SEC- For D11 to D16 Type Drain

Fig. 25



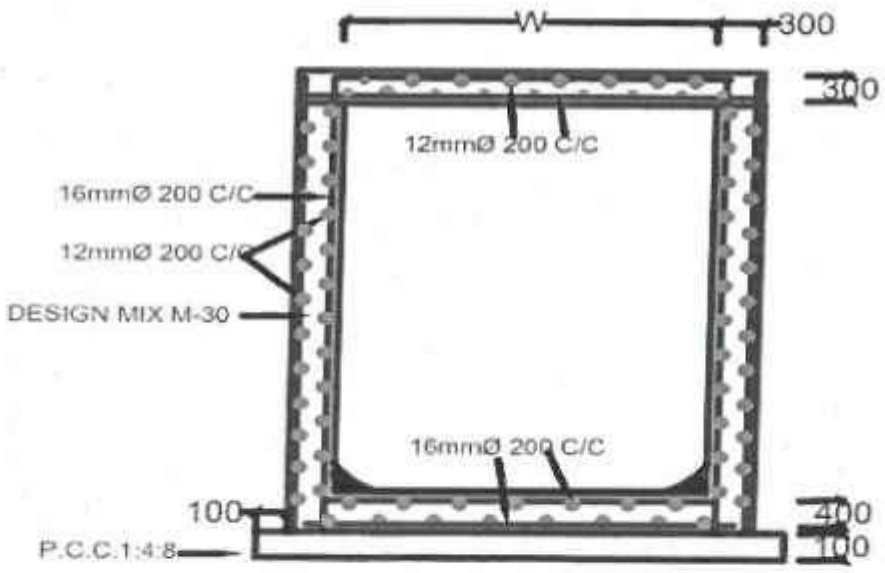
X SEC- For D17 to D23 Type Drain

Fig.26



Culvert SEC- For Span < 1000 mm

Fig. 27



Culvert SEC- For Span > 1000 mm

Fig. 28

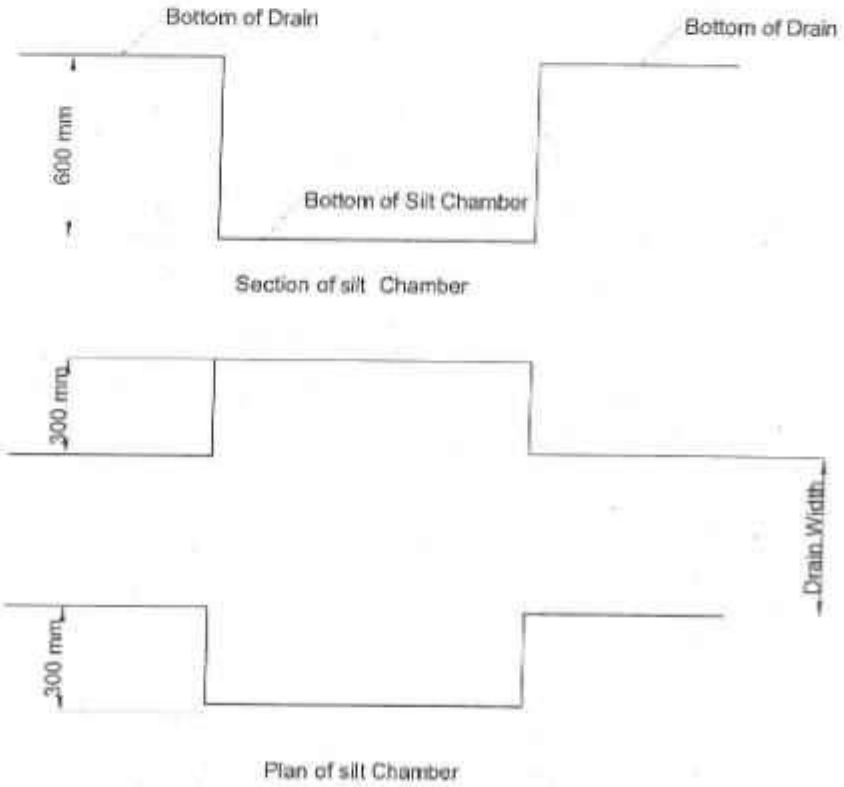

Bottom of Drain
Bottom of Drain
600 mm
Bottom of Silt Chamber
Section of silt Chamber
300 mm
Drain Width
300 mm
Plan of silt Chamber

Figure 29

PHOTOGRAPH

(Book let Attached)

ANALYSIS OF RATES

Phase 2

Figure: Location P1

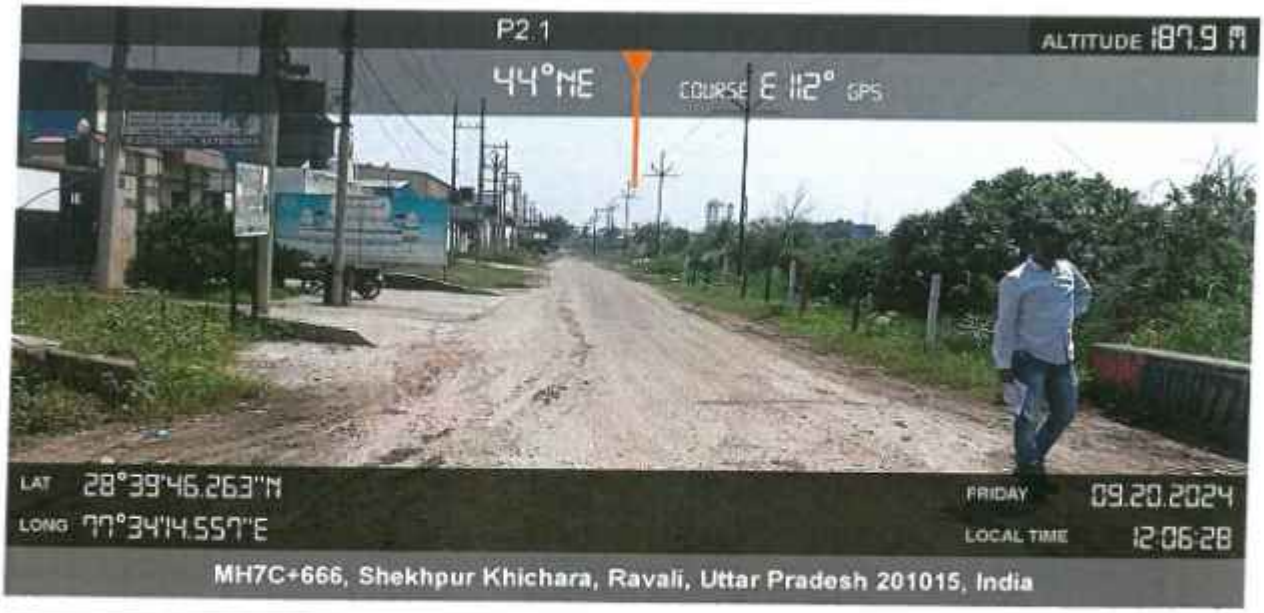


Figure: Location P2

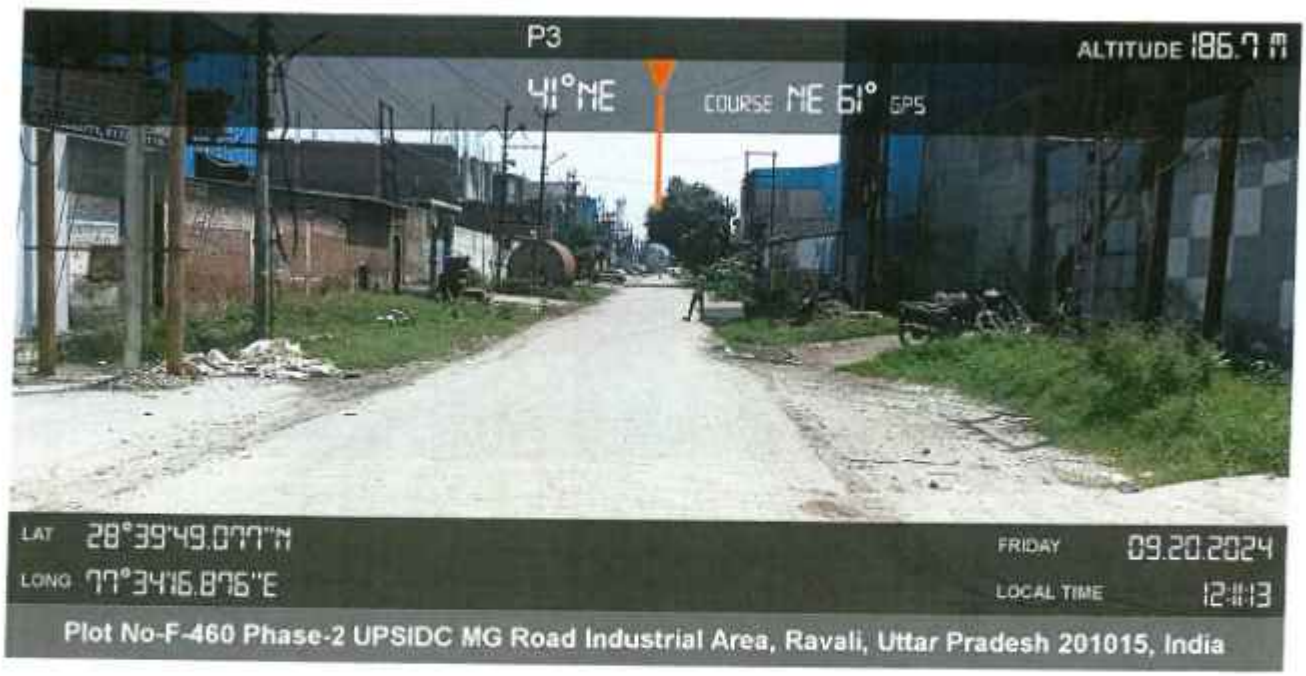


Figure: Location P3

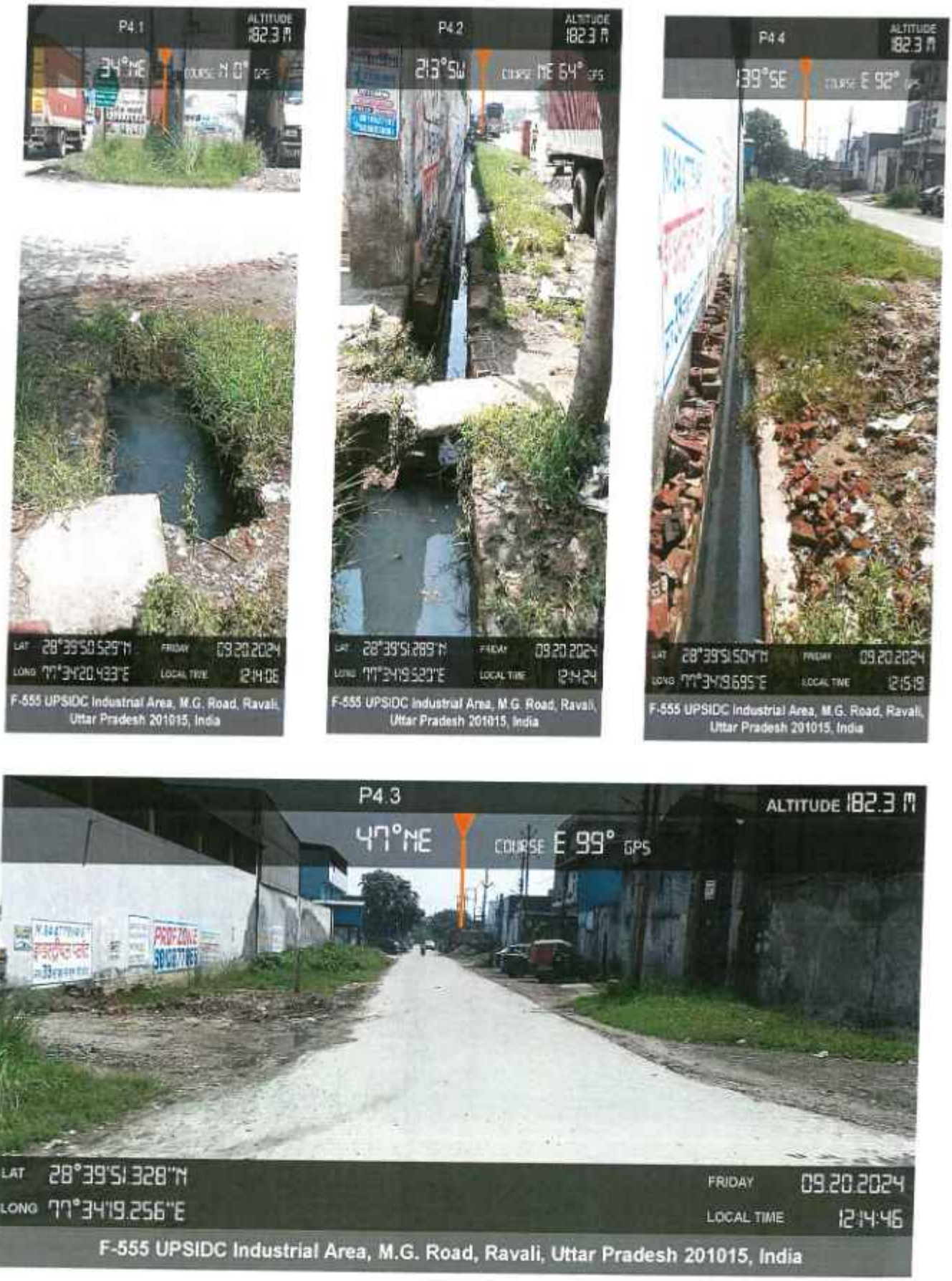


Figure: Location P4

Figure: Location P5

Figure: Location P6

Figure: Location P7

Figure: Location P8

Figure: Location P9

Figure: Location P10-A

Figure: Location P10-B

Figure: Location P11

Figure: Location P12

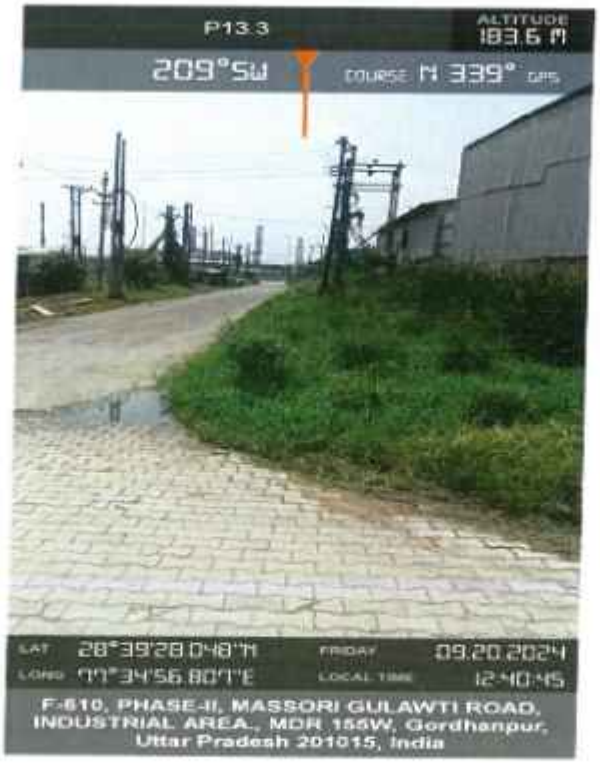


Figure: Location P13

Figure: Location P14

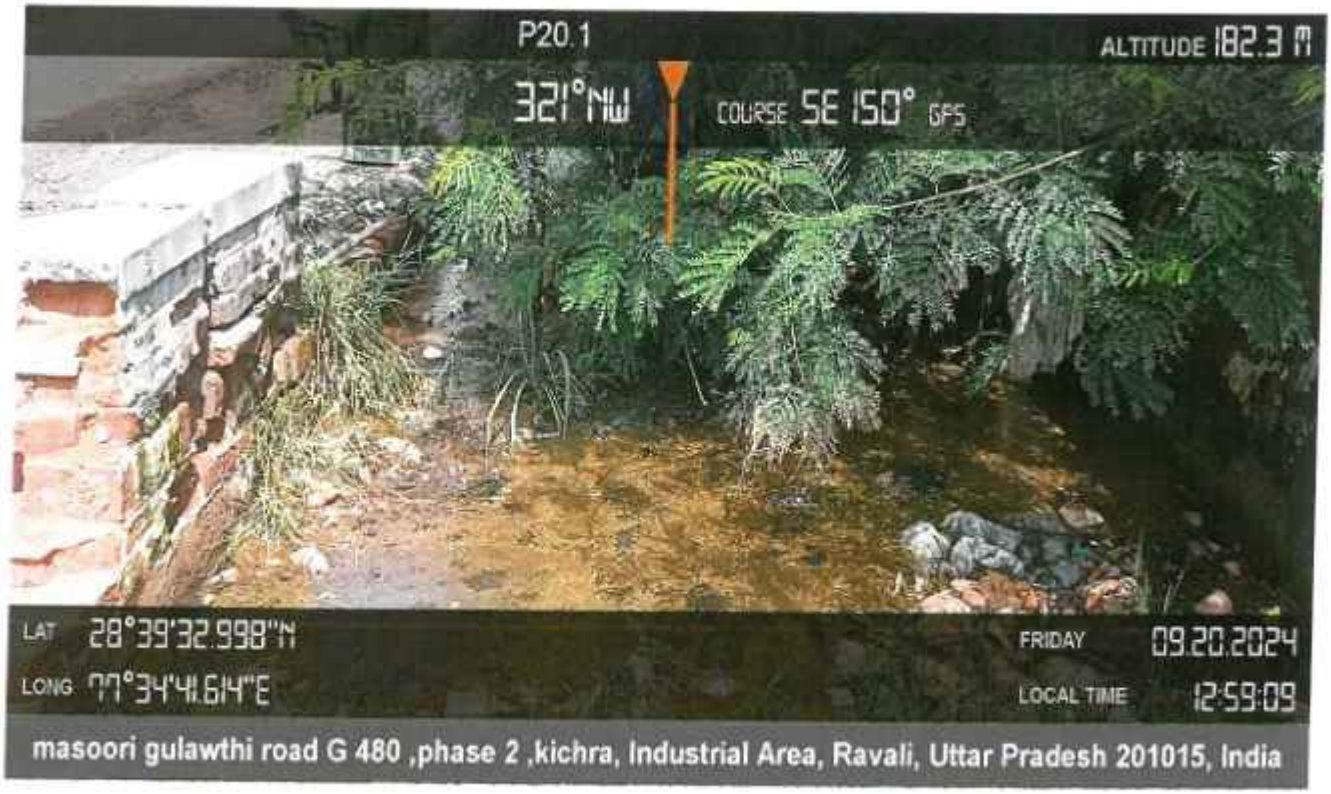
Figure: Location P15

Figure: Location P16

Figure: Location P17

Figure: Location P18

Figure: Location P19



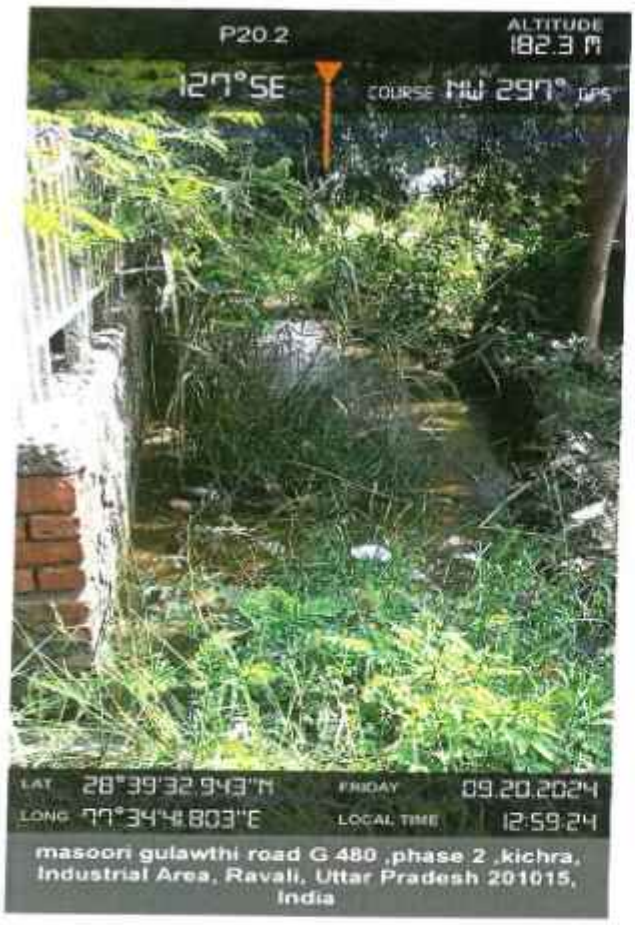


Figure: Location P 20

Figure: Location P 21

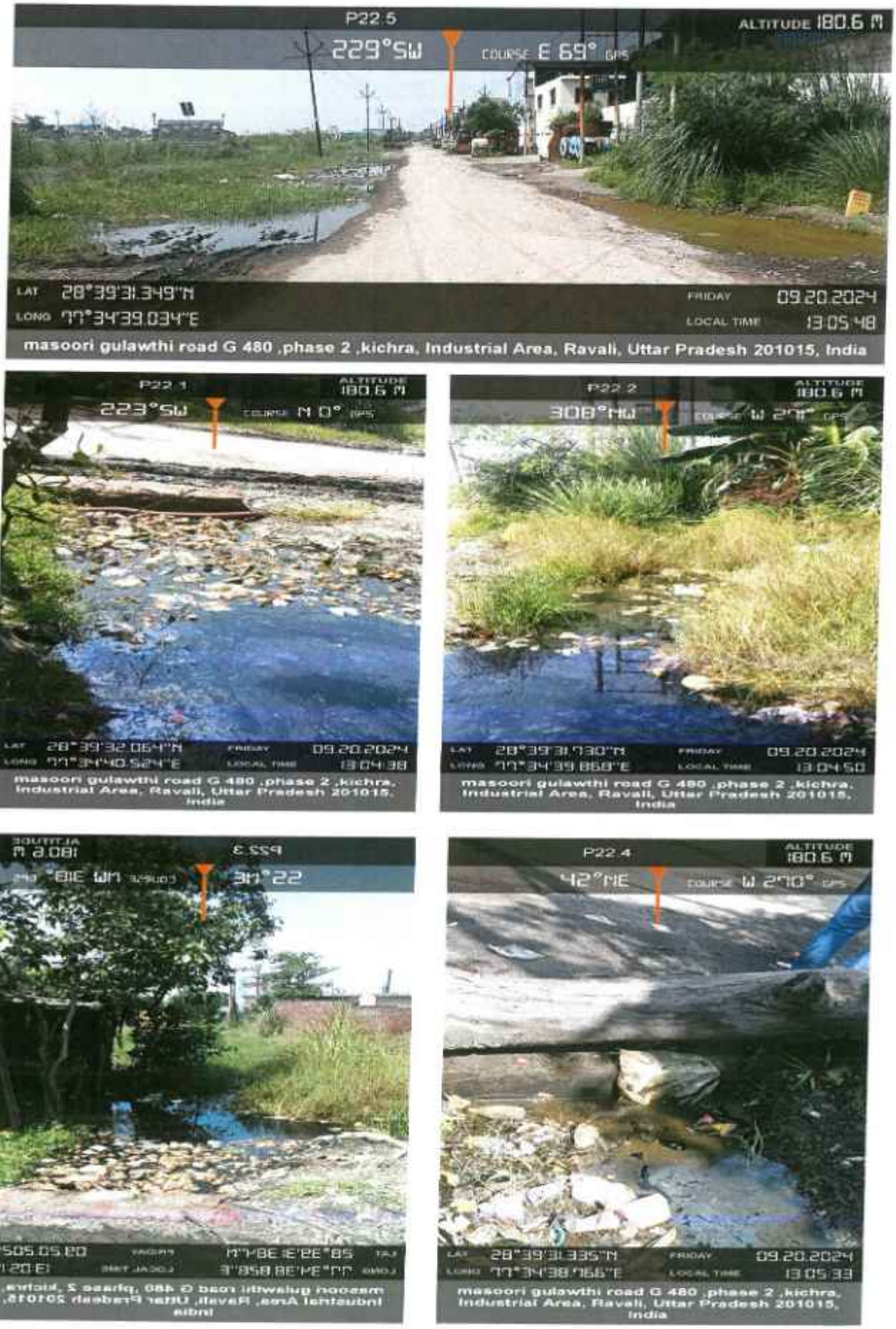


Figure: Location P 22

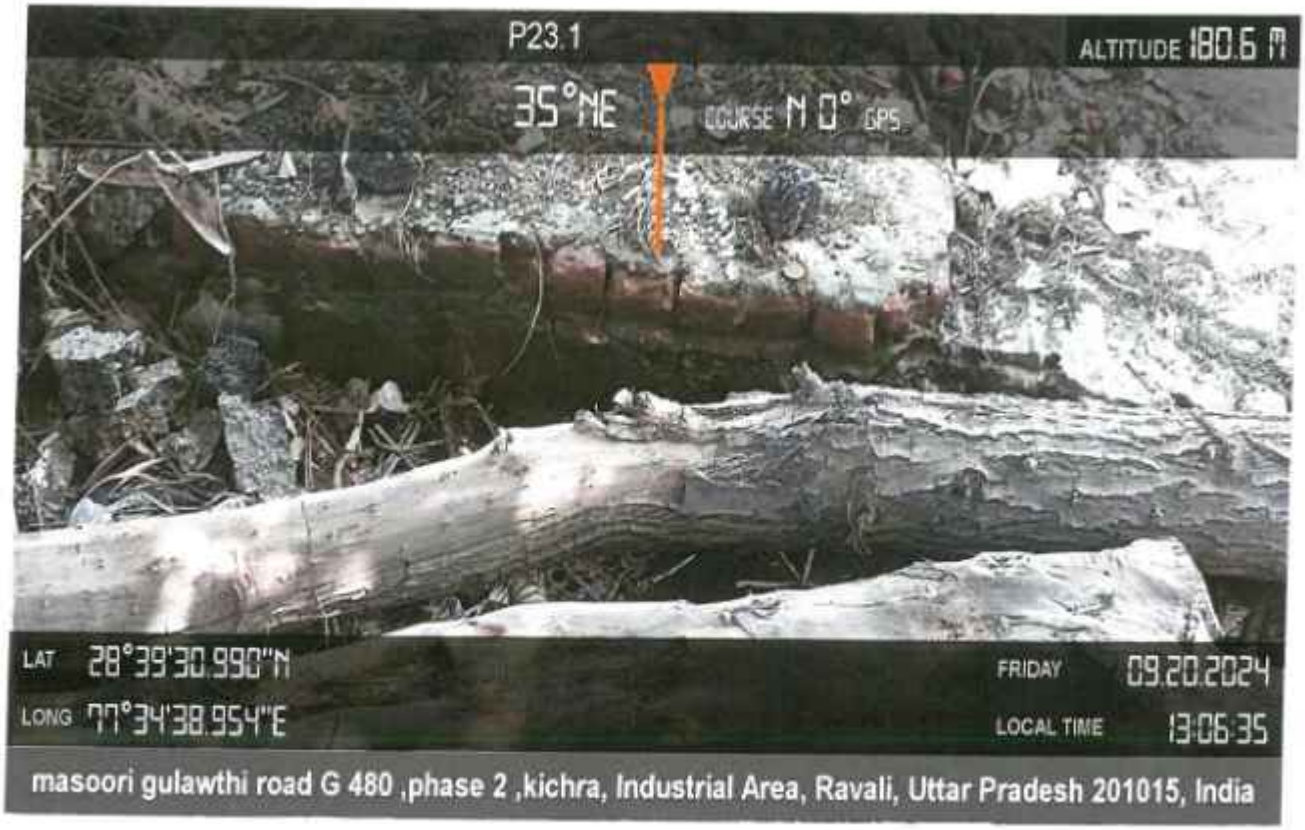


Figure: Location P 23-A

Figure: Location P 23-B

Figure: Location P 23-C

Phase -3

Figure: Location P C1

Figure: Location P 24-A

Figure: Location P 24-B

Figure: Location P 24-C

Figure: Location P 25

Figure: Location P 26

Figure: Location P 27

Figure: Location P 29

Figure: Location P 30-A

Figure: Location P 30-B

Figure: Location P 32-A

Figure: Location P 32-B

Figure: Location P 33

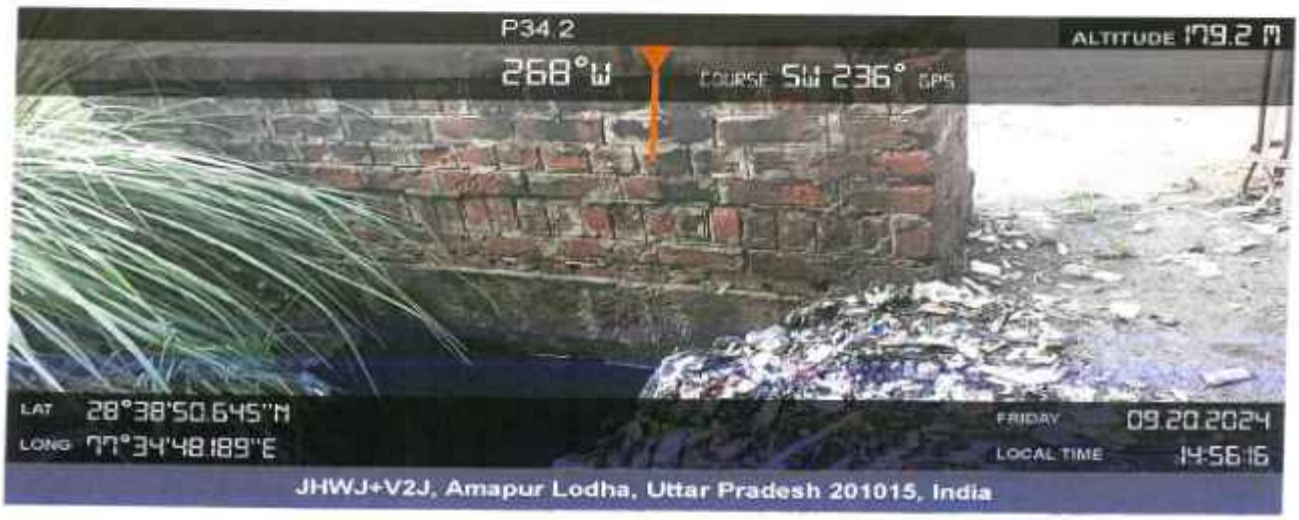


Figure: Location P 34

Figure: Location P 35

Figure: Location P 36

Figure: Location P 37-A

Figure: Location P 37-B

Figure: Location P 38

Figure: Location P 39

Figure: Location P 40

Figure: Location P 41

Figure: Location P 42-A

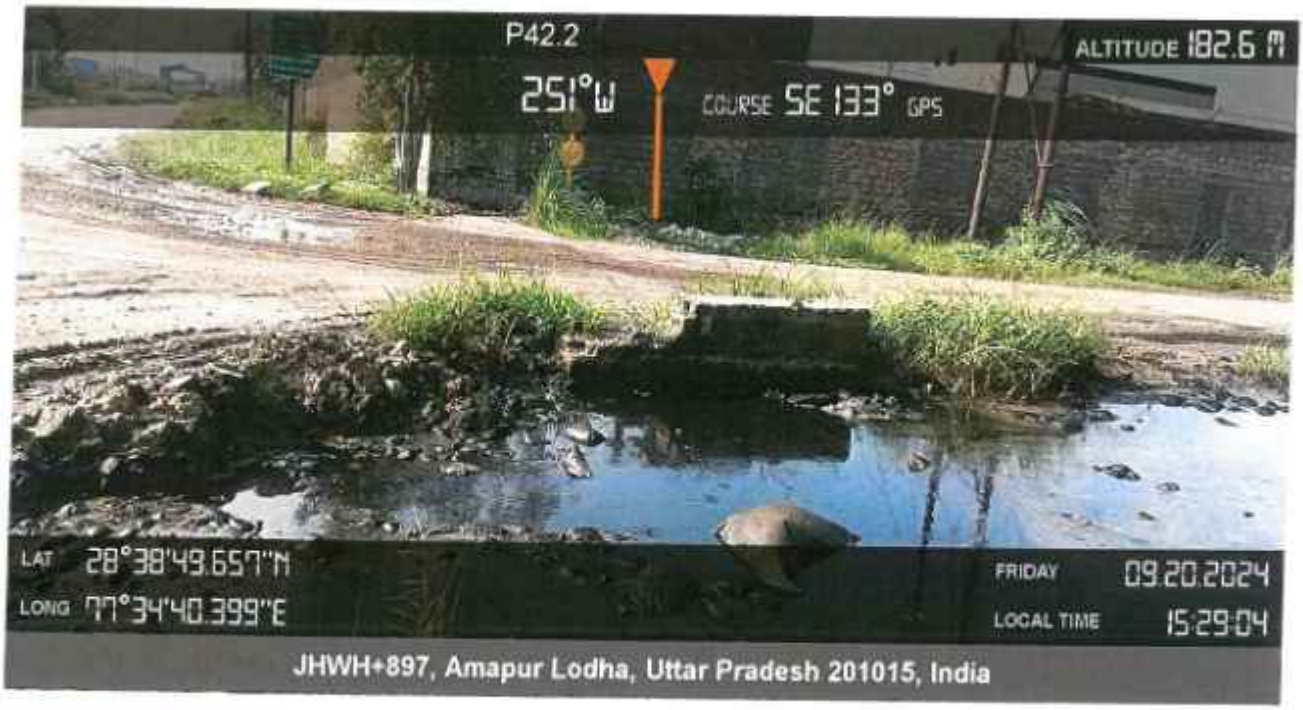
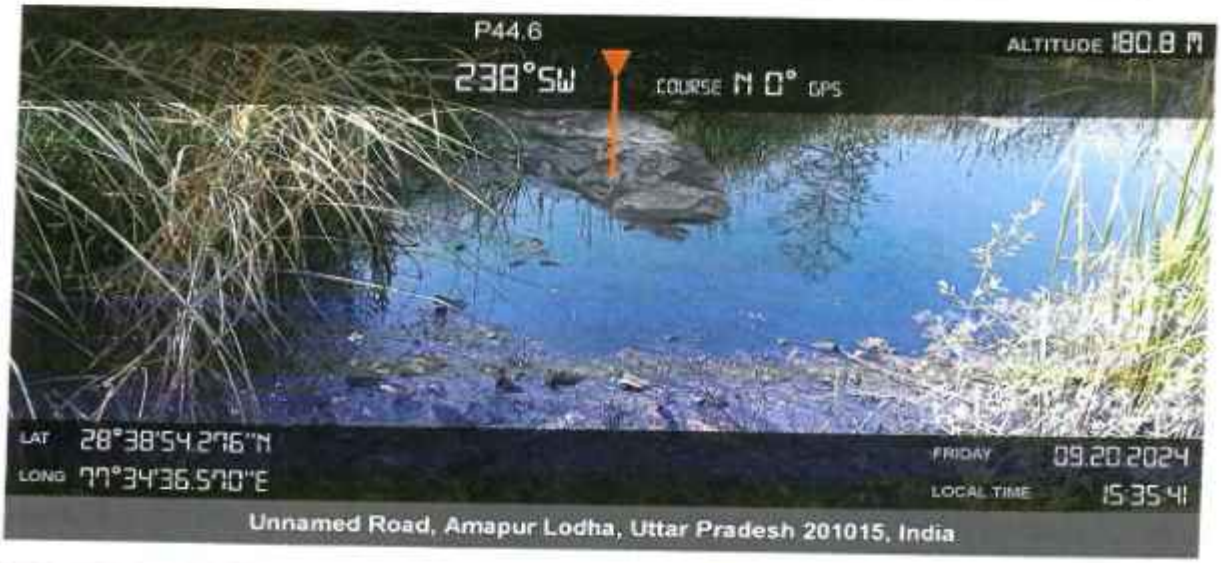


