HALF YEARLY COMPLIANCE REPORT

THE ENVIRONMENTAL CLEARANCE LETTER
(Ref.No. 97 dated 26.10.2012)
For

FROM OCTOBER 2018 TO MARCH 2019

INDIAN INSTITUTE OF TECHNOLOGY PATNA, BIHTA

1 INTRODUCTION

1.1 About the Project

- Indian Institute of Technology Patna is one of the new IITs established by an Act of the Indian Parliament on August 06, 2008.Patna which was known as Patliputra has been a center of knowledge since long has been attracting visitors and scholars from many parts of the world such as China, Indonesia, Japan, Korea, Sri Lanka, among others.
- IIT Patna has ten departments: These are Computer Science & Engineering, Electrical Engineering, Mechanical Engineering, Chemical and Biochemical Engineering, Civil & Environmental Engineering, Materials Science & Engineering, Chemistry, Physics, Mathematics and Humanities & Social Science departments.
- Recently, IIT Patna has been ranked as the 19th best engineering college in the recently released ranking by the Human Resource Ministry, Govt. of India

1.2 Site Connectivity

- The proposed site is connected to transport routes. Site I adjacent to the bihta-kampa road. Site is at distance of approx. 25 km from the Jay Prakash Narayan International airport. However state highway-2 is at the distance of approx. 0.97 km from the site

Site accessibility form airport, railway station and via road is shown in figure below

Figure 1- site accessibility

1.3 Project Features

- The geographical co-ordinates of the site are:

Table 1- Geographical coordinates of the site

	Latitude	Longitude
Centre of the Plot	25°32'8.13"N	84°51'1.71"E
Corner-1	25°33'19"N	84°51'32"E
Corner-2	25°33'05"N	84°51'43"E
Corner-3	25°32'11"N	84°51'25"E
Corner-4	25°31'49"N	84°51'12"E
Corner-5	25°32'03"N	84°50'36"E

Figure 2- Project Location

Table 2-Salient features of the site

S. No.	Description	Proposed
1.	Plot Area	20,23,436.5 m^2
2.	Proposed Built Up Area	1,37,997.62 m^2
3.	Total Water Requirement	1,500 KLD
4.	STP Capacity	15000 litter/hour capacity
5.	Parking Proposed	1133 ECS
6.	Total Power Requirement	7 MVA

On Going Construction Works

1. Housing Type – C
2. Gymkhana
3. Girls Hostel
4. Cycle Stand
5. Boys Hostel No -2

1.4 Present Status of the Project

Housing Type – C

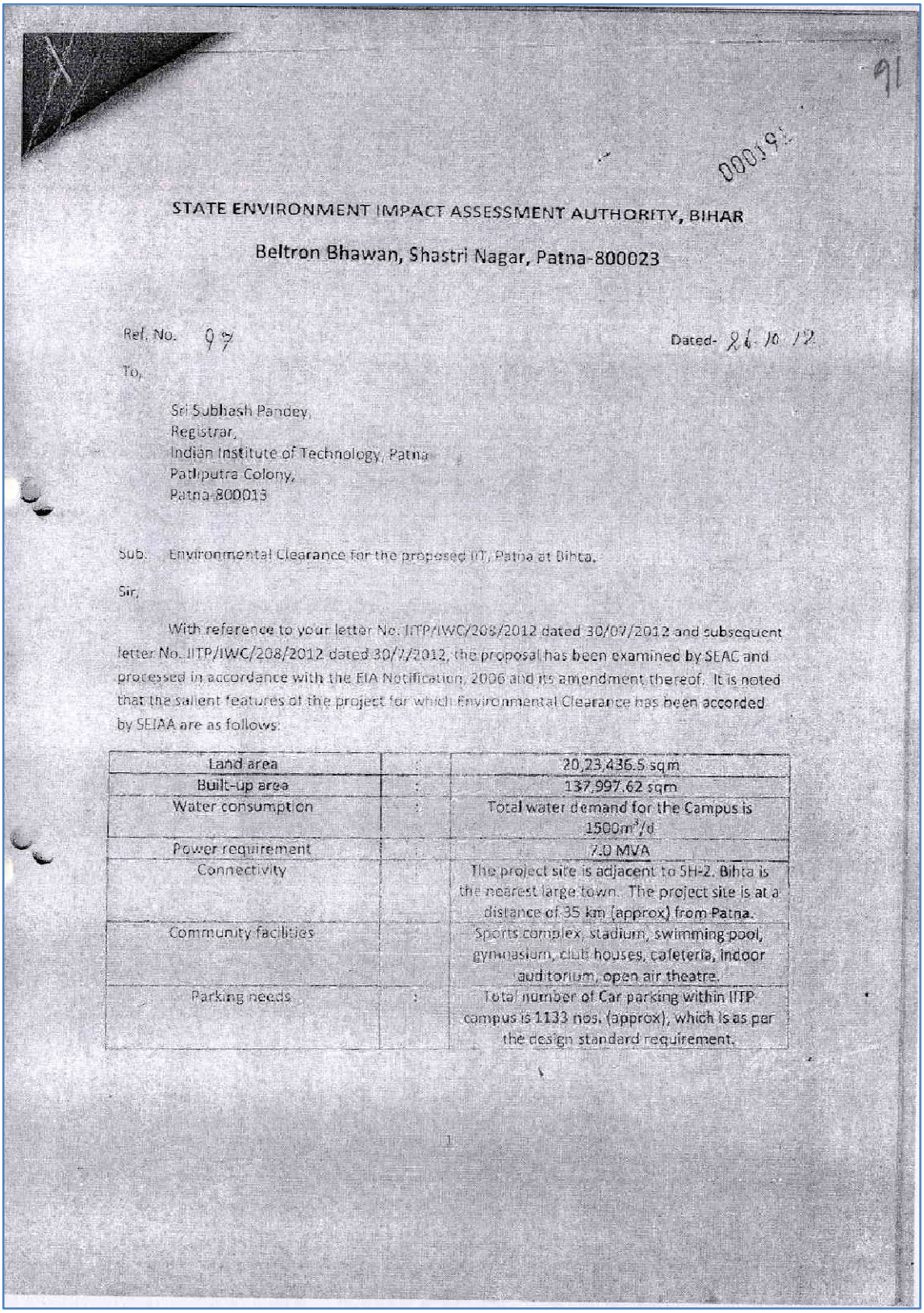
Gymkhana

Girls Hostel

Cycle Stand

Boys Hostel No – 2

2 COPY OF EC LETTER



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STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR

Beltron Bhawan, Shastri Nagar, Patna-800023

Ref. No. 97 Dated- 24/10/12

To,

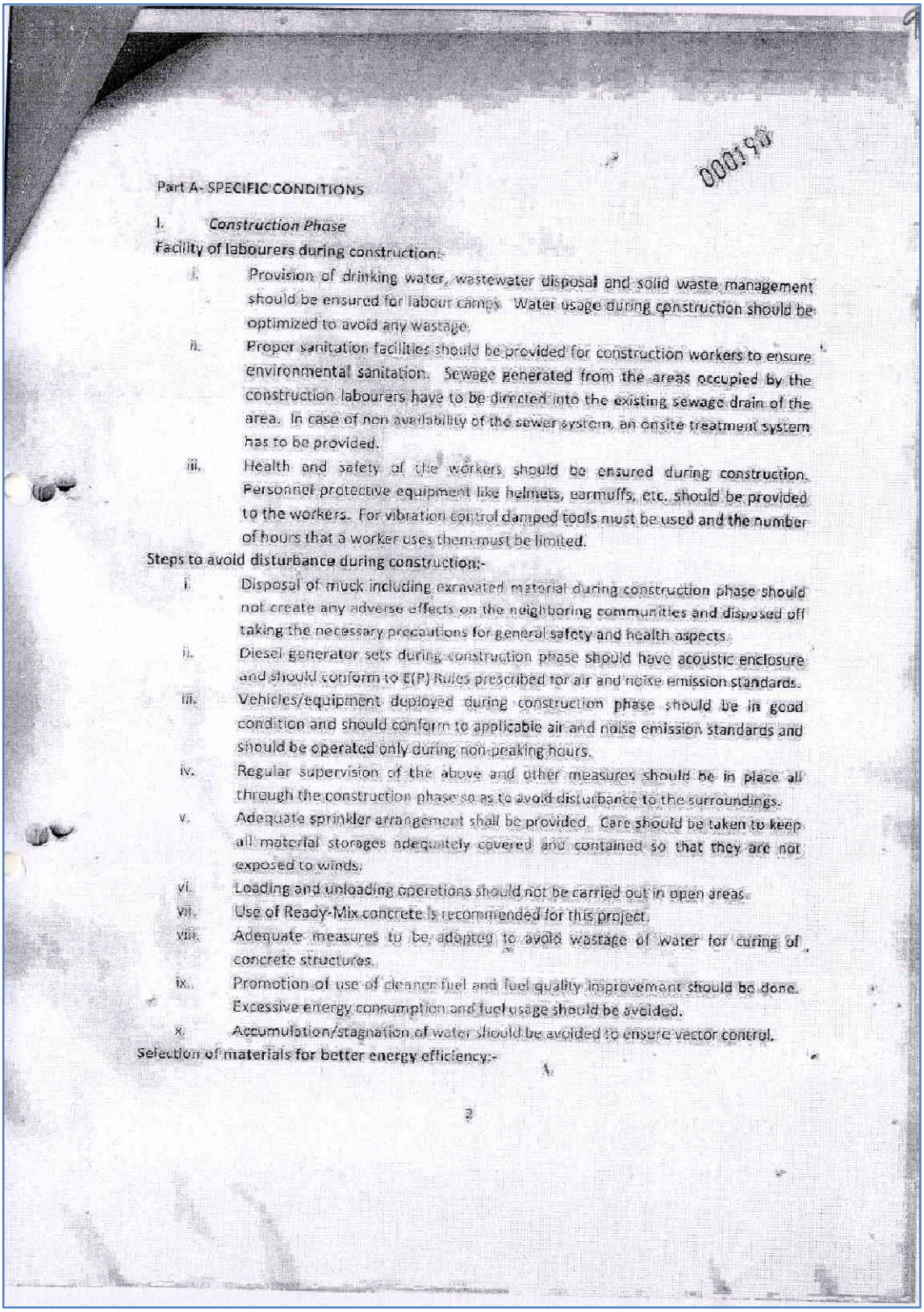
Sri Subhash Pandey,
Registrar,
Indian Institute of Technology, Patna
Patliputra Colony,
Patna-800013