Figure: Location P 42-B

Figure: Location P 43



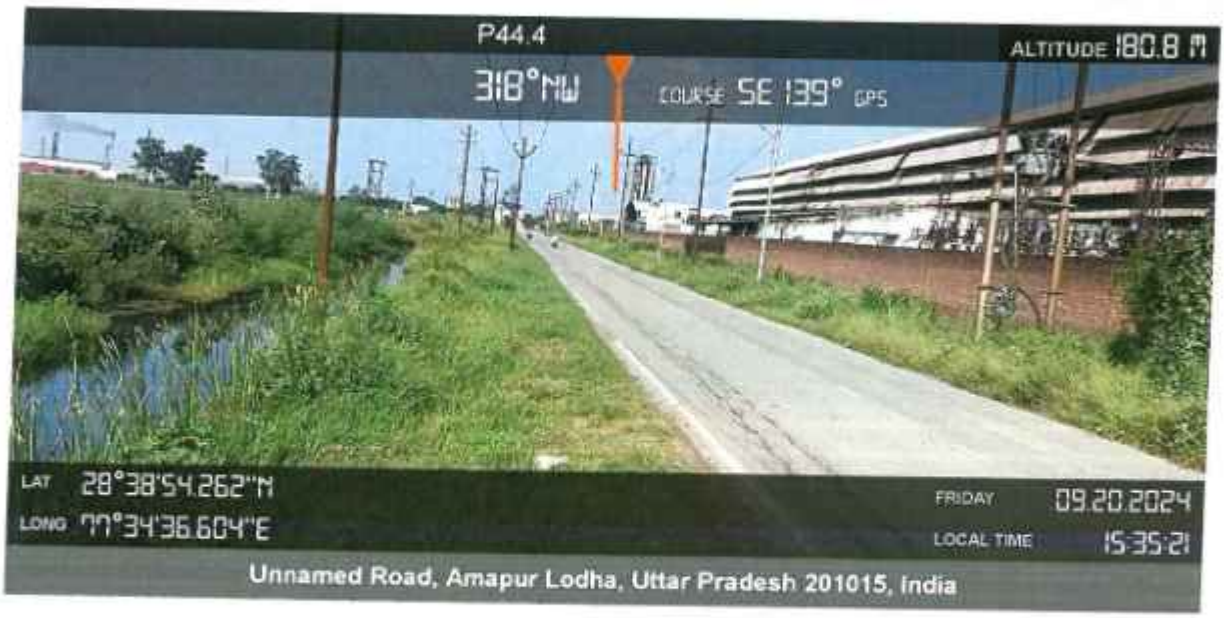


Figure: Location P44

Figure: Location P 45

Figure: Location P 46

Figure: Location P 47 and 48

Figure: Location P 49

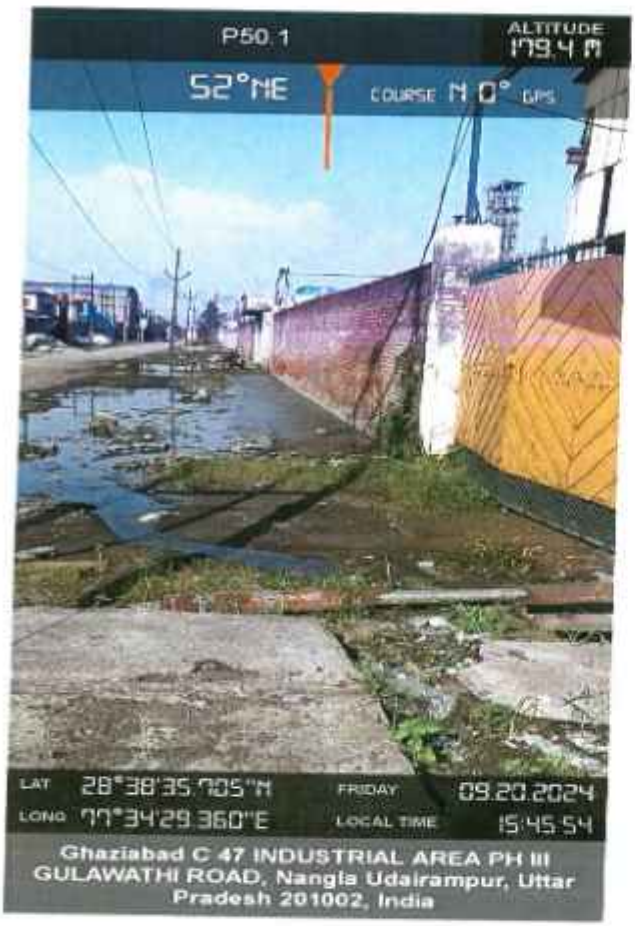


Figure: Location P 50

Figure: Location P 51

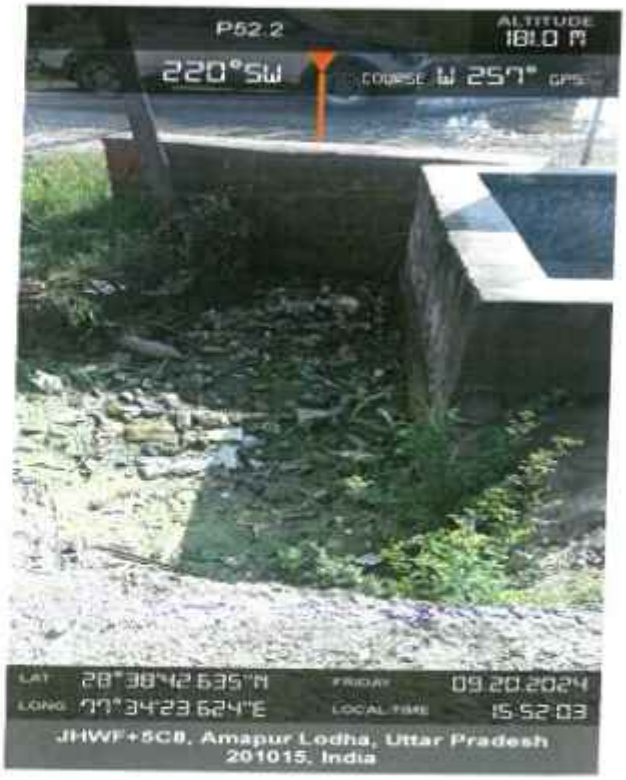


Figure: Location P 52-A

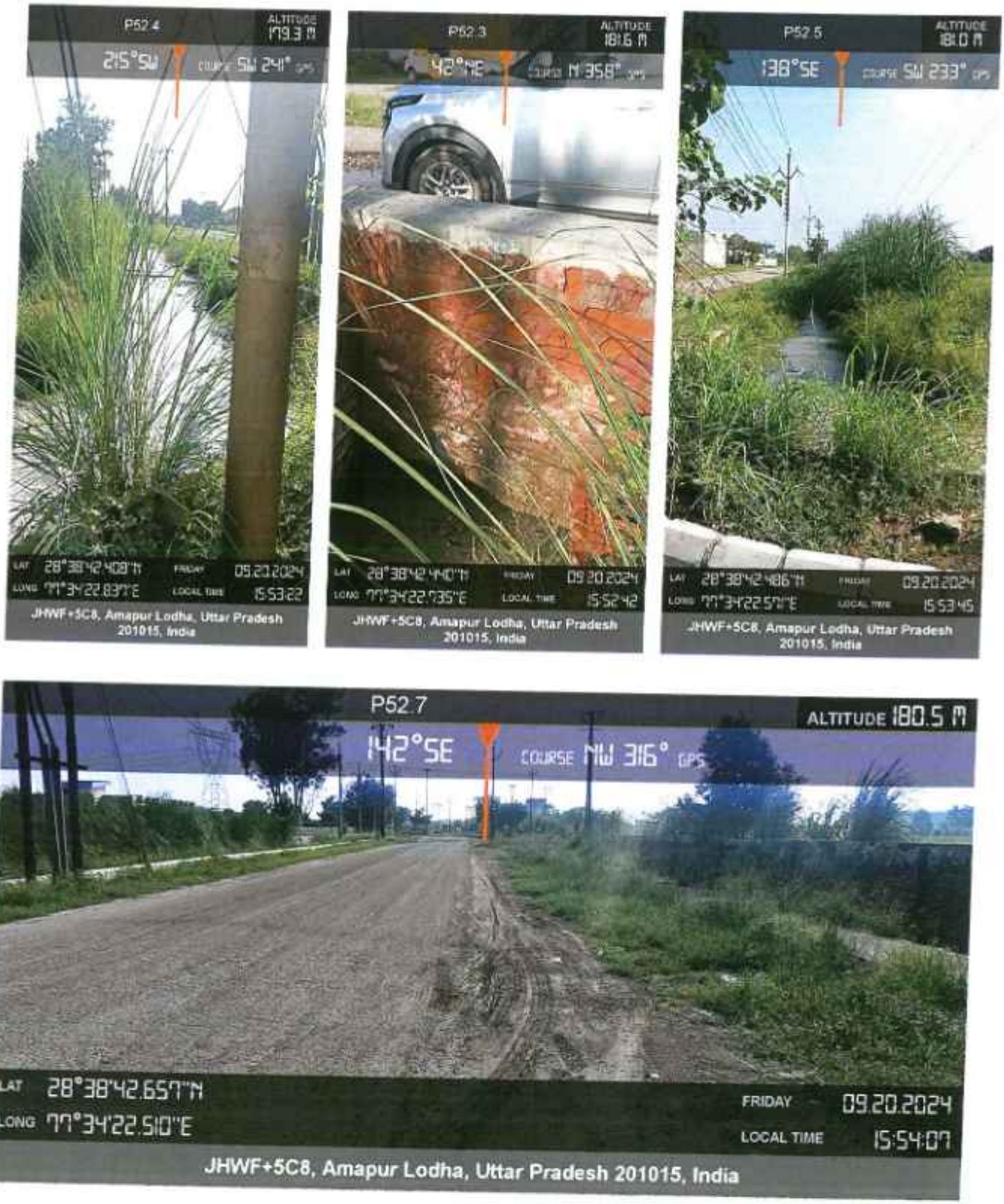


Figure: Location P 52-B

Figure: Location P 53

Phase -1

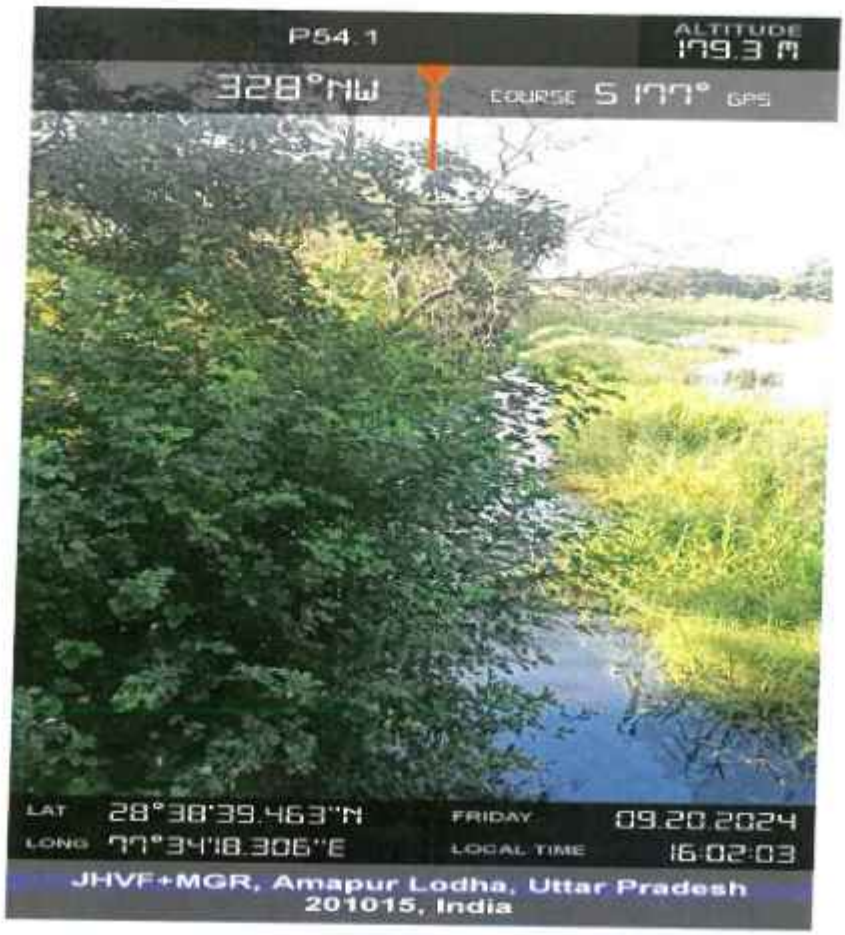


Figure: Location P 54-A

Figure: Location P 54-B

Figure: Location P 55

Figure: Location P 56

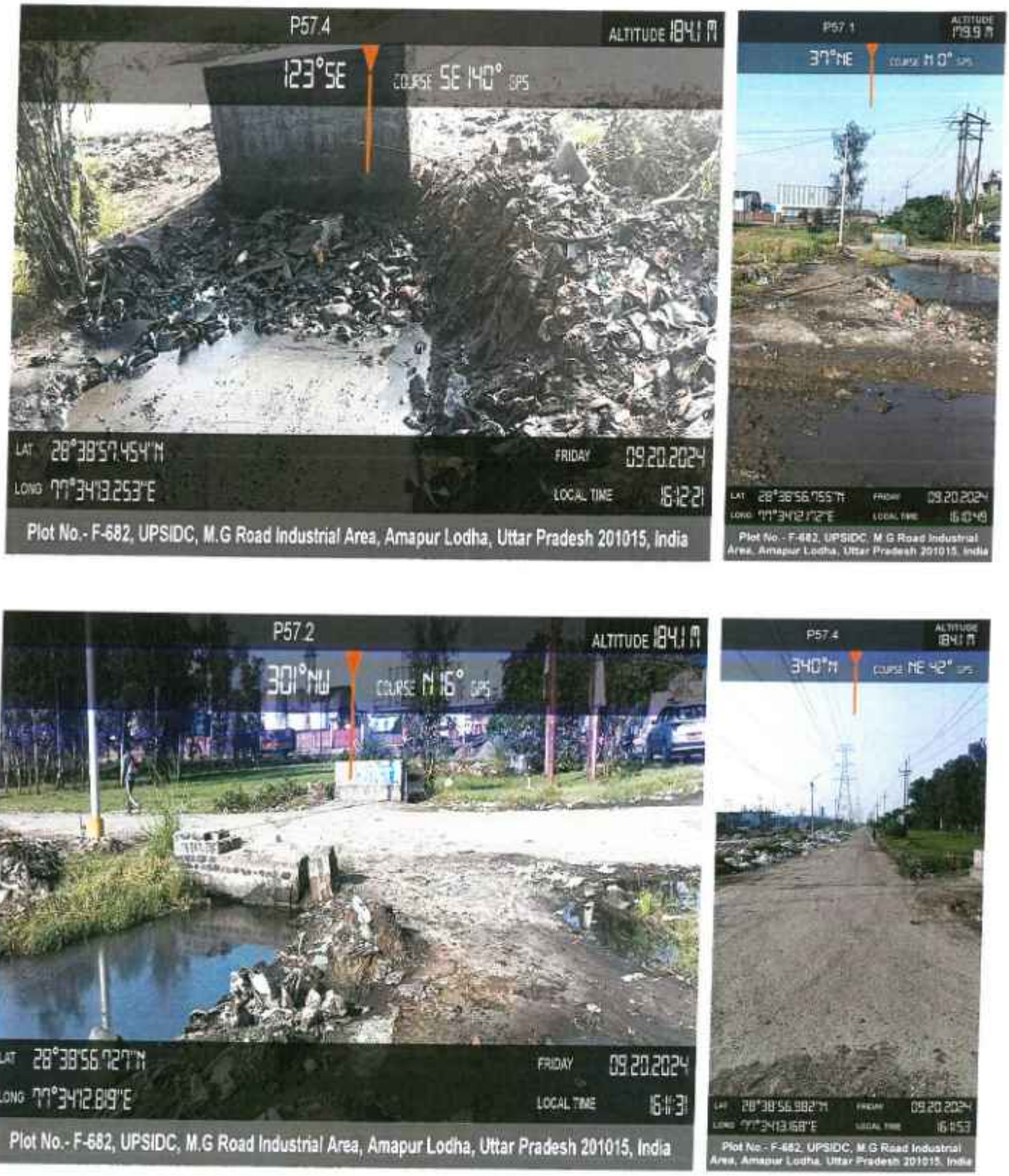


Figure: Location P 57

Figure: Location P 58

Figure: Location P 59

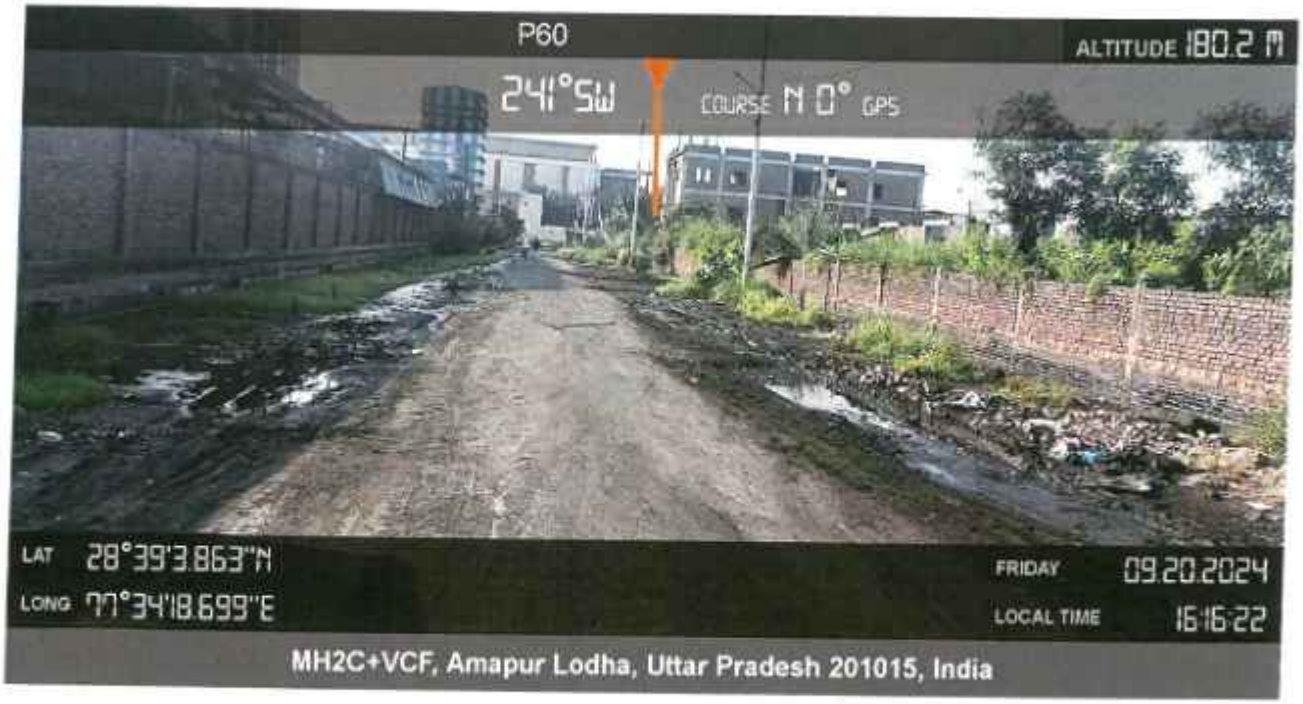


Figure: Location P 60-A

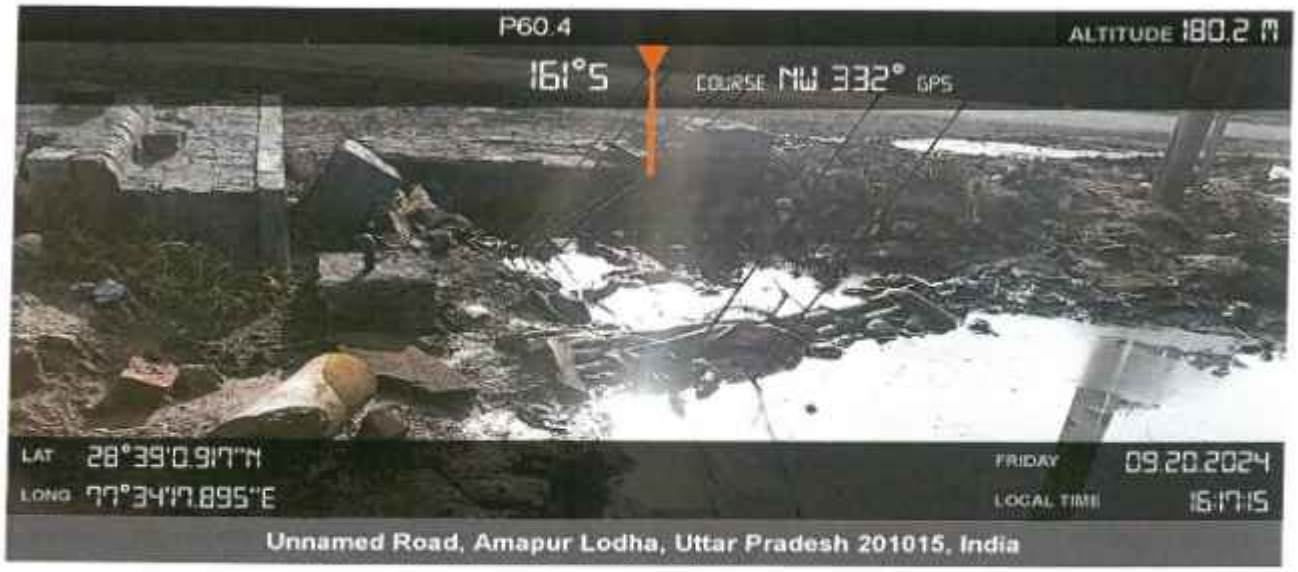


Figure: Location P 60-B

Figure: Location P 61-A

Figure: Location P 61-B

Figure: Location P 62-A

Figure: Location P 62-B

Figure: Location P 63-A

Figure: Location P 63-B

Figure: Location P 64-A

Figure: Location P 65

Figure: Location P 66

Figure: Location P 67

Figure: Location P 68-A

Figure: Location P 68-B

Figure: Location P 69-A

Figure: Location P 69-B

Figure: Location P 70-A

Figure: Location P 70-B

Figure: Location P 71-A

Figure: Location P 71-B

Figure: Location P 72-A

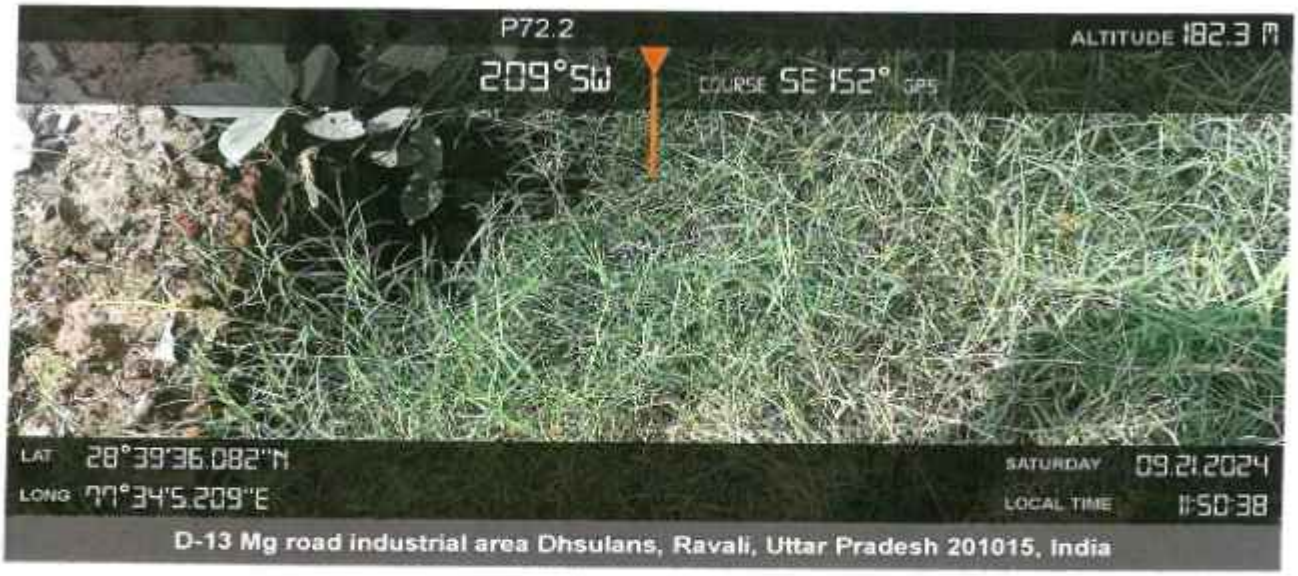


Figure: Location P 72-B

Figure: Location P 73-A

Figure: Location P 74

Figure: Location P 75-A

Figure: Location P 75-B

Figure: Location P 76-A

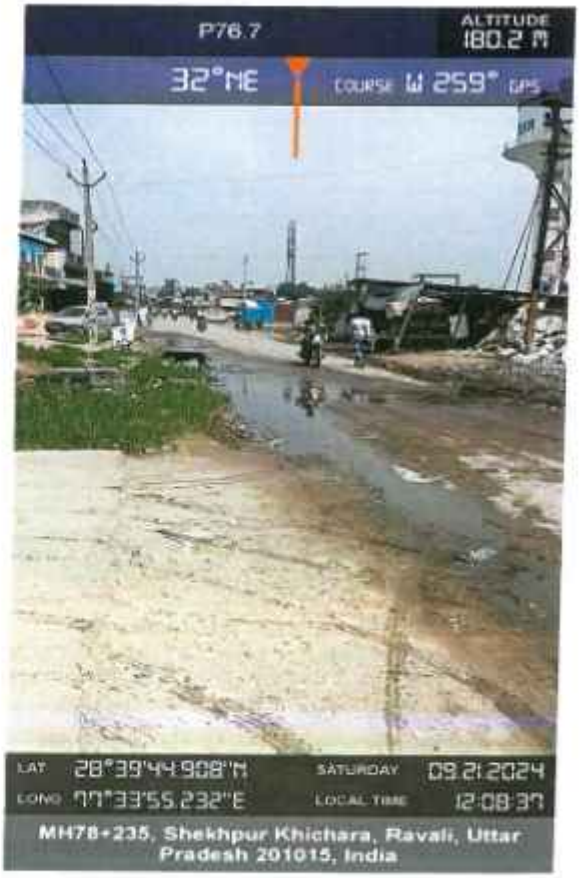


Figure: Location P 76-B

Figure: Location P 77

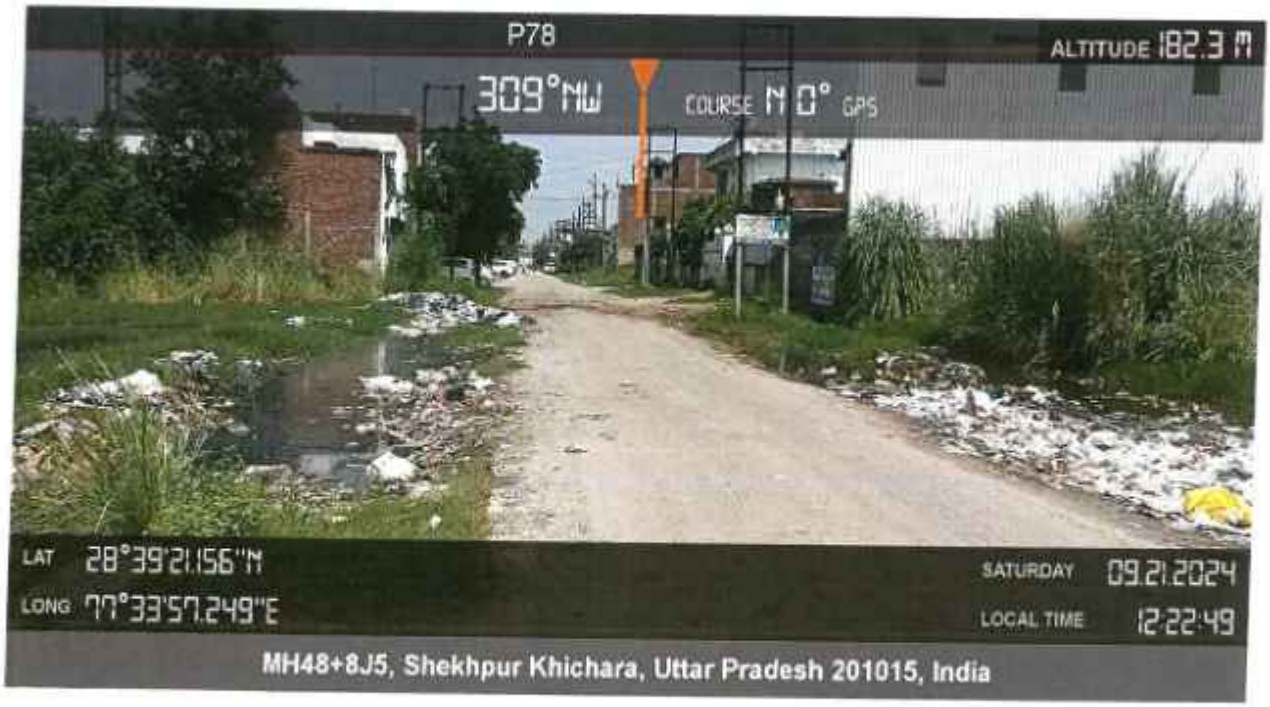


Figure: Location P 78

Figure: Location P 79

Figure: Location P 80

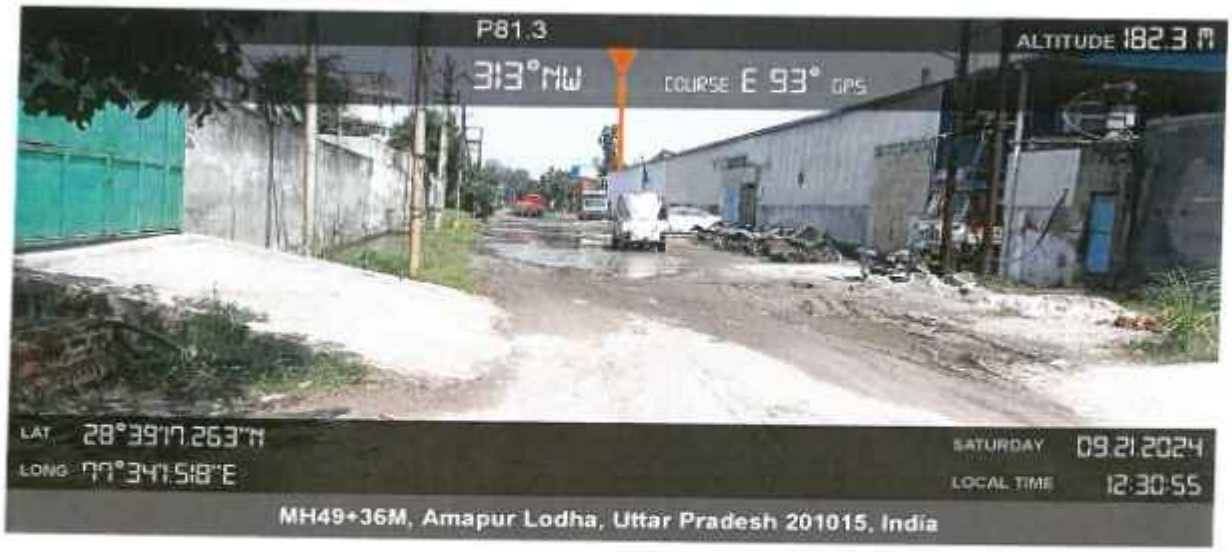


Figure: Location P 81-A

Figure: Location P 81-B

Figure: Location P 82

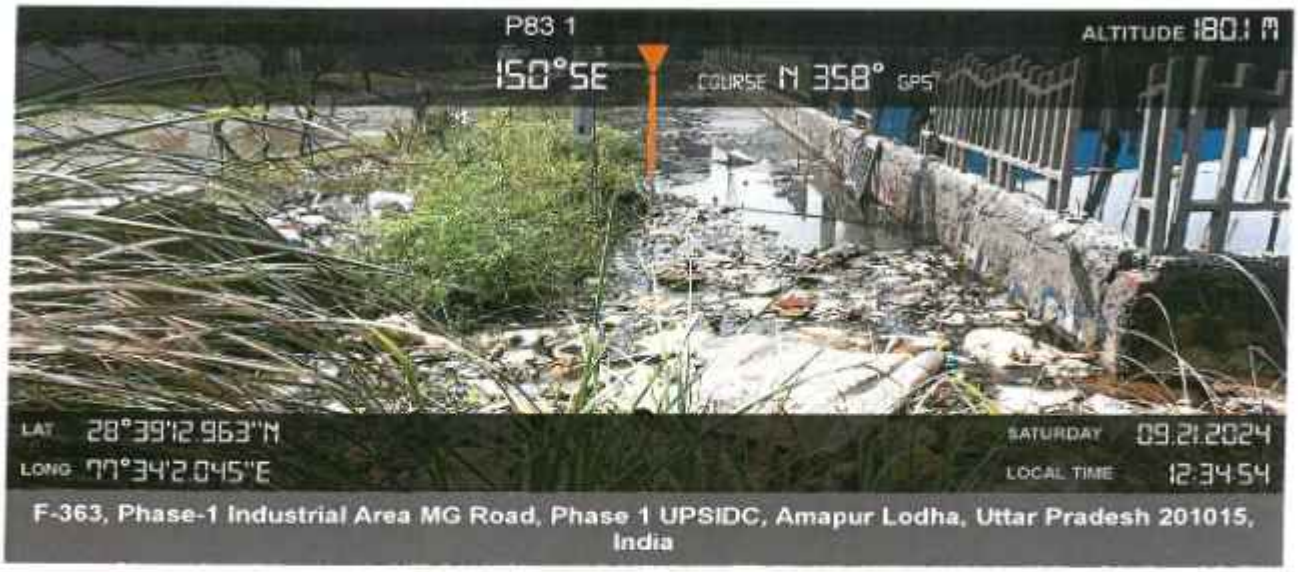


Figure: Location P 83

Figure: Location P 85-A

Figure: Location P 85-B

Figure: Location P 86

Figure: Location P 87

Figure: Location P 88

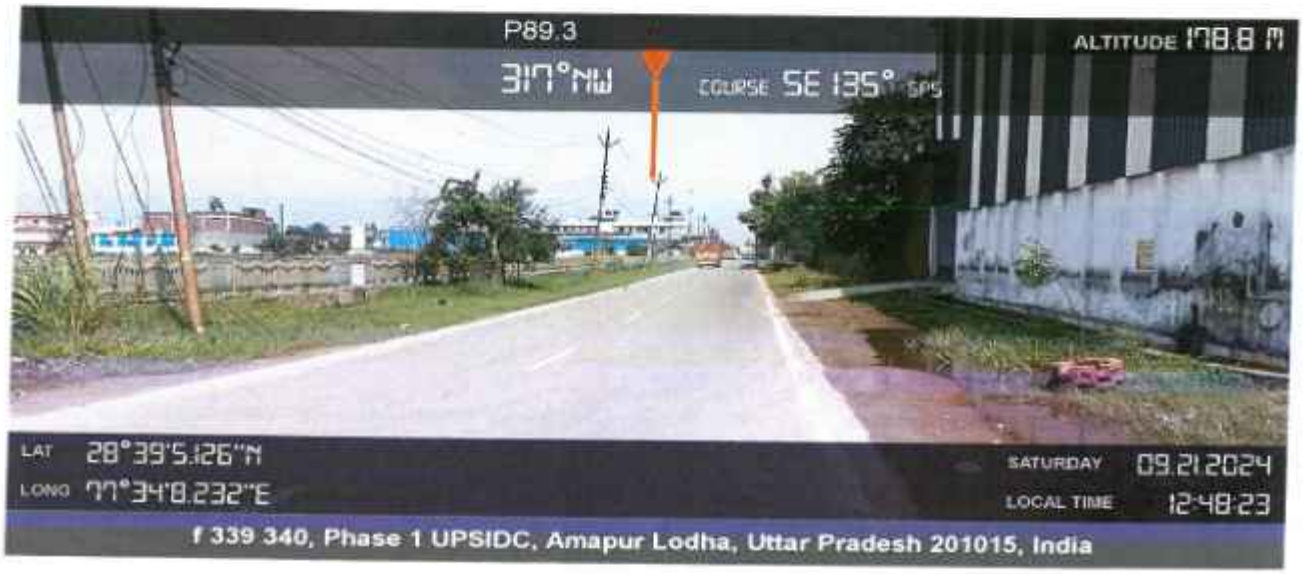


Figure: Location P 89

Figure: Location P 90

Figure: Location P 91

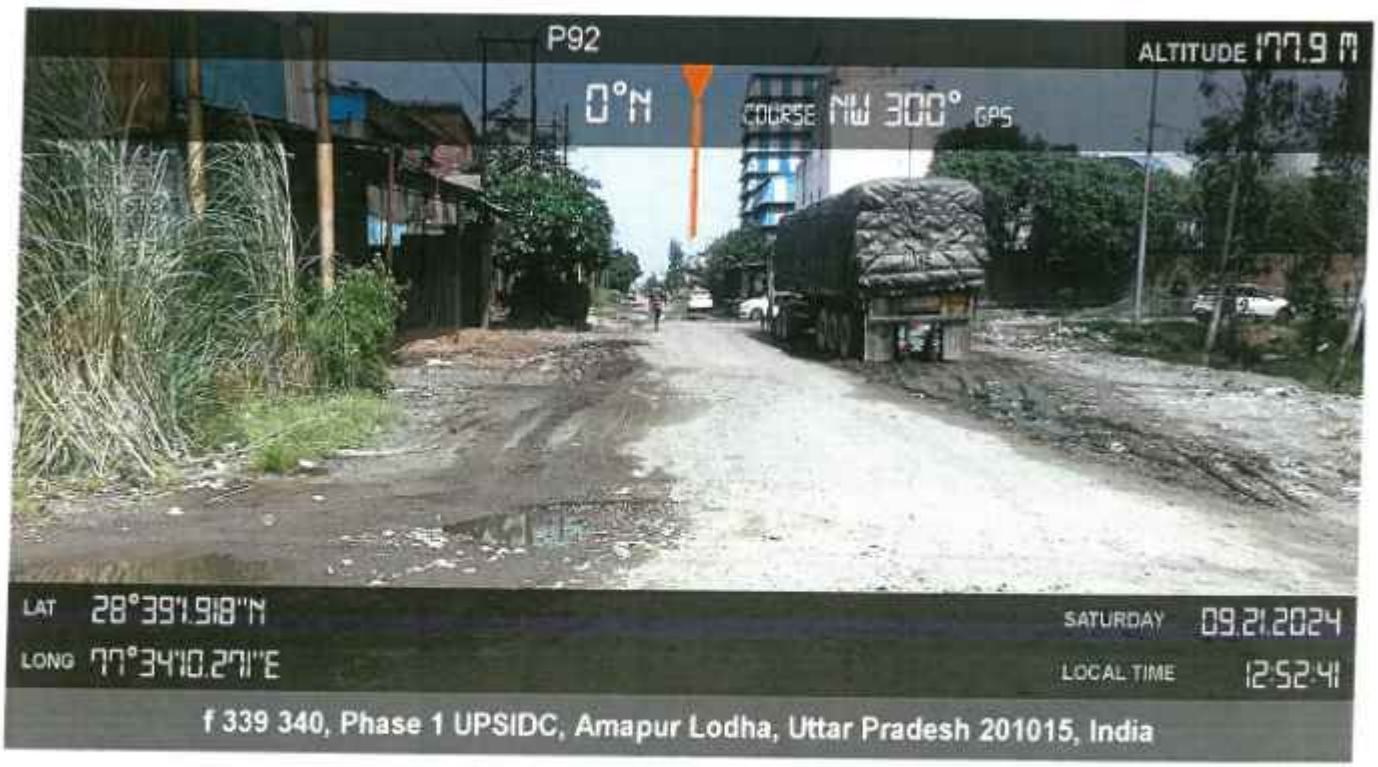


Figure: Location P 92

Figure: Location P 93

Figure: Location P 94

Figure: Location P 95-A

Figure: Location P 95-B

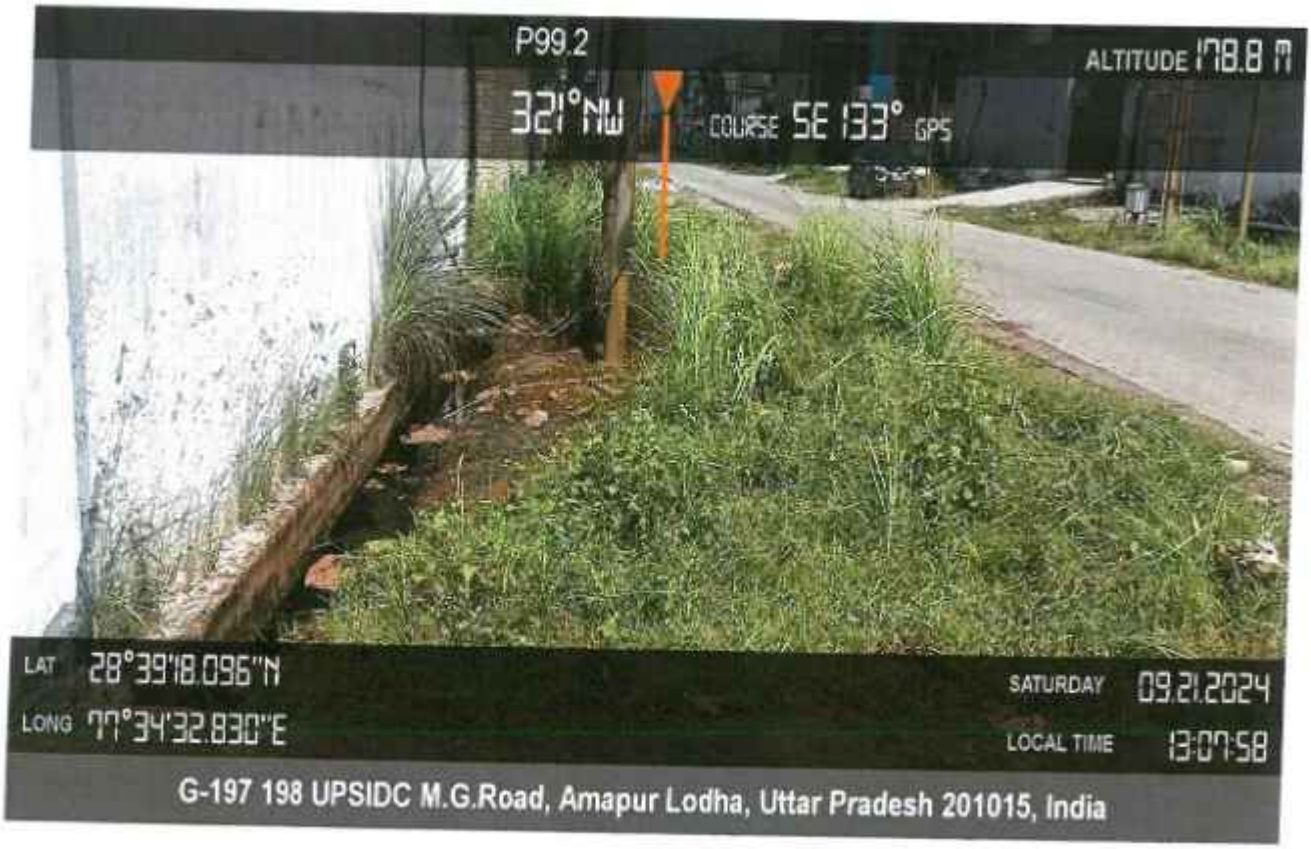
Figure: Location P 96-A

Figure: Location P 96-B

Figure: Location P 97

Figure: Location P 98

Figure: Location P 99-A



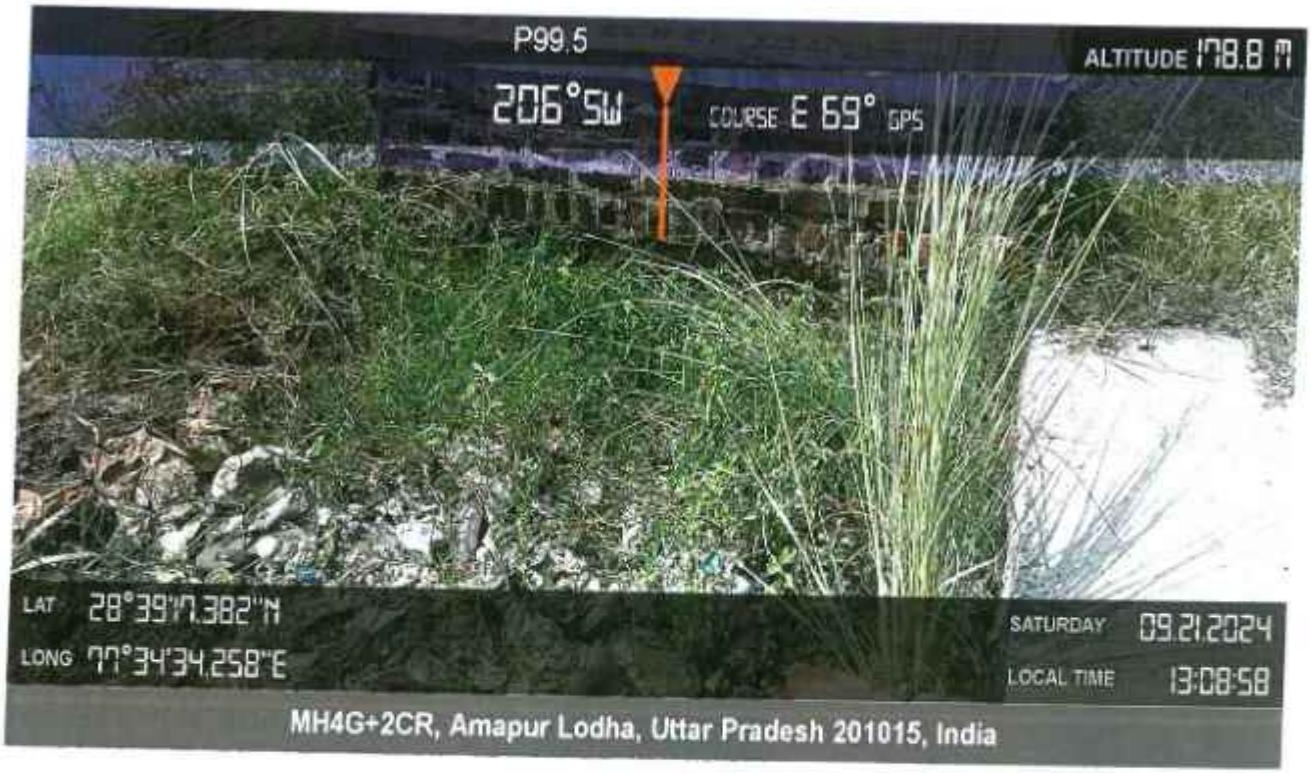


Figure: Location P 99-B

Figure: Location P 100

Figure: Location P 101-A

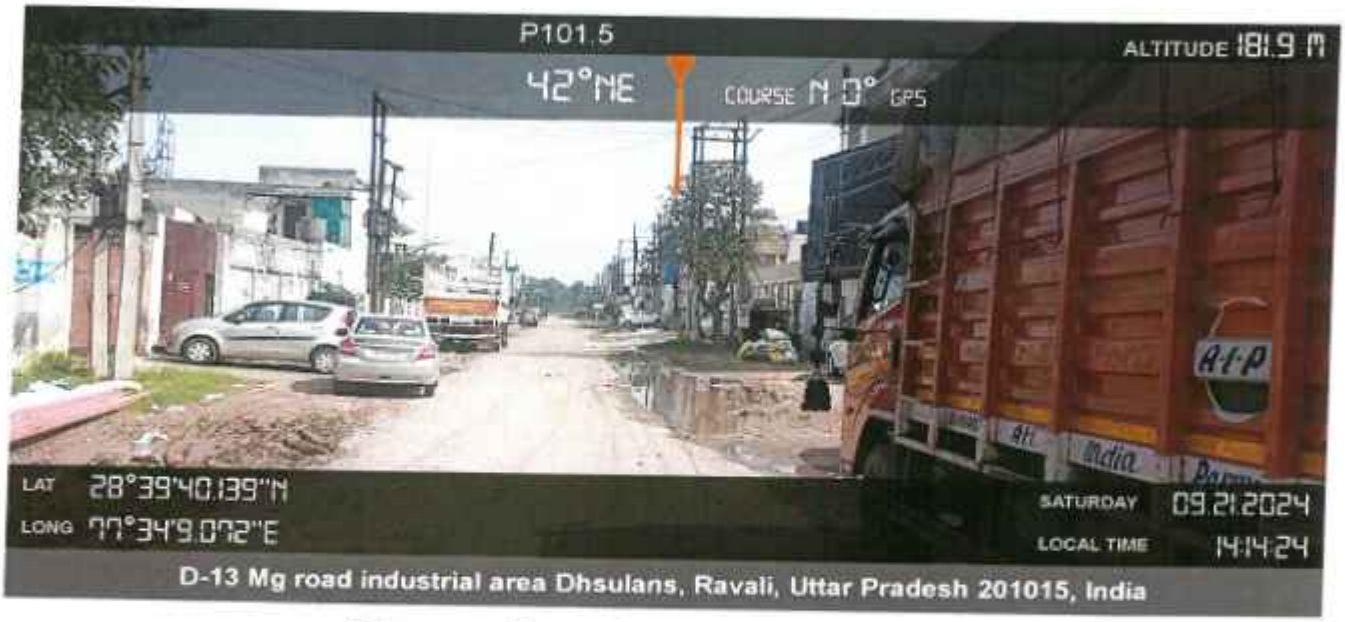


Figure: Location P 101-B

Figure: Location P 102-A

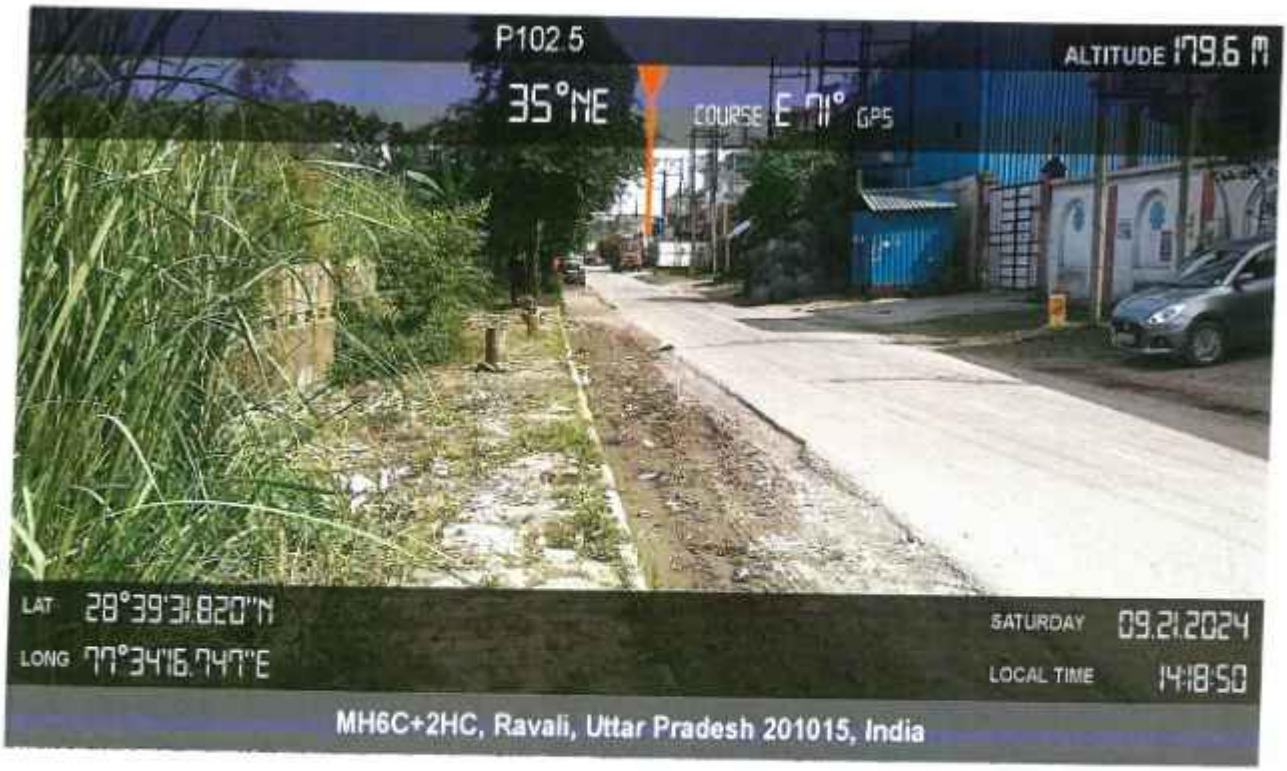


Figure: Location P 102-B

Figure: Location P 103

Figure: Location P 104

Figure: Location P 105-A

Figure: Location P 105-B

Figure: Location P 106-A

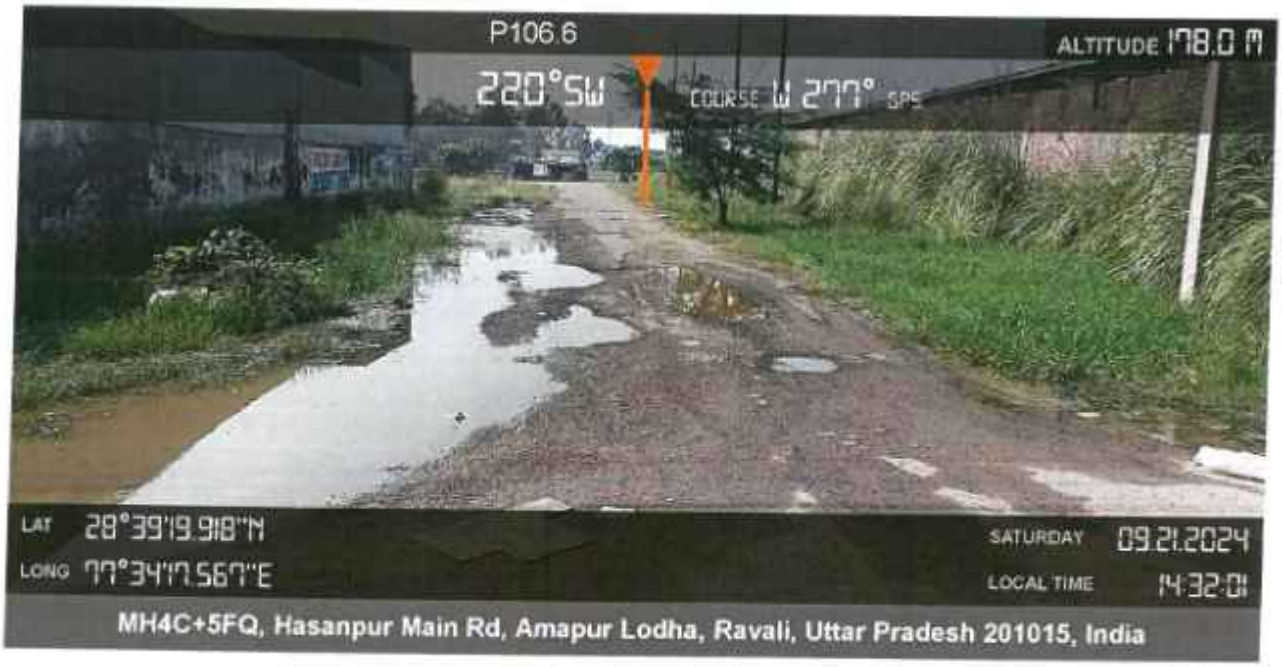


Figure: Location P 106-B

Figure: Location P 107

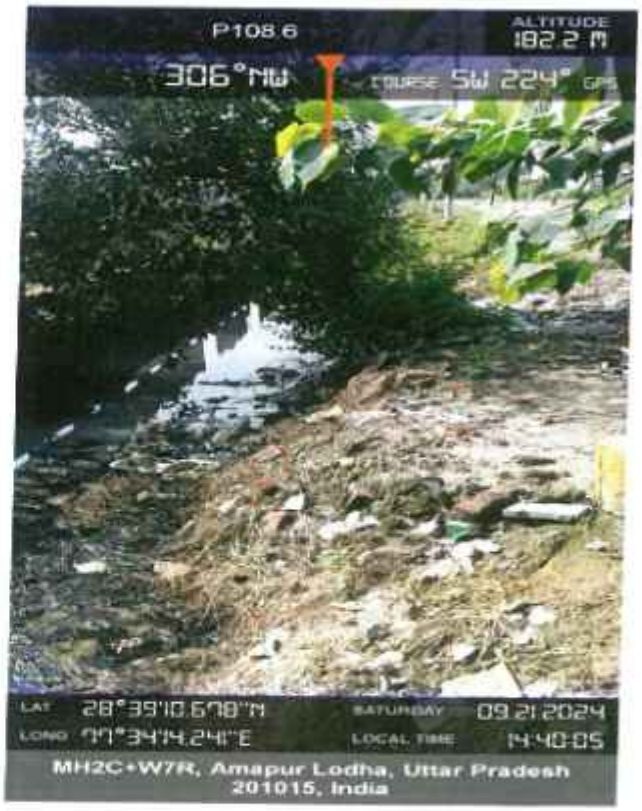


Figure: Location P 108

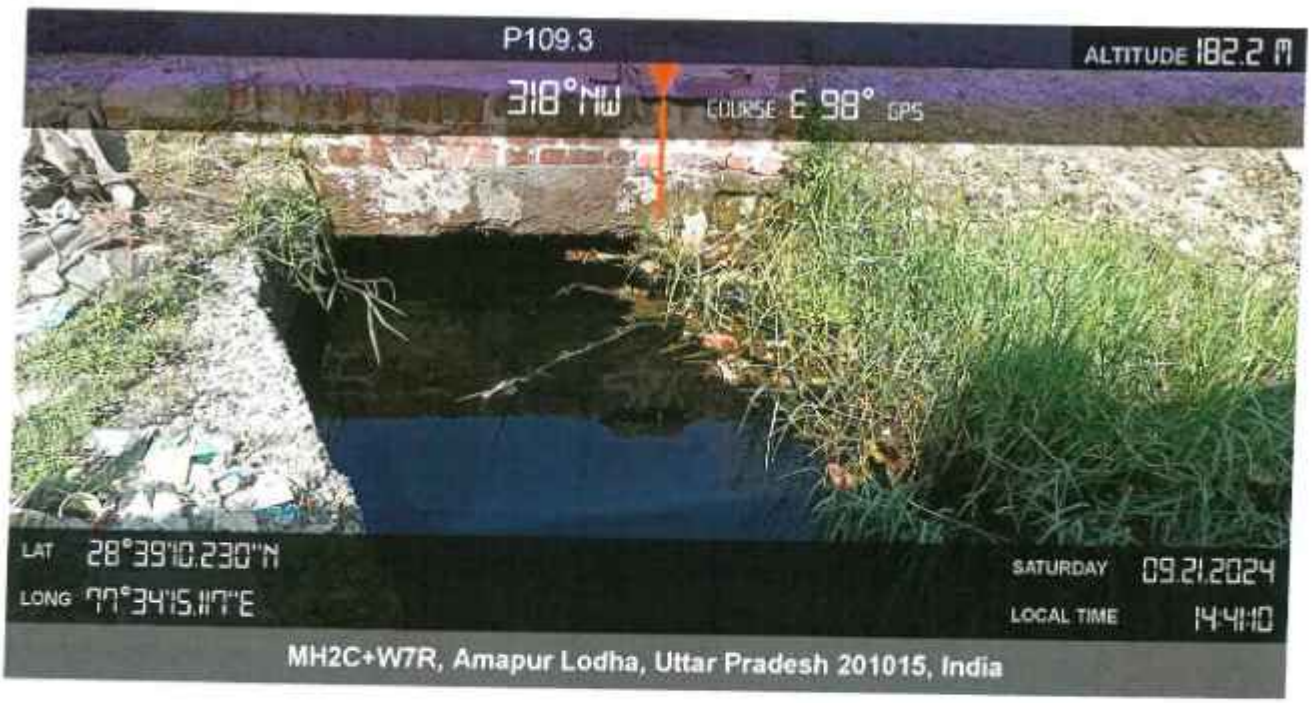


Figure: Location P 109-A

Figure: Location P 109-B

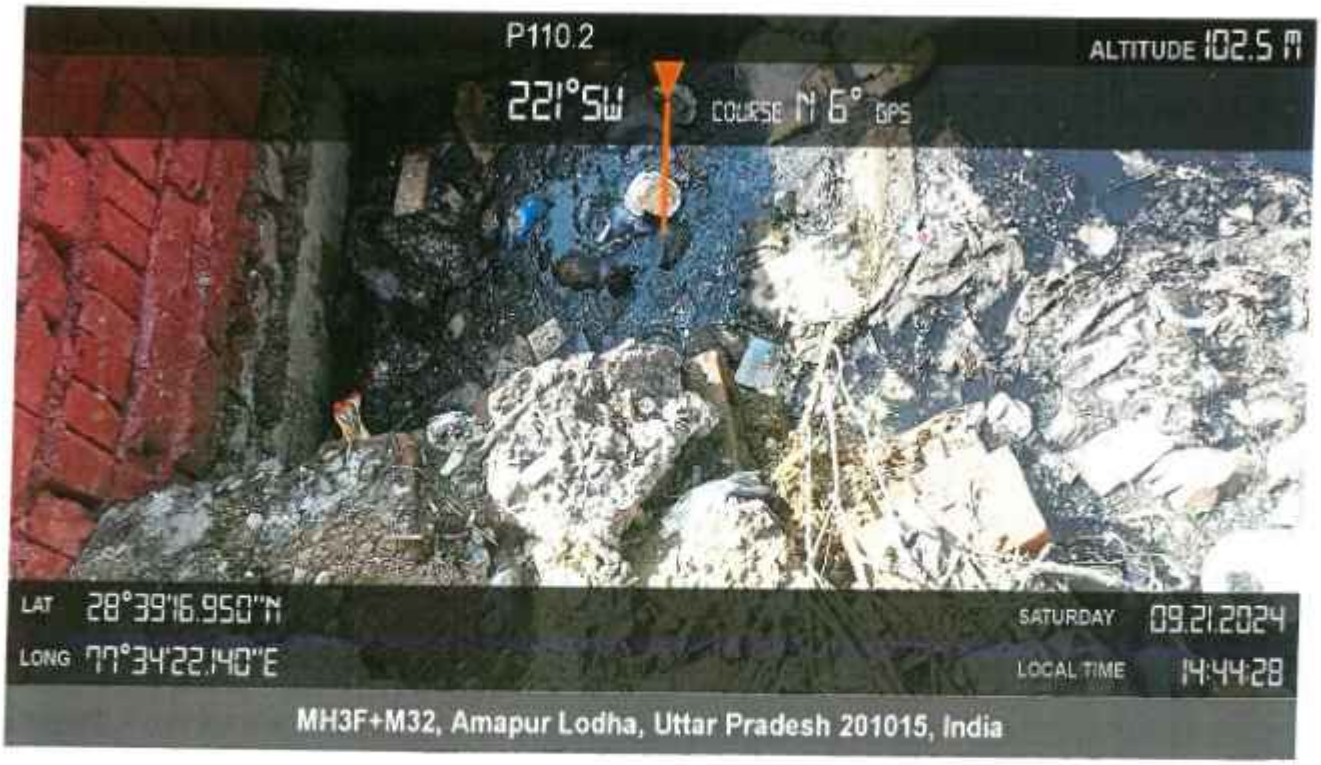


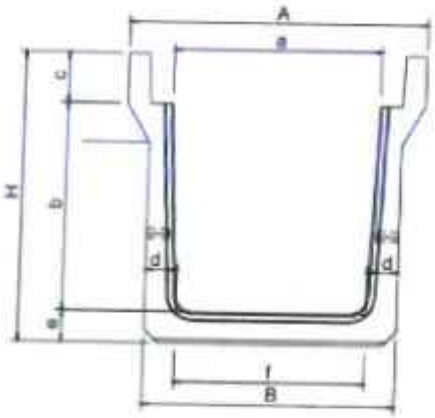
Figure: Location P 110

Figure: Location P 111

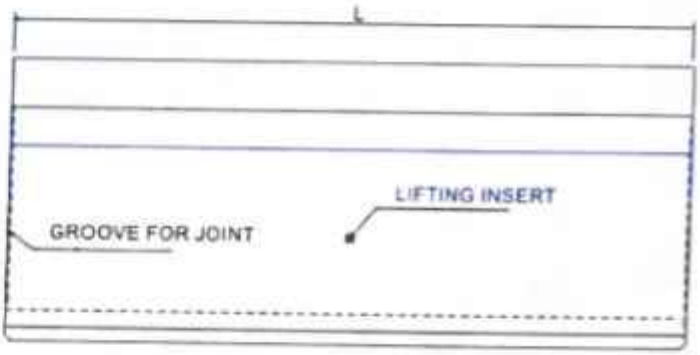
Figure: Location P 112

APPENDIX 2

U-SHAPE DRAIN



SECTION



SIDE VIEW

Size (mm) BXH	Dimensions of U-shape drain (mm)										Appx. Weight (kg)
	L	A	B	H	a	b	c	d	e	f	
250X250	2000	460	360	405	250	250	90	65	65	230	289
300X300	2000	520	420	465	300	300	95	70	70	280	435
450X450	2000	700	590	660	450	450	130	80	80	430	657
600X600	2000	860	730	835	600	600	145	90	90	550	890
750X750	2000	1050	890	1000	750	750	150	100	100	690	1200
900X900	2000	1200	1070	1170	900	900	160	120	120	830	1646

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

STORM WATER FLOW DIRECTION OF MG ROAD INDUSTRIAL AREA MASURI, GHAZIABAD

D -Drain
C- Culvert
DS- Desilting Chamber

M.G.ROAD

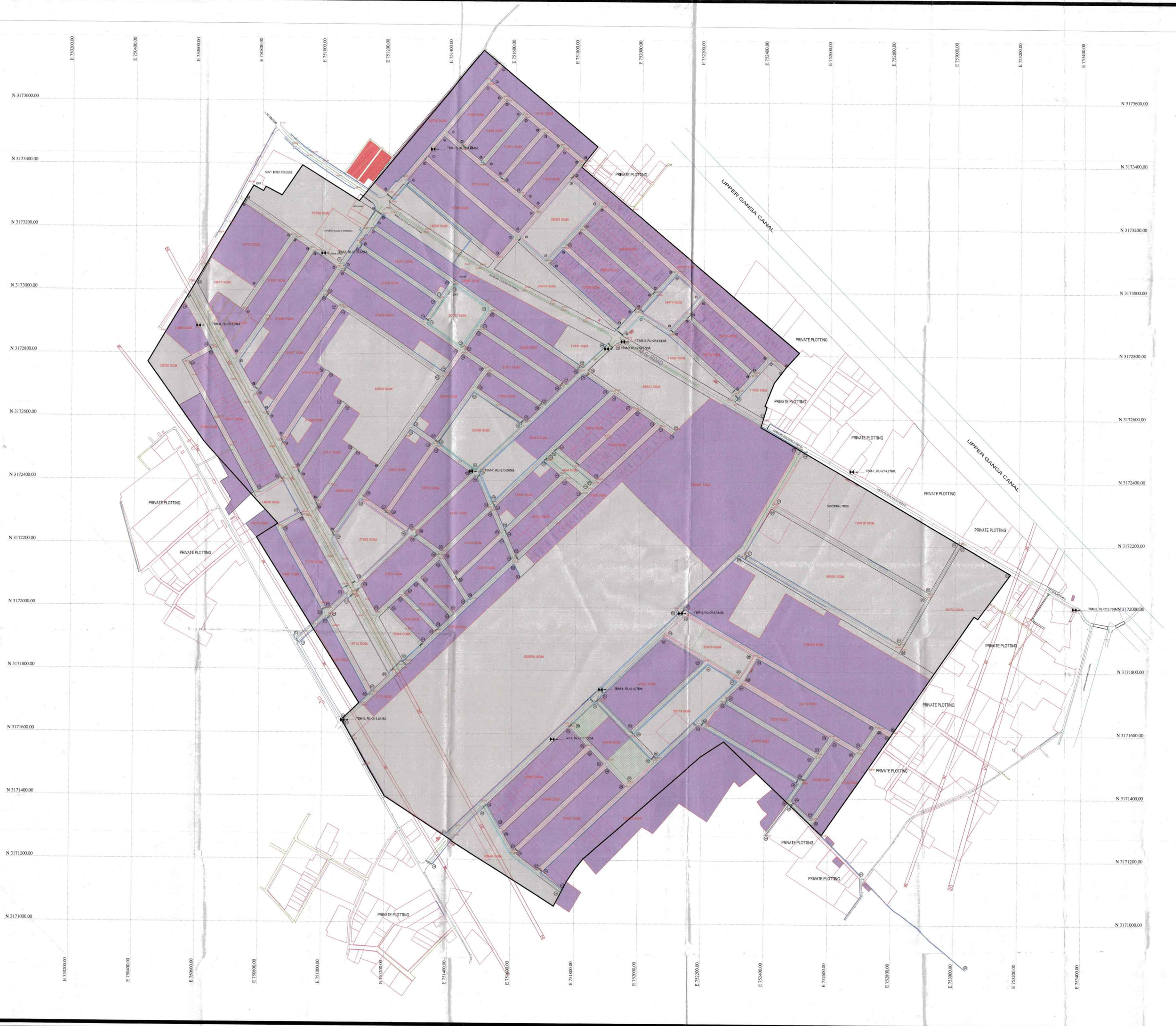
E 750200 E 750400 E 750600 E 750800 E 751000 E 751200 E 751400 E 751600 E 751800 E 752000 E 752200 E 752400 E 752600 E 752800 E 753000 E 753200 E 753400

N 3173600 N 3173400 N 3173200 N 3173000 N 3172800 N 3172600 N 3172400 N 3172200 N 3172000 N 3171800 N 3171600 N 3171400 N 3171200 N 3171000

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

TOPOGRAPHICAL SURVEY PLAN OF MG ROAD INDUSTRIAL AREA MASURI, GHAZIABAD



BENCH MARKS		GATE	
BITUMEN ROAD		GROUND LEVEL	000.000
BORE WELL	BW	HANDPUMP	
BOUNDARY		HT LINE	
BUILTUP		IGL PILLAR	
CART TRACK		INDUSTRIES	
CCTV CAMERA		KHARANJA	
CENTER LINE		LAMP POST	
CHAMBER		MANHOLE	
CULVERT		RCC ROAD	
DIVIDER		ROAD CENTER LEVELS	
DRAIN		ROAD EDGE LEVELS	TOAD
DRAIN INVERT LEVEL	000.000	TILES ROAD	
DRAIN KACHCHA		TRANSFORMER	
DRAIN NEW		UPSIDC BOUNDARY	
DRAIN TOP LEVEL			
ELECTRIC-POLE			
FENCING			
FOOTPATH			

REMARKS:

1. All Dimensions & Levels are in meters

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

SCALE
1:4000@A0

-100m 00m 200m 400m

CLIENT

Surveyor

HABIB SURVEY & DESIGN PVT. LTD.
Land Surveying & Geospatial Team
H-45, U.P.S.I.D.C. Site-C, Greater Noida-201308
M : 9312620283 Telefax : 0120-4266819
email: info @ habibsurveying.com

TITLE

TOPO SURVEY PLAN OF

REV. R0	26/08/2024	DRAWN BY	CHECKED BY	S.SIZE A0
REV. R1		WASEEM KHAN +91 935 085 8876		
REV. R2				SHEET NO. 1 OF 1

N
NW NE
W m
SW SE
S

898

Department of Civil Engineering
Indian Institute of Technology, Delhi

26.09.2024

To,
Deputy General Manager (Civil)
Construction Division- I
Building No. A-03, UPSIDA Residential Colony,
Sector-16, Shastrinagar,
Ghaziabad-201001.

Subject: **Structural & Hydraulic Design, and Cost Estimate of RCC Drain work in the Industrial Area Masuri Gulawathi Road.**

Reference: (1) Your letter no. 210(1)/UPSIDA/DGM(C)/C.D.-1/Ghaziabad, Dated 03.06.2024
(2) Meeting dated 12th September 2024
(3) Our report dated 23.09.2024 and subsequent discussion

Dear Sir,

This has reference to the subject and the discussion we had with you on 12th September 2024. Please find enclosed the draft report on the "Structural & Hydraulic Design, and Cost Estimate of RCC Drain work in the Industrial Area Masuri Gulawathi Road".

Based on the design, the abstract of estimated cost is provided in Table 1 and details are available in the report.

Table 1: Cost Estimate of RCC Drain work in the Industrial Area Masuri Gulawathi Road.

S. No.	Particulars	Amount (INR)
1	Cost of Work	51,47,65,965.56
2	GST @ 18% on above	9,26,57,873.80
3	Total cost including GST	60,74,23,839.36
4	Add for Labour Cess @1% on estimated cost-plus GST amount	60,74,238.39
5	Add for Contingencies on BOQ	5,00,000.00
6	Add for Third Party @1.5% on BOQ	77,21,489.48
7	Add for Advertisement L.S.	2,00,000.00
8	Total Cost	62,19,19,567.23
9	Say	**62,19,19,567.00**

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

The estimated cost of **Rs. 62,19,19,567.00 (Rs. Sixty Two Crore Nineteen Lakh Nineteen Thousand Five Hundred Sixty Seven Only)** prepared for the subject project appears reasonable for tendering purpose and is vetted. The detailed technical specifications and drawings may further should be reviewed when the details are available or at the time of execution.

Please feel free to contact us in case you have any queries or clarification related to this report.

Thanking you,

Sincerely,

B R CHAHAR

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

K N JHA

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Enclosure: (1) Survey drawings (2) Document showing condition of the existing drains, (3) Hydraulic design, Drain Design, and Cost Estimate.

Report on

Hydraulic & Structural Design of RCC Strom Drain Work in the Industrial Area, MG Road, District Hapur

submitted to

DGM (Civil) Construction Division I, UPSIDA, Ghaziabad

by

Prof B R Chahar

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Prof K N Jha

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Department of Civil Engineering

Indian Institute of Technology Delhi

Hauz Khas, New Delhi 110 016

Background & Status of the Existing Drain Network

UPSIDA has developed an industrial area at Masuri Gulawathi Road, District Hapur (UP). The total area of this industrial area is about 935 Acres in three phases. Masuri Gulawathi Road divides the area into two parts, one side Phase 2 and other side Phase 1 and Phase 3 as shown in Fig 1 (Google Earth Image).

Fig 1: Google Earth Image of Industrial Area, MG Road

Majority of plots have been occupied by well-developed industries as shown in Fig. 2 a & b (Google Earth Image).

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Fig. 2: Google Earth Image of the current development status of industrial plots

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

UPSIDA had provisioned storm drain network at the time of development of this industrial area. The old storm network is of brick work that deteriorated/damaged with time, so UPSIDA constructed RCC drains at selected stretches. To assess the status of the existing storm drain network, detailed surveying and photography along with site visits have been carried out. Selected photos showing the current status are included as Appendix I. The following table summarizes the details.

Table 1: Summary of drain conditions on various roads

S. No.	Road Mark	Location Mark	Remarks
Phase 2			
1	Road 11	**P2**	The side drain is covered with vegetation at this location.
2	**Road 12**	P3	The drain is flowing but blocked at the culvert point and at the junctions.
3	**Road 13**	**P4**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
4	**Road 14**	**P21**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
5	**Road 15**	**P19**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
6	**Road 16**	**P18, P14**	The drains at this road are one side of the drains is covered with vegetation, and the other side is a brick lane but damaged. At P18, one side of the culvert is blocked with vegetation.
7	**Road 17**	**P13, P10**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
8	**Road 18**	**P5**	The sides of the drains are covered with vegetation. The flow of drainage is blocked due to the accumulation of waste (plastic waste).

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

9	**Road 1**	**P1-P5**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
10	**Road 2**	**P23, P10, P9**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
11	**Road 3**	**P11**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
12	**Road 4**	**P12, P19, P20, P21, P22**	The sides of the drains are covered with vegetation. At few locations the sides are totally damaged. The flow of drainage is blocked due to the accumulation of waste (plastic waste).
13	**Road 5**	**P17, P18**	The sides of the drains are covered with vegetation. The flow of drainage is blocked at one side of the culvert due to over-vegetation.
14	**Road 6**	**P13-P16**	The sides of the drains are covered with vegetation. The flow of drainage is blocked due to the accumulation of waste (plastic waste).
	Phase 3		
15	**Road 1**	**P24, P25, P26, P29, P44, P45, P46, P52, P56**	The sides of the drains are covered with vegetation. The flow of drainage is blocked due to the accumulation of waste (plastic waste)..
16	**Road 2**	**P47**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
17	**Road 3**	**P48, P51**	The sides of the drains are covered with vegetation. The flow of drainage is blocked due to the accumulation of waste (plastic waste).
18	**Road 4**	**P49, P50, P35, P31, P32, P33, P34**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
19	**Road 8**	**P30, P39**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

20	**Road 11**	**P41, P42, P43**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
21	**Road 13**	**P34, P36, P37**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
22	**Road 14**	**P33**	The sides of the drains are covered with vegetation. The flow of drainage is blocked due to the accumulation of waste (plastic waste).
23	**Road 16**	**P29, P30**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
24	**Road 17**	**P26, P28**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
25	**Road 18**	**P25, P27**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
		Phase 1	
26	**Road 4**	**P54-P64**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
27	**Road 5**	**P92, P93, P96, P97, P 98**	The sides of the drains are covered with vegetation. The flow of drainage is blocked due to the accumulation of waste (plastic waste).
28	**Road 6**	**P87, P86, P88, P89, P108, P109, P110, P111, P105, P104, P103, P65, P66, P112**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
29	**Road 7**	**P85, P67**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
30	**Road 1**	**P56, P57, P89, P90, P84, P83, P77, P75**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
31	**Road 2**	**P76, P77, P70, P69, P102, P104**	The sides of the drains are covered with vegetation. The flow of drainage is blocked due to the accumulation of waste (plastic waste).

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha 6
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

32	**Road 11**	**P74, P72, P69, P101, P68, P100**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.
33	**Road 10**	**P76, P75**	The sides of the drains are covered with vegetation. The flow of drainage is blocked due to the accumulation of waste (plastic waste).
34	**Road 29**	**P80, P79**	The sides of the drain are damaged and covered with vegetation. And it is blocked at the culvert.
35	**Road 26**	**P106, P107**	The sides of the drains are totally damaged and covered with plant vegetation. And the culverts are blocked.

The surveying, photography and site visits established that

- The existing storm drain network is in dilapidated state.
- Culverts and drains are damaged at many places.
- Many drains look like kachha drains, choked, full of trashes and stagnated water.
- Water logging is present at some places including behind site office and central verge of main road along HTL.
- Connectivity of drains are missing at several places.
- MG road divides the area into two parts and the runoff is to be carried into a nallah near the upper Ganga canal, so the storm runoff generated from the area located one side of the MG road is to be carried through culvert under the road to the outfall on other side of the road.

Overall, the existing storm drain network is non-functional so the industrial area is facing problems of frequent water logging and flooding, which is resulting into inconvenience and unhealthy surrounding environment as well as affecting the functioning and productivity of industries leading to huge losses. Therefore, a complete replacement of the existing drains with a new storm water drainage network is required.

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. B. R. Ghabar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Scope of Work

Office of DGM (Civil), Construction Div – I, UPSIDA, Ghaziabad, henceforth referred to as the Client, approached IIT Delhi for the design of a storm drain network in the Industrial area of MG road, District Hapur, UP. A team of experts in Water Resources Engineering and Structural Engineering comprising Prof. B R Chahar and Prof K N Jha, Department of Civil Engineering, IIT Delhi, carriedout this design work. Since, at present the existing drainage system is not functional in the scheme area, this work aimed to design a RCC storm drainage system of the MG road industrial area. The agreed scope of the work was limited to

1. Surveying of the Area
2. Layout plan of storm drains
3. Hydraulic design of storm drain system
4. Structural design of drains and culverts
5. Cost estimate of the work

For ease of construction (in situ as well as precast) and maintenance, all drains have to be taken as rectangular shape. Rectangular drain sections having minimum width as 45 cm and the minimum depth as 30 cm have to be adopted for the drains. Also a plot of about 51 hectares between Phase 1 and Phase 3 is under litigation, so the main drain cannot pass through it and to be routed along its periphery. All drains and culverts have to be adopted of precast RCC for better performance, quality, and durability. There are a number of options available in precast construction of drains. One of the possible option is attached in Appendix 2.

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Surveying of Area

To carry out a detailed survey of the area services of M/s Habib Survey & Design Pvt Ltd was hired. They conducted detailed surveying using DGPS and captured various information to prepare different layers in AutoCAD drawings. They have submitted the following

1. Scheme layout plan (A0 size print out submitted separately with the report)
2. AutoCAD files with different information in various layers (softcopy - mailed)

Basic Inputs for Hydraulic Design

1. Scheme layout plan prepared by Habib Survey & Design Pvt Ltd after detailed surveying of the project area.
2. Site visits and meetings on several occasions.
3. Approximate road patri levels, Section of Nala, culvert section & IL etc. captured from the surveying done by Habib Survey & Design Pvt Ltd using DGPS.
4. Rainfall intensity i = 13 mm/hr as recommended by the Client according to their master plan.
5. Runoff coefficient C = 0.65.
6. Manning's n = 0.012 for cement plaster/RCC finish.
7. Minor head losses at bends and junctions are neglected.
8. Runoff contributing area of the plot under litigation and few plots on the periphery of scheme are considered.
9. Outfall into the Udairampur drain, maintained by UP Irrigation Department. The client confirmed the RLs of bed level and HFL of Udairampur drain as 208.75 m and 209.40 m, respectively at the location of the industrial area drain outfall.

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Hydraulic Design of Storm Drain Network

Layout of Drains

The storm water drains are to be aligned both sides along the main roads. MG Road divides the area into two parts, so the storm runoff generated from the area located one side of the road is to be carried through a culvert under the road to the outfall on other side of the road. Also the main drain cannot pass through the plot under litigation between Phase 1 and Phase 3, so it has to be routed along its periphery. Using trial and error method, drain slopes and starting IL have been adopted to ensure that (1) velocities in drains are maximum, (2) excavation for drains are minimum, and (3) raising of road patri levels are minimum. The final proposed layout plan of proposed drain network is as per the drawing annexed with this report.

Hydraulic design of drains

Runoff computation by rational formula ($Q = CiA$) has been done considering rainfall intensity i = 13 mm/hr as recommended the Client according to their master plan. Hence, actual estimation of time of concentration for the catchment and analysis of rainfall for critical return period of rainfall intensity of time of concentration has not been warranted. There may be requirement of rainwater harvesting adaptation by the developers, but runoff coefficient C = 0.65 has been adopted so as to be on safer side due to efficacy of the implementation and subsequent performance of such rainwater harvesting measures. Runoff contributing area (A) for the each drain has been computed using AutoCAD layout plan of the scheme. The total discharge for the peak runoff generated from the entire scheme came out as 8.878 m^3/s = 313.516 cusec.

Manning's formula ($Q = \frac{1}{n} a^{5/3} p^{-2/3} S^{1/2}$) has been adopted for hydraulic calculations and arriving at drain sizing. Where n is Manning's roughness coefficient; a is flow area of drain; p is wetted perimeter of drain; and S is bed slope of drain. For ease of construction (in situ as well as precast) and maintenance all drains have been taken as rectangular shape. Rectangular drain

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

sections having Manning's n = 0.012 (cement plaster/RCC finish) and the minimum width as 45 cm and the minimum depth as 30 cm have been adopted for the drain.

Excel sheet calculations have been undertaken for various calculations. Steady state flow depths in different drains based on Manning's equation have been computed using "Goal Seek/Solver Function", and then actual flow area and velocity have been computed. Then the invert level at head and tail of each drain has been computed. A suitable free board has been added over the flow depth to get the total depth hence size of the drain. Finally, the minimum patri level is invert level plus total depth of the drain. Using trial and error method, drain slopes and starting IL have been adopted to have velocities in drains maximum, excavation for drains minimum, and raising of road patri levels minimum.

Table 2 lists the start and end of drain node, drain length, adopted bed slope, drain sizing, drain type, and flow velocity. Table 2 also tabulates the IL as well as full supply level (FSL) at head and tail of each drain and approximate road patri levels. Junction between two drains and transition between two drain sections should be carefully implemented. **The final drain network flow diagram is as per the A0 size drawing sheet submitted with this report**.