Sub: Environmental Clearance for the proposed IIT, Patna at Bihta.

Sir,

With reference to your letter No. IITP/IWC/208/2012 dated 30/07/2012 and subsequent letter No. IITP/IWC/208/2012 dated 30/7/2012, the proposal has been examined by SEAC and processed in accordance with the EIA Notification, 2006 and its amendment thereof. It is noted that the salient features of the project for which Environmental Clearance has been accorded by SEIAA are as follows:

Land area	:	20,23,436.5 sqm
Built-up area	:	137,997.62 sqm
Water consumption	:	Total water demand for the Campus is 1500m^3/d
Power requirement	:	7.0 MVA
Connectivity	:	The project site is adjacent to SH-2. Bihta is the nearest large town. The project site is at a distance of 35 km (approx) from Patna.
Community facilities	:	Sports complex, stadium, swimming pool, gymnasium, club houses, cafeteria, indoor auditorium, open air theatre.
Parking needs	:	Total number of Car parking within IITP campus is 1133 nos. (approx), which is as per the design standard requirement.



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Part A- SPECIFIC CONDITIONS

I. *Construction Phase*

Facility of labourers during construction:-

i. Provision of drinking water, wastewater disposal and solid waste management should be ensured for labour camps. Water usage during construction should be optimized to avoid any wastage.

ii. Proper sanitation facilities should be provided for construction workers to ensure environmental sanitation. Sewage generated from the areas occupied by the construction labourers have to be directed into the existing sewage drain of the area. In case of non availability of the sewer system, an onsite treatment system has to be provided.

iii. Health and safety of the workers should be ensured during construction. Personnel protective equipment like helmets, earmuffs, etc. should be provided to the workers. For vibration control damped tools must be used and the number of hours that a worker uses them must be limited.

Steps to avoid disturbance during construction:-

i. Disposal of muck including excavated material during construction phase should not create any adverse effects on the neighboring communities and disposed off taking the necessary precautions for general safety and health aspects.

ii. Diesel generator sets during construction phase should have acoustic enclosure and should conform to E(P) Rules prescribed for air and noise emission standards.

iii. Vehicles/equipment deployed during construction phase should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peaking hours.

iv. Regular supervision of the above and other measures should be in place all through the construction phase so as to avoid disturbance to the surroundings.

v. Adequate sprinkler arrangement shall be provided. Care should be taken to keep all material storages adequately covered and contained so that they are not exposed to winds.

vi. Loading and unloading operations should not be carried out in open areas.

vii. Use of Ready-Mix concrete is recommended for this project.

viii. Adequate measures to be adopted to avoid wastage of water for curing of concrete structures.

ix. Promotion of use of cleaner fuel and fuel quality improvement should be done. Excessive energy consumption and fuel usage should be avoided.

x. Accumulation/stagnation of water should be avoided to ensure vector control.

Selection of materials for better energy efficiency:-

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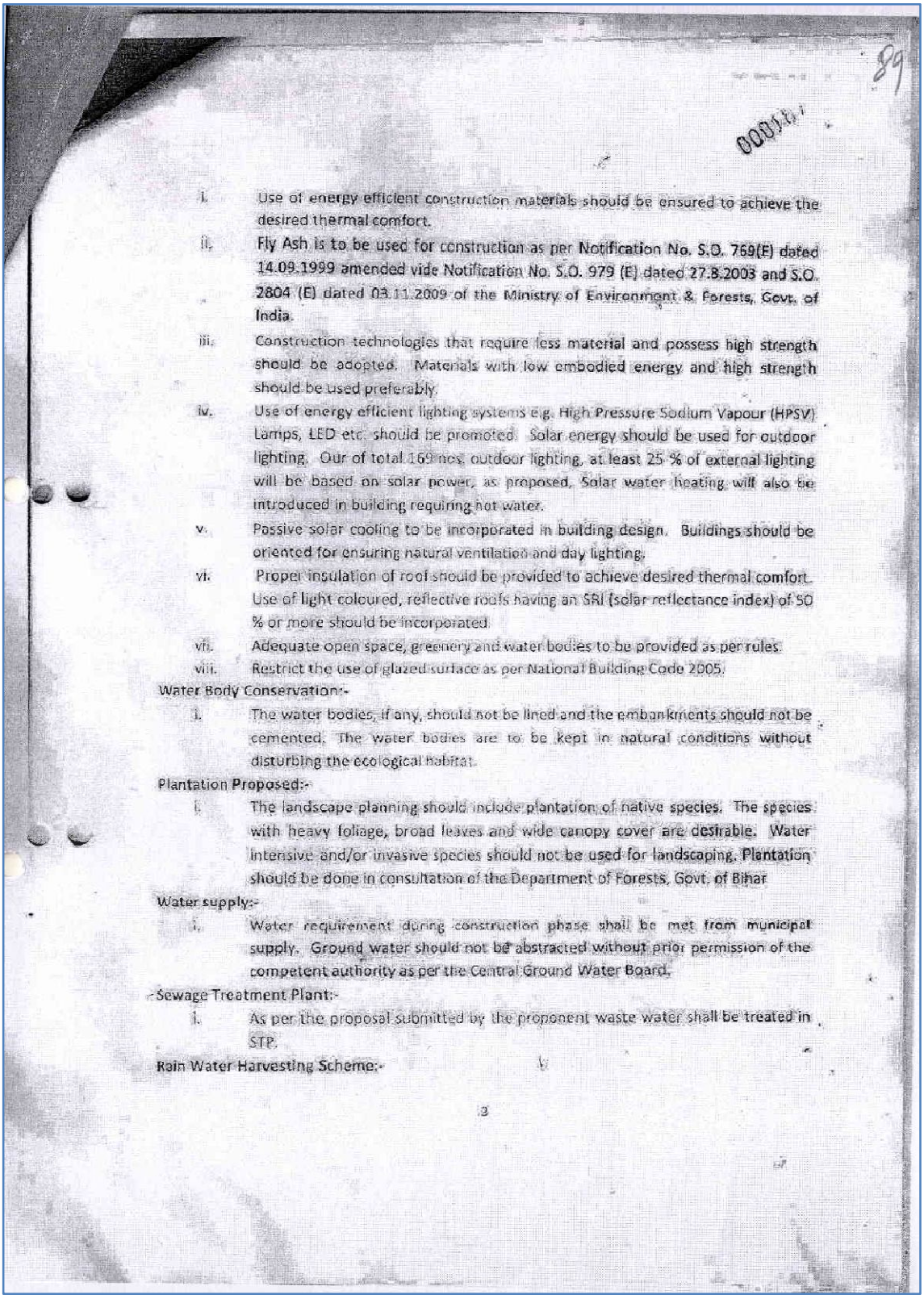

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i. Use of energy efficient construction materials should be ensured to achieve the desired thermal comfort.

ii. Fly Ash is to be used for construction as per Notification No. S.O. 769(E) dated 14.09.1999 amended vide Notification No. S.O. 979 (E) dated 27.8.2003 and S.O. 2804 (E) dated 03.11.2009 of the Ministry of Environment & Forests, Govt. of India.

iii. Construction technologies that require less material and possess high strength should be adopted. Materials with low embodied energy and high strength should be used preferably.

iv. Use of energy efficient lighting systems e.g. High Pressure Sodium Vapour (HPSV) Lamps, LED etc. should be promoted. Solar energy should be used for outdoor lighting. Our of total 169 nos. outdoor lighting, at least 25 % of external lighting will be based on solar power, as proposed. Solar water heating will also be introduced in building requiring hot water.

v. Passive solar cooling to be incorporated in building design. Buildings should be oriented for ensuring natural ventilation and day lighting.

vi. Proper insulation of roof should be provided to achieve desired thermal comfort. Use of light coloured, reflective roofs having an SRI (solar reflectance index) of 50 % or more should be incorporated.

vii. Adequate open space, greenery and water bodies to be provided as per rules.

viii. Restrict the use of glazed surface as per National Building Code 2005.

Water Body Conservation:-

i. The water bodies, if any, should not be lined and the embankments should not be cemented. The water bodies are to be kept in natural conditions without disturbing the ecological habitat.

Plantation Proposed:-

i. The landscape planning should include plantation of native species. The species with heavy foliage, broad leaves and wide canopy cover are desirable. Water intensive and/or invasive species should not be used for landscaping. Plantation should be done in consultation of the Department of Forests, Govt. of Bihar

Water supply:-

i. Water requirement during construction phase shall be met from municipal supply. Ground water should not be abstracted without prior permission of the competent authority as per the Central Ground Water Board.

Sewage Treatment Plant:-

i. As per the proposal submitted by the proponent waste water shall be treated in STP.

Rain Water Harvesting Scheme:-

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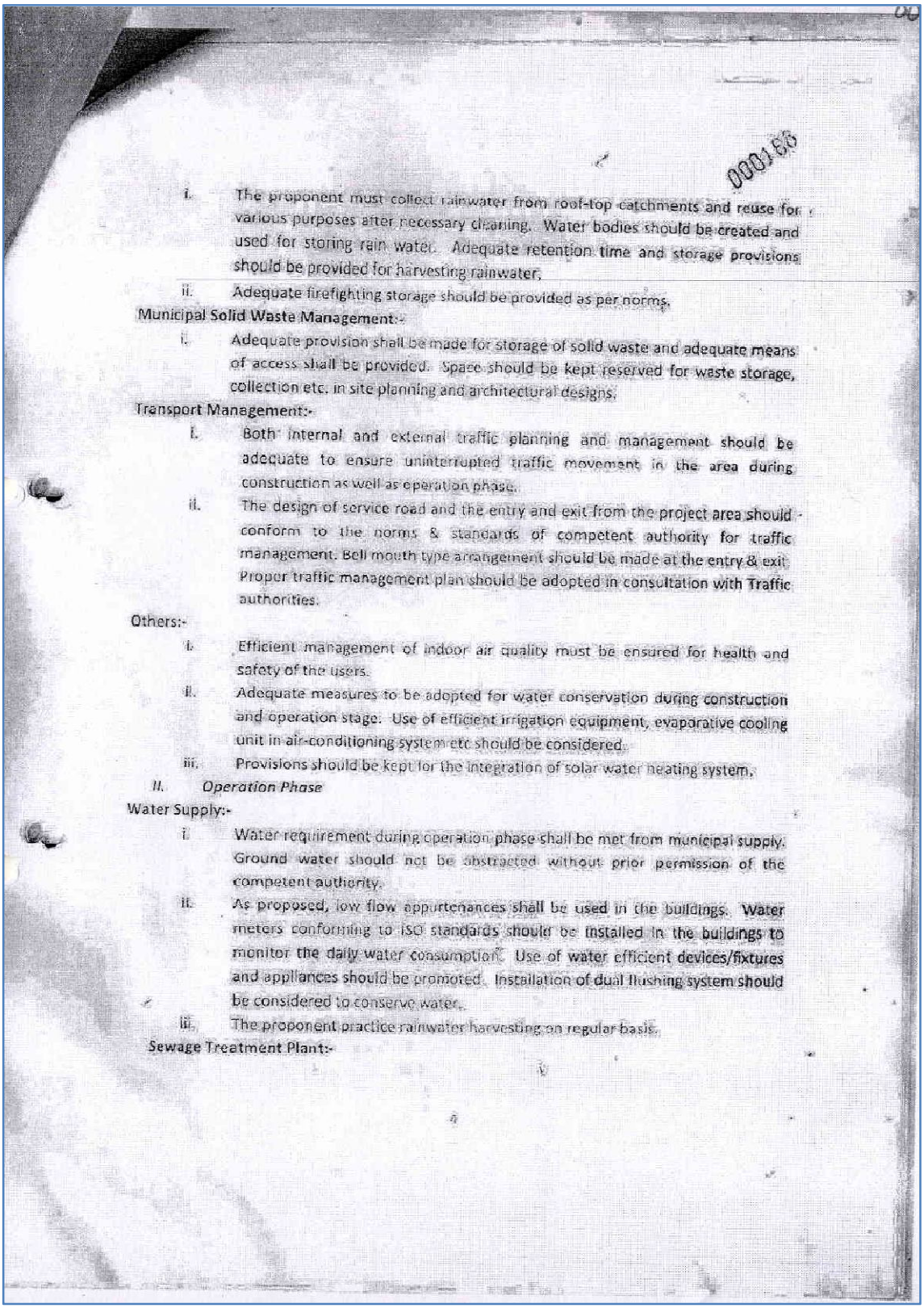


i. The proponent must collect rainwater from roof-top catchments and reuse for various purposes after necessary cleaning. Water bodies should be created and used for storing rain water. Adequate retention time and storage provisions should be provided for harvesting rainwater.

ii. Adequate firefighting storage should be provided as per norms.

Municipal Solid Waste Management:-

i. Adequate provision shall be made for storage of solid waste and adequate means of access shall be provided. Space should be kept reserved for waste storage, collection etc. in site planning and architectural designs.

Transport Management:-

i. Both internal and external traffic planning and management should be adequate to ensure uninterrupted traffic movement in the area during construction as well as operation phase.

ii. The design of service road and the entry and exit from the project area should conform to the norms & standards of competent authority for traffic management. Bell mouth type arrangement should be made at the entry & exit. Proper traffic management plan should be adopted in consultation with Traffic authorities.

Others:-

i. Efficient management of indoor air quality must be ensured for health and safety of the users.

ii. Adequate measures to be adopted for water conservation during construction and operation stage. Use of efficient irrigation equipment, evaporative cooling unit in air-conditioning system etc should be considered.

iii. Provisions should be kept for the integration of solar water heating system.