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Table 2: Hydraulic calculations for drain sizing, flow velocity and FSL & IL at head and tail of each drain

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	I/S	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
1	9	8	D1	85	6637.20	0.015579	500	0.144	0.45	0.065	0.240	212.900	212.730	213.044	212.874	15.55	0.30	213.352	213.801
2	8	12	D1	375	18573.00	0.033595	750	0.184	0.45	0.083	0.527	212.691	212.191	212.874	212.374	11.61	0.30	213.801	213.570
3	9	11	D1	375	11935.80	0.028016	750	0.161	0.45	0.072	0.388	212.900	212.400	213.061	212.561	13.94	0.30	213.352	213.524
4	11	12	D1	81	18541.00	0.043520	750	0.184	0.45	0.083	0.526	212.377	212.269	212.561	212.453	11.62	0.30	213.524	213.570
5	6	7	D1	84	6726.80	0.015789	500	0.135	0.45	0.061	0.261	213.250	213.082	213.385	213.217	16.54	0.30	213.811	213.753
6	7	13	D1	375	18809.00	0.044149	500	0.169	0.45	0.076	0.581	213.048	212.298	213.217	212.467	13.13	0.30	213.753	213.732
7	29	18	D1	198	5161.70	0.012114	500	0.122	0.45	0.055	0.221	213.250	212.854	213.373	212.976	17.82	0.30	213.735	213.723
8	29	30	D1	63	2888.80	0.006781	500	0.098	0.45	0.044	0.154	213.250	213.174	213.348	213.222	20.20	0.30	213.735	213.693
9	30	17	D1	198	8050.00	0.018895	500	0.144	0.45	0.065	0.292	213.078	212.687	213.222	212.826	15.61	0.30	213.693	213.815
10	31	16	D1	198	5140.20	0.012065	500	0.122	0.45	0.055	0.220	213.300	212.904	213.422	213.026	17.83	0.30	213.791	213.792
11	31	32	D1	63	2874.80	0.006748	500	0.098	0.45	0.044	0.153	213.300	213.174	213.398	213.272	20.22	0.30	213.791	213.714
12	32	15	D1	198	8015.00	0.018813	500	0.144	0.45	0.065	0.291	213.128	212.732	213.272	212.876	15.63	0.30	213.714	213.626
13	6	14	D1	375	12082.20	0.028360	500	0.149	0.45	0.067	0.422	213.300	212.550	213.449	212.699	15.08	0.30	213.811	213.722
14	28	27	D1	63	2900.20	0.006807	750	0.098	0.45	0.044	0.154	213.300	213.216	213.398	213.314	20.18	0.30	213.726	213.625

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
15	27	20	D1	199	8086.50	0.018981	750	0.144	0.45	0.065	0.293	213.170	212.905	213.314	213.049	15.58	0.30	213.625	213.628
16	28	19	D1	199	5186.30	0.012173	500	0.122	0.45	0.055	0.222	213.350	212.952	213.472	213.074	17.79	0.30	213.768	213.726
17	25	22	D1	198	5143.50	0.012073	750	0.122	0.45	0.055	0.220	213.400	213.136	213.522	213.258	17.83	0.30	213.835	213.647
18	25	26	D1	61	2861.00	0.006715	1000	0.098	0.45	0.044	0.153	213.300	213.239	213.398	213.337	20.23	0.30	213.835	213.551
19	26	21	D1	198	8004.50	0.018788	1000	0.144	0.45	0.065	0.291	213.193	212.995	213.337	213.139	15.64	0.30	213.551	213.505
20	4	24	D1	63	2877.80	0.006755	1000	0.106	0.45	0.048	0.142	213.300	213.237	213.406	213.343	19.44	0.30	213.489	213.415
21	24	23	D1	198	8022.50	0.018831	1000	0.155	0.45	0.070	0.270	213.187	212.989	213.343	213.145	14.49	0.30	213.915	213.769
22	1	5	D1	196	5128.70	0.012038	750	0.127	0.45	0.055	0.220	213.350	213.089	213.472	213.210	17.84	0.30	213.899	213.799
23	5	23	D1	63	8006.90	0.018793	750	0.144	0.45	0.065	0.291	213.067	212.983	213.210	213.126	15.63	0.30	213.799	213.769
24	23	22	C1	16	16029.00	0.037624	750	0.169	0.45	0.076	0.496	212.958	212.936	213.126	213.105	13.15	0.30	213.769	213.647
25	22	21	D1	64	24057.50	0.056468	750	0.204	0.45	0.092	0.614	212.900	212.815	213.105	213.020	9.55	0.30	213.647	213.505
26	21	20	C2	16	32062.00	0.075257	750	0.243	0.45	0.109	0.688	212.777	212.755	213.020	212.998	20.71	0.45	213.505	213.628
27	20	19	D4	63	43048.70	0.101045	750	0.223	0.60	0.134	0.755	212.755	212.671	212.978	212.894	22.69	0.45	213.628	213.768
28	19	18	C4	16	48235.00	0.113218	750	0.241	0.60	0.144	0.784	212.654	212.632	212.894	212.873	20.93	0.45	213.768	213.723
29	18	17	D4	63	56285.00	0.132113	750	0.269	0.60	0.161	0.820	212.605	212.521	212.873	212.789	18.14	0.45	213.723	213.815
30	17	16	C4	16	64335.00	0.151009	750	0.293	0.60	0.176	0.859	212.496	212.475	212.789	212.768	15.71	0.45	213.815	213.792
31	16	15	D7	63	72350.00	0.169822	1000	0.289	0.75	0.217	0.784	212.475	212.412	212.764	212.701	16.12	0.45	213.792	213.626
32	15	14	C7	16	80365.00	0.188635	1000	0.311	0.75	0.234	0.807	212.389	212.373	212.701	212.685	13.85	0.45	213.626	213.722
33	14	13	D8	83	99166.00	0.232765	1000	0.363	0.75	0.272	0.855	212.322	212.239	212.685	212.602	23.69	0.60	213.722	213.732
34	13	12	C9	16	117975.00	0.276914	1000	0.347	0.90	0.312	0.888	212.239	212.223	212.585	212.569	25.34	0.60	213.732	213.570
35	12	36A	C9	16	155089.00	0.364028	1000	0.424	0.90	0.381	0.955	212.146	212.130	212.569	212.553	17.64	0.60	213.570	213.535

Drain No.	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			*A*	*Q*	*I/S*	*y*	*b*	*a*	*v*	Head	Tail	Head	Tail	FB (cm)	$d = y + FB$	Head	Tail
36	112	55	D1	105	5497.50	0.012904	500	0.135	0.45	0.061	0.213	212.750	212.540	212.885	212.675	16.54	0.30	213.257	213.405
37	51	52	D1	50	1447.00	0.003396	500	0.076	0.45	0.034	0.100	213.000	212.900	213.076	212.976	22.44	0.30	214.061	213.313
38	50	50a	D1	50	1447.00	0.003396	500	0.076	0.45	0.034	0.100	213.000	212.900	213.076	212.976	22.44	0.30	214.061	213.313
39	61	56A	D1	185	11903.60	0.027940	500	0.160	0.45	0.072	0.389	212.750	211.980	212.910	212.140	14.03	0.30	213.245	213.199
40	56A	55A	D1	20	69297.10	0.162656	500	0.270	0.60	0.162	1.005	211.870	211.830	212.140	212.100	18.04	0.45	213.199	213.405
41	48	59	D1	64	3807.00	0.008936	500	0.157	0.45	0.071	0.127	213.000	212.872	213.157	213.029	14.32	0.30	213.562	213.502
42	59	53	D1	273	10933.50	0.025663	500	0.161	0.45	0.072	0.355	212.868	212.322	213.029	212.483	13.92	0.30	213.507	213.399
43	58	54	D1	273	7139.20	0.016758	500	0.155	0.45	0.070	0.241	212.950	212.404	213.105	212.559	14.52	0.30	213.637	213.209
44	58	57	D2	64	3815.80	0.008957	500	0.150	0.45	0.068	0.132	212.950	212.822	213.100	212.972	29.97	0.45	213.637	213.418
45	46	65A	D1	163	4922.50	0.011554	500	0.117	0.45	0.053	0.219	212.960	212.574	213.017	212.691	18.29	0.30	213.476	213.451
46	65A	61	C1	16	4922.50	0.011554	500	0.155	0.45	0.070	0.166	212.536	212.504	212.691	212.659	14.50	0.30	213.451	213.245
47	61	62	D1	83	7792.40	0.018290	500	0.148	0.45	0.067	0.274	212.504	212.338	212.653	212.487	15.15	0.30	213.245	213.656
48	47	60	D1	145	4778.50	0.011216	500	0.117	0.45	0.053	0.213	213.250	212.960	213.367	213.077	18.28	0.30	213.789	213.475
49	65A	60	D1	103	4442.50	0.010428	500	0.155	0.45	0.070	0.149	213.000	212.794	213.155	212.949	14.49	0.30	213.451	213.475
50	60	57	C1	16	9221.00	0.021644	500	0.115	0.45	0.052	0.418	212.794	212.762	212.909	212.877	18.50	0.30	213.475	213.421
51	57	56	D1	273	20176.50	0.047359	750	0.185	0.45	0.083	0.569	212.692	212.328	212.877	212.513	11.51	0.30	213.421	213.189

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			*A*	*Q*	*I/N*	*y*	*b*	*a*	*v*	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
52	36	47	D1	101	4426.50	0.010390	500	0.118	0.45	0.053	0.195	213.000	212.798	213.118	212.916	18.16	0.30	213.476	213.789
53	47	48	C1	16	4426.50	0.010390	500	0.155	0.45	0.070	0.149	212.761	212.729	212.916	212.884	14.49	0.30	213.789	213.562
54	48	49	D1	273	11553.00	0.027117	750	0.115	0.45	0.052	0.524	212.729	212.365	212.844	212.480	18.50	0.30	213.562	213.458
55	49	53	D1	62	15344.00	0.036016	750	0.163	0.45	0.074	0.490	212.317	212.234	212.480	212.398	13.65	0.30	213.458	213.428
56	53	54	C2	16	26277.50	0.061679	1000	0.234	0.45	0.105	0.585	212.246	212.230	212.480	212.464	21.56	0.45	213.428	213.209
57	54	56	D4	62	37217.00	0.087357	1000	0.223	0.60	0.134	0.652	212.174	212.112	212.398	212.336	22.67	0.45	213.209	213.189
58	56	56A	C4	16	57391.50	0.134719	1000	0.303	0.60	0.182	0.741	212.161	212.145	212.464	212.448	14.70	0.45	213.189	213.189
59	43	42	D1	84	5565.80	0.013064	750	0.125	0.45	0.056	0.232	212.950	212.838	213.075	212.963	17.47	0.30	213.414	213.459
60	42	42A	D1	151	10444.15	0.024515	750	0.159	0.45	0.071	0.343	212.805	212.603	212.963	212.762	14.13	0.30	213.459	213.261
61	42A	67	D1	151	15322.50	0.035965	1000	0.181	0.45	0.081	0.443	212.581	212.430	212.762	212.611	11.94	0.30	213.261	213.402
62	41	41A	D1	151	4006.85	0.009405	500	0.111	0.45	0.050	0.189	212.900	212.598	213.011	212.709	18.02	0.30	213.375	213.716
63	41A	66	D1	151	8013.70	0.018810	750	0.144	0.45	0.065	0.291	212.565	212.364	212.709	212.507	15.63	0.30	213.716	213.474
64	41	40	D1	62	4227.80	0.009924	500	0.113	0.45	0.051	0.195	212.900	212.776	213.013	212.889	18.69	0.30	213.375	213.646
65	40	40A	D1	151	8234.65	0.019329	750	0.145	0.45	0.065	0.296	212.744	212.543	212.889	212.688	15.48	0.30	213.646	213.717
66	40A	65	D1	151	12241.50	0.028734	750	0.167	0.45	0.075	0.383	212.521	212.320	212.688	212.486	13.32	0.30	213.717	213.475
67	39	39A	D1	149	3877.00	0.009100	500	0.109	0.45	0.049	0.185	213.000	212.702	213.109	212.811	19.06	0.30	213.418	213.775
68	39A	64	D1	149	7754.00	0.018200	500	0.142	0.45	0.064	0.285	212.670	212.372	212.811	212.513	15.83	0.30	213.775	213.110
69	35	44	D1	118	6244.60	0.014657	500	0.131	0.45	0.059	0.249	213.250	213.014	213.381	213.145	16.91	0.30	213.802	213.524
70	44	37	D1	240	15980.50	0.037510	750	0.168	0.45	0.076	0.495	212.977	212.657	213.145	212.825	13.17	0.30	213.524	213.457

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
71	39	38	D1	64	4092.00	0.009605	500	0.112	0.45	0.050	0.191	212.900	212.772	213.012	212.884	18.83	0.30	213.418	213.658
72	43	43A	D1	151	4878.35	0.011451	500	0.119	0.45	0.054	0.213	212.900	212.598	213.019	212.717	18.07	0.30	213.414	213.618
73	43A	45	D1	151	9756.70	0.022901	500	0.155	0.45	0.070	0.329	212.563	212.261	212.717	212.415	14.53	0.30	213.792	213.716
74	45	67	D1	84	15322.50	0.035965	750	0.169	0.45	0.076	0.474	212.247	212.135	212.415	212.303	13.15	0.30	213.716	213.402
75	67	66	C1	16	30645.00	0.071931	750	0.214	0.45	0.096	0.748	212.090	212.068	212.303	212.282	8.63	0.30	213.402	213.474
76	66	65	D4	62	42886.50	0.100664	750	0.223	0.60	0.134	0.754	212.059	211.977	212.282	212.199	22.75	0.45	213.474	213.475
77	65	64	C4	16	55128.00	0.129398	750	0.260	0.60	0.156	0.829	211.939	211.918	212.199	212.178	18.98	0.45	213.475	213.110
78	64	63	D4	61	66974.00	0.157203	1000	0.338	0.60	0.203	0.776	211.840	211.776	212.178	212.114	11.22	0.45	213.110	213.408
79	63	63A	C8	16	111402.00	0.261485	1000	0.396	0.75	0.297	0.880	211.718	211.702	212.114	212.098	20.38	0.60	213.408	213.408
80	9B	9A	D1	67	4395.80	0.010318	1500	0.124	0.45	0.056	0.185	212.800	212.755	212.924	212.879	17.62	0.30	213.339	213.412
81	10A	10	D1	50	1775.00	0.004049	1500	0.087	0.45	0.039	0.103	212.900	212.867	212.987	212.954	21.28	0.30	214.023	213.487
82	10	10B	D1	67	3725.00	0.008743	1500	0.116	0.45	0.052	0.167	212.837	212.793	212.954	212.909	18.37	0.30	213.487	213.487
83	2	3	D1	60	2799.40	0.006571	750	0.097	0.45	0.044	0.151	213.250	213.170	213.347	213.267	20.31	0.30	213.737	213.928
84	3	3A	D1	236	16033.40	0.037634	750	0.169	0.45	0.076	0.496	213.098	212.784	213.267	212.952	13.15	0.30	213.928	213.735
85	3A	33	D1	157	26818.40	0.062949	1000	0.226	0.45	0.102	0.619	212.726	212.569	212.952	212.795	7.40	0.30	213.735	213.759
86	33	34	D3	60	36827.40	0.086442	1000	0.222	0.60	0.133	0.650	212.569	212.509	212.791	212.731	7.85	0.30	213.759	214.080
87	34	34A	D4	283	50309.40	0.118087	1000	0.275	0.60	0.165	0.716	212.456	212.173	212.731	212.448	17.51	0.45	214.040	214.080
88	34A	46A	D4	170	55584.40	0.130469	1000	0.293	0.60	0.176	0.742	212.155	211.985	212.448	212.278	15.71	0.45	214.080	213.833
89	46A	50A	D4	116	60427.40	0.141837	1000	0.312	0.60	0.187	0.758	211.966	211.850	212.278	212.162	13.82	0.45	213.833	213.794
90	50A	50u	D7	283	79577.40	0.186786	1000	0.308	0.75	0.231	0.808	211.850	211.567	212.158	211.875	14.18	0.45	213.794	214.726
91	50u	52	C7	16	81024.40	0.190182	1000	0.313	0.75	0.235	0.809	211.562	211.546	211.875	211.859	13.66	0.45	214.726	213.313
92	52	55	D7	157	89431.90	0.209917	1000	0.336	0.75	0.252	0.833	211.523	211.366	211.859	211.702	11.39	0.45	213.313	213.405

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contribut-ing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			*A*	*Q*	*I/N*	*y*	*b*	*a*	*v*	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
93	35	36	D2	322	10526.90	0.024709	500	0.151	0.45	0.068	0.365	213.200	212.556	213.351	212.707	29.94	0.45	213.802	213.640
94	36	37	D2	108	16601.50	0.038967	750	0.175	0.45	0.079	0.495	212.532	212.388	212.707	212.563	27.52	0.45	213.640	213.457
95	37	38	C2	16	32582.00	0.076477	750	0.224	0.45	0.101	0.760	212.339	212.318	212.563	212.541	22.64	0.45	213.457	213.658
96	38	38A	D4	149	40551.00	0.095182	1000	0.236	0.60	0.142	0.673	212.305	212.156	212.541	212.392	21.42	0.45	213.658	213.611
97	38A	63	D5	149	44428.00	0.104282	1000	0.252	0.60	0.151	0.690	212.140	211.991	212.392	212.243	34.81	0.60	213.611	213.408
98	1	10B	D4	475	35058.00	0.082289	1000	0.214	0.60	0.128	0.642	213.100	212.625	213.314	212.839	23.62	0.45	213.761	213.487
99	10B	9A	C1	21	38951.00	0.091427	1000	0.229	0.60	0.137	0.665	212.610	212.589	212.839	212.818	22.09	0.45	213.487	213.339
100	9A	11B	D4	267	57062.20	0.133938	1000	0.301	0.60	0.181	0.741	212.518	212.349	212.818	212.551	14.87	0.45	213.412	213.215
101	11B	36B	D4	92	61418.00	0.144162	1000	0.316	0.60	0.190	0.761	212.235	212.143	212.551	212.459	13.41	0.45	213.215	213.473
102	36B	36A	D7	114	67293.80	0.157954	1500	0.317	0.75	0.238	0.664	212.141	212.065	212.459	212.383	13.27	0.45	213.559	213.535
103	36A	38B	D12	138	227209.65	0.533312	1500	0.494	1.20	0.592	0.901	211.889	211.797	212.383	212.291	25.65	0.75	213.535	213.473
104	38B	63A	D12	284	235686.40	0.553208	1500	0.507	1.20	0.608	0.909	211.784	211.595	212.291	212.101	21.31	0.75	213.611	213.408
105	63A	62	C14	16	347088.40	0.814694	1500	0.545	1.50	0.817	0.997	211.557	211.546	212.101	212.091	20.53	0.75	213.408	213.656
106	62	55A	D15	385	366784.40	0.860924	1500	0.567	1.50	0.850	1.013	211.524	211.267	212.091	211.834	33.32	0.90	213.377	213.433
107	55A	55	C15	16	436081.50	1.023580	1500	0.643	1.50	0.965	1.061	211.191	211.180	211.834	211.823	25.68	0.90	213.408	213.541
108	**55/C3**	**C4**	**C15**	**30**	**531010.90**	**1.246401**	**1500**	**0.626**	**1.80**	**1.126**	**1.107**	**211.180**	**211.160**	**211.806**	**211.786**	**27.45**	**0.90**	**213.541**	**213.451**
109	84a	84	D1	77	8102.50	0.019018	1500	0.156	0.45	0.070	0.271	213.100	213.049	213.256	213.204	14.43	0.30	213.339	213.181
110	84	81	D1	203	27078.00	0.063558	1500	0.261	0.45	0.118	0.540	212.943	212.808	213.204	213.069	3.86	0.30	213.181	213.172
111	85	80	D1	281	8666.80	0.020343	1500	0.160	0.45	0.072	0.283	213.000	212.813	213.160	212.972	14.03	0.30	213.139	213.209

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	I/S	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	d = y+FB	Head	Tail
112	82	81	D1	181	18799.50	0.044127	1500	0.233	0.45	0.096	0.459	213.000	212.879	213.213	213.093	8.65	0.30	213.324	213.172
113	81	80	C4	16	46005.50	0.107985	1500	0.299	0.60	0.179	0.603	212.794	212.784	213.093	213.082	15.14	0.45	213.172	213.209
114	80	79	D2	58	58345.70	0.136950	1500	0.286	0.75	0.215	0.638	212.784	212.745	213.070	213.031	16.38	0.45	213.209	213.286
115	79	78	C7	16	58473.70	0.137251	1500	0.287	0.75	0.215	0.638	212.744	212.734	213.031	213.020	16.33	0.45	213.286	213.090
116	78	77	D7	89	66779.10	0.156745	1500	0.316	0.75	0.237	0.662	212.705	212.646	213.020	212.961	13.45	0.45	213.090	213.328
117	83	76	D4	360	38548.00	0.090481	1500	0.263	0.60	0.158	0.573	213.050	212.810	213.313	213.073	18.69	0.45	213.368	213.225
118	68	76	D1	199	24518.00	0.057549	1500	0.238	0.45	0.107	0.537	212.980	212.847	213.218	213.086	6.18	0.30	213.273	213.225
119	76	77	C7	16	63194.00	0.148330	1500	0.303	0.75	0.227	0.653	212.782	212.772	213.086	213.075	14.70	0.45	213.225	213.328
120	77	88	D9	464	148871.90	0.349435	1500	0.478	0.90	0.430	0.812	212.597	212.287	213.075	212.766	12.18	0.60	213.328	213.104
121	79	86	D1	412	24117.30	0.056609	1500	0.234	0.45	0.105	0.537	212.800	212.575	213.034	212.760	6.56	0.30	213.286	212.908
122	78	87	D1	423	18570.80	0.043590	1500	0.212	0.45	0.096	0.456	212.750	212.468	212.962	212.680	8.75	0.30	213.090	213.027
123	236	86	D1	263	16791.50	0.039413	1500	0.205	0.45	0.092	0.428	212.750	212.575	212.955	212.779	9.54	0.30	213.184	212.908
124	86	87	C4	16	41036.80	0.096322	1500	0.274	0.60	0.165	0.585	212.505	212.494	212.779	212.769	17.55	0.45	212.908	213.027
125	87	88	D7	97	64260.60	0.150834	1500	0.307	0.75	0.230	0.656	212.462	212.397	212.769	212.704	14.32	0.45	213.027	213.104
126	88	89	C10	16	213260.50	0.500570	1500	0.471	1.20	0.565	0.885	212.233	212.222	212.704	212.693	12.88	0.60	213.104	212.924
127	108	107	D1	57	2712.50	0.006367	500	0.103	0.45	0.046	0.137	212.850	212.736	212.953	212.839	19.67	0.30	213.316	213.222
128	107	90	D1	403	14962.50	0.035120	750	0.174	0.45	0.078	0.448	212.665	212.128	212.839	212.302	12.59	0.30	213.152	213.186
129	106	91	D1	410	14660.00	0.034410	750	0.173	0.45	0.078	0.442	212.800	212.253	212.973	212.426	12.70	0.30	213.356	212.950

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			*A*	*Q*	*I/N*	*y*	*b*	*a*	*v*	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
130	105	92	D1	260	8480.00	0.019904	500	0.158	0.45	0.071	0.279	212.530	212.010	212.688	213.168	14.16	0.30	213.050	213.055
131	104	93	D1	168	12177.53	0.028583	500	0.161	0.45	0.073	0.393	212.500	212.164	212.661	212.325	13.86	0.30	213.050	212.990
132	103	94	D1	258	10184.22	0.023905	750	0.151	0.45	0.068	0.352	212.350	212.006	212.501	212.157	14.90	0.30	212.786	212.922
133	102	95	D1	262	12804.50	0.030055	500	0.163	0.45	0.073	0.410	212.430	211.906	212.593	212.069	13.71	0.30	212.822	212.910
134	101	96	D1	208	8089.10	0.018987	500	0.156	0.45	0.070	0.271	212.900	212.484	213.056	212.640	14.44	0.30	213.390	212.978
135	100	97	D1	222	9568.00	0.022158	500	0.147	0.45	0.066	0.338	212.750	212.306	212.897	212.453	15.25	0.30	213.249	212.966
136	70	120A	D1	448	12315.00	0.028906	1000	0.164	0.45	0.074	0.390	213.000	212.552	213.164	212.716	13.55	0.30	213.350	213.370
137	120A	120	C1	16	12443.00	0.029206	1000	0.164	0.45	0.074	0.396	212.552	212.536	212.716	212.700	13.62	0.30	213.370	213.302
138	120A	163	D1	392	12315.00	0.028906	1000	0.164	0.45	0.074	0.390	213.030	212.638	213.194	212.802	13.55	0.30	213.370	213.350
139	72	117	D1	304	8912.40	0.020919	1500	0.161	0.45	0.073	0.288	213.150	212.947	213.311	213.109	13.86	0.30	213.304	213.480
140	73	116	D1	304	8812.40	0.020685	1000	0.161	0.45	0.072	0.286	213.170	212.866	213.331	213.027	13.93	0.30	213.474	213.413
141	118	117	D1	62	3736.20	0.008770	500	0.116	0.45	0.052	0.167	213.050	212.926	213.166	213.042	18.35	0.30	213.399	213.480
142	117	116	C1	16	12776.60	0.029990	750	0.164	0.45	0.074	0.407	212.879	212.858	213.042	213.021	13.64	0.30	213.480	213.413
143	116	115	D1	71	26410.60	0.061992	750	0.182	0.45	0.082	0.758	212.839	212.745	213.021	212.926	11.83	0.30	213.413	213.462
144	74	115	D1	304	8812.40	0.020685	1500	0.161	0.45	0.073	0.286	212.800	212.597	212.961	212.758	13.93	0.30	213.186	213.462

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
146	115	114	C4	16	35351.00	0.082972	1500	0.247	0.60	0.148	0.560	212.511	212.500	212.758	212.747	20.30	0.45	213.462	213.245
146	114	113	D4	251	48542.50	0.113940	1500	0.311	0.60	0.186	0.611	212.437	212.269	212.747	212.580	13.93	0.45	213.245	213.009
147	75	112	D1	448	16233.60	0.038104	750	0.173	0.45	0.078	0.490	212.800	212.703	212.973	212.376	12.71	0.30	213.211	213.426
148	109	111	D1	448	16233.60	0.038104	750	0.173	0.45	0.078	0.490	212.700	212.103	212.873	212.276	12.71	0.30	213.252	213.187
149	106	110	D4	375	49326.00	0.115779	500	0.213	0.60	0.128	0.907	212.800	212.050	213.013	212.263	23.73	0.45	213.356	213.244
150	119	114	D1	145	6171.75	0.014486	750	0.141	0.45	0.063	0.229	212.900	212.707	213.041	212.847	15.94	0.30	213.344	213.245
151	71	118	D1	300	8880.40	0.020844	1000	0.161	0.45	0.071	0.287	212.900	212.608	213.061	212.761	13.89	0.30	213.244	213.399
152	118	119	C1	16	9008.40	0.021145	1000	0.162	0.45	0.073	0.290	212.599	212.583	212.761	212.745	11.80	0.30	213.399	213.344
153	119	120	D1	138	15124.15	0.035500	1500	0.193	0.45	0.087	0.408	212.552	212.460	212.745	212.653	10.67	0.30	213.344	213.302
154	120	113	D4	145	33738.90	0.079193	1500	0.239	0.60	0.143	0.552	212.414	212.317	212.653	212.556	21.09	0.45	213.302	213.245
155	113	112	C8	16	82409.40	0.193433	1500	0.369	0.75	0.276	0.700	212.188	212.177	212.556	212.546	23.15	0.60	213.245	213.426
156	112	111	D9	82	104259.00	0.244719	1500	0.367	0.90	0.330	0.741	212.177	212.123	212.544	212.490	23.29	0.60	213.426	213.187
157	111	110	C9	16	120620.60	0.283123	1500	0.409	0.90	0.368	0.770	212.081	212.070	212.490	212.479	19.14	0.60	213.187	213.244
158	110	99	D12	343	219016.60	0.514081	1500	0.480	1.20	0.577	0.892	211.999	211.770	212.479	212.250	26.96	0.75	213.244	212.820
159	99	98	D12	257	228864.60	0.537196	1500	0.496	1.20	0.595	0.902	211.754	211.583	212.250	212.079	25.39	0.75	212.820	212.843
160	126	125	D1	81	4143.30	0.009725	500	0.112	0.45	0.050	0.193	212.750	212.588	212.862	212.700	18.78	0.30	213.247	213.514
161	126	131	D1	274	10347.70	0.024288	500	0.158	0.45	0.071	0.341	212.800	212.252	212.958	212.410	14.18	0.30	213.247	212.923
162	131	132	D1	86	14531.00	0.034107	750	0.163	0.45	0.073	0.465	212.247	212.133	212.410	212.295	13.71	0.30	212.923	212.582

Drain No.	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y + FB$	Head	Tail
163	134	133	D1	83	3958.60	0.009292	500	0.110	0.45	0.050	0.187	212.400	212.234	212.510	212.344	18.97	0.30	212.820	212.896
164	134	141	D1	335	10367.40	0.024335	750	0.152	0.45	0.068	0.356	212.400	211.953	212.552	212.105	14.80	0.30	212.820	213.146
165	141	136	D1	86	14350.00	0.033683	750	0.172	0.45	0.077	0.436	211.934	211.819	212.105	211.991	12.85	0.30	213.146	212.776
166	121	122	D1	58	3232.25	0.007587	1000	0.110	0.45	0.050	0.153	212.650	212.592	212.760	212.702	18.97	0.30	213.011	213.461
167	122	123	C1	16	1360.25	0.007887	1000	0.112	0.45	0.050	0.157	212.590	212.574	212.702	212.686	18.81	0.30	213.461	213.219
168	123	124	D1	72	7231.90	0.016975	1000	0.149	0.45	0.067	0.253	212.537	212.465	212.686	212.614	15.08	0.30	213.219	213.238
169	124	125	D1	16	7359.90	0.017275	1000	0.159	0.45	0.071	0.242	212.456	212.440	212.614	212.598	14.15	0.30	213.238	213.514
170	125	132	D2	273	21842.90	0.051270	1000	0.211	0.45	0.095	0.541	212.388	212.115	212.598	212.325	23.94	0.45	213.514	212.794
171	132	133	C3	16	36501.90	0.085678	1000	0.220	0.60	0.132	0.650	212.106	212.090	212.325	212.309	23.02	0.45	212.794	212.896
172	133	136	D4	333	50811.90	0.119267	1000	0.274	0.60	0.164	0.727	212.036	211.763	212.309	211.976	17.65	0.45	212.896	212.776
173	136	137	C4	16	65289.90	0.153250	1000	0.331	0.60	0.198	0.772	211.645	211.629	211.976	211.960	11.92	0.45	212.776	212.963
174	137	138	D8	141	73405.90	0.172300	1000	0.292	0.75	0.219	0.788	211.629	211.488	211.921	211.780	30.84	0.60	212.963	212.876
175	121	162	D1	396	9627.25	0.022597	1000	0.164	0.45	0.074	0.305	212.950	212.554	213.114	212.718	13.56	0.30	213.011	213.521
176	122	161	D1	325	9059.25	0.021264	750	0.150	0.45	0.068	0.314	213.000	212.567	213.150	212.717	14.95	0.30	213.461	213.628
177	123	160	D1	318	10233.85	0.024021	750	0.158	0.45	0.071	0.339	212.870	212.446	213.028	212.604	14.25	0.30	213.219	213.494
178	124	159	D1	303	10113.85	0.023739	750	0.157	0.45	0.071	0.336	212.800	212.396	212.957	212.553	14.32	0.30	213.238	213.164
179	127	158	D1	201	5702.30	0.013385	500	0.126	0.45	0.057	0.235	212.750	212.348	212.876	212.474	17.35	0.30	213.252	213.280
180	127	128	D1	62	2250.70	0.005283	500	0.089	0.45	0.040	0.132	212.800	212.676	212.889	212.765	21.07	0.30	213.252	213.203

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
181	128	157	D1	285	8625.00	0.020245	750	0.148	0.45	0.066	0.305	212.618	212.238	212.765	212.385	15.23	0.30	213.900	213.234
182	129	156	D1	186	9502.50	0.022304	500	0.153	0.45	0.069	0.324	212.600	212.228	212.753	212.381	14.68	0.30	213.178	213.228
183	129	130	D1	197	9590.50	0.022511	500	0.154	0.45	0.069	0.325	212.600	212.206	212.754	212.360	14.65	0.30	213.178	212.842
184	130	154	D1	146	18773.00	0.044064	750	0.185	0.45	0.083	0.530	212.175	211.980	212.360	212.165	11.51	0.30	212.856	212.950
185	135	153	D1	140	6874.80	0.016137	500	0.136	0.45	0.061	0.264	212.450	212.170	212.586	212.306	16.43	0.30	212.897	212.977
186	135	142	D1	259	10704.20	0.025125	500	0.160	0.45	0.072	0.349	212.450	211.932	212.610	212.092	13.98	0.30	212.897	212.757
187	142	143	D1	88	17163.00	0.040285	500	0.170	0.45	0.076	0.527	211.932	211.746	212.092	211.916	13.02	0.30	213.044	212.876
188	137	140	D1	183	8452.00	0.019839	500	0.147	0.45	0.066	0.301	212.450	212.084	212.597	212.231	15.34	0.30	212.963	212.989
189	69A	164	D1	550	22749.20	0.053397	1000	0.217	0.45	0.097	0.548	213.250	212.700	213.467	212.917	8.33	0.30	213.722	213.684
190	164	163	D2	101	30743.80	0.072163	1000	0.233	0.45	0.109	0.659	212.673	212.572	212.917	212.816	20.67	0.45	213.684	213.329
191	163	162	C4	16	43186.80	0.101369	1000	0.247	0.60	0.148	0.684	212.569	212.553	212.816	212.800	20.31	0.45	213.329	213.521
192	162	161	D4	59	56054.30	0.131572	1000	0.297	0.60	0.178	0.738	212.502	212.443	212.800	212.741	15.27	0.45	213.521	213.628
193	161	160	C4	16	65241.55	0.153136	1000	0.331	0.60	0.198	0.772	212.410	212.394	212.741	212.725	11.94	0.45	213.628	213.494
194	160	159	D7	74	79363.05	0.186283	1000	0.309	0.75	0.231	0.805	212.394	212.320	212.703	212.629	14.14	0.45	213.494	213.348
195	159	158	C7	16	89604.90	0.210323	1000	0.337	0.75	0.252	0.833	212.292	212.276	212.629	212.613	11.34	0.45	213.348	213.280
196	158	157	D8	63	97565.90	0.229009	1000	0.359	0.75	0.269	0.852	212.254	212.191	212.613	212.550	24.15	0.60	213.280	213.234
197	157	156	C8	16	106318.90	0.249554	1000	0.383	0.75	0.287	0.870	212.167	212.151	212.550	212.534	21.75	0.60	213.234	213.228
198	156	154	D9	206	125483.90	0.294539	1000	0.362	0.90	0.326	0.903	212.151	211.945	212.514	212.308	23.76	0.60	213.228	212.950
199	154	153	C9	16	144384.90	0.338903	1000	0.402	0.90	0.362	0.937	211.906	211.890	212.308	212.292	19.83	0.60	212.950	212.977
200	153	143	D10	263	159112.50	0.373472	1500	0.503	0.90	0.453	0.825	211.789	211.613	212.292	212.116	24.70	0.75	212.977	212.971

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
201	143	140	C10	16	176403.50	0.414058	1500	0.544	0.90	0.490	0.845	211.572	211.561	212.116	212.106	20.58	0.75	212.971	212.989
202	140	139	D12	215	193563.50	0.454337	1500	0.439	1.20	0.527	0.862	211.561	211.418	212.001	211.857	31.08	0.75	212.989	212.802
203	175	166	D1	336	16380.90	0.038450	750	0.170	0.45	0.077	0.502	213.100	212.652	213.270	212.822	12.99	0.30	213.499	213.275
204	165	166	D1	126	10136.60	0.023793	500	0.151	0.45	0.068	0.351	212.900	212.648	213.051	212.799	14.93	0.30	213.377	213.409
205	166	167	C2	16	26645.50	0.062543	750	0.219	0.45	0.098	0.636	212.580	212.559	212.799	212.777	23.15	0.45	213.409	213.368
206	167	155	D4	449	51936.80	0.121907	750	0.254	0.60	0.152	0.800	212.523	211.925	212.777	212.179	19.59	0.45	213.368	212.909
207	155	152	C4	16	52064.80	0.122208	750	0.255	0.60	0.153	0.800	211.924	211.903	212.179	212.157	19.55	0.45	212.909	212.508
208	152	144	D4	262	60860.10	0.142852	1000	0.314	0.60	0.188	0.759	211.844	211.582	212.157	211.895	13.63	0.45	212.508	212.963
209	144	145	C4	16	60988.10	0.143153	1000	0.314	0.60	0.189	0.759	211.581	211.565	211.895	211.879	13.58	0.45	212.963	212.888
210	145	219	D7	222	69731.30	0.163675	1000	0.281	0.75	0.211	0.776	211.565	211.343	211.846	211.674	16.88	0.45	212.888	212.963
211	152	151	D1	100	5266.20	0.012361	500	0.123	0.45	0.055	0.224	212.500	212.300	212.623	212.423	17.72	0.30	212.933	212.810
212	144	147	D1	98	5250.20	0.012323	500	0.123	0.45	0.055	0.223	212.450	212.254	212.573	212.377	17.74	0.30	212.916	212.935
213	145	146	D1	100	5444.80	0.012780	500	0.124	0.45	0.056	0.228	212.400	212.200	212.524	212.324	17.57	0.30	212.888	212.930
214	167	168	D1	97	10075.70	0.023650	500	0.157	0.45	0.070	0.336	212.950	212.756	213.107	212.913	14.34	0.30	213.368	213.275
215	168	186	D1	505	35815.00	0.084066	750	0.245	0.45	0.110	0.763	212.668	211.994	212.913	212.239	5.50	0.30	213.344	212.915
216	186	151	C4	16	46098.70	0.108204	750	0.233	0.60	0.140	0.774	211.994	211.973	212.227	212.206	21.69	0.45	212.915	212.888
217	151	147	D4	207	59720.20	0.140177	750	0.277	0.60	0.166	0.843	211.929	211.653	212.206	211.930	17.29	0.45	212.888	212.935
218	147	146	C4	16	65098.40	0.152800	1000	0.330	0.60	0.198	0.772	211.600	211.584	211.930	211.914	11.99	0.45	212.935	212.900
219	146	220	D7	342	80246.40	0.188356	1000	0.311	0.75	0.233	0.807	211.584	211.242	211.895	211.553	13.88	0.45	212.900	212.802

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			*A*	*Q*	*1/S*	*y*	*b*	*a*	*v*	Head	Tail	Head	Tail	FB (cm)	*d = y+FB*	Head	Tail
220	170	169	D1	71	3105.55	0.007289	500	0.101	0.45	0.045	0.161	213.050	212.908	213.151	213.008	19.93	0.30	213.483	213.418
221	169	185	D1	245	10986.50	0.025788	500	0.162	0.45	0.073	0.354	212.847	212.357	213.009	212.519	13.82	0.30	213.418	213.242
222	185	184	C1	16	22757.00	0.053416	750	0.199	0.45	0.090	0.596	212.320	212.298	212.519	212.497	10.09	0.30	213.242	213.158
223	184	183	D1	35	23709.60	0.055652	750	0.203	0.45	0.091	0.609	212.294	212.248	212.497	212.451	9.70	0.30	213.158	213.095
224	183	182	C1	16	23837.60	0.055952	750	0.204	0.45	0.092	0.611	212.247	212.226	212.451	212.429	9.65	0.30	213.095	213.069
225	182	187	D2	211	32161.25	0.075490	750	0.243	0.45	0.110	0.689	212.186	211.905	212.429	212.148	20.66	0.45	213.069	213.094
226	187	150	C2	16	32289.25	0.075790	750	0.222	0.45	0.100	0.758	211.905	211.883	212.127	212.105	22.79	0.45	213.094	212.810
227	150	149	D4	209	38905.00	0.091319	750	0.208	0.60	0.125	0.733	211.883	211.605	212.091	211.812	24.24	0.45	212.810	212.701
228	149	148	C4	16	39033.00	0.091619	750	0.208	0.60	0.125	0.734	211.604	211.583	211.812	211.791	24.20	0.45	212.701	212.677
229	148	225	D4	82	41752.00	0.098001	750	0.218	0.60	0.131	0.748	211.573	211.463	211.791	211.682	23.17	0.45	212.677	212.951
230	225	224	C4	16	41880.00	0.098302	750	0.219	0.60	0.131	0.749	211.463	211.441	211.682	211.660	23.12	0.45	212.951	213.015
231	224	223	D4	53	43862.70	0.102954	1000	0.250	0.60	0.150	0.687	211.410	211.357	211.660	211.607	20.03	0.45	213.015	212.821
232	223	222	C4	16	43990.20	0.103255	1000	0.250	0.60	0.150	0.688	211.357	211.341	211.607	211.591	20.00	0.45	212.821	212.827
233	222	221	D4	52	45967.80	0.107897	1000	0.258	0.60	0.155	0.696	211.333	211.281	211.591	211.539	19.18	0.45	212.827	212.658
234	221	221A	C4	16	46095.80	0.108197	1000	0.259	0.60	0.155	0.697	211.280	211.264	211.539	211.523	19.13	0.45	212.658	212.835
235	221A	220A	D4	32	48364.60	0.113522	1000	0.267	0.60	0.160	0.709	211.256	211.224	211.523	211.491	18.30	0.45	212.835	212.384
236	182	181	D1	70	3403.85	0.007990	1000	0.112	0.45	0.051	0.158	212.650	212.580	212.762	212.692	18.75	0.30	213.069	212.118
237	181	188	D1	244	11991.50	0.028147	1000	0.169	0.45	0.076	0.370	212.523	212.279	212.692	212.448	13.10	0.30	213.063	212.961
238	188	195	C1	16	15563.35	0.036531	1000	0.181	0.45	0.082	0.448	212.267	212.251	212.448	212.432	11.89	0.30	212.961	212.890
239	195	196	D2	197	25516.10	0.059892	1000	0.208	0.45	0.093	0.641	212.225	212.028	212.432	212.235	24.24	0.45	212.890	212.955
240	180	189	D1	252	8386.35	0.019685	750	0.158	0.45	0.071	0.277	212.500	212.164	212.658	212.322	14.23	0.30	213.100	212.590
241	189	194	C1	16	8514.35	0.019985	1000	0.159	0.45	0.071	0.280	212.163	212.147	212.322	212.306	14.14	0.30	212.590	212.908
242	194	197	D1	195	14420.65	0.033848	1000	0.175	0.45	0.079	0.430	212.131	211.936	212.306	212.111	12.51	0.30	212.908	212.940

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y + FB$	Head	Tail
243	174	173	D1	42	636.00	0.001493	500	0.056	0.45	0.025	0.060	213.100	213.016	213.156	213.072	24.44	0.30	213.627	213.555
244	173	192	D1	634	33463.00	0.078545	750	0.233	0.45	0.105	0.750	212.839	211.993	213.072	212.226	6.72	0.30	213.555	212.963
245	192	205A	D4	467	60937.00	0.143033	750	0.285	0.60	0.171	0.837	211.941	211.319	212.226	211.604	16.52	0.45	212.963	213.006
246	170	170A	D1	327	8536.95	0.020038	750	0.147	0.45	0.066	0.303	213.100	212.664	213.247	212.811	15.28	0.30	213.662	213.314
247	170A	185	D1	71	11642.50	0.027328	750	0.165	0.45	0.074	0.367	212.646	212.551	212.811	212.716	13.47	0.30	213.385	212.689
248	171	171A	D1	328	8726.25	0.020482	750	0.148	0.45	0.067	0.307	213.000	212.563	213.148	212.711	15.16	0.30	213.642	213.176
249	171A	176	D1	70	11901.50	0.027935	1000	0.167	0.45	0.075	0.372	212.544	212.474	212.711	212.641	13.33	0.30	213.176	213.322
250	184	177	D1	157	2825.40	0.006632	500	0.097	0.45	0.044	0.152	212.700	212.386	212.797	212.483	20.28	0.30	213.158	213.115
251	183	178	D1	157	2825.40	0.006632	500	0.097	0.45	0.044	0.152	212.700	212.386	212.797	212.483	20.28	0.30	213.152	213.077
252	180	179	D1	70	3290.15	0.007723	500	0.103	0.45	0.046	0.167	212.550	212.410	212.653	212.513	19.71	0.30	212.964	213.095
253	155	186	D1	307	10155.70	0.023838	500	0.157	0.45	0.071	0.337	212.600	212.386	212.757	212.543	14.29	0.30	212.941	212.951
254	187	188	D1	75	3443.85	0.008083	1000	0.105	0.45	0.047	0.172	212.500	212.425	212.605	212.530	19.53	0.30	212.887	212.961
255	189	190	D1	75	3330.15	0.007817	500	0.103	0.45	0.047	0.168	212.400	212.230	212.503	212.353	19.66	0.30	212.910	212.930
256	150	195	D1	76	3433.00	0.008058	1000	0.105	0.45	0.047	0.171	212.400	212.324	212.505	212.429	19.54	0.30	212.786	212.890
257	194	193	D1	74	3075.60	0.007219	500	0.100	0.45	0.045	0.160	212.500	212.352	212.600	212.452	19.97	0.30	212.908	212.963

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	1/S	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	d = y+FB	Head	Tail
258	149	196	D1	75	3425.00	0.008039	500	0.104	0.45	0.047	0.171	212.200	212.050	212.304	212.154	19.55	0.30	212.701	212.955
259	196	197	C2	16	29069.10	0.068232	500	0.200	0.45	0.090	0.757	211.954	211.922	212.154	212.122	24.98	0.45	212.955	212.973
260	197	198	D4	70	46533.35	0.109224	750	0.235	0.60	0.141	0.775	211.888	211.794	212.122	212.029	21.51	0.45	212.973	213.009
261	148	199	D1	156	4342.50	0.010193	500	0.114	0.45	0.051	0.198	212.500	212.188	212.614	212.302	18.58	0.30	212.892	212.887
262	225	200	D1	153	4318.50	0.010136	500	0.114	0.45	0.051	0.198	212.300	212.194	212.614	212.308	18.60	0.30	213.017	212.920
263	224	201	D1	153	3561.30	0.008359	500	0.106	0.45	0.048	0.175	212.500	212.194	212.606	212.300	19.40	0.30	213.015	212.990
264	223	202	D1	153	3561.30	0.008359	500	0.106	0.45	0.048	0.175	212.300	211.994	212.406	212.100	19.40	0.30	212.821	213.041
265	222	203	D1	155	3582.10	0.008408	500	0.106	0.45	0.048	0.176	212.300	211.990	212.406	212.096	19.38	0.30	212.803	213.086
266	221	204	D1	155	3587.10	0.008108	500	0.106	0.45	0.048	0.176	212.100	211.790	212.206	211.896	19.38	0.30	212.658	212.867
267	221A	204A	D1	155	4259.20	0.009997	500	0.113	0.45	0.051	0.196	212.300	211.990	212.413	212.103	18.66	0.30	212.835	212.888
268	171	172	D1	70	3175.25	0.007453	750	0.102	0.45	0.046	0.163	212.900	212.807	213.002	212.908	19.84	0.30	213.512	213.392
269	172	176	D1	257	11333.50	0.026602	750	0.164	0.45	0.074	0.361	212.745	212.402	212.908	212.566	13.64	0.30	213.392	213.322
270	176	177	C1	16	23363.00	0.054838	750	0.202	0.45	0.091	0.605	212.364	212.343	212.566	212.544	9.84	0.30	213.322	212.989
271	177	178	D1	29	27093.00	0.063593	750	0.217	0.45	0.098	0.652	212.327	212.289	212.544	212.506	8.32	0.30	212.989	213.030
272	178	179	C1	16	30046.40	0.070526	750	0.230	0.45	0.104	0.681	212.275	212.254	212.506	212.484	6.99	0.30	213.030	213.095
273	179	190	D4	357	42562.90	0.099905	1000	0.244	0.60	0.147	0.682	212.240	211.883	212.484	212.127	20.57	0.45	213.095	212.950
274	190	193	C4	16	46021.05	0.108022	1000	0.258	0.60	0.155	0.699	211.870	211.854	212.127	212.111	19.24	0.45	212.950	212.393
275	193	198	D4	183	54906.95	0.128879	1000	0.293	0.60	0.176	0.732	211.818	211.635	212.111	211.928	15.65	0.45	212.393	212.807

926

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d=y+FB$	Head	Tail
276	198	199	C7	16	101568.30	0.238403	1000	0.370	0.75	0.277	0.860	211.559	211.543	211.928	211.912	8.04	0.45	212.807	212.887
277	199	200	D8	53	108397.80	0.254434	1000	0.388	0.75	0.291	0.874	211.524	211.471	211.912	211.859	21.19	0.60	212.887	212.902
278	200	201	C8	16	112844.30	0.264871	1000	0.400	0.75	0.300	0.883	211.459	211.443	211.859	211.843	19.99	0.60	212.902	212.950
279	201	202	D8	50	118363.80	0.277826	1000	0.415	0.75	0.311	0.893	211.428	211.378	211.843	211.793	18.50	0.60	212.950	212.941
280	202	203	C8	16	122053.10	0.286486	1000	0.425	0.75	0.319	0.899	211.368	211.352	211.793	211.777	17.52	0.60	212.941	212.978
281	203	204	D9	52	127612.80	0.299536	1000	0.367	0.90	0.330	0.907	211.352	211.300	211.719	211.667	23.31	0.60	212.978	212.913
282	204	204A	C9	16	131322.90	0.308244	1000	0.375	0.90	0.337	0.914	211.293	211.277	211.667	211.651	22.53	0.60	212.913	212.936
283	204A	205	D9	73	138178.90	0.324337	1000	0.389	0.90	0.350	0.927	211.262	211.189	211.651	211.578	21.10	0.60	213.936	212.993
284	217	218	D1	74	3548.50	0.008329	500	0.106	0.45	0.048	0.175	212.500	212.352	212.606	212.458	19.41	0.30	212.956	213.591
285	216	215	D1	73	3607.70	0.008468	500	0.107	0.45	0.048	0.177	212.500	212.354	212.607	212.461	19.35	0.30	212.971	213.361
286	227	226	D1	73	3607.70	0.008468	500	0.107	0.45	0.048	0.177	212.350	212.204	212.457	212.311	19.35	0.30	212.788	212.772
287	226	215	D1	281	12911.00	0.030305	750	0.155	0.45	0.070	0.434	212.155	211.781	212.311	211.936	14.50	0.30	212.781	213.361
288	215	218	C1	16	16518.70	0.038773	750	0.174	0.45	0.078	0.494	211.762	211.740	211.936	211.915	12.57	0.30	212.956	213.591
289	218	207	D1	277	29181.70	0.068496	750	0.206	0.45	0.093	0.738	211.708	211.339	211.915	211.545	9.38	0.30	213.495	213.144
290	213	214	D1	125	6900.10	0.016196	500	0.136	0.45	0.061	0.265	213.150	212.900	213.286	213.036	16.41	0.30	213.757	213.440
291	212	211	D1	122	3283.40	0.007707	500	0.103	0.45	0.046	0.167	213.150	212.906	213.253	213.009	19.72	0.30	213.834	213.624
292	226A	214	D2	311	30670.90	0.071991	750	0.236	0.45	0.106	0.678	212.250	211.835	212.486	212.071	21.41	0.45	212.876	213.492
293	214	211	C2	16	37571.00	0.088187	750	0.258	0.45	0.116	0.761	211.814	211.792	212.071	212.050	19.24	0.45	213.492	213.834
294	211	208	D4	279	51162.30	0.120089	750	0.252	0.60	0.151	0.796	211.792	211.420	212.044	211.672	19.84	0.45	213.834	213.351

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Pateri	
	Start	End			*A*	*Q*	*I/S*	*y*	*b*	*a*	*v*	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
295	234A	234	D1	64	5098.00	0.011966	1000	0.121	0.45	0.055	0.219	212.600	212.536	212.721	212.657	17.87	0.30	213.111	212.957
296	233	232	D1	83	4355.10	0.010222	1000	0.114	0.45	0.051	0.199	212.550	212.467	212.664	212.581	18.57	0.30	213.050	212.957
297	233	231	D1	459	18436.40	0.043274	1000	0.196	0.45	0.088	0.490	212.550	212.091	212.746	212.287	10.39	0.30	213.093	212.051
298	231	230	D1	83	22791.50	0.053497	1000	0.217	0.45	0.098	0.548	212.070	211.987	212.287	212.204	8.31	0.30	213.093	213.101
299	233A	231A	D4	458	46657.00	0.109514	750	0.235	0.60	0.141	0.776	212.550	211.939	212.785	212.175	21.47	0.45	213.076	213.191
300	231A	230A	D4	80	52486.10	0.123197	1000	0.283	0.60	0.170	0.725	211.891	211.811	212.175	212.095	16.67	0.45	213.191	212.887
301	228A	228	D1	78	5071.80	0.011905	900	0.121	0.45	0.054	0.219	212.200	212.044	212.321	212.165	17.90	0.30	212.737	212.841
302	235	234	D1	159	8151.00	0.019132	750	0.156	0.45	0.070	0.272	212.750	212.538	212.906	212.694	14.40	0.30	213.221	212.957
303	234	232	D1	16	13377.00	0.031399	750	0.167	0.45	0.075	0.419	212.527	212.506	212.694	212.673	13.33	0.30	212.957	213.190
304	232	230	D4	450	36096.50	0.084727	1000	0.218	0.60	0.131	0.647	212.454	212.004	212.673	212.223	23.17	0.45	213.190	213.077
305	230	230A	C4	16	59016.00	0.138524	1000	0.307	0.60	0.184	0.753	211.916	211.900	212.223	212.207	14.35	0.45	213.077	212.887
306	230A	228	D8	113	117595.20	0.276022	1000	0.413	0.75	0.310	0.891	211.794	211.681	212.207	212.094	18.71	0.60	212.887	212.864
307	228	227	C9	16	122795.00	0.288227	1000	0.357	0.90	0.321	0.898	211.681	211.665	212.038	212.022	24.33	0.60	212.864	212.786
308	227	216	D9	281	132098.30	0.310064	1000	0.376	0.90	0.339	0.916	211.645	211.364	212.022	211.741	22.37	0.60	212.786	212.971
309	216	217	C9	16	132226.30	0.310365	1000	0.377	0.90	0.339	0.916	211.364	211.348	211.741	211.725	22.34	0.60	212.971	212.943
310	217	206	D9	280	141364.80	0.331815	1500	0.460	0.90	0.414	0.802	211.265	211.078	211.725	211.538	14.01	0.60	212.943	212.993
311	206	207	D9	80	144961.30	0.340256	1500	0.469	0.90	0.422	0.807	211.069	211.016	211.538	211.485	13.13	0.60	212.925	213.144
312	207	208	C10	16	174271.00	0.409053	1500	0.539	0.90	0.485	0.843	210.945	210.935	211.485	211.474	21.09	0.75	213.144	213.351
313	208	209	D12	110	227467.00	0.533916	1500	0.494	1.20	0.593	0.901	210.935	210.861	211.429	211.355	25.61	0.75	213.351	213.949
314	209	210	C12	16	227595.00	0.534216	1500	0.494	1.20	0.593	0.901	210.861	210.851	211.355	211.345	25.59	0.75	213.949	213.833

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Pairs	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
315	69a	69	D1	269	6128.00	0.014384	1000	0.140	0.45	0.063	0.228	213.200	212.931	213.340	213.071	15.98	0.30	213.722	213.186
316	69	70	D1	38	8420.00	0.019764	1000	0.158	0.45	0.071	0.278	212.913	212.875	213.071	213.033	14.20	0.30	213.186	213.256
317	70	71	C1	16	8548.00	0.020064	1000	0.159	0.45	0.071	0.281	212.874	212.858	213.033	213.017	14.11	0.30	213.256	213.244
318	71	72	D1	62	12284.20	0.028834	1500	0.182	0.45	0.082	0.352	212.835	212.794	213.017	212.976	11.80	0.30	213.244	213.401
319	72	73	C1	16	12412.20	0.029134	1500	0.181	0.45	0.081	0.358	212.794	212.783	212.975	212.964	11.91	0.30	213.401	213.474
320	73	74	D1	71	17233.80	0.040452	1500	0.206	0.45	0.093	0.437	212.758	212.711	212.964	212.917	9.43	0.30	213.474	213.186
321	74	75	C1	16	17361.80	0.040752	1500	0.206	0.45	0.093	0.439	212.710	212.700	212.917	212.906	9.35	0.30	213.186	213.428
322	75	109	D2	83	24350.60	0.057156	1500	0.238	0.45	0.107	0.534	212.668	212.613	212.906	212.851	21.21	0.45	213.428	213.212
323	109	108	C2	16	24478.60	0.057457	1500	0.239	0.45	0.107	0.535	212.612	212.601	212.851	212.840	21.12	0.45	213.212	213.264
324	108	89	D4	374	36496.60	0.085666	1500	0.253	0.60	0.152	0.564	212.587	212.338	212.840	212.591	19.68	0.45	213.264	212.924
325	89	90	D12	70	252573.60	0.592846	1500	0.533	1.20	0.640	0.926	212.057	212.011	212.591	212.544	21.65	0.75	212.924	213.186
326	90	91	C12	16	267664.10	0.628267	1500	0.557	1.20	0.668	0.940	211.987	211.977	212.544	212.533	19.31	0.75	213.186	212.950
327	91	92	D12	82	286180.10	0.671728	1500	0.585	1.20	0.702	0.956	211.948	211.893	212.533	212.479	16.46	0.75	212.950	213.055
328	92	93	C12	16	294788.10	0.691933	1500	0.599	1.20	0.718	0.963	211.880	211.870	212.479	212.468	15.15	0.75	213.055	212.865
329	93	94	D12	94	313059.88	0.734821	1500	0.626	1.20	0.751	0.978	211.842	211.779	212.468	212.405	12.78	0.75	212.865	212.922
330	94	95	C12	16	323372.10	0.759026	1500	0.642	1.20	0.770	0.986	211.764	211.753	212.405	212.395	10.83	0.75	212.922	212.910
331	95	96	D14	109	341332.00	0.801182	2000	0.597	1.50	0.896	0.894	211.753	211.699	212.350	212.296	15.28	0.75	212.910	212.978
332	96	97	C14	16	349549.10	0.820469	2000	0.608	1.50	0.912	0.900	211.688	211.680	212.296	212.288	14.23	0.75	212.978	213.040
333	97	98	D14	95	363773.10	0.853856	2000	0.626	1.50	0.939	0.910	211.662	211.615	212.288	212.240	12.43	0.75	213.040	212.843
334	98	138	C16	16	592765.70	1.391353	2000	0.752	1.80	1.354	1.028	211.488	211.480	212.240	212.232	14.80	0.90	212.843	212.635
335	138	139	D17	153	674383.60	1.582928	2000	0.827	1.80	1.489	1.063	211.405	211.329	212.232	212.156	22.29	1.05	212.635	212.863
336	139	219	C18	16	808075.10	2.037565	2000	0.859	2.10	1.803	1.130	211.297	211.289	212.156	212.148	19.15	1.05	212.863	212.963
337	219	220	D19	102	943267.20	2.214058	2000	0.913	2.10	1.916	1.155	211.235	211.184	212.148	212.097	28.75	1.20	212.963	212.802
338	220	220A	C19	16	1023641.60	2.402714	2000	0.969	2.10	2.036	1.180	211.127	211.119	212.097	212.089	23.06	1.20	212.892	212.814
339	220A	205	D19	158	1077295.80	2.528653	2000	1.007	2.10	2.115	1.196	211.082	211.003	212.089	212.010	19.30	1.20	212.814	212.993
340	205	205A	C19	16	1215474.70	2.852989	2000	1.102	2.10	2.315	1.232	210.907	210.899	212.010	212.002	9.75	1.20	212.993	212.993

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contribut-ing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	I/S	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	d = y+FB	Head	Tail
341	205A	210	D19	240	1282411.70	3.010105	2000	1.148	2.10	2.411	1.248	210.854	210.734	212.002	211.882	5.19	1.20	213.006	213.833
342	**210**	**237**	**D21**	**489**	**1513918.70**	**3.553504**	**2000**	**1.137**	**2.40**	**2.730**	**1.302**	**210.734**	**210.489**	**211.871**	**211.627**	**21.26**	**1.35**	**213.833**	**212.825**
343	310	283	D7	393	62896.00	0.147631	1500	0.302	0.75	0.226	0.652	212.350	212.088	212.652	212.390	14.80	0.45	213.037	212.799
344	283	283A	C7	16	63024.00	0.147931	1500	0.302	0.75	0.227	0.652	212.088	212.077	212.390	212.379	14.76	0.45	212.799	212.799
345	283A	278	D9	591	135278.00	0.317528	1500	0.445	0.90	0.400	0.793	211.934	211.540	212.379	211.985	15.50	0.60	212.799	213.654
346	282	281	D1	182	22379.20	0.052529	1500	0.219	0.45	0.098	0.533	212.680	212.559	212.899	212.778	8.12	0.30	212.924	212.561
347	281	275	D8	568	89692.80	0.210529	1500	0.392	0.75	0.294	0.716	212.385	212.007	212.778	212.399	20.79	0.60	212.561	212.369
348	280	276	D4	568	33060.50	0.077600	1500	0.236	0.60	0.141	0.549	212.350	211.971	212.586	212.207	21.43	0.45	212.460	213.434
349	280	279	D1	169	20363.00	0.047796	1000	0.205	0.45	0.092	0.517	212.200	212.031	212.405	212.236	9.46	0.30	212.460	212.574
350	279	277	D4	568	53423.50	0.125397	1500	0.331	0.60	0.199	0.631	211.905	211.526	212.236	211.858	11.86	0.45	212.574	213.493
351	248	248A	D1	95	6000.00	0.014083	500	0.129	0.45	0.058	0.243	212.500	212.310	212.629	212.439	17.11	0.30	213.026	212.852
352	285	286	D1	40	2588.3	0.006075	500	0.094	0.45	0.042	0.144	212.500	212.420	212.594	212.514	20.59	0.30	213.050	213.036
353	274	275	D1	186	22411.20	0.052604	500	0.183	0.45	0.082	0.640	212.500	212.128	212.683	212.311	11.73	0.30	213.473	213.365
354	275	276	C7	16	112232.00	0.263433	500	0.309	0.75	0.231	1.138	212.002	211.970	212.311	212.279	14.14	0.45	213.365	213.434
355	276	277	D8	166	165631.50	0.388774	500	0.412	0.75	0.309	1.259	211.867	211.535	212.279	211.947	18.84	0.60	213.434	213.493
356	277	278	C10	16	219183.00	0.514471	500	0.423	0.90	0.381	1.350	211.523	211.491	211.947	211.915	32.66	0.75	213.493	213.654
357	278	271	D12	245	390184.00	0.915849	500	0.490	1.20	0.589	1.556	211.424	210.934	211.915	211.425	25.96	0.75	213.654	213.231

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	I/S	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	d = y+FB	Head	Tail
358	247	246	D1	83	664.00	0.001559	500	0.056	0.45	0.025	0.061	212.400	212.234	212.456	212.290	24.35	0.30	212.912	212.933
359	238	240	D1	147	9860.40	0.023145	500	0.155	0.45	0.070	0.331	212.500	212.206	212.655	212.361	14.47	0.30	213.055	213.026
360	240	248A	D1	283	27140.00	0.063704	500	0.193	0.45	0.087	0.735	212.169	211.603	212.361	211.795	10.73	0.30	213.026	212.852
361	248A	246	C1	16	27268.00	0.064004	750	0.218	0.45	0.098	0.654	211.578	211.556	211.795	211.774	8.24	0.30	212.852	212.933
362	246	294	D8	673	107611.60	0.252588	750	0.347	0.75	0.260	0.970	211.427	210.529	211.774	210.877	25.27	0.60	212.933	213.204
363	269	267	D1	271	9894.60	0.023225	500	0.156	0.45	0.070	0.332	212.650	212.108	212.806	212.264	14.45	0.30	213.083	212.851
364	267	268	D1	83	13870.00	0.032556	500	0.157	0.45	0.071	0.460	212.106	211.940	212.264	212.098	14.27	0.30	213.083	212.870
365	288	289	D1	81	5853.30	0.013739	500	0.128	0.45	0.057	0.239	212.500	212.338	212.628	212.466	17.21	0.30	213.029	212.956
366	289	305	D1	427	21415.00	0.050266	500	0.179	0.45	0.080	0.624	212.287	211.433	212.466	211.612	12.11	0.30	212.400	212.697
367	303	304	D1	81	3529.35	0.008284	500	0.106	0.45	0.048	0.174	212.100	211.938	212.206	212.044	19.43	0.30	212.701	212.408
368	269	270	D1	83	1975.40	0.009331	500	0.110	0.45	0.050	0.188	212.500	212.334	212.610	212.444	18.95	0.30	213.032	213.114
369	270	268	D1	271	13870.00	0.032556	500	0.157	0.45	0.071	0.460	212.287	211.745	212.444	211.902	14.27	0.30	213.143	212.870
370	268	288	C1	16	27868.00	0.065412	500	0.196	0.45	0.088	0.743	211.707	211.675	211.902	211.870	10.44	0.30	212.870	212.956
371	288	287	D4	427	43429.70	0.101939	750	0.225	0.60	0.135	0.756	211.646	211.076	211.870	211.301	22.51	0.45	212.956	212.418
372	287	305	D4	81	49283.00	0.115678	750	0.245	0.60	0.147	0.788	211.056	210.948	211.301	211.193	20.52	0.45	212.418	212.697
373	305	304	C4	16	70826.00	0.166244	750	0.318	0.60	0.191	0.871	210.875	210.854	211.193	211.172	13.19	0.45	212.697	212.674
374	304	306	D4	250	83078.50	0.195004	750	0.357	0.60	0.214	0.911	210.815	210.482	211.172	210.838	9.32	0.45	212.674	212.604
375	239	241	D1	83	5069.05	0.011898	500	0.121	0.45	0.054	0.218	212.650	212.484	212.771	212.605	17.90	0.30	213.101	212.839
376	241	253	D1	378	18371.50	0.043122	500	0.175	0.45	0.079	0.549	212.430	211.674	212.605	211.849	12.53	0.30	212.839	212.784

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
377	242	252	D1	378	11235.00	0.026371	500	0.161	0.45	0.073	0.363	212.350	211.594	212.511	211.755	13.85	0.30	212.753	212.899
378	242	243	D1	61	4007.00	0.009405	500	0.111	0.45	0.050	0.189	212.350	212.228	212.461	212.339	18.92	0.30	212.753	212.863
379	243	251	D1	392	15354.00	0.036039	500	0.162	0.45	0.073	0.493	212.176	211.392	212.339	211.555	13.77	0.30	212.637	212.999
380	244	250	D1	396	14230.45	0.033402	500	0.159	0.45	0.072	0.467	212.400	211.608	212.559	211.767	14.11	0.30	212.846	213.094
381	244	245	D1	82	5397.05	0.012668	500	0.124	0.45	0.056	0.227	212.400	212.236	212.524	212.360	17.61	0.30	212.846	212.691
382	245	249	D1	396	19627.50	0.046070	500	0.172	0.45	0.077	0.595	212.188	211.396	212.360	211.568	12.81	0.30	212.627	212.912
383	255	260	D1	260	9808.00	0.023022	500	0.155	0.45	0.070	0.330	212.250	211.750	212.405	211.885	14.50	0.30	212.796	212.825
384	255	256	D1	107	6008.00	0.014102	500	0.129	0.45	0.058	0.243	212.250	212.036	212.379	212.165	17.10	0.30	212.796	213.128
385	256	259	D1	260	15816.00	0.037134	500	0.164	0.45	0.074	0.502	212.001	211.481	212.165	211.645	13.57	0.30	213.128	212.930
386	239	254	D1	354	13110.45	0.030773	500	0.154	0.45	0.069	0.445	212.500	211.792	212.654	211.946	14.62	0.30	213.101	213.015
387	254	253	D1	83	18179.50	0.042671	500	0.174	0.45	0.078	0.545	211.772	211.606	211.946	211.780	12.61	0.30	212.839	212.784
388	253	252	C2	16	36679.00	0.086094	500	0.234	0.45	0.105	0.818	211.586	211.514	211.780	211.748	21.61	0.45	212.784	212.863
389	252	251	D4	61	51921.00	0.121870	500	0.221	0.60	0.132	0.920	211.514	211.392	211.735	211.613	22.93	0.45	212.863	212.999
390	251	250	C4	16	67403.00	0.158210	500	0.264	0.60	0.158	0.998	211.349	211.317	211.613	211.581	18.59	0.45	212.999	212.691
391	250	249	D4	82	87030.50	0.204280	500	0.316	0.60	0.190	1.076	211.264	211.100	211.581	211.417	13.37	0.45	212.691	212.912
392	249	260	C8	16	106786.00	0.250650	750	0.345	0.75	0.259	0.968	211.071	211.050	211.417	211.395	25.47	0.60	212.912	212.825
393	260	259	D8	107	122602.00	0.287774	750	0.383	0.75	0.287	1.003	211.013	210.870	211.395	211.253	21.73	0.60	212.825	212.930
394	259	261	C9	16	138546.00	0.325198	750	0.351	0.90	0.316	1.030	210.870	210.849	211.221	211.200	24.92	0.60	212.930	212.924

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			*A*	*Q*	*1/S*	*y*	*b*	*a*	*v*	Head	Tail	Head	Tail	FB (cm)	*d = y+FB*	Head	Tail
395	272	257A	D13	351	512808.00	1.203674	500	0.600	1.20	0.721	1.671	212.000	211.298	212.600	211.898	44.96	1.05	213.214	212.941
396	258	265	D1	284	14812.30	0.034768	500	0.161	0.45	0.073	0.479	212.100	211.532	212.261	211.693	13.85	0.30	212.764	212.824
397	262	263	D1	322	14377.65	0.033748	500	0.160	0.45	0.072	0.470	212.250	211.606	212.410	211.766	14.05	0.30	212.816	212.746
398	292	293	D1	83	4809.70	0.011289	500	0.119	0.45	0.053	0.211	212.300	212.134	212.419	212.253	18.13	0.30	212.889	212.103
399	290	302	D1	322	9609.95	0.022553	500	0.154	0.45	0.069	0.326	212.500	211.856	212.654	212.010	14.62	0.30	213.070	212.777
400	302	301	D1	63	13128.50	0.030816	500	0.154	0.45	0.069	0.445	211.856	211.730	212.010	211.884	14.61	0.30	212.777	212.666
401	303	303A	D1	229	8555.15	0.020081	500	0.147	0.45	0.066	0.303	212.000	211.542	212.147	211.689	15.27	0.30	212.709	212.625
402	292	300	D1	339	12385.30	0.029071	1000	0.169	0.45	0.076	0.382	211.900	211.561	212.069	211.730	13.08	0.30	212.135	212.617
403	290	291	D1	63	3518.55	0.008259	500	0.106	0.45	0.047	0.174	212.400	212.274	212.506	212.380	19.45	0.30	213.070	212.736
404	291	301	D1	322	13128.50	0.030816	500	0.154	0.45	0.069	0.445	212.226	211.582	212.380	211.736	14.61	0.30	212.877	212.538
405	301	300	C1	16	26385.00	0.061931	500	0.190	0.45	0.085	0.725	211.546	211.514	211.736	211.704	11.02	0.30	212.538	212.563
406	300	299	D2	83	43580.00	0.102292	500	0.244	0.45	0.110	0.933	211.460	211.294	211.704	211.538	20.63	0.45	212.563	212.464
407	257	266	D1	284	14812.30	0.034768	500	0.161	0.45	0.073	0.479	212.200	211.632	212.361	211.793	13.85	0.30	212.967	213.085
408	266	265	D1	141	24300.50	0.057039	500	0.143	0.45	0.064	0.888	211.632	211.350	211.775	211.493	15.73	0.30	213.085	212.824
409	265	263	C2	16	39240.80	0.092107	500	0.221	0.45	0.099	0.927	211.272	211.240	211.493	211.461	22.92	0.45	212.824	212.824
410	263	264	D4	104	59508.30	0.139679	750	0.276	0.60	0.166	0.842	211.184	211.046	211.461	211.322	17.36	0.45	212.746	213.029
411	264	293A	D4	188	61012.30	0.143209	750	0.282	0.60	0.169	0.848	211.041	210.790	211.322	211.071	16.84	0.45	213.029	212.910
412	293A	293	C4	16	61140.30	0.143510	750	0.282	0.60	0.169	0.848	210.789	210.768	211.071	211.050	16.80	0.45	212.910	212.103

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
413	293	299	D4	339	78335.30	0.183870	750	0.341	0.60	0.205	0.898	210.709	210.257	211.050	210.598	10.89	0.45	212.103	212.674
414	299	299A	C8	16	122043.30	0.286463	1000	0.425	0.75	0.319	0.899	210.173	210.157	210.598	210.582	17.53	0.60	212.674	212.516
415	299A	303A	D9	76	124895.10	0.293157	1000	0.361	0.90	0.325	0.902	210.157	210.081	210.519	210.443	23.88	0.60	212.516	212.085
416	303A	306	D9	81	136979.60	0.321522	1000	0.386	0.90	0.348	0.924	210.056	209.975	210.443	210.362	21.35	0.60	212.085	212.488
417	306	307	C10	16	220186.10	0.516826	1000	0.552	0.90	0.497	1.040	209.809	209.793	210.362	210.346	19.79	0.75	212.488	212.629
418	165A	C4	D2	395	20000.00	0.046944	500	0.178	0.45	0.080	0.585	212.400	211.610	212.578	211.788	27.15	0.45	213.377	213.433
419	C4	273	D16	265	613992.20	1.441176	1500	0.695	1.80	1.250	1.153	211.160	210.984	211.855	211.678	20.53	0.90	213.377	213.377
420	273	271A	D17	660	715272.80	1.678904	1500	0.777	1.80	1.398	1.201	210.902	210.462	211.678	211.238	27.33	1.05	213.559	213.214
421	271A	271	C17	16	715272.80	1.678904	1500	0.777	1.80	1.398	1.201	210.462	210.451	211.238	211.228	27.33	1.05	213.214	213.231
422	271	284A	D19	772	1179158.80	2.767748	1500	0.968	2.10	2.032	1.362	210.260	209.743	211.228	210.713	21.23	1.20	213.231	213.010
423	284A	286	C19	16	1185286.80	2.782132	1500	0.971	2.10	2.040	1.364	209.741	209.731	210.713	210.702	27.85	1.20	213.010	213.036
424	286	307	D19	370	1201420.50	2.820001	1500	0.981	2.10	2.061	1.369	209.721	209.474	210.702	210.456	21.87	1.20	213.036	212.629
425	307	307 A	D20	40	1427130.90	1.349793	1500	1.116	2.10	2.345	1.429	209.339	209.312	210.456	210.429	23.36	1.35	212.629	212.770
426	237	257A	D21	675	1519318.70	3.566179	2500	1.240	2.40	2.976	1.198	210.489	210.219	211.729	211.459	11.02	1.35	212.924	212.941
427	257A	257	C22	16	2032254.70	4.770153	2500	1.371	2.70	3.701	1.289	210.088	210.082	211.459	211.453	12.93	1.50	212.941	212.821
428	257	258	D22	141	2041742.90	4.792424	2500	1.375	2.70	3.714	1.290	210.077	210.021	211.453	211.396	12.45	1.50	212.821	212.764
429	258	262	C22	16	2041870.90	4.792725	2500	1.376	2.70	3.714	1.290	210.021	210.014	211.396	211.390	12.45	1.50	212.764	212.735
430	262	261	D22	104	2047760.75	4.806550	2500	1.379	2.70	3.722	1.291	210.011	209.970	211.390	211.348	12.15	1.50	212.735	212.733
431	261	294A	D23	101	2193489.75	5.148608	2500	1.308	3.00	3.921	1.312	209.970	209.905	211.278	211.213	19.22	1.50	212.816	212.991
432	294A	294	C23	16	2193617.75	5.148908	2500	1.308	3.00	3.924	1.312	209.905	209.899	211.213	211.207	19.21	1.50	212.991	212.862
433	294	298	D23	365	2353679.75	5.524609	2500	1.378	3.00	4.133	1.337	209.829	209.683	211.207	211.061	12.22	1.50	212.910	212.641
434	298	297	D23	67	2354215.75	5.525868	2500	1.378	3.00	4.134	1.337	209.683	209.656	211.061	211.034	12.20	1.50	212.641	212.650
435	297	296	C23	16	2354343.75	5.526168	2500	1.378	3.00	4.134	1.337	209.656	209.649	211.034	211.028	12.19	1.50	212.650	212.689
436	296	307A	D23	98	2355127.75	5.528008	2500	1.378	3.00	4.135	1.337	209.649	209.610	211.028	210.988	12.16	1.50	212.689	212.861

Drain No	Drain		Drain/ culvert type	Drain length (m)	Runoff Contributing area (m^2)	Runoff discharge (m^3/s)	Adopted Bed Slope	Flow Depth (m)	Width (m)	Drain flow area (m^2)	Flow velocity (m/s)	Invert Level (m)		Full Supply Level (FSL) (m)		Free-board	Total Drain depth (m)	App level of Patri	
	Start	End			A	Q	$1/S$	y	b	a	v	Head	Tail	Head	Tail	FB (cm)	$d = y+FB$	Head	Tail
437	307A	308	D24	191	3782258.05	8.877800	3000	1.916	3.30	6.323	1.404	209.072	209.009	210.988	210.925	18.40	2.10	212.770	212.100
438	308	308A	C24	16	3782258.05	8.877800	3000	1.916	3.30	6.323	1.404	209.009	209.003	210.925	210.919	18.40	2.10	212.100	212.200
439	**308A**	309/Outfall	**D24**	**489**	**3782258.05**	**8.877800**	**3000**	**1.916**	**3.30**	**6.323**	**1.404**	**209.003**	**208.840**	**210.919**	**210.756**	**18.40**	**2.10**	**212.200**	**212.000**
440					Udaiampur	drain					Outfall	**208.750**		**209.400**					

935

Summary of Drains and Culverts

Table 3 summarizes the details (size, number and length) of the drains while Table 4 lists culverts of various sizes at different locations. Thus, the different sizes of drains to be adopted to drain off rain water from the scheme area are as in Table 3.

Table 3: Length and sizes of drains

S No	Drain Type	Width (mm)	Depth (mm)	No of drains	Length (m)
1	**D1**	450	300	211	39115.00
2	**D2**	450	450	10	1601.00
3	**D3**	600	300	1	60.00
4	**D4**	600	450	46	10141.00
5	**D5**	600	600	1	149.00
6	**D7**	750	450	11	1892.00
7	**D8**	750	600	10	2017.00
8	**D9**	900	600	11	2266.00
9	**D10**	900	750	1	263.00
10	**D12**	1200	750	10	1838.00
11	**D13**	1200	1050	1	351.00
12	**D14**	1500	750	2	204.00
13	**D15**	1500	900	1	385.00
14	**D16**	1800	900	1	265.00
15	**D17**	1800	1050	2	813.00
16	**D19**	2100	1200	5	1642.00
17	**D20**	2100	1350	1	40.00
18	**D21**	2400	1350	2	1164.00
19	**D22**	2700	1500	2	245.00
20	**D23**	3000	1500	4	691.00
21	**D24**	3300	2100	2	680.00
Total number and length of drains				**335.00**	**65822.00**

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Table 4: Length and sizes of box culverts

S No	Culvert Type	Width (mm)	Depth (mm)	No of Culverts	Length (m)
1	C1	450	300	22	352.00
2	C2	450	450	10	160.00
4	C4	600	450	25	405.00
7	C7	750	450	8	128.00
8	C8	750	600	7	112.00
9	C9	900	600	8	128.00
10	C10	900	750	4	64.00
11	C11	1200	600	1	16.00
12	C12	1200	750	4	64.00
14	C14	1500	750	2	32.00
15	C15	1500	900	1	16.00
16	C16	1800	900	2	46.00
17	C17	1800	1050	1	16.00
18	C18	2100	1050	1	16.00
19	C19	2100	1200	3	48.00
22	C22	2700	1500	2	32.00
23	C23	3000	1500	2	32.00
24	C24	3300	2100	1	16.00
Total number and length of culverts				**104**	**1683**

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

L-Sections

Figures 3 to 9 show L-sections along the main drains.