II. *Operation Phase*

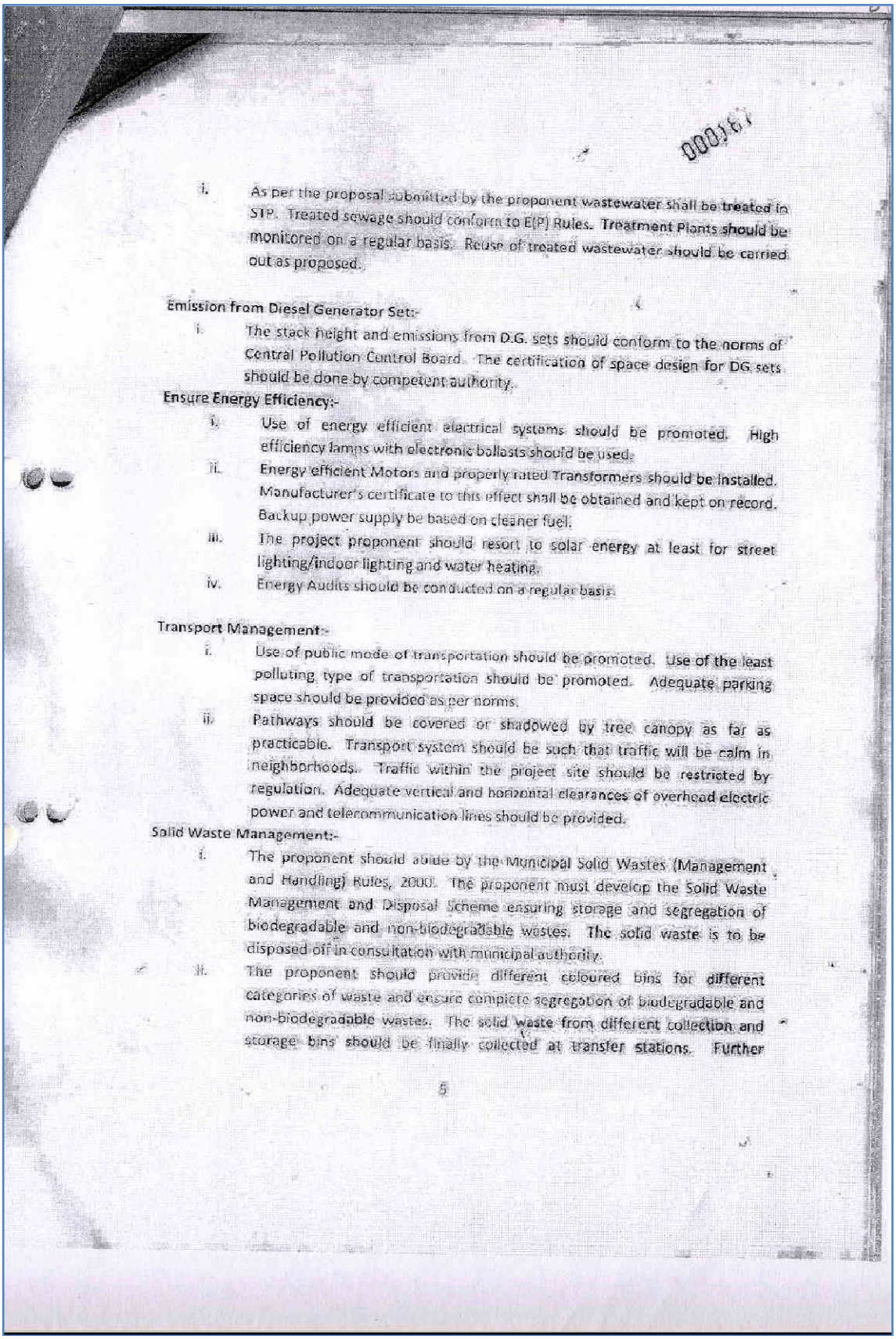
Water Supply:-

i. Water requirement during operation phase shall be met from municipal supply. Ground water should not be obstructed without prior permission of the competent authority.

ii. As proposed, low flow appurtenances shall be used in the buildings. Water meters conforming to ISO standards should be installed in the buildings to monitor the daily water consumption. Use of water efficient devices/fixtures and appliances should be promoted. Installation of dual flushing system should be considered to conserve water.

iii. The proponent practice rainwater harvesting on regular basis.

Sewage Treatment Plant:-



i. As per the proposal submitted by the proponent wastewater shall be treated in STP. Treated sewage should conform to E(P) Rules. Treatment Plants should be monitored on a regular basis. Reuse of treated wastewater should be carried out as proposed.

Emission from Diesel Generator Set:-

i. The stack height and emissions from D.G. sets should conform to the norms of Central Pollution Control Board. The certification of space design for DG sets should be done by competent authority.

Ensure Energy Efficiency:-

i. Use of energy efficient electrical systems should be promoted. High efficiency lamps with electronic ballasts should be used.

ii. Energy efficient Motors and properly rated Transformers should be installed. Manufacturer's certificate to this effect shall be obtained and kept on record. Backup power supply be based on cleaner fuel.

iii. The project proponent should resort to solar energy at least for street lighting/indoor lighting and water heating.

iv. Energy Audits should be conducted on a regular basis.

Transport Management:-

i. Use of public mode of transportation should be promoted. Use of the least polluting type of transportation should be promoted. Adequate parking space should be provided as per norms.

ii. Pathways should be covered or shadowed by tree canopy as far as practicable. Transport system should be such that traffic will be calm in neighborhoods. Traffic within the project site should be restricted by regulation. Adequate vertical and horizontal clearances of overhead electric power and telecommunication lines should be provided.

Solid Waste Management:-

i. The proponent should abide by the Municipal Solid Wastes (Management and Handling) Rules, 2000. The proponent must develop the Solid Waste Management and Disposal Scheme ensuring storage and segregation of biodegradable and non-biodegradable wastes. The solid waste is to be disposed off in consultation with municipal authority.

ii. The proponent should provide different coloured bins for different categories of waste and ensure complete segregation of biodegradable and non-biodegradable wastes. The solid waste from different collection and storage bins should be finally collected at transfer stations. Further

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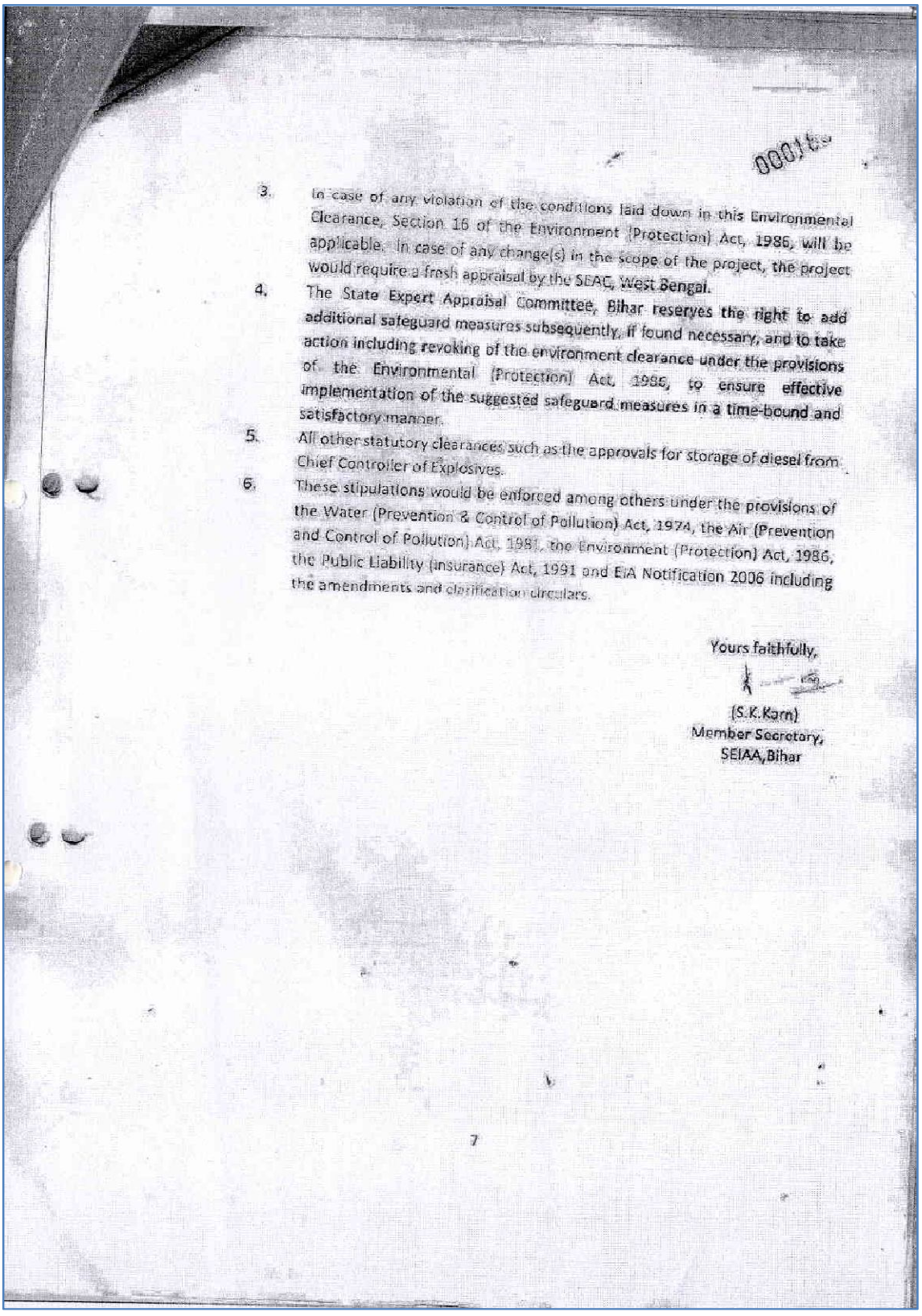

3. In case of any violation of the conditions laid down in this Environmental Clearance, Section 16 of the Environment (Protection) Act, 1986, will be applicable. In case of any change(s) in the scope of the project, the project would require a fresh appraisal by the SEAC, West Bengal.

4. The State Expert Appraisal Committee, Bihar reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environmental (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time-bound and satisfactory manner.

5. All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives.

6. These stipulations would be enforced among others under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 2006 including the amendments and clarification circulars.