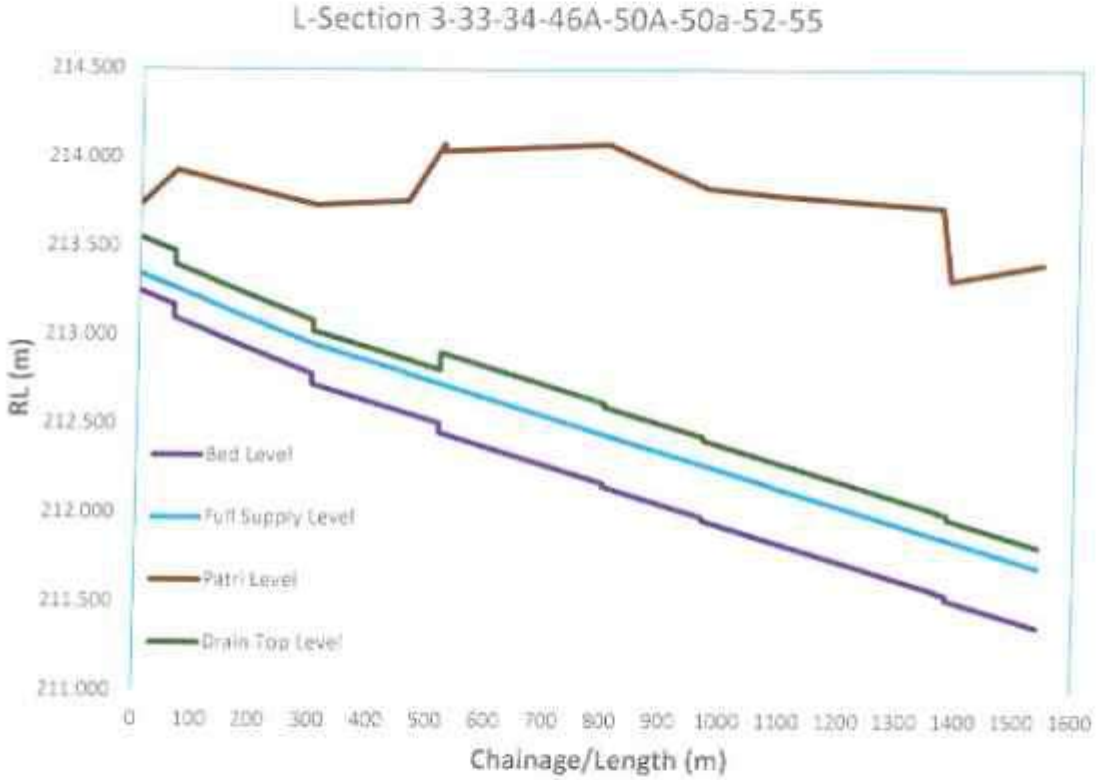


Fig 3: L-Section 3-33-34-46A-50A-50a-52-55

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

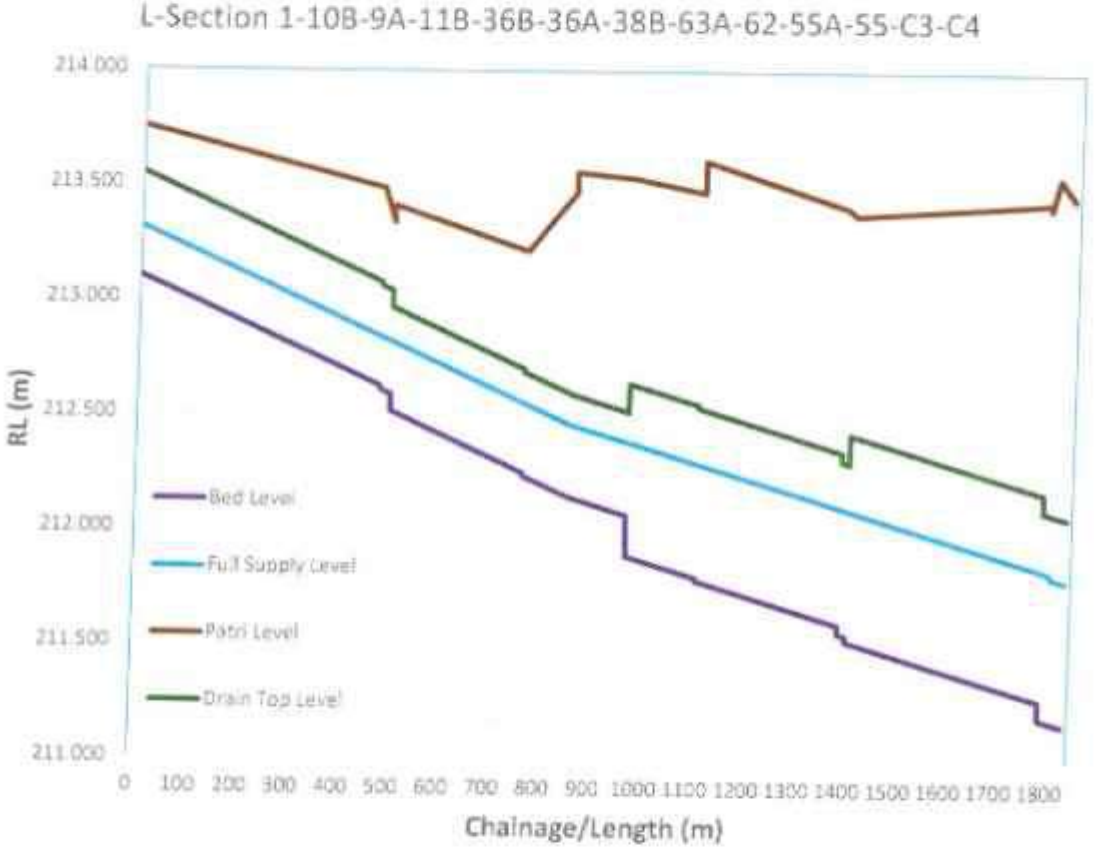


Fig 4: 1-10B-9A-11B-36B-36A-38B-63A-62-55A-55-C3-C4

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

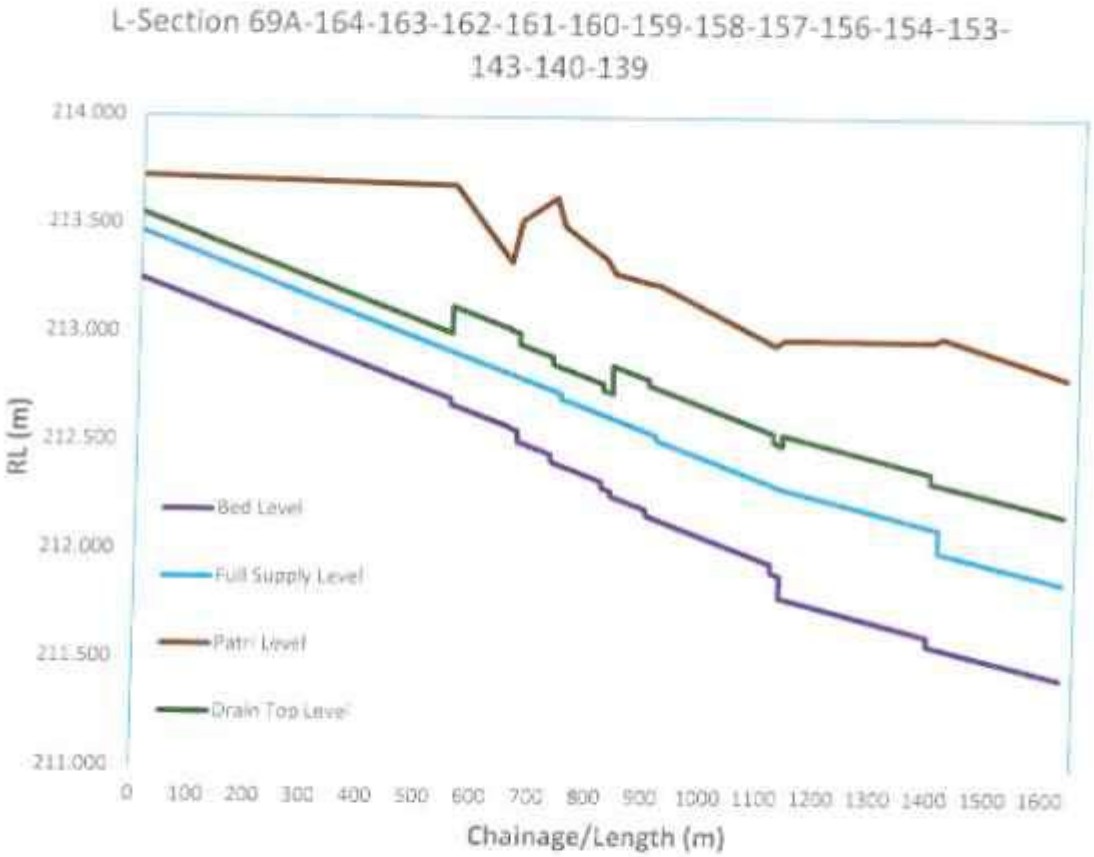


Fig 5: 69A-164-163-162-161-160-159-158-157-156-154-153-143-140-139

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

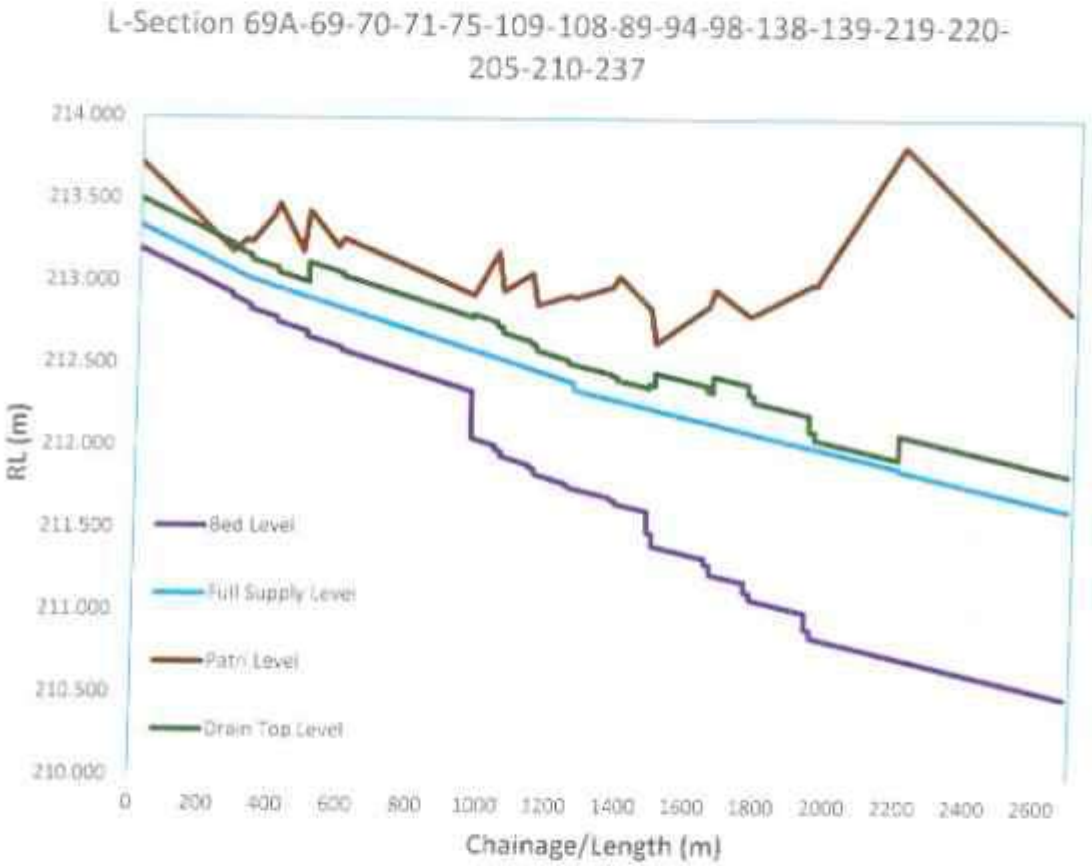


Fig 6: 69A-69-70-71-75-109-108-89-94-98-138-139-219-220-205-210-237

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

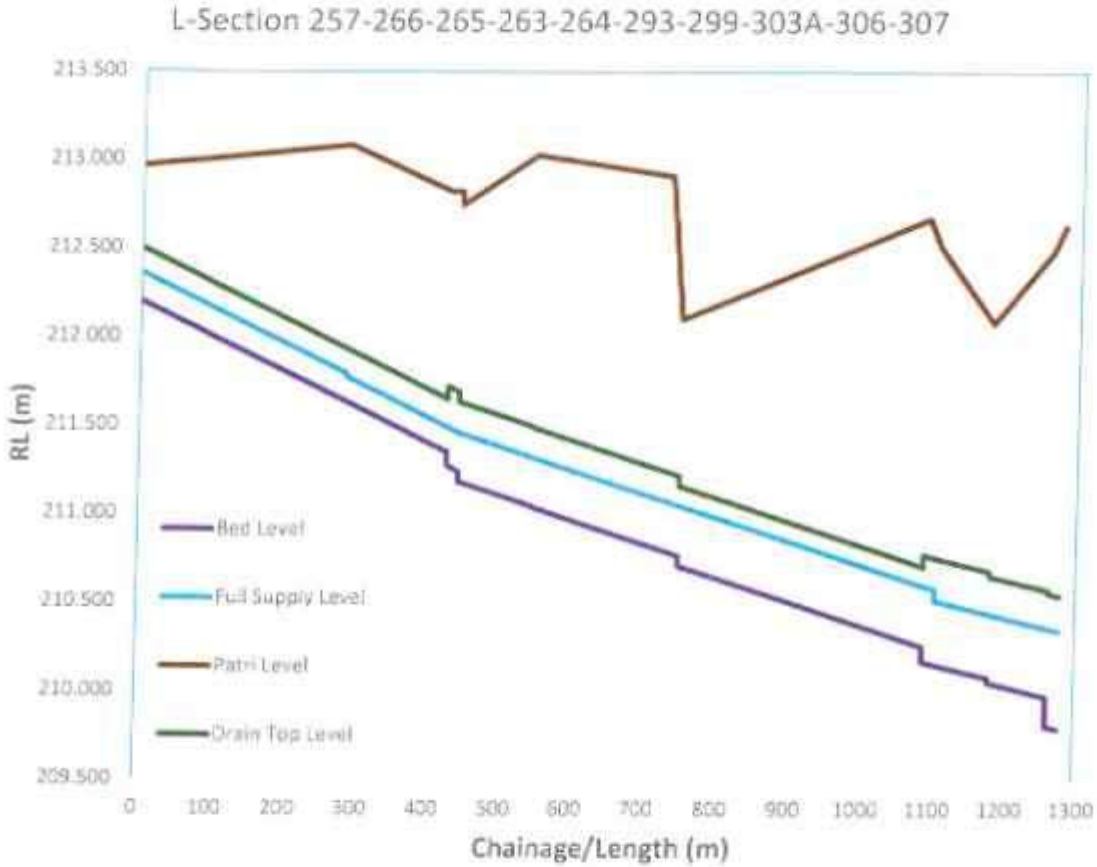


Fig 7: 257-266-265-263-264-293-299-303A-306-307

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

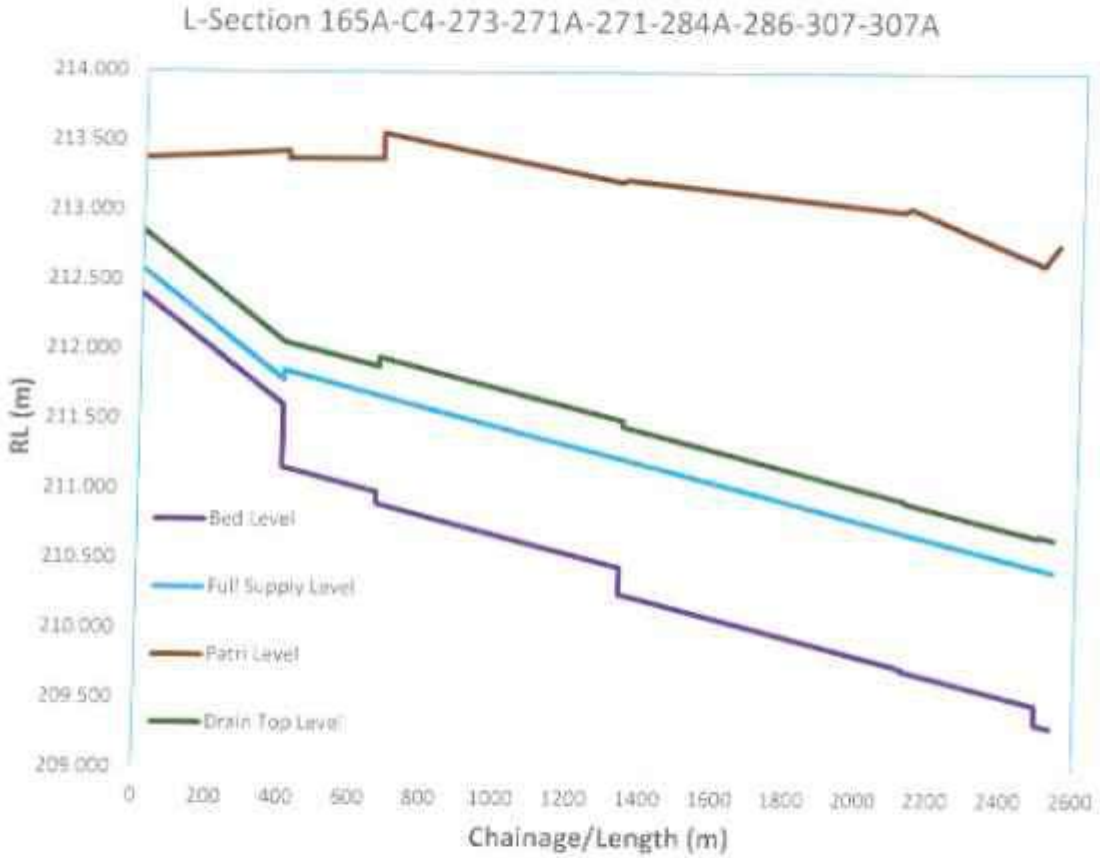


Fig 8: 165A-C4-273-271A-271-284A-286-307-307A

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

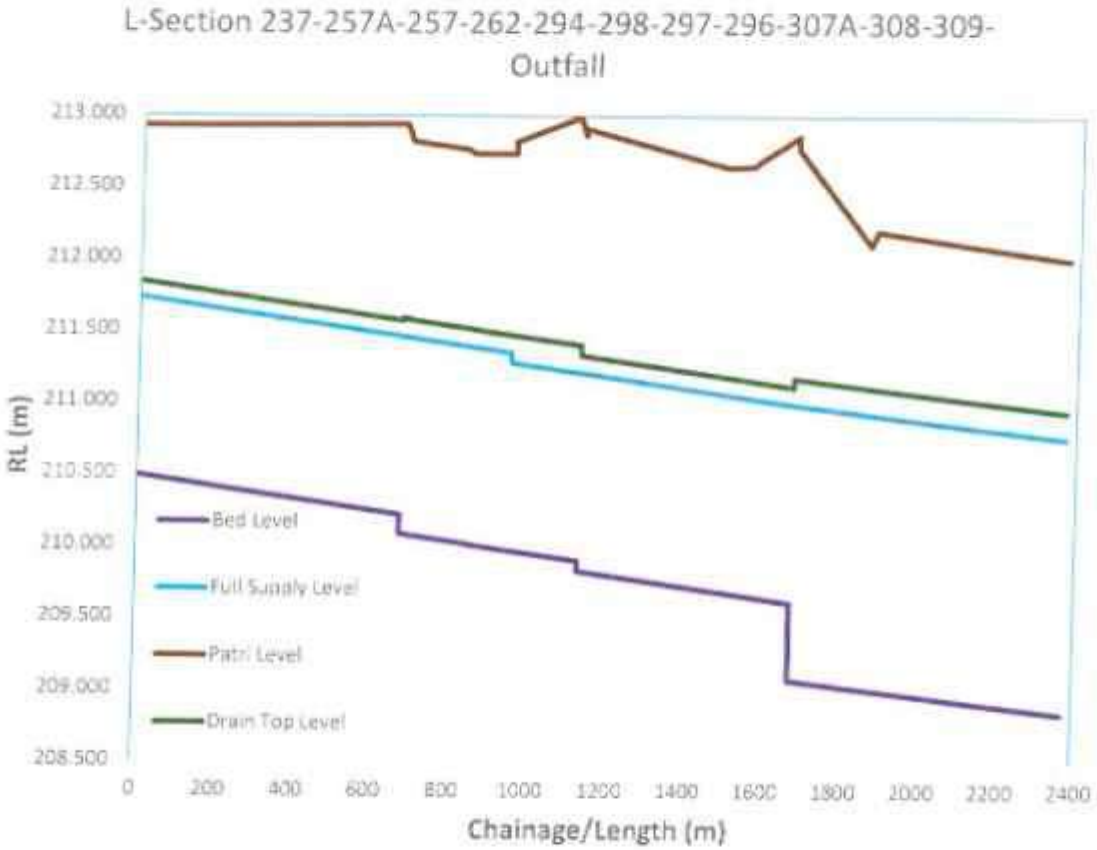


Fig 9: 237-257A-257-262-294-298-297-296-307A-308-309-Outfall

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Cross Sections

Figures 10 to 13 show cross sections at selected places.

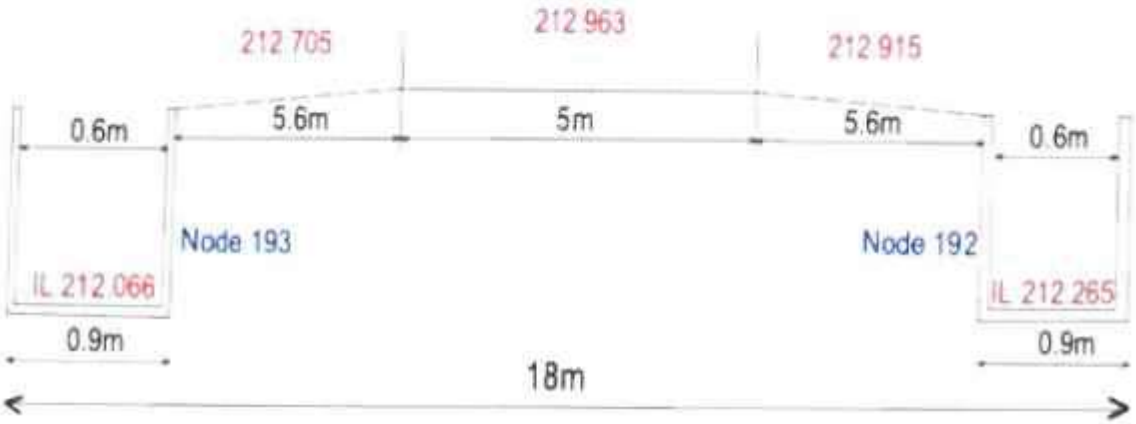


Fig 10: Cross Section at 193-192

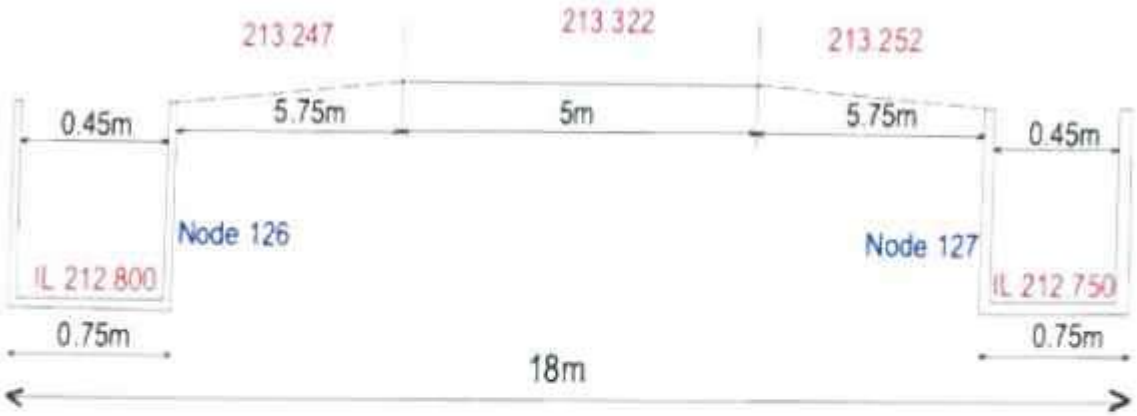


Fig 11: Cross Section at 126-127

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

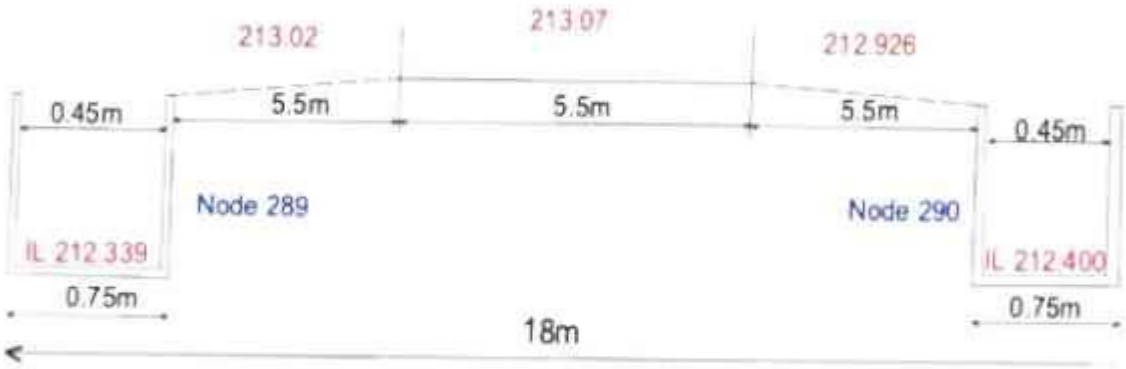


Fig 12: Cross Section at 289-290

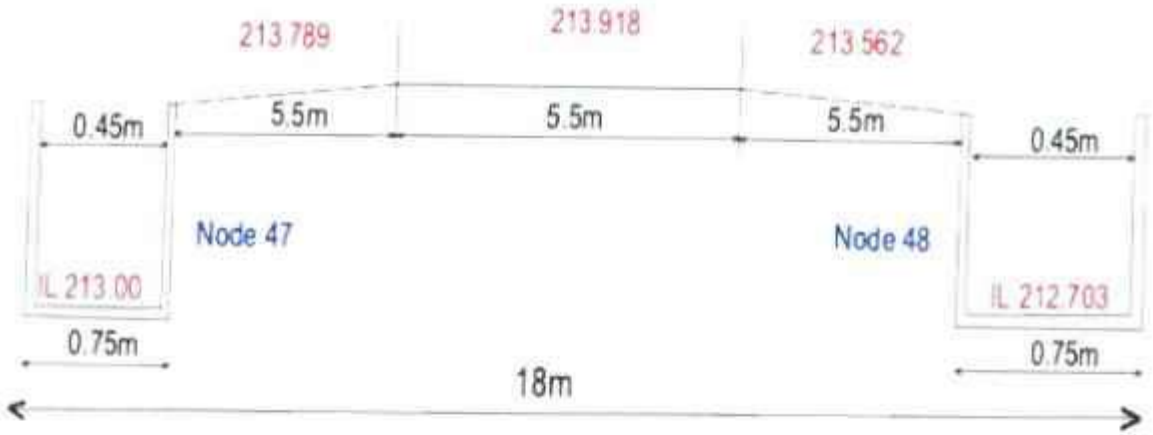


Fig 13: Cross Section at 47-48

Remarks on Hydraulic aspects

The present analysis and design are based on certain assumptions, inputs, and interpretations, so the following should be kept in mind

1. The sizing of drain and free board are based on the discharge at the tail of a drain, so throughout the drain length, the drain size will be on safer side and also the available free board will be more than the initially provided free board.

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

2. On the basis of discussions according to YEIDA/GNOIDA master plan, the intensity of rainfall has been taken as 13 mm/hr for runoff computation with rational formula.

3. The storm runoff from few plots on the periphery of scheme and the plot under litigation have been considered into the network.

4. Road patri levels be raised wherever required based on the top level of drains wrt the adjoining ground level. Also if the top of drain is below the adjoining ground level then the drain side walls be raised appropriately.

5. Transition between two drain sections of different sizes should be carefully implemented adhering to the proposed invert levels and full supply levels.

6. The Udairampur drain has sufficient capacity to carry whole peak storm runoff from the scheme, thus the drains outfalling into it have been assumed discharging freely without backwater effect.

7. All drains and culverts are taken as rectangular shape (minimum width as 45 cm and the minimum depth as 30 cm) and made of RCC (precast/cast in situ) having Manning's n = 0.012 (cement plaster/RCC finish).

8. The minimum bed width to be adopted was 45 cm, hence the velocities in the starting drains are relatively on the lower side.

9. Four desilting chambers and ten screens/trash racks are suggested. Additional screens at culvert inlets and other places may be provided. Desilting chambers at other places may be provided but they will not result into reduction of cleaning/desilting requirements of drains.

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Structural Design and Bill of Quantity

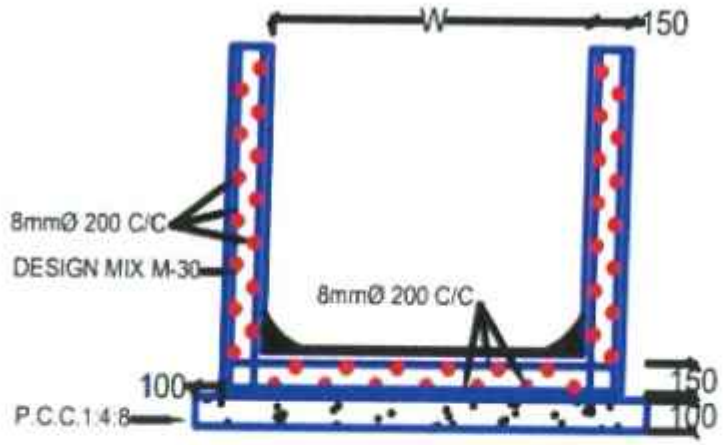
From Table 3, it is observed that the proposed depth of drains varies from 300 mm to 2100 mm.

The RC sections for various depths are provided in Figures 14 to Figures 16. The culvert sections are provided in Figures 17 & 18 and for silt chamber refer Figure 19.

The grade of concrete proposed is M30 and Reinforcement proposed is Fe 500.

To enhance the quality and speed of construction, it is proposed to use precast drains.

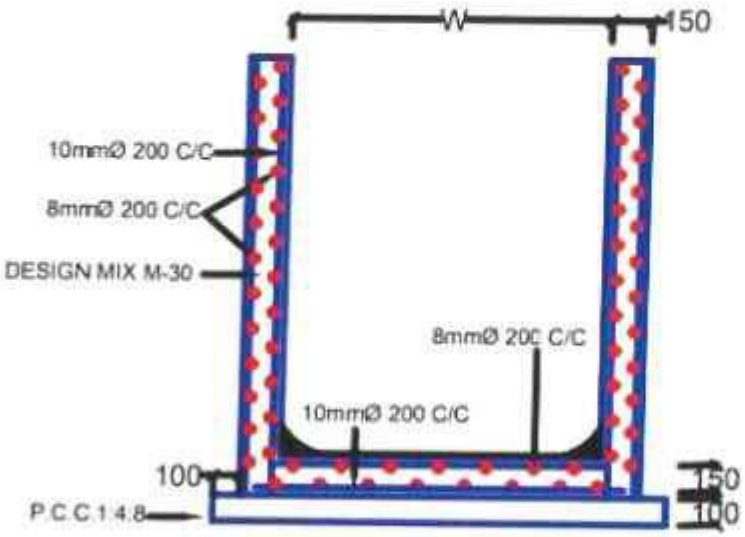
The details of measurement and bill of quantity for the entire drain sections along with culvert of various lengths is provided in 'Measurement' and 'Bill of Quantity' Sections, respectively. The calculations for reinforcement quantities for different drains and culverts are given in Annexures 1 to 21.



X SEC- For D1 to D11 Type Drain

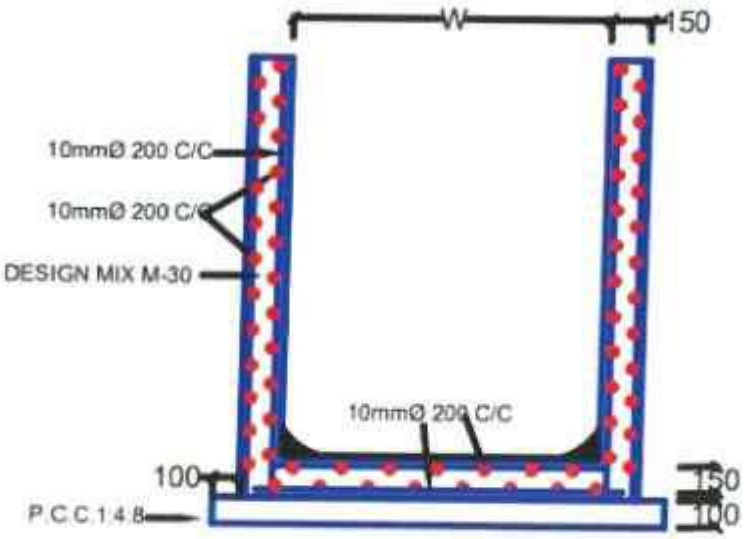
Fig. 14

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India



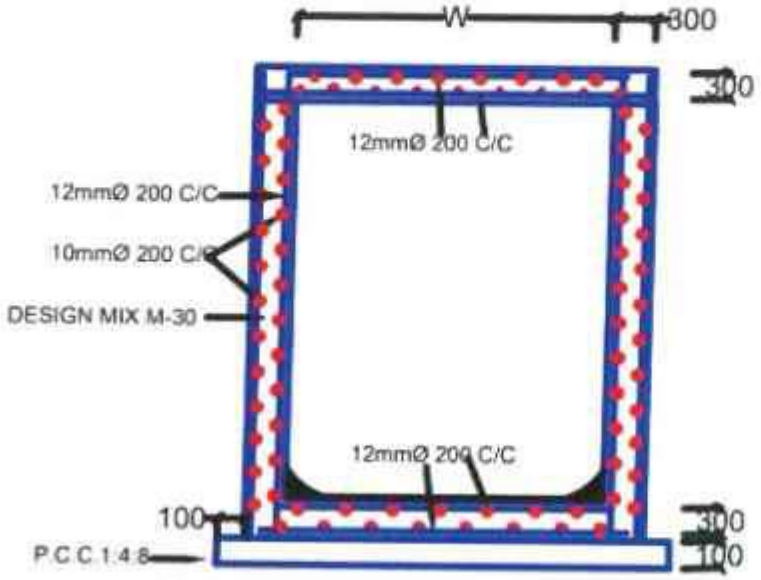
X SEC- For D12 to D15 Type Drain

Fig. 15



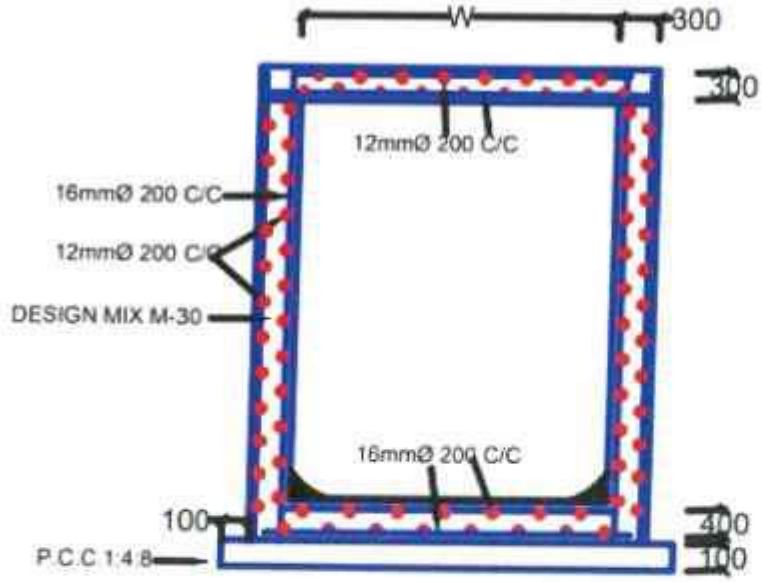
X SEC- For D16 to D24 Type Drain

Fig.16



Culvert SEC- For Span < 1000 mm

Fig. 17



Culvert SEC- For Span > 1000 mm

Fig. 18

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

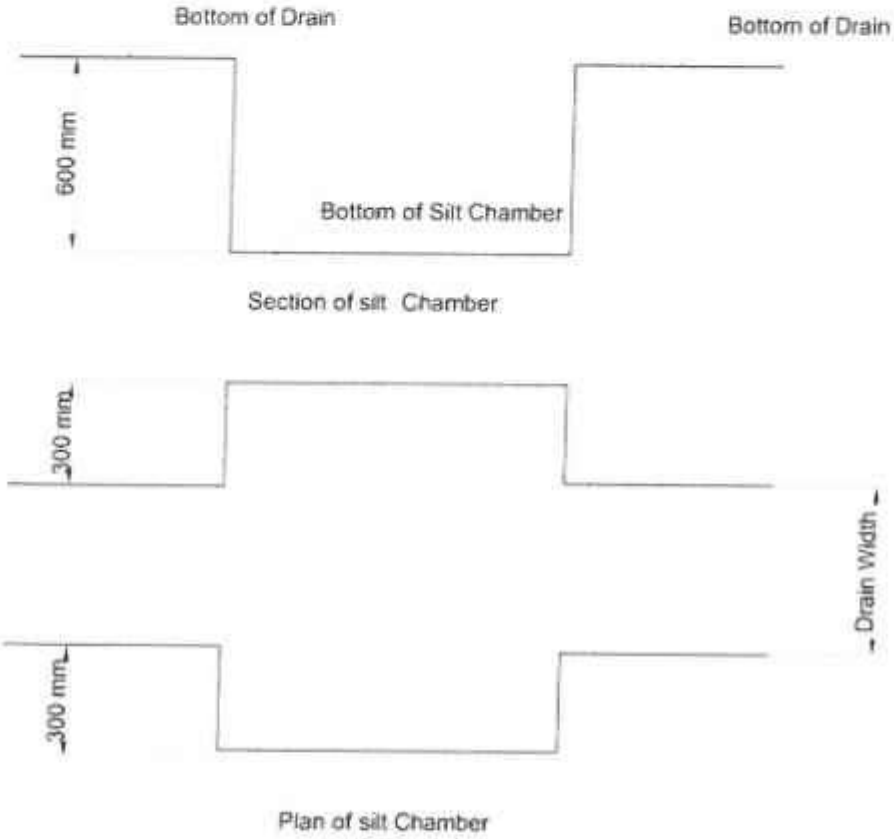


Fig. 19

Details of Measurement

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
1	Dismantling reinforced cement concrete or reinforced brick work including stacking of materials as directed by the engineer-in-charge within a distance of 60 metre (200 feet)	Cum	1515	1500	200	454.50
2	Excavation in foundation in ordinary soil including lift upto 1.5 m and lead upto 30 m and including filling, watering and ramming of excavated earth into the trenches or into the space between the building and the sides of foundation trenches or into the plinth and removal and disposal of surplus earth all complete as per direction of engineer in charge. {AS PER PWD SOR 2022 PAGE NO 15 SI NO 4.01 ITEM NO 251 (a).}					
	D1	Cum	39115	1250	550	26891.56
	D2	Cum	1601	1250	700	1400.88
	D3	Cum	60	1400	550	46.20
	D4	Cum	10141	1400	700	9938.18
	D5	Cum	149	1400	850	177.31
	D7	Cum	1892	1550	700	2052.82
	D8	Cum	2017	1550	850	2657.40
	D9	Cum	2266	1700	850	3274.37
	D10	Cum	263	1700	1000	447.10
	D12	Cum	1838	2000	1000	3676.00
	D13	Cum	351	2000	1300	912.60

953

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
	D14	Cum	204	2300	1000	469.20
	D15	Cum	385	2300	1150	1018.33
	D16	Cum	265	2600	1150	792.35
	D17	Cum	813	2600	1300	2747.94
	D19	Cum	1642	2900	1450	6904.61
	D20	Cum	40	2900	1600	185.60
	D21	Cum	1164	3200	1600	5959.68
	D22	Cum	245	3500	1750	1500.63
	D23	Cum	691	3800	1750	4595.15
	D24	Cum	680	4100	2350	6551.80
	Culvert					
	C1	Cum	352	1550	700	381.92
	C2	Cum	160	1550	850	210.80
	C4	Cum	405	1700	850	585.23
	C7	Cum	128	1850	850	201.28
	C8	Cum	112	1850	1000	207.20
	C9	Cum	128	2000	1000	256.00
	C10	Cum	64	2000	1250	160.00
	C11	Cum	16	2300	1100	40.48
	C12	Cum	64	2300	1250	184.00
	C14	Cum	32	2600	1250	104.00
	C15	Cum	16	2600	1400	58.24
	C16	Cum	46	2900	1400	186.76
	C17	Cum	16	2900	1550	71.92