Yours faithfully,

(S.K.Karn)
Member Secretary,
SEIAA,Bihar

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3 POINT WISE COMPLIANCE OF CONDITIONS/SAFEGUARDS REGARDING ENVIRONMENT CLEARANCE LETTER

3.1 Specific Conditions

3.1.1 Construction Phase

1. FACILITY OF LABOURERS DURING CONSTRUCTION:-	
1	***Provision of drinking water, wastewater disposal and solid waste management should be ensured for labour camps. Water usage during construction should be optimized to avoid any wastage.***
	Complied - For the construction workers provision of drinking water is being provided. The construction phase involves generation of construction waste/ debris, waste oil and chemicals from construction machinery and domestic solid waste from camp site etc. also involve generation of construction and demolition waste/ debris, waste oil and chemicals from construction machinery and domestic solid waste from campsite etc. Which is being handled as per the C&D waste management and handling rules 2016. for the wastewater generated from labour camps adequate number of portable toilets, septic tanks and soak pits are provided onsite for disposal of sewage as per the design aspects of Bureau of Indian Standards
2	***Proper sanitation facilities should be provided for construction workers to ensure environmental sanitation. Sewage generated from the areas occupied by the construction labourers have to be directed into the existing sewage drain of the area. In case of non-availability of the sewer system, an onsite treatment system has to be provided.***
	Complied Proper sanitation facilities are given to the workers, The sewage generated from the portable toilets is vacuum-collected and emptied into the main sewerage system of the area. Soak pits are provided at the construction areas to absorb wash waters and other domestic waste water.

3	***Health and safety of the workers should be ensured during construction. Personnel protective equipment like helmets, earmuffs, etc. should be provided to the workers. For vibration control damped tools must be used and the number of hours that a worker uses them must be limited.***
	Complied • The workers engaged in construction activities are exposed to occupational health and safety hazards and risks, for which proper measures are being taken: • The construction staff and contractors involved in the construction activities is trained on the necessary precaution and safety practices prior to commencement of construction activity • The necessary safety measures have been taken up before and during the construction activities for all electrical driven machinery • A work permit system is implemented for all works related to working at heights (typically when working over 2m and above).All works related to working at heights are undertaken only during the daytime when sufficient sunlight is available; • Workers have required PPEs to be used at site; • All excavation activities are conducted under supervision of the site supervisor; • Proper signage is provided at site of excavated areas; • No blasting activities or use of explosives is required at site
2. STEPS TO AVOID DISTURBANCE DURING CONSTRUCTION:-	
4	***Disposal of muck including excavated material during construction phase should not create any adverse effects on the neighbouring communities and disposed off taking the necessary precautions for general safety and health aspects.***
	Complied • Soil strata at site constitutes of sandy soil and no material is found during excavation. All water seeps down the ground and no stagnation of water is there. Project site falls in plain area where excavation material generated is a very less. All surplus excavated earth is stored within the site and used for site levelling and green belt development. Since there is no stagnation of water, no muck is generated. • All excavation has been done in the campus within the boundary wall. This is an industrial area and there is no effect on Neighbouring communities.

5	***Diesel generator sets during construction phase should have acoustic enclosure and should conform to E (P) Rules prescribed for air and noise emission standards.***
	Complied • The DG sets used by Construction Agency have inbuilt acoustic enclosure as per norms and conform to E(P) rules. • Rubber padding provided for vibration control • Regular maintenance repair of equipment. • Greenbelt is planted which act as barrier.
6	***Vehicles/equipment deployed during construction phase should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peaking hours.***
	Complied • Downwash of trucks (especially tyres) is being done prior to departure from site to reduce the mud and dirt carryout. • Vehicles employed in construction are in good condition. Pollution under control (PUC) certificates are kept in record. • The vehicle speeds on unpaved roads is restricted 25 kmph. • Limited vehicular movement is permitted on disturbed soils. • Regular maintenance of vehicles is being done • Restriction on use of equipment generating high noise during night time.
7	***Regular supervision of the above and other measures should be in place all through the construction phase so as to avoid disturbance to the surroundings.***
	Complied Regular supervision of the above and other measures are in placeso that proposed site construction has not created any disturbance to the surroundings

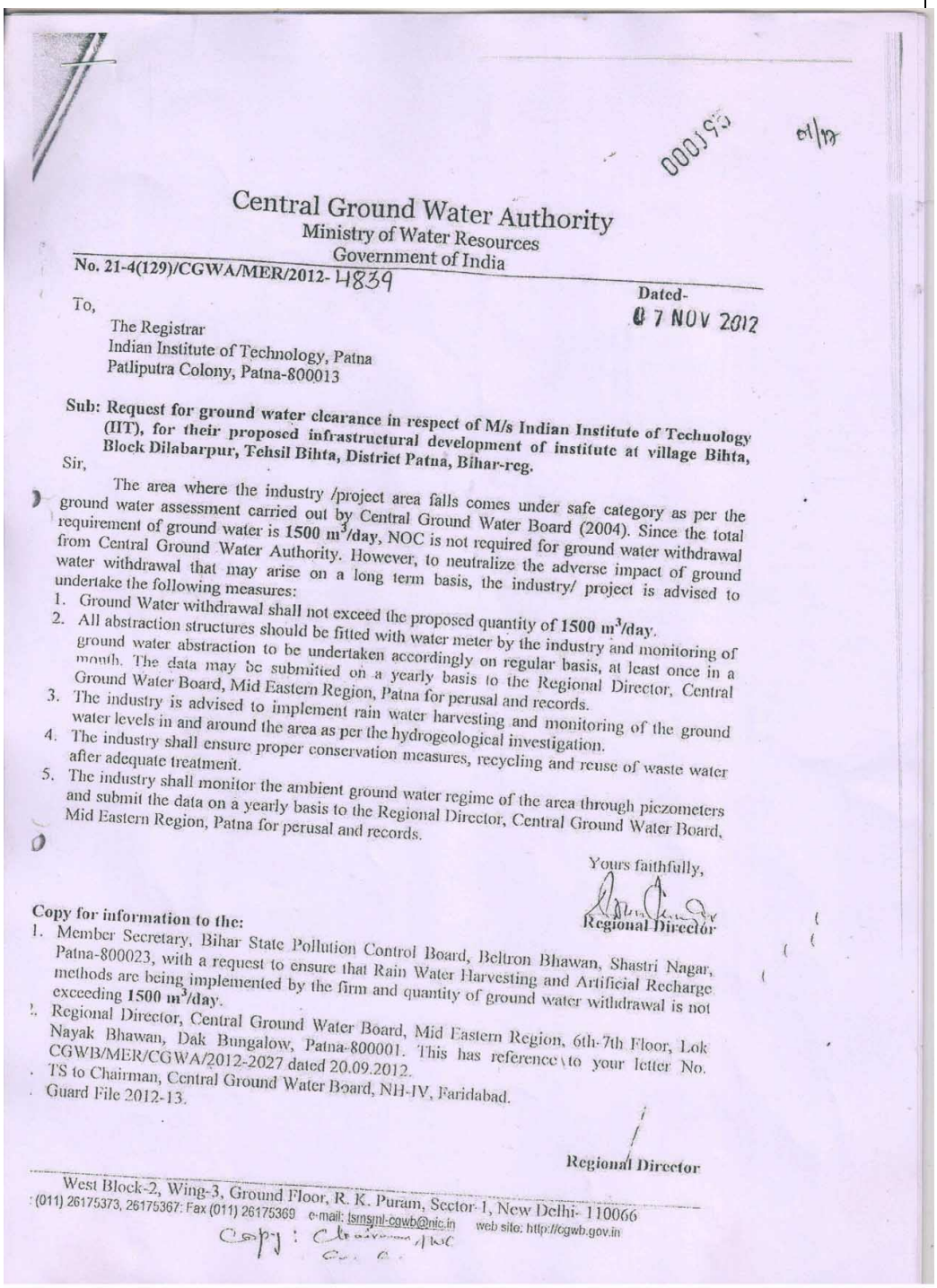
8	***Adequate sprinkler arrangement shall be provided. Care should be taken to keep all material storages adequately covered and contained so that they are not exposed to winds.***
	Complied • Heaps of sand, earth etc. are normally covered. Also, sprinkling of water has been resorted on the sand stored in open. • Wet suppression is being applied to at least 80 percent of disturbed surface areas on a daily basis especially during dry and windy days. • Downwash of trucks (especially tyres) is being done prior to departure from site to reduce the mud and dirt carryout. • During material handling, the materials is being dropped from a low height in order to reduce any fugitive dust emissions. • Haul trucks keep covered with suitable covering material like tarpaulin sheets to prevent fugitive emissions during transportation of construction materials. • Site barricading is done to prevent dust of construction and demolition site to spread from the site.
9	***Loading and unloading operations should not be carried out in open areas.***
	Complied • Sites of work arebarricaded from all sides. Stacking of materials is also done within barricaded area. It is thus ensured that no loading and unloading of material is done in open area.
10	***Use of Ready-Mix concrete is recommended for this project.***
	Complied • RMC is being used at site. Concrete from the plant is transported through TMs to work site.

11	***Adequate measures to be adopted to avoid wastage of water for curing of concrete structures.***
	Agreed • To reduce the water demand during construction Curing of RCC is done by wrapping with hessian cloth, ponding of water on horizontal surface. There is no wastage of water in curing. • Wet coverings with hessian clothes are extensively used for curing. The coverings are kept continuously moist so that a film of water remains on the concrete surface throughout the curing period.
12	***Promotion of use of cleaner fuel and fuel quality improvement should be done. Excessive energy consumption and fuel usage should be avoided.***
	Complied, • LPG is used by Labourers for cooking food • High Speed Diesel is used in DG Sets and vehicles
13	***Accumulation/stagnation of water should be avoided to ensure vector control.*** Soil strata is sandy and all water seeps down the ground. There is no accumulation of water in the work area. There is no natural water body.
3. SELECTION OF MATERIALS FOR BETTER ENERGY EFFICIENCY:-	
14	***Use of energy efficient construction materials should be ensured to achieve the desired thermal comfort.***
	Complied Double glazed glass unit (DGUs) have been used. Fly ash brick wall on external face is provided for Thermal insulation. Puff insulation has been provided over roof and light colour heat resistance terrace tiles with SRI>78% has been provided over roof.

15	***Fly Ash is to be used for construction as per Notification No. S.O. 769(E) dated 14.09.1999 amended vide Notification No. S.O. 979 (E) dated 27.8.2003 and S.O. 2804 (E) dated 03.11.2009 of the Ministry of Environment & Forests, Govt. of India.***
	Complied • PPC Cement which contains fly ash is used in the work. Fly ash bricks have been used in masonry.
16	***Construction technologies that require less material and possess high strength should be adopted. Materials with low embodied energy and high strength should be used preferably.***
	Complied • Construction is done with RCC framed structure technology which is suitable in the seismic zone.
17	***Use of energy efficient lighting systems e.g. High Pressure Sodium Vapor (HPSV) Lamps, LED etc. should be promoted. Solar energy should be used for outdoor lighting. Our of total 169 nos. outdoor lighting, at least 25 % of external lighting will be based on solar power, as proposed, Solar water heating will also be introduced in building requiring hot water.***
	Complied • Energy efficient lighting systems like HPSV lamps and LEDs have been used all over external lighting system. The campus has Grid connected 1MW_P (1000 kw_p) solar PV Plant giving power to Non-essential supply of various buildings, Compliance of at least 25% of external lighting from Solar PV is not necessary. (This is required in case of standalone solar PV Systems). • Maximum utilization of natural light • LED in common areas. • Use of solar lights in street and landscaping • Energy efficient motors and pumps • Appropriate design to reduce heat gain and loss • Roof-top thermal insulation

18	***Passive solar cooling to be incorporated in building design. Buildings should be oriented for ensuring natural ventilation and day lighting.***
	Complied Building orientation has been done considering Sun path.. Shading devices have been used in Design. Passive design maximizes the use of 'natural' sources of heating, cooling and ventilation to create comfortable conditions inside buildings. It harnesses environmental conditions such as solar radiation, cool night air and air pressure differences to drive the internal environment. Passive measures do not involve mechanical or electrical systems.
19	***Proper insulation of roof should be provided to achieve desired thermal comfort. Use of light coloured, reflective roofs having an SRI (solar reflectance index) of 50 % or more should be incorporated.***
	Complied • for thermal comfort Puff insulation has been provided over roof and light color heat resistance terrace tiles with SRI>78% has been provided over roof.
20	***Adequate open space, greenery and water bodies to be provided as per rules.***
	Complied • Existing Green Area (Trees, Shrubs and Grass) is 65,263 Sqm with projected total of 1,30,398 Sqm out of 20,23,436.5 Sqm land area
21	***Restrict the use of glazed surface as per National Building Code 2005.***
	Complied. Limited Glazing has been used. Glazing is on northern side.
04. WATER BODY CONSERVATION:-	
22	***The water bodies, if any, should not be lined and the embankments should not be cemented. The water bodies are to be kept in natural conditions without disturbing the ecological habitat.***
	There is no natural water body within the site at present as natural soil of the site is of sandy pervious nature, water doesn't retain on theground surface.

05. PLANTATION PROPOSED	
23	***The landscape planning should include plantation of native species. The species with heavy foliage, broad leaves and wide canopy cover are desirable. Water intensive and/or invasive species should not be used for landscaping. Plantation should be done in consultation of the Department of Forests, Govt. of Bihar***
	Complied, Comprehensive plantation drive in the campus has been undertaken by the forest department, Danapur, Bihar. 10,000 Nos. plantation has been done in the year 2016 including one-year maintenance. Forest department help will be taken for further plantation of selected species.
06. WATER SUPPLY	
24	***Water requirement during construction phase shall be met from municipal supply. Ground water should not be abstracted without prior permission of the competent authority as per the Central Ground Water Board.***
	Complied. Water for construction is obtained from water tankers available in the market and treated water from nearby the STPs. Permission of Central Ground water authority to extract 1500 KLD of water for its use as specified under Letter No 21-4(129)-CGWA/MER/2012-4839 copy of which is attached as under.



Central Ground Water Authority

Ministry of Water Resources
Government of India

No. 21-4(129)/CGWA/MER/2012- 4839 Dated- 07 NOV 2012

To,

The Registrar
Indian Institute of Technology, Patna
Patliputra Colony, Patna-800013

Sub: Request for ground water clearance in respect of M/s Indian Institute of Technology (IIT), for their proposed infrastructural development of institute at village Bihta, Block Dilabarpur, Tehsil Bihta, District Patna, Bihar-reg.

Sir,

The area where the industry /project area falls comes under safe category as per the ground water assessment carried out by Central Ground Water Board (2004). Since the total requirement of ground water is **1500 m^3/day**, NOC is not required for ground water withdrawal from Central Ground Water Authority. However, to neutralize the adverse impact of ground water withdrawal that may arise on a long term basis, the industry/ project is advised to undertake the following measures:

1. Ground Water withdrawal shall not exceed the proposed quantity of **1500 m^3/day**.
2. All abstraction structures should be fitted with water meter by the industry and monitoring of ground water abstraction to be undertaken accordingly on regular basis, at least once in a month. The data may be submitted on a yearly basis to the Regional Director, Central Ground Water Board, Mid Eastern Region, Patna for perusal and records.
3. The industry is advised to implement rain water harvesting and monitoring of the ground water levels in and around the area as per the hydrogeological investigation.
4. The industry shall ensure proper conservation measures, recycling and reuse of waste water after adequate treatment.
5. The industry shall monitor the ambient ground water regime of the area through piezometers and submit the data on a yearly basis to the Regional Director, Central Ground Water Board, Mid Eastern Region, Patna for perusal and records.

Yours faithfully,

Regional Director

Copy for information to the:

1. Member Secretary, Bihar State Pollution Control Board, Beltron Bhawan, Shastri Nagar, Patna-800023, with a request to ensure that Rain Water Harvesting and Artificial Recharge methods are being implemented by the firm and quantity of ground water withdrawal is not exceeding **1500 m^3/day**.
2. Regional Director, Central Ground Water Board, Mid Eastern Region, 6th-7th Floor, Lok Nayak Bhawan, Dak Bungalow, Patna-800001. This has reference to your letter No. CGWB/MER/CGWA/2012-2027 dated 20.09.2012.
3. TS to Chairman, Central Ground Water Board, NH-IV, Faridabad.
4. Guard File 2012-13.

Regional Director

West Block-2, Wing-3, Ground Floor, R. K. Puram, Sector-1, New Delhi- 110066
(011) 26175373, 26175367; Fax (011) 26175369 e-mail: ismgmi-cgwb@nic.in web site: http://cgwb.gov.in

Copy : Chairman/NWC

07. SEWAGE TREATMENT PLANT	
25	***As per the proposal submitted by the proponent waste water shall be treated in STP.***
	Complied Wastewater is treated in 3 Nos. STPs of 120 KLD each based on FAB Technology.
08. RAIN WATER HARVESTING SCHEME	
26	***The proponent must collect rainwater from roof-top catchments and reuse for various purposes after necessary cleaning. Water bodies should be created and used for storing rain water. Adequate retention time and storage provisions should be provided for harvesting rainwater.***
	Rain from the Roof of the building is collected and discharged in to surface rainwater channel network at ground level, filtered and finally discharged to groundwater discharging pits constructed as per specifications given in National Building Code.
27	***Adequate firefighting storage should be provided as per norms.***
	Complied Under ground sump of Fire water storage of 4lakh litre capacity has been provided.Addressable Intelligent fire detection and Alarm system of latest technology with Fire alarm panels, multi Sensor detectors, smoke detectors, heat detectors, beam detectors, response indicators, manual call point and hooters, light strobe etc. is provided. This meet the requirement of NBC 2016/NBCC Specifications/ State By laws. License/Approval of Local Fire Authorities has been obtained.