954

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
	C18	Cum	16	3200	1550	79.36
	C19	Cum	48	3200	1700	261.12
	C22	Cum	32	3800	2000	243.20
	C23	Cum	32	4100	2000	262.40
	C24	Cum	16	4400	2600	183.04
	Silt Chamber					
	C3/55 (1800x900)	Cum	3.5	2.5	1.75	15.31
	C271 (1800x1050)	Cum	3.5	2.5	1.9	16.63
	C22 (2700x1500)	Cum	4.4	2.5	2.35	25.85
	C23 (3000x1500)	Cum	4.7	2.5	2.35	27.61
		Cum				
						85962.04
3	Extra rates for quantities of works, executed: In or under foul position, including pumping out water as required. Quantity same as Item no. 2	Cum				**85962.04**
4	Cement Concrete with 4 cm gauge approved stone ballast, coarse sand & cement in the proportion of 8:4:1 including supply of all material, labour, tools & Plant etc. required for proper completion of work. As per Sl No. 281					
	D1	Cum	39115	950	100	3715.93
	D2	Cum	1601	950	100	152.10
	D3	Cum	60	1100	100	6.60

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
	D4	Cum	10141	1100	100	1115.51
	D5	Cum	149	1100	100	16.39
	D7	Cum	1892	1250	100	236.50
	D8	Cum	2017	1250	100	252.13
	D9	Cum	2266	1400	100	317.24
	D10	Cum	263	1400	100	36.82
	D12	Cum	1838	1700	100	312.46
	D13	Cum	351	1700	100	59.67
	D14	Cum	204	2000	100	40.80
	D15	Cum	385	2000	100	77.00
	D16	Cum	265	2300	100	60.95
	D17	Cum	813	2300	100	186.99
	D19	Cum	1642	2600	100	426.92
	D20	Cum	40	2600	100	10.40
	D21	Cum	1164	2900	100	337.56
	D22	Cum	245	3200	100	78.40
	D23	Cum	691	3500	100	241.85
	D24	Cum	680	3800	100	258.40
	Culvert					
	C1	Cum	352	1250	100	44.00
	C2	Cum	160	1250	100	20.00
	C4	Cum	405	1400	100	56.70
	C7	Cum	128	1550	100	19.84
	C8	Cum	112	1550	100	17.36
	C9	Cum	128	1700	100	21.76
	C10	Cum	64	1700	100	10.88

956

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Sl no	Description	Unit	L.(m)	W(mm)	H/D(mm)	Qty
	C11	Cum	16	2000	100	3.20
	C12	Cum	64	2000	100	12.80
	C14	Cum	32	2500	100	8.00
	C15	Cum	16	2500	100	4.00
	C16	Cum	46	2800	100	12.88
	C17	Cum	16	2800	100	4.48
	C18	Cum	16	3100	100	4.96
	C19	Cum	48	3100	100	14.88
	C22	Cum	32	3700	100	11.84
	C23	Cum	32	4000	100	12.80
	C24	Cum	16	4300	100	6.88
	Silt chamber					
	C3/55 (1800x900)	Cum	2.9	2.5	0.1	0.73
	C271 (1800x1050)	Cum	2.9	2.5	0.1	0.73
	C22 (2700x1500)	Cum	3.8	2.5	0.1	0.95
	C23 (3000x1500)	Cum	4.1	2.5	0.1	1.03
		Cum				**8231.29**

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
5	Providing and laying Precast RCC design mix concrete of M-30 grade in drain including supply of all materials, centering and shuttering, labour, T&P for completion of work. All necessary arrangement for vibration, compaction & curing etc. complete as directed by Engineer In charge. Cost of reinforcement is not included here.	Cum				
	Base Slab					
	D1	Cum	39115	750	150	4400.44
	D2	Cum	1601	750	150	180.11
	D3	Cum	60	900	150	8.10
	D4	Cum	10141	900	150	1369.04
	D5	Cum	149	900	150	20.12
	D7	Cum	1892	1050	150	297.99
	D8	Cum	2017	1050	150	317.68
	D9	Cum	2266	1200	150	407.88
	D10	Cum	263	1200	150	47.34
	D12	Cum	1838	1500	150	413.55
	D13	Cum	351	1500	150	78.98
	D14	Cum	204	1800	150	55.08
	D15	Cum	385	1800	150	103.95
	D16	Cum	265	2100	150	83.48
	D17	Cum	813	2100	150	256.10
	D19	Cum	1642	2400	150	591.12
	D20	Cum	40	2400	150	14.40
	D21	Cum	1164	2700	150	471.42

958

Dr. B. R. Ghalsar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
	D22	Cum	245	3000	150	110.25
	D23	Cum	691	3300	150	342.05
	D24	Cum	680	3600	150	367.20
	Wall					
	D1	Cum	39115	150	600	7040.70
	D2	Cum	1601	150	750	360.23
	D3	Cum	60	150	600	10.80
	D4	Cum	10141	150	750	2281.73
	D5	Cum	149	150	900	40.23
	D7	Cum	1892	150	750	425.70
	D8	Cum	2017	150	900	544.59
	D9	Cum	2266	150	900	611.82
	D10	Cum	263	150	1050	82.85
	D12	Cum	1838	150	1050	578.97
	D13	Cum	351	150	1350	142.16
	D14	Cum	204	150	1050	64.26
	D15	Cum	385	150	1200	138.60
	D16	Cum	265	150	1200	95.40
	D17	Cum	813	150	1350	329.27
	D19	Cum	1642	150	1500	738.90
	D20	Cum	40	150	1650	19.80
	D21	Cum	1164	150	1650	576.18
	D22	Cum	245	150	1800	132.30
	D23	Cum	691	150	1800	373.14
	D24		680	150	2400	489.60

959

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
	Culvert Base Slab					**25031.08**
	C1	Cum	352	1050	300	110.88
	C2	Cum	160	1050	300	50.40
	C4	Cum	405	1200	300	145.80
	C7	Cum	128	1350	300	51.84
	C8	Cum	112	1350	300	45.36
	C9	Cum	128	1500	300	57.60
	C10	Cum	64	1700	300	32.64
	C11	Cum	16	2000	300	9.60
	C12	Cum	64	2000	400	51.20
	C14	Cum	32	2300	400	29.44
	C15	Cum	16	2300	400	14.72
	C16	Cum	46	2600	400	47.84
	C17	Cum	16	2600	400	16.64
	C18	Cum	16	2900	400	18.56
	C19	Cum	48	2900	400	55.68
	C22	Cum	32	3500	400	44.80
	C23	Cum	32	3800	400	48.64
	C24	Cum	16	4100	400	26.24
	Culvert Top Slab					
	C1	Cum	352	1050	300	110.88
	C2	Cum	160	1050	300	50.40
	C4	Cum	405	1200	300	145.80
	C7	Cum	128	1350	300	51.84
	C8	Cum	112	1350	300	45.36

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
	C9	Cum	128	1500	300	57.60
	C10	Cum	64	1500	300	28.80
	C11	Cum	16	1800	300	8.64
	C12	Cum	64	1800	300	34.56
	C14	Cum	32	2300	300	22.08
	C15	Cum	16	2300	300	11.04
	C16	Cum	46	2600	300	35.88
	C17	Cum	16	2600	300	12.48
	C18	Cum	16	2900	300	13.92
	C19	Cum	48	2900	300	41.76
	C22	Cum	32	3500	300	33.60
	C23	Cum	32	3800	300	36.48
	C24	Cum	16	4100	300	19.68
	Culvert Wall					
	C1					
	C2	Cum	352	300	300	63.36
	C4	Cum	160	300	450	43.20
	C7	Cum	405	300	450	109.35
	C8	Cum	128	300	450	34.56
	C9	Cum	112	300	600	40.32
	C10	Cum	128	300	600	46.08
	C11	Cum	64	300	750	28.80
	C12	Cum	16	300	600	5.76
	C14	Cum	64	300	750	28.80
	C15	Cum	32	400	750	19.20
		Cum	16	400	900	11.52

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
	C16	Cum	46	400	900	33.12
	C17	Cum	16	400	1050	13.44
	C18	Cum	16	400	1050	13.44
	C19	Cum	48	400	1200	46.08
	C22	Cum	32	400	1500	38.40
	C23	Cum	32	400	1500	38.40
	C24	Cum	16	400	2100	26.88
	Silting Chamber (W+600, L=2500, D=D+500					
	Base slab					
	C3/55 (1800x900)	1	2700	2500	150	1.01
	C271 (1800x1050)	1	2700	2500	150	1.01
	C22 (2700x1500)	1	3600	2500	150	1.35
	C23 (3000x1500)	1	3900	2500	150	1.46
	Wall					
	C3/55 (1800x900)	1	2700	2500	1500	2.34
	C271 (1800x1050)	1	2700	2500	1650	2.57
	C22 (2700x1500)	1	3600	2500	2100	3.84
	C23 (3000x1500)	1	3900	2500	2100	4.03
		Cum				**2259.39**
						27290.47
6	Shifting of segment from casting Yard to site by trailer including loading, unloading, placing and aligning the segment as per the line level.	Cum				**27290.47**

962

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
7	S/F M:S (tor steel or plain) in plain work such as R:C:C or R:B work including bending for proper shape as necessary including bending for proper completion of the work and including supply of all steel & wastage, bend, hooks, and authorised overlapping shall be measured etc all complete as per direction of engineer in charge.	Kg				
	Drain					
	D1 (450x300)	Kg	39115	21.55		842975.188
	D2	Kg	1601	23.55		37703.3899
	D3	Kg	60	22.95		1376.733
	D4	Kg	10141	25.73		260971.0293
	D5	Kg	149	26.94		4014.49955
	D7	Kg	1892	26.52		50183.881
	D8	Kg	2017	28.34		57156.3341
	D9	Kg	2266	28.94		65581.7789
	D10	Kg	263	30.15		7929.54205
	D12	Kg	1838	33.73		61993.9939
	D13	Kg	351	36.15		12687.40395
	D14	Kg	204	47.27		9643.8246
	D15	Kg	385	50.74		19535.54295
	D16	Kg	265	55.00		14574.91785
	D17	Kg	813	56.89		46249.70823
	D19	Kg	1642	62.24		102204.2375
	D20	Kg	40	65.71		2628.4708
	D21	Kg	1164	82.60		96143.82756
	D22	Kg	245	91.31		22370.90835

Dr. B. R. Chabra
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
	D23	Kg	691	120.95		83575.4135
	D24	Kg	680	134.57		91504.54
	Parapet					13023.15
	Silting chamber					1383.955
	Culvert @ 1.25%					221702.6438
	Total of above by adding 5% extra	Kg				**2233470.659**
8	Providing and laying RCC of M30 grade concrete inside forms including all materials, centring and shuttering, labour, T&P for parapet wall of culvert. All necessary arrangement for vibration, compaction & curing etc. at yard complete as directed by Engineer In charge. Cost of reinforcement is not included here					
	Parapet for culvert					
	C10	Cum	32	200	750	9.60
	C11	Cum	208	200	750	62.40
	C12	Cum	48	200	750	14.40
	C14	Cum	16	200	750	4.80
	C15	Cum	32	200	750	9.60
	C16	Cum	48	200	750	14.40
	C17	Cum	25	200	750	7.50
	C18	Cum	16	200	750	4.80
	C19	Cum	48	200	750	14.40
	C22	Cum	16	200	750	4.80
	C23	Cum	48	200	750	14.40
	C24	Cum	16	200	750	4.80

964

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Sl no	Description	Unit	L(m)	W(mm)	H/D(mm)	Qty
						165.90
9	Providing and fixing of screening fixtures as per design at silting chamber of different sizes	Nos				
						10.00
10	Rebate for refused material/malwa used by contractor. Quantity taken 50% of Item no. 2.	Cum				
						42981.02

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

965

Bill of Quantity

S no.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT	
1	Dismantling reinforced cement concrete or reinforced brick work including stacking of materials as directed by the engineer-in-charge within a distance of 60 metre	Cum	454.50	1340.00	609030.00	SOR2022/694/ 17.4
2	Excavation (by mechanical/manual mean) in foundation in mixed soil with Moorum, shingle, kankar, bricks (requiring the use of special tools and plant such as pickaxes, sabbals etc.) including lift up to 1.5m and lead up to 30m. and including filling watering and ramming of excavated earth into the space between the building and the sides of foundation trenches or into the plinth and removal and disposal of surplus earth as directed by the Engineer in charge up to a distance of 30m. from the foundation trenches including all T&P phowarah and basket etc. complete	Cum.	85962.04	115.00	9885634.60	SOR2022/252
3	Extra rates for quantities of works, executed:					
	In or under foul position, including pumping out water as required.	Cum.	85962.04	28.75	2471408.65	
4	Cement Concrete with 4 cm gauge approved stone ballast, coarse sand & cement in the proportion of 8:4:1 including supply of all materials, labour, Tools & plants etc. required for proper completion of the work.	Cum.	8231.29	6100.00	50210869.00	SOR2022/281

Dr. B. R. Ghalsasi
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

S no.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT	
5	Providing and laying precast RCC drain of M30 grade concrete inside forms including all materials, centring and shuttering, labour, T&P for fixing of the same. All necessary arrangement for vibration, compaction & curing etc. at yard complete as directed by Engineer In charge. Cost of reinforcement is not included here	Cum	27290.47	8545.15	233201159.70	AOR/ SOR2022/283(a)/5.15
6	Shifting of segment from casting yard to site by trailer including loading, unloading, placing and aligning the segment as per the line level.	Cum	27290.47	1800.00	49122846.00	AOR
7	S/F M:S (tor steel or plain) in plain work such as R:C:C work including bending for proper shape as necessary including bending for proper completion of the work and including supply of all steel & wastage, bend, hooks, and authorised overlapping shall be measured etc all complete as per direction of engineer in charge.					
	Thermo-Mechanically Treated bars.	Kg	2233470.66	79.85	178342632.20	MR & AOR based on MORTH

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

S no.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT	
8	Providing and laying RCC of M30 grade concrete inside forms including all materials, centring and shuttering, labour, T&P for for parapet wall of culvert. All necessary arrangement for vibration, compaction & curing etc. at yard complete as directed by Engineer In charge. Cost of reinforcement is not included here	Cum	165.90	8545.15	1417640.39	AOR based on SOR
9	Providing and fixing of screening fixtures as per design at silting chamber of different sizes	Nos	10.00	25000.00	250000.00	AOR based on SOR
10	Rebate for refused material/malwa used by contractor	Cum.	42981.02	-250.00	-10745255.00	SOR2022/231(a)
			TOTAL RS.		514765965.6	

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. S. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

ABSTRACT OF TOTAL COST

S. No.	Particulars	Amount (INR)
1	Cost of Work	51,47,65,965.56
2	GST @ 18% on above	9,26,57,873.80
3	Total cost including GST	60,74,23,839.36
4	Add for Labour Cess @1% on estimated cost-plus GST amount	60,74,238.39
5	Add for Contingencies on BOQ	5,00,000.00
6	Add for Third Party @1.5% on BOQ	77,21,489.48
7	Add for Advertisement L.S.	2,00,000.00
8	Total Cost	62,19,19,567.23
9	Say	**62,19,19,567.00**

Dr. K. K. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Annexure 1: Calculations for reinforcement quantity

Sl no	Description	Unit		L	W	H/D	Qty
D1	10 Rmt Drain Size (450x300)						
	Excavation	Cum		10	1250	550	6.88
	PCC	Cum		10	950	100	0.95
	RCC Base	Cum		10	750	150	1.13
	Wall	Cum		20	150	600	1.80
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		600	24.00
	R/F Base 8@200 C/C top and bottom		102	850			34.25
			10	10000			39.50
	Wall (8@200 C/C (both way)		204	975			78.57
			16	10000			63.20
							215.51
					Kg/Rmt		**21.55**

Annexure 2

Sl no	Description	Unit		L	W	H/D	Qty
D2	10 Rmt Drain Size (450x450)						
	Excavation	Cum		10	1250	700	8.75
	PCC	Cum		10	950	100	0.95
	RCC Base	Cum		10	750	150	1.13
	Wall	Cum		20	150	750	2.25
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		750	30.00
	R/F Base 8@200 C/C top and bottom		102	850			34.25
			12	10000			47.40
	Wall (8@200 C/C both way)		204	1125			90.65
			16	10000			63.20
							235.50
					Kg/Rmt		**23.55**

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Annexure 3

Sl no	Description	Unit		L	W	H/D	Qty
D3	10 Rmt Drain Size (600x300)						
	Excavation	Cum		10	1400	550	7.70
	PCC	Cum		10	1100	100	1.10
	RCC Base	Cum		10	900	150	1.35
	Wall	Cum		20	150	600	1.80
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		600	24.00
	R/F Base 8@200 C/C top and bottom		102	1000			40.29
			12	10000			47.40
	Wall (8@200 C/C both way)		204	975			78.57
			16	10000			63.20
							229.46
					Kg/Rmt		**22.95**

Annexure 4

Sl no	Description	Unit		L	W	H/D	Qty
D4	10 Rmt Drain Size (600x450)						
	Excavation	Cum		10	1400	700	9.80
	PCC	Cum		10	1100	100	1.10
	RCC Base	Cum		10	900	150	1.35
	Wall	Cum		20	150	750	2.25
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		750	30.00
	R/F Base 8@200 C/C top and bottom		102	1000			40.29
			12	10000			47.40
	Wall (8@200 C/C both way)		204	1125			90.65
			20	10000			79.00
							257.34
					Kg/Rmt		**25.73**

Dr. B. R. Ghalar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Annexure 5

Sl no	Description	Unit		L	W	H/D	Qty
D5	10 Rmt Drain Size (600x600)						
	Excavation	Cum		10	1400	850	11.90
	PCC	Cum		10	1100	100	1.10
	RCC Base	Cum		10	900	150	1.35
	Wall	Cum		20	150	900	2.70
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		900	36.00
	R/F Base 8@200 C/C top and bottom		102	1000			40.29
			12	10000			47.40
	Wall (8@200 C/C both way)		204	1275			102.74
			20	10000			79.00
							269.43
					Kg/Rmt		**26.94**

Annexure 6

Sl no	Description	Unit		L	W	H/D	Qty
D7	10 Rmt Drain Size (750x450)						
	Excavation	Cum		10	1400	850	11.90
	PCC	Cum		10	1100	100	1.10
	RCC Base	Cum		10	900	150	1.35
	Wall	Cum		20	150	750	2.25
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		750	30.00
	R/F Base 8@200 C/C top and bottom		102	1000			40.29
			14	10000			55.30
	Wall (8@200 C/C both way)		204	1125			90.65
			20	10000			79.00
							265.24
					Kg/Rmt		**26.52**

Dr. B. R. Chalur
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Annexure 7

Sl no	Description	Unit		L	W	H/D	Qty
D8	10 Rmt Drain Size (750x600)						
	Excavation	Cum		10	1550	700	10.85
	PCC	Cum		10	1250	100	1.25
	RCC Base	Cum		10	1050	150	1.58
	Wall	Cum		20	150	900	2.70
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		900	36.00
	R/F Base 8@200 C/C top and bottom		102	1150			46.33
			14	10000			55.30
	Wall (8@200 C/C both way)		204	1275			102.74
			20	10000			79.00
							283.37
					Kg/Rmt		**28.34**

Annexure 8

Sl no	Description	Unit		L	W	H/D	Qty
D9	10 Rmt Drain Size (900x600)						
	Excavation	Cum		10	1700	850	14.45
	PCC	Cum		10	1400	100	1.40
	RCC Base	Cum		10	1200	150	1.80
	Wall	Cum		20	150	900	2.70
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		900	36.00
	R/F Base 8@200 C/C top and bottom		102	1300			52.38
			14	10000			55.30
	Wall (8@200 C/C both way)		204	1275			102.74
			20	10000			79.00
							289.42
					Kg/Rmt		**28.94**

Annexure 9

Sl no	Description	Unit		L	W	H/D	Qty
D10	10 Rmt Drain Size (900x750)						
	Excavation	Cum		10	1700	0	0.00
	PCC	Cum		10	1400	100	1.40
	RCC Base	Cum		10	1200	150	1.80
	Wall	Cum		20	150	1050	3.15
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1050	42.00
	R/F Base 8@200 C/C top and bottom		102	1300			52.38
			14	10000			55.30
	Wall (8@200 C/C both way)		204	1425			114.83
			20	10000			79.00
							301.50
					Kg/Rmt		**30.15**

Annexure 10

Sl no	Description	Unit		L	W	H/D	Qty
D12	10 Rmt Drain Size (1200x750)						
	Excavation	Cum		10	2000	850	17.00
	PCC	Cum		10	1700	100	1.70
	RCC Base	Cum		10	1500	150	2.25
	Wall	Cum		20	150	1050	3.15
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1050	42.00
	R/F Base 8@200 C/C top and bottom		102	1600			64.46
			16	10000			63.20
	Wall (8@200 C/C both way)		204	1425			114.83
			24	10000			94.80
							337.29
					Kg/Rmt		**33.73**

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Annexure 11

Sl no	Description	Unit		L	W	H/D	Qty
D13	10 Rmt Drain Size (1200x1050)						
	Excavation	Cum		10	2000	2000	40.00
	PCC	Cum		10	1700	100	1.70
	RCC Base	Cum		10	1500	150	2.25
	Wall	Cum		20	150	1350	4.05
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1350	54.00
	R/F Base 8@200 C/C top and bottom		102	1600			64.46
			16	10000			63.20
	Wall (8@200 C/C both way)		204	1725			139.00
			24	10000			94.80
							361.46
					Kg/Rmt		**36.15**

Annexure 12

Sl no	Description	Unit		L	W	H/D	Qty
D14	10 Rmt Drain Size (1500x750)						
	Excavation	Cum		10	2300	1000	23.00
	PCC	Cum		10	2000	100	2.00
	RCC Base	Cum		10	1800	150	2.70
	Wall	Cum		20	150	1050	3.15
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1050	42.00
	R/F Base 10@200 C/C		102	1900			119.57
	8@200c/c		20	10000			79.00
	Wall (10@200 C/C)		204	1425			179.36
	8@200c/c		24	10000			94.80
							472.74
					Kg/Rmt		**47.27**

Annexure 13

Sl no	Description	Unit		L	W	H/D	Qty
D15	10 Rmt Drain Size (1500x900)						
	Excavation	Cum		10	2300	1000	23.00
	PCC	Cum		10	2000	100	2.00
	RCC Base	Cum		10	1800	150	2.70
	Wall	Cum		20	150	1200	3.60
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1200	48.00
	R/F Base 10@200 C/C		102	1900			119.57
	8@200c/c		20	10000			79.00
	Wall (10@200 C/C)		204	1575			198.24
	8@200c/c		28	10000			110.60
							507.42
					Kg/Rmt		**50.74**

Annexure 14

Sl no	Description	Unit		L	W	H/D	Qty
D16	10 Rmt Drain Size (1800x900)						
	Excavation	Cum		10	2600	1150	29.90
	PCC	Cum		10	2300	100	2.30
	RCC Base	Cum		10	2100	150	3.15
	Wall	Cum		20	150	1200	3.60
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1200	48.00
	R/F Base 10@200 C/C		102	2200			138.45
	8@200c/c		22	10000			86.90
	Wall (10@200 C/C)		204	1575			198.24
	8@200c/c		32	10000			126.40
							550.00
					Kg/Rmt		**55.00**

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi

77

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Annexure 15

Sl no	Description	Unit		L	W	H/D	Qty
D17	10 Rmt Drain Size (1800x1050)						
	Excavation	Cum		10	2600	1300	33.80
	PCC	Cum		10	2300	100	2.30
	RCC Base	Cum		10	2100	150	3.15
	Wall	Cum		20	150	1350	4.05
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1350	54.00
	R/F Base 10@200 C/C		102	2200			138.45
	8@200c/c		22	10000			86.90
	Wall (10@200 C/C)		204	1725			217.12
	8@200c/c		32	10000			126.40
							568.88
					Kg/Rmt		**56.89**

Annexure 16

Sl no	Description	Unit		L	W	H/D	Qty
D19	10 Rmt Drain Size 2100x1200)						
	Excavation	Cum		10	2900	1450	42.05
	PCC	Cum		10	2600	100	2.60
	RCC Base	Cum		10	2400	150	3.60
	Wall	Cum		20	150	1500	4.50
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1500	60.00
	R/F Base 10@200 C/C		102	2500			157.34
	8@200c/c		22	10000			86.90
	Wall (10@200 C/C)		204	1875			236.00
	8@200c/c		36	10000			142.20
							622.44
					Kg/Rmt		**62.24**

Dr. B.R. Ghalar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Annexure 17

Sl no	Description	Unit		L	W	H/D	Qty
D20	10 Rmt Drain Size (2100x1350)						
	Excavation	Cum		10	2900	1600	46.40
	PCC	Cum		10	2600	100	2.60
	RCC Base	Cum		10	2400	150	3.60
	Wall	Cum		20	150	1650	4.95
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1650	66.00
	R/F Base 10@200 C/C		102	2500			157.34
	8@200c/c		26	10000			102.70
	Wall (10@200 C/C)		204	2025			254.88
	8@200c/c		36	10000			142.20
							657.12
					Kg/Rmt		**65.71**

Annexure 18

Sl no	Description	Unit		L	W	H/D	Qty
D21	10 Rmt Drain Size (2400x1350)						
	Excavation	Cum		10	3200	1600	51.20
	PCC	Cum		10	2900	100	2.90
	RCC Base	Cum		10	2700	150	4.05
	Wall	Cum		20	150	1650	4.95
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1650	66.00
	R/F Base 10@200 C/C		102	2800			176.22
	10@200c/c		28	10000			172.76
	Wall (10@200 C/C)		204	2025			254.88
	10@200c/c		36	10000			222.12
							825.98
					Kg/Rmt		**82.60**

Annexure 19

Sl no	Description	Unit		L	W	H/D	Qty
D22	10 Rmt Drain Size (2700x1500)						
	Excavation	Cum		10	3500	1750	61.25
	PCC	Cum		10	3200	100	3.20
	RCC Base	Cum		10	3000	150	4.50
	Wall	Cum		20	150	1800	5.40
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1800	72.00
	R/F Base 10@200 C/C		102	3100			195.10
	10@200c/c		32	10000			197.44
	Wall (10@200 C/C)		204	2175			273.76
	10@200c/c		40	10000			246.80
							913.10
					Kg/Rmt		**91.31**

Annexure 20

Sl no	Description	Unit		L	W	H/D	Qty
D23	10 Rmt Drain Size (3000x1500)						
	Excavation	Cum		10	3800	2350	89.30
	PCC	Cum		10	3500	100	3.50
	RCC Base	Cum		10	3300	150	4.95
	Wall	Cum		20	150	1800	5.40
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		1800	72.00
	R/F Base 10@200 C/C		102	3400			308.65
	10@200c/c		38	10000			234.46
	Wall (10@200 C/C)		204	2175			394.89
	10@200c/c		44	10000			271.48
							1209.49
					Kg/Rmt		**120.95**

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

Annexure 21

Sl no	Description	Unit		L	W	H/D	Qty
D24	10 Rmt Drain Size (3300x2100)						
	Excavation	Cum		10	4100	2350	96.35
	PCC	Cum		10	3800	100	3.80
	RCC Base	Cum		10	3600	150	5.40
	Wall	Cum		20	150	2400	7.20
	Form Work Base	Sqm		20		150	3.00
	Form Work Wall	Sqm		40		2400	96.00
	R/F Base 10@200 C/C		102	3700			335.89
	10@200c/c		38	10000			234.46
	Wall (10@200 C/C)		204	2775			503.83
	10@200c/c		44	10000			271.48
							1345.66
					Kg/Rmt		**134.57**

Dr. B. R. Chahar
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi

Dr. K.N. Jha
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016, India

ANNEXURE-7

रजिस्ट्री सं० डी० एल०-33004/99 REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग II—खण्ड 3—उप-खण्ड (i)
PART II—Section 3—Sub-section (i)
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 802] नई दिल्ली, मंगलवार, सितम्बर 26, 2017/आश्विन 4, 1939
No. 802] NEW DELHI, TUESDAY, SEPTEMBER 26, 2017/ASVINA 4, 1939

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 26 सितम्बर, 2017

सा.का.नि. 1203(अ).—आर्द्रभूमि, जो जलीय चक्र का अत्यावश्यक भाग हैं, उच्चतर उत्पादक पारिस्थितिकी प्रणालियां हैं जो समृद्ध जैवविविधता का आधार हैं तथा हमारी समृद्ध सांस्कृतिक विरासत का भाग होने के कारण कई महत्वपूर्ण मनोरंजक, सामाजिक और सांस्कृतिक कार्यकलापों का समर्थन करते हुए जल भंडारण, जल शुद्धिकरण, बाढ़ अल्पीकरण, अपरदन नियंत्रण, भूजल का पुन:भरण, सूक्ष्म जलवायु का विनियमन, दृश्यभूमि के सौन्दर्य बौध को बढ़ाना जैसी पारिस्थितिकी प्रणाली सेवाओं की व्यापक रेंज प्रदान करता है।

और, अधिकतर आर्द्रभूमि, अपवहन और भरणस्थान, प्रदूषण (घरेलू और औद्योगिक बहि:स्राव का निस्सारण, ठोस अपशिष्टों का निपटान), जल विज्ञान संबंधी परिवर्तन (जल अपनयन और अंतर्वाह तथा बहिवाह परिवर्तन) के माध्यम से भूमि सुधार और अवक्रमण के कारण गंभीर रूप से संकटस्थ स्थिति में हैं और उनके प्राकृतिक संसाधनों के अत्यधिक दोहन के परिणामस्वरूप जैव विविधता की हानि और आर्द्रभूमि द्वारा उपलब्ध पारिस्थितिकी प्रणाली सेवाओं में विघटन हुआ है;

और, संविधान के अनुच्छेद 51क के खंड (छ) में यह बताया गया है कि भारत के प्रत्येक नागरिक का यह कर्तव्य होगा कि वह प्राकृतिक पर्यावरण की, जिसके अंतर्गत वन, झील, नदी और वन्यजीव हैं, रक्षा करे और उसका संवर्धन करे तथा प्राणिमात्र के प्रति दयाभाव रखे;

और पर्यावरण (संरक्षण) अधिनियम, 1986 पर्यावरण को संरक्षण प्रदान करने तथा उसमें सुधार लाने के लिए एक व्यापक विधान है, जिसमें अन्य बातों के साथ-साथ आर्द्रभूमि और उससे जुड़े मामले भी सम्मिलित हैं।

और, राष्ट्रीय पर्यावरण नीति, 2006 में आर्द्रभूमि द्वारा उपलब्ध पारिस्थितिकी सेवा को मान्यता दी गई है और सभी आर्द्रभूमि के लिए एक विनियामक तंत्र स्थापित करने की आवश्यकता पर बल दिया गया है, जिससे उनकी ऐसी पारिस्थितिकी स्थिति को बनाए रखा जा सके, जो अंततोगत्वा उनके एकीकृत प्रबंध में सहायक हो;

और, भारत, आर्द्रभूमि संबंधी रामसर अभिसमय का हस्ताक्षरकर्ता है, तथा अपने अधिकार क्षेत्र के भीतर सभी आर्द्रभूमियों के संरक्षण और बुद्धिमतापूर्ण उपयोग के लिए प्रतिबद्ध है।

और केन्द्रीय सरकार ने तारीख 4 दिसंबर, 2010 की सं.सा.का.नि. 951(अ) द्वारा आर्द्रभूमि (संरक्षण और प्रबंधन) नियम, 2010, प्रकाशित किए हैं;

और आर्द्रभूमि का संरक्षण और युक्तियुक्त उपयोग राज्य और राष्ट्रीय अर्थव्यवस्था को सारवान प्रत्यक्ष और अप्रत्यक्ष आर्थिक लाभ प्रदान कर सकता है तथा केन्द्रीय सरकार विभिन्न क्षेत्रों के लिए विकास आयोजना तथा निर्णय लेने की प्रक्रिया में आर्द्रभूमि जैवविविधता तथा पारिप्रणाली सेवाओं की पूर्ण श्रृंखला को मुख्य धारा में लाने के लिए प्रतिबद्ध है;

और, राज्य सरकारें और संघ राज्य क्षेत्र प्रशासनों को इसी प्रकार से अपने विकासात्मक कार्यक्रमों तथा आर्थिक कल्याण में आर्द्रभूमि पारिस्थितिकी प्रणाली सेवाओं और जैव विविधता संबंधी मूल्यों पर विचार करने और इस बात को संज्ञान में लेने की आवश्यकता है कि आर्द्रभूमि पारिस्थितिकी प्रणाली के दो मुख्य पारिस्थितिकी घटक भूमि और जल, भारतीय संविधान के अनुसार राज्य के विषय के रूप में सूचीबद्ध हैं;

और केन्द्रीय सरकार ने देश में आर्द्रभूमियों के प्रभावी संरक्षण और प्रबंधन के लिए आर्द्रभूमि (संरक्षण और प्रबंधन) नियम, 2010 को अधिक्रांत करना आवश्यक समझा है;

और, अब, केंद्रीय सरकार ने पर्यावरण (संरक्षण) अधिनियम, 1986 की उपधारा (1) और उपधारा (2) के खंड (v) और धारा 3 की उपधारा (3) के साथ पठित धारा 25 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए जनसाधारण की जानकारी के लिए, जिनके उससे प्रभावित होने की संभावना है, सा.का.नि. 385 (अ) तारीख 31 मार्च, 2016 द्वारा आर्द्रभूमि (संरक्षण और प्रबंधन) नियम, 2016 का प्रारूप प्रकाशित किया था; और यह सूचना दी गई थी कि केंद्रीय सरकार द्वारा उक्त प्रारूप नियमों पर, उस तारीख से, जिसको इस राजपत्र में यथाप्रकाशित इस अधिसूचना की प्रतियां जनता को उपलब्ध करा दी जाती है, साठ दिन की अवधि की समाप्ति के पश्चात् विचार किया जाएगा;

और, केन्द्रीय सरकार को प्रारूप आर्द्रभूमि (संरक्षण और प्रबंधन) नियम, 2016 के संबंध में राज्य सरकारों, संघ राज्य क्षेत्रों राज्यों और इसके संगठनों, व्यक्तियों और सिविल समाज संगठनों से सुझाव तथा आक्षेप प्राप्त हुए हैं;

और, ऐसे आक्षेपों और सुझावों पर, जो ऊपर उल्लिखित प्रारूप नियमों के संबंध में प्राप्त हुए हैं, पर राज्य सरकारों और राज्य क्षेत्र प्रशासनों के परामर्श से केन्द्रीय सरकार द्वारा सम्यक रूप से विचार किया गया;

अत: अब, केन्द्रीय सरकार, पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 3 की उप-धारा (1) और उप-धारा (2) के खंड (v) और उप-धारा (3) के साथ पठित धारा 25 और धारा 23 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए तथा आर्द्रभूमि (संरक्षण और प्रबंधन) नियम, 2010 को उन बातों के सिवाय अधिक्रांत करते हुए, जिन्हें ऐसे अधिक्रमण से पूर्व किया गया था या करने का लोप किया गया था, आर्द्रभूमि के संरक्षण और प्रबंधन के लिए निम्नलिखित नियम बनाती है, अर्थात्:—

1. **संक्षिप्त नाम और प्रारंभ**.—

(1) इन नियमों का संक्षिप्त नाम आर्द्रभूमि (संरक्षण और प्रबंध) नियम, 2017 है।

(2) ये राजपत्र में प्रकाशन की तारीख को प्रवृत्त होंगे।

2. परिभाषाएं.—

(1) इन नियमों में, जब तक कि संदर्भ से अन्यथा अपेक्षित न हो,—

(क) "अधिनियम" से पर्यावरण (संरक्षण) अधिनियम, 1986 अभिप्रेत है;

(ख) "प्राधिकरण" से यथास्थिति राज्य आर्द्रभूमि प्राधिकरण या संघ राज्य क्षेत्र आर्द्रभूमि प्रधिकरण, अभिप्रेत है;

(ग) "समिति" से नियम 6 में निर्दिष्ट राष्ट्रीय आर्द्रभूमि समिति अभिप्रेत है;

(घ) "पारिस्थितिकीय गुण" से पारिस्थितिकी प्रणाली घटकों, प्रक्रियाओं तथा सेवाओं का ऐसा संकलन अभिप्रेत है जो आर्द्रभूमियों की विशिष्टता चित्रित करता है;

(ङ) "एकीकृत प्रबंधन योजना" से कोई ऐसा दस्तावेज अभिप्रेत है जिसमें आर्द्रभूमि का युक्तियुक्त उपयोग के लिए कार्यनीतियों और कार्रवाइयों का वर्णन किया गया है तथा इस योजना में स्थल प्रबंधन के उद्देश्य; उद्देश्यों को प्राप्त करने के लिए अपेक्षित प्रबंधन कार्रवाइयां, वे घटक, जो विभिन्न स्थल विशिष्टताओं को प्रभावित करते हैं, या प्रभावित कर सकते हैं; पारिस्थितिकीय स्वरूप में परिवर्तनों का पता लगाने के लिए और प्रबंधन की प्रभाविता के मापन के लिए अपेक्षित मानीटरी और कार्यान्वयन प्रबंधन कार्यान्वयन के लिए संसाधन सम्मिलित हैं;

(च) "रामसर अभिसमय" से 1971 में ईरान के रामसर में हस्ताक्षरित आर्द्रभूमि संबंधी अभिसमय अभिप्रेत है;

(छ) "आर्द्रभूमि से कोई क्षेत्र या कच्छ पंक, पीटभूमि या जल; प्राकृतिक या कृत्रिम, स्थायी या अस्थायी, जल जो ठहरा है या बहते, ताजे, खारे या लवणीय, जिसके अंतर्गत समुद्री जल का जिसकी गहराई ज्वार की स्थिति छह मीटर से अधिक की न हो अभिप्रेत है, परंतु इसमें नदी जल मार्ग, धान के खेत, पेयजल प्रयोजनार्थ विशिष्ट रूप से मानव निर्मित जल निकाय/जलाशय, मत्सयपालन, नमक उत्पादन और सिंचाई प्रयोजनों के लिए विशिष्ट रूप से निर्मित संरचनाएं सम्मिलित नहीं हैं;

(ज) "आर्द्रभूमि परिसर" से दो या दो से अधिक पारिस्थितिकीय और जलीय समीपस्थ आर्द्रभूमियां तथा जिनमें उनसे जुड़े नाले/वाहिकाएं सम्मिलित हो सकती हैं, अभिप्रेत हैं;

(झ) "आर्द्रभूमियों का युक्तियुक्त उपयोग" से सतत विकास के संदर्भ में पारिप्रणाली दृष्टिकोण के माध्यम से प्राप्त पारिस्थितिकीय गुणों का रख-रखाव अभिप्रेत है;

(ञ) "प्रभावित जोन" से आर्द्रभूमि या आर्द्रभूमि परिसर के आवाह-क्षेत्र का वह भाग जिस पर विकासात्मक कार्यकलापों के कारण पारिप्रणाली ढांचे, तथा पारिप्रणाली सेवाओं में प्रतिकूल परिवर्तन पड़ता है।

(2) उन सभी शब्दों और पदों के, जो इन नियमों में प्रयुक्त हैं और परिभाषित नहीं है, किंतु अधिनियम में परिभाषित है, वही अर्थ होंगे जो उनके उस अधिनियम में हैं।

3. नियमों का लागू होना.—ये नियम निम्नलिखित आर्द्रभूमियों या आर्द्रभूमि परिसरों को लागू होंगे, अर्थात्:-

(क) रामसर अभिसमय के अधीन 'अंतरराष्ट्रीय महत्व की आर्द्रभूमि' के रूप में वर्गीकृत आर्द्रभूमियां;

(ख) केन्द्रीय सरकार, राज्य सरकार और संघ राज्य क्षेत्र प्रशासन द्वारा यथा अधिसूचित आर्द्रभूमियां।

परंतु ये नियम समय-समय पर यथा संशोधित भारतीय वन अधिनियम, 1927, वन्यजीव (संरक्षण) अधिनियम, 1972, वन (संरक्षण) अधिनियम, 1980, राज्य वन अधिनियम तथा तटीय विनियमन जोन अधिसूचना, 2011 के अंतर्गत आने वाले क्षेत्रों में पड़ने वाली आर्द्रभूमियों को लागू नहीं होंगे।

4. आर्द्रभूमियों में क्रियाकलापों पर निर्बंधन.—(1) आर्द्रभूमि का संरक्षण और प्रबंध, आर्द्रभूमि प्राधिकरण द्वारा यथा अवधारित 'युक्तियुक्त उपयोग' के सिद्धांत के अनुसार किया जाएगा।

(2) आर्द्रभूमि के भीतर, निम्नलिखित क्रियाकलापों को प्रतिषिद्ध किया जाएगा, अर्थात्:-

(i) किसी भी किस्म के अतिक्रमण सहित गैर-आर्द्रभूमि उपयोग हेतु परिवर्तन;

(ii) किसी उद्योग को स्थापित करना और विद्यमान उद्योगों का विस्तार करना;