09. Municipal Solid Waste Management: -	
28	***Adequate provision shall be made for storage of solid waste and adequate means of access shall be provided. Space should be kept reserved for waste storage, collection etc. in site planning and architectural designs.***
	Complied. Waste is collected in designated waste bins based on their types, placed at the strategic locations. Bio-degradable waste is composted and used in Manure. Further Organic waste converters planned in 2 no's garbage yards. Non-Biodegradable waste is handed over to authorized agency for further disposal out of site. After collection of waste, solid waste management plan followed by authorized agency is as given below: 1. Segregation of recyclable and non-recyclable wastes. 2. Disposal of recyclable wastes for recycling. 3. Composting of bio degradable organic of wastes for captive use. 4. Disposal of segregated wastes to common municipal waste landfill site. Space for two Garbage yards for waste storage, collection etc. has been earmarked in site planning and Layout plan.
10.Transport Management:-	
29	***Both internal and external traffic planning and management should be adequate to ensure uninterrupted traffic movement in the area during construction as well as operation phase.***
	Complied. 6 m wide roads have been provided. Trafficis mostly pedestrian and cyclists. Present population is much less than the targeted population. Traffic movement is uninterrupted all the time at present.
30	***The design of service road and the entry and exit from the project area should conform to the norms & standards of competent authority for traffic management. Bell mouth type arrangement should be made at the entry & exit. Proper traffic management plan should be adopted in consultation with Traffic authorities.***
	Complied. Entry and Exit from Project area has been designed as per norms and standard. Bell mouth type arrangement has been made at Entry and Exit of the campus. Traffic authorities will be consulted, if and when requirement is felt.

Others: -	
31	***Efficient management of indoor air quality must be ensured for health and safety of the users.***
	All Air conditioned areas have provision of fresh air duct for improved air quality. Indoor air quality test have been performed and report is attached
32	***Adequate measures to be adopted for water conservation during construction and operation stage. Use of efficient irrigation equipment, evaporative cooling unit in air-conditioning system etc should be considered.***
	• To reduce the water demand during construction Curing of RCC is done by wrapping with hessian cloth, ponding of water on horizontal surface. There is no wastage of water in curing. • Wet coverings with hessian clothes are extensively used for curing. The coverings are kept continuously moist so that a film of water remains on the concrete surface throughout the curing period. Drip irrigation system and sprinklers have been adopted to minimize use of water in irrigation. VRV System of Air conditioning which do not require water has been used in the campus. • Dual plumbing has been installed to segregate the fresh water use with supply of recycled water for non-potable water requirements such as flushing, horticulture, etc. •
33	***Provisions should be kept for the integration of solar water heating system.***
	Solar hot water systems is fully functional in Girls Hostel.
3.1.2 Operation Phase **Water Supply:-**	
34	***Water requirement during operation phase shall be met from municipal supply. Ground water should not be abstracted without prior permission of the competent authority.***
	Complied The source of water supply during operational phase is mainly Ground water. Central Ground water authority has granted for withdrawal of 1500 KLD underground water vide letter No 21-4(129)-CGWA/MER/2012-4839 copy of which has been attached.

35	***As proposed, low flow appurtenances shall be used in the buildings. Water meters conforming to ISO standards should be installed in the buildings to monitor the daily water consumption. Use of water efficient devices/fixtures and appliances should be promoted. Installation of dual flushing system should be considered to conserve water.***
	Complied. Aerators and Low flow appurtenances are used in all buildings. Water meter will be installed shortly. Use of water efficient devices/fixtures and appliances is being promoted. Dual flushing cisterns has been provided in all buildings.
36	***The proponent practice rainwater harvesting on regular basis.***
	Complied Rainwater harvesting practice is done on regular basis. All buildings are having ground water recharge system. Harvesting pits are periodically cleaned to keep functioning. The campus is zero Liquid Discharge.
	Sewage Treatment Plant
37	***As per the proposal submitted by the proponent wastewater shall be treated in STP. Treated sewage should conform to E(P) Rules. Treatment Plants should be monitored on a regular basis. Reuse of treated wastewater should be carried out as proposed.***
	Complied Wastewater is being treated in STPs. Treated sewage has BOD < 10 MG/L & COD < 100 MG/L & conform to E(P) rules. Quality of treated water is tested and monitored regularly. Treated water is being used for horticulture and flushing purpose.
	Emission from Diesel Generator Set:-
38	***The stack height and emissions from D.G. sets should conform to the norms of Central Pollution Control Board. The certification of space design for DG sets should be done by competent authority***.
	Complied • stack height and emissions from D.G. sets conform to the norms of Central Pollution Control Board. Stack emission test report is attached. Certification of space standard of DG sets are not required as all DG sets are of 500 KVA capacity with inbuilt acoustic enclosure and kept in a space with terrace and no surrounding walls on three sides (i/c radiator side).

	Ensure Energy Efficiency:-
39	***Use of energy efficient electrical systems should be promoted. High efficiency lamps with electronic ballasts should be used.***
	Complied. Energy efficient lighting systems(LED type) has been used all over external lighting system. Solar water heating system has been provided in Girls Hostel.
40	***Energy efficient Motors and properly rated Transformers should be installed. Manufacturer's certificate to this effect shall be obtained and kept on record. Backup power supply be based on cleaner fuel.***
	Complied. Energy efficient Motors (IE2 class) and properly rated Transformers installed. Manufacturer's Certificate has been received and is kept in record. DG Sets run on High speed Diesel oil.
41	***The project proponent should resort to solar energy at least for street lighting/indoor lighting and water heating.***
	Complied. The campus has Grid connected 1MW_P (1000 kw_p) solar PV Plant giving power to Non-essential supply of various buildings and is better than standalone solar PV Systems used for street lighting.Solar water heating system has been provided in Girls Hostel.
42	***Energy Audits should be conducted on a regular basis.***
	Complied. Internal audit energy report is attached.
	Transport Management:-
43	***Use of public mode of transportation should be promoted. Use of the least polluting type of transportation should be promoted. Adequate parking space should be provided as per norms.***
	Complied. To promote public mode of transport, Bus services at regular interval plies from IIT campus to Patna city in collaboration with BSTC. Inside the campus, bus plies point to point within the campus. Bicycle is common mode of transport in the campus.

44	***Pathways should be covered or shadowed by tree canopy as far as practicable. Transport system should be such that traffic will be calm in neighborhoods. Traffic within the project site should be restricted by regulation. Adequate vertical and horizontal clearances of overhead electric power and telecommunication lines should be provided.***
	Complied. Extensive tree plantation to cover and give shadows has been done along pathways. Traffic is mostly pedestrians and cyclists. Traffic presently is much lower than design traffic capacity of roads. All LT Cables are laid underground. No overhead electric cables are there in the campus.
Solid Waste Management: -	
45	***The proponent should abide by the Municipal Solid Wastes (Management and Handling) Rules, 2000. The proponent must develop the Solid Waste Management and Disposal Scheme ensuring storage and segregation of biodegradable and non-biodegradable wastes. The solid waste is to be disposed off in consultation with municipal authority.***
	Complied. Solid waste management plan is followed in consultation with the Municipal Authority.
46	***The proponent should provide different coloured bins for different categories of waste and ensure complete segregation of biodegradable and non-biodegradable wastes. The solid waste from different collection and storage bins should be finally collected at transfer stations. Further segregation will be done at transfer stations to collect recyclables such as plastic, polythene, glass, metals, textiles, rubbers, leathers, paper etc. Separate compartments shall be provided for each type of recyclables.***

<table>
<tr><td></td><td>


All habitable buildings are provided with coloued dustbins of different categories to ensure efficient segregation and further processed.</td></tr>
<tr><td>47</td><td>Spent oil from DG sets should be stored in HDPE drums in isolated covered facility and disposed off as per the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008. Spent oil from DG Sets should be disposed off through registered recyclers only.</td></tr>
<tr><td></td><td>Complied.
Spent lube oil from DG Sets are handed over to authorized agency engaged for AMC of DG Set for further disposal.</td></tr>
<tr><td>48</td><td>Various types of electrical and electronic wastes generated in the buildings, which includes PC, Xerox machine components etc. should be collected separately for transportation to the authorized recyclers approved by the State/Central Pollution Control Boards. There should also be provision for storage of these wastes in the building before transportation. The e-waste collected should be processed by authorized recycling unit. The proponent should abide by e-waste (Management & Handling) Rules, 2011.</td></tr>
<tr><td></td><td>Complied.
This is a new campus. Electronic waste generated is negligible so far. Some outdated electronic equipments were disposed off through buy back system of purchase.</td></tr>
</table>

Others:-	
49	***The implementation of Environmental Management Plan should be carried out, as proposed. Regular monitoring should be carried out during construction and operation phases.***
	Complied. Regular monitoring of EMP is being carried out. Environment Management committee has been formed for the purpose.
50	***The project proponent should provide guidelines to the users to ensure conservation of energy and water. In house environmental awareness campaigns should be carried out at regular intervals to ensure environmental protection.***
	Complied. To encourage conservation of energy and water, poster campaigning are undertaken in the campus. Various social media tools are used to spread awareness for environment.
51	***Firefighting systems should be designed in compliance with the WBFS and NBC norms. Preventive measures should be adopted for Risk& Disaster Management as per the provisions of the National Building Code 2005.***
	Complied. All fire fighting system has been designed as per NBC 2016. DMP is in place.
52	***As a measure of precaution against accidents, Disaster Management Plan should be prepared. Good housekeeping practices and preventive measures should be adopted to prevent spread of diseases/vectors from the laboratory areas to the neighboring habitation areas.***
	Complied. Disaster Management Plan is in place. There is a team of staff to supervise the work of outsourced housekeeping agencies. The discharge from laboratories is negligible and stored in a container and to be disposed through authorized agencies.
53	***Environmental Management Information System shall be maintained properly.***
	Complied

Part-B General Conditions	
i	***The environmental safeguards contained in the EMP Report should be implemented in letter and spirit.***
	Agreed. Safeguards contemplated in the EMP Report are implemented in letter and spirit.
ii	***All the labourers to be engaged for construction works should be screened for health and adequately treated before issue of work permits. Provision should be made for the supply of kerosene or cooking gas to the labourers during construction phase.***
	Complied. Labourers engaged during construction have regular health checkup. There is Dispensary in the campus where staff Nurse is available for first-aid. Cooking gas has been provided to Labours for making food.
iii	***In case of any violation of the conditions laid down in this Environmental Clearance, Section 16 of the Environment (Protection) Act, 1986, will be applicable. In case of any change(s) in the scope of the project, the project would require a fresh appraisal by the SEAC, Bihar.***
	Agreed
iv	***The State Expert Appraisal Committee, Bihar reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environmental (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time-bound and satisfactory manner.***
	Agreed.
v	***All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives.***
	There is no storage of diesel in the campus. Diesel brought from dealers is directly filled up in fuel tank of DG sets. So approval of chief controller of explosives is not necessary.

vi	***These stipulations would be enforced among others under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 2006 including the amendments and clarification circulars.***
	Agreed and complied.
vii	***The Project Proponent should inform the public that the project has been accorded environmental clearance by SEIAA & the copies of clearance letters are available with the State Pollution Control Board and may also be seen on SEIAA website (www.seiaabihar.org). This should be advertised within 7 days from this date of issue of the clearance letter, at least 2 local papers for wide circulation.***
	Environmental clearance status has been published in 2 Newspapers.

Head Office :
122 C, Aastha
Road No. 5 A
Patliputra Colony
PATNA – 800 013 (Bihar)

Laboratory Address -
01ST FLOOR, RAJHANS NIKETAN,
NEAR CANAL, RUKUNPURA,
BAILEY ROAD,
PATNA – 800014 (BIHAR)

SHIVA TEST HOUSE

Tel. : 0612 – 2241638 ; TeleFax : 0612 - 2590705
E.mail : sthpatna1@yahoo.co.in

JAS ANZ
ISO 18001:2007
OHSAS Certified

RECOGNISED AS ENVIRONMENTAL LABORATORY BY CENTRAL GOVT. UNDER ENVIRONMENT (PROTECTION) ACT 1986), BY DEPTT. OF INDUSTRY, FORESTS & ENVIRONMENT, GOVT. OF BIHAR AND BIHAR STATE POLLUTION CONTROL BOARD & ACCREDITED BY NABL

TEST REPORT

Ref. No. *G/TR/19-20/44* Dt. *17.04.2019*		Your Work Order No. *NIL*		Dt. *15.04.2019*
[a] Name and address of the Customer	THE EXECUTIVE ENGINEER C.P.W.D. IIT PATNA CAMPUS BIHTA DIST. PATNA			
[b] Details of Sample	*Monitoring of Ambient Air Quality*			
[c] Sample Collected by	*Shiva Test House on 15.04.19*			
[d] Sampling Location	IS 5182 (Part - 14)			
[e] Method of Sampling	*Premises of IIT Patna*			
[f] Sampling Environmental Condition	Temp. (°C)	41	Humidity (%)	62
[g] Details of Sample Container (No. & Type of Container)	Filter Paper ; Glass Impinger			
[h] Sample Quantity	9			
[i] Items required to be tested	As per request			
[j] Whether any specific Method of Test has been suggested by the customer	No			
[k] Date of receiving the sample in Laboratory	*15.04.19*			
[l] Analysis Start Date / Analysis Completion Date	*16.04.19 / 17.04.19*			

Parameters	Method of Test	Sampling Station			Limit as per NAAQS 2009
		Near Academic Block 3 & 4	*Near Boys Hostel*	*Near Bus Parking*	
1. Particulate Matter (PM_{10}), µg / m^3	IS 5182 (Part-23)	56.5	52.6	59.5	100 µg / m^3
2. Particulate Matter ($PM_{2.5}$), µg/m^3	CPCB (GMAAP Vol. I)	33.6	30.9	35.8	60 µg / m^3
3. Sulphur Dioxide as SO_2 µg / m^3	IS 5182 (Part-2)	7.7	6.7	10.1	80 µg / m^3
4. Nitrogen Dioxide as NO_2 µg / m^3	IS 5182 (Part-6)	19.6	15.4	22.9	80 µg / m^3

SHIVA TEST HOUSE Rukurpura PATNA 800014. RAJHANS NIKETAN

Authorized Signatory
Quality Manager / Dy. Quality Manager

1. This report applies only to sample tested as above.
2. Total Liability of our Laboratory is limited to invoiced amount.
3. Test Report endorsed only the tests and not the product certificate.
4. Test Report can not be reproduced partially or full for legal court purpose without written permission of the Laboratory.

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122 C, Aastha
Road No. 5 A
Patliputra Colony
PATNA – 800 013 (Bihar)

Laboratory Address :-
01ST FLOOR, RAJHANS NIKETAN,
NEAR CANAL, R. KUNPURA,
BAILEY ROAD,
PATNA – 800014 (BIHAR)

SHIVA TEST HOUSE

Tel : 0612 – 2241638 ; TeleFax : 0612 - 2590705
E.mail : sthpatna1@yahoo.co.in

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TEST REPORT

Ref. No. *G/TR/19-20/45* Dt. *17.04.2019*		Your Work Order No. *NIL*		Dt. *15.04.2019*
[a] Name and address of the Customer		THE EXECUTIVE ENGINEER C.P.W.D. IIT PATNA CAMPUS BIHTA DIST. PATNA		
[c] Details of Sample		*Monitoring of Noise Level around the Factory Periphery*		
[d] Monitored by		SHIVA TEST HOUSE on *15/16.04.19*		
[e] Items required to be tested		As per request		
[f] Whether any specific Method of Test has been suggested by the party		No		
Monitoring Location	*LWA Of Noise Level in dB(A)*		*Ambient Air Quality Standards in respect of Noise in dB(A)**	
			Silence Zone	
	Day Time (6.0 am to 10.0 pm)	*Night Time (10.0 pm to 6.0 am)*	*Day Time*	*Night Time*
1. Block IX (Inside the Building)	52.9	---	55	40
2. Block IX (Outside the Building)	44.6	---	--do--	--do--
3. Block VI (Inside the Building)	51.4	---	--do--	--do--
4. Block VI (Outside the Building)	53.2	---	--do--	--do--
5. Boys Hostel (Inside)	51.0	38.4	--do--	--do--
6. Boys Hostel (Outside)	47.5	36.1	--do--	--do--
7. School (Inside)	40.8	---	--do--	--do--
8. School (Outside)	44.3	---	--do--	--do--
9. Residential B Block (Inside)	44.9	34.6	--do--	--do--
10. Residential B Block (Outside)	56.1	35.4	--do--	--do--
N.B. **Standards in respect of Noise as per Noise Pollution (Regulation & Control) Rules'2000*				
The authority shall take action against violator if the noise level exceed the ambient noise standards by 10 dB(A) or more against any area/zone				

SHIVA TEST HOUSE Rukunpura PATNA 800014. RAJHANS NIKETAN

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