(iii) निर्माण और विध्वंस अपशिष्ट प्रबंधन नियम, 2016 के अंतर्गत आने वाले निर्माण और विध्वंस अपशिष्ट का विनिर्माण या हथालन या भंडारण या निपटान; परिसंकटमय रसायन के विनिर्माण, भंडारण और आयात नियम, 1989 या परिसंकटमय सूक्ष्म जीवों आनुवंशिक रूप से निर्मित जीवों या कोशिकाओं का उपयोग, आयात, निर्यात और भंडारण संबंधी नियम, 1989 या परिसंकटमय अपशिष्ट (प्रबंधन, हथालन और सीमापारीय संचलन) नियम 2008 के अंतर्गत आने वाले परिसंकटमय पदार्थ; ई-अपशिष्ट (प्रबंधन) नियम, 2016 के अंतर्गत आने वाला ई-अपशिष्ट;

(iv) ठोस अपशिष्ट का पाटन;

उद्योगों, शहरों, कस्बों, गांवों और अन्य मानव बस्तियों से अशोधित अपशिष्ट और बहिस्रावों का निस्सारण;

(v) किसी स्थायी प्रकृति का किसी निर्माण सिवाय नाव घाटों के, पचास मीटर के भीतर इन नियमों के प्रारंभ की तारीख से पिछले दस वर्षों में प्रेक्षित बाढ़ के औसतन उच्च स्तर से गणना की जाएगी; और

(vi) अवैध शिकार।

परंतु केन्द्रीय सरकार प्राधिकरण की सिफारिश पर किसी कार्यकलाप के विलोपन के लिए राज्य सरकार या संघ राज्य क्षेत्र प्रशासन से प्राप्त प्रस्तावों पर विचार कर सकेगी।

5. आर्द्रभूमि प्राधिकरण.—(1) केन्द्रीय सरकार, प्रत्येक राज्य में राज्य आर्द्रभूमि प्राधिकरण का गठन करेगी जिसमें निम्नलिखित सदस्य होंगे, अर्थात्:-

(i) राज्य सरकार के पर्यावरण/वन विभाग का भारसाधक मंत्री या आर्द्रभूमि के विषय से संबंधित कार्य कर रहे भारसाधक मंत्री - अध्यक्ष;

(ii) राज्य का मुख्य सचिव या समतुल्य अपर मुख्य सचिव – उपाध्यक्ष;

(iii) पर्यावरण विभाग का भारसाधक सचिव – पदेन सदस्य;

(iv) वन विभाग का भारसाधक सचिव – पदेन सदस्य;

(v) शहरी विकास विभाग का भारसाधक सचिव – पदेन सदस्य;

(vi) ग्रामीण विकास विभाग का भारसाधक सचिव – पदेन सदस्य;

(vii) जल संसाधन विभाग का भारसाधक सचिव – पदेन सदस्य;

(viii) मत्स्यकी विभाग का भारसाधक सचिव – पदेन सदस्य;

(ix) सिंचाई और बाढ़ नियंत्रण विभाग का भारसाधक सचिव – पदेन सदस्य;

(x) पर्यटन विभाग का भारसाधक सचिव – पदेन सदस्य;

(xi) राजस्व विभाग का भारसाधक सचिव – पदेन सदस्य;

(xii) निदेशक, राज्य सुदूर संवेदी केन्द्र – पदेन सदस्य;

(xiii) मुख्य वन्यजीव वार्डन – पदेन सदस्य;

(xiv) सदस्य सचिव, राज्य जैवविविधता बोर्ड – पदेन सदस्य;

(xv) सदस्य सचिव, राज्य प्रदूषण नियंत्रण बोर्ड – पदेन सदस्य;

(xvi) पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय के क्षेत्रीय कार्यालय का अपर प्रधान मुख्य संरक्षक – पदेन सदस्य;

(xvii) आर्द्रभूमि पारिस्थितिकी, जल विज्ञान, मत्स्यकी, भू-दृश्य योजना और सामाजिक-आर्थिक क्षेत्र में से प्रत्येक का एक विशेषज्ञ जिसे राज्य सरकार द्वारा नामनिर्दिष्ट किया जाए; और

(xviii) पर्यावरण/वन विभाग या आर्द्रभूमियों से संबंधित विभाग में अपर सचिव/ संयुक्त सचिव/निदेशक - सदस्य सचिव।

(2) केन्द्रीय सरकार, प्रत्येक राज्य क्षेत्र के लिए संघ राज्य क्षेत्र आर्द्रभूमि प्राधिकरण का गठन करेगी जिसमें निम्नलिखित सदस्य होंगे, अर्थात्:-

(i) संघ राज्य क्षेत्र का प्रशासक या मुख्य सचिव – अध्यक्ष;

(ii) पर्यावरण विभाग का भारसाधक सचिव – उपाध्यक्ष;

(iii) वन विभाग का भारसाधक सचिव – पदेन सदस्य;

(iv) शहरी विकास विभाग का भारसाधक सचिव – पदेन सदस्य;

(v) ग्रामीण विकास विभाग का भारसाधक सचिव – पदेन सदस्य;

(vi) जल संसाधन विभाग का भारसाधक सचिव - पदेन सदस्य;

(vii) मत्स्यकी विभाग का भारसाधक सचिव - पदेन सदस्य;

(viii) सिंचाई और बाढ़ नियंत्रण विभाग का भारसाधक सचिव - पदेन सदस्य;

(ix) पर्यटन विभाग का भारसाधक सचिव - पदेन सदस्य;

(x) राजस्व विभाग का भारसाधक सचिव - पदेन सदस्य;

(xi) निदेशक, सुदूर संवेदी केन्द्र - पदेन सदस्य;

(xii) सदस्य सचिव, संघ राज्य क्षेत्र प्रदूषण नियंत्रण समिति - पदेन सदस्य;

(xiii) सदस्य सचिव, संघ राज्य क्षेत्र जैव-विविधता बोर्ड - पदेन सदस्य;

(xiv) मुख्य वन्यजीव वार्डन - पदेन सदस्य;

(xv) पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय के क्षेत्रीय कार्यालय के अपर प्रधान मुख्य वन संरक्षक - पदेन सदस्य;

(xvi) आर्द्रभूमि पारिस्थितिकी, जल-विज्ञान, मत्स्यकी, भू-दृश्य योजना और सामाजिक-आर्थिक क्षेत्रों से एक-एक विशेषज्ञ जिसे संघ राज्य क्षेत्र प्रशासन द्वारा नामनिर्दिष्ट किया जाए; और

(xvii) पर्यावरण/वन विभाग या आर्द्रभूमि हथालन विभाग में अपर सचिव/संयुक्त सचिव/निदेशक - सदस्य सचिव।

(3) राज्य आर्द्रभूमि प्राधिकरण या संघ राज्य क्षेत्र आर्द्रभूमि प्राधिकरण, तीन से अधिक, यदि अपेक्षित हों, अन्य सदस्यों, का सह-चयन, कर सकेंगे।

(4) राज्य आर्द्रभूमि प्राधिकरण या संघ राज्य क्षेत्र आर्द्रभूमि प्राधिकरण, निम्नलिखित शक्तियों का प्रयोग करेगा और निम्नलिखित कृत्यों का पालन करेगा, अर्थात् :—

(क) इन नियमों के प्रकाशन की तारीख से तीन मास के भीतर राज्य या संघ राज्य क्षेत्र की सभी आर्द्रभूमियों की सूची तैयार करना;

(ख) इन नियमों के प्रकाशन की तारीख से छह मास के भीतर अधिसूचित की जाने वाली आर्द्रभूमियों की सूची तैयार करना; अन्य सुसंगत राज्य अधिनियमों के अधीन तैयार/अधिसूचित आर्द्रभूमियों की किसी विद्यमान सूची को संज्ञान में लेना;

(ग) इन नियमों के अधीन विनियमन हेतु उनके संक्षिप्त दस्तावेज़ों के आधार पर अभिज्ञात आर्द्रभूमियों की संस्तुति करना;

(घ) इन नियमों के प्रकाशन की तारीख से एक वर्ष की अवधि के भीतर सभी आर्द्रभूमियों की व्यापक डिज़ीटल सूची तैयार करना और उक्त प्रयोजन से केन्द्रीय सरकार द्वारा विकसित की जाने वाले डेडीकेटिड बेब पोर्टल पर इसे अपलोड करना; और इस सूची को प्रत्येक दस वर्ष में अद्यतन किया जाएगा;

(ङ) अधिसूचित आर्द्रभूमियों के भीतर विनियमित और अनुज्ञात किए जाने वाले कार्यकलापों और उनके प्रभाव क्षेत्र की विस्तृत सूची विकसित करना;

(च) विनिर्दिष्ट आर्द्रभूमियों के लिए प्रतिषिद्ध कार्यकलापों की सूची में बढ़ोतरी, यदि कोई हो, की सिफारिश करना;

(छ) आर्द्रभूमियों की अधिकारिता के भीतर उनके संरक्षण और युक्तियुक्त उपयोग के लिए कार्यनीतियां पारिभाषित करना; यदि पारिस्थितिक प्रणाली के कार्यकलापों (जल भण्डारण, भू-जल संभरण, बाढ़-प्रतिरोधक जैसे) और मूल्य (मनोरंजन और सांस्कृतिक जैसे) का अनुरक्षण किया जाता है या उसमें अभिवृद्धि की जाती है; तो इन पारिस्थितिक प्रणाली को प्रबंधित करने के लिए एक सिद्धांत, जो संरक्षण के साथ संगत वहनीय उपयोगों को समावेशित करता है (जैसे जीवन-निर्वाह स्तर हेतु मछली पकड़ना या जलीय वनस्पति की पैदावार करना) का विवेकपूर्ण उपयोग करना;

(ज) प्रत्येक अधिसूचित आर्द्रभूमियों के लिए एकीकृत प्रबंधन योजना का पुनर्विलोकन करना (केन्द्रीय सरकार के समन्वयन से सीमा-पारीय आर्द्रभूमियों सहित), और इन योजनाओं के भीतर आर्द्रभूमियों, जो पारिस्थितिकीय स्वरूप के अनुकूल हैं, के पारम्परिक उपयोगों को जारी रखना और उसमें समर्थन देने पर विचार करना;

(झ) उन मामलों में, जहां अधिसूचित आर्द्रभूमियों या आर्द्रभूमि परिसरों की सीमा के भीतर भूमि क्षेत्र का निजी भू-धारण अधिकार है, उन्हें बढ़ावा देने के लिए कार्यकलापों के माध्यम से पारिस्थितिकीय स्वरूप को बनाये रखने के लिए कार्यतंत्रों हेतु सिफारिश करना;

(ञ) विद्यमान राज्य/संघ राज्य क्षेत्र स्तर की विकास योजनाओं और कार्यक्रमों के साथ प्रबंध योजना के कार्यान्वयन के अभिसरण के लिए कार्यतंत्रों की पहचान करना;

(ट) इन नियमों और अन्य सुसंगत अधिनियमों, नियमों और विनियमों का प्रवर्तन सुनिश्चित करना और अर्द्ध-वार्षिक आधार पर (प्रत्येक कैलेन्डर वर्ष के जून और दिसम्बर पर) एक सूचना तंत्र के माध्यम से ऐसी अधिसूचित आर्द्रभूमियों की स्थिति पर संबंधित राज्य सरकार या संघ राज्य क्षेत्र प्रशासन या केन्द्रीय सरकार को सूचना देना;

(ठ) विभिन्न संगत विभागों और अन्य संबंधित अभिकरणों के माध्यम से युक्तियुक्त उपयोग के सिद्धांत के आधार पर एकीकृत प्रबंधन योजनाओं के क्रियान्वयन का समन्वयन करना;

(ड) राज्य या संघ राज्य क्षेत्र प्रशासन के भीतर सभी आर्द्रभूमि विनिर्दिष्ट प्राधिकरणों के लिए नोडल प्राधिकरण के रूप में कार्य करना;

(ढ) संबंधित क्रियान्वयन अभिकरणों को आर्द्रभूमियों के संरक्षण और सतत प्रबंधन हेतु आवश्यक निदेश जारी करना;

(ण) आर्द्रभूमियों के मूल्यों और क्रियाकलापों के संबंध में पणधारियों और स्थानीय समुदायों के बीच जागरूकता के संवर्धन हेतु उपाय करना; और

(त) स्वप्रेरणा से या राज्य सरकार या संघ राज्य क्षेत्र प्रशासन द्वारा यथानिर्दिष्ट अन्य मामले पर सलाह देना।

(5) राज्य सरकार या संघ राज्य क्षेत्र प्रशासन का संबंधित विभाग, प्राधिकरण के लिए नोडल विभाग और सचिवालय के रूप में सभी आवश्यक सहायता प्रदान करेगा और कार्य करेगा।

(6) प्राधिकरण, इन नियमों के प्रकाशन के नब्बे दिन के भीतर :

(क) संक्षिप्त दस्तावेज़ों और प्रबंध योजनाओं का पुनर्विलोकन करने तथा आर्द्रभूमि प्राधिकरण द्वारा निर्दिष्ट किसी तकनीकी विषय पर सलाह देने के लिए एक तकनीकी समिति का, और

(ख) जनता द्वारा प्राधिकरण को की गईं शिकायतों की सुनवाई करने और उन्हें अग्रेषित करने के लिए एक कार्यतंत्र उपलब्ध कराने हेतु चार सदस्यों से मिलकर बनी एक शिकायत समिति का गठन करेगा।

(7) उप-नियम (6) में निर्दिष्ट समितियां अपने कृत्यों के निष्पादन के लिए प्रत्येक तिमाही में कम से कम एक बार बैठक करेंगी ।

(8) प्राधिकरण की वर्ष में कम से कम तीन बार बैठक होगी।

(9) राज्य सरकार या संघ राज्य क्षेत्र प्रशासन द्वारा नामनिर्दिष्ट प्राधिकरण के गैर-अधिकारिक सदस्यों का कार्यकाल अधिकतम तीन वर्ष की अवधि का होगा।

6. राष्ट्रीय आर्द्रभूमि समिति का गठन.—(1) केन्द्रीय सरकार, एक राष्ट्रीय आर्द्रभूमि समिति का गठन करेगी, जिसमें निम्नलिखित सदस्य होंगे, अर्थात् :—

(i) सचिव, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, भारत सरकार – अध्यक्ष;

(ii) आर्द्रभूमि संबंधी कार्य देख रहे विशेष सचिव या अपर सचिव, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, भारत सरकार – उपाध्यक्ष;

(iii) अपर महानिदेशक, वन्यजीव, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, भारत सरकार – पदेन सदस्य;

(iv) आर्द्रभूमियों संबंधी कार्य देख रहे सलाहकार या संयुक्त सचिव, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय – पदेन सदस्य;

(v) संयुक्त सचिव, पर्यटन मंत्रालय, भारत सरकार – पदेन सदस्य;

(vi) संयुक्त सचिव, जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय, भारत सरकार – पदेन सदस्य;

(vii) संयुक्त सचिव, कृषि और किसान कल्याण मंत्रालय, भारत सरकार – पदेन सदस्य;

(viii) संयुक्त सचिव, सामाजिक न्याय और अधिकारिता मंत्रालय भारत सरकार – पदेन सदस्य;

(ix) संयुक्त सचिव, शहरी विकास मंत्रालय, भारत सरकार - पदेन सदस्य;

(x) संयुक्त सचिव, ग्रामीण विकास मंत्रालय, भारत सरकार - पदेन सदस्य;

(xi) अध्यक्ष, केन्द्रीय प्रदूषण नियंत्रण बोर्ड - पदेन सदस्य;

(xii) निदेशक, भारतीय प्राणि सर्वेक्षण या वैज्ञानिक एफ - पदेन सदस्य;

(xiii) निदेशक, भारतीय वनस्पति सर्वेक्षण या वैज्ञानिक एफ - पदेन सदस्य;

(xiv) निदेशक, अंतरिक्ष अनुप्रयुक्ति केंद्र, अहमदाबाद या वैज्ञानिक एफ - पदेन सदस्य;

(xv) सदस्य केन्द्रीय जल आयोग - पदेन सदस्य;

(xvi) सलाहकार, नीति आयोग - पदेन सदस्य;

(xvii) राज्य सरकार या संघ राज्यक्षेत्र प्रशासन के तीन प्रतिनिधि, चक्रानुक्रम आधार पर, प्रत्येक दो वर्ष के कार्यकाल के लिए;

(xviii) आर्द्र भूमि पारिस्थितिकी, जल विज्ञान, मत्स्यकी क्षेत्र, भू-दृश्य योजना और सामाजिक अर्थशास्त्र के क्षेत्रों में से प्रत्येक का एक-एक विशेषज्ञ; और

(xix) आर्द्रभूमि से संबंधित कार्य करने वाले निदेशक/अपर निदेशक/संयुक्त निदेशक, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय - सदस्य सचिव।

(2) राष्ट्रीय आर्द्रभूमि समिति, यदि अपेक्षित हो, तीन से अनधिक अन्य सदस्यों को सहयोजित कर सकेगी।

(3) राष्ट्रीय आर्द्रभूमि समिति निम्नलिखित कृत्यों का पालन करेगी, अर्थात्:—

(क) आर्द्रभूमियों के संरक्षण तथा बुद्धिमत्तापूर्ण उपयोग के लिए समुचित नीतियों और कार्रवाई सम्बन्धी कार्यक्रमों के विषय में केंद्रीय सरकार को सलाह देना;

(ख) आर्द्रभूमियों के एकीकृत प्रबंधन के लिए बुद्धिमत्तापूर्ण उपयोग के सिद्धान्त पर आधारित मानदंड और मार्गदर्शक सिद्धांत तैयार करना;

(ग) प्राधिकरण द्वारा इन नियमों के क्रियान्वयन की निगरानी करना;

(घ) नियम 4 के उप नियम (2) में यथानिर्दिष्ट प्रतिषेधित क्रियाकलापों के लिए राज्य सरकारों या संघ राज्य क्षेत्र प्रशासनों से प्राप्त पुनरीक्षित प्रस्तावों के संबंध में केन्द्रीय सरकार को सलाह देना;

(ड.) रामसर अभिसमय के अधीन अंतर्राष्ट्रीय महत्व की आर्द्रभूमियों को अभिहित किये जाने की सिफारिश करना;

(च) अधिसूचित किये जाने के लिए सीमापार आर्द्रभूमियों की सिफारिश करना;

(छ) रामसर स्थलों और सीमापार आर्द्रभूमियों के एकीकृत प्रबंध की प्रगति का पुनर्विलोकन करना;

(ज) आर्द्रभूमियों से संबंधित मुद्दों पर अंतर्राष्ट्रीय अभिकरणों के समन्वय के संबंध में सलाह देना; और

(झ) किसी अन्य मामले पर स्वप्रेरणा से सलाह देना या केंद्रीय सरकार को निर्दिष्ट करना।

(4) समिति के गैर-सरकारी सदस्यों को कार्यकाल तीन वर्ष से अनधिक का नहीं होगा।

(5) समिति प्रत्येक छह मास में कम से कम एक बार बैठक करेगी।

7. **राज्य सरकारों और संघ राज्य क्षेत्र प्रशासनों को शक्तियों और कार्यों का प्रत्यायोजन.**—(1) राज्य सरकार या संघ राज्य क्षेत्र प्रशासन का सम्बद्ध विभाग इन नियमों के प्रकाशन की तारीख से एक वर्ष की अवधि के भीतर अधिसूचित किये जाने हेतु अभिज्ञात प्रत्येक आर्द्रभूमि के लिए एक संक्षिप्त दस्तावेज तैयार करेगा, जिसमें निम्नलिखित का उपबंध होगा:—

(क) निर्देशांकों सहित यथार्थ डिजिटल मानचित्रों द्वारा समर्थित और जमीनी सत्यापन द्वारा विधिमान्य आर्द्रभूमि का सीमांकन;

(ख) इसके प्रभाव क्षेत्र का सीमांकन और डिजिटल मानचित्र में संकेतित उसका भूमि उपयोग और आच्छादित भूमि क्षेत्र;

(ग) पारिस्थितिक-स्वरूप का विवरण;

(घ) पूर्वत: विद्यमान अधिकारों तथा विशेषाधिकारों का लेखा;

(ड.) आर्द्रभूमि तथा इसके प्रभाव क्षेत्र के भीतर अनुज्ञप्त स्थल-विशिष्ट क्रियाकलाप की सूची;

(च) आर्द्रभूमि और उसके प्रभाव क्षेत्र के भीतर विनियमित किये जाने वाले स्थल-विशिष्ट क्रियाकलापों की सूची; और

(छ) विनियमों के प्रवर्तन की रीति;

(2) प्राधिकरण, संक्षिप्त दस्तावेज के आधार पर, आर्द्रभूमियों को अधिसूचित किये जाने के लिए राज्य सरकार या संघ राज्यक्षेत्र प्रशासन को सिफारिश करेगा।

(3) राज्य सरकार या संघ राज्य क्षेत्र प्रशासन संबंधित और प्रभावित व्यक्तियों से प्राप्त आक्षेपों, यदि कोई हों, पर विचार करने के पश्चात् प्राधिकरण द्वारा की गयी सिफारिश की तारीख से दो सौ चालीस दिन से अनधिक की अवधि के भीतर राजपत्र में आर्द्रभूमियों को अधिसूचित करेगी।

(4) (क) केन्द्रीय सरकार सीमा-पार आर्द्रभूमियों के मामले में, संक्षिप्त दस्तावेज, जिसमें उप-नियम (1) में यथा सूचीबद्ध सूचना दी गई हो, को तैयार करने में संबद्ध राज्य सरकार और संघ राज्यक्षेत्र प्रशासनों के साथ समन्वय करेगी।

(ख) संक्षिप्त दस्तावेज के आधार पर, राष्ट्रीय आर्द्रभूमि समिति आर्द्रभूमि को अधिसूचित किये जाने के लिए केन्द्रीय सरकार को सिफारिशें करेगी।

(ग) केन्द्रीय सरकार संबद्ध और प्रभावित व्यक्तियों से प्राप्त आक्षेपों, यदि कोई हों, पर विचार करने के पश्चात् समिति द्वारा की गई सिफारिश की तारीख से दो सौ चालीस दिन से अनधिक की अवधि के भीतर आर्द्रभूमियों को राजपत्र में अधिसूचित करेगी।

(5) (क) केंद्रीय सरकार आर्द्रभूमियों से संबंधित सूचना के लिए एक समर्पित वेब पोर्टल का सृजन करेगी।

(ख) केंद्रीय सरकार, राज्य सरकार और संघ राज्य क्षेत्र प्रशासन अपनी अधिकारिता में की आर्द्रभूमियों के विषय में, सभी संबंधित सूचना अपलोड करेगी।

[फा. सं. जे-22012/78/2003-सीएस(डब्ल्यू) पार्ट.V]

डॉ. ए. दुरैसामी, वैज्ञानिक 'जी'

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 26th September, 2017

G.S.R. 1203(E).—Whereas the wetlands, vital parts of the hydrological cycle, are highly productive ecosystems which support rich biodiversity and provide a wide range of ecosystem services such as water storage, water purification, flood mitigation, erosion control, aquifer recharge, microclimate regulation, aesthetic enhancement of landscapes while simultaneously supporting many significant recreational, social and cultural activities, being part of our rich cultural heritage;

And whereas many wetlands are threatened by reclamation and degradation through drainage and landfill, pollution (discharge of domestic and industrial effluents, disposal of solid wastes), hydrological alteration (water withdrawal and changes in inflow and outflow), over-exploitation of their natural resources resulting in loss of biodiversity and disruption in ecosystem services provided by wetlands;

And whereas clause (g) of article 51A of the Constitution stipulates that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures;

And whereas the Environment (Protection) Act, 1986 is a comprehensive legislation to provide protection and improvement of the environment, including *inter-alia*, wetlands, and for matters connected therewith;

And whereas the National Environment Policy, 2006 recognises the ecosystem services provided by wetlands and emphasizes the need to set up a regulatory mechanism for all wetlands so as to maintain their ecological character, and ultimately support their integrated management;

And whereas India is a signatory to the Ramsar Convention on Wetlands and is committed to conservation and wise use of all wetlands within its territory;

And whereas the Central Government has published the Wetlands (Conservation and Management) Rules, 2010, vide number G.S.R. 951(E), dated the 4th December, 2010;

And whereas conservation and wise use of wetlands can provide substantial direct and indirect economic benefits to state and national economy, and thereby the Central Government stands committed to mainstreaming full range of wetland biodiversity and ecosystem services in development planning and decision making for various sectors;

And whereas the State Governments and Union Territory Administrations need to take into account wetland ecosystem services and biodiversity values likewise within their developmental programming and economic well-being, also taking into cognizance that land and water, two major ecological constituents of wetland ecosystems, are enlisted as State subjects as per the Constitution;

And whereas the Central Government considered it necessary to supersede the Wetlands (Conservation and Management) Rules, 2010 for effective conservation and management of wetlands in the country;

And whereas the Central Government had, in exercise of the powers conferred by section 25, read with sub-section (1) and clause (v) of sub-section (2) and sub-section (3) of section 3 of the Environment (Protection) Act, 1986, published the draft Wetlands (Conservation and Management) Rules, 2016, vide number G.S.R. 385 (E) dated 31st March, 2016 for information of the public likely to be affected thereby; and notice was given that the said draft rules would be taken into consideration by the Central Government after expiry of a period of sixty days from the date on which copies of the Gazette notification is made available to the public;

And whereas the Central Government has received the suggestions and objections from the State Governments, Union Territories and its organisations, individuals and civil society organisations on the draft Wetlands (Conservation and Management) Rules, 2016;

And whereas the suggestions and objections received in response to the above mentioned draft rules have been duly considered by the Central Government in consultation with State Governments and Union Territory Administrations.

Now, therefore, in exercise of the powers conferred by section 25, read with sub-section (1) and clause (v) of sub-section (2) and sub-section (3) of section 3 and section 23 of the Environment (Protection) Act, 1986 and in supersession of the Wetlands (Conservation and Management) Rules, 2010, except as respects things done or omitted to be done before such supersession, the Central Government hereby makes the following rules for conservation and management of wetlands, namely:—

1. Short title and commencement.—

(1) These rules may be called the Wetlands (Conservation and Management) Rules, 2017.

(2) These shall come into force from the date of their publication in the Official Gazette.

2. Definitions.—

(1) In these rules, unless the context otherwise requires,-

(a) "Act" means the Environment (Protection) Act, 1986;

(b) "Authority" means the State Wetlands Authority or Union Territory Wetlands Authority, as the case may be;

(c) "Committee" means the National Wetlands Committee referred to in rule 6;

(d) “ecological character” means the sum of ecosystem components, processes and services that characterise the wetlands;

(e) “integrated management plan” means a document which describes strategies and actions for achieving wise use of the wetland and the plan shall include objectives of site management; management actions required to achieve the objectives; factors that affect, or may affect, the various site features; monitoring requirements for detecting changes in ecological character and for measuring the effectiveness of management; and resources for management implementation;

(f) "Ramsar Convention" means the Convention on Wetlands signed at Ramsar, Iran in 1971;

(g) “wetland" means an area of marsh, fen, peatland or water; whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters, but does not include river channels, paddy fields, human-made water bodies/tanks specifically constructed for drinking water purposes and structures specifically constructed for aquaculture, salt production, recreation and irrigation purposes;

(h) “wetlands complexes" means two or more ecologically and hydrologically contiguous wetlands and may include their connecting channels/ducts;

(i) “wise use of wetlands” means maintenance of their ecological character, achieved through implementation of ecosystem approach within the context of sustainable development;

(j) “zone of influence” means that part of the catchment area of the wetland or wetland complex, developmental activities in which induce adverse changes in ecosystem structure, and ecosystem services.

(2) The words and expressions used in these rules and not defined, but defined in the Act, shall have the meanings assigned to them in the Act.

3. Applicability of rules.—These rules shall apply to the following wetlands or wetlands complexes, namely:**—**

(a) wetlands categorised as 'wetlands of international importance' under the Ramsar Convention;

(b) wetlands as notified by the Central Government, State Government and Union Territory Administration:

Provided that these rules shall not apply to the wetlands falling in areas covered under the Indian Forest Act, 1927, the Wild Life (Protection) Act, 1972, the Forest (Conservation) Act, 1980, the State Forest Acts, and the Coastal Regulation Zone Notification, 2011 as amended from time to time.

4. Restrictions of activities in wetlands.—(1) The wetlands shall be conserved and managed in accordance with the principle of 'wise use' as determined by the Wetlands Authority.

(2) The following activities shall be prohibited within the wetlands, namely,-

(i) conversion for non-wetland uses including encroachment of any kind;

(ii) setting up of any industry and expansion of existing industries;

(iii) manufacture or handling or storage or disposal of construction and demolition waste covered under the Construction and Demolition Waste Management Rules, 2016; hazardous substances covered under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 or the Rules for Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms Genetically engineered organisms or cells, 1989 or the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008; electronic waste covered under the E-Waste (Management) Rules, 2016;

(iv) solid waste dumping;

(v) discharge of untreated wastes and effluents from industries, cities, towns, villages and other human settlements;

(vi) any construction of a permanent nature except for boat jetties within fifty metres from the mean high flood level observed in the past ten years calculated from the date of commencement of these rules; and,

(vii) poaching.

Provided that the Central Government may consider proposals from the State Government or Union Territory Administration for omitting any of the activities on the recommendation of the Authority.

5. Wetlands Authorities.—(1) The Central Government hereby constitutes the State Wetlands Authority in each State with the following members, namely:—

(i) Minister In-charge of the Department of Environment/Forests of the State Government or Minister In-charge of the Department handling wetlands - Chairperson;

(ii) Chief Secretary of the State or Additional Chief Secretary equivalent - Vice Chairperson;

(iii) Secretary in-charge of the Department of Environment - Member *ex-officio*;

(iv) Secretary in-charge of the Department of Forests - Member *ex-officio*;

(v) Secretary in-charge of the Department of Urban Development - Member *ex-officio*;

(vi) Secretary in-charge of the Department of Rural Development - Member *ex-officio*;

(vii) Secretary in-charge of the Department of Water Resources - Member *ex-officio*;

(viii) Secretary in-charge of the Department of Fisheries - Member *ex-officio*;

(ix) Secretary in-charge of the Department of Irrigation and Flood Control - Member *ex-officio*;

(x) Secretary in-charge of the Department of Tourism - Member *ex-officio*;

(xi) Secretary in-charge of the Department of Revenue - Member *ex-officio*;

(xii) Director, State Remote Sensing Centre - Member *ex-officio*;

(xiii) Chief Wildlife Warden - Member *ex-officio*;

(xiv) Member Secretary, State Biodiversity Board - Member *ex-officio*;

(xv) Member Secretary, State Pollution Control Board - Member *ex-officio*;

(xvi) Additional Principal Chief Conservator of Forests of the Regional Office of Ministry of Environment, Forest and Climate Change - Member *ex-officio*;

(xvii) One expert each in the fields of wetland ecology, hydrology, fisheries, landscape planning and socio-economics to be nominated by the State Government; and

(xviii) Additional Secretary/Joint Secretary/Director in the Department of Environment/Forests or Department handling wetlands - Member Secretary.

(2) The Central Government hereby constitutes the Union Territory Wetlands Authority for each Union Territory with the following members, namely:—

(i) Administrator or Chief Secretary of the Union Territory - Chairperson;

(ii) Secretary in-charge of the Department of Environment - Vice Chairperson;

(iii) Secretary in-charge of the Department of Forests - Member *ex-officio*;

(iv) Secretary in-charge of the Department of Urban Development - Member *ex-officio*;

(v) Secretary in-charge of the Department of Rural Development - Member *ex-officio*;

(vi) Secretary in-charge of the Department of Water Resources - Member *ex-officio*;

(vii) Secretary in-charge of the Department of Fisheries - Member *ex-officio*;

(viii) Secretary in-charge of the Department of Irrigation and Flood Control - Member *ex-officio*;

(ix) Secretary in-charge of the Department of Tourism - Member *ex-officio*;

(x) Secretary in-charge of the Departments of Revenue - Member *ex-officio*;

(xi) Director, Remote Sensing Centre - Member *ex-officio;*

(xii) Member Secretary, Union Territory Pollution Control Committee - Member *ex-officio*;

(xiii) Member Secretary, Biodiversity Board of the UT - Member *ex-officio*;

(xiv) Chief Wildlife Warden - Member *ex-officio*;

(xv) Additional Principal Chief Conservator of Forests of the Regional Office of Ministry of Environment, Forest and Climate Change- Member *ex-officio*;

(xvi) One expert each in the fields of wetland ecology, hydrology, fisheries, landscape planning and socio-economics to be nominated by the Union Territory Administration; and

(xvii) Additional Secretary/Joint Secretary/Director in the Department of Environment/Forests or Department handling wetlands - Member Secretary.

(3) The State Wetlands Authority or Union Territory Wetlands Authority may co-opt other members, not exceeding three in number, if required.

(4) The State Wetlands Authority or Union Territory Wetlands Authority shall exercise the following powers and perform the following functions, namely:-

(a) prepare a list of all wetlands of the State or Union Territory within three months from the date of publication of these rules;

(b) prepare a list of wetlands to be notified, within six months from the date of publication of these rules; taking into cognizance any existing list of wetlands prepared/notified under other relevant State Acts;

(c) recommend identified wetlands, based on their Brief Documents, for regulation under these rules;

(d) prepare a comprehensive digital inventory of all wetlands within a period of one year from the date of publication of these rules and upload the same on a dedicated web portal to be developed by the Central Government for the said purpose; the inventory to be updated every ten years;

(e) develop a comprehensive list of activities to be regulated and permitted within the notified wetlands and their zone of influence;

(f) recommend additions, if any, to the list of prohibited activities for specific wetlands;

(g) define strategies for conservation and wise use of wetlands within their jurisdiction; wise use being a principle for managing these ecosystems which incorporates sustainable uses (such as capture fisheries at subsistence level or harvest of aquatic plants) as being compatible with conservation, if ecosystem functions (such as water storage, groundwater recharge, flood buffering) and values (such as recreation and cultural) are maintained or enhanced;

(h) review integrated management plan for each of the notified wetlands (including trans-boundary wetlands in coordination with Central Government), and within these plans consider continuation and support to traditional uses of wetlands which are harmonized with ecological character;

(i) in cases wherein lands within boundary of notified wetlands or wetlands complex have private tenancy rights, recommend mechanisms for maintenance of ecological character through promotional activities;

(j) identify mechanisms for convergence of implementation of the management plan with the existing State/Union Territory level development plans and programmes;

(k) ensure enforcement of these rules and other relevant Acts, rules and regulations and on half-yearly basis (June and December of each calendar year) inform the concerned State Government or Union Territory Administration or Central Government on the status of such notified wetlands through a reporting mechanism;

(l) coordinate implementation of integrated management plans based on wise use principle through various line departments and other concerned agencies;

(m) function as nodal authority for all wetland specific authorities within the State or Union Territory Administration;

(n) issue necessary directions for conservation and sustainable management of wetlands to the respective implementing agencies;

(o) undertake measures for enhancing awareness within stakeholders and local communities on values and functions of wetlands; and

(p) Advise on any other matter *suo-motu*, or as referred by the State Government/Union Territory Administration.

(5) The concerned Department of the State Government or Union Territory shall provide all necessary support and act as nodal Department and Secretariat to the Authority.

(6) The Authority shall, within ninety days of publication of these rules, shall constitute,—

(a) a technical committee to review brief documents, management plans and advise on any technical matter referred by the Wetland Authority; and

(b) a grievance committee consisting of four members to provide a mechanism for hearing and forwarding the grievances raised by public to the Authority;

(7) The Committees referred to in sub-rule (6) shall meet at least once in every quarter to perform their functions.

(8) The Authority shall meet at least thrice in a year.

(9) The term of non-official members of the Authority nominated by State Government or Union Territory Administration, shall be for a period not exceeding three years.

6. Constitution of National Wetlands Committee.—(1) The Central Government, hereby constitutes the National Wetlands Committee with the following members, namely:—

(i) Secretary, Ministry of Environment, Forest and Climate Change, Government of India - Chairperson;

(ii) Special Secretary or Additional Secretary dealing with wetlands, Ministry of Environment, Forest and Climate Change, Government of India-Vice Chairperson;

(iii) Additional Director General, Wildlife, Ministry of Environment, Forest and Climate Change, Government of India - Member *ex-officio*;

(iv) Adviser or Joint Secretary dealing with wetlands, Ministry of Environment, Forest and Climate Change - Member *ex-officio*;

(v) Joint Secretary, Ministry of Tourism, Government of India- Member *ex-officio*;

(vi) Joint Secretary , Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India- Member *ex-officio*;

(vii) Joint Secretary, Ministry of Agriculture and Farmers Welfare, Government of India- Member *ex-officio*;

(viii) Joint Secretary, Ministry of Social Justice and Empowerment, Government of India- Member *ex-officio*;

(ix) Joint Secretary, Ministry of Urban Development, Government of India- Member *ex-officio*;

(x) Joint Secretary, Ministry of Rural Development, Government of India- Member *ex-officio*;

(xi) The Chairman, Central Pollution Control Board - Member *ex-officio*;

(xii) Director, Zoological Survey of India or Scientist F- Member *ex-officio*;

(xiii) Director, Botanical Survey of India or Scientist F- Member *ex-officio*;

(xiv) Director, Space Application Centre, Ahmedabad or Scientist F- Member *ex-officio*;

(xv) Member, Central Water Commission - Member *ex-officio*;

(xvi) Adviser, Niti Aayog - Member *ex-officio*;

(xvii) Three representatives of State Government or Union Territory Administration on a rotational basis for a tenure of two years each;

(xviii) One expert each in the fields of wetland ecology, hydrology, fisheries, landscape planning & socio-economics; and

(xix) Director/Additional Director/Joint Director dealing with wetlands, Ministry of Environment, Forest and Climate Change - Member Secretary.

(2) The National Wetlands Committee may co-opt other members, not exceeding three in number, if required.

(3) The National Wetlands Committee shall perform the following functions, namely:-

(a) advise the Central Government on appropriate policies and action programmes for conservation and wise use of wetlands;

(b) evolve norms and guidelines for integrated management of wetlands based on wise use principle;

(c) monitor implementation of these rules by the Authority;

(d) advise the Central Government on proposals received from State Governments or Union Territory Administrations for omission of the prohibited activities as referred in sub-rule (2) of rule 4;

(e) recommend designation of wetlands of international importance under Ramsar Convention;

(f) recommend trans-boundary wetlands for notification;

(g) review progress of integrated management of Ramsar sites and transboundary wetlands;

(h) advise on collaboration with international agencies on issues related to wetlands; and

(i) advise on any other matter *suo-moto*, or as referred by the Central Government.

(4) The tenure of non-official members of the Committee shall not exceed three years.

(5) The Committee shall meet at least once in every six months.

7. Delegation of powers and functions to the State Governments and Union Territory Administrations.— (1) The concerned Department of the State Government or Union Territory Administration shall, within a period of one year from the date of publication of these rules, prepare a Brief Document for each of the wetland identified for notification, providing:—

(a) demarcation of wetland boundary supported by accurate digital maps with coordinates and validated by ground truthing;

(b) demarcation of its zone of influence and land use and land cover thereof indicated in a digital map;

(c) ecological character description;

(d) account of pre-existing rights and privileges;

(e) list of site-specific activities to be permitted within the wetland and its zone of influence;

(f) list of site specific activities to be regulated within the wetland and its zone of influence; and

(g) modalities for enforcement of regulation;

(2) Based on the Brief Document, the Authority shall make recommendations to the State Government or Union Territory Administration for notifying the wetlands.

(3) The State Government or Union Territory Administration shall, after considering the objections, if any, from the concerned and affected persons, notify the wetlands in the Official Gazette, within a period not exceeding 240 days from the date of recommendation by the Authority.

(4) (a) In case of trans-boundary wetlands, the Central Government shall coordinate with concerned State Governments and Union Territory Administrations to prepare the Brief Document containing information as listed in sub-rule (1).

(b) Based on the Brief Document, the National Wetlands Committee shall make recommendations to the Central Government for notification of the wetland.

(c) The Central Government shall, after considering the objections, if any, from the concerned and affected persons, notify the wetlands in the Official Gazette, within a period not exceeding 240 days from the date of recommendation by the Committee.

(5) (a) The Central Government shall create a dedicated web portal for information relating to wetlands.

(b) The Central Government, State Government and Union Territory Administration shall upload all relevant information and documents pertaining to wetlands in their jurisdiction.

[F. No. J-22012/78/2003-CS (W) Pt. V]

Dr. A. DURAISAMY, Scientist 'G'

Uploaded by Dte. of Printing at Government of India Press, Ring Road, Mayapuri, New Delhi-110064
and Published by the Controller of Publications, Delhi-110054.